

**Request for Proposal (RFP) for Selection of Service
Provider for Upgradation of Toll Monitoring & Control
Centre (TMCC) Application including Development,
Operations & Maintenance of TMCC 2.0**

**RFP No. IHMCL/TMCC 2.0/2026
Date: 31/07/2026**

**Issued by
Indian Highways Management Company Limited
G-5&6, Sector-10, Dwarka,
New Delhi- 110075**



NOTICE INVITING RFP

RFP No. IHMCL/TMCC 2.0/2026

Dated: 31/07/2026

- i. Indian Highways Management Company Limited (Hereinafter referred to as “Authority” or “IHMCL”) intends to engage the Service Provider (also referred as “Bidder” and “Successful Bidder” in the Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0
- ii. The period of engagement shall be Seven (07) years post Go-Live. The bidding firm shall be required to implement and roll out phase of the solution within 12 Months from the date of signing of the Contract Agreement.
- iii. The prospective bidders are hereby invited to submit their bids comprising Technical and Financial bids through e-tendering mode only. The bid shall be valid for 120 days w.e.f. bid due date. The bids should be submitted online only on e-tender portal (<https://etenders.gov.in>) of Government of India and in the prescribed formats. No change in the formats and / or other mode of bid submission is permissible.
- iv. Bidder should pay Tender Application Fee (non-refundable) of INR 25,000/- (Rupees Twenty-Five Thousand Only) inclusive of GST through online mode to IHMCL's Bank account as mentioned in the RFP. The bidder shall also upload the online payment receipt.
- v. The Indian Highways Management Company Limited now invites bids from eligible bidders for the following project:

State	RFP Ref No.	Name of Work
Delhi	RFP No. IHMCL/TMCC 2.0/2026	Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

- vi. The complete BID document can be viewed / downloaded from official portal of IHMCL <http://www.ihmcl.co.in> or e-procurement portal <https://etenders.gov.in> from 31/07/2026 to 27/08/2026. Bidder must submit online its technical and financial bid at <https://etenders.gov.in> on or before 27/08/2026 up to 05:00 PM IST. Bids received online shall be opened on 28/08/2026 at 5:30 PM IST
- vii. Bidding through any other mode shall not be entertained. Please note that the Authority reserves the right to accept or reject the bids without assigning any reason whatsoever.

Officer In-charge:

COO - IHMCL,

Indian Highways Management Company Limited

G-5&6, Sector-10, Dwarka, New Delhi- 110075

Phone – 011- 25074100 Extn – 1804, e-mail: tenders@ihmcl.com

Disclaimer

The information contained in this RFP document (the “RFP document”) or subsequently provided to Bidder(s), whether verbally or in documentary or any other form by or on behalf of IHMCL or any of its employees or advisors, is provided to Bidder(s) on the terms and conditions set out in this RFP document and such other terms and conditions subject to which such information is provided.

This RFP document is not an agreement and is neither an offer nor an invitation by IHMCL to the prospective bidders or any other person. The purpose of this RFP document is to provide interested parties with information that may be useful to them in making their technical/ financial offers (“Bid(s)”) pursuant to this RFP document. This RFP document includes statements, which reflect various assumptions and assessments arrived at by IHMCL in relation to the Project. Such assumptions, assessments, and statements do not purport to contain all the information that each Bidder may require. This RFP document may not be appropriate for all persons, and it is not possible for IHMCL, its employees, or advisors to consider the investment objectives, financial situation, and particular needs of each party who reads or uses this RFP document.

The assumptions, assessments, statements, and information contained in this RFP document may not be complete, accurate, adequate, or correct. Each bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability, and completeness of the assumptions, assessments, statements, and information contained in this RFP document and obtain independent advice from appropriate sources. Bidders acknowledge that they are responsible for conducting their own independent assessments, analyses, and due diligence to determine the suitability of their proposals and the requirements of the project.

The information provided in this RFP document to the Bidder(s) is on a wide range of matters, some of which may depend upon interpretation of the law. The information given is not intended to be an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of the law. IHMCL accepts no responsibility for the accuracy or otherwise of any interpretation or opinion of the law expressed herein. All information, specifications, requirements, and terms contained in this RFP are subject to change, modification, or withdrawal at the discretion of IHMCL without prior notice.

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

IHMCL also accepts no liability of any nature, whether resulting from negligence or otherwise, howsoever caused, arising from the reliance of any bidder upon the statements contained in this RFP document. IHMCL may, in its absolute discretion, but without being under any obligation to do so, update, amend, or supplement the information, assessment, or assumptions contained in this RFP document.

The issue of this RFP document does not imply that IHMCL is bound to select a bidder or to appoint the successful bidder for the Project and IHMCL reserves the right to reject all or any of the bidders or bids without assigning any reason whatsoever. Further, IHMCL reserves the right to cancel the bidding

process, or pursue alternative procurement methods at any stage without incurring any liability to bidders. Bidders agree to indemnify and hold harmless IHMCL, its officers, employees, and agents from any claims, damages, liabilities, or expenses arising out of or related to their participation in the bidding process, submission of proposals, or performance under the contract.

The bidder shall bear all costs associated with or relating to the preparation and submission of their bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations that may be required by IHMCL or any other costs incurred in connection with or relating to bid. All such costs and expenses will remain with the bidder and IHMCL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a bidder in preparation or submission of the bid, regardless of the conduct or outcome of the bidding process.

DOCUMENT COMPOSITION

This RFP Documents comprise the following parts:

Part-I	Instructions to Bidders
Part-II	Formats for Bid Submission
Part-III	Draft Format of Contract Agreement
Section 1.1	Draft Contract Agreement
Section 1.2	General Conditions of Contract
Schedule A	Details of Site
Schedule B	• Detailed Scope of Work ○ Design & Development of the Toll Monitoring and Control Centre (TMCC 2.0) ○ Operation & Maintenance of Toll Monitoring and Control Centre (TMCC 2.0)
Schedule C	• Service Level Agreements (SLA)

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DEFINITIONS

S.No	Term	Definition
1.	Applicable Law	Are the laws applicable in India
2.	Authority	Indian Highways Management Company Limited (IHMCL)/National Highway Authority of India (NHAI)
3.	Authorized Representative	Authorised Representative of bidder
4.	Commencement Date or Effective Date	The date on which the Successful Bidder signs the Contract Agreement.
5.	Control Centre (CC)	A dedicated control center for monitoring and management of the entire projects' operations
6.	Decision support	Reports, Graphs, Dashboard and Alerts, etc. which shall help in supporting decisions for MLFF project
7.	Downtime	"Downtime" refers to the period during which MLFF equipment or system is either non-functional or not actively operating to execute its intended tasks effectively, thus failing to meet the operational characteristics due to significant interruptions or failures.
8.	Good Industry Practice	"Good Industry Practice" means the practices, methods, techniques, designs, standards, skills, diligence, efficiency, reliability and prudence which are generally and reasonably expected from a reasonably skilled and experienced contractor engaged in the same type of undertaking as envisaged under this Agreement and which would be expected to result in the performance of its obligations by the Contractor in accordance with this Agreement, Applicable Laws and Applicable Permits in reliable, safe, economical and efficient manner.
9.	Plaza ETC Equipment	Plaza ETC Equipment" means all lane-level and plaza-level hardware, software, sensors, cameras, communication devices, and supporting systems installed at a physical toll plaza for enabling Electronic Toll Collection (ETC)/FASTag operations, vehicle detection, transaction processing, surveillance and monitoring,
10.	Plaza ETC System Integrator	Plaza ETC System Integrator" means the agency/entity responsible for supply, installation, integration, commissioning, operation, maintenance, and support of Plaza ETC Equipment and associated Toll Management Software at a toll plaza, including integration with the FASTag/NETC

S.No	Term	Definition
		ecosystem and other prescribed external systems for seamless toll operations
11.	MLFF Agencies	MLFF Agency/Bank” shall mean the Acquirer Bank appointed/authorized for supply, installation, integration, commissioning, operation, maintenance, and support of MLFF Equipments, Plaza operations, responsible for transaction acquiring, payment processing, settlement, reconciliation, dispute handling, and integration with relevant MLFF tolling and payment ecosystem components
12.	MLFF Equipments	MLFF Equipment” means all field-level and backend hardware, software, sensors, cameras, communication devices, and associated systems deployed for Multi-Lane Free Flow (MLFF) toll collection, enabling automatic vehicle identification, classification, toll transaction processing, enforcement, and monitoring without physical toll booths or lane barriers
13.	MoRTH	Ministry of Road Transport and Highways
14.	Network Management Software	Network Management Software (NMS) is a centralized application used to monitor, manage, and maintain communication networks, including devices such as routers, switches, servers, and transmission links. It enables functions such as real-time network monitoring, fault detection, performance analysis, configuration management, and security oversight to ensure reliable and efficient network operations.
15.	Toll Management Software (TMS)	Toll Management Software (TMS)” means the software application/platform used for operation, control, monitoring, and management of toll collection activities at toll plazas, including Electronic Toll Collection (ETC)/FASTag transaction processing, lane management, vehicle classification, toll fee calculation, reconciliation, reporting, audit logs, user management, and integration with external systems
16.	Successful Bidder	The “bidder”, “Service Provider” & “Implementation Agency (IA)” interchangeably, after the complete evaluation process, has been issued the letter of award by IHMCL.
17.	Toll Monitoring and Control Centre (TMCC)	“ TMCC ” refers to the existing Toll Monitoring and Control Centre established at IHMCL/NHAI headquarters in New Delhi for monitoring and maintaining the ETC equipment health status, as well as the traffic and revenue data of all National Highway fee plazas.
18.	Uptime	Uptime ” refers to the duration during which an MLFF equipment or system is actively functioning, operating, and ready to execute its intended tasks effectively, meeting the operational characteristics as

S.No	Term	Definition
		defined in the RFP document, without encountering significant interruptions or failures.
19.	Vehicle Classification	Shall mean vehicle classification under different vehicle types/categories/classes as per NH Fee (Determination of rates and Collection) Rules 2008 (and its amendment from time to time) and NHAI/MoRTH/IHMCL/NETC guidelines.
20.	Working Days	Working Day(s)" means days on which manpower is deployed as per the roster for operation and maintenance of the System, excluding notified Government holidays.

ABBREVIATIONS

#	Abbreviations	Full Form
1.	MLFF	Multi Lane Free Flow
2.	ANPR	Automatic Number Plate Recognition
3.	BoQ	Bill of Quantities
4.	CCH	Central Clearing House
5.	CMOS	Complementary Metal Oxide Semiconductor
6.	DSRC	Dedicated Short Range Communication
7.	FAT	Factory Acceptance Test
8.	FS	Functional Specification
9.	GoI	Govt. of India
10.	IHMCL	Indian Highways Management Company Limited
11.	ITMS	Intelligent Traffic Management System
12.	ITS	Intelligent Transportation System
13.	IT/OT	Information Technology/ Operational Technology
14.	MoRTH	Ministry of Road Transport and Highways
15.	NHAI	National Highways Authority of India
16.	RFID	Radio Frequency Identification
17.	SAT	Site Acceptance Test
18.	SI	System Integrator
19.	STQC	Standardization Testing and Quality Certification
20.	TS	Technical Specifications
21.	UAT	User Acceptance Test
22.	VRN	Vehicle Registration Number
23.	VIN	Vehicle Identification Number (Chassis Number of the Vehicle)

PART - I

INTRODUCTION

1. INTRODUCTION

1.1. BACKGROUND

- a) Indian Highways Management Company Limited (Hereinafter referred to as “Authority” or “IHMCL”) intends to engage Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operation & Maintenance of TMCC 2.0.
- b) Brief particulars of the Project are as follows:

RFP Ref No.	Name of Assignment	EMD	Contract Period
RFP No. IHMCL/TMCC 2.0/2026	Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0	INR 1 Crore	12 Months (Design, Development and Implementation and roll out period) and 84 Months as O&M period (After successful completion/commissioning of the TMCC 2.0)

- c) The Successful Bidder shall be responsible Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operation & Maintenance of TMCC 2.0 in accordance with the provisions of a contract (the “Contract”) to be entered into between the Service Provider and the Authority in the form provided by the Authority as part of the Bidding Documents pursuant hereto.
- d) The Agreement sets forth the detailed terms and conditions for award of the project to the Service Provider, including the scope of the Service Provider’s services and obligations enclosed as part of this document.
- e) The Authority shall receive bids pursuant to this RFP in accordance with the terms set forth in this RFP, and all bids shall be prepared and submitted in accordance with such terms on or before the bid due date specified in Clause-1.2 for submission of bids (the “BID Due Date”).

1.2. KEY DATES

#	EVENT(S)	DATE (Unless otherwise notified separately)
1.	Invitation of RFP (NIT)	31/07/2026
2.	Last date of receiving queries	11/08/2026 Upto 05:00 PM IST
3.	Pre-Bid meeting at specified venue	12/08/2026 at 11:00 AM IST
4.	Last date/ time for online submission of bids (i.e., Bid due date)	27/08/2026 Upto 05:00 PM IST
4.	Opening of <i>Technical bids</i>	28/08/2026 at 05:30 PM IST
5.	Opening of Financial bids	To be intimated to shortlisted/ technically qualified bidders separately.
6.	Validity of Bids	120 Days

2. GENERAL TERMS OF BIDDING

2.1. TENDER FEE

The bidder should pay Tender Application Fee (non-refundable) INR 25,000/- (Rupees Twenty-Five Thousand only) inclusive of GST through online mode. The Bidder shall also upload the payment receipt in e-tender portal as proof of submission.

Details of designated bank account are as under:

#	Particulars	Details
1.	Name of Beneficiary	Indian Highways Management Company Limited
2.	Name of Bank	Canara Bank
3.	Account No.	8598201006217
4.	IFSC Code	CNRB0008598

2.2. BID SECURITY

- a) The bidder shall furnish as part of its Bid, a Bid Security amounting to Rs 1,00,00,000/- (Rs One Crore Only). The Bid Security shall be in the form of Bank Guarantee (in format mentioned in this RFP) in favor of Indian Highways Management Company Limited, New Delhi from any of the following banks: -
 - i. State Bank of India or its subsidiaries,
 - ii. Any Indian Nationalised Bank
 - iii. Any Scheduled Commercial Bank approved by RBI having a net worth of not less than Rs. 500 Cr as per the latest Annual Report of the Bank. In the case of a Foreign Bank (issued by a branch in India), the net worth in respect of the Indian operations shall only be considered.
- b) Any bid not accompanied by a Bid Security and Tender Application Fee in the prescribed manner shall be summarily rejected.
- c) The Bid Security of the Successful bidder shall be retained till it has provided Performance Security under the Contract Agreement.
- d) The Bid Security of the unsuccessful bidders will be returned after signing of the Contract Agreement with Successful bidder.
- e) The EMD can also be submitted in the form of NEFT/ RTGS in the IHMCL bank account details provided in RFP Clause 2.1.

2.3. INVOCATION OF BID SECURITY

- a) The Bid Security shall be forfeited by IHMCL as damages payable to IHMCL for, *inter-alia*, time, cost and effort of IHMCL without prejudice to any other right or remedy that may be available to IHMCL under the provisions in the RFP and/or under the Contract Agreement, or otherwise, under the following circumstances:
- i. If a Bidder engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice; or
 - ii. If the Bid is withdrawn during the intervening period between the bid due date and the expiration of the Bid Validity; or
 - iii. If the bidder tries to influence the evaluation process; or
 - iv. If a Bidder having been notified Successful Bidder by IHMCL with the issuance of Letter of Award (LOA) during the bid validity period:
 - a) Fails or refuses to furnish the Performance Security, in accordance with the conditions of RFP; or
 - b) Fails or refuses to execute/sign the Contract within the stipulated time frame.
- b) No Bidder shall submit more than one Bid for the Project.
- c) Any condition or qualification or any other stipulation contained in the Bid shall render the Bid liable to rejection as a non-responsive Bid.
- d) The Bidding documents including this RFP and all attached documents, provided by the Authority are and shall remain or become the property of the Authority and are transmitted to the Bidders solely for the purpose of preparation and submission of a Bid in accordance herewith. 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 the Authority will not return to the Bidders any Bid, document or any information provided along therewith.
- e) Notwithstanding anything to the contrary contained herein, if the Bid Due Date falls within three months of the closing of the latest financial year of a Bidder, it may ignore such financial year for the purposes of its Bid and furnish all its information and certification with reference to the 3 (three) years or 5 (five) years, preceding its latest financial year. For the avoidance of doubt, the financial year shall, for the purposes of this Bid hereunder, mean the accounting year followed by the Bidder during its normal business.

3. ELIGIBILITY AND PRE-QUALIFICATION CRITERIA

3.1. PRE-QUALIFICATION CRITERIA

The Bidders are required to fulfil the following Pre-Qualification Criteria:

SI #	Requirement Paramters	Eligibility Criteria	Supporting Documents to be provided
1.	Legal Entity	The Bidder can be either: a. A business entity ("Sole Bidder") incorporated under the Companies Act 1956/2013 or Limited Liability Partnerships Act 2008 OR, b. A JV/Consortium of business entities ("Consortium"), where each Member of the JV/Consortium shall be incorporated under the Companies Act 1956/2013 or Limited Liability Partnerships Act 2008, subject to fulfilling following conditions: i. members of the JV/Consortium shall nominate one member as the lead member (the "Lead Member"), who shall be responsible for all interactions and co-ordination with IHMCL; ii. maximum number of members in the JV/Consortium shall be two (2) including the Lead Member; iii. all members in the JV/Consortium shall be jointly and severally liable; iv. Members of the JV/Consortium shall nominate one member as the lead member. The nomination(s) shall be supported by a Power of Attorney, as per the format at Form T-3 and Form T-4, signed by all the members of the JV/Consortium. v. any entity who has submitted Proposal for this RFP in its individual capacity or as part of a JV/Consortium cannot participate as a member of any other JV/Consortium;	For sole bidder/lead member and all members of the JV/Consortium as applicable. • Copy of Certificate of Incorporation • GST Registration certificate • MoU in case of a JV/Consortium as per format provided in Form T-10. • Power of Attorney as per format provided in Form T-3 and Form T-4.

SI #	Requirement Paramters	Eligibility Criteria	Supporting Documents to be provided
		vi. The members of the JV/Consortium shall enter into a Memorandum of Understanding (MoU) for the purpose of submission of the Proposal. The MoU should include a brief description of the roles and responsibilities of individual members, particularly with reference to financial, technical and O&M obligations. vii. The Sole Bidder / all members in case of a JV/Consortium should be registered with GST in India.	
2.	Field of Business	The Sole Bidder, or Lead Bidder, in case of a JV/Consortium, should be in the field of Information Technology for at least last Five (5) years as on the bid due date.	• Copy of relevant documents should be submitted in the Technical bid.
3.	Average Annual Turnover	The Sole Bidder, or all members of the JV/Consortium collectively, in case of a JV/Consortium, shall have an average annual turnover of at least INR 100 Crore during the last three (3) financial years, i.e., FY 2022-23, FY 2023-24, and FY 2024-25. In the case of a JV/Consortium, the Lead Member shall meet at least 70% requirement of Minimum Average Annual Turnover and the other Member shall meet at least 20% of Minimum Average Annual Turnover. For avoidance of doubt it is further clarified that the Joint Venture/Consortium must collectively and individually satisfy the above qualification criteria, i.e., JV/Consortium shall cumulatively/collectively fulfil the 100% requirement. For the purpose of this criterion, annual turnover of only the bidding entity will be considered. Annual turnover of any parent, subsidiary, associated or other related entity will not be considered.	• Relevant extracts of audited financial statements for the last three financial years FY 2022-23, FY 2023-24 and FY 2024-25 • Certificate from the CA/Statutory Auditor on turnover details over the last three (3) financial years FY 2022-23, FY 2023-24 and FY 2024-25. As per format provided in Form T-5.

SI #	Requirement Paramters	Eligibility Criteria	Supporting Documents to be provided
4.	Networth	The Sole Bidder, or all members of the JV/Consortium, in case of JV/Consortium, must have positive Net worth in Indian Rupees as on 31 March 2025.	Certificate from the CA/Statutory Auditor clearly specifying the net worth of the firm as on 31 March 2025. As per format provided in Form T-5.
5.	Relevant Experience 1	The Sole Bidder or any member of the JV/Consortium, in case of a JV/Consortium, shall have successfully implemented at least one (1) project involving real-time remote monitoring of field equipment/ sensors through centralized Monitoring center/facility, in the field of Smart Cities/City Surveillance or Safe City/Highways/Intelligent Transportation System/Power Transmission/Airports/Oil & Gas/ Water, in India or Abroad, during the last seven (7) years preceding the Bid Due Date, for Central/State Government Departments, Law Enforcement Authorities, Government Entities, or Public Sector Undertakings (PSUs). Components of “Qualifying Projects”: For the purpose of evaluation criteria, a "Qualifying Project" shall mean a project that involved the design, implementation, and/or operation of a system for real-time monitoring of operational health/ fault/ performance/ telemetry data from at least 1,000 IT/OT equipment/devices/sensors or systems, installed across multiple, geographically distributed sites/ locations, using standard protocols/technologies such as IoT, SNMP, NMS, telemetry systems, APIs, or other equivalent M2M communication protocol. Note: i. The project should be either completed, or ongoing with the Operations & Maintenance (O&M) phase currently in progress, post Go-Live.	i. Work order/ Contract clearly highlighting the relevant scope of work, and contract value, year of execution. ii. Client/Authority certificate. In case of large orders/orders with operations & maintenance phase, the completion/self-certificate may specify successful execution and in-operation status of a part of the order meeting the requirement. The format of the self-certificate is provided in RFP at Form T-15 and T-16 iii. Documentary proof/ certificate duly issued by the client/authority certifying the number of IT/ OT equipment/ devices/ sensors or systems, installed across multiple, geographically distributed sites/ locations

SI #	Requirement Paramters	Eligibility Criteria	Supporting Documents to be provided
		ii. The Project shall have been implemented by the bidding entity. Experience of any parent company, subsidiary, affiliate, or sister concern shall not be considered for evaluation.	
6.	Relevant Experience 2	The Sole Bidder or any Member of the JV/Consortium in case of JV/Consortium should have been successfully implemented/ completed at least one (1) project involving Design, Development, Deployment, and Maintenance of a software application/platform related to Data Analytics and/or Business Analytics, in India during last seven years for Central/State Government departments/Law Enforcement Authorities/entities/ PSUs/ Banks, as on the bid due date. The qualifying project should involve daily data ingestion of a minimum of average 5 million “transactions” per day in any calendar month. Note: i. “transaction” shall mean a single discrete recorded event/incidents involving toll transaction or financial transaction or API calls, logged/ stored in the system database. ii. The project should be either completed, or ongoing with the Operations & Maintenance (O&M) phase currently in progress, post Go-Live. iii. The Project shall have been implemented by the bidding entity. Experience of any parent company, subsidiary, affiliate, or sister concern shall not be considered for evaluation.	i. Work order/ Contract clearly highlighting the relevant scope of work, and contract value, year of execution. ii. Client/Authority certificate. In case of large orders/orders with operations & maintenance phase, the completion/self-certificate may specify successful execution and in-operation status of a part of the order meeting the requirement. The format of the self-certificate is provided in RFP at Form T-15 and T-16. iii. Documentary proof/ certificate duly issued by the client/authority certifying the average daily transaction count processed.
7.	Certification	The Sole Bidder or Lead bidder of JV/Consortium, in case of a JV/Consortium should be at least CMMi level 3 organization as on bid due date.	• Copy of valid certificate Note: The validity of the CMMI certificate shall be verified on CMMI institute website

SI #	Requirement Paramters	Eligibility Criteria	Supporting Documents to be provided
8.	Undertaking of Blacklisting	The Sole Bidder or any Member of the JV/Consortium, in case of JV/Consortium should not be under a declaration of ineligibility / banned / blacklisted for any statutory and/or performance reasons, as on last date of submission of the Bid.	Self-certificate /Affidavit - attested by the authorized signatory as per format provided in Form T-12
9.	Undertaking on Conflict of Interest	The Sole Bidder or any Member of the JV/Consortium in case of JV/Consortium or the bidder's parent / subsidiary /sister concern company should NOT be currently engaged by NHA or IHMCL for user fee collection, tolling operations or system integrator for ETC or MLFF systems at any NH Fee plazas across the country as on RFP release date. The successful bidder shall further undertake that it shall not be take up activities such as user fee collection, tolling operations and system integration at NH fee plazas allocated to it during the Contract Period.	Declaration & Undertaking in the Bid Cover Letter Form T-1

Note: For any incomplete document provided by the Bidder, IHMCL reserves the right to disqualify the bidder as non-responsive, without asking for any clarification.

3.2. CONFLICT OF INTEREST

- a) A Bidder shall not have a conflict of interest that may affect the bidding process (the "Conflict of Interest"). Any Bidder found to have a Conflict of Interest shall be disqualified. In the event of disqualification, IHMCL shall invoke the bid securing declaration as mutually agreed genuine pre-estimated loss and damage likely to be suffered and/ or incurred by the IHMCL and not by way of penalty for, inter alia, the time, cost, and effort of IHMCL including consideration of such Bidder's Bids, without prejudice to any other right or remedy that may be available to IHMCL hereunder or otherwise.
- b) IHMCL requires that the successful bidder provides professional, objective, and impartial advice and always holds IHMCL's interest's paramount, avoiding conflicts with other assignments or its own interests. The successful bidder shall not accept or engage in any assignment that would conflict with its prior or current obligations to other clients, or that may place it in a position of not being able to carry out the assignment in the best interests of IHMCL.
- c) A Bidder shall be deemed to have a Conflict of Interest affecting the bidding process, if:
 1. A constituent ¹ of Bidder is also a constituent of another Bidder; or

¹ For this clause the word "constituent" shall include Promoter, Director, Shareholder, Partner, Agent, representative etc.

2. Such Bidder, its member or its associate receives or has received any direct or indirect subsidy or grant from any other Bidder, its member, or its Associate; or
 3. Such Bidder has the same legal representative for purposes of this Bid as any other Bidder; or
 4. Such Bidder, its member or its associates has a relationship with another Bidder, its member or its associates, directly or through common third parties, that puts them in a position to have access to each other's information about the bids, or if they share or access each other's information regarding the bids or to influence the bid of either or each of the other Bidder; or
 5. There is a conflict among this, and other assignments of the Bidder (including its member, associates, personnel, agents and subordinates) and any subsidiaries or entities controlled by such Bidder or having common controlling shareholders or Key Managerial Personnel; or
 6. While providing services to IHMCL for this assignment, the Bidder shall not take up any assignment that by its nature will result in conflict with the present assignment; or
 7. A company/firm that has been engaged by the Authority to provide goods and/or works, and/or services for a project, and its associates, will be disqualified from providing consulting services for the same project and/or associated services. or
- d) Bidders should be deemed to be in a conflict-of-interest situation if it can be reasonably concluded that their position in a business or their personal interest could improperly influence their judgment in the exercise of their duties. The process for selection of Bidders should avoid both actual and perceived conflict of interest; or
- e) The normal way to identify conflicts of interest is through self-declaration by the Bidder. Where a conflict exists, which has not been declared, competing companies are likely to bring this to the notice of IHMCL. All conflicts must be declared as and when the Bidder becomes aware of them.

4. DISCLAIMER AND CLARIFICATION REGARDING RFP DOCUMENT

4.1. SITE VISIT

- a) Before the pre-bid meeting date, bidders are strongly advised and encouraged to conduct site visits, including visits to the Toll Plaza/ MLFF location(s), to assess the existing situation and gather information relevant to their bid proposal. The Authority strongly advises and encourages bidders to address any questions they may have about the site conditions through a pre-bid inquiry. Failing which, it shall be deemed that the bidder has fully satisfied itself about the site conditions as outlined in the Contract Agreement.
- b) The bidder shall not hold the Authority responsible or liable for any inconsistencies, inaccuracies, mismatches, or errors that may arise between the Contract Agreement and the actual site conditions.
- c) Bidders must adhere to all safety and security protocols during site visits. The Authority reserves the right to limit or restrict access to certain areas of the site, or to impose conditions on site visits as deemed necessary for safety, security, or operational reasons.
- d) The Authority makes no representations or warranties regarding the accuracy, completeness, or suitability of the information gathered by bidders during site visits, and bidders undertake their own risk assessment and due diligence based on such information.
- e) Bidders agree that their proposals are based on their independent analysis and expertise, and they shall not hold the Authority liable for any discrepancies, omissions, or inaccuracies in the information gathered by the bidders during site visits.
- f) Bidders agree to indemnify and hold harmless the Authority, its officers, employees, and agents against any claims, damages, liabilities, or expenses that may arise because of or in connection with their site visit activities.

4.2. PRE-BID MEETING

- a) A prospective Bidder requiring any clarification regarding the RFP may notify IHMCL in writing or e-mail at IHMCL's address indicated in the invitation to Bid. IHMCL will respond to any request for clarification which is received before the pre-bid meeting.
- b) The Bidder or his authorized representative is invited to attend a pre-bid meeting which will take Place at IHMCL, Asia Bhawan, Sector-9, Dwarka, New Delhi-110077, as mentioned in the RFP as "KEY DATES" in Part-I Instructions to Bidders of the RFP.
- c) The Bidder who is interested in attaining the pre-bid meeting should confirm IHMCL about the participation (maximum three authorised persons) one day prior to the schedule. The confirmation can be sent to tenders@ihmcl.com.
- d) The purpose of the meeting will be to clarify issues and to answer questions on any matter pertaining to this RFP document.
- e) All Bidders are requested to go through the RFP document carefully and submit any queries/ clarifications addressed to the COO, IHMCL in the format prescribed in Part III. If no query is raised, then it shall be assumed that such a Bidder has fully satisfied itself regarding the sufficiency of information contained in the RFP. The Bidder is requested to

submit any questions / queries in writing or by email in editable format to tenders@ihmcl.com to reach at IHMCL well before the scheduled meeting.

- f) Clarifications to the queries will be hosted on IHMCL's website/ e-tender portal only.
- g) Any modification in the RFP document which may become necessary because of the deliberations in the pre-Bid meeting shall be made by IHMCL separately through issue of an Addendum/ Amendment and the same will be hosted on IHMCL's website/ e-tender portal.

5. ACCESSING BID DOCUMENTS, PREPARATION AND SUBMISSION OF BID

Website for accessing RFP is <https://etenders.gov.in>. The Bidders shall submit the proposal strictly as per criteria laid down in the RFP. The tender process timelines are mentioned in the RFP as "Key Dates" in Part-I Instructions to Bidders of the RFP. The same can also be viewed / downloaded from IHMCL e-tender portal.

5.1. PREPARATION & SUBMISSION OF BIDS

- a) Detailed RFP may be downloaded from the e-tender portal and bid shall be submitted online following the instruction appearing on the screen.
- b) The scanned copies of the following documents shall be submitted as part of a bid to IHMCL before the prescribed date & time for submission of Bids.
 - i. Tender Application Fee in the manner prescribed.
 - ii. Bid Security in the manner prescribed.
 - iii. Original Power of Attorney in Favor of Authorized Signatory in the Format prescribed in this document.
 - iv. All Annexures/Forms and Forms as provided in the RFP.
- c) The Technical and Financial bid should be submitted online separately only in the prescribed format given on the e-tender portal. No other mode of submission is allowed.
- d) No physical document shall be accepted unless and until the same is specifically stated in the RFP or it is a legal requirement.
- e) All pages of the RFP and all the subsequent corrigendum shall be signed by authorised signatory and stamped confirming that bidder is complying to all the functional and technical terms and conditions of the RFP (and subsequent corrigendum).

5.2. BID VALIDITY

The bid should remain **valid for a period of 120 calendar days from the bid due date**. IHMCL will make its best efforts to complete the evaluation process and work award within the bid validity period. Under exceptional circumstances, prior to the expiration of the bid validity, IHMCL may request bidder to extend the bid validity for a specified additional period. Such request by IHMCL and replies / responses from bidders shall be in writing. The bidder(s) not agreeing to such an extension will be allowed to withdraw their bids without invocation of their bid securing declaration.

5.3. BID COMPOSITION

The Bid shall comprise the following:

(A) PART 1: Technical Bid

To be uploaded on E-tender portal only. Physical submission of bids is not allowed.

- a) Tender Fee (proof of deposition in given account number)
- b) Bid Security (Scan copy of Bank Guarantee).
- c) Scanned copy of Power of Attorney of bidder in prescribed format.
- d) Technical Bid comprising of various formats prescribed in RFP (T1 to T16 as applicable).
- e) Stipulated documentary evidence attested by the authorized signatory in support of their claim for fulfilling the prescribed eligibility criteria and an undertaking on the bidder's letter heads to the fairness of these documents in support of their claim while submitting the Bids.
- f) Undertaking that the bidder and/or JV/Consortium member should not have been blacklisted or debarred by any government department/ agency/PSU for material non-performance or contractual non-compliance in India or abroad as on bid due date.
- g) Self-declaration concerning any 'Conflict of Interest' prescribed under Para -3.2 of eligibility criteria.
- h) Technical Proposal
 - a. The Bidder shall describe the proposed works in sufficient detail in his Technical Proposal as per format given in T-6 to enable the IHMCL to evaluate the technical adequacy of the proposed system. Authority may ask clarification, and if not found satisfactory response, the technical bid shall be declared non-responsive.
 - b. Detailed Project Plan
 - c. Risk and mitigation Plan

(B) PART 2: Financial Bid

(In the prescribed format on E-Tender portal)

- a) Financial bid shall be submitted online on e-tender portal on the prescribed format which may be downloaded well before the bid due date from e-tender portal.
- b) The bid must encompass all costs/charges/expenditure payable in complete adherence/conformity/compliance to the Scope of Work, including all necessary works, ancillary or incidental in nature, regardless of whether they are explicitly stated or not, as well as other terms indicated in the RFP document. No additional/further payments shall be made in this regard.
- c) The bid should include all statutory taxes/ levies / surcharge on tax etc., as applicable. Prices quoted by the bidder shall be inclusive of Taxes/GST, as applicable.
- d) Bidder should note that Income tax payable by the Bidder is not reimbursable by IHMCL.

5.4. COST OF BIDDING

The Bidder shall be solely responsible for all the costs associated with the preparation and submission of their Bids including subsequent negotiation, visits to IHMCL, project site etc. IHMCL shall not be responsible in any way liable for such costs, regardless of the conduct or outcome of the bidding process.

5.5. LANGUAGE OF THE BIDS

The Bid and all communications in relation to or concerning the RFP shall be in **English language**. No supporting document or printed literature shall be submitted with the Bid unless specifically asked for and in case any of the documents are in another language, it must be accompanied by an accurate translation of the relevant passages in English, in which case, for all purposes of interpretations of the Bid, the original documents attached with the bid or the information incorporated in the bid shall be final and binding.

5.6. MODIFICATION /SUBSTITUTION/ WITHDRAWAL OF BIDS

1. The Bidder may modify, substitute, or withdraw its e-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.
2. In case, if the bid is withdrawn by bidder after due date, IHMCL shall forfeit the EMD submitted by bidder.

5.7. OPENING & EVALUATION OF BIDS

1. Opening and evaluation of bids will be done through online process.
2. The bids will be opened online on the due date and time prescribed in the RFP document in the presence of the bidders who choose to attend. The Authority will subsequently examine and evaluate the bids in accordance with the provisions set out.
3. The Authority shall determine whether each Bid is responsive to the requirements of this RFP.
4. 'Financial Bid' of non-responsive bidders shall not be opened.
5. To assist in the examination, evaluation, and comparison of Bids, IHMCL may, at its discretion, ask any Bidder for clarification of its Bid. The request for clarification and the response shall be in writing or by e-mail, but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by IHMCL in the evaluation of the Bids.
6. Except in case any clarification is asked by IHMCL, no Bidder shall contact IHMCL on any matter relating to its Bid from the time of the Bid opening to the time the Contract is awarded. If any Bidder wishes to bring additional information to the notice of IHMCL, it should do so in writing at the address prescribed in the Notice Inviting Tender
7. All information and discussions related to the bid evaluation process shall be treated as

confidential. Bidders and any other involved parties must maintain strict confidentiality and refrain from disclosing any details regarding the evaluation process or deliberations.

8. The Evaluation Committee's deliberations and discussions on bid proposals, shall be considered confidential and privileged information. The Committee shall refrain from discussing or sharing details of their deliberations with bidders or any unauthorized individuals.

6. BID EVALUATION CRITERIA AND SELECTION PROCEDURE

6.1. EVALUATION PROCESS

1. The bids shall be opened online by the Evaluation Committee on the date and time prescribed. Prior to evaluation of the bids, IHMCL shall determine as to whether each bid is responsive to the requirements of this RFP document. A bid will be declared non-responsive in case:
 - a) If a bidder does not fulfil pre-qualification criteria mentioned in the RFP including the pre-qualification criteria of sub-contractor (SI).
 - b) If a bidder submits more than one bid against this RFP.
 - c) Bid is submitted without Tender Fee.
 - d) Bid is submitted without Bid Security.
 - e) If the Authorized Signatory holding Power of Attorney (POA)/Letter of Authorization or the person executing/delegating such POA/ Letter of Authorization and Digital Signatory for uploading the bid on e-tender portal are not the same.
 - f) If a bidder submits a conditional bid or makes changes in the terms and conditions given in this RFP document.
 - g) Failure to comply with all the requirements of RFP document by a bidder.
 - h) If the bid is not submitted in the formats prescribed in the RFP document.
 - i) If any requisite document/certificate is 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.
 - j) A bid valid for a period shorter than prescribed in the RFP document.
 - k) Commercial information (Financial Bid) is provided as part of the technical proposal.
 - l) If two or more bids are received having same Bidder/Consortium member, all such bids shall be treated as non-responsive.

2. A three-stage procedure shall be adopted for evaluation of the bids. The stages of bid evaluation are mentioned as below:

(i) First Stage: Pre-Qualification/ Eligibility Stage:

- a) The Evaluation Committee shall carry out initial screening of technical bids by examining the statement of qualification, furnished by the Bidder in support of their fulfilment of eligibility against the criteria prescribed in this RFP.
- b) The Evaluation Committee may, at its discretion, call for additional information from the bidder(s) through email/fax/telephone/meeting or any other mode of communication. Such information must be supplied within the set-out time frame as provided by the Evaluation Committee; otherwise, Evaluation Committee shall make its own reasonable assumptions at the total risk and cost of the bidders and the proposal is liable to be rejected. Seeking clarification cannot be treated as acceptance of the proposal. For verification of information submitted by the bidders, the committee may visit the bidder's offices at its own cost. The bidders shall provide all the necessary documents, samples, and reference information as desired by the Committee. The bidders shall also assist the committee in obtaining relevant information from their references.
- c) The bidder shall have to submit all the required documents as per the various formats provided in the Appendices. These documents will be scrutinized in this phase of evaluation. Those bidders who do not fulfil the terms and conditions of Eligibility Criteria as specified in this tender will not be eligible for further evaluation i.e. Second Stage: Technical Qualification stage.
- d) The shortfall information/ documents shall be sought only in case of historical documents which pre-existed at the time of the bid opening, and which have not undergone change since then.

(ii) Second Stage: Technical Qualification Stage

- (a) The Technical Proposals of the Bidders shall be evaluated based on the Technical Evaluation Framework as listed in the Table below:

Section #	Evaluation Criteria	Total Marks
A	Bidder Profile	15
B	Relevant Project Experience	40
C	Approach & Methodology	25
D	Proposed Manpower Resources	20
Overall Technical Score Total		100

(b) The Technical evaluation of the bids shall be carried out as per criteria provided below:

Sl. #	Technical Evaluation Criteria	Maximum Marks	Supporting Document required
A.	Sole bidder/Lead Member Profile	15	
A1	Average annual turnover of the Sole Bidder, or all members of the JV/Consortium collectively, in case of a JV/Consortium, during the last three (3) financial years, i.e., FY 2022-23, FY 2023-24, and FY 2024-25. Marks shall be allotted as given below: • >INR 200 crore = 5 marks • >INR 150 crore and up to INR 200 Crore = 4 marks • >= INR 100 crore and up to INR 150 Crore = 3 marks • Less than INR 100 Crore = 0 marks For the purpose of this criterion, annual turnover of only the bidding entity will be considered. Annual turnover of any parent, subsidiary, associated or other related entity will not be considered.	5	• Relevant extracts of audited financial statements for the last three financial years FY 2012-23, FY 2023-24 and FY 2024-25 • Certificate from the CA/Statutory Auditor on turnover details over the last three (3) financial years FY 2012-23, FY 2023-24 and FY 2024-25. As per format provided in Form T-5
A2	Total number of Full-time employee (software developers / data analysts/ engineers) on payroll, as on the date of release of the RFP, of the Sole Bidder or the Lead Member, in case of a JV/Consortium. Marks shall be allotted as given below: • >200 number of full-time software developers / data analysts / engineers = 5 marks • >= 150 and up to 200 number of full-time software developers / data analysts / engineers = 4 marks	5	Notarized affidavit confirming number of Full time software developers / data analysts/ engineers on payroll.

Sl. #	Technical Evaluation Criteria	Maximum Marks	Supporting Document required
	• ≥ 100 and up to 150 number of full-time software developers / data analysts / engineers = 3 marks • Less than 100 number of full-time software developers / data analysts / engineers = 0 mark		
A3	The Sole Bidder or, Lead member of the JV/Consortium, in the case of a Consortium, shall have a valid CMMI Level 3 or higher certificate as on the Bid Due Date. Marks shall be allotted as given below: • Valid CMMI Level 5 certificate = 5 marks • Valid CMMI Level 3 certificate = 3 marks	5	Copy of valid certificate Note: The validity of the CMMI certificate shall be verified on CMMI institute website
B	Relevant Project Experience	40	
B1	The Sole Bidder or any member of the JV/Consortium, in case of a JV/Consortium, shall have successfully implemented at least one (1) project involving real-time remote monitoring of field equipment/ sensors through centralized Monitoring center/facility, in the field of Smart Cities/City Surveillance or Safe City/Highways/Intelligent Transportation System/Power Transmission/Airports/Oil & Gas/ Water, in India or Abroad, during the last seven (7) years preceding the Bid Due Date, for Central/State Government Departments, Law Enforcement Authorities, Government Entities, or Public Sector Undertakings (PSUs). Components of “Qualifying Projects”: For the purpose of evaluation criteria, a "Qualifying Project" shall mean a project that involved the design, implementation, and/or operation of a system for real-time monitoring of operational health/ fault/ performance/ telemetry data from at least 1,000 IT/OT equipment/devices/sensors or systems, installed across multiple, geographically distributed sites/ locations, using standard	20	i. Work order/ Contract clearly highlighting the relevant scope of work, and contract value, year of execution. ii. Client/Authority certificate. In case of large orders/orders with operations & maintenance phase, the completion/self-certificate may specify successful execution and in-operation status of a part of the order meeting the requirement.

Sl. #	Technical Evaluation Criteria	Maximum Marks	Supporting Document required
	protocols/technologies such as IoT, SNMP, NMS, telemetry systems, APIs, or other equivalent M2M communication protocol. Marks shall be allotted as given below: ○ For one qualifying project – 10 marks Subject to maximum 20 marks Note: i. The project should be either completed, or ongoing with the Operations & Maintenance (O&M) phase currently in progress, post Go-Live. ii. The Project shall have been implemented by the bidding entity. Experience of any parent company, subsidiary, affiliate, or sister concern shall not be considered for evaluation.		The format of the self-certificate is provided in RFP at Form T-15 and T-16. iii. Documentary proof/certificate duly issued by the client/authority certifying the number of IT/OT equipment/ devices/ sensors or systems, installed across multiple, geographically distributed sites/ locations
B2	The Sole Bidder or any Member of the JV/Consortium in case of JV/Consortium should have been successfully implemented/ completed at least one (1) project involving Design, Development, Deployment, and Maintenance of a software application/platform related to Data Analytics and/or Business Analytics, in India during last seven years for Central/State Government departments/Law Enforcement Authorities/entities/ PSUs/ Banks, as on the bid due date. The qualifying project should involve daily data ingestion of a minimum of average 5 million “transactions” per day in any calendar month. Note: i. “transaction” shall mean a single discrete recorded event/incidents involving toll transaction or financial transaction or API call, logged/stored in the system database.	20	i. Work order/ Contract clearly highlighting the relevant scope of work, and contract value, year of execution. ii. Client/Authority certificate. In case of large orders/orders with operations & maintenance phase, the completion/self-

Sl. #	Technical Evaluation Criteria	Maximum Marks	Supporting Document required
	ii. The project should be either completed, or ongoing with the Operations & Maintenance (O&M) phase currently in progress, post Go-Live. The Project shall have been implemented by the bidding entity. Experience of any parent company, subsidiary, affiliate, or sister concern shall not be considered for evaluation. Marks shall be allotted as given below: - Daily data ingestion of more than average 30 million “transactions” per day in any calendar month = 20 marks - Daily data ingestion of more than average 20 million “transactions” per day in any calendar month upto average 30 million “transactions” per day in any calendar month = 15 marks - Daily data ingestion of more than average 10 million “transactions” per day in any calendar month upto average 20 million “transactions” per day in any calendar month = 10 marks - Daily data ingestion of equal to or more than average 5 million “transactions” per day in any calendar month upto average 10 million “transactions” per day in any calendar month = 5 marks - Daily data ingestion of below average 5 million “transactions” per day in any calendar month = 0 marks		certificate may specify successful execution and in-operation status of a part of the order meeting the requirement. The format of the self-certificate is provided in RFP at Form T-15 and T-16. iii. Documentary proof/ certificate duly issued by the client/authority certifying the average daily transaction count in any calendar month processed.

Sl. #	Technical Evaluation Criteria	Maximum Marks	Supporting Document required												
C	Approach & Methodology	25													
	Approach & Methodology Marks shall be provided as below: <table><tr><th>Parameters</th><th>Max Marks</th></tr><tr><td>Detailed understanding of existing TMCC application as provided in the RFP and Demonstration of Strategy & work plan to Take-over TMCC 1.0 application on As-Is basis</td><td>5 marks</td></tr><tr><td>Understanding of various functional requirements of the required software modules of TMCC 2.0 and Scope of work</td><td>5 marks</td></tr><tr><td>Detailed Understanding of Module 2 – MLFF transactions, e-Notices transactions, Settlement and Reconciliation of collections, and reporting capabilities of the proposed solution.</td><td>5 marks</td></tr><tr><td>Demonstration of the proposed solution and deployment and roll-out plan for onboarding of toll plazas on TMCC 2., including implementation methodology, phased rollout approach, transition, and the proposed framework for real-time measurement, monitoring, reporting, and compliance management of SLA requirements as specified in the RFP.</td><td>5 marks</td></tr><tr><td> - Project implementation plan & Work Break down Structure - Manpower Deployment Plan during Implementation phase and O&M phase, - Strategy for compliance to SLA defined </td><td>5 marks</td></tr></table>	Parameters	Max Marks	Detailed understanding of existing TMCC application as provided in the RFP and Demonstration of Strategy & work plan to Take-over TMCC 1.0 application on As-Is basis	5 marks	Understanding of various functional requirements of the required software modules of TMCC 2.0 and Scope of work	5 marks	Detailed Understanding of Module 2 – MLFF transactions, e-Notices transactions, Settlement and Reconciliation of collections, and reporting capabilities of the proposed solution.	5 marks	Demonstration of the proposed solution and deployment and roll-out plan for onboarding of toll plazas on TMCC 2., including implementation methodology, phased rollout approach, transition, and the proposed framework for real-time measurement, monitoring, reporting, and compliance management of SLA requirements as specified in the RFP.	5 marks	- Project implementation plan & Work Break down Structure - Manpower Deployment Plan during Implementation phase and O&M phase, - Strategy for compliance to SLA defined	5 marks	25	Assessment to be based on Proposal Submitted & Presentation made by Bidder before the Tender Evaluation Committee.
Parameters	Max Marks														
Detailed understanding of existing TMCC application as provided in the RFP and Demonstration of Strategy & work plan to Take-over TMCC 1.0 application on As-Is basis	5 marks														
Understanding of various functional requirements of the required software modules of TMCC 2.0 and Scope of work	5 marks														
Detailed Understanding of Module 2 – MLFF transactions, e-Notices transactions, Settlement and Reconciliation of collections, and reporting capabilities of the proposed solution.	5 marks														
Demonstration of the proposed solution and deployment and roll-out plan for onboarding of toll plazas on TMCC 2., including implementation methodology, phased rollout approach, transition, and the proposed framework for real-time measurement, monitoring, reporting, and compliance management of SLA requirements as specified in the RFP.	5 marks														
- Project implementation plan & Work Break down Structure - Manpower Deployment Plan during Implementation phase and O&M phase, - Strategy for compliance to SLA defined	5 marks														

Sl. #	Technical Evaluation Criteria	Maximum Marks	Supporting Document required								
D	Proposed Manpower Resources	20									
D1	Project Manager - Minimum Education Qualification – BE/BTech in any Stream and Full-time MBA or equivalent, from any recognized institutes by AICTE/UGC. - Minimum Years of Experience – At least 10 years <table><tr><th>Head</th><th>Marking</th></tr><tr><td>Educational Qualification</td><td> i. Regular Full-time Degree or Post-Graduation from any IITs/ IISc/ IIMs/ XLRI or any Top 100 colleges (Engineering/ Management course, as applicable) as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks ii. Regular Full-time Degree or Post-Graduate from any institute other than (i) above – 0 mark </td></tr><tr><td>Total years of experience</td><td> - More than 15 years = 5 marks - Between 12 years and up to 15 years =3 marks - Between 10 years and up to 12 years =2 marks - Less than 10 years = 0 mark </td></tr><tr><td>Experience in IT/ITS Projects with Central / State Government departments / entities, Authorities, or PSUs</td><td> > 6 no. of projects = 3 marks 5 - 6 no. of projects = 2 marks 3 - 4 no. of projects = 1 mark </td></tr></table> Reference: Link for NIRF Top 100 Engineering Colleges: 2023 - https://www.nirfindia.org/Rankings/2023/EngineeringRanking.html	Head	Marking	Educational Qualification	i. Regular Full-time Degree or Post-Graduation from any IITs/ IISc/ IIMs/ XLRI or any Top 100 colleges (Engineering/ Management course, as applicable) as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks ii. Regular Full-time Degree or Post-Graduate from any institute other than (i) above – 0 mark	Total years of experience	- More than 15 years = 5 marks - Between 12 years and up to 15 years =3 marks - Between 10 years and up to 12 years =2 marks - Less than 10 years = 0 mark	Experience in IT/ITS Projects with Central / State Government departments / entities, Authorities, or PSUs	> 6 no. of projects = 3 marks 5 - 6 no. of projects = 2 marks 3 - 4 no. of projects = 1 mark	10	Based on CV submitted as a part of Technical Bid Documents and relevant experience marks shall be allotted. CV format is provided at Form T-14.
Head	Marking										
Educational Qualification	i. Regular Full-time Degree or Post-Graduation from any IITs/ IISc/ IIMs/ XLRI or any Top 100 colleges (Engineering/ Management course, as applicable) as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks ii. Regular Full-time Degree or Post-Graduate from any institute other than (i) above – 0 mark										
Total years of experience	- More than 15 years = 5 marks - Between 12 years and up to 15 years =3 marks - Between 10 years and up to 12 years =2 marks - Less than 10 years = 0 mark										
Experience in IT/ITS Projects with Central / State Government departments / entities, Authorities, or PSUs	> 6 no. of projects = 3 marks 5 - 6 no. of projects = 2 marks 3 - 4 no. of projects = 1 mark										

Sl. #	Technical Evaluation Criteria	Maximum Marks	Supporting Document required
	2024 – https://www.nirfindia.org/Rankings/2024/EngineeringRanking.html 2025 - https://www.nirfindia.org/Rankings/2025/EngineeringRanking.html Link for NIRF Top 100 Management Colleges: 2023 https://www.nirfindia.org/Rankings/2023/ManagementRanking.html 2024 – https://www.nirfindia.org/Rankings/2024/ManagementRanking.html 2025 - https://www.nirfindia.org/Rankings/2025/ManagementRanking.html		

Sl. #	Technical Evaluation Criteria	Maximum Marks	Supporting Document required						
D2	Solution Architect - Minimum Education Qualification – BE/BTech in any Stream from any recognized institutes by AICTE/UGC. - Minimum Years of Experience – At least 10 years <table border="1"><thead><tr><th>Head</th><th>Marking</th></tr></thead><tbody><tr><td>Educational Qualification</td><td> i. Regular Full-time Engineering Degree from any IITs/ IISc or any Top 100 Engineering colleges as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks ii. Regular Full-time Engineering Degree from any institute other than (i) above – 0 mark </td></tr><tr><td>Total years of experience</td><td> - More than 15 years = 3 marks - More than 12 years and up to 15 years =2 marks - Between 10 years and up to 12 years =1 mark - Less than 10 years = 0 mark </td></tr></tbody></table>	Head	Marking	Educational Qualification	i. Regular Full-time Engineering Degree from any IITs/ IISc or any Top 100 Engineering colleges as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks ii. Regular Full-time Engineering Degree from any institute other than (i) above – 0 mark	Total years of experience	- More than 15 years = 3 marks - More than 12 years and up to 15 years =2 marks - Between 10 years and up to 12 years =1 mark - Less than 10 years = 0 mark	5	Based on CV submitted as a part of Technical Bid Documents and relevant experience marks shall be allotted. CV format is provided at Form T-14.
Head	Marking								
Educational Qualification	i. Regular Full-time Engineering Degree from any IITs/ IISc or any Top 100 Engineering colleges as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks ii. Regular Full-time Engineering Degree from any institute other than (i) above – 0 mark								
Total years of experience	- More than 15 years = 3 marks - More than 12 years and up to 15 years =2 marks - Between 10 years and up to 12 years =1 mark - Less than 10 years = 0 mark								
D3	Data Analytics & AI Specialist - Minimum Education Qualification – BE/BTech in any Stream from any recognized institutes by AICTE/UGC. - Minimum Years of Experience – At least 8 years	5	Based on CV submitted as a part of Technical Bid Documents and relevant experience marks shall be allotted. CV format is provided at Form T-14.						

Sl. #	Technical Evaluation Criteria		Maximum Marks	Supporting Document required
	Head	Marking		
	Educational Qualification	i. Regular Full-time Engineering Degree from any IITs/ IISc or any Top 100 Engineering colleges as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks ii. Regular Full-time Engineering Degree from any institute other than (i) above – 0 mark		
	Total years of experience	• More than 12 years = 3 marks • More than 10 years and up to 12 years =2 marks • Between 8 years and up to 10 years =1 mark • Less than 8 years = 0 mark		

(c) The Minimum technical score to qualify for Financial Proposal evaluation (ST) is 70 marks out of total 100 marks.

(d) The bidder shall be required to submit Self Evaluation as per format provided in Form T-13.

