From Playground to *Playable* Ground

MaryKate Olson Weaver

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Masters of Landscape Architecture
in
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Playable Ground

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Abstract

Playing outside is of vital importance to children's mental and physical health; play is a biological necessity that teaches children the skills they will need in order to survive as adults. Yet the colorful and ubiquitous playground structures found in most parks often fall short of their full potential. These plastic playgrounds, which should serve as catalysts for creative thought and action in children, are limited in their sameness. Furthermore, the playground structures, which are manufactured in bulk and then bolted onto the ground at their final destinations, have little connection to their sites. I propose to investigate the characteristics of playgrounds in Washington, DC, and to use this investigation as a catalyst in the creation of a different type of grounds for play. I will create a *playable ground* which utilizes the specific qualities of site to engage children to move their bodies and their minds in imaginative ways.

Acknowledgements

I am deeply thankful for the support I have received in this endeavor. I would like to thank my committee chair Nathan Heavers, my committee members Susan Piedmont-Palladino and Dean Bork, my colleagues at the WAAC, the ever helpful Marlene, and my very patient friends and family- Karen, Bill, Lee, Tony, Jess, Lewis, Sarah, and Tamurlaine. Thank you Nick Bacon for your unwavering support.

Dedication

For Lewis, and all the other little guys and gals out there who are just trying to have a little fun.

Contents

Chapter One
Introduction and Research

America is sick. Our children are malnourished, overweight, and overmedicated, and our neighborhoods, communities and the country as a whole is paying the price. According to a report published by the Robert Wood Johnson Foundation Commission to Build a Healthier America, "health in America is worse than in other developed nations on more than 100 measures". It is a frightening diagnosis, but the good news is that there are ways to address this epidemic; one solution that is particularly important within the profession of landscape architecture is to assess the relationship between children and the built environment of their communities, and to create healthy, safe, and engaging places for our children to play, grow, and learn.

In 1998, a team of researchers from four universities conducted a case study in three Western Australian suburbs to determine whether or not a connection exists between the built environment and children as catalysts of social capital in a community. The results of their study indicated that "local schools, parks, libraries, and shopping centers were among public spaces identified as places where parents with children meet and interact. Playgrounds were seen to be particularly important for children and families" (Wood, et.al.). If children really are "catalysts of social capital" (Wood), then it is time to realize that when we build for our children, we build for the future of our communities.

Children of the 2000s are both playing less, and playing with less creativity and intelligence. This is occurring both at schools and in the home- strict new policies in the education system have led to cutbacks in the arts, music, and recess time in favor of more time spent in the classroom. At home, parents ferry their children to soccer practice, football practice, cheerleading practice; it is rare that children are let loose to run around on their own and just play (Gray).

Child's play is more that the term at first suggests- rather, it is a biological necessity, teaching children the skills they need to survive as adults. Without play, children are less imaginitive, less able to think critically, and have fewer social skills, symptoms of what American psychologist Peter Gray refers to as "play deprivation", which can eventually lead to "anxiety, depression, suicide, narcicissm, and loss of creativity." It is clear that children need to play to lead healthy lives, but the how, the how much, and the where are equally as important.

Why does it matter? Studies have shown that on average, IQ scores in the United States have risen; stories in the news warn us to keep our children close at all times. According to evolutionary psychologist Peter Gray, it does matter- "playing is learning...at play children learn the most important of life's lessons, the ones that cannot be taught in school...children need lots and lots of play, without interference from adults" (Gray). Gray is referring to the widely accepted "practice theory of play" developed by the German philosopher and naturalist Karl Groos in his 1898 book *The Play of Animals.* The practice theory of play posits that "play came about by natural selection as a way to ensure that animals would practice the skills they need in order to survive and reproduce...humans, having much more to learn than other species, are the most playful of animals" (Gray).

Today's children have less time for play, and they are not better off for it. This is not to say that kids don't play- we take our children to playgrounds, where we let them swing on swing sets, slide down slides, and climb on plastic rock walls, but even when we do let our kids play, is it possible that we are doing that wrong too?

How can the ground become an integral part of thrilling and risky-feeling play?

Children see and interact with the world differently than adults, which is a key element to consider when designing for children. While adults are more likely to react to the big picture, a child picks up individual objects from the ground, reacting to the physical sensations they create. This detail-focused mindset leads to an importance on the direct interaction between a child and his or her environment.

Lewis Weaver, 4, constructs a tower of sweetgum seeds on his local playground. Photo by MaryKate Weaver.

The current trend in playground building, the ubiquitous colorful structures built of metal encased in rubber, only scratches the surface of the level at which children need to interact. As sensory stimulators, these structures address only sight and touch. Perhaps it is not surprising that these structures are often abandoned in favor of sticks, stumps, and grassy hills in the parts of the landscape forgotten by adults- but not by children. There is a need for less programmed play areas that allow for more imaginative play and a deeper level of interaction between child and environment.

The six elements of risky play:

1. Exploring heights
2. Handling dangerous tools
3. Being near dangerous elements
4. Rough and tumple play
5. Speed
6. Exploring on one's own.

Another important aspect of child development in terms of play is the risk factor. Ellen Sandseter, author of *Children's Risky Play from an Evolutionary Perspective*, calls it "risky play", and deems it essential for the healthy mental development of children. Sandseter suggests that low-levels of risk taking in play helps children to learn about the consequences of their actions, and can prevent them from engaging in behavior in the future that could have negative long-term impacts on their lives. In addition, engaging in an appropriate amount of risky behavior is essential to overcoming fears and managing phobias. The previously mentioned colorful play structures are of limited value in this as well. Regulations and guidelines for building safe playgrounds have led to the development of these well-intentioned but sterile structures. Playground equipment has evolved to become "safer" by replacing asphalt and concrete surfaces with rubber, removing merry-go-rounds, and shortening slides, yet studies have shown that in spite of changes in regulations over the past several decades, playgrounds are no more safe now than they used to be- one reason being that children continue to behave in risky ways, and no amount of regulating playground equipment will change the evolutionary hardwiring that pushes them to engage in risk-taking (Rosin). Lists of rules at playgrounds are extensive and include instructions such as "No Rough-Housing", "No Tag-Playing", and "No Running". A school in Long Island, New York has even banned cartwheels (Tierney)! Playgrounds in the United States no longer have merry-go-rounds, tall slides, or asphalt surfaces, partly due to serious accidents that have resulted in lawsuits, such as in the case of a toddler named Frank Nelson, whose family was awarded nearly ten million dollars in a lawsuit resulting from his fall off a Chicago playground in the 1970s (Mount). Playground codes require ground surfaces to be rubber or wood chips, and the prefabricated playground structures are closely regulated to prevent accidents. A major issue is that it is often an issue of how much you can reasonably claim. According to the Consumer Product Safety Commission, the number of children who die per year in playground-related accidents is, on average, thirteen, compared to 1980 when there were ten deaths per year. Emergency room visits related to playground accidents have also remained fairly steady, in 2012 it was about one per 1,156 Amercans as opposed to 1980 when it was one per 1,452 Americans (Rosin). In attempting to keep our children safe, playgrounds and playtime have become sterile environments where children are not only still getting injured, but they are also missing out on opportunities for the creation of creative mental development. An important question emerges: "Is the dumbing down of playgrounds" (Ball) worth it?

Some firms are addressing the need for interactive and exciting play-scapes for children, rejecting the traditional play structures in favor of more natural play areas, which emphasize changes in topography, planting materials and materiality. One such firm is Natural Playgrounds, Inc, a New-Hampshire-based company that builds play areas for preschools such as Beverley Hills Preschool in Arlington, Virginia, which practices an aggressively laissez-faire style of of childhood education known as the Reggio Emilio Approach. The Reggio Emilio philosophy "focuses on each child in relation to others and seeks to activate and support children's reciprocal relationships with other children, family, teachers, society, and their environment" (Malaguzzi). Even these natural playgrounds, however, are prefabricated, disconnecting them from the site-specific qualities of individual sites and missing an opportunity to ground them in a a meaningful way.

Lewis Weaver engages in a thrilling experience with his Granny-Nanny on the National Mall in 2014. Photo by MaryKate Weaver.

What next?

When I was a child, my cousins and I spent years digging a hole on my grandparen't farm. Every summer we picked up where we had left off from the year before. We pondered what treasures were hiding in the soil, we seriously discussed digging all the way to China, and for several weeks we strategized building an underground system of tunnels and forts. But mostly, we were just digging because digging is fun. Twenty years later, The Hole is still noticeable- the ground sags slightly and is squishier where we spent so many hours digging.
This realization that children's behavior during play can have an impact on their environment has been of crucial importance in moving from the conceptual to the design phase of this project.

