2015 Universal Design putrajaya

green building

PERBADANAN PUTRAJAYA

KOLOKIUM MALAYSIAN STANDARD

8 SEPTEMBER 2015

DEWAN SERI MELATI, KOMPLEKS PPj

MS 1184:2014

Universal Design Accessibility In the Built Enviroment

APPLICATION OF UNIVERSAL DESIGN IN THE BUILT ENVIRONMENT 2015

Presented by :

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INTRODUCTION

- **"Universal Design"** means the design of products, environments, programmes & services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.
- **UNIVERSAL DESIGN** enables a wider cohort of people to benefit from **accessibility, safety and usability** - Without **discriminating** against anyone.
- The Seven Principles of Universal Design state that facilities should be designed to be **usable to the greatest possible extent rather than 'by all'**

Ron Mace (1985)

"Enabling inclusive design requires the **successful capture of information about the end-user** and representing that information in a form that is accessible to the designer since inclusive or **universal design are fundamentally derived from a user-centered design theory"**

S.KEATES & J. CLARKSON (2003)

"Housing is too frequently **designed for the 'average' person with 'average' physical ability when, in reality, few people meet this description of 'average'.** People range greatly in size and physical and mental abilities, and they experience many changes throughout their lives."

EMORY BALDWIN (2003)

GLOBAL - PEOPLE WITH DISABILITIES (PWDS)

- **Estimated 15% of the world's population has a disability**
- **More than ONE BILLION people with special needs worldwide**
- **An estimated 80% live in developing countries**

(Source: WHO Report, 2011)

PEOPLE WITH DISABILITIES (PWDS) IN MALAYSIA

- There are 436,317 PWDs registered with the Department of Social Welfare by Dec 2012
- 37.3% - learning disabilities (autism is the highest %)
- 33.4% - physically disabled
- 9.0% - visually impaired
- 3.3% - hearing impaired
- 3.3% - mentally disabled
- 0.4% - speech disability
- 4.6% - other type of disabilities.

(Source: Jabatan Kebajikan Masyarakat [JKM] Malaysia, 2012)

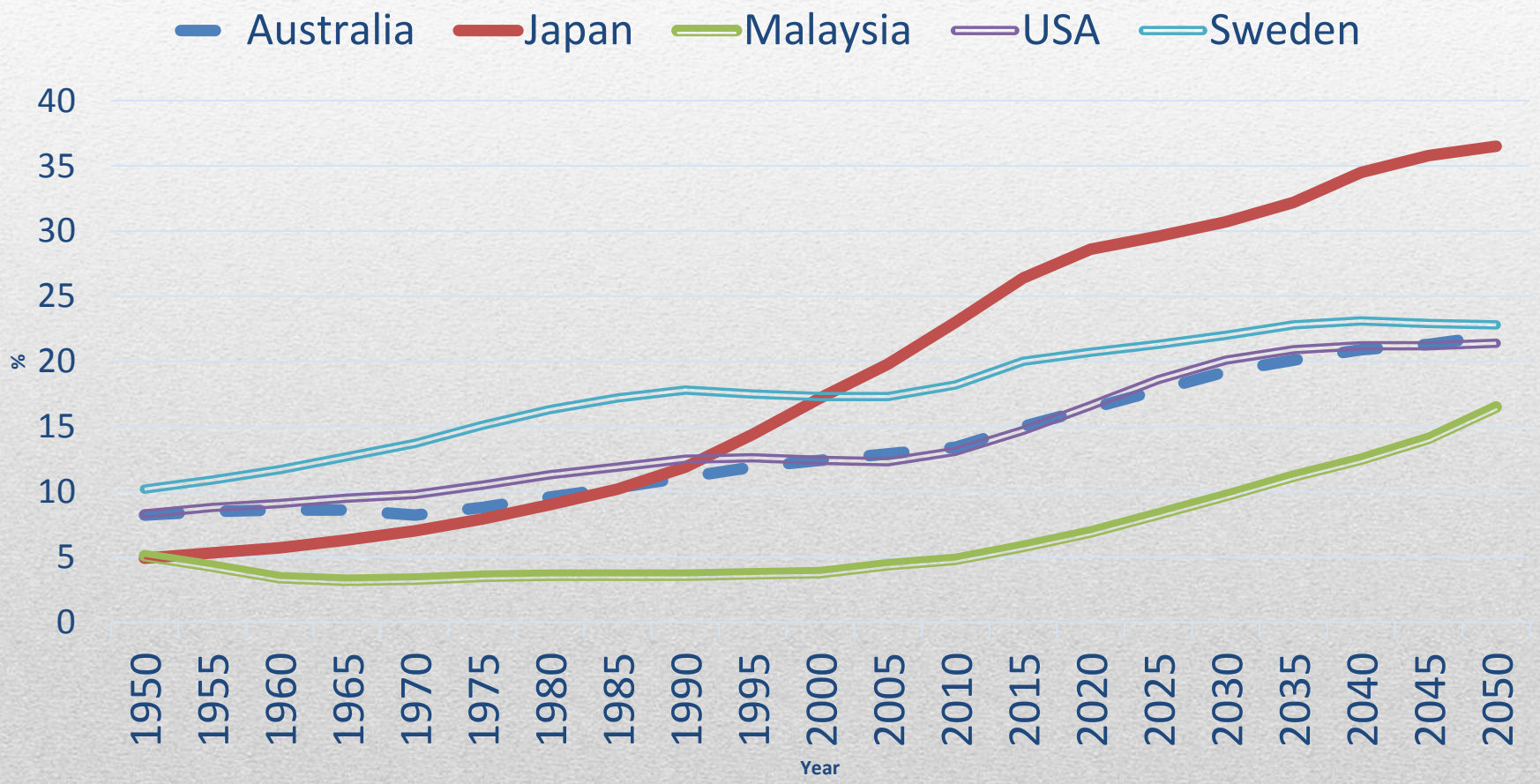
ELDERLY IN MALAYSIA (60+)

- **Population of 60+ in 2010 is 7.9%**
- **Population projection in 2040 will be 16.3%**

(Social Welfare Department, 2013)

INTRODUCTION

POPULATION RATIO 65+



Source: Satoshi Kose (ICUDBE, 2013)

UNIVERSAL DESIGN APPROACH

Strategies and approaches in **designing, constructing and managing** the **accessible** built environment to ensure that it **satisfies all the needs** of the intended users

(Figure Source: Jim Harrison, ICUDBE 2013)

INTENDED USERS

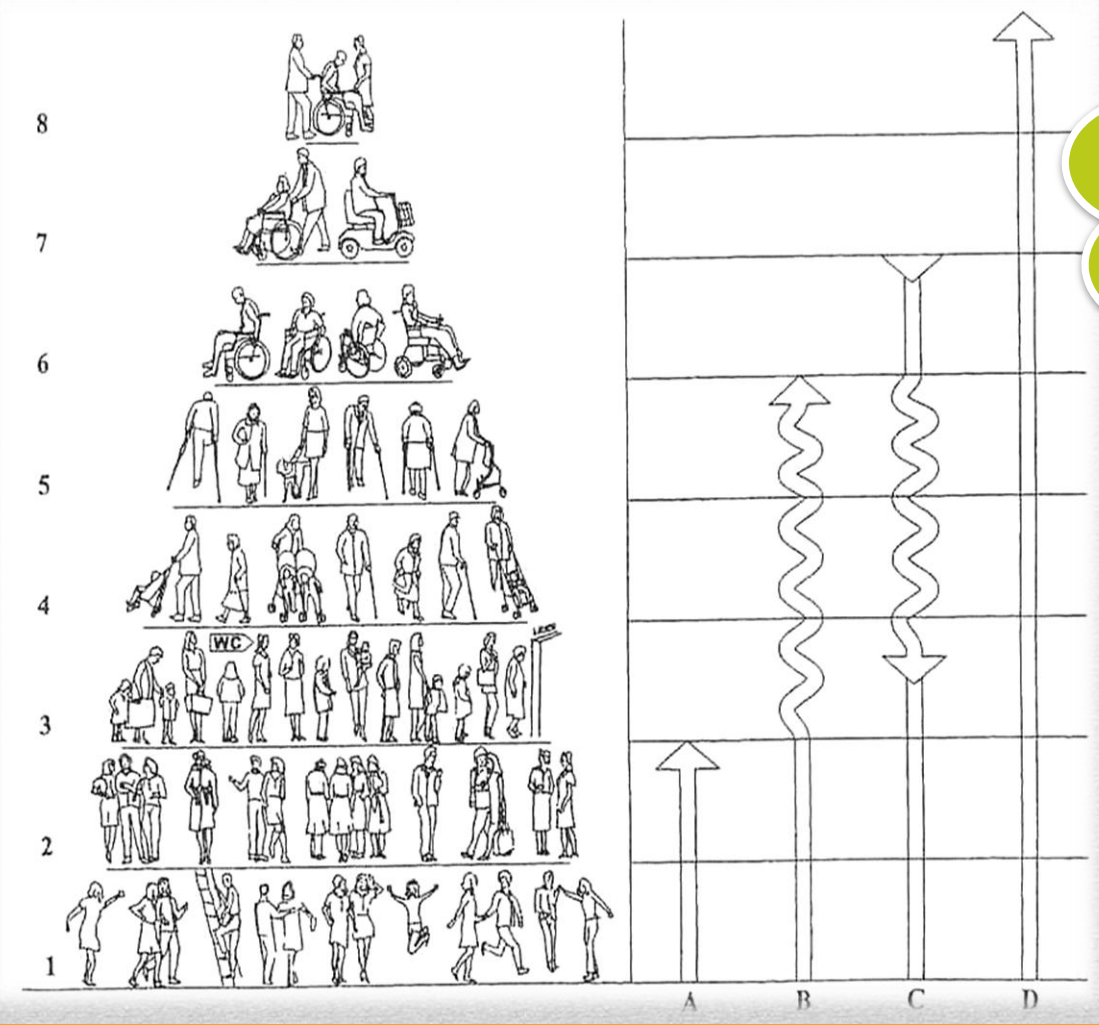
(Source: Asiah Abdul Rahim, 2013)

