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M.S. Interior Architecture and Design
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The Idea of A Middle Landscape

Redefining our built environment by creating a balance between Nature, Culture and Education to promote wellbeing

Contents

Introduction

"The idea of a "middle landscape"—of a place partaking equally of nature and culture, striking a compromise or balance between the two—has received too little attention, with the result that the garden in America has yet to come into its own."

Michael Pollan

abstract

During a summer of being kept in doors, it has brought me to explore what we consider to be the normal for an interior space. Things I liked, things that were missing, things that needed to change. I began to experience feelings of disconnect and longing and an increasing need to be outside. My unhappiness with my own surroundings had me running to the outside, wanting to travel and see what else the world had to offer. I found that I was not the only one that felt this way about being stuck in the space that I considered home. It seemed that everyone around me was missing a part of the outside world and needed to escape. Which brought up another issue, how much green space we have around us.

Everyone around me seemed to be a little happier just being outside and walking around in nature but very little seemed to care about the impact this increased use would have on nature. This made me think about a lot of things in our surrounding environments; the divide we have created between the interior and the exterior, the lack of color, texture and details in our structures and how nature feels like a sixth sense that we leave untapped.

Nature Experience Through Form, Material and Atmosphere to Promote Well-being

Over the years there has been an increased desire to explore our natural environments (Orams, M. 2017). This finding is the seed that started the roots of this literature review. It poses some interesting questions for discussion. Questions such as, why, recently, is there more of a desire to explore these natural landscapes? Why have we taken more of an interest in exploring nature, when nature has always been available to explore? Are we missing something from our built environments that we are only finding on our natural one? And what type of impact are these environments experiencing from this increase in attention? In order to address these questions, this review will discuss the natural environments of U.S. National Parks, before looking at issues of nature related to connection and restoration, and immersion and equity. The review will specifically address why we are drawn to nature, how immersion can provide stimulation, and the restorative benefits a connection with nature has for our wellbeing.

Nature of Experience in the U.S National Parks

In the United States, one of the natural environments that seems to experience a higher attraction rate amongst individuals are our National Parks (Mackenzie, J. 2016). The first National Park was established in 1872 when Nathaniel P. Langford recalls "being struck by the natural beauty of the land and wanted to advocate for its preservation" (Mackenzie, J. 2016). Shortly after this proclamation, an act was signed in order to protect land from settlement, occupancy or sale so that all of the community could enjoy it. This act created the first wilderness preserve movement that our national parks are founded after (Pollan, M., 2020).

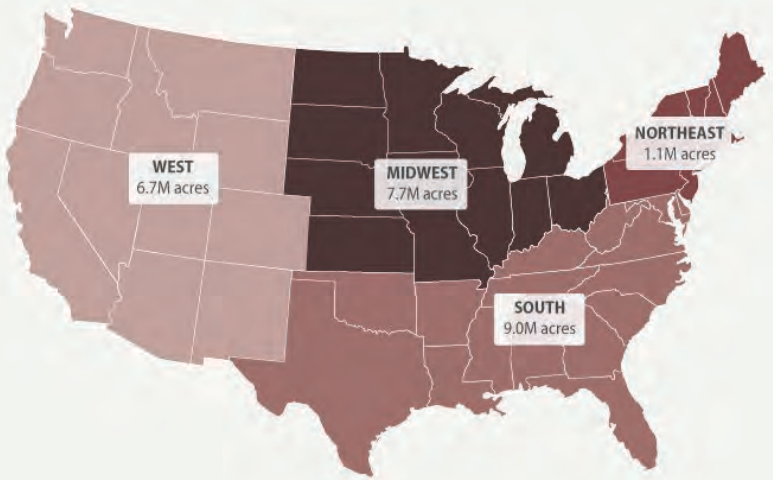
The U.S. national park system encompasses over 417 sites that span across more than 84 million acres in each state and cross over into connecting territories. Out of these sites, only 62 are named 'National Parks'. These are the sites that host some of the 20 national park types which fall under the 'protection of the National Park Service acts' that help preserve these sites for future generations (Lower, R. 2020). Some of these 20 destinations include: Battlefields, historical sites and parks, monuments, lakeshores, memorials, recreation areas and rivers. These landscapes are scenes that depict our nation's past through historical narratives that are filled with culture and recreation.

Clark Van Fleet (1961)—an author and a conservationist, believes that one of the reasons our national parks are environments that hold so much interest is because of their beauty. He calls these landscapes, "living museums, filled with scenes that can be viewed and used, without being used up". Jon Waterman (2019) argues that these landscapes hold a deeper purpose for visiting other than their beauty. He describes them as destinations that can have different meanings for visiting, depending on the person. For example, they can act as a place for escaping the distraction of the modern world or an opportunity to explore something that is real, authentic, and historic. He suggests that these landscapes provide an outside experience from civilization; one that is completely unique and cannot be found in our built environments (Waterman, J. 2019).

Design Probe 1: Scale

What is clear, by these individuals and others, is that these national parks provide areas for experiencing beauty, prospect and refuge. Millions of Americans are allowed to freely use these lands to bike, hike, climb, paddle, camp and explore because national parks are considered to be public land (Mackenzie, J.,2016). Over the last fifty-five years however, the same questions keep arising as to how much tourism should be actually allowed in these parks and how we can maintain the landscapes without restricting access (Wilson, M. 2019). It is important to remember that although these landscapes are incredible and provide a variety of adventure, they are also a living ecosystem that requires balance.

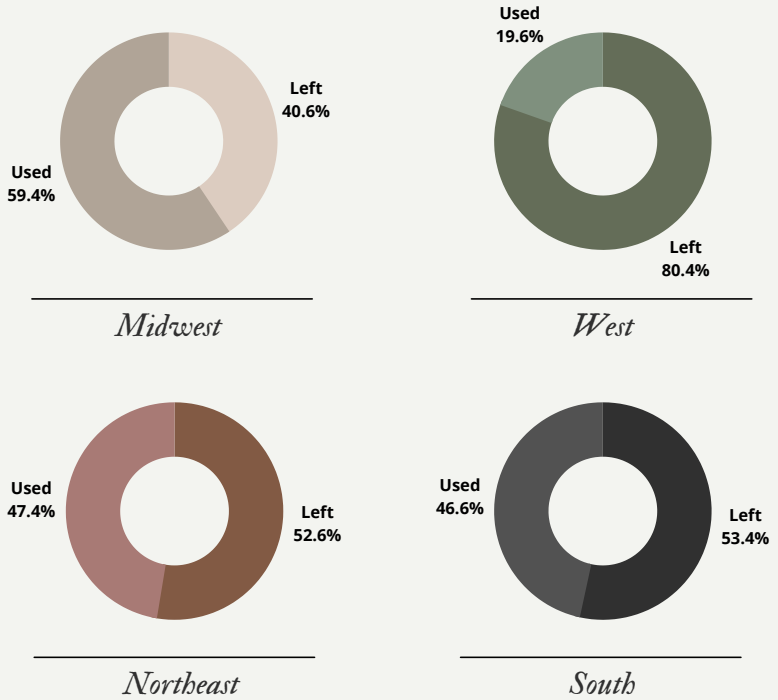
With parks being public, states are having a hard time providing the funding needed to properly educate, staff and maintain the environment against the growing number of visitors (Lown-Hecht, T., 2015). It has become clear that the influx in human presence has begun to disrupt this balance and jeopardize these lands. In an article written by Mackenzie, J. (2016) the national parks are experiencing record high levels for the average number of visitors. She states that the predicted number of visitors was around 315 million in 2016 and the parks are straining under the pressure. These natural environments aren't just suffering from over tourism but they also lack the necessary funding's needed to help preserve them and because of this, they face the prospect of privatization.



Map: Acres of land in the 48 US states

If privatized, the land is at risk of being destroyed, built on and closed off from the public. The consequences could be extreme: 43% of paddling, 193,500 miles of hiking trails, 71% of climbing and 12,659 miles of mountain biking may no longer be available (Lown-Hecht, T., 2015). Growing urbanization has already begun to create a change in how we connect with nature and if access to the park is eliminated, the quality and quantity of our connection with nature will continue to degrade (Shanahan et al. 2019).

This brings up an interesting argument posed by Michael Pollan (2020) about the mutual interdependence of civilization and wilderness (wilderness being the national parks). This argument wrestles around the idea that our society doesn't know if it wants to take over nature for civilization or preserve nature so that it can use it as an escape from civilization. Pollan states that 8% of land is given to wilderness while the other 92% is given to civilization. This means that 92% of our land is left unmanaged. Even with the growing consciousness that our natural world is in trouble, there is still little knowledge that addresses how to reincorporate nature into land already taken by civilization. Environmental awareness is not enough of a response to equal out this imbalance between nature and culture (Pollan, M. 2020) and therefore in order to allocate resources for the purpose of creating or preserving more natural environments, it is important to assess what sort of return we can expect by increasing our connection with nature.



Diagrams: Built Land Vs Natural Land

If privatized, the land is at risk of being destroyed, built on and closed off from the public. The consequences could be extreme: 43% of paddling, 193,500 miles of hiking trails, 71% of climbing and 12,659 miles of mountain biking may no longer be available (Lown-Hecht, T., 2015). Growing urbanization has already begun to create a change in how we connect with nature and if access to the park is eliminated, the quality and quantity of our connection with nature will continue to degrade (Shanahan et al. 2019).

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193,500 *miles of hiking trails*

12,659 *miles of mountain biking*

43% *of Paddling*

71% *of climbing*

Diagrams: Activities available on public land

Diagrams: Conserved vs Un-Conserved Land

Nature of People and Wellbeing

Many studies have been done which address questions as to why we are drawn to nature and what are its benefits. In looking across a variety of research, Capaldi (2015) states that there are three major theories predicting why we are drawn to nature, which will be discussed below: biophilia, attention restoration, and stress-reduction.

Biophilia, suggests that, humans have an unconscious, innate desire to affiliate with nature due to our evolutionary history (Grinde, P. 2009). In most culture, past and present, it is evident that humans have a tendency to incorporate elements of nature into their surroundings. This action is thought to be directly correlated to our mind's affection for plants and therefore we can sense when there is an absence of greenery in our surroundings (Grinde, P. 2009). Research has proven that by adding elements of nature to our interiors we can initiate positive changes to our cognitions and emotions (Kellert & Wilson, 1993). Having a visual presence of plants can create an aesthetic stimuli that gives pleasure to the mind and in return can reduce stress and speed up recovery processes (Grinde, P, 2009).

