REJUVENATING QUALITY OF LIFE IN EAST GARFIELD PARK

A Sustainable Approach to Urban Revitalization
By Kourtney Dillavou
Acknowledgements
I would like to thank Dr John Motloch in assisting me through my research and design process. I would like to thank Simon Bussiere for providing me advice with my graphics.
Rejuvenating the Quality-of-Life in East Garfield Park: 
A Sustainable Approach to Urban Revitalization

An Honors Thesis (LA 404)

by
Kourtney Dillavou

Thesis Advisor
John Motloch
Signed

Ball State University
Muncie, IN
April 2014

Expected Date of Graduation
May 2014
This project is revitalizing a Chicago west side neighborhood, East Garfield Park. East Garfield Park is one of the most poverty and crime ridden neighborhoods in the city of Chicago. After much analysis of why the current residents are in this situation, a design was created. This design focuses on how the implementation of food and energy systems can revitalize the community, through lowering their cost of living while raising their quality of life.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>5</td>
</tr>
<tr>
<td>Introduction</td>
<td>8</td>
</tr>
<tr>
<td>Background</td>
<td>10</td>
</tr>
<tr>
<td>Successful Sustainable Affordable Housing Planning and Design</td>
<td>11</td>
</tr>
<tr>
<td>-History of Site</td>
<td>12</td>
</tr>
<tr>
<td>-Community Needs</td>
<td>14</td>
</tr>
<tr>
<td>Problem Statement &amp; Significance</td>
<td>18</td>
</tr>
<tr>
<td>Mission, Goals &amp; Objectives</td>
<td>20</td>
</tr>
<tr>
<td>Design Process</td>
<td>22</td>
</tr>
<tr>
<td>Site Inventory</td>
<td>24</td>
</tr>
<tr>
<td>Site Analysis</td>
<td>30</td>
</tr>
<tr>
<td>Case Studies</td>
<td>34</td>
</tr>
<tr>
<td>Program</td>
<td>38</td>
</tr>
<tr>
<td>Conceptual Design</td>
<td>40</td>
</tr>
<tr>
<td>Lake Street</td>
<td>44</td>
</tr>
<tr>
<td>Sacramento</td>
<td>45</td>
</tr>
<tr>
<td>Final Design</td>
<td>46</td>
</tr>
<tr>
<td>Land use</td>
<td>50</td>
</tr>
<tr>
<td>Master plan</td>
<td>54</td>
</tr>
<tr>
<td>Zoom in</td>
<td>56</td>
</tr>
<tr>
<td>Supporting drawings</td>
<td>58</td>
</tr>
<tr>
<td>Appendices</td>
<td>66</td>
</tr>
<tr>
<td>Definitions</td>
<td>67</td>
</tr>
<tr>
<td>Figure List</td>
<td>68</td>
</tr>
<tr>
<td>Bibliography</td>
<td>70</td>
</tr>
</tbody>
</table>
Introduction
In the 1950's, East Garfield Park, a west side neighborhood in the city of Chicago, was a flourishing blue-collar industrial neighborhood with over 70,000 residents. However, due to the decline in manufacturing, and creation of suburbs and highways, the deterioration of the neighborhood started to occur. Since then, East Garfield Park has never been able to recover.

Now, East Garfield is down to 20,000 residents. It is one of the most crime-ridden neighborhoods in Chicago ranking 3rd in most violent crimes, 12th in most property crimes and 2nd in most quality of life crimes. The unemployment rate is at 18%, and almost 40% of the population is living under the poverty level. The landscape is overrun by underutilized land with over 1750 vacant lots in the neighborhood. Outside of Garfield Park, there is very little open green space for people to enjoy. The neighborhood is also a food desert. There are no grocery stores on site, but rather just small convenience and liquor stores for residents to get their food.

