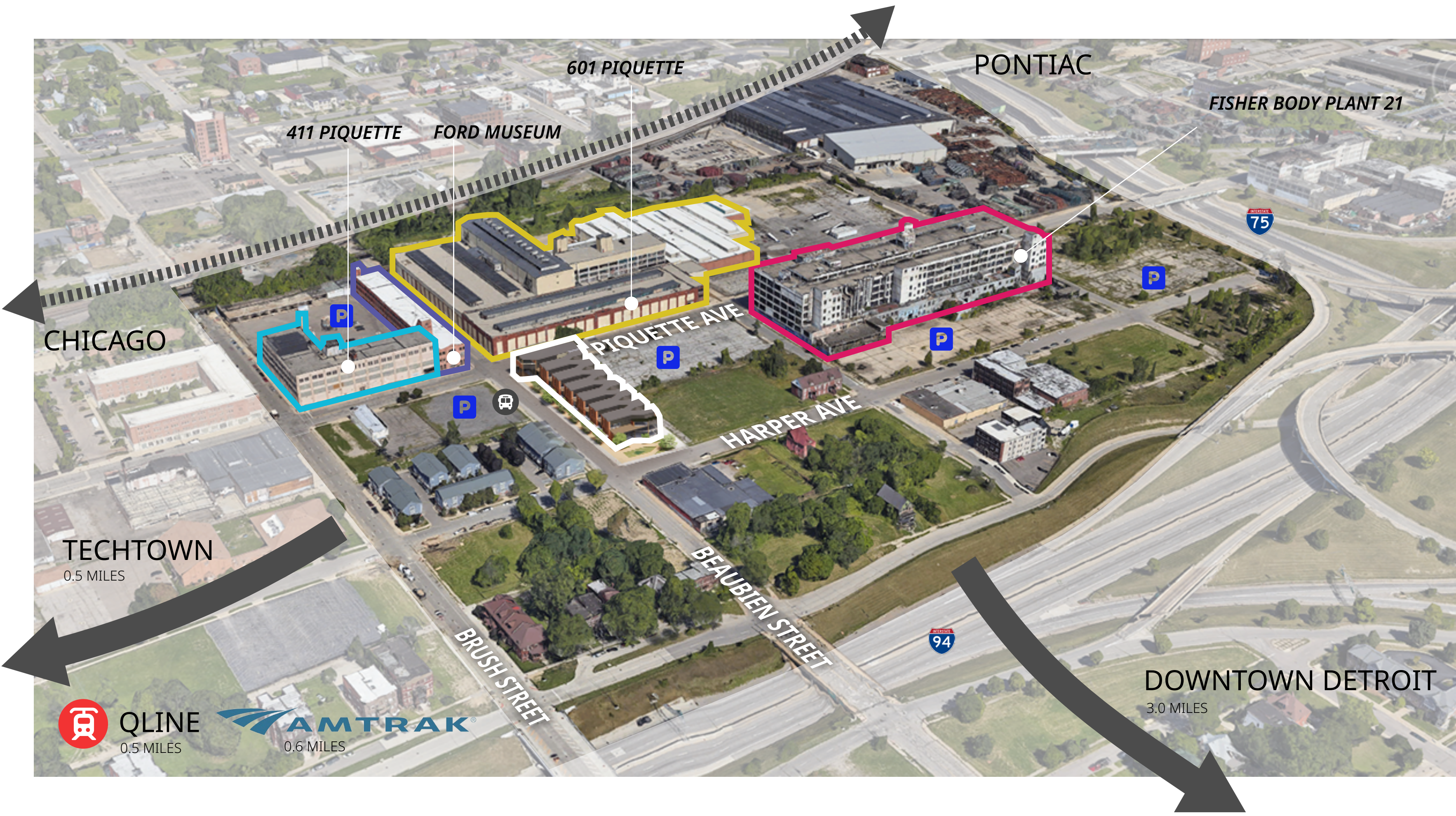


Detroit Re-Makerspace is a concept and structure born out of the DNA of Motor City. The building harnesses salvaged material from the thousands of empty houses scattered throughout the metropolitan area. The rise, fall, and rebirth of Detroit is woven into its envelope and tied into its core. From within, the re-makers are defining a new Detroit, one that celebrates its history while leading the way as a sustainable and adaptive community. Positioned strategically near multiple modes of transportation, new housing developments such as 411 Piquette and Fisher Body Plant 21, and institutions of learning and innovation, 500 Piquette is an ideal place to build community and develop ideas for establishing Detroit as an environmentally and economically resilient city.

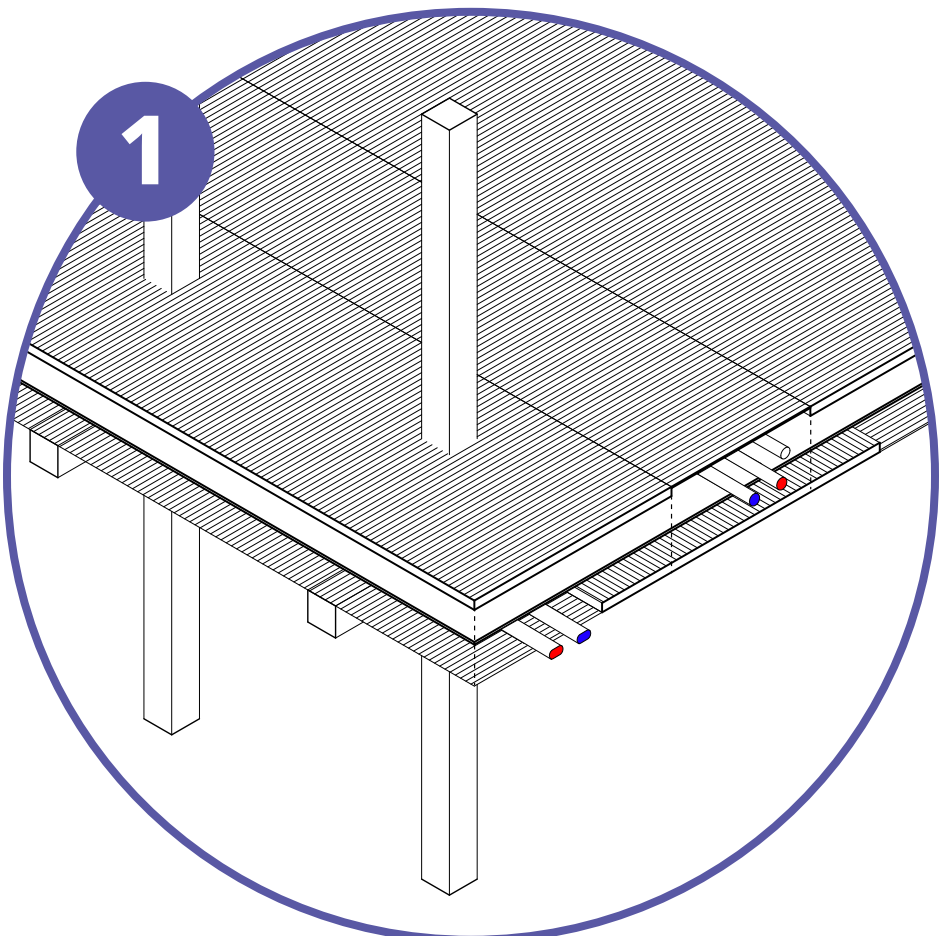
Above: Rendered West Elevation, Left: Site Plan, Below: Context Diagram



