

NOTICE OF INVITATION

DELHI METRO RAIL CORPORATION LIMITED

Our Ref:

Date:

TO

FROM

Managing Director,
Delhi Metro Rail
Metro Bhawan,
Barakhamba Road,
Fire Brigade Lane,
New Delhi - 110001

DELHI METRO RAIL CORPORATION LIMITED

**EXPRESSION OF INTEREST FOR IMPLEMENTATION OF EMV AND
RUPAY BASED OPEN LOOP TICKETING IN DMRC INCLUDING
COMPREHENSIVE MAINTENANCE OF AFC SYSTEM OF PHASE I, II,
AND III STATIONS**

EOI/AFC/EMV 01

NOTICE OF INVITATION

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Delhi Metro Rail Corporation Ltd. (DMRC) invites Expressions of Interest (EOI) for Implementation of EMV and RUPAY based Open Loop Ticketing in DMRC including Comprehensive Maintenance of AFC system of Phase I, II, and III stations.

This document is an Expression of Interest (EOI) published by Delhi Metro Rail Corporation Ltd. to solicit and examine the response of the Financial Institutions/Banks along with firms/companies/entities that are capable of upgrading the AFC System and provide Comprehensive Onsite Maintenance as per the details mentioned in this document.

The current document is, therefore, published to explore the response from perspective bidders. The timelines and the quantity of units mentioned in this document are subject to change and shall be firmed up while the Technical and Commercial Bids i.e. Request for Proposal (RFP) are called for by DMRC at a later date.

Some of the conditions are briefly mentioned in this document. These are subject to change based on the review of the response received.

The Documents describing the Scope of Work and the Terms and Conditions for the EOI are enclosed with this Notice of Invitation.

EOI Documents comprise of:

- Notice of Invitation
- Instructions to Applicants

The Evaluation and Determination of Responsiveness of EOI and subsequently RFP submission shall solely be carried out by DMRC.

The EOIs for this Contract will be considered only from those companies, corporation, partnerships, consortia and joint ventures that pass the Initial Eligibility based on submissions with the EOI. Only such eligible applicants will be allowed to participate in the next stage of the project, i.e. RFP (Request for Proposal).

KEY DETAILS:

Expected Completion period of the Work	10 years (including years for supply & commissioning of EMV & Rupay Based System and 10 years of Comprehensive Onsite Maintenance).
EOI documents release date	13/09/2017. For further information on this regard bidders are advised to contact DMRC on 011-23418410
Cost of EOI documents	NIL (All documents uploaded on DMRC website- www.delhimetrorail.com)
Last date of Seeking Clarification	24/10/2017 (Queries from applicants after due date shall not be acknowledged)
Pre-EOI Meeting	17/10/2017 at 11:00 Hrs.
Last date of issuing DMRC's response to queries	31/10/2017
Date & time of Submission of EOIs	10/11/2017 up to 11:00 Hrs.
Date & time of opening of EOIs	10/11/2017 @ 11:05 Hrs.
Authority and place for submission of EOIs and seeking clarifications	Executive Director/Signal & Telecom/Project-I 6th floor B Wing Metro Bhawan, Barakhamba Road New Delhi , 110001

Please note carefully the requirements for submitting EOIs, and the date and time for submittal. Late or delayed EOIs will not be accepted.

DELHI METRO RAIL PROJECT:

Expression of Interest

FOR

**Expression of Interest for IMPLEMENTATION OF
EMV AND RUPAY BASED OPEN LOOP TICKETING
IN DMRC INCLUDING COMPREHENSIVE
MAINTENANCE OF AFC SYSTEM OF PHASE I, II,
AND III STATIONS**

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INSTRUCTION TO APPLICANTS

A. INTRODUCTION

A1 Introduction and Definition

- (i) Delhi Metro Rail Corporation (DMRC) Limited invites proposals from the bidders for Implementation of EMV and Rupay based Open Loop Ticketing extendable to feeder buses, parking services and other services in Delhi & Comprehensive Onsite Maintenance of Automatic Fare Collection System for Ph-I, Ph-II & Ph-III of Delhi Metro.
- (ii) In this request for Expression of Interest, the words and expressions shall have the meanings assigned to them, except where the context requires otherwise. Words indicating persons or parties include corporations and other legal entities except where the context requires otherwise.
- (iii) Throughout these Bidding Documents:
- a. The term “in writing” means communicated in written form and delivered against receipt;
 - b. Except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
 - c. “**Applicant**” means the JV/SPV/Consortium submitting the EOI.
 - d. “**Commencement Date**” means the date of Letter Of Acceptance.
 - e. “**Contract Period**” means the total contract duration of 10 years from commencement date during which the Consortium shall be responsible to execute the Project.
 - f. “**Day**” means calendar day.
 - g. “**Engineer**” means any person nominated or appointed from time to time by DMRC to act as the Engineer for purposes of the contract and notified as such in writing to the Applicant.
 - h. “**Fare Box Revenue**” means the revenue generated by DMRC through fare collection from its metro and other services.

- i. **“FI” means “Financial Institution”** that can be a Bank in India which is included in the second schedule of Reserve Bank Of India, RBI Act (1934).
- j. **“Non-Fare Box Revenue”** means the revenue accrued by the JV/Consortium through other services including through fare collection by other transit operators integrated with DMRC’s Common Smartcard Ticketing System.
- k. **“Project”** means
 - a. Upgrade the Automated Fare Collection System of Delhi Metro Rail Corporation Limited to enable the EMV and RuPay based open loop ticketing following the NCMC standard model as specified by MoHUA for interoperability with other operators by use of non-proprietary standards so that the interface is scalable to other networks (transit operator/retail outlets/parking etc.) in Delhi/NCR; and
 - b. Execute the Comprehensive maintenance of Complete DMRC AFC System including the Back Office.
- l. **“Royalty”** means premium paid by service provider to DMRC to get rights to issue EMV and RuPay Cards to commuters and facilitate existing DMRC AFC system for new services.

