Enter at Your Own Risk: Creating Authentic Children's Gardens in a Built World



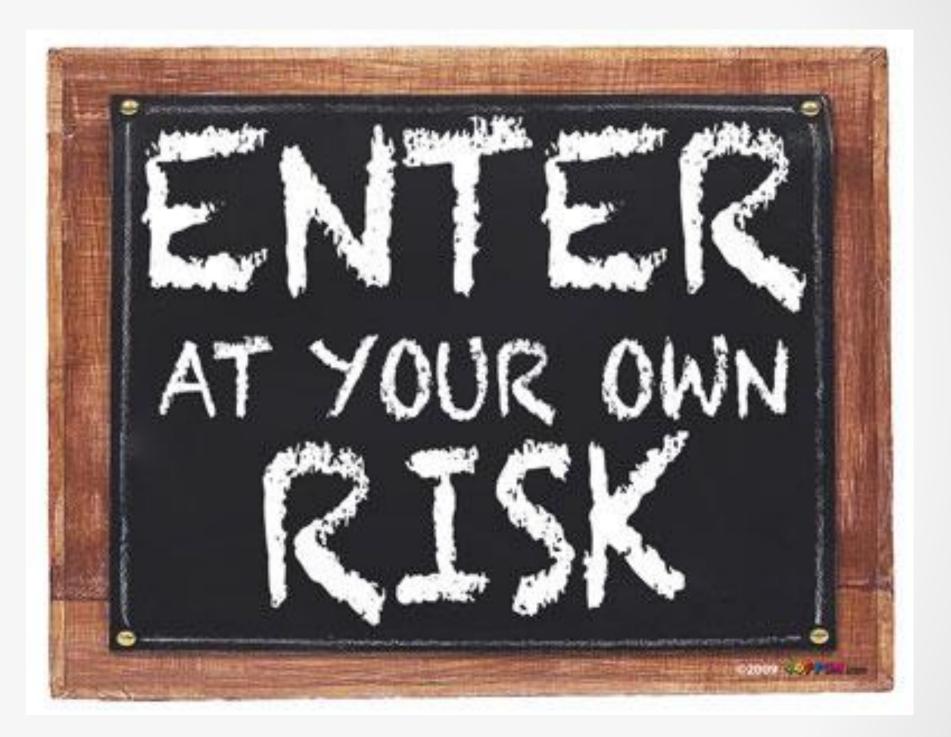


THE ARBORETUM AT PENN STATE didierdesignstudio



Panel members:

- Susan Pell, Nick Nelson, United States Botanic Garden, Washington, District of Columbia
- Shari Edelson, The Arboretum at Penn State, University Park, Pennsylvania
- Emmanuel Didier, Didier Design Studio LLC, Fort Collins, Colorado
- Jeri Deneen, Jon Powell Deneen Powell Atelier, Inc., San Diego, California



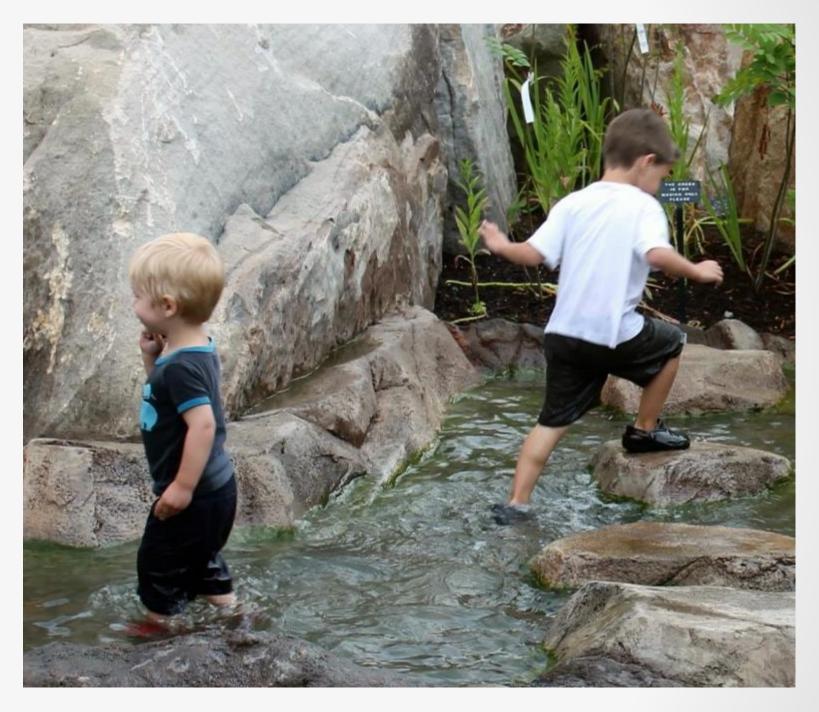
Risk and Children's Play: What the Research Tells Us



All photos: The Arboretum at Penn State, unless otherwise noted

Agenda:

- The benefits of risky play
- Parental perceptions of risk and safety
- The costs of engineering risk and free play out of children's experience
- Where children's gardens fit in



The Benefits of Risky Play

- Distinguishing risk from hazard
 - Risky play: Play that "combine[s] the joy of freedom with just the right measure of fear to produce the exhilarating blend known as *thrill*' (Gray, 2014.)
 - Hazard: "A source of harm that is not obvious to the child, such that the potential for injury is hidden" (Wallach, 1992.)





The Benefits of Risky Play

- Types of risky play (Sandseter, 2011.)
 - Great heights!
 - Rapid speeds!
 - Dangerous tools!
 - Dangerous elements!
 - Rough and tumble!
 - Disappearing!
- What do all of these have in common?
- Why might this be important?



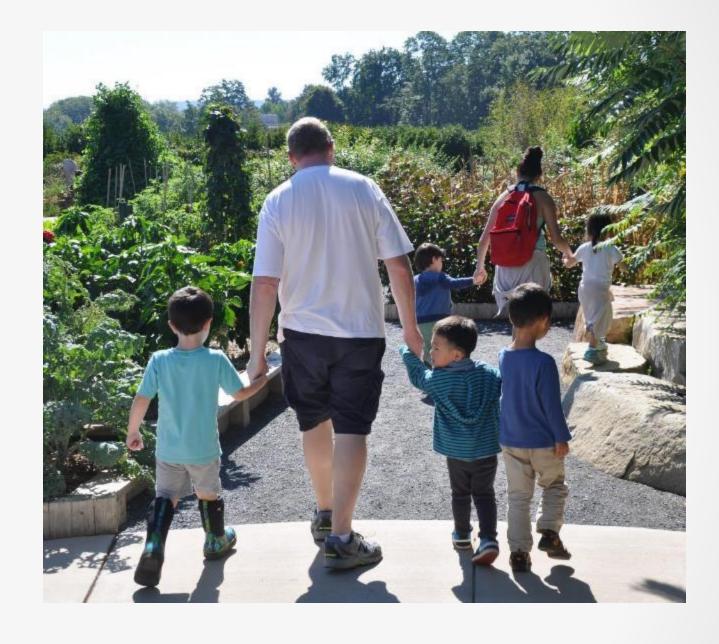
The Benefits of Risky Play

- An evolutionary perspective: The anti-phobic effects of thrilling experiences (Sandseter, 2011.)
- A developmental perspective: Learning resilience and developing competence (Brussoni et al., 2012.)



Parental Perceptions of Risk and Safety

- Parental safety concerns are the largest influence on children's access to independent play (Valentine and McKendrick, 1997.)
 - 43% of UK parents in a 2006 survey thought children under 14 should not be allowed outside unsupervised; 22% believed this to be true of children up to age 16! (Living Streets, 2009.)
- Cultural norms influence parental behavior (Thomas et al, 2016.)
 - Our current parenting norm: constant direct adult supervision of children
 - Consequences of violating this norm range from harsh criticism to legal action



The Costs of Engineering Risk and Free Play out of Children's Experience

- Impacts to physical health and well-being
 - The childhood obesity epidemic
 - Growing sense of disconnection with the natural world
- Team sports as a replacement for free play in many school and leisure settings
 - Rules are set by adults, who also adjudicate all disputes
 - 3.5 million children under age 14, or 1 out of 7 children engaged in youth sports, receive medical treatment for sports injuries per year (Gray, 2014.)
- Intensively-parented children develop anxiety and depression in adolescence
 - The overly-constrained children of today are the anxious, depressed, and dependent young adults of tomorrow (Estroff Marano, 2004.)

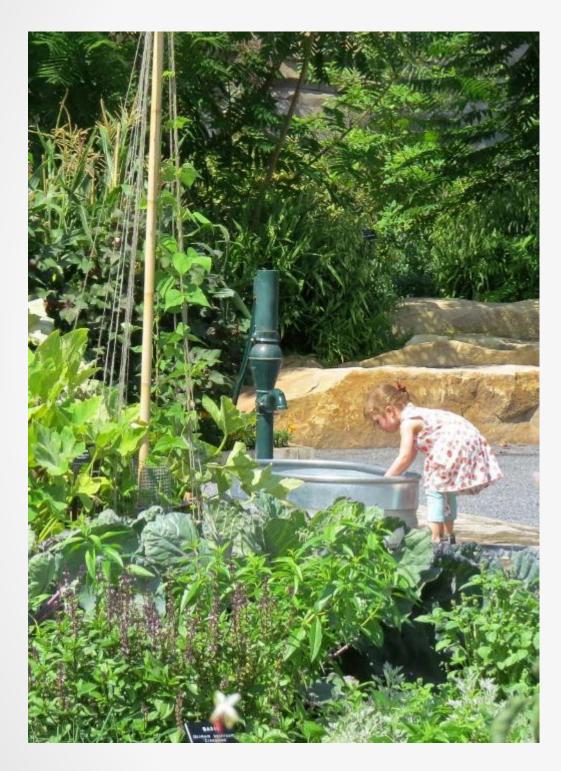
Where Children's Gardens Fit In



References

- Brussoni, M., L. Olsen, I. Pike, & D. Sleet. (2012). Risky play and children's safety: Balancing priorities for optimal child development. *International Journal of Environmental Research and Public Health*, *9*, 3134-3148.
- Estroff Marano, H. (2004). A nation of wimps. *Psychology Today.* Retrieved from: https://www.psychologytoday.com/us/articles/200411/nation-wimps
- Gray, P. (2014). Risky play: Why children love it and need it. *Psychology Today*. Retrieved from: <u>https://www.psychologytoday.com/us/blog/freedom-learn/201404/risky-play-why-children-love-it-</u> and-need-it
- Living Streets. (2009). No Ball Games Here. Retrieved from: https://www.livingstreets.org.uk/media/1404/noballgames.pdf
- Play Safety Forum. (2008). Managing risk in play provision: A position statement. London: National Children's Bureau. Retrieved from: http://www.playengland.org.uk/media/120462/managing-risk-play-safety-forum.pdf
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- Thomas, A., P. Stanford, and B. Sarnecka. (2016.) No child left alone: Moral judgements about parents affect estimates of risk to children. Collabra, 2(1), 1-14.
- Valentine, G., and J. McKendrick. (1997.) Children's outdoor play: Exploring parental concerns about children's safety and the changing nature of childhood. *Geoforum*, 28, 219-235.
- Wallach, F. (1992). Playground safety: What did we do wrong? Parks and Recreation, 27, 52-57.

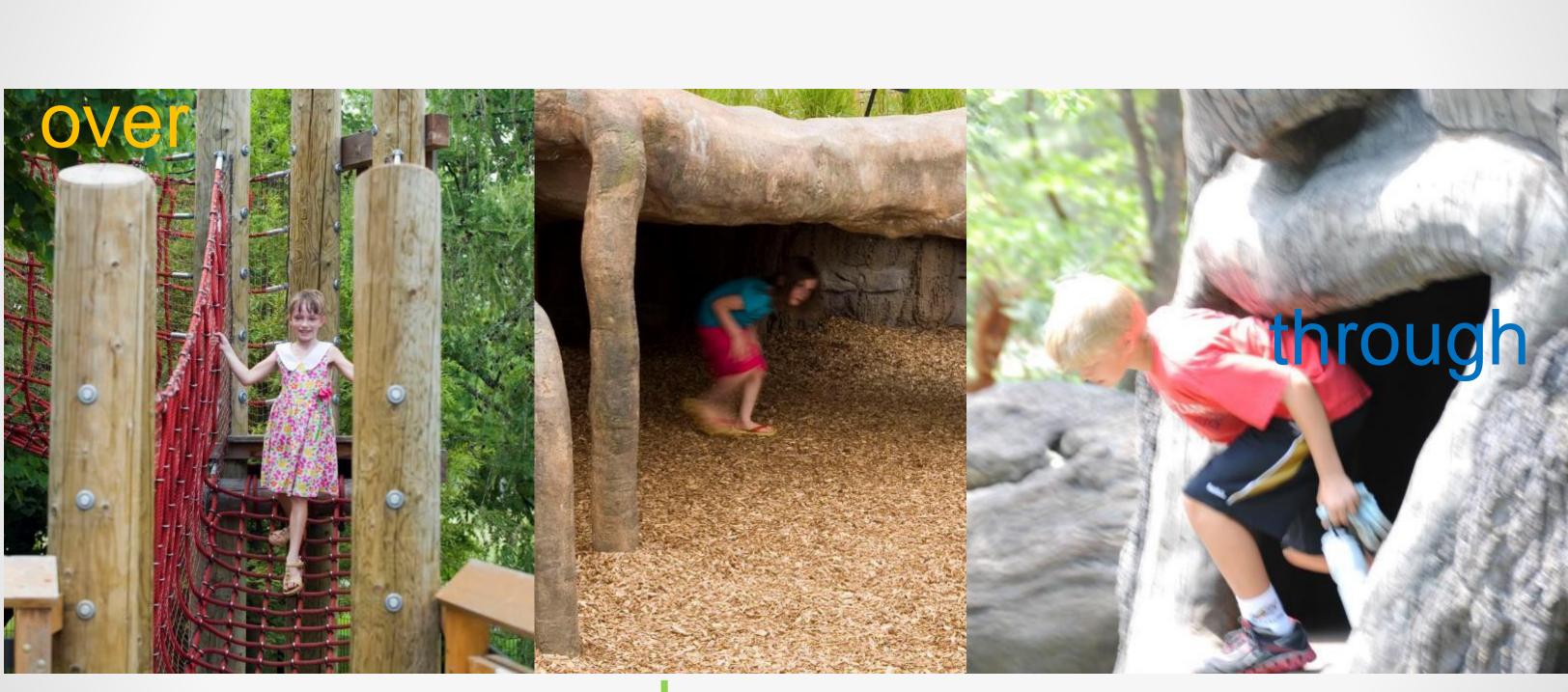
A Place to connect to the Natural Environment