Attention restoration, indicates that our direct attention drains us (modern life stimuli) and it's when we switch into involuntary attention where we can begin to restore this damage; nature being the key to switching attention and restoring wellbeing (Kaplan & Kaplan, 1989).

Although this does not describe the direct correlation between the visual presence of nature and the positive effects on wellbeing, it indicated that we subconsciously see our natural environments as requiring less effort and attention and therefore nature can become a restorative tool.

Stress-reduction, argues that our natural environments promote psychological recovery from stress and fatigue whereas our built environments increase arousal and stress levels (Ulrich et al., 991). Stress correlates to the onset of many common health problems and etiologies such as anxiety disorders and depression. This theory finds that even a relatively brief exposure to nature can significantly improve stress levels (Grinde, P. 2009).

These three theories, among others, document that experiences in nature or visual presences of nature can play a key role in how it impacts our mental and physical wellbeing. Nature is a seen as a restorative tool that can be used to unwind, recharge and disconnect from modern stimulus (Capaldi, P., 2015). Wilson (1984) believes that because we have just recently started living in, mainly, urban environments, our need to feel connected with nature is an innate expression of who we are. Even though nature can provide vital benefits for our physical and psychological well beings, we have begun to spend less time in the natural environment and more time in the built environment. Studies show that Americans spend 90% of their time in doors and this can be damaging to our overall well-being (Grigoriou, E., 2019). This damage is believed to be caused by a lack of human interaction with nature in our built environments as a result of modern day demands (Kellert, S.R., 2008).

Increased consumption and technology has elicited a disconnect between ourselves and the natural environment (Asah, B. 2012). In order to design and construct spaces at a rate that keeps up with current demands, spaces begin to lack the authenticity, atmosphere and forms we would generally find in nature (Stouhi, D., 2020).

This growing lack of connection to nature makes it important to recognize the impacts that our interior environments can have on our overall health and wellbeing and find ways to re-connect to the nature environment. In order to mend this divide, we must understand how immersive nature experiences combined with aesthetics, sustainability and craftsmanship can play a vital role in improving wellbeing.

Nature of Place and Experiences

The idea of immersion is important when discussing nature and wellbeing. Studies predict that nature-based experiences can improve physical, mental and social conditions (Capaldi, P., 2015). Waite and Pratt (2011) comment on how the 'hands on' learning part of place experience proves to be beneficial. This embodied experience can initiate a holistic approach that engages multiple facets of learning such as, cognitive, physical, sensory, and emotional. Gillis and Gatersleben (2015) explain that these experiences can be direct, indirect or refer to place experience.

Place experience describes a full body immersion in the natural environment, including consideration of how to replicate these features into the built environment. One of these experiences refer to the idea of prospect-refuge in relation to restorative environments (Gillis and Gatersleben, 2015). Results state that high level views with low levels of prospect in nature can provide a restorative experience. This means that when a person has a hard time navigating through a space, it can increase stress. This type of place experience can be controlled in the built environment through the use of wayfinding.

Direct experience refers to having direct contact to nature. This contact can be achieved with elements of natural light, plants, materials, textures and forms that are common when being outside. Indirect experience refers to implementing representations of nature in the built environment. This form of experience is usually used when direct nature contact can't be achieved. These representations can be achieved through images of nature and by using natural materials and shapes that reflect nature (Gillis and Gatersleben, 2015). By designing an interior with place and experience of nature in mind, we can benefit from the impact that nature has on our wellbeing and understand the importance of our natural environments to ensure we are able to continue to connect to nature.

Conclusion

Overall, evidence suggests that connecting with nature provides a promising path to wellbeing. However, the connection we have with nature is continuing to diminish in quality and quantity due to modernization, urbanizations, and reduced access. Our connection to nature is in jeopardy due to population growth, climate change and lacking resources. Crucial natural environments, such as national parks, which are visited regularly by individuals who seek nature's restorative benefits, are being threatened. The quality of nature present in our interior surroundings is also reduced due to the demands of modern lifestyles and our built environments no longer authentically representing our natural environments. In order to repair this break and increase the benefits of nature, this project aims to encourage conservation of these natural environments through amplifying the connection between human and nature, promoting immersive nature experiences, and educating people on the role that aesthetics, sustainability, and nature have on our wellbeing.

References

Asah, B. (2012). The Influence of Childhood: Operational Pathways to Adulthood Participation in Nature-Based Activities. Environment and Behavior, 44(4), 545–569. https://doi.org/10.1177/0013916510397757

Capaldi, P. (2015). Flourishing in nature: A review of the benefits of connecting with nature and its application as a wellbeing intervention. International Journal of Wellbeing, 5(4), 1–16. https://doi.org/10.5502/ijw.v5i4.1

Dima Stouhi. "Bringing the Outdoors Inside: The Benefits of Biophilia in Architecture and Interior Spaces" 24 Oct 2019. ArchDaily. Accessed 6 Nov 2020. <https://www.archdaily.com/923100/bringing-the-outdoors-inside-the-benefits-of-biophilia-in-architecture-and-interior-spaces> ISSN 0719-8884

Dreyer, B. C., Coulombe, S., Whitney, S., Riemer, M., & LabbA[c], D. (2018). Beyond Exposure to Outdoor Nature: Exploration of the Benefits of a Green Building's Indoor Environment on Wellbeing. Frontiers in Psychology. https://link.gale.com/apps/doc/A552340043/AONE?u=drexel_main&sid=AONE&xid=723858ba

Gillis, G. (2015). A Review of Psychological Literature on the Health and Wellbeing Benefits of Biophilic Design. Buildings (Basel), 5(3), 948–963. https://doi.org/10.3390/buildings5030948

Grigoriou, E. (2019). Wellbeing in interiors: philosophy, design and value in practice . RIBA Publishing.

Grinde, P. (2009). Biophilia: Does Visual Contact with Nature Impact on Health and Well-Being? International Journal of Environmental Research and Public Health, 6(9), 2332–2343. https://doi.org/10.3390/ijerph6092332

Kaplan, R., & Kaplan, S. (1989).The experience of nature: A psychological perspective.Cambridge, UK: Cambridge University Press

Kellert, S.R. Dimensions, Elements, and Attributes of Biophilic Design. In Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life; Heerwagen, J., Mador, M., Eds.; Wiley: Hoboken, NJ, USA, 2008

Kellert, S. R., & W ilson, E. O.(1993).The biophilia hypothesis.W ashington, DC: Island Press

Lown-Hecht, T. (2015). Things you Need to Know About the Public Lands. Outdoor Alliance. Retrieved from https://www.outdooralliance.org/blog/2015/7/14/5-things-you-need-to-know-about-the-public-land-heist

Lower, R. (2020) How Many National Parks are There? National Park Foundation.Retrieved from https://www.nationalparks.org/connect/blog/how-many-national-parks-are-there#:~:text=The%20National%20Park%20System%20encompasses,%2C%20American%20Samoa%2C%20and%20Guam.

Mackenzie, J. (2016) Protecting our National Parks Another 100 Years. Nrdc. Retrieved from https://www.nrdc.org/stories/protecting-our-national-parks-another-100-years

Pollan, M. (2020) Beyond Wilderness and Lawn. Retrieved from http://www.harvarddesignmagazine.org/issues/4/beyond-wilderness-and-lawn

Shanahan, D.F.; Astell–Burt, T.; Barber, E.A.; Brymer, E.; Cox, D.T.; Dean, J.; Depledge, M.; Fuller, R.A.; Hartig, T.; Irvine, K.N.; Jones, A.; Kikillus, H.; Lovell, R.; Mitchell, R.; Niemelä, J.; Nieuwenhuijsen, M.; Pretty, J.; Townsend, M.; van Heezik, Y.; Warber, S.; Gaston, K.J. Nature–Based Interventions for Improving Health and Wellbeing: The Purpose, the People and the Outcomes. Sports 2019, 7, 141.

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A., & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments.Journal of Environmental Psychology,11, 201-230.

Waite, S., & Pratt, N. (2011). Theoretical perspectives on learning outside the classroom: Relationships between learning and place. In S. Waite (Ed.), Children learning outside the classroom: From birth to eleven. London: Sage.

Waterman, J. (2019) National Parks Crowding Climate. New York Times. Retrieved from https://www.nytimes.com/2019/11/22/opinion/sunday/national-parks-crowding-climate.html

Wilson, E. O. (1984).Biophilia. Cambridge, MA: Harvard University Press

Wilson, M. (2019). National Park Maintenance Problems Arent New. The Atlantic. Retrieved from https://www.theatlantic.com/letters/archive/2019/07/national-park-maintenance-problems-arent-new/593293/

Framework

FRAMEWORK

thesis focus

Premises

The premises for my thesis started last summer while I was on a hike at Ridley Creek state park.
Like most of you, It felt like an endless 3 months of eating, sleeping, working and going to school indoors while staring at a computer screen.
I was so excited to finally get to go on a walk in a public place, outside, instead of staring at my 4 walls at home. Almost immediately I started to feel better, my mood had changed and I felt like I had more energy.

And then just like that, the walk was over and sure enough I was back at my desk...inside. Wishing I was back outdoors.
You see, over and over again, especially as designers, we are reminded that our natural environment can positively impact our physical and psychological well being.
Yet studies show that 90% of our time is spent indoors.

Research

My research started by analyzing our built environments in order to mend this divide between interior and exterior and create a place that amplifies the human and nature connection and all of its restorative benefits.

This thesis project explores the idea of a middle landscape by creating a seamless and interactive experience between nature, culture and education in order to redefine our built environments and transform them into a more natural and sustainable infrastructure.

NATURE

- Located near public and private greenspaces
- Access to public transportation and/or walking and biking trails that connect the building to the town
- Built to celebrate the surrounding environment with sustainability in mind

CULTURE

- Program designed to support the local community and celebrate the surrounding culture and heritage
- Provide Multi-functional and adaptive spaces for all age groups
- Redirect visitor resources to help support the community

EDUCATION

- Create a healthier relationship between the built and natural environments
- Educate about the importance of conserving natural resources to ensure a sustainable future
- Use immersive nature experiences to foster a healthier connection with our natural environment.

precedent

The Josey Pavillion

Location: Decatur, Texas
Architect: Lake|Flato

Function: the space is a 5,000-square-foot pavilion which functions as a site for meetings and educational events for the Dixon Water Foundation

Design Goal: is meant to promote healthy watersheds through sustainable land management

Structure

The pavilion has a low lying form, which is intended to praise the surrounding site of the native prairie. The complex consists of two similarly scaled buildings that are joined in the middle by a porch. By the entry of the building you walk into a space which includes a herbarium, a restroom and a kitchen. From there you exit to a covered porch and then enter the other building, which houses a multi-purpose space for education events.

