Playground Safety Series



Part Two
Maintaining a Playground
By
Colorado School Districts Self Insurance Pool



Trainer Guide



Playground Safety Series Trainer Guide

Introduction

The Playground Safety Series is designed to provide school personnel with an introduction to safety inspection and maintenance concepts applicable to play equipment and playgrounds. Participants will be introduced to common playground risk exposures and given strategies to identify and manage those risks. The information provided in this program should be customized to reflect your policies, procedures and management protocols to improve its effectiveness.

The purpose of the playground maintenance series is to provide a safe environment for students and users while on the playground. Maintaining playground equipment will help prevent accidents and injuries that are the results of poorly maintained equipment. Proper, routine and timely maintenance is a way of managing risk at school district playgrounds, helping to protect them from costly accidents and demonstrating the school district's standard of care.

Mission

The Mission of The Colorado School District Self Insurance Pool (CSDSIP) is to provide a user friendly format to bring public schools into compliance with the current standards and best practices advanced by the Consumer Product Safety Commission and ASTM Guidelines. These voluntary standards have evolved into the standard of care for designing and managing public playgrounds.

CSDSIP Support

We anticipate that the implementation of the playground safety series may generate a need for a deeper level of understanding for playground risk management or generate more sophisticated questions than are addressed in the training material. The CSDSIP Risk Control Staff are Certified Playground Safety Inspectors and are available to assist you in the development and review of your playground safety program.

Training Objectives

After completing Playground Maintenance Series you will:

- ✓ Understand the importance of inspecting and maintaining playground equipment
- ✓ Understand the importance of establishing a schedule for inspections and maintenance of playgrounds, either by following the manufacturer's instructions and inspection schedule or establishing your own inspection schedule
- ✓ The importance of establishing checklists for general or detailed inspections, either by using the manufacturer provided checklist or using the General Maintenance checklist



- ✓ Review who should do maintenance inspections?
- ✓ Review common playground maintenance issues for the following equipment:
 - o Swings
 - o Climbers
 - o Slides
- ✓ Understand the importance of documentation
- ✓ Have reference guide for guidelines and standards

Administrator Guide

A recent Colorado Supreme Court decision, Loveland v. St. Vrain SD, has increased the liability exposure of schools related to the maintenance and safety of their playgrounds. Playgrounds are an important component of the learning environment and through proper safety inspections and routine maintenance they may support your educational mission.

Prioritizing Your Maintenance Inspections

As the playground safety administrator, you should be familiar with your school's playground maintenance schedule and the responsibilities assigned to building staff. You should provide a copy of the school's policies and procedures to the training participants.

The following factors may affect your maintenance schedule and inspection frequency:

- The frequent use of the playground,
- The age of the users,
- A frequency of accidents,
- The age and types of equipment,
- Changing climate conditions,
- The availability of staff and maintenance resources.

Taking into account the above factors your **high frequency** inspections should be done as often as *daily* or no less than *weekly*. Handout A, *Routine Inspection and Maintenance Issues*, provides a list of maintenance issues to check for during your inspections. Specific to this training, the playground maintenance items are highlighted in yellow.

Much like high frequency maintenance inspections, scheduling your **low frequency** inspections also depend on the above factors. These checks should be done as often as *monthly* or no less frequently than *annually*. Handout B, *Suggested General Maintenance Checklists*, shows a list of maintenance issues to check for during these inspections. Specific to this training, the playground maintenance items are highlighted in yellow.



Basic Maintenance

Building Engineers and Custodians are expected to complete basic maintenance of the playground equipment. The following tools should be made available to your maintenance crew to complete basic repairs/checks:

- Applicable Maintenance Checklist
- Clipboard
- Pen
- Tape Measurer
- Shovel(s)
- Rake(s)
- Wheel barrow(s)
- Ladder (swings)
- Small hand tools
- Power Tools
- Personal protection safety equipment

Documentation

It is important that you and your maintenance crew adequately document your inspections and repair activities. Good documentation will demonstrate the level of reasonable care used to maintain a safe playground. Poor documentation may be held against you as an example of lack of care or concern for safety.

