



CLEVELAND METROPARKS

DEPARTMENT OF PARK OPERATIONS

OPERATIONAL STANDARDS

OCTOBER 2003



CLEVELAND METROPARKS

DEPARTMENT OF PARK OPERATIONS

OPERATIONAL STANDARDS

CONTENTS

1. Turf Standards
2. Litter Standards
3. Road and APT Berming Standards
4. Road and Parking Lot Standards
5. Restroom Cleaning Standards
6. Planter and Landscape Bed Standards
7. Trail Standards
8. Tree/Shrub Planting and Aftercare Standards
9. Picnic Area Standards
10. Shelter and Reservable Tent Preparation and Cleaning Standards
11. Building and Facilities Standards
12. Swimming Facility Standards
13. Baseball Field Standards

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|---------------------|--|--|
| • <i>Appendix A</i> | <i>Cleveland Metroparks</i> | <i>Ice/Snow Removal Policy (10/11/02)</i> |
| • <i>Appendix B</i> | <i>Cleveland Metroparks</i> | <i>Annual Bridge Management Tasks (10/09/03)</i> |
| • <i>Appendix C</i> | <i>U.S. Consumer Product
Safety Commission</i> | <i>Handbook for Public Playground Safety
(Pub. No. 325)</i> |
| • <i>Appendix D</i> | <i>Cleveland Metroparks</i> | <i>Vegetative Maintenance Guidelines (7/29/96
and 6/25/02)</i> |
| • <i>Appendix E</i> | <i>Cleveland Metroparks</i> | <i>Visual Communications Standard Sign Reference
Manual (Source Book – March 2000)</i> |
| • <i>Appendix F</i> | <i>Cleveland Metroparks</i> | <i>Basic Tree/Shrub Planting and Aftercare
Procedures (April 2003)</i> |



CLEVELAND METROPARKS

OPERATIONAL STANDARDS

**Cleveland Metroparks
Department of Park Operations
Turf Standards**

Commitment

Cleveland Metroparks Department of Park Operations is committed to managing turf areas in conjunction with the *Vegetative Maintenance Guidelines* (Appendix D). Turf areas will be managed, with the environment in mind, in order to: prolong the life of improvements, for access and activity, for fire control, for safety/site line, for vistas, and for flora and fauna habitat management.

Operational Standards

- Intersections will be cleared so that motorists positioned at the stop bar can see 100' in either direction.
- Turf that requires cutting in flora and fauna management areas will be cut according to the reservation's vegetative management plan.
- Roadside will be cut in an undulating fashion to the established mowing limits.
- Ball fields, managed turf areas and picnic areas will be fertilized and limed, based on soil analysis and minimum turf requirements.
- Leaves will be managed to prevent accumulation on turf that would adversely impact public use areas.
- Ball fields will be cut to a height of 2 ½" prior to the turf attaining a height of 3 ½".
- Lawn areas will be cut to a height of 3" prior to the turf attaining a height of 4".
- Roadsides and picnic areas will be cut to a height of 3" prior to the turf attaining a height of 6".
- The turf in the area from road edge to a point 2' beyond the opposite side of fence lines, guardrails and guard posts will be managed at a height not to exceed 8".
- Trimming will take place around mowing obstacles prior to weeds attaining a height of 8".
- All ball fields and picnic areas will be aerated **bi-annually** during the **spring and fall**.
- Damaged turf areas will be repaired **upon discovery** during the growing season.

**Cleveland Metroparks
Department of Park Operations
Litter Standards**

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing parks that are clean and free of litter and other debris.

Operational Standards

- **General**
 - Litter will be picked up upon discovery.
 - Initial daily litter cycle will be scheduled so as to complete this task within 4 hours.
- **Buildings and facilities**
 - Litter will be picked up daily.
 - Trashcans will be emptied at a time when they become full or offensive in sight/smell.
- **Roadsides and all purpose trails**
 - Noticeable litter will be picked up daily from respective use areas.
- **Picnic areas and playfields**
 - Litter will be picked up daily.
 - Trashcans will be emptied at a time when they become full or offensive in sight/smell.
- **Hiking trails and bridle trails**
 - Litter will be picked up weekly when trails are not ice/snow covered.
 - Litter that is noticeable from the first loop trail around nature centers will be picked up daily.

**Cleveland Metroparks
Department of Park Operations
Road and APT Berming Standards**

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing high-quality roads and all purpose trails while prolonging the usability of their surfaces. Asphalt/concrete roads and all purpose trail edges within the Park District will be managed with a proper berm to allow for a safe transition on and off the respective surface, while directing the flow of water away and reducing edge cracking.

Roads

Operational Standards

- Pavement/concrete edge and berm edge will be maintained at less than 3".
- Berm width should be a minimum of 18".
- Berm material should be a #617 aggregate mix or approved aggregate mix that will bind together.
- Berms will be observed ***daily*** in conjunction with roadside litter pick up.
- When a difference in height from 1" to 3" exists, the berm edge will be corrected within ***30 days*** of inspection.
- When a height difference exceeds 3", the berm will be corrected ***within 5 working days*** of inspection.

APT

Operational Standards

- Pavement edge and berm edge will be maintained at less than 3".
- Berm width should have a 12" minimum and blend into surrounding area.
- Berm material should be topsoil mixture.
- Berms will be inspected ***1 time per month***.
- When a difference in height from 1" to 3" exists, the berm edge will be corrected within ***30 days*** of inspection.
- When a height difference exceeds 3", the berm edge will be corrected ***within 5 working days*** of inspection.

Cleveland Metroparks

Department of Park Operations

Road and Parking Lot Standards

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing high-quality roads and parking lots. Park District roads and parking lots will be constructed of diverse materials that are suitable for vehicular traffic, uniformly smooth, free of extreme bumps or holes, usable in all weather conditions, comply with ADA requirements, and are safe for appropriate usage.

Operational Standards

- Structures, equipment and/or other amenities will be installed and managed in accordance with the manufacturer's recommendations.
- The backs of metal signs and posts will be painted brown in accordance with Visual Communications.
- Traffic signs will be installed in accordance with *Visual Communications Standard Sign Reference Manual and ODOT's Uniform Traffic Manual* (Appendix E).
- All trimming or cutting of vegetation will comply with the *Vegetative Maintenance Guidelines* (Appendix D).
- **Road and parking lot surfaces**
 - Roads and parking lots will be inspected weekly and/or after a severe weather occurrence for safety, damage or mechanical concerns. Safety concerns will be repaired upon discovery.
 - All asphalt surfaces with cracks that are greater than ½" will be sealed annually.
- **Trees/shrubs**
 - Trees and shrubs within the fall zone of roads and parking lots will be inspected 1 time per month and/or after a severe weather occurrence by reservation staff.
- **Drainage structures (i.e., box culverts and pipe)**
 - Drainage structures will be assessed 1 time per year and/or after a severe weather occurrence for safety, damage and obstructions. Safety concerns will be repaired upon discovery. All other repairs will be completed within 2 weeks.
- **Pavement Markings**
 - Stop bars, Crossing, Directional Arrows and Parkway Edge line/Centerlines will be applied every 2 years.
 - Parking lot markings will be applied every 4 years.
- **Signage and delineators**
 - Signage and markers will be inspected daily for safety or damage concerns. All repairs will be made upon discovery.
- **Road berms**
 - Berms will be inspected and managed in accordance with the *Road and APT Berming Standards*.

Road and Parking Lot Standards

- **Bridges**
 - Bridges will be managed in compliance with the *Annual Bridge Management Tasks* (Appendix B).
- **Guardrails, fences and ballards**
 - Guardrails will be inspected 2 times per year for safety, damaged and structural integrity. Repairs will be made upon discovery.
- **Gates**
 - Gates will be inspected 1 time per month for safety, damage and proper function. Safety concerns will be repaired upon discovery. All other repairs will be completed within 2 weeks.
- **Ice/Snow**
 - Ice and Snow will be managed in compliance with *Cleveland Metroparks Ice/Snow Removal Policy* (Appendix A).

Cleveland Metroparks Department of Park Operations Restroom Cleaning Standards

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing safe, high-quality facilities and services. Park District restrooms will be consistently managed for cleanliness and good repair, with odors kept to a minimum.

Operational Standards

Level II cleaning will include the following:

- Remove all litter debris
- Disinfect and scrub all fixtures
- Remove any graffiti
- Replenish paper products

Level I cleaning will include the following:

- Remove all litter debris and cobwebs inside and outside of facility.
 - Spray and wet down fixtures with sanitizing agent to loosen debris when temperature conditions permit.
 - Scrub all fixtures.
 - Remove any graffiti.
 - Wash and disinfect floor.
 - Remove excess water and dry fixtures.
 - Clean mirrors.
 - Replenish paper products.
-
- All restrooms will receive a **Level II** cleaning/sanitizing **1 time per day or every 100 uses per fixture.**
 - All restrooms will receive a **Level I** cleaning/sanitizing **1 time every 7 days or every 300 uses per fixture.**
 - Sanitary conditions, which jeopardize safety and/or hygiene, will receive a **Level I** cleaning/sanitizing **upon discovery.**
 - Pit toilet will be pumped prior to obtaining 80% liquid level in the vault.

**Cleveland Metroparks
Department of Park Operations
Planter and Landscape Bed Standards**

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing high-quality planters and landscape bed areas to enhance the appearance of Park District buildings and entrances. The planters and beds will contain indigenous and/or naturalized small growth trees, shrubs and perennials that are vigorous while providing contrasting prolonged color.

Operational Standards

- Signs incorporated in planter/bed areas will be visually inspected 1 time per year for good repair and clarity of graphics. Damaged/vandalized signs will be removed/repaired upon discovery. All other repairs will be made within 1 month of discovery. Total sign replacements will be requested via Visual Communications.
- Trees/shrubs will be installed and cared for per the *Tree/Shrub Installation and Aftercare Standards*.
- During April of each year:
 - trim back dead perennials top to 1” above ground.
 - rake out matted debris, and begin replanting/supplemental planting of hardy perennials.
- During May of each year:
 - continue desired planting, carefully cultivate soil, thin out/transplant perennials, apply fertilizer, mulch and wildlife repellent if necessary.
- During June of each year:
 - continue desired plantings, pull weeds by hand, monitor soil moisture, and provide supplemental water and apply wildlife repellent if necessary.
- During July of each year:
 - pull weeds by hand, monitor soil moisture and provide supplemental water, pinch off dead flowers, apply liquid fertilizer one (1) time, and apply wildlife repellent if necessary.
- During August of each year:
 - pull weeds by hand, monitor soil moisture and provide supplemental water, pinch off dead flowers and apply wildlife repellent if necessary.
- During September of each year:
 - pull weeds by hand and monitor soil moisture and provide supplemental water. Divide perennials as necessary.
- During October/November of each year:
 - pull weeds by hand.
 - trim back dead perennials top to 1” above ground.

Cleveland Metroparks

Department of Park Operations

Trail Standards

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing a diversity of high-quality trails for passive recreation. Park District trails will consist of all purpose trails, ADA-compliant trails, maintained surface/aggregate trails, natural surface trails, fitness stations, and bridle trails. All trails will be developed, clearly marked, and managed to provide resource protection and visitor access, education and safety.

Operational Standards for APT

- Trees that fall across trails will be removed in a manner that minimally impacts the natural surroundings and has minimal visual impact.
 - Sections of trail that are attached directly to the road will have delineators positioned no less than 40' apart along the transition line. An 8" white paint edge line will parallel the parkway edge line. Bike symbols will also be incorporated on the trail surface at a minimum of 500' apart.
 - Berming will be in compliance with the *Road and APT Berming Standards*.
 - Ice and snow will be managed in accordance with *Cleveland Metroparks Ice/Snow Removal Policy* (Appendix A).
 - Trees/shrubs will be inspected/mitigated in accordance with Cleveland Metroparks *Vegetative Maintenance Guidelines*.
 - All-purpose trails will be visually inspected daily for safety, litter/debris, damage, structural or vandalism concerns.
 - Litter and debris that is *visible from the trail* will be picked up daily.
 - Trail surfaces will have debris removed 1 time per week (April – November), or after a severe weather occurrence, and as necessary to prevent leaves from accumulating on surface during the fall.
 - Bridges will be visually inspected and mitigated 1 time per year for safety concerns.
 - Trees/shrubs will be inspected and mitigated bi-weekly and/or after a severe weather occurrence by reservation staff.
 - Damage/failure of trail surfaces that impede travel will be repaired upon discovery. Trail surface damage/failure that does not impede travel will be repaired annually.
 - Pavement markings will be reapplied once every 3 years.
 - Trailhead kiosks, signage and delineators will be inspected and mitigated 1 time per week for safety, missing, damage or vandalism.
 - Drainage will be inspected and mitigated 1 time per year and/or after a severe weather occurrence for safety, damage and obstructions. Drainage will be managed so as to minimally impact the natural resources and to protect the trail.
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Operational Standards for ADA-Compliant

- All operational standards for all purpose trails are applicable.
- Paved trails will be constructed and managed in accordance with the ADA regulations and guidelines.

Operational Standards for Aggregate Surfaces

- Trail surface will be maintained at 6 feet 6 inches.
- Vegetation along trail corridors will be managed to provide a maximum width of 8 ½ feet clear of rigid vegetation, and maximum height of 10 feet.
- All trimming and cutting will be in accordance with professional arboriculture standards.
- Aggregate surface trails will be visually inspected 1 time per week (April – November), and 1 time per month (December – March) for safety, litter/debris, damage, structural or vandalism concerns.
- Litter/debris that *is visible from the trail* will be picked up 1 time per week (April – November), and 1 time per month (December – March).
- Bridges will be inspected and mitigated 1 time per year for safety concerns.
- Trees in a weakened condition, and likely to fall on the trail will be removed upon discovery.
- Damage to trail surfaces will be repaired within 2 weeks if it impedes travel. Surface damage that does not impede travel will be repaired annually.
- Trailhead kiosks and signage will be inspected and mitigated 1 time per month for safety, damage, missing signage, mechanical or vandalism concerns.
- Drainage will be inspected and mitigated 1 time per year or after a severe weather occurrence for safety, damage or obstructions. Drainage will be managed so as to minimally impact the natural resources and to protect the trail.
- The entrance of “Bootleg” trails will be blocked and educational signs erected within 1 month of discovery.

Operational Standards for Natural Surface

- Trees that fall across trails will be removed only if they prevent travel. If removal is necessary, it will be done in a manner to minimize adverse impact on natural resources and minimize visual impact.
- The width and/or height of trail corridors will be managed in a natural state.
- Drainage will be performed only to protect natural resources.
- Natural surface trails will be visually inspected 1 time per month (April – November) for safety, litter and vandalism concerns.
- Litter debris that is *noticeable from trail* will be picked up 1 time per month (April – November).
- The entrance of “Bootleg” trails will be blocked and educational signs erected within 1 month of discovery.

Operational Standards for Fitness Stations

- Circuit trail surface will vary between asphalt (APT) and compacted aggregate material.
- The sections of fitness circuit trail that utilize all-purpose trail will be managed in accordance with the *Operational Standards for APT*.
- Trees that fall across trail will be removed upon discovery in a manner that minimally impacts the natural surroundings and has minimal visual impact.
- Drainage will be managed so as to minimally impact the natural resources and to protect the trail.
- Trees/shrubs will be inspected/mitigated in accordance with Cleveland Metroparks *Vegetative Maintenance Guidelines*.
- Trail and par course stations will be visually inspected **1 time daily (April - November), and 1 time weekly (December- March)** for safety, litter, sanitary, good repair or vandalism concerns.
- Defects in or damage to par course stations that adversely impact the safety or health of visitors will be **closed and repaired upon discovery**.
- All other damages that **do not** create an adverse impact on safety or health of visitors will be repaired **within 1 week of discovery**.
- Litter that is noticeable from the circuit trail will be picked up **daily**.
- Aggregate surface trail sections
 - Will be uniformly smooth with no obstructions **(April-November)**.
 - Trees/shrubs will be inspected **bi-weekly and/or after a severe weather occurrence** by reservation staff.
 - Damage/failure of trail surfaces that is unsafe and impedes travel will be repaired **upon discovery**.
 - Trail surface damage/failure that **does not impede travel** will be repaired **annually**.
 - Drainage will be inspected and mitigated **1 time per year** and/or **after a severe weather occurrence** for safety damage and obstructions.

Operational Standards for Bridle Trails

- Vegetation along trail corridors will be managed at a maximum width of 8 ½ feet and maximum height of 12 feet.
- Trees that fall across the trails will be removed in a manner that minimally impacts natural surroundings and has minimal visual impact.
- Drainage will be managed so as to minimally impact the natural resources and to protect the trail.
- Bridle trails will be visually inspected *1 time per month (April-November)* for safety, litter, good repair or vandalism concerns.
- Litter/debris that is visible from trail will be picked up *1 time per month*.
- Bridges will be inspected and mitigated *1 time per year* for safety concerns.
- Trees in a weakened condition, and likely to fall on the trail will be removed *upon discovery*.
- Damage to trail surfaces will be repaired *upon discovery* if damage impedes travel. Trail surface damage that *does not impede travel* will be repaired *annually*.
- Drainage will be inspected *1 time per year* and/or *after a severe weather occurrence* for safety, damage or obstructions.

**Cleveland Metroparks
Department of Park Operations
Tree/Shrub Planting and Aftercare Standards**

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing a natural-appearing, semi-forested environment for all developed public use areas. This environment will consist of trees and shrubs that are predominantly indigenous or naturalized to northeast Ohio, with non-natives limited to specific applications. Trees and shrubs should be viable, functional, in balance with turf requirements, and representative of a diversified stand, both in age and species composition.

Operational Standards

- Trees and shrubs will be selected, planted and cared for in accordance with the *Vegetative Maintenance Guidelines (Appendix D)* and *Cleveland Metroparks Basic Tree/Shrub Planting & Aftercare Procedures (Appendix F)*.
- Aftercare for all trees/shrubs will be provided **for three consecutive years after installation.**
- Damage to staked or guying materials will be repaired **upon discovery.** All staking and guying systems should be removed **one year after installation.**
- Soil moisture **within the planting hole** will be assessed **1 time per week** while tree/shrub possess foliage. Soil moisture will be managed to **prevent** plant material from wilt.
- Deer protection will be installed **annually during September,** and removed in **March.**

**Cleveland Metroparks
Department of Park Operations
Picnic Area Standards**

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing high-quality grounds, facilities and services. Park District picnic areas will be managed to provide park patrons with an environment that is safe and clean, with facilities and structures that are in good repair.

Operational Standards

- Shelters will be managed in accordance with the *Shelter/Reservable Tent Cleaning Standards* and the *Building/Facility Standards*.
- Turf areas will be managed in accordance with the *Turf Standards*.
- Playground equipment will be managed in compliance with the (CPSC) *Handbook for Public Playground Safety* (Appendix C) and will be inspected by in-house Certified Playground Safety Inspectors.
- Restroom facilities will be managed in accordance with the *Restroom Cleaning Standards* and *Building/Facility Standards*.
- Litter will be removed in accordance with the *Litter Standards*.
- Aggregate surface picnic pads will be managed to prevent water impoundment.
- Trees will be inspected and managed in accordance with Cleveland Metroparks *Vegetative Maintenance Guidelines* (Appendix D).
- Grounds and amenities will be inspected for sanitary, safety, damage and good repair daily.
- Picnic tables and grills will be cleared of debris 1 time per day (May - October).
- Aggregate surface picnic pads will be raked to remove debris 1 time every 2 weeks (May - October).
- Trees and shrubs will be inspected 1 time per week and/or after a severe weather occurrence by reservation staff.
- Water stations will be operable (May - October).

Cleveland Metroparks
Department of Park Operations
Shelter and Reservable Tent Preparation and Cleaning Standards

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing high-quality facilities and services. Park District shelters and reservable tents will be managed to provide park patrons with facilities that are safe, clean, and in good repair.

