W

Selected Works
2023-2026

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ANATOMY OF RESPONSE

Architecture becomes political when people can claim, adapt, and transform the systems they inhabit. Living across distinct cultural contexts made me attentive to how ownership is negotiated through everyday use. I design spatial systems that make overlooked conditions legible and convert them into rules for occupation, construction, and change.

01

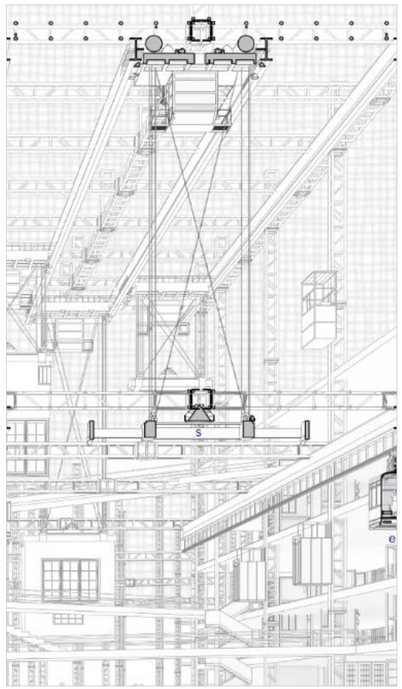
Calibrated Environment

Mixed-use | BIM | Environmental design

A Mixed-use Tower shaped by occupancy and environmental performance

1

02



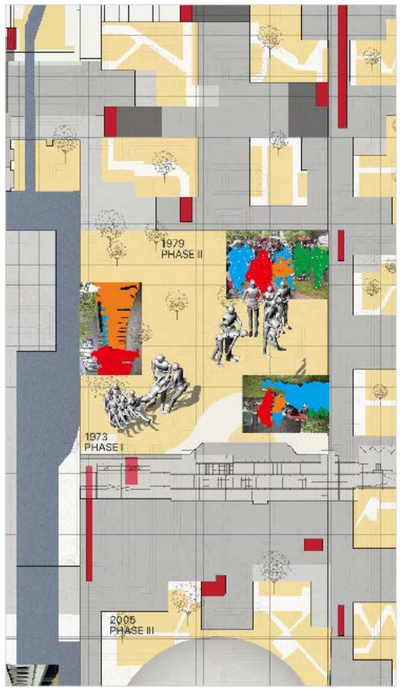
Zero-to-Zero

Housing | Material Systems | Ecological infrastructure

An open Framework that builds itself out of what Madrid discards

5

03



Transcription Kinetic Democracy

Envelope design | Mechanism | Spatial research

Collective movement translated into architectural change

10

04

City as Domain Adaptive Living Patterns

Urban Design | Collective Housing | Semi-exterior Infrastructure

Domestic thresholds expanded into collective urban infrastructure

14

Junction of mixed-use program zones, shared amenities, and calibrated façade system

01

Calibrated Environment

Mixed-use Tower Shaped by Occupancy and Environmental Performance

Featured in *Columbia GSAPP* | Official Project Archive

A tower does not need one comfort standard. It needs several, distributed by use.

Calibrated Environment organizes retail, office, hospitality, and residential programs through occupancy cycles and environmental exposure. Operating hours, peak use, daylight demand, solar gain, privacy, and views position each program within the section.

These inputs also shape the envelope. Window size, louver depth, façade density, and floor-plate setbacks vary by orientation and use. Zones of environmental excess or deficiency become shared gardens, pools, and terraces.

Developed through Revit, Grasshopper, Rhino, and Ladybug, the project treats environmental analysis as a design input for plan, section, and façade—not as a check applied afterward.

Spring 2026

Site 1227 Broadway, New York, NY
Type *Mixed-use tower* Residential, Hospitality, Office, and Retail
Instructor Joseph A. Brennan, *Columbia University GSAPP*
Group Project *Role* Residential and Office Plan Design, Façade Design, and Revit/Grasshopper development

