







Elderly-friendly Design Guidelines



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Architectural Services Department

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1.0. INTRODUCTION

Many cities are undergoing an unprecedented demographic change that comes with a decline in birth rate and an increase in ageing population. Hong Kong, one of the most densely populated cities in the world, is no exception. According to the “Hong Kong Population Projections 2017-2066”, the number of elderly people aged 65 and over will increase from 16.6% of the population (1.16 million) in 2016 to 36.6% of the population (2.59 million) in 2066. This represents an increase of 1.43 million elderly population in the next few decades. The demographic change leads to a rethink on how to improve life for the current and tomorrow’s elderly generations, enabling them to live fulfilling lives and stay active in their communities.

Promotion of age-friendliness requires a multi-disciplinary and synergistic approach that encourages design professionals to work in collaboration with different government authorities, elder-care practitioners, communities agencies and the users to seek design solutions that benefit the whole society. As stated in the World Health Organization’s (WHO) “Global Age-friendly Cities: A Guide”, there are eight inter-related domains which reflect the age-friendliness of a city. These are:

- Outdoor spaces and buildings
- Transportation
- Housing
- Social participation
- Respect and social inclusion
- Civic participation and employment
- Communication and information
- Community support and health services

Within these domains, building environment is one of the key areas which designers and project proponents can contribute a positive influence in the society. They are encouraged to incorporate more age-friendly design in public spaces and facilities that empowers the elderly to participate in various economic and social activities and enjoy their life as valued members of the society for as long as they wish.

In this respect, the Architectural Services Department (ArchSD) has commissioned P&T Architects and Engineers Limited (the Consultant) to develop a set of the Elderly-friendly Design Guidelines (hereinafter referred as the Guidelines) to help designers and project proponents to make design decisions and to explore means to improve the built environment in support of happy, healthy and active ageing.

2.0. DEVELOPMENT PROCESS OF THE GUIDELINES

The development process of the Guidelines has gone through the following key stages to compile a set of design recommendations:

STAGE 1

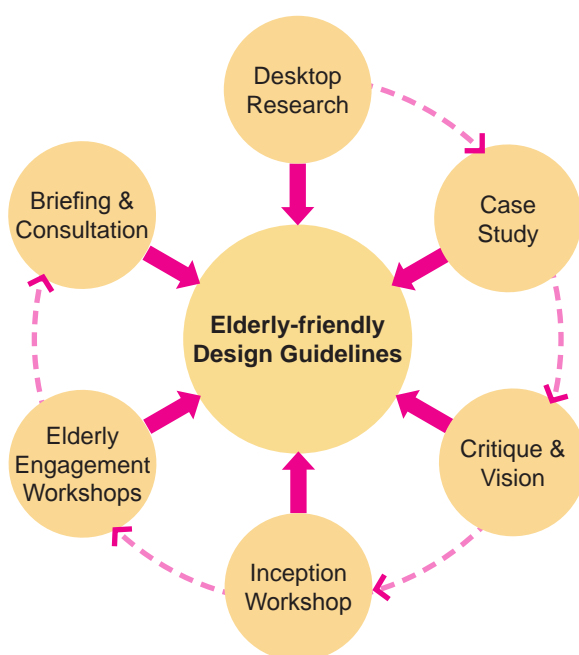
- **Desktop Research** - Research on legislation and design guidelines
- **Case Study** - Case studies of completed local and overseas projects
- **Critique and Vision** - Establishment of the framework of the Guidelines

STAGE 2

- **Inception Workshop** - Formulation of design approach through consultation with stakeholders
- **Elderly Engagement Workshop** - Interactive workshops with the elderly volunteers for the understanding of their needs and challenges in daily living

STAGE 3

- **Briefing Session & Consultation** - Consultation with stakeholders and finalization of the Guidelines



STAGE 1

Desktop Research

The early stage of the development of the Guidelines focused on desktop research to examine and evaluate design criteria for an elderly-friendly built environment. It involved research on legislation and design guidelines currently in force in Hong Kong and three other Asia Pacific countries including Australia, Japan and Singapore to understand how different countries are coping with the ageing population. The design recommendations extracted from the documents were examined in the research and served as the reference for the development of the Guidelines. A full list of the documents is in the table on page 4.

Case Study

A case study of 24 local and overseas projects was also conducted at Stage 1. This included 12 residential care homes for the elderly (RCHE) and 12 projects of other building types; all of which were completed within the past 10 years. The overseas case study was based on internet research and the information available from the building operators and/ or project designers. The local case study focused on the information obtained from site visits and interviews with the users, operators and/or project designers. The purpose of the case study was to draw inspiration from recent projects on how different elderly-friendly design strategies were implemented and how these could enhance the elderly's quality of life. A full list of projects selected for the case study can be found on page 5-6.

Critique & Vision

The desktop research and case study led to a thorough review on the existing elderly-friendly design provisions under current legislation and design guidelines, identifying areas for improvement and providing vision for the future elderly-friendly built environment. While most design recommendations for elderly-friendly design that we came across in the research focused primarily on the physical wellbeing and safety of the elderly in the built environment, the mental and social wellbeing of the elderly were often neglected. With an aim to develop a comprehensive elderly-friendly design guideline, the framework of the Guidelines was set at the onset of the development process of the Guidelines to establish the design approach to elderly-friendly design (Chapter 4) and the four overarching principles, namely SAFETY, SUPPORT, COGNITION and WELLBEING (Chapter 5) that address both the physical, mental and social wellbeing of the elderly.

LIST OF PUBLICATION FOR STAGE 1 DESKTOP RESEARCH

Publication Title	Author	Year of Publication
Hong Kong		
Design Manual: Barrier Free Access 2008 Chapter 6	Buildings Department	2008
Universal Accessibility Best Practices and Guidelines	Architectural Services Department	2004
Universal Accessibility for External Areas, Open Spaces and Green Spaces	Architectural Services Department	2007
Universal Design Guidebook for Residential Development in Hong Kong	Hong Kong Housing Society	2005
Strategic Service Framework for Elderly Patients	Hospital Authority	2012
Australia		
Age-friendly Built Environment	Australian Local Government Association	2006
Integrated Age-Friendly Planning Toolkit for Local Government in New South Wales	Local Government of New South Wales	2012
Age-Friendly Neighbourhoods / Guidelines and Toolkits for Local Government	Government of South Australia	2012
Age-Friendly Communities Good Practice Review	Queensland Government	2017
Japan		
Design Guidelines for Dwellings for the Ageing Society	Ministry of Construction	1995
Design Guidelines for Dwellings for the Ageing Society: Japanese Approach Toward Universal Design	Satoshi Kose	2001
Housing Elderly People in Japan	Satoshi Kose	2012
Barrier Free to Age-Friendly Akita City	Friends of International Federation on Ageing	2011
Tokyo 2020 Accessibility Guidelines	Ministry of Land, Infrastructure, Transportation and Tourism	2014
Singapore		
Code on Accessibilities in the Built Environment 2013 - Appendix B	Building and Construction Authority	2013
Universal Design Guide for Public Places	Building and Construction Authority	2016
The Spatial Provisions Guidelines for Elderly and Disabilities Facilities	Ministry of Social and Family Development of Singapore	2012
SingHealth Age Friendly Guidelines	SingHealth	2011

Project list for case study: Residential Care Home for the Elderly (RCHE)

HONG KONG



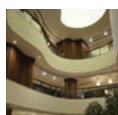
Hong Kong Sheng Kung Hui Cyril and Amy Cheung Aged Care Complex
Shatin, Hong Kong



Jockey Club Home for Hospice
Shatin, Hong Kong



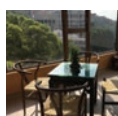
Po Leung Kuk Wan Chai Home for the Elderly cum Day Care Centre for the Elderly
Wan Chai, Hong Kong



The Tanner Hill & Joyous Circle
North Point, Hong Kong

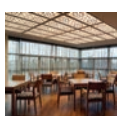


Tung Wah Group of Hospitals Ho Yuk Ching Willow Lodge
Tai Kok Tsui, Hong Kong



Tung Wah Group of Hospitals Sunshine Complex for the Elderly
Aberdeen, Hong Kong

OVERSEAS



Coppin Suites, Coppin Centre
Melbourne, Australia

Photo courtesy of Royal Freemasons

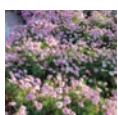


Baptcare Strathalan
Macleod, Australia



Nursing Home Rudolfsheim
Vienna, Austria

Photo courtesy of wup_wimmerundpartner / Andreas Buchberger

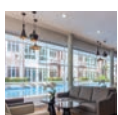


Bistrupvang Care Home
Birkerød, Denmark



Butterfly Hill Hosoda
Tokyo, Japan

Photo courtesy of Zenkokuai



The Hillford
District 21, Singapore

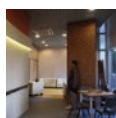
Photo courtesy of P & T Consultants (Singapore)

Project list for case study: Other Building Types

HONG KONG



Geriatric Day Hospital, Ambulatory Care Centre Extension at Queen Elizabeth Hospital Yau Ma Tei, Hong Kong



Hong Kong Sheng Kung Hui St. Luke's Settlement Neighbourhood Elderly Centre Kennedy Town, Hong Kong



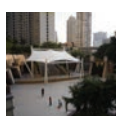
Kai Tak Cruise Terminal Kowloon Bay, Hong Kong



Ko Shan Theatre New Wing Hung Hom, Hong Kong



Mass Transit Railway (MTR) - Austin Station Jordon, Hong Kong



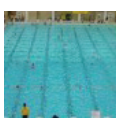
Upper Ngau Tau Kok Estate Kwun Tong, Hong Kong

OVERSEAS

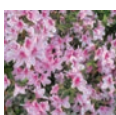


Bunurong Memorial Park Victoria, Australia

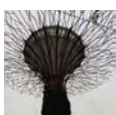
Photo courtesy of BVN



Regent Park Aquatic Centre Toronto, Canada

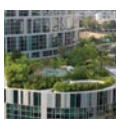


Amanenomori Nursery Funabashi, Japan



Gardens by the Bay Marina Bay, Singapore

Photo courtesy of CPG Consultants



Ng Teng Fong General Hospital Jurong East, Singapore

Photo courtesy of CPG Consultants



The Centre for Healthy Living Florida, United States

STAGE 2

The establishment of the framework of the Guidelines in Stage 1 was followed by a series of workshops in Stage 2. At the workshops, stakeholders were invited to share their visions and aspirations on an elderly-friendly built environment. Two different types of workshop were conducted.

Inception Workshop

An Inception Workshop on elderly-friendly design was held in December 2017. The purpose was to bring together a group of related academics, professionals and practitioners from both public and private sectors with common interest in improving the built environment that benefits the health and wellbeing of the elderly. At the workshop, the participants were invited to engage in the following interactive exercises:

- **Group discussion** to identify challenges and impediment experienced by the elderly in different settings including home, travel, and community.
- **Brainstorming** to gather the elderly-friendly design considerations based on the four proposed overarching principles: SAFETY, SUPPORT, COGNITION and WELLBEING that were developed in Stage 1.
- **Design charrette** to apply elderly-friendly design considerations in several imaginary design projects.

Discussions at the Inception Workshop formulated the approach to elderly-friendly design and also confirmed the framework of the Guidelines based on the four overarching principles.



Idea boards on design provisions for an elderly-friendly environment.



Elderly Engagement Workshop #1 - Ageing Simulation Workshop

In February 2018, a half-day Ageing Simulation Workshop was held at ArchSD, which gave the participants from ArchSD and the Consultant an opportunity to play a role as an elderly by wearing a special gear that was designed to reduce their physical capability and vision.

At the workshop, the participants were asked to complete different tasks such as reading and walking on stairs with an age simulation gear that caused blurred vision and restricted movement. The purpose was to arouse empathy among the participants for the elderly and to let them experience the challenges that are often encountered by the elderly in their daily living.

What did the participants feel after the ageing simulation workshop?

Fatigue

Helplessness

Frustration

Annoyance



Elderly Engagement Workshop #2 - Community Walk with the Elderly

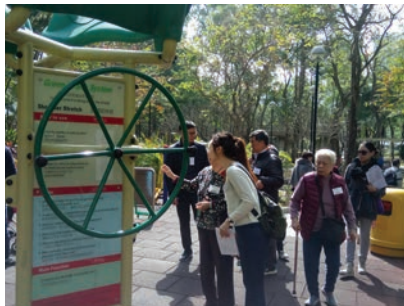
Following the Ageing Simulation Workshop was the Community Walk with the Elderly event that provided an opportunity for participants from ArchSD and the Consultant to spend half a day with the elderly volunteers from Caritas District Elderly Centre, aged 60 to 85. Each participant was paired up with a volunteer. Together, they visited a number of public facilities in the Tin Shui Wai neighbourhood such as market, park, recreational centre, library, hospital and community health centre. The participants were asked to interact with the elderly volunteers and observe the effect of built environment on the mobility and other challenges to the elderly. After the walk, the participants completed the questionnaires together with the elderly volunteers to gather their point of view on elderly-friendly design.

