

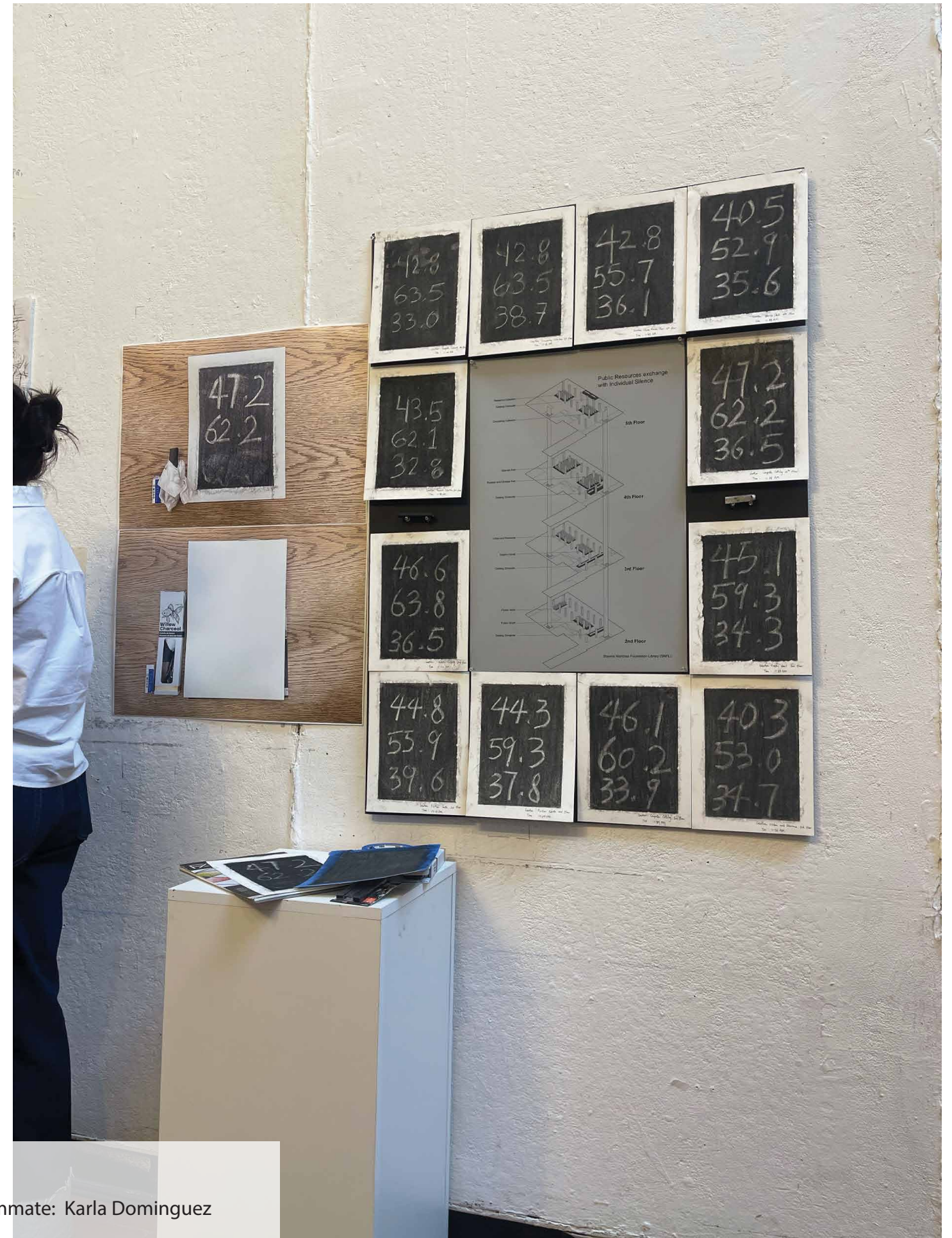
Portfolio

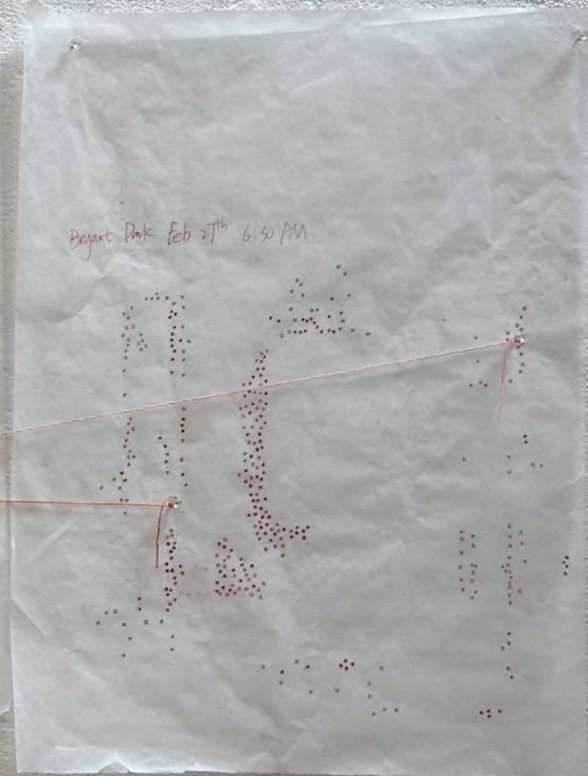
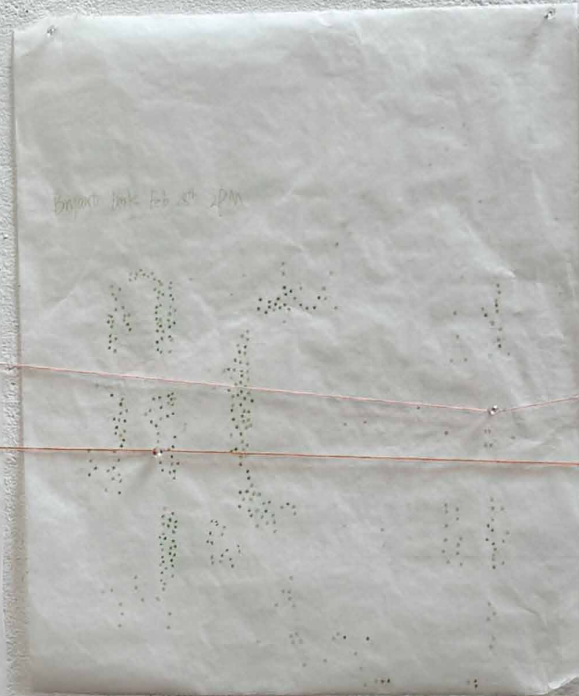
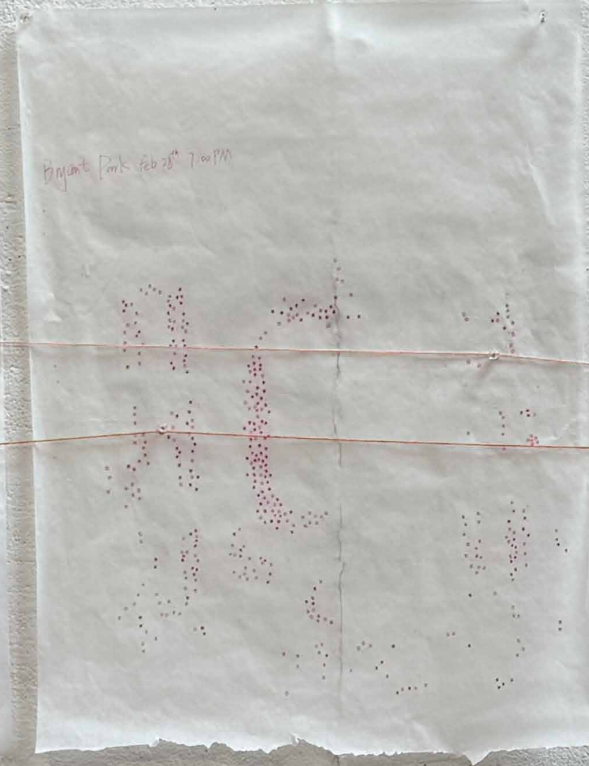
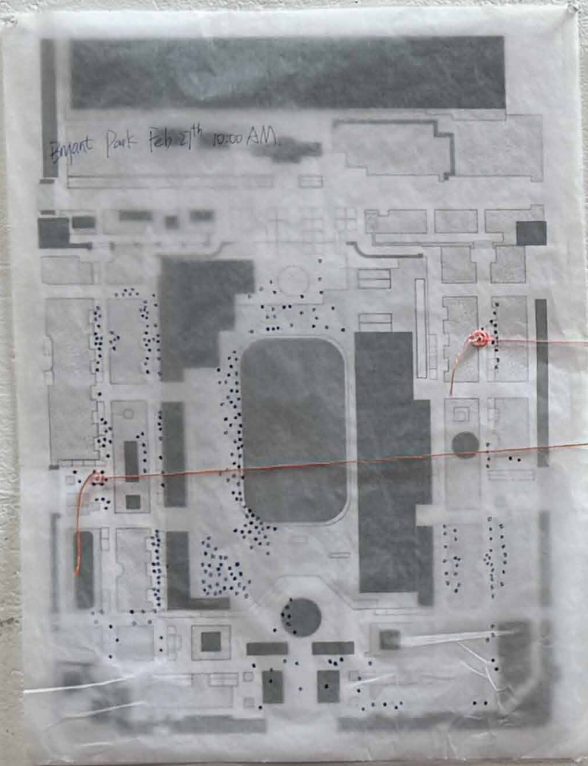
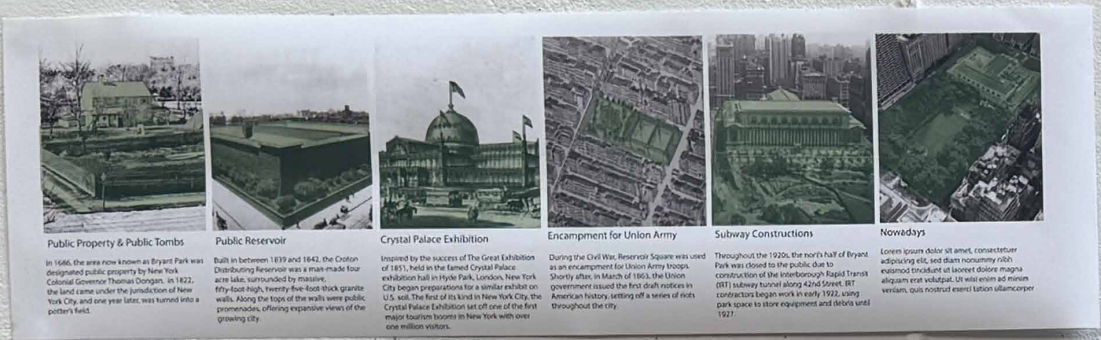
Columbia University GSAPP MSAAD
Summer 2025-Fall 2026

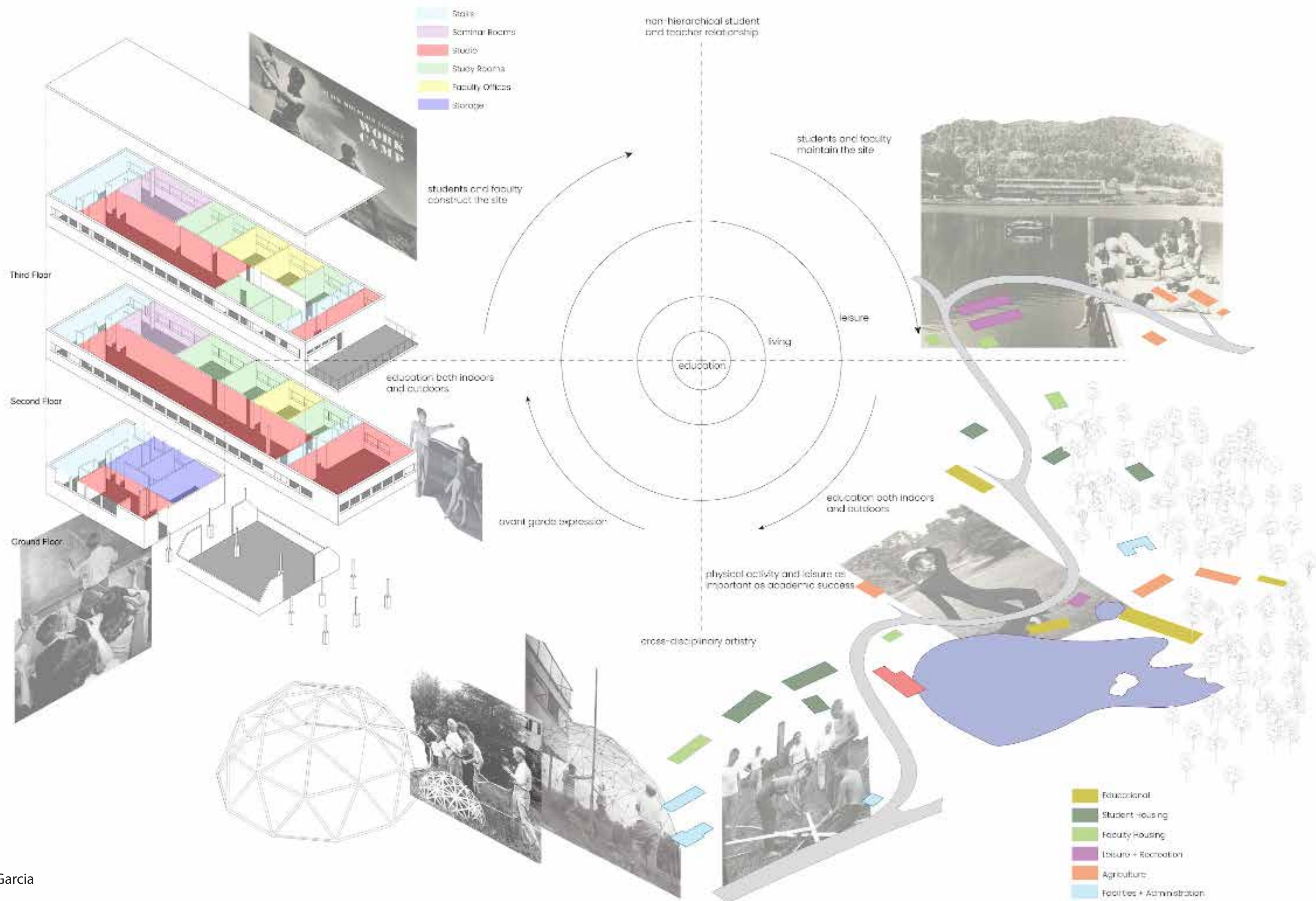
Shuyang(Dorrit) Fang

Ali + Munkenbeck Studio

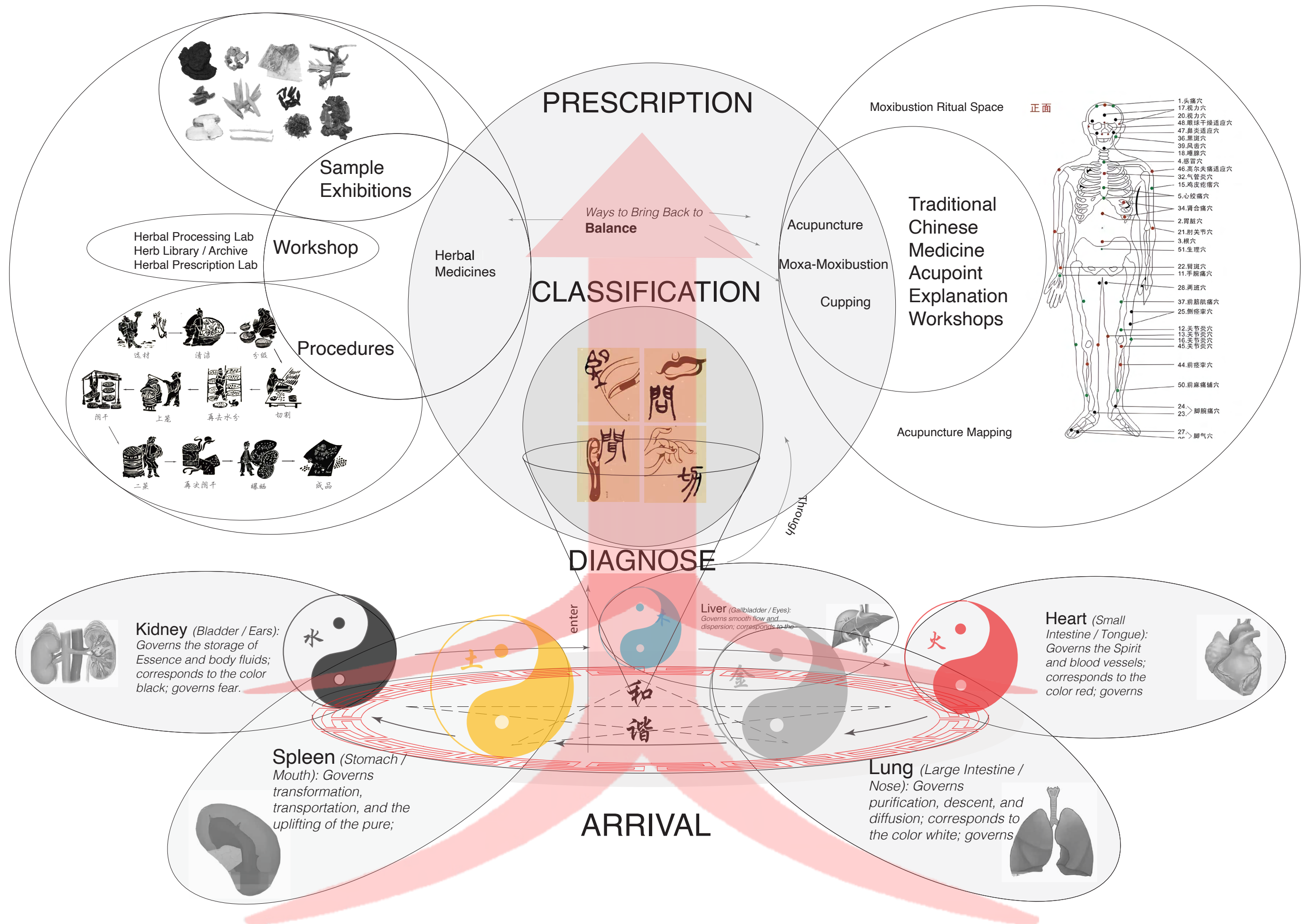
Teammate: Karla Dominguez













a. Hong Yee Pharmacy INC



b. Happy Li Trading INC(新太平)



c. Ton Ren Herb Supply



d. Quintessential Herbs Inc



e. Li's Herb Inc.



