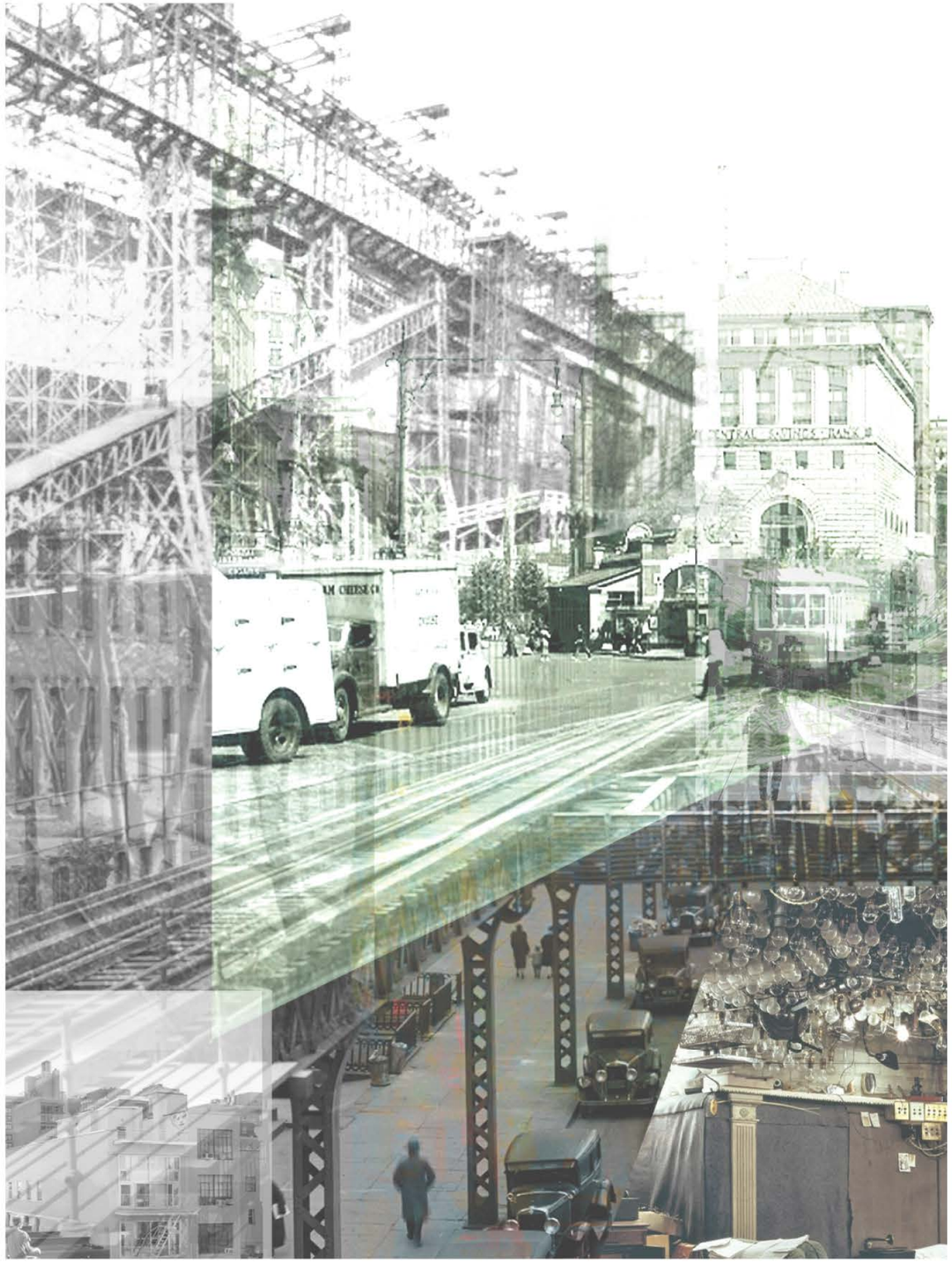
JACKSON P. KEY

Graduation Portfolio
Masters in Architecture
Columbia University GSAPP
2022-2025

Core II: Historical Layers Model



Core I: Collage (Valleys and Ships)

I.

Waiting for Geology: Staging Hydrogeothermal Spectacle on Geyser Hill

Advanced VI | Hotspots: Architectures of Cultural Geology
Spring 2025 | Professor Mark Wasiuta

II.

Venice Center for Nautical Archeology | Centro Di Archeologia Nautica Di Venezia

Advanced V | Enacting Material Entanglements: Venice's Galeazze Dell' Arsenale as a Site of Production / Site of Exchange
Fall 2024 | Professors Mark Rakatansky & Jorge Otero Pailos

III.

Migrating Frames: A Public Threshold for Montauk

Advanced IV | Managed Retreat
Spring 2024 | Professor Robert Marino

IV.

Blue Zone Lofts at 128th Street

Core 3 | Living in Between
Fall 2023 | Professor Chris Leong

V(a).

Two Roofs: Frictional Speculations at South Street Seaport

Core 2: Damage Control, Spring 2023
Spring 2023 | Professor Esteban De Backer

V(b).

Two Roofs: Part II | Design Development

Building Technology III: Materials + Assemblies | Building Technology IV: Systems Integration
Fall 2023 | Professors Gabrielle Brainard, Katherine Chan, Berardo Matalucci

V(c).

Two Roofs: Part III | Wall Connection Material Exploration

Building Technology V
Spring 2024 | Professors Lola Ben Alon, Tommy Schaperkotter

VI.

(Im) Permanence: Explorations Beyond Memory

Core I | Broadway Stories: Nature Works,
Fall 2022 | Professor Christoph a. Kumpusch

VII.

The Visit

Storytelling & Design
Spring 2025 | Professor Hilary Sample

VIII.

Eight Selected Scenic & Lighting Designs

Columbia University Theatrical Designs 2023-2025

IX.

New York State Theater / David Koch Theater at Lincoln Center

Seminar of Section
Spring 2024 | Professor Marc Tsurumaki

X.

La Fabrica

Architectural Drawing & Representation I
Fall 2022 | Professor Ray Wang

XI.

Why are there Windows on the Subway?

Questions in Architectural History I (Abridged for PEEL Journal)
Fall 2022 | Professor Reinhold Martin

I.

Waiting for Geology

Staging Hydro Geothermal Spectacle on Geyser Hill

ADVANCED IV | Spring 2025
Hotspots: Architectures of Cultural Geology

Upper Geyser Basin, Yellowstone National Park | Wyoming
Studio Professor: Mark Wasiuta

Yellowstone National Park functions as vast a machine of encounters with the national landscape - and the mysterious actions underground as revealed at the surface. The 18,000 geothermal features here are an ephemeral constructs of nature, the result of a delicate occurrence of geology, water, and heat that creates a surface phenomena. The most famous geyser in the park is the Old Faithful Geyser. Regularly recurring approximately every 90 minutes since the Park was established in 1872. The feature is understood in its reaches with a system of porous chambers holding heated water and air in precise balance to boil up and create this regular eruption of typically less than 3 minutes. In peak months with the daylight - roughly 10 of the 14 eruptions per day are recorded and seen. As few as four are in the peak of the day - capturing the attention of thousands. Given this limited time of encounter- the infrastructure of the site must accommodate and hold the anticipation and physical space of waiting for thousands of visitors each day and their distribution through the park to see other sites and features: hotels, cabins, dining, restrooms, benching, parking. Trails lead out from the site to encounter other features (400 in the upper basin alone) In winter, the whole site closes down except for one snow lodge, but the old faithful keeps on going. People at the surface are positioned far from the feature seeing the erupting height against the sky and landscape - but are removed from the geyser when not erupting or from its plumbing.

The project questions the singularity of the old faithful spectacle. The site is not wilderness, but a purposefully staged encounter with the surface phenomena of the geothermal. The key to Old Faithful is predictability - and in that predictability it is the most witnessed and studied geyser on earth - the question is - how can features with less grandeur or predictability be engaged with as spectacle? Moving uphill, Geyser hill hosts 50 geothermal features of many types, sizes, and periods. Introducing new methods of framing and staging - to use architecture to moderate between people in new proximity to the features, or via new senses: temperature, sound, and at different times. To observe the still, and capture the moment of activity and form new paths between, replacing the nineteenth century garden boardwalk loop with a network of connections - open and enclosed - in proximity to the field, under the summer sun, or in the winter snow.

The acts of waiting and viewing are central to the project, the architecture must respond to the periodicity between activities, the duration of the features eruptions, and the scale of the event, Providing for different times, and different scales of both feature and observation: collective to individual. Some enclose, some frame and address, others capture sounds and heat from the deep. Even Old Faithful, the most understood geyser in the world, still contains mysteries. Geyser Hill's features, many of which are far less studied, are in their nature unpredictable. Most are recorded through casual observation in daytime, by geologists and enthusiasts - counting measuring and timing over the last century. Will the decades long gently boiling Dragon Spring erupt explosively as it did in 1952? Will the Plume Geyser (see right) that erupts on average every 55 minutes drag out to 9 hours before spouting up from the ground?

Associate Faculty:
Ammar Rassal

Review Critics:
Farah Alkhoury (Bard College)
Jorden Carver (Yale)
Jarret Ley (Washington Post)
Leah Meisterlin (Barnard College)
Dan Miller (GSAPP)
Marina Otero (GSAPP)
Violette de la Selle (CityGroup, Yale)
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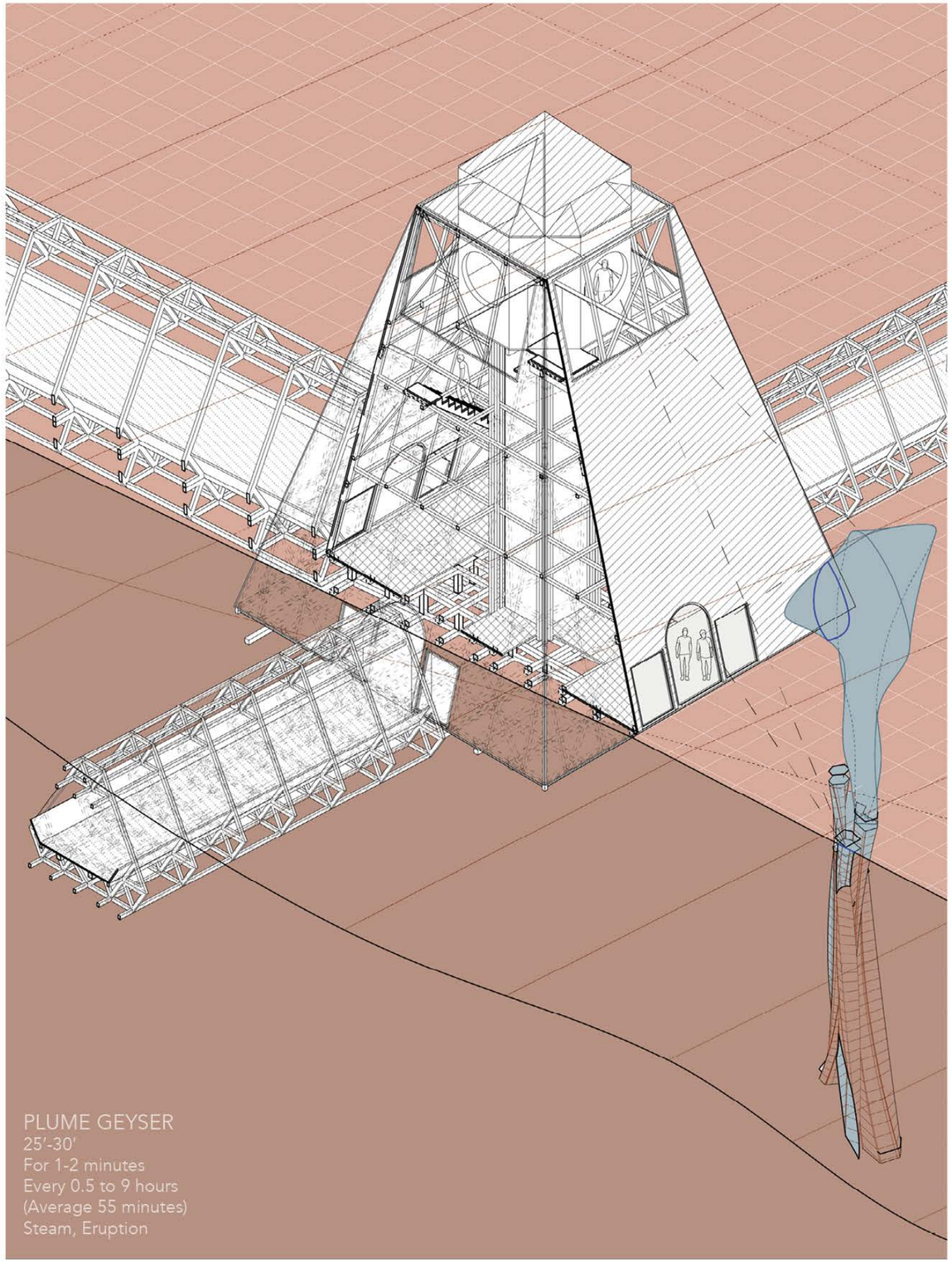
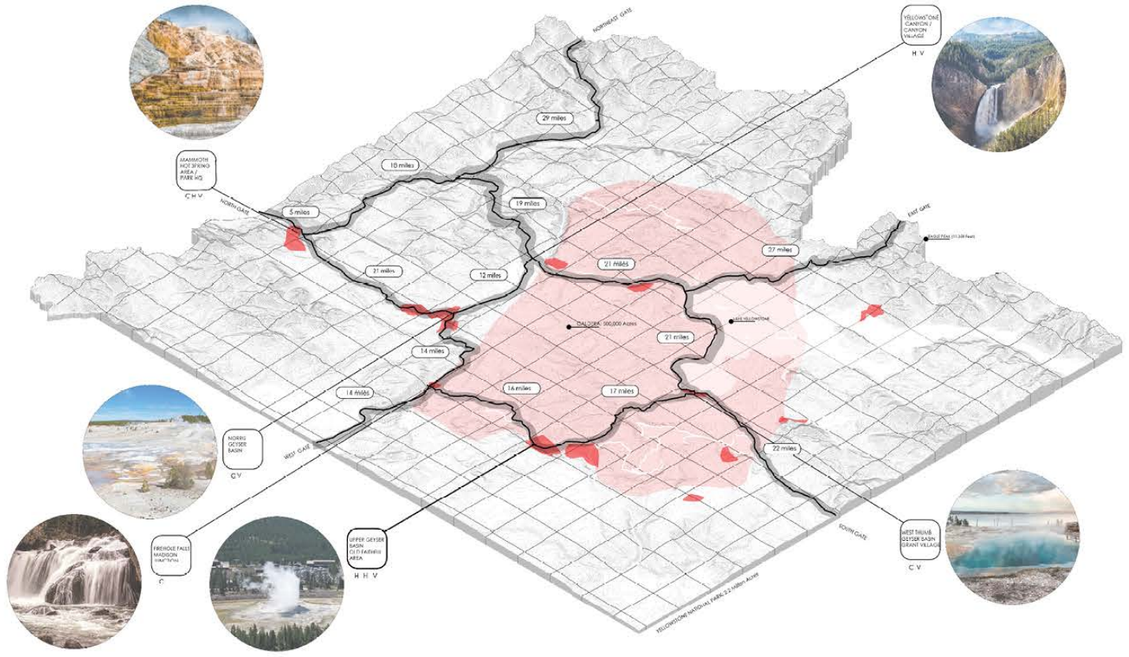
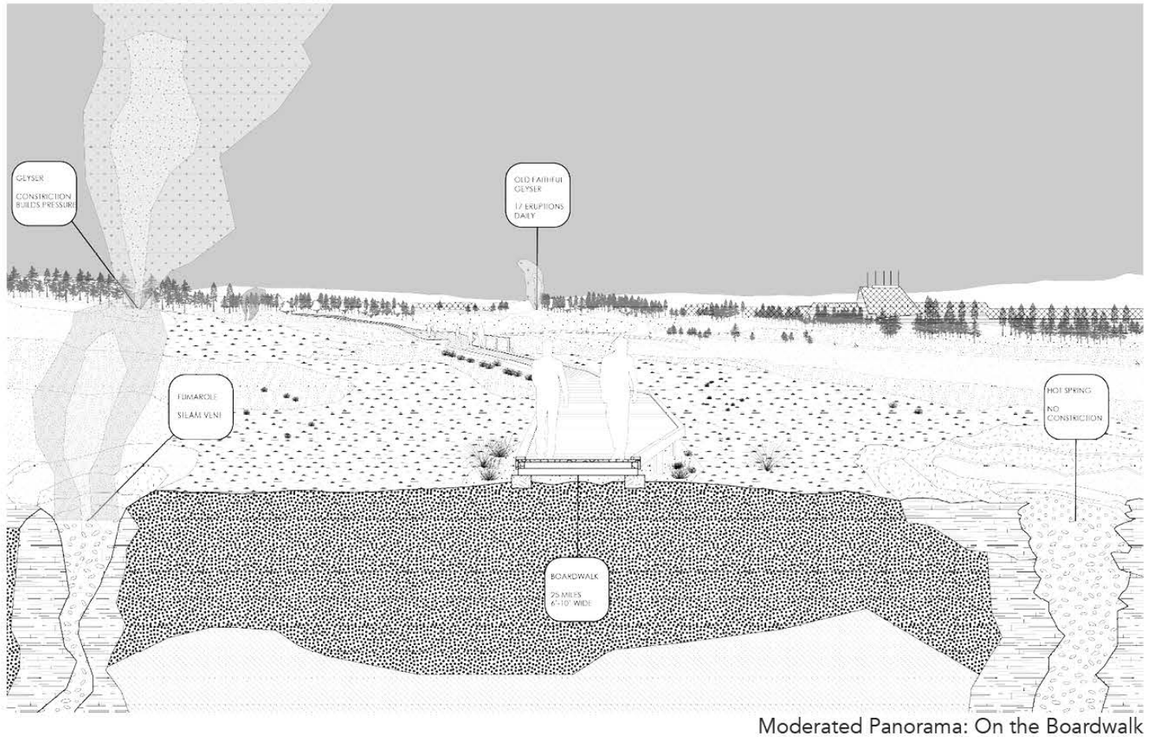
Grace Ali (NYU)
Stella Ioannidou (GSAPP)
Nayhun Hwang (GSAPP / nhdm)
Genevieve Matekyo (GSAPP_



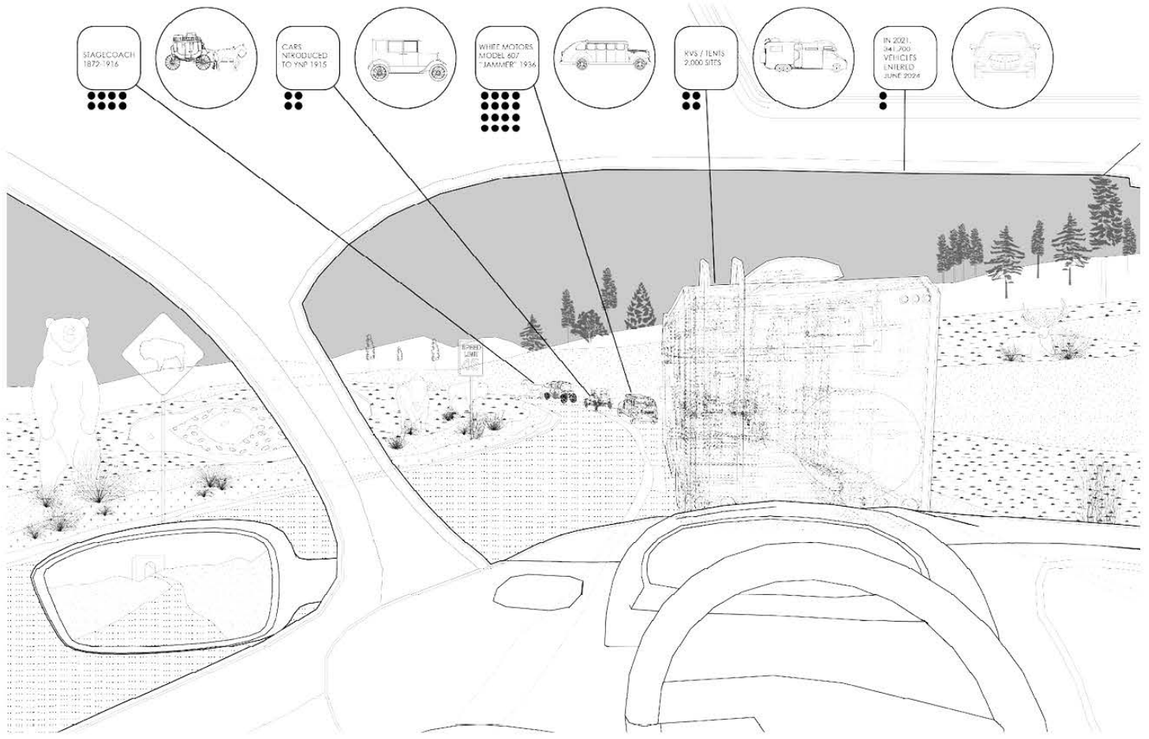


Yellowstone National Park as a Geothermal Territory

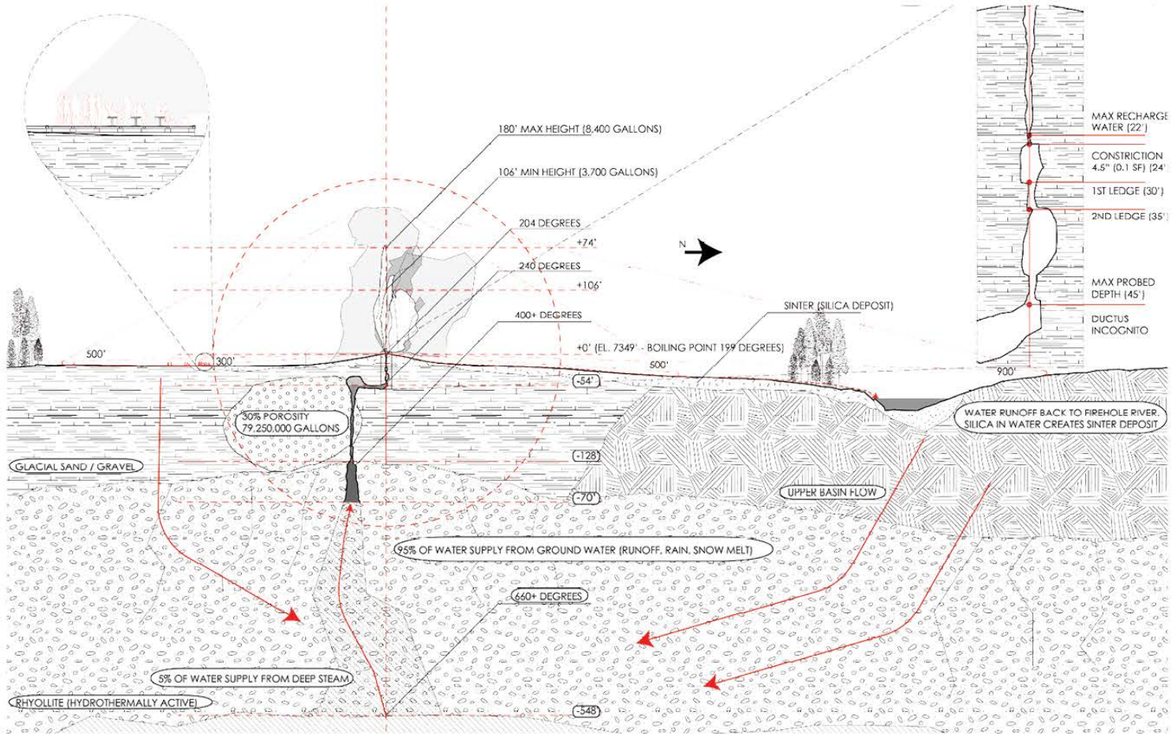
Yellowstone National Park is an immense 2 million acre territory centered on the Yellowstone Caldera and numerous hotspots of geothermal activity. Established as a park in 1872 at the end of western expansion with the Frontier declared closed in 1890. The park is discussed as a national landscape and wilderness - but Yellowstone is visited by four million people per year and since the 19th century has been carefully staged to frame encounters and manage this flow of people as a tourist attraction. The grand loop road connecting the major sites and the five gates has existed in part since the 1880s, and the first major moderator of the geography and the visual panorama is the car. On the geothermal sites themselves boardwalks (25 miles worth) asymptotically brings the visitor against the hot, fragile ground as they progress linearly through the landscape - safety is managed in the horizontal distance from features. Occasionally, an eruption with damage to the boardwalk requires rerouting. In the early years, Soldiers, Mountain men, explorers, Railroad men, photographers whose early documentation helped convince the Congress to preserve the land and others who built the Park worked directly with the features recording, measuring, photographing - often with great proximity and risk.



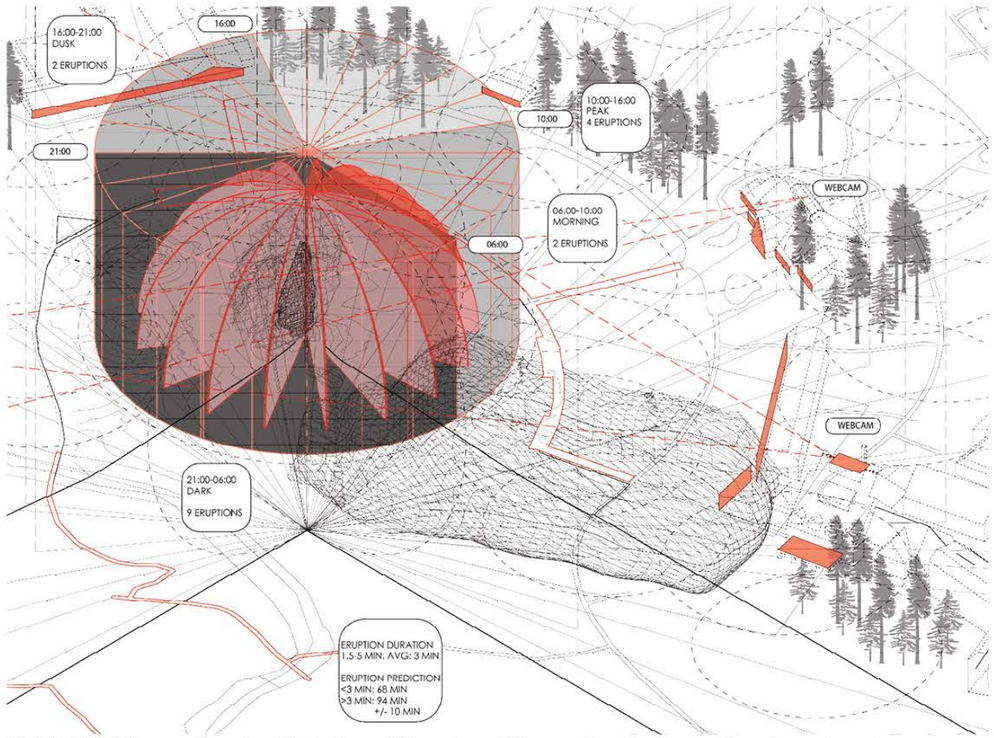
Moderated Panorama: On the Boardwalk



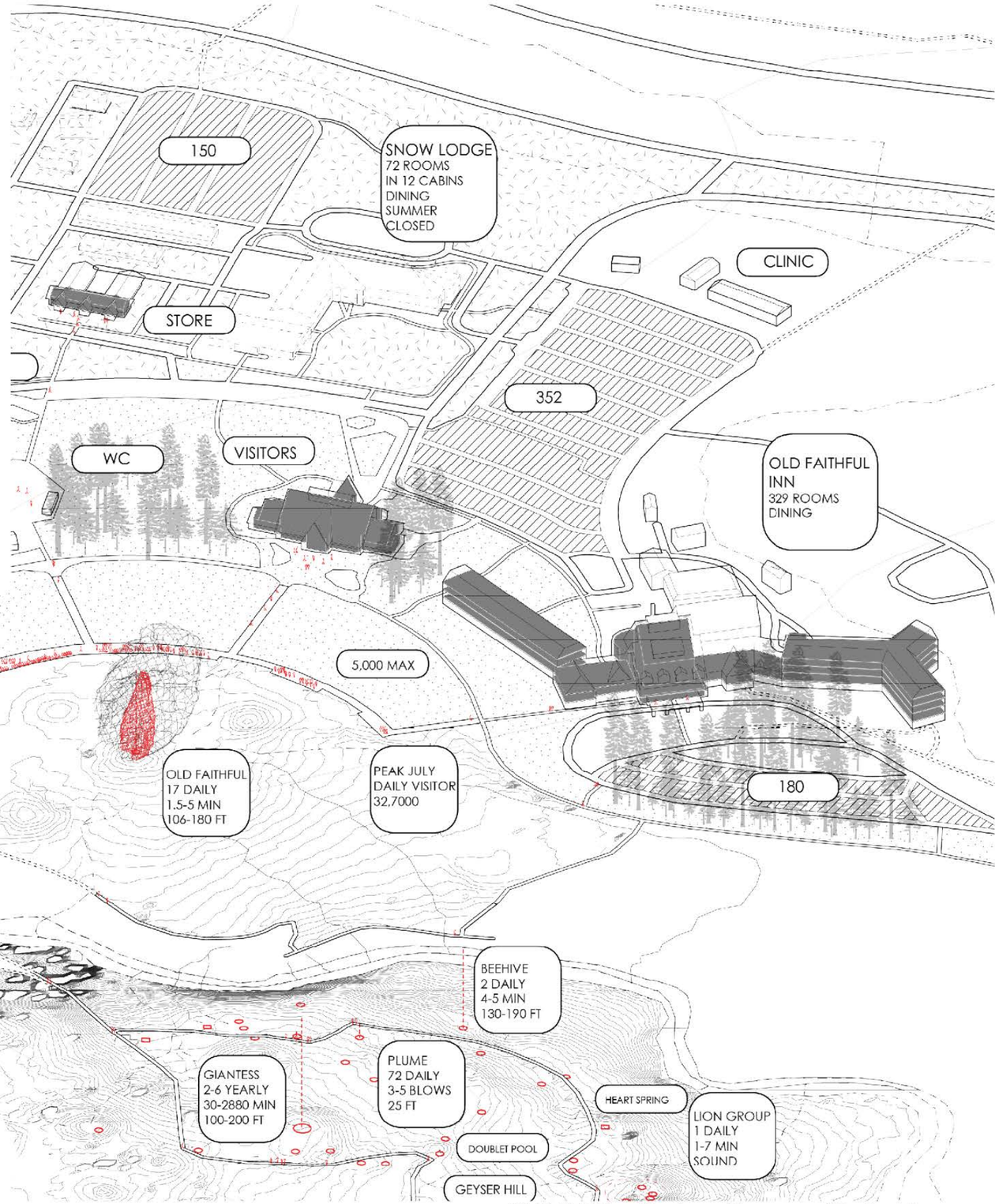
Moderated Panorama: By Car



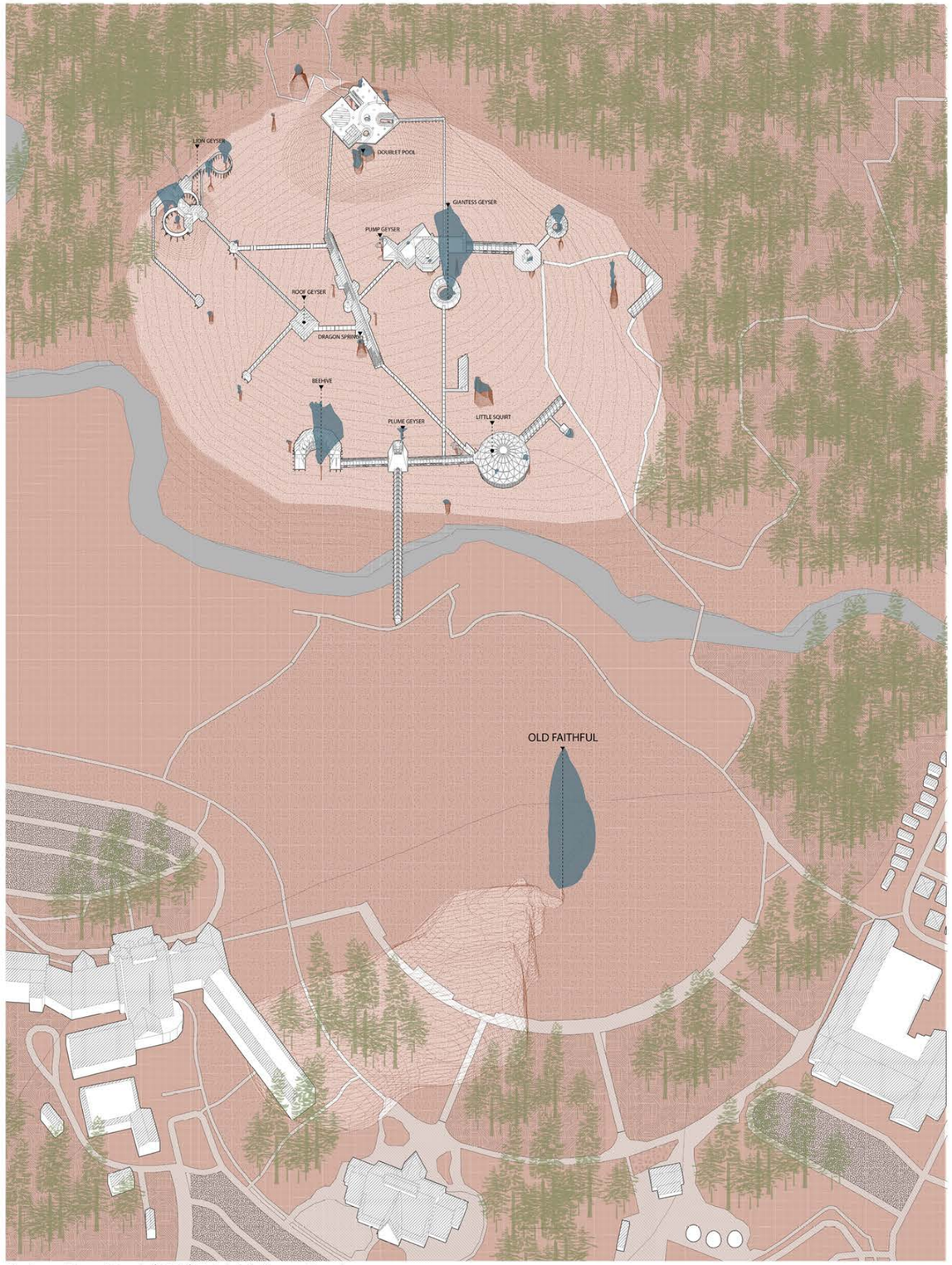
Old Faithful Geyser Temperature, Height, Pressure, Viewing



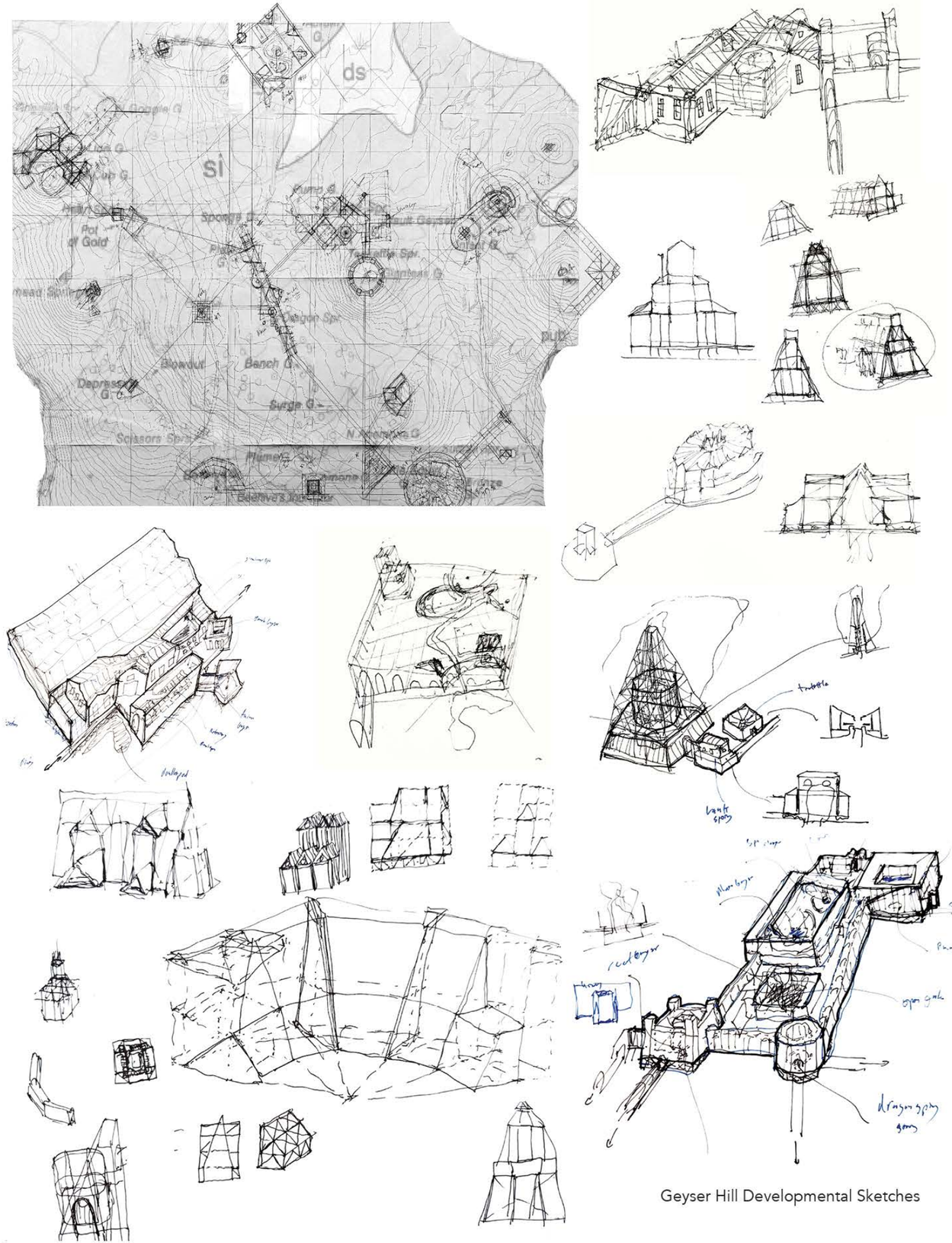
Old Faithful Geyser Eruption Periods and Durations; Observation Positions; Geophone Locations



Old Faithful Area Geothermal Features and Tourism Infrastructure

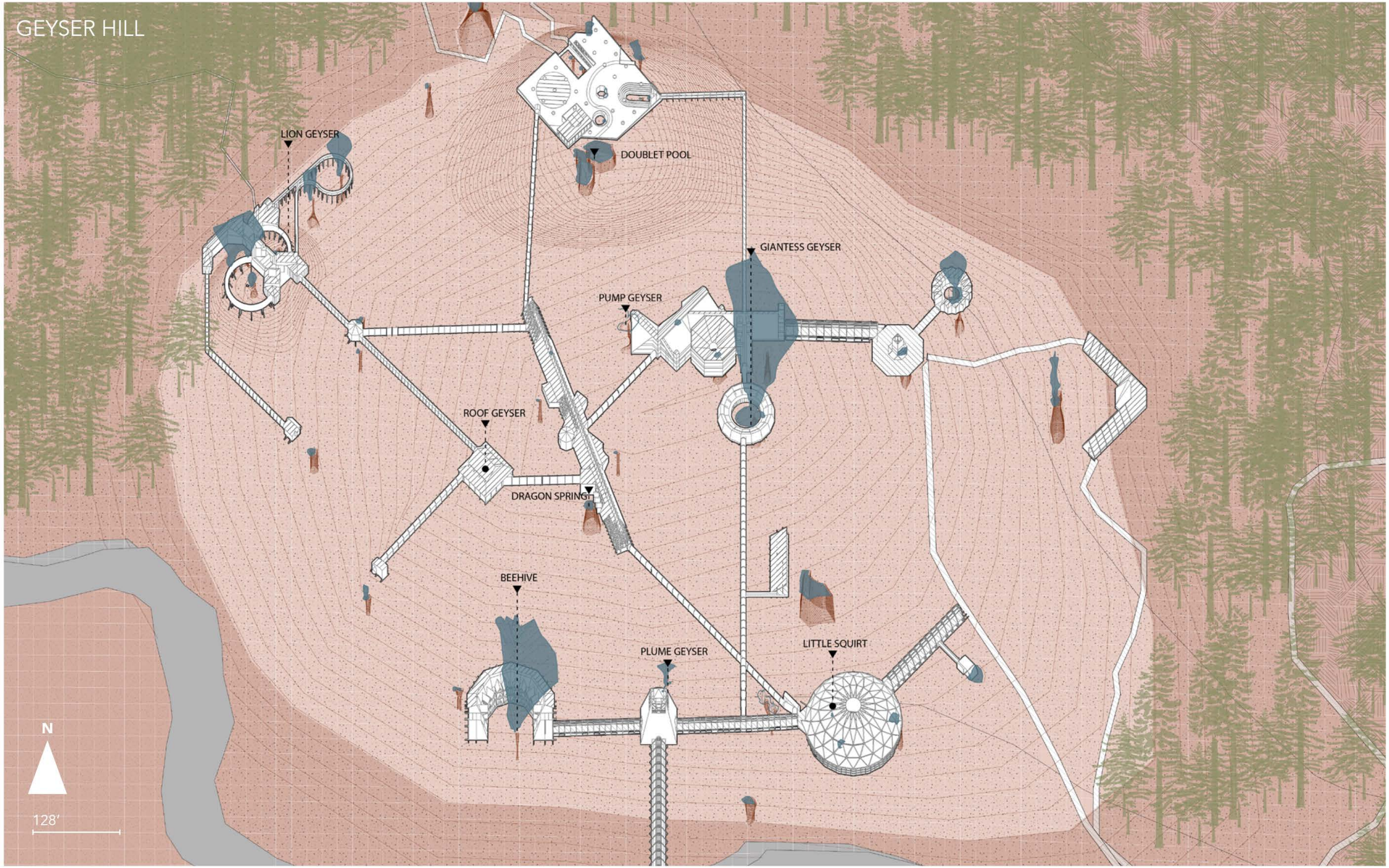


Project Site: North | Old Faithful Area: South



Geyser Hill Developmental Sketches

GEYSER HILL

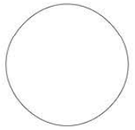

LION GEYSER
DOUBLET POOL
GIANTESS GEYSER
PUMP GEYSER
ROOF GEYSER
DRAGON SPRING
BEEHIVE
PLUME GEYSER
LITTLE SQUIRT
N
128′

DOUBLET POOL

Bringing a piece of landscape onto the field - heated from below - a new field allows for observation of the large still beauty of the pool and the site, set in counter to other playing features and two geysers.