Operational Standards

Level II cleaning will include the following:

- Wash and disinfect soiled tables and floor.
- Visually inspect for sanitary, safety, damage and mechanical concerns.
- Remove any graffiti.
- Litter will be managed in accordance with the *Litter Standards*.
- Remove ashes from fireplace prior to accumulation to bottom of grate.
- Remove ashes from grills.

Level I cleaning will include the following:

- Visually inspect for sanitary, safety, damage and mechanical concerns.
 - Remove cobwebs and bees nests that are in facility.
 - Trashcans will be emptied and washed inside and out.
 - Wash and disinfect soiled tables and floor.
 - Remove ashes from fireplace and grills.
 - Volleyball courts and horseshoe pits will be raked.
 - Clean windows and doors.
-
- Shelters and reservable tents will receive a **Level II** cleaning *1 time per day (April – November)*.
 - Shelters and reservable tents will receive a **Level I** cleaning/sanitizing *1 time every 7 days and/or 1 hour* prior to facility reserve booking (*December – March when temperatures permit*).

Cleveland Metroparks

Department of Park Operations

Building and Facilities Standards

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing high-quality buildings and facilities that comply with existing regulations, such as health and building codes and licensing requirements. Equally important is the safety, health and welfare of those who enter or use a building. Each Park District building will be managed for cleanliness, sanitary conditions, functionality and to maximize the building's productive life.

Operational Standards

- Repairs to and remodeling of existing buildings or facilities will be performed by trained/experienced park employees and /or, when applicable, by appropriate certified/licensed personnel and in accordance with federal, state and local codes, where required.
- Public buildings and facilities will be managed in accordance with regulatory agency requirements at all times.
- Buildings/facilities and associated equipment will be managed in accordance with the manufacturers' recommendations.
- HVAC equipment will be inspected in accordance with HVAC equipment inspection process.
- Litter will be managed in accordance with the *Litter Management Standards*.
- Roads and parking lots will be managed in accordance with the *Road and Parking Lots Standards*.
- Restrooms will be managed in accordance with the *Restroom Cleaning Standards*.
- Landscape will be managed in accordance with the *Planter and Landscape Bed Standards*.
- Snow will be managed in accordance with *Cleveland Metroparks Ice/Snow Removal Policy*. All other sidewalks will be cleared and deiced on a priority basis, determined by park manager and as resources permit.
- Trees will be managed in accordance with *Cleveland Metroparks Vegetative Maintenance Guidelines* (Appendix D) and professional arboriculture standards.
- All buildings and facilities will be visually inspected one **1 time per month** for safety, health, sanitary condition, mechanical and vandalism concerns.
- Defects in and damages to buildings, facilities or appurtenances that adversely impact the safety or health of visitors or employees, or imperil the ongoing existence of the building, will be **closed and repaired upon discovery**.
- All other damages that **do not** create an adverse impact on the safety or health of visitors or employees, or **do not** imperil the ongoing existence of the building, will be repaired **within 30 days**.
- All floors will be cleaned of debris **1 time per week**.

**Cleveland Metroparks
Department of Park Operations
Swimming Facility Standards**

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing high-quality swim facilities that comply with existing regulations such as health and building codes and licensing requirements. Equally important is the safety, health and welfare of those who utilize these facilities. Park Operations swim areas will be managed for cleanliness, sanitary condition, functionality and good repair to maximize the productive life of the facilities.

Operational Standards

- All buildings/facilities will be managed in accordance with the *Building and Facility Standards*.
- Buoys will be utilized to identify areas designated for swimming.
- Water quality testing will be completed in accordance with the applicable health codes.
- Swim facilities and associated equipment will be inspected **daily, prior to opening, during the posted swim season** for safety, health and sanitary conditions, cleanliness, good repair, and vandalism concerns.
- Sand beaches will be raked **two times per week, prior to opening, during the posted swim season**. Huntington Beach will be raked **daily**.
- Litter/debris will be picked up **daily, prior to opening, during the posted swim season**.
- Buoys will be installed prior to posted swim season.

**Cleveland Metroparks
Department of Park Operations
Baseball Field Standards**

Commitment

Cleveland Metroparks Department of Park Operations is committed to providing consistently managed ballfields. Park District ballfields will be managed to provide park patrons with fields that are safe, playable and in good repair.

Operational Standards

- Litter will be managed in accordance with the *Litter Standards*.
- Skin infields will consist of baseball field-blended material, and be managed to minimize water impoundments.
- Turf areas will be managed in accordance with the *Turf Standards*.
- Baseball fields and associated equipment will be inspected **daily (May - October)** for safety, playability, cleanliness and good repair.
- Skin infields will be dragged **1 time per week**,



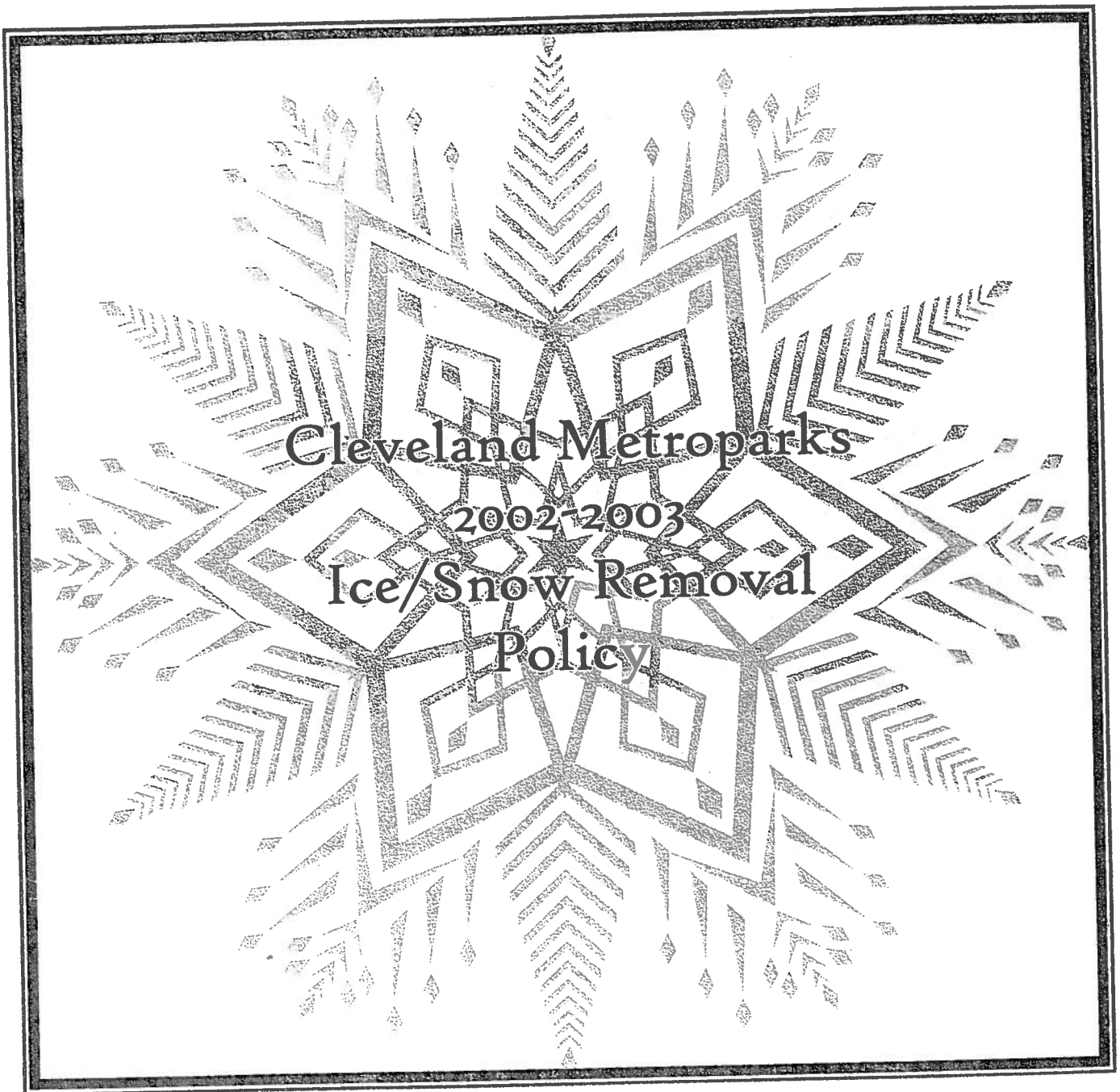


APPENDIX A

CLEVELAND METROPARKS

2002 - 2003

ICE/SNOW REMOVAL POLICY



CLEVELAND METROPARKS ICE/SNOW REMOVAL POLICY

Cleveland Metroparks will use reasonable maintenance efforts to maintain parkways and parking lots from 6:00 a.m. to 11:00 p.m. during the winter season to promote useable and safe conditions. As an agency inherently concerned about the conservation and preservation of natural areas, Cleveland Metroparks will maintain a program of minimum salt usage in its snow and ice removal operation. Further, the guidelines outlined below seek to maximize public safety balanced with financial parameters.

GUIDELINES FOR IMPLEMENTATION OF THE ICE/SNOW REMOVAL POLICY

A. SEVERE CONDITIONS

From 11:00 p.m. to 6:00 a.m., the following severe conditions must be in place in order to have a crew in to plow:

1. Ice has accumulated due to freezing rain or **unusual circumstances**. For unusual circumstances, a follow-up report by park manager and ranger lieutenant is compulsory.
2. Snow of 4" or more has accumulated.

B. CALL-OUT PROCEDURES FOR PARK MANAGEMENT

1. **Ranger Headquarters** will notify each park manager when unsafe or impassable conditions exist.
 - Ranger must be in the reservation to visually see conditions before manager(s) are called.
 - Ranger Headquarters should first contact managers by cell phones. Wait five (5) minutes, then call home phone number.
 - If unsuccessful, contact second pager number and wait five (5) minutes. If no response, call home phone number.
 - If no response, call appropriate Chief.
2. **Park Managers** will have snow plow equipment on the road according to each reservation's needs and weather conditions.
3. **Park Managers** will notify Ranger Headquarters when a crew has been deployed, stating estimated time of service.
4. **Snowplow Operators** will call in on radio to Ranger Headquarters when beginning service, as well as when completing service.
5. On Saturdays, Sundays, and Holidays, Ranger Headquarters will contact Park Managers not prior to 5 A.M. for call-out.
6. For any miscommunication of the call-out procedures, immediate follow-up is to be completed by park managers and communications officer or zone Lt.
7. Phone Numbers - **SEE ATTACHMENT**

Bedford Reservation Priority Policy/Procedures

Park Manager: Bill Davis

The Bedford Reservation will use reasonable maintenance efforts to maintain its parkways and parking lots from 6:00 A.M. to 11:00 P.M. during the winter season.

Radio usage

Snowplow operators will notify Ranger Headquarters when they are in service and when they are out of service.

PLOWING PRIORITIES	
Day (6:00am – 3:30 pm)	Evening (3:30 pm – 11:00 pm)
Lower Button	Lower Button
Gorge Parkway	Gorge Parkway
Overlook Lane	Overlook Lane
Hawthorn Parkway	Hawthorn Parkway
Hemlock Lot	Hemlock Lot
Hermits Hollow Lot	Hermits Hollow Lot
Overlook Lot	Overlook Lot
Bridal Veil Lot	Bridal Veil Lot
Egbert Lot	Egbert Lot
Broadway Lot	N/A
Richmond Lot	N/A
Dunham Lot	N/A
Alexander Lot	N/A
Willis Street Lot	N/A
Overlook Lane Lots	N/A
Little Overlook Lot	N/A
Viaduct Lot	N/A
APT	N/A
Management Center	Management Center
Ranger Lot	Ranger Lot

- ❖ **PLOW NO FASTER THAN 20 MPH.!** The Meyer Company recommends that speed be kept down to reduce strain on vehicle and to allow for snow to be rolled off the road (as opposed to being thrown). When driving with plow in transit, truck should not exceed 40 mph.

Loading procedures

Trucks are to be loaded with salt at the end of each use in order to be ready for the next use. Trucks are to be loaded according to the manufactures recommendations. The Case loader/ backhoe is the primary unit to be used for loading with the Ford front-end loader as a backup. After loading trucks are to be washed and parked inside whenever possible.

CLEVELAND METROPARKS BIG CREEK RESERVATION PRIORITY POLICY/PROCEDURES

Park Manager: Bob Chambers

The following delineates procedures adopted by Big Creek Reservation for removal of ice/snow from its roadways:

- Big Creek Reservation will keep Big Creek Parkway open and safe between 6:00 a.m. and 11:00 p.m., and on a 24-hour basis when severe conditions exist, as defined in the Cleveland Metroparks Ice/Snow Removal Policy. All other routes within Big Creek Reservation will be maintained in a safe and passable condition from the hours of 6 a.m. to 3:30 p.m.

Plowing Priorities	
Day (5:30 am to 3:30 pm)	Evening (3:30 pm to 5:30 am)
Big Creek Parkway from Valley Parkway to Brookpark Rd.	Big Creek Parkway from Valley Parkway to Brookpark Rd.
APT, Valley Parkway to Brookpark Rd.	
Parking Lots:	
Slot	
Willows	
Beyers	
Isaac	
Stumph	
Snow Rd. picnic area	
Upper Fernhill picnic area	
Lower Fernhill picnic area	
Memphis picnic area	

LARGE PLOW TRUCK

The large plow truck will plow and salt Big Creek Parkway as needed, using the following procedures:

- Truck will enter Big Creek Parkway at Valley Parkway and proceed northbound all the way to Brookpark Road, where it will circle around and proceed southbound from Brookpark Road back to Valley Parkway.
- Truck will start its second pass northbound on Big Creek and proceed to Brookpark Road. If the roadway is in safe condition, the truck will proceed to Memphis Road picnic area and secure the driveway. If the Parkway is NOT in safe and good condition, the truck will proceed southbound, clearing the Memphis area when the roadway is in good condition.

SMALL PLOW TRUCK

The small plow truck will clear the lots in the following order:

1. The slot
2. Willows
3. Isaac Lake
4. Stumph Road lot
5. Snow Road picnic area
6. Fernhill picnic area
7. Memphis picnic area

Brecksville Reservation Priority Policy/Procedures

Park Manager: Rick Huff

The Brecksville Reservation will use reasonable maintenance efforts to maintain its parkways and parking lots from 6:00 A.M. to 11:00 P.M. during the winter season.

Radio usage

Snowplow operators will notify Ranger Headquarters when they are in service and when they are out of service.

Plowing Priorities

During the hours of 6:00 AM and 11:00 PM, Valley Parkway from Rt. 21 to Bennett Road, will be kept open and clear of ice. These areas will also be serviced on an emergency basis, per the guidelines set in Cleveland Metroparks Ice/Snow Removal Policy.

PLOWING PRIORITIES	
Day (5:30.m. – 2:00 p.m.)	Evening (2:00 p.m. – 11:00 p.m.)
Valley Pkwy west – Rt. 21 to Edgerton	
Valley Pkwy east – Rt. 21 to Chippewa Dr.	
Meadows Dr. to Parkview Rd.	
Chippewa Dr. from Riverview Rd. to Rt. 82.	
Meadows Dr. from Chippewa Dr. to service drive at maintenance	
Sleepy Hollow GC parking lot	
Harriet Keeler parking lot	
Oak Grove parking lot	
Plateau parking lot	
Meadows parking lot	
Gorge parking lot.	
Valley Pkwy. West – Rt. 21 to Edgerton Rd.	
APT – Rt. 82 to Riverview Rd.	
Maintenance parking lot.	
Stuhr Woods parking lot.	
York Rd. parking lot.	
Nature Center walkway.	
Brecksville Stables (front lot only and fire lanes around barns).	
Two (2) lots east of Rt. 21	
Deer Lick Cave lot.	

Brookside Reservation Priority Policy/Procedures

Park Manager: John Virzi

Nagy Boulevard from Ridge Road to the bottom gate will be kept plowed and salted during regular working hours. The Brookside crew will plow and salt Nagy Boulevard up to 11 p.m. as needed. Nagy Boulevard will not be plowed after 11 p.m. Weekends and Holidays: Nagy Boulevard will be plowed and maintained on weekends and holidays by the Brookside crew between 6.a.m. to 11 p.m.

Radio usage

When the driver leave's the yard they will radio ranger headquarters that they are in service. When finished radio headquarter to let them know they are out of service.

PLOWING PRIORITIES	
Day (6:00am – 3:30 pm)	Evening (3:30 pm – 11:00 pm)
Nagy Boulevard to zoo gate.	Nagy Boulevard to first set of gates.
All parking lots and walks.	
A.P.T.(plowed only).	

- ❖ **PLOW NO FASTER THAN 20 MPH.!** The Meyer Company recommends that speed be kept down to reduce strain on vehicle and to allow for snow to be rolled off the road (as opposed to being thrown). When driving with plow in transit, truck should not exceed 40 mph.

Loading procedures

The Zoo's skidsteer loader.

List of equipment

Brookside small dump truck with V box and plow.

Training

Meyer's snow plow training.

De-icing compounds used

Salt

Scheduling

7 a.m. to 3:30 p.m. weekdays.

Weekend and evenings call in procedure with pager.

- ⇒ Re-stock woodpile.
- ⇒ Check fire in barrel throughout time of duty to ensure it is lit.
- ⇒ Do pull-off parking areas.
- ⇒ Before leaving park, make sure sled hill has enough wood for rest of day and that barrel is lit and burning well.

Loading procedures

- When loading truck box, four (4) buckets of salt will be enough to sufficiently salt the roadway. Load truck from side; **DO NOT LOAD SPREADER FROM REAR AT ANY TIME! DO NOT USE SALT SPREADER WITH BED RAISED! AT NO TIME IS BED OF TRUCK TO BE RAISED** (raising the bed too high will result in spinner hitting hitch).
- Spreader is set so salt is put on roadway in proper amounts **only** when traveling at 20 mph or less; if extra salt is indicated on curves or icy patches of roadway, truck should be slowed down—this will allow more salt to drop in one area. Salt should be spread in center 4' of pavement; traffic will move salt to outside. The EPA as material has classified Road salt hazardous to the environment. As a conservation/preservation agency, Cleveland Metroparks will make every endeavor to avoid damage to the environment.

List Of Equipment

F350 1 Ton Plow Truck with salt spreader	EM 0997
¾ Pick up With Plow F-150	
Case Back Loader	EM 0694
TC33D Ford Tractor	EM 0105

Training

On October 24, 2000 Manager Dale Snyder, Steve Richards, Bruce Jolly, Wilbert Nevels and Ebony Davis attended snow plow training class provided by Fleet Manager, Mike Vegas at the Zoo.

De-icing Compounds Used

Calcium chloride used in extremely cold temperatures on walkways and roadways.

Scheduling

If all efforts have failed as stated in Cleveland Metroparks Ice/Snow Removal Policy the following should be contacted:

1. Bruce Jolly pager number 517-6406
2. Wilbert Nevels pager number 517-5270
3. Steve Richards's pager number 517-6434

Hinckley Reservation Priority Policy/Procedures

Park Manager: Ed Povraznik

Hinckley Reservation is located in a predominately rural area void of heavy traffic. However, located within the reservation are a number of year round reservable facilities and private residences which require attention. In accordance with Cleveland Metroparks Ice and Snow Removal Policy, Hinckley Reservation personnel will use reasonable maintenance efforts to maintain parkways and parking lots from 6:00 a.m. to 11:00 p.m. during the winter season.

Radio Usage

Snowplow operators will notify Ranger Headquarters by radio when they place their respective snowplows in and out of service.