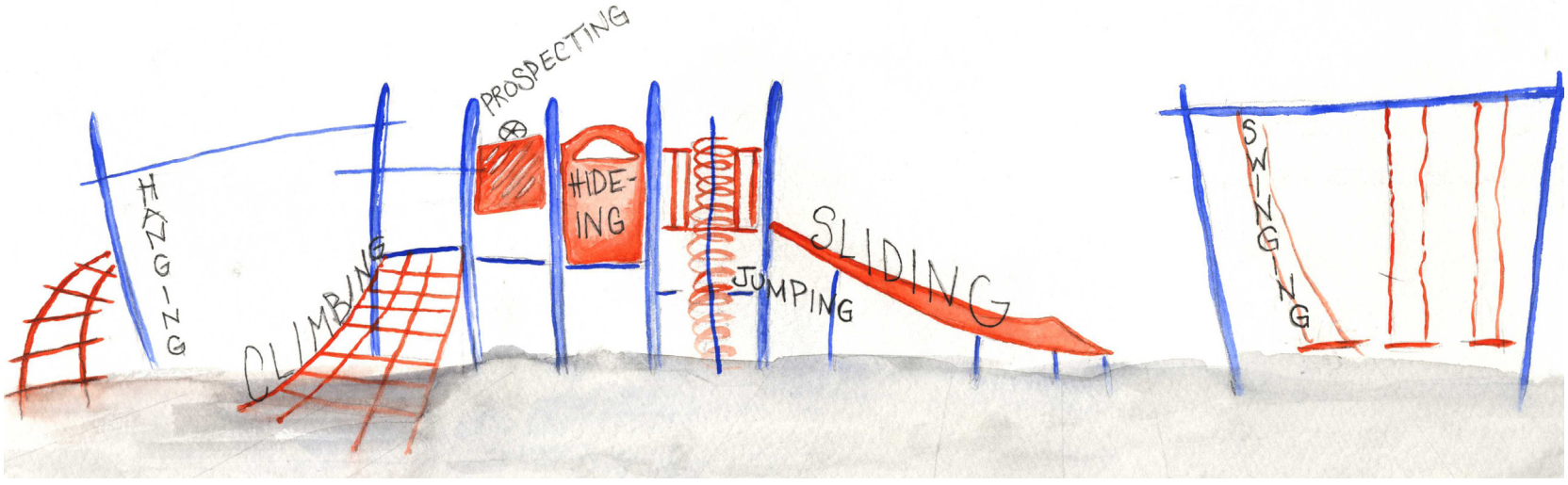
The relationship between children and ground is fascinating, perhaps due to its interdependant nature. Early childhood development, both physically and mentally, is crucially linked with a child's access to the outside world, and the world is utterly dependent on the people who populate it. These children truly are the key to determining what sort of environment we create, and landscape architects have an incredible opportunity to design places that connect children to the land.
My thesis projects seeks to put the "thrill" back into play landscapes by creating interactive and playable ground that connects children to their environment, especially by engaging the ground, in a way that traditional playgrounds fail to do.

Chapter 2
Case Studies: Paradigms and Precedents

Photo by MaryKate Weaver.

The Paradigm

The playground at Marie Reed Community Learning Center and Elementary School closely resembles thousands of playgrounds that can be found all over the country. Notice the rubber mat positioned below the equipment to create a safer environment.

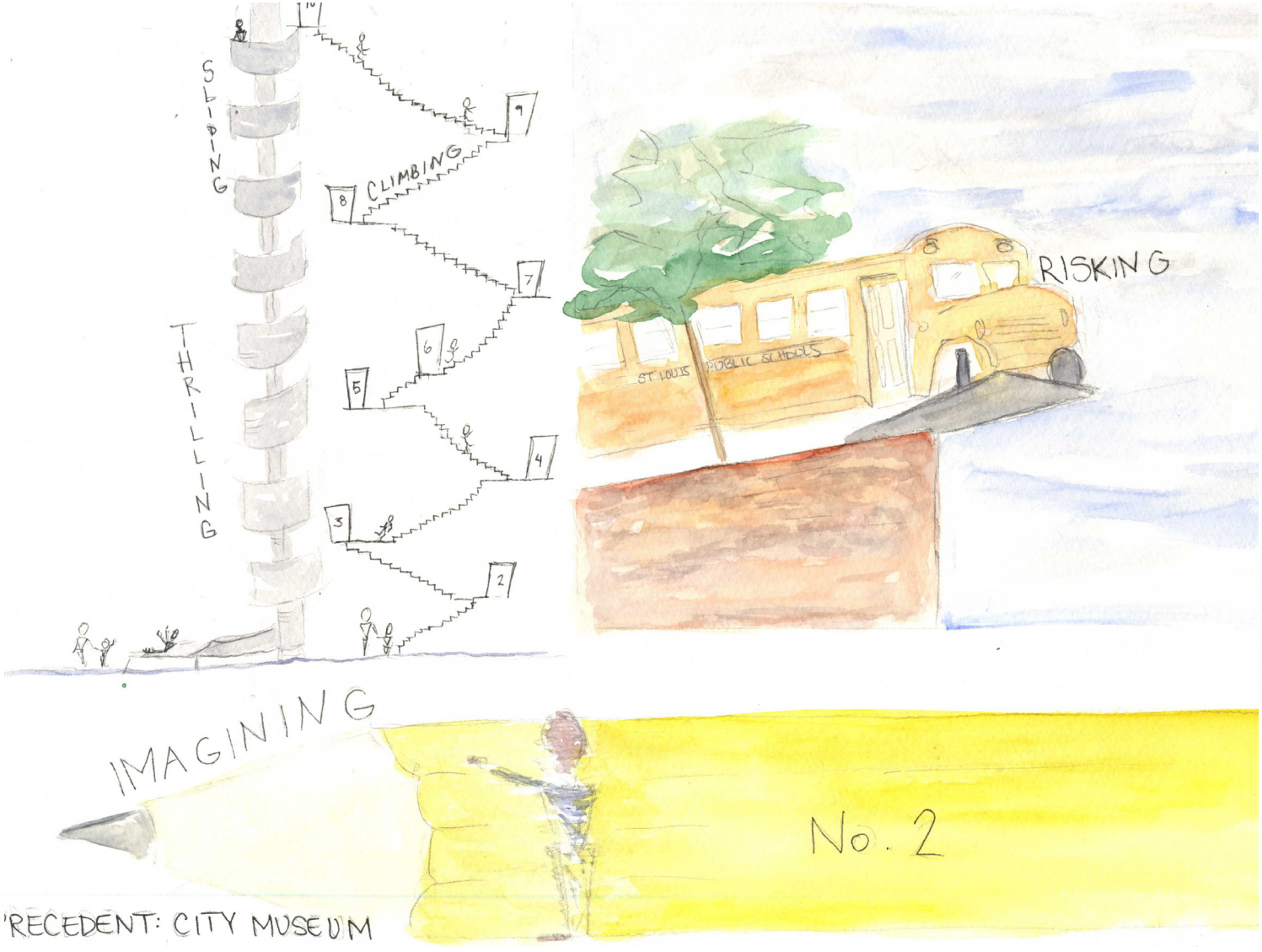


Beauvoir Elementary School

The elementary school on the grounds of the Washington National Cathedral, Beauvoir has an interactive playground that begins to engage the ground in creative ways by using it to make slides safe yet still risky-feeling.The playground relies on the steep topography of the site to create an exciting environment that is actually highly controlled. The heavy use of pre-fabricated structures suggests that more could be done to create meaningful interaction between children and the ground.

The Land

The Land is an adventure playground in Wales. To some, it probably resembles a junk yard, but to children, it is a play paradise. Parents are actually discouraged from attending to allow children maximum free-play. Risk abounds at The Land- children build fires in trash cans, build forts using hammers and saws in ways that make parents want to cover their eyes, and swing from trees on ropes that dangle over a creek. It is not pretty, but it does activate some of the survival skills that Ellen Sandseter deems crucial.



City Museum

City Museum, located in St.Louis, Missouri, is a wonderland for both children and adults. The ten-story converted shoe factory features many structural components that play with scale, such as the ten-story slide, an enormous pencil, and a rickety-feeling bus teetering over the building's roof edge. It is easy to get lost and explore on one's own in the maze-like environment.

