01

APERTURES THROUGH BRIDGES

; terraced bridge gaps create shared spaces, connecting life, labor, and care

This project reinterprets the H-type collective housing by responding to the growing precarity of contemporary life, focusing on remote workers as a key demographic. Chosen for their shifting boundaries between life and labor, they represent broader uncertainties in urban living today. I proposed two unit types - skip-stop units for those seeking solitude and linear units for residents drawn to community - forming the first distribution, seperating life from labor within the home.

Above and between these units, bridges twist and stack vertically, introducitng shared thresholds for domestic, immaterial and material labor - the second distribution. These bridges bring daylight into deeper spaces, transform inactive courtyards into terraces, and foster collective encounters. Through this layered apporach, the project reorganizes the H-type into diverse configurations, connecting residents across scales - from the intimacy of the unit, to the collective cluster, and finally to the urban fabric.

_ 2025 Summer design studio

_ Collective Housing

_ Nerraj Bhatia

_ 525 W 50th St, New York

_ A New Grammar for Collective Housing

LEFT 1 : 250 H SHAPE TYPOLOGY MODEL
RIGHT 1 : 100 BUILDING TYPOLOGY MODEL

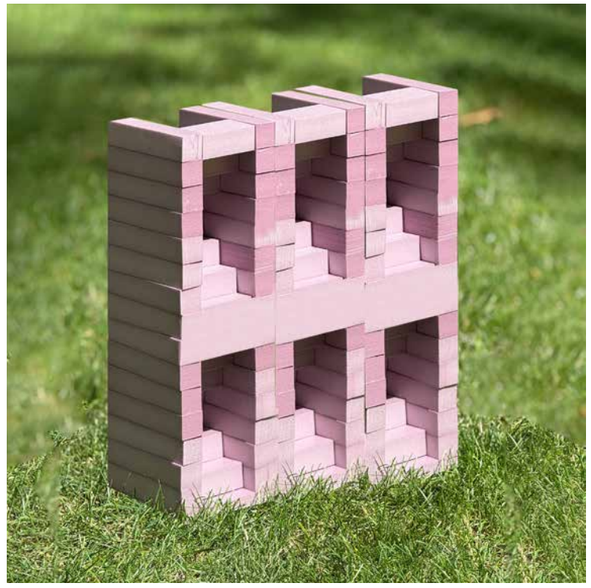
Rethinking the H-Type: A Study in Porous Aggregation

From Typological Iteration (1:250) to Functional Cluster (1:100)

type - A

aggregation - A'

type - B



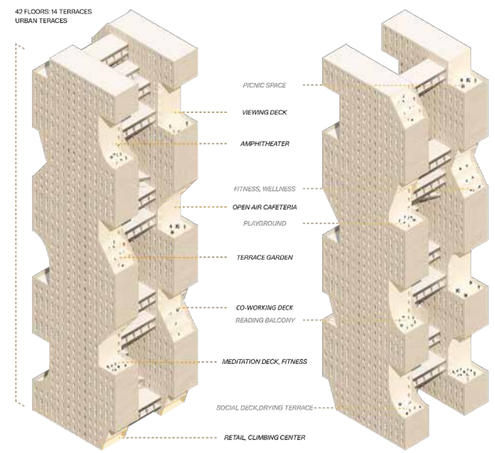
aggregation - B'

aggregation - B'

According to Steven Holl's Alphabetical City, a typical H-type features two wings, internal courtyards, and a connecting bridge, yet vertical growth limits light and reduces courtyard activity. The bridge functions paradoxically as both connector and divider. Building on these traits, I analyzed potential residents to guide the design and reimagined the H-type as a porous system of terraced gaps and shared thresholds, linking vertical layers of life while easing spatial pressures and fostering collective care.

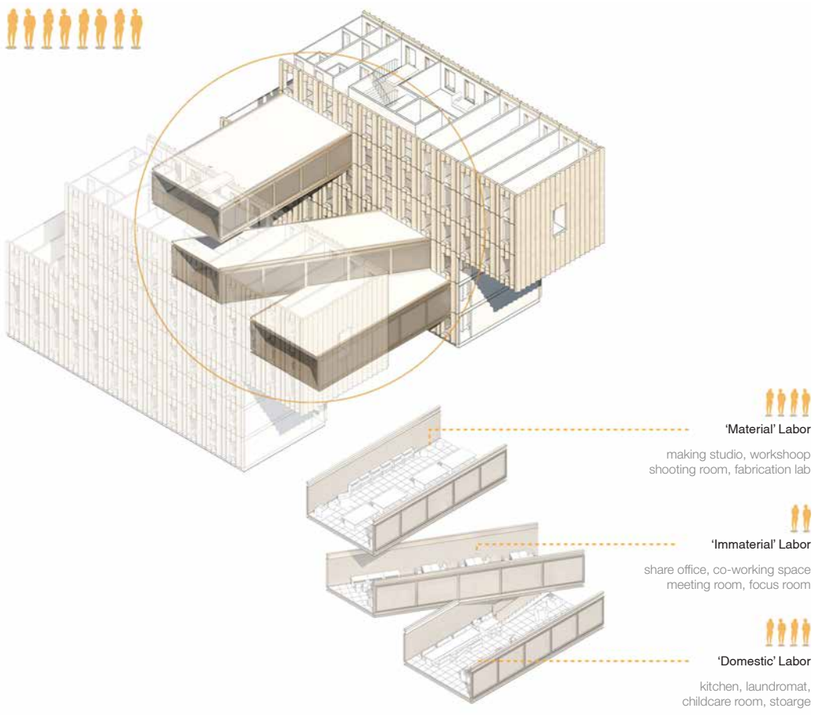
Gathering Through 'Bridge' – balancing 'distribution' of functions and boundaries with 'connection' for social interaction. H-type layouts with side cores encourage openness, while center cores divide wings through the bridge. I aimed to offer residents both community and privacy by twisting and stacking bridges vertically. This strategy enhances daylight, activates inactive courtyards as terraces, and creates shared spaces that connect vertical life.

Floor plan : 20 units with 10 skip-stop units and 10 linear unit types

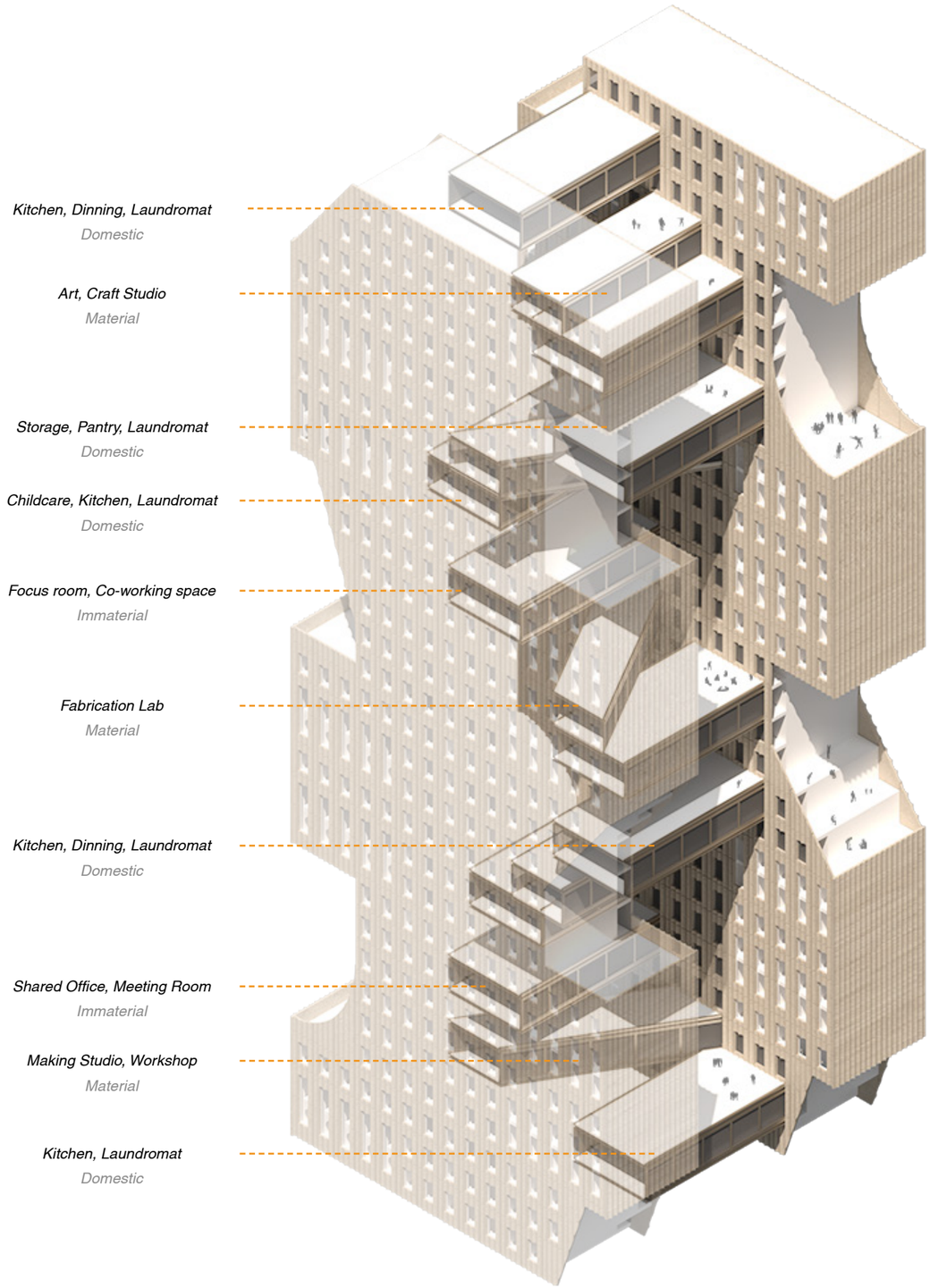


Urban Apertures : 14 various types of care interactions

Two living patterns shape the project: skip-stop units for residents seeking solitude and linear units for those drawn to community. This defines the 'first distribution' - seperating life from labor within the home. Bridges, twisted and stacked vertically, become the frame work for the 'second distribution' - labor - accommodating three types of work: domestic, immaterial and material. By weaving these programs into the bridges, the building reorganizes the H-types into diverse spatial configurations, linking residents while opening spaces for gathering, making, and care.