A2 General Description of Work

A2.1 General Information:

- (i) The Delhi Metro is a metro system serving Delhi and its satellite cities of Faridabad, Gurgaon, Noida and Ghaziabad in National Capital Region in India. Delhi Metro Rail Corporation Limited (DMRC) with a total length of 218 kilometres (135 mi) serving 153 stations (including 6 on Airport Express line).
- (ii) In FY16-17, the metro had an average daily ridership of 2.76 million passengers, and served 100 crore (1.0bn) riders in total during the year.
- (iii) For the first time, Delhi Metro has constructed ring lines in Phase III in which 2 new lines and 10 route extensions totaling 167.27 km serving 87 stations are being implemented for Phase III DMRC Project.

(iv) DMRC has implemented AFC for Phase I, II and III system. Phase I and II consists of 6 Lines with 153 stations:

S No	Line No	Section	No of Stations
1.	Line-1	Dilshad Garden-Rithala	21
2.	Line-2	Badli – Huda City Centre	37
3.	Line-3	Noida City Centre- Dwarka Sector 21	43
4.	Line-4	Laxmi Nagar-Vaishali	7
5.	Line-5	Inderlok N-Kirti Nagar N	16
6.	Line-6 and Line 6 ext	Kashmiri Gate–YMCA Chowk	32
7.	Airport Express Line	New Delhi – Dwarka Sec 21	6

(v) Implementation of phase III works for MRTS for Delhi/NCR is going for approx 87 stations.

(vi) The upcoming sections comprise of :

S No	Line	Section	No of stations
1.	Line 7	Majlis Park to Shiv Vihar	38
2.	Line 8	Botanical garden to Janakpuri West	25
3.	Line 5 Ext	MIA to City Park	7
4.	Line 9	Dwarka to Najafgarh	3
5.	Line 3 Ext	Noida City Centre to Sector 62	6
6.	Line 1 Ext	Dilshad Garden to New Bus Adda	8

(vii) The details of stations, AFC Equipments and existing technology are placed at Appendix-I.

A2.2 Upgradation of AFC System

(i) In order to upgrade the ticketing technology, DMRC envisages to upgrade the existing Automatic Fare Collection System to enable the EMV and RuPay based open loop ticketing following the NCMC standard model as specified by MoHUA (Ministry of Housing and Urban Affairs) for interoperability with other operators

by use of non-proprietary standards so that the interface is scalable to other networks (transit operator/retail outlets/parking etc.) in Delhi/NCR.

- (ii) Ministry of Housing and Urban Affairs has laid down the Smart NCMC standard model specifications. Following the NCMC standard model, the Common Mobility card will enable seamless travel by different metros and other transport systems across the country besides retail shopping and purchases.
- (iii) The existing AFC technology and infrastructure (Hardware and software including Back Office and external interfaces) needs to be updated accordingly.
- (iv) The proposed Business Model shall have a Consortium of a Financial Institution as a lead and prime member in principle, a AFC Solution provider and/or a third member. The AFC Solution provider is the mandatory member of the consortium.
- (v) The Financial Institution shall be responsible for Issuance of Co-branded EMV/RuPay Dual Interface smart cards & other fare media and related logistics, including marketing, Customer contact center support on card transactions & Fraud Management Setup of online card top-up/ renewal, customer account management and customer support with payment gateway and authentication services as per RBI requirements, settle Fare Revenues with DMRC and other Public Transit system revenues with respective operators, Non-fare box revenue settlement with DMRC, Yearly Premium/ Royalty payment to DMRC
- (vi) The AFC Provider shall be responsible for upgrading the Station level Equipments to support EMV and RuPay Media, QR and NFC Based ticketing, Integration of clearing house and smart Card host system of FI, Integration of DMRC mobile application with AFC System and provide the Comprehensive Onsite Maintenance of the complete DMRC AFC System including the Back Office.
- (vii) The Key Dates for delivery and commissioning will be detailed out in the RFP Document.

A2.3 Functional and Performance Based specifications

- (i) The AFC Contractor shall be responsible for operation of both existing and new AFC Equipments.

- (ii) The Performance requirements of each system shall be met in accordance to Design Parameters placed at Appendix-II.

A2.4 Contract Period

- (i) The Contract Period will be Ten (10) Years from Commencement date.
- (ii) The Contractor will be responsible to meet the specified performance criteria in the RFP Document.

A 2.5 Consortium Liability

- (i) The Consortium/JV would be liable for all services as per the scope of work to be detailed out in the RFP document.
- (ii) FI will be likely to share Non-Fare box revenue earned through non-transit transactions performed by Smart Card holders, which will be detailed in RFP Document.
- (iii) The AFC provider would be jointly liable for all scope of services pertaining to the Supply, Installation, Commissioning, Upgradation and Maintenance of AFC system at all locations and related services.

A 2.6 DMRC Liability

- (i) DMRC shall pay to the bidder fare box revenue share during the Revenue Service Period, which will be detailed in RFP Document.
- (ii) The account ownership for the float of DMRC CSC amount shall remain with DMRC.

A 2.7 Operating Expenses

- (i) The complete cost of Upgradation, Operation and Maintenance of AFC Equipments shall be borne by the JV/Consortium.
- (ii) The personnel required for staffing the Customer Care Counters/Excess Fare Offices at DMRC stations shall be provided by DMRC and shall be adequately trained by the JV/Consortium on the required ticketing operations.

A2.8 Comprehensive Maintenance and Upgradation of AFC Equipments

- (i) The maintenance and upkeep of the AFC Equipments and facilities, over the entire contract period shall be the responsibility of the JV/Consortium.
- (ii) It is expected that the Contractor shall assess the condition of the AFC Equipments at the time of submission of RFP and shall plan replacement of the

installed assets with the consent of DMRC, if required, during the contract period to ensure that the available assets at the end of the Contract Period shall have residual life of five or more years. The detail will be available in the RFP Document.

