

Facility Maintenance

Playground Maintenance Workshop

Functions & Priorities of Playground Maintenance

1. *Safety* First Priority!
2. *Utility* Ensure everything works
3. *Economy* Maximize the investment
4. *Life Cycle* Plan timely replacement

Categories of Playground Maintenance

- **Preventive Maintenance**
(scheduled, periodic)
- **Routine Maintenance**
(scheduled, frequent)
- **Repairs**
(unscheduled, as needed)



Frequency of Maintenance

Preventative Maintenance

The need forecast by . . .

- Visual Indicators
(measurement, missing part, broken or bent part, discoloration, etc.)
- Audio Indicators
(squeaking, grinding, rattling, knocking, etc.)
- Structural Indicators
(rot, rust, brittle, wear, wobble, abnormal movement, etc.)

Frequency of Maintenance

Routine Maintenance

The need forecast by . . .

- Materials
- Agency policy
- Type & age of equipment
- Surfacing type & material



Repair Priorities on the Playground

Factors: Safety & Utility

1. Noncompliant *and* dysfunctional condition
2. Noncompliant *but* functional condition
3. Dysfunctional *but* compliant condition
4. Functional *and* compliant condition

Repair Priorities on the Playground

Contamination of equipment or surfacing

- Chemical Toxins
pesticides, fuels, solvents (Arsenic Leachite), heavy metals (lead), etc.
- Sanitary Toxins
human or animal defecation, body fluids, food or beverage spills, etc.

Hazardous debris or litter

tramp metal, glass, sharp objects, slipperiness, etc.

Presence of vectors, parasites, noxious plants and other pests

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metals (lead), etc.

Chromated Copper Arsenate (CCA), Creosote,
Petachlorophenol, Tributyl Tin Oxide

Should not be used for wooden playgrounds

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Removing Burnt Play Equipment

- Polyvinyl Chloride (PVC) coating is the culprit
- Highly toxic Dioxin & Polychlorinated Biphenyls (PCB's) formed when PVC is burned
- Creates carcinogenic ash



Removing Burnt Play Equipment

- Identify existing playgrounds which contain PVC
- Preplan response with Health, Fire, & Maintenance Departments (including disposal of burnt material & contaminated soil)
- Train & Equipment Maintenance Crew (protective clothing, gloves, particle masks, etc.)



Cleaning & Sanitizing Play Equipment

- STUDIES: #1 Contaminated surface; 44% tested positive for urine, feces, mucus, saliva, & other blood-borne pathogens
- PRODUCTS: Non-corrosive, non-toxic, environmentally-friendly products. Antimicrobial properties. 5.25% Chlorine bleach solution (?)
- PROCESS: Disinfect (spray), clean (scrub), rinse (pressure wash?), polish (optional)
- OTHER: Frequency, clean inside & out, sand (play element)



Playground Winter Maintenance

- Check for loose hardware – plastic components contract (shrink) in cold temperatures
- If the protective surfacing retains moisture, it will freeze when temperatures drop below the freezing mark. If surfacing is frozen, *the play area should be closed.*
- Inspect the metal stakes used to secure containment barriers. Frost may have shifted soil upwards and exposed the stakes, creating tripping, or other, hazards.



Planning for Playground Maintenance

- Describe the ideal condition
- Know the indicators of degradation at early, moderate, and advanced stages
- For each item, know its specific common problematic conditions & consequences if uncorrected

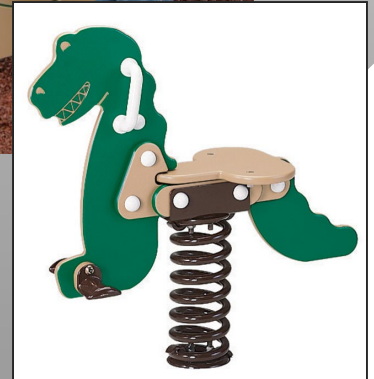
Planning for Playground Maintenance

- Describe maintenance required for each item at each maintenance level
(Basic/Minimal, Intermediate, Highest)
- Identify needed tools, supplies, & equipment
- Describe maintenance procedures sequentially



Maintaining Play Equipment Materials: Plastic

- Check for cracks, holes, and burns
- Damaged parts should be repaired or replaced
- Plastic panels: scratches can be burnished away with a clean, blunt instrument