Top voted outdoor challenges:

1. Have trouble finding proper seating area for resting (100%)
No overhead shading provided at seating area (100%)
2. Have trouble finding building signage (89%)
3. Fear of climbing long flight of stairs (78%)
Uneven floor surface (78%)

Top voted indoor challenges:

1. Not enough wayfinding signage (100%)
2. Text on signage are difficult to read (89%)
3. Fear of climbing long flight of stairs (78%)



STAGE 3

Briefing Session and Consultation

Two briefing sessions were conducted during the development process of the Guidelines to obtain comments and suggestions from participants from ArchSD, academics, relevant government groups, non-governmental organisations (NGOs) and social service groups on the draft Guidelines. Electronic questionnaires were distributed to all the participants after the briefing sessions to collect their feedback. The suggestions and comments collected from the briefing sessions were consolidated for further development of the Guidelines.



3.0. ABOUT THE GUIDELINES

Objectives

Ageing is a gradual process. The level of physical and sensory abilities declines in a progressive manner as ageing proceeds and the speed of decline varies between individuals. Our built environment needs to be more adaptive to the changing needs of the ageing population. The ultimate goal of an age-friendly city is thus to allow the society to evolve and develop over time to accommodate the changing needs of the ageing population and provide a desirable built environment for active ageing.

Active ageing is more than being physically active. It is about continuing to grow our potential, to learn and to get involved in our community as we age. By providing an environment that supports active ageing, the elderly in the society would be empowered to choose the way they want to live, maintain independence in activities of daily living and live as a valued member of the community for as long as they wish.

The Guidelines aim to raise awareness among designers and project proponents on how design decisions can contribute to the building of an elderly-friendly environment that supports active ageing. The recommendations in the Guidelines are not meant to be mandatory rules that should be strictly followed; but designers and project proponents are encouraged to design and develop projects with the elderly in mind and adopt design recommendations that help enhance the quality of life of the elderly in our communities.



Application

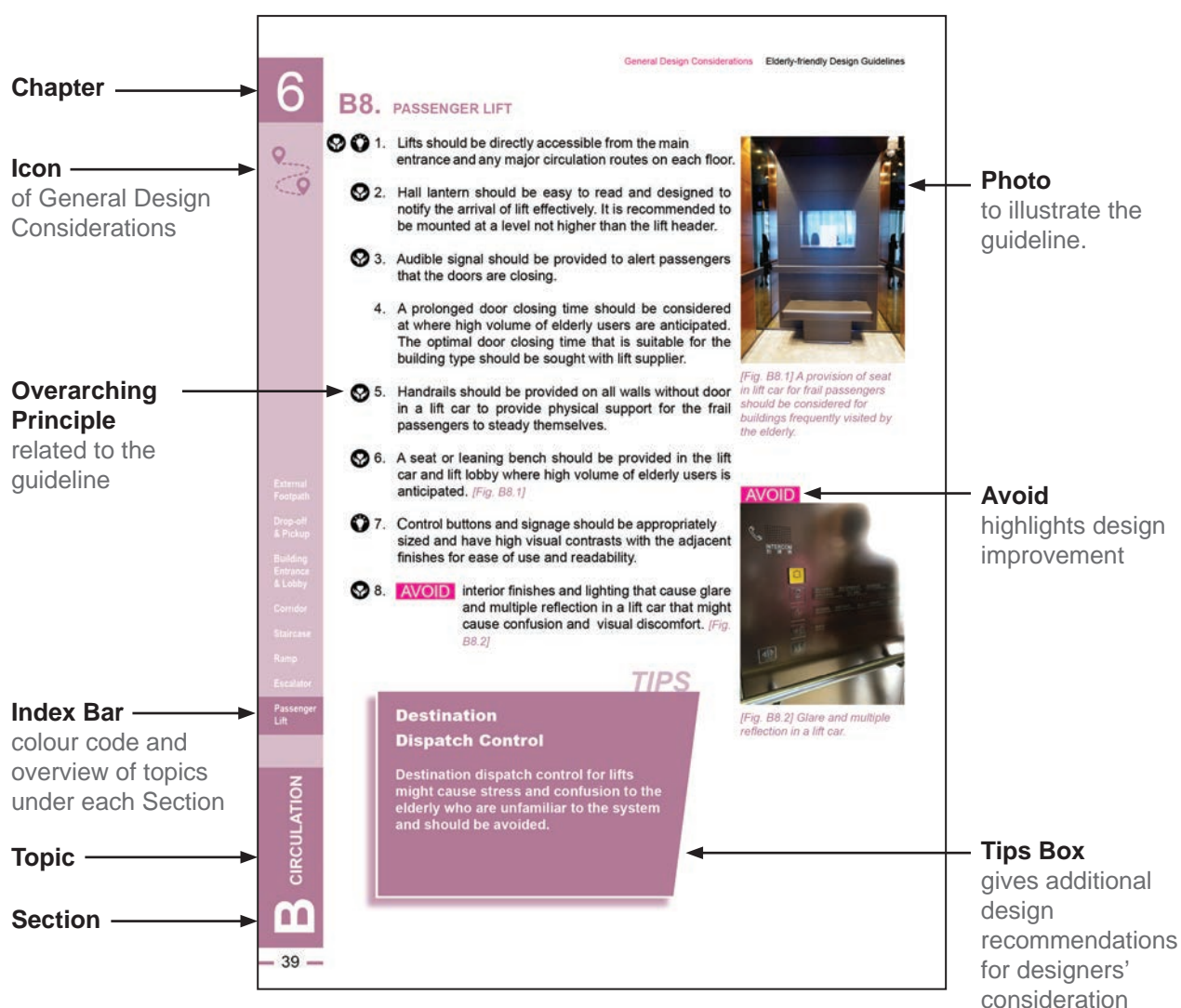
The design recommendations in the Guidelines are intended for use by designers, project proponents and public advocates in supporting decision making for elderly-friendly building projects. The design recommendations can be applied to different project types in ArchSD including:

- Government Offices;
- Departmental Quarters;
- Community facilities;
- Leisure and Cultural facilities;
- Food and Environmental Hygiene facilities;
- Hospitals and Health facilities;
- Welfare facilities for the elderly;
- Public Transport facilities;
- Security facilities;
- Judiciary facilities; and
- Burial related facilities

The Guidelines encompass design recommendations for the ambulant elderly who are experiencing age-related changes in physical strength, vision, hearing and cognition that may lead to inconvenience in their daily living. The Guidelines are not intended to address specific degree of impairment, but to recognize a wide range of capacities and lifestyle choices among the elderly, to respond flexibly to ageing-related needs and preference and to highlight key design aspects that are crucial in building an elderly-friendly environment. Quantifiable design recommendations in the Guidelines are therefore only provided as suggested options and best practices instead of mandatory requirements.

How to use the Guidelines

The content of the Guidelines is structured such that designers and project proponents would consider various design aspects along the design process from spatial planning to circulation; from exterior space to interior space; and from common facilities to fixture and furniture. While the design recommendations in Chapter 6 are general and applicable to most building types, Chapter 7 covers enhanced elderly-friendly design for specific building types.



A Typical Page of Chapter 6

4.0. APPROACH TO ELDERLY-FRIENDLY DESIGN

Elderly-friendly design should be carried out through a development process that starts with identifying clear objectives and progresses through collaboration. The following is the recommended approach in the design process:

Commit

It is important at the outset to have a clear commitment for achieving elderly-friendly design; and all decisions made during the design process shall take considerations of the needs of the elderly.

Engage

The elderly should be engaged in the design process so their needs and concerns can be well understood and properly addressed in the design process.

Collaborate

The design process should embrace an inter-disciplinary collaborative approach to develop effective design solutions from inception to design development and detailing. This requires commitment and joint efforts from different stakeholders, government departments, designers, consultants and users working together to develop an optimal design solution.

Explore

Designers should explore emerging technologies and adaptive design in response to the changing needs of the elderly.

5.0. THE FOUR OVERARCHING PRINCIPLES

A set of principles have guided the development of the Guidelines. The recommendations in the Guidelines revolve around the four overarching principles that address the physical, behavioural, mental, and social wellbeing of the elderly. Each of the principles is associated with a unique icon which appear in the subsequent sections of the Guidelines to highlight the relevant principle demonstrated by each design recommendation. The four overarching principles include:



SAFETY

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Create environment that facilitates safe mobility and activity.



SUPPORT

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Create environment that fosters confidence and independence in activities of daily living.



COGNITION

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Create environment that supports cognitive ability and reduce anxiety.



WELLBEING

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Create environment that promotes sense of contentment.



Safety



Safety is a crucial aspect of building design especially for the elderly who are more vulnerable to falls and less mindful of potential hazards in the built environment. Safety in an elderly-friendly building environment can be enhanced by addressing the following:

- **Fall Prevention:**

- a) *Quality of floor surface*

The design of flooring and selection of material is crucial in making the built environment safe for the elderly. Floor surface should be even, level and slip resistant to prevent falls.

- b) *Level changes*

Lifts and escalators are more convenient means of vertical transportation over stairs and ramps for the elderly. Where stairs and ramps are provided, safety features such as handrails and warning strips at edge of steps and ramps should be provided.

- c) *Aid for walking*

Handrails are common features in a building to facilitate safe mobility and to provide support for the people with frailty to steady themselves when needed. Handrails should be securely fastened at appropriate levels, easy to grab and well maintained to perform their intended function.

- d) *Desirable lighting*

Our eyes lose sensitivity and need more light to function well as we age. Corridors and areas with stairs and ramps can become hazardous in poor lighting condition as the elderly with reduced vision may not be aware of any level changes. Adequate lighting can assist the elderly in finding their way, give them a sense of security and help them to better understand their surrounding environment.

- e) *Cognitive change*

Design of the built environment should take into consideration the cognitive challenges that are often experienced by the elderly and can lead to falls due to mis-perception of space.

- **Injury Mitigation**

- a) *Pedestrian safety*

Most elderly have a slower response and tend to walk in a slower pace. It is important to segregate pedestrian and vehicular circulations and provide a designated pedestrian path so the elderly can take their time and walk at their own pace to reach their destinations without worries of competing with vehicular traffic.

- b) *Hazard removal*

Any potential hazards in the built environment such as projection in corridor, sharp edges and corners of furniture and partition should be avoided in design. Flooring material with cushioning property can reduce the impact of fall injury.

- c) *Furniture design*

Furniture should be designed to ensure safety, comfort and accessibility for the elderly. Sharp edges and corners should be avoided. Many elderly tend to use furniture for support and stability so light weight furniture that will topple should also be avoided.

- d) *Glass treatment*

Windows and glazed panels can optimize daylight and visibility to desirable views but transparency of glazed panel can also pose risk of accident for the elderly. Glass partitions and doors should be highlighted with graphic design to prevent people from walking into the glass.

- **Contingency Planning**

- a) *Minimize response time*

The location of reception and information desk should be prominent and easily identifiable from major circulation route so people know where to seek assistance when needed.

- b) *Provide means of emergency communication*

In the event of an emergency, the elderly may have difficulties to reach out to seek for help. Therefore, emergency call button should be simple and intuitive to use, easily identifiable and accessible by everyone to allow people to call for help at strategic locations.



Support

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Decline in cognitive and physical abilities as ageing proceeds will result in loss of strength, stamina and dexterity, weakened vision and hearing loss. Therefore, a more corresponding built environment is needed to support a variable range of functional needs of the elderly with more emphasis on the following:

- **Maximizing accessibility and promoting physical independence**

- a) Provide direct routes*

When considering the mobility needs of the elderly, direct routes should be provided by a logical grouping of functional areas and efficient layout. Escalator or lift that helps to reduce physical effort should be considered when great change in floor levels is inevitable.

- b) Provide aid for walking*

Handrails should be provided to give physical support. For many elderly, walking for a long distance can be a challenge. Handrails and seats in common area and along circulation route can help the elderly to reach farther distance at their own pace.

- c) Provide appropriate ramps or steps*

Ramps should be designed with gentle gradient; and steps should be designed with low risers and wide treads to enhance user comfort.

- d) Ease of use / Intuitive Use*

Fittings and devices (e.g. switches and control, sockets) should be designed for ease of reach, low physical effort and user-friendliness. Doors with automatic operating system should be considered. Where automated doors cannot be not provided, doors with lever handles that can be operated with low physical effort should be provided.

- **Maximizing convenience for the elderly**

- a) *Opportunities for choice*

Choices for the elderly to cope with the environment in their own way should be provided. This can promote a sense of self-worth and confidence in the elderly.

- b) *Logical layout*

Layout of the building should take into consideration the adjacencies of functional areas and amenities to maximize convenience for the elderly users.

- c) *Design for helper / companion*

Many elderly have a helper or companion to assist them with daily activities. The design should take into consideration the provision of a suitably sized unisex toilet, changing facility and service counter that allow the elderly's helper or companion to give immediate assistance to the elderly.

- d) *Adequate toilet facilities*

It is important to locate toilet facilities in a convenient location led by a direct and accessible route. Adequate and clear wayfinding signage should be provided to assist the elderly to locate the facilities.

- e) *Enhanced support in toilet*

Suitably sized toilet with non-slip flooring and adequate lighting, grab bars and hooks for walking stick and personal belongings are essential features to provide support in toilet facilities.