Periodicity:
N/A

Eruption:
N/A



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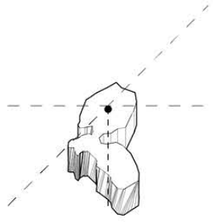

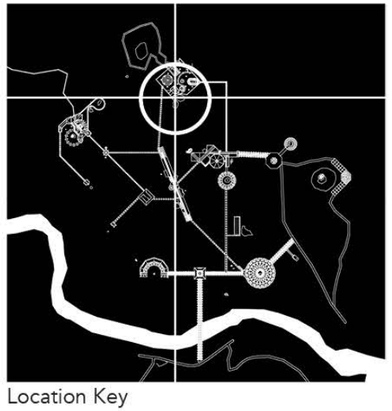

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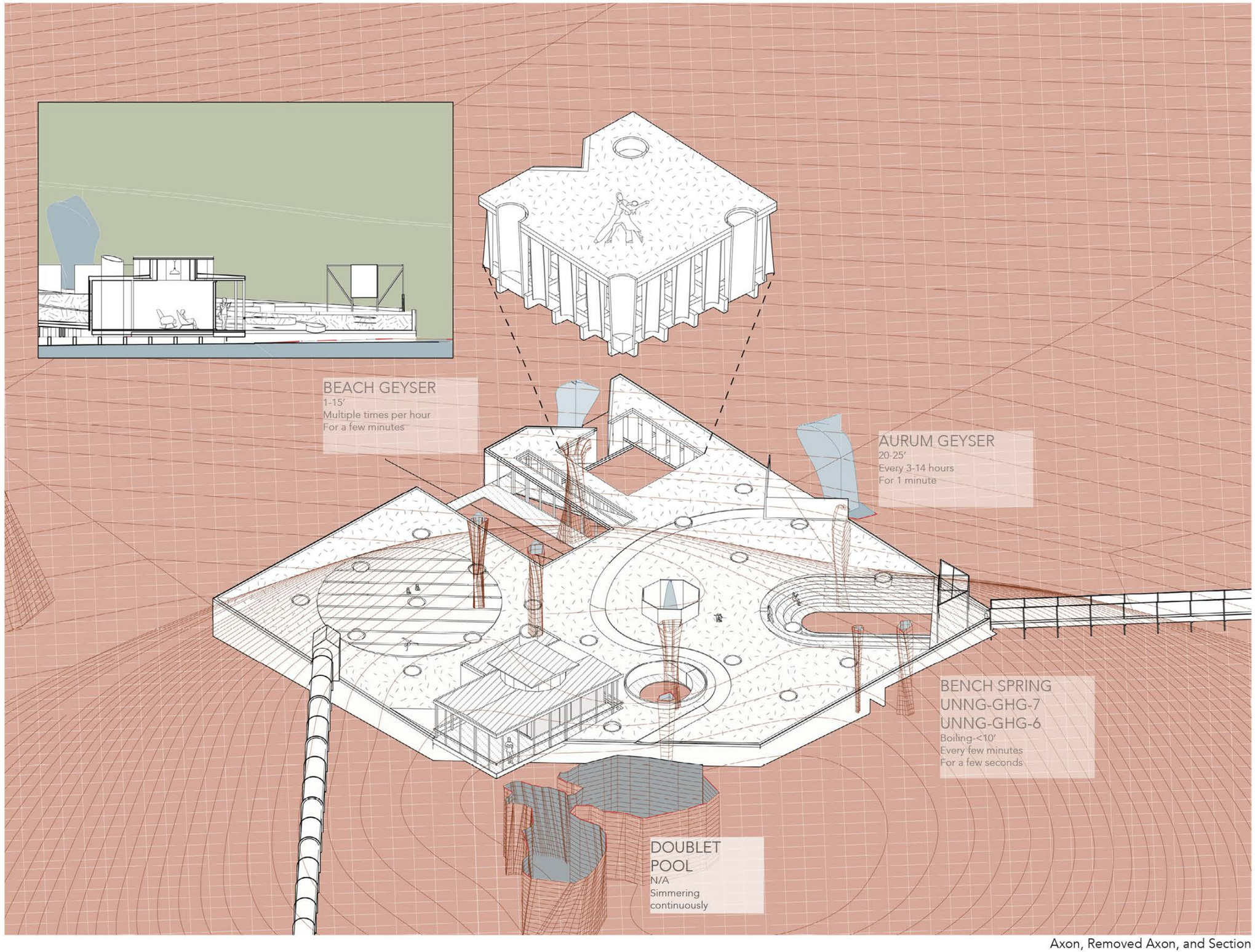
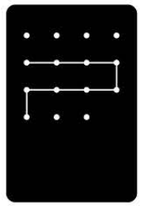


Axon, Removed Axon, and Section

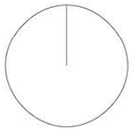
ROOF GEYSER

Enclosing corridors reflect and contain the sound into the soffit bringing the visitor to the maw prolonging the auditory experience. The site is a critical connector between other points giving the hidden center a bustling edge.

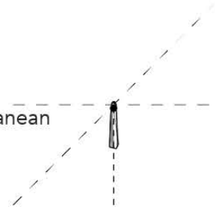
Periodicity:
Minutes

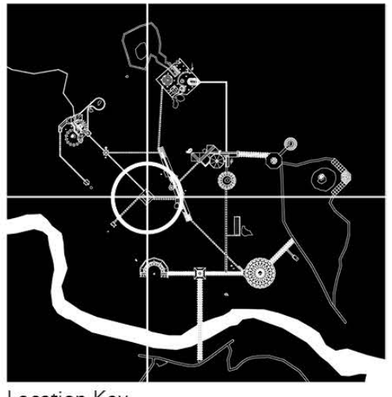


Eruption:
Seconds



Height:
Subterranean





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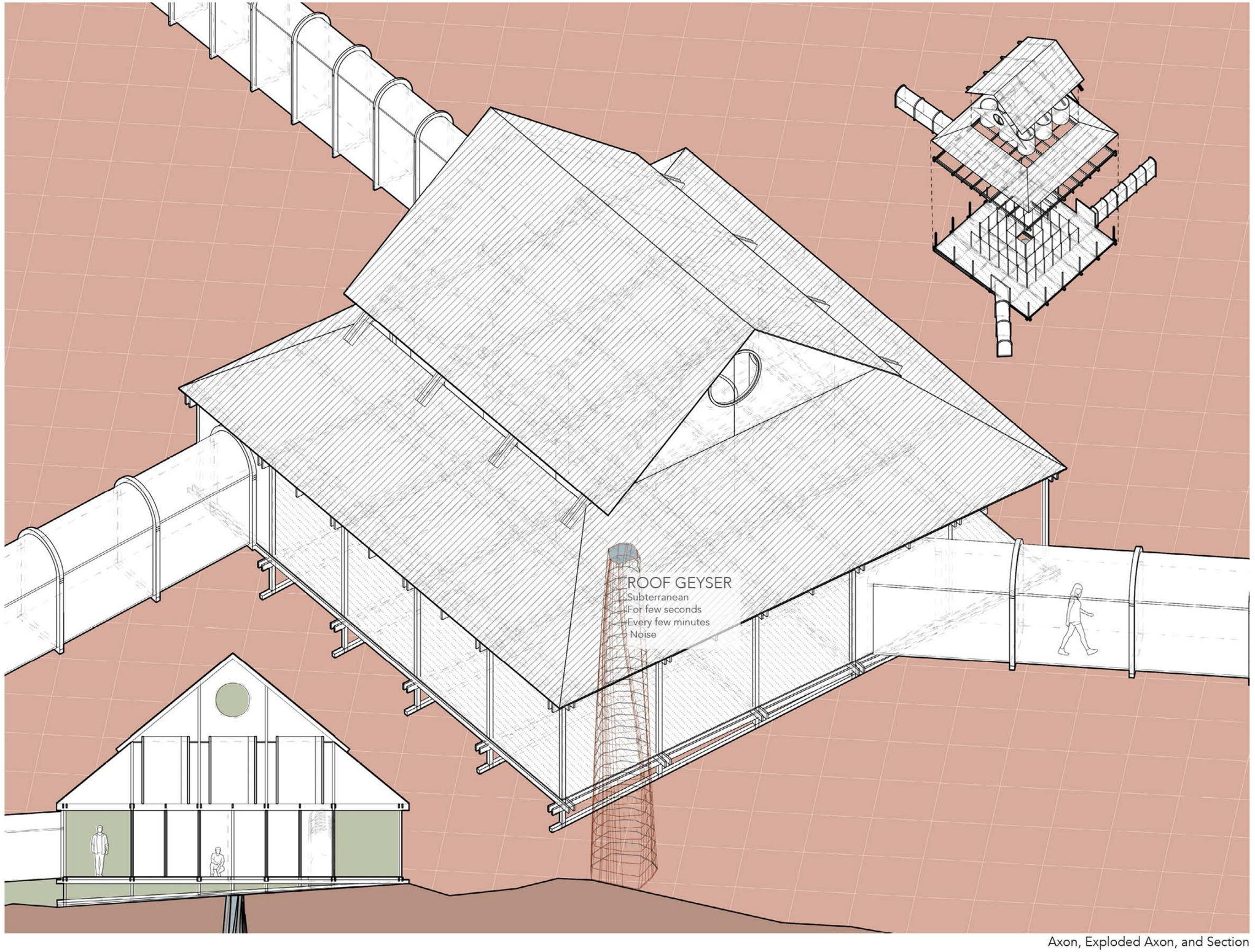
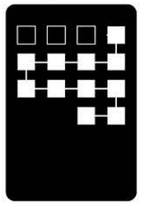


Axon, Exploded Axon, and Section

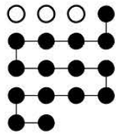
LITTLE SQUIRT

Just because the period is long, it does not mean the feature is large, but it erupts for many hours after days of quiet. Three features generate sound and heat, while the ground heats two built pools of water in the greenhouse staging not only the visual and auditory but the thermal.

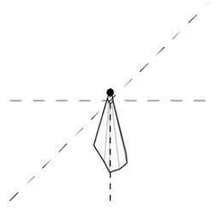
Periodicity:
3-14 days

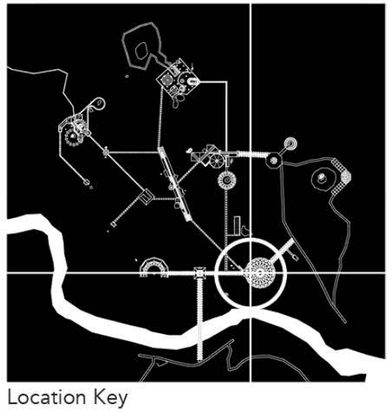


Eruption:
12-18 hours



Height:
4'-8'





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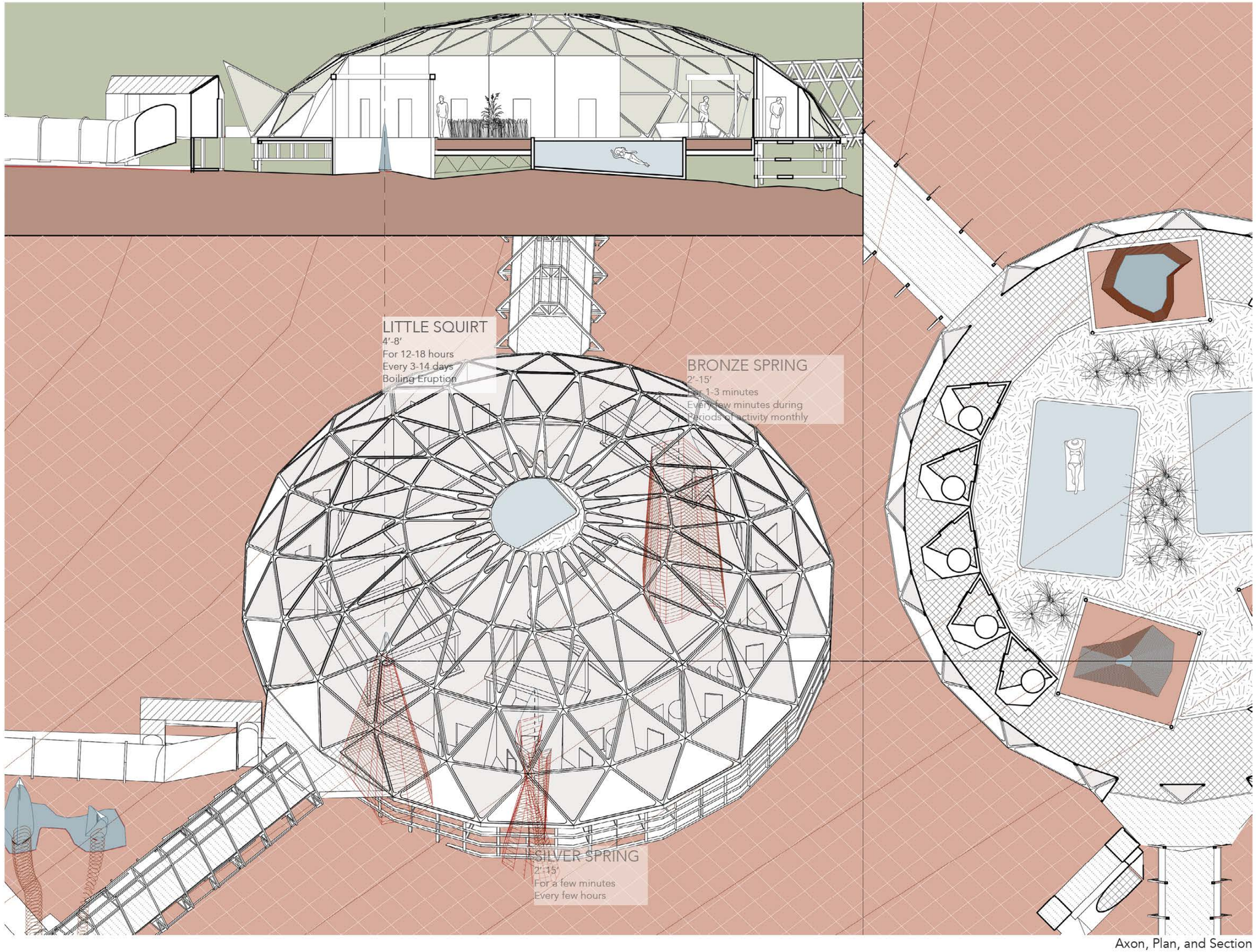
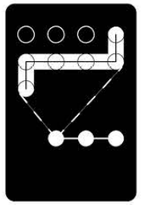


Axon, Plan, and Section

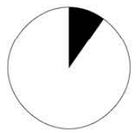
LION GEYSER

Within the Lion Geyser complex operating cyclically and relatedly before erupting in bursts, bridges through the site provide numerous surrounding views and circulations to provide for both the extended wait, and close and quick encounter when the cycle roars to life.

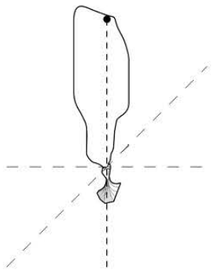
Periodicity:
1-3 hours
Cycling
4-9 hours

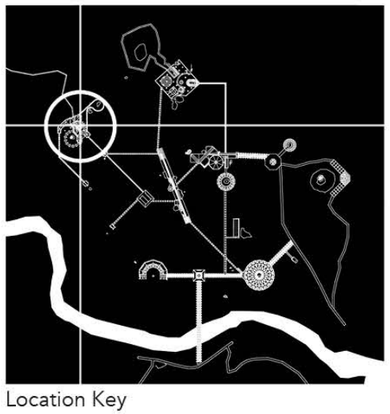


Eruption:
0-5minutes



Height:
30-100'





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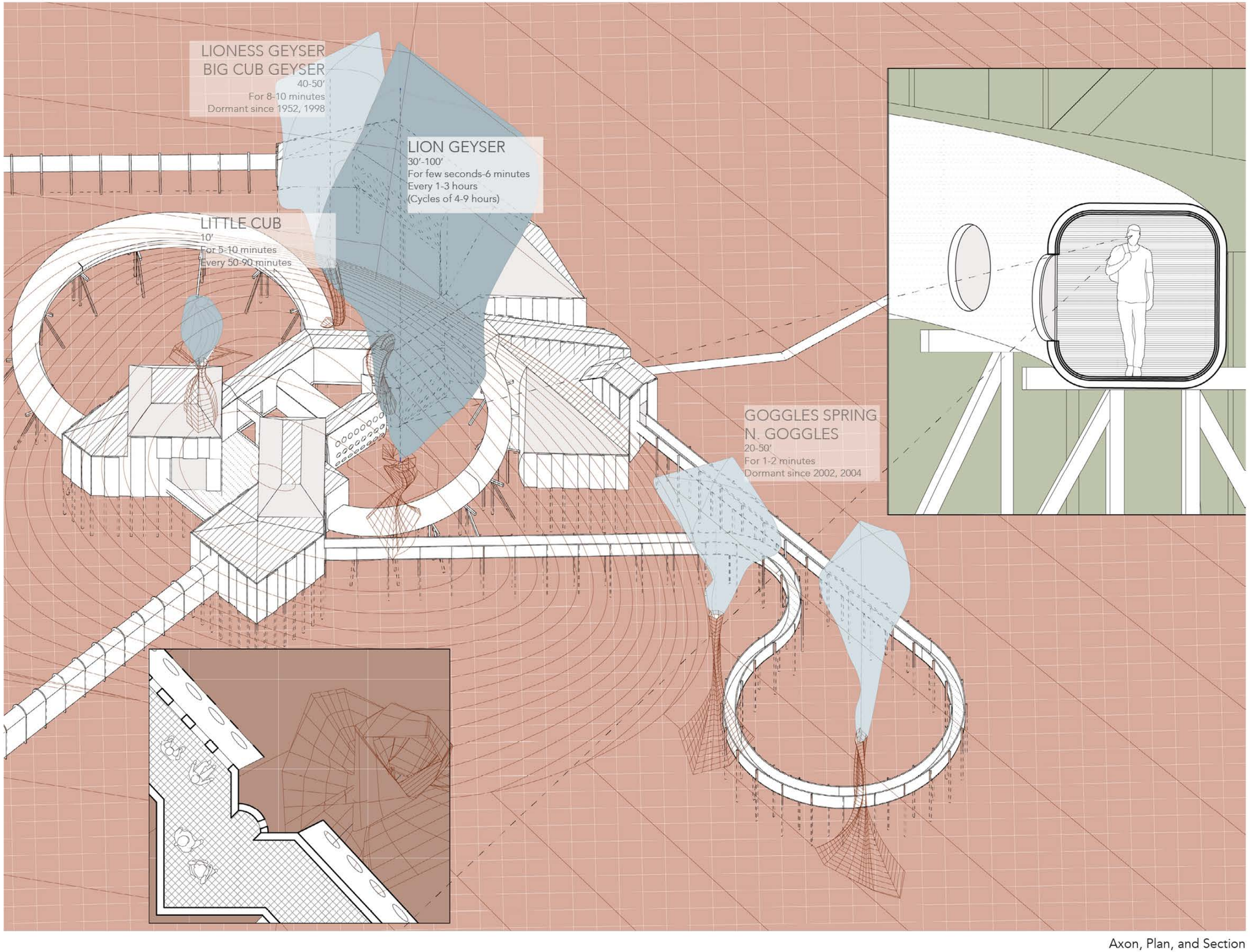
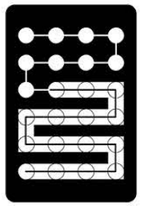


Axon, Plan, and Section

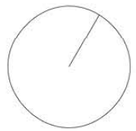
BEEHIVE GEYSER

Named by the Washburn-Langford-Doane Expedition of 1870. Singularly standing opposite the Old Faithful, it is taller and more powerful. Dormers focus carefully on the rise, attentive day and night to the brief eruptions, capturing Old Faithful in the distance more regularly.

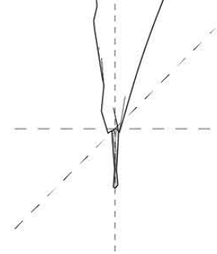
Periodicity:
9-14 Hours

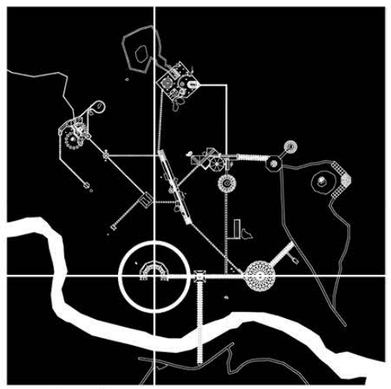


Eruption:
5 Minutes



Height:
150'





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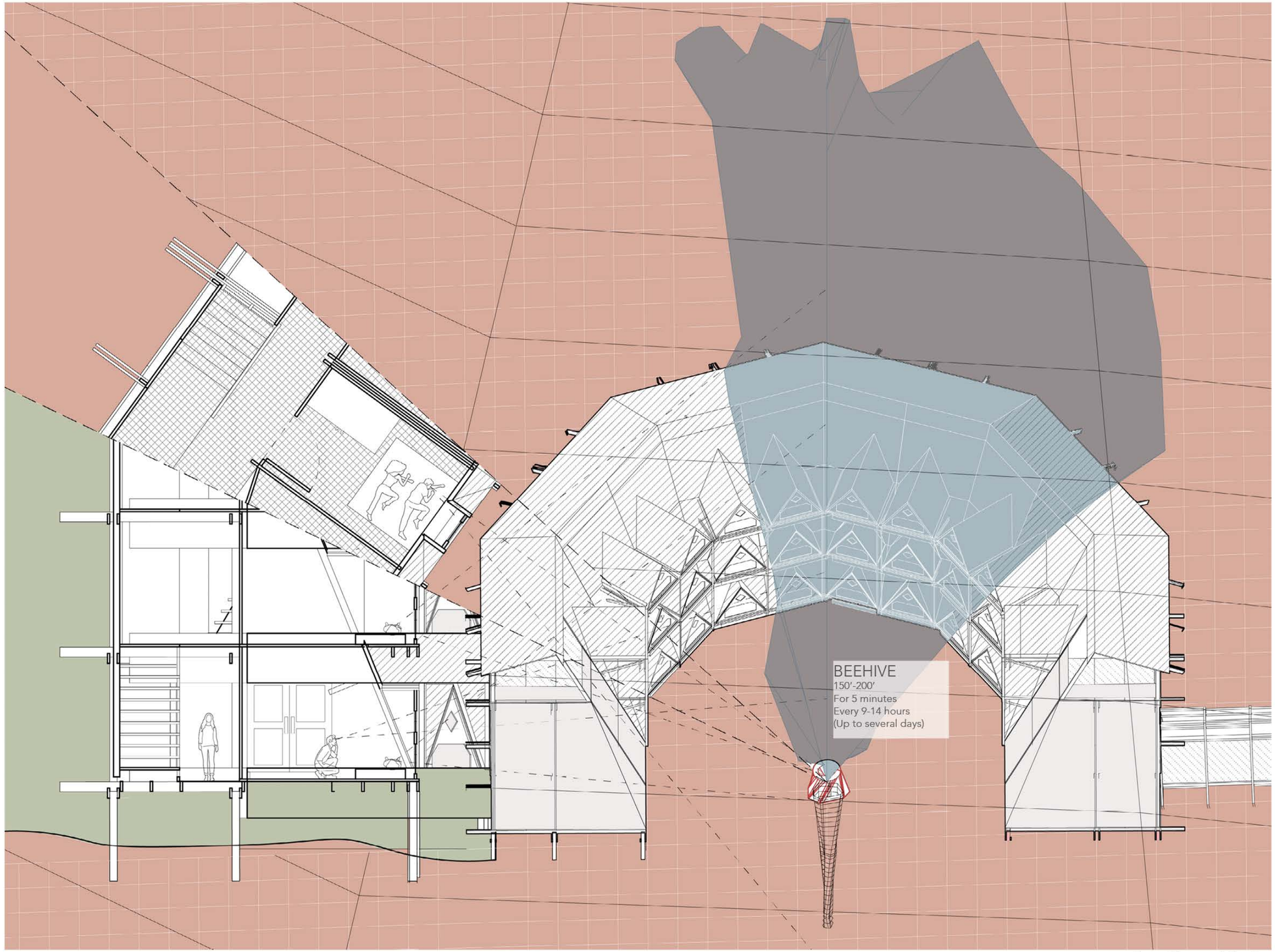
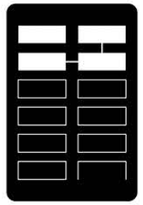


Axon, Plan, and Section

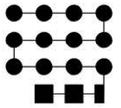
GIANTESS GEYSER

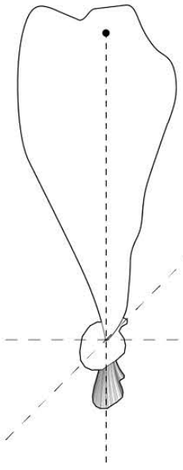
Also named by the Washburn-Langford-Doane Expedition of 1870. Erupting for hours to days, people enter towering column and boiling steam clouds bridging to numerous other features which are observed along with the angry hissing pool in between: anxiously awaiting.

Periodicity:
2-4 Months

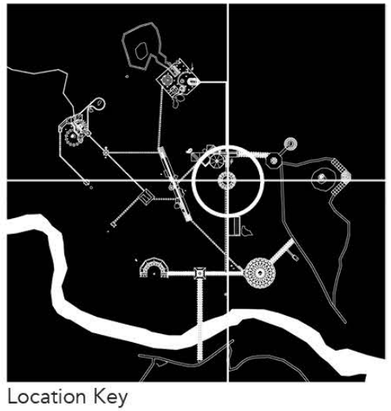


Eruption:
1-43 Hours





Height:
200'



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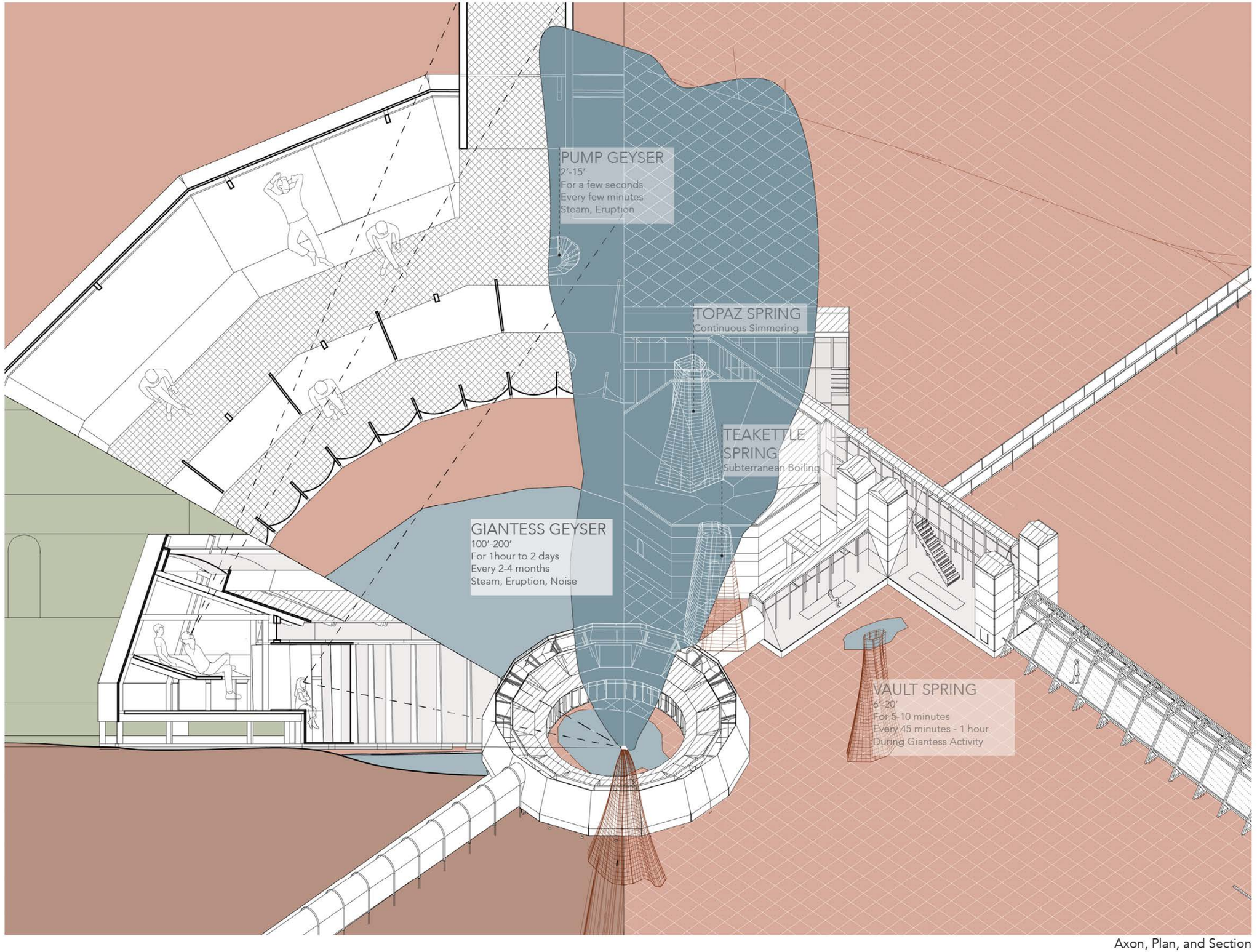

Axon, Plan, and Section

II.

Venice Center For Nautical Archeology
Centro Di Archeologia Nautica Di Venezia

ADVANCED V/ JOINT HISTORIC PRESERVATION STUDIO | Fall 2024
Enacting Material Entanglements:
Venice's Galeazze Dell' Arsenale as a Site of Production / Site of Exchange
Galeazze Dell' Arsenale, Metropolitan City of Venice | Italy
Studio Professors: Jorge Otero-Pailos & Mark Rakatansky

The history of Venice is rooted in the maritime. How do we know about this history when few if any ships survive from antiquity? Who studies the history of shipbuilding and ships? The answer is Nautical Archaeologists. Studying the interactions between cultures and water environments. Studying artifacts, maps, and documents - building on work from land archeology and history, nautical archeology conducts expeditions studying remains and wrecks on the seabed surveying and excavating artifacts for study. The field then analyzes the artifacts, building on historical study, and creates and tests experimental hypotheses to attempt to recover lost knowledge of shipbuilding and use. This field synthesizes history and science requiring complex facilities to both handle, study, and store artifacts, conduct experiments small and large, support expeditions, and provide space for drafting, cartography, and analysis.