Tip: Purchase all replacement parts from the Original Equipment Manufacturer (OEM)

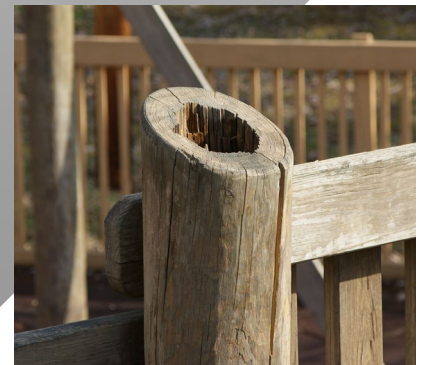
Maintaining Play Equipment Materials: Plastic

- Poly Parts (slides, tires, etc.): Scratches can be sanded or burnished away with a clean, blunt instrument. Burnish until they "melt together". More significant repairs are not economically feasible.
- Polycarbonate Parts (windows, bubbles):
Cleaning - Use glass cleaner spray for cleaning. No abrasives. *Repair* - Sharp corners from scratches can be burnished away with a clean, blunt instrument.



Maintaining Play Equipment Materials: Wood

- Check for cracks, severe checking, splinters
- Splinters – remove, smooth the area, fill with caulk if necessary
- Warping or rot – check integrity of wood and its anchoring point
- Particular attention to where wood intersects the protective surfacing and footers



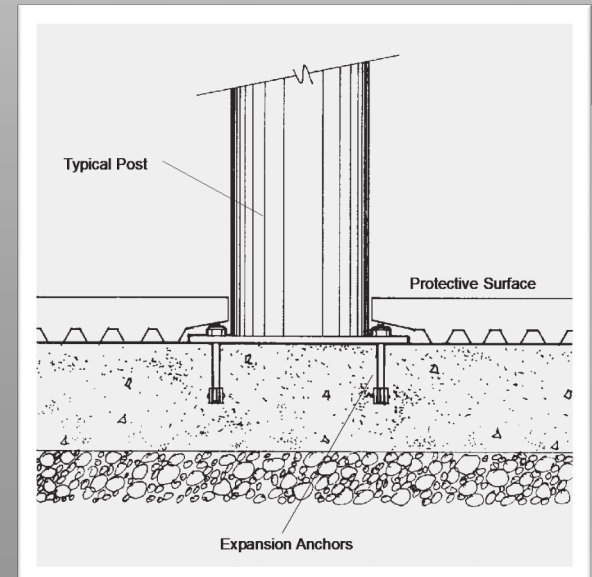
Maintaining Play Equipment Materials: Metal

- All metal parts should be free from rust & chipping paint
- Replace posts if severely damaged or pitted with rust (area at top of the footing is most vulnerable)
- Posts must be plumb
- Replace beams or clamps if any cracks are found in the welds. Replace if deformed or pitted with rust.



Maintaining Play Equipment Materials: Metal

- Pipe caps required on all ends of tubing: Replace cap if missing or damaged beyond repair.
- Make sure cap attachment rivets are secure.
- Surface-mounted post: Shake structure, if loose remove surfacing to repair. A larger anchor may be necessary or grout around existing anchor. If problem persists, remove enough concrete to install "L" shaped anchor bolts in new concrete.



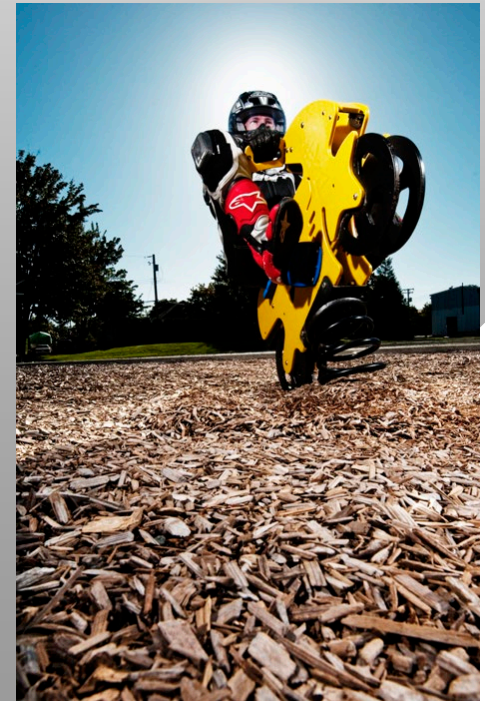
Maintaining Play Equipment Materials: Structural Elements

