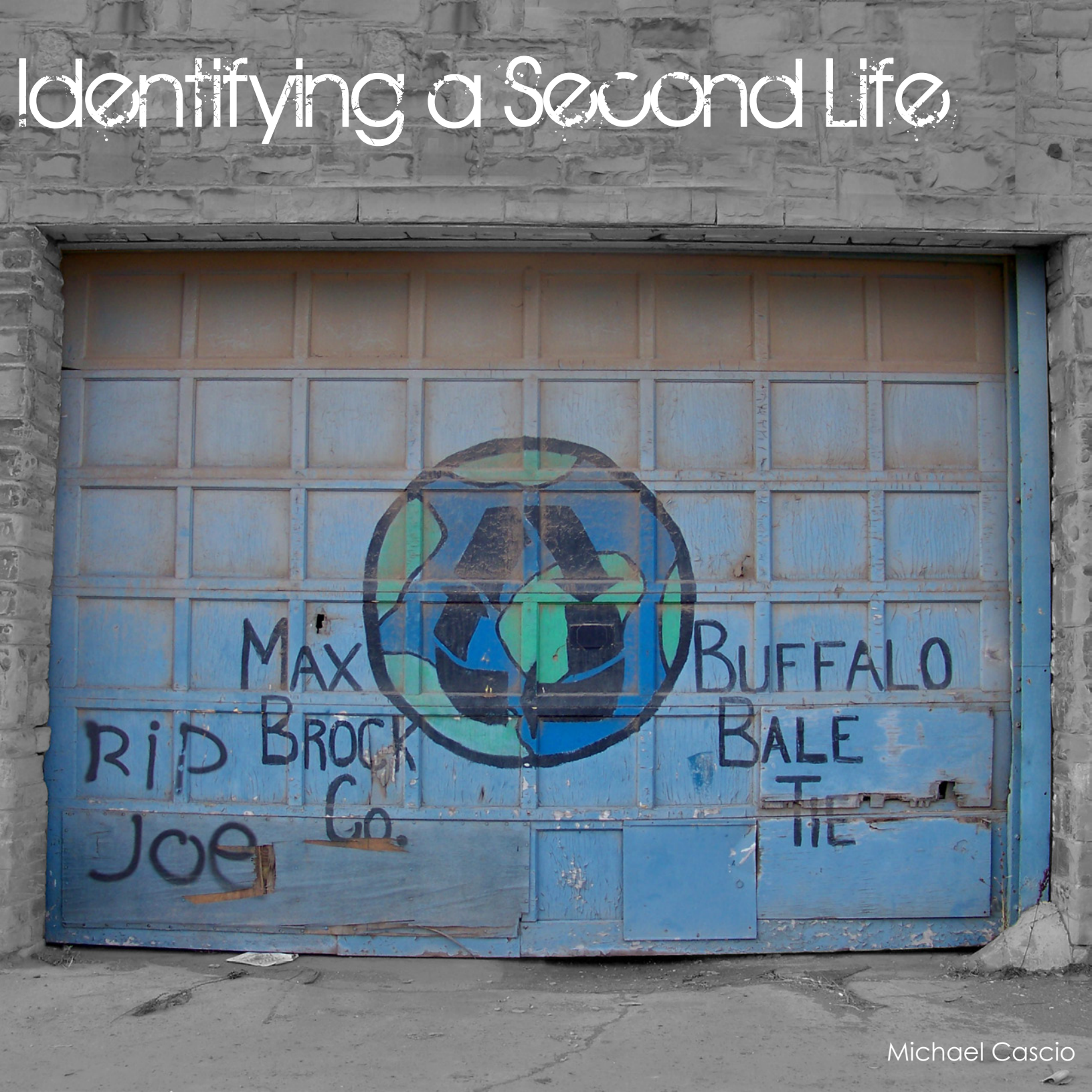
Identifying a Second Life



Michael Cascio

Identifying a Second Life.

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29 April 2011

This book is dedicated to:

Chris Petzak
David Smoes
Blake Hill
James Jenkins
Lauren Leow
Joe Machek
Amber Menchaca

AJ Noto
Chris Gillen
Brad Sucher
Basse Cummings
Carissa Chatterley
Matt Denner
Nick Piotrowski

Salvatore Lore
Roger Van Tol
Chris DeGrendel
Veronica Allen
Evan Veit
Derek Wendt
Andrew Flippo

Nathan Lohrer
Dima Daimi
Alana Buynak
Scott Lakin
Ryan Morse
Jeff Harris
Phil Martin
Dean Storm
Alan Latour

...And to my family. Thank you all for your unyielding support.


CONCRETE CENTRAL

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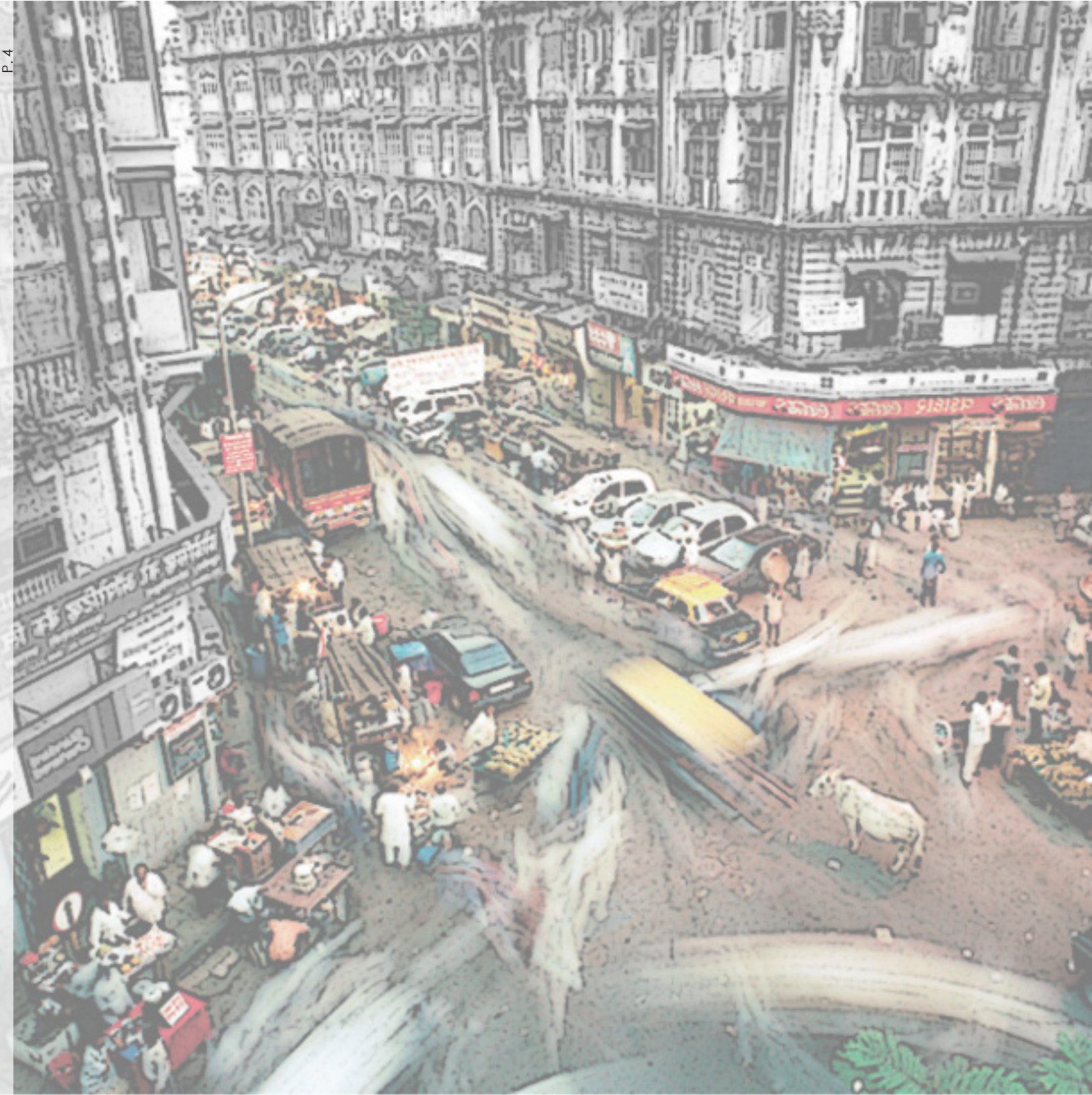
Abstract:

The human ability to adapt to different situations and transition seamlessly between many social roles has provided for our survival for thousands of years as we deal with disaster as well as subtle changes in our daily lifestyle. More definitively, a person's purpose and subsequent actions may change at any instance to better suit our current situation. For example, a person may go from the role of an architect, to a father, to a patron, to an entertainer, to a volunteer worker, and their actions will correspond to their current social role. Architecture has the potential to take on different roles as well. Sometimes it is a spectacle or symbol drawing society into it's attraction, it can start a revolution or movement, or it can unite a community. At other times schools, libraries, and museums can take on the role of institutions of higher education, as architects continue to integrate better ways of learning into the edifice itself. Architecture can also exist as a place of community and renewal, whether that place exists for the benefit of society or the environment. Architecture can furthermore serve as a connection between multiple locations and offer a means to establish relationships between different sites.

In a growing community, different roles must be fulfilled to satisfy the proper development of the area. The demand of each role in a community fluctuates over time and certain communities may require the use of specific roles at different times. To meet the demands that each community requires, the emerging architecture must be flexible and able to fluidly adapt to the needs of the community. Current architectural techniques create situations where a building outlives its original program which can often lead to abandonment and further deterioration of the community, but through this process, the life-cycle of the prevalent architecture can be perpetuated, resisting obsolescence and abandonment, and provide exactly what is necessary to continue to benefit the community. With the number of communities in need of drastic redevelopment suffering from a declining population, economy, and quality of life, is it possible to spark a new form of urban renewal through adaptive and productive design?

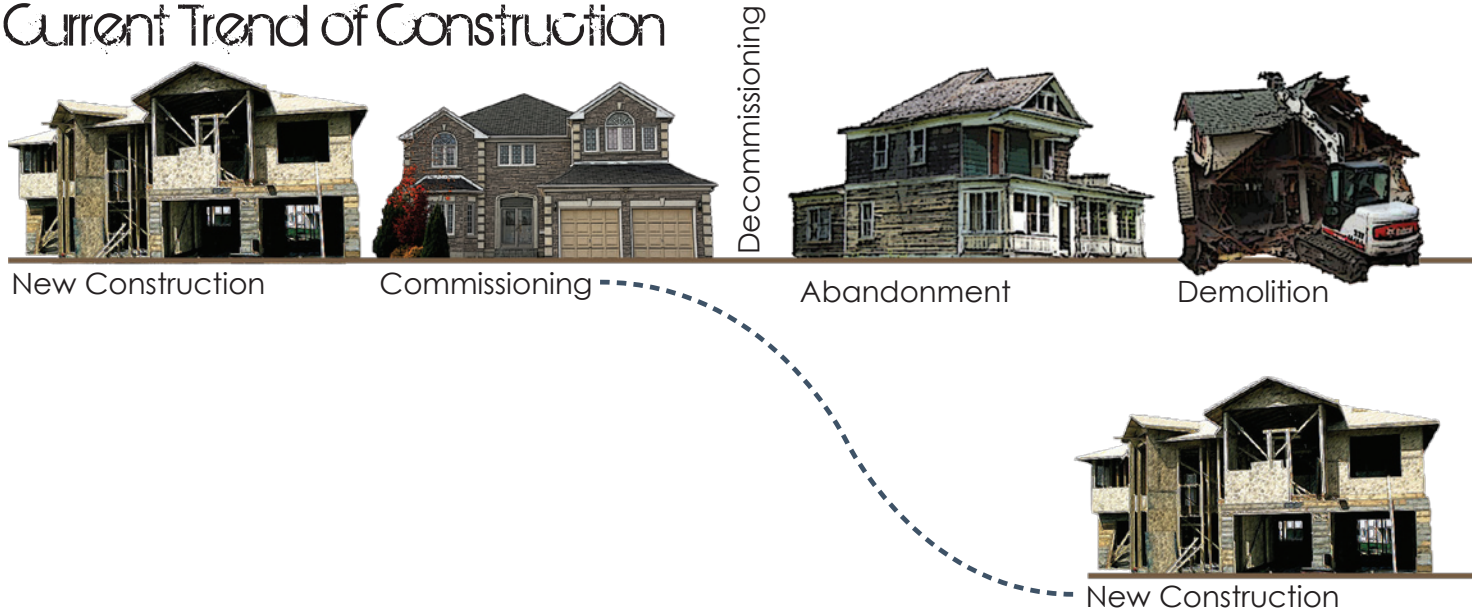


Thesis:

From the middle of last century until now, society has become permeated with the "throw away" lifestyle, and buzz words like "disposable" and "one-use" have grow to be commonplace. Where communities used to "make do and mend" in the recent past, they now simply replace items that are no longer functioning or are no longer wanted. This may seem great if there were an everlasting supply of clean energy to make replacement goods and bottomless land fill sites, but neither exist and it is important to realize that this way of living has long term negative effects on the planet and civilization.

When this "throw away" model is applied to the built environment as it has been in recent times, the resulting landscape begins to develop inconsistently leading towards disuse and abandonment. The current trend in the life cycle of a building tends to consist of the following: construction, commissioning, decommissioning, abandonment, and then possible demolition. Although a standalone structure may go through several ownerships, the building was never designed for an adaptable reuse of the space and there is a limited scope of different possible programmatic infill. The original occupant of the

Current Trend of Construction



Adaptive Method

Figure 1

building may leave for a variety of reasons long before the building has reached the end of its lifespan. This current model for a building's life creates situations where a building's active life is much shorter than the useful life of a building's architectural components, and while these structures lie in disuse, the useful life of these components passes along with time due to neglect and deterioration and their value is lost. Instead of the current trends of construction that seem to exist, the method that exists should consist of construction, commissioning, decommissioning, adaptation, re-commissioning, and proceed in a cyclical fashion.

Valuable and reusable architectural components can be divided into three different categories: skin, structure, and space. The skin of a building consists of its visible elements, its envelope, and is generally comprised of elements chosen for their aesthetic of performance values. The skeleton is the structure of a building. These elements resist loading, keep the building standing, and hold the other components of the construction together. The skeleton of a building also consists of the infrastructure of a building as well, including its electrical, mechanical, and plumbing systems which many times go unseen, but add value to the construction as well and keeps it in working condition. The third category is space, or site. The space in which a building occupies has value as well and can lose its value when the site or surrounding environment fall to disuse as well. It is important to understand that this is not only the physical volume that a structure occupies on a site, but how that structure occupies that space; such as its relationship to the streetscape and the pedestrian or its openness toward the community.

1: *(opposite page)* This graph displays the current trends in construction in which buildings are discarded long before the end of their lifespan and lose their potential value, while new buildings are constructed wasting even more resources.

Useful Life of Materials

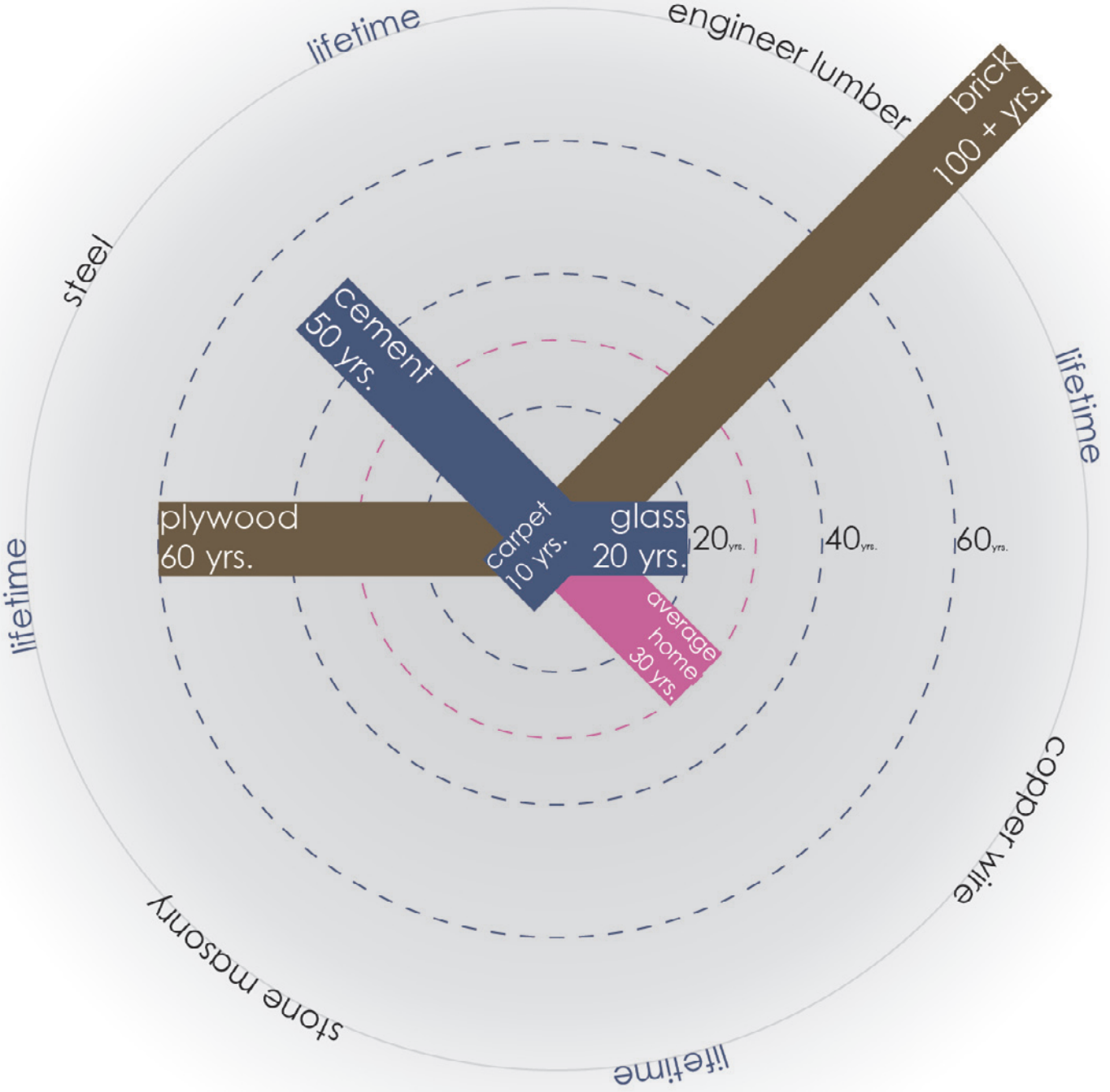


Figure 2

Coupled with these trends in construction are the effects of deindustrialization on the urban landscape. Due to the relocation of industry as well as the effects of urban sprawl in the Northeastern and Midwestern regions of the United States, many cities in that region lie derelict and depopulated. This depopulation of the city has also assisted in wearing down and creating holes in the urban fabric of the city leaving behind material dross, as well as a loss of jobs, increase in crime rate, and a demoralization of the local population.