Associate Faculty:
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Review Critics:
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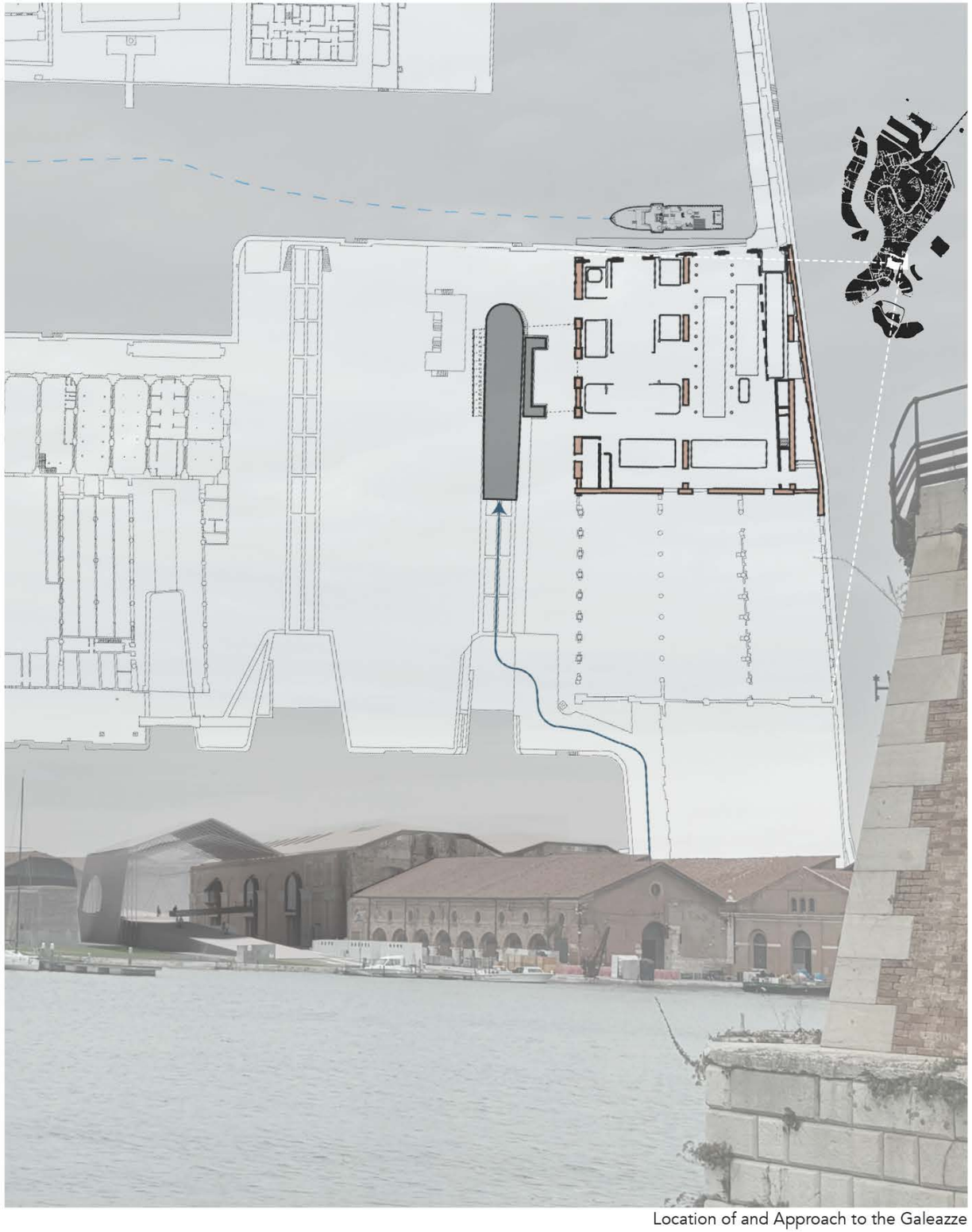
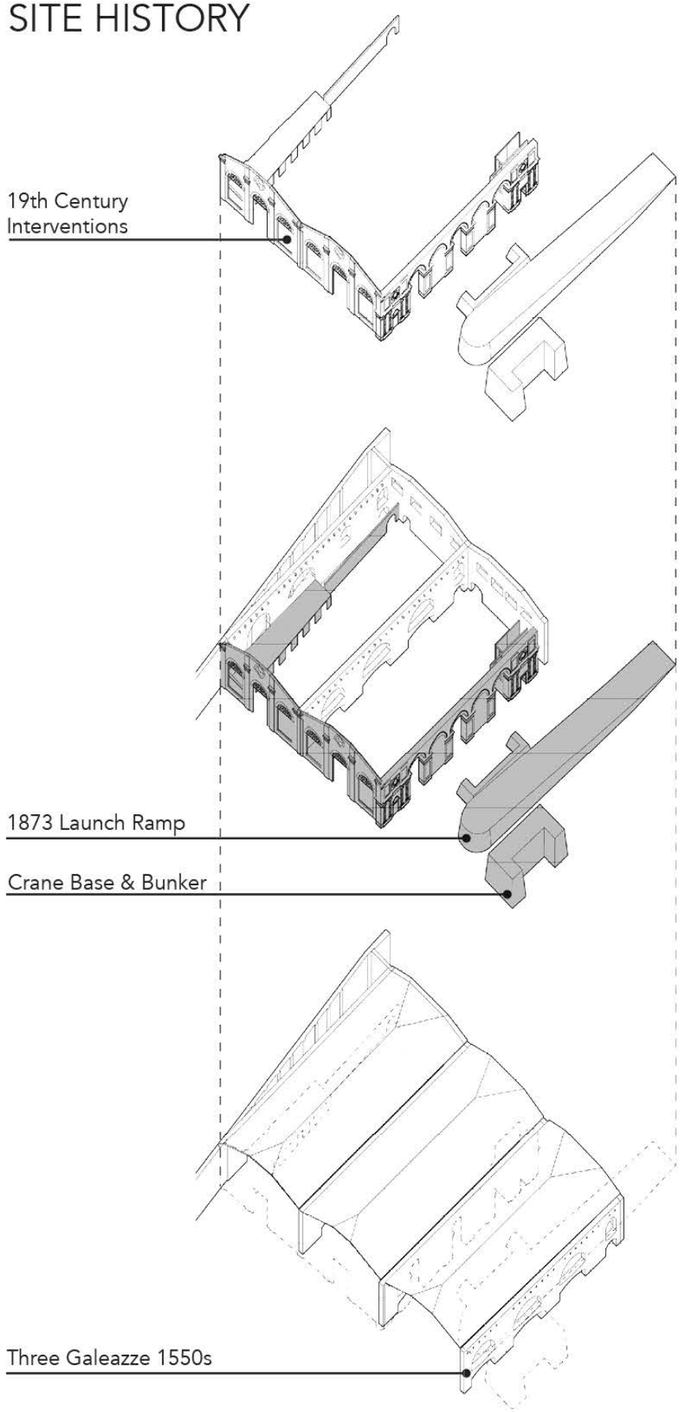
Paul Bentel (GSAPP)
Francesco Trovo (IUAV)
Adam Yarinsky (ARO)
Amelyn Ng (GSAPP)
Ziad Jamaleddine (GSAPP)
Laurie Hawkinson (SMHA / GSAPP)
Hiliary Sample (MOS / GSAPP)
Marc Tsurumaki (LTL / GSAPP)
Kim Yao (ARO)



Location of and Approach to the Galeazze

SITE HISTORY



The Venice Arsenale site served the Venetian republic from the 12th century through the fall of the Serenissima in 1797, continuing on as a site of naval production to the 1960s. The Arsenale produced and maintained hundreds of galleys in its history and was the world's first organized factory wherein ships were built from the keel up, and outfitted with sails, oars, and cannons also made on site by thousands of workers, called the "arsenalotti." The Arsenale complex today has three primary tenants:The Italian Navy, The Venice Biennale, and the Municipality of Venice

GALEAZZE DELL' ARSENALE, the site of this studio, was a series of six buildings erected in the 1560s to produce and house a larger type of war galley called a Galleass. Organized into two sets of three, the buildings addressed a canal sharing a system of massive brick walls and a vast open spanning wooden truss roof clad in a tile roof. The Galleass was first and most notably present at the Battle of Lepanto in 1571, the final major naval battle fought by the Venice Republic until their fall in 1797 to Napoleon.
Substantial infrastructure was added to the site in the 1870s after unification and the modernization of the Italian Navy to the age of steel and steam. One of the three bays was removed to make way for a ship launching ramp (1873), and a new facade was added, enclosing the remaining two bays to create a machine shop and foundry for steel parts. The site continued active ship and submarine building until the 1960s after which the site fell into disrepair. It has been roofless since the 1980s and is used as an open air storage yard of building materials. The site challenges include its large size, poor condition, roofless state, and difficult access.

Contributing to the site are the 16th century walls, including the perimeter wall which intersects the building where the original Galleass' were built, but also the 19th century facades and interior structures enclosing the building revealing its layered history as shipbuilding technology evolves. The stone ship launch ramp from 1873, and the bunker from WWI further ground this complex history.

Galleass (Ship Constructed At The Galeazze)

Arsenale Map (Galeazze At Top Left) , 1797

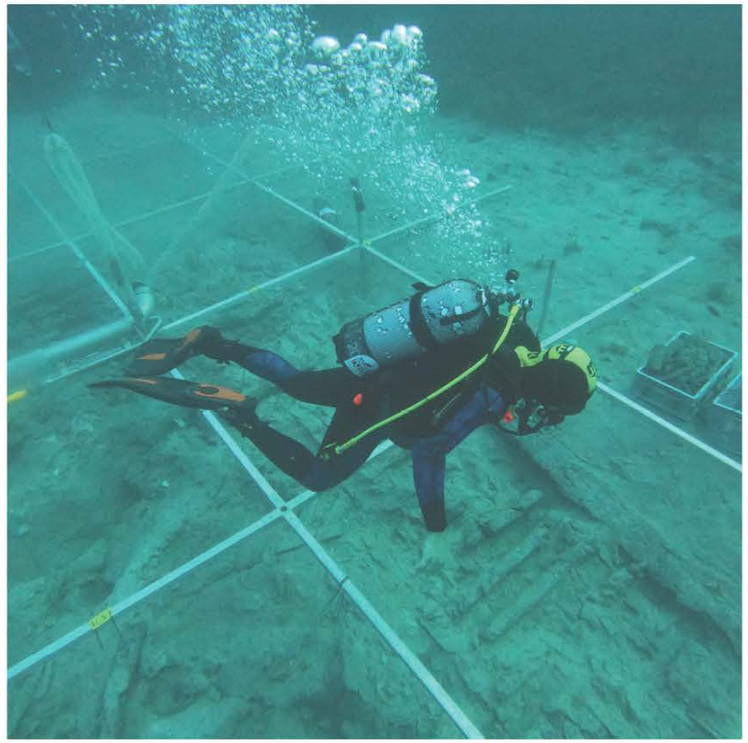
Battle Of Lepanto, 1571

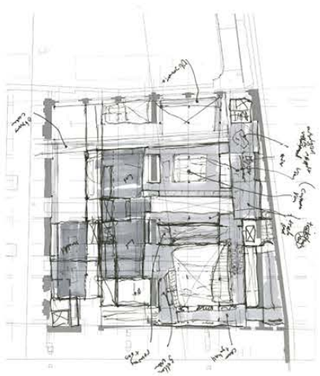
Ship Launch (Galeazze visible background), 1939

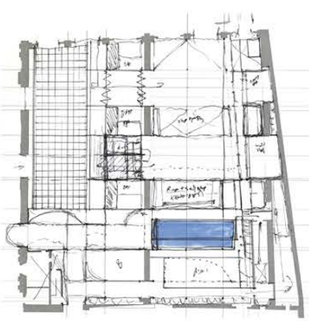
Present Site Condition

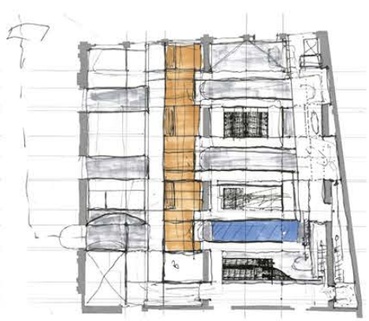
NAUTICAL ARCHEOLOGY

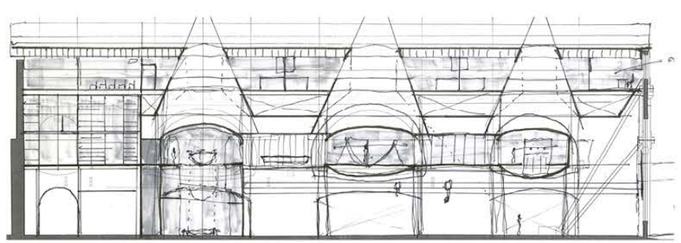
Study, Planning, Diving, Excavation, Storage, Studying, Archiving
Analysis , Experimentation, Discovery
Communication

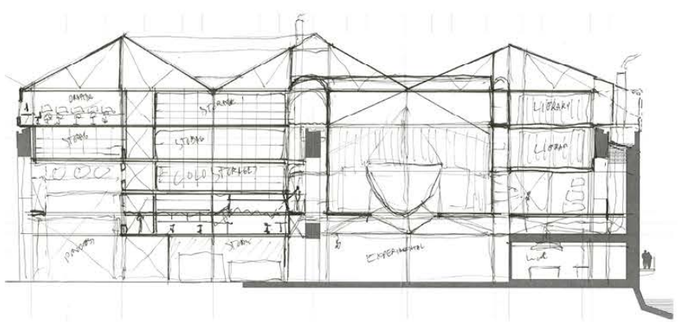










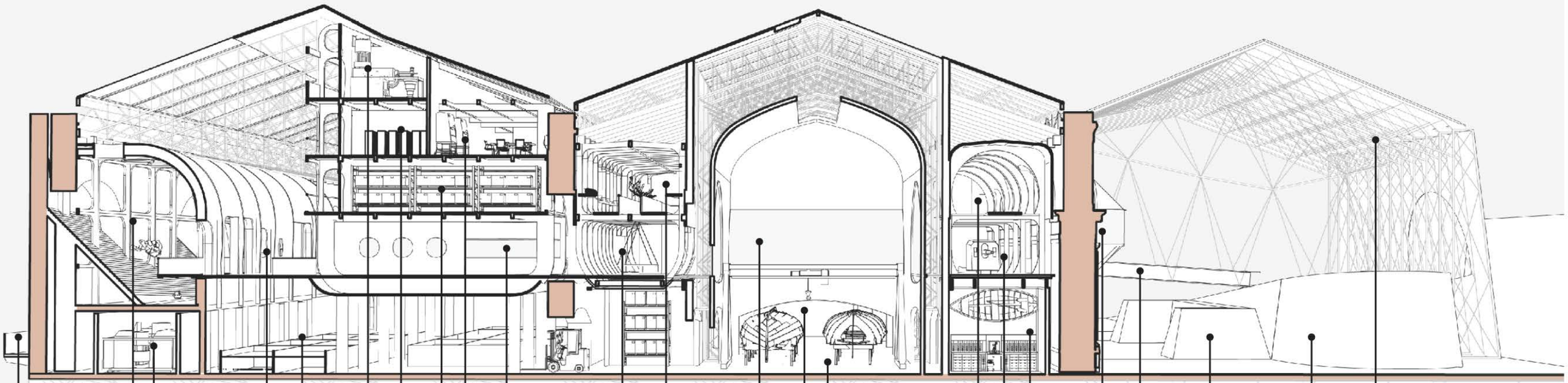


Developmental Sketches

Transverse Section Perspective (Looking East)

The north bay focuses on processing, storing, analyzing, and understanding artifacts from desalination in the ground level, to chemical labs, and storage rooms for the many sizes, conditions, materials, and fragilities of the materials entering the site. The library and archive at the east houses books, reports, maps, drawings, and recordings necessary for the historic research. Curatorially, the guest is introduced to the history of Venice's marine history, and the work of underwater archaeologists, and the scientific work done on site engaging across the levels.

Between the 16th century and 19th century walls, the south bay focuses on contextualize both of research and curation across the arc of history. The experimental archeology hall centers the bay at the west with fabrication shops necessary for building full size mock ups, replicas, and experiments. Above, support spaces and model fabrication shops meet historical exhibitions connecting the history of ships, trade, war, wood, metal from the 12th century through the 20th century arc of the arsenale as a site of production.



Sidewalk

Desalination Equipment / Storage

Underwater Archeology Exhibition

Artifact Research Overlook

Desalination Tanks / Artifact Processing

Equipment Rooms

Artifact Storage

Conservation Lab

Lab Exhibition

Wood & Trade Exhibition

Wooden Shipbuilding Exhibition

Ship Fragment Exhibition/ Overlook

Demonstration Area

Experimental Fabrication Laboratory

Metal & War Exhibition

19th & 20th Century Shipbuilding Exhibition

Fabrication Workshop

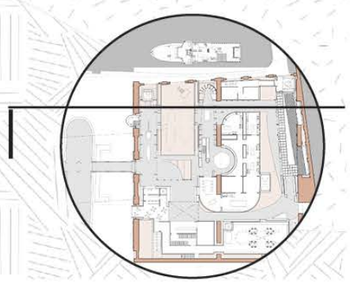
Stair Return & Overlook

Entry Bridge

Bunker

1873 Ship Launch Ramp / Approach

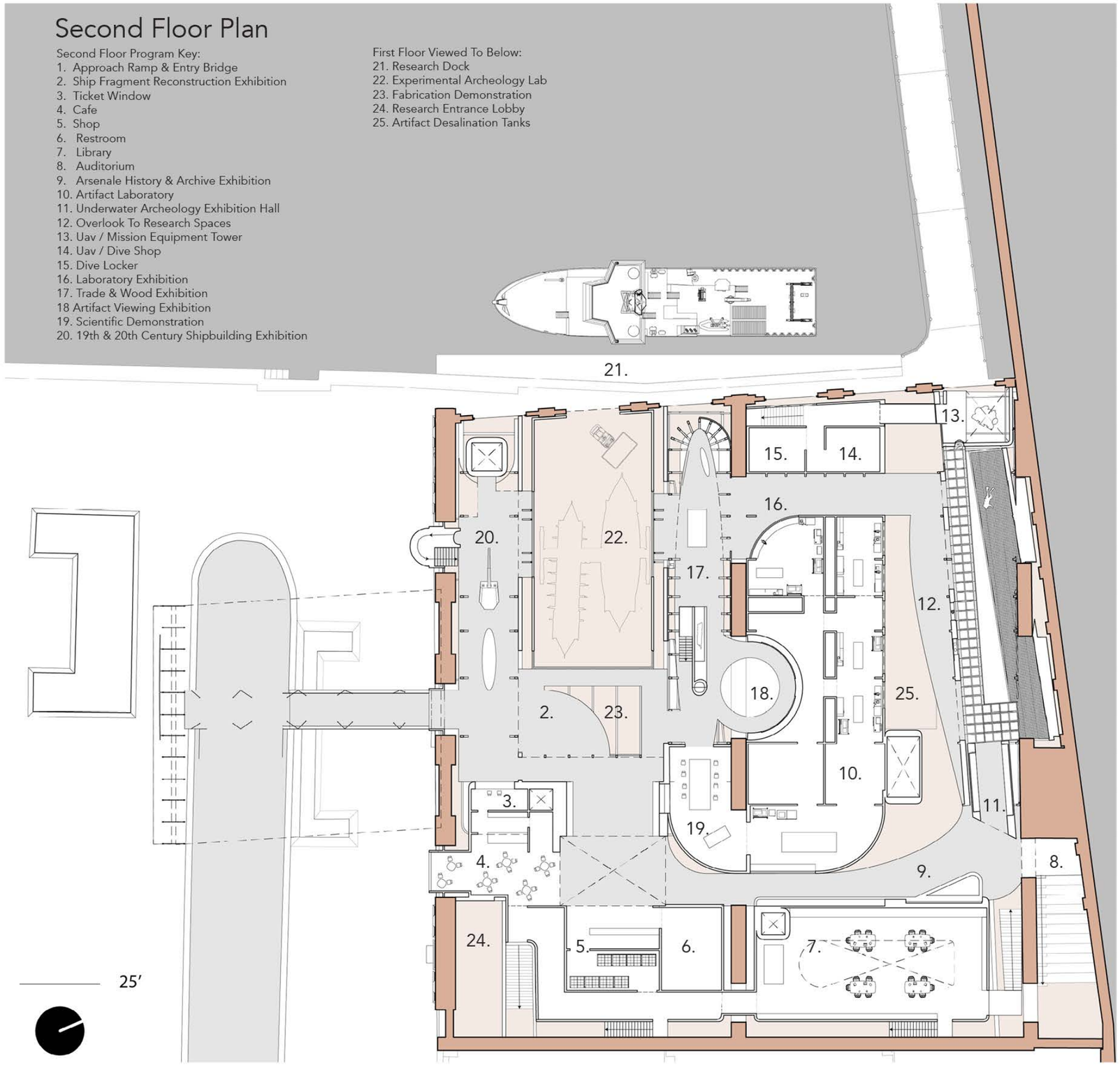
3rd Galaezze Pavilion

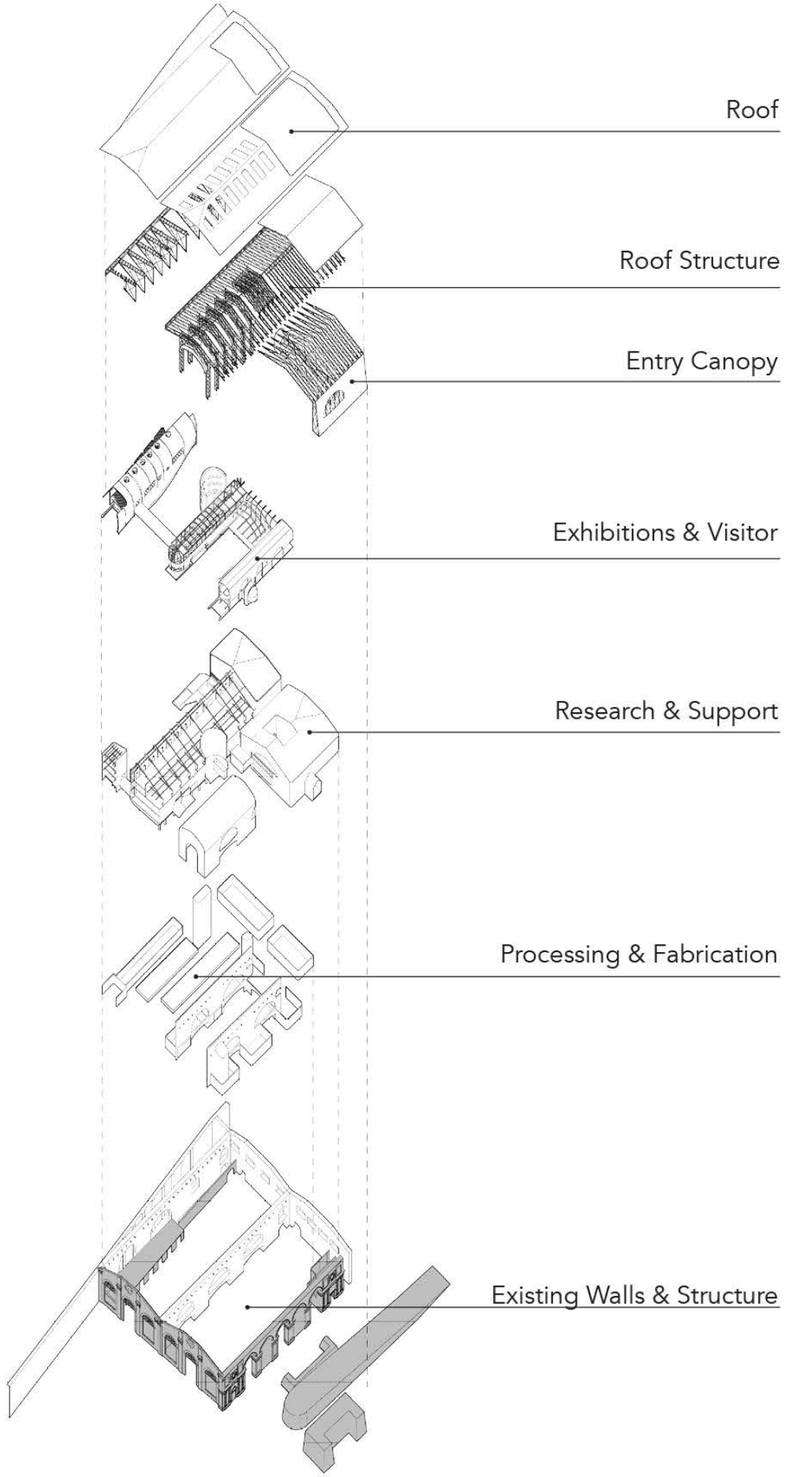


Second Floor Plan

Second Floor Program Key:
1. Approach Ramp & Entry Bridge
2. Ship Fragment Reconstruction Exhibition
3. Ticket Window
4. Cafe
5. Shop
6. Restroom
7. Library
8. Auditorium
9. Arsenale History & Archive Exhibition
10. Artifact Laboratory
11. Underwater Archeology Exhibition Hall
12. Overlook To Research Spaces
13. Uav / Mission Equipment Tower
14. Uav / Dive Shop
15. Dive Locker
16. Laboratory Exhibition
17. Trade & Wood Exhibition
18 Artifact Viewing Exhibition
19. Scientific Demonstration
20. 19th & 20th Century Shipbuilding Exhibition

First Floor Viewed To Below:
21. Research Dock
22. Experimental Archeology Lab
23. Fabrication Demonstration
24. Research Entrance Lobby
25. Artifact Desalination Tanks

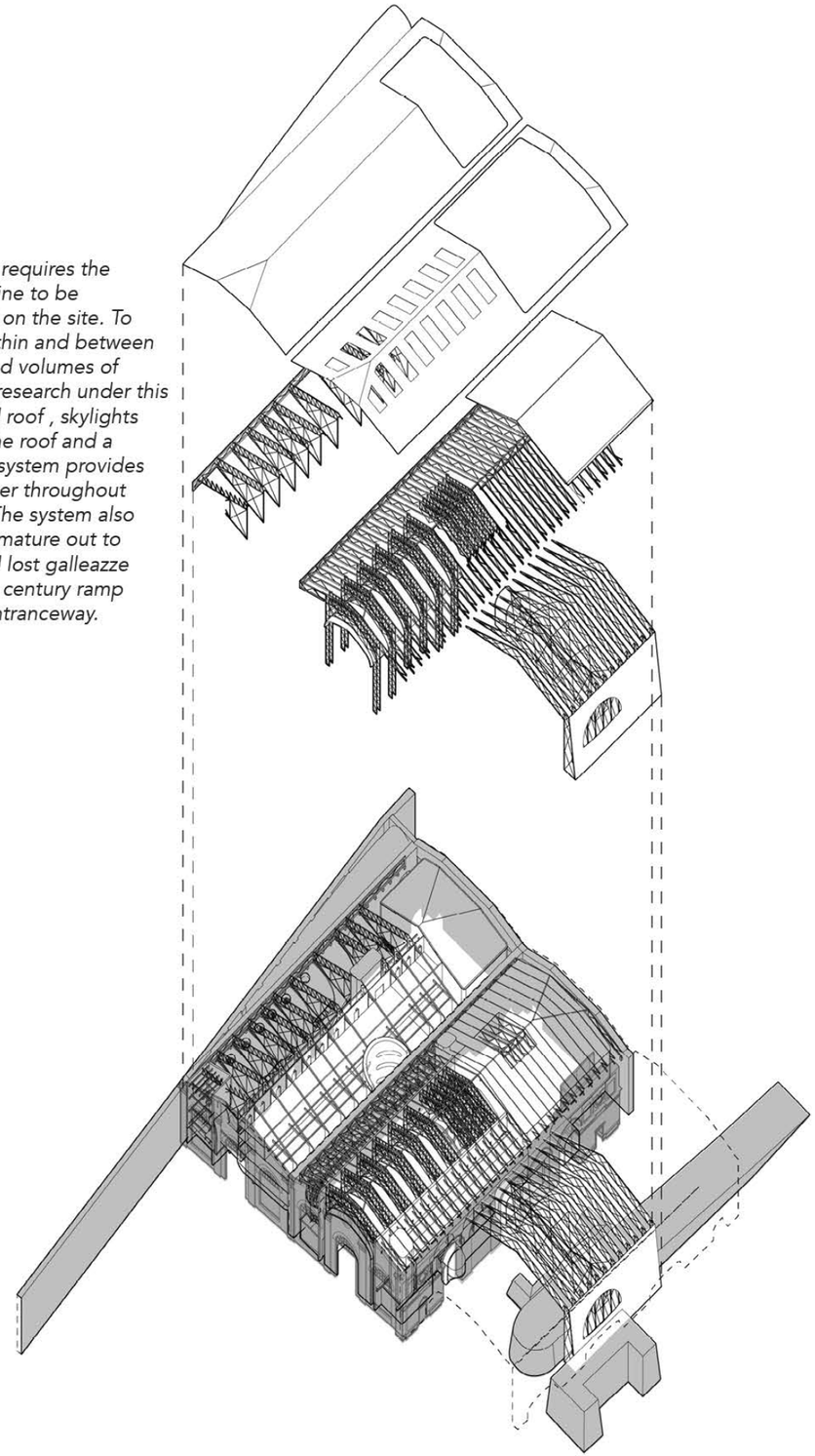




Exploded Axon Diagram

Entryway Render

Venetian Law requires the original roof line to be reestablished on the site. To allow light within and between the spaces and volumes of curation and research under this reconstructed roof , skylights are cut into the roof and a light framing system provides for light to filter throughout the volume. The system also reaches an armature out to evoke the 3rd lost galleazze over the 19th century ramp forming an entranceway.

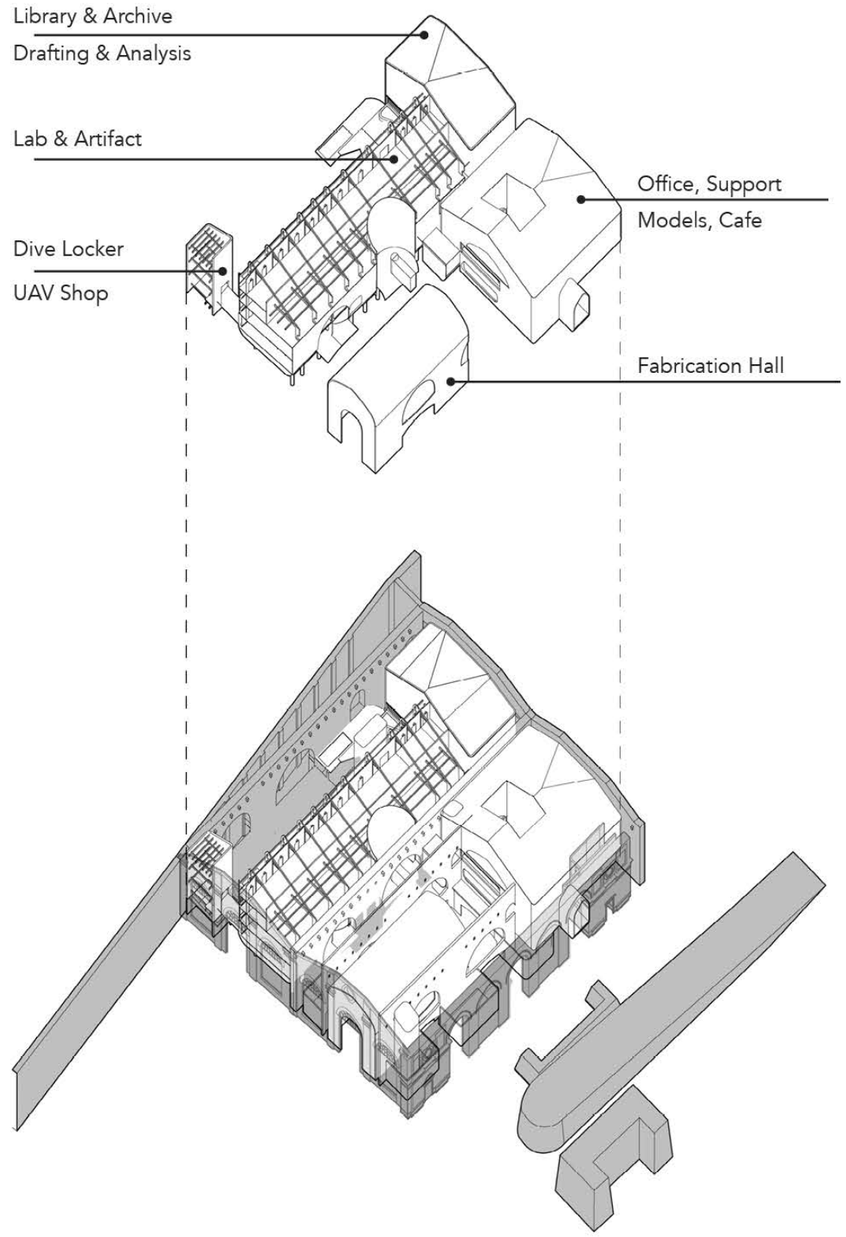


Roof Exploded Axon Diagram

Artifact storage rooms share an open hallway allowing visual connection while providing the most careful environment for long term storage requirements such as light level, humidity, temperature.

Artifact Storage Level Render

Laboratory and support spaces are contained within metal clad volumes to allow for control of environment and safety of materials and equipment from the environment. While the ground floor permits the wet, dirty work to occur, the upper volumes allows the dry, clean spaces necessary for lab work, conservation, storage, model making, library, archive, office, cartography, and drafting.

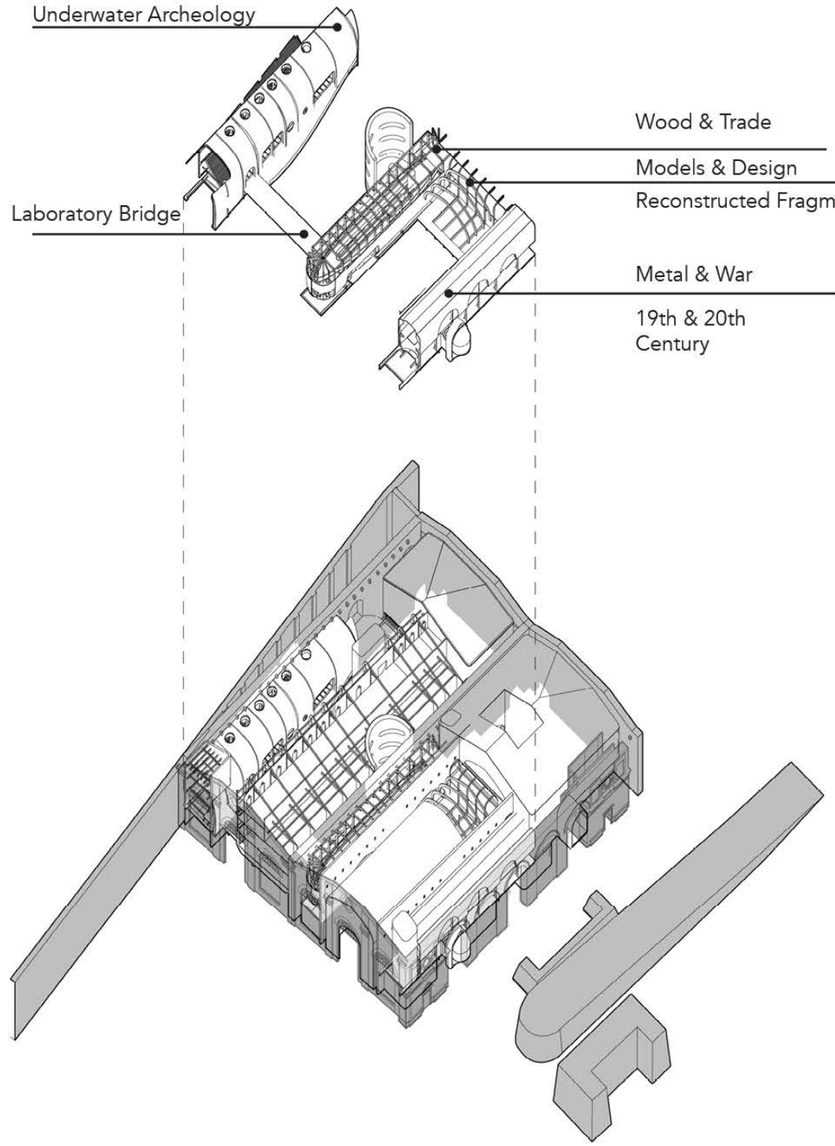


Laboratory Spaces Exploded Axon Diagram

The guest is able to see all levels of artifact research from the ground level tanks, to labs, to storage above. However, much of the initial work of archaeologists is done far removed from the site surveying and excavating wrecks and remains and the exhibitions here introduce the visitor to this work making the connection between the artifacts and the history.

Underwater Exhibition Level Render

The curatorial programming is introduced through additional hulls in wood adjacent to and connecting between the research volumes to create relationships between the existing site and building, and the research sequence operating within the building providing the visitor an understanding work of nautical archaeologists & the application of that work on the maritime history of Venice. This journey exists spatially on the second floor visually connecting across levels and tracks the flow of artifacts and experiments from the seabed to the experimental replicas intersecting the historic context and the work on the individual researchers.



Curatorial Spaces Exploded Axon Diagram

Metal & War

The attic exhibition comes against the north wall exhibiting the history of metal fabrication at the Arsenale, primarily for weapons construction. This is intersected with the history of Venetian naval warfare on the site centering on the Galleass' notable engagement at Lepanto (1571). Down the stairs, one engages with the 19th century facade and changes of shipbuilding infrastructure continuing the story of metal & war from Napoleon through the Second World War.

Attic Of The Arsenalotti

The exhibition on the upper floor focuses on the construction of wooden vessels, such as the Galleass, within the very walls present. Centering on the Arsenalotti, the arsenal's workforce of shipwrights, sawyers, carpenters, oar makers, coopers, pulley makers, and mast makers buildings on the trade and wood material below

Central Hall/ Model Shop

From Wood & Trade, the visitor enters a space between the volumes on a bridge connection with a display of models of ship designs over the history of Venice. These models connect to a full size Galleass fragment in the center of the room and the nature of vessels as programmatic and material composites.

A model shop is viewed through the glass showing the use of models to test research

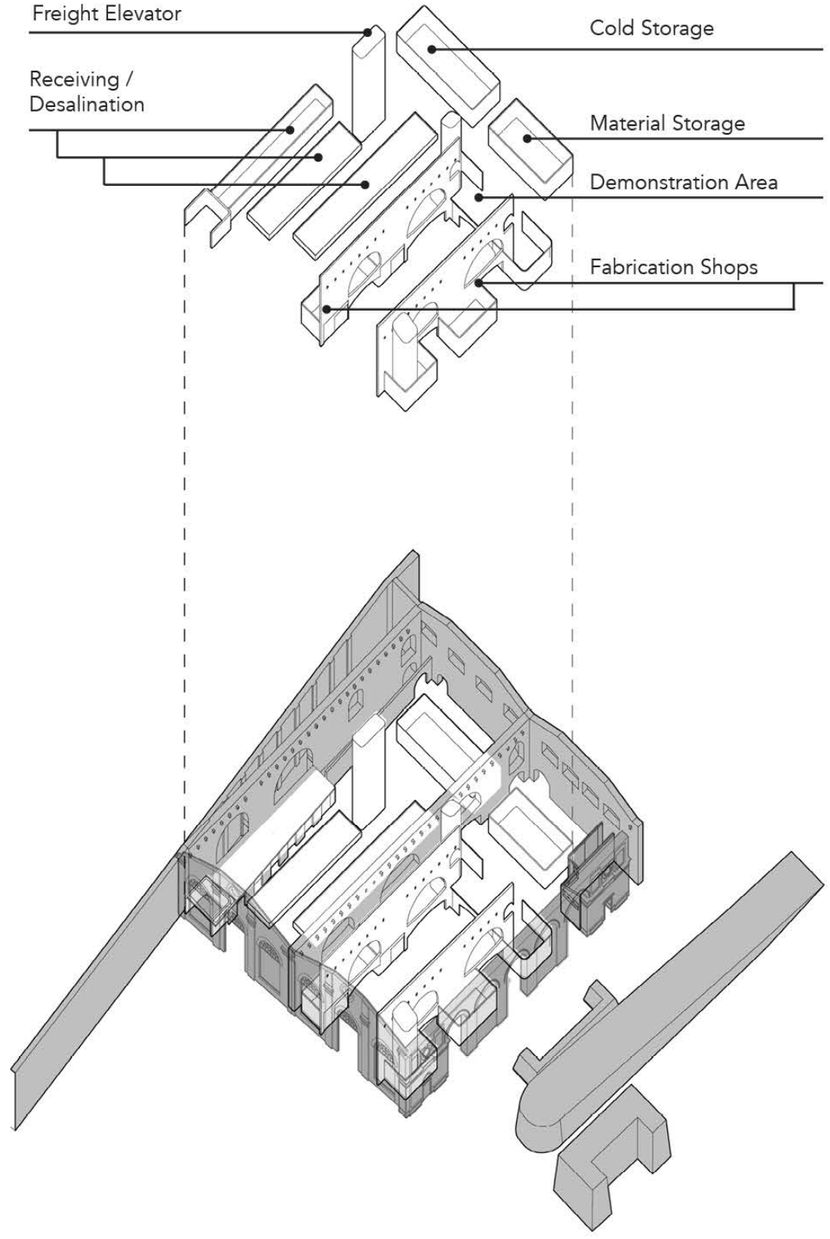
Trade & Wood / Interlocking Lab

The Trade and Wood Exhibition hall interlocks around the center wall and the laboratories of the north spanning between the experimental fabrication and the artifact study. The triple layer of the program provides the connection between the shaping of a new keel, the sourcing of timber in the Venice maritime empire, and the dendrochronology dating timber artifacts

Why ship design decisions were made is one of the fundamental mysteries explored by nautical archaeologists as that knowledge is lost save for the predictions made experimentally. Drawing on the full body of research historic and scientific, the experimental hall serves as a beginning point and ending point, where artifacts are brought in, expeditions depart, and full size experimental mock ups and replicas are constructed to answer hypotheses and ask new questions .

