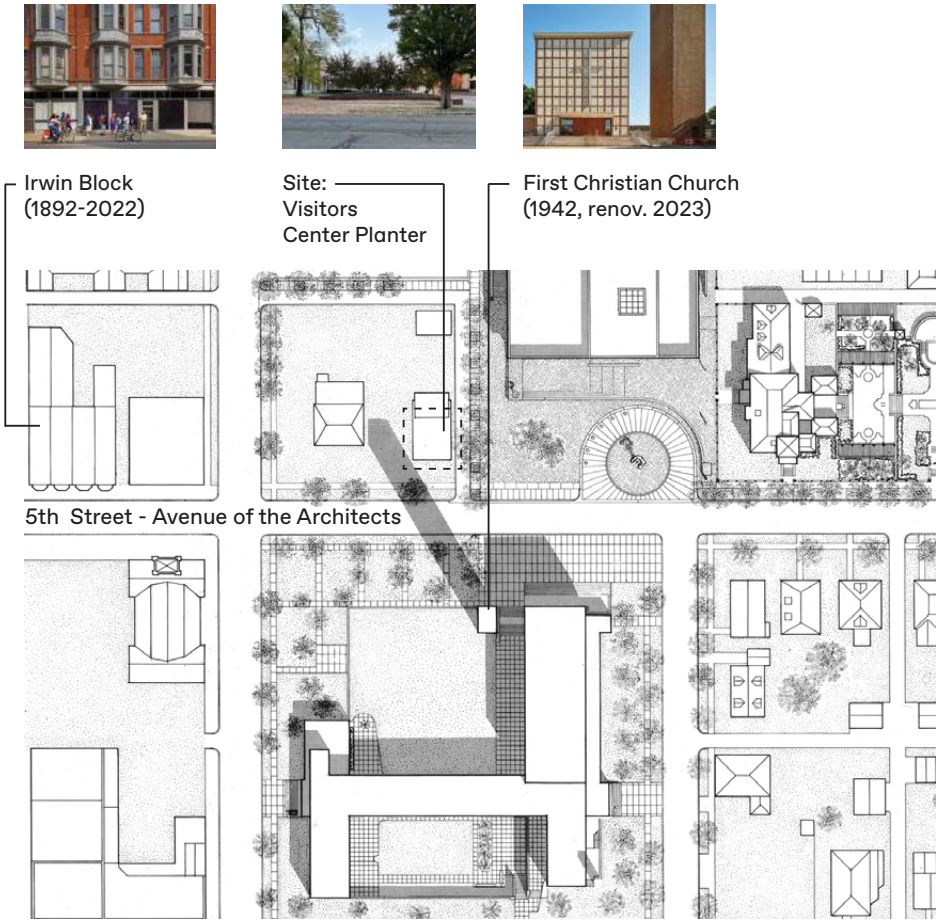
Sylvan Scrapple

ACSA FACULTY DESIGN AWARD SUBMISSION
COMPLETED AUGUST 2023
EXHIBITED AT EXHIBIT COLUMBUS 2023: PUBLIC BY DESIGN
COLUMBUS VISITORS CENTER
506 5TH ST, COLUMBUS, INDIANA, USA

Columbus, Indiana, has a unique architectural legacy and collection of over 80 significant works of architecture. Despite this context, Columbus faces challenges activating its downtown post-pandemic, adapting the grand scale of mid-century urban spaces to fit contemporary needs, and building sustainably – issues shared by many cities.

Developed for the 4th cycle of the biennial exhibition Exhibit Columbus, *Sylvan Scrapple* responds to specific site conditions with transferable tactics: urban activation, mass timber construction, reuse, and public engagement.