Obstructive VS Supportive Built Environment

- People live and move in an everyday of planned and unplanned experiences and activities, always in the context and interrelationship of social, physical and virtual environments.
- On a daily basis, a person uses a home, transportation, communication and information technology, commercial facilities, workplaces, streets and squares, entertainment areas.
- Each of these settings and services – and also the chain of connections – must be integrally and inclusively accessible for a diversity of users.
- The built environment must manifest itself to users as a necessary spatial-morphological whole and fabric of accessible and usable buildings and open space, public and private spaces, implements and facilities.
- Decision-makers, designers and builders must work in the structure and in the fabric of that global built environment.

(Source: Hubert Froyen (Ed.) *Universal Design – A Methodological Approached*)

BUILDING COMMUNITY THROUGH ACCESSIBILITY – DESIGNING FOR THE LIFE OF A FAMILY



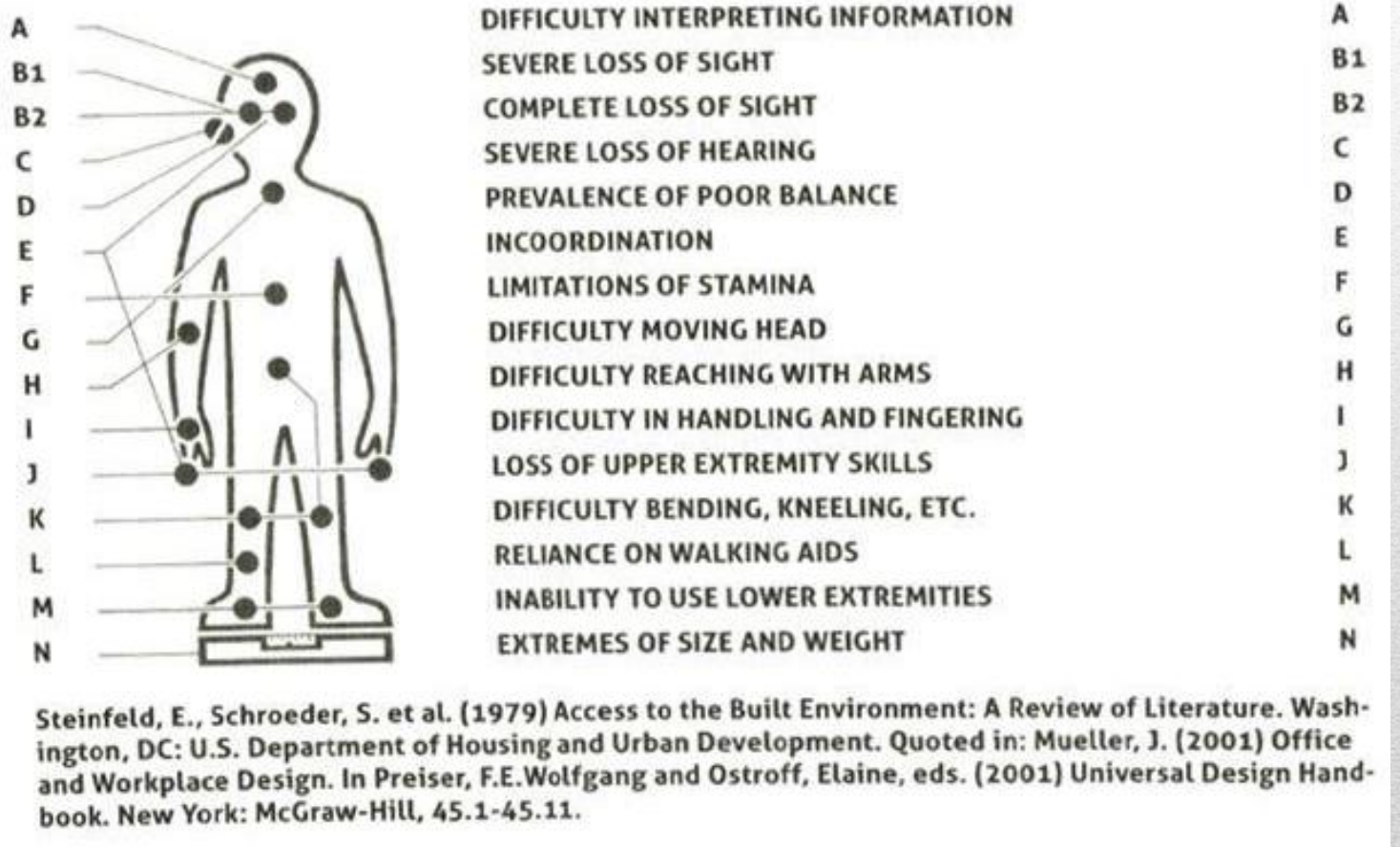
"PLAN FOR HUMANITY"
"BUILD FOR SOCIETY"
"DESIGN FOR PEOPLE"

JOSEPH KWAN (2013), ***Universal Design: Architect's Social Responsibility.*** **Hong Kong (ICUDBE 2013)**

The Universal Design Pyramid demonstrate the bottom up methodology of universal design.

Source: Universal Design Pyramid (Goldsmith, 2000)

THE ENABLER



Steinfeld, E., Schroeder, S. et al. (1979) Access to the Built Environment: A Review of Literature. Washington, DC: U.S. Department of Housing and Urban Development. Quoted in: Mueller, J. (2001) Office and Workplace Design. In Preiser, F.E.Wolfgang and Ostroff, Elaine, eds. (2001) Universal Design Handbook. New York: McGraw-Hill, 45.1-45.11.

In the 70s', **Professor Edward Steinfeld**, as director and researcher with the Rehabilitation Engineering Research Centre (RERC) of the University at buffalo in New York, developed a usable synthesis of relevant design data related to functional limitations. In *The Enabler* (1979) he compiled an overview of such limitations, without becoming entangled in medical jargon and without revealing confidential medical data.

(Source: Hubert Froyen (Ed.) *Universal Design – A Methodological Approached*)

7 PRINCIPLES OF UNIVERSAL DESIGN

1

Equitable Use

The design is useful and marketable to people with diverse abilities.

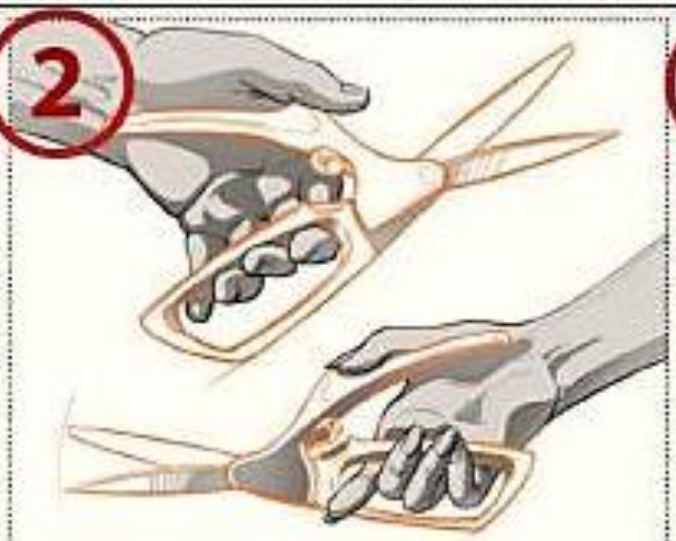
1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.