PLOWING PRIORITIES	
Day (6:00am – 3:30 pm)	Evening (3:30 pm – 11:00 pm)
West Drive	West Drive
East Drive	East Drive
Bathhouse parking lot	Bathhouse parking lot
Whipp's Ledges Drive and lot	Whipp's Ledges Drive and lot
Top-O-Ledges Drive and lot	Top-O-Ledges Drive and lot
Boathouse Drive and lot	Boathouse Drive and lot
Johnson's Picnic Area	
Ranger Stables Drive and lot	
Ranger Field Office and lot	Ranger Field Office and lot
Coasting Hill Drive and lot	Coasting Hill Drive and lot
Redwing Cabin Drive and lot	(if reserved)
Exchange Cabin Drive and lot	(if reserved)
Ledge Lake Drive and main lot	(if reserved)
Kiwanis Cabin Drive and lot	(if reserved)
Route 606 Horse Trailer lot	
Judge's Lake Drive and lot	
Management Center	
West Drive Scenic Overlook	
Buzzard's Roost	
East Drive Scenic Overlook	
Taki	
Johnson's Horse Trailer lot	
APT	

- ❖ **PLOW NO FASTER THAN 20 MPH.!** The Meyer Company recommends that speed be kept down to reduce strain on vehicle and to allow for snow to be rolled off the road (as opposed to being thrown). When driving with plow in transit, truck should not exceed 40 mph.

Mill Stream Run Reservation Priority Policy/Procedures

Park Manager: Kevin Vinicky

Snow and ice removal for Mill Stream Run Reservation will be a priority between the hours of 5:30a.m. and 11:00p.m. during the winter season. From 11:00p.m. to 5:30a.m., the following severe conditions must be in place in order to have a crew called into service:

1. Ice has accumulated due to freezing rain
2. Snow of 4" or more has accumulated.

Radio Usage

Driver is to notify Ranger Headquarters when going in and out of service.

PLOWING PRIORITIES	
Day (5:30a.m. – 3:30 p.m.)	Evening (3:30 p.m. – 11:00 p.m.)
Bagley to Edgerton roadway	Bagley to Edgerton roadway
Ranger Headquarters	Ranger Headquarters
Chalet	Chalet
Park Operations & trailers	Park Operations & trailers
Park entrances	Park entrances
A. P. T.	
ALL parking lots	

- ❖ **PLOW NO FASTER THAN 20 MPH.!** The Meyer Company recommends that speed be kept down to reduce strain on vehicle and to allow for snow to be rolled off the road (as opposed to being thrown). When driving with plow in transit, truck should not exceed 40 mph.

Loading procedures

Load at Park Operations

List of equipment

Large Dump, Small Dump, 4-wheel drive pickup, Tractor w/ plow & loader

Training

Training to be done by Senior Crew Members prior to going out in the truck solo.

De-icing compounds used

Salt

Scheduling

7:00-3:30p.m. weekdays manager will send out crew as needed,
5:30a.m. -7:00a.m., 3:30p.m.-11:00p.m. and on weekends headquarters will contact manager to call out a crew.

Training

All operators will be updated in the proper use of radios, use of plow trucks, speed, loading & cleaning. On a rotating basis, half the crew attends Meyers snowplow training in the fall.

De-icing compounds used

Products to be used are rock salt & calcium chloride. These products are chemicals and need to be applied properly and safely since we have sensitive areas that need to be considered.

Scheduling

Weekdays – 5:30 a.m. – 3:30 p.m. Weekends, evenings & holidays will be a call in procedure with pagers.

De-icing compounds used

At present, salt is provided by bid, calcium chloride is used at the CanalWay Center on concrete areas, and fertilizer is used on the Towpath and All-Purpose Trails only when conditions dictate, (icy conditions on slopes).

Scheduling

- Plowing schedule will run from November through March, (cyclical).
- The early shift shall run November through March, hours are 5:30 AM to 2:00 PM Monday thru Friday.
- The early shift shall be on a two-week rotation with a back up employee in case of emergency.
- All employees will be contacted by the use of pagers. If the manager cannot contact the primary employee that is scheduled to work, he will contact the secondary employee or back up, then through the list of employees if necessary. If the primary employee cannot be reached without prior notice to the manager, justification will be necessary to curb disciplinary action.

RR Stables Lots and Fire lane	RR Stables Lots and Fire lane
Life Flight lots	Life Flight lots
Ranger Field Office and Garage	Ranger Field Office and Garage
Barrett Sledding Hill lot	Barrett Sledding Hill lot
Memorial Field lots	N/A
Tyler Field lots	N/A
Big Met lot	N/A
North Mastick lots	N/A
South Mastick lots	N/A
Cottonwood lot	N/A
Big Cedar Point lot	N/A
Maple Grove lot	If Reserved
Lagoon lots	N/A
Willow Bend lot	N/A
Barrett Overlook lot	NA

Routine Vehicle/Equip Maintenance

All trucks and equipment shall be washed to remove salt deposits, especially the undercarriage, at least every week prior to loading.

List of equipment

1996 International dump for roadways
2000 Ford 550 dump for roadways
1997 Ford 1 ton dump 4x4 for roadways and parking lots
1994 Ford pickup 4x4 for parking lots
2002 Loader backhoe for loading
1999 Ford Skid steer for loading
2002 New Holland, with blower or blade for APT, parking lots and access points
Toro snow thrower- walk behind for walkways and access points
Ariens snow thrower for walkways and access points

Training

All employees not familiar with the equipment or procedures should inform their supervisor. They will receive training from the mechanic and experienced snowplow operators before they operate any equipment.

De-icing compounds used

Products to be used – rock salt, #9 Limestone, urea or other fertilizers.
Consideration must be used when applying any of these products, as some are chemicals and should be used properly and safely.

Scheduling

As of 11-1-02, 4 employees are on a rotating two-week schedule for snow plowing during the hours other than 7:00 a.m. to 3:30 p.m. During the hours of 7:00 a.m. to 3:30 p.m. any trained snowplow operator may be asked to handle snow removal needs.

Snow Removal Courtesies

Once roadways, parking lots and the APT are in a usable condition, attention will be given to providing access from parking lots, toilets, garbage cans, hiking trails and shelters.

***Special Note**

Sulphur Springs picnic area will have the gate closed at the first major snowstorm and remained closed for the balance of the winter season.

PARK OPERATIONS

2002-2003 ICE / SNOW REMOVAL

TELEPHONE LIST**

STAFF / Park Management	Cell Phone	Home	Work	STAFF / Park Management	Cell Phone	Home	Work
534 Bedford				1538 Mill Stream Run			
Bill Davis, Park Manager	(440) 742-0215	(330) 467-2653	(440) 439-5127	Kevin Vrnicky, Park Manager	(440) 742-0223	(440) 838-1451	(440) 891-3775
539 Big Creek				1532 North Chagrin			
Bob Chambers, Park Manager	(440) 742-0224	(440) 234-7804	(440) 891-3776	Dale Snyder, Park Manager	(440) 742-0218	*(216) 575-1527	(440) 943-5414
541 Bradley Woods / Huntingdon				1543 Ohio & Erie Canal			
Joan Pfingsten, Park Manager	(440) 742-0221	(440) 243-7568	(440) 835-0360	Gary Baran, Park Manager	(440) 742-0217	(440) 777-2684	(216) 341-1706
536 Brecksville				1540 Rocky River			
Jack Huff, Park Manager	(440) 742-0219	(330) 725-4936	(440) 526-8300	Keith Kessler, Park Manager	(216) 780-1406	(330) 278-2438	(440) 333-0788
542 Brookside				1535 South Chagrin			
John Virzi, Park Manager	(440) 742-0225	(440) 237-7907	(216) 635-3328	Dave Wallden, Park Manager	(216) 780-1412	(440) 247-5447	(440) 248-5919
531 Euclid Creek				1750 Zoo Facility Operations			
Tom Bell, Park Manager	(440) 742-0213	*(440) 461-6080	(216)-382-5660	Lori Stojkov, Grounds/Serv Mgr.		(440) 234-9301	(216) 661-6500
535 Garfield Park				Dan Gorman, Grounds/Serv Mgr.		(330) 220-8863	(216) 661-6500
Gene Devezin, Park Manager	(440) 742-0220	(330) 467-3291	(216) 341-3161	Dick Chodera, Supt. of Zoo		(330) 225-3151	(216) 661-6500
537 Hinckley				Chief of Support			
Ed Povraznik, Park Manager	(440) 742-0216	*(330) 278-2659	(330) 278-4544	Bill Binggeli	(440) 742-0231	(440) 572-5787	(440) 234-3216
				Chief of Parks			
				Scott Robbins	(440) 742-0290	(330) 467-4424	(440) 234-3216

ote: (*) Indicates Unlisted Phone Number-Please Restrict Distribution

** DISTRIBUTION LIMITED TO RANGER H.Q.; PARK MANAGERS AND ASSISTANT MANAGERS; STEVE DICE; BILL BINGGELI AND SCOTT ROBBINS

ICE / SNOW REMOVAL POLICY SUMMARY FOR DISPATCH USE ONLY

(Lieutenant Gallagher 10/11/02)

Cleveland Metroparks will use reasonable efforts to maintain parkways and parking lots from 6:00 am to 11:00 pm. during the winter season to promote useable and safe conditions. As an agency inherently concerned about the conservation and preservation of natural areas, Cleveland Metroparks will maintain a program of minimum salt usage in its snow and ice removal operation. Further, the guidelines outlines below seek to maximize public safety balanced with financial parameters.

- 1) After the hour of **15:30 and before 23:00** Dispatchers are to follow the call-out procedure for Park Management crews for **ALL PARKS**. (See call out procedures attached)
- 2) Between the hours of 23:00hrs and 06:00hrs **SEVERE CONDITIONS** must exist to call the Park Manager.
SATURDAYS, SUNDAYS and HOLIDAYS DO NOT CONTACT THE PARK MANAGER BEFORE 05:00HRS
- 3) The Park Manager **WILL NOT BE CALLED** during severe conditions for
 - a) The Canal Zone...Zone I
 - b) Bradley Woods...Zone A
 - c) Huntington Beach...Zone B
 - d) Brookside...Zone G
- 4) During severe conditions barricades will be used to close the road in the following Zones:
 - a) Brecksville.....Ridge Rd. Valley Parkway
 - b) North Chagrin.....Ox Lane
 - c) Bedford.....Gorge Hill
 - d) Brecksville.....Snake Hill Valley Parkway
 - e) Zoo.....Wildlife Way

**** SEVERE CONDITIONS exist with accumulation of 4" of snow or more, or when ice has accumulated due to freezing rain. ****

See Call Out Procedure and Phone Numbers On Back



APPENDIX B

CLEVELAND METROPARKS

ANNUAL BRIDGE MANAGEMENT TASKS



CLEVELAND METROPARKS

ANNUAL BRIDGE MANAGEMENT TASKS

1. **Clean abutments and pier seats.**
Abutment and pier seats should be cleaned to remove any loose debris that may have accumulated over the years. Initial cleaning may require the use of a shovel or other hand tools to remove debris.
2. **Clean drains on or near structure.**
Drains (catch basins, scuppers) located at the ends of or on the bridge should be open and free of debris.
3. **Clean bridge joints.**
Bridge joints should be clean and free of debris.
4. **Remove debris from channel near structure.**
Any debris that has lodged up against or has been deposited in the immediate vicinity of the structure should be removed. This includes logs, brush, tree limbs, and fallen trees.
5. **Power wash the bridge deck.**
Each spring a power washer should be used to flush debris and chlorides from the bridge.
6. **Power wash abutment and pier seats.**
Each spring a power washer should be used to flush debris and chlorides from abutment and pier seats.
7. **Patch potholes and seal cracks in bridge decks.**
Cracks in concrete decks should be cleaned of debris and sealed with a High-molecular-weight methacrylate (HMWM) resin. Care should be taken to fill the cracks completely. Cracks in asphalt pavement should be patched with a standard crack filler/sealer.

Potholes in concrete decks should be patched as soon as possible to maintain rideability and to prevent further deterioration of the deck. For small patches, a very-rapid-hardening hydraulic cement can be used. Potholes in asphalt pavement should be repaired with a standard asphalt patching material.
8. **Add channel protection to eroded areas of channel banks.**
Some type of channel protection (bioengineering to be used) should be placed along eroded areas of channel banks.
9. **Repaint traffic markings on pavement.**
Faded or missing pavement traffic markings should be repainted as required.

HANDBOOK FOR PUBLIC PLAYGROUND SAFETY

**U.S. CONSUMER PRODUCT SAFETY
COMMISSION
WASHINGTON, DC 20207**

Handbook for Public Playground Safety



U.S. Consumer Product
Safety Commission
Washington, DC 20207

Pub. No. 325

Table of Contents

	Page No.
1. Introduction	1
2. Playground Injuries	2
3. Definitions	2
4. Surfacing	3
5. Use Zones for Equipment	6
6. Layout and Design of Playgrounds	8
7. Installation & Maintenance of Equipment	9
8. Materials of Manufacture & Construction	10
9. General Hazards	11
10. Stairways, Ladders and Handrails	16
11. Platforms, Guardrails and Protective Barriers	18
12. Major Types of Playground Equipment	20
12.1 Climbing Equipment	20
12.2 Merry-Go-Rounds	22
12.3 Seesaws	23
12.4 Slides	24
12.5 Spring Rockers	28
12.6 Swings	28
12.7 Trampolines	30
13. References	31

APPENDICES

Appendix A — Suggested General Maintenance Checklist	32
Appendix B — Entrapment Recommendations and Test Methods	33
Appendix C — Characteristics of Surfacing Materials	38
Appendix D — Description of Loose-Fill Surfacing Materials	40
Appendix E — Noteworthy Revisions to the 1997 Handbook	41
Public Playground Safety Checklist	Inside Back Cover

maintenance, as discussed in this handbook, are essential for increasing public playground safety.

A playground should allow children to develop progressively and test their skills by providing a series of graduated challenges. The challenges presented should be appropriate for age-related abilities and should be ones that children can perceive and choose to undertake.

Preschool and school-age children differ dramatically, not only in physical size and ability, but also in their cognitive and social skills. Therefore, age-appropriate playground designs should accommodate these differences with regard to the type, scale, and the layout of equipment. Recommendations throughout this handbook address the different needs of preschool and school-age children; "preschool-age" refers to children 2 through 5 years, and "school-age" refers to children 5 through 12 years. The overlap between these groups is realistic in terms of playground equipment use, and provides for a margin of safety.

The recommendations in this handbook are based on the assumption that the minimum user will be a 2-year-old child. Therefore, playground equipment fabricated in accordance with these recommendations may not be appropriate for children under 2 years of age.

Playground designers, installers and operators should be aware that The Americans with Disabilities Act of 1990 (ADA) prohibits discrimination on the basis of disability in employment, public services, transportation, public accommodations (including many services operated by private entities) and telecommunications. Title III of the legislation includes within the definition of public accommodation: "a park, zoo, amusement park, or other place of recreation; a school, including nursery schools; a day care center; and a gymnasium, health spa, or other places of exercise or recreation." Specific Federal requirements for accessibility to playgrounds by the disabled are expected to be published in the future. These requirements could necessitate changes to existing playgrounds as well as when new playgrounds are planned or existing playgrounds refurbished.

2. PLAYGROUND INJURIES

The U. S. Consumer Product Safety Commission has long recognized the potential hazards that exist with the use

of public playground equipment. A Commission study [4] of playground equipment-related injuries treated in U.S. hospital emergency rooms indicated that the majority resulted from falls from equipment. These were primarily falls to the ground surface below the equipment rather than falls from one part of the equipment to another part.

Other hazard patterns involved impact by swings and other moving equipment, colliding with stationary equipment, and contact with such hazards as protrusions, pinch points, sharp edges, hot surfaces, and playground debris. Fatal injuries reported to the Commission involved falls, entanglement of clothing or other items on equipment such as slides, entanglement in ropes tied to or caught on equipment, head entrapment in openings, impact from equipment tipover or structural failure, and impact by moving swings.

The recommendations in this handbook have been developed to address the hazards that resulted in these playground-related injuries and deaths. The recommendations include those which address the potential for falls from and impact with equipment, the need for protective surfacing under and around equipment, openings with the potential for head entrapment, the scale of equipment and other design features related to user age, layout of equipment on a playground, installation and maintenance procedures, and general hazards presented by protrusions, sharp edges, and pinch points.

3. DEFINITIONS

Composite Structure — Two or more play structures, attached or directly adjacent, to create one integral unit that provides more than one play activity (e.g., combination climber, slide, and horizontal ladder).

Critical Height — The fall height below which a life-threatening head injury would not be expected to occur.

Designated Play Surface — Any elevated surface for standing, walking, sitting or climbing, or a flat surface greater than 2 inches wide having an angle less than 30° from horizontal.

Embankment Slide — A slide that follows the contour of the ground and at no point is the bottom of the chute greater than 12 inches above the surrounding ground.

formula to derive a value known as Head Injury Criteria (HIC) [5]. Head impact injuries are not believed to be life threatening if the HIC does not exceed a value of 1,000.

The most widely used test method for evaluating the shock absorbing properties of a playground surfacing material is to drop an instrumented metal headform onto a sample of the material and record the acceleration/time pulse during the impact. Test methods are described in an ASTM Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment, ASTM F1292 [6].

4.2 Critical Height

This is a term originating from Europe and is used to describe the shock absorbing performance of a surfacing material. As used in this publication, the Critical Height for a surfacing material is defined as the maximum height from which the instrumented metal headform, upon impact, yields both a peak deceleration of no more than 200 G's and a HIC of no more than 1,000 when tested in accordance with the procedure described in ASTM F1292. Therefore, the Critical Height of a surfacing material can be considered as an approximation of the fall height below which a life-threatening head injury would not be expected to occur.

The surfacing material used under and around a particular piece of playground equipment should have a Critical Height value of at least the height of the highest designated play surface on the equipment. This height is the fall height for the equipment.

4.3 Fall Heights for Equipment

Recommendations for the fall heights for various pieces of playground equipment are as follows.

Climbers and Horizontal Ladders — The fall height is the maximum height of the structure.

Elevated Platforms Including Slide Platforms — The fall height is the height of the platform.

Merry-Go-Rounds — The fall height is the height above the ground of any part at the perimeter on which a child may sit or stand.

See-Saws — The fall height is the maximum height attainable by any part of the see-saw.

Spring Rockers — The fall height is the maximum height above the ground of the seat or designated play surface.

Swings — Since children may fall from a swing seat at its maximum attainable angle (assumed to be 90° from the "at rest" position), the fall height of a swing structure is the height of the pivot point where the swing's suspending elements connect to the supporting structure.

4.4 Equipment to Which Protective Surfacing Recommendations Do Not Apply

Equipment that requires a child to be standing or sitting at ground level during play is not expected to follow the recommendations for resilient surfacing. Examples of such equipment are sand boxes, activity walls, play houses or any other equipment that has no elevated designated playing surface.

4.5 Acceptability of Various Surfacing Materials

Hard surfacing materials, such as asphalt or concrete, are unsuitable for use under and around playground equipment of any height unless they are required as a base for a shock absorbing unitary material such as a rubber mat. Earth surfaces such as soils and hard packed dirt are also not recommended because they have poor shock absorbing properties. Similarly, grass and turf are not recommended because wear and environmental conditions can reduce their effectiveness in absorbing shock during a fall.

Acceptable playground surfacing materials are available in two basic types, unitary or loose-fill.

Unitary Materials — are generally rubber mats or a combination of rubber-like materials held in place by a binder that may be poured in place at the playground site and then cured to form a unitary shock absorbing surface. Unitary materials are available from a number of different manufacturers, many of whom have a range of materials with differing shock absorbing properties. Persons wishing to install a unitary material as a playground surface should request test data from the manufacturer identifying the Critical Height of the desired material. In addition, site requirements should

properties. For this reason, a margin of safety should be considered in selecting a type and depth of material for a specific use. When loose-fill materials are used, it is recommended that there be a means of containment around the perimeter of the use zone. Also, depending on playground location, weather conditions and frequency of use, frequent maintenance may be necessary to insure adequate depth and to loosen the materials which may have become packed (see additional maintenance discussion in Appendix C).

