

Notes on "Camping":  
Vacationing in Fairmount Park

by

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B.S. Architecture  
University of Texas at Arlington, 1999

ARCHIVES

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February 2009

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Ryan M. Murphy

Submitted to the Department of Architecture on January 15, 2009 in Partial  
Fulfillment of the Requirements for the Degree of Master of Architecture

ABSTRACT

The public perception of landscape is still primarily shaped by eighteenth-century English aesthetics, pastoral idealism disassociated with infrastructural reality. This idealism is on display in most cities, in the form of municipal parks which Koolhaas states can be read as both “an operation of preservation” and “a series of manipulations.”<sup>1</sup> Further support of this assertion is the means by which municipal parks preserve an appearance of naturalness. Philadelphia’s Fairmount Park, the site of this thesis, is continually constructed and managed by a staff of hundreds, assuring the right varieties of vegetation, constant fish stocks in a polluted river, purposeful insect infestations, etc. If this presentation of nature is wholly synthetic, can it be re-imagined as an architectural project?

Modern architecture adopted the conditioned interior as a means of isolating the interior from exterior. Pushed to its logical end, could the conditioned interior become a new municipal park?

The thesis proposes that the preservation programs of the park be recast as a new interior pleasure garden which makes visible Fairmount Park’s necessarily synthetic construction.

<sup>1</sup> Koolhaas, Rem. *Delirious New York: A Retroactive Manifesto for Manhattan*. New York (The Monacelli Press, 1994), 23.

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My sincere thanks for help in completing my  
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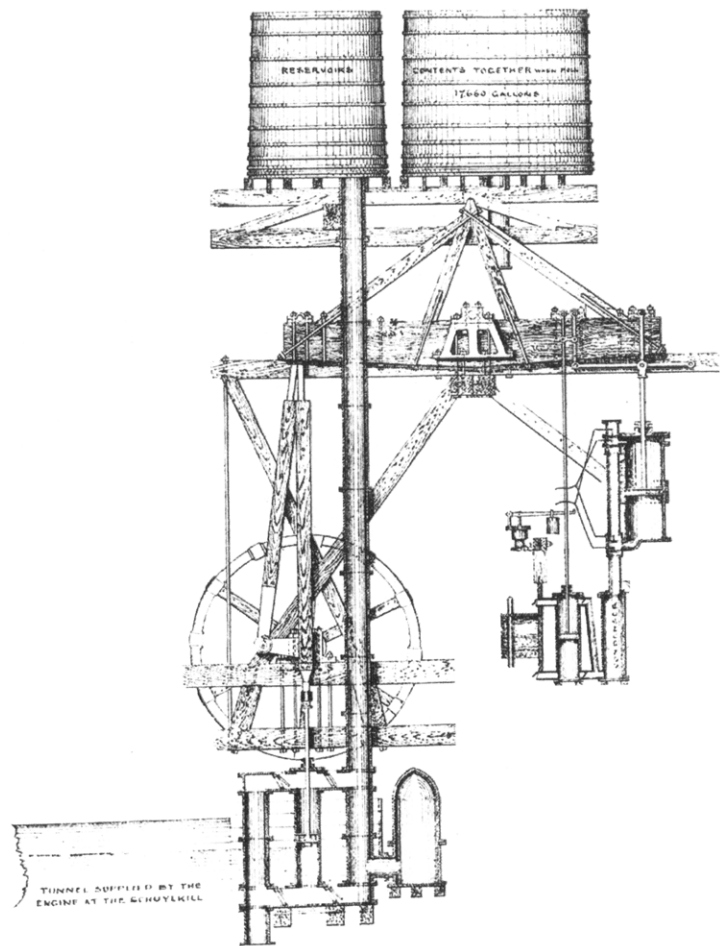


fig. 1 Pumhouse Machinery for Philadelphia Waterworks

&



fig. 2 Pleasure Grounds of Fairmount Park - 1875

## Borrowing “Camp” for “Camping”

“The traditional means for going beyond straight seriousness -- irony, satire -- seem feeble today, inadequate to the culturally oversaturated medium in which contemporary sensibility is schooled. Camp introduces a new standard: artifice as an ideal, theatricality.”

Susan Sontag, Notes on “Camp”

As Susan Sontag reluctantly defines it in Notes on “Camp”, the “essence of Camp is its love of the unnatural: of artifice and exaggeration.” In particular she focuses on eighteenth century ideals of nature, which either re-created a specific image of nature or remade “it into something artificial.” These ideals still play out in our park and conservation systems. How we define what is the right nature for our parks is a curious operation (determining invasive species, stocking animal life for sport, pitting one species against another). While serious attention is being given to ‘green’ agendas and initiatives, this thesis aims to precede those concerns. What is the nature we are striving to save or promote? And if these natures are exaggerations, what are the potentials of further/different exaggerations?

“One must distinguish between naïve and deliberate Camp. Pure Camp is always naïve. Camp which knows itself to be Camp (‘camping’) is usually less satisfying.”

Architectural “camping” through themed destinations is neither a new nor an exhausted idea. “Staycationing”, a term coined in re-

sponse to rising transportation costs impeding long distance travel, has become a popular vacationing option for American families. The standard staycation destination is totally interior while pretending not to be. Some offer acres of interior parks complete with animals and park rangers. While these endeavors target an audience that has little regard for Camp, it is undeniable that they are operating through “camping”, faking the real with grand ambition. For example, the Gaylord Texan in Grapevine Texas offers within its conditioned interiors a 4.1 acre park that has a replica of the Alamo, a copy of the riverwalk in San Antonio, and a manicured hill country landscape.

“The dividing line [of Camp] seems to fall in the eighteenth century; there the origins of Camp taste are to be found (Gothic novels, Chinoiserie, caricature, artificial ruins, and so forth). But the relation to nature was quite different then...Today’s Camp taste effaces nature, or else contradicts it outright.”

Fairmount Park’s history might allow me to revisit the “origins of Camp” as they relate to nature. The park’s early uses led directly to the way it is used and maintained today. The park was the location of the first municipal waterworks system in the United States. The infrastructural marvel of pumping stations and machines was juxtaposed with picturesque pleasure grounds leading spectators to and from the waterworks building. Visitors were confronted with the natural and its domination. The waterworks building, a Greek Revivalist collection of buildings along the waterfront, was designed in a manner of a country estate. Today recreational boating,

fishing, the zoo, playing fields, etc. require a similarly artificial, rigorously maintained landscape. This program is far more ambitious than the interior “parks” found in staycationing projects like the Gaylord Texan. My thesis is to use these ambitious programs of the municipal park as generators for a new type of destination hotel (or interior vacation), one that is built around/within a hyper-artificial nature.

*fig. 1 - <<http://phillyh2o.org>> - Adam Levine*  
*fig. 2 - Stevick 81*

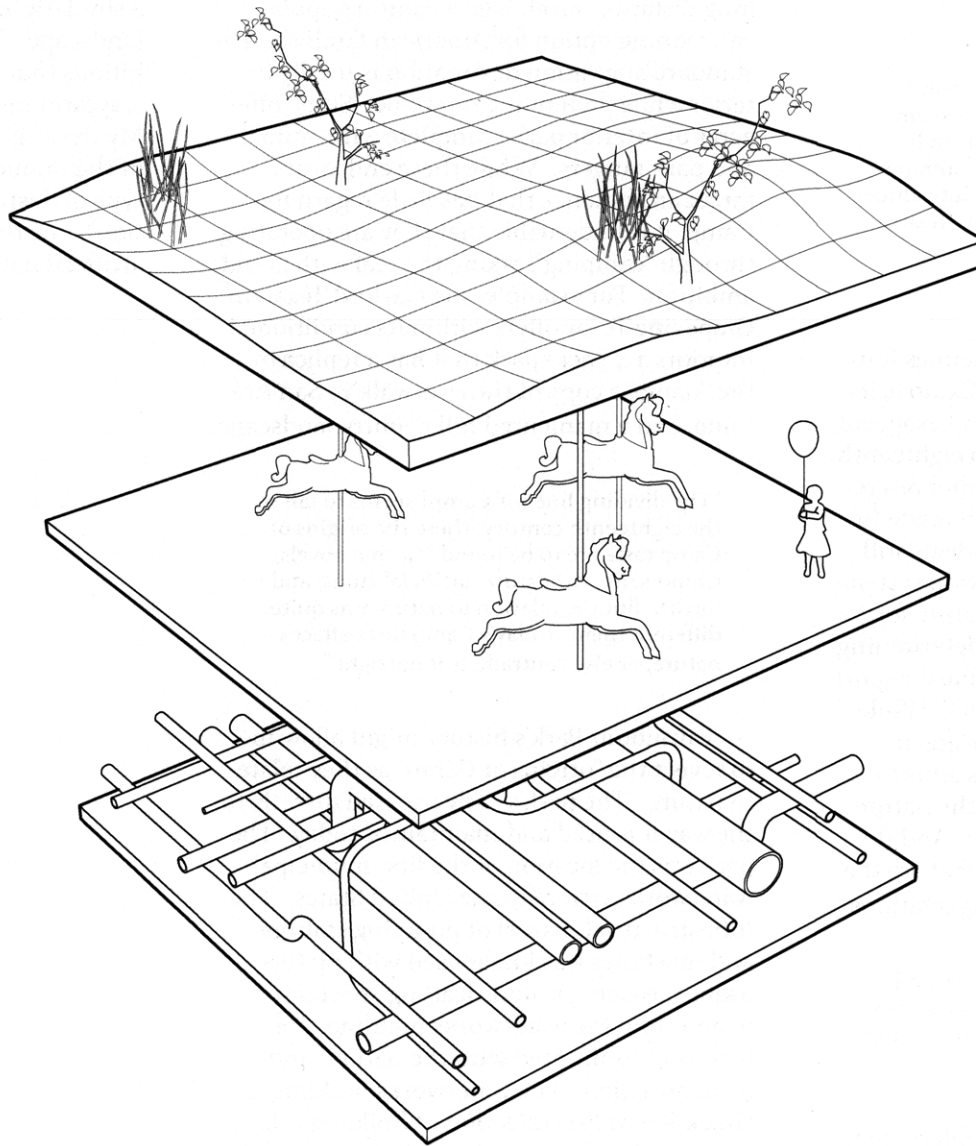


fig. 3 Early Cartoon Diagram of "Thickened Ground"



## Landscape as an Architecture

“Born of architecture’s recent interest in landscape and landscape architecture’s own critical self-appraisal in recent years, the ground of the contemporary metropolis is no longer modernity’s repressed other, but potentially the twenty-first century’s mother of the arts. And yet what makes the emergence of landscape at this time unusual is that it occurs precisely as that which has been traditionally referred to as landscape is almost completely denatured, if not erased by urbanity.”

Richard Weller, *An Art of Instrumentality: Thinking Through Landscape Urbanism*

The recent fascination with urban agendas in landscape architecture is mapped by Stan Allen, in *Mat Urbanism: The Thick 2-D*, as a direct descendant of mat-building. He argues that the mat-building of the postwar period has re-emerged through contemporary studies of topological surfaces: singular surfaces that accommodate varying levels of materialization and programmatic specificity. Landscape as a discipline has always been concerned with the surface but with a focus on performative effects such as water retention, vegetative growth cycles, etc. Allen contends that the future of urban development will happen through design and control of these natural effects, landscape urbanism. In recent years, landscape urbanism has become the means by which the city is both understood and (re)constructed.

Even though natural effects have come to shape our understanding of urbanity, the public perception of landscape is still primar-

ily shaped by eighteenth-century English aesthetics, pastoral idealism disassociated with infrastructural reality. This idealism is on display in most cities, in the form of municipal parks which Koolhaas states can be read as both “an operation of preservation” and “a series of manipulations.” (Koolhaas, p.23) Further support of this assertion is the means by which municipal parks preserve an appearance of naturalness. Philadelphia’s Fairmount Park, the site of my thesis, is continually constructed and managed by a staff of hundreds, assuring the right varieties of vegetation, constant fish stocks in a polluted river, purposeful insect infestations, etc. If this presentation of nature is wholly synthetic, can it be reimagined as an architectural project?

Through a study of the specific ecology and synthetic nature of Fairmount Park in Philadelphia, I want to reconfigure the park as a mat-building project\*. I will re-visit Alison Smithson’s original definition of mat-building as an architectural/spatial construction through devices of natural control in an effort to extend the lineage of mat-building into contemporary architectural discourse beyond the limits of surface. Architectural typologies developed with the intent of controlling and presenting nature (greenhouses, nurseries, aquariums, aviaries, etc.) will help me develop the architectural devices by which the park can be given a spatial and material reality. These typologies will also become a starting point for programming an urban, architectural “nature.” The project will extend the Philadelphia Zoo, adding a series of recreational programs such as greenhouses, an aquarium, and a hotel. Each of these programs, while providing a specific architectural lineage, also

supports a common, constructed relationship between urbanites and nature that will underpin my new mat-building type.

\* My early investigation was focused on mat-building typologies as a means of controlling nature. Through out the development of the thesis, an insistence on mat-building tactics disappeared. I include this as an introduction because it was the means by which I entered the project with an architectural agenda.

*fig. 3 - by author*

## Fairmount Park & Waterworks History

*The city of Philadelphia is empowered to “appropriate and set apart forever the area of land and water comprised within the limits... as open public ground and Park for the preservation of Schuylkill water and of the health and enjoyment of the people forever.”*

Philadelphia Act of General Assembly  
March 26, 1867

Philadelphia’s Fairmount Park has always been defined as both a park and an infrastructure. An outbreak of Yellow Fever in Philadelphia in 1790 led to the first municipal water system in the US. Because pollution was threatening the city’s water supply, the local government passed the Consolidation Act of 1854, granting the city and county the power to acquire land for public use. In 1855, Philadelphia began purchasing estates along the Schuylkill River, officially founding Fairmount Park. Lying northwest of Philadelphia’s Center City, Fairmount Park is the largest municipal landscaped park in the U.S. It contains an array of recreation features including Boat House Row, the Philadelphia Zoo, Centennial Arboretum, Bartrams Garden (the country’s oldest Botanical Garden), Lemon Hill estates, and the Philadelphia Museum of Art (located on the site of the waterworks reservoir).

The impetus for the park, the municipal waterworks, still exists within the park. In 1822 Philadelphia put Fairmount Waterworks into operation. The waterworks evolved from the public water system designed by Benjamin Latrobe in 1799, the first in America. Since its completion in 1822, the Fairmount Wa-

terworks building has undergone multiple changes. Designed by Frederick Graff, the Greek revival buildings housing the machinery were part of a larger planned garden within Fairmount Park. Until the end of the nineteenth century Fairmount Waterworks was considered an essential tourist attraction in Philadelphia. Visitors were encouraged to roam the grounds, view the fountains fed by the Schuylkill River, observe the machinery of the waterworks, and drink the water. Over time the waterworks system was unable to accommodate the population of Philadelphia. Pollution and poor sanitation left the immediate waterfront undesirable in the 1890’s after Fairmount Waterworks stopped serving the city. In 1909 the city modernized the waterworks system and the Fairmount Waterworks became the Philadelphia aquarium. River water was supplied to the aquarium through existing waterworks machinery until it proved too polluted for the marine life. Due to neglect, the aquarium was closed in 1962. In 1976, the Fairmount Waterworks was listed on the National Register of Historic Places, and began a restoration process that is on-going. Today the complex is now partially occupied by an interpretive center that aims to teach visitors about river ecology and the history of Fairmount Waterworks.

Considering this history of the waterworks complex, the site suggests potential for architecture that situates itself between nature/leisure and technology/utility.

fig. 4 - Stevick 78

fig. 5 - <<http://.phillyh2o.org>> - Adam Levine

fig. 6 - Philadelphia Department of Records

fig. 7 - Franklin Institute Science Museum

fig. 8 - Franklin Institute Science Museum

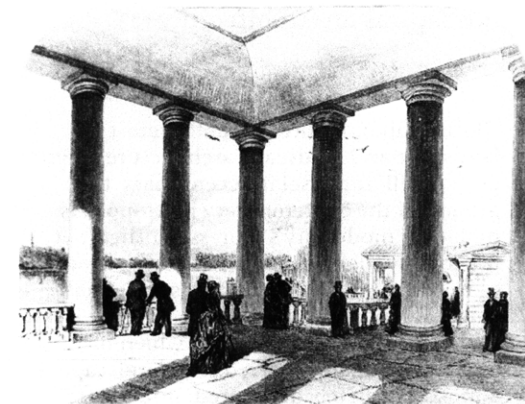


fig. 4 Fairmount Waterworks Viewing Platform

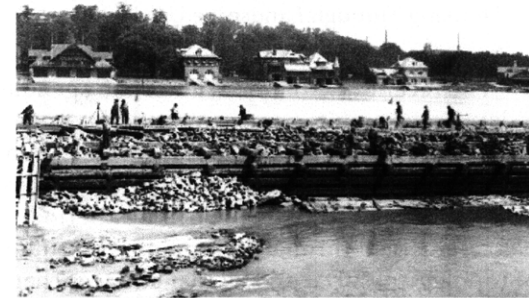


fig. 5 Fairmount Dam Reconstruction, 1904  
(Boathouse Row beyond)

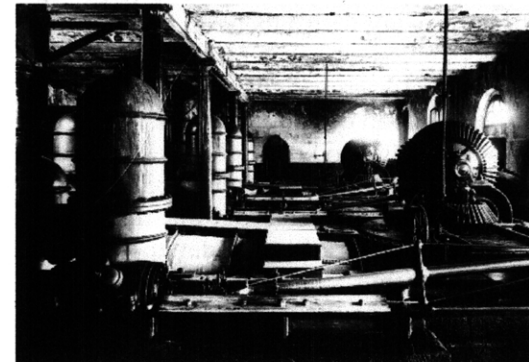


fig. 6 Pumphouse in Waterworks Building



## Current Programs of Fairmount Park

The architectural program I propose explicitly straddles the fence between natural and synthetic. The park itself is reliant on a series of programs to remain in stasis: an implied 'natural', pastoral state. Using the methods of Mat Building, I will design a new aquarium, insectarium, nursery, and aviary for Fairmount Park. Within each of these programs is the possibility for a new type of amusement within the park and an opportunity to make known an already existing infrastructure of natural production.

The Philadelphia Aquarium that once occupied the Fairmount Waterworks was never re-opened. This program of amusement could be reintroduced in the park as an extension of an already existing program: the fish stocking of the Schuylkill River. The Pennsylvania Fish and Boat Commission release up to 10,000 fish into the Schuylkill River and adjoining creeks because pollution in the river has deteriorated fish stocks. Now that pollution levels are coming under control, the demand for sport fishing is exceeding the capacity of the river. Instead of trucking the fish on site during fishing seasons as is the current practice, could the fish be farmed on the grounds of Fairmount Park, allowing the public to benefit from its display?

The aquarium itself can be seen as a combination of technology and nature. The history of the aquarium may be understood as the technological history of the transparent (glass or plastic) wall. Contemporary aquariums are typically inward looking, providing a totally

self-contained entertainment experience. An aquarium project within the park could draw upon the history of infrastructure in support of entertainment to propose an aquarium that goes beyond entertainment to reinterpret the nineteenth-century connections among infrastructure, nature, technology, and leisure.

In order to control invasive plants in Fairmount Park the Environment, Stewardship and Education Division of the park has begun an insect-releasing program. Previous to this program, invasive species of plants were controlled through mechanical and herbicidal means. In June, 9,000 *Galerucella* beetles were released in the park to control the Purple Loosestrife, a non-native plant that is spreading throughout the park and driving out native plants. The insect release program is being monitored and is expected to become an annual program for Fairmount Park. By extending the scope of this program, the park hopes to discontinue many of the herbicidal and mechanical means of invasive plant control. Similar to the aquarium, could the farming of the insects become an amenity for the park grounds? Breeding the insects on the grounds of the park could become an exhibition of grotesque nature.

Currently, Philadelphia is home to the largest insectarium in the nation. Visitors to the museum are encouraged to look at, hold, and even eat the insects. The insectarium was started by a local exterminator after drawing crowds to his pest control business storefront by displaying his "catch of the day." I propose moving the insectarium to Fairmount Park. There it can serve as both a museum of insects for the viewing public and also as a breeding ground for insects that can be released into

the park in an effort to control invasive plants.

Fairmount Park is currently beginning a vegetation catalogue that will track all native and non-invasive species within the park. In tandem with this catalogue, Fairmount Park intends to construct greenhouses, shade-houses, and laboratories that can service these plants. The laboratory research would be focused on means of protecting/promoting these native vegetations and means of removing others. Similar to the insectarium and aquarium, could these programs find a home within Fairmount Park. The greenhouses, along with supporting the park's research and maintenance, could be new interior park grounds for the public. These interior park grounds could make visible the volume of production required to maintain a municipal park.

*fig. 9-14 - <<http://www.fairmountpark.org>>*

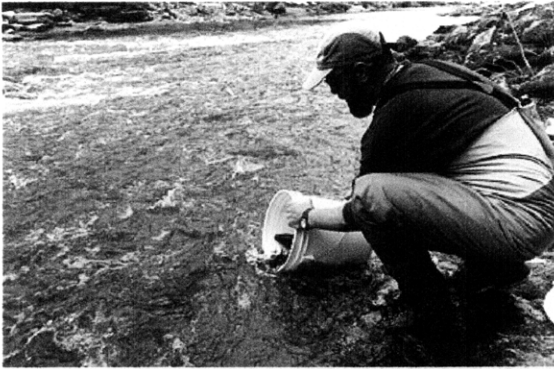


fig. 9-11 Fish Stocking in Fairmount Park



fig. 12 Purple Loosestrife - invasive to Fairmount Park

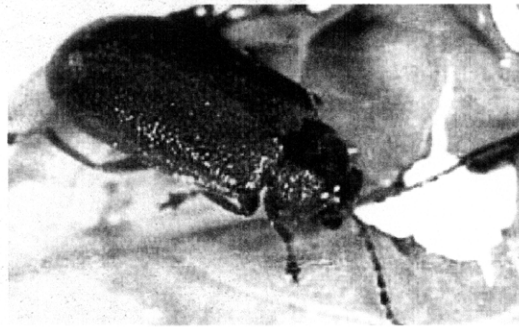


fig. 13 Galerucella Beetle - to combat Purple Loosestrife

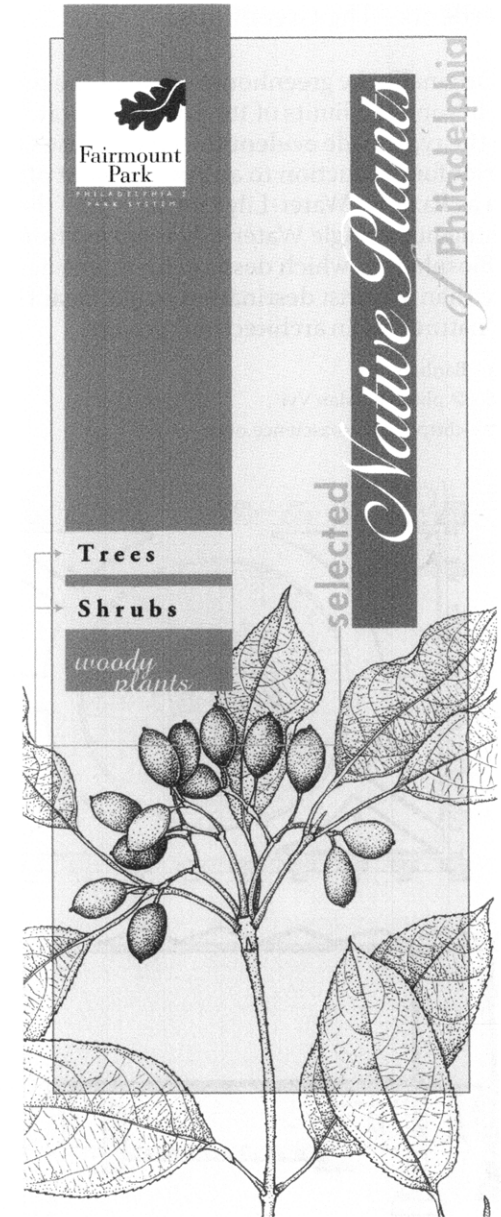


fig. 14 Fairmount Park's Guide to Native Vegetation



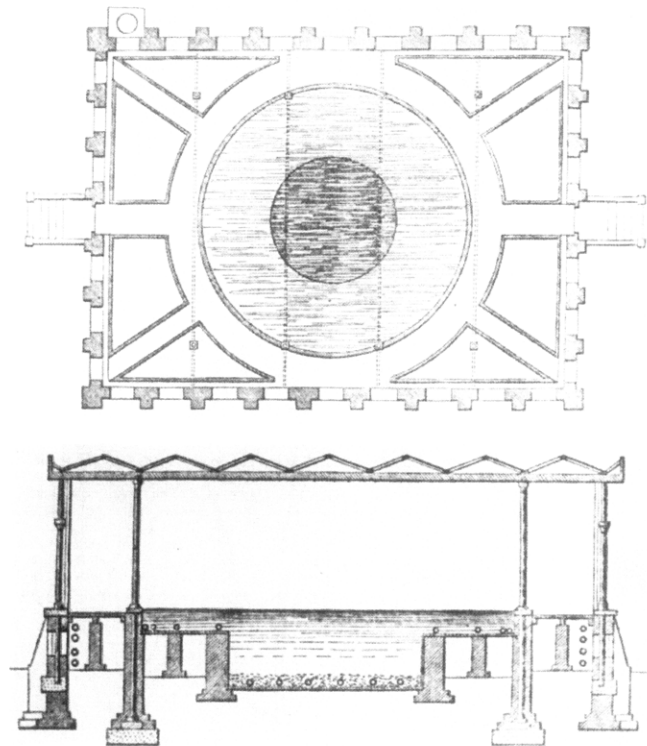
## Precedents - The Greenhouse

Originally the greenhouse enabled the production of vegetation beyond the limits of its natural habitat. Early investigation into the type made evident the greenhouse's evolution from an interior for production to an environment of spectacle. Projects such as Paxton's Water-Lily House, where the structure holds nothing but a single Water-Lily removed from any context, or the Biosphere 2, which despite intentions has become little more than a tourist destination, make clear the potential of interior 'natures' as an architectural project.

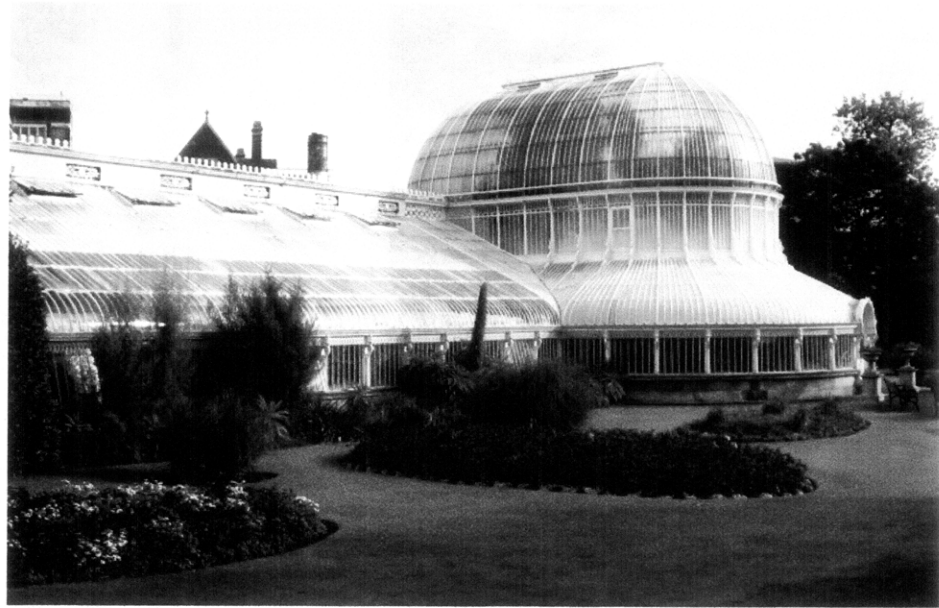
*fig. 15 - Banham 144*

*fig. 16 - © photo by Man Vyi*

*fig. 17 - <<http://www.b2science.org>>*



*fig. 15 Sir Joseph Paxton's Water-Lily House - 1850 - plan and section*



*fig. 16 Charles Lanyon's Palm House at Queen's University - Belfast*



*fig. 17 Peter Pearce's Biosphere 2 - Oracle, Arizona*

## Precedents - The Staycation Hotel

Encouraging vacationers to stay home and save travel expenses, staycation resorts have become popular destinations for Americans looking to 'get away'. Often the resorts contain all the amenities of an entire vacation under a single roof, outside activities, restaurants, shopping, and luxury living. The Gaylord resorts are in 4 locations across the U.S., always near large international airports and metropolitan centers. They boast 4.5 acres of conditioned space with themed landscapes with real vegetation and live animals. The Gaylord Texan outside Dallas, Texas has an indoor fireworks show every Friday for their clients. My thesis adopts this idea of a new synthetic nature that becomes a destination for extended stay.

