Soil in our hands:

Rammed-Earth Community Kitchen for a Deaf Immigrant Advocacy Farm

Soil in our Hands: Rammed-Earth Community Kitchen

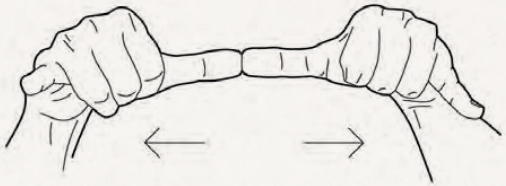
Type	Faculty-led Community Design-Build Project
Collaborator	Deaf New Americans
Authors	Christina Chi Zhang, Hannibal Newsom, Lauren Scott
Date	May 2024 – September 2024
Location	Kirkville, NY

“Soil in our Hands” features a rammed-earth community kitchen designed and built in partnership with *Deaf New Americans,* a local non-profit organization led by Deaf resettled refugees.

In 2022, Deaf New Americans launched a community farm to provide a safe space for Deaf community members to share skills and knowledge from their home countries by growing and selling fresh, familiar produce and create a space of belonging to celebrate food and culture.

As the farm flourished, the need for an outdoor kitchen emerged – a place where farmers could prepare daily meals as they work, where local residents could partake in seasonal cooking lessons from the farmers, and where stories would be shared over the warmth of freshly cooked cultural dishes.

In the summer of 2024, with a modest budget of $7,000 and boundless energy from Syracuse School of Architecture students and local community volunteers, we, architecture faculty from Syracuse University, decided we would all work to construct the outdoor kitchen and shelter together, with our own hands. We embraced local soil as a primary construction material to minimize cost and environmental impact, while honoring our deep-rooted connections to the nourishing earth beneath our feet. This earthen kitchen also makes room for the Nepalese farmers to continue their tradition of cooking in an earth hearth (chulo).



"Measurements"

Use this sign if you need to communicate with Deaf partners on site.

26'-0"

13'-0"

6"

3'-0"

2'-0"

2'-10"

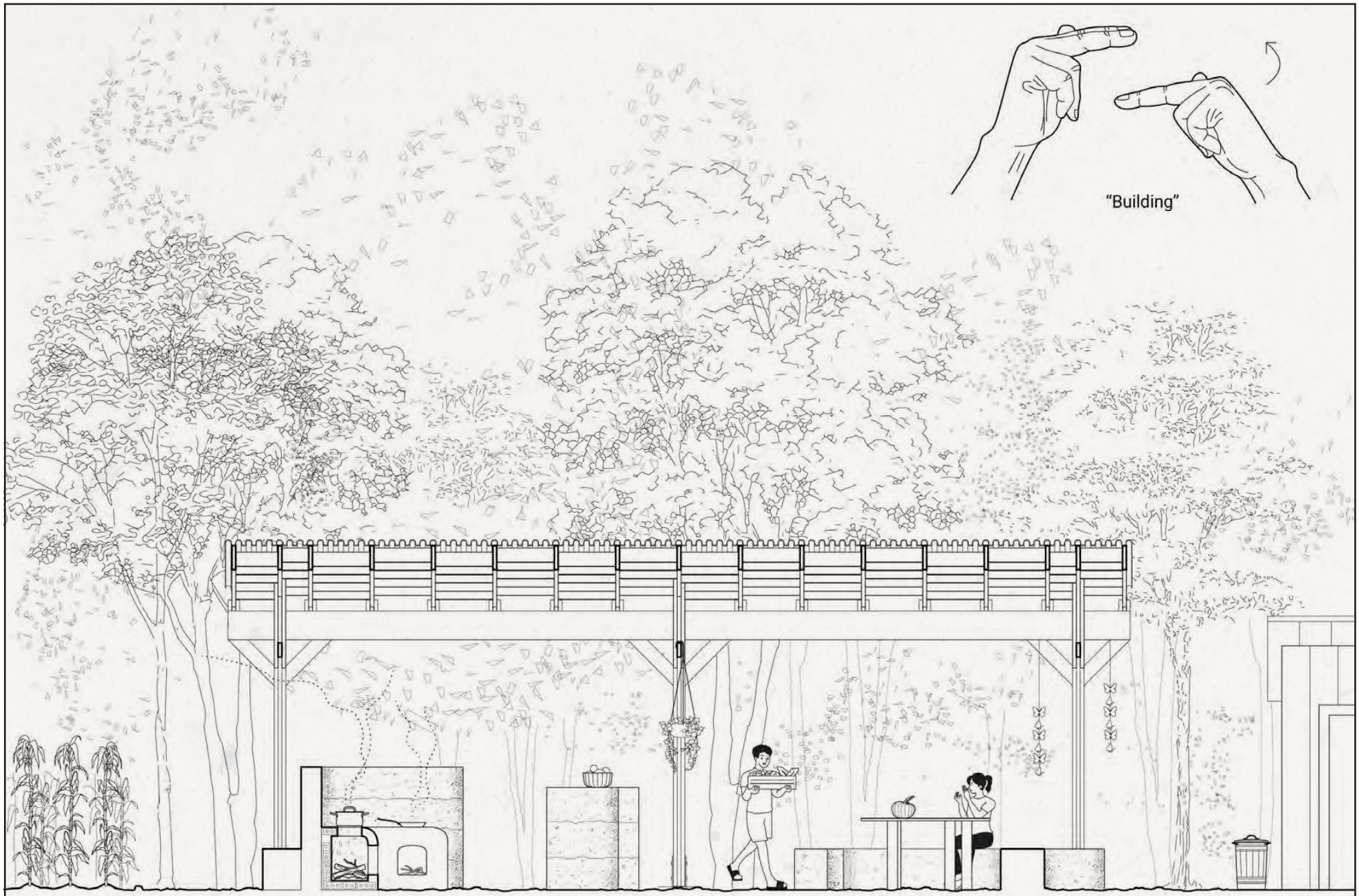
1'-6"