- Concrete Footings: Replace footing if it cracked or not tight around post or subsoil. (Shovel away protective surfacing and part of subsoil to inspect.) Add protective surfacing if footing is not covered with appropriate depth of material.
- Concrete footings and other anchoring devices should be installed beneath the full depth of safety surfacing.



Maintaining Play Equipment Materials: Structural & Gripping Elements

- Structural members should be sound and securely fastened (upright supports, horizontal beams, platforms)
- Coil springs and other types of rockers – heavy use. May crack, wear out, or become loose (check points of attachment – footing and body of the spring rider)
- Handhold/grips should be tight, in good condition, and not rotate



Maintaining Play Equipment Materials: Stepping Components

- Stepping surfaces should be level and stable/secure (steps, platforms, rung ladders, climbers, stepping forms, balance beams, etc.)
- All stepping surfaces should be clean, free of debris, and drain well
- All foot rungs/holds are tight, secure, and in good condition



Maintaining Play Equipment Materials: Fasteners & Connectors

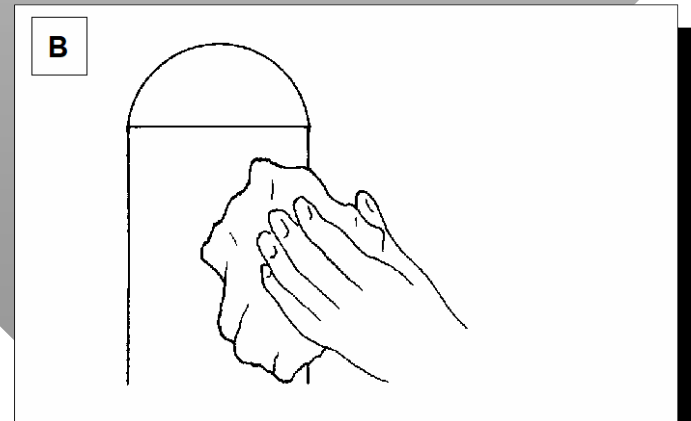
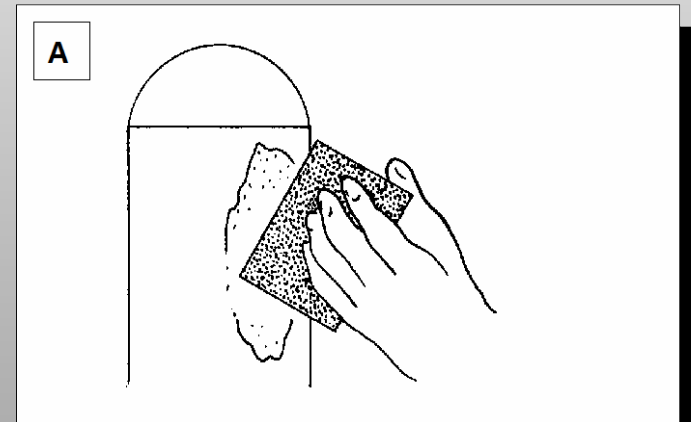
- Tighten attachment fasteners/fully engaged
- Replace if missing, cracked, deformed, or broken
- Turnbuckles are engaged and properly adjusted
- Cables/ropes are securely anchored and not unraveled



Maintaining Play Equipment Materials: Coatings

Powder Coating:

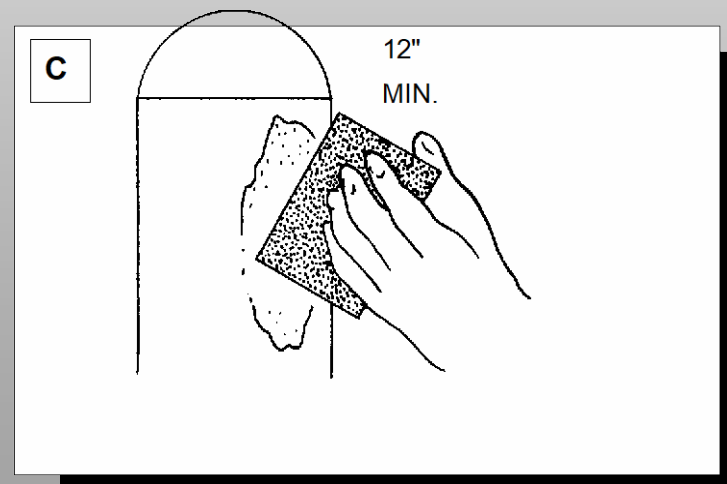
- A. With emery cloth sand area to be repaired until all rust is removed. Be sure to rough and feather edges of surrounding powder-coated area with 400 grit sandpaper until smooth.
- B. To help assure best results be sure areas to be painted are clean & dry. This can be accomplished by using a cloth dampened with rubbing (isopropyl) alcohol or water.



Maintaining Play Equipment Materials: Coatings

Powder Coating:

- C. Protect adjacent areas from overspray, if necessary. Apply a minimum of 3 light coats of primer. Allow to dry 'to the touch' between coats. Lightly sand with 400 grit sandpaper, then wipe with clean cloth. Use same method to apply a minimum of 3 light coats of paint.



NOTE: Be sure to hold spray can 12" - 14" from surface.

Be sure to allow areas to dry 3 to 4 hours before use.
(Drying time will vary)

Maintaining Play Equipment Materials: Coatings

Deck Coating, cleaning:

- Deck coating, cleaning: Apply “Graffiti Cleaner” or other suitable cleaner to affected area.
- Heavy stains may need to be removed mechanically first (scrape with a knife or sandpaper).
- Seal the affected area with “Clear Guard” by Turtle Wax or “Armor All” by Armor All.
- Buff the area until the colors blend.



Maintaining Play Equipment Materials: Coatings

Deck Coating, repair:

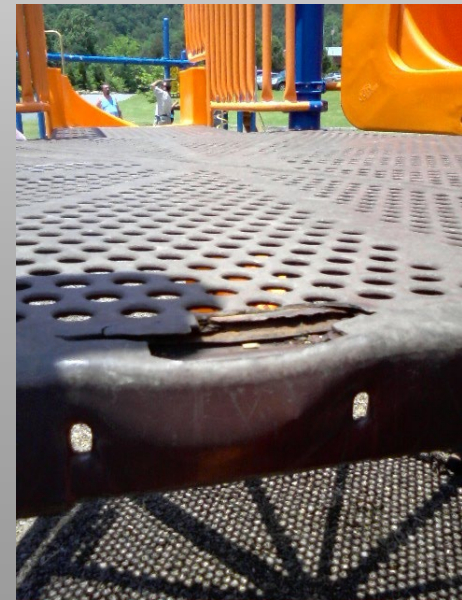
- PVC patch kit required – recommended to repair/replace worn, damaged, or vandalized areas of PVC-coating.
- The temperature range for application is between 40° & 90°F. It should be applied on a dry day.



Maintaining Play Equipment Materials: Coatings

Deck Coating, repair:

- Clean surface, remove surface corrosion of steel with light sanding. Trim flat with PVC coated surface using a razor blade or knife. Apply enough patch to cover bare metal or gouged surface. Spread patch evenly with wet (water) finger, plastic, or knife.
- Patch will dry to touch in approximately 15-30 minutes depending on size of area. (During this time, it is advisable to keep the area restricted from users.)
- Patch may shrink, apply second coat if needed. Clean-up with rag or paper towel.