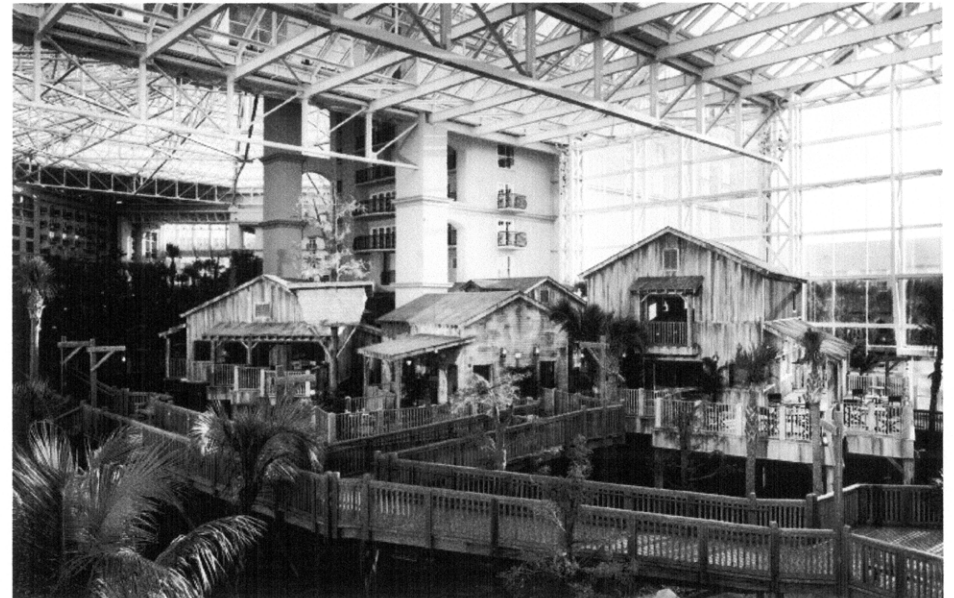
*fig. 18-20* - <<http://www.gaylordhotels.com>>



*fig. 18* Delta Riverboat in Gaylord Opryland Resort - Nashville, Tennessee



*fig. 19* St. Augustine Atrium in Gaylord Palms Resort - Kissimmee, Florida



*fig. 20* Everglade Atrium in Gaylord Palms Resort - Kissimmee, Florida





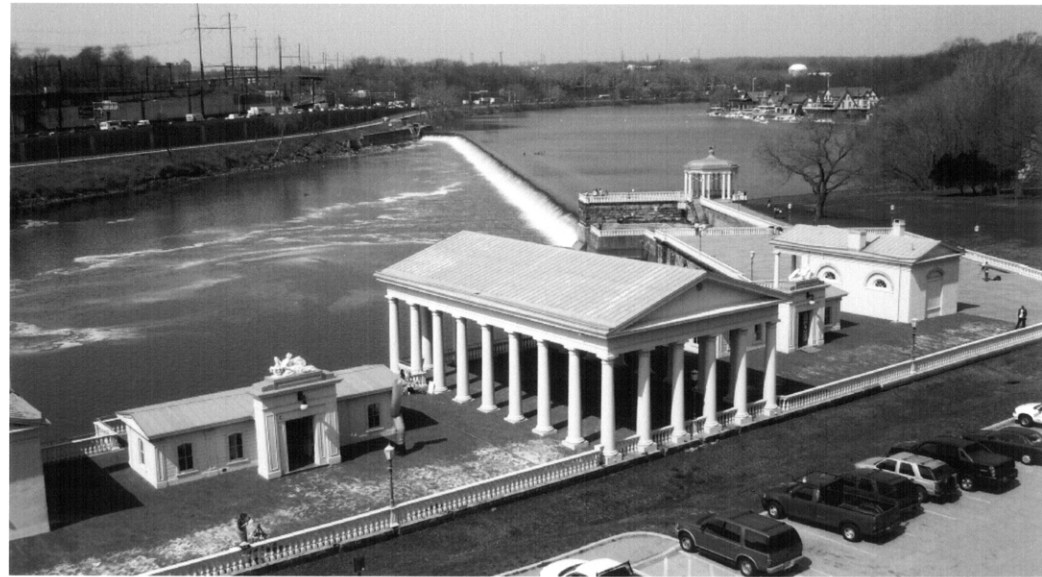
Notes on “Camping”  
The Project

## Project Site

*an overview of Fairmount Park (south)*

Fairmount Park is located just northwest of Center City Philadelphia. This thesis concentrates on the southern-most edge of the park (highlighted in the adjoining map), near the Philadelphia Museum of Art at the Fairmount Waterworks.

The landmarks in this area of the park are Fairmount Waterworks and dam, boathouse row, Philadelphia Zoo and the Philadelphia Museum of Art. The Schuylkill River divides the park into east and west. Currently there is no pedestrian access from the eastern park (Fairmount Waterworks, Philadelphia Museum of Art, and boathouse row) to the western park (Philadelphia Zoo).

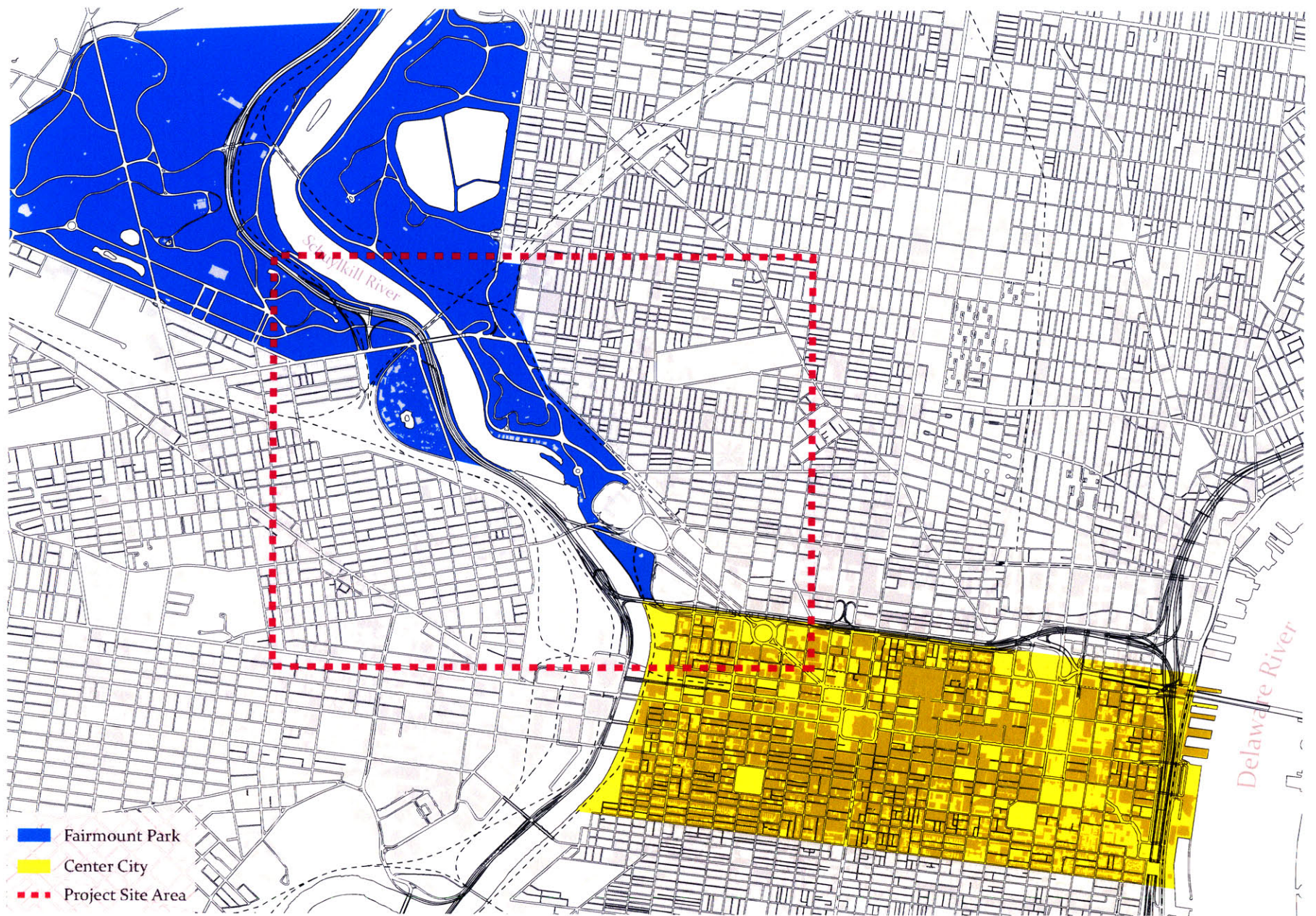


Fairmount Waterworks and dam looking west across the Schuylkill River

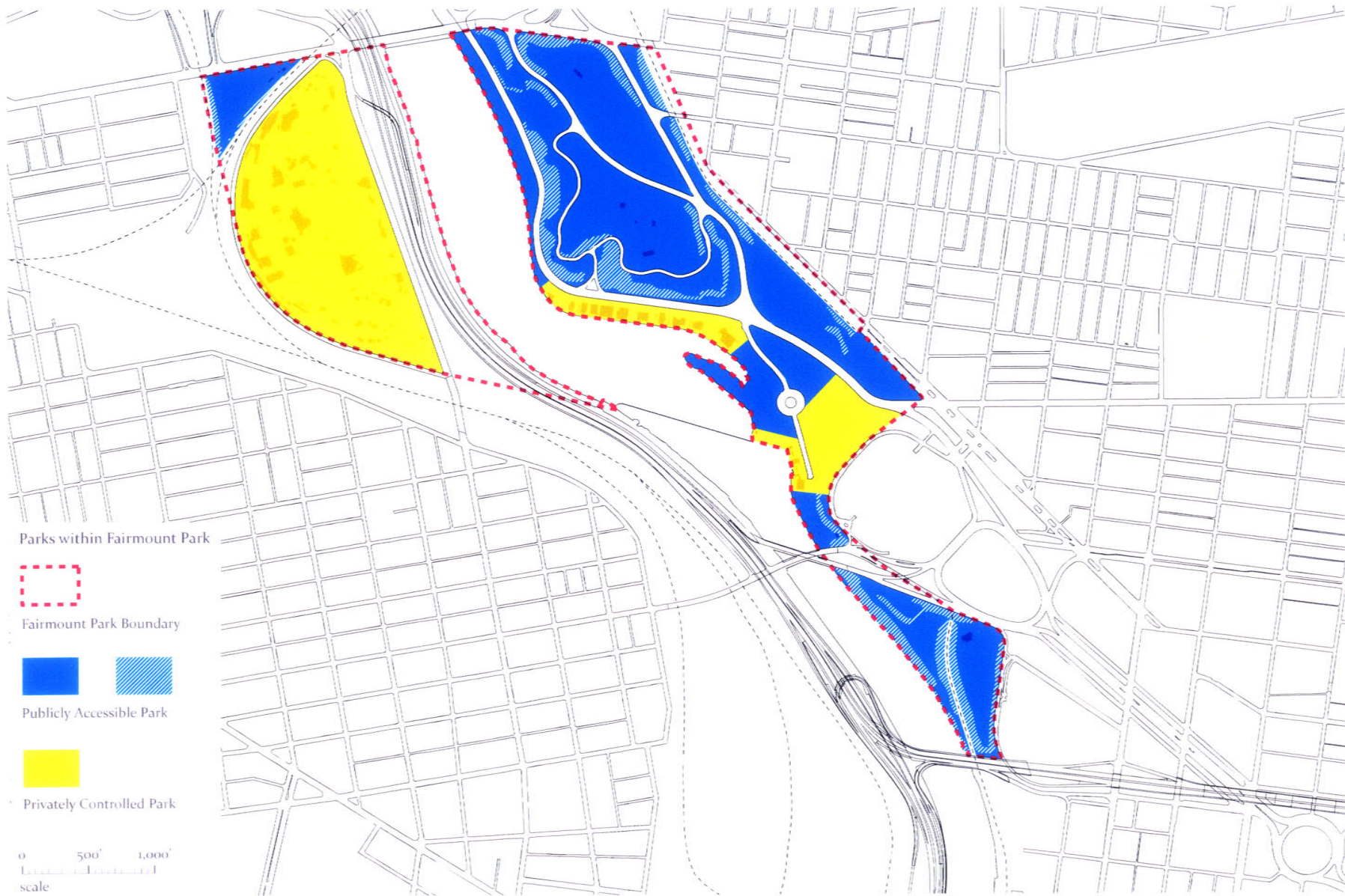


Fairmount Waterworks and dam looking west across the Schuylkill River





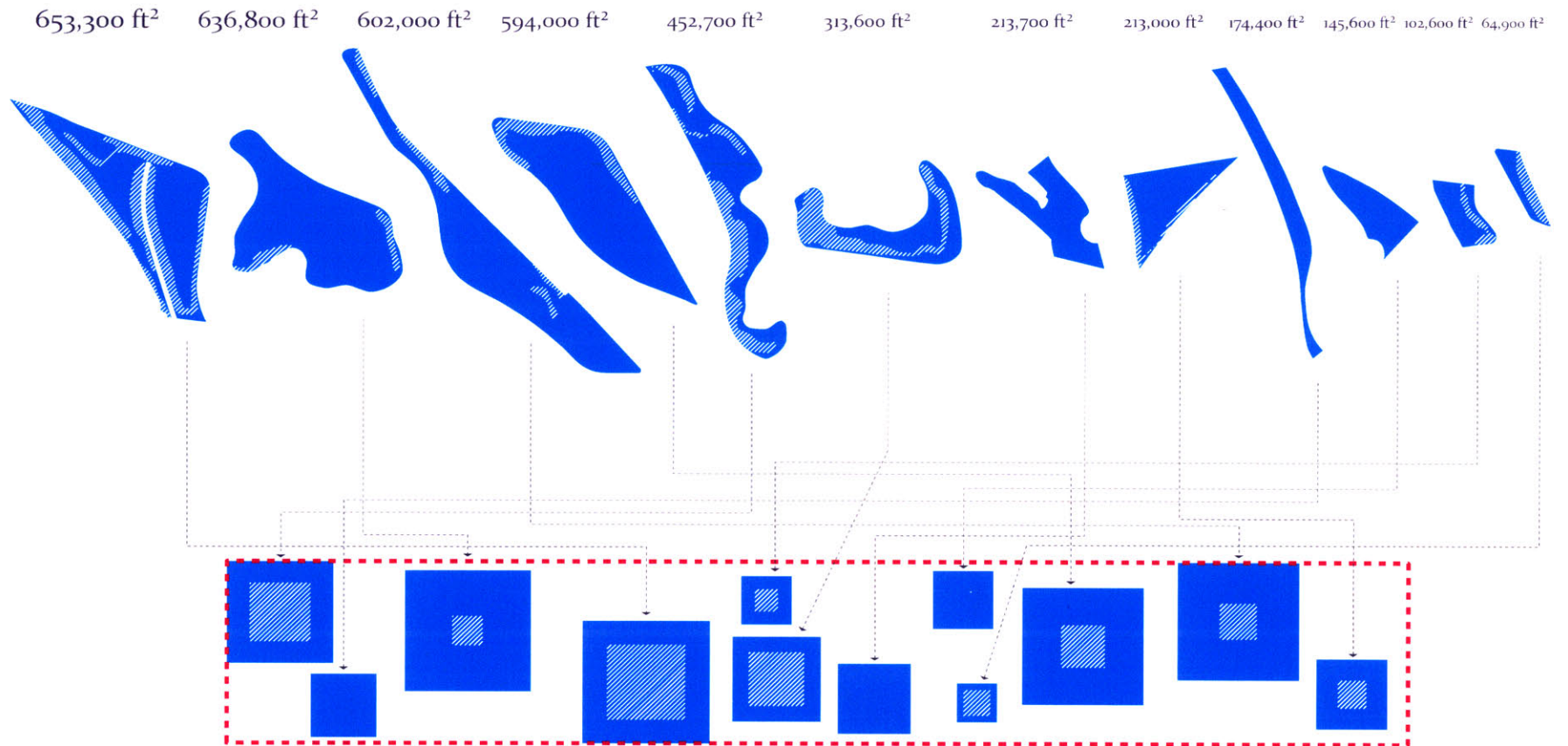




Diagramming the Park  
*(Park as an Episode)* - the municipal park is composed of multiple smaller parks within its boundary

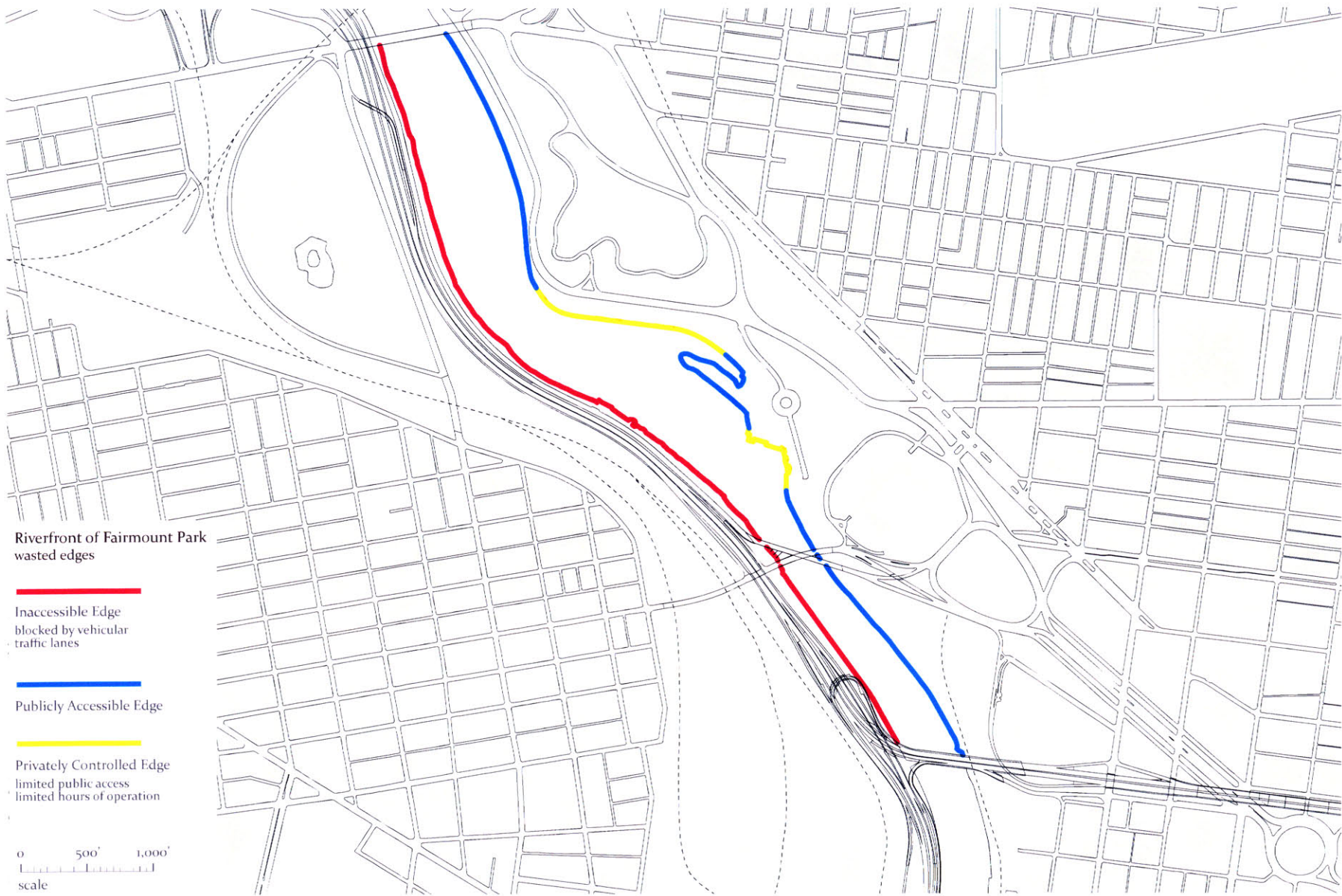


The Proportioned Park

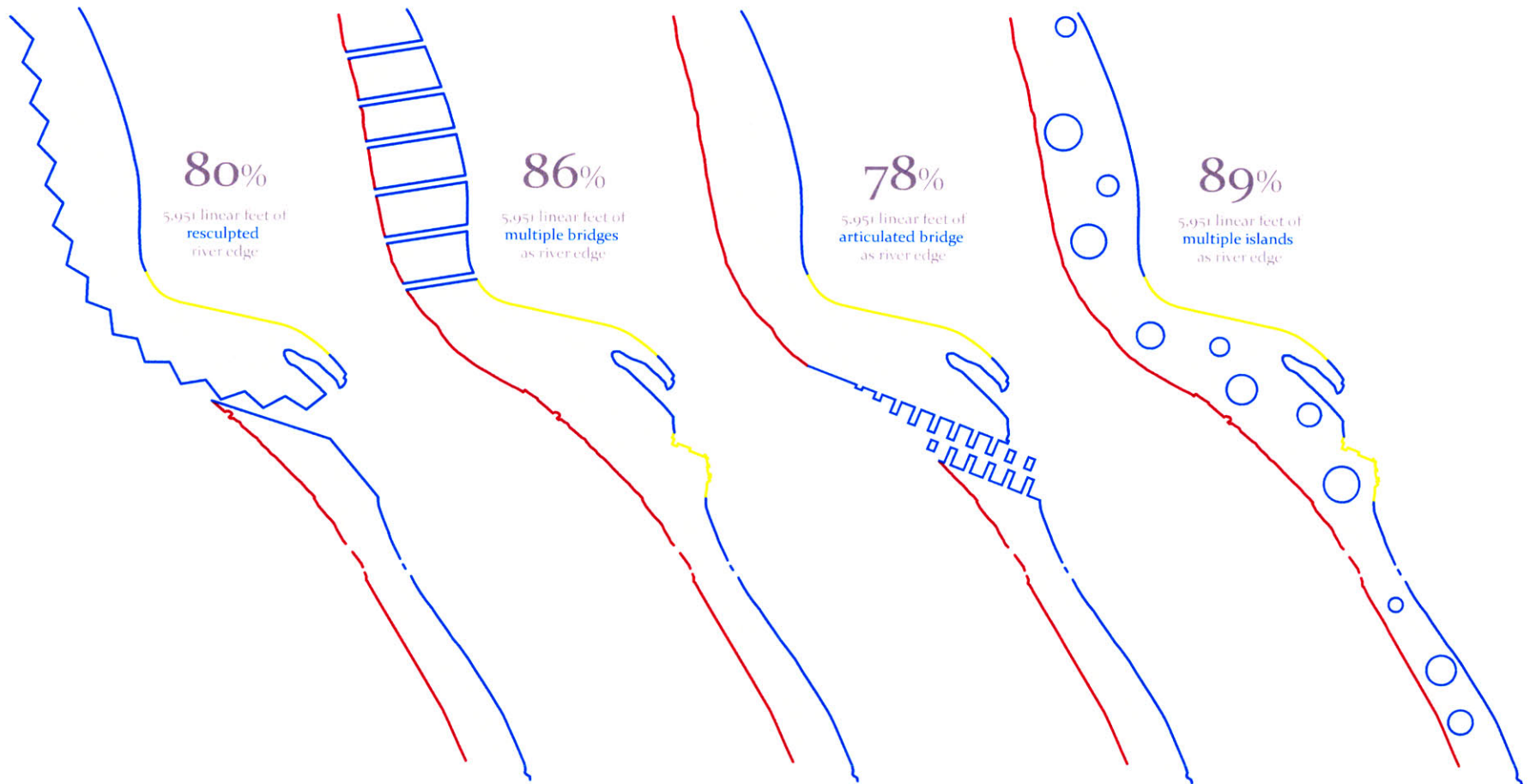
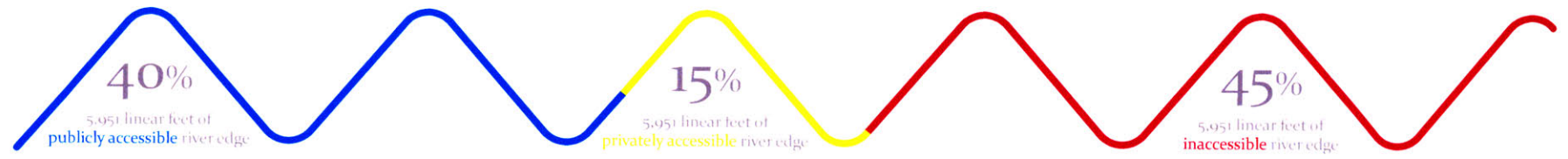


Parks as Episodes within the Envelope





Diagramming the Park  
(Wasted Edges) - more than half of the riverbank is not accessible by the public - how can it be reclaimed? (4 new edges)





**STATUS REPORT**

Date of Plan Adoption: June 2004  
Date of Status Report: March 2007  
Elapsed time: 32 months