f. Kamwo Herbal Pharmacy



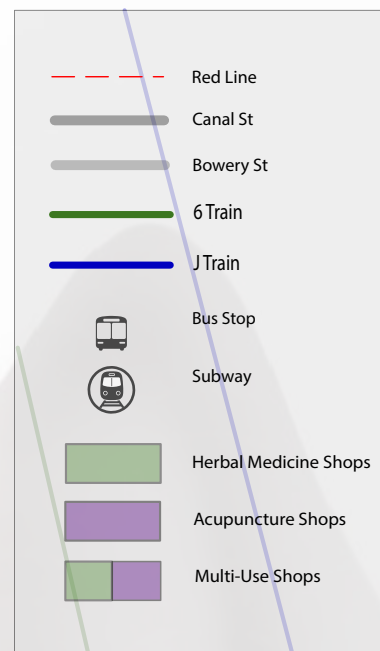
g. Grand Street Pharmaxeutical LLC



h. Jeffrey G. Chen, Acupuncture LLC



i. Ewa Trading Co Inc



j. Health Town Inc



k. Lin's Sister Herb Shop INC



l. NYC Physical Therapy and Acupuncture



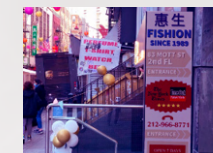
m. China Acupuncture Center Clinic



n. Jeffrey G. Chen, Acupuncturist



o. Shing Fu Tong INC



p. Fision Therapy Center



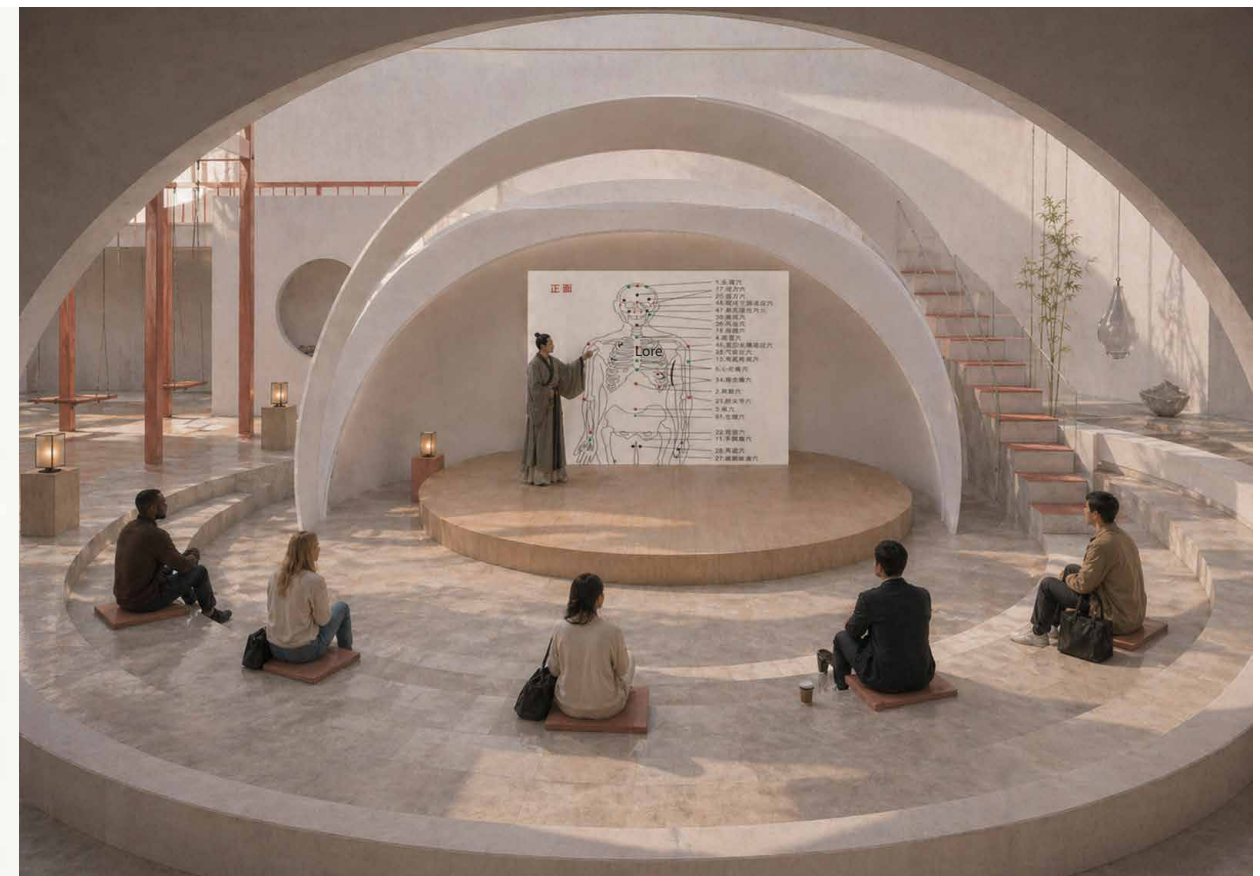
q. Naturo Medical Health Care



r. HealthKey Group - Wellington Physical Therapy & Acupuncture



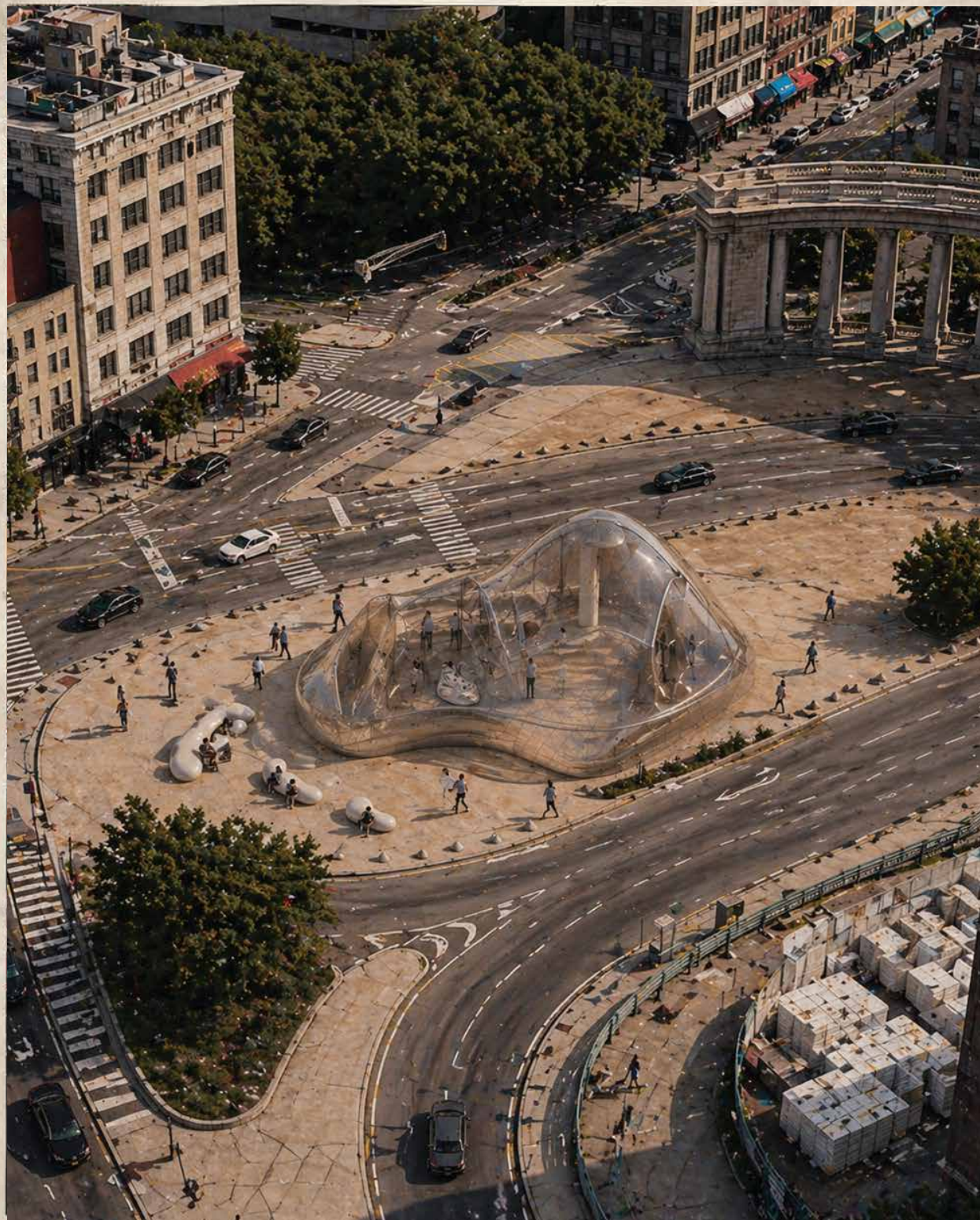
Acupuncture Lecture Hall



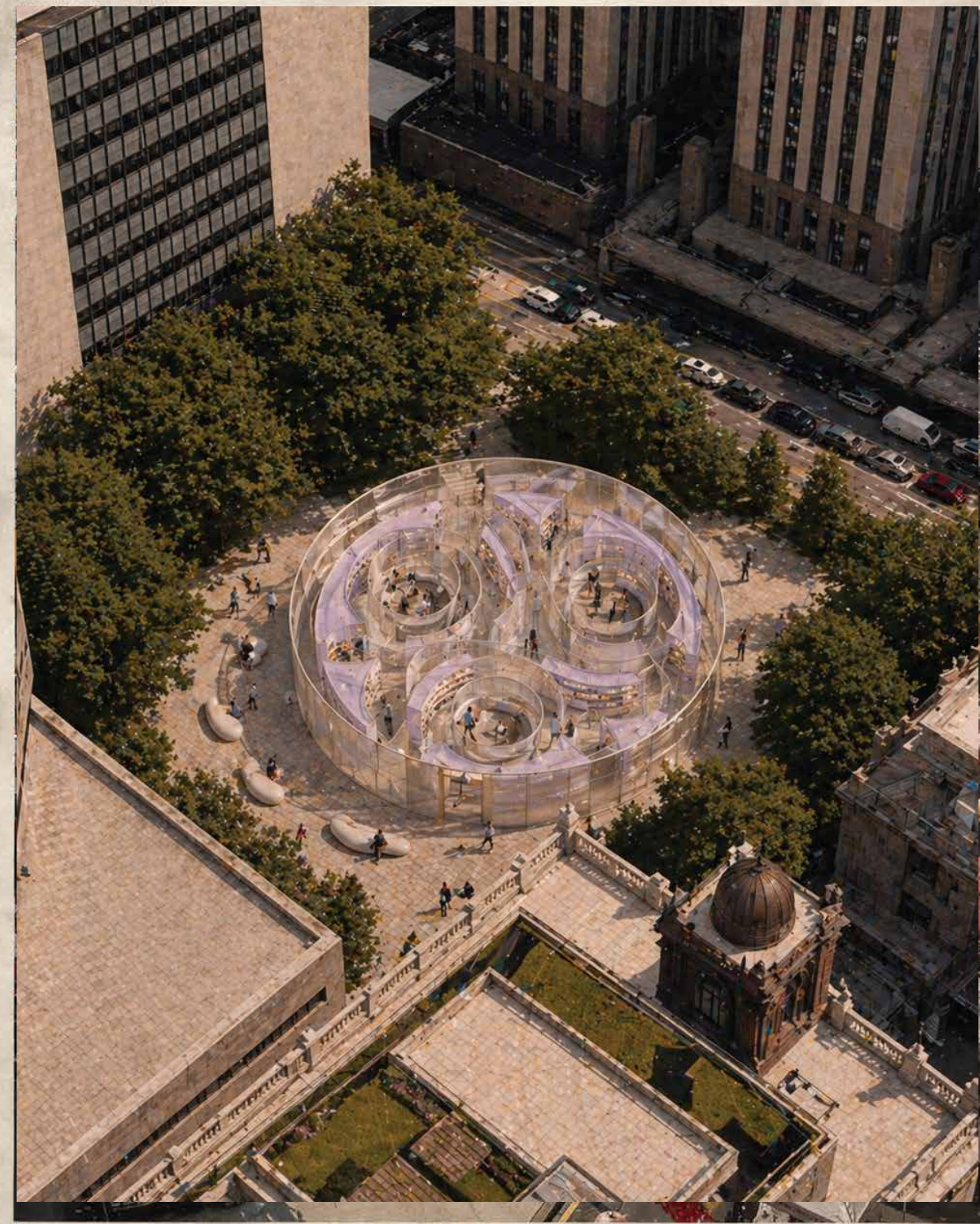
Now



Future



Arrival&Diagnose



Herbal Medicine Exhibition

Volume 6

DORRIT FANG

MATERIALS

Gordon Kipping Studio
(All Individual Work)

Low Embodied Carbon

Energy Efficiency

Ecological Significance

This booklet explores materials through the lens of sustainability and regenerative design. Each selection is examined not only for its performance and aesthetics, but also for its energy efficiency, ecological significance, and role within bioclimatic design strategies. Emphasizing adaptive reuse and low embodied carbon, the materials featured here demonstrate how thoughtful choices can minimize environmental impact while enhancing human comfort. Inspired by the principles of the Living Building Challenge, this collection aims to encourage designers and builders to create spaces that are restorative, resource-conscious, and responsive to the natural systems that sustain them.

Bioclimatic Design

Adaptive Reuse

Living Building Challenge



Steel



Glass



Concrete



Wood



Mycelium



Bamboo



Straw-Bales



Hempcrete



Unfired-Brick



Oyster Shell



Carbon-Fibre

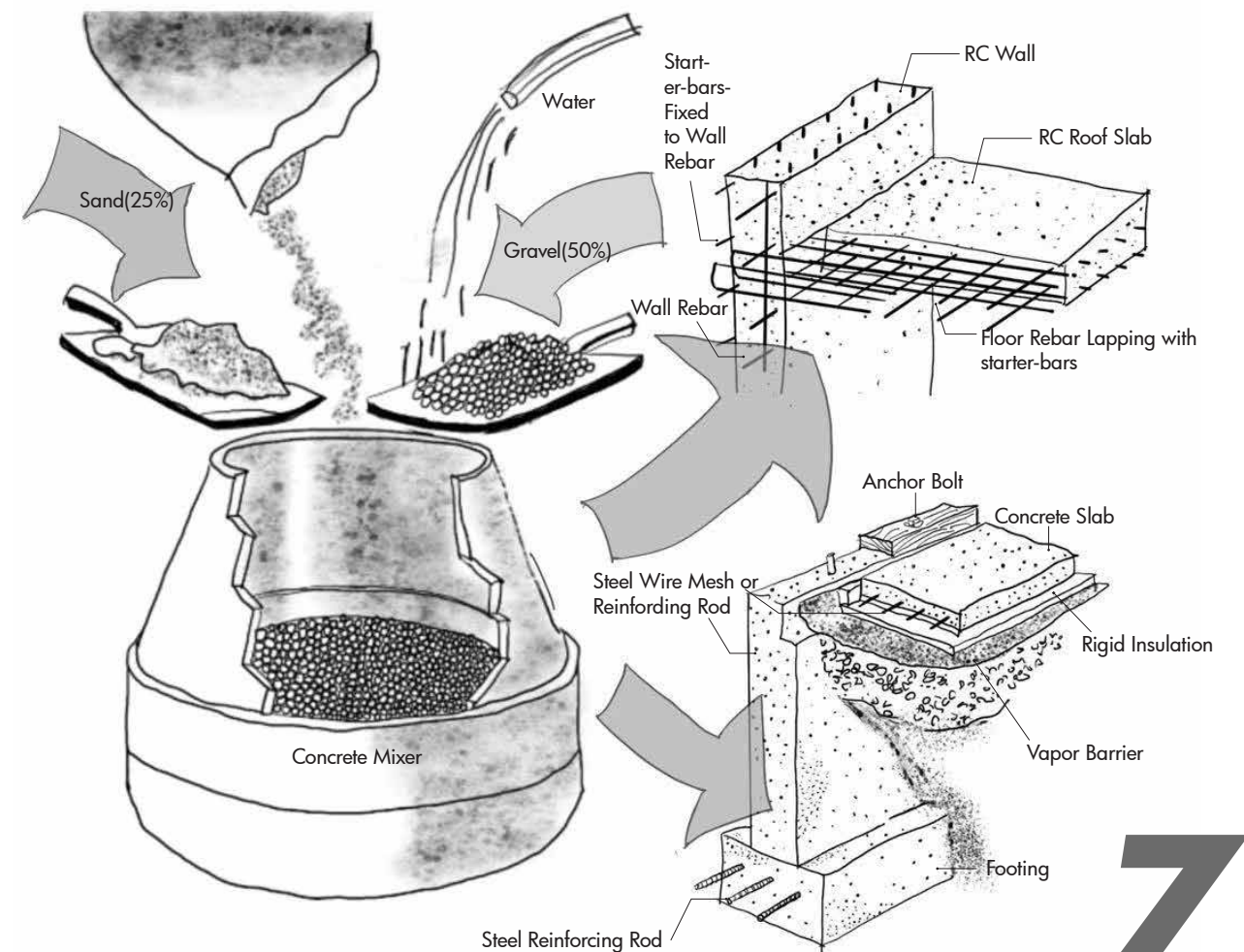


Unsorted Stone

concrete

Tadao Ando's 152 Elizabeth Street (2019) in Nolita is a seven-story, seven-residence condo with a signature poured-in-place concrete façade. Combining concrete, glass, and metal, it was designed as a serene urban sanctuary amid the city.

Concrete is one of the most widely used and enduring building materials in modern construction. Formed by combining cement, water, and aggregates, it can be poured into virtually any shape, hardening into a material with exceptional compressive strength and durability. Its plasticity when wet and solidity when cured make it both structurally versatile and expressive, capable of spanning monumental infrastructures or shaping delicate architectural details. Variations such as reinforced, precast, and high-performance concrete expand its applications, from bridges and skyscrapers to finely crafted façades. Though often seen as raw and austere, concrete also carries symbolic weight: it embodies permanence,