1b. Avoid segregating or stigmatizing any users.

1c. Provisions for privacy, security, and safety should be equally available to all users.

1d. Make the design appealing to all users.

2



Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

2a. Provide choice in methods of use.

2b. Accommodate right- or left-handed access and use.

2c. Facilitate the user's accuracy and precision.

2d. Provide adaptability to the user's pace.

3

Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or education level.

3a. Eliminate unnecessary complexity.

3b. Be consistent with user expectations and intuition.

3c. Accommodate a wide range of literacy and language skills.

3d. Arrange information consistent with its importance.

3e. Provide effective prompting and feedback during and after task completion.

7 PRINCIPLES OF UNIVERSAL DESIGN

4 Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

- 4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- 4b. Provide adequate contrast between essential information and its surroundings.
- 4c. Maximize "legibility" of essential information.
- 4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- 4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

5 Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

- 5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- 5b. Provide warnings of hazards and errors.
- 5c. Provide fail safe features.
- 5d. Discourage unconscious action in tasks that require vigilance.

6 Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

- 6a. Allow user to maintain a neutral body position.
- 6b. Use reasonable operating forces.
- 6c. Minimize repetitive actions.
- 6d. Minimize sustained physical effort.

7 Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

- 7a. Provide a clear line of sight to important elements for any seated or standing user.
- 7b. Make reach to all components comfortable for any seated or standing user.
- 7c. Accommodate variations in hand and grip size.
- 7d. Provide adequate space for the use of assistive devices or personal assistance.

Source: http://www.fpintell.fpinnovations.ca/en/2012/07/aging-in-place/

ELEMENTS OF UNIVERSAL DESIGN

- **Universal design – design of environments and products** access to buildings, horizontal circulation, vertical circulation, mechanical circulation, sanitary circulation, indoor public facilities, outdoor public facilities, amenities etc
- **Built environment**: building typology, school, office, waterfront development, parks
- i) **Vertical circulation** (change of level): stairs, ramps, lifts, escalators
- ii) **Horizontal circulation**: access routes, step ramps, corridors, walkalators, bridges, crossings etc
- **Assistive products** – railings, grab rails, fittings
- **Communication and information** – signage, alarms, notices, digital, switches, flashing lights, blinking alarms, vibrators

UNIVERSAL DESIGN IN THE BUILT ENVIRONMENT

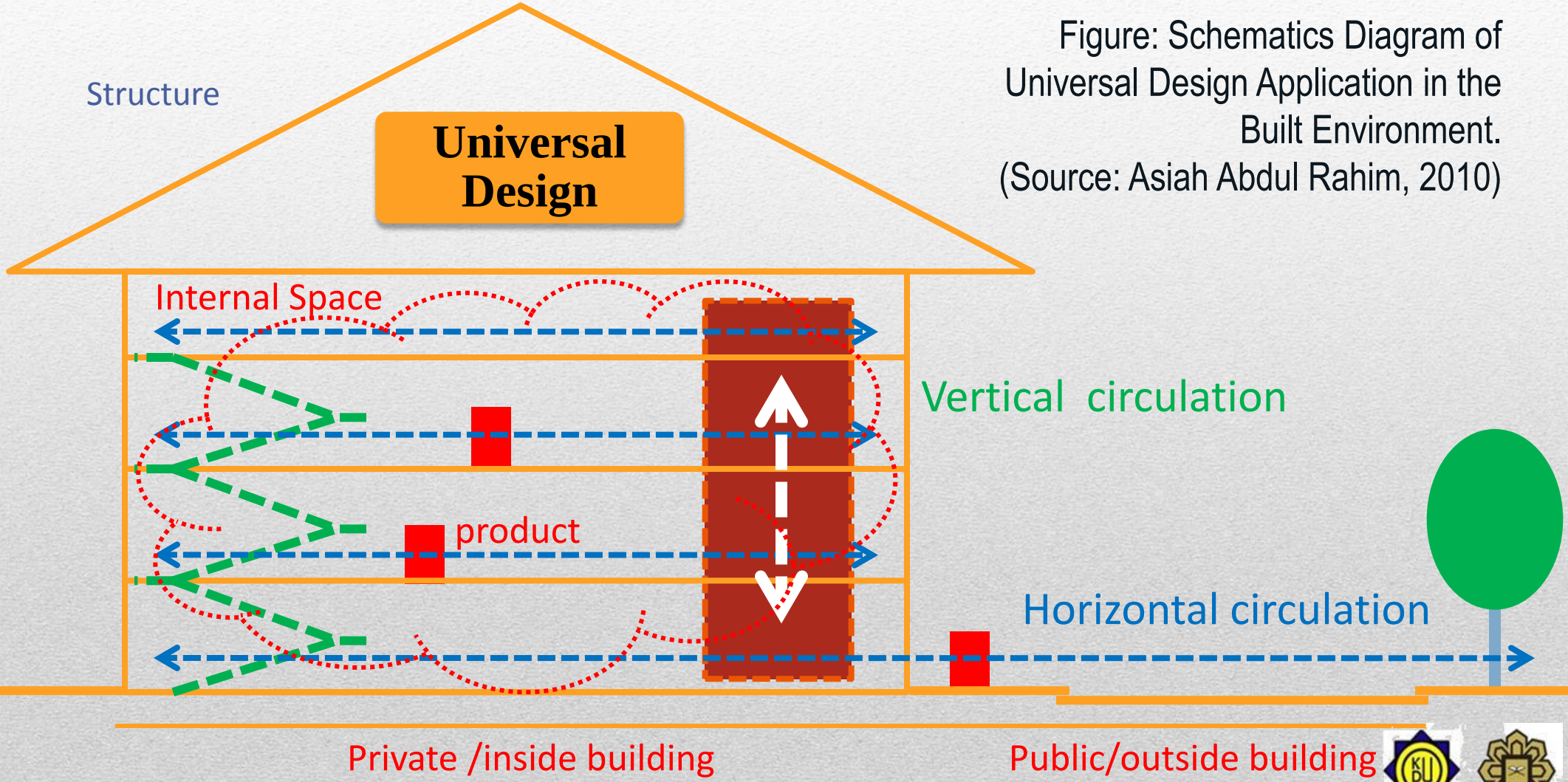


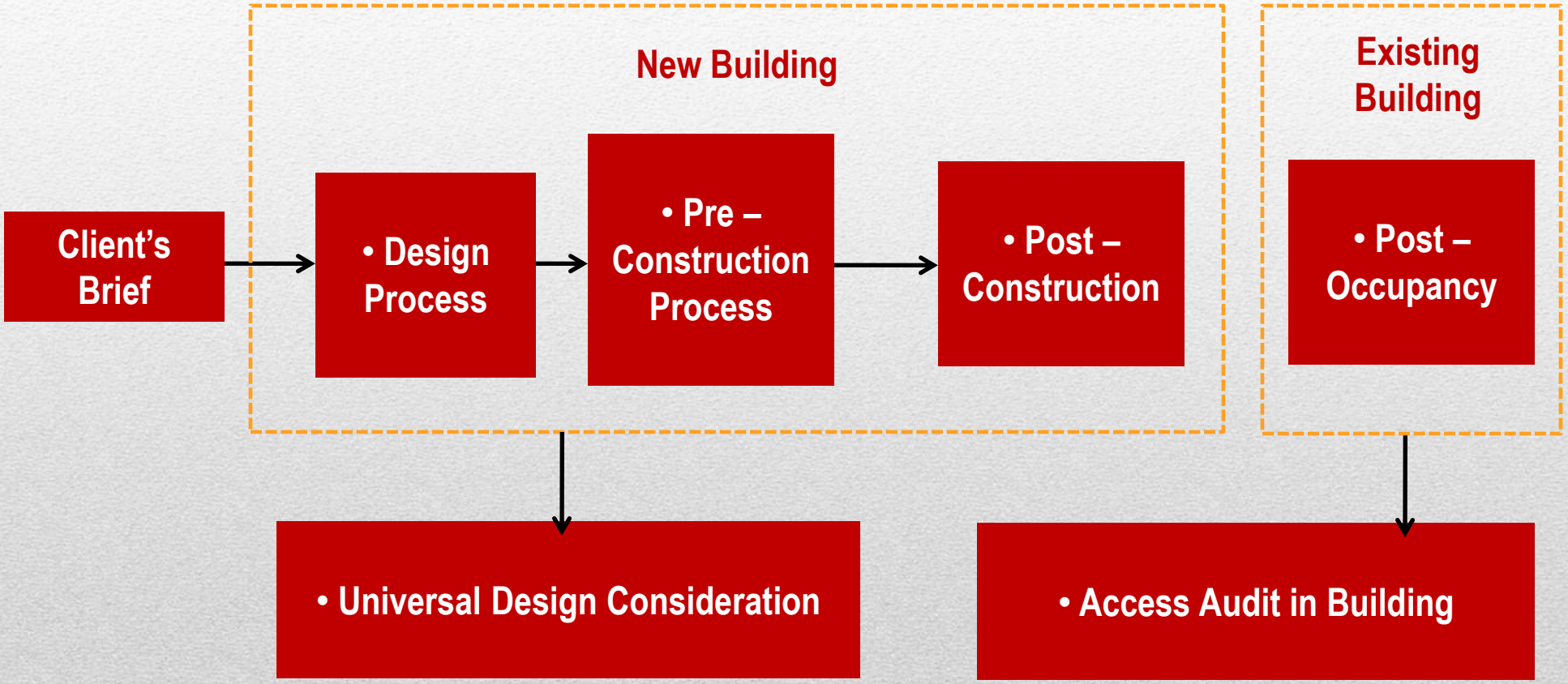
Figure: Schematics Diagram of Universal Design Application in the Built Environment.
(Source: Asiah Abdul Rahim, 2010)