A2.9 Performance Criteria

- (i) The Contractor would be responsible for meeting the laid down Performance Criteria, which shall be detailed in RFP.
- (ii) The Contractor shall carry out Integrated Testing and Commissioning of EMV and Rupay based ticketing, QR and NFC functionality on the system in co-ordination with the Engineer. He shall also carry out all Interface tests with the FI Host.
- (iii) The Scope of Work for the Contractor shall be detailed in the RFP document.

A3 Eligible Applicants

- (i) The EOIs for this Contract will be considered only from those consortia and joint ventures that pass the Initial Eligibility criteria based on submissions with the EOI. Only such eligible applicants will be allowed to participate in the next stage of the project, i.e. RFP.
- (ii) Each Applicant (each member of joint venture or consortium) or any associate is required to confirm and declare with his EOI that no agent, middleman or any intermediary has been, or will be, engaged to provide any services, or any other item or work related to the award and performance of this Contract. They will have to further confirm and declare in the submittal that no agency commission or any payment which may be construed as an agency commission has been, or will be, paid and that the quoted prices will not include any such amount. If the Employer subsequently finds to the contrary, the Employer reserves the right to declare the Applicant as non-compliant, and declare any Contract if already awarded to the Applicant to be null and void. Canvassing or offer of an advantage or any other inducement by any person with a view to influencing acceptance of an EOI will be an offence under laws of India. Such action will result in the rejection of the EOI, in addition to other punitive measures.

(iii) There are no restrictions on the country of origin of equipment, materials, and services to be provided under the Contract. However, all the upgradation of equipment, materials and services shall be to the satisfaction of the Employer's Engineer. The information regarding all the Equipment, materials and services included in the Applicant's Proposals and incorporated into the Contract Document shall not, in any event, be construed as a submission to the Engineer under the Contract.

A3.1 Initial Eligibility Criteria

The applicants will be evaluated on the eligibility criteria provided below table. When responding to the eligibility criteria, applicants should demonstrate their capabilities, by providing material based on their experience, past performance, their personnel, equipment and financial resources.

S No	Criteria	Yes	No
1.	Has the Applicant (any member) abandoned any work in the last ten (10) years?		
2.	Has the Applicant (any member) suffered bankruptcy / insolvency in the last ten (10) years?		
3.	Has the Applicant (any member) been debarred by Government of India/any State Government in India/Central or State Government undertaking as on the due date of submission of bid? (Bidder to furnish a specific undertaking to this effect)		
4.	Has the Applicant certified that no agent / middleman has been or will be engaged or any agency commission been or will be paid?		
Eligibility Criteria for Prime Bidder (Financial Institution)			
S No	Criteria	Documentary Evidence	Yes/No
5.	The Prime Bidder should be a Bank in India which is included in the second schedule of Reserve Bank of India, RBI Act (1934)	Certified copy of incorporation	
6.	The Prime Bidder should have the details of GST Registration	Copies of relevant certificates	

	and PAN		
7.	FI should have the experience of handling channels of payment gateways (web, mobile etc.), processing NEFT/RTGS, IMPS, ATMs, IVR, SMS etc.	Self-Certification or copy of relevant and valid PO / WO / LOA / Contract Agreement issued till the date of bid submission, along with completion certificates issued by the client or company secretary/CFO/Auditor of the FI member, covering the requirements.	
8.	FI should have the experience of cobranding card services with other organizations / institutions	-----DO-----	
9.	Applicant should have the experience of developing and commissioning EMV based smart card system	-----DO-----	
10.	FI should have the experience of executing projects with loyalty program design or management of retail customer base	Self-Certification or copy of relevant and valid PO / WO / LOA / Contract Agreement issued till the date of bid submission, along with completion certificates issued by the client or company secretary/CFO/Auditor of the FI member, covering the requirements.	
11.	FI should have the experience in providing following corporate banking services: Provide Salary accounts to employees of organization, Cash Management Services, Provide term deposit services and FI should be in the business of accepting deposits from Corporate Government Organization	-----DO-----	
Eligibility Criteria for AFC Provider			

S No	Criteria	Documentary Evidence	Yes/No
12.	AFC provider should constitute under Companies Act of the country, which it belongs to. In case of Foreign Company, incorporation documents other than English language should be accompanied by a notarized translation to English language only.	Certified copy of incorporation	
13.	AFC provider as part of consortium should have experience of working on EMV contactless cards.	Copy of relevant and valid PO / WO / LOA / Contract Agreement issued till the date of Bid Submission along with the completion certificates issued by the client or Company Secretary/CFO/Auditor of the Consortium member covering the requirements. Self-certification from Consortium's member /CFO/Auditor is also applicable.	
14.	AFC provider should carry out one of the following projects in the last 5 years in a Metro/LRT/Mono Rail System: - a) Must have completed ONE work of Contactless smart card based AFC System of minimum value equal to INR 100 Crore at 31.03.2017 price level or One work of contactless smart card based AFC System for minimum 20 stations. OR b) Must have completed Two works of similar nature of Contactless Smart Card Based AFC System of each costing minimum INR 80 Crore at 31.03.2017 price level OR	Copy of relevant and valid PO / WO / LOA / Contract Agreement issued till the date of Bid Submission along with the completion certificates issued by the client or Company Secretary/CFO/Auditor of the Consortium member covering the requirements. Self-certification from Consortium's member /CFO/Auditor is also applicable.	

	<p>each of these 2 work of Contactless smart card based AFC System for minimum 18 stations.</p> <p>OR</p> <p>c) Must have completed THREE works of similar nature of Contactless smart card based AFC System of each costing minimum INR 64 Crores at 31.03.2017 price level OR each of three work at minimum 15 stations.</p>		
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Note:

1. A "Yes" answer to any question 1,2,3 and 4 will disqualify the Applicant.
2. A "No" answer to any question 5 to 14 will disqualify the Applicant.
3. In the Consortium, each Individual member must qualify individually in the 'Eligibility of Applicants – Check List' for Serial No 1,2,3 and 4.
4. Sr. No 5-11 is applicable for Financial Institution only and Sr. No 12-14 are applicable for AFC Provider only.
5. Change in the composition of a Consortium may be permitted by DMRC prior to submission of RFP Documents subject to meeting the qualifying requirements of EOI, DMRC, at the specific written request of the qualified consortium/JV, may agree for change of any partner(s) at post EOI stage except that change of the Technology partner (member of the consortium/JV responsible for providing AFC Solution and provided as options for the role of AFC Provider) would not be permissible.

