2019 2026 Yenhsing Cheng

PORTFOLIO

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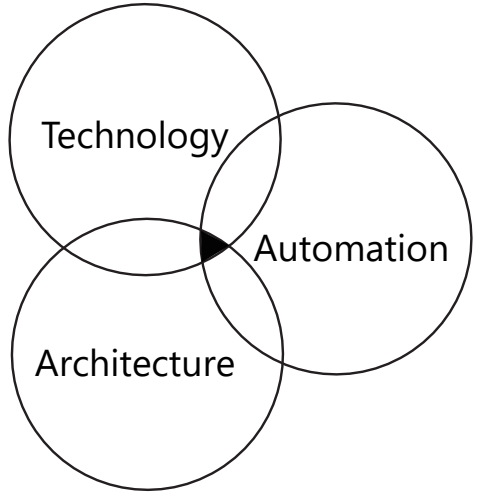


This architecture portfolio is based on my selected works from 2019 to 2026

ORIENTEERING

Sensory Reuse of a Former Military Outpost

Location
Matsu, Taiwan

Duration
02/2022-08/2022
NYCU

Advisor
Shu-Chang Kung,
Ling-Li Tseng

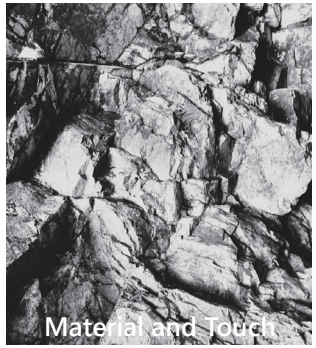
Team Project
5 members

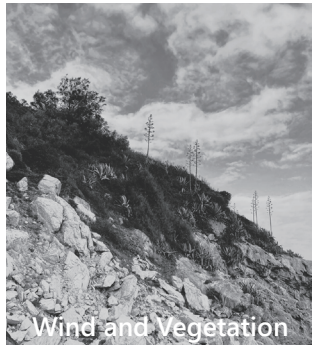
Role
Led programming and brand identity development, integrating spatial experience, landscape, visual identity, and structural and tectonic strategies.

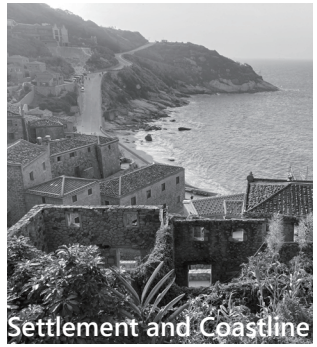
From a Defense Network to Five Sensory Routes

Xiju's military sites once formed a dispersed network of surveillance and defense. Rather than preserving these structures as isolated monuments, we reorganize them as five orienteering routes based on sight, sound, smell, taste, and touch.

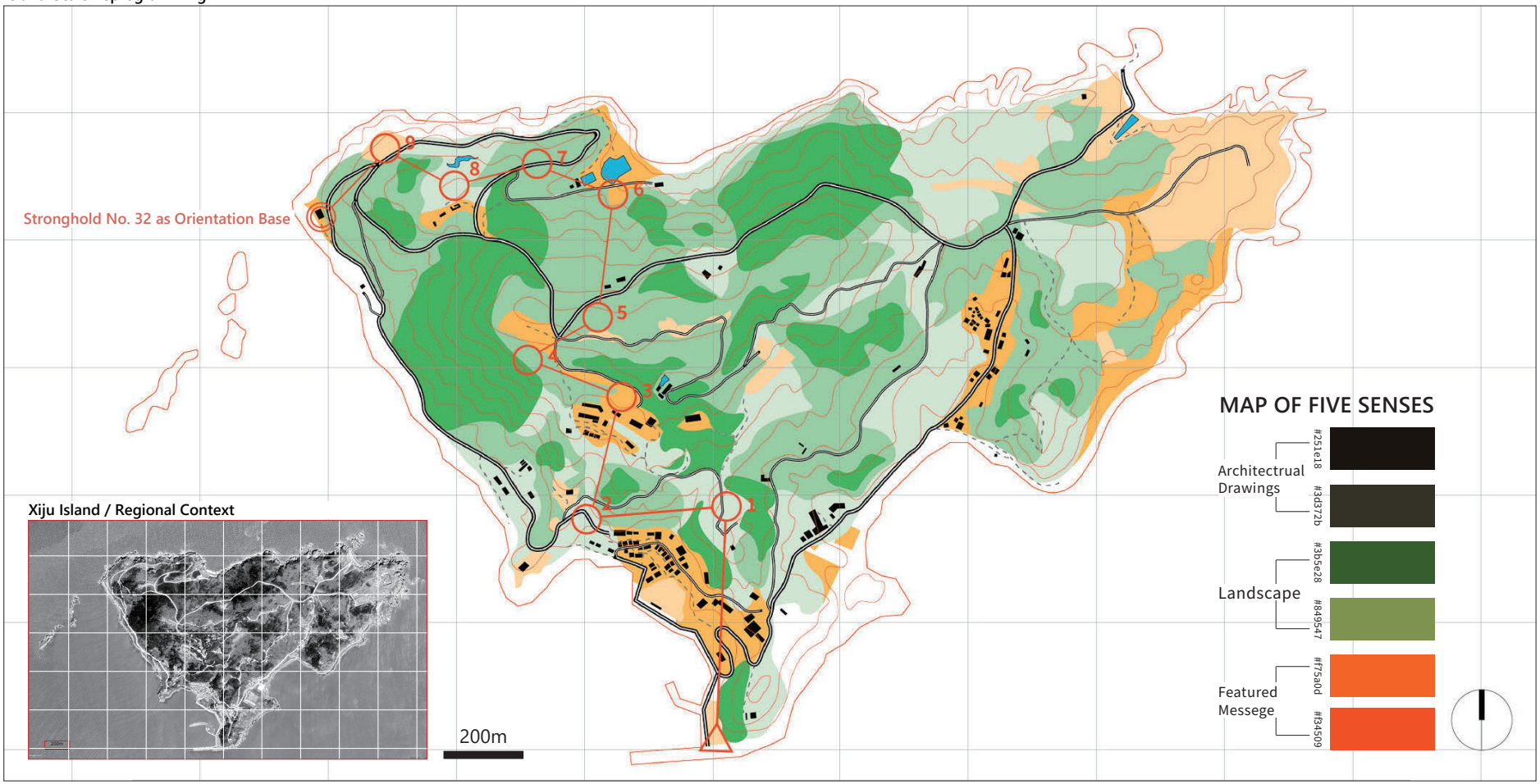
Stronghold No. 32 becomes the starting point and orientation base of this network. Movement between village, ridgeline, coastline, and military remains transforms the island from a collection of destinations into a continuous sensory journey to rediscover the senses they often overlook.







Island-Scale Reprogramming

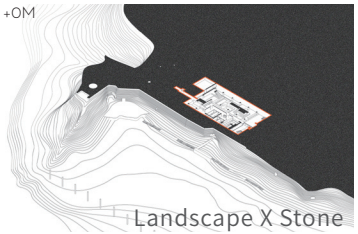


Reading Stronghold No. 32 as Three Interlocking Terrains

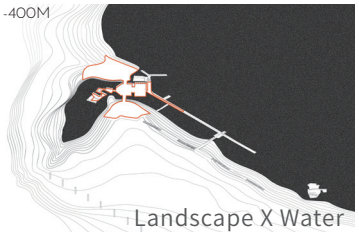
Stronghold No. 32 is read not as a single building, but as a vertical system embedded within the coastal terrain. Surface bunkers occupy exposed ridges, semi-subterranean living quarters are concealed within the slope, and underground tunnels extend toward the shoreline.