It is recommended that your safety inspection and maintenance documentation be maintained for a long period of time, even years after the equipment is replaced. Children have until the age of majority (2 years after they turn 18) to take formal legal action against a school. Keep the documentation on site during the current school year. Anything older can be moved to central location or archived electronically. You should review your school's records retention policies and how they address playground inspection and maintenance records.

Safety inspection and maintenance documentation should be reproduced and secured separately following the report of a severe playground injury. A severe playground injury is an injury that results in a fractured bone, dislocation of a joint, head injury or a laceration requiring stitches.

Administrators should record and maintain record of maintenance staff attendance and participation in playground safety training.



^{*} When the maintenance issue exceeds your crew's ability to make the repair or they are without the equipment needed, a work order should be generated.

Learning Objectives Review

After the Playground Surfacing series is completed administrators may use these questions as material review to evaluate what the participant's comprehension and understanding.

Playground Maintenance Material - Question and Answer Session

1. Why is it important to maintain playground equipment?

Answer: to reduce or illuminate injuries

2. Name two checklist options maintenance/custodians can use to help maintain playground?

Answers:

Manufacturer's Checklist General Maintenance Checklist

3. Why it is important to use manufacturers supplied checklist?

To ensure that inspections are in compliance

4. Who should do maintenance inspections?

Personnel familiar with the playground

Maintenance workers

Custodians

- 5. Open S hooks can catch a child clothing and present what type of hazard?Strangulation
- 6. To check and see if S-hook gaps are 0.04 what item can you use?

A dime

7. What types of inspections are done as preventative maintenance, which include maintaining surfacing, removing debris and issuing work orders for any repairs that are needed?



Answer: Low frequency

8. What types of inspections are done as routine or remedial maintenance? They are usually are conducted often and are done daily to weekly.

Answer: High frequency

Inspection Activity

You may use the attached handouts to walk your maintenance staff through example **high frequency** and **low frequency** inspections. The group should look for examples of the learning objectives and discuss their plan of action to remedy the condition and to document the action taken.

Training Specifications

The following sources were utilized in the development of this training program. These sources provide guidelines and/or standards applicable to playgrounds:

- U.S. Consumer Product Safety Commissions Pubic Playground Safety Handbook
- ASTM F 1487-Standard Consumer Safety Performance of Playground Equipment for Public Use
- ASTM F 1292- Standard Specifications for Impact Attenuation of Surfacing Systems Under and Around Playground Equipment
- ASTM F 2223-Standard Guild on Playground Surfacing
- ASTM F 2075- Standard Specifications for Engineered Wood Fiber

Limits of Liability (Disclaimer)

The authors and publishers of this training (document) assume no risk or liability for incident arising from the application of this information in any way. This training (document) should not be construed as a substitute for ASTM Performance Standard U.S Consumer Safety Commissions Guideline or the Applicable play area safety coded and/or standard of the state or jurisdiction in which the training document is used.



Participant Handouts



Here is an example of a Manufacturer's Maintenance Handbook





Playground Maintenance Handbook



Playground Maintenance Checklist

Location:		Inspected By:	Date:	Time:
			•	
OK Not OK	Condition		Recommendat	ion/ Action Taken
	Survey area for dangerous t broken bottles and glass, na	9		
	Are there any trip hazards i	dentified?		
	Are large puddles forming a draining properly?	fter rain? Is the play area		
		per surfacing. Are there holes les starting to get loose and		
	How is the wood chip level? Does it need to be raked or provide fall attenuating pro			
	Are rubber tiles stick up or have they moved?			
	Inspect equipment for signs of stress or deterioration. Document with a photo and description.			
	Are all footers still intact and holding equipment firmly in the ground?			
	Are all "S" hooks closed?			
	Are there missing caps or poment?	lugs in slides or other equip-		
	Look for any sharp points, riorating equipment is.	especially where rusted or dete-		
		pment that may have moved ning between 3.5" and 9" that nent.		