A3.2 Applicant Conditions

Prime bidder, as part of its technical proposal, is allowed to propose up to 3 (three) entities as options for the role of AFC provider in the consortium subject to following conditions:

- (i) Each of entities proposed as option for the role of AFC Provider consortium member shall meet the requirements of RFP and bid submission requirement including relevant bidding forms.
- (ii) Prime Bidder is required to include all relevant details of each entity option as per the bidding forms that will be detailed out in the RFP.

A4 Payment to the Employer/Contractor

- (i) The payment terms shall be detailed in the RFP Document and shall be based on the Fare Box Revenue and Non Fare Box Revenue Collection, through Open Loop Ticketing.
- (ii) The Percentage sharing of Fare Box Revenue to be paid by the Employer and the percentage of Non-fare Box revenue share to be paid by the Consortium shall be fixed and detailed out in the RFP Document
- (iii) The Contractor shall also pay Yearly Royalty to DMRC which shall be detailed in RFP Document.

A5 Site Visits

- (i) The Applicant is advised to visit existing and proposed DMRC Stations and examine the Equipments and facilities available, site and surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the EOI for the proposed Works.
- (ii) The costs of visiting the Site shall be borne by the Applicant. It shall be deemed that the Applicant has undertaken a visit to the site of Works and is aware of the site conditions prior to the submission of the EOI.
- (iii) The Applicant and any of his personnel will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the Applicant, and his personnel, will release and indemnify the DMRC and his personnel from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of the inspection.

A6 Indigenization

- (i) For Indigenization (Preference to Make in India), the Applicants have to comply with the Public Procurement Order, 2017 issued by Ministry of Commerce and Industry, Department of Industrial Policy and Promotion No. P-45021/2/2017-B. E. -II dated 15th June 2017]-
http://dipp.nic.in/sites/default/files/publicProcurement_MakeinIndia_15June2017.pdf
- (ii) However, the minimum Local Content shall ordinarily be 50%. The 'Local Content' means the amount of value added in India, which shall unless otherwise prescribed by the Nodal Ministry, be the total value of item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, in percent.

B. EOI Documents

B1 Contents of EOI Documents

- (i) The EOI Documents, as listed below, have been prepared for the purpose of inviting EOIs for implementation of EMV and RuPay based Open Loop Ticketing & Comprehensive Onsite Maintenance of Automatic Fare Collection System for Ph-I, II and III stations of DMRC and as more particularly described in these documents:
 - a. Notice of Invitation to EOI (NIE),
 - b. Instruction to Applicants (ITA),
 - c. Bid Data Sheet (BDS) [Refer Annexure III]
- (ii) The Applicant is expected to examine carefully the contents of all the above documents. Failure to comply with the requirements of the EOI Submittal will be at the Applicant's own risk. EOIs that are not substantially responsive to the requirements of the EOI Documents will be rejected.
- (iii) The Applicant shall not make or cause to be made any alteration, erasure or obliteration to the text of the EOI Documents.

B2 Clarification of EOI Documents

- B2.1 The Applicant shall check the pages of all documents against page numbers given in indexes and summaries and, in the event of discovery of any discrepancy, the Applicant shall inform in writing to the office of Executive Director/Signal Telecom/Project-I (ED/S&T/P-I) forthwith for clarification.
- B2.2 Should the Applicant for any reason whatsoever, be in doubt about the meaning of anything contained in the Invitation to EOI or EOI Documents, the Applicant shall seek clarification from the Engineer, not later than the "last date of seeking clarification" given in the Bid Data Sheet.
- B2.3 DMRC will respond in writing, to any request for clarification received in writing from Applicants prior to deadline for such clarification or modification in the Bid Data Sheet.
- B2.4 The response to queries of the prospective applicants shall be uploaded on the DMRC Website, without identifying the source of clarifications.

B2.5 No further clarification questions will be accepted after the “last date of seeking clarifications”.

B2.6 Except for any such written clarification by the office of ED/S&T/P-I which is expressly stated to be by way of an addendum to the documents referred to in paragraph B1 above and/or for any other document issued by DMRC which is similarly described, no written or verbal communication, representation or explanation by any employee of the DMRC or the Engineer shall be taken to bind.

B3. Amendment of EOI Documents

Applicants are advised that further Instructions to Applicants and addenda to the EOI Documents may be issued during the EOI period. The provisions in any such addenda shall take priority over the Invitation to EOI and EOI Documents previously issued. Applicants shall confirm receipt of such documents and list them in the EOI Submittal.

C. PREPARATION OF EOI

C1 EOI Bid Submission Documents

C1.1 EOI Pro-forma

- (i) The Applicant shall submit the specified EOI Pro-forma, duly filled in.
- (ii) The Applicant shall provide EOI Index (Table of Contents) in his EOI. The EOI Index should indicate where within the EOI, the Applicant has included his responses/comments to the EOI requirements and conditions elaborated in these EOI documents. (Refer EOI Pro-forma in 'Annexure-I')
- (iii) EOIs and all accompanying documents shall be in English. In case any accompanying printed literature is in other languages, it shall be accompanied by an English translation duly certified by a registered translator. The English version shall prevail in matters of interpretation.

C1.2 Applicant Details

State the structure of the applicant's organization, i.e. Joint Venture or Consortium.

C1.3 Leader of JV/Consortium

C1.4 MoU for JV/Consortium: The Applicant shall submit the following additional information to meet the initial eligibility criteria for eligibility.