Experimental Fabrication Workshop Render

Venice's ground floor elevations are highly vulnerable to flooding and a series of masonry volumes provides both support for upper floors and containment against flooding. Heavy, wet materials are received and processed in desalination tanks on this level before moving up through the facility in the north bay. In the south bay, fabrication, experimental, and demonstration spaces allow for the construction of up to full size vessels and parts.



Support Spaces Exploded Axon Diagram

III.

Migrating Frames
A Public Threshold for Montauk Beach

ADVANCED IV STUDIO | Spring 2024
Managed Retreat

Downtown Montauk Beach, East Hampton Town | New York
Studio Professor: Robert Marino

Downtown Montauk sits defensive against the beach lacking public access downtown with a series of parallel motels and hotels leaving limited and minimal access points along with limited infrastructure in the close blocks to the beach including bathrooms, restaurants, etc.

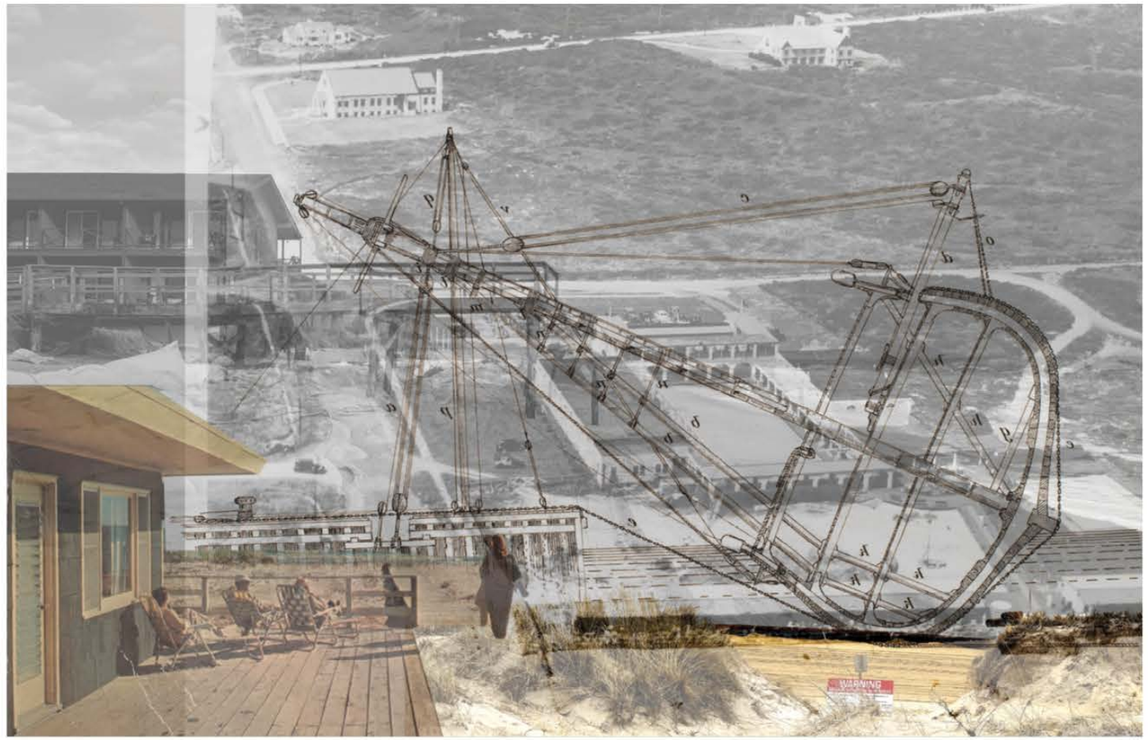
Despite extensive and expensive efforts to stablize and recover the beach, the beachfront along which this condition is built is being washed away and the fight to maintain the status quo will be lost in time...

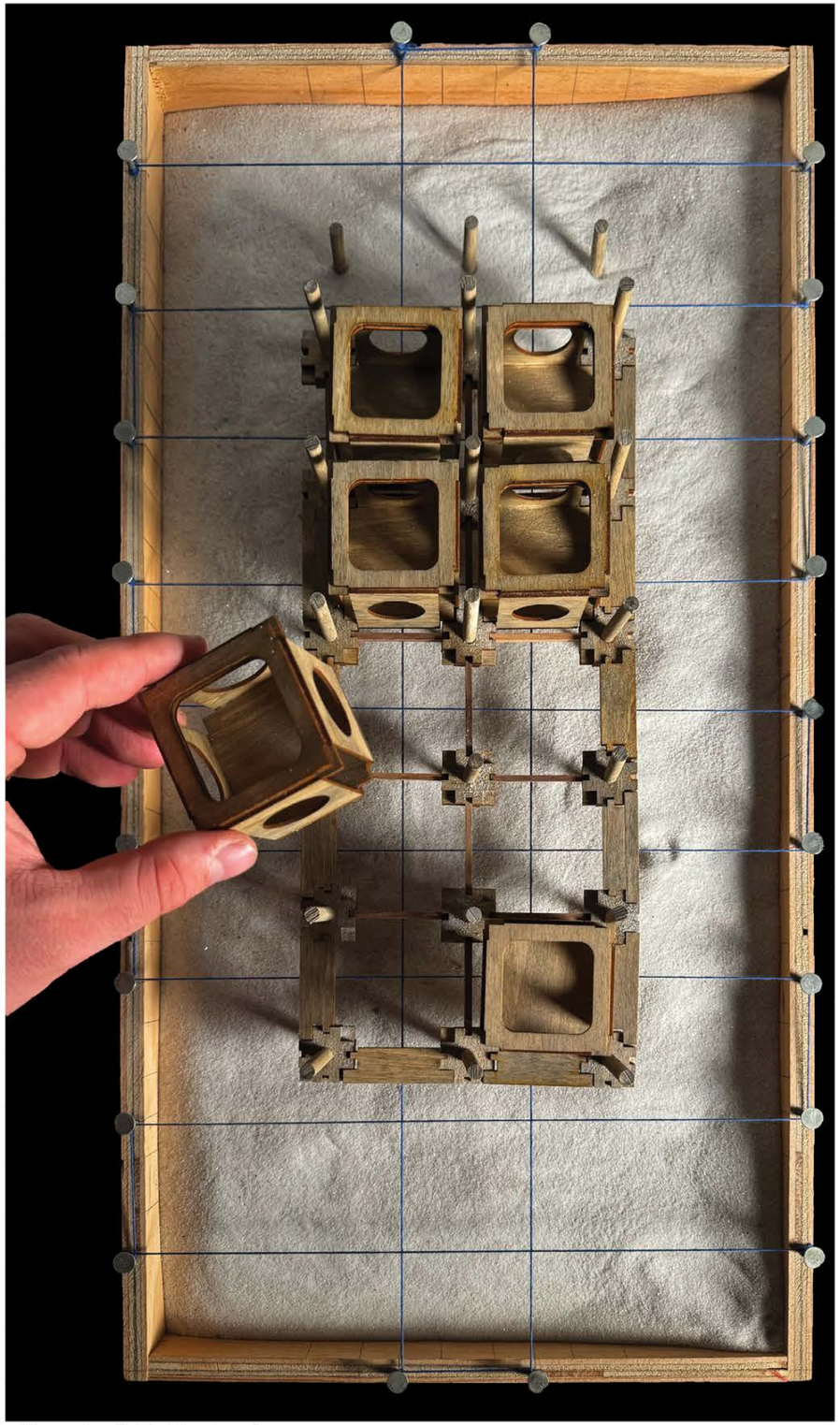
Review Critics:
Michael Bell (GSAPP)
Thomas Hanrahan (Pratt Institute)
Nicolas Goldsmith (Silman)
James Garrison (Garrison Architects)
Nadine Oelschlager (SHoP)
James Brillon (Studio Superette)
Thaddeus Pawlowski (GSAPP)

Existing site condition: South Edgemere Street & Downtown Beach

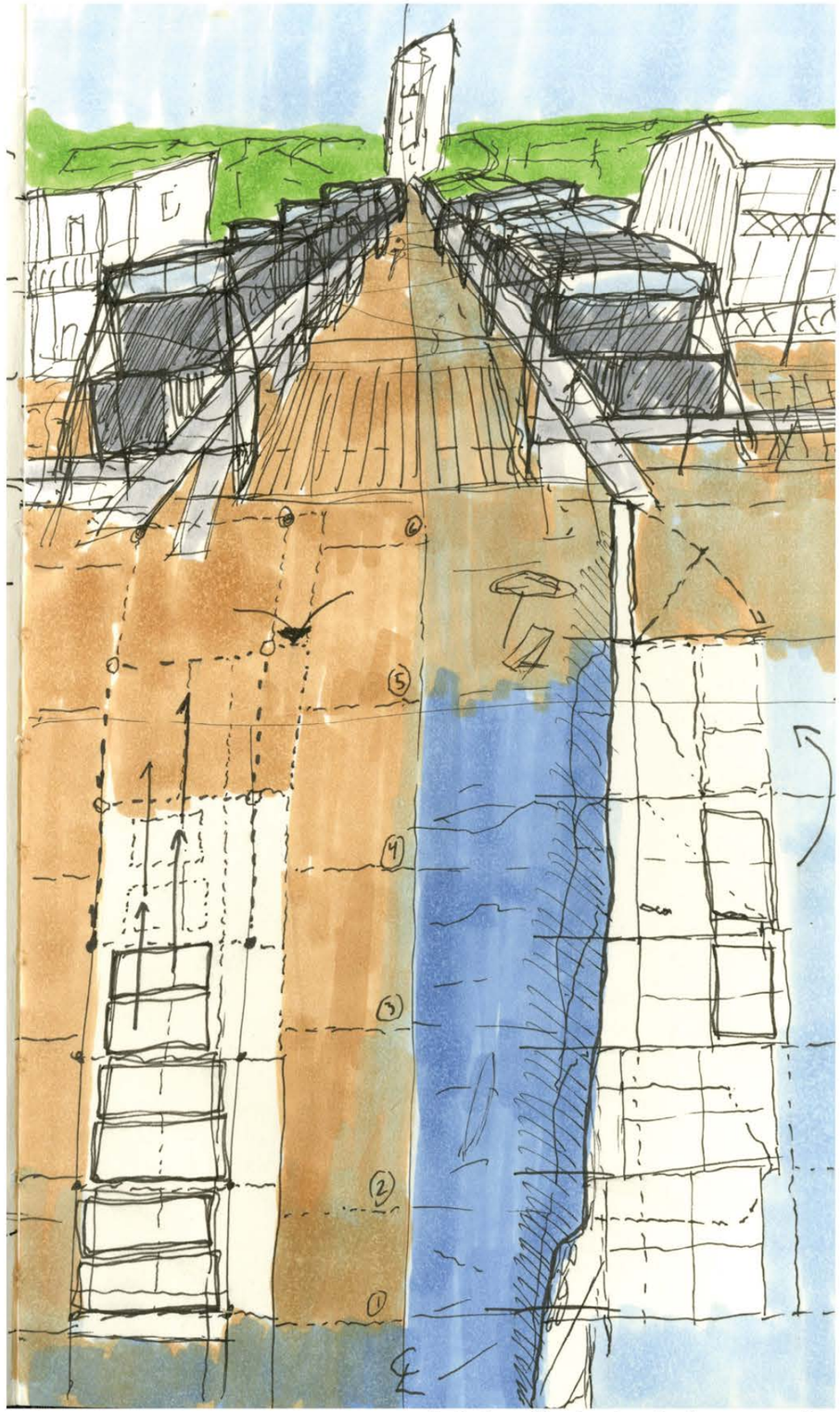
...Responding to the East Hampton Town Coastal Resiliency Plan, Active beach erosion, particularly in the downtown blocks where dune had been cleared in the 1950s, will require the first blocks of downtown Montauk to be retreated from to restore the dune boundary. This project will walk inland from the current position and retreat over time- allowing the threshold to remain at the end of town and beach over phases of erosion. The project leverages its modularity to allow for this movement incrementally or in larger steps providing a new threshold for Montauk beach via a pair of modular structures supporting a boardwalk, public program, and lodging framing and providing a new gate to the beach on South Edgemere Street.

Render of Beach View

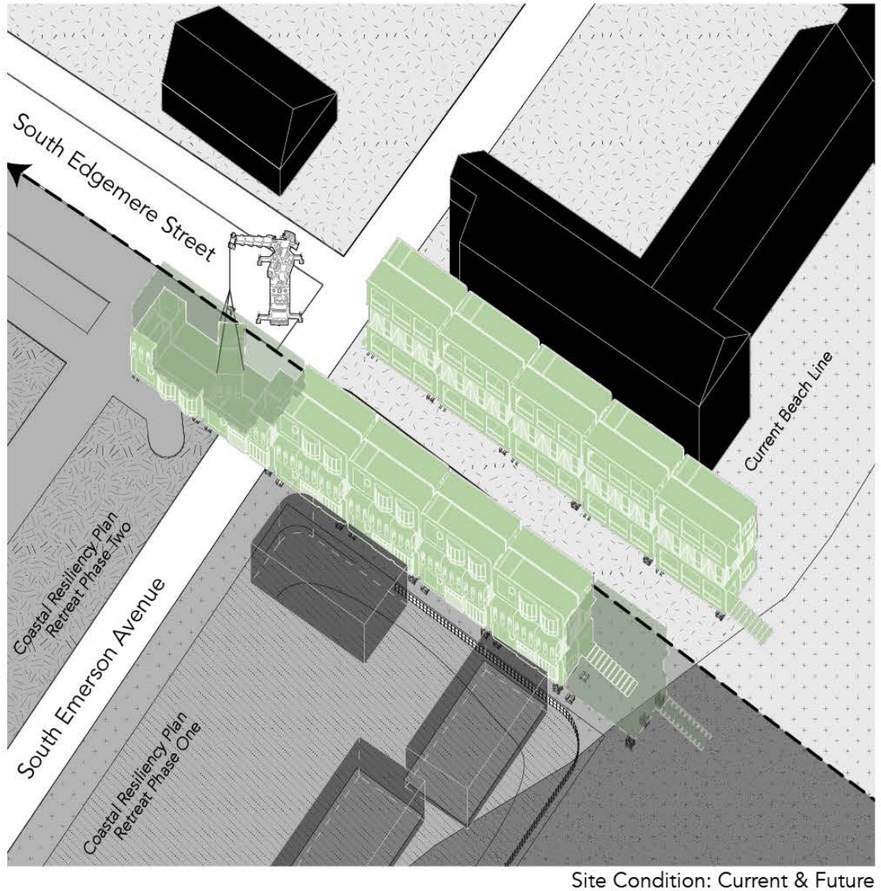




Motion Study: Measuring & Marking Land

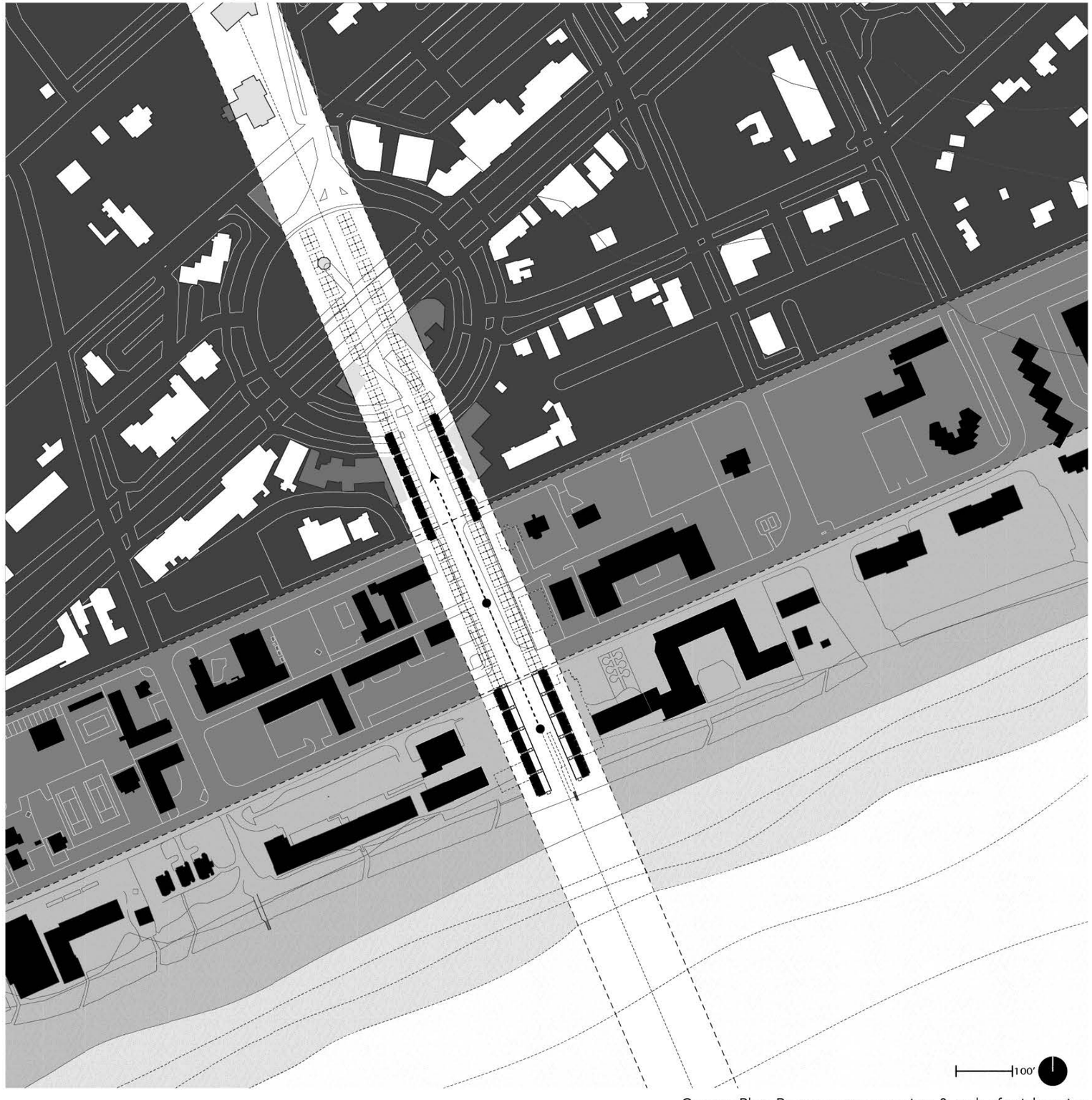


Preliminary Sketch: migrating frames away from erosion line

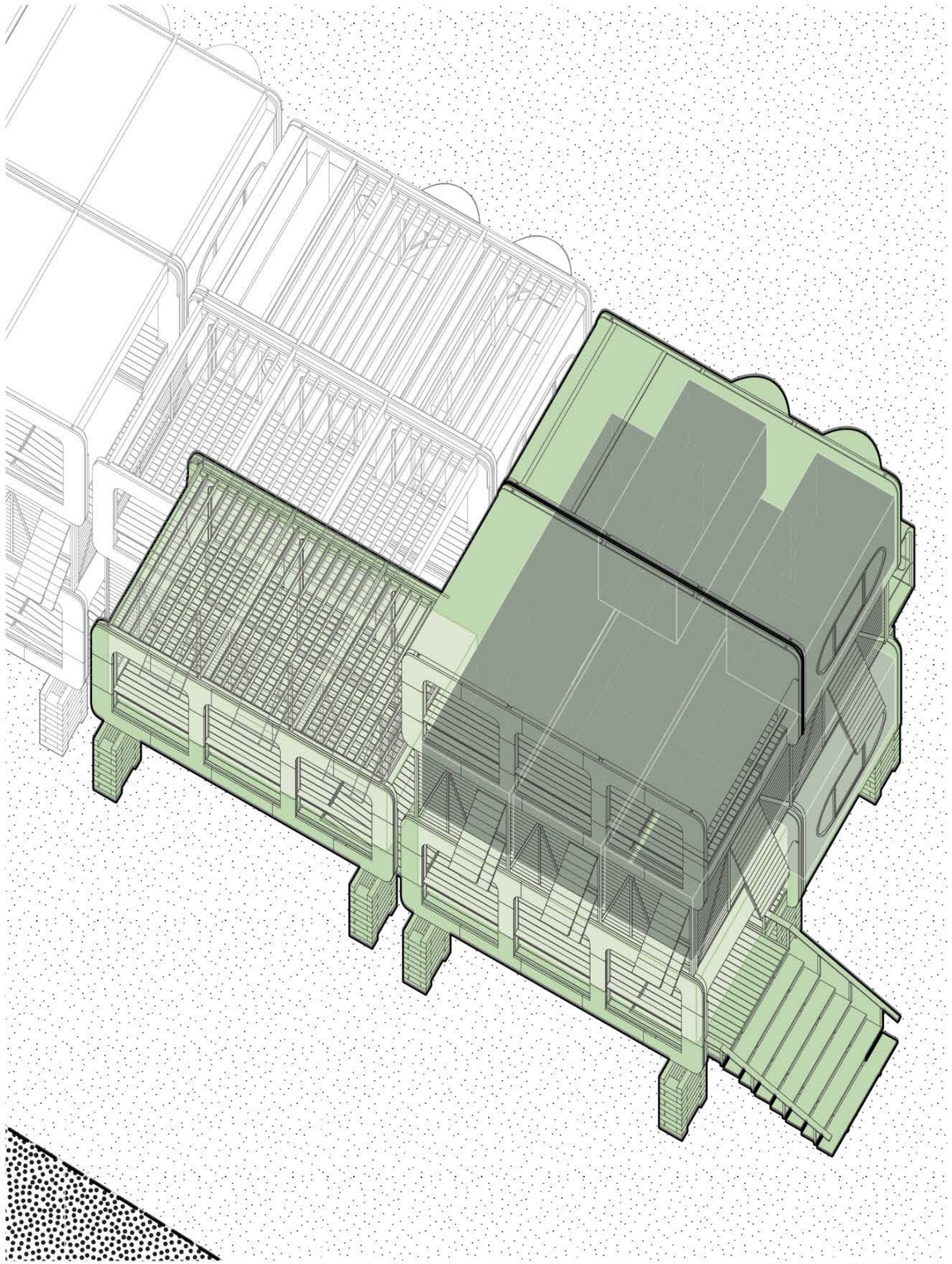


Site Condition: Current & Future

Setting a Frame



Context Plan: Retreat zones over time & path of axial motion



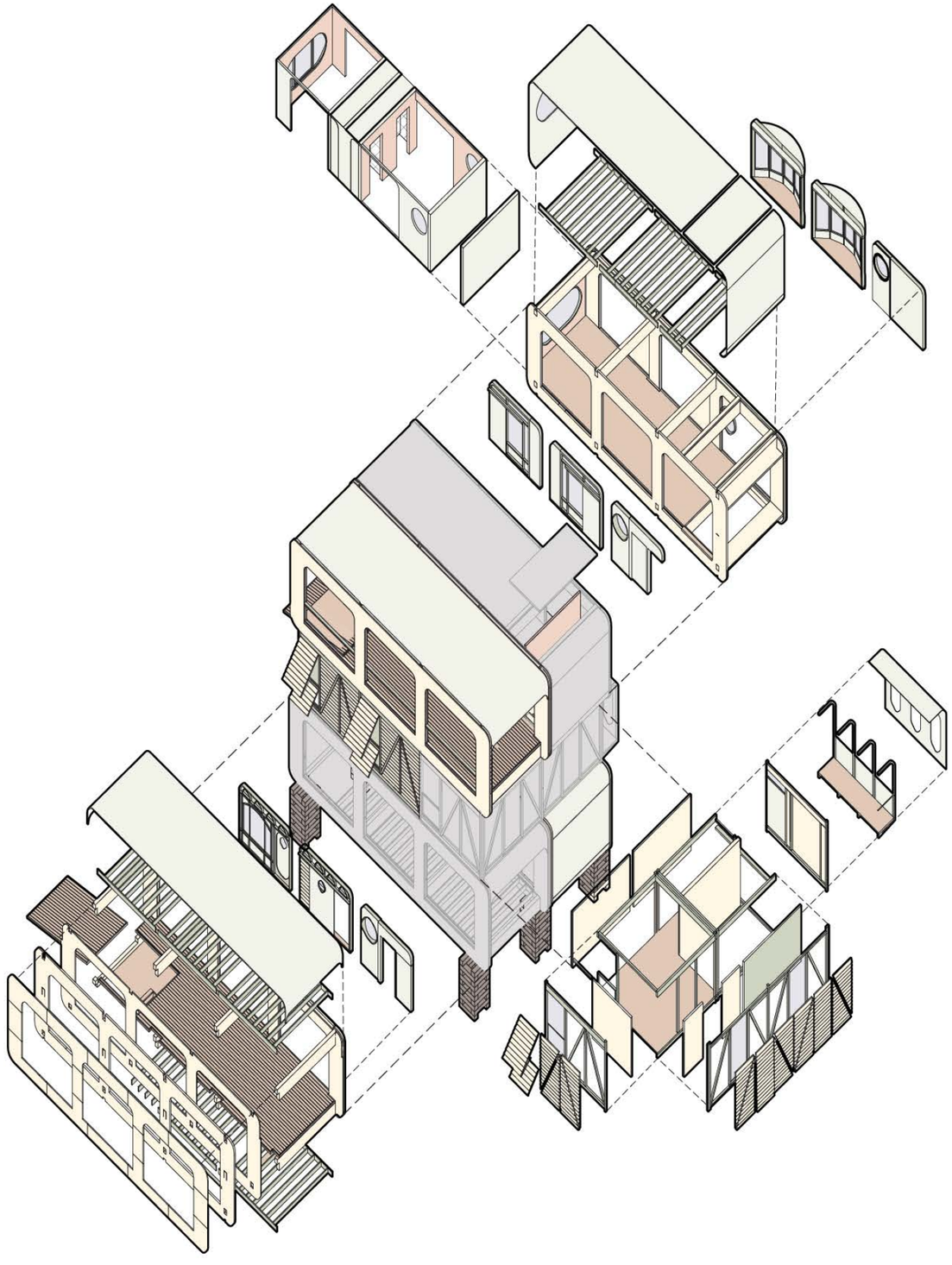
Volumes within Frames

Day: Public threshold between town and beach

Night: Contains and supports hospitality and commercial programming

Ground Floor Cafe View

Upper Floor Room

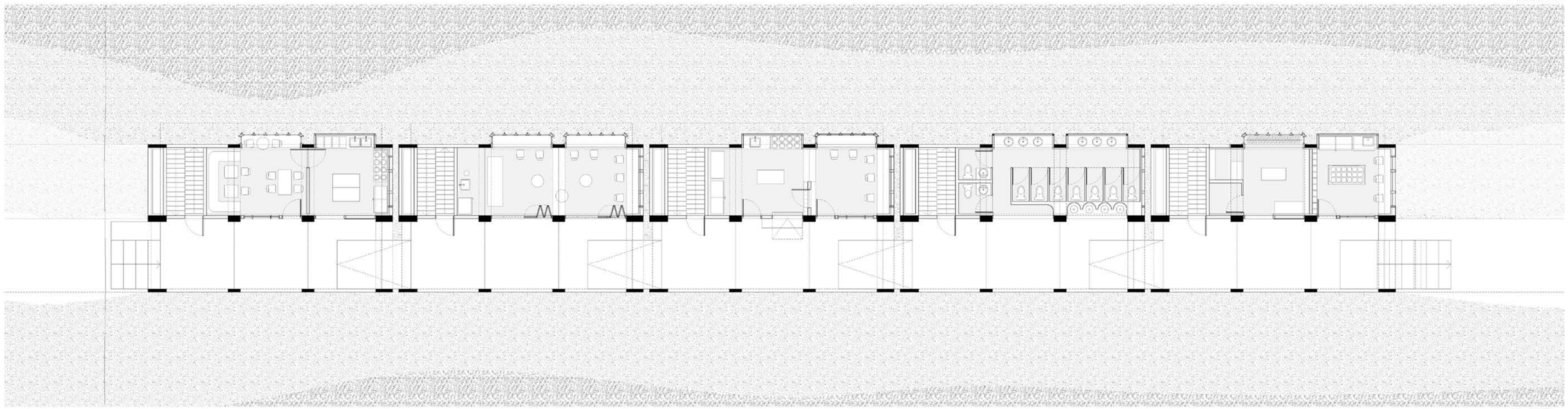


Exploded Axon: One Module, Seven Units

10 bays along the ground floor boardwalk support commercial tenants, cafes, shops, ice cream stalls, bars, public restrooms and showers, and other public amenities. Upper floors support 40 units of hotel lodging across two unit types, the upper boardwalk allows for private circulation between the hotel units above the public.

When the structure must be moved inland, a crane can move each module onto a 53' trailer for a great distance, or simply onto the next set of modules one increment at a time.

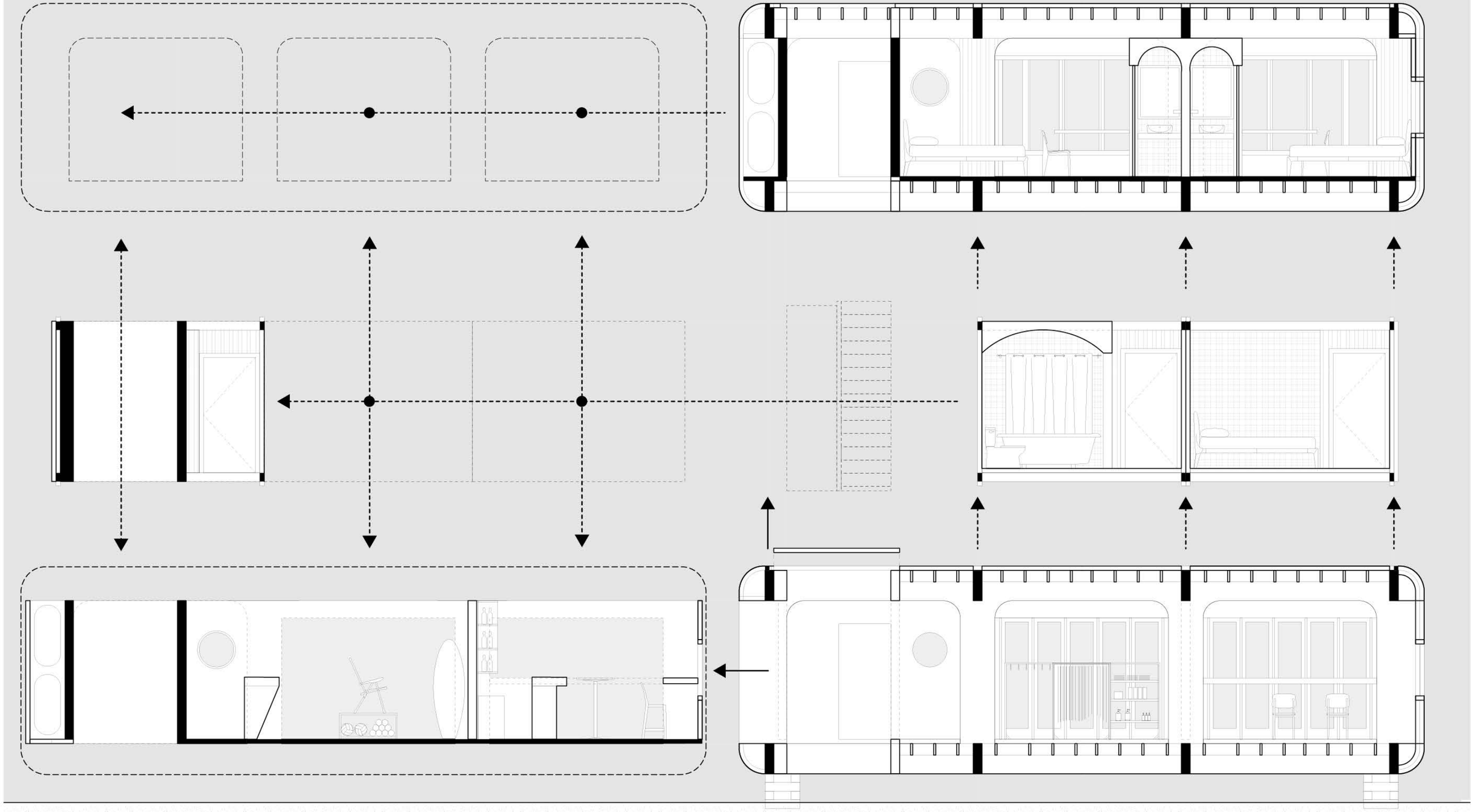
Elevation



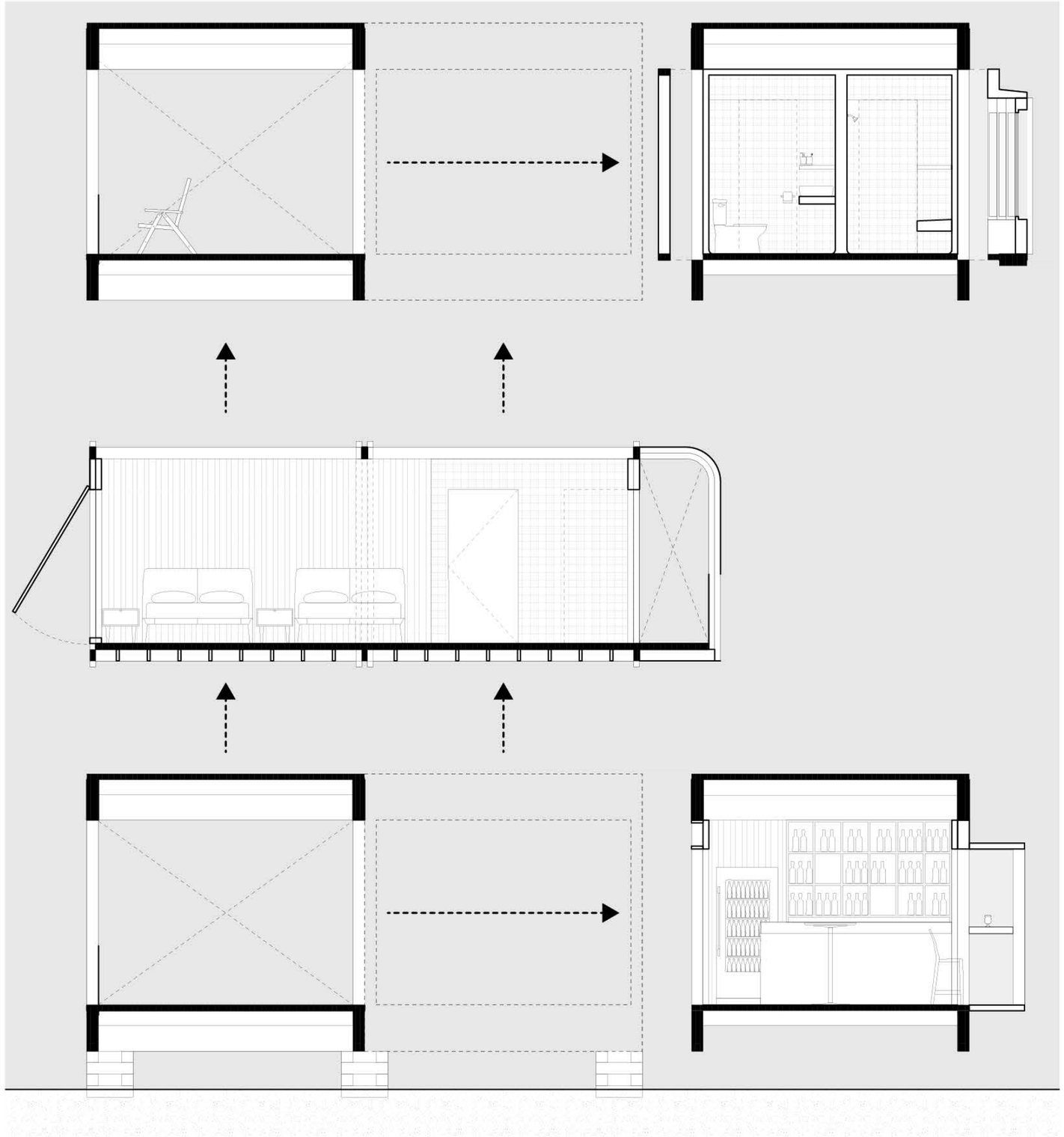
Half Plan

Transverse Section Perspective

12′



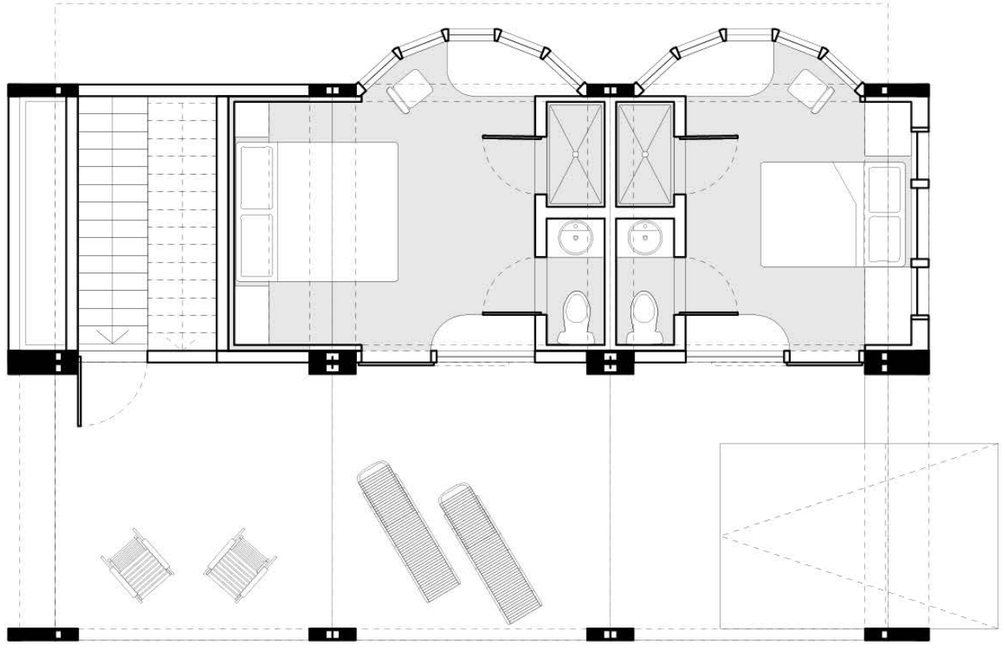
Long Section Assembly Diagram



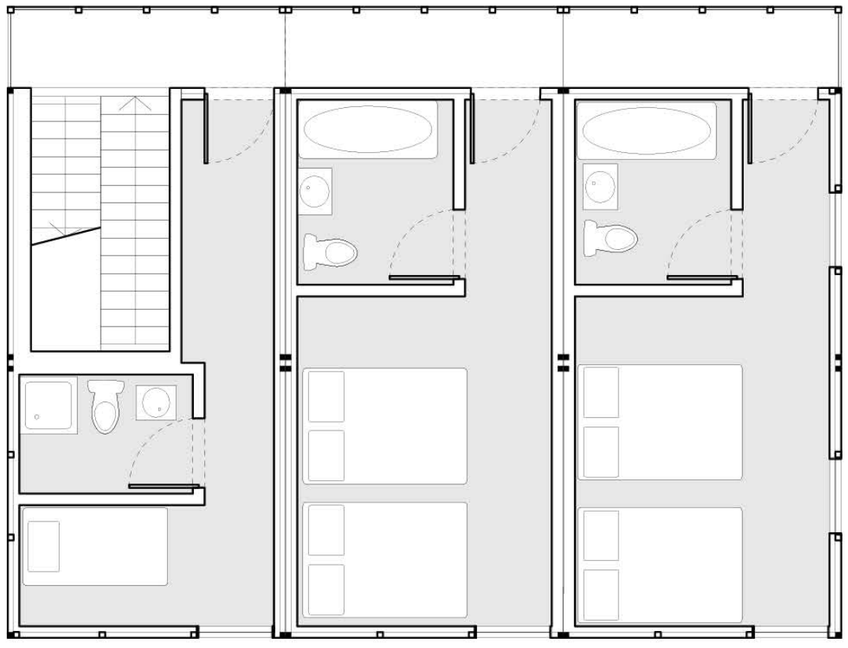
Transverse Section Assembly Diagram

Third Floor Unit Window Bays

Ground Floor Cafe View



Third Floor Unit Plan



Second Floor Unit Plan

Third Floor Room Model

Second Floor Units Interior Render

12′

IV.