Cognition

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As we age, it takes us longer time to process information and to retrieve memories. Most elderly with decline in cognitive ability often have great difficulties with orientation and wayfinding in a building, especially in a large building with complex layout. To minimize confusion and anxiety in the elderly, the built environment should be designed with the following considerations to compensate for the cognitive deficit which might be experienced by the elderly:

- **Wayfinding and Orientation**

- a) *Proper signage*

Deploying a cohesive signage system that is clear to read and easy to understand can reduce anxiety caused by disorientation. Directional signage that is designed to lead to key functional areas can help the elderly in wayfinding. Design of signage should focus on simplicity, clarity and legibility.

- b) *Integrating wayfinding with design*

Excessive signage may make an environment too confusing for the elderly with overloaded information. Another approach to assist the elderly with wayfinding is to integrate wayfinding into interior design that guides the elderly to their destinations intuitively.

- **Comprehension of space**

- a) *Visual cue*

Providing a unique design or visual cue to different functional spaces would help the elderly to locate and recognize their destinations. Visual cue may include a combined use of colours, materials, symbols, icons, artworks, window with a view, just to name a few. It is worth noting that some elderly tend to respond to symbols and icons better than textual or colour cues. In this regard, various elderly-related functional spaces could be codified by ways of symbols and icons in devising wayfinding system to aid navigation.

- b) *Visual contrast*

The thickening and yellowing lens of maturing eyes change the way colour is perceived. Some elderly might have difficulty distinguishing colours with subtle differences. Use of colour contrast can help people with poor colour perception to draw attention to risk or something important.



Wellbeing



Wellbeing can be defined as a sense of contentment. It is increasingly recognized that the built environment can influence the emotion and social behaviour of individuals. For instance, a greyish enclosed interior space may trigger negative feeling while an airy open space with warmer interior colour may brighten the mood. A pleasant and welcoming elderly-friendly environment would empower the elderly to venture out and choose their way to maintain physically and socially active in the community. Wellbeing in the built environment can be enhanced by addressing the following:

- **Providing a comfortable environment**

- a) *Indoor air quality*

Elderly are more susceptible to the effects of airborne pollutants due to their physical fragility, especially for those with respiratory health problems. Many elderly with limited mobility may spend lengthy period of time indoor so selection of materials with low emitting materials is important to reduce the amount of airborne pollutants.

- b) *Thermal comfort*

Our ability to regulate body temperature tends to decrease with age. Most elderly require consistent air temperature and relative humidity to maintain thermal comforts. Ventilation of a premises should provide flexibility in adjusting the comfort level in the built environment.

- c) *Acoustics*

Hearing loss is common in the elderly. Elderly with hearing problem may find it difficult to engage in conversation in noisy environment. Appropriate acoustic treatment in the built environment can serve to compensate for their hearing problems.

- **Providing an uplifting environment**

- a) *Welcoming atmosphere*

Interior design can affect our mood and has an intangible impact to our emotional wellbeing. We may experience different degree of negative emotion as we age due to physical and cognitive decline. The use of colour, art works, music, greenery and manipulation of daylight can enliven the built environment and create an uplifting atmosphere that helps the elderly to overcome anxiety and depression.

- b) *Optimal use of daylight*

Natural lighting has multiple benefits over artificial lights in an elderly- friendly environment. It is not only a great source of green energy; the unsurpassed light quality can also help the elderly to see their surrounding environment better. Optimal use of daylight contributes to mental wellbeing of the elderly by giving a soft and pleasant ambient light to enliven an interior space.

- c) *Connection with nature*

Physical connection to gardens and terraces offer great opportunity for the elderly to get a sense of connection with nature where they may find peace and delight. Visual connection to outdoor greenery through window can also benefit the elderly.

- **Promoting an active lifestyle & social interaction**

- a) *Socializing spaces*

The built environment should be designed to encourage socializing and inter-generational activities. It should provide opportunities for the elderly to enrich their social life. This would help the elderly to overcome loneliness and the feeling of isolation.

- b) *Variety of spaces*

One may like a lively atmosphere while the other may prefer a quiet area for solitary musing. The elderly would be more tempted to leave their private dwelling and to venture out if options are provided for them to choose their desirable environment to engage in different kinds of activities and social interaction.

6.0. GENERAL DESIGN CONSIDERATIONS

In the subsequent sections of Chapter 6, the design considerations for elderly-friendly design in the built environment are organized under the following categories, guided by the principles of SAFETY, SUPPORT, COGNITION and WELLBEING:

6A Master Layout Planning



1. Main Entrance
2. Layout Planning
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4. Passive Design

6B Circulation



1. External Footpath
2. Drop-off & Pickup
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6C Interior Space



1. Floor Finishes
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6E Amenities



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6F Outdoor Space



1. Outdoor Space
2. Outdoor Amenities

See Chapter 3 on how to use the Guidelines

6A

Master Layout Planning

- A1. Main Entrance
- A2. Layout Planning
- A3. Outdoor Space
- A4. Passive Design

Design decisions made at master planning stage set up the parameters for subsequent design development which can affect elderly-friendly design outcome. Prioritizing elderly-friendly design goals at the onset of planning stage can put a project on the right track towards achieving elderly-friendly design.

A1. MAIN ENTRANCE

Design of a main building entrance contributes to the overall identity of a building. A clearly visible and accessible main building entrance can serve as a beacon for the elderly on wayfinding and make the elderly feel welcome. The following are the key considerations for the planning of an elderly-friendly main building entrance:

1. Main building entrance should be easy to locate and planned to facilitate convenient access and connection to main road and public transport hubs. Designers should consult relevant government departments at early stage to formulate the master plan. *[Fig A1.1]*
2. A direct adjacency relationship between main building entrance and passenger drop-off and pickup point should be considered to maximize convenient access.
3. Space planning should allow for architectural features to provide weather protection at the building entrance and the external footpath leading to the building entrance.
4. A direct physical and visual connection between building entrances and footpaths should be provided to help the elderly to find their way to and around the building. *[Fig A1.2]*
5. Pedestrian and vehicular circulation should be segregated as far as practicable to minimize conflicts. *[Fig A1.3]*



[Fig A1.1] The main building entrance should have a convenient access from main road. (Tiu Keng Leng Sports Centre and Tiu Keng Leng Public Library, HK)



[Fig A1.2] The main building entrance should be clearly defined and visible at a distance. (Ko Shan Theatre New Wing, HK)



[Fig A1.3] Clear segregation of pedestrian and vehicular circulation should be provided. (Hong Kong Velodrome, HK)

Main Entrance

Layout Planning

Outdoor Access

Passive Design

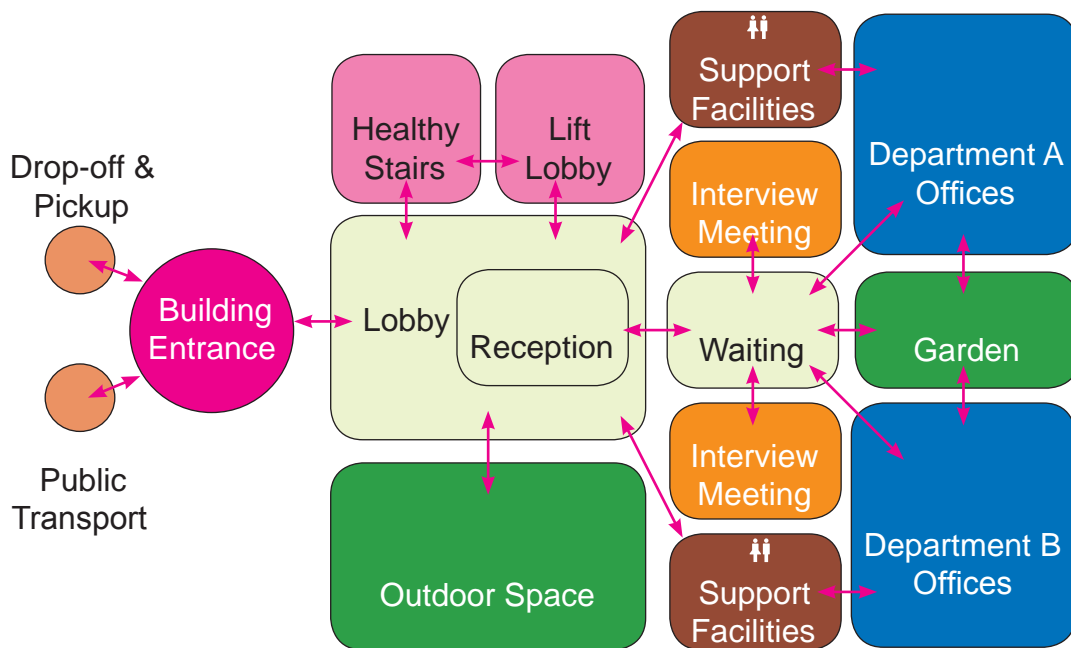
A2. LAYOUT PLANNING

A simple and logical layout can help the elderly to find their way around the building with a sense of control. The elderly can also benefit from an efficient building layout that guides them intuitively to various functional areas and building facilities through direct routes. The following are the key considerations for layout planning:



1. The adjacency relationship between different functional areas should be based on a logical progression of space for the convenience of the elderly. [Fig. A2.1]

[Fig. A2.1] An adjacency bubble diagram is useful to illustrate the spatial relationship and progression of functional space.



2. Space for distinctive architectural feature to aid orientation should be considered in the layout planning. [Fig. A2.2]



[Fig. A2.2] Landmark can aid orientation. (Fanling South Government Complex, HK)

- 3. Functional areas should be logically grouped to facilitate intuitive wayfinding without relying heavily on directional signs.
- 4. A circulation route should be simple and direct to enable the elderly to navigate a venue with confidence. *[Fig. A2.3]*



[Fig. A2.3] A simple circulation route can assist wayfinding (Aldrich Bay Park, HK)

- 5. A conveniently located, visible and appealing staircase should be provided next to a lift lobby or main building entrance to encourage the physically capable individuals to take the stairs so more room can be spared in the lift for the less abled individuals. *[Fig. A2.4]*



[Fig. A2.4] A staircase provided next to a lift can encourage walking and promote active lifestyle. (Hong Kong Wetland Park, HK)

- 6. Layout planning should consider convenient location and even distribution of sanitary facilities over a large area to ensure that they are located near main entrance, waiting areas and key functional areas.



Main
Entrance

Layout
Planning

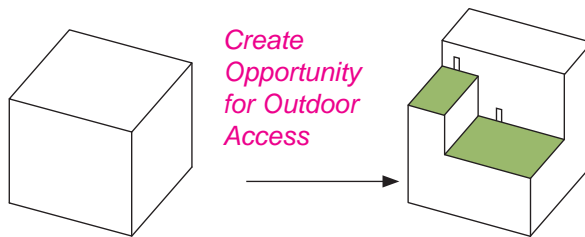
Outdoor
Access

Passive
Design

A3. OUTDOOR ACCESS

Outdoor space offers physical, mental and sociological benefit for the elderly. A convenient access to outdoor space can encourage the elderly to venture out, interact with other people and maintain a healthy lifestyle. The following are the design considerations to facilitate access to outdoor space at the planning stage of a project:

1. The massing and orientation of a building should be designed to maximize access to outdoor space where appropriate.



2. Provision of terrace, balcony and roof garden should be planned at the onset of a project design and take into consideration accessibility, safety, privacy and enjoyment of users. [Fig. A3.1]

3. Visual connection to a natural landscape from an interior space should be considered to benefit the elderly. [Fig. A3.2]

4. Planning of outdoor space should take into consideration of the spatial and functional relationship between the indoor and outdoor space and take advantage of the vista of the site. [Fig. A3.3]



[Fig. A3.1] Provision of outdoor access should be planned at the onset of planning stage of a project. (Sunshine Complex for the Elderly, HK)



[Fig. A3.2] Interior space with visual connection to the natural landscape can benefit the elderly.

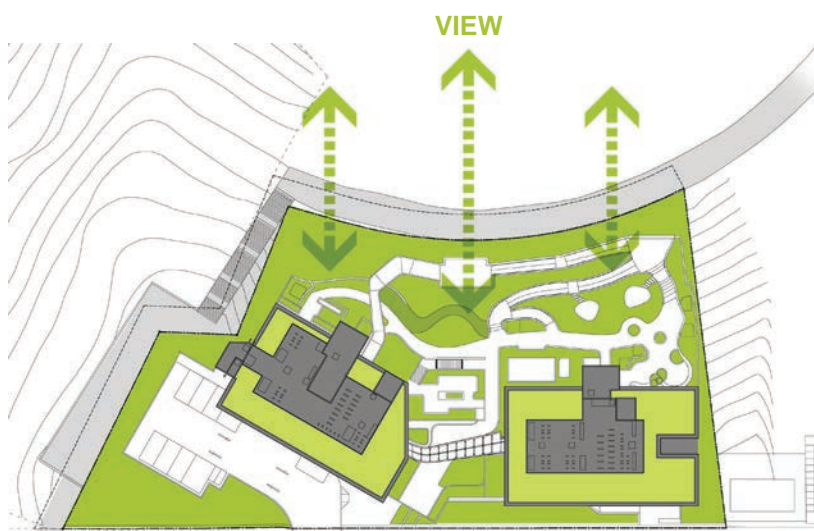


Illustration: Courtesy of AGC Design Ltd.

