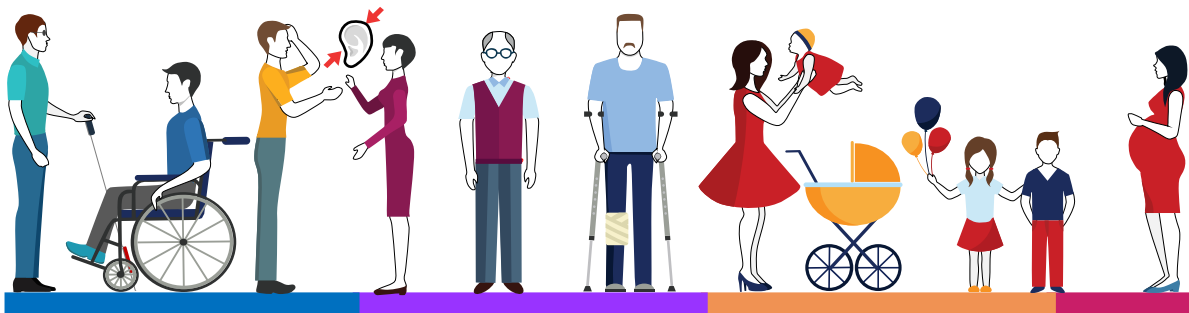


Guide to Universal Design index



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Introduction

Aim

The aim of this guidebook is to assist the reader in understanding the user-friendly features that could be incorporated in building design to shape a more inclusive built environment. Architects, designers and building owners could refer to this guide and utilise the Universal Design index (UDi) self-assessment framework to gauge the level of user-friendliness of their design or buildings.

Procedures and Applicability

The UDi is to be completed and submitted by a Qualified Person (QP) as part of their application for Building Plan approval, Temporary Occupation Permit or Certificate of Statutory Completion.

The UDi is to be submitted, taking into account the entire building in cases where it comprises of,

- New building(s) with a total Gross Floor Area (GFA) of more than 500m²; or
- Additions and alteration (A&A) works to an existing building involving more than 50% of the existing GFA and where the total Gross Floor Area (GFA) is more than 500m²; or
- A&A works to an existing building involving more than 50% of the total number of storey in the building and where the total Gross Floor Area (GFA) is more than 500m²

For other A&A works not described above, the UDi is to be submitted for the area of A&A works only.

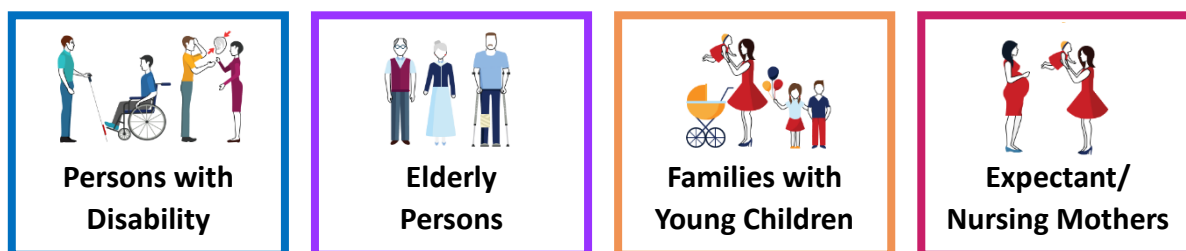
The following projects do not require the submission of UDi,

- Non-buildings, such as linkways, covered drop-offs, bus stops, pedestrian overhead bridges, underpasses and the like; or
- Landed residential; or
- Buildings with total GFA of 500m² or less.

QPs and building owners are also encouraged to use the UDi at the conceptual or building design stage to set targets for inclusive design or consider user-friendly features that could be incorporated to realise benefits for their building users.




Determination of the Universal Design index

The premise of Universal Design is to design for as many user groups, to the maximum extent possible, so that more people of varying needs and abilities can live, work, learn and play in the building. The UDi sets out to provide indicators on the level of user-friendliness for key user groups – persons with disability, the elderly, families with young children and expectant or nursing mothers – all of whom have their own needs and require sensitive consideration and design accommodations.



Graphic (above): Key user groups considered in the Universal Design index.

Based on the user-friendly features that are provided in the building, the UDi will indicate the level of user-friendliness for each user group as shown in the below table. Up to four additional stars could be obtained on top of the single star for a design that complies with the minimum requirement in the Code on Accessibility in the Built Environment.

User-friendly level	Indicator	Range of Points for Respective User Groups	
 1 star	Provided adequate user-friendly features for this user group	D	55 or more
		E	55 or more
		F	50 or more
		M	45 or more
 0.5 star	Provided some user-friendly features for this user group	D	35 to 54.5
		E	35 to 54.5
		F	30 to 49.5
		M	25 to 44.5
 0 star	Provided basic features for this user group	D	Less than 35
		E	Less than 35
		F	Less than 30
		M	Less than 25

Legend:

D Persons with Disability
E Elderly

F Families with Young Children
M Expectant/Nursing Mothers

The aggregate of the level of user-friendliness across the user groups will provide a Universal Design index rating for the building to indicate how successful they are in universal design implementation. The range of UDi ratings and its indication of a building’s overall level of user-friendliness is detailed in the table below.

Universal Design index Rating	Universal Design index	Indicator
A	5 stars	Excellent Universal Design provisions Caters well to all identified user groups
B	4 to 4.5 stars	Good Universal Design provisions Caters well to most user groups
C	3 to 3.5 stars	Fair Universal Design provisions Caters to some user groups
D	1.5 to 2.5 stars	Basic Universal Design provisions
E	1 star	Complying with minimum standards specified in the Code on Accessibility in the Built Environment

Universal Design index Checklist

The UDi checklist contains a list of user-friendly features that could be implemented within a project. QPs and developers are encouraged to use the checklist at an early stage of their design development to guide, enhance or set the standard of user-friendliness for their projects.

QPs and developers only need to input information into the yellow-coloured cells, such as quantities, Yes/No, project details or location of certain user-friendly features. Points are automatically computed based on the inputs. The diagram on the following page shows an extract of the checklist and the key features of the form.

