

SPECIFICATIONS

PLAY EQUIPMENT SPECIFICATIONS

Equipment should be designed to provide a wide range of behavioral options for children of varying abilities. Separate areas for very young children (Tot Lots) should be provided.

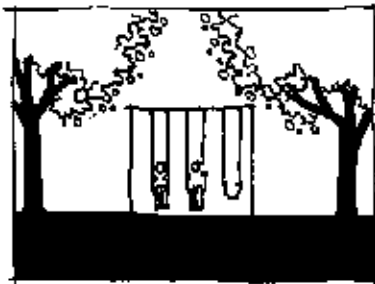
The following are desirable activities in the playground:

- Climbing, Swinging, Bouncing, Balancing, Jumping, Crawling, Hopping, Skipping, Creeping, Sliding, Rolling Lifting, Pushing, Pulling, Knee Walking, Swinging, Hand-Over-Hand, Hanging By Arms, Twirling/Spinning.

GENERAL SAFETY GUIDELINES

All playgrounds should comply with the most current Consumer Product Safety Commission (CPSC) guidelines. Playgrounds must comply with the following safety guidelines:

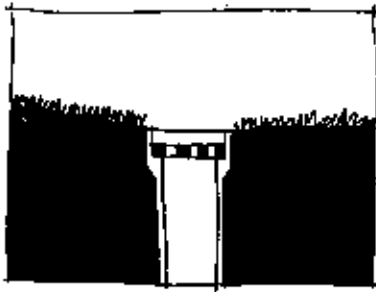
1. Clear space at end of slides should be equal to the length of the slide or 12 feet in the case of slides over four feet in height. Clear space on sides of slides shall be six feet on each side.
2. Swing, to-and-fro: Minimum clear space should be equal to two times the height of the swing in the direction of each motion.
3. All play equipment should have a minimum of six feet clear space from adjacent structures, trees, framing, and other pieces of equipment.
4. Spring animals should have a minimum of a seven-foot radius of clear space.
5. Tot structures should not exceed 4-1/2 feet in height.
6. No deck for any age group should exceed 6-1/2 feet in height (except for slides with enclosed decks, which may be seven feet in height).
7. Minimum safety surfacing (clear wood chips - not tree trimmings) at least eight inches thick should be placed under all play equipment.
8. Swing units should not be attached to the main play structure.
9. No opening on any play structure or accessory shall be between four inches and ten inches. Openings in this range represent potential entrapment.
10. Vertical angles formed by adjacent surfaces on the boundary of an accessible opening should exceed 55 degrees, per CPSC



entrapment guidelines.

11. All nuts and bolts should be recessed.
12. Footings: The tops of playground equipment footings should be covered by four inches of compacted fill plus inches of fall-absorbing material.

DRAINAGE



- Install positive drainage.
- The site should be practically level if loose material such as sand is to remain in place (unless there are effective retaining features). Locations under swings and at the end of slides (because they tend to become the lowest points) need the most active drainage.
- A subsurface drainage material (e.g. plastic drain material) connected to drain pipes with a filter cloth layer on top is recommended wherever needed.

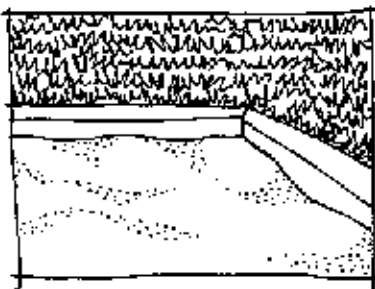
SURFACE



The following are acceptable surfaces for the play equipment area:

1. **HARDWOOD CHIPS.** Clear wood chips (not tree trimmings) provide an acceptable surface for play equipment. Chips come in different sizes. The one- to three-inch chips work best. Engineered systems that meet CPSC standards are encouraged. Hardwood chips are the best choice because they last longest. Maintain a minimum of eight inches of chips in equipment areas, and a minimum of six inches in non-equipment areas.
2. **PEA GRAVEL.** Pebbles must be round in shape and as uniform in size as possible. A diameter of 1/8" - 3/8" must be maintained. Must meet CPSC standards.
3. **OTHER SURFACES.** Other surfaces, such as sand or synthetic material, may be used if CPSC standards regarding these materials are adhered to.