The urban environment provides many benefits for its occupants as well as the environment. Beginning in the social realm, the urban environment sets up a tightly woven network of interactions, providing a unique, culturally rich experience for its inhabitants. Urbanization often leads to development of infrastructure and communication systems which promotes businesses and industry to take root within the city. Industry and retail operation in the city provides jobs the local community and money making opportunities for the local labor force. Compact development also uses less land and resources than sprawling developments and allows enough density to allow transit for transportation instead of cars as well as walkable communities. The deindustrialized urban environment is not only the canvas for multiple reuse projects, it also acts as the medium with which to create a productive urban landscape. As a community becomes more conscious of the limited resources that exist and the fragile environment which continues to be strained by a gross influx of waste, it becomes paramount to locate waste and identify potential problems and opportunities for reusing it in an effort to restore these communities to a flourishing and unique district within an urban context.

2: *(opposite page)* This graph displays the useful life of materials used in everyday construction, more specifically, of homes. Although the average home has a shelf life of approximately 30 years, many of the materials used in their construction have a lifespan far longer. These materials end up lifeless and abandoned or in landfills where their worth is degraded.

Designers have made valiant attempts to recycle the vast waste created through deindustrialization through many adaptive reuse projects, but these attempts perhaps have not gone as far as to achieve a truly valuable re-production capable through re-imagining and salvaging the collective body of dross in the material stream. It is important for designers to be considerate of the impact of their creations in their environment, to design for flexibility so the potential value of the construction can be tapped, and design with the complete life cycle of their creations and their components in mind.

The act of repurposing man-made structures has used to an extent throughout history. Hadrian's Wall, in northern England, was constructed in 122 A.D. as a defendable fortification which served as the northern border to the Roman Empire. After the fourth century, due to Barbarian invasions, economic decline, and military coups, the Empire's hold on Britain had loosened and the wall was abandoned and fell into ruin. However, enough had survived through the eighth century for portions of it to find their way into the construction of Jarrow Priory. Over the centuries and even into the twentieth century a large portion of the stone was reused in other local building. In Northumberland, England stand the ruins of Thirlwall Castle. The castle was built in the 12th century, and later strengthened with the stones of Hadrian's Wall; bringing new use, and worth, to the archaic wall. The wall is composed of large stackable stones, not only capable of supporting heavy loads, but due to the size, shape and method of construction used to put them together permit a flexibility in their design. Local Britons at the time were able to see the advantages that the stones held and

realized that they would be useful for much longer than they were intended to be used originally. Hadrian's wall is one example of a collection of materials that exist and have fallen in disuse, with potential to not only re-enter the material stream but also to gain usefulness and worth in a way that was not originally imagined.

The way in which architectural components are transferred from one use to another is not always as straight forward as a analogous reassembly in a new location as is the case with Hadrian's wall. The Big Dig House designed by SsD Architecture, located in Lexington, Massachusetts, is an example of a prototype building that demonstrates how infrastructural refuse can be salvaged and reused. In this example the structural system for the house is comprised of steel and concrete discarded from Boston's Big Dig utilizes over 600,000 pounds of salvaged materials from elevated portions of the dismantled I-93 highway. Sections of the elevated highway were assembled to form inhabitable spatial arrangements in a way that may have been informed by its previous life, but is used fundamentally differently than it was originally. Although this project is useful in understanding a unique example in the reimagining of construction and demolition waste, it also presents several important question to consider in the scope of this thesis.

When reuse is considered in architecture, identifying a material source is critical to the development of a design that smoothly transitions the salvaged architectural components from one life to another. Components in any environment come in a variety of conditions intrinsic to their previous use. Materials may come in a variety of sizes due to a previous use or the method of

extracting which is used to salvage them, and other elements may need to remain assemble together or remain unchanged to facilitate their reuse. A space may require remediation of some kind, whether it be physical or the remediation of the community, to permit a successful reuse. Different environments provide a diverse variety of components available for building, however the location may limit the type and quantity available. It is impossible to correctly assess the type, quantity, and condition of components in a particular environment before locating an actual source of materials. In the case of the Big Dig House, the design followed the identification of a valuable material source which was only available for a limited amount of time restricting their opportunity for reuse. If material reuse is to be used to produce worth for the urban environment a process for predicting the certainty of materials must be found.

Being Less Bad

The more reuse is used and studied in attempts to reduce or reverse our production of waste the more apparent it becomes that the materials that are being reused were never designed with further use in mind. Good intentions aside, many attempts to reuse and recycle materials means wrestling them into a form that requires as much energy, and perhaps generates as much waste, as producing a new product. All of the effort that goes into designing and manufacturing a product from reused materials only ends up postponing the usual fate of the materials by a life cycle or two. These conglomerations of reused materials, are still on their way towards landfill; they have just deferred the trip in a new location.

Essentially this is not enough. For products or architecture to exist in a closed loop system, the intention of reuse must be planned for simultaneously in their conception. In the book Cradle to Cradle: Remaking the Way We Make Things William McDonough, an architect, and Michael Braungart, a chemist, present a detailed manifesto on a switch from the "cradle-to-grave" life cycle pattern that transcends the field of product development to the entire world of design. In the book they tell the tale of three books which can be metaphorically applied to construction and architecture.

The first is a familiar typology; it is a regular size and shape, dark inks are used to create crisp impressions on the creamy paper. But what happens when the book is discarded? The paper came from trees, so natural resources have already been depleted to produce the reading material. The paper is biodegradable but the inks on the pages and jacket contain carbon black and heavy metals, and the jacket is not really

paper but an amalgam of materials including wood pulp, polymers, and coatings. The book cannot be safely composted, and if it is burned, it produces some of the most cancer-causing materials ever created by humans.

The second book may also seem all too familiar in contemporary times. The book is similar in size and shape as the first, but the paper is thin and a dull beige. It is printed on recycled paper with soy-based inks; the designer even attempted to "dematerialize" the product, using less of everything. However, these design decisions based on the narrow scope of eco-efficiency lead to a product that isn't user friendly: flimsily put together and ink that shows through the flimsy paper, and lack contrast straining the eyes. The designer had to make many choices and trade-offs in the choice of materials for the book with every choice having drawbacks. Because the paper has such a high level of recycled content, its fibers have about already reached its limits of reuse, and the soy-based ink may still include toxins more bioavailable in a water-soluble ink. The book is truly a concerted attempt to be eco-efficient, and it is a step in the direction towards slowing the production of waste and filling landfills, but perhaps it does not go far enough to rethinking our problems of waste production. This typology can be seen loosely as an analogy for typical reuse in the field of architecture.

To be innovative in designing for a lifetime of reuse perhaps it is necessary to completely rethink the idea of the product and how its produced. Imagine the third book as the book of the future. The book is not made of paper. Instead, it is made of plastic polymers developed to be infinitely recyclable at the same level of quality. It has been designed with its future life

foremost in mind, rather than as an unfortunate afterthought. The inks are nontoxic and can be washed off with an extremely hot water bath leaving the rest of the book to be recovered and reused. The cover is made of a heavier grade of the polymer and the glue is made of compatible ingredients so that once the book is discarded it can be easily recovered in a one step recycling process. Nor is the users' experience and pleasure an afterthought either. The book's pages are sensuously smooth, and unlike recycled paper, they will not yellow with age. Although the book's next life has already been imagined, it is durable enough to last for generations. Rather than apologizing for the products materials, it celebrates them [*McDonough, Cradle to Cradle*]. When this typology of design is applied to architecture it provides the potential for a building to completely re-enter the material stream after an infinitely number or uses.

A building that exemplifies several of these ideas is architect Peter Zumthor's Swiss Sound Box, which was the Swiss Pavilion for Expo 2000 in Hanover, Germany. Taking the Expo's theme of sustainability seriously, Zumthor designed a beautiful and unique building with the foresight to consider the future life of the temporary pavilion. The walls of the building are constructed using over 144 kilometers of unseasoned lumber and assembled without glue, bolts, or nails. The beams are stacked one on top of the other, pressing down on the ones below and are braced with only steel cables [*Etherington, Projects by Peter Zumthor*]. When the Expo had finished, the building was disassembled and the lumber which had finally finished its seasoning process was able to be sold as timber ready for construction. In this unique example, the form of the pavilion follows

the function of intended reuse. Not only did the architect have the foresight to consider the future life for the pavilion's materials, but the innovative system of reuse is only possible through its specific design and construction. The key feature of the project which makes this novel system viable is the dry assembly of the materials. This allowed them to remain completely unscathed by the construction and deconstruction of the pavilion granting near mint condition materials for future construction.

The next step in putting these ideas into action is determining specific systems that define this paradigm. When critiquing examples reuse projects throughout history, flexibility appears as a key factor in a building or component's capacity for reuse. The designed flexibility can be categorized in three different typologies: constructive, performance, and usage. Constructive flexibility can be categorized as having a number of components, which are manufactured ready for assembling and integration with other components through dry assembled techniques. Performance flexibility makes use of custom-made components, whose performances can be modified easily in relation to technical, physical, and environmental requirements fixed for the building. Usage flexibility is the ability for a component to be changed in relation to developing trends in users to better suit a purpose.

In McDonough and Braungart's manifesto they discuss a product's relationship with two different material flows: the biosphere and the technosphere. The biosphere is swirling with biological nutrients, which are materials or products that are designed to return to the biological cycle, and the Technosphere is filled

with technical nutrients, which are materials or products that are designed to return to the industrial cycle. Materials that enter one of the two streams fuel the material flow and facilitate a clean and waste-less reuse of their nutrients. However, problems begin to arise when a products become composites of multiple materials, and consequently are unable to be separated or enter either material flow. These "monstrous hybrids" contaminate nutrients for both industry and nature, and their ability to be reused efficiently is lost. Because products existing in both material flows may be necessary in the construction of a building, their assembly again becomes increasingly important. Products existing in separate material streams require the ability to be disassembled so that they can be properly returned to their material flow after their initial use.

A designer must have the considerations and foresight necessary to design for the continual reuse of a building and its components and guarantee their future life. By shifting away from orthodox methods of construction and reimagining the composition of materials, these systems of continual reuse can become a boon to both people and the environment. Instead of dedicating valuable time and embodied energy to the salvaging and preparation of materials which will be forced into one or two more life cycles that were never planned, designing components for continual reuse from their conception ensures that the future of a community will not be troubled with questions of how to manage the physical remnants of abandonment.

However, Planning and design cannot solve all problems associated with the vast amount of urban waste landscape. Drosscaping,

as a verb is the placement upon the landscape of new social programs that transform waste (real or perceived) into more productive urbanized landscapes to some degree. Adaptively reusing this waste landscape seems to be one of the twenty-first century's great infrastructural design challenges as these sites are potentially transformable into new productive uses such as permanent open landscapes or infill developments [*Berger, Drosscape*]. Designers must begin to think of themselves as charged with the task of identifying undervalued and overlooked potentials of the urban region and re-presenting them to the community as useful and worthy.

The intentions of this thesis are to explore how urban waste landscapes can be transformed and reused to create productive landscapes capable of generating economic, environmental, and cultural worth to the surrounding areas. Through a network of planning and programming these derelict portions of the city can become new infrastructure which will support the repopulated cities of tomorrow.

Precedent Studies

Hadrian's Wall:

Location: Northern England

The act of repurposing man-made structures has used to an extent throughout history. Hadrian's Wall, in northern England, was constructed in 122 A.D. as a defendable fortification which served as the northern border to the Roman Empire. After the fourth century, due to Barbarian invasions, economic decline, and military coups, the Empire's hold on Britain had loosened and the wall was abandoned and fell into ruin. However, enough had survived through the eighth century for portions of it to find their way into the construction of Jarrow Priory. Over the centuries and even into the twentieth century a large portion of the stone was reused in other local building. In Northumberland, England stand the ruins of Thirlwall Castle. The castle was built in the 12th century, and later strengthened with the stones of Hadrian's Wall; bringing new use, and worth, to the archaic wall. The wall is composed of large stackable stones, not only capable of supporting heavy loads, but due to the size, shape and method of construction used to put them together permit a flexibility in their design. Local Britons at the time were able

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Precedent Studies

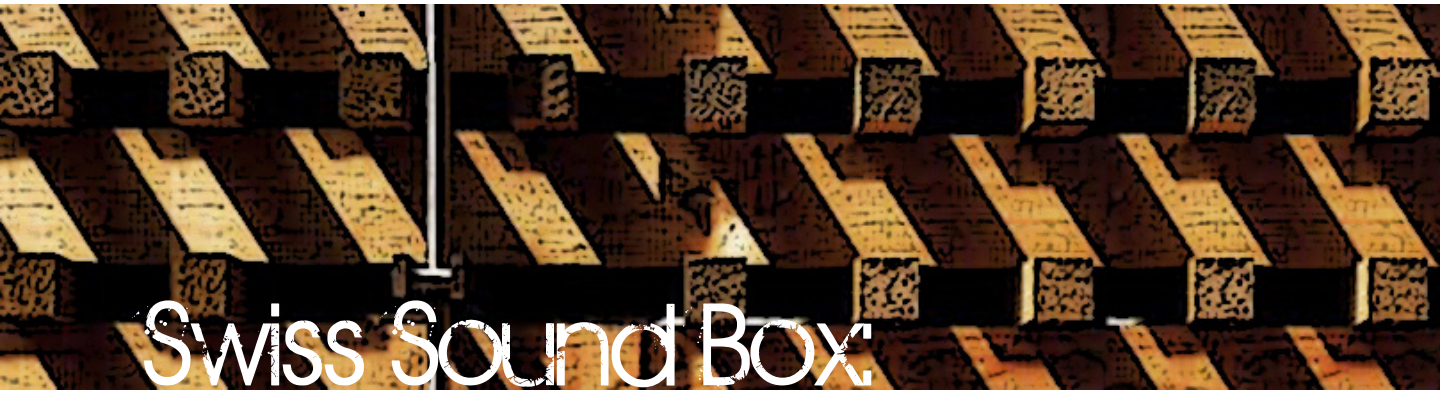
Big Dig House:

Location: Lexington, Massachusetts, USA

Architect: SsD Architecture + Urbanism

The Big Dig House designed by SsD Architecture, located in Lexington, Massachusetts, is an example of a prototype building that demonstrates how infrastructural refuse can be salvaged and reused. In this example the structural system for the house is comprised of steel and concrete discarded from Boston's Big Dig utilizes over 600,000 pounds of salvaged materials from elevated portions of the dismantled I-93 highway [*Single Speed Design*] Sections of the elevated highway were assembled to form inhabitable spatial arrangements in a way that may have been informed by its previous life, but is used fundamentally differently than it was originally. Although this project is useful in understanding a unique example in the reimagining of construction and demolition waste, it also presents several important question to consider in the scope of this thesis.

Precedent Studies



Location: Hanover, Germany

Architect: Peter Zumthor

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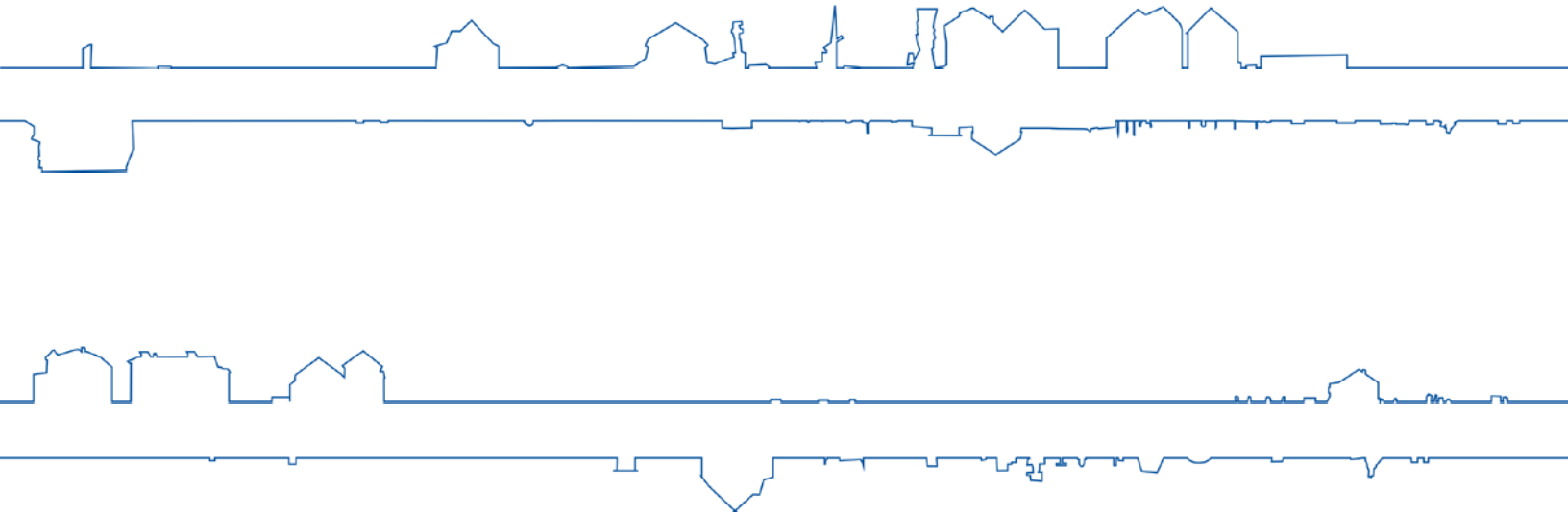


Heidelberg Project:

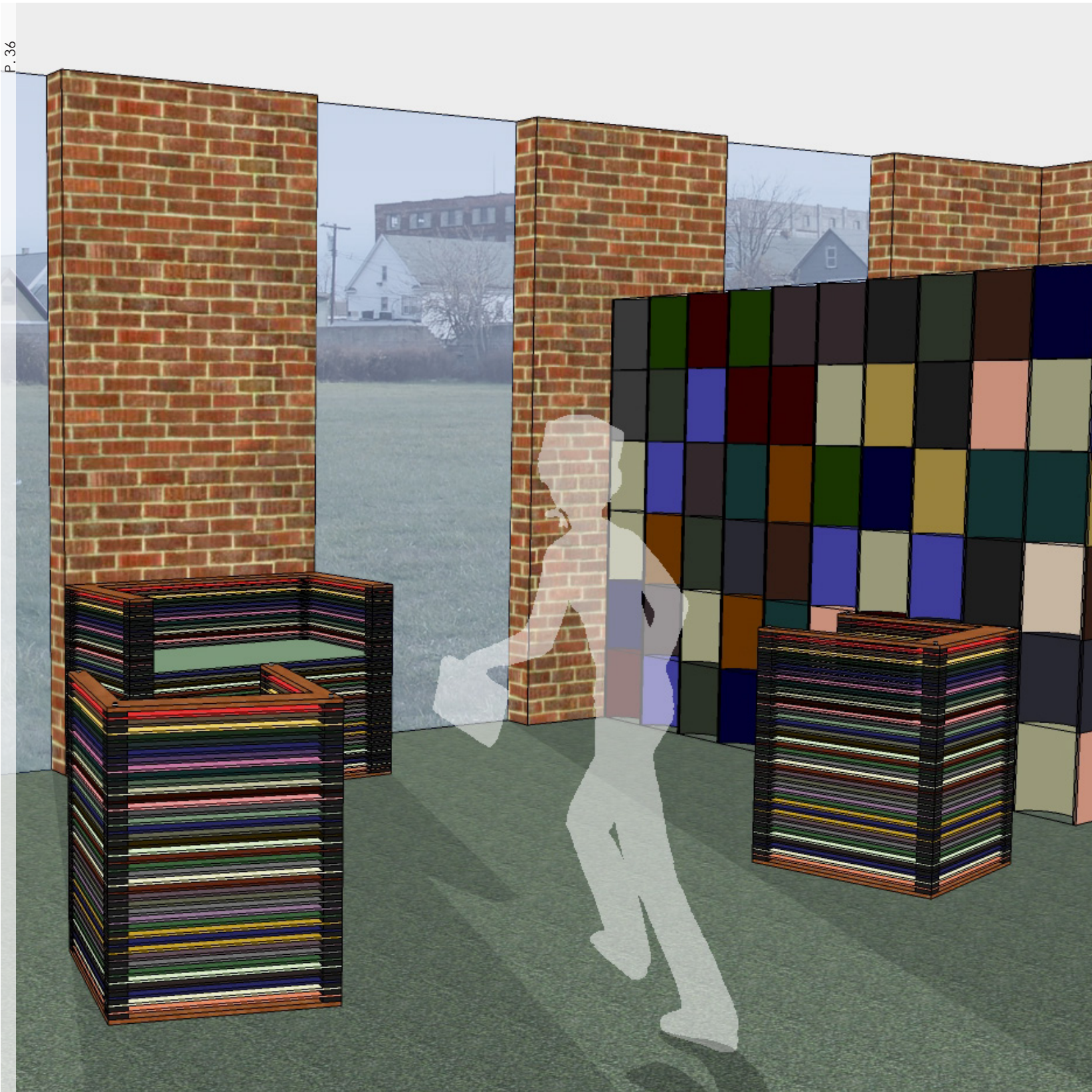
Location: Detroit, Michigan, USA

Artist: Tyree Guyton

The Heidelberg Project is an artist's commentary on the abandonment of Detroit. Although the artists use salvage materials to create their installations, the specific materials used do not provide an increased worth for the architecture. Originally through this exploration this exploration was viewed as an anti precedent for the following work. However, as the focus of the intended thesis shifted away from the reuse of materials to increase the worth of the architecture within a space toward the reuse of the entire space to develop a landscape that produces social, economic, and environmental worth for a community, the Heidelberg Project quickly switched its role and influence. Tyree Guyton created the project with the idea of visibly transforming the environment of his decaying neighborhood, which was marred by crime, prostitution, and gangs. Using the materials around him—cast-off toys, discarded car parts, and other debris—along with his trademark brightly colored polka dots, Guyton eventually


THE WALL
TAXI

transformed several houses and vacant lots on Heidelberg Street into the city's most recognizable art environment and one of its leading tourist attractions [*Guyton, Connecting the Dots*].