A cluster : 3 types of shared program

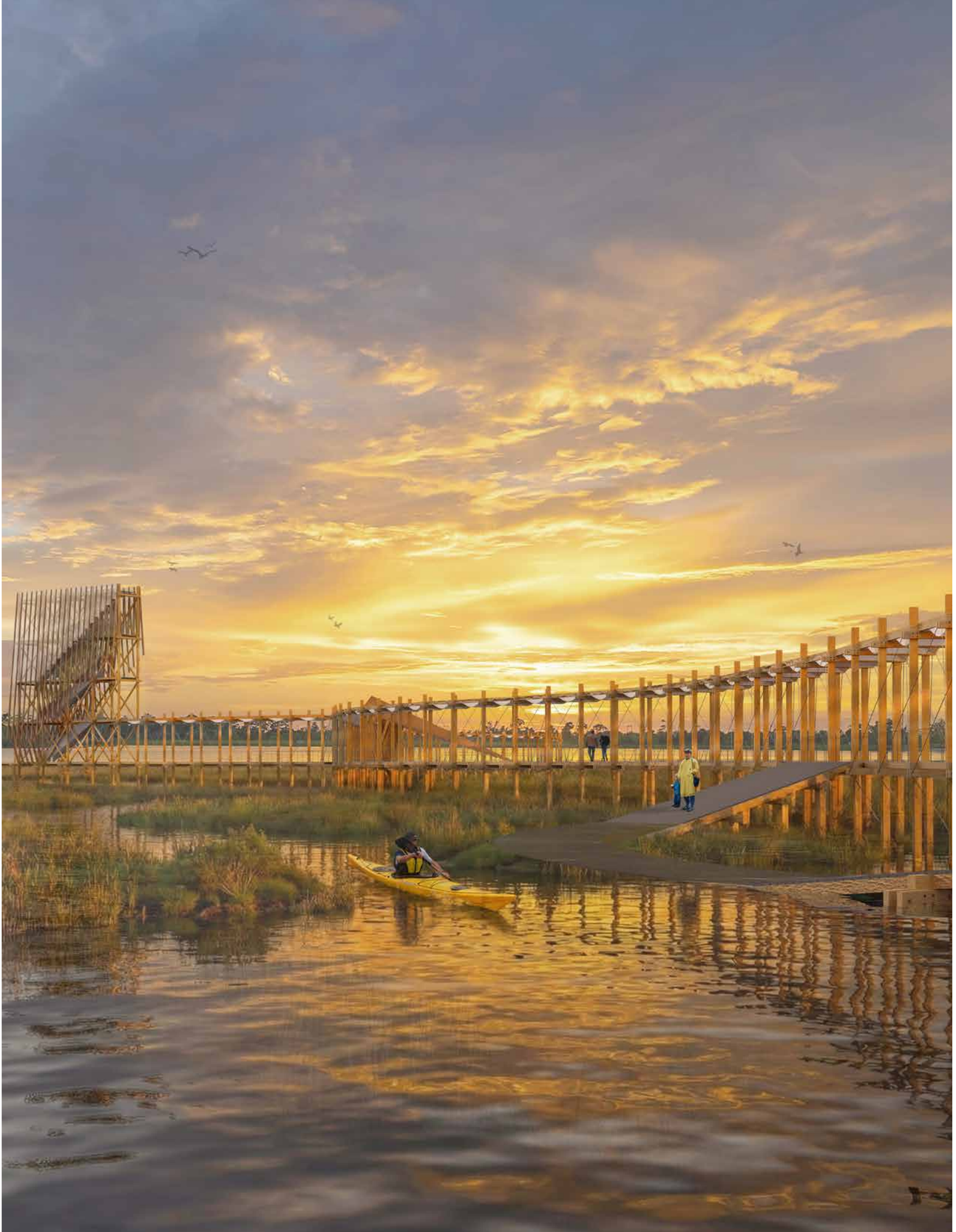


UNFOLDING SCALES, SCALE TO SPACE

This project reimagines the traditional H-shape building typology, as seen in Steven Holl's Alphabetical City, by transforming it into a dynamic porous system. The design focuses on overcoming the spatial limitations of conventional H-types—such as restricted light and vertical isolation—by introducing a series of terraced gaps and interstitial bridges. Through a multi-scalar exploration from 1:250 to 1:100, these structural openings are evolved from simple voids into active social thresholds that facilitate community interaction and natural ventilation.

As the study deepens into the 1:10 interior scale, the architecture balances private dwelling with shared openness. By integrating lateral cores and vertically stacked community programs within the bridges, the project activates previously passive courtyards into vibrant, multi-layered terraces. This transition from massing to detailed interior modules creates a seamless sensory sequence, allowing residents to experience a cohesive architectural language that links their private living space to the broader urban landscape.

LEFT TYPOLOGICAL STUDIES MODEL
RIGHT 1 : 50 FINAL MODEL PHOTOGRAPHY



02

THE LIVING SHORELINE

; 3d-printed earthen systems for adaptive marsh regenration

The Living Shoreline addresses Jamaica Bay's critical marsh loss by repurposing dredged material into 3D-printed, porous earthen walls. Instead of traditional hardened defenses, these structures are placed within the tidal zone to dampen wave energy and capture sediment, creating a protected environment where marshes can naturally regenerate. As the system interacts with the tides, these walls function as a dynamic armature that can erode, thicken, or merge, eventually rising through accretion to become an integral, structural extension of the emerging marsh landscape.

To support this evolving ecosystem, an expanded trail network serves as a stable anchor for the system while providing public access without fixing the shoreline in place. As the marsh edges migrate outward, the process continues with new walls being printed along emerging boundaries to ensure continuous, bay-wide restoration. This approach reframes shoreline protection as a living, adaptive infrastructure that grows and transforms in harmony with Jamaica Bay's natural ecological processes.