Universal Design –I.E. Its Application

Example Building typology	Example of Products Design			Services (human resources)
Waterfront / tourist attraction areas	Digitized information	Guiding Blocks	Warning blocks	Doorman Assistance
Residential	Ramps	Braille Lettering	Hazard Lights	Service Personnel
Public buildings / Religious Building	Accessible toilets' appliances	Grab bars / Hooks	Flashing Lights	Interpreter
Institutional / Healthcare	Railing	Legible / Embossed Graphics	Commercial Wheelchairs	Sign Language

(Source: Asiah Abdul Rahim, 2010)

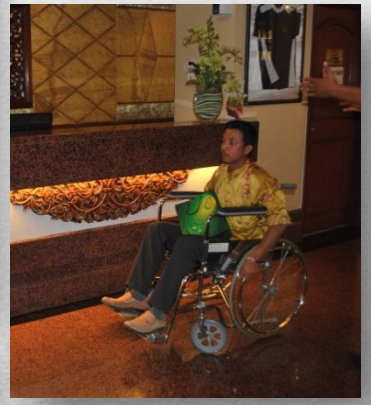
UNIVERSAL DESIGN CONSIDERATION



(Source: Asiah Abdul Rahim, 2010)

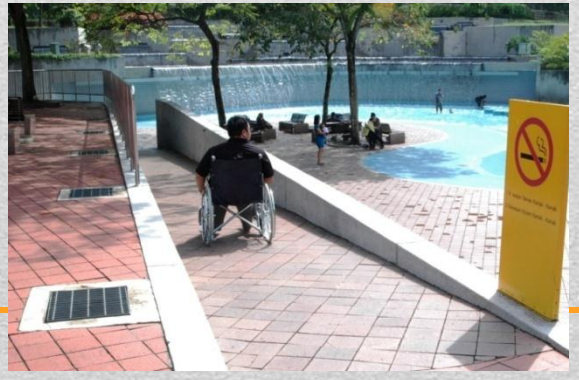
PHYSICAL BARRIERS IDENTIFIED

Access Audit Simulation in Existing Building



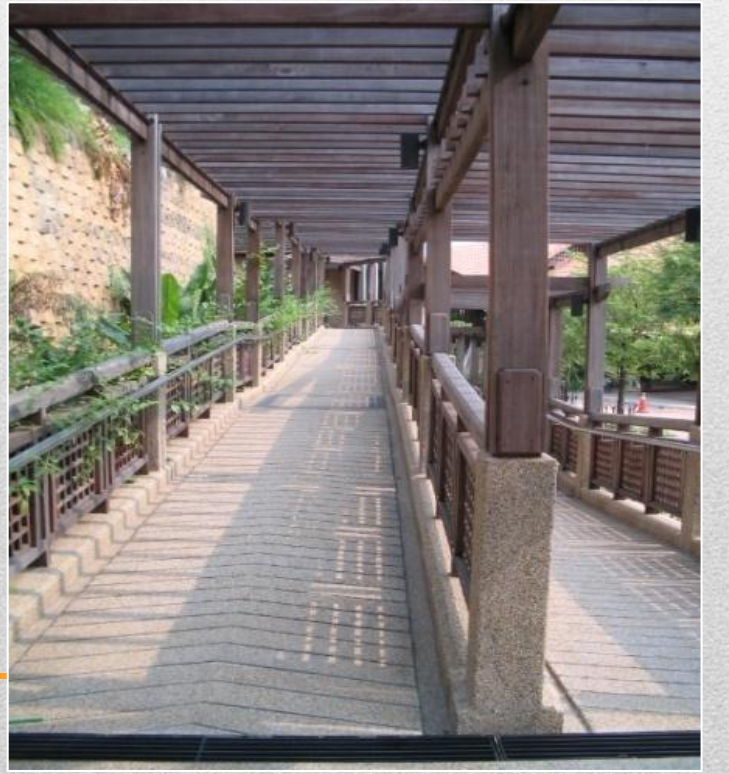
CASE STUDY: KUALA LUMPUR CONVENTION CENTRE (KLCC)

Ramp facility and disable parking are designed with the consideration of Malaysian Standards (MS)



CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- Comfortable width of walkway with railings assist the wheelchair users to use this ramp.
- Suitable floor finishes and sufficient walkway width help in providing good and safe outdoor environment.



CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- Junction design that has provision of pedestrian zebra crossing
- Bollards provide good barrier for motorcyclist and cars from parking at this area and going up the curbs as the pavement are ‘curb cuts’
- Should have ‘warning tactile’ at curd cuts before & after zebra crossing

CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- Accessible Bus Stop provides an area for wheelchair next to normal seating area, an e.g of integrated design
- The bus stop has minimum difference in levels making it easier to wheel as gentle slopes are designed and curbs from the road are sufficient with height of bus

CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- The walkway are leveled off from the house entrance to the main road.
- Any hard landscapes should be surrounded by a minimum height curb; e.g like in this neighborhood
- Floor furnishes have a non-slip surface and its texture should be traversal by disabled persons.

CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- At Parks and green area should have clear signage and appropriate location of signboard.
- Sitting area is provided at the park
- Seamless Walkway connected to houses without steps.
- Clear pedestrian walkway between soft landscape and hard landscape.

GOOD EXAMPLES IN SINGAPORE

Correct use of gradient and warning block for the ramp

Clear signage for the PWD & appropriate Height for wheelchair users

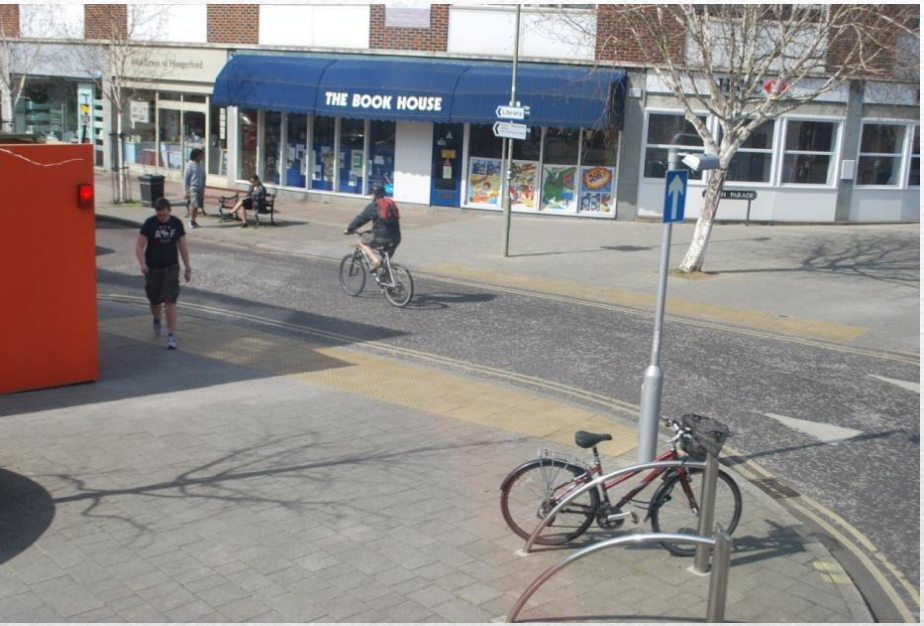
GOOD EXAMPLES IN EUROPE/UNITED KINGDOM

- Pedestrian friendly walkway for all types of user
- Accessible, multi-purpose and wide public walkway
- Ramps provided at heritage and new buildings