Nature Play Challenges



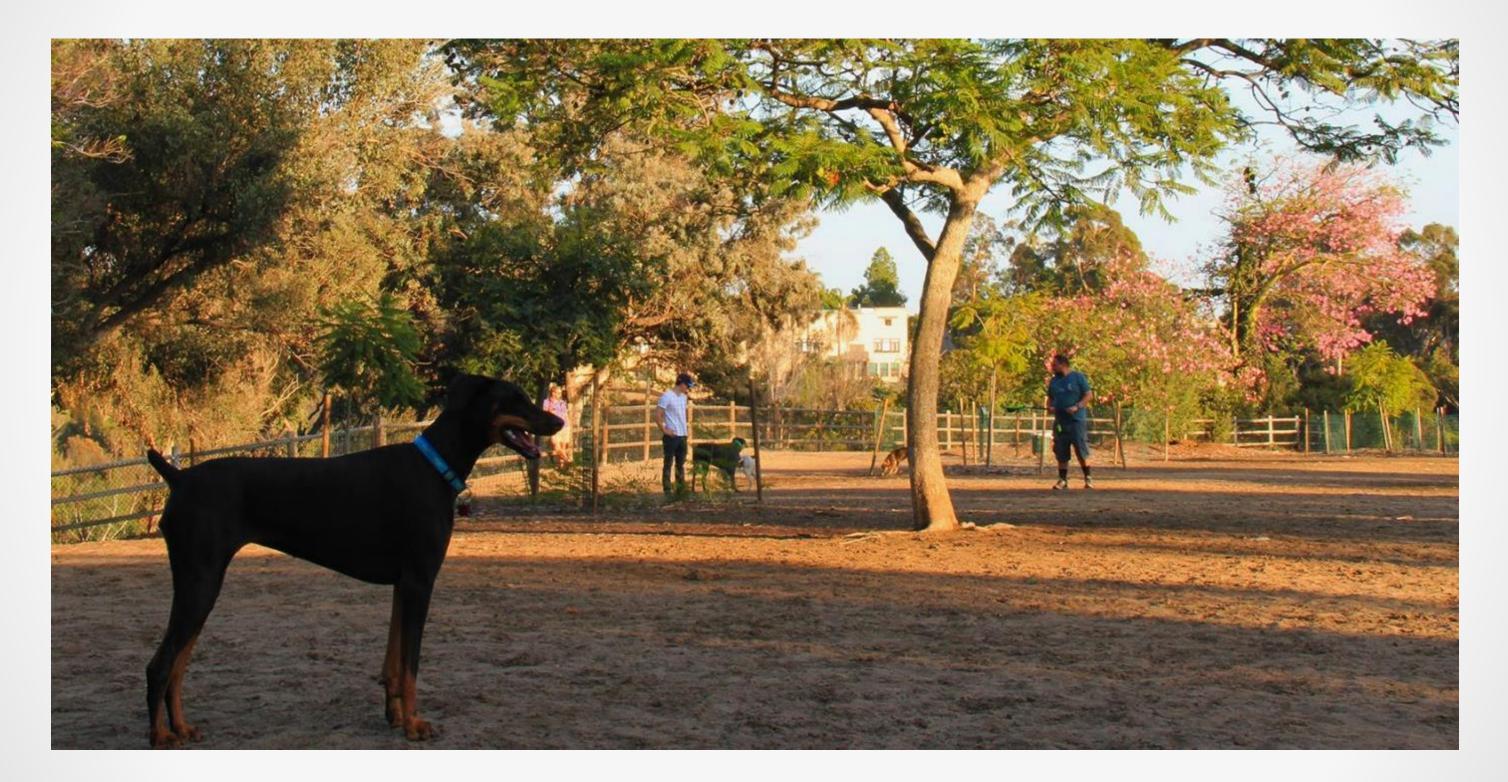
under

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How to avoid compaction or loosing the plant collection



Not a dog park with bare ground

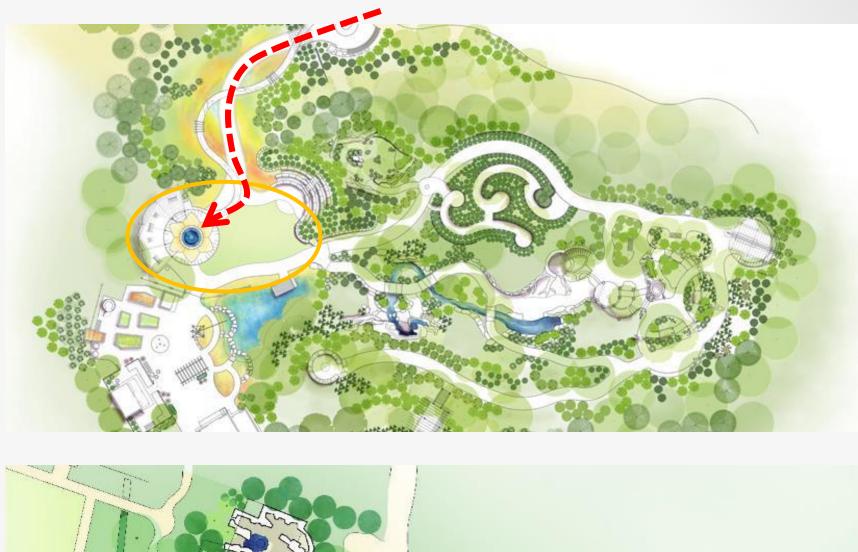


Not a playground with no plants



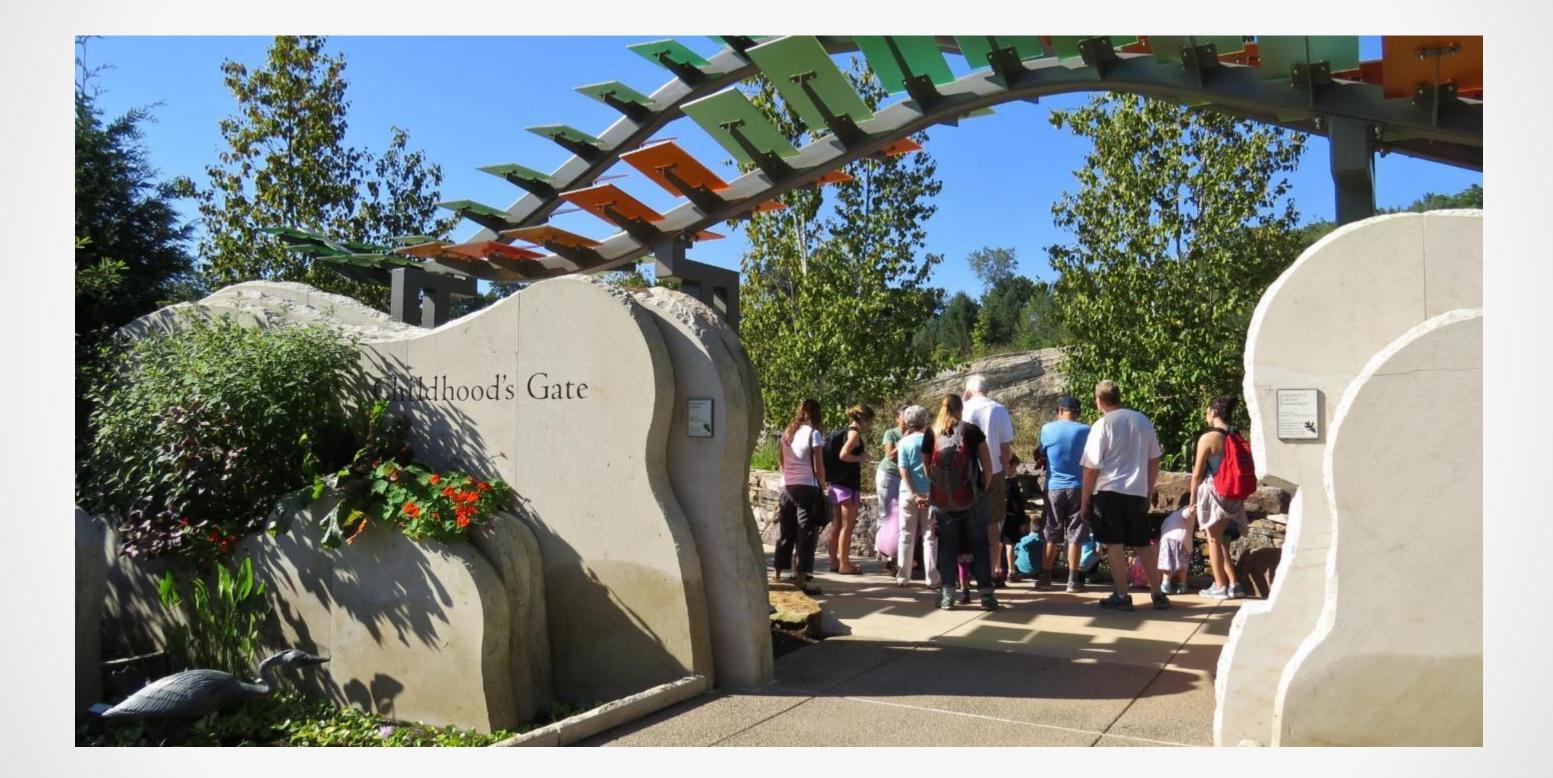
Overall considerations: sight lines and circulation





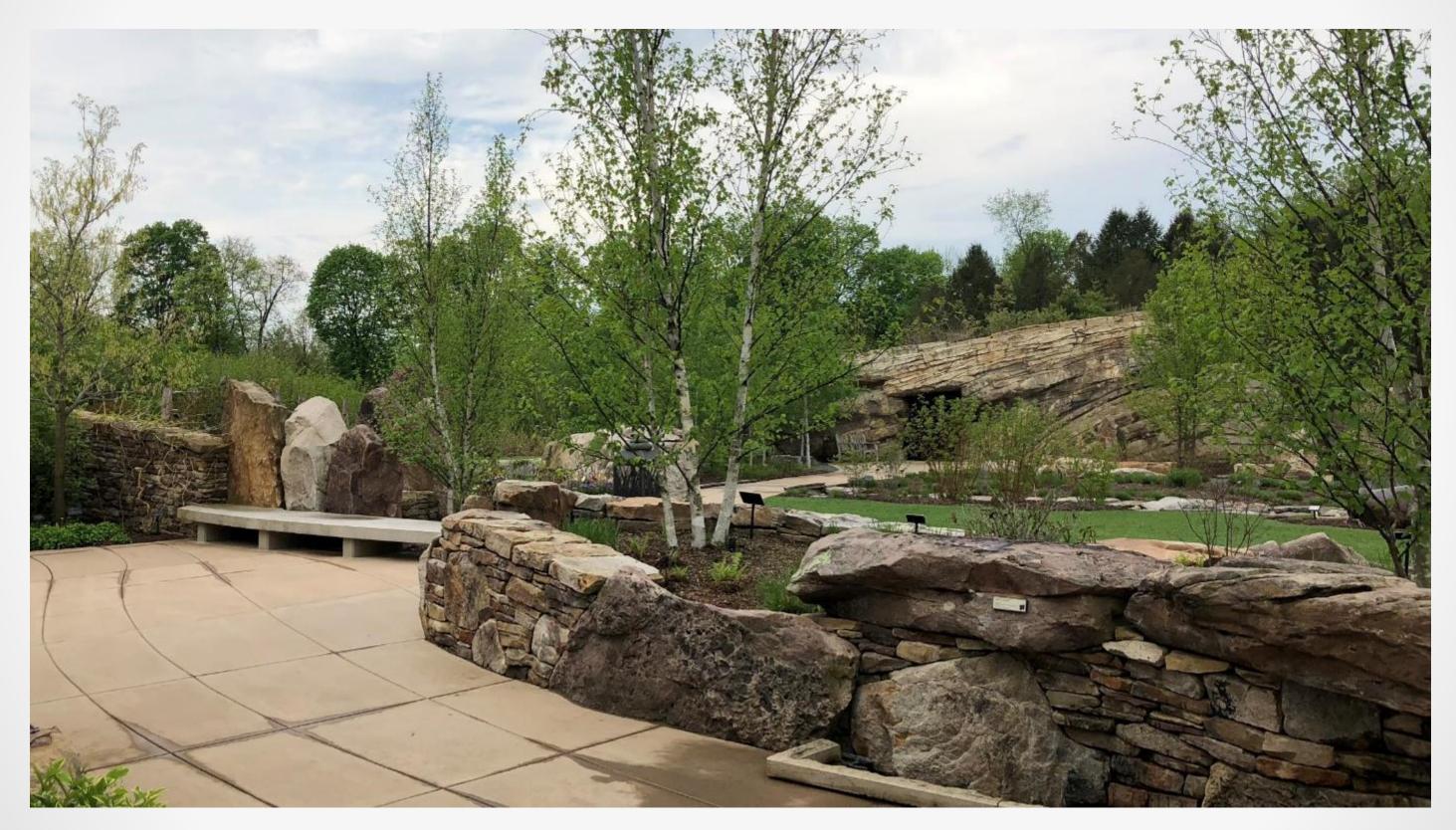








Build discovery and channel flows with raised landforms + plants



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Raised Beds to expose plants





Balance between social spaces for interaction and energy dispersion, versus compressed moments for discovery and spaces for plants.