Material Study:

One of the first studies that was done while working with recycled materials was the Carpet Square Chair and Carpet partition wall. These studies were an attempt at finding a way to take advantage of the usage flexibility of a material that had fallen into disuse. The design is simple and flexible and can be assembled in different sizes as well to better suit the needs of the users.

Figure 3

3: *(left)* The Carpet Square Chair, constructed by threading metal rods through layers of used carpet samples. By repurposing the carpet samples, their value can be increased and their disposal is postponed.
4: *(right)* The Carpet Square Partition Wall is constructed of several bands of carpet riveted together and warped to provide support for the rows that could be stacked on top.

Figure 4

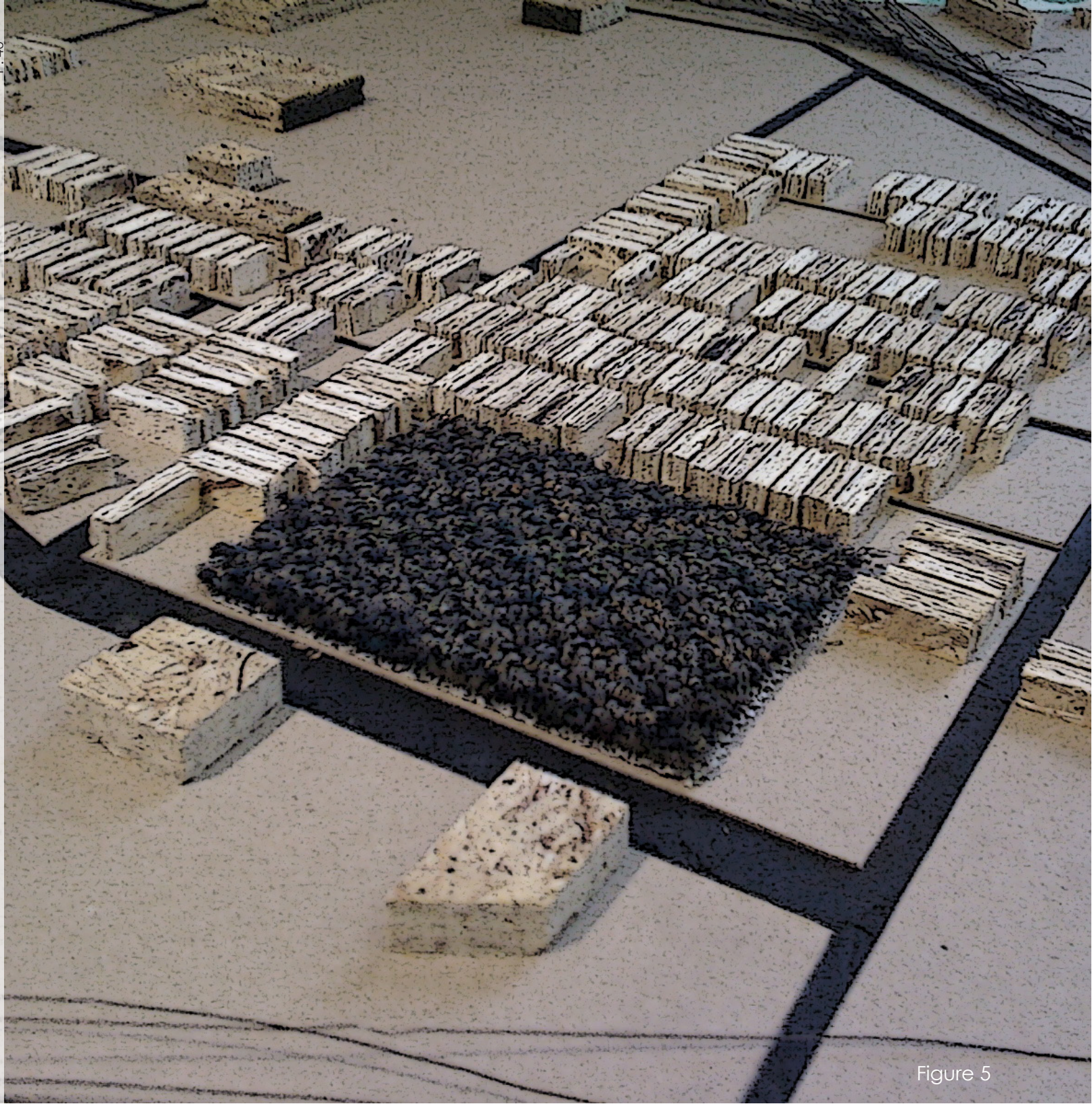


Figure 5

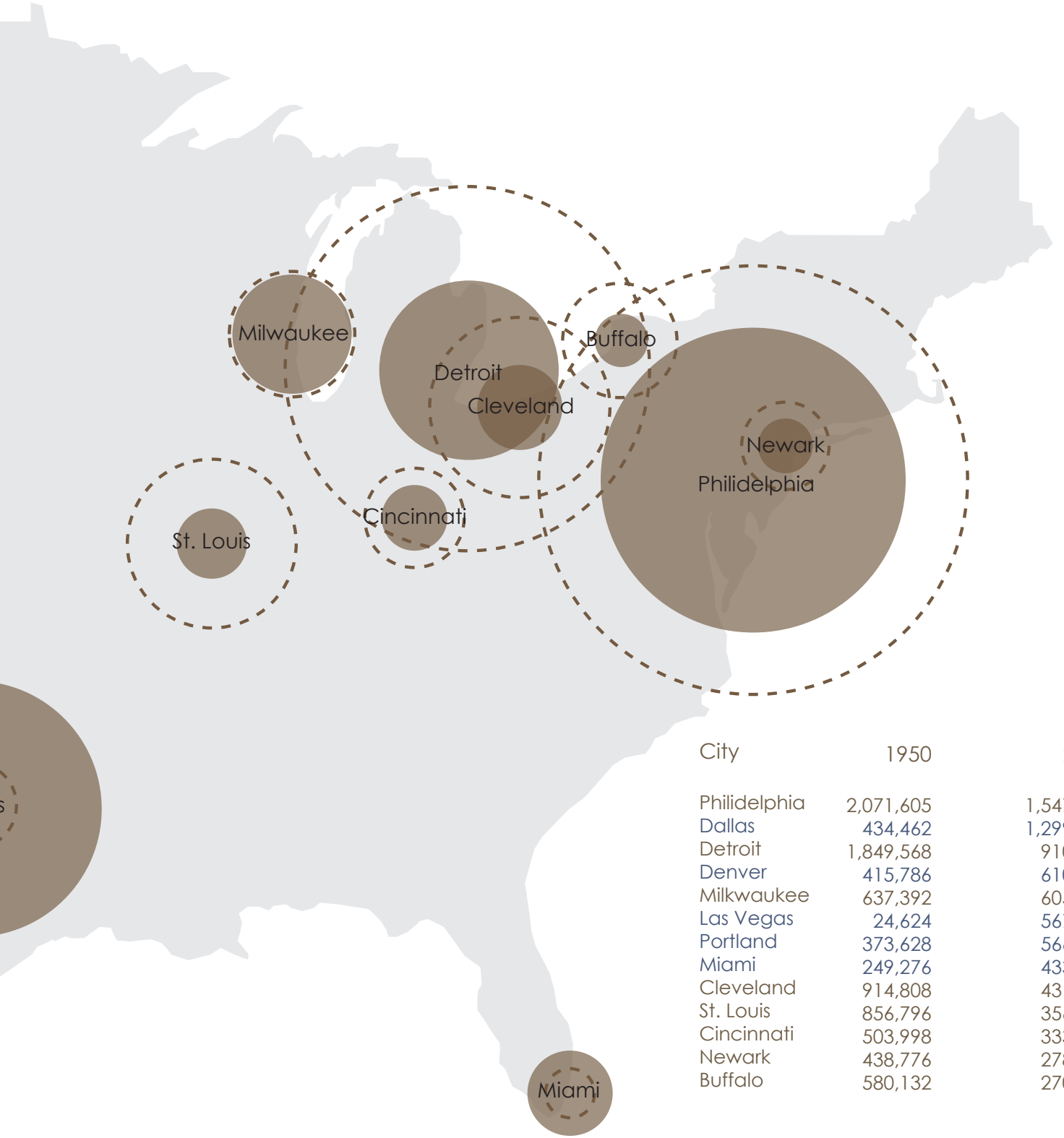
Site Selection:

Guided by the book by Alan Berger entitled Drosscape: Wasting Land in Urban America, as well as Shrinking cities, a project of the Federal Cultural Foundation, under the direction of Philipp Oswalt, the site selection process for this thesis focused on locating a site in the United States that was not only within the urban environment, but more importantly, an urban environment in economic and social recession in need of intervention. After briefly establishing a list of cities in the United States with gross population decline over the past 50 years and assessing their economic and cultural situations, Buffalo was selected as the city of study for this thesis.

Buffalo, New York is a prime example of the effects of deindustrialization in the United States. In 1900 Buffalo was the eighth largest city in the United States, but since 1950 it has seen nearly fifty percent of its population leave the city, dropping below its 1900 population. This has lead to vast abandonment within the city, ranging from huge parcels of land, to historic landmarks like the Buffalo Central Terminal which lies vacant and looming in central Buffalo, with its empty rail lines like veins that have run dry, to industrial buildings like factories and warehouses, to the

5: *(opposite page)* This is an early model of the chosen site at Metcalfe used to display the density of houses (both vacant and occupied) in proximity of the site

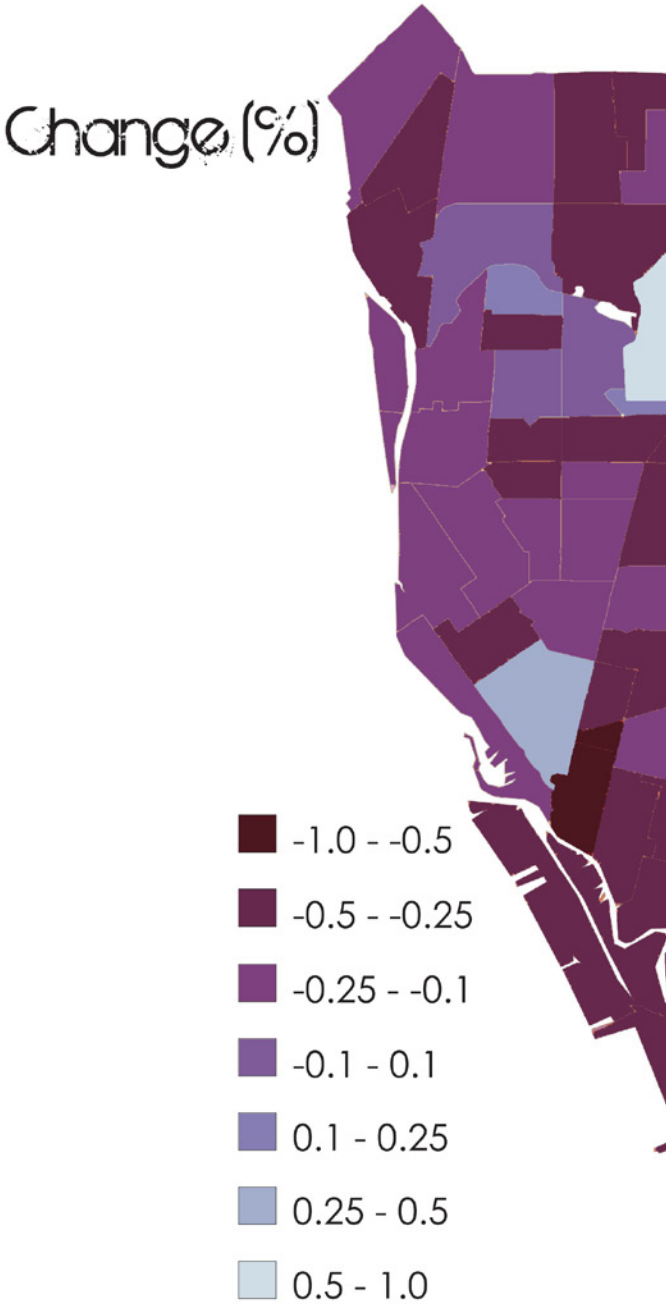

Portland
Denver
Las Vegas
El Paso
Dallas



City	1950	2009
Philidelphia	2,071,605	1,547,901
Dallas	434,462	1,299,543
Detroit	1,849,568	910,920
Denver	415,786	610,345
Milkwaukee	637,392	605,013
Las Vegas	24,624	567,641
Portland	373,628	566,141
Miami	249,276	433,136
Cleveland	914,808	431,639
St. Louis	856,796	356,587
Cincinnati	503,998	333,013
Newark	438,776	278,154
Buffalo	580,132	270,240

Figure 6


1970
163 - 2444
2445 - 4261
4262 - 5643
5644 - 7428
7429 - 13029


Change (%)
-1.0 - -0.5
-0.5 - -0.25
-0.25 - -0.1
-0.1 - 0.1
0.1 - 0.25
0.25 - 0.5
0.5 - 1.0

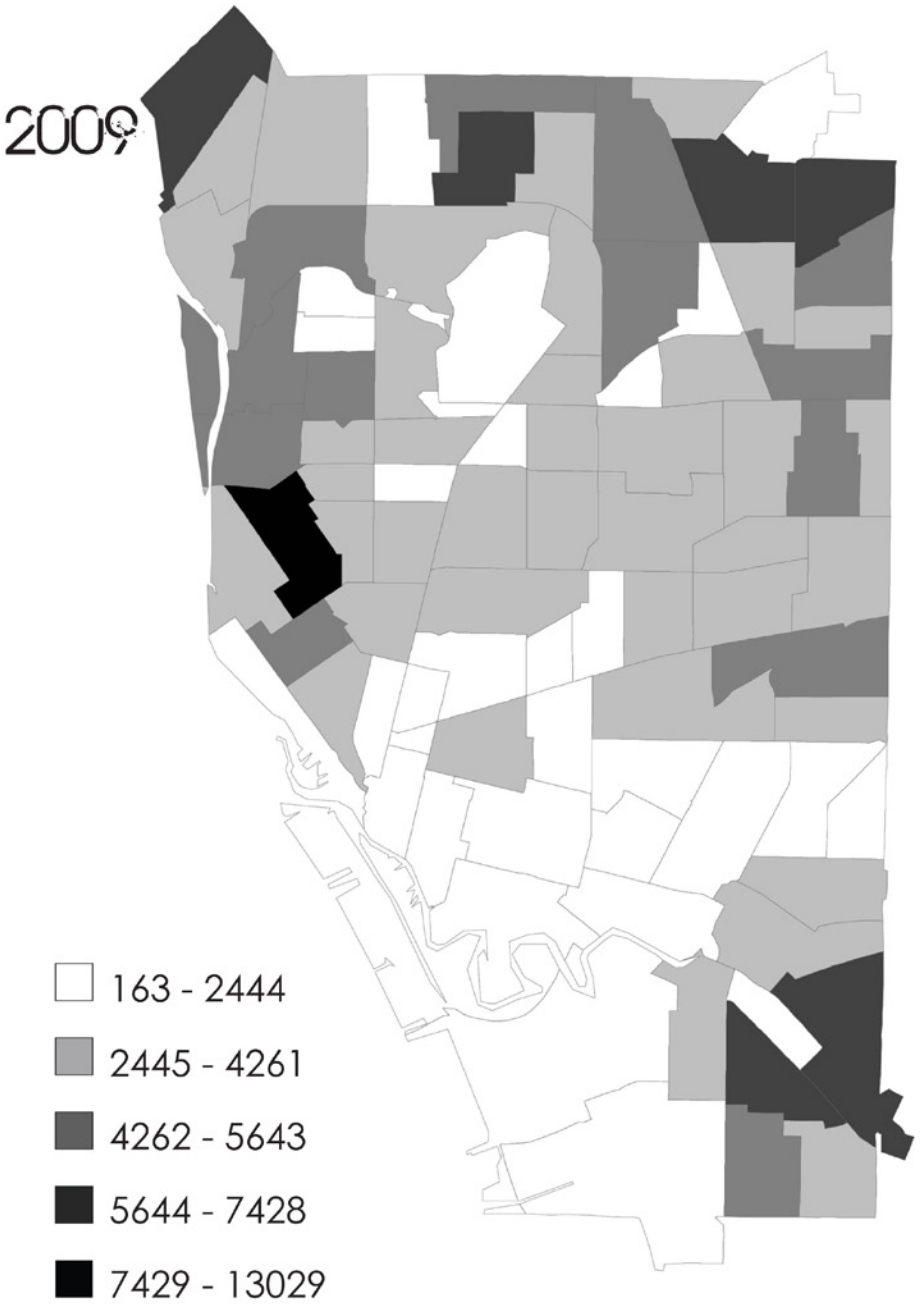
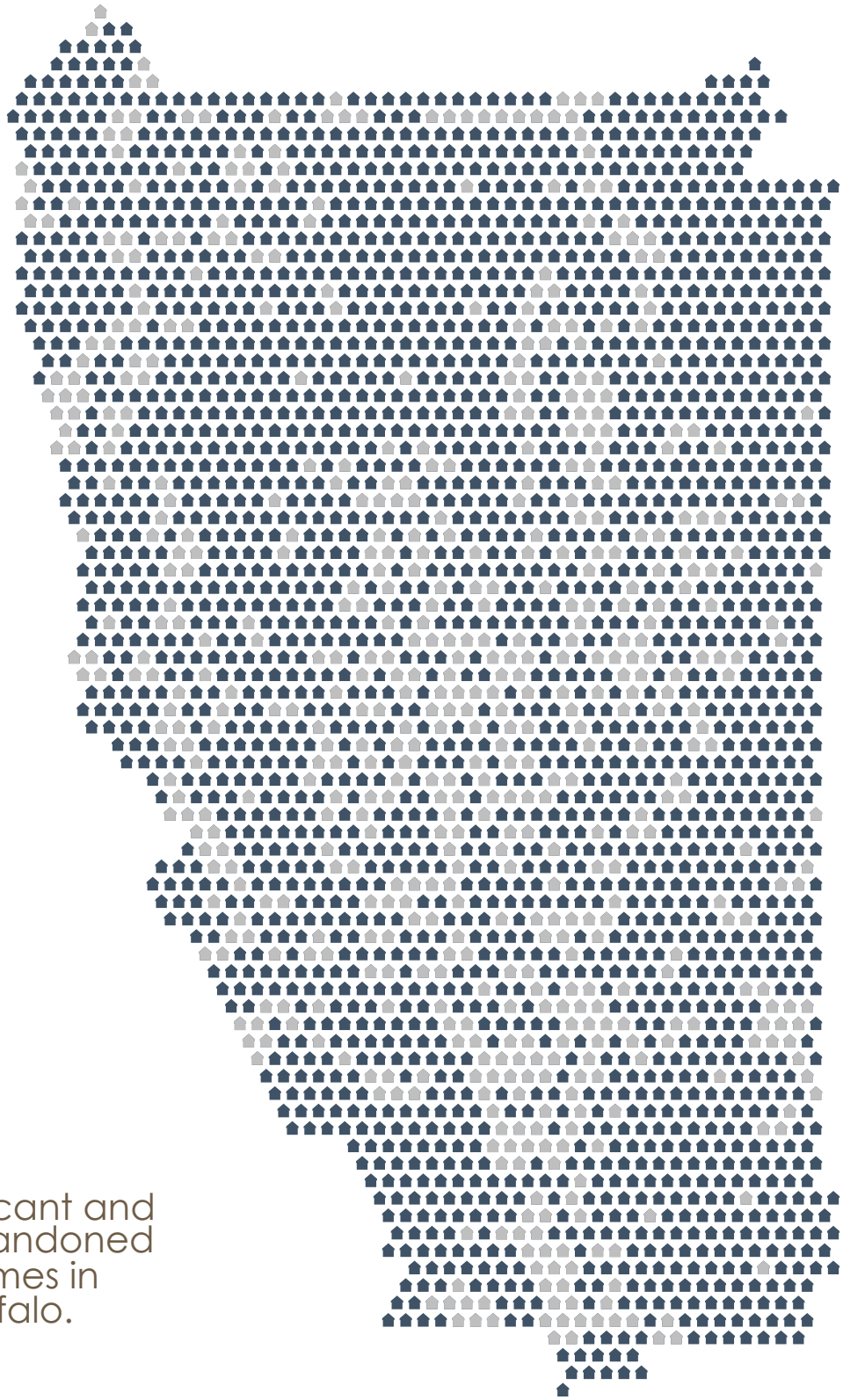