Program Revit+Grasshopper | Rhino+Ladybug | X-figura | Illustrator

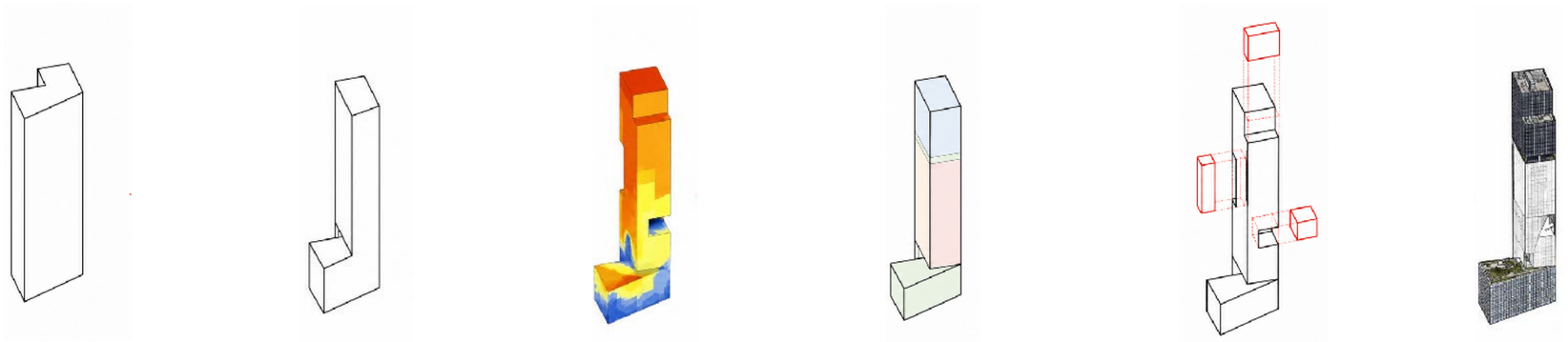
01 Seasonal Solar Exposure

02 Daily Occupancy Cycles

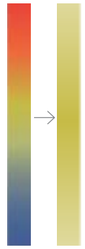
03 Program Distribution

04 Massing and Terrace Adjustment

05 Façade Calibration

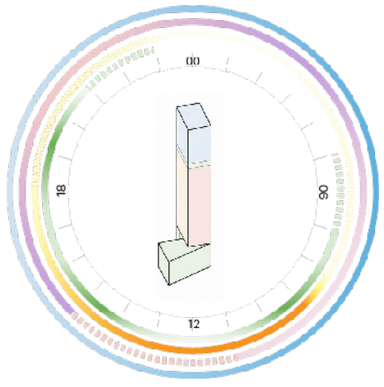


Different Programs Require Different Environments

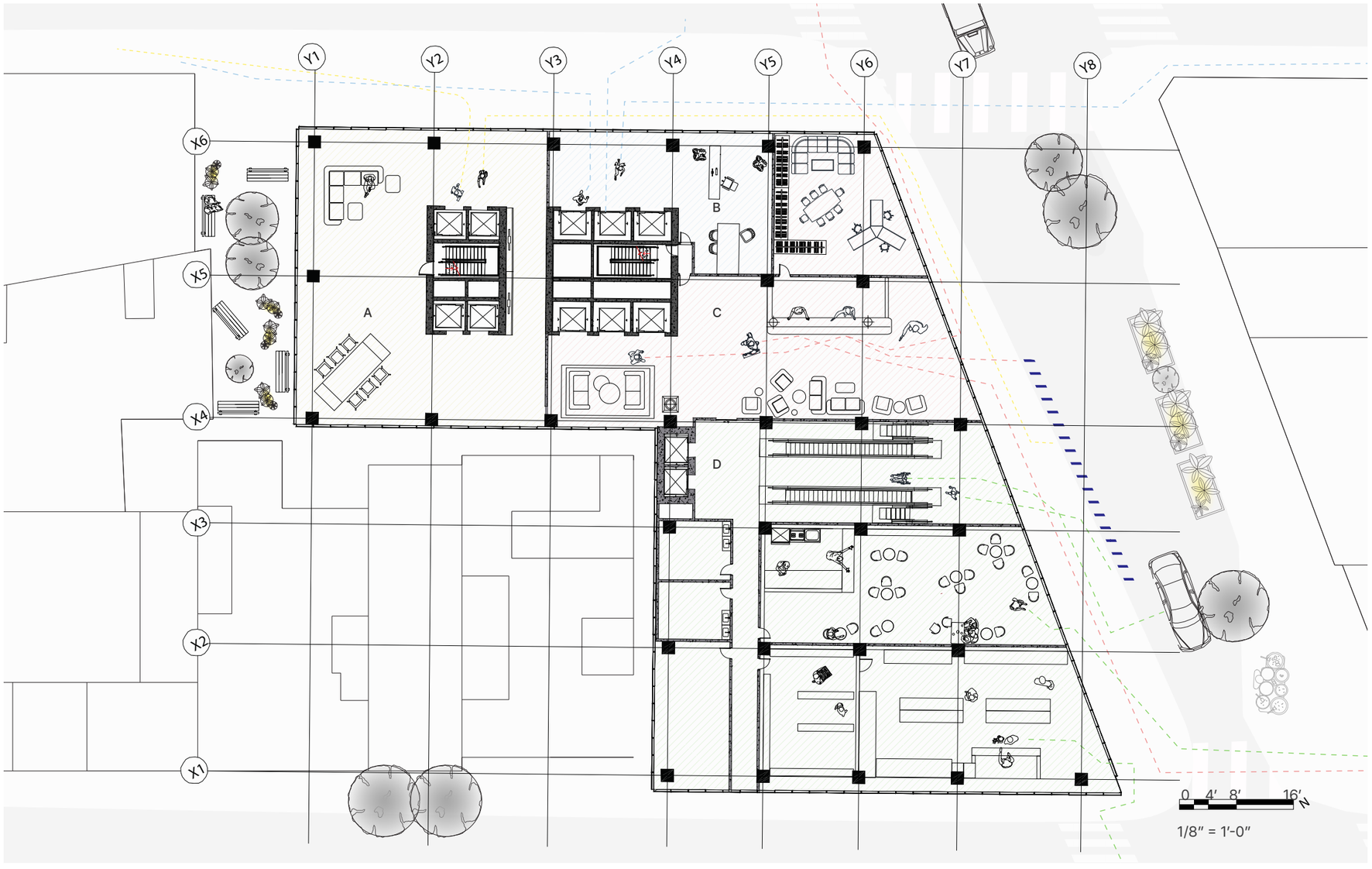


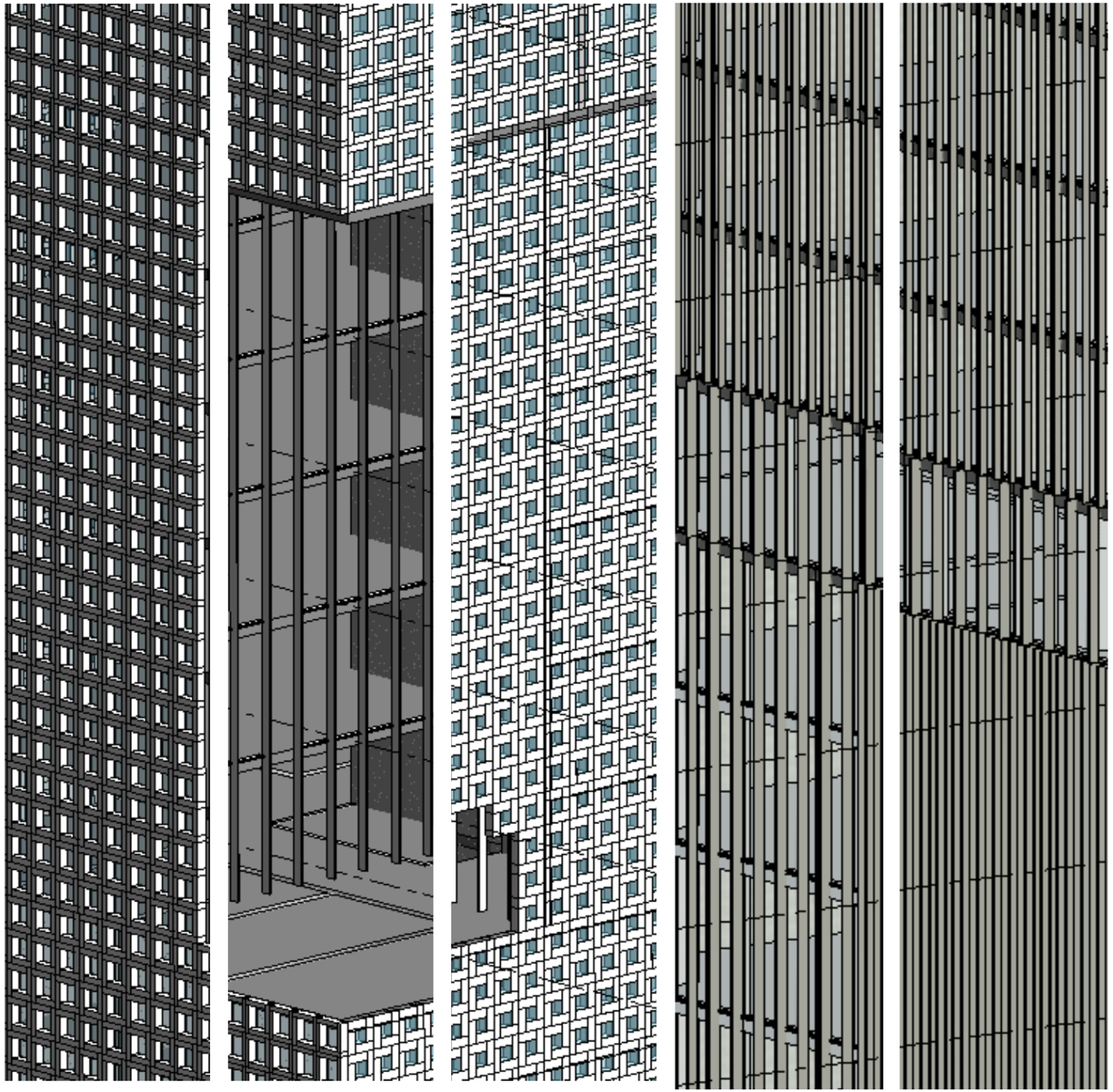
Comfort :
Calibrated through occupation + sunlight exposure

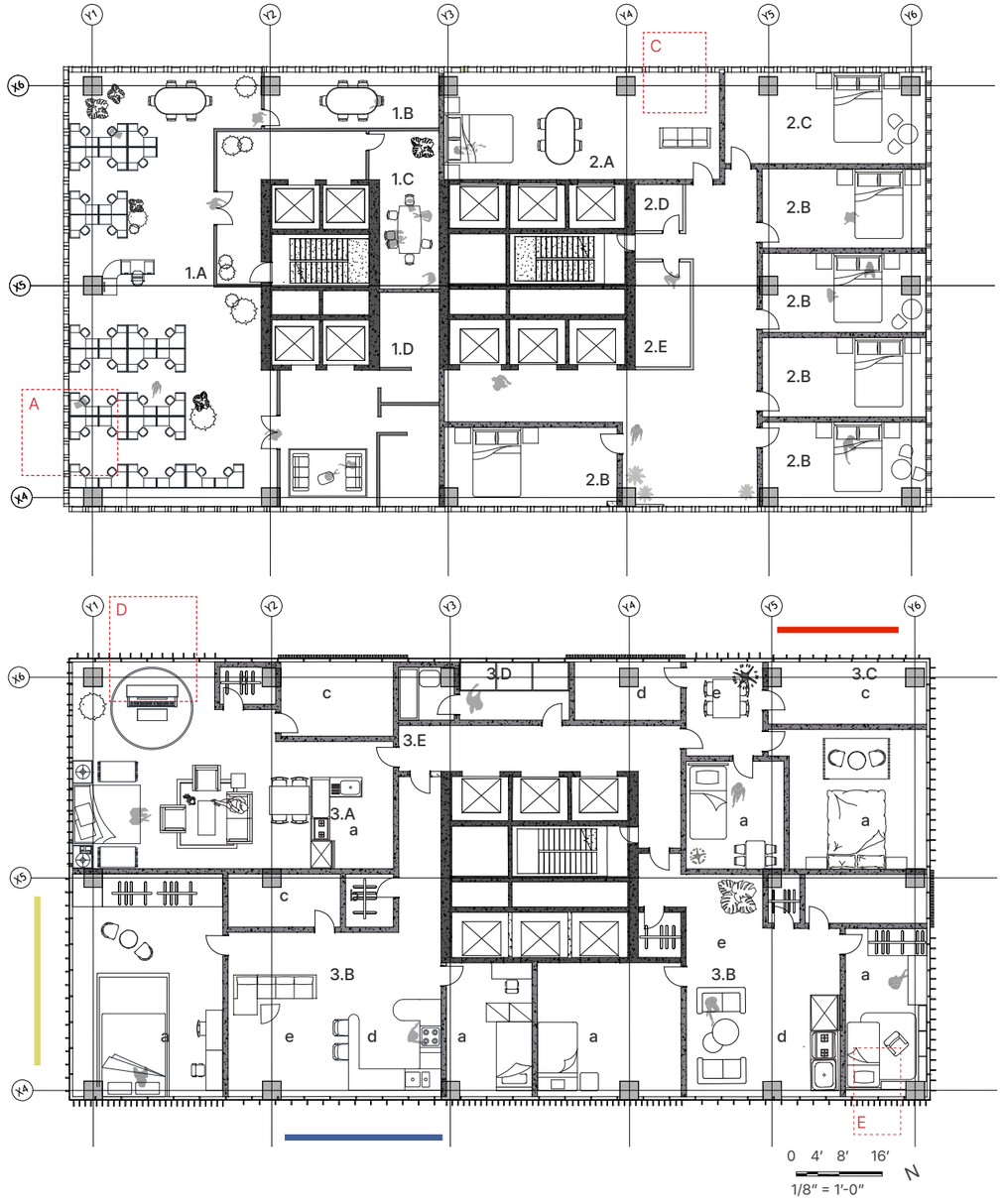
Comfort is calibrated through occupation and exposure rather than against a single target. Seasonal solar radiation, daylight access, occupancy schedules, privacy, views, and surrounding buildings are evaluated together. The analysis establishes program distribution, massing setbacks, terrace locations, and façade depth.



- A. Office
- B. Residential
- C. Hospitality
- D. Retail
- Typical Working Hours
- Typical Away Hours
- Check-in, Check-out
- Turnover
- Peak Hours
- Operating Hours







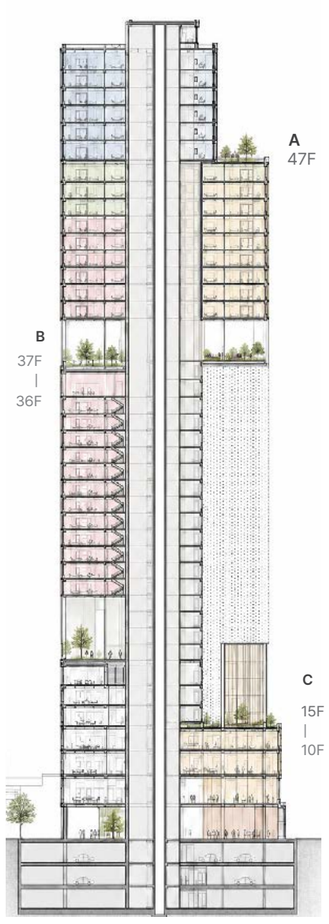
Adaptive Façade System

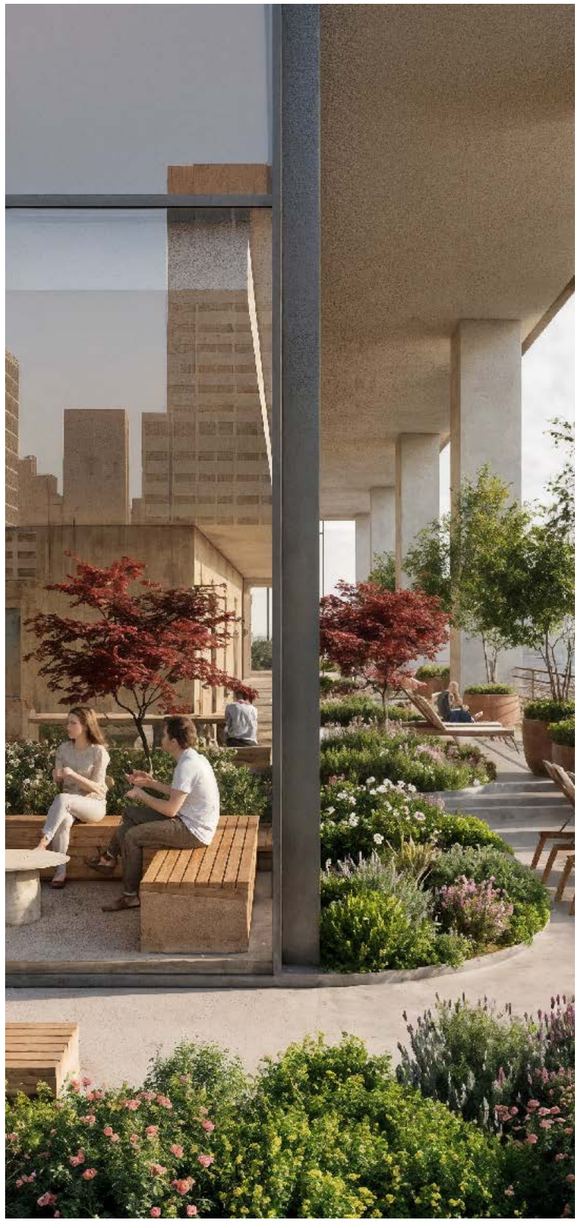
Program schedules organize the section; solar exposure calibrates the envelope.

