



Barrier Free Conditions of Mass Rapid Transit Stations in Hong Kong

著者	OSAKAYA Yoshiyuki, AOYAMA Takeshi, RATANAMART Suphawadee
journal or publication title	Proceedings of TRANSED 2010
volume	2010
number	A078
page range	1-10
year	2010-06-02
URL	http://hdl.handle.net/10258/1148

Barrier Free Conditions of Mass Rapid Transit Stations in Hong Kong

著者	OSAKAYA Yoshiyuki, AOYAMA Takeshi, RATANAMART Suphawadee
journal or publication title	Proceedings of TRANSED 2010
volume	2010
number	A078
page range	1-10
year	2010-06-02
URL	http://hdl.handle.net/10258/1148

BARRIER FREE CONDITIONS OF MASS RAPID TRANSIT STATIONS IN HONG KONG

Osakaya Yoshiyuki, Muroran Institute of Technology
Muroran, Japan, E-mail: osakaya@mmm.muroran-it.ac.jp

Aoyama Takeshi, Muroran City Council
Muroran, Japan, E-mail: t-aoyama@beige.plala.or.jp

Ratanamart Suphawadee, King Mongkut Institute of Technology Ladkrabang
Bangkok, Thailand, E-mail: nuibooks@yahoo.com

SUMMARY

In Hong Kong, it is estimated that aging will be rapidly going on after 2010. Increase of the elderly means increase of the disabled. In Hong Kong, there are 3 KCR lines (East Line, West Line and Ma On Shan Line) and 7 MTR lines (Kwun Tong Line, Tsuen Wan Line, Island Line, Tsung Wan O Line, Tung Chung Line, Airport Line and Disneyland Line) in 2006.

This study firstly made the actual conditions of barrier free at all 81 stations clear. It secondly made problems clear. It thirdly showed proposals of barrier free improvement and issues in future.

Field survey of all 81 stations was carried out in order to grasp actual conditions of barrier free at each station, such as platform including platform-doors, lift and/or escalator between platform and concourse, concourse itself, lift and/or escalator between concourse and ground level, ground level near the exits of each station. Transfer mass rapid transit to others such as LRT, bus, Taxi or private car was also investigated.

Platform-doors are attached at underground stations but they are not attached at elevated stations except some of new stations of KCR West Line and Disneyland Line. Lifts between platform and concourse are attached at most of stations. As for MTR Kwun Tong Line and KCR East Line, there are many barriers which should be improved because both lines began to operate in early times. Opinions and requests of passengers were not affected to the barrier free improvement plan and project except inquiry.

Conference or coordination committee among various traffic agencies, related administration and passengers including the elderly and the disabled should be necessary to realize barrier free society in Hong Kong.

Key Words: Barrier Free, Station of Mass Rapid Transit, The Elderly, The Disabled, Hong Kong

PURPOSE OF THE STUDY

1. Background

The population in Hong Kong on 1st July 2006 is about 7 million and will increase into about 8.3 million in 2030. In 2000, the aging ratio in Hong Kong was 10.5% less than 17.4% in Japan but the rapid aging after 2010 is pointed out, so that barrier free improvement of mass rapid transit stations is important and should be promoted as soon as possible. According to "Disability at a Glance" of the United Nations (UN) Economic and Social Commission for Asia and the Pacific (ESCAP), the number of the disabled in Hong Kong is about 270 thousand in 2000 and the their percentage of total population is about 4.0%.

2. Purpose of the Study

The first purpose is to grasp actual conditions of barrier free at all 81 stations of mass rapid transit in Hong Kong through field survey. Based on the results of survey, the second purpose is to find out problems of barrier free improvement. Considering rapid aging, the third purpose is to show some proposals for more improvement and issues in future. The results of this study will be useful for other Asian large cities to promote barrier free improvement of railway stations.

3. Policies for Barrier Free

The policies of the disabled in Asian countries and areas including Hong Kong began with "United Nations Decade of Disabled Persons" (1983-1992) which was accepted in 1981 called "International Year of Disabled Persons". But the achievement was poor, so that "Asian and Pacific Decade of Disabled Persons" (1993-2002) was approved under the initiative of UN ESCAP and each country or area continuously developed several policies. Main emphases were focused on right of the disabled and poverty program for education, training and employment. One of twelve issues was "traffic access" but public transportation is mainly bus in most of Asian countries and areas. Therefore the priority of access for mass rapid transit was low because mass rapid transits were only developed in some large cities such as Hong Kong, Singapore and so on. This situation showed that it was not enough for the disabled to use and access of public transportation, so "Second Asian and Pacific Decade of Disabled Persons" (2003-2012) was approved and 7 important issues and 14 aims were set up. Important issue No.5 is "access to physical environment". Aim No.9 is "All government makes the standards for

access to all public facilities and public transportations in the city and farm village” and aim No.10 is “The transportation systems including existing ones should be constructed or improved for the elderly and the disabled to realize complete access”. And existing systems were required to be improved until 2012.

