

Appendix 10 Proceedings of the Disable Workshop

Proceedings
on
The Workshop
toward
Accessible LRT System in Colombo, Sri Lanka

September 6th & 7th 2017, MMWD



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1 Background and Objective of the Workshop

1.1 Background

The JICA Feasibility Study Project, “The Preparatory Study on the Project for Establishment of New Light Rail Transit (LRT) System in Colombo” emphasizes the accessibility of the LRT to all beneficiaries such as pregnant women, women with small children, elderly persons, and persons with disabilities. The design accessible to such population is beneficial for all passengers such as passengers with large luggage. By introducing the example of Japan and other countries, the workshop pursues the station design accessible to all users.

JICA promotes the idea of “Mainstreaming disability” which aims to include disabled people in the development process of infrastructure as well as gender mainstreaming. Under the ideas, the Study involves the disabled persons and women in the design stage to directly reflect their opinions.

Regarding on the barrier-free transportation, the government of Sri Lanka prescribes “Protection of the Rights of Persons with Disabilities Act, No. 28 of 1996” to ensure the equal rights of the disabled persons. In addition, Minister of Social Services and Social Welfare prescribed “Disabled Persons (Accessibility) Regulations, No. 1 of 2006” to ensure the accessibilities of disabled people in all public buildings and transportation. In response to the regulation, a certain number of facilities installed the slopes, handrails elevators but most of the train stations were built before the regulation and their designs are far from barrier-free. Poor road condition and the design of the station currently prevent disabled persons from going out and using the public transportation by themselves.

Under the conditions, the Study Team aims to make the new LRT system to be accessible to all expected passengers regardless of their disabilities. The Study Team identifies that raising awareness of the government officers who will be in charge of the new LRT system and learning Japanese history and practices of barrier-free transportation are essential to achieve the goal. Learning the practices of Japanese barrier-free process such as field experiment and hands-on trial are effective for the Sri Lankan government officials to implement the same activities in the detailed design phase.

Project Management Unit (PMU) of Ministry of Megapolis and Western Development (MMWD) is the main organizer of the workshop and JICA Study Team provided technical assistance. JICA has been implementing the projects related with disabilities for long time in various fields and JICA Sri Lanka Office has strong working relationship with stakeholders such as government officials and party organizations. Thus, JICA Sri Lanka offices assisted PMU to introduce the focal points of the stakeholders. As a part of long-term JICA’s partnership of disability sector, ten Japan Overseas Cooperation Volunteers who are specializing in the field of disability are currently working in Sri Lanka and four of these volunteers participated in the workshop to assist the group discussion and trial of the facility.

1.2 Objective

The objective of the workshop is to understand the needs of expected users who needs special cares to be barrier-free station areas in the new LRT system and to raise the awareness of counterpart agencies regarding to the barrier free design.

Throughout the communication with the party organizations, it is designed to mutually understand the difficulties relating to the mobility of persons with disabilities by experiencing the limitation of movement. It was expected to formulate the action plan by the group discussion with various stakeholders.

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Also trial of the actual size of the station facilities can verify the usability of major facilities such as LRT station buildings to be constructed in the future (ticket gates, elevators, ticket vending machines, platform, and handrail) and usability of the dimensions.

1.3 Workshop Program Outline

The workshop was conducted as a two-day program. The objective of the first day was to understand the barrier-free transportation in Japan and current challenges of the public transportation in Sri Lanka.

Foundation for Promoting Personal Mobility and Ecological Transportation (ECOMO Foundation) made two presentations about explanation of barrier-free concepts, its history of development, and practices of barrier-free transportation in Japan as well as examples of human resource development activities. These presentations enabled participants to have general understanding of disability and barrier-free and more concrete examples of what to be achieved in Sri Lanka. Group discussion followed after these presentations with different topics toward accessible LRT system in Sri Lanka. Each group presented the result of the group discussion.

After having understanding of barrier-free/accessible transportation from the first day’s program, the second day, all participants had opportunities to learn the actual challenges for persons with disability to use public transportation. In order to verify the usability of barrier-free facilities (ticket vending machine, ticket gate, handrail, elevator, platform) at LRT station, disabled participants and participants without disability using supporting tools (wheel chair, crutches, eyes mask, elderly experience kits) tried the models of actual size of the station facilities and gave their specific comments and suggestions on each item.

JICA Study Team and PMU collected the result of the discussion and feedbacks regarding to the usability of the station facilities. The data will be compiled to utilize as references for future design consideration of LRT station facilities in the future. Result of the group works and the trial of the station facilities are summarized in the Section 4 and Section 6 of this report. Following are the agenda of the two-day workshop.

1st day, September 6, 2017 (Wednesday)

Theme: Introduction of the Japanese Barrier-free activities

Time	Item	Lecturers
8:30-9:00	Registration	
9:00-9:20	Opening Remarks Ice Breaking	Mr. H.M.J.J Herath MMWD
9:20-9:30	Introduction of the LRT Project	Mr. H.M.J.J Herath MMWD
9:30-10:00	Understanding disability	Mr. Atsushi Matsubara ECOMO-foundation
10:00-10:30	Effort for barrier-free transportation in Japan	Ms. Keiko Takeshima ECOMO-foundation
10:30-10:40	Coffee Break	
10:40-10:55	Introduction of the concept of station design	Mr. Yoshihisa Asada JICA Study Team
10:55-11:25	Group Discussion (Topic : Issues on barrier-free in Sri Lanka and Action Plan to solve the issues)	All Participants
11:25-11:50	Presentation on the result of the Group Discussion	All Participants
11:50-12:00	Closing Remarks	Mr. H.M.J.J Herath MMWD

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2nd day, September 7, 2017 (Thursday)

Theme: Needs for accessible LRT Station

Time	Item	Lecturers
8:30-9:00	Registration	
9:00-9:20	Opening remarks	Mr. Chaminda Ariyasada MMWD
9:20-9:40	Challenges to use public transportation	Mr. Mr.
9:40-10:00	Preparation and explanation of the assessment of the accessible route for disabled persons	Facilitators: Ecomofoundation, JICA Study Team
10:00-11:00	Needs/evaluation on sizes of facilities for LRT station for all (Target: ticket wicket /ticketing machine / handrail/ elevator/ slope/platform)	
11:00-11:10	Coffee Break	
11:10-10:50	Wrap up of the assessment on route (Mutual understanding of barriers)	All Participants
11:50-12:00	Wrap up and closing remarks	Mr. Chaminda Ariyasada MMWD

2 Opening Remarks

2.1 Opening Remarks from Mr. H.M.J.J Herath (on 6th September, 2017)

On the 1st day (Sept. 6th), Mr. H.M.J.J Herath, PMU- MMWD delivered opening remark and explained the objectives of “the Workshop toward Accessible LRT System”.

Mr. Herath introduced the participants from government organizations, stakeholders and other organizations and expressed his gratitude for their attendance. He explained the background of the LRT project which aims to solve current traffic congestion problem in Colombo. He also stated the project’s mission with the target users are not only normal people but also for people with disability. In the latter part of his remarks, Mr. Herath emphasized that the workshop will help participants to have better understanding on the LRT project and contribute to develop practical design concepts for station facilities by the feedback from participants during the presentation, discussion and actual trial.

At the end of the remarks the introduction video of the LRT project in Sri Lanka was presented to envision the image of the future transport for the participants.



Figure 2-1 Opening Remark from Mr. H.M.J.J Herath (PMU-MMWD)

2.2 Opening Remarks from Mr. Chaminda Ariyadasa

On the 2nd day (Sept. 7th), Mr. Chaminda Ariyadasa, Project Director of LRT project-MMWD, gave an opening remark on the workshop.

Mr. Chaminda Ariyadasa welcomed all participants who participated in the workshop and contributed to share their experience and comments on the station facilities of the LRT system. In addition, Mr. Ariyadasa expressed the importance of holding such workshop to understand future users’ comments and feedback on the LRT system. He explained that every person using public transport means that it includes disabled people. Therefore, accessibility is one of important concepts that LRT system in Sri Lanka has to follow. The contribution of this workshop is essential to have valuable comments at this planning stage of the LRT system.

Especially, he strongly hoped and believed that this workshop will bring advantages to the LRT project to have the most accessible system in Sri Lanka.



Figure 2-2 Opening remark from Mr. Chaminda Ariyasada (PD-PMU-MMWD)

3 Presentation by ECOMO Foundation and JICA Study Team

In order to learn the practices of barrier-free transportation in Japan, JICA Study Team invited the advisors from ECOMO Foundation (Foundation for Promoting Personal Mobility and Ecological Transportation). ECOMO Foundation is a semipublic corporation established in 1994 under the authorization of Ministry of Land, Infrastructure, Transport and Tourism, Japan. The organization's objectives are the creation of a social environment friendly both for humans and for the environment through awareness activities, providing information, conducting research, equipping, possessing, leasing and offering other supports for facilities which improve mobility for the elderly and the disabled, through solving global environmental issues, and through promoting and assisting international exchanges on a regional level. ECOMO Foundation has been engaging in formulating the guidelines of accessible transportation and engaging in the human resource development program related to the barrier-free transportation.

3.1 Understanding Disability

Mr. Atsushi Matsubara, Manager of Division for Promoting Accessible Transportation, ECOMO Foundation made a presentation about “Understanding Disability”.

Mr. Matsubara first explained the target of barrier-free transportation and their characteristics - elderly persons, physically impaired, persons suffering from internal disorders, visual impaired, persons suffering from hearing and speech disorders, persons with intellectual disabilities, mental impaired, persons with developmental disabilities, pregnant women, persons with infants, foreigners, others (temporary injuries, illness, persons carrying heavy load). In the latter part of the presentation, he introduced the history of legislation related to the barrier-free transportation and its detail which are the step-by-step progress by taking long time.

Throughout the presentation, he emphasized that barrier-free is not the matter of disabled people but all of the people because becoming the elderly person is the synonym of being disabled in terms of mobility. He also emphasized that the actual field trial is essential to realize the barriers in the designed route.

For the detail of the presentation, please refer to Appendix- 2 presentation of the speakers.



Figure 3-1 Presentation from Mr. Matsubara, ECOMO foundation

3.2 Understanding Disability: Effort for barrier-free transportation in Japan

Ms. Keiko Takeshima, Section Manager of Promotion Division for Accessible Transportation, ECOMO foundation made a presentation about the example of barrier-free transportation system in Japan.

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Ms. Takeshima presented the specific examples of the barrier in the station such as slope, elevator, guiding blocks, ticket vending machine, ticketing gate, toilet, and platform door and showed its standard for each facility. In the latter part of her presentation, she introduced the examples of ECOMO Foundation’s works related to barrier-free transportation such as website to search accessible route, maps and human resource development programs to raise awareness of officers in transport companies and students.

For the detail of the presentation, please refer to Appendix- 2 presentation of the speakers.



Figure 3-2 Presentation from Ms. Keiko Takeshima, ECOMO foundation

3.3 LRT Station Tentative Design Concept

Mr. Yoshihisa Asada, Team Leader of the LRT Project, JICA Study Team presented the tentative concept of LRT station system in Sri Lanka. In this presentation, Mr. Yoshihisa Asada explained the concept of the structure of facilities such as ticket vending machine, ticket gate, station staff office, information board, platform, scene door, benches, and so on. The presentation enabled the participants to have tangible ideas of discussion topic about station facilities in the next section.



Figure 3-3 Presentation from Mr. Yoshihisa Asada, JICA Study Team

4 Topic of the Group Discussion and Its Result with Members

4.1 Topics for Group Discussion

In order to share and discuss the current challenges and actions to be taken toward an accessible LRT system in Sri Lanka, the workshop conducted the group discussion about the topics below. Participants were divided into five groups based on the organizations and kind of disabilities so that government officials and the members of the party organizations are in the same group to their perspectives.

After the group works, one member from each group presented the results of the discussion. This group discussion was considered as a first step to understand the current barrier-free condition in Sri Lanka and challenges to overcome for Sri Lanka in order to achieve the accessibility in the LRT system.

Group A and B: Station facility 1&2: ticket gate, gap, stairs, etc
Group C: Access to station: road condition, other transportation modes, etc
Group D: Inside of vehicle: seat condition, announcement, etc
Group E: Human resource development: awareness of users and railway company officers

Details of discussion results are shown in the following section.

4.2 Details of Discussion Presentation

1) Group A and B : Station Facilities

Since the comments on the station facilities are invaluable to develop the accessible LRT, two groups (Group A and B) discussed about the station facilities considering the underdeveloped barrier-free infrastructure in Sri Lanka. Major concerns about the station facilities are the specific facilities such as ticket gate, ticket vending machine, stairs, elevator, and other security installations such as CCTV.



Mr. Charles Mendis (MHTA-SL)



Ms. Shalika Karunaratna (SLCB)

Figure 4-1 Presentation of Group A&B on Station Facilities

Table 4-1 Station Facilities Discussion Results

Topic	Discussion Result
Station	<u>Ticket Gate:</u> - Width of the gate should be wide enough for wheel chair users

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Topic	Discussion Result
facilities	<ul style="list-style-type: none"> - Time period of inserting the ticket and opening up the gate should be long enough for a disable person to pass - Guide blocks should be provided - Call button should be equipped to ask for assistance - Colour contrast should be considered for low vision people <p><u>Ticket Vending Machine:</u></p> <ul style="list-style-type: none"> - Tactile markings should be installed on touch screen and audio - Call button should be equipped to ask for assistance <p><u>Stair:</u></p> <ul style="list-style-type: none"> - Two level of handrail is needed - Colour contrast and low steps for easy climb-up (avoid high step stairs) - Warning tiles at beginning and end of the stairs should be installed - Audio announcement should be audible enough to hear over crowds <p><u>Elevator:</u></p> <ul style="list-style-type: none"> - Should be prioritized for users in need - Use transparent material for easier notice in case of incident - Guide block should be installed <p><u>Others</u></p> <ul style="list-style-type: none"> - CCTV should be equipped - Ticket should be readable for disabled people

2) Group C: Access to Station

Access to station is also one of major concerns for people with disabilities. Figure 4-2 shows the presentation from Group C. Since Mr. Siriwardane, the presenter of the group has traveled and experienced railway systems in many countries, he suggested that the gap between train and platform should be minimized as much as possible for people using wheelchair.

Details for the results of discussion are presented as in Table 4-2.



Mr. C. Siriwardena (SLRFD)

Figure 4-2 Presentation of Group C of the discussion on access to station

Table 4-2 Access to station discussion results

Topic	Discussion Result
Access to station	<ul style="list-style-type: none"> - Gap between train and platform should be minimized for wheelchair users - There should be a separate bus stops for each station - Separate parking area for private vehicle users - Design a pathway for bus stop and parking area to elevator including guide blocks - Design accessible path to station (suitable pedestrian crossing as subway, flyover) - Information signs to guide paths and entrance (braille, tactile map)

3) Group D: Inside Vehicle

Members of Group D discussed the topic about inside vehicle. During the presentation, they pointed out about facilities gate, parking place, announcement as well as guide block for people with visual impaired.



Mr. Prasanna Piyadigama (Department of Persons with Disability)
 Figure 4-3 Presentation of Group D of the discussion on inside vehicle

Table 4-3 Inside vehicle discussion results

Topic	Discussion Result
Inside vehicle	<ul style="list-style-type: none"> - Expect automatic door with sensor - Parking place for wheel chair users (symbol should display) - Navigation map should be displayed with station - Station location (present and next) should be announced - Voice record equipment should be installed - Guide block should be affixed on floor - Full map of train route is necessary

4) Goup E: Human Resource Development

Members of Group E discussed the topic about on human resource development focusing on the development of staff training system so that in any situation, the staff knows how to behave appropriately. In addition, they also expressed that getting feedback from the users is essential. Summary of the discussion is shown in the Table 4-4.



Mr. Janaka Hemathilaka (Janakashan)

Figure 4-4 Presentation of Group E on the discussion of human resource development

Table 4-4 Human resource development discussion result

Topic	Discussion Result
Human resource development	<ul style="list-style-type: none"> - Understanding of train users: disabled people, school children, elders - Disability care system - Helpdesk or information desk - Sign boards should be provided - Proper user analysis - Customer feedback system - Alternative communication mean (leaflets with attractive design,..) - Management system (setting up minimal standards) - Staff development activities (Customer care training: attitude for treating disable people)

5 Presentation by Disabled Participants

5.1 Presentation from Mr. Nishantha Kumara (Thushare Talking Hands)



Figure 5-1 Presentation from Mr. Nishantha Kumara (Thushare Talking Hands)

Mr. Nishantha Kumara is a staff of Thushare Talking Hands. As he has to commute to the work place every day by himself, he uses public transportation, bus. In his presentation, he shared his experience when using public transportation such as bus and train in Sri Lanka. The experience basically focused on the difficulties when a person with visually impaired takes bus and train (inside vehicle, getting on/off vehicle, ticket and so on). Summary of his experience and suggestions are as follows:

Buses

- Disabled people should get the left side on the front seats. However, in most of the situations those seats are occupied by others.
- When getting off from the bus, disabled people couldn't find the exact stop unless a conductor guides them. Therefore, it is recommended that audio guidance should be provided.
- There are difficulties when buying a ticket and getting change. Hence, proper regulations and system should be developed to reduce these challenges.

Trains

- It is difficult to board and alight to the trains. Therefore, level boarding system should be implemented.
- There is no signal system for visually impaired people to find locations/places. It is necessary to install voice aids system/announcement in each station.

5.2 Presentation from Mr. C. Siriwardena (SLRFD)



Figure 5-2 Presentation from Mr. C. Siriwardena (SLRFD)

Mr. Siriwardena is being a member of SLRFD (Sri Lankan Foundation of Rehabilitation of the Disabled). In his presentation, he shared experience when using public transport modes like bus and train not only in Sri Lanka but also in other countries. The presentation widely covered the regulation standard for LRT system facilities and suggestion on design consideration that LRT system in Sri Lanka should follow.

For the detail of the presentation, please refer to Appendix- 3.

Summary on the presentation from Mr. Siriwardane is as follows:

- Regulations of Sri Lanka (Act, No 28 of 1996; Disabled Persons (Accessibility) Regulations No,1, 2006): space requirements for persons using mobility devices, design requirements to be adopted in public buildings, public places where common services are available.
- Introduction of English/ behavior using to treat disabled people. For different situation when interact with disable person, proper behavior should be used to treat with (who using wheelchair, who with visual impaired, who with hearing impaired. In addition, using English phrases, word in proper way should be considered while communicate with disable person or when mention about disable people with different disabilities.
- Proposed amendments to Accessibility Regulation: Based on experience, Mr. Siriwardane proposed some amendments to regulations of railway station in Sri Lanka:
 - A) Approach to Railway Station / Terminal
 - *The approach shall not have a difference in level. If a level difference is unavoidable, install a ramp or a ramp plus staircase.*
 - B) Floor Surfaces
 - *Pathways shall be constructed of non-slip material. At places where there is a difference in level, such as where staircases meet floor, it is desirable that the appearance of the surface material be changed using colour contrast both immediately before and after that area.*
 - *The approach pathway shall have guiding blocks for persons with impaired vision.*
 - *If the approach pathway is parallel to a road for vehicles, enhance the safety of pedestrians by installing guard rails.*
 - C) Railway Station Entrances and Exits
 - *The railway station / terminal entrance or exit shall not have a difference in level. If a level difference is unavoidable, install a ramp or a ramp plus staircase.*
 - *It is desirable that space be marked out near the entrance and exit for vehicles carrying wheelchair users.*

-
- D) Entrance for disabled persons
- *The width of the entrance shall be at least 1800 mm.*
 - *The entrance shall not have a difference in level, If a level difference is unavoidable, install a ramp or a ramp plus staircase.*
 - *The floor surface of an entrance shall be made of non-slip material. At places where there is a difference in level such as stairs, it is desirable that the appearance of the surface material be changed using colour contrast.*
 - *Ensure that columns, signboards, and other fixtures do not protrude from wall surfaces to form an obstruction or obstacle.*
 - *Install guiding blocks on the concourse for persons with impaired vision*
- E) Lifts (Elevators)
- *For the lift (elevator) install two guiding blocks of minimum size 300mm x 300mm for persons with impaired vision 300mm. away from the call button.*
- F) Toilets
- *Provide a toilet and wash basin suitable for use by wheelchair users and other disabled.*
- G) Reservation or Information Counters
- *Reservation or information counters shall have unobstructed approaches for wheelchair users.*
 - *Counter heights for the use of the disabled shall not be in excess of 850 mm.*
- H) Ticket Gates
- *At least one of the ticket gates shall be wide enough allow wheelchair users to pass through easily.*
 - *One of the ticket gates shall have a continuous line of guiding blocks for persons with impaired vision.*
- I) Ticket Vending Machines
- *The coin slot shall be at a suitable height for easy insertion of coins by wheelchair users.*
 - *A knee recess beneath the ticket vending machines shall be provided.*
 - *Install guiding blocks for persons with impaired vision 300mm. away from the ticket vending machine.*
 - *The fare buttons, cancel buttons and other information buttons shall be written in braille also or in a distinct relief pattern.*
- J) Information, Signs and Announcements
- *The information board shall be made easily readable by using sufficiently large text size, distinct contrast and illumination.*
 - *It is desirable that in addition to a printed version of train schedule, table of fares and other travel information also be in Braille, fixed at a convenient height or printed in braille on readily available brochures.*
 - *Information on train arrivals and departures must be visually indicated by, for example, using an electronic signboard, in addition to broadcast announcements.*
- K) Platforms
- *The platform shall have one row of dotted guiding blocks for persons with visual impairments 800mm from the edge.*
 - *A fence shall be installed at both ends of the platform to protect visually impaired passengers from falling off*
 - *The surface of the platform shall be slip resistant.*
 - *Stairs, kiosks and dustbins on the platform must not hinder the clear passage of persons with visual impairments, wheelchair users and ambulant disabled.*
 - *A bench shall be installed on the platform, indicating it is reserved for the disabled.*

6 Trial of the Station Facilities and Disability Experience Tools

6.1 Overview of the Trial

On the 2nd day of the workshop, in order to mutually understand the difficulties in mobility of disabled people, participants without disabilities experienced the limitation of movement by using elderly person experience kit or supporting equipment such as wheelchair, crutches, eye mask with stick for visually disabled person.

By experiencing trial of the station facilities, JICA Study Team confirmed the usability and dimensions of the major LRT station facilities which will be constructed in the future such as ticket vending machine, ticket gate, handrail, elevator, and platform.

Following is the step of the trial of the facilities

1. Participants wear or experience experiment kit (Wheelchair, eye mask and stick, elbow crutch, supporting stick, elderly person experience kit)
2. Each participant experiences from ticket vending machine, ticket gate, handrail, elevator and platform
3. After experience, provide feedback to PMU

This time, since the characteristics of the elderly persons represents the major characteristics of disabled people such as low vision, hearing, sense of touch, moving, JICA Study Team prepared the elderly person experience kit shown in the figure below. This kit is widely used in Japanese schools and public and private sector to train and educate about the awareness of disabled people and elderly people.



Figure 6-1 Elderly person experience kit used in the workshop



Figure 6-2 Participants experienced elderly person experience kit

6.2 Methodology and Result of the Trial

Over layout of the trial is shown in Figure 6-3 (Left). The layout and route are considered as close as possible for the actual route in the station. Participants tried each facility in order ticket vending machine, ticket gate, handrail, elevator and platform, and gave feedback for each facility by filling out the monitoring form.