A | B | C | D | E

Retail, office, hospitality, and residential programs operate on different but overlapping schedules. Their distribution follows street access, solar exposure, and public use. Shared entrances, retail, and amenities absorb shorter cycles at the base; hospitality and housing occupy upper zones governed by longer daily patterns. Across the tower, façade families respond to both program and orientation.

Façade System	Office	Hospitality	Residential	
A. Large Punched Curtain Wall	**1.A.** workspace	**2.A.** Double Room	**3.A.** Studio	**a.** bedroom
B. Glass Curtain Wall	**1.B.** Enclosure Meeting Room	**2.B.** Single Room	**3.B.** 2b1b	**b.** closet
C. Small Punched Curtain Wall	**1.C.** Open Meeting Room	**2.C.** Deluxe Room	**3.C.** 2b2b	**c.** bathroom
D. Low-Density Louvers	**1.D.** Bathroom	**2.D.** Linen Room	**3.D.** W/D	**d.** kitchen
E. High-Density Louvers		**2.E.** Storage	**3.E.** Refuse	**e.** living room





Shared Amenities

Environmental extremes become shared amenities. The façade is developed through a parametric workflow linking solar radiation, daylight exposure, privacy, and program. Opening size, panel density, and shading depth vary by orientation and interior use. Where environmental conditions are most demanding, massing setbacks and recessed enclosures create shared pools, gardens, and intermediate zones.

A. Elevated Pool | Residential + Hospitality

A recessed pool, shaded perimeter, and planted edge moderate high solar exposure while forming a shared outdoor room.

B. Shared Garden | Office + Residential + Hospitality

A massing setback separates program zones while providing daylight, outdoor access, and an environmental buffer.

C. Indoor Garden | Hospitality + Office

A recessed glazed enclosure and interior planting create an intermediate zone between the façade and occupied floor plate.

02

Zero-to-Zero

An Open Framework for Production, Habitation, and Ecological Repair

Featured on ***Columbia GSAPP*** | Official Instagram

The city hides the systems that sustain it. Zero-to-Zero builds with them.

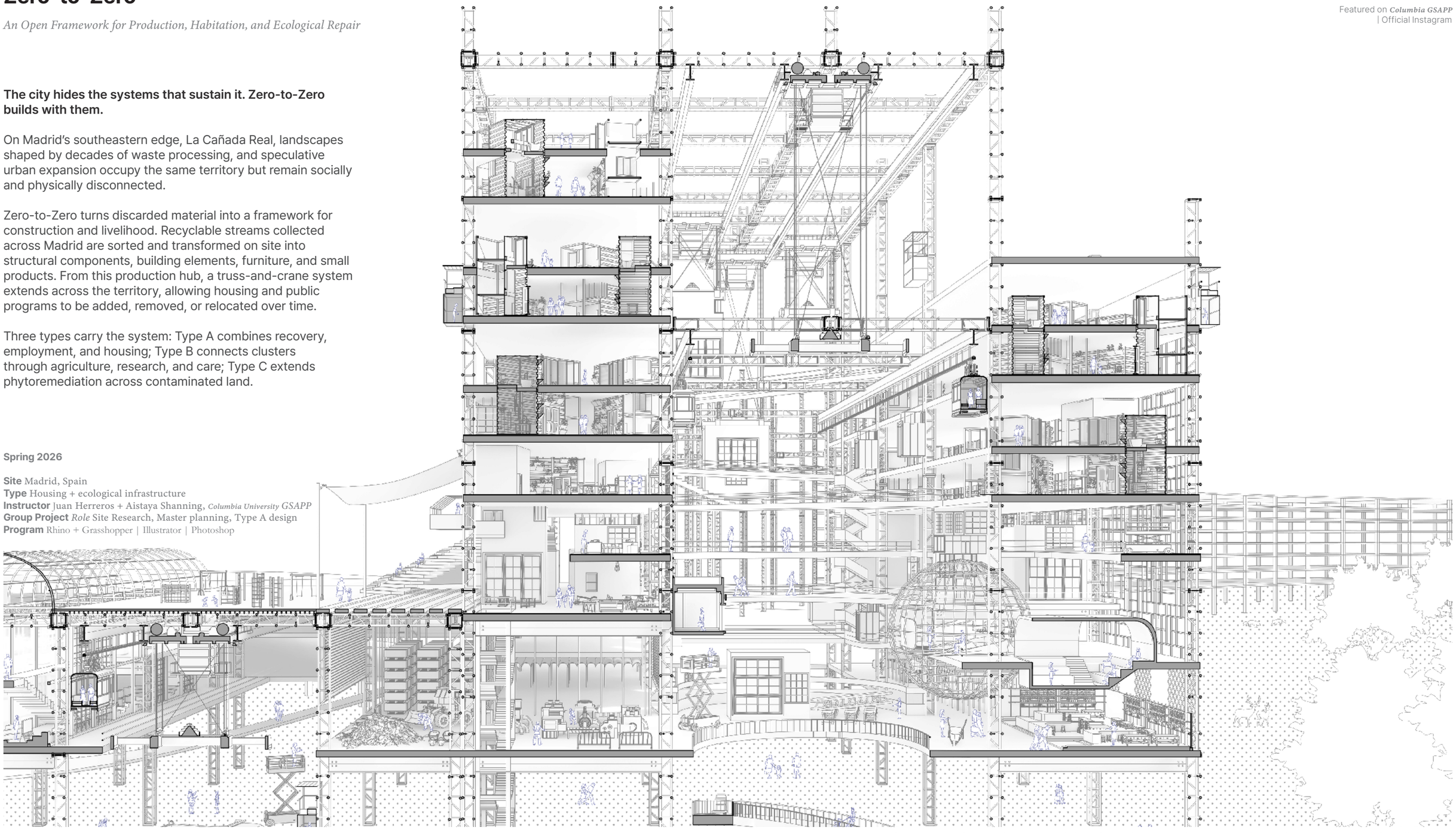
On Madrid's southeastern edge, La Cañada Real, landscapes shaped by decades of waste processing, and speculative urban expansion occupy the same territory but remain socially and physically disconnected.

Zero-to-Zero turns discarded material into a framework for construction and livelihood. Recyclable streams collected across Madrid are sorted and transformed on site into structural components, building elements, furniture, and small products. From this production hub, a truss-and-crane system extends across the territory, allowing housing and public programs to be added, removed, or relocated over time.

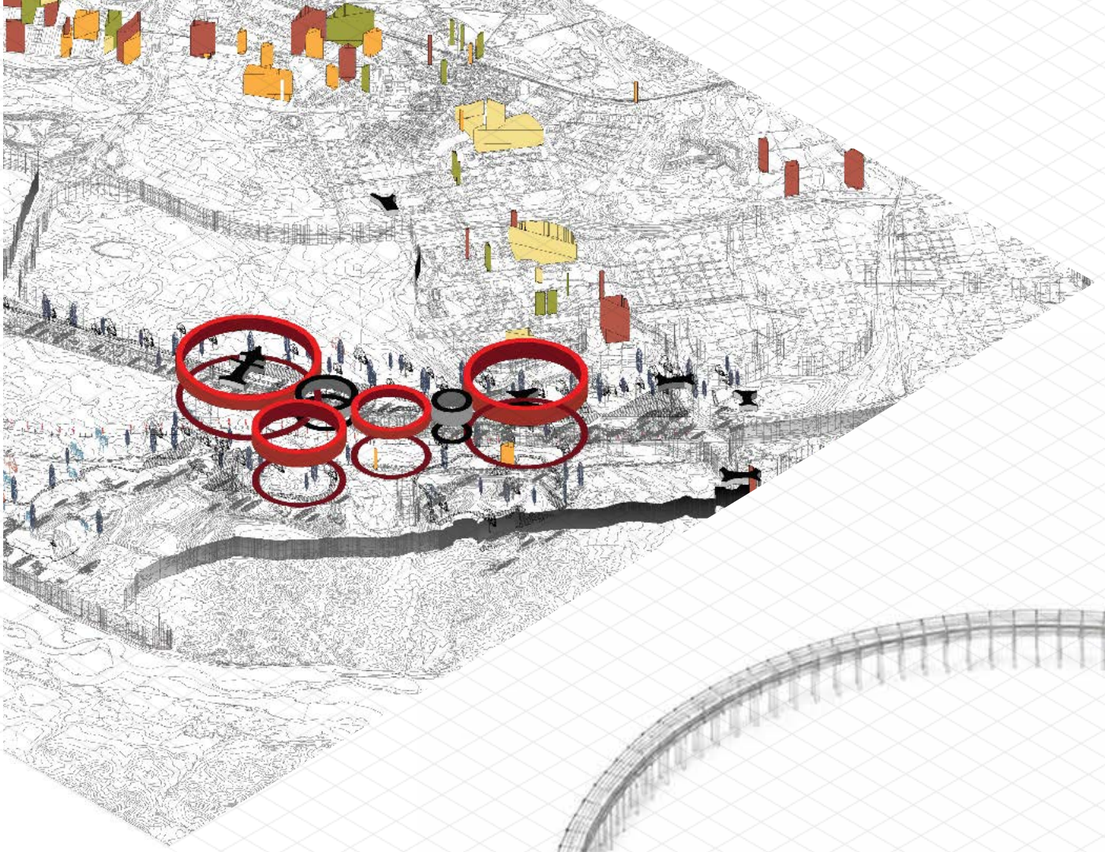
Three types carry the system: Type A combines recovery, employment, and housing; Type B connects clusters through agriculture, research, and care; Type C extends phytoremediation across contaminated land.