Blue Zone Lofts
at 128th Street

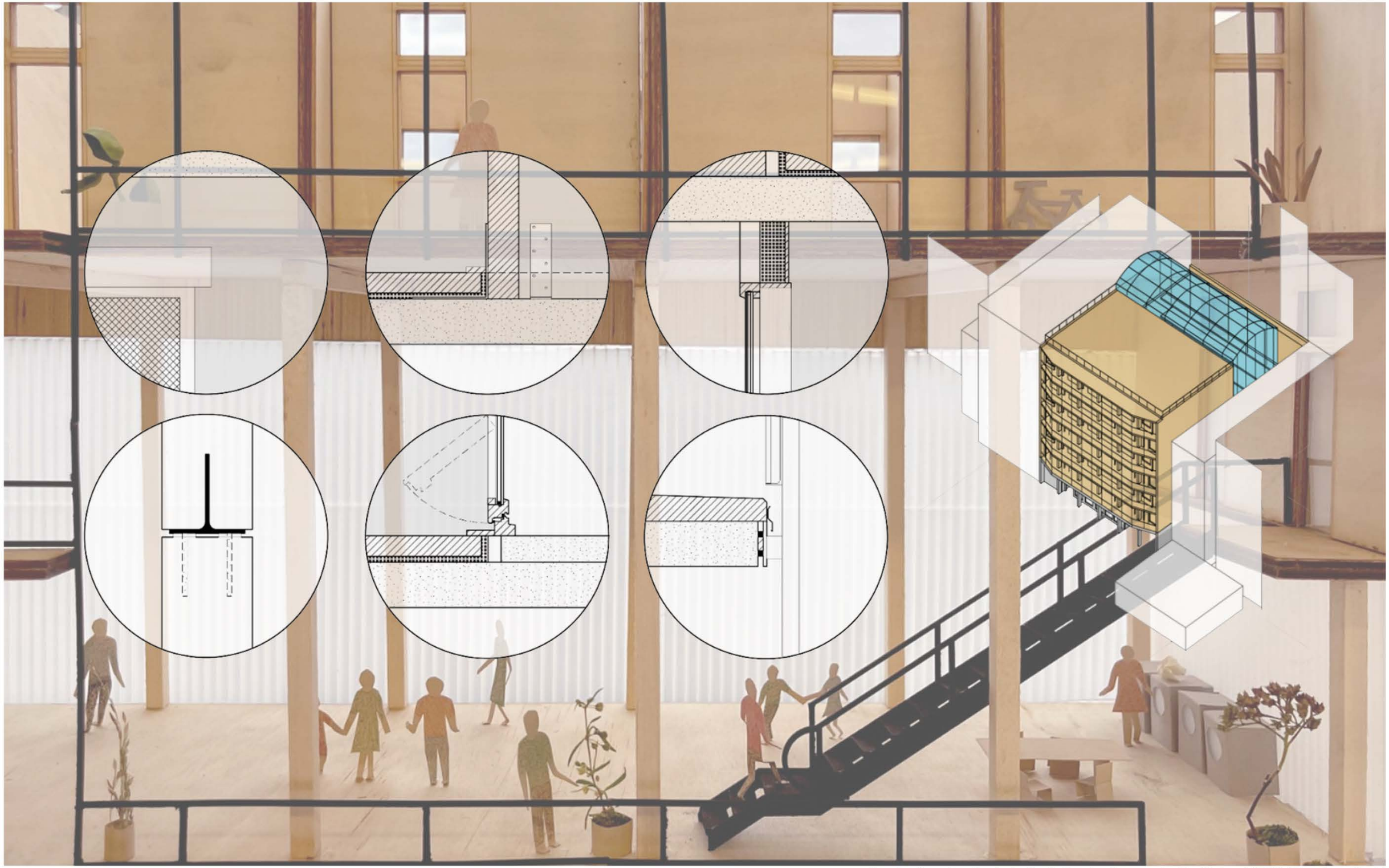
CORE III STUDIO | Fall 2023
Housing | Living in Between

West Harlem, New York | New York
Studio Professor: Chris Leong
Studio Partner: Jordan R. Howard

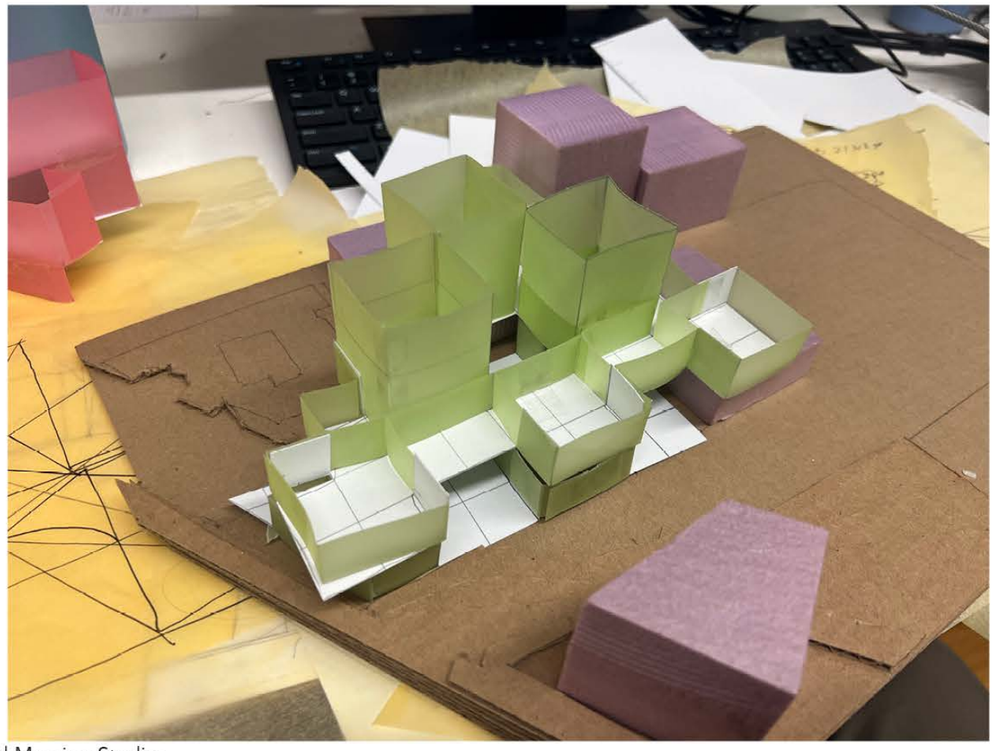
This housing proposal explores how living environments can increase longevity in New York City. With the framework of Blue Zone Living, this housing development refocuses on how people move, what they eat, and how they maintain deep personal relationships. Located at an intersection between a commercial district and residential neighborhood, urban farming becomes a tool for social and spatial connection.
A common circulation core connecting 70 units enables social interaction and incorporates stairs into residents' daily movement. Each apartment is clustered nodally in groups of 5-7 which promotes a circle of close friendships outside of the family unit. Unit aggregation looks to facilitate intergenerational living through adjacencies of studio, 1 bedroom, and 3 bedroom units. Food systems are a major focus of Blue Zone living, and the proposal seeks to incorporate locally sourced, plant based food at multiple scales. Critically, the proposal looks to partner with Harlem Grown to develop an urban farm for both production and education on the adjacent vacant lot. Food production through hydroponic greenhouses produces upwards of 1 ton of vegetables annually per 90 sq-ft, allowing for hundreds of residents and the larger community of West Harlem to have access to locally produced, healthy food.

Review Critics:
Nima Javidi (Cooper Union)
Elisa Ours (Corocran Sunshine)
Galia Solomonoff (SAS / GSAPP)
John Paul Risavy (SHoP)
Wonne Ickx (Productora / GSAPP)
Matt Shaw (U Penn)
Dominic Leong (Leong Leong)
Benjamin Cadena (GSAPP)
Jenna Dezinski (BIG-NY)
Khoi Nguygen (GSAPP)
Nile Greenberg (ANY)

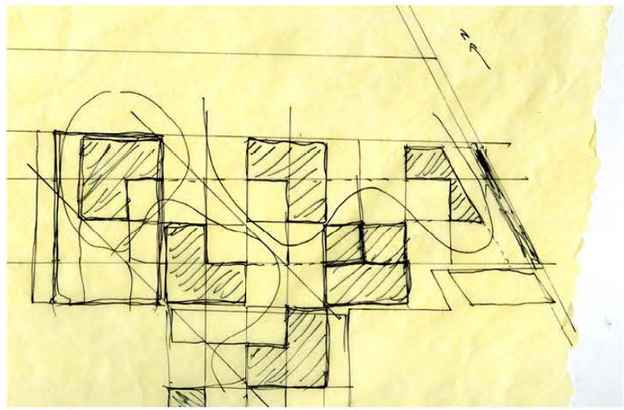
Render from 128th Street: Circulation Core, Historic Mechanic Shop meets New

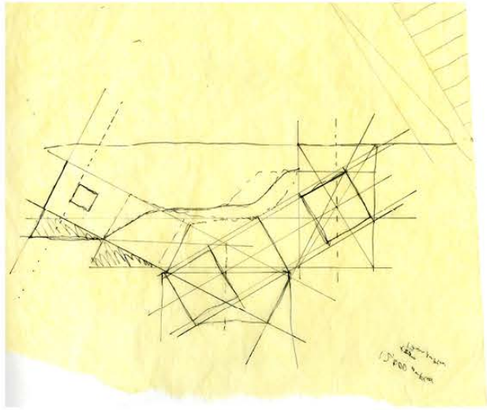


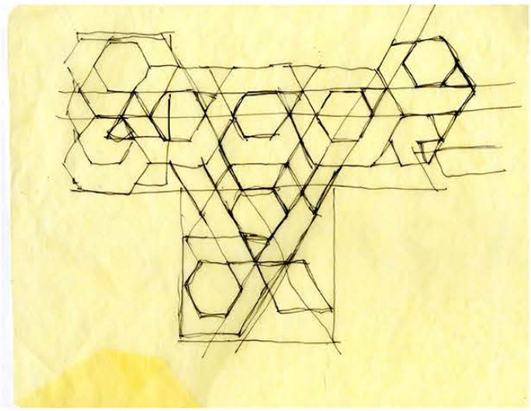
Housing Precedent Study: La Borda Housing Cooperative (Arch't Lacol | 2018 | Barcelona, Spain)
Team: Jordan Howard, Rory Peckham, Brandon Gil

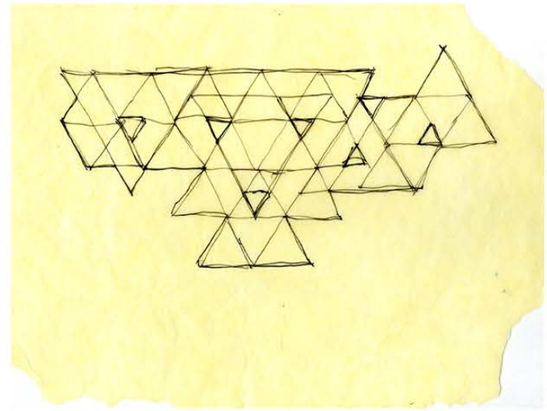


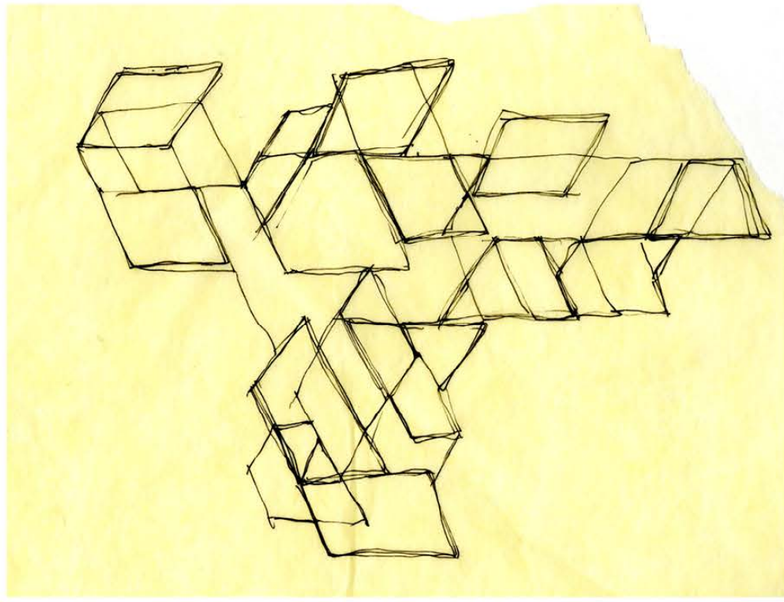
Conceptual Massing Studies



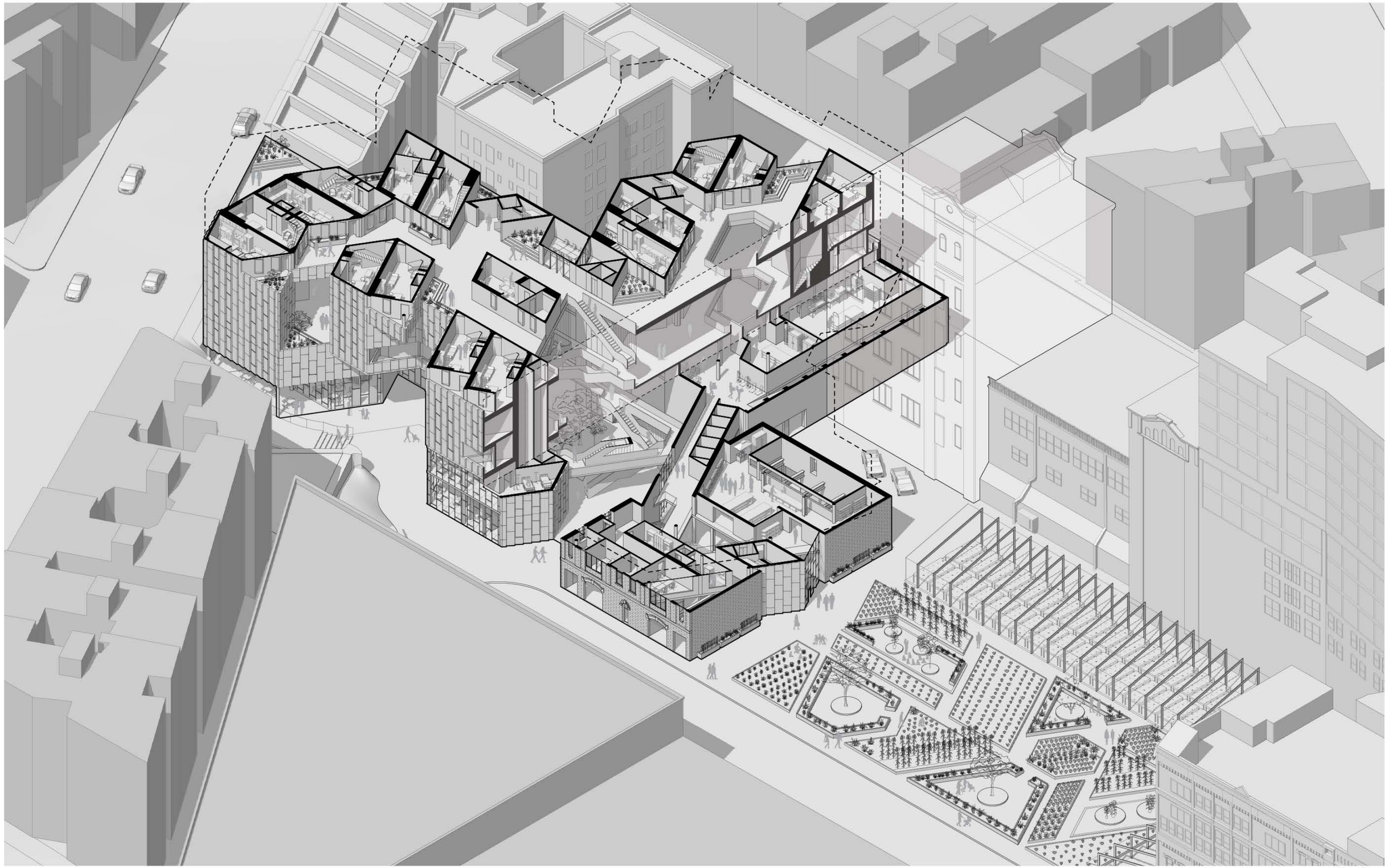






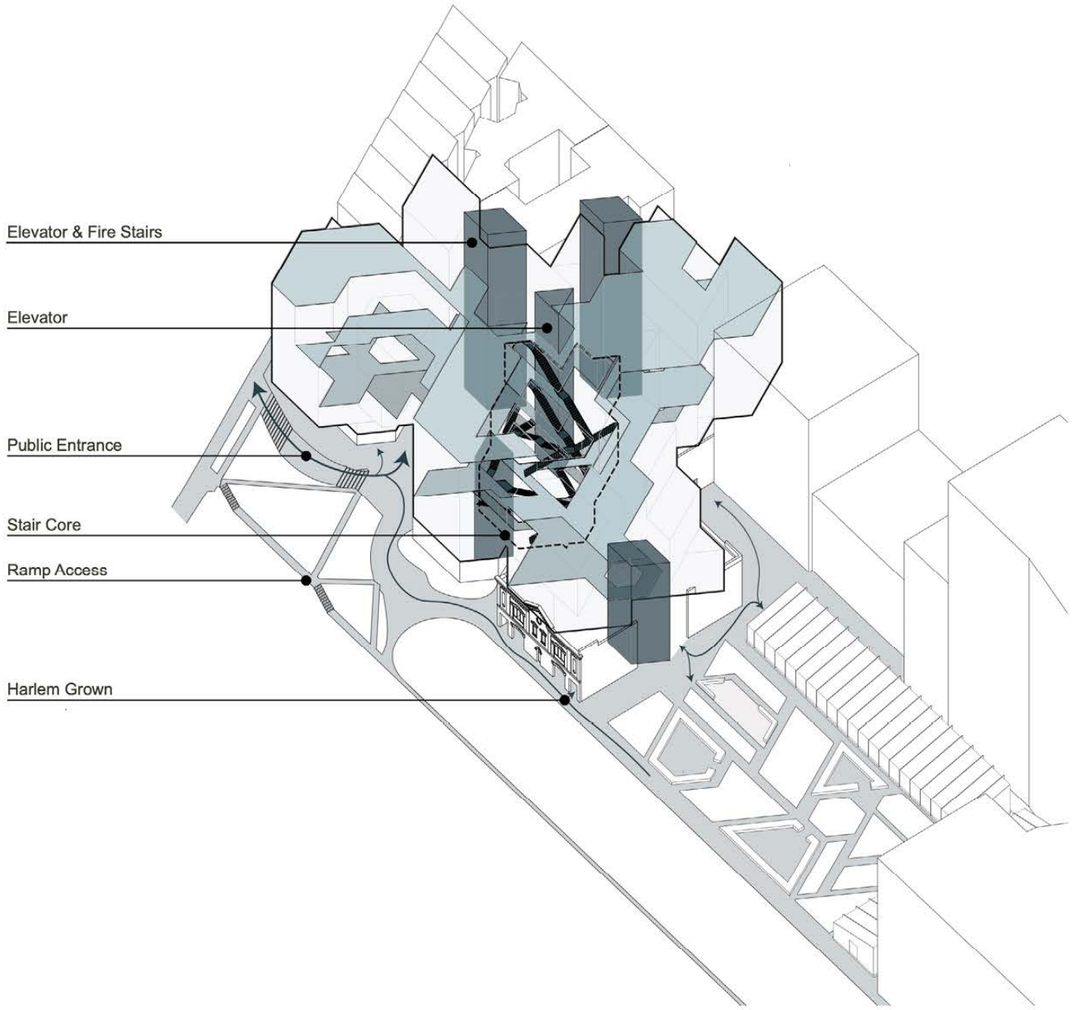


Plan Conceptual Development

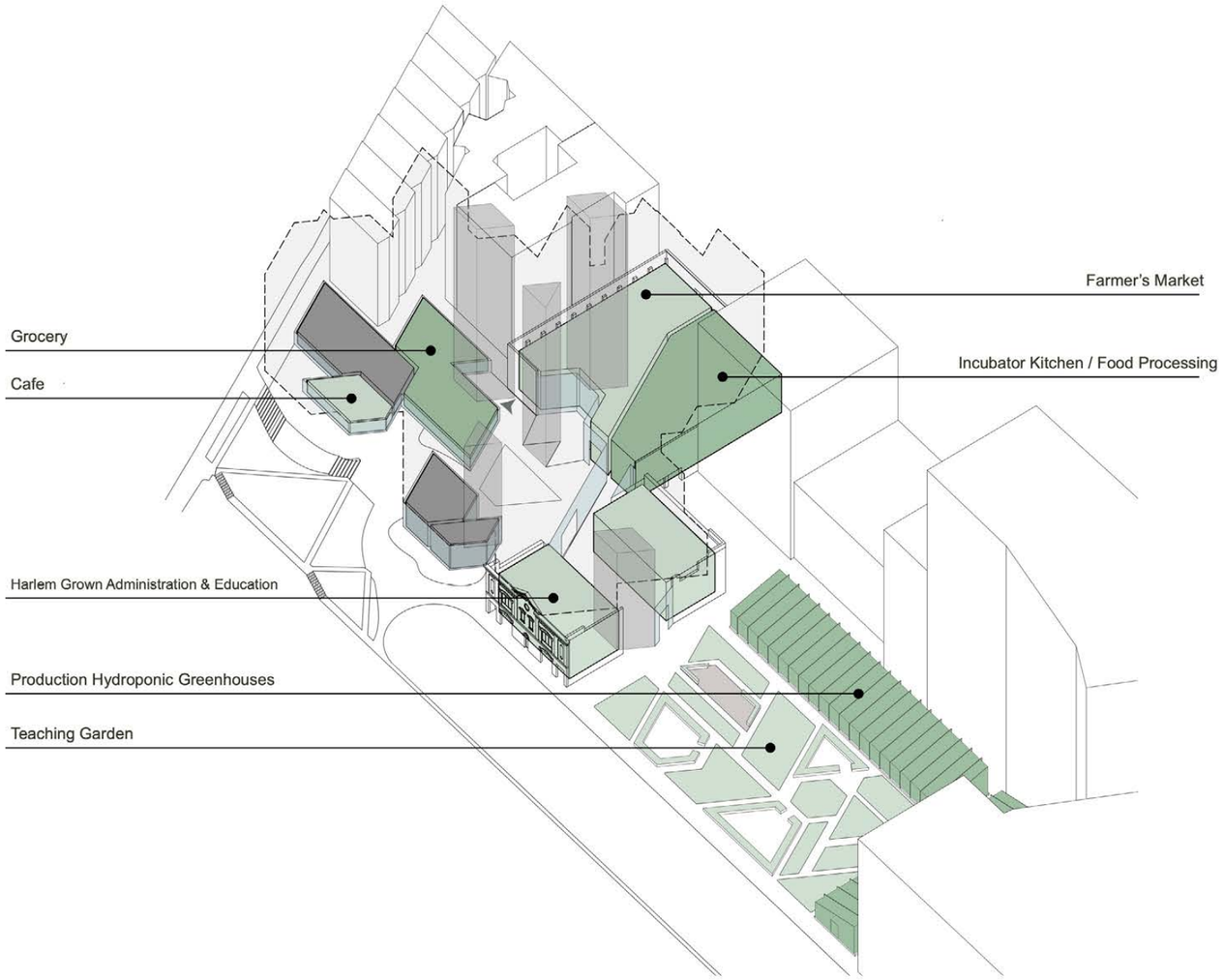


Cut Axon

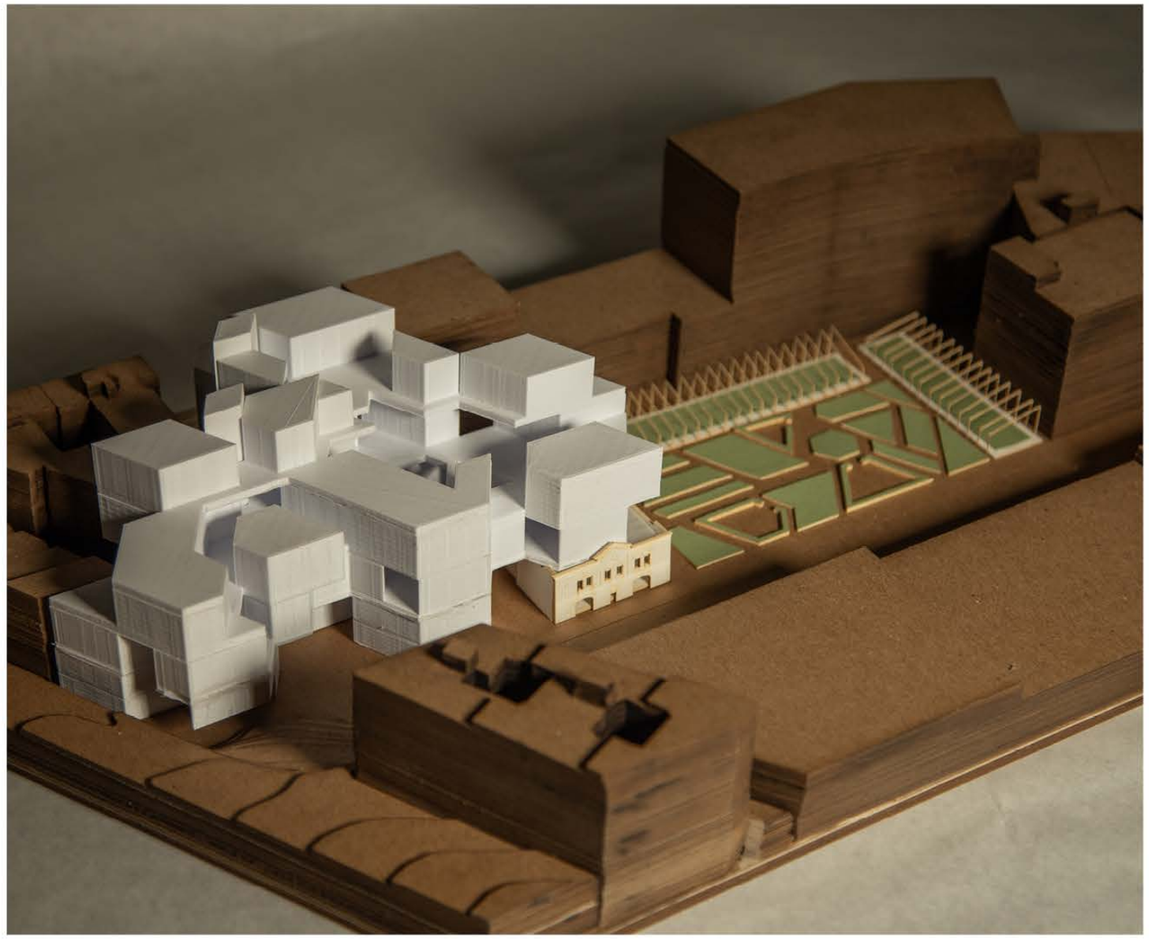
Concept Diagram



Circulation Diagram



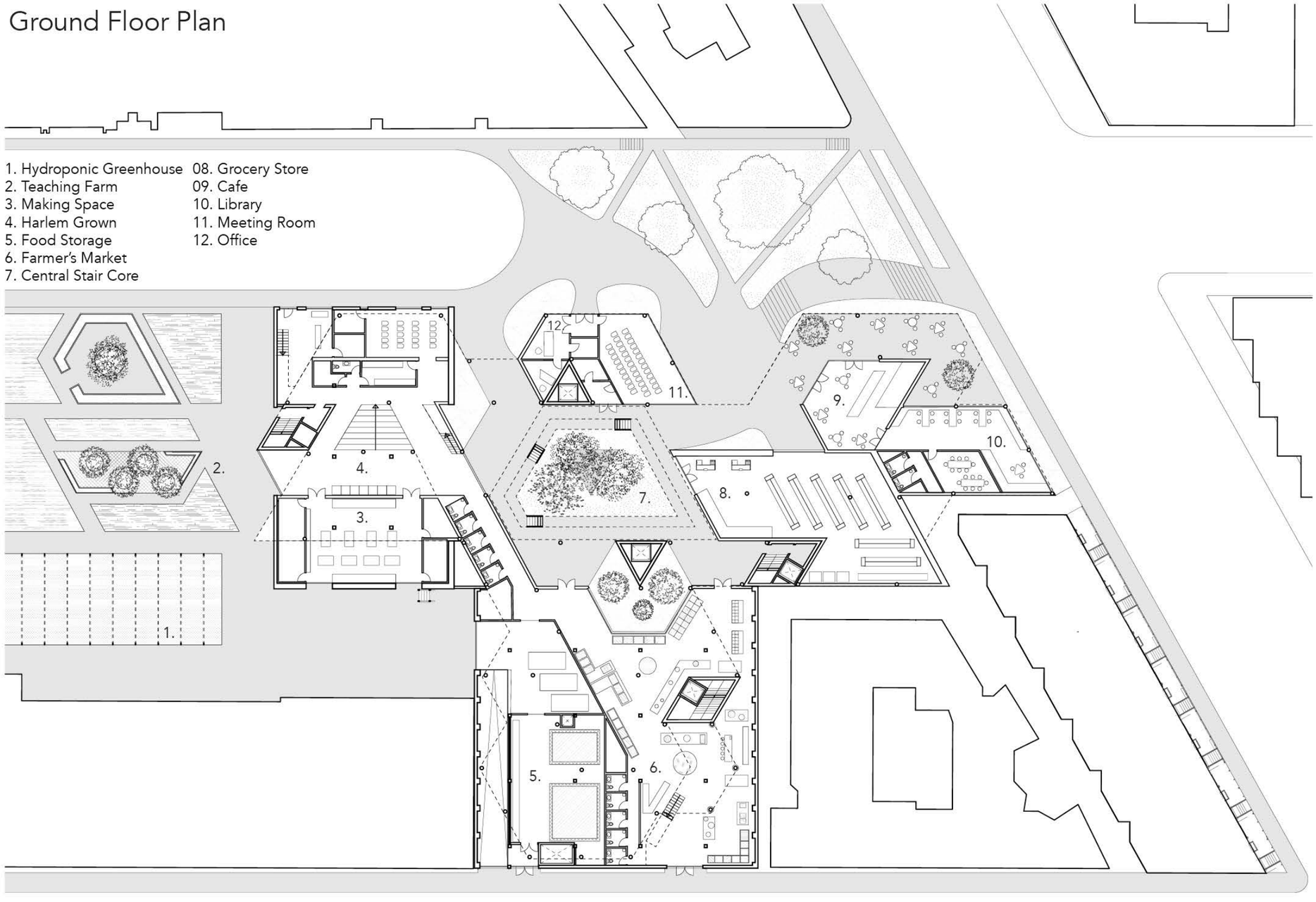
Food System Diagram

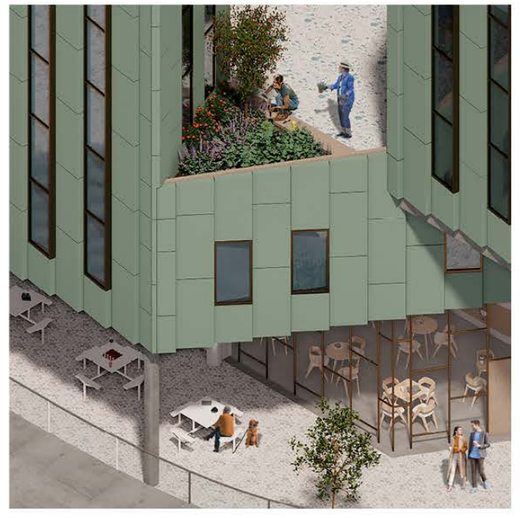


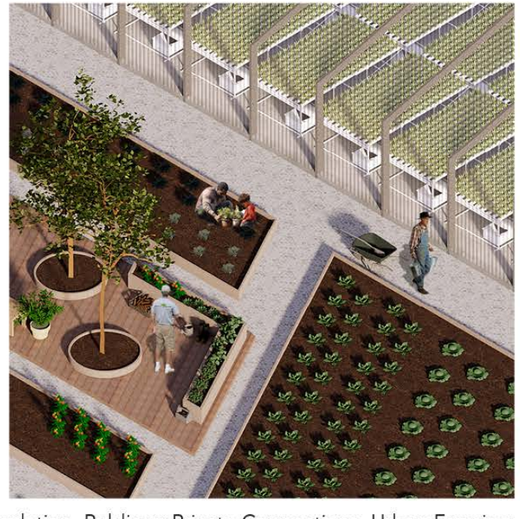
Site Model Photograph

Ground Floor Plan

1. Hydroponic Greenhouse
2. Teaching Farm
3. Making Space
4. Harlem Grown
5. Food Storage
6. Farmer's Market
7. Central Stair Core
08. Grocery Store
09. Cafe
10. Library
11. Meeting Room
12. Office

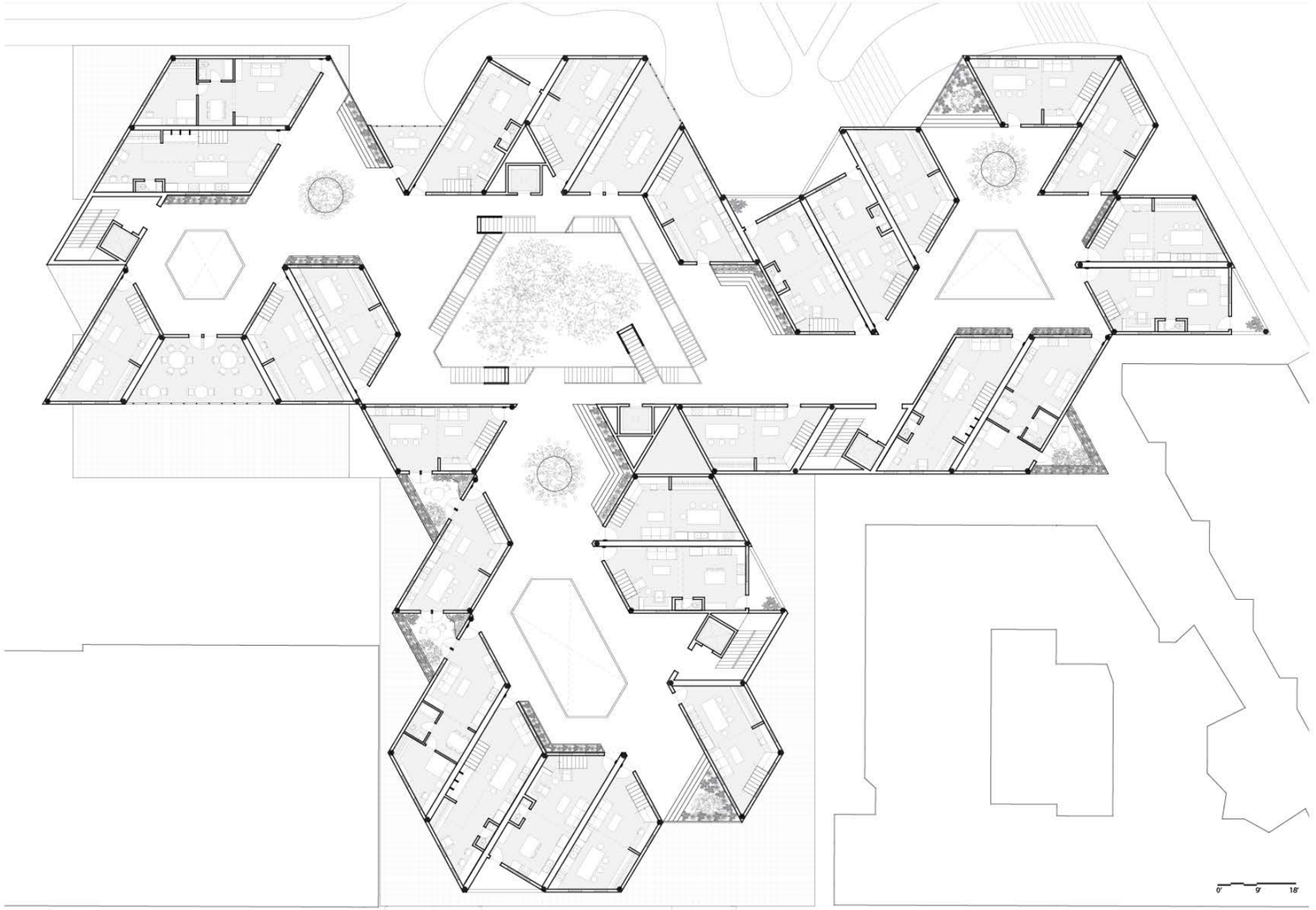






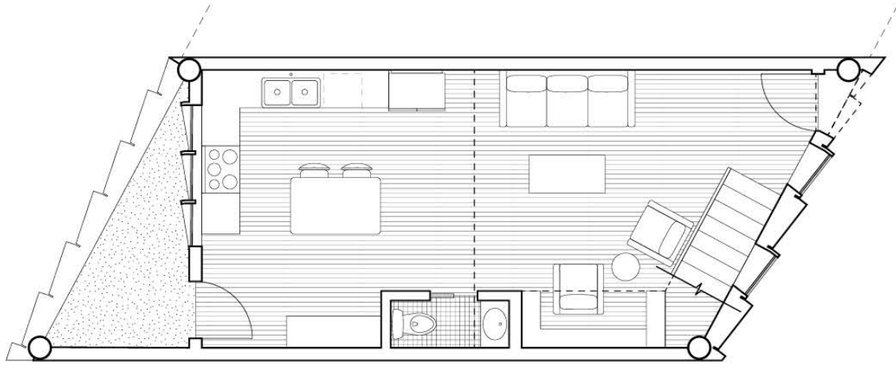
Vignettes: Stairs Circulation, Public vs Private Connections, Urban Farming

Typical Floor Plan

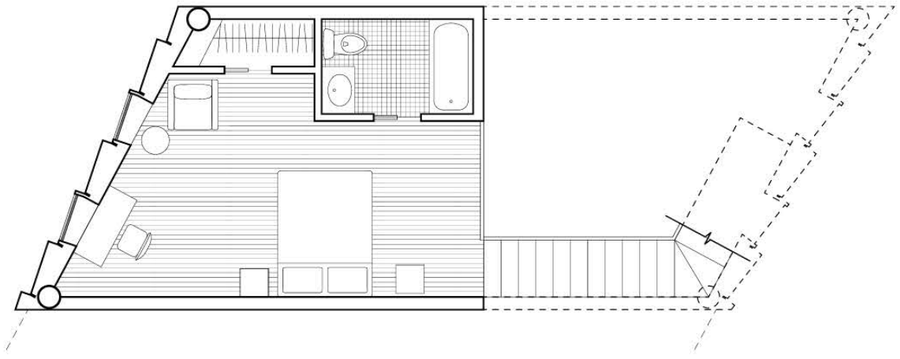


Render of Unit Commons

Model Photograph 1/4”=1’



Ground Level: Patio, Kitchen, Living



Upper Level: Bedroom, Closet, Bathroom

V (a).