Playground Maintenance Checklist

Location:			Inspected By:	Date	:	Time:
	ı	Γ		•		
ОК	Not OK	Condition		Recom	mendatio	n/ Action Taken
		Inspect equipment for prot more than two threads sho				
		Inspect equipment for smawhere a shoe string, or swe lodged.				
		Look for equipment that is inappropriate for the age group intended to use it, such as tall overhead climbers for ages 2-5 or open railings on decks over 4'.				
		Are there any splinters, cracks, or rot in wooden equipment?				
		Is there any rust and deterioration of metal equipment?				
		Are there for cracks in plastic equipment?				
		Are there any loose hardware that could be tightened?				
		Is there a safety sign or safety stickers on the play structure letting parents and guardians know what ages should use the equipment?				



When choosing equipment for your play environment we chose equipment with the expectation that the equipment will not only last for 15 years but that the equipment is meant to function for generations.

General recommendations for maintenance inspections for Berliner Products:

For the documentation of potential damages or for the determination of necessary spare parts it is recommendable to shoot photos and/or to make sketches that help to identify the exact position of the damaged elements in the play structure or that show clearly the dimensions.

1. Visual routine inspection:

According to standard EN 1176-7 the condition of the play structure must be determined through regular inspection. At the same time the soft fall material must be inspected and replenished if necessary. The amount of soft fall material required will depend on the structure. The frequency of the visual inspection will depend on the play activity and the season. We recommend weekly inspections.

2. Operational inspection and maintenance:

2.1. Frameworx® space framework. Check the stability of the framework. Try to vigorously shake the frame. If the framework is unstable or if single pipes are loose, retighten the pipe connections to the nodes (hollow aluminium balls). Furthermore check the paint work for possible corrosion initiation points. If required touch up(remove rust and coat with zinc dust paint). If the correct color is unknown, simply call our technical hot line and provide the identification-number (read off from the identification plate). They should be able to help you immediately.

Important note: All steel elements manufactured by us are powder coated with a zinc-epoxy- and a polyester powder in two layers. The high percentage of zinc in the first layer (70%) ensures optimal protection against corrosion as well as improved abrasion resistance. Moreover infiltration of rust

through the finish is prevented. Thus corrosion damage is always visible and is usually only an optical impairment.

Nodes (hollow aluminium balls):

Inspect the system nodes for external damage. Check the small hole at the underside of each ball (condensation water run-off) for permeability. Moreover ensure that the rubber cap in the assembly opening of each node is in place and plugged in properly. Check all screws and drill holes for

corrosion (if required remove rust and touch up with zinc dust paint; rusted screws should be replaced).





2.2. Condition of ropes and nets

Inspect all ropes for abrasion of the polyamide coating and for wire fractures. Replace any broken wires. Isolated abrasion of the Polyamide cover does not affect the safety of the part and does not impair the play function.

2.3. Peripherals:

Ensure that a suitable soft fall material is at the correct level and replenish if necessary. The amount of soft fall material required will depend on the structure. Impurities and dangerous sharp-edged objects must be removed from the soft fall area.

2.4. Determining the net tension

First make sure that each cloverleaf ring is in the correct position. The rings must be placed into the visible deflection points of the rope. Moreover it is important to make sure that no rope ends intersect before the balls. Two people are required to determine the tension of the net, irrespective of the type of model. The only tool required is a normal folding ruler.





Playground Inspection/ Maintenance and Repair Guidelines

D70041 Rev. A

The majority of playground injuries are the result of falls from the equipment to the surface below.

- 1. Never use concrete, asphalt, grass or compacted earth beneath and/or surrounding playground equipment. Always use a resilient, energy-absorbing material. The more resilient it is, the less likely an injury to the user who falls from the equipment.
- 2. The minimum dimensions of the use zone around each play apparatus (except swings and slide exits) is six (6) feet in each direction.
- 3. Swings' use zones must extend at least two (2) times the pivot height to both the front and rear of the top rail. The use zone must extend at least six (6) feet out at each end from the swing frame legs.
- 4. For the area in front of the slide exit measuring from the point where the slide slope is reduced to five (5) degrees, the use zone must extend a total of four (4) feet plus the height of the platform.