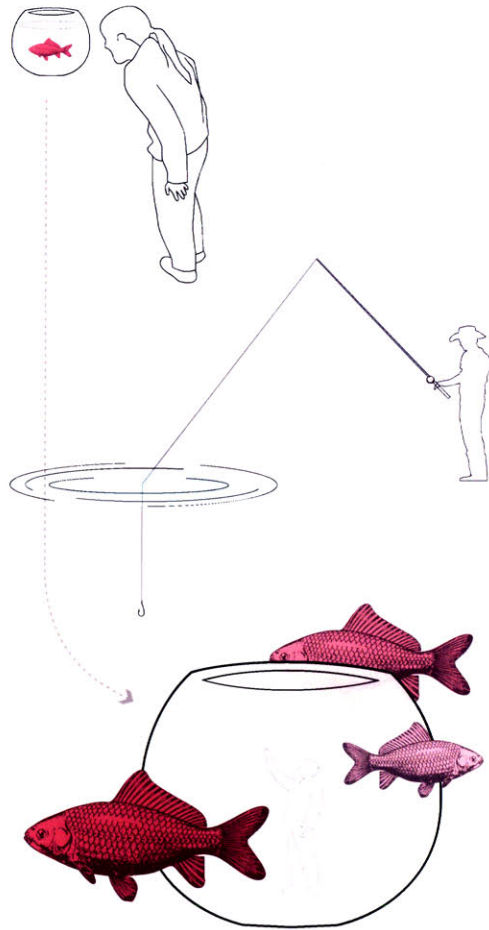
		Total strategies achieved as of the date of this report:		Completed	In Progress	Not Begun
<b>GOAL #1</b>	Elevate the quality and value of the Fairmount Park system to enhance quality of life and create pride for the residents of Philadelphia that result in retaining and attracting residents and visitors.			10	35	35
<b>Objective #2</b>	Expand the implementation of resource management plans throughout the Fairmount Park system that conserves, restores and preserves parks, watersheds and urban ecosystems that maximize the value of the natural resources.					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	<b>Develop and implement a Tree Inventory Management system.</b>	High	2 years		X	
2	Develop and implement an Urban Forestry Plan and Program that preserves the value of park trees through effective management.	High	4 years			X
3	Develop and implement a Street Trees Management Plan that preserves the value of street trees through effective management.	High	2 years		X	
4	Develop and implement a non-native plant management program in Fairmount Park to enhance the existing natural resource value through effective maintenance practices.	Medium	6 months			X
5	Implement Watershed Management Plans for the Fairmount Park system in conjunction with the Water Department to protect the waterway system in the City.	High	On-going		X	
6	Establish a Wildlife Management Program that educates the public on species in the park.	Low	2 years			X
<b>Objective #5</b>	<b>Promote &amp; market the park system as a signature City asset that encourages users to experience all elements of the park.</b>					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Develop a promotional map and campaign with Greater Philadelphia Tourism and Marketing and the Fairmount Park Conservancy on Fairmount Park by promoting attractions, events, historical properties and natural area themes that <b>entice visitors to the Park.</b>	High	18 months	X		
2	Develop organizational resources to support implementation of marketing initiatives.	High	1 year	X		
3	Capitalize on the names, images, and identities of key Fairmount Park system parks and structures through a copyrighting and licensing program.	High	1 year			X
4	Ensure visibility and recognition of Fairmount Park by requiring the park system name on all sponsorship material related to events or programs in the park.	High	1 year	X		
<b>GOAL #2</b>	Create and implement equitable and consistent standards throughout the Fairmount Park system that creates advocacy, value and support by residents.					
<b>Objective #5</b>	Enhance user friendliness through an effective signage and wayfinding program to better access park facilities, programs and amenities.					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Utilize the approved comprehensive wayfinding, directional, and interpretation signage system as the model for future signage development.	Medium	Ongoing	X		
2	<b>Extend the Center City District signage &amp; wayfinding system into Fairmount Park in order to promote synergy with Downtown.</b>	Medium	1 year		X	
<b>Objective #6</b>	<b>Increase participation for all age segments and communities through enhanced physical connections.</b>					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Implement the trail network master plan coordinated with other departments/agencies with funding strategies and priorities for development.	Medium	Ongoing		X	
2	Promote the trail network system through an image and marketing plan.	High	Ongoing			
3	Develop an activity plan for various park sites in the Park system that denotes which age segments are represented.	Medium	2 years			X
4	Coordinate with NTTI to identify target communities adjacent to the Park system for enhanced connections.	High	2 years			X
5	Establish a Developers Forum for enhancing connections with new developments adjacent to the Park system.	Medium	4 months			X

<b>GOAL #3</b>	Deliver a balanced and coordinated park system with natural and developed areas that maximizes the uses of park and recreation facilities.					
<b>Objective #3</b>	Enhance economic impacts to the City through increased special events while minimizing operational impacts to the Fairmount Park system through development of facilities and effective programming, permitting, and pricing.					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Adopt and implement the Special Events Plan for the Fairmount Park system.	High	18 months	X		
2	Establish a format for collecting economic impact detail for special events.	High	6 months			X
3	Identify activity costs incurred by the park system for each special event.	High	1 year		X	
4	Update permitting and pricing of special events held in Fairmount Park based on true costs incurred by the park system.	High	1 year	X		
5	Establish a funding process to support operational staff involved in special events.	High	18 months		X	
6	<b>Establish and design special event facilities in Fairmount Park.</b>	Medium	5 years		X	
<b>GOAL #4</b>	<b>Increase sustainable revenue sources to support operations &amp; capital improvements within the park system.</b>					
<b>Objective #1</b>	Enhance revenue generation through organizational and support systems within Fairmount Park.					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Create a revenue division to manage revenue generated by the Fairmount Park System.	High	18 months			X
2	Develop a revenue plan to generate 30% of total operating budget from earned income by year three (3) of the Strategic Plan.	High	3 years		X	
<b>Objective #2</b>	Enhance trust fund management by streamlining funds.					
<b>Strategy</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Streamline trust fund management to enhance effectiveness of funds and reduce administration costs.	High	18 months	X		
<b>Objective #3</b>	Maximize the effectiveness and fundraising capacity of the Fairmount Park Conservancy.					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Develop a coordinated fundraising plan to create awareness and consistent approach to fundraising.	High	2 years		X	
2	Seek support from Fairmount Park Conservancy to fund management positions to help meet the needs of the Park.	High	2 years		X	
<b>Objective #4</b>	Develop consistent and sustainable policies to guide pricing and revenue development.					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Update and adopt a pricing policy for all services and permits in the Park.	High	12 months	X		
2	Utilize Activity Based Costing (ABC) System to establish an effective pricing system.	High	6 months			X
3	Retain increased revenue generated within the Department.	High	6 months		X	
<b>Objective #5</b>	<b>Leverage existing park properties to enhance economic development &amp; revenue generation w/o reducing park resources.</b>					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	<b>Evaluate the development of revenue zones at the Water Works area.</b> Golf Courses, Centennial Fair Grounds, and each of the Regional Watershed Park areas.	High	10 years		X	
2	Develop and implement a Golf Management Plan.	High	1 year		X	
3	Develop and implement a Property Management Plan.	High	1 year			X
4	Develop and implement a Concessions Management Plan.	High	1 year		X	
<b>Objective #6</b>	Create a coordinated permitting process with Fairmount Park and the Department of Recreation that enhances use and increases revenue retention.					
<b>Strategies</b>		<b>Priority</b>	<b>Timeline</b>	<b>Completed</b>	<b>In Progress</b>	<b>Not Begun</b>
1	Establish a coordinated permitting system.	High	1 year			X
2	Establish a marketing and communications strategy to inform park users of the changes that were made and how to use the system.	High	2 years			X



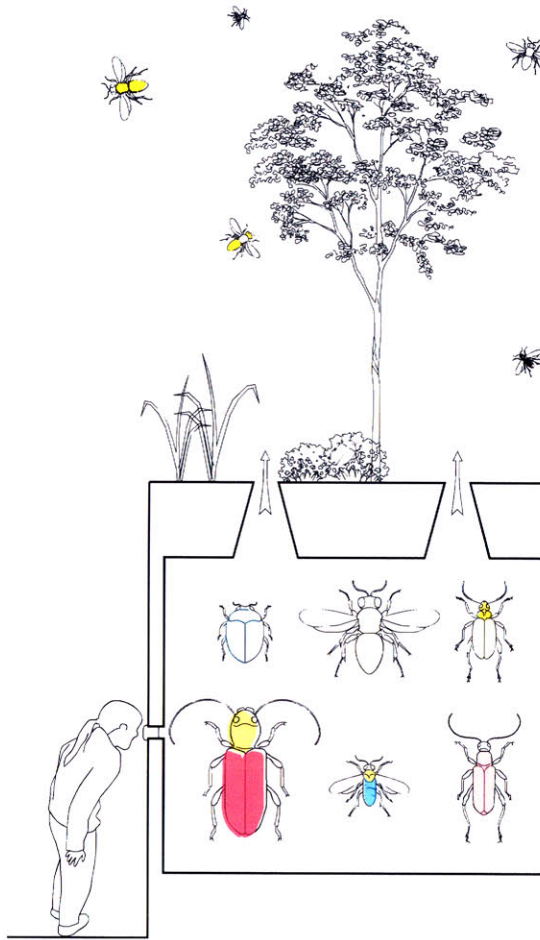
### The Aquarium

From the first week in March to the last week in October, the Pennsylvania Fish and Boat Commission releases around 10,000 fish into the Wissahickon Creek and Schuylkill River. Not long ago the Schuylkill River was too polluted to support marine life, but recent efforts to remediate the river have led to an increase in sport fishing along the Schuylkill banks. The proposed aquarium could serve as an on-site trout farm for the annual stocking of the creek and river.



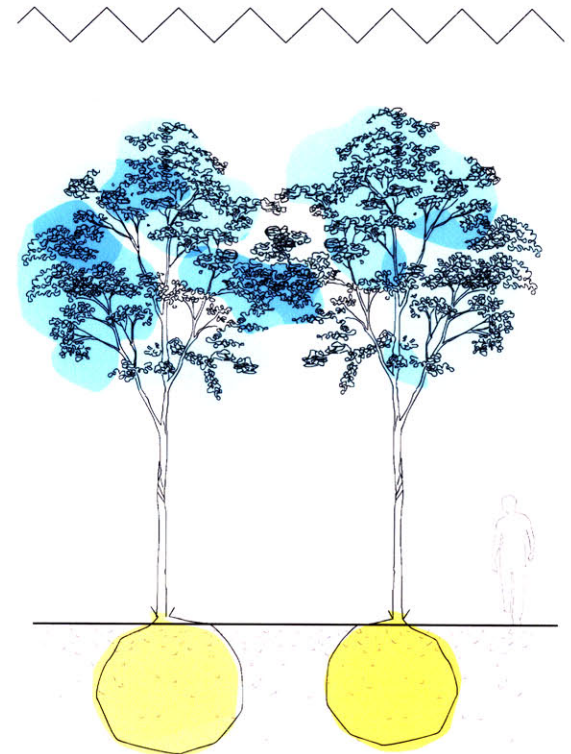
### The Insectarium

In order to control invasive plants in Fairmount Park the Environment, Stewardship and Education Division of the park has begun an insect releasing program. Previously, all of the invasive species of plants were controlled through mechanical and herbicidal means. By extending the scope of this program, the park hopes to discontinue many of the herbicidal means of invasive plant control. Similar to the fish farming opportunity, could the insects be farmed on the grounds of the park?



### The Greenhouse

Year-round programs distribute hundreds of volunteers within the park to remove invasive plants mechanically and plant accepted plant varieties. New greenhouses are desired to protect vulnerable vegetation. Could necessary greenhouses be new park grounds for Fairmount Park, allowing the public to better understand the scope of production required to maintain the park?

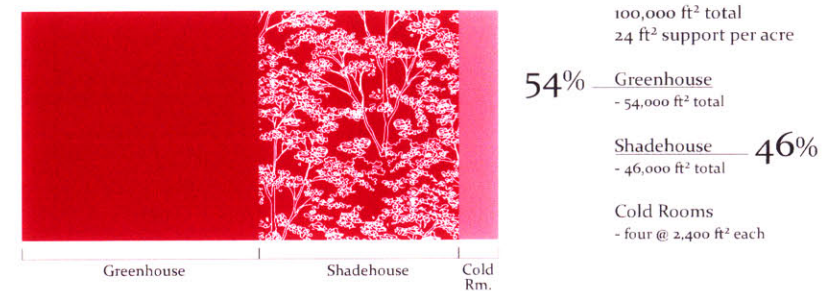
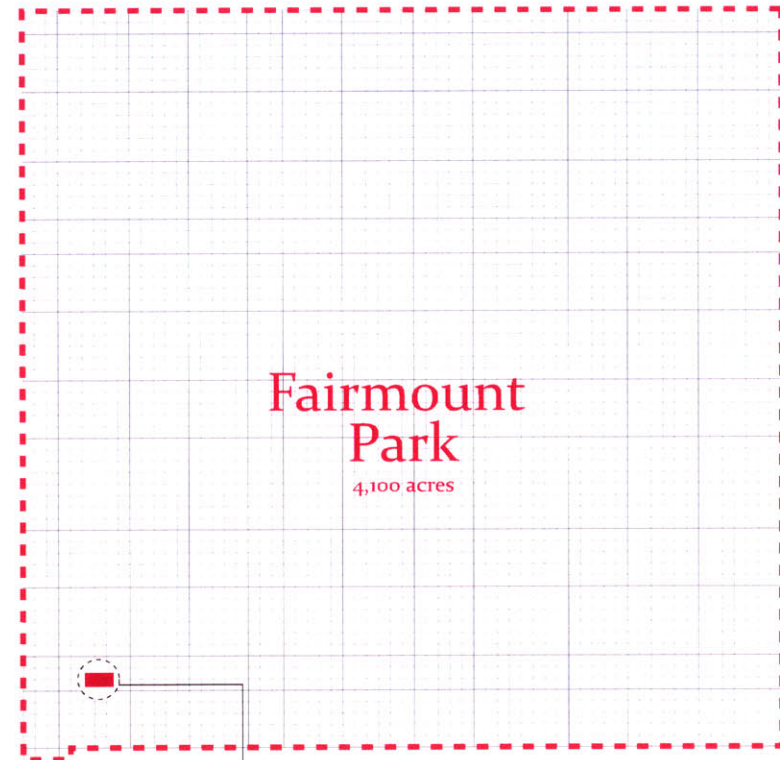
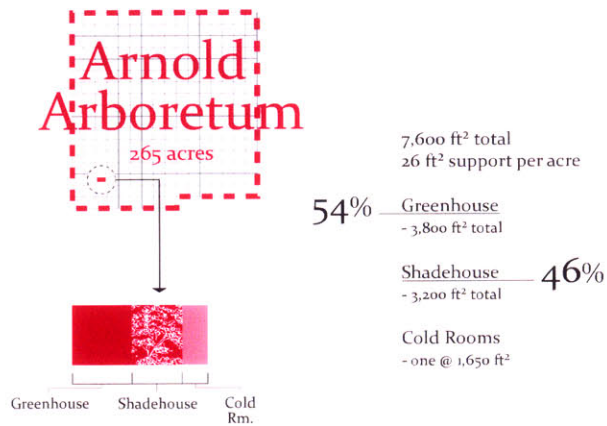


### Determining Fairmount Park Greenhouse Size referencing Arnold Arboretum

The Arboretum receives, on an average, 200 accessions of seed a year which represent their primary means of collections development. In addition, plant material from around the world arrives in the form of plants or propagules—softwood and hardwood cuttings, grafts, and seed being the most common. The plants are held in the nursery until they reach an appropriate size for planting in the main collections, a process that on average takes five to seven years.

The greenhouse staff also repropagates plants whose health is threatened by age, storm injury, or damage by insects or disease, thereby ensuring genetic continuity within our collections. Thus, research in applied horticulture and propagation is ongoing.

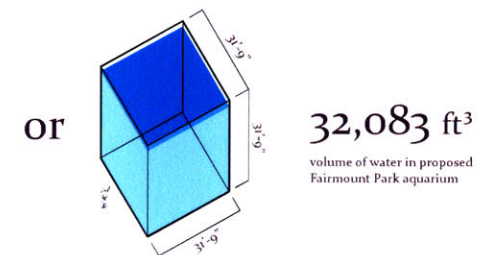
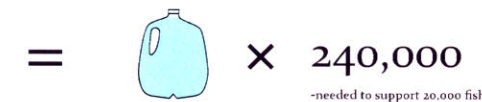
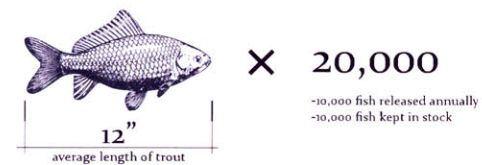
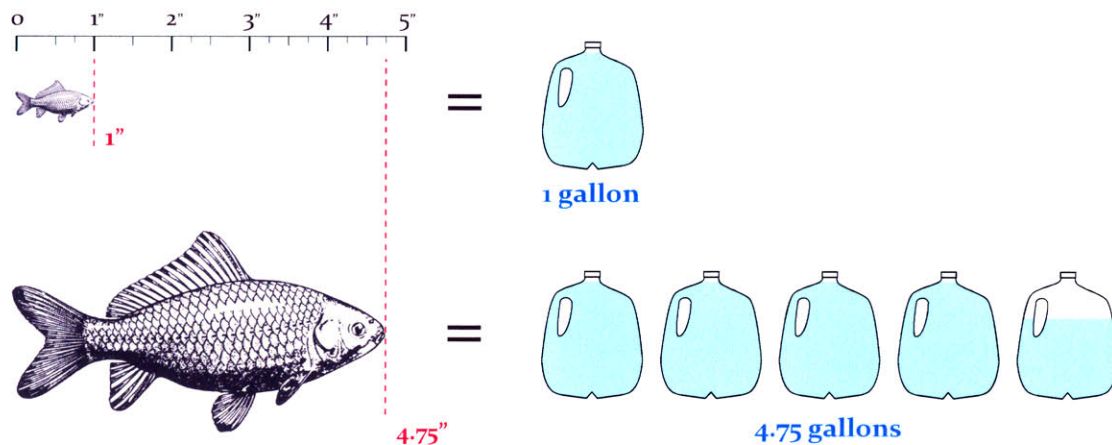
- Greenhouses and Shadehouses *used for on-site plant propagation and nurseries*
- Cold Storage Buildings *allows for storage of dormant plants in winter*



### Determining the Program Sizes (the metric of nature) - each program requires its own calculus

## Determining Aquarium Size

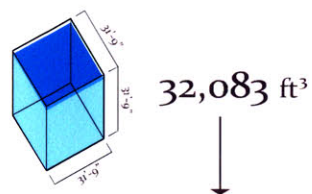
one inch of fish length = one gallon of water



Fairmount Park aquarium size based on the Schuylkill River trout stocking program

### square footage in relation to tank volumes

- total square footage
- tank foot print assuming 10' deep volume



**Fairmount Park Aquarium**  
240,000 gallons - 32,083 ft<sup>3</sup>  
20,000 ft<sup>2</sup>  
12 gallons of tank per ft<sup>2</sup>

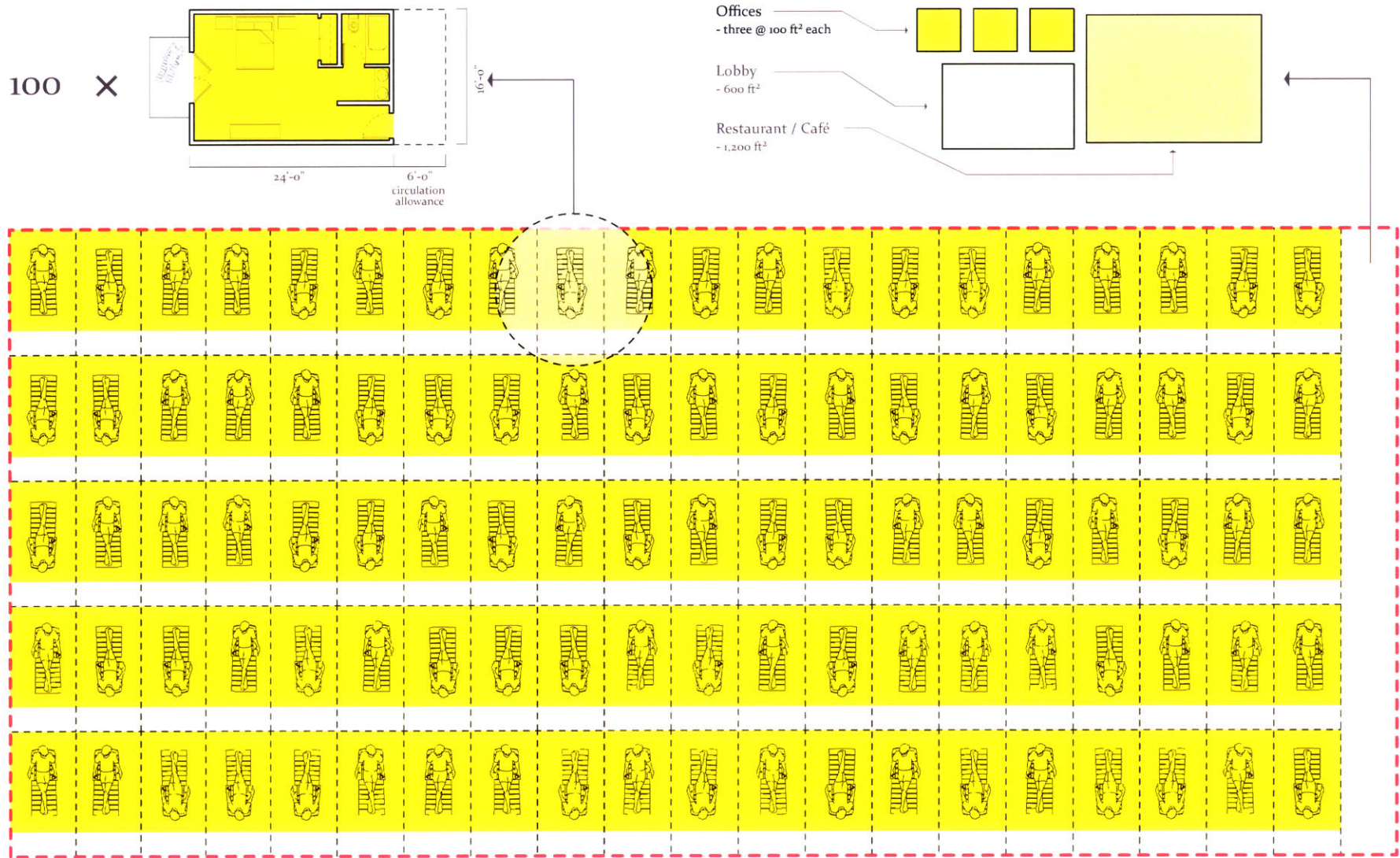
**Monteray Bay Aquarium**  
1,700,000 gallons - 227,257 ft<sup>3</sup>  
322,000 ft<sup>2</sup>  
5 gallons of tank per ft<sup>2</sup>

**Chicago Shedd Aquarium**  
3,000,000 gallons - 401,041 ft<sup>3</sup>  
422,000 ft<sup>2</sup>  
7 gallons of tank per ft<sup>2</sup>

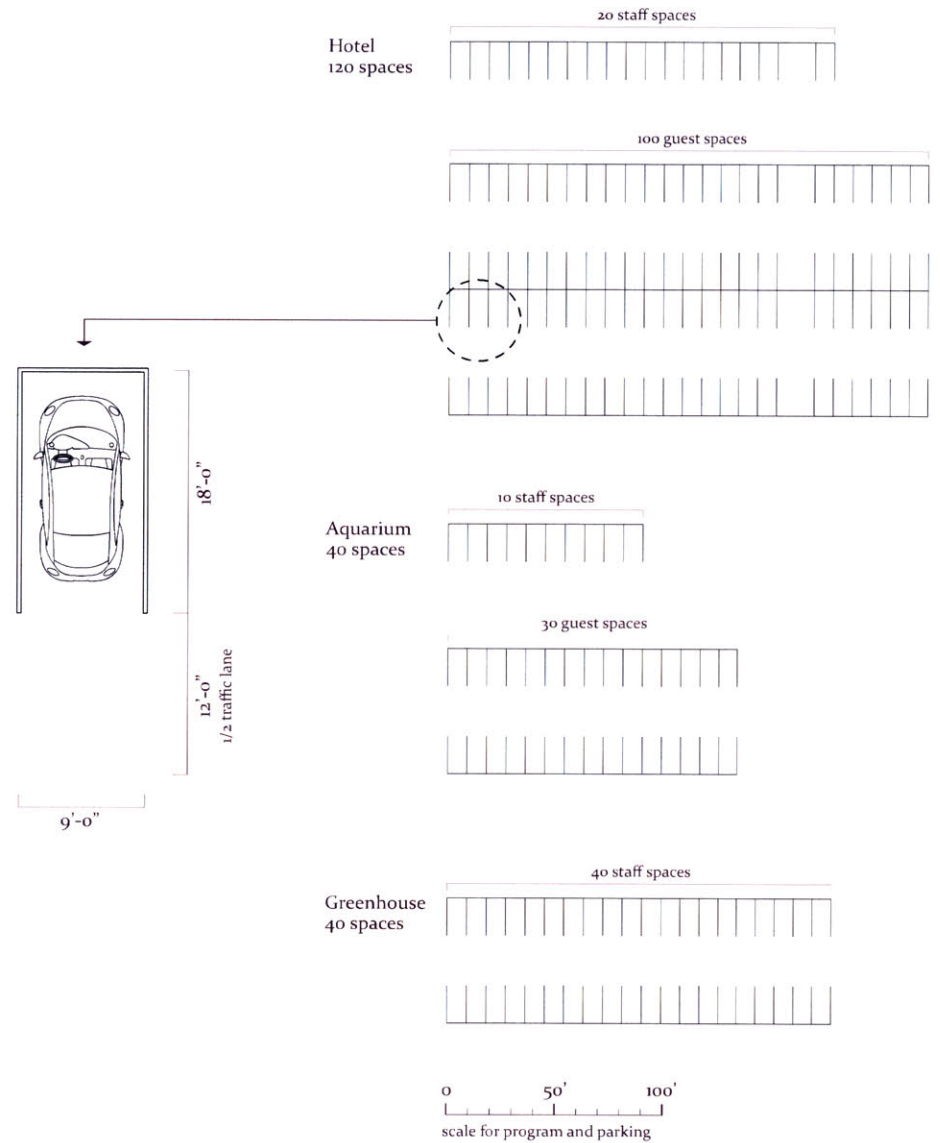
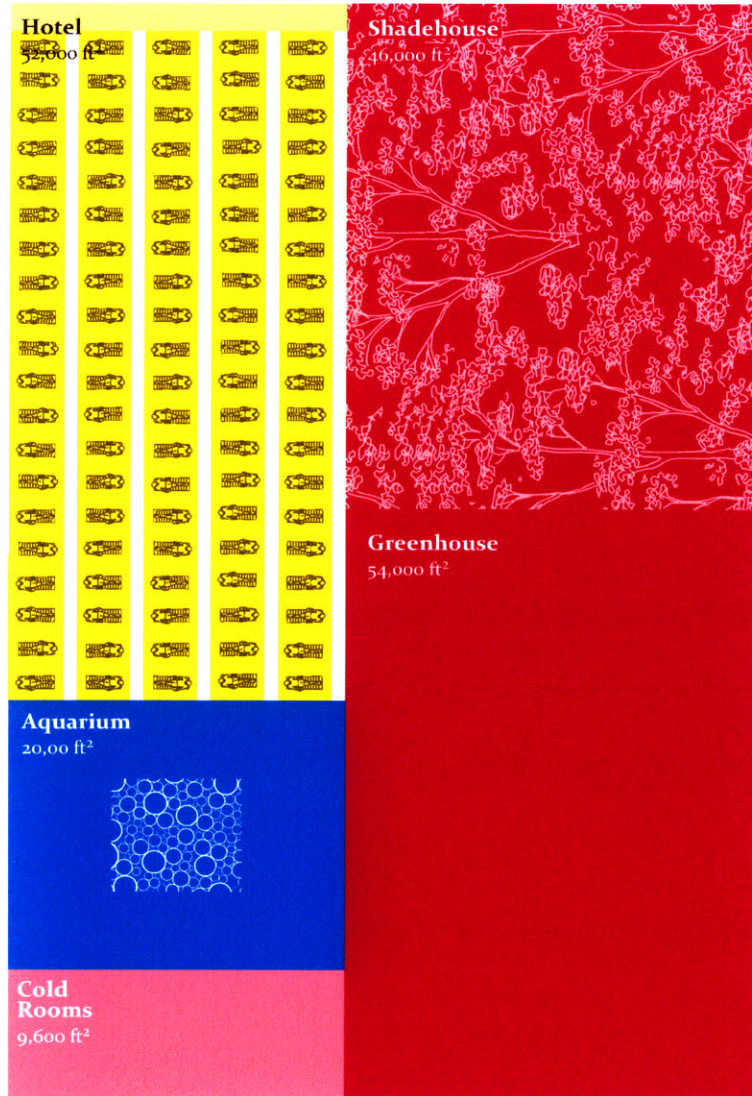
**Georgia Aquarium**  
8,000,000 gallons - 1,069,444 ft<sup>3</sup>  
550,000 ft<sup>2</sup>  
14 gallons of tank per ft<sup>2</sup>