Two Roofs:
Frictional Speculations at South Seaport

CORE II STUDIO | Spring 2023
Damage Control | Alternative Presents

South Seaport Historic District, New York | New York
Studio Professor: Esteban De Backer

When the Schermerhorn family bought this land at the turn of the 19th century they bought water. This act of speculation built this area into a thriving ferry stop and market district in 1810. However, speculation both built and promised have left scars on the landscape and the psychology of the inhabitants over the last 200 years. Buildings and lots left abandoned or stagnant for years as projects to build towers or extend the landfill are proposed, fought over, and eventually or quickly abandoned. The leaning and unfinished 161 Maiden lane is the embodiment of the island resisting the march of foundation pressures on its fragile edges. This 570 foot tall tower -stuck between the built and the idea is not the first marker of damage to the site.

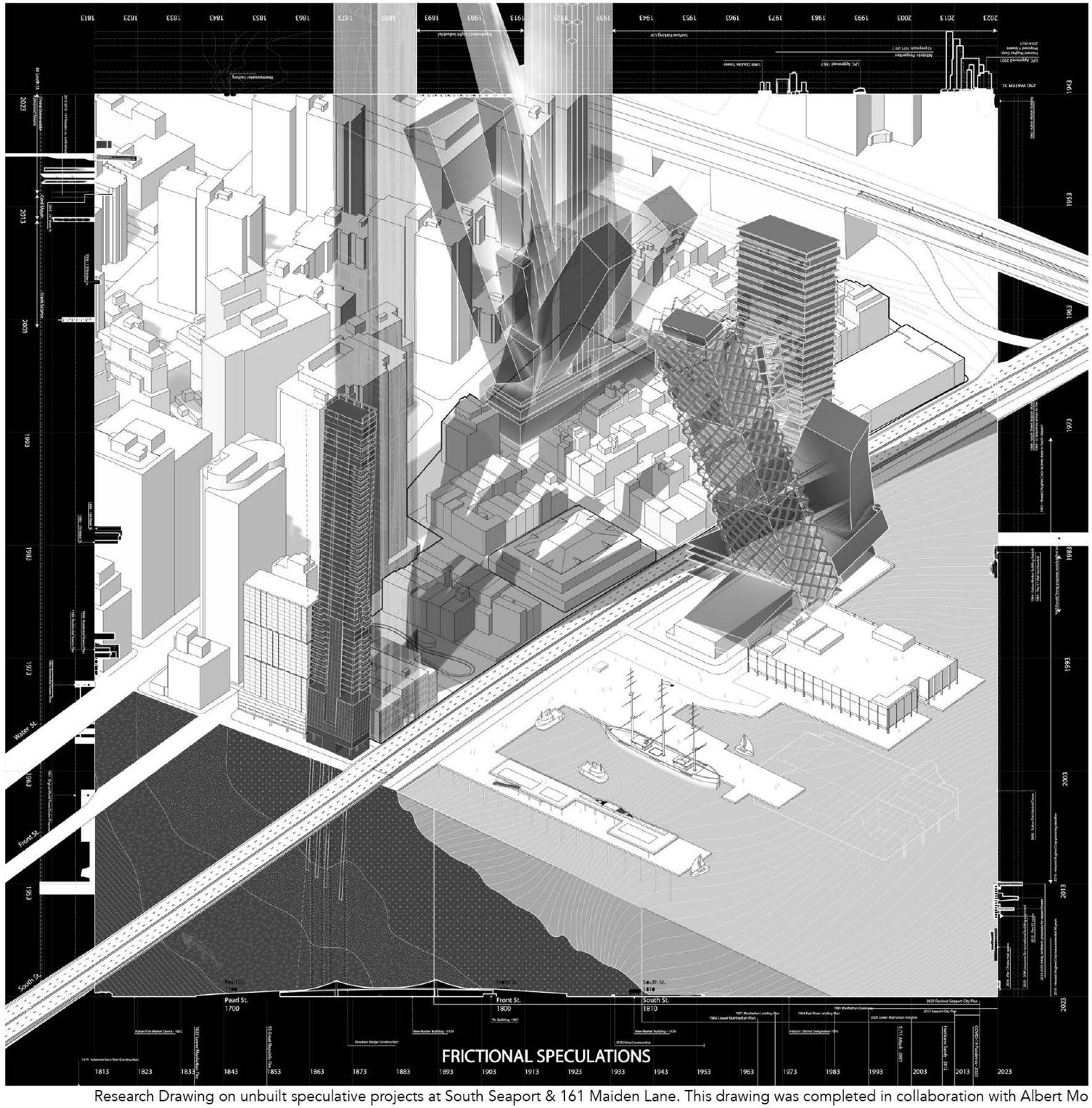
What does it mean when a place evolves from an economic space to a cultural one?

What does social density in a public landscape mean?

What is the goal of a district in the context of urban change?

What is "emptiness" in architecture and how can it create opportunities for public works?

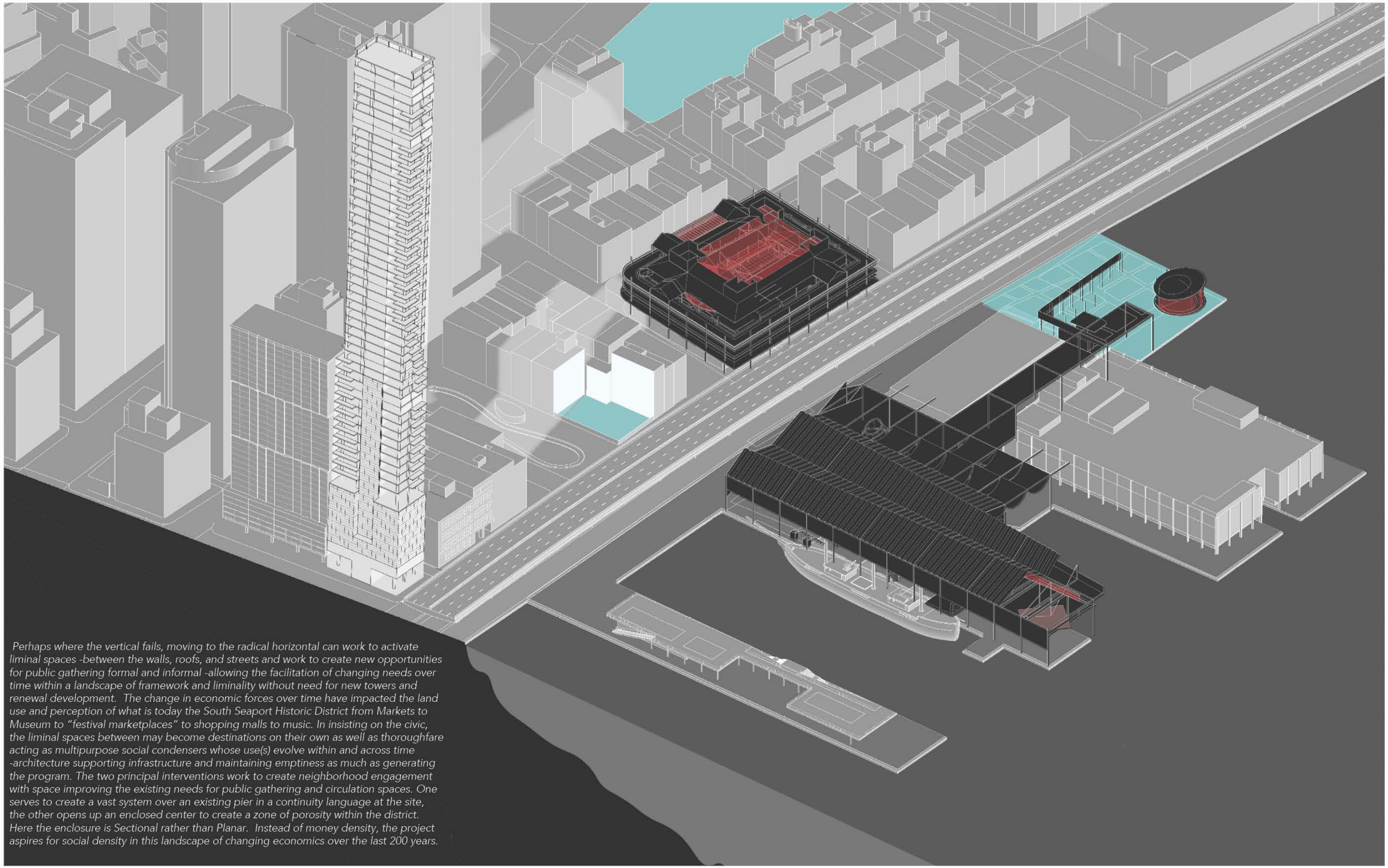
Review Critics:
Mario Gooden (GSAPP)
Benjamin Cadena (GSAPP)
Valeria Paez Cala (GSAPP)
Claudia Tomateo (GSAPP)
Andres Macera (Diller Scofidio + Renfro)
Antiono Cantero (Princeton University)
Rosana Ekhatib (GSAPP)
Annya Ramirez (Marvel Architects)



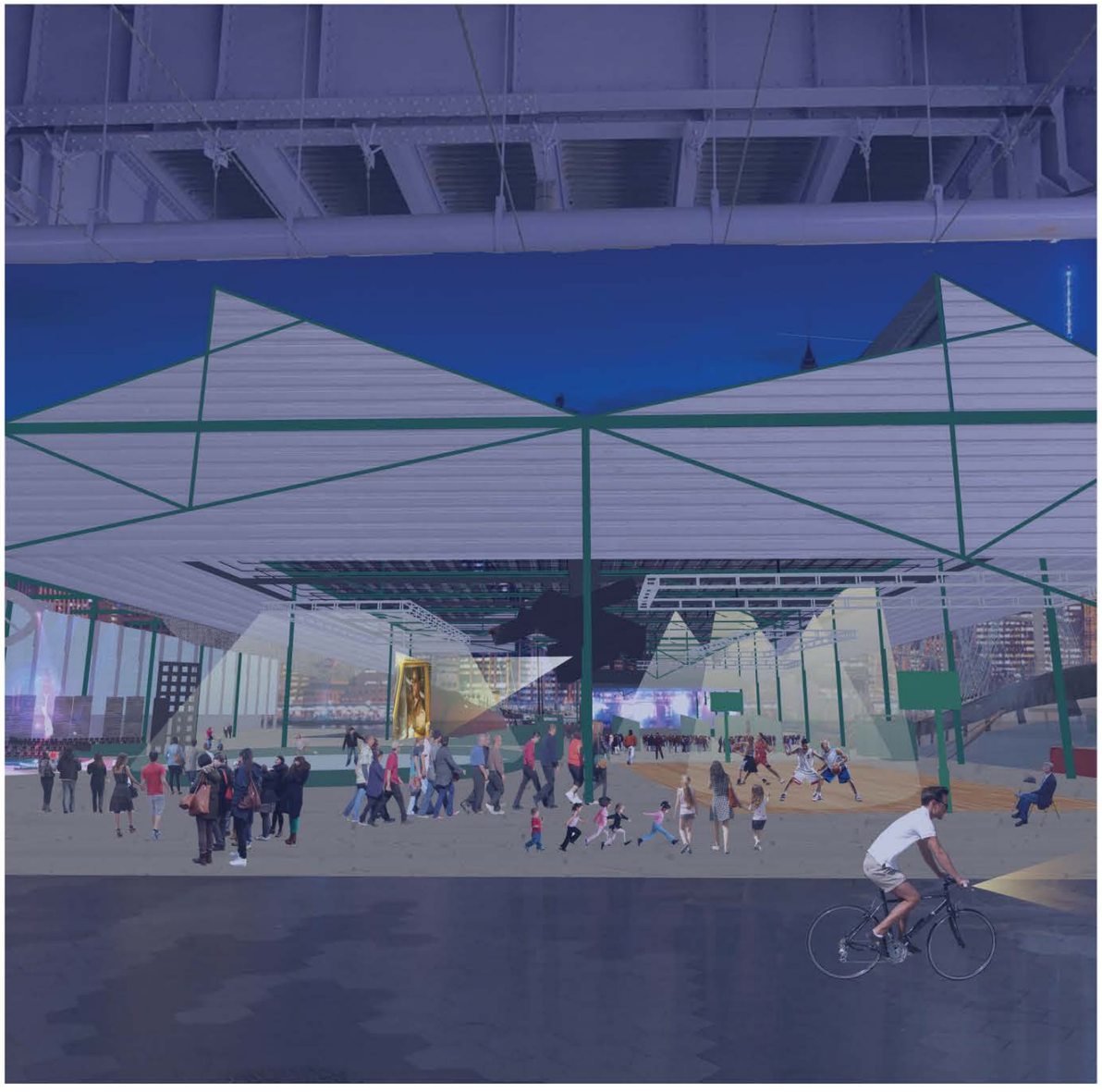
Research Drawing on unbuilt speculative projects at South Seaport & 161 Maiden Lane. This drawing was completed in collaboration with Albert Mo

Midterm model superimposing layers of spatial history architectural and geological on the site from the East River to Pearl Street - scaling each layer according to its endurance on the site - time intersecting with place, land, and structure.

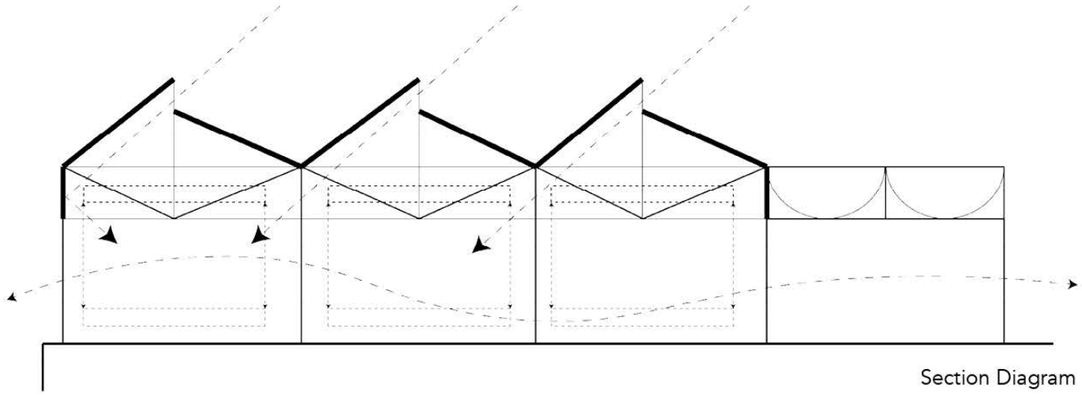
The Fulton Market Building's history as a fish market spans from 1810 connecting the city with the water. The current building dates from 1984, with the market moving in 2006 to the Bronx. The current usage as an enclosed, outward facing commercial units deprives the district of its historic heart.



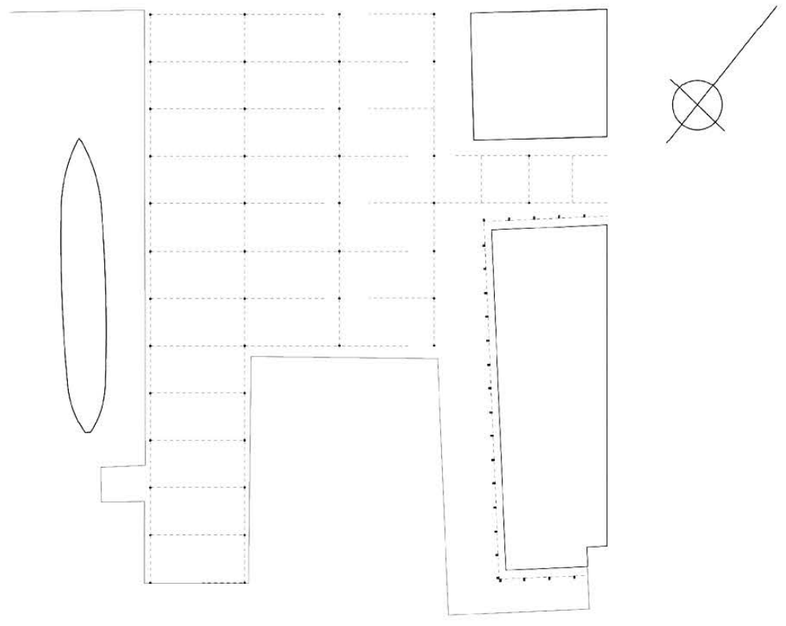
Perhaps where the vertical fails, moving to the radical horizontal can work to activate liminal spaces -between the walls, roofs, and streets and work to create new opportunities for public gathering formal and informal -allowing the facilitation of changing needs over time within a landscape of framework and liminality without need for new towers and renewal development. The change in economic forces over time have impacted the land use and perception of what is today the South Seaport Historic District from Markets to Museum to "festival marketplaces" to shopping malls to music. In insisting on the civic, the liminal spaces between may become destinations on their own as well as thoroughfare acting as multipurpose social condensers whose use(s) evolve within and across time -architecture supporting infrastructure and maintaining emptiness as much as generating the program. The two principal interventions work to create neighborhood engagement with space improving the existing needs for public gathering and circulation spaces. One serves to create a vast system over an existing pier in a continuity language at the site, the other opens up an enclosed center to create a zone of porosity within the district. Here the enclosure is Sectional rather than Planar. Instead of money density, the project aspires for social density in this landscape of changing economics over the last 200 years.



Rendering of night approach under FDR Drive to water

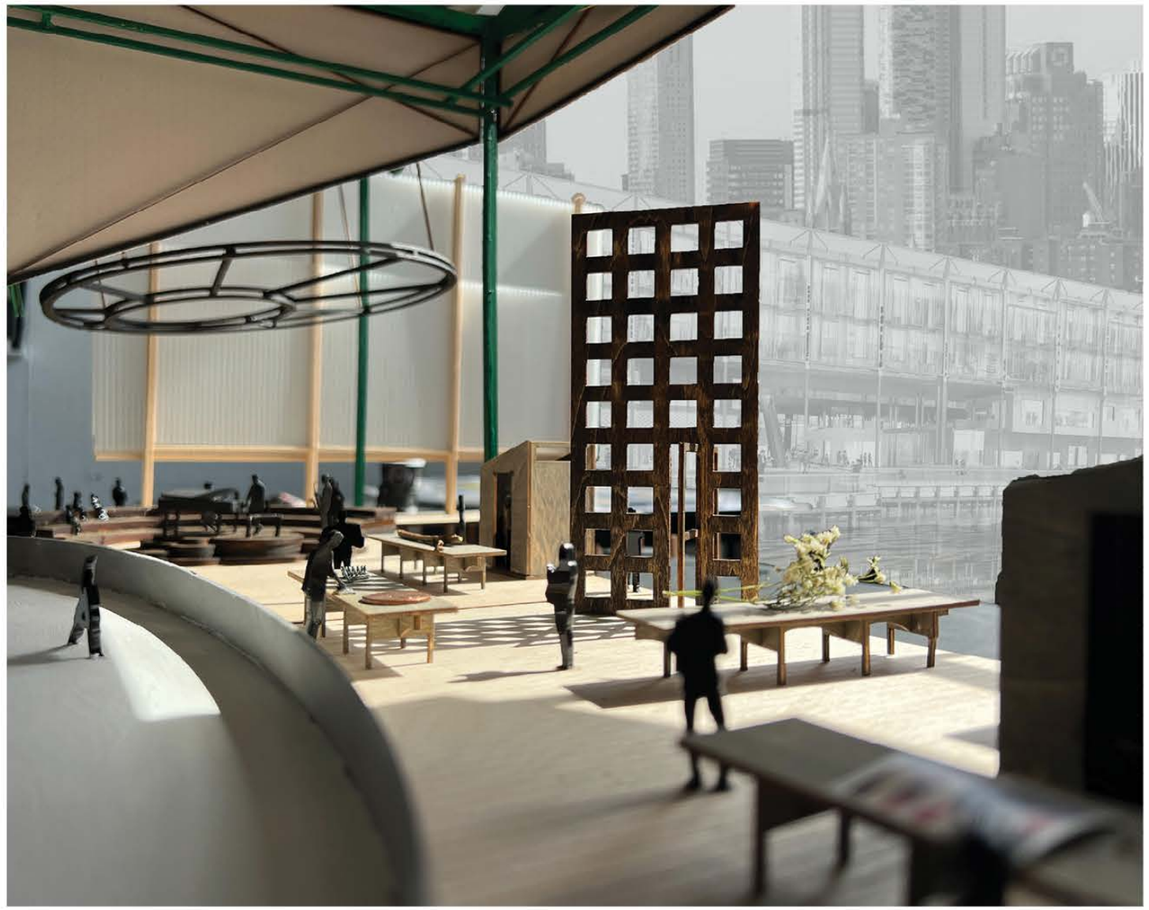


Section Diagram

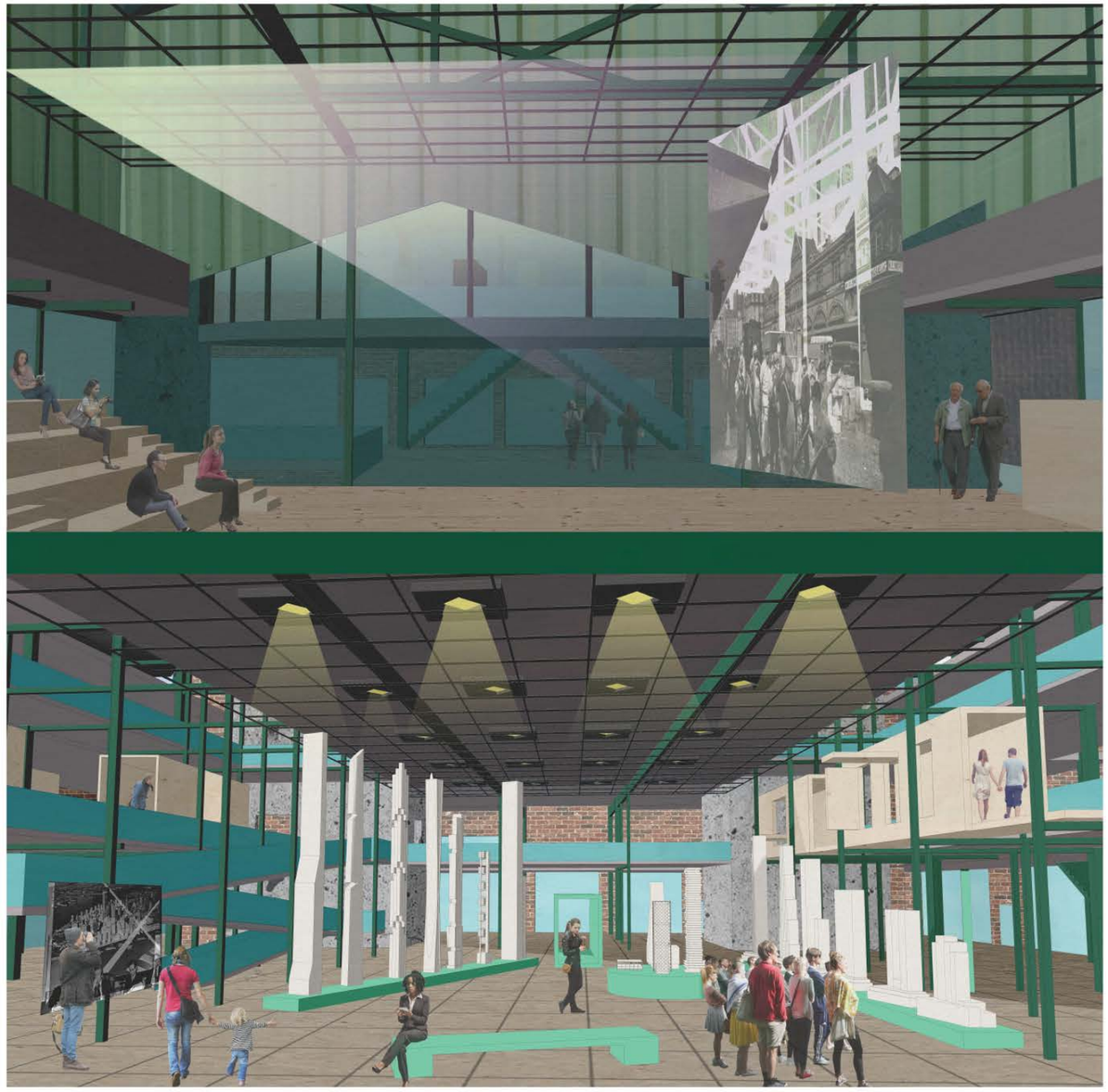


Plan Diagram

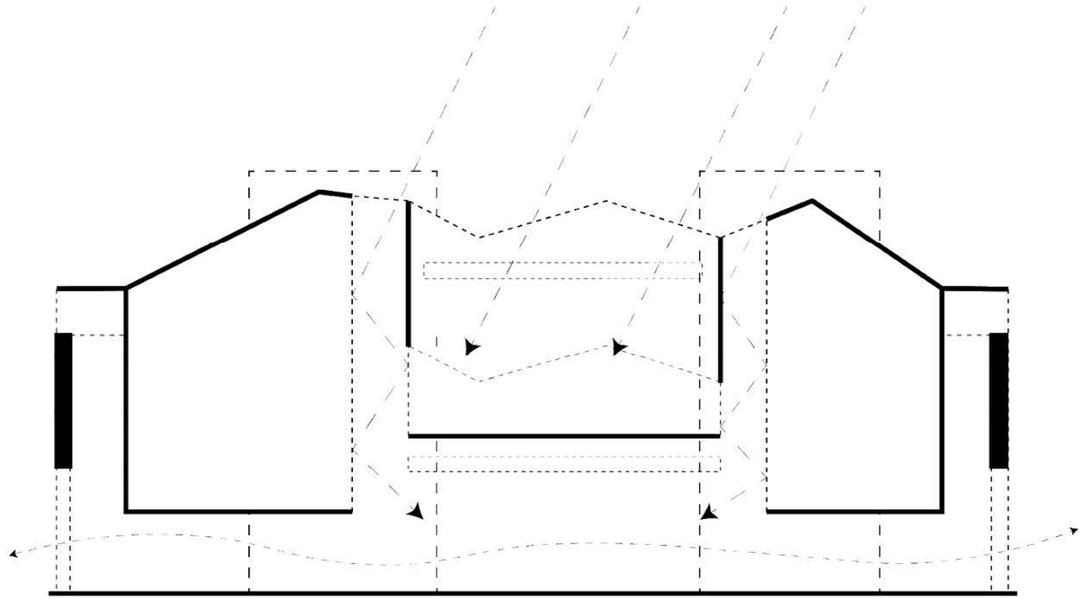
Between Pier 16 and 17 on the waterfront this intervention seeks to increase and enhance the present public use of the pier as a place of intersection, interaction, and destination through the regularization of a spatial grid, infrastructure of lighting and performance, and shelter. The current dock is open space between the Pier 17 development and the SS. Wavertree of the South Street Seaport Museum and is regularly occupied with pop up events and seasonal activities without sufficient infrastructure or organization between existing program.



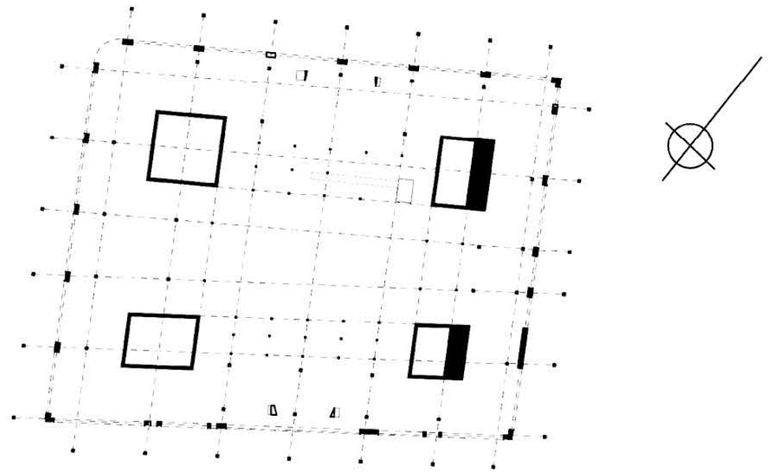
Final Model Photos Pier 16 Flexible Structure



Rendering of two spaces in simultaneous operation:
Film showing above in the theatre
Below an exhibition on the speculative vertical projects at the South Seaport in the main hall



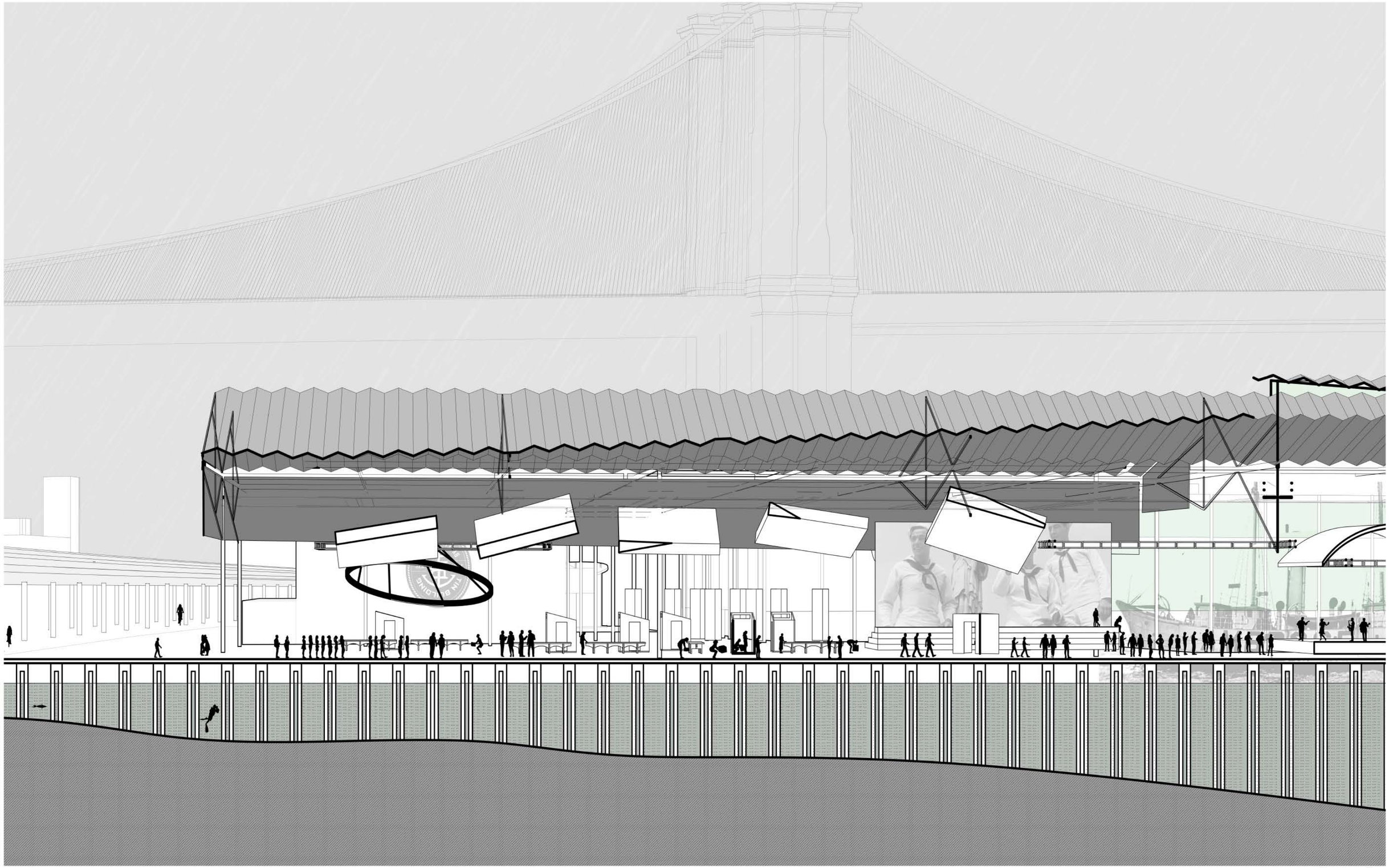
Section Diagram



Plan Diagram

Fulton Market Building Renovation into community spaces above and below with porosity to the urban district. An ambulatory encircles and creates levels of promenade and gallery circulating between levels and interior spaces. The central space is doubled with an open exhibition multi-use hall at the ground level and an enclosed performance theatre above.

Section: Fulton Market Building



Section: Pier

V (b).

Two Roofs *Part II*
Design Development

BUILDING TECHNOLOGY III | Fall 2024
Materials + Assemblies
BUILDING TECHNOLOGY IV | Fall 2024
Building Systems Integration

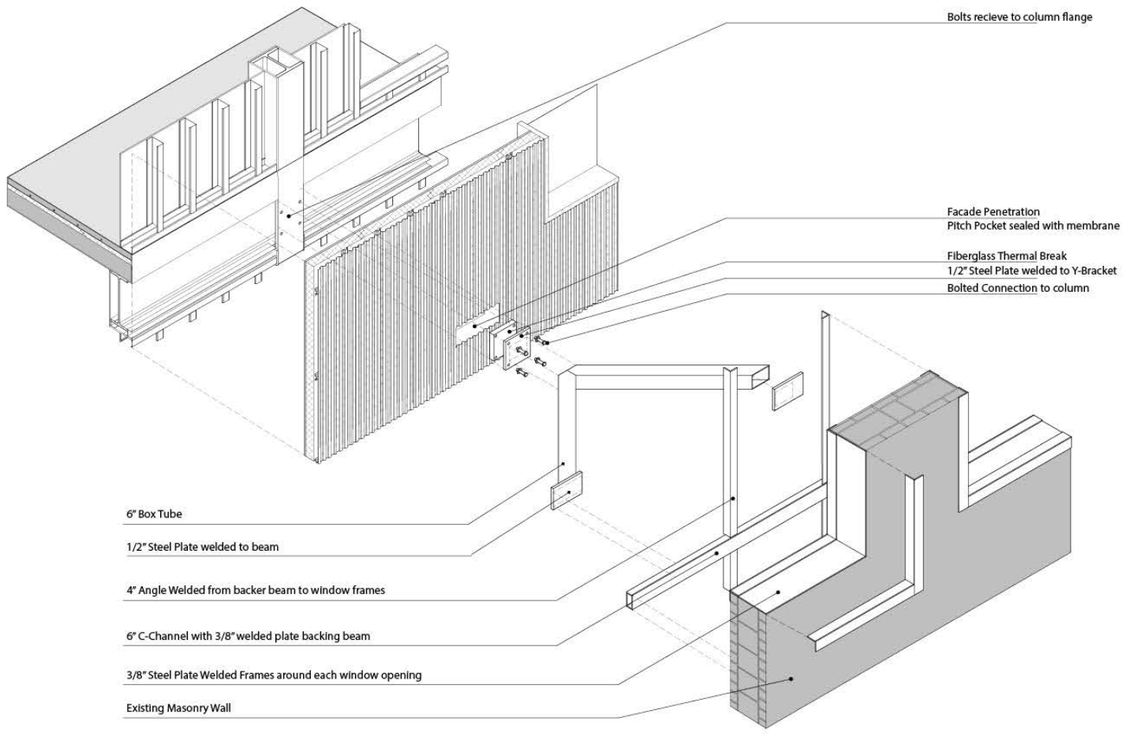
Instructors: Berardo Matalucci, Katherine Chan, Gabrielle Brainard
Project Team Members: Aiko Alvarez Gibson, Alex Faza, James Churchill, Senait Araya, Dori Renelus

This project was an evolution of the Core II studio project focusing in on the Fulton Market Building renovation exploring material and building systems. Working through the understanding of porosity, we worked to rationalize the preliminary design studying the building envelope between the existing brick and the new enclosure, the structural systems, mechanical systems, and the roof.