Concept & Design

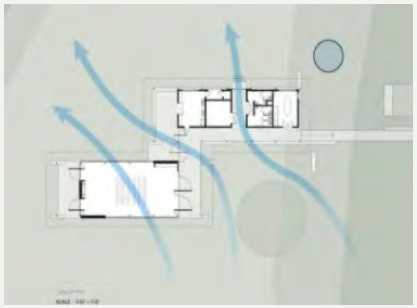
The Concept for the pavilion was meant to connect place and climate through form, materiality, and environment. The space is designed to be flexible and adaptive to environmental forces and The pavilions form was derived from a tree and is meant to allow one's senses to still connect to the outside prairie. This is achieved through the structure which captures and blocks wind flow. The deep overhangs which create shelter and refuge and the rooftop cupola which lets daylight in while allowing hot air to still escape. The pavilion uses as few materials as possible, in as natural of a state as possible and all are sourced and crafted locally or salvaged locally

FRAMEWORK

precedent

Sustainability

One of the things i chose to focus on with this design were the strategies and sustainability efforts.
Passive comfort strategies are controlled by sliding and pivoting doors which can be closed to block wind or opened to allow breeze and flow.
Bioclimatic and Ecological Strategies are controlled at 5 points: slotted wood doors are in larger gathering areas and can be opened to allow maximum ventilation; Open cupola brings in daylight and allows hot air to escape; Solar panels are used to help supply energy; supports rangeland conservation through carbon sequestration and water, energy and ecosystem balances;
Outdoor porches are designed to channel summer breezes and block winds and using livestock to improve the natural ecosystem and promote holistic ranching practices.



Relevance

This pavilion is relevant to my design approach because My design agenda is to explore the interior condition of aesthetic, sustainability, wellbeing and craftsmanship to develop a seamless, interactive experience between people and the natural environment in order to promote conservation and preservation of national parks.
Similarly, The pavilion fosters a sense of connection between human and nature without needing curved forms, interior plants or filigree that emulates nature. Instead, it uses form, materiality, and environmental factors to influence the design. Its also designed as a fully restorative living building and promotes the most advanced measure of sustainability in the built environment.

It promotes healthy indoor air quality. The materials are sourced locally and are familiar elements to the site that speaks to the naturalness of the materials. It houses the perfect place to teach and learn about environmental education in an interior while also enjoying nature. Through the use of Natural materials and human scaled spaces, the designer was able to create a tranquil environment that connects people with the landscape in a holistic, non-intrusive way while still supporting the foundation's mission. The pavilion also facilitates a deeper understanding of how sustainable living as well as the built environment can work to do more good than harm to our environment and preserve the beauty and longevity of our natural resources.

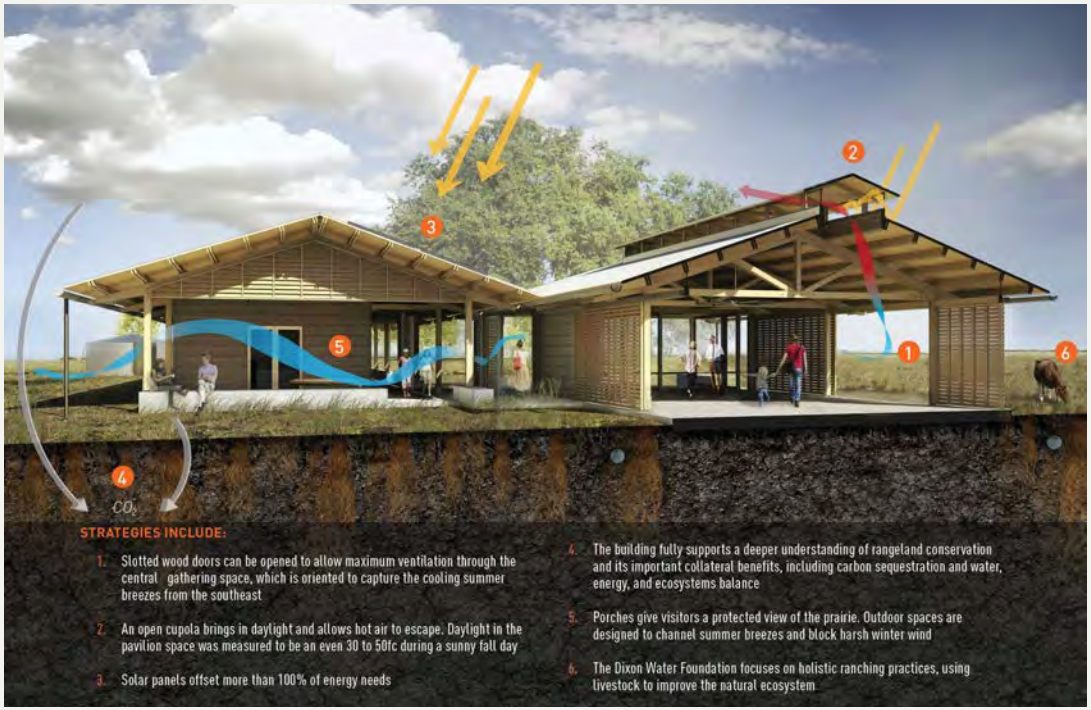


Diagram: Sustainability

FRAMEWORK

design probe experience

case study

The Frick Environmental Center

Location: Pittsburgh, PA
Architect: BCJ

Function: 16.440 sqft. center offering programs for residents of all ages to increase their contact with and understanding of the nature preserved in Frick park.

Design Goal: a living classroom for environmental education by providing hands-on opportunities to experience nature and learn about sustainable design

Relevance

One of the things i chose to focus on with this design were the strategies and sustainability efforts.

As a Living Building, environmental sustainability was the first priority with every design element of the Frick Environmental Center. The building features net zero in water and energy, and every material used to build the facility was vetted to be sustainably sourced and free of known toxins. It was also designed aesthetically to blend into its environment, rather than just to exist on the space. The site manager, Reed Hoffmier stated in his interview, "It is becoming more common to have buildings that reflect the mission of the occupants, though this is certainly not universal or even widespread. For us the building and site is an integral part of our identity, and we weave it into our education and outreach."

Level one

Level Two

Diagrams: Analysis privacy zones

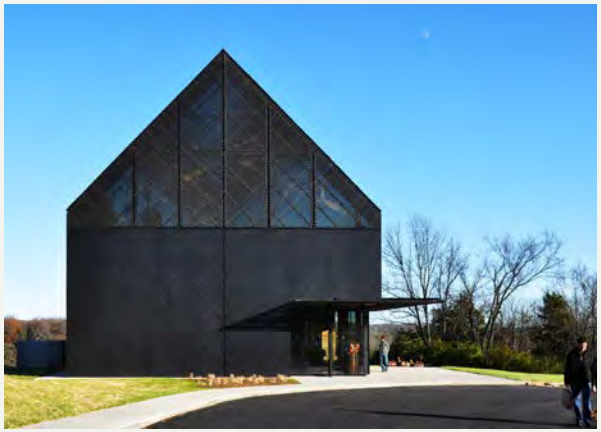
case study

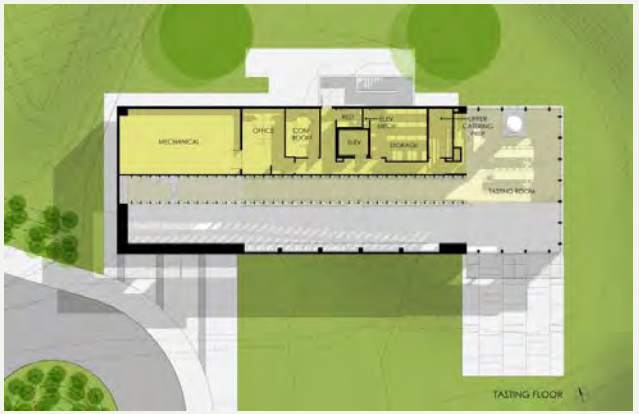
Wild Turkey Bourbon Visitor Center

Location: Lawrenceburg, KY
Architect: De Leon, Primmer Architecture Workshop

Function: 9,140 sqft. structure that welcomes visitors as they tour the 400 acre Wild Turkey Distillery.

Design Goal: To create a sustainable environment that fits the surroundings as well as helping to preserve the natural habitat of a population of wild turkeys.





Photos: Wild Turkey Bourbon Visitor Center

Relevance

When analyzing this case study I wanted to explore the buildings relation of tectonics and atmosphere. The iconic form is simple but intricate and shifts sense of scale and tactility. They manipulate lighting through transparencies to blur the boundaries of inside vs outside and solid vs. void.
The simple barn structure and stained wood siding is designed so that the building will fit into the surrounding environment.