[Fig. A3.3] Building design with an harmonious relationship with its surrounding environment can provide opportunity for the users to enjoy outdoor space. (Jockey Club Home for Hospice, HK)

A4. PASSIVE DESIGN

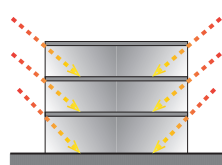
Passive Design for sustainability can reduce building energy demand and enhance energy efficiency. It can also contribute to the health and wellbeing of the elderly by optimizing daylight and natural ventilation. The following are the key design considerations to facilitate passive design at the planning stage of a project:-

1. The microclimate around the building should be studied to facilitate decision making in building orientation, configuration and massing design. *[Fig. A4.1]*

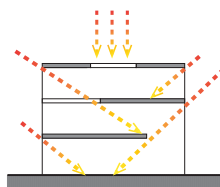


[Fig. A4.1] The disposition of residential buildings takes consideration of the prevailing wind to enhance natural ventilation. (Upper Ngau Tau Kok Estate, HK)

2. Daylight penetration through window and skylight should be optimized in a building while maintaining minimal solar heat gain and good glare control. *[Fig. A4.2]*
3. Depth of floor plate should be optimized for effective daylight penetration.



A deep floor plate limits daylight penetration



Daylight Penetration can be improved by skylight and tall windows



Photo courtesy of wup_wimmerundpartner / Andreas Buchberger

[Fig. A4.2] An internal courtyard can maximize daylight into the interior space in a deep building block. (Nursing Home Rudolfshheim, Vienna)

4. Functional area should be planned with respect to daylight availability. Adequate daylight to area of accommodation, activity and waiting should be considered to enhance wellbeing.



Main
Entrance

Layout
Planning

Outdoor
Access

Passive
Design

6B

Circulation

- B1.** External Footpath
- B2.** Drop-off & Pickup
- B3.** Building Entrance & Lobby
- B4.** Corridor
- B5.** Staircase
- B6.** Ramp
- B7.** Escalator
- B8.** Passenger Lift

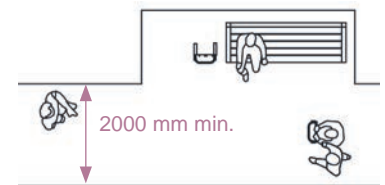
Safety, accessibility and convenience are the key considerations for an elderly-friendly path of circulation from arrival point to various functional areas . The path should be provided with supportive and safety features to cater for the elderly's reduced functional ability and enable the elderly to move around a venue with ease and confidence.

B1. EXTERNAL FOOTPATH

1. A covered pedestrian network should be provided in the external area to provide convenient connection between buildings and adjacent facilities. *[Fig. B1.1]*
2. Poor lighting may lead to trip hazard and fall due to poor visibility. Adequate lighting should be provided strategically along footpaths, ramps and steps to minimize shadows for safe use at night time.
3. Major footpaths should be designed with an appropriate width for the projected pedestrian volume. A minimum unobstructed width of 2000 mm is recommended. Street furniture and fixtures should not reduce the minimum clear width of a footpath. *[Fig. B1.2]*
4. Footpaths leading to a building entrance should be direct for easy wayfinding. *[Fig. B1.3]*
5. **AVOID** Avoid abrupt change in floor surface level without visual warning.
6. **AVOID** Avoid uneven paving surface.



[Fig. B1.1] A weather protected escalator should be considered if there is substantial level difference between street and building levels.



[Fig. B1.2] Seating area should not reduce the minimum width of the footpath



[Fig. B1.3] A weather protected and direct route from site entry point to main building entrance. (Hong Kong Wetland Park, HK)

External
Footpath

Drop-off
& Pickup

Building
Entrance
& Lobby

Corridor

Staircase

Ramp

Escalator

Passenger
Lift

CIRCULATION

B

B2. DROP-OFF & PICKUP

1. Passenger drop-off and pickup point should be located near building entrance to minimize crossing with vehicular traffic.
2. Continuous weather protection should be provided from passenger drop-off and pickup point to building entrance. *[Fig. B2.1]*
3. Appropriate seating area with good visibility to incoming vehicles should be provided adjacent to the passenger drop-off and pickup point.



[Fig. B2.1] A large canopy at passenger drop-off and pickup point for weather protection.

B3. BUILDING ENTRANCE & LOBBY

1. Building entrance should be easy to locate by visitors. *[Fig. B3.1]*
2. Adequate weather protected space should be provided outside entrance doors to enable the visitors to get themselves ready before entering or after leaving a building.
3. Automatic doors with a minimum clear width of 1500mm should be provided for the main entrance of public building. See Section C3.
4. Information / reception counter should be visible from the building entrance to allow the staff to provide immediate assistance to the visitors. *[Fig. B3.2]*
5. Incorporating natural light into the lighting design of entrance lobby can create a welcoming environment. This can also help the eyes to adapt to the changing lighting conditions between outdoor and indoor areas. *[Fig. B3.2]*



[Fig. B3.1] Building main entrance should be easy to locate. (Ping Shan Tin Shui Wai Sports Centre, HK)



[Fig. B3.2] Incorporating daylight in entrance lobby can enliven the interior space and create a welcoming environment. (Princess Margaret Hospital, HK)



External Footpath

Drop-off & Pickup

Building Entrance & Lobby

Corridor

Staircase

Ramp

Escalator

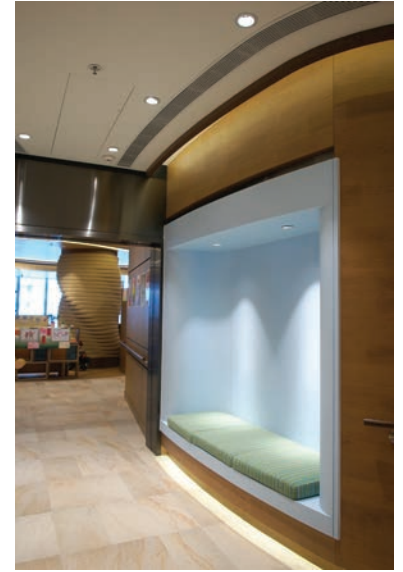
Passenger Lift

CIRCULATION

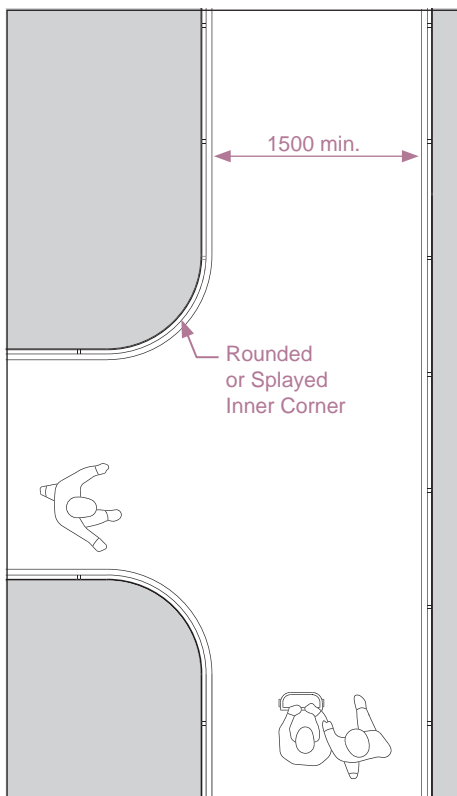
B

B4. CORRIDOR

1. Seating should be provided at an interval of not more than 50m in long corridor. *[Fig. B4.1]*
2. Handrails should be provided along the major corridor in a building where a high volume of elderly users is anticipated.
3. Corners should be rounded or splayed for safety and ease of movement.
4. Adequate lighting should be provided to assist the elderly in finding their way around the building safely.
5. Corridors should be designed to enable the elderly to travel from one place to another with their companion by their side comfortably. A minimum unobstructed width of 1500 mm is recommended. *[Fig. B4.2]*
6. **AVOID** Avoid abrupt change in floor surface level without visual warning.



[Fig. B4.1] - The seating alcove provides resting area for the elderly without becoming obstruction to circulation. (The Tanner Hill, HK)



[Fig. B4.2] Rounded or splayed corner at right angle turn can minimize risk of injury.

External
Footpath

Drop-off
& Pickup

Building
Entrance
& Lobby

Corridor

Staircase

Ramp

Escalator

Passenger
Lift

CIRCULATION

B

B5. STAIRCASE

1. A stair with appealing design is recommended to be provided in a visible and accessible location to encourage usage by the elderly to promote a healthy lifestyle. [Fig. B5.1]
2. Colours with high visual contrast with the surrounding environment should be used to highlight the edges of landing and steps. [Fig. B5.2]
3. All step edges should have non-slip nosing.
4. Steps with uniform riser height and tread depth should be provided. Below are the recommended riser height and tread depth:
 - Riser Height: 150mm maximum
 - Tread Depth: 300mm minimum
5. Handrails should be provided on both sides of the steps and continuous around the landing. See Section D2.
6. For a long flight of stairs, an appropriate seating area at intermediate landing is recommended to allow the elderly to rest before continuing their journey.
7. Clear signage to identify floor level should be provided. [Fig. B5.3]
8. **AVOID** Avoid projecting nosing to prevent trip hazard.
9. **AVOID** Avoid open risers and transparent treads as these are disconcerting for the elderly and can cause visual confusion.



[Fig. B5.1] Staircase can be a design feature that is appealing, pleasant to use and promotes active lifestyle. (HKU SPACE Po Leung Kuk Stanley Ho Community College)



[Fig. B5.2] Edges of landing and steps should be highlighted to warn users of changes in floor surface level.



[Fig. B5.3] Appropriate sign that identifies floor level should be provided at landing.



External Footpath

Drop-off & Pickup

Building Entrance & Lobby

Corridor

Staircase

Ramp

Escalator

Passenger Lift

B6. RAMP

1. Ramp with a gradient from 1:20 (5%) to 1:15 (6.7%) is recommended for ease of use. [Fig. B6.1]
2. A ramp with a gentle gradient should be provided next to steps as an option for the people to choose their preferred means of access. [Fig. B6.2]



[Fig. B6.1] Ramp with a gentle gradient leading to roof top garden (Ko Shan Theatre New Wing, HK)



[Fig. B6.2] Ramp provided next to steps. (Ko Shan Theatre New Wing, HK)

3. For a slight change in level, a full width sloping ground more gentle than 1:20 (5%) is preferred.
4. Handrails should be provided on both sides of the ramp and continuous around the landing. See Section D2.
5. Colours with high visual contrasts with the surrounding environment to highlight the edges of landings along the ramp is recommended.
6. Elderly with mobility aid might find curved ramp challenging to keep good balance and sightline while steering along a curved path. If provided, the gradient at the inner curve should not be steeper than 1:15. [Fig. B6.3]



[Fig. B6.3] Curved ramp can be a sculptural architectural feature but it shall be designed to ensure safety and ease of use.

External
Footpath

Drop-off
& Pickup

Building
Entrance
& Lobby

Corridor

Staircase

Ramp

Escalator

Passenger
Lift

B7. ESCALATOR

- ① 1. Elderly may have difficulty coping with the speed of escalator. Recommendation from supplier should be sought to determine the speed of escalator that is appropriate for the building type.
- ② 2. Flat steps at the beginning and at the end of the escalator can help the elderly to accustom themselves to the speed of a moving escalator. A greater number of flat steps should be provided to high-speed and long flight of escalator to enhance safety. [Fig. B7.1]
- ③ 3. Some elderly may find escalators challenging and prefer other means of vertical circulation. A directional sign adjacent to the escalator that guides the users to other means of vertical circulation such as lift is recommended. See Section D1
- 💡👤 4. A directional indicator is recommended to indicate the escalator's travelling direction. [Fig. B7.2]



[Fig. B7.1] Flat step is a step that is level with the landing prior to rising or descending along the incline.