The buyer / owner is responsible for maintenance of the equipment they have purchased.

- 1. A good preventive maintenance schedule can reduce accidents on playgrounds.
- 2. Inspect your playgrounds and playground equipment on a regular, scheduled basis.
- 3. Check your playground(s) for hazardous conditions. Equipment should be inspected for such things as loose or protruding bolts, missing hardware, damaged seats, open "S" hooks or chains, wear of chains, broken parts and splintering of wood surfaces.
- 4. All debris and litter including broken glass, stones, bottles, cans, etc. should be removed.
- 5. Loose-fill safety surfacing requires periodic raking to retain resilience in high use areas.
- 6. Playgrounds should be supervised at all times when children are present.
- 7. Playground supervisors should not allow children to use equipment incorrectly (i.e. running up slides, climbing on top of horizontal ladders or hand ring bridges, jumping out of swings, etc.)
- 8. Playground equipment should be installed to allow for safe transition between play apparatus.
- 9. Playground equipment should always be installed according to the manufacturer's specifications.
- 10. A regular playground inspection schedule can be established equal to the use and location factors of the park or playground. Certain playgrounds could require daily inspections, others may require only weekly inspections.

ayground Inspection / Maintenance & Repair



The time interval and choice of maintenance methods depend on the location of the equipment and the amount of usage.

Surfaces with fairly little mechanical damage and a film-coating that is otherwise intact are repaired using method A) a transparent stain. Surfaces with extensive damage to the film coating are repaired using method B) a solid color (pigmented).

A. Transparent wood stain.

Do not work in direct sunlight or at temperatures below +50°F.

- 1. Clean the old surface or damaged area thoroughly with pre-paint cleaner. Rinse carefully with water. Clean between the boards wherever necessary so that moisture run-off works properly.
- 2. Let the surface dry until the moisture content is not above 18%.
- 3. Scrape or sand the damaged (black) areas to remove loose paint and then apply two coats of oil primer. Or treat the entire surface. Let it dry between applications.
- 4. Leave to dry for at least 4 hours at a temperature of +50°F or above.
- 5. Apply two coats of wood stain to the damaged areas or until the correct color is achieved. It may be necessary to apply a final coat to the entire surface. Let it dry between applications.
- 6. Leave to dry for at least 4 hours at a temperature of +50°F or above.
- B. Solid color wood stain.

Do not work in direct sunlight or at temperatures below +50°F.

- 1. Clean the old surface or damaged area thoroughly with pre-paint cleaner. Rinse carefully with water.
- Clean between the boards wherever necessary so that moisture run-off works properly.
- 2. Let the surface dry until the moisture content is not above 18%.
- 3. Scrape or sand the damaged (black) areas to remove loose paint and then apply two coats of oil primer. Or treat the entire surface. Let it dry between applications.
- 4. Leave to dry for at least 4 hours at a temperature of +50°F or above.
- 5. Apply two coats of solid color wood stain to the damaged areas. It may be necessary to apply a final coat to the entire surface. Let it dry between applications.
- 6. Leave to dry for at least 4 hours at a temperature of +50°F or above. Although the pigments of our solid color wood stains have been specially developed to match our transparent wood stain shades, slight differences may arise, as it is technically impossible to guarantee a 100% match at all times. Wood stains for maintenance work.

Maintenance wood stains are available from HAGS – oil primer (colorless) HAGS R353 340 in 5-litre cans and required colors in 0.75 l cans. Touch-up paint can also be ordered. Please contact your HAGS representative for more information!

Improving powder coated steel components.