- a. A Memorandum of Understanding/Consortium Agreement, comprising of all the members, shall be provided.
- b. FI/Bank of the consortium or joint venture to be in-charge (Leader); and this authorization shall be covered in the Power of Attorney signed by the legally authorized signatories of all members of consortium or joint venture. Financial Institution/Bank can only be the Prime and lead Member of the Consortium;
- c. Details of the intended percentage participation given by each member shall be provided and reconfirmed and expanded with complete details of the proposed division of responsibilities and corporate relationships among the individual members.
- d. The lead partner (FI) and the AFC Service provider must have minimum 26% individual participation. Partners having less than 26% participation will be termed as non-substantial partners which means their financial soundness and work experience shall not be considered for Evaluation.
- e. The partner in charge (Leader) shall be authorized to incur liabilities,

receive payments (if provided for in MoU/Consortium Agreement) and receive instructions for and on behalf of any or all partners of the joint venture/consortium;

- f. All partners of the joint venture/consortium shall be jointly and severally responsible for the execution of the Contract in accordance with the Contract terms.
- g. The Applicant shall submit with his EOI full details of his ownership and control or, if the Applicant is a partnership, joint venture or consortium, full details of ownership and control of each member thereof.
- h. Indian Applicants, or Indian members of a partnership, joint venture or consortium shall submit, a certified copy of the last 3 years (including the latest Financial Year) income tax return, duly acknowledged by Income Tax department. In case the Indian member of a partnership, joint venture or consortium is a wholly owned 100% subsidiary of their foreign partner in the said joint venture or consortium and this Indian company has been formed less than 3 years ago, the certified copy of the latest Financial Year income tax return (applicable only if company was formed more than a year ago), duly acknowledged by Income Tax department shall be submitted.

C1.5 Power of Attorney for each member and for leader, as applicable

The Applicants to qualify for award of Contract shall submit a written power of attorney bearing specimen signatures of the authorized signatories of the EOI to commit each member of the partnership, consortium or joint venture. In case of Foreign Partners, Power of Attorney(s) and Board Resolution/Commercial Register confirming authority on the persons issuing the Power of Attorney for such actions, shall be submitted duly notarized by the notary public of country of origin and should be stamped by Embassy/High Commission. Applicants from Member Countries of Hague convention may submit all these documents with "Apostille" stamp instead of Embassy.

C1.6 Documents supporting Initial Eligibility Criteria

Documents in support of checklist provided in Initial Eligibility Criteria, Clauses A3 and A3.1 of this ITA.

C1.7 Financing structure

In order to have a sustainable and technically & financially sound proposal, DMRC shall propose a suitable financial structure for the Applicant in detailed RFP Document.

C1.8 Guarantees and Warranties

The Applicant shall submit full details of the identity of the proposed parties who would respectively provide or issue:

- a. The Performance Security;
- b. The Revenue Security;
- c. Parent company Undertakings;
- d. Parent company Guarantees.

If the Applicant comprises a consortium or joint venture, a parent company of each member or participant will be required to execute the Undertakings and Guarantees referred to in sub-paragraphs (c) and (d) above.

C1.10 EOI documents (including amendments) duly signed by each member. A form of certificate confirming careful examination of all the contents of EOI documents including EOI addenda and signing of all pages of the Applicant's proposal shall be furnished along with the EOI proposal. It should be submitted by each constituent member in case of a Joint Venture or Consortium, as per 'Annexure-II'.

C2 Pre-EOI Meeting

C2.1 The prospective Applicants or their official representatives are invited to attend a pre-EOI meeting, which will be held on the date, time and location indicated in Bid Data Sheet.

C2.2 The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised with respect to this EOI at that stage.

C2.3 The Applicants are requested to submit any questions in writing or by email, to reach DMRC before or during the meeting.

C2.4 Minutes of the meeting, including the text of the questions raised and the responses given, will be transmitted without delay to by mail to all such Applicants, who either attend the Pre-EOI meeting or intimate in writing that they

would like to receive the clarifications. Any modification of the EOI documents listed in paragraph B1 which may become necessary as a result of the pre-EOI meeting shall be made by the DMRC exclusively through the issue of an Addendum pursuant to paragraph B3 and not through the minutes of the pre-EOI meeting.

- C2.5 Non-attendance at the Pre-EOI meeting will not be a cause for disqualification of an Applicant.

D. Submission of EOIs

D1 Submission Address and Date

All documents corresponding to "Initial Eligibility" shall be annexed in a separate folder, which shall be a part of the EOI. All the envelopes shall be addressed to the DMRC at the following address:

To,
The Managing Director,
Metro Bhawan,
Delhi Metro Rail Corporation,
Barakhamba Road, New Delhi-110001

EOIs must be received at the address specified above, not later than the date and time noted in Bid Data Sheet.

D2 Sealing and Marking of EOI

- D2.1 The Applicant shall seal the Original and each copy of the EOI in separate envelopes, duly marking the envelopes as "Original", "Copy 1" and "Copy 2".

- D2.2 If the envelope is not sealed and marked as above DMRC will assume no responsibility for the misplacement or premature opening of the EOI.

D3 Late or Delayed EOIs

- D3.1 EOIs must be received by the ED/S&T/P-I, at the address specified above, not later than the date and time noted in Bid Data Sheet. If the due date is declared to be a public holiday due to unforeseen reasons, the EOIs shall be submitted and opened at the same time on the next working day. DMRC may, at its discretion, extend the deadline for submission of EOIs by issuing an amendment

in accordance with paragraph B3, in which case all rights and obligations of DMRC and the Applicant previously subject to the original deadline will thereafter be subject to the deadline as extended.

- D3.2 Any EOI received by the Engineer after the deadline for submission of EOIs stipulated above will be returned unopened to the Applicant.

E. EOI OPENING AND EVALUATION

E1 EOI Opening

The EOI will be opened at time and date as specified in Bid Data Sheet in the Office of DMRC, Metro Bhawan, New Delhi. The Applicants are allowed to be present at the time of opening.