		Inputs	Max Points	Points Scored for Persons with Disabilities	Points Scored for Elderly	Points Scored for Families with Young Children	Points Scored for Expectant / Nursing Mothers
F	ACCESSIBLE SANITARY FACILITIES			4	6	0	0
F.1	Larger Accessible Individual Washroom (Accessible individual washroom of at least 1.8 m x 2.1 m)						
F.1.1	Number of larger accessible individual washrooms required	0					
F.1.2	Number of larger accessible individual washrooms provided	0					
	- Code compliant		2	2	2		
	- Beyond Code compliance		1	0	0		
F.2	Accessible Changing Rooms						
F.2.1	Number of accessible changing rooms required	0					
F.2.2	Number of accessible changing rooms provided	0					
F.2.3	Location/s (to indicate storey, separated by commas, e.g. B1,1,3)						
	- Code compliant		2	2	2		
	- Beyond Code compliance		1	0	0		
F.2.4	Mechanical hoist is provided in the accessible changing room	N	1	0	0		
F.3	Ambulant friendly toilets/cubicles						
F.3.1	Number of ambulant friendly toilet cubicles required	5					
F.3.2	Number of ambulant friendly toilet cubicles provided	0	PLEASE CHECK				
	- Code compliant		2		0		
	- Beyond Code compliance (up to double of required numbers)		1		0		
	- Beyond Code compliance (more than 2 and more than double of required numbers)		1		0		
F.4	Ambulant friendly urinals						
F.4.1	Number of ambulant friendly urinals required	0					
F.4.2	Number of ambulant friendly urinals provided	0					
	- Code compliant		2		2		
	- Beyond Code compliance		1		0		
F.5	Ambulant friendly wash basins						
F.5.1	Provision of grab bars on both sides of wash basin/s	N	1		0		

Only cells in yellow require inputs

Points are auto computed. Scored points will be shown in green

Input errors will be highlighted for correction.

Diagram (above): Extract of the Universal Design index checklist and key features.

User-friendly Features

The following guide is organised to provide explanatory notes and photos of user-friendly features that are listed in the Universal Design index form.

A Access

The provision of an inclusive building starts as the user arrives at the building. This includes the inter-connectivity from street or transport infrastructure leading into the building.

Accessible Pedestrian Entrances into Building

A.1.1 Number of pedestrian entrances into building/development.

Refers to entrances which users can use to enter the building/development on foot.



A.1.2 Number of accessible entrances into building/development.

Refers to pedestrian entrances which wheelchair users can use to enter the building/development, located on accessible routes complying with the requirements in the Code.



A.1.3 Number of sheltered accessible entrances into building/development.

Refers to an accessible route which is sheltered starting from outside of the building/development leading into the accessible entrance of the building/development.



A.2 Accessible Alighting and Boarding Point

A.2.1 Seating provided at accessible alighting and boarding point

Seating which allow users to rest while waiting for their vehicle would benefit the elderly, expectant mothers, young children or the ambulant disabled. The provision of grab bars for seats would further assist the elderly in sitting down and getting up.



A.2.2 More than 1 sheltered accessible alighting and boarding point

As wheelchair users require more time for them to transfer from their wheelchair into the vehicle and to stowaway their wheelchair, the provision of sheltered accessible alighting and boarding point would provide convenience and reduce the anxiety during transfer.



A.3 Inter-Connectivity

A.3.1 Accessible inter-connectivity from building/development to buildings within the same development

Refers to the provision of accessible routes from one block to another block within a multi-block development.



A.3.2 Accessible inter-connectivity from building/development to adjacent development(s)

Refers to the provision of direct accessible routes from one development to adjacent development(s) without going through the public footpath, which brings convenience to everyone.



A.3.3 Accessible inter-connectivity from building/development to transport infrastructure (within 200m), such as bus stop, bus interchanges, MRT or LRT station.

Close proximity of transport infrastructure to the building/development with accessible connections would facilitate access by everyone who relies on public transport.

A.3.4 Accessible inter-connectivity from building/development to street infrastructure (within 200m), such as traffic junction crossings, pedestrian overhead bridge or underpass

Close proximity of street infrastructure to the building/development with accessible connections would facilitate the crossing of busy streets when accessing the building/development.



A.3.5 Accessible inter-connectivity from building/development to park connector or LTA's cycling network

Direct connections with the expanded commuting network would provide additional means of access for users.



A.4 Car Parking

A.4.1 Number of accessible parking lots provided.

A.4.2 Adequate provision of accessible car park lots that are located near to lift lobbies or accessible entrances and distributed evenly across the development would provide more flexibility for drivers with disabilities to park at their most convenient locations and enable easier access to their destination within the building/development.



A.4.3 Number of accessible parking lots with electric charging station(s)

As electric vehicles become more prevalent, drivers with disabilities may require larger car park lots with electric charging facilities for their vehicle.

A.5 Family Parking Lots

A.5.1 Number of family parking lots provided to

A.5.2 Adequate provision of larger-sized family parking lots serves a wide range of users and purposes. Families would have more space to set up or stowaway their prams or assist their elderly family members who may need to transfer to and fro wheelchairs. Drivers with disabilities could also use such lots.



A.5.3 Number of family parking lots with electric charging station(s)

As electric vehicles become more prevalent, drivers that may require the use of family parking lots may also require electric charging facilities for their vehicle.

B Circulation

After arriving at the building, the ease of travelling around the development or building is equally important so users can arrive at their destinations safely and conveniently. These include travelling on the same floor or in between floors.

B.1 Pedestrian Walkways in Car Park

B.1.1 Provision of designated pedestrian walkways in car park that is outside the vehicular driveway.

Designated pedestrian walkways in car parks provide a safe route for people to walk within the car parks. Such walkways should be located away from the vehicular driveway to mitigate the risk of vehicular-pedestrian accidents.

B.1.2 Provision of designated pedestrian crossings in car park.

Designated pedestrian crossings in car park provide a safer route for pedestrians by means of limiting possible hazard zones for drivers.