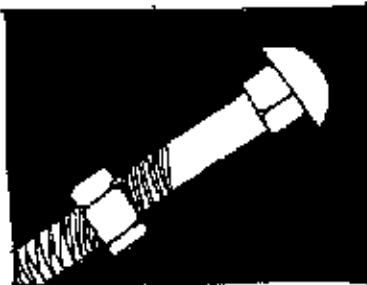
RETAINERS AND EDGE DETAILING



- **BORDER SETBACK AND MATERIALS.** Edging, curbing, or other containment is required around play areas filled with loose surface materials.
- **WOOD USED FOR THIS APPLICATION MUST BE TREATED FOR GROUND CONTACT.** Concrete edges should likewise have a wood cap to help reduce the possibility of broken glass. Provide adequate fall zones (as specified by supplier, for instance) around all play equipment. Pay special attention to the surface material retainer for visual impact and maintenance requirements.

- **HEIGHT DIFFERENTIAL.** The height of the surface material barrier should be determined by the following factors: the ability to retain loose material; the creation of a potential trip hazard; and the need to level an area to a one to three percent slope. Eight inches will normally contain all but intentionally thrown material.
- **TRANSITION ZONES AROUND EQUIPMENT AREAS.** The area around the surface material retainer, extending out about five feet, is an area where significant future maintenance will be needed. Material thrown out of the retainer will be deposited here and should be anticipated.

HARDWARE

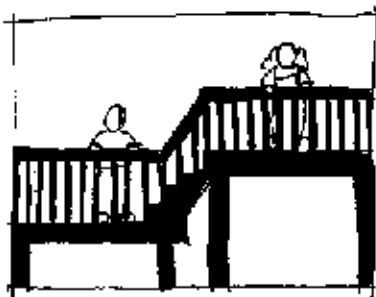


Determine that the fasteners used on play equipment are vandal-resistant and protrusion-free.

- **PROTRUSIONS.** The guidelines for protrusions established by the CPSC specified the maximum allowable protrusion. In no case should an object protrude more than half its diameter (e.g., a 1/2-inch bolt not more than 1/4 inch). If fasteners protrude, they shall have smoothly rounded corners.
- **MOVING JOINTS.** Moving joints are one of the most troublesome maintenance features on playgrounds. Bearings used, such as on roller slides, shall be sealed ball bearings. Other bearings shall have grease fittings and be sealed from weather with flexible rubberized boots or other bearings. All moving joints must be disassembled periodically to inspect for wear. As sealed joints cannot be disassembled, replacement records must be kept.

The manufacturer should supply all such joints with bearings, not simple metal-to-metal S hooks.

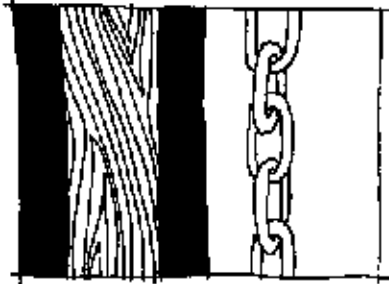
ENCLOSURE



Enclosure is essential for safety, e.g., in a multi-deck structure where a high deck is adjacent to a low deck. Be certain that platform enclosures are at least 38 inches in height and present no entrapments or footholds for climbing. Roofs, if used, should be steep to discourage access.

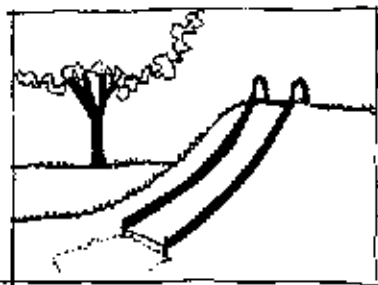
- Children with motor impediments may require additional railing details to support their movement through the play environment.

