

## **NAGPUR METRO RAIL CORPORATION LIMITED**

**Name of work: Implementation of EMV based open loop automated fare collection system for Nagpur metro extendable to NMC managed city buses and parking services.**

**Tender No.: N1T02/2016, Dtd.14.08.2016**

### **CORRIGENDUM – VII**

Date:02.12.2016

Tender No.: N1T02/2016

NMRCL E-Tender Portal: <https://nagpurmetrorail.etenders.in>

Tender No. (As uploaded in the E-Tender Portal of NMRCL): 59

- Part A: Addendum
- Part B: Modifications in Reply to bidder's queries
- Part I: Annexure
- Part III: Annexure
- Annexure IX- A: NOC from NMC



**General Manager  
(Procurement), NMRCL**

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**Name of work: Implementation of EMV based open loop automated fare collection system for Nagpur metro extendable to NMC managed city buses and parking services.**

**Tender No.: N1T02/2016, Dtd.25.11.2016**

**Corrigendum - VII, PART- A (Addendum)**

S.No.	Part No.	Section	Page No.	Clause No.	Clause Ref.	Existing Description	Replaced With
1.	Part 1	Section II	26	ITB 49.1	Additional Para	NMC would be liable for timely payment of the 1.4% revenue share of the NMC buses fare collection to the Service Provider till expire of contract.	Stands deleted
2.	Part 1	Section II	26	ITB 49.2	Additional Para	For details on Liabilities of NMC, please refer to Annexure IX-A-Memorandum of Understanding (MoU) between NMC and NMRCL.	For details on Liabilities of NMC please refer to Annexure IX-A-NOC letter from NMC
3.	Part 1	Section II	27	ITB 50.1( c)	Additional Para	Supply, Installation, Testing and Commissioning of open loop, EMV smart card based AFC system for Nagpur Metro and other public transport systems which include city/feeder buses, vehicle parking, etc.	Supply, Installation, Testing and Commissioning of open loop, EMV smart card based AFC system for Nagpur Metro, feeder buses and metro parking, etc.
4.	Part 1	Section II	27	ITB 50.1 (o)	Additional Para	Yearly Premium/ Royalty payment to NMRCL and NMC as per the Memorandum of understanding (MoU) between NMC and NMRCL MoU between NMC and NMRCL is attached as Annexure to Vol 3	Yearly Premium/ Royalty payment to NMRCL.
5.	Part 1	Section II	28	ITB 51.1 ( c)	Additional Para	Yearly Royalty/Premium payment to NMRCL and NMC	Yearly Royalty/Premium payment to NMRCL.

## Corrigendum - VII, PART- A (Addendum)

S.No.	Part No.	Section	Page No.	Clause Ref.	Existing Description	Replaced With
6.	Part 2 Section VII A – General Specification	Introduction	3	All NMC Clauses		All NMC related scope of work clauses under Chapter 1 Introduction stands deleted
7.	Part 2 Section VII A – Particular Specification	Section 1.3.3	11	Level -3 Central Backoffice System of AFC	The Central BackOffice System of AFC is the heart of entire AFC ecosystem. It shall function as a. Transaction Management system, Reconciliation and Settlements for NMRCL, NMC & parking systems, Management Information System (MIS), and also as a communication layer between AFC systems and External Interfaces (like banking interfaces, mobile & ERP).	The Central BackOffice System of AFC is the heart of entire AFC ecosystem. It shall function as a. Transaction Management system, Reconciliation and Settlements for NMRCL metro & Parking systems, Management Information System (MIS), and also as a communication layer between AFC systems and External Interfaces (like banking interfaces, mobile & ERP).
8.	Part 2 Section VII A – Particular Specification	Section 2.1.1	12	Section 2.1	The objective of this project is to provide automatic fare collection system for Nagpur Metro Rail Corporation Limited metro, feeder vans, Nagpur Municipal Corporation buses and NMC, NMRCL operated parking ticketing as agreed between the bidders, NMRCL and NMC. The Bidder shall be responsible for installation of the end to end EMV CSC based AFC system at the required	The objective of this project is to provide automatic fare collection system for Nagpur Metro Rail Corporation Limited metro, feeder vans, NMRCL Operated parking ticketing. The Bidder shall be responsible for installation of the end to end EMV CSC based AFC system at the required number of stations, feeder vans, parking lots with each devices connected to the Central Backoffice AFC system.

S.No.	Part No.	Section	Page No.	Clause Ref.	Existing Description	Replaced With
					number of stations, feeder vans, buses, parking lots with each devices connected to the Central Backoffice AFC system.	
9.	Part 2 Section VII A – Particular Specificati on	Section 2.2.1.1	14	Section 2.2.1	AFCS should design, manufacture, source and supply of AFC equipment. This also includes supply of local items, installation, testing and commissioning of AFC equipment's for NMRCL metro, NMC buses, NMRCL feeder vans, NMRCL & NMC parking.	AFCS should design, manufacture, source and supply of AFC equipment. This also includes supply of local items, installation, testing and commissioning of AFC equipment's for NMRCL metro, NMRCL feeder vans and parking.
10.	Part 2 Section VII A – Particular Specificati on	Section 2.2.1.2	14	Section 2.2.1	It also includes commissioning and maintenance of Central AFC solution on as a cloud based solution for NMRCL and NMC.	It also includes commissioning and maintenance of Central AFC solution on as a cloud based solution for NMRCL.
11.	Part 2 Section VII A – Particular Specificati on	Section 2.2.2	16	Section 2.2.2	The AFC system design shall meet the Nagpur metro and NMC requirement for handling at least 80 stations, 400 Vans and 500 buses (expandable further up to 256 station and 500 buses but not to be limited by any configuration parameter). The Central system should be scalable and integrated for Nagpur metro future extensions (for data handling capacity as well as number of lines / stations / equipment and smart cards by addition of extra hardware/up gradation of existing	The AFC system design shall meet the Nagpur metro for handling at least 80 stations & 400 Vans (expandable further up to 256 station and 500 Vans but not to be limited by any configuration parameter). The Central system should be scalable and integrated for Nagpur metro future extensions (for data handling capacity as well as number of lines / stations / equipment and smart cards by addition of extra hardware/up gradation of existing hardware).

S.No.	Part No.	Section	Page No.	Clause Ref.	Existing Description	Replaced With
					hardware).	
12.	Part 2 Section VII A – Particular Specificati on	Section 3.1.3	20	Section 3.1	The bidder shall make available the necessary AFC solution to ensure smooth operations by the NMRCL and NMC.	The bidder shall make available the necessary AFC solution to ensure smooth operations by the NMRCL.
13.	Part 2 Section VII A – Particular Specificati on	Section 3.1.5	16	Section 3.1	Bidder shall propose and, if agreed by Nagpur Metro Rail Corporation Limited, develop applications to cater for future business rules of Nagpur Metro Rail Corporation Limited and NMC AFC system.	Bidder shall propose and, if agreed by Nagpur Metro Rail Corporation Limited, develop applications to cater for future business rules of Nagpur Metro Rail Corporation Limited AFC system.
14.	Part 2 Section VII A – Particular Specificati on	Section 3.1.6	16	Section 3.1	Bidder shall liaise with Nagpur Metro Rail Corporation Limited and NMC during design stage to establish all configurable parameters.	Bidder shall liaise with Nagpur Metro Rail Corporation Limited during design stage to establish all configurable parameters.
15.	Part 2 Section VII A – Particular Specificati on	Section 3.2	21	Section 3.2.1	Business rules document would be provided by NMRCL and NMC during the preliminary design phase of the project. The bidder shall enhance and give necessary support to ensure that the business rules document contains the best practices and is in a format that supports relatively	Business rules document would be provided by NMRCL during the preliminary design phase of the project. The bidder shall enhance and give necessary support to ensure that the business rules document contains the best practices and is in a format that supports relatively easy customization and upgrade of the application software provided by the Bidder.