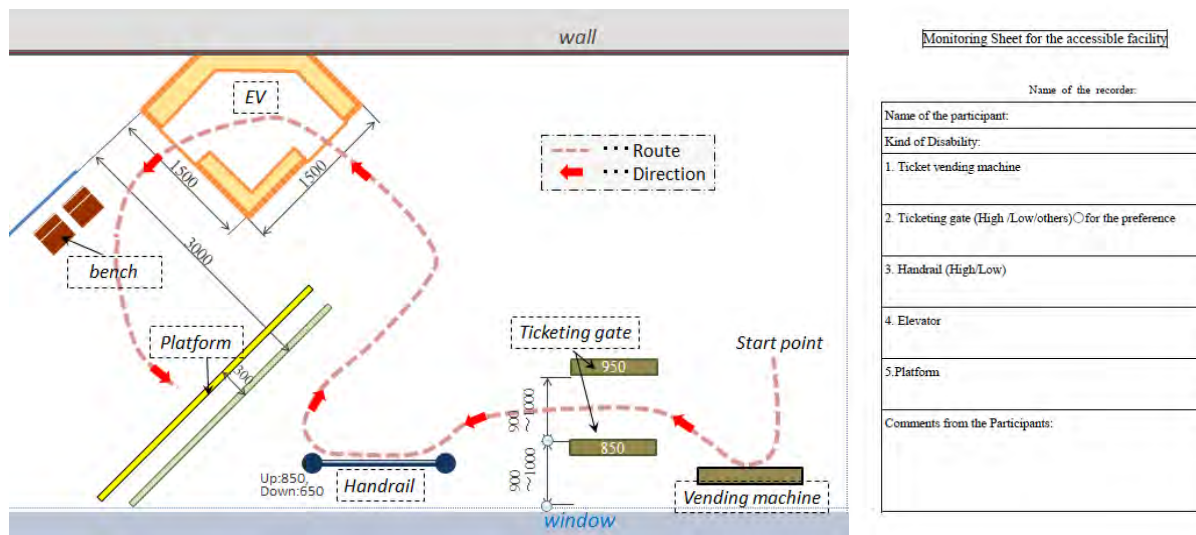


Figure 6-3 (Left) Overall layout of the trial (Right) Monitoring form

Details of trial of each facility and its results are as follows:

1) Trial of Vending Ticket Machine

(a) Methodology of the Trial

The size of the vending machine follows the regulation of Sri Lanka, “Disabled Persons (Accessibility) Regulations No1, 2006” as shown in the figure below. A white board with A0 paper was used for the purpose of checking the reach of the participants. During the trial each participant came close to the whiteboard as if they actually purchase a ticket and mark on the paper where they could actually reach.

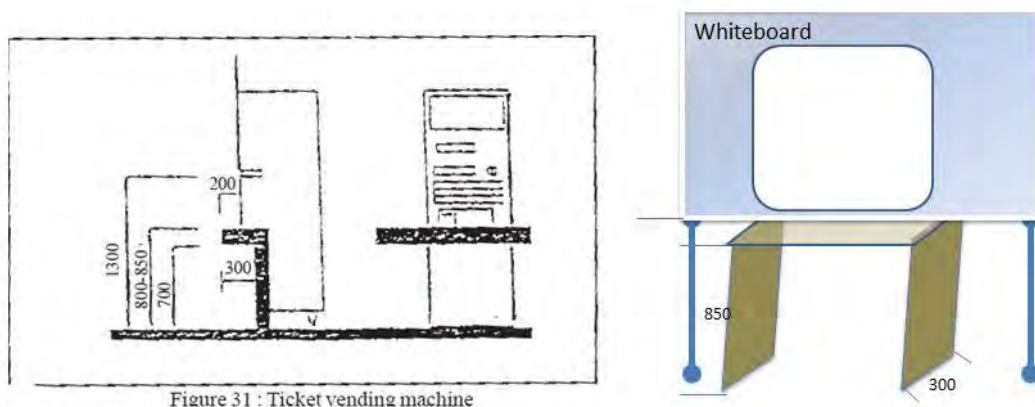


Figure 6-4 Layout of the ticket gate trial

(b) Result of the Trial

Result of the trial is summarized as follows. Almost all of the participants marked below 130cm as shown in the picture in the right side. Height of the vending machine and location of the bill and coin slot should be considered based on the result.

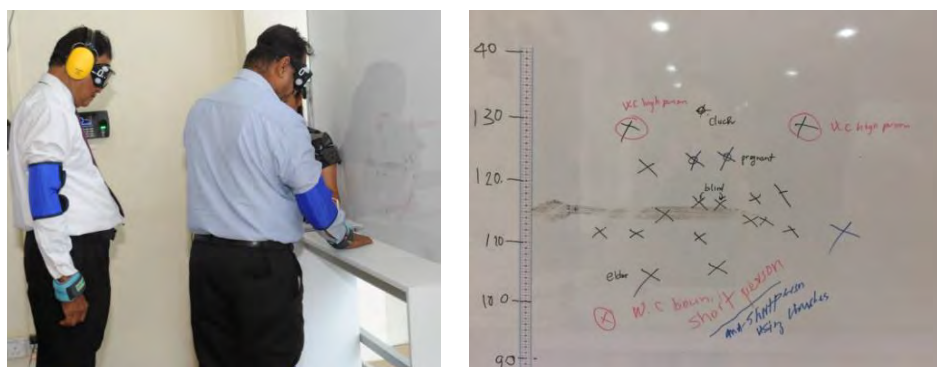


Figure 6-5 Result of trial mockup (ticket vending machine, unit: cm)

Table 6-1 Result of the trial by each participant

No.	Comment	Kind of disability
1	Up to 85 cm	Mobility handicapped (Paralysis of Legs)
2	Low	-
3	OK	-
4	Low	Elderly-Wheelchair
5	Reaching heights were marked	Wheel chair user
6	Table height was OK	Elderly
7	OK	Blind
8	OK	Deaf
9	OK	-
10	OK	-
11	OK	Deaf
12	Good	-
13	OK	Elbow crutch
14	Good	Using crutches
15	Ok	Visually impaired
16	OK	Visually impaired
17	Very Good	Pregnant
18	Very Good	Pregnant
19	OK	Blind
20	Height is OK. If it is a touch screen, there should be tactile marking and audio output. Button should have various sizes so that person who doesn't know braille can understand. There should be a simple lighting.	Low vision

2) Trial of Ticket Gate

(a) Methodology of the Trial

Trial of the ticket gate includes two components, verifying the width between gates and height of the gate. For the trial of the width of the gate, while the Sri Lanka’s regulation is 900mm and the Japanese barrier-free guideline is 1000mm. Therefore, the trial prepared movable gates to check the two widths, 900mm and 1000mm to check which width is more comfortable for some of the participants such as wheelchair users.

As for the height of the gate two different heights (850 mm and 950 mm) were examined to check the usability of the participants.

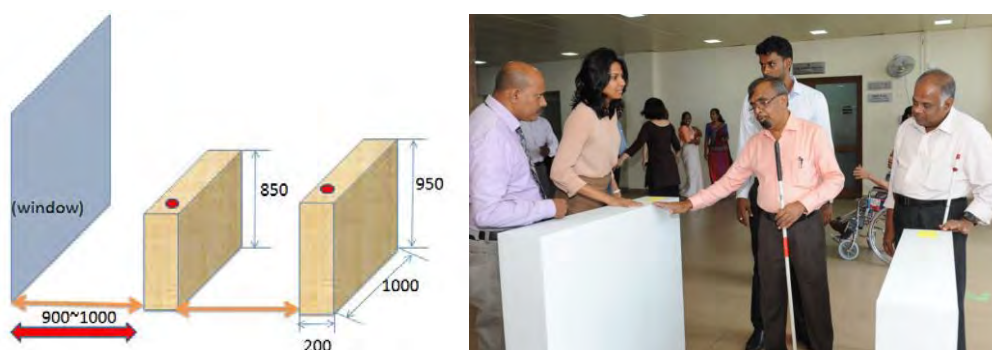


Figure 6-6 Model and trial of the ticket gate

(b) Result of the Trial

Results of the trial are summarized in the table below. For the width between the gates, disabled participants commented 900mm is enough, but for those who tried supporting equipment for the first time commented 1000mm is comfortable and 900mm is narrow for those who are not used to use the supporting equipment.

Table 6-2 Result of the trail by height

No.	Comment	Kind of disability
1	Low	Mobility handicapped (Paralysis of Legs)
2	Low	-
3	OK	-
4	Low	Elderly-Wheelchair
5	Both height levels are OK	Wheel chair user
6	Low level. Entrance width should be wider	Elderly
7	High	Blind
8	Low	Deaf
9	Low	-
10	Low	-
11	Low	Deaf
12	High	-
13	Middle	Elbow crutch
14	High	Using crutches
15	Both height levels are OK	Visually impaired
16	Both height levels are OK	Visually impaired
17	Both height levels are OK	Pregnant

No.	Comment	Kind of disability
18	Excellent	Pregnant
19	High & a way to properly identify the ticket positioning	Blind
20	The one in the left side high is ok. Emergency call button should be there.	Low vision

3) Trial of the Handrail

(a) Methodology of the Trial

The Japanese barrier-free guideline stipulates that handrails to be two levels and their heights are 850mm and 650mm. Thus, the trial prepared the handrail which followed the Japanese guideline and check the usability of the participants.

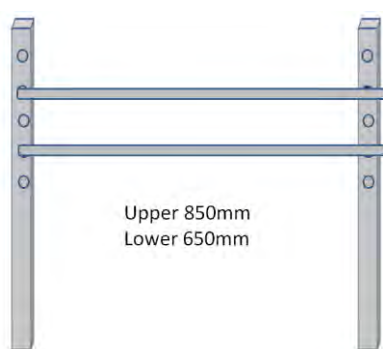


Figure 6-7 (Left) Size of the handrail (Right) Trial of the handrail

(b) Result of the Trial

Result of the trial of the handrail is summarized as shown in the table below. Both heights have preference for certain participants. That means necessity of two levels is verified and the Japanese standard is also applicable to Sri Lankan participants including disabled people.

Table 6-3 Result of the trial of handrail

No.	Comment	Kind of disability
1	Should be fix at both sides as 78cm	Mobility handicapped (Paralysis of Legs)
2	Low	-
3	OK	-
4	Average / Low	Elderly-Wheelchair
5	Not required for wheelchair user	Wheel chair user
6	High	Elderly
7	High	Blind
8	High	Deaf
9	High	-
10	High	-
11	High	Deaf
12	High	-
13	High	Elbow crutch
14	High	Using crutches

No.	Comment	Kind of disability
15	Both levels are OK	Visually impaired
16	Both levels are OK	Visually impaired
17	Good	Pregnant
18	Good	Pregnant
19	High	Blind
20	Top height is excellent.	Low vision

4) Trial of Elevator

(a) Methodology of the Trial

Since the type of the elevator which will be installed in the station is not available in Sri Lanka, JICA Study Team formed the actual size of the elevator based on the Japanese standard. One of the significant characteristics is that the elevator has two vertically located doors. This facilitates the mobility of the passengers with wheelchair in that they do not have to turn around in the elevator. The trial is designed to confirm that all users can comfortably use the elevator in terms of space, entrance width and so on.

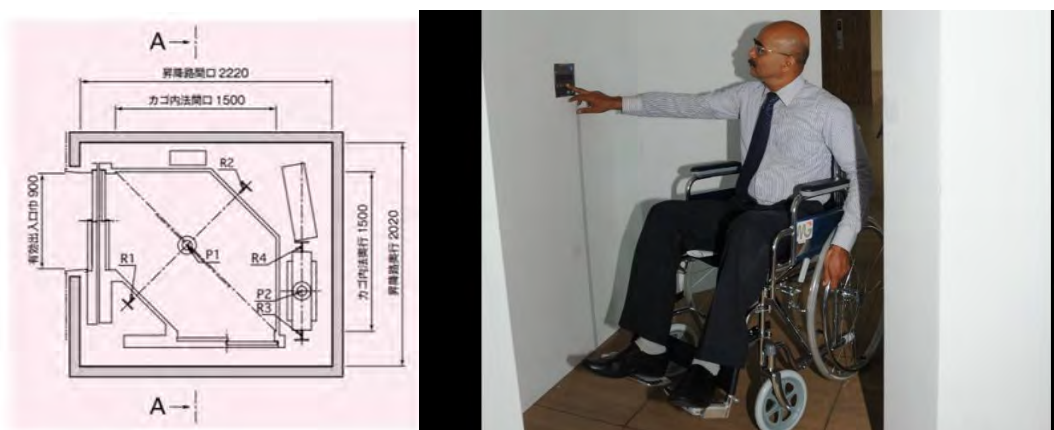


Figure 6-8 (left) Design of the elevator (right) Mock-up trial of elevator

(b) Result of the Trial

Result of the trial is summarized as the table shown in below. All participants did not have problems with the entrance width and inside the elevator. It should be noted that the size is relatively small because this elevator will be installed in the platform which does not have enough width.

Table 6-4 Result of the trial of elevator

No.	Comment	Kind of disability
1	OK	Mobility handicapped (Paralysis of Legs)
2	OK	-
3	OK	-
4	Average height	Elderly-Wheelchair
5	Separate gate of entrance and exit is more convenient	Wheel chair user
6	OK	Elderly
7	Satisfied	Blind

No.	Comment	Kind of disability
8	Good	Deaf
9	Good	-
10	Good	-
11	Good	Deaf
12	Good	-
13	OK	Elbow crutch
14	Good	Using crutches
15	OK	Visually impaired
16	OK	Visually impaired
17	Very Good	Pregnant
18	Good	Pregnant
19	Space should be wider to accommodate more than 4 people	Blind
20	Elevator is accessible. Buttons and tactile marking should be installed	Low vision

5) Trial of Platform

(a) Methodology of the Trial

The width of the platform should be considered with various facilities such as width of the elevator and bench which are expected to be installed on the platform. Participants checked if the width is secured when two persons with supporting equipment such as wheelchair and supporting crutch crossing each other.

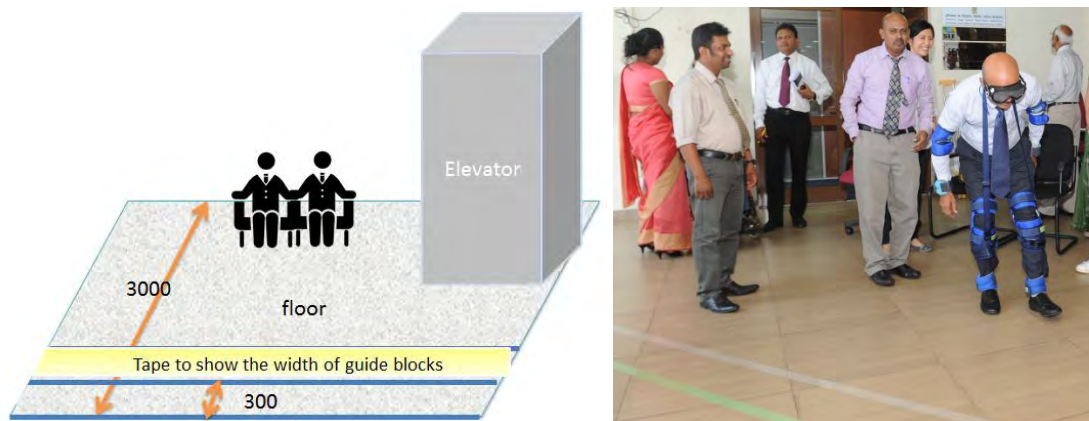


Figure 6-9 (left) Design of the platform (right) Mock-up trial of platform

(b) Result of the Trial

The result of the trial is summarized as shown in the table below. It is confirmed that width of the platform is appropriate. Participants commented the necessity of the guide blocks in the edge of the platform.

Table 6-5 Result of the trial

No.	Comment	Kind of disability
1	OK - Floor should not slippery	Mobility handicapped (Paralysis of Legs)
2	Gap should be eliminated	-
3	Ok	-
4	Gap should be eliminated	Elderly-Wheelchair
5	-	Wheel chair user
6	-	Elderly
7	-	Blind
8	OK	Deaf
9	OK	-
10	OK	-
11	OK	Deaf
12	Good	-
13	OK	Elbow crutch
14	Good	Using crutches
15	OK	Visually impaired
16	OK	Visually impaired
17	Very Good	Pregnant
18	Good	Pregnant
19	Satisfied	Blind
20	There should be a warning tactile at the edge of platform.	Low vision

Other than the spacing of the platform, participants made the comments on the platform as summarized below.

Table 6-6 Comments on the platform

Comment	Kind of disability
Good, satisfied	Wheel chair user (short person), blind , deaf, crutches users, visually impaired, low vison
Good, it is better to have guide block at the edge of the platform	Low vision
All the stations should be identical and should be symmetrical from both side	Blind
Floor is slippery	Mobility handicapped
Gap between platform and train should be minimized	Elderly

7 Closing Remarks

7.1 Closing Remark from Project Director, Mr. Chaminda Ariyadasa

The Project Director, Mr. Chaminda Ariyadasa delivered his closing remark. On behalf of MMWD, he thanked the participants for energetically participating in this workshop. He also expressed his appreciation toward JICA, ECOMO foundation, JOCV members in Sri Lanka, the JICA Study Team, government organizations, and stakeholders on great support for the success of the workshop.

Mr. Ariyadasa specially stressed that the sharing comments and suggestions from all participants regarding to the accessibility of LRT system are valuable to consider the future design stage of the project. In addition, this experience of the workshop will be a foundation for other projects in Sri Lanka to master on barrier-free accessibility. This workshop was also an experience for all normal people to understand the difficulties in mobility of disabled people while using public transportation. For government officers who are involved with the project, it was a great chance for hearing what are the concerns for the future users of LRT system.

Finally, Mr. Ariyadasa emphasized that all shared experience and feedbacks from participants on LRT station facilities will be taken in account to consideration on the LRT system’s design as well as training process toward achieving LRT users’ comfort.



Figure 7-1 Mr. Chaminda Ariyadasa delivered his closing remark

7.2 Comments from Participants

After finishing the workshop, feedback forms were distributed to all participants with email of MMWD written on. Participants had put their comments and suggestions on the workshop and expressed their expectation on the LRT system facilities to be accessible.

Most of the participants commented that this workshop was the first opportunity for them to experience, and understand the difficulty in mobility of disabled people while using transportation system. This activity was important since it could provide a clear idea on the design of LRT system’s facilities at the planning stage. Therefore, experience gained from this workshop will be a starting point for other projects in Sri Lanka to follow such kind of informative and necessary action on barrier-free. One of the participants, C. Siriwardena (SLRFD) has commented that: “*It is good to consider correct accessibility features at the planning stage. It is important to implement the location correctly at the initial stage.*” In addition, participants without disabilities participated in the workshop had a chance to play a role of

Preparatory Study on the Project for Establishment of New Light Rail Transit System in Colombo

“The Workshop toward Accessible LRT System”

Sept. 6th & 7th 2017

disabled person as using public transportation system facilities. Mr. Herath (PMU) who tried elderly experience kit has stated that: *“It is very useful to get practical experience on disability. Highly admirable for getting disability regulation to LRT project that will enable all the people accessible.”*

Overall, the participants expected to attend this kind of workshop more regularly. The participants also believed that “The Workshop toward Accessible LRT System” will be a reference on accessible transportation for other projects in Sri Lanka to follow.

8 Appendix

Appendix 1: Participant List

Appendix 2: Presentations Materials from ECOMO Foundation

Appendix 3: Presentations Materials from Mr. C. Siriwardena

Appendix 4: Pictures of the workshop

**Attendees List for the Barrier-Free Workshop
06th of September 2017, 8.30 - 12.00 at 11th Floor, Seminar Room Sethsiripaya Stage II**

Institute		Name	E-mail	Group	
Government Officials	Ministry of Social & Welfare	Department of Social Services	Chammi Dias	chaminidias77@gmail.com	D
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		Department of Persons with Disability	Ishanka Herath		C
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			Priyani Nuwanthie		E
Sri Lanka Police	OIC-UTI (Seeduwa)	M.R. Shantha Kumara	shanthak8@yahoo.com	E	
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	Sri Lanka Federation of the Visually Handicapped		W.M.D. Rathnasekara		B
	Sri Lanka Council for the Blind		Nawarathne Mudiyanse		A
	Sri Lanka Foundation for Disabled (SLRFD)		Shalika Karunarathna	shalikakalra@gmail.com	B
	Mobility Handicapped Technician Association Sri Lanka (MHTA-SL)		C. Siriwardena	cyril@slt.net.lk	C
	DAISY Lanka Foundation		M. Charles Mendis	mcmendischarles@gmail.com	A
	Central Federation for Deaf		Ashoka Bandula Weerawardana	asokabandula@gmail.com	E
	Janathakshan		K.K. Brayan Susantha	brayan70deaf@gmail.com	D
Disability Organisation Joint Front (DOJF)		Janaka Hemathilaka	janaka@janatheleshan.lk	E	
		Sugath Wasantha De Silva		C	
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			W.M.N.K Wijerathna	kumara.wije@yahoo.com	
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Attendees List for the Barrier-Free Workshop
07th of September 2017, 8.30 - 12.00 at 11th Floor, Seminar Room Sethsiripaya Stage II

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		UDA	Thushari Dissanayake	dissanayakahpjt@gmail.com	
		Sri Lanka Railway	Wijaya Samarasuriya		
	Sri Lanka Federation of the Visually Handicapped	W.M.D. Rathnasekara Nawarathne Mudiyanse			
Satakeholders	Sri Lanka Council for the Blind	Shalika Karunarathna	shalikakalra@gmail.com		
	Sri Lanka Foundation for Disabled (SLRFD)	C. Siriwardena	cyril@sltnet.lk		
	Mobility Handicapped Technician Association Sri Lanka (MHTA-SL)	M. Charles Mendis	mcmendischarles@gmail.com		
	DAISY Lanka Foundation	Ashoka Bandula Weerawardana D.A. Jayawardena	ashokabandula@gmail.com 		
	Central Federation for Deaf	S.B. Senevirathne R.M. Gunarathne			
		Janathakshan	Janaka Hemathilaka	janaka@janatheleshan.lk	
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	Vocational Training Authority (VTA) - Narahenpita		T.G.S.K. Dias	sisirakdias@gmail.com	
	Disability Organisation Joint Front (DOJF)	Sugath Wasantha De Silva			
	JICA	Japan International Cooperation Agency (JICA)	N Kato Rishani Thennakoon	Kato.Naoko@jica.go.jp 	
	JOCV	The Japan Overseas Cooperation Volunteers (JOCV)	M.Fukui Y. Suzuki	mayafukui11@gmail.com u.u.u.1983.yu@gmail.com	
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		OCG	JICA Study Team	Yoshihisa Asada Kazuhiro Tanaka Yoko Ota Yuki Kajigaya Catherine Diomampo Le Thi Thuong Kumari Dharmasiri	asada-ys@oriconsul.com tanaka@kaz-rail.co.jp otay@oriconsul.com kajigaya@oriconsul.com Catherine.Diomampo@erm.com lethuon@oriconsul.com dharmasirikumari@gmail.com