GOOD EXAMPLES IN UNITED KINGDOM

Adaptable Design to Heritage Building: External Lift at A Museum in Oxford University

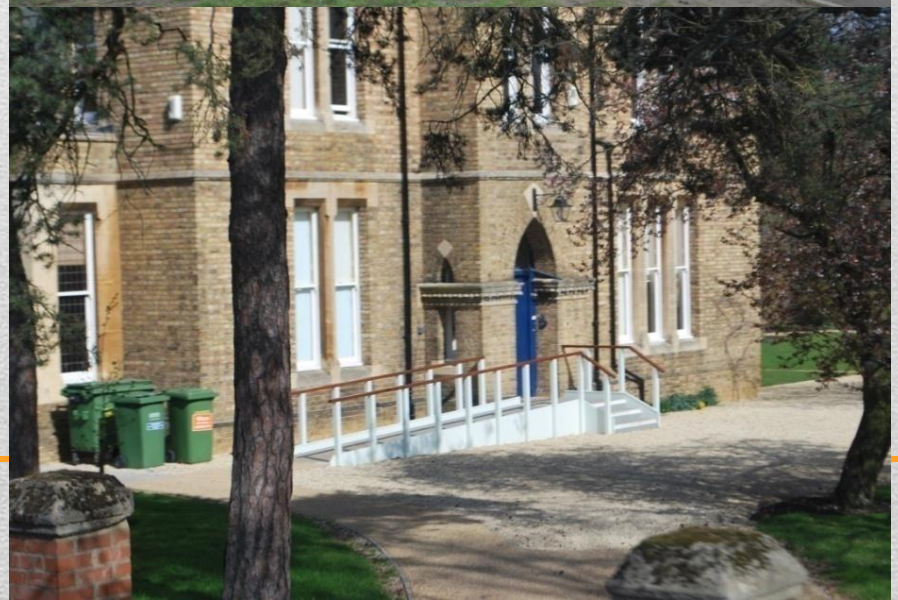
GOOD EXAMPLES IN UNITED KINGDOM



Pedestrian Crossing

GOOD EXAMPLES IN UNITED KINGDOM

- Ramp Design in new buildings



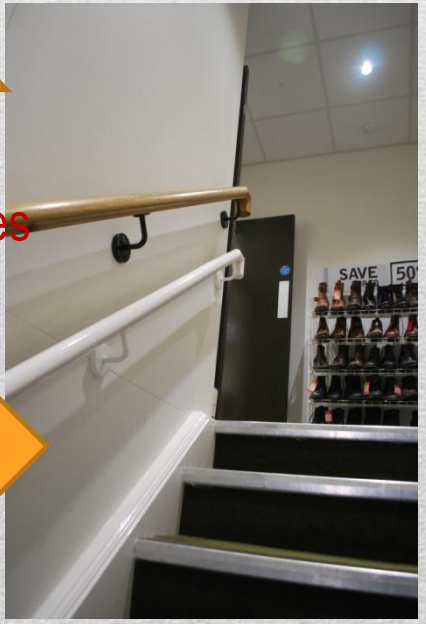
- Adaptable Design to Heritage Building: Ramp Design