Elevate plants for multi-sensorial experience and protection



Provide pockets of open space for activities within dense planting





Nestle social spaces within backdrops of planting



Provide planned cut-through framed by resilient planting

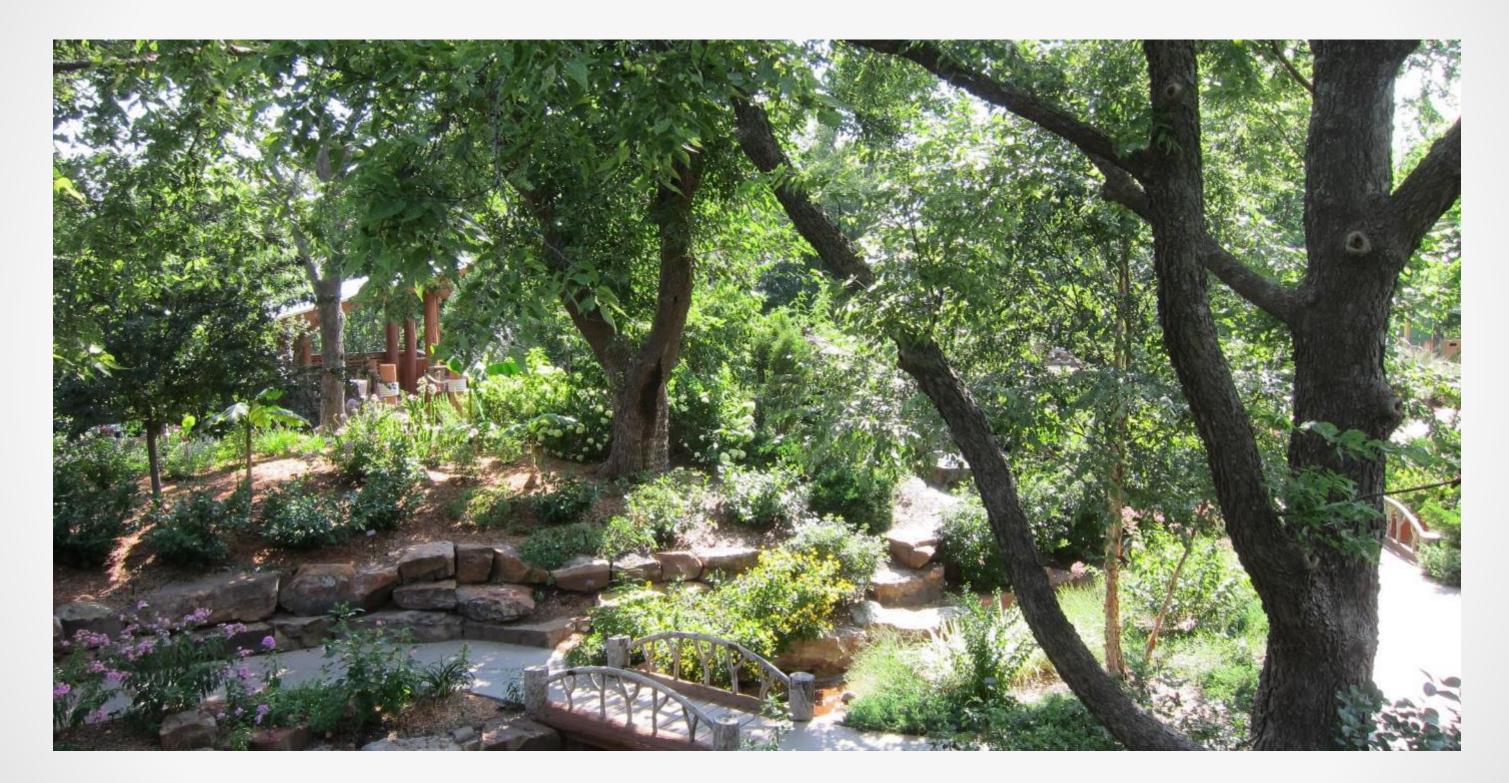


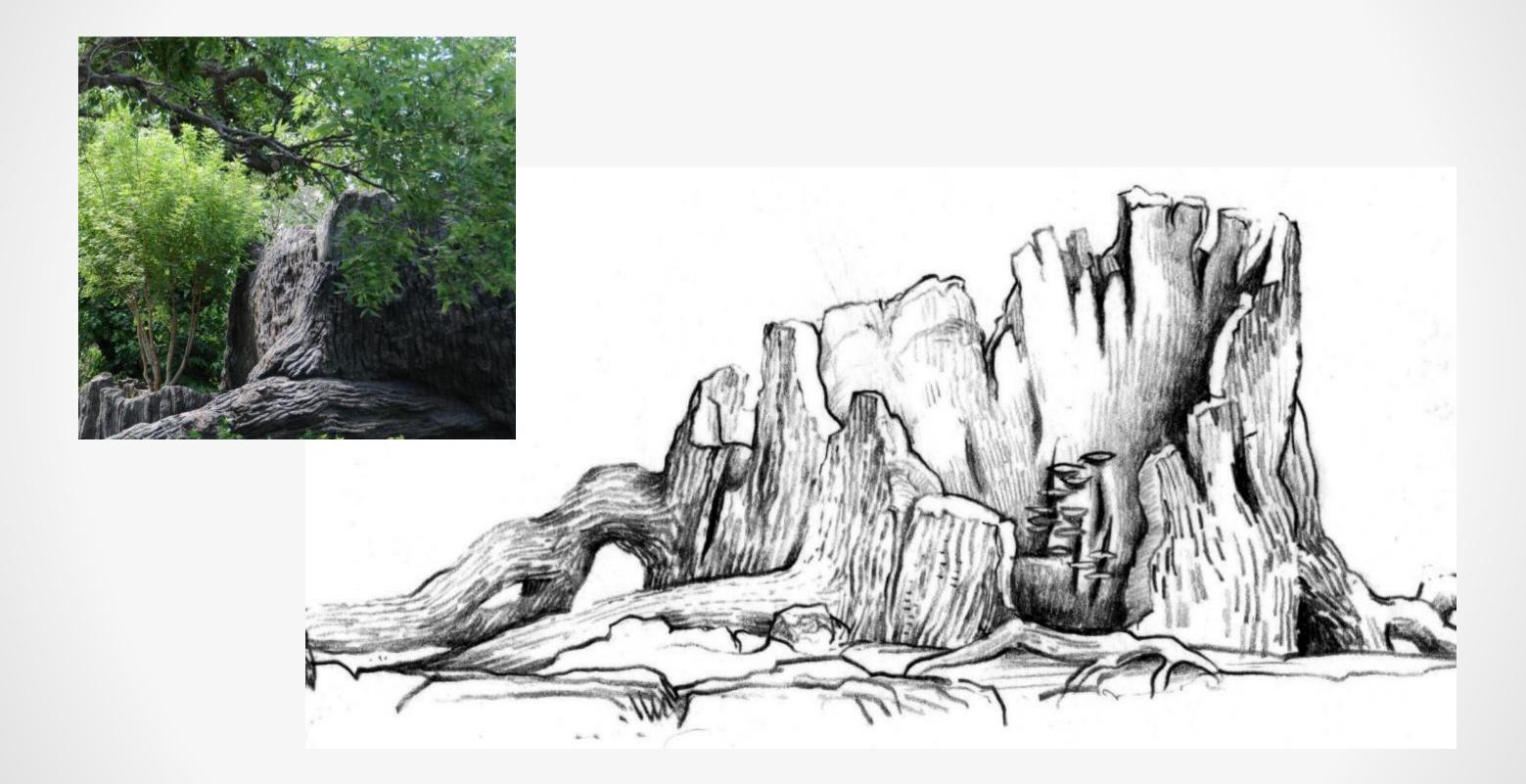


Create nooks and pockets for plants

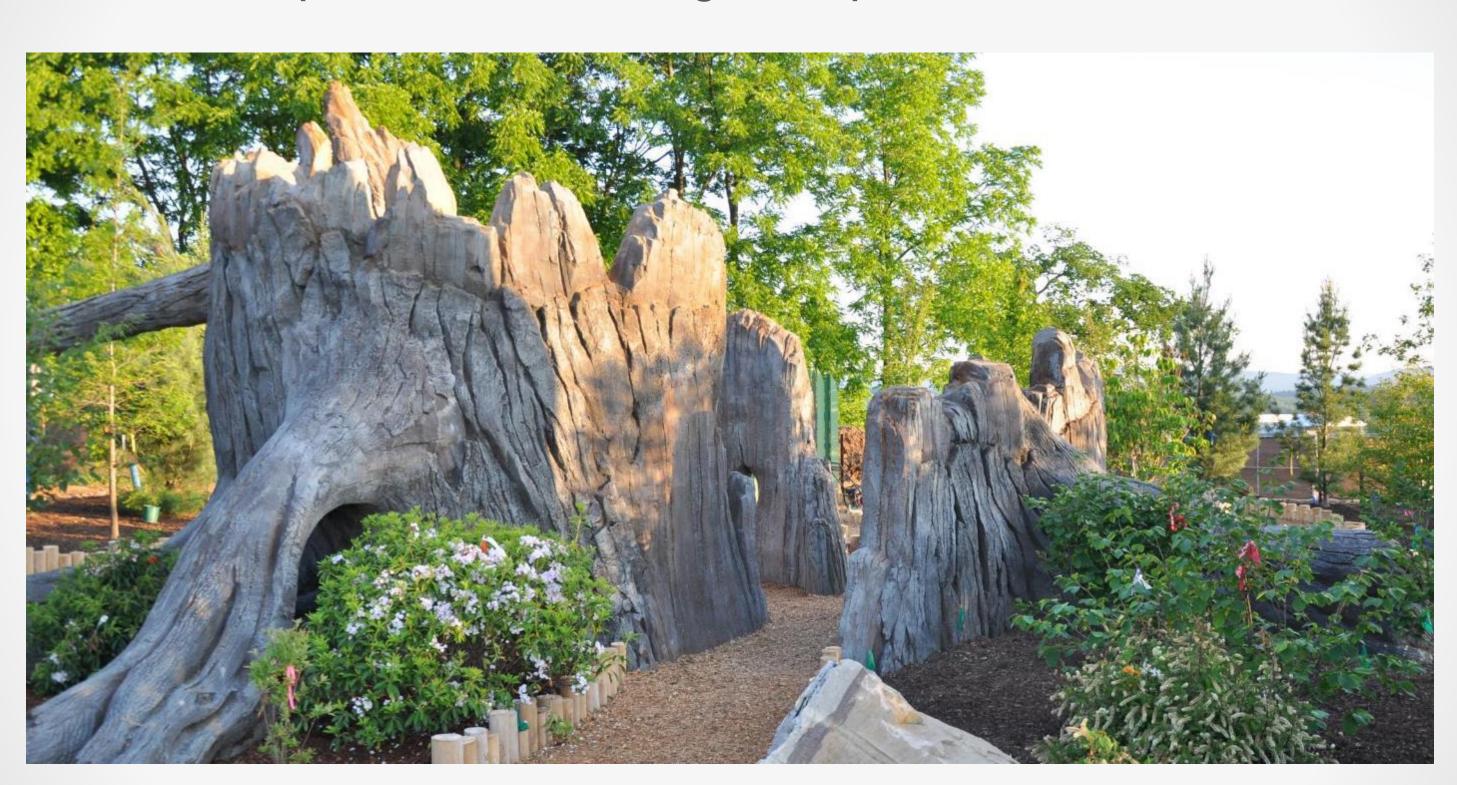


Topography as edges or barrier to channel flows



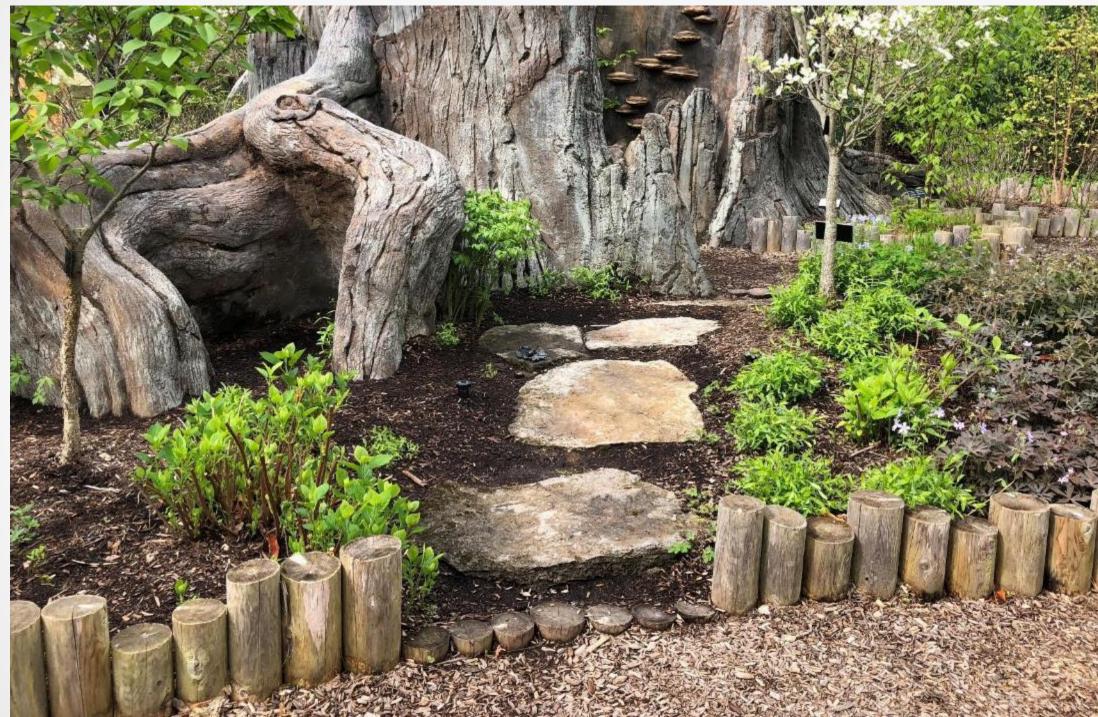


Use landscape elements as edges for plants





Adapt pathways when needed, but extending overall character



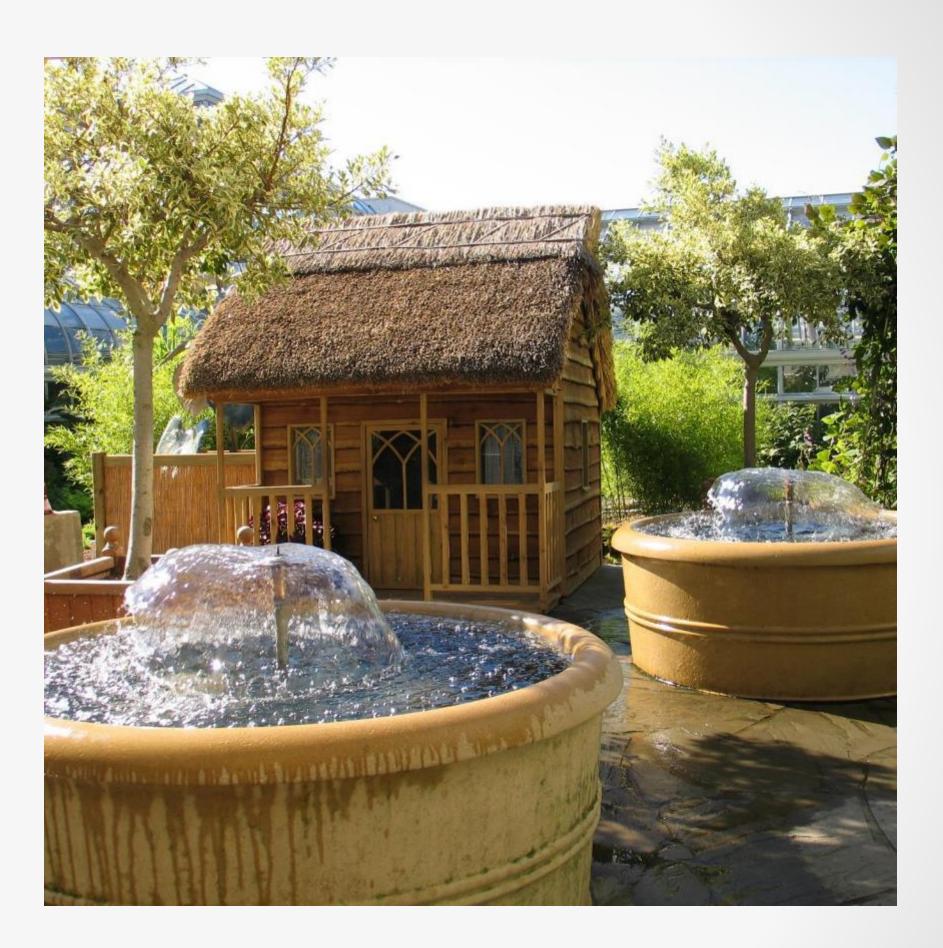


Weaving plants and children's flow lines and energy



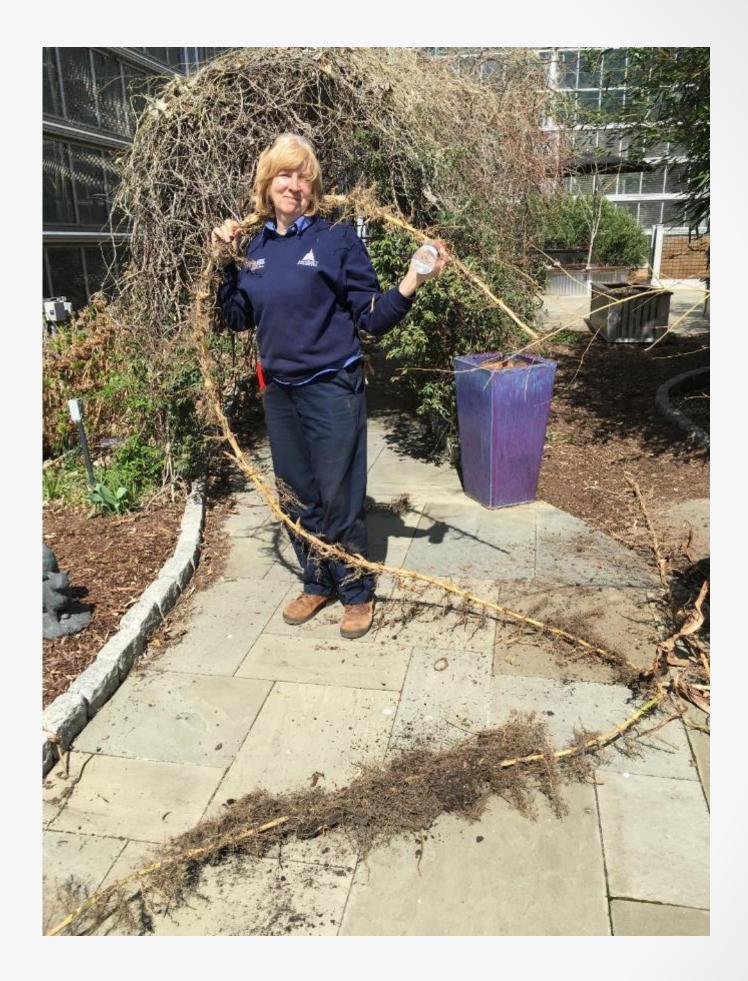


USBG Children's Garden circa 2005



Establishing a need for change





Phase A, Constructed 2015



Raised Planters

Phase A Water Features



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Phase A Raised Beds



8/27/2018

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Watering Can Fill Station