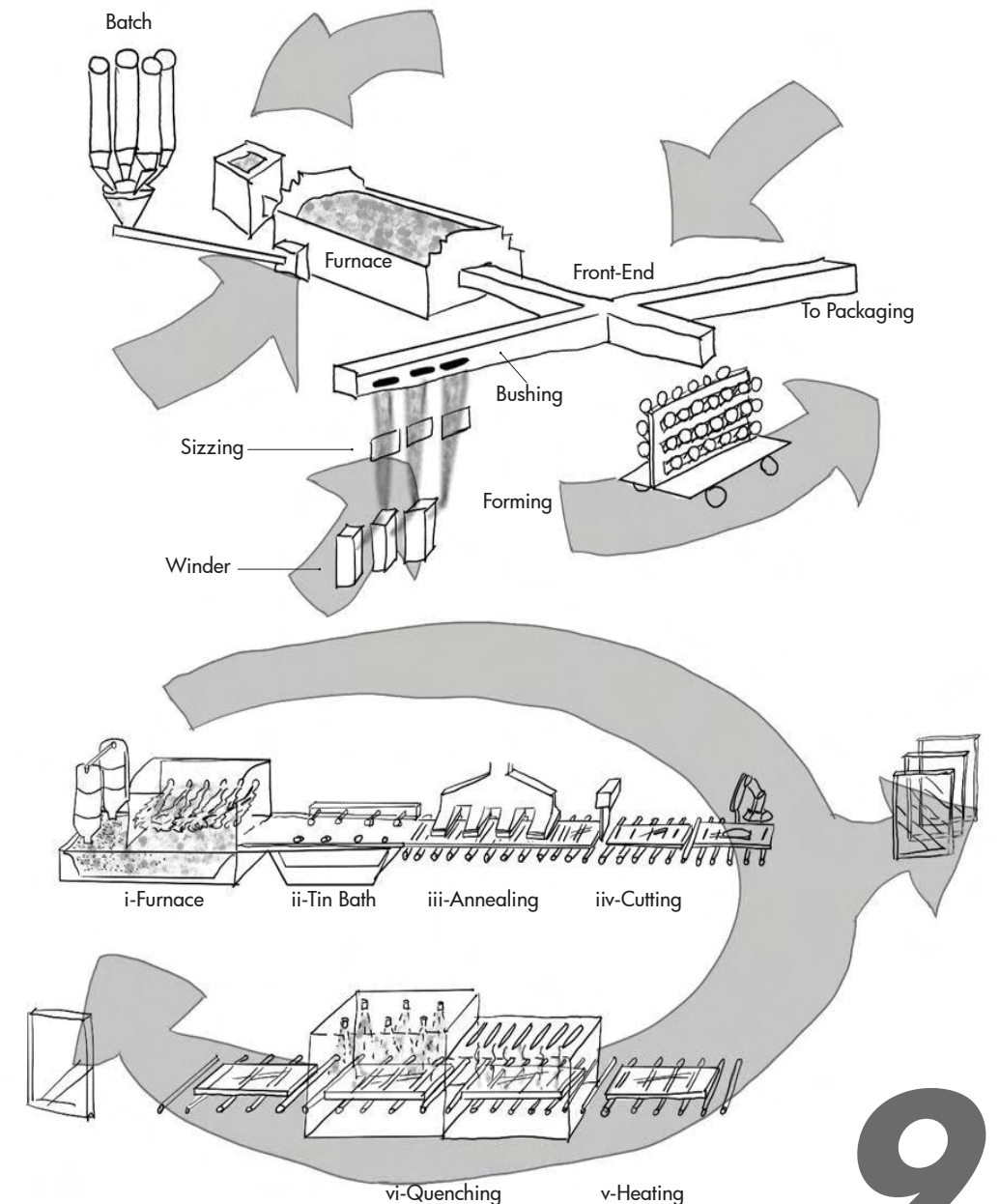




Glass

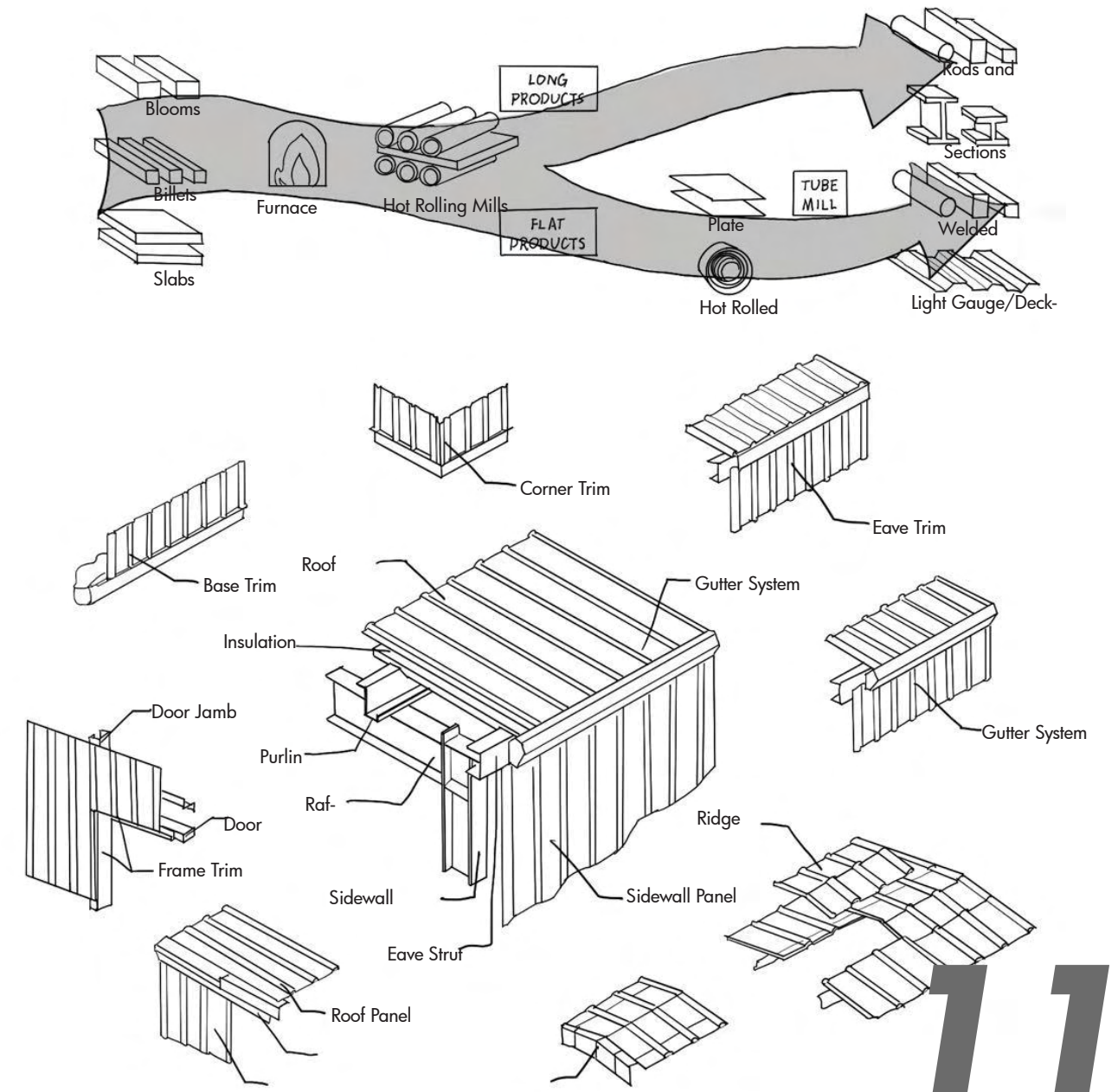
The Glass House, built between 1949 and 1995 by architect Philip Johnson, is a National Trust Historic Site located in New Canaan, Connecticut. The pastoral 49-acre landscape comprises fourteen structures, including the Glass House (1949), and features a permanent collection of 20th-century painting and sculpture, along with temporary exhibitions.

Bamboo is one of the most versatile and sustainable building materials in use today. Its hollow culms, divided by strong nodes, combine lightness with remarkable tensile strength, allowing it to perform like natural steel in resisting bending and stretching. The variations between thin- and thick-walled culms, solid and hollow stems, as well as distinctive branching patterns, give builders a wide range of structural possibilities. Bamboo is also renewable on an exceptional scale—reaching maturity within just a few years, unlike timber which takes decades. Beyond its physical properties, bamboo carries cultural and ecological significance:



The CCTV headquarters aims at an alternative to the exhausted typology of the skyscraper. Instead of competing in the race for ultimate height and style within a traditional two-dimensional tower 'soaring' skyward, CCTV's loop poses a truly three-dimensional experience, culminating in a 75-metre cantilever.

Steel is one of the most durable and widely used building materials in modern construction. Composed primarily of iron and carbon, it offers exceptional compressive and tensile strength, making it ideal for spanning long distances, supporting heavy loads, and withstanding extreme forces. Its malleability allows it to be rolled, welded, or cast into diverse forms, from slender beams to complex structural systems. Unlike natural materials, steel provides uniformity and predictability in performance, enabling precision in architectural and engineering design. Though energy-intensive to produce, steel is highly recyclable, contributing to circular construction practices.



Bamboo

Informed by the way the human ribcage is held in place by the tension from the surrounding muscles and skin, architecture studio Ibuku created a self-supporting roof made entirely from bamboo for the gymnasium of Bali's Green School.

Bamboo is one of the most versatile and sustainable building materials in use today. Its hollow culms, divided by strong nodes, combine lightness with remarkable tensile strength, allowing it to perform like natural steel in resisting bending and stretching. The variations between thin- and thick-walled culms, solid and hollow stems, as well as distinctive branching patterns, give builders a wide range of structural possibilities. Bamboo is also renewable on an exceptional scale—reaching maturity within just a few years, unlike timber which takes decades. Beyond its physical properties, bamboo carries cultural and ecological significance: it has long been central to vernacular traditions, while in contemporary practice it is reimagined as a symbol of ecological resilience and architectural experimentation.

Thin-walled Hollow Culm

Nodes in Close Succession

Leaf Complements (Branch Leaves)

Thick-walled Hollow Culm

Solid Culm

Branches Breaking Through Base of Sheath

Extravaginal Branching

Culm Leaf-Blade

Culm Leaf-Sheaths

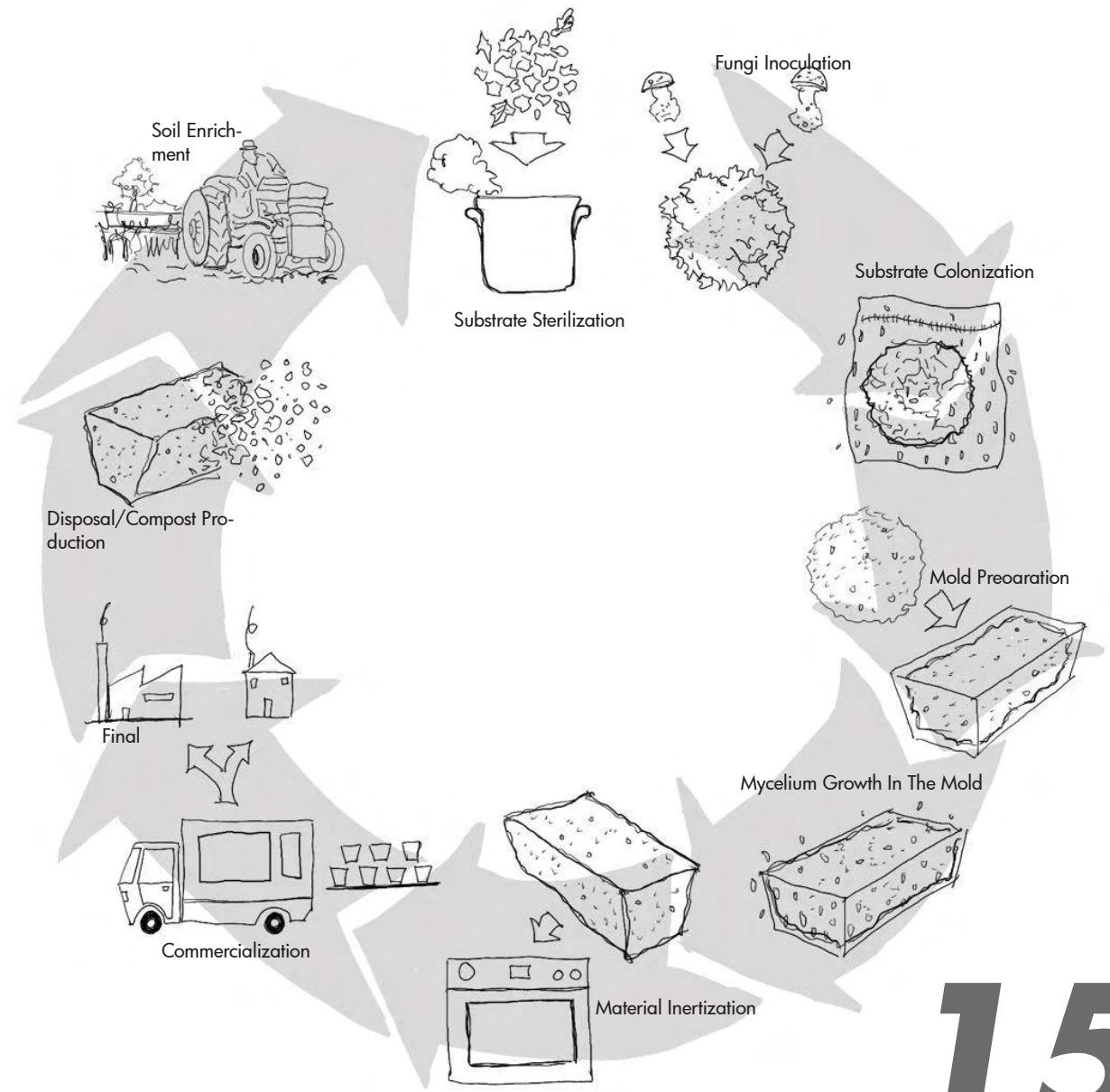
Intravaginal Branching

Mycelium

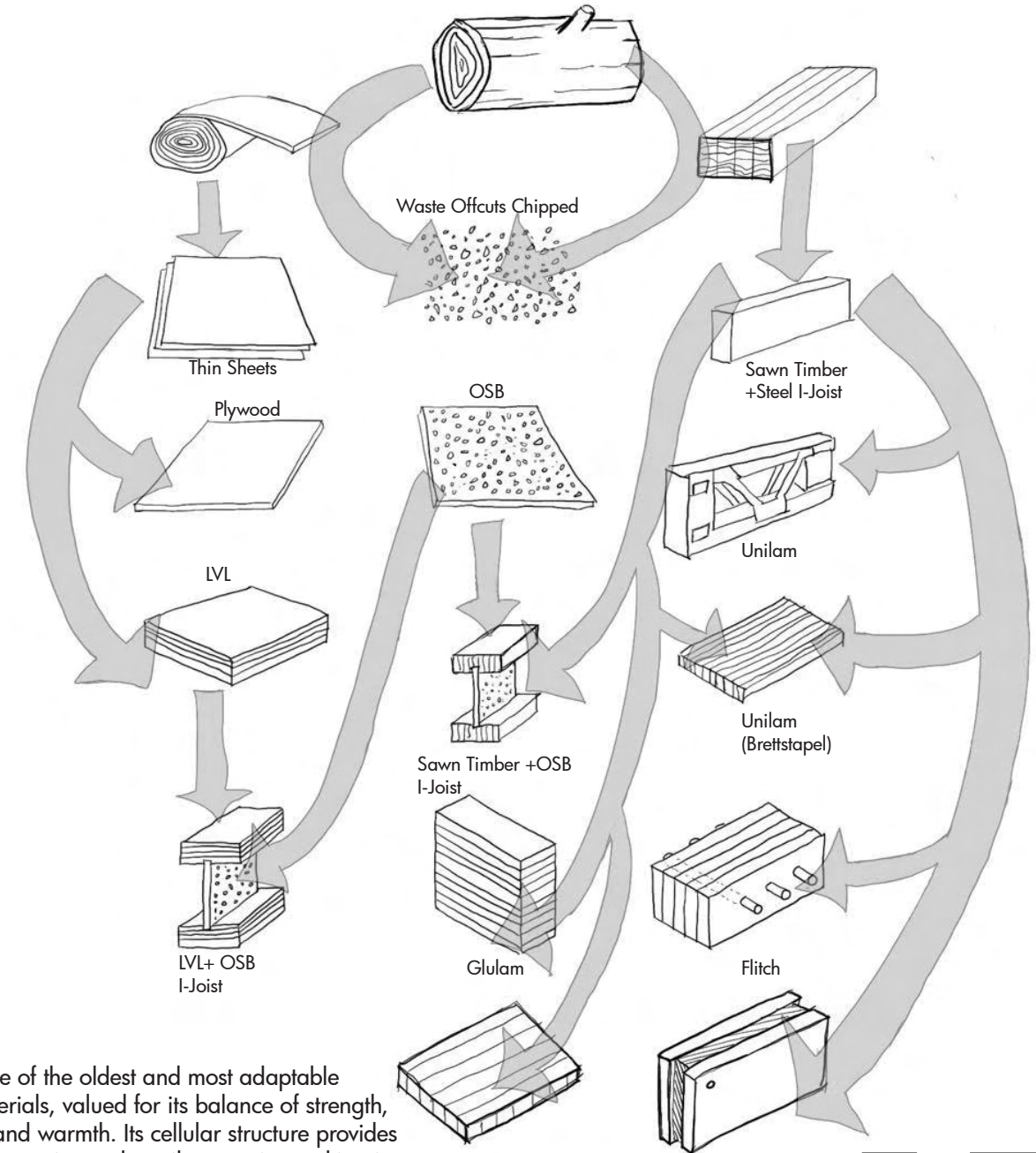
In 2014, New York architects 'The Living' built a mycelium brick tower called the Hy-Fi, designed as part of MoMA's Young Architects Programme. The team created 10,000 compostable bricks and constructed a tower 12 metres tall.



Mycelium is an emerging biomaterial celebrated for its sustainability and versatility in construction. Formed from the dense root networks of fungi, it grows by binding organic waste—such as sawdust, hemp, or agricultural byproducts—into lightweight yet durable composites. Despite its softness in appearance, mycelium exhibits impressive strength-to-weight ratios, with natural insulating, fire-resistant, and acoustic properties that rival or surpass conventional foams and plastics. Because it can be grown into specific shapes within molds, it reduces the need for intensive manufacturing processes and minimizes



Expo 2015 is a culinary competition, where 145 participating countries, companies and organisations try to outdo each other. The two themes of the World Exhibition 'Feeding the Planet' and 'Energy for Life' are, however, more serious, what with the threat of climatic disaster and overpopulation.

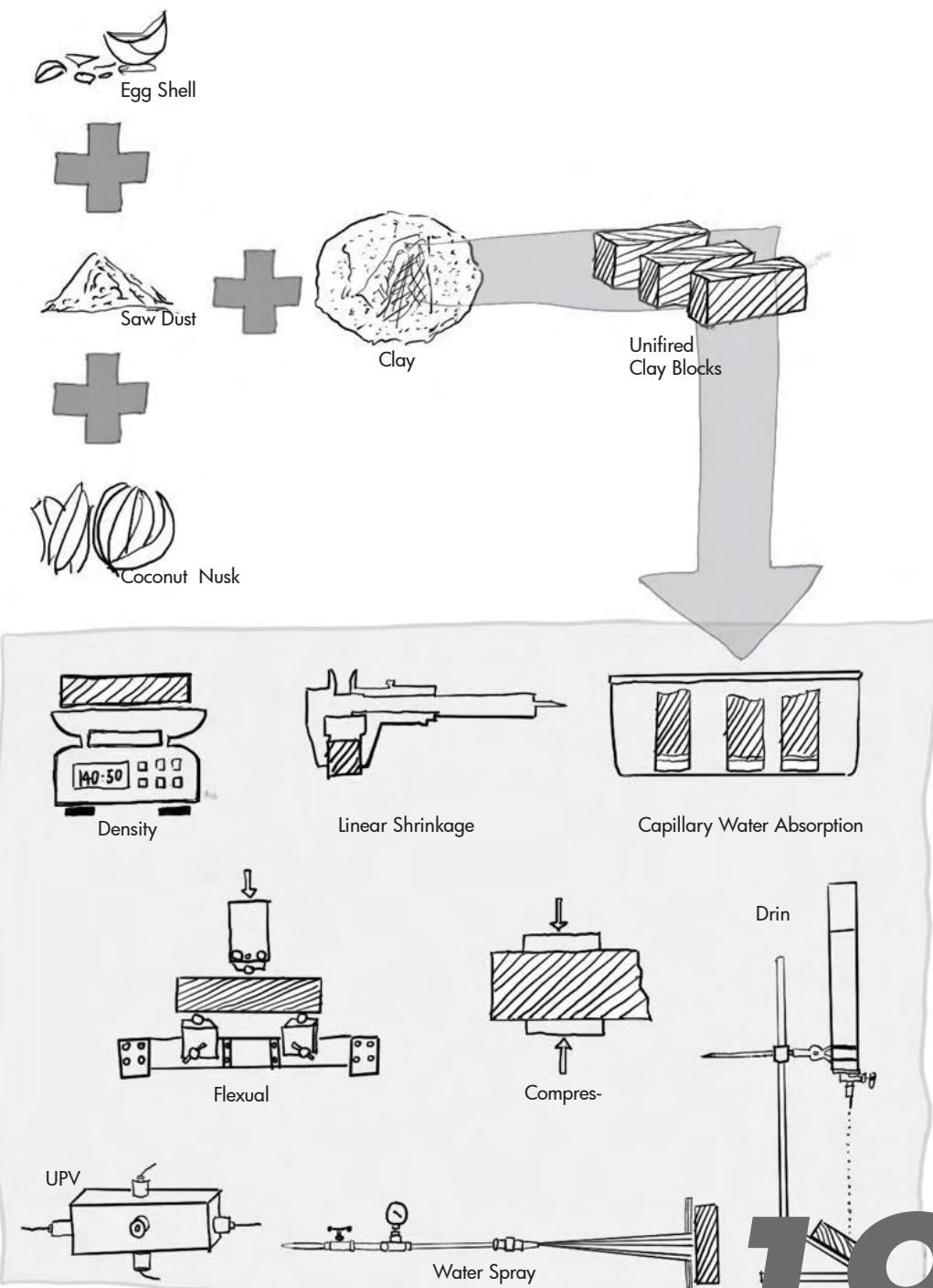


Wood is one of the oldest and most adaptable building materials, valued for its balance of strength, workability, and warmth. Its cellular structure provides excellent compressive and tensile capacity, making it suitable for everything from framing and flooring to large-span engineered systems. Variations in grain, density, and species allow architects and builders to tailor wood to structural, aesthetic, and environmental

Unfired Brick

Primary School Tanouan Ibi is a sustainable building which stands at the edge of a village in the vast plain of the Dogon country in Mali. The school consists of three 7 x 9 meters classrooms for in total 180 pupils, a principal's office, a depot and a sanitary building. In the evening the school is used for teaching women.