DESIGN FOR RE-USE

In 2020, Detroiters voted to pass Proposal N, a comprehensive plan to address 16,000 vacant homes in Detroit. 8,000 of those homes were to be rehabilitated and returned to the local housing market. The remaining 8,000 homes were to be demolished. As of June 2024, around 6,500 houses have been demolished. The success of Proposal N is likely to open the door to even larger scale renovations and demolitions. The 16,000 homes are just a fraction of the estimated 55,000 vacant homes in the city of Detroit, not to mention all the abandoned properties in the larger metropolitan region.

Michigan State University proposes that there is a third option for these vacant homes—deconstruction. As opposed to demolition, deconstruction salvages reusable building materials and gives them a second life—either as the same product or altered into a different product. Detroit Re-Makerspace is a prototype for how this can be implemented in Detroit, as well as an incubator hub for developing a deconstruction market and economic supply chain.



NAIL LAMINATED TIMBER

The floor system is constructed out of salvaged 2x4 lumber nailed together to form a structural deck (NLT). Due to the shallow depth of the lumber, the spans are limited to 10 ft in order to provide the required stability and safety for a makerspace. This limitation created opportunity for a unique design, a regular and modular pattern that can be scaled to variety of building types. 12 Detroit houses can supply enough lumber for this project.

The floor system consists of 2 layers of NLT. The first one spans across the beams with gaps for chases and suspended ceilings. Then, an acoustic and insulation layer is laid on top of the base and topped with another layer of NLT running perpendicular the bottom layer. The top layer can also be spaced out to provide utility and HVAC chases. A concrete topping is optional, and if left out, allows the floor system to be more easily deconstructed at end of life.



GLULAM COLUMNS AND BEAMS

The structural framing members of the building uses mass timber instead of concrete or steel. The embodied carbon of wood is much lower than high intensity manufactured materials such as concrete and steel. Though the columns and beams will likely be new, they have potential to be reused at the building's end of life.



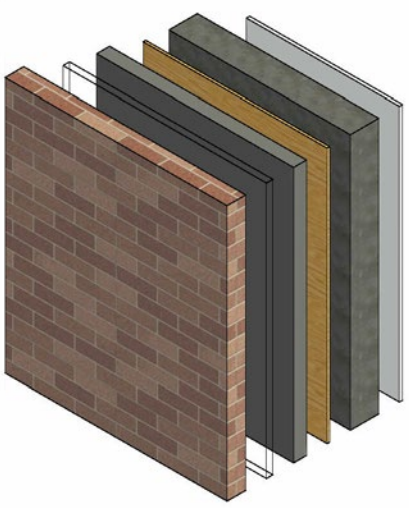
WOOD PLANK SIDEWALK

Salvaged wood planks are also used as walkways in lieu of sidewalks. Places like Detroit used to have wood plank sidewalks before poured concrete replaced them. Since the site's open space is covered with a constructed wetland and stormwater filter system, raised wood planks serve as an ideal walking surface.



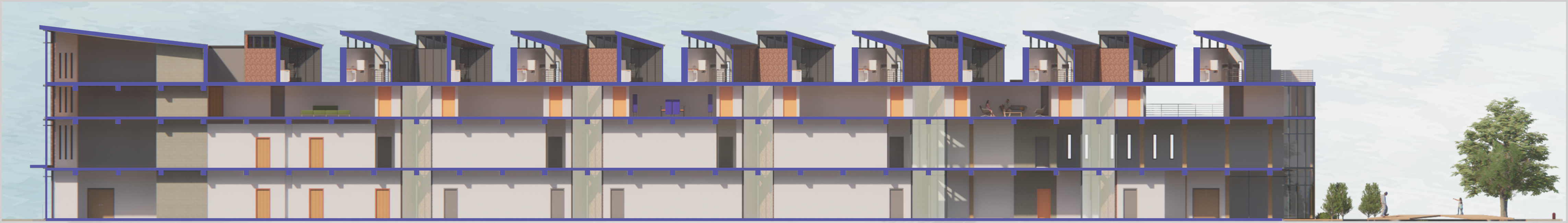
EXTERIOR WALL ASSEMBLY

The exterior wall assembly is comprised of a salvaged brick rainscreen cladding, air space, continuous mineral wool insulation, bio-based sheathing, 2x6 wood stud with wood fiber insulation, a vapor retarder, and gypsum wall board. Together the wall assembly provides R-50 of thermal resistance. A typical Detroit house provides 5000 bricks.