3'-0"

5'-0"

13'-0"

Plan Drawing



Section Drawing

Photography: Qianzhen Li

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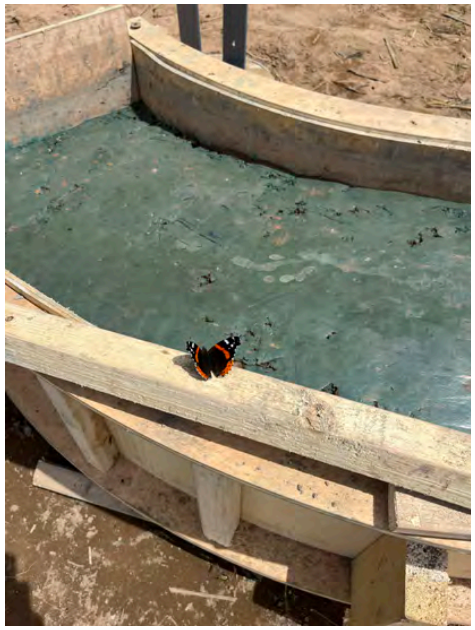
SOIL TESTS FOR SIGN LANGUAGE VISIBILITY

Colors: to add colors to the earth, we experimented with multiple non-toxic natural dyes, including iron oxide and mineral pigments. The final choice of color emphasizes sign language visibility—iron oxide blue dye creates a stark contrast with skin tone, making sign languages easier to read.

Mixture and soil testing: we examined local soil both on the farm and in nearby construction sites with available excavated subsoil. We proposed a mixture of 8:2:1 for clay, sand, and portland cement, making the structure as sustainable, affordable, and durable as possible.

top: students breaking down the clay for better mixing

left: color tests deciding the best color for sign language clarity and dye-to-soil mixture ratio for the most vibrant color