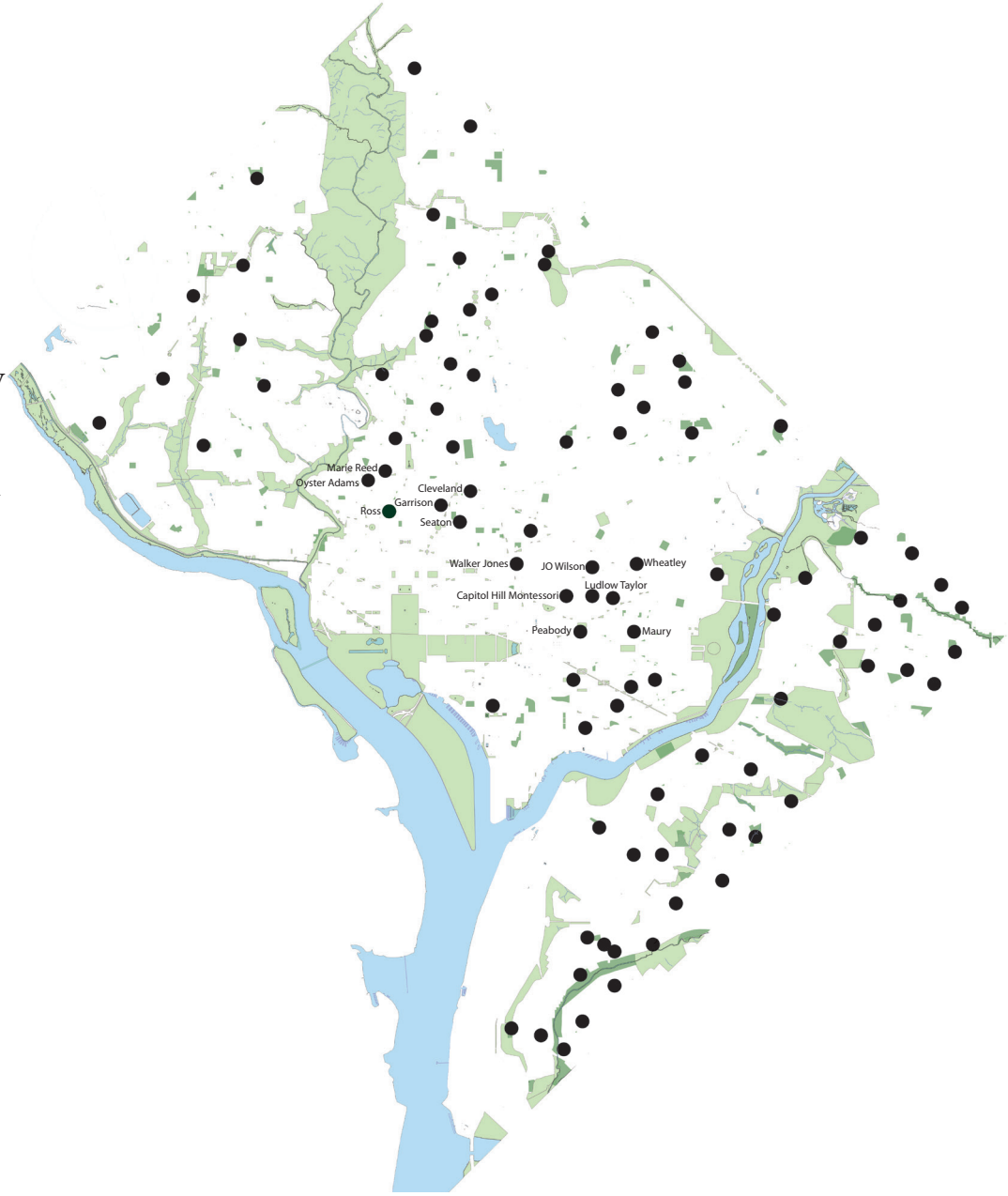
Chapter 3
Site Selection

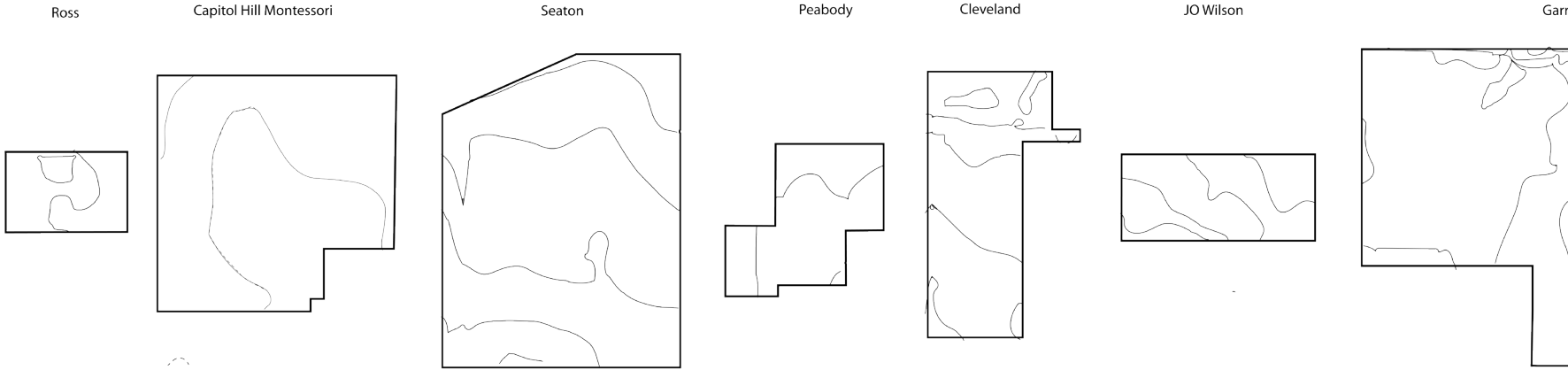
School Clusters and Park Deserts

I began to search for a site to test my theory in Washington, DC. Urban areas are particularly interesting places to examine children's play areas- smaller or non-existant yards increase the importance of community parks and playgrounds.

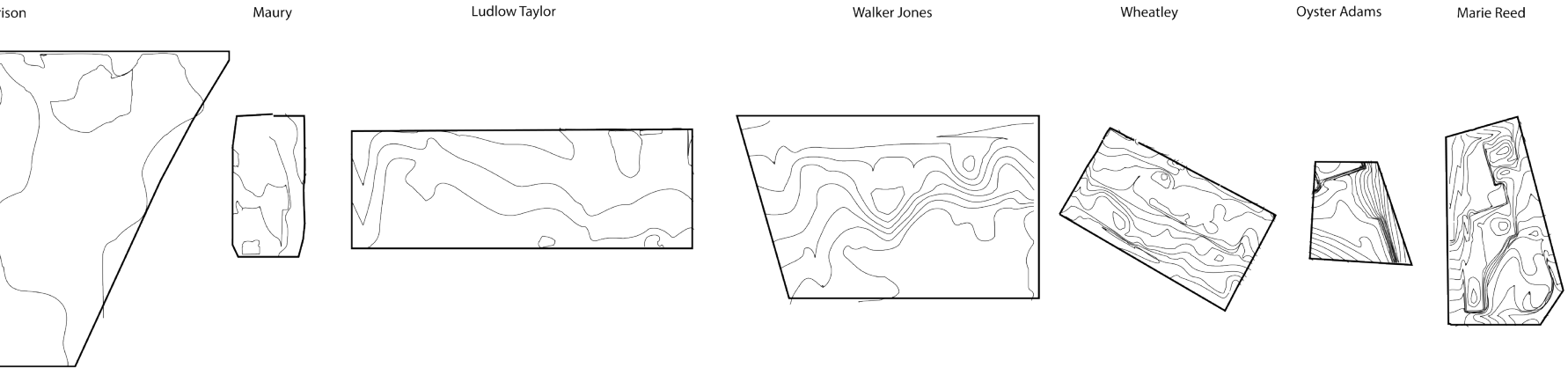
To better understand the current position of play areas in DC, I mapped all the elementary schools in the District against the ocurrance of parks in the city. I found that there is a dense cluster of elementary schools in central DC which ocurrs in a "park desert", which piqued my interest and required a more detailed exploration.

In terms of their connection to how children play, two of the most important qualities of ground are topography and surface condition, which is how I examined the group of schools clustered in the "park desert".



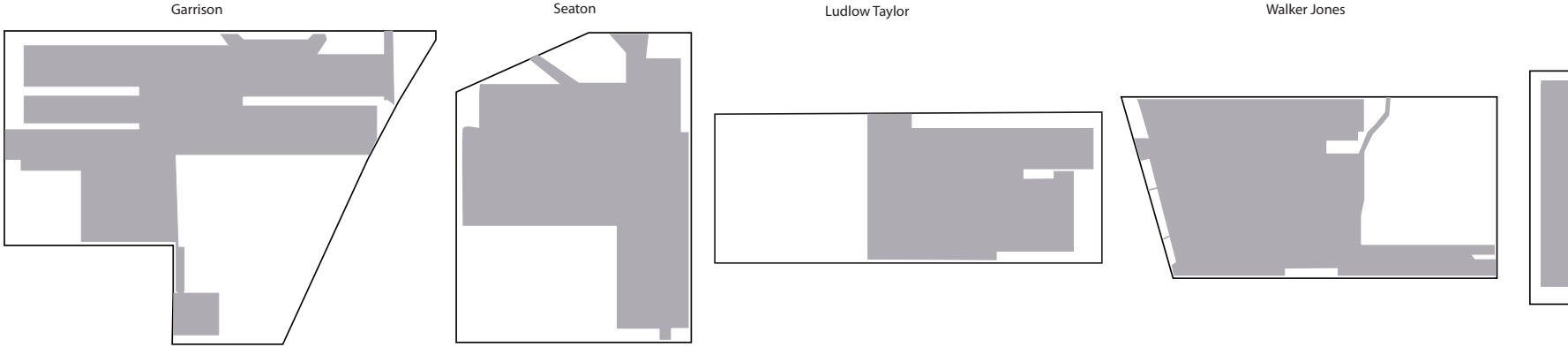


Study of Elevation Change within Elementary School Grounds in Washington, DC

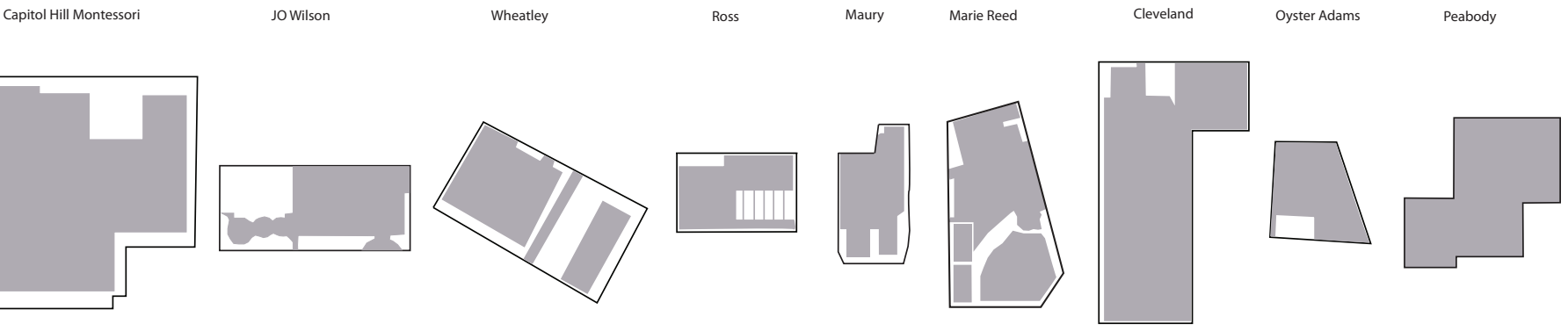


Topography

In total, thirteen elementary schools were examined for their topographic qualities. Marie Reed Community Learning Center and Elementary School is at the far end of the spectrum, revealing the steepest topographic change of all the surveyed schools.