Determining Fairmount Park Hotel Size  
*assuming one hundred guest rooms*



Total Program Size and Parking Requirements  
*total square footage - 181,600 ft<sup>2</sup>*







**Trees**

- Genus - **Acer**
- Box Elder
- Red Maple
- Silver Maple
- Sugar Maple
- Genus - **Amelanchier**
- Shadbush
- Smooth Serviceberry
- Genus - **Asimina**
- Paw Paw
- Genus - **Betula**
- Sweet Birch
- River Birch
- Gray Birch
- Genus - **Carpinus**
- Hornbeam
- Genus - **Carya**
- Bitternut Hickory
- Pignut Hickory
- Shagbark Hickory
- Mockernut Hickory
- Genus - **Castanea**
- Chinquapin
- Genus - **Fraxinus**

- Genus
- Genus - **Cornus**
- Flowering Dogwood
- Genus - **Crataegus**
- Cockspur Hawthorn
- Genus - **Diospyrus**
- Persimmon
- Genus - **Fagus**
- American Beech
- Genus - **Fraxinus**
- White Ash
- Green Ash
- Genus - **Gleditsia**
- Honeylocust
- Genus - **Ilex**
- American Holly
- Genus - **Juglans**
- Butternut
- Black Walnut
- Genus - **Juniperus**
- Eastern Red Cedar
- Genus - **Quercus**
- Genus

- Genus - **Magnolia**
- Sweetbay Magnolia
- Genus - **Malus**
- Sweet Crabapple
- Genus - **Morus**
- Red Mulberry
- Genus - **Nyssa**
- Sourgum
- Genus - **Ostrya**
- Hop-Hornbeam
- Genus - **Pinus**
- Pitch Pine
- White Pine
- White Pine
- Scrub Pine
- Genus - **Platanus**
- Sycamore
- Genus - **Populus**
- Cottonwood
- Large-toothed Aspen
- Quaking Aspen
- Genus - **Prunus**
- Black Cherry
- Chokecherry

- Genus - **Quercus**
- White Oak
- Swamp White Oak
- Scarlet Oak
- Spanish Oak
- Blackjack Oak
- Chestnut Oak
- Pin Oak
- Willow Oak
- Post Oak
- Black Oak
- Genus - **Robinia**
- Black Locust
- Genus - **Salix**
- Black Willow
- Genus - **Sassafras**
- Genus
- Genus
- Genus
- Genus

**Shrubs**

- Genus - **Alnus**
- Smooth Alder
- Genus - **Amelanchier**
- Serviceberry
- Genus - **Aronia**
- Red Chokeberry
- Black Chokeberry
- Purple Chokeberry
- Genus - **Baccharis**
- Groundsel-Tree
- Genus - **Ceanothus**
- New Jersey Tea
- Genus - **Cephalanthus**
- Buttonbush
- Genus - **Chionanthus**
- Fringe-Tree
- Genus - **Eleocharis**
- Genus

- Genus - **Corylus**
- Hazelnut
- Genus - **Diervilla**
- Bush-honeysuckle
- Genus - **Euonymus**
- Strawberry Bush
- Burning Bush
- Genus - **Hamamelis**
- Witch-hazel
- Genus - **Hydrangea**
- Wild Hydrangea
- Genus - **Ilex**
- Winterberry
- Genus - **Juniperus**
- Common Juniper
- Genus - **Kalmia**
- Mountain Laurel
- Genus - **Leucothoe**
- Swamp Sweetbells
- Genus - **Lythrum**
- Genus

- Genus - **Myrica**
- Bayberry
- Genus - **Physocarpus**
- Ninebark
- Genus - **Prunus**
- American Plum
- Genus - **Ptelea**
- Wafer Ash
- Genus - **Rhododendron**
- Rosebay
- Pinxter Flower
- Swamp Azalea
- Genus - **Rhus**
- Winged Sumac
- Smooth Sumac
- Staghorn Sumac
- Genus - **Ribes**
- American Black Currant
- Genus - **Rosa**
- Pasture Rose
- Swamp Rose
- Wild Rose
- Genus - **Rubus**
- Common Blackberry

- Genus - **Salix**
- Pussy-willow
- Heart-leaved Willow
- Sandbar Willow
- Silky Willow
- Genus - **Sambucus**
- American Elder
- Genus - **Spiraea**
- Meadowsweet
- Steeplebush
- Genus - **Staphylea**
- Bladderplum
- Genus
- Genus
- Genus
- Genus

**New Vegetation Classification**

(spatial classification - small to large) - what is the minimal spatial requirement to house all the protected vegetation of Fairmount Park?

80'  
70'  
60'  
50'  
40'  
30'  
20'  
10'

White Pine  
Basswood

Chestnut Oak

Scarlet Oak

Black Oak

Pignut Hickory

Hackberry  
Post Oak

Blackjack Oak

Smooth Serviceberry

Chokecherry

Winged Sumac

Scrub Pine

Southern Sumac

American Plum

Smooth Sumac

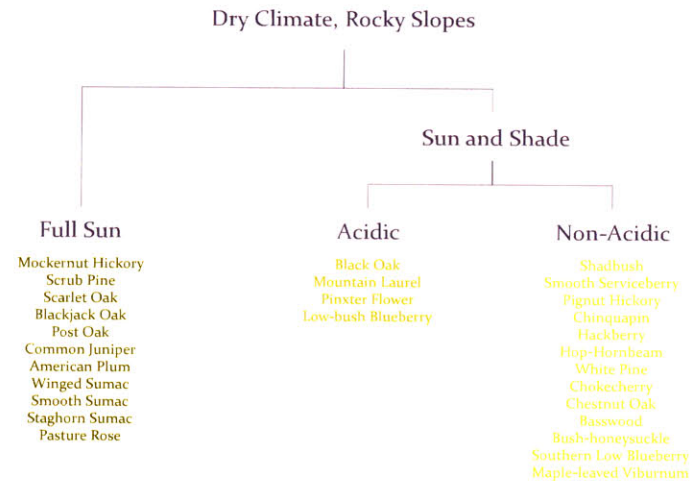
Chokecherry

Winged Sumac

Scrub Pine

Southern Sumac

American Plum



New Vegetation Classification - Dry Biomes  
(spatial classification - small to large) - defining the three biomes of Fairmount Park



New Vegetation Classification - Wooded Biomes  
 (spatial classification - small to large) - defining the three biomes of Fairmount Park



80'  
70'  
60'  
50'  
40'  
30'  
20'  
10'

**Cottonwood**

American Elm

**Pin Oak**  
Honeylocust  
Green Ash  
Bitternut Hickory  
Silver Maple

Swamp White Oak

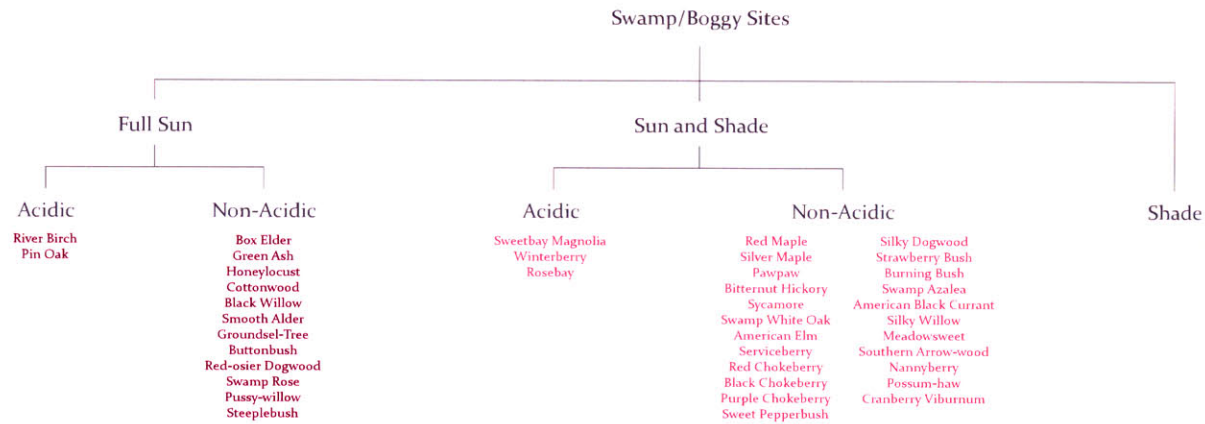
River Birch

Red Maple

Black Willow

Box Elder

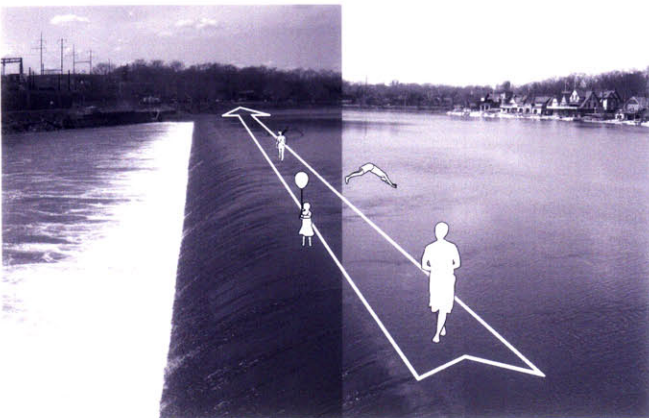
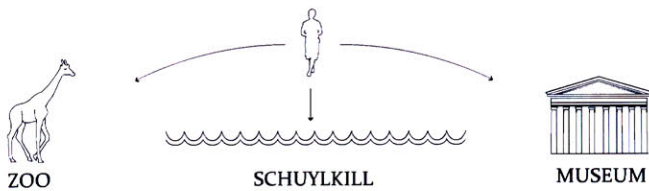
Paw Paw  
Nannyberry  
Possum-haw  
American Black Currant  
Silky Willow  
Meadow Sweet  
Southern Arrow-wood  
Cranberry Viburnum  
Sweet Pepperbush  
Purple Chokeberry  
Black Chokeberry  
Red Chokeberry  
Serviceberry  
American Elm  
Swamp White Oak  
Sycamore  
Bitternut Hickory  
Pawpaw  
Silver Maple  
Red Maple  
Rosebay  
Winterberry  
Sweetbay Magnolia



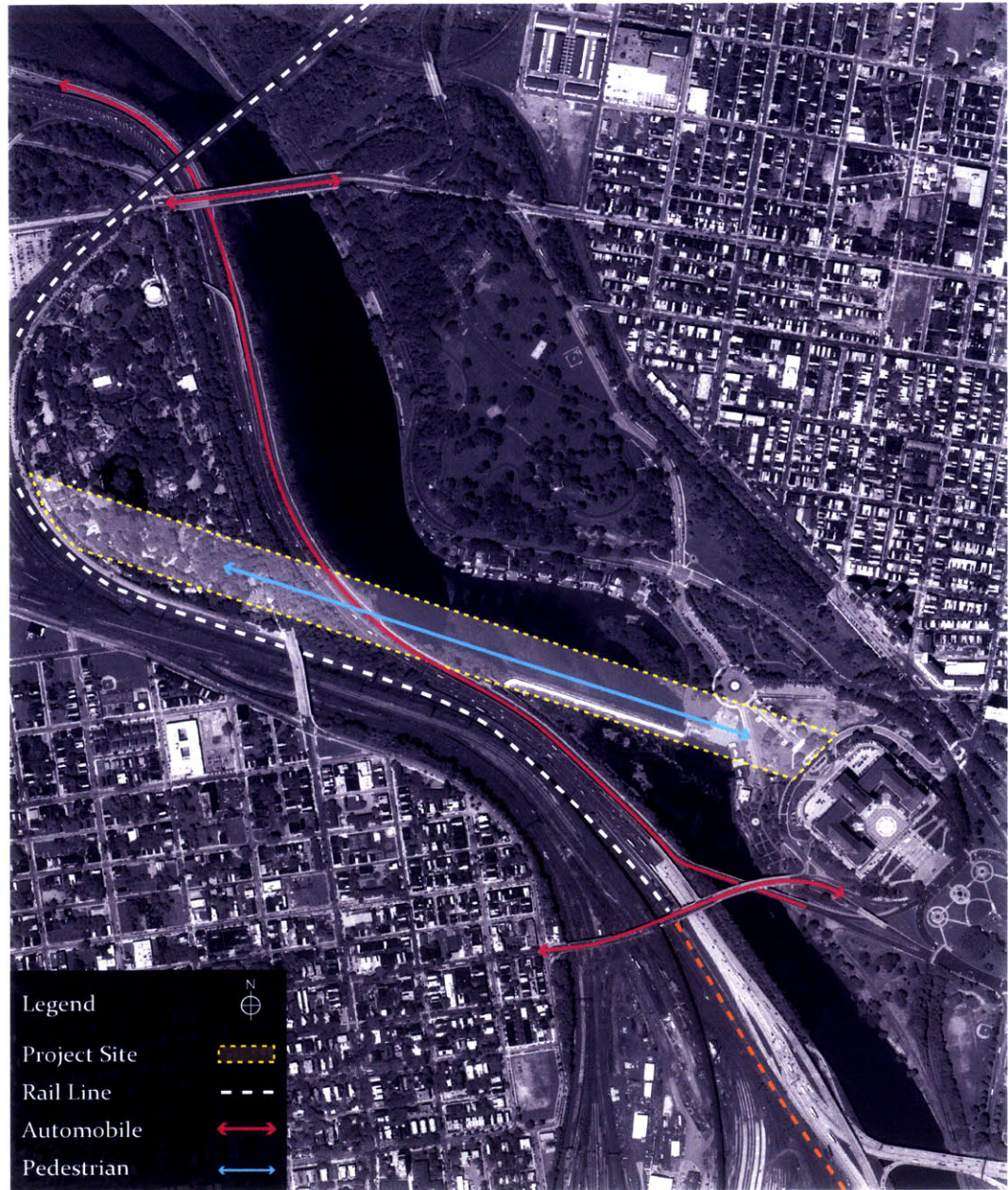
New Vegetation Classification - Swamp Biomes  
(spatial classification - small to large) - defining the three biomes of Fairmount Park

## The Project Site on the Fairmount Waterworks dam

The project site is the Fairmount Waterworks dam spanning the Schuylkill River between east and west park (from the zoo to the Museum of Art). Currently there is no pedestrian access from one side of the park to the other. The only way across is by motor vehicle. Furthermore the riverbanks of the Schuylkill are occupied by expressways and primary roadways allowing little to no pedestrian access to the river's edge. By using the existing dam as a site for a new architectural project a third river bank can be constructed. The project serves as new park surface that carries all the programs while creating pedestrian access across the river and to a new riverbank. This new interior 'nature' can be understood as an extension of the surrounding park ground, both serving the immense maintenance requirements of Fairmount Park and encouraging the public to participate in the parks construction.



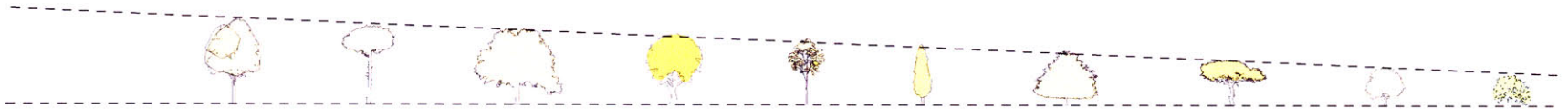
Crossing the Schuylkill River on the Waterworks dam



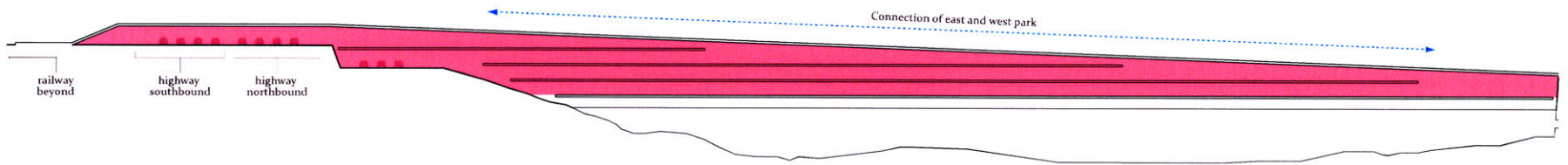


# Building Section as Organizer of Vegetation *using spatial vegetation classification to cross the dam*

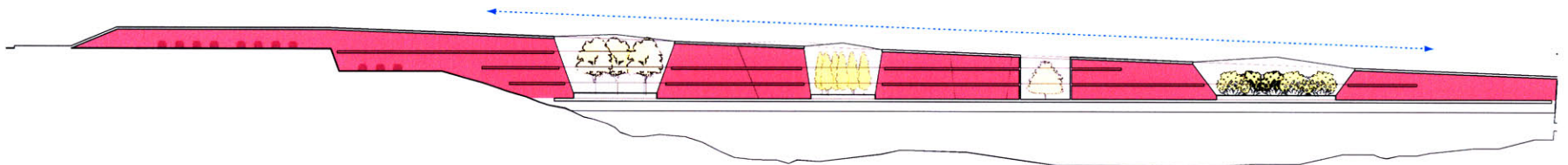
Redistributing the Vegetation  
(small - large)



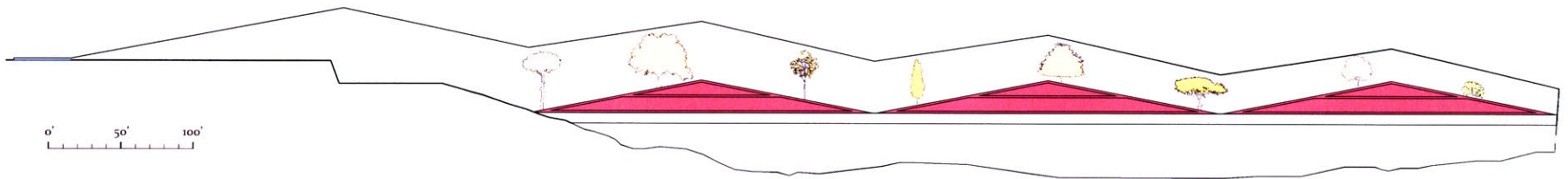
Section through Schuylkill River  
(connecting the park)



Section through Schuylkill River  
(diagrammatic section of project)



Section through Schuylkill River  
(section adjusted for roof slope)



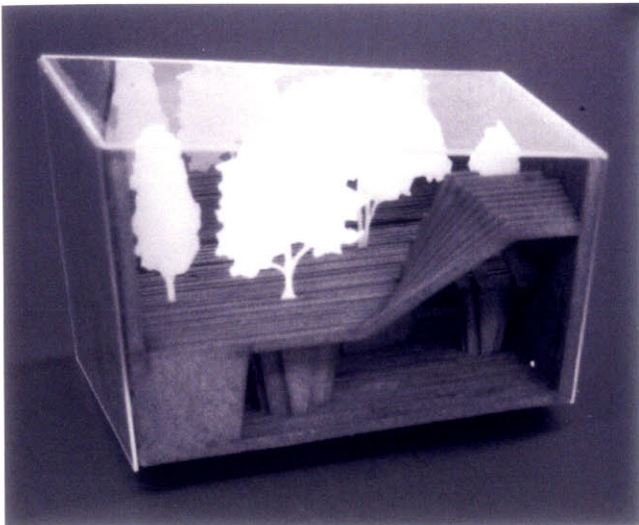
## The Project Structure

### *designing the space frame*

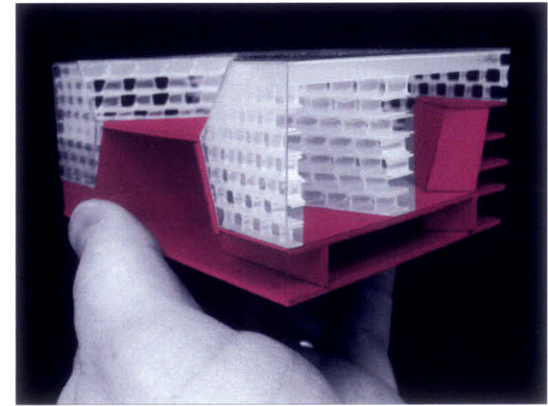
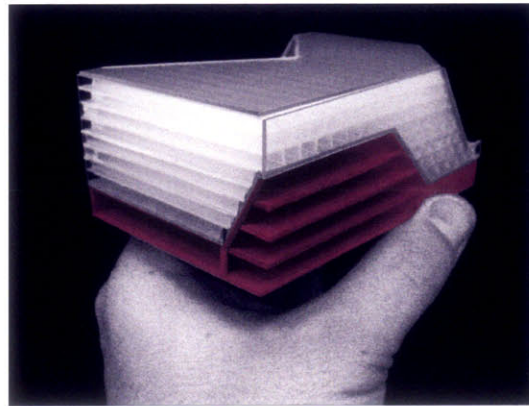
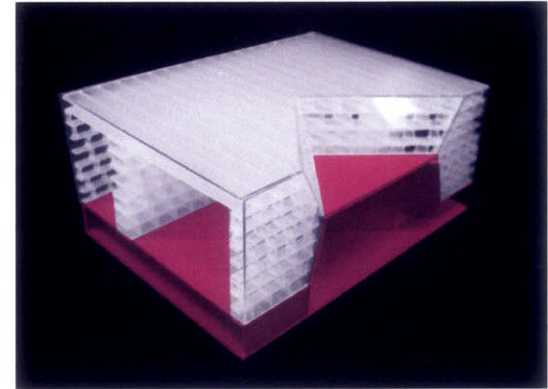
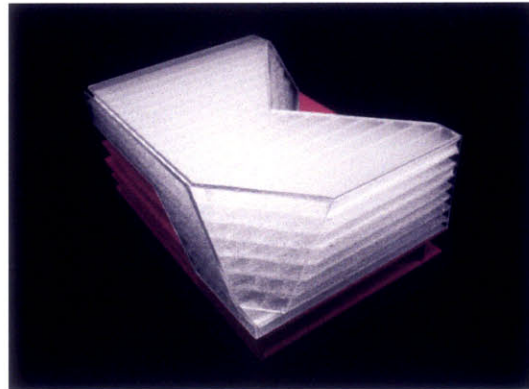
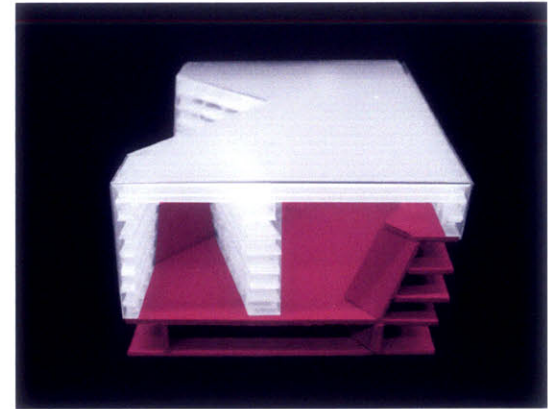
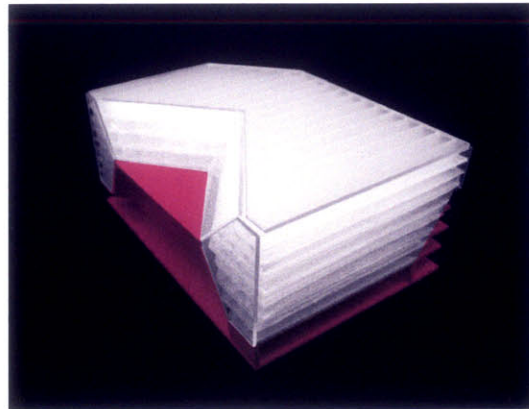
After developing the basic envelope as a diagram through the vegetation classification (p. 32) and building section studies (p. 35), the building form is determined through the structural realities. In order to create expansive interiors which can house the vegetation and related programs, it is decided that the exterior envelope must be supported by a space frame structure. This structure must tie into the foundation of the project, the waterworks dam, a concrete load bearing structure.

The early study models (to the right) investigate this co-habitation of a space frame and a load bearing structure as a means of defining both interior and exterior form. The load bearing structure is a grounded landscape that lifts in order to define the interior of the greenhouse and create a larger interior volume within the body of the dam. The space frame structure is cut from above to further define the interior of the greenhouse and allow light to enter into the depths of that interior.

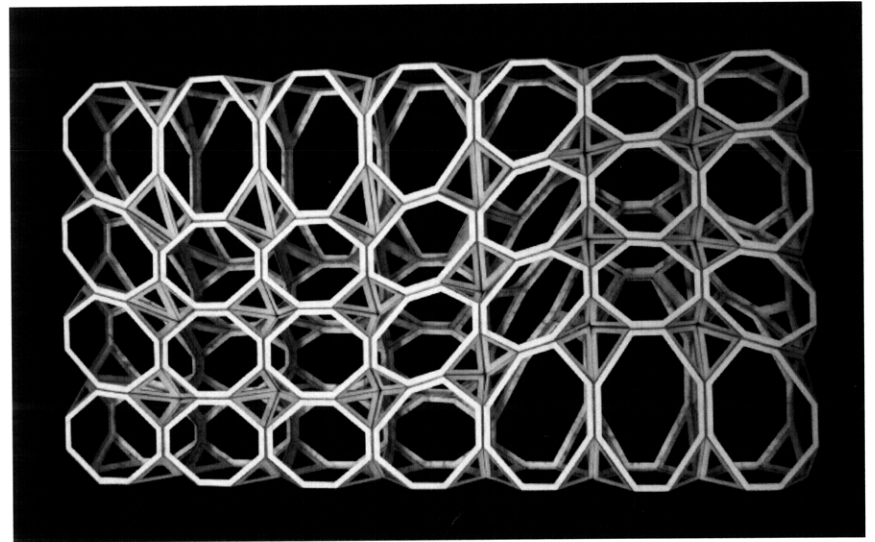
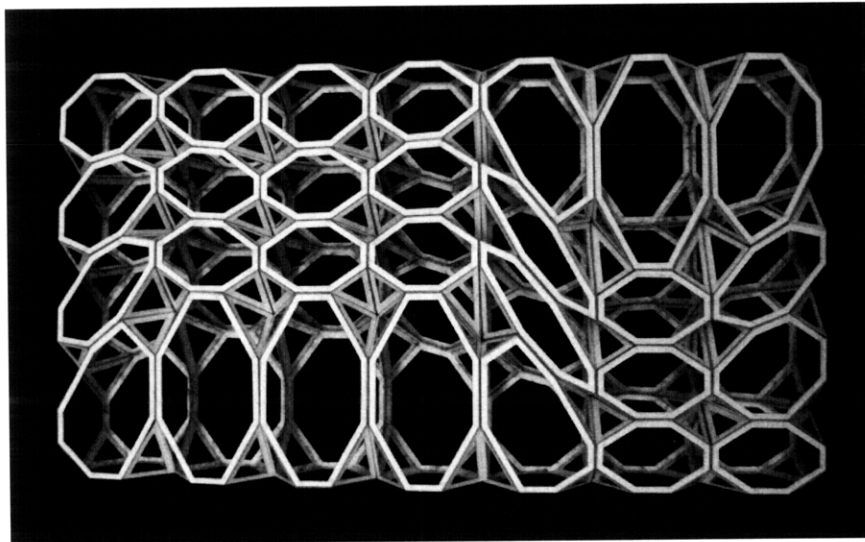
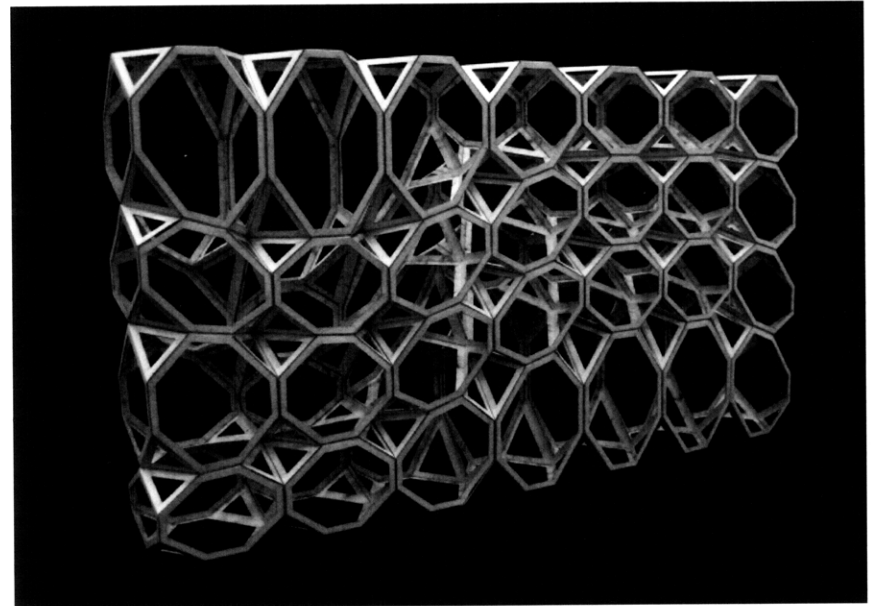
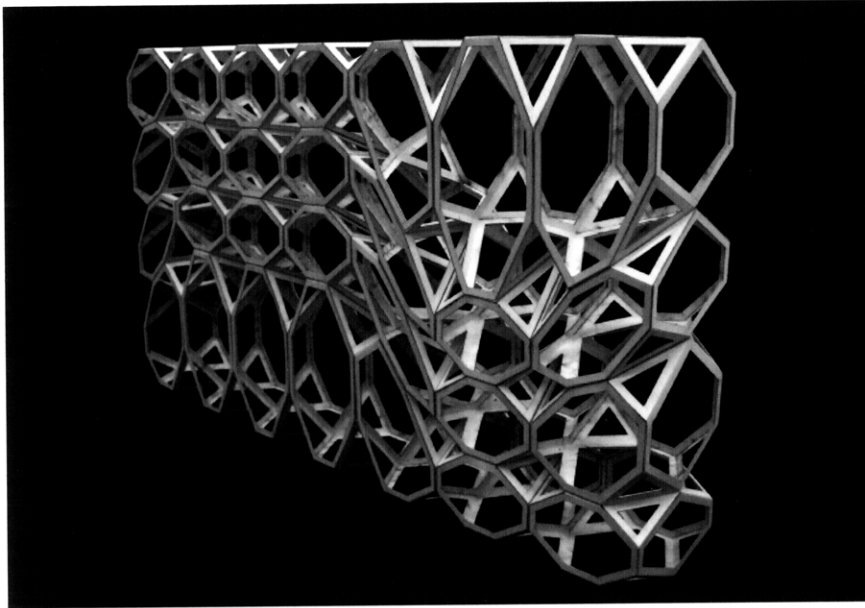
These studies were followed by a series of models testing the limits and possibilities of the space frame structure. What is its structural logic and how can it be modified/deformed to accommodate the program?