Spring 2026

Site Madrid, Spain
Type Housing + ecological infrastructure
Instructor Juan Herreros + Aistaya Shanning, *Columbia University GSAPP*
Group Project *Role* Site Research, Master planning, Type A design
Program Rhino + Grasshopper | Illustrator | Photoshop



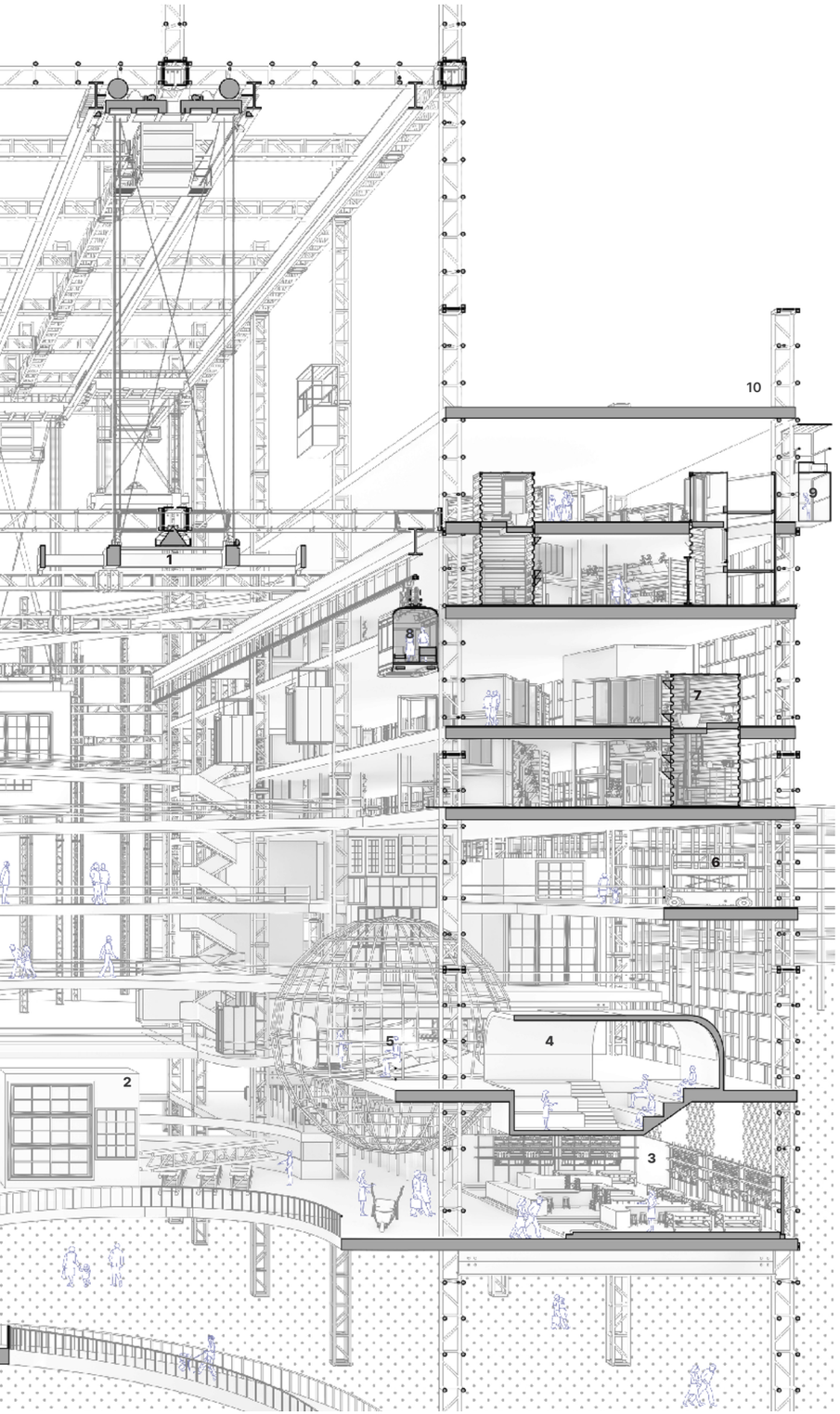
Junction of Type A—production, housing, and shared circulation—and Type B—soil-remediation research and wildlife care.



Making Hidden Conditions Visible

Informal Settlement · Waste Infrastructure · Speculative Expansion

The three types are positioned according to conditions already present on the site. Type A anchors production and housing beside La Cañada Real; Type B connects these hubs through research, agriculture, and ecological support; Type C extends through highway buffers, settlement edges, and landfill zones as phytoremediation infrastructure. Together, they reorganize separated conditions into a continuous framework of material recovery, habitation, and ecological repair.

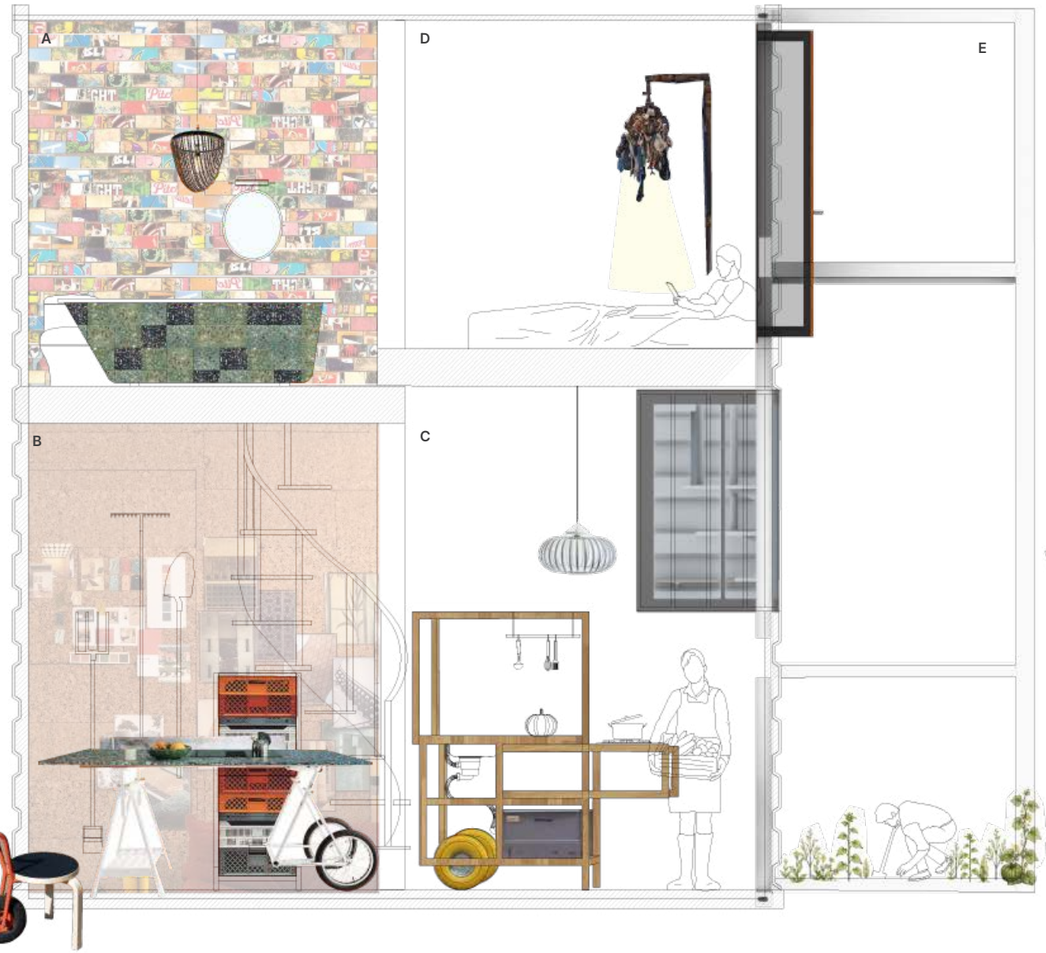


TYPE A Production Becomes Habitation

Links the making of the building to the daily life it supports

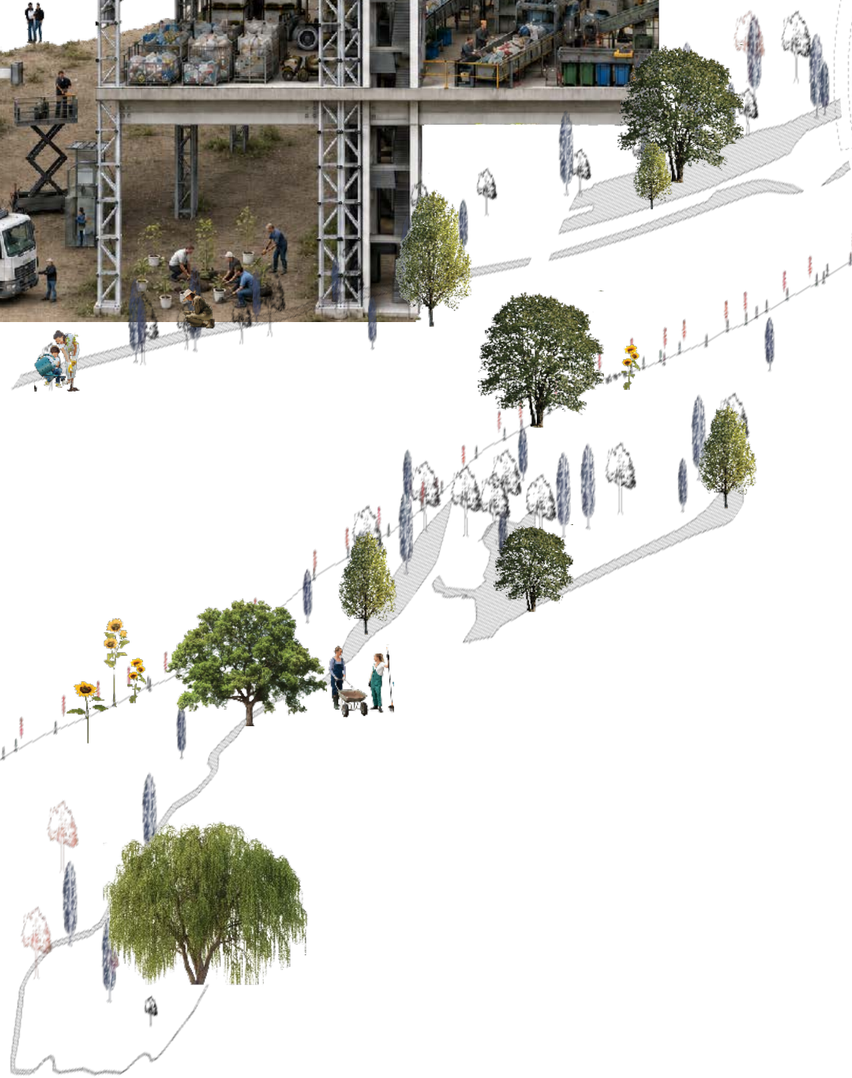
Reused shipping-container frames support an adaptable housing system. Each two-level unit places the workshop and kitchen below and bedrooms and bathrooms above. Reclaimed windows and doors reduce material demand, while a lightweight extension frame allows residents to expand the unit as household size and work patterns change.