Figure 7



20.8%

Vacant and abandoned homes in Buffalo.

Figure 8

average single family home, with 20.8% of homes in buffalo marked as continually unoccupied. This vast abandonment has left its trace on the city of buffalo adding to the ever growing drosscape. On top of all of this abandonment, the city is pursuing an aggressive demolition program mainly focused on the east side and many preservationists are irate with the destruction of historically and culturally significant buildings. Along the canal and nearby several industrial regions in the city, there are large contaminated waste sites, or brownfields, some fenced off, and some deemed safe enough to live almost on top of. The city likewise suffers from segregation, as main roads divide the city both spatially, and racially.

However there are many aspects of the city which make it an extremely unique place as well. Shrinking cities are often the starting points for cultural innovation. Whether in music, art, or architecture, in literature, photography, or film – a wide variety of new developments in popular and high culture emerge from these urban crisis sites [*Shrinkingcities*]. The city is also well known as a historic innovator in architectural and urban design, with extensive work from Olmsted, Wright, Sullivan, Richardson, Burnham, and SOM as well as the concrete grain elevators made famous in Corbusier's Vers Une Architecture of 1924. Buffalo is home to the oldest park system in the US, designed by Frederick Law Olmsted in 1876, which is still a beautiful part of the city today. In 1901 the city hosted the Pan-American Exhibition where electricity was first displayed as well as many other technological advancements. Home to extremely unique food and culture, Buffalo has a large polish population and is known as "Perogi Capital of the World" and is the birthplace of the

Figure 9


Figure 10

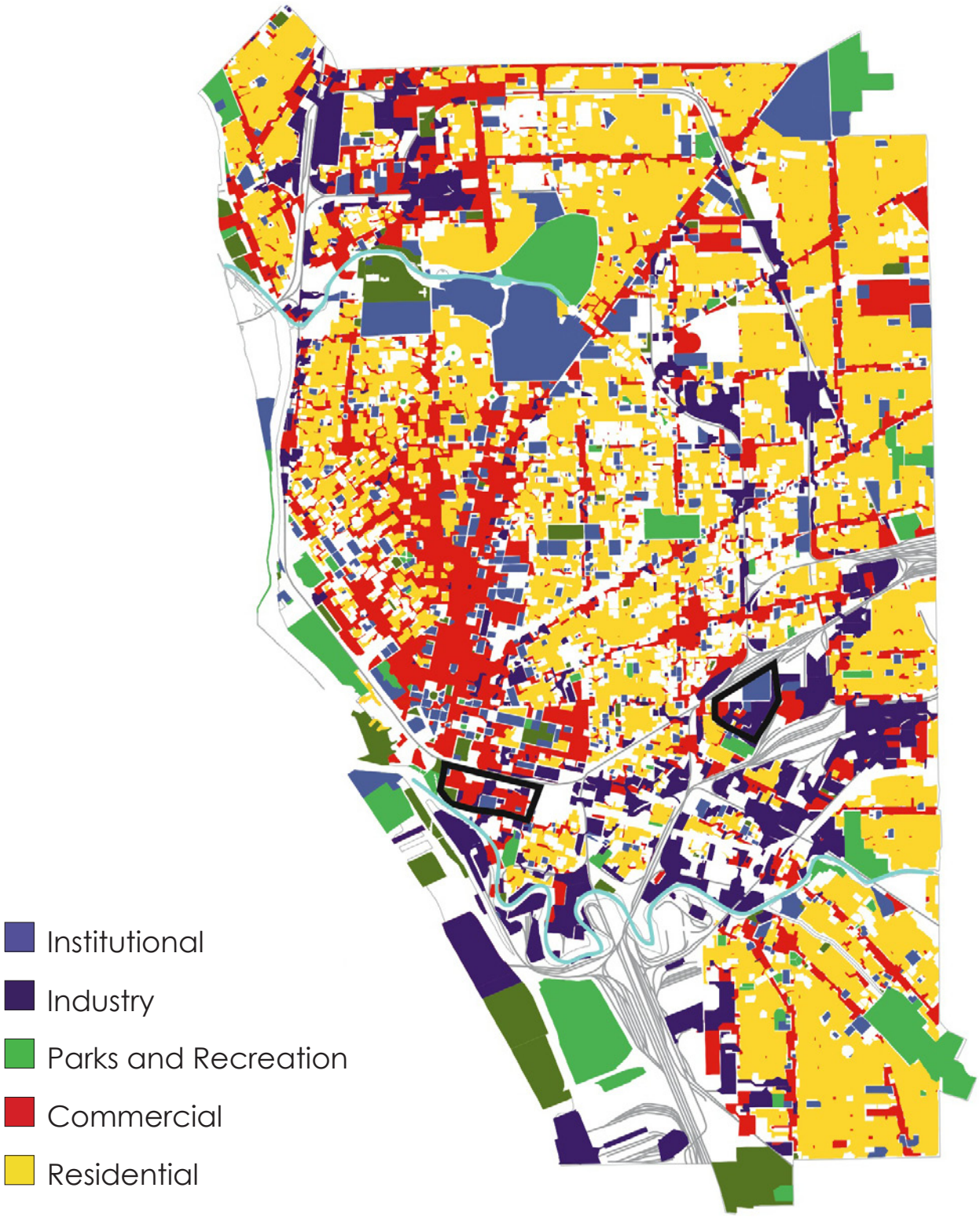

Institutional
Industry
Parks and Recreation
Commercial
Residential

Figure 11

chicken wing. Another unique aspect of the city is the number of bio remediation zones within the city, showing an attempt to redeem the city from its wasteful and contaminated history. An example of this is the Tifft Nature Preserve located in South Buffalo along the lakeshore. The 264 acre nature preserve, which use to be used as a dump site for slag, fly ash, foundry sand, harbor dredge spoils, and refuse was turned over to a nature preserve in 1975 and is maintained by the Buffalo Museum of Science. Nearly two million cubic feet of solid municipal waste was enclosed in clay and covered with soil excavated from another section of the preserve. Today, Tifft Nature Preserve maintains a natural setting and since its early beginnings has become the urban sanctuary many people envisioned over thirty years ago.


Figure 12


Figure 13

6: *(pg 44)* This graph displays the percentage (20.8%) and location of vacant homes in the city.
7: *(pg 40)* This map displays the growth and decline in population of several major cities across the United States. Buffalo has one of the highest percentage of decline at 53.4% [*Shrinking City Studio*].
8: *(pg 42)* This graph displays the specific tracts of Buffalo declining in population. The most extreme decline in population can be seen in South and Central Buffalo.
9: *(pg 45)* Sign displaying one of the many bio remediation zones throughout the City of Buffalo.
10: *(pg 45)* Buffalo Central Terminal, currently abandoned, many supporters hope to eventually restore the Terminal into a "hub" for activity in the city.
11: *(left)* This map shows the land use throughout the City of Buffalo. This displays certain disconnects throughout the city such as the major gaps between green space in the city and the post-industrial strip separating South Buffalo from the city core.
12: *(top right)* The Buffalo Psychiatric Center, designed by Henry Hobson Richardson and Frederick Law Olmsted, is a beautiful and ornately designed building but has still managed to fall into disuse.
13: *(bottom right)* Our Lady of Victory Basilica, one of many ornate Catholic churches scattered throughout South Buffalo.

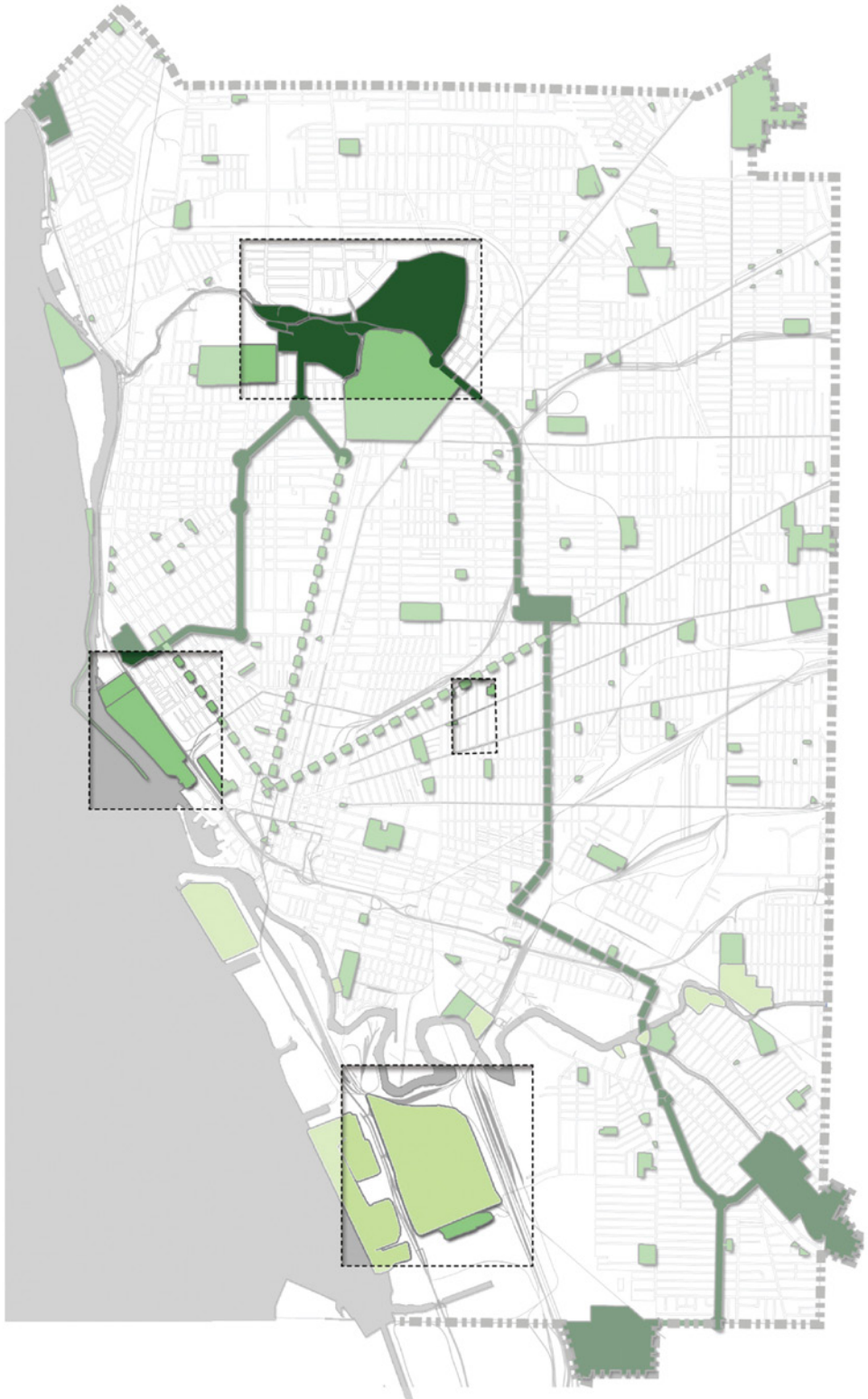
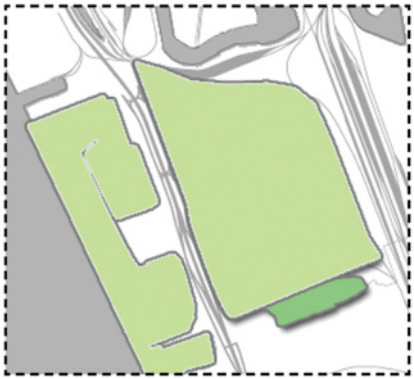


Figure 14

Green Space



Tifft Nature Preserve

264 acre nature preserve formerly owned by Lehigh Valley Railroad, the City of Buffalo and Republic Steel who used it as a dump site. In 1975, it was turned over to a nature preserve and is currently operated and maintained by the Buffalo Museum of Science.

Vacant Residential Property

Other unconventional open space includes: institutional and other private open space, rail and utility rights of way, highway margins, stream corridors, trail ways, and disused industrial land.

Olmsted Conservancy

This group has initiated a comprehensive planning process with the goal of restoring the park system, which is listed on the National Register of Historic Places. It includes 6 major parks, multiple parkways, circles, and small spaces.

Erie County Management

Erie County has taken over management of the City Park system due to Buffalo's fiscal crisis. Parkland per resident is very low at 5.1 acres per 1000 residents versus the state average of 9.2 acres per 1000 residents.

14: *(opposite page)* This map shows all of the green space in the city of Buffalo, as well as the existing and removed parkways that use to connect the original Buffalo Park System [*Shrinking City Studio*].

Site Consideration

- A Downtown Buffalo
- B Metcalfe + Clinton [site]
- C Babcock + Dorothy
- D Buffalo Color Site
- E Sketch Design 1
- F Sketch Design 2
- G Sketch Design 3
- H Tifft Nature Preserve
- I Buffalo Central Terminal
- J Buffalo Psychiatric Center
- K Buffalo + Erie County Historical Society
- L Delaware Park
- M University at Buffalo
- N Buffalo State College

Babcock St. + Dorothy Street

The East Side of Buffalo, including Babcock, is characterized by many ornate nineteenth century churches. Deindustrialization and disinvestment have damaged the East Side more than other Buffalo neighborhoods. A disproportionate number of the city's vacant and abandoned houses are located here, as are many acres of urban prairie. Located at the corner of Dorothy Street and Babcock Street, is a small post industrial parcel. The site is adjacent to several factories and warehouses including

SITE CONSIDERATION: BABCOCK ST. + DOROTHY ST.

Buffalo Wire Works and Allen Boat Company. To the north and south of the site is housing that would benefit from use of the derelict site. The site's post industrial history makes its current condition dangerous and displeasing, and a viable site for selection. The site was not chosen because of its industrial location which would make it difficult for pedestrian and neighborhood traffic to access. Also, the site was also deemed too small for the program of the project.

S. Park Ave.

Located in South of the Buffalo River, the Buffalo Color site was home to the first commercial producer of dyes in the U.S., now known as Allied Chemicals. The site has seen multiple owners. The last, the Buffalo Color Corp., declared bankruptcy in 2003. The site covers 70 acres adjacent to the Buffalo River and the railroad system. Many original buildings and production machines of the dye company remain. The site is being remediated as part of New York's Brownfield Cleanup Program. One particularly large parcel of the site is located

adjacent to South Park Avenue. There is a large amount of housing to the Southeast of the site, and its history and location along the water gave the site potential, however due to the city's current plans for remediation and development it was abandoned as a possible site.

Metcalfe St. + Clinton St.

The selected site is located along Metcalfe Avenue, between Fleming Street and Clinton Street to the North and South, respectfully. Three sides of the site are lined with the backs of homes, and on the other side of Metcalfe stands the remains of an abandoned and semi-demolished warehouse. The site is in the center of the neighborhood as Babcock and is situated near the Dulski Community Center and a community park. To the west of the site rest abandoned rail lines, a void memorializing the city's industrial

West Perspective

North Perspective

past. The adjacent warehouse lends itself to the site for a unique opportunity for adaptive reuse of its valuable components and its central location within a residential area allows it to be more accessible to the community and pedestrian traffic. Several vacant parcels in the perimeter of homes surrounding the site create a permeable barrier creating a unique link to the surrounding neighborhood.

Sketch Design:

As a precursor to the design development of the final proposal, several sketch designs were performed to explore the possibilities for the productive reuse of materials, and as an opportunity to become familiar with the urban fabric of the city of Buffalo. The three sketches range from small, medium, and large scale. Although many of the ideas expressed in these sketch designs were interesting concepts, the overall concept of material reuse was eventually ;eft on the back burner to allow the idea of spacial reuse for the creation of productive landscapes to develop more fully. However, the specific sites chosen for these sketch problems facilitated a greater understanding of the Buffalo Park System and a personal exploration of a new and unfamiliar urban environment, spurring fresh ideas for the final proposal culturally specific to the city of Buffalo.