S.No.	Part No.	Section	Page No.	Clause Ref.	Existing Description	Replaced With
					easy customization and upgrade of the application software provided by the Bidder.	
16.	Part 2 Section VII A – Particular Specification	Section 3.2	21	Section 3.2.2	AFC application software shall result in a design which, when implemented, at site shall be fully Compliant with NMRCL and NMC business rules.	AFC application software shall result in a design which, when implemented, at site shall be fully Compliant with NMRCL business rules.
17.	Part 2 Section VII A – Particular Specification	Section 3.2	21	Section 3.2.4	Bidder shall be responsible for optimizing the business rules, in conjunction with NMRCL & NMC, to a final version within three (3) months of contract award, or an alternative date to be agreed mutually with Nagpur Metro Rail Corporation Limited. However the bidder based on the preliminary business rules, without impinging upon project program or cost, shall develop the necessary software.	Bidder shall be responsible for optimizing the business rules, in conjunction with NMRCL to a final version within three (3) months of contract award, or an alternative date to be agreed mutually with Nagpur Metro Rail Corporation Limited. However the bidder based on the preliminary business rules, without impinging upon project program or cost, shall develop the necessary software.
18.	Part 2 Section VII A – Particular Specification	Section 3.5.3	23	Section 3.5.3.1	In the design of HMI software, bidder shall undertake detailed Requirements Capture Analysis in consultation with NMRCL & NMC.	In the design of HMI software, bidder shall undertake detailed Requirements Capture Analysis in consultation with NMRCL.
19.	Part 2 Section VII A –	Chapter 10	109	Chapter 10	<b>NMRCL/NMC PARKING TICKETING INTEGRATION</b>	<b>NMRCL PARKING TICKETING INTEGRATION</b>

S.No.	Part No.	Section	Page No.	Clause Ref.	Existing Description	Replaced With
	Particular Specification					
20.	Part 2 Section VII A – Particular Specification	Chapter 10	109	Chapter 10.1	<b>NMRCL/NMC Parking Ticketing Components.</b> NMRCL and NMC would be introducing the parking ticketing through the EMV smart card ticketing for the parking lots available parking lots outside the stations. Below are the minimal requirements for the Integration of the Parking ticketing.	<b>NMRCL Parking Ticketing Components.</b> NMRCL and NMC would be introducing the parking ticketing through the EMV smart card ticketing for the parking lots available parking lots outside the stations. Below are the minimal requirements for the Integration of the Parking ticketing.
21.	Part 2 Section VII A – Particular Specification	Chapter 10	110	Chapter 10.3	<b>NMRCL/NMC ticketing</b>	<b>NMRCL ticketing</b>
22.	Part 2 Section VII A – Particular Specification	<b>Central BackOffice System</b>	112	Chapter 10.5	The Central BackOffice AFC system of NMRCL would be extended for the NMRCL & NMC parking requirements and should be able to manage the parking ticketing products and process the parking ticketing transactions from parking ETM's.	The Central BackOffice AFC system of NMRCL would be extended for the NMRCL & parking requirements and should be able to manage the parking ticketing products and process the parking ticketing transactions from parking ETM's.
23.	Part 2 Section VII A – Particular	<b>Network Architecture</b>	112	Chapter 10.6 point 2	The connectivity shall be provided through the private APN's SIM by network operators to Cloud Host Data center of NMRCL/NMC.	The connectivity shall be provided through the private APN's SIM by network operators to Cloud Host Data center of NMRCL.

S.No.	Part No.	Section	Page No.	Clause Ref.	Existing Description	Replaced With
	Specification					
24.	Part 2 Section VII A – Particular Specification	Chapter 12	120	NMC BUS Ticketing	All clause under chapter 12 stands modified	As mentioned in the annexure “Part 2 - Annexure _NMC requirements” in Clause 2.
25.	Part 2 Section VII A – Particular Specification	20.7.1	8	All NMC Clauses	All NMC related scope of work clauses under section 20.7.1 stands deleted	
26.	Part 2	16.3.6	153	Interface with Civil		Contractor should provide physical glass barrier at the concourse area for barricading any additional spaces after installation of gate array in paid and unpaid area of station on finalizing the station drawing with Civil contractor.
27	Part 2	6.2.4.6	72	Alerts/Alarms management	Alerts/Alarms should be defined for each devices/components and should allow the employer to monitor the operation	Alerts/Alarms should be defined for each devices/components and should allow the Employer to monitor the operation from FOTS SCADA telecom system of NMRCL. Backoffice system should be integrated with FOTS SCADA system at OCC through connect cable from AFC servers to T SCADA server in TER/CER. for high

S.No.	Part No.	Section	Page No.	Clause Ref.	Existing Description	Replaced With						
						priority alarms and protocol would be provided by S&T contractors during design phase						
28.	Part 2 Section VII B – Particular Specification	Section 8.6	103	Section 8.6	<p>External funding stated above includes long term debt sanctioned by German government-owned development bank KFW. Terms of this loan are as follows</p> <table border="1"> <tr> <td>Interest pay out</td> <td>Quarterly. Interest pay-out would start immediately after disbursement of loan</td> <td>Quarterly. Interest pay-out would start immediately after disbursement of loan</td> </tr> </table>	Interest pay out	Quarterly. Interest pay-out would start immediately after disbursement of loan	Quarterly. Interest pay-out would start immediately after disbursement of loan	<p>External funding stated above includes long term debt sanctioned by German government-owned development bank KFW. Terms of this loan are as follows</p> <table border="1"> <tr> <td>Interest pay out</td> <td>Half yearly. Interest pay-out would start immediately after disbursement of loan</td> <td>Half yearly. Interest pay-out would start immediately after disbursement of loan</td> </tr> </table>	Interest pay out	Half yearly. Interest pay-out would start immediately after disbursement of loan	Half yearly. Interest pay-out would start immediately after disbursement of loan
Interest pay out	Quarterly. Interest pay-out would start immediately after disbursement of loan	Quarterly. Interest pay-out would start immediately after disbursement of loan										
Interest pay out	Half yearly. Interest pay-out would start immediately after disbursement of loan	Half yearly. Interest pay-out would start immediately after disbursement of loan										
29.	Part 2	Section VII-B	104	Cash management	<p>Financial Institution shall collect all cash from central location of NMRCL every day for previous day's operation for all cash based ticketing transactions across all metro Stations and then settle the cash with NMRCL current account with FI on T+3 settlement cycle. This is opportunity for financial institutions to earn float income.</p> <p>Cash management service shall be extended to NMC as well. NMC shall appoint an agency to pick up daily cash generated out of various transit transactions happened at NMC managed city buses and NMC parking terminals. FI shall collect the cash from this NMC appointed agency and deposit back the cash into NMC's current account with FI based on T+3 settlement cycle.</p>	<p>Financial Institution shall collect all cash from central location of NMRCL every day for previous day's operation for all cash based ticketing transactions across all metro Stations and then settle the cash with NMRCL current account with FI on T+3 settlement cycle. This is opportunity for financial institutions to earn float income.</p> <p>Revenue generated from ticketing transactions that happen using common mobility cards at NMC's ticketing terminals should be deposited electronically in bank account nominated by NMC as per T+3 settlement cycle.</p>						