Understanding disability

Prepared for JICA LRT Colombo FS on Sep 6, 2017

The ECOMO Foundation



1

What is the ECOMO foundation

- The ECOMO Foundation
(Foundation for Promoting Personal Mobility and Ecological Transportation)
- A semi public corporation
- Established in 1994 under the authorization of Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
- Mission: to promote accessible public transport and to improve transport environmental issues.
- Staff : 19 (accessible transport division:5)
- Office :Tokyo
(Gobancho KU bldg. 3rd. Floor, Gobancho 10, Chiyoda, Tokyo)
<http://www.ecomo.or.jp/>

2

1 Background : Historical change and policies for making transportation accessible



I take a photo on 1994 at COLOMBO

3

Target - The Traffic Barrier-free is intended for:

- Elderly persons
- The physically impaired, including wheelchair users and non-wheelchair users (users of cane, prosthetic leg, and so on)
- Persons suffering from internal disorders
- The visually impaired
- Persons suffering from hearing and speech disorders
- Persons with intellectual disabilities
- The mentally impaired
- Persons with developmental disabilities
- Pregnant women
- Persons with infants
- Foreigners
- Others
- Temporary injuries
- Illness
- Persons carrying a heavy load



It is should be understood that of there are various people in society

4

Characteristics of disability

Elderly persons:

- Have difficulty moving up/down stairs and steps
- Have difficulty continuously walking a long distance or standing for a long time
- Have difficulty recognizing information and communicating with others due to their diminished visual and auditory abilities

The physically impaired (Wheelchair users)

When using a wheelchair, persons with physical disabilities:

- Cannot go up/down stairs or steps
- Require a certain amount of space while moving around or riding a vehicle
- Have difficulty looking at indications and signs in high places because their sitting position is low
- Have difficulty smoothly maneuvering/operating by hand or arm if they have an upper limb disability
- May also have language disabilities due to disorders such as brain paralysis

5

Characteristics of disability

The physically impaired (Other than wheelchair users)

Users of canes, limb prostheses, artificial joints, and the like:

- Have difficulty moving up/down stairs, steps or slopes
- Have difficulty continuously walking a long distance or standing for a long time
- Have difficulty smoothly maneuvering/operating by hand or arm if they have an upper limb disability

Persons suffering from internal disorders:

- Can hardly be recognized by their appearance
- Have difficulty moving around when a sudden change in physical conditions occurs
- Are easily fatigued and have difficulty walking or standing for a long time
- May need dedicated facilities for ostomates (persons with an ostomy) in restrooms
- May need to carry an oxygen tank depending on their disorder

6

Characteristics of disability

The visually impaired

Since the degrees of visual disability may vary, ranging from total loss of sight to low vision and color anomaly, persons with visual impairments:

- Cannot perform or have difficulty performing visual recognition of information
- Have difficulty with spatial perception, as well as checking the route to their destination
- Have difficulty accessing textual information and distinguishing colors
- Are sometimes not recognized by their appearance, e.g., if they do not use a white cane

7

Characteristics of disability

Persons suffering from hearing and speech disorders

Since the degrees of hearing impairment may vary significantly, ranging from total hearing loss to hearing difficulty, persons with hearing and speech impairments:

- Cannot perform or have difficulty performing auditory recognition of information or communication
- Cannot recognize or have difficulty recognizing auditory alerts (e.g. alarm sounds)
- Have difficulty communicating information as they may have trouble with speech and language
- Can hardly be recognized by their appearance

8

Characteristics of disability

Persons with intellectual disabilities

Because of difficulty in dealing with new places and changing situations, persons with intellectual disabilities:

- Sometimes lose their way or fail to make their next move
- May have difficulty controlling their emotion, making communication with others difficult
- May get confused if too much information floods their understanding
- May get too sensitive to words and actions of surrounding people, which causes confusion
- May have difficulty with reading and writing

9

Characteristics of disability

The mentally impaired

Due to their difficulty in coping with changing situations, persons with mental disabilities:

- Get nervous and anxious about new things
- Get extremely nervous and anxious about congested or closed places
- May get too sensitive to words and actions of surrounding people, which subsequently causes confusion
- Are susceptible to stress, easily fatigued, and may have headaches, as well as visual or auditory hallucination.
- In some cases, frequently drink water or go to restrooms to take medicine
- Can hardly be recognized by their appearance

10

Characteristics of disability

Persons with developmental disabilities:

- May exhibit impulsivity and hyperactivity resulting from attention-deficit hyperactivity disorder (ADHD) and sometimes constantly move or rush around
- May have acute interest and persistence in particular objects due to Asperger syndrome or the like
- May engage in repetitive actions
- May have difficulty with reading and writing because of learning disorder (LD)
- May have difficulty developing interpersonal relationships

11

Characteristics of disability

Pregnant women

Due to pregnancy, expectant mothers:

- Walk unstably (In particular, they can hardly watch their step when going down stairs)
- Have difficulty standing for a long time
- May suddenly feel sick or easily get tired
- Are sometimes not recognized by their appearance, at an early stage of pregnancy, for example
- May suffer from poor health even after delivery

12

Characteristics of disability

Persons with infants

Persons using a stroller, carrying an infant or holding hands with a toddler:

- Have difficulty going up/down stairs or steps (particularly in using a stairway when having a stroller, load or toddler in their arms)
- Have difficulty standing for a long time (for example when carrying a child in their arms)
- May get involved in a dangerous situation caused by an unexpected action by the child
- Require places for diaper changing and lactation

13

Characteristics of disability

Foreigners

Without understanding Japanese language, foreign citizens:

- Cannot perform or have difficulty performing acquisition of information or communication in Japanese

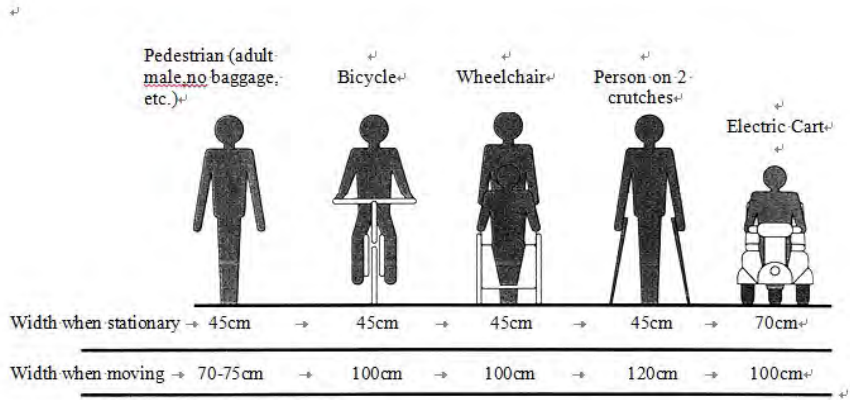
Others

- Temporarily injured persons (including those using crutches and/or wearing a cast)
- Persons with intractable disease or temporary illness
- Persons carrying a heavy and/or bulky load
- Persons unfamiliar with the place during their first visit

14

2-3 → Dimensions of road users⁴⁾

The basic dimensions of road users assumed in these Guidelines are shown in Figs. 1-3.⁴⁾



15

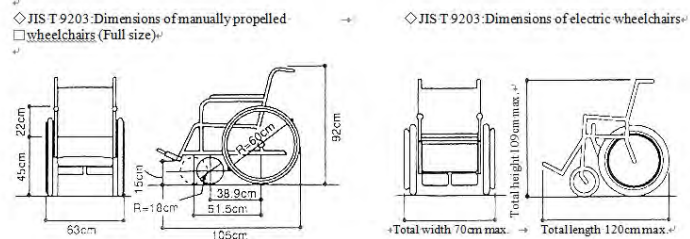
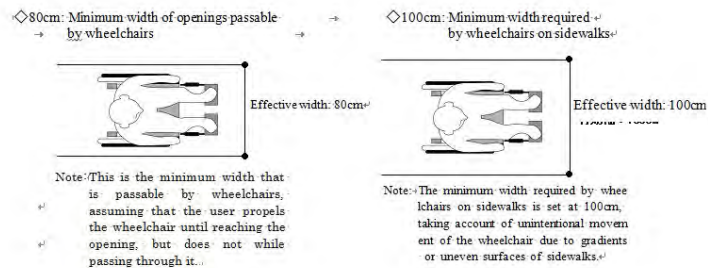
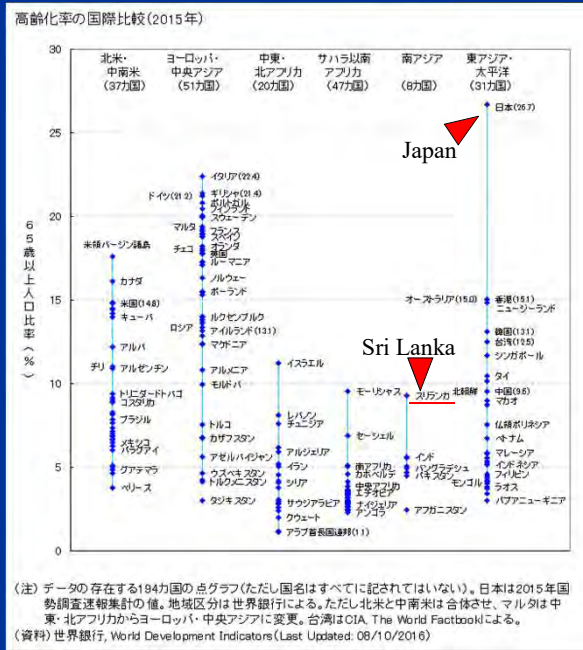


Fig. 2 Dimensions of Wheelchairs (JIS)⁴⁾



16

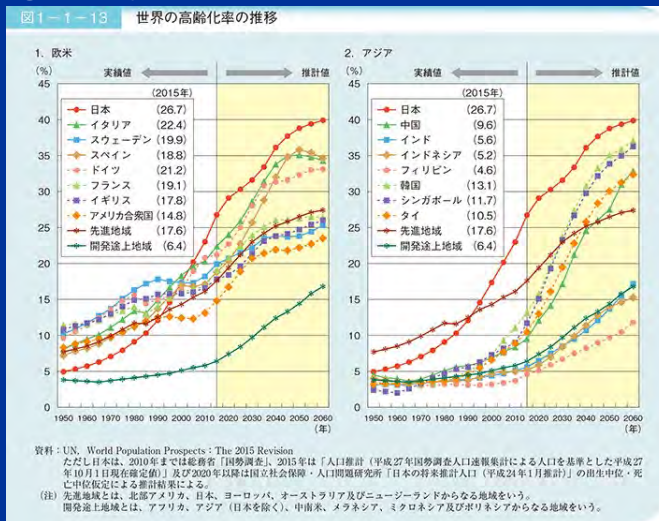
Aging Population (%) in the World



17

Aging Population

- Every country is expected to be aging society
- Both Japan and Sri Lanka has an issue of fewer children and aging society



18

18

Population of the disabled in Japan

	Total	at home	at facilities
Physical disability	3.66	3.57	0.09
Learning disability	0.55	0.42	0.13
Mental disability	3.23	2.90	0.33

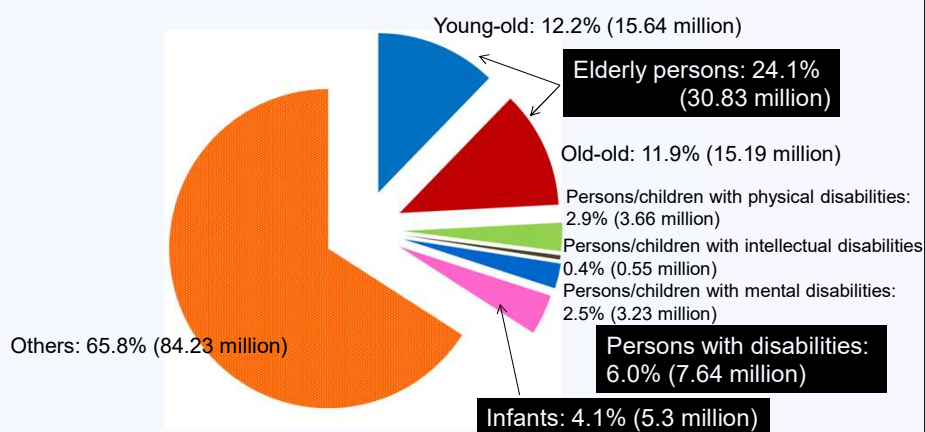
unit: million people

Data from government disability white paper in 2011

The number of disabilities people is increasing.
However the exact number is unknown.

19

Total population in Japan: 127.8 million



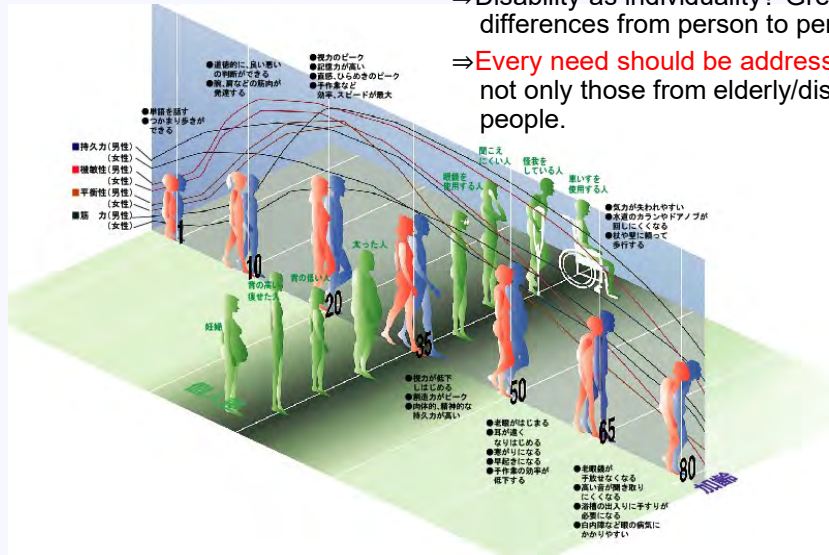
There is a handicap to move 1 / 3 of the Japanese

20

The human, gender differences, age differences, individual differences there is always

⇒ Disability as individuality? Great differences from person to person

⇒ **Every need should be addressed** not only those from elderly/disabled people.



21

History of transportation and barrier-free related law and regulation in Japan

- After enactment of “physically disabled people welfare law” in 1949 is the harbinger of measurement and response to the disabled persons in Japan.

- ⇒ The origin of the law is said to be a response to the war injured people

- ⇒ The countermeasures started after WW2

- Japanese first transport policy responding to disabled people is “Transport facility development for transportation vulnerable people” in 1981, which has only 30 years history.

- Formation and enactment of Transportation Barrier-free law (Law for Promoting Easily Accessible Public Transportation Infrastructure for the Aged and the Disabled) in 2000 made a great progress

- As for soft measures, the Law to Eliminate Discrimination against People with Disabilities enacted in 2016 is expected to play an essential roles to solve the issues.

22
22

Now in Japan

In 2006 the United Nations General Assembly, "the Rights of Persons with Disabilities, protection of dignity, comprehensive on the promotion, a comprehensive international treaty" was adopted.

Japan signed in September 2007, it was ratified in January 2014. January 2014 now, ratification of 140 countries and 1 institution

2013 "Law Concerning the Promotion of the elimination of discrimination on the grounds of disorders" was established
It was enforced in April 2016

23

Convention on the Rights of Persons with Disabilities

Conventional model

• Individual disability is the reason of inconvenience of their daily lives (Individual model)

⇒ It may result in human rights violation

In the future

- The treaty has a view that society has disability not individual
- Slogan of " Nothing about us without us "
- The treaty is formulated in the viewpoint of disabled people
- The environment should be equal regardless of disability

24

NOTE 1**Concept of Universal Design**

The concept of “universal design” maintains that all products, buildings and spaces should be designed, from the stages of design and planning to the extent possible, to permit people under all conditions to use them. The term “barrier-free-ization” has a connotation of problem solving in that the term means removing existing physical barriers. The concept of “universal design” is more positive and goes beyond the “barrier-free-ization” in that it incorporates general accessibility in the design of facilities so that as many people as possible, regardless of disability, age, or other problems, may easily use them.

The barrier-free-ization is a measure mainly for such disabled persons as people in wheelchair or the visually disabled, considering the “barrier-free design” as “special design,” different from ordinary ones. The concept of universal design is an evolution from barrier-free measures for the disabled, and is a new design concept to offer easy-to-use designs for all people (called “universal design” in the United States).

The concept of universal was proposed by Ronald Mace of the North Carolina State University in the 1980. The “universal design” calls for providing minute designs suited for all people, viewing people from all conceivable angles and under all conditions.

25

NOTE 2**Seven Principles of Universal Design**

- ① **Equitable use**
Provide the same means of use for all users, or comparable means if not possible. Avoid segregating or stigmatizing any people.
- ② **Flexibility in use**
Accommodate a wide range of individual preferences and abilities, right-handed or left-handed, wide range of users' paces.
- ③ **Simple and intuitive**
Use of the design is easy to understand intuitively, regardless of the user's experience, knowledge, language skills, or current concentration level.
- ④ **Perceptible information**
The design communicates necessary information to the users, in as distinguishable manners as possible, through versatile modes as pictorial, verbal, tactile, etc.
- ⑤ **Safety, tolerance for error**
The design eliminates possibilities for hazards, gives warnings of errors, and provides fail safe features.
- ⑥ **Low physical effort**
The design does not require to maintain unnatural body positions or to use forces, and minimizes sustainable physical loads.
- ⑦ **Size and space for approach and use**
Appropriate size and space are provided for approach, reach, manipulation, and use regardless of users' physical characteristics.

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The difference of barrier-free and universal design

Barrier-Free

Barrier-free is to get rid of a physical disorder, mental barriers for such as people with disabilities and the elderly

Remove the built the barrier

Universal Design

Universal design is the difference of culture, language, nationality, young and old, regardless without disabilities, is that the design of all of the people will be able to use.

Not create a barrier from the beginning

27

Barrier-free measures

Hardware

- Barrier-free initiatives in passenger facilities (It is important to secure accessible routes from entrance to exit points to all vehicle boarding/alighting points)
- Barrier-free initiative for vehicles, etc. (It is important to provide facilities that make it easy for the elderly and disabled to board, alight, and move inside vehicles)

Software

- Suitable provision of direction and information (It is important to provide visual information and audible information in appropriate, easily understood form)
- Education and sensitivity training of staff (It is important to substantially improve staff education by means of training, development of manuals, etc.)
In Japan, "the heart of the barrier-free" has become important.

Both wheels !

28

2 TAIL

2. The Transport Accessibility Improvement Law in JAPAN

29

2 TAIL

2000

The Transport Accessibility Improvement Law

(Law Concerning the Promotion of Public Transport Systems to the Disabled and Elderly, promulgated May 17,2000, enforced November 15,2000)

- In order to promote improvements in the convenience and safety of travel via public transport, by elderly people disabled people, expecting mothers, and so forth
- Obligation for transport providers to comply with barrier-free standards
- Promotion of community barrier-free policies on the initiative of local governments

30

Criteria of passenger facilities (Overview of the guideline for smooth travel by public transportation)

- 1) As for the route from the entrance of station to platform, remove the height difference by elevator or slope as a general rule (facilitated route)
- 2) Secure the width for wheelchair to move
 - Secure the width of the entrance to be more than 80cm which wheelchair can pass by
 - Secure the width of at least one route to be more than 140 cm which wheelchair can turn
- 3) Floor of the platform and vehicle of the railway should be as flat as possible. Also the gap between the platform and vehicle of the railway should be as small as possible
- 4) Install form door, movable form barrier, guiding block and other devices which prevent visually disabled people from dropping to platform
- 5) Install lighting facilities on the route and platform
- 6) For elevators, escalators, toilets, ticket vending machines, etc. secure the structure suitable for smooth use by elderly people, disabled people. The elevator should have a size of 140 x 135 cm or more that the wheelchair can turn around.
- 7) In addition, install guidance blocks for visual impairment, and facility to provide visual information and auditory information.
- 8) In the vicinity of major facilities such as elevators, toilets, etc., install signs according to JIS standards.
- 9) To set up a hand writing communication tool at a ticket sales office, information desk, etc. and indicate that there is a writing tool.
- 10) Install handrails on both sides of the stairs.