In Hong Kong, the Disability Discrimination Ordinance was enforced to prohibit any discrimination to the disabled in 1996. Transport Planning and Design Manual named “Facilities for People with Disabilities” was firstly made in 1987 and Design Manual named “Barrier Free Access” was also declared in 1997. Based on the Design Manual in 1997, new buildings are required to realize barrier free and existing buildings are required to make efforts for barrier free.

4. Mass Rapid Transit System in Hong Kong

On 2 December 2007, MTR Corporation Limited was newly established through the merger of old Mass Transit Railway (MTR) Corporation and Kowloon Canton Railway (KCR) Corporation. When the field survey was done in 2006, both MTR Corporation and KCR Corporation still existed. Until the merger, both MTR 7 lines and KCR 3 lines covered a large part of the Hong Kong Special Administrative Region. Both MTR and KCR lines played an important role to spread too crowded population in the Central (the tip of Kowloon Peninsula and Hong Kong Island). Most of lines were developed with closely linked to Newtown construction since 1970's. After some large new towns were developed in the New Territory, about 3.6 million which is more than half of all population live in the New Territory in 2006. KCR East line is the first railway in Hong Kong that operated in October 1910. This line has 14 stations from East Tsim Sha Tsui to Lo Wu at the border to the Main China and its business distance is 35.5 km. KCR West line operated in December 2003. This line has 9 stations from western new towns in the New Territory to Kowloon Central and its business distance is 30.5 km. KCR Ma On Shan line operated in December 2004 as KCR East branch line. This line has 9 stations from Sha Tin to northeastern New Town and its business distance is 11.4 km.

MTR Kwun Tong line which is the first subway operated on October 1979. This line has 15 stations located in early developed area of Kowloon and includes interchange station to KCR East line. Its business distance is 15.8 km. MTR Tsuen Wan line from Tsuen Wan in southern New Territory to Hong Kong Island via Kowloon Central operated in May 1982. This line has 14 stations and its business distance is 13.3 km. MTR Island line from the east to the west in the northern part of Hong Kong Island operated in May 1985. It runs through the underground of downtown of Hong Kong Island. This line has 14 stations and its business

distance is 13.3 km. MTR Tseung Kwan O line which runs from North Point station of MTR Island line to Po Lam operated in August 2002. This line has 7 stations and its business distance is 10.7 km. The circular subway network was completed by the open of Tseung Kwan O line. MTR Tung Chung line operated in July 1998 and its route is from Hong Kong station to Tung Chung Newtown in Lantau Island via Kowloon. This line has 8 stations and its business distance is 31.1 km. Airport line operated in July 1998 when Chek Lap Kok international airport opened. Its route is from the airport to downtown and it has 5 stations with business distance 35.3 km. This line and MTR Tung Chung line run in parallel. MTR Disneyland line which was constructed as a branch line of MTR Tung Chung line has 2 stations of Sunny Bay station and Disneyland Resort station with business distance 3.5 km.

METHODS

Actual barrier free conditions of all 81 stations were investigated through field surveys. The First field survey was done during 14 to 19 May 2006. The Second field survey was done during 18 to 22 October 2006. The survey items were as follows;

1. Platforms Level (PL)
 - 1) Existence of Platform-door
 - 2) Location of Lift
 - 3) Existence of Braille block (for leading and attention)
 - 4) Gap between platform and train
2. Platform Level to Concourse Level (PL-CL)
 - 1) Existence of Lift
 - 2) Existence of Escalator for up and/or down
3. Concourse Level (CL)
 - 1) Ticket Gate (automatic) for wheel-chair user
 - 2) Existence of Braille block (for leading and attention)
 - 3) Existence of Toilet (including existence of toilet for the disabled)
4. Concourse Level to Grand Level (CL-GL)
 - 1) Existence of Lift
 - 2) Existence of Escalator for up and/or down
5. Grand Level (GL)
 - 1) Existence of gap (including gap nearby exits)
 - 2) Existence of Braille block (for leading and attention)
6. Transfer
 - 1) KCR to KCR
 - 2) MTR to MTR
 - 3) KCR to MTR
 - 4) KCR to LRT (Light Rail Transit)
 - 5) KCR or MTR to Bus
 - 6) Taxi
 - 7) Private Car