GOOD EXAMPLES IN UNITED KINGDOM

Signage for PWDs

Complete Accessible Toilet

Staircases Handrail Design

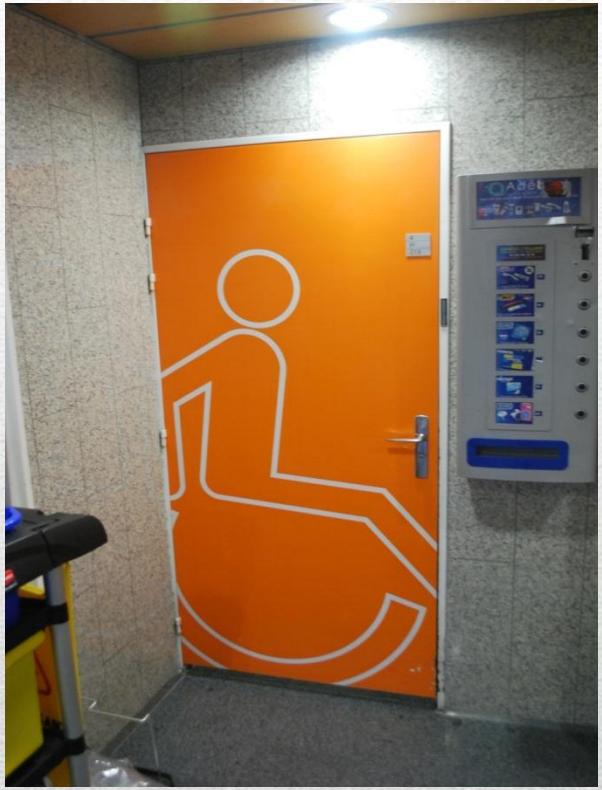


GOOD EXAMPLES OF STREETSCAPE

Several outdoor streetscape

Vertical transport at The Louvre

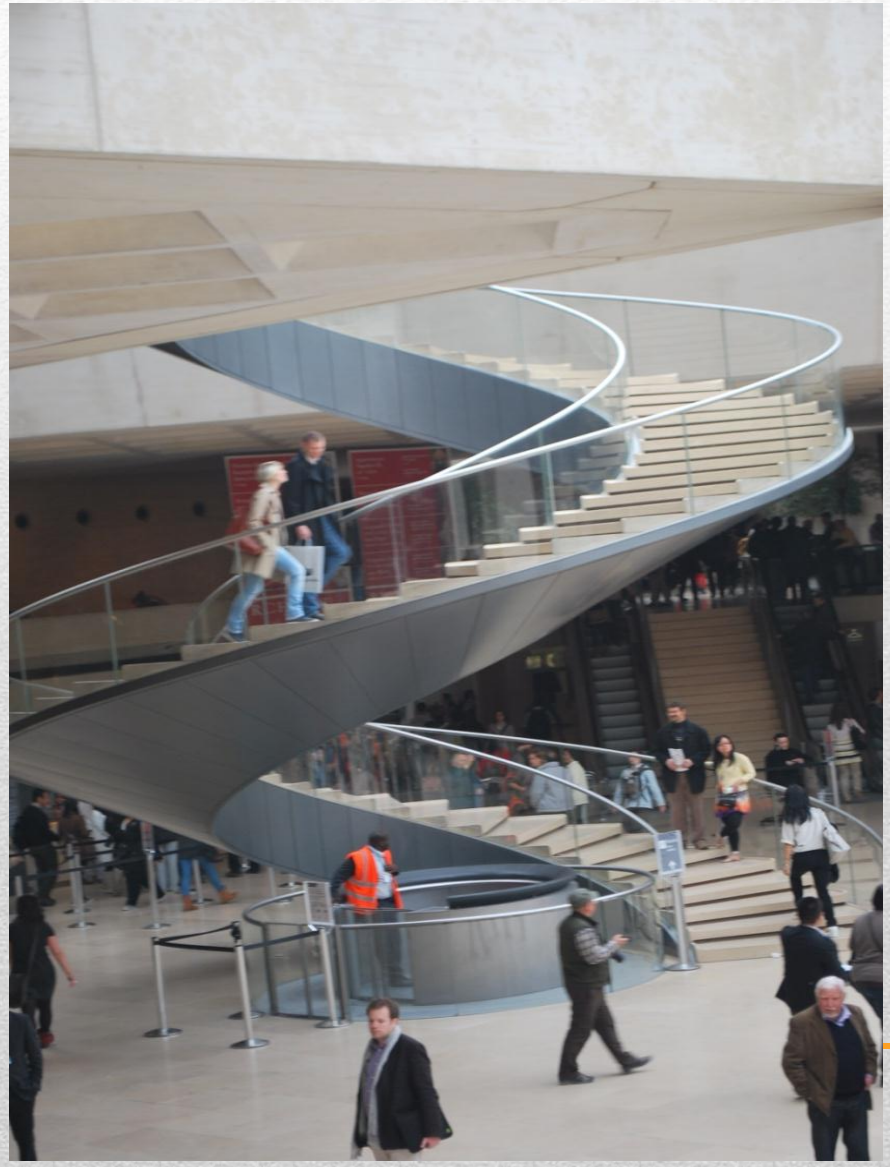
GOOD EXAMPLES IN PARIS, FRANCE

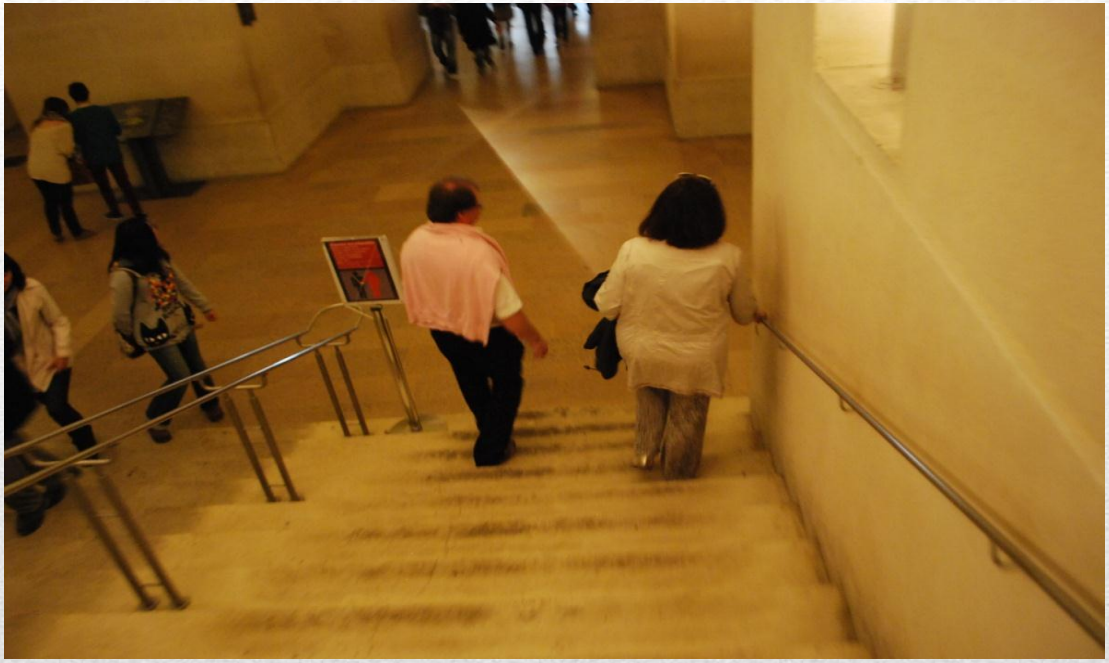


Accessible toilet and electronic door with manual push button at wheelchair height at Charles De Gaulle Airport, Paris.

A Disabled Friendly Welcome Desk with Seating Area at Charles De Gaulle Airport, Paris.

GOOD EXAMPLES IN PARIS, FRANCE

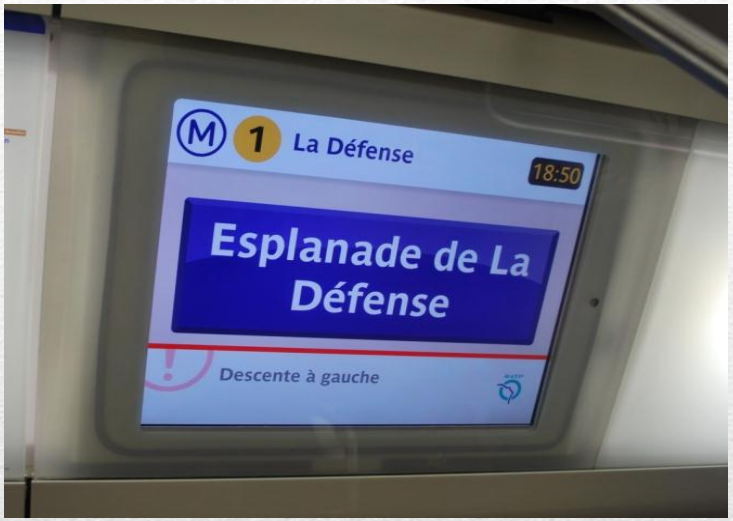


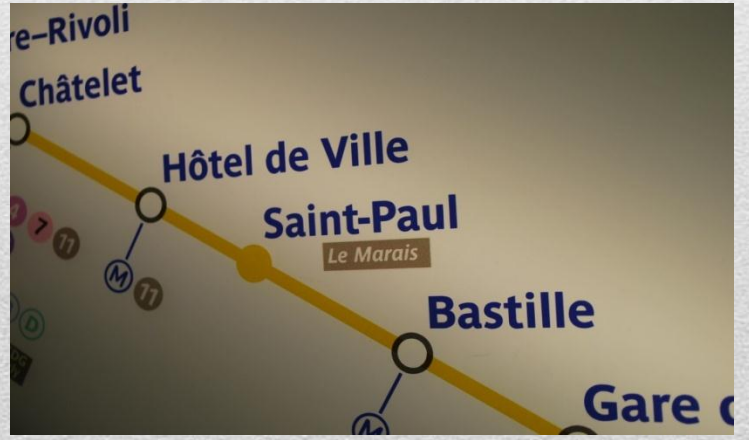


The addition of handrails at both sides of the stairs for the elderly inside The Lourve Musee in Paris

A design of spiral staircase integrated with an open accessible lift inside The Lourve Musee in Paris

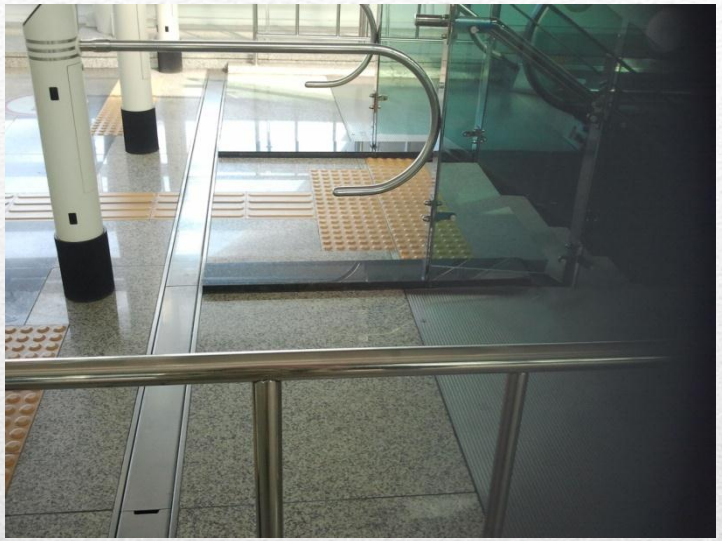
GOOD EXAMPLES IN PARIS, FRANCE





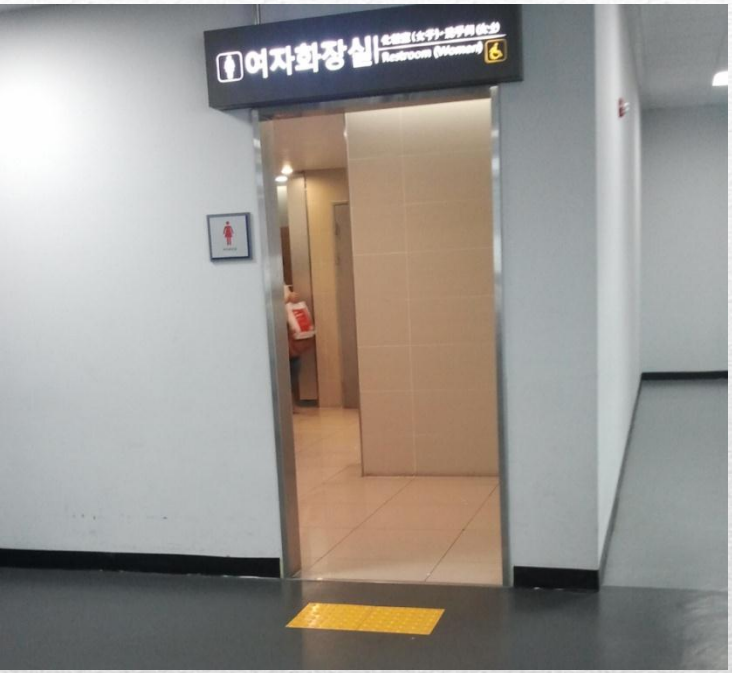
Directive and interactive Signage at Metro Train in Paris (Light & Sound)

GOOD EXAMPLES IN SEOUL, KOREA



The application of guiding blocks and warning blocks at public areas and train station

GOOD EXAMPLES IN SEOUL, KOREA



Symbols at toilet entrance that clearly indicate accessible toilet and normal toilet has warning blocks for the blind.

INTERGRATED TRANSPORTATION HUB

Accessible underground station and St. Pancras International in London

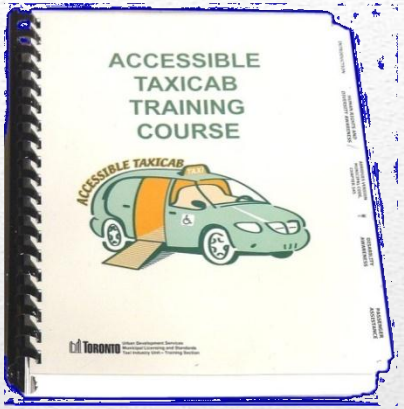
Airport Railroad Express (AREX) from Incheon International Airport to Seoul Station.

