Accessibility: Barrier Free Law and Facility Improvements through Cooperation of National Government, Local Governments and Railway Companies

The case of Haneda Airport

Tokyo Development Learning Center

Japan Project Brief

Background and Objectives

"Universal Design" refers to the design of products and environments that are usable by all people to the greatest extent possible, regardless of their age, size, language, ability or disability. This design concept has been widely applied to support economic and social activities, particularly through the application to public transport design, as the country has been facing rapid globalization and drastic changes in its demography, such as the continuously declining birthrate and increasing life expectancy. To produce safe and livable environments and enable all people to reach basic urban services in an aging society, there is an urgent need to upgrade transportation facilities to be equitably accessible, understandable and usable to people of all ages and abilities. To meet this emerging social need, the national government enacted the Act on Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc., commonly referred to as the Barrier Free Law in 2006. Along with this act, the national government set a target to adopt the concept of Universal Design for all public transportation facilities and vehicles that accommodate more than 3,000 daily passengers by 2020, including major airport terminals.

Haneda International Airport Terminal (Tokyo International Airport) was built in 2010, when the fourth runway was extensively developed. Thanks to the high market potential, a private financial initiative scheme was applied to build and operate the international terminal. More specifically, 13 private companies jointly founded Tokyo International Airport Terminal Corporation (TIAT), a special purpose company responsible for the design, construction, operation, and management of the terminal under a contract with the national government. To embody seamless air travel access, the national and local governments, TIAT, airline companies, and public transportation providers corroboratively made a great effort on the creation of an international terminal highly accessible to all kinds of people.

Project Overview

Haneda Airport is one of the world's busiest transportation hub annually, used by about 75 million international and domestic passengers. The international terminal alone is used by 10.5 million passengers, with 90,000 airplanes taking off and landing annually. When the terminal was designed, TIAT established a Universal Design Committee consisting of experts, people with disabilities, operators, and local government officers to make the new airport terminal usable and accessible for all people. The committee organized approximately forty Universal Design workshops and reflected the opinions collected from a wide range of users to the detailed drawing of the terminal. The members also visited existing airport facilities and used mock-ups to assess the effect of the design plan. As a result of these joint design efforts, the terminal successfully provides seamless access to public transportation, especially railways, and incorporates the concept of universal design into various facilities using advanced technologies.

Seamless Travel Between Railway Stations and Terminal Buildings

The international airport terminal is directly connected to Tokyo's major urban centers by two railway companies: Tokyo Monorail Line to eastern Tokyo and Keikyu Line to southern Tokyo. When the new terminal and stations were built, TIAT, Keikyu Corporation, and Tokyo Monorail Co., Ltd., collaborated to get rid of physical barriers across facilities for people with mobility disadvantages. For example, a hall (Figure 1 and Photo 1) in the terminal allows passengers to directly access to departure/arrival lobbies, public transportation services (e.g., Monorail, railway, buses, and taxies) and a car parking area via flat and straight paths. Several large-size elevators set in the Keikyu Line's station can also carry a large volume of passengers between the platforms and the arrival/departure floors. Tokyo Monorail redirected the guideway from the existing platform at the domestic terminal to the second floor of the international terminal to produce flat passenger access from the station to the departure lobby. In addition, the both railway lines introduced movable step boards that bridge train vehicles and platforms for wheelchair users, and platform screen doors for passengers' safety.

Photo1: Access hall in the terminal

Source: Japan Airport Terminal Home Page. https://www.tokyo-airport-bldg.co.jp/enjoy/photo_gallery/page3.html