The inherited vertical section is translated into three landscape operations: planting extends the surface, stone stabilizes the embedded layer, and water activates the underground tunnel system.

New planting extends the profile of the hillside, transforming military camouflage into a process of ecological succession.



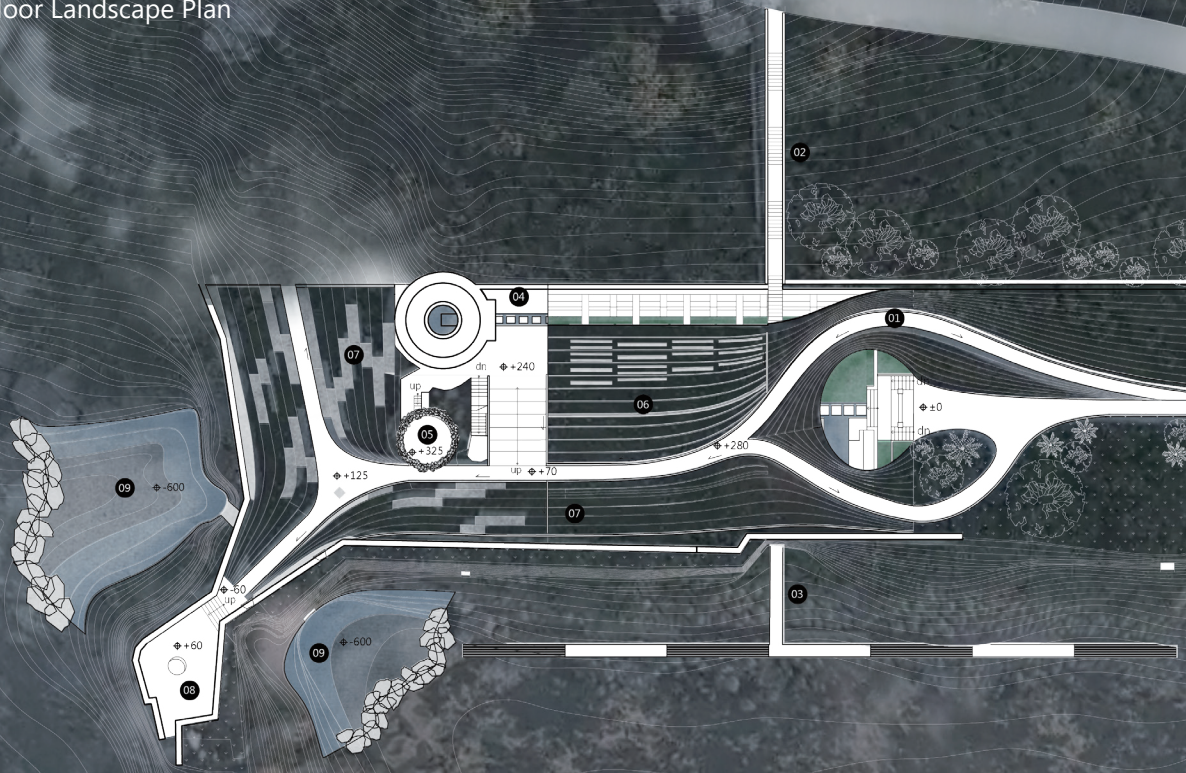
Stacked stone defines terraces, thresholds, and retaining edges while maintaining the material character of the island.



Existing drainage routes are redirected through the underground system to manage moisture and create new bathing spaces.

A Continuous Landscape from Arrival to Shore

Ground Floor Landscape Plan



The ground-level landscape is organized as a sequence rather than a collection of isolated rooms. From the arrival trail, visitors move through planted terraces and reused bunkers toward viewing platforms and coastal bathing spaces.

Each zone is defined by a change in slope, material, visibility, or proximity to water, allowing everyday circulation and visitor exploration to overlap without producing a single prescribed route.

Arrival Zone

01 Landscape Trail

Terrace and Bunker

03 Stepped Platform
04 Large Bunker
05 Small Bunker
06 Viewing Platform
07 Rest Area

Coastal Zone

08 Viewing Platform
09 Bathing Area

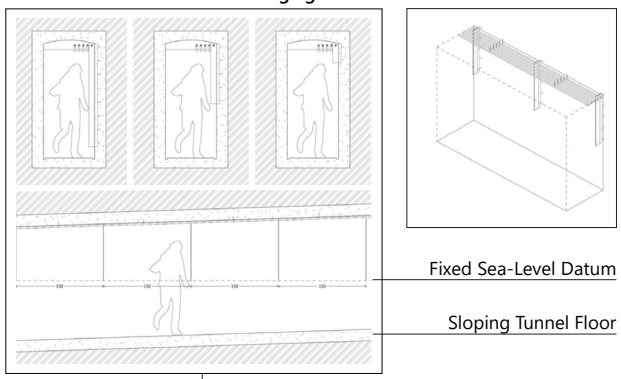
Return Route

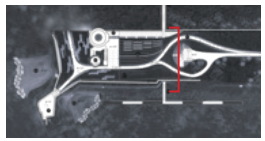
02 Driveway

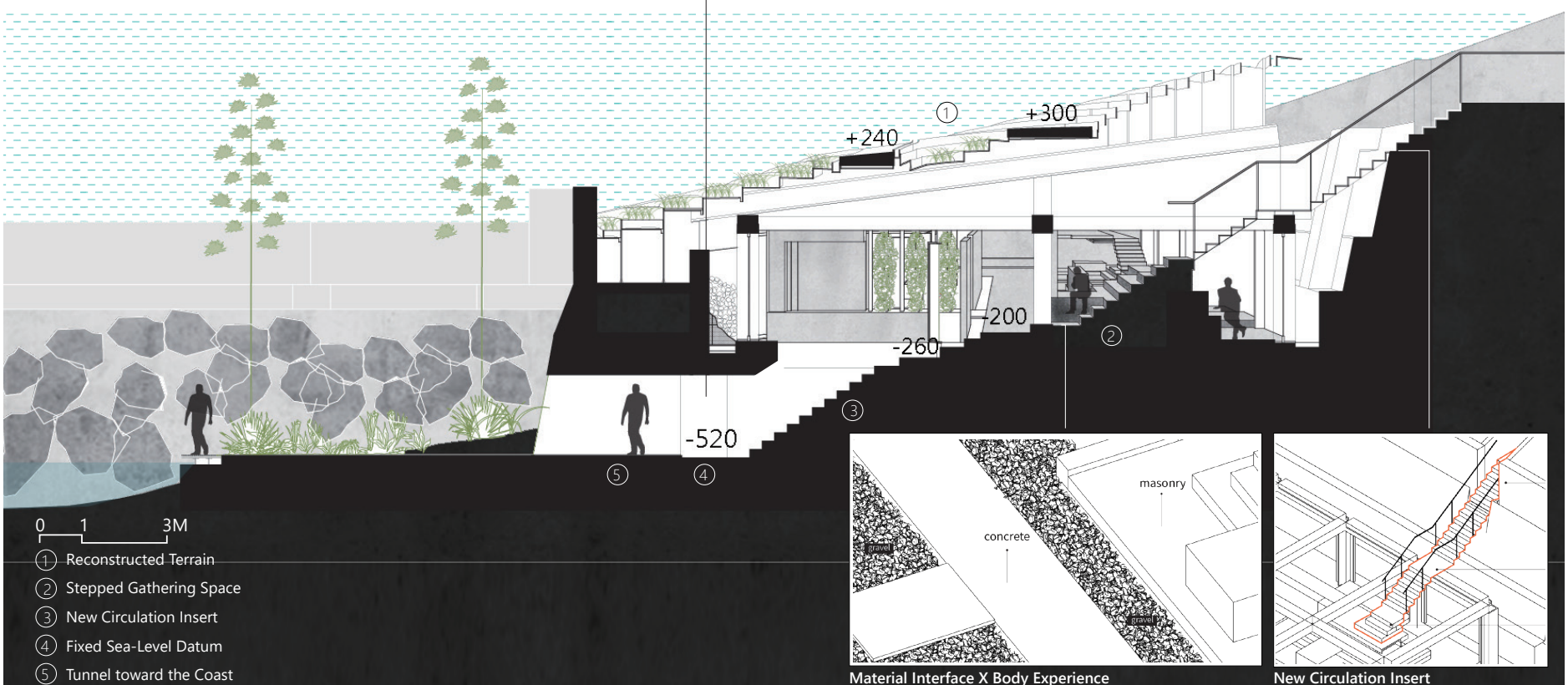
Descending through the Former Military Terrain