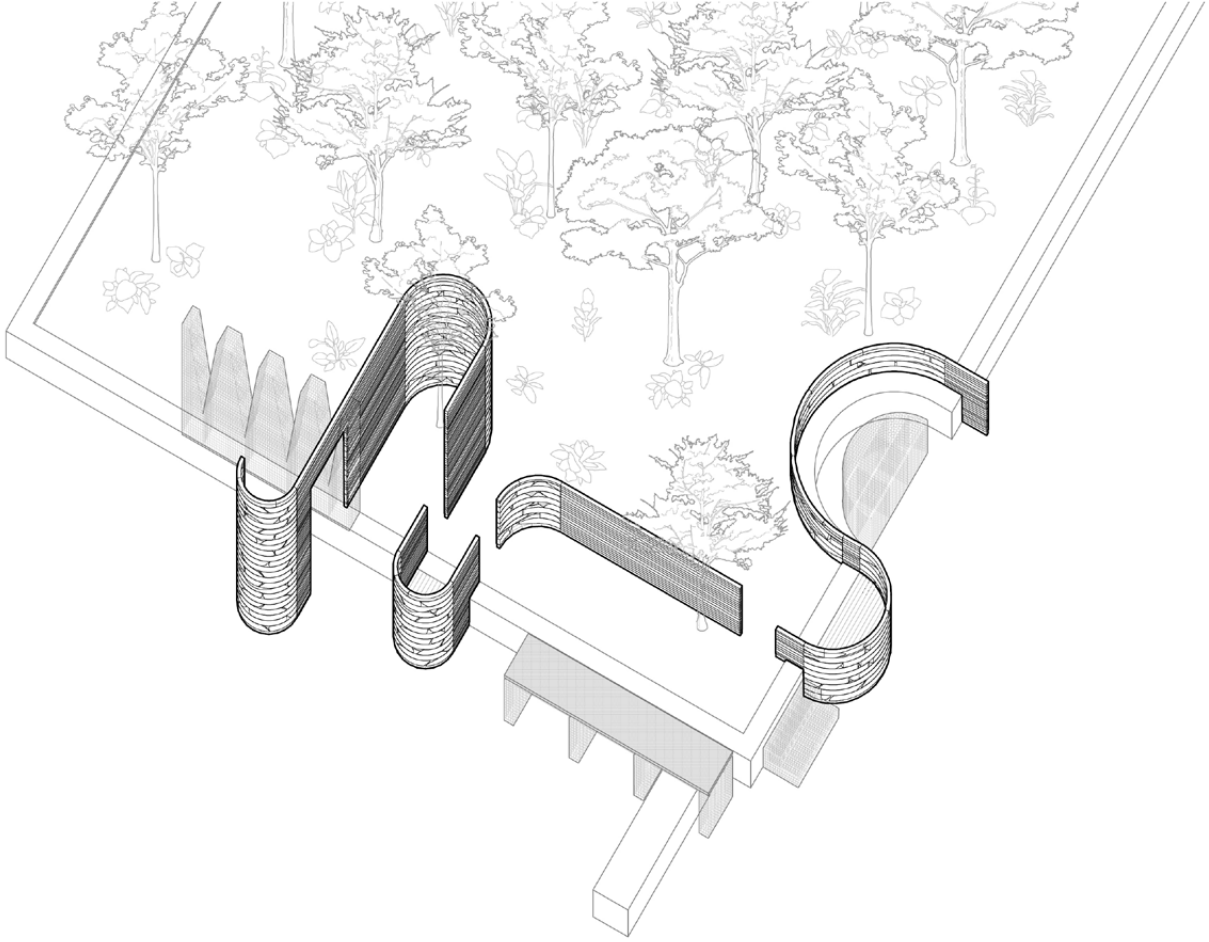
Sylvan Scrapple scribes a 110-foot-long snaking wood wall into an existing planter to form a wooded oasis.



^ Photos 1&3: Hadley Fruits; Photo 2: After Architecture.
^ Cleo Rogers Memorial Library site plan, Pei Cobb Freed, 1963-71.

