

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

REQUEST FOR INFORMATION

LIMITED-USE SMARTCARD FARE MEDIA

MAY 21, 2015

Responses Due: June 11, 2015, 2:00 pm Eastern Daylight Time

1. Introduction

The Massachusetts Bay Transportation Authority (MBTA), originally created in 1964 by an Act of the Commonwealth of Massachusetts, operates one of the oldest most extensive mass transit systems in the country. The MBTA's is the nation's 5th largest mass transit system and provides services to 175 cities and towns across Eastern Massachusetts encompassing almost 4.7 million people over an area of 3,200 square miles. Service is provided to stations throughout Boston and the greater metropolitan area, transporting 1.3 million passengers every day on a system of bus routes, rapid transit lines, commuter rail lines, ferry routes, trackless trolley lines, paratransit and a bus rapid transit system.

In 2002, the MBTA commenced the replacement of a read-only, magnetic ticketing system with a system employing a new magnetic ticketing and smartcard systems. The deployment of this system occurred through 2010, commencing with the implementation of the magnetic ticket (the CharlieTicket) then with the implementation of the smart card (the CharlieCard), for all subway, bus, bus rapid transit, and trolley services.

In 2015, the MBTA anticipates commencing work on an engineering retrofit to many devices in the fare collection system. This project will, among other things, phase out the use of magnetic tickets within the system. This will be done to reduce fraud

exposure, reduce system maintenance issues and cost, and improve customer experience. To meet this objective, the MBTA will also need to design and source new fare media which can be compatible with existing and future fare collection equipment. This RFI seeks to gather information to assist the MBTA in that design and specification process.

2. Instructions for Responding to this RFI

2.1. Who May Respond

Responses are welcome from any individual or organization with practical knowledge of and/or experience with smartcard technology and ticket vending equipment.

2.2. How to Respond

One electronic copy in Portable Document Format (PDF) should be sent to **aveneziano@mbta.com**. One confirming paper copy of all documents should be sent to the MBTA contact at the postal address below.

Adam Veneziano
Director of Fare Systems
Massachusetts Bay Transportation Authority
10 Park Plaza, Suite 4730
Boston, MA 02116

Responses to this RFI must be received at the MBTA **no later than 2:00 PM US Eastern Time on June 11, 2015**.

Other communication regarding this RFI should be sent to the same contact listed in this paragraph.

2.3. RFI Response Contact

In the response, anyone responding to this RFI shall designate a single contact within the responder's organization for the receipt of all subsequent information regarding this RFI.

2.4. Format of RFI Responses

The following outline must be followed in the development of your response. You should include:

- A cover letter -- the cover letter should include a brief summary of your interest and expertise in this area, and must identify the supporting documentation that is included in your response.
- Responses to the questions identified below.

Although the MBTA does not limit the size of responses, you are asked to consider that the MBTA has limited time to review the responses.

Furthermore, electronic document submission should be limited to 5 megabytes. If the submission is larger than this, then an e-mail should be sent to the contact above advising that an electronic copy will be sent on removable media. The entire submission still must be received by the due date noted above.

2.5. Reimbursement

The MBTA will not reimburse organizations responding to this RFI for any costs in conjunction with their responses to this RFI.

3. Background Information

Applications. There are three specific ticket applications that the MBTA needs to replace with a smartcard-based alternative:

- A. Roll stock for use in Fare Vending Machines and Ticket Office Machines, initialized with basic encoding, with one side made ready for thermal printing
- B. Single die cut stock for use in Retail Sales Terminals, initialized with basic encoding, with one side made ready for thermal printing
- C. Single die cut stock for direct distribution, initialized and encoded with specific products and delivered to the MBTA monthly, some visibly printed with product-specific artwork

Chip type. The MBTA currently uses both MIFARE Classic 1k 4-byte unique identifier (UID) first-generation cards and MIFARE Classic 1k 4-byte non-unique identifier cards. The MBTA expects during this calendar year that MIFARE Classic EV1 1k 4-byte non-unique identifier cards will also enter circulation.

The MBTA's fare system can currently only accept those three smartcard chip types.

Starting in approximately 2017, the MBTA expects to begin to migrate to one or more new smartcard chip types.