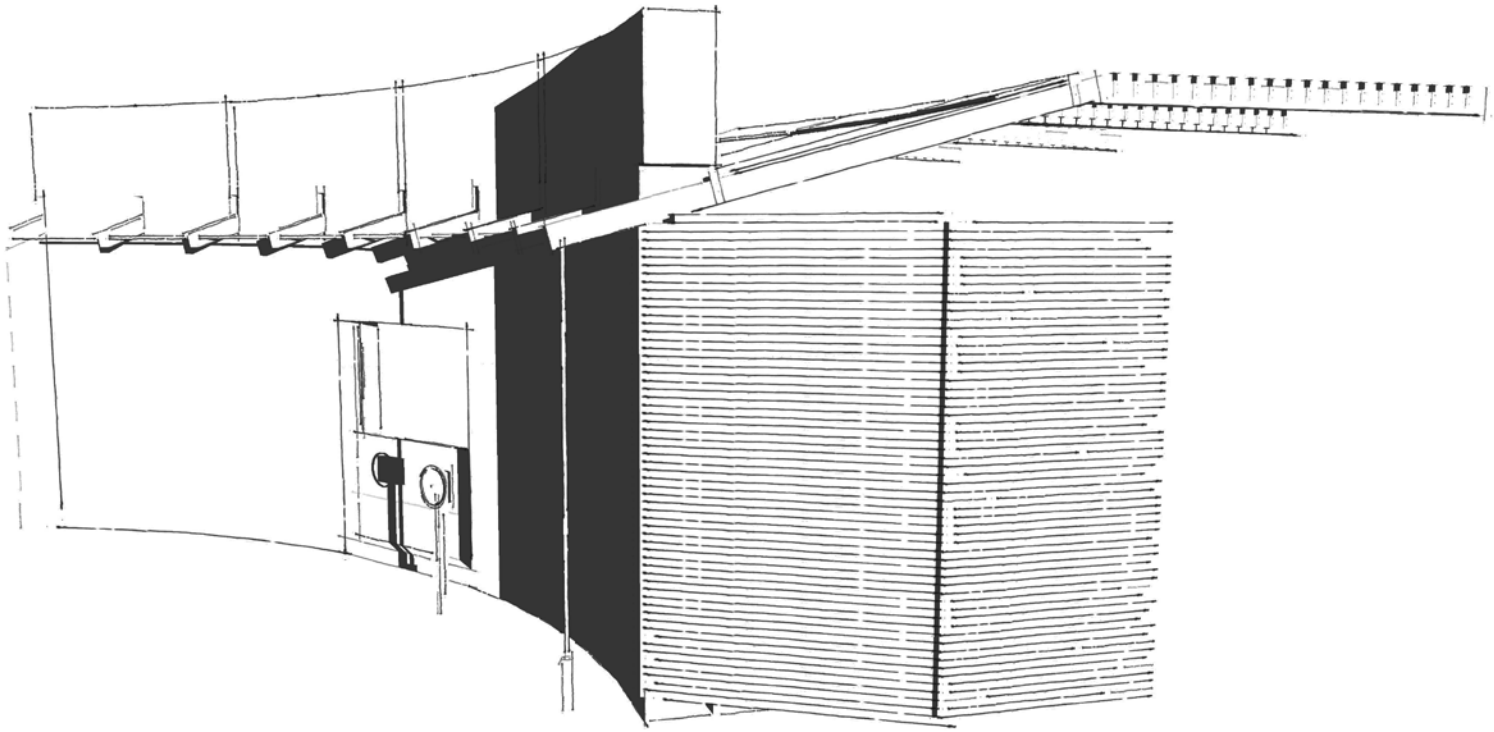
Warming Center - Closed

Sketch 1: Bandshell/Warming Center

This first sketch design is a small scale intervention and an attempt to design for the reuse of materials as well as for usage flexibility. All of the materials used in the construction can all be salvaged from the current abandoned building stock within the city ranging from 2x4s to reprocessed concrete. This particular study dealt with ephemeral issue of the changing seasons by changing its usage. The structure, which is designed to fit around a circular path in MLK park, is an enclosure for Buffalonians to escape the biting cold of winter, enjoy a warm beverage, and commune with others until they continue on their way. However, during the warmer months of the year, the facility can be transformed by removing wooden slats making up one of the walls as well as raising the roof and supports to create a bandshell where musicians can entertain crowds in the park.

Bandshell - Open

Sketch 1: Bandshell/Warming Center



Greenhome

Sketch 2: Greenhome

The second sketch design is intended to apply reuse to more than just the materials that make up the skin of a building. The Greenhome is a house that has been stripped of its original skin and re-presented as a skeleton that not only provides the structure for a greenhouse, but also infrastructure such as water, electricity, and accessibility due to its past life. These greenhomes can take the place of abandoned and derelict houses within Buffalo's urban fabric and used by the local community for their own personal gardening projects. The transition not only eliminates the abandoned pockets within neighborhoods, but increases the value of the surrounding homes and creates more desirable space for the community to share. This particular sketch problem is designated as a medium scale proposal because the concept can be applied to many homes within the residential areas of the city.

15: *(opposite page)* This section displays that the original basement of the greenhome can also be included as productive space ideal for growing mushrooms and truffles.

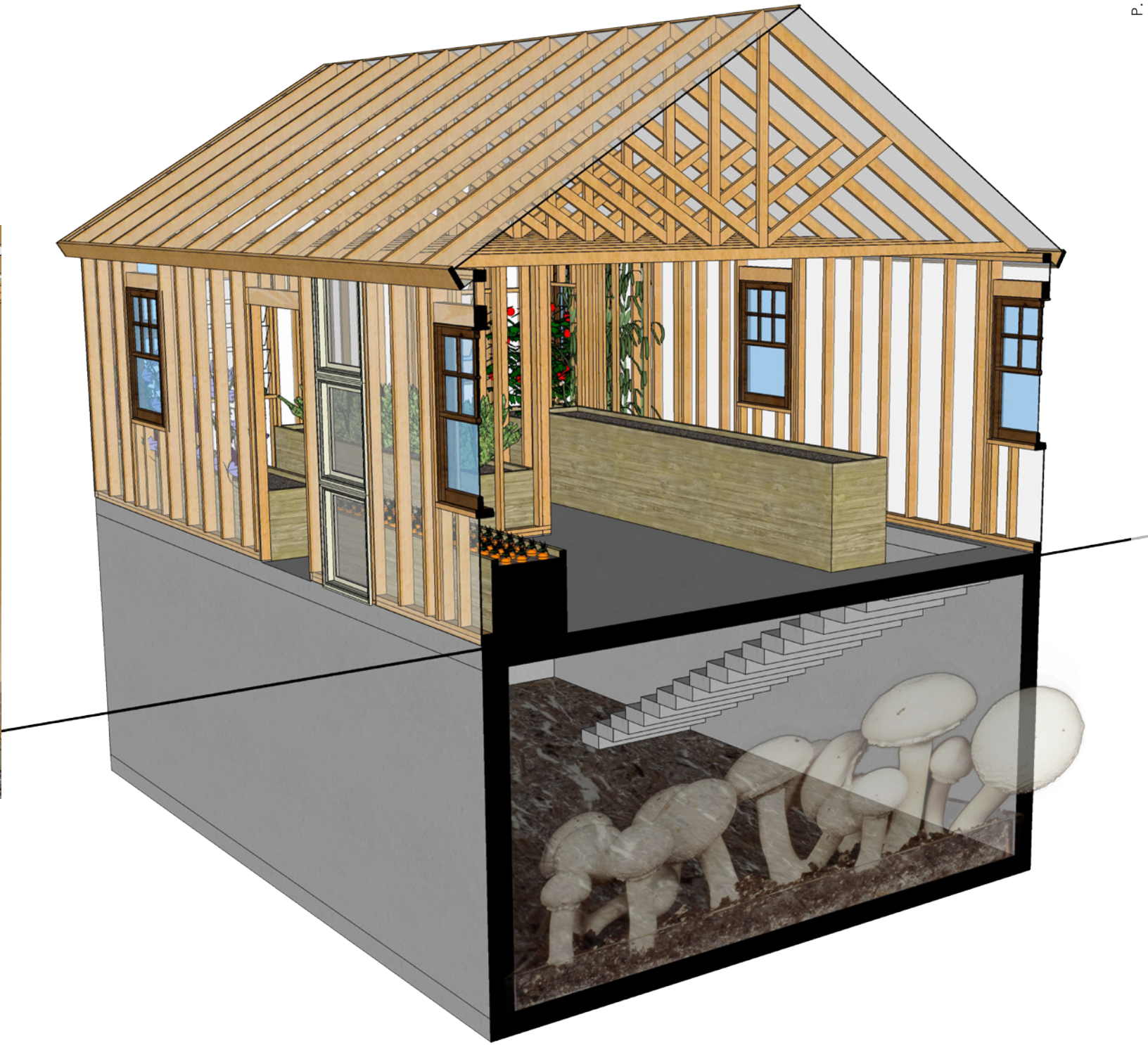
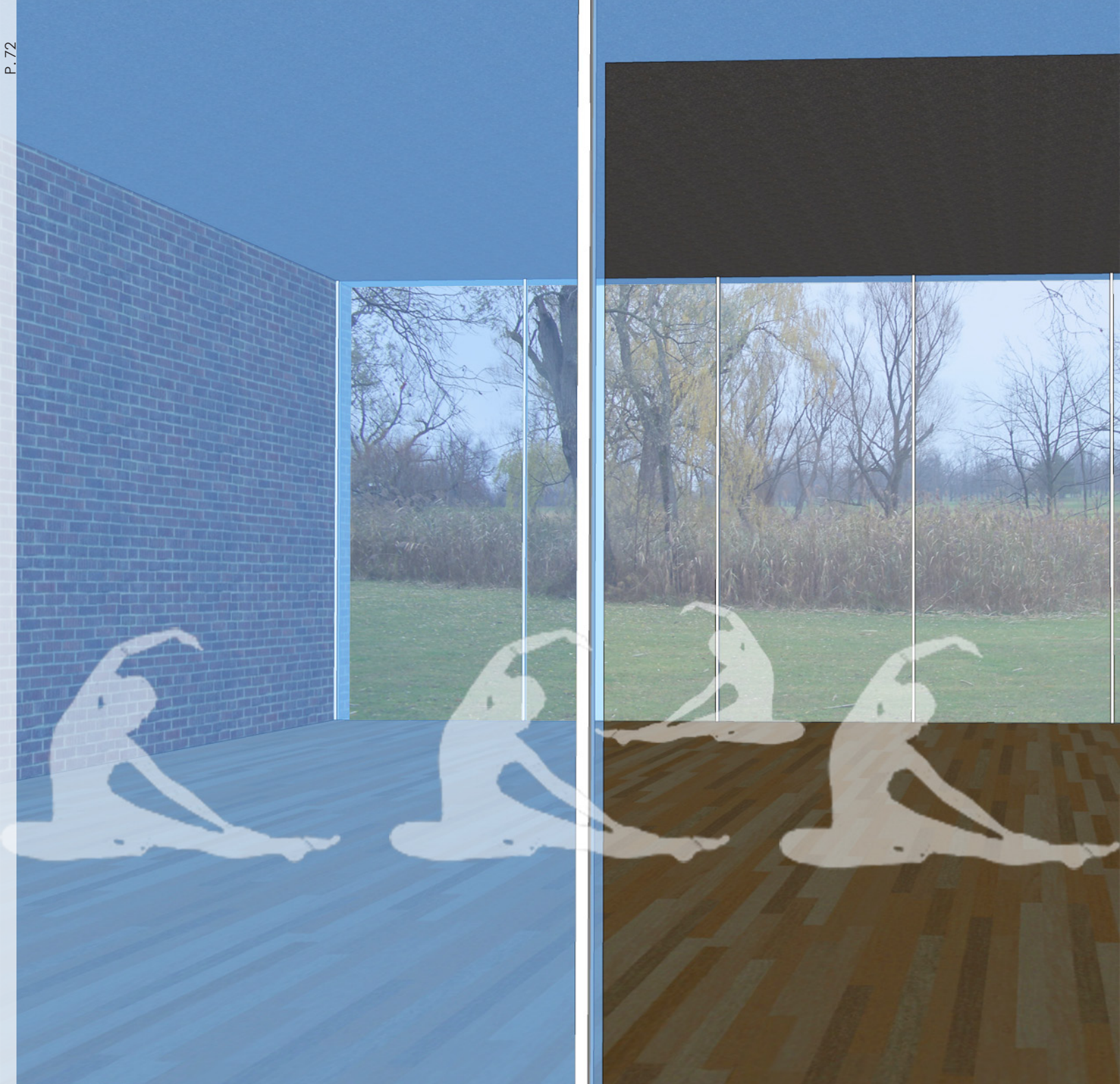


Figure 15

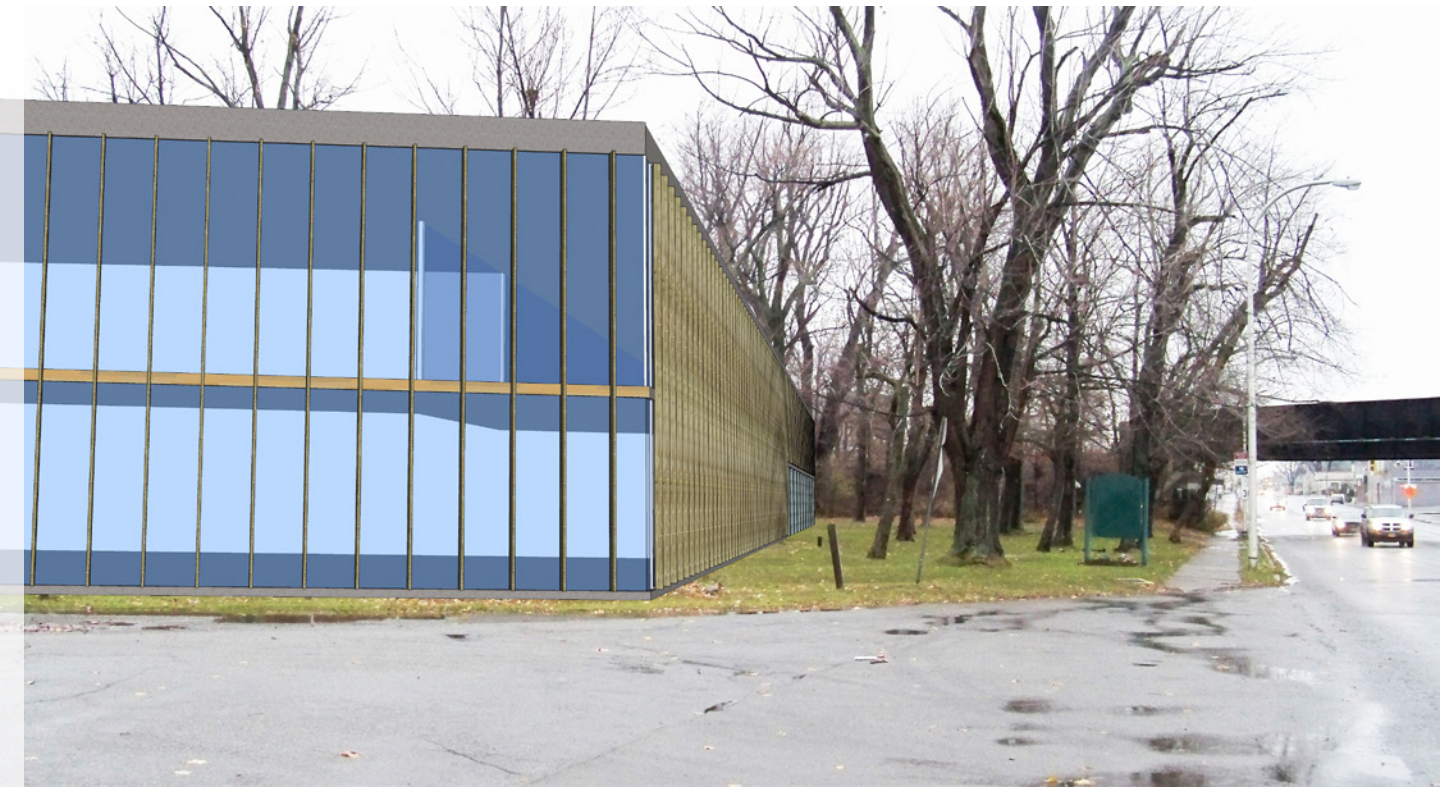


Fitness Center

Sketch 3: Fitness Center

This final large scale sketch design is an attempt to reuse a certain amount of its own construction waste in its own design. Most of the walls and structure for the building are fabricated from cast-in-place concrete, and the formwork that is used to cast it is reused to create shading devices on the southern and western exposure, as well as the floor for a portion of the building. The walls, shading devices, and floor are all scaled proportionate to each other to use as much of the material as possible. The intention of this sketch problem is a declaration that for reuse to be productive, rather than simply postponing the inevitable discarding, it must be planned for initially.

Figure 16



Sketch 3: Fitness Center

16: *(opposite page)* This elevation shows the cast in place concrete panels which would be created using wooden formwork which will later be used to create sun shading as well as lay flooring.