31

2 TAIL

Revision of Transportation Accessibility Improvement Law

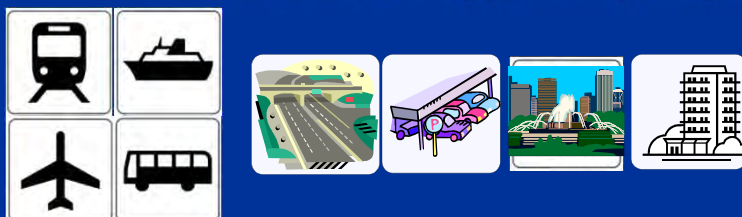
Law for accessible buildings 1994



Transportation Accessibility Improvement Law 2000

Law revision in 2006

A new law for making transportation and building accessible 2006 (including parks and parking lots)



32

Act on Promotion of Smooth Transportation, etc. of Elderly Persons, Disabled Persons, etc. (New Barrier-free Law)

Expansion of the target population
 • Not only physically disabled persons but also all disabled persons such as intellectually/mentally/development disorder etc., became target

Expansion of the target facility
 • In addition to building and public transport, road, outside parking, urban parks and welfare taxi became target

Passenger facilities and vehicles etc. (Added the standard of welfare taxi) **Road** **Outside parking** **Urban Park** **Building (Added the duty for effort to satisfy the standard for existing buildings)**

Enhancement of basic concept
 • Enlarge the target areas which promote barrier-free to the areas which do not include passenger facilities

Image of facilitation of mobility in priority development area

Participation of party organization to basic concept making
 • Legalize consultative meeting system
 • Formulate the system to suggest formulating the concept

Enhancement of soft-measure
Introduction of spiral up
 • In cooperation with stakeholders, strive to sustainable and step by step development of barrier-free measures.
Promotion of mental barrier-free
 • Each individual recognize the hardship of elderly persons and disable persons as own problem

33

Processing Barrier-free basic policy

Build consensus among various stakeholders through discussion
 Participants : Party organization, transport business, road management, facility management, and municipality office get together and discuss

In many cases site visit and workshop are organized

- Discussion in the meeting room often does not make things clear
- The workshop can be awareness raising of the participants

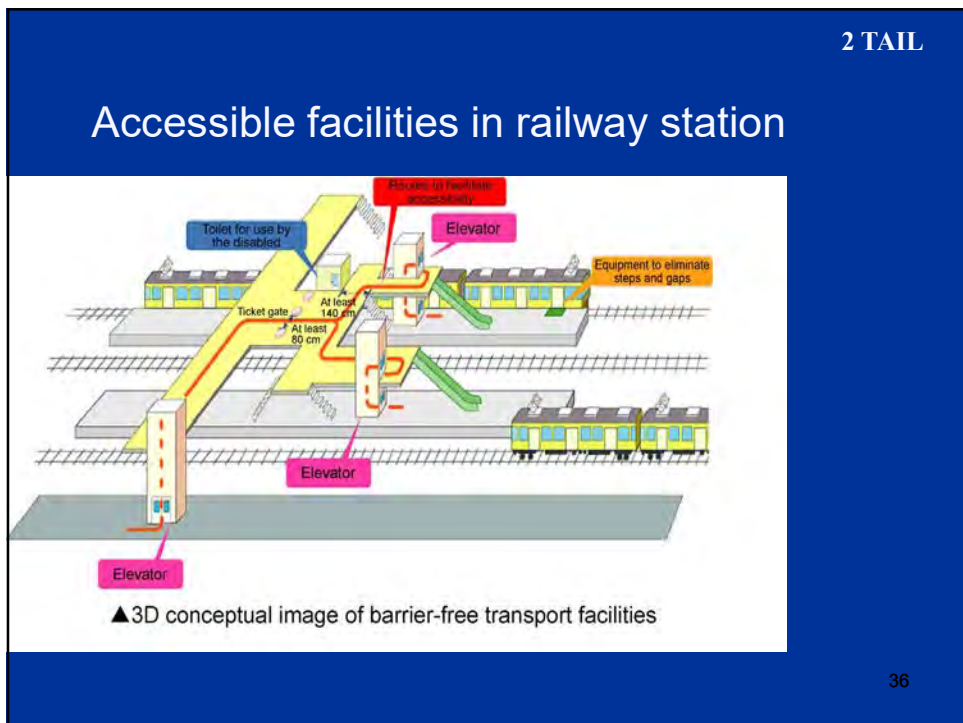
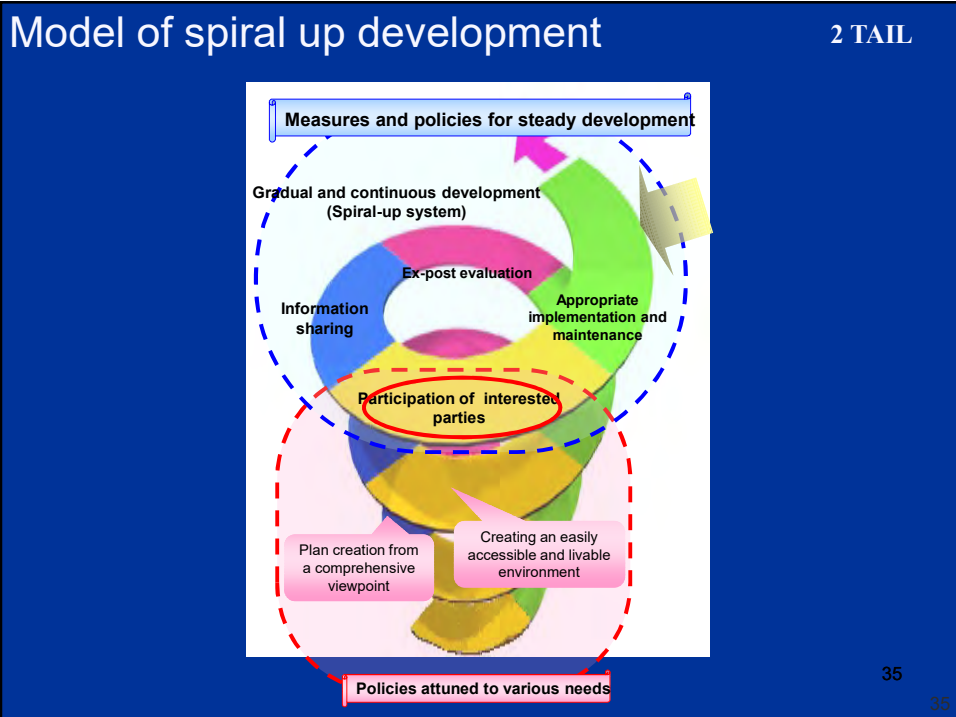
↓

When compiling the plan, the draft plan is opened to public comment and get feedback from the people who did not participated in the meeting

↓

Consensus Building

34



2 TAIL

The Law will lead to the following changes

The Transport Accessibility Improvement Law will lead to the following changes.

Under the Transport Accessibility Improvement Law, when new stations and other passenger facilities are constructed, and when new buses and other vehicles are introduced, they will be obliged to comply with barrier-free standards (standards for facilitating accessibility). Also, under the guidance of local governments, schemes to make neighboring roads, signals, etc. uniformly barrier-free are included. Through these means, stations and nearby roads will become progressively barrier-free.

37

Barrier-free is not there just for the elderly, disabilities people

Stroller is one

安全にお使いいただくために

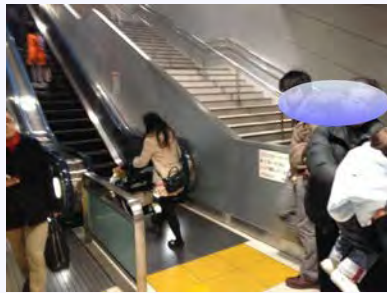
注意 取り扱いを誤ると傷害を負ったり、ベビーカーが破損するおそれがあります。

- バスの中では使用しないでください。本製品はバスの中で使用することを目的として設計されたものではありません。本製品をバスの中で使用すると、カーブや急ブレーキなどで転倒や思わぬ事故につながります。
- 電車の中での使用について
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⇒ In the first place, strollers are not originally intended for use in trains and buses.

38

Usage status of stroller



39

Usage status of stroller



Three strollers in a row waiting for an elevator



Three strollers at one door opening



Twin stroller



Stroller loaded with three children⁴⁰

IN CONCLUSION

- Guidelines and standards are important, but not everything.
- Absolute reliance on "barrier-free minds" seems to be just an excuse.
- We have piles of things to deal with, which are yet hidden behind those guidelines and standards.
- Times change in five or ten years. Japan will fail to keep up with the world unless we continue to progress step by step on the basis of our lessons learned from the past.
- The world outside Japan is not putting special focus on barrier-free...



41

42

3 Guidelines

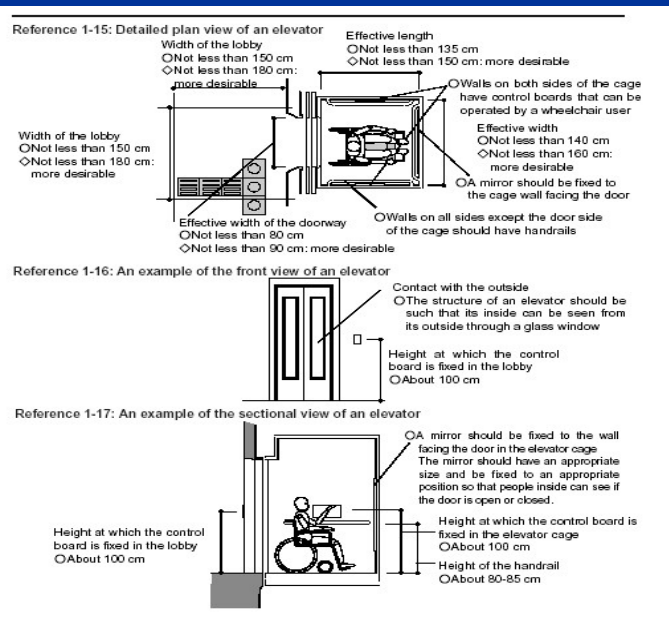
3 Guidelines and some examples of Barrier-free facilities of public transportation and so on



43

Example of the Guideline 6

3 Guidelines



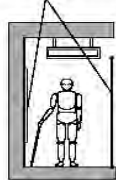
44

Example of the Guideline 7

3 Guidelines


Reference 1-7: Essential points in an overhang

- Any overhang should be positioned such that a person having bad sight cannot bump against it as he or she cannot detect it with his or her stick.



Reference 1-8: Height of the handrail

- It is more desirable that a handrail should be the double handrail.



Height of the lower handrail: about 66 cm
Height of the upper handrail: about 85 cm

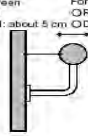
Reference 1-9: An example of the position and form of the handrail

Position

- Space between the handrail and the wall: about 5 cm

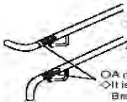
Form

- Round cross-section
- Diameter: about 4 cm



Reference 1-10: An example of the end of a handrail

- The end should have a bend.



An example of an end bent towards the wall.
An example of an end bent downward.
A mark of the destination in Braille.
It is more desirable that a mark in Braille should be accompanied by its decoded version.

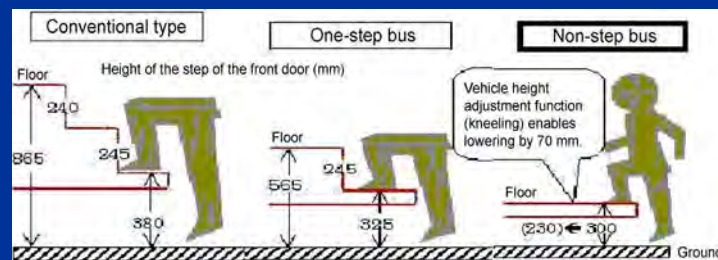
45

Non-step bus (low-floor bus)

3 Guidelines



Difference of floor height between a non-step bus and a one-step bus



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THE END
Thank you for your attention.

Contact: Atsushi MATSUBARA
a-matsubara@ecomoto.or.jp

JICA/JSRPD/ECOMO
Transportation Barrier-free

47

Understanding disability Effort for barrier-free transportation in Japan

**WORKSHOP ON ACCESSIBLE LRT STATION
FOR DISABLED PEOPLE**


Eco-Mo Foundation

6-7/9/2017

 Foundation for Promoting Personal Mobility and Ecological Transportation

Effort for barrier-free transportation in Japan

• What is hard measure of barrier-free and soft measure of barrier-free?
~Example of soccer~



<Hard measure of barrier-free>


- Ball
- Soccer Field
- Goal

etc

<Soft measure of barrier-free>

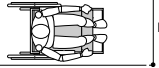
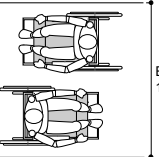
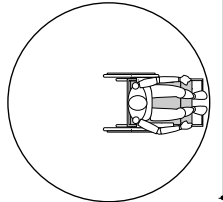
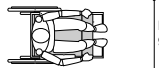
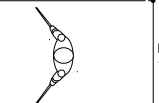
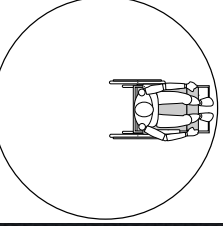
- Practice
- Rule
- Sportsmanship

etc

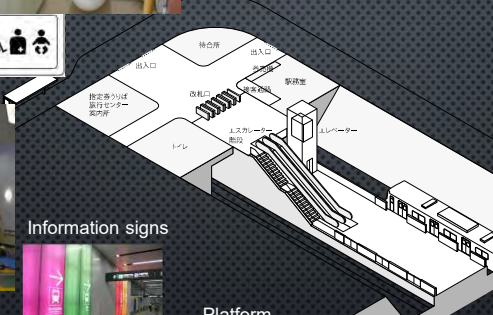


Anyone can enjoy playing soccer

Fundamental dimensions

<ul style="list-style-type: none"> ● The minimum width of a doorway  <p>Effective width: 80 cm</p>	<ul style="list-style-type: none"> ● The minimum width necessary for a wheelchair to go past another wheelchair  <p>Effective width: 180 cm</p>	<ul style="list-style-type: none"> ● The minimum space for a 360-degree turn of a wheelchair  <p>Effective width: 150 cm</p>
<ul style="list-style-type: none"> ● The minimum width for a doorway or a pathway with a fair margin  <p>Effective width: 90 cm</p>	<ul style="list-style-type: none"> ● The width of a pathway for the smooth passage of a person on crutches  <p>Effective width: 120 cm</p>	<ul style="list-style-type: none"> ● The minimum space for a 360-degree turn of a motor-driven wheelchair  <p>Effective width: 180 cm</p>

3



Multi-functional toilet

Acoustic guidance

Widened ticket gate, manned ticket gate

Guide blocks

Space allowing choices

Information signs

Platform doors

Movable platform fences

Benches of different heights

Waiting room

Elevator

From website of Fukuoka City Transportation Bureau

4

Reducing gaps in facilities

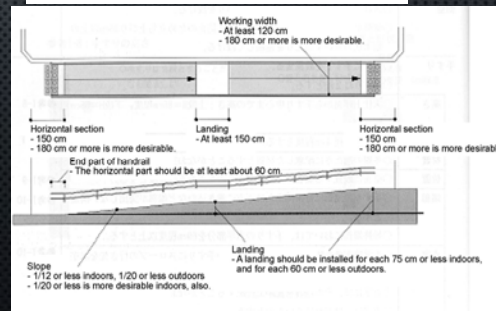
The greatest barrier wheelchair users feel is steps.



A slope makes it accessible.



What do you do with high steps?



5

Equipment to eliminate gaps at stations

An elevator enables going up or down independently, freely.



Musashi Kosugi Station on the Tokyu Toyoko Line

An escalator will do, but...



An escalator requires a helper.

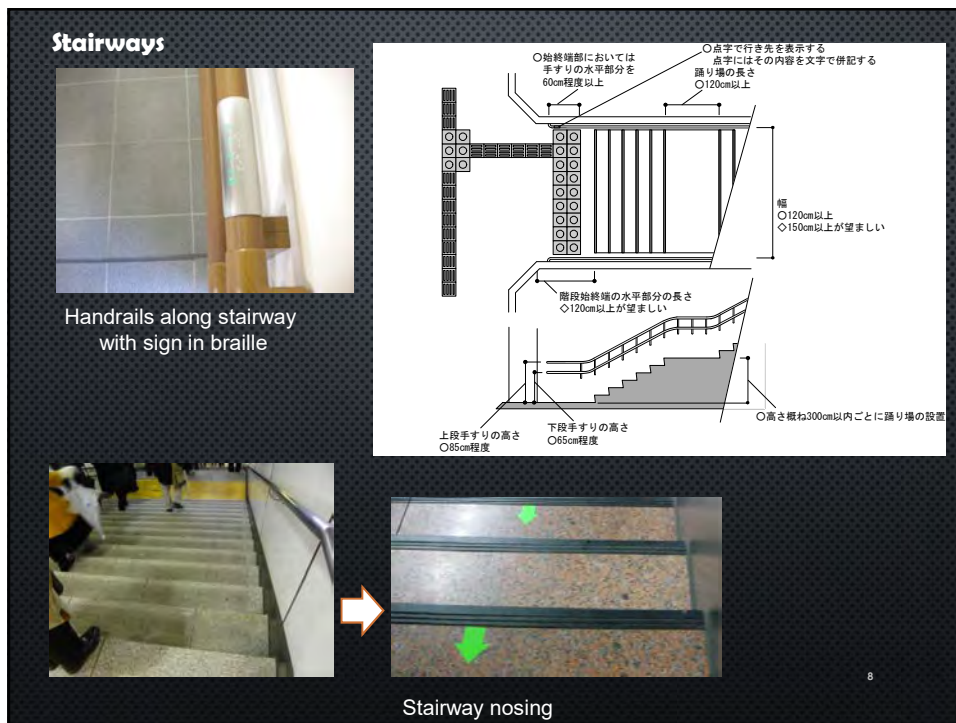
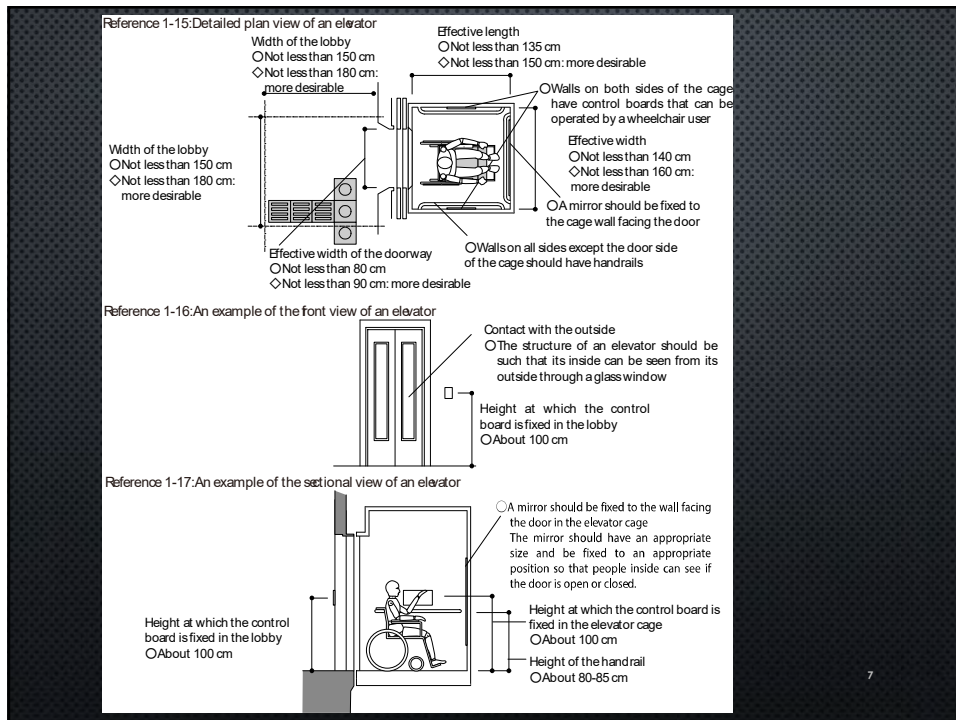


A stair lift also requires help.



An elevator enables wheelchair users and so on to be self-use

6



Ticket vending machines

Automatic ticket machine considering wheelchair users



Automatic ticket machine considering the visually disabled



Braille fare chart

Ticket vending machine with numeric keypad

9

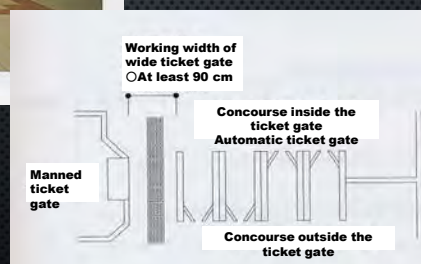
Ticket gate

An automatic ticket gate is narrow, making it impossible for a wheelchair user to pass. At most stations, however, there is a wide automatic ticket gate.



Urawa Misono Station on the Saitama Railway Line.

BECAUSE THIS IS WIDE, A WHEELCHAIR CAN ALSO PASS.


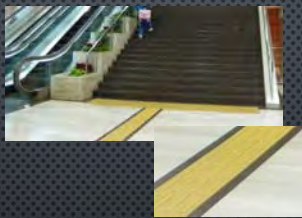



10

Entire station


Yellow block for the visually disabled (block to guide the visually disabled)

○ Good example, yellow and very easy to see






Guide blocks for persons with visual disabilities are rimmed with lines and clearly demarcated from ordinary floor panels.

× Bad example



Block colors are inconsistent.
The colors of blocks and the floor are similar (difficult to see).



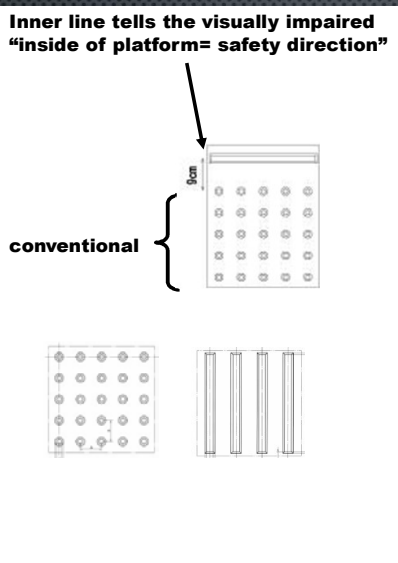
No object, such as a signboard, should be placed on blocks.

11

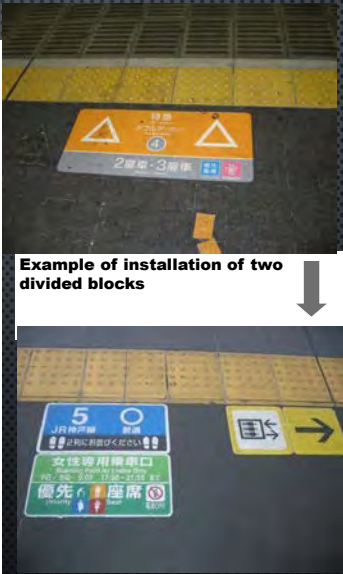
Example of blocks warning of the outside edge of a platform.

Example of integrated block

Inner line tells the visually impaired "inside of platform= safety direction"

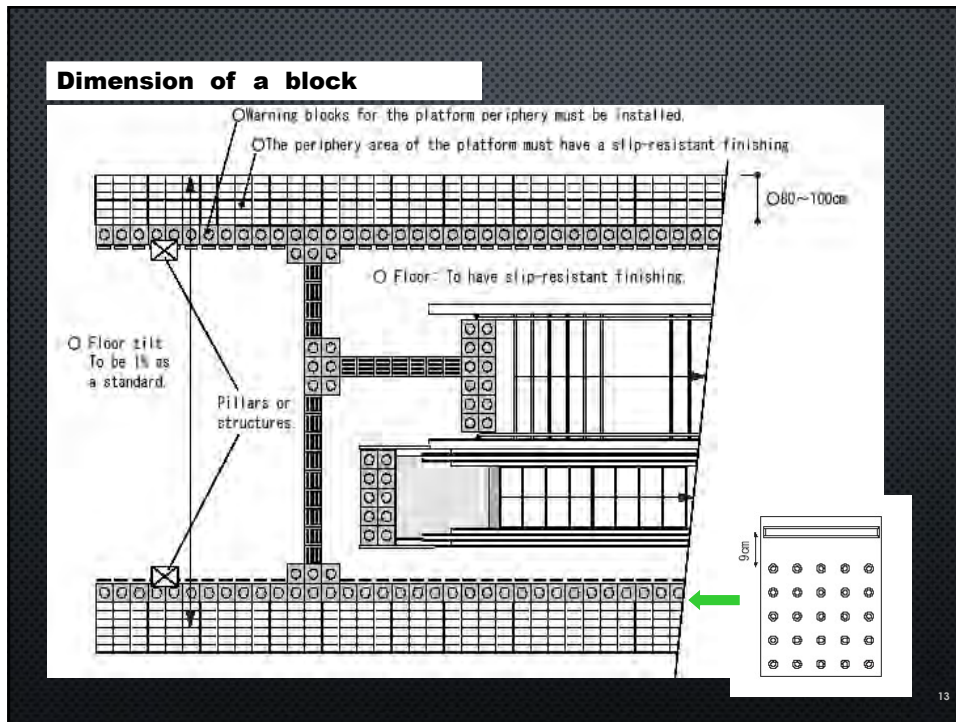


conventional

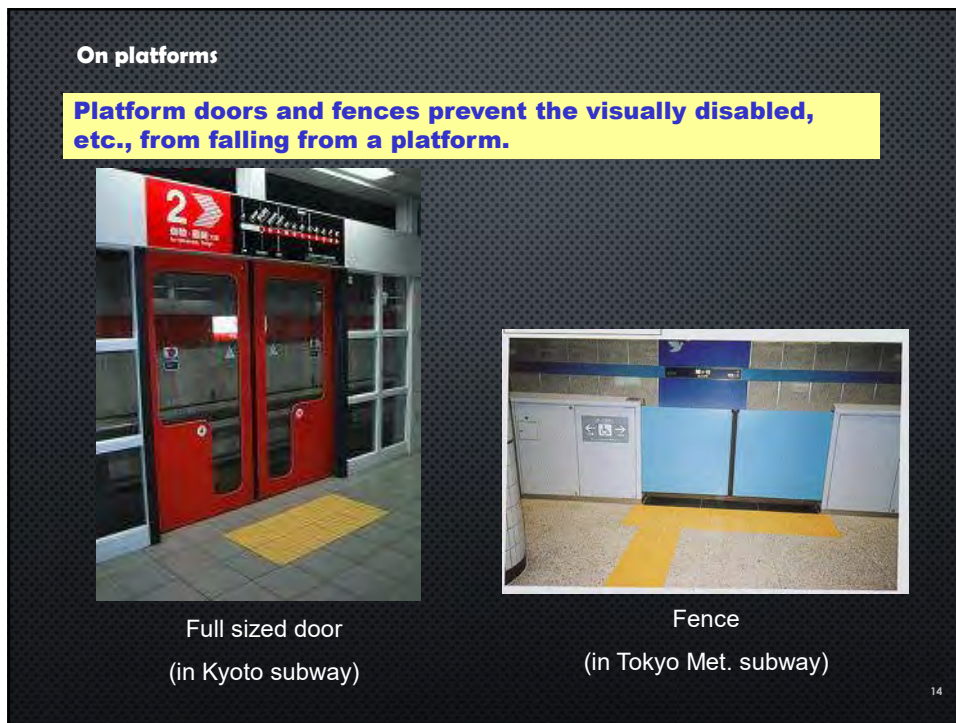


Example of installation of two divided blocks

12





13

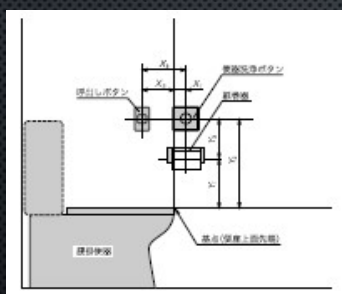
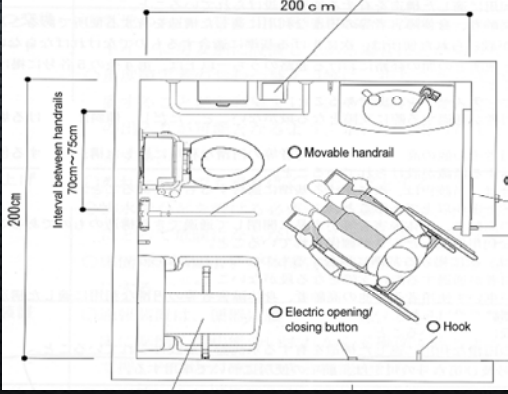


14

Multi-functional toilet

Men & Women
 Equipped for the physically impaired, ostomate, and infants.