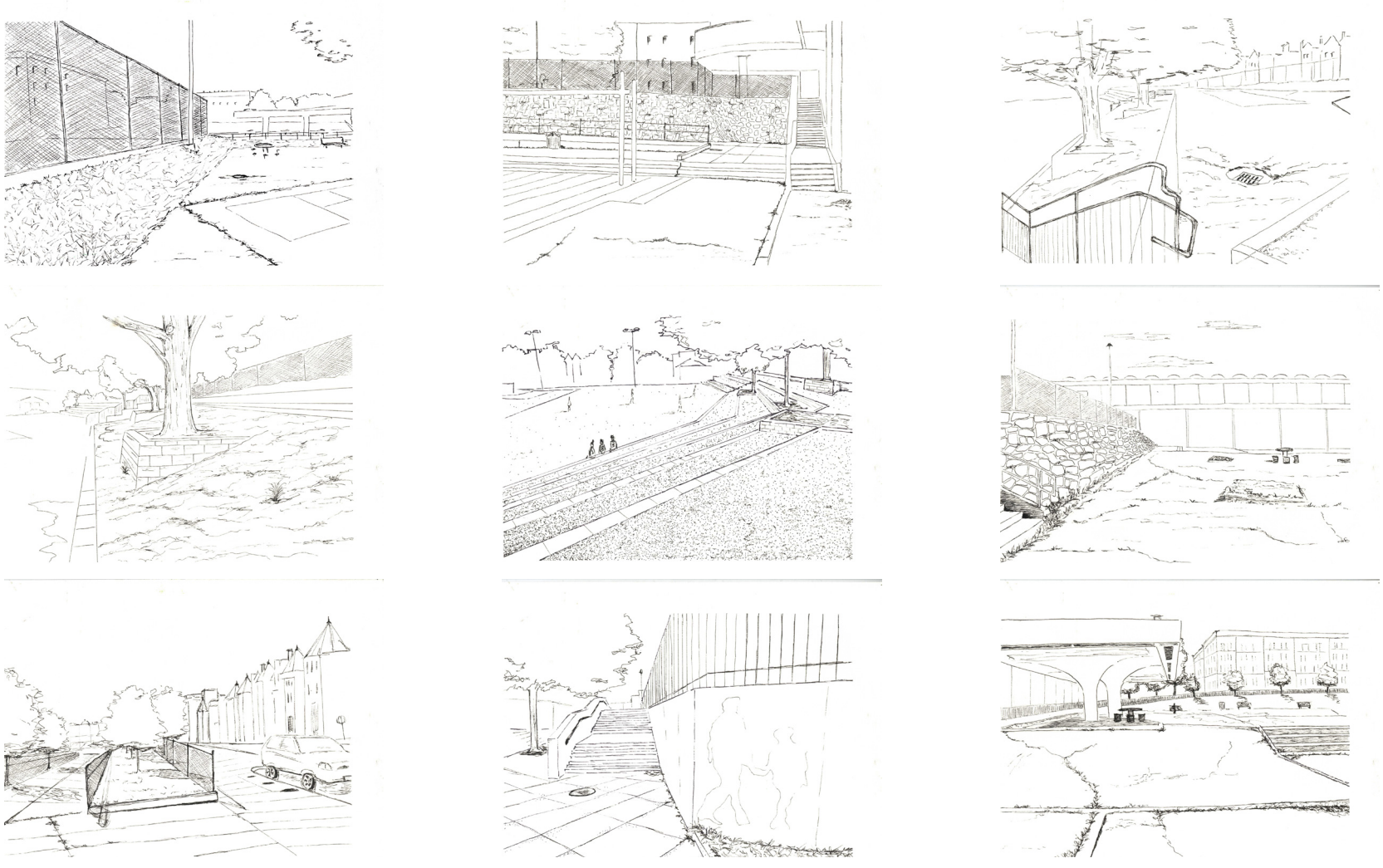
Impermeable Surface Study of Elementary School Grounds in Washington, DC



Surface Conditions

The same thirteen schools were then arranged on a spectrum based on the amount of impermeable materials on each site. Marie Reed, while not technically the "most impermeable" still reveals that its surface is highly paved or otherwise impermeable. The imporance of Marie Reed as a community hub, in addition to its historical relevence in the neighborhood of Adams Morgan, strengthened my feelings that this would be an appropriate site to explore the concept of "playable ground".

Chapter 4
Site Analysis



Current Condions

Marie Reed Community Learning Center and Elementary School was constructed in the 1960s as a community hub after desegration changed the existing dynamics of the neighborhood. The site is largely covered in impermeable materials such as asphalt, concrete, astroturf, pavers, and rubber. There are about thirty feet of elevation change across the site. Initial studies revealed that the topographic change is largely being mediated through retaining walls and terraced seating as opposed to being actively used on the site. There are basketball courts, tennis courts, and a soccer field; a standard-issue playground is perched on top of crumbling asphalt.

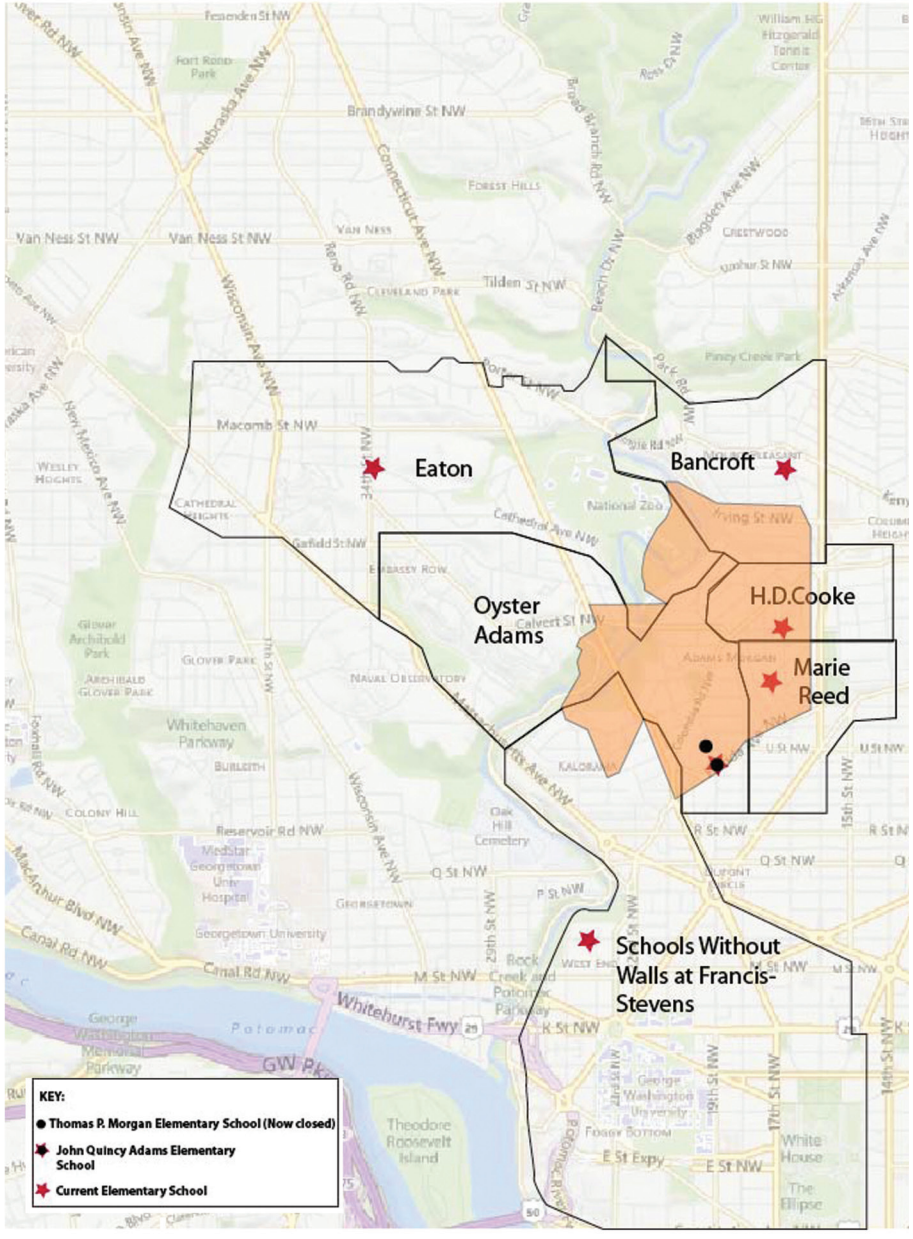

Image adapted from Bingmaps by MaryKate Weaver

A Community Divided

The name Adams Morgan is derived from the previously segregated elementary schools in the neighborhood, Thomas P. Morgan Elementary School and Oyster Adams Elementary School. After desegration, residents formed the Adams Morgan Better Neighborhood Conference and the resulting area became known as Adams Morgan.

Children who live in Adams Morgan today might attend any of the six elementary schools whose boundaries divide the neighborhood. This creates an opportunity to re-unite a neighborhood with a history of being divided, whether through segregation or fragmentation.

Photo by MaryKate Weaver



Fragmentation:
School Districts of Adams Morgan

Photo by MaryKate Weaver.