Study showing dam as a landscape w/ occupiable volumes below

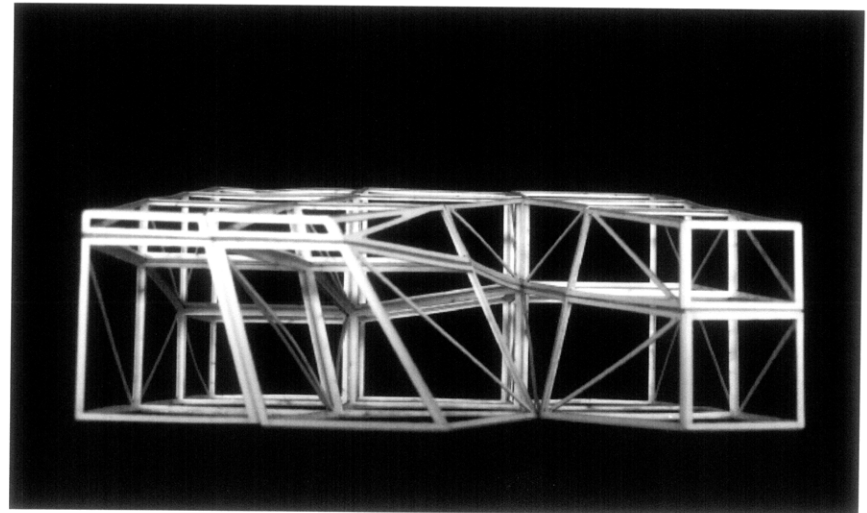
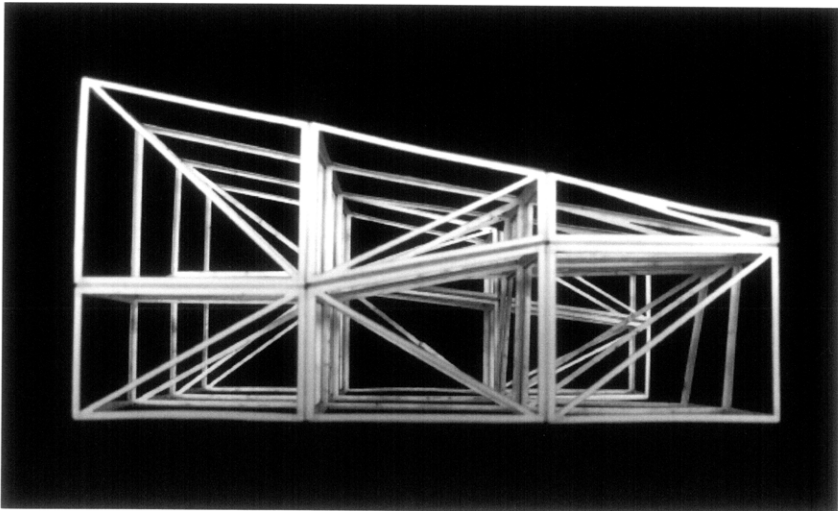
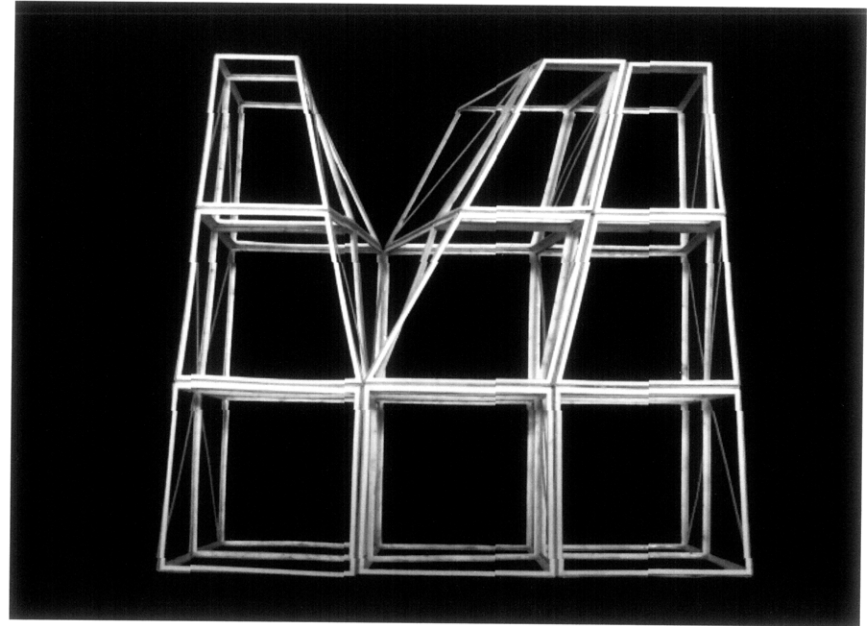
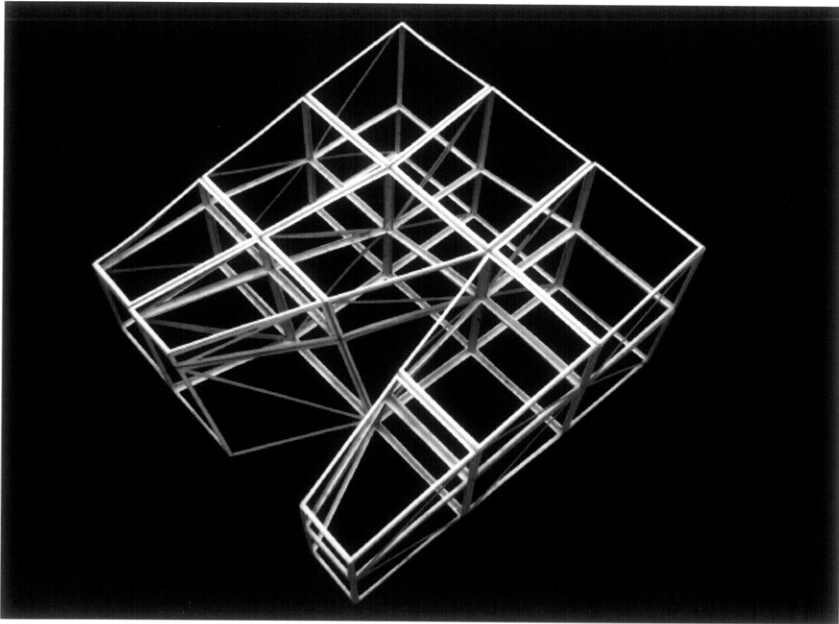


Early study models of structural strategy magenta = load bearing structure honeycomb = space frame structure

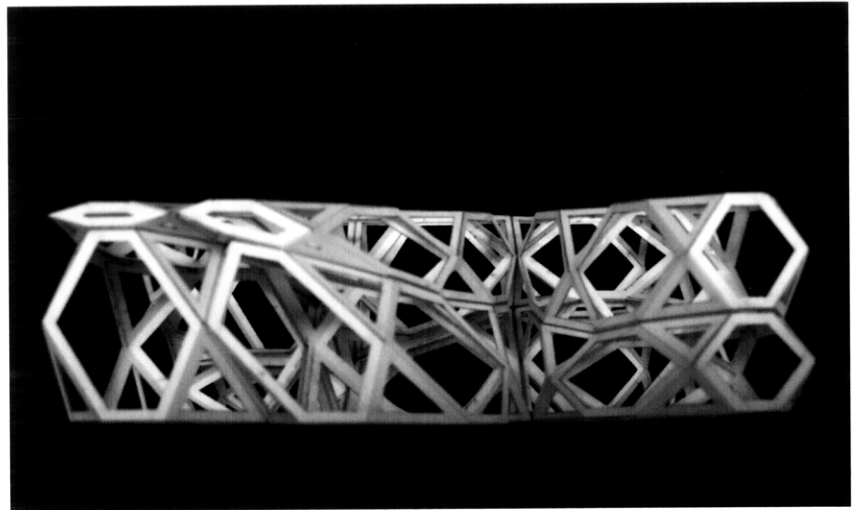
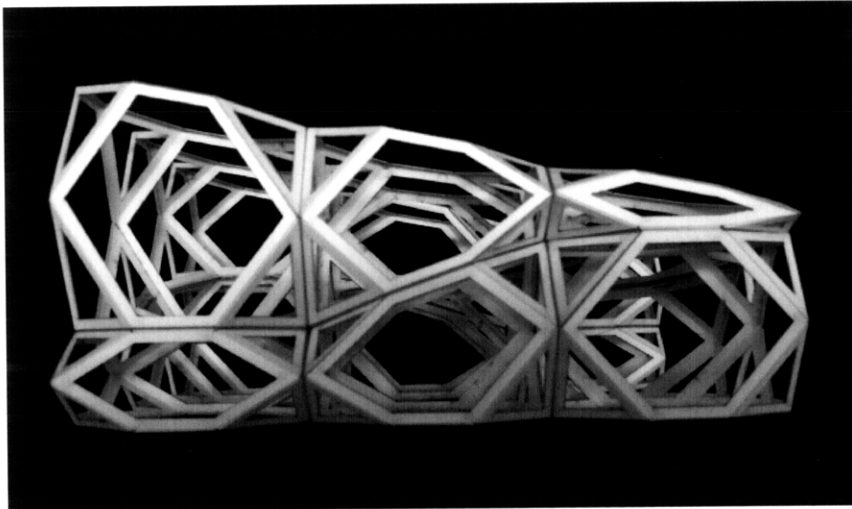
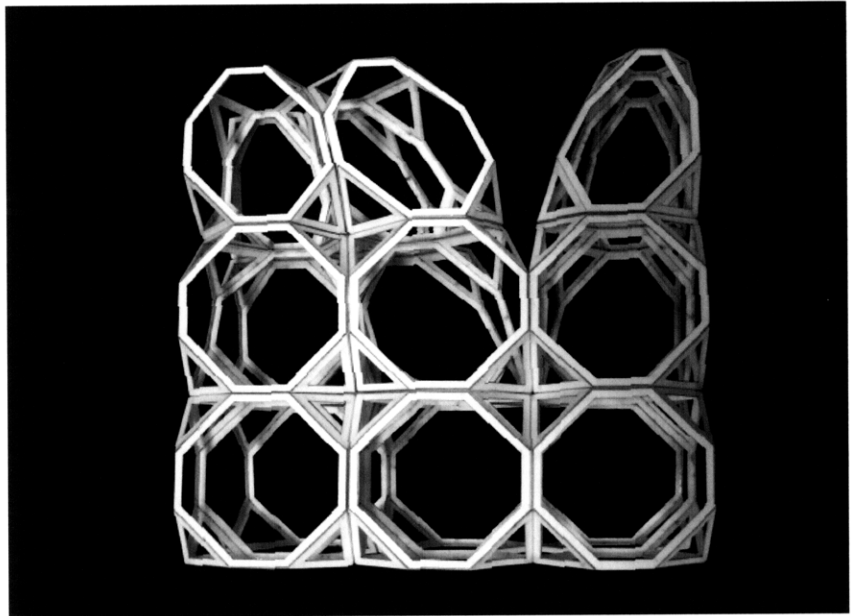
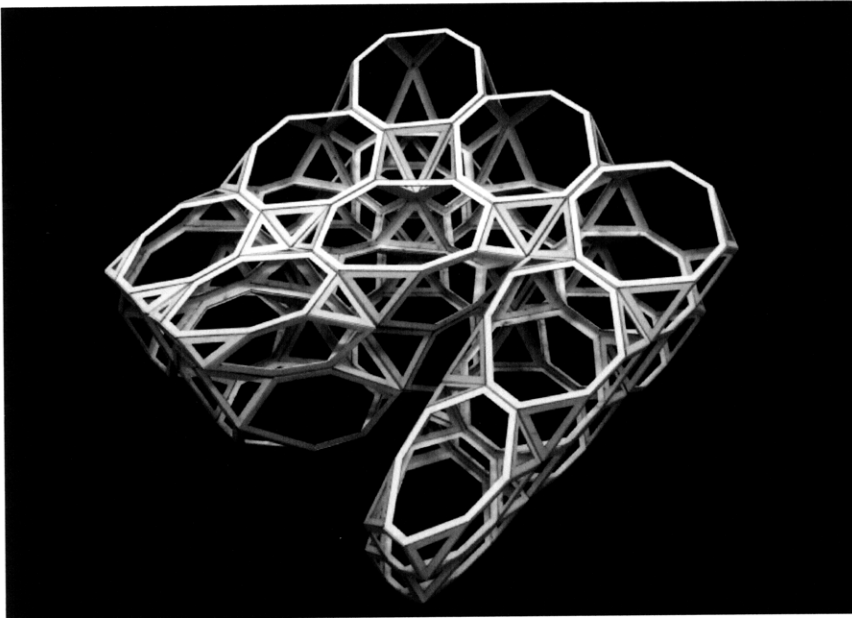


Space frame study model - developing a malleable logic

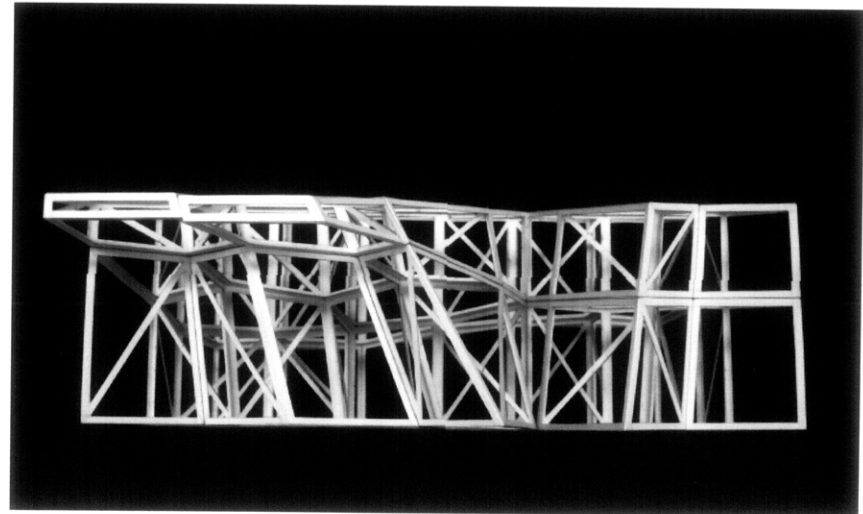
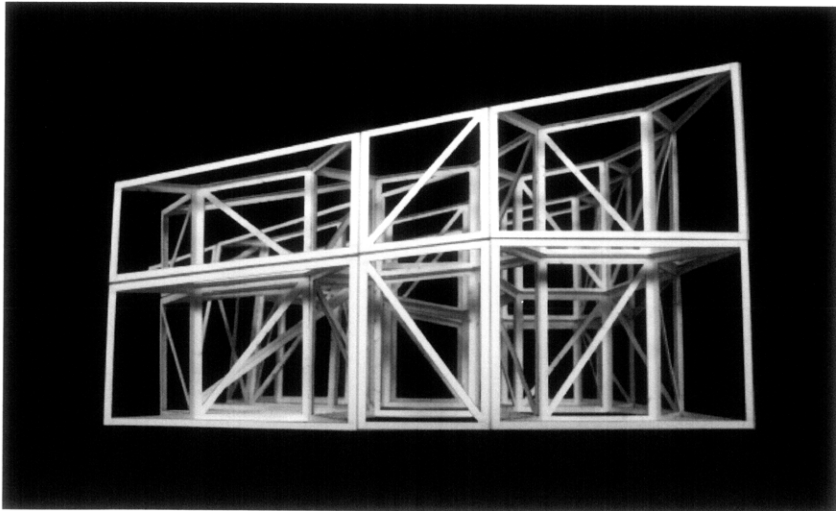
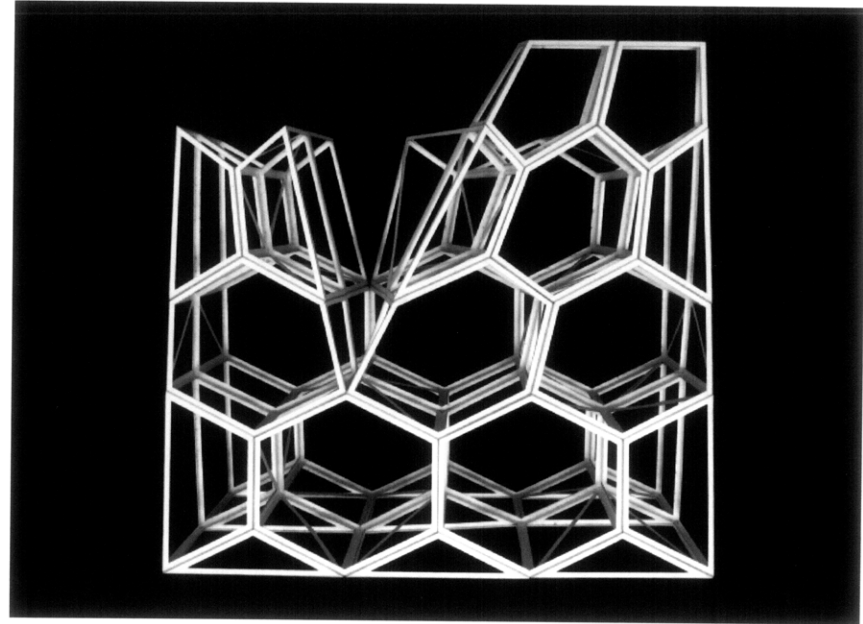
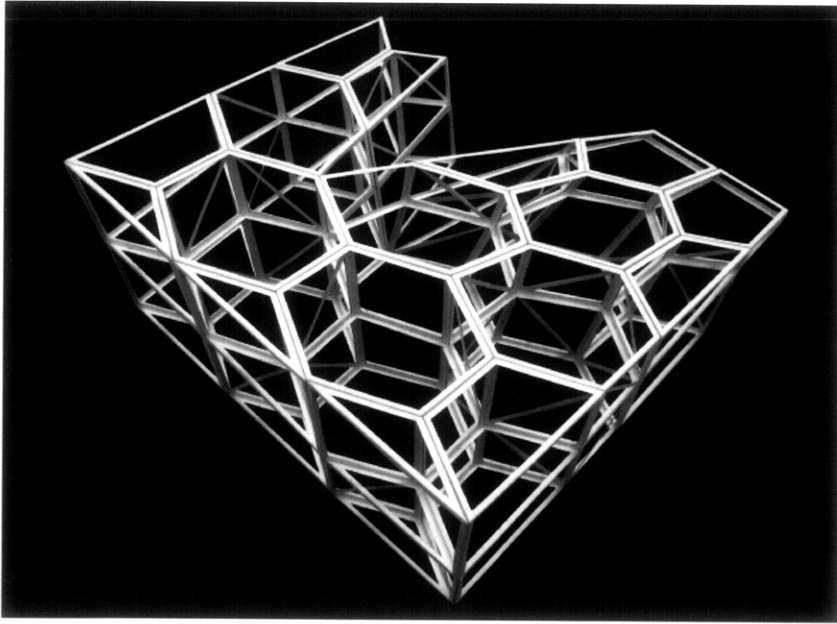




Space frame study model (rectangular frame) - developing a malleable logic



Space frame study model (hexagonal/octagonal frame) - developing a malleable logic

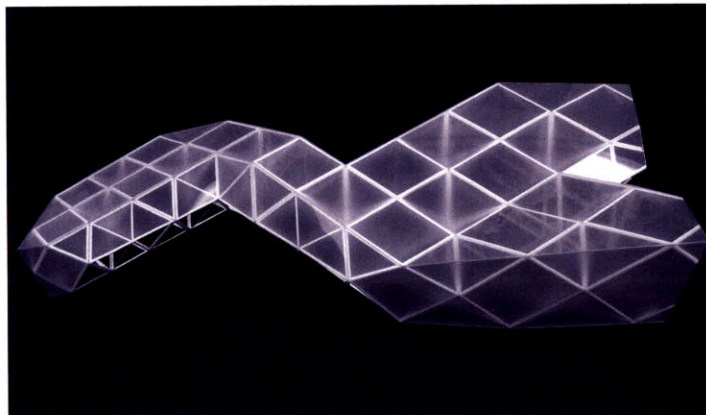
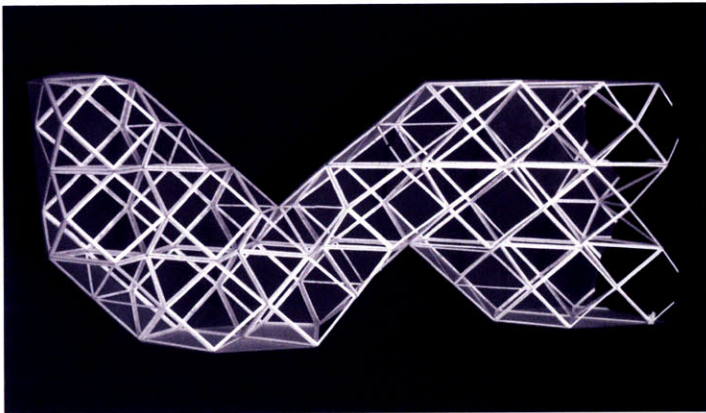


Space frame study model (extruded hexagonal frame/honeycomb) - developing a malleable logic



The Project Structure  
*the diagrid space frame*

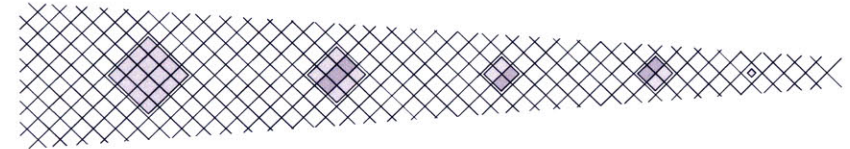
The structure chosen for the project is a diagrid space frame. The structure can be easily manipulated through simple adjustments of the diagrid angles. Where needed the structure can be made more dense by simply increasing the angle of the diagrid structure and conversely made more open by decreasing the angle. The structure of the building is designed to allow for varying interior spaces that can contain the discrete biomes.



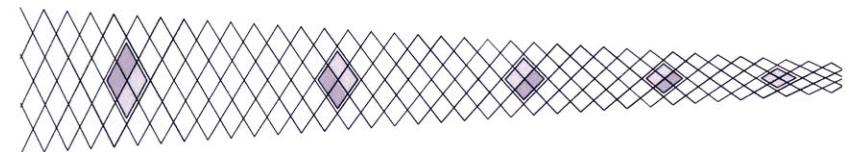
Space frame study model (diagrid)

Diagrammatic Structural Plan

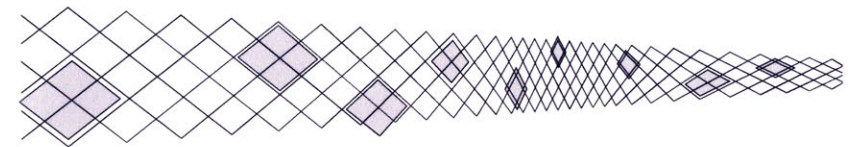
Obstructions   
 Path   
 Lines of Structure 



Simple diagrid



Diagrid  
 varied angles across length



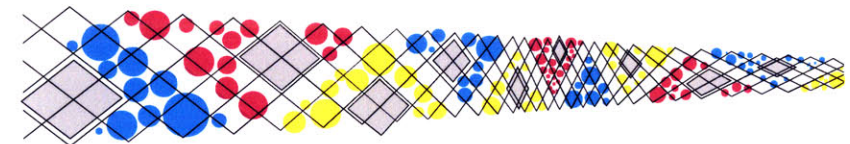
Diagrid  
 localized angle variations

+

Biomes of the park  
 colors represent 3 types



=



Diagrid  
 variations arrange biomes into discrete compartments

## The Project Overview

*all the parts*

The project is a continuous interior that connects east and west park over the Fairmount dam. The dam is currently only a spillway, its only function is to keep a still water condition upriver for recreation and competitive rowing. The dam is widened to accommodate the structure above, but still allows the river to flow unimpeded while keeping a continuous water level upriver. The public path that allows pedestrians to cross the Schuylkill serves as a vestibule that, through its meandering, divides the discrete interior biomes. Within each of the biomes is a laboratory structure (island) that is accessible through a private corridor below the surface of the dam. Each biome is a greenhouse that can accommodate varying experiments. Depending on the needs of the experimentation, the public can be allowed into the biomes or barred from access. No matter the access, the biomes are always on display for the public from the meandering public path.