_ 2025 Fall design studio

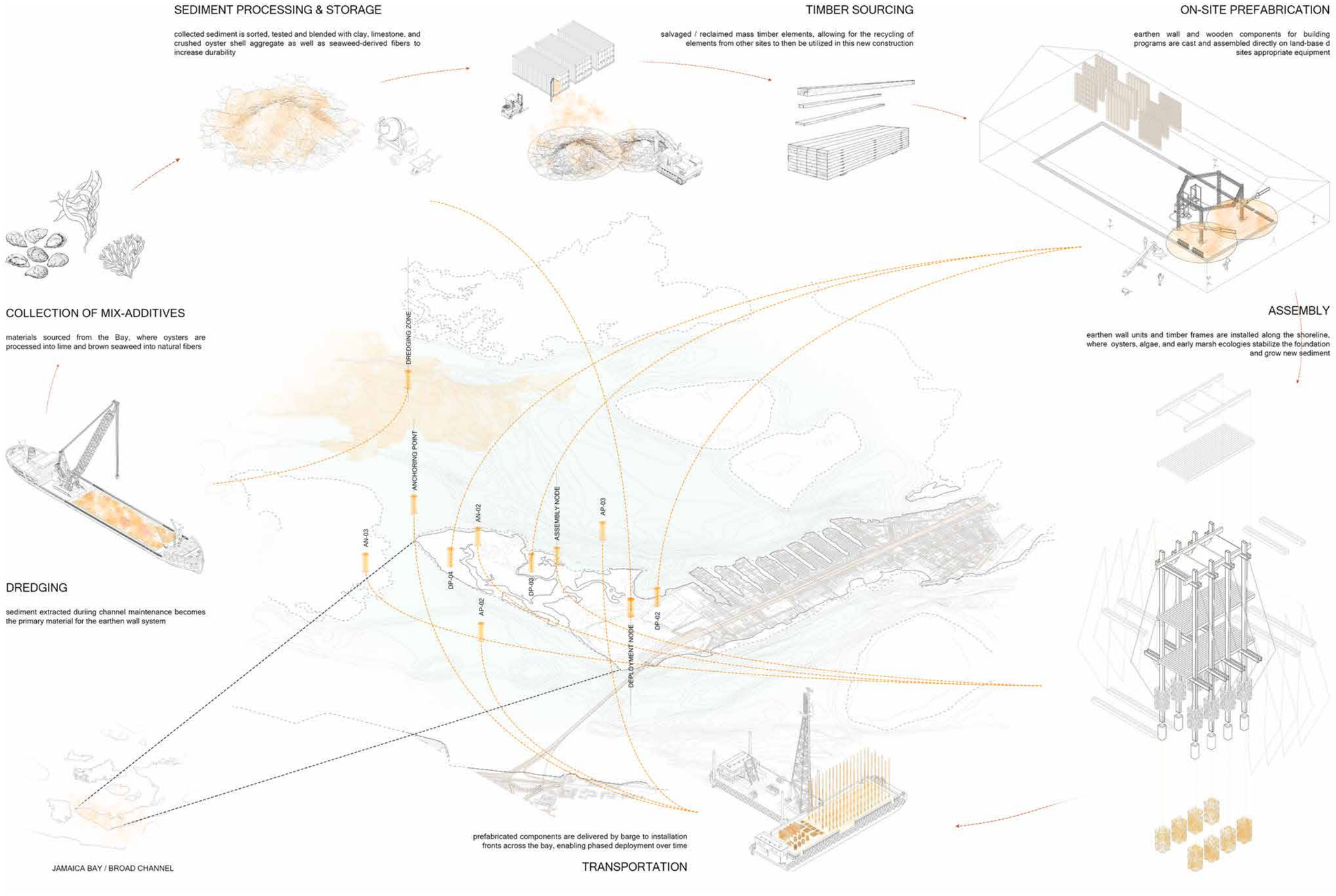
_ Ecological Infrastructure

_ Marc Tsurumkaki

_ Jamaica Bay, New York

_ Impermanent Matters

3D EARTHEN WALL PROCESS SEQUENCE



Cyclical Fabrication: From Dredged Sediment to Living Infrastructure

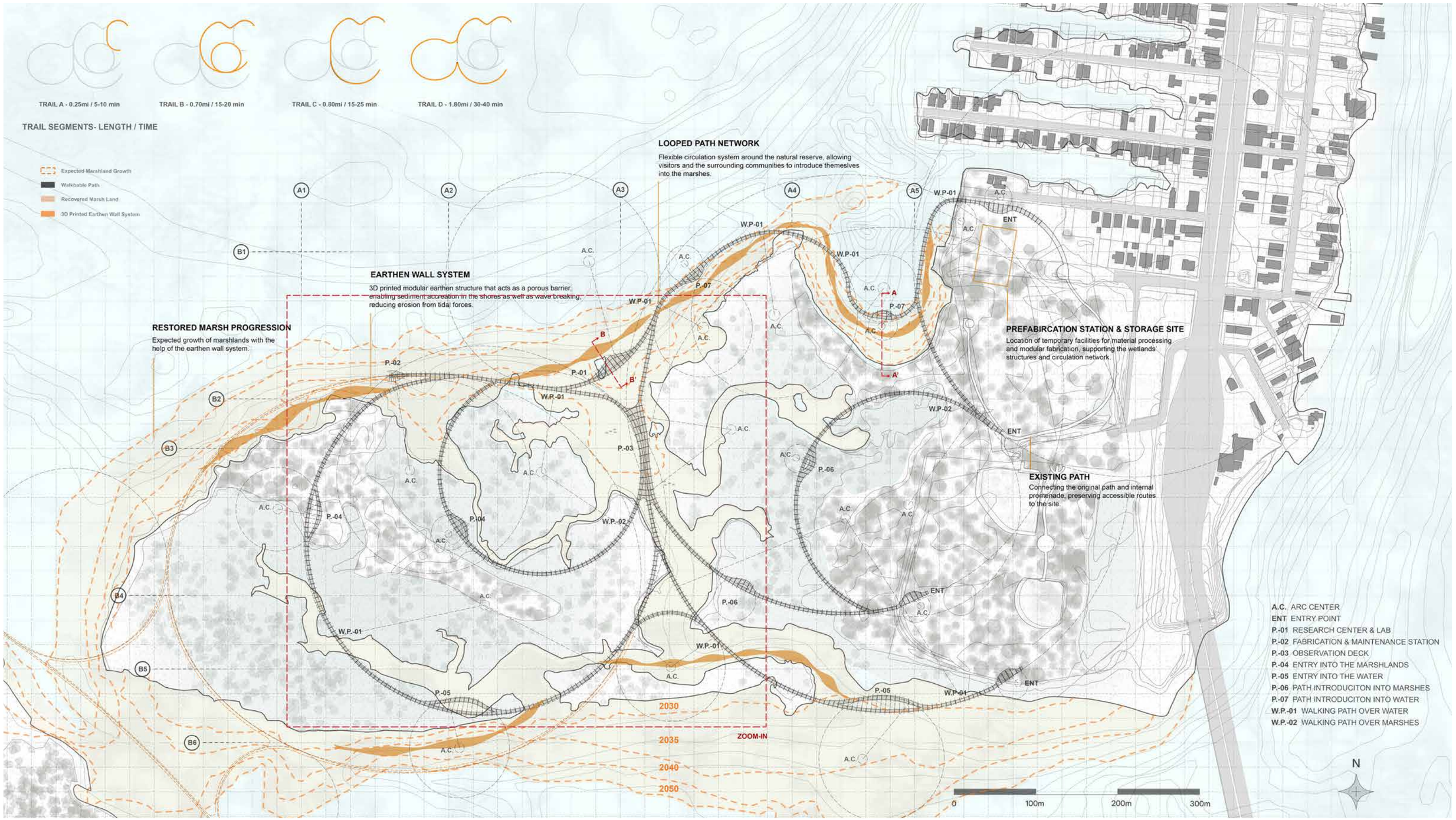
This sequence diagram illustrates a circular fabrication process designed for the ecological restoration of Jamaica Bay. The system begins by redefining dredged sediment—extracted from channel maintenance—as a primary construction resource. By blending this sediment with natural additives sourced directly from the bay, such as crushed oyster shells and seaweed fibers, the material's durability is enhanced while maintaining its ecological integrity.

The logic emphasizes on-site prefabrication, utilizing salvaged mass timber elements to create a stable armature for the 3D-printed earthen components. This localized production hub minimizes the carbon footprint associated with transportation. Once prefabricated, the units are delivered by barge to strategic deployment nodes along the shoreline. Upon assembly, these structures act as a catalytic substrate for oysters and algae, facilitating sediment accretion and allowing the architectural intervention to gradually transform into a natural extension of the marsh landscape.

spatial deployment & operational process

SITE STRATEGY: PHASED EXPANSION & PROGRAMMATIC TYPOLOGIES

Broad Channel, Jamaica Bay Trail Path Master Plan



ABOVE TRAIL PATH-01 2030 SECTION
BELOW TRAIL PATH-01 2025 SECTION

2030
structural stabilization & marsh expansion

2025
initial deployment & sediment capture

This project redefines coastal infrastructure by intertwining ecological restoration with human engagement. Submerged 3D-printed earthen walls function as a dynamic defense system against marsh loss. Unlike static barriers, these porous units are designed to undergo controlled weathering and erosion. This transformation allows them to structurally interlock, capture sediment, and foster marine habitats, evolving from artificial structures into a naturalized, stable armature.

Above the water, a timber framework facilitates stewardship and observation. The structure supports a network of programs—including research laboratories, observation towers, and 3D-printing maintenance hubs—allowing for continuous monitoring of the restoration process. By providing direct access to the water, the design invites visitors to witness the symbiotic relationship between architectural intervention and Jamaica Bay's ecological recovery.

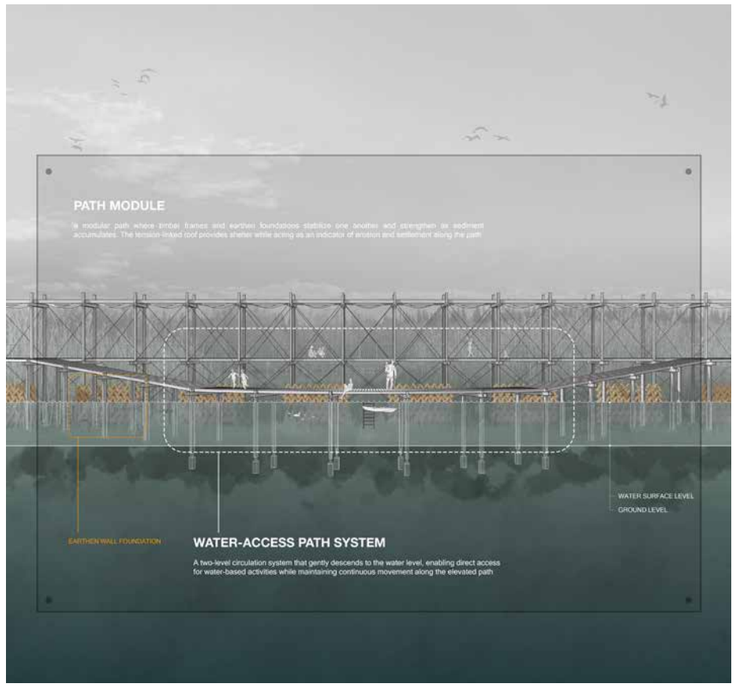
2035
ecological integration & active research

