3.4 Furniture, Equipment and Fittings

3.4.1 Common Outdoor Furniture, Equipment and Fittings

Common outdoor furniture, equipment and fittings are part of everyone's daily life. These elements are often taken for granted without notice. Passing through gates, bollards, lamp poles or sitting on a bench at the podium or at a park is familiar routine for many people. It is important that these common elements are properly designed for universal accessibility in order to allow the widest spectrum of users to enjoy them.

The best practices for the layout and design approach of outdoor furniture are common for most of the elements. Furniture and equipment should be located adjacent to the access route in a recess outside of the route on the same floor level without a plinth (3.4.1a). It would be beneficial to group certain furniture and equipment together for easy navigation and convenience. However they should not be placed immediately adjacent to seating benches or packed tightly together, which would create difficulties for some users.

Design of Protective Barriers

3.4.1.1 Boundary Walls and Fences

(a) All openings for entry should be designed for universal accessibility.
(b) Openings for entry should be clearly visible, with a minimum clearance of 1200mm wide and minimum clearance of 1500mm x 1500mm on both sides. There should be no kerbs, thresholds or protrusions (3.4.1.1a). Zigzag turn at the entry should be avoided.
(c) Viewing openings should allow viewing by people of different heights.
(d) Anti-climbing device should not be placed within reach, i.e. anywhere below 2100mm (based on an average person standing with an arm reaching up).

3.4.1a Map, fire hydrant, seating bench, lamp pole are all recessed into the planter area

3.4.1.1a Accessible entrances

(e) Detachable and loosely laid anti-climbing devices such as broken glasses or a loosely fixed roll of barbed wire, should not be used (3.4.1.1b).

(f) If an inclined wall is used, some form of barrier, such as planting, a plinth, a railing or a non-walking ground surface, should be provided in front and at the side to stop people from bumping into the wall (3.4.1.1c).

(g) Chain-link fences sometimes become deform and protrude onto access routes. Therefore, chain-link fence for facilities such as ball courts should be properly supported; narrow access routes immediately next to chain-link fences should be avoided (3.4.1.1d).

3.4.1.2 Gates, Guardrails and Turnstiles

(a) When a gate is opened, it should not obstruct the width of any access routes or openings (3.4.1.2a). If it is unavoidable to have the gate protruding onto an access route or part of the opening, the remaining clear width should not be less than the minimum clearance required, and appropriate barriers should be provided in front to prevent people from slamming into the gate.

(b) A gate should not have a threshold or a raised bottom rail. If it is unavoidable to have a raised bottom rail, ramps on both sides should be provided if the rail is raised by more than 10mm and splayed edges should be provided if the rail is raised by 10mm or less (3.4.1.2b). If a recessed rail wider than 13mm is used, the depth of the recess should be maximum 10mm.

3.4.1.1b Avoid the use of broken glass as anti-climbing device

3.4.1.1c Guardrails in front of the inclined wall prevent people from walking into it and also provide shaded seating for resting

3.4.1.1d Properly supported chain-link fence (top) and deformed chain-link fence protruding onto a narrow footpath (bottom)

3.4.1.2a Gate recessed into the wall in open position

3.4.1.2b Rail less than 10mm high

(c) Gate stoppers raised from an accessible ground should be avoided (3.4.1.2c & 3.4.1.2d). If it is unavoidable, the stopper should be maximum 10mm in height and be clearly visible.

(d) A guardrail or other form of protective barrier should be provided along and beside the track of a sliding gate (3.4.1.2e).

(e) An automatic gate should have visual and audible warning signals.

(f) A locking device should be provided for a removable guardrail to prevent it from wobbling (3.4.1.2f).

(g) A turnstile should be designed to allow wheelchair access with a minimum clearance of 800mm (3.4.1.2g). If the type of turnstile used is not wheelchair accessible, an alternative wheelchair entry should be provided adjacent to the turnstile (3.4.1.2h).

(h) In country park roads where vehicular barriers are installed, an accessible route should be provided for wheelchairs, bicycles, and baby strollers (3.4.1.2i).

3.4.1.2c Gate stopper

3.4.1.2d Avoid protruding gate stopper

3.4.1.2e Sliding gate recessed from the path

3.4.1.2f Locking device securing a guardrail post

3.4.1.2g Accessible turnstiles

3.4.1.2h Accessible gate besides turnstiles

3.4.1.2i Accessible route around a vehicular barrier

3.4.1.3 Bollards

(a) The use of bollards at the pedestrian entry should be avoided.
(b) Minimum clearance between bollards should be 1200mm for a single row (3.4.1.3a) and 1500mm for double zigzag rows (3.4.1.3b).
(c) Bollards should be clearly visible at any time (3.4.1.3c).
(d) A bollard should not have any sharp corners or edges.
(e) A locking device should be provided to a removable bollard to prevent it from wobbling.
(f) Chains or ropes hanging between bollards should be clearly visible at any time (3.4.1.3d).

Light Fittings

3.4.1.4 Lamp Poles, Bollard Lights and Lanterns

Lamp poles, bollard lights or lanterns should be erected away from access routes as far as practicable. If it is unavoidable to do so, and they have to be erected on an access route, then the following points should considered:

(a) They should be clearly visible at any time;
(b) A clearly visible plinth of minimum 150mm high should be provided for easier detection and collision prevention (as well as better weathering protection and easier maintenance) (3.4.1.4a);
(c) They should not obstruct the main access route or reduce the width of the access route to below the minimum clearance required (3.4.1.4b);

3.4.1.3a Wide opening in between guardrails

3.4.1.3c Bollard with reflector

3.4.1.3b Avoid double rows of bollards

3.4.1.3d Chains in between bollards should be clearly visible

3.4.1.4a Different types of lamp posts

3.4.1.4b Access routes with lamp poles cleared from the walking surface

(d) They should not encroach within 600mm of a tactile guide path;
(e) No wedges should extend out from the pole on the base plate unless the base plate is located on a plinth for easy detection (3.4.1.4c);
(f) No bracing wire cable or control box should protrude from the pole under 2000mm (3.4.1.4d).

