“I have good memories of this house, and I have faith that something good will happen here again”
Like too many Detroit houses irreparably damaged by disuse, vandalism and fire, the house at 3347 Burnside must come down. Rather than razing it and leaving fallow land, the house will be deconstructed and the foundation reused to build a semi subterranean, passive geothermal greenhouse called Afterhouse. Using just the heat of the sun and the constant temperature of the earth, Afterhouse requires no artificial heating in the winter or cooling in the summer and provides an environment where it is possible to raise crops that grow in climates far warmer than Detroit’s.

The footprint of the house will be maintained, and vernacular materials used, so that Afterhouse blends into the residential neighborhood and honors stories of the home’s history. Distinct from large scale urban agriculture projects that require a lot of
space, Afterhouse is discrete, almost hidden, making it appropriate for denser urban settings where conventional hoop houses and greenhouses are not. The community garden, Burnside Farms, will use and maintain the greenhouse as a place of growth and gathering, of warmth and life, during the long cold winter. A derelict house transformed from a hazard to a thing of beauty and of use, drawing from what once was to become a part of what Detroit is now, Afterhouse can serve as a model or prototype for other abandoned houses throughout the surrounding neighborhood.
3347 Burnside’s history is not unique. Demographic shifts, economic booms and busts all contribute to its story and the story of many parts Detroit. A typical Blue Collar Bungalow built in the 1920’s, it is a part of the first wave of the procedural construction industry as we know it today. Inexpensive, “cookie cutter” houses were built across large neighborhoods for the city’s rapidly growing auto worker force, utilizing the same cost savings available through standardization that the auto industry did. The small, cheap to maintain and heat homes are still attractive to people looking for affordable housing. However, the inexpensive materials and cheap construction present a barrier to restoring the derelict and damaged houses throughout the neighborhood. Rather than see this solely as a problem, Afterhouse takes advantage of this as an opportunity for an
alternative intervention to demolition that contributes to the community and can even be replicated.
WALKING TOUR OF
3347 BURNSIDE
DETROIT, MICHIGAN, USA

“I broke up a fight in front of this house once.”

“See that tire? It’s been there for forty years.”

“I remember a family with five little girls lived in that house. Their father would ask to borrow money every time I saw him.”
“We used to run an extension cord to the house next door for electricity. The only running water was in the bathtub. We washed dishes, washed clothes and drank water from the tub. Can you imagine?!?”

“my Brother and I used to build model airplanes in the basement. We also had a hammock down there.”

“I remember the first time I jumped from our roof to the house next door. I felt like Superman!”

“This schizophrenic guy lived here with his Mama. Sometimes he’d just go off on you. He would mess with people’s cars and yell from the front porch. I felt sorry for his Mama.”

“وكان هذا النادي لدينا”

“IT’s amazing what the fire did to the inside of this house. All of the walls are pitch black. It’s depressing and beautiful at the same time.”

“I have good memories of this house, and I have faith that something good will happen here again”

“To była moja babcia w kuchni. Miała piękny ogród w podwórku.”
Detroit’s booming auto industry brought masses of immigrants who used their factory earnings to build or to buy one of the small homes that sprung up almost overnight on the city’s open land.
"Detroit is the largest city of opportunity in the world."

-Detroit City Directory, 1924-1925
Quickly built, using inexpensive materials, Blue Collar Bungalow became a popular neighborhood style. Advertisements such as this could be found in catalogues throughout the 1920s.
After World War II, union-negotiated wage and benefit packages made auto work more secure. At the same time, New Deal programs gave white workers and veterans access to federally-backed mortgages and loan guarantees that made the American Dream more accessible. Homeownership rates skyrocketed and the neighborhood filled in.
Even as much of the city suffered a drastic drop in population, thousands of Bangladeshi immigrants moved to this part of Detroit-so many that the area has been dubbed Banglatown. This influx of people helped the neighborhood maintain its vibrancy and some of its density and made it an attractive place for artists and others to settle despite, or maybe because of the fact that the cheaply built housing stock does not lend itself to gentrification.

