API Guide

Playground Layout & Design

November 2006

Association of Play Industries
www.api-play.org

Introduction

The guidance given in this document has been formulated as a result of a design conference held by the Association of Play Industries (API).

It was felt that some benefit could be gained by formulating general guidelines for the design and layout of playgrounds that could be adopted by the industry.

These guidelines will help ensure that all personnel involved in playground design are working to the same principles.

RPII Annual Inspectors will be asked to adopt these guidelines when undertaking annual and/or post-installation inspections.

Playground Location:

Sometimes there is little choice over where to site the playground and, even then, there is little the supplier can do.

There is, however, a responsibility to draw the client's attention to the presence of matters that may form a hazard to the future use of the site. These could include:

- Overhead power lines/electricity sub-stations
- Major routes
- Hidden/secluded areas
- Railway lines
- Waterways

Selecting Equipment

Equipment should meet the requirements of BS EN 1176. This may be proved mainly by:

- A British Standard Kitemark
- A TüV mark

(Copies of certificates should be provided by the manufacturer or supplier before an order is placed)

In some circumstances other indications may be accepted:

- A supplier's declaration of conformity to EN 1176, in accordance with EN 45014.

- For some bespoke schemes, the standard could be used to form part of a risk assessment.

All equipment should carry the appropriate identification label, but not necessarily the ancillary equipment such as benches and litter bins.

Selecting Surfacing:

Suppliers should provide surfacing that has been independently tested to BS EN 1177 and BS 7188. It should have the required Critical Fall Height properties for the height of fall required by the equipment or recommended by the supplier. Test certificates from a recognised test house should be supplied or a supplier's declaration of conformity provided.

Equipment Layout:

The layout of the equipment will have a great influence on the overall safety of the provision. For example, collision accidents in play areas account for approximately 34% of play area accident reports.

Free Spaces & Falling Spaces:

When designing the layout of the area it is necessary to firstly consider the safety of the users of the equipment itself.

Guidance on these aspects is published in BS EN 1176 in the form of 'Free Spaces' and 'Falling Spaces'; but some confusion has arisen over how these Free Space and Falling Space areas can interact.

The Falling Spaces have 'Impact Areas' that are based on the Maximum Free Fall Height of the equipment; these may overlap.

Where there is a Free Space requirement (i.e. where the equipment has forced movement, for example a slide, fire pole or swings) the Free Space areas **MAY NOT overlap with each other or with an adjacent Falling Space.** It should however be noted that BS EN1176 is not mandatory, and a risk assessment could indicate that the Free Space and/or Falling Space areas should be increased.

For example, a Spinning Disc or Rotating Pole 1.00m from a fence would meet the standard but would not be safe and would attract a higher risk assessment rating.

Circulation within the Play Area

The Play Area layout also needs to consider the safety of users who may be passing through or around the area, but not necessarily using the equipment. These safety requirements need to be considered ***in addition*** to the Free space and Falling Space given in BS EN 1176.

Broadly, user circulation in play areas can be split into two areas of consideration:

- Children who are generally running around from one equipment item to another. The circulation space that is needed to deal with this will depend on the number of users that are expected to use the play

area at any one time. Therefore greater circulation space will be required in a busy municipal area than a quieter rural one.

- As a general rule it is suggested that a minimum of 2.50 metres should be allowed between two items of static equipment, with a Free Fall Height greater than 600mm, to allow for circulation, and a minimum of 2.50 metres between a swing seat and a static item of equipment. The circulation areas may overlap.

Diagram 1.

Static to static minimum separation 2500mm.

The falling spaces can overlap as shown in the diagram.

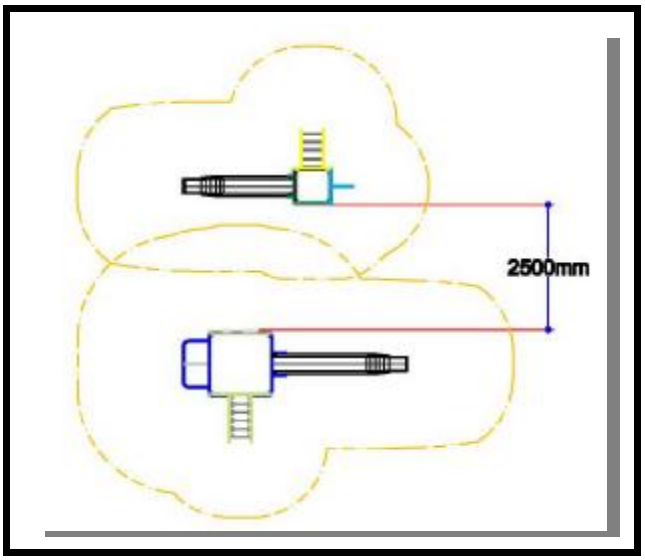


Diagram 2.

Static to Swing Seat minimum 2500mm.