(iii) Third Stage: Financial Bid Evaluation

- a) Post completion of the evaluation in Stage 1 and Stage 2, IHMCL will open the Financial bids of qualified bidders on the date and time prescribed. Prior to evaluation of the bids, IHMCL shall determine as to whether each bid is responsive to the requirements of this RFP document and secured the minimum technical score as mentioned in RFP.
- b) The Financial Bid Evaluation will be based on the "Total Price" quoted by the Bidder which would be inclusive of all levies and taxes like Excise Duty, Custom Duty, packing, forwarding, freight and insurance, Octroi/Entry Tax, etc. or as applicable taxes, but exclusive of GST. Bidders shall quote for the entire scope of contract on an overall responsibility basis such that the total bid price covers Bidder's all obligations mentioned in or to be reasonably inferred from the bidding documents in respect of providing the product/services.
- c) If there is a discrepancy between words & figures, the amount in words shall prevail. If the Bidder does not accept the correction of errors, its Bid shall be rejected and the EMD will be forfeited.
- d) The Bidder who has quoted the least Total Financial Bid in zone shall be given a Financial Score of 100 marks. The Financial Scores of Bidders shall be computed as follows:

$$\text{SF (Financial Score of a Bidder)} = 100 \times [\text{Lowest Total Financial Bid quoted (in INR)} / \text{Total Financial Bid quoted by the Bidder (in INR)}]$$

- e) **Composite Score:** - Combined evaluation of Technical and Financial Proposals. Proposals will finally be ranked according to their combined technical (ST) and Financial (SF) scores using the weights indicated below:

$$S = ST \times 80\% + SF \times 20\%$$

where,

S= Composite Score

ST= Technical Score out of 100

SF= Financial Score

- f) The IHMCL shall determine if the financial bids are complete and without computational errors. The financial quotes shall have to be provided on e-tender portal only.

6.2. SELECTION AND AWARD CRITERIA

- a) IHMCL will award the Contract to the bidder whose bid has been determined to be responsive as per criteria defined above and who has secured Highest Composite Score.
- b) The Successful bidder shall be intimated by IHMCL through a Letter of Award (LoA). Upon issue of the LoA the successful bidder shall be required to furnish the Letter of Acceptance and Performance Security and other guarantees as prescribed in the RFP document. IHMCL shall have the right to get bank guarantees verified from the respective issuing bank. Upon receipt of verification, the successful bidder shall be invited to sign the contract with IHMCL. The format of Contract Agreement is prescribed in the RFP Document.

- c) 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.

6.3. IMBALANCED BID

- a) Further, in case where the financial bid of the Successful Bidder is less than 85% of the average of all bids received, the Successful Bidder shall have to submit an Additional Performance Security (APS) in the form of a Bank Guarantee for 3% of the contract amount. The other requirements of APS are same as those of Performance Security, IHMCL may also require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of the proposed System.

6.4. WARRANTY AND GUARANTEE

- a) Successful bidder shall be fully responsible for the warranty of all items throughout Contract duration which shall be deployed by them. Successful bidder shall ensure to repair/replace all faults of equipment/Sub-equipment/consumables to meet the SLA parameters.
- b) Bidder is solely responsible for functioning and maintenance of equipment/components provided by bidder should have seven years of warranty.

6.5. PERFORMANCE SECURITY

- a) Within 15 (Fifteen) days of the receipt of the Letter of Award, the Successful Bidder shall submit an irrevocable and unconditional Bank guarantee issued in the name of IHMCL for an amount equal to 5% of the Total Price quoted by the Successful Bidder, issued by a Bank described under this RFP which shall be verified at any branch located in the National Capital territory of Delhi and through SFMS mode as performance security for the due performance of its obligations under the Contract.
- b) The aforesaid Bank Guarantee shall be as per the format given in format provided in this RFP and will be valid for a period of 1 year after the expiry of Contract period. Format for submission of Performance Bank Guarantee is placed at Form T-9.
- c) In case the contract is extended, the bidder shall extend the validity of PBG appropriately such that it remains valid until one year beyond completion of the contract.
- d) The PBG from the following scheduled banks shall only be accepted:
 - i. State Bank of India or its subsidiaries.
 - ii. Any Indian Nationalized Bank.
 - iii. Any Scheduled Commercial Bank approved by RBI having a net worth of not less than 500 Crores as per the latest Annual Report 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 considered.

6.6. MISCELLANEOUS

1. Resolution of Disputes

- a) Any dispute, difference or controversy of whatever nature howsoever arising under or out of or in relation to the Contract (including its interpretation) between the Parties, 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 in accordance with the conciliation procedure.
- b) The Parties agree to use their best efforts for resolving all Disputes arising under or in respect of the Contract promptly, equitably and in good faith, and further agree to provide each other with reasonable access during normal business hours to all non-privileged records, information and data pertaining to any Dispute.
- c) **Mediation:** In the event of any Dispute between the Parties, either Party may call upon the Chairman in case of IHMCL or his nominee and the Managing Director/ /CEO/Director in case of the Service Provider to mediate in arriving at an amicable settlement thereof. If after expiry of 30 days of receipt of the documents in relation to the Dispute or such extended period as the Parties may agree in writing, the Dispute remains unresolved, the Parties shall attempt to resolve the dispute through conciliation and/or Arbitration under the Arbitration and Conciliation Act, 1996.
- d) **Conciliation:** The Parties shall attempt to select one of the experts from the list of empaneled arbitrators of the Society for Affordable Redressal of Disputes ("SAROD") as the Conciliator to mediate and assist the Parties in arriving at an amicable settlement thereof. If the Parties fail to agree on nominating a conciliator within 15 (fifteen) days or the Dispute is not resolved as evidenced by the signing of written terms of settlement within 60 (sixty) days of the notice in writing or such longer period as may be mutually agreed by the Parties, either Party may refer the Dispute to arbitration.
- e) **Arbitration**
 - a. Any Dispute which is not resolved amicably by conciliation, shall be finally settled by arbitration as set forth below:
 - b. The Dispute shall be referred to Society For Affordable Redressal of Disputes (SAROD). The dispute shall be dealt with in terms of Rules of SAROD. The detailed procedure for conducting Arbitration shall be governed by the Rules of SAROD and provisions of Arbitration & Conciliation Act, 1996, as amended from time to time.
 - c. The seat of Arbitration shall be New Delhi and the language for all documents and communications between the parties shall be English.
 - d. The expenses incurred by each party in connection with the preparation, presentation, etc., of arbitral proceedings shall be borne by each party itself.
 - e. The arbitrators shall make a reasoned award (the "Award").
 - f. The Service Provider and IHMCL agree that an Award may be enforced against the Service Provider and/or IHMCL and their respective assets wherever situated.
 - g. This Agreement and the rights and obligations of the Parties shall remain in full

force and effect, pending any proceedings hereunder. Further, the Parties unconditionally acknowledge and agree that notwithstanding any Dispute between them, each Party shall proceed with the performance of its respective obligations, pending resolution of Dispute.

2. 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.
3. IHMCL, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, too.
 - (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 there to.
 - (ii) Consult with any bidder 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 all submissions or other information and/or evidence submitted by or on behalf of any bidder.
4. 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.
5. 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.
6. Verification and Dis-qualification: IHMCL reserves the right to verify all statements, information, and documents submitted by the bidder in response to this RFP, and the bidders 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 bidders of its obligations or liabilities hereunder, nor will it affect any rights of IHMCL thereunder.
7. IHMCL reserves the right to reject any Bid and/ or declare it non-responsive, if:
 - i. At any time, a material misrepresentation is made or uncovered, or
 - ii. The bidder does not provide, within the time specified by IHMCL, the supplemental information sought by IHMCL for evaluation of the Bid.
8. Such misrepresentation/ improper response shall lead to the disqualification of the bidder. If such disqualification/ rejection occurs after the bids have been opened and the lowest bidder gets disqualified/ rejected, then IHMCL reserves the right to take any such measure as may be deemed fit in the sole discretion of IHMCL, including annulment of the Bidding

process.

6.7. AMENDMENT TO RFP

- a) Any modification in the RFP document shall be made by IHMCL separately through issue of an Addendum/ Amendment.
- b) 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. Any amendment/ addendum thus issued shall be part of the RFP document and shall be communicated by hosting the same on IHMCL website only and should be taken into consideration by the prospective bidders while preparing their bids.
- c) To give prospective bidders reasonable time to take the amendment into accounting preparing their bid, IHMCL may, at its discretion, extend the bid due date.
- d) The bidder must read all the instructions in the RFP and abide by the same accordingly.

6.8. INDEMNITY

The bidder shall, subject to the provisions of the Contract, indemnify IHMCL for any loss or damage caused on account of any act/ omission attributable to the bidder.

6.9. PROPRIETARY DATA

All documents and other information provided by IHMCL or submitted by a bidder to IHMCL shall remain or become the property of IHMCL. Bidders are to treat all information as strictly confidential. IHMCL will not return any bid, or any information related thereto. All information collected, analyzed, processed, or in whatever manner provided by the successful bidder to IHMCL in relation to the services shall be the property of IHMCL.

6.10. CORRUPT OR FRAUDULENT PRACTICES

IHMCL requires bidder to observe the highest standard of ethics during the procurement and execution of the Contract. In pursuance of this policy, IHMCL:

- a. Defines, for the purposes of this provision, the terms set forth below as follows:
 1. "Corrupt Practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in Contract execution.
 2. "Fraudulent Practice" means a misrepresentation of facts to influence a procurement process or the execution of a contract to the detriment of IHMCL and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificially non-competitive levels and to deprive IHMCL of the benefits of free and open competition.

3. "Coercive Practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any person or property to influence any person's participation or action in the bidding process.
 4. "Undesirable Practice" means (i) Establishing contact with any person connected with or employed or engaged by IHMCL with the objective of canvassing, lobbying or in any manner influencing, or attempting to influence the bidding process; or (ii) having a Conflict of Interest; and
 5. "Restrictive Practice" means forming a cartel or arriving at any understanding or arrangement among bidders with the objective of restricting or manipulating a full and fair competition in the bidding process.
- b. IHMCL will reject a bid if it determines that the bidder has engaged in Corrupt Practice or Fraudulent Practice or Coercive Practice or Undesirable Practice or Restrictive Practice in competing for the Contract in question.
 - c. IHMCL will blacklist/ declare a bidder ineligible, either indefinitely or for a stated period, to be awarded any contract by IHMCL if it at any time determines that the bidder has engaged in Corrupt Practice/ Fraudulent Practice/Coercive Practice/Undesirable Practice/Restrictive Practice in competing for or in executing IHMCL Contract.

6.11. INTEGRITY PACT

Bidder shall comply with the provisions of the Office Memorandum No. 13030/09/2008-Vig. Dated 28.01.2013 issued by NHAI (Copy enclosed) at **Appendix-I**.

a) Appendix-I

Appendix -1 attached below.

	भारतीय राष्ट्रीय राजमार्ग प्राधिकरण (सड़क परिवहन और राजमार्ग विभाग) National Highways Authority of India (Ministry of Road Transport and Highways) जी-5 एंव 6, सेक्टर-10, द्वारका, नई दिल्ली-110075 G-5 & 6, Sector-10, Dwarka, New Delhi-110075	दुर्भाष /Phone : 91-11-25074100/25074208 फैक्स : Fax : 91-11-25032507 / 25093514
No.13039/8/2008-Vig.		Dated : 28 th January, 2013
<u>Office Memorandum</u>		
<u>Sub: Adoption of Integrity Pact (IP) for NHAI Projects-reg.</u>		
In suppression of OM No. NHAI/CMC/IP/IEM/2011-12 dated 13.08.2012 and OM of NHAI/CMC/IP/IEM/2011-12 dated 14.08.2012, it has been decided to implement the concept of Integrity Pact in NHAI projects. The Integrity Pact (IP) envisages an agreement between the prospective bidder and the buyers committing the persons/officials of both the parties, not to exercise any corrupt influence on any aspect of the contract. The IP also envisages empanelment of Independent External Monitors (IEM). The IEM may review independently and objectively whether and to what extent parties have complied with their obligations under the pact.		
2. NHAI is going to appoint IEM shortly for implementation of the IP in NHAI. MoRT&H vide its letter no. C-13019/8/2009-Vig. dated 18.11.2011 has approved applicability of adoption of IP in NHAI works as mentioned below:		
(i) Civil Works above Rs.100.00 crore (ii) Services such as consultancy, engineering etc. above Rs.5.00 crore		
3. In this connection, all the officers of NHAI are hereby requested to implement and follow the concept of IP and adopt the same in all future projects of NHAI as scrupulously in works included in para.2 above as per Model Agreements (copy enclosed) for each category. This Model Agreement would be provided to the bidders at NIT/ Pre-bid /Technical bid stage, whichever applicable, with instruction to submit the same after signing it. Contractor/ concessionaire / consultant / bidder would be required to submit this duly signed agreement (signed by the same signatory competent/authorized to sign the relevant contract agreement) along with their Technical Bid/Tender Documents. The representative authorized to sign contract agreement, on behalf of NHAI, would sign the same while signing the contract so that this may be made a part of the contract document and binding for both the parties signing the contract.		
4. It is clarified that IP should cover all phases of the contract, i.e. from the stage of Notice Inviting Tender (NIT) / pre-bid stage till the conclusion of the contract, i.e. the final payment or the duration of warranty / guarantee / defect liability / concession period, whichever applicable. The IEM would be, invariably, cited in the NIT. Further, information relating to tender in progress and under finalization would need to be shared with IEM on monthly basis.		
(Sd/-)		contd.2.

5. After implementation of Integrity Pact, NHAI has to send progress/status in the implementation of IP enabling CVC to include the same in their annual report as prescribed in the CVC circular no. 10/5/09 dated 18.05.2009 and subsequent circular no.31/08/10 dated 13.08.2010 (copies enclosed). Further, an internal assessment of the impact of IP shall be carried out periodically by the CVO and reported to the CVC through their report or special report, wherever necessary. In view of this, status of implementation of IP would be reported by all divisions to CVO on monthly basis.

6. All the Divisions engaged in purchase/procurement shall ensure strict compliance of this.

This issues with the approval of Chairman, NHAI.

- Encl: (1) Model Agreement for category (i) works
(2) Model Agreement for category (ii) works
(3) CVC's Circular no. 10/5/09 dt. 18.05.09
(4) CVC's Circular no.31/08/10 dt.13.08.10


(B.N.Sahay)

General Manager (CMC)

To

1. All PIUs/CMUs
2. All ROs
3. All CGMs at HQ
4. All GMs at HQ
5. CVO, NHAI

Copy for information to:

1. PS to Chairman
2. All PS to Members

b) INTEGRITY PACT FORMAT

(To be executed on plain paper and submitted along with Technical Bid. To be signed by the bidder and same signatory competent/ authorized to sign the relevant contract on behalf of IHMCL)

RFP No. <.....> dated <.....>

This Integrity Pact is made at _____ on this _____ day of ____ 202_.
between

Indian Highways Management Company Limited (IHMCL), incorporated under Companies Act 1956, having its registered office at G-5 & 6, Sector – 10, Dwarka, New Delhi, hereinafter referred to as **"The Principal"**, which expression shall unless repugnant to the meaning or contract thereof include its successors and permitted assigns.

And

_____, incorporated under _____ having registered office at _____ hereinafter referred to as **"The Bidder"** and which expression shall unless repugnant to be meaning or context thereof include its successors and permitted assigns.

Preamble

Whereas, the Principal intends to award, under laid down organizational procedure's contract/s for The principal values full Compliance with all relevant laws of the land, rules of land, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s)/ Bidder(s).

And whereas to meet the purpose aforesaid, both the parties have agreed to enter this Integrity Pact (hereafter referred to as Integrity Pact) the terms and conditions of which shall also be read as integral part and parcel of the Tender documents and contract between the parties. Now, therefore, in consideration of mutual covenants stipulated in this pact, the parties hereby agree as follows and this pact witnessed as under:

Article 1- Commitments of the Principal

- (1) The principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:
 - (a) No employee of the principal, personally or through family members, will in connection with the tender for or the execution of a contract, demand, take a promise for or except for self or third person any material or immaterial benefit which the person is not legally entitled to.
 - (b) The principal will during the tender process treat all bidder(s) with equity and reason. The principal will in particular before and during the tender process provide to all bidder(s) the same information and will not provide to any bidder(s) confidential/

additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

- (c) The principal will exclude all known prejudiced persons from the process, whose conduct in the past has been of biased nature.
- (2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act or any other Statutory Acts or if there be a substantive suspicion in this regard, the principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions as per its internal laid down Rules/ Regulations.

Article 2- Commitments of the Bidder(s)

The bidder(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

- (a) The bidder(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- (b) The bidder(s) will not enter with other bidders into any undisclosed agreement or understanding, whether formal or informal. This applies to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- (c) The bidder(s) will not commit any offence under the relevant IPC/ PC Act and other Statutory Acts; further the bidder(s)/ Contractor(s) will not use improperly, for purposes of completion or personal gain, or pass on to others, any information or document provided by the principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- (d) The bidder(s) of foreign origin shall disclose the name and address of the Agents/ representatives in India, if any. Similarly, the Bidder(s) of Indian Nationality shall furnish the name and address of the foreign principle, if any.
- (e) The bidder(s) will, when presenting his bid, disclose all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract. He shall also disclose the details of services agreed upon for such payments.
- (f) The bidder(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- (g) The bidder(s) will not bring any outside influence through any Govt. bodies/ quarters directly or indirectly on the bidding process in furtherance of his bid.

Article 3- Disqualification from tender process and exclusion from future contracts

- a) If the bidder(s) before award or during execution has committed a transgression through a violation of any provision of Article-2, above or in any other form such as to put his reliability or credibility in question, the principal is entitled to disqualify the Bidder(s) from the tender process.
- b) If the bidder(s) have committed a transgression through a violation of Article-2 such as to put his reliability or credibility into question, the principal shall be entitled to exclude including blacklist and put on holiday the bidder(s) for any future tender/ contract award process. The imposition and duration of the exclusion will be determined by the severity of the transgression. The severity will be determined by the principal taking into consideration the full facts and circumstances of each case particularly considering the number of transgressions, the position of the transgressors within the company hierarchy of the bidder(s) and the amount of the damage. The exclusion will be imposed for a minimum of 1 year.
- c) A transgression is considered to have occurred if the principal after due consideration of the available evidence concludes that “On the basis of facts available there are no material doubts”.
- d) The bidder(s) with its free consent and without any influence agrees and undertakes to respect and uphold the principal’s absolute rights to resort to and impose such exclusion and further accepts and undertakes not to challenge or question such exclusion on any ground, including lack of any hearing before the decision to resort to such exclusion is taken. This undertaking is given freely and after obtaining independent legal advice.
- e) The decision of the principal to the effect that a breach of the provisions of this Integrity Pact has been committed by the bidder shall be final and binding on the bidder.
- f) On concurrence of any sanctions/ disqualification etc. arising out from violation of integrity pact the Bidder shall not be entitled for any compensation on this account.
- g) Subject to full satisfaction of the principal, the exclusion of the bidder could be revoked by the principal if the bidder can prove that he has restored/ recouped the damage caused by him and has installed a suitable corruption prevention system in his organization.

Article 4- Compensation for Damages

- a) If the Principal has disqualified the bidder(s) from the tender process prior to the award according to Article 3, the principal shall be entitled to invoke the bid securing declaration apart from any other legal right that may have accrued to the principal.
- b) In addition to 1 above, the principal shall be entitled to take recourse to the relevant provisions of the contract related to Termination of Contract. In such case, the principal shall be entitled to forfeit the Performance Bank Guarantee of the bidder and/or demand and recover liquidated and all damages as per the provisions of the Contract Agreement against Termination.

Article 5 - Previous Transgressions

- a) The bidder declares that no previous transgressions occurred in the last 3 years

immediately before signing of this Integrity Pact with any other Company in any country conforming to the anti-corruption/ Transparency International (TI) approach or with any other Public Sector Enterprise/ Undertaking in India or any Government Department in India that could justify his exclusion from the tender process.

- b) If the bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action for his exclusion can be taken as mentioned under Article-3 above for transgressions of Article-2 and shall be liable for compensation for damages as per Article-4 above.

Article 6 - Equal treatment of all Bids(s)

- a) The Bidder(s) undertake(s) to demand from all sub- contractor(s) a commitment in conformity with this Integrity Pact, and to submit it to the principal before contract signing.
- b) The principal will enter into agreements with identical conditions as this one with all Bidder(s).

The principal will disqualify from the tender process all Bidders who do not sign this Pact or violate its provisions.

Article 7 - Criminal charges against violating Bidder (s)

If the Principal obtains knowledge of conduct of a Bidder or Sub-contractor (SI), or of an employee or a representative or an associate of a Bidder or Sub-contractor (SI), which constitutes corruption, or if the principal has substantive suspicion in this regard, the principal will inform the same to the Chief Vigilance Officer.

Article 8 - Pact Duration

This Pact begins when both parties have legally signed it. It expires for the Bidder 12 months after his Defect Liability Period is over or 12 months after his last payment under the contract whichever is later and for all other *unsuccessful* Bidders 6 months after the Contract has been awarded.

If any claim is made/ lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by Chairman of IHMCL.

Article 9 - Other Provisions

- a) This Pact is subject to Indian Law Place of performance and jurisdiction is the Registered Office of the Principal i.e., New Delhi.
- b) Changes and supplements as well as termination notices need to be made in writing.
- c) Should one or several provisions of this Agreement turn out to be invalid, the remainder of this Agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- d) Any disputes/ differences arising between the parties about term of this Pact, any action

taken by the principal in accordance with this Pact or any relation thereof shall not be subject to any Arbitration.

- e) The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

In witness whereof the parties have signed and executed this Pact at the place and date first done mentioned in the presence of following witnesses:

[For & On behalf of the (Principal)]

[For & On behalf of the Bidder/
Concessionaire/ Consultant]

(Office Seal)

Place:.....

Date: _____

Witness 1:

(Name & Address) _____

Witness 2: _____

(Name & Address) _____

PART-II

FORMAT FOR BID SUBMISSION

Form T-1 Technical Bid Covering Letter

(To be prepared on letterhead of the Bidder)

To,
Chief Operating Officer,
Indian Highways Management Company Limited,
G 5&6, Sector-10, Dwarka,
New Delhi – 110075

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref: RFP No..... on above subject.

Dear Sir,

1. I/We, the undersigned, have carefully examined the contents of the above referred RFP document including amendments/addendums (if any) thereof and we 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. I/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.
3. I/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".
4. I/We understand that:
 - i. This bid, if found incomplete in any respect and/ or if found with conditional compliance or not accompanied by the requisite Bid Security, shall be summarily rejected.
 - ii. 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 based on such information shall be cancelled.
 - iii. IHMCL is not bound to accept any/ all Bid(s) it will receive.
 - iv. Until a contract is executed, this bids together with RFP Document as well as the subsequent corrigendum, notification of the Letter of Award ~~is~~ by IHMCL shall constitute a binding Contract between us.
5. I/We declare that:
 - i. We do not have any conflict of interest in accordance clause 3.2.3 (Sl. No 9) and we or the our parent / subsidiary /sister concern company are NOT currently engaged by NHAI or IHMCL for user fee collection, tolling operations or system integrator for ETC or MLFF systems at any NH Fee plazas across the country as on RFP release date. We further undertake that we shall not be take up activities such as user fee collection, tolling operations and system integration at NH fee plazas allocated to it during the Contract Period.
 - ii. I/we have no proceeding for insolvency/bankruptcy in NCLT / Court as on Bid Due Date.

- iii. I/We have not been blacklisted/ *declared ineligible* by IHMCL or National Highways Authority of India (NHAI) or Ministry of Road Transport & Highways, Government of India or any other agency as on Bid Due date. I/We also confirm that I/We have not been *declared as non-performing or debarred* by IHMCL or NHAI or Ministry of Road Transport & Highways, Government of India as on bid due date.
- iv. I/We *haven't been blacklisted* by a Central/ State Government Institution/ Public Sector Undertaking/ Autonomous body and there has been *no litigation* with any Government Department/ PSU/ Autonomous body on account of similar services as on Bid Due Date.
- v. I/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; and I/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. I/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 RFP.
7. In the event of my / our bid being declared as successful bid, I/we agree to enter into a Contract Agreement in accordance with the format of the Contract Agreement. I/We agree not to seek any change in the aforesaid format of the Contract Agreement and agree to abide by the same.
8. I/We certify that:
 - i. I/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 offence that outrages the moral sense of the community.
 - ii. 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.
 - iii. No investigation by a regulatory authority is pending either against us or against our CEO or any of our directors/ managers/ employees.
 - iv. I / We don't have any conflict of interest in terms of Clause 3.2 of eligibility criteria defined in this RFP document.
 - v. 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 my knowledge and belief. Nothing has been omitted which renders such information misleading; and all documents accompanying my/our bid are true copies of their respective originals. I/We shall be liable for disqualification or termination of contract at any stage, if any information/ declaration is found to be incorrect or false. I/We will intimate IHMCL promptly in case of any change in the information submitted as part of this technical bid.
 - vi. I/We offer the cost of the RFP document and bid Security in accordance with the RFP document as per the details furnished below:

#	Reference No.	Date	Amount (Rs.)	Issuing Bank / Branch
Tender Fee				
Bid Security				

9. 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. I submit 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. 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.....

Form T-2: Brief Information about the Bidder(s)

(To be prepared on letterhead of the Bidder)

To,
Chief Operating Officer,
Indian Highways Management Company Limited,
G 5&6, Sector-10, Dwarka, New Delhi – 110075

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref: RFP No. on above subject.

- 1)
 - a) Name of Bidder :
 - b) Year of establishment :
 - c) Constitution of the bidder entity e.g., Government enterprise, private limited company, limited company, proprietorship / partnership firm etc.
 - d) In case of a government enterprise, please indicate as to whether legally and financially autonomous and operate under commercial law.
 - e) Name(s) of Directors/ Proprietors/ Partners: Yes/ No/ Not applicable
- 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 Bidder:
 - (a) Bank A/c Number :
 - (b) Branch Address :
 - (c) IFSC /MICR Code :
 - (d) GSTIN (as applicable) :
- 4) Name of the Statutory Auditor/ Company Secretary/ Chartered Accountant certifying the documents along with his/ her Membership number, if applicable:
Name
Designation of the Authorized Signatory

Form T-3 Power of Attorney/Letter of Authorization (as relevant)

(On non-judicial Stamp Paper of appropriate denomination)

Know all men by these presents, we, (Name of Company 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 Bidder for "**Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0**" proposed by Indian Highways Management Company Limited, 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 Authorized 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 Authorized 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 , 202_

For

(Signature, name, designation, and address)

Witnesses:

1.

2.

Notarised

Accepted

.....

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

Notes:

- a. 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 duly notarised by a notary public.**
- b. 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.
- c. 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.

Form T-4 Power of Attorney for Lead member

(On Non – judicial stamp paper of appropriate value or such equivalent document duly attested by notary public)

Power of Attorney

Whereas Indian Highways Management Company Ltd. (IHMCL), has invited Proposals from eligible entities for <RFP Name>the “Project”,

Whereas, the members of the Consortium are interested in bidding for the Project and implementing the Project in accordance with the terms and conditions of the Request for Proposal (RFP) Document and other connected documents in respect of the Project, and

Whereas, it is necessary under the RFP Document for the members of the Consortium to designate the Lead Member with all necessary power and authority to do for and on behalf of the Consortium, all acts, deeds and things as may be necessary in connection with the Consortium's bid for the Project who, acting jointly, would have all necessary power and authority to do all acts, deeds and things on behalf of the Consortium, as may be necessary in connection the Consortium's bid for the Project.

NOW THIS POWER OF ATTORNEY WITNESSETH THAT;

We, M/s. (Lead Member) and M/s. (the respective names and addresses of the registered office) do hereby designate M/s. being one of the members of the Consortium, as the Lead Member of the Consortium, to do on behalf of the Consortium, all or any of the acts, deeds or things necessary or incidental to the Consortium's bid for the Project, including submission of Proposal, participating in conferences/meetings, responding to queries, submission of information/ documents and generally to represent the Consortium in all its dealings with IHMCL, any other Government Agency or any person, in connection with the Project until culmination of the process of bidding and thereafter till the Agreement is entered into with IHMCL.

We hereby agree to ratify all acts, deeds and things lawfully done by Lead Member, our said attorney pursuant to this Power of Attorney and that all acts deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us/ Consortium.

Dated this theDay of2020

.....
(Executants)

(To be executed by all the members of the Consortium)

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 executant(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.

Form T-5 Bidder's Annual Turnover

(To be prepared on letterhead of the Bidder)

To,
Chief Operating Officer,
Indian Highways Management Company Limited,
G 5&6, Sector-10, Dwarka,
New Delhi – 110075

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref: RFP No. on above subject.

Dear Sir/Madam,

We hereby certify that the average annual turnover of M/s. _____ (name of the bidder) for the last three financial years (ending 31st March 2025) is as given below:

Annual Turnover for the last 3 Financial Years (FYs) in Indian Rupees (INR)			
FY 2022-23	FY 2023-24	FY 2024-25	Average

Annual Net worth for the last 3 Financial Years (FYs) in Indian Rupees (INR)			
FY 2022-23	FY 2023-24	FY 2024-25	Positive /Negative as on 31 st March 2025

Yours Sincerely,

(Signature of CA/Statutory Auditor)
Name of the CA/Statutory Auditor:
Name of the CA/Statutory Auditor Firm:

Seal:

Form T-6 Submission of Detailed Methodology and Work Plan

To,
Chief Operating Officer,
Indian Highways Management Company Limited,
G 5&6, Sector-10, Dwarka,
New Delhi – 110075

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref: RFP No. on above subject.

NOTE:

- i. Submission under this item is subject to evaluation under technical bid, while giving information, the bidders are advised to strictly focus and address the topic/sub-topic as asked for in a structured manner. Any superfluous submission shall be at bidders' risk.
- ii. IHMCL/IHMCL's Representative may seek clarification on any of the submission made by the bidder in form T-6. Any superfluous submission or inconsistent clarification with respect to site condition, is liable to make the bid non-responsive.

Dated: /....

- i. Detailed note on understanding of existing TMCC application, process for taking TMCC 1.0. System design document for implementation of TMCC with a list of items with quantity:
.....
.....
- ii. Control Center Hardware design document with a list of items with quantity Software architecture & components
.....
.....
- iii. Methodology of implementation:
.....
.....
- iv. Delivery Schedule and Time schedule to complete the entire work supported with bar chart:

.....
.....

- v. Any other aspects the Bidder may wish to add:

.....
.....

- vi. System Design proposed.

.....

- vii. Design of TMCC System.

.....

- viii. Total manpower being proposed as per design by designation.

.....

(Name and Signature of the Bidder)

Form T-7 Proforma for submitting written queries.

(To be submitted in doc/editable format only at the given email address)

To,
Chief Operating Officer,
Indian Highways Management Company Limited,
G 5&6, Sector-10, Dwarka,
New Delhi – 110075

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref: RFP No. on above subject.

Dated: /....

Name of Company: _____, Name of
Person _____

Contact No. _____,

Email Id: _____

Sr.No.	Page no. of RFP	Clause	RFP Statement	Query	Remarks

Form T-8 Bank Guarantee for Bid Security

(Refer Clauses 2.2 of General Terms of Bidding in Section -I of RFP)

B.G. No.

Dated:

1. In consideration of you, ****, having its office at **** (hereinafter referred to as the "Authority", which expression shall, unless it be repugnant to the subject or context thereof, include its successors and assigns), having agreed to receive the BID of and having its registered office at (and acting on behalf of its JV) (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), for Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0 (hereinafter referred to as "the Project") pursuant to the RFP Document dated issued in respect of the Project and other related documents, including without limitation the draft contract Agreement (hereinafter collectively referred to as "Bidding Documents"), we (Name of the Bank) having our registered office at and one of its branches at (hereinafter referred to as the "Bank"), at the request of the Bidder, do hereby, in terms of Clause 2.2 read with Clause 2.3 of the RFP Document, irrevocably, unconditionally, and without reservation guarantee the due and faithful fulfilment and compliance of the terms and conditions of the Bidding Documents (including the RFP Document) by the said Bidder and unconditionally and irrevocably undertake to pay forthwith to the Authority an amount of Rs. ***** (Rupees ***** only) (hereinafter referred to as the "Guarantee") as our primary obligation without any demur, reservation, recourse, contest, or protest and without reference to the Bidder if the Bidder shall fail to fulfil or comply with all or any of the terms and conditions contained in the said Bidding Documents.
2. 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 Bidding Documents shall be final, conclusive, and binding on the Bank.
3. 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 the 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 set forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs. *** ** (Rupees *** ** only).
4. This Guarantee shall be irrevocable and remain in full force for a period of 180 (one hundred and eighty) days from the BID Due Date inclusive of a claim period of 60 (sixty) days 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.

5. 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.
6. 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.
7. 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 the time for the submission of the BIDs or the BID validity period or the period for conveying acceptance of the 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.
8. 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.
9. 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.
10. 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.
11. We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of the Authority in writing.
12. 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.

13. For the avoidance of doubt, the Bank's liability under this Guarantee shall be restricted to Rs. *** crore (Rupees ***** crore only). 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 9 hereof, or before [*** (indicated date falling 180 days after the BID Due Date)]
14. This guarantee shall also be operatable at our Branch, 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.
15. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of [Ministry/IHMCL/NHIDCL/State PWD/BRO], details of which is as under:

#	Particulars	Details
1	Name of Beneficiary	Indian Highways Management Company Limited
2	Name of Bank	Canara Bank
3	Account No.	8598201006217
4	IFSC	CNRB0008598

Signed and Delivered by Bank

By the hand of Mr. /Ms....., its.....and authorized official.

(Signature of the Authorized Signatory)

(Official-Seal)

Form T-9 Format of Bank Guarantee

Performance Security/Additional Performance Security]

To,
Chief Operating Officer,
Indian Highways Management Company Limited,
G 5&6, Sector-10, Dwarka,
New Delhi – 110075

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref: RFP No. on above subject.

WHEREAS:

- (A) _____ [name and address of Bidder] (hereinafter called the “**Bidder**”) and Indian Highways Management Company Limited, G-5 & 6, Sector 10, Dwarka, New Delhi - 110075, (hereinafter called the “**Authority**”) have entered into an agreement (hereinafter called the “**Agreement**”) for “**Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0**” subject to and in accordance with the provisions of the Agreement
- (B) The Agreement requires the Bidder to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Implementation Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs.... cr. (Rupees crore) (the “**Guarantee Amount**”).
- (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (*hereinafter called the “**Guarantee**”*) by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally, and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Bidder’s obligations during the {Implementation Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Bidder, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the Indian Highways Management Company Limited, that the Bidder has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the

Agreement shall be conclusive, final, and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Bidder is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Bidder is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Bidder, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Bidder for any reason whatsoever.

3. To give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Bidder and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Bidder before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfilment and/ or performance of all or any of the obligations of the Bidder contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Bidder, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation 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 Bidder or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfilment, compliance and/or performance of all or any of the obligations of the Bidder under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect on ****. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to

the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee shall also be operatable 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. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of IHMCL, details of which is as under:

#	Particulars	Details
1	Name of Beneficiary	Indian Highways Management Company Limited
2	Name of Bank	Canara Bank
3	Account No.	8598201006217
4	IFSC	CNRB0008598

Signed and sealed this day of, 20..... at.....

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by: (Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Form T-10 DRAFT MEMORANDUM OF UNDERSTANDING EXECUTED BY MEMBERS OF THE CONSORTIUM

(To be executed on Non-Judicial Stamp Paper of INR 100 and duly notarized)

This Memorandum of Understanding (MoU) entered into this day of [Date] [Month] 2020 at [Place] among _____ (hereinafter referred to as "_____") and having office at [Address], India, as Party of the First Part and _____ (hereinafter referred to as "_____") and having office at [Address], as Party of the Second Part and _____ (hereinafter referred to as "_____") and having office at [Address], as Party of the Third Part.

The parties are individually referred to as Party and collectively as Parties.

WHEREAS, Indian Highways Management Company Limited (IHMCL) has issued a Request for Proposal dated [Date] (RFP) from the Bidders interested in <Name of RFP> :

AND WHEREAS the Parties have had discussions for formation of a Consortium for bidding for the said Project and have reached an understanding on the following points with respect to the Parties' rights and obligations towards each other and their working relationship.

AS MUTUAL UNDERSTANDING OF THE PARTIES, IT IS HEREBY AGREED AND DECLARED AS FOLLOWS:

- i. The purpose of this Agreement is to define the principles of collaboration among the Parties to:
 - a. Submit a response jointly to Bid for the "<Name of RFP> " as a Consortium.
 - b. Sign Contract in case of award.
 - c. Provide and perform the supplies and services which would be ordered by the Purchaser pursuant to the Contract.
- ii. This Agreement shall not be construed as establishing or giving effect to any legal entity such as, but not limited to, a company, a partnership, etc. It shall relate solely towards the Purchaser for "<Name of RFP> " for and related execution works to be performed pursuant to the Contract and shall not extend to any other activities.
- iii. The Parties shall be jointly and severally responsible and bound towards the Purchaser for the performance of the works in accordance with the terms and conditions of the BID document, and Contract.

- iv. ----- (Name of Party) shall act as Lead Partner of the Consortium. As such, it shall act as the coordinator of the Party's combined activities and shall carry out the following functions:
- a. To ensure the technical, commercial and administrative co-ordination of the work package
 - b. To lead the contract negotiations of the work package with IHMCL.
 - c. The Lead partner is authorized to receive instructions and incur liabilities for and on behalf of all Parties.
 - d. In case of an award, act as channel of communication between the Purchaser and the Parties to execute the Contract
- v. That the Parties shall carry out all responsibilities as Developer in terms of the Project Agreement.
- vi. That the broad roles and the responsibilities of each Party at each stage of the Bidding shall be as below:

Party A: _____

Party B: _____

- vii. That the Parties affirm that they shall implement the Project in good faith and shall take all necessary steps to see the Project through expeditiously.
- viii. That this MoU shall be governed in accordance with the laws of India and courts in Maharashtra shall have exclusive jurisdiction to adjudicate disputes arising from the terms herein.

In witness whereof the Parties affirm that the information provided is accurate and true and have caused this MoU duly executed on the date and year above mentioned.

(Party of the first part)(Party of the second part)

Witness:

i. _____

ii. _____



Form T-11 Change Control Note

Change Control Note		CCN Number:
Part A: Initiation		
Title:		
Originator:		
Sponsor:		
Date of Initiation:		
Details of Proposed Change		
(To include reason for change and appropriate details/specifications. Identify any attachments as A1, A2, and A3 etc.)		
Authorized by Purchaser	Date:	
Name:		
Signature:		
Received by the Bidder	Date:	
Name:		
Signature:		
Change Control Note		CCN Number:
Part B : Evaluation		
(Identify any attachments as B1, B2, and B3 etc.) Changes to Services, payment terms, payment profile, documentation, training, service levels and component working arrangements and any other contractual issue.		
Brief Description of Solution:		
Impact:		
Deliverables:		

Timetable:	
Charges for Implementation: (including a schedule of payments)	
Other Relevant Information: (including value-added and acceptance criteria)	
Authorized by the Bidder	Date:
Name:	
Signature:	
Change Control Note	CCN Number :
Part C : Authority to Proceed	
Implementation of this CCN as submitted in Part A, in accordance with Part B is: (tick as appropriate)	
☐ Approved ☐ Rejected ☐ Requires Further Information (as follows, or as Attachment 1 etc.)	
For Purchaser and its nominated agencies	For SI
Signature	Signature
Name	Name
Title	Title
Date	Date

Form-T:12 Format for the declaration of non-Blacklisting

DECLARATION – non-blacklisting

(By Authorized signatory on company letter head)

To,
Chief Operating Officer,
Indian Highways Management Company Limited,
G 5&6, Sector-10, Dwarka,
New Delhi – 110075

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref: RFP No. on above subject.

I /We hereby declare that _____, as on the date of bid submission, has not been blacklisted or debarred in the last three years for the work performed by it and is not under blacklisting period /active debarred list by _____ or any of the Central or State Government Organization / Public Sector Undertaking / Autonomous Body in India or abroad.

Signed: (insert signature of person whose name and capacity are shown)

Name: (insert complete name of person signing the Bid Securing Declaration having the Power of Attorney)

Duly authorized to sign the bid for an on behalf of (insert complete name of Bidder/Sub-Contractor)

Dated on _____ day of _____ (insert date of signing)

Form-T:13 – Self Evaluation - Technical Qualification Scoring

Sl. #	Technical Evaluation Criteria	Maximum Marks	Marks provided in self evaluation with details of supporting documents/project name etc
A.	Sole bidder/Lead Member Profile	15	
A1	Average annual turnover of the Sole Bidder, or all members of the JV/Consortium collectively, in case of a JV/Consortium, during the last three (3) financial years, i.e., FY 2022-23, FY 2023-24, and FY 2024-25. Marks shall be allotted as given below: • >INR 200 crore = 5 marks • >INR 150 crore and up to INR 200 Crore = 4 marks • >= INR 100 crore and up to INR 150 Crore = 3 marks • Less than INR 100 Crore = 0 marks For the purpose of this criterion, annual turnover of only the bidding entity will be considered. Annual turnover of any parent, subsidiary, associated or other related entity will not be considered.	5	
A2	Total number of Full-time employee (software developers / data analysts/ engineers) on payroll, as on the date of release of the RFP, of the Sole Bidder or the Lead Member, in case of a JV/Consortium. Marks shall be allotted as given below: • >200 number of full-time software developers / data analysts / engineers = 5 marks • >= 150 and up to 200 number of full-time software developers / data analysts / engineers = 4 marks • >= 100 and up to 150 number of full-time software developers / data analysts / engineers = 3 marks • Less than 100 number of full-time software developers / data analysts / engineers = 0 mark	5	
A3	The Sole Bidder or, Lead member of the JV/Consortium, in the case of a Consortium, shall have a valid CMMI Level 3 or higher certificate as on the Bid Due Date. Marks shall be allotted as given below:	5	

Sl. #	Technical Evaluation Criteria	Maximum Marks	Marks provided in self evaluation with details of supporting documents/project name etc
	- Valid CMMI Level 5 certificate = 5 marks - Valid CMMI Level 3 certificate = 3 marks		
B	Relevant Project Experience	40	
B1	The Sole Bidder or any member of the JV/Consortium, in case of a JV/Consortium, shall have successfully implemented at least one (1) project involving real-time remote monitoring of field equipment/sensors through centralized Monitoring center/facility, in the field of Smart Cities/City Surveillance or Safe City/Highways/Intelligent Transportation System/Power Transmission/Airports/Oil & Gas/ Water, in India or Abroad, during the last seven (7) years preceding the Bid Due Date, for Central/State Government Departments, Law Enforcement Authorities, Government Entities, or Public Sector Undertakings (PSUs). Components of “Qualifying Projects”: For the purpose of evaluation criteria, a "Qualifying Project" shall mean a project that involved the design, implementation, and/or operation of a system for real-time monitoring of operational health/ fault/ performance/ telemetry data from at least 1,000 IT/OT equipment/devices/sensors or systems, installed across multiple, geographically distributed sites/ locations, using standard protocols/technologies such as IoT, SNMP, NMS, telemetry systems, APIs, or other equivalent M2M communication protocol. Marks shall be allotted as given below: For one qualifying project – 10 marks Subject to maximum 20 marks Note: iii. The project should be either completed, or ongoing with the Operations & Maintenance (O&M) phase currently in progress, post Go-Live.	20	iv.

Sl. #	Technical Evaluation Criteria	Maximum Marks	Marks provided in self evaluation with details of supporting documents/project name etc
	iv. The Project shall have been implemented by the bidding entity. Experience of any parent company, subsidiary, affiliate, or sister concern shall not be considered for evaluation.		
B2	The Sole Bidder or any Member of the JV/Consortium in case of JV/Consortium should have been successfully implemented/ completed at least one (1) project involving Design, Development, Deployment, and Maintenance of a software application/platform related to Data Analytics and/or Business Analytics, in India during last seven years for Central/State Government departments/Law Enforcement Authorities/entities/ PSUs/ Banks, as on the bid due date. The qualifying project should involve daily data ingestion of a minimum of average 5 million “transactions” per day in any calendar month. Note: iii. “transaction” shall mean a single discrete recorded event/incidents involving toll transaction or financial transaction or API call, logged/stored in the system database. iv. The project should be either completed, or ongoing with the Operations & Maintenance (O&M) phase currently in progress, post Go-Live. The Project shall have been implemented by the bidding entity. Experience of any parent company, subsidiary, affiliate, or sister concern shall not be considered for evaluation. Marks shall be allotted as given below: - Daily data ingestion of more than average 30 million “transactions” per day in any calendar month = 20 marks - Daily data ingestion of more than average 20 million “transactions” per day in any calendar month upto average 30 million “transactions” per day in any calendar month = 15 marks - Daily data ingestion of more than average 10 million “transactions” per day in any calendar month upto average 20 million “transactions” per day in any calendar month = 10 marks	20	iv.

Sl. #	Technical Evaluation Criteria	Maximum Marks	Marks provided in self evaluation with details of supporting documents/project name etc										
	- Daily data ingestion of equal to or more than average 5 million “transactions” per day in any calendar month upto average 10 million “transactions” per day in any calendar month = 5 marks - Daily data ingestion of below average 5 million “transactions” per day in any calendar month = 0 marks												
C	Approach & Methodology	25											
	Approach & Methodology Marks shall be provided as below: <table><tr><th>Parameters</th><th>Max Marks</th></tr><tr><td>Detailed understanding of existing TMCC application as provided in the RFP and Demonstration of Strategy & work plan to Take-over TMCC 1.0 application on As-Is basis</td><td>5 marks</td></tr><tr><td>Understanding of various functional requirements of the required software modules of TMCC 2.0 and Scope of work</td><td>5 marks</td></tr><tr><td>Detailed Understanding of Module 2 – MLFF transactions, e-Notices transactions, Settlement and Reconciliation of collections, and reporting capabilities of the proposed solution.</td><td>5 marks</td></tr><tr><td>Demonstration of the proposed solution and deployment and roll-out plan for onboarding of toll plazas on TMCC 2., including implementation methodology, phased rollout approach, transition, and the proposed framework for real-time measurement, monitoring, reporting, and compliance management of SLA requirements as specified in the RFP.</td><td>5 marks</td></tr></table>	Parameters	Max Marks	Detailed understanding of existing TMCC application as provided in the RFP and Demonstration of Strategy & work plan to Take-over TMCC 1.0 application on As-Is basis	5 marks	Understanding of various functional requirements of the required software modules of TMCC 2.0 and Scope of work	5 marks	Detailed Understanding of Module 2 – MLFF transactions, e-Notices transactions, Settlement and Reconciliation of collections, and reporting capabilities of the proposed solution.	5 marks	Demonstration of the proposed solution and deployment and roll-out plan for onboarding of toll plazas on TMCC 2., including implementation methodology, phased rollout approach, transition, and the proposed framework for real-time measurement, monitoring, reporting, and compliance management of SLA requirements as specified in the RFP.	5 marks	25	
Parameters	Max Marks												
Detailed understanding of existing TMCC application as provided in the RFP and Demonstration of Strategy & work plan to Take-over TMCC 1.0 application on As-Is basis	5 marks												
Understanding of various functional requirements of the required software modules of TMCC 2.0 and Scope of work	5 marks												
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Sl. #	Technical Evaluation Criteria		Maximum Marks	Marks provided in self evaluation with details of supporting documents/project name etc								
	- Project implementation plan & Work Break down Structure - Manpower Deployment Plan during Implementation phase and O&M phase, - Strategy for compliance to SLA defined	5 marks										
D	Proposed Manpower Resources		20									
D1	Project Manager - Minimum Education Qualification – BE/BTech in any Stream and Full-time MBA or equivalent, from any recognized institutes by AICTE/UGC. - Minimum Years of Experience – At least 10 years <table><thead><tr><th>Head</th><th>Marking</th></tr></thead><tbody><tr><td>Educational Qualification</td><td> iii. Regular Full-time Degree or Post-Graduation from any IITs/ IISc/ IIMs/ XLRI or any Top 100 colleges (Engineering/ Management course, as applicable) as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks iv. Regular Full-time Degree or Post-Graduate from any institute other than (i) above – 0 mark </td></tr><tr><td>Total years of experience</td><td> - More than 15 years = 5 marks - Between 12 years and up to 15 years =3 marks - Between 10 years and up to 12 years =2 marks - Less than 10 years = 0 mark </td></tr><tr><td>Experience in IT/ITS Projects with Central / State Government departments / entities, Authorities, or PSUs</td><td> > 6 no. of projects = 3 marks 5 - 6 no. of projects = 2 marks 3 - 4 no. of projects = 1 mark </td></tr></tbody></table> Reference: Link for NIRF Top 100 Engineering Colleges:		Head	Marking	Educational Qualification	iii. Regular Full-time Degree or Post-Graduation from any IITs/ IISc/ IIMs/ XLRI or any Top 100 colleges (Engineering/ Management course, as applicable) as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks iv. Regular Full-time Degree or Post-Graduate from any institute other than (i) above – 0 mark	Total years of experience	- More than 15 years = 5 marks - Between 12 years and up to 15 years =3 marks - Between 10 years and up to 12 years =2 marks - Less than 10 years = 0 mark	Experience in IT/ITS Projects with Central / State Government departments / entities, Authorities, or PSUs	> 6 no. of projects = 3 marks 5 - 6 no. of projects = 2 marks 3 - 4 no. of projects = 1 mark	10	
Head	Marking											
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Experience in IT/ITS Projects with Central / State Government departments / entities, Authorities, or PSUs	> 6 no. of projects = 3 marks 5 - 6 no. of projects = 2 marks 3 - 4 no. of projects = 1 mark											

Sl. #	Technical Evaluation Criteria	Maximum Marks	Marks provided in self evaluation with details of supporting documents/project name etc						
	2023 - https://www.nirfindia.org/Rankings/2023/EngineeringRanking.html 2024 – https://www.nirfindia.org/Rankings/2024/EngineeringRanking.html 2025 - https://www.nirfindia.org/Rankings/2025/EngineeringRanking.html Link for NIRF Top 100 Management Colleges: 2023 https://www.nirfindia.org/Rankings/2023/ManagementRanking.html 2024 – https://www.nirfindia.org/Rankings/2024/ManagementRanking.html 2025 - https://www.nirfindia.org/Rankings/2025/ManagementRanking.html								
D2	Solution Architect - Minimum Education Qualification – BE/BTech in any Stream from any recognized institutes by AICTE/UGC. - Minimum Years of Experience – At least 10 years <table><tr><th>Head</th><th>Marking</th></tr><tr><td>Educational Qualification</td><td> iii. Regular Full-time Engineering Degree from any IITs/ IISc or any Top 100 Engineering colleges as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks iv. Regular Full-time Engineering Degree from any institute other than (i) above – 0 mark </td></tr><tr><td>Total years of experience</td><td> - More than 15 years = 3 marks - More than 12 years and up to 15 years =2 marks - Between 10 years and up to 12 years =1 mark - Less than 10 years = 0 mark </td></tr></table>	Head	Marking	Educational Qualification	iii. Regular Full-time Engineering Degree from any IITs/ IISc or any Top 100 Engineering colleges as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks iv. Regular Full-time Engineering Degree from any institute other than (i) above – 0 mark	Total years of experience	- More than 15 years = 3 marks - More than 12 years and up to 15 years =2 marks - Between 10 years and up to 12 years =1 mark - Less than 10 years = 0 mark	5	
Head	Marking								
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Total years of experience	- More than 15 years = 3 marks - More than 12 years and up to 15 years =2 marks - Between 10 years and up to 12 years =1 mark - Less than 10 years = 0 mark								

Sl. #	Technical Evaluation Criteria	Maximum Marks	Marks provided in self evaluation with details of supporting documents/project name etc						
D3	Data Analytics & AI Specialist • Minimum Education Qualification – BE/BTech in any Stream from any recognized institutes by AICTE/UGC. • Minimum Years of Experience – At least 8 years <table><tr><th>Head</th><th>Marking</th></tr><tr><td>Educational Qualification</td><td> iii. Regular Full-time Engineering Degree from any IITs/ IISc or any Top 100 Engineering colleges as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks iv. Regular Full-time Engineering Degree from any institute other than (i) above – 0 mark </td></tr><tr><td>Total years of experience</td><td> • More than 12 years = 3 marks • More than 10 years and up to 12 years =2 marks • Between 8 years and up to 10 years =1 mark • Less than 8 years = 0 mark </td></tr></table>	Head	Marking	Educational Qualification	iii. Regular Full-time Engineering Degree from any IITs/ IISc or any Top 100 Engineering colleges as per NIRF list for any of the past 3 years i.e., 2023, 2024, or 2025 – 2 marks iv. Regular Full-time Engineering Degree from any institute other than (i) above – 0 mark	Total years of experience	• More than 12 years = 3 marks • More than 10 years and up to 12 years =2 marks • Between 8 years and up to 10 years =1 mark • Less than 8 years = 0 mark	5	
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Total years of experience	• More than 12 years = 3 marks • More than 10 years and up to 12 years =2 marks • Between 8 years and up to 10 years =1 mark • Less than 8 years = 0 mark								

Sincerely,

[Signature of Authorized Signatory]

Name: [Insert Full Name]

Designation: [Insert Designation]

Company: [Insert Manufacturer's Company Name]

Email: [Insert Official Email Address]

Phone: [Insert Contact Number]

Seal: [Affix Company Seal]

Form -T:14 – Curriculum Vitae (CV) Format
CURRICULUM VITAE (CV)

Position Title and No.	{e.g., K-1, Project Manager}
Name of Expert:	{Insert full name}
Date of Birth:	{day/month/year}
Country of Citizenship/Residence	
Total Years of Experience: (Relevant to the Proposed Profile/Expertise)	

Education: {List college/university or other specialized education, giving names of educational institutions, dates attended, degree(s)/diploma(s) obtained with their supporting copies}

Employment record relevant to the assignment: {Starting with present position, list in reverse order. Please provide dates, name of employing organization, titles of positions held, types of activities performed and location of the assignment, and contact information of previous clients and employing organization(s) who can be contacted for references. Past employment that is not relevant to the assignment does not need to be included.}

Period	Employing organization and your title/position. Contact information for references	Country	Summary of activities performed relevant to the Assignment
[e.g., May 2005-present]	[e.g., Ministry of, advisor/consultant to... For references: Tel...../e-mail.....; Mr. Hbbbbb, deputy minister]		

Membership in Professional Associations and Publications:

Language Skills (indicate only languages in which you can work): _____



Adequacy for the Assignment:

SI #	Project Details	Domain (Specify TMS/ ATMS/PMU/IT Security/ Others)	Key Activities performed (SAT/FAT/DPR/RFP etc. as required in the RFP) Detailed Tasks Assigned on Consultant's Team of Experts
1	Name of Project: Client Name: Year of Assignment:		
2	Name of Project: Client Name: Year of Assignment:		
3	Name of Project: Client Name: Year of Assignment:		

Expert contact information: (e-mail, phone.....)

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available to undertake the assignment in case of an award. I understand that any misstatement or misrepresentation described herein may lead to my disqualification or dismissal by the Client.

{day/month/year}

Name of Expert	Signature	Date {day/month/year}
Name of authorized Representative of the Consultant (the same who signs the Proposal)	Signature	Date

Form – T:15 – Format of submission of Work Experience / Technical Strength of Bidder

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref.:

Client Details Client Name: Address: Name of Contact Person: Contact No.Contact E-mail ID. (official e-mail ID)		Name of Work / Project ⁴
		Location:
		Approximate Value of Work / Project (INR)
Start Date		Present Status of Project (as per the Bidders mandate)
Completion Date		
Present Status		
Brief Scope of Work		
Application Users		
Name of Persons Deployed (KeyPersons only)		
Detailed features of Project Executed:		

Name

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

Dated: / /2026

Form – T:16 – Summary of Project Experience

Project Name: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

RFP Reference Number: _____ dated _____

Name of Bidder: _____

Sr.No	Name of Project	Client Name	Contract Value of the Project	Start Date	Completion Date	Status (ongoing / completed)	Reference / Documentary Evidence

Note: Submit the table separately for PQ and TQ.