Installers of playground equipment are encouraged to attach markers to the equipment support posts that indicate the correct level of loose-fill protective surfacing material under and around the equipment. Such markers will assist maintenance workers in determining when replenishment of the material is necessary.

4.6 Other Characteristics of Surfacing Materials

Selection of a surfacing material for a specific location may be governed by the environmental conditions at that location. Appendix C lists some characteristics of surfacing materials that may influence the choice for a particular playground.

5. USE ZONES FOR EQUIPMENT

The use zone is an area under and around the equipment where protective surfacing is required. Other than the equipment itself, the use zone should be free of obstacles that children could run into or fall on top of and thus be injured.

5.1 Recommendations for Use Zones for Different Types of Playground Equipment

5.1.1 Stationary Equipment (excluding slides)

The use zone should extend a minimum of 6 feet in all directions from the perimeter of the equipment.

The use zones of two stationary pieces of playground equipment that are positioned adjacent to one another may overlap if the adjacent designated play surfaces of each structure are no more than 30 inches above the protective surface (i.e., they may be located a minimum distance of 6 feet apart). If adjacent designated play

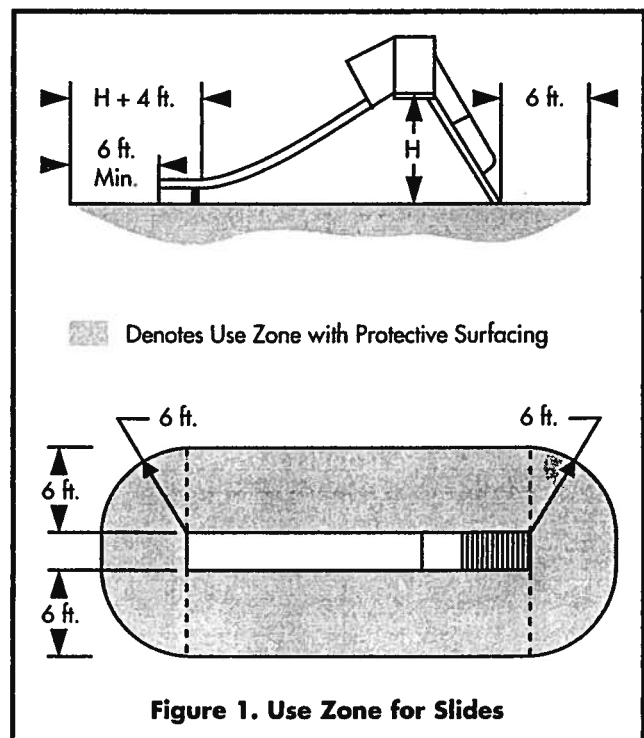
surfaces on either structure exceed a height of 30 inches, the minimum distance between the structures should be 9 feet.

5.1.2 Slides

The use zone in front of the access and to the sides of a slide should extend a minimum of 6 feet from the perimeter of the equipment. Note: This does not apply to embankment slides. However, the following recommendation applies to all slides, including embankment slides.

The use zone in front of the exit of a slide should extend a minimum distance of $H + 4$ feet where H is the vertical distance from the protective surface at the exit to the highest point of the chute (see Figure 1). However, no matter what the value of H is, the use zone should never be less than 6 feet but does not need to be greater than 14 feet. The use zone should be measured from a point on the slide chute where the slope is less than 5° from the horizontal. If it cannot be determined where the slope is less than 5° from the horizontal, the use zone should be measured from the end of the chute.

The use zone in front of the exit of a slide should never overlap the use zone of any other equipment.



5.1.7 Composite Play Structures

The above recommendations for individual pieces of equipment should be used as a guide in establishing the use zone around the perimeter of a composite play structure. Note that in Sections 12.6.2 and 12.6.4 it is recommended that swings not be attached to a composite structure.

In playgrounds where occasional overcrowding is likely, a supplemental circulation area beyond the use zone is recommended. Whether to provide such a supplemental circulation area should be based on the professional judgement of the playground designer and/or owner/operator.

6. LAYOUT AND DESIGN OF PLAYGROUNDS

6.1 Choosing a Site

When planning a new playground, it is important to consider hazards or obstacles to children traveling to or from the playground. A barrier surrounding the playground is recommended if children may inadvertently run into a street. Such a barrier should not prevent observation by supervisors. If fences are used for such barriers, it is recommended that they conform to applicable local building codes.

When selecting a site, consideration should be given to slope and drainage, especially if loose-fill surfacing materials are going to be installed. While a gentle slope may aid in drainage, steep slopes could result in loose fill materials becoming washed away during periods of heavy rain. Such sites may require re-grading.

6.2 Locating Equipment

The playground should be organized into different areas to prevent injuries caused by conflicting activities and children running between activities. Active, physical activities should be separate from more passive or quiet activities. Areas for play equipment, open fields, and sand boxes should be located in different sections of the playground.

In addition, popular, heavy-use pieces of equipment or activities should be dispersed to avoid crowding in any one area. The layout of equipment and activity areas

should be without visual barriers so that there are clear sight lines everywhere on the playground to facilitate supervision.

Moving equipment, such as swings and merry-go-rounds, should be located toward a corner, side or edge of the play area while ensuring that the use zones around the equipment, as recommended in Section 5, are maintained. Slide exits should be located in an uncongested area of the playground. Use zones for moving equipment, such as swings and merry-go-rounds, and at slide exits should not overlap the use zone of other equipment, regardless of height.

Composite play structures have become increasingly popular on public playgrounds. Care should be taken to ensure that the play and traffic patterns of children using adjacent components on composite structures are complementary.

6.3 Age Separation of Equipment

It is recommended that for younger children, playgrounds have separate areas with appropriately sized equipment and materials to serve their developmental levels. The following items of playground equipment are not recommended for preschool-age children (2 through 5 years):

- Chain or Cable Walks
- Free Standing Arch Climbers
- Free Standing Climbing Events with Flexible Components
- Fulcrum Seesaws
- Log Rolls
- Long Spiral Slides (more than one turn — 360°)
- Overhead Rings
- Parallel Bars
- Swinging Gates
- Track Rides
- Vertical Sliding Poles

In this handbook, there are several specific recommendations for equipment designed for preschool-age children. These recommendations, together with references to the sections in which they are discussed, are as follows:

- Rung Ladders, Stepladders, Stairways and Ramps (Table 2)

insure they have not become displaced or compacted in high traffic areas such as under swings and at slide exits. Any damage or hazards detected during inspections should be repaired immediately in accordance with the manufacturer's instructions for repair and replacement of parts.

For each piece of equipment, the frequency of thorough inspections will depend on the type of equipment, the amount of use, and the local climate. Based on the manufacturer's recommendations regarding maintenance schedules for each piece of equipment, a maintenance schedule for the entire playground can be created. The detailed inspections should give special attention to moving parts and other components which can be expected to wear. Inspections should be carried out in a systematic manner by trained personnel.

One possible procedure is the use of checklists. Some manufacturers supply checklists for general or detailed inspections with their maintenance instructions. These can be used to ensure that inspections are in compliance with the manufacturer's specifications. Inspections alone do not constitute a comprehensive maintenance program. All hazards or defects identified during inspections should be repaired promptly. All repairs and replacements of equipment parts should be completed in accordance with the manufacturer's instructions. A general checklist that may be used as a guide for frequent routine inspections of public playgrounds is included at Appendix A. This is intended to address only general maintenance concerns. It does not provide a complete safety evaluation of a specific equipment design and layout. For example, it does not address the risk of falls from equipment, moving impact incidents, or head entrapment. Therefore, the use of this checklist is only for general maintenance purposes. The detailed design recommendations contained in this handbook can be used to evaluate the safety of each piece of equipment and the playground as a whole.

Records of all maintenance inspections and repairs should be retained, including the manufacturer's maintenance instructions and any checklists used. When an inspection is performed, the person performing it should sign and date whatever form is used. A record of any accident and injury reported to have occurred on the playground should also be retained. This will help identify potential hazards or dangerous design features that should be corrected.

8. MATERIALS OF MANUFACTURE AND CONSTRUCTION

8.1 Durability and Finish

Purchasers should be sure that the equipment is manufactured and constructed only of materials that have a demonstrated record of durability in the playground or similar outdoor setting. Any new materials should be documented or tested accordingly for durability by the playground equipment manufacturer.

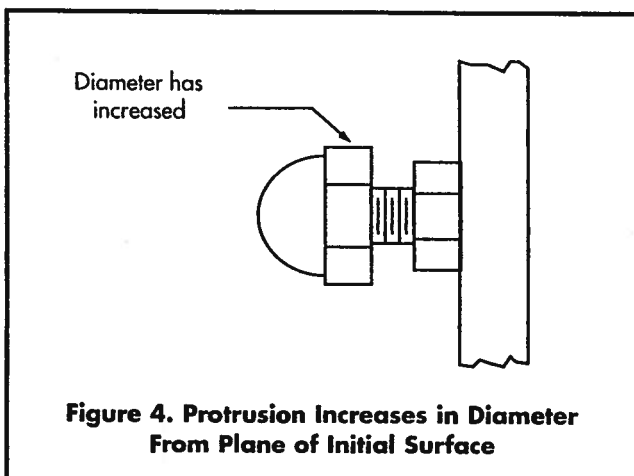
A major concern for playground equipment materials is corrosion or deterioration. Metals should be painted, galvanized, or otherwise treated to prevent rust.

All paints and other similar finishes must meet the current CPSC regulation for lead in paint [7] (0.06% [600 ppm] maximum lead by dry weight). The manufacturer should ensure that, as a result of contact with playground equipment, the users cannot ingest, inhale, or absorb potentially hazardous amounts of preservative chemicals or other treatments applied to the equipment. Purchasers and installers of playground equipment should obtain documentation from the manufacturer that the preservatives or other treatments that have been used do not present a health hazard to the users.

Testing by CPSC and various state and local agencies revealed that some older playground equipment in schools, parks, and communities across the U.S. has leaded paint that over time has deteriorated. When playground equipment paint deteriorates, the resulting chips and dust may be ingested by young children who regularly touch the equipment while playing and then transfer the paint chips or dust from their hands to their mouths. The amount of paint that may be ingested can contribute to a hazardous and unnecessarily high lead exposure.

A strategy for identifying and controlling leaded paint on playground equipment is available from CPSC. A case-by-case approach is recommended since there are many factors to consider when developing a hazard assessment and plans for appropriate controls. Playground managers should consult an October 1996 report, CPSC Staff Recommendations for Identifying and Controlling Lead Paint on Public Playground Equipment [8].

Protrusions or projections on playground equipment should not be capable of entangling children's clothing, because such entanglement can cause death by strangulation. Particular attention should be given to avoid protrusions or projections on slides to minimize the risk

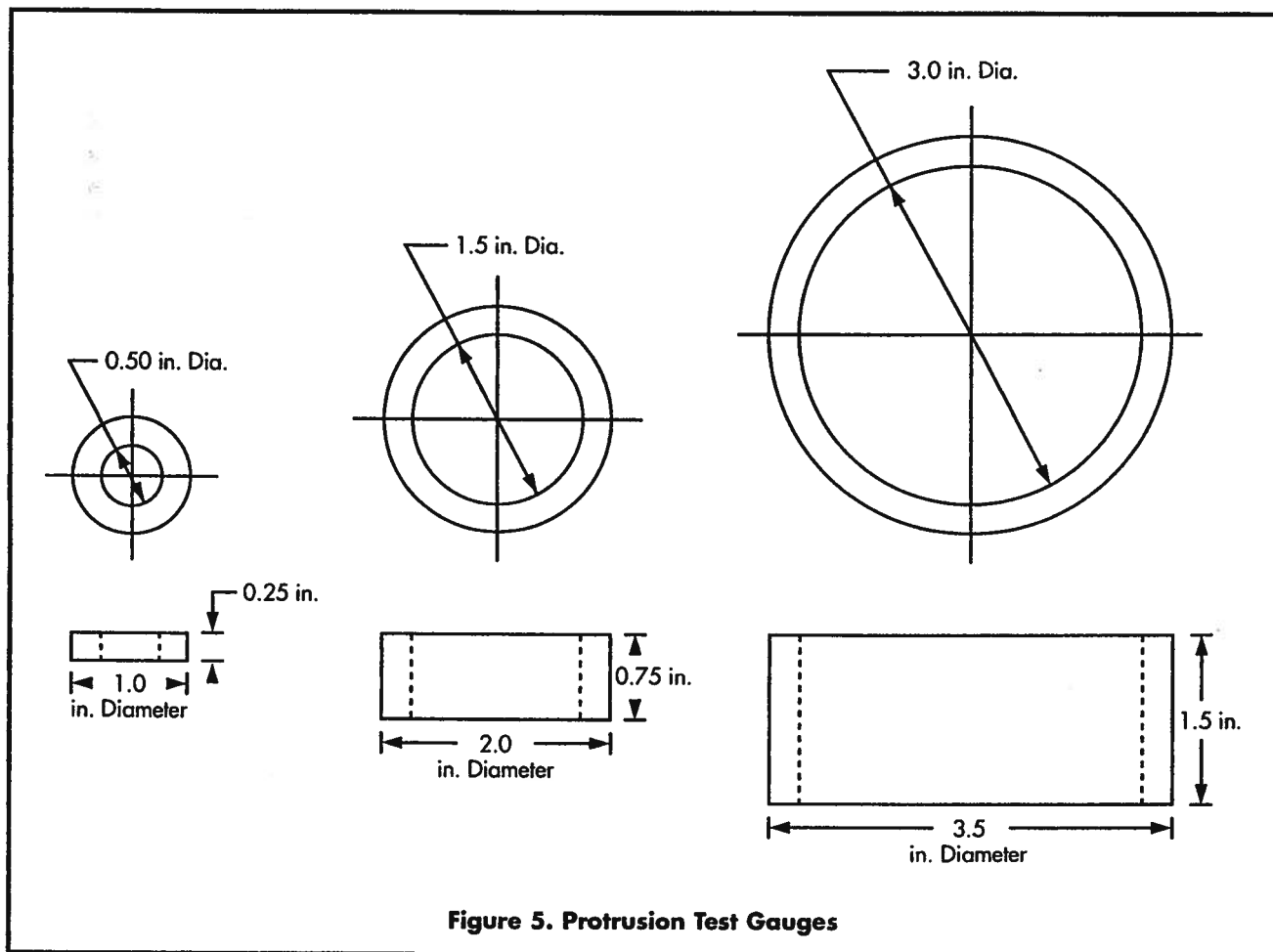


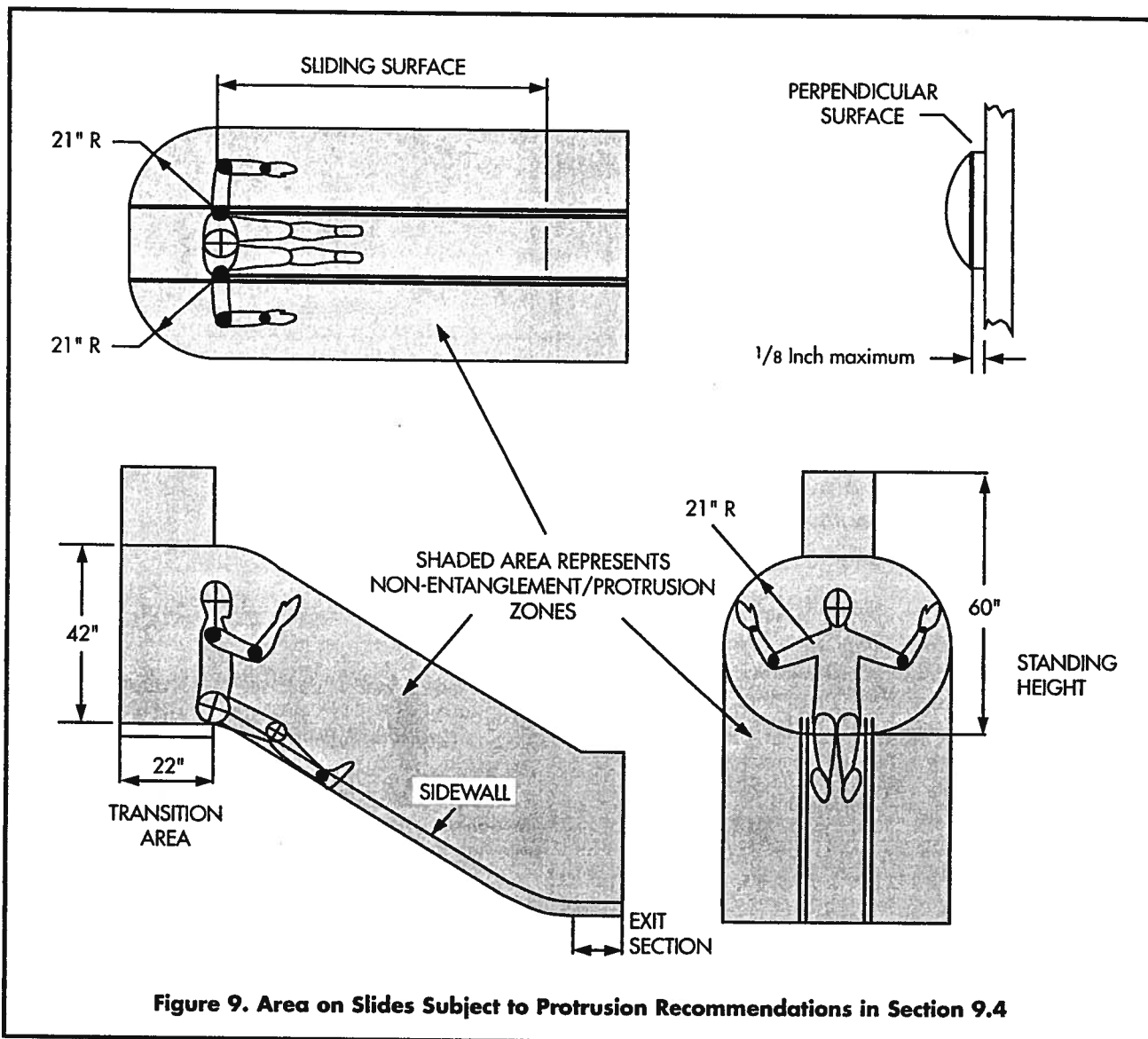
of entanglement with clothing. Jackets and sweatshirts with hoods and/or drawstrings have been involved in such entanglement/strangulation incidents. Jewelry, such as necklaces and rings, has also resulted in injuries from entanglement. The diameter of a protrusion should not increase in the direction away from the surrounding surface towards the exposed end (see Figure 4).

When tested in accordance with the procedure in Paragraph 9.2.1, no protrusion should extend beyond the face of any of the three gauges having dimensions shown in Figure 5. These gauges may be purchased from the National Recreation and Park Association (NRPA) [12].

9.2.1 Protrusion Test Procedure

Successively place each gauge (see Figure 5) over any protrusion or projection and determine if it projects beyond the face of the gauge (see Figure 6).





9.5 Pinch, Crush, and Shearing Points

There should be no accessible pinch, crush, or shearing points on playground equipment that could injure children or catch their clothing. Such points can be caused by components moving relative to each other or to a fixed component when the equipment moves through its anticipated use cycle. To determine if there is a possible pinch, crush or shear point, consider the likelihood of entrapping a body part and the configuration and closing force of the components. Additional information on pinch, crush, and shear points is provided in the recommendations addressing specific pieces of equipment in Section 9.