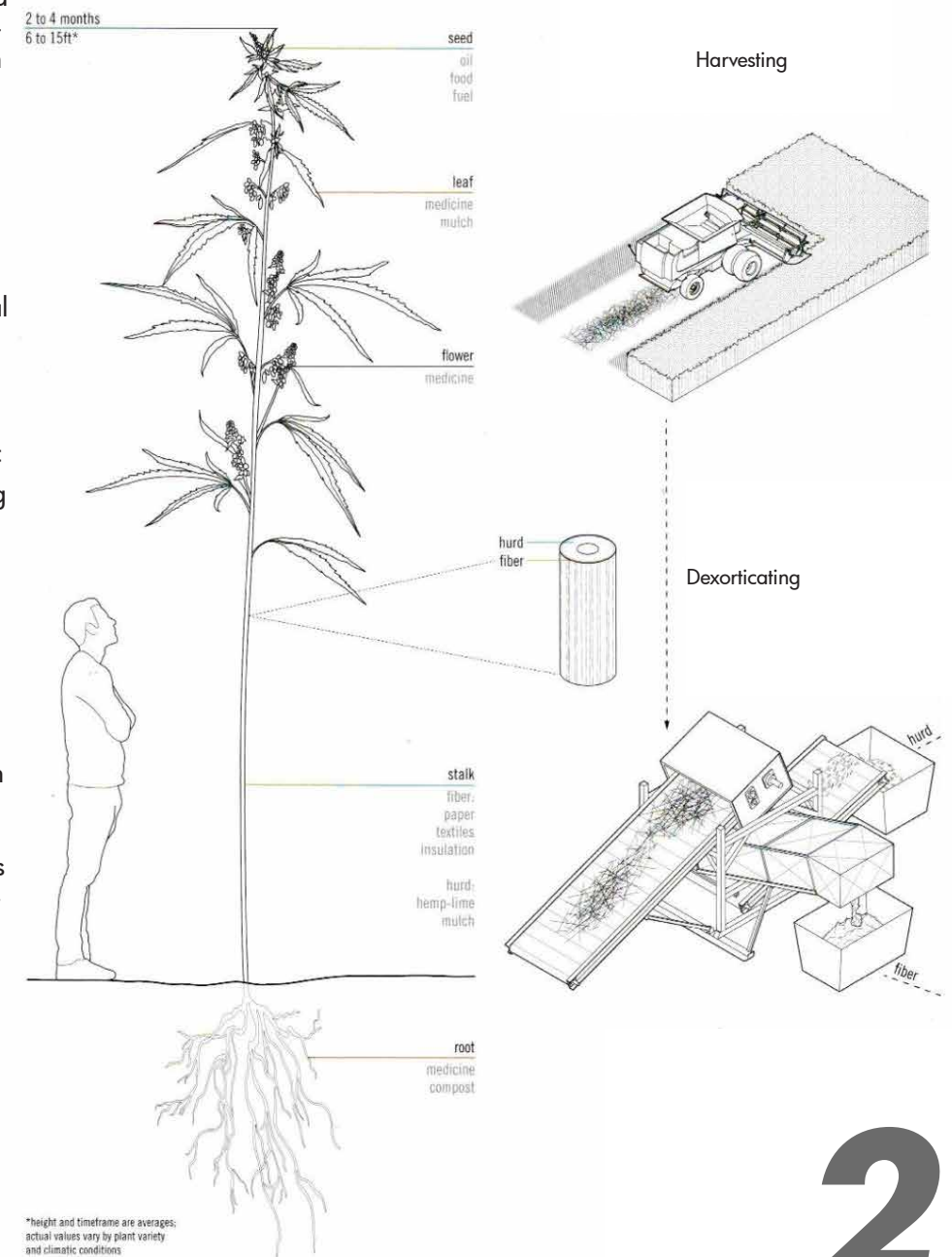
Unfired brick is one of the oldest and most sustainable building materials, valued for its low energy production and natural thermal performance. Made from clay, sand, and organic fibers like straw, the material is shaped and dried in the sun rather than kiln-fired, preserving its embodied energy and reducing carbon emissions. Its porous structure provides excellent insulation and humidity regulation, keeping interiors cool in hot climates and warm in cooler ones. Variations in composition and size allow for flexibility, from simple vernacular dwellings to refined contemporary applications.



Hempcrete

This project is framed within a wider masterplan for the Fort V site, aiming to strengthen the current function of public park. The 'bioclass' is known to locals, but needs a new infrastructure. It is conceived as a new reception centre for education of nature and ecology for the region.

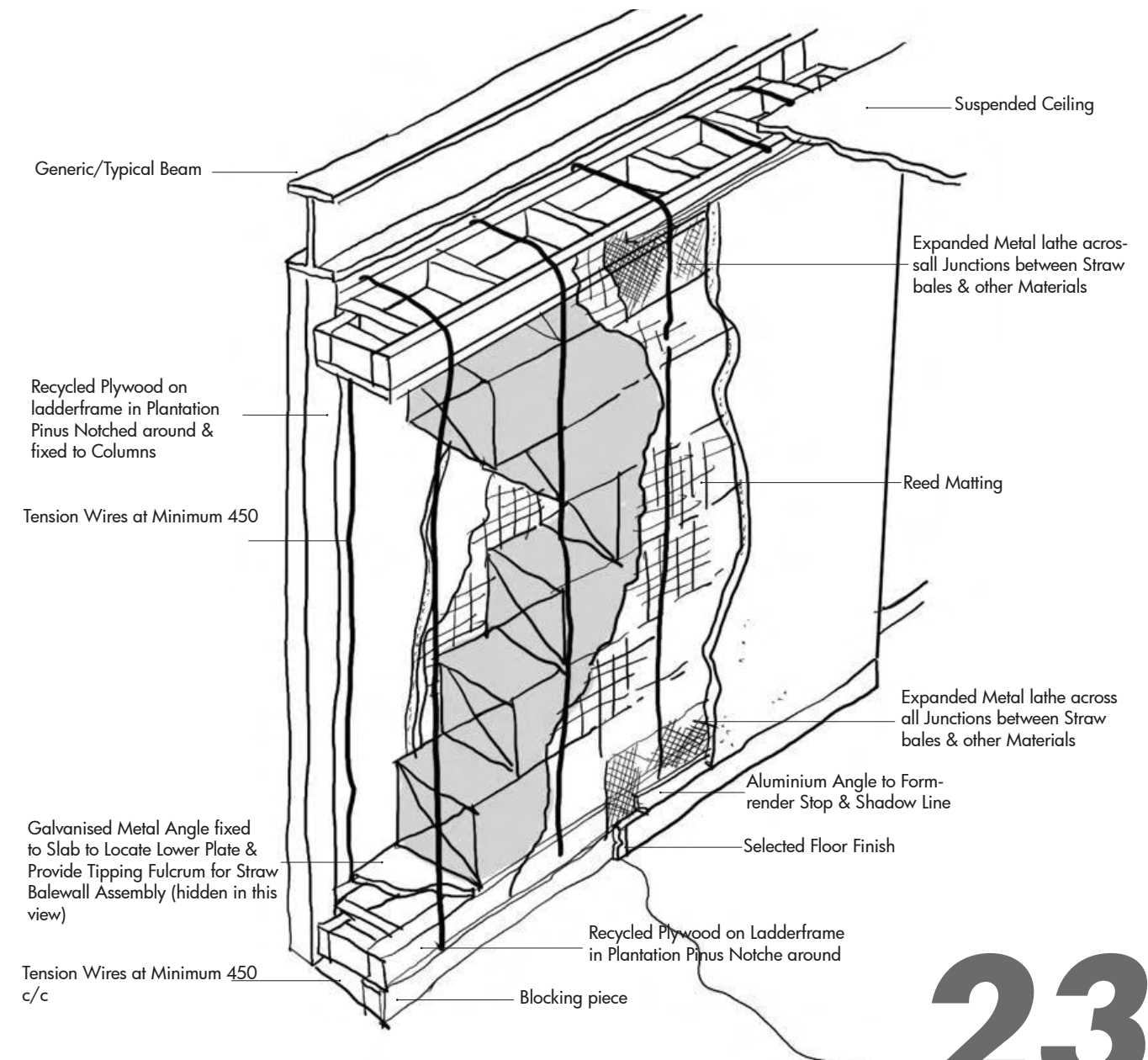
Hempcrete is a bio-based building material made from the woody core of the hemp plant mixed with lime binder and water. Lightweight and porous, it offers excellent thermal insulation and moisture regulation while remaining breathable, which helps prevent mold and improves indoor air quality. Its low density makes it non-load-bearing but ideal for infill walls around structural frames. Because hemp grows rapidly and absorbs significant amounts of carbon dioxide during cultivation, hempcrete walls lock away carbon throughout their lifespan, giving them a strongly regenerative environmental profile. Flexible in application, hempcrete has been used in both vernacular construction and innovative contemporary projects as a sustainable alternative to conventional concrete.



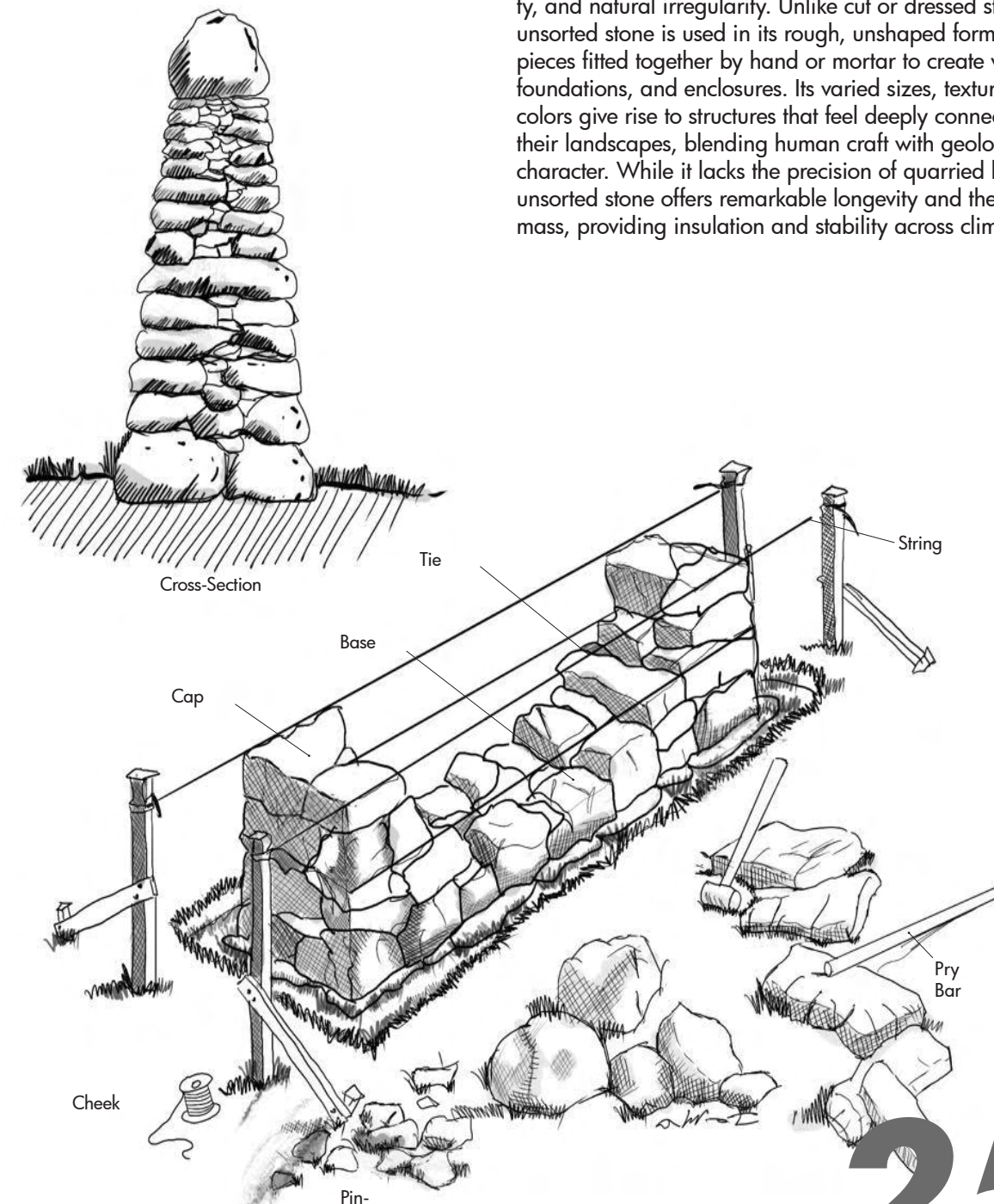
Straw Bales

"We were asked by our client, diagnosed with ALS (Amyotrophic Lateral Sclerosis), to adapt his house with an eye on the future. After meeting with the ergotherapist, we knew we had no time to spare considering the aggressive nature of the condition."

Straw bales are a simple yet highly sustainable building material valued for their excellent insulation and low environmental impact. Composed of densely packed stalks left over from grain harvests, they form thick, breathable walls that regulate temperature and humidity while providing natural resistance to fire when properly plastered. Their structural potential lies not in strength like timber or bamboo, but in their mass and insulating qualities, making them ideal for energy-efficient housing.



The winery is situated on an exceptional location in Napa Valley. Our client, the renowned Bordeaux wine producer, Christian Moeux, recognized the potential of this terroir for producing quality grapes in comparison to numerous other vineyards. Early obsidian finds reveal that the vineyard was once an Indian settlement.

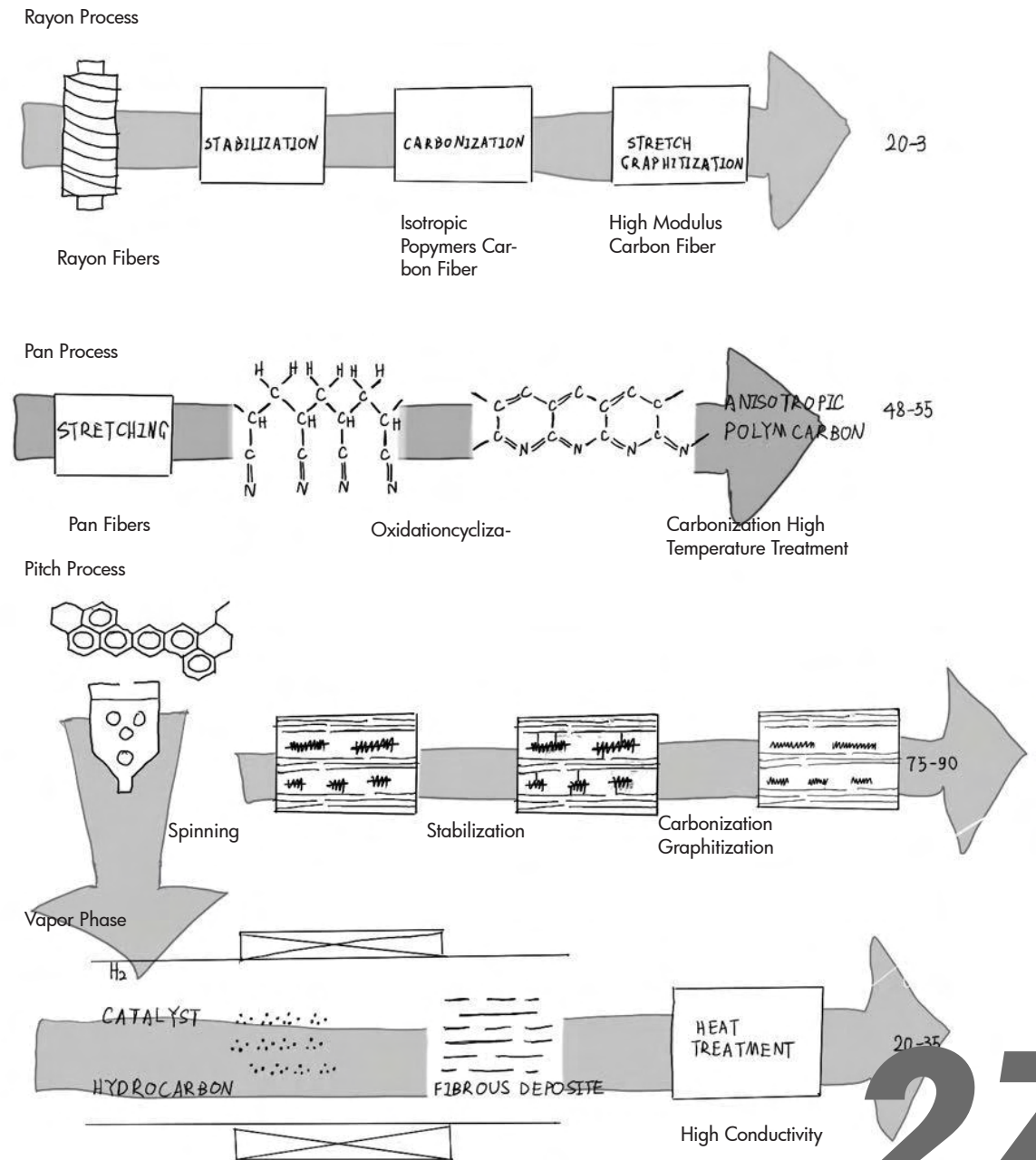


Unsorted stone is one of the oldest and most elemental building materials, valued for its raw strength, durability, and natural irregularity. Unlike cut or dressed stone, unsorted stone is used in its rough, unshaped form, with pieces fitted together by hand or mortar to create walls, foundations, and enclosures. Its varied sizes, textures, and colors give rise to structures that feel deeply connected to their landscapes, blending human craft with geological character. While it lacks the precision of quarried blocks, unsorted stone offers remarkable longevity and thermal mass, providing insulation and stability across climates.

Carbon Fibers

Mass Studies has created a park pavilion structure that works with its surroundings. The Air Forest absorbs winds to stay inflated, while it also has filters for sunlight that keeps natural light coming through.

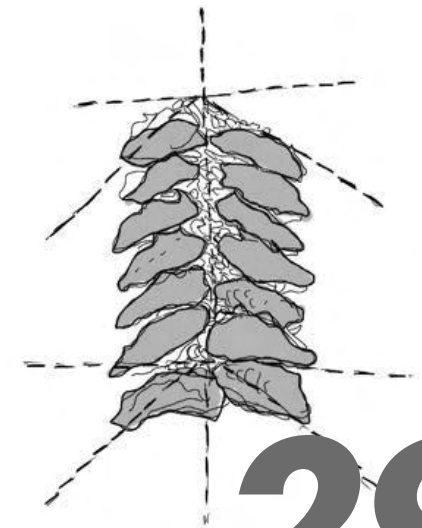
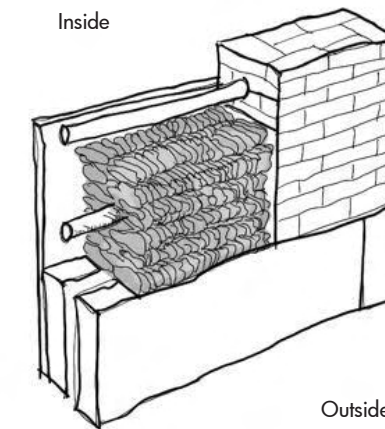
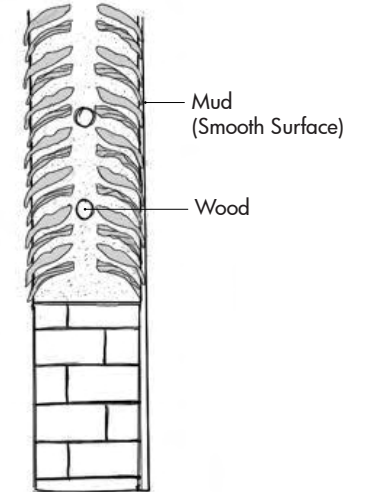
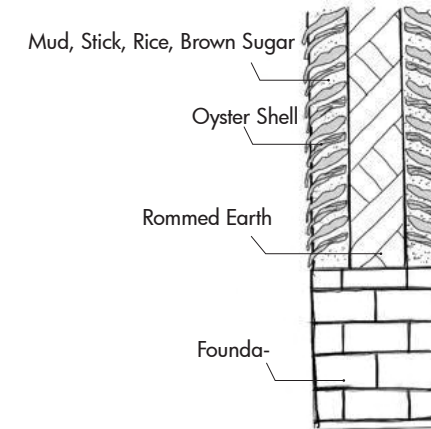
Carbon fiber is a high-performance composite material celebrated for its extraordinary strength-to-weight ratio. Composed of tightly bound carbon strands within a polymer matrix, it is both lighter than aluminum and stronger than steel, resisting tension, bending, and fatigue with remarkable efficiency. Its fibrous structure allows for precise tailoring—woven fabrics, unidirectional strands, and layered laminates can be engineered to meet specific structural demands. Unlike natural materials, carbon fiber is not renewable, but its durability and long service life make it



Oyster Shells

Oyster shell houses in the form of ancestral halls are valued by the villagers due to their unique nature and traditional family cultural characteristics, and they are constantly being renovated to keep them intact.