The project uses the site's changing elevation to transform movement into a bodily experience. A planted roof extends the terrain across the former bunker, while a stepped interior connects the arrival level with the tunnel below. Along the passage, metal frames remain aligned with a fixed sea-level datum as the floor rises and falls. The changing distance between the body, ground, and datum makes ascent and descent perceptible, turning the former military structure into a continuous public journey.

Embodied Elevation Cue: Walking against a Fixed Horizon







Material Interface X Body Experience

New Circulation Insert

Concealed Terrain

This conceptual diagram is a collaborative work by the architectural team of this project.

1 House for All

Transitional Housing as Urban Infrastructure

Award
1st Prize in Architecture
Solar Decathlon Europe 21/22

Location
Taipei City,
Taiwan

Duration
08/2021-04/2022
NYCU

Team Project
30 members

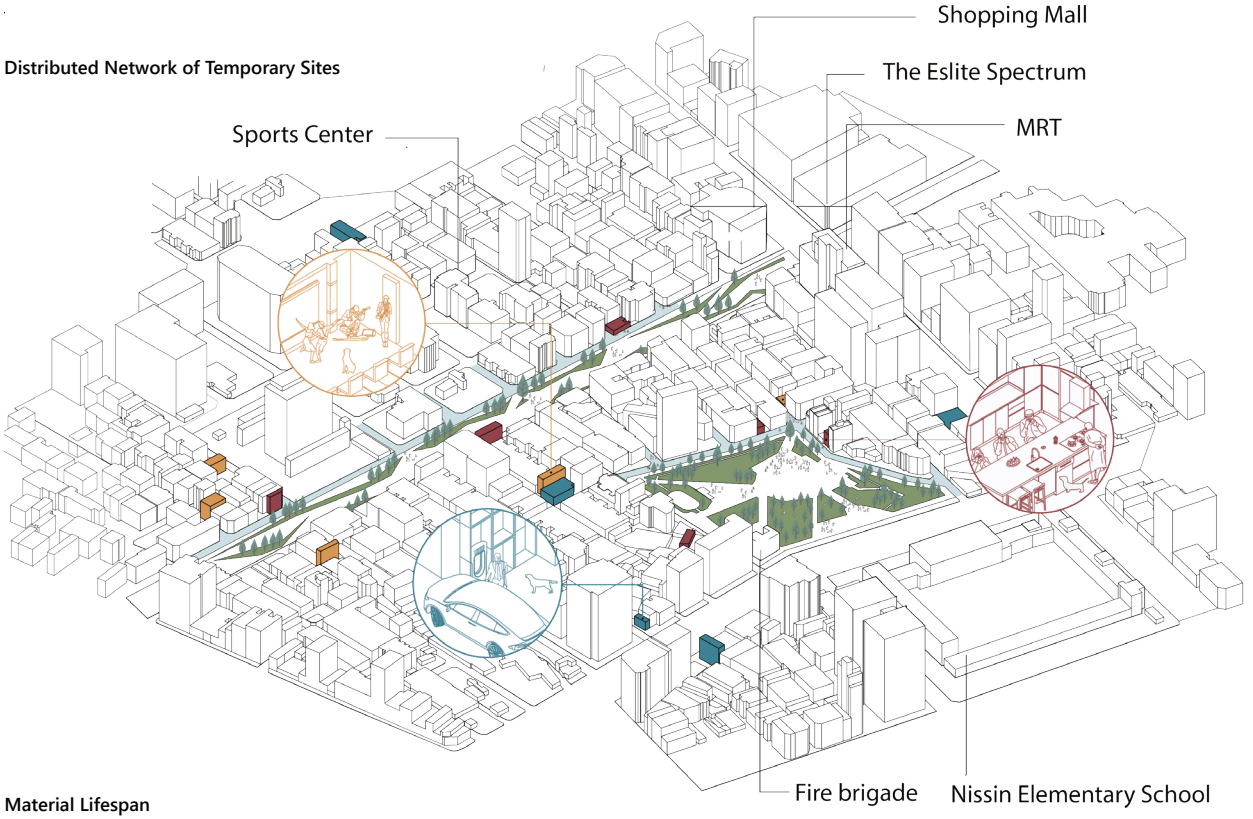
Role
Led BIM coordination and developed the modular facade, party-wall systems, and woodwork for the full-scale ADU prototype.

A Distributed Housing Network Built to Move

Taipei's urban-renewal process often takes more than a decade, leaving cleared properties vacant and residents in prolonged uncertainty. House for All treats these temporary gaps as sites for stable mid-way housing rather than as periods of inactivity.

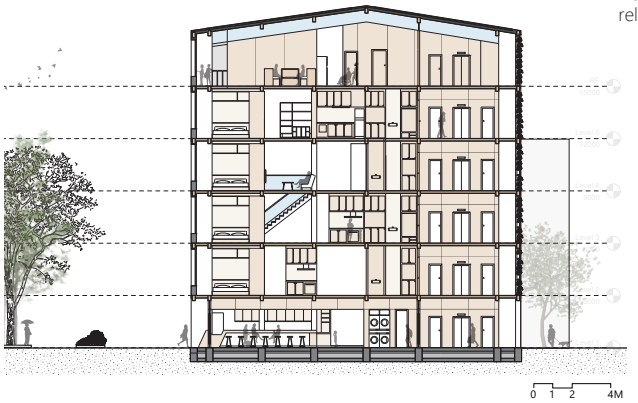
Modular units provide stable accommodation while contributing shared energy, mobility, and community services to the surrounding neighborhood. As redevelopment advances, the buildings can be disassembled, relocated, and adapted to another site, allowing housing to support communities through change rather than waiting for stability.