UPC: Strength and Maintenance

The solid structure and weight of PFC products ensures they are long lasting and easy to maintain. Maintenance and care are similar to what is needed for concrete picnic tables. Graffiti is simply cleaned with pressure washing and impact vandalism is easily smoothed over and re-stained. The single mold pour production means that very few products have seams. Seams are where most maintenance issues occur and over time, can increase maintenance costs.



What is Polyfibercrete?

Polyfibercrete or PFC is a specially formulated concrete mix that is ideal for creating products like playground boulders, logs or critters. The two types of synthetic fiber used in PFC add structural integrity, and increases shear and tensile strength. When needed, rebar is added to reinforce larger products.

PFC has more portland cement than regular concrete. As it dries, this 'hot' mix concrete produces micro-cracks that enhance the natural look, but do not affect the structural integrity or longevity of the PFC. After the PFC has dried, a light sandblasting gets rid of any sharp or abrasive edges and exposes small air bubbles to offer tiny fingers quality hand holds.



Versatility

Crafting playground products with PFC is easy. PFC is poured directly into a single mold. Color is added to the PFC mix before pouring, so a product has the same shade throughout. A light stain and surface color can be added during the final production stages to match colors of your native rock formations.

The production process also allows us to be creative with our designs – from really big caves to tunnel mountains to easy-to-climb cracks and fissures. Our boulders are not your average square block climbers. This simple manufacturing process means lower production costs, which are passed on to our customers.





Follow Up

For Parts and Equipment Please Contact Us:

Miracle Playsystems P.O. Box 263 Alamo, CA 94507 Phone # (800)879-7730 Fax # (510)893-2163



Inspection Frequency Form

Playground Name/ID Number					
Form Completed By	Date				

Factors	Possible Points	Points Given
A. Use Factors		
1. Vandalism (Abuse)		
High	10	
Moderate	5	
Low	2	
2. Use Level (Community Use, Litter, etc.)		
High	10	
Moderate	5	
Low	2	
3. Age Design		
Preschool age (2-5 years)	2	
School age (6-12 years)	4	
All ages (2-12 years)	10	
Use Factors Total	30	
B. Materials		
1. Resilient Surfacing		
Loose Materials	12	
Synthetic Material	2	
2. Material (Major Components)		
Wood, Painted Steel	4	
Stabilized Plastics, Aluminum, Gal. Steel	2	
Stainless Steel	0	
3. Equipment		
Moving (swing, spin around, spring rider, etc.)	6	
Static (Non-moving climbers)	2	
Both	6	

Factors	Possible Points	Points Given
B. Materials (contd.)		
4. Age of Equipment		
1-2 years old	0	
3-4 years old	3	
5-9 years old	6	
10-14 years old	9	
15 years old and over	12	
Materials Factors Total	34	
C. Environmental Factors		
1. Acid Soils/Rain/pH		
None (6-9)	0	
Moderate (10, 11, 4, 5)	4	
High (Acid 1-3, Basic 12-14)	8	
2. Salt Air (Coastal Exposure)		
None	0	
Moderate	4	
High	8	
3. Sun Exposure		
None	0	
Moderate	4	
High	8	
4. Drainage		
Functioning underground drainage system	0	
Moist Surface	4	
Seasonal Flooding	8	
Routine Standing Water	12	
Environmental Factors Total	36	
Total Points for Site	100	

IMPORTANT: This information has been prepared to assist the playground owner's attorney in defending potential litigation. DO NOT release to any person except an owner's official or desinated claim representative or an investigating police officer.

Reset Form
Print Form
Save Form

Inspection Frequency Summary Form for All Owner's Sites

Key to Inspection Frequency Chart					
Points	High Frequency Inspections	Low Frequency Inspections			
71 or more	2 or more times per week	2-3 times per month			
56-70	Weekly	Monthly			
41-55	Biweekly	Bimonthly			
40 and below	Monthly	Seasonal			

Once the Inspection Frequency Form has been completed for each playground site, the results can be transferred to the blank Inspection Frequency Summary Form (Appendix A) so that all sites can be evaluated collectively. The total points for each site can then be compared to the key to Inspection Frequency Chart (above), which will assist in determining the most appropriate High and Low Frequency Inspection schedule.