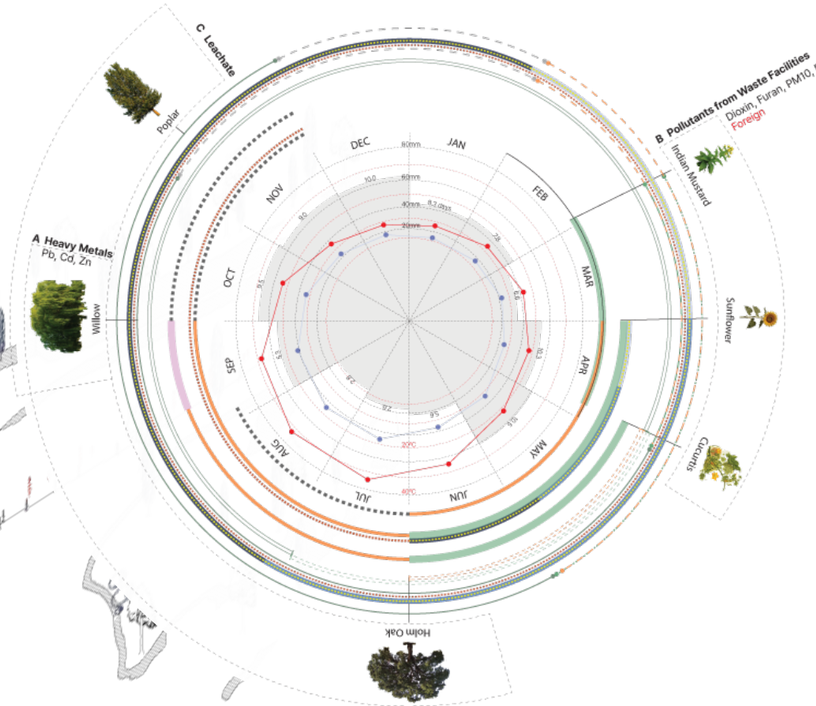
Movable trolleys shift work and domestic functions across the ground floor. Along the units, a shared corridor links circulation, planting, fabrication, and exchange, turning the edge of each dwelling into a social and ecological interface.



A. Bathroom
B. Multipurpose Room / Workshop
C. Multipurpose Room / Kitchen
D. Bedroom
E. Extended frame
F. Wall-mounted Gypsum Pot

1. Crane Claw
2. Housing Unit in Progress
3. Upcycling Markets
4. Theater
5. Conference Room
6. Community Hall
7. Residential Unit
8. Horizontal Elevator
9. Vertical Elevator
10. Expandable Structure





TYPE B Shared Support Infrastructure

Type B connects Type A clusters with urban farming, soil monitoring, material research, wildlife care, and leachate analysis. By placing these programs along the occupied connector, environmental maintenance becomes an everyday public activity rather than a separate technical service.

TYPE C Phytoremediation

Type C extends along highway buffers, settlement edges, and landfill zones. Plants requiring controlled early growth are raised in Type A and Type B nurseries, transplanted to affected areas, monitored, harvested, and safely processed after absorbing pollutants.

Buffer System

Willow, holm oak, and poplar stabilize soil and reduce exposure along traffic and facility edges.

Remediation System

Indian mustard, cucurbits, and sunflower are introduced through phased planting cycles coordinated by residents and research programs.

Max. Temp
Min. Temp
Precipitation

Annual
Sprout
Flowering
Fruit
Die

Perennial
Flowering
Leaf-out
Green
Leaf Fall

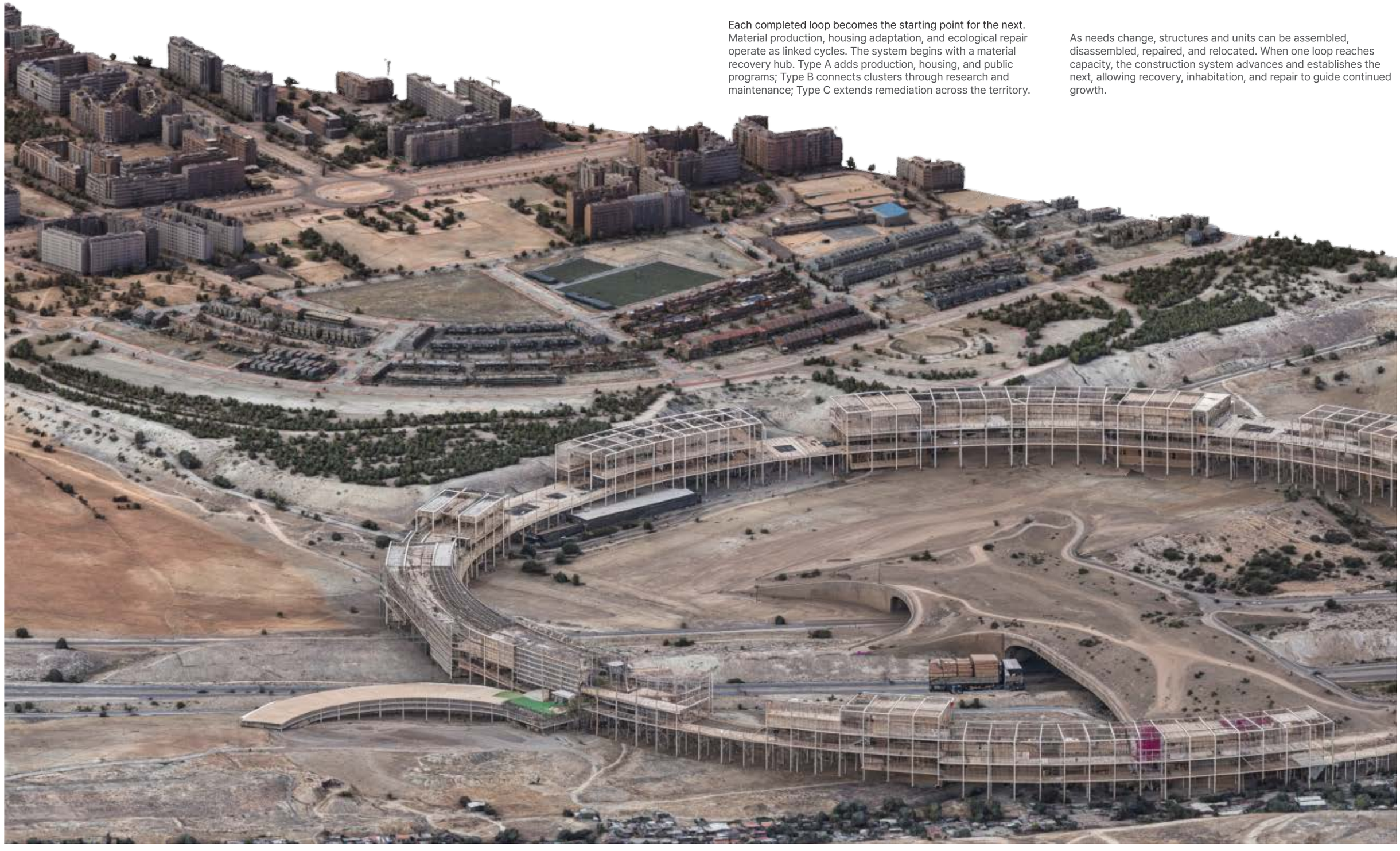
Evergreen
Flush
Flowering
Evergreen

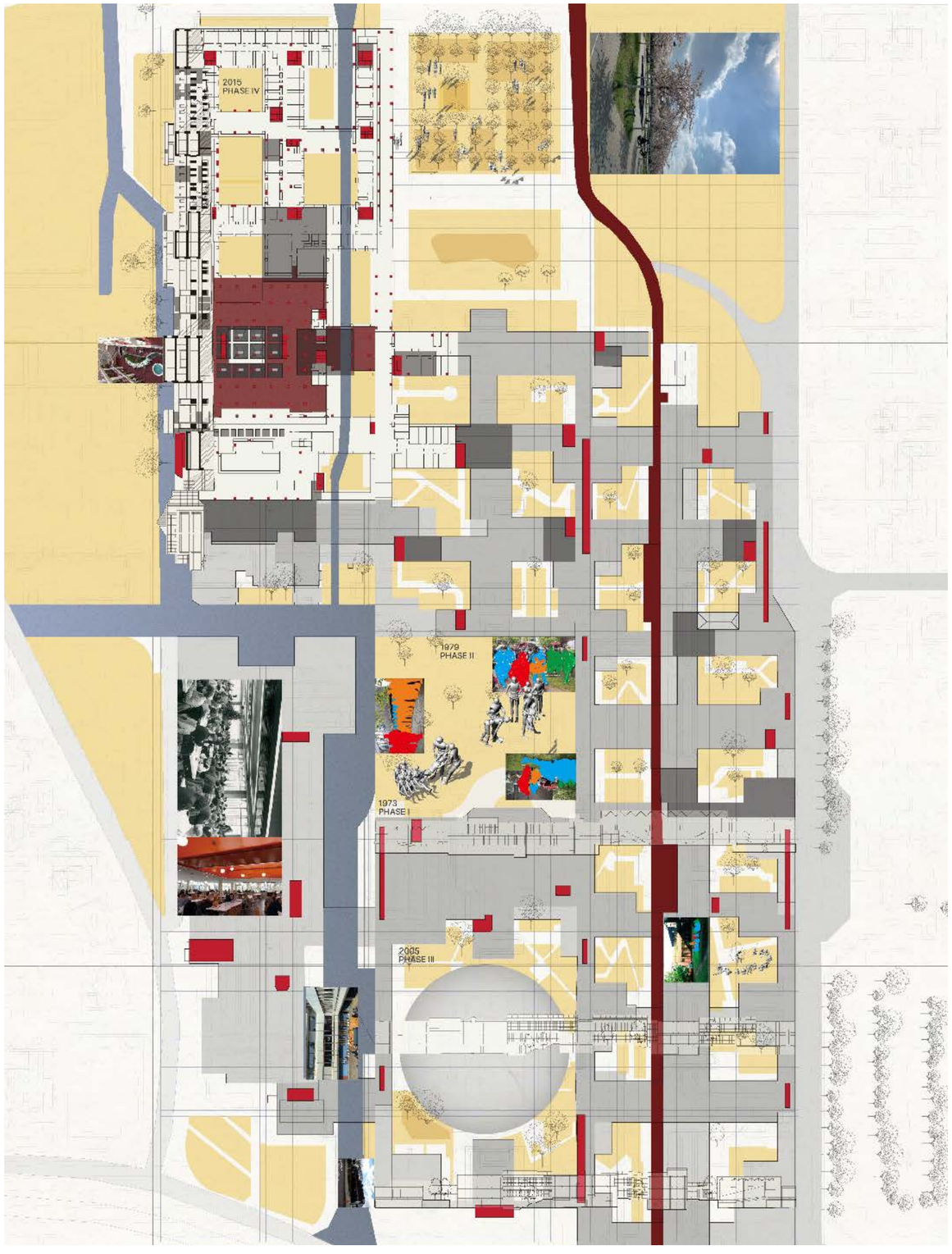
Special Care
Gypsum Pot
Greenhouse
Semi-outdoor
Outdoor

The proposal is not a final form.

Each completed loop becomes the starting point for the next. Material production, housing adaptation, and ecological repair operate as linked cycles. The system begins with a material recovery hub. Type A adds production, housing, and public programs; Type B connects clusters through research and maintenance; Type C extends remediation across the territory.