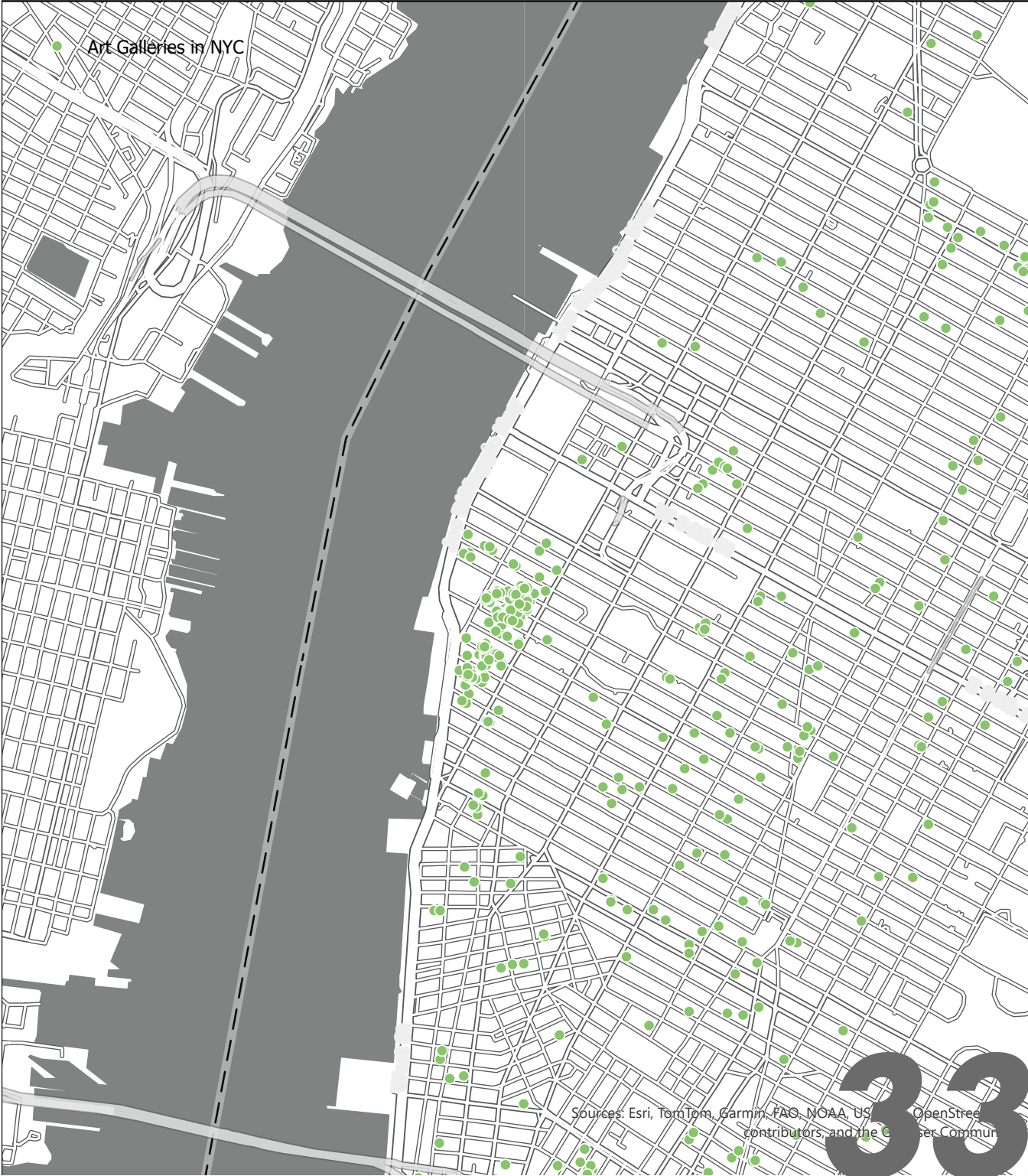
Oyster shells, once considered mere waste from coastal communities, are increasingly recognized as a promising sustainable building material. Composed primarily of calcium carbonate, they share properties with limestone and can be processed into lime for cement, plaster, or aggregate applications. Their layered microstructure offers durability and resistance to weathering, while their irregular yet strong form makes them suitable for insulation and filler. Beyond performance, oyster shells embody a powerful ecological cycle: when reused, they reduce construction's reliance on quar-







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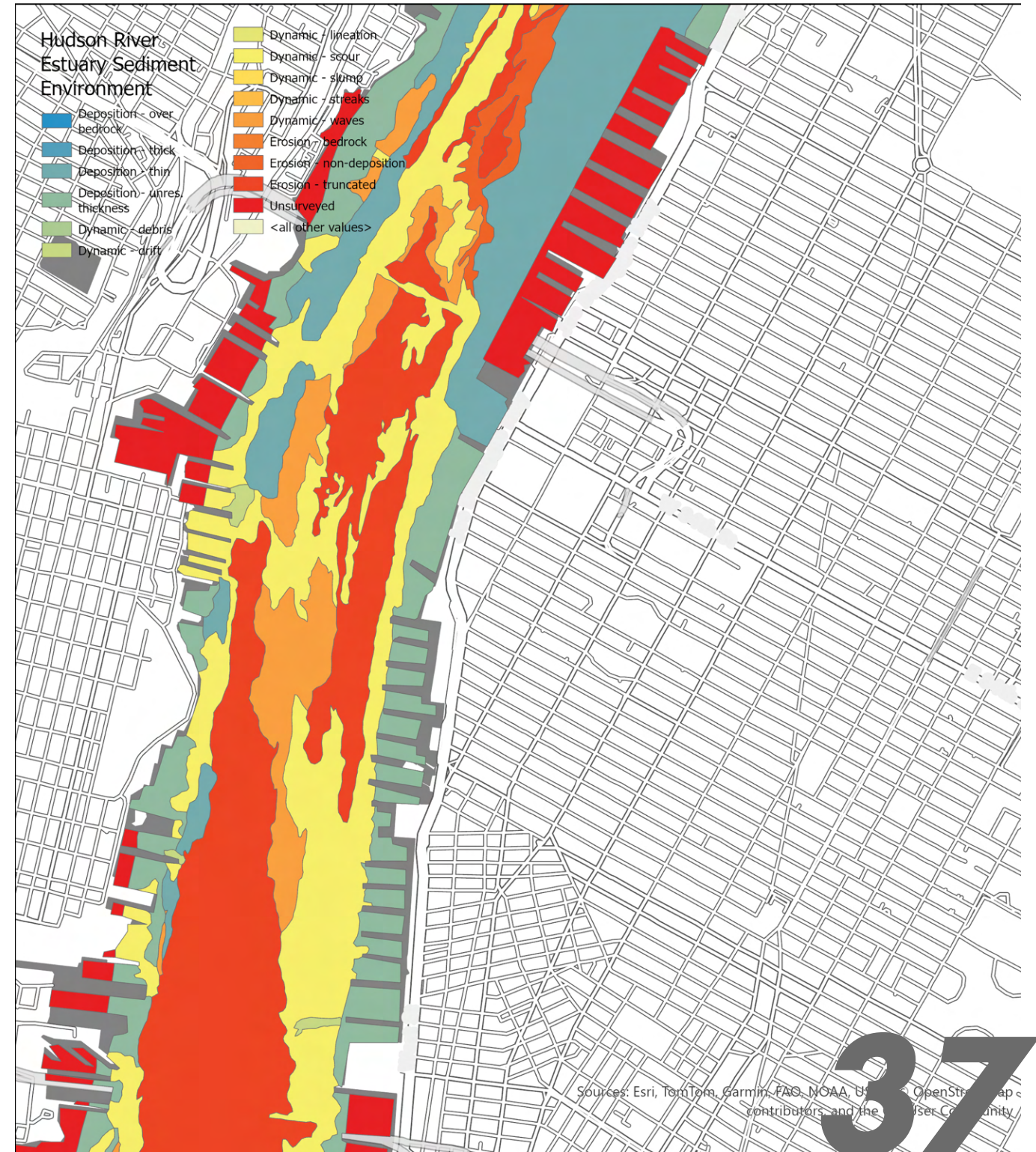


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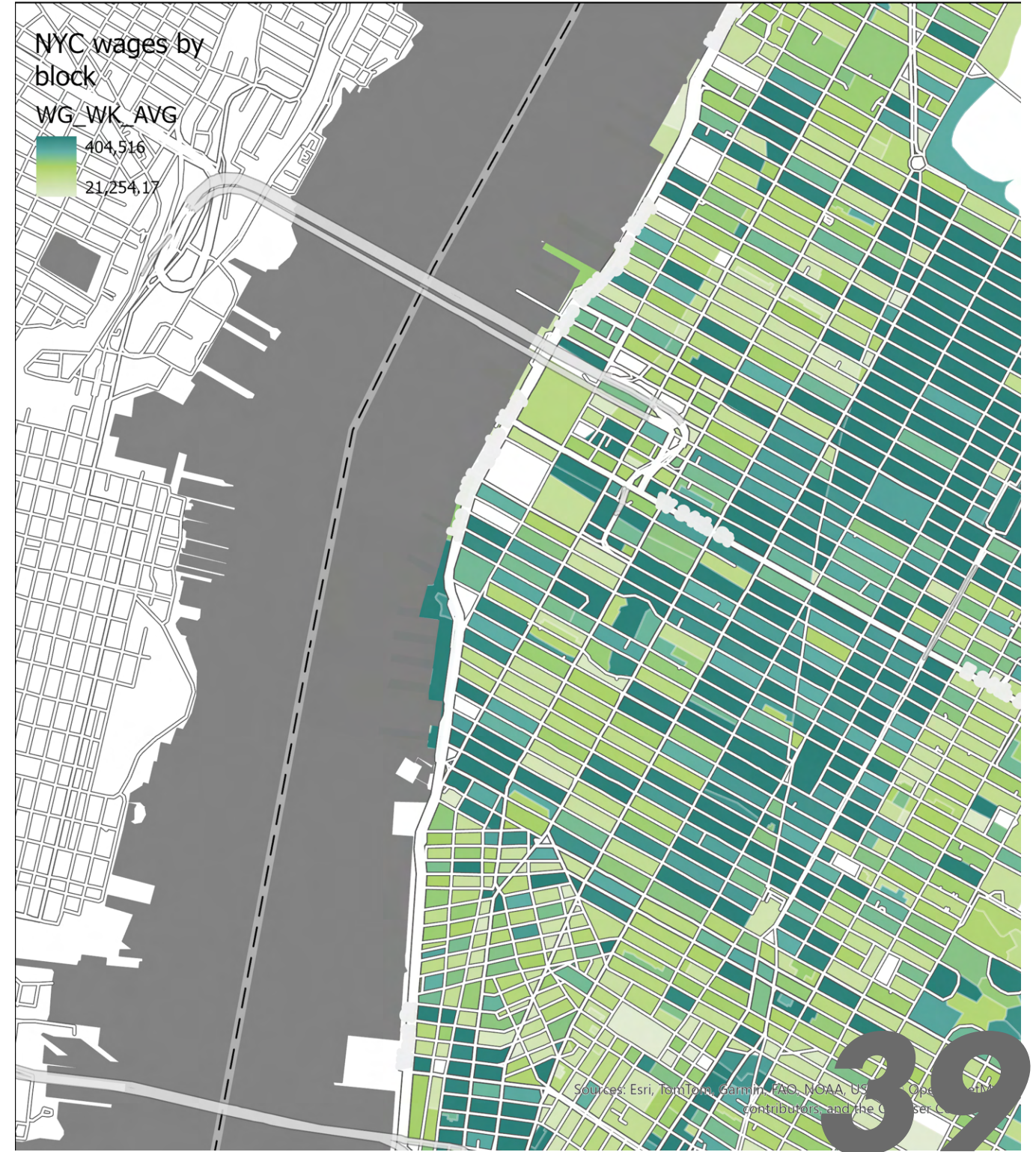