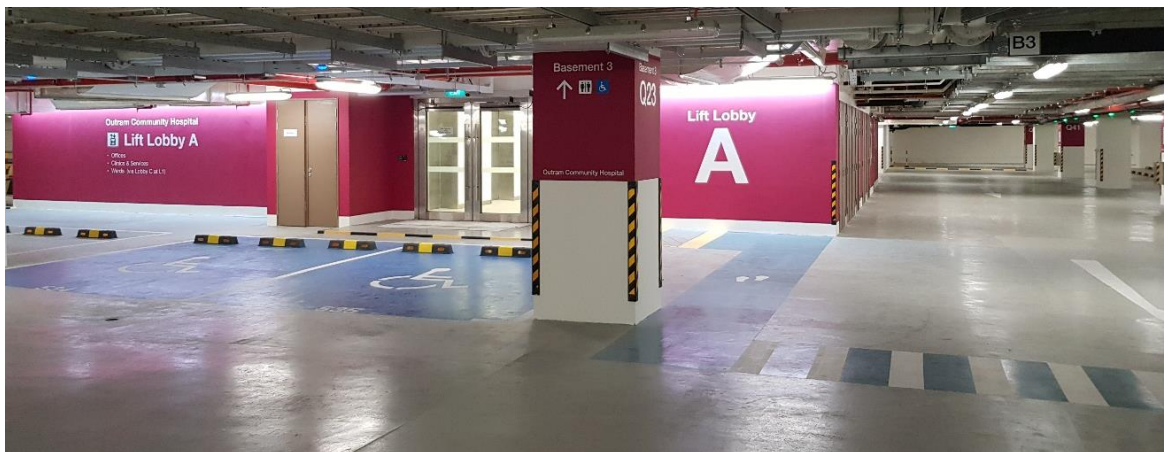


Photo (above): Example of designated pedestrian walkways and crossing in car park

B.2 Accessible Circulation Routes

B.2.1 1 circulation route leading to all accessible spaces and facilities of width complying with Code requirements.

The widths for the primary accessible routes as specified in the Code are minimum requirements to enable the safe and adequate passage of users.

B.2.2 1 circulation route leading to all accessible spaces and facilities of widths wider than Code requirements.

Designers are encouraged to design sufficient widths, which may be more than the minimum required, to allow for better flow of human traffic, which may be a mix of wheelchair users, families with prams, or persons with bulky mobility aids.

B.2.3 All circulation routes are accessible with widths more than 1.5m

For equitable and convenient access for everyone throughout the building/development, providing more than 1.5m width for all passageways would allow comfortable travelling in most instances.



Photo (above): Example of wide accessible routes beyond minimum required by the Code on Accessibility in the Built Environment.

B.3 Ramps

B.3.1 All ramps comply with Code requirements.

All ramps, where provided, must comply with requirements as specified in the Code on Accessibility such as detectable warning surfaces, handrails on both sides, edge protection etc.

B.3.2 Secondary handrails are provided for children.

Provision of handrails at a lower level would enable children to hold onto a railing to navigate ramps independently and safely. Parents can also free up their hands to perform other actions, such as holding on to bags or groceries or pushing a pram with another child.



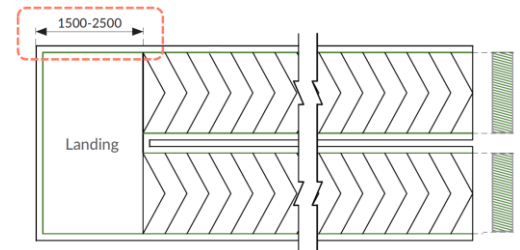
B.3.3 Braille and tactile indicators are provided on handrails.

Provision of braille and tactile indicators would provide feedback for persons with visual impairment to inform them on where they are heading to.



B.3.4 Ramp landings are greater than 1.5m deep.

Ramp landings serves as a means for users to rest while travelling along the ramp as well as to break a fall. Provision of a deeper landing provides more space for such purposes.



B.4 Staircases

B.4.1 All staircases comply with Code requirements.

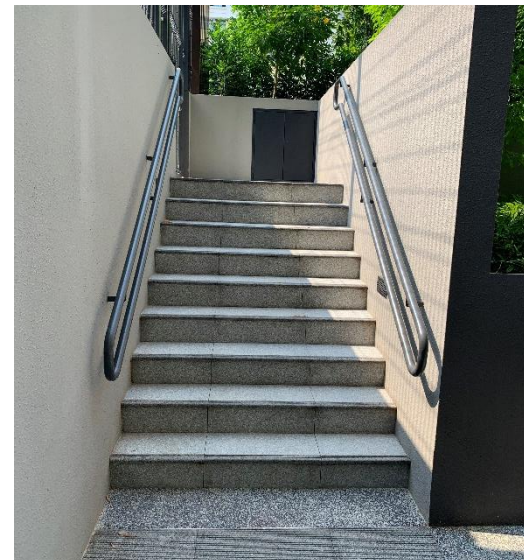
All staircases, where provided, must comply with requirements as specified in the Code on Accessibility such as detectable warning surfaces, handrails on both sides, edge protection etc.

B.4.2 Staircases are provided with minimum tread width of 300mm and maximum riser height of 150mm.

Staircases with a gentler pitch would be easier for users to travel along.

B.4.3 Handrails are provided on both sides of staircases.

Handrail provision on both sides of staircases would provide users with support or guidance regardless of their dominant hand or direction of travel, especially when there are users travelling in both directions.



B.4.4 Secondary handrails are provided for children.

Provision of handrails at a lower level would enable children to hold onto a railing to navigate staircases independently and safely. Parents can also free up their hands to perform other actions, such as holding on to bags or groceries.



B.4.5 Braille and tactile indicators are provided on handrails and wall at storey landing.