9.6 Entrapment

9.6.1 Head Entrapment

A component or a group of components should not form openings that could trap a child's head. A child's head may become entrapped if the child enters an opening either feet first or head first. Head entrapment by head-first entry generally occurs when children place their heads through an opening in one orientation, turn their heads to a different orientation, then are unable to withdraw from the opening. Head entrapment by feet-first entry involves children who generally sit or lie down and slide their feet into an opening that is large enough

change of elevation should be obvious. The use of bright colors can contribute to better visibility.

9.8 Suspended Hazards

Cables, wires, ropes, or similar flexible components suspended between play units or from the ground to a play unit within 45 degrees of horizontal should not be located in areas of high traffic because they may cause injuries to a running child. It is recommended that these suspended members be either brightly colored or contrast with surrounding equipment to add to their visibility. This recommendation does not apply to suspended members that are located 7 feet or more above the playground surface.

10. STAIRWAYS, LADDERS AND HANDRAILS

10.1 General

Access to playground equipment can take many forms, such as conventional ramps, stairways with steps, and ladders with steps or rungs. Access may also be by means of climbing components, such as climbing nets, arch climbers, and tire climbers (see Figure 12). Such

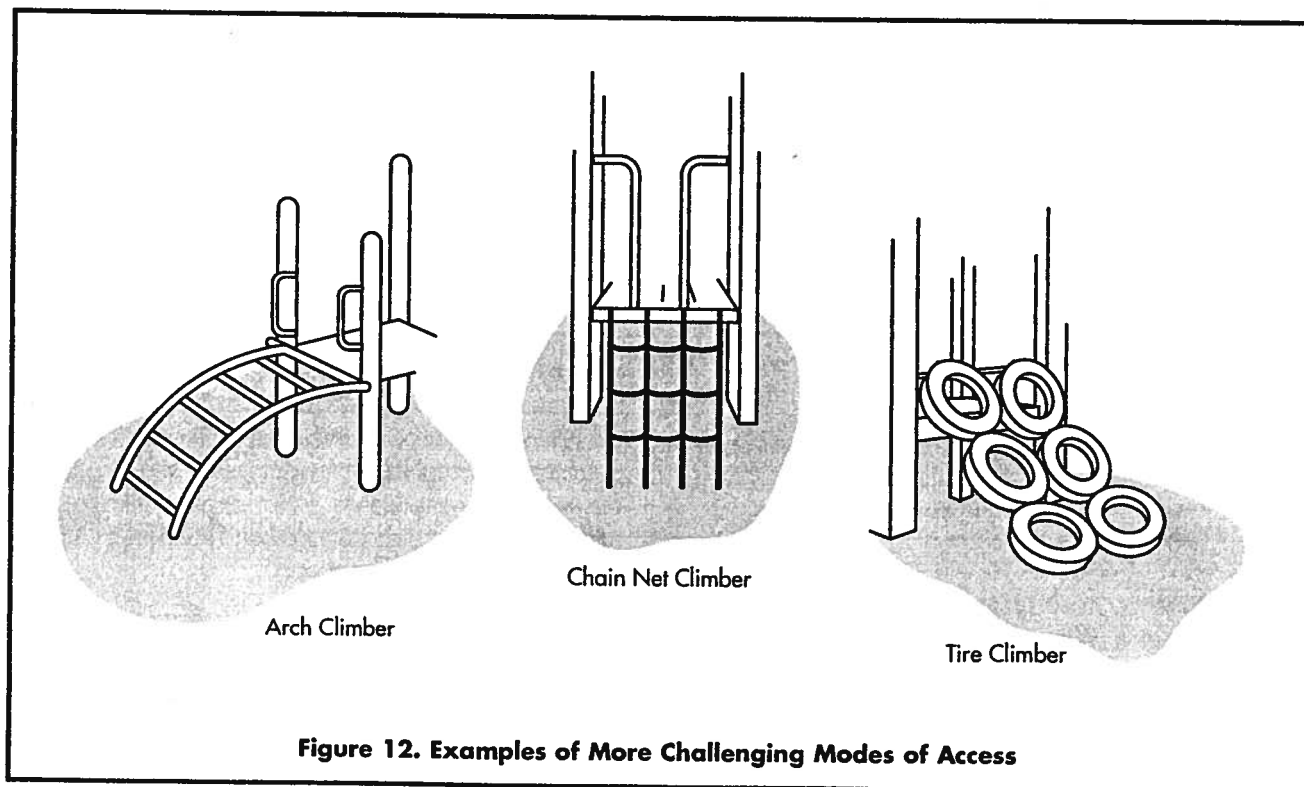
climbing components are generally intended to be more challenging than stairways and stepladders, and so require better balance and coordination of the children. Rung ladders are generally considered to present a level of challenge intermediate between stairways or stepladders and climbing components.

Rung ladders and climbing components such as climbing nets, arch climbers, and tire climbers, should not be used as the sole means of access to equipment intended for preschool-age children.

Platforms over 6 feet in height (with the exception of free-standing slides) should provide an intermediate standing surface where a decision can be made to halt the ascent and to pursue an alternative means of descent.

10.2 Stairways and Ladders

Stairways, stepladders, and rung ladders are distinguished by the range of slopes permitted for each of these types of access. However, in all cases the steps or rungs should be evenly spaced, including the spacing between the top step or rung and the surface of the platform. Table 2 contains recommended dimensions for:



the top surface of the handrail above it should be as follows:

- **Preschool-Age Children:** between 22 and 26 inches.
- **School-Age Children:** between 22 and 38 inches.

10.3.2 Handrail Diameter

The diameter or maximum cross-sectional dimension of handrails should be between 0.95 and 1.55 inches. To benefit the weakest child in each age group, a diameter of 1.25 inches is preferred.

10.4 Transition from Access to Platform

On any transition from an access mode to a platform, handrails or handholds should be adequate to provide support until the child has fully achieved the desired posture on the platform. Any opening between a handrail and an adjacent vertical structure (e.g., vertical support post for a platform or vertical slat of a protective barrier) should not pose an entrapment hazard (see Section 9.6).

On accesses that do not have handrails, such as rung ladders, flexible climbers, arch climbers, and tire climbers, hand support should provide for the transition between the top of the access and the platform. Options include vertical handrails and loop handgrips extending over the top of the access.

11. PLATFORMS, GUARDRAILS AND PROTECTIVE BARRIERS

11.1 Design Considerations

Platforms should be within $\pm 2^\circ$ of a horizontal plane and openings should be provided to allow for drainage.

11.2 Guardrails and Protective Barriers

Either guardrails or protective barriers may be used to prevent inadvertent or unintentional falls off elevated platforms. Protective barriers, however, to provide greater protection, should be designed to prevent intentional attempts by children seeking to defeat the barrier either by climbing over or through the barrier.

For example, guardrails may have a horizontal top rail with infill consisting of vertical bars having openings that are greater than 9 inches. Such openings would not present an entrapment hazard but would not prevent a child from climbing through the openings. A protective barrier should prevent passage of a child during deliberate attempts to defeat the barrier. Any openings between uprights or between the platform surface and lower edge of a protective barrier should prevent passage of the small torso template (see Figure B-3 in Appendix B).

11.3 Minimum Elevation Requiring Guardrails and Protective Barriers

Guardrails or protective barriers should be provided on platforms, walkways, landings, and transitional surfaces in accordance with the following minimum elevation recommendations.

Preschool-Age Children: Since younger children have poorer coordination and balance and are more vulnerable to injury than school-age children, guardrails or protective barriers are warranted at lower elevations. An elevated surface that is more than 20 inches above the protective surfacing should have a guardrail or protective barrier to prevent falls. Guardrails are acceptable for platforms over 20 inches but not over 30 inches high, but a full protective barrier may be preferable for this age group since it affords a greater degree of protection from falls. Protective barriers should always be used for platforms that are over 30 inches above the protective surfacing.

School-Age Children: An elevated surface that is more than 30 inches above the protective surfacing should have a guardrail or protective barrier to prevent falls. For platforms over 30 inches but not over 48 inches high, guardrails are acceptable, although a full protective barrier always provides greater protection. Platforms that are over 48 inches above the protective surfacing should always have a protective barrier.

An elevated surface is exempt from these recommendations if a guardrail or protective barrier would interfere with the intended use of the equipment; this includes most climbing equipment, and platforms that are layered so that the fall height does not exceed 20 inches on equipment intended for preschool-age children or 30 inches on equipment intended for school-age children.

The space between the stepped platforms should follow the recommendations for entrapment in enclosed openings in Section 9.6. If the space exceeds 9 inches and the height of the lower platform above the protective surfacing exceeds 30 inches for preschool equipment or 48 inches for school-age equipment, infill should be used to reduce the space to less than 3.5 inches.

12. MAJOR TYPES OF PLAYGROUND EQUIPMENT

12.1 Climbing Equipment

12.1.1 General

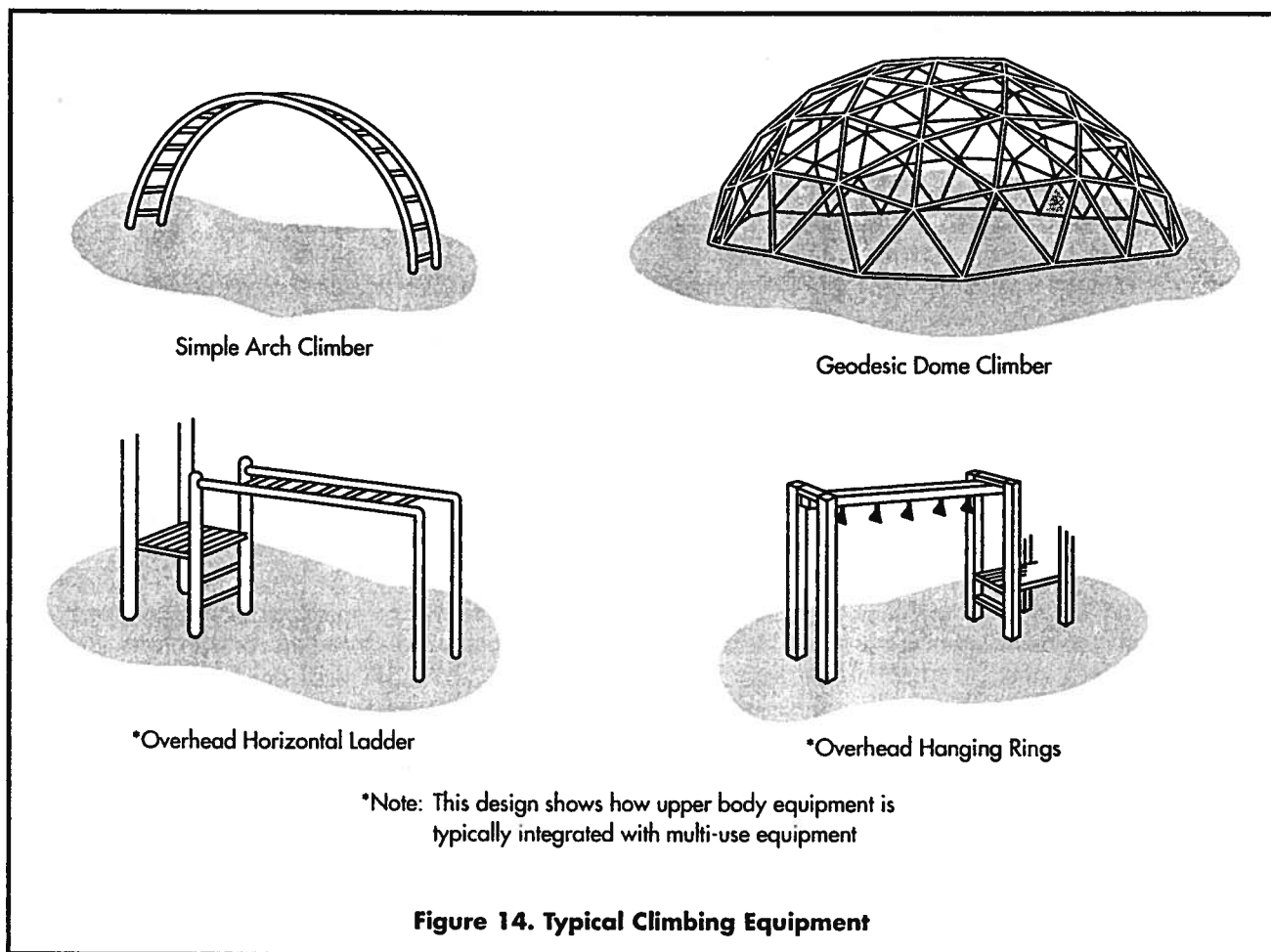
The term climbers refers to a wide variety of equipment, including arch climbers, sliding poles, chain or net climbers, upper body equipment (overhead horizontal ladders, overhead rings), dome climbers, parallel bars, balance beams, cable walks, suspension bridges, and spiral climbers, as well as composite structures with linked platforms (see Figure 14 for examples). Climbing equipment is generally designed to present a greater degree of physical challenge than other equipment on public playgrounds.

Older children tend to use climbing equipment more frequently and proficiently than younger ones. Because very young children have not yet developed some of the physical skills necessary for certain climbing activities (including balance, coordination, and upper body strength), they may have difficulty using more challenging climbing components such as rung ladders, non-rigid climbers, arch climbers, and upper body devices.

Older children tend to use climbing equipment more frequently and proficiently than younger ones. Because very young children have not yet developed some of the physical skills necessary for certain climbing activities (including balance, coordination, and upper body strength), they may have difficulty using more challenging climbing components such as rung ladders, non-rigid climbers, arch climbers, and upper body devices.

12.1.2 Design Considerations

Since the more challenging modes of access discussed in Section 10 are also intended to be used as climbing



minimizes the risk of children impacting rigid access structures if they fall from the first handhold during mount or dismount.

The maximum height of upper body equipment measured from the center of the grasping device to the protective surfacing should be:

- Preschool-Age Children: 60 inches.
- School-Age Children: 84 inches.

If overhead swinging rings are suspended by chains, the maximum length of the chains should be 12 inches.

12.1.6 Sliding Poles

Vertical sliding poles are designed to be more challenging than some other types of climbing equipment. They are not recommended for preschool-age children who may lack the upper body strength and coordination to successfully slide down the pole. Furthermore, once younger children have grasped the pole, they would be forced to slide down it since there is no alternative option.

Sliding poles should be continuous with no protruding welds or seams along the sliding surface and the pole should not change direction along the sliding portion.

The horizontal distance between a sliding pole and the edge of the platform or other structure used for access to the sliding pole should be at least 18 inches. This minimum distance applies to all points down the sliding pole.

No point on the sliding pole at or above the level of the access structure, where a child is likely to reach for the pole, should be more than 20 inches away from the edge of the access structure.

The pole should extend at least 60 inches above the level of the platform or other structure used for access to the sliding pole.

The diameter of sliding poles should be no greater than 1.9 inches.

Sliding poles and their access structures should be located so that traffic from other events will not interfere with the users during descent.

12.1.7 Climbing Ropes

A climbing rope should be secured at both ends and not be capable of being looped back on itself creating a loop with an inside perimeter greater than 5 inches.

12.1.8 Balance Beams

To avoid injuries during falls, balance beams should be no higher than:

- Preschool-Age Children: 12 inches.
- School-Age Children: 16 inches.

12.1.9 Layout of Climbing Components

When climbing components are part of a composite structure, their level of challenge and mode of use should be compatible with the traffic flow from adjacent components.

Upper body devices should be placed so that the swinging movement generated by children on this equipment cannot interfere with the movement of children on adjacent structures, particularly other children descending on slides.

The design of adjacent play structures should not facilitate climbing to the top support bars of upper body equipment.

12.2 Merry-Go-Rounds

Merry-go-rounds are the most common type of rotating equipment found on public playgrounds. Children usually sit or stand on the platform while other children or adults push the merry-go-round to make it rotate. In addition, children often get on and off the merry-go-round while it is in motion.

Merry-go-rounds may present a physical hazard to preschool-age children who have little or no control over such products once they are in motion. Therefore, children in this age group should always be supervised when using merry-go-rounds. Following are recommendations for merry-go-rounds:

The rotating platform should be continuous and approximately circular. The difference between the minimum and maximum radii of a non-circular platform should not

12.4 Slides

12.4.1 General

Although children under 6 years of age may be more likely to play on slides, older children will still use slides depending on their availability relative to other types of equipment. Children can be expected to descend slide chutes in many different positions, rather than always sitting and facing forward as they slide. They will slide down facing backward, on their knees, lying on their backs, head first, and will walk both up and down the chute. Younger children in particular often slide down on their stomachs, either head or feet first.

Slides may provide a straight, wavy, or spiral descent either by means of a tube or an open slide chute. They may be either free-standing (see Figure 17), part of a composite structure, or built on the grade of a natural or man-made slope (embankment slide). The recommendations in this section do not apply to water slides or swimming pool slides.

12.4.2 Slide Access

With the exception of embankment slides, access to a slide may be by means of a ladder with rungs or steps, a stairway with steps, or the slide may be a component of a composite play structure to which access is provided

by other means. Whatever means of access is provided to a slide, it should conform to the guidelines specified in the general discussion of access to all playground equipment (see Section 10).

12.4.3 Slide Platform

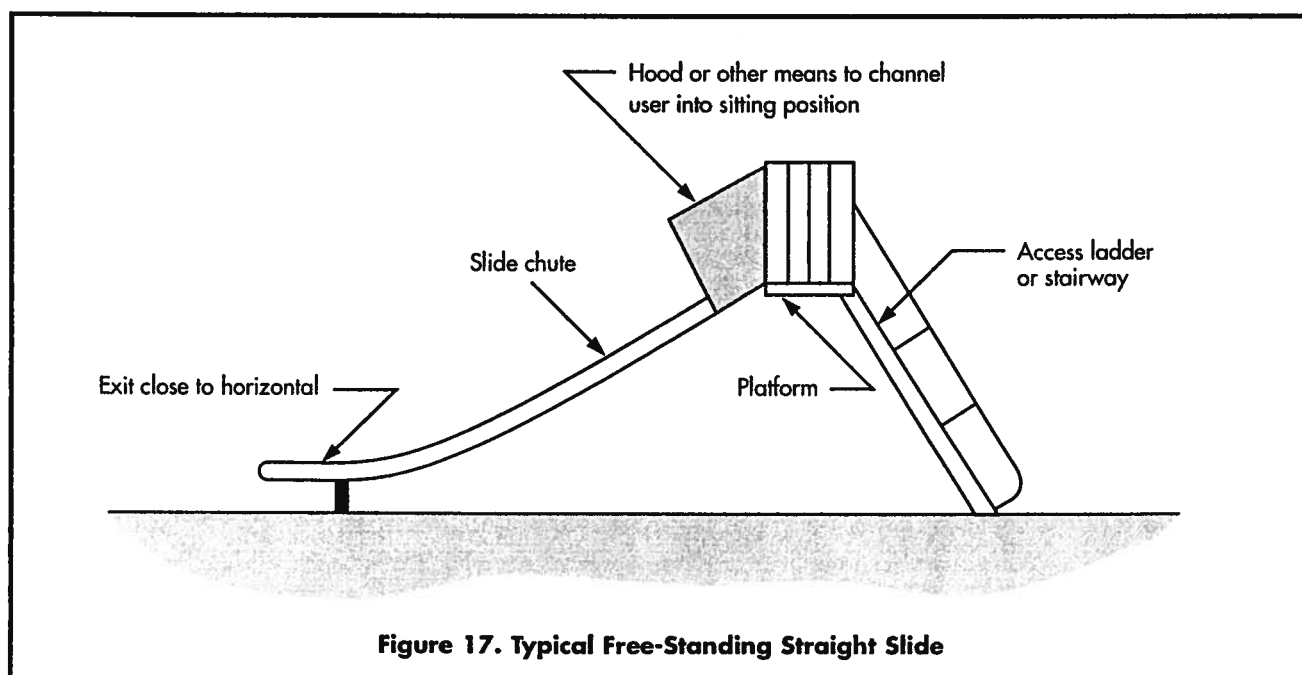
All slides should be provided with a platform with sufficient length to facilitate the transition from standing to sitting at the top of the inclined sliding surface. The length of the platform will usually not be an issue when the slide is attached to the deck of a composite structure, because decks are generally at least 3 feet square. However, in the case of a free-standing slide, it is recommended that the platform have a minimum length of at least 22 inches.