3.4.1.5 Other Lighting Fixtures

(a) Glass covers for floor lighting should not become slipping hazards (3.4.1.5a). Large ground surfaces of glass should not be used for pedestrian accessible areas.
(b) Floor lighting should be flush with the ground surface (3.4.1.5b).
(c) Wall-mount lighting should be located above 2000mm. If it is below 2000mm, it should be recessed into or flush with the wall (3.4.1.5c and 3.4.1.5d). If it is absolutely unavoidable to have protruding wall-mount lighting below 2000mm, the maximum protrusion should be 90mm and the lighting fixture should not be hot or easily get caught in clothing.

3.4.1.4c Lamp pole with wedges set on plinth to avoid tripping

3.4.1.4d Avoid the use of bracing wire cable

3.4.1.5a Different types of floor lighting fixtures

3.4.1.5b Avoid raised floor lights

3.4.1.5c Avoid protruding light

3.4.1.5d Use recessed light

3.4.1.6 Seating Bench Provision

(a) Seating benches should be provided at suitable intervals along lengthy access routes, particularly at access routes for connections in parks, residential podiums, open spaces, and country parks, etc. (3.4.1.6a).

(b) Seating benches should be provided at suitable intervals along routes where great effort is required such as a long flight of stair or a sloping ground, etc. (3.4.1.6b).

(c) Seating benches should be provided in association with active or passive recreational activities, such as seating facing playgrounds and ball courts, and seating immediately beside pools, flower beds, etc. (3.4.1.6c and 3.4.1.6d).

(d) Seating benches should also be provided near toilets or other areas where long queues are expected (3.4.1.6e).

(e) Resting provisions other than seating benches can also be explored. Examples are seating at planter walls, low railings or parapet walls (but without hazard of falling over) (3.4.1.6f). Where appropriate, temporary seating and provisions such as a high railing, high parapet wall or inclined wall for leaning can also be considered.

3.4.1.6a Seating benches along a lengthy path

3.4.1.6b Seating benches half-way up a long flight of stair

3.4.1.6c A group of seating benches under a tree at a popular gathering place

3.4.1.6d Seating arrangement that encourages interaction

3.4.1.6e Folded seats for queuing area

3.4.1.7 Seating Bench — Location and Approach

Seating benches should be located in a recessed alcove adjacent to the access route on the same floor level without a plinth (3.4.1.7a).

3.4.1.8 Wheelchair Space Near Seating Bench

A wheelchair space with a minimum size of 1500mm x 1500mm should be provided on one or both sides of some of the seating benches in each of the different areas (3.4.1.8a).

3.4.1.9 Design of Seating Bench

(a) Some of the seating benches in each of the different areas should have backrest and armrest (3.4.1.9a).
(b) Material of the seating bench should be weather proof and shelter should be provided to some of the seating areas.
(c) Materials that can be easily heat up by the sun or easily trap water should be avoided.

3.4.1.6f Seating at planter edge

3.4.1.7a Seating benches, litter bins and fire hydrant recessed from the access route

3.4.1.8a Wheelchair space next to seating benches

3.4.1.9a Seating bench with armrest and backrest, and an adjacent wheelchair space

3.4.1.10 Litter Bins, Recycle Bins and Drop-in Boxes

(a) The lower edge of a litter bin or recycle bin opening should be maximum 1200mm high from the ground (3.4.1.10a).
(b) Side opening or opening on a front-inclined plane would be preferable over a top opening.
(c) The size of the opening should be large enough for ease of use.
(d) If the opening has a cover, the cover should be easily pushed open and it should not catch hands, fingers or clothing (3.4.1.10b).

3.4.1.10a Different types of litter bins

3.4.1.10b Book return drop-in opening with cover

3.4.1.11 Drinking Fountains and Telephone Booths

Drinking fountains and public telephones are common facilities provided in external areas and open spaces. Some good design features would greatly enhance the user friendliness and accessibility of these facilities (3.4.1.11a, 3.4.1.11b, 3.4.1.11c, 3.4.1.11d and 3.4.1.11e).

(a) Sufficient floor space in front and knee space below should be provided (3.4.1.11a).

(b) One of the telephones or drinking fountains should be located at a lower position to facilitate use by wheelchair users. It is good practice to provide at least two in a group with one at a lower position and one at a higher position (3.4.1.11b). The higher one will provide convenient access for the elderly and for persons with back problems.

(c) Buttons should be easily operable without tight griping, twisting or hard pushing. They should have Braille, tactile sign or raise dot indication for detection by visually impaired persons (3.4.1.11c).

(d) Drinking fountains or telephones should be easily detectable by cane and they should not form an obstruction on the access route.

3.4.1.11a Drinking fountain with knee space and handrails

3.4.1.11b A group of drinking fountains provided at different heights

3.4.1.11c Large and easily operable buttons at drinking fountain

3.4.1.11d Accessible phone booths

3.4.1.11e Emergency call buttons / phones should be accessible

3.4.1.12 Portable Toilets

Portable toilets are often used temporarily to supplement permanent facilities because of a sudden increase in demand for an event or due to the lack of permanent facilities in a remote location. Greater care should be exercised in the selection of placement location, as they are usually more remotely placed from the main event area than other furniture and equipment.

(a) If queuing is expected, the access route should be wide enough for the passage of wheelchair and people while there is a queue (3.4.1.12a).
(b) The number of accessible portable toilets provided should at least be in accordance with the ratio defined for permanent facilities stipulated in Buildings Department's Design Manual — Barrier Free Access, i.e. at least one must be provided in a group of portable toilets if the total number is 20 or less in a group, and two if the total number exceeds 20. If space allows, more accessible portable toilets should be provided, as they can also be used by elderly users and small children with parents.
(c) Accessible portable toilets should be provided at the start of a row of portable toilets for the shortest travelling distance.
(d) Some temporary seats could be provided in the vicinity for elderly persons in the queue and also for persons waiting for others to return after using the toilets.