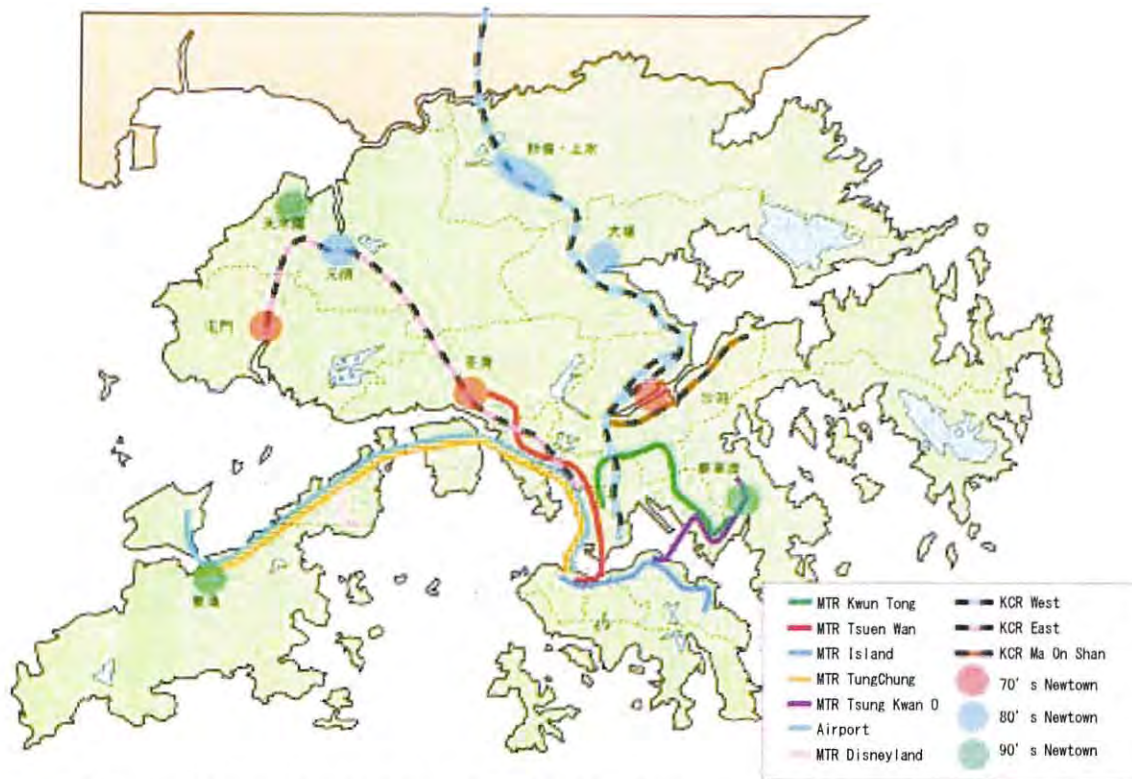


Fig.1 Mass Rapid Transit Network in Hong Kong

Table 1 List of Mass Rapid Transit Stations in Hong Kong

KCR East		Sha Tin Wai		Cheung Sha Wan		Tsung Kwan O		BUS	
Station	Transfer	City One		Sham Shui Po		Hong Kong		MTR(Tsuen Wan)	
East Tsim Sha Tsui	MTR(Tsuen Wan)	Shek Man		Prince Edward	MTR(Kwun Tong)	Po Lam		BUS	
Hung Hom	BUS	Tai Shui Hang		Mong Kok	MTR(Kwun Tong)	MTR Tung Chung			
Mong Kok		Heung On		Yau Ma Tei	MTR(Kwun Tong)	Station		Transfer	
Kowloon Tong	MTR(Kwun Tong)	Ma On Shan	BUS	Jordan		Hong Kong		MTR(Tsuen Wan)	
Tai Wai	KCR(Ma On Shan)	Wu Kai Sha	BUS	Tsim Sha Tsui	KCR(East)			BUS	
Sha Tin		MTR Kwun Tong			BUS	Kowloon		Airport	
Fo Tan		Station	Transfer	Admiralty	MTR(Island)			BUS	
Rosecourse	BUS	Yau Ma Tei	MTR(Tsuen Wan)	Central	MTR(Island)	Olympic		BUS	
University	BUS	Mong Kok	MTR(Tsuen Wan)		MTR(Tung Chung)	Nam Cheong		KCR(West)	
Tai Po Market	BUS	Prince Edward	MTR(Tsuen Wan)		Airport			BUS	
Tai Wo		Shek Kip Mei		MTR Island		Lai King		MTR(Tsuen Wan)	
Farling		Kowloon Tong	KCR(West)	Station	Transfer	Tsing Yi		BUS	
Sheung Shui	BUS	Lok Fu	BUS	Shaukei Wan		Sunny Bay		MTR(Disneyland)	
Lo Wu		Wong Tai Sin		Central	MTR(Tsuen Wan)	Tung Chung		BUS	
KCR West		Diamond Hill	BUS		MTR(Tung Chung)			Cable-car	
Station	Transfer	Choi Hung		Wan Chai	MTR(Tsuen Wan)	Airport			
Nam Cheong	MTR(Tung Chung)	Kowloon Bay		Causeway Bay	MTR(Tung Chung)	Station	Transfer		
Mai Foo	MTR(Tsuen Wan)	Ngau Tau Kok		Tin Hau	BUS	Hong Kong		MTR(Tsuen Wan)	
Tsuen Wan West	BUS	Kwun Tong		Fortress Hill				MTR(Tung Chung)	
Kam Sheung Road	BUS	Lam Tin	BUS	North Point	MTR(Tsung Kwan O)	Kowloon		BUS	
Yuen Long	BUS	Yau Tong	MTR(Tsung Kwan O)	Quarry Bay	MTR(Tsung Kwan O)			MTR(Tung Chung)	
	LRT	Tiu Keng Leng	MTR(Tsung Kwan O)	Tai Koo				BUS	
Long Ping			BUS	Shai Wan Ho		Tsing Yi		MTR(Tung Chung)	
Tin Shui Wai	LRT	MTR Tsuen Wan		Shau Kei Wan	BUS			BUS	
Siu Hong	LRT	Station	Transfer	Heng Fa Chuen		Airport		Asia World Expo	