AFTER Architecture BEFORE Building UVA SCHOOL OF ARCHITECTURE JEFFERSON TRUST

^ Photo: Hadley Fruits for Landmark Columbus Foundation.



URBAN ACTIVATION

Mid-century urban design privileged grand urban moves out of scale with Columbus' modest population of 50,000.

Sited between the Kevin Roche-designed Columbus Visitors Center (1995) and I.M. Pei-designed Cleo Rogers Memorial Library (1971), Sylvan Scrapple inserts a 110-foot-long snaking wood wall along an existing, 2000 ft^2 landscape planter. Scribed to the planter's brick perimeter, the curved wall shapes two elevated seating areas, two street level seating areas, and a gateway.

^ Snaking geometry forms a series of spaces with a minimal footprint.
< Existing site street elevation. Photo: After Architecture.
< Activated street elevation. Photo: After Architecture.

^ Photo: After Architecture.

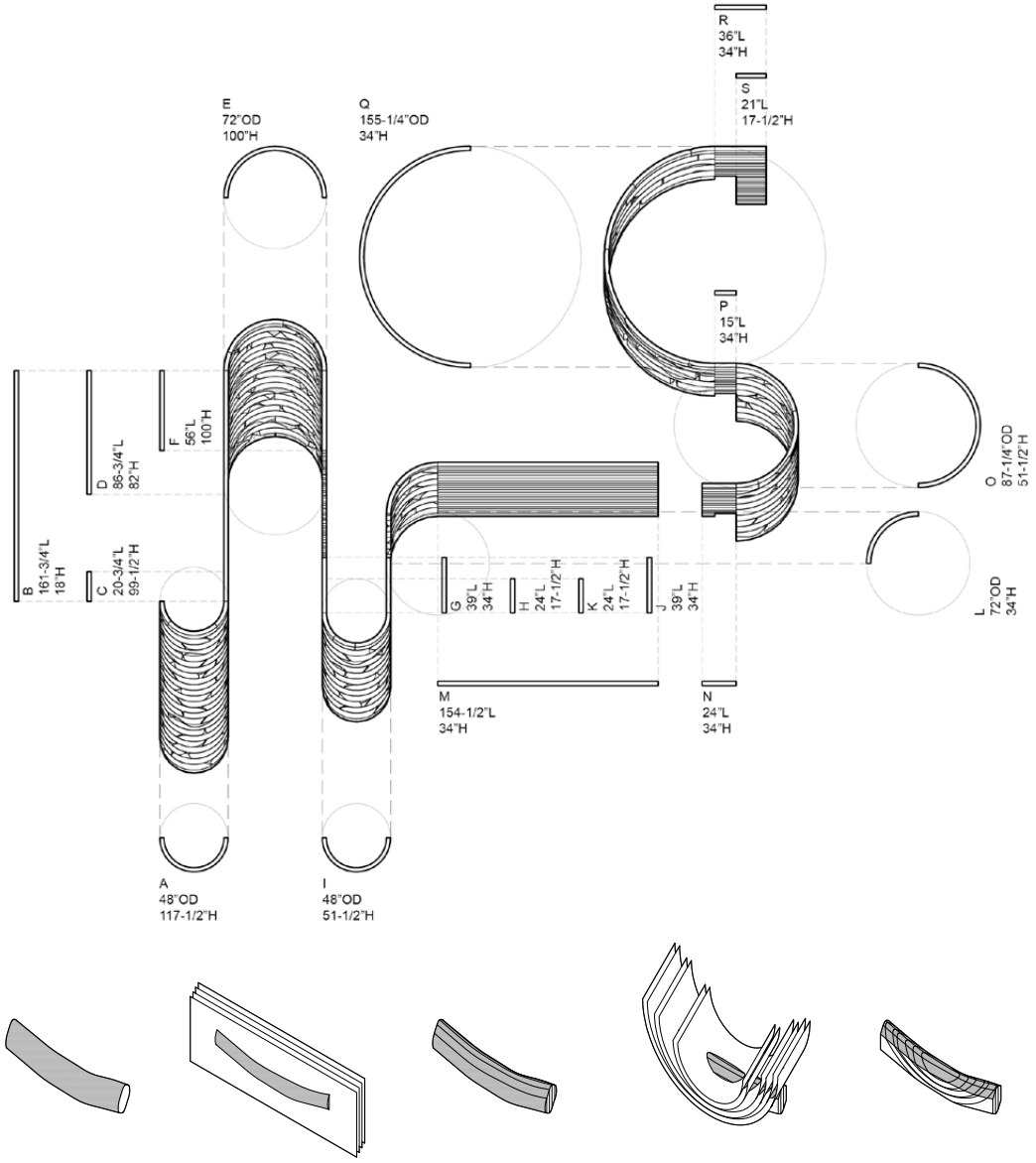
^ Photo: Leonid Furmansky.