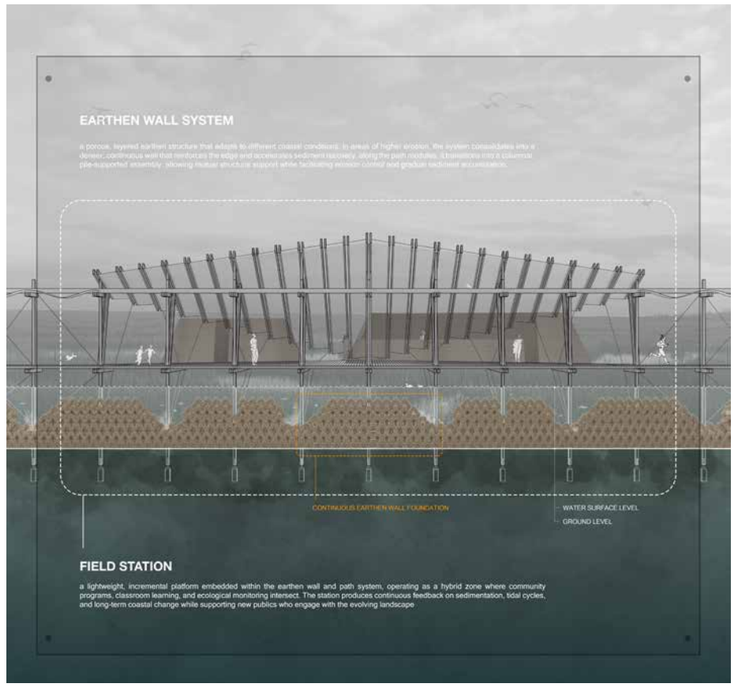
2025
on-site fabrication & module deployment

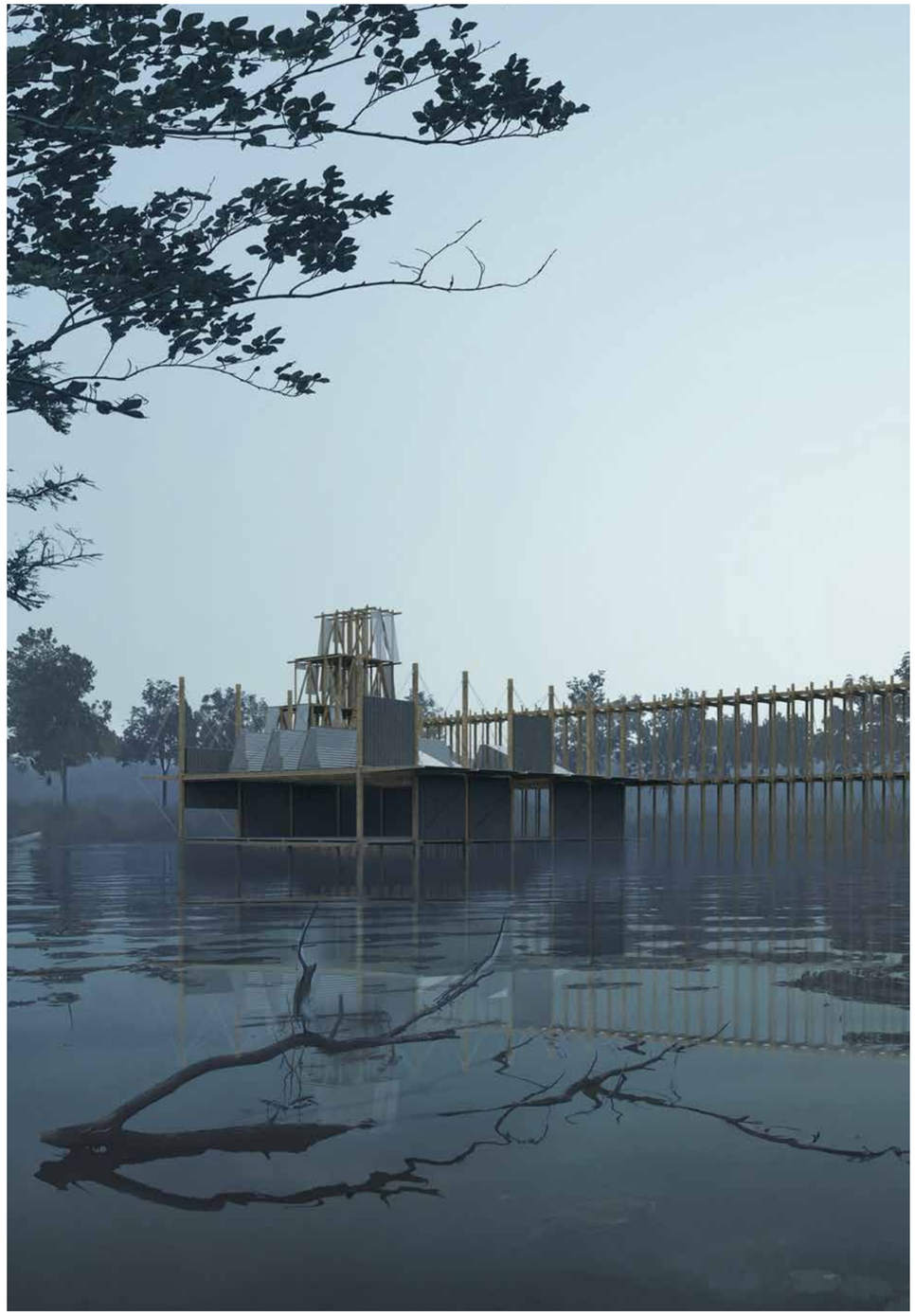
This section reveals the project's operational core: a Research Center and Fabrication Lab that functions as an adaptive control tower. The system does not rely on a uniform solution; instead, the 3D-printed earthen walls are parametrically designed to respond to specific environmental conditions such as water depth, tidal variation, and wave energy.

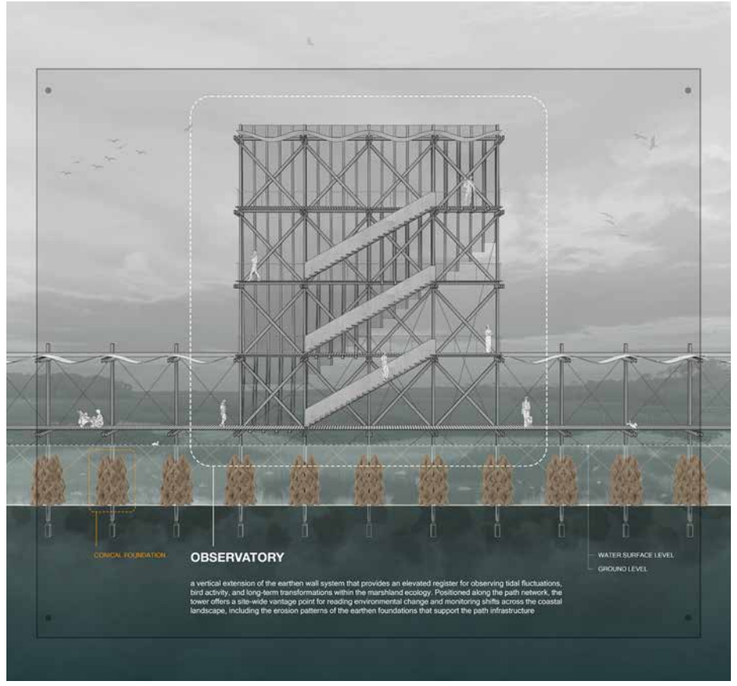
Depending on the site's requirements, the units vary in geometry, structural rigidity, and porosity. Denser, more robust units are deployed in high-erosion zones to break wave energy, while more porous, lattice-like structures are placed in calmer areas to maximize sediment capture and habitat growth. This context-specific deployment strategy ensures that each section of the shoreline receives a tailored intervention, optimizing the resilience and ecological performance of the entire Jamaica Bay system.