### Envelope

Translucent / Transparent Skin  
Diagrid structural skin

### Vestibule

Air gap between discrete biomes  
Public path and private rooms  
Long stay living units  
Mechanical Services

### Biomes

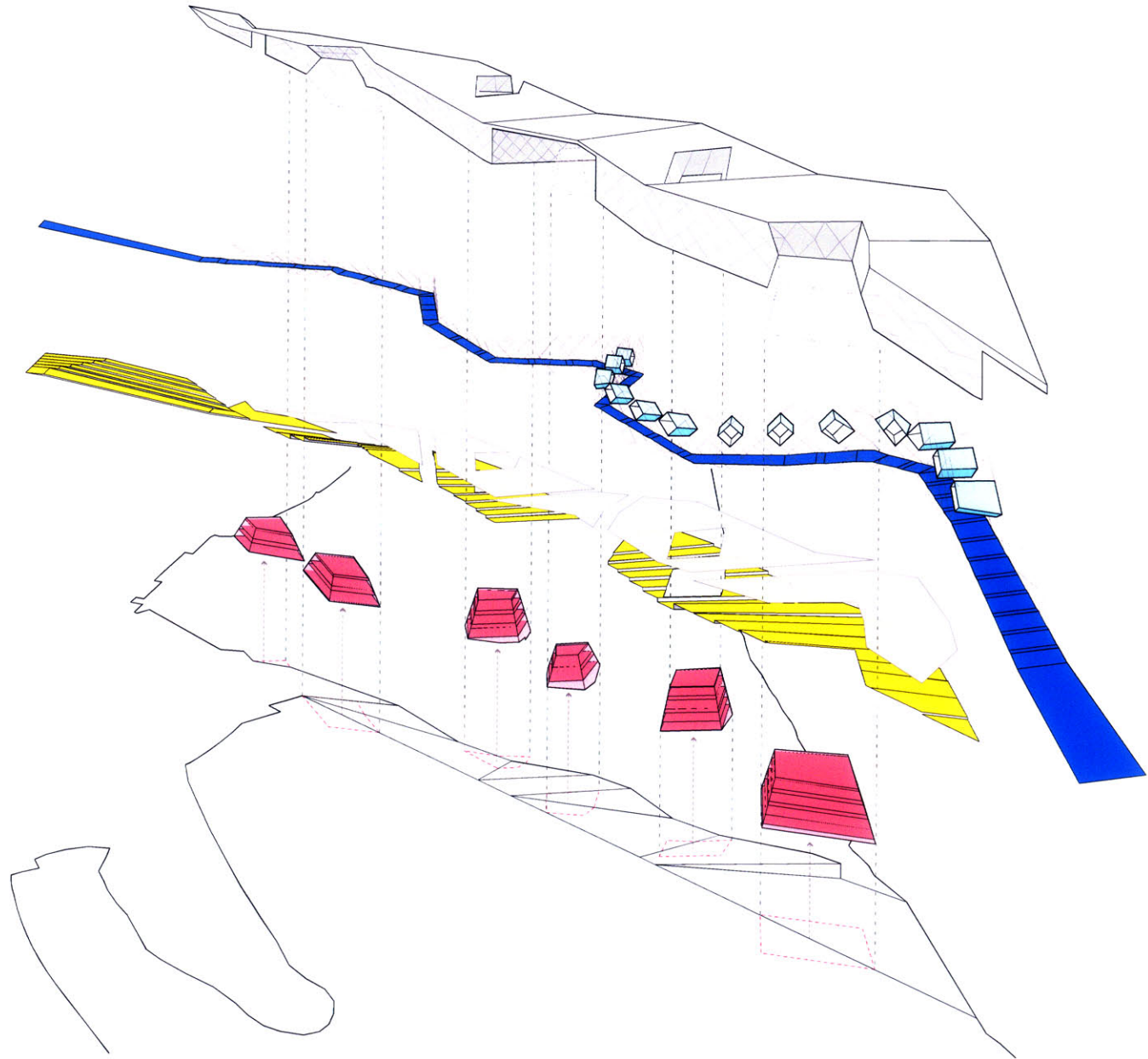
Discrete environments containing all of Fairmount Park's 'allowed' vegetation

### Labs

Laboratory facilities for research of Fairmount Park's vegetation  
Private access to controlled biomes

### Spillway Dam

Expanded existing infrastructure keeping still water condition upriver







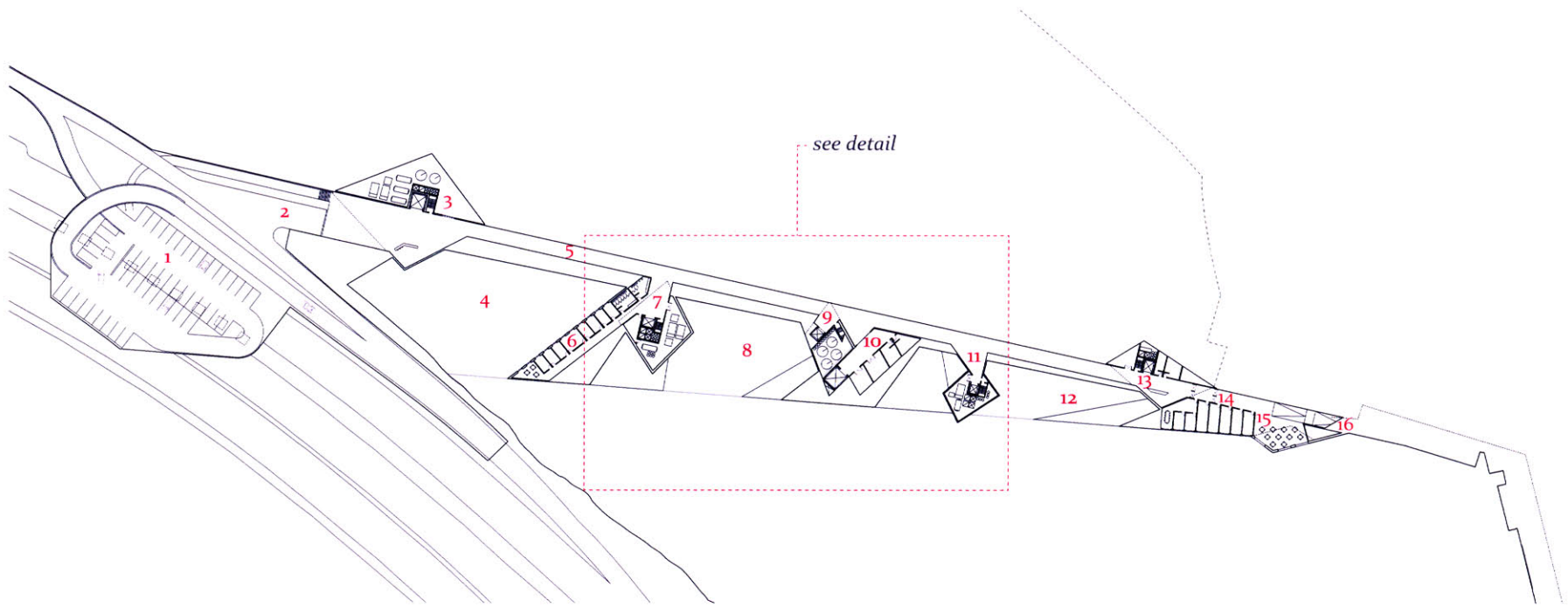
Site Plan  
*magenta = public path    white diamonds = laboratory islands    lighter areas = biomes*



- 1 Parking for laboratories below Schuylkill Expressway
- 2 Shipping & receiving
- 3 Lab storage, services, & access
- 4 Spillway
- 5 Service Corridor private access to laboratories
- 6 Offices

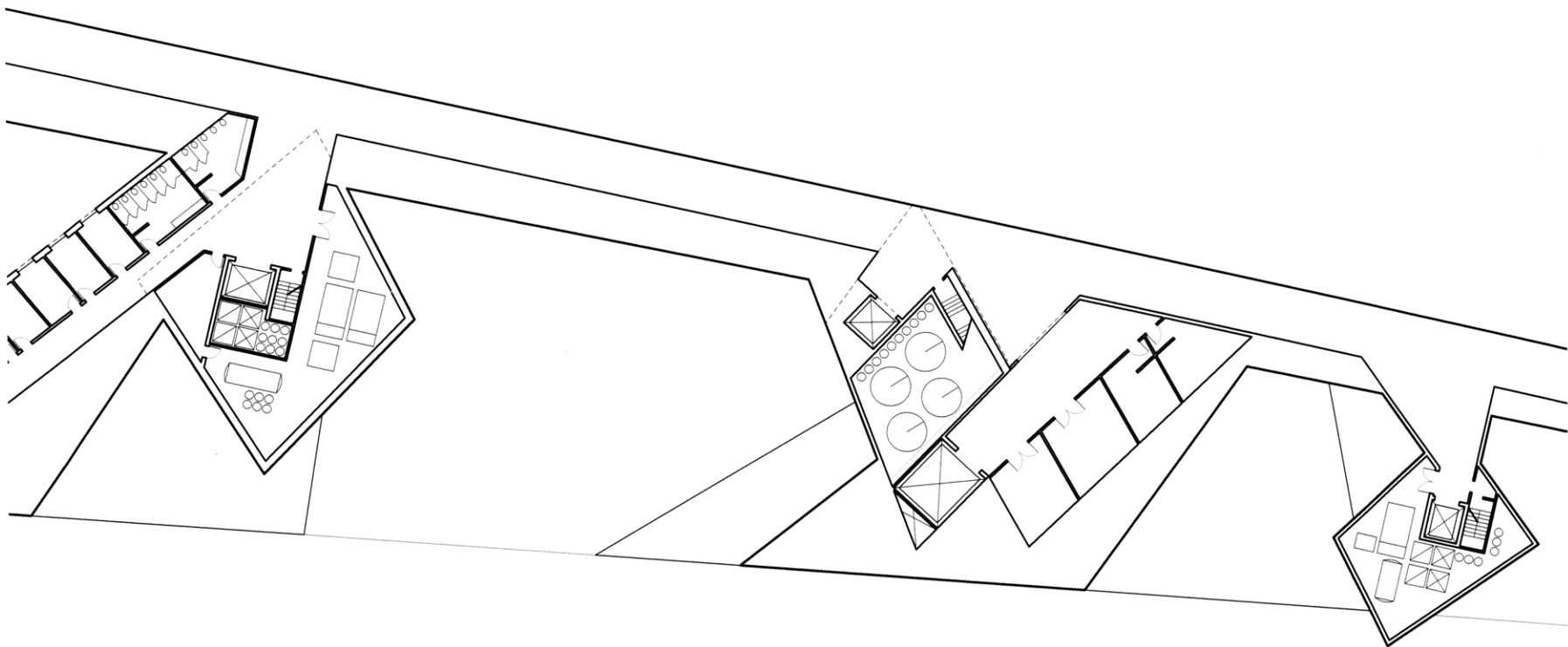
- 7 Lab storage, services, & access
- 8 Spillway
- 9 Aquarium storage, services, & access
- 10 Storage & large freight access to upper level
- 11 Lab storage, services, & access
- 12 Spillway
- 13 Lab storage, services, & access

- 14 Offices
- 15 Cafeteria
- 16 Access to existing subterranean waterworks facility

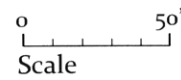


Lower Level Plan  
below surface of upriver Schuylkill





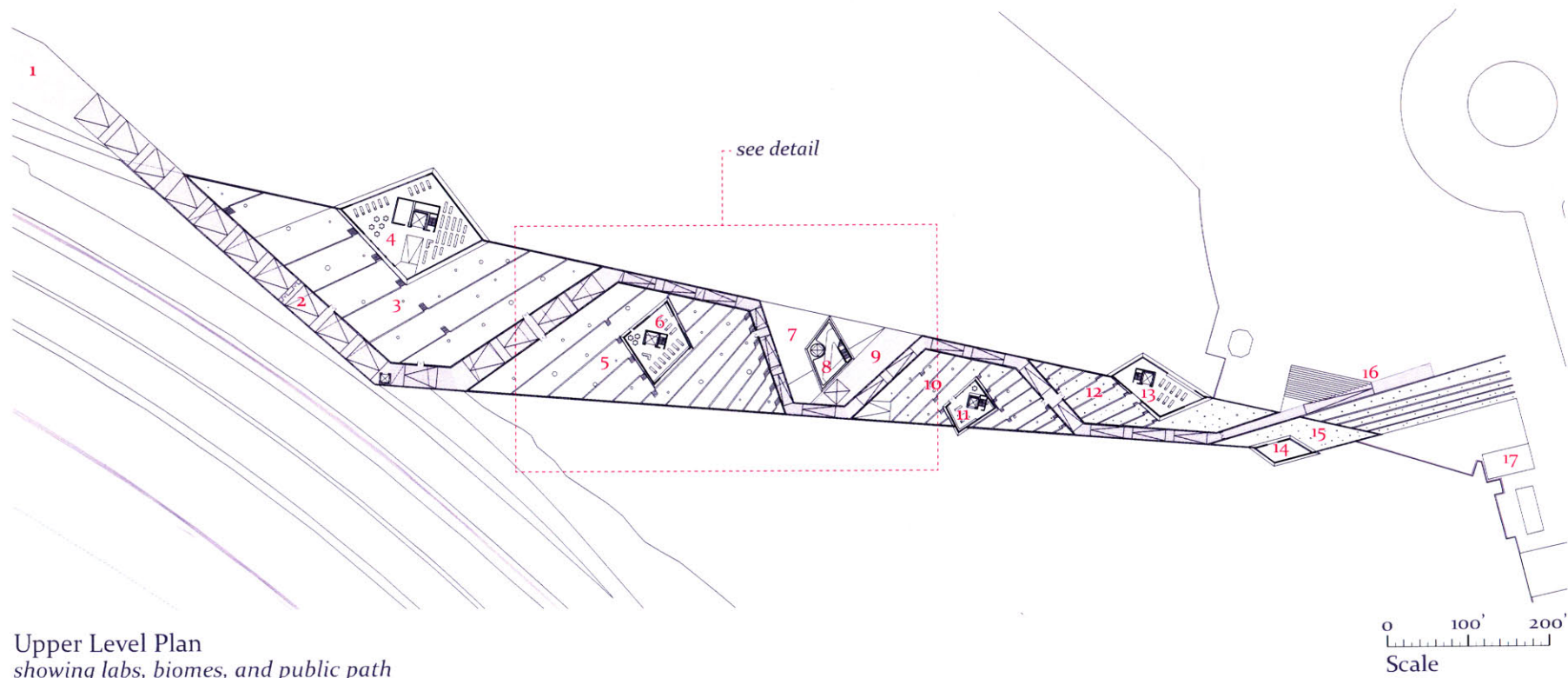
Detail of Lower Level Plan



- 1 Publicly accessible riverfront
- 2 Public path/vestibule
- 3 Interior terraced biome/greenhouse
- 4 Laboratory
- 5 Interior terraced biome/greenhouse
- 6 Laboratory
- 7 Spillway

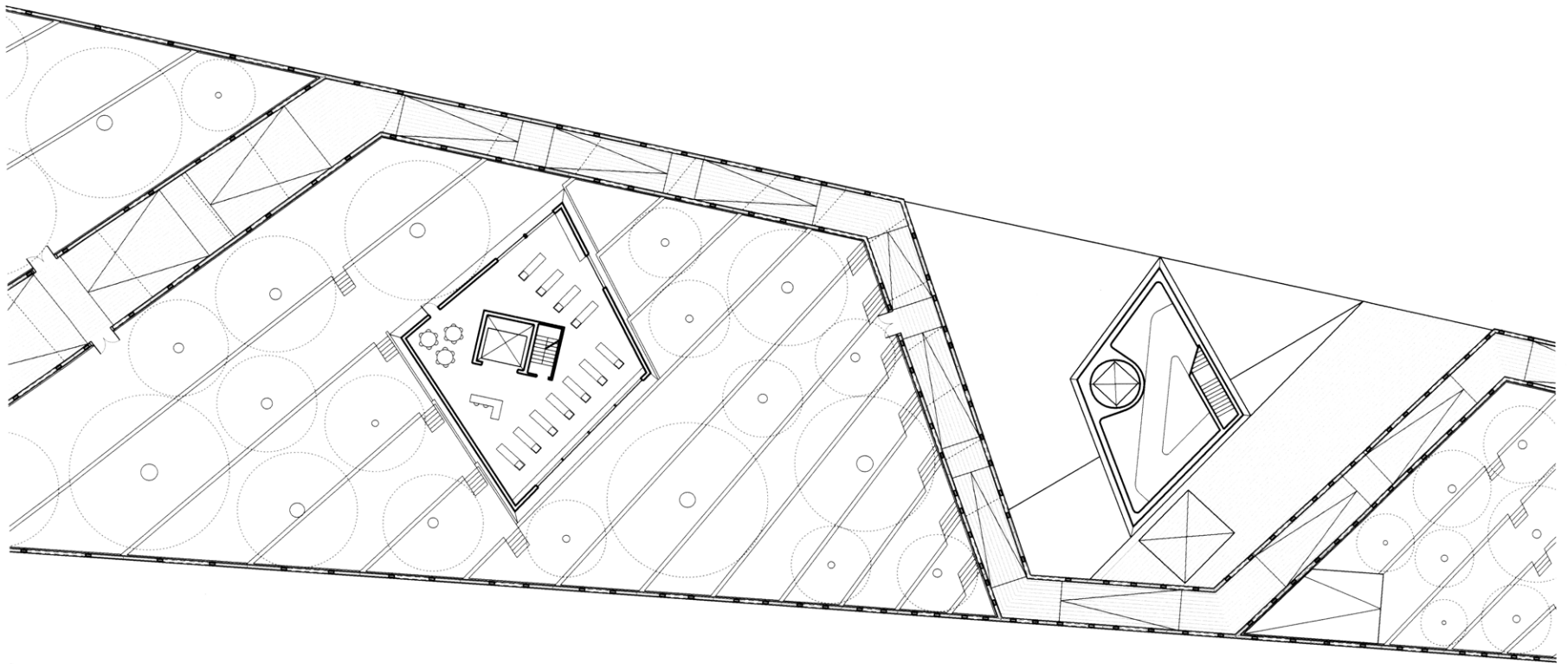
- 8 Aquarium
- 9 Mid-river publicly accessible beach/riverfront
- 10 Interior terraced biome/greenhouse
- 11 Laboratory
- 12 Interior terraced biome/greenhouse
- 13 Laboratory
- 14 Greenhouse storage

- 15 Interior biome/greenhouse
- 16 Landscaped entry
- 17 Existing Waterworks buildings

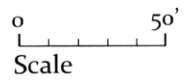


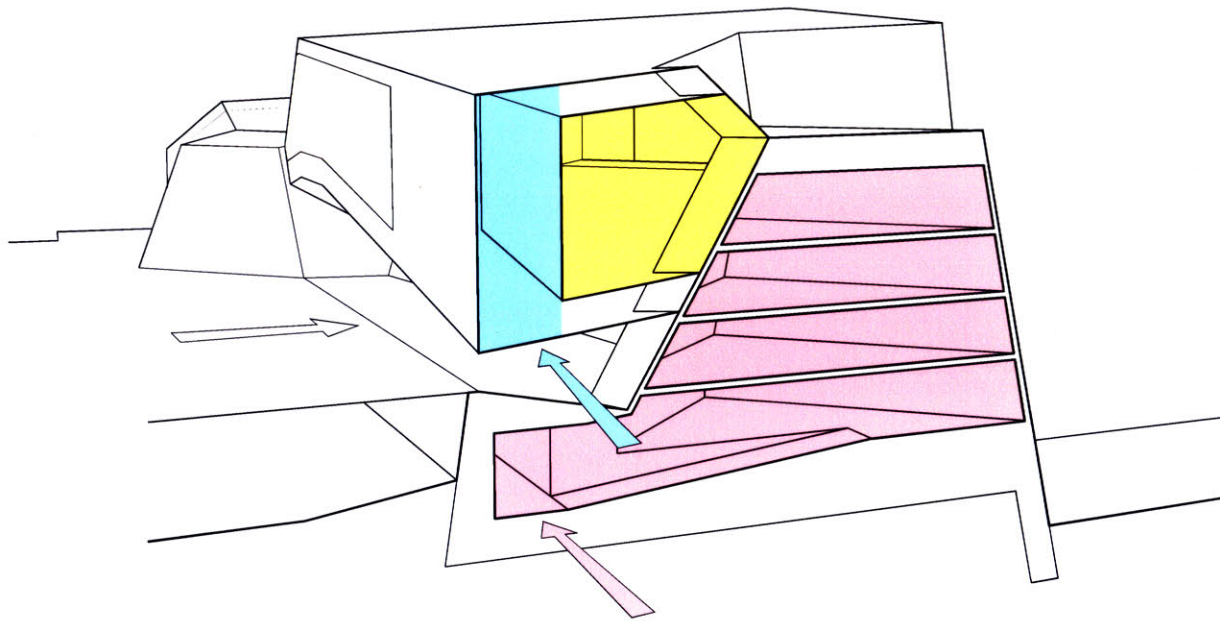
Upper Level Plan  
 showing labs, biomes, and public path





Detail of Upper Level Plan





*Vestibule*

- Pedestrian corridor
- Vestibule between containment biomes
- Camping units
- Mechanical Services

*Biomes*

- Secure interior environment for experiments on native vegetation
- Can be secured from public access or made fully accessible

*Labs*

- Privately accessed
- Direct access to biomes & exterior (roof) environment

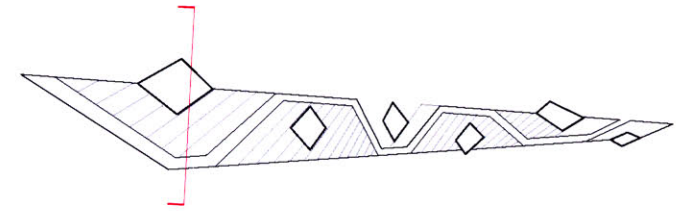
*Spillway Dam*

- Keeps still water condition upriver
- Maintains 15 ft. (avg.) level difference between upriver and downriver

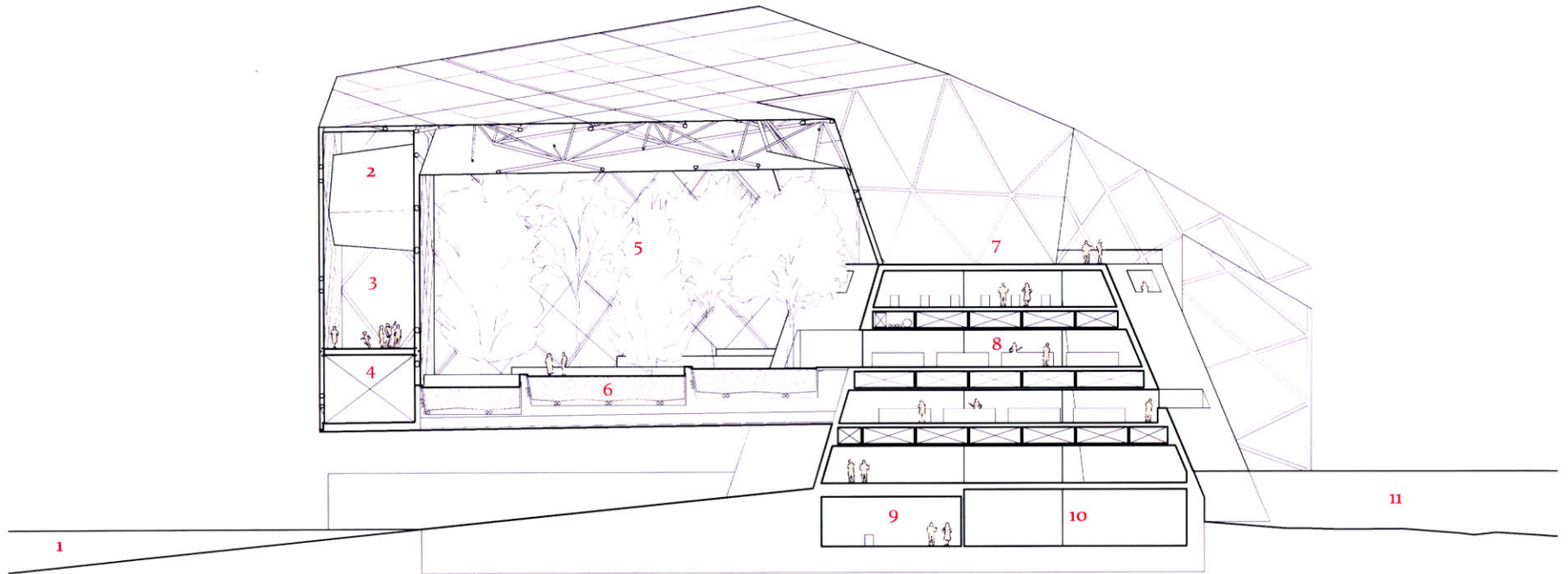
Diagrammatic Section  
 through lab/island, biome, vestibule/public path, & Schuylkill level change

- 1 Downriver Schuylkill  
-15 ft. (avg.) lower level
- 2 Camping unit beyond
- 3 Vestibule/public corridor
- 4 Mechanical space
- 5 Greenhouse/biome
- 6 Terraced planting beds

- 7 Roof garden  
accessible from laboratory
- 8 Laboratory
- 9 Storage & services
- 10 Private corridor below dam
- 11 Upriver Schuylkill  
higher level



Section Guide

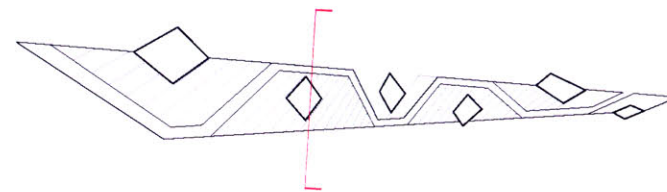


Section A

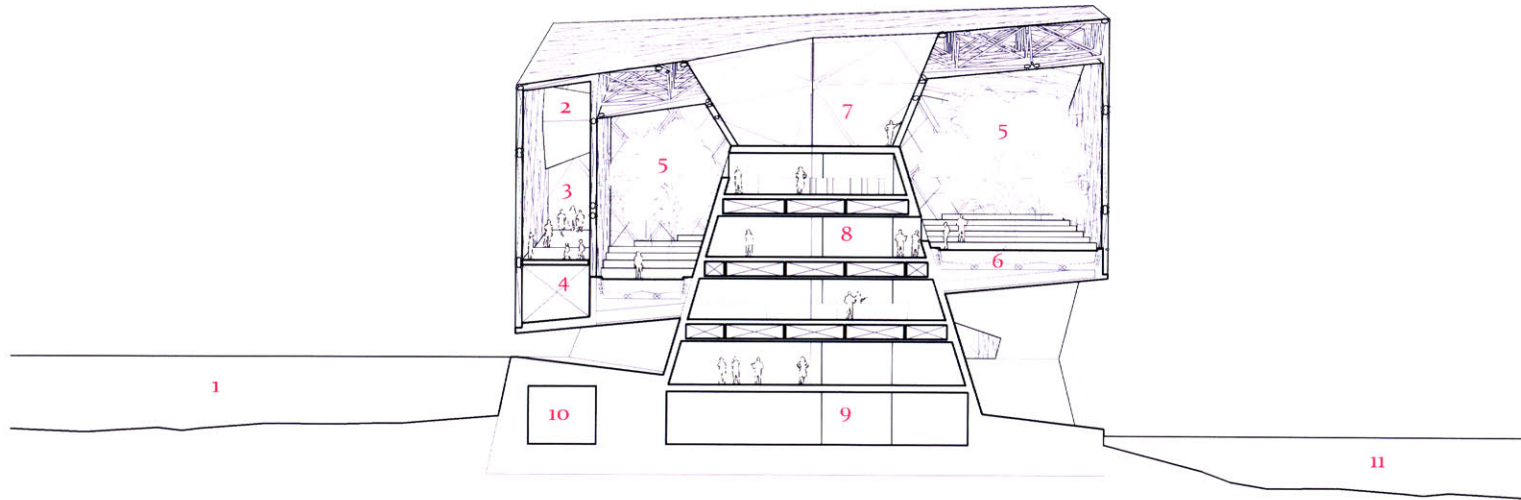


- 1 Upriver Schuylkill higher level
- 2 Camping unit beyond
- 3 Vestibule/public corridor
- 4 Mechanical space
- 5 Greenhouse/biome
- 6 Terraced planting beds