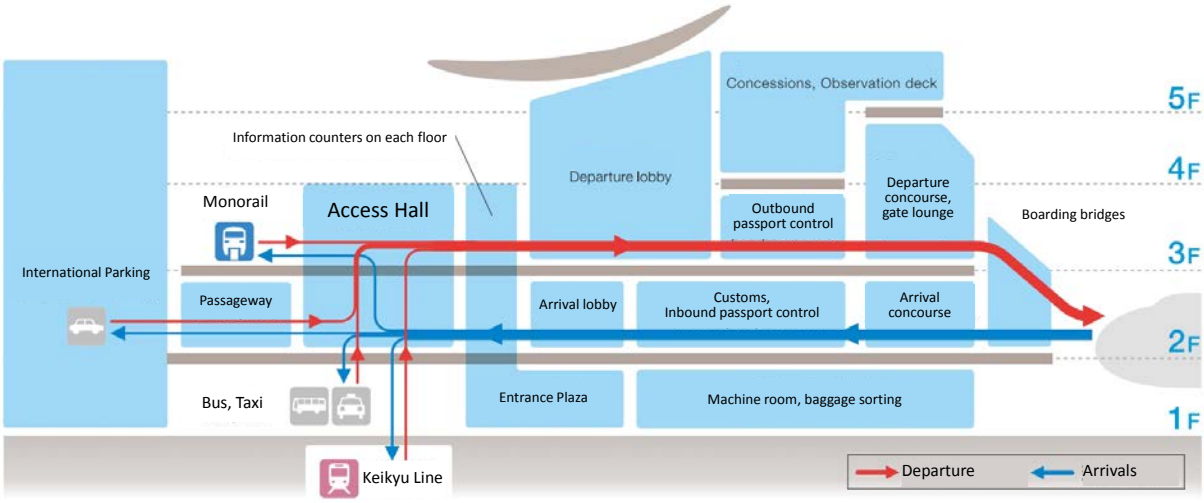

Figure 1: Cross-section map of Haneda International Airport Terminal

Source: Tokyo International Air Terminal Corporation Home Page. http://www.tiat.co.jp/

Universal Design with Advanced Technologies and Services

The universal design committee carefully took into account opinions from users and progressively introduced world-class terminal facilities with the Universal Design concept. Multipurpose toilets, boarding bridges, and versatile concierge service and communication devices exemplify its novelty.

Multipurpose Toilets: Multipurpose toilets, with necessary devices and spacious rooms, were provided on all floors in the terminal building for parents with small children, the elderly, and wheelchair users (Figure 2). The locations of these toilets are intelligibly directed by concierges, braille blocks, perceptible pictogram signage (Photo 2), and audio guidance in four differe
nt languages. Haneda is the first airport terminal that introduced special toilets for the assistant dogs that accompany disabled passengers before and/or after boarding long flight.

Boarding bridge: All boarding gates in the Haneda International Terminal are equipped with step-less boarding bridges, a global first. With a wide and flat path, this special boarding bridge allows people with disabilities to board and disembark the aircraft smoothly.

Concierge services and devices: 90 well-trained staff provide concierge services and all staff have a service care-fitter license. A variety of assistant services are available in four languages and sign language at information counters in both the airport terminal and the railway stations. Furthermore, braille floor maps and guidebooks, communication support boards (Photo 3), and hearing loops are served to facilitate communications with visual or hearing impaired passengers. In addition to the concierge services provided by TIAT, two Japanese airline companies offer a range of special support to people in need, such as pregnant women, families with small kids, wheelchair users, and people with any disabilities. For example, these passengers can borrow wheelchairs and strollers and use

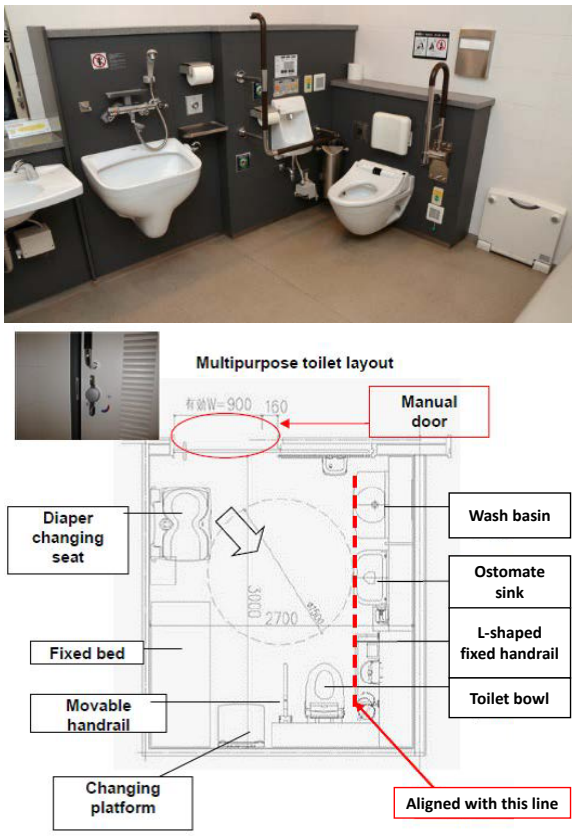

Figure 2: A layout of multipurpose toilet

Photo 2: Pictogram signage in front of toilets

special checking-in counters with physically comfortable seats.