MATERIALS



- **ATTACHMENT HARDWARE.** There shall be a minimum number of types of attaching hardware. All hardware shall be of a vandal-resistant type. Nails should never be used to secure play equipment.
- **POSTS.** Posts shall be steel, aluminum, pressure-treated wood, or plastic. All posts should be warranted for ten years. Support posts should be installed in concrete a minimum of 30 inches below ground surface. Concrete footing should be six to eight inches below ground surface (not wood chip surface).
- **DECKS.** Decks shall be retained without protruding hardware. Nails are not permitted. Metal decks are permissible if vinyl clad.
- **PLASTICS.** All plastics shall be high-grade polyethylene, polyvinyl chloride, or polycarbonate. They shall be stabilized against ultraviolet light degradation. They shall be self-extinguishing.
- **CHAIN AND CABLE.** All chain or cable on climbing structures shall be covered with rust-resistant material. Chains and joints shall be smooth and free of burrs.
- **WOOD TREATMENT.** All wood shall be treated with an acceptable wood preservative process that meets the standard of a .40 pounds CCA process. The manufacturer shall certify that wood treatment complies with the C - 17 standard of the American Wood Preservers Institute and is free of residual chemicals. Coating or sealer may also need to be applied.
- **CHECKS MAY NOT EXCEED 18 INCHES IN LENGTH OR 1/8 INCH IN WIDTH WHEN RECEIVED.** Wood may not check after installation for a period of one year to a check dimension of 24 inches in length and 3/16 inch in width.
- **METAL TREATMENT.** Touch up scratches in posts. Paint shall be supplied by the manufacturer. (Be aware that dents can affect the integrity of posts.)

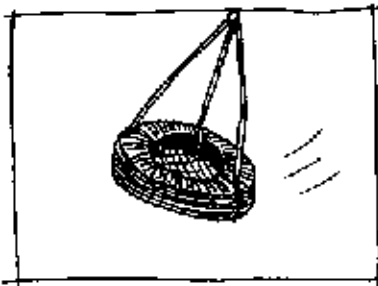
SLIDES



- **SLIDE HEIGHTS.** Slides should be less than 85 inches from the ground unless installed on slopes. If slide heights are greater than four feet, access decks should be properly enclosed with a 38-inch non-climbable enclosure and should include a double safety rail and a side rail a minimum of 2-1/2 inches above the slide surface.
- **SLIDE GRADIENT.** The average incline of the sliding surface shall not exceed 30 degrees. For accessibility and integration, paired slides are preferable to wide slides.

- **SLIDE EXIT ZONES.** Slide exit zones should be a minimum of 16 inches long, with a height between 9 and 15 inches, on decks higher than four feet.
- **FREESTANDING SLIDES.** Freestanding slides should be avoided, unless the steps are fully enclosed. Check that the stairs are fully enclosed and not sand traps and, therefore, slip hazards.
- **SLIDE ENTRY AREA.** Ensure that slides have devices that provide transition security at their entrance and that such devices do not introduce new hazards.
- **SLIDE MATERIALS.** Stainless steel, while very durable, gets hot enough in the sun to cause second degree burns. To minimize this problem it is recommended that slides be installed pointing in a northerly direction. Alternatively, slides must be provided with adequate shading.
- **PLASTIC SLIDES SOLVE PROBLEMS OF HEAT AND SHARP EDGES OF STAINLESS STEEL.** Currently, high-density polyethylene slides solve the durability problem and add an element of permanent color. If they are not well-made, they can be light-sensitive and can be damaged by sand and by heavy objects being thrown against them.
- **USE ONE-PIECE STRAIN SLIDES.** Spiral slides should have lap joints rather than butt joints to avoid foreign objects being inserted into the chute area.

SWINGS



- **SWING SEATS.** The only acceptable swing seats are the rubber belt type, the triple-hung auto tire, and the full bucket tot seat. All seats shall be spring steel reinforced to reduce vandalism and belt seats should not allow sharp edges to be exposed. Swing seats for special applications are allowed as long as they conform to the CPSC guidelines.

Handicap accessible swing seats must have a back and side support or a hole/indentation (as in a tire swing with a cloth or webbed bottom) for the child's backside.

- **ISOLATION AND TRAFFIC FLOW BARRIERS.** Because swings can act as battering rams and small children commonly walk into the swing use zone, swings should be isolated from other play equipment. They should not be combined with multi-play structures.
- **DISTANCE BETWEEN SWINGS (AND BETWEEN SUPPORT BEAMS) SHOULD BE A MINIMUM OF 24 INCHES.**
- **SWING SETBACKS.** The minimum setback requirement for swings is two times the height of the swing beam from any edge

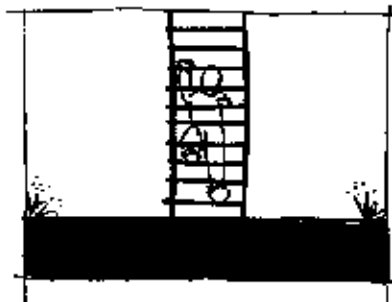
or obstacle. For tot and fire swings with low beams this distance can be reduced slightly.