**Corrigendum - VII, PART- A (Addendum)**

S.No.	Part No.	Section	Page No.	Clause No.	Clause Ref.	Existing Description	Replaced With
1.	Part 3	Section IX	4	1.1.6.13	Royalty	Royalty means premium paid by service provider to NMC and NMRCL to get rights to issue Nagpur common mobility Cards to commuters.	Royalty means premium paid by service provider to NMRCL to get rights to issue Nagpur common mobility Cards to commuters.
2.	Part 3	Section IX	4	14.1 (a)	Contract Price	NMC would be liable for timely payment of the 1.4 % revenue share of the NMC buses fare collection to the Service Provider till expire of contract.	For details on Liabilities of NMC please refer to Annexure IX-A-NOC letter from NMC
3.	Part 3	Section IX	14	2.1	Right to access to the site	<p>The Engineer shall grant the Contractor right of access to, and/or possession of, the Site progressively for the completion of Works. Such right and possession may not be exclusive to the Contractor. The Contractor will draw/modify the schedule for completion of Works according to progressive possession/right of such sites.</p> <p>If the Contractor suffers delay from failure on the part of the Employer to grant right of access to, or possession of the Site, the Contractor shall give notice to the Engineering a period of 28 days of such occurrence. After receipt of such notice the Engineer shall proceed to determine any extension of time to which the Contractor is entitled and shall notify the Contractor accordingly.</p> <p>For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time and no monetary claims whatsoever shall be paid or entertained on this account.</p>	<p>The Engineer shall grant the Contractor right of access to, and/or possession of, the Site progressively for the completion of Works. Such right and possession may not be exclusive to the Contractor. The Contractor will draw/modify the schedule for completion of Works according to progressive possession/right of such sites.</p> <p>If the Contractor suffers delay from failure on the part of the Employer to grant right of access to, or possession of the Site, the Contractor shall give notice to the Engineering a period of 28 days of such occurrence. After receipt of such notice the Engineer shall proceed to determine any extension of time to which the Contractor is entitled and shall notify the Contractor accordingly.</p> <p>For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time and no monetary claims whatsoever shall be paid or entertained on this account.</p> <p>The Access Dates shown in the Works Requirements are for planning purposes only.</p> <p>The Engineer reserves the right to make each site available to the Contractor any time before or after the</p>

S.No.	Part No.	Section	Page No.	Clause No.	Clause Ref.	Existing Description	Replaced With
						<p>The Access Dates shown in the Works Requirements are for planning purposes only. The Engineer reserves the right to make each site available to the Contractor any time before or after the Access Dates. The Engineer will notify the Contractor of the actual Access Dates in advance for each part of the works. This Notice will specify the area to which it refers is accessible and in a sufficient state of completion to permit the Contractor to begin installation and testing therein. It shall not imply that the Contractor will enjoy exclusive use of the area or that the work of other Contractor's therein is complete. The Contractor shall begin installation in each area by the actual Access Date, and shall complete all installation and testing in each area by the relevant Key Date.</p> <p>Notwithstanding the actual Access Date, whether before or after the stipulated Access Dates, the Employer shall not accept any increase in cost to the Employer.</p> <p>The Employer can enter into a Memorandum of Understanding with Nagpur Municipal corporation (NMC) to on-board NMC managed public transport buses and parking facilities. Implementation of open loop based automated fare collection system for NMC managed buses and parking facilities are included in scope of the project.</p> <p>The authorized representatives of NMC shall grant the Contractor to access the site of NMC bus depot's and related premises for the completion of works</p>	<p>Access Dates. The Engineer will notify the Contractor of the actual Access Dates in advance for each part of the works. This Notice will specify the area to which it refers is accessible and in a sufficient state of completion to permit the Contractor to begin installation and testing therein. It shall not imply that the Contractor will enjoy exclusive use of the area or that the work of other Contractor's therein is complete. The Contractor shall begin installation in each area by the actual Access Date, and shall complete all installation and testing in each area by the relevant Key Date.</p> <p>Notwithstanding the actual Access Date, whether before or after the stipulated Access Dates, the Employer shall not accept any increase in cost to the Employer.</p> <p>Nagpur Municipal corporation (NMC) has agreed to accept the common mobility cards as fare media for city buses and NMC run parking areas. Scope of work for contractor in this regards is specified in Annexure IX-A-NOC letter from NMC.</p> <p>The authorized representatives of NMC shall grant the Contractor to access the site of NMC such as buses, bus depot's, parking areas etc. for the completion of works</p>

S.No.	Part No.	Section	Page No.	Clause No.	Clause Ref.	Existing Description	Replaced With
4.	Part 3	Section IX	17	4.1( k)	Contractor's general obligation	Extending AFC and Smart Card services to the other modes of public transport of Nagpur city NMC parking and city buses	Extending Smart Card services to the other modes of public transport of Nagpur city NMC parking and city buses. For details related to scope of work in this regards, please refer to Annexure IX-A-NOC letter from NMC.
5.	Part 3	Section IX	71	Additional clause – PC 14	Price discovery	Price discovery shall happen by comparison of the market rates which prevails on the date of availing the service. Employer would do the price discovery by comparing market rates and same shall be discussed with service provider. Final rate shall be derived based on negotiation between Employer and service provider.	Price discovery shall happen by comparison of the market rates which prevails on the date of availing the service. Employer would do the price discovery by discussing with other banks and metro rail organizations and same shall be discussed with service provider. Final rate shall be derived based on negotiation between Employer and service provider.

**Name of work: Implementation of EMV based open loop automated fare collection system for Nagpur metro extendable to NMC managed city buses and parking services.**

**Tender No.: N1T02/2016, Dtd.25.11.2016**

**Corrigendum - VII, PART- B (Modifications in Reply to bidder's queries)**

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
Part 2: Work requirement Section VII-B: PS	8.6	103	<p>1. Salary accounts – Following table shows break-up of total employees that are working currently with NMRCL</p> <p>Permanent Employees 90 On Contract Employees 78 External Consultants 30 Total 198 NMRCL has received an approval for hiring up to 400 employees, hence in future total count of NMRCL employees may increase up to 400. Financial institution shall provide salary accounts and other retail banking services such as debit cards, credit cards, internet banking accounts etc. to all NMRCL employees.</p> <p>In addition to core retail banking services, financial institution may cross sell different banking</p>	<p>Please elaborate on details about salary, cash management, EMD amounts etc.</p>	<p>Please refer to Part 2 - Particular Specifications, Section 8, clause 8.6 points 1, 2 and 5 for details about Salary, cash management and EMD amounts respectively</p>

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
			<p>products such as Life insurance, loans etc. to NMRCL employees. NMRCL is planning to engage contractors to execute Nagpur Metro project. Financial institution may extend aforementioned banking services and products to employees of these contractors.</p> <p>However this shall solely depend on relation between financial institution and contractor and NMRCL shall not play any role in offering banking services and products to contractor's employees.</p> <p>2. Cash management –Financial Institution shall collect all cash from central location of NMRCL every day for previous day's operation for all cash based ticketing transactions across all metro stations and then settle the cash with NMRCL with T+3 settlement cycle. This is opportunity for financial institutions to earn float income. Cash management service shall be extended to NMC as well. NMC shall appoint an agency to</p>		

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
			<p>pick up daily cash generated out of various transit transactions happened at NMC managed city buses and NMC parking terminals. FI shall collect the cash from this NMC appointed agency and deposit back the cash into NMC's account based on T+3 settlement cycle.</p> <p>5. EMD Deposits (Short term deposits) – NMRCL is planning to float multiple tenders for various work packages during the metro construction. Total worth of these work packages is estimated as INR 6000 Cr to INR 6500 Cr. NMRCL will receive 1% of total contract value as EMD deposits from various bidders during this tendering process. Financial Institution shall provide short term deposit services to park EMDs</p>		
Part 2: Work requirement Section VII-B: PS	8.6	104	7. Bill discounting services – Total INR 3500 Cr. Worth of civil works are planned during Nagpur Metro project. NMRCL is planning to engage civil contractors to execute these works. Financial	Please share assessment for bill discounting services (tenor of bills, expected pricing, structure of the transactions)	Most of the civil contracts are for periods ranging around 110 weeks which is 25 months. The work is generally divided into 25 months in which initially there would be a mobilization advance and after the end of the three months there could be monthly billing being raised by contractors based on the actual work executed.