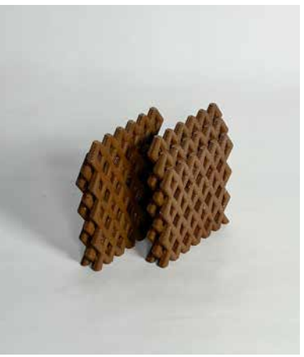
PROGRAMMATIC TYPOLOGIES









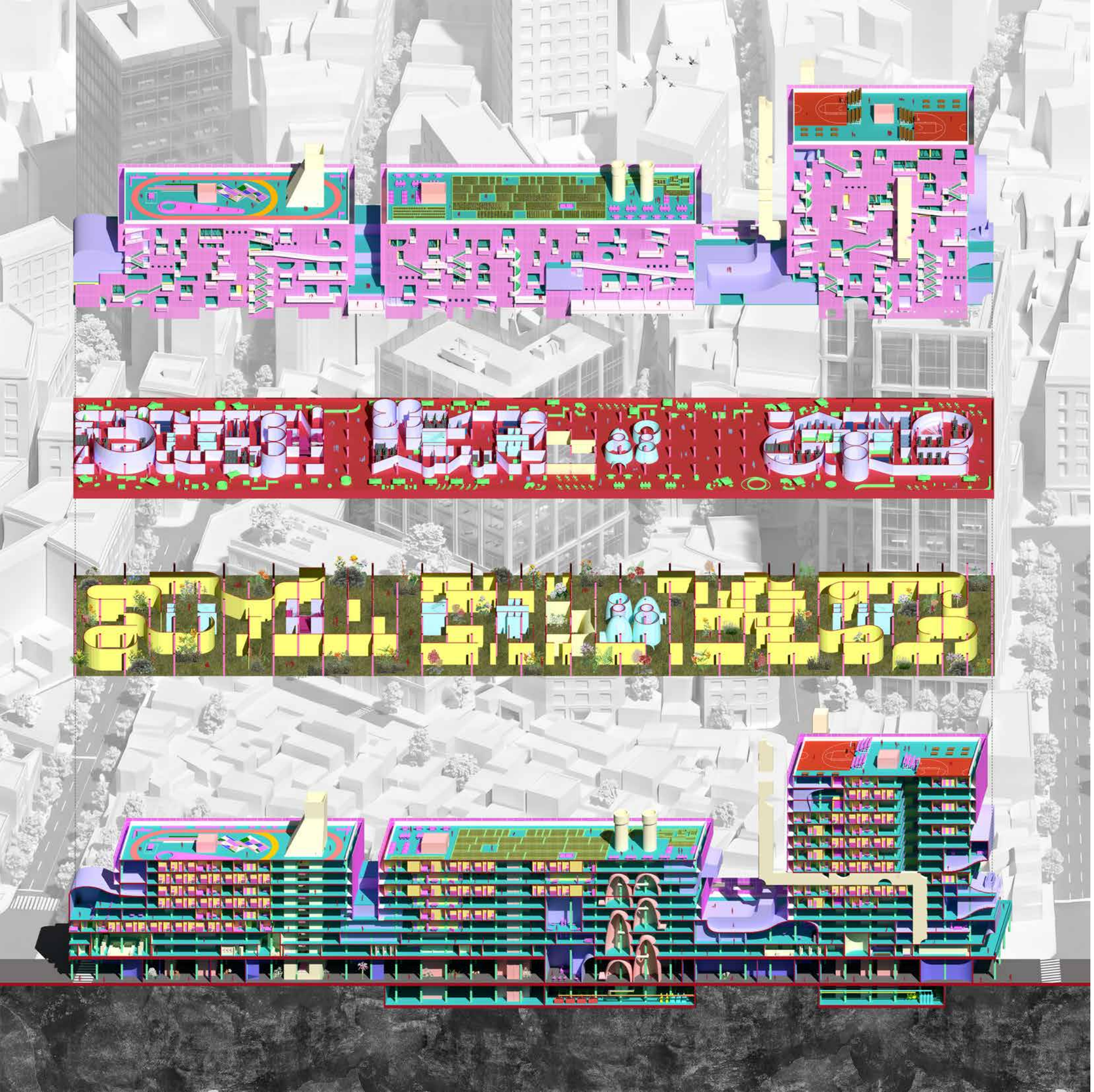


UNFOLDING SCALES, SCALE TO SPACE

This project reimagines the traditional H-shape building typology, as seen in Steven Holl's Alphabetical City, by transforming it into a dynamic porous system. The design focuses on overcoming the spatial limitations of conventional H-types—such as restricted light and vertical isolation—by introducing a series of terraced gaps and interstitial bridges. Through a multi-scalar exploration from 1:250 to 1:100, these structural openings are evolved from simple voids into active social thresholds that facilitate community interaction and natural ventilation.

As the study deepens into the 1:10 interior scale, the architecture balances private dwelling with shared openness. By integrating lateral cores and vertically stacked community programs within the bridges, the project activates previously passive courtyards into vibrant, multi-layered terraces. This transition from massing to detailed interior modules creates a seamless sensory sequence, allowing residents to experience a cohesive architectural language that links their private living space to the broader urban landscape.

LEFT FOUNDATION TYPOLOGIES MODEL
RIGHT FABRICATION LAB RENDERING IMAGE



03

JINYANG : LOOSE SOLIDARITIES

; an open frame, reinterpreting the conditions of (at)tending

Moving beyond discussions of wholesale demolition, this project focuses on the complex layers of life embedded within Jinyang Sangga, reimagining it as a vibrant urban ecosystem where diverse generations and species coexist. In response to the fragmentation of modern cities driven by efficiency, we propose a culture of (at)tending that restores severed relationships and the urban collective through the act of tency. By building upon the structure's historical mixedness, the project fosters a model of coexistence where residents maintain their individual rhythms while naturally intersecting through a shared ecological sense of belonging.

This philosophy is materialized through strategic spatial interventions—the public bath as a social infrastructure, the urban ballroom for cultural exchange, and the circulatory commons—designed to facilitate serendipitous encounters and intergenerational dialogue. We view architecture not as a static object, but as an open frame that evolves with its users and accumulates collective memories over time. Ultimately, this project proposes a new urban attitude where living together is a vital necessity, imagining a future that transcends the boundaries of generation and species to grow and age together.