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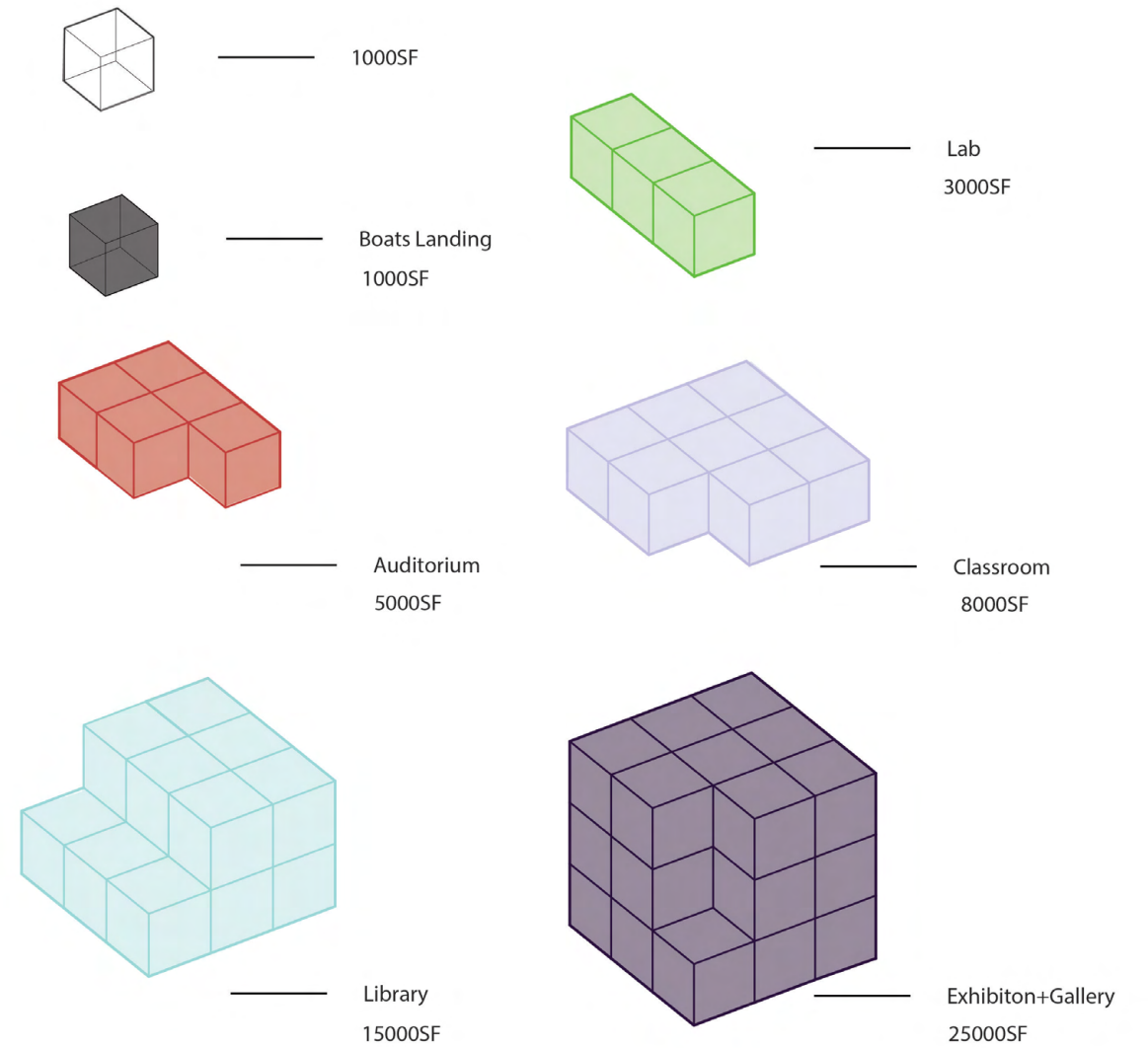
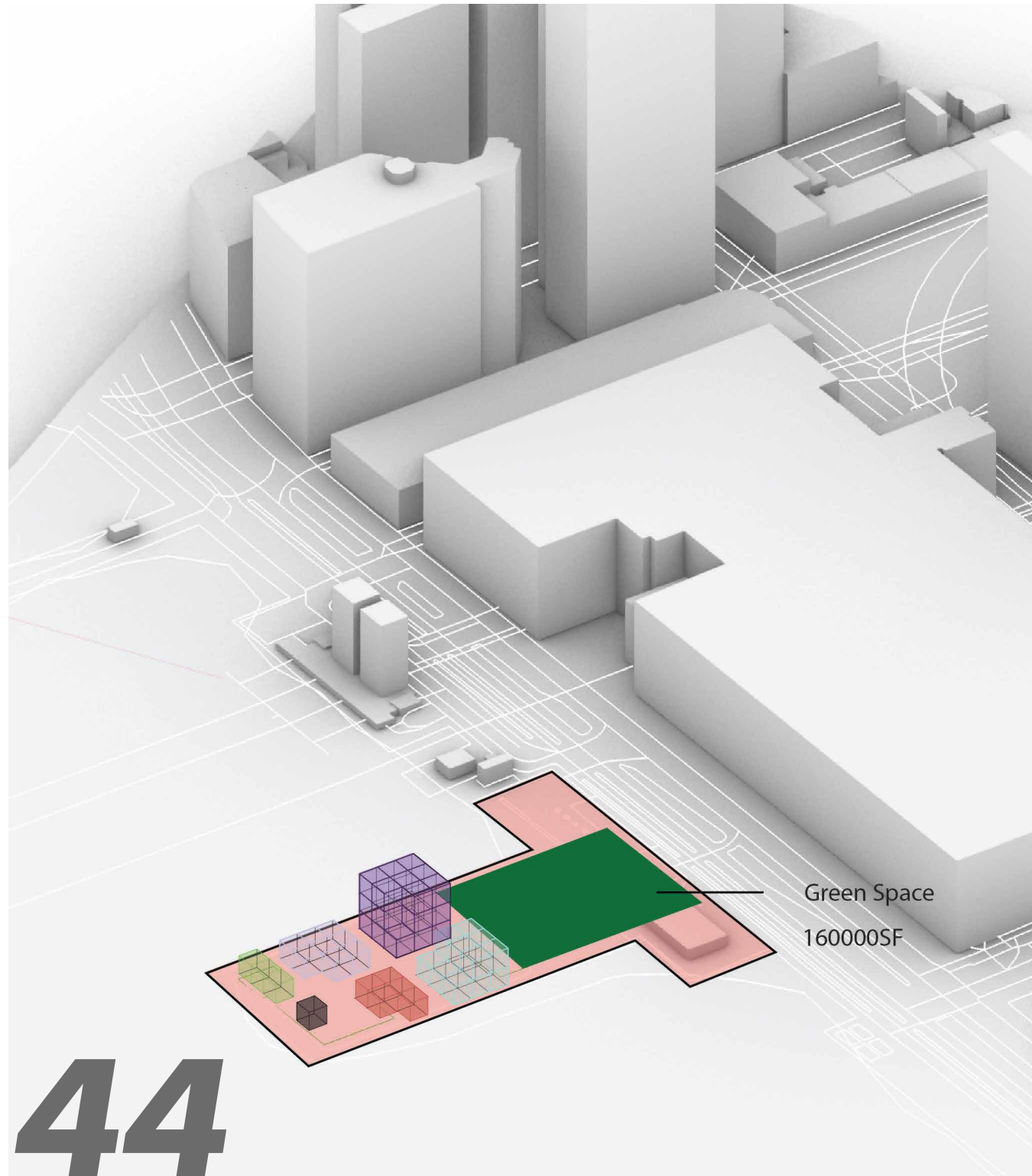
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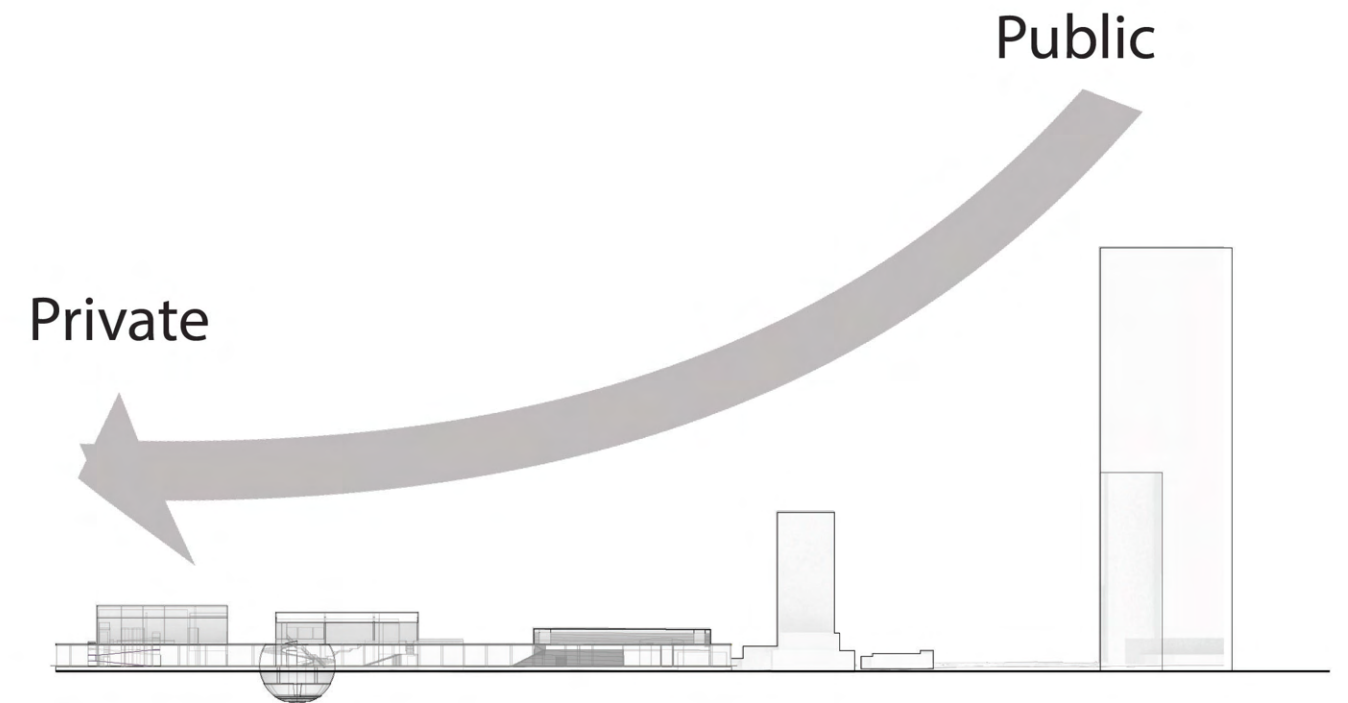
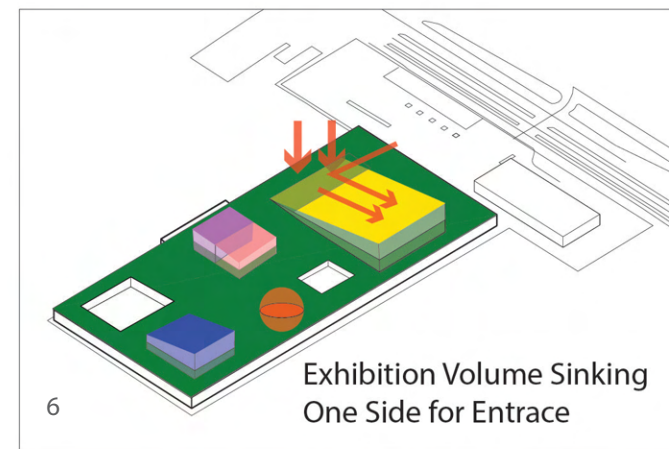
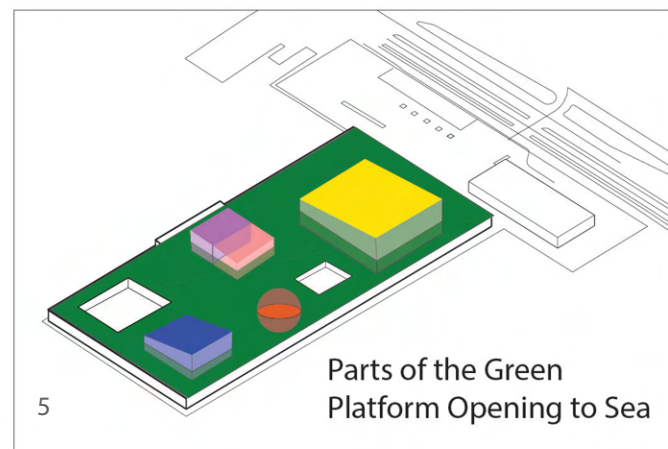
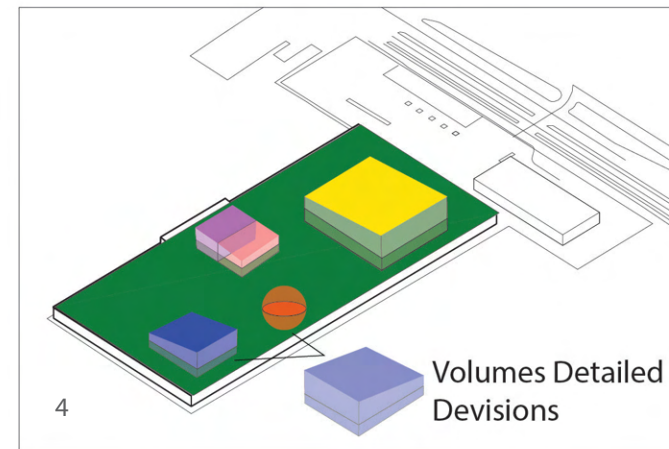
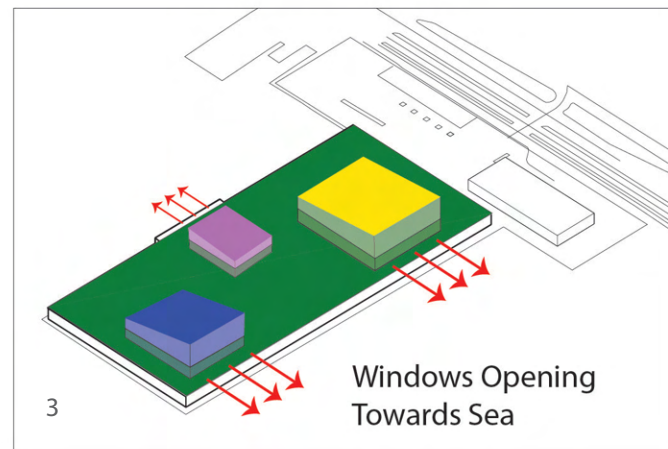
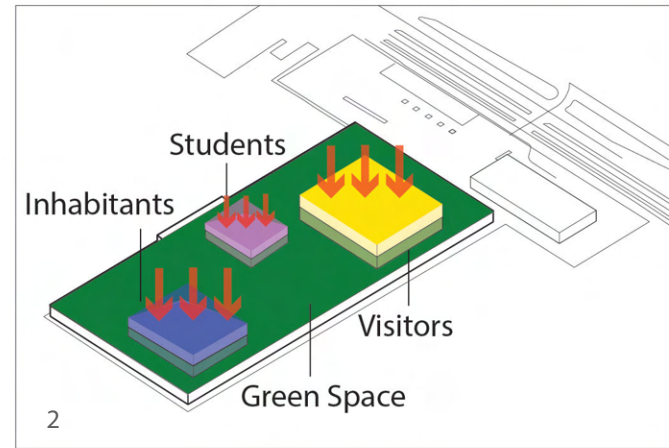
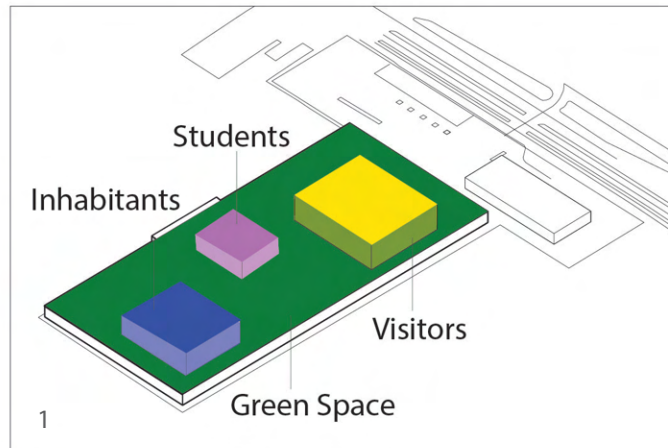


Hudson River Park Expansion Complex

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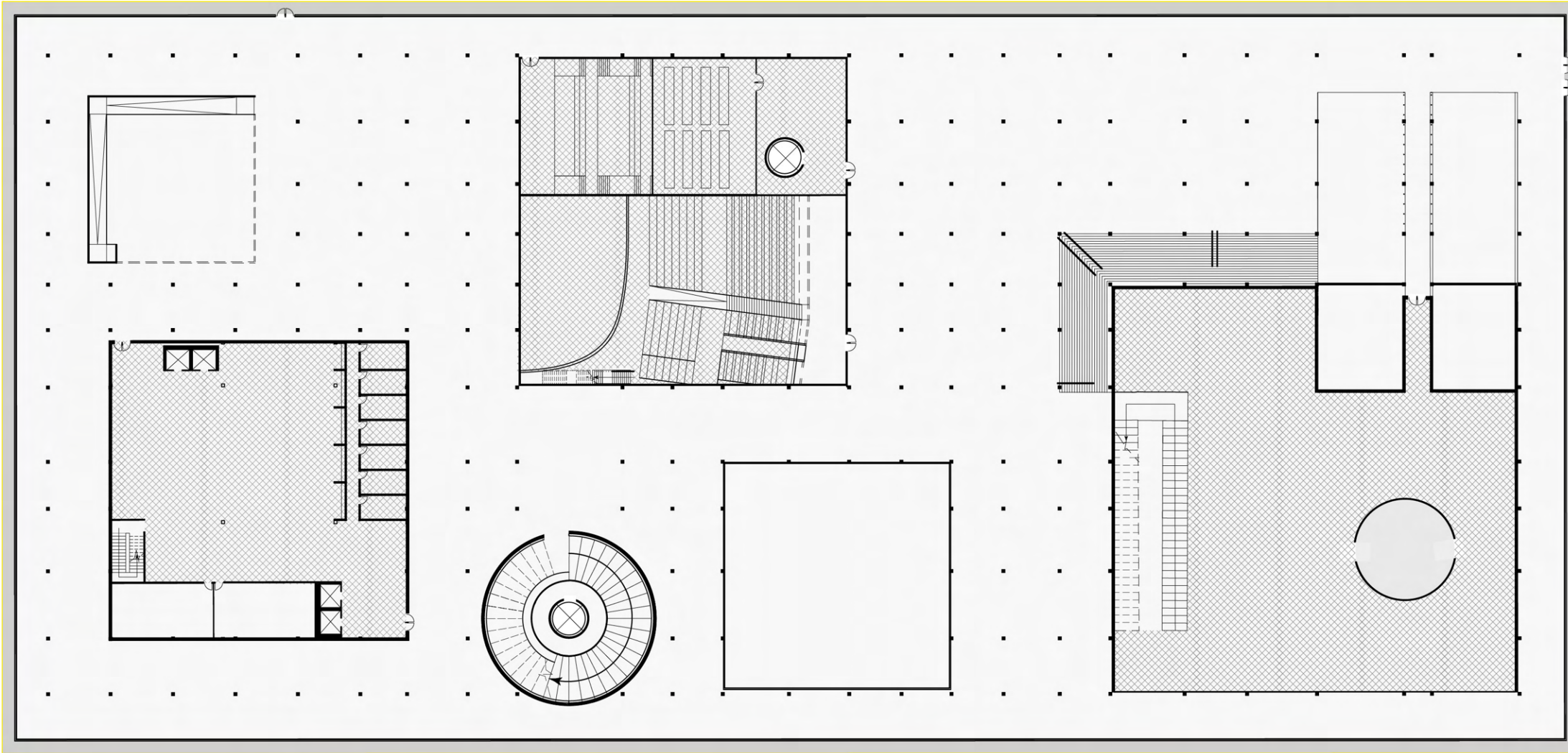
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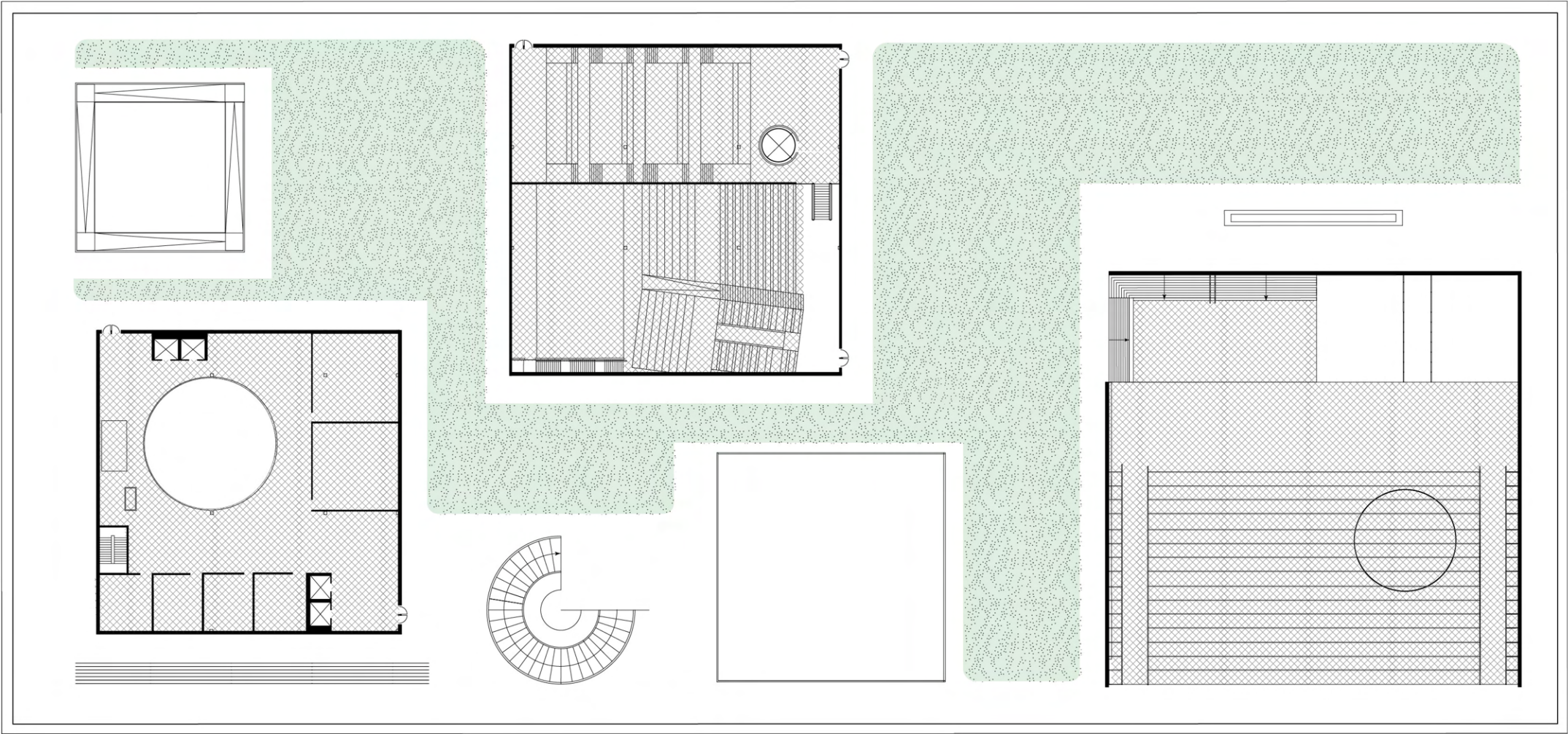


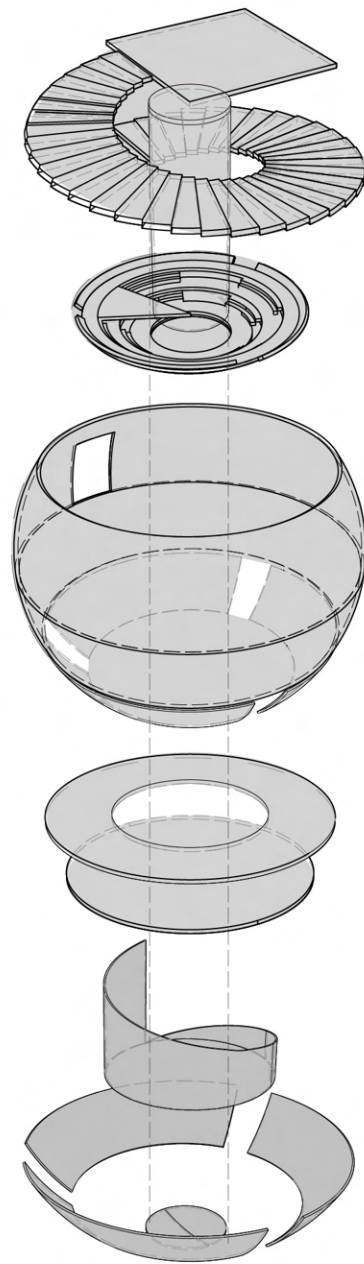
FORMING

Ground Floor Plan

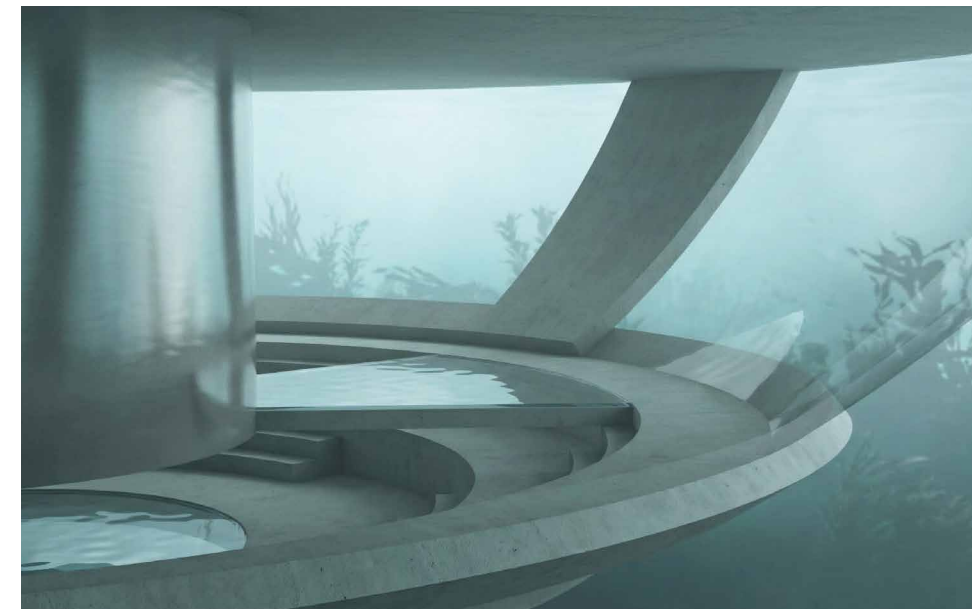
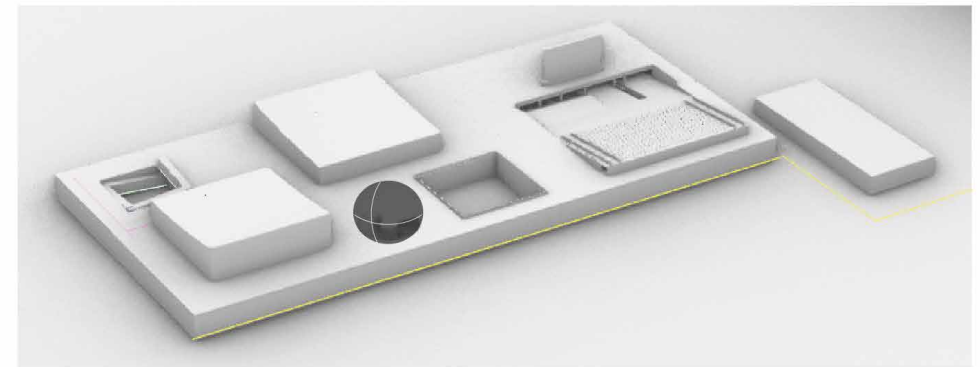