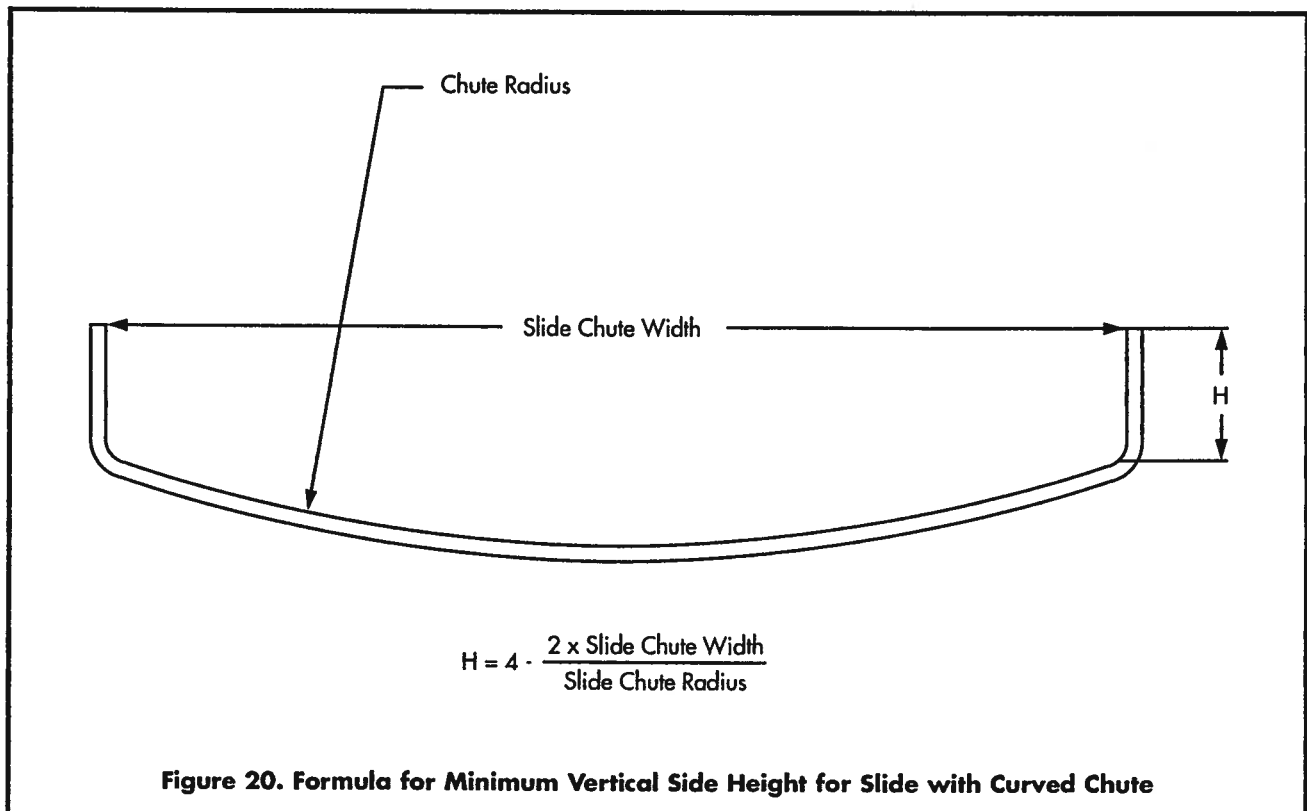
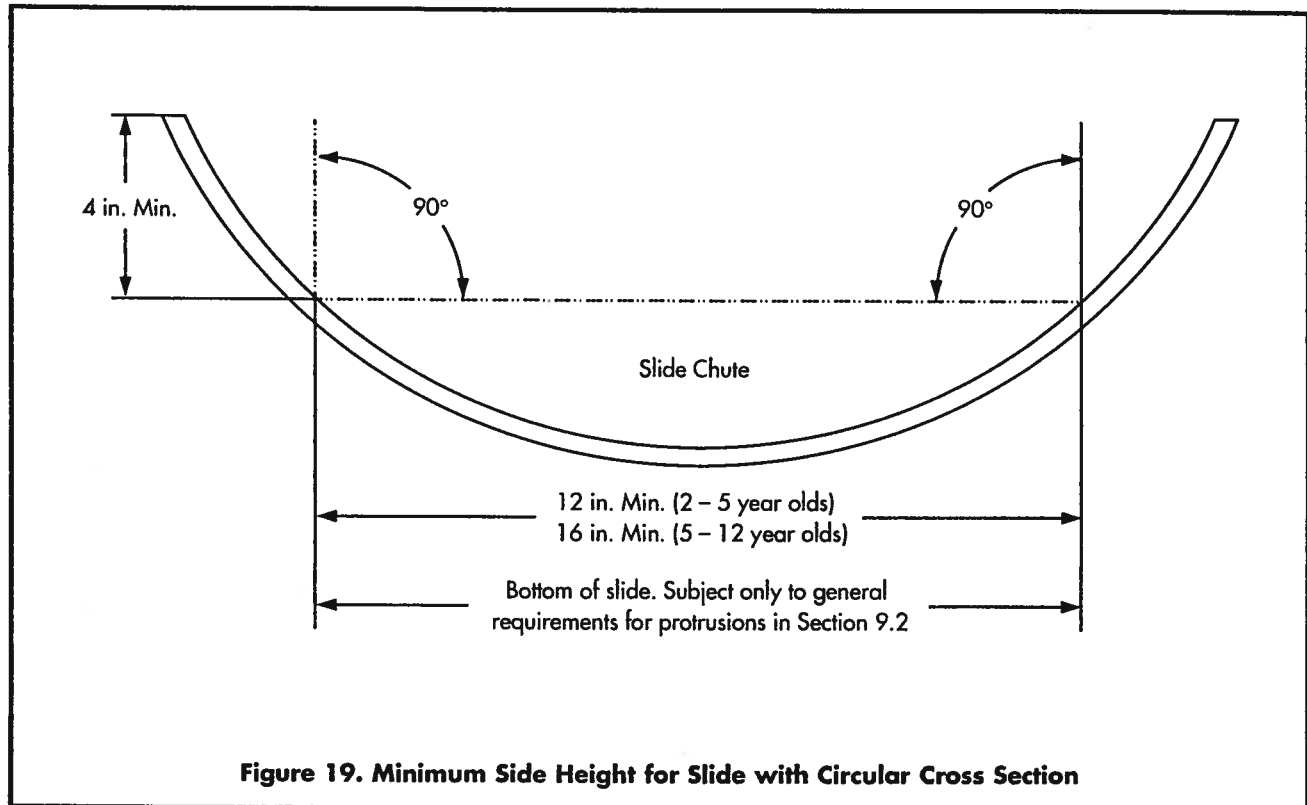
The platform should be horizontal and have a width at least equal to the width of the slide.

Guardrails or protective barriers should surround a slide platform and should conform to the guidelines specified in the general discussion of platforms (see Section 11).

Slides should not have any spaces or gaps between the platform and the start of the slide chute.

With the exception of tube slides, handholds should be provided at the entrance to all slides to facilitate the





The minimum internal diameter of the tube should be no less than 23 inches.

It should be noted that children using tube slides may not be visible to a supervisor. Consideration should be given to extra supervision on playgrounds having tube slides or to having transparent tube sections for observation and supervision.

12.4.9 Roller Slides

Roller slides should meet applicable recommendations for slides in Section 12.4.

The space between adjacent rollers and between the ends of the rollers and the stationary structure should be less than 3/16 inch.

Frequent inspections are recommended to insure that there are no missing rollers or broken bearings.

12.5 Spring Rockers

Preschool-age children enjoy the bouncing and rocking activities presented by this equipment, but older children may not find it challenging enough.

Examples of spring rockers are shown in Figure 21. Preschoolers are the primary users of such rocking

equipment. Therefore, the recommendations in this section address only preschool-age children.

Seat design should not allow the rocker to be used by more than the intended number of users.

Each seating position should be equipped with handgrips and footrests. The diameter of handgrips should follow the recommendations for handgripping components in Section 10.

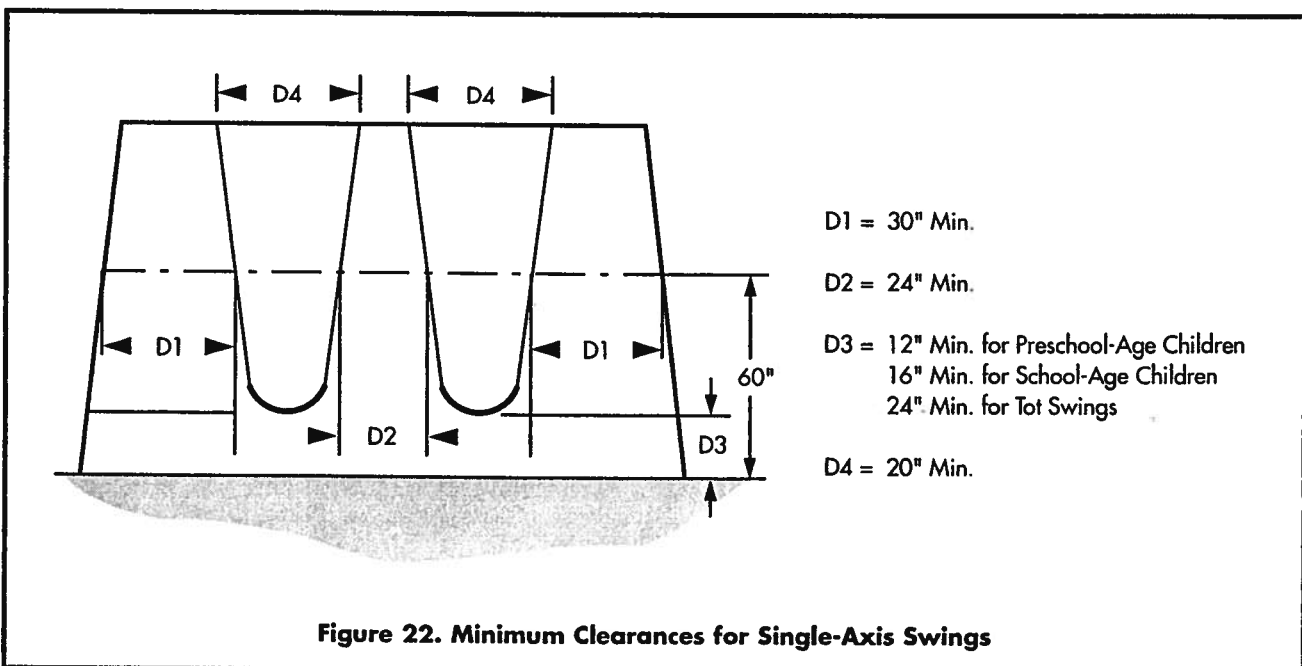
The springs of rocking equipment should minimize the possibility of children pinching their hands or their feet between coils or between the spring and a part of the rocker.

12.6 Swings

12.6.1 General

Children of all ages generally enjoy the sensations created while swinging. Most often, they sit on the swings, and it is common to see children jumping off swings. Younger children tend to also swing on their stomachs, and older children may stand on the seats.

Swings may be divided into two distinct types: single-axis of motion and multiple-axes of motion. A single-axis swing is intended to swing back-and-forth in a single



Full-bucket tot swing seats are recommended to provide support on all sides of a child (see Figure 23). It is important that such supports do not present a strangulation hazard. Openings in tot swing seats should conform to the entrapment criteria in Section 9.6. It is recommended that tot swings be suspended from structures which are separate from those for other swings, or at least suspended from a separate bay of the same structure.

The vertical distance from the underside of an occupied tot swing seat to the protective surfacing should be no less than 24 inches to minimize the likelihood that it will be used by unsupervised young children who may become stuck in the seat.

12.6.4 Multi-Axis Tire Swings

Tire swings are usually suspended in a horizontal orientation using three suspension chains or cables connected to a single swivel mechanism that permits both rotation and a swinging motion in any axis.

A multi-axis tire swing should not be suspended from a structure having other swings in the same bay. Attaching multi-axis swings to composite structures is not recommended.

To minimize the hazard of impact, heavy truck tires should be avoided. Further, if steel-belted radials are used, they should be closely examined to ensure that there are no exposed steel belts that could be a

potential protrusion or laceration hazard. Plastic materials can be used as an alternative to simulate actual automobile tires. Drainage holes should be provided in the underside of the tire.

The likelihood of hanger mechanism failure is increased for tire swings, due to the added stress of rotational movement and multiple occupancy. Special attention to maintenance is warranted. The hanger mechanisms for multi-axis tire swings should not have any accessible pinch points.

The minimum clearance between the seating surface of a tire swing and the uprights of the supporting structure should be 30 inches when the tire is in a position closest to the support structure (see Figure 24).

12.6.5 Swings Not Recommended for Public Playgrounds

The following types of swings are not recommended for use in public playgrounds:

Animal Figure Swings – These are not recommended because their rigid metal framework is heavy presenting a risk of impact injury.

Multiple Occupancy Swings – With the exception of tire swings, swings that are intended for more than one user are not recommended because their greater mass, as compared to single occupancy swings, presents a risk of impact injury.

Rope Swings – Free swinging ropes that may fray or otherwise form a loop are not recommended because they present a potential strangulation hazard.

Swinging Dual Exercise Rings and Trapeze Bars – These are rings and trapeze bars on long chains that are generally considered to be items of athletic equipment and are not recommended for public playgrounds. NOTE: The recommendation against the use of exercise rings does not apply to overhead hanging rings such as those used in a ring trek or ring ladder (see Figure 14).

12.7 Trampolines

Trampolines are not recommended for use on public playgrounds.

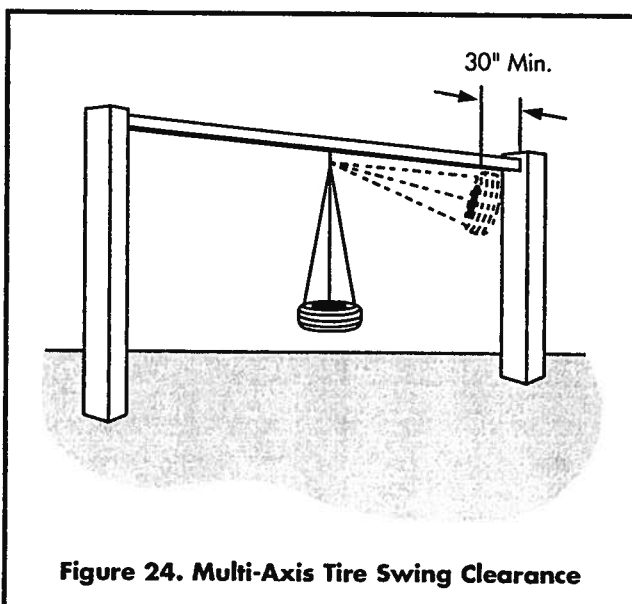


Figure 24. Multi-Axis Tire Swing Clearance

APPENDIX A

Suggested General Maintenance Checklist

The following checklist may be used to determine the condition of a playground. Numbers in parenthesis refer to sections in the handbook that discuss these issues. Place a check mark next to each of the following items that apply.

Surfacing (4)

- ___ The equipment has adequate protective surfacing under and around it and the surfacing materials have not deteriorated.
- ___ Loose-fill surfacing materials have no foreign objects or debris.
- ___ Loose-fill surfacing materials are not compacted and do not have reduced depth in heavy use areas such as under swings or at slide exits.

General Hazards

- ___ There are no sharp points, corners or edges on the equipment (9.1).
- ___ There are no missing or damaged protective caps or plugs (9.1).
- ___ There are no hazardous protrusions and projections (9.2).
- ___ There are no potential clothing entanglement hazards, such as open S-hooks or protruding bolts (8.2, and 9.4).
- ___ There are no pinch, crush, and shearing points or exposed moving parts (9.5).
- ___ There are no trip hazards, such as exposed footings on anchoring devices and rocks, roots, or any other environmental obstacles in the play area (9.7).

Deterioration of the Equipment (7.2)

- ___ The equipment has no rust, rot, cracks or splinters, especially where it comes in contact with the ground.
- ___ There are no broken or missing components on the equipment (e.g., handrails, guardrails, protective barriers, steps or rungs on ladders) and there are no damaged fences, benches, or signs on the playground.
- ___ All equipment is securely anchored.

Security of Hardware (7.2)

- ___ There are no loose fastening devices or worn connections, such as S-hooks.
- ___ Moving components, such as swing hangers or merry-go-round bearings, are not worn.

Drainage (6.1)

- ___ The entire play area has satisfactory drainage, especially in heavy use areas such as under swings and at slide exits.

Leaded Paint (8.1)

- ___ The leaded paint used on the playground equipment has not deteriorated as noted by peeling, cracking, chipping or chalking.
- ___ There are no areas of visible leaded paint chips or accumulation of lead dust.

General Upkeep of Playgrounds (7.2)

- ___ The entire playground is free from miscellaneous debris or litter such as tree branches, soda cans, bottles, glass, etc.
- ___ There are no missing trash receptacles.
- ___ Trash receptacles are not full.

NOTES:

B2.2 Large Head Template — The dimensions (see Figure B-4) of this template are based on the largest dimension on the head of the largest child at risk (95th percentile 5-year-old child). If an opening is large enough to permit free passage of the template, it is large enough to permit free passage of the head of the largest child at risk in any orientation. In addition, openings large enough to permit free passage of the Large Head Template also will not entrap the chest of the largest child at risk.

These templates can easily be fabricated from cardboard, plywood or sheet metal.