Appendix A-Form F-1: Format for Financial Bid Submission

(For sample only, actual Format to be downloaded from e-tender portal for on-line submission)

To,
Chief Operating Officer,
Indian Highways Management Company Limited,
G 5&6, Sector-10, Dwarka,
New Delhi – 110075

Sub.: Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0

Ref: RFP No. on above subject.

Bidder's Name:	
Address:	
Email:	

Sr. No.	Item	UOM	Qty	Unit Rate	Total Amount	Remarks
A	Software Take-over and Design & Development Cost					
A1	Take-over of existing TMCC Application along with source code on "As-Is basis" functional at all Live plazas and with all existing API Integrations with external system such as NPCI, Banks (for Annual Pass), VAHAN, NATGRID, BISAG-N MEITY, MoRTH Dashboard, NHAI Datalake, GSTN, and E-Detection portals as per RFP.	LS	1		-	
A2	Design, Development of TMCC 2.0 with all modules	LS	1		-	
A3	Setting up of Control Room IT Infrastructure at IHMCL Office Premises or any identified location by IHMCL	LS	1		-	
	Sub-total for Software Take-over and Design & Development Cost (A)				-	
B	Plaza Onboarding Cost on TMCC 2.0 and Integration with External Agencies					
B1	Pilot deployment of TMCC 2.0 application at MLFF projects and Go-Live	Plaza s	17		-	Refer Schedule A

Sr. No.	Item	UOM	Qty	Unit Rate	Total Amount	Remarks
						for list of plazas.
B2	Integration & Deployment of TMCC 2.0 at fee plazas (ETC plazas and MLFF Plazas) throughout the Contract Period including all existing NH fee plazas and new fee plazas during O&M period (Lumpsum quantity)	Plaza s	2000		-	Payments to be released pro-rata based on the nubur of plazas on-boarded on TMCC 2.0
B3	One Time Sync/ Async Integration Cost with any new External Application as per RFP requirement	Nos	5		-	Payments shall be released based on Successful integration with each new external application as per Clause 2.5 of Schedule B
Sub-total for Plaza Onboarding Cost on TMCC 2.0 and Integration with External Agencies (B)					-	
C	Operations & Maintenance Cost					
Sl. #	Item	UOM	Indic ative Qty	Unit Rate for O&M (Quarterly Rate)	Total Amount (₹)	Remarks
C1	Year 1 - Pro-rata Quarterly O&M charges for fee plazas operational on TMCC 1.0 (Lumpsum quantity)	Quart er	4		-	(i) Shall be released only after taking over of all fee plazas
C2	Year 2-7 - Pro-rata Quarterly O&M charges for fee plazas operational on TMCC 2.0 (Lumpsum quantity)	Per Plaza	2,000		-	(i) Quarterly Unit Rate to be quoted for each plaza for 24 quarters. (ii) Cost for O&M for 24 quarters for the indicative Qty of fee plazas

Sr. No.	Item	UOM	Qty	Unit Rate	Total Amount	Remarks
						mentioned under UOM.
Sl. #	Item	UOM	Indicative Qty	Unit Rate for O&M (Monthly Man-month Rate)	Total Amount (₹)	Remarks
C4	Manpower cost during O&M phase					
C4.1	Project Manager (1 resource)	Man-Months	84		-	
C4.2	Data Analytics & AI Specialist (1 resource)	Man-Months	84		-	
C4.3	TMCC Operators (5 resources)	Man-Months	420		-	
	Sub-Total for O&M Cost (C)				-	
	TOTAL PROJECT COST (D)				-	

NOT
E:

- The Bidder shall ensure strict adherence to the prescribed cost distribution limits, as below:
 - Sub-Total (C) for O&M cost shall not less than 50% of the Total Project Cost (D); and**
 - Sub-Total (A) for Software Take-over and Design & Development Cost (A) shall not **exceed 20%** of the Total Project Cost (D).
 - Quarterly Unit Rate for O&M of TMCC 1.0 per plaza should **NOT be more than 50%** of Quarterly Unit Rate of TMCC 2.0 per plaza.

In the event of any deviation or non-compliance with the above stipulated thresholds, the Financial Bid shall be treated as non-responsive and shall be rejected summarily, without any further evaluation or clarification. No post-submission rectification in this regard shall be permitted.

- The quantities of fee plazas indicated in the Financial Bid is indicative, and have been provided for the limited purpose of bid evaluation and benchmarking. The actual number of fee plazas in O&M phase to be onboarded during the project tenure may vary, based on actual fee plaza operational.

PART-III

DRAFT FORM OF CONTRACT AGREEMENT

1.1.DRAFT CONTRACT AGREEMENT

No.

This Contract Agreement (hereinafter called the "Contract") is made on this _____ day of the month of _____, 202__.

BETWEEN

Indian Highways Management Company Limited (IHMCL) (CIN), incorporated under Companies Act 1956, and having its head office at G 5 & 6, Sector 10, 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 _____ (CIN), incorporated under the provisions of the (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.

WHEREAS

- a) IHMCL is mandated by NHAI to implement and manage the Operation & Maintenance (O&M) of the Electronic Tolling via FASTag, including Multi-Lane Free Flow (MLFF) based tolling on National Highways.
- b) the Bidder, in the ordinary course of its business, is engaged in providing similar services to their clients, and have represented to IHMCL through their bids, against Request for Proposal (RFP) for Selection of Service Provider for Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operations & Maintenance of TMCC 2.0" that they have the required experience, professional skills, personnel and technical resources to provide the required Services.
- c) on the basis of the said Tender, IHMCL has adjudged the Bidder as a Successful Bidder and issued Letter of Award (LoA) No. dated. __.202__ for the same.
- d) the Bidder has agreed through their letter of acceptance No dated to provide the said Services on the terms and conditions set forth in this Contract Agreement and has also submitted performance bank guarantee equivalent to (Rs.) such that it remains valid until one year beyond completion of the contract.

NOW THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Contract Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties hereby agree as follows:

1. The mutual rights and obligations of the Bidder and IHMCL shall be as set forth in this Contract

Agreement, in particular:

- i. The Bidder shall carry out the Services in accordance with the provisions of the Contract and Good Industry Practice; and
 - ii. IHMCL shall make payments to the Bidder in accordance with the provisions of the Contract.
2. The following schedules/ appendices shall be deemed to form and be read and construed as part of this Contract Agreement viz.

General Conditions of Contract	
Schedule A:	The Site
Schedule B:	The Proposed TMCC Facilities
Schedule C:	Service Level Agreement
Appendices:	
Appendix A	Copy of Financial Bid of the Bidder
Appendix B	Letter of Award issued by IHMCL
Appendix C	Letter of Acceptance submitted by the Bidder
Appendix D	Copy of the Performance Security submitted by the Bidder including copies of confirmation provided by the respective bank.
Appendix E	Copy of the Technical Bid and/or any subsequent correspondence of the Bidder/ IHMCL
Appendix F	Copy of RFP Document and subsequent amendment / addendum including Minutes of Pre-bid Meeting if any

IN WITNESS WHEREOF, the parties hereto have caused this Contract Agreement 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 Limited) (Authorized Representative)

Name: _____

Designation: _____

Indian Highways Management Company Limited G-5&6, Sector – 10, 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 Limited

G-5&6, Sector – 10, Dwarka

New Delhi – 110075

Name: _____

Designation: _____

Indian Highways Management Company Limited

G-5&6, Sector – 10, Dwarka

New Delhi – 110075

Name: _____

Designation: _____

M/s _____

Address: _____

Name: _____

Designation: _____

M/s _____

Address: _____

1.2. GENERAL CONDITIONS OF CONTRACT

1.2.1. Definition

The words and expressions beginning with capital letters and defined in this Contract 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.

1.2.2. Interpretation

1.2.2.1. In this Contract 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 can apply to any transaction entered 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 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 Contract Agreement are for convenience of reference only and shall not be used in, and shall not affect, the construction or interpretation of this Contract 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 they are followed by such phrases.
- f) any reference to any period shall mean a reference to that according to Indian Standard Time.
- g) references to a “day” shall be construed as a reference to all days of the year.
- h) any reference to month shall mean a reference to a calendar month as per the Gregorian calendar.
- i) references to any date, period or time shall mean and include such date, period or time as may be extended pursuant to this Contract Agreement.
- j) 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 and dates; provided that if the last day of any period computed under this Contract Agreement is not a business day, then the period shall run until the end of the next business day.
- k) the words importing singular shall include plural and vice versa.
- l) “**lakhs**” means a hundred thousand (100,000) and “**crore**” means ten million (10,000,000).
- m) references to the “**winding-up**”, “**dissolution**”, “**insolvency**”, or “**reorganization**” 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, reorganization, dissolution, arrangement, protection or relief of debtors.

- n) save and except as otherwise provided in this Contract 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 IHMCL hereunder or pursuant hereto in any manner whatsoever;
- o) any agreement, consent, approval, authorization, notice, communication, information or report required under or pursuant to this Contract Agreement from or by any Party shall be valid and effective only if it is in writing under the hand of a duly authorized representative of such Party, as the case may be, in this behalf and not otherwise.
- p) the Schedules and Recitals to this Contract Agreement form an integral part of this Contract Agreement and will be in full force and effect as though they were expressly set out in the body of this Contract Agreement.
- q) References to Recitals, Articles, Clauses, Sub-clauses or Schedules in this Contract Agreement shall, except where the context otherwise requires, mean references to Recitals, Articles, Clauses, Sub-clauses and Schedules of or to this Contract Agreement and references to a Paragraph shall, subject to any contrary indication, be construed as a reference to a Paragraph of this Contract Agreement or of the Schedule in which such reference appears; and
- r) the damages payable as set forth in this Contract 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**”).
- s) “Arbitration Act” means the Arbitration and Conciliation Act, 1996 and shall include amendments, modifications to or any re-enactment thereof as in force from time to time.
- t) “**TMCC**” or “**System**” refers to “Toll Monitoring and Control Centre (TMCC)”
- u) “**Effective Date**” shall mean date of this Contract Agreement.
- v) “**Uptime**” refers to the duration during which an MLFF equipment or system is actively functioning, operating, and ready to execute its intended tasks effectively, meeting the operational characteristics as defined in the RFP document, without encountering significant interruptions or failures.
- w) “**Downtime**” refers to the period during which MLFF equipment or system is either non-functional or not actively operating to execute its intended tasks effectively, thus failing to meet the operational characteristics outlined in the RFP document due to significant interruptions or failures.
- x) “**Bidder**”, “**Successful Bidder**”, “**Service Provider**” & “**Implementation Agency (IA)**” mean the Successful Bidder who has executed the contract with IHMCL and has complied with other

requirements as specified in this RFP to the satisfaction of IHMCL.

- y) **“Total Project Cost”** mentioned in the RFP shall mean Total Project Cost quoted by the bidder in Form F-1.

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

1.2.3. Definitions

The definitions mentioned in the RFP is referred from the Section under “Definitions” in the RFP.

1.2.4. Arithmetic conventions

All calculations should be rounded to two decimal places. If the third digit after the decimal point is 5 or higher, the same shall be rounded up. If the third digit is less than 5, the same shall be rounded down.

1.2.5. Priority of Agreements, Clauses, and Schedules

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

1.2.5.2. In case of ambiguities or discrepancies within this Contract Agreement, the following shall apply:

- (a) between two or more Clauses of this Contract 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.

1.2.6. Scope of Work

Under this Agreement, the scope of the Project shall mean and include:

1. **Design, Development and Implementation of the TMCC 2.0:** Undertake the Upgradation of Toll Monitoring & Control Centre (TMCC) Application including Development, Operation & Maintenance of TMCC 2.0 listed in Schedule-A, with the provision of facilities as specified in Schedule-B, and ensure compliance with the Specifications and Standards outlined in Schedule-C.
2. **Operations & Maintenance:** Carry out the operations and maintenance of the Toll Monitoring and Control Centre (TMCC) in accordance with this Agreement, adhering to the requirements specified in Schedule-B & Schedule-C.
3. **Web based Application Portal** - The Bidder shall provide a web-based application/portal for real-time monitoring of system health and availability, automatic alerts for MLFF equipment downtime and MLFF data. The design should prioritize scalability to accommodate future advancements and technologies, ensuring the portal remains adaptable and continues to meet evolving requirements effectively.

4. **Data Security and Protection:** The Bidder shall ensure robust data security and protection measures in compliance with Government of India guidelines, including but not limited to the Information Technology (IT) Act 2000 and the Digital Personal Data Protection (DPDP) Act 2023, to safeguard user data, prevent unauthorized access, and maintain the integrity and confidentiality of all collected information.
5. **Performance and fulfilment of obligation:** Ensure the performance and fulfillment of the Bidder's obligations in accordance with the provisions of this Agreement, including all incidental or necessary activities required to meet the obligations under this Agreement.
6. IHMCL shall provide the Control Centre space and bear recurring electricity charges. The IA shall be responsible for all fit-out costs including furniture and minor electrical works, and shall provision redundant internet connectivity of minimum 100 Mbps from two independent ISPs.

1.2.7. Relationship between the Parties

Nothing in this Contract Agreement shall be interpreted to establish a relationship of master and servant or principal and agent between IHMCL and the Bidder. The Bidder, while performing the Services under this agreement, shall have full authority and responsibility over its personnel and representatives. The Bidder shall be solely accountable for the remuneration and statutory compliance concerning its employees, contractors, or representatives. IHMCL shall bear no liability with respect to the Bidder's personnel or representatives, and the Bidder shall indemnify IHMCL against any claims, liabilities, or obligations arising from such relationships.

1.2.8. Governing Law and Jurisdiction

This Contract 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 Contract Agreement.

1.2.9. Language

This Contract Agreement 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 Agreement.

1.2.10. Effectiveness of Contract

This Contract Agreement 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.

1.2.11. Commencement of Services

The Bidder shall commence the services from the date of signing of Contract Agreement with IHMCL.

1.2.12. Duration and Extension of Contract

The term of this Contract Agreement shall be **12 months for design, development & implementation and roll out of the TMCC and 7 years for Operation and Maintenance (O&M)** phase, starting from the Effective Date, which shall be **extendable up to a period up to 2 years upon the satisfactory performance and** as per requirement of IHMCL.

Any additional implementation work awarded within the original Contract Period of 7 year and 12 months period will be incorporated into the implementation and O&M phases in such a way that the

total original Contract duration does not exceed the initial 7 years and 12 months, unless an extension is granted by IHMCL.

1.2.13. Assignment

This Contract Agreement shall not be assigned by the Bidder to any person / agency except with the prior consent in writing of IHMCL and IHMCL shall be entitled to decline without assigning any reason whatsoever. Notwithstanding anything to the contrary contained in this Contract Agreement, IHMCL may, after giving 30 days' notice to the Bidder, assign and/ or transfer any of its rights, benefits and/or obligations under this Contract Agreement to an assignee who is, in the reasonable opinion of IHMCL, capable of fulfilling all IHMCL's then outstanding obligations under this Contract Agreement.

1.2.14. Severability

If for any reason whatsoever any provision of this Contract 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 Contract Agreement or otherwise.

1.2.15. Notices

Any notice, request or consent required or permitted to be given or made pursuant to this Contract Agreement 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: Chief Operating Officer

Address: Indian Highways Management Company Limited, G-5&6, Sector-10, Dwarka, New Delhi - 110075

E-mail: tenders@ihmcl.com & coo@ihmcl.com

Bidder:

Attention:

Address:

E-mail: ...

1.2.16. Time Schedule

Milestone #	Project Milestones	Timelines
1.	Signing of Contract Agreement	T
2.	Submission of Project Plan with detailed activity list, resource deployment plan, etc.	T + 7 days
3.	Take-over of existing TMCC Application along with source code on “ As-Is basis ” functional at all Live plazas and with all existing API Integrations with external system such as NPCI, Banks (for Annual Pass), NATGRID, e-Detection System, etc. as per RFP.	T + 1.5 months
4.	Submission of detailed Technical Design Document of TMCC 2.0 comprising all Modules	T + 2 months
5.	Design, Development and Operationalisation of Module 2 — MLFF Plaza Monitoring & Reconciliation across identified pilot plazas as per Schedule A of the RFP	T + 3.5 months
6.	Setting up of Control Room IT Infrastructure at IHMCL Office Premises or any identified location by IHMCL	T + 4 months
7.	Completion of Design, Development, Integration & User Acceptance Testing (UAT) for TMCC 2.0 with all modules at identified pilot plazas as per Schedule A of the RFP	T + 5 months
8.	Go-Live of TMCC 2.0 with all modules across identified Pilot plazas	T + 6 months
	TMCC 2.0 Roll Out	
9.	Phase 1 Roll Out Deployment of TMCC 2.0 Application at all Plazas (ETC plazas and MLFF plazas) as per Schedule A of the RFP.	From T + 8 months
10.	Phase 2 Roll Out Deployment of TMCC 2.0 Application at all Plazas (ETC plazas and MLFF plazas) as per Schedule A of the RFP.	From T + 10 months
11.	Phase 3 Roll Out Deployment of TMCC 2.0 Application at all Plazas (ETC plazas and MLFF plazas) as per Schedule A of the RFP.	From T + 12 months

Milestone #	Project Milestones	Timelines
12.	Operations & Maintenance Period of TMCC 2.0	7 years from date of Go-Live at identified pilot plazas as per Schedule A of the RFP

Note: Post completion of Phase I and Phase II rollout, the TMCC application shall be deployed at additional MLFF projects throughout the Contract duration. The onboarding of each such new MLFF projects shall be done within two (2) weeks from the date of intimation by IHMCL.

1.2.16.1. Assessment During Pilot Phase

#	Assessment Area	Criteria
1.1	Connectivity & Data Ingestion	Integration with all stakeholders as mentioned in Schedule B Clause 5, Module 2: MLFF Transaction Monitoring & Reconciliation Module (MTMR) along with reconciliation of data.
1.2		Health/status data fetched at ≤ 3 min intervals over continuous 30-day window
1.3		Transactional data ingested with full completeness
1.4		Zero data loss, duplication, or corruption during pilot window
2.1	Device Identity & Binding	100% of field devices registered with unique Device ID, MAC, IP, and GPS co-ordinates
2.2		Unauthorized IP/MAC change detected and alerted within 15 minutes — controlled test
2.3		Binding violation auto-logged in tamper-proof audit trail with accurate timestamp
3.1	Anti-Fraud & Fake IP Detection	Simulated ICMP fake ping scenarios detected and flagged — all IHMCL test cases
3.2		Simulated IP spoofing and MAC manipulation detected within 15 minutes
3.3		Simulated proxy device insertion detected without manual intervention
3.4		Zero false negatives in all controlled anti-fraud test scenarios
4.1	SLA Monitoring & Computation	SLA computation accuracy verified against IHMCL ground-truth data
4.2		SLA breach detected and alert generated within 15 minutes of event
4.3		Auto-escalation to MLFF Project Control Centre within configured time window
5.1		All views operational — project, stretch, equipment, and SLA-parameter wise

#	Assessment Area	Criteria
5.2	Dashboard & Visualization	GIS map accuracy verified against physical device location records
5.3		On-demand live camera feed access successful across all camera devices
5.4		Dashboard page load response time under normal load
6.1	Data Validation & Reporting	Random sampling validation workflow demonstrated and verified by IHMCL
6.2		On-demand image/video evidence retrieval for 10 randomly selected incidents

1.2.16.2. **Consequences of Unsuccessful Pilot Demonstration**

- a) Any deviations or non-compliance identified concerning the functional requirements specified in the RFP must be rectified by the IA within seven (7) days from the date of formal notification.
- b) Failure of the Implementation Agency (IA) to resolve or rectify the identified observations within the stipulated timeframe shall result in termination of the Contract Agreement and forfeiture of PBG, without any financial liability or obligation on IHMCL.

1.2.17. **Damages**

1.2.17.1. Damages for Delay in completion of work

Refer to Section Service Level Agreements (SLA), in the RFP Schedule C Section 1.

1.2.17.2. Extension of Time (EOT)

- i. The Bidder may request an extension of time beyond the binding completion schedule if it encounters unforeseen circumstances or events beyond its control that materially and significantly impact its ability to meet the deadline.
- ii. The Bidder shall submit a written request for the extension, detailing the reasons for the delay and providing supporting documentation, to IHMCL within a reasonable time frame after becoming aware of the delay.
- iii. IHMCL shall review the extension request and may grant an extension if it deems the reasons provided by the Bidder to be valid and justifiable.
- iv. If the Bidder fails to request an extension of time within thirty (30) day from the date of occurrence of the delay-causing event or if the delay is not attributable to reasons beyond its control, the request of the Bidder will not be considered by IHMCL.
- v. The Bidder shall not be entitled to any extension of time or relief from damages for delays caused by its own negligence, inadequate planning, insufficient resources, or failure to adhere to project timelines.
- vi. The decision of IHMCL regarding extension requests and imposition of damages shall be final and binding on the Bidder, subject to dispute resolution mechanisms as outlined in the Contract Agreement.

1.2.17.3. Damages for non-adherence of Service Level Agreement (SLA)

- a. Non-Adherence of SLA during the O&M period would result in damage mentioned in Schedule-C of the Agreement.

1.2.18. Payments

- (a) The payment shall be made based on the Total Project Cost, as specified in the Bidder's Financial Bid Form F-1 and accepted by the Authority, in consideration of the obligations outlined in this Agreement.
- (b) The unit rates quoted by the Bidder shall remain firm and fixed for the first five (5) years of the O&M period. Thereafter, the unit rates may be escalated by up to 10% year-on-year on the O&M payments for the remaining O&M period.
- (c) All payments shall be made subject to adjustment of applicable damages.
- (d) IHMCL reserves the right to ask the Successful bidder to submit proof of payment against any of the taxes, duties, levies indicated.
- (e) No amount or cost shall be payable for holding discussion, as considered necessary by IHMCL, for any purpose with IHMCL's Officials at IHMCL's Head Office or elsewhere, prior, during or after the conduct of an assignment.

1.2.19. Payment Terms

SI #	Project Milestones	Timelines	Payment Terms
1.	Take-over of existing TMCC Application along with source code on "As-Is basis" functional at all Live plazas and with all existing API Integrations with external system such as NPCI, Banks (for Annual Pass), NATGRID, e-Detection System, etc. as per RFP.	T + 1.5 months	100 % of Sub-total for A.1 as per Financial Bid
2.	Completion of Milestone Design, Development and Operationalisation of Milestone 5 - Module 2 — MLFF Plaza Monitoring & Reconciliation across identified pilot plazas as per Schedule A of the RFP	T + 3.5 months	100 % of Sub-total for A.2 as per Financial Bid
3.	Setting up of Control Room IT Infrastructure at IHMCL Office Premises or any identified location by IHMCL	T + 4 months	100 % of Sub-total for A.3 as per Financial Bid
4.	Go-Live of TMCC 2.0 with all modules across identified Pilot plazas as per Schedule A of the RFP.	T + 6 months	100 % of Sub-total for B.1 as per Financial Bid
	Roll Out Phase		

SI #	Project Milestones	Timelines	Payment Terms
5.	Phase 1 Roll Out: Deployment of TMCC 2.0 Application at all Plazas (ETC plazas and MLFF plazas) as per Schedule A of the RFP.	From T + 8 months	Pro-rata payment for each plazas on-boarded on TMCC 2.0 as per Plaza Onboarding Cost of the B.2 of the Financial Bid
6.	Phase 2 Roll Out: Deployment of TMCC 2.0 Application at all Plazas (ETC plazas and MLFF plazas) as per Schedule A of the RFP.	From T + 10 months	Pro-rata payment for each plazas on-boarded on TMCC 2.0 as per Plaza Onboarding Cost of the B.2 of the Financial Bid
7.	Phase 3 Roll Out: Deployment of TMCC 2.0 Application at all Plazas (ETC plazas and MLFF plazas) as per Schedule A of the RFP.	From T + 12 months	Pro-rata payment for each plazas on-boarded on TMCC 2.0 as per Plaza Onboarding Cost of the B.2 of the Financial Bid
8	O&M Payments		
8.1	Pro-rata O&M payments for plazas running on TMCC 1.0 from Take-over Date till migration to TMCC 2.0	From Date of Take-over	Quarterly Payments for plazas functional with existing TMCC 1.0 application as per rates quoted in C.1 of the Financial Bid. Such payments shall become payable only after the successful take-over of all Fee Plazas as under existing TMCC application as per Project Milestone #1 above, and shall be made for a maximum period of four (4) quarters from the date of take-over of all Fee Plazas approved by IHMCL. In the event that IHMCL grants an Extension of Time (EOT) in accordance with Clause 1.2.17.2, the payment period shall be extended accordingly, subject to the terms of the approved EOT.

SI #	Project Milestones	Timelines	Payment Terms
8.2	Pro-rata O&M payments for plazas running on TMCC 2.0	Post Go-Live	Quarterly Payments for plazas functional with existing TMCC 1.0 application as per rates quoted in C.2 of the Financial Bid.
8.3	Manpower Cost	Post deployment of Man-power and take-over of TMCC 1.0 application	Quarterly Payments as per C.3 of Operations & Maintenance Cost of the Financial Bid

1.2.20. Change of Scope

- a) The Implementation Agency shall be entitled for additional payment over and above the Contract Price in case of Change of Scope Order is given by IHMCL. Change of Scope will be initiated in the following cases only after written instructions from IHMCL or its representative:
- b) Change of Scope and Pro-Rata Payment: In the event of a Change of Scope Order issued by IHMCL, the Implementation Agency (IA) entitled to additional payment over and above the Contract Price. Such a Change of Scope will be applicable only upon written approval from IHMCL and shall be initiated under the following circumstances:
 - i. Any **new MLFF Project added under scope of work** of this RFP, beyond the number of projects specified in Schedule-A, will be considered a Change of Scope.
 - ii. Any **new ETC Fee Plaza added under scope of work** of this RFP, beyond the number of projects specified in Schedule-A, will be considered a Change of Scope.
 - iii. The IA shall undertake the additional work only after receiving formal written instructions from IHMCL or its designated representative.
- c) Clarification on Change of Scope and Standard Responsibilities
 - i. Activities such as addition in number of cameras/equipment's, sensors within the existing projects provided in Schedule A, software upgrades, report development or customization, data analysis, system optimization, routine troubleshooting, and performance tuning are considered part of the standard operational responsibilities under the existing contract. These tasks are inherent to the regular maintenance, enhancement, and reporting functions of the project and do not represent significant changes or expansions to the original project deliverables. Therefore, they shall not be treated as a Change of Scope, and no additional payment will be made for these activities.
 - ii. For any work that qualifies as a Change of Scope, as outlined in the contract, the cost estimate shall be determined through mutual agreement, following Good Engineering Practices.
- d) Upon receipt of written instruction from IHMCL or its representative, the IA shall submit the Change of Scope proposal within 15 days duly including the estimate, design drawing of the work along with functional and technical specifications and time required for completion of the additional

work, to IHMCL or its representative for issue of the Change of Scope Order.

1.2.20.1. Change Control Note (CCN)

- a) This applies to and describes the procedure to be followed in the event of any proposed change to contract, site Implementation, and Service levels. Such change shall include, but shall not be limited to, changes in the scope of services provided by Successful bidder and changes to the terms of payment.
- b) Change requests in respect of the contract, the site implementation, or the Service levels shall emanate from the Parties' representative who shall be responsible for obtaining approval for the change and who shall act as its sponsor throughout the Change Control Process. CCNs shall be presented to the other Party's representative who shall acknowledge receipt by signature of the authorized representative of the IHMCL.
- c) Successful bidder and Authority while preparing the CCN, shall consider the change in the context of whether the change is beyond the scope of Services including ancillary and concomitant services required.
- d) The CCN shall be applicable for the items which are beyond the stated/implied scope of work as per the RFP document.

1.2.21. Project Administration

The Chief Operating Officer (COO), IHMCL shall be administrator of the Contract. COO, IHMCL shall act as coordinator, who will be responsible for the coordination of activities under this Contract Agreement. For acceptance and finalization of the services and of other deliverables IHMCL/NHAI may appoint a Supervision Consultant or any official of IHMCL/NHAI to act on its behalf.

1.2.22. Audit

- i. IHMCL/NHAI at its sole discretion may conduct regular /forensic audit of the services under this Contract Agreement. The Successful bidder shall cooperate and provide all required documentation, access to IT system during such audit, failing which, it shall be considered as breach of Contract Agreement on part of Bidder under Clause No. 1.2.31(p).
- ii. NHAI/IHMCL reserves the right to install or appoint any third party to install additional third party software or any other equipment, to facilitate third-party audits. This infrastructure may be deployed to independently verify data, monitor operations, or ensure compliance with service level agreements (SLAs). The successful bidder shall provide all requisite support to the third-party facility such as Power, Integration with successful bidder solution, network bandwidth etc. without any additional cost to NHAI/IHMCL.

1.2.23. Fraud and Corruption

1.2.23.1. Definitions

It is IHMCL's policy that IHMCL as well as bidder observe the highest standard of ethics during the

selection and execution of such contracts. In pursuance of this policy, IHMCL defines, for the purpose of this provision, the terms set forth below as follows:

- i. "Corrupt practice" means the offering, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the selection process or in contract execution.
- ii. "Fraudulent practice" means a misrepresentation or omission of facts to influence a procurement process or execution of a contract with IHMCL; and includes collusive practice among bidders, prior to or after bid submission, designed to establish bid prices at artificially high or non-competitive levels and to deprive IHMCL of the benefits of free and open competition.
- iii. "Collusive practices" means a scheme or arrangement between two or more bidders, with or without the knowledge of IHMCL, designed to establish prices at artificial, non- competitive levels.
- iv. "Coercive practices" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process or affect the execution of a contract.
- v. "Unfair trade practices" means supply of services different from what is ordered on, or change in the Scope of Work which was not agreed to; and
- vi. "Restrictive practices" means forming a cartel or arriving at any understanding or arrangement among bidder(s) with the objective of restricting or manipulating a full and fair competition in the bidding process.

1.2.23.2. **Measures to be taken by IHMCL.**

- a) IHMCL may terminate the contract if it determines at any time that representatives of the Bidder were engaged in corrupt, fraudulent, collusive or coercive practices during the selection process or the execution of that contract, without the Bidder having taken timely and appropriate action satisfactory to IHMCL to remedy the situation; and
- b) IHMCL may also sanction against the Bidder, including blocklisting or declaring the Bidder ineligible, either indefinitely or for a stated period, to be awarded a contract if it at any time determines that the Bidder has, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or executing a contract with IHMCL.

1.2.24. **Confidentiality of the Assignment/Findings**

- (a) During the term of this Contract Agreement and for three years following its expiration or termination, the Bidder shall not divulge or authorise the disclosure of the services, this Contract Agreement, or the business or operations of IHMCL to a third party without IHMCL's prior written consent. This excludes its agents, consultants, or sub-contractors (SI) who require the information for the purpose of performing its duties under the Contract Agreement. The Bidder must ensure that such agents, consultants, or sub-contractors (SI) are bound to preserve the complete confidentiality of any Proprietary and Confidential Information of IHMCL.

- (b) The Bidder and its personnel shall use such Proprietary Information only for the purpose for which it was disclosed and shall not use or exploit such Proprietary Information for its own benefit or the benefit of another without the prior written consent of the IHMCL. Without limitation of the foregoing, Bidder shall not cause or permit reverse engineering of any Proprietary Information or recompilation or disassembly of any information or software programmes that are part of the Proprietary Information received by it under this Contract Agreement. For the purposes of this Contract Agreement - Proprietary Information shall include, but not be limited to, strategies, official secrets, actual and anticipated research, developments or plans, services, software, source codes, inventions, processes, discoveries, formulas, architectures, concepts, ideas, designs, drawings, personnel, financial information, demonstrations, operations, records, assets, technology, data, and information derived, whether existing or derived or analysed out of the information made available to the Bidder in the form of raw data or reports, in any form whatsoever.
- (c) The Bidder alone shall be responsible for ensuring the maintenance of confidentiality as contemplated above and shall be responsible for employing sufficient measures to prevent any unauthorised access to the Proprietary Information.

1.2.25. Insurance cover to be maintained.

- (a) The Bidder shall ensure to maintain proper insurance coverage of all the equipment, materials, establishment against fire, theft, vandalism or any other perceived risk(s) / natural disaster etc. during the entire duration of the contract period. It shall sole responsibility of bidder to claim the insurance and replace the damaged component or system during contract period.
- (b) In addition to material and equipment, the Bidder shall also ensure to have adequate insurance for all its personal working/ deployed under this Contract Agreement. The insurance shall also fully cover the personnel / workers / laborers of sub-contractors (SI). In case any worker / laborer claim is not covered by the insurance company, the Bidder shall be responsible for covering the entire expenses for medical, transportation, wages, compensation etc. of the personnel in case of any incident / accident/ mishap / death, or a claim by the third party etc. Suitable compensation shall be paid by the Bidder to the personnel deployed at the project in case of any incident / accident/ mishap / death, etc. if any happened on the site/ project or in transit, irrespective of thereason. Hence the insurance policy shall be comprehensive and shall cover all types of risks and compensation.
- (c) The Bidder shall fully indemnify IHMCL against any damage/ loss of property or personnel of Bidder working on any site under this Contract Agreement.
- (d) The Bidder shall submit copies of the insurance policies to IHMCL within 15 days of Contract Signing, and renewal policy within 15 days of the expiration of the policy until the end of the Contract period.

1.2.26. Labour Laws

- (a) The Bidder shall obtain all relevant labor registrations and comply with all relevant labor laws applying to its employees and shall duly pay them and afford them all their legal rights.

- (b) The Bidder shall make all deductions of tax at source and all contributions to the Payment of Gratuity, Provident Fund (including Employees' contribution) and Employees' State Insurance Scheme as may be required by Applicable Laws and deposit the aforesaid contributed amount with the appropriate authority/(s).
- (c) The Bidder shall require all personnel engaged in the work to obey all Applicable Laws and regulations. The Bidder shall permit the Authority to witness labor payments for the Bidder direct labor or the sub-contractors'(SI) labor. The Bidder shall ensure that all its sub-contractors (SI) strictly comply with all labor laws.
- (d) Documentary evidence confirming the above compliance, as may be required from time to time, shall be provided to the IHMCL's Representative.
- (e) IHMCL shall not be liable for any delay or default of the Bidder in compliance with the labor laws.

1.2.27. No partnership

This Contract 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 act as an agent or representative of, or to otherwise bind, the other Party.

1.2.28. 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. However, it is agreed and acknowledged by the Bidder that intellectual property rights in the Proprietary Information as well as any other data or information/ reports generated during the performance of services contemplated herein by the Bidder shall always vest with IHMCL and Bidder or its employee, agent, official, sub-contractor (SI) will not have any right in such IPR whatsoever.

1.2.29. Force Majeure

- i. Neither party shall be responsible to the other for any delay or failure in performance of its obligations due to any occurrence of a Force Majeure event which is beyond the control of any of the Parties, including, but without limited to, fire, flood, explosion, acts of God or any governmental body, public disorder, riots, embargoes, or strikes, acts of military authority, epidemics, pandemics, strikes, lockouts or other labour disputes, insurrections, civil commotion, war, enemy actions.
- ii. If a Force Majeure arises, the Successful bidder shall promptly notify IHMCL in writing of such condition and the cause thereof. Unless otherwise directed by IHMCL, the Successful bidder shall continue to perform his obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. The Parties shall be excused from performance of their respective obligations in whole or part as

long as such Force Majeure event continues to prevent or delay such performance by the Parties. However, in case such Force Majeure event lasts for a continuous period of 60 days, either Party may terminate the Contract.

1.2.30. Dispute Resolution

Dispute resolution procedure shall be as mentioned in Clause 6.6 of the RFP.

1.2.31. Events of default by the Bidder

The failure on the part of the Bidder to perform any of its obligations or comply with any of the terms of this Contract shall constitute an Event of Default on the part of the Bidder. The events of default as mentioned above may include inter-alia of the following:

- a. the Bidder fails to provide, extend, or replenish the Performance Security in accordance with this Agreement.
- b. the Bidder abandons or manifests intention to abandon the implementation or O&M of the Project without the prior written consent of the Authority.
- c. the Bidder fails to takeover the existing TMCC application with all modules in accordance with timeline mentioned under this Agreement.
- d. the Project Completion Date does not occur within the period specified in RFP Clause 1.2.12 for the Scheduled Completion Date, or any extension thereof accorded under Clause 1.2.12.
- e. the Bidder fails to rectify any Defect, the non-rectification of which shall have a Material Adverse Effect on the Project, within the time specified in this Agreement or as directed by the Authority.
- f. the Bidder fails to complete successful Pilot Demonstration as per Clause 1.2.16.1.
- g. the Bidder creates any Encumbrance in breach of this Agreement.
- h. an execution levied on any of the assets of the Bidder, or if a trustee or receiver is appointed for the Bidder or for the whole or material part of its assets that has a material bearing on the performance of the Bidder under the Contract Agreement.
- i. the Bidder is adjudged bankrupt or insolvent, has been, or is in the process of being liquidated, dissolved, wound-up.
- j. the Bidder has been or is in the process of being amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the Authority, a Material Adverse Effect or would be in breach of the terms of the Contract Agreement.
- k. any representation or warranty of the Bidder herein contained which is, as of the date hereof, found to be false or that the Bidder is at any time hereafter found to be in breach or non-compliance thereof.
- l. the Bidder submits to the Authority any statement, notice or other document, in written or electronic form, which contains false contentions/ information and can potentially adversely impact the Authority's rights, obligations or interests if accepted on its face value.
- m. the Bidder has failed to fulfil any obligation, for which failure Termination has been specified in this Agreement.

- n. the Bidder commits a default in complying with any other provision of this Agreement if such a default causes a Material Adverse Effect on the Project or on the IHMCL.
- o. In case bidder fails to complete Hand Over Take Over (HOTO) activities during the contract period, as per Clause 1.2.35.
- p. The bidder's refusal to allow or failure to support the conduct of a forensic audit or IT system audit of their TMCC.
- q. The bidder fails to meet SLA as mentioned in the Contract Agreement.
- r. Gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission, or other thing of value, as an inducement or reward:
 - i. for doing or forbearing to do any action in relation to the Contract, or
 - ii. for showing or forbearing to show favor or disfavor to any person in relation to the Contract, or
 - iii. if any of the Bidder's personnel, agents, or sub-contractors (SI) give or offer to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (o). However, lawful inducements and rewards to Bidder's Personnel shall not entitle termination.

1.2.32. Consequences of Default

Where an Event of Default subsists or remains uncured then IHMCL shall be entitled to:

- 1) Impose any such obligations and conditions and issue any clarifications as may be necessary to inter alia ensure smooth continuation of project and the Services which the Bidder shall be obliged to comply with. The Bidder shall in addition take all available steps to minimize is resulting from such event of default.
- 2) Notwithstanding anything stated in this Contract Agreement, in the event of any defaults on part of the Bidder, IHMCL shall issue a notice to the Bidder (hereinafter referred to as Cure Period Notice) setting out specific defaults / deviances / omissions / non-compliances / non-performances and providing a notice of Fifteen (15) days ("Cure Period") to enable such defaulting party to remedy the default committed. If the Bidder fails to cure the default within the Cure Period, as stated in the Cure Period Notice, the Bidder shall be deemed to be in default of this Contract Agreement, unless the default has occurred solely as due to Force Majeure or for reasons not attributable to the Bidder. The Cure Period under this Clause shall be calculated from the date of receipt of the notice by the Bidder or when the default comes into the knowledge of the Bidder, whichever is earlier. If the Bidder fails to remedy the default after lapse of Cure Period notice, the contract is liable to be terminated by IHMCL.

1.2.33. Termination

- (a) Without prejudice to any other rights or remedies which the Authority may have under this Agreement, upon occurrence of a Bidder Default, the Authority shall be entitled to terminate this Agreement by issuing a Termination Notice to the Acquirer bank; provided that before issuing the Termination Notice, the Authority shall by a notice inform the Acquirer bank of its intention to issue such Termination Notice and grant 15 (fifteen) days to the Bidder to make a representation, and may after the expiry of such 15 (fifteen) days, whether or not it is in receipt of such representation, issue the Termination Notice.

- (b) Notwithstanding the above, IHMCL at its sole discretion may terminate the Contract Agreement any time by giving 30 days prior notice without assigning any reason.
- (c) Nothing herein shall restrict the right of the IHMCL to invoke the Bank Guarantee and other Guarantees furnished hereunder and pursue such other rights and/or remedies that may be available to the IHMCL under this Agreement and/or the Applicable Law.

1.2.34. Consequence of Termination

1. Upon Termination on account of Clause 1.2.33 (a):
 - i. the Authority shall encash and appropriate the Performance Security, Additional Performance Security if any.
 - ii. the Authority may debar/blacklist the successful bidder from participating in any other project/assignment/work of IHMCL for a period as determined by IHMCL at its sole discretion.
2. Upon Termination on account of Clause 1.2.33 (b), the Authority shall make Termination Payment as under:
 - i. IHMCL shall pay the Successful bidder for all Services satisfactorily rendered up to the date of termination less any amounts owed by the Successful bidder to IHMCL (including liquidated damages, SLA deductions) and the Performance Security shall be returned.
 - ii. No other compensation or damages shall be payable to the Successful bidder on termination under this clause.
 - iii. The Successful bidder shall immediately cease all Services and hand over the Platform, all related assets, data, documentation, source code, and credentials to IHMCL;
3. Upon Termination, the Bidder shall handover all reports, all applicable photographs, videos and all other data generated in readable format as per the provision of Contract Agreement including all data, backup data and any other material / document set forth in this Agreement, to IHMCL or its representative in running condition.

1.2.35. Handing over and taking over

- a) After the expiry of the Maintenance Period set forth in the Contract Agreement and any extension thereof, the Successful bidder shall handover entire facility in good working condition, reports, all applicable photographs, videos and migration of all other data generated in readable format as per the provision of Contract Agreement including all data, backup data and any other material / document set forth in this Agreement, to IHMCL or its representative in running condition.
- b) The Successful bidder shall provide proper transfer of technology to IHMCL post Contract Period. The IA shall carry out project hand-over of the system at the end of contractual period along with all documentation required to operate and maintain the system IA will supply to the IHMCL the following before the expiry of the contract:
 - a. Information relating to the current services rendered and data relating to the performance of the services; Entire documentation relating to various components of the Project, any other data and confidential information related to the Project;
 - b. All other information (including but not limited to documents, records and agreements)

relating to the products & services related to the project to enable IHMCL and its nominated agencies, or its replacing IA to carry out due diligence in order to transition the provision of the Project Services to IHMCL or its nominated agencies, or its replacing IA (as the case may be).

- c. Source code of TMCC 2.0 application.
- d. Project Documentation

1.2.36. Survival of rights

Notwithstanding anything to the contrary contained in this Contract Agreement, any Termination pursuant to the provisions of this Contract 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.

1.2.37. Indemnification

- (a) The Bidder shall indemnify, defend, save and hold harmless, IHMCL and NHAI and M/o Road Transport and Highways (MoRTH) and its Officers, Agents, Engineer, 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, such as fees and expenses 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 Bidder's obligations under this Contract Agreement or any other related agreement or otherwise, any fraud or negligence attributable to the Bidder or its Agents or Sub-Contractors (SI), under contract or tort or on any other ground whatsoever, all eventualities of theft, dacoity, 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 Contract Agreement on the part of IHMCL.
- (b) The Bidder shall indemnify IHMCL and NHAI and MoRTH of all legal obligations of its professionals deployed. IHMCL and NHAI and MoRTH also stand absolved of any liability on account of death or injury sustained by the Bidder's staff during the performance of their work and for any damages or compensation due to any dispute between the Bidder and its staff.
- (c) 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.
- (d) The provisions of this Article shall survive Termination.

1.2.38. Compensation for default by the Bidder

- 1) In the event of the Bidder being in breach of this Contract Agreement, unless such default or delay is on account of Force Majeure or through no fault of the Bidder, the Bidder shall pay to IHMCL, all direct costs suffered or incurred by IHMCL because of such breach, within 30 days of receipt of the demand supported by necessary particulars thereof.

- 2) The Bidder shall pay to IHMCL all direct costs suffered or incurred by IHMCL incurred because of 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, such as fees and expenses incurred), joint or several, that arise out of, or based upon:
 - (i) Any untrue statement or misrepresentation of a material fact provided by the Bidder 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 Bidders or its directors, employees, personnel or representatives.
 - (iii) Negligence, fraud or misconduct of the Bidder or any of its employees, agents, affiliates or advisors.

1.2.39. Cap on Liability of Parties

- a) Subject to Clause 1.2.39 (2), the aggregate liability of Successful Bidder (and its Affiliates) to the IHMCL for any Losses arising in connection with this Agreement, whether based upon an action or claim in contract, tort (including negligence), misrepresentation, equity or otherwise (including any action or claim arising from the acts or omissions of the Successful Bidder (or, as the case may be, its Affiliate)) shall not exceed the Performance Security or an amount equal to the Charges for Services paid to the Successful Bidder under the Agreement till the date of such event, whichever is higher.
- b) The limitation described in Clause 1.2.39 (a) above will not apply to (i) Obligations under Clauses 1.2.24 [Confidentiality of the Assignment/Findings] or 6.8 [Indemnity].
- c) Successful Bidder has a duty to mitigate the damages and any amounts payable under an indemnity that would otherwise be recoverable from the IHMCL pursuant to signing of the resultant Agreement by taking appropriate and commercially reasonable actions to reduce or limit the amount of such damages or amounts.

1.2.40. Representation and Warranties of the Bidder

The Bidder declares, represents, and warrants as follows:

- 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 Contract Agreement and to carry out the works and provide services contemplated hereby.
- 2) It has taken all necessary corporate actions under Applicable Laws to authorize the execution and delivery of this Contract Agreement and to validly exercise its rights and perform its obligations under this Contract Agreement.
- 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 Contract Agreement.
- 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.

- 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.
- 6) It undertakes to continue to comply with all Applicable Laws with respect to its roles / obligations under this Contract Agreement.
- 7) There are no actions, suits, proceedings, or investigations pending before any court or before any other judicial, quasi- judicial or other authority, the outcome of which may result in the breach of this Contract 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 Contract Agreement.
- 8) **Deleted**
- 9) No representation or warranty by the Bidder contained herein or in any other document furnished by it to 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.
- 10) No sums, in cash or kind, have been paid or will be paid, by or on behalf of the Bidder, to any person by way of fees, commission or otherwise for securing the award of this Contract Agreement or for entering into this Contract Agreement or for influencing or attempting to influence any officer or employee of IHMCL in connection therewith.

1.2.41. Exit Management

1. The bidder shall submit a structured & detailed Transition and Exit Management plan to IHMCL along with the bid.
2. At the end of the contract period or during the contract period, if any other agency is identified or selected for providing services related to the scope of work, the bidder shall ensure that a proper and satisfactory handover is made to the other agency.
3. All risk during transition stage shall be properly documented by the bidder and mitigation measures shall be planned to ensure a smooth transition without any service disruption.
4. The bidder must ensure that no end of support products exist at time of transition.
5. The bidder must provide notice 06 (six) months in advance before starting the exit management activities.
6. The transition & exit management period will start 6 (six) months before the expiration of the contract. The bidder will provide shadow support for at least three months and secondary support for an additional three months before the end of the O&M period or termination of the contract or mutually exit, as applicable at no additional cost to IHMCL. In case of termination, the exit management period will start from effective date of termination, or such other date as may be decided by IHMCL but no later than 3 months from effective date of termination.
7. Closing off all critical open issues as on date of exit. All other open issues as on date of Exit shall be listed and provided to IHMCL.

8. The bidder shall provide all necessary knowledge transfer and transition support. The deliverables are indicated below:
- a) Updated transition plan on periodic basis
 - b) Complete documentation for the entire system handed over to the IHMCL /identified agency.
 - c) Handover of all AMC support related documents, credentials etc. for all OEM products supplied/maintained in the system.
 - d) Handover of the list of complete inventories of all assets created for the project.
 - e) Assisting the new agency/ IHMCL with the complete audit of the system including
 - f) Detailed walk-throughs and demos for the solution.
 - g) Handover of all data generated during the contract period, along with project documentation, including images, videos, and other applicable materials, shall be provided to IHMCL at no additional cost.
 - h) Knowledge transfer of the system to IHMCL to the satisfaction of the prescribed conditions per the specified timelines.
9. The bidder shall be released from the project once successful transition is completed by meeting the parameters defined for successful transition.