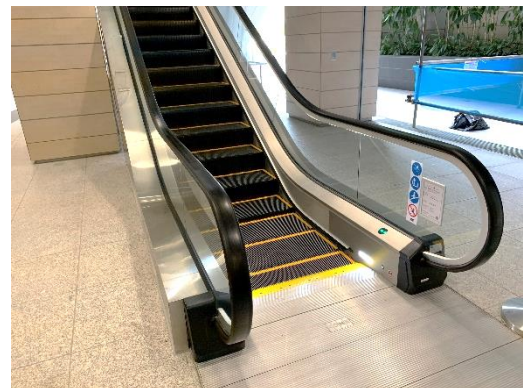
Provision of braille and tactile indicators on handrails would provide feedback for persons with visual impairment to inform them on where they are heading to as they use the handrails to guide their movements. Provision of braille and tactile signage on wall at storey landing would inform them of the storey that they are on before going up or down the staircase.



B.5 Escalators and Travellators

B.5.1 Escalators provided with minimum three horizontal steps/Travellators provided with horizontal section at landings

Horizontal sections of such inclined moving walks would allow users to steady themselves before the inclined movement begins and to anticipate the end of the journey and get ready to step off the escalator or traveller.



B.5.2 Additional safety barrier taller than handrail height provided

As an additional safety measure to mitigate the risk of falling from height or collision with protruding elements.



B.5.3 Guiderails provided at escalator landings to segregate circulation flow.

For areas with an anticipated high volume of human traffic, guiderails could guide the movement of users away from the escalator landings to prevent congestion.

B.5.4 Audio feedback on direction of travel or reaching the end of travellers.

Audio feedback would allow persons with visual impairment or distracted users to be alerted to the traveller's direction of travel or end of the traveller.

B.6 Lift and Lift Lobbies

B.6.1 Provision of accessible passenger lifts.

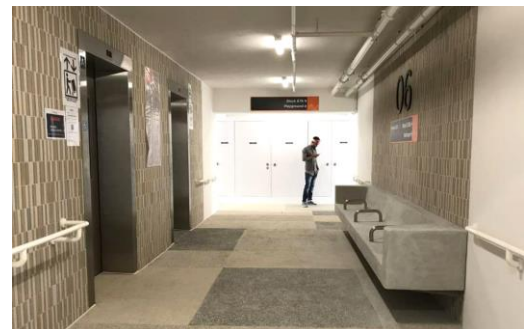
to

B.6.3

Accessible lifts are required to have additional provisions for wheelchair users, including a minimum lift car size of 1.2m by 1.4m, provision of control panel on the side of the lift car and non-breakable mirror at the rear of lift car interiors.

B.6.4 Seating provided at lift lobbies

Seats allow users to rest while waiting for the lift.



B.6.5 Lift lanterns to indicate arrival of lift.

Refers to lantern extending out from the wall that lights up when the lift arrives. This would help waiting users to easily identify the lift that has arrived, especially where there are multiple lifts within the same lobby.



B.6.6 Emergency communication system linked to an induction loop system.

An emergency communication system that is linked to a hearing enhancement system would allow persons with hearing impairment to communicate.

B.6.7 Emergency visual information display system or visual alarm (flashing beacon/lights)

A visual information display system that can display messages would allow persons with hearing impairment to understand the situation, receive updates as well as any instructions in the event of a lift malfunction or breakdown.

B.7 Resting Areas

B.7.1 Adequate seating provided (at all spaces where users are likely to gather and at 25m intervals)

Seats which allow users to rest would benefit the elderly, expectant mothers, young children or the ambulant disabled. Provision of seating spaces is deemed adequate if the seating spaces are provided at key activity areas or key spaces where users are expected to gather for a period of time.



B.7.2 Seats fitted with grab bars/arm rests or backrests

The provision of grab bars for seats would further assist users in sitting down and getting up.



B.7.3 Adjacent seats of varying heights to cater to users of different statures

Seating designed with a variety of heights would better cater to a group of users who may consist of elderly, adults and young children. Adjacent seating would allow them to sit together.



B.7.4 Adjacent space(s) for wheelchair users and/or baby carriage(s)

Space(s) should be provided near seating so wheelchair users can communicate naturally with their friends who are seated. The same space(s) can also be used to park prams. These spaces should not extend out into the main circulation path.



C Way-Finding

Adequate and good provision of way-finding features would allow users to efficiently navigate the building and locate important destinations.

C.1 Signage

C.1.1 Provision of building directory with maps or accessible interactive directory/kiosk located prominently at main accessible entrance/lobby.

A directory showing the location of key destinations at the entrance to the building would allow users to orientate themselves and to identify destinations for efficient navigation.



C.1.2 Use of easily understood pictograms on signs

The use of universally understood pictograms would reduce the need for text, which is dependent on language, literacy and legibility.

C.1.3 Use of contrast between text and background on non-reflective signs (no glare from ambient or artificial lighting)

Reflective signs are prone to glare which diminishes the legibility of the signs. Having adequate contrast between the text and the background would allow the information to be easily read and allow users to efficiently and effectively identify the route to take.

C.1.4 Indication of distance to accessible features

The indication of distance to accessible features such as accessible toilets, lifts, nursing rooms would provide users with a gauge on the time and/or distance required for them to arrive at their destination.



Photo (above): Example of signage with pictograms and distance to accessible features such as toilets.

C.2 Physical Design

C.2.1 Use of shapes, colours, patterns or graphics for easy identification at key spatial zones or circulation routes/paths.

Key spatial zones include examples like east/west wings, north/south towers, atriums or similar. Key circulation routes/paths could include lift lobbies, circulation “spine” or nodes connecting various circulation routes.



C.2.2 Use of shapes, colours, patterns or graphics for easy identification at car parking zones.

Lift lobbies should be prominently identified. Other design features such as use of shapes, colours, patterns or graphics on columns to sub-divide the car park into identifiable zones would facilitate location of parked vehicles.



C.2.3 Use of shapes, colours, patterns or graphics for easy identification at blocks.

Uniquely designed blocks, especially in multi-block developments, allows easier orientation and identification of the user within the development.



C.3 Information Counters

C.3.1 Provision of information counters

to

C.3.2

Provision of information counters would allow users, especially first-time visitors to the building, to seek assistance or to obtain information on facilities within the building. Such information counters should be provided with hearing enhancement systems and a lowered accessible counter suitable for wheelchair users to better serve more users with varied abilities.

C.3.3 Information counter is located on same floor as main accessible entrance.