With all of these issues, the neighborhood has gained some attention in the past years. In 2005, the city of Chicago created the New Communities Program which created framework plans for communities in need, including East Garfield Park. It is realized that this community currently is unsuccessful. It is not working economically, environmentally, or socially. This proposed design works confronts these issues to construct a neighborhood that's viable economically, environmentally and socially while not displacing the current residents.
Background
Successful Sustainable Affordable Housing Planning and Design

Concern regarding low-income neighborhoods is not something new in the field of landscape architecture. Fredrick Law Olmstead, father of landscape architecture, saw what the effects of urbanization and industrialization had on the lower class. He designed several urban parks with a main goal of bringing "light, air, and community soul to the crowded poor to Boston, Buffalo, Louisville, and New York (Fredrick)." These issues have not gone away. Those who live in low-income communities are lacking resources, have more health issues due to environmental injustices, such as living close to garbage dumps or sewage treatment plants, inadequate education, and little say with their town or community just to name a few setbacks (Ra).

There have been many pieces of literature written about the revitalization of affordable housing communities to improve the quality of life for those residents. Affordable housing for this project is defined as affordable for a person who earns 80% or less of the area's median income and can pay for it using 30% or less of their income. Recently, there have been several case studies on the impact of green technologies on low-income housing. Danielle Arigoni's Affordable Housing and Smart Growth: Making the Connection is the most helpful when looking at the sustainable affordable housing holistically. William Bradshaw's The Costs and Benefits of Green Affordable Housing is the most comprehensive piece of literature regarding previous work. It has 16 case studies from around the United States.

Arigoni details the EPA's vision for smart growth in the United States. Many current public programs only address one issue in regards to revitalizing a community. This almost always does not result in a better community, and only the community members are left to wonder why the revitalization did not go well. Arigoni emphasizes that in order for smart growth to happen, there has to be multiple issues being addressed that serve the economy, community and environment (9). Affordable housing is the primary goal of smart growth. According to Harnik in Smart Collaboration, "transit may make density viable, but affordable housing is what makes it vibrant (1)..." The Smart Growth plan has a similar viewpoint in that there are several components of a community that make it successful. Affordable housing is one of them, and should not be forgotten.

These ten principles (shown in Box 1.1) are what Arigoni has stated as vital to creating a successful place. The case studies discussed later in this report.

Box 1.1

Smart Growth's 10 Major Principles:

- "Mix land uses
- Take advantage of compact building design
- Create housing opportunities and choices for a range of household types, family sizes and incomes
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, historic buildings and critical environmental areas
- Reinvest in and strengthen existing communities and achieve a more balanced regional development
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost effective
- Encourage citizen and stakeholder participation in development decisions (Arigoni 14)"
(see pg__) all have several, if not all, of these principles imbedded into the design. In order for the revitalization of East Garfield to be successful, these principles were strongly thought about in every design decision.

Gentrification is often a concern when redesigning a poverty-ridden neighborhood. When a neighborhood becomes successful, the cost of living often rises so much that it drives out the original members. For the redesign of East Garfield, it needs to be centralized on the idea of not improving just the quality of the area but also include improving the quality of life for the current residents. This means implementing educational and economic opportunities for existing residents with the overall improvement of the aesthetic of the site. This way, the residents will be able to continue to afford to live in the area, and not be forced out of the area.

Multiple references have also suggested how much the level of sustainability can differ between each project. Some are just as simple as changing to more energy efficient appliances, while others attempt to be completely self-sustaining. For the purpose of East Garfield, the most beneficial approach can be found somewhere in the middle; enough to see a significant improvement in their environmental quality, both indoor and outdoor, and to lower their cost of living, but not necessarily completely self-sustaining.

The History of East Garfield

In order to better understand East Garfield Park as a site, knowledge of the history must be known. Eunita Rushing and the Chicago Historical Society provide information about East Garfield in general about its various transitions since the late 1800's. Ali Mananipour and Paul Knox were able to give a more holistic, national perspective about what was happening at certain time periods and how it affected the lower class.

East Garfield is located on the west side of Chicago, with I-290 on the southern edge, Garfield Park on the western edge, Metra Railway on the northern edge and another railway on the eastern edge. It was annexed in 1869 by the city of Chicago. Not much happened in East Garfield for the first several years due to the corruption of land dealings, and a barren landscape for Central Park (now renamed as Garfield Park). In 1905, Jens Jensen became the supervisor for the park and the landscape was finally installed (East Garfield). Transportation to East Garfield was not very good at the time. This did not make it very appealing for people to move to the neighborhood. The neighborhood was surrounded on three sides by railroads, making it the perfect place for manufacturers.
With manufacturers coming in, workers from these manufacturing sites started to settle in as well. Most of these houses were two-flats and small apartment buildings and then later modern homes started to appear in the neighborhood (East Garfield). As more people started moving in, more commercial and industry started to appear in the neighborhood. Madison Street was the prominent commercial street, and the most elaborate homes were located on Jackson, Warren and Washington (Rushing 8).