As needs change, structures and units can be assembled, disassembled, repaired, and relocated. When one loop reaches capacity, the construction system advances and establishes the next, allowing recovery, inhabitation, and repair to guide continued growth.





03

Transcription Kinetic Democracy

Collective movement transcribed into architectural change

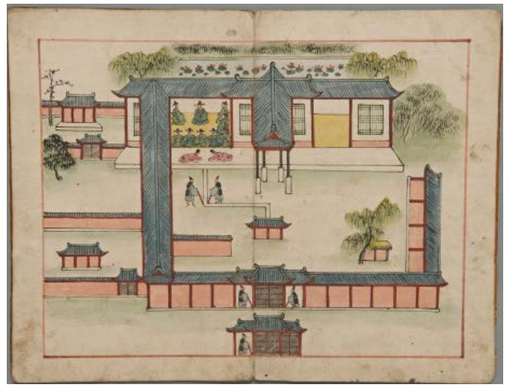
Can collective action generate architectural change?
At the Free University of Berlin, collective force becomes a system for transforming the façade. The project begins with the university's democratic mat-building: dispersed departments, non-hierarchical circulation, and multiple courtyards were intended to support exchange. Plans, archives, satellite images, and user photographs were compared to reconstruct how these spaces have been occupied over time; a 2019 courtyard protest became the central case study.

An unfolded axonometric drawing—developed through a study of Geumo Gyecheop, a Joseon-period album of paintings and calligraphy—places simultaneous movement and interior–exterior relationships on a single plane. From the protest, three actions—pushing, lifting, and coordinated pressure—are translated into a deployable envelope operating across individual, group, and collective scales.

Fall 2025

Site Berlin, Germany
Type *Envelope Design + Spatial Research*
Instructor Michael Bell, *Columbia University GSAPP*
Individual Project

Program Rhino | Illustrator

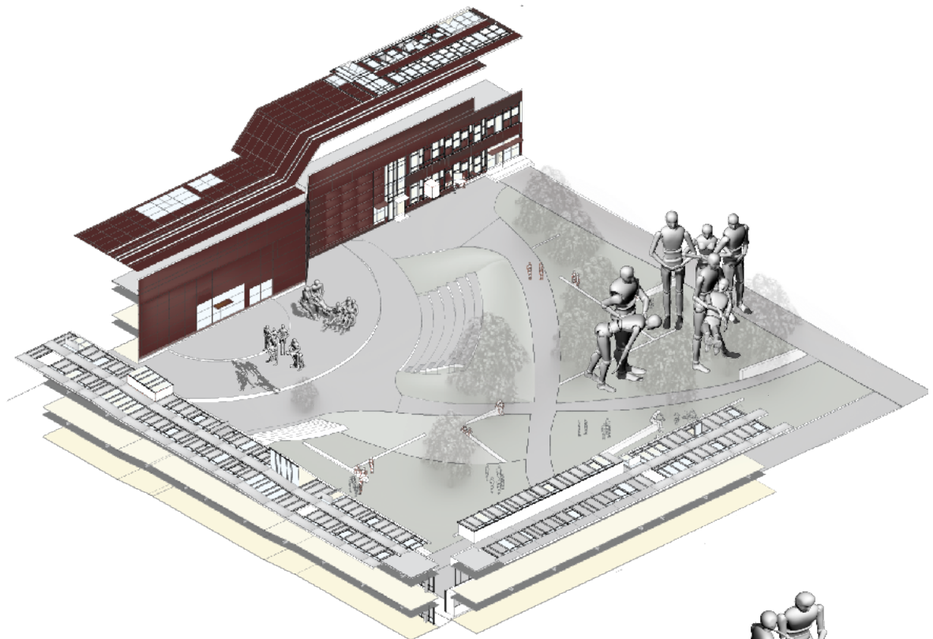


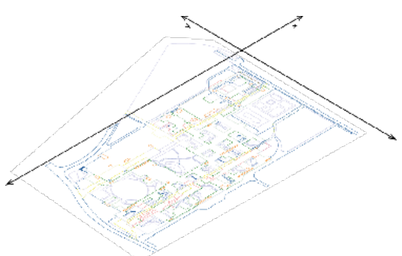
National Folk Museum of Korea, accession no. 91503; image via eMuseum.

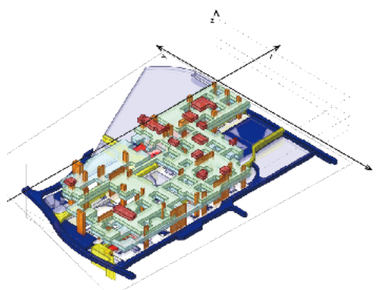
Level changes, overlapping routes, courtyards, and informal gatherings produce distinct spatial intensities within the mat-building. Protest imagery is traced as vectors of pressure, reach, and coordination. These traces establish three scales of participation—individual, group, and collective—and three architectural actions: push, lift, and coordinate.

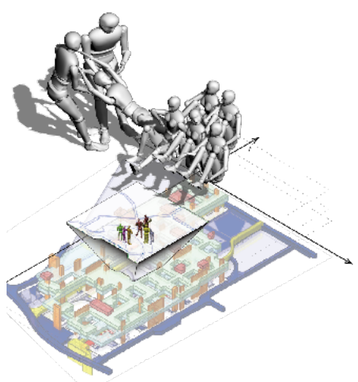
[金吾稧帖] Geumo Gyecheop, 1804

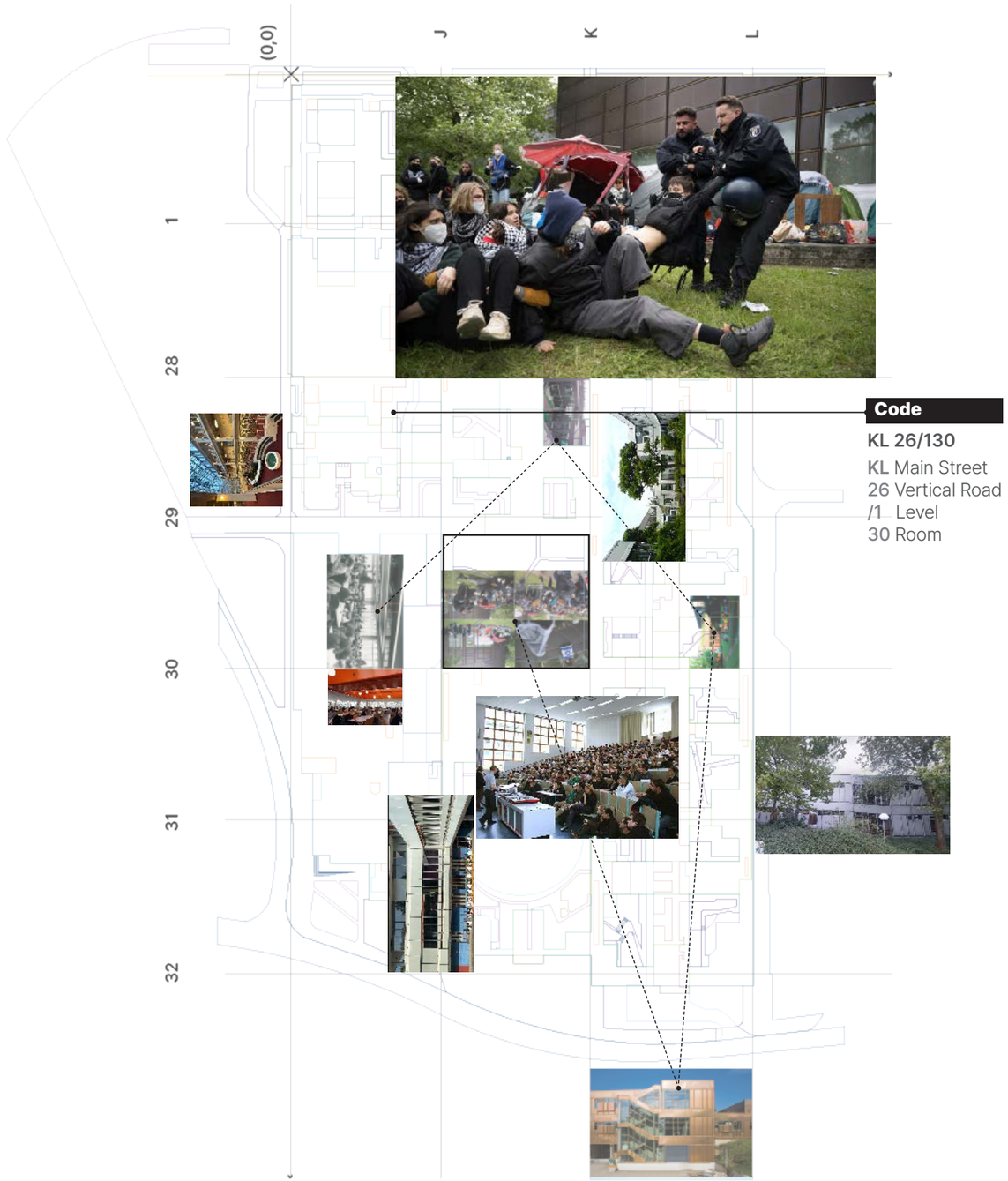
Its flattened, multi-directional view records architecture and collective activity within a single frame—a representational logic adapted here to map simultaneous movement across the Free University.











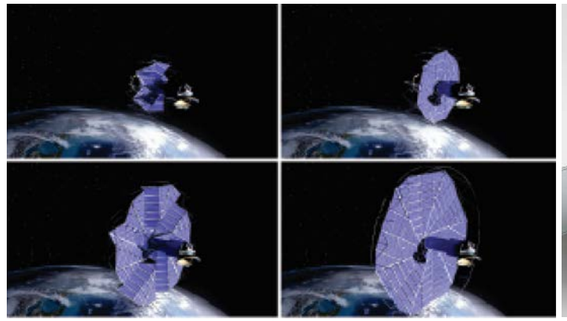
Code

KL 26/130

KL Main Street
26 Vertical Road
/1 Level
30 Room

Façade states and Courtyard occupation

The envelope combines a fixed structure with deployable panels that support four states of occupation. Closed panels maintain the existing enclosure. An individual action opens an alcove; a small group raises a shared platform; and coordinated action opens the courtyard wall. Each state links a specific action to a mechanism, structural support, and occupied area.