Leaf Trellis and Watering Can Seats

Digging Area

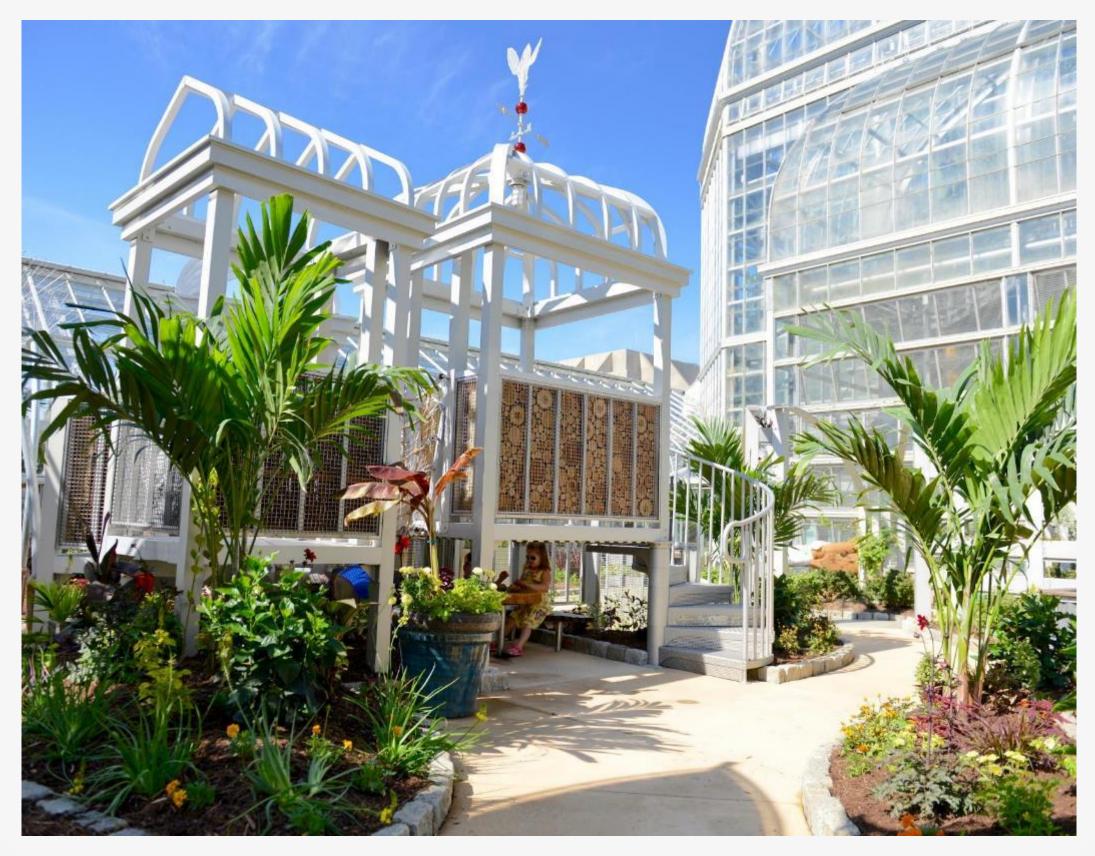
Dandelion Sculptures

Platform Discovery Structure

Kiwi Tunnel

Toadstool Seats

Platform Discovery Structure

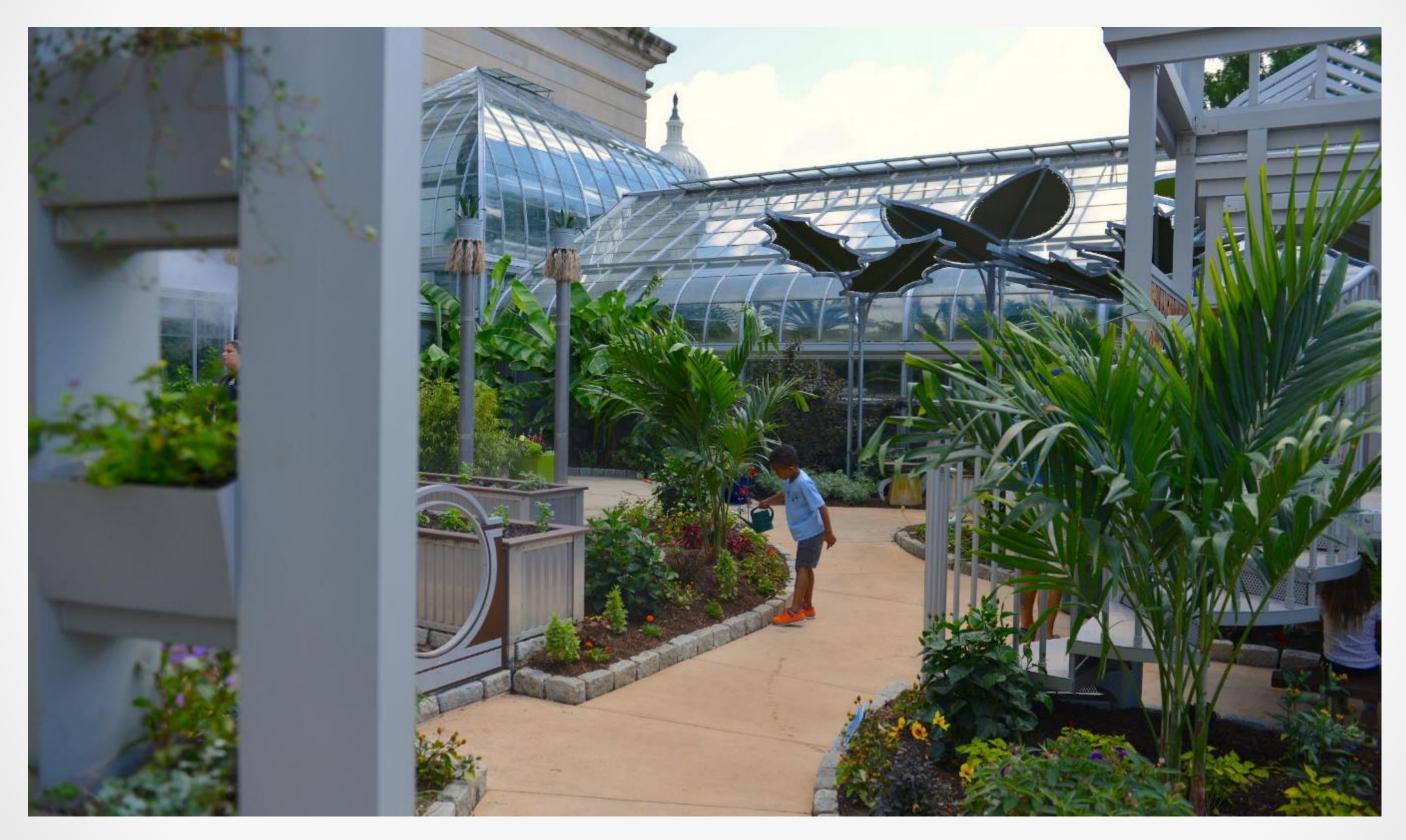


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Platform Discovery Structure

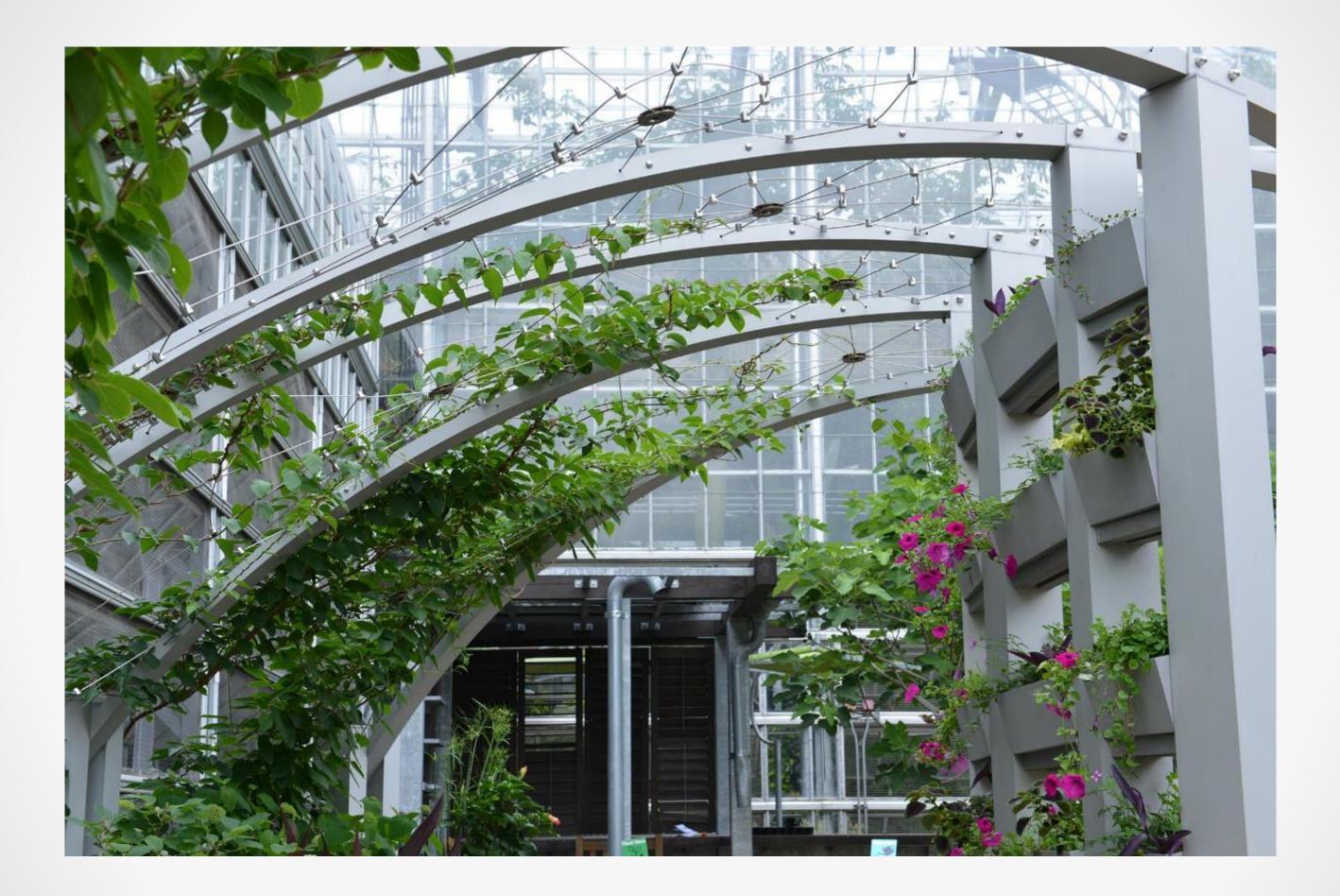


Leaf Shades



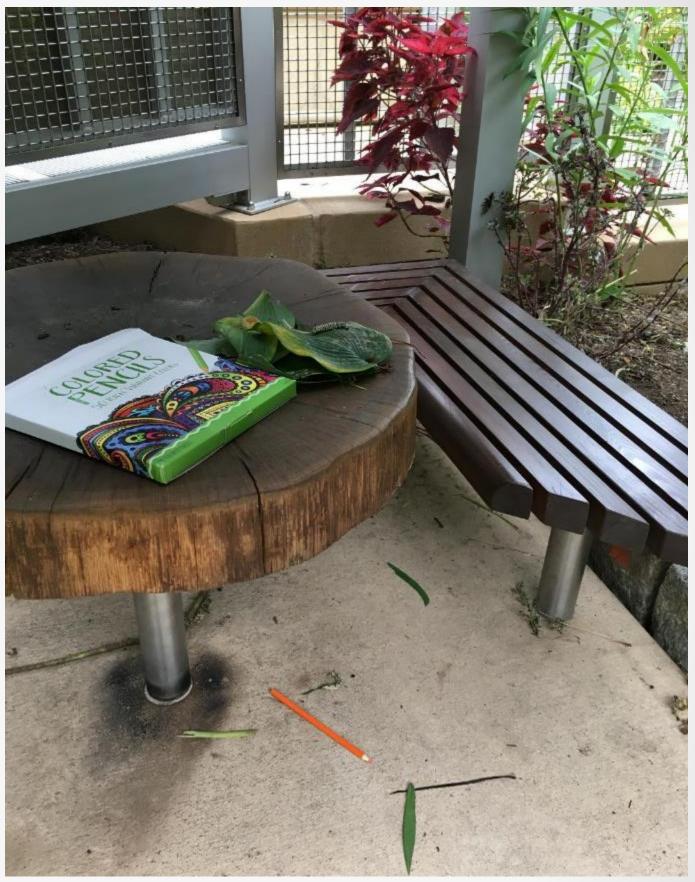
Dandelion Sculptures





Children learn to think creatively through their interactions





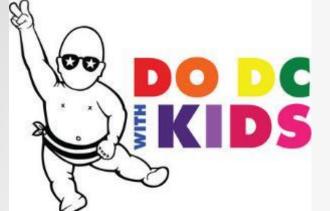
Prepare for battle

"In preparing for battle I have always found that plans are useless, but planning is indispensable."

Dwight D. Eisenhower









e children's garden at the United ates Botanical Garden has reened and is better than ever.

By Tina

Published on June 19, 2017



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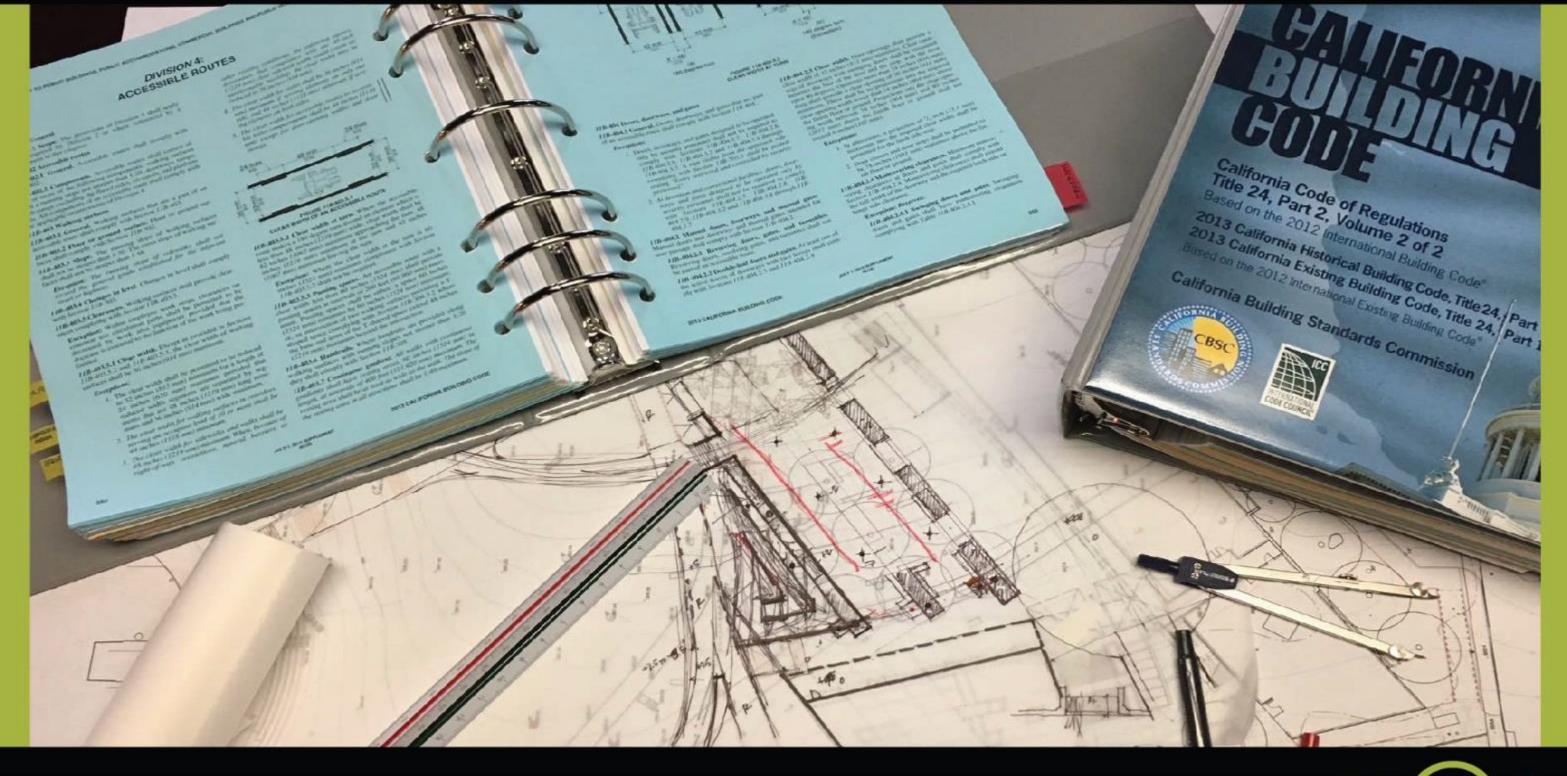
"You may be a city kid when, shoveling is a total delight."



