_ 2026 Spring design studio

_ Social-Ecological (at)Tending Assemblage

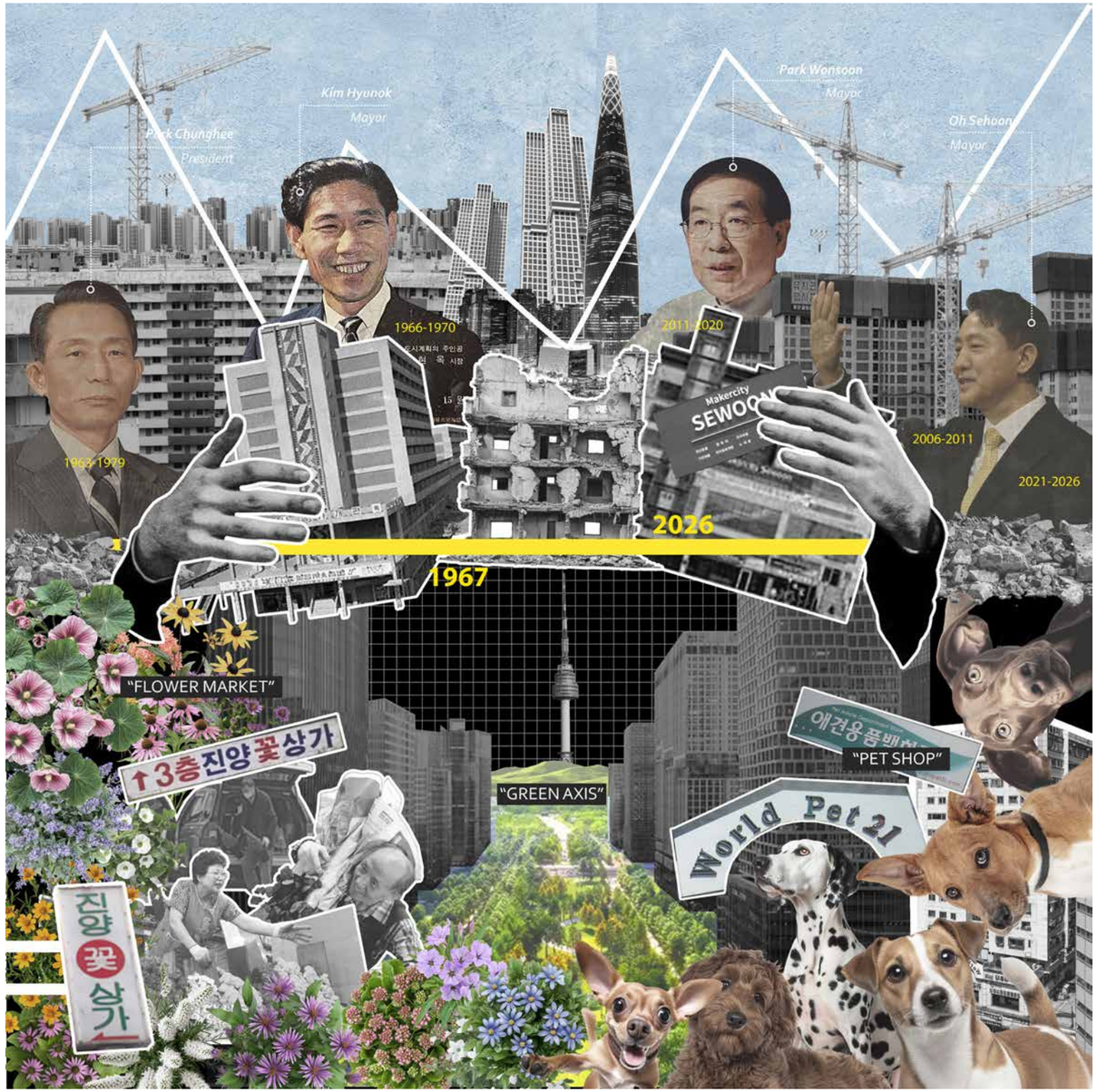
_ Nahyun Hwang

_ Se-woon Sangga, Seoul

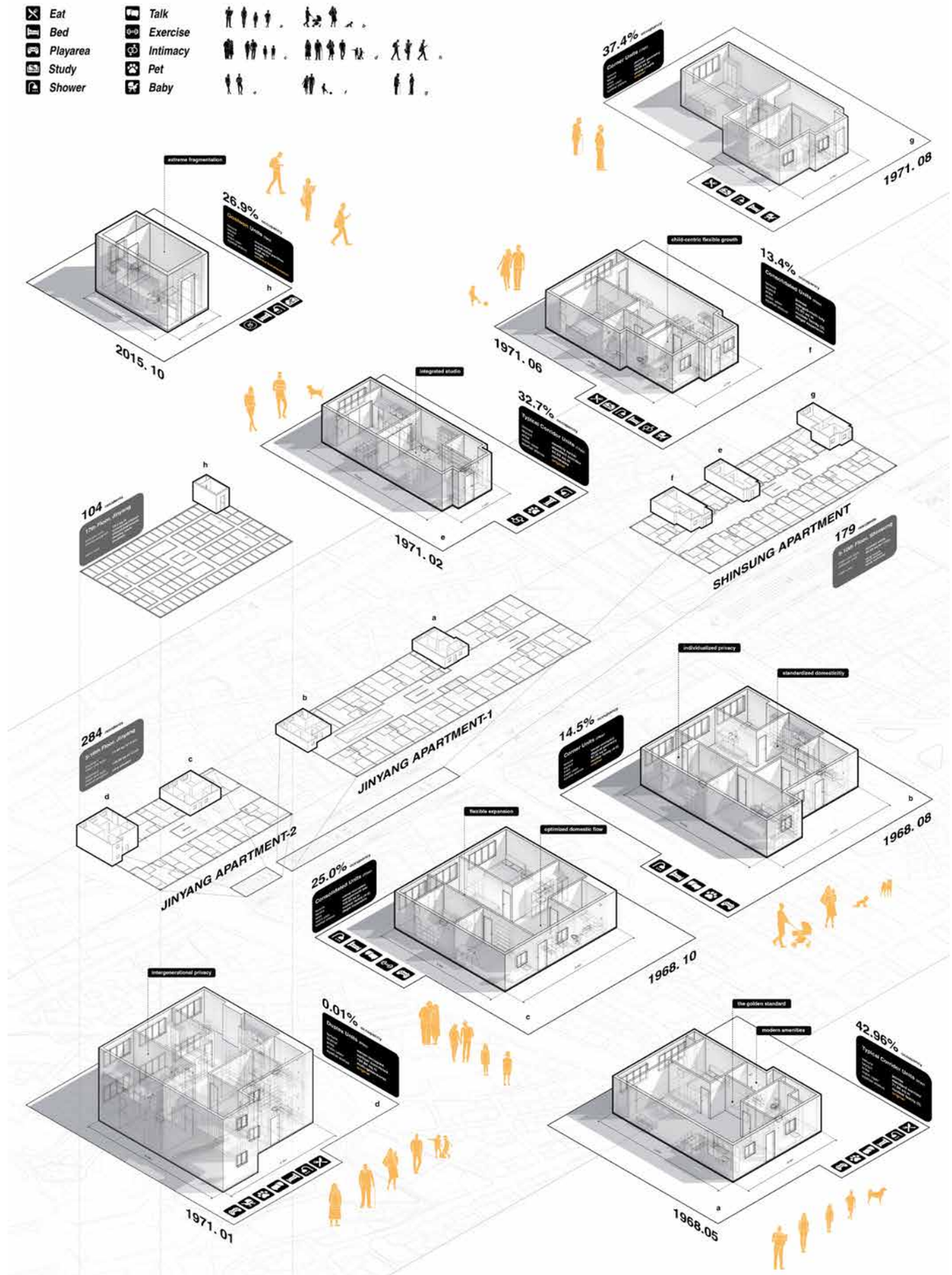
_ World Power Complex & Possibilities of Architectural (At)Tendings

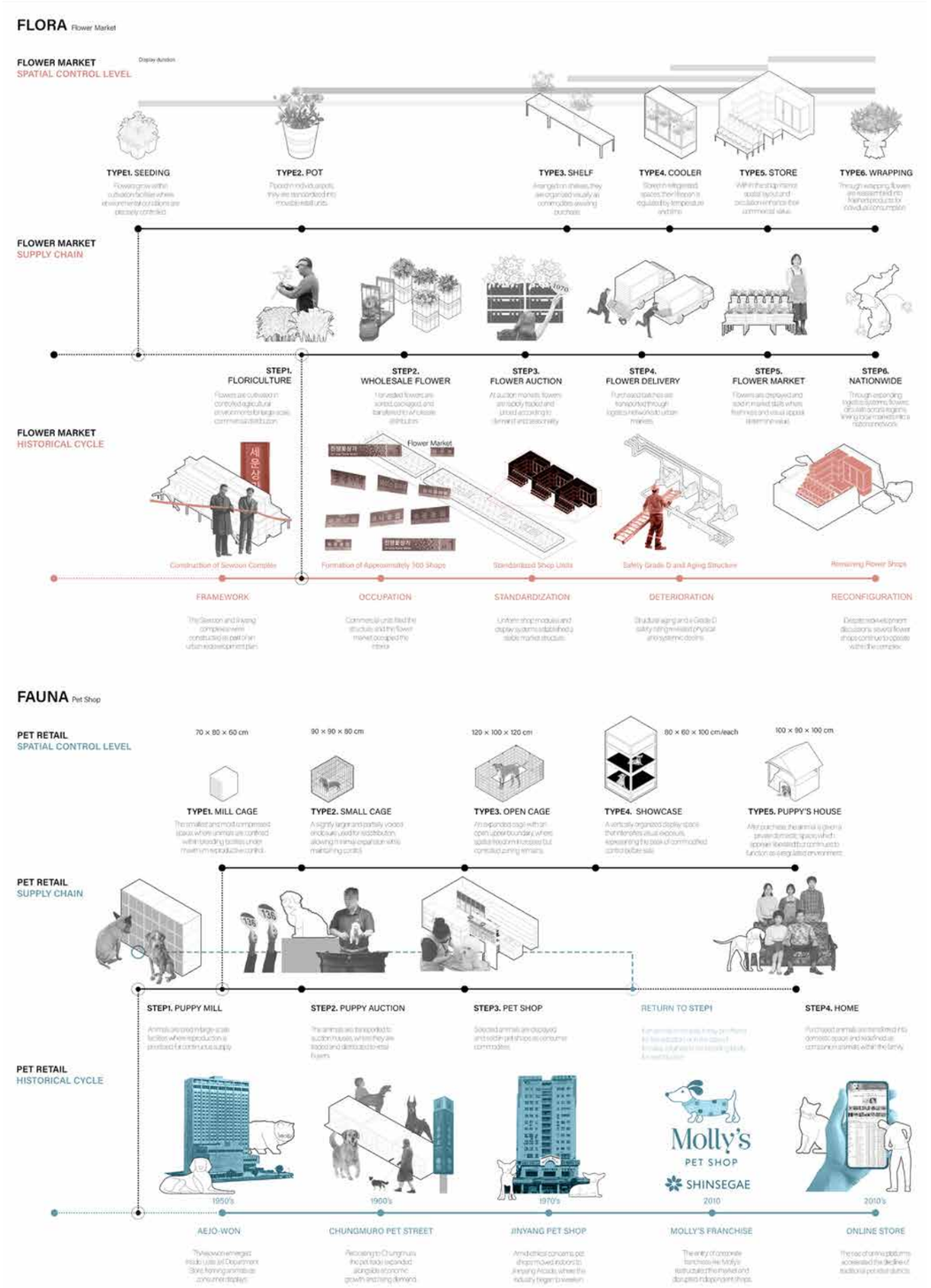
LEFT SE-WOON SANGGA TIMELINE COLLAGE
RIGHT FRAGMENTED HOUSING, “GOSIWON”

AGGREGATED HISTORIES, FRAGMENTED DOMESTICITIES



Conceived during the Park Chung-hee era as a technological monument, Sewoon Sangga’s massive scale originally embodied the political ambition of Korea’s postwar modernization. Over decades, this structure became a dense repository of urban life where the historical flower market and “Worldpet” shop collided with top-down visions like social saunas and the “Green Axis.” However, a relentless pursuit of redevelopment efficiency eventually dismantled the urban collective, transforming once-celebrated modern apartments into isolated, Goshiwon-type cells. In response, Jinyang Sangga is reimagined as an “open frame” for collective tending, where architecture facilitates mutual care between people, plants, and diverse generations. By prioritizing these shared rituals over reckless expansion, the project allows residents to maintain their individual rhythms while re-establishing lost solidarities within the city’s fragmented layers.