200 cm
 Interval between handrails 700mm~750mm
 200 cm
 Movable handrail
 Electric opening/closing button
 Hook

15

Information signs

Changeable contents display(LED)



Guidance sign



Digital Signage



Track number



富山・金沢方面
 for Toyama, Kanazawa
 6-12号車
 Car No.

Transfer guide



Pictogram, Japanese, English, Chinese, Korean

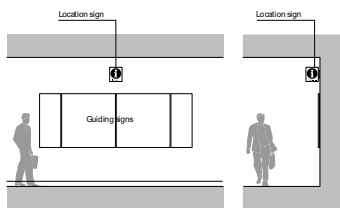
16

Pictograms standardized in JIS / ISO Information signage system

17

Reference 2-8: Display example of the information corner

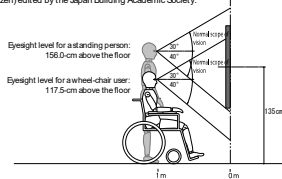
We make here a setting (information corner) where the guides are collectively shown in a manner easy to see from the moving direction of the pathway. Display examples of the location sign at 1 information corner are shown.



Reference 2-9: How to determine the exhibit height of the sign to be seen from nearby

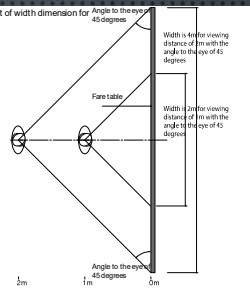
When the sign is facing the viewer at close range, the scope of the vision that a wheelchair user feels is easy to see is lower than that from a standing person by about 40 cm. Therefore, when we want to set such a close-range sign for viewing by both standing persons & wheelchair users, the height from the floor to the center point of the sign should be 135 cm, 1 midpoint between the eyesight level of the standing person and that of the wheelchair user.

Note) The normal scope of vision in the picture below is from "Building design data collection 3" 11 (Manuzen) edited by the Japan Building Academic Society.

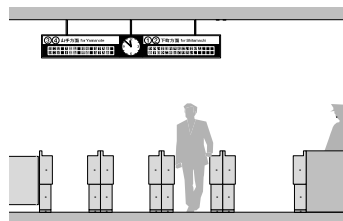


Reference 2-10: How to determine the limit of width dimension for the fare table

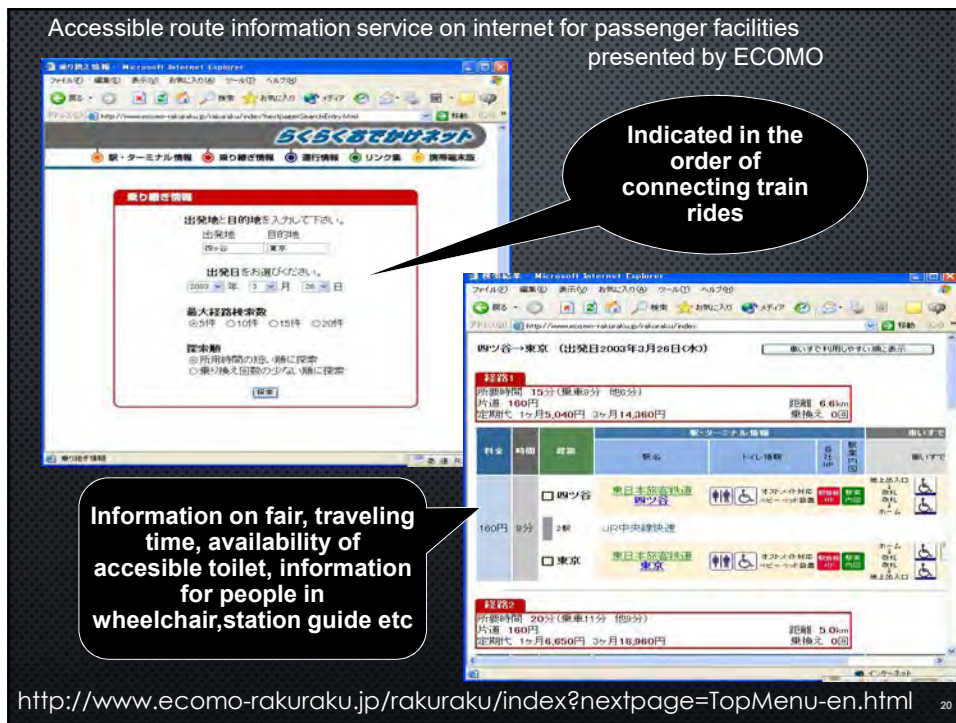
The design of the fare table should consider not only the volume of information exhibited and the required size of the letters but also the eyesight scope that accommodates reading without error. According to the literature, if the angle to the eye is smaller than 45 degrees, error rate in reading the fare table increases. As passengers tend to approach the ticket machine without checking the fare, the distance to the fare table becomes much closer. Taking into consideration the limit in the angle to the eye, the width dimension of the fare table should be within about 2 and 2m, respectively. Note) According to the steel labor research on monitoring graphic panels in "Ergonomics in diagrams" (Japan Specification Association, ed. Kogoyu Noro, 1990) that it is not desirable to make the angle to the eye less than 45 degrees since the error rate in reading the



We show here the display example for changeable contents display set up at the ticket gate.



18



How to consult with the station guide Information for people in wheelchair

Yotsuya Station

東京 東京駅

トイレ情報
インターネット情報
ホームページリンク
車いすでの移精
駅のタイプ
車いすでの利用情報

<http://www.ecomo-rakuraku.jp/rakuraku/index?nextpage=TerminalSelectE.html>

Priority seat

From website of JR West

Multi-functional toilet
(provided in limited express trains and the like)

From website of JR Kyushu

Elimination of step between platform and train

From website of JR West

Space for wheelchairs

From website of Fukuoka City Transportation Bureau

Information signs

From website of JR West

When getting on a train from a platform



A slope board can easily eliminate steps.

There is equipment to eliminate steps. (Part of a platform is raised at a slant.)

Equipment to eliminate steps and gaps



Equipment to eliminate steps and gaps, stored at a platform of Kami-Ooka Station on the Keikyu Main Line.



5mm gap height is realized. (in Fukuoka city subway)

23



5mm gap height is realized. (in Toyama LRT)



24

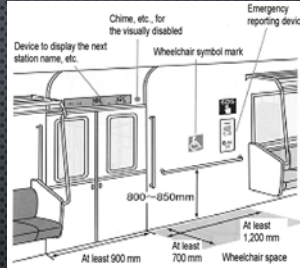
Barrier-free consideration inside vehicles

There is space for wheelchair users to stay.

Space for a wheelchair



Wheelchair space on the metropolitan subway Mita Line



There is space for wheelchair users to get on.



(in Toyama LRT)

Barrier-free consideration inside railway vehicles

Shinkansen also has wheelchair space.



Toilets for Wheelchair users

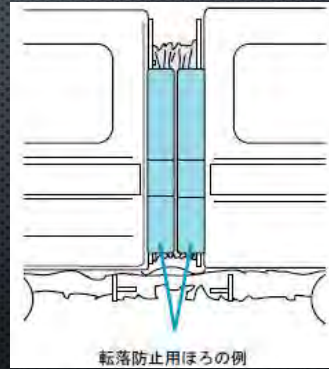
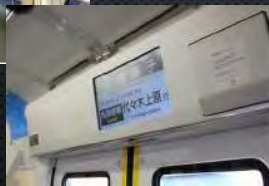


Priority seats (and free space)

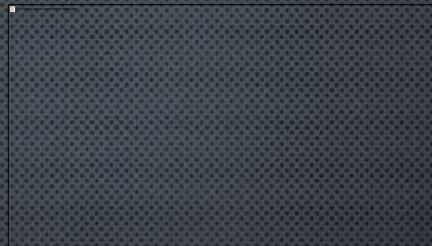
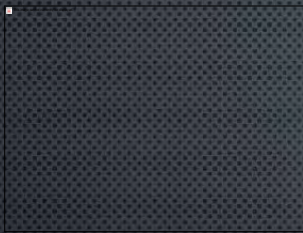


There is also priority seats for elderly and other people who has mobility impairments.

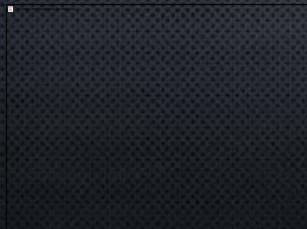
Information signs



27



Tramway(LRT) Stops: retrofit construction has been done for gentle angle slope and guide blocks for the blind



Station Plazas

Roofing for parking space of cars and taxis

28



Crosswalk with an escort line in the middle of the zebra

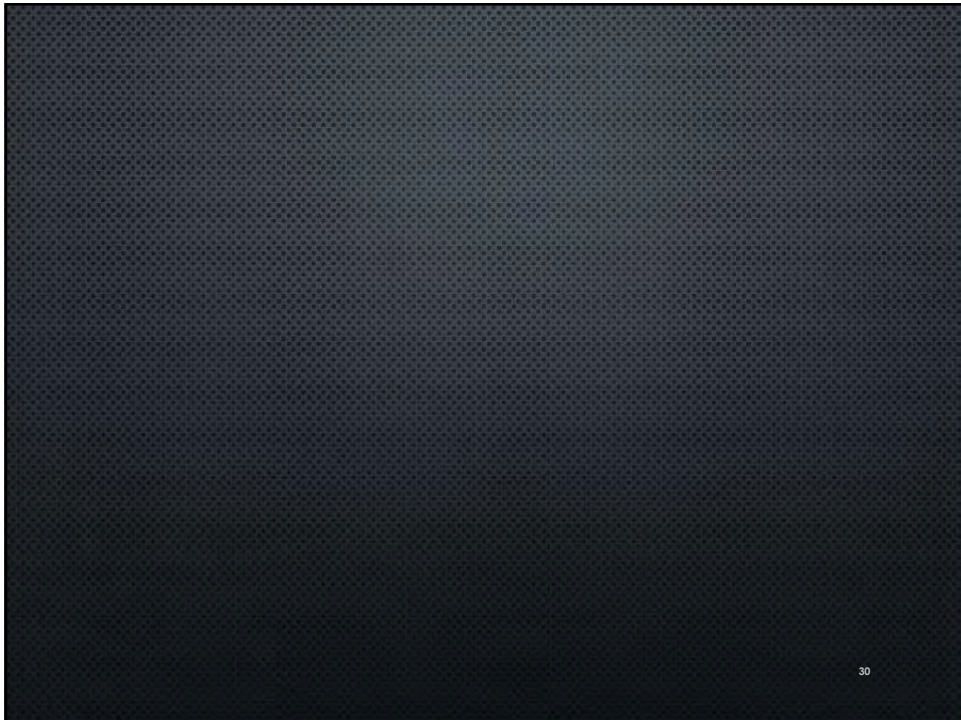


Priority Parking for the disabled



Elevator for a pedestrian deck

29



30

BEST: Barrier free Education System for Transportation



The training seminar for public transport staffs both railway and bus companies has been holding by ECOMO for four years.

This training program contains a lecture and a experience of assistance technique with participation of the disabled as a lecturer.

Both the disabled and transport staffs can understand each other for more accessible ride.

Photo(upper) is experience of guide assistance for visually impaired.



Photo(lower) is experience of guide assistance for wheelchair user.

<http://www.ecomo.or.jp/barrierfree/best/index.html>

31

BEST: Barrier free Education System for Transportation



This program also contains discussion time and presentation by transport staffs.

This process is good for summarizing the knowledge and the awareness which is learnt in the training.

Photo(upper) is group discussion.
Photo(lower) is presentation.



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Contents of the Training

§ 1 Orientation

§ 2 New Barrier-free law and necessity of reception and assistance

§ 3 Daily lives of users

§ 4 Basic concept of understanding disability and communication

§ 5 Learning the way of reception and assistance and its practical training

§ 6 Group discussion –training for raising awareness

33

Lecture of the department of transport



Lecture about developmental difficulty



Lecture about hearing disability



Group discussion on the first day



34

Practical training for guiding visually impaired persons



Practical training for assisting visually impaired persons and wheel-chair users at railway station



Practical training for assisting wheel-chair users



35

Group discussion
Training for "Awareness raising"



Presentation about the result



36

Experience of communication with verbally disabled persons by station name chain words

Listen to mentally disabled person about their inconvenience

Speaking of wheel chairs, it varies

Participation of the workshop

Experience of assistance while being watched by the disabled person

Stretcher will be on board

**It is highly effective that the disabled is the lecturer
⇒It is beneficial both the disabled and participants ³⁷**

Barrier-free Learning Program

The program to think about the society livable for everyone with the point of barrier-free and universal design which aim to be usable for various kind of people in various location such as city, station and vehicle.

学んでみよう! みんなが住みやすい街や駅

フレッシュコース (主に小学生以上向け)
小学生の教科書に載っている

ジュニアコース (主に中学生以上向け)
小学生の教科書に載っていない

見て知って理解する! 世界のバリアフリー

チャレンジしてみよう! バリアフリー検定

※ 専用教材専用ウェブサイトをこちらから

<http://www.bfed.jp/>

Fresh course: targeting primary school students and above

Junior course : targeting middle school and above

Introduce the barrier free in the world

Communication Support Board

This board is designed to help you communicate effectively with a passenger with difficulty communicating orally, such as a deaf-mute or an intellectually disabled person. You can also use it as a talking-aid with a foreigner who does not speak Japanese. Use the Board when you find yourself having difficulties talking with such a passenger. Show the Board to the passenger, and while pointing at the text and graphic messages, ask the passenger to indicate the ones that correspond to their answer or request.



http://www.ecomo.or.jp/barrierfree/comboard/comboard_top.html

END

Thank you for your attention.

Contact

Atsushi MATSUBARA a-matsubara@ecomor.jp
Keiko TAKESHIMA k-honda@ecomor.jp

<http://www.ecomor.jp/english/index.html>

41

**TECHNICAL SPECIFICATIONS
&
DESIGN CONSIDERATION
FOR
BARRIER FREE
BUILT ENVIRONMENT**

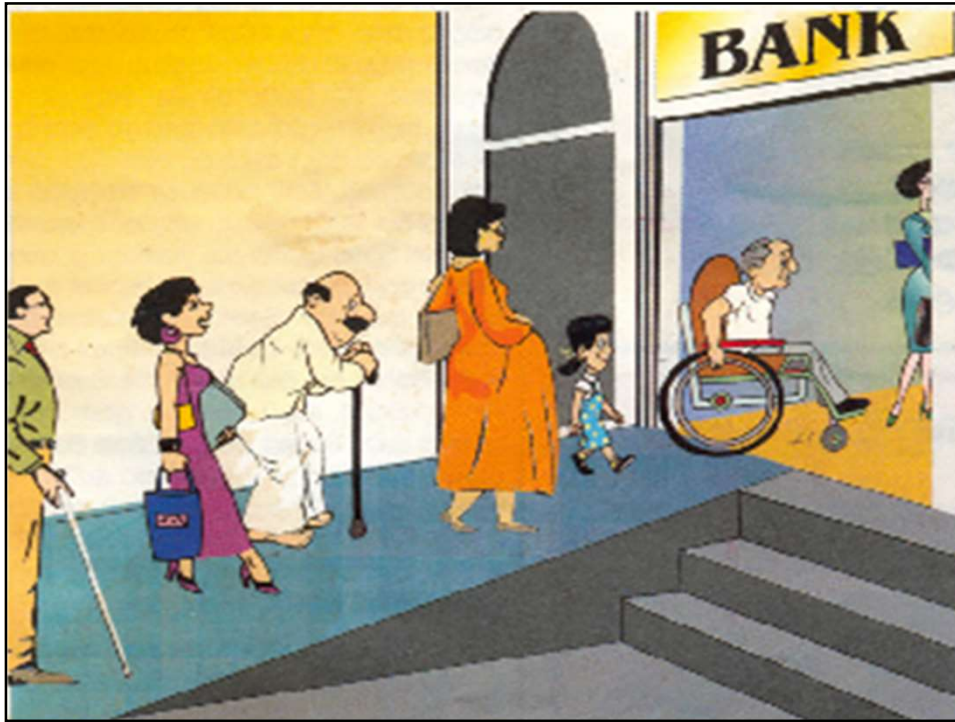
REGULATIONS OF SRI LANKA

Act

- Protection of the Rights of Persons With Disabilities Act , No.28 of 1996

Regulations

- Disabled Persons (Accessibility) Regulations No.1 of 2006



DESIGN CONSIDERATIONS

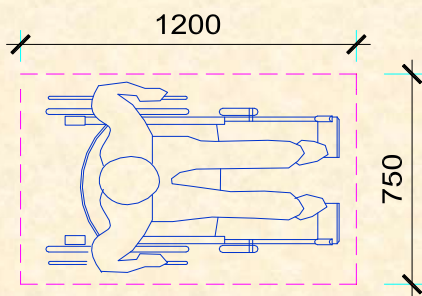


PART 2A OF REGULATIONS

PART 2 A

SPACE REQUIREMENTS FOR PERSONS USING MOBILITY DEVICES

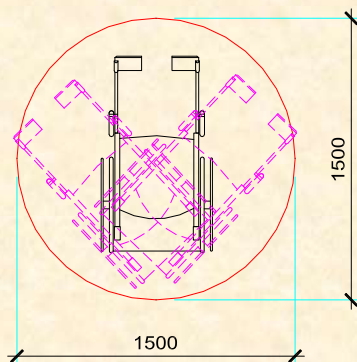
1.1.SPACE REQUIREMENTS



Size and approach

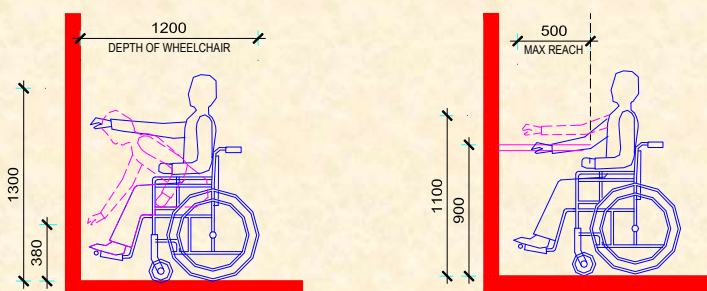
Fig. 01

1.2.TURNING SPACE REQUIREMENTS



Wheelchair turning space

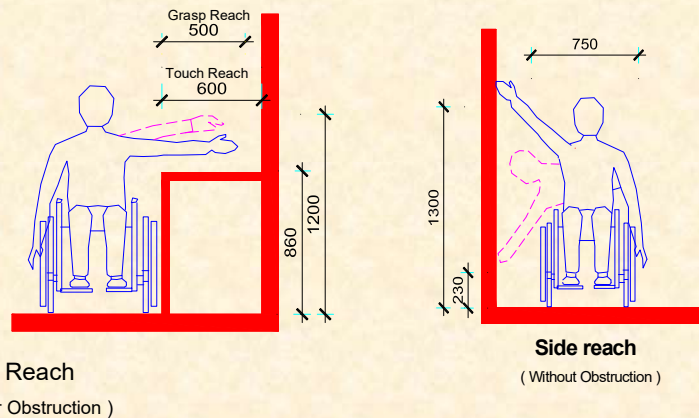
2.1.THE RANGE OF FORWARD REACH



Forward reach
(Without Obstruction)

Forward reach
(Over obstruction)

2.2.THE RANGE OF SIDE REACH



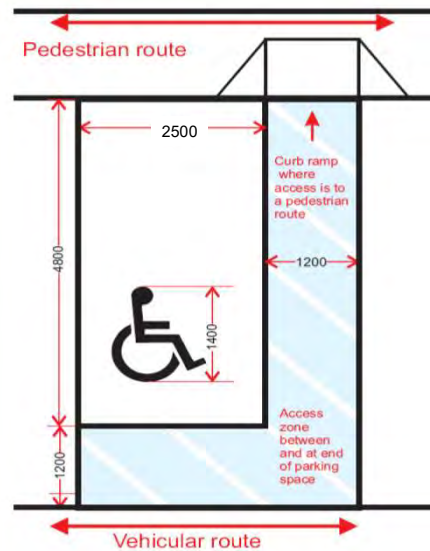
PART 2 B

DESIGN REQUIREMENTS TO BE ADOPTED IN

- PUBLIC BUILDINGS
- PUBLIC PLACES WHERE COMMON SERVICES ARE AVAILABLE

1. PARKING SPACE

- Designated parking slots located as close as possible to the main entrance.
- 1200 mm minimum clear space around the parking
- Parking slot should be at least 3700 mm x 480 mm
- Adequate parking slots (1 for every 25) and marked with the universal symbol.