Schedule-A: Site of the Project

1. All NH Fee Plazas – Approx 1200 currently.

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
1	Bangalore	Mysuru	Somanahalli	16
2	Bangalore	Dharwad	Hattargi	12
3	Bangalore	Dharwad	Kognoli	12
4	Bangalore	Chitradurga	Guilalu Toll Plaza	12
5	Bangalore	Gulbarga	Mustapur	8
6	Bangalore	Bangalore	Hoskote Toll Plaza	14
7	Bangalore	Tumkur	Rajatadripura Toll Plaza	16
8	Bangalore	Bangalore	Bangalore- Nelamangala Plaza	21
9	Bangalore	Chitradurga	Hirehalli	18
10	Bangalore	Hasan	Shantigrama Toll Plaza	10
11	Bangalore	Dharwad	Nalavadi	10
12	Bangalore	Mysuru	Attigulipura Toll plaza	6
13	Bangalore	Bagalkot	Nagarhalla Toll Plaza	12
14	Bangalore	Dharwad	Bankapur	14
15	Bangalore	Hasan	Nelamangala Toll Plaza	14
16	Bangalore	Bangalore	Mulbagal Toll Plaza	8
17	Bangalore	Mysuru	Kannegala TOLL PLAZA	6
18	Bangalore	Mysuru	Sheshagiri halli Toll Plaza	11
19	Bangalore	Mysuru	Gananguru Toll Plaza	24
20	Bangalore	Hospet	Hitnal	18
21	Bangalore	Mysuru	K N Huindy	8
22	Bangalore	Hospet	Jajirakallu Toll Plaza	18
23	Bangalore	Bangalore	Sundrapalya	16
24	Bangalore	Gulbarga	Mangalgi	8
25	Bangalore	Bangalore	Hulikunte	18
26	Bangalore	Hasan	Chowlagere Toll Plaza	8
27	Bangalore	Mysuru	Sathyagala	10
28	Bangalore	Hospet	Shahapur	12
29	Bangalore	Chitradurga	Karjeevanhally Toll Plaza	12
30	Bangalore	Bagalkot	Kasaba Toll Plaza	12
31	Bangalore	Chitradurga	Chalageri Toll Plaza	12
32	Bangalore	Gulbarga	Kamkole	14
33	Bangalore	Chitradurga	Kananakatte	12
34	Bangalore	Bagalkot	Mulawad Toll Plaza	8
35	Bangalore	Hospet	Vanagiri	12
36	Bangalore	Bangalore	Devanahalli Toll Plaza	24

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
37	Bangalore	Hasan	Kadabhalli (Kirasave) Toll Plaza	10
38	Bangalore	Dharwad	Ganebail Toll Plaza	10
39	Bangalore	Bangalore	Hedaginabele Toll Plaza KM 14	18
40	Bangalore	Bangalore	Agrahara Toll Plaza KM 24	16
41	Bangalore	Bagalkot	Rampur Toll Plaza	8
42	Bangalore	Hasan	Bellur Toll Plaza	14
43	Bangalore	Mangalore	TALAPADY TOLL PLAZA	12
44	Bangalore	Gulbarga	Harwal TOLL PLAZA	4
45	Bangalore	Honanvar	Holegadde	12
46	Bangalore	Bangalore	ATTIBELLE	14
47	Bangalore	Bangalore	ELECTRONIC CITY Phase 1	14
48	Bangalore	Dharwad	Hirebgewadi toll plaza	10
49	Bangalore	Tumkur	Chokkenahalli toll plaza	10
50	Bangalore	Bangalore	Nangli Toll Plaza	10
51	Bangalore	Mysuru	Yeddore Toll Plaza	6
52	Bangalore	Honanvar	Shirur	12
53	Bangalore	Chitradurga	Thimmalapura	12
54	Bangalore	Bangalore	Bagepalli Toll Plaza	8
55	Bangalore	Chitradurga	Balenahalli Toll Plaza	10
56	Bangalore	Gulbarga	Khadernagar Toll Plaza	10
57	Bangalore	Chitradurga	Hebbalu Toll Plaza	16
58	Bangalore	Tumkur	Kulumapalya toll plaza	10
59	Bangalore	Mangalore	HEJAMADI TOLL PLAZA	18
60	Bangalore	Gulbarga	Kannole TOLL PLAZA	4
61	Bangalore	Mangalore	Brahamarakotlu Toll Plaza	6
62	Bangalore	Dharwad	Halligudi Fee Plaza	10
63	Bangalore	Mysuru	Kaniminike Toll Plaza	11
64	Bangalore	Bangalore	Nalluru Devanahalli	18
65	Bangalore	Tumkur	Linglapura	16
66	Bangalore	Bangalore	Krishnarajapura Plaza KM 52	16
67	Bangalore	Mangalore	Sasthan Toll Plaza	12
68	Bangalore	Honanvar	Belekeri	12
69	Bhopal	Chindwara	Khawasa Toll Plaza	18
70	Bhopal	Bhopal	Harshili Toll Plaza	16
71	Bhopal	Chindwara	Chikhalikala	6
72	Bhopal	Gwalior	Para Fee Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
73	Bhopal	Bhopal	Vishankheda	10
74	Bhopal	Ujjain	Tulheda Toll Plaza (Ch. 27+335)	8
75	Bhopal	Ujjain	Rojwas	18
76	Bhopal	Bhopal	Sonkacch	10
77	Bhopal	Chhatarpur	Pachwara Toll Plaza	10
78	Bhopal	Ratlam	NayapuraToll Plaza	16
79	Bhopal	Harda	Barwaikheda Toll Plaza	8
80	Bhopal	Gwalior	Ramnagar	8
81	Bhopal	Gwalior	Purankhedi Toll Plaza	12
82	Bhopal	Bhopal	Kachnaria	10
83	Bhopal	Bhopal	Talen Mirzapur Toll Plaza	10
84	Bhopal	Gwalior	Ratirampura	10
85	Bhopal	Indore	Jamli Toll Pllaza	10
86	Bhopal	Indore	Methwada	12
87	Bhopal	Chindwara	Madai Fee Plaza	8
88	Bhopal	Vidisha	Johariya Sheikh Toll Plaza	8
89	Bhopal	Chhatarpur	Devgaon Toll Plaza	10
90	Bhopal	Gwalior	Goragaon Toll Plaza	10
91	Bhopal	Rewa	Bela Toll Plaza	8
92	Bhopal	Ujjain	Nayakheda Toll Plaza (Ch. 95+058)	12
93	Bhopal	Ujjain	Antraliya Toll Plaza (Ch.109+670)	12
94	Bhopal	Ujjain	Semli Kakad Toll Plaza (Ch.112+500)	8
95	Bhopal	Gwalior	Mundiyar Toll Plaza	8
96	Bhopal	Rewa	Khadda Toll Plaza	6
97	Bhopal	Rewa	Kherwasani TOLL PLAZA	10
98	Bhopal	Ratlam	DalavadaToll Plaza	16
99	Bhopal	Ratlam	DhamnoddToll Plaza	18
100	Bhopal	Gwalior	Baretha or Jajau	10
101	Bhopal	Indore	SONWAY Toll Plaza	10
102	Bhopal	Indore	Dattigaon	12
103	Bhopal	Rewa	Sonvarsha Toll Plaza	6
104	Bhopal	Jabalpur	Bahoripar TOLL PLAZA	12
105	Bhopal	Rewa	Palhan Toll Plaza	6
106	Bhopal	Ratlam	DVE Bhuteda Plaza	16
107	Bhopal	Ujjain	Kharsodkhurd Toll Plaza	10
108	Bhopal	Indore	Khalghat Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
109	Bhopal	Sagar	Malthone	8
110	Bhopal	Sagar	Titarpani	8
111	Bhopal	Indore	IDTL Toll Plaza-B	8
112	Bhopal	Jabalpur	Mohtara Toll Plaza	10
113	Bhopal	Sagar	Bakori	8
114	Bhopal	Chindwara	Kelwad	6
115	Bhopal	Chindwara	Jungawani	6
116	Bhopal	Bhopal	Patariya Goyal Toll Plaza	10
117	Bhopal	Jabalpur	Shahpura	10
118	Bhopal	Ujjain	Palkhanda	10
119	Bhopal	Harda	Kundi Toll Plaza	10
120	Bhopal	Indore	IDTL Toll Plaza-A	16
121	Bhopal	Bhopal	Pagara Toll Plaza	12
122	Bhopal	Bhopal	Jogipur Toll Plaza	12
123	Bhopal	Jabalpur	Pandutala Toll Plaza	6
124	Bhopal	Ratlam	NeemthurToll Plaza	16
125	Bhopal	Chindwara	Jaitpur Toll Plaza (RO-Bhopal)	6
126	Bhopal	Rewa	Odaki Pipkhar	10
127	Bhopal	Rewa	Shadol/Dhuwar	6
128	Bhopal	Jabalpur	Saliwada Toll Plaza	6
129	Bhopal	Rewa	Mahauri Toll Plaza	8
130	Bhopal	Bhopal	Bagwada Fee Plaza	16
131	Bhopal	Bhopal	Khiriya Fee Plaza	12
132	Bhopal	Vidisha	Newli Fee Plaza	8
133	Bhopal	Ratlam	GarothToll Plaza	14
134	Bhopal	Ratlam	TimarwaniToll Plaza	8
135	Bhopal	Harda	Baharagaon Toll Plaza	10
136	Bhopal	Ujjain	Semalkhedhi Fee Plaza	6
137	Bhopal	Rewa	Patharahata Toll Plaza	6
138	Bhopal	Ujjain	Khedakhajuria Toll Plaza(Ch. 40+500)	12
139	Bhopal	Sagar	Chitora	8
140	Bhopal	Gwalior	Mud Kheda	12
141	Bhopal	Rewa	Pathoroundi Toll Plaza	6
142	Bhopal	Chhatarpur	Ujara	8
143	Bhopal	Bhopal	Sehatganj	6
144	Bhopal	Gwalior	Raksha Toll Plaza	8
145	Bhopal	Gwalior	Dagrai Toll Plaza	10
146	Bhopal	Harda	Gadha Plaza	10
147	Bhopal	Indore	Mengaon Toll Plaza	12
148	Bhopal	Indore	IVRCL ramp plaza	12

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
149	Bhopal	Ujjain	Barkheda Barod Toll Plaza (Ch. 74+684)	12
150	Bhopal	Gwalior	Mehra Toll Plaza	8
151	Bhopal	Gwalior	Panihar	12
152	Bhopal	Ujjain	Chapra	18
153	Bhopal	Chhatarpur	Mungwari Toll Plaza	6
154	Bhopal	Rewa	Majhgawan	6
155	Bhopal	Chindwara	Fulara	6
156	Bhopal	Gwalior	Choundha	10
157	Bhopal	Indore	Mandwara	10
158	Bhopal	Chhatarpur	Lohari Toll Plaza	10
159	Bhopal	Jabalpur	Sarasdol Toll Plaza	18
160	Bhopal	Ujjain	Nipaniya Fee Plaza	6
161	Bhopal	Khandwa	Chhegaon Makhan Toll Plaza	8
162	Bhopal	Sagar	Kishanpura toll plaza	8
163	Bhopal	Ujjain	Mana Toll Plaza	8
164	Bhopal	Ujjain	Mundla Sondhiya Toll Plaza (Ch. 68+220)	12
165	Bhopal	Sagar	Karrapur Fee Plaza	8
166	Bhubaneswar	Chandikhole	Bhagada Narayanpur Toll Plaza	12
167	Bhubaneswar	Bhubaneswar	Pipili Toll Plaza	10
168	Bhubaneswar	Chandikhole	SERGARH TOLL PLAZA	8
169	Bhubaneswar	Bhubaneswar	Bandalo/Manguli Toll Plaza	18
170	Bhubaneswar	Keonjhar	Jamudihi Toll Plaza	10
171	Bhubaneswar	Sambalpur	Nunmath Toll Plaza	6
172	Bhubaneswar	Sambalpur	Pudapada Nildungri Toll Plaza	12
173	Bhubaneswar	Keonjhar	Bideibadkudar	14
174	Bhubaneswar	Keonjhar	Khireitangiri Toll Plaza	12
175	Bhubaneswar	Sambalpur	Kadaligarh Toll Plaza	6
176	Bhubaneswar	Keonjhar	Kantaghar	10
177	Bhubaneswar	Keonjhar	Banajodi	10
178	Bhubaneswar	Keonjhar	Janasanpur Toll Plaza	12
179	Bhubaneswar	Keonjhar	Darjing Toll Plaza	10
180	Bhubaneswar	Sambalpur	Hatibari Toll Plaza	10
181	Bhubaneswar	Sambalpur	Sambalpur Baragarh Tollways	8
182	Bhubaneswar	Chandikhole	Srirampur toll plaza	20
183	Bhubaneswar	Dhenkanal	Khairamunda Toll Plaza	8
184	Bhubaneswar	Sambalpur	Dakuamunda Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
185	Bhubaneswar	Chandikhole	Padmanavapur Toll Plaza	10
186	Bhubaneswar	Keonjhar	Kandra Toll Plaza	10
187	Bhubaneswar	Chandikhole	Jharpokharia Toll Plaza	10
188	Bhubaneswar	Keonjhar	Balani plaza	10
189	Bhubaneswar	Dhenkanal	Itapa Toll Plaza	10
190	Bhubaneswar	Behrampur	Karapadu Toll Plaza	10
191	Bhubaneswar	Behrampur	Gurapali Toll Plaza	12
192	Bhubaneswar	Sambalpur	Govindpur Toll Plaza	4
193	Bhubaneswar	Keonjhar	Hasanpur	10
194	Bhubaneswar	Behrampur	Gudipada or Gangapada Toll Plaza	12
195	Bhubaneswar	Dhenkanal	Khamara Toll Plaza	6
196	Bhubaneswar	Chandikhole	Sukhuapada Toll Plaza	10
197	Bhubaneswar	Sambalpur	Bolangir	6
198	Bhubaneswar	Sambalpur	Rangamatia	6
199	Bhubaneswar	Dhenkanal	Rampey Toll Plaza	8
200	Chandigarh	Bhiwani	Amrawali Khera Toll Plaza	10
201	Chandigarh	Chandigarh	BHAGOMAJRA TOLL PLAZA	16
202	Chandigarh	Bhiwani	Gulzarpura Tharua	20
203	Chandigarh	Bhiwani	Bahri Toll Plaza	12
204	Chandigarh	Bhiwani	Kheri Sharaf Ali Toll Plaza	12
205	Chandigarh	Chandigarh	Chandimandir Toll Plaza	16
206	Chandigarh	Ludhiana	Darapur Toll Plaza	10
207	Chandigarh	Bhiwani	Bisalwas Toll Plaza	6
208	Chandigarh	Chandigarh	Paind Toll Plaza	10
209	Chandigarh	Bhiwani	Alewa	20
210	Chandigarh	Ambala	Gharonda Toll Plaza	33
211	Chandigarh	Amritsar	JATL Dhilwan Toll Plaza	12
212	Chandigarh	Hisar	Narwana	12
213	Chandigarh	Bhatinda	Zidda Toll Plaza	10
214	Chandigarh	Ludhiana	Chahar	16
215	Chandigarh	Amritsar	LADPALWAN TOLL PLAZA	10
216	Chandigarh	Hisar	Badopatti	10
217	Chandigarh	Bhatinda	Shekhpura Toll Plaza	6
218	Chandigarh	Bhatinda	Kala Tibba Toll Plaza	8
219	Chandigarh	Ludhiana	Ferozeshah Toll Plaza	8
220	Chandigarh	Bhiwani	Dadri Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
221	Chandigarh	Amritsar	Bhagupur Toll Plaza	6
222	Chandigarh	Hisar	Abubshehar Toll Plaza	4
223	Chandigarh	Amritsar	Waryam Nangal	10
224	Chandigarh	Bhatinda	Lehra Begga Toll Plaza	10
225	Chandigarh	Chandigarh	GMR dapar	12
226	Chandigarh	Bhatinda	Balluana Toll Plaza	9
227	Chandigarh	Bhiwani	Pabanawa Toll Plaza	20
228	Chandigarh	Ludhiana	Karahewala Toll Plaza	6
229	Chandigarh	Ludhiana	Arifke Fee Plaza	6
230	Chandigarh	Ambala	Ghagghar Toll Plaza	17
231	Chandigarh	Ambala	Saini Majra Toll Plaza	10
232	Chandigarh	Bhatinda	Kot Karora Kalan Plaza	12
233	Chandigarh	Chandigarh	beharpur	10
234	Chandigarh	Bhiwani	Kharkhara Toll Plaza	10
235	Chandigarh	Sonepat	Hassangarh	16
236	Chandigarh	Amritsar	JATL Nijerpura Toll Plaza	8
237	Chandigarh	Hisar	Khuian Malkna	14
238	Chandigarh	Sonepat	Chhara Toll Plaza	14
239	Chandigarh	Bhiwani	Bainsi Toll Plaza	12
240	Chandigarh	Hisar	Alika Toll Plaza	4
241	Chandigarh	Sonepat	Puthi	10
242	Chandigarh	Bhiwani	Jamni	34
243	Chandigarh	Chandigarh	Dhareri Jattan Toll Plaza	10
244	Chandigarh	Chandigarh	Jaloli Fee Plaza	14
245	Chandigarh	Bhiwani	Chandlana Toll Plaza	12
246	Chandigarh	Bhiwani	Kherari Toll Plaza	12
247	Chandigarh	Hisar	Shergarh Toll Plaza	4
248	Chandigarh	Sonepat	Humanyupur	20
249	Chandigarh	Chandigarh	Dharer Azizpur Toll Plaza	12
250	Chandigarh	Hisar	Mayar Toll Plaza	12
251	Chandigarh	Amritsar	Manan Toll Plaza	6
252	Chandigarh	Sonepat	Issapur Kheri	10
253	Chandigarh	Jalandhar	Chak Bamniya Toll Plaza	10
254	Chandigarh	Chandigarh	MilkMajra Toll Plaza	14
255	Chandigarh	Chandigarh	Kalajhar Toll Plaza	12
256	Chandigarh	Hisar	Bhavdeen Plaza	14
257	Chandigarh	Jalandhar	Harsa Mansar	7
258	Chandigarh	Ludhiana	Chaukiman Toll plaza	10
259	Chandigarh	Sonepat	Jharoti Toll Plaza	16
260	Chandigarh	Bhiwani	Mohna Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
261	Chandigarh	Bhatinda	Khuian Sarvar Plaza	8
262	Chandigarh	Hisar	Jogewal Toll Plaza	8
263	Chandigarh	Chandigarh	Banaundi Toll Plaza	10
264	Chandigarh	Sonepat	Jat Gangaicha Toll Plaza	10
265	Chandigarh	Sonepat	Dahar Toll Plaza	10
266	Chandigarh	Sonepat	Dighal Toll Plaza	10
267	Chandigarh	Amritsar	Usma	10
268	Chandigarh	Hisar	Chaudhrivyas	10
269	Chandigarh	Hisar	Khatkar Toll plaza	10
270	Chandigarh	Sonepat	Makrauli Kalan Toll Plaza	10
271	Chandigarh	Sonepat	Bhagan Toll Plaza	26
272	Chandigarh	Bhiwani	Bass	6
273	Chandigarh	Ludhiana	Mallian Plaza	8
274	Chandigarh	Bhiwani	Kilazafargarh Toll Plaza	10
275	Chandigarh	Bhatinda	Pathrala entry	4
276	Chandigarh	Bhiwani	Bawani Khera	10
277	Chandigarh	Ambala	L&T PANIPAT	21
278	Chandigarh	Bhatinda	Badbar	10
279	Chandigarh	Hisar	Landhari Toll Plaza	14
280	Chandigarh	Jalandhar	Behram	10
281	Chandigarh	Jalandhar	Bachhwan (Bachhuan)	10
282	Chandigarh	Hisar	Madina Toll Plaza	12
283	Chandigarh	Sonepat	Kitlana	10
284	Chandigarh	Bhiwani	Peont	8
285	Chandigarh	Bhiwani	Morwala Toll Plaza	6
286	Chandigarh	Bhiwani	Buchawas Toll Plaza	12
287	Chandigarh	Bhiwani	Jat Guwana Toll Plaza	20
288	Chandigarh	Bhiwani	Bhalkhi Toll Plaza	6
289	Chandigarh	Bhiwani	Chabri Toll Plaza	10
290	Chandigarh	Sonepat	Bamla Toll Plaza	12
291	Chandigarh	Bhatinda	Abul Khurana	10
292	Chandigarh	Hisar	Dabwali Toll Plaza	4
293	Chandigarh	Sonepat	Jhinjholi Toll Plaza	16
294	Chandigarh	Bhiwani	Kharak Pandwa	34
295	Chandigarh	Sonepat	Bartana Toll Plaza	16
296	Chandigarh	Sonepat	Chandi Toll Plaza	18
297	Chandigarh	Bhatinda	Jassi Baghwali	16
298	Chandigarh	Chandigarh	GHULAL Toll Plaza	16
299	Chandigarh	Ludhiana	Ladowal Toll Plaza	32
300	Chandigarh	Ambala	Thana Village Toll Plaza	12
301	Chandigarh	Amritsar	Chiddan Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
302	Chandigarh	Jalandhar	Chollang	10
303	Chandigarh	Sonepat	Rohad Toll Plaza	14
304	Chandigarh	Chandigarh	Chottian User fee Plaza	8
305	Chandigarh	Hisar	Chautala Toll Plaza	4
306	Chandigarh	Sonepat	Mohana Toll Plaza	16
307	Chandigarh	Chandigarh	Bajheri Toll Plaza	16
308	Chennai	Viluppuram	Kariyamanglam Toll Plaza	8
309	Chennai	Krishnagiri	Karagadahalli Toll Plaza	20
310	Chennai	Viluppuram	Vikkravandi Toll Plaza	16
311	Chennai	Kancheepuram	Chennasamaduram Toll Plaza	10
312	Chennai	Salem	Keezhkuppam Toll Plaza	6
313	Chennai	Puducherry	Gangarampalayam Toll Plaza	16
314	Chennai	Trichy	Elurpatti Toll Plaza	8
315	Chennai	Viluppuram	Nagampatti Toll Plaza	8
316	Chennai	Krishnagiri	Kadhavani Toll Plaza	10
317	Chennai	Viluppuram	Naglikondan Toll Plaza	8
318	Chennai	Coimbatore	IVRCL Chengapally Tollways Limited (Kaniyur)	16
319	Chennai	Viluppuram	Kallakudi Toll plaza	16
320	Chennai	Coimbatore	Velampatti fee plaza	8
321	Chennai	Salem	H. Pudhupatti	8
322	Chennai	Puducherry	Kotthatai	18
323	Chennai	Puducherry	Seliyamedu Toll Plaza	10
324	Chennai	Chennai-2	Vanagaram Toll Plaza	10
325	Chennai	Salem	Vaiguntham Toll Plaza	10
326	Chennai	Viluppuram	Mettupatti Plaza	10
327	Chennai	Viluppuram	Nathakkarai Plaza	10
328	Chennai	Viluppuram	Thennamadevi Toll Plaza	6
329	Chennai	Salem	Vijayamangalam Toll Plaza	10
330	Chennai	Chennai-2	Pattarai Toll Plaza	6
331	Chennai	Viluppuram	Kurungudi	10
332	Chennai	Chennai-2	SURAPATTU TOLL PLAZA	12
333	Chennai	Salem	Omalur Toll Plaza	12
334	Chennai	Salem	Rasampalayam Plaza	12
335	Chennai	Viluppuram	Veeracholapuram Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
336	Chennai	Krishnagiri	Krishnagiri Plaza	16
337	Chennai	Salem	L&T Krishnagiri Thopur Toll Plaza(Palayam)	14
338	Chennai	Chennai	Mathur Toll Plaza	10
339	Chennai	Chengalpattu	Athur Toll Plaza	10
340	Chennai	Kancheepuram	SriPerumbadur	10
341	Chennai	Viluppuram	Managethi Toll Plaza	10
342	Chennai	Coimbatore	Madukkarai Toll Plaza	5
343	Chennai	Coimbatore	Pongalur	8
344	Chennai	Krishnagiri	Vaniyambadi Toll Plaza	14
345	Chennai	Krishnagiri	Pallikonda Toll Plaza	20
346	Chennai	Chennai	Nallur Toll Plaza	14
347	Chennai	Puducherry	Pondicherry Tindivanam Toll P	8
348	Chennai	Chennai-2	S.V Puram Toll Plaza	12
349	Chennai	Chengalpattu	Paranur	12
350	Chennai	Salem	Ponnalagaram Toll Plaza	6
351	Chennai	Viluppuram	Enamkariyandal Toll Plaza	6
352	Chennai	Viluppuram	Vallam Toll Plaza	6
353	Chennai	Coimbatore	Vellar	6
354	Chennai	Coimbatore	Ammapettai Toll Plaza	6
355	Dehradun	Najibabad	Jagtapur Patti Toll Plaza	12
356	Dehradun	Roorkee	Sayyad Mazra Toll Plaza	16
357	Dehradun	Roorkee	Bhadarabad TOLL PLAZA	14
358	Dehradun	Rudrapur	DEORIYA	14
359	Dehradun	Roorkee	Sarsawa Toll Plaza	16
360	Dehradun	Rudrapur	Nagla Toll Plaza	8
361	Dehradun	Roorkee	Chhapar TOLL PLAZA	14
362	Dehradun	Roorkee	Ganeshpur Toll plaza	16
363	Dehradun	Vasant Vihar	Lachiwala Toll Plaza	12
364	Dehradun	Rudrapur	Banushi Toll Plaza	8
365	Dehradun	Najibabad	Puraini Toll Plaza	12
366	Dehradun	Vasant Vihar	Shahpur Kalyanpur Fee Plaza	10
367	Dehradun	Roorkee	Bhagwanpur Toll Plaza	16
368	Dehradun	Rudrapur	Koyla TOLL PLAZA	12
369	Delhi	Dwarka	IGI Toll Plaza	1
370	Delhi	Meerut	Chota Mawana	16
371	Delhi	Dwarka	Mundka Toll Plaza	24

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
372	Delhi	Baghpat	Khyawadi Fee Plaza	12
373	Delhi	EPE	Beel Akbarpur	20
374	Delhi	EPE	Main Plaza Village Jakhauli	18
375	Delhi	EPE	Fatehpur Rampur	12
376	Delhi	Baghpat	Bhuni Toll Plaza	8
377	Delhi	EPE	Mavikala	12
378	Delhi	EPE	Maujpur	12
379	Delhi	EPE	Duhai	17
380	Delhi	EPE	Dasana	16
381	Delhi	Meerut	Bhanera	16
382	Delhi	Baghpat	Badgaon Interchange	8
383	Delhi	Sohna	Khalilpur NH fee plaza	16
384	Delhi	Sohna	Kalinger Fee Plaza	6
385	Delhi	Meerut	Mujhera Toll Plaza	16
386	Delhi	Ghaziabad	Sarai Kale Khan DME KM 0000	8
387	Delhi	Ghaziabad	Indirapuram Plaza DME KM 9500	1
388	Delhi	Ghaziabad	Bhojpur Plaza DME KM 4570	8
389	Delhi	Ghaziabad	Kashi Plaza DME KM 5823	23
390	Delhi	Ghaziabad	Dundahera Plaza DME KM 1990	1
391	Delhi	Ghaziabad	Rasoolpur Sikrod DME KM 3134	4
392	Delhi	Ghaziabad	Dasna Plaza DME KM 2760	1
393	Delhi	Baghpat	Jagaheri fee plaza	8
394	Delhi	Meerut	Sivaya Toll Plaza	12
395	Delhi	Dwarka	Kherki Daula Toll Plaza	27
396	Delhi	Rewari	Ghamroj Sohna Road Toll Plaza	24
397	Delhi	Ghaziabad	Badagaom Toll Plaza	9
398	Delhi	Mathura	Mahuvan Toll Plaza	14
399	Delhi	EPE	Chhajju Nagar	18
400	Delhi	Mathura	Karman Toll Plaza	18
401	Delhi	Sohna	Ghata Samsabad Fee Plaza	16
402	Delhi	Baghpat	Jiwana Toll plaza	10
403	Delhi	Mathura	Badarpur faridabad Toll Plaza	35
404	Delhi	Meerut	Kurana Toll Plaza	14

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
405	Delhi	Mathura	Gadpuri Toll Plaza	26
406	Delhi	Sohna	Hilalpur Fee Plaza	32
407	Delhi	Mathura	Kiranj Toll Plaza	16
408	Delhi	Baghpat	Patnipratapur	8
409	Delhi	Baghpat	Jalalpur Interchange	12
410	Delhi	Baghpat	Karaunda Interchange	12
411	Delhi	Baghpat	Bantikheda Interchange	8
412	Delhi	Ghaziabad	Chhajarsi Toll Plaza	18
413	Delhi	Rewari	Kathuwas Toll Plaza	20
414	Delhi	Baghpat	Baleni Fee Plaza	12
415	Delhi	Baghpat	Tamsabad Toll Plaza	8
416	Delhi	Dwarka	Bijwasan	36
417	Delhi	Baghpat	Katha Toll Plaza	20
418	Delhi	Baghpat	Tatiri Interchange	18
419	Delhi	Baghpat	Loni Toll Plaza	14
420	Delhi	Rewari	Sirohi Bahali TOLL PLAZA	18
421	Delhi	Sohna	Sheetal Fee Plaza	16
422	Delhi	Sohna	Pinan Fee Plaza	16
423	Delhi	Baghpat	Dabhedi Toll Plaza	10
424	Delhi	Ghaziabad	Peelak Toll Plaza	12
425	Delhi	Baghpat	Rasoolpur Fee Plaza	20
426	Delhi	Dwarka	Mundka Toll Plaza MLFF	24
427	Gandhinagar	Surat	Ena Toll Plaza	13
428	Gandhinagar	Palanpur	TP29 Bakutra	16
429	Gandhinagar	Surat	Choryasi Toll Plaza	16
430	Gandhinagar	Rajkot	Pithadiya Toll Plaza	10
431	Gandhinagar	Bhavnagar	Velva Toll Plaza	14
432	Gandhinagar	Ahmedabad	Ahmedabad Toll Plaza	8
433	Gandhinagar	Ahmedabad	Ahmedabad Ring Road 2	13
434	Gandhinagar	Gandhidham	Samakhiali	18
435	Gandhinagar	Ahmedabad	Nadiad Toll Plaza	26
436	Gandhinagar	Ahmedabad	Vantada Toll Plaza	10
437	Gandhinagar	Gandhidham	Vaghasiya Toll Plaza	12
438	Gandhinagar	Rajkot	Dari Toll Plaza	10
439	Gandhinagar	Palanpur	TP28 Varonosari	16
440	Gandhinagar	Rajkot	Gorsar Toll Plaza	8
441	Gandhinagar	Palanpur	TP27 Jorawargadh	16
442	Gandhinagar	Godhra	Bhatwada Toll Plaza	8
443	Gandhinagar	Rajkot	Vanana Toll Plaza	8
444	Gandhinagar	Godhra	Dodaka Toll Plaza	21
445	Gandhinagar	Palanpur	TP24 Nana Masera	6

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
446	Gandhinagar	Surat	Bhagwada Toll Plaza	14
447	Gandhinagar	Ahmedabad	Anand Toll Plaza	8
448	Gandhinagar	Ahmedabad	Pithai Toll Plaza	8
449	Gandhinagar	Rajkot	Bharudi Toll Plaza	10
450	Gandhinagar	Gandhidham	Makhel Toll Plaza	10
451	Gandhinagar	Godhra	Limdi Toll Plaza	6
452	Gandhinagar	Rajkot	Kuchadi Toll Plaza	12
453	Gandhinagar	Palanpur	Bhordu Toll Plaza	8
454	Gandhinagar	Rajkot	Tarana Toll Plaza	10
455	Gandhinagar	Ahmedabad	Vadodara Toll Plaza	18
456	Gandhinagar	Ahmedabad	Vasad	14
457	Gandhinagar	Palanpur	Bhiladi Toll Plaza	10
458	Gandhinagar	Palanpur	Bhalgam	12
459	Gandhinagar	Gandhidham	Mokha Toll Plaza	16
460	Gandhinagar	Godhra	Mandva Toll Plaza	20
461	Gandhinagar	Rajkot	Gadoi Toll Plaza	10
462	Gandhinagar	Palanpur	Panthawada toll plaza	8
463	Gandhinagar	Bhavnagar	Rohisa Toll Plaza	12
464	Gandhinagar	Godhra	SanpaToll Plaza	24
465	Gandhinagar	Godhra	DahegamToll Plaza	49
466	Gandhinagar	Palanpur	TP26 Tharad	16
467	Gandhinagar	Bhavnagar	Nageshri Toll Plaza	12
468	Gandhinagar	Gandhidham	Bhirandiyara	6
469	Gandhinagar	Ahmedabad	Bhat Village Plaza	14
470	Gandhinagar	Godhra	L&T Vadodra (Bharthana)	22
471	Gandhinagar	Surat	Boriach Toll Plaza	18
472	Gandhinagar	Ahmedabad	Vavadi Toll Plaza	8
473	Gandhinagar	Palanpur	Varahi Toll Plaza	10
474	Gandhinagar	Rajkot	Dhumiyani Toll Plaza	10
475	Gandhinagar	Palanpur	TP25 Budhanpur	6
476	Gandhinagar	Surat	Moti Naroli	26
477	Gandhinagar	Surat	Ena VME	13
478	Gandhinagar	Gandhidham	Varshamedi Fee Plaza	10
479	Gandhinagar	Ahmedabad	JalalpurGodhaneshvar tollplaza	12
480	Gandhinagar	Ahmedabad	Vejalka toll plaza	12
481	Gandhinagar	Ahmedabad	Kheda	14
482	Gandhinagar	Ahmedabad	Kathpur Toll Plaza	10
483	Gandhinagar	Gandhidham	Surajbari Toll Plaza	16
484	Gandhinagar	Palanpur	UNDVARIYA TOLL PLAZA	8
485	Gandhinagar	Surat	Bhatia Toll Plaza	17

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
486	Gandhinagar	Bhavnagar	Bhadbhid Fee Plaza	14
487	Gandhinagar	Rajkot	Dharampur Danta Toll Plaza	10
488	Gandhinagar	Gandhidham	Kukma Toll Plaza	10
489	Gandhinagar	Ahmedabad	Ahmedabad (Ring Road) Toll Plaza	13
490	Gandhinagar	Palanpur	KHEMANA TOLL PLAZA	8
491	Gandhinagar	Surat	Mandal Toll Plaza	18
492	Gandhinagar	Rajkot	Okhamadi Toll Plaza	12
493	Gandhinagar	Bhavnagar	Kobadi Toll Plaza	14
494	Gandhinagar	Bhavnagar	Sundarpara	14
495	Gandhinagar	Godhra	FajalpurToll Plaza	28
496	Gandhinagar	Godhra	SamiyalaToll Plaza	40
497	Gandhinagar	Ahmedabad	Valinda Toll Plaza	12
498	Goa	Goa	Sukekulan Mopa Toll Plaza	12
499	Guwahati	Shillong	Lomshinong	6
500	Guwahati	Shillong	Deingpasoh Toll Plaza	6
501	Guwahati	Shillong	Pasyih Toll Plaza	6
502	Guwahati	Haflong	Manderdisa	6
503	Guwahati	Haflong	Balachera	6
504	Guwahati	Bongoigaon	Dahalapara Toll Plaza	10
505	Guwahati	Guwahati	Raha	10
506	Guwahati	Guwahati	Mikirati Hawgaon Toll Plaza	6
507	Guwahati	Bongoigaon	TeliparaToll Plaza	8
508	Guwahati	Guwahati	Rangamati Fee Plaza	10
509	Guwahati	Bongoigaon	Patgaon Toll Plaza	6
510	Guwahati	Shillong	Pahammawlein Toll Plaza	7
511	Guwahati	Guwahati	Nazirakhat Toll Plaza	6
512	Guwahati	Guwahati	Madanpur Toll Plaza	8
513	Guwahati	Bongoigaon	Galia Toll Plaza	8
514	Guwahati	Guwahati	Sulung Fee Plaza	8
515	Hyderabad	Khammam	Painampalli Toll Plaza	10
516	Hyderabad	Hyderabad	Pantangi	16
517	Hyderabad	Khammam	Alagapada Toll Plaza	8
518	Hyderabad	Mancherial	Mandamarri Toll Plaza	8
519	Hyderabad	Warangal	Guduru Toll Plaza	16
520	Hyderabad	Nirmal	Indalwai	12
521	Hyderabad	Warangal	Komalla Fee Plaza	14
522	Hyderabad	Nirmal	Rolmamda Toll Plaza	12
523	Hyderabad	Nirmal	Manoharabad	12

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
524	Hyderabad	Hyderabad	Konetipuram	6
525	Hyderabad	Warangal	Komatipalli Fee Plaza	10
526	Hyderabad	Khammam-2	Singarajupally Toll Plaza	6
527	Hyderabad	Nirmal	Ganjol Toll Plaza	12
528	Hyderabad	Warangal	Muthojipet	5
529	Hyderabad	Khammam	Gowraram Toll Plaza	6
530	Hyderabad	Gajwel	Gummadidala Toll Plaza	12
531	Hyderabad	Mancherla	Sarandi	10
532	Hyderabad	Hyderabad	Raikal Toll Plaza	14
533	Hyderabad	Gajwel	Dharmaram Toll Plaza	18
534	Hyderabad	Gajwel	Taddanpally Toll Plaza	8
535	Hyderabad	Hyderabad	Chillakallu	12
536	Hyderabad	Nirmal	Bhiknoor Toll Plaza	8
537	Hyderabad	Mahabubnagar	Kachwar Fee Plaza	6
538	Hyderabad	Mahabubnagar	Sakapur Toll plaza	12
539	Hyderabad	Hyderabad	Kadthal Toll Plaza	6
540	Hyderabad	Hyderabad	Chitlapalli Toll Plaza	12
541	Hyderabad	Khammam-2	Yerkaram Toll Plaza	8
542	Hyderabad	Khammam	Kothagudem Toll Plaza	6
543	Hyderabad	Khammam-2	Singarenipalli Toll Plaza	16
544	Hyderabad	Warangal	Medipally	6
545	Hyderabad	Hyderabad	Koralaphad	12
546	Hyderabad	Nirmal	Pippalwada	12
547	Hyderabad	Warangal	Jawahar Nagar Toll Plaza	8
548	Hyderabad	Khammam	Yerraboinapalli	8
549	Hyderabad	Mahabubnagar	Pullur Toll Plaza	12
550	Hyderabad	Warangal	Chinthapally Toll Plaza	6
551	Hyderabad	Nirmal	Dilawarpur fee plaza	4
552	Hyderabad	Hyderabad	Munnanur Toll Plaza	8
553	Hyderabad	Khammam	Chintagudem	8
554	Jaipur	Jaisalmer	Parewar Toll Plaza	2
555	Jaipur	Udaipur	Mujras Toll Plaza	10
556	Jaipur	Jodhpur	UTHMAN	14
557	Jaipur	Jaipur	Daulatpura Toll Plaza	17
558	Jaipur	Jaipur	Thikariya Toll Plaza	16
559	Jaipur	Jaipur	Manoharpura Toll plaza	12
560	Jaipur	Ajmer	Gegal	18
561	Jaipur	Jodhpur	Binaswas Toll Plaza	10
562	Jaipur	Udaipur	Narayanpura Toll Plaza	20
563	Jaipur	Dausa	Bonli Toll Plaza	8
564	Jaipur	Udaipur	Bhagat Talai Toll Plaza	8

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
565	Jaipur	Jaisalmer	Kair Fakir Ki Dhani toll plaza	8
566	Jaipur	Jodhpur	Deogarh Toll Plaza	12
567	Jaipur	Ajmer	Pipalaz	18
568	Jaipur	Udaipur	Jojro Ka Kheda Toll Plaza	22
569	Jaipur	Kota	Similiya Toll Plaza	8
570	Jaipur	Udaipur	Mandawara Toll Plaza	12
571	Jaipur	Ajmer	Tamdoli	8
572	Jaipur	Bikaner	Patroda Toll Plaza	12
573	Jaipur	Bikaner	Gangajali Toll Plaza	2
574	Jaipur	Ajmer	Jaswantpura Toll Plaza	10
575	Jaipur	Jodhpur	Manaklaw TP-02	12
576	Jaipur	Hanumangarh	3M Toll Plaza	8
577	Jaipur	Kota	Balapura Toll Plaza	20
578	Jaipur	Dausa	BEDOLI TOLL PLAZA	12
579	Jaipur	Jaipur	Hingonia Toll Plaza	28
580	Jaipur	Jaipur	Shahjahanpur Toll Plaza	25
581	Jaipur	Dausa	Rajadhok Toll Plaza	8
582	Jaipur	Jaisalmer	Nimbasar	8
583	Jaipur	Kota	Methoon Toll Plaza	6
584	Jaipur	Bikaner	Barsalpur Toll Plaza	2
585	Jaipur	Hanumangarh	Deshnok Toll Plaza	12
586	Jaipur	Bikaner	Parwa Toll Plaza	6
587	Jaipur	Kota	Chechat Toll Plaza	10
588	Jaipur	Kota	Fatehpur Toll Plaza	8
589	Jaipur	Dausa	Ludhwai Toll Plaza	10
590	Jaipur	Dausa	Amoli Toll Plaza	10
591	Jaipur	Jaipur	Dhadhar	8
592	Jaipur	Udaipur	Aroli	6
593	Jaipur	Udaipur	Khandi Obri Toll Plaza	17
594	Jaipur	Hanumangarh	Malkisar Toll Plaza	16
595	Jaipur	Hanumangarh	Norangdesar Toll Plaza	16
596	Jaipur	Hanumangarh	Chohilanwali Toll Plaza	16
597	Jaipur	Dausa	BAGRANA TOLL PLAZA	18
598	Jaipur	Dausa	SUNDAR PURA TOLL PLAZA	12
599	Jaipur	Dausa	GELLA KI NANGAL TOLL PLAZA	12
600	Jaipur	Dausa	KURI KHURD TOLL PLAZA	24
601	Jaipur	Udaipur	Negadiya Toll Plaza	12

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
602	Jaipur	Jaipur	Harimma	8
603	Jaipur	Jodhpur	Netra	6
604	Jaipur	Jaipur	Lasedi	8
605	Jaipur	Dausa	Kusthala Toll Plaza	11
606	Jaipur	Kota	Gopalpura Toll Plaza	40
607	Jaipur	Jaipur	Sonwa Toll Plaza	8
608	Jaipur	Jaipur	Tatiawas Toll Plaza	12
609	Jaipur	Jodhpur	Raipur	10
610	Jaipur	Udaipur	Rupakheda Toll Plaza	10
611	Jaipur	Ajmer	Banthri	8
612	Jaipur	Jodhpur	Khanori Toll Plaza	8
613	Jaipur	Kota	Mandana Toll Plaza	10
614	Jaipur	Dausa	Titoli	12
615	Jaipur	Jodhpur	Biratiya Toll Plaza	10
616	Jaipur	Kota	Beer Mandi Toll Plaza	16
617	Jaipur	Dausa	Badkapara Fee Plaza	10
618	Jaipur	Jodhpur	Laxman Nagar Toll Plaza	16
619	Jaipur	Jodhpur	Dangiyawas	12
620	Jaipur	Udaipur	Padla Hadliya Plaza	6
621	Jaipur	Jaisalmer	Ramgarh Toll Plaza	2
622	Jaipur	Jodhpur	Indranagar	10
623	Jaipur	Kota	Kota Bypass Toll Plaza	10
624	Jaipur	Jaisalmer	Hathitala Toll Plaza	8
625	Jaipur	Dausa	Rajora Khurd	10
626	Jaipur	Jaisalmer	Ramdevara	8
627	Jaipur	Udaipur	Dhulepura Toll Plaza	10
628	Jaipur	Kota	Karadiya Toll Plaza	40
629	Jaipur	Kota	Laban Toll Plaza	16
630	Jaipur	Dausa	Sikandra Toll Plaza	8
631	Jaipur	Udaipur	Lambiya Kalan	22
632	Jaipur	Ajmer	Khedi	22
633	Jaipur	Udaipur	Bassi	10
634	Jaipur	Jaipur	Sitarampura Toll Plaza	28
635	Jaipur	Dausa	Dungarpur Fee Plaza	28
636	Jaipur	Hanumangarh	Jaitpur Toll Plaza (RO-Jaipur)	16
637	Jaipur	Udaipur	Dakan Kotra	14
638	Jaipur	Kota	Zalimpura Toll Plaza	16
639	Jaipur	Jodhpur	TP23 Mokhpura	16
640	Jaipur	Hanumangarh	14SSW	12
641	Jaipur	Jaipur	Kishangarh Plaza	17
642	Jaipur	Jaipur	Barkheda Toll Plaza	14

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
643	Jaipur	Kota	Kishorepura Toll Plaza	10
644	Jaipur	Jodhpur	Doli Toll Plaza	8
645	Jaipur	Dausa	Kondar Toll Plaza	8
646	Jaipur	Jaipur	Nekawala	6
647	Jaipur	Ajmer	Para Toll Plaza	6
648	Jaipur	Kota	Gumanpura	8
649	Jaipur	Jodhpur	Jasnathnagar Toll Plaza	8
650	Jaipur	Udaipur	Khachrol	6
651	Jaipur	Jaisalmer	Lathi	8
652	Jaipur	Ajmer	Kuchera Toll Plaza	6
653	Jaipur	Ajmer	Baggar Toll Plaza	6
654	Jaipur	Udaipur	Gogunda	10
655	Jaipur	Jodhpur	Morani Toll Plaza	8
656	Jaipur	Bikaner	Nokhra Toll Plaza	10
657	Jaipur	Hanumangarh	6 ML Toll Plaza	6
658	Jaipur	Jaisalmer	Balana Toll Plaza	6
659	Jaipur	Dausa	Bhandaraj Fee Plaza	32
660	Jaipur	Kota	Mandawara Toll Plaza2	16
661	Jaipur	Jodhpur	Dadal	16
662	Jaipur	Jodhpur	Dadal G Toll	12
663	Jaipur	Jaipur	Akhepura	12
664	Jaipur	Udaipur	Malera	10
665	Jaipur	Jodhpur	BIRAMI	14
666	Jaipur	Bikaner	Salasar Toll Plaza	12
667	Jaipur	Jaisalmer	Bor Charnan Toll Plaza	6
668	Jaipur	Ajmer	Badi Ghati Toll Plaza	6
669	Jaipur	Ajmer	Bagaliya Toll Plaza	6
670	Jaipur	Dausa	Rabawata	10
671	Jaipur	Kota	Pallai	8
672	Jaipur	Bikaner	Kheerwa Toll Plaza	10
673	Jaipur	Jodhpur	Tankala	6
674	Jaipur	Jaipur	Sobhasar	8
675	Jaipur	Jaipur	THIRPALI BADI Toll Plaza	6
676	Jaipur	Bikaner	Seora	2
677	Jaipur	Dausa	Bahala Toll Plaza	10
678	Jaipur	Jodhpur	Panchu Toll Plaza	16
679	Jaipur	Jodhpur	Jathon Toll Plaza	16
680	Jaipur	Jodhpur	Khudiyala Toll Plaza	16
681	Jaipur	Jodhpur	Patau Toll Plaza	14
682	Jaipur	Jodhpur	Moothli Toll Plaza	16
683	Jaipur	Jodhpur	Sangana Toll Plaza	16
684	Jaipur	Bikaner	Gogelao	6

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
685	Jaipur	Udaipur	Pipalwas Plaza	6
686	Jaipur	Jaisalmer	Lanela Plaza	2
687	Jaipur	Jodhpur	TP21 Deora	16
688	Jaipur	Dausa	Korai Toll Plaza	8
689	Jaipur	Dausa	Chilla Chond Toll Plaza	8
690	Jaipur	Jaisalmer	Nimbayani	6
691	Jaipur	Ajmer	Leelamba Toll Plaza	6
692	Jaipur	Udaipur	Dhaneshwar	10
693	Jaipur	Kota	Kadisahena Toll Plaza	8
694	Jaipur	Kota	Lal ka Khera	8
695	Jaipur	Jaipur	Nimbi Jodha	8
696	Jaipur	Bikaner	RaisinghNagar	12
697	Jaipur	Jaisalmer	Narsana	6
698	Jaipur	Jaisalmer	Chhoti Villor Fee Plaza	10
699	Jaipur	Udaipur	Karel Toll Plaza	6
700	Jaipur	Kota	Daulatpura Fee Plaza	8
701	Jaipur	Hanumangarh	Uchharangdesar Toll Plaza	16
702	Jaipur	Jodhpur	Bungri Toll Plaza	16
703	Jaipur	Jodhpur	Sirmandi Toll Plaza	12
704	Jaipur	Jodhpur	Meghawas Toll Plaza	16
705	Jaipur	Hanumangarh	Sangariya Toll Plaza	16
706	Jaipur	Jaisalmer	Asada Ki Beri	6
707	Jaipur	Jodhpur	Jajoosan	16
708	Jaipur	Jaisalmer	Gadra Toll Plaza	6
709	Jammu	Jammu	Lakhanpur Toll Plaza	12
710	Jammu	Udhampur	Bann Toll Plaza	8
711	Jammu	Udhampur	Mada toll plaza	4
712	Jammu	Ramban	Lamber toll plaza	7
713	Jammu	Jammu	Dondpur plaza	12
714	Jammu	Srinagar	Kaichachkoot Toll Plaza	12
715	Jammu	Udhampur	Nashri toll plaza	4
716	Jammu	Ramban	Ujroo toll plaza	7
717	Kerala	Palakkad	Paliyekkara Toll plaza	12
718	Kerala	Cochin/Kochi	Poonarimangalam	10
719	Kerala	Cochin/Kochi	Devikulam Plaza	8
720	Kerala	Thiruvananthapuram	Thiruvallam Toll Plaza	12
721	Kerala	Cochin/Kochi	Vettichira Toll Plaza	12
722	Kerala	Cochin/Kochi	Kumbalam Toll Plaza	8
723	Kerala	Kozhikode	Thiruvangad Toll Plaza	4
724	Kerala	Palakkad	PamPamPallam Toll Plaza	10
725	Kerala	Kozhikode	Olavanna Fee Plaza	12

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
726	Kerala	Palakkad	Paniyankara Toll Plaza	18
727	Kolkata	Durgapur	Banskopa Plaza	16
728	Kolkata	Jalpaiguri	Ghogarkuthi Fee Toll Plaza	6
729	Kolkata	Purulia	Tetla Toll Plaza	8
730	Kolkata	Kolkata	Dankuni	20
731	Kolkata	Durgapur	Kalapathar Toll Plaza	6
732	Kolkata	Kharagpur	Rampura Plaza	10
733	Kolkata	Kolkata	Debra toll plaza	10
734	Kolkata	Krishnagar	Sali Bamandanga	10
735	Kolkata	Kolkata	Namkhana Fee Toll Plaza	4
736	Kolkata	Kolkata	Sonapetya	12
737	Kolkata	Durgapur	Beliyad toll plaza	32
738	Kolkata	Malda	Gazole Toll Plaza	12
739	Kolkata	Kolkata	Rajchandrapur Toll Plaza	20
740	Kolkata	Jalpaiguri	Paschim Madati	14
741	Kolkata	Jalpaiguri	Satbhaiya Fee Toll Plaza	6
742	Kolkata	Malda	Barai Toll Plaza	18
743	Kolkata	Purulia	Belkuri Toll Plaza	8
744	Kolkata	Krishnagar	Ayespur Toll Plaza	10
745	Kolkata	Kharagpur	Laxamannath Plaza	10
746	Kolkata	Malda	Chandermore Plaza	14
747	Kolkata	Malda	18th Mile Toll Plaza	14
748	Kolkata	Jalpaiguri	Sulkhapara Fee Plaza	8
749	Kolkata	Durgapur	Palsit	24
750	Kolkata	Jalpaiguri	Panikauri Toll Plaza	18
751	Kolkata	Malda	Shibpur Plaza	14
752	Kolkata	Jalpaiguri	Rangalibazna Fee Plaza	6
753	Kolkata	Kharagpur	Balibhasa Toll Plaza	10
754	Kolkata	Jalpaiguri	Husludanga Toll Plaza	18
755	Kolkata	Kolkata	Jaladhulagori toll plaza	16
756	Kolkata	Jalpaiguri	Surjapur Toll Plaza	10
757	Kolkata	Jalpaiguri	Guabari Toll Plaza	8
758	Kolkata	Durgapur	Mejia Toll Plaza	8
759	Lucknow - West	Lucknow	Ahmadpur Toll Plaza	10
760	Lucknow - West	Bareilly	Sarai Sundarpur Fee Plaza	8
761	Lucknow - West	Agra	Baros Toll Plaza	6

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
762	Lucknow - West	Bareilly	Akbarganj Simra (Tikri) Plaza	6
763	Lucknow - West	Bareilly	Faridpur Toll Plaza	16
764	Lucknow - West	Kanpur	Newada Toll Plaza	18
765	Lucknow - West	Agra	Madrak Toll Plaza	6
766	Lucknow - West	Lucknow	Asroga Toll Plaza	16
767	Lucknow - West	Lucknow	Balleerpur Toll plaza	10
768	Lucknow - West	Agra	Raibha	10
769	Lucknow - West	Kanpur	Anantram Toll Plaza	20
770	Lucknow - West	Agra	Tundla Toll Plaza	14
771	Lucknow - West	Kanpur	Badauri Toll Plaza	18
772	Lucknow - West	Kanpur	Khanna Toll Plaza	7
773	Lucknow - West	Kanpur	Barajore toll plaza	22
774	Lucknow - West	Lucknow	Aaini Toll Plaza	6
775	Lucknow - West	Moradabad	Belon TOLL PLAZA	8
776	Lucknow - West	Aligarh	Aaspur Toll Plaza	18
777	Lucknow - West	Bareilly	Bautha Toll Plaza	8
778	Lucknow - West	Lucknow	Nawabganj Toll Plaza	17
779	Lucknow - West	Moradabad	Brijghat Toll Plaza	16
780	Lucknow - West	Aligarh	GABHANA(somna) Tollplaza	12
781	Lucknow - West	Lucknow	Bara Toll Plaza	16
782	Lucknow - West	Moradabad	Mohammad Ibrahimpur	8
783	Lucknow - West	Jhansi	Babina Toll Plaza	8
784	Lucknow - West	Lucknow	Itaunja Toll Plaza	10
785	Lucknow - West	Jhansi	Vighakheth Toll Plaza	8
786	Lucknow - West	Lucknow	Shahabpur Toll Plaza	6

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
787	Lucknow - West	Bareilly	Hitouta Toll Plaza	8
788	Lucknow - West	Aligarh	Kiratpur fee plaza	16
789	Lucknow - West	Moradabad	Niyamatpur Ekrotiya Toll Plaz	24
790	Lucknow - West	Lucknow	Khairabad Toll Plaza	12
791	Lucknow - West	Jhansi	Chamari Toll Plaza	10
792	Lucknow - West	Bareilly	Sabli Toll Plaza	6
793	Lucknow - West	Bareilly	Maigalganj Toll Plaza	16
794	Lucknow - West	Moradabad	Joya Toll Plaza	16
795	Lucknow - West	Jhansi	Bamhori Kumari Toll Plaza	6
796	Lucknow - West	Bareilly	Lebhera Toll Plaza	6
797	Lucknow - West	Agra	Gurau (Formerly Semra Atikabad) Toll Plaza	14
798	Lucknow - West	Jhansi	AIT Toll Plaza	12
799	Lucknow - West	Lucknow	Dakhina Shekpur Toll Plaza	10
800	Lucknow - West	Kanpur	Akwabad Toll Plaza	16
801	Lucknow - West	Bareilly	Kudaiya	8
802	Lucknow - West	Bareilly	Mahanadpur toll plaza	8
803	Lucknow - West	Jhansi	Semri Toll Plaza	10
804	Lucknow - West	Aligarh	Tarwa Deva	18
805	Lucknow - West	Kanpur	Basheerapur Toll Plaza	16
806	Lucknow - West	Agra	JawrToll Plaza	10
807	Lucknow - West	Agra	Bakhtyarpur Toll Plaza	8
808	Lucknow - West	Moradabad	Thiriya Khetal Toll Plaza	24
809	Lucknow - West	Kanpur	Katoghan Toll Plaza	18
810	Lucknow - West	Kanpur	Aliyapur Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
811	Lucknow - West	Aligarh	LUHARLI Toll plaza	15
812	Madurai	Ramanathapuram	Tirupachethi	12
813	Madurai	Karaikudi	Vennathur Toll Plaza	8
814	Madurai	Madurai	Kappalur	10
815	Madurai	Trichy	Sengurichi Toll Plaza	14
816	Madurai	Madurai	Kozhinjipatti Plaza	12
817	Madurai	Trichy	Ponnambalapatti Plaza	8
818	Madurai	Tuticorin	Pudurpandiyapuram	12
819	Madurai	Nagercoil	Thirupathisaram Toll Plaza	12
820	Madurai	Trichy	Thiruparaithurai Plaza	6
821	Madurai	Trichy	Samayapuram Toll Plaza	12
822	Madurai	Madurai	Etturvattam Toll Plaza	10
823	Madurai	Karaikudi	Kodikottai Toll Plaza	8
824	Madurai	Thanjavur	Vembukudi	12
825	Madurai	Nagercoil	Salaipudur	10
826	Madurai	Dindigul	Chatrapatti Toll Plaza	8
827	Madurai	Nagercoil	Nanguneri Toll Plaza	12
828	Madurai	Tuticorin	Elliyarpathy	12
829	Madurai	Trichy	Boothakudi	10
830	Madurai	Nagercoil	Nathampatti Toll Plaza	8
831	Madurai	Trichy	Thirumandurai Toll Plaza	14
832	Madurai	Trichy	Manavasi Plaza	10
833	Madurai	Thanjavur	Valvanthakottai	12
834	Madurai	Tuticorin	VAGAIKULAM Toll Plaza	6
835	Madurai	Karaikudi	Lembalakudi	6
836	Madurai	Trichy	Chittampatti Toll Plaza	10
837	Madurai	Ramanathapuram	Bogalur	6
838	Madurai	Dindigul	Upparpatti	8
839	Madurai	Thanjavur	Kovilvenni Toll Plaza	6
840	Madurai	Dindigul	Velanchettiyur	12
841	Madurai	Karaikudi	Palaya Gandharvakottai	6
842	Madurai	Madurai	Pudur Toll Plaza	10
843	Madurai	Thanjavur	Manambadi	8
844	Madurai	Karaikudi	Lechchumanapatti	8
845	Madurai	Karaikudi	Shenbagampettai toll plaza	6
846	Mumbai	Ahmednagar	Banpimpri Toll Plaza	16
847	Mumbai	Ahmednagar	Ahmednagar Bypass Toll Plaza	18