3.4.1.12a A group of two portable toilets in a country park, with one being an accessible toilet

3.4.1.13a Money exchange machine

3.4.1.13b Vending machine for drinks

3.4.1.13 Vending Machines

Vending machines for drinks are very common in outdoor recreational areas. Other types of vending machines include those for snacks, tickets, money exchange, etc. (3.4.1.13a). Other than the location and approach, it is also important to select the type of machines that can serve the widest range of users. The following points should be considered in making the selection:

(a) Buttons, insert/pick-up openings and money return outlets should be located at a height between 400mm and 1200mm from the floor level (3.4.1.13b).
(b) The selection panel should allow views of all items from the eye level of a standing person or a person in wheelchair.
(c) Clearly visible instructions should be provided. Preference should be given to machines with instructions in Braille and buttons with Braille/tactile.

3.4.1.14 Barbeque Pits, Picnic Tables and Seating

Barbeque pits, picnic tables and seats are usually fixed outdoor furniture or on-site custom-made fixtures. Due to inflexibility in moving them or changing their configuration, they cannot be used by all users if they are not designed for accessibility early on (3.4.1.14a).

(a) Space for wheelchair users should be provided at some of these facilities (3.4.1.14b).
(b) A level and hard floor surface should be provided at these facilities (3.4.1.14c).
(c) Seats with backrest should be provided at some of these facilities to enable elderly people to enjoy them (3.4.1.14d).

3.4.1.14a Avoid having narrow passages and fixed seats all around the barbeque pit

3.4.1.14b Accessible fire pit and picnic table with fixed seats and space for wheelchairs

3.4.1.14c Fixed picnic table and seats

3.4.1.14d Picnic table with cover and seats with backrest, but it is not designed for wheelchair users

3.4.1.15 Fixed Telescopes, Binoculars, Recorded Sound Playback, Maps, Information Plaques, etc.

(a) Provide equipment or facilities for use by users of different heights (3.4.1.15a), by having provisions such as the following:

- Equipment that can be adjusted in height;
- Detachable hand-held equipment with the holder mounted not higher than 1200mm from the floor level;
- Two pieces of equipment mounted at different heights.

(b) Provide equipment for experiencing with different senses (3.4.1.15b). In case some experiences must be perceived with a specific sense, it would be beneficial to provide an explanation to describe the experience to those users who have a disability in that sense.

3.4.1.16 Customized Fixtures, Sculptures and Theme Park Features

Customized fixtures, sculptures and theme park features should be designed for universal accessibility (3.4.1.16a). Access and experiences should be provided to the widest range of users. Attention should be paid to the following:

(a) 1050mm minimum clearance for width of passage;
(b) 800mm minimum clearance for width of opening;
(c) 1500mm x 1500mm turning space;
(d) 1200mm deep levelled landing for manoeuvring;
(e) Reachable range between 400mm and 1200mm in height;
(f) Non-slip floor surface;
(g) 800mm x 1300mm wheelchair space adjacent to fixed seats;
(h) Features should not become obstructions to users (3.4.1.16b);
(i) Safe to touch.

3.4.1.15a Binocular with raised step for children

3.4.1.15b Multi-functional map for everyone, including the blind. Avoid tall maps behind rails intended for tall users only

3.4.1.16a Theme park with seating bench features

3.4.1.16b Protruding sculpture can become a hazard

3.4.2 Play Areas and Play Equipment

3.4.2.1 Outdoor Children Play Areas

Every child should have equal access to the leisure and pleasure offered by public play areas.

Play areas should be designed to offer opportunities for children to explore and learn (3.4.2.1a). Whilst the notion of play zone segregation to suit different age groups and stages of development is important, the social experience amongst different age groups during playtime is equally vital since most children nowadays come from small families. According to figures from the Census and Statistics Department, the average domestic household size in the year 2006 is 3.0[1].

3.4.2.2 Design Considerations and Best Practices

Currently there is no statutory requirement in Hong Kong for children play areas. However, there are well-established and internationally recognized design codes and safety guidelines for outdoor children playgrounds in overseas countries. Proprietary modular play equipment is widely installed in Hong Kong, both in public and private open spaces. In fact, most proprietary equipment is exclusively designed by the manufacturers according to the anthropometrics of a specifically defined range of age group.

Internationally recognised standards and/or design codes should be adopted in the design, procurement and management of public outdoor children playgrounds. Refer to Figure 3.4.2.2a.

3.4.2.1a Playtime is an important and spontaneous part in a child's life. Imagination goes with exploration

[1] Census and Statistics Department, the Hong Kong SAR Government

	European Standard (BS EN) and British Standard (BS)	American Society For Testing and Materials (ASTM) Standards
Standard Specifications	■ BS EN 1177 Impact absorbing playground surfacing (test methods)	■ ASTM F1292 Specification for Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment
	■ BS 7188 Impact Absorbing Playground Surfaces (performance requirements and test methods)	■ ASTM F1951 Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment
	■ BS EN 1176 (Parts 1 to 7) Playground Equipment	■ ASTM F1487 Standard Consumer Safety Performance Specification for Playground Equipment for Public Use
Relevant guidelines and other references		■ CPSC Document #325 Handbook for Public Playground Safety, US Consumer Product Safety Commission (CPSC), Washington, DC [1]
		■ CPSC Document #327 Public Playground Safety Checklist, US Consumer Product Safety Commission (CPSC), Washington, DC [2]
		■ Americans with Disabilities Act Accessibility Guidelines (ADAAG), Section 15.6 on Play Areas

Remarks:
(1) Available from CPSC's website : http://www.cpsc.gov/cpscpub/pubs/325.html
(2) Available from CPSC's website : http://www.cpsc.gov/cpscpub/pubs/327.html

3.4.2.2a List of internationally recognised standard specifications and relevant references on outdoor children playground for public use

3.4.2.3 "4-i" Approach for Public Children Playgrounds

The design setting and layout should encourage children to take the initiative and get self-motivated for exploration and physical exercise within a safe and secure environment (3.4.2.1a). Playground is an outdoor space where children can test their own limits (physically, socially, intellectually and mentally), extend their interests/hobbies and also develop an appreciation of beauty in life and nature. The place, as a whole, should be challenging, educational and encourage social interaction and fond memories. Above all, playgrounds should be fun to every visitor (3.4.2.3a to 3.4.2.3d).