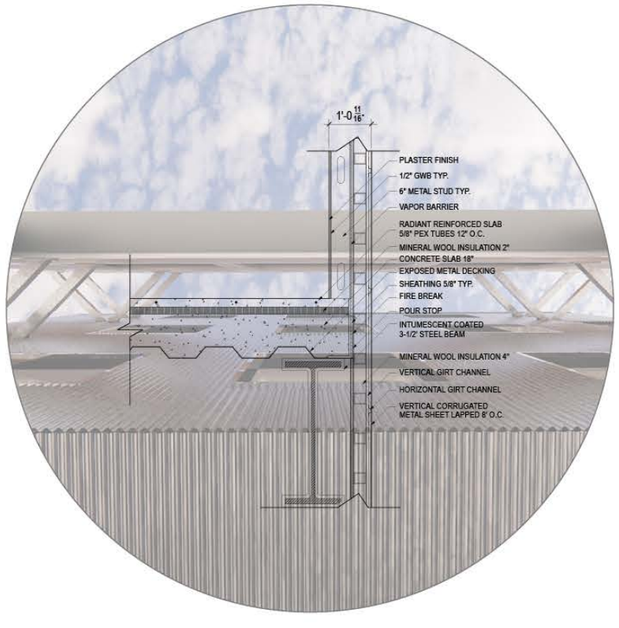
Extracting the critical ideas and intentions of the original studio project, working towards rationalizing the design and integrating new considerations while developing and materializing systems and elements. The existing brick wall of the current Fulton Market is maintained with the new building enclosure fully separated iterated on the original design and the project worked with how to achieve that during construction and long term in the removal of the floor plates through a system of armatures and frames. Structurally, a system of columns support the outer ambulatory, while four service towers support large trusses spanning the center and provide vertical circulation and mechanical chases. The enclosure line pulled back under the ambulatory creating a portico inside the original wall; while the sectional parti over an open ground floor was maintained with conditioned air cooling isolated within the ambulatory and the upper theatre, with the ground and mezzanines enclosed and force ventilated at the soffit - operable doors allow the ground to be opened up in temperate conditions. Heating throughout is via a water system with in the slabs. The faceted glazed roof in the original design evolved into clerestory and glazing interior maintaining the daylit interior spaces. The ideas of porosity that shaped the ground, section, and ventilation systems also translated into the facade - working a grid of square fenestration and perforated metal rain screen panels behind and offset by armatures from the original window positions in the historic brick.

Team Mentors:
Stephan Potts (Stanev Potts Architects)
Teel Riggs (Facade Research Collaborative
Nathan Vader (Atelier Ten)
Aaron Campbell (Dattner)

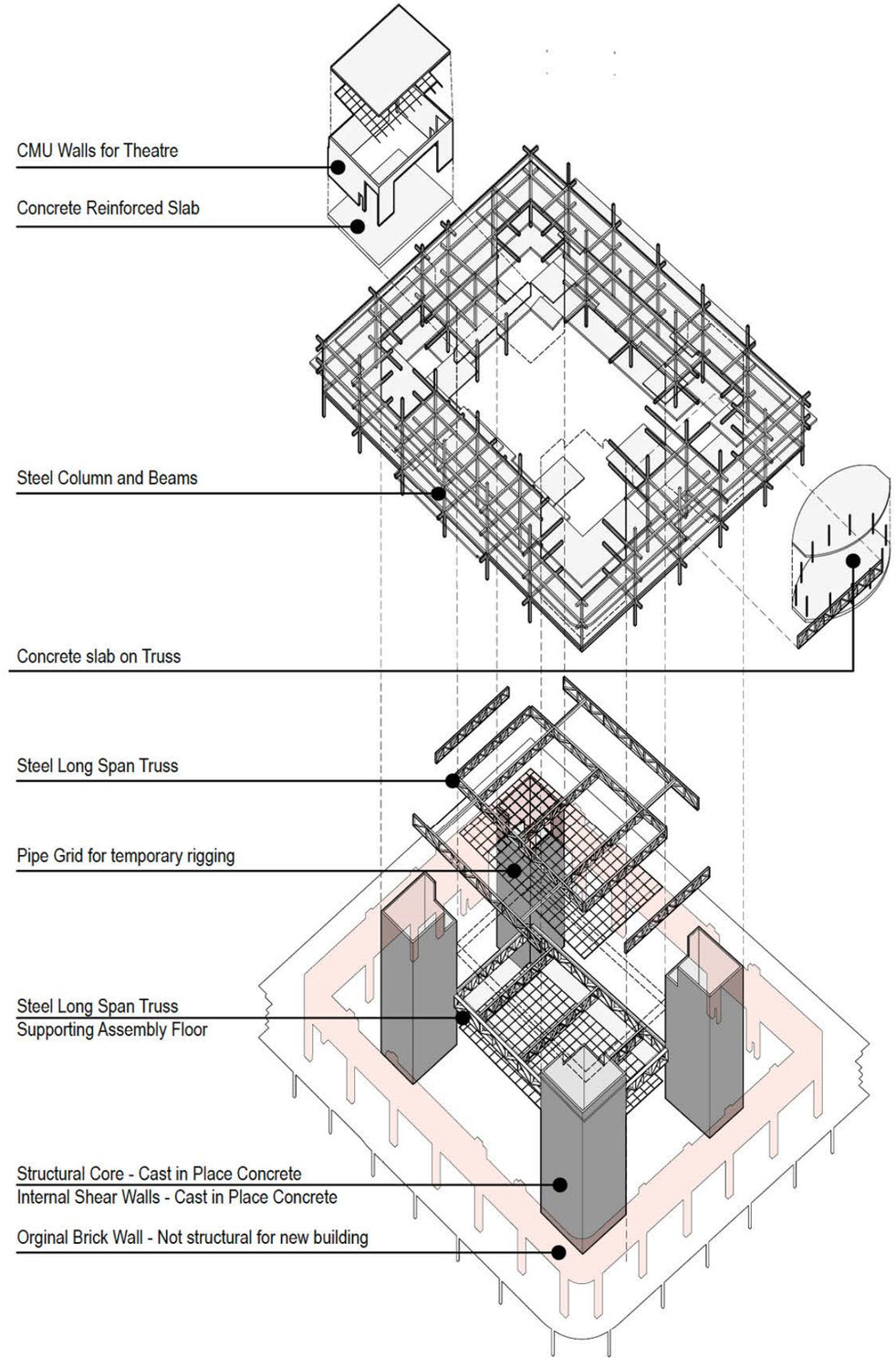
Render of fragment



Breakdown of the enclosure systems.



Render between old & new



Structural Systems Exploded Axon Diagram

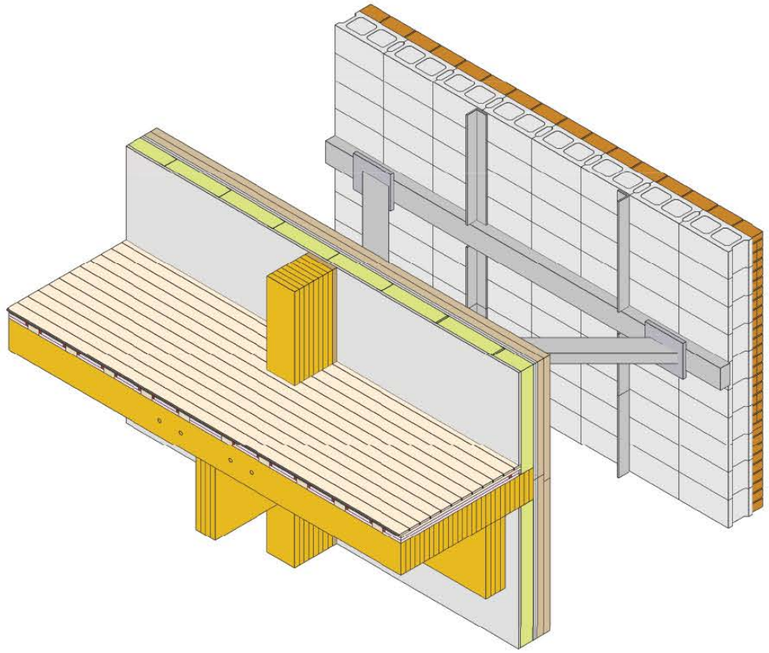
V (c).

Two Roofs *Part III*
Wall Connection Material Exploration

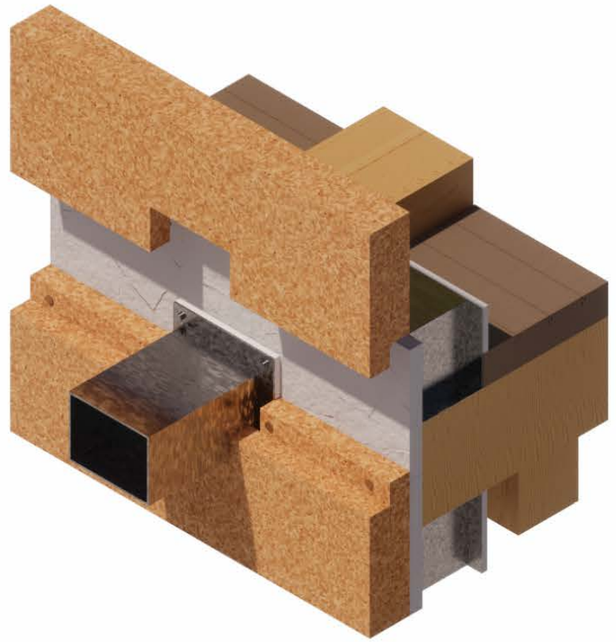
BUILDING TECHNOLOGY V | Spring 2024

Construction & Life Cycle Analysis
Instructors: Lola Ben Alon, Tommy Schaperkotter, Aaron Campbell
Team Members: Jordan Howard, Rory Peckham, Brandon Gil

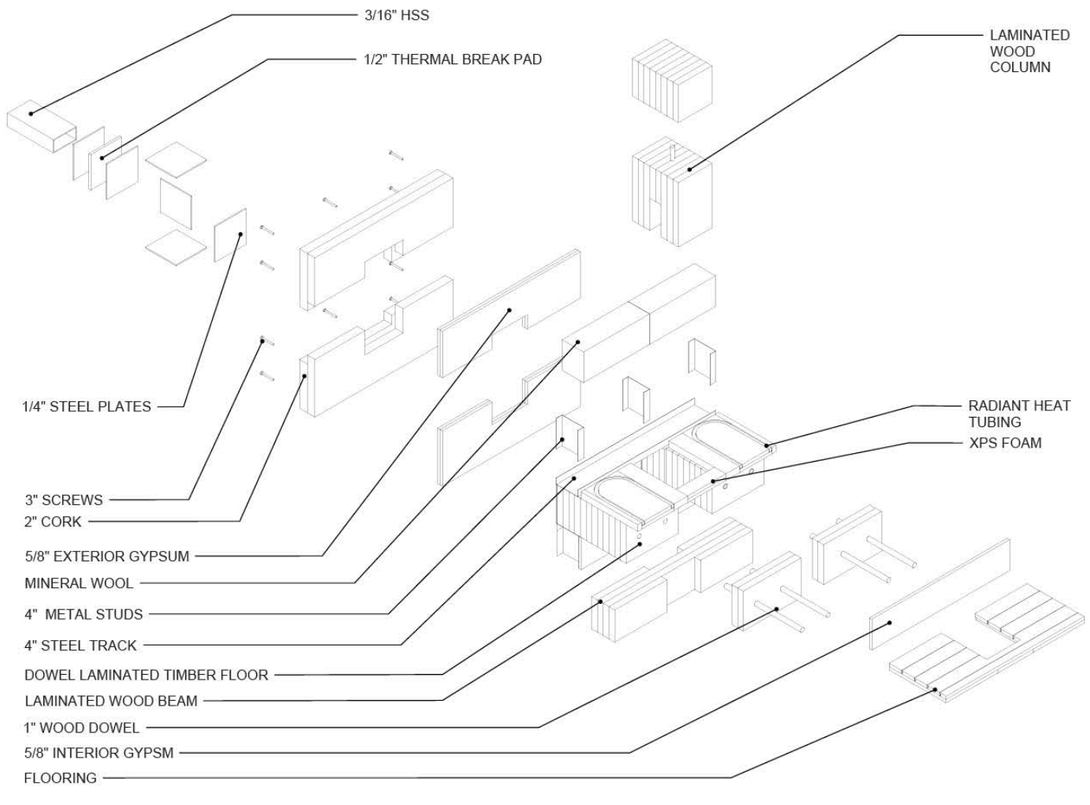
This project was an evolution of my Core II studio project and Tech III/IV project moving from the whole building scale into the detail considering material decisions into construction sequences and assemblies. The chosen moment - an intersection of structure and the exterior envelope evolved from concrete and steel into an engineered wood structure with a cork facade after an extensive study of material cycles and sources. Each replacement system was analyzed against the previous systems architectural and technical performance goals. A steel armature still mounts through the facade to support the existing brick wall of the Fulton Market. The paneled cork facade system maintains the idea of porosity that shaped the previous version, serving as both cladding and insulation over the engineered CLT frame and Dowel-Laminated slabs. This final chapter also looked into methods of fabrication, assembly and construction sequencing culminated in a 3’x3’x3’ 1:1 mock up.



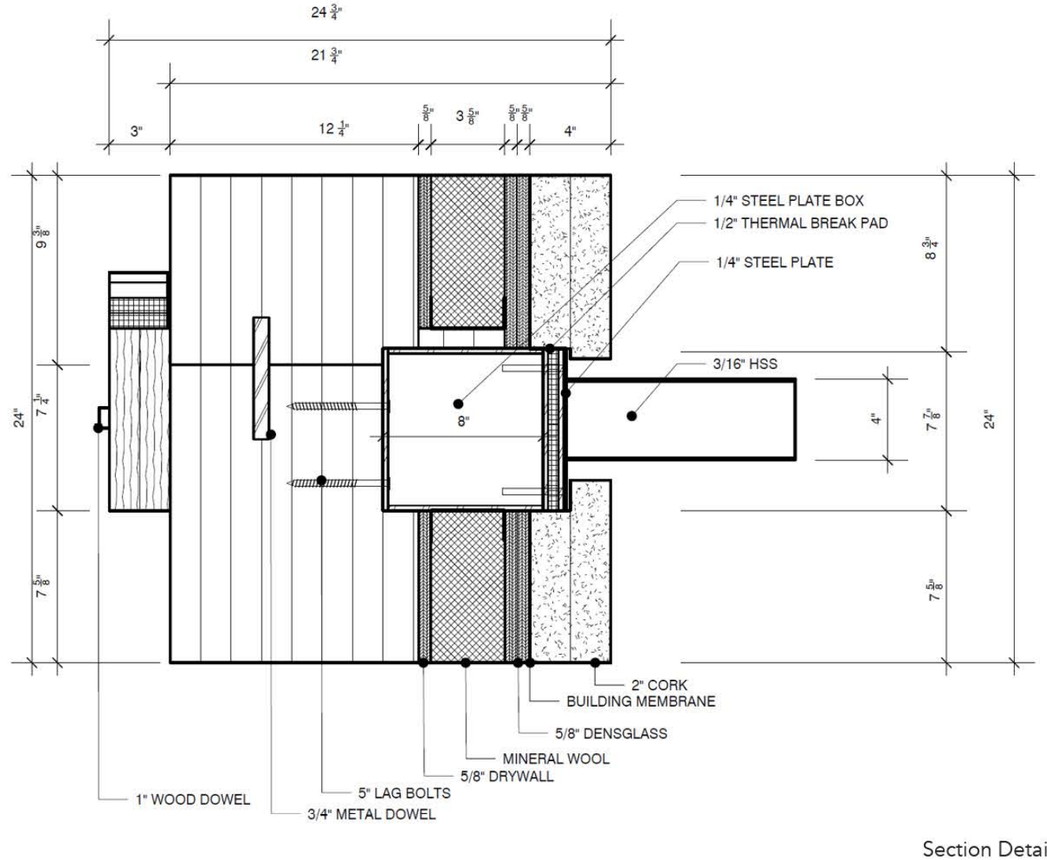
CLT / DLT Frame



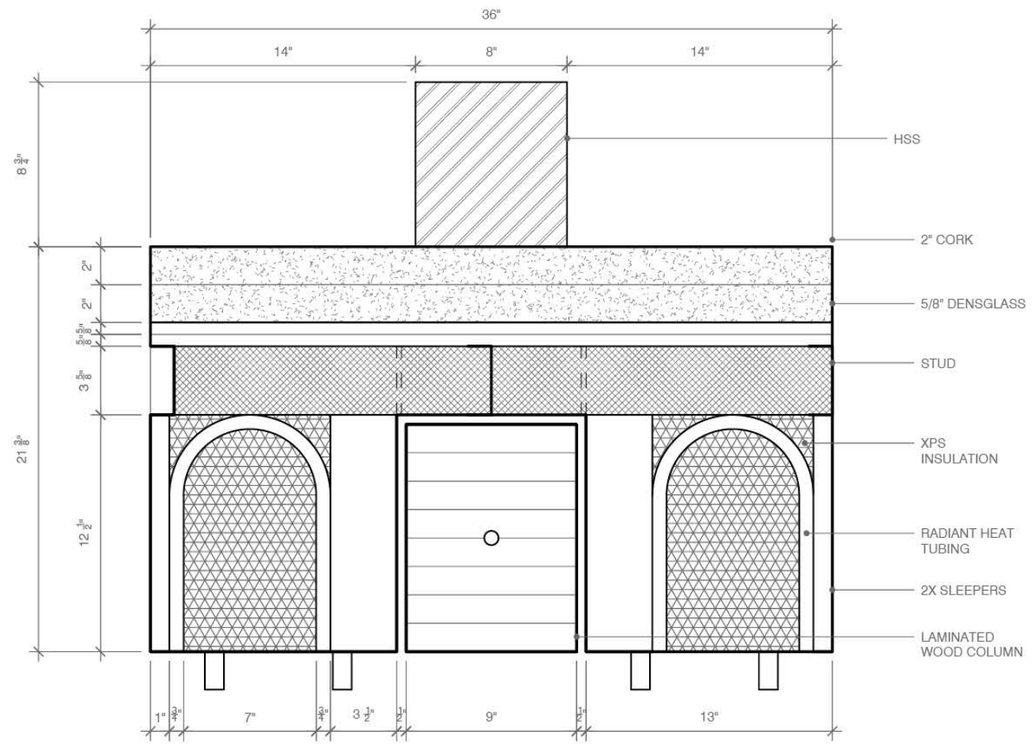
Cork Facade Panel Installation



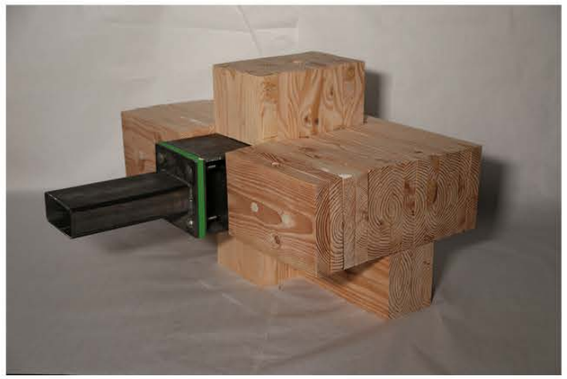
Exploded Detail



Section Detail



Floor Detail



1:1 Mock up - Construction Sequence Photographs

VI.

(Im)Permanence
Explorations Beyond Memory

CORE I STUDIO I Fall 2022
Broadway Stories I Nature-works

72nd & Broadway, New York, New York
Studio Professor: Christoph a. Kumpusch

As described by Alan Wiseman in World Without Us -The city exists in ruin -the population having left the city's 2,000+ blocks and the ancient path once called Broadway lies quiet. The waters of the Hudson have risen over 70 feet and the upper west side is covered in water.

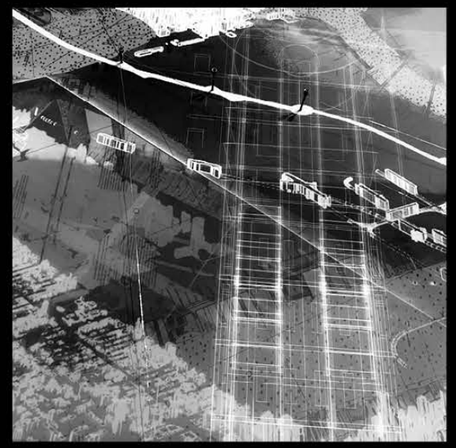
This story of reoccupation of the urban landscape is told over the following day, perhaps a rotation, a revolution (solar or lunar), or a century following three groups of explorers of memory -distant and invisible, human and natural -between observer and the cartographer acting as constructor in one moment operating in contrast to the maker at the haptic scale building the individual plurality of fragments whose layers over ages build the urban anew.

Each of the three acts exists at this frontier of memory with their own understandings of space, distance, and time: What do they derive from the site, from purpose, and from the preceding echo of memories? What do they ignore? What fragments of knowledge do they leave behind?

Review Critics:
Dean Andres Jaque (GSAPP)
Dr. Anthony Titus (Titus Studio)
Patricia Anahory (Storia na Lguan)
Tatiana Tararintseva (Melamed Architecta)
Dr. Patrice Derrington (GSAPP)
Leah Meisterlin (GSAPP)
Khea Vu (OXMANN)
Dimitra Tsachrelia (Steven Holl Architects)
Cory Archie (MACRO)
Osvaldo Delbrey
Alesandra Raffone (Ealain Studio)
Graham Drennan
Deepa Gopalakkrishnan
Reem Makkai
Kevin Hai Pham (Space Exploration Design)
Samantha Vesseur (CetraRuddy)

Final Exhibition in Ware Lounge

"Knowledge does not endure but must be recreated anew by each person, by each generation. Knowledge is created and dies with the knower."
- Lebbeus Woods

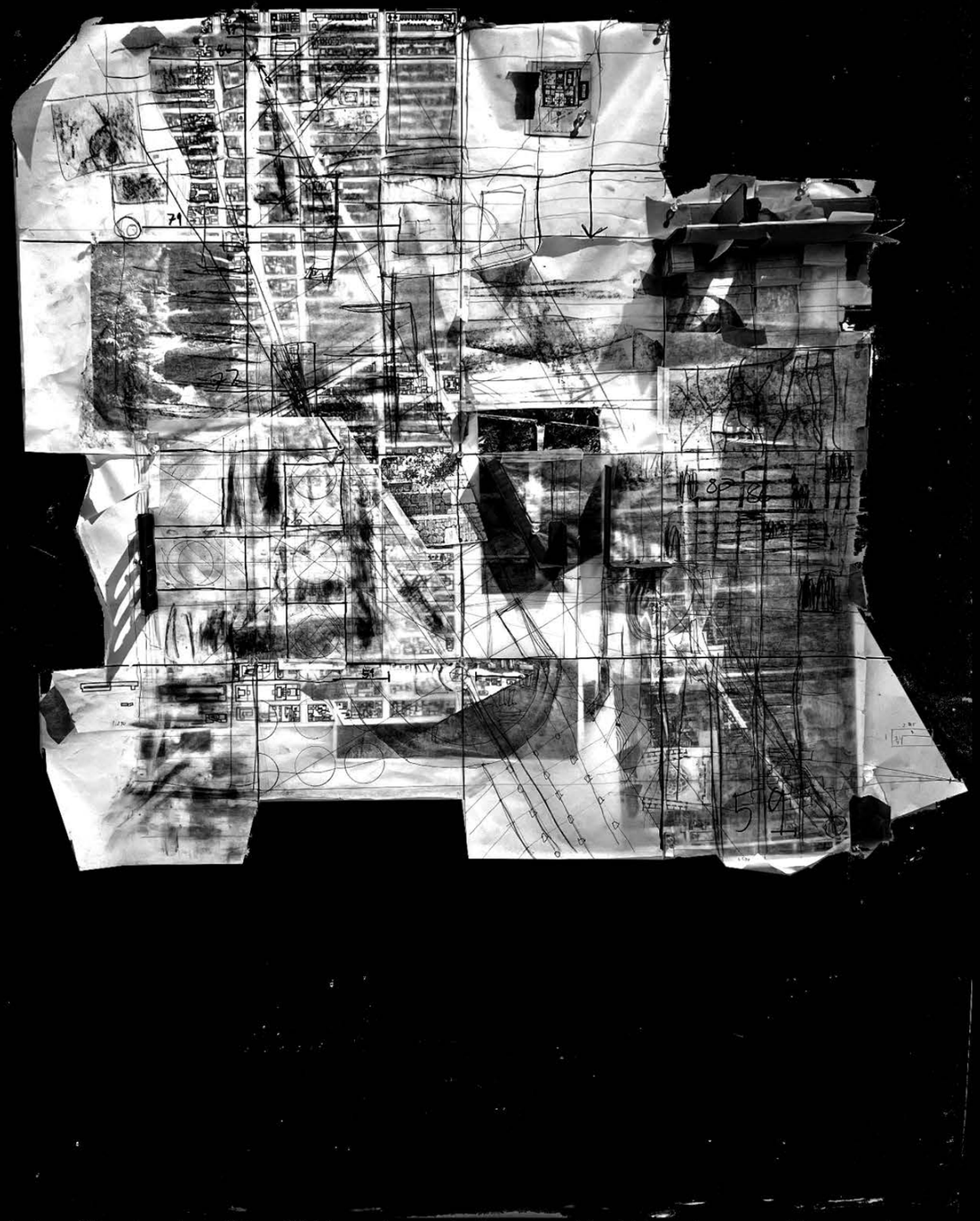


The Five Relational Grounds Fields between Sky and Earth
Visible and Invisible, each has two faces and perhaps a door.

Collective Site Model 1:750
Broadway from 59th to 87th Streets
Photo by James Churchill

The high ground - where sky meets the rooftops.
The vertical ground - where the street meets the built.
The Ground plane - where the condition of field, ground, grid is perceived. - Perhaps the false ground.
The enclosed ground, the interior - interfacing with the four grounds via Attics, Windows, Doors and Basements.
The low ground -below ground, under the ground plane.
-Where the ground finds the earth, and water seeks the horizon and time is buried.

Curated Artifacts: collected & crafted, broken & whole

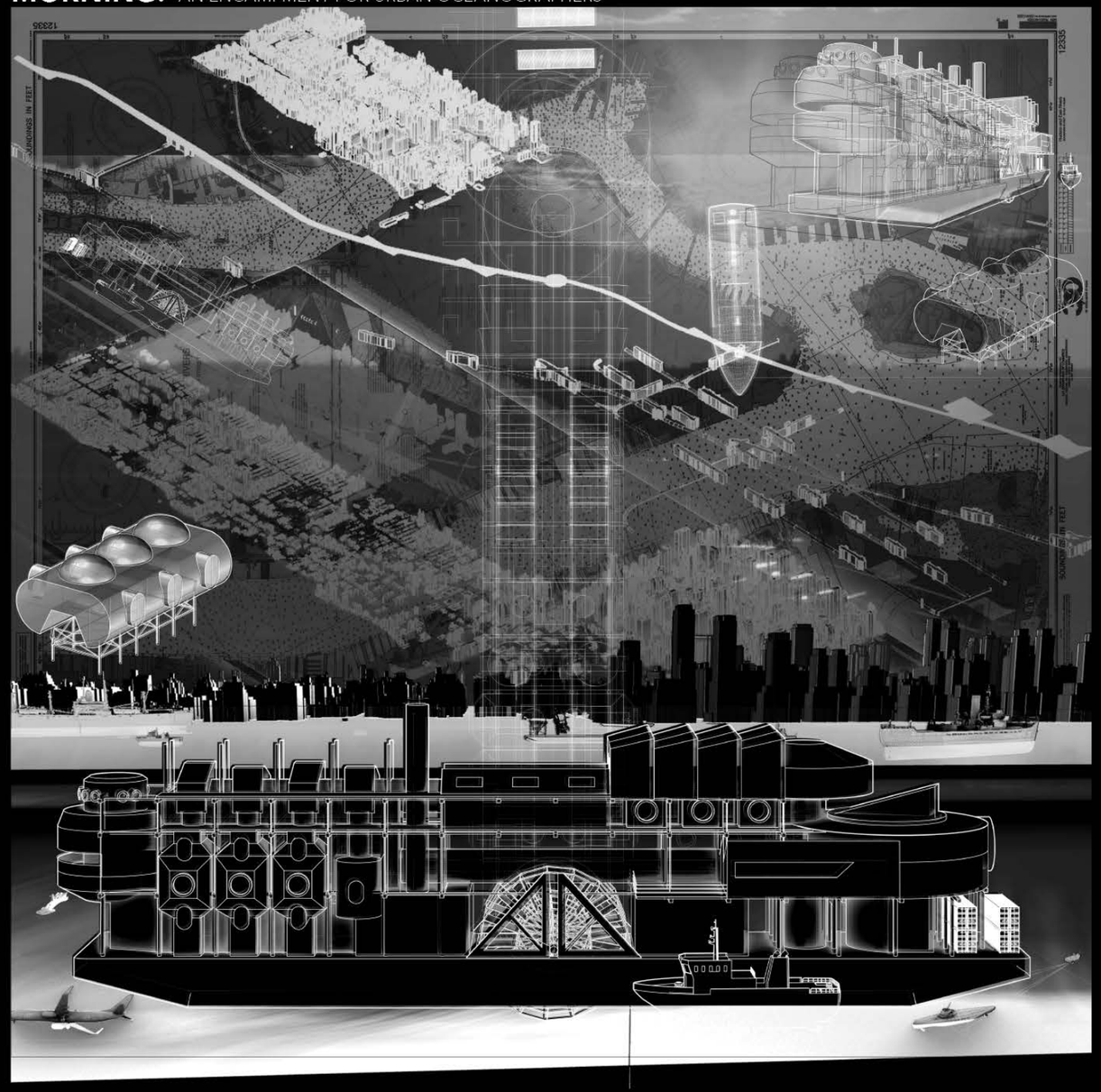


Transcription of Broadway from 59th to 87th into a 1 meter by 1 meter and 4 x 4 (along the avenues) for extraction to casts

Extractive Panels: 1 meter by 1 meter collective castings of urban conditions re-framed as artifacts into a context model.

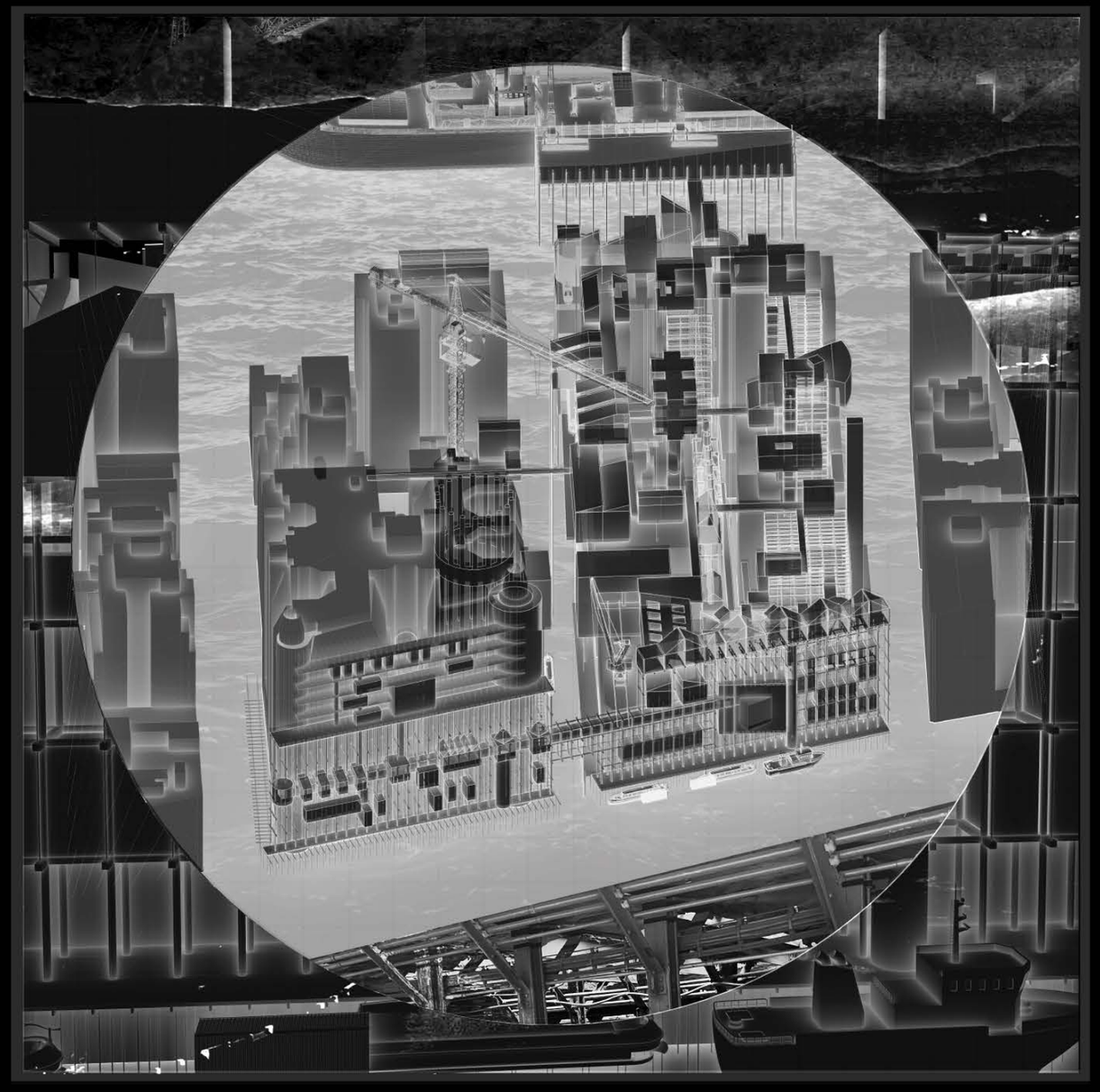
Selected Speculative Collapsing Collages: “73rd Street Occupation”,“Mazes”,“Pouring down”

MORNING: AN ENCAMPMENT FOR URBAN OCEANOGRAPHERS



Urban Oceanographers arrive seeking new horizon(s) be vertical and horizontal -casting downriver -they stop at the narrows before a small lake. They are constantly defining the intersection of ancient lines and the infinite perimeter of water responding to the field condition of current, and eddies.. At the water's edge, the flatboat docks at the halfway point dispatching smaller craft to explore the edge - a roving localized center defining the threshold of an endless edge. In the Hudson at west, others install underwater stations in the dark depths while a submersible venture into the watery IRT line - the columns akin to the forest precondition wrought in iron. Some adventurous climbers climb the vertical cliffs and establish way points and beacons relaying back into the network upstream, but they do not make permanent camps as the rivers flows on. As the sun rises, the Oceanographers paddle downstream -looking back to where they have come -unsure where the river will take them.

AFTERNOON: A VILLAGE FOR SPECULATIVE ARCHAEOLOGISTS



Archaeologists inhabit the plateaus and lay a new grid atop and in line with the old, beginning to examine the ruins of the wall, and the artifacts of water towers, skylights, and HVAC equipment. They search for the past - what is this ruined landscape beneath them? The roofs may be treacherous and unstable, but the walls and stout hold up the village where otherwise piers reach down to the water and earth. Spelunkers venture into the caves below through the shafts cutting away new passages to understand the visible and the invisible -fragments and elements are studied and cataloged. The scaffolding erected as docks and cliffs connects water and village: the streets in z as well as x & y. New structures are erected on the landscape as the village emerges and develops new aspirations looking to the horizon above in the shadow of the Ansonia -the speculative archaeologists using the echoes of the past to form generative geometry forming axes, landmarks, nodes, and edges for their village and consider the future possibility of the ruins. They are concerned with what has been and what could be.

NIGHT: A CITY FOR CARTOGRAPHIC ASTRONOMERS

Structures reach towards the sky and turn to face the northern star, the sun and the moon at hand, and the river flowing to the bay at south. This new city rises on frames, scaffolding, and pilotes forming new lanterns above ancient ruins and the village of the day -expanding beyond in the search for understanding between the center and the infinite horizon. The formerly abandoned ruins beneath begin re-occupancy forming caves and grottoes of a great archive of information, with supporting spaces in between collection and storage -a conduit of data. The elevated train brings passengers and supplies along the path of the IRT line into the new city and other horizontal transportation systems connect the center with others. Now ships form collective spaces in the sky held by piers as bridges between the great ruins and the river below as the new city looks to the horizons- looking to the grid below, the river, the mountains, and the stars beyond under the rising moon.

VII.

The Visit
By Frederich Dürrenmatt, Translated by Patrick Bowles

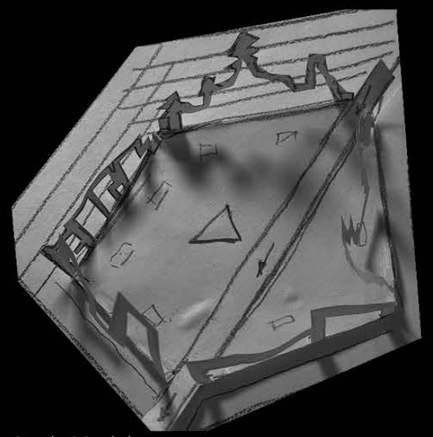
STORYTELLING & DESIGN | Spring 2025

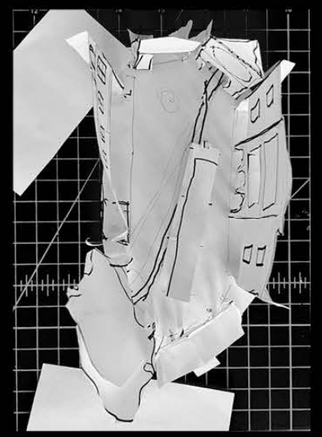
Park Avenue Armory | New York
Instructor: Hilary Sample
Project Team: Conrad Hiler, Deniz Dagtekin, Jana Marinovic

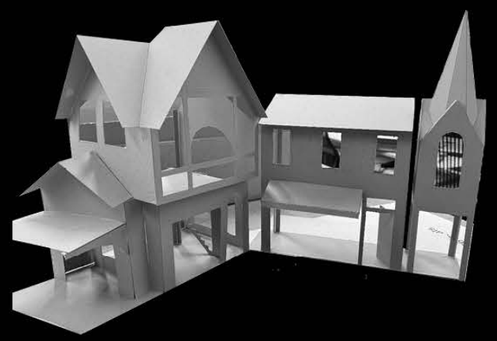
The Visit, a 1956 play by the Swiss playwright Fredrich Dürrenmatt tells the story of an enormously wealthy older woman named Claire who returns to her former hometown of Güllen in 1950s central Europe with a dreadful bargain: she wants the townspeople to kill a shopkeeper named Alfred who, in their youth, got her pregnant, then jilted her publicly. In exchange, she will provide a vast sum of money to revitalize the now decrepit town. The townspeople, who at first refuse the bargain eventually agree. The play is a tale about morality, revenge, greed, desperation, paranoia, pain, and love. This production is staged in the vast space of the Park Avenue Armory drawing the audience through the woods into an amphitheater like structure surrounding the action of the play which occurs in the town-scape which hangs precipitously from the air bisected the by the train tracks which arrive and depart providing the path of escape which is never taken. The audience feels as if part of the town itself as the pressure builds and the feeling of all encompassing surveillance and weight sets in on Alfred as the end draws near.