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
848	Mumbai	Pandharpur	Undewadi Toll Plaza	8
849	Mumbai	Solapur	Ankadhal	18
850	Mumbai	Pune	Anewadi Toll Plaza	16
851	Mumbai	Nashik	Arjunalli toll plaza	14
852	Mumbai	Nashik	Ghoti toll plaza	14
853	Mumbai	Pune	Khed-Shivapur Toll Plaza	20
854	Mumbai	Kolhapur	Kini Toll Plaza	8
855	Mumbai	Solapur	Tamalwadi Toll Plaza	12
856	Mumbai	Solapur	Talmod Toll Plaza	12
857	Mumbai	Pandharpur	Penur Toll Plaza	10
858	Mumbai	Solapur	Sawaleshwar Toll Plaza	14
859	Mumbai	Pune	Chalakhwadi toll plaza	12
860	Mumbai	Solapur	Nandini	12
861	Mumbai	Nashik	Pimparwadi Toll Plaza	16
862	Mumbai	Solapur	Tidagundi	12
863	Mumbai	Kolhapur	Borgaon Toll Plaza	18
864	Mumbai	Ahmednagar	Nimgaon Khalu Toll Plaza	8
865	Mumbai	Nashik	Pandane	8
866	Mumbai	Nashik	Chandwad toll plaza	10
867	Mumbai	Ahmednagar	Dumbarwadi	6
868	Mumbai	Pune	Hiwargaon pavasa toll plaza	12
869	Mumbai	Pune	Patas Plaza	14
870	Mumbai	Ahmednagar	Dhoki TOLL PLAZA	6
871	Mumbai	Solapur	Valsang Toll Plaza	12
872	Mumbai	Nashik	Pimparkhed User Fee Plaza	6
873	Mumbai	Nashik	Baswant Toll Plaza	16
874	Mumbai	Solapur	Yedashi Toll Plaza	12
875	Mumbai	Solapur	Phulwadi Toll Plaza	12
876	Mumbai	Nashik	Dongrale Toll Plaza	4
877	Mumbai	Pandharpur	Bawada Toll Plaza	8
878	Mumbai	Solapur	Varwade Toll Plaza	14
879	Mumbai	Pune	Sardewadi Plaza	13
880	Mumbai	Ahmednagar	Badewadi TOLL PLAZA	6
881	Mumbai	Nashik	Chachadgaon Toll Plaza	6
882	Mumbai	Nashik	Laling toll plaza	10
883	Mumbai	Solapur	Ichgaon	18
884	Mumbai	Pune	Bhavaninagar	8
885	Mumbai	Thane	Charoti Toll Plaza	14
886	Mumbai	Thane	Khaniwade Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
887	Mumbai	Kolhapur	TASAWADE TOLL PLAZA	29
888	Mumbai	Kolhapur	Yevlewadi Toll Plaza	6
889	Mumbai	Panvel	Kharpada Toll Plaza	8
890	Mumbai	Pune	Belasar Toll Plaza	8
891	Nagpur	Nagpur	Bhagemari Fee Plaza	12
892	Nagpur	Nagpur	Kamptee Kanhan Bypass Check Toll Plaza	8
893	Nagpur	Amravati - NGP	Nimbhi	6
894	Nagpur	Chandrapur	Umred	4
895	Nagpur	Nagpur	Khambara Toll Plaza	10
896	Nagpur	Nanded	Bhamb Raja Toll Plaza	10
897	Nagpur	Nagpur	Daroda	10
898	Nagpur	Nanded	Ashta Toll Plaza	12
899	Nagpur	Amravati - NGP	Gondkhairi Plaza	8
900	Nagpur	Aurangabad	Padalshingi TP	12
901	Nagpur	Nagpur	Milanpur Toll Plaza	10
902	Nagpur	Amravati - NGP	Dhumka Tondgaon Toll Plaza	18
903	Nagpur	Nanded	Malegaon Toll Plaza	10
904	Nagpur	Amravati - NGP	Karanja Toll Plaza	8
905	Nagpur	Aurangabad	Loni Toll Plaza	6
906	Nagpur	Jalgaon	Nashirabad Toll Plaza	20
907	Nagpur	Nagpur	Champa Toll Plaza	16
908	Nagpur	Nanded	Salava Jharoda Toll Plaza	16
909	Nagpur	Amravati - NGP	Kurankhed Toll Plaza	10
910	Nagpur	Dhule	Shirpur	12
911	Nagpur	Amravati - NGP	Taroda-Kasba Toll Plaza	10
912	Nagpur	Nagpur	BORKHEDI TOLL PLAZA	10
913	Nagpur	Aurangabad	Maliwadi-bhokarwadi TP	12
914	Nagpur	Chandrapur	Kelapur	4
915	Nagpur	Nagpur	Selu Toll Plaza	18
916	Nagpur	Chandrapur	Shembal Toll Plaza	16
917	Nagpur	Chandrapur	Hirapur Toll Plaza	6
918	Nagpur	Nanded	Pardi Makta TP	10
919	Nagpur	Nagpur	PawangaonFee Plaza	10
920	Nagpur	Nagpur	Sendurwafa	8
921	Nagpur	Dhule	Songir	12
922	Nagpur	Nanded	Selu Amba Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
923	Nagpur	Aurangabad	Vaidyakinhi Toll Plaza	8
924	Nagpur	Nagpur	Khadaka Toll Plaza	10
925	Nagpur	Nagpur	Mansar Toll Plaza	10
926	Nagpur	Nagpur	NAGPUR BYPASS CHECK TOLL PLAZA	10
927	Nagpur	Chandrapur	Husnapur	10
928	Nagpur	Jalgaon	Dasarkhed Toll Plaza	10
929	Nagpur	Amravati - NGP	Tuptakli Toll Plaza	6
930	Nagpur	Amravati - NGP	Medshi Sawarkheda	16
931	Nagpur	Nanded	Bijora Toll plaza	10
932	Nagpur	Chandrapur	Devghat Toll plaza	10
933	Nagpur	Amravati - NGP	Nandgaon Toll Plaza	10
934	Nagpur	Nagpur	Mathni	10
935	Nagpur	Aurangabad	Hatnoor Toll Plaza	15
936	Nagpur	Jalgaon	Sub Gavhan Kh Toll Plaza	12
937	Nagpur	Aurangabad	Nayagaon Toll Plaza	6
938	Nagpur	Aurangabad	UMRI TOLL PLAZA	8
939	Nagpur	Amravati - NGP	Pusla Toll Plaza	6
940	Nagpur	Nanded	Fulval Toll Plaza	6
941	Nagpur	Chandrapur	Haladgaon Toll Plaza	10
942	Nagpur	Chandrapur	Kharbi Toll Plaza	6
943	Nagpur	Aurangabad	Karodi	16
944	Nagpur	Amravati - NGP	Undri Toll Plaza	6
945	Nagpur	Chandrapur	Wadgaon	4
946	Nagpur	Chandrapur	Darwha Toll plaza	6
947	Nagpur	Nanded	Kingaon Toll Plaza	8
948	Nagpur	Aurangabad	Pargaon TP	12
949	Nagpur	Nanded	Ashiv TOLL PLAZA	10
950	Nagpur	Dhule	Borvahir Toll Plaza	10
951	Nagpur	Nanded	Sonari Toll Plaza	8
952	Patna	Patna	Paithna	18
953	Patna	Gaya	Toda Toll Plaza	6
954	Patna	Sasaram	Katiryara Toll Plaza	8
955	Patna	Purnia	Bhadesar Toll Plaza	4
956	Patna	Muzaffarpur	Saidpur Patedha Toll Plaza	12
957	Patna	Purnia	Barsoni Toll Plaza	10
958	Patna	Sasaram	Mohania Toll Plaza	12
959	Patna	Muzaffarpur	Parsoni Khem	10
960	Patna	Bhagalpur	Bhagalpur Toll plaza	6
961	Patna	Muzaffarpur	Mahant Maniyari	8
962	Patna	Begusarai	Shahpur Toll Plaza	10

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
963	Patna	Patna	Dalsagar Toll Plaza	10
964	Patna	Gaya	Devkuli Toll Plaza	12
965	Patna	Patna	Biharibigha toll	10
966	Patna	Aurangabad (Bihar)	Saukala Toll Plaza	12
967	Patna	Muzaffarpur	Govindpur (Murlitol)	7
968	Patna	Chhapra	Chapraitha Fee Plaza	6
969	Patna	Patna	DidarGanj	12
970	Patna	Chhapra	Brindawan Fee Plaza	6
971	Patna	Bhagalpur	Malhipur	6
972	Patna	Purnia	Kakan Toll Plaza	10
973	Patna	Sasaram	Sasaram Toll Plaza	24
974	Patna	Chhapra	Pokhrai Fee Plaza	6
975	Patna	Patna	Kulhariya fee plaza	12
976	Patna	Muzaffarpur	Maithi	10
977	Patna	Purnia	Jeerangachh toll Plaza	10
978	Patna	Purnia	Hariabara	10
979	Patna	Muzaffarpur	Runni Shaidpur Toll Plaza	8
980	Patna	Bhagalpur	Balgudar Toll Plaza	4
981	Patna	Gaya	Karigawan fee	16
982	Patna	Motihari	Barhima Toll Plaza	8
983	Patna	Motihari	Parei Toll Plaza	4
984	Patna	Muzaffarpur	Raje Toll Plaza (T-2)	10
985	Patna	Chhapra	Sonho Fee Plaza	6
986	Patna	Sasaram	Babhaniyawar Toll Plaza	8
987	Patna	Purnia	Routara Toll Plaza	18
988	Patna	Patna	Mamrejpur Fee Plaza	14
989	Patna	Motihari	Phulwaria Toll Plaza	6
990	Patna	Sasaram	Daffi Toll Plaza	18
991	Patna	Muzaffarpur	Asanpur Toll Plaza	10
992	Patna	Begusarai	Maranga Toll Plaza	6
993	Patna	Begusarai	Kharik	6
994	Patna	Motihari	Bishunpurwa Toll Plaza	6
995	Patna	Gaya	Jindapur Toll Plaza	12
996	Patna	Madhubani	Rahua Toll Plaza	4
997	Raipur	Korba	Pachira	6
998	Raipur	Bilaspur	Mudhipar TOLL PLAZA	18
999	Raipur	Raipur 1	Kumhari	10
1000	Raipur	Raipur 1	Mandir Hasaud Toll Plaza	10
1001	Raipur	Korba	Chotiya TOLL PLAZA	6
1002	Raipur	Raipur 1	Tarapoungi plaza	20

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
1003	Raipur	Bilaspur	Madanpur	10
1004	Raipur	Bilaspur	Kesla Plaza	8
1005	Raipur	Raipur 2	Thakurtola	8
1006	Raipur	Raipur 1	Dhank Toll Plaza	8
1007	Raipur	Dhamtari	Mashora Toll Plaza	6
1008	Raipur	Bilaspur	Bhojpuri Toll Plaza	18
1009	Raipur	Raipur 1	Mudiyapara Fee Plaza	4
1010	Raipur	Dhamtari	Maroud Toll Plaza	8
1011	Raipur	Korba	Jamnipali Toll Plaza	10
1012	Raipur	Raipur 2	Durg Bypass	8
1013	Raipur	Korba	Jhalmala Toll Plaza	8
1014	Raipur	Korba	Lodam Toll Plaza	8
1015	Raipur	Dhamtari	Jagtara TOLL PLAZA	6
1016	Raipur	Bilaspur	Limha Toll Plaza	10
1017	Raipur	Raipur 1	Chhuhipali Toll Plaza	8
1018	Raipur	Dhamtari	Badaiyguda	6
1019	Raipur	Bilaspur	Paraghat Toll Plaza	10
1020	Raipur	Korba	Maharajpur Toll Plaza	8
1021	Raipur	Bilaspur	Baiji Toll Plaza	6
1022	Ranchi	Gumla	Anjan Dham Toll Plaza	10
1023	Ranchi	Ranchi	Pata Toll Plaza	8
1024	Ranchi	Hazaribagh	Nagwan Toll plaza	16
1025	Ranchi	Ranchi	Edalhatu Toll Plaza	12
1026	Ranchi	Dhanbad	Pupunki Toll Plaza	10
1027	Ranchi	Ranchi	Putru Toll Plaza	8
1028	Ranchi	Hazaribagh	Madangundi	14
1029	Ranchi	Daltonganj	Garhdevi Toll Plaza	16
1030	Ranchi	Daltonganj	Hariharnath Toll Plaza	10
1031	Ranchi	Dhanbad	Ghanghri Toll Plaza	24
1032	Ranchi	Dhanbad	Navasari	6
1033	Ranchi	Ranchi	HAZARIBAGH-RANCHI EXPRESSWAY (Pundag)	14
1034	Ranchi	Hazaribagh	Rasoia Dhamna Toll Plaza	12
1035	Ranchi	Dhanbad	Sosokhurd Toll Plaza	6
1036	Ranchi	Dhanbad	Tand Balidih Toll Plaza	10
1037	Ranchi	Ranchi	KOKPARA TOLL PLAZA	14
1038	Ranchi	Ranchi	Murma Toll Plaza	6
1039	Ranchi	Ranchi	Patrachauli	8
1040	Ranchi	Ranchi	Turup Toll Plaza	16
1041	Ranchi	Daltonganj	Bansidhar Toll Plaza	8
1042	Ranchi	Daltonganj	Medininagar Toll Plaza	8

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
1043	Ranchi	Deoghar	Kothiya	6
1044	Shimla	Mandi	Dolhu Nallah Fee Toll Plaza	8
1045	Shimla	Mandi	Takoli Plaza	10
1046	Shimla	Mandi	Baloh Toll Paza	10
1047	Shimla	Shimla	Sanwara Toll Plaza	10
1048	Shimla	Mandi	Moura Fee Plaza	8
1049	Shimla	Hamirpur	Ghatta Toll Plaza	8
1050	varanasi	Raebareli	Itora Buzurg	6
1051	varanasi	Raebareli	Andiyari	8
1052	varanasi	Ayodhya	Mandawnagar Toll Plaza	10
1053	varanasi	Gorakhpur	Nainsar	6
1054	varanasi	Gorakhpur	Chandithan Toll Plaza	6
1055	varanasi	Ayodhya	Chaukadi Toll Plaza	8
1056	varanasi	Raebareli	Kunwarpur	6
1057	varanasi	Azamgarh	Amora Moiddinpur Kala Plaza	10
1058	varanasi	Gorakhpur	Sherpur Chamraha Toll Plaza	12
1059	varanasi	Gorakhpur	Salemgarh Toll Plaza	10
1060	varanasi	Gorakhpur	Tendua Toll Plaza	10
1061	varanasi	Prayagraj	SAHSON Toll Plaza	4
1062	varanasi	Prayagraj	Harro Toll Plaza near Ganne	8
1063	varanasi	Ayodhya	Mithegaon Toll Plaza	16
1064	varanasi	Prayagraj	KOKHRAJ (Sirohi) Toll Plaza	12
1065	varanasi	Raebareli	Bharatkund TOLL PLAZA	6
1066	varanasi	Bahraich	Badagaon Toll Plaza	6
1067	varanasi	Raebareli	Shrishikalan Toll Plaza	6
1068	varanasi	Gorakhpur	Belgada Toll Plaza	8
1069	varanasi	Raebareli	Akhtiyari Kotila	8
1070	varanasi	Prayagraj	SORAON Toll Plaza	4
1071	varanasi	Ghazipur	Kaithi plaza	12
1072	varanasi	Prayagraj	HANDIYA (Sujala) Toll Plaza	12
1073	varanasi	Varanasi	Hauj Fee Plaza	8
1074	varanasi	Prayagraj	Shringveerpur	4
1075	varanasi	Gorakhpur	Gulhaura Toll Plaza	6
1076	varanasi	Varanasi	Gopalpur Toll Plaza	6
1077	varanasi	Gorakhpur	Mirzapur / Kyampur Toll Plaza	12

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
1078	varanasi	Gorakhpur	Bhitaha Toll Plaza	12
1079	varanasi	Prayagraj	Lalanagar Toll Plaza	14
1080	varanasi	Bahraich	Gulalpurva Toll Plaza	6
1081	varanasi	Azamgarh	Amdi TOLL PLAZA	8
1082	varanasi	Prayagraj	Mungari	4
1083	varanasi	Prayagraj	Ramnagar Gansiyari	12
1084	varanasi	Azamgarh	Derhi Toll Plaza	6
1085	varanasi	Raebareli	Etaura Bujurg Toll Plaza	8
1086	varanasi	Prayagraj	Nawabganj Toll Plaza (Prayagraj)	4
1087	varanasi	Raebareli	Nuruddinpur toll plaza	6
1088	varanasi	Raebareli	Pidhi Toll Plaza	6
1089	varanasi	Gorakhpur	Akshda TOLL PLAZA	6
1090	varanasi	Prayagraj	Umapur TOLL PLAZA	6
1091	varanasi	Bahraich	Dularpur	6
1092	varanasi	Varanasi	Baiti Kala Plaza	8
1093	varanasi	Raebareli	Nasaratpur toll Plaza	10
1094	varanasi	Prayagraj	Ganga EP Ramp Plaza	8
1095	varanasi	Gorakhpur	Muzaina Hetim Toll Plaza	10
1096	varanasi	Ayodhya	Ronahi Toll Plaza	10
1097	varanasi	Raebareli	Jindpur Toll Plaza	6
1098	varanasi	Gorakhpur	Hadwa TOLL PLAZA	6
1099	varanasi	Raebareli	Aindhi Toll Plaza	6
1100	varanasi	Raebareli	Aihar Toll Plaza	6
1101	varanasi	Gorakhpur	Semra Toll Plaza	6
1102	varanasi	Varanasi	ATRAILA SHIV GULAM Toll	18
1103	varanasi	Raebareli	Jorwara Toll Plaza	6
1104	varanasi	Varanasi	Pratappur Toll Plaza	18
1105	varanasi	Bahraich	Sisiya toll plaza	8
1106	Vijayawada	Vishakhapatnam	Agnampadi	8
1107	Vijayawada	Vishakhapatnam	Goshtani Gate of Navy	3
1108	Vijayawada	Kadapa	Chittimitti Chinthala	6
1109	Vijayawada	Vijayawada	Pottipadu	8
1110	Vijayawada	Nellore	Sullurpet Plaza (NH-16), (old NH-5)	8
1111	Vijayawada	Nellore	Budhanam Plaza (NH-16)	10
1112	Vijayawada	Ongole	Bollapalli Toll Plaza	14
1113	Vijayawada	Tirupati	Mahasamudram	10
1114	Vijayawada	Ongole	Musunur Toll Plaza	14
1115	Vijayawada	Anantpur	Marur Toll Plaza	12

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
1116	Vijayawada	Kadapa	Chagalmarri Toll Plaza	12
1117	Vijayawada	Vishakhapatnam	Panchvati Colony(Vishakapatnam Port Connectivity)	8
1118	Vijayawada	Vizianagaram	Gantyada Toll Plaza	6
1119	Vijayawada	Rajahmundry	Unguturu Toll Plaza	6
1120	Vijayawada	Ongole	Millampali	6
1121	Vijayawada	Tirupati	Thenepalli Plaza	4
1122	Vijayawada	Rajahmundry	Eethakota at Km.946.300	6
1123	Vijayawada	Tirupati	Chinthalapalem toll plaza	6
1124	Vijayawada	Kadapa	Chapirevula	12
1125	Vijayawada	Anantpur	Bathalapalli Toll Plaza	8
1126	Vijayawada	Rajahmundry	Seetharampuram Toll Plaza	6
1127	Vijayawada	Vijayawada	Reddypalem Toll Plaza	6
1128	Vijayawada	Ongole	Veeranjaneyapuram Fee Plaza	6
1129	Vijayawada	Chittoor	Ramanathapuram Toll Plaza	8
1130	Vijayawada	Vijayawada	Keesara Plaza (NH-65), (old NH-9)	10
1131	Vijayawada	Vishakhapatnam	Madapam Toll Plaza	18
1132	Vijayawada	Rajahmundry	Krishnavaram	10
1133	Vijayawada	Ongole	Tangatur Toll Plaza	14
1134	Vijayawada	Kadapa	Bandapalli	6
1135	Vijayawada	Anantpur	Jellipalli Toll Plaza	6
1136	Vijayawada	Anantpur	Mangapatnam Toll Plaza	16
1137	Vijayawada	Kurnool	Rudravaram Toll plaza	8
1138	Vijayawada	Rajahmundry	Vempadu	10
1139	Vijayawada	Nellore	D C Palli Toll Plaza	6
1140	Vijayawada	Tirupati	Rapur Toll Plaza	6
1141	Vijayawada	Vishakhapatnam	Marripalem Toll Plaza	13
1142	Vijayawada	Chittoor	Danamaiahgaaripalli Toll Plaza	6
1143	Vijayawada	Rajahmundry	Annampalli Toll Plaza	6
1144	Vijayawada	Vishakhapatnam	Gorribanda Toll Plaza	8
1145	Vijayawada	Vishakhapatnam	Jonnada Toll Plaza	8
1146	Vijayawada	Tirupati	MERLAPAKA TOLL PLAZA	14
1147	Vijayawada	Ongole	Basinenipalli Toll Plaza	8
1148	Vijayawada	Anantpur	Kasepalli Toll Plaza	12

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
1149	Vijayawada	Vishakhapatnam	Laxmipuram	10
1150	Vijayawada	Nellore	Bhramanapalli Toll Plaza	6
1151	Vijayawada	Ongole	Chinaganjam Fee Plaza	6
1152	Vijayawada	Vijayawada	Kalaparru Toll Plaza	18
1153	Vijayawada	Kadapa	Nannur	12
1154	Vijayawada	Vijayawada	Badava Toll Plaza	6
1155	Vijayawada	Ongole	Sameerapalem Toll Plaza	8
1156	Vijayawada	Vizianagaram	Manapuram Toll Plaza	6
1157	Vijayawada	Chittoor	Kumarajapet	8
1158	Vijayawada	Ongole	Raviguntapalli Toll Plaza	6
1159	Vijayawada	Anantpur	Halaharvi TOLL PLAZA	6
1160	Vijayawada	Rajahmundry	Gollaprolu	10
1161	Vijayawada	Anantpur	yerradoddi	6
1162	Vijayawada	Kadapa	Dumpalagattu Paatimeeda Palli	10
1163	Vijayawada	Tirupati	Gandaboyanapalle Toll Plaza	10
1164	Vijayawada	Ongole	Kothapalli Toll Plaza	8
1165	Vijayawada	Anantpur	Kadarampalli Fee Plaza	8
1166	Vijayawada	Amravati - BZA	Kaza Toll Plaza Mangalgi	16
1167	Vijayawada	Kadapa	Basapuram Toll Plaza	8
1168	Vijayawada	Nellore	Buchireddypalem Toll Plaza	6
1169	Vijayawada	Tirupati	Durgamvaripalli Toll Plaza	6
1170	Vijayawada	Vishakhapatnam	Dukkavanipalem Toll Plaza	13
1171	Vijayawada	Vijayawada	Munjuluru Toll Plaza	6
1172	Vijayawada	Vijayawada	Mopidevi Toll Plaza	6
1173	Vijayawada	Vizianagaram	Pedagaruvu Toll Plaza	6
1174	Vijayawada	Ongole	Paluvai Toll Plaza	8
1175	Vijayawada	Amravati - BZA	Venkatapalem Toll Plaza	12
1176	Vijayawada	Ongole	Peddakonduru Toll Plaza	8
1177	Vijayawada	Anantpur	Amakthadu Toll Plaza	12
1178	Vijayawada	Vijayawada	Davaluru	8
1179	Vijayawada	Amravati - BZA	Medapi Toll plaza	10
1180	Vijayawada	Rajahmundry	VeeraValli TOLL PLAZA	18
1181	Vijayawada	Chittoor	Bandlapalli Toll Plaza	8

S.No.	RO	PIU	Plaza Name	No. of Lanes at Fee Plaza
1182	Vijayawada	Anantpur	Cholasamundram Toll Plaza	8
1183	Vijayawada	Kadapa	Mudiveedu Toll Plaza	8
1184	Vijayawada	Anantpur	Roll Toll Plaza	8
1185	Vijayawada	Kurnool	R Kothapalli Toll palza	10
1186	Vijayawada	Anantpur	Inagaluru Toll plaza	12
1187	Vijayawada	Nellore	Nellore Plaza (NH- 16)	10
1188	Vijayawada	Vishakhapatnam	Nathavalasa	14
1189	Vijayawada	Ongole	Mekalavaripalli Toll Plaza	6
1190	Vijayawada	Amravati - BZA	Pandillapalli Toll plaza	10
1191	Vijayawada	Anantpur	Jodi Dharmapuram Toll Plaza	10
1192	Vijayawada	Tirupati	Gadanki toll plaza	12
1193	Vijayawada	Anantpur	Vaddupalli Toll Plaza	8
1194	Vijayawada	Tirupati	Burakayala kota Toll Plaza	6
1195	Vijayawada	Ongole	Upputuru Toll Plaza	8
1196	Vijayawada	Vijayawada	Vedurupavuluru	14
1197	Vijayawada	Chittoor	Pondavakkam	8
1198	Vijayawada	Chittoor	Veerakaverirajapuram	6

2. List of Pilot Fee Plazas under MLFF based tolling

S. No.	RFP Name	State
1	Choryasi Fee Plaza	Gujarat
2	Gharaunda Fee Plaza	Haryana
3	Daulatpura Fee Plaza	Rajasthan
4	Manoharpura Fee Plaza	Rajasthan
5	Shahjahanpur Fee Plaza	Rajasthan
6	Mundka Fee Plaza	Delhi
7	Nemili / SriPerumbadur	Tamil Nadu
8	Chennasamaduram Toll Plaza	
9	Paranur Toll Plaza	
10	Boraich	Gujarat
11	Kasepalli Toll Plaza	Andhra Pradesh
12	Amakthadu toll plaza	
13	Marur Toll Plaza	
14	Chalakwadi Toll plaza	Maharashtra
15	Hiwargaon Pavasa	
16	Badarpur Faridabad Toll plaza	Delhi
17	Madanpur Fee plaza	Assam

3. List of Fee Plazas proposed under MLFF based tolling as on bid release date:

S.No.	Plaza Name	PIU
1	Sirohi Bahali Toll Plaza	Rewari
2	Kathuwas Toll Plaza	Rewari
3	Ghamroj Sohna Road Toll Plaza	Rewari
4	Kiranj Toll Plaza	Mathura
5	Bhanera	Meerut
6	Chota Mawana	Meerut
7	Mujhera Toll Plaza	Meerut
8	Kurana Toll Plaza	Meerut
9	Jiwana Toll plaza	Baghpat
10	Tamsabad	Baghpat
11	Patnipratapur	Baghpat
12	Bhuni Toll Plaza	Baghpat
13	Jagaheri Plaza	Baghpat
14	Dabhedi Toll Plaza	Baghpat
15	Sivaya Toll Plaza	Meerut
16	Bharthana	Ektanagar
17	Mandva	Ektanagar
18	Bhadbhid	Bhavnagar
19	Kobadi	Bhavnagar
20	Rohisa	Bhavnagar
21	Nageshri	Bhavnagar
22	Velva	Bhavnagar
23	Sundarpara	Bhavnagar
24	Pithai	Ahmedabad
25	Vavadikhurd	Ahmedabad
26	Vantada	Ahmedabad
27	Kathpur	Ahmedabad
28	Bhagwada	Surat
29	Varshamedi	Gandhidham
30	Kukma	Gandhidham
31	Bharudi	Rajkot
32	Pithadiya	Rajkot
33	Kuchadi	Rajkot
34	Okhamadhi	Rajkot
35	Dharampur-Danta	Rajkot
36	Gadoi	Rajkot
37	Dari	Rajkot
38	Gorsar	Rajkot
39	Tarana	Rajkot
40	Panthangi	Hyderabad
41	Korlaphadu	Hyderabad
42	Chillakallu	Hyderabad

S.No.	Plaza Name	PIU
43	Komatipalli	Warangal
44	Komalla	Warangal
45	Painampalli	Khammam-1
46	Singarenipally	Khammam-2
47	Mandamarri Toll Plaza	Mancherial
48	Sarandi Toll Plaza	Mancherial
49	Taddanpally	Gajwel
50	Dharmaram	Gajwel
51	Pipili Toll Plaza	Bhubaneswar
52	Pudapada & Nildungri Toll Plaza	Sambalpur
53	Dakuamunda Toll Plaza	Sambalpur
54	Hatibari Toll Plaza	Sambalpur
55	Jharpokharia	Sambalpur
56	Padmanavapur	Sambalpur
57	Sukhuapada	Sambalpur
58	Khairamunda Fee Plaza	Dhenkanal
59	Hasanpur (Sainkul)	Keonjhar
60	Khantaghar (Dhenkikote)	Keonjhar
61	Banajodi (Padmapur)	Keonjhar
62	Khireitangiri	Keonjhar
63	Jansanpur	Keonjhar
64	Kandra	Keonjhar
65	Darjing	Keonjhar
66	Jamudihi	Keonjhar
67	Balani	Keonjhar
68	Dakan kotra	Udaipur
69	Jaswantgarh (Gogunda)	Udaipur
70	Malera	Udaipur
71	Kishorepura	Kota
72	Beermandi	Kota
73	Mandana	Kota
74	Biratiya Kalan	Jodhpur
75	Binawas	Jodhpur
76	Dangiyawas	Jodhpur
77	Manaklao-TP-02	Jodhpur
78	Tankla	Jodhpur
79	Netra	Jodhpur
80	Hingonia	Jaipur
81	Sitarampura	Jaipur
82	Kishangarh	Jaipur
83	Thikariya	Jaipur
84	Tatiawas	Jaipur
85	Akhepura	Jaipur

S.No.	Plaza Name	PIU
86	Thirpali Badi	Jaipur
87	Titoli	Dausa
88	Rabawata	Dausa
89	Chandlana Toll Plaza	Bhiwani
90	Mohna Toll Plaza	Bhiwani
91	Kheri Sharaf Ali Toll Plaza	Bhiwani
92	Bahri Toll Plaza	Bhiwani
93	Amrawali Khera Toll Plaza	Bhiwani
94	Kilazafargarh Toll Plaza	Bhiwani
95	Bainsi Toll Plaza	Bhiwani
96	Kharkhara Toll Plaza	Bhiwani
97	Kherari Toll Plaza	Bhiwani
98	Dadri Toll Plaza	Bhiwani
99	Buchawas Toll Plaza	Bhiwani
100	Bhalkhi Toll Plaza	Bhiwani
101	Jat Guwana Toll Plaza	Bhiwani
102	Pabanawa Toll Plaza	Bhiwani
103	Jamni NH 152D	Bhiwani
104	Chabri Toll Plaza	Bhiwani
105	Sergarh Toll Plaza	Chandikhole

Schedule – B: Scope of Work

Background and Project Context

- 1.1. To enhance the efficiency, transparency, and operational reliability of tolling operations across fee plazas on National Highway network, IHMCL conceptualized and implemented the Toll Monitoring and Control Centre (TMCC) during in 2021. The platform was established as a centralized monitoring and analytics solution to provide end-to-end visibility into tolling operations across toll plazas on National Highways.
- 1.2. The existing TMCC serves as a centralized command and control platform integrating data from multiple sources including Toll Management Systems (TMS) deployed at toll plazas, NPCI transaction systems, equipment health monitoring systems, traffic survey systems, mobile applications, and other operational data sources. The platform currently supports monitoring of more than 1,200 toll plazas across the country.
- 1.3. Key functionalities of the existing TMCC include:
 - i. Real-time monitoring of toll plaza operations and transaction performance.
 - ii. Centralized monitoring of health and availability of critical ETC infrastructure and field equipment deployed at toll plazas through IoT / Windows App based monitoring mechanisms.
 - iii. Toll data lake for storage, consolidation and analysis of tolling and operational datasets from multiple sources.
 - iv. Business Intelligence (BI)-based dashboards and analytical reports for operational, financial and management decision-making.
 - v. Toll plaza performance monitoring including ETC penetration, exemption analysis, traffic trends, transaction analysis and revenue-related insights.
 - vi. Alert generation, escalation, incident logging and resolution tracking for critical operational events.
 - vii. Monitoring of service levels and operational performance of ecosystem stakeholders.
 - viii. Support through a dedicated 24x7 operations and monitoring team.
- 1.4. The existing TMCC has been developed over multiple phases and comprises a combination of monitoring dashboards, reporting modules, data integration interfaces, data lake infrastructure and analytics capabilities. The system currently provides operational visibility into tolling transactions, plaza performance, equipment health status and key management information reports required by IHMCL and NHAI.
- 1.5. With the introduction of Multi-Lane Free Flow (MLFF) tolling and evolving business requirements, IHMCL intends to upgrade the existing platform into TMCC 2.0, which shall build upon the existing system by enhancing current functionalities, modernizing the technology stack, integrating additional data sources and developing new modules for centralized monitoring of MLFF operations, enforcement activities, revenue monitoring and advanced analytics. The selected bidder shall take over the existing TMCC application on an "As-is-Where-is" basis and undertake enhancement, integration, development, deployment, operation and maintenance activities as part of the TMCC 2.0 implementation.

1.6. Project Objective:

The objective of TMCC 2.0 is to establish a unified Toll Management Command & Control Centre platform for centralized monitoring, analytics, reporting, alerting and operational oversight of Electronic Toll Collection (ETC) and Multi-Lane Free Flow (MLFF) tolling operations across the National Highway network. The system shall provide a consolidated view of toll transactions, revenue performance, operational exceptions, enforcement status, and associated stakeholder systems through a centralized dashboard.

1.7. Existing TMCC System Details:

Detailed information pertaining to the existing TMCC system, including its functional modules, system architecture, technology stack, integrations, databases, interfaces, infrastructure components, operational workflows, and other relevant technical details, is provided in Clause 10 of Schedule B of this RFP. Bidders are advised to thoroughly review Clause 10 of Schedule B to gain a comprehensive understanding of the existing TMCC ecosystem and its current capabilities. The proposed TMCC 2.0 solution shall take into consideration the existing application landscape, integrations, and operational requirements described therein. No additional claims arising from lack of understanding of the existing system details provided in Clause 10 of Schedule B shall be entertained subsequently.

1. Brief Scope of Work

1. Scope Overview

- a) The Overall Scope is the design, development, enhancement, integration, deployment, operation and maintenance of the Toll Monitoring and Control Centre (TMCC) 2.0 platform. TMCC 2.0 shall serve as the centralized command, control, monitoring and analytics platform for tolling operations, enabling real-time visibility of Electronic Toll Collection (ETC) on barrier-based toll plazas and Multi-Lane Free Flow (MLFF) barrier-less toll plazas across the NH network.
- b) The scope of work broadly includes takeover of the existing TMCC application on an **"As-Is-Where-Is"** basis, assessment and documentation of the current system, enhancement of existing TMCC modules, and development of new functionalities required to support MLFF tolling operations. The successful bidder shall upgrade the platform architecture and ensure seamless continuity of existing services during the transition.
- c) The scope further encompasses development of centralized monitoring dashboards, revenue monitoring and intelligent alert systems, comprehensive reporting and analytics capabilities, and integration with Acquirer Banks, MLFF ecosystem stakeholders, NIC, Canara Bank and other designated systems for monitoring of transactions, enforcement activities and e-Notice lifecycle management.
- d) The bidder shall establish a scalable and secure data integration framework capable of ingesting, processing and analysing data from multiple internal and external systems. The solution shall support real-time operational monitoring, business intelligence, advanced analytics, auditability, cybersecurity compliance and future extensibility for emerging tolling technologies.
- e) The TMCC 2.0 platform shall also provide centralized real-time health monitoring of tolling and field infrastructure, including ETC and MLFF equipment, communication networks and associated

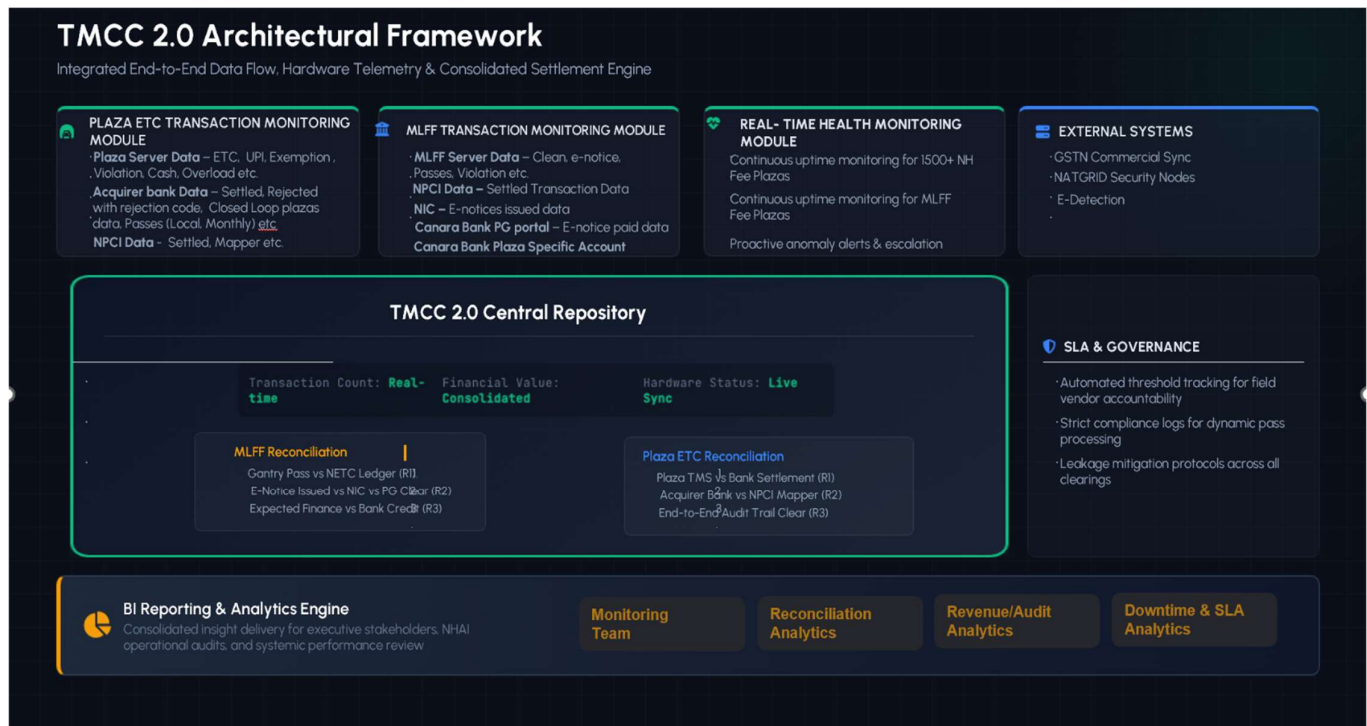
applications, along with automated SLA monitoring, uptime tracking, incident management, alert generation, escalation workflows and performance reporting to ensure compliance with prescribed service levels across the tolling ecosystem.

- f) The Selected Bidder shall design, develop, deploy and maintain an integrated **SLA Governance Module** as part of TMCC 2.0 for centralized monitoring, measurement, reporting, compliance management and automated penalty computation for MLFF projects and associated ecosystem stakeholders.
- g) In addition, the selected bidder shall be responsible for deployment, testing, migration, training, documentation, operations and maintenance support, including adherence to prescribed Service Level Agreements (SLAs), throughout the contract period.
- h) Implementation Agency (hereinafter "IA" or "Successful Bidder") shall design, develop, implement, and operate an integrated Toll Monitoring and Control Centre (TMCC) 2.0 Platform comprising five modules delivered as a single unified contract:

Module	Name	Primary Function
Module 1	Plaza ETC Transaction Monitoring (PETM) Module	Real-time data ingestion from Toll Plaza TMS, NPCI & Acquirer bank; financial reconciliation (Plaza vs. Acquirer Bank vs. NPCI); visual audit layer; advanced analytics including Annual Pass Compensation for point based and closed loop fee plazas, Integrations with external agencies etc..
Module 2	MLFF Transaction Monitoring & Reconciliation (MTMR) Module	Ingestion, storage, and multi-source reconciliation of all MLFF transaction data; e-Notice lifecycle management; financial settlement validation; SLA monitoring; MIS reporting.
Module 3	Real-Time Health Monitoring (RTHM) Module	Real-time equipment health monitoring; device registry and identity binding; anti-spoofing / data integrity controls; equipment SLA computation; GIS visualization; ticketing and escalation. equipment health monitoring for plaza ETC and MLFF equipment's
Module 4	SLA Monitoring Module	Continuous tracking of performance metrics against Contract KPIs of MLFF and Plaza ETC System; automated calculation of penalties; automated generation of plaza, RO, and PIU-level SLA Monitoring reports.
Module 5	Integration with External Agencies	Digital bridge with official government databases (like VAHAN, NATGRID, BISAG-N MEITY, MoRTH Dashboard, NHA1 Datalake, GSTN, and E-Detection portal.), while continuously syncing with the central FASTag network (NPCI).

- i) All five modules shall be delivered by the same IA, deployed on a common infrastructure, and accessible through a unified portal.

i. The High-Live Architecture of TMCC 2.0 is provided as below:



- ii. The Successful Bidder shall design, develop, deploy, integrate, test, commission, operate, maintain, and support the TMCC 2.0 platform comprising Plaza ETC Transaction Monitoring, MLFF Transaction Monitoring & Reconciliation, and Real-Time Health Monitoring modules.
- iii. The Successful Bidder shall establish secure, automated, and near real-time ingestion of plaza-level ETC, cash, exempt, violation, and MLFF transaction data from all connected Toll Plazas and MLFF systems.
- iv. The Successful Bidder shall integrate TMCC 2.0 with external systems including NPCI-NETC, Acquirer Banks, NIC Portal, Canara Bank Payment Gateway, plaza bank accounts, and other Government systems/databases as required by IHMCL.
- v. The Successful Bidder shall develop and maintain centralized repositories for secure storage, management, reconciliation, traceability, and archival of toll transactions, settlements, e-Notices, operational logs, and associated metadata.
- vi. The Successful Bidder shall implement automated multi-party reconciliation mechanisms for validation of plaza transactions, MLFF transactions, e-Notice lifecycle, financial settlements, remittances, and payout adjustments using configurable rule-based engines.
- vii. The Successful Bidder shall provide automated anomaly detection capabilities to identify mismatches, revenue leakages, unsettled transactions, duplicate transactions, delayed remittances, SLA breaches, and data inconsistencies.
- viii. The Successful Bidder shall establish a comprehensive e-Notice management system for monitoring notice generation, settlement, payment lifecycle, disputes, exclusions, and compliance with prescribed timelines and business rules.
- ix. The Successful Bidder shall provision secure APIs, middleware, and interoperability frameworks to facilitate seamless integration, onboarding, and data exchange with multiple stakeholders and third-party platforms.
- x. The Successful Bidder shall provide centralized monitoring of health, uptime, fault status, and performance of Plaza ETC and MLFF field equipment through real-time telemetry and SNMP-based monitoring

mechanisms.

- xi. The Successful Bidder shall implement robust device identity management and anti-spoofing mechanisms including Device ID, IP, MAC, GPS binding, heartbeat validation, SNMP correlation, and anomaly detection to ensure authenticity of field equipment status.
- xii. The Successful Bidder shall develop and maintain GIS-enabled dashboards for visualization of equipment health, incidents, transaction patterns, and operational events across National Highway stretches.
- xiii. The Successful Bidder shall provide secure retrieval, storage, correlation, and audit access of transaction-linked image and video evidence for operational verification, dispute handling, and enforcement purposes.
- xiv. The Successful Bidder shall implement automated alerting, ticketing, escalation, and incident management mechanisms with configurable workflows, escalation matrices, timelines, and audit trails.
- xv. The Successful Bidder shall provide automated SLA monitoring and penalty computation for transaction timelines, remittances, API availability, equipment uptime, reconciliation timelines, and operational compliance parameters.
- xvi. The Successful Bidder shall develop advanced analytics and reporting capabilities including traffic trends, transaction reconciliation, annual pass compensation, journey analytics, financial reports, KPIs, audit reports, and operational dashboards.
- xvii. The Successful Bidder shall ensure role-based access control, multi-factor authentication, encryption, immutable audit trails, and compliance with applicable cybersecurity and regulatory frameworks including CERT-In, DPDP Act, and IT Act.
- xviii. The Successful Bidder shall maintain tamper-proof, time-stamped logs of transactions, reconciliation activities, alerts, device communications, SLA computations, user actions, and system events for the prescribed retention period.
- xix. The Successful Bidder shall ensure scalability, configurability, interoperability, and future readiness of TMCC 2.0 to support additional plazas, MLFF projects, devices, integrations, and evolving tolling requirements without major system redesign.
- xx. The Successful Bidder shall provide comprehensive Operations & Maintenance (O&M) support including preventive, corrective, and adaptive maintenance, performance monitoring, backups, disaster recovery, helpdesk support, and periodic upgrades.
- xxi. The Successful Bidder shall provide training, documentation, user acceptance support, knowledge transfer, and all associated services required for smooth implementation and sustained operation of TMCC 2.0 during the contract period.
- xxii. The Successful Bidder shall take over the complete existing data from the current TMCC vendor and undertake secure migration, validation, and integration of the same into the TMCC 2.0 system to ensure seamless continuity, historical traceability, and uninterrupted data availability.

2. Objectives

2.1 Module 1 — Plaza ETC Transaction Monitoring (PETM) Module Objectives

- i. Establish continuous, automated real-time data pipelines from all connected Toll Plazas for ingestion of complete plaza transactions (ETC, UPI, Exempt, Overload and Violations).
- ii. Integrate with NPCI and all Acquirer Banks for tri-party automated reconciliation of plaza-level transaction data, detecting unsettled plazas, revenue slippages, and mismatched vehicle classifications.
- iii. Integration with Toll Plazas for transaction images and to maintain a 30-day rolling visual audit layer with transaction images (Front Image) tagged to unique transaction IDs for instant operational auditing and vehicle profile validation.
- iv. Generate advanced analytics including Annual Pass Compensation computation for point-based, closed-loop fee plazas, sectional average speed and origin-destination profiling, and comprehensive MIS reports filterable by Regional Office (RO), Project Implementation Unit (PIU).

2.2 Module 2 — MLFF Transaction Monitoring and Reconciliation (MTMR) Module Objectives

- i. Establish a repository of all MLFF transaction data sourced from all MLFF Agencies and integrated data systems.
- ii. Obtain final settled ETC transaction records from NPCI and reconcile against MLFF Agency-reported data.
- iii. Obtain e-Notice generated records from NIC and reconcile against MLFF Agency-reported e-Notice data.
- iv. Obtain e-Notice settlement data from the Canara Bank Central PG Portal and reconcile against NIC records.
- v. Obtain weekly remittance data from plaza-specific Canara Bank accounts and reconcile against expected net settlement amounts.
- vi. Detect, alert, and report any financial or transactional anomaly in real time with automated escalation.
- vii. Monitor MLFF Agency SLA compliance for e-Notice generation, data submission, and settlement, with penalty computation.
- viii. Provide IHMCL with a comprehensive, audit-ready MIS and reconciliation dashboard.
- ix. Integration with various government software/ platforms such as NATGRID, GSTIN, E-detection for sharing transactional data and images.

2.3 Module 3 — Real-Time Health Monitoring (RTHM) Module Objectives

- i. Establish centralized, real-time visibility into the health and operational status of all Plaza ETC equipment's and MLFF field equipment across all projects and geographies.
- ii. Enforce strict device identity binding and multi-layer availability validation to eliminate SLA misrepresentation through fake pings, MAC spoofing, or proxy devices.
- iii. Compute equipment-level and project-level SLA compliance and penalties strictly in accordance with Contract Agreements.
- iv. Provide GIS-based spatial visualization of equipment health and incident data across National Highways.
- v. Generate automatic helpdesk tickets and escalate to System Integrators / OEMs on equipment downtime or anomaly detection.

- vi. Maintain a cryptographically signed, tamper-proof audit trail of all equipment status events, data integrity incidents, and SLA computations.

2.4 Module 4 – SLA Monitoring Module

- i. Establish centralized, automated tools for continuous real-time tracking of operational performance metrics against the contractually agreed-upon KPIs for both the MLFF and Plaza ETC systems.
- ii. Deploy a programmatic billing and penalty calculation engine to compute service level deductions, latency threshold breaches, and credit adjustments automatically without requiring manual intervention.
- iii. Generate dynamic performance dashboards and automated SLA monitoring reports structured natively at the specific Fee Plaza, Project Implementation Unit (PIU), and Regional Office (RO) levels for administrative compliance.
- iv. The SLAs to be monitored for MLFF and Plaza ETC System projects may be referred to RFP details provided at Section 2 of Schedule C.

2.5 Module 5 – Integration with External Agencies

- i. Provide a secure, scalable digital bridge and central middleware architecture to connect already integrated official government databases including VAHAN, NATGRID, BISAG-N MEITY, MoRTH Dashboard, NHAI Datalake, GSTN, and E-Detection portal.
- ii. Following are the envisaged new external integrations which shall have to be carried out as per requirement of NHAI/MoRTH from time to time:
 - a) Rajmarg Yatra
 - b) 1033
 - c) NHAI ATMS
 - d) NHAI One Mobile App

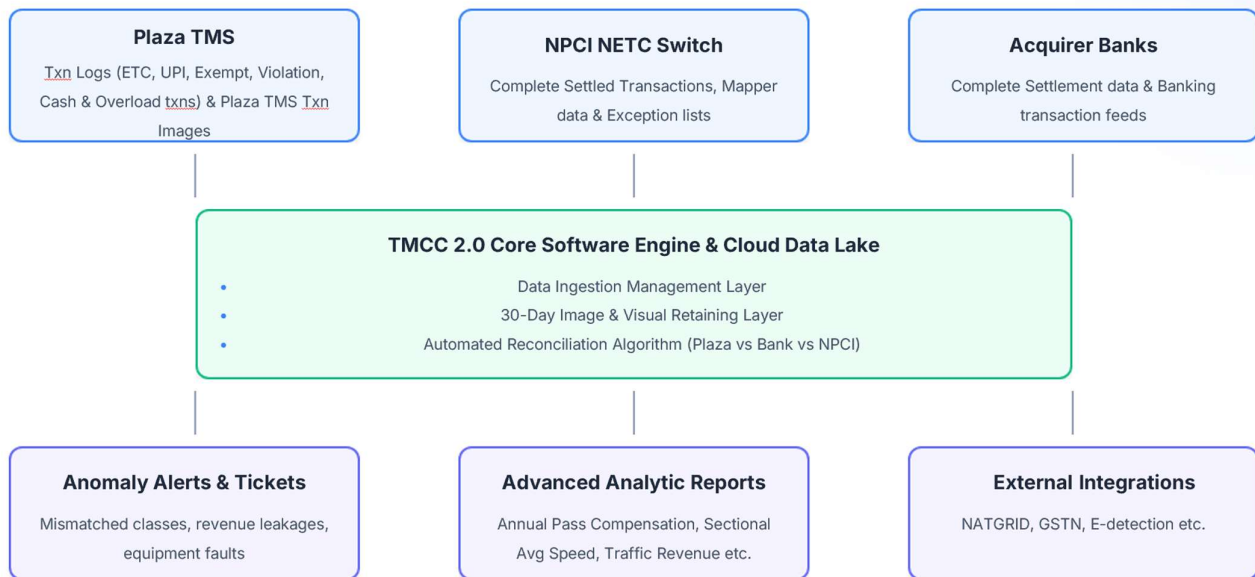
3. Data Sources and Integration Architecture

The PETM (Module 1) shall integrate with all plaza TMS, NPCI and Acquirer banks for transaction and financial data. The MTMR (Module 2) shall integrate with five primary data sources for transaction and financial data. The RTHM (Module 3) shall integrate with Plaza ETC field equipment's and MLFF field equipment across all ETC and MLFF projects for real-time health and status data. The IA shall establish and maintain secure, reliable integrations with all sources.

3.1 Module 1 – Transaction Data Sources

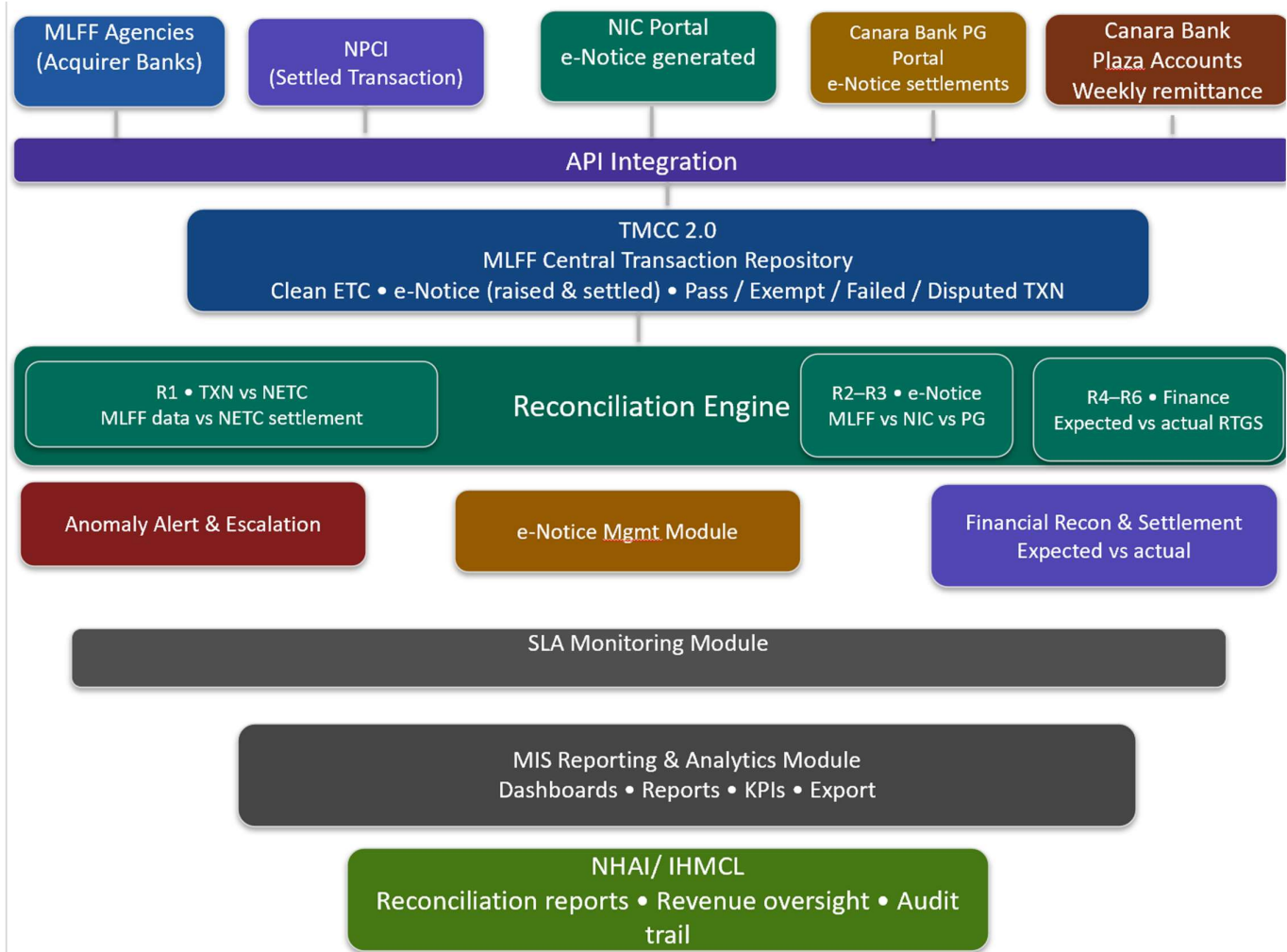
Type of Integration Required / Target System	Data to be Acquired / Parameters Description	Frequency / SLA Latency
Toll Management System (TMS) (~1200 Plazas)	- Each and every toll transaction (Transaction date/time, Plaza ID, Lane ID, Media of payment, Vehicle details, etc.) - Transaction images against each transaction	Every 5 minutes (Near real-time maximum gap of 10 minutes)
NPCI – NETC System (including EGCS)	Details of each and every FASTag electronic toll collection transaction across the network.	On Demand as required
NPCI NETC Mapper	Vehicle registration and owner details, active FASTag status fields, and global Exception/Blacklists of FASTags.	Every 5 minutes (Near real-time maximum gap of 10 minutes)
Acquirer Bank	Details of each and every FASTag electronic toll collection transaction across the network including logic implemented for Closed Loop fee plazas.	Every 5 minutes (Near real-time maximum gap of 10 minutes)
Canara Bank (for remittance management dashboard)	Plaza-wise and agency-wise remittance status (remitted, pending, delayed, short-remitted, if any), with ageing analysis of outstanding remittances by API/SFTP-based integration with NHAI's accredited bank's (Canara Bank, as on date).	Once in a day.

Plaza ETC Monitoring (PEM) Module Architecture



3.2 Module 2 — Transaction Data Sources

Data Source	Data Obtained	Integration Method
MLFF Agencies (Acquirer Banks)	Clean ETC TXN, e-Notice TXN raised, Exempted Vehicle TXN, Discount / Pass TXN, Failed / Rejected TXN, Manual Override TXN	Real-time API ≤ 15 min
NPCI — NETC System	Final settled ETC TXN records — NPCI TXN reference, settlement amount, settlement date, FASTag ID, settlement status (success / failed / reversed)	NPCI-NETC settlement API / reconciliation file/SFTP
NIC Portal	Authoritative e-Notice generated TXN records — VRN, violation timestamp, plaza code, vehicle class, e-Notice amount, evidence image references, NIC notice reference	Secure API (minimum every 4 hours) /SFTP
Canara Bank Central PG Portal	e-Notice settled / paid TXN details — payment date, amount received, UTR reference, payer VRN, payment status (success / failed / partial)	API (daily) /SFTP
Canara Bank Plaza-Specific Accounts	Weekly RTGS remittance credits — credit date, amount, RTGS / NEFT UTR reference, remitting party	Bank statement API / SFTP feed per plaza account (daily)



3.2.1 Integration with MLFF Agencies (Transaction API)

The IA shall design a standardized RESTful API framework (the "TMRM API Gateway") through which all MLFF Agencies shall transmit transaction data. MLFF Agencies shall push all transaction categories in near-real-time batches (maximum 15-minute intervals) using API integration.

3.2.2 Integration with NPCI — NETC

The IA shall establish API-based integration with the NPCI NETC system to obtain final settled ETC transaction records, serving as Data Point B in R-01 reconciliation. All Clean ETC transactions reported by MLFF Agencies shall be cross-validated against NPCI-NETC final settlement; reversals, failures, and unsettled transactions not reflected in MLFF Agency data shall be flagged as Critical anomalies.

3.2.3 Integration with NIC e-Notice Portal

The IA shall establish API integration with the NIC e-Notice portal (minimum pull every 4 hours) to obtain authoritative e-Notice generated records — VRN, violation timestamp, plaza code, vehicle class, e-Notice amount, evidence image references, and NIC notice reference number. NIC records serve as the primary reference for the e-Notice lifecycle and R-02 reconciliation.