Approach & Focus

APPROACH & FOCUS

site overview

Site Selection

Location: Louisville, Colorado
Designer: ZGF Architects LLC
Size: 55,000 sqft.
Year: Built 2013
Current Use/Owner: Pearl Izumi North American corporate headquarters

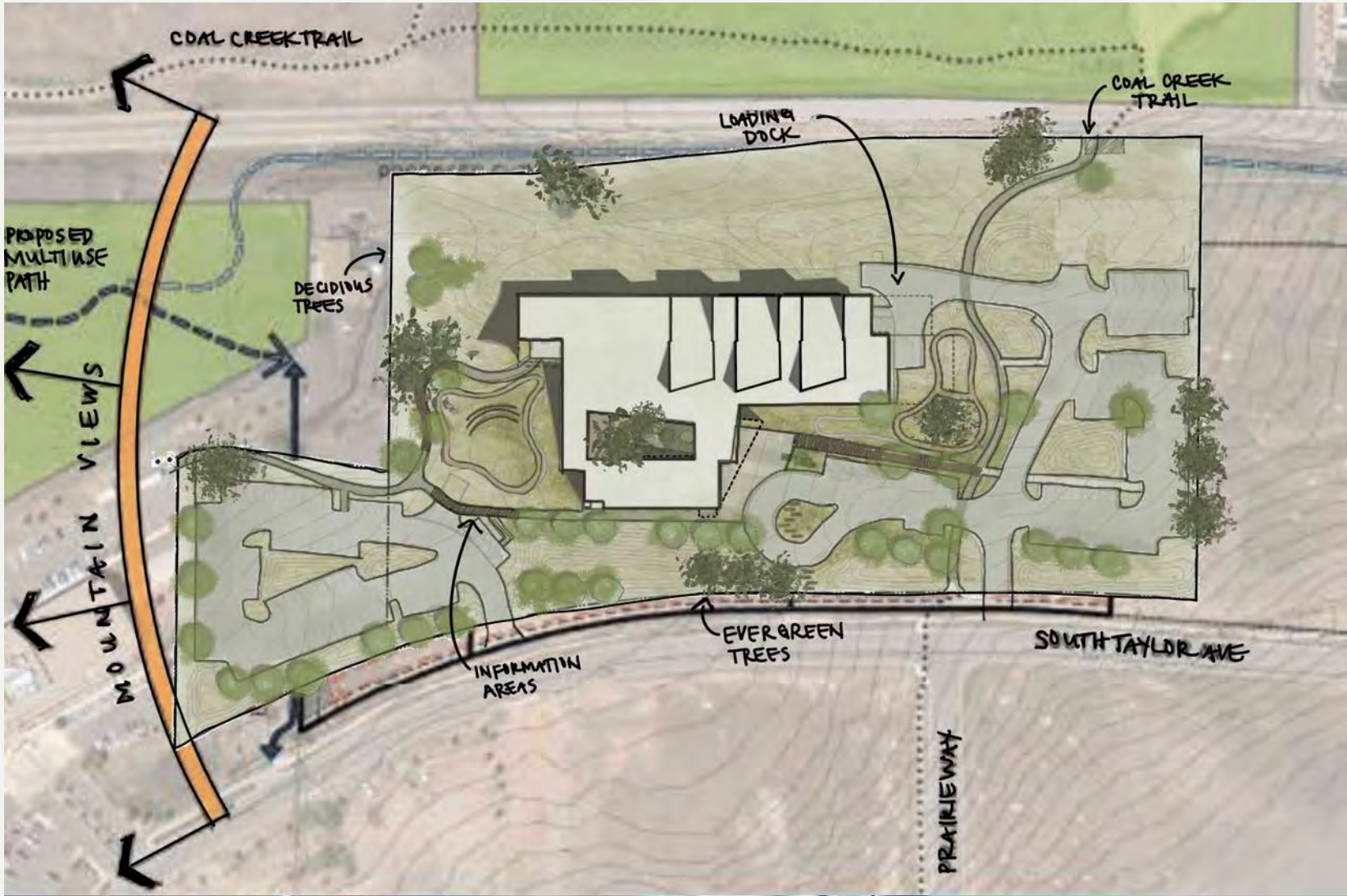
Design & Sustainability

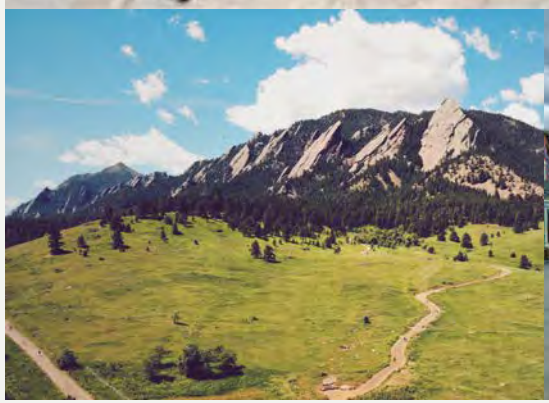
The exterior is built using weathered Steel, Concrete, wood, and glass. This is an important design element for my thesis because these materials are very easy to maintain and will cut down the cost on yearly maintenance and upkeep. This building was also designed with sustainable materials that blend in and celebrate the landscape.

Low impact and passive strategies were used along with thermal control considerations and natural ventilation.

Louisville, Colorado

A town that appreciates all things art and believes in the universal human need to create and enjoy their surroundings. Louisville is an old mining town that still believes in the importance of working hard so that they can play hard later. The Louisville community feels a strong connection with nature and speaks out about the importance of educating people on how to protect the land. Especially because it is the 3rd quickest growing city in CO and is in jeopardy of losing the surrounding greenery.


COAL CREEK TRAIL
COAL CREEK TRAIL
LOADING DOCK
PROPOSED MULTI USE PATH
DECIDIOUS TREES
MOUNTAIN VIEWS
INFORMATION AREAS
EVERGREEN TREES
SOUTH TAYLOR AVE
PRAIRIEWAY



site analysis

Surrounding Greenspaces

- Rocky Mountain National Park
- National Forest
- Rocky Flats National Wildlife Refuge
- National Forest
- Carolyn Holmberg Preserve at Rocky Mountain

Surrounding Communities

- Louisville
- Broomfield
- Lafayette
- Gunbarrel
- Boulder

Surrounding Greenspace
This analysis was trivial in selecting my site. Within a 10 mile radius of Louisville, CO there are both public and private owned greenspaces.

Surrounding Community
This analysis shows that the site is surrounded by three larger cities and is at jeopardy of loosing the surrounding green spacing with the growing population and lack of funding.

Surrounding Transportation
This mapping shows that the site is accessible to the public through a bus route from the city as well as having both a paved and an unpaved trail for biking, running or walking that goes directly from the site to the town.

site analysis

Surrounding Green Space

- City owned land
- State owned land
- Private owned land

Surrounding Transportation

- Walking and bike trails
- Public transportation path

APPROACH & FOCUS

site documentation

Interior

The interior displays raw wood and steel materials in order to compliment the weathered exterior and surrounding landscape

Exterior

The exterior is built using weathered Steel, Concrete, wood, and glass and the building envelope was designed to mirror the flatiron mountains

The building features sustainable materials that blend in and celebrate the landscape.

And Low impact and passive strategies were used along with thermal control considerations and natural ventilation.

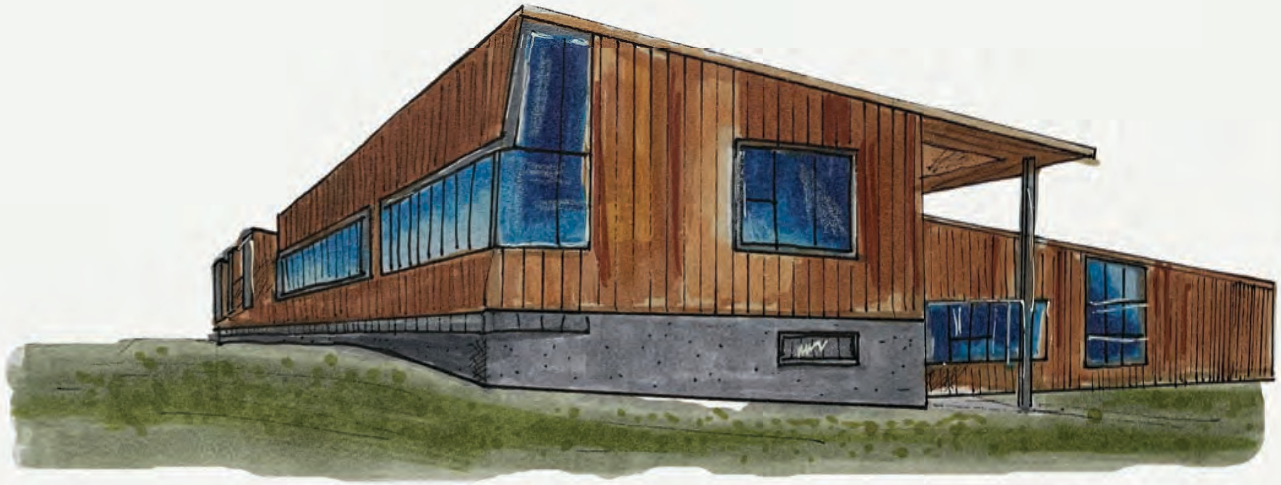

MID LEVEL


RAMP


OPEN OFFICE SPACE


RETAIL SHOP


BREAKROOM




NORTH ELEVATION


ROOF PLANE


EXTERIOR MATERIALS


LARGE APERTURES


COURTYARD


MAIN ENTRY

APPROACH & FOCUS

sustainability considerations

VENTILATION
portions of roof are cut and tilted to provide natural ventilation and daylight

RECYCLES METAL SKIN
metal roof and siding are composed of a recycled sheet steel that is low maintenance and durable