A Distributed Network of Temporary Sites



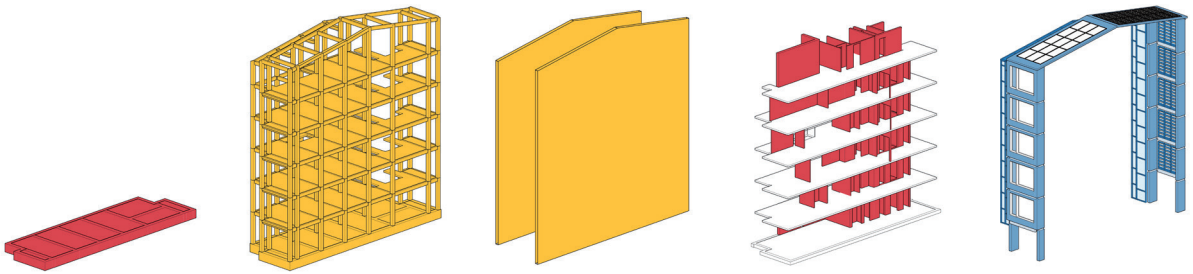
Community Living in Section

The section connects shared neighborhood spaces at ground level, homes above, and a rooftop day care center, bringing social interaction, everyday living, and care together across generations.



Material Lifespan

1 House for All uses a reversible kit of timber, CLT, and GLT components designed for rapid assembly, disassembly, and reuse. Long-life foundations and structural frames are separated from shorter-life partitions, insulated walls, and façades, allowing each layer to be repaired, replaced, or relocated independently.



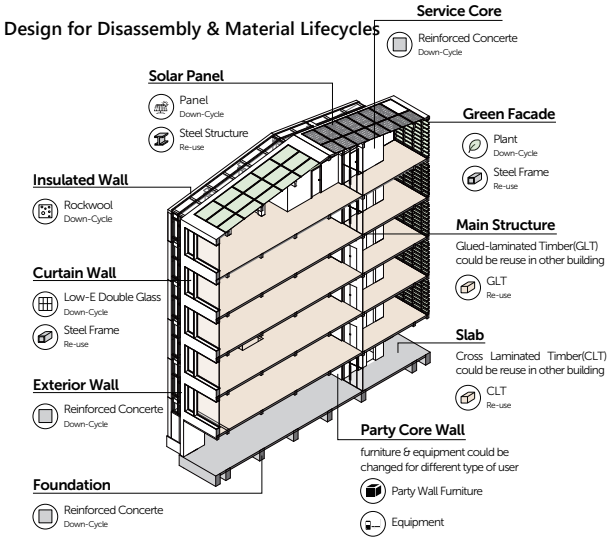
Foundation	Structure	Insulated Wall	Partition	Facade
100 years	50-100 years	10-30 years	10-30 years	30-50 years

Reducing Demand before Producing Energy

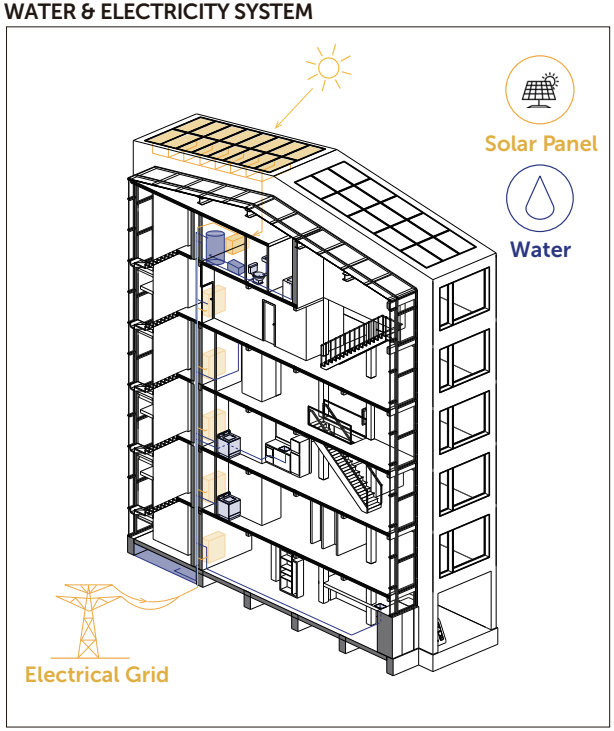
The environmental strategy begins by reducing loads through an airtight, insulated envelope, controlled glazing, and heat-recovery ventilation. Roof-mounted solar thermal and photovoltaic systems then supply hot water and electricity, while an energy-management system shifts battery charging away from peak demand. The grid remains as a backup, allowing the prototype to operate as a resilient neighborhood-scale energy system.

Reduce loads → Recover heat → Generate and store energy

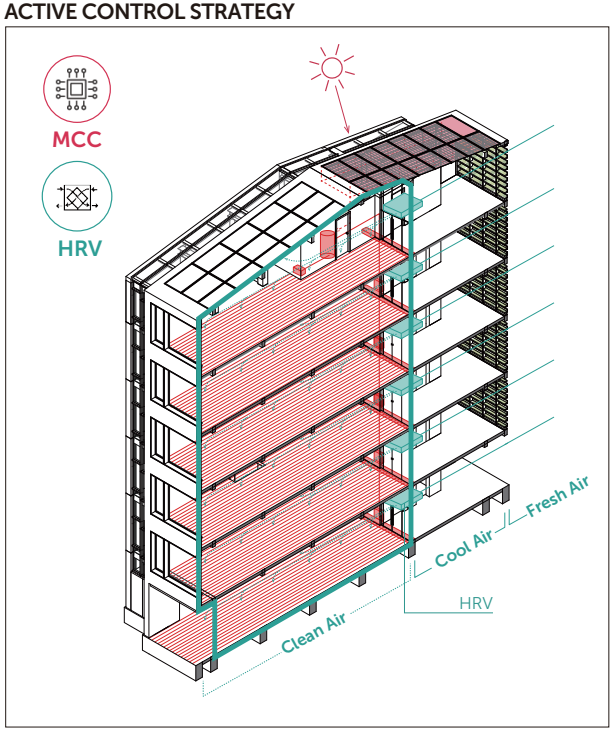
Design for Disassembly & Material Lifecycles