3.2.4 Integration with Canara Bank Central PG Portal

The IA shall establish API integration with the Canara Bank Central PG Portal (minimum daily pull) to obtain e-Notice payment records — NIC notice reference, VRN, payment amount, UTR reference, payment date, and payment status. These records serve as Data Point A in R-03 reconciliation.

3.2.5 Integration with Canara Bank Plaza-Specific Accounts

The IA shall receive daily account statement feeds (bank statement API / secure SFTP) for each plaza-specific Canara Bank account, capturing credit date, amount, RTGS/NEFT UTR, and remitting party name. Each credit shall be mapped to the corresponding MLFF Agency's weekly Tuesday settlement cycle and validated against the expected net remittance computed from the CTR.

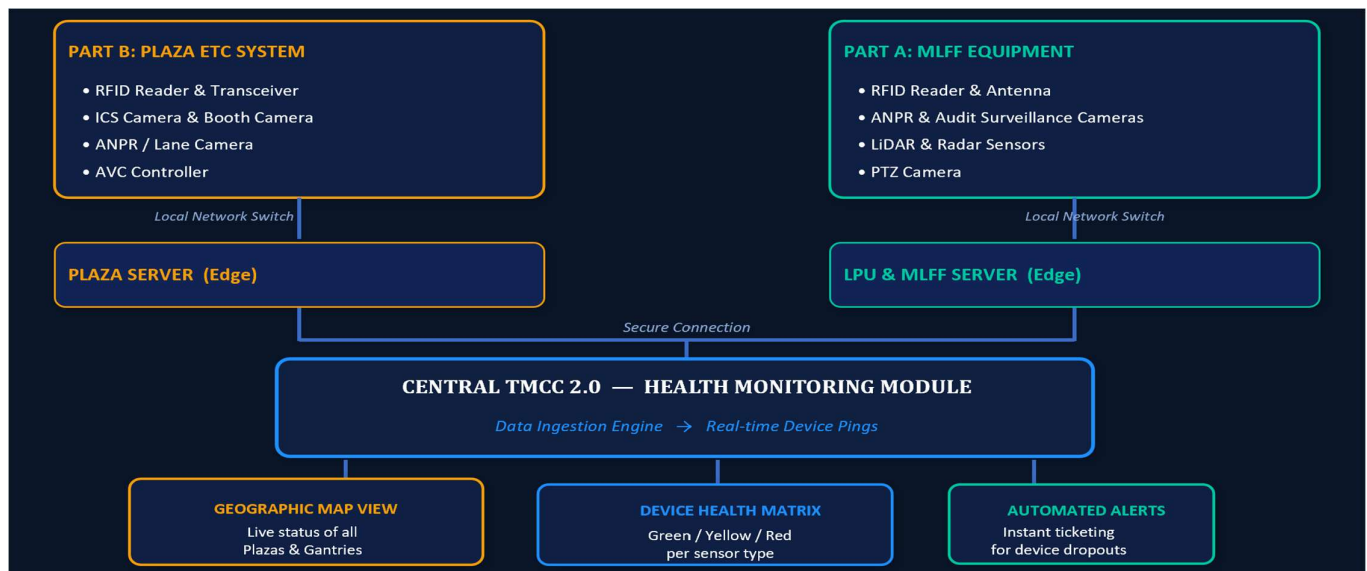
3.3 Module 3 — RTHM Module (Real-Time Health Monitoring Module)

The IA shall integrate the RTHM with Plaza ETC equipments across all NH Fee Plazas and MLFF field equipment across all MLFF projects through SNMP-based data collection and secure device-initiated heartbeat protocols. The integration shall:

- Support heterogeneous MLFF systems from multiple System Integrators / OEMs, with a common integration framework designed for extensibility as new projects are added.
- Collect SNMP data at configurable intervals (≤ 3 minutes for health data;) from all registered devices.
- Receive encrypted, digitally signed, application-level heartbeat signals from each field device at intervals not exceeding 3 minutes, containing Device ID, MAC Address, timestamp, and operational status payload.
- Provide APIs for integration with existing NHAI / IHMCL management platforms and third-party systems as required.

3.4 Module 4 - SLA Monitoring Module

The IA shall integrate with Plaza ETC System and MLFF System for effective monitoring of different SLA parameters as mentioned in respective Contract Agreements. The SLAs to be monitored for MLFF and Plaza ETC System projects may be referred to RFP details provided at Section 2 of Schedule C.



4. Functional Requirement — Module 1: Plaza ETC Transaction Monitoring Module

The scope of Module 1 shall include the Take-over of existing TMCC application and design, development, deployment, integration, testing, commissioning, operation, maintenance, and support of the Plaza ETC Transaction Monitoring Module — a platform for real-time data ingestion from Toll Plazas, automated tri-party financial reconciliation, visual audit layer management, and advanced analytics. The detailed scope shall include, but not be limited to, the following:

4.1 Existing TMCC Modules 1.0 –

The details of existing TMCC application are provided at Clause 10 of Schedule B. The IA shall take over the existing TMCC application and perform the enhancements mentioned in subsequent clauses. The Selected Bidder shall undertake the takeover of the existing TMCC application on an "as-is-where-is" basis. The scope shall include:

- a) Detailed study and assessment of the existing TMCC application, architecture, source code, APIs, database structures, interfaces, reports, dashboards, workflows and operational processes.
- b) Preparation of a System Assessment Report identifying existing functionalities, gaps, dependencies, technical debt, performance bottlenecks and enhancement requirements.
- c) Reverse engineering and documentation of existing modules wherever complete documentation is unavailable.
- d) Migration and onboarding of existing application components, databases, configurations, reports and integrations into the TMCC 2.0 environment.
- e) Ensuring continuity of operations during transition without disruption to existing toll monitoring services.
- f) Preparation and submission of comprehensive Software Requirement Specification (SRS), System Design Document (SDD), Interface Control Documents (ICD), Database Design Documents and User Manuals for the existing and proposed system.

4.2 Enhancement in TMCC 1.0

The enhancements required in TMCC 1.0 Module are provided as below:

4.2.1 Sub-module 1.1 - Plaza-Level Real-Time Ingestion

The TMCC 2.0 Software shall establish continuous, automated data pipelines with each individual Toll Plaza connected to the network. This integration encompasses two primary operational dimensions:

- 1 **Real-Time Transactional Stream:** Ingestion of every single time-stamped lane transaction (ETC, Cash, Exempt, and Violations) directly from the plaza-level Toll Management System (TMS) within a near real-time window.
- 2 **Indicative Transaction Data field to be taken from Plaza TMS Server is provided as below:**

- a) Transaction Date and Time
- b) Plaza ID
- c) Lane ID
- d) Media of Toll Payment: ETC/UPI/ Exempt/Violation/Cash/Pass/others
- e) Transaction Id
- f) Tag Id / Other ETC media Id (for non-FASTag media)
- g) Vehicle class (Tag Class /Operator class)
- h) Vehicle class (AVC)
- i) Vehicle Registration Number
- j) Overload Weight
- k) Overload Amount
- l) Toll amount

4.2 Sub-module 1.2 - Core Multi-Party Integration Architecture

The Plaza ETC Monitoring Module shall function as the central clearinghouse for plaza-level data validation. The system must natively interface with external financial and regulatory infrastructure via standard, secure APIs:

- 1 **NPCI NETC Central Integration:** Continuous synchronization with the NPCI central switch to fetch overall electronic transaction feeds, global clearing logs, updated NETC Mapper databases (vehicle registration maps, tag states), and active Exception/Blacklists.
- 2 **Acquirer Bank Direct Stream Integration:** Dedicated integration with all empaneled Acquirer Banks to pull precise financial settlement records, batch transmission reports, payment responses, and banking transaction files independently of the plaza and clearinghouse networks.
- 3 **Indicative Transaction Data field to be taken from NPCI & Bank is provided as below:**
 - i. Plaza ID
 - ii. Lane ID
 - iii. Concessionaire ID
 - iv. Transaction ID (Plaza) – To be shared by Acquirer Bank
 - v. Transaction ID (Bank) – To be shared by Acquirer Bank & NPCI
 - vi. Transaction Code – 01, 02,... 07, 08
 - vii. Transaction Date and time stamp
 - viii. Transaction settlement Date and time stamp
 - ix. Tag class
 - x. Mapper class
 - xi. Violation raised?
 - xii. Date and time stamp of when Violation was raised
 - xiii. Violation resolved and result?
 - xiv. Date and time stamp of Violation resolution
 - xv. Dispute (by Road User) raised?
 - xvi. Date and Time stamp when the dispute was raised
 - xvii. Dispute resolved and result?
 - xviii. Date and Time stamp of dispute resolution
 - xix. Action Taken e.g. Tag Blacklisted

4.3 Sub-module 1.3 - Transaction Image Retention & Visual Auditing Storage Layer

- 1 The software shall integrate with MLFF agencies for taking image evidence against each

transaction.

- 2 All transaction-associated images must be systematically compressed, securely tagged with unique transaction IDs, and retained in active cloud storage for a mandatory rolling period of 30 calendar days, available for instant operational auditing and automated vehicle profile validation.
- 3 **Operational Compliance Standard:** Near real-time data delivery mandates a maximum latency gap of 10 minutes from on-ground generation to backend ingestion, maintaining time synchronization across all systems.

4.4 Sub-module 1.4 - Automated Tri-Party Financial & Operational Reconciliation

The core engine of this module shall host an automated, algorithmic tri-party reconciliation workflow operating continually across three distinct data inputs: Plaza TMS Data (on-ground lane transaction logs, local media timestamps, and local vehicle classification records); Acquirer Bank Data (direct financial settlement logs, bank processing timestamps, and credit/debit transaction files); and NPCI Switch Data (clearinghouse logs, centralized mapper definitions, and exception/settlement statuses).

The engine shall automatically align these records using deterministic matching rules (Transaction ID, Tag ID, Timestamp, and Plaza ID) and instantly flag any anomalies, including: Unsettled Plazas (transactions logged at the plaza TMS but missing from the Acquirer Bank or NPCI pipeline); Revenue Slippages & Double deduction (variance between settlement amounts authorized by the clearinghouse vs actual banked funds); Mismatched Classifications (misalignments between local AVC classification, and the central NPCI mapper's declared vehicle type) and Overload Collection etc.

4.5 Sub-module 1.5 - Advanced Analytics & Intelligent Reporting Infrastructure

Leveraging the data lake infrastructure, the reporting engine shall support automatic generation of the following high-order analytical metrics:

- 1 **Annual Pass Compensation Analytics for Point based and Closed Loop Fee plazas:** Algorithmic formulation modeling for calculation of pass utilization frequencies and automating accurate compensation summaries owed to Concessionaires/ User fee collection agencies based on pass structures.
- 2 **Average Speed & Sectional Journey Profiling:** Utilizing sequential point-to-point toll plaza transactions of unique Tag IDs to map regional origin-destination arrays and compute precise average speeds across national highway sections for logistics, bottleneck detection, and traffic modeling.
- 3 **Comprehensive Operations Reporting:** Automated modular publishing options (daily, monthly, quarterly) filtering down to Regional Office (RO) levels, Project Implementation Units (PIU).
- 4 Toll Plaza Monitoring Dashboard.
- 5 Transaction Monitoring and Reconciliation Dashboards.
- 6 FASTag Transaction Analytics.
- 7 Exception Transaction Monitoring.
- 8 User Management and Role-Based Access Control.
- 9 Operational Alerts and Notifications.
- 10 Dashboard Visualization and Business Intelligence Features.
- 11 Audit Trail and Activity Logging.
- 12 Data Archival and Retrieval Mechanisms.

13 Performance Optimization and Scalability Improvements.

The enhancements shall be configurable and scalable to accommodate future business requirements.

4.6 Sub-module 1.6 – Plaza Congestion Monitoring System (PCMS)

1. Overview

The Successful Bidder shall deploy a Plaza Congestion Monitoring System (PCMS) to monitor real-time traffic congestion at **100 fee plazas** using satellite/map-based services or AI-based remote sensing technology (e.g., Google Maps, MapMyIndia, Bhuvan, OpenStreetMap, or equivalent). The system shall be delivered on a **Software-as-a-Service (SaaS) model**, encompassing app development, AI analytics, cloud hosting, API integrations, and Toll Data Lake connectivity — all at no additional cost to IHMCL.

2. Scope of Work

The Bidder shall undertake the following:

- a. **Data Collection** — Collect real-time traffic flow, queue length, wait-time, and congestion data at each fee plaza via map-based services;
- b. **Map Integration** — Integrate collected data with map-based services through custom or existing APIs for real-time traffic updates;
- c. **Data Processing** — Process and analyse data using ML algorithms and visualisation tools to identify congestion hotspots and predict traffic patterns;
- d. **User Interface** — Develop a web-based platform and mobile application displaying real-time traffic updates and congestion status;
- e. **PTZ Cross-Verification** — Validate system-generated alerts against PTZ camera feeds available at the NHAI/IHMCL Command Centre;
- f. **API Integration** — Populate congestion data via automated APIs into the TMCC 2.0 platform and Toll Data Lake;
- g. **Maintenance & Upgrades** — Provide ongoing support, algorithm updates, software/hardware patch management, and version upgrades throughout the contract period at no extra cost to IHMCL.

3. Functional Requirements

The PCMS dashboard shall provide, at a minimum:

- a. 24×7 real-time monitoring with alerts for queue lengths exceeding 300 metres;
- b. Lane-closure information by integration with Plaza TMS data.
- c. Automated alerts (SMS/Email) to the designated NHAI Nodal Officer when wait time

- exceeds 3 minutes; alerts to be tracked until congestion recedes below 40 sec;
- d. Ranking of worst-performing plazas by wait time;
- e. Geospatial congestion view on an interactive map interface;
- f. Live display of plaza performance with online and historical traffic statistics and predictions;
- g. Data presentation in tabular, graphical, and chart formats including graphs, dials, and other at-a-glance visualisations;
- h. Daily/Weekly Reports covering peak congestion hours with improvement recommendations;
- i. Integration with the IHMCL Command Centre, if directed.

4. Accuracy & Penalty

The system shall achieve a minimum accuracy of **98%** for congestion detection and wait-time estimation, verified against NH live feeds available with IHMCL. Non-compliance shall attract penalties as prescribed elsewhere in this RFP.

5. Regulatory Compliance

All satellite imagery, map feeds, and geospatial data shall hold requisite regulatory and security clearances for use in India.

6. Cost Obligations

All costs including API hit charges (Google Maps or equivalent), or renewals shall be borne entirely by the Successful Bidder.

4.7 Annual Potential Collection (APC) Module

1. The system shall have the capability to compute the Annual Potential Collection (APC) for each toll plaza based on PCU-wise traffic volume, applicable toll rate notifications, historical/projected traffic growth trends, and seasonal variation factors, in accordance with NHAI's prescribed APC methodology, as required by NHAI from time to time.
2. The dashboard shall generate APC reports in the format required for NHAI's bidding-out process for selection of toll collection agencies at PF plazas, including comparative APC trends over prior years, to support reserve-price/bid-parameter determination.
3. The dashboard shall provide functionality to revise/recompute APC upon updated traffic count data or revised toll rate notifications, with version control to log all changes, including seasonal or force majeure adjustments applied.

4.8 Remittance Management Dashboard (Integration with Canara Bank)

1. The system shall have API/SFTP-based integration with NHA's accredited bank's (Canara Bank, as on date) settlement/remittance systems for automated reconciliation of toll collection amounts against bank credits for taking data on a daily basis.
2. The dashboard shall display plaza-wise and agency-wise remittance status (remitted, pending, delayed, short-remitted, if any), with ageing analysis of outstanding remittances.
3. The system shall have the capability to auto-generate alerts/notifications for remittance delays or mismatches beyond a defined threshold, escalating as per defined SLA timelines.
4. The dashboard shall maintain a complete audit trail of remittance transactions, including bank reference numbers (UTR), reconciliation status, and provision for manual reconciliation with supporting documentation upload.

4.9 Closed Tolling Plaza Management Dashboard

1. The system shall have the capability to monitor and report on closed-loop fee plazas (e.g., Delhi–Vadodara, Trans-Haryana, etc.) separately, capturing entry-exit transaction correlation and distance-based fee computation specific to closed-tolling architecture.
2. The dashboard shall display entry-exit transaction matching status, including unmatched transactions (vehicles with entry but no corresponding exit record, or vice versa), with configurable ageing thresholds for escalation.
3. The dashboard shall provide comparative analytics specific to closed-tolling plazas, distinguishing these from open/MLFF plaza analytics.

4.10 Site Engineer Module

1. The system shall have a dedicated log-in/module for concerned Site Engineers under each PIU log-in, enabling them to view and act upon assigned action points.
2. The system shall have the capability to prioritise improvement/action items using AI/analytics-based logic (e.g., severity, recurrence, SLA impact), and to assign such items to the concerned Site Engineer(s) based on plaza/jurisdiction mapping.
3. The module shall enable Site Engineers to record action-taken updates against assigned items, including upload of closure evidence (photographs/documents), with the system tracking ageing of open items and auto-escalating unresolved items beyond defined timelines.
4. The dashboard shall generate Site Engineer-wise performance reports (e.g., closure rate, average resolution time, ageing of pending items) enabling identification of high-performing Site Engineers, for reporting to NHA/IHMCL.

5. Functional Requirement — Module 2: MLFF Transaction Monitoring & Reconciliation (MTMR) Module

1. The Selected Bidder shall design, develop, deploy and maintain a dedicated MLFF Monitoring Module as part of TMCC 2.0. The module shall include, but not be limited to:
 - a) Centralized monitoring of MLFF tolling transactions across all operational corridors.
 - b) Monitoring of vehicle detection, vehicle classification, image capture, ANPR processing and toll charging processes.
 - c) Monitoring of transaction lifecycle from vehicle passage to toll realization.
 - d) Tracking of chargeable, exempted, pending and disputed transactions.
 - e) Monitoring of toll collection efficiency and revenue realization metrics.
 - f) Monitoring of violations, missed detections, unreadable registrations, low-confidence ANPR cases and system exceptions.
 - g) Operational dashboards for corridor-wise, lane-wise and gantry-wise monitoring.
 - h) Real-time monitoring of MLFF subsystem health and performance indicators.
 - i) Revenue analytics and trend analysis for MLFF operations.
 - j) Provision of drill-down analytics up to transaction level.
 - k) Support for future integration with GNSS-based tolling and other emerging tolling technologies.
2. The scope of Module 2 shall include the design, development, deployment, integration, testing, commissioning, operation, maintenance, and support of the MTMR Module — an integrated platform for reconciliation of MLFF transactions, e-Notice lifecycle management, financial settlement validation, anomaly detection, SLA monitoring, and MIS reporting. The detailed scope shall include, but not be limited to, the following:

5.1 Sub- Module 2.1 - API Integration and Data Ingestion

- (i) The IA shall design, develop, deploy, and maintain an API Integration Gateway (AIG) for secure integration with MLFF Agencies, NPCI-NETC, NIC Portal, Canara Bank Central PG Portal, and Plaza Bank Accounts.
- (ii) The system shall support:
 - API-based ingestion of all transaction categories from MLFF Agencies at defined intervals;
 - API-based retrieval of e-Notice records from the NIC Portal;
 - API-based integration with NPCI-NETC for final settled ETC transaction records;
 - Integration with the Canara Bank Central PG Portal for e-Notice settlement details;
 - Integration with plaza-specific bank accounts for RTGS remittance verification.
- (iii) The API Gateway shall enforce OAuth 2.0, TLS 1.3, schema validation, deduplication, retry logic, audit logging, and exception handling. All APIs shall be documented in OpenAPI 3.0 format.

5.2 Sub-Module 2.2 - Central Transaction Repository

- (i) The IA shall develop and maintain a Central Transaction Repository for storage, management, and processing of:
 - Clean ETC transactions — settled through NPCI-NETC;
 - e-Notice records (raised) — cross-validated against NIC Portal;
 - e-Notice records (settled) — confirmed by Canara Bank Central PG Portal;
 - Pass and Discount transactions — including Local Pass (Category N5) and Global Pass; 4-TXN per 24-hour cap enforced;
 - Exempted vehicle transactions — vehicles exempted under Rule 11 of NH Fee Rules, 2008;
 - Failed / Rejected, Disputed, and Manual / Override transactions;
 - Settlement and remittance records — weekly RTGS credits per plaza-specific Canara Bank account.
- (ii) The Central Transaction Repository shall maintain immutable audit trails and records for a minimum of 7 years (or as prescribed by IHMCL / Authority). Each record shall carry full metadata: Plaza Code, Lane ID, Transaction Timestamp (IST, millisecond precision), VRN, FASTag ID, Vehicle Class, Transaction Amount (INR), Transaction Status, NPCI/NETC Reference ID, NIC e-Notice Reference (where applicable), Canara Bank PG Reference (where applicable), and MLFF Agency Identifier.
- (iii) The system shall ensure data consistency, traceability, reconciliation readiness, and secure archival throughout the retention period.
- (iv) The scope shall include:
 - a) Integration with MLFF transaction processing systems of Acquirer Banks for getting transactional and sensor data (Radar, Lidar, Cameras etc.) from different fee plazas.
 - b) Collection and consolidation of transaction data from multiple acquiring entities.
 - c) Centralized dashboard for monitoring transaction volumes, charge success rates, pending recoveries and revenue realization.
 - d) Standardization and normalization of data received from multiple sources.
 - e) API-based integration framework supporting future onboarding of additional acquiring entities.
 - f) Monitoring of API performance, availability and transaction success rates.
 - g) Reconciliation dashboards across participating entities.

5.3 Sub-Module 2.3 - Reconciliation Engine

- (i) The IA shall design and implement an automated, configurable, rule-based Reconciliation Engine performing multi-stage reconciliation across transaction, e-Notice, and financial datasets.

R1 — Transaction Reconciliation

- Reconciliation of MLFF-reported Clean ETC transaction data against NPCI-NETC final settlement records;
- Validation of pass / fail / exempt transaction status, count, and settlement consistency.

R2 & R3 — e-Notice Reconciliation

- R2: Reconciliation between MLFF Agency-reported e-Notice records and NIC Portal authoritative records;
- R3: Cross-verification between NIC Portal records and Canara Bank Central PG Portal payment records — validation of notice raising, authorization, payment status, UTR, and settlement amount.

R4 to R6 — Financial Reconciliation

- R4: Computation of expected weekly net remittance (gross TXN – payout – penalties) and comparison against actual RTGS credit in plaza-specific Canara Bank account;
- R5: Validation of remittance cycle timeliness (Tuesday settlement); identification of delayed, short, or excess remittance;
- R6: Validation of e-Notice 14-day payout adjustment compliance; flagging of premature deductions for reversal.

(ii) All reconciliation exceptions shall be categorized (shortfall / excess / missing / timing breach), assigned severity (Critical / High / Medium / Low), and alerts shall be generated for any anomalies.

Rec. ID	Data Point A	Data Point B	Reconciliation Logic & Alert Trigger
R-01	Clean ETC TXN count & amount (MLFF Agency)	Final settled TXN records (NPCI-NETC)	Match MLFF-reported TXN count and amount against NPCI-NETC final settlement; flag count mismatch, amount variance, reversal, or unsettled TXN
R-02	e-Notice TXN generated (NIC Portal)	e-Notice TXN reported by MLFF Agency	All NIC-registered e-Notices must match MLFF Agency-reported notices; unmatched notices on either side flagged as Critical anomaly
R-03	e-Notice settled amount (Canara Bank Central PG Portal)	e-Notice TXN generated (NIC)	Match payment against notice; identify unpaid, partially paid, overpaid, duplicate, and lapsed notices
R-04	Expected weekly net remittance (Computed from CTR)	Actual credit in plaza-specific Canara Bank account	Verify RTGS credit = expected net (gross TXN – payout – penalties); flag shortfall, excess, or missing credit
R-05	Remittance cycle timeliness	Settlement cycle	Detect delayed RTGS credits; alert if credit not received by deadline
R-06	e-Notice payout adjustment in weekly settlement	14-day rule compliance check	Validate MLFF Agency does not adjust e-Notice payout before 14-day window; flag premature deductions for reversal

5.4 Sub-Module 2.4 - e-Notice Management

(i) The IA shall manage the end-to-end e-Notice lifecycle using the NIC Portal as the source of truth for e-Notice generation and the Canara Bank Central PG Portal as the source of truth for settlement and payment validation.

(ii) The Selected Bidder shall integrate TMCC 2.0 with systems of NIC, Canara Bank and other designated agencies for monitoring and tracking of e-Notice issuance and enforcement activities.

(iii) The scope shall include:

- a) Integration through APIs, web services or other approved mechanisms.
- b) Real-time status tracking of e-Notice lifecycle.
- c) Dashboard for monitoring notice generation, dispatch, delivery and closure status.
- d) Tracking of pending, disputed and resolved notices.
- e) Exception monitoring and alert generation for failed or delayed notices.
- f) Reporting and analytics related to enforcement effectiveness.
- g) Future extensibility for integration with additional enforcement agencies and stakeholders.
- h) Monitoring of e-Notice generation timelines — time from violation timestamp to NIC registration; SLA breach alert where not registered within 24 hours (or as per NPCI / NIC guidelines);
- i) Tracking of e-Notice status: raised, dispatched, acknowledged, pending, paid, disputed, failed, cancelled, lapsed — with full timestamp history;
- j) Monitoring of payment timelines and 14-day payout adjustment rule enforcement; aging dashboard (pending / eligible / overdue / paid / disputed / lapsed) by plaza and MLFF Agency;
- k) Exclusion validation: e-Notices shall not be expected for Discount Pass, Global Pass, or Exempted vehicles; any such notices in NIC data flagged for investigation.

(iv) The module shall support configurable business rules, workflow management, and automated status tracking.

5.5 Sub-Module 2.5 - Financial Reconciliation & Settlement Module

(i) The FRSD shall provide validation of expected versus actual remittance, settlement variance computation, detection of delayed or short remittance, and computation of incentives, penalties, and settlement adjustments. It shall include:

- Weekly expected vs. actual remittance view per plaza per MLFF Agency, with INR and percentage variance;
- Running ledger of plaza-specific Canara Bank credits mapped to settlement cycles;
- Quarterly incentive computation: clean ETC TXN % against 95% threshold; 25% of Fixed Per Transaction Cost on excess transactions;
- SLA penalty tracker; exception management workflow for IHMCL officers.

(ii) The module shall generate reconciliation statements and settlement summaries suitable for financial audits and regulatory submissions.

5.6 Sub-Module 2.6 - Anomaly Alert & Escalation Mechanism

(i) The AAAM shall provide real-time identification of exceptions across all data streams and reconciliation

outputs. It shall:

- Generate alerts for: reconciliation mismatch, delayed e-Notice generation, payment failures, API downtime, delayed RTGS remittance, data inconsistency;
- Trigger Email / SMS / portal notifications within 2 hours of detection; escalate unresolved alerts to senior IHMCL officers after 4 hours;
- Maintain configurable escalation matrix, response timelines, and full alert lifecycle audit trail.

(ii) Alert thresholds, timelines, and escalation matrix shall be configurable by IHMCL without IA development intervention.

5.7 Summary of Module 2 (MLFF Transaction Monitoring & Reconciliation (MTMR) Module)

ID	Sub-Module Name	Key Functions
M2.1	API Integration Gateway (AIG)	Secure ingestion from MLFF Agencies; pull integration with NPCI-NETC, NIC Portal, Canara Bank PG Portal, and plaza bank accounts.
M2.2	Central Transaction Repository	Immutable store for all TXN categories — Clean ETC, e-Notice (raised & settled), Pass, Exempt, Failed, Disputed, Settlement / Remittance records.
M2.3	Reconciliation Engine	Six-stage automated reconciliation: R1 (TXN vs NPCI-NETC), R2–R3 (e-Notice: MLFF vs NIC vs Canara Bank PG), R4–R6 (Financial: expected vs actual RTGS). Rule-based, configurable.
M2.4	e-Notice Management	Full lifecycle tracking (NIC = generation source of truth; Canara Bank PG = settlement source of truth). SLA monitoring; 14-day payout rule; aging dashboard.
M2.5	Financial Reconciliation & Settlement	Expected vs actual remittance validation; variance computation; incentive and penalty computation; reconciliation statements for IHMCL / audit.
M2.6	Anomaly Alert & Escalation	Real-time anomaly detection; Email / SMS /WhatsApp escalation within 2 hours; configurable thresholds and escalation matrix; full audit trail.

6. Functional Requirement — Module 3: Real-Time Health Monitoring Module (RTHM)

The scope of Module 3 shall encompass the design, development, deployment, integration, testing, commissioning, operation, maintenance, and support of the Real-Time Health Monitoring (RTHM) system — a centralized platform for real-time monitoring and management of Plaza ETC Equipment's and MLFF Equipment's. The RTHM shall facilitate equipment health monitoring, device identity and access management, anti-spoofing mechanisms, equipment SLA computation, incident detection and management, and related operational oversight. The detailed scope of work shall include, but not be limited to, the following:

6.1 Design, Development and Deployment

- (i) The IA shall design, develop, deploy, and commission the RTHM system, integrating with MLFF equipment across all MLFF projects and Plaza ETC equipment across all Plaza ETC Systems for real-time health monitoring of field equipment and computation of equipment SLAs. The IA shall:
 - a) Conduct a comprehensive assessment for finalization of detailed technical architecture, network topology, and project execution plan; submit detailed design documents to IHMCL for approval prior to commencement of development;
 - b) Assess accessibility of the Control Centre site, identify installation constraints, evaluate technical and integration risks associated with heterogeneous Plaza ETC and MLFF systems from multiple System Integrators / OEMs;
 - c) Design and implement the complete network, intercom, structured cabling, power, and required connectivity infrastructure within the Control Centre building as per IHMCL specifications and applicable national standards (IS / IEC);
 - d) Integrate the RTHM with all Plaza ETC and MLFF equipment across all projects to fetch near-real-time health, uptime / downtime, fault, and performance data from all Plaza ETC and MLFF field equipment;
 - e) Ensure the software architecture supports horizontal and vertical scalability to accommodate increasing numbers of traditional Plaza ETC and MLFF projects, devices, and data volumes without performance degradation;
 - f) Implement robust failover and high-availability mechanisms to ensure uninterrupted monitoring in the event of server failures, network disruptions, or component outages;
 - g) Provide and configure APIs to facilitate integration with existing NHAI / IHMCL management platforms, dashboards, and third-party systems as required.

6.2 Sub-Modules - Real-Time Monitoring Capabilities

The RTHM shall provide the following monitoring capabilities:

- a) **Sub-Module 3.1 - Device Registry & Identity Management:** Register all Plaza ETC and MLFF equipment with project-wise unique Device IDs for unambiguous identification and tracking. Each equipment shall be tagged with its Device ID, MAC Address, IP Address, physical location (GPS coordinates), and associated project and stretch code;
- b) **Sub-Module 3.2 - SNMP Data Collection Engine:** Collect SNMP data from all Plaza ETC and MLFF devices including system health parameters, fault alerts, and performance statistics, at configurable intervals (minimum every 3 minutes for health data);

- c) **Sub-Module 3.3 - Real-Time Health & Uptime Monitoring:** Monitor Real-time health status of MLFF and Plaza ETC System equipment. Monitor SLA parameters of Plaza ETC System Integrators and MLFF Agencies strictly in accordance with the Contract Agreement between IHMCL and System Integrators and IHMCL and MLFF Agencies; generate device-wise and project-wise SLA breach reports with configurable SLA rules, thresholds, scoring logic, and penalty computation;
- d) **Sub-Module 3.4 - Anti-Spoofing & Data Integrity Engine:** Refer at Clause 7 of Schedule B.
- e) **Sub-Module 3.5 - GIS-Based Visualization:** Display real-time incident data and equipment health status on a GIS-based map of National Highways for intuitive spatial awareness and operational response;
- f) **Sub-Module 3.6 - Video and Image Evidence:** Provide secure on-demand retrieval, viewing, and export of image and video evidence correlated with incident records and transaction data for verification and audit purposes.
- g) **Sub-Module 3.7 - Warning, Alerts and Ticketing and Tamper-Proof Audit Trail**
 - a) Generate automatic alerts and unique helpdesk tickets upon detection of any Plaza ETC or MLFF equipment downtime, SLA breach, or system anomaly, and share with the concerned System Integrator for immediate action;
 - b) Implement a structured follow-up and escalation mechanism for unresolved alerts with configurable escalation matrices;
 - c) Maintain a complete log of all alerts generated, acknowledged, escalated, and resolved — with full timestamps and resolution audit trail.

6.3 Summary of Module 3 (RTHM) Module

ID	Sub-Module Name	Key Functions
M3.1	Device Registry & Identity Management	Registration of all Plaza ETC and MLFF equipment with unique Device IDs; one-to-one binding of Device ID, MAC Address, IP Address, GPS coordinates, and project/stretch code.
M3.2	SNMP Data Collection Engine	Collection of SNMP health, fault, and performance data from all Plaza ETC and MLFF devices at configurable intervals (≤ 3 minutes for health data; 6-hourly for transactional data).
M3.3	Real-Time Health & Uptime Monitoring	Continuous monitoring of equipment operational status using multi-layer authentication: signed heartbeats, SNMP correlation, video feed verification, and transactional evidence correlation.
M3.4	Anti-Spoofing & Data Integrity Engine	Fake IP ping detection; MAC/IP binding enforcement; proxy/VPN detection; ARP spoofing detection; ML-based time-series anomaly detection; behavioral fingerprinting.
M3.5	GIS-Based Visualization Dashboard	Real-time display of equipment health and incident data on a GIS-based National Highways map; spatial drill-down to plaza, lane, and device level.
M3.6	Video & Image Evidence Module	Secure on-demand retrieval, viewing, and export of image and video evidence correlated with incident records and transaction data for verification and audit.
M3.7	Alert, Ticketing & Escalation and Tamper-Proof Audit Trail Module	Automatic helpdesk ticket generation on equipment downtime / SLA breach; structured escalation to System Integrators; configurable escalation matrix; complete alert lifecycle log. Cryptographically signed, write-once, append-only audit log of heartbeats, identity mismatches, spoofing events, SLA computations, user actions, and system events. Retained for Contract Period + 7 years.

6.4 Equipment Coverage (Plaza ETC & MLFF)

The Real-Time Health Monitoring Module (Module 3) shall provide monitoring coverage for both Plaza ETC equipment and MLFF field equipment across all connected projects. The indicative list of equipment to be monitored as per the scope of Module -3 is provided as below:

S. No.	Equipment Category	Equipment Type
Part A: MLFF Equipment		
1	MLFF	RFID Reader
2	MLFF	RFID Antenna
3	MLFF	ANPR Camera
4	MLFF	Audit Surveillance Camera
5	MLFF	LiDAR
6	MLFF	Radar
7	MLFF	Local Processing Unit (LPU)
8	MLFF	PTZ Camera
9	MLFF	MLFF Server
Part B: Plaza ETC Equipment		
1	Plaza ETC	RFID Reader & Transceiver
2	Plaza ETC	ICS Camera
3	Plaza ETC	Booth Camera
4	Plaza ETC	ANPR/Lane Camera
5	Plaza ETC	Automatic Vehicle Classification (AVC) Controller
6	Plaza ETC	Plaza Server
7	Plaza ETC	Toll Lane Controller (TLC)

Note:

- The above list of equipment's is indicative, IHMCL reserves the right to increase the number and categories of equipment to be brought under monitoring during the project period.
- The proposed solution shall be modular, scalable, and interoperable, capable of seamless integration with additional equipment categories, OEMs, System Integrators, and future electronic tolling requirements under both Plaza ETC (NETC) and MLFF ecosystems.

7. Data Integrity and IP Authenticity Controls (Module 3 Real-Time Health Monitoring Module (RTHM))

CRITICAL COMPLIANCE REQUIREMENT: This Section establishes mandatory anti-spoofing and data integrity obligations on the Implementation Agency. Any violation of these requirements shall constitute a Critical SLA Breach and shall attract severe financial penalties, up to and including contract termination and blacklisting. Mere ICMP Ping responses SHALL NOT be accepted as valid proof of equipment availability for SLA computation under any circumstances.

7.1 Rationale

IHMCL recognizes that unscrupulous entities may attempt to misrepresent the operational status of Plaza ETC and MLFF field equipment — including through fake IP pings, ICMP echo spoofing, MAC address manipulation, proxy devices, IP masking, or reassignment — with the intent to falsely claim higher uptime, avoid SLA penalties, or manipulate payment computations. This Section establishes comprehensive technical, procedural, and penal safeguards to detect, prevent, and penalise any such attempt.

7.2 Prohibition on ICMP Ping as Proof of Availability

It is expressly mandated that:

- a) Mere network-level reachability verified through ICMP Ping (Internet Control Message Protocol Echo Request / Reply) shall NOT constitute valid evidence of device availability or operational status for any purpose under this Contract, including SLA computation, uptime reporting, or penalty avoidance;
- b) The IA is explicitly prohibited from using ICMP Ping alone as the basis for reporting any Plaza ETC and MLFF field device as 'available' or 'operational'. Any system configuration relying solely on ping responses for availability determination shall be treated as a design deficiency and shall be remediated at no additional cost;
- c) The IA shall not configure, permit, or allow any mechanism that generates, relays, or simulates automated ping responses from MLFF field locations to inflate reported uptime statistics.

7.3 Mandatory Multi-Layer Device Authentication for Availability

Device availability and operational uptime for SLA computation shall only be validated through a multi-layer authentication framework comprising ALL of the following:

- a) Secure Device-Initiated Heartbeats: Each Plaza ETC and MLFF field device shall transmit encrypted, digitally signed, application-level heartbeat signals to the RTHM at configurable intervals (not exceeding 3 minutes), containing device-specific authentication tokens, timestamp, Device ID, MAC Address, and operational status payload;
- b) Encrypted Application-Level Acknowledgements: The RTHM shall acknowledge each heartbeat through an encrypted response channel; devices failing to receive acknowledgement shall trigger automatic alerts;
- c) SNMP Correlation: SNMP data from each device shall be cross-correlated with heartbeat signals; discrepancies between SNMP data and application-layer status shall be flagged as anomalies for investigation;
- d) Transactional Evidence Correlation: For enforcement and detection equipment, the existence of transactions (violations detected, challans generated, counts recorded) within the reporting period shall be correlated with reported operational status; extended periods of zero transactions from an operationally-reported device shall trigger automatic investigation alerts;

- e) System Log Analysis: Application and system logs from Plaza ETC and MLFF field equipment shall be retrieved and analysed to validate operational continuity; log gaps, anomalous patterns, or log manipulation shall be treated as Critical SLA Breaches.

7.4 One-to-One Device Identity Binding

The RTHM shall enforce strict one-to-one binding between the following identity parameters for every registered MLFF field device:

- a) Device ID (as assigned by Plaza ETC System Integrator/ MLFF Contractor);
- b) MAC Address (hardware-level unique identifier of the device network interface);
- c) Source IP Address (static, Plaza ETC System Integrator / MLFF Contractor-assigned IP address of the device);
- d) Physical Location Coordinates (GPS latitude / longitude of device installation);
- e) Project Code and Stretch Code.

Any deviation from the registered binding — including IP address changes, MAC address spoofing, use of proxy devices, VPN tunnelling, or any form of IP masking — shall be automatically detected in real time, logged with a tamper-proof timestamp, and flagged as a Critical SLA Breach.

7.5 Fake IP Ping Detection — Mandatory Technical Controls

The RTHM shall incorporate a dedicated Fake IP Ping Detection Engine with the following mandatory capabilities:

- a) Statistical Baseline Profiling: Establish and maintain a statistical baseline of response times, packet sizes, TTL values, and traffic patterns for each registered device; deviations beyond configurable thresholds shall trigger automated anomaly alerts;
- b) IP Source Geolocation Validation: Validate that the source IP address of each device communication originates from the expected physical location / network segment; IP addresses from unexpected geographic locations, ASNs, or ISPs shall be flagged;
- c) Duplicate IP / MAC Detection: Detect and alert on any attempt to register two or more devices with the same IP or MAC address, or any unauthorized reassignment of IP / MAC bindings;
- d) Proxy and VPN Detection: Identify and flag communications routed through known proxy servers, VPN endpoints, Tor exit nodes, or data centre IP ranges inconsistent with field device deployments;
- e) ARP Spoofing Detection: Implement ARP cache monitoring to detect ARP spoofing or poisoning attacks used to impersonate field devices;
- f) Time-Series Anomaly Detection: Apply ML-based time-series anomaly detection on device availability patterns to identify unnaturally consistent uptime reports, synchronized failures, or improbable recovery patterns suggesting automated response generation;
- g) Behavioral Fingerprinting: Maintain a behavioral fingerprint for each device class based on expected traffic patterns, response times, and data volumes; significant deviation shall trigger investigation;
- h) Real-Time Alerting: All detected anomalies shall generate real-time alerts on the RTHM dashboard.

7.6 Tamper-Proof Audit Trail

- a) The RTHM shall maintain a comprehensive, tamper-proof, time-stamped audit trail — accessible only to IHMCL-authorized personnel — covering:
 - i. All device heartbeat transmissions, acknowledgements, and failures;
 - ii. All detected identity mismatches, IP / MAC binding violations, and anomalous network behaviours;
 - iii. All suspected fake ping events, proxy detections, and IP spoofing attempts;
 - iv. All SLA computations, breach detections, and penalty calculations;
 - v. All user login / logout activities, data access events, and configuration changes;
 - vi. All system downtime events, failover activations, and recovery completions.
- b) Audit logs shall be cryptographically signed, stored in a write-once append-only log store, and retained for the entire Contract Period. Audit logs shall be made available to IHMCL on demand within 24 hours of request.

7.7 Independent Verification Mechanism

- a) IHMCL reserves the right to conduct independent verification of reported MLFF equipment operational status through:
 - i. Deployment of independent monitoring probes at NH stretches without prior notice to the IA;
 - ii. Physical field inspections by IHMCL-designated officers or third-party auditors;
 - iii. Forensic analysis of audit logs, SNMP data, and network traffic captures;
 - iv. Third-party penetration testing and security audits by CERT-In empanelled agencies.
- b) Any discrepancy identified through independent verification between IHMCL's findings and the IA's reported operational status shall constitute prima facie evidence of data fudging and shall trigger penalties as specified in Schedule C.
- c) Exclusion: Any Plaza ETC or MLFF equipment that is non-compliant with SNMP data sharing requirements shall continue to remain within the scope of health monitoring; however, such equipment shall be excluded from SNMP-based fraud IP detection and related anti-spoofing/data integrity validation mechanisms.

8. Functional Requirement – Module 4 – SLA Monitoring Module

8.1 SLA Monitoring Module for MLFF Projects

(i) The SLA Monitoring Module shall provide continuous, automated monitoring of following parameters:

Sl. No.	Parameter	Scope of IA
1.	Availability of MLFF Equipment and Software in Control Centre	The IA shall assess uptime and operational availability of MLFF equipment using Module 2 & Module 3.
2.	E-Notice for End Users	The IA shall verify timelines for generation of e-Notices post-validation and assess compliance with prescribed turnaround timelines. Delayed or missed e-Notices shall be identified through system and transaction audit trails.
3.	Vehicle Count Accuracy	The IA shall validate vehicle count accuracy on a random basis using ANPR, video analytics, audit surveillance footage, and transaction data through sample or complete audits. Any discrepancy in tollable vehicle counts shall be recorded and reported.
4.	Vehicle Classification Accuracy	The IA shall verify vehicle classification accuracy on a random basis by comparing system-generated classifications with audit footage and independent validation mechanisms. Misclassifications and recurring deviations shall be documented.
5.	Availability of Images and Video	The IA shall verify availability and accessibility of ANPR images and surveillance videos corresponding to vehicle transactions. Missing or inaccessible images/videos impacting auditability shall be flagged and reported.
6.	Remote Video Check	The IA shall periodically verify remote accessibility of surveillance cameras, video feeds, IP connectivity, and authentication credentials. Any failure in remote access or visibility of footage shall be recorded with supporting evidence.
7.	Incorrect Manual Transactions	The IA shall audit manual transactions to verify compliance with approved procedures and identify incorrect VRN-based entries or unauthorized transactions. Deviations shall be validated through transaction logs and supporting records.
8.	Wrong E-Notices	The IA shall review issued e-Notices to identify cases of incorrect notice issuance due to data mismatch or processing errors. Verified instances shall be documented for corrective action and reporting.
9.	Delay in Remittance of Collected Charges	The IA shall monitor timelines for remittance of collected charges and assess compliance with contractual requirements. Delays or discrepancies in remittance records shall be flagged and reported.

Sl. No.	Parameter	Scope of IA
10.	Availability of Critical Equipment Spares	The IA shall verify availability of prescribed critical spares through physical inspections, stock verification, and surprise audits. Any deficiency in mandatory spare inventory shall be documented.

8.2 SLA Monitoring for Plaza ETC System Projects

Sl. No.	Parameter	Scope of IA
1.	Plaza Building Equipment Availability	The IA shall assess uptime and operational availability of critical Plaza Building equipment using Module 1 & Module 3.
2.	Lane Equipment Availability	The IA shall assess uptime and operational availability of critical ETC lane equipment on a per-lane basis using Module 1 & Module 3.
3.	AVC Accuracy	The IA shall validate AVC accuracy on each lane through transaction logs, system outputs based on data captured through Module 1.
4.	MSWIM System – Weight Accuracy	The IA shall assess accuracy of weight captured through the MSWIM system by comparing records against weighbridge (SWB) measurements or permissible weight and actual weight identified by WIM. Deviations beyond prescribed tolerance limits shall be documented and reported.
5.	Upload/Download of ETC Transactions as per ICD and PG Guidelines	The IA shall verify that ETC transactions are uploaded and downloaded in accordance with ICD specifications and Payment Gateway guidelines. Deficiencies leading to rejection, non-uploading, or settlement issues shall be identified and reported.

Note:

- a. Above-mentioned are the indicative SLA parameters, IHMCL reserves the right to increase the SLA monitoring parameters as per requirement.

9. Functional Requirement – Module 5 – Integration with External Agencies

- 1 TMCC 2.0 shall provide secure, scalable digital bridge and central middleware architecture to connect already integrated official government databases including VAHAN, NATGRID, BISAG-N MEITY, MoRTH Dashboard, NHAI Datalake, GSTN, and E-Detection portal
- 2 The IA shall provision APIs, middleware, and necessary interfaces for seamless data exchange and interoperability
- 3 TMCC 2.0 shall have a scalable and configurable architecture to enable future integrations with additional Government systems as directed by IHMCL without major system changes.
- 4 Following are the envisaged new external integrations which shall have to be carried out as per requirement of NHAI/MoRTH from time to time:
 - 1) Rajmarg Yatra
 - 2) 1033
 - 3) NHAI ATMS
 - 4) NHAI One Mobile App

10. Data Migration and Legacy Takeover

1. The Successful Bidder shall take over the complete existing data from the current TMCC vendor and undertake secure migration, validation, and integration of the same into the TMCC 2.0 system to ensure seamless continuity, historical traceability, and uninterrupted data availability. The format, protocol, medium, timelines, and methodology for data handover and migration shall be mutually agreed upon between IHMCL, the existing vendor, and the Successful Bidder.
2. The Successful Bidder shall ensure integrity, completeness, consistency, and non-loss of data during migration and shall carry out necessary data cleansing, validation, indexing, reconciliation, and compatibility checks for successful onboarding into TMCC 2.0. Any required transformation, normalization, or restructuring of legacy datasets for compatibility with the TMCC 2.0 architecture shall be within the scope of the Successful Bidder at no additional cost to IHMCL.
3. The details of existing TMCC application are provided at Annexure 1 of Section 2 of Schedule C.

11. TECHNICAL REQUIREMENTS AND SPECIFICATIONS

11.1 Software Architecture Principles

- a) The System shall be designed and implemented in accordance with the following architectural principles:
- i. Scalability
 - ii. High Availability
 - iii. Security
 - iv. Data Integrity
 - v. Interoperability
 - vi. Manageability
- b) Auto-Discovery of Nodes and Sensors: The solution shall support automated discovery of all SNMP/ICMP-enabled devices (nodes, sensors, routers, switches, firewalls, IP devices) without manual intervention. Device inventory shall be dynamically updated upon any addition, modification, or decommissioning. Devices shall be auto-classified by type, vendor, location, and MLFF project, and populated into a centralized Device Registry. Both scheduled and on-demand discovery shall be supported.
- c) Network Topology Visualization: The solution shall provide an interactive topology view of all devices and links with real-time status, IP mapping, and drill-down capability from corridor to device level. Failures shall be colour-coded and the topology shall be exportable (PDF/PNG/SVG).
- d) Real-Time KPI Monitoring: The solution shall monitor KPIs including uptime, CPU/RAM usage, disk/memory, bandwidth (IN/OUT), packet loss, errors, latency, jitter, and protocol statistics. Threshold breaches shall trigger RED alarms with email alerts.
- e) Root Cause Analysis & Event Correlation: The solution shall include automated RCA and event correlation to identify primary faults and suppress redundant alerts. RCA reports shall be generated for major incidents and made available for IHMCL review.
- f) Vendor-Agnostic Monitoring: The solution shall support monitoring of all SNMP-enabled devices (v1/v2c/v3) irrespective of OEM, without proprietary agents or additional licensing.
- g) LDAP & SSO Integration: The solution shall support LDAP/Active Directory integration and Single Sign-On from Day 1, enabling centralized authentication and seamless access. Configurations shall be documented and handed over to IHMCL.
- h) URL Monitoring: The solution shall monitor application URLs for availability, response time, and SSL expiry. Alerts shall be triggered for downtime, performance degradation, and certificate expiry.
- i) Software Supply Obligation - All required software, tools, and licenses shall be provided by the IA at no additional cost. License validity shall be maintained throughout the Contract Period, with 90-day prior expiry notification.
- j) Open-Source - The solution shall be based on open-source architecture, avoiding vendor lock-in.

11.2 Hosting and Cloud Infrastructure

The cloud infrastructure required for deployment of the NAMS solution shall be provisioned and made available by IHMCL through a MeitY-empanelled Cloud Service Provider (CSP), preferably through NIC. The Successful Bidder shall deploy, host, operate, and maintain the NAMS solution on a MeitY-empanelled Cloud Service Provider (CSP) in compliance with the Government of India Cloud Adoption and Management Guidelines issued by MeitY vide O.M. dated 20.03.2026, as amended from time to time. The hosting environment shall be designed to ensure scalability, high availability, cybersecurity, data protection, disaster recovery, and regulatory compliance throughout the Contract Period, with the following requirements:

- a) The IA shall be required to host all software applications on cloud infrastructure.
- b) A separate account shall be created in the name of IHMCL, with full administrative rights provided to IHMCL for independent verification of resource utilization, security configurations, and data access.
- c) The IA shall implement data replication and backup in strict conformance with MeitY Guidelines on Cloud Services and Data Localization. All data shall be stored within Indian territory (data localization).
- d) In the event of a primary data centre failure, the IA shall be capable of restoring complete system operations from a secondary data centre within a Recovery Time Objective (RTO) of four (4) hours and a Recovery Point Objective (RPO) of fifteen (15) minutes.
- e) The IA shall develop and implement appropriate policies and checklists in conformance with ISO 27001 and ISO 20000 frameworks for failover, disaster recovery, and business continuity.
- f) All associated costs for domain name procurement, SSL/TLS certificates, CDN services, and cloud tooling shall be the responsibility of the IA.

11.3. Business Intelligence (BI), Data Analytics and Reporting Framework

1. The IA shall design, develop, deploy, operate, and maintain an enterprise-grade Business Intelligence (BI), analytics, and reporting platform for centralized monitoring of Plaza ETC Systems (TMS), MLFF tolling systems, and associated operational ecosystems. The platform shall enable real-time and historical analytics, operational monitoring, decision support, and performance reporting through configurable dashboards and automated MIS modules.
2. The BI platform shall support:
 - i. Real-time, near real-time, and historical analytics for tolling operations, traffic, transactions, equipment health, revenue, settlements, and SLA compliance.
 - ii. Interactive dashboards with drill-down capabilities, slicing and dicing, multi-dimensional analytics, pivoting, ranking, trend analysis, and graphical visualizations.
 - iii. Configurable KPI-based dashboards for IHMCL at National, Regional Office (RO), PIU, Integrator Agency (IA), project, plaza, lane, and gantry levels.
 - iv. Predictive analytics and anomaly detection for revenue leakage, equipment degradation, network failures, abnormal transactions, SLA deviations, and operational inefficiencies.
 - v. Role-based access control, SSO/LDAP/OAuth authentication, domain-wise access privileges, and audit trails.

- vi. Ad-hoc report generation through GUI-based drag-and-drop interfaces and advanced query mechanisms.
 - vii. Automated report scheduling, alerts, notifications, and event-based exception management through email, SMS, WhatsApp, and mobile applications.
 - viii. Integration with cloud and on-premise systems, ETL pipelines, APIs, relational databases, IoT systems, big data platforms, and external enterprise applications.
 - ix. Export of dashboards and reports into PDF, Excel, CSV, image, and other industry-standard formats.
 - x. Geospatial analytics, heatmaps, comparative analytics, journey analytics, and Origin-Destination (OD) based toll movement insights.
 - xi. Scalability to support onboarding of additional toll plazas, MLFF corridors, assets, and future tolling technologies without major redesign.
3. The BI and analytics framework shall support performance monitoring, trend analysis, operational intelligence, predictive maintenance, financial analytics, preventive alerts, automated ticketing, and asset health monitoring for both Plaza ETC and MLFF tolling ecosystems.