The damaged houses that dot the neighborhood are not salvageable, but the embodied energy of the house foundations could be a resource transformed into an asset for the community. Afterhouse is a place where food and community will be grown, shared, and celebrated.
2013 Bungalow Density
(outlined = potential sites of intervention)
The Cast

The community that surrounds the site for Afterhouse is the determining factor in its success. Here are a few of the individuals who contribute to the project and neighborhood.
The Owner

Artist and committed Detroiter that lived and worked in a house down the street. Concerned about safety, he bought the abandoned, fire damaged house at 3347 Burnside so that he was empowered to discourage vandalism and squatting. As he used his own home as an alternative exhibition space, he hoped that the 3347 house could also be used as a place of artistic or architectural intervention. He collected stories of people who lived there, or remembered people who did and he made drawings that told their stories, and those stories and memories informed the design of Afterhouse.
The Farmer

A Farmer and Artist bought the house next to 3347 Burnside a few years ago as a place to live and work. She subsequently started the urban agriculture project Burnside Farm in the 6 empty lots at the end of the block. The farm and her home are a part of her creative practice and she describes the whole place is a giant studio of sorts. She and her collaborators developed a creative CSA that not only distributes fresh local produce to its shareholders, but curated art objects as well. She will use and maintain Afterhouse as a part of the Burnside Farm, greatly extending her growing season and crop diversity.
The Neighbors

Aside from the owner and the custodian, Afterhouse will serve as a place of warmth for the community in which it resides, transforming the problem of a dangerous structure into a source of engagement and nourishment. The neighborhood surrounding this intervention is diverse and changing. Here are three examples of members of the community:

Long Term Members

Until very recently, the neighborhood was populated mostly by people of Polish origin and their descendants. As job opportunities moved away, so did many of these citizens, but some life long residents remain, and enrich the neighborhood.
New Members

Over the last 30 years, thousands of Bangladeshi immigrants have moved into the neighborhood. This phenomenon has increased the neighborhood’s ethnic, cultural and culinary diversity and kept it relatively stable, even as many long term residents moved out.
A New Future

There are many children living in the neighborhood; you can hear them playing in the street after school and on summer days. The blight of the damaged homes presents a particular hazard for them. Afterhouse will increase safety for the neighborhood and stability for the block.
Design

Afterhouse is an alternative to demolition. The typical 1600 square-foot residence has nearly 70 tons of concrete in its foundation that is landfilled in a typical demolition. In addition to losing the embodied energy of the concrete, the foundation removal is energy and labor intensive. Reusing a house’s foundation represents a double or triple savings at no additional cost or energy.
(This can be avoided)
1. The existing building is beyond repair and must be removed, leaving the foundation.

2. An insulated platform at the street side maintains the cultural and urbanistic disposition of the neighborhood while guarding against temperature fluctuations.
3.
A simple shed-style greenhouse covers the basement.

4.
The greenhouse is rotated to the South to maximize solar exposure.
5. The form is sliced to fit the bounds of the foundation.

6. The form is adjusted to meet the foundation.
7. The allowable planting area is determined by sun angles and street orientation.

8. This porch* can be customized with plants of various heights within the planting area.
In many bungalow-style houses the porch personalizes the house and makes it a home. The porch is where the space of the street approaches the house, but it is also the architectural device that mediates entry into the home.

The foundation is set back from the porch so the Afterhouse planter porch will be built to maintain the original scale of the house. Additionally, it provides a threshold between the public street and the more private space of the sunken garden.