Short Section Looking North Through Atrium

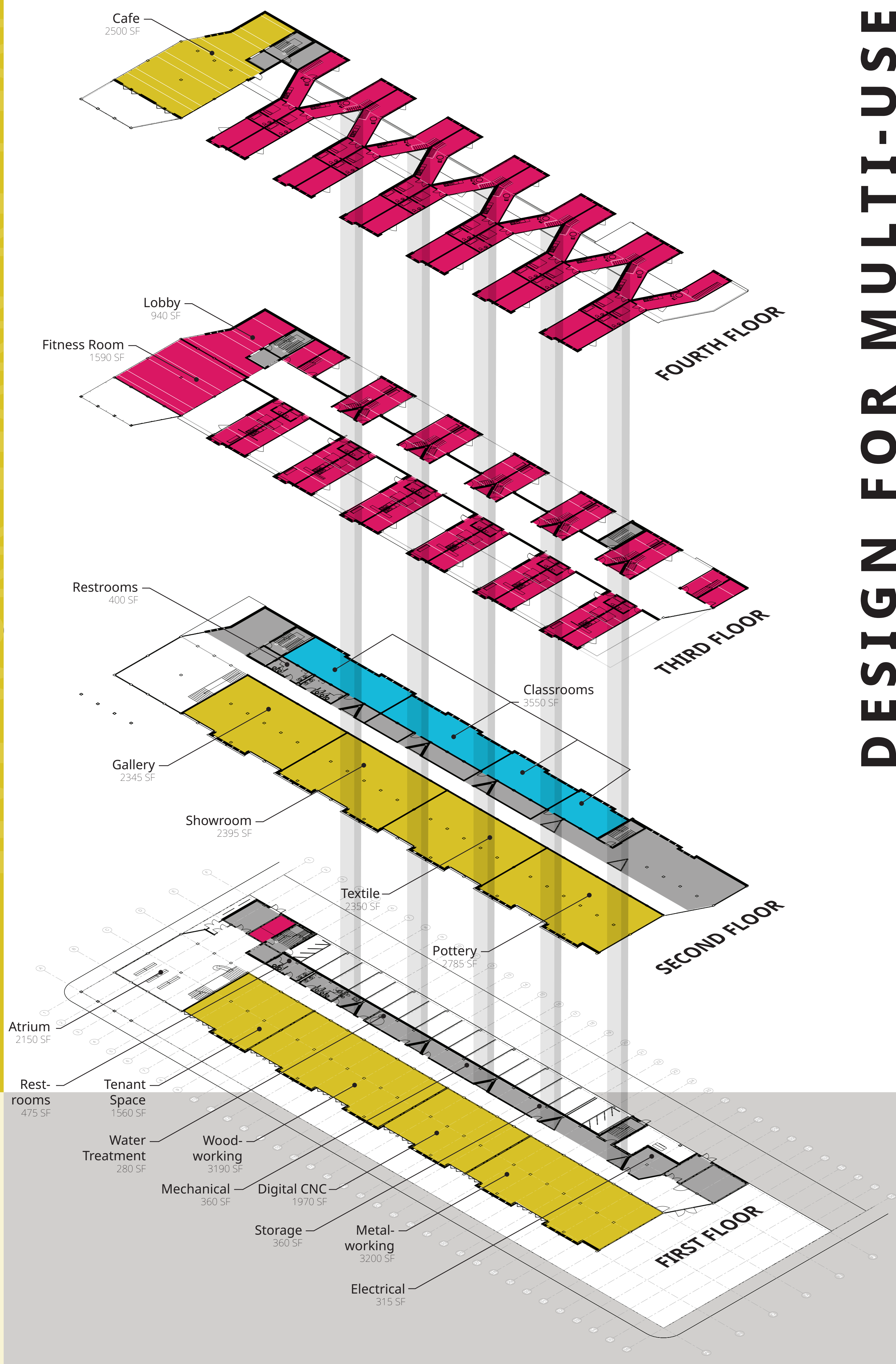
0 2.5 5 10 FT



Long Section Cutting Through Central Corridor

0 2.5 5 10 FT

DESIGN FOR MULTI-USE



This project is driven by the ambitious goals of the triple bottom line—the design must meet the needs of its diverse user groups, the design must restore the natural environment, and the design must have an economic benefit on the surrounding community. The physical design and layout of the building is a response to this challenge. In anticipation of increased development in the Medbury Park/Milwaukee Junction neighborhoods, the structure takes up 2/3 of the property area, reserving 1/3 for open space and public amenities. The zero-lot line setbacks at the corner of Piquette and Beaubien reinforce an urban character.

The parti is a long narrow building that maximizes daylight and organizes programming along a service core and corridor. Makerspace and other day users can enter from Piquette St. in the North and arrive at spacious and open workshops along the Western facade. Across the corridor is a narrow spine of service spaces. This spine is regularly punctured by enclosed light wells that also double as mechanical and plumbing riser shafts. The core buffers the exterior parking and loading area to the East. Since this



THE FIRST FLOOR MAKERSPACES HAVE DIRECT ACCESS TO THE OUTSIDE VIA BIFOLD DOORS. THE NLT LAYERED CEILING DESIGN ALSO ALLOWS DUCTS AND UTILITIES TO BE INSTALLED ABOVE THE BEAMS.