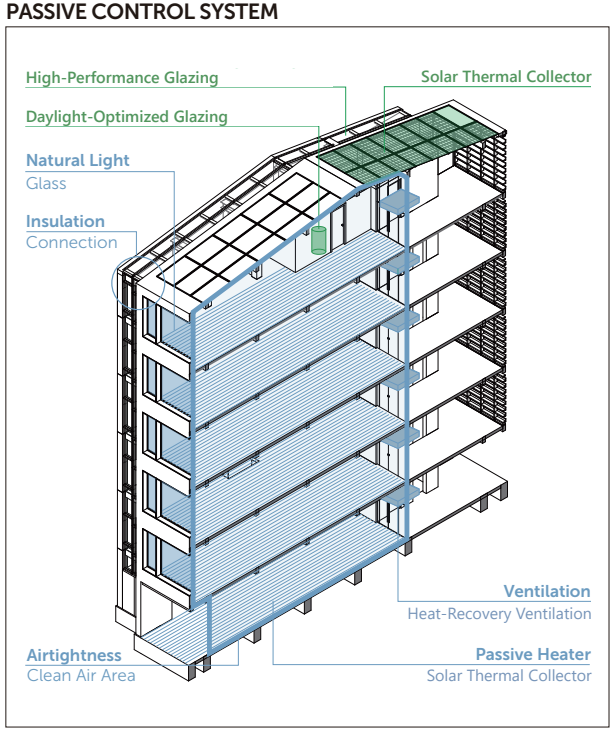
WATER & ELECTRICITY SYSTEM



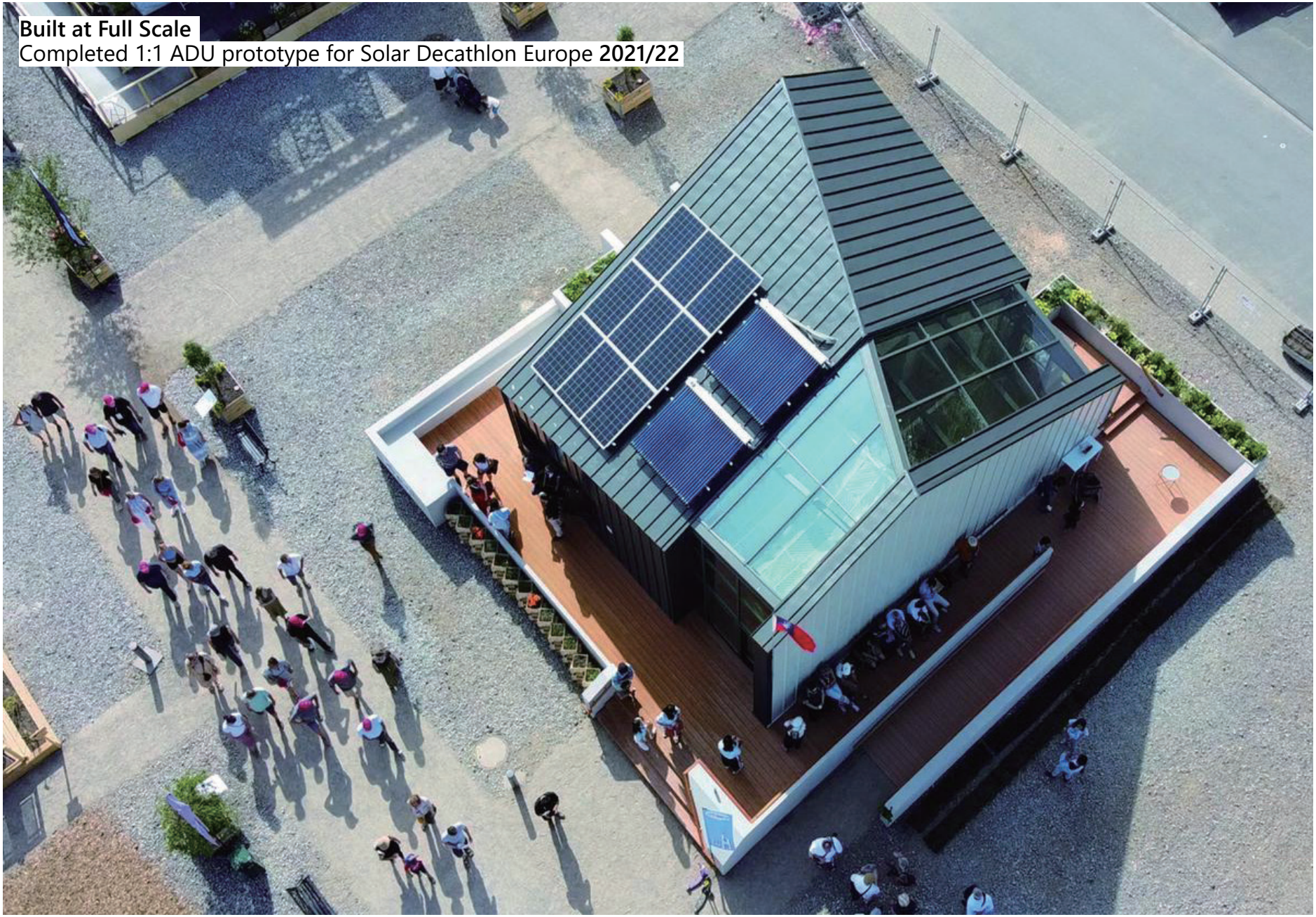
ACTIVE CONTROL STRATEGY



PASSIVE CONTROL SYSTEM



Built at Full Scale
Completed 1:1 ADU prototype for Solar Decathlon Europe **2021/22**



Photograph and intellectual property rights belong to the original architecture firm.

Banqiao Station Entrance

Professional Work, Square-Arch Architect

Location
New Taipei City, Taiwan

Duration
10/2024-08/2025

Architect
Shi-Shuin Chen

Team Project
3 members

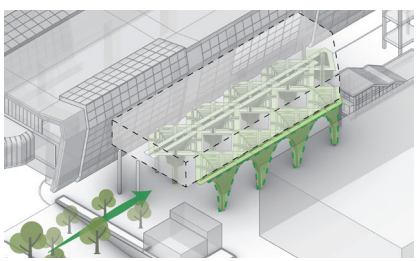
Developed schematic design and construction detailing, contributing to code compliance, project coordination with an international outsourced team, and communication with consultants.

Extending the Green Belt into the Station

The entrance is conceived as a continuation of the adjacent landscape rather than an isolated transit object. Branching canopy columns reinterpret tree structures, while the elevated station volume creates a clear, double-height public ground beneath. Pedestrian routes remain visible across the site, and the warm-colored circulation core acts as an orientation device connecting the sidewalk, concourse, and upper station level.

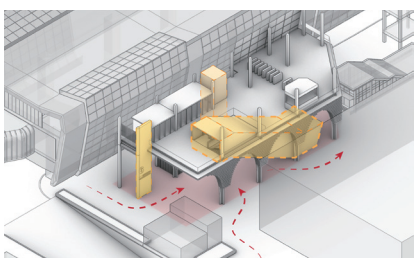
Landscape Extension

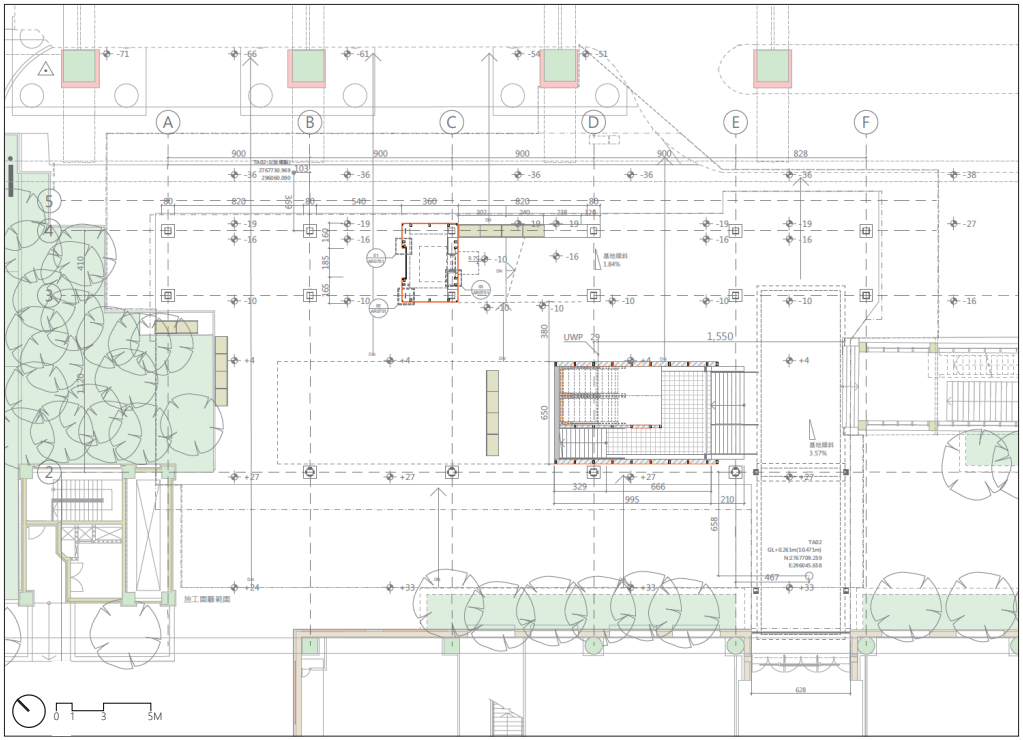
The adjacent green belt continues into a branching structural canopy, linking landscape, circulation, and the station frontage.