DMRC shall prepare a record of the opening that shall include, as a minimum: the name of the Applicant. The Applicants' representatives who are present shall be requested to sign the record. The omission of an Applicant's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Applicants.

E2 Clarification of EOIs from Applicants

To assist in the examination, evaluation and comparison of EOIs, DMRC may, at his discretion, ask any Applicant for clarification of his EOI. The request for clarification and the response shall be in writing or by facsimile, but no change in the substance of the EOI shall be sought, offered or permitted. DMRC may call for a meeting with the Applicants in this regard. The minutes of the meeting, if held, with any applicant shall be recorded and acknowledgement obtained from the concerned applicant.

E3 Determination of Responsiveness

- E3.1 DMRC will determine whether each EOI:

- (i) Has been properly signed; and
- (ii) Meets the Initial Eligibility Criteria – DMRC will evaluate the eligibility and acceptability based on Initial Eligibility criteria indicated in these

documents.

A 'NO' answer to any of the above item will disqualify the EOI.

E4 Intimation of Evaluation of EOI

- E4.1 RFP document shall be issued to only such applicants, who qualify based on E3.1 above.
- E4.2 Applicants may note that pursuant to their qualification in the 'Initial Eligibility Criteria', in case the Applicant (applies to each individual member in case of a Joint Venture/Consortium) is debarred/blacklisted by Government of India/State Government/Government undertaking after the due date of submission of EOI but before the evaluation of RFP document to be issued separately. They shall inform the same to DMRC in writing within 5 working days of issue of such debarment, failing which it will be considered that the applicant has willfully concealed the information and the applicant shall be solely responsible for all implications that may arise in accordance with the conditions of this EOI. Any such debarment will result in disqualification of the Applicant and the RFP document of such Applicant shall be returned unopened.

F. ANNEXURE I

EOI Pro-Forma

PRO-FORMA LETTER OF APPLICATION (on Firm's Letter Head)

The Managing Director,
Delhi Metro Rail Corporation Ltd.,
Metro Bhawan,
Barakhamba Road,
New Delhi 110001
India.

(Applicant to provide date and reference)
APPLICATION FOR INITIAL ELIGIBILITY

Dear Sir,

We hereby make application for Initial Eligibility as an applicant for the implementation of EMV Based open loop ticketing & maintenance of Automatic Fare Collection System for Ph-I, II and II stations of DMRC In support of the application we submit herewith one original and two copies of the required documents.

This application is submitted on behalf of a joint venture/consortium (applicant to delete as appropriate) comprising (Applicant to state the names of each member) and of which (Applicant to insert name of leading member of joint venture/consortium) has agreed to act as leader. Each member has prepared a statement of participation in relation to this application and these are contained in the next Section herewith.

Yours faithfully,

..... (signature)

Name of signatory:

Capacity of signatory:

Name and address of the leader of the Consortium

**PRO-FORMA LETTER OF PARTICIPATION FROM EACH MEMBER OF A
Joint Venture/Consortium**

(On Letter Head of each Firm)

The Managing Director,
Delhi Metro Rail Corporation Ltd.,
Metro Bhawan, Barakhamba Road
New Delhi 110001,
India.

(Applicant to provide date and reference)

APPLICATION FOR INITIAL ELIGIBILITY

Dear Sir,

We wish to confirm that our company/firm *(delete as appropriate)* has formed/intends *(delete as appropriate)* to form a Joint Venture/Consortium with
(Member to insert names of all other members of the group) for purposes associated with this EOI.

(Members who are not the lead member of the Joint Venture/Consortium should add the following paragraph).

The Joint Venture/Consortium is led by (member to insert name of lead member) whom we hereby authorize to act on our behalf for the purposes of applying for Initial Eligibility.

(The lead member of the Joint Venture/Consortium should add the following paragraph)

In this Joint Venture/Consortium we act as leader and, for the purposes of applying for Initial Eligibility, represent the group.

In the event of our Joint Venture/Consortium being invited to tender for this EOI, we agree to be jointly (with other members of our Joint Venture/Consortium) and severally liable to the Delhi Metro Rail Corporation Ltd. (DMRC), its successors and assigns for all obligations, duties and responsibilities arising from or imposed by any contract subsequently entered into between the DMRC and our Joint Venture/Consortium.

Yours faithfully,

(Signature)

(Name of Signatory)

(Capacity of Signatory)

G. ANNEXURE II

FORM OF CERTIFICATE

FORM OF CERTIFICATE CONFIRMING CAREFUL EXAMINATION OF ALL THE CONTENTS OF EOI DOCUMENTS AND SIGNING OF ALL PAGES OF APPLICANT'S PROPOSAL

This is to certify that we, M/S [Name of the company] have carefully examined all the contents of the EOI documents including EOI Addenda (if any) and all the pages of our proposal have been signed and stamped (by each constituent member in case of a Joint Venture or Consortium).

SIGNATURE OF APPLICANT

* To be submitted by each constituent member.

H. ANNEXURE III

Bid Data Sheet (BDS)		
1.	The name of the Project is:	EOI/AFC/EMV 01
2.	Employer is:	Delhi Metro Rail Corporation (DMRC)
3.	The name of the EOI is: The identification number of the EOI is:	Expressions of Interest for Implementation of EMV and Rupay based Open Loop Ticketing in DMRC including Comprehensive maintenance of AFC system of Ph I,II and III stations EOI/AFC/EMV 01
4.	Expected Completion period of the work	10 years
5.	EOI Documents release date	13/09/2017
6.	Cost of EOI Documents	NIL (all documents uploaded on DMRC website- www.delhimetrorail.com)
7.	For clarification purposes only, the Purchaser's address is:	Attention: ED/S&T/P-I 6 th Floor, B Wing Metro Bhawan, Barakhamba Road, New Delhi 110001
8.	Last date for seeking clarification:	24/10/2017
9.	Pre-EOI Meeting:	17/10/2017
10.	Last date of issuing DMRC's response to queries:	31/10/2017
11.	The language of the Bid is:	English
12.	Representation by an Agent	Not allowed.
13.	In addition to the original Bid, the number of copies is:	Two
14.	The written confirmation of Authorization to sign on behalf of the Bidder shall consist of:	Power of Attorney for each member and for leader, as applicable
15.	The identification of this bidding process is:	Superscription on each package of the bid 1. EOI Pro-forma: "EOI Pro-forma : EOI/AFC/EMV 01 2. Initial Eligibility Criteria (Original + 2 copies)