- **TIRE SWINGS.** The swing hangers are one of the most critical hardware items used on playground equipment. Since tire swings move in all directions, they require a beam support span which is two times the swing length plus four feet. A twelve-foot span, common for this type of swing, would therefore be limited to 48 inch lengths of support chains and have a horizontal member height of 72 inches.

The beams should have universal joint bearings protected by a boot securely attached to the beam. Use thick chains and hardened steel S hooks that need special crimping tool.

The swings are easily made accessible by strapping webbing to the bottom or inserting plasticized canvas in the hole and bolting it in, thus creating a nest. Tires should drain.

CLIMBERS

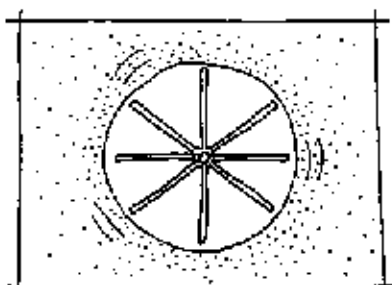


- **CLIMBER HEIGHTS.** The height of a climber should be based on four factors:
 1. Type and quality of the fall-absorbing surface
 2. Location
 3. User group
 4. Ability to maintain the equipment and surfacing

Rails and grips on climbers should be between 1 inch and 1-3/8 inches in diameter.

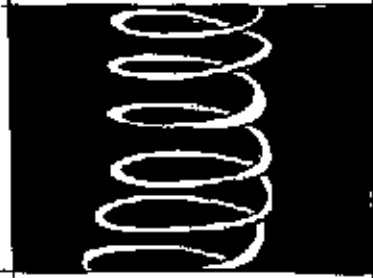
All freestanding climbers should be free-fall with openings four inches or less and ten inches or more.

SPINNING EQUIPMENT



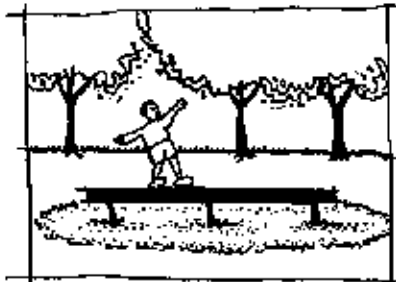
- **SURFACING OF SPINNING EQUIPMENT.** The use of whirls causes loose material to be pushed away all around their base, exposing the underside for possible entrapment. Be certain that rotating equipment is installed in such a manner that children cannot become trapped underneath.

ROCKING/SPRING MOUNTED EQUIPMENT



- If playground includes rocking spring-mounted animals they should be placed within play areas for tots.
- Rocking equipment should contain the child as much as possible. No high-spring animal head and hard, sharp-edged back supports are allowed.

BALANCE EVENTS



- Balance surfaces should not be more than 12 inches above the ground.
- Swinging gates should not be included in playgrounds.
- Seesaws should not be included in playgrounds.
- Spring platforms should not be included in playgrounds.
- Spiral fire poles should not be included in playgrounds.

UPPER BODY EVENTS

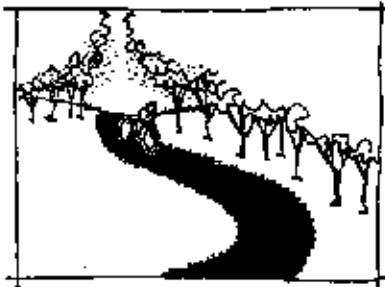


- Include upper body development events with graduated skill levels in each equipment setting.
- Upper body events should be used to link sections of the play environment and should be sized to challenge children of various abilities.
- Upper body development equipment should have appropriate, easily-used mount-dismount features.
- Height of Upper Body Events. Determining the proper height of upper body events is another area where the use of the equipment is in conflict with safety considerations. Horizontal ladders placed at a height of 78 inches may be used effectively by most children and are still low enough to be safe with appropriate safety surfacing.