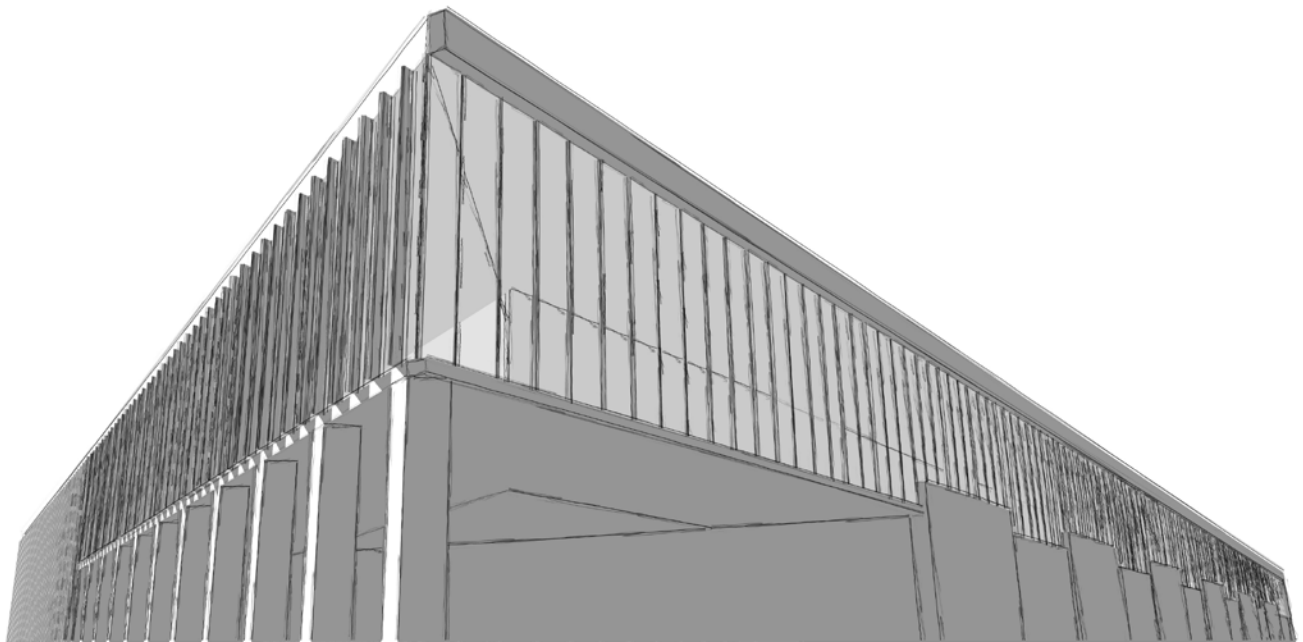


Figure 17

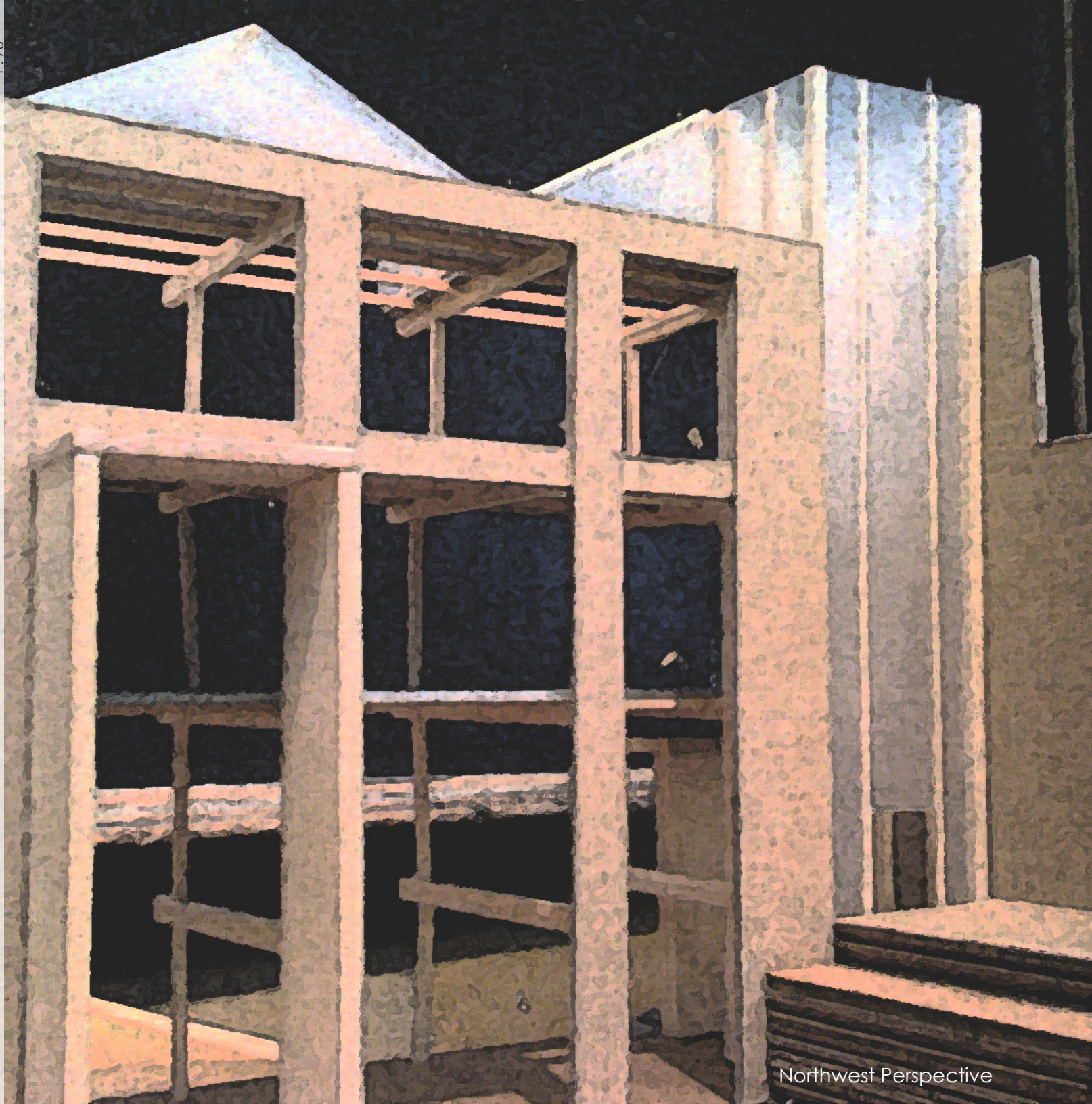
Final Design:

After much deliberation as to what could be the most beneficial program for the surrounding community, the chosen program for the proposal consists of a network of urban farms and farmers market centrally located at the Metcalfe site.

This program allowed for several simple yet substantial benefits to the community. Firstly, the process of developing urban farms requires the remediation of large parcels of contaminated soil purifying and preparing the native soil for its new life. Also, the mitigation of farmland as well as parkways throughout the city can create cleaner air and a more vital environment for the city and surrounding areas. Another benefit of the market is that it provides access to fresh fruits and vegetables, as well as other products, improving the health of the local community. Finally, the farm and market can act as a center for community participation in a unique, cultural, and social network of other people interested in improving the environment for themselves and others.

The building has been programmed with its most public space on the ground level where customers and pedestrians can pass throughout the building as they move around the area, limited

17: *(opposite page)* Section model of the reused building displaying the load bearing masonry and new roof system.



Northwest Perspective

access to the second floor for those participating in classroom and facility activities, and private access to those operating and tending to the greenhouse on the third floor.

Quantitative Programing

First Floor	**10134 Sq. Ft. Total**
Interior Market:	4090 sq. ft.
Exterior Market:	5452 sq. ft.
Circulation:	592 sq. ft.
Second Floor	**4682 Sq. Ft. Total**
Classroom/Kitchen:	2058 sq. ft.
Cold/Dry Storage:	636 sq. ft.
Restrooms (2):	204 sq. ft. each
Offices (3):	170 sq. ft. each
Circulation:	1070 sq. ft.
Third Floor	**4682 Sq. Ft. Total**
Greenhouse:	3354 sq. ft.
HVAC/Storage:	546 sq. ft.
Circulation:	782 sq. ft.

Farmer Supply	**3442 Sq. Ft. Total**
Retail:	2837 sq. ft.
Storage:	381 sq. ft.
Restrooms (2):	204 sq. ft. each
Polebarn	**2040 Sq. Ft. Total**
Machinery/ Product Storage:	2040 sq. ft.
Total:	**24980 Sq. Ft. Total**

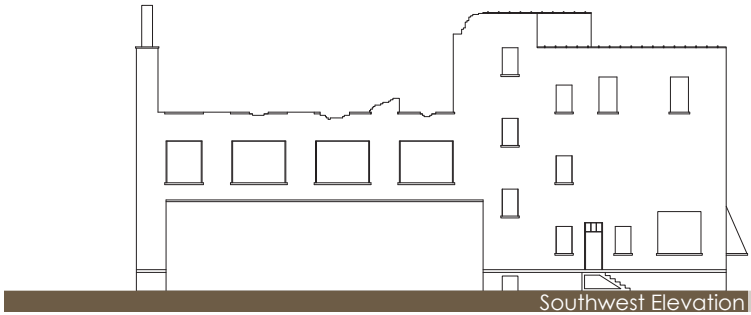
SW Perspective

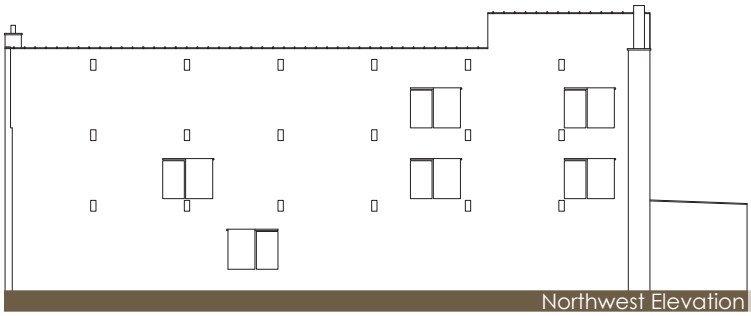
SE Perspective

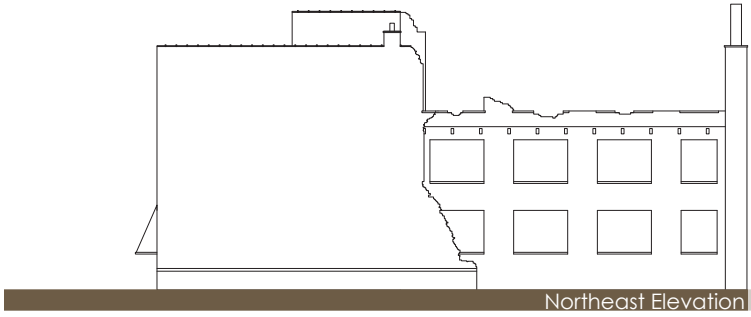
Design Development

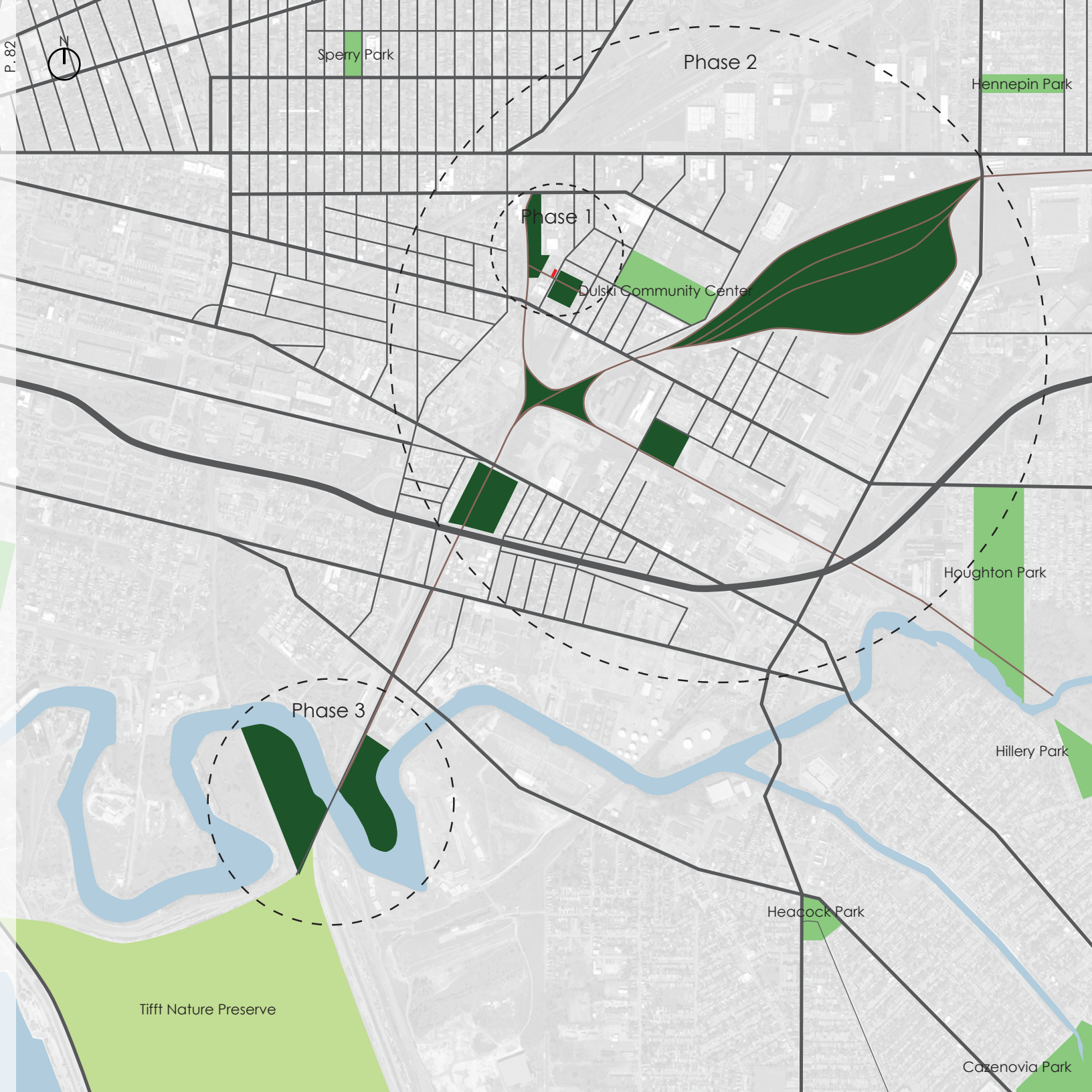
As an initial process for the design of the market it was pivotal to understand the existing building and the canvas that was to be filled, so to speak. The market is located across the street from the originally chosen site sits in what use to be an abandon warehouse, originally belonging to the Buffalo Tire and Wire Company, which suffered from what appears to be fire damage, damaging a large portion of its rear end. Although the street half and facade have faced a fair share of abuse as well due to its abandonment the structure remains in fairly good condition. The building is supported by load bearing masonry which limits the adaptation of its form to remain structurally sound. Next to the original building is a new facility that will house additional retail space for members of the community to acquire supplies such as seed and fertilizer for their own gardens.


Southeast Elevation


Southwest Elevation


Northwest Elevation


Northeast Elevation


N
Sperry Park
Phase 2
Hennepin Park
Phase 1
Dulski Community Center
Houghton Park
Phase 3
Hillery Park
Heacock Park
Tifft Nature Preserve
Cazenovia Park

Master plan + Phases of Development

The originally chosen site on Metcalfe can serve as the first phase of development and central node of a network of urban farms and parks connected by a series of abandoned railways, which will be converted to trails and linear parks, sprawling throughout the southern quarters of the city and connecting existing and planned green spaces, including Olmsted's Buffalo Park System. The conversion of the rail lines present a unique opportunity to re-appropriate the architectural significance typical of the former industrial structures and reconfigure the existing vacant land.

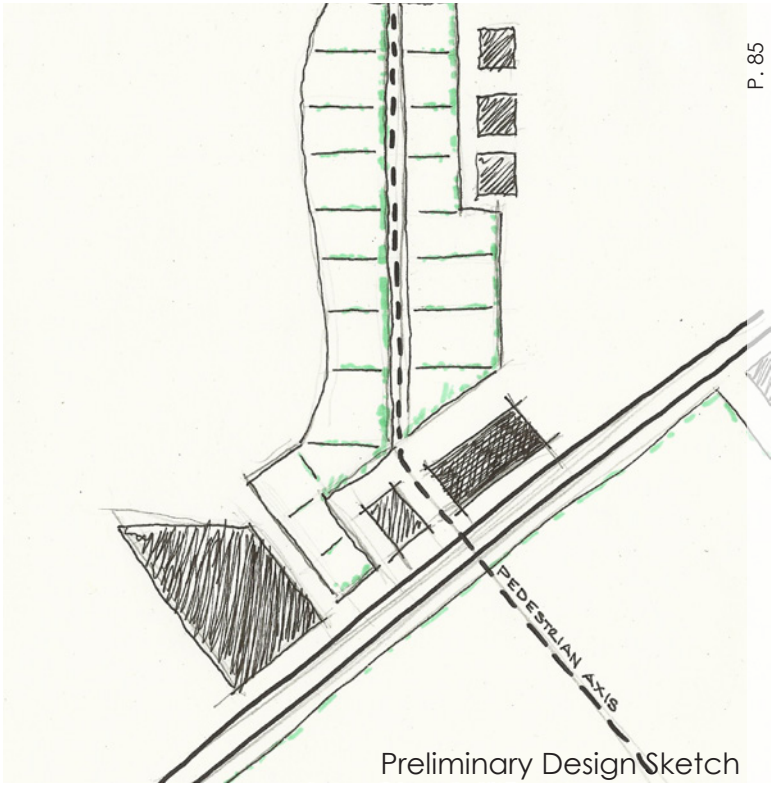
This network of urban farms and green space can expand radially from the central site (in phases determined by the success of the market) along these new parkways absorbing the residual spaces of the city and remediating those which require some planned intervention for healthy growing conditions and inhabitation. These new paths simultaneously promote a sense of walkability within a spatially segregated area, divided by highways which replaced the original parkways which connected much of the old park system. The new phases of development will help to expand the variety and quantity of production for the market, as well as allow for the possibility of job creation and community participation to beautify the city.


N

Phase 1: Site Plan

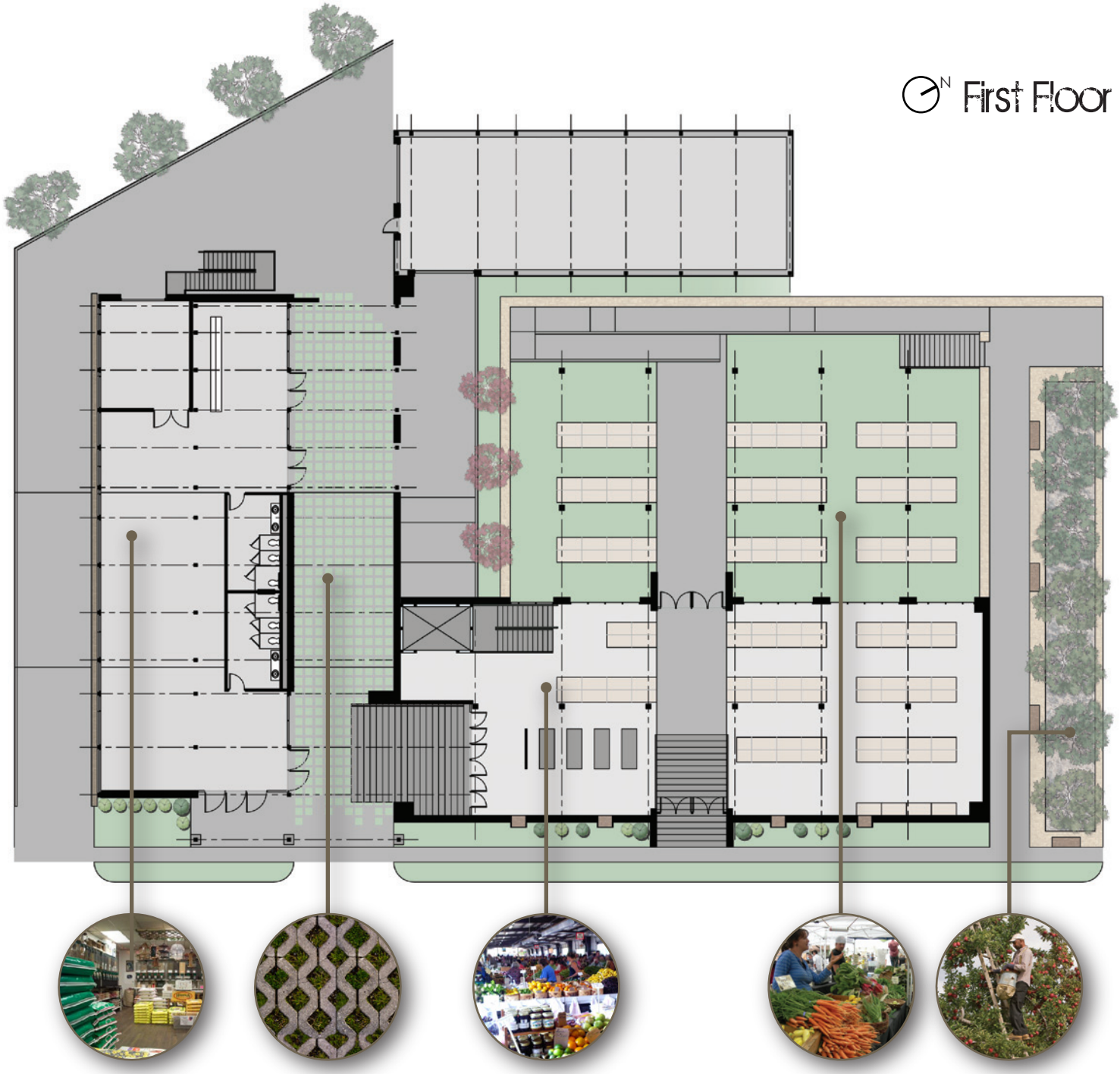
Within the first phase of development is property designated for lease by residents of the community who would be allowed to use the land in return for a portion of the crop produced there. These properties of approximately 1000 square feet border the new parkways allowing easy access to the property and market by the community as well as along the perimeter of the original site provided for the homes surrounding it.