The approach of universal accessibility in designing public children playgrounds involves four inter-related key issues (3.4.2.3e). They are:

- **I**ntegrative
- **I**nteractive
- **I**maginative
- **I**nclusive

3.4.2.3a Careful and **integrative** site planning is vital in fostering an **integrated** social experience during playtime

3.4.2.3b Multi-sensory play elements provide alternatives and options for **interactive** games in a free, exciting and cheerful setting

3.4.2.3c Thoughtful site planning with flexible design is important to stimulate children's **imagination** and give them the freedom to enjoy informal outdoor play in a creative mode

3.4.2.3d Children with varying abilities and/or from different age groups play with great fun, in groups or independently, in this accessible sunken maze. Design calls for **inclusion** not exclusion

3.4.2.3e "4-i" Approach for public children playgrounds

3.4.2.4 Key Design Factors

(a) Age-group specific

All proprietary play equipment is age-group specific. Placement and installation must comply with manufacturer's recommendations and relevant international safety guidelines. For example, unidirectional bucket-seat swing is for children aged 2-5 and flat seat is for children aged 5-12 (3.4.2.4a). The swing clearance from the seat to ground surface will also be different according to manufacturer's recommendations.

(b) Safety margins in placing play equipment

- Depending on the country of origin, the definitions and prescribed specifications will vary since different design codes/guidelines and standards are adopted in the different countries concerned. Refer to Figure 3.4.2.2a.
- In any case, a protective ground surfacing should be provided and the surface area should be larger than the *impact area/use zone* for each play equipment (inclusive of each component as in the case of composite or modular equipment) (3.4.2.4b). The ground surfacing, with adequate impact absorbing/attenuating properties, should cater for the maximum "*free height of fall*" or maximum "*fall height*" of the corresponding play equipment (BSEN and ASTM refer respectively).
- Other than the equipment itself, the impact area/use zone should be free of obstacles that children could run into or fall on top of and thus be injured. In addition, the surface within the *impact area/use zone* should have no sharp edges, protrusions, or entrapments.
- The dimension and configuration of the *impact area/use zone* should be dependent upon the type of play equipment (static, swinging, rotating, springing or rocking, etc.) according to recommendations from the manufacturer

3.4.2.4a Age-appropriate swings

3.4.2.4b The dimensions and configuration of the *use zone/impact area* is dictated by the type of play equipment. Swings take up a relatively large space for safety margins

and in full compliance with the pertinent safety guidelines or codes of standards.

(c) Accessibility for children with different abilities

- An inclusive approach should be adopted in the design of any designated play area within a public park. Interaction amongst children, irrespective of their physical or mental ability, should be encouraged. Opportunity should be provided for children to have options and choices according to their age, physical strength and ability level.
- The modular play structure shown in 3.4.2.4c is a simple and effective way of taking on an inclusive approach while 3.4.2.4d is a good example of adaptive equipment supplementing the other facilities within the same site. With supervision and assistance, the same experience of swinging motion can be offered to children with much less physical strength and/or body control impairments by such proprietary swing.
- Being part of the action or the experience of sharing the same play equipment with others has great psychological and social impact on a child's development. When isolation of different play modes is unavoidable in conformity with safety margins, various play components can be visually linked together as one entity by means of a themed structure or matting graphics to foster social integration (3.4.2.4e).

3.4.2.4c Low-level deck with grip bars at different heights facilitates all users to get on/off the play equipment

3.4.2.4d Adaptive swing to meet special needs

3.4.2.4e Play structures of different play modes can be linked up visually to form an integrated entity

(d) Signage

- Adequate signage is required in providing any necessary warnings and instructions for use.
- The message should be clear and multi-media information should be provided to allow users with different abilities to receive the message.
- Provide information and instructions for use in bilingual text and graphics to facilitate comprehension by all potential users including children.
- Signage should be located at prominent locations, immediately adjacent to each corresponding equipment, but outside the safety margins and key circulation space.
- Public notices should carry positive messages to promote cooperative and responsible behavior rather provoking mischief and confrontational response to prohibited usages of certain facilities (3.4.2.4f).
- The age group specifically designed for the installed play equipment should be clearly displayed on site. Clear warning signs should be provided for both the young users and the accompanying adults to avoid misuse and unnecessary risk in using such equipment (3.4.2.4g).

(e) Safety

- Impact absorbing surfacing material *(IASM)* placed under and around the play equipment is essential. It should cater for the maximum fall height of the equipment in order to absorb the impact from a fall and to reduce the chance of life threatening head injuries. Also refer to *Section 3.4.2.4(b) — Safety margins in placing play equipment*
- The type of *IASM* most commonly used is prefabricated synthetic rubber mat. Its impact attenuation performance is measured by a set of scientific/laboratory-based method, but it is *not* specified or defined by the nominal thickness of the matting itself (3.4.2.4h).

3.4.2.4f Positive messages with simple graphics

3.4.2.4g Signage clearly stating the target age group of a play equipment

3.4.2.4h Selection of an appropriate ground surfacing with impact attenuation quality is based on its performance (as shown here) but not the nominal thickness of the mat itself

- All parts should be appropriately fixed and/or assembled into a single entity that is firmly anchored on the ground, installed in full compliance with the relevant design codes and manufacturer's instructions, and also finished with appropriate impact attenuating surfacing catering for the *critical fall height*.