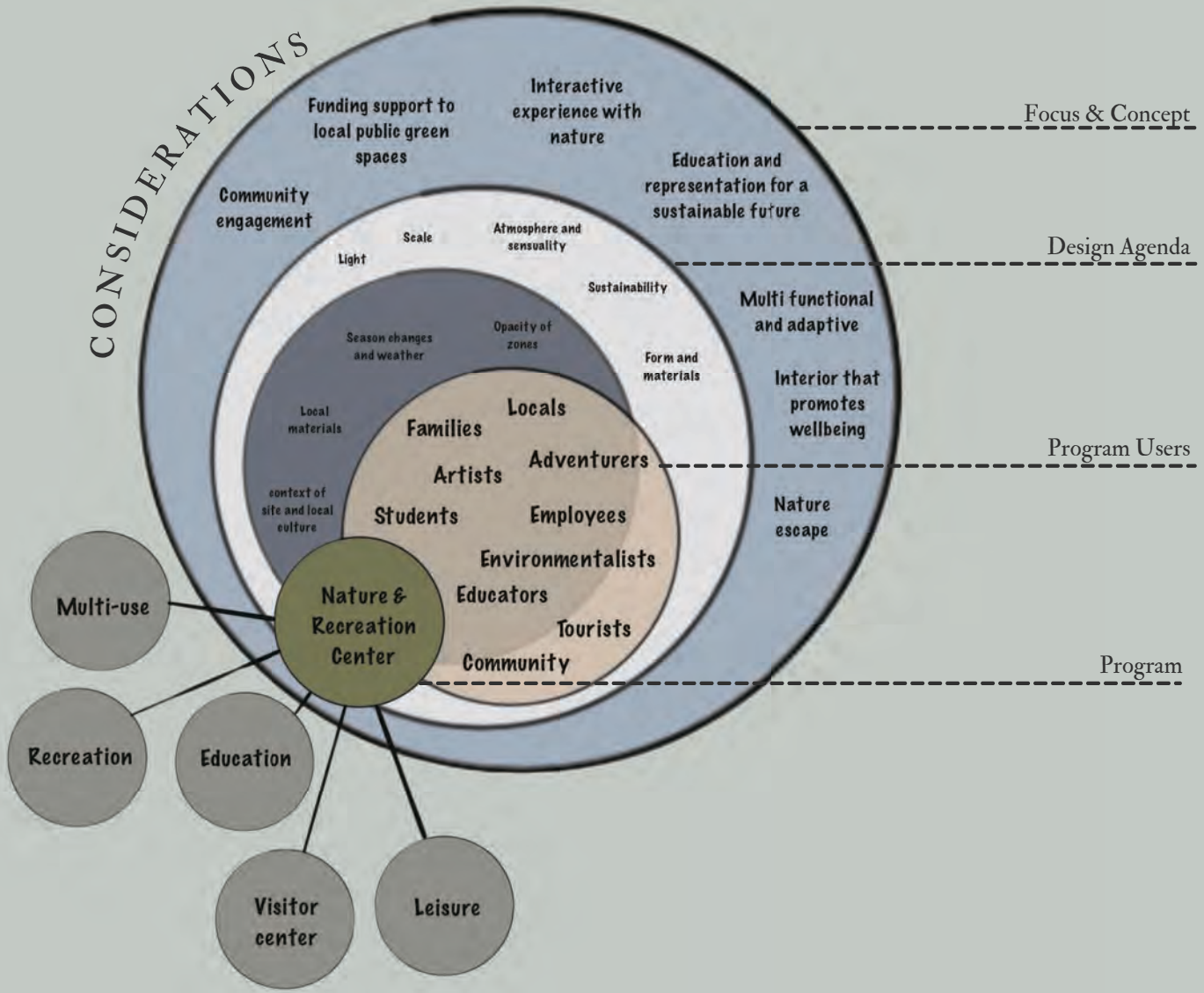
HIGH PERFORMANCE GLASS
triple-panel window and skylight glazing systems will have a 0.14 U-value

LED LIGHTING
energy efficient lighting fixtures will be used

SUPER INSULATED
wall and roofs are oversized to provide insulation

PLASTER WALL FINISH
durable veneer plaster finishes with earth from around the site mixed in with plaster will be used in some of the spaces. this will add a tactile rich surface.

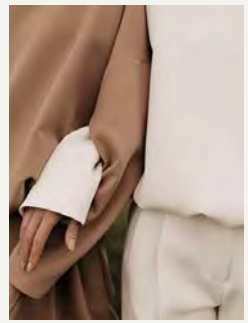
THERMAL MASS
the building is oriented so that primary spaces have access to southern sun. Concrete floors store and distribute solar heat gain throughout the day.

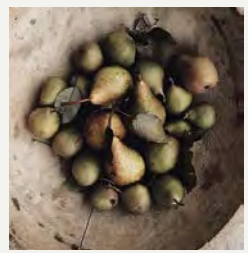

CONSIDERATIONS
Funding support to local public green spaces
Interactive experience with nature
Education and representation for a sustainable future
Community engagement
Scale
Atmosphere and sensuality
Light
Sustainability
Multi functional and adaptive
Season changes and weather
Opacity of zones
Form and materials
Interior that promotes wellbeing
Local materials
Locals
Families
Adventurers
Artists
context of site and local culture
Students
Employees
Nature escape
Environmentalists
Multi-use
Nature & Recreation Center
Educators
Tourists
Community
Recreation
Education
Visitor center
Leisure
Focus & Concept
Design Agenda
Program Users
Program

Programming

PROGRAMMING

design agenda





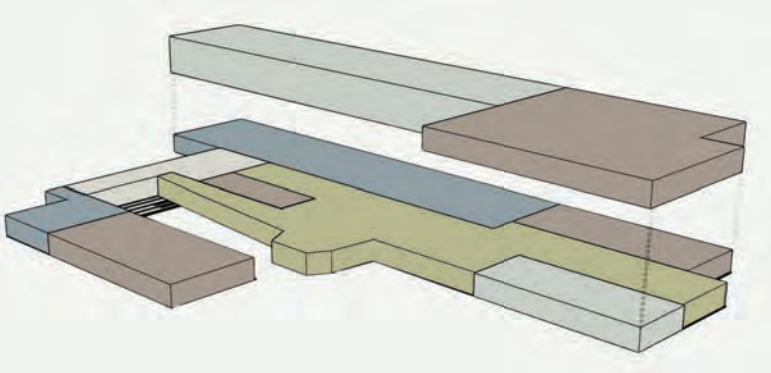
ATMOSPHERE

SCALE

FORM

PROGRAMMING

site scale



COMMUNITY & LEISURE

POTTERY ROOM	2271	TAPROOM	3000
KILN	155	COURTYARD	4350
GLAZING	466	OUTDOOR AUDITORIUM	4500
WASH AREA	210	STORAGE	200
OBSERVATION DECK	578	P. STUDIOS	1022
UTILITY SPACE	211	PAINTING ROOM	1715
MULTI-CRAFT ROOM	1453	SHARED STUDIO	356
PUBLIC WC	1048	PUBLIC MUDROOM	2500

EDUCATION

CLASSROOMS	1380
OBSERVATION DECK	791
MULTI-PURPOSE	1160
MUDROOM	380
RESEARCH LAB	360
LIBRARY	2400
READING ROOM	600
STORAGE	466

NATURE EXPERIENCE

NATURE GALLERY	16000
BREEZE WAY	1075
LOBBY	1780
GIFT SHIP	930
EXHIBITION	788
PUBLIC WC	800
ENTRY	2525

BOH

CO WORKING	3022
P. OFFICE	460
CALLROOM	80
STAFF BREAK ROOM	440
MEN LOCKER ROOM	800
WOMEN LOCKER ROOM	900
COPY/STORAGE	200
MEETING	664
KITCHEN	1200