[Fig. B7.2] Examples of directional indicator

TIPS

Flat Steps

“At least 3 flat steps should be provided at the beginning and at the end of the escalator”

Referenced from Singapore's Universal Design Guide for Public Spaces 2016



External Footpath

Drop-off & Pickup

Building Entrance & Lobby

Corridor

Staircase

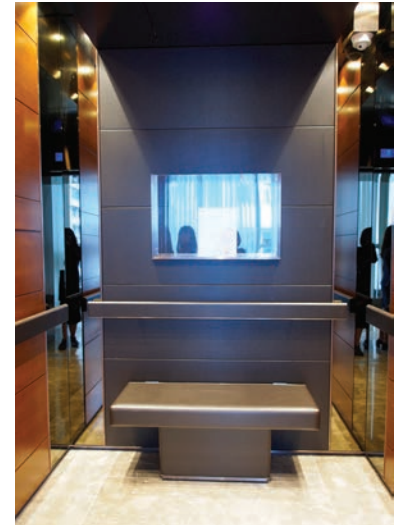
Ramp

Escalator

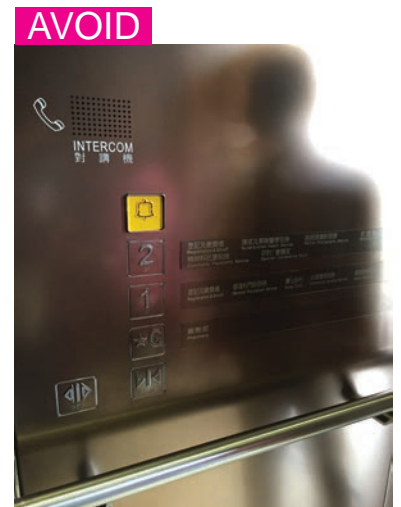
Passenger Lift

B8. PASSENGER LIFT

1. Lifts should be directly accessible from the main entrance and major circulation routes on each floor.
2. Hall lantern should be easy to read and designed to notify the arrival of lift effectively. It is recommended to be mounted at a level not higher than the lift header.
3. Audible signal should be provided to alert passengers that the doors are closing.
4. A prolonged door closing time should be considered where high volume of elderly users are anticipated. The optimal door closing time that is suitable for the building type should be sought with the lift supplier.
5. Handrails should be provided on all walls without door in a lift car to provide physical support for the elderly to steady themselves.
6. A seat or leaning bench should be provided in the lift car and lift lobby where high volume of elderly users is anticipated. *[Fig. B8.1]*
7. Control buttons and signage should be appropriately sized and have high visual contrasts with the adjacent finishes for ease of use and readability.
8. **AVOID** Avoid interior finishes and lighting that cause glare and multiple reflection in a lift car that lead to confusion and visual discomfort. *[Fig. B8.2]*



[Fig. B8.1] Provision of seat in lift car for frail passengers should be considered for buildings frequently visited by the elderly.



[Fig. B8.2] Glare and multiple reflection in a lift car.

TIPS

Destination
Dispatch Control

Destination dispatch control for lifts might cause stress and confusion to the elderly who are unfamiliar to the system and should be avoided.

External
Footpath

Drop-off
& Pickup

Building
Entrance
& Lobby

Corridor

Staircase

Ramp

Escalator

Passenger
Lift

CIRCULATION

B

6C

Interior Space

- C1.** Floor Finishes
- C2.** Colour & Decor
- C3.** Door
- C4.** Indoor Air Quality
- C5.** Thermal Comfort
- C6.** Acoustics

Interior design has a prominent role in contributing to an elderly-friendly built environment that will ensure safety, maximize accessibility and facilitate wayfinding for the elderly; and reduce adverse stimuli on them from the immediate environment.



C1. FLOOR FINISHES

1. Floors should be evenly finished and slip-resistant to prevent falls and tripping.
2. Resilient flooring such as vinyl, linoleum and carpet are preferable to hard surface materials as they are gentle under foot and can provide some cushioning to reduce the impact of fall.
3. High slip-resistant floor finishes should be laid in wet areas such as shower, bathroom and kitchen to reduce slip hazard.
4. Flooring design would help the elderly in the recognition of orientation and perception of space, but should be carefully designed to avoid adverse effect. *[Fig. C1.1]*



[Fig. C1.1] Shiny and reflective floor finishes can be visually challenging for people with visual impairment. Shiny surface may give an impression of wet and slippery floor that is not safe to walk on. A dark patch may be mistaken as a hole or change in level.

Floor
Finishes

Colour &
Décor

Door

Indoor Air
Quality

Thermal
Comfort

Acoustics

TIPS

Trip Hazard

Tactile guide path can be a trip hazard for frail elderly so they should be placed strategically throughout a building.

TIPS

Wet / Dry Conditions

Floor surface can become slippery when wet. The selected flooring material should have consistent slip resistant performance at both dry and wet conditions.

C2. COLOUR & DECOR

1. In general, elderly have higher risk of depression. Interior space with warmer and brighter colour tones should be considered to create an uplifting ambience. *[Fig. C2.1 & C2.2]*
2. Appropriate visual cues such as art works and potted plants should be provided to facilitate orientation which would help the elderly to locate their destinations easily. *[Fig. C2.3]*
3. Clear demarcation of different functional areas through the use of colour and interior decor is recommended to aid wayfinding.
4. Floors, skirting boards and walls should have contrasting colours. This would help the elderly to distinguish the wall and floor junction to enhance perception of space. *[Fig. C2.4]*



[Fig. C2.1] Effective use of decoration can transform a clinical functional area into an inviting space



[Fig. C2.2] warm colours can enliven an interior space.

TIPS

Colour Contrast

Use of colour contrasts can help people with poor vision to draw attention to something important. Placing colours with subtle difference together should be avoided.



[Fig. C2.3] Art work can be used as visual cue for wayfinding.

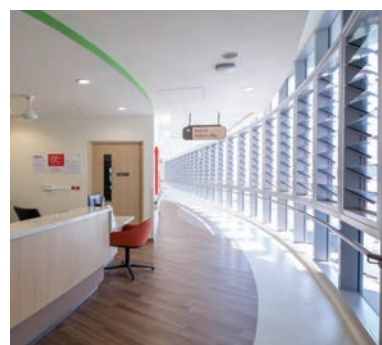


Photo courtesy of CPG consultants

[Fig. C2.4] Colour contrast can enhance perception of space



Floor
Finishes

Colour &
Décor

Door

Indoor Air
Quality

Thermal
Comfort

Acoustics





C3. DOOR

1. Entrance to toilet should be designed without door where possible for ease of access. If not feasible, door hardware that can be sensor operated is recommended. *[Fig. C3.1]*
2. Automatic doors should be provided at the main entrance of public building. *[Fig. C3.2]*
3. Lever-type door handle should be provided as they are easier to operate by the elderly than door knob. For safety, lever-type door handle with closed end or D-shaped design is recommended.
4. Closing speed of the door should be suitably adjusted to cater for the elderly.
5. The presence of glass doors and partitions should be made visible with graphics to alert people.
6. Door and/or door frame for public access should have colours contrasting with adjacent wall finishes to help the elderly to identify the entry to their destination.
7. If a traditional keying system is used on the door, the keyhole should be made visible with high visual contrast against the door finishes.



[Fig. C3.1] A sliding door is fitted with hands-free operator that helps the elderly to open/close the door easily.



[Fig. C3.2] Automatic door should be provided at main entrance of public building. Outside the entrance doors, adequate weather protected space should be provided to enable the visitors to get themselves ready before entering or after leaving the building. (Princess Margaret Hospital, HK)

Floor
Finishes

Colour &
Décor

Door

Indoor Air
Quality

Thermal
Comfort

Acoustics



C4. INDOOR AIR QUALITY

1. Elderly are more susceptible to the effects of indoor air pollutants. Building materials and finishes that are low emitting and with low volatile organic compounds (VOC) should be used.
2. Interior space should be well ventilated to prevent concentration of odour. *[Fig. C4.1]*



[Fig. C4.1] Openable windows can be used to facilitate natural ventilation

C5. THERMAL COMFORT

1. Our ability to regulate body temperature tends to decrease with age. Most elderly require consistent air temperature, air velocity and relative humidity be provided in a building to maintain thermal comfort.
2. Local temperature control in area for individual or small group of occupants to regulate heating and cooling should be provided where appropriate. *[Fig. C5.1]*
3. Mechanical air supply grille should be strategically located to prevent air blowing directly over the head of occupants, causing discomfort and headache.



[Fig. C5.1] A thermostat with an user friendly dial allows easy adjustment of room temperature

C6. ACOUSTICS

1. Hearing loss is common among the elderly. Elderly with hearing problem may find it difficult to engage in conversations in a noisy setting. Speech intelligibility in waiting, meeting and gathering places can be improved by installation of sound absorbing material on finishes to reduce echoes. See recommendation on reverberation time in Section 7A. *[Fig. C6.1]*
2. Provision of assistive listening system in all information/ service counters should be considered.



[Fig. C6.1] Acoustics should be considered for speech intelligibility.

Floor Finishes

Colour & Décor

Door

Indoor Air Quality

Thermal Comfort

Acoustics

INTERIOR SPACE



6D

Fixtures and Furniture

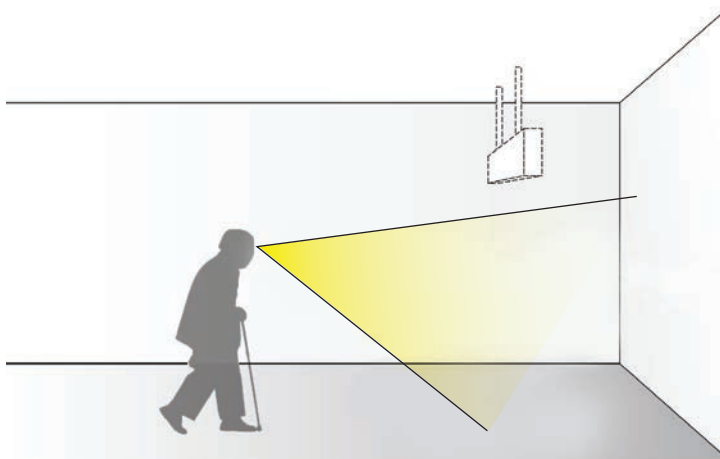
- D1.** Signage
- D2.** Handrail
- D3.** Furniture
- D4.** Lighting
- D5.** Switch & Control

Elderly-friendly design has a strong emphasis on safety, support, cognition and wellbeing. This is where meticulous attention to detailing comes into play, ensuring that the most tangible design elements such as fixtures and furniture are designed with the elderly in mind.



D1. SIGNAGE

1. Interactive digital display is commonly used for directory. Where provided, button and switches should be easy to use.
2. The map on building directory should be oriented to align to the user's viewing direction and indicate user's current location on the map to aid orientation.
3. Directional signs should be placed at key decision points along a circulation route to provide directional information for users to reach their intended destinations.
4. Most elderly have difficulty reading overhead signage at close viewing distance, so placement of signs and the size of text should be determined based on the intended viewing angle and distance. *[Fig. D1.1]*



[Fig. D1.1] Viewing angle of an elderly.

5. Intuitive icons and symbols should be incorporated in signage system as most elderly with cognitive deficit tend to respond to symbols and icons better than textual or colour content. *[Fig. D1.2]*



[Fig. D1.2] Easily recognizable symbols are used on a directory to indicate key destination in a park.

Signage

Handrail

Furniture

Lighting

Switch &
Control

FIXTURES &
FURNITURE

D



6. Key signage should be positioned to face the intended viewing direction. Projected signage should be considered to facilitate wayfinding where appropriate. *[Fig. D1.3]*



Photo courtesy of CPG consultants

[Fig. D1.3] Strategic use of projected signage can facilitate wayfinding and shows the users what's ahead at a distance.

7. High visual contrasts of content against its background should be provided.

8. For English text, a combination of capital and lower case lettering would be easier to read than all uppercase letters.

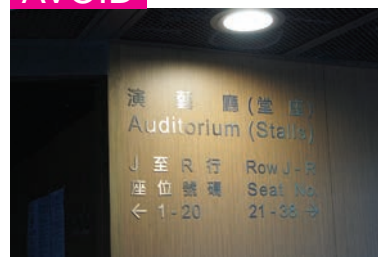
AUTHORIZED PERSON ONLY

Authorized Person Only

9. Some elderly may find stairs and escalators challenging. Directional signs that inform users of all the available options of vertical circulation can help the elderly to choose their preferred means of access.

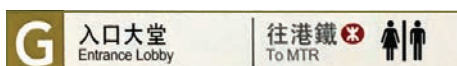


AVOID



[Fig. D1.4] Signage with reflective surface can cause glare and should be avoided.

10. Floor level identification sign should also indicate main building entrance, access to public transport facilities and the available facilities on each floor such as toilet and car park.



11. **AVOID** Avoid any light source to shine directly on the signage with reflective surface. *[Fig. D1.4]*

TIPS:

Flooring as Wayfinding

Integrating wayfinding into flooring design that directs users to various functional area has been widely utilized in healthcare facilities. This design concept can be further developed and applied to a wider spectrum of building types.



Signage

Handrail

Furniture

Lighting

Switch & Control

FIXTURES & FURNITURE





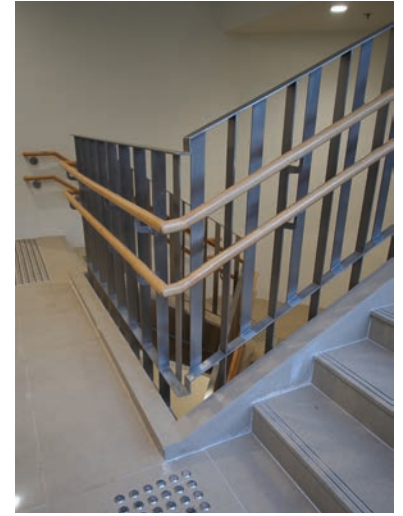
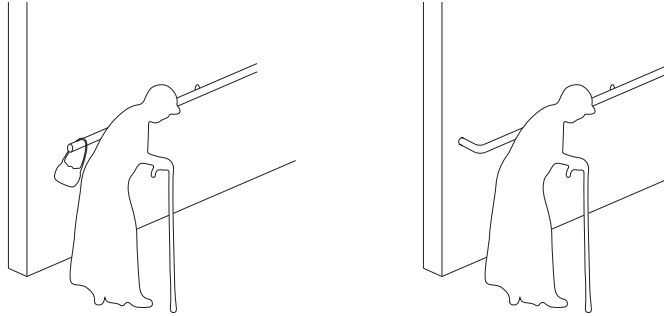
D2. HANDRAILS



1. Handrails should be provided on both sides of the corridor along the major circulation route in elderly-related functional area, at ramps and at staircases. See recommended heights of dual-level handrails in Section 7A. *[Fig.D2.1]*



2. Closed end handrails should be provided to prevent risk of catching clothes and bags, contributing to falls.



[Fig.D2.1] Dual-level handrails should be considered to cater for people with different physical conditions.