United States Department of Justice Civil Rights Division

Information and Technical Assistance on the Americans with Disabilities Act

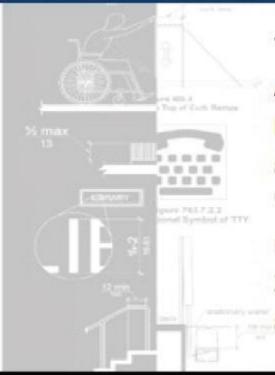
Law / Regulations

Design Standards



2010 ADA Standards for Accessible Design - html

ADA Standards for Accessible Design



The Department of Justice's revised regulations for Titles II and Americans with Disabilities Act of 1990 (ADA) were published in Register on September 15, 2010. These regulations adopted rev accessibility standards called the 2010 ADA Standards for Acc "2010 Standards." On March 15, 2012, compliance with the 201 required for new construction and alterations under Titles II and 2012, is also the compliance date for using the 2010 Standards accessibility and barrier removal.

Technical Assistance Materials



ACCESSIBLE PLAY AREAS A Summary of Accessibility Guidelines for Play Areas





UNITED STATES ACCESS BOARD

Advancing Full Access and Inclusion for All

	The Board	Guidelines & Standards	Training	Enforcemen
Home > Guidelines and St Areas	tandards > Re	creation Facilities > Outdoor D	eveloped Areas	> Background
	Outdoo	r Developed Areas		
TABLE OF				(
CONTENTS				
Other Issues	Outdoor developed areas covered by this section shall comply with the applicable requirements of section 4 and the special application section except as modified or otherwise provided in this section.			
Trails				
Recreation Access	16.1 Gen	eral. All newly designed and c	onstructed ped	lestrian trails or

All newly designed and constructed pedestrian altered portions of existing pedestrian trails connecting to designated trailhead or accessible trails shall comply with 16. All newly designed and **Outdoor Developed** constructed camping facilities, picnic areas, and beach access routes or altered portions thereof shall comply with 16.

Appendix

Routes

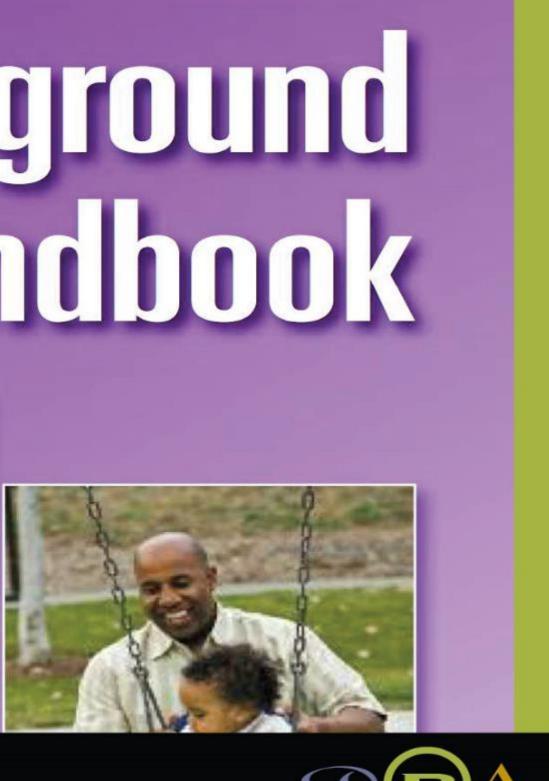
Areas

16.1.1 Extent of Application. Departures from specific technical



Public Playground Safety Handbook









Designation: F 1487 – 07a^{€1}

Standard Consumer Safety Performance Specification for Playground Equipment for Public Use¹

This standard is issued under the fixed designation F 1487; the number immediately following the designation indicate original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last revision. superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

 ϵ^1 Note—The following paragraphs and figures were corrected editorially in June 2007: 3.1.45, 6.4.4, 8.3.5, 8. 9.8.2, Fig. A1.16, Fig. A1.30, Fig. A1.34, and Fig. A1.36.

INTRODUCTION

This consumer safety performance specification establishes nationally recognized safety for public playground equipment to address injuries identified by the U.S. Consumer Produ Commission (CPSC).

During 1999 the CPSC estimated that about 156 000 victims were treated in U.S





Designation: F2373 - 11

Standard Consumer Safety Performance Specification for Public Use Play Equipment for Children 6 Months through 23 Months¹

This standard is issued under the fixed designation F2373; the number immediately following the designation indicates the year original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This consumer safety performance specification provides safety and performance requirements for various types of public use play equipment such as, but not limited to, composite play structures, climbing structures, to-fro swings, spring rocking equipment, and slides. It is intended to apply to play equipment that is used in places of public assembly, including 1.6 This consumer safety performance sp cludes the following sections:

Title Scope Referenced Documents ASTM Standards ANSI Standards Federal Standards CPSC Documents





Designation: F1292 - 09

Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment¹

This standard is issued under the fixed designation F1292; the number immediately following the designation indicates the year original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

Surveys by the United States Consumer Product Safety Commission (CPSC)² and others has shown that falls from playground equipment onto the underlying surface are a significant cause injuries to children. Severe head injuries are the most frequently implicated cause of death playground equipment-related falls. Use of appropriate impact-attenuating surfacing materials in the use zone of playground equipment can reduce the risk of fall-related injury. In particular, it is believe that the risk of life-threatening head injuries is reduced when appropriate surfacing materials a

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Designation: F2049 - 11

Standard Safety Performance Specification for Fences/Barriers for Public, Commercial, and Multi-Family Residential Use Outdoor Play Areas¹

This standard is issued under the fixed designation F2049; the number immediately following the designation indicates the year original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapprove superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification provides the recommended minimum requirements for denoting various types of fences/barriers for the protection of children's outdoor play spaces in public, commercial, and multi-family residential use locations. This specification excludes individual single family residential use play equipment locations. Interior fences located in a play area that has a perimeter fence established shall only have to

2. Referenced Documents

2.1 ASTM Standards:²
A392 Specification for Zinc-Coated S Fence Fabric
A491 Specification for Aluminum-Coated Fence Fabric
F552 Terminology Relating to Chain Linl
F668 Specification for Polyvinyl Chlori



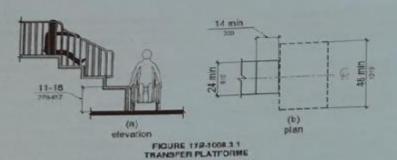






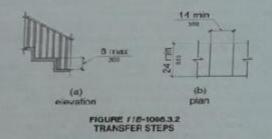


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11B-1008.3.1.4 Transfer supports. At least one means of support for transferring shall be provided.

11B-1008.3.2 Transfer steps. Transfer steps shall be provided where movement is intended from transfer platforms to levels with elevated play components required to be on accessible rouses. Transfer steps shall comply with Section 11B-1008.3.2.



11B-1008.3.2.1 Size. Transfer steps shall have level surfaces 14 inches (356 mm) deep minimum and 24 inches (610 mm) wide minimum.

11B-1008.3.2.2 Height. Each transfer step shall be 8 inches (203 ram) high maximum.

11B-1008.3.2.3 Transfer supports. At least one means of support for transferring shall be provided.

11B-1008.3.2.4 Contrasting stripe. Striping complying with Section 11B-504.4.1 shall be provided at each transfer step.

11B-1008.4 Play components. Ground level play components on accessible routes and elevated play components connected by ramps shall comply with Section 11B-1008.4.

11B-1008.4.1 Turning space. At least one turning space complying with Section 11B-304 shall be provided on the same level as play components. Where swings are provided, the turning space shall be located immediately adjacent to the swing.

11B-1008.4.2 Clear floor or ground space. Clear floor or ground space complying with Sections (1B-305.2 and 11B-1008.4.3 Play tables. Where play tables are provided, knoe clearance 24 inches (610 mm) high minimum, 17 inches deep (432 mm) minimum, and 30 inches (762 mm) wide minimum shall be provided. The tops of mms, curbs, or other obstructions shall be 31 inches (787 mm) high maximum.

- I to I the for the form

Exception: Play tables designed and constructed primarily for children 5 years and younger shall not be required to provide knee clearance where the clear floor or ground space required by Section 11E-1008.4.2 is arranged for a parallel approach

11B-1008.4.4 Entry points and seats. Where play components require transfer to catry points or scats, the entry points or seats shall be 11 inches (279 mm) minimum and 24 inches (610 mm) maximum from the clear floor or ground space.

Exception: Entry points of slides shall not be required to comply with Section 11B-1008.4.4.

11B-1008.4.5 Transfer supports. Where play components require transfer to entry points or seats, at least one means of support for transferring shall be provided.

11B-1009 Swimming pools, wading pools, and spas

11B-1009.1 General. Where provided, pool lifts, sloped entries, transfer walls, transfer systems, and pool stars shall comply with Section 11B-1009.

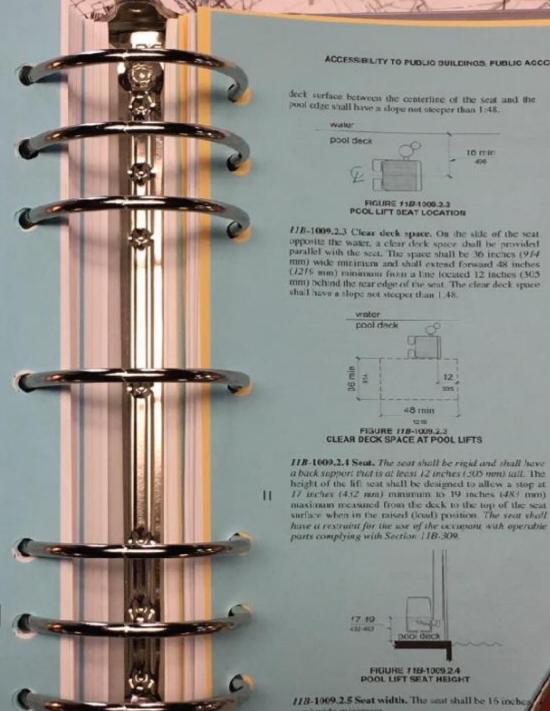
11B-1009.2 Pool lifts. Pool lifts shall comply with Section 11B-1009.2.

11B-1009.2.1 Pool lift location. Pool lifts shall be located where the water level is 36 inches (914 mm) minimum and 48 inches (1219 mm) maximum.

Exceptions:

- Where the entire pool depth is *less than 36 inches* (914 mm) or greater than 48 inches (1219 mm), compliance with *Section 11B*-1009.2.1 shall not be required.
- Where multiple pool lift locations are provided, no more than one pool lift shall be required to be located in an area where the water level is 48 inches (1219 mm) maximum.

11B-1009.2.2 Seat location. In the raised position, the



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11B-1009.2.6 Footrests and armrests. Foorrests shall be provided and shall move with the seat. The seat shall have two armrests. The armrest positioned opposite the water shall be removable or shall fold clear of the seat when the seat is in the raised (load) position.

Exception: Footrests shall not be required on pool lifts provided in spas.

11B-1009.2.7 Operation. The lift shall be capable of unassisted operation from both the deck and water levels. Controls and operating mechanisms shall be unobstructed when the lift is in use and shall comply with Section 11B-3/99.4. The lift shall be stable and not permit unintended movement when a person is getting into or out of the seat.

11B-1009.2.8 Submerged depth. The lift shall be designed so that the seat will submerge to a water depth of 18 inches (457 mm) minimum below the stationary water level

stationery water level

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RGED DEPTH

FIGURI

11B-1009.2.9 Liftin shall have a weight mum and be cap one and a half th 11B-1009.3 Slop

Section HB 1

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with D

1009

pool decl

y of 300 pounds (136 kg) minilustaining a static load of at lease rated load.

ries. Sloped entries shall compty with

ord entries. Sloped entries shall comply except as modified in Sections 11Bth 11B-1009.3.3.

a: Where sloped entries are provided, the sur-I not be required to be slip resistant.

3.2 Submerged depth. Sloped entries shall is a depth of 24 inches (610 mm) minimum and 30 (762 mm) maximum below the stationary water where landings are required by Section 11B-405.7, asi one landing shall be located 24 inches (610 mm) mmum and 30 inches (762 mm) maximum below the tionary water level

Exception: In wading pools, the sloped entry and landings, if provided, shall extend to the deepest part of the





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DIVISION 4: ACCESSIBLE ROUTES



11B-401 General

118-401.1 Scope. The provisions of Division 4 shall apply where required by Division 2 or where referenced by a requirement in this chapter.

11E-402 Accessible routes

11B-402.1 General. Accessible rouses shall comply with 110-402

11B-402.2 Components. Accessible routes shall consist of one or more of the following components: walking surfaces with a running slope nor steeper than 1:20, doorways, ramps. carb ramps exchading the flared sides, elevators, and platform lifis. All components of an accessible route shall comply with the applicable requirements of Division 4. 112-403 Walking surfaces

11B-403.1 General. Walking surfaces that are a part of an accessible route shall comply with Section 11B-403.

118-403.2 Floor or ground surface. Floor or ground sur-faces shall comply with Section 118-302.

11B-403.3 Slope. The running slope of walking surfaces shall not be steeper than 1/20. The cross slope of walking surfaces shall not be steeper than 1:48.

Exception: The moning slope of subworks shall not exceed the general grade established for the adjacent street or highway.

11B-403.4 Changes in level. Charges in level shall comply with Section 118 303.

11B-403.5 Clearances. Walking surfaces shall provide clearances complying with Section 11B-403.5.

Exception: Wahin employee work areas, clearances on common use circulation paths shall be permitted to be decreased by work area equipment provided that the decrease is emential to the function of the work being performed

11B-403.5.1 Clear width. Except as provided in Sections 11B-403.5.2 and 11B-403.5.3, the clear width of walking surfaces shall be 36 inches (914 mm) minimum.

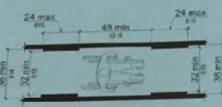
Exceptions

- 1. The clear width shall be permitted to be reduced to 32 inches (613 num) minimum for a length of 24 inches (610 mm) maximum provided that reduced width segments are separated by seg-ments that are 48 inches (1219 mm) long minimum and 36 inches (9/4 mm) wide minimum.
- 2. The clear width for walking surfaces in corridors serving an accuptant linui of 10 or more shall be 44 inches (\$138 mm) manimum.
- 3. The educar width for sidewalks and walks shall be 48 inches (1219 mm) minimum. When, because of right-of-way restrictions, masural burriers or

other existing conditions, the enforcing agency determines that compliance with the 48-inch (1219 mm) clear sidewalk width would create on the hardship, the clear with may be reduced to 36 inches (914 rum).

1. 13 MIN 1 1

- 4. The clear width for misles shall be 50 mehes (914 cam) minimum if serving elements on only are side, and 44 metues (1118 mar) minumum if serviing elements on both sides.
- The clear with for accessible routes to accessible todes compariments shall be 44 inches (1)18
 mm) except for door-meaning widdle and door



FRAURE 17/8-402.5.1 CLEAR WIDTH OF AN ACCESSIBLE ROUTE

118-405.5.2 Clear width at turn. Where the accessible roote makes a 180 degree turn around an element which is less than 48 inches (1219 mm) wide, clear width shall be 42 inches (1067 mm) minimum approaching the turn, 48 nches (1219 mm) minimum at the turn and 42 inches (1067 mm) minimum leaving the name

Exceptions Where the clear width at the turn is 60 inches (1524 mm) minimum compliance with Section 116-403.5.2 shall not be required.

11.8-403.5.3 Passing spaces. An accessible route with a clear width less than 60 inches (1524 mm) shall provide passing spaces at intervals of 200 (set (60,960 mm) maximum. Passing spaces shall be either: a space 60 inches (1524 mm) minimum by 60 inches (1524 mm) minimum; or, an intersection of two walking surfaces providing a Tshaped space complying with Section 11B-304.3.2 where the base and arms of the T-shaped space extend 48 inches (1219 mm) minimum beyond the intersection.

11B-403.6 Handrails. Where handrails are provided along walking surfaces with running slopes not steeper than 1:20 they shall comply with Section 778-505.

11B-403.7 Continuous gradient. All wolks with continuous prodients shall have cesting streas, 60 inches (1524 mm) in length, at intervals of 400 feet (121,920 ram) minimum. The resulting area shall be at least as wide as the walk. The slope of the resting area in all directions shall be 1-48 maximum.