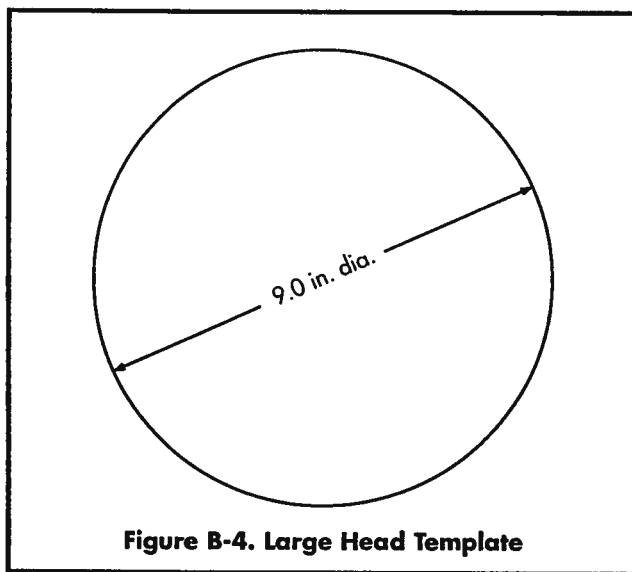


Figure B-4. Large Head Template

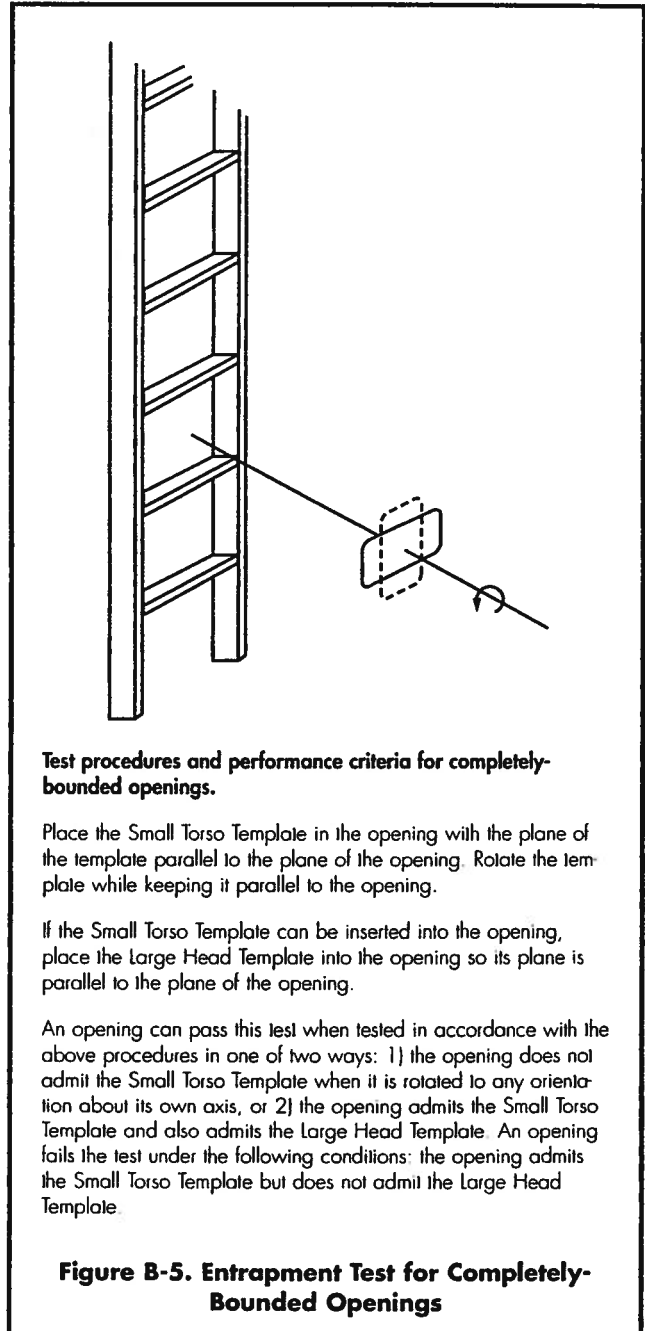
B3. RECOMMENDATION — When tested in accordance with the procedure in B4. below, an opening meets the recommendation if:

- (1) the opening does not admit the Small Torso Template,
- or
- (2) the opening admits the Small Torso Template and also admits the Large Head Template.

An opening fails to meet the recommendation if it admits the Small Torso Template but does not admit the Large Head Template.

B4. TEST PROCEDURE — Attempt to place the Small Torso Template in the opening with the plane of the template parallel to the plane of the opening. While

keeping it parallel to the plane of the opening, the template should be rotated to its most adverse orientation i.e., major axis of template oriented parallel to the major axis of the opening. If the Small Torso Template can be freely inserted through the opening, place the Large Head Template in the opening, again with the plane of the template parallel to the plane of the opening, and attempt to freely insert it through the opening. The test procedure is illustrated in Figure B-5.



NO — If the opening in Plane A does not admit the Large Head Template, then a child whose torso can enter the opening in Plane A as well as the opening in Plane B, may become entrapped by the head in the opening in Plane A. The opening does not meet the recommendations.

YES — If the opening in Plane A admits the Large Head Template, then the largest user at risk can exit the opening in Plane A. The entrapment potential depends on whether or not the largest user at risk can also exit the opening in Plane B. The Large Head Template is used to test this as follows:

With the plane of the Large Head Template parallel to the opening in Plane B, does the opening in Plane B admit the Large Head Template?

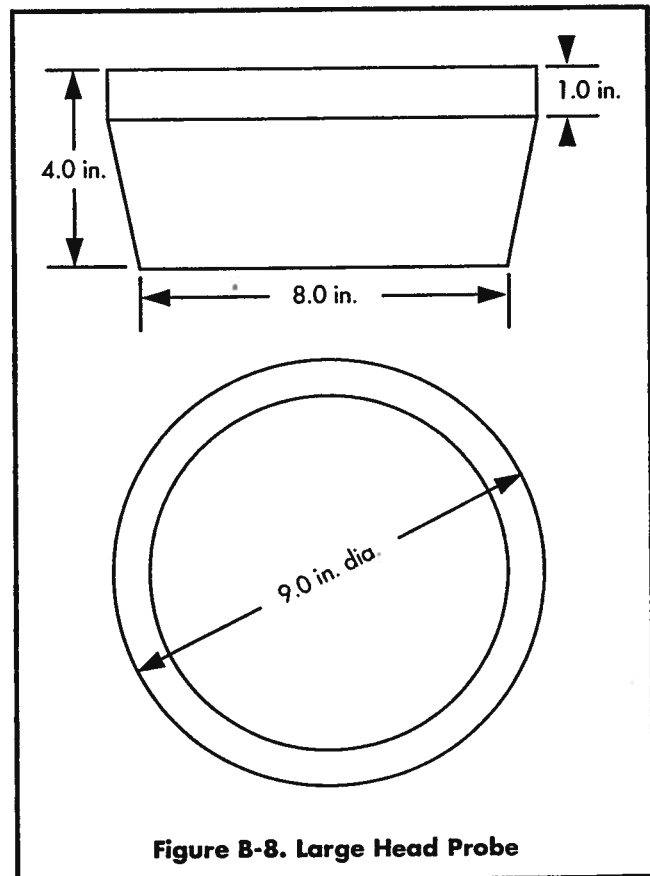
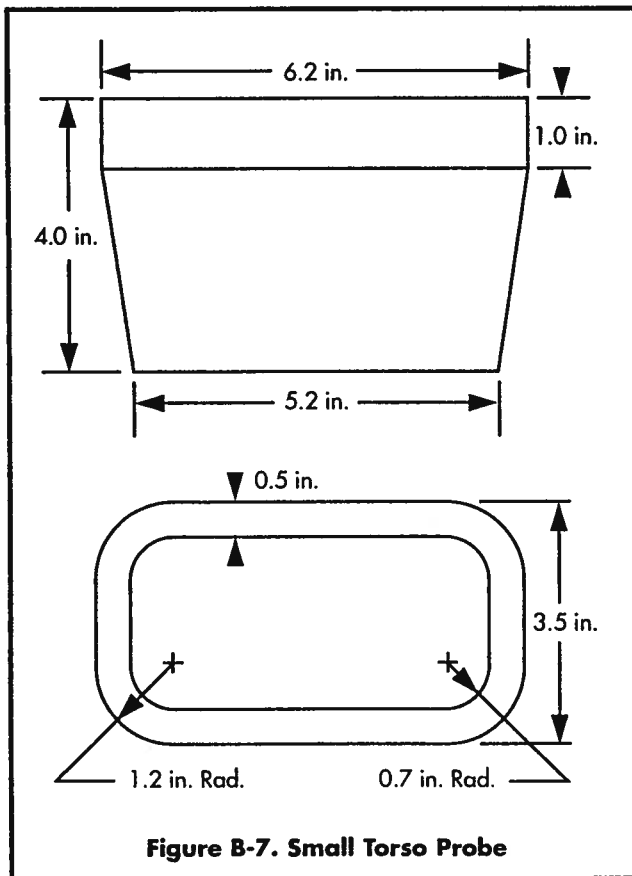
NO — If the opening in Plane B does not admit the Large Head Template, then the largest user at risk cannot exit the opening in Plane B. This presents an entrapment hazard because a child's torso may enter the openings in Plane A and Plane B, and a child's head may pass

through the opening in Plane A but become entrapped in the opening in Plane B. The opening does not meet the recommendations.

YES — If the opening in Plane B admits the Large Head Template, then the largest user at risk can exit the opening in Plane B so there is no entrapment hazard. The openings in Plane A and Plane B meet the recommendations.

B6. Non-Rigid Openings — Climbing components such as flexible nets are also a special case for the entrapment tests because the size and shape of openings on this equipment can be altered when force is applied, either intentionally or simply when a child climbs on or falls through the openings. Children are then potentially at risk of entrapment in these distorted openings.

B6.1 Test Fixtures — The procedure for determining conformance to the entrapment recommendations for non-rigid openings requires two three-dimensional test probes which are illustrated in Figures B-7 and B-8 and are applied to an opening in a non-rigid component with



APPENDIX C

Summary Characteristics of Organic and Inorganic Loose-Fill Materials, and Unitary Synthetic Materials

ORGANIC LOOSE MATERIAL

wood chips, bark mulch, engineered wood fibers, etc.

Fall Absorbing Characteristics

- Cushioning effect depends on air trapped within and between individual particles, and pre-supposes an adequate depth of material. See Table 1 for performance data.

Installation/Maintenance

- Should not be installed over existing hard surfaces (e.g., asphalt, concrete).
- Requires a method of containment (e.g., retaining barrier, excavated pit).
- Requires good drainage underneath material.
- Requires periodic renewal or replacement and continuous maintenance (e.g., leveling, grading, sifting, raking) to maintain appropriate depth and remove foreign matter.

Advantages

- Low initial cost.
- Ease of installation.
- Good drainage.
- Less abrasive than sand.
- Less attractive to cats and dogs (compared to sand).
- Attractive appearance.
- Readily available.

Disadvantages

The following conditions may reduce cushioning potential:

- Rainy weather, high humidity, freezing temperatures.
- With normal use over time, combines with dirt and other foreign materials.
- Over time, decomposes, is pulverized, and compacts requiring replenishment.
- Depth may be reduced by displacement due to children's activities or by material being blown by wind.
- Can be blown or thrown into children's eyes.
- Subject to microbial growth when wet.
- Conceals animal excrement and trash (e.g., broken glass, nails, pencils, and other sharp objects that can cause cut and puncture wounds).
- Spreads easily outside of containment area.
- Can be flammable.
- Subject to theft by neighborhood residents for use as mulch.

INORGANIC LOOSE MATERIAL

sand and gravel

Fall Absorbing Characteristics

- See Table 1 for performance data.

Installation/Maintenance

- Should not be installed over existing hard surfaces (e.g., asphalt, concrete).
- Method of containment needed (e.g., retaining barrier, excavated pit).
- Good drainage required underneath material.
- Requires periodic renewal or replacement and continuous maintenance (e.g., leveling, grading, sifting, raking) to maintain appropriate depth and remove foreign matter.
- Compacted sand should periodically be turned over, loosened, and cleaned.
- Gravel may require periodic break up and removal of hard pan.

Advantages

- Low initial cost.
- Ease of installation.
- Does not pulverize.
- Not ideal for microbial growth.
- Nonflammable.
- Materials are readily available.
- Not susceptible to vandalism except by contamination.
- Gravel is less attractive to animals than sand.

Disadvantages

The following conditions may reduce cushioning potential:

- Rainy weather, high humidity, freezing temperatures.
- With normal use, combines with dirt and other foreign materials.
- Depth may be reduced due to displacement by children's activities and sand may be blown by wind.
- May be blown or thrown into children's eyes.
- May be swallowed.
- Conceals animal excrement and trash (e.g., broken glass, nails, pencils, and other sharp objects that can cause cut and puncture wounds).

Sand

- Spreads easily outside of containment area.
- Small particles bind together and become less cushioning when wet; when thoroughly wet, sand reacts as a rigid material.
- May be tracked out of play area on shoes; abrasive to floor surfaces when tracked indoors; abrasive to plastic materials.
- Adheres to clothing.
- Susceptible to fouling by animals.

APPENDIX D**Description of Loose-Fill Surfacing Materials in Table 1**

1. **Wood Chips** — Random sized wood chips, twigs, and leaves collected from a wood chipper being fed tree limbs, branches, and brush.

2. **Double Shredded Bark Mulch** — Similar to shredded mulch commonly used by homeowners to mulch shrubs and flower beds.

3. **Engineered Wood Fibers** — Relatively uniform sized shredded wood fibers from recognized hardwoods. Sample contained no bark or leaves.

4. **Fine Sand** — Particles of white sand purchased in bags marked "play sand." The material was passed through wire-cloth screens of different sizes in accordance with ASTM Standard Method C136-84a and yielded the following results:

<i>Screen Size</i>	<i>Percent Passing Through Screen</i>
#16	100
#30	98
#50	62
#100	17
#200	0-1

5. **Coarse Sand** — Sample was obtained from a supplier to the landscaping and construction trades. ASTM C136-84a test results were:

<i>Screen Size</i>	<i>Percent Passing Through Screen</i>
#4	98
#8	73
#16	4
#30	1
#50	0-1

6. **Fine Gravel** — Sample was obtained from a supplier to the residential landscaping market. Gravel particles were rounded and were generally less than 3/8 inch in diameter. ASTM C136-84a test results were:

<i>Screen Size</i>	<i>Percent Passing Through Screen</i>
3/8 inch	100
#3 1/2	93
#4	65
#8	8
#16	5
#30	4

7. **Medium Gravel** — Particles were rounded as found in river washed or tumbled stone. ASTM C136-84a test results were:

<i>Screen Size</i>	<i>Percent Passing Through Screen</i>
1/2 inch	100
3/8 inch	80
5/16 inch	58
#3 1/2	20
#4	8
#8	7
#16	3

8. **Shredded Tires** — No impact attenuation tests have been conducted by CPSC on these materials. The size of the particles and the method by which they are produced may vary from one manufacturer to another. Therefore, consumers seeking to install such materials as a protective surfacing should request test data from the supplier showing the critical height of the material when tested in accordance with ASTM F1292. In addition, a guarantee should be obtained from the supplier that the material is free from steel wires or other contaminants.

Slides

- Changed recommendations for slides with curved chute cross sections (12.4.4). This change harmonizes the recommendations for these slides with the requirements in the ASTM F1487 voluntary standard.
- Added definition for embankment slides and added an exit use zone recommendation (12.4.6). These were added to clarify what is an embankment slide and what use zone is recommended at the exit.
- Added recommendations for roller slides (12.4.9). These were added to harmonize the CPSC recommendations with the ASTM F1487 voluntary standard.
- Added new figure to clarify how to measure slide slope (Fig. 18). This was added to clarify the intent of the previous recommendation.

Swings

- Added recommendation that fiber ropes not be used to suspend swings (12.6.1). Fiber ropes that unraveled during use have been involved in strangulation incidents.
- Added swing seat height recommendations for all swings (12.6.2 & 12.6.3). These recommendations are intended to minimize cratering of loose-fill protective surfacing under the swings.

Seesaws

- Added a recommendation for maximum angle of fulcrum seesaws (12.3). The addition is intended to minimize the likelihood that a child will be propelled forward when the seesaw reaches its maximum height.

Other Noteworthy Changes

- Revised the introduction to state that the guidelines in the handbook do not apply to adult fitness trail equipment, soft contained play equipment, or water play facilities (1). The maximum user of playground equipment covered by the recommendations in this

handbook is a 95th percentile 12 year old. Therefore, certain dimensions on adult fitness trail equipment may not apply. Soft contained play equipment is generally designed to prevent falls, therefore, the surfacing and use zone recommendations may not apply. Water play facilities are relatively new and were not considered when the recommendations in the handbook were being drafted.

- Added list of equipment not recommended for preschool-age children and provided a list identifying where to find specific recommendations for preschool-age equipment (6.3). These additions are for the convenience of persons seeking information on playground equipment for preschool-age children.
- Changed the recommendations for the diameter of handgripping components (10.2.1). At the time the recommendations for the 1991 handbook were being drafted ladder rungs were commonly fabricated from 1 ¼ inch steel pipe having an outside diameter (O.D.) of 1.66 inches. Since that time, steel pipe with an O.D. of 1.5 inches has become readily available and is closer to the optimum size recommended for components that will be grasped by a child to support full body weight.
- Changed the recommendation for handrail height on stairways (10.3.1). Handrail height more appropriate for preschool-age children has been added.

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CLEVELAND METROPARKS

VEGETATIVE MAINTENANCE GUIDELINES

FINAL DRAFT, July 29, 1996
Source: Tom Stanley, Chief of Natural Resources

Cleveland Metroparks Vegetative Maintenance Guidelines

Cleveland Metroparks Mission Statement¹⁾

Cleveland Metroparks will conserve significant natural resources and enhance people's lives by providing safe, high-quality outdoor education, recreation, and zoological opportunities.

Policy parameters were developed to serve as "filters", providing guidance in decision making. These are:

Conservation Policy

Conservation of natural resources is a primary responsibility of Cleveland Metroparks.

Education Policy

Cleveland Metroparks will foster awareness, appreciation, and understanding of the importance of natural resources so that all may become better stewards of our environment.

Recreation Policy

Cleveland Metroparks will provide recreation opportunities which are compatible with and support the goals of conservation and education.

Introduction

Maintenance of healthy trees, understory vegetation, wildlife habitats, etc., must be accomplished with the recognition of the following procedures and principles. As used herein, "Vegetative Maintenance" and "Vegetative Management" shall mean and include the cutting, trimming, planting and other management of all trees, understory, meadows, grass and plants of all kinds in all areas of all reservations of Cleveland Metroparks, with the exception of golf courses and Cleveland Metroparks Zoo.

A vegetative management plan. The "Plan" for each reservation of Cleveland Metroparks will be jointly developed by the Park Manager, Natural Resource Manager and Forestry Manager to reflect the short and long-term goals specific to that reservation. The plan will include decisions and goals on maintenance issues related to safety, facility care, and long-term objectives of edge management along road corridors and other developed areas. Goals and objectives related to habitat and cultural management of natural areas are contained within the Natural Resource Plan of each reservation. Together, these two components will comprise the **Vegetative Management Plan** for the reservations. If the foregoing persons are unable to agree upon specific parts of the plan, the Superintendent of Parks and the Chief of Natural Resources shall be consulted for a resolution. This plan (including future amendments) and its implementation for all vegetative maintenance shall

1) Mission Statement as cited from June, 1995, "Metroparks 2000" guide plan, Cleveland Metroparks

apply to any and all other documents which reference vegetative maintenance and management. To the extent applicable, the plan shall address the management and restoration of areas within the reservation adversely impacted by destructive and improper clearing, trimming, limbing and cutting of trees and other vegetation which has, or may, occur. Item 1 under procedures below, states the role of Park Managers for developing the vegetative management plans for their reservations and any necessary future amendments thereto. Items 2, 3, 4 and 5 cover implementation of the plan. During the period when a reservation does not have a plan, all vegetative maintenance shall be performed in accordance with professional vegetative maintenance standards and these guidelines.

Procedures

1. **Park managers have responsibility to identify areas** within their assigned park reservation **which may require vegetative maintenance**. Categories of vegetative park maintenance are provided to assist park managers in evaluating potential work areas.
2. **Park managers must consult with the assigned Natural Resource Manager** regarding the purpose, scope, and extent of proposed vegetative maintenance work. **Area Natural Resource Managers must concur** with the anticipated work. If a difference of opinion exists, the Superintendent of Parks and Chief of Natural Resources will be consulted for resolution.
3. **Vegetative maintenance work must be performed with the appropriate guidance of the area Natural Resource Manager**. In practice, this could include, for example: a) a joint work effort; b) periodic supervision; or c) direct work effort by the area's natural resource manager.
4. Within each reservation, **on-site field training** of park maintenance personnel (including seasonal personnel) of **proper cultural vegetative maintenance procedures** will be arranged. Lead responsibility for training implementation: Chief of Natural Resources (Tom Stanley); Superintendent of Parks - West (Bill Binggeli); and Superintendent of Parks - East (Dave Walkden). Training to be integrated as part of future vegetative maintenance work.
5. When **outside contractors and/or agencies** are performing vegetative maintenance on Cleveland Metroparks lands, they will be instructed to comply with the vegetative maintenance guidelines and it will be the responsibility of park managers, resource managers and the forestry manager to assure such compliance. If the party performing the work does not have an easement over the area involved, these guidelines shall be incorporated as part of the contract.