		<p>3. OUTER PACKAGE :</p> <p>3.1. ORIGINAL comprising of S.No.1 & 2 shall be sealed in an outer envelope and marked as "BID : EOI/AFC/EMV 01- ORIGINAL".</p> <p>3.2. Copies of the Initial Eligibility criteria shall be sealed in outer envelopes and marked as "BID : EOI/AFC/EMV 01-Copy 1" and "BID : EOI/AFC/EMV 01-Copy 2"</p>
16.	For bid submission purposes only, the Purchaser's address is :	<p>Attention: ED/S&T/P-I, Delhi Metro Rail Corporation Ltd. Street Address: Metro Bhawan, Barakhamba Road City: New Delhi Zip code: 110001 Country: India</p>
17.	The deadline for bid submission is:	<p>Date: 10/11/2017 Time: Upto 1100 hrs</p>
18.	Date and time for opening of EOIs	10/11/2017 at 1105 hrs

I. APPENDIX I

Number of AFC Equipments and Technology

Equipment specification as installed in existing DMRC AFC System: -

List of Stations:

GREEN LINE (Samsung)		
1	Inderlok	Elevated
2	Ashok Park Main	Elevated
3	Satguru Ram singh Marg	Elevated
4	Punjabi Bagh East	Elevated
5	Shivaji Park	Elevated
6	Madipur	Elevated
7	Paschim Vihar East	Elevated
8	Paschim Vihar West	Elevated
9	Peera Garhi	Elevated
10	Udyog Nagar	Elevated
11	Surajmal Stadium	Elevated
12	Nangloi	Elevated
13	Nangloi Railway station	Elevated
14	Rajdhani Park	Elevated
15	Mundka	Elevated

VIOLET LINE (Samsung)		
1	Central Secretariat	Underground
2	Khan Market	Underground
3	Jawaharlal Nehru Stadium	Underground
4	Jangpura	Underground
5	Lajpat Nagar	Elevated
6	Moolchand	Elevated
7	Kailash Colony	Elevated
8	Nehru Place	Elevated
9	Kalkaji Mandir	Elevated
10	Govind Puri	Elevated
11	Okhla	Elevated
12	Jasola Apollo	Elevated
13	Sarita Vihar	Elevated
14	Mohan Estate	Elevated
15	Tughlakabad	Elevated

16	Badarpur	Elevated
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YELLOW LINE (Samsung)		
1	QutubMinar	Elevated
2	Chhatarpur	Elevated
3	Sultanpur	Elevated
4	Ghitorni	Elevated
5	ArjanGarh	Elevated
6	Guru Dronacharya	Elevated
7	Sikandarpur	Elevated
8	MG Road	Elevated
9	IFFCO Chowk	Elevated
10	HUDA City Centre	Elevated

Equipment Specifications:

S.No.	Equipment	Type	Technology	Make
1.	Gate	CST(Type A & C)	Mifare Ultralight (64 bytes)	Samsung
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A & C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	
2.	TVM	CST(Type A & C)	Mifare Ultralight(64 bytes)	Samsung
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A & C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	
3.	TOM	CST(Type A & C)	Mifare Ultralight(64 bytes)	Samsung
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A & C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	

YELLOW LINE (Thales)		
1	Samaypur Badli	Elevated
2	Rohini Sector 18	Elevated
3	Haiderpur	Elevated

VIOLET LINE (Thales)		
1	ITO	Underground
2	Mandi House	Underground
3	Janpath	Underground
4	Sarai	Elevated
5	NHPC Chowk	Elevated
6	Mewla Maharajpur	Elevated
7	Sector 28	Elevated
8	Badkhal Mor	Elevated
9	Faridabad Old	Elevated
10	Neelam Chowk Ajrona	Elevated
11	Bata Chowk	Elevated
12	Escorts Mujesar	Elevated

Equipment Specifications:

S.No.	Equipment	Type	Technology	Make
1.	Gate	CST(Type A)	Mifare Ultralight (64 bytes)	Thales V3
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A &C)	Mifare Desfire (4 KB)	
			Sony Felica RCS 833(1 KB)	
2.	TVM	CST(Type A & C)	Mifare Ultralight (64 bytes)	Thales V3
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A &C)	Mifare Desfire (4 KB)	
			Sony Felica RCS 833(1 KB)	

BLUE LINE (Thales)		
1	Dwarka	Elevated
2	Nangli	Elevated
3	Saraspur	Elevated

GREEN LINE (Thales)		
1	Mundka Industrial Area (MIA)	Elevated
2	Ghevara Metro station	Elevated
3	TikriKalan	Elevated
4	Tikri Border	Elevated
5	Modern Industrial Estate (MIE)	Elevated
6	Bus Stand	Elevated
7	Bahadurgarh City Park	Elevated

VIOLET LINE (Thales)		
1	Kashmere Gate	Underground
2	Lal Qila	Underground
3	Jama Masjid	Underground
4	Delhi Gate	Underground
5	NCB Colony	Elevated
6	Ballabgarh	Elevated

PINK LINE (Thales)		
1	Mukundpur	At Grade
2	Majilis Park	Elevated
3	Azadpur	Underground
4	Shalimar Bagh	Underground
5	NetajiSubhash Place	Underground
6	Shakurpur	Elevated
7	Punjabi Bagh West	Elevated
8	ESI Hospital	Elevated
9	Rajouri Garden	Elevated
10	Maya Puri	Elevated
11	Naraina Vihar	Underground
12	Delhi Cantt	Elevated
13	South Campus	Elevated
14	Moti Bagh	Elevated