Photo 3: Communication support board

Project Impacts

Economic Impact:

Introducing the Universal Design concept to the entire terminal building can save the total cost of design and construction, as it does not require different design adaptations or specialized design for certain people. The terminal supported by progressive services and technologies are also likely to offer better travel experiences, attract more international passengers, and, in turn, increase airport operation revenues.

Social Impact:

The increased physical accessibility in and around the airport terminal significantly improved the social inclusiveness of the elderly, disabled, and other people with mobility limitations. In addition, the progressive services and devices, such as pictogram signage, multilingual guides, and concierge's assistance, help to provide hospitality to international visitors through the gateway.

Environmental Impact:

The proportion of public transportation (railway and bus services) in the airport access/egress market has gradually been increasing since the international terminal was opened (Figure 3). It is likely that better intermodal services with seamless access could shift air passengers from personal vehicles to public transportation systems, which contribute to reducing road traffic congestion and CO_2 emissions.

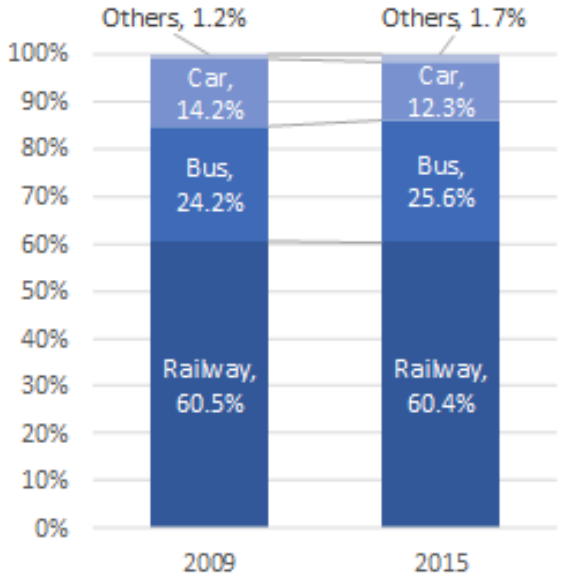

Figure 3. Modal Split in the Airport Access/Egress Market, 2009 and 2015

Source: Ministry of Land, Infrastructure, Transport and Tourism. Air Passenger Survey in fiscal year of 2009 and 2015.

Lessons Learned

In the context of globalization and aging society, airport terminals are increasingly used by a variety of international and domestic travellers. However, around the world, there are many physical barriers that hamper people with disabilities from having a comfortable travel experience in and around terminals. In the case of Tokyo, three private companies took up the challenge to apply the Universal Design concept and cutting-edge technologies to produce a world-class international airport terminal from the planning/design stage. Key lessons learned from Haneda International Airport Terminal are summarized below:

Thoughtful and Interactive Design Process:

Airport terminals require several special facilities related to a series of air travel procedures, such as security checks, embarking and disembarking, immigration, and lengthy waiting times. To increase access to the terminal for everyone, the usability of all facilities needs to be scrutinized and should reflect the voices from a range of actual users. This design approach calls for more human interaction and careful coordination than a conventional one.

Integrated Access to and from Urban Centers:

Integrated access design between an airport terminal, ground transportation systems, and urban centers is critical for travelers with disabilities. In particular, it is essential to eliminate all types of level differences and floor gaps that can cause stress and hamper passengers from having seamless door-to-door travel experiences. Incorporating a centralized hall into the terminal benefits all users, as it enables smooth transfers among different transportation modes with barrier-free paths and, in turn, mitigates pedestrian congestion at airports.

Public Guidance and Private Initiatives:

According to the philosophy of Universal Design, the facility improvements needed to support people with disabilities can benefit everyone. Increased physical accessibility and hospitality satisfy customers with the high-quality of services and contribute to increasing the number of airport users to some extent. While the national government plays a pivotal role in adopting the Universal Design concept in public transportation facilities, private terminal operators should be motivated to proactively install innovative technologies and unconventional services for long-term cost saving and customer (passenger) satisfaction.

Future Challenges

The number of foreign visitors recorded an increase of 2.36 times during the period from 2012 to 2015 in Japan. It is expected that the number of aircraft movements at Haneda International/Domestic Airport will increase up to additional 390,000 movements annually by 2020, when the Tokyo Olympic and Paralympic games will be held. Hence, there is an urgent need to expand the international and domestic terminal capacity without compromising high-quality airport passenger services. Terminal buildings, operation hours, flight paths, and runways need to be redesigned to provide world-class travel experience to a wide variety of international business travelers and tourists as well as local residents in an aging society.

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