Device compatibility. The media will be read by a variety of smartcard readers. The media will be read and written to by smartcard readers manufactured by Oti and Schiedt & Bachmann. In applications A and B, the media will also be printed on by Schiedt & Bachmann equipment while being encoded inline in that same equipment.

Volume. Current magnetic ticket consumption averages 7-8 million per year. As the device retrofit project commences, consumption of the new fare media would increase month by month. Anticipated future media consumption rates by application would be:

- A. 80%
- B. 10%
- C. 10%

Existing ticket form factor. For reference, a drawing showing dimension information for the current ticket used for application A is attached.

CharlieCard. The existing CharlieCard will not be changed or addressed as part of this project.

4. Questions to be Addressed

- 4.1. What fare media manufacturing material would you recommend for each of the MBTA's three applications, and why?
- 4.2. What is the ideal card thickness and minimum tolerance you would recommend for each of the MBTA's three applications, and why?
- 4.3. What is durability (time period) would you recommend the MBTA publish to its customers for the product used in each of the three applications?
- 4.4. Have you delivered a product consistent with any of the three applications described above using the MIFARE Classic chip types?
- 4.5. Have you delivered a product consistent with any of the three applications described above for use in Scheidt & Bachmann ticketing equipment?
- 4.6. What smartcard chip type(s) would you recommend the MBTA consider for each of the three applications as the MBTA gradually migrates away from the MIFARE Classic 1K?
- 4.7. How would costs of a project like this vary using different chip types?
- 4.8. What lead time should the MBTA allow to start bulk deliveries for applications A and B from placing an order?
- 4.9. What other projects or installations are you aware of that you believe would be useful for the MBTA to review as part of this design process? Would you please provide document links and contact information with us?
- 4.10. What method of media serialization (e.g. printing or engraving chip serial number) for each application would you recommend and why?
- 4.11. To what extent could products for each of the applications be recyclable?

5. Response Review Process

5.1. Acknowledgement

The MBTA will acknowledge receipt of materials via electronic mail to the address from which the materials were sent.

5.2. Review Process

RFIs are issued by the MBTA with the intent to survey the industry and obtain information that provides the MBTA with an understanding of the range of products and services that are available in the market, vendors' experience in deploying these products, and where these products have been deployed.

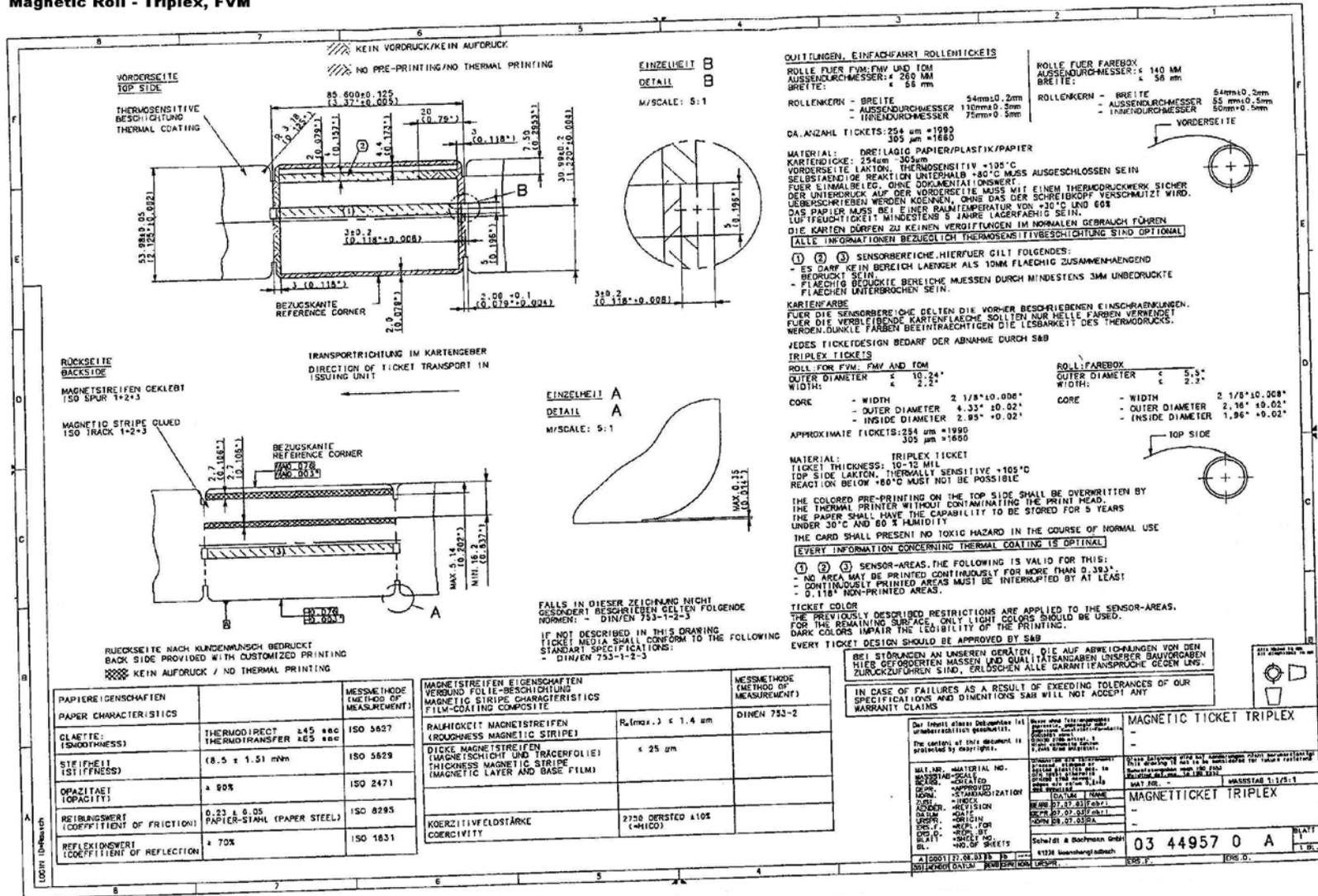
The MBTA's Treasurer-Controller's Office and Information Technology Fare Systems Unit will review responses to this RFI.