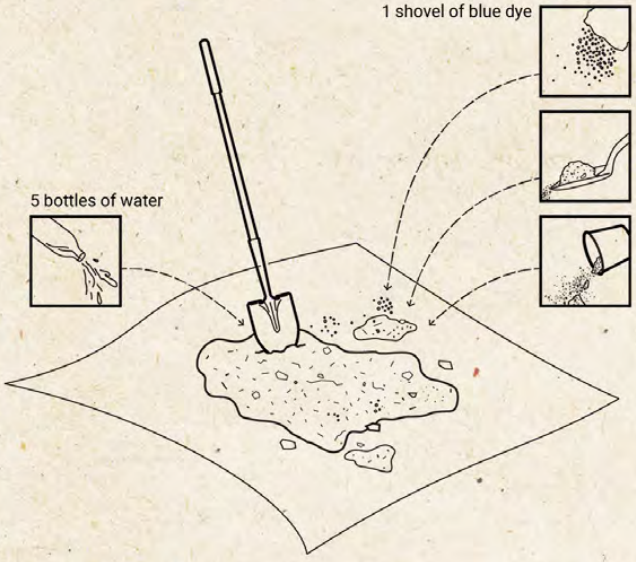

SCREWS

SAFE AND ACCESSIBLE CONSTRUCTION SITE

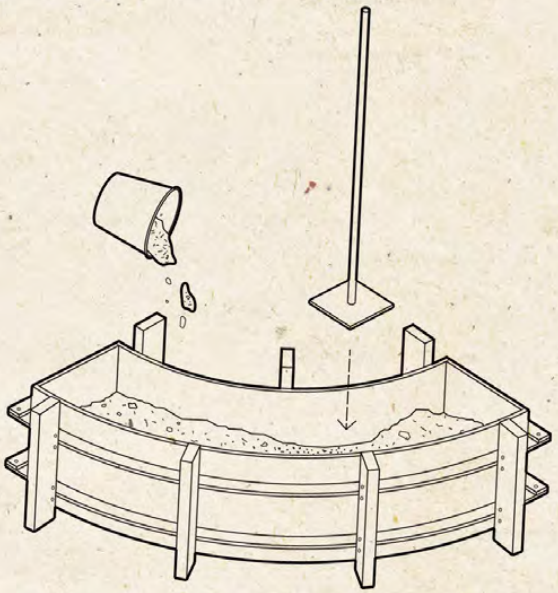
Learning from our partners, dedicated advocates for accessibility, faculty and students developed inclusive construction drawings to demystify the building process and encourage volunteers—regardless of prior experience—to take part in the construction. Our workflow was designed to welcome everyone, allowing them to pick up tools and add to the creation after simple instructions. We set up multiple workstations, where participants could choose to mix, transport, or ram earth based on their interests and physical capabilities. Architecture students on site learned quickly and took charge to guide less-experienced volunteer builders on different tasks. Putting soil in our hands, this project grounded us all in the shared experience of creation.

1 "Filling Station"
Fill up the mixing tub with
2 shovels of sand,
8 shovels of clay,
and 1 shovel of cement

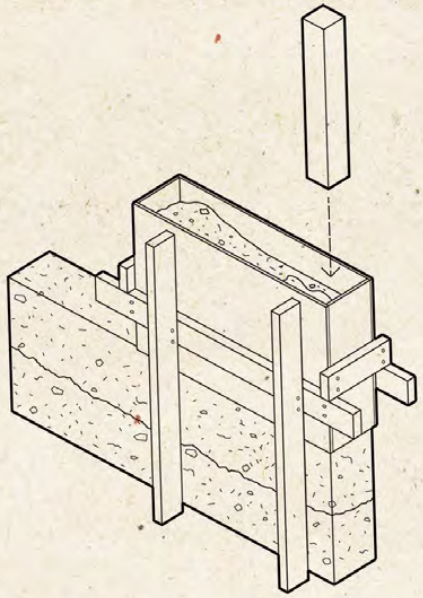
2 "Carrying Station"
Carry the filled mixing tubs to the
mixing station and carefully unload



3 "Mixing Station"
Mix and tumble the earth
mixture while adding water,
until the mixture becomes
evenly blue



4 "Bench Ramming Station"
Evenly spread the mixture inside the
formwork, and ram the mixture by
lifting and dropping the tamper



5 "Wall Ramming Station"
Evenly spread the mixture inside the
formwork, and ram the mixture with
a 4x4 post. Lift and drop the wood
post to compact the earth.