Tuen Mun	BUS	Tsuen Wan	BUS	Chai Wan		MTR Disneyland			
	LRT	Tai Wo Hui		MTR Tsung Kwan O		Station	Transfer		
KCR Ma On Shan		Kwai Hing	BUS	Station	Transfer	Sunny Bay		MTR(Tung Chung)	
Station	Transfer	Kwai Fong	BUS	North Point	MTR(Island)	Disneyland Resort		MTR(Tung Chung)	
Tai Wai	KCR(Ma On Shan)	Lai King	MTR(Tung Chung)	Quarry Bay	MTR(Island)				
One Kung Temple	BUS	Mai Foo	KCR(West)	Yau Tong	MTR(Kwun Tong)				
		Lai Chi Kok	BUS	Tiu Keng Leng	MTR(Kwun Tong)				
					BUS				

RESULTS

Based on the field survey, the findings and the results at stations of each line are shown but those are mainly focused to common matters because of less space. However features of specific line and problems are also shown.

1. Platform Level (PL)

Platform-doors are classified into two types, one is full-covered type between ceiling and floor and another is gate-type which height about 130cm from floor of platform. The former is installed at underground stations and the latter is installed at elevated stations. The station with platform-doors of KCR East line is only East Tsim Sha Tsui station (underground) that is newly built by extension of the line. As for KCR West line, there are platform-doors at all stations including elevated ones. As for KCR Ma On Shan line, all stations are elevated and there are no platform-doors. As for MTR Kwun Tong line, there are platform-doors at 12 stations of 15 ones. 3 stations (Kowloon Bay, Ngau Tau Kok and Kwun Tong) with no platform-doors are elevated ones. As for MTR Tsuen Wan line and MTR Island line, there are platform-doors at underground stations but there are no platform-doors at elevated stations. As for MTR Tseung Kwan O line, there are platform-doors at all stations. As for MTR Tung Chung line, MTR Airport line and MTR Disneyland line, there are platform-doors at all stations. So platform-doors are attached at relatively new stations including elevated ones but attachment works of platform-doors are postponed or neglected at older stations.