Review Critics:
Mimi Lien
Leslie Ayvazin
Lynn Nottage

Claire presents the town with her bargain



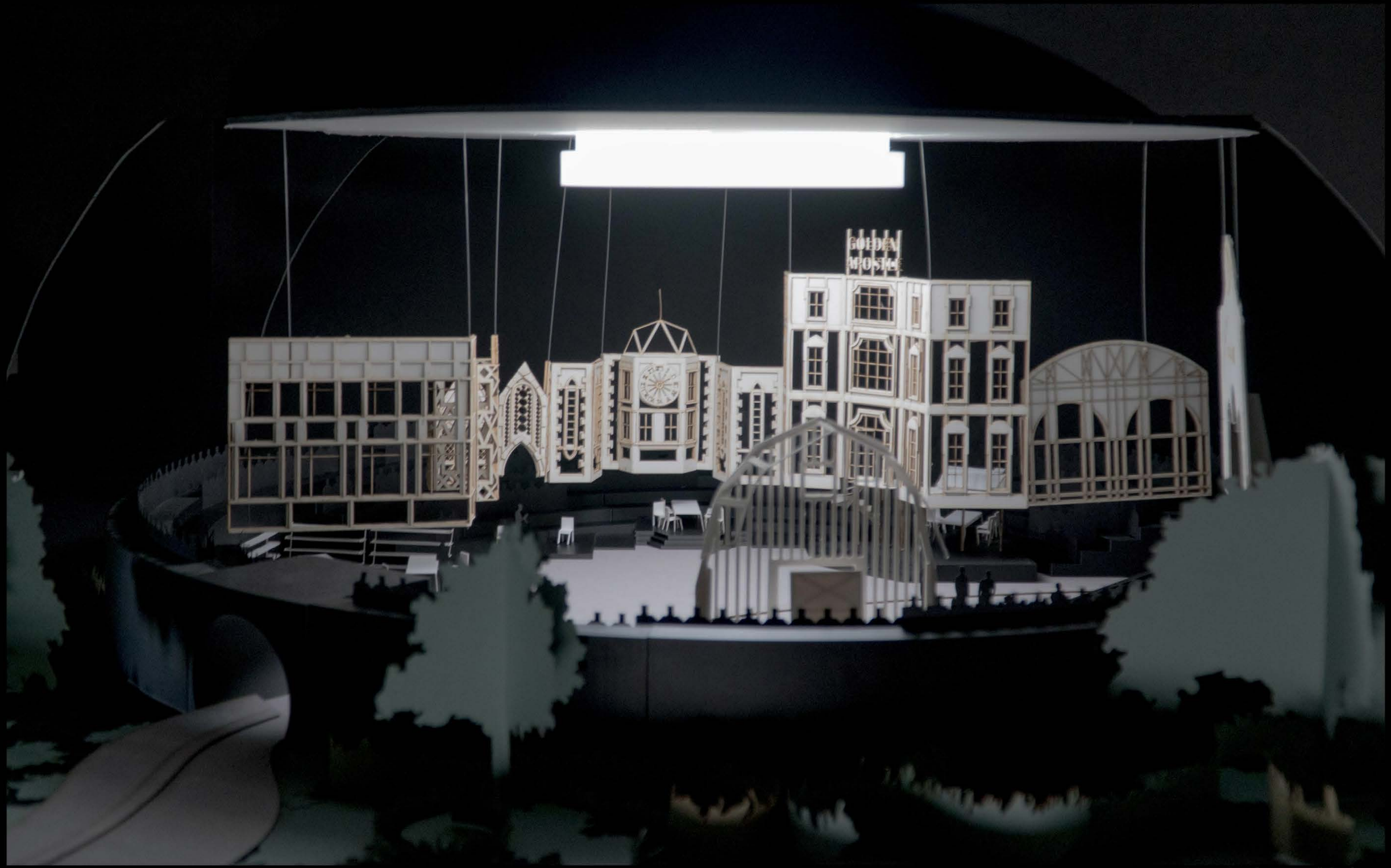




Study Models

Mayor discusses Claire's arrival

Concept Sketch of Facades of Güllen



Journey into the town and the theatre

VIII.

Eight Selected Theatrical Designs

Around Columbia University 2023-2025

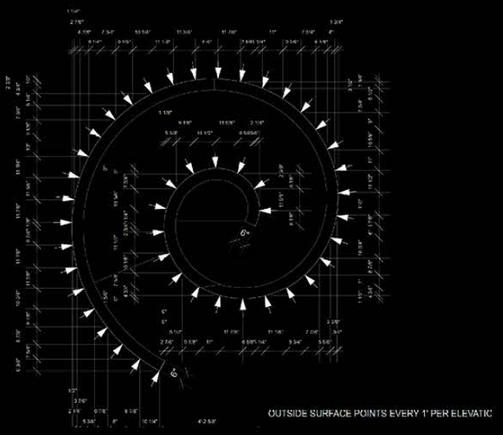
Theatrical Design has been profoundly impactful to my journey as a designer. While at GSAPP, I have designed scenery or lighting for seven productions for the Columbia University School of the Arts Theatre Program across the Directing, Playwriting, and Acting programs including two MFA thesis productions along with designing and fabricating five additional productions at Barnard College's Glicker Milstein Theatre. Among these included nine new works or substantive adaptations/translations brought to the stage for the first time. Each project resulted from deep collaboration with playwrights, directors, dramaturgs, choreographers, designers, technicians, producers, managers and close coordination of budget, time, regulations, labor, space, and logistics. More so, the craft of stage design is the interpretation of the written word into light, material, space, image in composition with the human body on stage, the audience, and the room to hold the fragility of the written word in space in the medium of time, and to help elucidate from the collective audience the genius loci within the suspension of disbelief. From living rooms, laboratories, fantasy islands, palaces of terrible kings, psychiatrists offices, horse stables, Paul Simon's New York, and warehouse amusement park purgatories. I have had the privilege of shaping many stories while at Columbia University.

Below is a selection of images and drawings from eight works: two of which are result of a collaboration with the Lebanese writer / director Ghina Fawaz in her evolving explorations of Arab folk tales and stories, and three each reshape the Glicker Milstein Theatre with new collaborators.

The Queen of the Living Room
Scenic & Lighting Design
Columbia School of the Arts Theatre Program | Spring 2024 (New Plays Festival)
Director: Chaesong Kim
Photo Credit: Jonathan Barbee

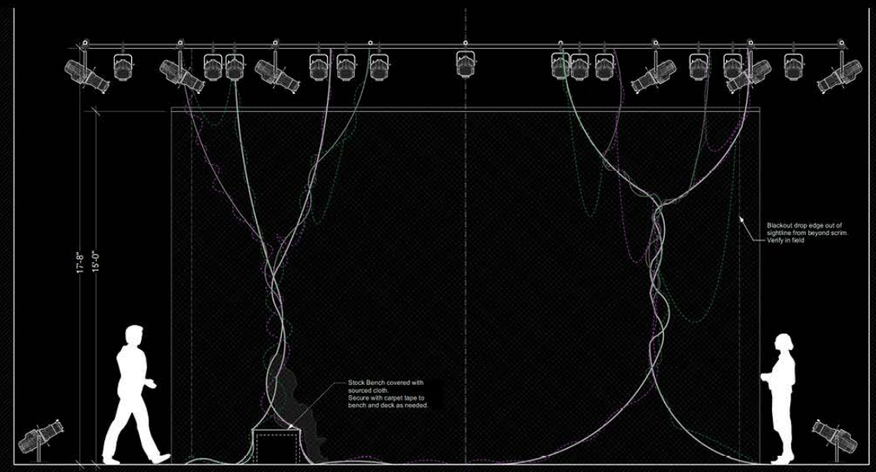
On the Evolutionary Function of Shame
Lighting Design
Columbia School of the Arts Theatre Program (MFA Playwriting) | Spring 2024
Director: LD Kelley
Photo Credit: Jonathan Barbee

Henry VI: The Civil Wars
Scenic & Properties Design
Theatre Program (MFA Acting) | Fall 2023
Director: Katy Walsh



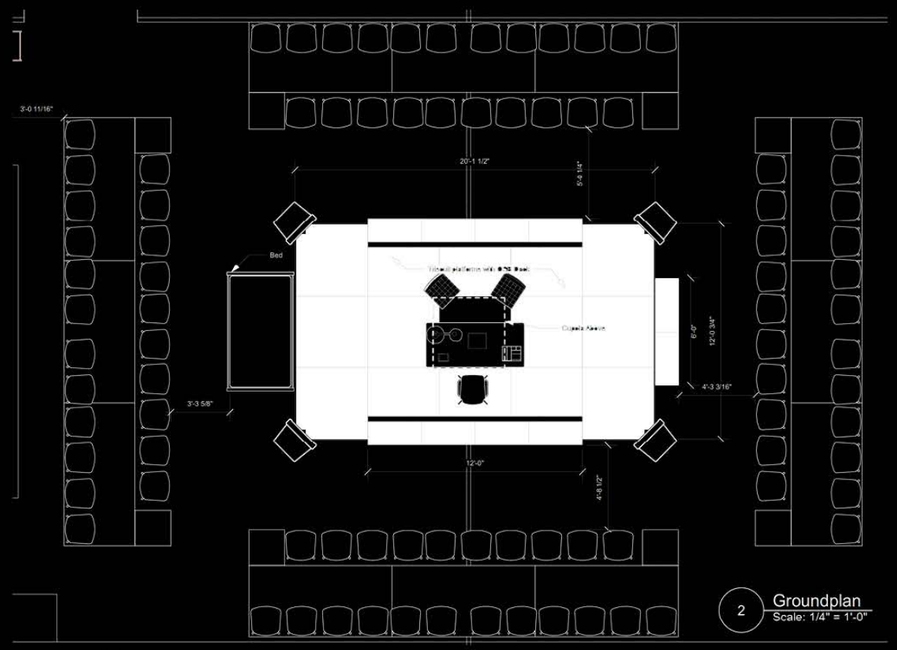
Spiral Geometry Layout & Preliminary Study Render

ألف ليلة وليلة *The One Thousand and One Nights*
Scenic Design
Columbia School of the Arts Theatre Program | Spring 2025 (MFA Directing Thesis)
Director & Adaptor: Ghina Fawaz
Photo Credit: Carol Rosegg



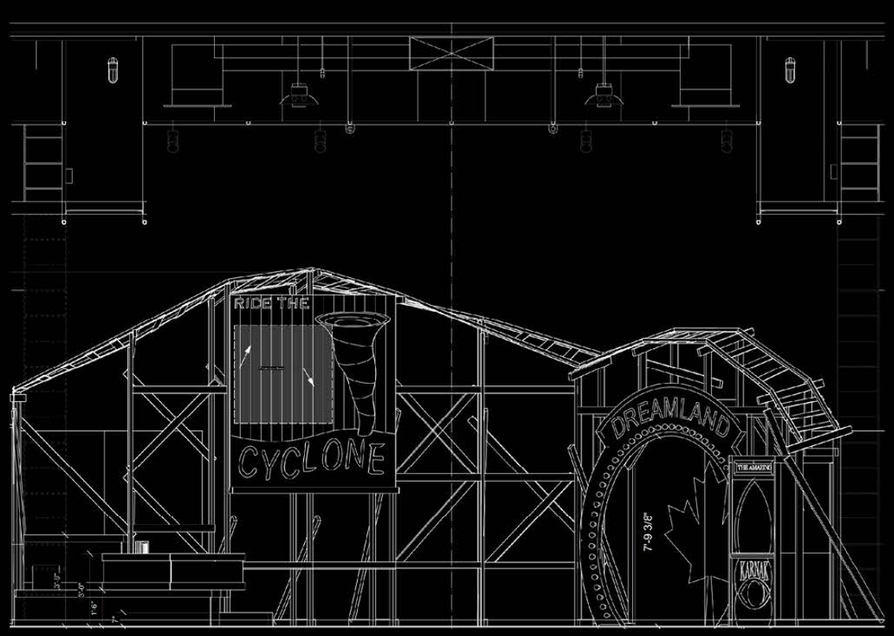
Elevation with Tree Geometry

Antlers
Scenic & Lighting Design
Columbia School of the Arts Theatre Program | Fall 2023 (MFA Directing)
Director & Playwright: Ghina Fawaz
Photo Credit: Jonathan Barbee



Groundplan

Equus
Scenic Design & Fabrication
Columbia University Players | Fall 2024
Director: Theo Taplitz



Preliminary Elevation

Ride the Cyclone
Scenic Design & Fabrication
Columbia Musical Theatre Society | Spring 2025
Director: Lucia Towne
Photo Credit: Olivia Kuan Romano

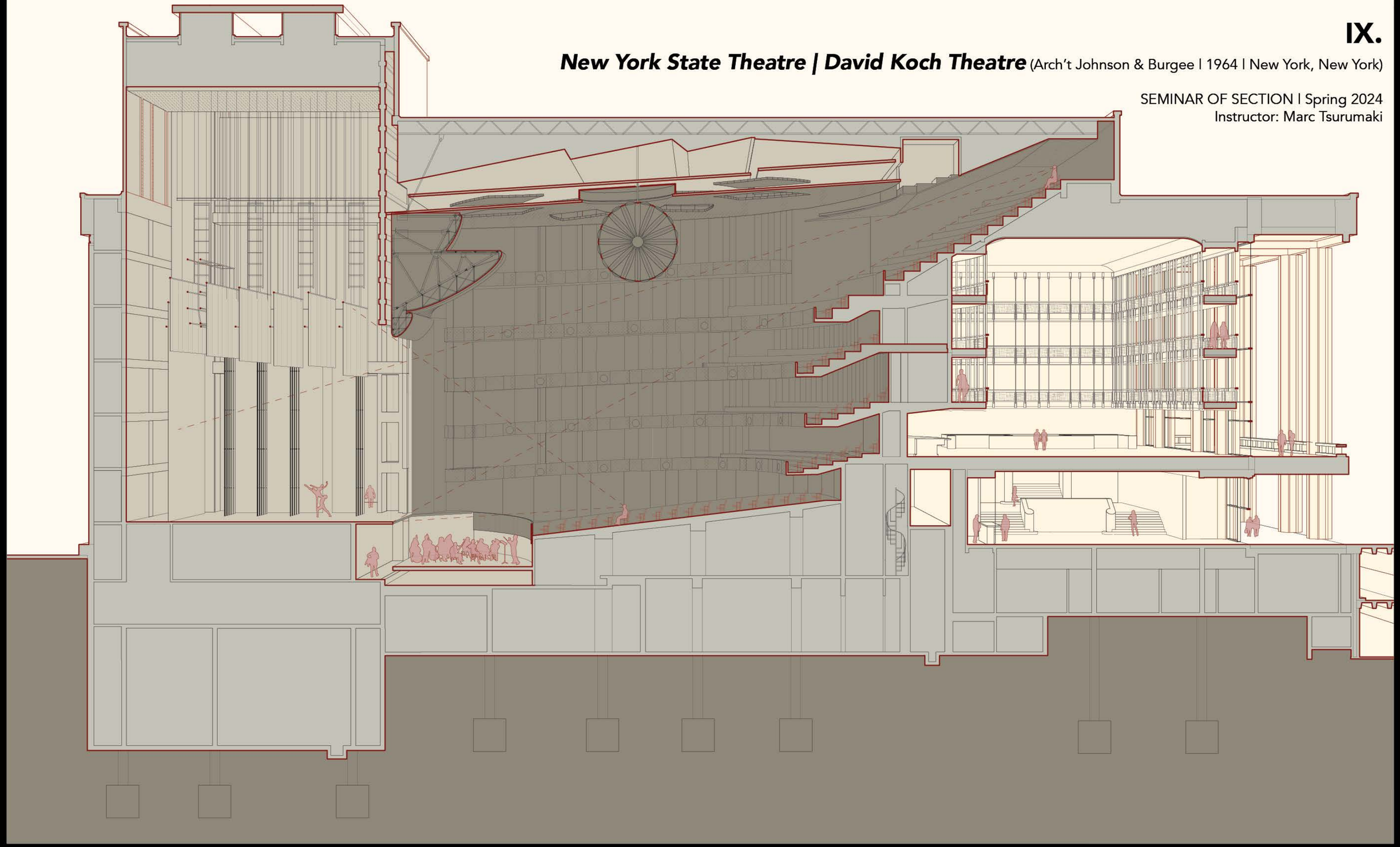
Concept Sketch

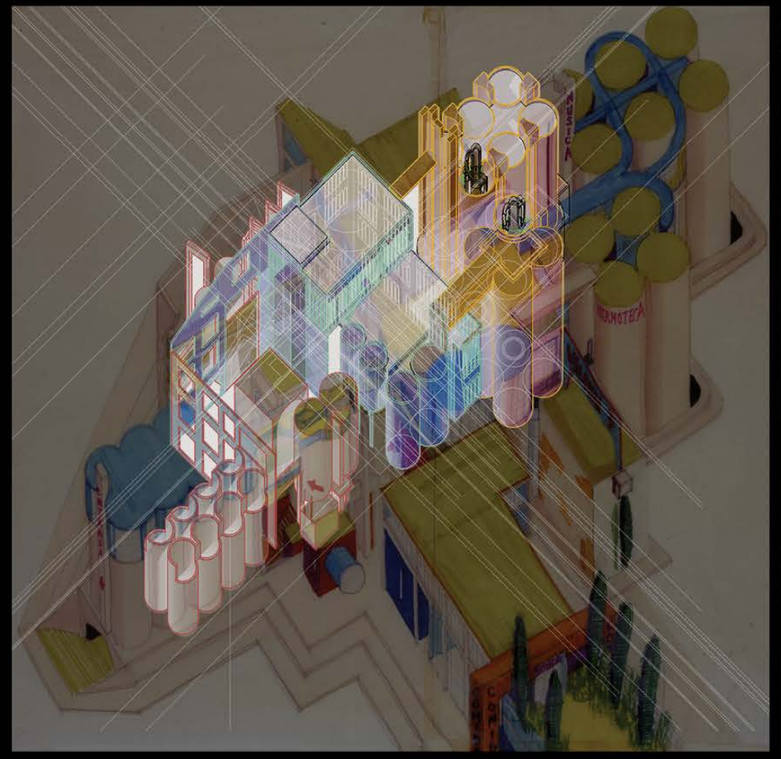
The Simon Suites
Scenic Design & Fabrication
Columbia University Performing Arts League | Spring 2023
Director:Julia Ruth Patella
Photo Credit: Emily Lord

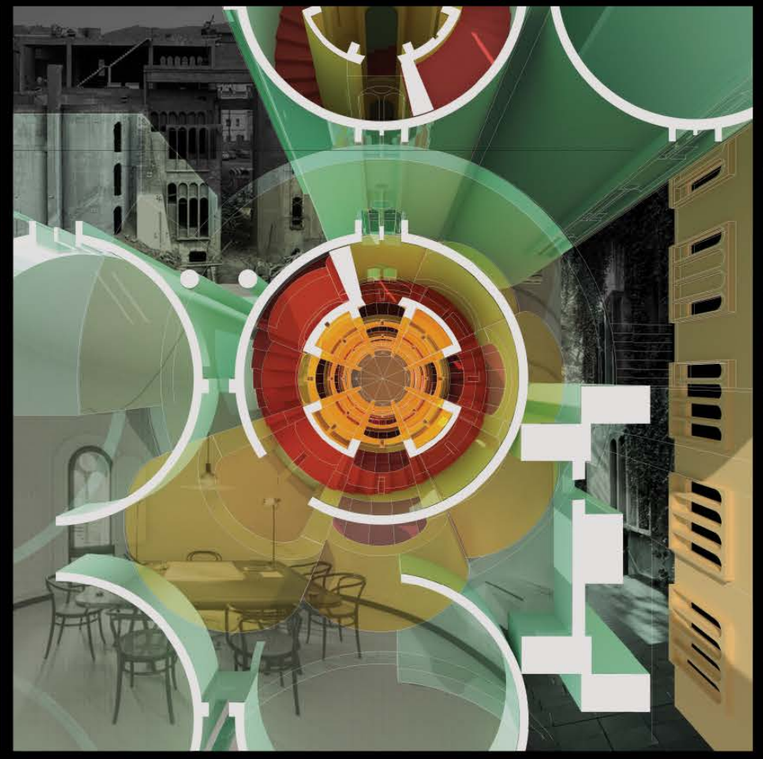
IX.

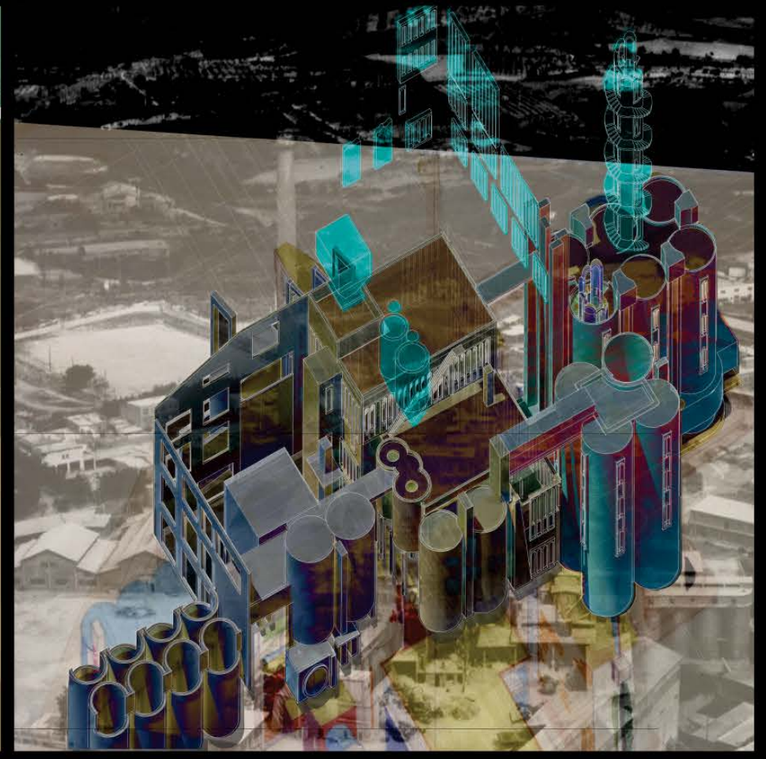
New York State Theatre | David Koch Theatre (Arch't Johnson & Burgee | 1964 | New York, New York)

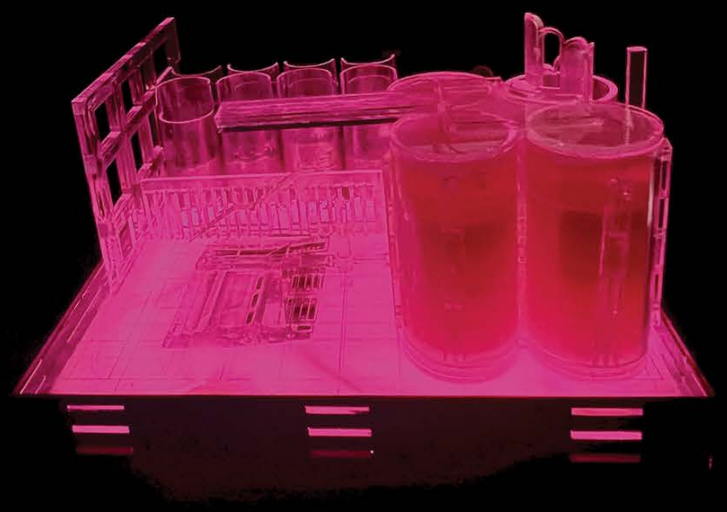
SEMINAR OF SECTION | Spring 2024
Instructor: Marc Tsurumaki

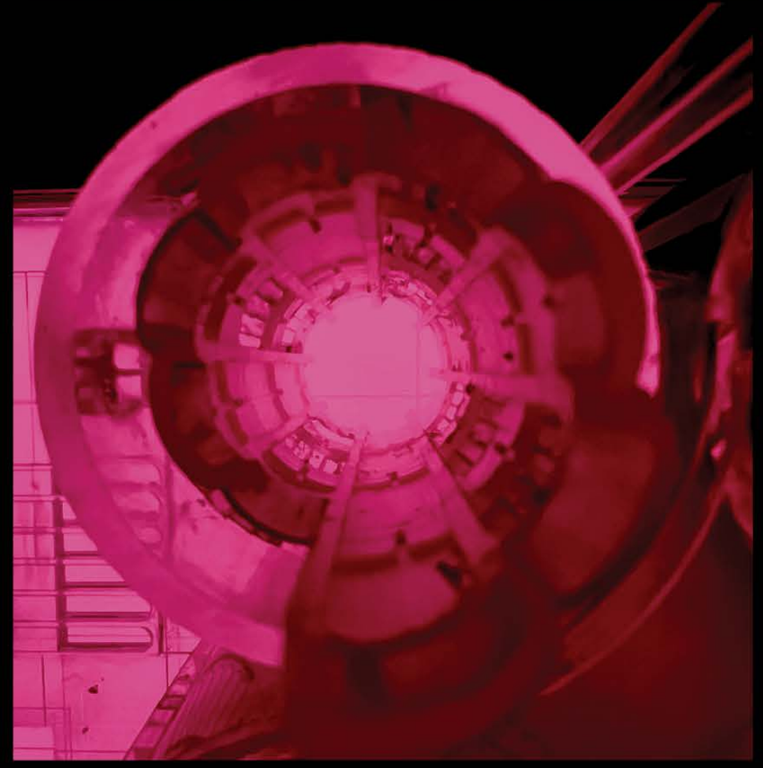


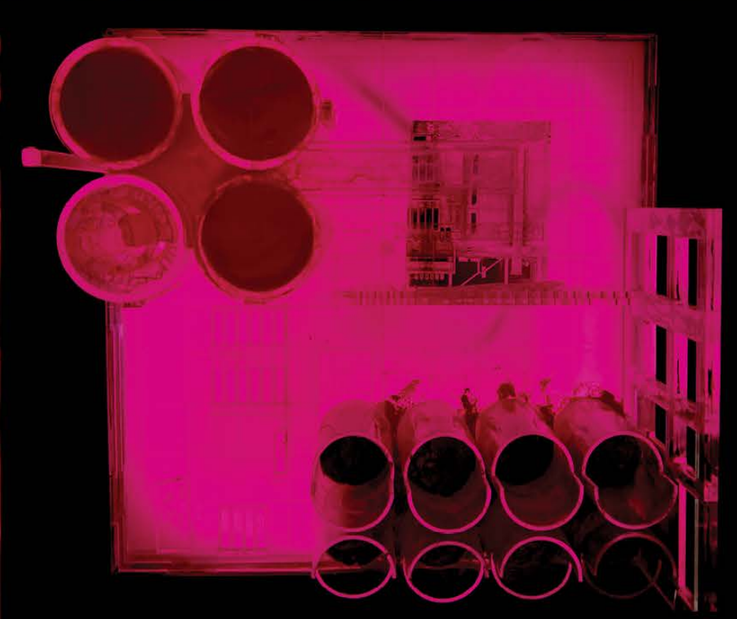












X.

La Fabrica (Arch't Riccardo Bofil | 1973 | Barcelona, Spain)

ARCHITECTURAL DRAWING & REPRESENTATION 1 | Fall 2022
Instructor: Ray Wang

XI.

QUESTIONS IN ARCHITECTURAL HISTORY I | Fall 2022
(Excerpt Abridged & Adapted for PEEL Journal, Spring 2023)
Instructor: Reinhold Martin

Why Are There Windows on the Subway?
The Panoramic Void & Anti-Landscape on the New York City Subway

"[The Cellar] will be rationalized and its conveniences enumerated. But it is first and foremost the dark entity of the house, the one that partakes of subterranean forces. When we dream there, we are in harmony with the irrationality of the depths… In the cellar darkness prevails both day and night, and even when we are carrying a lighted candle, we see shadows dancing on the dark walls."[1]

Gaston Bachelard in "The Poetics of Space" (1958)

The peeling sticker stating "this is an air-conditioned car: do not open windows" reminds the present traveler their climate controlled situation was not always so. However, it begs the question for a subterranean method of transportation: why does the subway car have windows at all?

One stands in a grove of steel timbers, the water and light pouring into the grotto from above-reaching out seeking the horizon. From the darkness the headlights of an incoming train scrape along the tiled walls from the shadows off the end of the platform; the rumble of traction motors in prelude to the rush of moving air as a train moves into the station. A silver blur screeches to a halt at just the right mark, asymptotically approaching the platform at the juncture of place and distance. At the threshold one steps into the irrational - between the world of the city, and the world of the subway car, - a world of waiting in a pocket of light in the darkness of the subterranean cellar of the city. This space between platform and car is the non-thickness of a plane -it is the realm of geographical space.

In the 1977 book *The Railway Journey: the Industrialization of Time and Space in the Nineteenth Century,* the German cultural historian Wolfgang Schivelbusch describes, "The railroad knows only the points of departure and destination… As for the space between those points -the traditional traveling space -was destroyed, those points moved into each other's immediate vicinity… The speed and mathematical directness with which the railroad proceeds through terrain destroys the close relationship between traveler and traveled space. The space of *landscape* becomes, to apply Erwin Straus' concept, *geographical* space."[2] He continues with this idea of geographical space acting in contrast to "*Total Space*" which was perceived by the traditional traveler processing distance as the sum of points in positional sequence along the path of their journey. Geographical space in turn, is perceived in motion as the "*panoramic landscape*" where what is experienced is the extended background in motion is disconnected from the foreground leaving the traveler unable to perceive the exact path between the point of arrival and destination -which has been in effect destroyed by the rail line.[3] While a line is understood geometrically to be without width, the pencil of the planner indicating the track across the map has width, and that width is manifested in the presence of the tunnel reaching beyond the ends of the station. Waiting on the platform in the gloom, the passenger, external to the system, stands in an industrial mechanical space -of pipes and pumps, of signals, of tracks, cracks, and structure holding back the city from this cartographic line between position and motion, place and distance.

Schivelbusch notes this tension, "The landscape that was seen from the train window appear[ed] to be another world was the railroad itself, within excavations, tunnels, etc. Yet the railroad was merely an expression of the rails' technological requirements."[4] The subway system in Manhattan being buried[5] thus exists as almost entirely contained within a complete extension of itself isolated from the traditional landscape forming an underlay between cartography and bedrock. The reverse of this map is not blank and this new system exists within a crowd of other invisible machines of urbanity in a complex network of sewers, pipes, and tunnels each connecting distances beneath the city.

In the subway car, one stands still as the world moves past. Physics tells us $V= \Delta x/\Delta t$[6]; however, as the iron rail has destroyed the sense of position, we must rely on new systems of sensing: the rhythm of the sounds, the sequence of light and not light through the windows, and the intermittent crackle of the intercom. This passage and metering of time suggests velocity and motion paralleling movement of position above. On the street, a localized universe of blocks defines an area of possible travel together with the understanding that if one continues along any one street - new areas will be encountered over an amount of time. From the traveler's perspective as a point on the subterranean line, the understanding of velocity is restricted to the limits of the moment and the car, removed from position or direction save for indication of the signs and signifiers in the stations, maps, memory, and the conductor's unintelligible announcements to interpolate between the journey and the position points of each station above.

When a neighboring train passes in the opposite direction, the windows blur by at such a rate it forms a kaleidoscopic break between void and the intermittent rhythm of worklighting in the tunnel. Revealed in the moment is the sense of *speed*. Speed is not a geographic or cartographic understanding of movement, but the subjective experience of relative velocities. In seeing the passing rush of silver and light, one understands one's own present speed along the track at a moment through the window. When two trains run in parallel, one gets an extended momentary window across a looking glass before pulling away on their different paths. The others are currently in an equally indistinguishable train compartment much like almost every other; however, in looking out the window into the void and seeing a window, one sees another world parallel to their own also waiting in the gathering of landscape between arrival and destination. In that moment you are shifted from participant to viewer, expanding your own world into another. Perhaps a small child waves from her window, expanding her world through the looking glass into yours, and when you wave back there is a connection across time and space and distance in the *Panoramic Void*.

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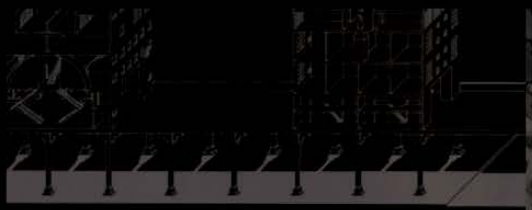
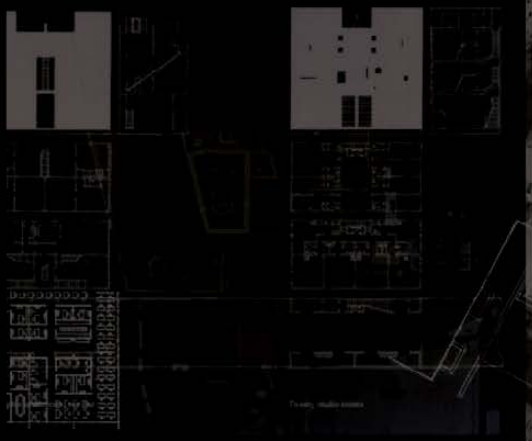
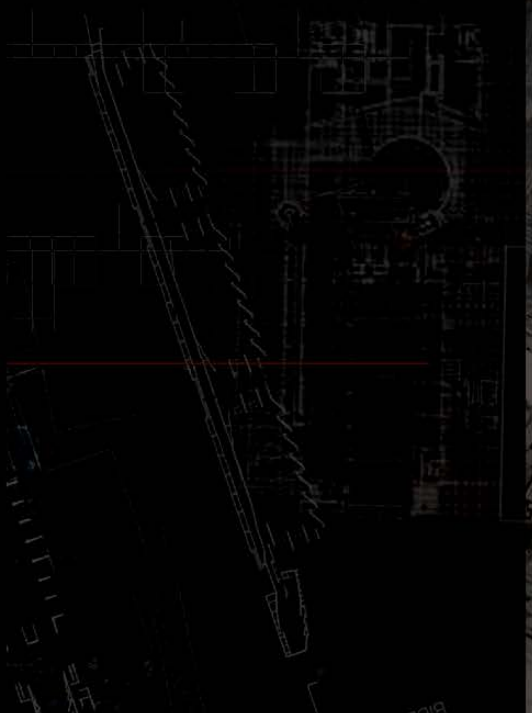
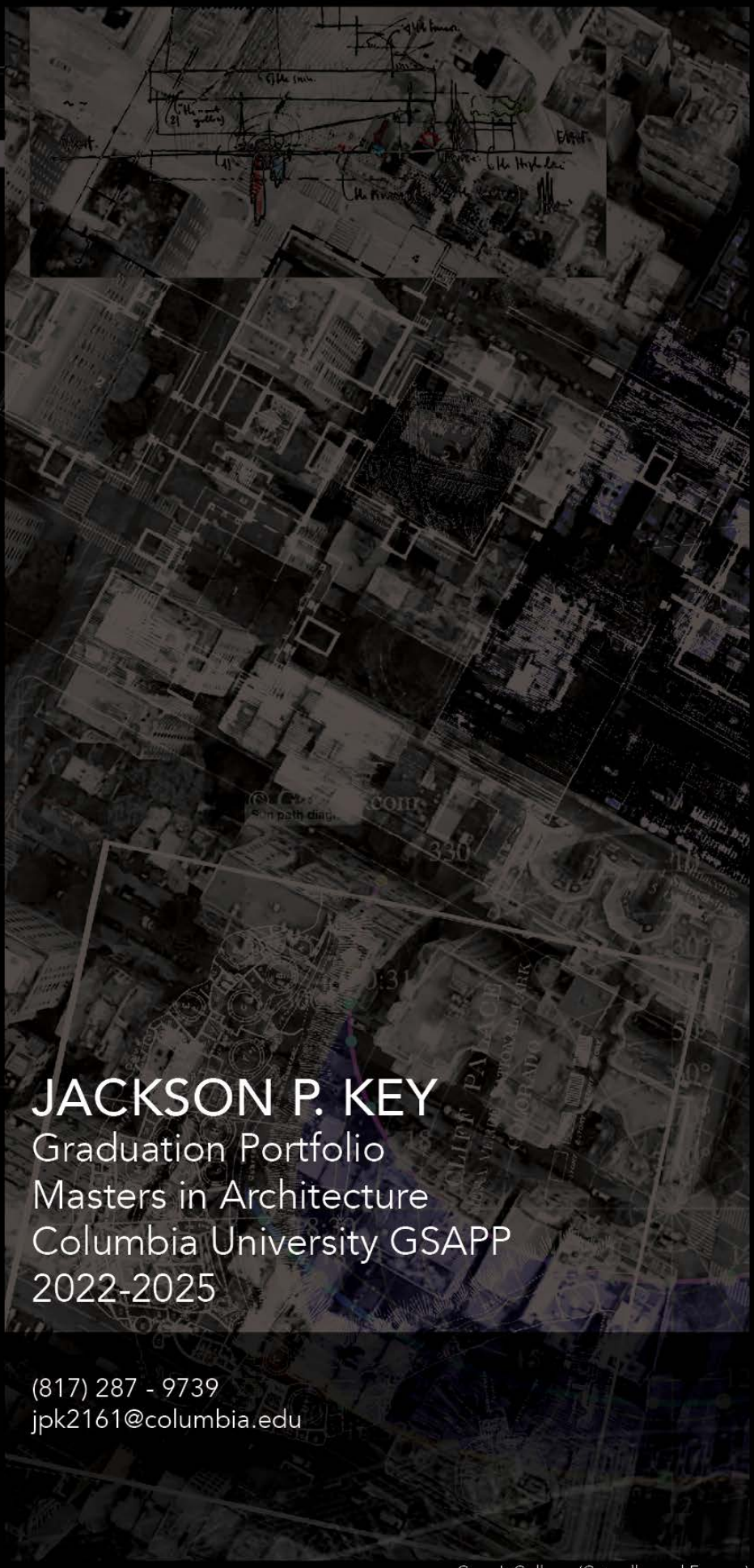
[1] Gaston Bachelard, *The Poetics of Space*. Translated by Maria Jolas. (2014, Penguin; 1958, Presses Universitaires de France (as *La Poétique de l'Espace)*), 39-40. Citation refers to the 2014 Penguin edition.
[2] Wolfgang Schivelbusch, *The Railway Journey: The Industrialization of Time and Space in the Nineteenth Century*. (2014, reis, University of California Press, 1986; 1977, Munich (as *Geschichte der Eisenbahnreise)*), 53. Citation refers to the 2014 University of California Press edition.
[3]
[4] Schivelbusch, *The Railway Journey…*, 24
[5] NOTE: The NYC Subway is almost entirely underground in Manhattan, and is largely above ground in the boroughs of Brooklyn, Queens, Staten Island, and the Bronx. This paper focuses on Manhattan Island.
[6] $V= \Delta x/\Delta t$, or velocity equals the change in position divided by the change in time.









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Core I: Collage (Catwalks and Frames)