5.3. Clarification

To fully comprehend the information contained within a response to this RFI, the reviewing group may seek further clarification on that response. This clarification may be requested in the form of brief verbal communication by telephone; written communication; electronic communication; or a presentation of the response to a meeting of interested parties at the MBTA.

RFI respondents may be invited to present their response to a review group. The purpose of this presentation would be to seek clarification of information contained within the response (as noted above), to further explore issues raised, or to further meet the goals of the RFI.

Magnetic Roll - Triplex, FVM



PAPIEREIGENSCHAFTEN PAPER CHARACTERISTICS	MESSTMETHODE (METHOD OF MEASUREMENT)	ISO
GLÄTTE: (SMOOTHNESS)	THERMIDIRECT 145 μ m THERMIDIRECT 145 μ m	ISO 5827
STIFHEIT (STIFFNESS)	(8.5 x 1.5) mm	ISO 5829
OPAZITÄT (OPACITY)	± 90%	ISO 2471
REIBUNGSWERT (COEFFICIENT OF FRICTION)	0.23 ± 0.05 PAPIERSTAHL (PAPER STEEL)	ISO 8295
REFLEKTIVSWERT (COEFFICIENT OF REFLECTION)	± 70%	ISO 1851

MAGNETSTREIFEN EIGENSCHAFTEN VERBUND FOLIE-BESCHÜTTUNG MAGNETIC STRIPE CHARACTERISTICS FILM-COATING COMPOSITE	MESSTMETHODE (METHOD OF MEASUREMENT)	ISO
RAUHKOEFFIZIENT MAGNETSTREIFEN (ROUGHNESS MAGNETIC STRIPE)	$R_a(\max.) \leq 1.4 \mu$ m	DIN EN 753-2
DICKE MAGNETSTREIFEN (MAGNETIC LAYER AND TRACER FOLIE) (THICKNESS MAGNETIC STRIPE (MAGNETIC LAYER AND BASE FILM))	$\leq 25 \mu$ m	
KOERZITIVFESTSTÄRKE COERCIVITY	2750 OERSTEDT $\pm 10\%$ (= NIICO)	

IN CASE OF FAILURES AS A RESULT OF EXCEEDING TOLERANCES OF OUR SPECIFICATIONS AND DIMENSIONS SBA WILL NOT ACCEPT ANY WARRANTY CLAIMS

MAGNETIC TICKET TRIPLEX
03 44957 0 A