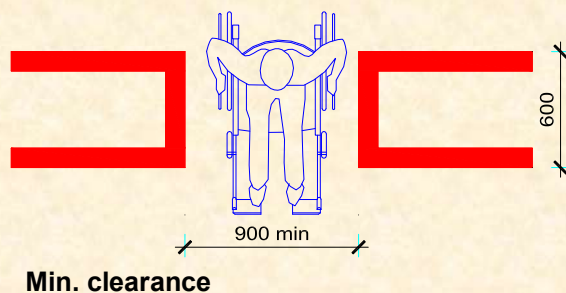


Designated Parking Slot for Persons With Disabilities

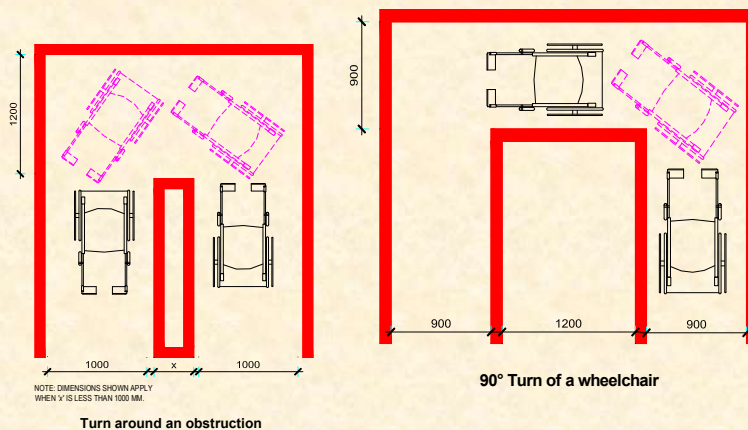


2. PATHWAYS & CORRIDORS

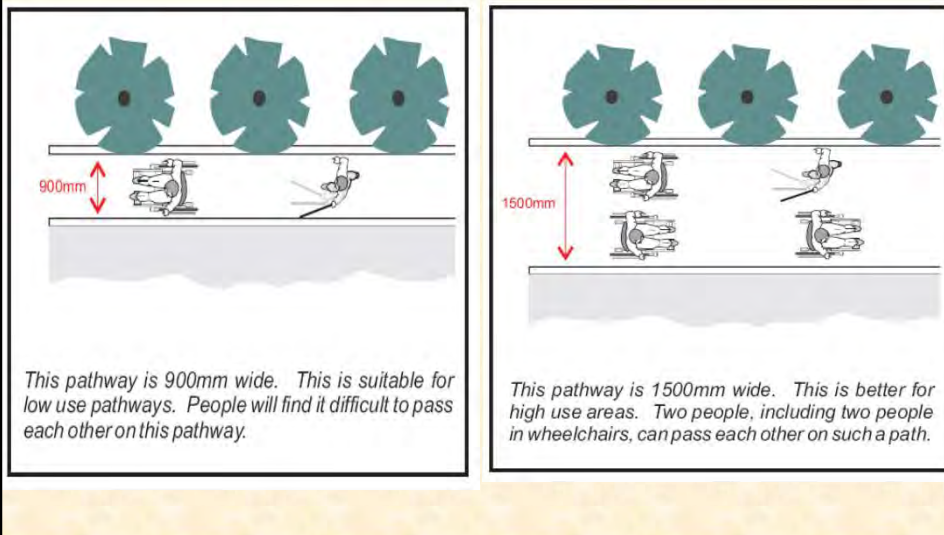
- Wide enough for Wheel Chair users.(Min.900mm)
- Keep Turning spaces at reasonable intervals if corridor is less than 1500mm width



Turning space for Corridors



External Pathways

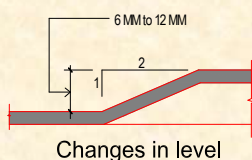
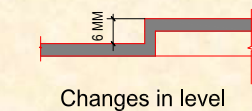


3.GROUND & FLOOR SURFACE

- Stable , Firm & Slip resistant
- 6-12mm level change leveled off with a slope of not more than 1:2
- Grating spaces not more than 13mm
- Carpets or flooring firmly attached to floor
- Rugs non – slip
- Long thick rugs not used

Correcting bevelled edges on floor surface

- Change in Level of Accessible route



Bevelled edges are essential for the wheels of the wheelchair to glide over the threshold.

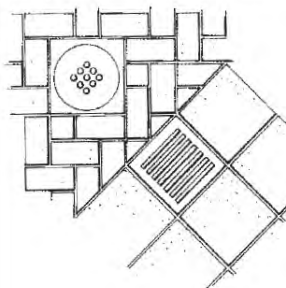
Grating space



This drainage system is used in Thailand at the bottom of steps and ramps, and on the landings of ramps. It lies flat with the ground and the holes are not too big to catch mobility devices.

Drainage channels

circulation holes in gratings should be not more than 18mm diameter



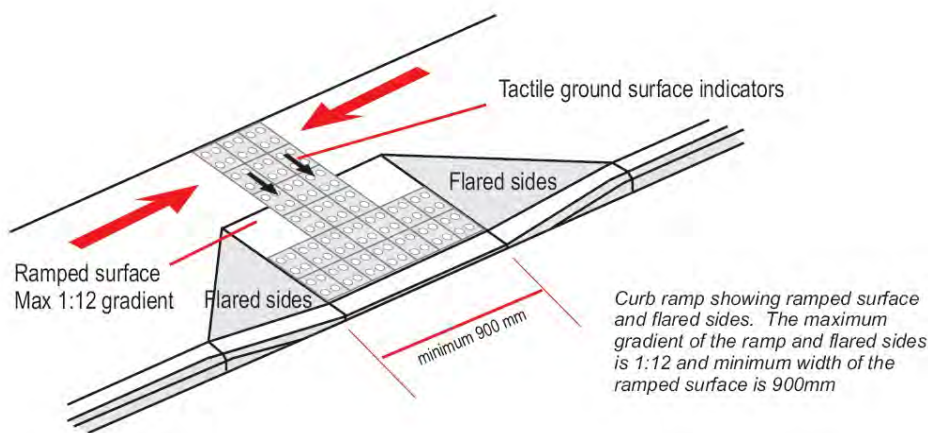
slots in gratings should be not more than 13mm wide and set at right angles to dominant line of travel

From - CAE (2004)
Two example of Drainage slots.

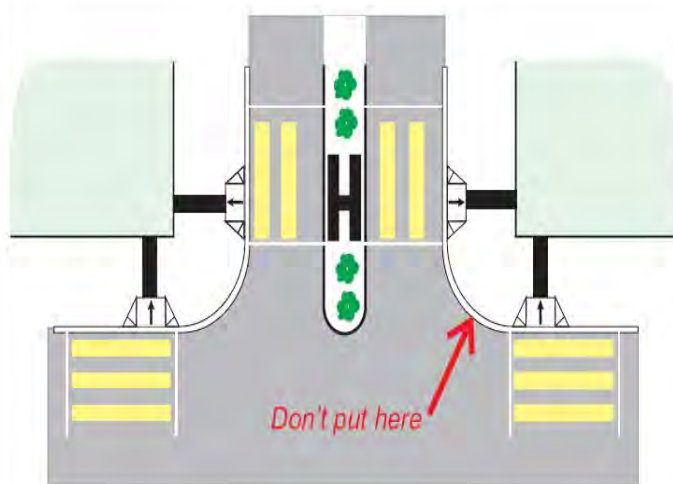


4. PAVEMENTS PUBLIC ROADS & PEDESTRIAN CROSSINGS

- CURB RAMPS



Curb Ramps at Marked Crossings



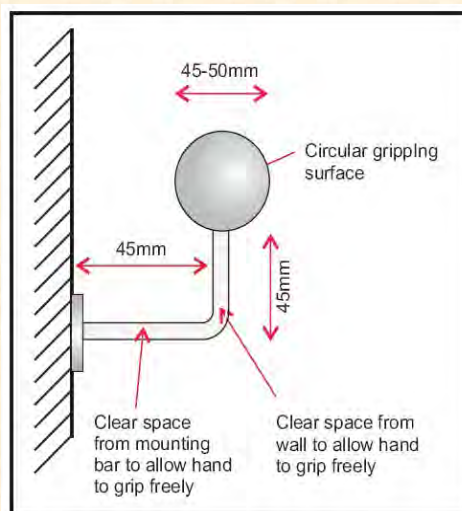
Curb ramps should be at each quadrant of an intersection and always on both sides of a pedestrian crossing.

NEVER put the curb ramp on the actual corner or the person will travel into the middle of the intersection!

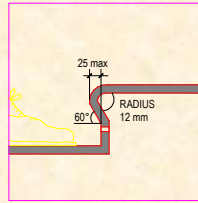
5. HANDRAIL AND GRAB BARS

HANDRAILS

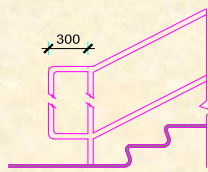
- Fabricated in diameter/ width and strength so that they can be easily used for support
- If mounted, adjacent to wall, adequate clearance between the wall
- In a colour that contrasts with the surroundings



6. STEPS & STAIRS



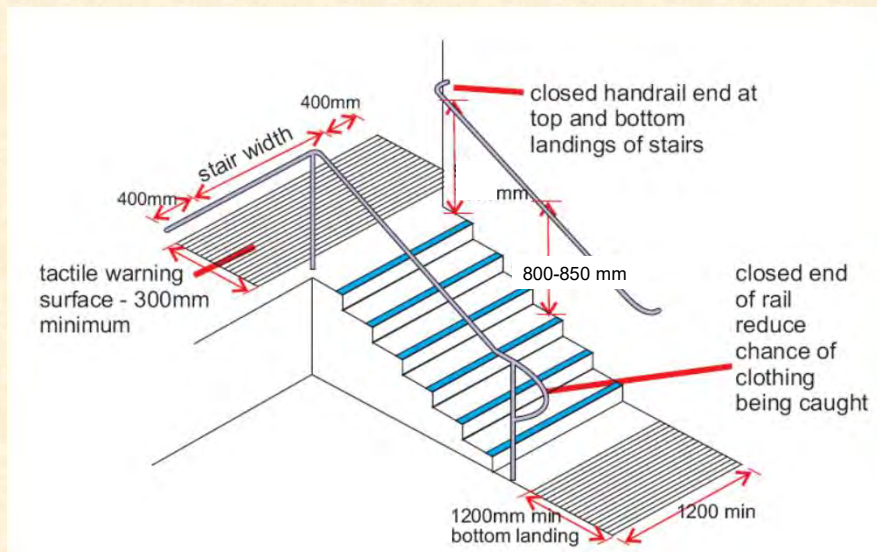
Nosing detail



Handrails

- Uniform risers and goings (R=150mm, G= 300mm)
- No open risers recommended
- Nosing project as little as possible (Max. 25mm)
- Handrails on both sides
- Handrail extend adequately beyond the top and bottom of stairs (Min. 300mm)
- Stair edges in visible colours
- Adequately illuminated.

Typical Staircase



7.RAMPS



- Minimum Ramp width 1200mm
- Gentle gradient ; preferably 1:20, but no steeper than 1:12
- Landings at every 10m
- Double handrails on both sides at 700mm to 850mm
- Raised curbs on open edges (75mm)
- Handrails extend horizontally 300mm beyond the top and bottom



Technical Specifications for Barrier Free Environment



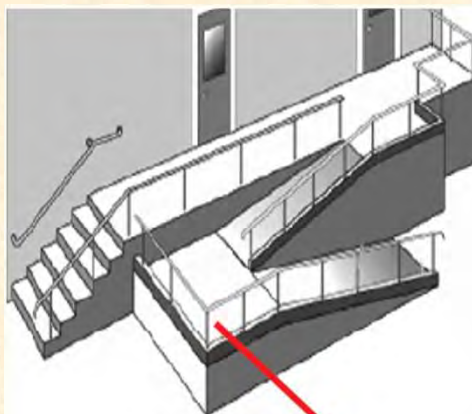
The appearance....

Feature Highlight: Universal design



An illustration of universal design is the provision of both ramp and steps for access by everyone – not just by those with special difficulties, but for all users in all situations.

Configuration of ramps



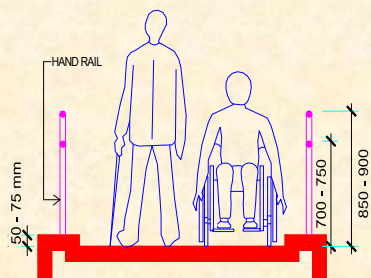
Landing is at least 1500 mm long

- Sometimes, after you calculate your gradient, you will find that the ramp is going to have to be very long. Perhaps you cannot make the ramp go straight out from the building in this case as the ramp might lead out onto a road.
- You may be able to overcome this problem by changing the configuration of a ramp. There are three general configurations:
 - straight run
 - 90 degree turn
 - 'switch back' or 180 degree turn
- Whatever the configuration decided upon, your ramp must have a landing at every change in direction



Raised Curb on Edges

- Cross Section of Ramp



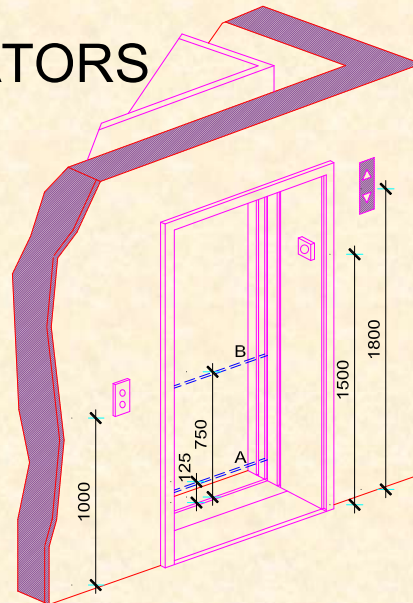
Ramp with curb



ACCLAIM IMAGES
(541)618-8723
0015-0405-2910-1955

8.LIFTS & ELEVATORS

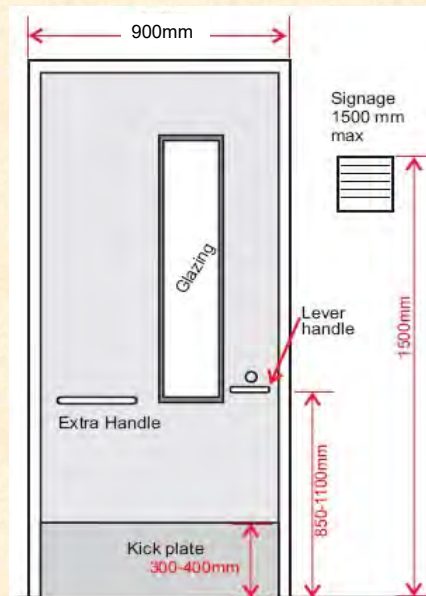
- Enough floor space for WC (1500 x 1500mm)
- Reachable controllers with Braille signs
- Door width \geq 900mm
- Adequate space in front of door for WC
- Adequate automated voice & visual position indicators



NOTE: THE AUTOMATIC DOOR REOPENING DEVICE IS ACTIVATED IF AN OBJECT PASSES THROUGH EITHER LINE 'A' OR LINE 'B'. LINE 'A' & 'B' REPRESENT THE VERTICAL LOCATIONS OF THE DOOR REOPENING DEVICE NOT REQUIRING CONTACT.

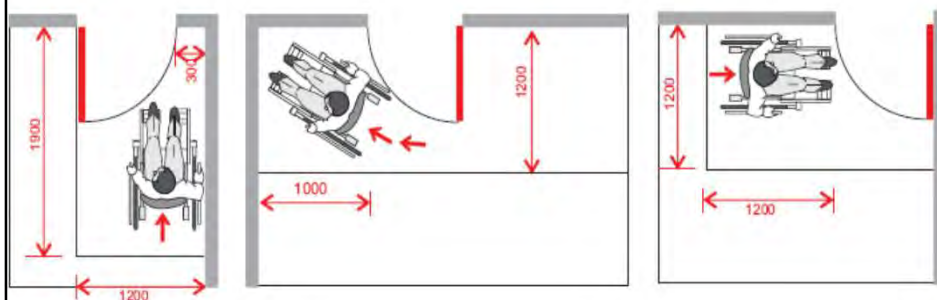
9.DOORWAYS AND ENTRANCES TO ANY PUBLIC BUILDINGS

- Min width 900mm (Adequate fo WC users)
- Space to manoeuvre in front of doorways
- Lever Handles & push type mechanisms
- Colour contrast between doorways and surrounding wall
- Glass doors must have a bright , coloured motif at every level
- Thresholds of doorways shall not exceed 20mm



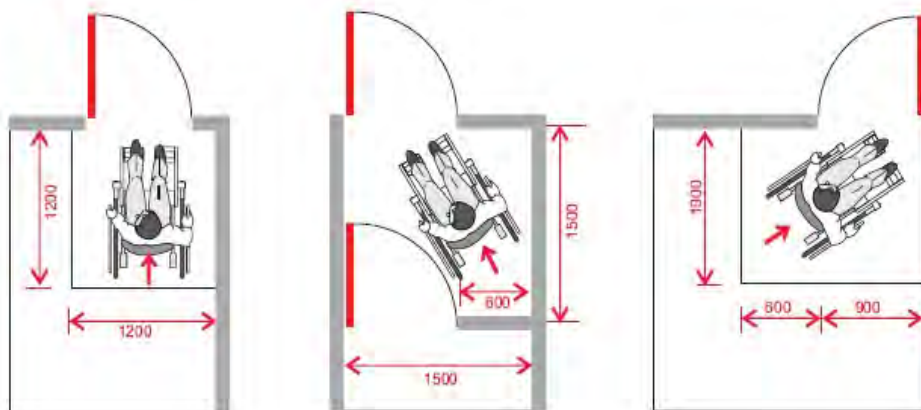
Door opening towards the wc user

Circulation space at doors



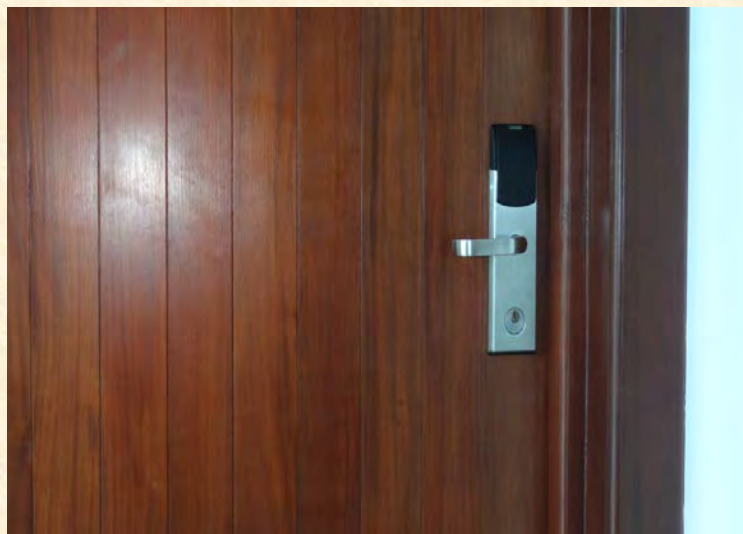
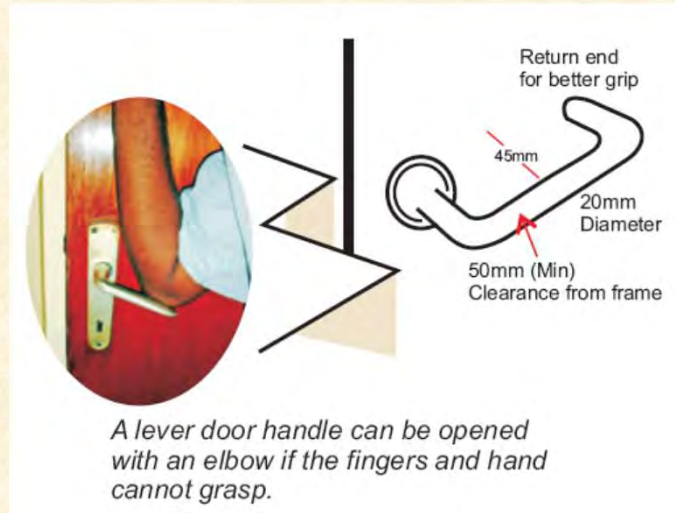
Space requirements for doors opening towards the direction of approach

Doors opening away from the wc user



Space requirements for doors opening away from the direction of approach

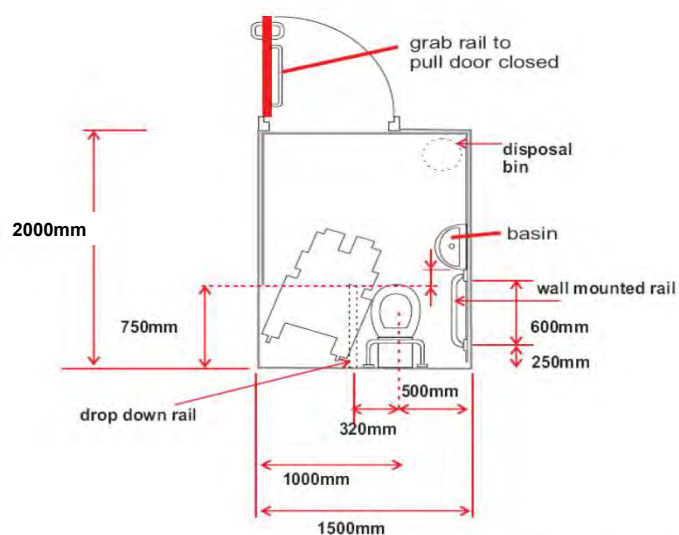
Lever Handles for Doors



10. PUBLIC TOILETS

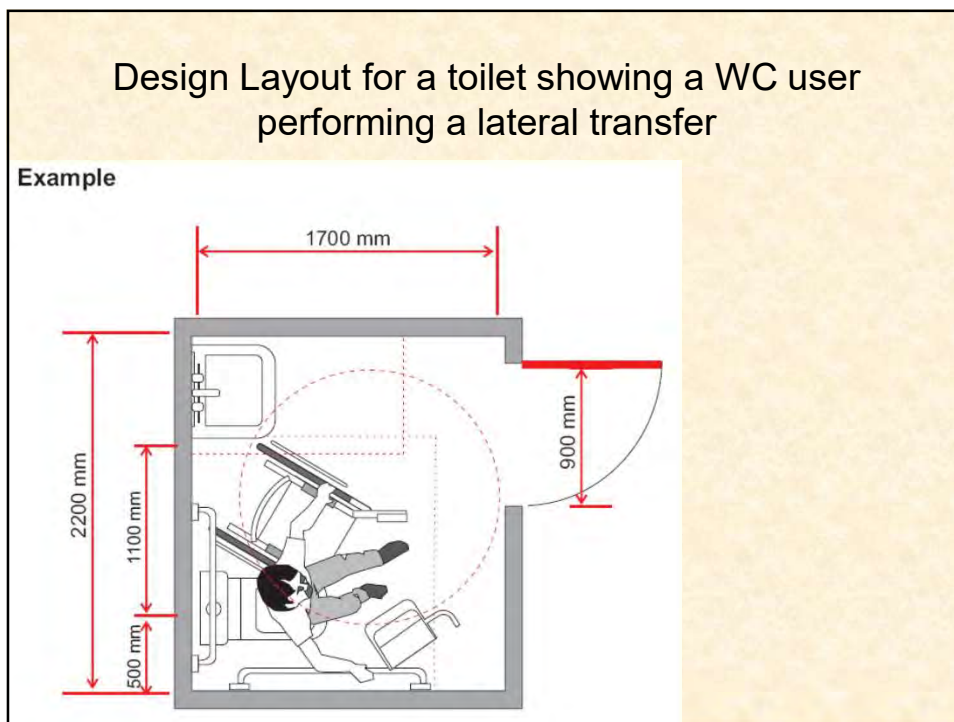
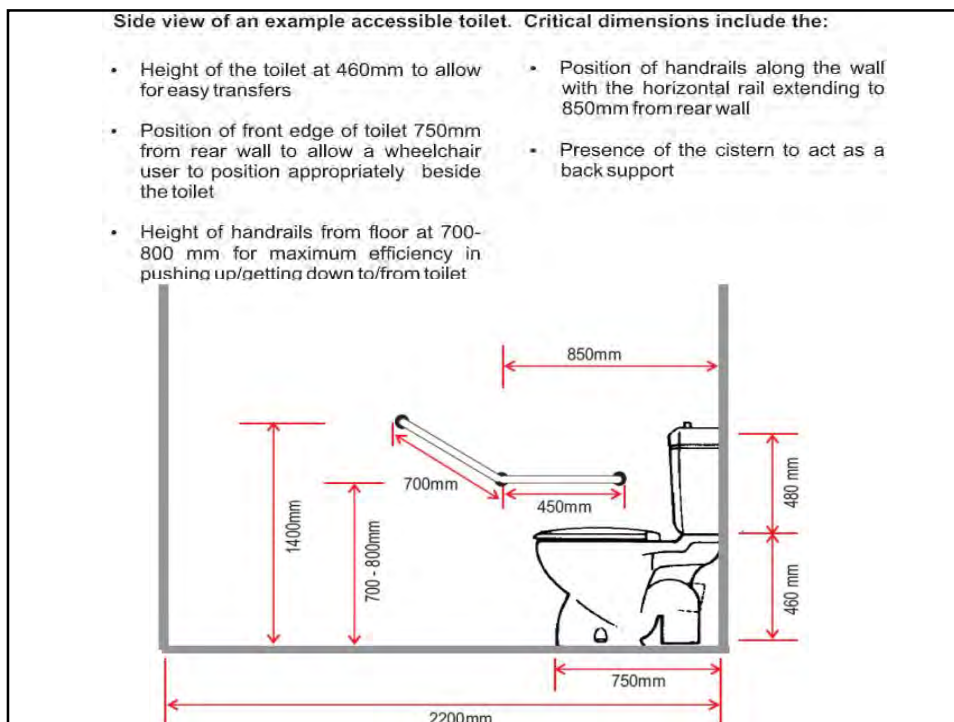
- Universal Accessibility Symbol displayed outside
- Adequate floor space (2000x1500mm)
- Toilet seat height (450-460mm)
- Support rails at suitable height
- Lever type taps
- Doors sliding or outward opening
- Toilet fittings should be fixed with easy access