15	Bhikaji Cama Place	Underground
16	Sarojini Nagar	Underground
17	INA	Underground
18	South Extension	Underground
19	Lajpat Nagar	Underground
20	Vinobapuri	Underground
21	Ashram	Underground
22	Hazrat Nizamuddin	Underground
23	Mayur Vihar – I	Elevated
24	Mayur Vihar Pocket 1	Elevated
25	Trilok Puri	Elevated
26	Vinod Nagar East	Elevated
27	Vinod Nagar	Elevated
28	IP Extension	Elevated
29	Anand Vihar	Elevated
30	Karkarduma	Elevated
31	Krishna Nagar	Elevated
32	East Azad Nagar	Elevated
33	Welcome	Elevated
34	Jaffrabad	Elevated
35	Maujpur	Elevated
36	Gokul Puri	Elevated
37	Johri Enclave	Elevated
38	Shiv Vihar	Elevated

MAGENTA LINE (Thales)

1	Janakpuri West	Underground
2	Dabri Mor	Underground
3	Dashrath Puri	Underground
4	Palam	Underground
5	Sadar Bazaar	Elevated
6	Indira Gandhi International Airport Terminal 1-D	Underground
7	Shankar Vihar	Elevated
8	Vasant Vihar	Underground
9	Munirka	Underground
10	R.K Puram	Underground
11	IIT	Underground
12	Hauz Khas	Underground
13	Panchsheel Park	Underground

14	Chirag Delhi	Underground
15	Greater Kailash II	Underground
16	Nehru Enclave	Underground
17	Kalkaji Mandir	Underground
18	Okhla Phase-III	Elevated
19	Sukhdev Vihar	Elevated
20	Jamia Milia Islamia	Elevated
21	Okhla Vihar	Elevated
22	Jasola Vihar	Elevated
23	Kalindi Kunj	Elevated
24	Okhla Bird Sanctuary	Elevated
25	Botanical Garden	Elevated

Equipment Specifications:

S.No.	Equipment	Type	Technology	Make
1.	Gate	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	Recto/Verso(Thales V4)
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	
2.	TVM	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	Recto/Verso(Thales V4)
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	
3.	TOM	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	Recto/Verso(Thales V4)
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	

List of Stations:

BLUE LINE (Indra)		
1	Noida 34	Elevated
2	Noida 52	Elevated
3	Noida 61	Elevated
4	Noida 59	Elevated
5	Noida 62	Elevated
6	Electronic City	Elevated

RED LINE (Indra)		
1	Sahid Nagar	Elevated
2	Raj Bagh	Elevated
3	Rajendra Nagar	Elevated
4	Shyam park	Elevated
5	Mohan Nagar	Elevated
6	Arthala	Elevated
7	Hindon River	Elevated
8	New Bus Adda	Elevated

Equipment Specification:

S.No.	Equipment	Type	Technology	Make
1.	Gate	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	G46 (INDRA)
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	
2.	TVM	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	G46 (INDRA)
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	
3.	TOM	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	G46 (INDRA)
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	

S.No.	Equipment	Type	Technology	Stations
1.	Gate	CST(Type A & C)	Mifare Ultralight(64 bytes)	Line06: Central secretariat to Badarpur Line 05: Inderlok to Mundka Line 02: Qutub Minar to Huda City Center
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A & C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	
2.	TVM	CST(Type A & C)	Mifare Ultralight(64 bytes)	
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A & C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	
3.	TOM	CST(Type A & C)	Mifare Ultralight(64 bytes)	
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A & C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	

S.No.	Equipment	Type	Technology	Stations
1.	Gate	CST(Type A)	Mifare Ultralight(64 bytes)	Line 02: Samaypur Badli to Haiderpur Line 06: ITO to Janpath& Sarai to Escort Mujesar
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A &C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	
2.	TVM	CST(Type A & C)	Mifare Ultralight(64 bytes)	
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A &C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	
3.	TOM	CST(Type A & C)	Mifare Ultralight(64 bytes)	
			Sony Felica RCS 890(512 bytes)	
		CSC (Type A &C)	Mifare Desfire(4 KB)	
			Sony Felica RCS 833(1 KB)	

S.No.	Equipment	Type	Technology	Stations
1.	Gate	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	Line 03 ext: Dwarka to Saraspur Line 05: MIA to Bahadurgarh city park Line 06:NCB-Ballabhgarh Heritage line: Kashmere Gate to Delhi Gate Line 07: Mukundpur to Shiv Vihar Line08: Janakpuri west to Botanical garden
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	
2.	TVM	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	
3.	TOM	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	

S.No.	Equipment	Type	Technology	Stations
1.	Gate	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	Line 01: Rajbagh to New Bus Adda Line 03: Noida 34 to Electronic City
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	
2.	TVM	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB)	

		NFC)	EV1 ISO/IEC 14443 and ISO 18092 or equivalent	
3.	TOM	CST(Type A & NFC)	Mifare Ultralite (64 bytes)/My-D Move (Infineon). Type A Token compliant to ISO 14443.	
		CSC (Type A & NFC)	Mifare Desfire (minimum 4 KB) EV1 ISO/IEC 14443 and ISO 18092 or equivalent	

J. APPENDIX II

DESIGN PARAMETERS

Function/ Performance	Mobile based NFC ticketing	QR code based ticketing	Contactless EMV Smart Card
Minimum Operating Lifetime With Data Retention in Memory	5 Years	As per expiry for one time usage	5 Years
Recyclable	No	No	No
Recharge-Purchase Tickets or Increase 'Pay As You Go'	Yes	N/A	Yes
Auto Top-Up 'Add Value' Via Arrangement With Debit or Credit Card Provider	Yes	N/A	Yes - details to be agreed With Employer
Maximum Time to Complete a Transaction	500m Sec	600m Sec	500m Sec

*****END OF DOCUMENT*****