MASS TIMBER & ROBOTIC CONSTRUCTION

Sylvan Scrapple develops an application for curved logs and instrumentalizes their curvature in service of thin, lateral-force resisting structures. A post-tensioning system is deployed to address the ease of human labor, embodied carbon of heavy machinery, fuel costs, disassembly, and decommissioning.

This project is the first full-scale prototype of a freestanding post-tensioned curved timber wall assembly that deploys computer numerically controlled (CNC) sawmilling methods to process waste wood in the form of nonlinear logs.

The project team invented and built an electric CNC sawmill with sensors, motors, guides, and digital toolpaths. The team submitted a U.S. Provisional Patent application for the technology in May 2024. This project is the first application of this technology.



Raw Log

Cut 1:
Vertical Planes

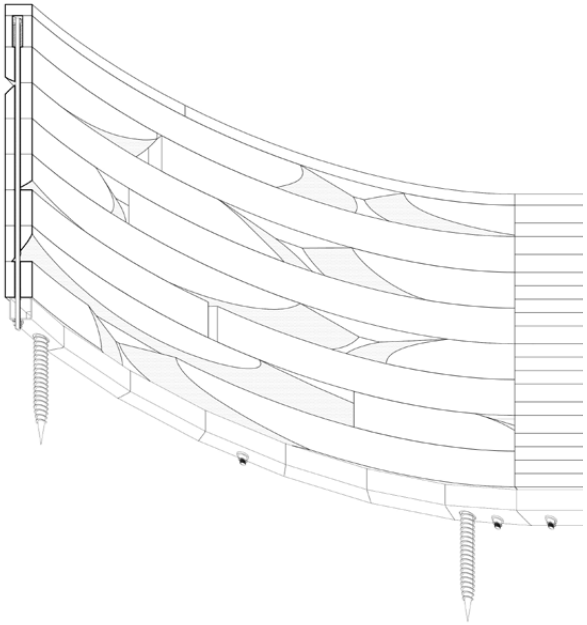
Cut 1
Output

Cut 2:
Curved Surfaces

Cut 2
Output

^ Inventory of straight segments and arcs.
^ Nested toolpaths processed with the robotic bandsaw sawmill.
< Irregular logs are cut on a custom, robotic sawmill using digitally programmed toolpaths. Photo: After Architecture.

Photo: After Architecture



Nonlinear logs are cut into 3” wide curved boards. For straight walls, reclaimed lumber from a decommissioned barn is gathered and planed. Straight segments have a uniform final width of 3” and vary in vertical thickness, allowing for reclaimed 2×4s (1.5” x 3.5”) to be maximized, while still making use of larger boards.

Panels are assembled without adhesives. Wood is stacked, threaded, and post-tensioned using vertical rod secured to a steel tube base. An integrated spring detail allows for expansion and contraction in response to seasonal fluctuations in the moisture content of the wood, as well as rapid disassembly.

^ Integrated spring detail. Photo: After Architecture.
< Worms eye sectional axonometric through threaded rod detail.