Permeable Surfaces

Intended Entrances

"Ghosts" of 1911

Impermeable Surfaces

"Terraces"

Three Discoveries

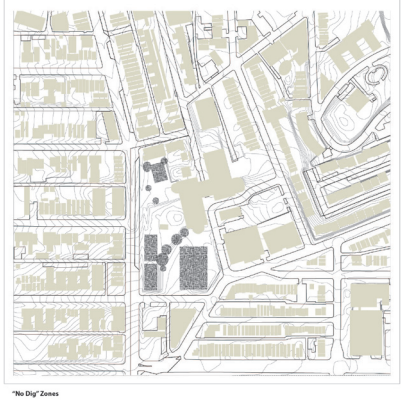
After a thorough analysis of the ground plane at Marie Reed I made three major discoveries. First, I realized that while I already knew that the surface was highly impermeable, I had not known how variable the materials really were. The five impermeable surfaces include asphalt, concrete, pavers, astroturf, and rubber, each of which has differing material qualities that could provide exciting opportunities to engage children. Second, I discovered that the topographic change on the site is largely wasted as an

Topographic Access

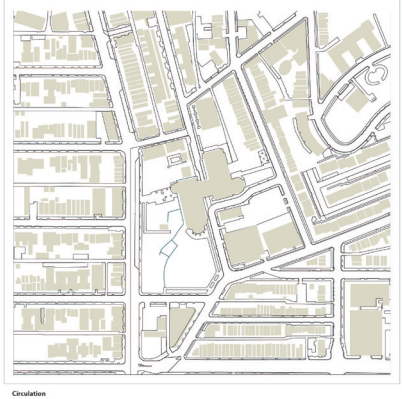
Water Flow

Topography

Tree Canopy



"No Dig" Zones

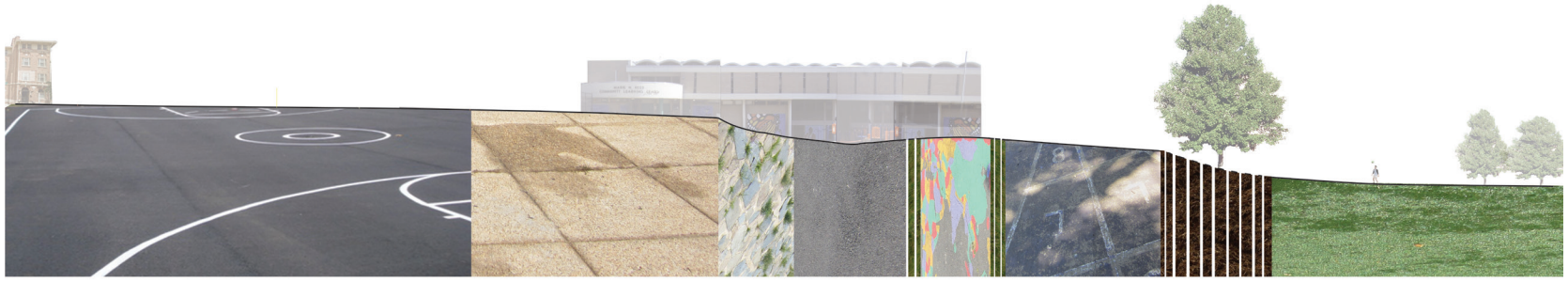


Circulation

opportunity to engage children. The topographic change is merely mediated through a series of retaining walls and seating stairs, creating a series of "terraces" on the site to allow for programmed play areas for soccer, tennis, and basketball. Third, I discovered that the site has a rich physical history. In the early 1900s, numerous brick buildings stood on the west side of the site. I began thinking of these as the "Ghosts of 1911". Could portions of their foundations still be intact below the impermeable surfaces?

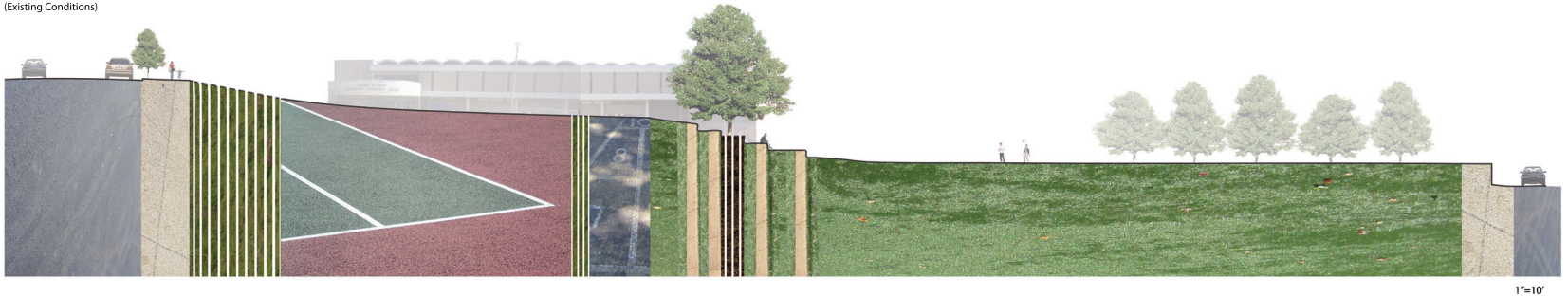

MARIE H. REED
COMMUNITY LEARNING CENTER

Surface Study:
Upper Ballfields and Courtyard
(Existing Conditions)



1"=10'

Surface Study:
Terrace and Lower Ballfields
(Existing Conditions)



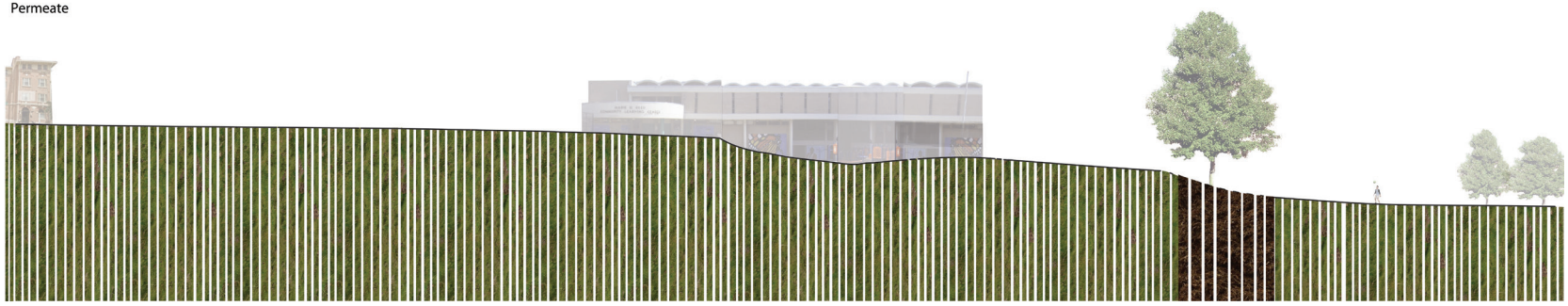
1"=10'

On the Ground

Careful observation of the ground conditions at Marie Reed reveal many wasted opportunities to engage with the ground in creative ways. Topographic change is merely mediated through retaining walls and terraced seating that lacks imagination. The impermeable surfaces are cracked and crumbling.

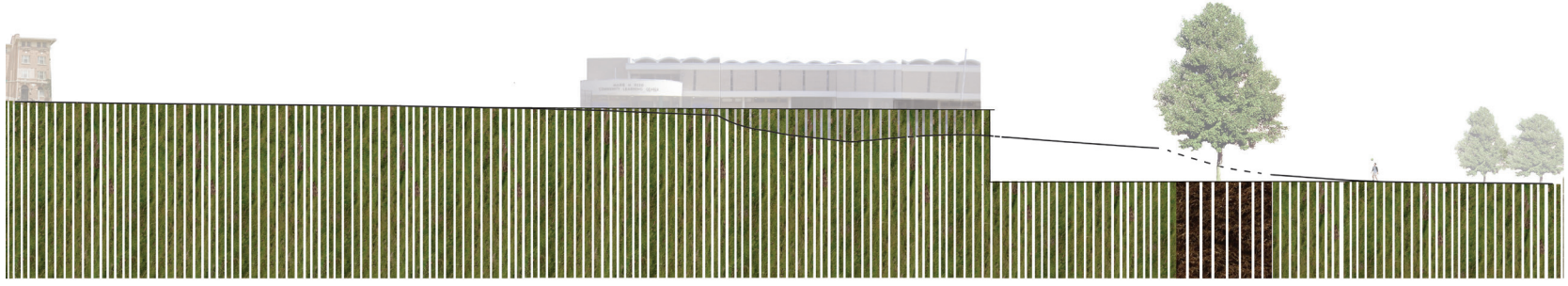
Possible Conditions

Permeate



Exaggerate

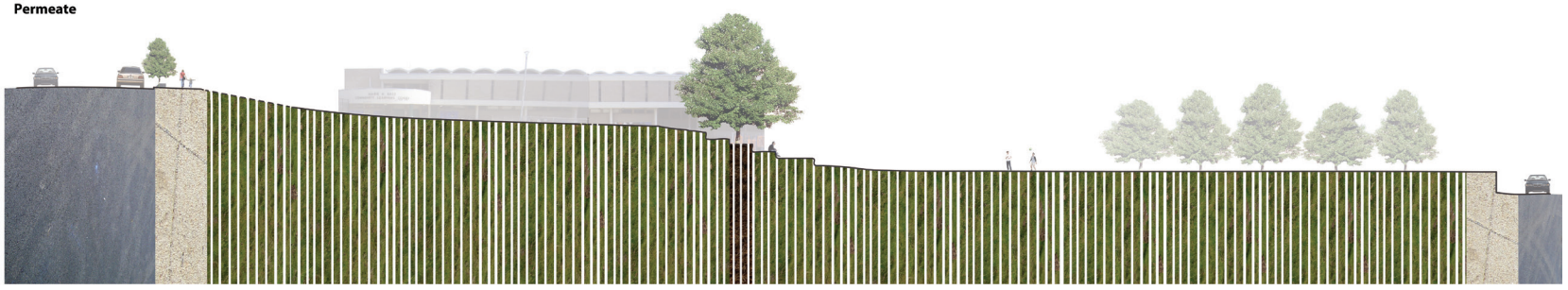
Permeate and Exaggerate



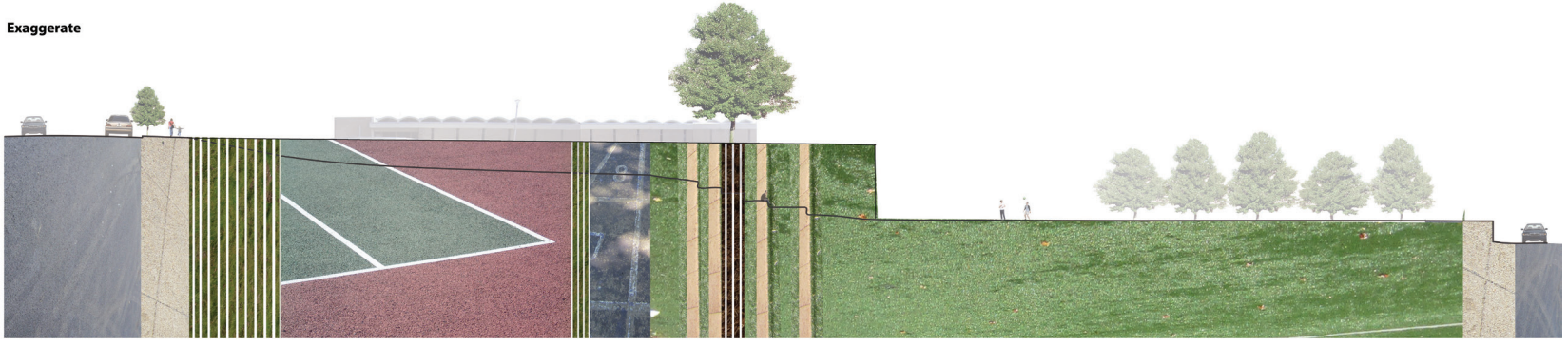
1"=20'