Note: the dimension is to the swing seat, not the frame.

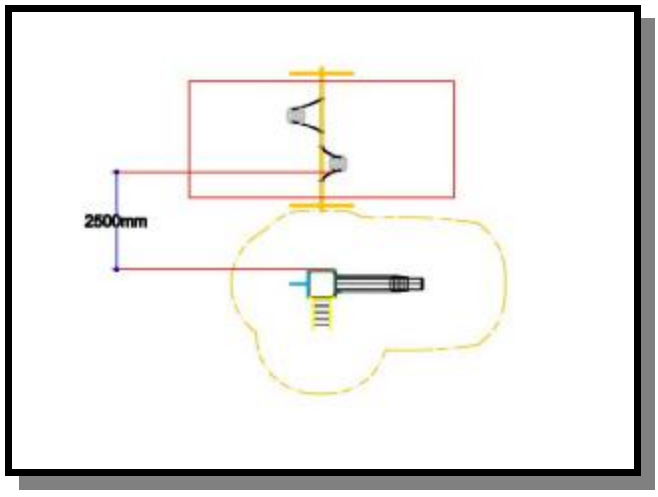
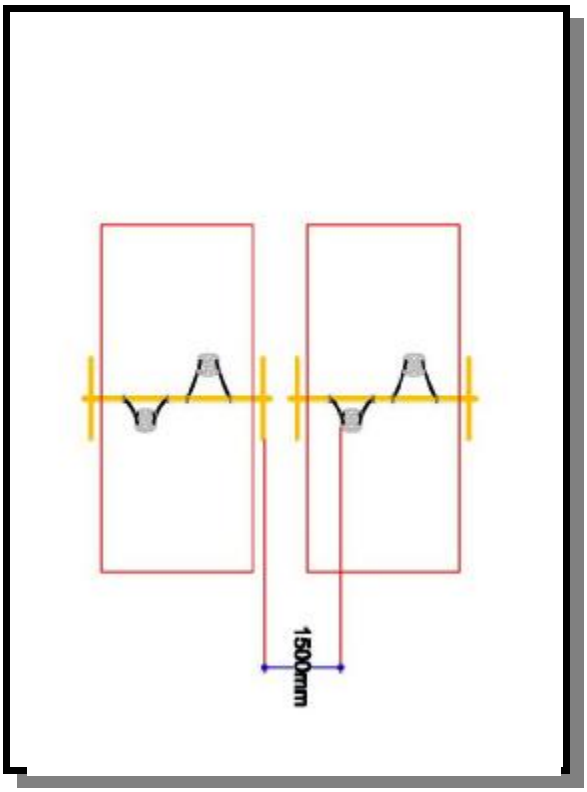


Diagram 3.

Swing to swing minimum separation 1500mm.

In this example the positioning of two swings shows the dimension from the swing seat of one frame to the swing frame on the second swing



For all other moving items the specified (non overlapping) Free Space areas cover the requirements for separation.

Consideration should always be given to the anticipated number of users on the site and the circulation zones increased if deemed necessary.

Desire Lines/Routes:

Desire routes are the routes a user will most likely take in moving around a play area. For a child this is quite straightforward it will be a straight line between any two pieces of equipment the user may wish to play on. For a carer or supervisor the desire route will be from the entrance to a position from which they can oversee children at play e.g. a bench or seating area, and from there to the places where the children are playing.

The desire routes of users should also be considered. This is where the natural desire route from one item of equipment to another could be through the arc of moving equipment.

- For example, placing a set of swings between two climbing frames would create a hazard where users may run through the arc of a moving swing and should be avoided.

Main pathways or desire routes to/or through the play area where supervisors, baby buggies, wheelchairs etc. need to gain safe access will need separate consideration.

- The safety of these users of the area will generally require a clear pathway or route through the area that is free from any hazards created by the users of the equipment items.

Desire routes in play areas will be created, amongst other things, by the positions of gates and seating and interlinking pathways between items of equipment. NB: The addition of pathways is in effect creating a rule for children to adhere to, encouraging them to use the pathways to move between items of equipment.

The Play Inspection Company, RoSPA or an RPII qualified Annual Inspector can provide an evaluation service for plans.

Post-installation Inspection:

For new sites with a value in excess of £10,000 a post-installation inspection by an RPII Annual Inspector should be provided. Where individual items of equipment are installed or for low value sites this can be undertaken as part of the annual inspection process.

Risk Assessment:

The Management of Health and Safety at Work Regulations require that all playgrounds be subject to a risk assessment. This is the responsibility of the playground Operator. The supplier; post-installation inspector or annual inspector can provide a risk assessment for the use of the Operator as part of his assessment – it does not replace it.

Playground Furniture:

ISO 50 and ISO 51, require that the playground furniture or ancillary items need to be assessed for safety and the operative standard for this assessment is BS EN 1176.