^ Photo: After Architecture.

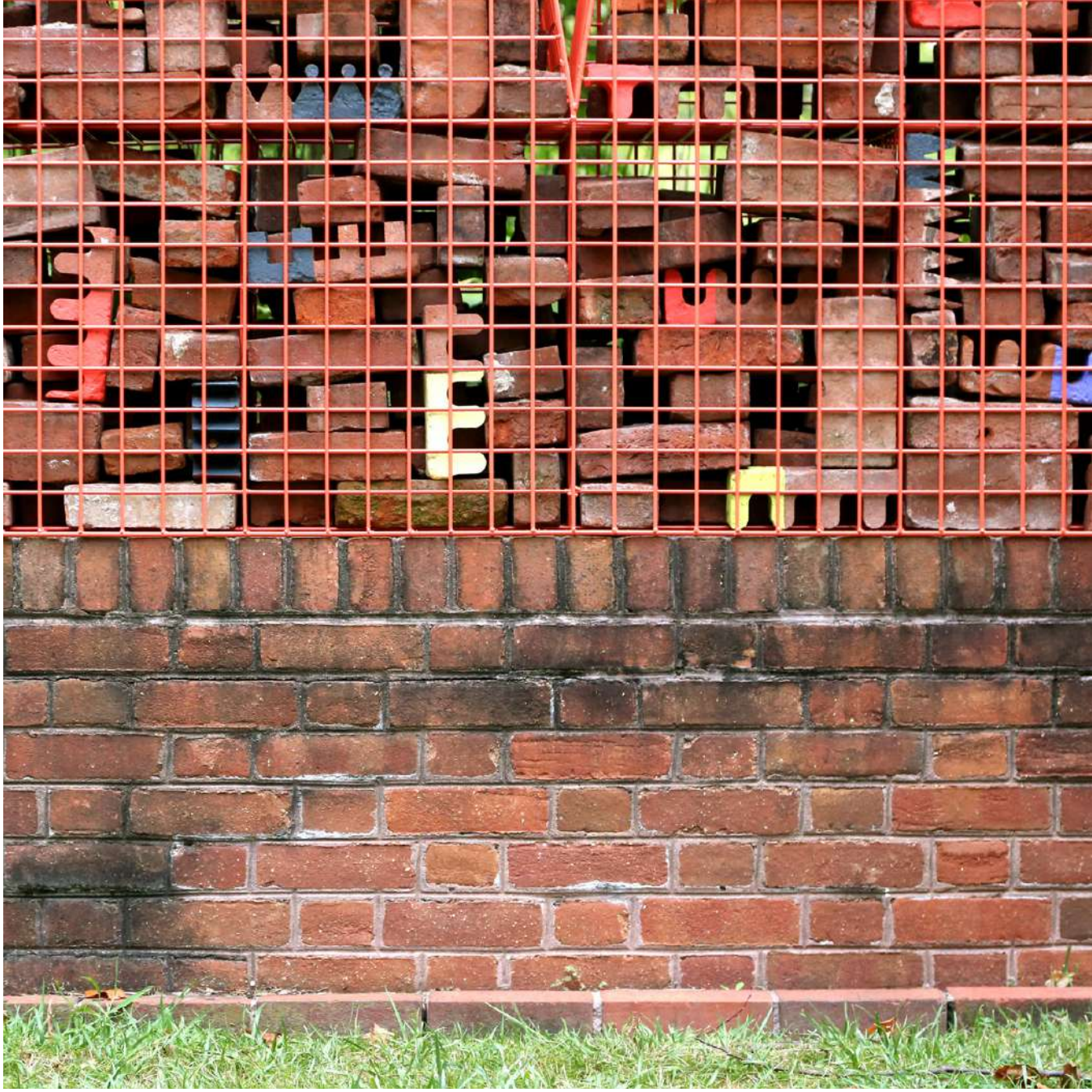
REUSE

The project collected scraps from significant buildings across the city. The landscape planter's existing brick wall is augmented with custom welded gabion cages which form a series of urban furniture elements including a screen, dining table, stairs, and coffee table.