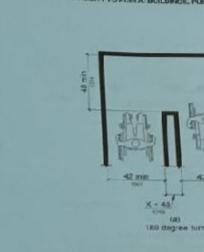


FIGURE 178-403.9.2 CLEAR WIDTH AT TURN

11B-404 Doors, doorways, and gates

- 11B-404.1 General, Doors, doorways, and gales that are part of an accessible route shall comply with Section 11B-404. Exceptions
 - I. Drave, decraways, and gazes designed to be operated only by security personnel shall not be required to comply with Sections 11B-404.2.7, 11B-404.2.8, 11B-404.2.9, 11B-404.3.2 and 11B-404.3.4 through 11B-404-37. A sign visible from the opproach sule complying with Section 11B-203.5 shall be possed mating "Entry restricted and controlled by security
 - 2. At detention and correctional facilities, doors, door ways, and gates designed to be operated only by smarking personnel shall not be required as comply with Sections 11B-404.2.7, 11B-404.2.8, 11B-404.2.9, 11B 404 3.2 and 119 404 3.4 through 11E
- /IR-404.2 Manual doors, doorways, and manual gates Manual doors and doorways and narmal gates intended for user paysage shall comply with Section 1111-404.2.
- 11B-404.2.1 Revolving doors, gates, and turnstilles, Revolving doors, revolving gates, and turnstales shall not be part of an accessible route

11B-404.2.2 Double-leaf doors and gates. At least one of the active knows of doorways with two leaves shall com-ply with Sections 118-404.2.3 and 118-404.2.4.

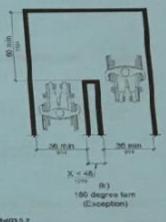
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2013 CALIFORNIA BUILDING CODE

ACCESSIBILITY TO FLIFLIC BUILDINGS, PUBLIC ACCOMMODATIONS, COMMERCIAL BUILDINGS AND PUBLIC MOUSING



118-404/2.3 Clear width. Door openings shall provide a clear width of 32 mehes (#13 mm) monimum. Clear open ings of doorways with awinging doors chall be measured between the face of the door and the stop, with the door open 90 degrees. Openings more than 24 inches (610 mm) deep shall provide a clear opening of 36 metres (914 mm) reinimum. There shall be no projections into the required, clear opening width lower than 34 inches (954 mm) above superious into the clear open

> Side man (man bo mehen ton Made braces no.

the finish Eloor or group ing width between (2012 mm) above increal 4 inches (

Exception

- 1. In sit maxim permitted for it
- 2. Door closers and be 78 inches (1981 m ish floor or ground.

HB-404.2.4 Maneuvering clearances, Ma

vering clearances at doors and gates shall compose Section 11B-404.2.4. Maneuvering clearances shall colo the full width of the doorway and the required latch side of hings side charance

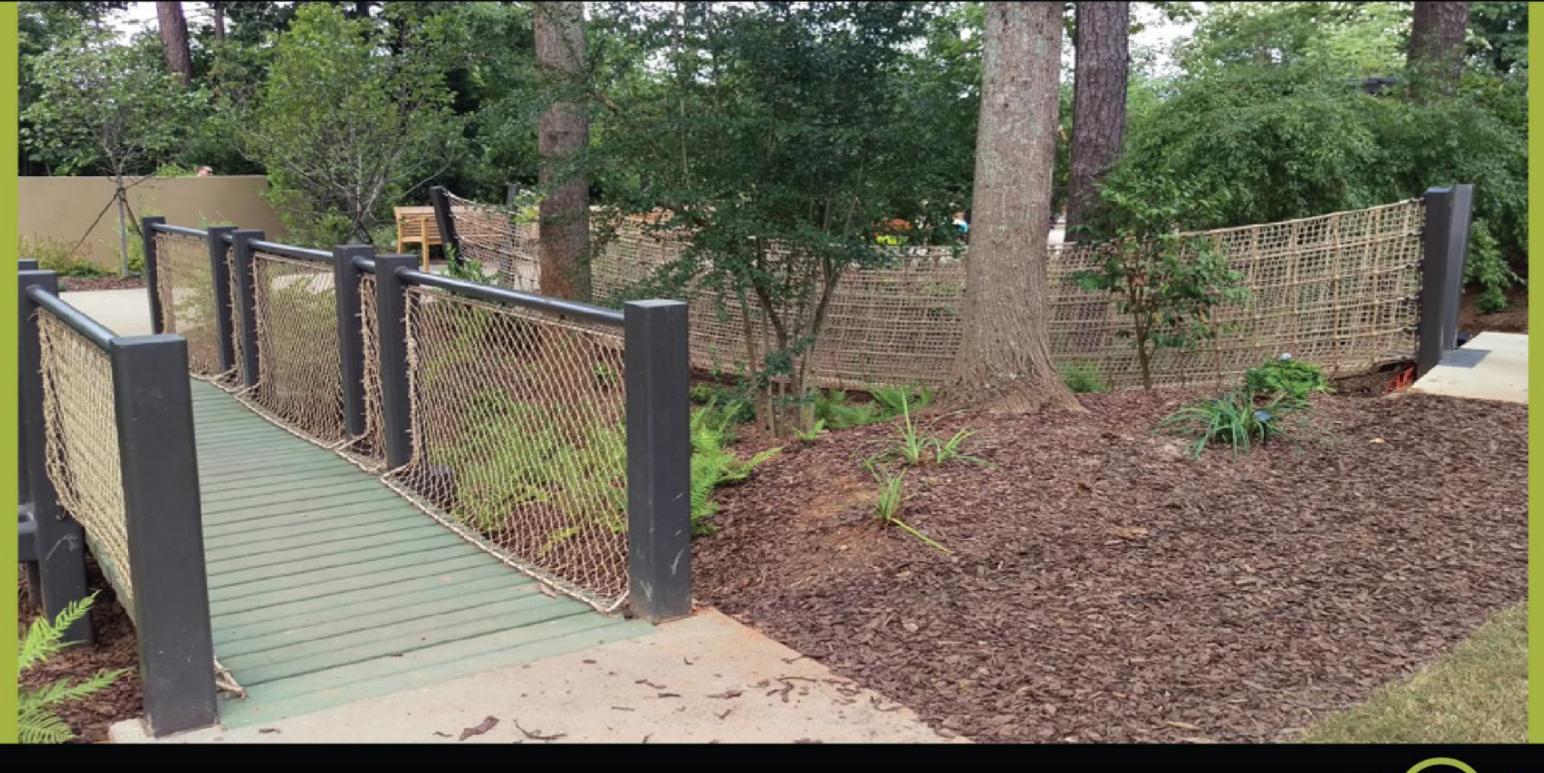
Exception: Received.

118-404.2.4.1 Swinging doors and gates. Swinging doory and gates shall have maneuvering clearances complying with Table 118-404.2.4.1