“applause”

Photography: Qianzhen Li

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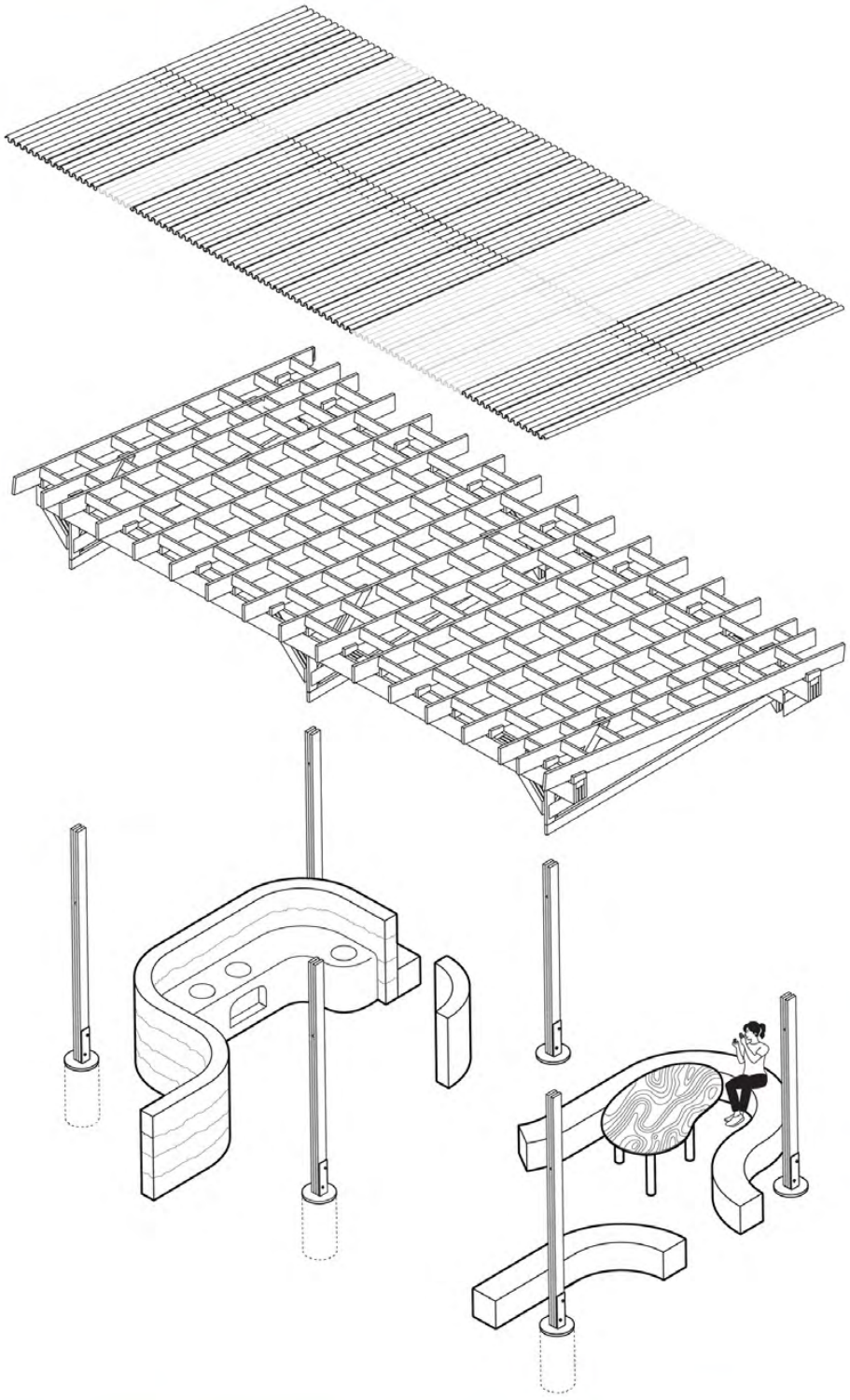