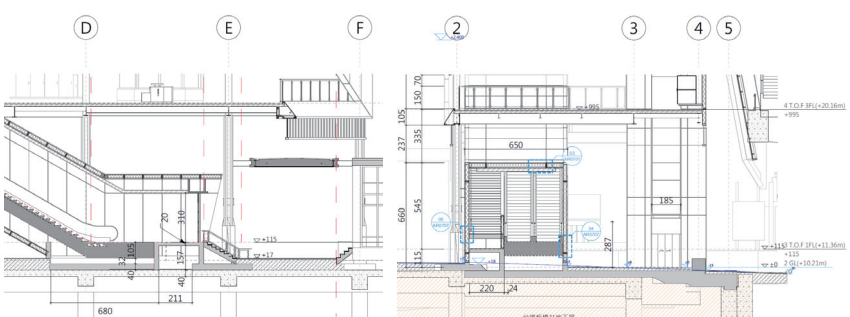
Open and Elevated Ground

Lifting the enclosed station volume preserves cross-site movement and creates a visible, weather-protected public threshold beneath.

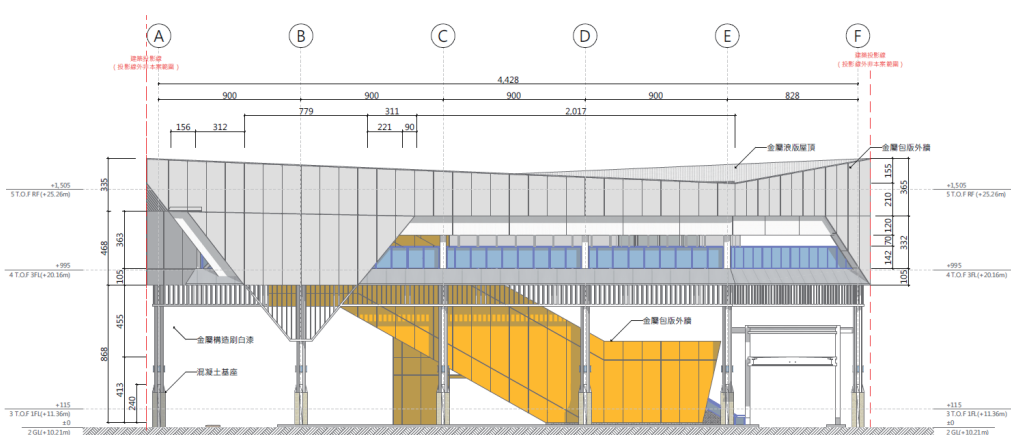




Ground Floor Plan



Revit BIM Escalator Section

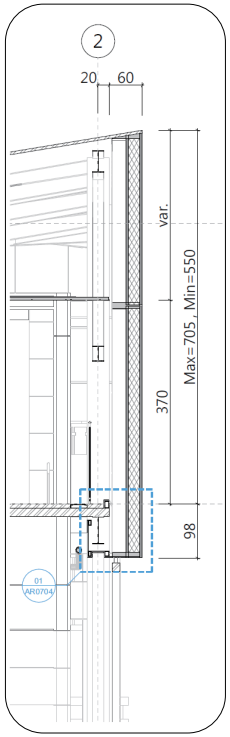


Entrance Elevation

Layered Envelope for Rain and Wind

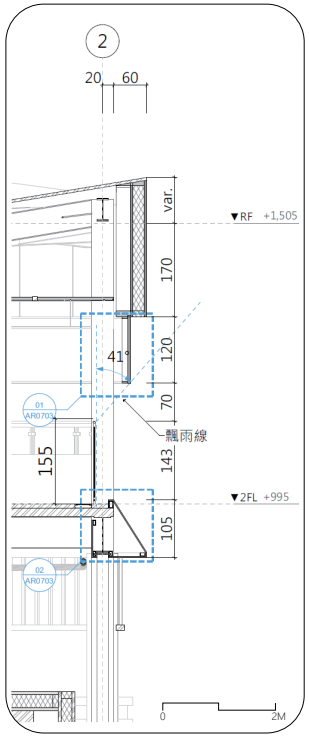
The entrance envelope is developed as a layered environmental system. A two-metre cantilever projects beyond the glazed edge to reduce exposure to wind-driven rain, while vertical metal fins and horizontal louvers extend the weather barrier without enclosing the public ground below. These repeated members provide shade, drainage, and protection while translating the branching landscape motif into a buildable architectural system.

Extended Weather Canopy



Maximum Louver Extension

A two-metre cantilever extends the protective edge beyond the glazing, reducing direct exposure to wind-driven rain.



Rain-Screen Louvers

Layered vertical fins and horizontal louvers increase weather coverage while maintaining daylight, airflow, and visual permeability.

6
捷運板橋站
MRT BANQIAO STATION

THRESHLD

AI-Aided Spatial and Product Design

Location
Los Angeles, California

Duration
02/2026-04/2026

Advisor
M. Casey Rehm, Garrett Santo

Software & Tool
Blender MCP, Rhino MCP, Grasshopper, Python, Houdini, ComfyUI (Flux 2 & Hunyuan3D), Hydro Dip

Developed the workflow from site capture and point-cloud processing to AI-generated massing, architectural rationalization, product prototyping, visualization, and fabrication studies.

Inflatable Cervical Posture-Feedback Collar

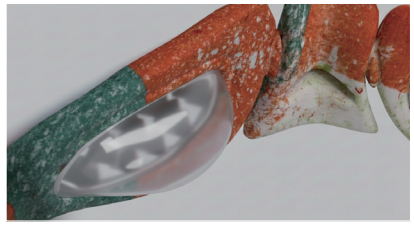
This wearable collar responds when neck flexion exceeds a predefined range-of-motion threshold. Rather than issuing a single alert, it provides three escalating levels of physical feedback. Soft internal fingers first create a tactile reminder; if the posture is maintained, internal chambers inflate to reduce movement; at full inflation, the collar stiffens and guides the neck back toward a neutral position. The system transforms posture correction from passive notification into immediate bodily feedback.

(Input: neck flexion beyond the ROM threshold; Output: escalating tactile and pneumatic resistance)

Three-Stage Escalating Feedback: The longer the incorrect posture is maintained, the stronger the physical feedback becomes.