- 7 Roof garden accessible from laboratory
- 8 Laboratory
- 9 Storage & services
- 10 Private corridor below dam
- 11 Downriver Schuylkill -15 ft. (avg.) lower level



Section Guide

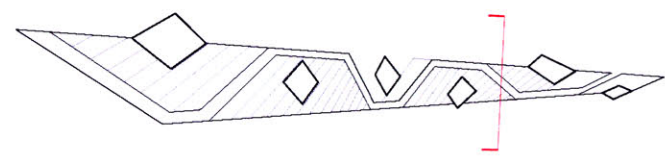


Section B

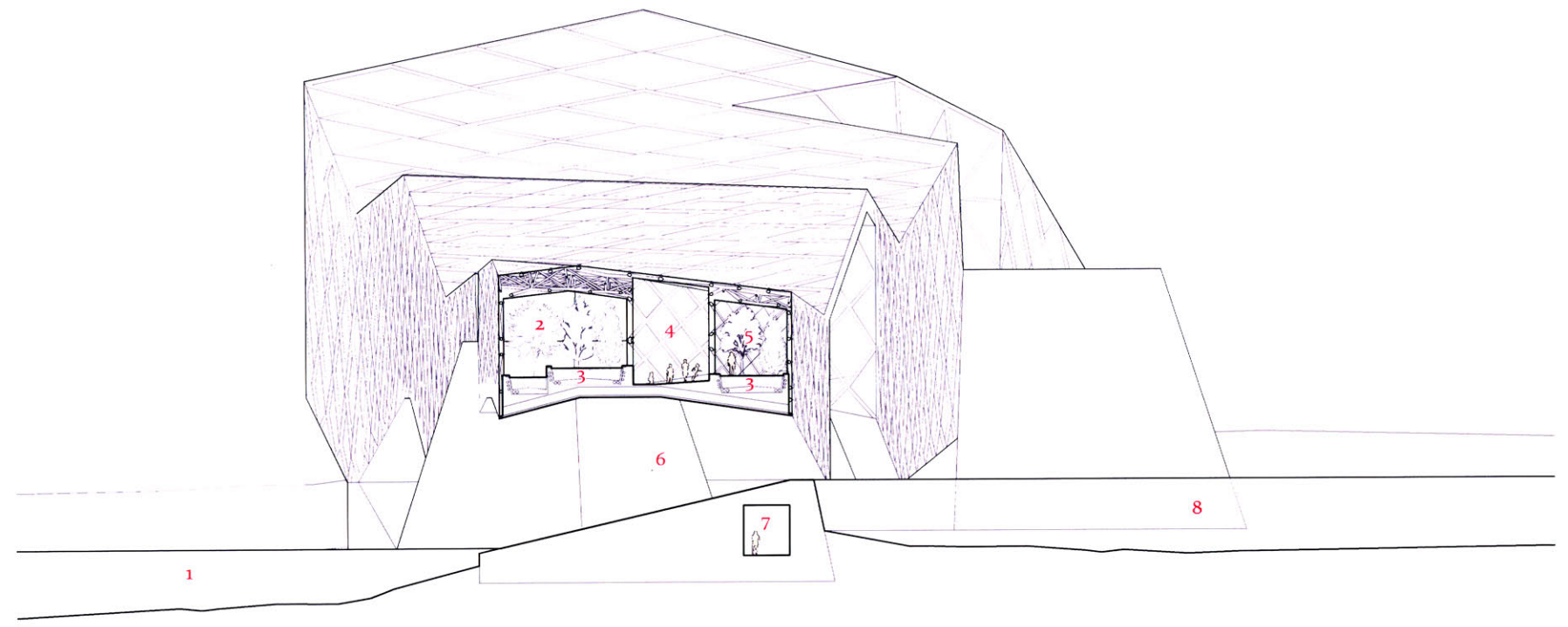


- 1 Downriver Schuylkill  
-15 ft. (avg.) lower level
- 2 Greenhouse/biome
- 3 Terraced planting beds
- 4 Vestibule/public corridor
- 5 Greenhouse/biome
- 6 Spillway

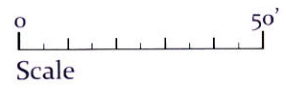
- 7 Private corridor below dam
- 8 Upriver Schuylkill  
higher level

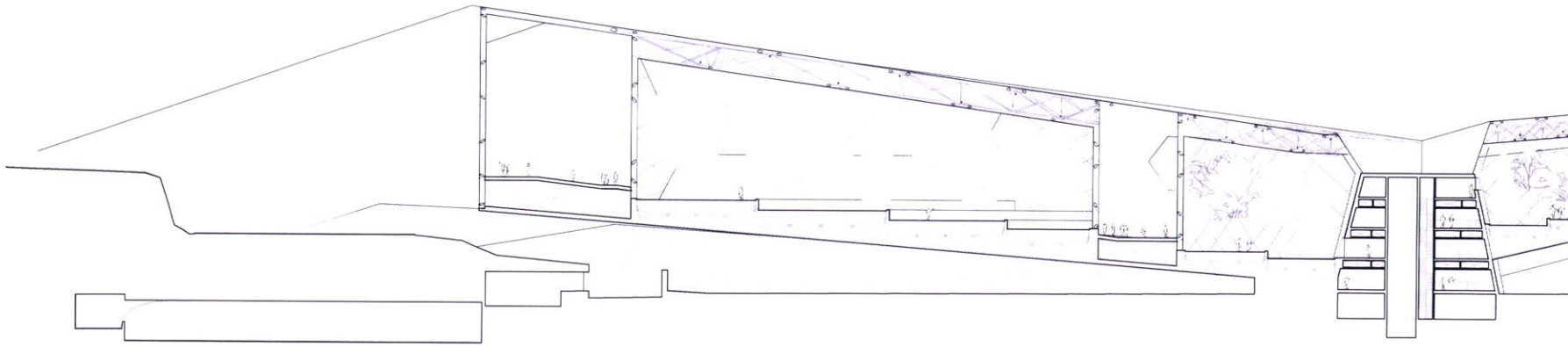


Section Guide



Section C



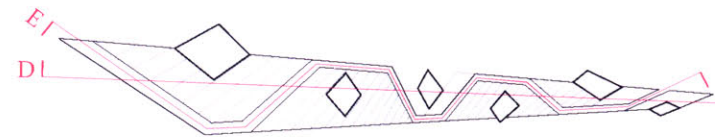


Section D

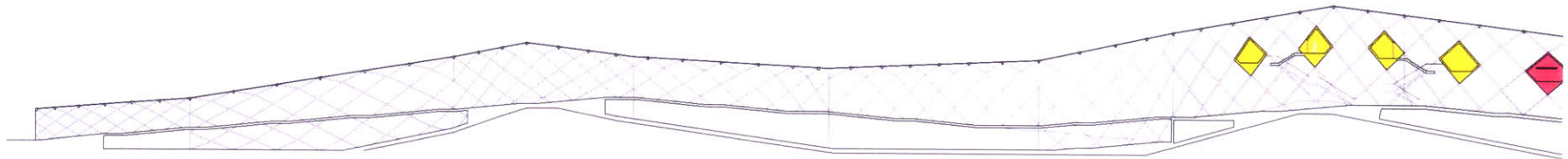
### The Camping Units

*options for overnight stay in the park*

Along the public path/vestibule are 14 overnight stay units. These units are for the general public and can accommodate various group sizes, from the individual to multiple families. Each camping unit is suspended above the public path and between two distinct environments.

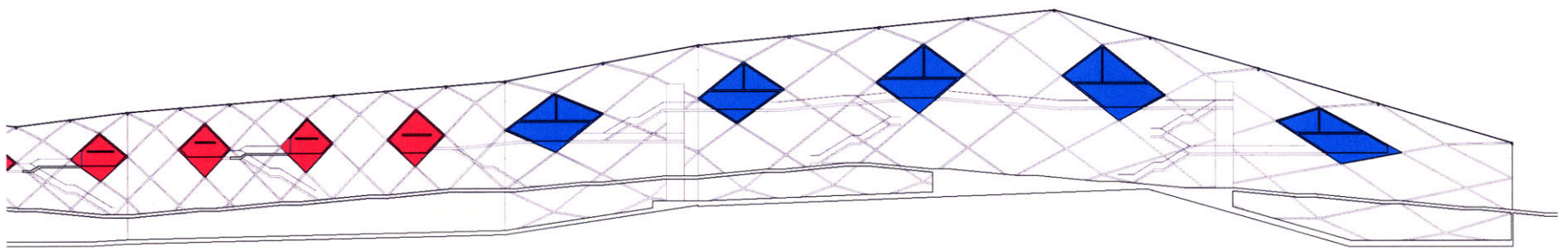
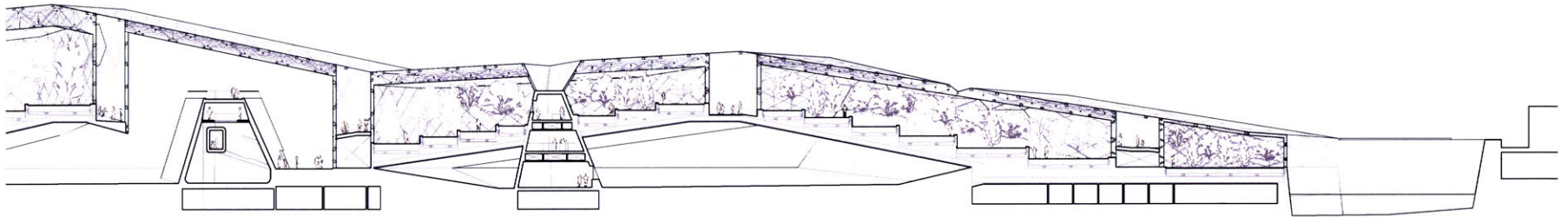


Section Guide



### Section E

*through vestibule/public path showing location of camping units*



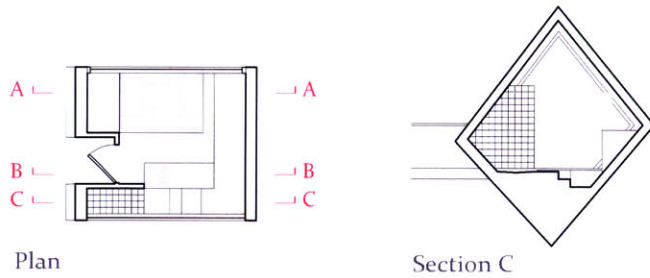
Cabins ■ Cottages ■ Lodges ■

0 100'  
Scale

## The Cabin

Efficiency unit complete with kitchenette, shower, dining nook, and retractable double bed.

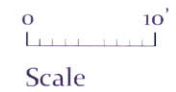
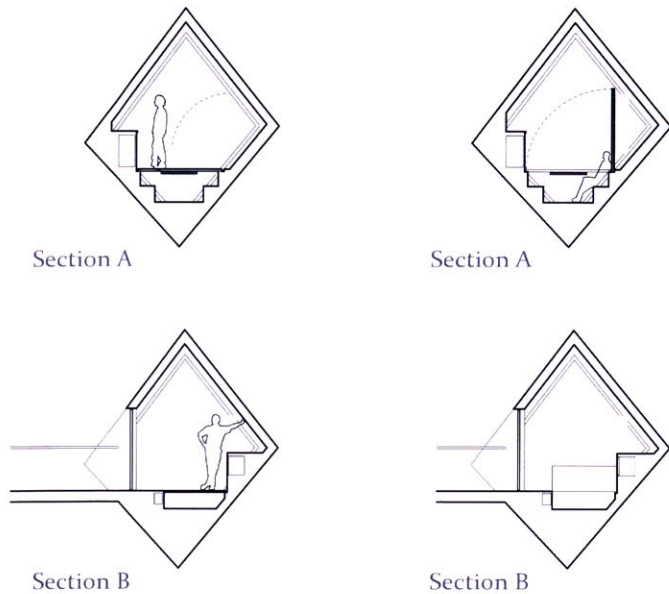
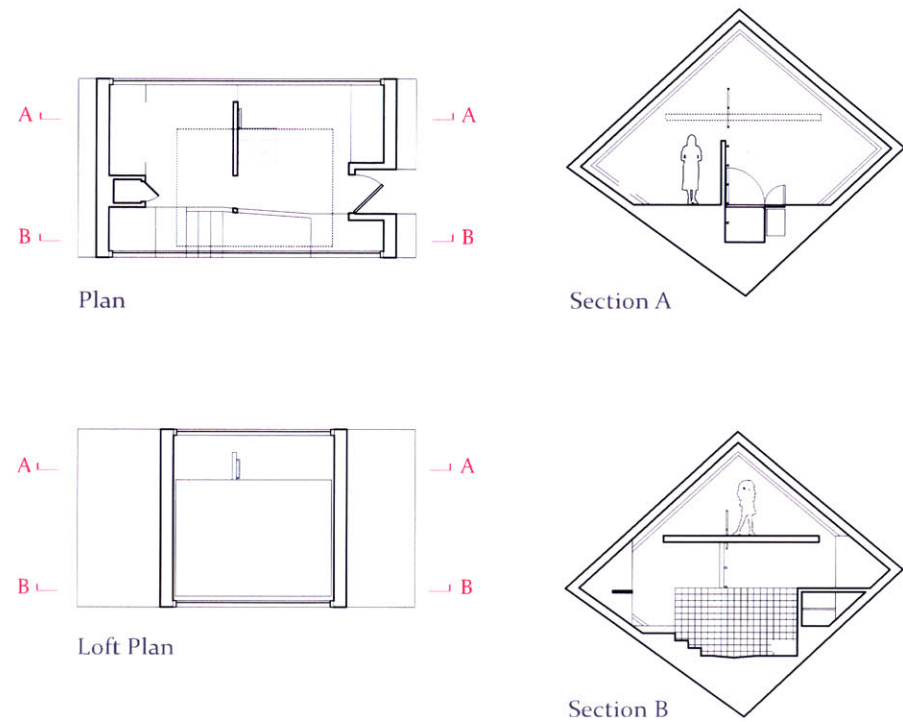
There are a total of 4 cabins within the project, each with a maximum capacity of 2 occupants.



## The Cottage

Family-sized unit complete with kitchen, shower, dining nook, bedroom, sleeping loft, and sleeper sofa.

There are a total of 5 cottages within the project, each with a maximum capacity of 5 occupants.

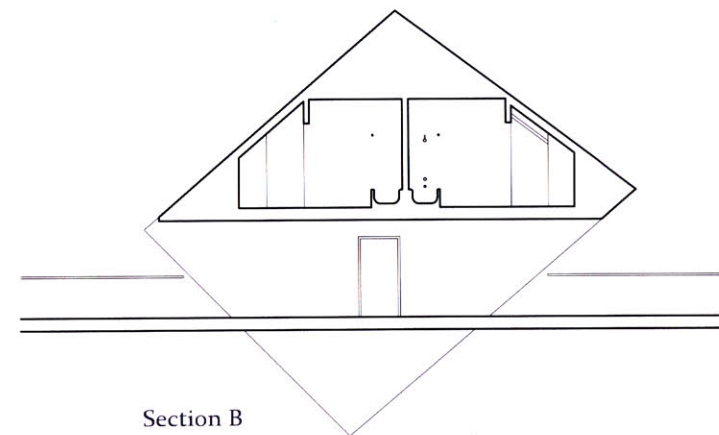
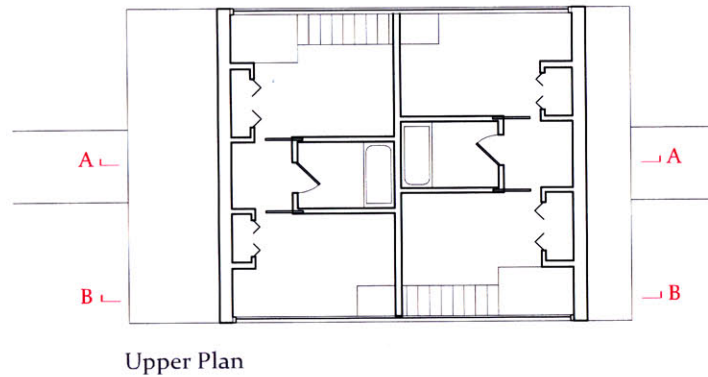
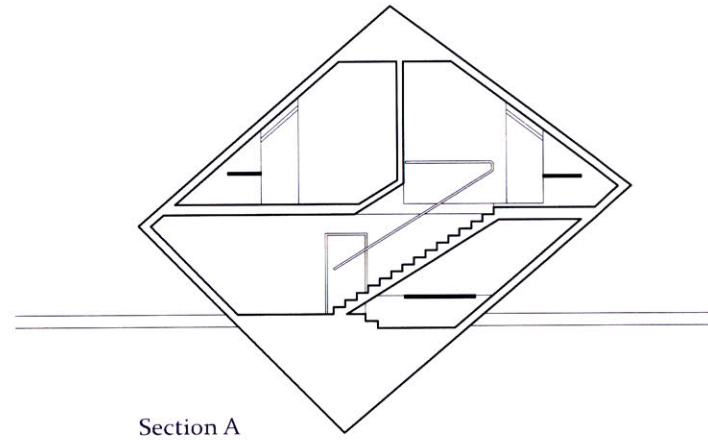
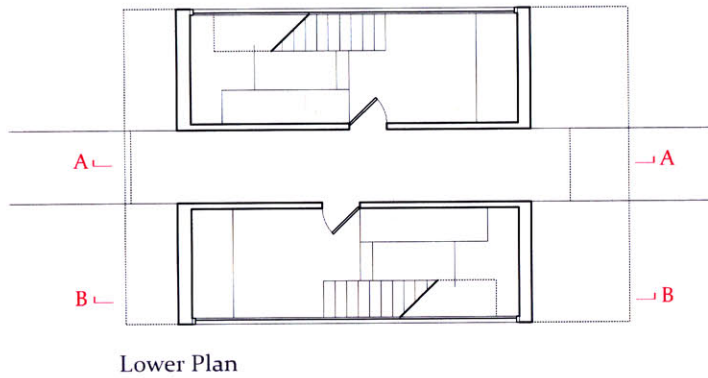


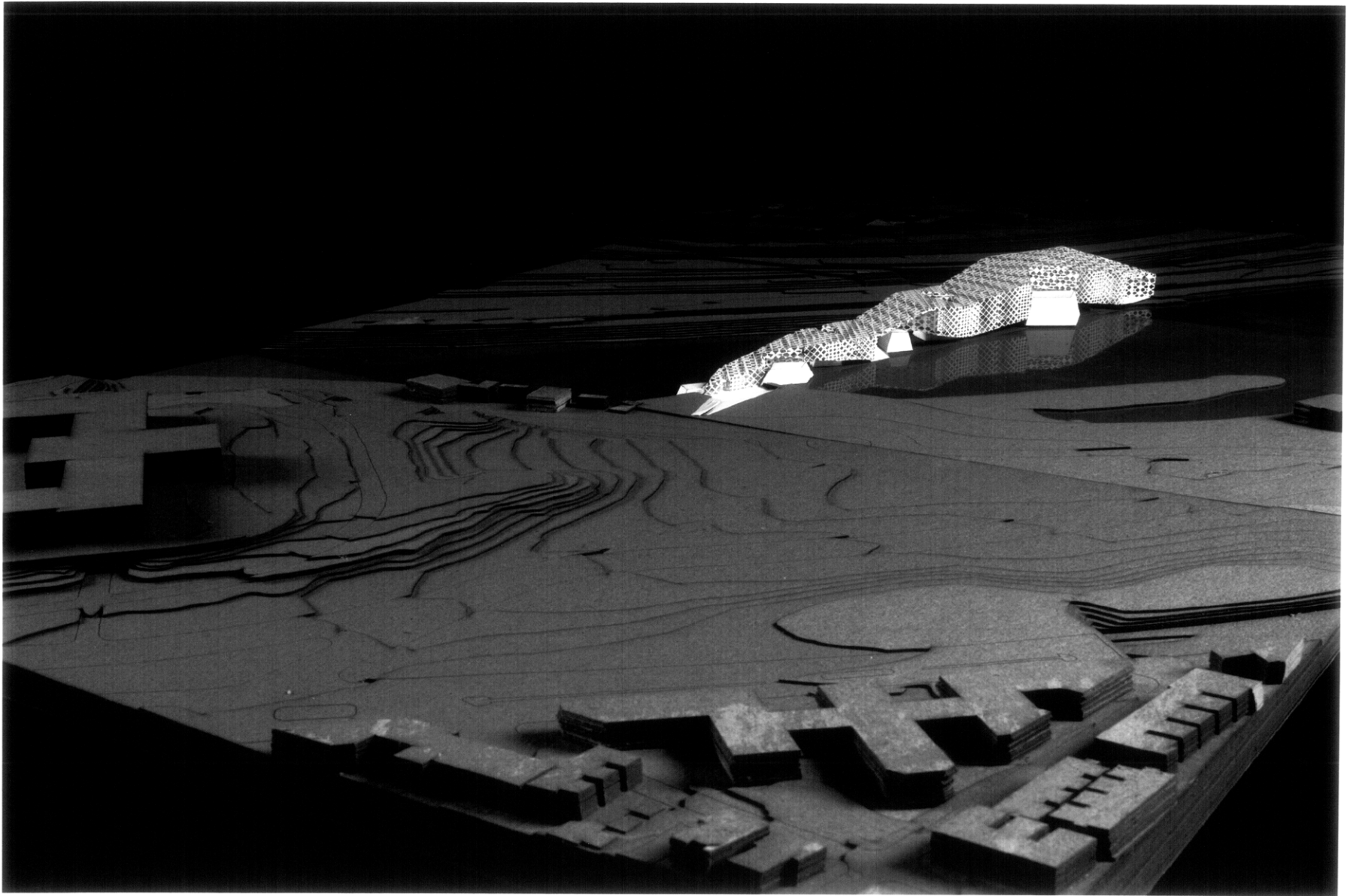


## The Lodge

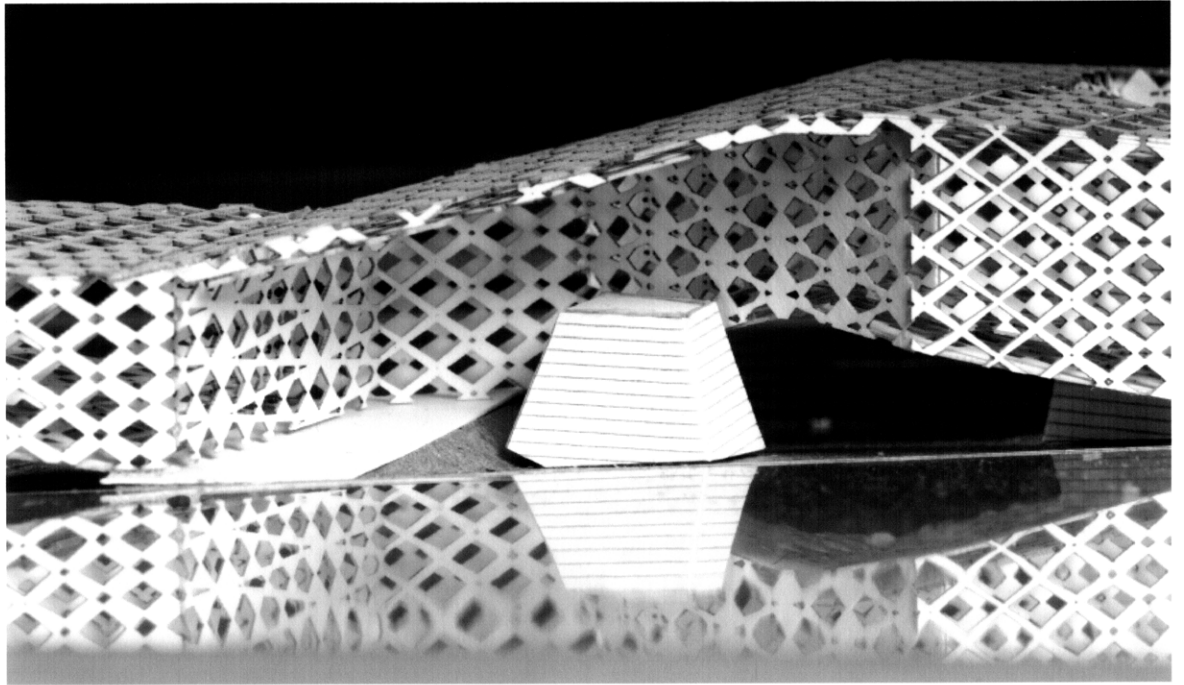
2 Family-sized units complete with kitchen, bath, dining area, 2 bedrooms, and sleeper sofa.

There are a total of 5 lodges within the project, each with a maximum capacity of 12 occupants.