This allotment gardening provides sociocultural benefits and economic benefits. *For communities,* a better quality of life through the reduction of noise, the establishment of open green space in densely populated areas; *for families,* a meaningful leisure activity and the personal experience of sowing, growing, cultivating, and harvesting healthy vegetables amidst high-rise buildings and the concrete jungle; *for children and adolescents,* a place to play, communicate, and to discover nature and its wonders; *for working people,* relaxation from the stress of work; *for the unemployed*, the feeling of being useful and not excluded as well as a supply of fresh vegetables at minimum cost, as well as many other benefits.



Preliminary Design Sketch

First Floor



Diagrammatic Floor Plans

Farmer Supply Store

This auxiliary new building on the site provides essential supplies necessary for gardeners to tend to their personal gardens.

Exterior Market

This exterior market occupies a sunken courtyard caved out of the old footprint of the existing building. This portion of the market would be open during fair weather and can also be used as a gathering space for the community.

Permeable Pavement

The pathway that passes between the two facilities is composed of "grasscrete" pavers intended to mitigate greenspace throughout this urban environment and pull the new landscape as well as pedestrians into the market.

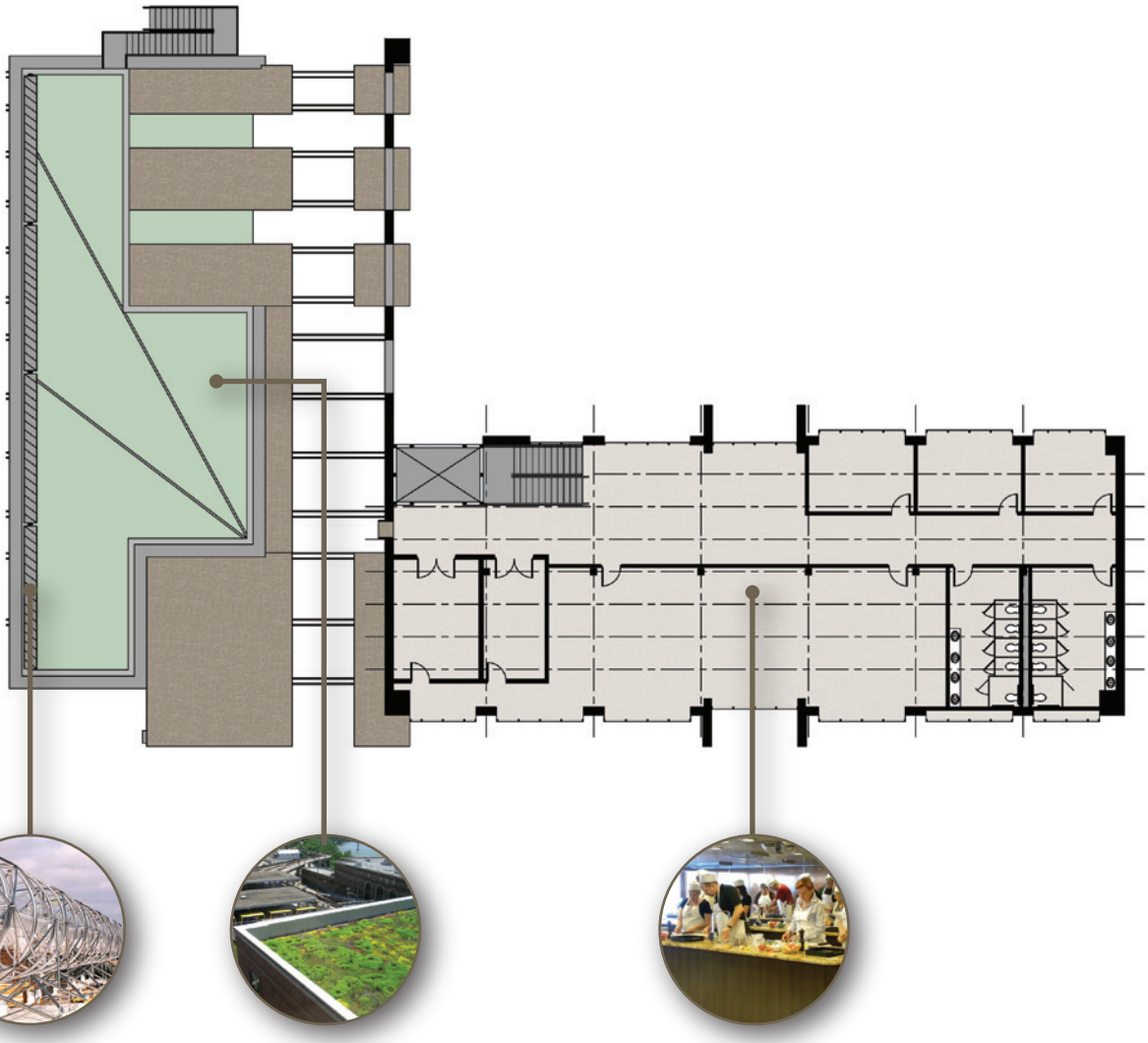
Harvestable Landscape

The landscaping that is located around the plots of farmland can be used not only as a windbreak to protect crops, but can also provide an opportunity to be productive and harvestable.

Interior Market

This area houses the primary market space which is filled with bins of fruits and vegetables, as well as other "value added" products that would be for sale.

Second Floor



Diagrammatic Floor Plans

Wind Turbines

Taking advantage of the strong westerly winds native to Buffalo, these wind turbines supply supplemental energy for the market.

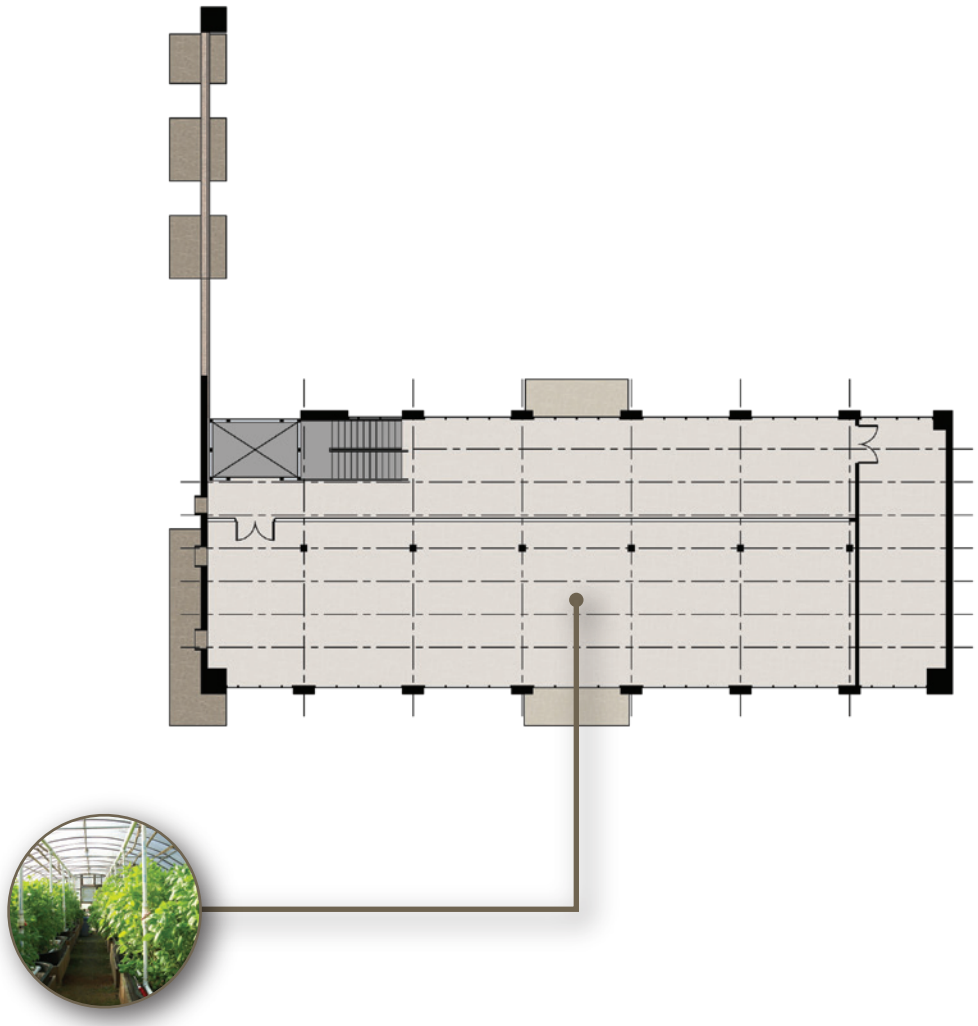
Classroom + Kitchen

This space is designated as an educational area for members of the community who are interested in learning more about gardening, food preparation, and healthy nutrition.

Green Roof

The green roof on the new building not only provides more green mitigation , but cleaner air for the urban denizen and thermal insulation for the building.

N Third Floor



Diagrammatic Floor Plans

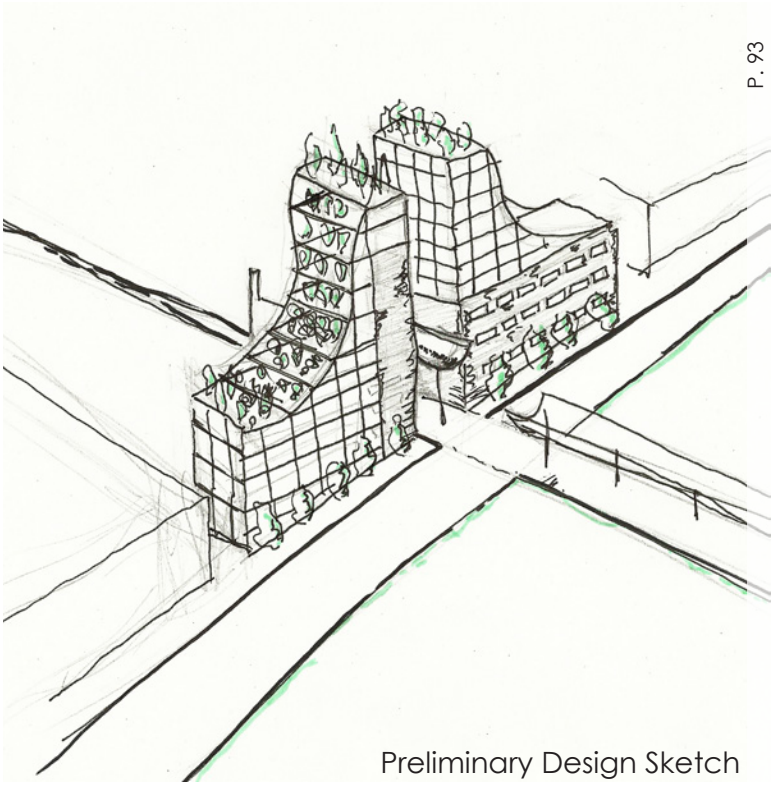
Greenhouse

This interior grow space has been created on the top floor of the market which gains optimal sunlight from the new roof fenestration. This space allows crops to begin growing earlier in the season lengthening the seasonal operation of the market.

Elevations

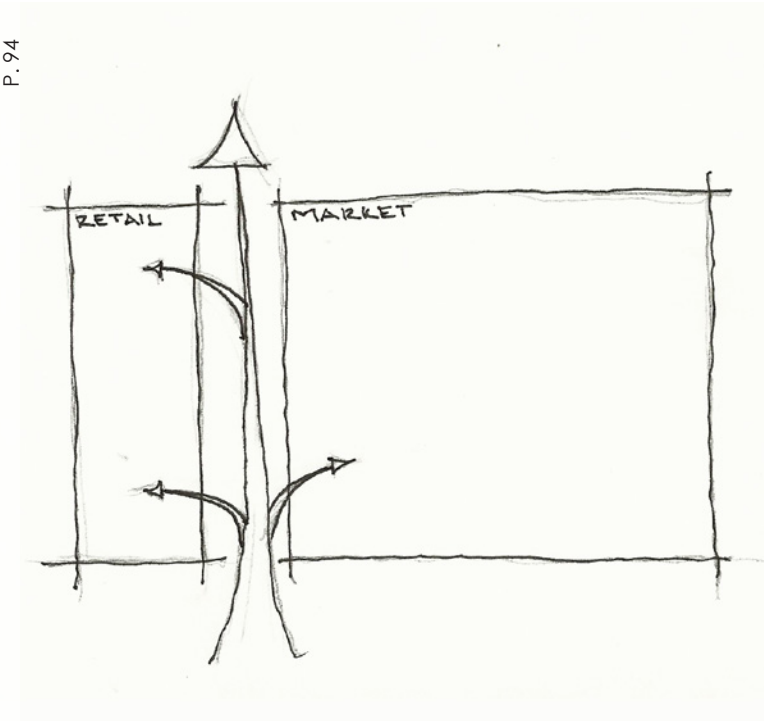
Southeast Elevation

Several paths lead pedestrian traffic from the surrounding community directly to the facility whether it is the market floor or the rear freight elevator to transport people or goods to the floors above. One of these paths runs through the primary field in front of the building where it connects with several other auxiliary paths which come together forming a gathering space where vendors can set up temporary shops and pedestrians can linger, experience, and observe the dichotomy of the farming landscape within the urban environment. This path runs between



Preliminary Design Sketch

Northeast Elevation



Path through and into facilities

Elevations

the two buildings creating a pinch point meshing them and allowing customers to experience both the market and the farmer supply store and pass almost seamlessly between the two buildings, as well as creating a viewport to the fields on either side of the facilities. The entrances to the building are clearly called out to create a more inviting presence to the building in contrast to its current state. Nearby the site, many of the abandoned as well as still active buildings in the area have an extremely stark and uninviting presence because of their hard façade and minimal windows,

Northwest Elevation

leaving them disconnected from the surrounding community. The façade has been opened up to create a transparency into and through the building to display the vision of the fields beyond, invite the community inside, and display a sense of safety within and around the facility.

The existing structure has four floors, the second of which will be removed to provide a higher ceiling and more open air environment for the market on the first level. Behind the building, accessed from the market floor, is a sunken courtyard for gathering and outdoor

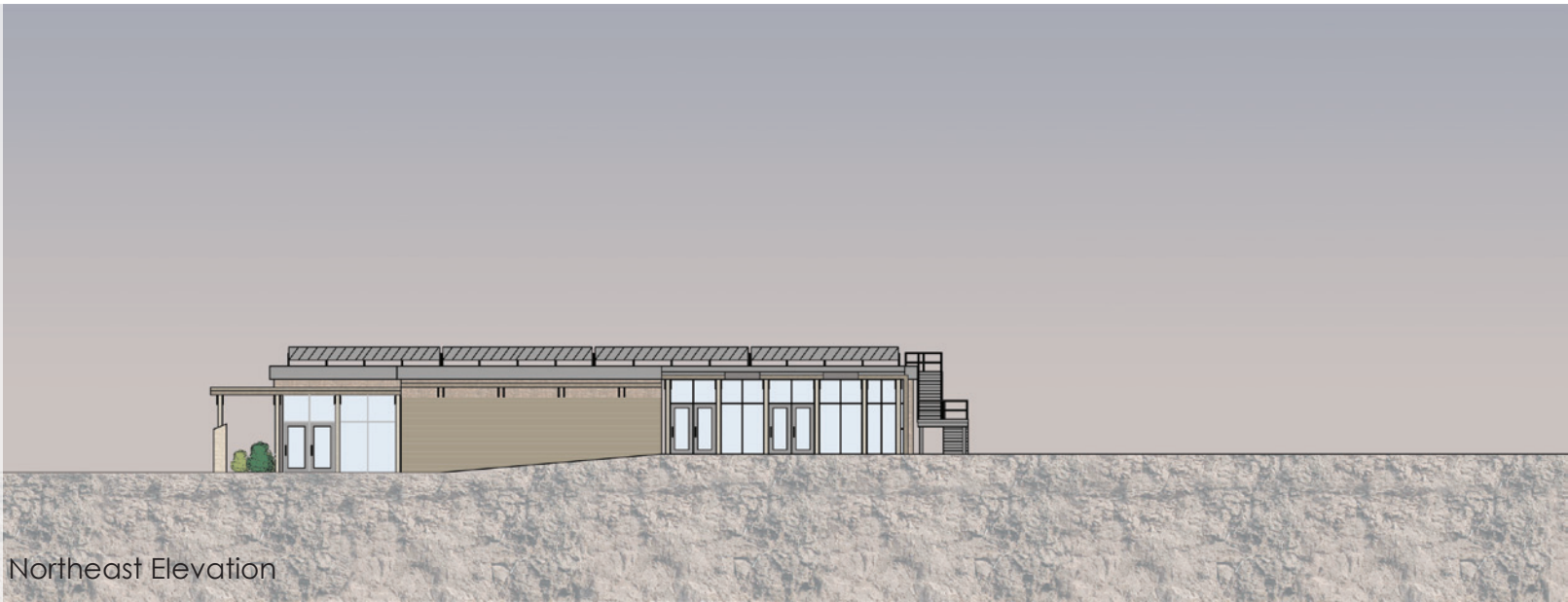
Southwest Elevation

Elevations

market space. This courtyard is enveloped by the facade of the demolished portion of the building, which remains as an architectural artifact of the buildings history.

The first floor and exterior retail space is designed as flexible space for the possibility of expansion, varying layout, and providing a gathering space for the community.