TRAINS / AIRPLANES

Metro Train in Paris

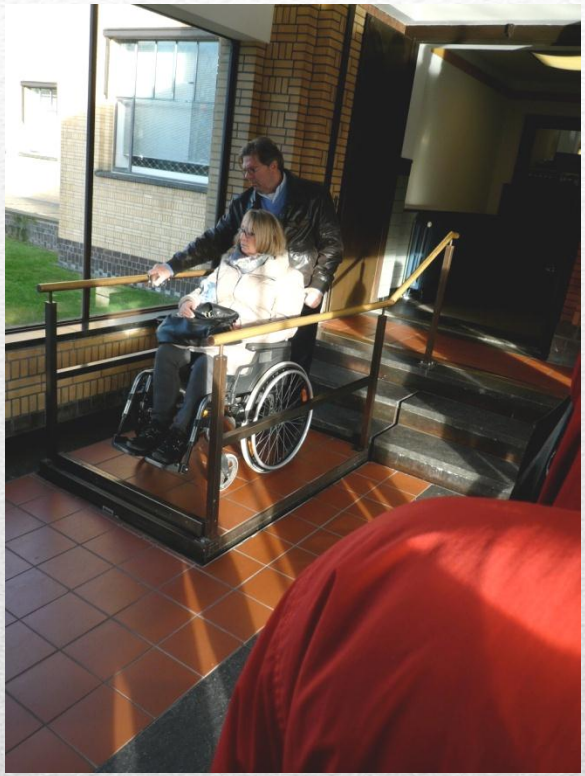
Interactive display, wheelchair park spot in train, mode of wheelchair transfer & Accessible toilets

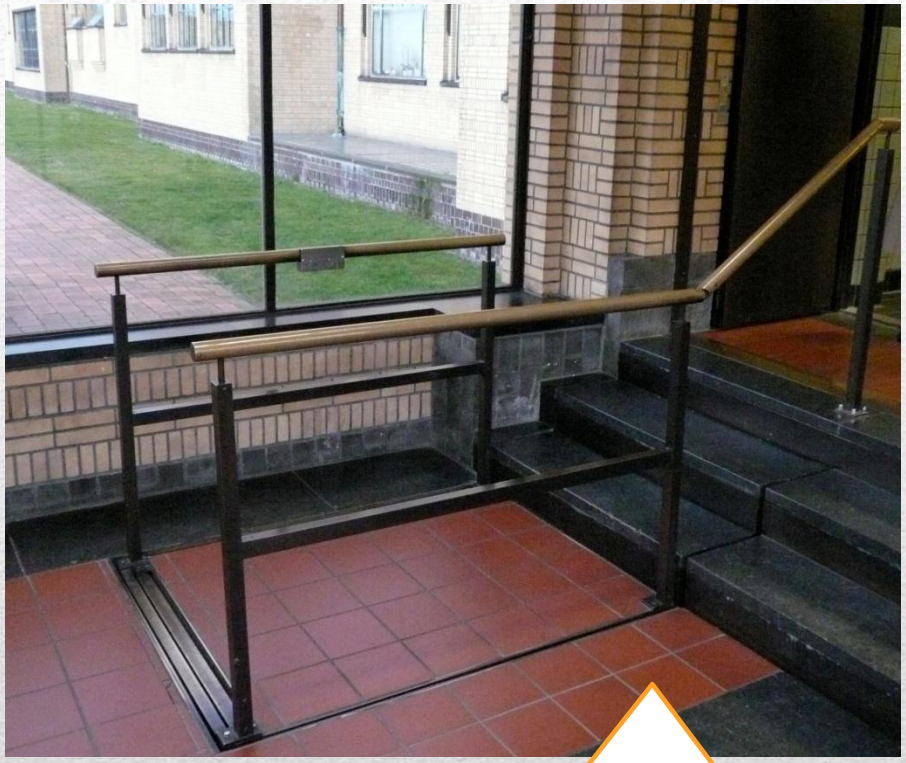
PUBLIC BUSES / COACHES / VANS / TAXIS



Adaptable ramps and allocation areas for PWDs on public buses and taxis (Hong Kong, United Kingdom & Malaysia)

DESIGN & PLANNING INNOVATIONS – PLATFORM LIFT





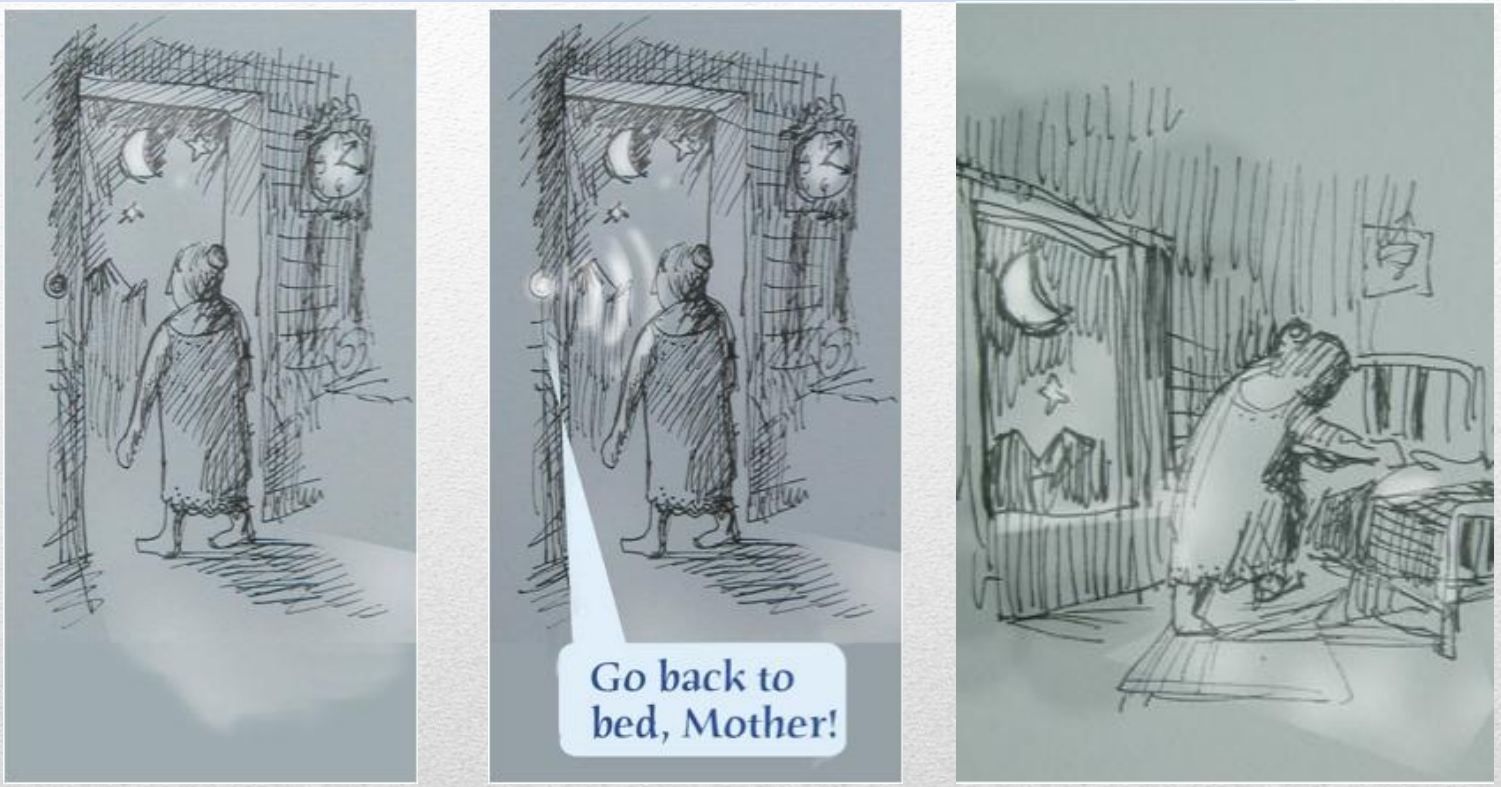
PLATFORM LIFT FOR WHEELCHAIR USERS WHEN NEEDED

BECOMES STEPS WHEN THE PLATFORM IS NOT IN USE

(Figure Source: Jim Harrison, ICUDBE 2013)

DESIGN & PLANNING INNOVATIONS - PRODUCTS

DESIGNING FOR DEMENTIA



(Figure Source: Jim Harrison, ICUDBE 2013)

- Communication devices - sensors and ‘apps’ that are used on mobile phones, bluetooth or RFID (radio frequency identification) with proximity sensors (eg audio guide handsets in museums)
- Can be located to activate existing parts of the building - opening doors, switching lights or providing information
- Through the use of wearable sensors the services can be designed to respond to the individual needs of the building user, rather than just for people in general.