The stations of KCR West line and MTR Tseung Kwan O line are very easy to use lift because lifts are located at the center of platform. The stations of KCR East line, KCR Ma On Shan line, MTR Tsuen Wan line and MTR Island line are not easy to use lift because locations of lifts are different among stations such as center, front or back of platforms. As for MTR Kwun Tong line, it is easy to use lift because locations of lifts at 10 stations of 15 ones are center of platform but it isn't easy to use lift because locations of lifts at other 5 stations are front or back. As for MTR Tung Chung line, it is easy to use lift because lift is located at center of platform at Lai King station(interchange to MTR Tsuen Wan line) but it isn't easy to use lift because locations of lifts at other 5 stations are at end of platform.

Braille block on platform is very important for safety of visual disabled. There are no faults of Braille block at all stations of KCR West line. There are many stations with Braille block at other stations of other lines but there are no Braille blocks at older stations. As for Braille block, some problems were found out because of bad maintenance or bad management with obstacles on Braille block and so on.

Administrators seem to have low consciousness about planning, construction, maintenance and management because there are several problems of Braille block at stations of new line such as MTR Tseung Kwan O line.

When wheel-chair users get on or off the train, station staffs help them with board because of gap between platform and train. Gap between platform and train is barrier for wheel-chair users, baby carriage users and stick users and causes accident. There are large gaps at University and Lo Wu station of KCR East line.

2. Platform to Concourse (PL-CL)

Existence of Lift is quite important for wheel-chair users and the visual disabled. As for Kowloon Tong and Lo Wu station of KCR East line, lift is not necessary because PL and CL are the same level. There are lifts between PL and CL at other stations of KCR East line. But there is some narrow door-width with 75cm width among existing lifts. KCR West line, KCR Ma On Shan line, MTR Kwun Tong line and MTR Tung Chung line have lifts between PL and CL at all stations. MTR Tsuen Wan line also has lifts between PL and CL at all stations. At Tsuen Wan station, there is lift on the platform for only Central direction but there is no lift on opposite side platform from Central direction.

As for move between PL and CL, more passengers use both up and down escalator. But most of passengers don't use stairs because of many steps.

3. Concourse Level (CL)

There are wide ticket gates and automatic ones for wheel-chair users nearby ticket office at every station. Braille block for leading or attention is laid to ticket gates and ticket machines. Most of stations have 4 exits but only one exit usually has Braille block for leading. Because only one exit has slope for difference between CL and GL, it is limited for the disabled to use exit. CL has the same problems as platform that there are obstacles on Braille block.

As for KCR line stations, there are toilet for male and toilet for female as well as multipurpose toilet with wheel-chair mark. But door of multipurpose toilet is not suitable for wheel-chair users. Moreover heavy door of is not suitable for the elderly and children. As for MTR line stations, there are not any toilets. At most of MTR line stations, passengers can use toilets of adjacent commercial facilities but they passengers feel inconvenience so much.

4. Concourse to Grand level (CL-GL)

All stations with difference of over one floor between CL and GL have stairs and escalators for up and down at. Lift is necessary for wheel-chair users and the visual disabled to move. As for KCR Ma On Shan line, 5 stations have the same

level of Concourse as GL. 4 stations have lifts between CL and GL. Ma On Shan station is directly connected to commercial facility at CL and is connected to GL by the lift of commercial facility. Other 3 stations have lifts only for station.

As for MTR Kwun Tong line, 12 stations are underground ones but 5 have no lifts between CL and GL. The stations without ordinary lifts have rail-lift or lift only for wheel-chair users but they are far from exits. Yau Tong and Tiu Keng Leng station have the same level of concourse as GL. As for MTR Island line, 8 stations without lifts have stairs and escalators. 6 stations have lifts between CL and GL. Causeway Bay station has only one exit with lift in spite of many exits. As for MTR Tung Chung line, 6 stations have lifts between CL and GL. Sunny Bay station and Tung Chung terminus station don't have lifts between CL and GL and have slopes with handrail. As for MTR Tueng Wan O line, 6 stations don't have lifts and have little gaps between CL and GL but passengers can use slopes nearby stairs. North Point interchange station and Quarry Bay station have lifts between CL and GL.

5. Grand Level (GL)

Large problem on the grand level is a gap between station exit and pedestrian way. This gap with several steps prevents water influx in case of heavy rain but this gap is barrier for the disabled. Especially, old line which passes through the central business district in Hong Kong Island and Kowloon is late to be improved for barrier free because of many users and many exits from GL to CL of station. Because exit for the visual disabled is quite limited and there is less coordination with road management, Braille blocks on pedestrian way around stations aren't often laid.