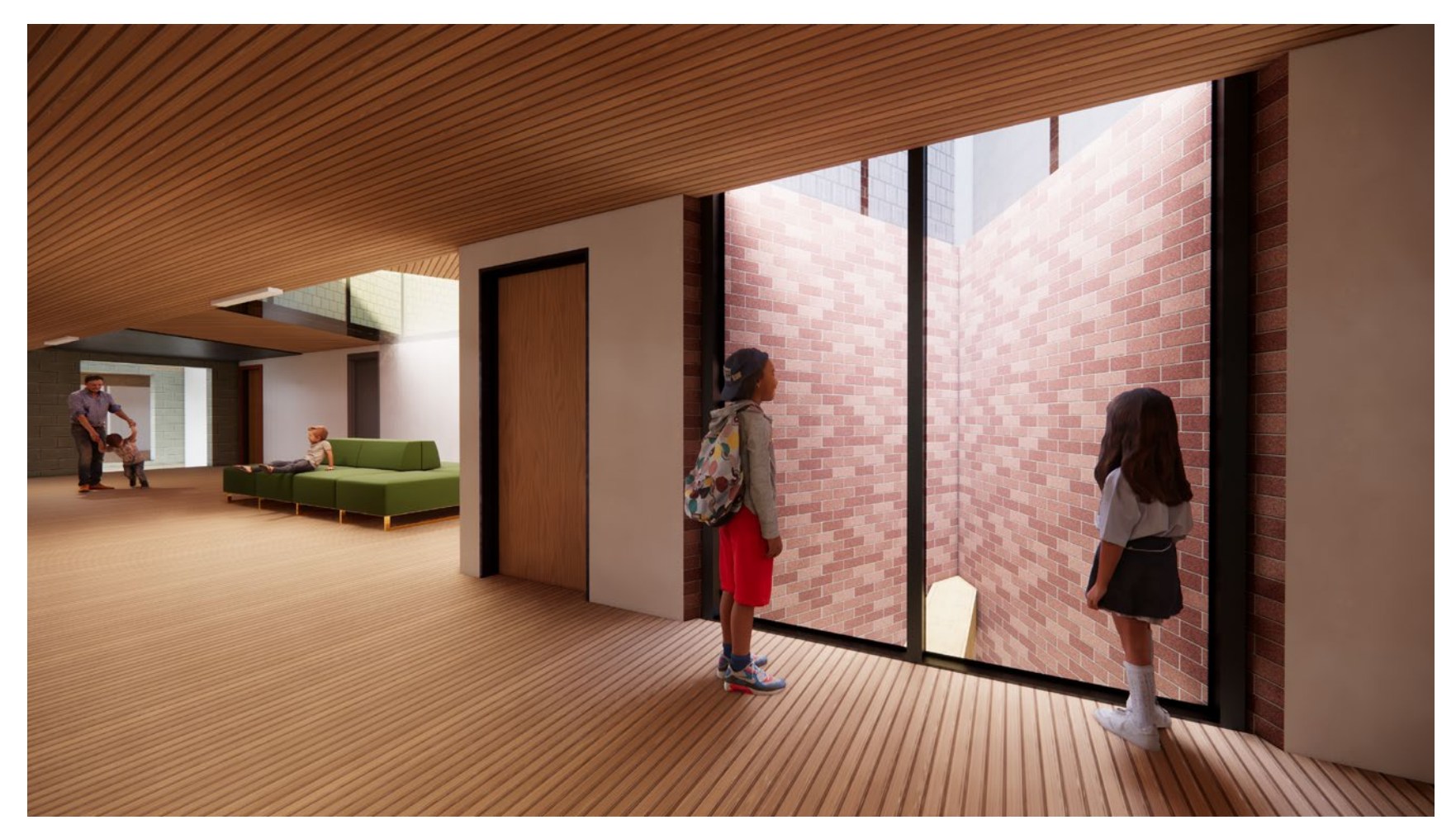
THE CONSTRUCTED WETLANDS FLOW INTO A BIOSWALE AT THE SOUTHERN END. NATIVE PLANTS AND FILTERING SOILS CLEAN THE STORMWATER BEFORE IT RETURNS TO GROUNDWATER.

project is located near multiple modes of public transportation and a surplus of surface and street parking, the number of parking spaces has been reduced to 18 spaces, with 2 offering electric vehicle charging. On-site bike storage and showers for day users encourages alternate modes of transportation to a personal vehicle.

Artists in residence can enter the building from the East and use either the elevator or fire stair to bypass the first two floors of makerspaces, classrooms, and offices. The third floor contains the lobby, fitness room, and rooftop space. The central corridor extends to the South with 24 apartments stretched out in an accordion fashion to maximize views, daylight, and privacy. By weaving and stacking, the apartment floor plans are able to provide each unit sunlight from 3 directions. The 12 Western apartments are accessible studios at 390 SF. The 12 Eastern apartments are lofted 1-bedroom units at 640 SF. The fourth floor has a cafe and rooftop terrace accessible by the public via the elevator and adjacent fire stair. The rest of the fourth floor is private residences and their rooftop gardens accessible from only within those units.



DURING MARKET DAYS, THE OUTSIDE IS CONVERTED TO VENDOR STALLS. A CANOPY SHADES THE INSIDE OF THE MAKERSPACE AND PROVIDES PROTECTION FROM THE ELEMENTS FOR THE VENDORS.



LIGHT SHAFTS REGULARLY PUNCTURE THE BUILDING, PROVIDING ADDITIONAL DAYLIGHTING AS WELL AS UTILITY RISERS FOR HARVESTED RAINWATER PIPES AND MECHANAL PIPES AND DUCTS.