1 TACTILE CUE
When neck flexion first exceeds the range-of-motion threshold, soft internal fingers contact the neck to provide a subtle physical reminder.

2 PROGRESSIVE INFLATION
If the incorrect posture is maintained, the internal air chambers gradually inflate, reducing the available range of movement.



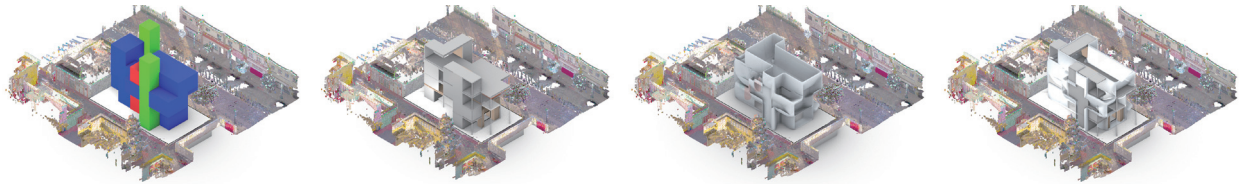
3 STABILIZING CONSTRAINT
At full inflation, the collar becomes structurally rigid, limiting further flexion and guiding the neck back toward a neutral position.

Wearable Fit Test

Site Capture, AI Generation, and Architectural Rationalization

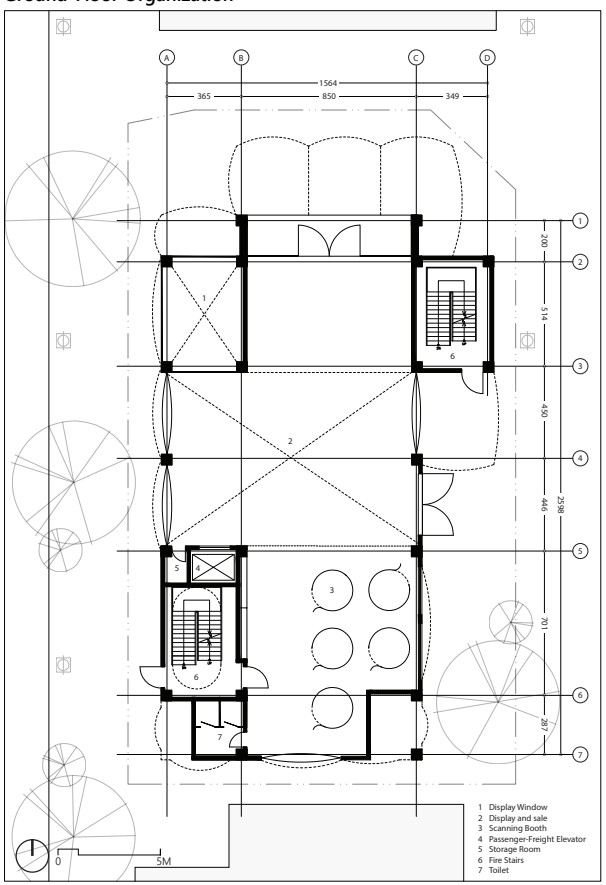
Building on the posture-to-pressure feedback mechanism developed through the wearable collar, the flagship store scales pneumatic response from the body to the building envelope. The design begins with a 3D scan of the existing site; the resulting point cloud is cleaned, registered, and processed into a spatial reference model that preserves the surrounding building fabric, setbacks, and street conditions. Within this measured context, customer posture and movement are conceived as directional inputs for a field of ETFE cushions. AI-assisted studies explore the operations of stacking, inflation, rotation, and overlap, while selected forms are rationalized through a regular timber frame. Changes in cushion pressure alter the façade's depth, translucency, and silhouette, making interior activity perceptible from the street while maintaining an open ground-floor threshold.

AI-Aided Architectural Development



Program Blocks | Structural Generation | Volume Wrapping | Structural Rationalization

Ground-Floor Organization



Earthen

Ceramic Facade System for Post-Wildfire Recovery

Location
Los Angeles, California

Duration
09/2025-12/2025

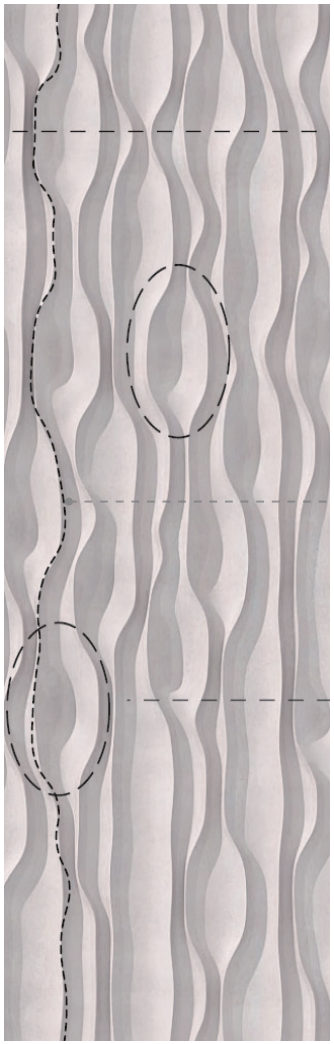
Advisor
Herwig Baumgartner

Team Project
7 members

Led structural development of the envelope system, including robotic ceramic printing, glaze studies, assembly detailing, rammed-earth testing, and fabrication of the half-scale prototype.

Wall that Collects, Holds, and Releases Water

Developed in response to post-wildfire displacement in Southern California, Earthen proposes a transitional ADU system that combines rammed earth with robotically printed ceramic components. Rather than functioning as a static barrier, the envelope operates as a living water-distribution system: printed ridges capture rainfall, integrated channels direct its movement, planting pockets retain moisture, and concealed irrigation lines return excess water to the ground.



Collect
Organic ridges capture

Channel
Grooves direct water

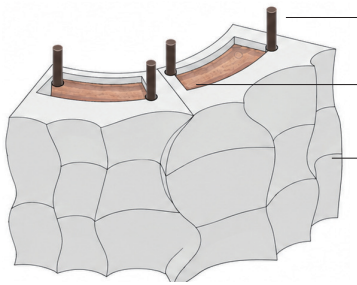
Concealed Irrigation Pipe
Allows excess water to seep into the ground

Retain
Pockets store moisture and support planting

Release
Excess water returns to the ground

The ceramic units establish the geometry of the wall and remain in place as permanent formwork for compacted earth. Steel reinforcement and irrigation lines are integrated within the assembly, bringing environmental performance, fabrication, and structural logic into a single composite system. Specialized ceramic units wrap around windows and planting openings, maintaining the continuity of both the wall structure and its hydrological network.