Minimum Space For Accessible Toilet

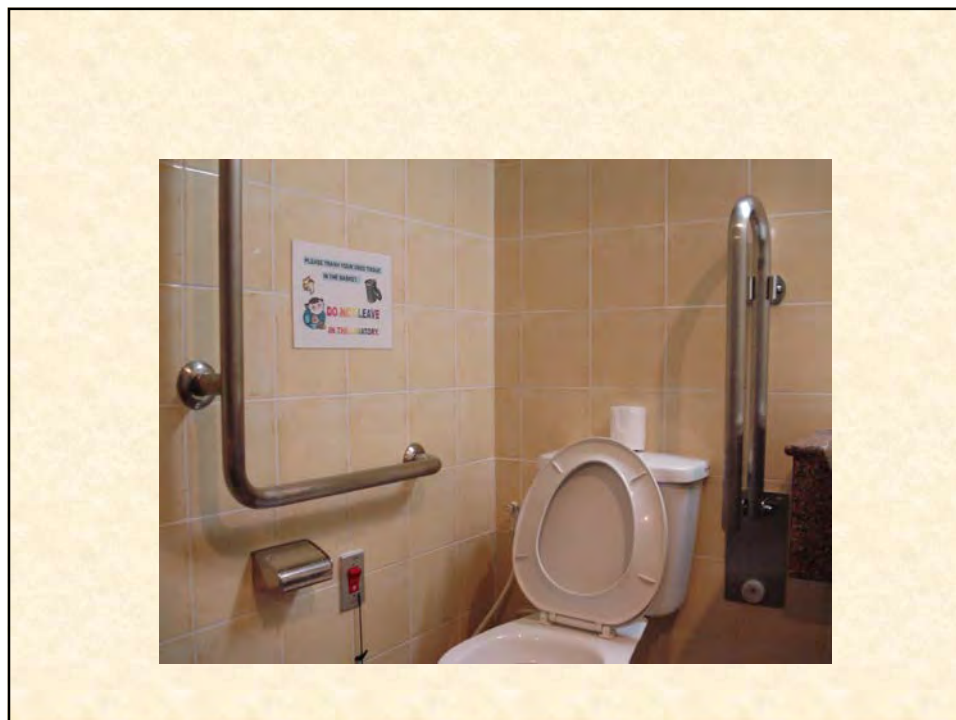
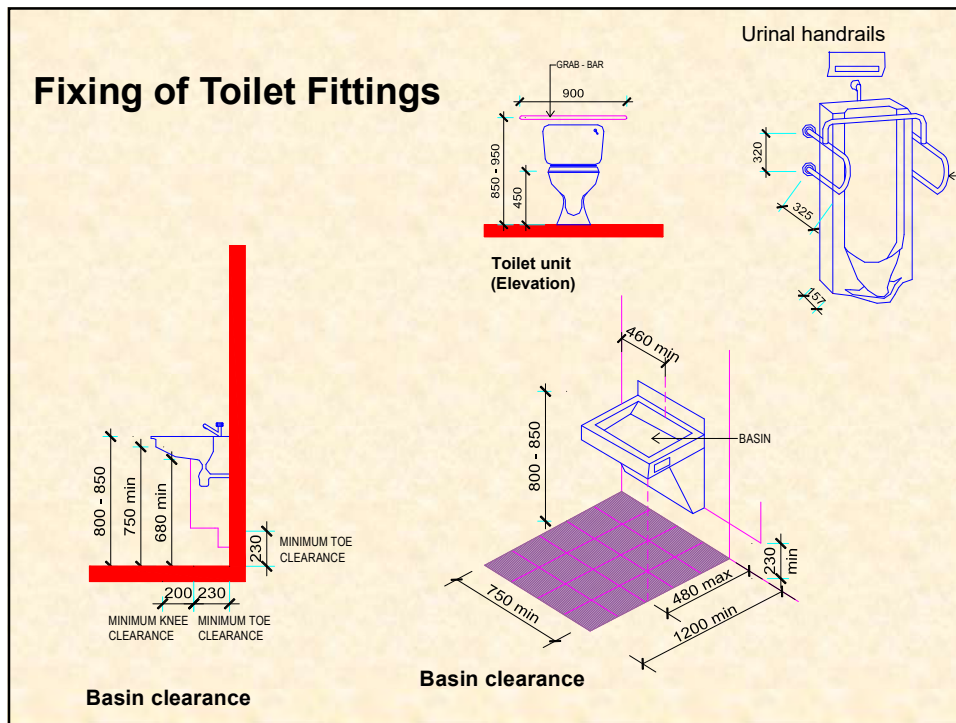


This layout allows a wheelchair user to approach from the front, from the side (lateral transfer) and diagonally, giving more opportunities for people who use the toilet differently.

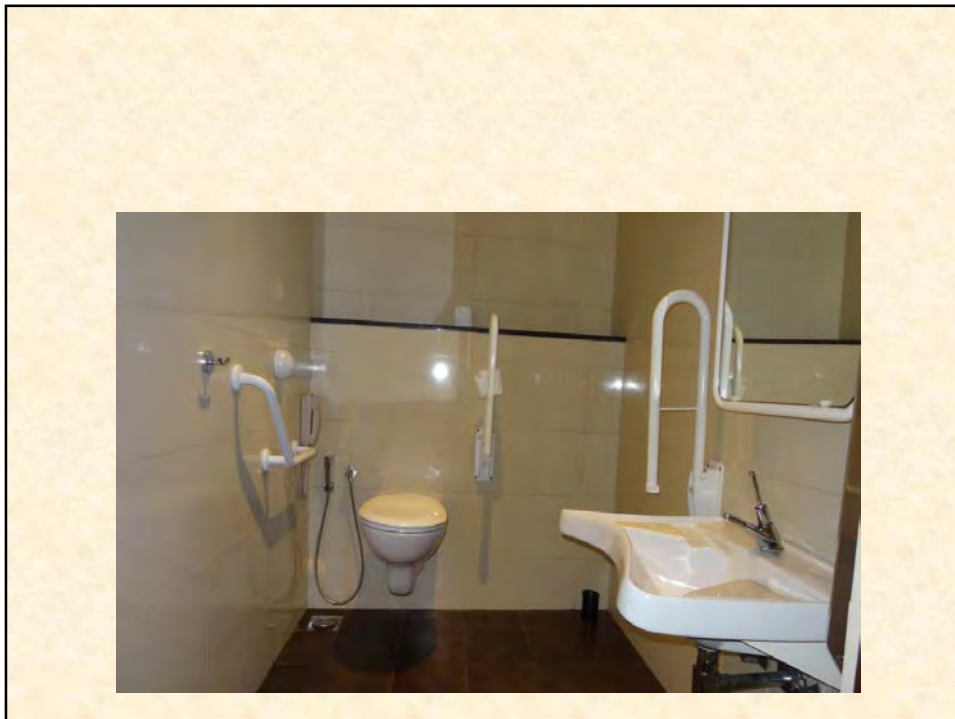
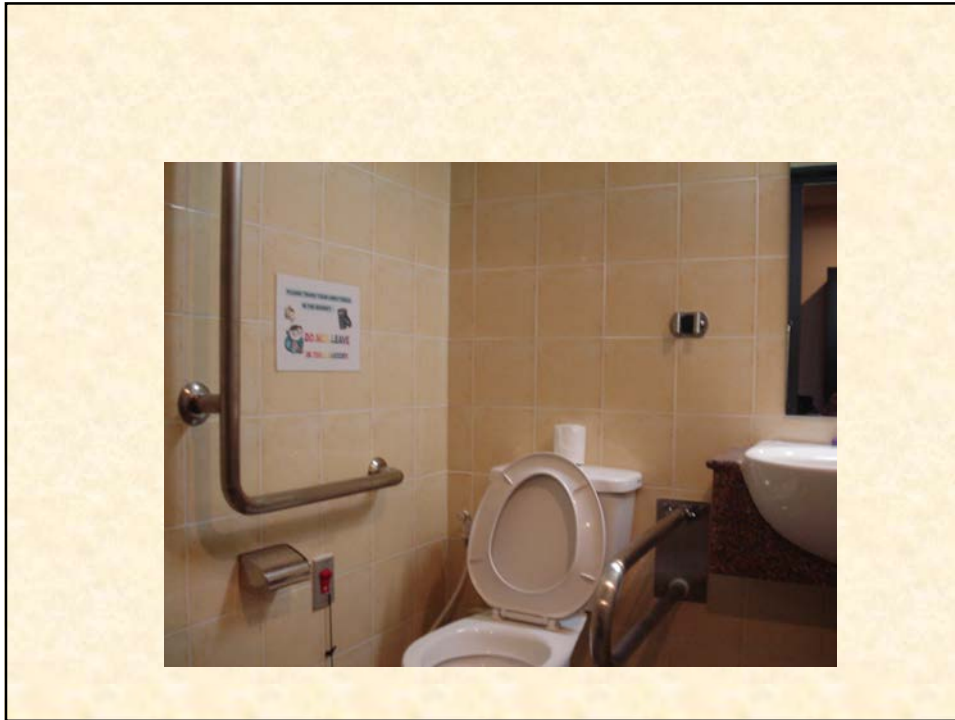
Technical Specifications for Barrier Free Environment



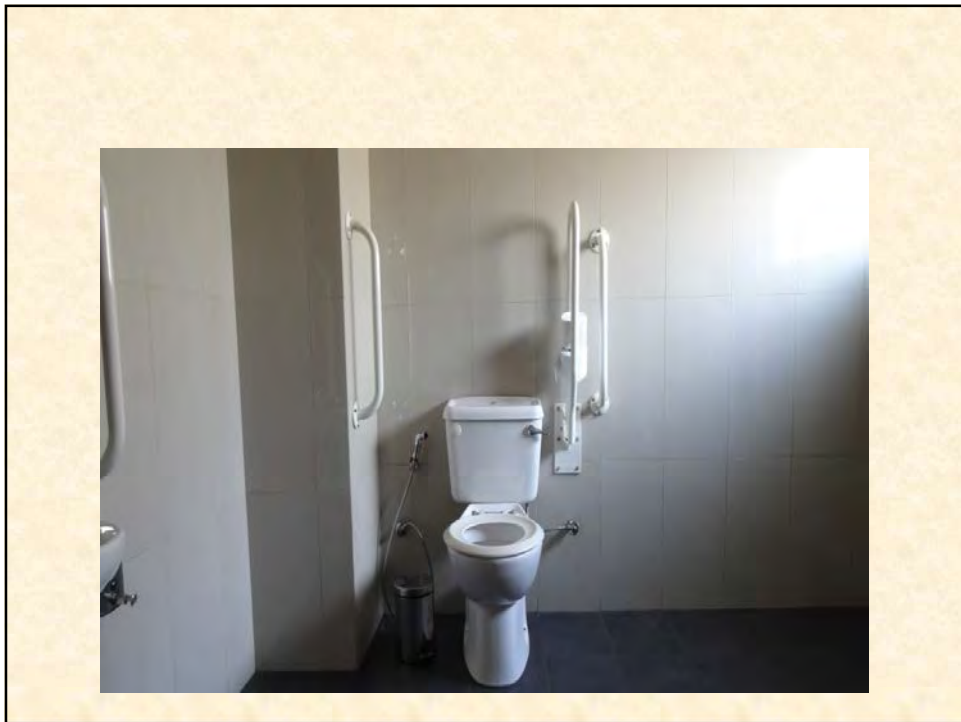
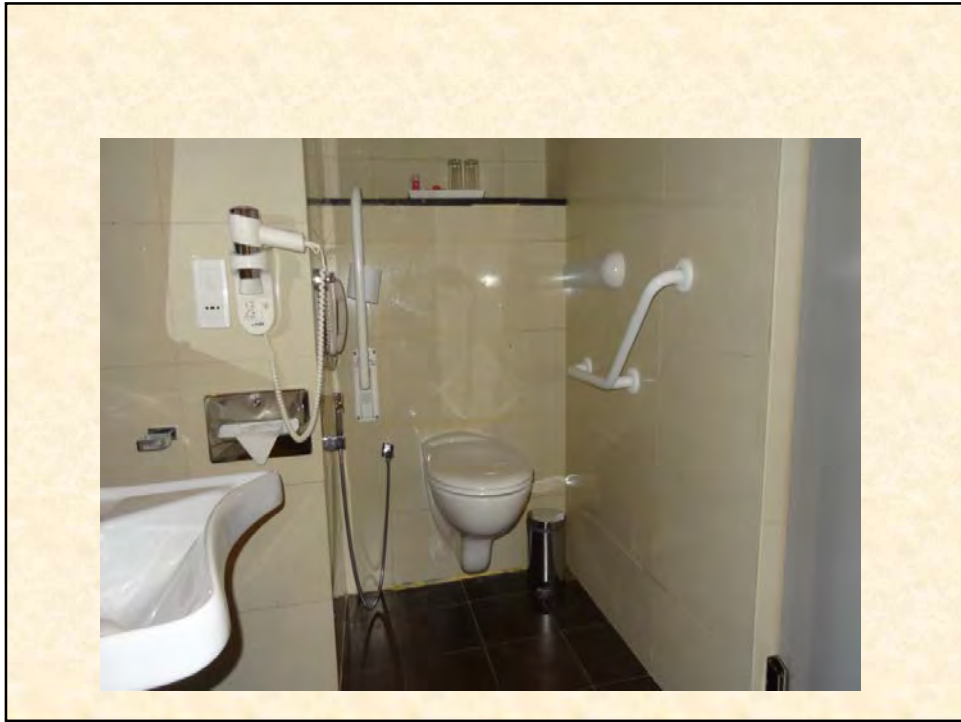
Technical Specifications for Barrier Free Environment



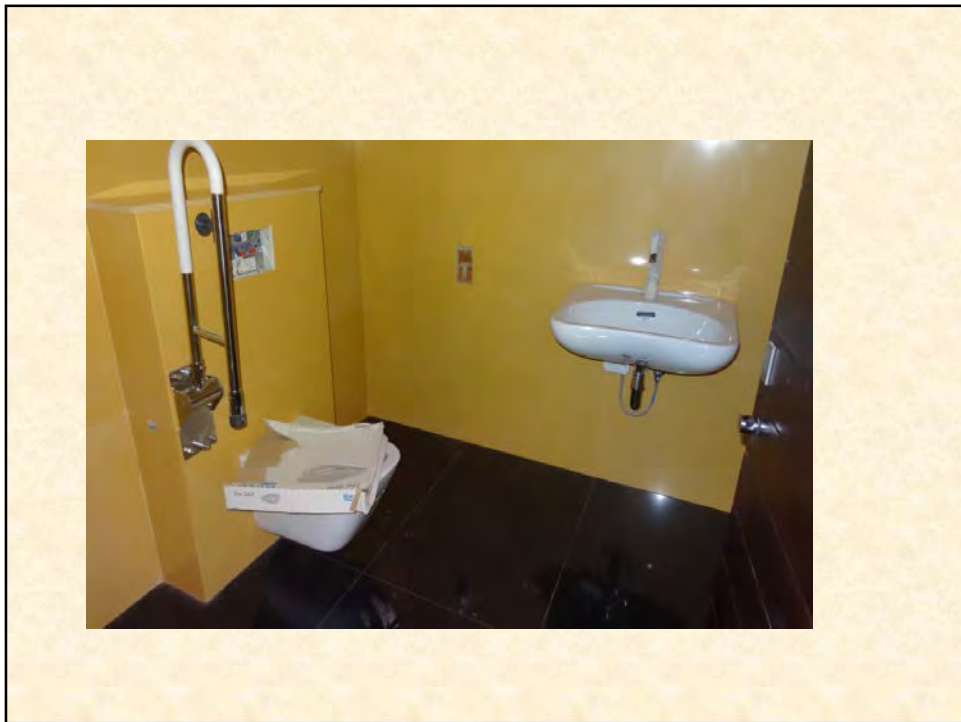
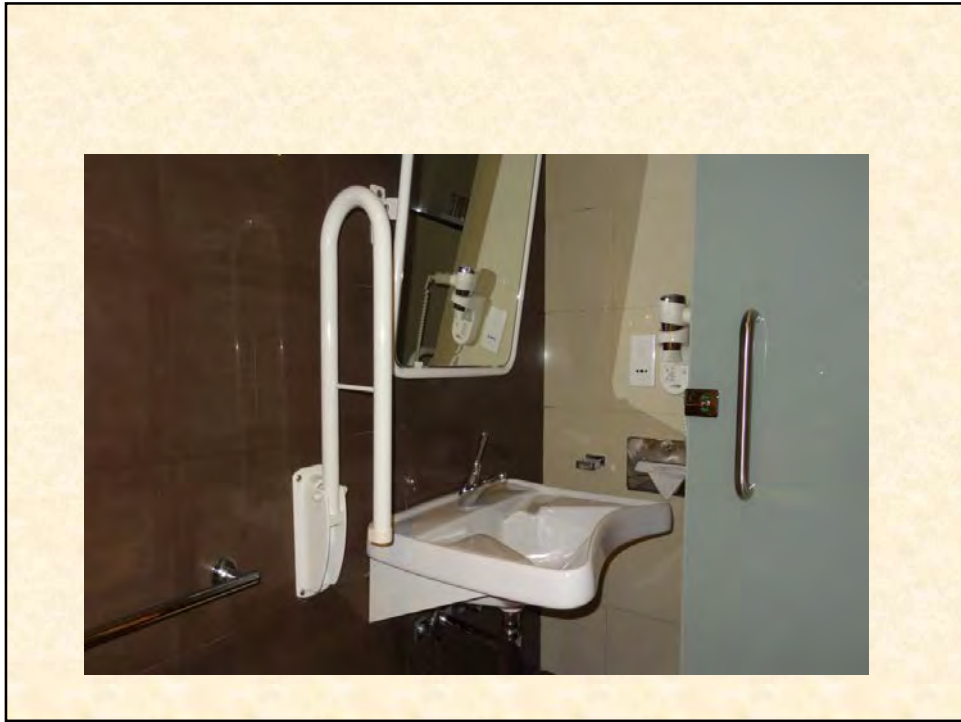
Technical Specifications for Barrier Free Environment



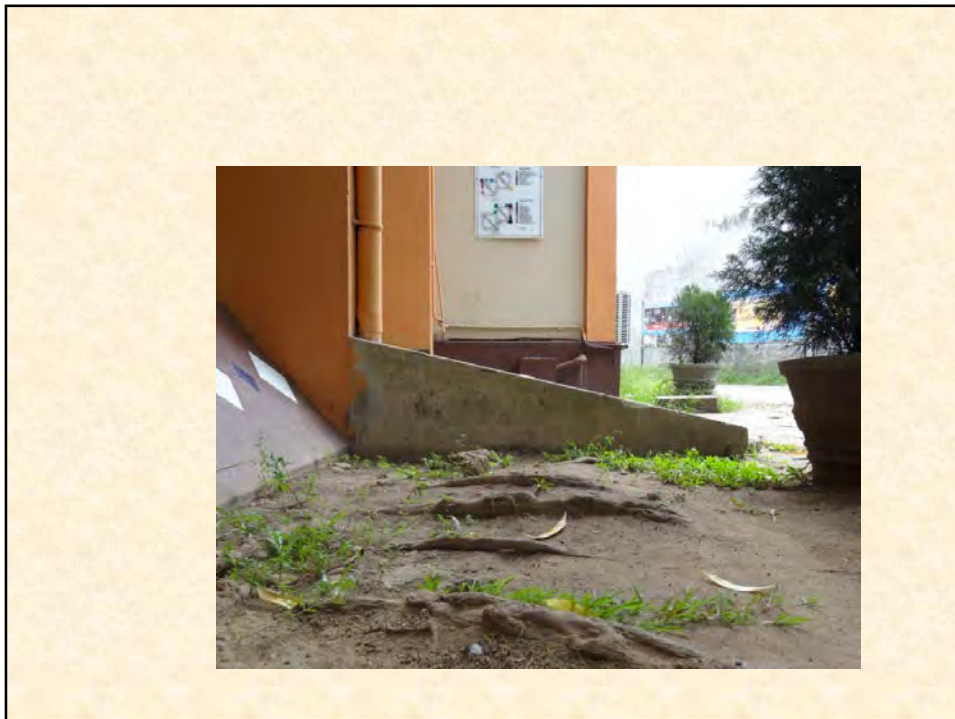
Technical Specifications for Barrier Free Environment