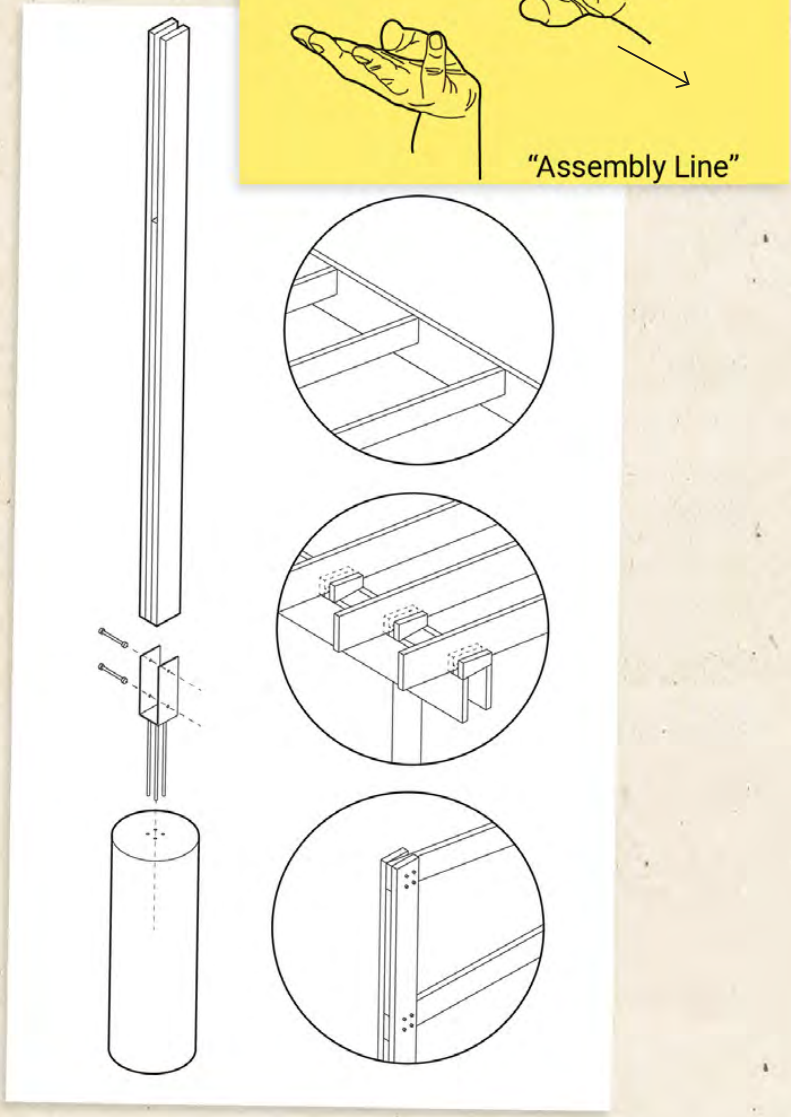

WOOD FRAMING ASSEMBLY

The construction site has no power source, and is 30 minutes away from any fabrication shops. We could cut large pieces of lumber on site with a generator and a circular saw, but could not easily make precise assembly pieces. To develop the most efficient construction and assembly system, we designed and fabricated standard-size "joints" and "saddles" in the architecture school's fabrication shop, and transported them on site for lumber to easily slot in.

Photography: Qianzhen Li

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LEARNING THROUGH COLLECTIVE PRACTICE

This community design-build project was set up by faculty as a summer extracurricular research project. Many students participated in the design and construction process, and learned various skills through volunteering together with community members and collaborators. The core learning objectives include:

- Making construction drawings and building process accessible to a non-specialist audience;
- Managing a construction site with a focus on accessibility;
- Leadership skills as guides for less-experienced volunteers;
- Versatile communication through signing, gesturing, smiling, and drawing;
- Maximizing the impact of small intervention for community service;
- Construction sequencing and methods;
- Understanding structure;
- Conducting material research;
- Understanding and assessing environmental impact of constructions.