Possible Conditions

Permeate



Exaggerate



Permeate and Exaggerate

1″=20′

Interior Access: Site At Grade
1" = 1/8"

Exterior Access: Site At Grade
1" = 1/8"

Exterior Access: Site Below Grade
1" = 1/8"

Exterior Access: Site Above Grade
1″ = 1/8″

Exterior Access: Site Above Grade
1″ = 1/8″

On the Edge

An exploration of the current edge conditions of the site led me to consider a boundary to define the site. In order for parents to be comfortable letting their children run free on the site, a physical boundary must separate children from the busy roads surrounding Marie Reed. In order to maintain a strong visual connection, a stone wall is preferred over a vegetative or earthen boundary.

Vegetative Barrier

Structural Barrier

Topographic Barrier

Edge Condition Study: Exterior Access and Topographic Accessibility
1/4" = 1'

Phase One

Phase Two

Phase Three

Phase Four

Removing, Digging, and Planting
1"4" = 1'

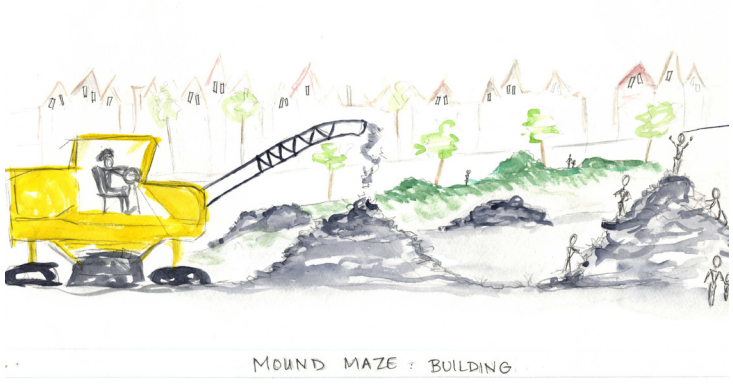
Chapter 5
Process Design and Early Concepts

Excavation and Mounding

My analysis of the ground conditions revealed an important truth- in order to engage the ground at Marie Reed, I must first *unearth* the ground. Considering that the soil has been trapped beneath impermeable surfaces on the site for nearly a century, it is very likely that it is both extremely compacted and nutrient deprived. Exposing the earth raised two important questions:

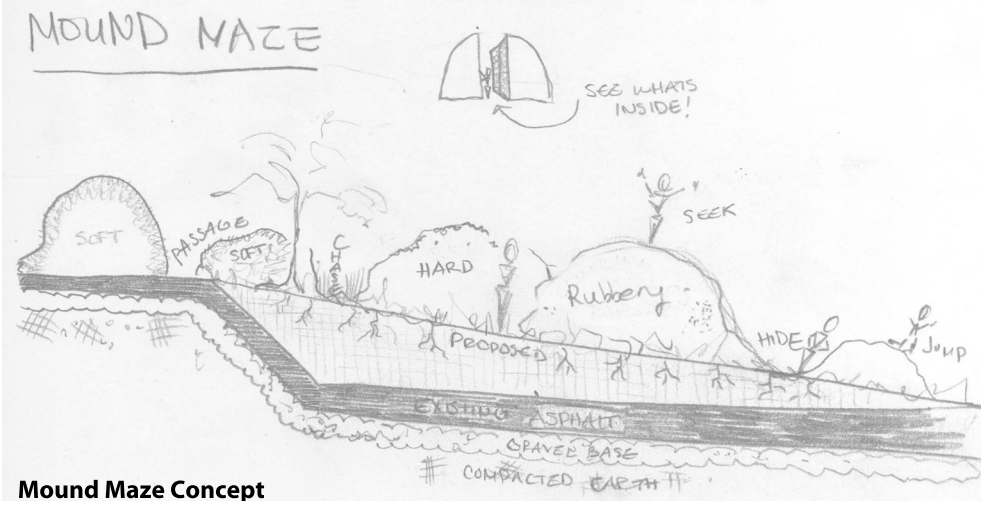
1. What to do with the removed materials?
2. What to do with the compacted soil beneath?

The excavation process presented a unique opportunity to create intense topography that is defined by the material qualities of each of the five removed materials. As each material on site was removed, it could be re-placed in a pile or mound elsewhere on site.

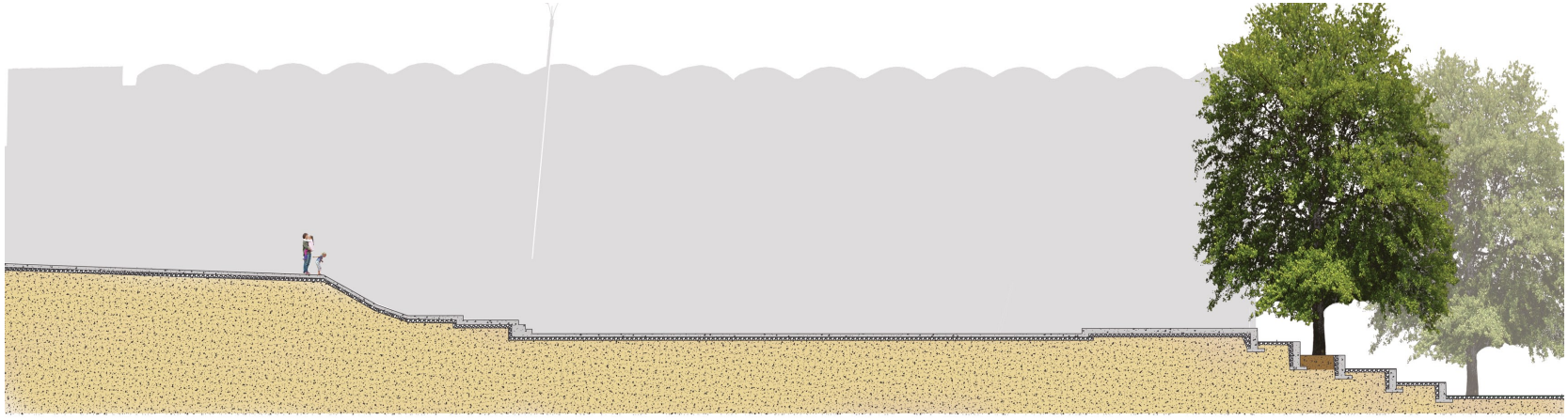


Unearthing the Earth

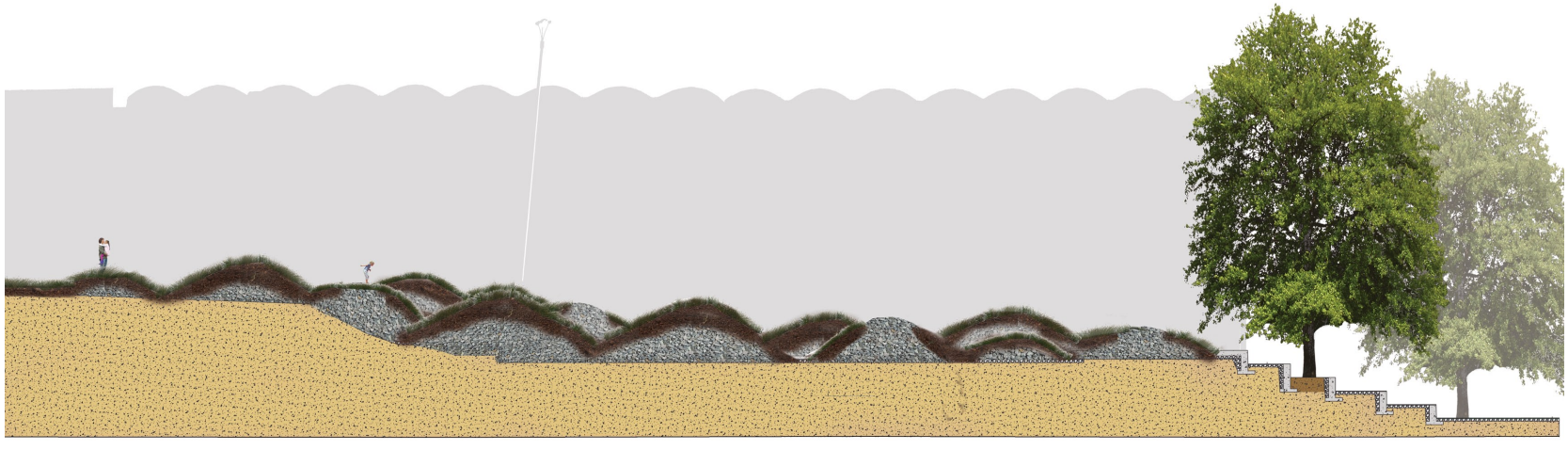
The compacted soil at Marie Reed presents another opportunity for children to engage with the ground. Digging is an important part of soil decompaction and as we know, digging is fun! The Ghost Maps of 1911 led me to consider the west portion of the site to not only become the site of soil remediation, but a kind of archeological dig where children could become actively involved in the ground through digging, finding, and decompacting.