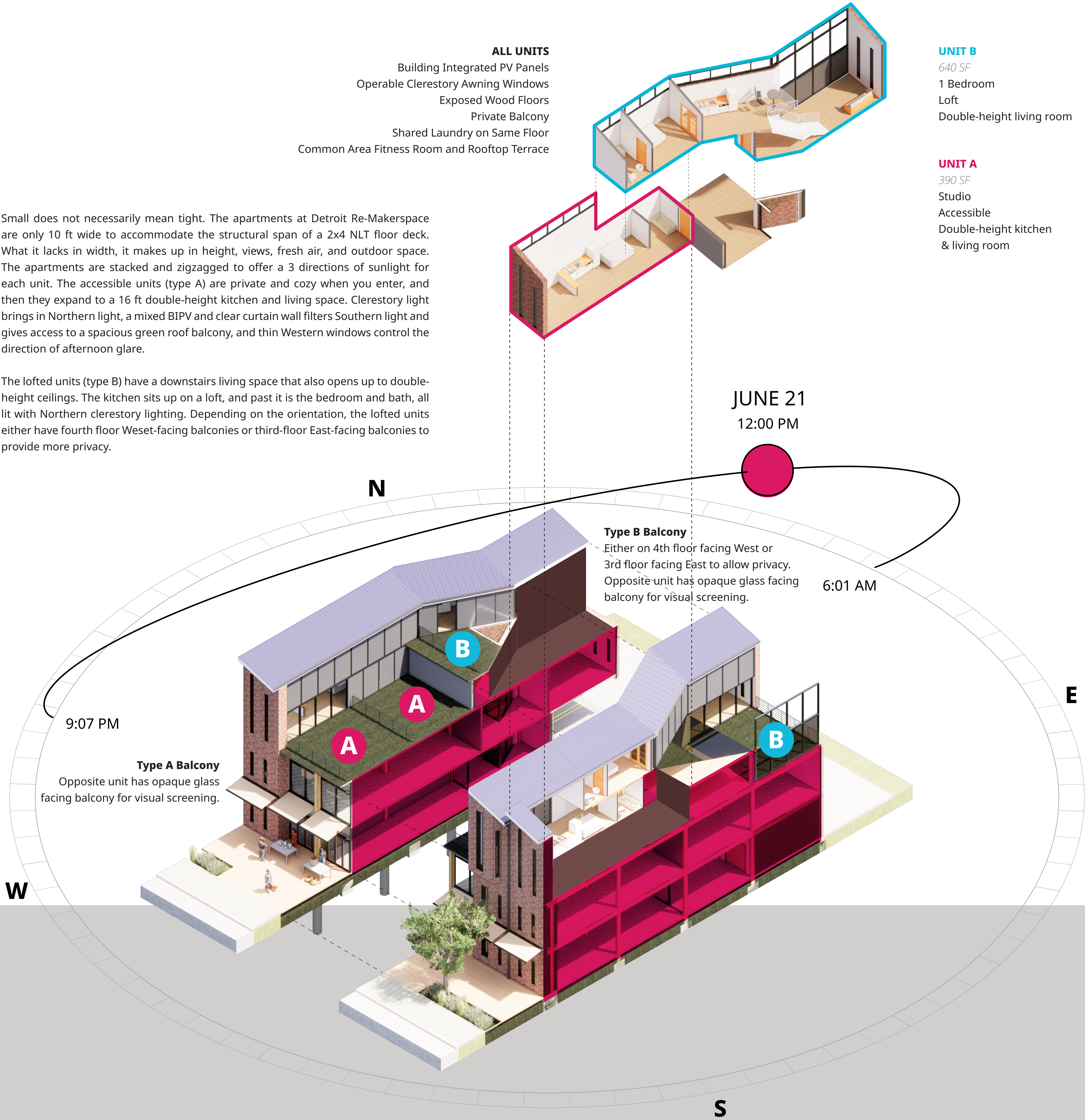
MAKERSPACE	
EDUCATION	
APARTMENTS	
SERVICE CORE	
CIRCULATION/OTHER	

BUILDING FOOTPRINT	23,900 SF
OPEN SPACE	11,400 SF
	35,300 SF

- ALL UNITS**
- Building Integrated PV Panels
 - Operable Clerestory Awning Windows
 - Exposed Wood Floors
 - Private Balcony
 - Shared Laundry on Same Floor
 - Common Area Fitness Room and Rooftop Terrace

Small does not necessarily mean tight. The apartments at Detroit Re-Makerspace are only 10 ft wide to accommodate the structural span of a 2x4 NLT floor deck. What it lacks in width, it makes up in height, views, fresh air, and outdoor space. The apartments are stacked and zigzagged to offer a 3 directions of sunlight for each unit. The accessible units (type A) are private and cozy when you enter, and then they expand to a 16 ft double-height kitchen and living space. Clerestory light brings in Northern light, a mixed BIPV and clear curtain wall filters Southern light and gives access to a spacious green roof balcony, and thin Western windows control the direction of afternoon glare.

The lofted units (type B) have a downstairs living space that also opens up to double-height ceilings. The kitchen sits up on a loft, and past it is the bedroom and bath, all lit with Northern clerestory lighting. Depending on the orientation, the lofted units either have fourth floor West-facing balconies or third-floor East-facing balconies to provide more privacy.



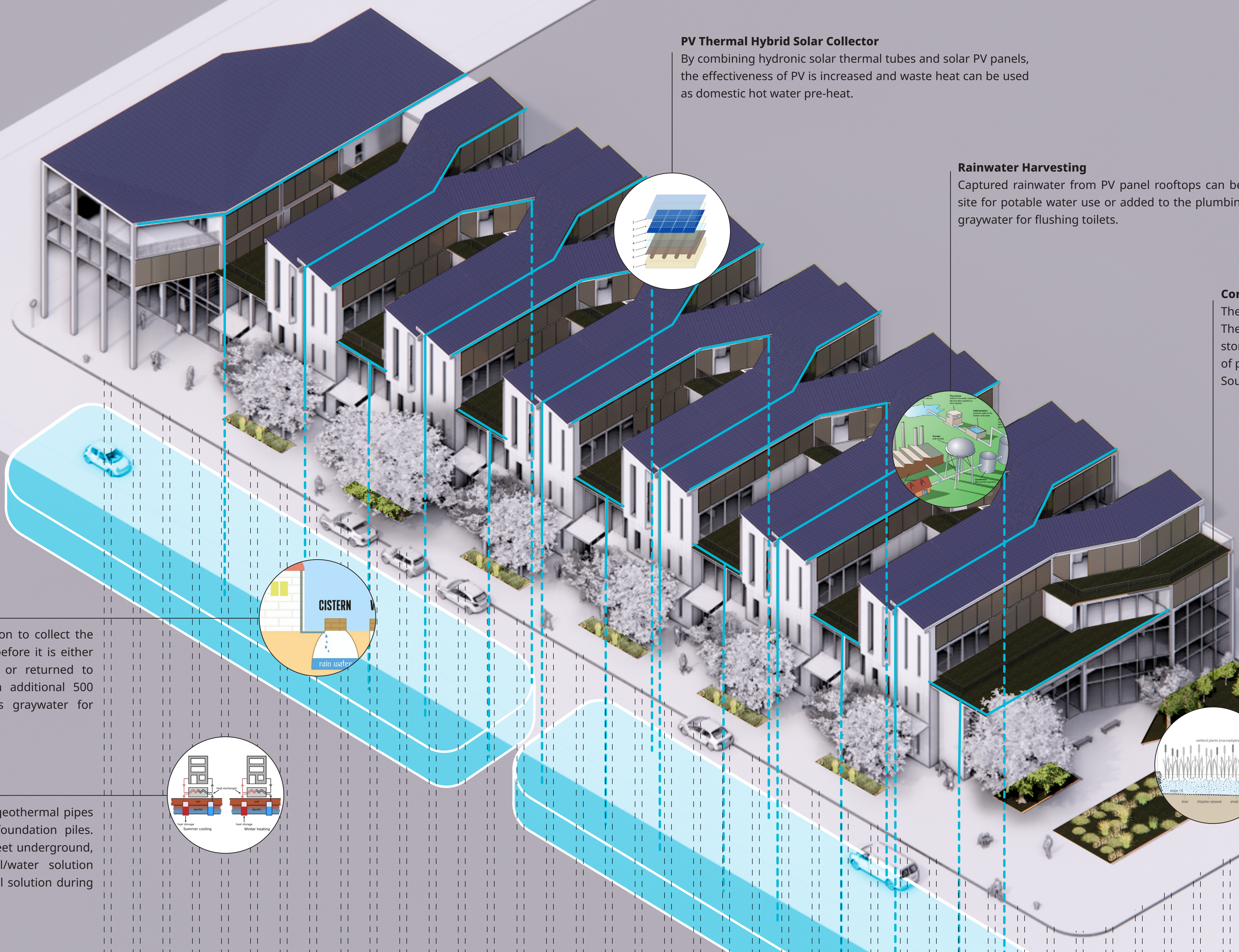
LOFT KITCHEN AND DINING AREA IN 1 BEDROOM UNIT



RESIDENTIAL CORRIDOR IS INTERSPERSED WITH COMMON AREAS AND NATURAL DAYLIGHT



EACH APARTMENT HAS A PRIVATE BALCONY



PV Thermal Hybrid Solar Collector

By combining hydronic solar thermal tubes and solar PV panels, the effectiveness of PV is increased and waste heat can be used as domestic hot water pre-heat.