Photography: Qianzhen Li

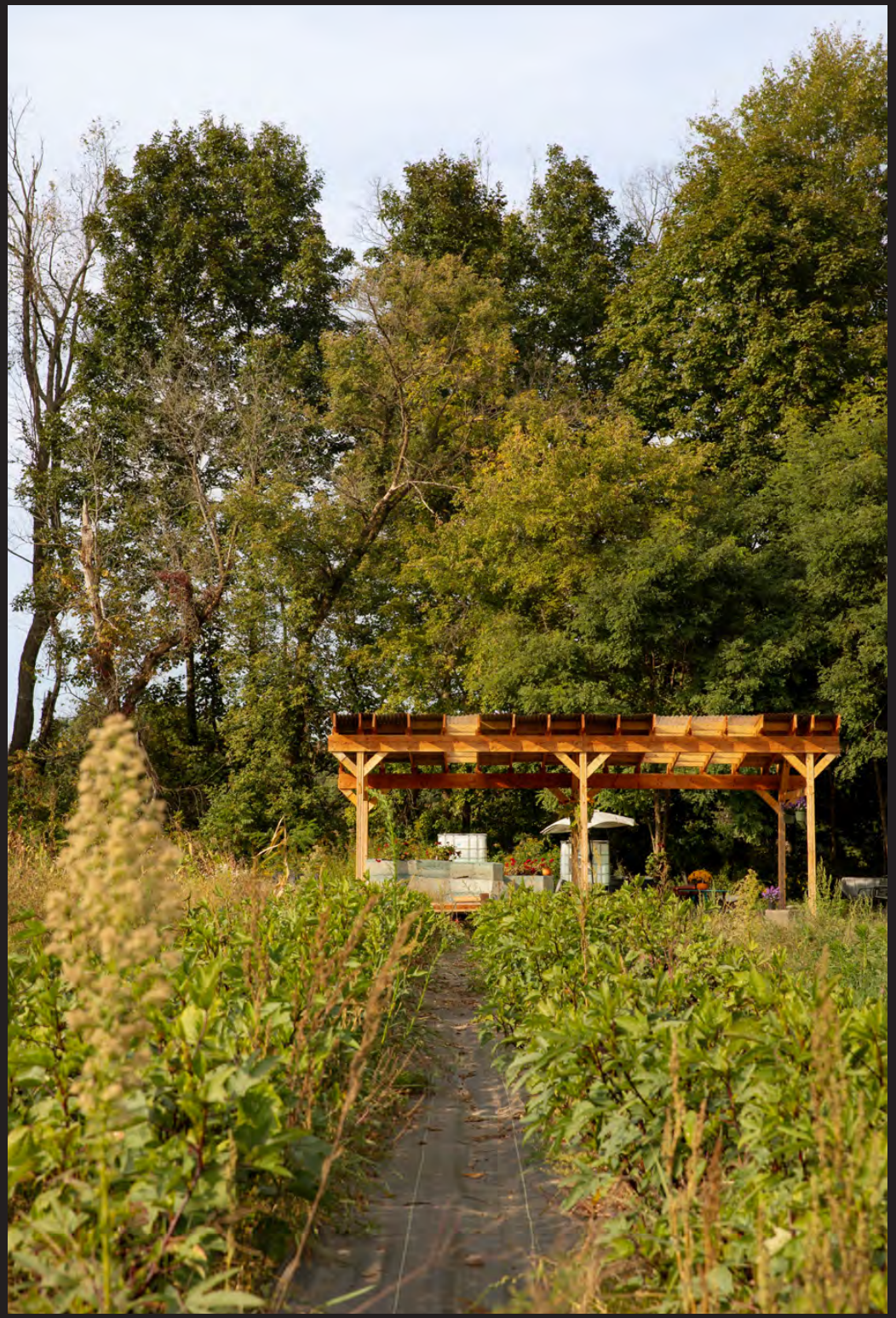
COLLABORATION AND CREDITS

Project Date:	May 2024 – September 2024
Nominees (co-authors):	Christina Chi Zhang Hannibal Newsom Lauren Scott
Collaborator (client):	Deaf New Americans
Core Volunteering Team:	Sinéad Mac Namara (faculty structural advisor), Tru Truong, Aryan Ambani, James Barbier, Sara Lin
Volunteers:	20+ Syracuse University students, 7 volunteers from SUNY-ESF and Upstate University, 30+ volunteers from Alive Wesleyan Church, United Way, and Leadership Greater Syracuse
Funding Sources:	Faculty Research Funds from Syracuse University School of Architecture and Lehigh University Art, Architecture & Design, and donation from Ideation Lab, a non-profit organization for community initiatives
Compensation:	All work on this community project was volunteer-based, including all faculty, students, and community organizations involved.
Gross Floor Areas:	464sf
Dimensions:	16’W x 29’L x 14’H

Total Cost: $7,150

Cost breakdown:

Lumber	$2,243
Cement	$721
Roofing	$815
Hardware	$961
Soil Transportation	$160
Natural Dyes	$446
Equipment Rental	$784
Truck Rental	$460
CNC Milling	$80
Gas for generator	$60
Miscellaneous Supplies	$420



Photography: Qianzhen Li

"love"