Upper Floor Plan



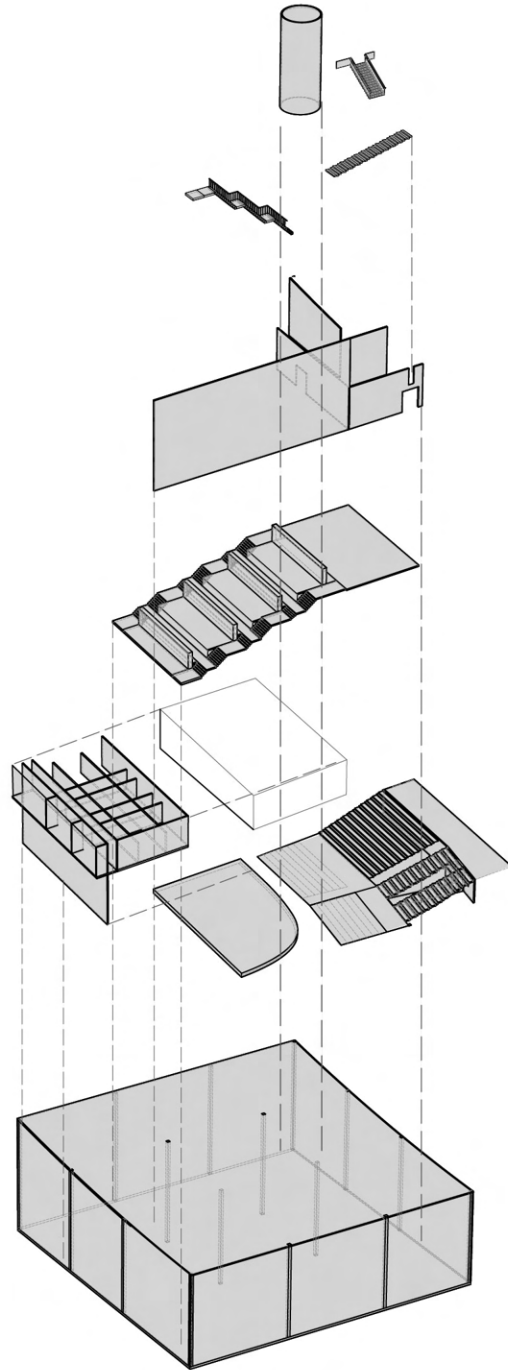


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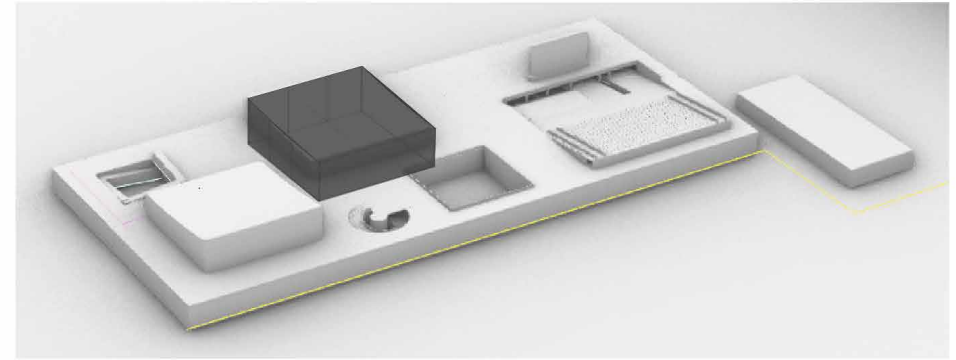


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Auditorium+Library

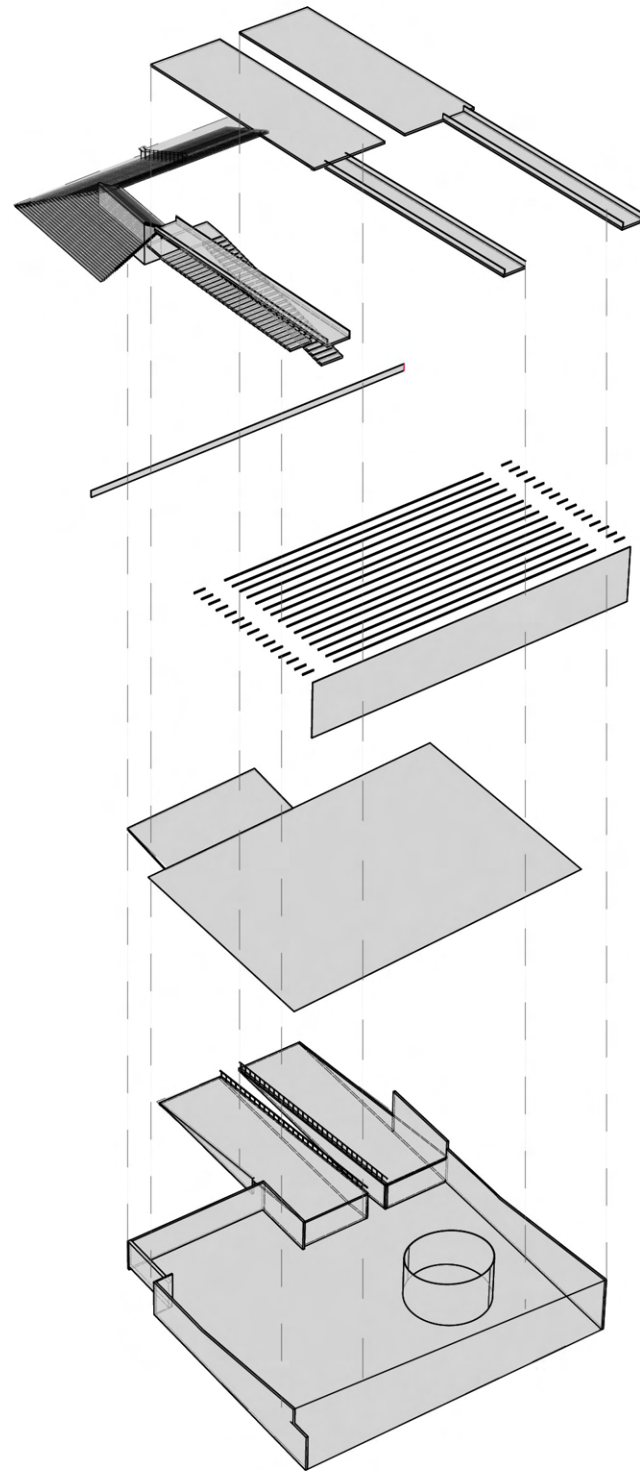


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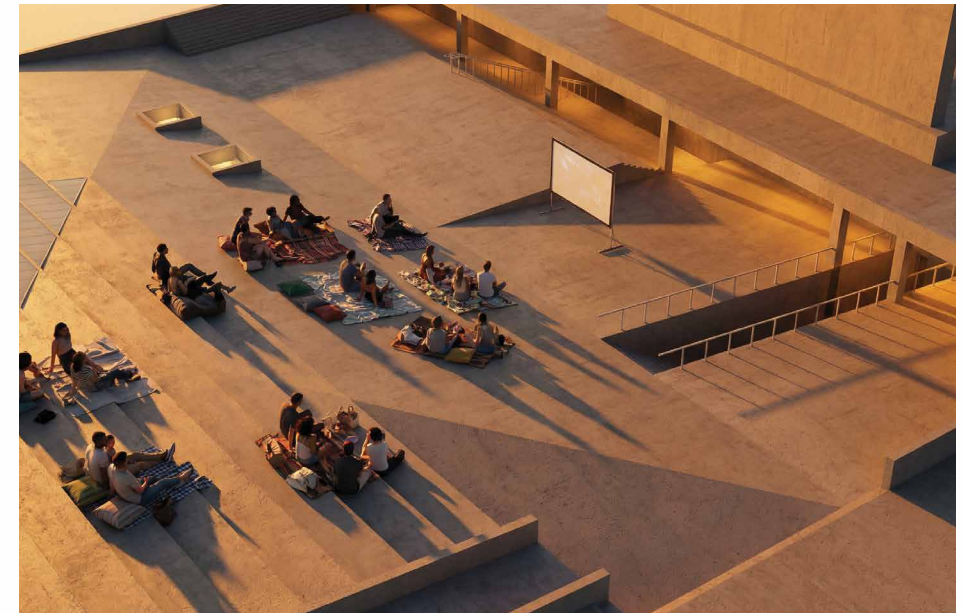
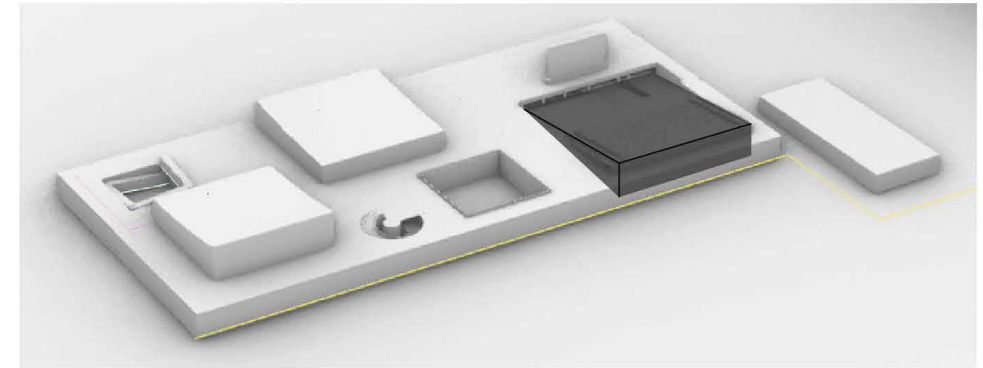


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Exhibition

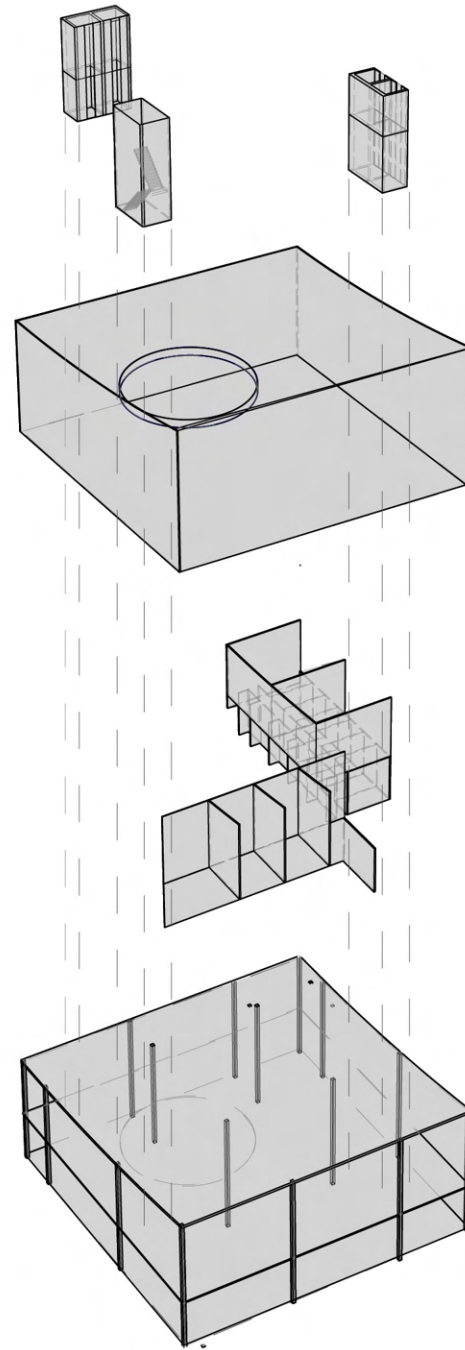


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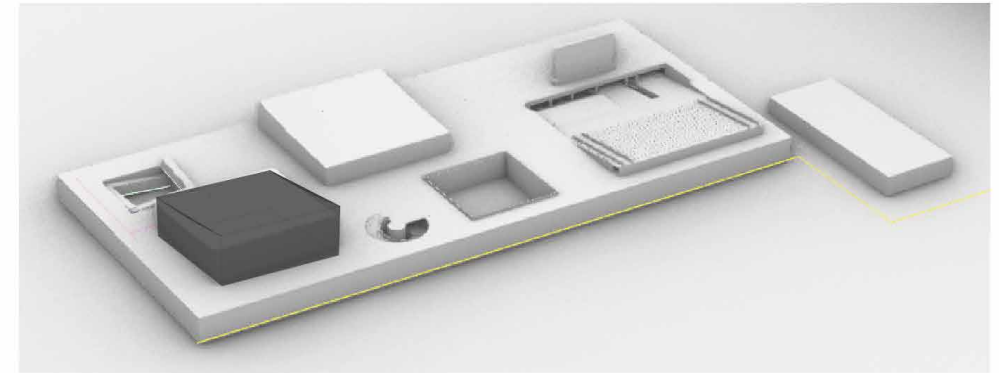


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Learning Center



56



57

***Thank
You***

58

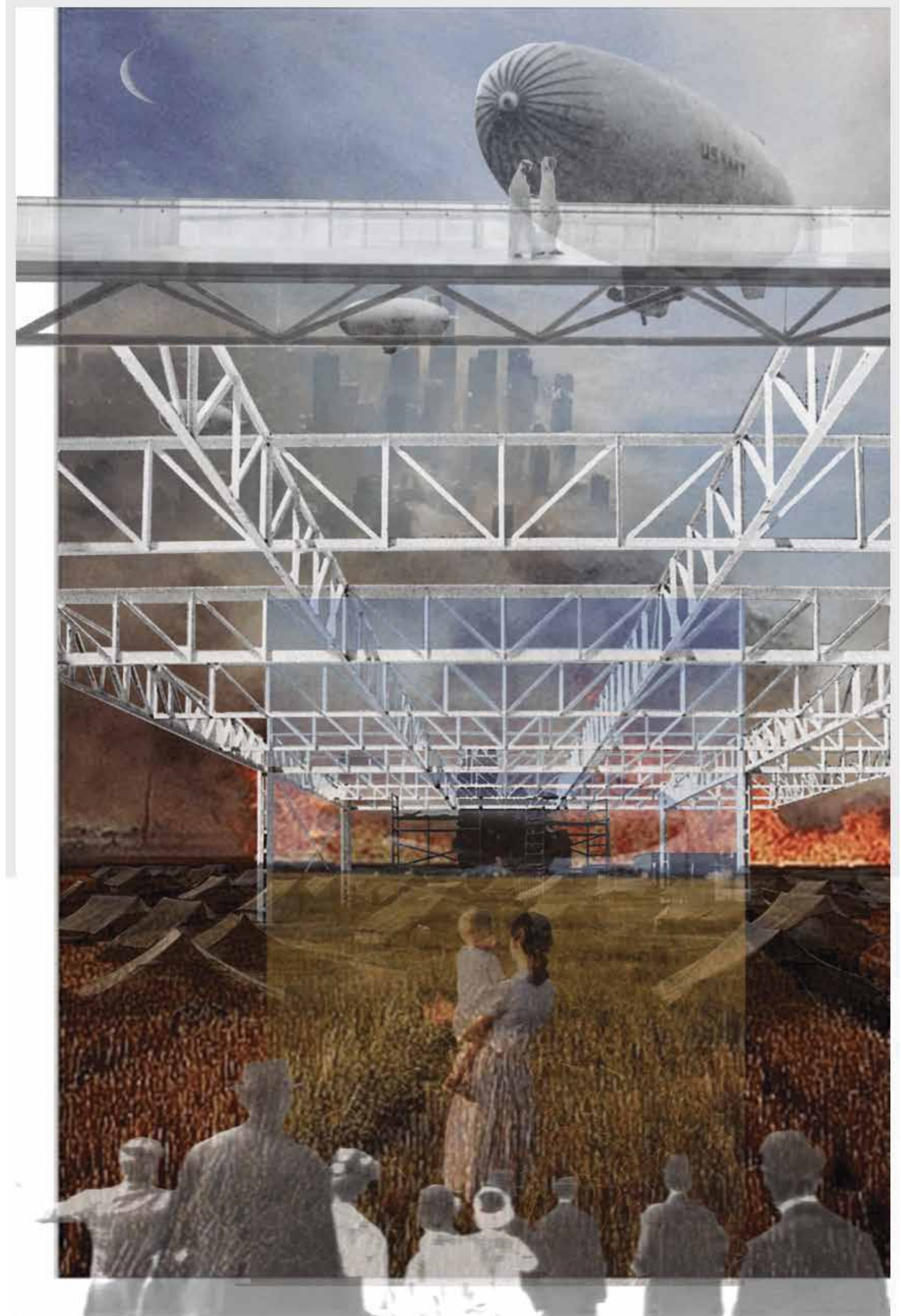


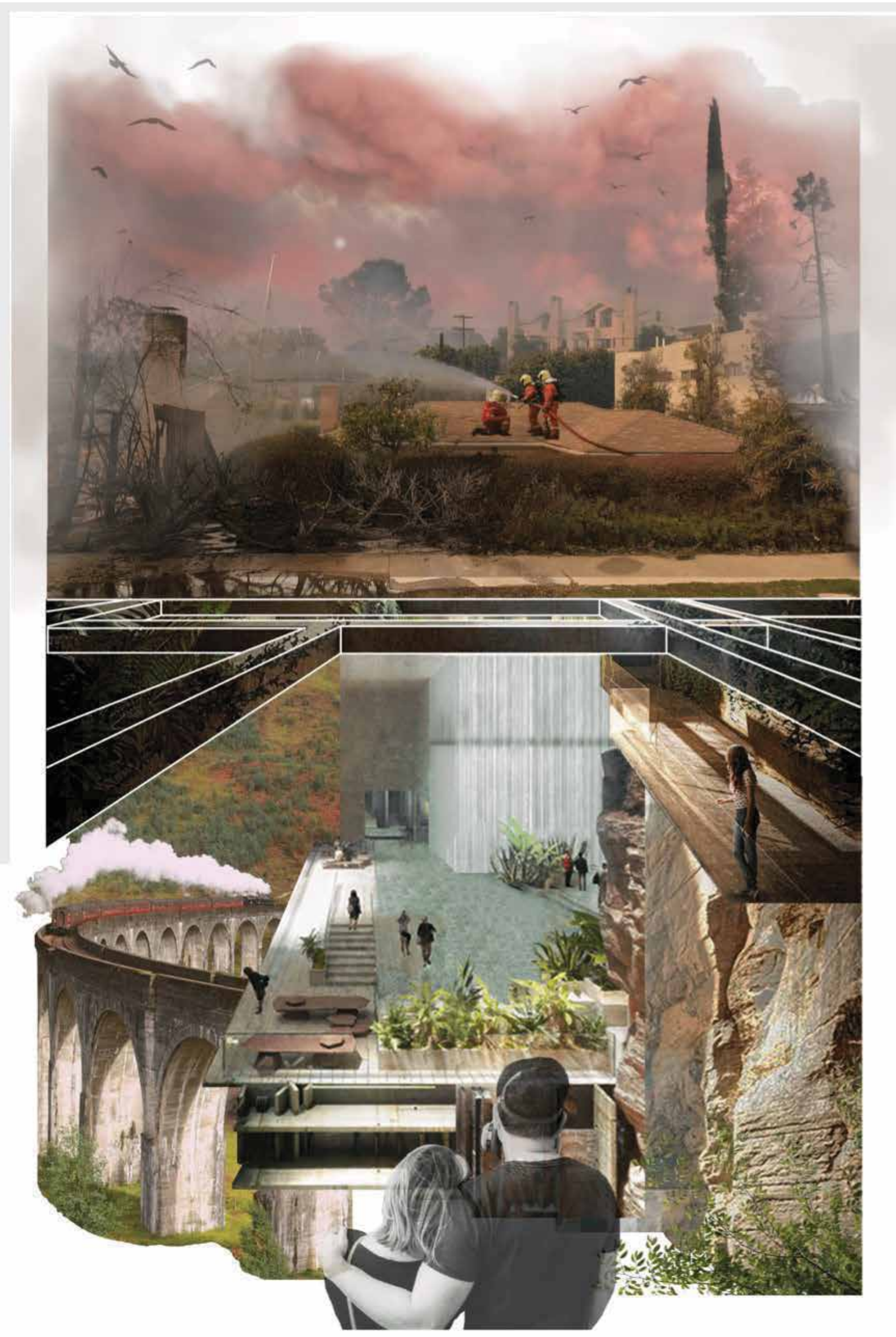
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David Eugin Moon Studio