Gates: As a general principle these should take 4 – 8 seconds to close from a 90 degree open position.

To prevent animal access they should open outwards unless opening directly onto a footpath where they could cause a collision.

Fences: These should pass the entrapment requirements: i.e. less than 89 mm between vertical paling's; no horizontal access, and hoop tops should pass the head and neck probe. *(Drawing)*

Seats: These should be placed at least 300mm from the fence to prevent potential entrapment between the bench and the fence.

Litter bins: These should be placed at least 500mm from seats.

Signs: These should be placed adjacent to each of the playground entrances.

Cycle racks: These should be placed adjacent to the playground entrance

Pathways: Erosion resisting pathways should be provided into the site at least to the seating areas.

DDA

The requirements of the Disability Discrimination Act in regard to access (i.e. pathway and gate widths and gradients) should be considered for all new sites. (See Appendix A for suggestions)

Inspection & Maintenance

The purchaser must be advised of the inspection and maintenance schedules for each item of equipment. They should be advised that inspectors at the three levels (Routine, Operational and Annual) should be qualified by examination through the Register of Play Inspectors International.

Documentation

The documentation recommended by BS EN 1176 must be supplied.

Further information and advice

The API has set up an advisory committee to provide guidance where required.

Production

This document has been produced by Keith Dalton & Peter Heseltine of The Play Inspection Company, Andrew Yates (SMP Playgrounds Ltd), Rob Davies (Wicksteed Leisure Ltd) and members of API and the RPII.

Appendix A: Children with disabilities

Gradients:

- Ramps/pathways up to 2 metres in length can have a gradient of 1:12 (8%)
- Ramps/pathways 2 metres to 5 metres in length 1:15 (7%)
- Ramps/pathways Greater than 5 metres in length 1:20 (5%)
- Car parking spaces 1:50 (2%)

Clearance Heights:

- 2 metres is recognised as the *minimum* recommended height for clearance of branches, shrubs etc. on access routes to avoid the possibility of facial damage.

Handrail Heights:

- BS 8300 recommends 1000mm for the height of a handrail adjacent to steps. BS EN 1176 recommends a height of between 600mm and 850mm for play equipment. For this document we have used the recommendations of BS 8300, as it is primarily concerned with access to the playground.

Width of Gate Openings:

- BS 8300 suggests 1000mm for the gate opening, but the use of gates with 1200mm post centres is generally accepted as more desirable and should be adopted for new playgrounds. (These will provide an opening of approximately 1100mm).

Gate Colour:

- Changing the colour of the gate to contrast with the fence will assist visitors to the playground, especially those with a visual impairment, to identify the location of the gate.

Width of Pathways:

- 1000mm is generally acceptable for the width of a pathway, but if long distances (more than 20 metres) are to be covered then it will be necessary to provide passing places and/or rest areas with benches. For new playgrounds consider using 1200mm as the width of a pathway.

Entrances:

- Entrances to the playground should be free of any change in heights as these can present difficulties whilst manoeuvring prams, pushchairs or wheelchairs. Keep an eye out for erosion or trip points in these areas, as they are heavily used and susceptible to wear.

Sign Height:

- There is no recommendation for the height of a sign, but 1500mm seems to offer good visibility for all users.

Sign Colours:

- There are standard colours for warning signs, for other signs use good contrasting colours to make them easier to read.

Swings:

- Swings with rubber cradle seats are suitable for the majority of children up to the age of 3½ years.

- Swings with rubber flat seats are suitable for children over the age of 3½ years, as long as they can maintain good sitting balance and sustained hand grip.

- Full support style swing seats are now becoming increasingly available that provide opportunities for inclusive use for those who require greater body support.

Slides:

- Children of most abilities can use single-width slides attached to play units.

- Adult assistance may be necessary for less physically able children to get to the top platform and to get up from the end of the slide.

- It may be more difficult to access free-standing slides.

- Less well coordinated children can find double width slides too much of a challenge.

Roundabouts:

- Children with disabilities, together with their carers, can access the majority of standard roundabouts with seating.

- Adults can give children security and support, whilst allowing them to enjoy the rotating experience.

- Roundabouts with surround support seating give children back support and good handholds.

Rocking Equipment:

- Children with good sitting balance and sustained hand grip will be able to use the majority of rocking equipment.

- Sit-in Spring Mobiles and Rockers with good surround seating are more suitable if children need support whilst rocking.

- Traditional Rocking Horses allow carers to sit behind children and give them additional support.

Multi-Play Equipment:

- Low level tunnels, play panels, games, shops and bridges, etc., can combine with higher level activities to enable children with different levels of physical abilities to play together.

- Children who have limited mobility may require some assistance to get to the upper level of this type of equipment.

- Features such as wide ramps, wheelchair transfer platforms and double-width slides facilitate this or enable a helper to assist and provide physical support.

- Use of ramps within the play equipment adds little ‘inclusive play’ value.