3. Handrails should be extended beyond the first and last steps. This can help the elderly to grab a handrail and steady themselves before ascending or descending a stair or ramp.



4. Handrails should be in high visual contrasts with their background to help the elderly with poor vision to locate them. *[Fig.D2.2]*



[Fig.D2.2] Handrails in high visual contrast against the background can help individuals with visual impairment to locate the handrails.

TIPS:

Touch & Feel

Handrails with metal finishes tend to give a cold feeling to the touch which makes them uncomfortable to hold. It can be a safety concern if the elderly is reluctant to hold tight onto handrails when going up and down steps or ramp. For this reason, designers should consider to specify a coating material with low thermal conductivity which makes the metal handrails more pleasant to use.



D3. FURNITURE

1. Seating with armrest and backrest should be provided.
2. Design of furniture should take into consideration the space required for parking or holding shopping trolley, walkers and walking sticks that are commonly used by the elderly.
3. Furniture with high visual contrasts are recommended for easy identification to facilitate use by the elderly with poor vision. *[Fig. D3.1]*
4. Furniture in common area should be arranged to promote social interaction. *[Fig.D3.2]*
5. Furniture should be provided with eased corners and edges to minimize the risk of injury.
6. **AVOID** Avoid light weight furniture and furniture on caster which are not robust and stable enough for the elderly to lean on and get support.



Photo courtesy of CPG consultants

[Fig.D3.1] Furniture in contrasting colour with their surrounding background can help the elderly to identify their presence at a distance.



Photo courtesy of BVN

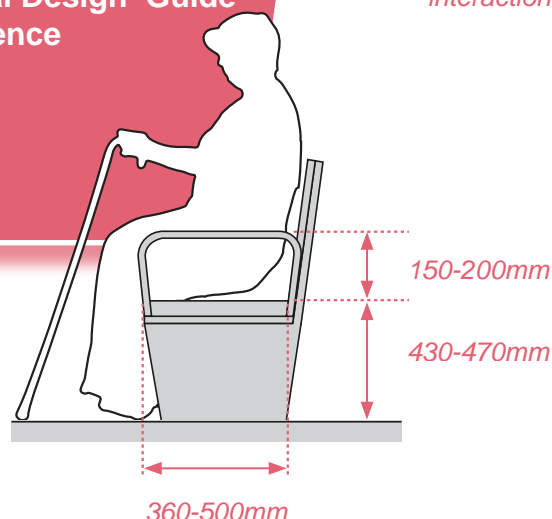
[Fig. D3.2] Furniture should be arranged to encourage social interaction.

TIPS

Ergonomics

Armrest in chair can help the elderly in getting up from the chair independently and backrest gives support to the back when sitting.

The recommended dimensions for a chair from Singapore's Universal Design Guide 2016 is provided for reference



Signage

Handrail

Furniture

Lighting

Switch & Control

FIXTURES & FURNITURE





D4. LIGHTING

1. Ageing eyes have difficulty adjusting contrasting lighting level between outdoor and indoor environment. Transition light and shade at the building entrance should be provided to increase visual comfort. *[Fig. D4.1]*
2. Adequate lighting should be provided in elderly-related functional area to help the elderly to understand their surrounding environment better.
3. Appropriate task light should be considered in reading area where the elderly need to see fine details.
4. Direct glare from light source should be minimized by using of indirect light or appropriate shading device. *[Fig. D4.2]*
5. Optimal daylight should be provided for the interior space where possible. It is especially important for the elderly as a lack of exposure to daylight may affect their mood and lead to depression. *[Fig. D4.3]*



Photo courtesy of BVN

[Fig. D4.1] Daylight in entrance lobby can help the ageing eyes to adjust change in lighting levels.



[Fig. D4.2] Indirect lighting which points at ceiling or wall surface should be considered to avoid direct exposure of eye to the light source.

TIPS

Room without Window

Full spectrum lighting is recommended for elderly related facilities without windows. It is the closest alternative to natural light, with the same quality of light that improves overall wellbeing.



Photo courtesy of BVN

*[Fig. D4.3] Optimal daylight should be provided to frequently used area to enhance wellbeing of occupants.
(Bunurong Memorial Park, Australia)*



D5. SWITCH AND CONTROL

1. Switches and controls should be designed for ease of use and low physical effort for operation. [Fig. D5.1]
2. Switches and controls should have high visual contrast with their background so they can be easily identified by the elderly with poor vision.
3. **AVOID** Avoid power socket at low level that would increase back strain and injuries when bending forward.



[Fig. D5.1] This “Wave Hand to Open” door operator incorporates intuitive graphic design to guide the users to operate the motion sensor.

TIPS:

Technology

Wireless emergency assistance alarm.
Communication device that connects people.
Smart floor that detects falls.
Scooter that doubles as trolley bag.
Robot that provides companionship.

There is no shortage of smart technology that assists the elderly with daily living; but it is changing and evolving everyday.

As we are moving toward an increasingly digital and technological society, designers should keep up with the latest technological trends that care for the ageing population as those smart technologies can change the way we use, design and interact with the built environment.

For example, when motorized wheelchairs and mobility scooters are becoming more popular among the elderly, provisions for parking and charging facilitates should be taken into consideration in the planning and design of the built environment.

Signage

Handrail

Furniture

Lighting

Switch & Control

FIXTURES &
FURNITURE



6E

Amenities

E1. Reception

E2. Toilet

E3. Shower

E4. Car Park

As the physical functional ability declines with age, a more responsive built environment is needed to correspond to a variable range of functional needs of the elderly. If properly designed, building amenities can enhance the enjoyment of the elderly in the use of the building.

E1. RECEPTION

1. Reception should be visible from building entrance and departmental unit entrance to allow the staff to provide immediate assistance to visitors upon arrival.
2. Reception should be provided with seating for the elderly if space permits. *[Fig. E1.1]*
3. Some elderly visit a facility with their helper; so amenities such as information / service counters should be designed with appropriate width to accommodate at least two individuals.
4. Work surface should incorporate design for holding walking stick, umbrella and alike at the information / service counter.



Photo courtesy of Royal Freemasons

[Fig. E1.1] Reception should be provided with seating for the visitors if space permits.

TIPS:

A Notch to Hold Walking Stick

A notch in work surface for holding walking stick is commonly found in reception design. Designer should consider the use of slip resistant material around the edge of the notch to enhance the function of the notch; so that a walking stick or umbrella would not slip off.



Reception

Toilet

Shower

Car Park

E2. TOILET

1. Toilet facility should be conveniently located adjacent to key activity area.
2. Doorless entry should be considered for public toilet for ease of access. Otherwise, door hardware that enable the elderly to open the door with minimum effort should be provided. See Section C3. *[Fig. E2.1]*
3. Hands-free sensor type faucet or lever type faucet should be provided for convenient use by the elderly with reduced physical strength.
4. Holding devices for walking sticks and bags should be provided near wash basin.
5. Adequate unisex toilet facilities should be provided to allow a helper to assist an elderly regardless of gender.



[Fig. E2.1] Doorless entry to toilet facility

TIPS:

Grandparents & Babysitting

Nowadays, many elderly take on the task to look after their grandchildren. Baby-sitting can be a good way for the elderly to rediscover a sense of purpose, while keeping them physically and mentally active. In this regard, the built environment should be designed to provide more physical support serving the needs of the elderly baby-sitters.

Here are some tips to improve elderly-friendliness of toilet facilities:

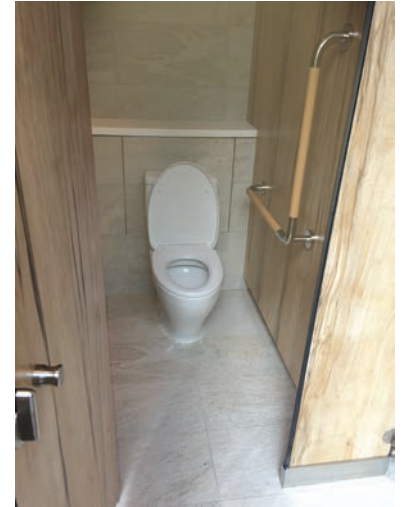
1. Provision of wash basin and water closet for children at lower mounting height can help to reduce risk of injury to the elderly when lifting up a child.
2. Provision of larger toilet cubicle for comfortable use by an elderly with a child can maximize convenience and privacy.

Waiting Area

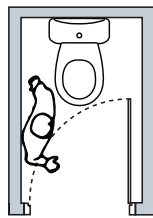
Provide waiting area with seats outside the toilet for the elderly while waiting for their companion, helper or grandchildren.

E2. TOILET (CONT'D)

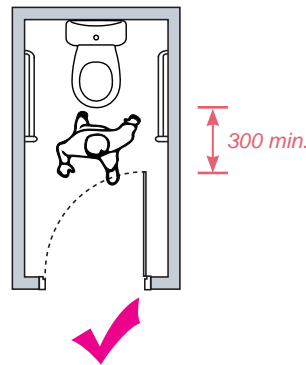
- ⊕ 6. Adequate lighting should be provided inside a cubicle.
- ⊕ 7. Door hardware should allow release of door from outside for rescue in an emergency situation.
- 👤 8. Grab bars should be provided on both sides of the water closet in every toilet cubicle. [Fig. E2.2]
- 👤 9. Hands-free sensor type toilet flush should be provided for convenient use by the elderly.
- 👤 10. Adequate maneuvering space should be provided to minimize the risk of a person colliding with the door.



[Fig. E2.2] Grab bars should be provided on both sides of the water closet.



AVOID



- 👤 11. Holding device for walking sticks and bags should be provided in the cubicle in addition to coat hook.
- 👤 12. Cubicle door lock should be easy to operate without the need of strong finger force.
- 👤 13. Designers should consider to minimize the use of the squat type toilet.

TIPS:

No Squatting

Most elderly with knee and back problems would find it difficult to stand up from a squatting position. For this reason, squat type toilet is not recommended for elderly-friendly facility.

E3. SHOWER

1. For changing room with communal shower cubicles, a dry-off zone with benches next to the shower area is recommended to allow people to dry off before stepping out to the locker area to reduce the risk of slipping on wet floor.
2. Floor finishes should be slip resistant at wet condition to prevent slip and fall injury.
3. Adequate lighting should be provided in shower area to enable the elderly to carry out personal care tasks safely.
4. A thermostatic shower mixer with a safety button to keep water at a safe and constant temperature to prevent scalding should be provided.
5. Curbless walk-in shower should be provided to avoid raised threshold that may cause trip hazards. Drainage channels with non-slip surface should be provided at the entrance and in the shower area. *[Fig. E3.1]*
6. Grab bars and shower seat should be provided in shower area to cater for users with reduced strength.
7. A thermal ventilator in shower and dry-off area is recommended to enhance thermal comfort.



[Fig. E3.1] Curbless walk-in shower

TIPS:

Water Temperature

According to United Kingdom Home Care Association (UKHCA) Guidance - Controlling Scalding Risks for Bathing and Showering (Version 4), water temperature must not exceed 44°C for bathing or showering.