SQFT. TOTAL

PROGRAM SQFT: 58,016
CIRCULATION: 17,404

75.420 SQFT

Diagram: Program Zones

site scale

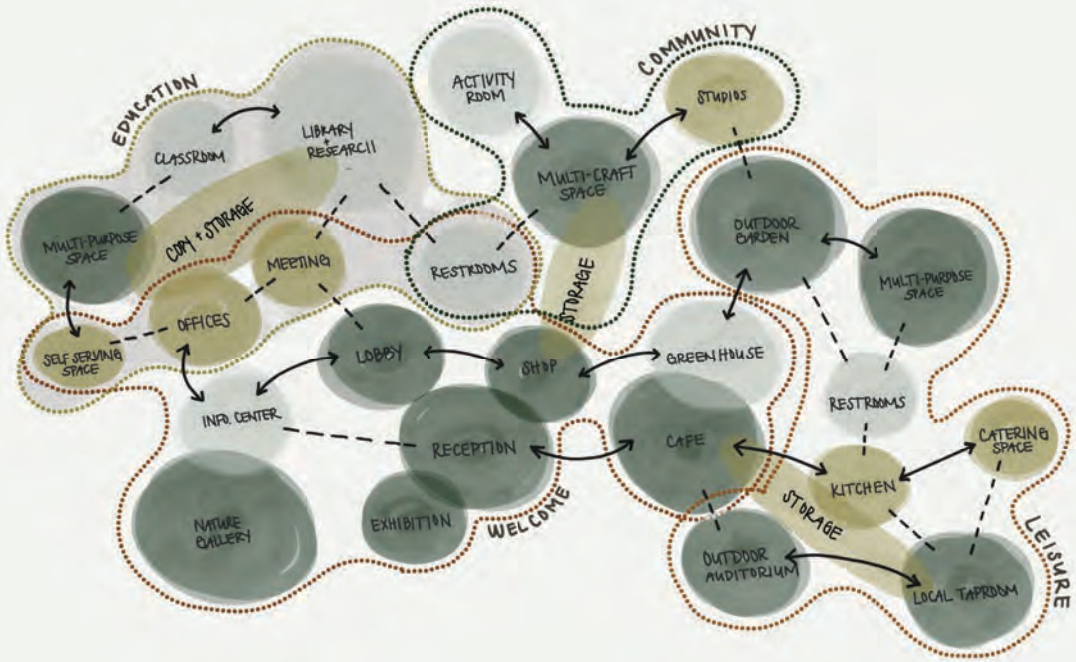


Diagram: Bubble


IRON PEAK
NATURE & LEISURE
CENTER

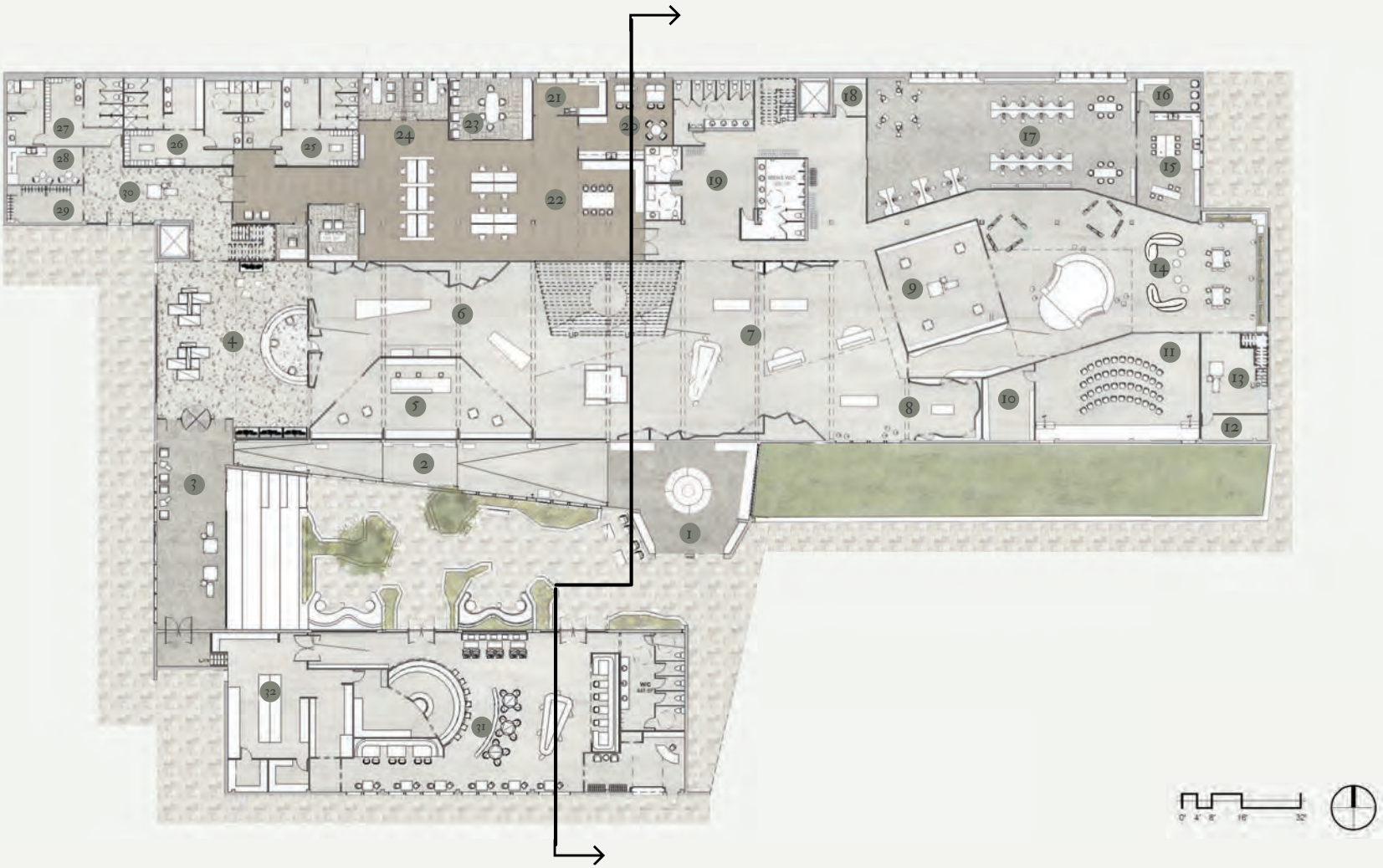
Design

DESIGN

floor plans

Level One

1. main entry
2. ramp
3. breeze way
4. main lobby
5. giftshop
6. wildlife exhibition
7. nature exhibition
8. resources
9. exhibition
10. storage
11. multi-purpose
12. mechanical
13. east entry
14. playscape zone
15. glazing
16. kiln
17. pottery room
18. janitor
19. public restrooms
20. breakroom
21. copy & storage
22. co-working
23. private offices
24. mens lockerroom
25. womens lockerroom
26. public mudroom
27. kitchenette
28. bike racks
29. employee entry
30. taproom
31. kitchen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DESIGN

floor plans

Level Two

1. library
2. meeting
3. classroom a
4. classroom b
5. observation deck a
6. public restrooms
7. reading room
8. storage
9. utility room
10. painting room
11. multi-craft room
12. group studio
13. private studios
14. utility room
15. observation deck b


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OPEN TO BELOW
OPEN TO BELOW

DESIGN

nature experience

PROGRAM GOALS:

1. EDUCATE LOCALS & VISITORS	Vital Signs and Resources the community should know about the surrounding environment
2. PROVIDE FUNDING FOR LOCAL GREENSPACES	Lack of funding, maintenance and over tourism are affecting our natural environments and our resources are depleating.
3. INCLUSIVITY	Not everyone has the ability or opportunity to explore our natural environment.

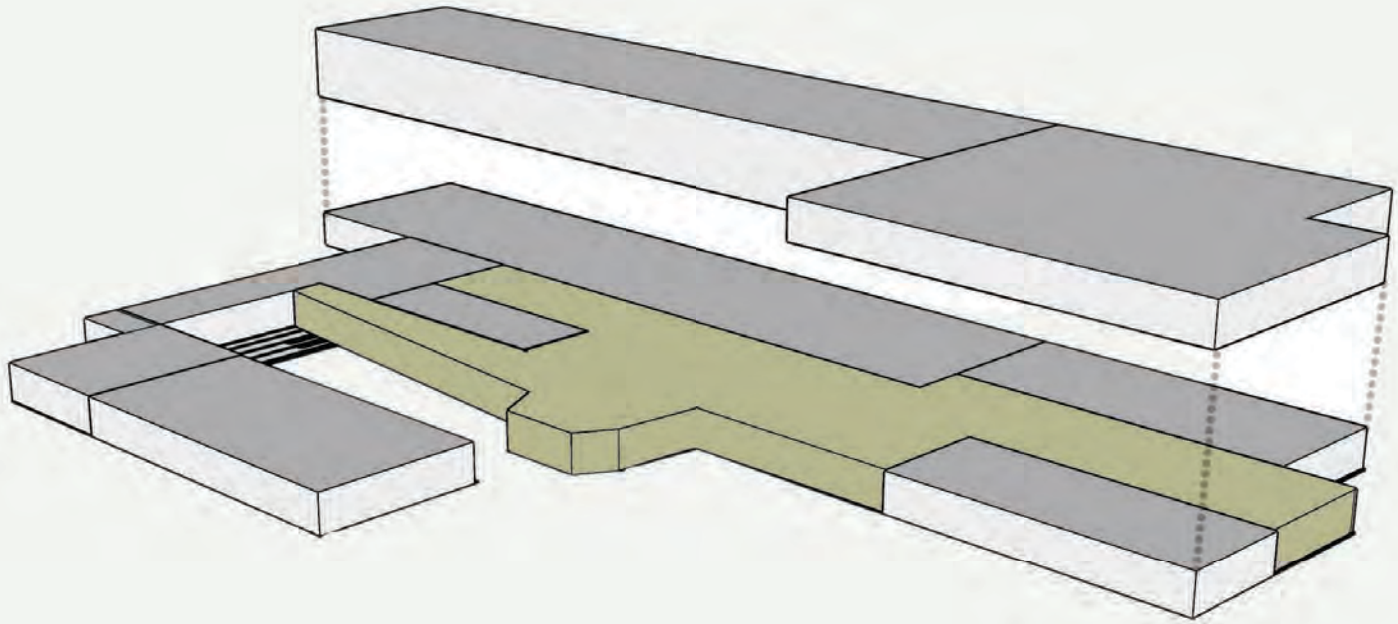


Diagram: Blocking of Nature Experience

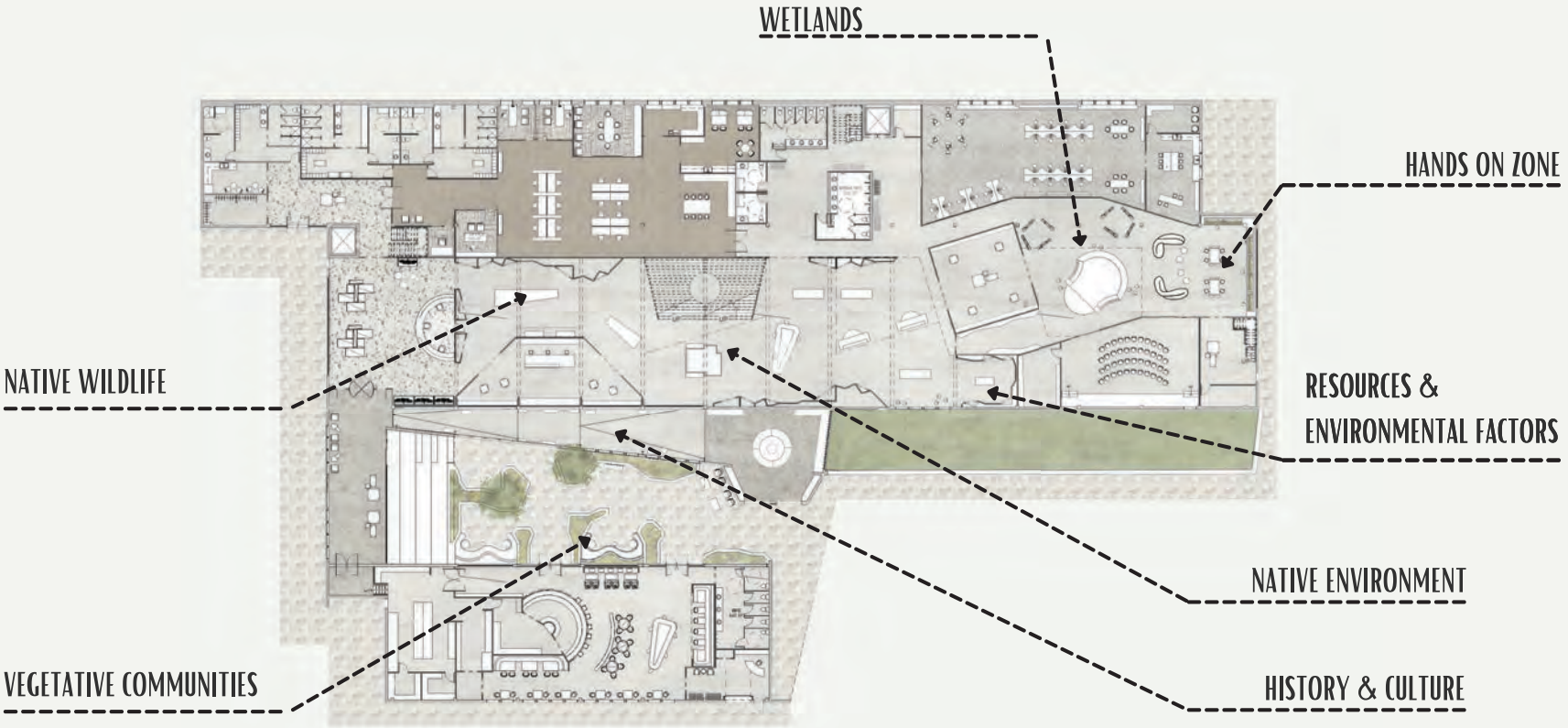


Diagram: Exhibit Locations & Path

DESIGN

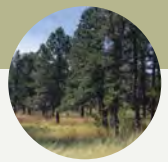
nature experience path

Perspective: Main Entry

1. VEGETATIVE COMMUNITIES

THE PATH BEGINS AS SOON AS YOU STEP FOOT ONTO THE PROPERTY. THE EXTERIOR LANDSCAPE IS FILLED WITH LOCAL PLANTS AND ALONG THE PATH YOU CAN FIND INFORMATION ABOUT LOCAL VEGETATIVE COMMUNITIES AND ANIMALS.