PAPER CUTTING OF ACCESS AUDIT WORKSHOP DONE PREVIOUSLY

BENGKEL AKSES AUDIT DALAM PERSEKITARAN ALAM BINA KOTA KINABALU 2012

PADA 9 – 10 April 2012

PUSAT PEMBELAJARAN BANDARAYA KOTA KINABALU

Anjuran Bersama:

Jabatan Standard Malayisa

dan KAED Universal Design Unit (KUDU), Kuliyyah Of Architecture Environmental Design, International Islamic University Malaysia

Dengan Kerjasama:

Dewan Bandaraya Kota Kinabalu

PAPER CUTTING OF ACCESS AUDIT WORKSHOP DONE PREVIOUSLY

Perlu tingkat kemudahan OKU

Oleh NIK JASNI CHE JAAFAR
nikjasni.ub@gmail.com

KOTA KINABALU: Kemudahan untuk golongan orang kelainan upaya (OKU) di bandaraya ini masih tidak memuaskan dan perlu diperbaiki.

Pengarah KAED Universal Design Unit (KUDU) Universiti Islam Antarabangsa Malaysia (UIAM), Prof Datuk Ar Dr Asiah Abdul Rahim berkata ketika ini hanya beberapa bangunan dan kawasan baharu di bandaraya ini mesra OKU.

Justeru, katanya, banyak usaha perlu dilaksanakan untuk menjadikan bandaraya ini sesuai untuk OKU.

"Ada hotel yang mengambilkira keadaan OKU tetapi tidak menyeluruh. Ketika ini, tiada laluan mesra OKU dari bangunan ke bangunan.

"Struktur bangunan juga ada yang tidak mesra OKU selain masalah komunikasi apabila berurusan di kaunter kerana tiada pegawai yang tahu menggunakan bahasa isyarat," katanya.

Jelasnya, banyak pejabat kerajaan yang menggunakan pintu kayu atau menggunakan sistem pengesan pelanggan menggunakan bunyi loceng yang menyukarkan golongan OKU pendengaran.

"Kerana itu, kita mencadangkan agar pegawai kaunter dan penyambut tetamu mempunyai kemahiran berbahasa isyarat untuk memudahkan golongan OKU pendengaran untuk berurusan di kaunter," katanya.

Asiah juga berharap pihak berkuasa tempatan (PBT) dapat memberi bahan rujukan.

"Misalnya MS 1184:2002 dan MS 1331:2003 serta MS 2015:2006 untuk tandas awam juga sudah ada," katanya.

Beliau berkata demikian ketika ditemui di Bengkel Audit Akses Dalam Persekitaran Alam Binan Kota Kinabalu di Pusat Pembelajaran Kingfisher, di sini, kelmarin.

ASIAH

Bengkel terbabit anjuran bersama Jabatan Standard Malaysia (Standard Malaysia), KUDU dan Dewan Bandaraya Kota Kinabalu (DBKK).

Terdahulu, dalam ucapannya beliau berkata hanya 25 peratus daripada 16 kajian kes bagi Audit Akses Kemudahan berada dalam keadaan baik, manakala selebihnya kurang baik dan tidak baik.

"Dapatan ini menunjukkan bahawa bangunan yang ada di Malaysia ketika ini tidak memuaskan untuk golongan OKU," katanya.

Kajian itu, katanya, melibatkan muzium, kawasan riadah, bangunan komersil, kawasan pejalan kaki, terminal pengangkutan awam dan stesen keretapi serta kawasan perumahan.

Katanya, keperluan menyediakan kemudahan OKU ini juga telah disebut dalam Akta Orang Kurang Upaya.

Justeru, beliau meminta pihak yang terlibat dalam industri pembinaan

Sementara itu, Asiah berkata, Dewan Bandaraya Kuala Lumpur merupakan PBT paling aktif kerana telah menubuhkan Unit Inovasi dan Piawaian khusus untuk mengendalikan hal berkairtan pengurusan kemudahan OKU.

KUDU, jelas beliau, telah empat kali bekerjasama dengan DBKL bagi audit akses dengan lima hingga tujuh bangunan untuk setiap audit akses.

"Jadi kami bersyukur DBKK cuba buat tujuh kes tetapi ini memerlukan pengkalan data diperbaiki untuk mengenalpasti masalah sedia ada dan perbaiki apa yang perlu," katanya.

Dalam pada itu, beliau menambah UIAM merupakan universiti pertama memiliki silibus berkaitan kemudahan OKU yang mengandungi aspek kejuruteraan dan binaan bangunan.

Katanya, silibus itu juga telah dikongsi bersama Universiti Teknologi Mara (UiTM) dan Universiti Putra Malaysia (UPM).

"Perkembangan penggunaan silibus ini menunjukkan kita bukan sahaja mahu melatih golongan profesional untuk mempromosikan suasana mesra OKU, malah memulakan usaha itu dari peringkat universiti lagi," katanya.

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Participants of the Access Audit in Construction Line Workshop including officials from City Hall, universal design experts, development professionals and officials from the Malaysian Standards Department posing with Mayor Datuk Abidin Madingkir.

KK more disabled-friendly but still lacks connectivity

Jason Santos

KOTA KINABALU: The city is becoming more disabled-friendly but needs to focus more on building-to-building connectivity.

This is the finding of a research group under Universiti Islam Antarabangsa (UIA) which has been researching the city environment since the year 2008.

"In Sabah, we had our research done at the Waterfront and the Filipino market," said Kulliyah of Architecture and Environmental Design (KAED) Director, Professor Dato' Dr Asiah Abdul Rahim.

"While the market is found unsatisfactory, the Waterfront still needs some improvements. As for hotels, they do pay attention to the needs of the disabled."

But overall what is lacking is connectivity between buildings in the city, she said, adding however that things will likely improve in new structures coming up in the city.

She was speaking at an Access Audit in Construction Line Workshop at the Taman Kingfisher Community Hall, Monday.

Dr Asiah said from the 16 case studies they had conducted for the whole of Malaysia, only 25 per cent were found satisfactory under the Facility Audit Access for Public Amenities.

The case studies entrusted to the university's KAED Universal Design Unit (Kudu) by the Ministry of Women, Family and Community Development since its formation in 2008.

She said the studies were done at the Melaka Museum, Kota Kinabalu Waterfront, Kuching, Danga Bay in Johor Baru and Kuantan as well as commercial centres like Berjaya Times Square, the Bukit Bintang Walk and transport terminals like in Pulau Pinang, Bandar Tasik Selatan train station.

Also included was a housing area in Seremban and the Persiaran Perdana in Putrajaya, she said, adding that the research covered logistics, historical buildings, jetty, hotel and market.

"One of the strategies adopted from the research is to ensure the needs of the disabled are met during the designing stages.

"Thus, the workshop is created to expedite awareness of the community, especially, professionals like architects, engineers, landscape engineers, academician, students, rehabilitation specialists, local authorities and individuals who are fighting for the rights of the disabled," she said.

Dr Asiah said the workshop comes under the collaboration of Kudu and the Malaysian Standards Department.

She said to date only four workshops have been conducted, namely in UIA, Seremban, Putrajaya and Kuching in 2011, while this year it is scheduled for Kota Kinabalu, Penang, Kelantan, Terrengganu, Pahang and Negeri Sembilan.

Meanwhile, Mayor, Datuk Abidin Madingkir, who was present at the opening ceremony, said the disabled have the same rights and equal opportunities to lead normal lives.

"It is the responsibilities of those who are physically and mentally able to aid the local authorities and government in ensuring the disabled receive the rights."

Madingkir said relevant parties should be exposed and trained about facilities for the disabled and apply them into their projects.

He said RM2 million was allocated by the Local Government and Housing Ministry in 2009 for such projects.

From there, Madingkir said, City Hall through the City Planning Department has constructed ramps, pedestrian paths, tactile and signal lights in areas like the City Hall compound, Jalan Pantai and Jalan Gaya.

"City Hall for several years has already Imposed terms for the developer when approving building plans, taking into account aspects of universal designs and facilities for the disabled.

"This is in line with the Government's effort on city design and planning to provide access to all groups, including children, elderly and pregnant women," he said

He hoped a special unit or Access Audit will be established for local authorities and that City Hall would become the model for other town councils in the State.

The workshop, which will end on April 10, is being attended by disabled bodies, local councils and other professionals in the construction line.

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Thank You

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