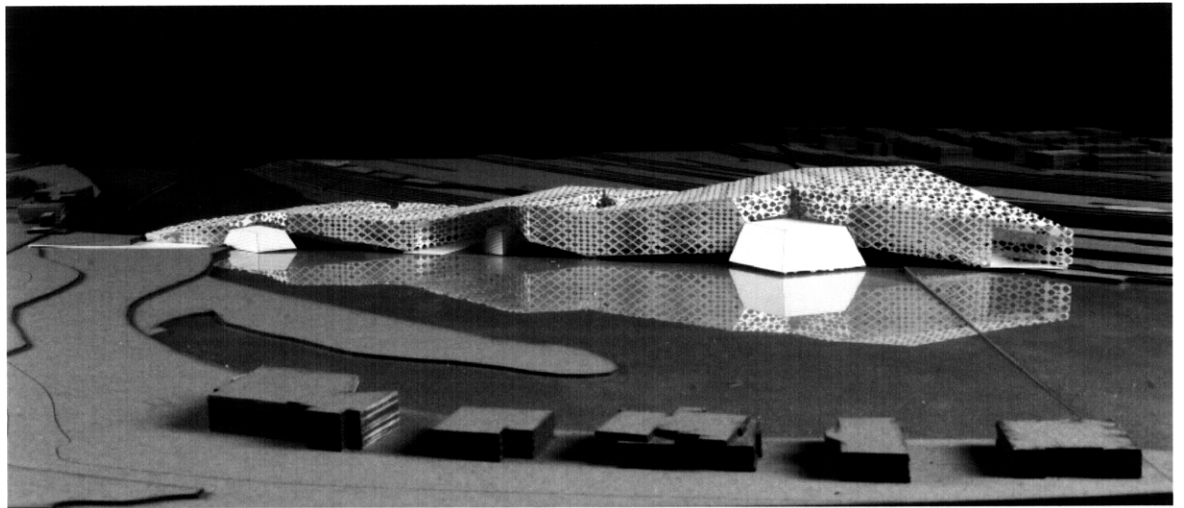




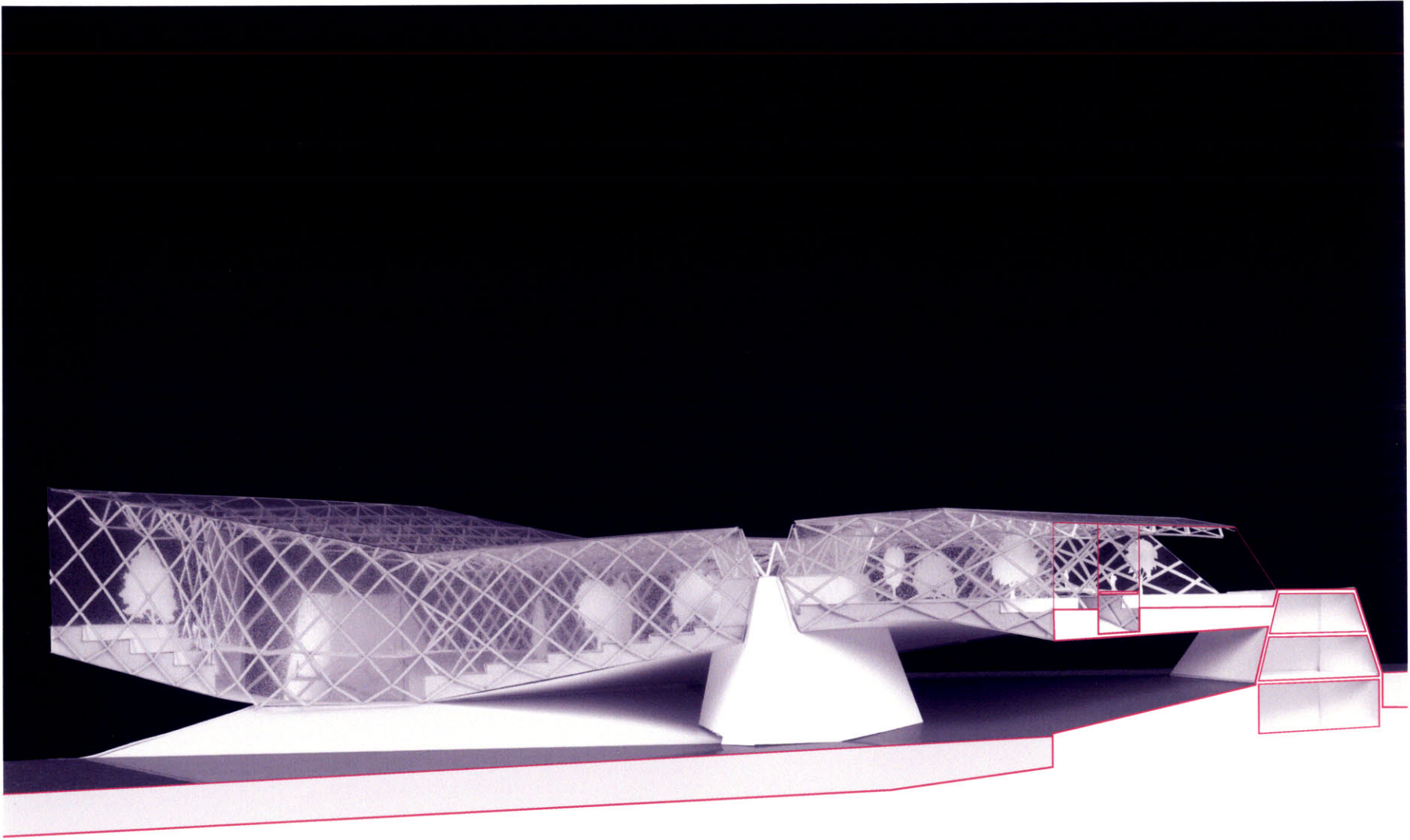
Final Site Model  
*looking south-west*



Final Site Model  
*detail of public beach*



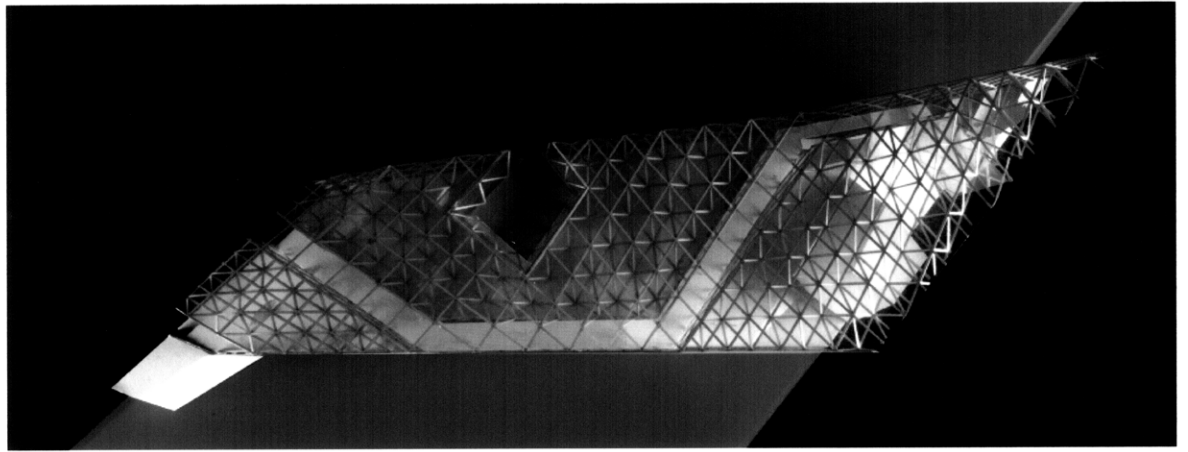
Final Site Model  
*looking south*



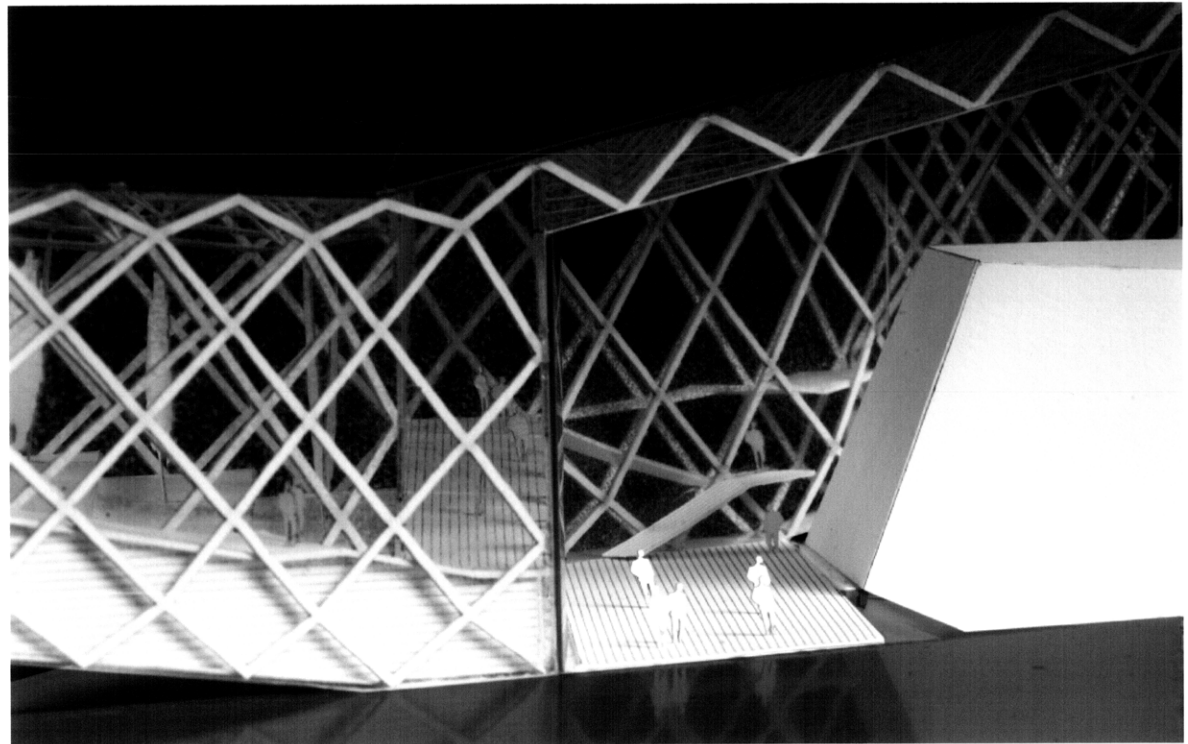
Final Section Model  
*cut through laboratory, greenhouses/biomes, & public path/vestibule*

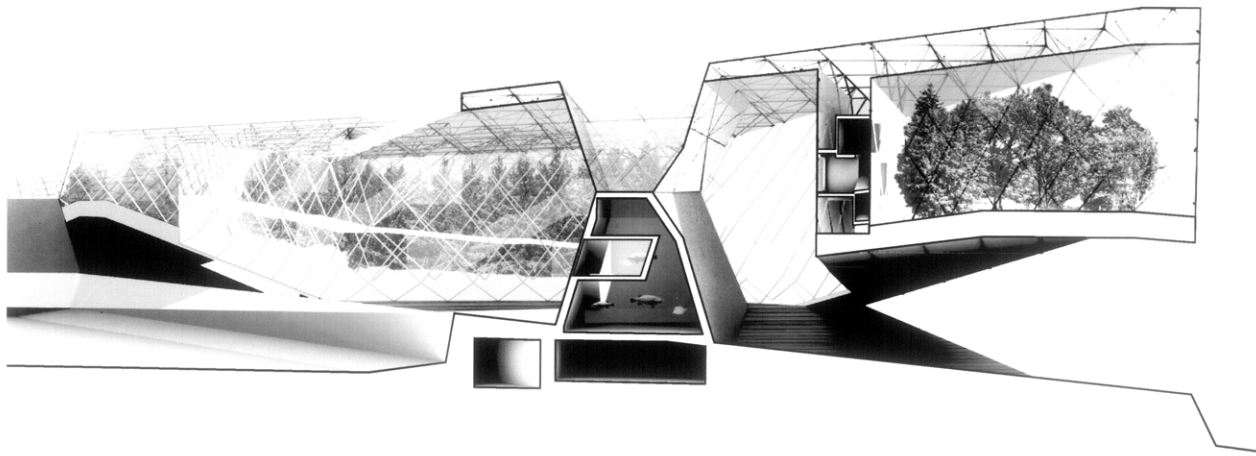


Final Section Model  
*from above*

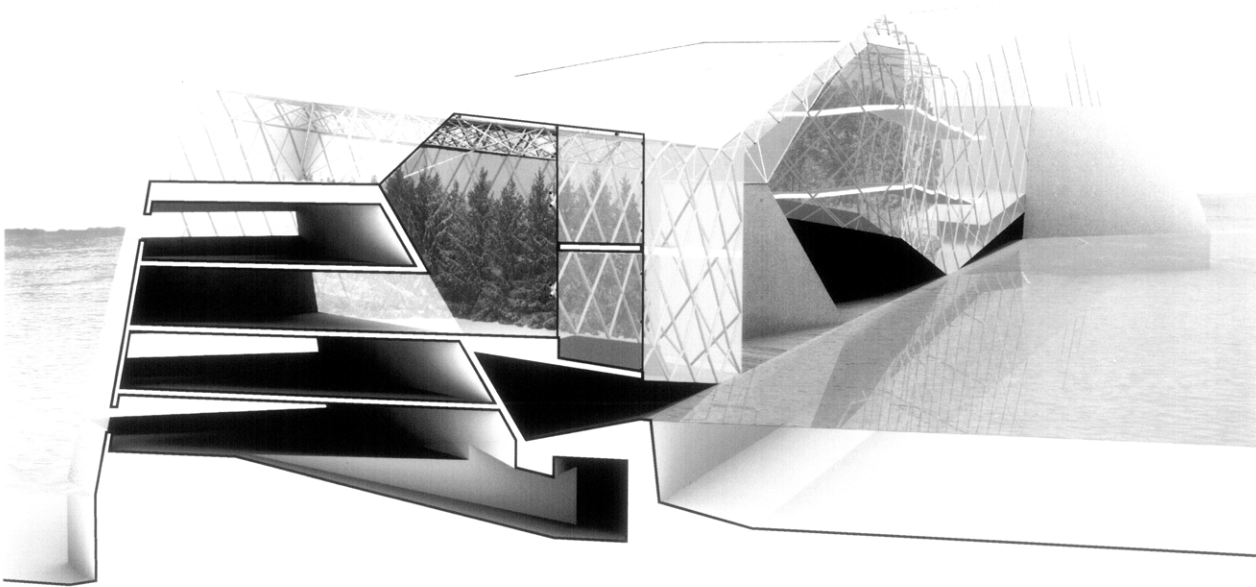


Final Section Model  
*detail of public beach*





Early Section Rendering  
*through aquarium, biome, & vestibule*

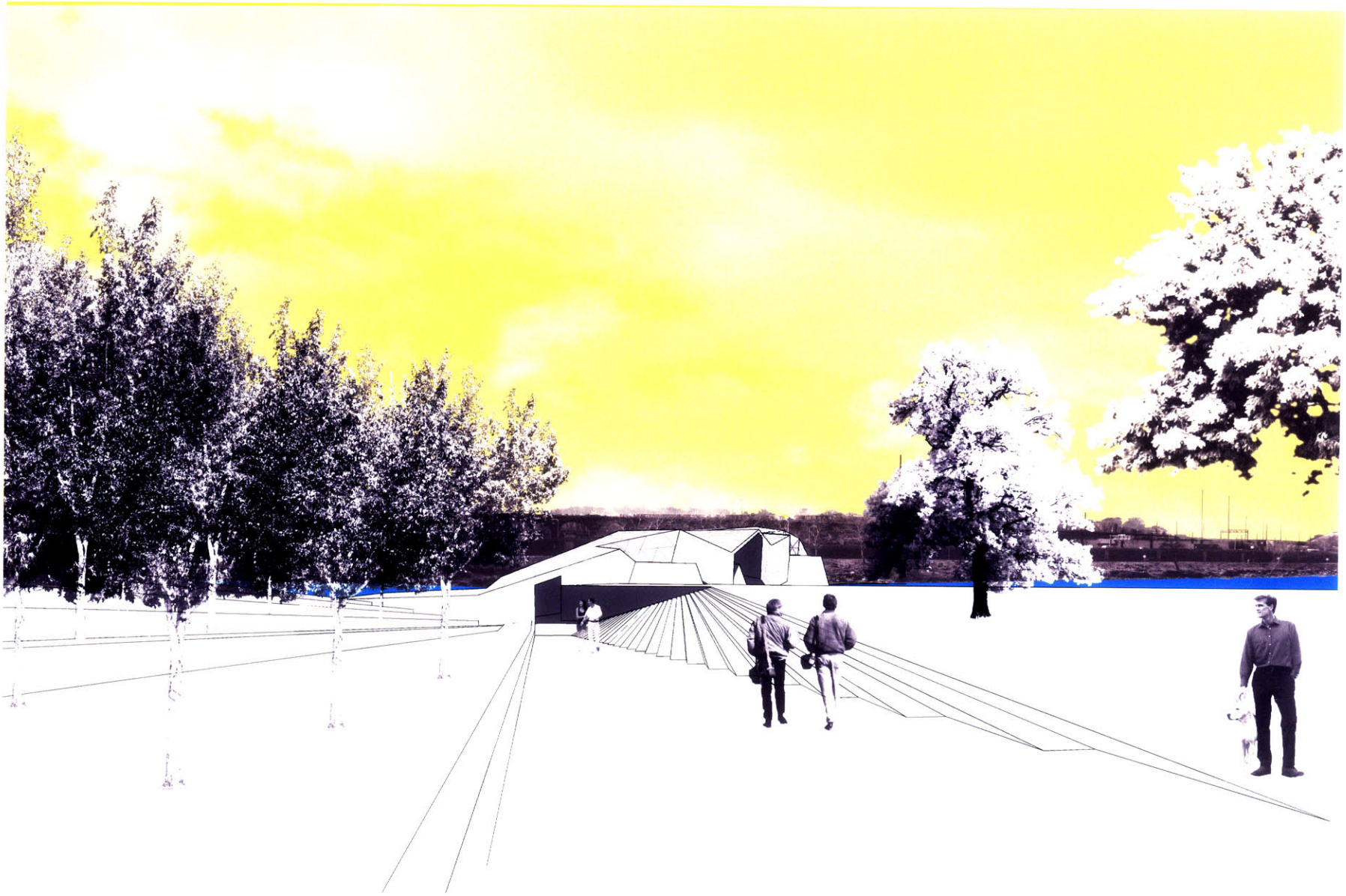


Early Section Rendering  
*through lab, biome, & vestibule*



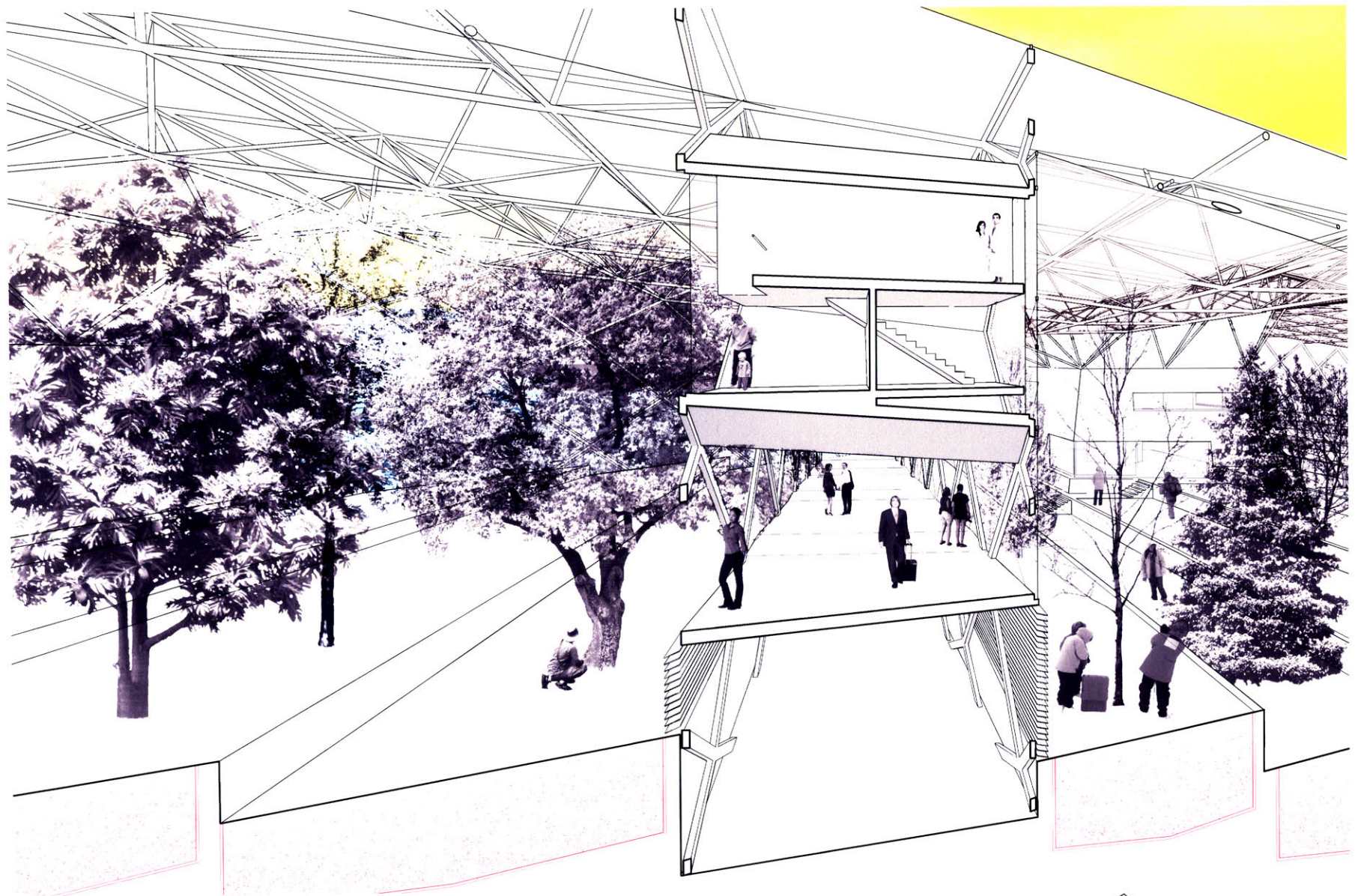
Aerial vignette  
*looking south towards Center City Philadelphia*



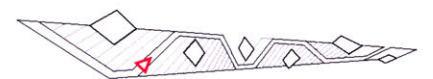


Entry vignette  
*looking down ramp towards the eastern entry*

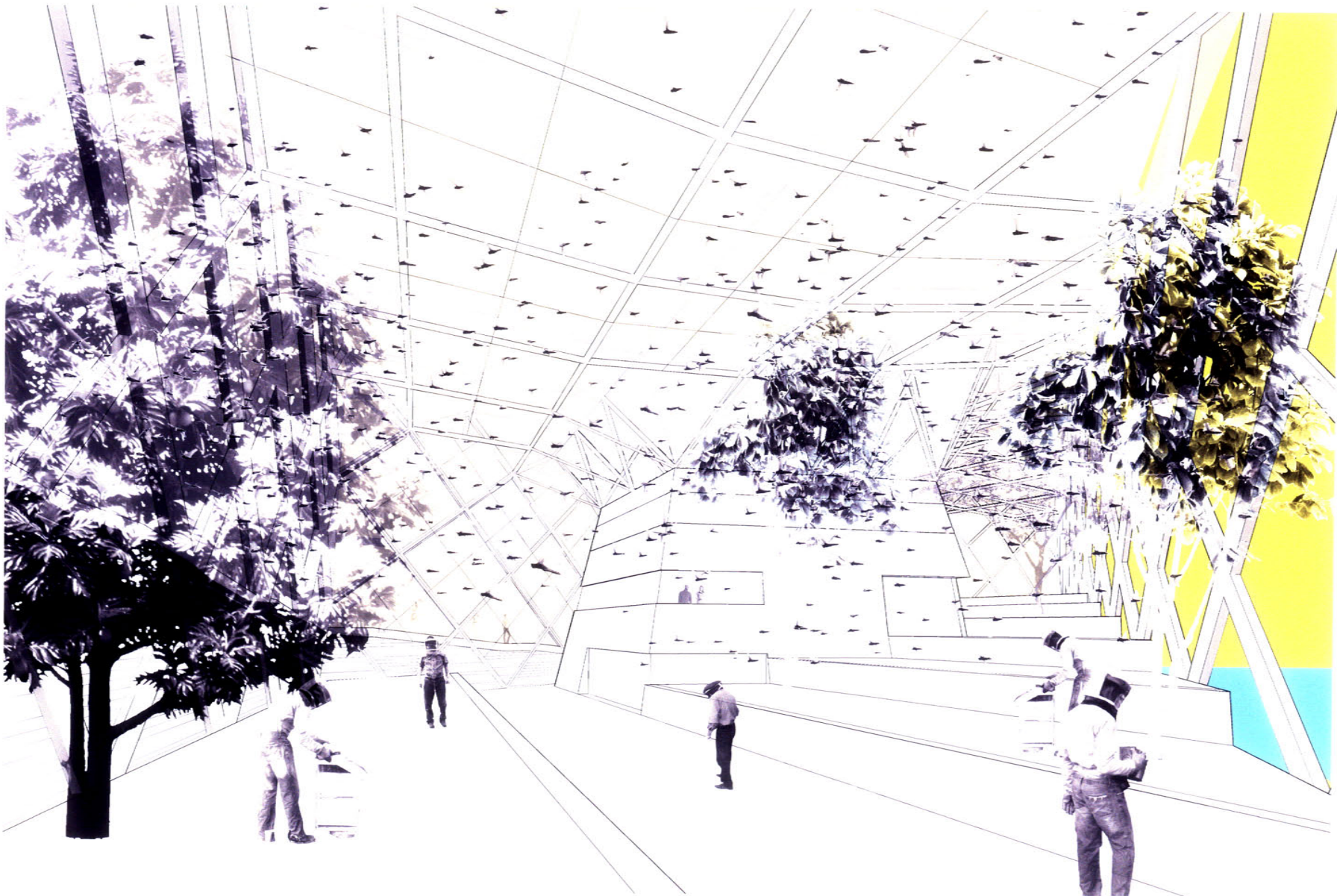




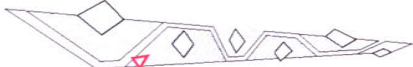
Interior vignette  
 section through biomes, public path, mechanical room, & a cottage - 2 different interior weathers



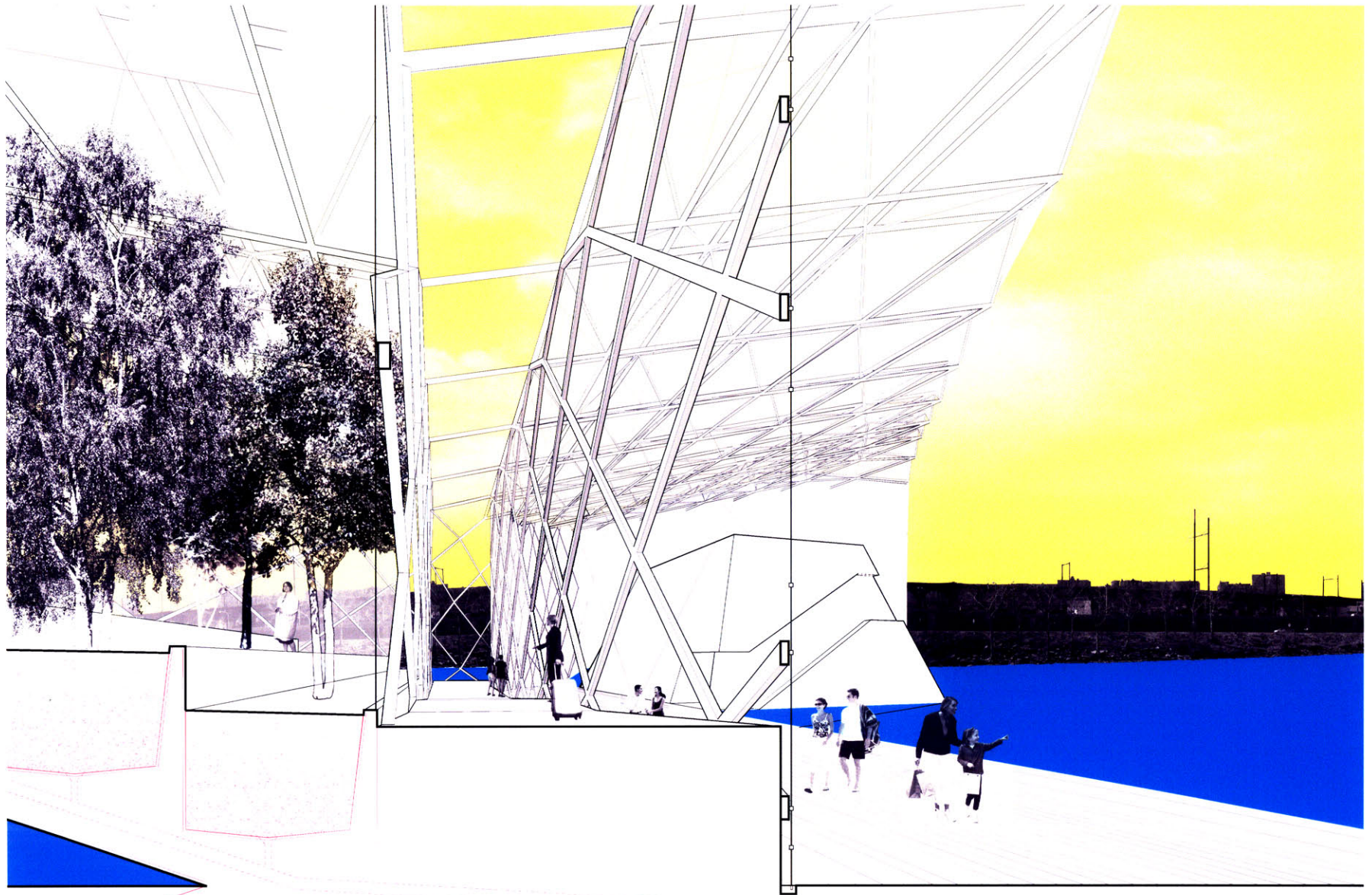




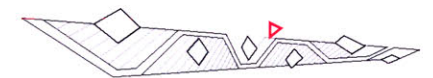
Interior vignette  
*view inside biome during an insect infestation*







Interior vignette  
section through biomes, public path, & mid river public beach - aquarium behind







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