The Irwin Block (1892), a significant Queen Anne style building, burned down in November 2022.

^ Irwin Block (February 2023). Photo: After Architecture.
< Irwin Block (August 2021). Photo: Hadley Fruits.
< Irwin Block (December 2022). Photo: Mike Wolanin for The Republic.

The gabions collect 2,500 bricks salvaged from Columbus' Irwin Block (destroyed by fire in 2022) as well as 500 bricks salvaged from Eliel Saarinen's First Christian Church tower (1942), which was restored in 2023. After the installation is de-installed, the gabions become standalone furniture elements.



^ Existing brick planter wall augmented with gabion cages and filled with salvaged bricks from the Irwin Block and First Christian Church. Photo: After Architecture.
< Water jet brick profiles referenced Alexander Girard's legacy in Columbus. Photo: Hadley Fruits for Landmark Columbus Foundation.

Wood, bricks, and scraps form a 15’ long dining table that creates a center for the installation. Bound with bioresin, this table closely resembles scrapple (a traditional dish that makes use of scraps and trimmings). A game of “I spy” uncovers panels salvaged from Eliel Saarinen’s church tower and branches from Mill Race Park.

< Bioresin table collects offcuts and scraps.
Photo: Hadley Fruits for Landmark Columbus Foundation.

PUBLIC ENGAGEMENT

Table Scraps is a collection of recipes that make use of food waste exhibited with Sylvan Scrapple. By relating the use of waste in cooking and construction, this exhibition sought to build a bridge between architectural practice and the everyday rituals of the public.

Call for Recipes
Table Scraps

We invite you to submit recipes that make use of food waste, to be collected and exhibited with the installation *Sylvan Scrapple* at Exhibit Columbus: Public by Design in Columbus, Indiana this August.

The project draws parallels between the use of waste in cooking and construction, combining recipes with visual scraps and place settings from dining tables, counters, restaurants, and social halls, in Columbus and beyond.

please submit:

1. Recipe
2. Photograph from above of the plated dish (example on flip side)
3. Written details about your place setting
4. Name & Short Bio

to: beforebuilding@virginia.edu
by: 8/1/2023

Exhibit Columbus opens 8/25!

UVA SCHOOL OF ARCHITECTURE BEFORE Building

^ Call for Recipes postcard.

^ Photo: Hadley Fruits for Landmark Columbus Foundation.

^ Photo: After Architecture.

The collection combines recipes with visual scraps. Recipes were gathered through a public call. Each recipe is photographed on the place setting of its authors and displayed as a lifesize vinyl placemat.















^ Recipe exhibitors, from top left:
Stephanie Sang Delgado, Anna Denoyer, Deniz Gürata Hayırlı, Deniz Gürata Hayırlı, Margaret Saunders, Karen MacDonald, John Comazzi, Esteban Garcia Bravo, Emily Ploppert, Ammon Embleton, Mikhail Grinwald, Katie MacDonald & Kyle Schumann, Isaac Goodin, Carole Schumann, Kristin MacDonald.

Sylvan Scrapple and the accompanying exhibition *Table Scraps* attracted families and school groups throughout Exhibit Columbus's duration.