Rainwater Harvesting

Captured rainwater from PV panel rooftops can be treated on site for potable water use or added to the plumbing system as graywater for flushing toilets.

Constructed Wetlands

The building hovers over the site, resting on foundation piles. The site is lowered and filled with filtering substrates that slows stormwater that falls on the site and runs it through several layers of porous media before reaching the constructed wetland at the Southern end and eventually infiltrating back into the water table.

Cisterns

The site has a 50,000 gallon to collect the rainwater from rooftops, before it is either treated for potable uses or returned to groundwater. There is an additional 500 gallon cistern that stores graywater for flushing toilets.

Geothermal Wells

Deep vertical closed-loop geothermal pipes are integrated with the foundation piles. They tunnel hundreds of feet underground, supplying a warm glycol/water solution during the winter, and cool solution during the summer.



HEATING/COOLING
High-efficiency geothermal heat pumps



OTHER SYSTEMS
DHW can be pre-heated using solar thermal heat



LIGHTING/EQUIPMENT
Makerspace equipment is a major energy load



SOLAR PV
Rooftop solar panels and BIPV can meet 75% of the building energy needs



TOTAL
30.03 EUI Makerspace
-69.17 EUI Residences

Credits

All project graphics are original works of the author apart from the 5 systems diagrams listed below:

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Building Deconstruction Data: <https://domicology.msu.edu/upload/MuskegonDeconstructionHubFinalReport.pdf>

Building Energy Modeling: Cove.Tool

Project Concept

Detroit Re-Makerspace is designed to address the triple bottom line of planet, people, and profit. The goal of the building is to mitigate the negative environmental impact of building a new structure, and if possible, have the project regenerate the infill plot and have a positive impact on the natural environment. The building also has to fulfill multiple needs of different users. Artist, craftspeople, community members, educators, and residents are just a few of the different people who will be using the makerspace. Finally, the project is a crucial piece to economically rejuvenating the Medbury Park/Milwaukee Junction neighborhoods. The project not only creates jobs, but it has potential to be a market catalyst for additional development.

The project centers on the concept of Re-Making. With hundreds and thousands of vacant houses in the Detroit area, there are unharnessed resources that can potentially be given a new life. Deconstruction and salvaging materials have not been popular due to the manual labor required and low price of new materials. However, when the environmental cost of new materials is considered and the economic benefit of creating a new labor market is factored in, deconstruction can make sense. Detroit is an ideal candidate for a new deconstruction market that extracts reusable materials from vacant buildings slated for demolition and manufactures new products out of them. This project proposes uses 2x4 lumber to create a nail laminated timber (NLT) floor deck. By laminating different lengths of lumber together on edge, a stronger whole system can be achieved. 2x4 lumber is the most common framing member found in Detroit houses, other wider lengths such as 2x6, 2x8, and 2x10 can be used to create NLT decks of even longer spans. LEED awards projects for reusing salvaged materials, and this project is able to use mostly salvaged materials for its floor system. The rainscreen wall also uses salvaged brick as a cladding finish layer. The typical Michigan house is 1,500 SF with 4,000 board feet of lumber and 5000 bricks according to a study published by Michigan State University Center for Community and Economic Development in 2017 (<https://domicology.msu.edu/upload/MuskegonDeconstructionHubFinalReport.pdf>). 12 Detroit houses can provide enough lumber for the makerspace's entire floor system.

Equitable and healthy indoor environments is another key consideration in this project. This project uses a unique stacked accordion parti to give each residential unit daylight from 3 directions. The thin unit floorplans allow ample sunlight for all artists-in-residence. 12 of the apartments are efficiency style accessible units, and 12 are 1-bedroom lofted units. This meets the needs of a diverse range of artists. Each unit also has its own

balcony that is visually screened from opposing units for privacy. When residents want to come together, there are plenty of common space recesses in the corridor along with a residential lobby, fitness room, and rooftop deck.

The project is intended to draw makers and artists to the Medbury Park/Milwaukee Junction neighborhood and create a new job market for deconstruction and salvaged materials. The artists-in-residence units along with slated developments at 411 Piquette and 21 Fisher Body Plant will add increased housing density and potential workers. The nearby empty warehouses and industrial spaces can be redeveloped for storing salvaged materials and manufacturing new building products such as nail laminated timbers and wood fiber insulation. The Michigan State study mentioned previously suggests that Michigan has ideal market conditions for creating a deconstruction and reuse supply chain.

Detroit Re-Makerspace scores 90 to 95 points in the New Construction category of LEED v.4.1, achieving the Platinum certification. Many of the site qualities were conducive to a sustainable building including location in a Qualified Census Tract, previously developed site, etc. The rest of the credits were earned by aiming to be the most regenerative building possible while respecting the triple bottom line. The building uses a high-efficiency geothermal system to provide hydronic heating and cooling, a separate ventilation system, high-performing wall and roof assemblies, and hybrid PV/thermal solar collectors. The building can provide 75% of its needed electricity. The building has no combustible systems. Since makerspace equipment has high draw loads, it's difficult to produce all energy on site, but as the grid decarbonizes the building will achieve net zero energy. The project also aggressively pursues the highest performance in the Water Efficiency category. Change is causing more and more extreme storm events in the Great Lakes Region. The site is designed to hold and filter up to 6 inches of rain during one rain event. This decreases chances of urban flooding and prevents runoff from polluting the waterways. The project aims to treat and generate its own potable water onsite. This is an ambitious goal, but projects such as the Bullitt Center in Seattle demonstrate that it's possible.

Detroit Re-Makerspace imagines what a climate-resilient city can look like. As natural resources are depleted, and the climate becomes more and more unpredictable, new strategies are required to be economically and socially successful. This project designs what an environmentally just building in Detroit can look like.