(f) Spatial planning

- Good site planning is required in selecting and locating individual pieces of equipment.
- Dimensions, including safety margins, should always be verified before and after installation of the play equipment for full compliance with manufacturer's recommendations and instructions.
- Generous space allowance is necessary both around the equipment and outside the requisite safety margins for circulation and to avoid collisions.
- Appropriate spatial planning and design is critical in supporting various unstructured spontaneous play. Children with different physical or mental strength/ability enjoy many common children activities such as running/chasing, riding, playing ballgames, and flying kites, etc (3.4.2.4i). Adequate space for such play should be allowed where possible. Some physically and mentally challenged children may also require close adult supervision, hence due spatial considerations should be given to those users (3.4.2.4j).
- The quality of space is significant. A good setting should have different optional routes throughout the designated play area. The route itself may become a play experience (3.4.2.4k).

3.4.2.4i Appropriate spatial design is critical in supporting various unstructured spontaneous forms of play that may otherwise cause conflict in circulation or potential hazard of collision

3.4.2.4j Sensory play elements at different access levels to suit different needs of children

3.4.2.4k Accessible ramp to the slides fosters a joyful play experience

(g) Drainage

- All play areas and surrounding spaces should be adequately drained (3.4.2.4m). Subsurface drainage under most surface matting (made of synthetic rubber) is essential, with drains laid to adequate falls and properly connected to storm water drains. In view of the local climate and the intensive use of public children playgrounds, subsurface drainage by soakaway is not recommended.

(h) Other design considerations

- Integrated planning of the play areas is important so that a variation of play modes can be offered to a wide range of users.
- Rest areas under shelter/shade are needed for both children and their accompanying caretakers/parents; they should preferably be located with a good view to the activity areas (3.4.2.4n).
- Desired routes or shortcuts for pedestrian traffic need to be taken into consideration when locating play equipment in order to avoid conflict between pedestrians and children playing or running around.
- Overall site planning is crucial and one should take advantage of shading from trees wherever possible.
- Careful use and arrangement of natural elements, especially those with rich sensory qualities such as sand and water, can enrich children's play (3.4.2.4p). However, the relevant safety aspects must be duly considered. Refer to *Section 3.9 — Safety*.
- Abrupt change in levels should be avoided. If unavoidable, it needs to be clearly visible and properly illuminated at night. Any containment edging to the matting should be installed flush with the matting and the adjacent floor surface to prevent tripping.

3.4.2.4m Effective drainage system at children playgrounds is essential

3.4.2.4n Accessible lawn serves as a free play area and provides opportunity for different group games such as supervised tug of war or informal kick-about

3.4.2.4p Natural elements such as sand, with its unique sensory quality, are very appealing to children

- Other supporting amenity facilities such as toilets, drinking fountains, washing basins, first-aid facilities, etc. should be provided in close proximity for comfort and convenience and they should be accessible to all users.
- Any other built elements within the play areas such as ramps, seating, entrances/exits, etc. should be accessible to all users old and young. Relevant good practices on universal accessibility should be followed.

(i) Maintenance and management

- Routine inspections and regular maintenance are essential for outdoor children playgrounds (3.4.2.4q). Long-term maintenance and management needs should be identified at the early stage. This is particularly important in Hong Kong due to high public usage and quick weathering of materials.
- The parts most subjected to wear and tear, e.g. at bottom of slides and under swings, should be frequently inspected and any damaged material replaced to prevent puddles forming, mosquito breeding, and the creation of slippery surfaces (3.4.2.4r).
- Temporary closure may be necessary during and after some routine maintenance operations, such as application of pesticides or fertilizers at nearby planting beds, or cleansing/repair works of equipment. Adequate warning signs and temporary access diversions, if necessary, should be provided (3.4.2.4s). Refer to *Section 3.10 — Management and Maintenance*.

3.4.2.4q Like any facilities for public usage, children play equipment is always susceptible to vandalism. Proper maintenance and management is essential

3.4.2.4r Inspection of children playground should include not only the play equipment itself but also all other supporting facilities and provisions such as wear and tear to floor surfacing

3.4.2.4s Proper signage and appropriate barrier is required during temporary closure for maintenance and repair

Two Examples of Play Areas

3.4.2.5 An Overseas Example

This example in a regional urban park of over 71 hectares shows a thoughtfully designed outdoor play area that is more than just a conventional children's playground (3.4.2.5a). The design theme is adopted from a well-known local folk legend about the ogres, who have the spirit of thunder in their hands (3.4.2.5b).

The area of about 6 hectares is treated not purely as an ionic gimmick but rather in a positive response to the collective memories of the local residents from different generations who were invited to actively participate in the entire design process. The venue is developed as a "play kingdom" and is completed with various sensory and playful elements in a unique setting that closely tie in with the local cultural heritage.

The underlying design philosophy is not simply to provide a playful space for physical stimulation, but to create a surreal environment that encourages social and intellectual integration of both children and adults with different abilities.

Best Practices Observed

(a) Responsive design appealing to collective memories and local culture

- Play elements in oversized models resemble a traditional Japanese meal (3.4.2.5c). They offer a unique learning experience for the younger children and also spark the collective memory of the older generation citizens.

3.4.2.5a A surreal landmark

3.4.2.5b Heritage theme promotes local identity and social integration

3.4.2.5c Specially designed play components — rice bowl and chopsticks

(b) A wide range of play modes with multiple sensory stimuli giving challenges at different levels

- Bold and durable play elements installed at different heights are accessible to all (3.4.2.5d). Stimulants are associated with the spirit of thunder, e.g. percussion apparatus relate to the spirit of thunder (sense of hearing); soft-padded white mounds relate to the clouds in the sky (sense of touch and sense of balance).
- The focal feature, symbolizing the Ogres, provides a mingling place and also serves as an accessible observation tower (3.4.2.5e). The sense of enclosure as opposed to exposure is very strong when exploring the various ways of getting in and out of the mound.
- Children are motivated by the surreal play elements to take on the challenge and test their own physical limits by climbing onto the Ogres' meal tray (3.4.2.5f). Use of different materials in good colour contrast and rich texture provides a very strong tactile experience to visually impaired visitors.
- A secret garden in natural woodland setting provides scenic "softscape" backdrop in contrast with the "hardscape" dominant "play kingdom". It also offers a different experience of exploration to visitors (3.4.2.5g).
- Other passive and/or low-effort activities such as walking and strolling are not disregarded in site planning. Slender herbaceous plants (*Iris douglasiana*) are purposely positioned on the footpath verge along the forest walk. The showy flowers, as seen from the top, spark every visitor's interest in the beauty of nature (3.4.2.5h).