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
			institution has an opportunity to offer bill discounting services to the contractors.		
Part 2: Work requirement Section VII-B: PS	8.6	104	7. Bill discounting services – Total INR 3500 Cr. Worth of civil works are planned during Nagpur Metro project. NMRCL is planning to engage civil contractors to execute these works. Financial institutions has an opportunity to offer bill discounting services to the contractors.	Would all the bills for discounting be backed by LCs. Would Bills discounting facility be with recourse to NMRCL	Possibility of opening of L.C's rests with the systems supplier. No there is no compulsion that all bills for discounting would be backed by L.C's. NMRCL would have to pay the contractors for works executed as per specifications and after verification the relevant amount of payment for work executed would be released.
Part 2: Work requirement Section VII-B: PS	8.6	104	4. Letter of credit services – NMRCL is planning to purchase INR 2500 Cr worth of rolling stocks, signaling and traction systems from various suppliers. Out of this, suppliers might require to import goods worth INR 1500 Cr. to supply above mentioned systems to NMRCL. Suppliers might need Letter of credit services for these import transactions. Financial institution shall provide letter of	Would the limits be onto NMRCL or the suppliers. Please give a detailed deal structure for procurements.	NMRCL

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
			credit services to NMRCL suppliers.		
Part 2: Work requireme nt Section VII-B: PS	8.6	104	4. Letter of credit services – NMRCL is planning to purchase INR 2500 Cr worth of rolling stocks, signaling and traction systems from various suppliers. Out of this, suppliers might require to import goods worth INR 1500 Cr. to supply above mentioned systems to NMRCL. Suppliers might need Letter of credit services for these import transactions. Financial institution shall provide letter of credit services to NMRCL suppliers.	Credit rating / health of the suppliers. Would the facilities given to suppliers be with recourse on NMRCL. Suppliers could have existing banking arrangement.	No recourse to NMRCL.
Part 2: Work requireme nt Section VII-B: PS	8.6	104	4. Letter of credit services – NMRCL is planning to purchase INR 2500 Cr worth of rolling stocks, signaling and traction systems from various suppliers. Out of this, suppliers might require to import goods worth INR 1500 Cr. to supply above mentioned systems to NMRCL. Suppliers might need Letter of credit services for these import transactions. Financial	LCs would be domestic or import. Please share list of beneficiaries of the LCs and preferably a D&B report on them.	Could be for both; depending on the requirement of the contractor and their comfort

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
			institution shall provide letter of credit services to NMRCL suppliers.		
Part 2: Work requireme nt Section VII-B: PS	8.6	104	4. Letter of credit services – NMRCL is planning to purchase INR 2500 Cr worth of rolling stocks, signaling and traction systems from various suppliers. Out of this, suppliers might require to import goods worth INR 1500 Cr. to supply above mentioned systems to NMRCL. Suppliers might need Letter of credit services for these import transactions. Financial institution shall provide letter of credit services to NMRCL suppliers.	Expected terms of LCs, to check for red clause and other RBI guidelines	Terms would depend on the purpose of the LCs and tender conditions.
Part 2: Work requireme nt Section VII-B: PS	8.6	104	4. Letter of credit services – NMRCL is planning to purchase INR 2500 Cr worth of rolling stocks, signaling and traction systems from various suppliers. Out of this, suppliers might require to import goods worth INR 1500 Cr. to supply above mentioned systems to NMRCL. Suppliers might need Letter of credit services for these	Payment under the LCs would be through equity or borrowing	Could be from either

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
			import transactions. Financial institution shall provide letter of credit services to NMRCL suppliers.		
Part 2: Work requireme nt Section VII-B: PS	8.6	104		Financial projections for next 10 years	DPR of NMRCL has the relevant details
Part 2: Work requireme nt Section VII-B: PS	8.6	104	4. Letter of credit services – NMRCL is planning to purchase INR 2500 Cr worth of rolling stocks, signaling and traction systems from various suppliers. Out of this, suppliers might require to import goods worth INR 1500 Cr. to supply above mentioned systems to NMRCL. Suppliers might need Letter of credit services for these import transactions. Financial institution shall provide letter of credit services to NMRCL suppliers.	Would the LCs be required to be issued in favor of suppliers? What shall be the security available? Shall the guarantee from NMRCL be available for LC facility to be granted to suppliers?	Yes, would be required to be issued in favor of suppliers subject to the clause being present in the respective RFP's. No security can be made available by NMRCL.
Part 2: Work requireme nt Section VII-B: PS	8.6	104	7. Bill discounting services – Total INR 3500 Cr. Worth of civil works are planned during Nagpur Metro project. NMRCL is planning to engage civil	Which bank the bill discounting shall be done? What shall be the security available? Shall the guarantee from	NMRCL cannot guarantee that all bill discounting of contractors will be done from the bank that comes on board. However, it is felt that most of the contractors would ideally avail of facilities from the same payment bank from whom payments are received. No security can be provided by NMRCL;

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
			contractors to execute these works. Financial institution has an opportunity to offer bill discounting services to the contractors.	NMRCL be available for the same?	the supplier would provide the relevant rating and necessary security to the bankers.
Part 2: Work requirement Section VII-B: PS	8.6	104	7. Bill discounting services – Total INR 3500 Cr. Worth of civil works are planned during Nagpur Metro project. NMRCL is planning to engage civil contractors to execute these works. Financial institution has an opportunity to offer bill discounting services to the contractors.	In order to make projections from cash management services, we would need some data on the below: Number of NMC City bus terminals Number of parking terminals Number of agent offices Kindly clarify	1&2: Please refer to clause 12.2 and 10.2 of Part 2 Particular specifications 3: This cannot be ascertained at present. Bidders to do their own market research

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
Part 2: Work requireme nt Section VII-B: PS	8.6	105	8. Working capital Loans – As stated in aforementioned funding pattern table, NMRCL will receive debt funds from international organizations such as AFD and KFW. Equity funds would be sourced from Government of India and Government of Maharashtra. There could be certain instances where payments to contractors might become due/ overdue and NMRCL might need to bridge the intermediate funding mismatch by resorting to seeking short term funding from financial institutions.	What would be the expected amount, tenure and security for bridge finance?	NMRCL has set itself aggressive timelines of completing the project by Jun 2019 with over 7000 Crs of expenses to be incurred over 3 years while the loan components could be close to 4500 Crs. The equity contribution would be closed to 2500 Crs. Equity contribution from GOI and GOM. Given that project is time sensitive, payments to contractors has to happen seamlessly, there could be timing mismatch between equity inflow and contractor bill payments. It will be difficult to give exact sum. Tenure of bridge finance could be 3 to 6 years. No guarantee / security will be provided by NMRCL for the bridge finance.
Part 2: Work requireme nt Section VII-B: PS	8.6	104	3. Remittance account for international transactions – NMRCL need international remittance services especially to repay international loan principle and interest. Principle repayment would begin after 5 years of moratorium however interest repayment would begin immediately after disbursement of loan.	Please share the expected yearly forex flows (both inward and outward) separately for all currencies.	The expected draw down would be 567 crores in FY16-17, 1098 crores in Fy17-18, 1284 crores in FY18-19 and 1193 crores in FY19-20; from KfW & AFD. The interest payout would be once in six months for the loan drawn down till date. The current rate of int. for both the loans average out to about (0.6%+1.25%) +6m euribor which works out to ~1% for total loan of ~Rs.4500crs. Over the next three months i.e. by Dec 2016 all orders of system packages are likely to be ordered/concluded and hence based on the deliveries the requirement of payment would arise.