Mound Maze Concept



Existing



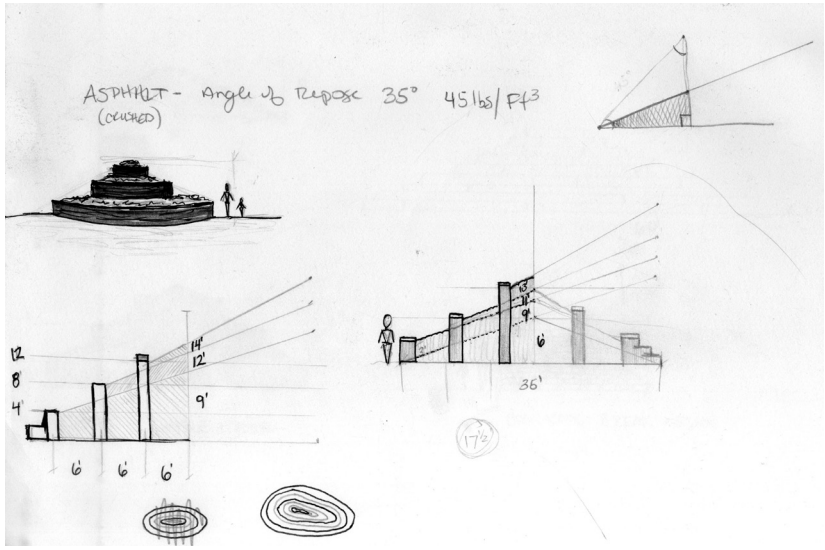
Proposed

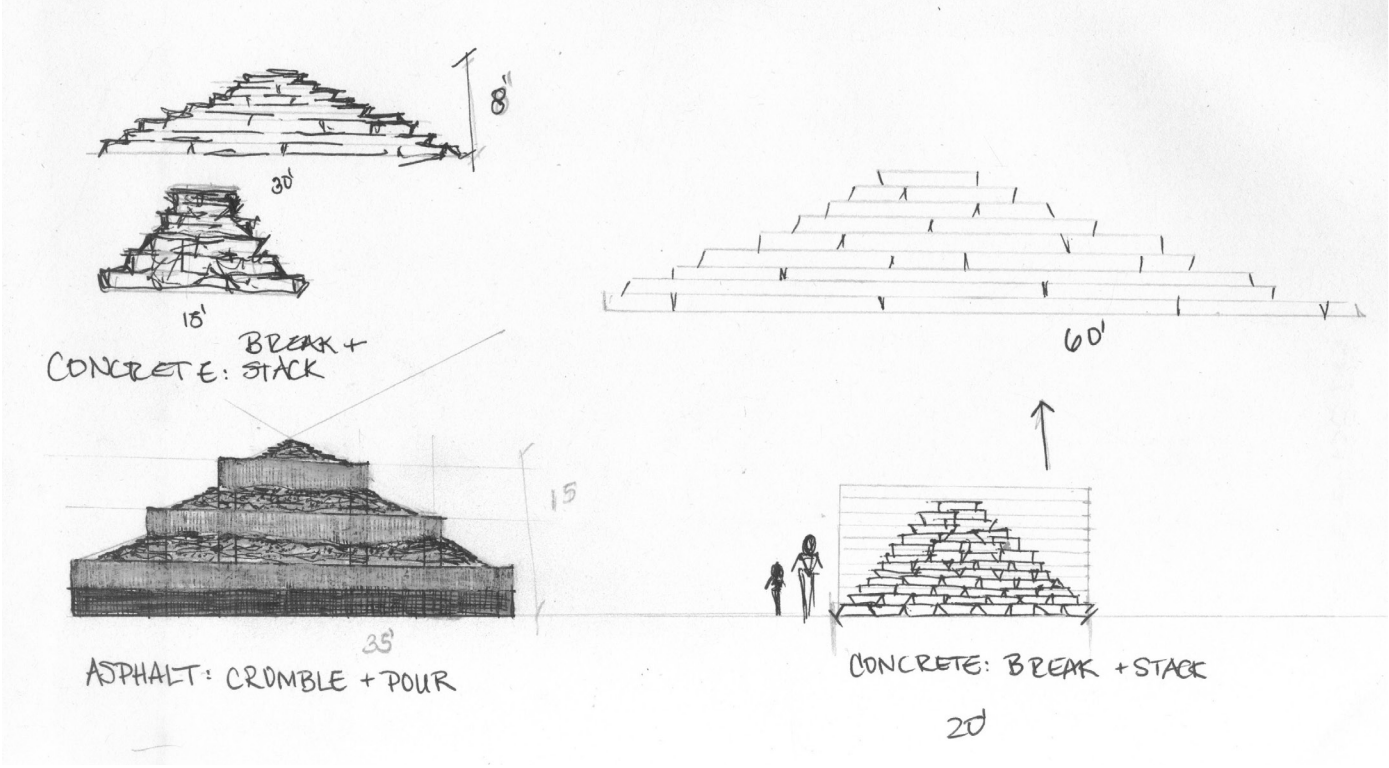
Getting Started

Early plans for the Mound Maze envision the excavated impermeable materials as core building materials for mounds that would be covered in soil and then planted, with portions of the internal material exposed to reveal the different types of impermeable materials within.

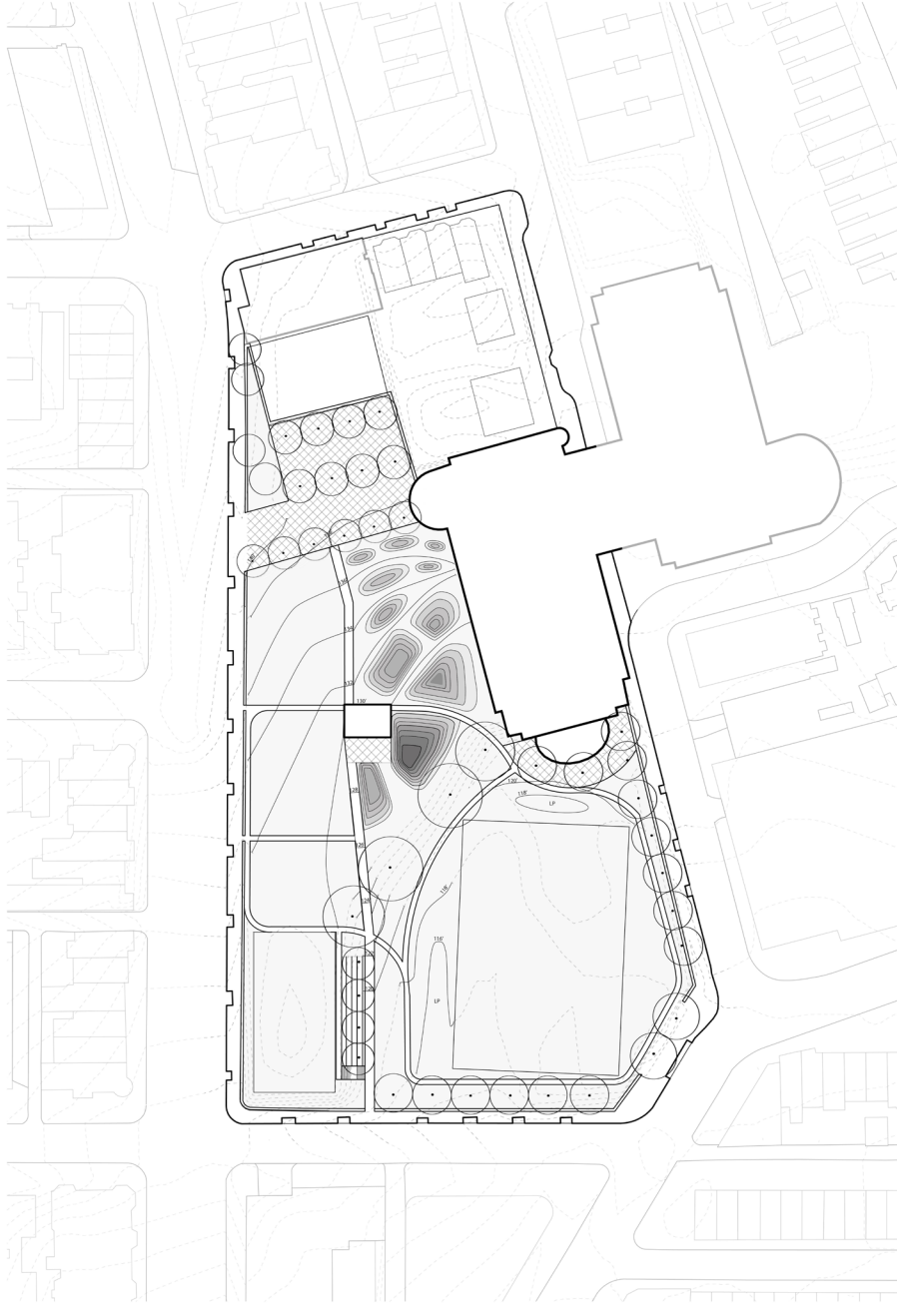
Mound Making

More detailed mound explorations delved into the material characteristics of astroturf, rubber, pavers, concrete and asphalt to take advantage of their differing qualities and how children might engage them in different ways. For example, the angle of repose of crumbled asphalt is thirty-five degrees, which helps to define the shape of the asphalt mound.