Integrative Process

1 point

The project team performed a multidisciplinary discovery charette to analyze any synergies between energy-related systems and water-related systems. Through considerations of both systems, a few strategies were selected for their symbiotic benefits. One example is PV panels were paired with an integral solar thermal collector to both increase the effectiveness of the panels and collect warmed water for domestic hot water pre-heat. The project team will use a project team letter to establish the intent and implementation plan.

LOCATION AND TRANSPORTATION

Sensitive Land Protection

1 point

The project is located on previously developed land.

High Priority Site

1 point

The project is located in a US HUD Qualified Census Tract: 26163511200.

Access to Quality Transportation

2 points

Stop	Type	Walking Distance	Weekday	Weekend
Beaubien & Piquette	Bus	160 ft	14	12
Amsterdam St.	Light Rail/Streetcar	0.4 miles	~80 (every 15 mins 8AM – 12AM)	~80 (every 15 mins 8AM – 12AM)
Detroit Amtrak Station	Passenger Rail	0.5 miles	8	8
Total			102	100

The QLINE runs on dedicated lanes for segments of its length and mixed traffic in remaining. If it qualifies as a light rail, the project would be eligible for 2 points, if it counts as a streetcar, the projects would not be eligible for any points.

Bicycle Facilities

1 point

Both the short term and long term bike storage areas are within 200 feet of the building main entrance. There are 8 short term storage spaces for day users, and 10 long term storage spaces for residential tenants as well as a shower with changing facilities for day users. The building main entrance is located 0.3 miles from the E Grand Boulevard Bike Route, 0.4 miles

from the Cass Ave Bike Route, and 0.7 miles from the Midtown Loop Trail. By taking Piquette Ave (which qualifies as a bike network since the posted speed limit is 25 mph) cyclists can connect to the Cass Ave Bike Route to reach the Detroit Amtrak Station or QLINE Amsterdam St. Station.

Reduced Parking Footprint

1 point

The project assumes parking type of rental apartments – efficiency for the third and fourth floor which requires 1 parking space per dwelling unit. It assumes office/lab for the first floor and second floor which is typically 1 per 1000 SF.

The parking baseline is $(24 \text{ units} \times 1 \text{ space}) + (47,800 \text{ SF} / 1000) = 72$

The provided parking is 18 off-street spaces which is a 75% reduction from the baseline. Users are encouraged to take alternative methods of transportation or park on-street in the right-of-way.

Electric Vehicles

1 point

2 out of the 18 off-street parking spaces are equipped with electrical vehicle chargers. 1 is a Level 2 Charger and 1 is a Level 3 Fast Charger.

SUSTAINBLE SITES

Site Assessment

1 point

The project team will perform a site assessment prior to schematic design.

Protect or Restore Habitat

2 points

The entire site has been previously disturbed. 33% of it will be designated as open space and restored. The soil will be restored as a constructed wetland and 6 native species of trees, shrubs, and groundcover will be planted. At least 30SF of the open space will be designed as a pollinator garden.

Open Space

1 point

33% of the site is reserved as open space, these include the market social areas, constructed wetlands and pervious walkways. More than 25% of the outdoor space will be planted with the 6 native species mentioned above.

Rainwater Management

3 points

100% of the stormwater that falls on the site is either captured and stored in cisterns for potable water treatment or graywater use or infiltrated slowly into the ground with the layered soil and fill media. Outside of a 500-year storm event, the site is capable of handling all water that falls on it.

Heat Island Reduction

2 points

Area of non-roof measures include the pervious wood walkways above the constructed wetlands (11,400 SF) and PV roof panels (15,660 SF). The area of high reflectance roof over the fire stairs is 500 SF. Vegetated roofs are 10,000 SF.

There is no site paving other than the wood walkways. Total roof area is the total of all above roofs without the constructed wetlands.

Light Pollution Reduction

1 point

All lighting exterior lighting fixtures will use BUG ratings appropriate for lighting zone LZ2-Moderate.

WATER EFFICIENCY

Reduce Outdoor Water Use

2 points

No irrigation is required for the constructed wetlands. Native plantings that are drought-resistant will be specified. Residential rooftop gardens will not have irrigation; tenants can use building water that has been harvested from the rooftops.

Reduce Indoor Water Use

6 points

The building collects rainwater from rooftops and stores the supply in a 50,000-gallon cistern. This is expected to meet the needs of a 6-inch storm event which is the average peak annual amount for Detroit. The water is treated on-site for potable use and excess is returned to groundwater after filtering. There is an additional 500-gallon cistern that stores graywater. This is unprocessed water that is used for flushing high-efficiency toilets and fire sprinkler tanks.

Water Metering

1 point

The building tracks water usage at several points. The amount of harvested rainwater is metered, potable water use is metered separately for makerspace uses and residential uses. Domestic hot water, graywater, and process water are all metered separately for makerspace and residential use as well.

Energy and Atmosphere

Enhanced Commissioning

6 points

The project will have enhanced and monitor-based commissioning as well as building enclosure commissioning.

Optimize Energy Performance

18 points

Both reductions in energy performance cost and greenhouse gas emissions are reduced significantly compared to ASHRAE baseline buildings based on energy modeling software. Factors that contribute to this are selecting a high-efficiency ground-source heat pump heating and cooling system, designing a high R-value roof and wall assembly, and selecting low U-value glazing with SHGC appropriate for the building level and use.

Advanced Energy Metering

1 point

The building tracks energy usage of several systems on a continuous basis. Energy meters will be installed to track electricity use for heating, cooling, ventilation, lighting, plug-loads, and other systems. It will be metered separately for makerspace and residential use.

Demand Response

2 points

The building will participate in Grid Harmonization and Demand Response.

Renewable Energy

5 points

The building has on-site PV panels that meet 75% of the electricity demand.

Enhanced Refrigerant Management

1 point

The HVAC system will use low impact refrigerants. The geothermal system will use a closed-loop system with a glycol/water solution. The distribution system will use a low-impact refrigerant to supply and return to hydronic units.

MATERIALS AND RESOURCES

Building Life-Cycle Impact Reduction

1-4 points

The building does not reuse an in-place existing building so it would not qualify for option 1 unless it chose to count salvaged materials in this credit instead of Sourcing of Raw Materials. It

can pursue the LCA option. The building can earn up to 4 points for reusing salvaged materials into its structure and enclosure and achieving a 20% global warming potential reduction and 10% in 2 additional categories. The exact LCA results were not calculated for the competition, so 1 point is used in the scorecard.