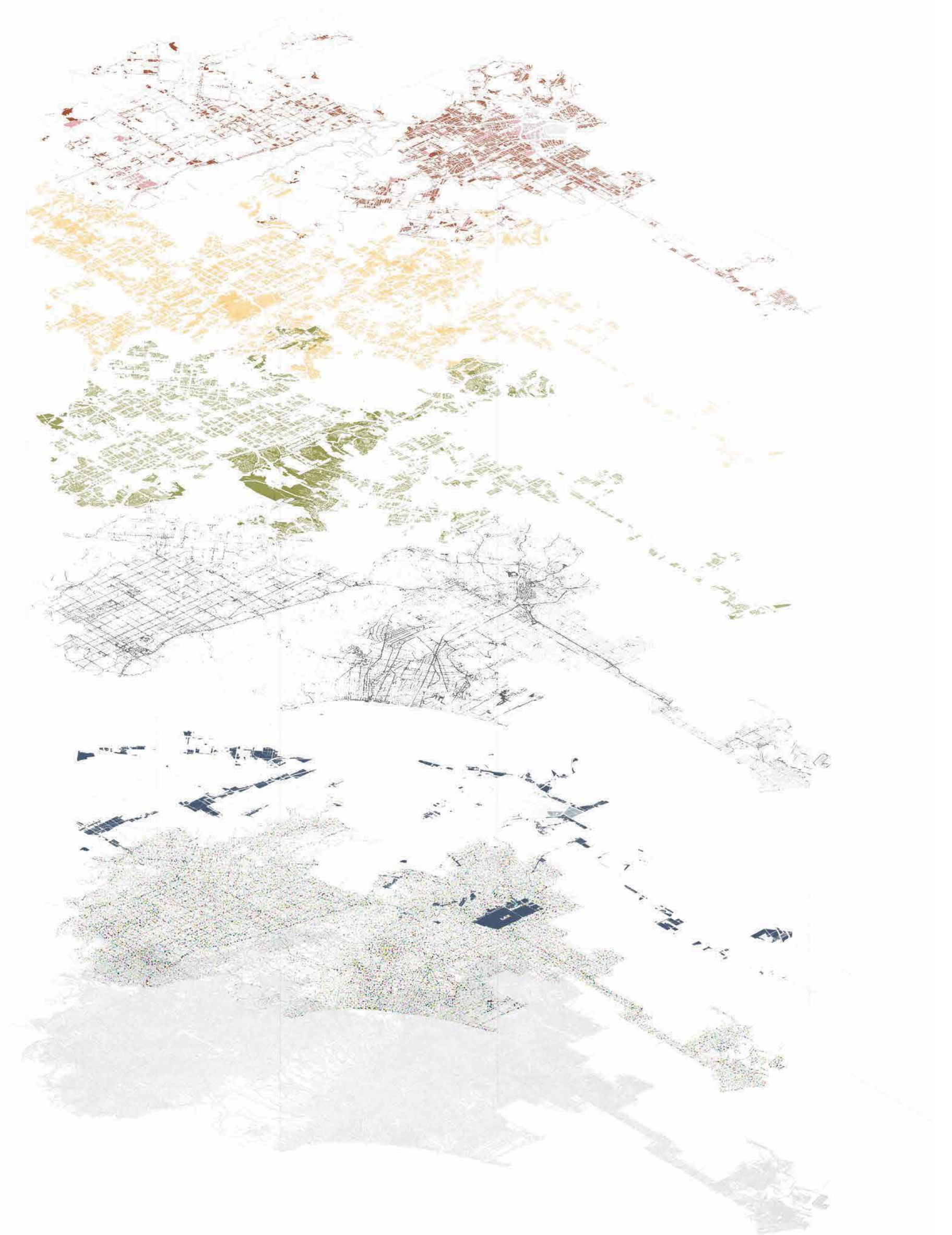
Teammates: Penghan Pan, Shengguang Zhou



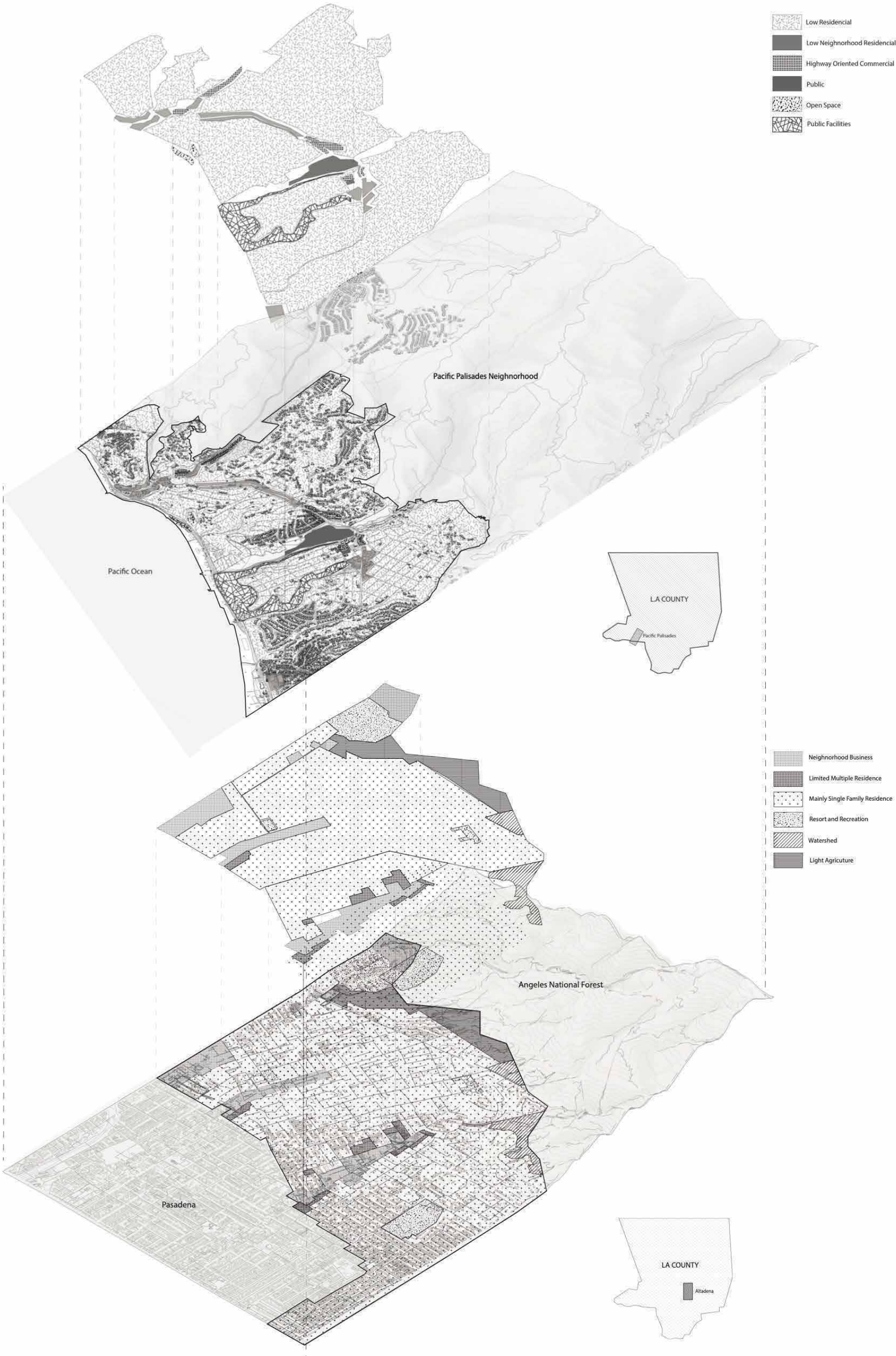


Site Analysis for LA Urban Framework Form, Nature and Mobility

- High Density Residential
- Low Medium / Low Medium I Residential
- Open Space
- Heavy Manufacturing
- Population Density



Site Analysis of The Most Affected Area During LA Wildfire



Site Analysis for Altadena

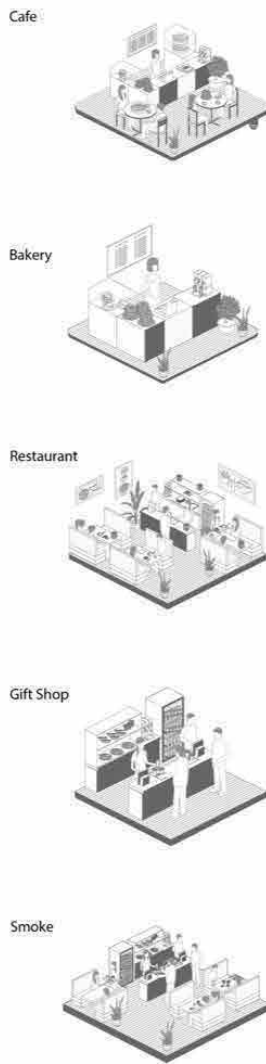
Housing Affordability Index



Middle Housing Affordability

Higer Housing Affordability

Programs



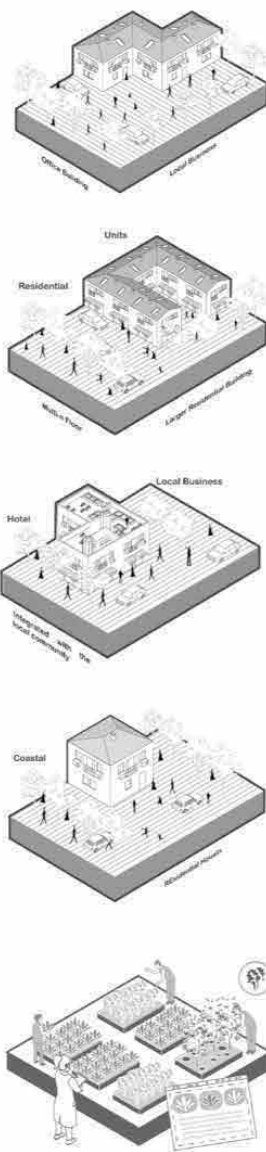
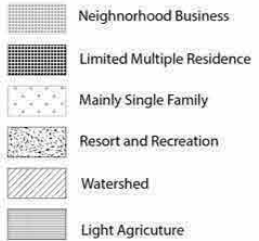
Population Distribution



Reclassify Vegetation Layer

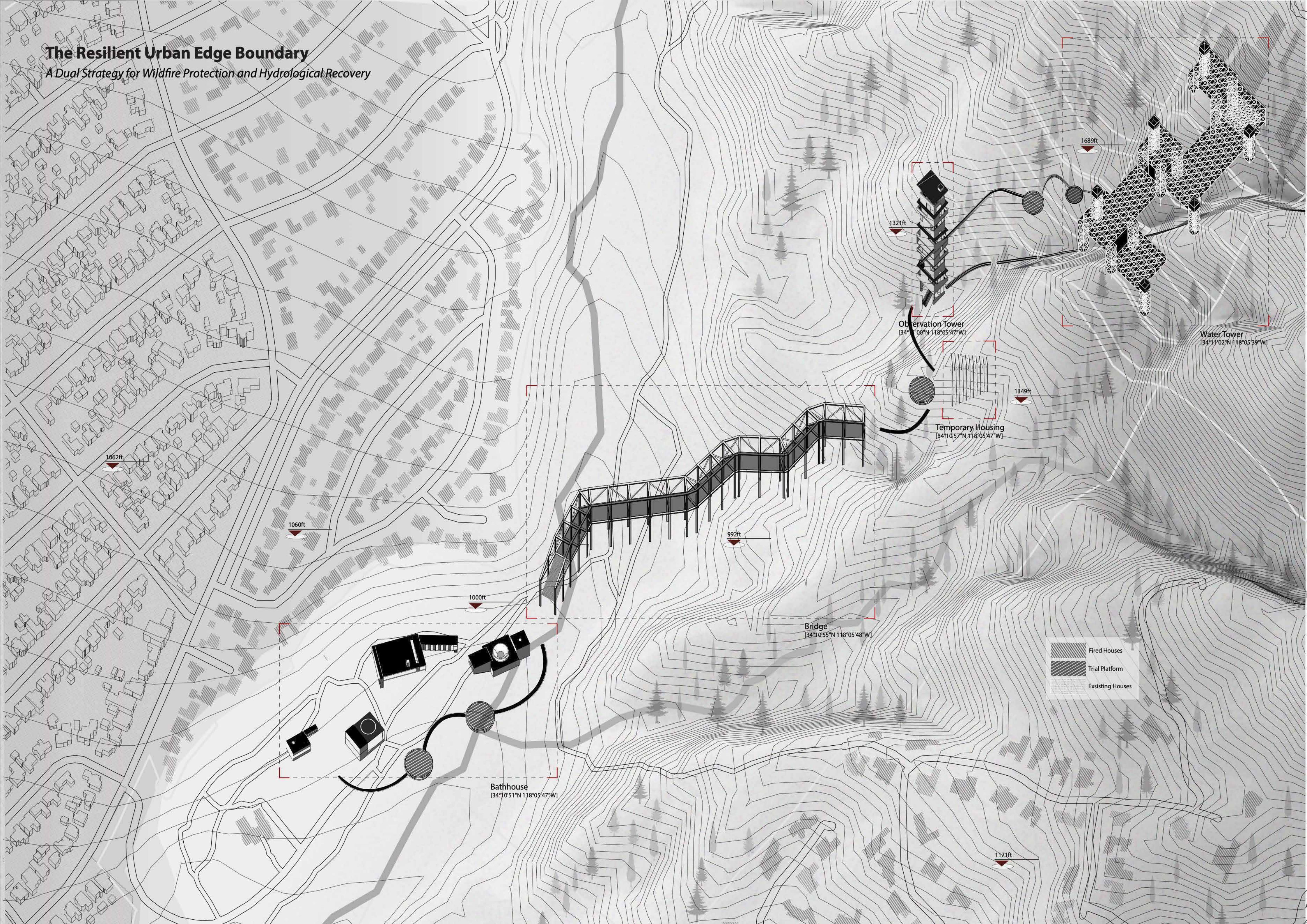


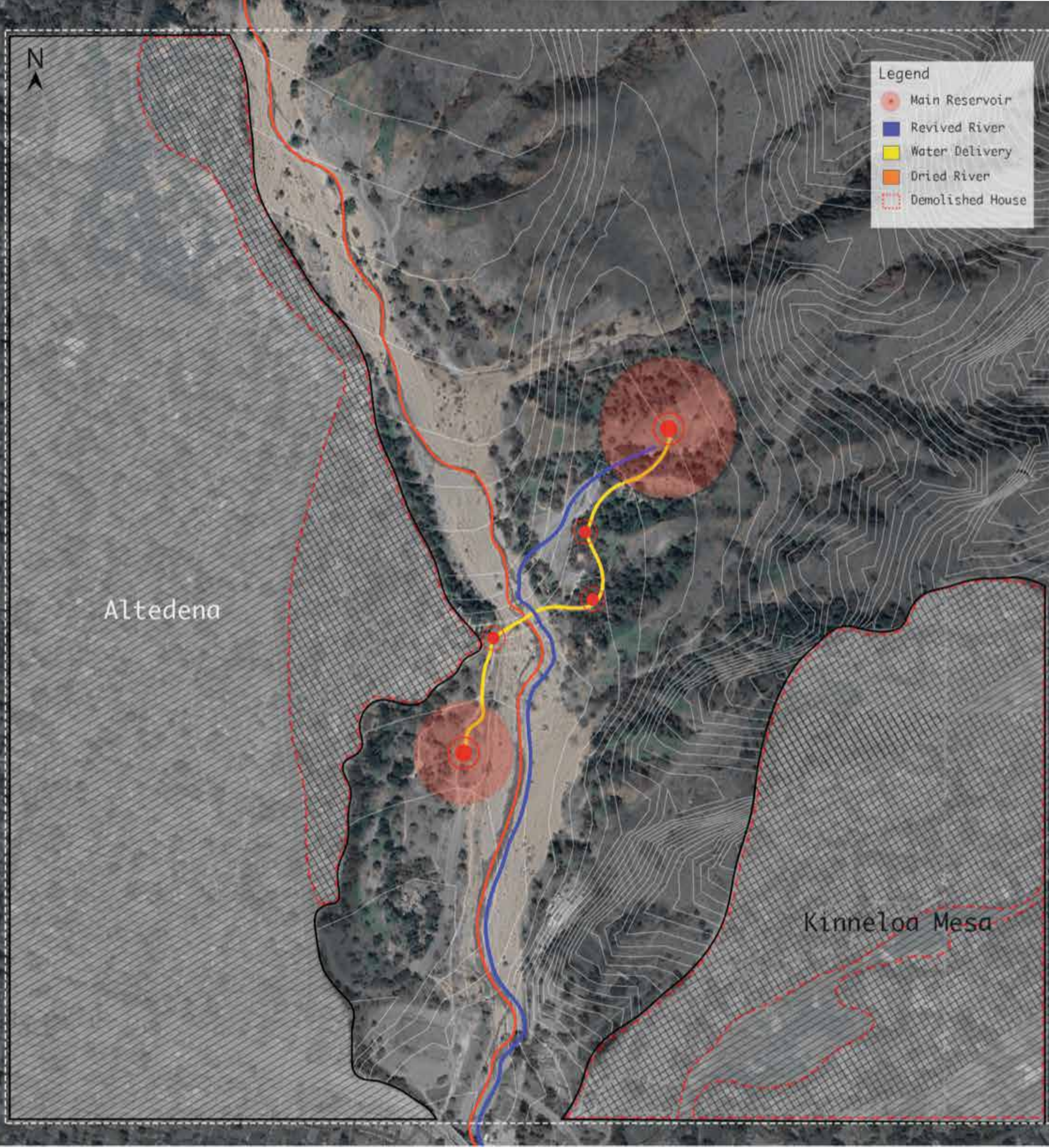
Zoning Layer



The Resilient Urban Edge Boundary

A Dual Strategy for Wildfire Protection and Hydrological Recovery







- 1 Water Towers
- 2 Cultivated Land
- 3 Observation Tower
- 4 Water Delivery Bridge
- 5 Supply Station
- 6 Emergency Shelter
- 7 Trails with Platform
- 8 Green Area
- 9 Bath House
- 10 Dried Up River
- 11 Revived Stream

WATER SYSTEM SECTIONAL ANALYSIS

PIPE LINES