Maintaining Playground Equipment: 3-D Net Climbers

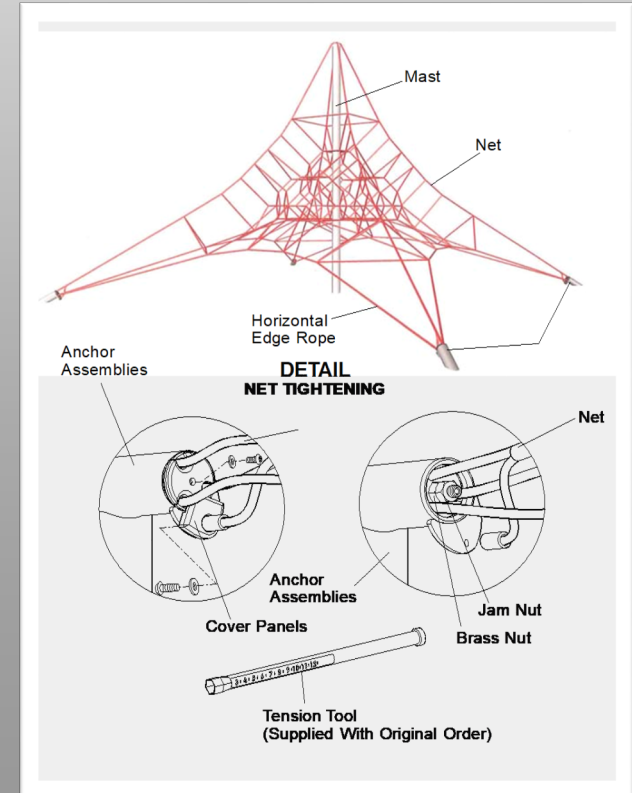
- Replace net if cables are cut or severely damaged
- Cover Panels: Replace if cracked, embrittled, or seriously discolored. Scratches can be burnished away with a clean, blunt instrument.
- Mast: Replace if deformed, or severely pitted with corrosion.
- Anchor Assemblies: Replace if deformed, or severely pitted with corrosion.



Maintaining Playground Equipment: 3-D Net Climbers

Tension of the Net – as a rule of thumb for proper tension of net, proceed as follows:

- Stand on the lower horizontal rope. If the rope displaces more than 1" you will need to tighten the ropes.
- Remove the cover panels. Remove brass jam nut, then use tension tool to tighten net. Make sure net is evenly tensioned.
- Reinstall brass jam nut onto threaded rod, then reattach cover panel.



Maintaining Playground Equipment: Slides

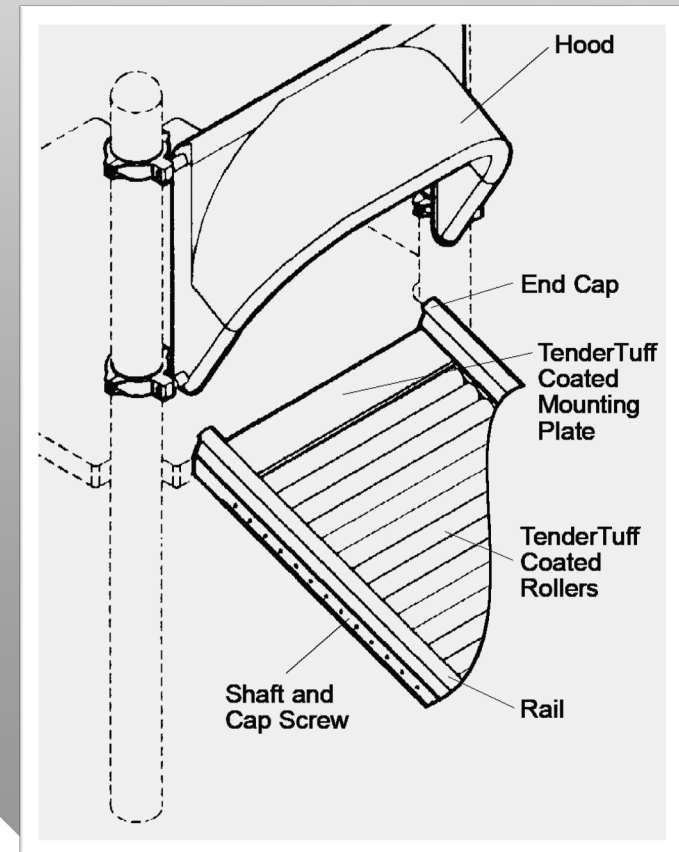
Slide chutes & sidewalls should be smooth & free from debris. Also, check for:

- Gaps between slide chute & deck, between slide sections, & at sidewall
- Excessive wear
- Material degradation