JUCK & HERE BUPPLEMENT



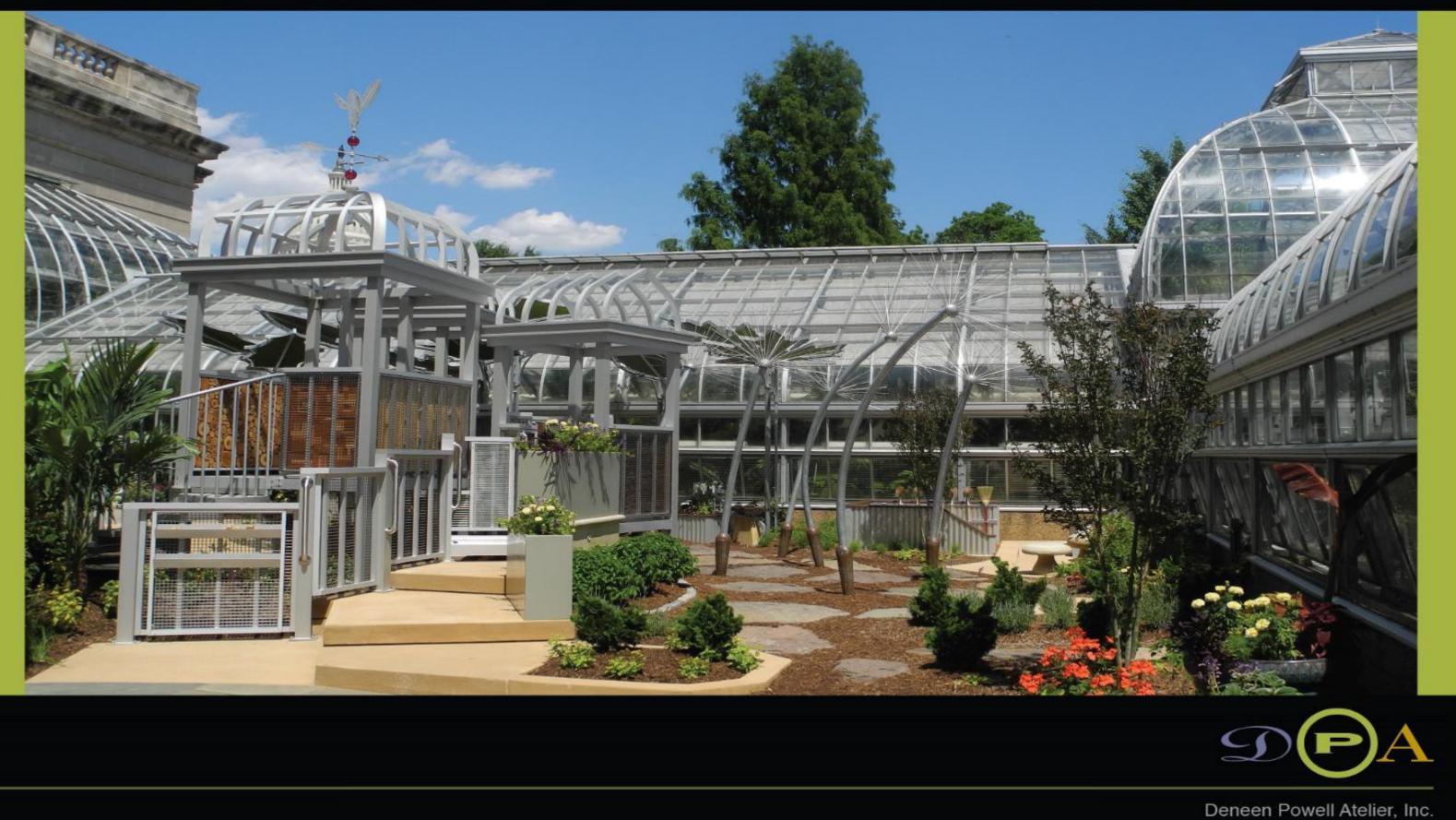
41







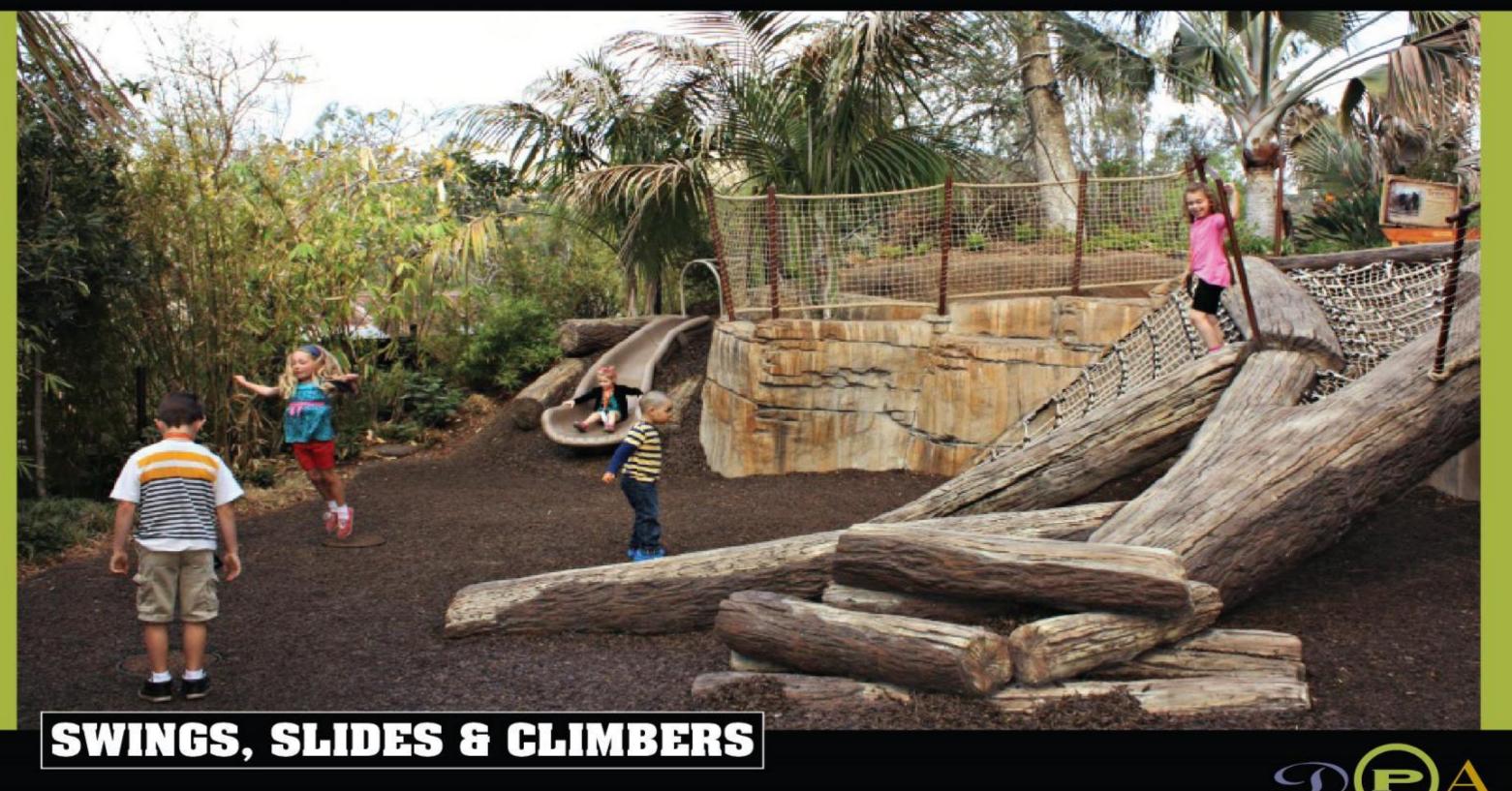




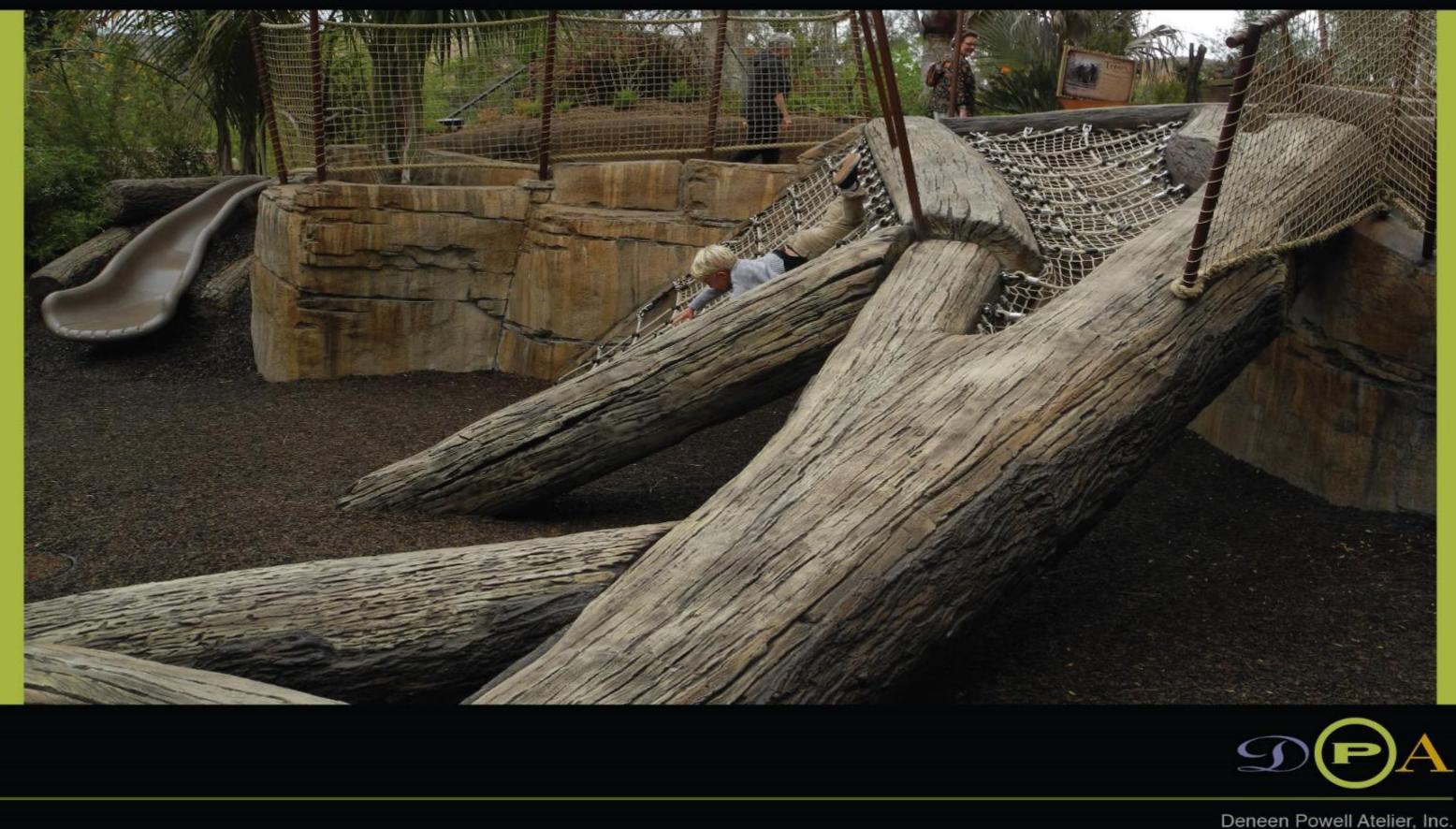


































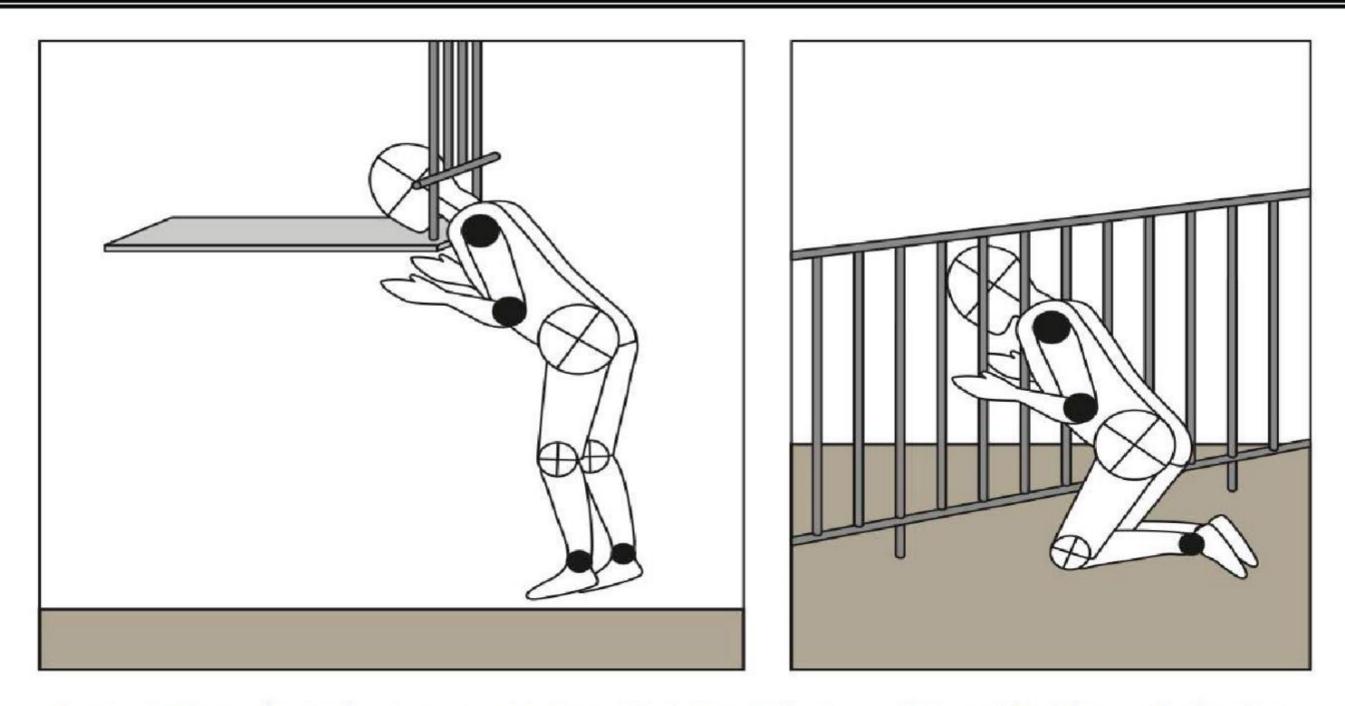
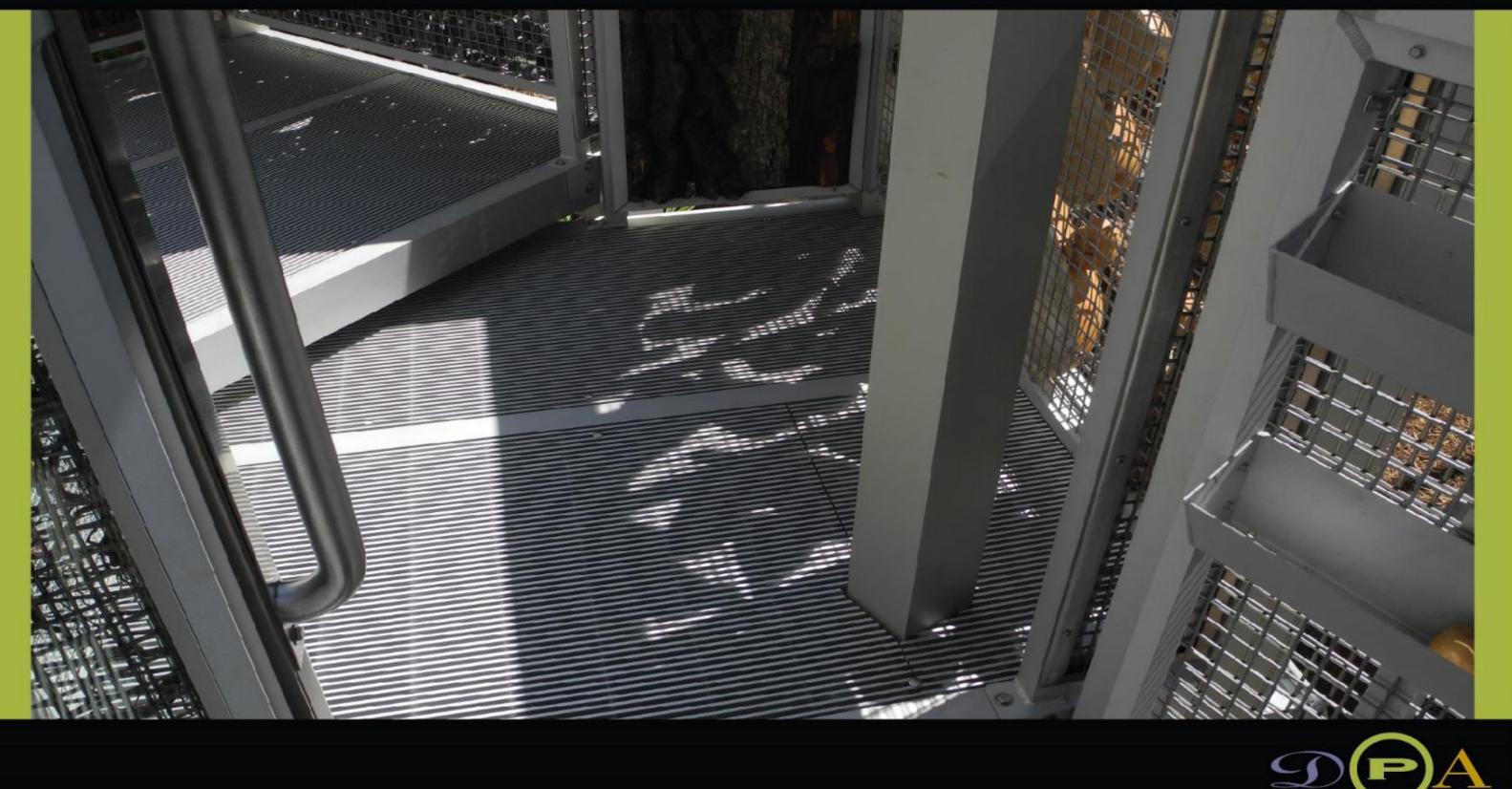


Figure 4 Examples of entrapment below a barrier and between the vertical bars of a barrier. ENTRAPMENT







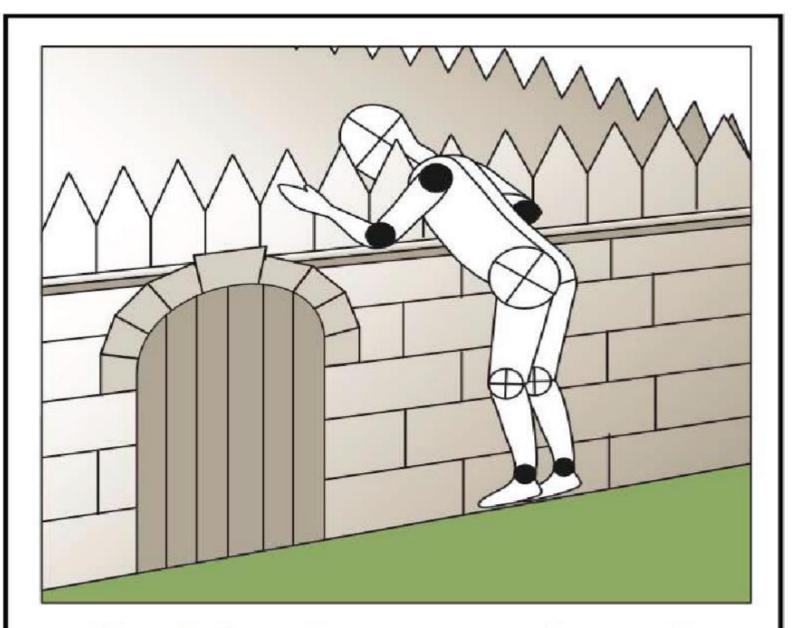


Figure 5. Example of entrapment in an angle less than 55 degrees on a fort.

- the exit (see also §5.3.6.4).
- there are no exposed steel belts/wires.
- equipment.

3.5 Suspended Hazards

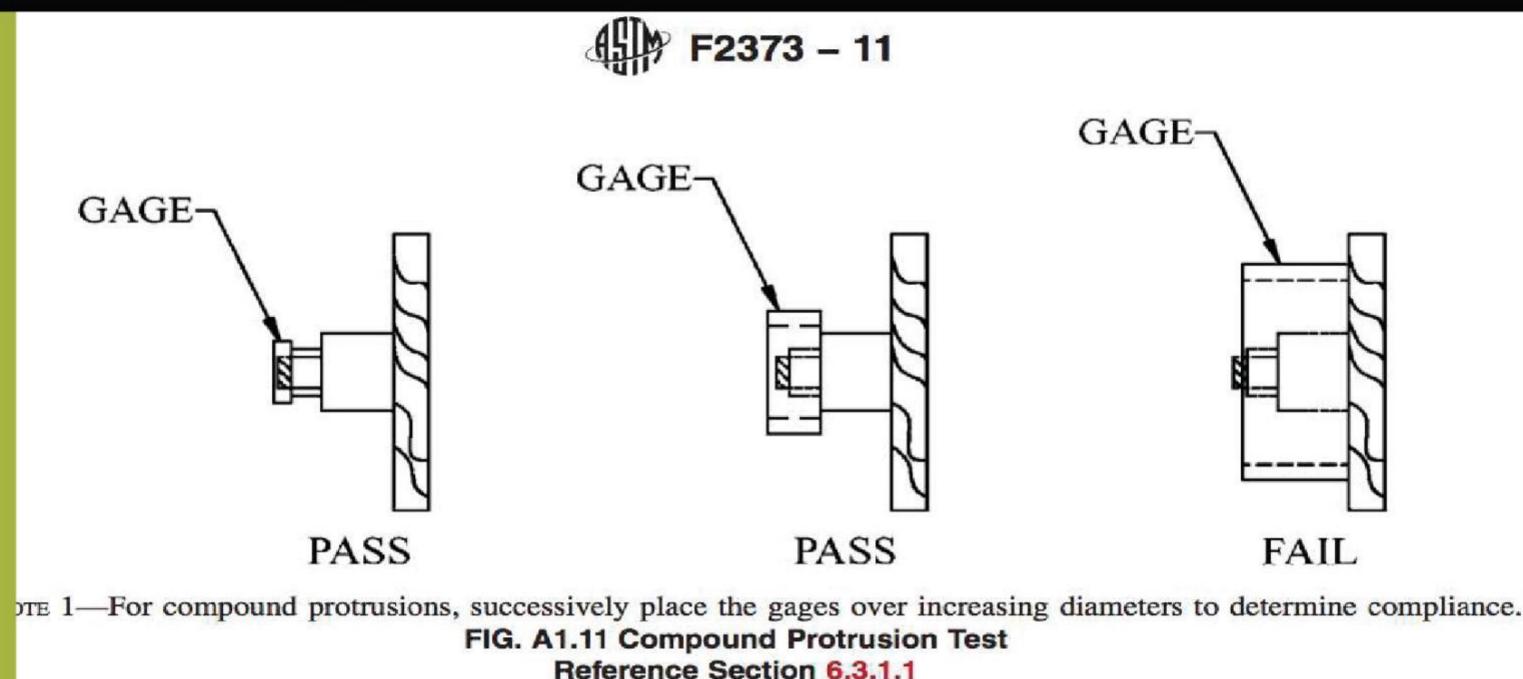
Children using a playground may be injured if they a or trip over suspended components (such as cables, ropes, or other flexible parts) connected from one pl the playground equipment to another or hanging to ground. These suspended components can become l

There should be no sharp edges on slides. Pay spe attention to metal edges of slides along the sides

· If steel-belted radials are used as playground equi they should be closely examined regularly to ensu

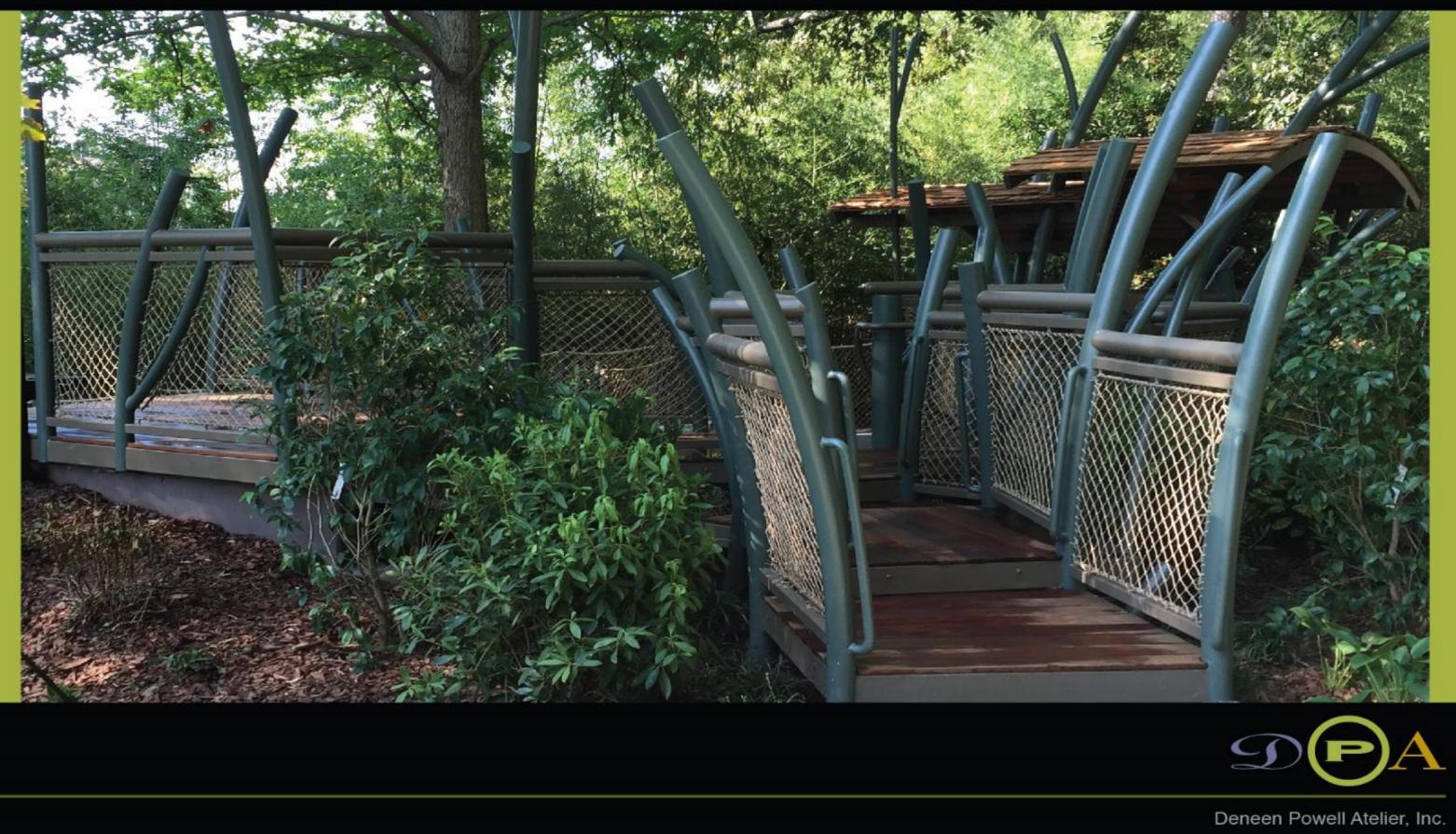
Conduct frequent inspections to help prevent inj caused by splintered wood, sharp points, corners, that may develop as a result of wear and tear on





PROTRUSIONS















It's all worth it!!!