3.4.2.5d Different play modes with sensory features

3.4.2.5e Accessible earth mound with ramps, stairs and slides

3.4.2.5f Climbing feature symbolizes a rice bowl with an egg

3.4.2.5g Woodland serves as an informal playground

3.4.2.5h Backdrop in a naturalistic setting

(c) Design features and supporting services accessible to all

- A direct approach, segregated from vehicular access, leads from the main entrance to the “play kingdom”. The pathway is firm, wide and fully accessible to wheelchairs, strollers and visually impaired visitors (3.4.2.5i). Accessible car parking and other auxiliary facilities (vending machines, toilet blocks, etc.) are provided at main entrance of the play area.
- A sand play area is created on an intimate scale. A flat and firm timber walkway provides an accessible and detectable route to the main sand pit. Sand tables, with clearance for knee space, are provided at various heights to allow a wide range of users who have different range of forward/side reach to use the facilities. Sheltered seats and an accessible washbasin (with long lever handle) are provided nearby (3.4.2.5j).
- Drums are positioned at different heights in an arc form so that children and accompanying adults can play together to create music (3.4.2.5k). Other auditory and visual elements (wind chimes and reflective surfaces) are spaciously distributed on different platforms connected with gentle ramps and steps throughout the site.

3.4.2.5i Segregated circulation by different traffic modes

3.4.2.5j Sand play area is fully accessible to all visitors

3.4.2.5k Eye-catching multi-sensory play elements positioned at different heights for greater play value

- A spacious shelter with seating is provided in a central location and connected to individual “play pockets” with firm and detectable pathways. A large clock mounted on a pole gives visitors a sense of passage of time during their stay (3.4.2.5m).
- Throughout the site, seating facility is generously provided, in different forms and shapes, to cater to the different needs of visitors. Large, sturdy armrests (in loop shape) are placed on opposite corners to facilitate easy grip and transfer onto the bed size benches (3.4.2.5n). The large benches allow fatigued visitors to lie down and can also serve as nursing beds for infants.
- Sanitary facilities with duly considered anthropometrics dimensions to suit a wide range of users are provided to allow independent use by visitors of different age and ability (3.4.2.5p).

3.4.2.5m Shelter provided in a central location

3.4.2.5n Pergola with flexible seating

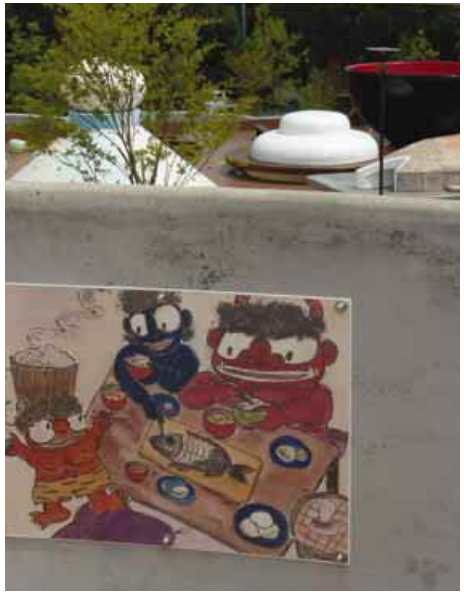
3.4.2.5p Accessible sanitary fittings

(d) Information conveyed in multiple means for easy comprehension

- Large signage conveys clear messages on safety codes and general information of the “play kingdom”.
- Utility covers are creatively treated as a positive element to echo the main theme and to serve as iconic signs for showing directions throughout the venue (3.4.2.5q).
- Pictorial signage with good colour contrast conveys clear and easily understood messages (3.4.2.5r).
- The play area is described with “story boards”, which are a series of colourful paintings by local children (3.4.2.5s). Each panel is strategically placed at the observation deck to facilitate understanding of the design theme and orientation within the park.
- At the main entrance of the park, information is presented on a tilted, large multi-media directory. The coloured map is positioned in the correct orientation, and it contains pictorial graphics, audio and tactile information in both Braille and written text. It conveys clear messages to a wide range of visitors (3.4.2.5t).

3.4.2.5q Creative treatment of utility covers

3.4.2.5r Comprehensible pictorial signage



3.4.2.5s Information/message in universal language — pictorial story boards

3.4.2.5t Multi-media directory and information boards

3.4.2.6 A Local Example

In this example from Hong Kong, local history was taken into account during the planning stage in order to achieve an integrated design. The site was a fishing village a few decades ago. The theme of a fishing village is articulated throughout the entire playground. Reminders of this small island, which became landlocked due to reclamation for new town development, are reflected in many built/landscape elements (3.4.2.6a). A vernacular looking accessible ramp is provided as an integrating element and allows access throughout the composite play structure (3.4.2.6b).

This playground has become a very popular open space for residents in the neighbourhood.

Best Practices Observed

(a) Responsive design appealing to collective memory and local culture

- The attractive theme of a fishing village and clear circulation are features of this large composite play structure occupying 920 sq.m. A lighthouse as a supporting design feature provides a focal point to facilitate orientation within the play area (3.4.2.6a and 3.4.2.6b).

(b) A wide range of play modes promotes social integration for children of different abilities and physical strength.

- Play equipment, such as the low-effort interactive tactile panel shown in 3.4.2.6c, is accessible to both able and physically impaired children. Adequate knee space has also been allowed for wheelchair users.

