

JR East Stations —Accessibility for Today and Tomorrow

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Introduction

East Japan Railway Company (JR East) is modifying its stations and rolling stock so that all people, including the elderly and disabled, can travel more easily. These improvements are based on the company's desire to provide more people-friendly services, in line with its corporate philosophy promoting easier mobility for all people now and in the 21st century. JR East calls its forward-looking stance Future 21.

Basic Approach

Now that Japan's population is aging rapidly, Future 21 aims to improve equipment and facilities in stations and rolling stock to offer barrier-free access. Greater cleanliness is another goal. The following steps are being taken to meet the future needs of the travelling public:

- Installing more escalators and other devices to make it easier to move from one station level to another

- Upgrading station signs, making information easier to obtain and understand
- Installing easier-to-use ticket vending machines and other equipment

Accessibility Today within Stations

Escalators and elevators

The different levels in stations limit the access of wheelchair users and other people who find stairs difficult to negotiate. Mechanized devices like escalators and elevators offer far greater mobility. These are being installed in JR East stations to facilitate train travel for the elderly, disabled, and other users as well. JR East's most heavily used stations are generally located within 50 km of the heart of Tokyo and the company gives priority to installation of escalators within this area. The company plans to have installed escalators in all its stations in Tokyo's 23 wards within 4 years from fiscal 1998, and in about 80% of its stations located within a 50-km radius (Fig.1).

Improved facilities for visually impaired

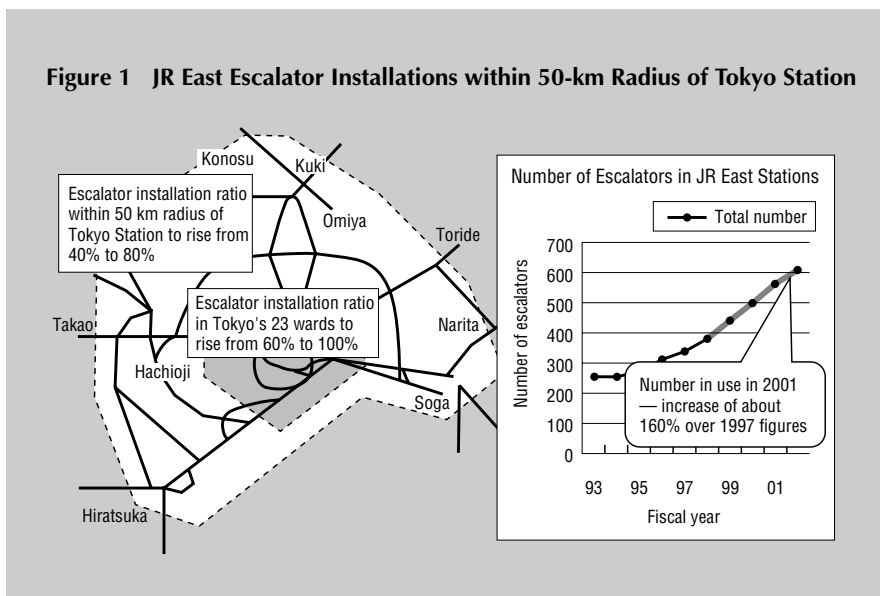
JR East is also making its facilities more accessible for the visually impaired. For example, it has been laying tactile tiles in passageways and on platform floors, to guide and warn of potential hazards. It is also attaching Braille keys and labels to ticket vending machines, fare schedules and stairway handrails, and installing chimes that help passengers locate places. The newest touch-sensitive ticket vending machines have Braille labelling.

Upgraded signs and other improvements

JR East has improved its station signs and display panels to make navigating in stations smoother and less worrying. In 1989, it installed new types of signs in two Tokyo stations—Shinjuku and Akihabara. Since then, it has refined its signs to make information easier to understand, and has printed good practice manuals detailing new sign policies. Signs now have larger print and more pictograms to help the elderly.

The company has taken other steps as well, including installing toilets that offer easier use for the physically disabled, laying ramps at steps for wheelchair users, and widening ticket wickets.

Figure 1 JR East Escalator Installations within 50-km Radius of Tokyo Station



Rolling Stock Improvements

Priority seats

The company designates seats on all local trains for priority use by the elderly, disabled, passengers with young children, pregnant women, etc.

Facilities for wheelchair users

Some JR East cars have wheelchair positions, as well as toilets accessible for wheelchair users. Special wheelchair lifts offer better access to double-deck shinkansen cars.