The original residents of East Garfield were Irish, German, Italian, and Russian Jews. However, the composition of the residents slowly started to change. In 1950, 70,000 people lived in East Garfield. In 1956, the Eisenhower Expressway started to be built (Rushing 8). This displaced many located on the south side of the neighborhood. White flight started to take place as an effect of the construction of the expressways and creation of suburbia. East Garfield transitioned into a more African American dominated neighborhood. In 1960, the addition of Chicago Housing Authority (CHA) public housing projects (Harrison Courts, Maplewood Courts, and Rockwell Gardens) started the decline in prosperity for the neighborhood (East Garfield).

In 1961, the Rockwell Gardens public housing was built. It was originally seen as a step up for working class residents (Rushing 8). However the complex was isolated and poorly maintained. It soon only held the very poor.

Manipour states in “Living Together or Apart” how there started to be two different visions of the city around the 1950’s. One is that it was dangerous and should be avoided and the other was that the city asserted economic and social significance; that it creates tolerance among those who are not alike (Manipour 486). This part of the city was seen as the negative viewpoint. Many people left the area. Currently, there is only 20,000 people in the neighborhood, 50,000 less people live there now than they did in the 1950’s. The 1,750 vacant lots on site today show how much of an impact this decline in population has had. This provided a unique opportunity for the design because by just redeveloping the vacant lots the overall character of the neighborhood could change drastically.

In the 1960’s there started to be a restructuring of the economy in the United States. There were declining profit rates in manufacturing. Productivity was not matching wage growth (Knox 165). Globalization was also starting at this time; so manufacturing jobs were able to move out of the country to lesser-developed nations. That way, the products could be made at a cheaper price. This closed the majority of manufacturing sites, thus greatly hurting East Garfield who prospered due to manufacturing. The United States was shifting to a service based economy and East Garfield couldn’t keep up.

Another event that took place that impacted East Garfield was the Martin Luther King Jr. assassination in 1968 (Rushing 9). When the assassination happened, riots and fires took over East Garfield, particularly on Madison. These actions destroyed many businesses further putting East Garfield in a worse situation. East Garfield started to see a lot of problems such as overcrowded schools, poverty, neglectful landlords, and shrinking industrial jobs (Rushing 9). The people left in East Garfield were those who were too poor to leave.

Today, East Garfield is still feeling the effects of history. Only 20,800 people, over 90% being African American, live in East Garfield and there are over 1750 vacant lots. Garfield Park is no longer a place for relaxation, but rather it is ridden with gangs, drug deals and other sorts of crime. East Garfield’s surrounding neighborhoods
are also struggling just as much. Rushing’s Quality of Life Plan stresses that the community wants and needs revitalization. The residents want “a community that serves existing, honors past, and welcomes newcomers (Rushing 2).” One of the previous proposals for East Garfield by mayor Daley was to honor the past was to create an industrial green corridor on Lake Street (Rushing 11). Lake Street would then become a place where environmentally oriented businesses could take root.

East Garfield has a rich history of being a prominent industrial neighborhood, filled with a strong working class. The future design of East Garfield should embrace this history and highlight the historical buildings and other interesting aspects of its history. The struggle of achieving success should also be prominent. This was originally a place for immigrants to settle in and then it soon became a neighborhood for the African American community. Each group had their fair share of hardship and them overcoming those hardships should be celebrated in the design. A new economy could also be established through the redevelopment of the vacant lots. This would help create a more cohesive neighborhood.

Garfield’s Community Needs

Eunita Rushing, author of East Garfield Park: Growing a Healthy Community Quality-of-Life Plan, provides in depth data about East Garfield Park’s needs. There were a large number of plans created for other neighborhoods found in the city of Chicago. East Garfield’s plan was the one I found most interesting because it is a low-income neighborhood that has the desire to focus on green infrastructure and become a more self-sustaining neighborhood.