Just as is the case with the bungalows in the neighborhood, the Afterhouse porch will be customized by its owner without affecting performance. Within a certain volume (shown in red at right), seasonal crops can be grown without affecting the plants inside.
North-Facing Street

South-Facing Street

East-Facing Street

West-Facing Street
Construction

The construction process of an Afterhouse is a delicate interplay of destruction and creation, demolition and assembly. This sequence must be carefully executed to ensure that the future tenants (plants) will be warm and well-protected.
1.
Carefully remove house, leaving foundation intact.
2.
Excavate the stairwell and cut door on South foundation wall.
3.
Frame walls and place SIPs.
4.
Frame roof and place SIPs.
5.
Sheath roof with polycarbonate.
6.
Insulate walls and ground.
7.
Apply wood and corrugated metal siding.
8.
Customize with individual planted porch area.
Ingredients

The components of an Afterhouse are carefully chosen, on the basis of economy, embodied energy, durability, and deliciousness.
International building materials supplier Insulspan, has generously agreed to donate Structural Insulated Panels (SIPs) cut offs from other projects to Afterhouse.

R-Value @ 6-½” = 25
R-Value @ 12” = 48
Double-walled polycarbonate is an industry standard material for high-performance greenhouses, due to its insulative qualities and high light-transmissivity.

R-Value @t 8mm double-wall = 1.6
Wood Off-Cuts

Hardwoods of Michigan sawmill is collecting and donating the irregular slats created through industry standard practice of trimming down irregular 4-Quarter rough planks to square off their edges. These slats are will be used as inexpensive rainscreen material.
Salvaged corrugated metal roof material can be found at scrap yards around the Detroit Metro area for minimal expense.
DIY Truss

High performance and low cost, made using standard 2x4s, steel strapping, pipe, and cable, the DIY Truss enables the Afterhouse to withstand relatively high loads while allowing for maximum light transmission.
Kiwifruit, *Actinidia deliciosa*. The berry of a woody vine native to Southern China, the kiwi was known as the Chinese Gooseberry when it was first planted in New Zealand in the early 20th century. Its popularity among American servicemen during World War II inspired the New Zealand Fruit Federation to export it to the United States Market and rename it after New Zealand’s brown and fuzzy national bird.

- **Exposure:** Full/Part Sun
- **Spacing:** 10 ft
- **Water Use:** water regularly
- **Cold Hardiness:** Zone 7
- **Soil preference:** Well drained, acidic
- **Flower Season:** Early spring
- **Harvest Season:** Late fall
- **Self Fertile**
Olive, *Olea europaea arbequina*. Cultivated for thousands and thousands of years, this small broadleaf evergreen tree is native to the Mediterranean, Iraq and Iran and cultivated all over the world for food and fuel.

Exposure: Full Sun  
Spacing: 6 ft  
Water Use: drought tolerant  
Cold Hardiness: Zone 8  
Soil preference: Poor soil  
Flower Season: Early spring  
Harvest Season: Late fall  
Self Fertile
Ginger, *Zingiber officinale*. The rhizome of a perennial plant, ginger is native South Asia and has been used medicinally and as a spice for thousands of years.

Exposure: Part Sun
Spacing: 12 inches
Water Use: do not allow to dry out
Cold Hardiness: Zone 9
Soil preference: moist, drained, loamy
Flower Season: N/A
Harvest Season: After the first year
Pomegranate, *Punica granatum*. Cultivated since ancient times and rich in nutrients and phytochemicals, pomegranates have been used medicinally for thousands of years.

Exposure: Full Sun  
Spacing: 6 ft  
Water Use: drought tolerant  
Cold Hardiness: Zone 8  
Soil preference: Poor soil,  
Flower Season: Early spring  
Harvest Season: Late fall  
Self Fertile
Yusu Citrus, *Citrus ichangensis*. A naturally occurring hybrid long cultivated in East Asia and widely used in Japanese and Chinese cuisine.

Exposure: Full Sun  
Spacing: 4 ft  
Water Use: drought-tolerant  
Cold Hardiness: Zone 8  
Soil preference: Poor soil,  
Flower Season: Late spring  
Harvest Season: Early winter  
Self Fertile
Pistachio, *Pistacia vera*. Small, long lived, deciduous tree native to Central Asia and cultivated since ancient times.