6. Transfer

As for MTR to MTR interchange, passengers can't sometimes transfer smoothly because of structure of station but they can usually transfer at opposite side of arrival platform. As for MTR to KCR interchange, passengers can smoothly at Kowloon Tong and Mei Foo station but those are rare cases of smooth transfer for the reasons why there is only one lift on the platform, the location of lift is too far, the access has long distance and there are several stairs on the way. As for KCR to KCR interchange, passengers can transfer smoothly at Tai Wai station through the large slope in spite of the gap between two platforms. Along KCR West line between Yuen Long and Tuen Mun, LRT almost runs side by side. There are many barriers at the transfer from KCR West line to LRT because LRT is the streetcar.

KCR and MTR stations have bus terminals or bus stops near the exit of the stations. But bus terminals near KCR and MTR stations have various barriers to prevent

smooth transfer except some stations. Barriers are gaps between station exit and floor of the bus terminal, un-installation of automatic door, single hinged door or sliding door, edge stone of the pedestrian way, crossing of the roadway, fence of the bus stop and so on. The bus terminals at Haung Hau and Tseung Kwan O stations of MTR Tseung Kwan O line are good cases because both stations have flat and simple ways to the station and easy access. If barriers between exit and pedestrian way are removed, passengers can transfer smoothly. But in the case of different agencies such as MTR Corporation and Bus Company, total barrier free performance is not going on well.

Usual stations have taxi stands near the exit but some stations have those far from the exits. There are many pick up points of private cars but they are not easily found out because signs of pick up points are obscure different from taxi's ones.

DISCUSSION

New lines operated one after another but there are lots of old-fashioned stations of relatively older lines. The older lines get behind in barrier free improvement and are left without improvement. The priority of new line construction gives delay of barrier free improvement to the old stations.

Cooperation and adjustment among different traffic administrators aren't enough. Thus there is less consideration for realization of whole and successive barrier free improvement.

Because traffic administrator doesn't adequately recognize necessity of barrier free improvement, improvement projects including addition of lifts aren't enough. As the result, there are some cases of ineffective barrier free maintenance. There are also some cases of unsuitable situations because the process of improvement has problems even though it is carried out as barrier free improvement. There are some cases that Braille blocks disappear on the way and it means correspondence to remove barriers is not enough.

Enquiry of traffic agency accepts opinions and requests of the elderly and the disabled directly and indirectly through such as telephone and e-mail. But it isn't guaranteed that opinions and requests should be reflected to the barrier free improvement plan and specific improvement works.

CONCLUSION

If it considers that the area around station is regarded as "the surface", spot barrier free improvement still remains "point" improvement of stations and various buildings

and it is not enough for desirable or complete barrier free.

Based on spot investigation, barrier free improvement is focused on hardware, mainly physical barrier solution. Therefore, barrier free improvement at stations of relatively older lines are neglected, postponed or delayed because of difficulty.

In downtown, access between station and commercial facilities around the stations isn't improved for barrier free. As for station located in suburb such as new towns or housing complex, access between station and residential area is not improved for barrier free. For the time being, it is necessary to improve stations of older lines, and then it will be important that access as "the line" linked to station, commercial facilities around the station and residential area should be improved barrier free. According to barrier free improvement of pedestrian way, "the surface" (barrier free area) with spatial extension will be completed.

As for software, it is necessary for traffic administrator and related governmental department to understand importance of barrier free more and to take positive measures for barrier free.

According to the results of field survey, cooperation and adjustment are not enough between KCR and MTR. On 2 December 2007, MTR Corporation Limited was newly established through the merger of old MTR and KCR. The new MTR administrator should have more consideration to barrier free and promote barrier free improvement more and more. The new MTR administrator should strengthen cooperation and adjustment for barrier free among MTR and other administrators such as bus companies. And adjustment among MTR, road administrator and building owners around the station should be also necessary.

Coordinating committee consisting "the traffic weak" such as the elderly, the disabled and so on, traffic administrators and related organizations should be established in order to reflect opinions and requests of "the traffic weak" and to make better barrier free improvement plan.

REFERENCES

- (1) ESCAP (2006) Disability at a Glance: Profile of 28 Countries and Areas in Asia and the Pacific
- (2) HK Census and Statistics Department (2006) Hong Kong Population Projections
- (3) UN (1982) United Nations Decade of Disabled Persons
- (4) ESCAP (1992) Asian and Pacific Decade of Disabled Persons (1993-2002)
- (5) ESCAP (2002) The Second Asian and Pacific Decade of Disabled Persons (2003-2012)