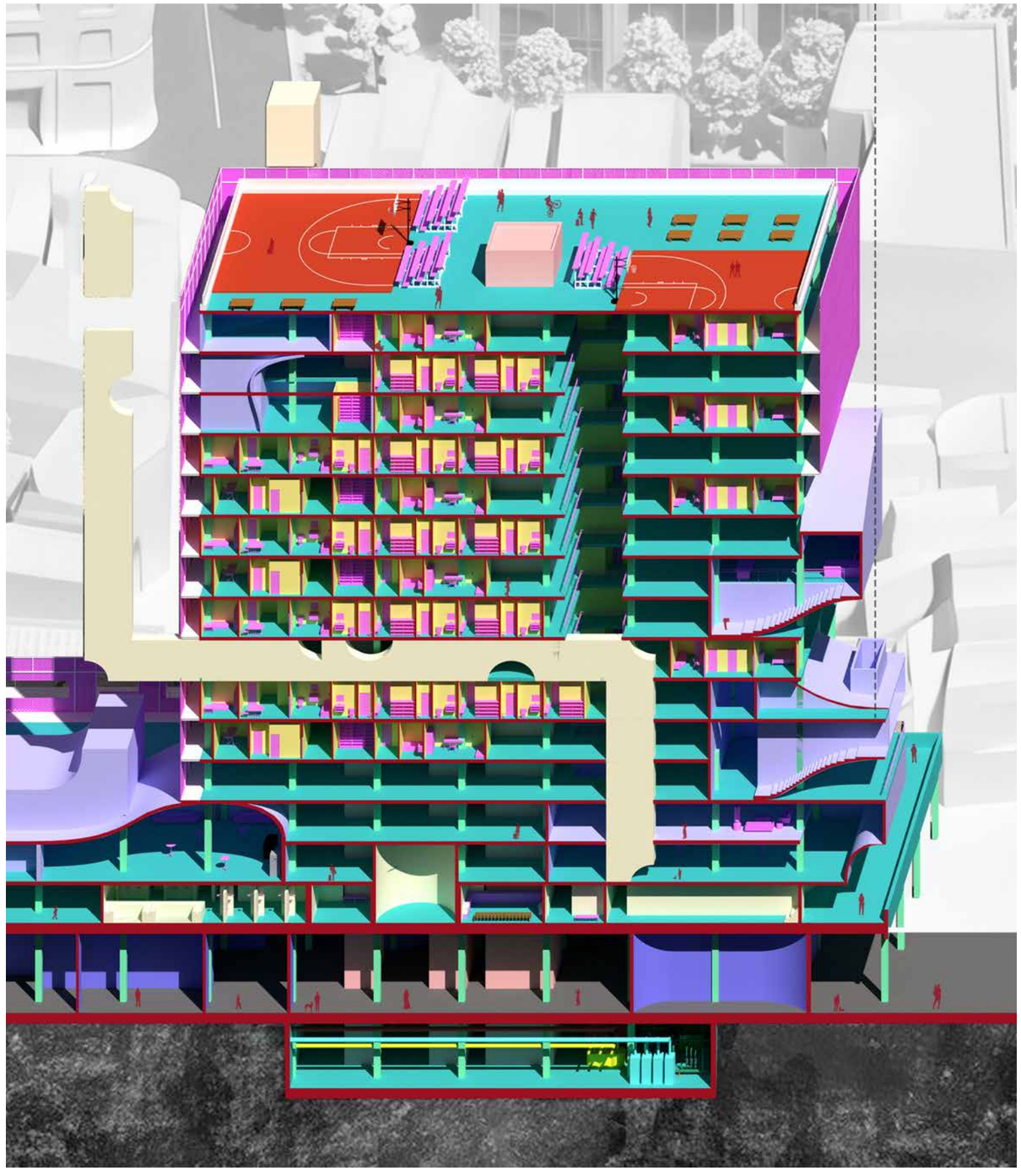


(AT)TENDING IDENTITIES: REINTERPRETING THE INFRASTRUCTURES OF CARE

Jinyang Sangga's identity was defined by a unique programmatic layering, where the flower market and pet shops functioned alongside social rituals like saunas to create a rhythmic system of intergenerational contact. As the urban fabric became increasingly fragmented, these vital spaces were neglected or pushed to the periphery of modern redevelopment plans. This project utilizes the concept of "(At)tending" to re-examine these existing identities, treating them not as outdated functions but as essential seeds for urban recovery and collective stewardship. By reimagining the "Green Axis" and public baths as active infrastructures of care, the architecture restores Jinyang's fragmented layers into a resilient collective where diverse rhythms of life once again intersect naturally.

LEFT ELEVATION LOGIC, POROUS ENVELOPE
RIGHT INTER-SECTIONAL LAYERING

JINYANG SANGGA SOLIDARITIES: AN ANATOMY



TRANSGENERATIONAL SCAFFOLDING

Inspired by the traditional “Pyeongsang,” these communal platforms facilitate serendipitous encounters and generate a continuous sequence of social interactions within the megastructure. These thresholds serve as active zones for intergenerational exchange, where the specialized wisdom of the elderly and the vibrant energy of the youth are shared through collective participation. This architecture of encounter moves beyond forced social constructs, allowing for a natural transmission of knowledge that enriches the urban collective.

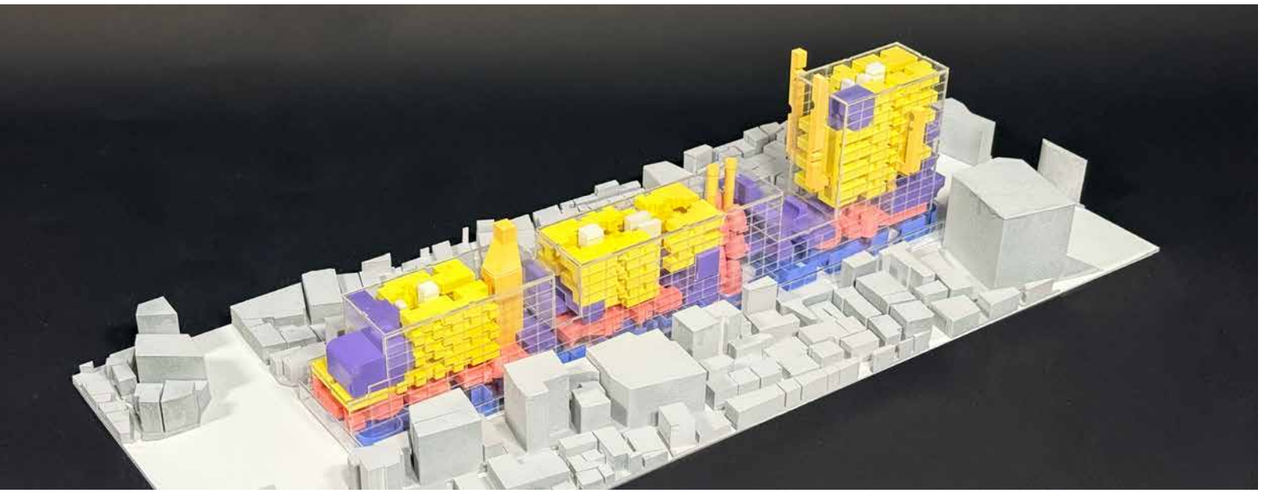
While residents eventually return to their distinct private domains—ranging from the cultural vibrancy of the ballroom and club to the solitary refuge of the Goshiwon—the bonds forged in these shared spaces remain persistent. By prioritizing these loose yet meaningful solidarities, the project creates a resilient framework where different generations can grow and age together while respecting their individual rhythms of life.

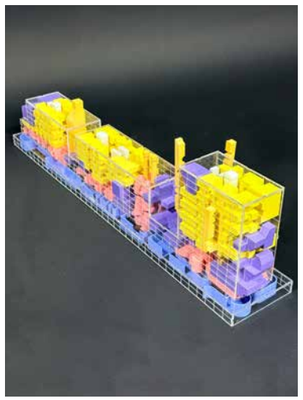
LEFT INTERGENERAIONAL PLAZA
RIGHT PRIVATE DOMAINS, CLUB TO GOSIWON

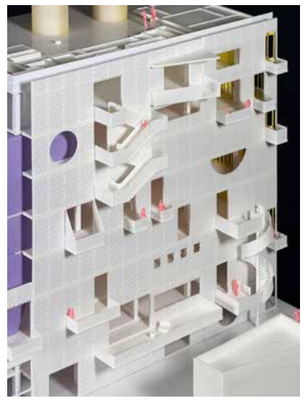
COLLECTIVE RITUALS, BATHHOUSE TO ROOFTOP

This final layer of intervention reimagines Jinyang Sangga's historical social anchors—the public sauna and the flower market—into a vibrant landscape of shared rituals and collective tending. The rooftop is transformed into a productive weekend farm and barbecue area, serving as a transgenerational commons where residents exchange specialized wisdom through the collaborative act of cultivation and celebration.

Complementing this, the reimagined public bath functions as a social infrastructure for intergenerational dialogue, facilitating serendipitous encounters on the "Pyeongsang" platforms where knowledge flows naturally between generations. Together, these spaces form a resilient scaffolding for care, ensuring that while residents maintain their individual rhythms, they remain deeply anchored within a unified urban collective. Ultimately, this architecture of encounter restores the lost solidarities of the city, creating a living frame where diverse lives grow and age together.







PROTOTYPING MULTI-SCALAR MODELS OF (AT)TENDING

IThese physical models translate the theoretical framework of “Loose Solidarities” into a multi-scalar architectural system. The sectional anatomy reveals strategic porosity and “Pyeongsang” platforms as a transgenerational scaffolding for the exchange of collective wisdom. Vivid color-coding illustrates how historical programs, such as the social sauna and flower market, are reinterpreted as modern infrastructures of care integrated within the megastructure.

By materializing the open frame, these prototypes demonstrate how architecture facilitates serendipitous encounters while strictly respecting individual rhythms of life. Ultimately, these assembled models propose a resilient future where diverse generations grow and age together through shared ecological and social rituals.

LEFT 1 : 500 SITE PHYSICAL MODEL
RIGHT 1: 100 SECTIONAL PHYSICAL MODEL

04

WOVEN AND UNDULATING TENSIONS

; exploring stability through Wave-form Geometry

This research investigates the translation of dynamic gravitational forces into a static structural surface through a process of physical form-finding. The experiment began by utilizing five spheres of varying masses and diameters to induce specific wave-like deformations, allowing for a precise prediction of how weight influences curvature and tension. By analyzing these undulating patterns, we were able to simulate a complex force distribution that maintains a state of harmonic equilibrium across the continuous surface.

To stabilize these transient forces into a permanent architectural morphology, the gravity-induced geometry was inverted and reinforced. Using a resin-based medium that originates from the perimeter boundaries, we captured the tensioned state of the surface, transforming a flexible system into a rigid, self-supporting prototype. This study demonstrates a "tension-inversion" methodology, where the calculated movement of waves results in a highly stable structural typology that balances fluid aesthetics with mechanical performance.