Local conditions may include other factors and in some cases affect seasonal adjustments to the schedule. The owner/operator's local knowledge and experience is the best guide.

Inspection Frequency Summary Form (Sample)

	Factors Evaluated					
Playground Site Name	Use Factors	Material	Environmental	Points Given	High Freq. Inspection	Low Freq. Inspection
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

Handout A

	Routine Inspection and Maintenance Issues			
	☐ Broken equipment such as loose bolts, missing end caps, cracks, etc.			
	☐ Broken glass & other trash			
	☐ Cracks in plastics			
	□ Loose anchoring			
	☐ Hazardous or dangerous debris			
	□ Insect damage			
	☐ Problems with surfacing			
	☐ Displaced loose-fill surfacing (see Section 4.3)			
	☐ Holes, flakes, and/or buckling of unitary surfacing			
	☐ User modifications (such as ropes tied to parts or equipment rearranged)			
	□ <mark>Vandalism</mark>			
	□ Worn, loose, damaged, or missing parts			
	□ Wood splitting			
	□ Rusted or corroded metals			
	□ Rot			
	□ Drainage			
	otes:			
Da	ate: Inspected By:			

Source: Handbook for Public Playground Safety



SUGGESTED GENERAL MAINTENANCE CHECKLISTS

Surfacing (§2.4)	Security of Hardware (§2.5)
Adequate protective surfacing under and around the equipment.	There are no loose fastening devices or worn connections.
Install/replace surfacing	Replacefasteners
Surfacing materials have not deteriorated.	Other maintenance:
Replace surfacing	Moving parts, such as swing hangers, merry-go-
Other maintenance:	round bearings, and track rides, are not worn.
Loose-fill surfacing materials have no foreign objects or debris.	☐ Replace part ☐ Other maintenance:
Remove trash and debris	Durability of Equipment (§2.5)
Loose-fill surfacing materials are not compacted.	
Rake and fluff surfacing	There are no rust, rot, cracks, or splinters on any equipment (check carefully where it comes in con-
Loose-fill surfacing materials have not been displaced under heavy use areas such as under swings or at slide exits. Rake and fluff surfacing	tact with the ground). There are no broken or missing components on the equipment (e.g., handrails, guardrails, protective barriers, steps, or rungs).
Drainage (§2.4)	There are no damaged fences, benches, or signs on the playground.
The entire play area has satisfactory drainage, especially in heavy use areas such as under swings and at slide exits.	All equipment is securely anchored. Leaded Paint (§2.5.4)
☐ Improve drainage	Paint (especially lead paint) is not peeling, cracking,
Other maintenance:	chipping, or chalking.
General Hazards	There are no areas of visible leaded paint chips or
	accumulation of lead dust.
There are no sharp points, corners or edges on the equipment (§3.4).	Mitigate lead paint hazards
There are no missing or damaged protective caps or	General Upkeep of Playgrounds (§4)
plugs (§3.4). There are no hazardous protrusions (§3.2 and Appendix B).	There are no user modifications to the equipment, such as strings and ropes tied to equipment, swings looped over top rails, etc.
There are no potential clothing entanglement hazards, such as open S-hooks or protruding bolts	☐ Remove string or rope
(§2.5.2, §3.2, §5.3.8.1 and Appendix B).	☐ Correct other modification
There are no crush and shearing points on exposed moving parts (§3.1).	The entire playground is free from debris or litter such as tree branches, soda cans, bottles, glass, etc.
There are no trip hazards, such as exposed footings	☐ Clean playground
or anchoring devices and rocks, roots, or any other obstacles in a use zone (§3.6).	☐ There are no missing trash receptacles.
<u>obstacles III a use zone</u> (35.0).	☐ Replace trash receptacle
	☐ Trash receptacles are not full.
NOTES:	☐ Empty trash
DATE OF INSPECTION:	INSPECTION BY:

Source: Handbook for Public Playground Safe