Hybrid Ceramic + Rammed-Earth Assembly

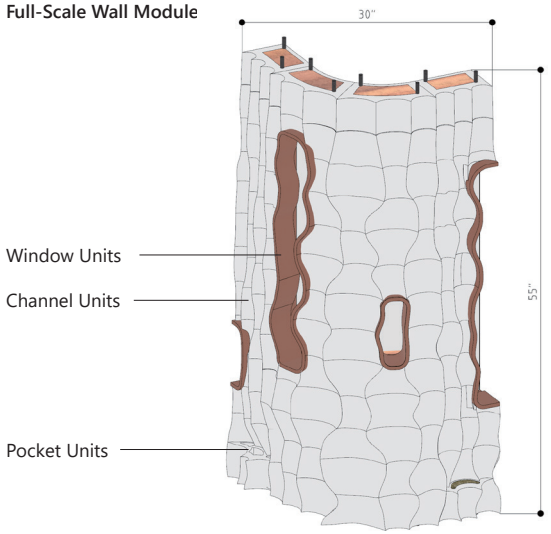


Rebars
tie and anchor

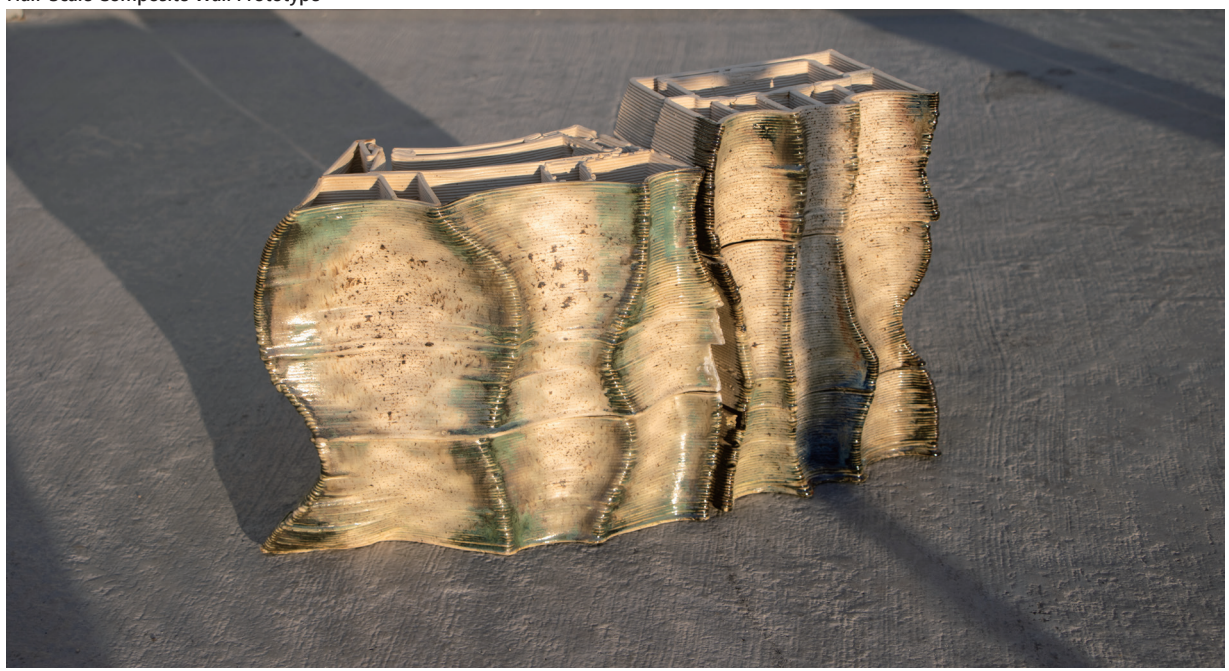
Rammed Earth
mass and compression

Ceramic Units
define and contain

Full-Scale Wall Module

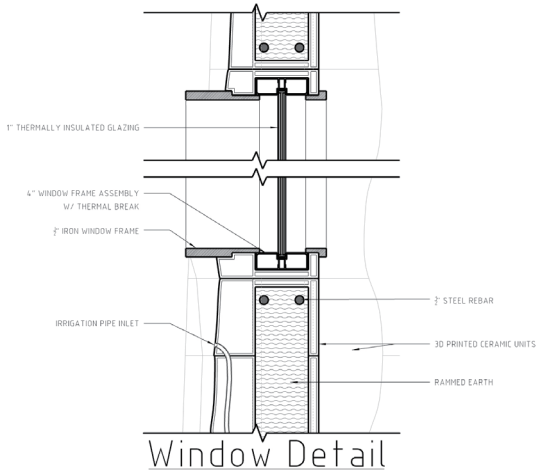


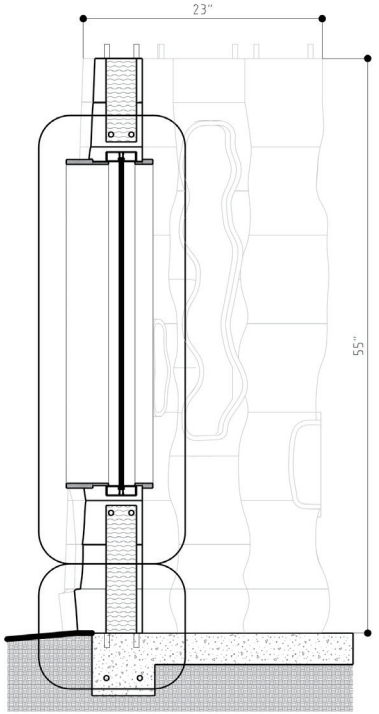
Half-Scale Composite Wall Prototype



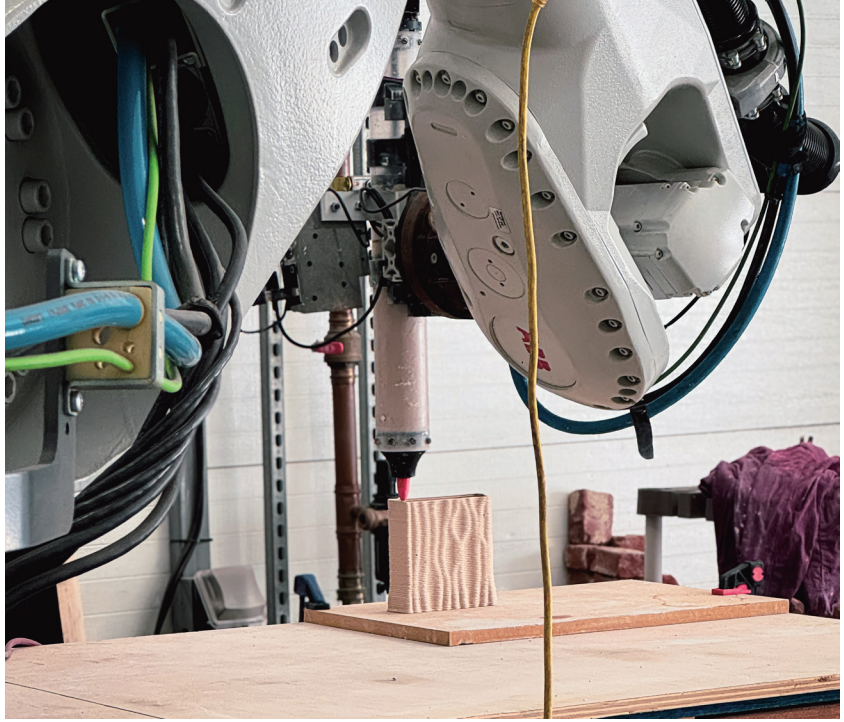
Fabrication, Compaction, and Assembly

Each ceramic unit is robotically printed, glazed, and fired before being stacked into vertical courses. Reinforcing bars align the modules and tie the ceramic shell to the foundation and window frames. Rammed earth is compacted within the printed formwork in successive lifts, producing a composite assembly that accommodates openings, irrigation lines, and localized planting pockets.





Robotic Ceramic Printing



Glazing and Firing

Stacking and Compaction