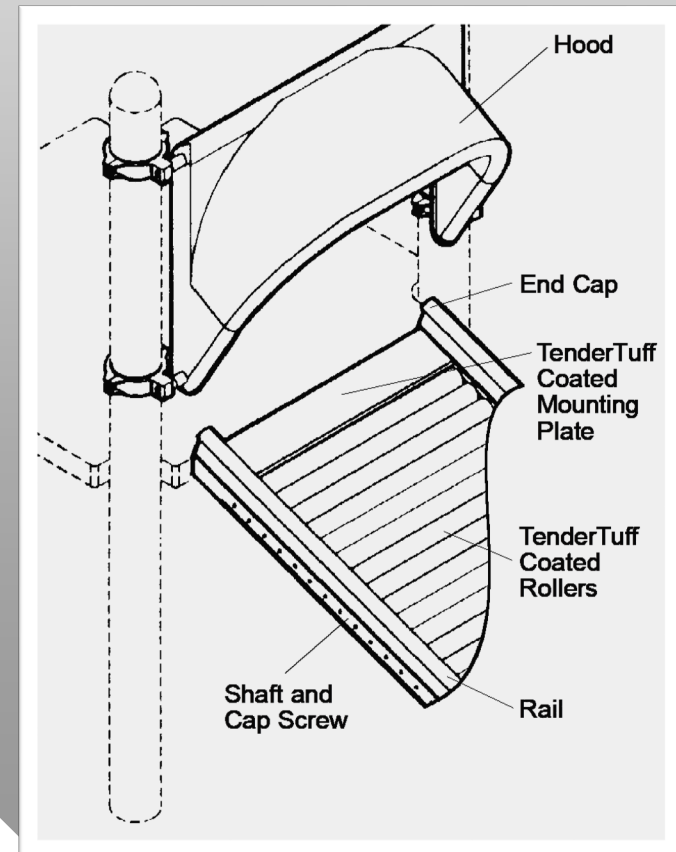
Maintaining Playground Equipment: Roller Slides

- Mounting Plate: Replace if deformed or severely pitted from rust.
- Rollers: Replace roller if it doesn't roll freely on bearings/shaft or if deformed or PVC coating is missing.
- Shafts: Replace if rusted. Shaft and screw must not turn with roller.



Maintaining Playground Equipment: Roller Slides

- Rails: Replace if cracked or deformed, or if screws have turned and elongated the holes by more than 1/8".
- Base Supports: Replace if deformed or severely pitted from rust.
- Hood (Poly): Replace if cracked, brittle, or seriously discolored.



Maintaining Playground Equipment: Swings

Chains:

- Check that swing chains or cable are not twisted and are free from excessive wear (check links top to bottom for kinks, paying special attention to the links at the top of the chain and at the swing seat connection)
- Unwrap swing chains wrapped around the top rail of the swing structure, checking for deep wear



Tip: Only purchase swing chain from a playground equipment manufacturer (different hardness ratings)

Maintaining Playground Equipment: Swings



"S" Hooks:

- Check "S" Hooks and other types of fasteners for wear and make certain that they are closed (maximum opening of .04")
- Never reuse an "S" Hook (once it has been closed and re-opened, its strength has been compromised)
- Never weld an "S" hook

Tip: Only purchase "S" hooks from a playground equipment manufacturer (different qualities of steel)

Maintaining Playground Equipment: Swings

Swing Hangers:

Check that . . .

- Swing hangers are free from wear
- Bushings are lubricated and in good condition
- Swing hangers are securely fastened to the top rail (not spin or rotate around the top rail, unless designed to do so)



Maintaining Playground Equipment: Swings

Swing Seats:

- Check that swings seats are smooth, in good condition, and free from cuts, tears, cracks, or wear.
- Check for exposed metal edges (tot and belt swings) or steel belts (tire swings).
- Check condition of tire swing where the hardware comes through, to make certain the rubber or plastic is not cracking.