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
Part 2: Work requireme nt Section VII-B: PS	8.6	105	8. Working capital Loans – As stated in aforementioned funding pattern table, NMRCL will receive debt funds from international organizations such as AFD and KFW. Equity funds would be sourced from Government of India and Government of Maharashtra. There could be certain instances where payments to contractors might become due/ overdue and NMRCL might need to bridge the intermediate funding mismatch by resorting to seeking short term funding from financial institutions.	Please share assessment, projection, tenor, collateral details and other terms for the proposed bridge loan	Please refer to s. no 94 of corrigendum IV.
Part 2: Work requireme nt Section VII-B: PS	8.6	105	8. Working capital Loans – As stated in aforementioned funding pattern table, NMRCL will receive debt funds from international organizations such as AFD and KFW. Equity funds would be sourced from Government of India and Government of Maharashtra. There could be certain instances where payments to contractors might become due/ overdue and NMRCL might need to bridge the intermediate funding mismatch by resorting to seeking short term funding from financial institutions.	Please confirm on the committed volumes on the extended corporate banking requirements of NMRCL	No committed volumes but given the size of the project and the opportunity the same needs to be derived

Part No.	Clause No.	Pg.	Bid Condition	Bidder Queries	NMRCL's Response
Part 2: Work requireme nt Section VII-B: PS	8.6	105	8. Working capital Loans – As stated in aforementioned funding pattern table, NMRCL will receive debt funds from international organizations such as AFD and KFW. Equity funds would be sourced from Government of India and Government of Maharashtra. There could be certain instances where payments to contractors might become due/ overdue and NMRCL might need to bridge the intermediate funding mismatch by resorting to seeking short term funding from financial institutions.	Please clarify on the expectations of interest cost or cost of providing extended corporate banking service by FI	Please refer to additional clause PC-14 Price discovery of Section IX- Particular conditions of contract on page 71
Part 2: Work requireme nt Section VII-B: PS	8.6	105	8. Working capital Loans – As stated in aforementioned funding pattern table, NMRCL will receive debt funds from international organizations such as AFD and KFW. Equity funds would be sourced from Government of India and Government of Maharashtra. There could be certain instances where payments to contractors might become due/ overdue and NMRCL might need to bridge the intermediate funding mismatch by resorting to seeking short term funding from financial institutions.	Please clarify on the expectations of interest cost or cost of providing extended corporate banking service by FI	Needs to be competitive but with an assurance from NMRCL that all the above mentioned facilities if availed by the entity would be through the winning bidder only.

**Part 1 – Annexure 1**

**Form Tech 6: Bill of Quantities (NMRCL Metro, Parking, Feeder Vans, Parking Ticketing system)**

THIS DOCUMENT IS TO BE PREPARED AND COMPLETED BY THE SELECTED TENDERER)  
(Bill of Quantities to be proposed by Selected Tenderer along with the cost therein)

Item No.	Hardware	Units (Nos.)	Test platform	Cost (To be Provided by bidder per equipment)
1	Total Number of Gates	288	3	
	a. Entry Gate	96	1	
	b. Exit Gate	96	1	
	c. Wide Gate	96	1	
	Total	291	-	
2	Ticket Office Machine (TOM)	100	1	
3	Excess Fare Office (EFO)	46	1	
4	Handheld	55	1	
5	Ticket Readers	46	1	
6	Station Computer	37	1	
7	Ticket Vending Machine (TVM)	46	1	
8	OCC Central Computer Hardware	1	1	
9	OCC CC workstations	10	1	
10	Card Personalization Printers	10	2	
11	Network Management system	1	-	
12	NMRCL parking ETM's	48	2	
13	NMRCL Feeder Van ETM's	400	2	

Note that the BOQ given above is only for hardware supply and there may be 10% variation in the actuals. The sub-components for each components listed above are as per the Particular Specifications of Vol2. Software specifications are as per the Particular Specifications of Vol 2.

**Note:**

- 1) Contractor shall also give indicative unit price of each equipment along with list of supplier and contact information.
- 2) Sub-components not covered in the above list shall be determined in accordance with PS.

- 3) Contractor should supply the consumables for the contract period of 10 years. Consumables includes receipt paper printer rolls, toner QR code paper tickets ,printer papers at TOM, TVM, station computers and OCC workstations.

List of Spares for Automatic Fare Collection for NMRCL after DLP period

Item No.	Hardware	Spare (Nos.)
1	Total Number of Gates (Including cabinets)	30
	a. Entry Gate	10
	b. Exit Gate	10
	c. Wide Gate	10
	<b>Total</b>	30
2	Ticket Office Machine (TOM)	10
3	Excess Fare Office (EFO)	5
4	Handheld	5
5	Ticket Readers	5
6	Station Computer	5
7	Ticket Vending Machine (TVM)	5
8	OCC Central Computer Hardware	1
9	OCC CC workstations	2
10	Card personalization printers	3
10	NMRCL parking ETM's	5
11	NMRCL Feeder Van ETM's	40
12	Notebook (Laptop for equipment configuration and test)	2

List of spare modules and consumables

S.No.	Equipment/Item	Quantity of spare modules	
1	Gate (complete modules). All internal modules including internal cables/connectors, controller board, PIDs, sensors, flaps, motor ,solenoids etc. of Gates (excluding cabinet)	Entry gate	Exit gate
		Each 10% of actuals	Each 10% of actuals
2	TOM (modules – QR printers, QR scanners , Receipt printers , Contactless card readers, PDU, Cash Drawers )	5% of total actuals	
3	TVM (module –, BNR , Coin vault, Note Vault, QR code printer , PDU , MCU, UPS, power supply unit, Coin re-circulating unit)	5% of total actuals	
4	TR (modules- MCU)	5% of total actuals	
5	All patch panel, connectors, power strip, fan, LEDs for switch rack (except cabinet)	5% of total actuals	
6	RJ 45, RJ 11 Connector	5% of total actuals	

7	Hubs	5% of total actuals
8	All type of PCB's including power supply cards of sub-systems	5% of total actuals

#### SPECIAL TOOLS, TESTING AND MEASURING INSTRUMENTS

No.	Description	Make	Quantity
A.	Tool kit consisting of following tools with a carrying case		10
1	Electrician Knife	Reputed make	1
2	Stainless steel rule	Reputed make	1
3	Screwdriver (multiple blade)	Reputed make	1
4	Screwdriver 6.5 mm	Reputed make	1
5	Screwdriver 8 mm	Reputed make	1
6	Insulated screwdriver 3.5 mm	Reputed make	1
7	Insulated screwdriver 5.5 mm	Reputed make	1
8	"Screw holding" Screwdriver	Reputed make	1
9	Insulated round nose pliers	Reputed make	1
10	Half-rounded nose pliers	Reputed make	1
11	Universal pliers	Reputed make	1
12	Soldering pliers	Reputed make	1
13	Stripper Pliers	Reputed make	1
14	Set of 6 open-end wrenches (3.2 to 13 mm)	Reputed make	1
15	Adjustable wrench	Reputed make	1
16	Set of 8Head wrench(1.5 to 8 mm) Allen keys	Reputed make	1
17	De soldering Pump	Reputed make	1
18	Soldering iron	Reputed make	1
19	De soldering Braid	Reputed make	1
20	Spring extractor	Reputed make	1
21	Plastic bottle (empty)	Reputed make	2
22	Oil fountain pen	Reputed make	1
23	Scissors	Reputed make	1
24	Set of needle files : flat and round	Reputed make	1
25	Inspection mirror	Reputed make	1
26	Brush	Reputed make	1
27	PVC Tape	Reputed make	1
28	Tracing tip	Reputed make	1
29	Flash light mini (without batteries)	Reputed make	1
30	IC probe	Reputed make	1
31	Set of test cords : Red & Black	Reputed make	1

32	Set of feeler gauges (mm/inches)	Reputed make	1
33	Set of wire grippers : Red & Black	Reputed make	1
34	Light test screwdriver	Reputed make	1
35	Set of Phillips screwdrivers : No. 1 & 2	Reputed make	1
36	Insulated cutting pliers	Reputed make	1
37	Stainless tweezers	Reputed make	1
38	Insulated flat nose pliers	Reputed make	1
39	Set of 11 sockets wrenches (inches)	Reputed make	1
40	Set of 13 sockets wrenches (mm)	Reputed make	1
41	Hand-held digital multi meter Fluke	Fluke	1
42	Set of Gate Machines keys		10
44	Any other item required for line maintenance	Reputed make	
B. Hopper and container opening tool			30

Note: The above special tools /spare list does not include any vendor specific tools which would be required for maintenance of any equipment's. Contractor should provide all the AFC provider vendor specific tools required for maintenance of system after DLP period

## PART 2- ANNEXURE

### Integration with NMC ticketing system for common mobility

In order to achieve common mobility and enable acceptance of Nagpur common mobility card as fare media for city buses and parking facilities, NMC ticketing system will have to interact with Financial institution that will be issuing common mobility cards as well as processing the card based transactions from the NMC ETM terminals.