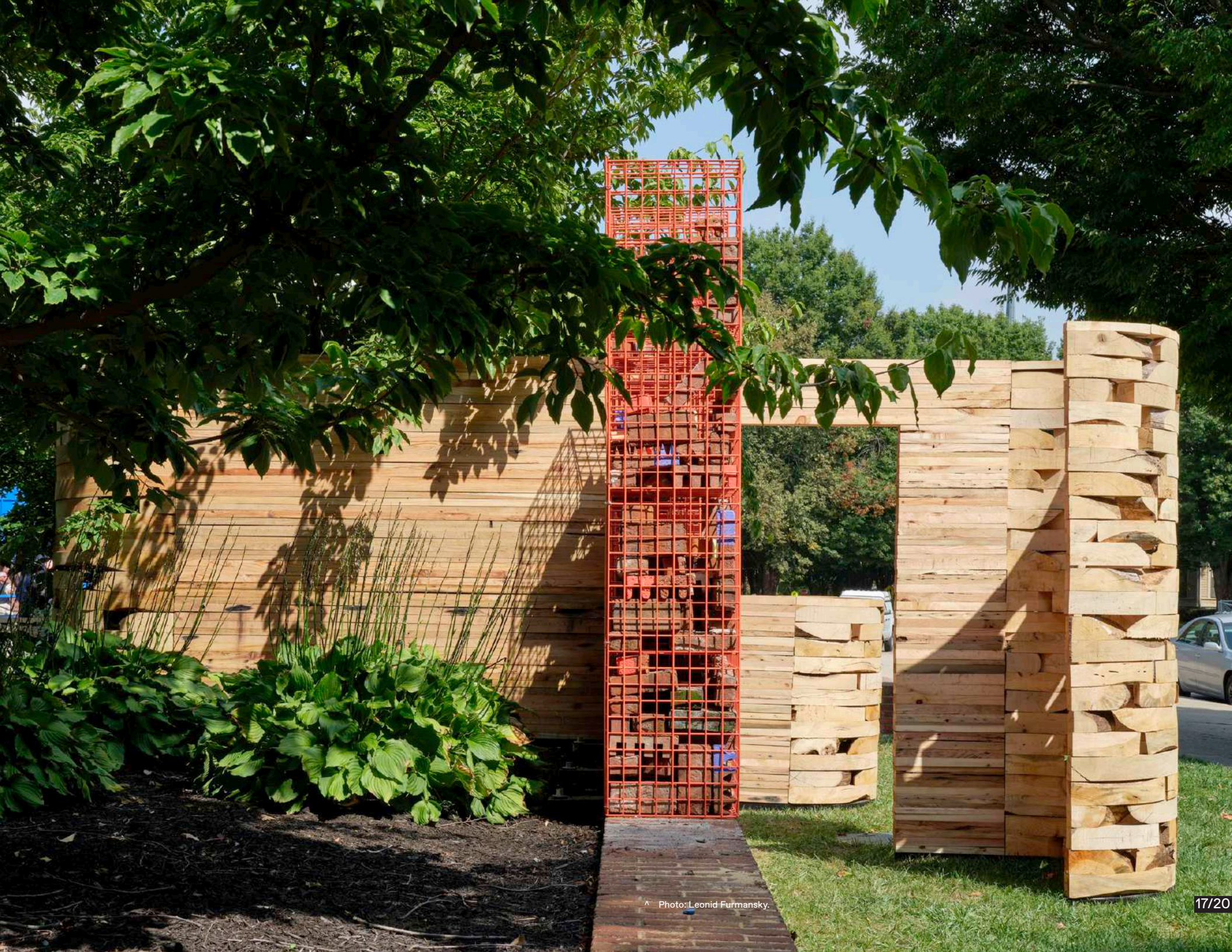








^ Photography from top left:
Leonid Furmansky, Kristin MacDonald, Laura Garrett, Unkown, Hadley Fruits, Hadley Fruits, Hadley Fruits, Leonid Furmansky, Unknown, Leonid Furmansky, Katie MacDonald, Hadley Fruits, Hadley Fruits, Unknown, Leonid Furmansky.



^ Photo: Leonid Furmansky.

^ Casting Table. Photo: After Architecture.
< Project Team. Photo: After Architecture.