Chapter 6
Final Design



Layout and Grading
1″ = 30′

RUBBER:
RIP+
FOLD

ASTROTURF:
TEAR +
RUMPLE

PAVERS:
BREAK +
PILE

CONCRETE:
BREAK +
STACK

ASPHALT:
CRUMBLE +
POUR

The Site Plan

The site plan reveals the major design moves on the site- the Big Dig on the west side and the Mound Maze on the east side.

The Big Dig

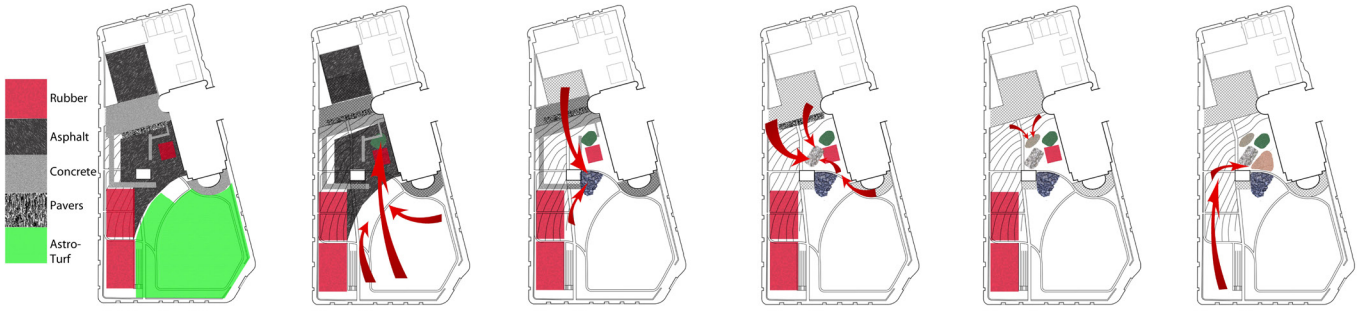
The Big Dig is the site of soil remediation and a controlled and moveable archeological dig. Soil decompaction and remediation is achieved through the processes of strip cropping and green manuring. Crops such as daikon radishes, alfalfa, red clover, sunflowers, and monarda are rotated on a two-week cycle. After a strip has been tilled under as green manure, that strip become available for "free digging", in which children wield shovels and wheelbarrows, continuing the process of decompaction as they dig into the soil to see what lies beneath. The image to the right, labeled RE-SURFACING, shows how the Big Dig is a temporal space, changing with the seasons and over time, beginning with the daikon radish (well-known for its decompaction properties), then moving to Fall/Winter cover crops such as alfalfa and red clover, and finally into Spring/Summer, when crops such as sunflowers and monarda brighten up the landscape. Over time, as the quality of the soil improves, the variety of crops that can survive will increase, and the community will actually be able to see the change in soil quality through the changes in the types of plantings.

The Mound Maze

The Mound Maze, on the east side of the site, is carefully constructed based on an excavation strategy that allows for an efficient re-placing of the materials on site. Harder, impermeable surfaces are clustered towards the center of the range, while smaller mounds made of earth and plantings surround them. There is a wide variety of heights and steepness to their slopes to allow for a wide variation in ages and sizes of children who explore here.

Playable Ground
Marie Reed Community Center
1" = 30'

Excavation and Mound Making



Existing Conditions:
Impermeable Surfaces

Phase One:
Re-Place Astroturf

Phase Two:
Re-Place Asphalt

Phase Three:
Re-Place Concrete

Phase Four:
Re-Place Pavers

Phase Five:
Re-Place Rubber

Decompaction and Soil Making

RE-SURFACING

The Mound Range

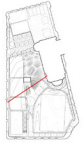
The Hub

The concrete structure in the middle of the site is an existing structure that will remain on site as a part of the new design for playable ground. It is an excellent place for staging the soil remediation operation; wheelbarrows, shovels, and a tilling machine all need to remain on site and in close proximity to the Big Dig fields. Additionally, it provides much-needed shade in an otherwise very sunny field. Lastly, it could be useful as a "look-out" for parents or teachers who want to allow their children to play freely yet still want to know where their children are on the site.

1/4″= 1′

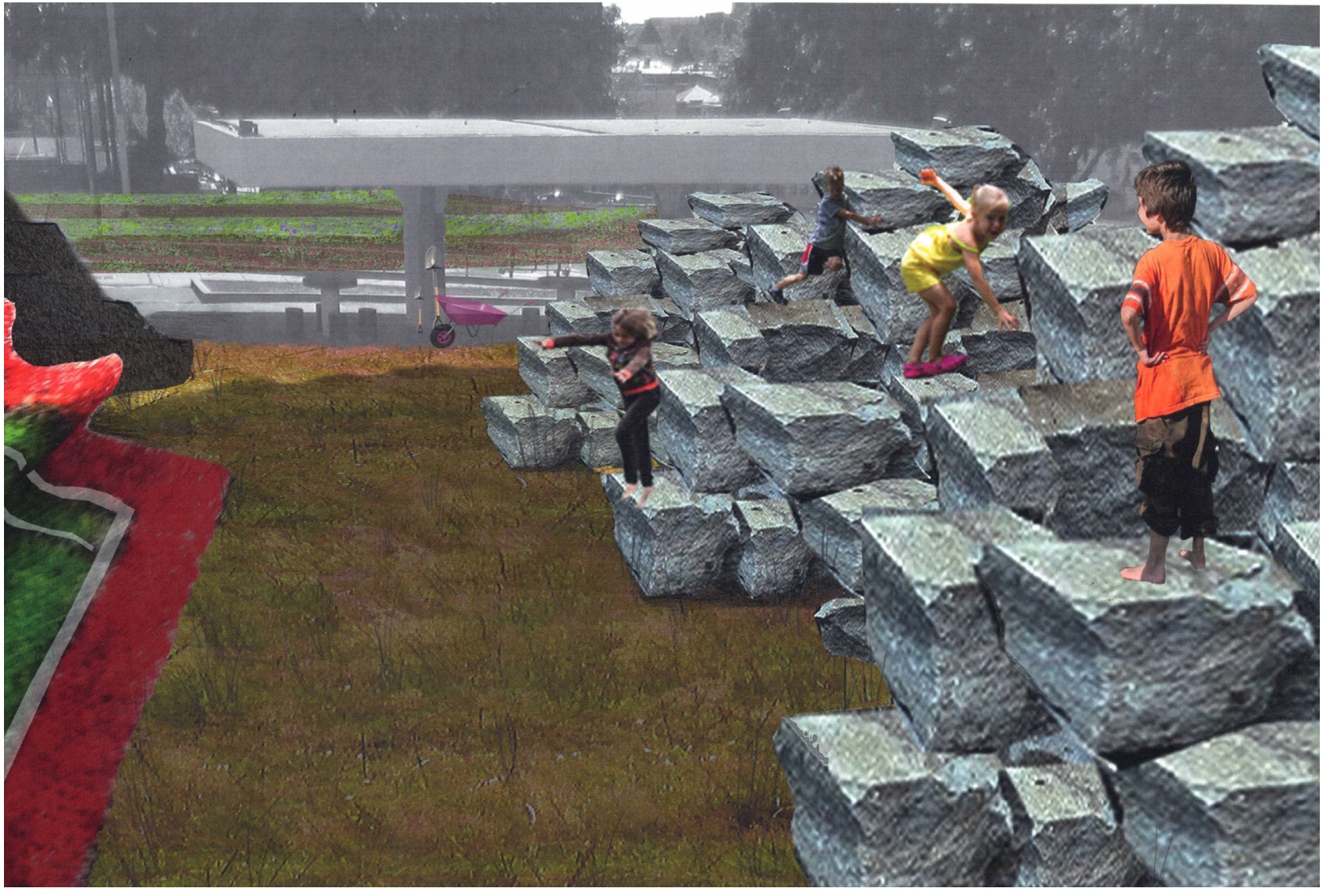
First Impressions

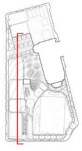
The entrance to the school is repaved with bluestone pavers and replanted with native Sycamore trees to create a shady gathering space. A wide and accessible path leads down through the Big Dig and the Mound Maze to the Hub at the center of the site.



South of the Hub

1/4″= 1′





The Playable Grounds at Marie Reed

1″ = 10′

Chapter 7
Conclusions

In 2005, author Richard Louv coined the term "nature-deficit disorder" in his book *The Last Child in the Woods.* Fewer children are playing outside than ever before, and the consequences are profound. According the the National Environmental Education Foundation, more than one in three children in the United States are overweight or obese, which can lead to type-two diabetes, and asthma. The consequences are not only physical- time spent outside can help children with attention deficit hyperactivity disorder (ADHD) to concentrate better. Peter Gray further cautions about the consequences of "play-deficit disorder" which can lead to depression and loss of creativity, among other ailments. It is time to get serious about designing places where children can play in ways that encourage them to be as physically and mentally challenged as possible.

Getting kids interested in playing outside requires building places that are exciting for children and that appeal to them on many levels, both physically and mentally. Our current playground-building standards underestimate children's ability to assess risk on their own, and fall short of engaging children in advanced ways.

Early in my research, I asked how the site-specific grounding of the built environment for children, coupled with a deep understanding of the vital role of play in the psychological development of young children, might enable designerss to create interactive, imaginitive, and didactive outdoor play scapes for children? Later, the question evolved: *how can the ground become a integral part of thrilling and risky-feeling play?*

Playable Ground at Marie Reed uses the process of soil remediation to engage both children and the ground, creating a place where children are encouraged to take risks, play freely, and engage their envionment in a physical way in which they can see the ground change through their actions. The intense topography of the Mound Maze and the Big Dig encourages the types of risky-play suggested by Ellen Sandseter, and involves children in a community-oriented process that includes them in an important healing process, not only for the soil that they are remediating, but for themselves, their families, and their communities.

Lewis Weaver digs a firepit in his backyard in Richmond, Virginia. Photo by MaryKate Weaver.

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