3.4.2.6a Local heritage theme

3.4.2.6b Access ramp

3.4.2.6c Inclined play panel with knee space for wheelchair users

- The play experience of going onboard a boat is accessible to all visitors. This is very important in encouraging social integration for children in informal play (3.4.2.6d).
- Steps, slides, elaborate ramps, and climbing frames are set at different heights and configuration to allow children to make their own decisions as to the level of physical challenge they wish to take on. A transfer unit is also provided at some play equipment to facilitate access (3.4.2.6e).

(c) Design features and supporting services accessible to all

- An accessible ramp integrates different functional spaces and unifies the overall design theme.
- Sheltered seating is strategically located on the outer edge of the park next to the exits. They provide a direct view towards the main play area and facilitate parents to supervise the children activities (3.4.2.6f).

3.4.3 Recreational Equipment

Provision of outdoor fitness equipment is becoming very popular in Hong Kong, both in public open spaces and within landscaped areas of private residential developments. Most of them are proprietary products that are designed according to the anthropometrics of the intended users, i.e. based on the dimensions of an average adult person or a specific range of children age groups.

3.4.3.1 Outdoor Exercise and Fitness Equipment

(a) Accessible propriety outdoor exercise and fitness equipment is readily available in the market. Most of this equipment is very accessible and hence quite popular with the public. For example, some Tai-chi wheels are mounted on a pole at various levels to allow people of different heights as well as wheelchair-bound users to use them at the same time (3.4.3.1a).

3.4.2.6d Equal opportunity to play on the themed feature

3.4.2.6e Transfer unit at play equipment

3.4.2.6f Sheltered seats in close proximity of the playground

(b) Fitness equipment for adults could be either placed individually in a fitness station along a walking/jogging path, or grouped together in an area within a public park. In either approach, they should be positioned away from the general circulation space, preferably with a landscape buffer.

(c) Exercising equipment or facilities may not necessarily be proprietary products. Examples are pebble walks or therapeutic ramps (3.4.3.1b and 3.4.3.1c).

3.4.3.2 Design Considerations and Best Practices in Outdoor Fitness Equipment

Currently, there are no internationally recognized design codes or safety standards for outdoor fitness equipment. For those fitness equipment specifically designed for children's use, relevant codes and guidelines on outdoor children play equipment should be referred to. In general, the following good practices on universal accessibility can be considered:

(a) Safety

- Fitness equipment should be firmly anchored on the ground and finished with appropriate floor surfacing (3.4.3.2a).
- Adult fitness equipment in public parks should be properly managed to avoid misuse (3.4.3.2b).
- Proper drainage design at outdoor exercise areas is crucial in avoiding slipping hazard and potential problem in public hygiene (3.4.3.2c).

3.4.3.1a Pole mount Tai-chi wheels at different heights facilitate concurrent use by various users

3.4.3.1b Handrail, warning sign and rain shelter with seats provided near a pebble walk

3.4.3.1c Specially designed ramps for therapeutic exercise in a rehabilitation garden

3.4.3.2a Appropriate floor surfacing is required for adult fitness equipment

3.4.3.2b Proper management is required to avoid misuse

3.4.3.2c Weep-hole outlets should not be positioned directly at ground surface of outdoor exercise areas

(b) Signage

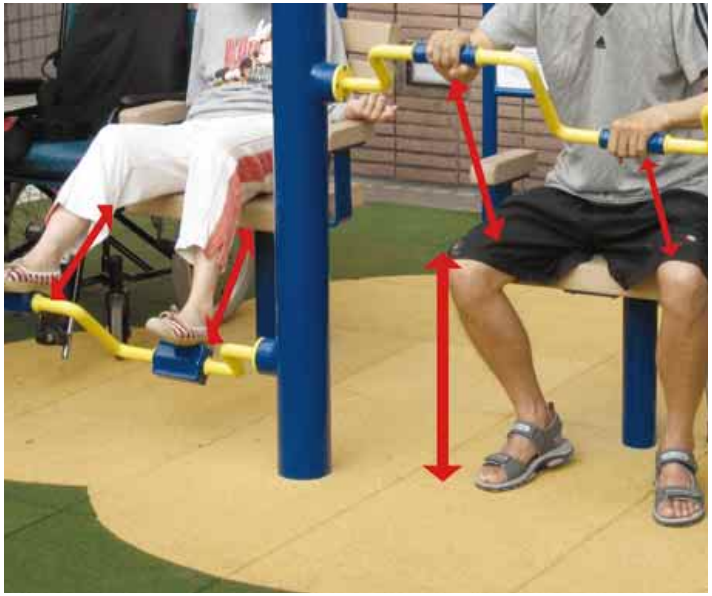
- Adequate signage is required in providing any necessary warnings and instructions for use.
- The message should be clear and multi-media information should be provided to allow users with different abilities to receive the message.
- Information on instruction for use should be provided in bilingual text and graphics to facilitate comprehension by all potential users (3.4.3.2d).
- Signage should be located at a prominent location immediately adjacent to each corresponding equipment but outside the safety margins and circulation space (3.4.3.2e).

(c) Spatial planning

- Good site planning is required in selecting and locating individual pieces of equipment.
- Dimensions, including safety margins, should be verified before and after installation of equipment for full compliance with manufacturer's recommendations and instructions. It should also be noted that proprietary products with overseas origin might not suit the anthropometrics of local people. This factor should be taken into consideration and the equipment should be checked to ensure that it is suitable and fit for the intended purpose (3.4.3.2f).