Environmental Product Declarations

2 points

The project will use performance specifications to require products meeting certain EPD rating standards and have optimization reports.

Sourcing of Raw Materials

2 points

The project uses bio-based materials for sheathing, wood products certified by the FSC for structural mass timber and wood fiber insulation. The NLT floor deck and brick wall cladding is entirely salvaged other than required fasteners.

Material Ingredients

2 points

The project will use performance specifications to require products meeting certain HPD rating standards and have optimization reports.

Construction and Demolition Waste Management

2 points

The project will divert at least 50% of the total construction and demolition materials from landfills and incineration facilities. The design of reusing salvaged materials and creating assemblies that can be easily deconstructed will help meet this goal. The project will also generate less than 10 lbs. of waste material for each SF of the building during construction. This will be achieved by careful planning and coordination with the General Contractor.

INDOOR ENVIRONMENTAL QUALITY

Enhanced Air Quality Strategies

2 points

The project will use the following strategies to achieve full points for this credit:

1. Entryway systems
2. Filtration of outdoor air
3. Filtration of recirculated air
4. Increased ventilation 30%
5. Operable windows
6. Carbon dioxide monitoring

Construction Indoor Air Quality Management

1 point

An indoor air quality plan will be required for construction and preoccupancy phases of the project.

Indoor Air Quality Assessment

2 points

The project will require air testing after substantial completion but before occupancy. The test will need to ensure that particulate matter, inorganic gases, and VOCs do not exceed the defined limits. If any contaminant is noncompliant, the issue must be addressed and retested until it is under compliance.

Thermal Comfort

1 point

The HVAC system and building envelope will meet ASHRAE Standard 55-2017. Individual controls for heating, cooling, humidity, and ventilation will be provided for each apartment and each separate room in the makerspace.

Interior Lighting

2 points

The project will use the following strategies to achieve full points for this credit:

1. Glare control
2. Color rendering
3. Lighting control
4. Surface reflectivity

Daylight

1 point

The average sDA value for regularly occupied floor area is 42% based on daylight modeling.

Quality Views

1 point

Approximately 90% of the regularly occupied floor area will have access to outdoor natural or urban environment views.

Acoustic Performance

1 point

HVAC background noise shall meet the appropriate ASHRAE standards. Since the mechanical system is geothermal and hydronic distribution, noise can easily be mitigated. All spaces will meet a minimum STC and NIC rating of 50 and 45 respectively. The integrated acoustic panel in floor systems will help reduce noise traveling vertically, and partition wall acoustic insulation and

sheathing will help horizontal noise transmission. Reverberation time will be below 0.8 for makerspace rooms, and below 0.6 for residential rooms.

INNOVATION

Innovation

5 points

The project proposes a new Innovation credit, meets the pilot credit of Integrated Project Water Reuse Strategy, and achieves exemplary performance in the reduced parking footprint and indoor water use credits.

The new Innovation credit proposes a metric to measure percentage of material that is designed to be reused. Whether it's a product with cradle to cradle manufacturer support or an assembly that is designed for disassembly, the intent is to add a consideration of future use for building products. This credit will be calculated similarly to the Raw Material credit. Instead of looking at what materials are coming into the building, it looks at what materials can leave the building without entering landfill.

LEED Accredited Professional

1 point

The project employs a LEED AP consultation as part of the project team.

REGIONAL PRIORITY

The following credits count towards the full 4 points for regional priority for the project site:

1. Enhanced Indoor Air Quality
2. High Priority Site and Equitable Development
3. Building Life-Cycle Impact Reduction
4. Rainwater Management
5. Renewable Energy



LEED v4.1 BD+C Project Checklist

Project Name: Detroit Re-Makerspace
Date: 6/30/2024

Y ? N

1			Credit	Integrative Process	1
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5	2	9	Location and Transportation	16
			Credit LEED for Neighborhood Development Location	16
1			Credit Sensitive Land Protection	1
1		1	Credit High Priority Site and Equitable Development	2
		5	Credit Surrounding Density and Diverse Uses	5
	2	3	Credit Access to Quality Transit	5
1			Credit Bicycle Facilities	1
1			Credit Reduced Parking Footprint	1
1			Credit Electric Vehicles	1

9	0	1	Sustainable Sites	10
Y			Prereq Construction Activity Pollution Prevention	Required
1			Credit Site Assessment	1
1		1	Credit Protect or Restore Habitat	2
1			Credit Open Space	1
3			Credit Rainwater Management	3
2			Credit Heat Island Reduction	2
1			Credit Light Pollution Reduction	1

9	0	2	Water Efficiency			11
Y			Prereq	Outdoor Water Use Reduction	Required	
Y			Prereq	Indoor Water Use Reduction	Required	
Y			Prereq	Building-Level Water Metering	Required	
2			Credit	Outdoor Water Use Reduction	2	
6			Credit	Indoor Water Use Reduction	6	
		2	Credit	Optimize Process Water Use	2	
1			Credit	Water Metering	1	

33	0	0	Energy and Atmosphere			33
Y			Prereq	Fundamental Commissioning and Verification	Required	
Y			Prereq	Minimum Energy Performance	Required	
Y			Prereq	Building-Level Energy Metering	Required	
Y			Prereq	Fundamental Refrigerant Management	Required	
6			Credit	Enhanced Commissioning	6	
18			Credit	Optimize Energy Performance	18	
1			Credit	Advanced Energy Metering	1	
2			Credit	Grid Harmonization	2	
5			Credit	Renewable Energy	5	
1			Credit	Enhanced Refrigerant Management	1	

9	3	1	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
1	3	1	Credit	Building Life-Cycle Impact Reduction	5
2			Credit	Environmental Product Declarations	2
2			Credit	Sourcing of Raw Materials	2
2			Credit	Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

14	0	2	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
2			Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
2			Credit	Interior Lighting	2
1		2	Credit	Daylight	3
1			Credit	Quality Views	1
1			Credit	Acoustic Performance	1

6	0	0	Innovation	6
5			Credit Innovation	5
1			Credit LEED Accredited Professional	1

4	0	0	Regional Priority			4
1			Credit	Regional	Priority: Specific Credit	1
1			Credit	Regional	Priority: Specific Credit	1
1			Credit	Regional	Priority: Specific Credit	1
1			Credit	Regional	Priority: Specific Credit	1

90	5	15	TOTALS	Possible Points: 110
ed: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum 80				