"Enter at Your Own Risk" 2018 APGA Annual Conference

Sanitization of Play



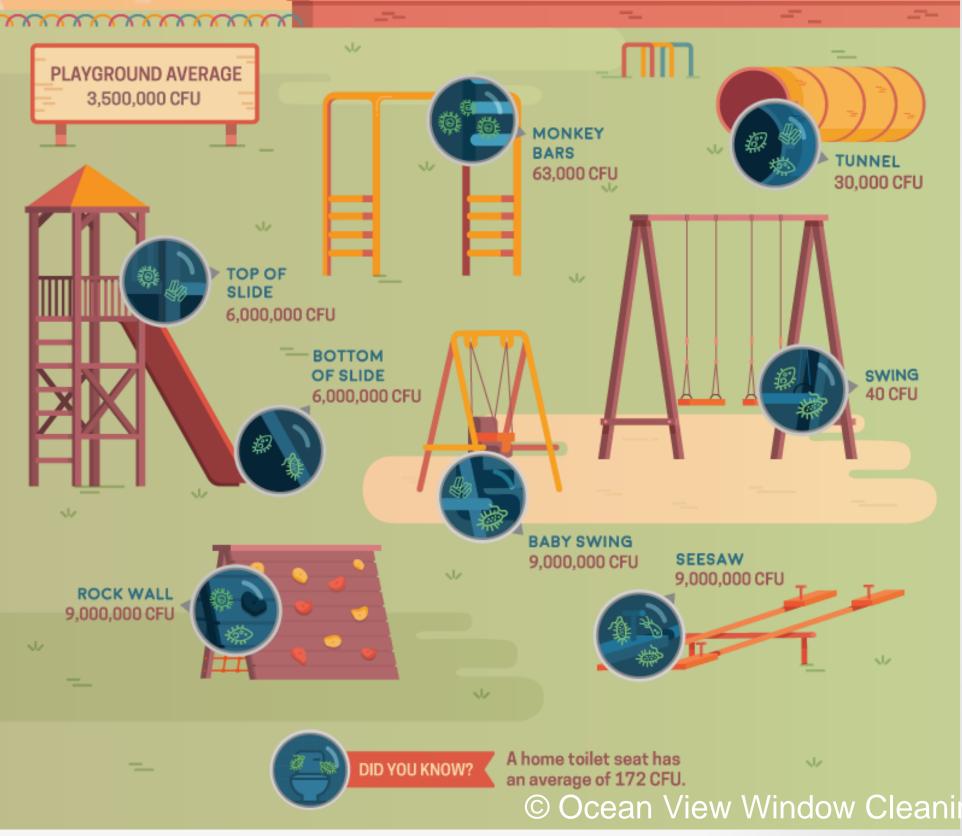


"Enter at Your Own Risk" 2018 APGA Annual Conference

BACTERIA LEVELS ON PLAYGROUND EQUIPMENT

ALL VALUES ARE IN COLONY-FORMING UNITS PER SQUARE INCH

Sanitization of Play



Sanitization of Play

"Dig in: eating dirt and playing in the mud are thought to confer protection from allergies and asthma" and inflammatory diseases.



NATURE | NEWS

Early exposure to germs has lasting benefits

Findings help to explain how microbes programme a developing immune system.

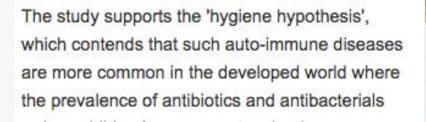
Helen Thompson

22 March 2012

Rights & Permissions

Exposure to germs in childhood is thought to help strengthen the immune system and protect children from developing allergies and asthma, but the pathways by which this occurs have been unclear. Now, researchers have identified a mechanism in mice that may explain the role of exposure to microbes in the development of asthma and ulcerative colitis, a common form of inflammatory bowel disease.

In a study published online today in Science¹, the researchers show that in mice, exposure to microbes in early life can reduce the body's inventory of invariant natural killer T (iNKT) cells, which help to fight infection but can also turn on the body, causing a range of disorders such as asthma or inflammatory bowel disease.





Dig in: eating dirt and playing in the mud are thought to confer protection from allergies and asthma.



J. Phipps/Shutterstock

Sanitization of Play

An 8-year old's handprint on a petri dish after playing outside.



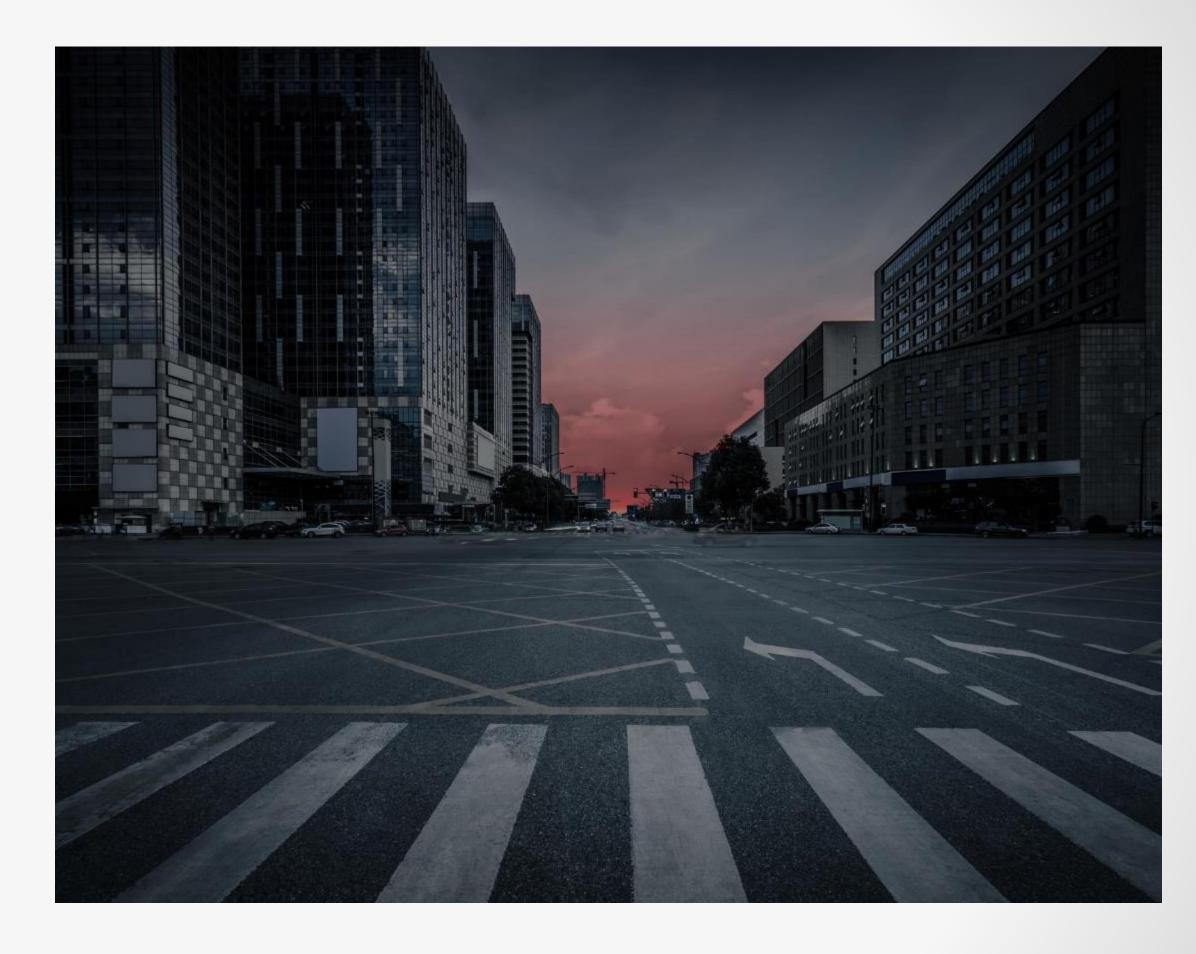
Distractions

A recent British survey found that kids spend half as much time (4 hours per week!) playing outside as their parent's generation did.



Urbanization

According to the 2010 census, just over 80% of Americans live in urban areas.





Structured Programs and Informal Learning Opportunities



"Enter at Your Own Risk" 2018 APGA Annual Conference

Structured Programs and Informal Learning Opportunities





U.S. National Arboretum





"Enter at Your Own Risk" 2018 APGA Annual Conference

Missouri Botanical Garden



U.S. Botanic Garden



Encouraging Discovery



Brooklyn Botanic Garden

Encouraging Discovery





U.S. Botanic Garden

8/27/2018

Teaching / Taking Risks

K-12 The Value Of Wild, Risky Play: Fire, Mud, Hammers And Nails

April 3, 2015 · 6:58 AM ET







The Land adventure playground is situated in a neighborhood that allows the staff to get to know the children well. Playworker Dave Bullough supervises a fire that Corey has built. Courtesy of Erin Davis

In Britain's Playgrounds, 'Bringing in Risk' to Build Resilience

a



The New York Times

By ELLEN BARRY MARCH 10, 2018





Teaching / Taking Risks



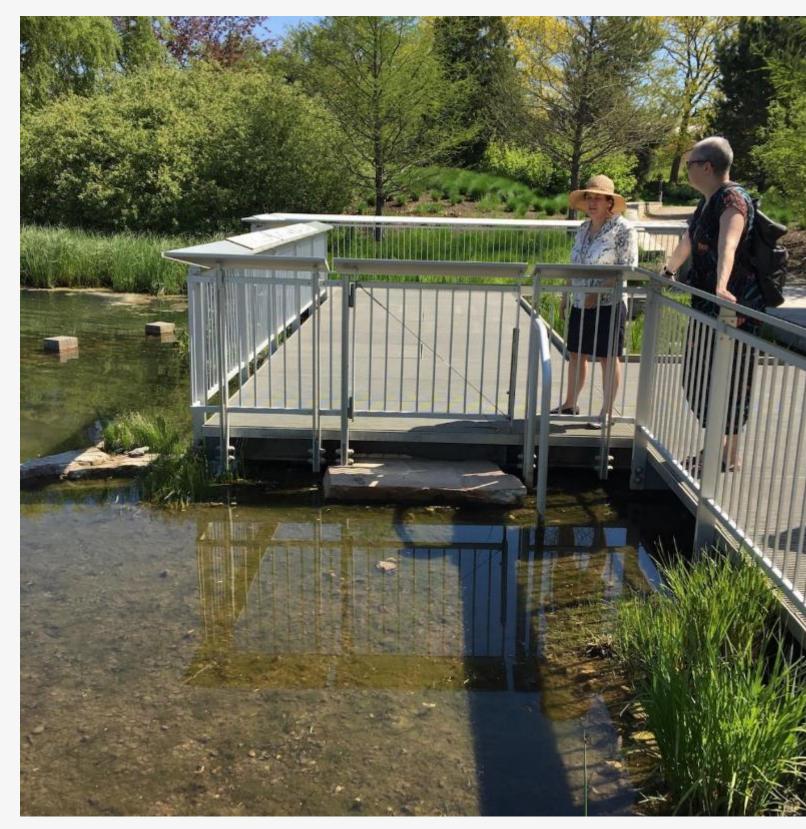




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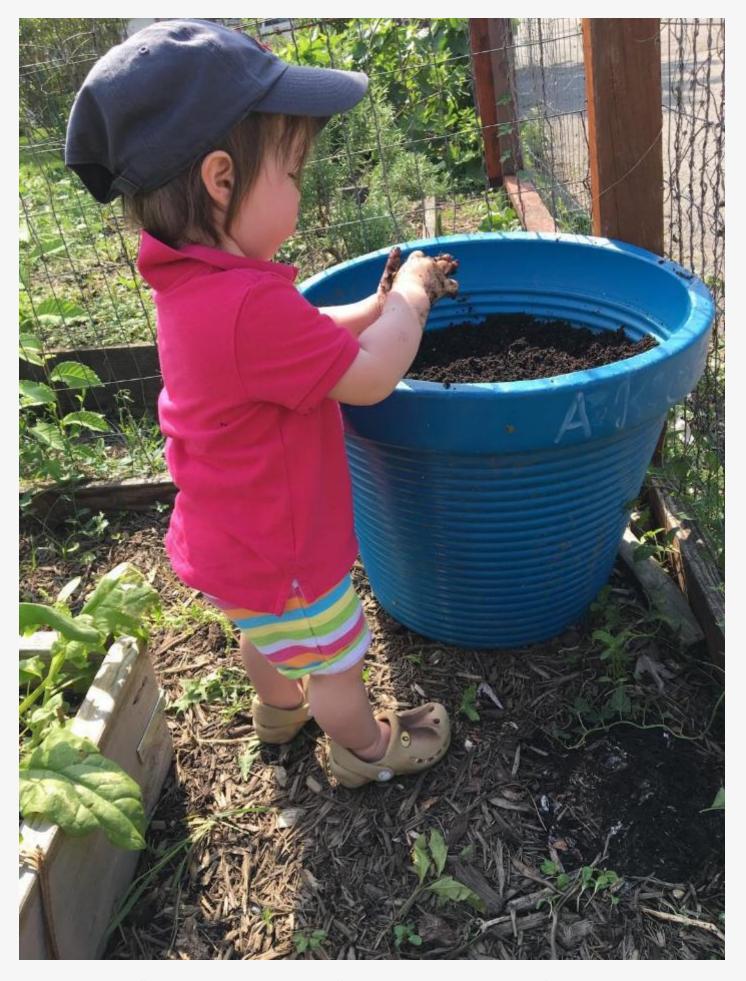
The Huntington

Teaching / Taking Risks



"Enter at Your Own Risk" 2018 APGA Annual Conference

Chicago Botanic Garden



"Enter at Your Own Risk" 2018 APGA Annual Conference

Panel members:

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 - <u>nnelson@aoc.gov</u>
- Shari Edelson, The Arboretum at Penn State
 - <u>ske13@psu.edu</u>
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 - jon@dpadesign.com