Exposure: Full Sun  
Spacing: 6 ft  
Water Use: drought tolerant  
Cold Hardiness: Zone 7  
Soil preference: adaptable  
Flower Season: Mid spring  
Harvest Season: Late summer  
Self Fertile
Fig, *Ficus carica*. Small tree native to the Middle East and western Asia that is one of the first crops ever cultivated.

- Exposure: Full Sun
- Spacing: 5 ft
- Water Use: drought tolerant
- Cold Hardiness: Zone 7
- Soil preference: well drained, loamy
- Flower Season: Early Spring, Summer
- Harvest Season: Spring, Late Summer
- Self Fertile
Mango, *Mangifera indica*. The national fruit of India, Pakistan and the Philippines and the national tree of Bangladesh, mangoes have been cultivated for thousand of years.

Exposure: Full Sun  
Spacing: 8  
Water Use: water regularly  
Cold Hardiness: Zone 8  
Soil preference: well drained, loamy  
Flower Season: Late winter  
Harvest Season: Spring  
Self Fertile
Pineapple, *Ananas comosus*. Tropical perennial native to South America and spread throughout the Caribbean and Central America in the Pre-Columbian era.

Exposure: Full Sun  
Spacing: 3 ft  
Water Use: water regularly  
Cold Hardiness: Zone 9  
Soil preference: well drained, loamy  
Flower Season: After 20 months  
Harvest Season: After 6 months  
Pollinator required for seed formation
Rosemary, *Rosmarinus officinalis*. A woody, evergreen shrub native to the Mediterranean and Asia believed to ward off evil spirits in some cultures, and a symbol of fidelity in others.

Exposure: Full Sun
Spacing: 18”
Water Use: drought tolerant
Cold Hardiness: Zone 8
Soil preference: well drained
Flower Season: winter
Harvest Season: anytime
Specifications

(removeable) step up threshold islo0 style
fill CMU with perlite insulation

KAiE

xs < ASP + ABOUT

planning schemes

water tubes (Black PVC)

reused cast iron pipes
③ Farmer’s House
⑤ Afterhouse
⑥ Planter Porch
⑪ Outdoor Bed
⑦ Planter Bed
① Insulated Ground Cover
② Access For Soil
⑫ Thermal Mass Water Tubes
⑩ Stair Down to Afterhouse
⑨ Former Property Line
⑩ Ridge

Roof/Framing Plan
Farmer’s House
Existing Foundation
New Stairwell
Equinox Sun Angle
Out Door Bed Thermal Mass
Tree Planter Bed
Shrub Planter Bed
Thermal Mass Water Tubes
Dry Well with Gravel
6” SIP Scrap
12” SIP Scrap
Polycarbonate
Hardwood Scrap Slats
Corrugated Metal
Project Credits

Project Direction:
Abigail Murray, Project Principal, Visual Artist
Steven Mankouche, Associate Professor of Architecture
University of Michigan
Jono Sturt, Lecturer of Architecture, University of Michigan
Matthew Schulte, Designer, ARCHOLAB

Student Team
Travis Williams, Student Leader, Undergraduate Student of Architecture, University of Michigan
Edward Sach, Undergraduate Student of Architecture, University of Michigan

Community Team
Andrew Malone, owner and artist
Kate Daughdrill, farmer and artist, Burnside Farms
Jamin Townsley, filmmaker

Funding
United States Economic Development Administration Center for Regional Economic Innovation
Michigan State University Center for Community and Economic Development
The University of Michigan Undergraduate Research Opportunity Program (UROP)
The University of Michigan Taubman College for Architecture and Urban Planning

Industry Sponsors
Insulspan Inc.
Hardwoods of Michigan Inc.
“It’s amazing what the fire did to the inside of this house. All of the walls are pitch black. It’s depressing and beautiful at the same time.”