BRIDGES WITH INFORMATION ABOUT LOCAL VEGETATIVE COMMUNITIES

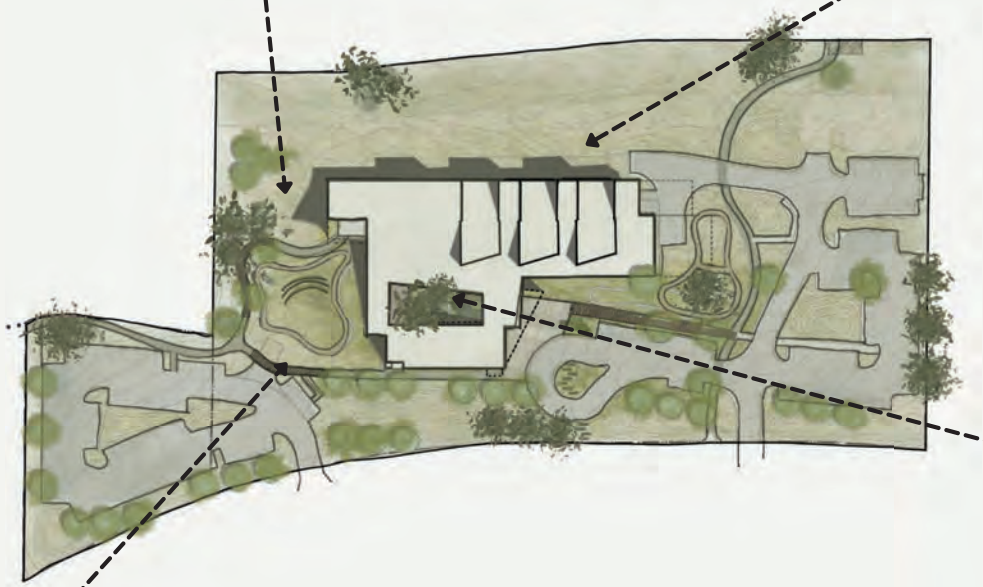


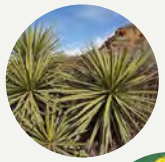
ASPEN GROVE

EVERGREEN TREES
LUPINE
SUN SEDGE

PRAIRE GROVE

PRAIRE DROPSEED
MOUNTAIN MUHLY

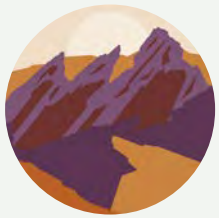




COURTYARD

BLUEBELL
ASTER
YUCCA

Perspective: Courtyard



CULTURE OF
LOUISVILLE

INDIGENOUS TRIBES
OF LOUISVILLE

ARAPAHO TRIBE
APACHE TRIBE
COMANCHE TRIBE
SHOSHONE TRIBE
UTE TRIBE

LANDMARKS

HISTORY OF
LOUISVILLE

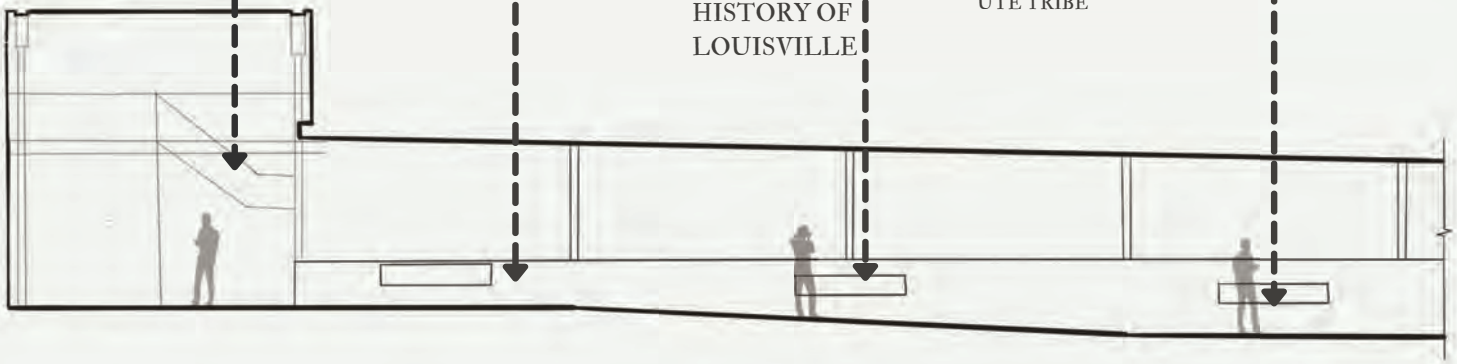


Diagram: Section Detail of Ramp

Perspective: Ramp

HISTORY AND CULTURE

2.

THE SECOND PART OF THE PATH ACTIVATES THE RAMP TO CREATE A PROCESSION THROUGH THE CAVERN AND BACK IN TIME. HERE YOU LEARN ABOUT THE INDIGENOUS TRIBES TO THE AREA, THE HISTORY AND CULTURE OF THE TOWN AND THE FAMOUS LANDMARKS IN THE AREA.

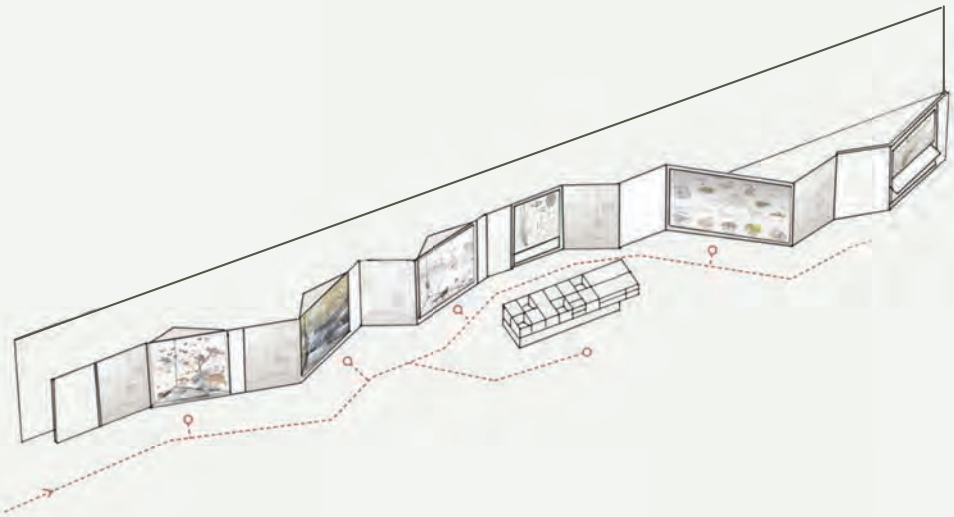
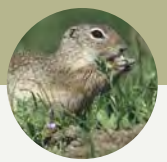
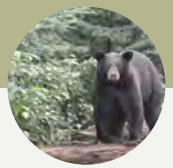


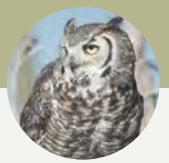
Diagram: Wayfinding and Typical Exhibition Design



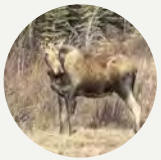
PRAIRE DOG



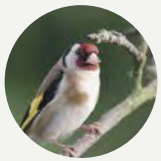
BLACKBEAR



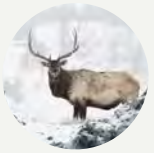
GREAT HORNED OWL



PREBLES MEADOW JUMPING MOOSE



AMERICAN GOLDFINCH



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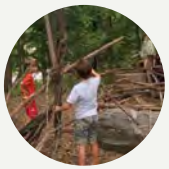
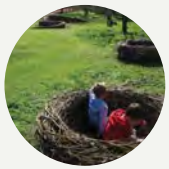




VALLEYS

CLIMATE

WETLANDS

MONTANE

LAKES AND STREAMS

FOOTHILLS

PEAKS

3. NATIVE WILDLIFE. ENVIRONMENT & RESOURCES

AFTER YOU EXPERIENCE THE HISTORY OF THE LAND AND THE RICHNESS OF THE CULTURE, YOU START YOUR JOURNEY THROUGH THE SURROUNDING ENVIRONMENT. HERE YOU LEARN ABOUT THE RESOURCES THE LAND PROVIDES AND UNDERSTAND THE IMPORTANCE OF CARING FOR OUR NATURAL ENVIRONMENT.

Perspective: Exhibition Place

DESIGN

education

PROGRAM GOALS:

1. LOCAL COMMUNITY

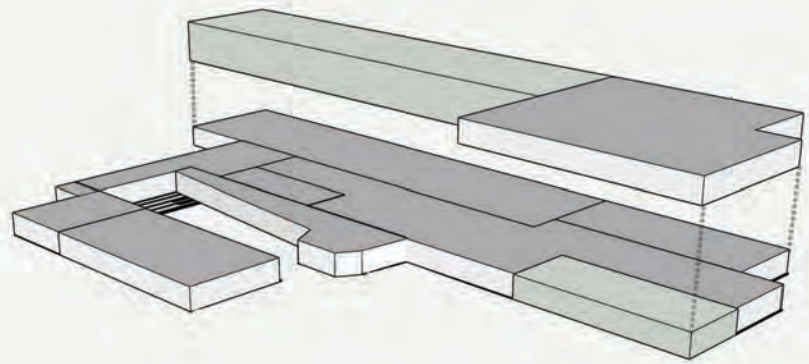
Classroom spaces for the community
Multi-purpose spaces to host events
Hands on lab opportunities

2. ENVIRONMENTAL RESOURCES

Explore and educate visitors and guests about the local environment and the importance of conservation.