Reception

Toilet

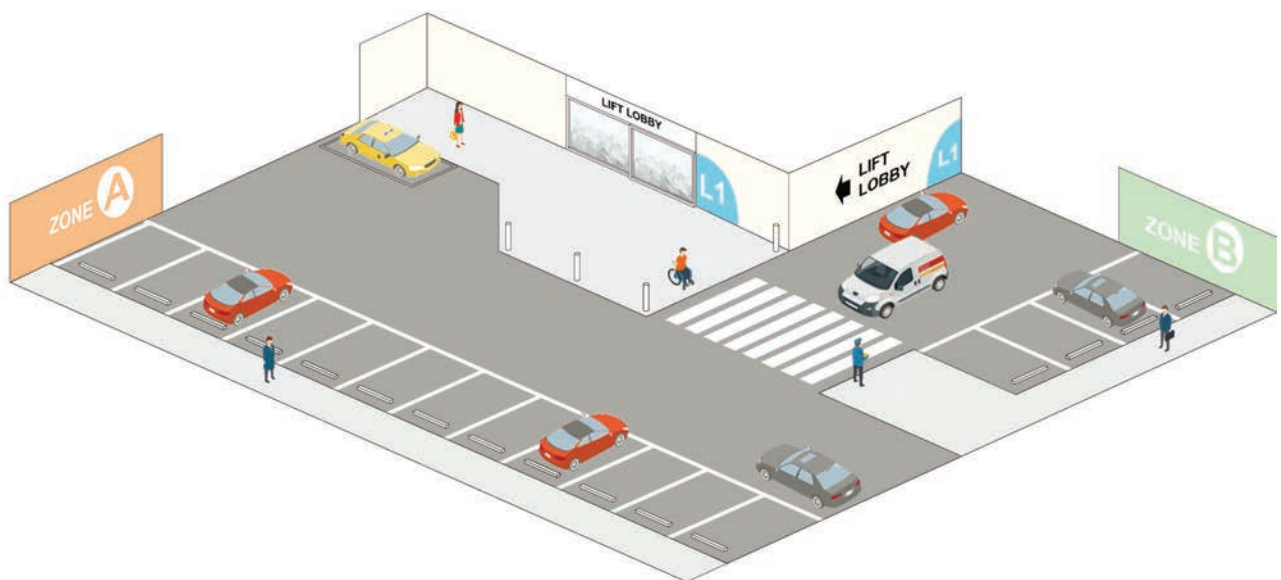
Shower

Car Park

AMENITIES

E4. CAR PARK

1. Layout of carpark should be simple and easy to understand to minimize confusion.
2. Building entrance or lift lobby should be well signed and visible from car park area to facilitate wayfinding and orientation.
3. The sign for car park section number and individual lot number should be large and placed at a prominent location to allow users to locate their parking lot easily.
4. A passenger drop-off and pickup bay adjacent to the building entrance and lift lobby is recommended.
5. Adequate lighting should be provided to maximize visibility for drivers and visitors.
6. Proper signage system should be provided to guide pedestrians to take a safe route between parking area and building entrance / lift lobby. *[Fig. E4.1]*
7. **AVOID** Avoid changes in level from the road surface to pedestrian walkway where possible.



[Fig. E4.1] A safe route that guides the pedestrians to the lift lobby or building entrance should be clearly marked.

Reception

Toilet

Shower

Car Park

6F

Outdoor Space

F1. Outdoor Space

F2. Outdoor Amenities

Outdoor space would benefit the elderly for their physical and mental wellbeing. An elderly-friendly outdoor space should emphasize on accessibility, safe circulation and easy wayfinding. It should also provide facilities that encourage various physical activities and social interaction.



F1. OUTDOOR SPACE

1. Outdoor space should be provided with different interesting focal points and landmarks to facilitate orientation. *[Fig. F1.1]*
2. Outdoor space should be designed with options for both active and passive activities such as group exercise, taichi, strolling, horticultural activity, etc to promote healthy lifestyle among the elderly for their wellbeing.
3. Outdoor space should be designed to promote inter-generational exchange to help the elderly to stay connected to their community for their wellbeing. *[Fig. F1.2]*
4. Outdoor space should include landscaping with a variety of plants that can be touched and smelled to provide sensory stimulation to the elderly.
5. Poor lighting may lead to trip hazard and fall due to poor visibility. Adequate lighting should be provided for outdoor area.
6. Access to outdoor space offers physical, psychological and sociological benefits for the elderly so easy access to outdoor space should be provided to encourage the elderly to venture out. *[Fig. F1.3]*



[Fig. F1.1] Landmark can facilitate wayfinding



[Fig. F1.2] Elderly can benefit from outdoor space that is designed to promote inter-generation interaction.

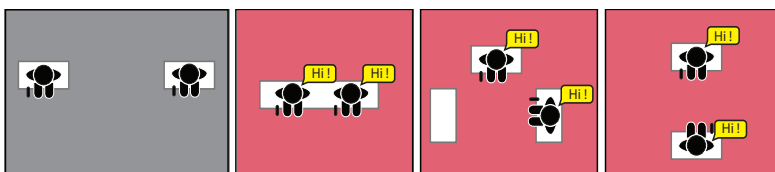


[Fig. F1.3] A pleasant outdoor space can encourage the elderly to venture out and stay active. (Upper Ngau Tau Kok Estate, HK)



F2. OUTDOOR AMENITIES

1. Shaded seating areas should be provided at appropriate intervals along the footpath. *[Fig. F2.1]*
2. A clear space should be provided alongside a seating area for the elderly to place their mobility aids such as trolleys and walkers.
3. Outdoor space should be provided with various seating options, in quiet setting or group setting, to allow the elderly to engage in different types of activities. The elderly with limited mobility can benefit from the seating arrangement that provides opportunities for social interaction.



[Fig. F2.1] A weather protected resting area along a footpath can enhance user experience.

4. Colour contrast should be used to highlight outdoor furniture to help the elderly to locate them from a distance.

TIPS:

Why Close-loop Path?

Most elderly suffer from poor memory; but this should not inhibit them from exploring outdoor. Design feature such as a simple looped walking path is ideal without causing them confusion and frustration at change of direction and dead-ends situation. The simple looped path system can lead the elderly along a journey of interesting focal points and facilitate continuous movement.

Seating at Regular Interval

Singapore's "Universal Design Guide for Public Places 2016" recommends to provide resting areas at frequent intervals of not exceeding 50m to allow older persons to pause and rest.

Outdoor
Space

Outdoor
Amenities

OUTDOOR
SPACE



7.0. ENHANCED DESIGN FOR SPECIFIC BUILDING TYPES

While the design considerations described in Chapter 6 from 6A to 6F are general and should be applied to most building types, Chapter 7 covers enhanced elderly-friendly design that should be considered for specific building types.

7A Residential Care Facilities

7B Recreation & Sports Facilities

7C Performance Venue

7D Public Transport Facilities

7E Market

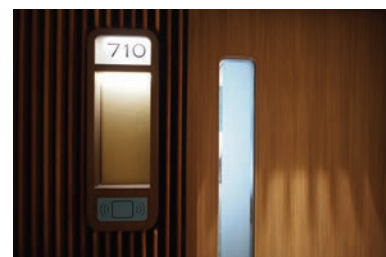
7F Columbarium

7A

Residential Care Facilities

A. RESIDENTIAL CARE FACILITIES

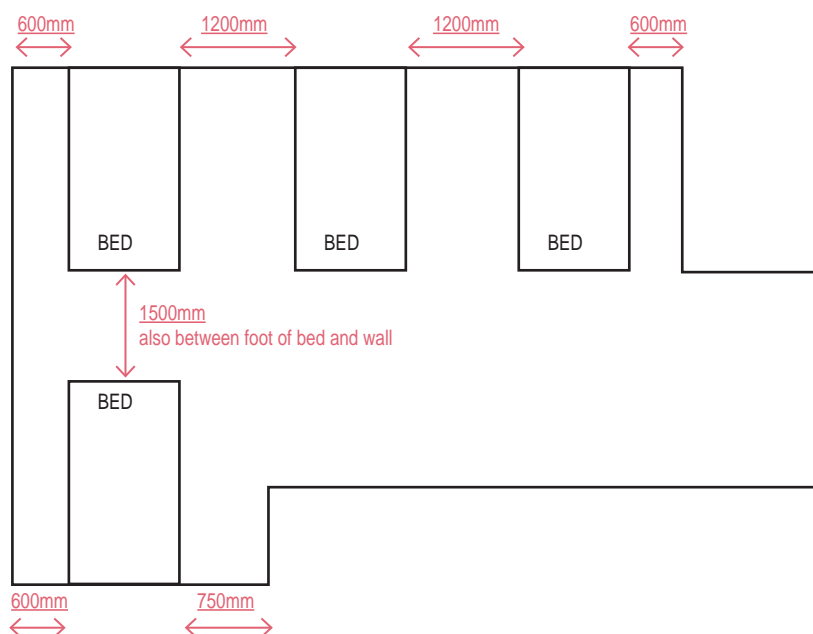
1. Residential care facilities should be designed with a positive, welcoming and homely environment.
2. Design should allow opportunities for residents to decorate and personalize their room so the space looks more intimate and less institutional for the residents. *[Fig. 7A.1 & 7A.2]*
3. The design of individual bed unit in dormitory should provide a sense of privacy to the residents. Design can focus on the bed head with partition or furniture at both sides of the bed that create a sense of privacy by cutting off visual contact between residents while maintaining good visibility for staff to check in their condition. *[Fig. 7A.2]*
4. All functional areas should be well ventilated and kept free from offensive odours.
5. Clear signage of bedroom and individual bed should be provided to assist the residents with cognitive deficit to locate and identify their individual space.
6. Residents often require assistance from caregivers and staff. Adequate access space should be provided on both sides and at foot of the bed for staff to attend to the residents easily and to respond to emergency situation. *[Fig. 7A.3]*



[Fig. 7A.1] An illuminated sign for dormitory that allows the residents to place their favourite decoration can help to elderly to find their room.



[Fig. 7A.2] Design that allows residents to decorate their bed area can make the space more intimate and less institutional.



[Fig. 7A.3] Recommended circulation space in dormitory area

- 7. Adequate storage space should be provided for the residents to store their personal items which may include bulky items. Designer should discuss the provision of storage space with the service operator at early stage of the project.
- 8. Ceiling track hoist system in dormitory should be provided for safe transfer of immobile residents and to reduce likelihood of injury to both staff and residents. Designer should discuss with the service operator at early stage of a project to ensure adequate space be provided for installation of the system. *[Fig. 7A.4]*
- 9. Two-way switching system should be provided in single room to enable control of light from bedside and room entry.
- 10. In dormitory, each bed space should be fitted with power provision for bedside table lamp or reading lamp at the bed-head.
- 11. Light switch with LED indicator which helps the elderly to locate the switch in the dark is recommended. *[Fig. 7A.5]*



[Fig. 7A.4] Additional space may be needed to accommodate a patient lifting equipment so the provision should be considered at early planning stage.



[Fig. 7A.5] An example of a light switch with LED indicator that can help the elderly to locate the light switch in the dark.

TIPS:

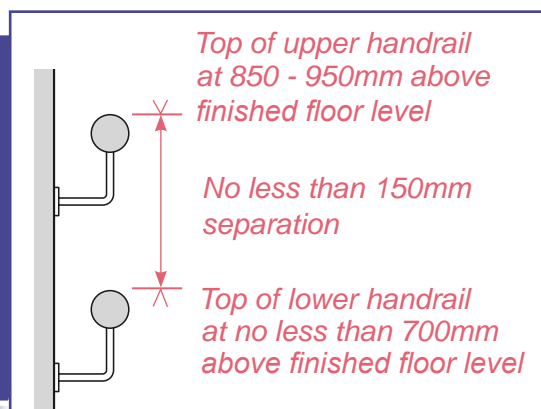
Wellbeing of Staff

Caring for the caregivers is integral to caring for the elderly. A pleasant work environment enables the caregiver to deliver their best care service while maximizing job satisfaction and minimizing stress from their intense daily routine.

TIPS:

Handrail of Dual Heights

By providing handrails at two different heights, a wider range of elderly people would be benefited from the support for walking.



Residential Care

Recreation & Sports

Performance Venue

Public Transport

Market

Columbarium

A. RESIDENTIAL CARE FACILITIES (CONT'D)

Common Activity Area

- 12. Common activity area should be designed with flexible layout to facilitate various types of social activities. [Fig. 7A.6]
- 13. Common activity area should be designed with pocket spaces to promote social interaction.
- 14. Access to daylight should be provided to enhance wellbeing.
- 15. Arrangement of furniture should not impede circulation.



Photo courtesy of wup_wimmerundpartner / Andreas Buchberger

[Fig. 7A.6] Flexible, open plan design for a common area

TIPS:

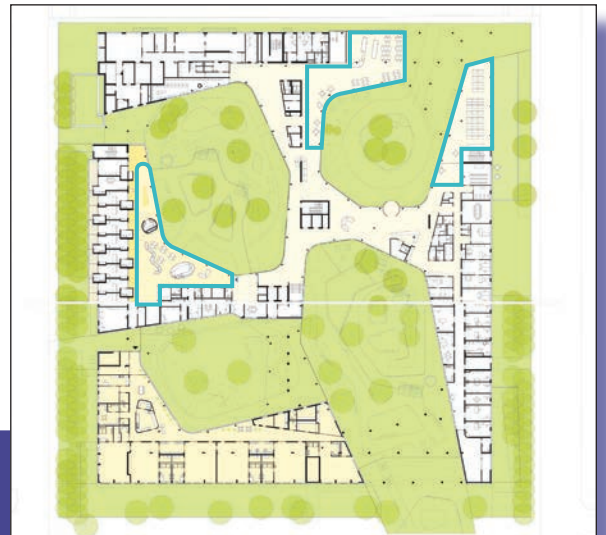
Reverberation Time (RT)

The German standard, DIN 18041, suggests the following demands for different types of rooms in elderly care premises:

- Group rooms: $RT \leq 0.64$ sec.
- Foyer: $RT \leq 0.69$ sec.
- Occupational therapy: $RT \leq 0.63$ sec.