Educating the community on gardening techniques, nutritional values, and food preparation can be a valuable and productive function for this facility. The second floor provides

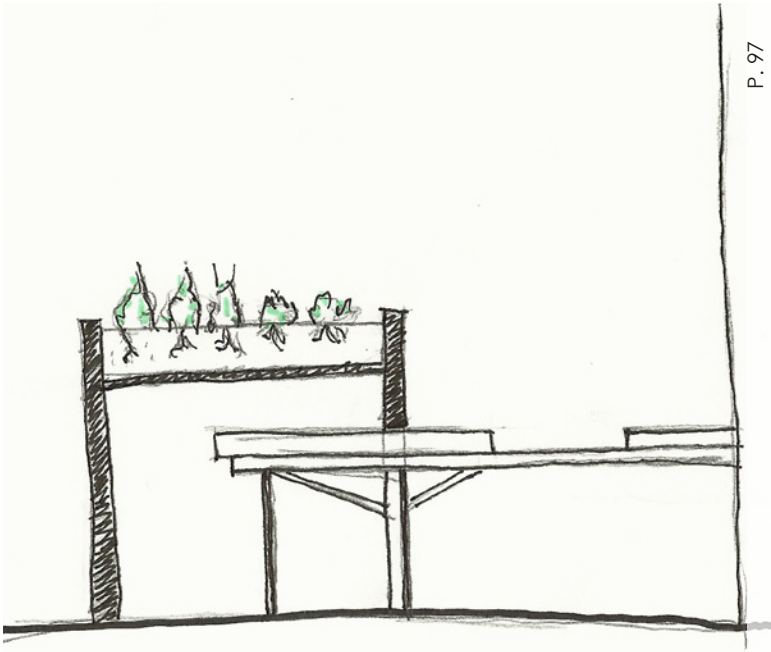


Northeast Elevation

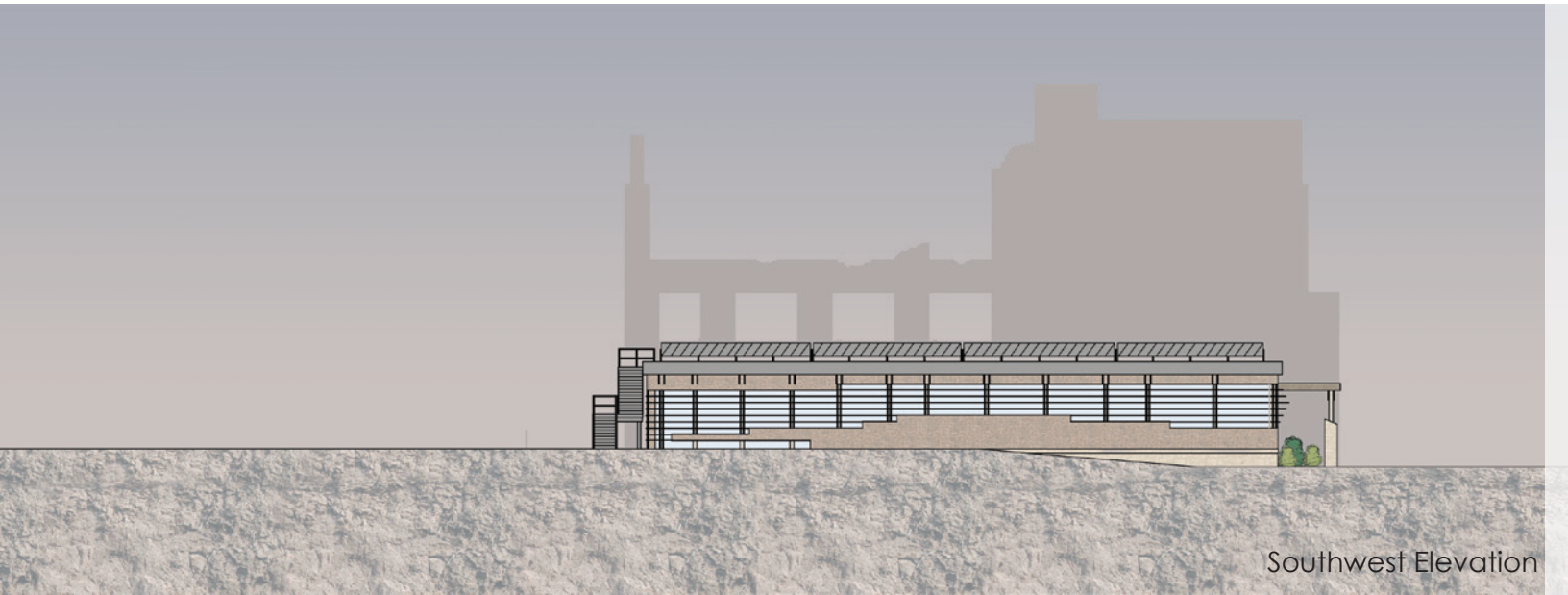
space for food preparation and storage, as well as a workroom/classroom space for this educational function.

To allow for year round growing and optimal field production, the third floor which already had the most access to light, has been adapted for interior growing. Produce can be grown here until it is matured enough and outdoor conditions are suitable. It can also be used for educational and observational purposes as well.

Continuing to turn this facility into a productive landscape, the farmer supply store

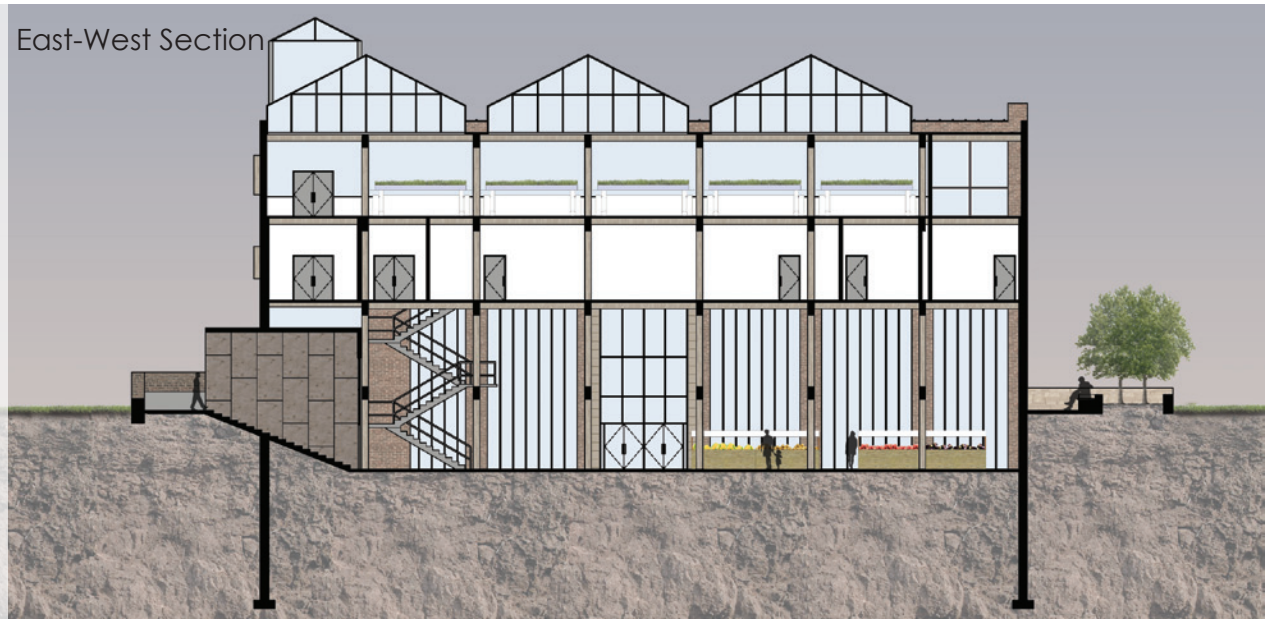


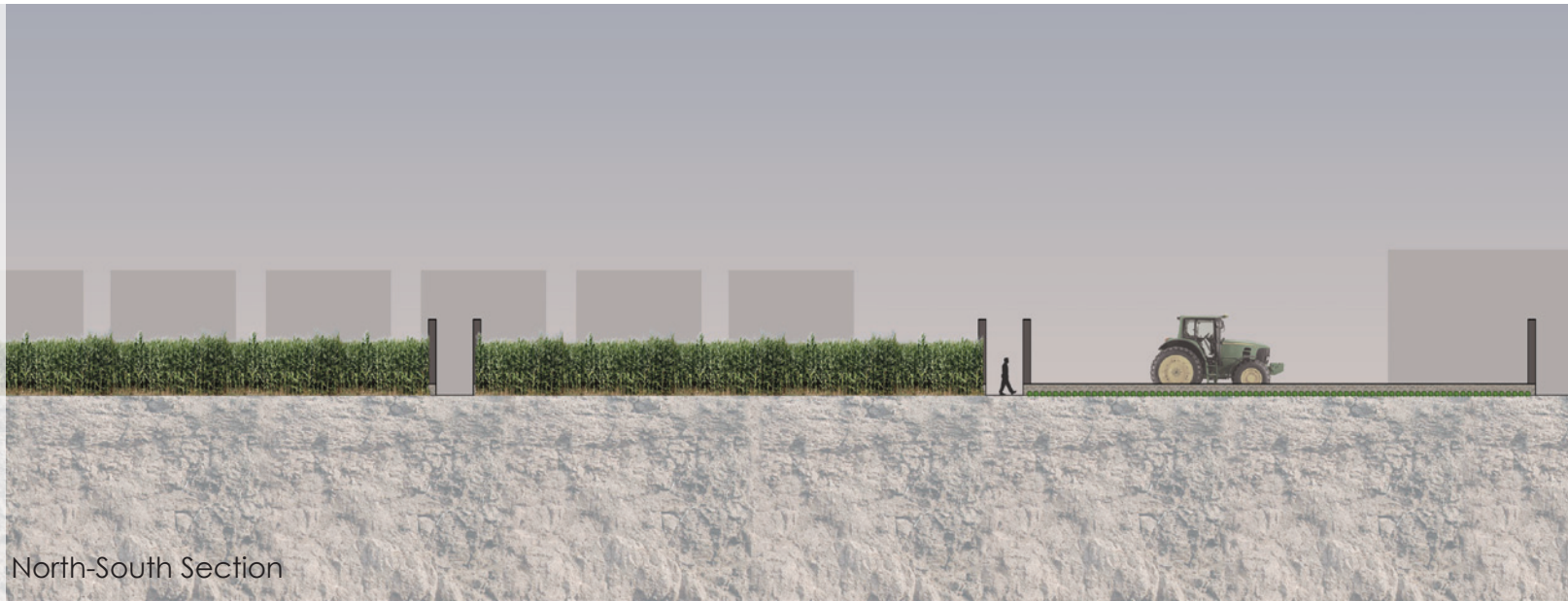
Preliminary Design Sketch



Southwest Elevation

East-West Section





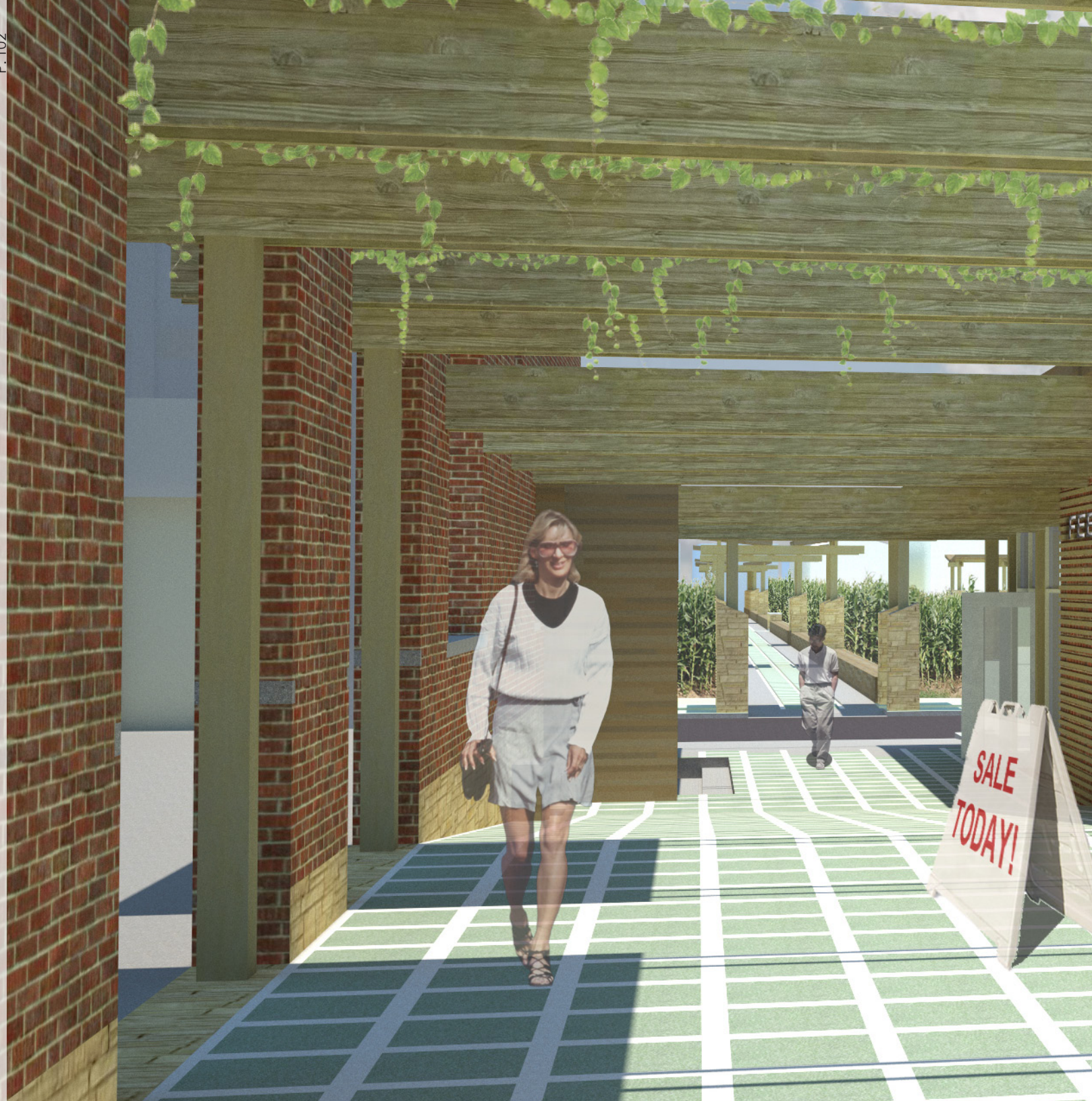
North-South Section

Sections

has been equipped with a green roof of sedums and shrubs and a wind turbine to produce clean energy for the facilities. Minimal parking has been provided adjacent to the facility as well as along the street; however, this facility will promote pedestrian traffic by the surrounding community initially.

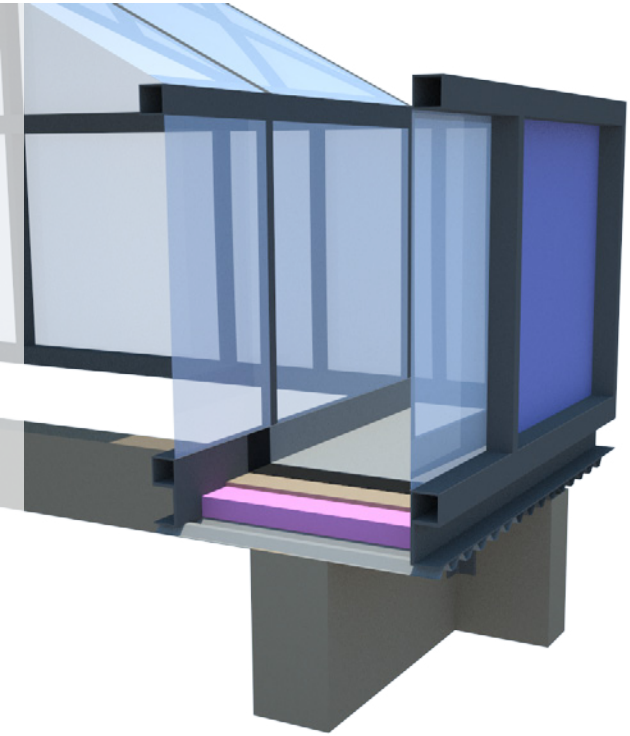

FEED SEED
+ SUPPLY

Approaching the market


SALE
TODAY!

Pinch point between buildings

Gathering space



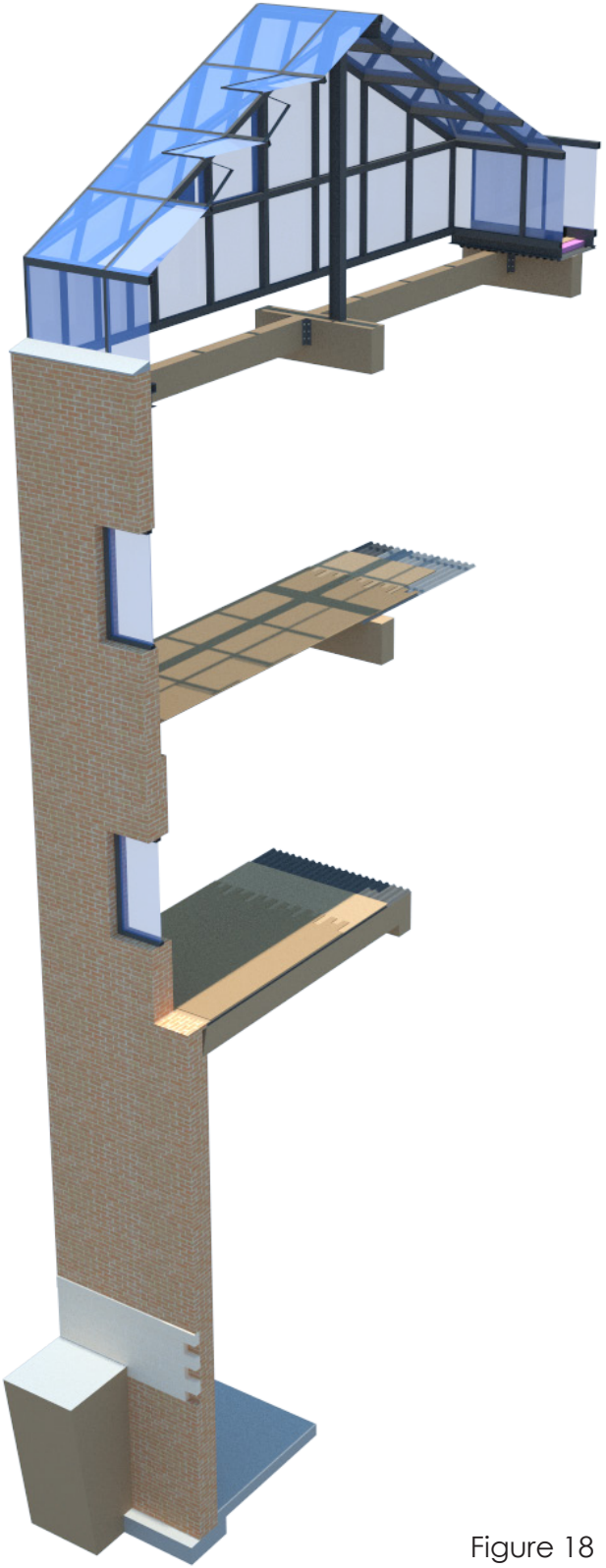


Figure 18

Concluding Remarks:

What started as an exploration in material reuse to tap into potential worth eventually grew into the larger scale theme of reusing the drosscapes of the urban environment. The main theme of this thesis was to gain a greater understanding of how the deindustrialized landscapes of today can be reused to produce social, economic, and environmental worth to their communities. Another theme of the project may be the exploration of a foreign community and developing a design strategy unique to a particular area.

Although many other themes were explored during the process, the goal of this thesis was to attempt to generate value through the intervention of architecture and community development. To call the project truly successful might be inaccurate, however, it is a powerfully step in the right direction toward a greater understanding in the reuse of space and materials. These moves can begin to lead designers on how to create unique, efficient, and socially thoughtful spaces within the urban environment.

18: *(opposite page)* This detailed wall section displays the roof system with pitched skylights (27 degrees) and operable panels to provide adequate sunlight and air to the greenhouse.

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Until next time ...