3. IMMERSIVE EXPERIENCES

Spaces for solitude
Opportunities to appreciate the natural environment while also appreciating the built



Perspective: Library

DESIGN

community & leisure

PROGRAM GOALS:

1. LOCAL ARTISTS

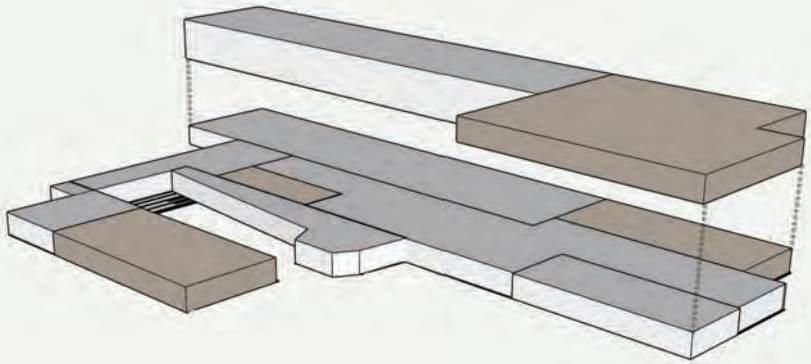
Create spaces for local artists to use.
Tactile opportunities for visitors
Bring in revenue for the community

2. LOCAL COMMUNITY

Create a space where locals can come and relax, listen to music, or grab some food while being surrounded by their culture and natural environment

3. IMMERSIVE EXPERIENCES

Large views that bring the outside in
Forms, scale, and tectonics
Hands on experiences



Perspective: Painting Room

Perspective: Taproom & Cafe


MOUNTAIN
NATIONAL
PARK

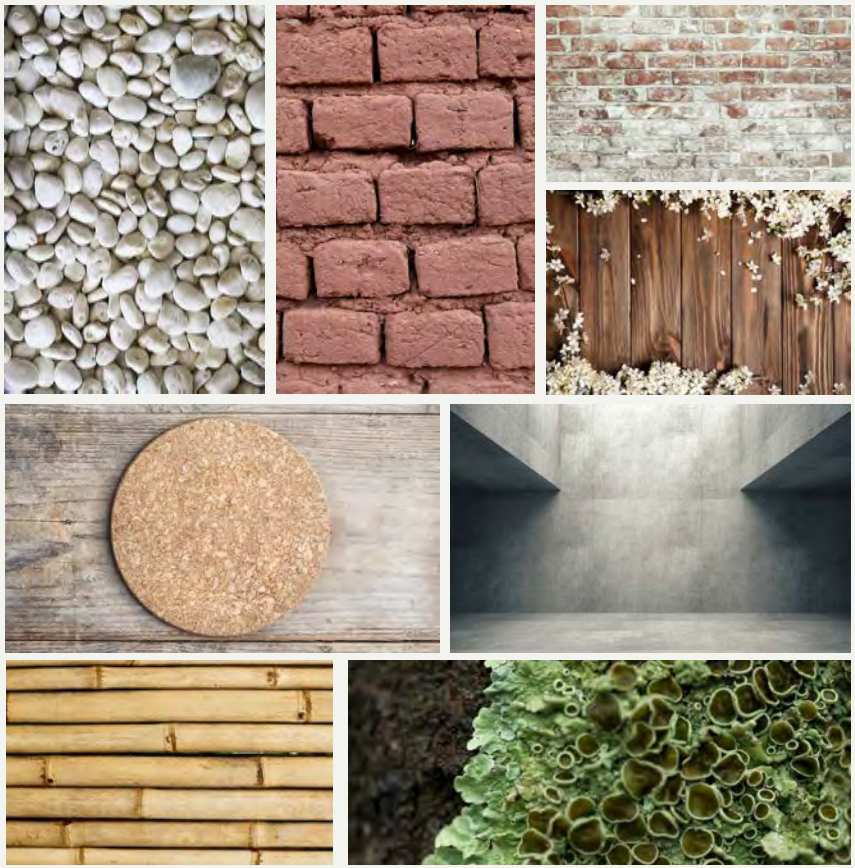
Perspective: Cross Section

Appendix

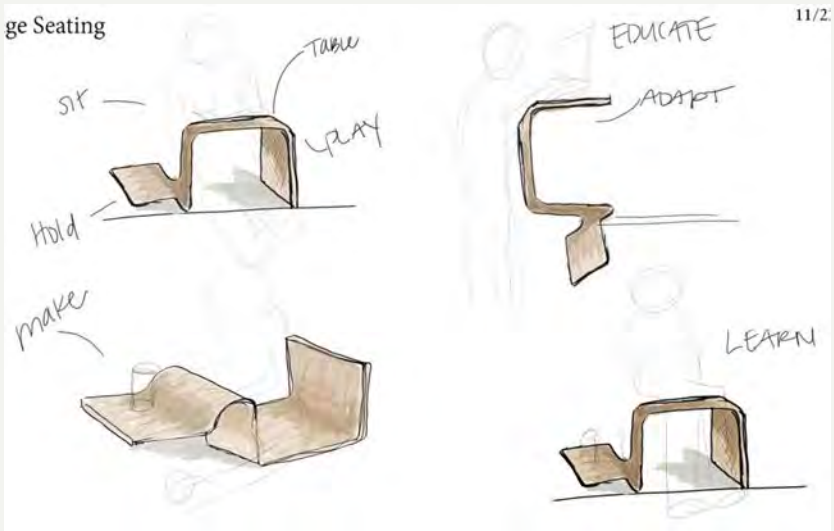
APPENDIX

design probes

Design Probe Two: Material



Design Probe Two: Scale



APPENDIX

interview

Casestudy Interview

Name of interviewee: Reed Hoffmier
Title: Frick Environmental Center Site Manager
Date: 1/19/21

Conditions of the Existing Facility and Organization

1)What is the main goal/purpose of your facility? (Are there annual reports, pamphlets, etc. available?)
Two main purposes. A) Home of the Education Department for the Pittsburgh Parks Conservancy. Office and programming space. Programs range from Pre-K to adult education/entertainment. B) Public Facility in a city park. Open to anyone for recreation, information, event rental, etc.

2) How would you describe your organizational culture?
Very collaborative and forward-thinking. Focused on connecting diverse groups to the park and nature.

3) What is the square footage of your facility and how many occupants does that accommodate?
16,500 square feet. Public space 115 people. Office has desk space for 20 occupants.

4) Is that size/ratio ideal?
It's a good balance. As a mixed-use facility it is not perfect for any particular use. It would be more practical/profitable as an event space if there were more public space. As an educational space (school groups, etc.) it would be better to have more specific amenities like a lab set-up. But with our amorphous identity, it is nice that it is fairly open and flexible, with decent storage.

5) How does the design of your facility differ from other similar facilities? How is it the same?
As a Living Building, environmental sustainability was the first priority with every design element. We are net zero in water and energy, and every material used to build the facility was vetted to be sustainably sourced and free of known toxins. It was also designed aesthetically to blend into its environment, rather than just to exist on the space. It is becoming more common to have buildings that reflect the mission of the occupants, though this is certainly not universal or even widespread. For us the building and site is an integral part of our identity, and we weave it into our education and outreach.

6) Who are the types of people that come to this facility?
The general public comes just because it's in a nice park and it's open. They might just want to check it out and use the restroom. Or they might read a book in the living room, bring their kids' playgroup there on a rainy day, borrow some binoculars, or whatever.
As far as the Education Department, there are a lot of school groups, but there are also a wide range of events for all ages: family programming, older adult education, professional development for architects/engineers/educators, mixers/concerts for young adults, etc.

7) What is the average age/ability range of the occupants?
All ages.

8) Do occupants have a space preference that you've noticed?
No, we have indoor, outdoor, and in-between spaces that are designed for different activities, and they are all well-used.

9) Do you think each of your spaces are sized adequately to accommodate your usual number of occupants?
In general, yes.

APPENDIX

interview

10) What are the different departments within your facility? What do they do? (Please Make list)
Education: Approximately 8 full time staff plus interns.Facilities: Site Manager, Office Manager, and Gardener.

11) Number of staff? How many facility at a time? (List of job titles)
Typically 10-15 on a regular, pre-Covid day.

12) How do departments interact? Are there any special adjacencies?
We're pretty small with an open office. There are also a conference room, two small "think tanks", and a staff deck for breakouts.

13) Do you have an organizational chart?
Yes, there is one for the greater Pittsburgh Parks Conservancy (larger than the 10-15 people that occupy this facility).

14) What type of work spaces does the staff require?
Desks, meeting rooms, and classrooms. Lots of programming is conducted outdoors.

15) What are the public areas in the space? Who uses them?
Everything that is not in the office space is available to the public. Classrooms are also public, as long as there is not a scheduled programming occurring.

16) What activities take place in the public areas? What works? What doesn't? School field trips, speakers, seminars, concerts, dinners, event rentals. It's not great for larger event rentals (weddings, etc.) Just not big enough.

17) What are the circulation paths of public, staff, patients, deliveries? Building is designed with a flow through the top level that is part of a larger trail through the park.

18) Explain the process of coming in and going out and the spaces needed for this.
Every exterior entry leads directly to a trail into the park. There are vestibules, open spaces, and a reception area for people to acclimate without being right in the middle of something.

19) Are there any special equipment, plumbing, lighting, technology, or ventilation requirements?
Yes. We were built to some of the highest levels of sustainable development in the world. I'll include plenty of information for you.

20) What are the main safety issues?
Public access plus school children leads to security concerns. Staff has active threat and lockdown training.

21) Are there any special safety or security issues?
Pretty well addressed. Only post-occupancy additions have been deadbolts in the classrooms and additional surveillance cameras in the parking lots.

Design Specific Questions

1) Are there special workplace issues that will affect the program (purpose of space) or space planning (furniture/equipment layout)?
Not yet. The public/programming space is fairly open with moveable furniture.

2) Are there special finishes (surfaces, flooring) or furniture?
All vetted for environmental sustainability. See materials petal info.

3) Is there any necessary equipment?
A/V equipment built into the space. Accessibility. Landscaping equipment in the barn.

interview

4) Is there any special attention to acoustics?
Not enough. Classroom space is pretty noisy. Noise carries from the living room/gallery throughout the building. Metal decks on the top floor are loud in the office.

Thesis Specific Questions

1) If money were no object, what would this facility be like?
Larger public space. I think I would leave it pretty much as is, but add another space (around 600 square feet) for lab equipment. Then we wouldn't have to break down all of the educational program stuff every time there is something else scheduled in the afternoon, evening, or weekend.

2) What are the spaces required to efficiently run this facility?
Office, classrooms, barn, mechanical room.

4) What is the square footage for staff designated areas? How many offices?
Approximately 2500 square feet. Open office.

5) What is the most popular type of event?
School field trips.