Referenced from website
AcousticBulletin

Illustration courtesy of wup_wimmerundpartner / Andreas Buchberger



TIPS:

Open Plan

Circulation space can be doubled as common activity area. The design of Nursing Home Rudolfsheim in Austria utilizes the circulation space as activity area with decentralized common space that provides different opportunities for people to meet and interact.

Circulation space doubled as common activity area to create different space of social encounter.

Kitchen

- 16. An open kitchen or pantry would facilitate social interaction.
- 17. The depth of counter-top should not exceed 600mm.
- 18. Dual height counter-top at 750mm and 860mm for the elderly at both standing and seated posited should be considered.
- 19. Knee space beneath sink and counter should be considered to provide an option for the residents to use the counter in a seated position. [Fig. 7A.7]
- 20. Hands-free or lever-handled faucet should be provided for ease of operation.
- 21. Installation of light strip to the underside of hanging cabinet should be considered to provide even illumination on work surface.



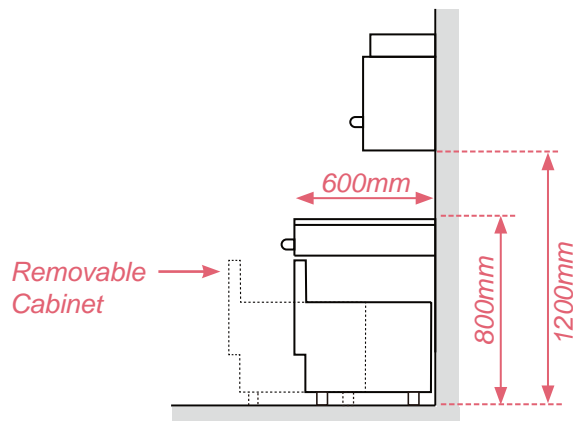
[Fig. 7A.7] The design of this kitchenette has removable lower cabinet for adaptive use by people on wheelchair.

TIPS:

Cabinets

Some elderly may find slide out shelves for lower cabinets useful for ease of access, without worries of bending stress when reaching out to access the back of cabinets.

Recommended dimensions from Hong Kong Housing Society's "Universal Design Guidebook for Residential Development in Hong Kong"



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7B

Recreation & Sports Facilities

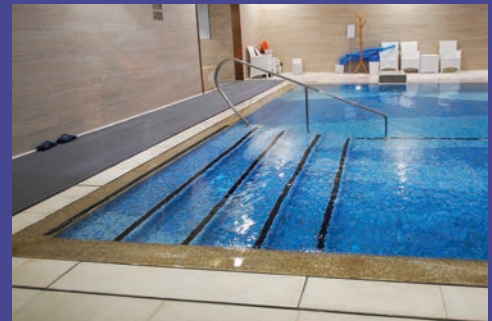
B. RECREATION AND SPORTS FACILITIES

1. Layout of lockers / changing rooms should be easy to understand and provided with visual cue to assist the elderly to identify their lockers. Benches should be provided for the elderly to change their clothes while seated.
2. Incorporation of children's play facilities alongside with elderly exercise facilities would have benefit of promoting inter-generational social interactions for the elderly.
3. Adequate seating should be provided for the elderly and spectators to take breaks between exercises.
4. Amenities provided in the facility such as water drinking fountains and toilets should be conveniently located.
5. Unisex changing room and toilet should be provided to allow a helper to assist the elderly.

TIPS:

Swimming Pool

Swimming is considered as an ideal low impact exercise for the elderly but safety has always been a primary concern for elderly. The following are the key design features for an elderly-friendly swimming pool:



Non-slip floor finishes

Options of ramps or steps with handrails to replace pool ladder

Quick and easy access to toilet facilities from the pool

Contrasting colours to highlight edge of pool and steps

Daylight to enhance wellbeing

Thermostatic mixer for shower

7C Performance Venue

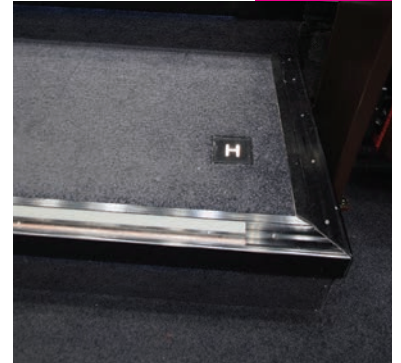
C. PERFORMANCE VENUE

1. The layout of the building should be logical and easy to understand to ensure that the elderly can easily identify and locate areas of interest.
2. Seats should have high visual contrasts with floor and wall surfaces to aid identification.
3. Access to seats should be unobstructed and clearly identified. Row number and seat number should be large, easy to read and oriented to the viewing direction. *[Fig. 7C.1]*
4. Where fixed seats are provided, adequate spacing should be provided between rows of seats so that an audience can remain seated while permitting another person to get by. *[Fig. 7C.2]*
5. Handrails are recommended along the aisles in theatre and auditorium. They should be strategically located so that they would not obstruct the sightline from seats behind.

AVOID



AVOID

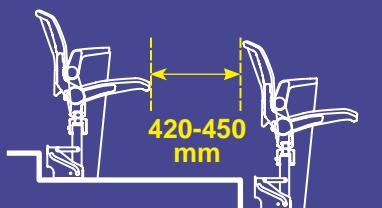


[Fig. 7C.1] Avoid small row number and seat number that are hard to read

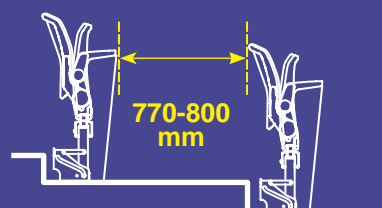
TIPS:

ROW SPACING

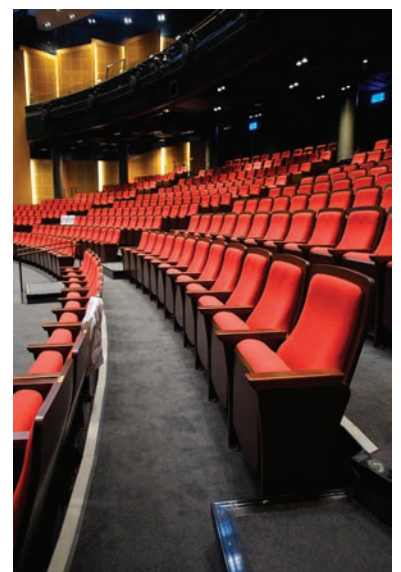
The following are the clear space between rows of seats at Ko Shan Theatre New Wing which received positive comments for the comfortable spacing for the elderly audience:



Seat in folded-down position:



Seat in upright position:



[Fig. 7C.2] Adequate spacing should be provided between rows of seats so the audience can remain seated while permitting another person to get by.

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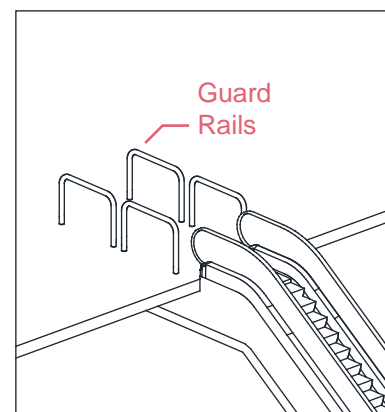
7D Public Transport Facilities

D. PUBLIC TRANSPORT FACILITIES

1. The layout of facility should be efficient to provide direct routes between destinations.
2. Seat and leaning bench should be considered for commuters while waiting for the arrival of public transport. It should be strategically located so that it would not become obstruction to the main circulation. *[Fig.7D.1]*
3. Weather protection should be provided at outdoor stands and major circulation path between entrance of public transport building and other facilities such as taxi stand.
4. A well-marked buffer zone with guard rail should be provided at landing area of escalator as safe transitional zone to control traffic flow. *[Fig.7D.2]*
5. Climbing on staircase may be physically challenging to the elderly. An alternative means of vertical transportation such as lift or escalator should be provided and well signed. *[Fig.7D.3]*



[Fig.7D.1] Leaning bench is a space-saving design that is commonly used at busy bus station to provide a temporary resting point for riders.



[Fig.7D.2] Extended guide rails are recommended to create a safe transitional zone at landing area of escalator in crowded area.

[Fig.7D.3] Lift should be provided for use by the people with mobility challenges.

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7E Market

E. MARKET

- ⊕ 1. Floor finishes should be slip-resistant at both dry and wet conditions to minimize the risk of falling.
- ⊕ 2. Effective surface drainage and ventilation should be provided to keep the floor dry to prevent slip and fall accidents.
- ⊕ 3. Adequate lighting should be provided throughout the market, especially at the entrances and passages.
- 😊 4. Acoustic design should be considered to minimize excessively loud noise which interfere with conversation.
- 👉 5. Ease of access for shopping trolley should be considered especially at change of level. *[Fig.7E.1]*
- 👉 6. Wide aisles and step-free access should be provided throughout the market for ease of movement especially between retail stalls. *[Fig.7E.2]*
- 👉 7. A ledge should be provided at the cashier for shoppers to place their bags when paying.
- 👉 8. A waiting area with benches adjacent to the entrance/exit should be considered to allow the shoppers to rest and sort out their purchases, without obstructing the circulation.



[Fig.7E.1] Ease of access for shopping trolley to the market.

[Fig.7E.2] A wide aisle should be provided to allow comfortable movement between stalls.



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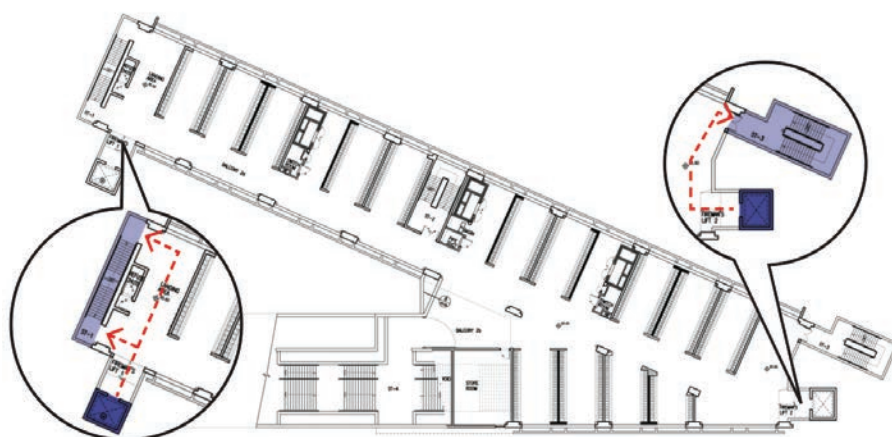
7F Columbarium

F. COLUMBARIUM

- ④ 1. Columbarium receives a large number of visitors during annual festivals including Ching Ming and Chung Yeung Festival. Free flow in a crowded situation can be dangerous for the elderly who can become disoriented and confused and are vulnerable to falls. The planning and design of columbarium should take into consideration of crowd management in high season and allow one-way circulation system to be implemented to keep good order in crowded situation.
- ④ 2. Open staircase should be provided to enhance visual connection and maximize visibility. The open design can aid orientation, deter potential crimes in hidden area and allow early detection of accidents. [Fig.7F.1]
- ④ ④ 3. Stair climbing can be challenging for the elderly so an alternative to stairs such as lifts should be provided in a multi-storey columbarium and located adjacent to the stairs for convenient use by the elderly. [Fig.7F.2]
- ④ 4. Seat and leaning bench should be considered for use at public transport hub as a temporary resting point to improve queuing experience for all riders. See Section 7D.
- ④ 5. Adequate communal facilities such as toilets and joss paper burners should be provided and conveniently located. The design shall take into consideration of the possible queuing for the use of communal facilities during high season. Waiting area with seating adjacent to communal facilities should be considered to benefit the elderly.



[Fig.7F.1] - Open staircase and lift lobby can enhance visual connection and maximize visibility and allow early detection of accidents.



[Fig.7F.2] - Lift should be located adjacent to stairs for convenient use by the elderly. (Diamond Hill Columbarium, HK)

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Columbarium

- 6. Fear of ageing and death may cause psychological distress to the elderly. Without deepening their negative emotion, the design of a columbarium should convey a light-hearted and uplifting atmosphere for the people commemorating the departed. *[Fig.7F.3]*
- 7. The repetitive layout of a multi-storey columbarium can be confusing for the elderly with weak cognition. Effective wayfinding system with visual cues and proper zoning can assist the elderly to orient themselves and identify the location of niches.
- 8. Adequate seating area should be provided throughout the columbarium and along the external path to benefit the elderly with reduced physical strength. *[Fig.7F.4]*
- 9. Effective use of daylight and view to greenery can positively affect the atmosphere of space for mourning and help to relieve emotional distress. *[Fig.7F.5]*



[Fig.7F.3] The use of warm color and material can enliven the atmosphere of the space.



[Fig.7F.4] Adequate seating area can benefit the elderly with reduced physical strength. (Wo Hop Shek Kiu Tau Road Columbarium Phase V, HK)



[Fig.7F.5] Access to greenery and daylight can positively affect the atmosphere of the space for mourning and help to relieve emotional distress (Wo Hop Shek Kiu Tau Road Columbarium Phase V, HK)

Residential
CareRecreation
& SportsPerformance
VenuePublic
Transport

Market

Columbarium

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