PROJECT LEADS
- Katie MacDonald
- Kyle Schumann

STUDENT RESEARCH ASSISTANTS
- Shiza Chaudhary, M.Arch. ‘25
- Ammon Embleton, M.Arch. ‘24
- Isaac Goodin, M.Arch. ‘25
- Emily Ploppert, M.Arch. ‘24
- Margaret Saunders, M.Arch. ‘25

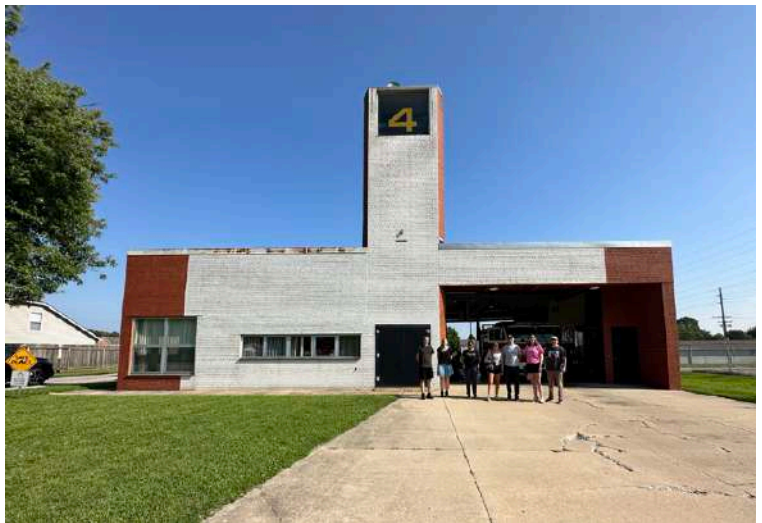
FUNDING
- Exhibit Columbus University Design Research Fellowship
- Jefferson Trust Annual Cycle Grant
- UVA School of Architecture Summer Research Grant
- UVA Vice Provost for the Arts Grant

MATERIAL DONATION
- UVA Sawmilling
- Irwin Block
- First Christian Church

PHOTOGRAPHY
- Leonid Furmansky
- Hadley Fruits
- After Architecture

POWDER COATING
- Hanover Powder Coating

FABRICATION LABS
- School of Architecture Fabrication Lab
  Melissa Goldman, Manager
  Trevor Kemp, Assistant Manager
  Andrew Spears, Lab Technician
- School of Engineering Experiential Center
  Sebring Smith, Manager



STUDENT RESEARCH ASSISTANTS

As educators and researchers performing grant funded work, our priority is to provide paid professional development opportunities to students, rather than outsource work to third parties. 55% of the project budget was allocated for research assistant (RA) labor, professional development, and travel.

Student Wages
5 RAs worked 40 hrs/week for $20/hr, the maximum wage allowed in our academic unit for student workers at the time.

Professional Development
RAs were trained in digital modeling, preparing shop drawings, procurement, community engagement, welding, woodworking, water jet cutting, painting, casting, and more.

Installation Travel & Tours
RAs were provided funded transportation, food, and lodging to travel to Columbus, Indiana for project installation. Time was set aside for tours of significant works of architecture. Lodging was located within a block of the project site.

Opening Weekend Travel, Party, Tour, & Presentation
RAs were provided with funded lodging for opening weekend, tickets to the opening benefit party, and tickets to tour the Miller House and Gardens. Research assistants were introduced to architects from renowned practices and leading academics. Research assistants presented alongside faculty leads at the public opening.

- Top Row: Fabrication - Storm-felled tree collection; Welding; Installation. Photos 1&2: After Architecture; Photo 3: Hadley Fruits.
- Middle Row: Opening - Team picture; Opening party; Public opening speech. Photo 1: After Architecture; Photos 2&3: Hadley Fruits.
- Bottom Row: Touring Columbus. Photos 1,2,&3: After Architecture.

< Sylvan Scrapple reinstalled at the University of Virginia. Photos: After Architecture.
^ RAs present Sylvan Scrapple as part of the School of Architecture's Material Realities school-wide showcase and graduate open house. Photos: Tom Daly.