Technical Specifications for Barrier Free Environment

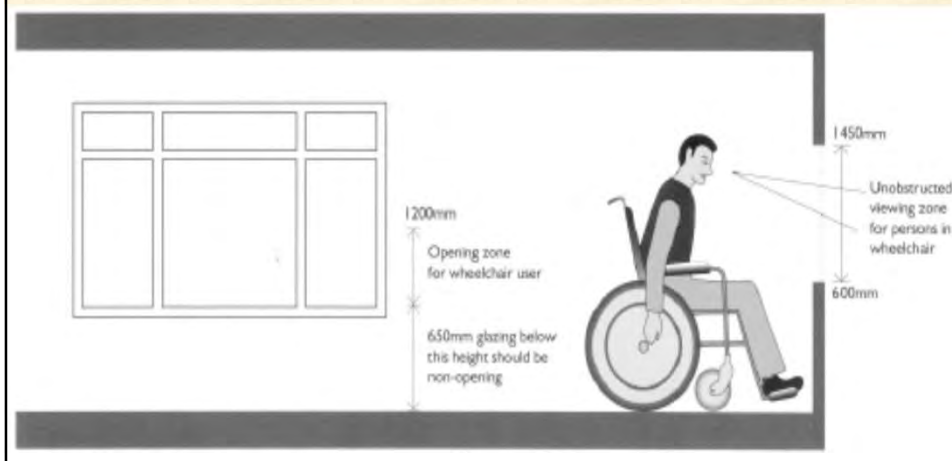


Technical Specifications for Barrier Free Environment



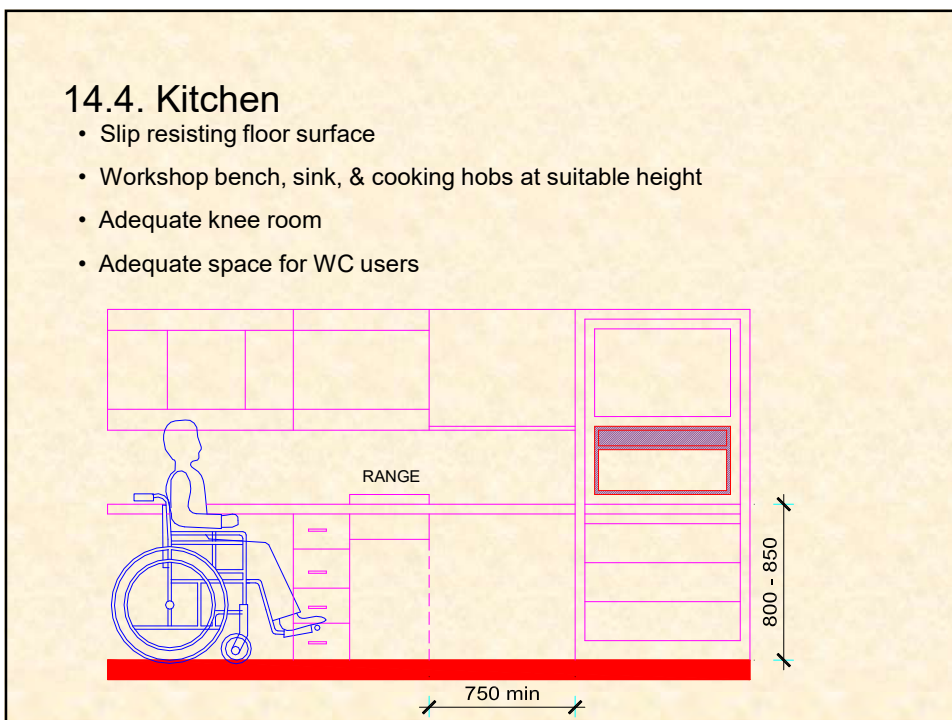
14. DESIGN PLANS TO BE ADOPTED IN PLANNING PUBLIC BUILDINGS

14.1. Windows



14.4. Kitchen

- Slip resisting floor surface
- Workshop bench, sink, & cooking hobs at suitable height
- Adequate knee room
- Adequate space for WC users



SIGNS AND SYMBOLS

- Use of symbols where appropriate to minimize use of written descriptions
- Clear system of signs used throughout building , placed at same height and being of same style
- Contrasting colours used to increase visibility
- Preferably raised or embossed for tactile reading
- Use universally recognized colours



Thank You.



Welcoming disabled colleagues



when meeting a person who uses a wheelchair.....

don't treat disabled adults as children



treat everyone as you yourself would expect to be treated



don't lean on a person's wheelchair.
the chair is a part of the body space of
the person who uses it.



try to put yourself at the wheelchair
user's eye-level to avoid stiff necks



wheelchair users are not speech or hearing impaired...



talk directly to the person, not through a companion. relax and make eye contact



don't assume that the wheelchair users need help and go to help



always wait until your offer is accepted before you help....



when meeting a person who is
blind or partially sighted....

when approaching a blind person
say clearly who you are



don't walk behind the blind person
pushing him/her forward



to guide a blind person walk slightly
in front allowing them to hold your
arm



mention steps in advance, saying if they are up or down



mention steps in advance, saying if they are up or down



don't leave them talking to an empty space. tell them before your move away



when giving directions to a blind person, don't point



give directions verbally



don't handover all the money at once



count their change out loud coin by coin or note by note, as you place it in their hand



when meeting a person who is deaf or has difficulty with speech

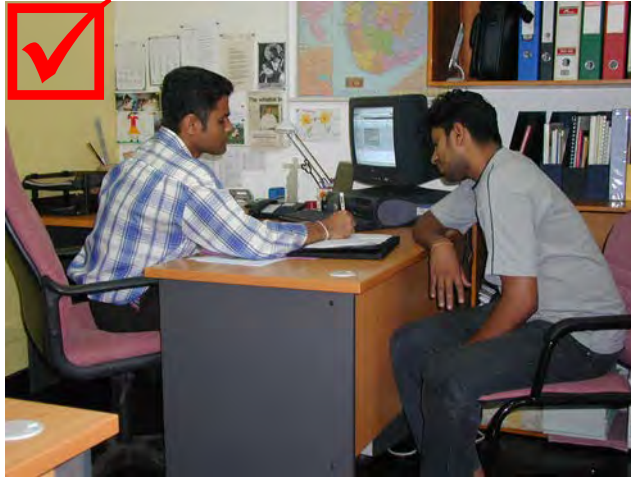
don't shout



attract attention with a light touch
on the deaf person's shoulder or
wave your hand



respect deaf person's privacy, write down what is confidential



don't correct or speak for the deaf person



be patient, and always look encouraging



Create awareness within the organisation

- Don't ask questions which are unrelated to the job offered.
Ex. Disability if not interfering with the job, cause of disability, previous salary, state salary but don't bargain

language

don't say	say
victim of/ crippled by.../ suffering from...../ afflicted by.../ "an invalid"	person who has...../ person with...../
wheelchair-bound.../ confined to a wheelchair...(wheelchair gives people freedom)	wheelchair-user/ person who uses a wheelchair
deaf and dumb	deaf without speech (Hearing impaired/Speech impaired)

don't be daunted by the long list of rights and wrongs

if you are in doubt, rely on your own common sense and understanding. If you are not sure what to do, feel confident about asking the disabled person

LRT Colombo: Workshop toward Accessible LRT System
Sept. 6th & 7th 2017, Seminar room 11th Floor Ministry of Megapolis and Western Development



Opening Remark from Project Director, Mr. Chaminda



Presentation from ECOMO, Mr. MATSUBARA



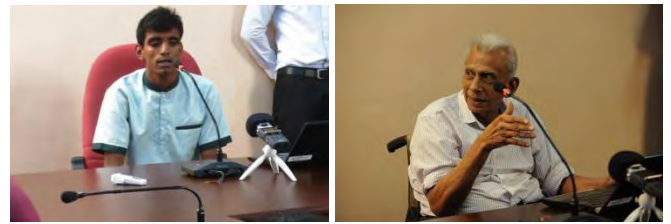
Presentation from ECOMO, Ms. TAKESHIMA



Participating in group discussion



Presentation of each group on discussion results



Disability participants' sharing: Experience/difficulty of using public transportation



Disability participants and government officials evaluate LRT station facilities' size



Group photo after completing the workshop

Appendix 11 Construction Schedule for Each Package

Implementation Schedule for New Light Rail Transit System in Colombo (Option-3 DD by ODA Consultant)
[Project Nickname to be provided]

Tentative Proposal Only for Discussion: Packaging and terms for tasks/actions may be changed.

as of 17 July 2017

TASK / ACTION	Month	2017		2018		2019		2020		2021		2022		2023		2024		2025		2026		2027	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Expected Milestone for Public					Official Pledging																		
						Signing Loan Agreement																	
Preparatory Purvery	9																						
Selection of Consultant (Accelerated Process by GOSL)	6																						
General Consultancy Services including DD, TA, and CS	97																						
Investigation and Basic Design	12																						
Detailed Design and Draft Tender documents	9																						
Tender Assitance (TA)	19																						
Construction Supervision (CS)	61																						
Post-construction (PC)	24																						
Selection of Contractors for Package1:Civil Wrks	12																						
Selection of Contractors for Package2:Civil Works	12																						
Selection of Contractors for Package3:Civil Works	12																						
Selection of Contractors for Package4:RS & System	12																						
Selection of Contractors for Package5:Depot	12																						
Selection of Contractors for Package6:Utility	12																						
Review and Finalization for Tender Documents	2																						
Tender Period (Joint Pre-qualification)	3																						
Evaluation of Bids for Technical Submissions	1																						
JICA Concurrence of Technical Bid Evaluation	1																						
Evaluation of Bids for Financial Submissions	1																						
JICA Concurrence of Financial Bid Evaluation	1																						
Contract Negotiation and Signing of the Contract	2																						
JICA Concurrence of Contract	1																						
Land Acquisition and Resettlement	34																						
Construction, Procurement and Installation	73																						
CP-01: Rolling Stock and System Works (Design, Manufacture, Supply, Test and Commissioning)	49+24=73																						
CP-02: Depot (Construction) and Workstop Equipment (Design, Procurement, Supply and Test).	49+24=73																						
CP-03: Civil Works (Construction) 4km+100~8km+500 including 5 stations	42+24=66																						
CP-04: Civil Works (Construction) 8km+500~13km+500 including 5 stations	42+24=66																						
CP-05: Civil Works and Depot/Workstop 13km+500~19km+800 including 6 stations	42+24=66																						
CP-06: [LCB]Relocation of Utility (Transmission Line Works, Distribution Line Works)	24																						

Consultant's Task
 Sub Task
 Defect Liability Period (DLP)
 Client's Task

**Appendix 12 Gazettes for Sri Jayewardenepura Bird Sanctuary and
Thalangama Environmental Protection Area**

කා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ ගැසට් පත්‍රය

අති විශේෂ

The Gazette of the Democratic Socialist Republic of Sri Lanka

EXTRAORDINARY

අංක 331/8—1985 ජනවාරි 09 වැනි දින—1985.01.09

No. 331/8 — WEDNESDAY, JANUARY 09, 1985

(Published by Authority)

PART I: SECTION (I) — GENERAL

Government Notifications

D.S.B.9/73
FAUNA AND FLORA PROTECTION ORDINANCE
ORDER made by the Minister of State under subsection 2) of section 2 of the Fauna and Flora Protection Ordinance (Chapter 489), as amended by the Act No. 44 of 1964 and Act No. 1 of 1970.

ANANDATISSA DE ALWIS,
Minister of State,
Colombo, 4th January, 1985.

Order

The area of land specified in the Schedule hereto is hereby declared to be a sanctuary for the purposes of the Fauna and Flora Protection Ordinance (Chapter 489), as amended by Act No. 44 of 1964 and Act No. 1 of 1970.

SCHEDULE

SRI JAYWARDENEPURA BIRD SANCTUARY—KOTTE

All that area of land situated in Kaduwela and Kegoda Assistant Government Agents Divisions in Colombo District of Western Province, containing in extent approximately 1,110 Acres and bounded as follows:

North: From the meeting place of Walpola Ela and Diyawanna Oya shown in lot No. 3 in P. P. 5829 and in lot No. 5, 6 and 11 in P. P. 5442 to meet Etul Kotte-Battaramulla Road to Subuthipura junction.

East: Thence along Etul Kotte-Battaramulla to Rajamalwatta road junction; Rajamalwatta road, Asoka Mawatha, that stretch of Battaramulla-Thalawathugoda road from Asoka Mawatha junction to Rohitha Mawatha junction, Rohitha Mawatha, Eastern boundary lots Nos. 2 and 3 in preliminary plan No. 5218 and the eastern boundary of lot No. 3 in preliminary plan No. 5516.

South: By a line drawn from the south-eastern boundary of lot No. 3 in preliminary plan No. 5516 upto the Beddegana (south) junction on Thalawatugoda-Pita Kotte road.

West: By a line drawn along Beddegana (south) the stretch from the Beddegana (south) junction in Pita Kotte-Etul Kotte road upto Etul Kotte junction, from Etul Kotte junction upto Diyawanna Oya and Diyawanna Oya upto Walpola Ela, the starting point of Northern boundary.

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The Gazette of the Democratic Socialist Republic of Sri Lanka
EXTRAORDINARY

අංක 1,487/10 – 2007 මාර්තු 05 වැනි සඳුදා – 2007.03.05
No. 1,487/10 – MONDAY, MARCH 05, 2007

(Published by Authority)

PART I : SECTION (I) — GENERAL

Government Notifications

L.D. B4/81.(ii)

THE NATIONAL ENVIRONMENTAL ACT, No. 47 OF 1980

Order under Section 24C and Section 24D

BY virtue of the powers vested in me by Section 24C and Section 24D of the National Environmental Act, No. 47 of 1980, I, Patali Champika Ranawaka, Minister of Environment and Natural Resources do by this Order, declare –

- (a) that the limits of the area of land described in the Schedule I hereto shall be an environmental protection area for the purposes of the aforesaid Act and shall be called the “Thalangama Environmental Protection Area”, and
- (b) that for so long as this Order is in force,—
- (i) any planning scheme or project within the aforesaid protection area which is in conflict with the provisions of the aforesaid Act, shall cease to operate from the date of the making hereof ;
 - (ii) no person other than the Central Environmental Authority shall exercise any powers or discharge any functions within the limits of the aforesaid Thalangama Environmental Protection Area ;
 - (iii) the powers and functions of the Central Environmental Authority (Permitted Uses) shall in relation to the aforesaid environmental protection area, be limited to those specified in Schedule II to this Order and shall be exercised and discharged in accordance with the conditions specified in Schedule III hereto.

For the purposes of this Order “Central Environmental Authority” means the Authority established under the National Environmental Act, No. 47 of 1980.

PATALI CHAMPIKA RANAWAKA,
Minister of Environment and Natural Resources.

Colombo,
23rd February, 2007.

1A

SCHEDULE I

LIMITS OF THE THALANGAMA ENVIRONMENTAL PROTECTION AREA

- North* : Commencing from the southern corner of the Pottewela Anicut and proceeding from the centre line of the Depa Ela to the middle line of the Udawatte Road ;
- East* : Proceeding from the centre line of the Depa Ela which flows parallel to Udawatte Road towards Pothuarawa Road, thereafter from the centre of the road along the same line of the Depa Ela to the Eastern boundary of the Avarihena Wewa ; then from the Southern boundary of the lake, across the centre line of Avarihena Road up to the point that it meets the Heen Ela ; from there along the centre line of the Heen Ela in a South Westerly direction to the centre point of the end of Wewa road ; from there onwards from the centre line of the Southern bank of Depa Ela to the centre point of the Hokandara – Thalawathugoda main Road ;
- South* : From the last mentioned point in a line drawn along the centre line of the Hokandara – Thalawathugoda main road towards left bank of the Thalangama Tank on the centre point of the Depa Ela ;
- West* : From there onwards from the point through the centre line of the Thalangama Tank towards the Northern direction of the left bank of the Thalangama Tank until it crosses the Wewa road and proceeds in a northerly manner from this point across the centre line of the Pothuarawa Road ; from there from the centre line of the Depa Ela to the centre line of the Pottewela Anicut Road ; from there onwards from the centre line of the Pottewela Anicut Road to the starting point.

SCHEDULE II

PERMITTED USES

1. The cultivation of paddy.
2. Fishing.
3. Nature trails.
4. Construction of towers for the observation of Birds.
5. An Environmental Educational Information centre and a sales outlet.
6. Construction of a Security Post.

SCHEDULE III

CONDITIONS SUBJECT TO WHICH PERMITTED USES ARE TO BE CARRIED OUT

- (a) Construction of security posts shall be constructed in limited numbers and shall be of a semi-permanent nature, always ensuring that the environment shall not be disturbed.
- (b) Only the area alongside the Depa Ela and the mud bunds (*niyara*) of the paddy fields can be used for the purpose of Nature trails.
- (c) Construction of bird observation towers shall be constructed in limited numbers and shall be of a semi-permanent nature, always ensuring that the environment shall not be disturbed. Trees existing within the area can be used for this purpose.
- (d) Only traditional fishing activities are permitted within the environmental protection zone. No motor boats will be allowed therein.
- (e) No barriers or activities which hinder the sustainability of the environmental protection zone will be permitted. Any barrier or activity so erected or carried out shall be forthwith removed or stopped by the CEA.
- (f) Permitted uses shall be carried out in such a manner as not to disturb the general life pattern of life and the livelihood of the villagers.

- (g) The permitted uses should be carried out in consultation with the Central Environmental Authority (CEA), the Urban Development Authority (UDA), the Agrarian Development Department (ADD), the Department of Irrigation (ID), the Sri Lanka Land Reclamation and Development Corporation (SLLR & DC), and the relevant Local Authorities and in keeping with the general standards applicable hereto.
- (h) The prior approval of the CEA should be obtained for any development of any infrastructure facilities.
- (i) If the permitted uses described in the Schedule II is a prescribed project under the Part IV C of the National Environmental Act, approval should be obtained accordingly.
- (j) If the proposed project is not prescribed under the Part IV C of the National Environmental Act, an Environment Assessment should be carried out (in accordance with provision of Section 10H of the National Environmental Act) for evaluation prior to granting the approval of the CEA.
- (k) The report will be evaluated by an appropriate committee appointed by the CEA.
- (l) A Monitoring Committee will be appointed to monitor the project activities.
- (m) An Administrative Levy Scheme will be prepared and adopted by the CEA, in order to process and evaluate the Project Proposal and Monitor the project activities.

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L.D.B 4/81.(ii)

THE NATIONAL ENVIRONMENTAL ACT, No. 47 OF 1980

Order under Section 24C and Section 24D

BY virtue of the powers vested in me by Section 24C and Section 24D of the National Environmental Act, No. 47 of 1980, I, Patali Champika Ranawaka, Minister of Environment and Natural Resources do by this Order, declare –

- (a) that the area of land, the limits of which are described in Part I and Part II of the Schedule I hereto shall together be an environmental protection area for the purposes of the aforesaid Act and shall be called the “Lake Gregory Environmental Protection Area”, and
- (b) that for so long as this Order is in force,—
 - (i) any planning scheme or project within the aforesaid protection area which is in conflict with the provisions of the aforesaid Act, shall cease to operate from the date of the making hereof ;
 - (ii) no person other than the Central Environmental Authority shall exercise any powers or discharge any functions within the limits of the aforesaid Lake Gregory Environmental Protection Area ;
 - (iii) the powers and functions of the Central Environmental Authority (Permitted Uses) shall in relation to the aforesaid Lake Gregory Environmental Protection Area, be limited to those specified in Schedule II to this Order and shall be exercised and discharged in accordance with the conditions specified in Schedule III hereto.

For the purposes of this Order “Central Environmental Authority” means the Authority established under the National Environmental Act, No. 47 of 1980.

PATALI CHAMPIKA RANAWAKA,
Minister of Environment and Natural Resources.

Colombo,
23rd February, 2007.

SCHEDULE I

LIMITS OF THE LAKE GREGORY ENVIRONMENTAL PROTECTION AREA

PART I

- North* : From the junction at which meets the eastern end of the Dun Short Cut and Upper Lake Road, upto the point which starts the Magastota eastate road on the Upper lake road ;
- East* : From the last mentioned point upto the Magastota junction of the Welimada – Nuwara Eliya main road ;
- South* : From the last mentioned point toward the Western direction until it meets. Race Course Road of the Welimada – Nuwara Eliya main road ;
- West* : From the last mentioned point along the line drawn upto the Eastern end of the Dun Short Cut of the Upper Lake Road.

PART II

- North* : From the starting point of the Abepura Road of the Nuwara Eliya – Welimada Main Road towards the Eastern direction until it meets starting point of Gamunupura road ;
- East* : From the above mentioned point along the Gamunupura Road and Dharmarama temple road upto entrance of the Dharmarama temple and along the Western boundary of the Dharmarama temple until it meets 50 m. contour of the High Flood Level of the Gregory Lake ;
- South* : From the last mentioned point toward Western direction along the 50 m. contour line of the Fully Supply Level until it. intersects the line drawn along weir of the Gregory Lake ;
- West* : From the last mentioned point line drawn along the weir of the Gregory Lake until it meets foot path and along the foot path and Abepura road until it meets the Nuwara Eliya – Welimada main road.

SCHEDULE II

PERMITTED USES

1. In accordance with the Order published in *Gazette Extraordinary* No. 1337/16 of 23rd April, 2004 specifying the Development Plan for the Nuwara Eliya Municipal Council area, establishing and maintaining : –

- (a) Eco-friendly restaurants, semi permanent structure.
 - (b) Parks and play gorunds.
 - (c) Fairs and exhibitions of a temporary nature.
 - (d) Recreational clubs
 - (e) Aquariums.
 - (f) Camping, picnicking site.
 - (g) Small food courts.
 - (h) Utility service relatd structures.
2. Visitor Centres and information centre.
 3. Outdoor fitness facilities.
 4. Caravan parking sites.
 5. Other nature based recreation activities.

6. Water transport if carefully integrated and operated.
7. Water sports : Rowing, Sailing, Pelasure Boating, Pedalos.
8. Jetties and piers.
9. Marsh parks.
10. Theme parks.
11. Forests.
12. Game (Angling) Fishing Decks.
13. Decks on stilts.
14. Foot path, walk ways, Cycle ways, Bridle ways.
15. Ponds and cascades.

SCHEDULE III

CONDITIONS SUBJECT TO WHICH PERMITTED USES ARE TO BE CARRIED OUT

1. All development shall be carried out without disturbing vitally important plant and animal habitats.
2. All areas of outstanding landscape/wildlife habitats/cultural/historicla vlaue should be conserved.
3. All development projects whether existing or proposed should have its own integrated management plan for soil conservation, storm water drainage, waste management and landscape works. The plan should be prepared in consultation with Department of Agriculture, Sri Lanka Land Reclamation and Development Corporation, Urban Development Authority, Central Environmental Authority and Sri Lanka Tourist Board as the case may be. Such plan should thereafter be implementd and maintained accordingly.
4. No structures which will block the acquatic enviromment are allowed.
5. A reservation area of 10 metres from the full supply levl of the lake should be kept.
6. Only environmental friendly recreational infrastructure (temporary) are allowed at specific location within the reservation area.
7. A reservation area should be landscaped in keeping with the approved development plan.
8. A permanent forest cover should be maintained in the area described under Part II of Schedule I.
9. All existing large trees (more than 3 feet GBH) should be protected.
10. The maximum permitted height of the structure from the ground level shall be according to the approved development plan.
11. If the permitted uses described in the Schedule II is a prescribed project under the Part IV C of the National Environmental Act, approval should be obtianed accordingly.
12. If the proposed project is not a prescribed under the Part IV C of the National Environmental Act, an Environmental Assessment should be carried out (in accordance with provision 10H of the National Environmental Act) for evaluation prior to granting the approval of the CEA.
13. The report will be evaluatd by an appropriate committee appointed by the CEA.
14. A Monitoring Committee will be appointd to monitor the project activities.
15. An Adminstrative Levy Scheme will be prepared and adopted by the CEA, in order to process and evaluate Project Proposal and Monitor the project activities.

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