Ladders can be lowered to make them accessible for young children and children in wheelchairs with upper body strength, but choosing an appropriate ground surface for both fall cushioning and wheelchair access is important.

PATHS AND TRAILS

Walking and bicycling are the most popular recreation activities of Montgomery County residents. An interconnected pathway system can provide recreation for all age groups including the elderly. They are also one of the few types of facilities that can be utilized by the handicapped. Pathways also provide accessibility and separate functionally different spaces; pathways can be a recreation and play facility in and of themselves.



- Provide a network of accessible routes to connect directly with entrances, extend across the site, and connect main centers of activity.
- Provide a variety of paths to accommodate hiking, triking and biking and interpretive activities, to meet the varied needs of children.
- Provide adequate resting places.
- Slopes for hiker/biker trails should not exceed 8% for lengths greater than 150 feet.
- Paths should be designed to have appropriate handicapped accessibility to the system. The maximum allowable slope for the handicap is 8.3% for a maximum distance of 30 feet. Zero to four percent is desirable for longer distances.
- Trails should have a minimum vertical clearance of eight feet. Tree branches should be pruned accordingly.
- Gratings for storm drainage should be placed off pathways. When they do occur, openings should be less than 1/2 inch and positioned so that bicycle tires will run perpendicular to the openings in the grate.

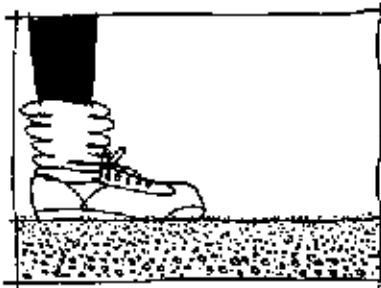
The following are acceptable surfaces for paths:

1. **ASPHALT.** Asphalt pathways may be used if they are carefully constructed and maintained. Typical construction should include:
 - A. Subgrade cleaned and cleared to a depth of six inches below finished grade, compacted to 95% density. A soil sterilizer may be utilized to control weed growth.
 - B. Three- to four-inch base of course aggregate, compacted to 95%.
 - C. Primer Coat.
 - D. Two- to three-inch surface course of hot mix bituminous concrete, compacted to 95% density. An epoxy finish coated with sand may be used to give a natural appearance and reduce softening problems in hot climates.
 - E. Slope to drain.



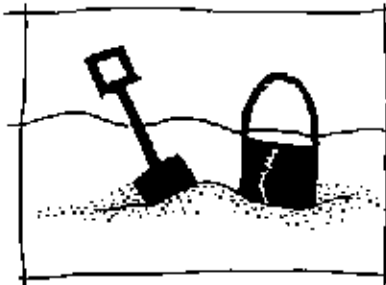
An alternate asphalt path section, consisting of 4 inch hot mix of bituminous concrete with subbase, may be used for pedestrian paths only.

Asphalt surfaces may become soft in very hot climates, causing difficulty for people in wheelchairs, and should not be used in very hot, sunny locations. Maintenance is important so that the pathway is not degraded by weeds, cracks, or erosions.



2. **CRUSHED STONE AND DECOMPOSED GRANITE.** Crushed stone can form an accessible surface if it is correctly designed and constructed, and adapted to regional climatic conditions.
 - A. Provide subgrade cleaned and cleared to a depth of six inches below finished grade, compacted to 95% density. The use of a soil sterilizer is recommended.
 - B. Provide four-inch base course, 3/4 inch crushed stone, compacted to 95% density. A binder of 2-3% Portland cement with water and gravel may be used.
 - C. Provide two-inch surfacing course of crusher fines, rolled and compacted to 95% density. Cement binder recommended.
 - D. Maintenance is essential to ensure a consistent surface.
3. **WOOD DECKING.** Wood decking may be used as a pathway and flooring surface for all levels of accessibility, providing joints meet the requirements of the level. Warpage and movement of the material must also be controlled.

SAND SETTINGS



Sand, along with water, is one of the most popular play materials because of its softness and malleability. It has even more potential when combined with water. Sand can serve both as a play material and as a safety surface. Sand play areas should be explicitly designed.