4. Indicative Reports Required for Plaza ETC System (TMS)

The BI platform shall support generation of configurable and customizable reports for Plaza ETC Systems (TMS), including but not limited to the following:

A. Traffic, Revenue and Transaction Reports

- i. Revenue Collection Reports (Lane-wise, Plaza-wise, Region-wise, National level)
- ii. FASTag vs Cash Transactions Reports
- iii. Dedicated Lane vs Hybrid Lane Performance Reports
- iv. Hourly, Daily, Weekly, Monthly, Quarterly, Half-Yearly and Annual Revenue Reports
- v. ETC, Cash, Exempt, Violation, and Other Category Transaction Reports
- vi. Vehicle Throughput Reports (Lane-wise and Plaza-wise)
- vii. Traffic Reports based on Vehicle Classes
- viii. Comparative Traffic and Revenue Reports across Plazas

B. Equipment Performance and SLA Reports

- i. Plaza Equipment Uptime and Availability Report
- ii. Lane Equipment Downtime Reports
- iii. Critical Equipment Downtime Reports
- iv. MTBF (Mean Time Between Failure) Reports
- v. MTTR (Mean Time to Repair) Reports
- vi. System Availability Reports
- vii. Internet/Data Connectivity Performance Reports
- viii. FASTag SLA Compliance Reports
- ix. FASTag Readability and Read Accuracy Reports

C. Accuracy and Validation Reports

- i. AVC Accuracy Reports (Lane-wise and Plaza-wise)
- ii. Inter-Plaza AVC Comparative Reports
- iii. FASTag Transaction Validation Reports
- iv. Incorrect/Duplicate Transaction Reports
- v. Double Deduction / Overcharging Reports
- vi. Non-Reading FASTag / Free Passage Reports

D. Settlement and Reconciliation Reports

- i. NETC Transaction Settlement Reports
- ii. Rejected Transaction Reports
- iii. Reconciliation Reports with Acquirer Banks
- iv. Transaction Upload/Download Compliance Reports as per ICD/PG Guidelines

E. Operations and Incident Reports

- i. Plaza-wise Violation Handling Efficiency Reports
- ii. Customer Dispute Resolution Efficiency Reports
- iii. Incident/Event Reports
- iv. User Activity and Audit Trail Reports

F. Analytical and Comparative Reports

- i. Plaza Performance Comparative Reports
- ii. Regional Office (RO), PIU, IA and Plaza-wise Performance Reports
- iii. Journey Analytics and Origin-Destination Reports using FASTag data
- iv. Revenue Leakage and Exception Detection Reports
- v. Analytics-based Predictive Maintenance Reports

5. Indicative Reports Required for MLFF Based Tolling System

The BI platform shall support generation of configurable and customizable reports for MLFF tolling systems, including but not limited to the following:

A. Equipment, Lane and Infrastructure Reports

- i. MLFF Equipment Uptime Reports
- ii. Lane/Gantry Uptime Reports
- iii. Equipment Health Monitoring Reports
- iv. Network Uptime and Connectivity Reports
- v. Network Latency and Outage Reports
- vi. Equipment SLA Compliance Reports
- vii. Predictive Maintenance Reports

B. Traffic, Revenue and Transaction Reports

- i. Traffic and Revenue Reports (Lane-wise, Gantry-wise, Corridor-wise)
- ii. Tollable vs Non-Tollable Transaction Reports
- iii. Vehicle Count Reports (Class-wise and Corridor-wise)
- iv. Revenue Share Reports

- v. Real-Time and Historical Transaction Reports
- vi. Traffic Trend and Revenue Trend Reports

C. Accuracy and Classification Reports

- i. LiDAR vs FASTag Classification Accuracy Reports
- ii. LiDAR vs Mapper Classification Reports
- iii. ANPR Accuracy Reports
- iv. RFID Reader Accuracy Reports
- v. Vehicle Classification Accuracy Reports
- vi. Exception and Misclassification Reports

D. Reconciliation and Settlement Reports

- i. Successful, Failed, and Pending Transaction Reports
- ii. Settlement Status Reports
- iii. Reconciled Amount Reports
- iv. Chargeback, Adjustment, and Discrepancy Reports

E. E-Notice and Enforcement Reports

- i. E-Notice Issuance Reports
- ii. Accepted, Rejected, Exempted, and Pending E-Notice Reports
- iii. Penalty Collection Status Reports
- iv. Reasons for Rejection/Exemption Reports
- v. Repeat Offender Reports
- vi. E-Notice Trend Analysis Reports

F. Event, Security and Audit Reports

- i. Event and Incident Reports
- ii. System Logs and Audit Trail Reports
- iii. Cybersecurity Incident Reports
- iv. Failed Login Attempt Reports
- v. Antivirus Status and Threat Reports

G. Analytical and Predictive Reports

- i. Traffic and Revenue Trend Analysis Reports
- ii. Predictive Analytics Reports for Equipment Failure
- iii. Revenue Leakage Detection Reports
- iv. Anomaly Detection Reports
- v. Comparative Corridor and Gantry Performance Reports
- vi. Financial Impact Assessment Reports

H. Monitor toll revenue trends in real time.

I. Generate automated alerts in case of abnormal revenue variations.

J. Detect sudden revenue drops based on configurable thresholds and historical patterns.

K. Generate alerts for communication failures, transaction failures, integration failures and system outages.

- L.** Support SMS, email, dashboard and mobile application-based alerts.
- M.** Provide configurable escalation matrices and workflow-based alert handling.
- N.** Maintain complete alert history and resolution tracking.

11.4 Cybersecurity Requirements

1. The IA shall conduct Vulnerability Assessment and Penetration Testing (VAPT) through a CERT-In empanelled third-party testing agency prior to the system Go-Live, and annually thereafter. VAPT reports shall be shared with IHMCL within 30 days of completion.
2. All observations and findings from VAPT and security audits shall be remediated by the IA within stipulated timelines at no additional cost to IHMCL.
3. The IA shall conduct an Annual IT Security Audit of all software applications of the Control Centre through a CERT-In empanelled third-party agency. Audit findings shall be addressed comprehensively within the timelines specified in the audit report.
4. The system shall implement comprehensive access controls, including RBAC with principle of least privilege, MFA for all privileged access, session timeout controls, and audit logging of all administrative actions.
5. Logs for login/logout activities, system downtime, configuration changes, and system errors shall be securely stored within the system for a minimum period of seven (7) years.
6. The IA shall comply with all applicable cybersecurity guidelines and directions issued by CERT-In, MeitY, and NHA from time to time.
7. Core Security Controls
 - a. The Bidder shall deploy the following minimum controls:
 - b. Network & System Security: Multi-layered protection including firewalls, IDS/IPS, endpoint security, and 24x7 SOC-based monitoring.
 - c. Access Management: Role-Based Access Control (RBAC), Multi-Factor Authentication (MFA), and periodic access audits.
 - d. Data Encryption: Encryption of data at rest and in transit using standards such as AES-256 and TLS 1.3 or higher.
 - e. Vulnerability Management: Regular vulnerability assessments, penetration testing, and patch compliance as per CERT-In guidelines.
 - f. Incident Response: Documented plan covering detection, escalation, and reporting to IHMCL within six (6) hours of any breach or incident.
 - g. System Hardening: Secure baseline configurations for all servers and network components.

8. Data Protection and Privacy

- a) All data generated or processed under the Project—including video feeds, incident logs, and analytical outputs—shall be treated as confidential and protected in line with applicable Indian laws. The Bidder shall:
- b) Store and process all data within India as per MeitY guidelines as issued from time to time
- c) Maintain secure backup and disaster-recovery arrangements; and
- d) Apply anonymisation/masking where required to protect personal information, as applicable

9. Data Ownership and Intellectual Property

- a) All data, reports, and outputs created under this Contract shall remain the exclusive property of IHMCL. The Bidder shall neither retain nor share such data except as authorized. Upon completion or termination, all project data, credentials, and documentation shall be handed over to IHMCL, and all copies shall be permanently deleted with written confirmation.

10. Audit and Compliance

- a) IHMCL may conduct or authorize independent security or data-protection audits at any stage. The Bidder shall provide full access and promptly implement any corrective measures directed by IHMCL.

11. Liability

- a) Any data breach, unauthorized disclosure, or cyber-security lapse shall constitute a material breach of contract and attract penalties and legal action. The Bidder shall bear full liability for losses or damages arising from such incidents.

12. RBAC, MFA, TLS 1.3+ in transit, AES-256 at rest, and comprehensive audit logging across all TMRM modules.

13. End-to-end traceability of all transactions, reconciliation actions, alert events, and user activities — immutable logs reviewable by IHMCL at any time.

14. Compliance with CERT-In guidelines, DPDP Act 2023, and IT Act 2000. VAPT by CERT-In empanelled agency before go-live and annually thereafter.

11.5 Connectivity

- a) The IA shall provision redundant internet connectivity of minimum 100 Mbps (primary) plus 100 Mbps (secondary/backup, on a different ISP) at the Control Centre to ensure uninterrupted data transmission.
- b) Provision of internet connectivity at MLFF field locations is not within the scope of the IA. The IA shall co-ordinate with respective MLFF System Integrators for field connectivity details and shall document all connectivity parameters in the Device Registry.
- c) The Control Centre connectivity shall be monitored for uptime, latency, and packet loss with automated alerts for degradation below defined thresholds.

11.6 Control Centre Infrastructure

The IA shall be responsible for the supply, installation, configuration, and maintenance of the following Control Centre infrastructure:

Infrastructure Item	Specification / Requirement
LED Screen	4 nos 75 inches
Workstations	One (1) per Executive; One for Data Analytics & AI Specialist and One for Project Manager Intel i7 or AMD equivalent (latest gen); 16 GB RAM or more; 1 TB SSD; 3-monitor GPU; MS Windows (latest); Licensed Anti-Virus; MS Office (licensed); 21-inch LED TFT monitors.
Biometric Attendance	GPS based biometric attendance system for all Control Centre staff; monthly system-generated attendance reports to be submitted to IHMCL.
Furniture	Control Room furniture for manpower seating arrangement and desktops
Control Room Camera	Two CCTV Cameras of minimum 2 MP shall be provided in Control Room, which should have minimum backup of 30 days.

12. OPERATIONS, MANPOWER, AND ADMINISTRATIVE REQUIREMENTS

12.1 Operations Requirements

The IA shall ensure continuous staffing, system monitoring, and incident response at all times. The IA shall bear all operational costs including internet, consumables within the Control Centre, except Space for setting of Control Centre, electricity or where IHMCL has explicitly agreed to reimburse specific costs as per Contract terms.

12.2 Mandatory Manpower Deployment

S.No.	Role / Position	Minimum Qualification	Experience Requirement
1	Project Manager (1 No.)	Minimum Education Qualification – BE/BTech in any Stream and Full-time MBA or equivalent, from any recognized institutes by AICTE/UGC.	Minimum Years of Experience – At least 10 years
2	Data Analytics & AI Specialist(1 No.)	Minimum Education Qualification – BE/BTech in any Stream from any recognized institutes by AICTE/UGC.	Minimum Years of Experience – At least 8 years
3	TMCC Operators (5 Nos)	Graduation/ Diploma from a reputed institution	0-1 years experience

The IA may be required to deploy additional manpower as directed by IHMCL from time to time. The exact roles and responsibilities of additional personnel shall be defined by IHMCL. All such additional manpower shall meet minimum graduate qualification and shall be free of any criminal background/record.

12.3 Background Verification

The IA shall conduct comprehensive background verification of all personnel proposed for deployment on this project, covering criminal records, educational qualification verification, previous employment verification, and identity verification (Aadhaar). Background verification reports shall be submitted to IHMCL prior to deployment. The IA shall replace any personnel found unsuitable after deployment within seven (7) days of IHMCL's written request.

12.4 Administrative Requirements

- a) Identity Cards: All Control Centre personnel shall be issued official photo identity cards for security and verification purposes. A register of all personnel shall be maintained and updated.
- b) Biometric Attendance: Aadhaar-enabled biometric attendance shall be mandatory for all staff. Monthly system-generated attendance reports shall be submitted to IHMCL by the 5th of the following month. Any change in personnel must be reported to IHMCL in writing at least 48 hours before the change takes effect.
- c) Insurance: The IA shall procure and maintain comprehensive insurance coverage (including equipment, civil liability, and employee liability) for all systems and personnel throughout the Contract Period at its own cost.
- d) IHMCL Access Rights: Access-based login credentials shall be provisioned for all NHAI Regional Office (RO) and Project Implementation Unit (PIU) personnel as designated by IHMCL.
- e) MIS Reports: The IA shall prepare and submit all MIS reports as required by IHMCL, including daily incident reports, weekly uptime reports, and monthly SLA compliance reports.

13. PROJECT EXECUTION AND DELIVERY OBLIGATIONS

13.1 Implementation Methodology

The IA shall submit a detailed Project Execution Plan (PEP) as per timeline provided in RFP, covering project phasing, milestones, resource deployment plan, risk register, and quality assurance approach. The PEP shall be subject to IHMCL approval. Any changes to the PEP shall require prior written approval from IHMCL.

13.2 Sub-Contracting

Sub-contracting is permissible only for activities explicitly permitted herein and shall require prior written approval from IHMCL. Sub-contracting shall be allowed for:

- a) Passive networking and minor civil works during implementation phase.
- b) Facility Management Services (FMS) staff for non-IT support during operations phase.

Sub-contracting of core software development, system integration, operations management, or data analytics functions is not permissible without explicit written approval of IHMCL. Notwithstanding any approved sub-contracting, the IA shall remain the single point of responsibility for all deliverables, performance, and liabilities under this Contract. The IA shall submit copies of all sub-contracting agreements to IHMCL.

13.3 Training

- a) The IA shall provide comprehensive training to all deployed personnel and designated NHAI/IHMCL personnel for smooth operations of the TMCC.
- b) Training shall cover system operation, SLA monitoring, incident management, data analytics interpretation, cybersecurity protocols, and anti-fraud controls.
- c) Training documentation, user manuals, and operation guides shall be submitted to IHMCL in electronic and printed format.

13.5 Data Ownership and Confidentiality

The ownership of all data collected, processed, and stored during the project shall rest solely and exclusively with IHMCL. The IA shall not, under any circumstances, share, disclose, sell, transfer, or use any project data for any purpose other than performance of its obligations under this Contract without prior written approval from IHMCL. Any breach of data confidentiality shall constitute a serious violation and shall attract legal, financial, and contractual consequences including contract termination and blacklisting.

Schedule - C

Standards & Specifications

SECTION 1 — SERVICE LEVEL AGREEMENT AND PENALTY FRAMEWORK

1.1 General SLA Principles

The IA shall adhere to the minimum SLA standards specified in this Section throughout the Contract Period. Failure to meet SLA standards shall result in financial penalties deducted from the IA's monthly payments. SLA performance shall be monitored and default damages computed on a monthly basis. The decision of the Competent Authority of IHMCL on all penalty matters shall be final and binding.

1.2 TMCC 2.0 System Uptime SLA

SLA Parameter	Threshold	Penalty for Non-Compliance
Minimum monthly system uptime	99.5% (max. 3.6 hours downtime/month)	Tiered penalty as below
Downtime up to 1 hr beyond allowed limit	—	Rs. 20,000 per instance
Downtime > 1 hr to 3 hrs beyond allowed limit	—	Rs. 30,000 per instance
Downtime > 3 hrs to 5 hrs beyond allowed limit	—	Rs. 40,000 per instance
Downtime > 5 hrs beyond allowed limit	—	Rs. 50,000 per instance
Maximum default damages in any month	—	Capped at 10% of total monthly payable amount

If maximum penalty is imposed for two (2) consecutive months due to uptime SLA breach, IHMCL reserves the right to invoke contract termination provisions.

1.3 Incorrect SLA Reporting Penalty for Module 3

Event	Deduction
More than 2 verified instances of incorrect reporting of SLA breaches / equipment health status in a calendar month	10% deduction of monthly O&M payment for the Module
Up to 2 verified instances of incorrect reporting in a calendar month	5% deduction of monthly O&M payment for the Module

If 10% deduction of monthly O&M payments is imposed for two (2) consecutive months, IHMCL reserves the right to invoke contract termination provisions.

1.4 Data Completeness SLA for Module 1 and Module 2

- Requirement: 100% of all receivable transactional data generated by MLFF systems shall be available in the IA database on a daily basis.

- b) Penalty for Non-Achievement: Rs. 100/- (Rupees One Hundred) per missing data record per day.
- c) Measurement: An approved Data Completeness Assessment Tool shall be used. Output logs and reports shall be retained for audit purposes.

1.5 Data Integrity, IP Authenticity and Anti-Fudging SLA for Module 3

Breach Type	Penalty
Confirmed fake IP ping / ICMP spoofing to simulate device availability and TMCC is unable to detect the same.	Rs. 50,000/- per affected device
Confirmed IP address fudging, masking, proxying, or reassignment and TMCC is unable to detect the same.	Rs. 50,000/- per affected device
MAC Address spoofing or binding violation and TMCC is unable to detect the same.	Rs. 50,000/- per affected device
Data fudging / manipulation in SLA reports or stored data (first instance)	Rs. 10,00,000/- plus full deduction of monthly amount due for the period concerned
Data fudging / manipulation — repeat instances (2nd or subsequent)	Contract termination + forfeiture of Performance Bank Guarantee + blacklisting
Three (3) or more Critical SLA Breaches in any single calendar month	Right to terminate for material breach, blacklisting, and/or forfeiture of PBG

1.6 Delay in Implementation

Failure by the IA to complete implementation and achieve Go-Live within the prescribed time schedule shall result in delay damages of Rs. 50,000/- per week, subject to a maximum of 10% of the Contract value. Delay beyond five (5) weeks shall entitle IHMCL to terminate the Contract and forfeit the Performance Bank Guarantee. Extension of time may be granted by IHMCL at its sole discretion for delays attributable to reasons beyond the IA's control.

1.7 Manpower Non-Availability Penalty

- a) Operations shall be performed on a 24x7 basis with full staffing at all times.
- b) Daily attendance shall be recorded through Aadhaar-enabled biometric attendance only.
- c) Penalty for non-availability of any mandated personnel: Rs. 5,000/- per day per personnel.
- d) Delay in mobilisation or absenteeism exceeding three (3) weeks shall entitle IHMCL to invoke the Bid Securing Declaration and Performance Bank Guarantee and consider revocation of the Letter of Award or Contract termination.
- e) The IA shall maintain pre-approved, equally-qualified replacement personnel at all times and notify IHMCL in writing of any replacement before it takes effect.

1.8 Data Breach Penalty

In the event of any breach of data confidentiality or security, the IA shall be liable for penalties as prescribed under the Digital Personal Data Protection Act, 2023 (DPDPA) and any other applicable laws. The IA shall be treated as a Data Fiduciary under the DPDPA. IHMCL shall have the right to seek recovery of all costs, losses, reputational damages, and regulatory fines arising from any data breach attributable to the IA.

1.9 SLA Exclusions

SLA penalties shall not be imposed for downtime or non-performance attributable to the following, subject to prior written notice and documentary evidence submitted by the IA:

- a) Scheduled preventive maintenance approved in writing by IHMCL in advance, preferably between 11:00 PM and 05:00 AM, not exceeding two (2) instances per month of maximum four (4) hours each.
- b) Complete failure of internet connectivity at the Plaza/MLFF Contractor end, duly logged and substantiated with ISP-certified outage records.
- c) Force Majeure events as defined in the Contract.
- d) Delays or failures directly and solely caused by IHMCL/NHAI actions or inactions, documented and accepted by IHMCL.
- e) Any Plaza ETC or MLFF equipment that is non-compliant with SNMP data sharing requirements shall continue to remain within the scope of health monitoring; however, such equipment shall be excluded from SNMP-based fraud IP detection and related anti-spoofing/data integrity validation mechanisms.

SECTION 2: Sample MLFF RFP and Plaza ETC System – Empanelment Document for SLA Monitoring

The bidders are advised to refer to the following link on IHMCL website for various SLA parameters to be monitored as per RFP/RFE as below:

MLFF RFP

<https://ihmcl.co.in/wp-content/uploads/2026/03/FinalRFPMLFFHyd23032026-2.pdf>

ETC Empanelment Document

https://empanelment.ihmcl.co.in/admin-one/panel/img/Signed_Copy_of_RFE.pdf

Annexure -1 - TMCC 1.0 — Technical Reference

Toll Monitoring Control Centre

TMCC 1.0 — Technical Reference Annexure to the RFP for TMCC 2.0

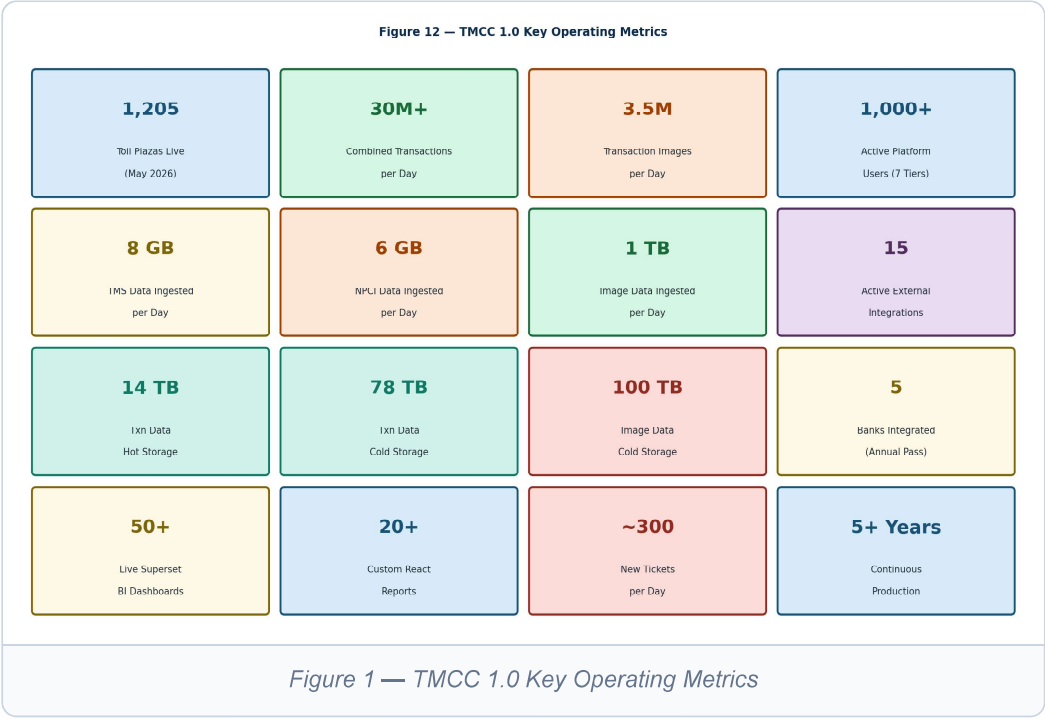
DOCUMENT TYPE	Technical Reference — Annexure to RFP
PURPOSE	Complete description of existing TMCC 1.0 for bidders
AUDIENCE	Bidders responding to TMCC 2.0 RFP
SYSTEM STATUS	Live production — as-existing state, May 2026
VERSION	1.0
DATE	May 2026

01 Platform at a Glance

The Toll Monitoring Control Centre (TMCC 1.0) is one of the most comprehensive centralised tolling intelligence platforms in India. It aggregates, monitors, analyses and distributes data from **1,205 live National Highway toll plazas**, processing over **30 million combined transactions every single day**. The system simultaneously manages 1,205 independent data pipelines from heterogeneous plaza systems operated by 30+ different System Integrators, runs an AI-based vehicle analytics pipeline spanning edge devices at plazas and cloud GPUs, computes government subsidy deltas for the Annual Pass scheme, and distributes

real-time data to 15 external government and agency systems — all while maintaining 24×7 availability with a dedicated operations team.

The platform is not a monitoring dashboard. It is a deeply integrated data infrastructure with multiple ingestion pipelines, a dual-mode datalake (OLTP + OLAP), an AI/ML edge-cloud pipeline for vehicle analytics, a complex financial computation engine for government subsidy processing, a centralised image repository handling millions of vehicle images per day, an incident management system, a BI layer with 50+ live dashboards, 20+ custom React reports, and an automated notification engine reaching over 1,000 users. It has been in continuous production for over five years.



1.1 Key Statistics

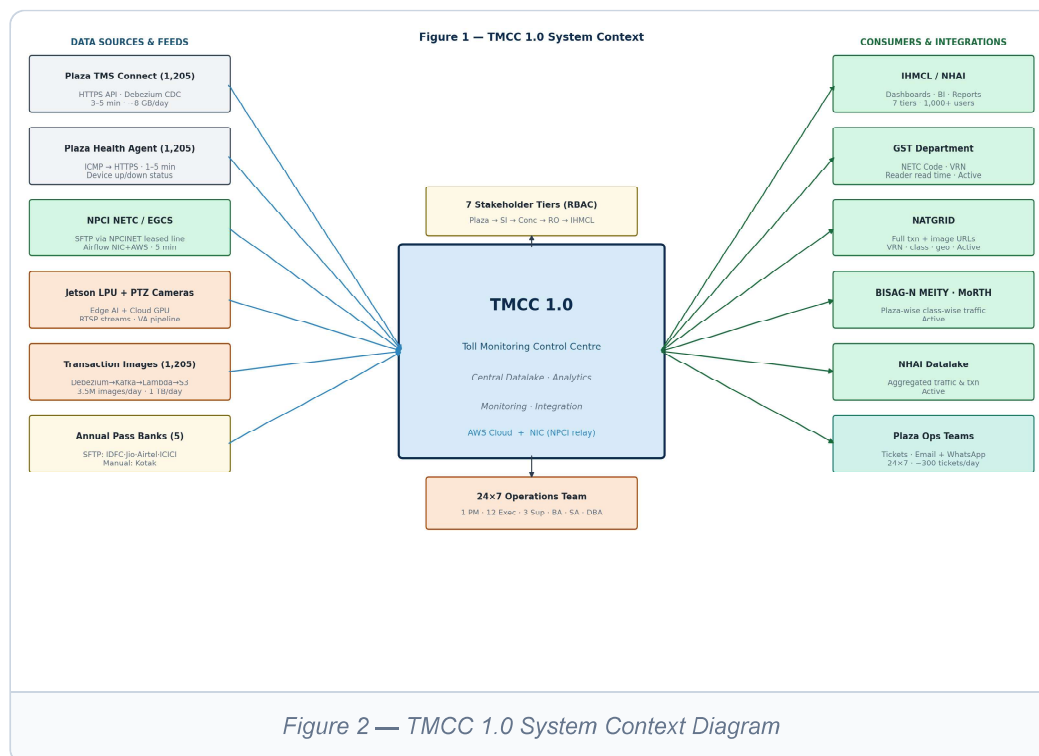
Parameter	Value (May 2026)
Toll plazas live	1,205 plazas
Combined transactions per day (TMS + NPCI)	30 million+ (30M+)

Parameter	Value (May 2026)
TMS data ingested per day	8 GB/day incremental
NPCI data ingested per day	6 GB/day incremental
Transaction images per day	3.5 million images · 1 TB/day
Transaction data — Hot Storage	14 TB
Transaction data — Cold Storage	78 TB
Image data — Cold Storage	100 TB
Active platform users	More than 1,000 across 7 stakeholder tiers
BI dashboards live (Superset)	50+ live dashboards
Custom operational reports (React)	20+ custom reports
Banks integrated (Annual Pass)	5 banks (4 SFTP automated + 1 manual)
External integrations active	15
New operational tickets per day	~300
System Integrators	30+ (Oracle · MSSQL · MySQL · PostgreSQL)
Cloud platform	AWS (Amazon Web Services) — fully VPC-deployed
Years in production	5+

1.2 What TMCC 1.0 Does — Five Core Functions

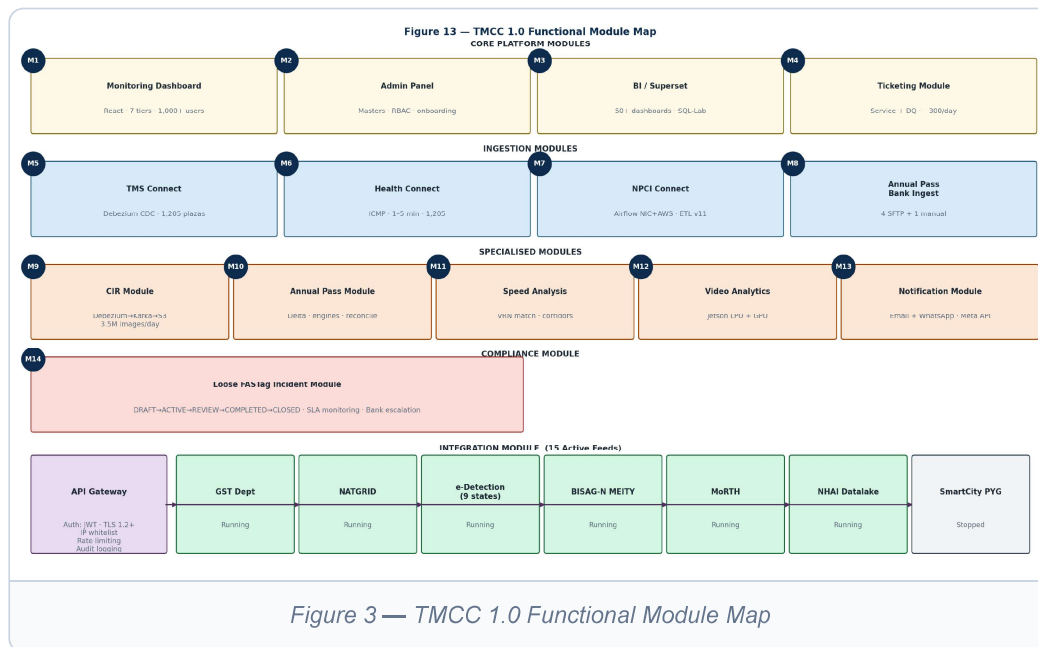
- **Real-time Multi-Source Data Ingestion:** Simultaneously pulls transaction data, lane events and vehicle images from 1,205 plaza TMS databases every 3–5 minutes using Debezium CDC; ingests NPCI's ETC settlement stream every 5 minutes via NPCINET leased line through dual-environment Airflow (NIC + AWS); receives Annual Pass settlement data from five banks via SFTP and manual ingestion.

- **Continuous Equipment Health Monitoring:** Health Connect monitors every critical ETC device at every lane of all 1,205 plazas every 1–5 minutes. Any anomaly triggers automated tickets and dispatches Email and WhatsApp alerts through configurable escalation templates to the responsible stakeholder tier.
- **Analytics, BI and Speed Intelligence:** 50+ Apache Superset dashboards plus 20+ custom React operational reports, all connected to MySQL and Druid. Weekly automated reports to PIUs, PDs, ROs and SIs. Speed Analysis computes corridor-level average speed profiles by matching VRNs across consecutive plazas — processing lakhs of VRN matches daily across the datalake.
- **Central Image Repository and Annual Pass Computation:** CIR captures 3.5 million transaction images per day at all 1,205 plazas through a Debezium → Kafka → Lambda → S3 pipeline. Annual Pass runs a six-engine computation pipeline covering eligibility, trip counting, delta computation, return journey detection, bank reconciliation and quarterly settlement.
- **External Data Distribution and Incident Management:** The Integration Module with API Gateway actively feeds 15 government and agency systems. The Loose FASTag Incident Module tracks every Tag-in-Hand incident through a structured ticket lifecycle with SLA monitoring against issuing banks.



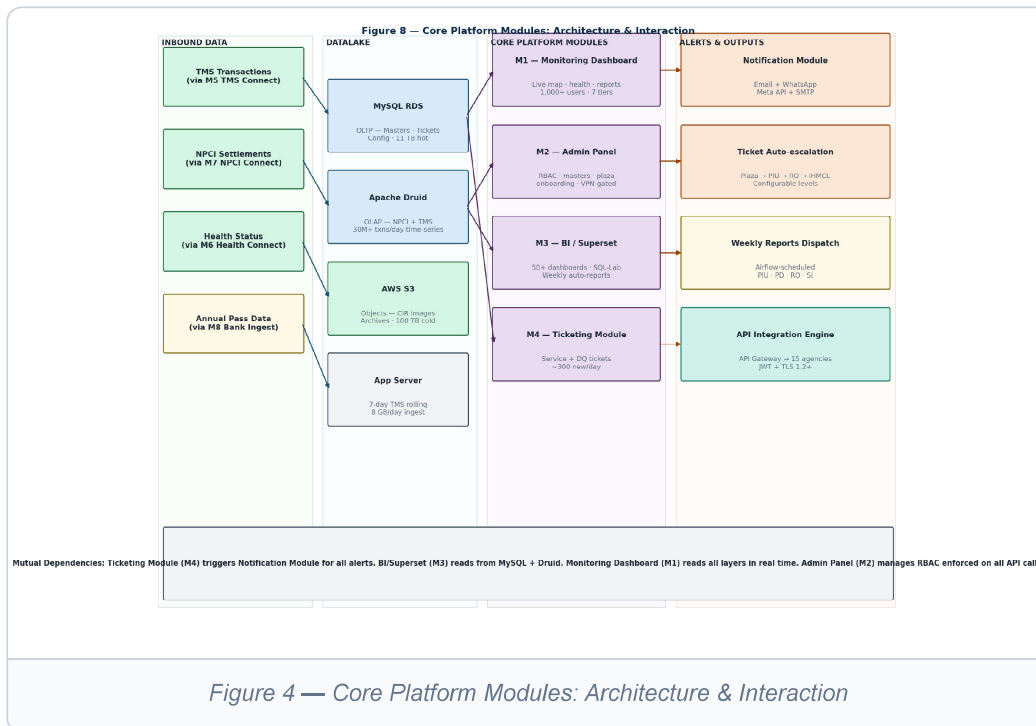
02 Functional Modules

TMCC 1.0 has fourteen functional modules across four groups, plus the Integration Module with API Gateway. The module map below shows the complete picture, followed by detailed descriptions of each group.



2.1 Core Platform Modules

The four Core Platform modules are the operational heart of TMCC. They are the surfaces every stakeholder tier interacts with daily, the tools the 24×7 operations team depends on, and the layer that transforms raw ingested data into actionable intelligence for IHMCL. Every ingestion module, every specialised module, and every integration ultimately exists to serve these four. Tech stack: React JS (frontend dashboard), Python Django (backend API), Django Admin (Admin Panel), MySQL (primary data store).



M1 — TOLL PLAZA MONITORING DASHBOARD

The Toll Plaza Monitoring Dashboard is the primary operational interface for all seven stakeholder tiers and the most-used surface of the entire TMCC platform. It is built on React JS with Python/Django as the API backend. No user can self-register — all users are created exclusively through the Admin Panel by TMCC Admins, who also assign roles and permissions. Session management uses JWT access tokens with auto-logout on inactivity.

The dashboard's defining characteristic is its role-scoped architecture: the same application delivers entirely different views depending on the logged-in user's tier. A Toll Plaza Manager sees only their one assigned plaza. A System Integrator sees their cluster. An RO sees every plaza within their regional boundary. IHMCL sees the complete national picture. This scoping is not merely a UI filter — every API endpoint enforces it server-side, so a user cannot retrieve data outside their authorised scope even via direct API calls.

DASHBOARD SUB-MODULES AND PAGES

Sub-Module	Description
Login Module	JWT-based authentication. No self-registration. Password change on first login enforced. Auto-logout on inactivity. Session token deleted on logout. Strong password validation enforced at change.
Homepage	Permission-based tiled menu rendered dynamically from API on login. Menus visible are exactly those the user's role permits — Toll Plaza Manager, Live Dashboard, Tickets/Alerts, Reports, etc. Includes IHMCL and NHAI branding.
Toll Plaza List	Filterable, paginated list of all toll plazas within the user's authorised scope. Each row shows plaza name, SI, RO, concessionaire, health %, last sync time, and quick-action buttons to the Plaza Monitor and Plaza Config pages. Filters: Concessionaire, System Integrator, RO, State, Health status.
Live Dashboard — Map View	India map with all onboarded plazas as colour-coded pins. Pin colour reflects current health status (green/amber/red). On-hover popup shows: plaza name, master details, health %, down device count, last sync timestamp, and a link to the plaza's monitor page. Map auto-zooms to filtered results. View-switch between Map, List, or both.
Live Dashboard — List View	Tabular equivalent of Map View. All onboarded plazas shown with master details, current health %, and last sync timestamp. Red flag shown if last sync from Health Monitoring or TMS Connect is more than 5 minutes ago (configurable threshold). Also filterable by Concessionaire, SI, RO, State, and Health status.
Toll Plaza Monitor	Per-plaza drill-down for real-time and historical status. Header shows: Plaza master details, current health status (poor/average/good) and percentage, TMS Server status, lane-wise summary, device-wise summary, last sync time for Health Monitoring, last sync time for TMS Connect. Body shows lane-by-lane status with device icons colour-coded green/red for up/down. A lane is shown as DOWN if no transactions in the configured period; a separate No-ETC flag appears if the lane has been recording only non-ETC transactions. Device icons are clickable — clicking opens a historical downtime popup showing all down episodes (device details, down start time, down end time, duration) for the last 7 days (configurable). An overall historical performance section allows custom date range selection for full device and lane downtime history.

Sub-Module	Description
Toll Plaza Configuration	Shows the plaza's IP configuration, lane mapping, device identifiers, and onboarding status. Used by ops team during onboarding and after SI migrations to verify device connectivity. Managed under Admin Panel — read-only view in dashboard.
Tickets and Alerts	Filterable list of all active tickets scoped to the user's authorised plazas. Only open tickets shown by default. Searchable and filterable by: ticket type, status, escalation level, toll plaza name, notification template type. Sortable. Paginated.
Reports	Operational reports for all stakeholder hierarchies: ETC Collection Summary (RO/PIU/toll-wise), Cash Collection Summary, ETC vs Cash trend, Device/Lane downtime summaries, overall plaza performance. Configurable as daily/weekly/monthly automated email to all user types. Exportable to PDF and Excel.
Custom React Reports (20+)	Bespoke operational reports built directly in React for specific IHMCL workflows requiring interactive tables, custom calculations, or download formats that Superset's generalised dashboards do not efficiently serve. Maintained as a separate report library within the dashboard.

ALARMS AND WARNINGS GENERATED BY THE DASHBOARD

The dashboard generates and displays real-time alarms based on the following contractually defined conditions. Un-acknowledged alarms flash red until acknowledged:

Condition	Alert Level
NIL transaction from a plaza for one 5-minute interval	Warning
NIL transaction from 40% or more of ETC lanes at a plaza	Warning
Communication break of 15 minutes (3 missed 5-minute transmissions)	Alarm
More than 20% of critical equipment faulty at a plaza	Alarm
Overall AVCC accuracy below 95%	Warning

Condition	Alert Level
More than 5% of ETC transactions processed through handheld readers	Warning
Exempt transactions (excluding FASTag exempt) exceeding 2% of total	Warning
Violation transaction count crossing 2% of total transactions for the day	Warning

Each alarm record carries: Warning/Alarm ID, date/time stamp, Plaza ID, description, and status (Un-acknowledged / Acknowledged / Resolved). When resolved: resolution timestamp and TMCC Operator ID also logged. All alarms are permanently logged for reporting and audit. SLA: every alarm must be acknowledged within 10 seconds of appearance; concerned plaza contacted within 5 minutes.

DATA ANALYTICS CAPABILITIES IN THE DASHBOARD

- **Equipment uptime analytics:** Plaza-wise MTBF, MTTR and system availability per device type
- **FASTag SLA performance:** FASTag SLA compliance per plaza, FASTag readability rates, read accuracy comparatives across plazas
- **AVC accuracy:** Lane-wise and plaza-level AVC accuracy; comparative across plazas and time periods
- **Near real-time monitoring:** AVC accuracy, handheld reader usage, ETC/Cash/Violation/Exempt transaction ratios, Tag Class vs AVCC Class vs Mapper Class monitoring
- **Journey analytics:** Typical journeys of FASTag IDs — origin-destination analysis geographically and vehicle class-wise
- **Malpractice detection:** Detection of anomalous patterns in FASTag issuance and usage
- **Violation and dispute analytics:** Plaza-wise violation handling and resolution efficiency; customer dispute handling efficiency; NETC settlement efficiency

M2 — ADMIN PANEL

The Admin Panel is the administrative backbone of the entire TMCC platform. It is accessible only to TMCC Admins and the operations team, reached exclusively via VPN. Without the Admin Panel functioning correctly, no other module can deliver accurate data — it is the foundational configuration and master-data layer for the entire system. Built in Python (Django Framework) with MySQL as the underlying database.

ADMIN PANEL SUB-MODULES

Sub-Module	Description
Login Module	Simple username/password form. URL not made public. Access restricted to admin/staff-level users only. Actions available after login: change password, manage account information, logout.
Users, Roles and Permissions	Full RBAC management. User fields: first name, last name, email, mobile, username, password, roles and permissions. Permission model: union-semantics — effective permissions = (role-level permissions) UNION (individual user-level additions/restrictions). One role can be assigned to multiple users. A user can have permissions cherry-picked on top of their role. All permission changes are audit-logged.
Various Masters	State Master, RO Master, PIU Master, Concessionaire Master, System Integrator Master, Collection Agency Master, Banks Master (issuer and acquirer banks), Critical Device Master, Vehicle Class Master, Transaction Mode Master, Lane Master, and other supporting masters. All downstream data normalisation and scope-linking depends on these masters being correctly configured.
Toll Plaza Management	Complete plaza lifecycle. Plaza list page: searchable, filterable by all master fields, paginated. Each plaza shows: onboarding statuses, TMS/Health Monitoring client statuses, contacts, quick action buttons, Google Map location, action log history, Toll Plaza Monitor link, Toll Plaza Config link, onboarding logs.
Manage Toll Plaza — 7 Tabs	(1) Master Information: Plaza name, # lanes, SI, RO, concessionaire, status flag (yes/no — controls inclusion in dashboards/alerts/reports). (2) Implementation Status: Per-module implementation tracker (Health Monitoring IoT/Desktop, TMS Connect, Video Analytics) with history log.

Sub-Module	Description
	(3) Contact Information: Plaza-level contacts (Manager, Nodal Officer, SI Team, CO Team). Each contact can be given a frontend dashboard user account for plaza monitoring access. (4) Toll Lanes Manager: Lane names, enable/disable for notifications (exempt lanes: Weigh Bridge / Reversible / Extreme Right or Left for non-ETC use — exempted only on formal request with higher authority approval). (5) IP Configuration: Device-to-IP mapping for the plaza's local network. Managed in the Dashboard's Toll Plaza Configuration Module; viewed here. (6) Applications Configurations: TMS Connect and Health Monitoring agent configurations — DB credentials, query definitions, IP plans, sync frequency. (7) Applications Connectivity Status: Live connectivity status of all clients/agents running at the plaza, last synced datetime, and respective application logs.
Multi-Plaza Contact Management	Manages contacts spanning multiple plazas (e.g., SI team lead covering a cluster). Prevents data duplication and ensures correct notification routing across plazas.
TMS/NPCI Data Mappers	Normalises heterogeneous data from 30+ SI platforms to TMCC's canonical data model. Operates at two levels: Global-level (generic translations applicable to most plazas) and Plaza-level (overrides for conflicting cases). Vehicle class mapping covers 15+ naming variants for the same class across different SIs. Transaction mode and lane ID mapping similarly handled. Plaza-level overrides take precedence over global mappings. Unmapped records written to non_translated_data table; flagged for manual correction.
TMS Connect Configuration Manager	Manages DB connection credentials, query definitions, sync frequency, and all other TMS Connect configuration per plaza. Changes pushed to the TMS Connect service at the plaza on its next configuration sync cycle. Only differential configurations are synced — unchanged settings not re-transmitted. Accessible by TMCC Admins only.
CRM / Tickets Management	Manages notification/alert templates, auto-generation rules, ticket lifecycle and CRM masters. Defines alert types, escalation levels, content, recipients, trigger conditions, minimum wait periods and allowed dispatch time windows. See M4 for full ticket management detail.

M3 — BUSINESS INTELLIGENCE LAYER (APACHE SUPERSET)

Apache Superset is deployed on a dedicated BI Server, connected to both MySQL RDS (for operational and master data) and Apache Druid (for high-volume NPCI and TMS time-series transaction data). The dual-datasource architecture is architecturally significant: SQL-Lab allows analysts to JOIN operational context from MySQL with time-series transaction data from Druid in a single query — enabling analysis that neither store alone could efficiently serve. Superset connects to databases via Python ORM (SQLAlchemy), supporting MySQL, Druid, and other SQL-compatible databases.

SUPERSET FEATURES AND CAPABILITIES

Capability	Detail
Live Dashboards (50+)	Pre-built dashboards covering: transaction performance (ETC vs Cash, lane-wise, hourly), lane health and device uptime, FASTag penetration and accuracy, revenue analytics (plaza/RO/concessionaire comparatives), AVC accuracy per lane and plaza, SI performance benchmarking, concessionaire comparatives.
SQL-Lab	Interactive SQL IDE connected to both MySQL and Druid. Supports ad-hoc cross-database queries, data preview, query history. Enables analysts to build and save complex queries across both data stores. Used for investigation, reconciliation analysis, and new report development.
Automated Weekly Reports	Airflow-scheduled reports dispatched every week to PIUs, PDs, ROs and SIs. Coverage: lane congestion, manual and cash transaction rates, delayed transaction rates, SQR metrics, DQR metrics. Live since November 2025.
Visualisation Types	Line charts, bar charts, pie charts, heat maps, geographic maps with plaza pins, time-series plots, comparative tables, pivot tables, spark lines. Drill-down from national to regional to plaza to lane level.
Export Formats	All dashboards, maps, graphs and tables exportable to PDF, Excel/CSV, and image formats. Schedule and share capabilities built in.

Capability	Detail
Access Control	Integrated with TMCC RBAC. Dashboard visibility scoped per stakeholder tier — a plaza-level user cannot access RO-level comparative dashboards. Configuration of intricate access rules per dataset and feature.
Slice Architecture	Each chart/visualisation is a "slice" associated with one or more dashboards. Slices are reusable across dashboards. Adding a new dashboard is a matter of selecting and arranging existing slices or building new ones — no code required for most use cases.

TYPICAL REPORTS AVAILABLE FROM THE BI LAYER

Report Category	Content
TMS Performance — Single Plaza	Revenue collection (lane-wise FASTag vs Cash, hourly FASTag vs Cash, dedicated vs hybrid lanes), plaza vehicle throughput (lane-wise, hourly, vehicle class-based), AVC accuracy (lane-wise and plaza-level)
TMS Performance — Comparative	Two or more plazas compared on revenue collection, throughput, FASTag percentage, AVC accuracy, downtime
Transaction Module Reports	Daily/fortnightly/monthly/quarterly/half-yearly/yearly: ETC, Cash, Violation, Exempt and other transactions — overall, RO-wise, PIU-wise, SI-wise and plaza-wise
AVC Accuracy Report	AVC accuracy by lane and plaza, trend over time, comparison across plazas and SIs
ETC Penetration Report	FASTag penetration trends by plaza, highway, concessionaire and vehicle class
ETC Transaction Detail	Fixed reader vs handheld reader ETC transactions — overall and plaza-wise
Equipment Downtime Report	Critical equipment downtime per device type per plaza; MTBF and MTTR; system availability trends

Report Category	Content
Lane Downtime Report	Lane-level downtime history; lanes not meeting SLA parameters
FASTag SLA Performance	Plazas not meeting FASTag SLA parameters; FASTag readability and read accuracy comparatives

Report generation performance SLA: status reports within 3 seconds; analytical reports within 10 seconds.

The distinction between Superset dashboards and the 20+ custom React reports is intentional: Superset serves structured analytical queries and scheduled stakeholder reports; the React reports serve specific IHMCL operational workflows where interactive tables, custom calculations, and tailored download formats are needed that Superset's generalised framework does not efficiently support.

M4 — TICKETING MODULE

The Ticketing Module is the structured incident management engine of TMCC. It manages two structurally different ticket categories through a unified interface: operational service tickets (device down, lane down, client connectivity failures) and data quality tickets (NPCI-TMS reconciliation mismatches, data pipeline anomalies). Both are generated automatically and manually, tracked through a defined lifecycle, and escalated through the stakeholder hierarchy when unresolved.

TICKET TYPES AND GENERATION

Ticket Type	Generation Trigger	Resolution Path
Device Down	Critical device (FASTag Reader, AVC, Camera, TLC, Barrier) offline beyond configured threshold	SI confirms device restored; Health agent shows active; auto-close on condition resolution
Lane Down	Lane reports no transactions beyond threshold period	SI restores lane; TMS data resumes; manual close by operator

Ticket Type	Generation Trigger	Resolution Path
TMS Client Down	TMS Connect stops sending data (5-min miss = warning; 15-min miss = alarm)	TMS Connect service restarted at plaza; auto-close when sync resumes
Health Client Down	Health agent stops sending ping data	Health agent restarted; connectivity confirmed; auto-close
Lane Non-ETC Only	Lane recording only non-ETC transactions beyond threshold — compliance flag	Plaza confirms ETC restoration; manual close
Data Quality (DQ)	Reconciliation engine detects data anomalies in the pipeline	Investigation; coordination with SI and NPCI as needed; manual close after verification
NPCI-TMS Mismatch	NPCI-settled transaction count does not match TMS-reported count for the same plaza and period	Root cause investigation; data gap resolution; may require NPCI coordination; manual close

TICKET DATA MODEL

Each ticket carries the following fields throughout its lifecycle:

Field	Description
Ticket ID	System-assigned unique identifier
Created / Updated / Renewed at	Timestamps for creation, last update, and last notification renewal
Ticket Type	One of the seven types above
Escalation Level	Current level in hierarchy (Plaza Manager / Nodal / PIU / RO / IHMCL)
Toll Plaza ID	Affected plaza
Ticket Status	Open / In Progress / Resolved / Closed

Field	Description
Closing Reason	Mandatory field on closure — captures how the issue was resolved
Closed at	Closure timestamp (auto or manual)
Alert / Notification Collection	All notifications dispatched for this ticket, with timestamps and delivery status
Notes	Free-text field by assigned agent — running commentary on investigation and follow-up
Follow-ups	Structured follow-up log: next follow-up timing, notes, status, with whom, last contact
Assigned to	TMCC operations executive responsible for this ticket

TICKET MANAGEMENT SUB-PAGES

Page	Description
Ticket List Page	Shows all open tickets by default. Searchable by plaza name, status, type, escalation level, notification template type. Sortable. Paginated. Key info shown per row: ticket type, timings, status, next follow-up, plaza brief, assigned agent.
Ticket Detail — Ticket Information	All ticket fields visible. Action buttons for status change and escalation management.
Ticket Detail — Alerts/Notifications	All notifications generated for this ticket, latest first. Each notification shows recipients, delivery status per recipient, grouped by escalation template.
Ticket Detail — Follow-ups	Complete history of all follow-up actions. Next follow-up shown at top. Each entry: summary, with whom, outcome, next follow-up details.
Ticket Detail — Toll Plaza Details	Complete plaza context embedded in ticket: master details, contacts, TMS/Health Monitoring connectivity status, current lanes down, current devices down, health summary, quick action buttons.

Page	Description
Ticket Detail — Escalation	Lists available escalation notification templates for this ticket type with contacts per level. Each item has a Send button — clicking dispatches the escalation notification and updates the ticket's escalation level.
Ticket Detail — Status Management	Action buttons to change ticket status with mandatory reason entry. Status trail maintained automatically.

NOTIFICATION/ALERT TEMPLATE SYSTEM (ADMIN PANEL — CRM SECTION)

Each alert type can have multiple templates — one per escalation level. A template defines every aspect of the communication it governs:

- **Escalation Level:** The primary level this template targets (Plaza Manager, PIU, RO, IHMCL)
- **Main Recipients:** Can span multiple escalation levels simultaneously — e.g., a PIU-level escalation can still include the Plaza Manager as a recipient
- **CC Recipients:** Secondary recipients copied on email (typically the previous escalation level when escalating upward)
- **Configurable Trigger Condition:** The threshold that must be met before this template fires (e.g., lane down for 2 hours for Level 1; lane still down after 5 days for Level 2 PIU escalation)
- **Minimum Wait Period:** Anti-spam control — minimum gap between two consecutive notifications of the same type for the same plaza (e.g., 4 hours). Prevents alert fatigue when a device remains down for an extended period.
- **Allowed Day Timings:** Time window within which the notification may be dispatched — suppresses non-critical alerts during night hours
- **Slug:** Unique programmatic identifier for the template
- **Email Content:** Subject line and body with dynamic field substitution (plaza name, device type, downtime duration)
- **WhatsApp Content:** Approved message template for dispatch via Meta API

AUTO-GENERATION AND TICKET-NOTIFICATION LINKAGE LOGIC

A continuous background process checks all plazas against all configured template conditions. When a condition is met:

1. Check whether an open ticket of the same type already exists for that plaza
2. If YES — renew the existing ticket by linking the new notification to it. No duplicate ticket created. The ticket becomes a collection of related notifications over the lifetime of the issue.
3. If NO — create a new ticket and dispatch the notification
4. Place the notification in the Email/WhatsApp dispatch queue
5. Queue worker dispatches to all recipients; failed sends retried; success logged to ticket
6. Same cycle checks all open tickets — if the underlying condition has resolved, ticket is auto-closed

Example: Lane 9 at a plaza goes down. Level 1 notification sent to Plaza Manager; ticket created. 4 hours later, the lane is still down. Level 1 notification sent again (minimum wait period elapsed) — attached to the same ticket. 5 days later, still unresolved — Level 2 escalation sent to PIU (with Plaza Manager on CC) — ticket escalation level updated. Lane eventually restored — auto-close triggered. The ticket record now contains the complete history of the incident: every notification dispatched, every recipient, every follow-up, and the resolution timestamp.

ESCALATION HIERARCHY

Plaza Manager → Nodal Officer → PIU / PD → Regional Office → IHMCL

Each escalation step dispatches a new notification to the next tier, keeps the previous tier on CC, and updates the ticket's escalation level field. All steps are time-stamped automatically. The escalation path and thresholds are configurable per alert type.

2.2 Ingestion Modules

M5 — TMS CONNECT MODULE

The TMS Connect Service runs inside each of 1,205 plaza networks simultaneously. Debezium CDC on read-only SQL Views ensures only new/changed records are pulled. Both transactions and images flow through the

[illegible]

M6 — HEALTH CONNECT MODULE

The Health Connect Module continuously monitors the operational status of every critical ETC device at every lane of all 1,205 onboarded toll plazas. It is the real-time eyes of the TMCC platform at the plaza level — not for transactions, but for the health of the physical infrastructure that enables transactions. The module is strictly read-only from the plaza network perspective: the Health Agent sends ICMP ping

requests to locally connected devices and forwards only binary up/down status payloads to TMCC. It does not access the TMS database, reads no transaction data, and opens no inbound port.

DEPLOYMENT MODES

Mode	Hardware	Runtime	Use Case
IoT Device	Raspberry Pi Model 3B+	Raspberry Pi OS 10 (Ubuntu-based), Python background service	Primary deployment — dedicated IP on plaza LAN, 24×7 uptime
Windows Service	Any plaza Windows PC (≥ Windows 7)	C# / .NET Framework 4, runs silently in background	Where IoT device is not feasible; installed via remote connection
Linux Daemon	Any plaza Linux machine	Python 3 daemon	Linux-based plaza environments

MONITORING CYCLE (EVERY 1–5 MINUTES)

1. Agent fetches current IP-to-device mapping from TMCC API (configured in Admin Panel)
2. Sends ICMP ping to each device IP across all lanes on the plaza's private LAN
3. Multi-threaded scan for plazas with many lanes (e.g., 20 lanes × 6 devices = 120+ IPs). Each IP retried up to 2 times before marking as down.
4. Constructs JSON payload with up/down status for every device
5. Sends payload to TMCC via single outbound HTTPS API call (port 443)
6. TMCC stores raw records and computes continuous downtime table (start/end time for each downtime episode >15 minutes)

DEVICES MONITORED PER LANE

#	Device	Notes
1	Central TMS Server	Plaza-level (not lane-level)

#	Device	Notes
2	TLC (Traffic Light Controller)	Per lane
3	AVCC (Automatic Vehicle Class Computer)	Per lane
4	FASTag Reader (RFID Transceiver)	Per lane — most critical for ETC operation
5	Lane Camera / ICC	Per lane — incident capture camera
6	License Plate Capture Camera (ANPR)	Per lane — where IP-based
7	Boom Barrier	Per lane — where IP-based

RESULT SYNC AND OFFLINE BEHAVIOUR

Results stored in local SQLite database and synced immediately after each scan. If internet is unavailable, results queue locally. On reconnection, most recent results synced first (max 25 per call) — ensuring the TMCC dashboard reflects the latest plaza status even after extended outages. Bandwidth: approximately 1–2 MB per lane per day.