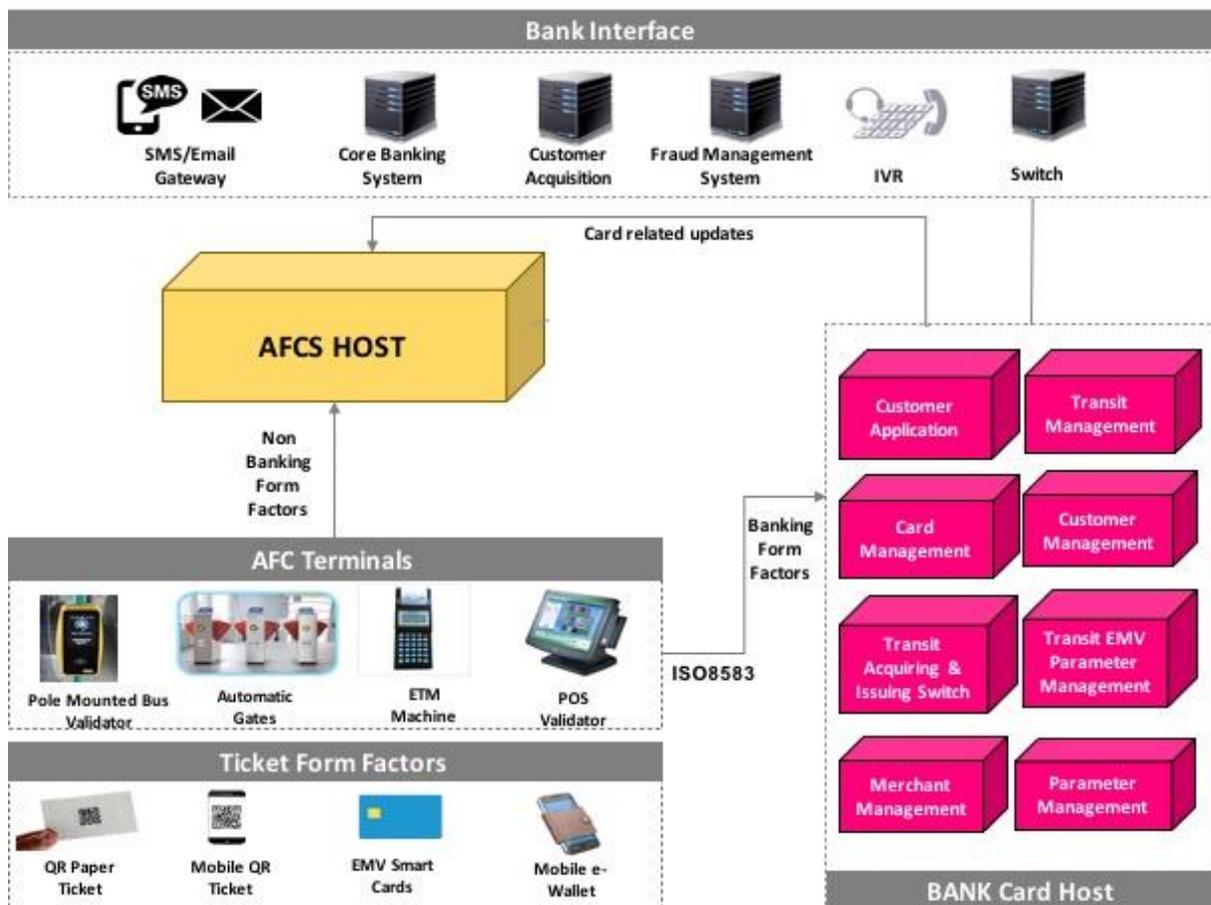
NMC ticketing terminals (ETMs) would be procured by NMC appointed contractor IBTM (Integrated Bus transport Management) and would be implementing the ticketing application for cash and card based transactions from buses.

Chapter 12 in Part2 Particular specification from page 120 to 139 stands modified as below

## 2. NMC BUS TICKETING INTEGRATION

### 2.1. General

Below is the overview of envisaged NMC Bus ticketing system along with description of various components of ticketing systems so as to be compatible with the Nagpur Metro Fare media for interoperability.



Overall System Overview

#### 2.1.1. Fare Media

Fare Media is any physical media that the system can recognize and interact to perform transactions. These TICKETING fare media components sold/distributed at NMC ticket office counters, Bus

Conductors and by various agencies as defined. TICKETING components at this level deals with Fare Media and Fare Product.

Apart from cash acceptance for ticketing, NMC buses shall accept the following cashless fare media for ticketing:-

- i. Contactless EMV/Rupay Smartcards
- ii. QR code through mobile
- iii. HCE using NFC enabled smart mobile phones

The above fare media shall be issued by the Bank selected by NMRCL for issuing tickets on the metro rail also.

#### 2.1.2. **Electronic Ticketing Infra Facilities (Validation and Sales Devices)**

This set up in NMC buses and ticket counters facilitates commuter travel by providing an ecosystem for the issuance and acceptance of fare media as well as cash. The key system components are:-

- a. **Ticket Office machine** :The TOM shall comprise of a dedicated office space to conduct the activities like issuing tickets, Fare Products (Passes), EMV travel cards, topping up of the EMV smart cards (through add value machine), Adding products and handle customer queries related to ticketing etc.
- b. **Electronic Ticket Machine(ETM)**: These are hand held electronic ticketing machines and shall be deployed with Bus conductors and Bus Inspectors for issuing paper tickets against cash, checking/ validating all other fare media like cards with the commuters . This equipment is a portable, hand held device to facilitate the ticket checking capability of the TICKETING system, the specifications of which is provided as Attachment 1 to this Annexure.

#### 2.1.3. **Central AFC Backoffice (host) of ticketing System**

The Central BackOffice System of NMC AFCS TICKETING is the heart of TICKETING ecosystem. It shall function as a Management Information System (MIS) and also as a communication layer between front end devices and External Interfaces.

#### 2.1.4. **External Interfaces to ticketing system**

Interfacing with Financial Institution Acquiring Systems: NMC ticketing system will have to interact with banking systems for enabling Acquiring, Issuing of cards, top-up channels, Mobile banking, Payment Gateway and others. All equipment / items in NMC AFCS associated along with any interfaces required to ensure operation within the performance requirements

The AFC system shall interface with following external IT systems: -

- i. **Bank Card Host** - The Bank card host shall issue contactless open loop fare media on plastic cards or as host card secure element inside NFC smart phones. This system would undertake all functions required for issuance of media, transaction processing, card life cycle management, security etc. associated with open loop fare media.

Bank host shall interface with Central AFC system for acceptance of bank issued fare media usage data and key management on AFCS devices. This shall also include sending the configuration parameters and data for keys, black list etc. to the AFC system.