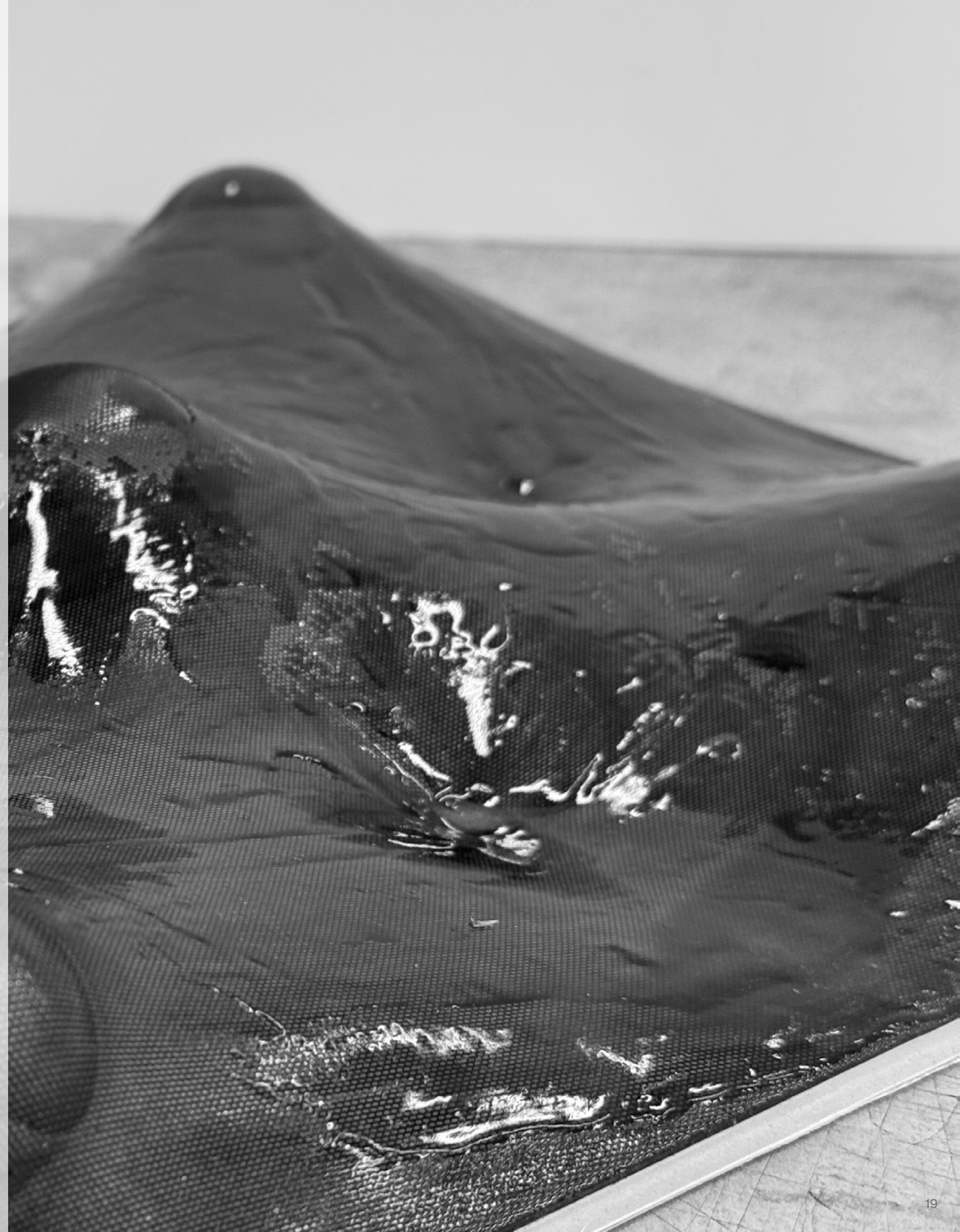
_ 2025 Fall elective

_ Structural Morphology

_ Robert Marino

_ Physics-based simulation

_ Tensile/Compression Surfaces in Architecture

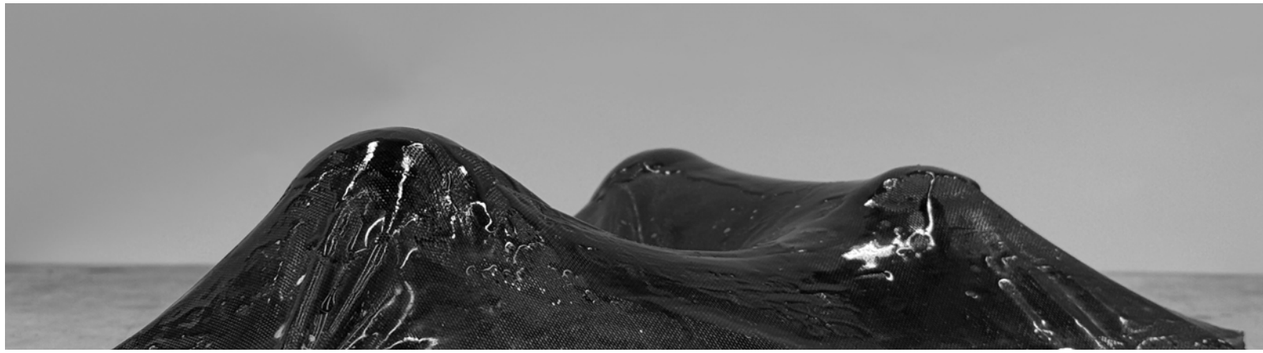


ABOVE MORPHOLOGICAL STUDY MODEL
BELOW TENSION-INVERSION PROTOTYPE

MONOLITHIC TENSION: SCALING THE PROTOTYPE

The transition from a laboratory experiment to a spanning structural prototype demonstrates the scalability of the wave-form logic. By articulating the rhythmic deformations as a series of interconnected arches, the model achieves a monolithic stability that bridges significant distances. The three primary contact points, derived from the gravitational simulation of the spheres, act as integrated supports that distribute loads across the entire undulating shell, minimizing the need for secondary structural elements.

The application of a resin-reinforced membrane allows for a high strength-to-weight ratio, creating a thin-shell structure that is both lightweight and rigid. As the geometry flows from the boundaries toward the center, it generates a varied spatial experience underneath, where the “peaks” of the wave create expansive openings and the “valleys” form intimate structural nodes. This physical artifact serves as a speculative architectural canopy, where the geometry itself is the primary informant of both performance and aesthetic.



05

35MM LATENT, 36 EXPOSURE

; developing an alternative vision within the 35mm experimental aperture

This photographic series, titled 35MM LATENT, is a methodical exploration of New York's architectural landscape through the irreversible and tactile medium of analogue film. In an era of digital immediacy, the choice to work within the constraints of a 36-exposure roll was a deliberate act of slowing down, requiring a heightened sensitivity to the "latent" conditions of the city before they are chemically manifested. Each frame represents a singular commitment to a moment in time, where the interaction between light and silver halide creates a physical artifact that captures the "atmosphere" and raw materiality of the built environment in a way digital sensors cannot replicate.

By engaging with the 35mm experimental world, this project transcends simple documentation to become a study of the invisible dialogue between the lens and the urban fabric. The inherent grain and organic texture of the film serve as a visual bridge, translating the cold surfaces of concrete and glass into a warm, lived-in narrative of light and shadow. These 36 exposures function as memory vessels, archiving the hidden narratives of the city and emphasizing that architecture is not merely a static object, but a repository for the complex and ever-changing interplay of time and lived experience.

_ 2025 Fall Elective

_ 35mm Latent Fabric

_ Michael Vahrenwald

_ New York-Seoul

_ Architectural Photography : From the Models to the Built World

MONUMENTAL SILHOUETTE, GHOST IN A SHELL

This photographic study utilizes the 35mm experimental aperture to investigate how light and framing can elevate the mundane into a monumental architectural experience. Through a methodological observation of light's transition into shadow, the project captures the "latent" significance of environments by stripping the New York skyline down to essential silhouettes. By prioritizing certain aspects of the built form, these frames do not merely document a location but deliberately construct a visual narrative where light itself becomes the primary structural informant.

The exploration extends into the "Ghost in a Shell" series, where the focus shifts toward evoking the particular character of diverse spaces through careful multi-scalar composition. By utilizing both wide views and tight details, the work reveals hidden narratives within well-worn pastoral structures and modern urban voids. The conspicuous absence of people highlights a lingering sense of inhabitation, allowing the frame and light to create a profound meaning beyond the physical shell. This sequence reflects a "second eye" that links the raw realities of our surroundings to a deeper, contemplative architectural language.

LEFT BUILDING INTERSTICES, SEOUL
RIGHT AGRARIAN STILLNESS, DANGJIN

CONSTRUCTIVE LOGIC, PERIPHERAL STILLNESS

This photographic investigation from Seoul redefines the temporary scaffolding and exposed structural skeletons as the definitive architectural character of the modern metropolis. By treating the cranes and vertical cores as primary subjects rather than background elements, the work highlights the beauty of the “unfinished” state through a deliberate play of natural light. These frames capture the tension between the dense verticality of the city and its ever-evolving periphery, where the monumental is found in the raw mechanics of urban growth.

The study shifts toward the peripheral infrastructure of the Korean countryside, exploring the quiet dominance of power lines over fallow fields. These elements serve as architectural anchors within the vast, organic void, creating a dialogue between the industrial grid and the stillness of the winter landscape. By documenting the conspicuous absence of the human figure, the series focuses on the “traces” of energy and utility that define the modern pastoral condition, revealing a hidden narrative of connectivity that binds the rural horizon to the urban core.