An information counter located in close proximity to where users would enter the building would allow users who require assistance to easily locate the information counter.



D Hearing Impaired Provisions

Provision of hearing enhancement systems would allow users to seek assistance and to participate in activities, similar to their able-bodied counterparts.

D.1.1 Hearing Enhancement Systems at Public Information/Service Counters

D.1.3 Information/service counters provided with hearing enhancement systems would allow staff to communicate with persons with hearing impairment and provide service and assistance. Provision of hearing enhancement systems at more counters would provide more convenience for the user.



D.1.4 Hearing Enhancement System coverage in auditoriums or halls

A wider coverage of auditoriums and halls would provide more flexibility for persons with hearing impairment in terms of where they can sit and allowing them to seamlessly participate in the activity with the rest of the participants.



E Visually Impaired Provisions

A key challenge for persons with visual impairment is to understand and navigate their surroundings. Careful integration of provisions for persons with visual impairment would allow them to understand their surroundings through touch, or for them to seek assistance.

E.1.1 Provision of seating arrangement within fixed seating of auditoriums and halls for a guide dog owner and a guide dog by the aisle

Guide dogs serve persons with visual impairment by guiding their owner from point to point while avoiding obstacles and hazards. The provision of a seating space for a guide dog owner and their guide dog would allow the person with visual impairment to participate in activities that are set in auditoriums and halls.

E.1.2 Provision of braille and tactile building directory

Visually impaired persons can understand the context which they are in via a braille and tactile directory. The tactile map would consist of raised features to show their current location, routes, spaces and buildings. This would be complemented with braille descriptions of spaces and buildings. As this directory would be read via touch, designers are encouraged to place the directory such that it can be comfortably reached by persons with visual impairment.



E.1.3 Provision of braille and tactile signs for rooms/units/spaces

Such signs allow persons with visual impairment to verify their destination spaces before entering. Apart from provision of braille, tactile signs are important for users who do not know braille. The raised letters would allow users to make out the text via touch.



E.1.4 Provision of directional tactile tiles from accessible entrance to information counter

Persons with visual impairment are trained to navigate from point to point via a memory map. Therefore, they are unable to navigate when they are in a new unknown space. The provision of tactile tiles from the entrances of buildings to the information counter would allow persons with visual impairment to locate the information counter for further assistance.

E.1.5 Provision of directional tactile tiles linking two transport nodes (e.g. MRT station to Integrated Transport Hub through a private development)

A series of directional and warning tactile indicators can be provided in transportation nodes to guide persons with visual impairment to key accessible facilities or to queues to board trains and buses within the station. As more integrated transport hubs are created within privately owned developments, it is important to continue the providing directional tactile so that persons with visual impairment have a consistent experience when transferring from one transportation node to another.

F Accessible Sanitary Facilities

To allow persons with disabilities to stay within the building for a longer period of time for work or play, sanitary facilities which support their needs are important provisions.

F.1 Larger accessible individual washroom

Larger unisex washroom with supporting features like grab bars allows for more manoeuvring space within the washroom for motorised wheelchairs or scooters.

It is not encouraged for accessible individual washroom to be combined with the family toilet as a person with disability may be unable to use the washroom when needed.



F.2 Accessible changing rooms

Accessible changing rooms are provided with height adjustable beds for caregivers of persons with multiple or severe disabilities to change and clean their loved ones. The bed provides a clean and hygienic space. With the ability to change and clean for them, the caregiver and the person with disability would be able to spend more time outdoors instead of having to return home to perform such tasks.



F.2.4 Mechanical hoist is provided in the accessible changing room

A mechanical hoist aids the caregiver in transferring the person with disability from the wheelchair to the changing bed.



F.3 to F.5 Ambulant friendly toilets/cubicles, urinals and wash basins

The provision of grab bars adjacent to the water closets/urinals/wash basins would provide support for users who may need them, including the elderly or users who are injured or not feeling well.



G Family Friendly Sanitary Facilities

For the convenience of families with young children and nursing mothers, provision of family friendly facilities is encouraged for families to spend more time out together.

G.1 Family toilets

- G.1.1 Designated family toilet fitted with adult and child-friendly sanitary facilities (WC, child-sized
- to
- G.1.3 WC, wash basin, child protection seat, diaper changing station, bin)

Such standalone toilets with both adult and child sized sanitary facilities allow parents to bring their children to the toilet regardless of their gender.



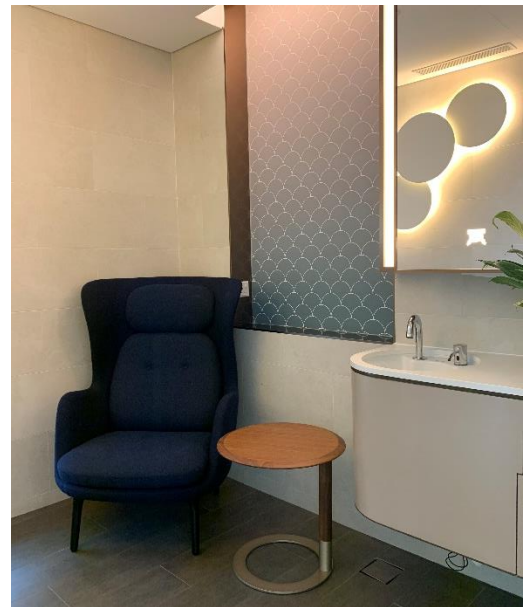
G.2 Nursing Facilities

- G.2.1 Lactation rooms

to

G.2.3

Lactation rooms are spaces where mothers can nurse/feed their babies or to express milk. Therefore, it is important that lactation rooms should not be within toilets. Lactation rooms should also be private and comfortable for mothers to nurse their babies. Power points should also be provided for mothers who may choose to express milk for subsequent use.