3.4.3.2d Written text supplemented with graphic illustration

3.4.3.2e Locate signage outside the safety margins of the fitness equipment



3.4.3.2f Each proprietary fitness equipment should be individually checked and verified with the manufacturer to ascertain the correct physical dimensions and anthropometrics before installation

3.4.3.2g Fitness stations appropriately spaced apart with clearly defined safety margins and shaded from the afternoon sun

(d) Other design considerations

- A good variety of equipment should be provided to enable a wide range of users with different levels of physical strength and/or range of mobility reach (including wheelchair users) to select the modes of exercise (3.4.3.2g and 3.4.3.2h).
- If possible, equipment should be placed under shelter since occasional heavy showers are not uncommon in Hong Kong. Alternatively, tree shading can also be considered, particularly for hot sunny summer days (3.4.3.2g).
- Seating benches should be provided next to the fitness equipment. This is particularly important if the intended users are mostly elderly (3.4.3.2h).
- Other supporting amenity facilities such as shade and shelters, toilets, drinking fountains, etc. should be provided in close proximity for comfort and convenience and they should be accessible to all users.
- If space allows, different types of fitness equipment should be grouped together to encourage and promote social interaction, particularly for the morning exercisers who are mostly elderly.

(e) Maintenance and management

- Routine inspection and regular maintenance to both the equipment and ground surfacing should be carried out. Long-term maintenance and management needs should be identified at the early stage (3.4.3.2i and 3.4.3.2j).

3.4.3.2h Seating benches with arm/back rest should be provided in close proximity to fitness stations for the elderly

3.4.3.2i Timely replacement of worn out matting is necessary

3.4.3.2j Regular maintenance to the fitness equipment is necessary

3.4.4 Operational Equipment

3.4.4.1 Operational Equipment that may form an Obstruction to Users

Water hose, maintenance cart, etc. may form an obstruction to users if they are not properly cared for at the design stage (3.4.4.1a).

(a) Parking spaces clear of the access route should be provided for maintenance carts or larger equipments in areas where their frequent use are anticipated, such as temporary refuse collection points, storage sheds, toilet blocks, utility buildings, etc.
(b) Areas in front of water points should be wide enough to accommodate coils of water hose without blocking pedestrians from passing.
(c) Warning signs should be provided if such equipment block the access route when they are in use (3.4.4.1b).

3.4.4.2 Removable Furniture and Equipment

Removable equipment for play, exercise, and recreation, as well as the layout of loose furniture, such as tables and chairs for alfresco dining or temporary seating for amphitheatre, should be considered at the design stage.

(a) The area for placing the furniture and equipment should be accessible (3.4.4.2a).
(b) Sufficient clearance should be reserved for the access route after placing the removable furniture or equipment. It is a good practice to distinguish the access route with a different floor pattern or surface material.
(c) Storage space should be reserved for storing the furniture and equipment or for placing the excess furniture that are not in use.

3.4.4.1a Maintenance cart in operation

3.4.4.1b Warning signs for water hose

3.4.4.2a Alfresco dining area on the side of the walkway

(d) The floor should be in colour contrast with the furniture and equipment if the colour is already known. For instance, the outdoor eating area of a restaurant at a beach house would probably have white plastic furniture so the floor should be in a colour other than completely white.

(e) The design of the lighting should cater for the intended use of the removable furniture and equipment, e.g. floor or bollard light should be allowed for areas intended to be used at night with tables and chairs that come with large umbrella or cover blocking any overhead lighting (3.4.4.2b and 3.4.4.2c). Refer to *Section 3.8 — Lighting*.

3.4.5 Utility Equipment and Other Fixtures

3.4.5.1 Common Utility Equipment and Other Fixtures

Common utility equipment and other fixtures include meters, transformers, traffic light control units, fire hydrants, water points, flag poles, etc.

These equipment and fixtures are not intended to be used by the general public or general users of the facilities. They should be designed in such a way that they do not form an obstruction to users (3.4.5.1a).

(a) Locate these equipment and fixtures outside the access route or in a recess.

3.4.4.2b Alfresco dining under shade

3.4.4.2c Up lighting underneath an umbrella cover

3.4.5.1a Avoid fire hydrant in the middle of a footpath

(b) Any movable parts, such as doors and other attachments, of these equipment and fixtures should not protrude onto the access route when they are in use.
(c) If it is unavoidable to locate the equipment on an access route, the minimum clearance of the route should not be reduced and the equipment should be clearly visible and easily detectable by a walking cane (3.4.5.1b).

3.4.6 Temporary Equipment

3.4.6.1 Common Temporary Equipment

Common temporary equipment includes performance stages (bamboo opera house, modern stage), booths, tents, wiring cables, potted plants for an event, maintenance areas, etc.

These types of temporary equipment are often not a known requirement at the design stage. It is important that the event organizer sets these up properly for access.

(a) Temporary performance stages at outdoor events are often very high. Handrails should be provided to the staircases. In cases where the events are for children, lower handrails should be provided. In cases where the events are for the elderly or persons with a disability, a ramp with handrails should be provided instead of staircases and a stage lower in height should be considered.

3.4.5.1b Utility control box placed on the edge of the walkway

3.4.6.1a Temporary tents

3.4.6.1b Temporary booth

(b) Temporary booths or tents should be securely constructed on level ground without a plinth or platform. Access to the booth or tent should have minimum width of 1050mm clearance (3.4.6.1a and 3.4.6.1b).

(c) A turning space of 1500mm x 1500mm should be provided inside the booth or tent intended for public access.

(d) Any wiring cables should be placed overhead above reach. If it is unavoidable to have cables running on the floor, proper floor cable conduits with flat surface and ramps on both sides should be provided if the conduit is raised by more than 10mm, and splayed edges should be provided if the conduit is raised by 10mm or less (3.4.6.1c).

(e) Potted plants should not reduce the clearance of access routes or openings (3.4.6.1d).

(f) Additional temporary signage to entrances, exits, toilets and temporary facilities such as event booths, portable toilets, control centres, first aid stations, etc. should be provided for public events.

(g) Areas under maintenance should be properly blocked off and a sign notifying the blockage should be provided (3.4.6.1e). If an access route is blocked and an alternative accessible route is not clearly visible, directional signs should be provided.

3.4.6.1c Temporary accessible ramp over covered cables running on the floor

3.4.6.1d Potted plants clear from access routes and tactile guide path

3.4.6.1e Maintenance area with guardrail and warning