CHAPTER 10

AUTOMATIC FARE COLLECTION

10.1 INTRODUCTION

Mass Rapid Transit Systems handle large number of passengers. Ticket issuance and fare collection play a vital role in the efficient and proper operation of the system. To achieve this objective, ticketing system shall be simple, easy to use/operate, easy on accounting facilities, capable of issuing single/multiple journey tickets, amenable for quick fare changes and require overall lesser manpower. In view of above, computer based automatic fare collection system is proposed. Relative advantages of automatic fare collection system over manual system are as follows:

Manual fare collection systems have the following inherent disadvantages:

1. Large number of staff is required for issue and checking of tickets.
2. Change of fare structure is time consuming as has to be done at each station.
3. Manipulation possible by jamming of mechanical parts.
4. Staff and passenger interaction leading to more chances of confrontation.
5. 100% ticket checking at entry / exit impossible.

Automatic fare collection systems have the following advantages:

1. Less number of staff required.
2. Less possibility of leakage of revenue due to 100% ticket check by control gates.
3. Recycling of ticket fraudulently by staff avoided.
4. Efficient and easy to operate, faster evacuation both in normal and emergency.
5. System is amenable for quick fare changes.
6. Management information reports generation easy.
7. System has multioperator capabilities.
8. AFC systems are the worldwide accepted systems for Metro environment.
9. Contactless card/token technology proves to be cheaper than magnetic technology in life cycle cost due to reduced maintenance as it has less wear and tear and less is prone to dusty environment.

The proposed ticketing system shall be of Contactless smart token/card type. The equipments for the same shall be provided at each station Counter/Booking office and at convenient locations and will be connected to a local area network with a computer in the station Master's room.

Passenger Operated Machine

Space for provision of Passenger Operated Machines (Automatic Ticket Dispensing Machines) for future, shall be provided at stations.
10.2 STANDARDS
The standards proposed for AFC systems are given in Table 10.1

Table 10.1
Standards Proposed for AFC Systems

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<th>Standards</th>
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| • Fare media                                  | a) **Contactless smart token** – For single journey. They shall have stored value amount for a particular journey. Tokens are captured at the exit gate.  
  b) **Contactless smart card** – For multiple journeys. |
| • Gates                                        | Computer controlled automatic gates at entry and exit. There will be following types of gates:  
  • Entry  
  • Exit  
  • Reversible – can be set to entry or exit  
  • Disabled – Wide reversible gate for disabled people. |
| • Station computer, Central computer and AFC Network | All the fare collection equipments shall be connected in a local area network with a station server controlling the activities of all the machines. These station servers will be linked to the central computer situated in the operational control centre through the optic fibre communication channels. The centralized control of the system shall provide real time data of earnings, passenger flow analysis, blacklisting of specified cards etc. |
| • Ticket office machine (TOM/EFO)              | Manned Ticket office machine shall be installed in the stations for selling cards/ tokens to the passengers. |
| • Ticket reader and portable ticket decoder.   | Ticket reader shall be installed near EFO for passengers to check information stored in the token / cards. |
| • UPS (uninterrupted power at stations as well as for OCC). | Common UPS of S&T system will be utilized. |
| • Maintenance philosophy                      | Being fully Contactless systems, manpower requirement for maintenance is much less compared to system with magnetic tickets. However, adequate facilities to be provided similar to that of S&T systems. |
Entry / Exit Gate

Ticket Office Machine