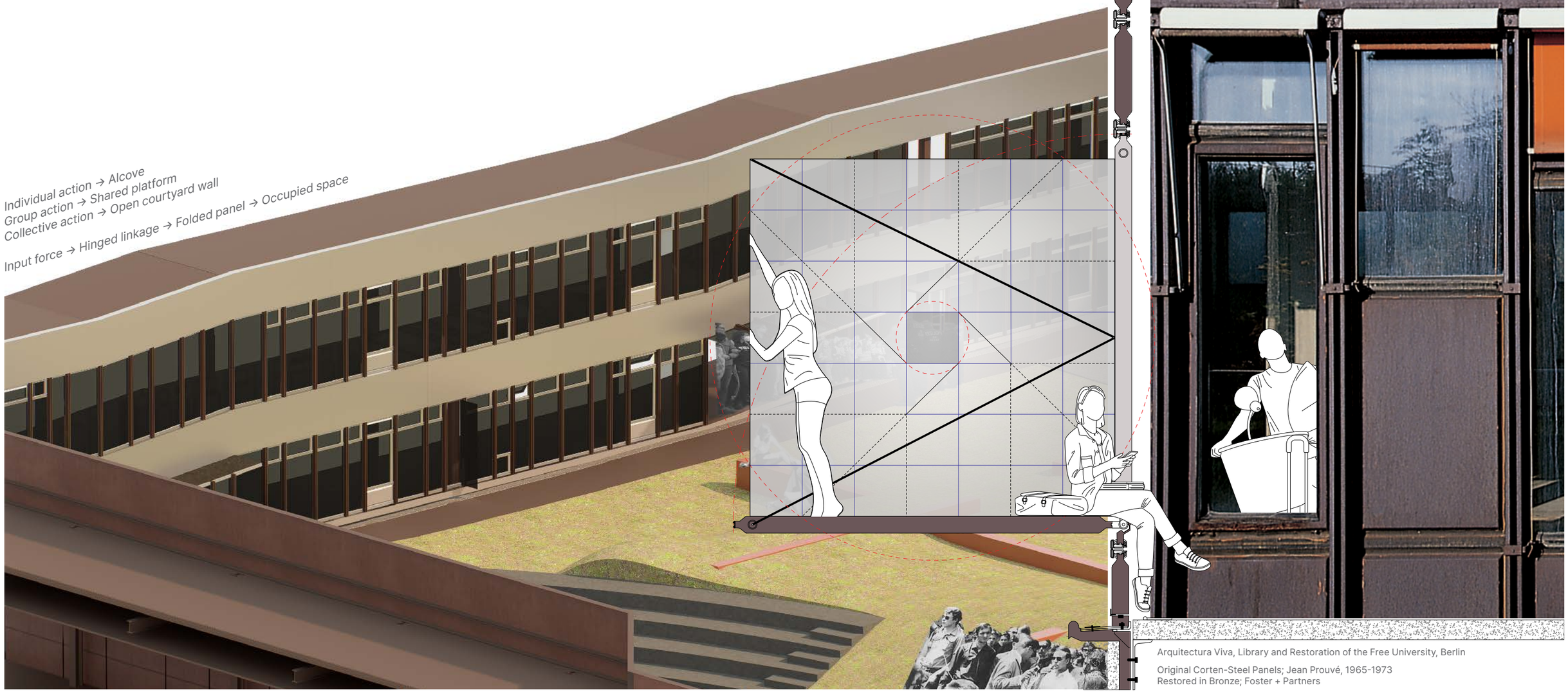
Yue, S. (2023), Journal of Physics: Conference Series, 2459(1), Fig. 8.

mock-up model

Smallest Force, Largest Spatial Change

Three collective actions identified in the protest image—pushing, lifting, and coordinated pressure—are translated into architectural forces. An origami-inspired deployable system amplifies limited movement through linked panels, hinges, and counterbalanced frames. Integrated with the existing façade, the mechanism allows different levels of participation to produce different spatial states.

An individual action opens an alcove for sitting or conversation. A small group lifts a shared platform between interior and courtyard. Coordinated action releases a larger wall section, extending the courtyard into a temporary civic space. The envelope therefore operates at three social scales rather than switching only between open and closed.



Arquitectura Viva, Library and Restoration of the Free University, Berlin

Original Corten-Steel Panels; Jean Prouvé, 1965-1973
Restored in Bronze; Foster + Partners

04

City as Domain

Domestic Thresholds as Collective Urban Infrastructure

Where does a house end?

Not at the wall. In Seochon, domestic life already extends into alleys, markets, rooftops, and mountain paths, but property boundaries keep these spaces discontinuous.

The project treats underused rooftops as inhabitable domains and links them through short bridges and semi-exterior rooms. These spaces are neither fully public nor fully private; they support activities that move between domestic and urban life—eating, working, resting, selling, meeting, and circulating.

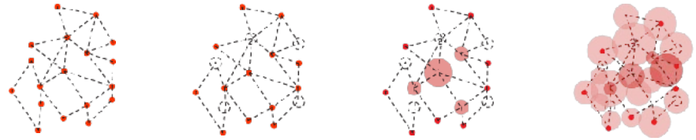
At the housing scale, the project reinterprets the toe-maru, the traditional threshold between room and yard. Function-defined Purpose spaces and function-neutral Rooms combine around shared thresholds, allowing household configurations to change while common semi-exterior zones remain.

Spring 2023

Site Seoul, South Korea
Type *Urban Design + Collective Housing*
Instructor HyunWhee Kim, *Kyonggi Univ SAK*
Individual Project

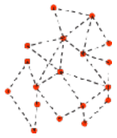
Program Rhino+Enscape | illustrator | Nanobanana | X-figura

Publicness Beyond Ownership



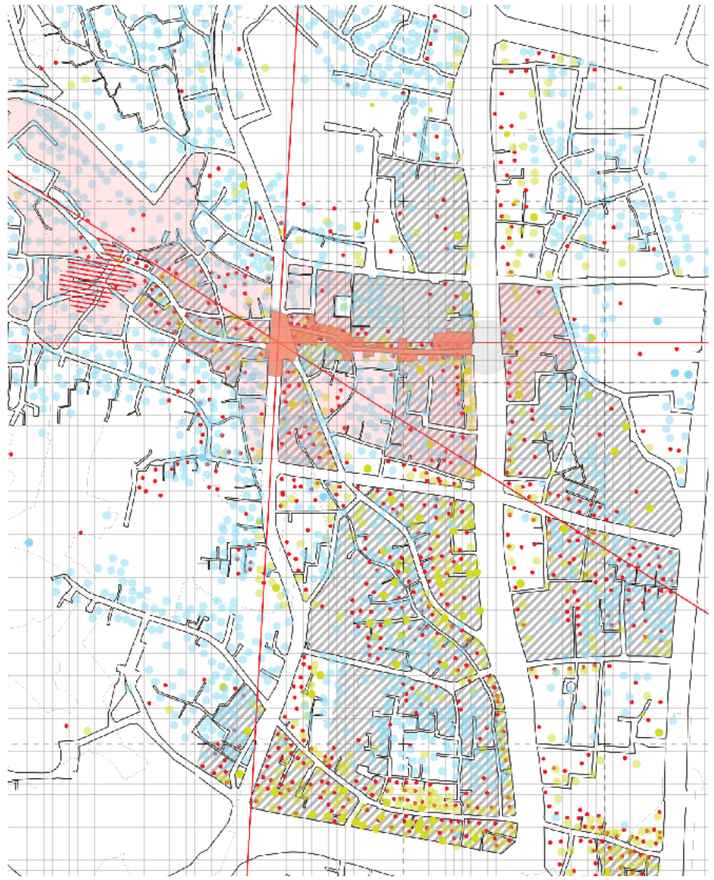
Step 1.Analyze Step 2.Empty Step 3.Fill Step 4.Overlap

Conventional urban diagrams reduce the city to destinations linked by routes; everything between them becomes passage rather than territory. This proposal defines publicness through use rather than ownership and works across three scales: a macro network connects neighborhood destinations; meso bridges and shared voids link blocks and programs; micro thresholds reorganize housing around flexible semi-exterior space.

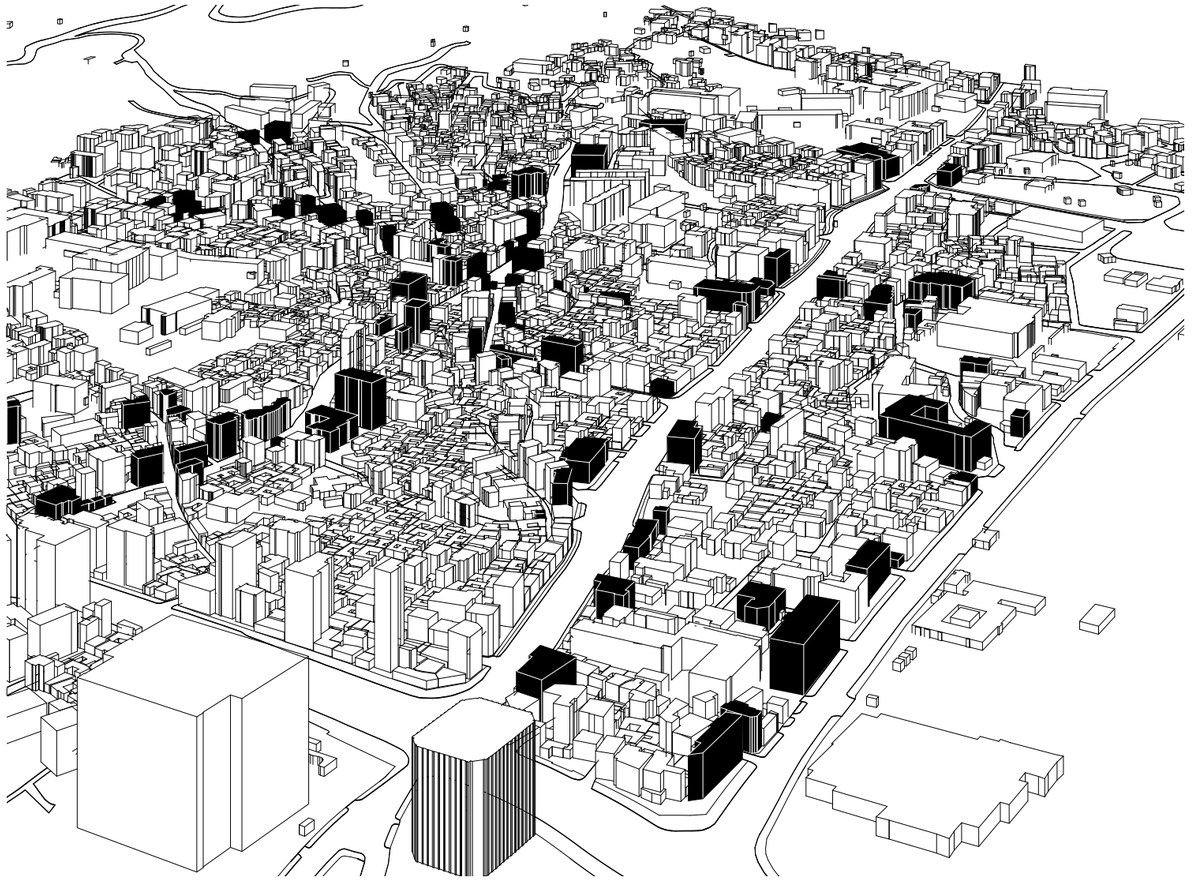


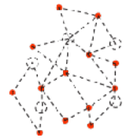
Step 1. Analyze

Contemporary cities are commonly understood as destinations connected by paths—places to move through rather than inhabit. By redefining publicness beyond ownership, the project reorganizes urban space as a continuous gradient of use.