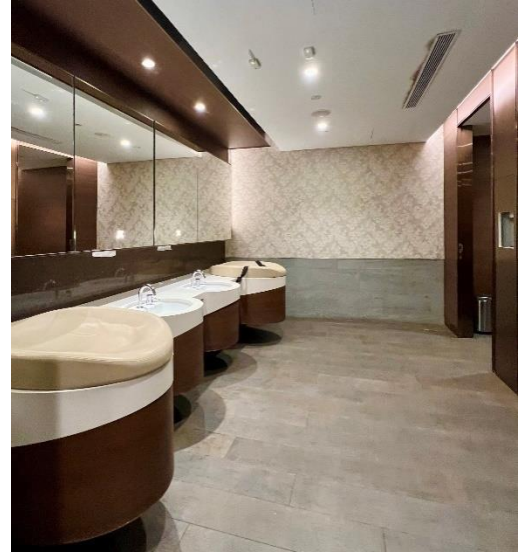


- G.2.4 Designated nursing room (partitioned lactation area(s) with seat(s), wash basin, diaper changing station/counters, hot water dispenser)

A designated nursing room would consist of all necessary provisions to allow parents to clean and change their children as well as for mothers to nurse their babies. There should be privacy segregation between the nursing area and the other features such as diaper changing station, wash basin and hot water dispenser since fathers can assist with such activities while mothers would be the primary users of lactation areas.

G.2.5 Space(s) for baby carriage within nursing room

Provision of sufficient space within the nursing room would bring about greater convenience to the users.



G.3 Designated children's toilet

G.3.1 Designated children's toilet fitted with child-friendly sanitary facilities (child-sized water closet(s), wash basin(s) and mirror)
G.3.5

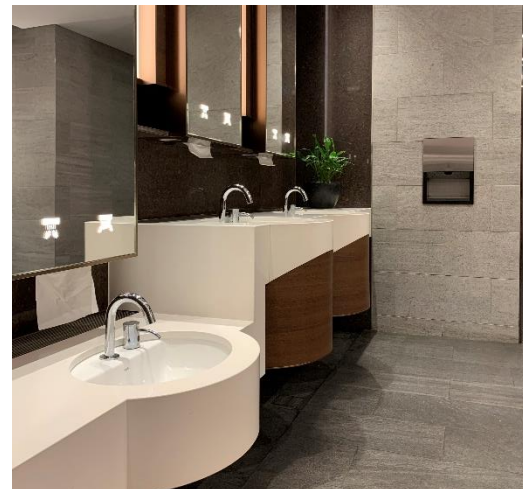
Where there is provision of child-specific facilities such as water play areas and playgrounds, designated children's toilets are encouraged. Such provisions would not only better accommodate the smaller stature of children but would also promote independent usage by children without over relying on parents.



G.4 Child-friendly basins

G.4.1 Provision of child-friendly basins
G.4.2

The provision of child-friendly basin within gender specific toilets should take into consideration children's height and reach for independent usage. Therefore, the basins must be located at an appropriate height and should not be as deep as adult sized basins.



G.5 Child-friendly water closets

G.5.1 Provision of child-friendly water closets

to

G.5.2

Such water closets within gender specific toilets must be child-sized. Use of seat adapters over adult-sized WCs are not acceptable as such WCs are still too high. Provision of step/stool to mitigate the height would pose safety risks and are not practicable in public toilets.

G.6 Child-friendly urinals

G.6.1 Provision of child-friendly urinals

to

G.6.2

Child-friendly urinals within gender specific toilets should be installed at an appropriate height with appropriate measures to allow the triggering of flush system by children.

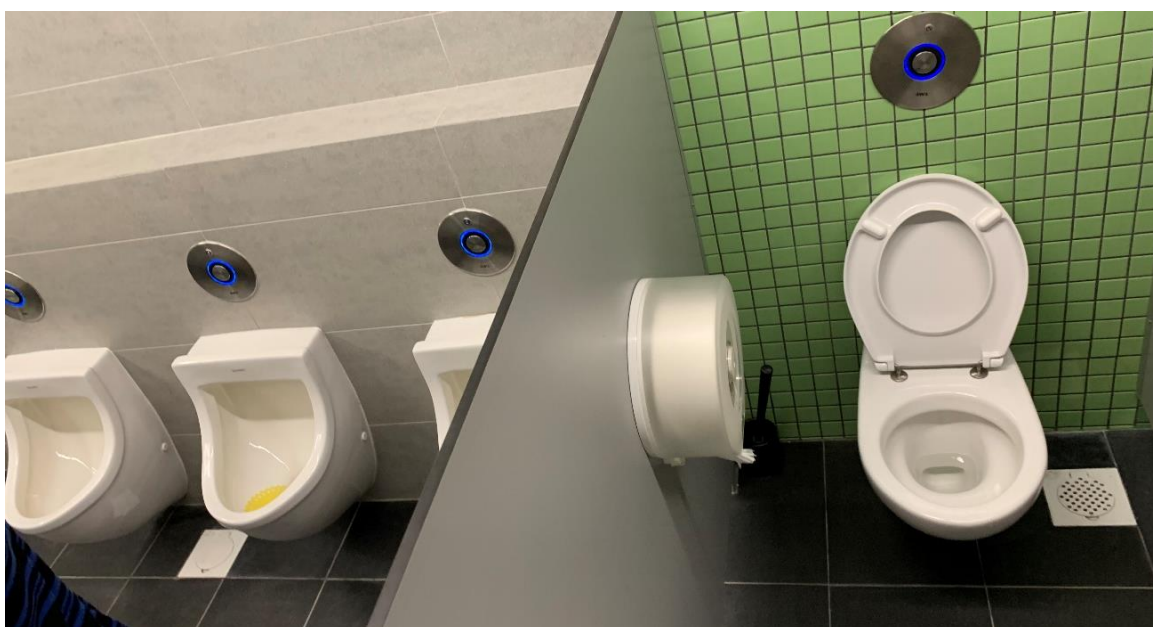


Photo (above): Example of child-sized urinals and water closets to promote independent usage.

G.6.3 Provision of child-friendly urinal in female toilet

Provision of child-friendly urinal in the female toilet would allow mothers to accompany their young boys to use the toilet.

G.7 Child-friendly showers

G.7.1 Provision of child-friendly showers

to

G.7.2

Children must be able to shower independently in such child-friendly showers. The tap and shower head (if operable) should be at a child-appropriate height.