Tactile tiles on platforms guide and warn people with impaired vision of hazards.

(JR East)



Braille keys on ticket vending machine

(JR East)

Future Developments

JR East is also developing new technologies, many of which allow far greater accessibility from one level to another. Let us look briefly at some of these innovations.

JD Escal

In the past, the company installed a few wheelchair lifts on station staircases to improve access for wheelchair users. These lifts had a number of disadvantages. For example, they took up considerable stair space, leaving less area for other passengers. In addition, the wheelchair lift system had to be pinned firmly to the walls of the stairwell, but the walls were often not strong enough to accommodate it. Consequently, this type of wheelchair lift could not be installed in many stations. To solve these problems and permit more widespread use of wheelchair lifts in stations, JR East developed a new type in 1992, called JD Escal. This newer version, installed since 1993, has a number of advantages over its predecessor:

- Staircases have practically same width after installation

- Carrying cab removed when not in use
Station staff operate the device and ensure safe functioning. As a result, the lift occupies very little space on the staircase. When the lift is not in use, the staircase width is practically the same as without the lift installation.
- Reduced installation time
The guide rails are self-supporting, so there is no need to strengthen the stairwell wall. This greatly reduces

installation time and costs.

- Users have no sense of inconvenience
The curved design matches the surroundings, making the device seem quite natural for the environment.
The older JD Escal wheelchair lift could only be used on straight stretches of stairs. However, passageways in stations often include bridges over tracks and tunnels under them—requiring passengers to make 90° turns, and to proceed up and



Easier-to understand station signs

(JR East)



JD Escal II (JR East)

down a series of gradients. To cope with these barriers, and let wheelchair users negotiate a number of staircases without changing to another lift, JR East developed the JD Escal II, an improved wheelchair lift. This version has been installed since 1997. Needless to say, both the JD Escal and the JD Escal II meet legislated safety standards, and have received ministerial approval.

At 31 March 1999, the JD Escal and its newer cousin, the JD Escal II, were installed in 77 locations in 40 JR East stations, and more than 50 were installed in stations operated by other railways. Wheelchair users find them a welcome addition to stations.

Space-saving elevators

Conventional elevators for wheelchair users require a machine room built separately from the elevator shaft. This makes installation difficult in stations where space is limited. They also require much time to install.

To solve these problems, JR East developed a small, space-saving elevator that has the following advantages:



Space-saving elevator at Yotsuya Station of Chuo Line in Tokyo (JR East)

- Requires less space

The motor is installed in the shaft. As a result, the floor area occupied by the system is only 2.05 x 1.9 m. The total required space is only about 30% of that required by a conventional elevator with a hydraulic motor in a machine room.

- Reduced installation time

Only one week is required to install the basic elevator unit and even the shaft is factory built, reducing costs and on-site work. About 1 month is required to complete installation, including subsidiary on-site work.

- Better convenience

The cage is narrower than conventional elevators, but the wheelchair does not have to turn around inside because there are two doors on opposite sides—one for entry, the other for exit.

- Safety

A weight sensor triggers an alarm automatically if a user remains inside the lift longer than the pre-determined time. Photocells are installed at the entry and exit doors and there is no door-close button. All these innovations were designed with the physically disabled in mind.

In 1995, this elevator system was first installed at Yotsuya Station on the Chuo Line on the platform serving express trains. A total of 11 improved, lower-cost versions had been installed in seven JR East stations by 31 March 1999.



Wheelchair platform installed on escalator

(JR East)



Seat designated for elderly, disabled people, etc.
(JR East)



Wheelchair-accessible toilet in rapid commuter train

(JR East)

JR East is currently developing an even more advanced low-cost elevator that will require even less space.

Other aids

The company is also conducting research on other devices to overcome barriers caused by different heights. These include:

- Devices permitting wheelchair users to easily traverse two or more steps in stations.
- Escalator system that can be retrofitted without ripping up station staircases.

Conclusion

As the Japanese population ages, the number of elderly and disabled will increase, and these people will assume more active roles in society. Many problems must still be solved before they can use barrier-free stations and trains without depending on the assistance of others. For example, station personnel must operate today's wheelchair lifts—future research will probably be needed

to develop a new type of lift that disabled passengers can operate themselves. And of course, stations must be made more convenient and appealing for the regular travelling public as well.

JR East intends to continue developing new equipment and technologies to establish a truly people-friendly railway environment that satisfies the needs of passengers in the next century. ■



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