General Principles

The following principles will be consistently employed in all vegetative maintenance plans as identified in "Categories of Vegetative Maintenance".

1. Cleveland Metroparks contains many natural areas including forests, meadows, wetlands, etc. in which the majority of park visitors come to savor the natural beauty and experiences held within these areas. Thus, recognition must be given to the fact that many areas do not need any vegetative maintenance and that any necessary vegetative work done under the plan and these guidelines shall be done in a way to avoid a manicured, landscaped appearance and to retain the wild, natural appearance.
2. The entire "natural system" within a given park reservation is where the ultimate resource value resides. All components in a given park reservation have value and function in the system.
3. Each area of Cleveland Metroparks is unique and requires a vegetative maintenance plan specific to the needs of that area.
4. The "edge" of a forest is a dynamic, complex system with great wildlife value. Opportunities for enhancement through proper vegetative maintenance are excellent.
5. A plant's physiological response to direct impact, i.e., trimming, or indirect impact, i.e., changed micro-environment, should be considered in the vegetative maintenance decision process.
6. A goal of all vegetative maintenance shall be that it is executed in a manner so as to minimize harmful visual and environmental impact. Professional vegetative maintenance standards shall be followed in all cases.
7. When vegetative maintenance is proposed as a solution to solve a problem, there must be verification that the problem is actually caused by, or is likely to be caused by, the vegetation; and the maintenance shall be done only to the extent necessary to solve the problem.
8. The policy shall be to not expand existing areas of mowed grass along parkways; but rather to promote the minimum maintenance nature of meadows including consideration of the reversion of certain mowed areas to meadow.
9. It is recognized that from time to time trimming and cutting has to be done for emergencies and minor damage-repair. This will be the responsibility of the Park Manager in each reservation.

Categories of Vegetative Maintenance

A. Safety/Sight Line Maintenance

Description:

To be used only for safety reasons when necessary to eliminate a clear potential or actual risk of injury or harm to park visitors or park personnel or damage to vehicles caused by the vegetation.

Typical Use:

Trimming and limbing of vegetation at road or trail intersections and road curves so as to provide views of approaching vehicles, horses, bicycles, pedestrians, etc. Also for the safety of park visitors and park personnel for trimming of low-hanging limbs, poison ivy control, etc. (Restrictions: sight-line maintenance does not include trimming and clearing within recreation areas, between adjacent trail and road corridors and the like merely to "open" views, but must be related to legitimate safety concerns such as documented accidents, near accidents, injuries, low hanging branches, attacks on park users, criminal activities, blind curves, etc.).

Goal:

When lines of sight are necessary for safety reasons, to perform the maintenance only to the extent necessary to provide reasonable safety in the area involved for the reasonably prudent park user and in a way to minimize the environmental impact. When sight lines are necessary on roadway or trail curves or intersections, to allow canopy and overstory plants to continue to grow in their natural state so as to produce a more open understory. When roadway sight lines are involved, care shall be taken not to perform the maintenance in a way which may give drivers a false illusion of safety and cause them to go faster than the conditions allow.

B. Facility Maintenance

Description:

To be used in situations where buildings, roads, trails (all purpose trails, bridle, and hiking), retaining walls, bridges, etc., may be damaged by vegetation, either directly through physical contact, or indirectly by preventing proper drainage, etc.

Typical Use:

Adjacent to buildings and other structures where roots may cause deterioration and/or in situations to improve drainage. There shall be no clearing to open the overstory on bridle or hiking trails for the purpose of helping to dry out wet areas

Goal:

Solve the immediate and long-term problem while minimizing impact on the natural environment. Remove offending vegetation completely if trimming would leave a visually unsatisfactory or unhealthy plant.

C. Forestry/Vegetation Cultural Maintenance

Description:

To be used in areas where, if maintenance was not performed, it would result in "die back", decreased vigor and/or health of area vegetation.

Typical Use:

Areas where vines, noxious non-native growth, storm damage, insect/disease infestation, etc. are causing negative impact to remaining vegetation.

Goal:

Utilize approved vegetative maintenance practices to reduce impact of negative plant material and maximize health/vigor of remaining plants.

D. Habitat Management

Description:

To be used in the management of the natural areas of Cleveland Metroparks to maximize the natural biodiversity found in northeast Ohio.

Typical Use:

To develop and maintain successional communities such as grass and forb meadows and old fields and to restore historic systems such as wetlands.

Goals:

To recognize the value of the biodiversity of successional communities as complements to the climax, mature ecosystems of northeast Ohio.

E. Edge Management

Description:

Edge is defined as the interface of two dissimilar biological community types. Each edge is a unique combination of plants, soils, aspect, etc., creating unique opportunities.

Typical Use:

Interfaces with park roads, major trail corridors, and picnic areas.

Goal:

Utilize the natural diversity of edges to feature and promote such aspects as fall color, flowering and fruiting species, unique specimens, wildlife benefits, etc. Recognition must be given to the reality that many edges do not need to be trimmed and that the overriding goal is to retain the edge in a natural state.



INTER-OFFICE CORRESPONDENCE

TO: Stephen D. Dice, Director of Park Operations
Sean P. McHugh, Chief Superintendent of Golf/Turf
Steve H. Taylor, Zoo Director

FROM: Charles P. Englehart, Forestry Manager

DATE: March 30, 2001 – Revised June 25, 2002

SUBJECT: **Vegetative Management Program –
Forestry Division - Operating Cycle and Assessment Guidelines**

By memo dated June 7, 2000, Cleveland Metroparks Vegetative Management Program was modified by disbanding the Tree Tagging Program and by amending portions of the Vegetative Maintenance Guidelines related to Safety/Sight Line Maintenance and Edge Management. By this Inter-Office Correspondence, Forestry Division establishes internal procedures intended to facilitate timely and effective implementation of Forestry Division's obligations with respect to Vegetative Management Program, as modified on June 7, 2000.

Operating Cycle

- Work by the Forestry Division, except work related to removal of dead and structurally compromised trees and limbs after each tree threatening weather occurrence, generally will be in conformance with an operating cycle established for individual reservations on a cyclical basis. The initial cycle will be established based on the 1999 visitor occasion statistics, with those reservations having the highest visitor occasions, as reflected below, commencing the cycle. Reservations with the highest to lowest visitor occasions are as follows:
 - ♦ Big Creek
 - ♦ Mill Stream
 - ♦ Rocky River
 - ♦ Garfield Park
 - ♦ Euclid Creek
 - ♦ North Chagrin
 - ♦ Brecksville
 - ♦ Huntington Beach/Bradley Woods
 - ♦ Hinckley
 - ♦ Bedford
 - ♦ South Chagrin
 - ♦ Brookside
 - ♦ Ohio & Erie Canal
- For efficiency purposes, the Forestry Division's operating cycle will take into account seasonal weather patterns. For example, Forestry Division work will not occur on golf courses in the spring when courses are likely to be unable to support crews with equipment without damage to the courses. Consequently, emphasis is scheduled to be concentrated in the following use areas during the respective months and time frames noted:

- ♦ **Parkways & Parking Lots** - January, September, October, (½) November, and December (cyclical basis)
 - ♦ **Picnic Areas and Facilities** - May, June, and July (cyclical basis)
 - ♦ **All Purpose Trails** - February, March, and April (cyclical basis)
 - ♦ **Golf Courses** – August (annually)
 - ♦ **Zoo** – (1/2) November (annually)
- Competent Forestry Division personnel shall evaluate specific service requests for priority attention.
 - *As resources permit*, the Forestry Division generally will operate two arborist teams. Each team will remain focused on the operating cycle unless other requests for services warrant priority attention.

****DRAFT****



Forestry

Memo

To: Patty Barz, Law Director
From: Chuck Engelhart, Manager
Date:
Re: Amended Vegetative Management Program

Following our Vegetative Management meeting on June 6, I am submitting the following amendment for your consideration. This revision includes your request to incorporate a cycle for Golf Courses. Changes are in bold print.

Operating Cycle

- Work by the Forestry Division, except work related to removal of dead and structurally compromised trees and limbs after each tree threatening weather occurrence, generally will be in conformance with an operating cycle established for individual reservations and golf courses on a cyclical basis. The initial reservation cycle will be established based on the 1999 visitor occasion statistics. **The initial golf course cycle will be established based on an average monthly nine hole rounds (based on 1999-2001).** Those reservations having the highest visitor occasions, and golf courses having the highest monthly nine hole rounds, as reflected below, will commence the respective cycle.

Reservation Cycle

- Big Creek
- Mill Stream
- Rocky River
- Garfield Park
- Euclid Creek
- North Chagrin
- Brecksville
- Huntington Beach/Bradley Woods
- Hinckley
- Bedford
- South Chagrin
- Brookside
- Ohio & Erie Canal

Golf Course Cycle

- Big Met
- Shawnee Hills
- Sleepy Hollow
- Manakiki
- Little Met
- Mastic Woods

Please review and advise of any questions or comments.

CE:cat



CLEVELAND METROPARKS

VISUAL COMMUNICATIONS STANDARD SIGN REFERENCE MANUAL

Traffic and Trail Signs

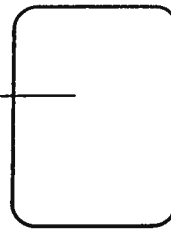
All Cleveland Metroparks signs are based on ODOT or national park standards. When it is necessary to deviate from these standards, we try to adhere to the principles behind the design and fabrication of well researched and long used signs.

Park managers are responsible to make certain that all signs are up-to-date within their reservation. If a sign has been in use for many years, it may not conform to what is standard or legal today. Periodic internal reviews of standard signs by operations personnel is suggested.

Ordering signs

To order items from this catalog, please refer to the stock number under the sign's illustration (see illustration below). Call or fax the Visual Communications Division with the quantities and stock number. The sign will be put in inter-office mail unless you make other arrangements.

sign



stock number 116
 size 20 X 30
 color(s) Black & Yellow

Ordering signs not found in the catalog

For signs not found in the catalog, you must fill out a Visual Communications Request Form (see page A5). The sign will be designed and fabricated following ODOT or national park standards. This may require obtaining opinions from legal advisors, Cleveland Metroparks risk manager and/or federal and state agencies.

Recycling old signs

Metal sign blanks are either reused or recycled. Please return them to the Visual Communications Division.

Installation

Staff and/or equipment to install signs is not available through VisCom. Please refer to the ODOT Uniform Traffic Manual for specific instructions on installation.

Traffic

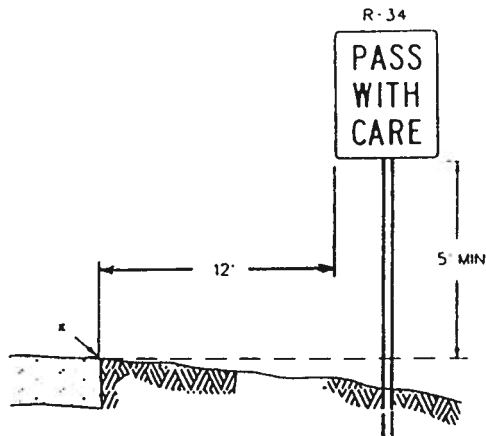
100 Parking
 200 Road Closed
 300 Municipal Signing
 400 Park Directional
 500 Traffic Warning
 600 Construction

General Park

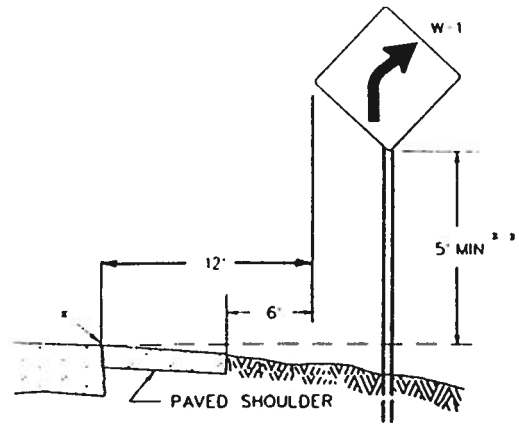
700 Park Warning
 800 Park Regulatory
 900 Park Informational
 1000 Marina
 1100 Chalet
 1200 All Purpose Trail
 1300 Hiking & Bridle Trails
 1400 Aquatics
 1500 Fishing & Wildlife Management
 1600 Golf
 1700 Winter Recreation

C Temporary cardboard
 S Stickers

TYPICAL HEIGHT AND LATERAL CLEARANCE OF SIGNS



RURAL



RURAL



CLEVELAND METROPARKS

BASIC TREE/SHRUB PLANTING AND AFTERCARE PROCEDURES



CLEVELAND METROPARKS



BASIC TREE/SHRUB PLANTING & AFTERCARE PROCEDURES

Prepared by: Chuck Engelhart, Forestry Mgr.
Revised: April, 2003

BASIC TREE CARE GUIDELINES

PART I TREE AND SHRUB PLANTING

Part I. 1 Preplanting Considerations

A. Site Considerations vs. Plant Selection

1. Site factor considerations are:
 - Growing space (above and below ground)
 - Drainage
 - Light levels
 - Soil type
 - pH, etc.
2. Plant material considerations are:
 - Size at maturity
 - Hardiness
 - Insect and disease resistance
 - Maintenance requirements
 - High-use areas, etc.
3. The best practice is to select plant material suitable for the planting site, rather than altering the site to suit the plant material.

B. Seasons for Planting

1. Preferred time to install plant material is during plant dormancy.
2. This window exists once plant material hardens off in the fall and continues prior to spring break.

C. Plant Material (Pre-installation)

1. Inspect all plant material prior to accepting and/or purchase.
2. Assess root ball (10"-12" per-every-inch caliper of tree), trunk, branches and buds/foliage for defects, damage and viability.
3. Moisture in the root ball must be maintained to prevent the tree from desiccation.
4. Plant material should be "heeled-in" and stored in a shaded area prior to installation.
 - Utilize mulch, wood chips, dirt, straw, or leaf humus.

Part I. 2 Plant Installation

A. Preparation of the Planting Hole

1. Depth to be 1" – 2" shallower than the root ball and firmly tamped at the bottom.
 - Care must be given to prevent plant material from settling.
2. Width to be twice the width of the root ball, with walls that taper to the bottom of the hole.

B. Placement of Plant Material in Planting Hole

1. Care should be given to minimize damage to the root ball.
2. Lift the tree by the root ball--never by the trunk.
3. Remove all canopy twine, ribbon and tags prior to standing the tree upright.
4. Top of root ball must be 1" – 2" higher than surrounding grade.

C. Initial Pruning

1. Remove any dead, broken or diseased limbs.

D. Straightening

1. Stand plant material upright and stabilize by tamping soil firmly around the lower quarter of the root ball.
2. Assess the tree from a north-south and east-west direction to assure the tree is straight.

E. Removal of Root Ball Wrappings

1. Cut off and remove burlap, twine and wire basket from the top half of the root ball.
2. All containers shall be removed entirely.

F. Root Systems (container grown)

1. Alleviate any potbound (girdling) roots by scoring the roots.
 - Use a sharp knife to make vertical slices every 2" – 3" around the root ball.

G. Backfilling

1. Utilize only good quality topsoil.
2. Tamp soil around root ball to ensure that no air pockets remain.
 - This can be accomplished by using your feet and a spud bar.

H. Construct a Water Well

1. Form a ridge of soil 2" – 4" high around the outer margin of the root ball.
 - The water well will reduce run-off from watering and rainfall, thus acting as a reservoir.

I. Placement of Trunk Guard

1. Guard to be constructed of 4" perforated flexible PVC pipe.
 - Pipe should be 8" – 12" long and requires a vertical slice down one side.
2. Guard should be placed around the trunk, with the bottom resting on the root ball.

J. Staking and/or Guying (to be utilized only when necessary to encourage straight, upright growth.)

1. Stake trees that are loose in the root ball, exposed to high winds, planted in loose soils, or possess a large canopy in relation to the trunk diameter.
2. Use the correct number and size of stakes for each tree.
3. All stakes are to be driven into undisturbed ground outside of the rootball area.
4. Multiple stakes should be placed equal distance from each other.
5. All support wires should be covered with pieces of old garden hose where contact is made with the trees.
6. Guying materials should be placed at a height that will provide optimum support, i.e., no higher than 2/3 the height of the tree.

K. Mulching

1. Use organic matter such as shredded bark mulch, leaf humus, aged wood chips, etc.
2. The mulch ring should be large enough to incorporate any lower scaffold branches, as well as any guy wire stakes that could interfere with mowing.
3. A layer of 3" – 4" of mulch should be placed around the plant material.
4. Do not allow mulch to come into contact with the root flare area of the plant material.

L. Watering In

1. Apply enough water to thoroughly soak root ball and surrounding soil area.
 - This practice is essential for plant establishment and will also settle loose soil and reduce air pockets around the roots.

M. Deer Protection

1. Wrap the trunk area of susceptible trees with plastic deer wrap.
 - The buck-rub area of the trunk extends from 12" above ground up to a height of 4 feet.

PART II AFTER PLANTING CARE FOR NEWLY-PLANTED TREES AND SHRUBS

Aftercare will be provided for three (3) consecutive years after installation.

A. Mulching

1. Mulch will be maintained at a depth of 2" – 4" over the planting hole.
2. Do not exceed 4" depth of mulch. This includes previous layers already in place.
3. Do not allow mulch to come into contact with root flare area of the plant material.
4. Previously applied mulch will be broken up to prevent binding.

B. Assessment of Staking and Guying Systems

1. All staked and guyed plant material should be inspected regularly for necessary repair and adjustments.
2. Inspect the plant material for damage such as girdling or excessive wear to bark tissue.
3. All staking and guying systems should be removed one year after installation.

C. Watering

1. *Watering is THE single-most important maintenance practice for plant establishment.*
 - Recommendations vary, depending on annual rainfall, temperature, wind conditions, soil type, humidity and quality of the root system.
2. Plant material should be assessed for adequate root ball moisture for a minimum period of three years after installation or one year for each inch caliper at time of installation.
3. Soil moisture within the planting hole should be assessed one time per week while trees/shrubs possess foliage. Soil moisture will be managed to prevent plant material from wilt.

C. Watering (cont'd.)

4. If watering is needed, apply water within the water well area at a slow rate of 5 gal. /per inch caliper.
5. Avoid overwatering! Too much water can be detrimental to root health.

D. Weed Control

1. Mulching practices serve as primary means of weed control.
2. Alternative natural products and/or methods should be considered as part of weed management practices.
3. Herbicide utilization will be kept to a minimum and in accordance with product labels.

E. Pruning/Directing Tree Development

1. All newly planted trees shall be pruned in accordance with professional arboriculture standards.
2. Plant material shall have any damaged branches removed upon discovery.

F. Insect/Disease Management

1. An Integrated Pest Management (IPM) approach shall be implemented in the decision-making process.
2. Proper plant selection and proactive plant health care to promote vigorous growth is vital to insect/disease management.
3. Early detection and proper identification, as well as monitoring of pest activity and population levels are the keys to successful IPM. The goal of pest management is to keep the pest populations down to a level where damage is not overly evident (aesthetic threshold level).
4. If aesthetic threshold level is reached, all control options—biological, chemical and cultural—should be considered.

G. Deer Protection

1. Deer wrap should be installed in accordance with plant material installation (Step M) annually during September, and removed in March.

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SEASONAL SCHEDULE for

Chuck Engelhart, Forestry Manager

PLANT INSTALLATIONS and AFTERCARE

TASK	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	COMMENTS
Site Consideration vs Plant Selection													Plant Consultation
Planting Seasons													Preferred leaf fall until bud break
Mulching													Fall preferred
Assess Staking/Guying													Ongoing
Watering Assessment													1" natural water weekly
Weed Control													
Training of Trees													Preferred while trees are dormant.
Deer Protection													If necessary, apply in September and remove in March
Insect/Disease Mgmt.(monitoring)													

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SEASON SCHEDULE 03.xls

Updated 4/2/2003