A playground sand area should be like a beach - deep, wide, and near to the water. The sand area should be near a path and have a ramped approach so that children on wheels can get in easily and not fall in by mistake. Playing with hoses and buckets of water in sand is fun and easily managed if there is a supply of water nearby. If the sand area is at least four feet deep with good drainage below and no covering over it, it will be perfectly hygienic. Rain, air, and sunshine keep it so. If it is exposed to falling leaves in autumn or to cats and dogs at night-time, a fine meshed cover can be put over it when necessary.

SPECIFICATIONS FOR SAND AREAS OR BOXES:

- Provide a balanced mix of particle sizes ranging from coarse sand (not more than 1.5 mm) to very fine.
- Pack well when moist.
- Sand must be well-washed, clean, and free of dirt, clay, silt oxides, iron, or other contaminants.
- Depth of sand in larger sand play areas should be between 12 and 24 inches.
- Shade in hot weather and sun in cool weather should be provided, with shelter from prevailing winds. All sand play areas should be sited to receive sun for part of the day for natural cleansing.
- Enclosures are necessary to keep sand in place and to thwart children from disturbing or running through the creative sand play of others. Enclosures provide a psychologically calm atmosphere. Shelf-like play surfaces can be designed in, along with places to sit or perch with peers. Enclosures must be made wide enough to support such activities.

If using timber, joints must be tight or filled; all timber cuts should have 2 coats of wood treatment solution brushed on.

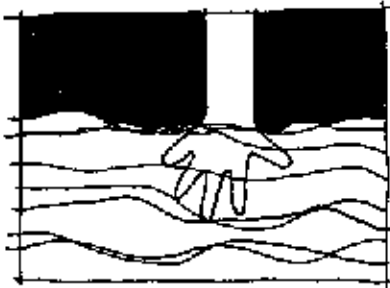
If using concrete, provide an apron with a minimum of 18 inches around the sand pit on all sides flush with grade for sweeping sand back into pit. Provide lids for sand areas when practical. Lids, preferably screen material, must allow light and air circulation for natural cleansing. Sandpits should be designed with a minimum three-foot-wide sand walk-off apron sloping 2% to 3% into the sandpit to permit sand to flow back into the pit. The perimeter enclosure of sand pits should be level. Sand pits should have positive drainage systems. Level sand pits are required because sand flows and tends to seek its

own level.

- **WATER SUPPLY.** This is essential for good sand play. A spring-loaded or dripping, tamper-proof faucet works best. Hoses may also be used.

Provide a limited-flow water source next to sand areas, such as hand water pumps or trickling water troughs, to allow for sand and water play. Locate drinking fountains away from sand play areas.

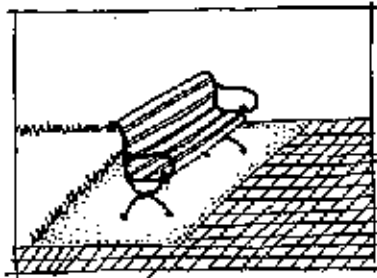
WATER SETTINGS



Water play areas are powerful playground attractions. Water play areas can be wading pools, spray pools, play pools, bubblers, sprinklers, troughs, or a running hose bib in a sandbox.

- Water areas must be sunny and protected from the wind.
- Maximum depth of hose-filled temporary ponds must not exceed six inches. Maximum depth of puddles must not exceed one inch nor one square yard per event; the maximum depth of a pond should be 14 inches.
- Pools must have adult supervision when water is being used.
- Fixtures must be vandal-proof.

SEATING



- Provide seating at every playground, sand area and water location.
- All benches for adults should have backs.
- Benches should be grouped in various configurations for sitting alone or in groups.
- Choose materials that do not retain heat or cold. Avoid rough materials or those that may splinter. Wood should be clear grades and free of knots.
- Sitting heights of 18 - 20 inches are preferable.
- Sitting surfaces below 12 inches width are uncomfortable for many adults. Likewise, widths beyond 18 inches become awkward for normal length legs.
- Provision for heel space of three inches makes rising from seated positions easier.
- Seat surfaces should be pitched to shed water.
- Include a space beside bench for wheelchair or stroller (approximately 30 inches wide for average wheelchair).
- Seating areas should be located adjacent to (but not obstructing) pathways and developed trails, particularly along inclines.
- Texture change in walkways adjacent to seating areas will cue the blind to location of benches.
- Benches that contrast in color from surroundings are more easily distinguished by visually-impaired people.