TOURIST HOUSING COMMERCIAL
COMBINED ALL PROJECT HOUSING
KEY STREET SITE



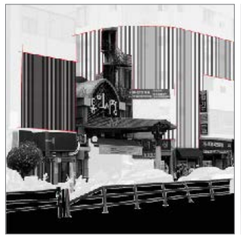


Step 2. Empty

The project extends beyond individual buildings by introducing semi-exterior voids and bridges across three urban layers. These intermediate spaces allow indoor and outdoor activities to overlap, enabling people to inhabit the city as citizens rather than only as consumers.

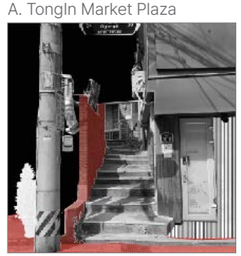
Available Vertical Intermediate Space
Available Horizontal Intermediate Space

A. TongIn Market Plaza



B: TongIn Market-st.Zahamun

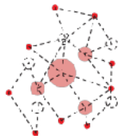
C : st.Zahamun-st.MulGil



D : Residential Link

E : Internal TongIn Market Link

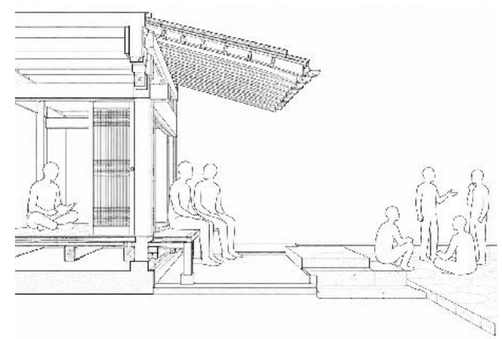
F : Residential District



Step 3. Fill

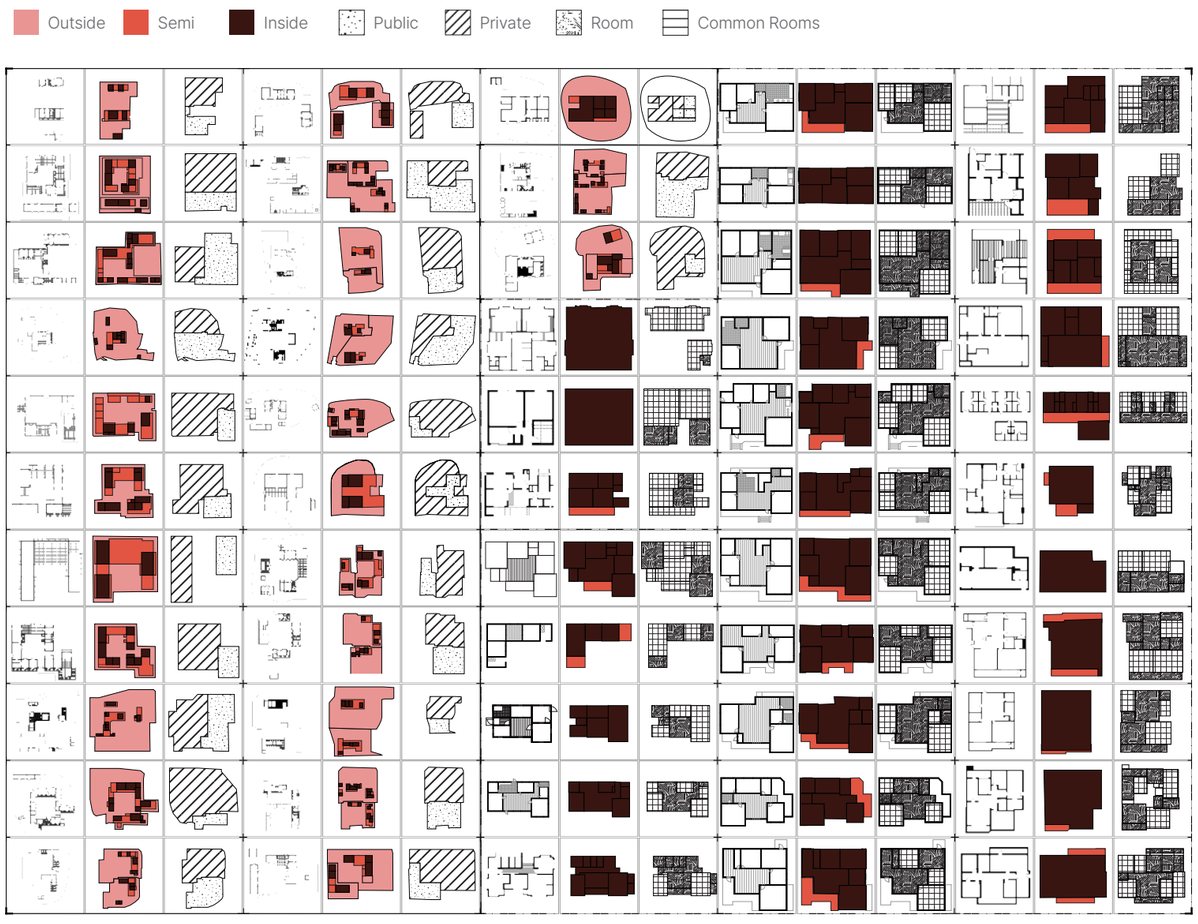
Insert shared rooms, thresholds, and short bridges.

The project translates the relational role of the toe-maru rather than reproducing its image. A shallow, roofed edge supports activity between private rooms, shared courtyards, and the city. Purpose spaces are defined by specific functions and open toward shared circulation; Rooms remain function-neutral and sit deeper within the dwelling. Repeated overlaps produce courtyards, terraces, and collective routes.



툇마루 [Toe-maru]

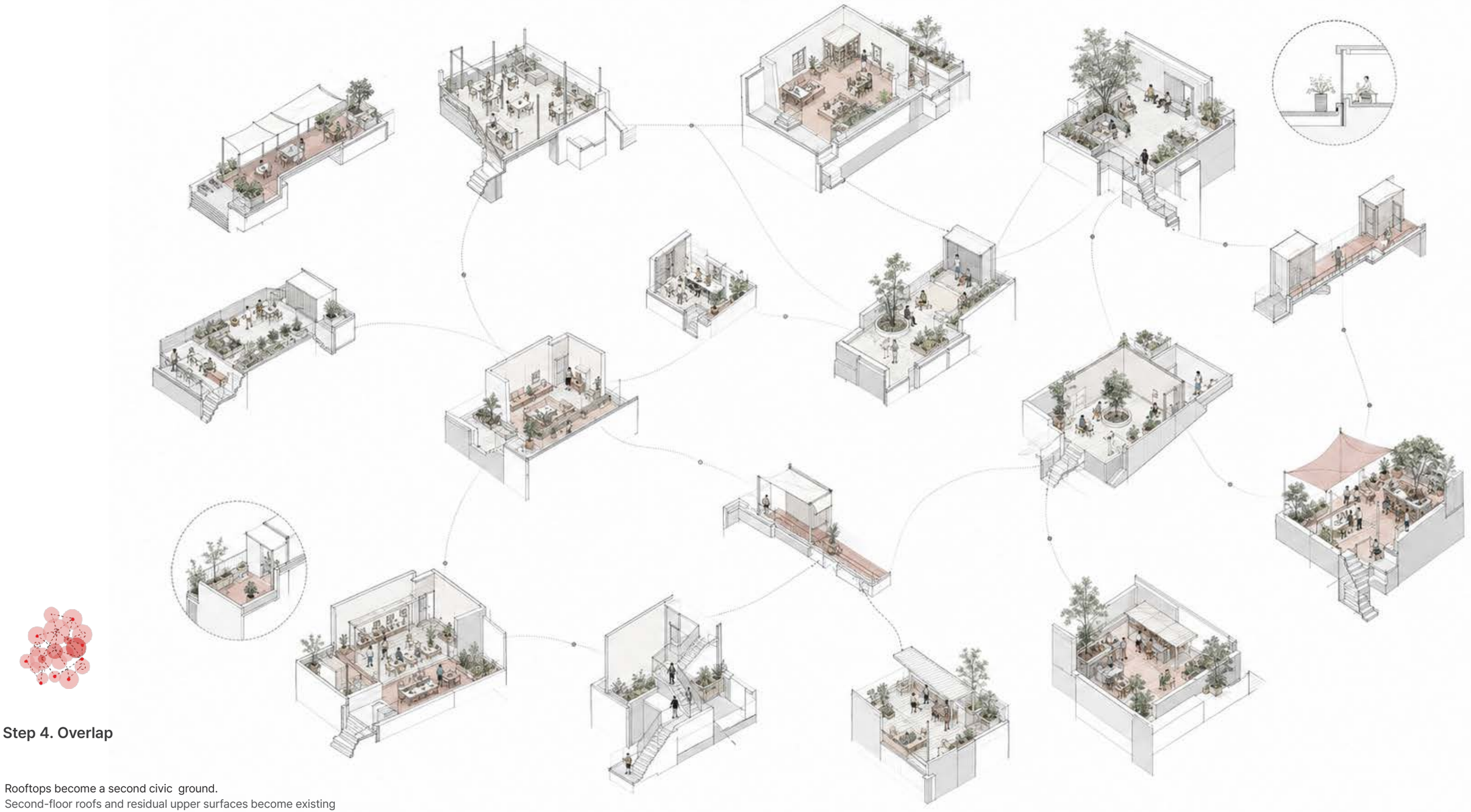
The project translates toe-maru spatial role: an inhabitable threshold supporting activity between private rooms and the city. Individual units aggregate around these thresholds to form shared courtyards.



Planar Method

Purpose spaces orient toward shared circulation, while Rooms remain deeper within each dwelling. Their aggregation produces courtyards, terraces, and layered paths without fixing a single household type. At the urban scale, the same sequence links housing, Tongin Market, and neighborhood streets through spaces that can be occupied rather than merely crossed.

0 4′ 8′ 16′
1/8″ = 1′-0″
N



Step 4. Overlap

Rooftops become a second civic ground.
Second-floor roofs and residual upper surfaces become existing territory for shared use. Short bridges and semi-exterior rooms connect housing, Tongin Market, neighborhood streets, and plazas into a distributed pedestrian network. By extending the same Public–Common–Private sequence from dwelling to city, the project creates shared layers across property boundaries without erasing them.

Thresholds, terraces, and bridges turn residual rooftop space into shared daily infrastructure