G.8 Child-protection seats in cubicles

G.8.1 Provision of child-protection seats in cubicles to

G.8.2 Child-protection seats provide with a space for parents to rest their young children while they use the toilet. Therefore, such child-protection seats should not be located in the common area of the gender specific toilet as the parent is unable to supervise while they are within the cubicle. Such provision must be in both male and female toilets.



G.9 Diaper changing stations

G.9.1 Provision of diaper changing stations to

G.9.2 Diaper changing stations provides a clean safe space for parents to change the diapers for their young children. Where diaper changing stations are provided in gender specific toilets, they must be in both male and female toilets.



H Accessible & Elder-Friendly Rooms

To ensure persons with disabilities and the elderly have access to hotel and/or service apartments rooms which can support their needs, hotels and service apartments are required to provide a minimum number of such rooms.

* Applicable to service apartments, hotels, hostels and the like only.

H.2 Accessible rooms

H.2.1 Provision of accessible rooms

to
H.2.3

Accessible rooms would allow wheelchair users to access the room, have enough manoeuvring space within the room and appropriate safety features within the bathroom. Refer to the specific requirements in the Code on Accessibility in the Built Environment. It is encouraged for such rooms to be distributed across different room tiers to provide more choices for wheelchair users.



Photo (above): Example of an accessible hotel room with accessible toilet provisions.

H.3 Elder-friendly rooms

H.3.1 Provision of elder-friendly rooms

to

H.3.3

Elder-friendly rooms would provide safety features for elderly guests using the rooms. This may consist of grab bars next to the bed and bathroom.



J Specific UD Features

- Social and Recreational Facilities

For an inclusive society, persons with disabilities and the elderly should be able to participate in communal activities. It is therefore important for such social and recreational facilities to be designed to facilitate their participation.

J.1.1 Community gardening with access for wheelchair users

A variety of gardening plots could be designed for various needs and users. Raised gardening plots would benefit the elderly, reducing the need for them to bend over, while raised gardening plots with knee space for wheelchair users would also allow them to engage in such activities. Appropriate floor finishes should also be considered such that wheelchair users can manoeuvre safely and easily. Stepping stones, turfed, sandy or gravel lined paths are not conducive for wheelchair users.



J.1.2 Gymnasium with equipment for wheelchair users

A variety of gym equipment could be provided, including those that are able to accommodate wheelchair users, allowing them to benefit from such machines. Free weights are not considered as equipment.



J.1.3 Outdoor fitness stations with equipment for elderly

Such provisions would encourage a healthy lifestyle for the elderly without compromising safety.



J.1.4 3G (Three Generation) concept in the placement of play and fitness area

The co-location of play and fitness facilities would cater for the needs of different members of the family, while allowing them to enjoy the activity together. This would also allow easy supervision of children by their parents or grandparents.



J.1.5 Children's play area with play equipment for children with disabilities

To promote a more inclusive play environment, various play equipment, including those that can cater for a wheelchair-bound child could be provided.



J.1.6 Swimming pool with means of access for wheelchair users and accessible rinsing shower

Means of access for wheelchair users could be in the form of ramps into the pool, or transfer platforms allowing wheelchairs to transfer onto the platform before descending into the pool. Accessible rinsing showers must have adequate space, appropriate floor finishes as well as accessible controls.



J.1.7 Multi-purpose courts/sports courts with fixed seating and designated wheelchair seating spaces

The provision of designated wheelchair seating spaces would allow wheelchair users to participate in the activities that may be taking place on the courts by being a spectator.



J.1.8 Quiet room for persons with special needs or library collection for persons with disabilities

A quiet room is a safe, enclosed space with reduced sensory interference which caregivers can bring persons with special needs into to calm down during episodes of outbursts. Library collection for persons with disabilities could include braille texts, or specialised topics pertaining to disabilities.

J.1.9 Accessible drinking fountains

Provision of drinking fountains at different heights would benefit a greater range of users. Adults could utilise the higher-level drinking fountain, while children or wheelchair users could use the lower-level drinking fountain.



J.1.10 Accessible letterboxes

Accessible letterboxes are configured such that a wheelchair user would be able to reach the topmost and lowermost letterbox.



J.1.11 Accessible BBQ facilities

Accessible BBQ facilities should take into consideration the provision of knee space for wheelchair users so that they can take part in the typical activities relating to BBQ, such as preparation of food, washing or cooking.



K Residential UD Features

- User-friendly Provisions in Apartments

As residential developments usually do not undergo major retrofitting works after it is constructed, the upfront provision of user-friendly features would benefit persons with disabilities or the elderly to age-in-place comfortably in a familiar environment.

* Applicable to non-landed residential developments only.

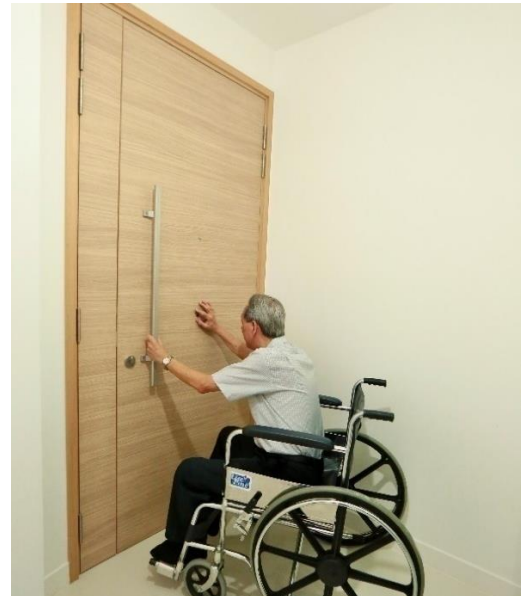
K.1 Ease of Movement

K.1.1 Levelled entrance into unit

Allows for easy access into the unit for wheelchair users

K.1.2 Vertical grab bar at unit main door

Provides ease of use for all user groups, including wheelchair users, children and adults.



K.1.3 Keyless lockset for main door

Provides ease of use particularly for persons with physical deformities or joint problems by eliminating the need for fine motor movement for inserting and turning a key.