Maintaining Playground Equipment: Merry-Go-Rounds

- Periodically check event for structural integrity, all hardware is tight, bearings are not worn
- Check for oscillating (wobbling) and/or grinding or clicking sounds
- Periodically lubricate event with multi-purpose grease
- Touch-up any marred or damaged surface



Maintaining Playground Equipment: Other Motion Apparatus

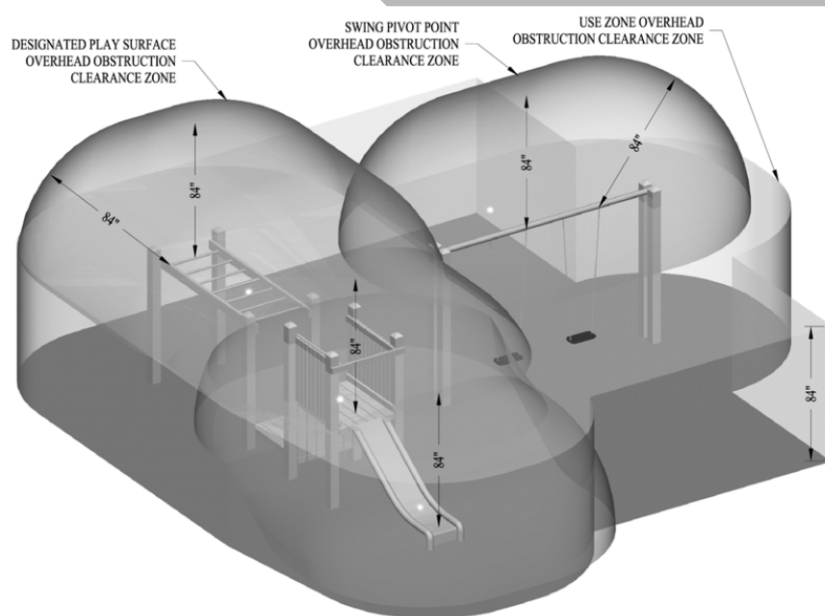
Spring riders, seesaws, track rides, ring treks, trapeze ladders, upright twirling components, backhoe diggers, steering wheels, chain net climbers, spinning seats, play panels with moving assemblies, suspension bridges, pogo-type bouncers

- Check for good condition, secure, and lubricate (grease, lubricated during inspection)
- Check frequently at concrete footing or other anchor/attachment point



General Playground Concerns: Overhead Obstructions

Remove any overhead obstructions that are not part of the play structure (for example, tree limbs) within 84" of each designated play surface, use zone, or above the pivot point of swings.



General Playground Concerns: Suspended Hazards

Check for a single cable, wire, rope, etc. that is suspended between play units or from the ground to a play unit within 45° of horizontal and less than 84" from the playground surface.

Missing bottom chain creates a "clothesline" effect



General Playground Concerns: Things Added by Users

Check for and remove . . .

- Materials attached to play equipment, such as jump rope or similar (strangulation hazard)
- Items of malicious intent
- “Stuff” from hiding places



Practical Tips



Practical Tips

- Outfit the Truck (carry commonly needed playground parts and tools, broom, garden rake, etc.)
- Provide trash receptacles at playground entrance/exit & at benches (empty frequently)
- Remove graffiti immediately (multiples rapidly if left unattended)
- Mowing (discharge away from playground, do not mow when playground is in use)



Placing a Playground “Out of Service”

- Temporary Safety Fencing (T-posts with plastic fencing, outside safety zone; use of yellow “caution/police” tape limited to during repair only)
- Warning Signs – Commercially Available or Handmade (Danger-Keep Out, Playground Equipment Under Repair, etc.)
- Remove Dangerous Equipment Immediately – Provide Temporary Barrier (ex: spare barrier panel, sheet of marine-grade plywood)
- Ground-Mounted Equipment (don’t leave exposed bolts, tripping hazard)

Placing a Playground “Out of Service”

Yellow caution tape – the only viable use is while the equipment is being repaired



Placing a Playground “Out of Service”

Temporary, short-term fencing solution

* Should be used in conjunction with a warning sign



Placing a Playground “Out of Service”

Chain-link construction fence provides a medium-term temporary barrier

* Should be used in conjunction with a warning sign



Placing a Playground “Out of Service”

Sample warning sign

* A warning sign should be used in conjunction with any temporary playground barrier fencing

WARNING

***PLAYGROUND IS CLOSED
PLEASE KEEP OUT!***

**This playground is under repair and is
unsafe for playing. Serious injury may result!**

**Repairs should be completed by
August 15, 2011**

**Please call (630) 555-8612 for
additional information.**

ELMHURST PARK DISTRICT

Facility Maintenance

Question and Answers