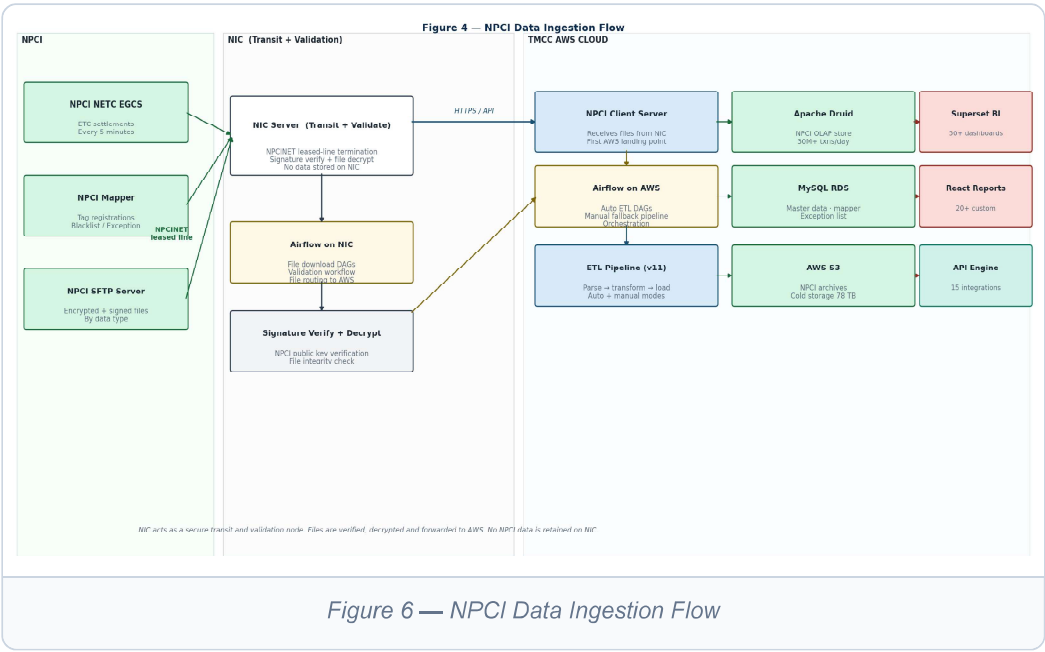
SECURITY DESIGN

- ICMP pings travel only on the plaza's private LAN — device IPs never exposed to internet
- Agent communicates outbound only via HTTPS to a single whitelisted TMCC API endpoint
- No inbound ports opened; plaza firewall can block all traffic except the one outbound HTTPS call
- Zero interaction with TMS database or any transaction system

M7 — NPCI CONNECT MODULE

The NPCI ingestion architecture spans three infrastructure environments: NPCI publishes files to SFTP every 5 minutes; the NIC Server receives them via NPCINET dedicated leased line, runs validation and decryption, and routes them to AWS; Airflow on AWS orchestrates the ETL with both automated and manual

fallback pipelines. Both Airflow instances — one at NIC, one at AWS — form the orchestration backbone of this pipeline.



Stream	Frequency	Key Fields
ETC Transactions	Every 5 min	txnSeqNo · txnId · tollTxnId · txnTime · txnType · tagId · merchantId · laneId · vehicleClassCode · vehicleRegNo · txnStatus · issuerId · acquirerId · settledAmt · purpose_code
Exception List	Near real-time	tagId · exceptionListCode · operation · updateTime
Mapper / Tag Registration	Near real-time	tagId · Tid · issueDate · vehicleClass · regNumber · VIN · status · orgId
Master Data	Daily	Merchant Master (Toll Plaza Master) · Participant Master (issuer + acquirer banks)

M8 — ANNUAL PASS BANK INGEST

The Annual Pass Bank Ingest module brings settlement data from the five participating Annual Pass banks into TMCC, feeding directly into the Annual Pass Delta Computation engines (M10). It handles two structurally different ingestion

modes — automated SFTP for four banks and manual upload for one — both landing in the same processing pipeline after validation.

PARTICIPATING BANKS

Bank	Ingestion Mode	Orchestration
IDFC First Bank	Automated SFTP pull	Apache Airflow DAG (AWS)
Jio Payments Bank	Automated SFTP pull	Apache Airflow DAG (AWS)
Airtel Payments Bank	Automated SFTP pull	Apache Airflow DAG (AWS)
ICICI Bank	Automated SFTP pull	Apache Airflow DAG (AWS)
Kotak Mahindra Bank	Manual file upload	Operations team via Admin Panel

INGESTION PIPELINE

Stage	Description
File Retrieval	Automated banks: Airflow DAG connects to bank SFTP and pulls settlement files on schedule. Kotak: operations team receives file from bank and uploads via Admin Panel.
Schema Validation	File validated against expected schema — field names, data types, mandatory fields, record count. Failed validation: file quarantined and flagged for manual review.
Pre-processing	Normalisation of bank-specific field encodings to TMCC canonical format — bank identifiers, date formats, amount representations standardised.
MySQL Staging	Validated records written to staging table tagged with bank identifier, ingestion timestamp and file reference.
Handoff to M10	Annual Pass Delta Computation engines pick up staged records for the 6-engine processing pipeline.

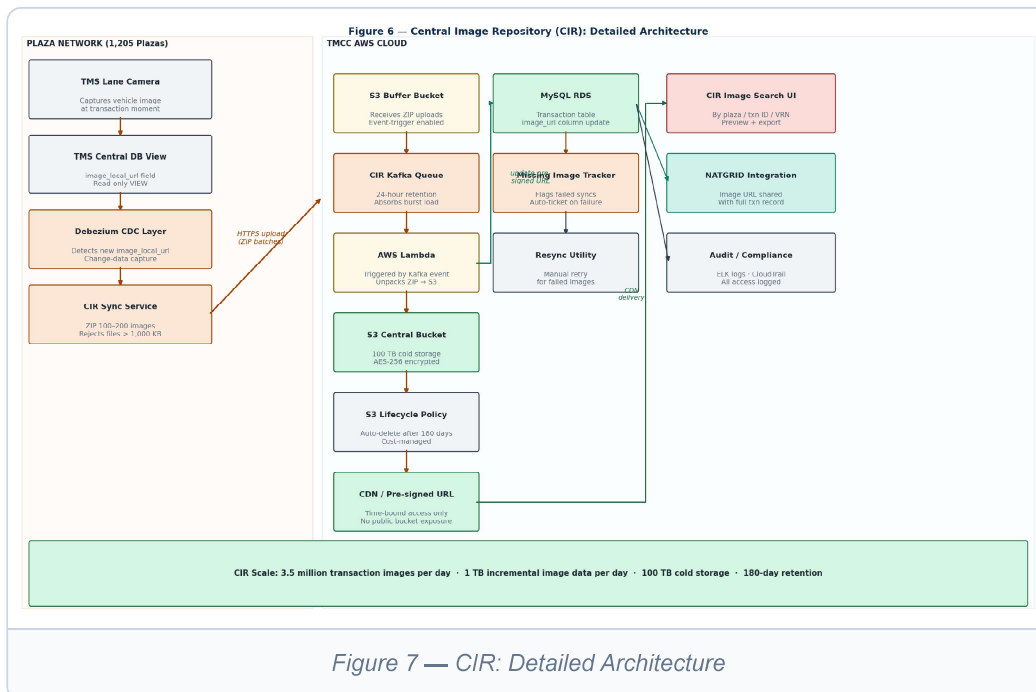
RECONCILIATION OUTPUTS

Report	Frequency	Recipients
Concessionaire Report	Daily	Concessionaires — eligible/disqualified counts, delta payable, CSV + PDF
PF Plaza Report	Weekly	IHMCL and Regional Offices — Performance Frontier plazas
Bank Reconciliation	Quarterly	IHMCL — TMCC-computed delta vs bank-supplied settlement data, formal document

2.3 Specialised Modules

M9 — CENTRAL IMAGE REPOSITORY (CIR)

The CIR module captures 3.5 million transaction images daily and ingests them through a fully automated pipeline. The architecture is designed to handle burst load: 1,205 plazas upload simultaneously during peak hours, and the Kafka queue absorbs these bursts before Lambda processes them at a controlled rate.



Capability	Details
Image capture	Debezium CDC detects populated image_local_url in TMS View; CIR Sync batches 100–200 images per ZIP
Streaming queue	Apache Kafka (24h retention) — absorbs burst load from 1,205 simultaneous plazas
Processing	AWS Lambda triggered by Kafka event; unpacks ZIP; stores to S3 central bucket; updates MySQL record
Access control	Pre-signed time-bound CDN URLs only; no direct bucket access; role-scoped within TMCC
Retention	180 days; S3 lifecycle policy auto-purges; 100 TB cold storage
Search UI	By plaza, date range, transaction ID, vehicle registration; preview and export
Failure handling	Missing image tracker with auto-ticket on sync failure; manual resync utility

M10 — ANNUAL PASS MODULE

The Annual Pass Module is the most financially critical component in TMCC 1.0. It is the system of record for government subsidy computation under the IHMCL/NPCI Annual Toll Pass scheme, where private vehicle owners pay ₹3,000 upfront for 200 toll transactions per year with a 2-trip-per-day cap. Every delta computed here has direct financial settlement implications. The module processes millions of transactions daily through six sequential computation engines, maintains multi-level reconciliation with five banks, and produces outputs that form the basis of IHMCL's financial claims.

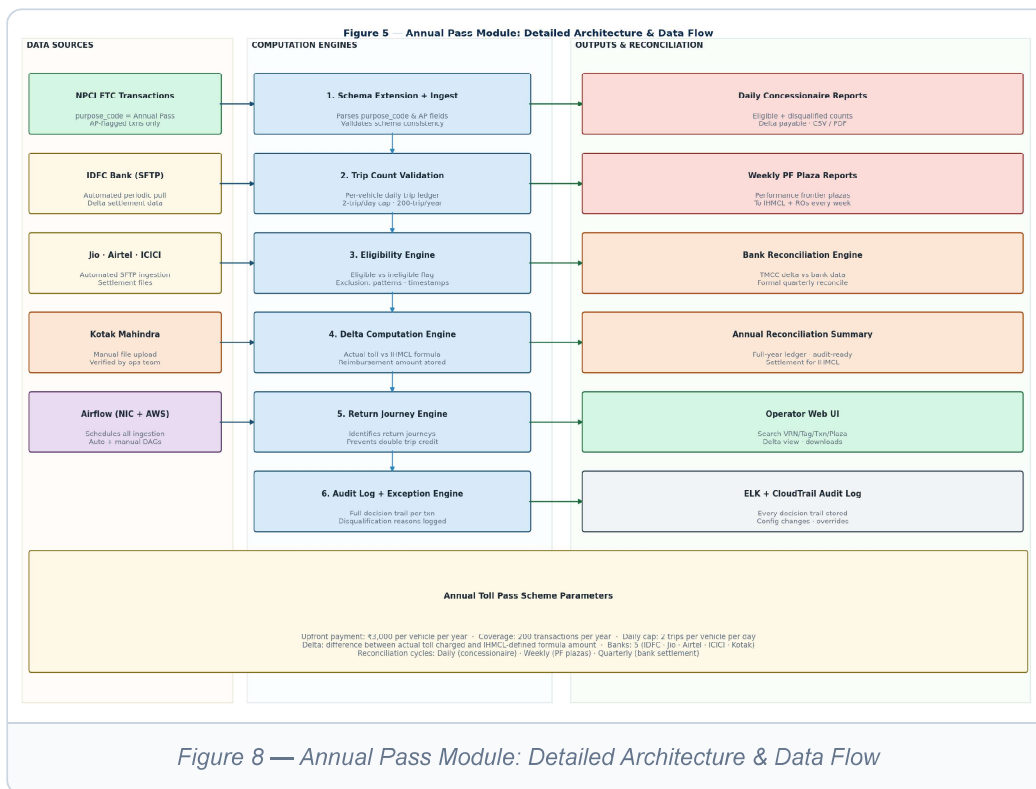


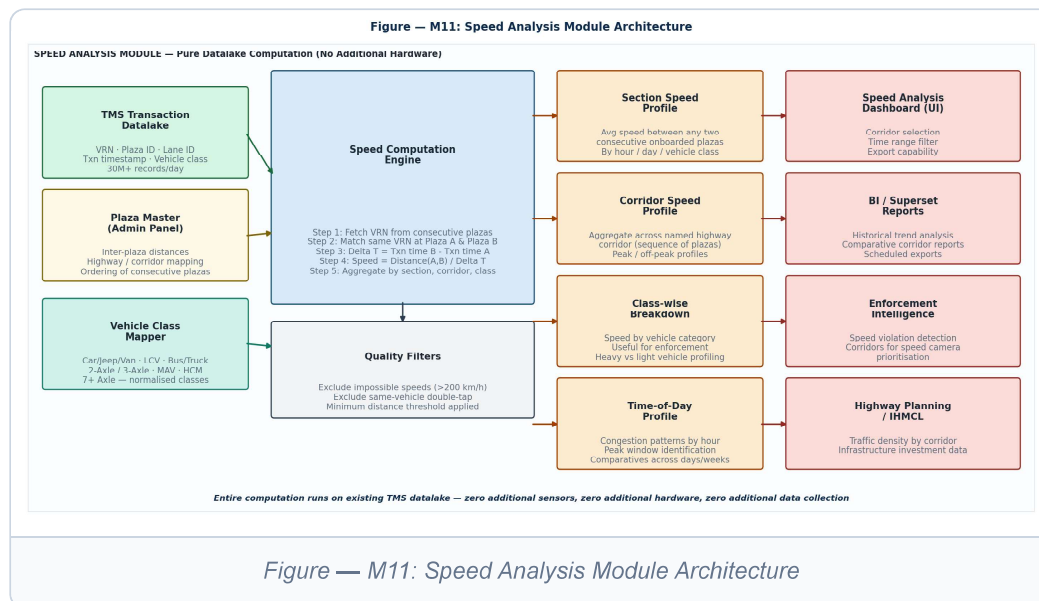
Figure 8 — Annual Pass Module: Detailed Architecture & Data Flow

Engine	Function
1. Schema Extension + Ingest	Parses purpose_code and AP-specific fields from NPCI feed. Validates schema consistency. Future-ready extensibility.
2. Trip Count Validation	Per-vehicle daily trip ledger. Enforces 2-trip/day cap and 200-trip/year limit. Flags over-quota transactions.
3. Eligibility Engine	Eligible vs ineligible flag per transaction. IHMCL-defined exclusion logic: usage patterns, timestamps, plaza category.
4. Delta Computation Engine	Applies IHMCL-frozen formula to each eligible transaction. Computes reimbursement amount. Stored as transaction metadata. Near real-time processing.
5. Return Journey Engine	Identifies return journeys (same vehicle, same route, same day). Prevents double-counting of trip credits — a critical financial correctness control.
6. Audit Log + Exception Engine	Full decision trail per transaction: eligibility status, rule checks applied, delta computed, disqualification reason. Manual overrides and config changes logged.

Reconciliation Framework: Daily concessionaire reports (eligible/disqualified counts, delta payable, CSV/PDF); Weekly PF plaza reports to IHMCL and ROs; Quarterly bank reconciliation (TMCC-computed delta vs bank-supplied data — formal settlement document for IHMCL). Operator web UI: search by VRN/Tag/Txn/Plaza, delta view, trip history, report downloads.

M11 — SPEED ANALYSIS MODULE

The Speed Analysis Module derives average vehicle speeds across National Highway corridors entirely from data already resident in the TMCC transaction datalake — no additional sensors, no dedicated roadside hardware, no separate data collection. It works by matching the same Vehicle Registration Number (VRN) at consecutive onboarded toll plazas and computing speed from elapsed time and inter-plaza distance. Every VRN that passes through two consecutive plazas already exists in the datalake with precise timestamps; the module joins these records, applies quality filters, and derives speed at scale across lakhs of VRN matches every day.



INPUTS

Input	Source	Data Used
TMS Transaction Datalake	MySQL / Druid — 30M+ records/day	VRN, Plaza ID, Lane ID, transaction timestamp, vehicle class
Plaza Master (Admin Panel)	MySQL master tables	Inter-plaza distances, highway corridor mapping, ordering of consecutive plazas
Vehicle Class Mapper	MySQL mapper tables	Normalised vehicle classes across all 30+ SI naming conventions

COMPUTATION STEPS

1. **Fetch:** Pull VRN records from consecutive onboarded plazas A and B on the same highway corridor
2. **Match:** Identify the same VRN appearing at Plaza A and then Plaza B within a valid time window
3. **Delta T:** Transaction timestamp at Plaza B minus transaction timestamp at Plaza A
4. **Speed:** $\text{Distance}(A, B) \div \text{Delta T} = \text{average speed for that vehicle on that section}$
5. **Quality filters:** Exclude speeds above 200 km/h; exclude same-vehicle double-tap; apply minimum inter-plaza distance threshold
6. **Aggregate:** Group by section, corridor, vehicle class, and time-of-day to produce profiles

OUTPUTS

Output	Description	Consumer
Section Speed Profile	Average speed between any two consecutive onboarded plazas, by hour, day and vehicle class	Speed Analysis Dashboard, BI Reports
Corridor Speed Profile	Aggregate speed across a named highway corridor (ordered sequence of	IHMCL, Highway Planning

Output	Description	Consumer
	plazas) — peak and off-peak windows	
Class-wise Breakdown	Speed by vehicle category — useful for distinguishing heavy commercial from light vehicle traffic	Enforcement Intelligence, BI
Time-of-Day Profile	Congestion patterns by hour — peak windows and comparatives across days and weeks	Traffic management, Superset dashboards
Enforcement Intelligence	Speed violation detection — identifies corridors for speed camera prioritisation	IHMCL, Law enforcement integration

M12 — VIDEO ANALYTICS MODULE

The Video Analytics Module is a hybrid edge-cloud AI pipeline that automatically counts and classifies vehicles crossing toll plazas using live lane camera feeds. The architecture deliberately keeps initial video processing at source (edge) and offloads heavy ML inference to cloud GPUs. Critically, no video is ever stored anywhere in the pipeline — live feeds are processed in real time and discarded; only structured analytics outputs (class, count, timestamp, lane) are persisted to the datalake.

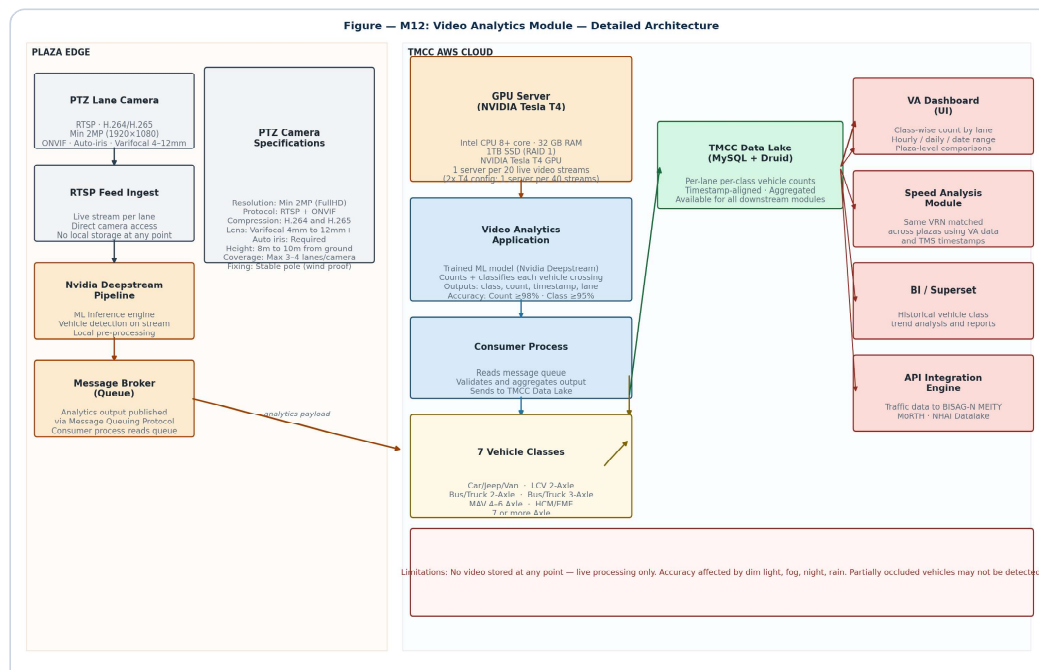


Figure — M12: Video Analytics Module — Detailed Architecture

LANE CAMERA SPECIFICATIONS (PLAZA EDGE)

Parameter	Specification
Video protocol	RTSP (Real Time Streaming Protocol)
Standard compliance	ONVIF — ensures interoperability across camera vendors
Minimum resolution	2MP (Full HD: 1920×1080)
Camera type	Network-based IP camera
Lens	Varifocal, 4mm to 12mm+ — adjustable to lane geometry
Iris	Auto-iris — automatic aperture adjustment for varying light
Compression	H.264 and H.265 — both supported
Installation height	8m to 10m from ground
Lane coverage	Maximum 3–4 toll lanes per camera
Pole requirement	Stable, wind-proof — camera must not swing in strong winds

GPU SERVER SPECIFICATIONS

Configuration	Specification	Capacity
Standard	8+ core Intel CPU, 32 GB RAM, 1 TB SSD (RAID 1), NVIDIA Tesla T4	1 server per 20 live video streams
High-capacity	12+ core Intel CPU, 64 GB RAM, 1.5 TB SSD (RAID 1), 2× NVIDIA Tesla T4	1 server per 40 live video streams

PIPELINE — EDGE TO CLOUD

Stage	Location	Function
Lane Camera	Plaza edge	Captures live traffic at lane level via RTSP. No storage at camera.
RTSP Feed Ingest	Plaza edge	Live stream ingested directly. No buffering or local storage at any point.
Nvidia Deepstream Pipeline	Edge / Cloud GPU	ML inference engine. Vehicle detection on live stream. Model trained on all vehicle types; retraining done as needed to maintain accuracy.
Message Broker (Queue)	Cloud	Analytics output published via Message Queuing Protocol. Consumer process reads queue continuously.
Video Analytics Application	Cloud GPU	Counts and classifies each vehicle crossing. Output: vehicle class, count, timestamp, lane ID. Count accuracy $\geq 98\%$, classification accuracy $\geq 95\%$.
Consumer Process	Cloud	Reads message queue, validates and aggregates, writes to TMCC Data Lake (MySQL + Druid).

7 VEHICLE CLASSES DETECTED

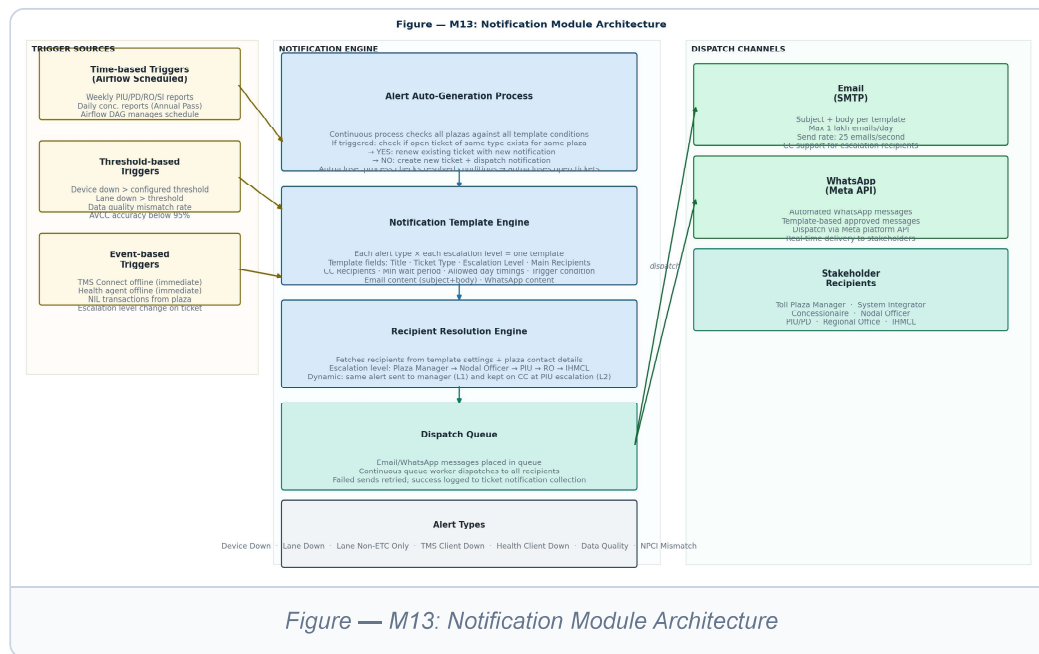
#	Vehicle Class
1	Car / Jeep / Van
2	LCV — 2 Axle (Light Commercial Vehicle)
3	Bus / Truck — 2 Axle
4	Bus / Truck — 3 Axle
5	Multi Axle Vehicle (MAV) — 4 to 6 Axle
6	HCM / EME (Heavy Construction Machinery / Earth Moving Equipment)
7	7 or more Axle

Accuracy requirements: Vehicle count $\geq 98\%$; vehicle classification $\geq 95\%$. Benchmarked using toll plaza transaction data. Contractual penalty of ₹5,000 per plaza per day if accuracy falls below prescribed levels.

Limitations: No video stored at any point — live processing only, no replay capability. Accuracy degrades in dim light, fog, night-time and heavy rain. Partially occluded vehicles may be missed or misclassified.

M13 — NOTIFICATION MODULE

The Notification Module is the automated communication backbone of TMCC. It dispatches Email and WhatsApp alerts to the right stakeholder, at the right escalation level, at the right time — driven by three trigger modes and governed by a highly configurable template engine. A critical design principle: when a notification is generated, the system first checks whether an open ticket of the same type already exists for that plaza. If it does, the new notification is attached to the existing ticket rather than creating a duplicate — preventing ticket proliferation while maintaining a complete audit trail.



ALERT TYPES

Alert Type	Trigger Condition
Device(s) Down	Critical device (FASTag Reader, AVC, Camera, TLC, Barrier) offline beyond configured threshold
Lane(s) Down	Lane reporting no transactions beyond defined downtime threshold
Lane Non-ETC Only	Lane processing only cash/manual transactions — a compliance flag for IHMCL
TMS Client Down	TMS Connect stops sending data (5-minute miss = warning; 15-minute miss = alarm)
Health Client Down	Health monitoring agent stops sending ping data
Data Quality / NPCI Mismatch	Reconciliation engine detects data anomalies or NPCI-TMS transaction count discrepancies

THREE TRIGGER MODES

Mode	Mechanism	Examples
Time-based	Apache Airflow DAG schedules periodic dispatch	Weekly PIU/PD/RO/SI reports; daily Annual Pass concessionaire reports
Threshold-based	Continuous process evaluates each plaza against configured thresholds	Device down > configured duration; lane down > threshold; AVCC accuracy <95%
Event-based	Immediate dispatch on detection of a specific system event	TMS Connect offline; Health agent offline; escalation level change on ticket

NOTIFICATION TEMPLATE ENGINE

Each alert type × escalation level = one configurable template. Template fields: **Title · Ticket Type · Slug (unique ID) · Escalation Level · Main Recipients · CC Recipients · Minimum Wait Period (anti-spam) · Allowed Day Timings (suppress night alerts) · Configurable Trigger Condition · Email Content (subject + body) · WhatsApp Content.**

ALERT AUTO-GENERATION PROCESS

1. Continuous process checks all plazas against all configured template conditions
2. If triggered: check whether an open ticket of the same type already exists for that plaza
3. If YES — renew the existing ticket by linking the new notification to it. No new ticket created.
4. If NO — create a new ticket and dispatch the notification to the queue
5. Queue worker sends to all matching recipients; failed sends retried; success logged to ticket
6. Same cycle: checks all open tickets for resolved conditions and auto-closes where applicable

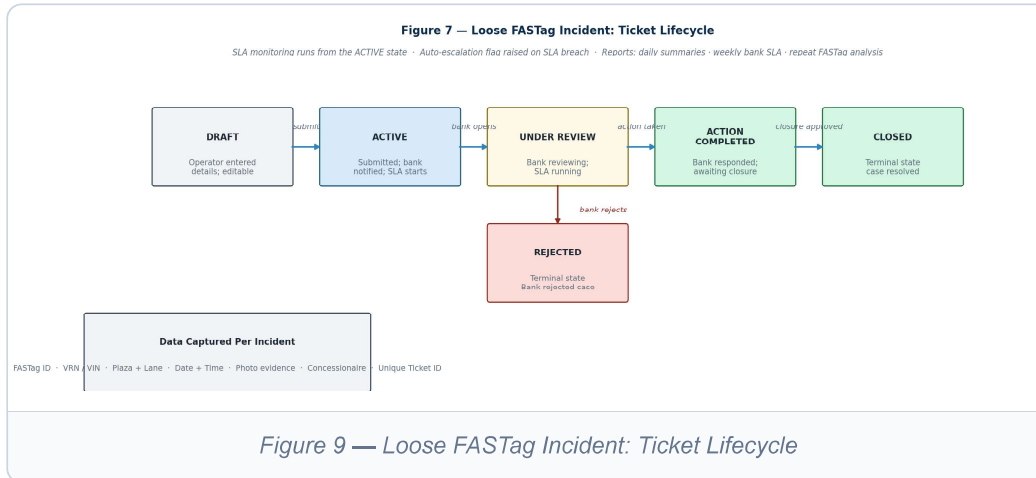
DISPATCH CHANNELS

Channel	Technology	Capacity
Email	SMTP transactional service	Max 1 lakh emails/day; send rate 25/second; CC support for escalation recipients
WhatsApp	Meta API (WhatsApp Business Platform)	Template-based approved messages; real-time delivery to registered numbers

Escalation hierarchy: Plaza Manager → Nodal Officer → PIU / PD → Regional Office → IHMCL. When escalating from L1 to L2, the L1 recipient is kept on CC — ensuring the plaza contact remains informed while the higher tier takes ownership.

M14 — LOOSE FASTAG INCIDENT MODULE

Structured workflow for Tag-in-Hand incidents at plazas. Captures FASTag ID, VRN/VIN, plaza/lane, date/time, photo evidence and concessionaire details. Automatically identifies the issuing bank. SLA monitoring runs from ticket submission with auto-escalation on breach.



2.4 Integration Module

All external data feeds pass through a centralised API Gateway that enforces authentication, authorisation, rate limiting and audit logging before any data leaves the TMCC boundary. 15 active feeds to government and agency systems.

#	Integration	Status	Data Shared
1	GST Department	Running	NETC Code, VRN, reader read time
2	NATGRID	Running	Full txn set: VRN, geo, lane, class, time, tag ID, mode, image URL
3— 11	e-Detection (9 states): CG · OD · RJ · WB · MP · UK · GJ · HP · Delhi NCT	Running	NETC Code, VRN, reader read time
12	BISAG-N MEITY	Running	Plaza-wise, class-wise traffic data
13	MoRTH	Running	Plaza-wise, class-wise traffic data
14	NHAI Datalake	Running	Aggregated traffic and txn data
15	SmartCity Prayagraj	Stopped	—

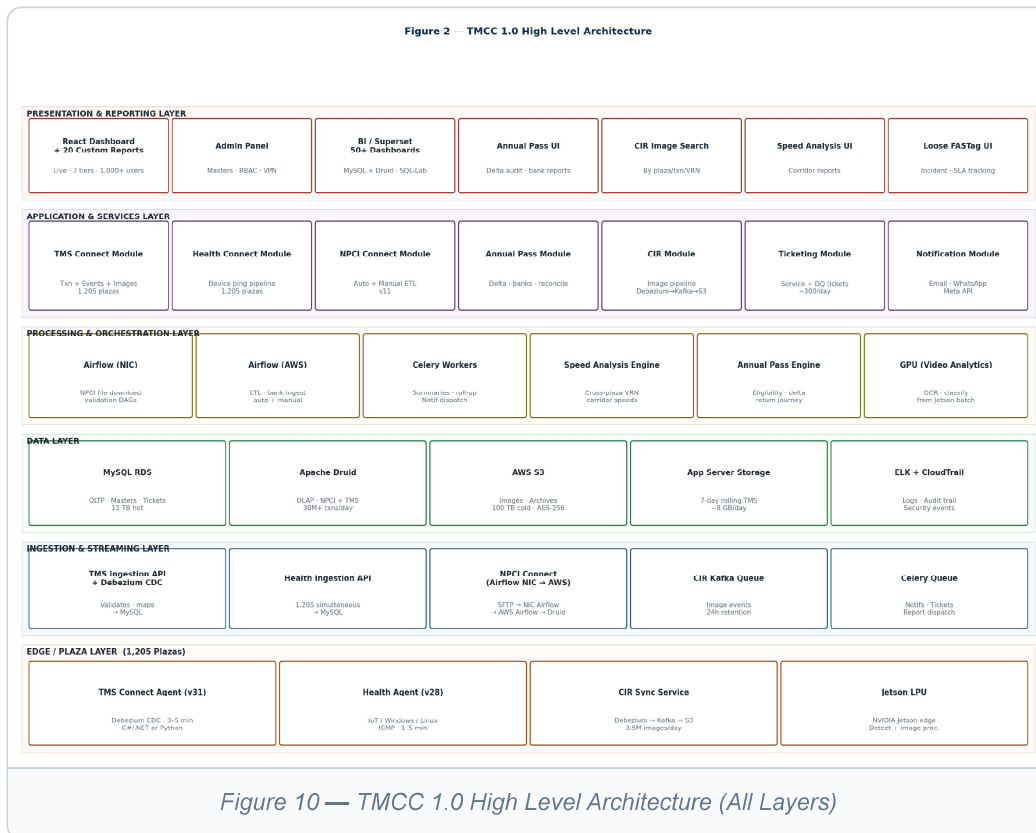
Component	Technology	Notes
Central backend	Python + Django	Standard Django views; no DRF for internal-only APIs
Frontend dashboard	React JS	Role-scoped SPA; 20+ custom operational reports
Admin panel	Django Admin	VPN-gated; operations team only
Operational DB (OLTP)	MySQL on AWS RDS	11 TB hot; masters, tickets, TMS txns
Time-series store (OLAP)	Apache Druid	30M+ txns/day; NPCI + TMS
Object storage	AWS S3	14 TB hot / 78 TB txn cold / 100 TB image cold; AES-256
CIR streaming queue	Apache Kafka (AWS)	24h retention; image event queue
Orchestration — NIC	Apache Airflow	NPCI file download + validation DAGs
Orchestration — AWS	Apache Airflow	NPCI ETL, bank ingestion, reconciliation DAGs
Async task queue	Celery (Cron Server)	Notifications, summaries, Druid roll-up
BI / analytics	Apache Superset	50+ dashboards; MySQL + Druid; SQL-Lab
API Gateway	Custom (Django)	JWT auth · IP whitelist · rate limiting · audit logging for all integrations
Application logs	ELK Stack	App logs, metrics, security events, exception traces

Component	Technology	Notes
Audit trail	AWS CloudTrail	All AWS API calls; tamper-evident; compliance
Serverless image processing	AWS Lambda	CIR: unpack ZIPs, store to S3, update DB
GPU inference	NVIDIA Tesla T4	Video Analytics OCR + classification
Edge AI	NVIDIA Jetson (LPU)	On-device detection + image processing at plaza
TMS agent (Windows)	C# / .NET 4.0	Windows background service
TMS agent (Linux)	Python 3	Linux daemon
Health agent (IoT)	Python 3 / Raspberry Pi OS 10	Raspberry Pi 3B+ on plaza LAN
CDC layer	Debezium	TMS Connect and CIR pipelines
Auth	JWT + 2FA	Mandatory 2FA; session tokens; rate-limit lockout
WhatsApp notifications	Meta API	Automated WhatsApp dispatch
Image delivery	AWS S3 pre-signed URLs	Time-bound CDN; no public buckets

04 Architecture

4.1 High Level Design — Layered Architecture

TMCC 1.0 is structured in six logical layers from the Plaza Edge to the Presentation tier. Each layer communicates with adjacent layers through defined interfaces. No layer is bypassed — data always flows through the defined path.



Layer	Components	Responsibility
L1 — Edge / Plaza	TMS Connect Agent · Health Agent · CIR Sync · Jetson LPU	Data collection inside plaza network; all outbound HTTPS only; no inbound ports
L2 — Ingestion	TMS Ingestion API + Debezium · Health API · NIC→AWS path · CIR Kafka · Celery Queue	Receive, validate, route and buffer all inbound data streams
L3 — Data	MySQL RDS · Apache Druid · AWS S3 · App Server Storage · ELK + CloudTrail	Persist all data in purpose-built stores — see Section 5 for detail
L4 — Processing	Airflow (NIC + AWS) · ETL Engine · Celery Workers · Speed Engine · AP Delta Engine · GPU	Transform, aggregate, compute; orchestrate all batch and streaming jobs
L5 — Application	All 14 functional modules as services	Business logic and API surface for UI and external consumers

Layer	Components	Responsibility
L6 — Presentation	React Dashboard · Admin Panel · Superset · AP UI · CIR UI · Speed UI · Loose FASTag UI	User-facing surfaces for 1,000+ users across 7 tiers; 20+ custom React reports

4.2 Data Flows

TMS TRANSACTION AND IMAGE FLOW (STEP-BY-STEP)

1. Vehicle crosses lane → TMS records transaction → propagates to plaza central TMS DB
2. Debezium CDC on read-only SQL View detects new record
3. TMS Connect Agent packages differential batch → sends to TMCC Ingestion API via HTTPS port 443
4. Ingestion API validates, applies mapper translations (normalises class codes, lane IDs, mode codes across 30+ SIs), writes to MySQL RDS
5. MySQL → Druid roll-up by Cron Server Celery Workers (hourly/daily aggregation)
6. Debezium CDC also detects populated image_local_url → CIR Sync batches 100–200 images into ZIP → uploads to S3 buffer
7. Kafka event triggers Lambda → unpacks ZIP → stores in central S3 → updates MySQL transaction record with pre-signed URL

NPCI DATA FLOW (STEP-BY-STEP)

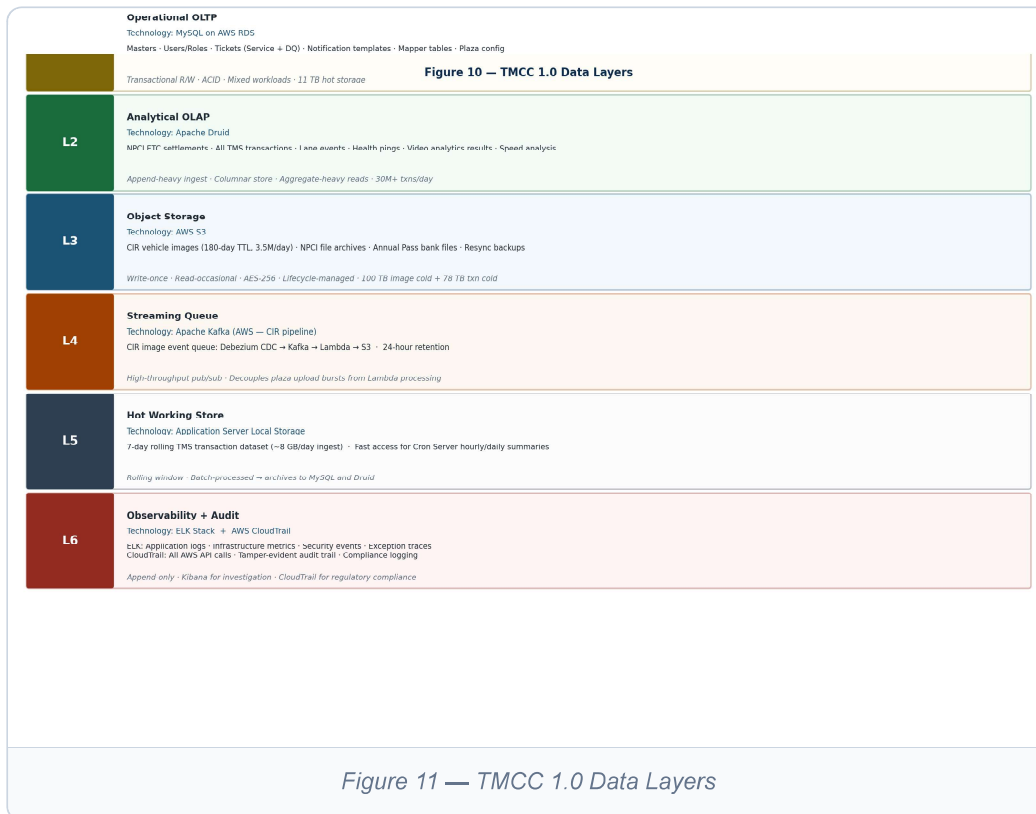
1. NPCI generates differential data files every 5 minutes → publishes to SFTP
2. NIC Airflow DAG executes → connects via NPCINET leased line → downloads, verifies signature, decrypts. NIC stores no data.
3. NIC routes verified files to AWS NPCI Client Server via HTTPS/API
4. AWS Airflow DAG triggers → ETL pipeline (auto, or manual on disruption) parses files → transactions to Druid, masters/exception list to MySQL
5. Annual Pass purpose_code fields routed to the AP Delta Engine

ANNUAL PASS COMPUTATION FLOW (STEP-BY-STEP)

1. NPCI transaction arrives with purpose_code = Annual Pass flag
2. Schema Extension Layer extracts and validates AP-specific fields
3. Trip Count Validation Engine checks per-vehicle daily and annual trip ledger
4. Eligibility Engine applies all IHMCL business rules → eligible / ineligible flag
5. Delta Computation Engine applies IHMCL-frozen formula → reimbursement amount stored as transaction metadata
6. Return Journey Engine detects return trips on same route same day → prevents double credit
7. Audit Log Engine records full decision trail for every transaction
8. Outputs: daily concessionaire reports → weekly PF plaza reports → quarterly bank reconciliation

05 Data Layers

Six data layers, each purpose-built for a specific data type, access pattern and volume. The separation is deliberate and necessary — using a single store for all data at 30M+ transactions per day would be architecturally untenable.

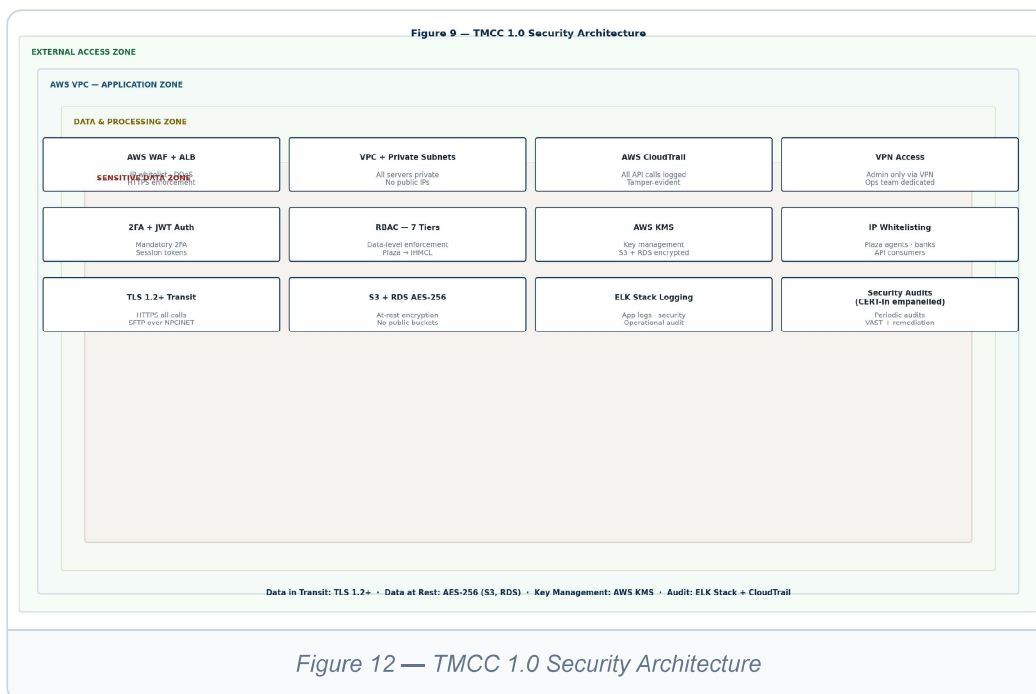


Layer	Technology	Data Held	Access Pattern
L1 — Operational OLTP	MySQL on AWS RDS	Masters · Users/roles · Tickets · Notification templates · Mapper tables · Plaza config	Transactional R/W · ACID · 11 TB hot
L2 — Analytical OLAP	Apache Druid	NPCI settlements · All TMS transactions · Lane events · Health pings · Video events · Speed results	Append-heavy · Columnar · 30M+/day
L3 — Object Storage	AWS S3	CIR images (180d TTL · 3.5M/day) · NPCI archives · AP bank files · Backups	Write-once · AES-256 · 100 TB image cold + 78 TB txn cold
L4 — Streaming Queue	Apache Kafka (AWS)	CIR image events: Debezium→Kafka→Lambda→S3 · 24h retention	Burst-absorbing pub/sub

Layer	Technology	Data Held	Access Pattern
L5 — Hot Working Store	App Server Storage	7-day rolling TMS dataset · ~8 GB/day · fast Cron summaries	Rolling window · Batch-processed
L6 — Observability + Audit	ELK Stack + CloudTrail	ELK: app logs · metrics · security events CloudTrail: all AWS API calls · compliance audit	Append-only · Compliance

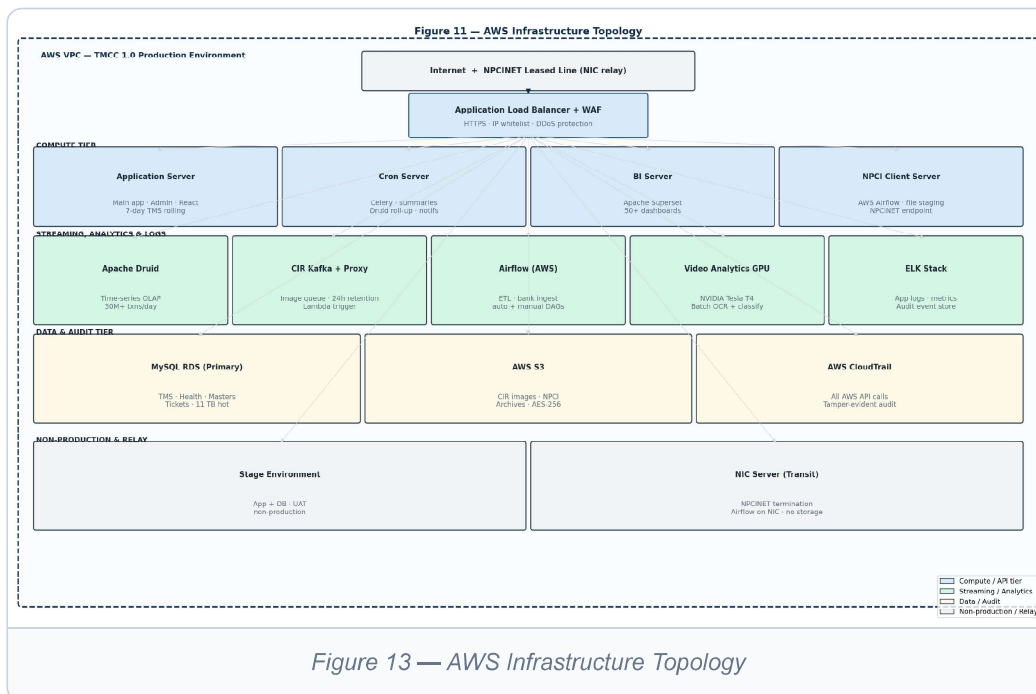
06 Security Architecture

Defence-in-depth across five security zones. AWS VPC; mandatory 2FA; all administrative access via VPN; ELK Stack + CloudTrail for observability and compliance.



Control	Implementation
Plaza edge	Agents: outbound HTTPS only; no inbound port; single whitelisted endpoint. TMS credential: read-only VIEW; no write/delete/schema privilege.
2FA + JWT	Mandatory 2FA for all logins. Rate-limit lockout. Inactivity session expiry.
RBAC (7 tiers)	Plaza → SI → Concessionaire → Nodal → PIU/RO → IHMCL/NHAI. Data-level enforcement on every API call.
API Gateway	All external integrations: JWT bearer token · IP whitelist · rate limiting · per-request audit logging
AWS WAF + ALB	IP whitelist; DDoS mitigation; HTTPS enforcement; rate limiting.
VPC + private subnets	All production servers in private subnets; no direct public IPs.
VPN access	Admin Panel accessible only via VPN.
AWS KMS	Encryption key management for S3 and RDS. Customer-managed keys; rotation enforced.
TLS 1.2+ in transit	All API calls, SFTP over NPCINET.
AES-256 at rest	S3 (all buckets) + RDS encryption. Pre-signed URLs only — no public access.
AWS CloudTrail	All AWS infrastructure API calls logged — tamper-evident compliance audit trail.
ELK Stack	Application logs, security events, exception traces; Kibana for investigation.
Security Audits	Periodic audits by CERT-In empanelled agency. Covers VAST and remediation tracking.
Data sovereignty	All data on AWS ap-south-1 (India). NPCI transit on NIC within India. No cross-border egress.

Entirely on AWS. NIC Server maintained only as NPCINET leased-line termination, Airflow-on-NIC host and transit relay.



Server	Purpose
Application Server	TMCC main application · Django admin · React dashboard · 7-day TMS rolling store (~8 GB/day)
Cron Server	Celery workers · summaries · Druid roll-up · log deletion · Email + WhatsApp dispatch
MySQL RDS (Primary)	TMS txns · health · masters · tickets · config · 11 TB hot · KMS encrypted · daily snapshots
BI Server	Apache Superset · 50+ dashboards · MySQL + Druid
NPCI Client Server	AWS Airflow consumer · receives from NIC · file staging · ETL trigger
Apache Druid	NPCI OLAP · 30M+ txns/day time-series store

Server	Purpose
CIR Kafka + Proxy	Image event queue · 24h retention · Lambda trigger coordination
Video Analytics GPU	NVIDIA Tesla T4 · batch OCR + classification from Jetson LPUs
ELK Stack	App logs · metrics · security events · CloudTrail feed
AWS S3	14 TB hot / 78 TB txn cold / 100 TB image cold · NPCI archives · AES-256
Stage Environment	App + DB stage · UAT + pre-production testing
NIC Server (Transit)	NPCINET termination · Airflow on NIC · validation + routing · no data stored

08

Operations

8.1 Team Structure

Role	Count	Responsibilities
Project Manager	1	Overall management · IHMCL coordination · technical discussions
Operations Supervisors	3	Shift supervision · escalation management · quality assurance
Operations Executives	12	Plaza monitoring · ticket handling · SI coordination · user management
BI Analyst	1	Daily reporting · operational audits · ad-hoc analysis · dashboard management
System Administrator	1	AWS upkeep · deployments · security patching · configuration

Role	Count	Responsibilities
Database Administrator	1	MySQL + Druid management · data integrity · backup verification

8.2 Daily Scale

Activity	Scale
24×7 Plaza Monitoring	~300 new tickets/day · ~4,200 active (Device down ~800 · Client down ~300 · Lane down ~900 · DQ ~700 · NPCI mismatch ~1,000)
New Plaza Onboarding	~8–10 plazas/month · full cycle: SI coordination, agent install, IP mapping, sync verify
SI Migration Handling	Full re-onboarding per migration (reinstall Health, re-integrate TMS, remap IP plan)
NPCI Pipeline Ops	Active monitoring · manual pipeline invocations on disruptions · NPCI NETC team coordination
Annual Pass Operations	Daily conc. reports · weekly PF plaza reports · manual Kotak ingestion · quarterly reconciliation
Reporting	Daily IHMCL report · weekly stakeholder reports · ad-hoc analysis
System Maintenance	TMS Connect · Health Connect · NPCI pipeline upkeep · patching · security audits

09 Current Scope of Work

Everything below is live in production as of May 2026.

9.1 Software Scope

#	Module / Service	Status
1	TMS Connect Module	Live · 1,205 plazas · Debezium CDC · Txns + Events + Images · 8 GB/day
2	Health Connect Module	Live · 1,205 plazas · IoT/Windows/Linux · Device-level ICMP
3	NPCI Connect Module	Live · NIC Airflow + AWS Airflow · Auto + Manual · 6 GB/day
4	Annual Pass Module	Live · 5 bank integrations · 6-engine computation pipeline · Daily/weekly/quarterly reporting
5	CIR Module	Live · Debezium→Kafka→Lambda→S3 · 3.5M images/day · 1 TB/day · 100 TB cold
6	Speed Analysis Module	Live · Cross-plaza VRN matching · Corridor speed profiles · Class-wise
7	Video Analytics Module	Live · Hybrid Jetson LPU + Cloud GPU · 7 classes · VA dashboard
8	BI Engine (Superset)	Live · 50+ dashboards · MySQL + Druid · Weekly automated reports (Nov 2025)
9	Custom React Reports	Live · 20+ custom operational reports
10	Integration Module + API Gateway	Live · 15 integrations · JWT + whitelist + TLS 1.2+
11	Ticketing Module	Live · Service disruption + DQ types · ~300 new/day
12	Notification Module	Live · Email + WhatsApp · Meta API · Airflow + threshold + event triggers
13	Loose FASTag Incident Module	Live · DRAFT→ACTIVE→REVIEW→COMPLETED→CLOSED · SLA monitoring

#	Module / Service	Status
14	Monitoring Dashboard	Live · React · 1,205 plazas · 7 tiers · 1,000+ users
15	Admin Panel	Live · Full RBAC · Masters · Plaza onboarding · Mappers · VPN-gated
16	TMCC Cloud Infrastructure	Live · AWS VPC · 10+ servers · 20+ AWS services · NIC server (Airflow + relay)

10 Glossary

Term	Definition
AVC / AVCC	Automatic Vehicle Classifier — lane equipment that independently classifies vehicle class
API Gateway	The TMCC Integration Module component that enforces authentication, rate limiting and audit logging for all external data feeds
CDC	Change Data Capture — detects only new/changed records in a database since last sync (Debezium)
CIR	Central Image Repository — captures, stores and serves vehicle transaction images (3.5M/day)
CloudTrail	AWS CloudTrail — logs all AWS API calls; tamper-evident compliance audit trail
Debezium	Open-source CDC platform used in TMS Connect and CIR pipelines
Delta (Annual Pass)	Difference between actual toll charged and IHMCL-defined eligible formula amount
Druid	Apache Druid — columnar OLAP DB for time-series transaction data at TMCC

Term	Definition
ELK Stack	Elasticsearch, Logstash, Kibana — centralised logging and security observability
ETC	Electronic Toll Collection — infrastructure for FASTag-based automated toll payment
FASTag	RFID-based national toll payment tag issued under NPCI NETC programme
IHMCL	Indian Highways Management Company Limited — owns and operates TMCC
KMS	AWS Key Management Service — manages encryption keys for S3 and RDS
LPU	Local Processing Unit — NVIDIA Jetson edge device at plaza for Video Analytics
Meta API	Meta platform API — used for automated WhatsApp message dispatch
NATGRID	National Intelligence Grid — receives comprehensive transaction data from TMCC
NETC	National Electronic Toll Collection — NPCI programme for FASTag-based toll
NIC	National Informatics Centre — NPCINET termination + Airflow-on-NIC + transit relay
NPCINET	NPCI's dedicated private network for sharing settlement data
NPCI	National Payments Corporation of India — clearing house for all FASTag transactions
PIU	Project Implementation Unit — NHAI field office
RBAC	Role-Based Access Control — 7-tier permission model with data-level enforcement
RO	Regional Office — NHAI regional administrative unit
SI	System Integrator — entity operating ETC equipment at a plaza

Term	Definition
TMS	Toll Management System — plaza-level software recording all toll transactions
VRN	Vehicle Registration Number
WAF	Web Application Firewall — deployed at TMCC ALB