K.1.4 Lowered window height for unobstructed view

Benefit wheelchair users or children as they are able to view out of the unit.



K.1.5 Levelled entry into bathroom

Allows for easy access for wheelchair users



K.2 User-friendly Interfaces

K.2.1 Wheelchair space (>1.2m) in front of kitchen cabinetry and table top

Provides sufficient space for wheelchair users to manoeuvre



K.2.2 Accessible carpentry, such as counter tops of adjustable/varying fixed levels, mobile furniture units for flexibility in use, pull-down cabinet shelving system/wardrobe

Such carpentry design should cater to the reaches of a wheelchair user to enable independent use.



K.2.3 Smart home system with assistive features such as voice controls or app integration with assistive functions

Sufficient provision must be made to allow the use of such smart home systems that can benefit residents with mobility or vision challenges.



K.2.4 Ease of M&E services use, such as two-way light switches, labels to switches and motion sensor lighting

Provisions should be aimed at minimising travel or trial and error.



K.2.5 Casement windows with horizontal handles below the crescent locks

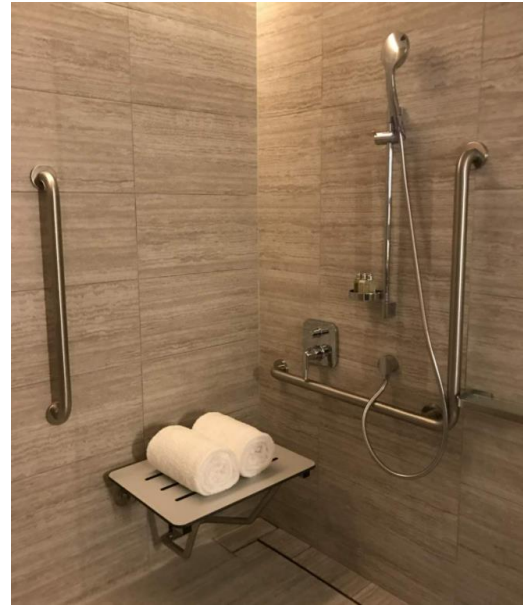
Such handles would allow make it easier for wheelchair users to operate windows.



K.3 Additional Safety/Assistive Features

K.3.1 Built-in seat in shower stall

The provision of a built-in seat in the shower stall would benefit the elderly who would be able to have a safe platform to sit while showering.



K.3.2 Visual doorbells with vibration/light indicators

The vibration or light indicators would inform persons with hearing impairment when the doorbell is triggered.

K.3.3 Adjustable/retractable clothes drying rack

Adjustable/retractable clothes drying rack would benefit users of different statures and physical capabilities.



K.3.4 Emergency pull-chord/button

Provision of such alerting features at deliberate/high-risk locations would facilitate the residents in seeking help when needed.



L Hotel, Hostels, Service Apartments

UD Features

As temporary places of accommodation, it is encouraged for such rooms to be designed to cater to as many user groups as possible.

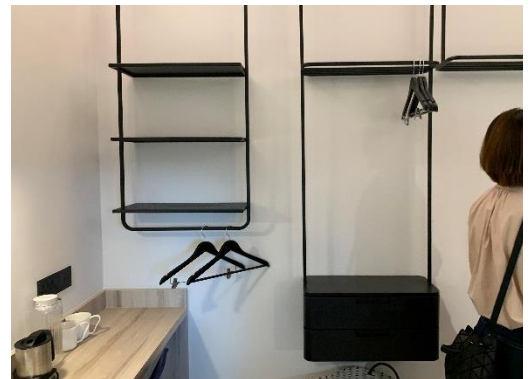
L.1 Elder-friendly In-room Facilities/Services

L.1.1 Night light in bathroom

Provides visibility for the bathroom user without disturbing other occupants

L.1.2 Furniture/fixtures that are easy to operate, e.g. pull-down wardrobe rails

Such carpentry design should cater to the reaches of a wheelchair user to enable independent use.



L.1.3 Larger font types for in-room guides or larger buttons for telephones/controls

Provides better legibility for persons with poorer eyesight.

L.1.4 Emergency pull-cord/button

Provision of such alerting features at deliberate/high-risk locations would facilitate the guest in seeking help when needed.



L.1.5 Height or position adjustable bed

Height adjustable beds could be better customised to the needs of the guest.



L.1.6 Visual doorbells with vibration/light indicators

The vibration or light indicators would inform persons with hearing impairment when the doorbell is triggered.

L.2 Family-sized Rooms & Facilities

L.2.1 Provision of family size rooms (Occupancy of 4 and above)

Such rooms accommodating more person, both adults and children would allow a family to stay together within the same room for greater convenience.

L.2.2 Provision of connecting rooms

Where family sized rooms are not available, provision of connecting rooms would allow easy access to an adjacent room for greater convenience.

M Project Development and Process

A project which starts with a clear intention of catering to as many user groups as possible would guide the project team during construction and even after the project is completed and operational.

M.1 Project Development

M.1.1 Consultancy team (architectural or engineering) comprises a BCAA certified Universal Design Assessor

A consultant who has a good understanding of the needs of various disabilities and various user groups is important to shape the project and enable use by the intended user groups, while not leaving out user groups with specific needs.

M.1.2 Developer team (building developer/owner or project manager) comprises a BCAA certified Universal Design Assessor

While consultants can design for the intended user groups, building developers/owners who understands the importance of catering to their intended user groups can guide the project team through specifying user-friendly provisions. A project manager who understands the needs of users with various abilities can ensure that such needs are addressed during construction.

M.1.3 Project team engages and incorporates feedback from specialist user groups, such as disability organisation, UD specialists etc.

It is encouraged for project teams to engage and consult with universal design or accessibility specialists, disability organisations or other relevant user groups so that the team can hear and understand first-hand the needs of persons with disabilities, or other user groups with specific needs (elderly, families with young children and expectant/nursing mothers).

General consultation or design development discussions with the project's users are not considered to satisfy this criterion. For example, consultation with in-house operators and nurses for a nursing home etc would not fulfil the intent of this criteria.





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