The banking interfaces shall be required for enabling top-up channels like POS, Mobile banking, Payment Gateway and service delivery points etc. The banking interfaces shall also be used for customer service and required API's shall be provided by FI. The NMC AFCS host has to interface with Bank Server and with Bank Payment Gateway for recharging of smart cards through different Banking Channels. The solution shall be capable of interacting with multiple banks using specifications of a particular scheme (Visa, MasterCard, RuPay).

AFCS Host shall maintain parallel Card information database including aliases. Cardholder Management shall be provided by the Bank appointed by NMRC

## **2.2. Transit Pass Products**

NMC issues multiple types of passes to its commuters which can be broadly categorized into monthly pass, student pass and daily pass. Following are the minimum to be considered as Pass products :

1. Monthly pass: This pass targets corporates, government office employees etc., who use NMC buses on daily basis. It can be used on any routes/ buses, but is restricted depending on the type (ordinary/superior) of pass.
2. Student pass: This includes half yearly or yearly pass, where the student can travel on a fixed route over multiple buses.
3. Daily pass: The validity of this pass is only for a day, which allows the holder limitless travel in all types of buses depending on the type of pass.

These pass products shall be required to configure in the EMV co-branded prepaid card by the NMC contractor. The required solution for managing the pass products will be provided by NMC contractor. FI shall provide card interface and Host specification to enable pass product configurations in the EMV cards.

## **2.3. On-Board Bus Sub-System**

### 2.3.1. Electronic Ticket Machine (ETM)

The On-Board Bus Sub-System consists of Electronic Ticketing Machine for in-bus fare collection using thermal paper tickets. The ETMs would be read and process co-branded contactless smart cards and support contactless smart cards ticketing with e-purse and passes

Below are the minimum requirements of the FI with the ETM's

- 2.3.1.1. FI should provide the terminal specification to NMC for the procurement of the ETM terminals as per the requirements to process the EMV cards transaction.
- 2.3.1.2. FI should provide the ETM terminal kernels to NMC contractor. FI shall provide necessary support for the integration & testing of the kernels.
- 2.3.1.3. Financial institution shall provide necessary interoperable data interfaces, including but not limited to the banking interfaces listed above, with NMC ticketing system devices including ETMs and Back end systems.
- 2.3.1.4. FI will provide required testing, interface/integration support to enable interfaces with banking system.

### 2.3.2. Network Requirements from ETM's

- 2.3.2.1. A GPRS connection over the wireless network shall be provided from ETM's by NMC contractor.
- 2.3.2.2. The connectivity shall be provided through the private APN's SIM to Host Data center of NMC.
- 2.3.2.3. Secured MPLS connection between the Financial Institution and NMC data center shall be provided by FI as per the network requirements & architecture proposed during design.

## 2.4. Ticket Office Machines (TOM)

The Point of Sales counters in NMC shall consist of card issuance infrastructure for issuance of co-branded EMV contactless smart cards for purchase by commuters for daily travel using e-purse on the card as well for Fare products like monthly/weekly pass etc. The fare product (bus pass) issuance infrastructure connects to the AFCS backend system through the Secure LAN network infrastructure at Issuance counters and with the Bank host through LAN and MPLS line for data connectivity.

Primarily the card issuance infrastructure required at NMC Point of sales counters through their by FI consists of the following:

2.4.1. **Point of Sales Machine:** This machine is used to process the card holder's data and issue cards/top-up's to cards. The specifications of work depot are as follows:

S.No	Parameter	Specifications
1	CPU	Min Intel® Core i5-760 Processor (2.80GHz, 1333MHz FSB, 8MB Cache)
2	Memory	4 GB DDR3 RAM with 16 GB Expandability.
3	Mother Board	Intel or better on OEM Motherboard.
4	Monitor	Min 15 inch and above Normal TFT / LED Digital Color Monitor
5	Display	Integrated on Board Min 1024X768 resolution with 16 Million colors
6	Hard Disk	Min 500 GB 7200 rpm SATA HDD or higher
7	Networking Features	10/100/1000 Network Card with remote booting facility, remote system installation, Asset tracking and security management, remote wake up.
8	Ports	Minimum 4 USB Ports (including 2 USB ports in the front) 1 VGA out 1 Serial & 1 Parallel I/O Ports 2 Line-in & 2 Line-out ports
9	Keyboard	104 Keys, heavy-duty normal English keyboard, having key life of 20 million keystrokes or more, USB
10	Mouse	USB Optical Scroll mouse with Pad
11	Power supply	230 watts and above Energy Star compliant Ver 5.0, ACPI compliant or more SMPS power supply, should be capable to support fully configured PC
12	Power Management	Energy star 5.0 compliant for power saving
13	Operating System	Min Windows 7 or latest with latest service pack preloaded with license and recovery CD from direct named account of Microsoft with certificate of authenticity having OEM name
14	Bundled software	Standard bundled software pertaining to the model offered should be included in offer (Must be specified in the offer)
15	Warranty	For the complete contract period

2.4.2. **Smart Card Printer:** The smart card issuance printer is placed in the pass issuance counters to issue co-branded EMV contactless smart cards for daily commuters and passes to the pass holders. The specifications of co-branded contactless smart card printer is as follows:

S.No	Parameter	Specifications
1	Print Technology	Dye-Sublimation Thermal Transfer Dual Side Edge to Edge Printing Full-Color and Monochrome Printing Capability Alphanumeric text, logos and digitized signatures 1D/2D bar code images

S.No	Parameter	Specifications
2	Print Resolution	Standard Mode: 300 x 300 dots per inch; standard text, bar code and graphics printing High Quality Mode: 300 x 600 dots per inch; enhanced text, bar code and graphics printing 300 x 1200 dots per inch; enhanced text and bar code printing
3	Printer Memory	128 MB
4	Printers Drivers	Microsoft Certified Windows Drivers
5	Connectivity	Built-in 10/100 Ethernet connectivity USB V2.0
6	Card Compatibility	Card Thickness: 10-40 mil Card Size: CR-80, ISO 7810 format, Type ID-1 Card Material: PVC and PVC composite Smart Card Contactless ISO 14443A/B, Sony Felica, ISO 18092 (NFC)
7	Operating Temperature	15° C to 30° C
8	Card Holder Capacity	Minimum 50 cards
9	Printer Display	Operator control LCD display
10	Input Voltage	190-270 VAC
11	Ribbon	Full Color: Minimum 250 images/roll Half Color: Minimum 400 Images/roll Monochrome: 1500 – 2000 Images/roll

2.4.3. Smart Card Reader: The smart card reader is used to read and write the data into the smart card. The specifications of co-branded EMV contactless smart card reader is as follows:

S.No	Parameter	Specifications	
2	Communication	Two RS232 ports (Main and Debug)	
3	SAM	3 SIM Slots	
4	Environment Protection	IP54	
5	Input Power	DC12V	
6	Certification	EMV	EMV Level 1, and Level 2 Rupay
		Others	CE
7	RF Interface	Operation Frequency	13.56Mhz
		Sub-carrier Frequency	847.5Khz
		Standard Support	ISO14443 A/B, ISO 18092 (NFC)

2.4.4. Camera: The camera is used to capture the image of the pass holder and the image will be processed on the co-branded EMV contactless smart card. The specifications of camera is as follows:

S.No	Parameter	Specifications
1	Photos	Up to 3.0 megapixels (software enhanced)
2	Connectivity	Hi-Speed USB 2.0 certified
3	Camera Drivers	Microsoft Certified Windows Drivers
4	Cable Length	Minimum 4 Feet

S.No	Parameter	Specifications
5	Pan	360 degrees

#### 2.4.5. Network Requirements at Depots Issuance Counters

Following are the network requirements that shall be fulfilled by NMC

1. A Local Area Network (LAN) shall be implemented within each Depot and Issuance counters to provide data connectivity to the TICKETING system equipment at each site.
2. The connectivity shall be provided by connectivity through the secure MPLS connection to Cloud Host Data center of NMC.
3. LAN shall support the required connectivity with 10 / 100 / 1000 Mbps throughput and reliability.
4. The design of the LAN shall provide a highly secure system, which shall prevent unauthorized access and/ or hostile intrusion and shall be highly reliable, stable and scalable with a capability to adapt to future technology changes.
5. The system design shall be highly resilient to common mode failure with fast recovery times and shall provide high transmission quality between network endpoints, response times and performance under normal operation and worst-case network loading.

2.4.5.1. Acquirer Bank: The backend system will interface with ETM for following:

1. Clearing & Settlement
2. Deferred Authorization
3. Balance query on card
4. EMV Parameter
5. Risk Management parameters

2.4.5.2. The backend of NMC backoffice system will interface with issuer Host

1. Card Balance Enquiry
2. Card Reload
3. Pass Issuance

**Part – 3 Annexure**

In Part 3 “Annexure –X- Service level agreement” section Service Levels in page no 935 and 935 stands modified as below:

**SERVICE LEVELS**

Activation of SLA: The SLAs specified in this section shall be activated from the date of opening of a Section for revenue services.

S. No.	Measurement	Definition	Target	Applicable Liquidated Damages
1	Non-availability of AFC systems due to Downtime of gates in a station	“Downtime” is the time the services and facilities are not available to the Employer and excludes the scheduled outages planned in advance	For more than 15 Minutes (Fifteen minutes) cumulatively during Peak Hours in a day for gates in a station	a. INR 1 Lakh per day per station  b. Additional INR 50,000 per day per station for every additional 15 minutes cumulative during Peak Hours for gates in a station
			For more than 45 Minutes (Forty-Five Minutes) cumulatively during Non-Peak Hours in a day for gates in a station	a. INR 1 Lakh per day per station  b. Additional INR 50,000 per day per station for every additional 45 minutes cumulative during Non-Peak Hours for gates in a station
2	Non-availability of AFC systems due to Downtime of a gate	Downtime include intermittent delay in processing, rebooting /restarting and non-compliance to SLA's for gates as mentioned in Particular specifications.	For more than 5 instances in a day for a gate in a station with exception on End of Day activities	a. INR 5000 per gate per station per day.
3	Non-availability of AFC due to downtime of	Downtime of NMRCL TOM or TVM or EFO at a station and	For more than 15 Minutes (Fifteen minutes) cumulatively during Peak Hours in a day in a station/	a. INR 1 Lakh per day per station

S. No.	Measurement	Definition	Target	Applicable Liquidated Damages
	NMRCL TOM or TVM or EFO			b. Additional INR 50,000 per day per station for every additional 15 minutes cumulative during Peak Hours for gates in a station
			For more than 45 Minutes (Forty-Five Minutes) cumulatively during Non-Peak Hours in a day in a station	a. INR 1 Lakh per day per station b. Additional INR 50,000 per day per station for every additional 45 minutes cumulative during Non-Peak Hours for gates in a station
4	Non-availability of AFC systems due to Downtime of a TOM or, TVM or EFO	Downtime include intermittent delay in processing, rebooting /restarting, unavailability of components and non-compliance to SLA's for TVM or TOM or EFO as mentioned in Particular specifications.	For more than 5 instances in a day for a gate in a station with exception on End of Day activities	a. INR 5000 per TVM, TOM, EFO per station.
5.	Non-availability of AFC systems due to Downtime of Central computer or Cloud BackOffice system	Downtime include affecting the ticket issuance includes various ticketing services as mentioned in Particular specifications	For more than 15 Minutes (Fifteen minutes) cumulatively during Peak Hours in a day in a station	a. INR 1 Lakh per day Additional INR 50,000 per day for every additional 15 minutes cumulative during Peak Hours
			For more than 45 Minutes (Forty-Five Minutes) cumulatively during Non-Peak Hours in a day in a station	b. INR 1 Lakh per day per station Additional INR 50,000 per day for every additional 45 minutes cumulative during Non-Peak Hours.

S. No.	Measurement	Definition	Target	Applicable Liquidated Damages
6.	Non-availability of AFC due to downtime of Ticket readers or, Handhelds or station computers or NMRCL mobile application	Downtime include affecting the operations performed by Handhelds or Ticket Readers or Station computer or NMRCL mobile app as mentioned in Particular specifications	For more than 30 Minutes (Thirty minutes) cumulatively during Peak Hours in a day in a station	a. INR 1 Lakh per day Additional INR 50,000 per day per station for every additional 30 minutes cumulative during Peak Hours
			For more than 60 Minutes (Sixty Minutes) cumulatively during Non-Peak Hours in a day for gates in a station	b. INR 1 Lakh per day per station Additional INR 50,000 per day per station for every additional 60 minutes cumulative during Non-Peak Hours.
7.	Delay in settlement of Fare Box revenues, Non-Fare Box Revenue and Annual Premium beyond declared period	Delay from the schedule date in 'days' for transfer of payments by Contractor to Employer towards collection of Fare Box Revenue, payment of Annual Premium and Non-Fare Box Revenue	For every day's delay, up to 30 days	a. Levy of interest at annual rate of 24% for the delay period
			For every day's delay beyond 30 days	a. Levy of interest at annual rate of 24% for the delay period b. Forfeiture of Revenue Security

Annexure IX- A: NOC from NMC

# NAGPUR MUNICIPAL CORPORATION

**SHRAVAN HARDIKAR, I.A.S.**  
Commissioner



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Lines, Nagpur - 440001.

Letter No.:- MC/ 496 /2016, Dt. 28/11/2016

✓ To,  
The Managing Director  
Nagpur Metro Rail Corp. Ltd.  
Nagpur

**Subject: - Common Mobility Card for Nagpur.**

Dear Sir,

Further to our letter no. Transport/394/2016 dated 10/08/2016 conveying our 'No objection' for acceptance of the envisaged common mobility card being issued by Nagpur Metro Rail Corporation (co-branded as NMC/NMRCL Card) and meeting held on dt. 24/11/2016 in the office of Commissioner, Nagpur Municipal Corporation we wish to further elaborate the arrangements as under:

1. NMC will ensure that the ticketing system provider for NMC public buses in Nagpur will **provide** the hardware/ software on the Electronic ticketing machines and ticketing Host system in the back end to meet the specifications for acceptance of the open loop Contactless smart cards issued by NMRCL. **In view of tight timeline for roll out of bus operations ETMS shall be procured by NMC shall immediately arrange to submit technical specification document for ETMS and associated components to NMC for incorporating in the NMC tender for such items.**
2. NMRCL shall ensure that the Bank selected as their service provider will remit the Fare collection money against the value of ticketing done **on NMC buses** using NMRCL cards by the commuters. The money shall be electronically remitted to the Bank account nominated by NMC at T+3 days or earlier, where T=day of the transactions excluding bank holidays.
3. The Bank selected by NMRCL shall provide the payment kernel, ETM integration assistance with bank card host, testing and troubleshooting support, specifications walk-through, field runs, and related technical support to the ticketing service provider of NMC for doing the customization of their software, integration of their ticketing system with Bank host for data transfer.

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**4. NMRL shall supply any required hand held machine software (beyond those provided by the NMC service provided by the NMC service providers), secure access modules (SAMs), card software that includes NMC bus business rules, technical support or open loop implementation as well as processing the electronic tickets by providing an inter-modal clearing house for the city of Nagpur. Commercial arrangements between NMRL and NMC shall be separately discussed and mutually agreed upon in due course once all elements of the project are crystallized.**

This letter of commitment may be taken as input by NMRL in their current tender process for selection of Bank led consortium to provide inter-modal ticketing and other payment systems for public transport, parking and other public utility payments for Nagpur city.



Municipal Commissioner  
Nagpur Municipal Corporation  
Nagpur