One of the major needs addressed by Rushing was safety. Crime and poverty have risen dramatically. 39.7% of the residents are living below the poverty line, and 18% of residents are unemployed (East Garfield). Compared to all Chicago neighborhoods, it is ranked 3th for most amount of violent crimes, 12th for most amount of property crimes, and 2nd most amount of quality of life crimes. The neighborhood ranked 1st in most quality of life crimes is West Garfield which is, of course, the adjacent neighborhood (East Garfield). Another issue is that East Garfield has the highest percentage of released prisoners entering back into the
community with 34% of all prisoners released from Cook County (Kantor).

By the neighborhood not having a safe environment, it is harder to attract others into the community. This creates isolation from other communities and does not help them gain economic advancement. By creating safer streets through better lighting, lessening of vacant lots and abandoned buildings and creating more pedestrian friendly access points, it creates a more welcoming environment to residents and visitors. Ian Colquhoun's book Design Out Crime is a very thorough resource of how approach safety from a design perspective. It details how housing, economics, public spaces, streetscapes, and sense of community all play into creating a safe environment. Safe Cities by Gerda R. Wekerle and Carolyn Whitzman has very similar ideas to Design Out Crime. However, it focuses more on the design details such as lighting, visibility and land use mix, rather than the big picture.

Another way various designers have been approaching the problem of safety and a more dynamic neighborhood setting has been mixed-use. This design idea consists of retail on the first floor with office space or housing on the rest of the floors. These are supposed to attract a variety of types of people from various backgrounds and stages of life. Mark Francis, however, disagrees with this viewpoint in his article “Mixed Life Places.” He believes that mixed-use models tend to only attract young professionals by having mostly one-bedroom and studio apartments and are focused more on creating density than creating a sense of community (Francis 435). Open space is often privatized so there is no real space for people to gather and interact with people who are different from one another.

Francis then suggests another idea he calls mixed-life. This idea creates a multitude of different housing and retail developments to cater to a variety of people and needs. These are typically more diverse in character and have a larger range of activity happening within its context. Because East Garfield wants to appeal to new residents and does not want to displace the current residents, the mixed-life approach to urban design makes more sense in comparison to mixed-use.

Another disagreement among urban design theories, which Ali Madanipour discusses in “Living Together or Apart: Social Mixing, Social Exclusion, and Gentrification,” is which is the better approach: social exclusion or social mixing? Social exclusion has happened a lot in recent decade, for example suburbanization and the white flight. People want to be surrounded by people who are similar in culture and economic status to provide them (middle and upper class) a better sense of safety and belonging. However, when the lower class is put in these situations, they tend to have a lack of resources to aid in decision-making, making them feel less empowered (Madanipour 488).

Social mixing is the other approach to challenges of diversity. This promotes “accessibility among social classes, overlap and spatial openness (Madanipour 489).” This has been a recent response to decline of ghettoization and public housing that happened due to social segregation. However, it has caused other problems such as gentrification and displacement. When the neighborhood starts to become successful, the properties become too expensive for the lower classes to afford and they have to move out. Because of this, urban design can either be associated with gentrification or segregation (Madanipour 492).

Having this knowledge emphasizes how challenging redesigning East Garfield will be in order to create a
successful low-income neighborhood without worrying that in the future the residents will have to leave due to the neighborhood becoming too successful.

Another need that East Garfield would like to address is healthier living environments. In “Interactions Between Public Health and Urban Design” Boarnet explains how the role of the built environment plays an important role in influencing health disparities and socio-environmental problems (198). Low quality housing, especially with the presence of mold, creates a high risk and an almost 3 times more likely to have asthma. Within East Garfield, 7.5% of the residents live in crowded housing (East Garfield). The creation of quality housing is necessary for the welfare of the residents, especially with the upcoming effects of climate change. Climate change will hit those in urbanized areas and poor housing conditions the worst (Boarnet 202). East Garfield, being a highly urbanized area with inadequate housing would be subject a more intense impact from climate disaster than other neighborhoods. Being able to properly redevelop East Garfield to minimize the potential harms would be greatly beneficial for the future of the community. While this issue has been known for quite some time though, it is unclear what the next steps are in ensuring environmental justice for low-income families.

Boarnet also explains the importance of the physicality element of the community. There is a clear association between environmental elements and walking (Boarnet 200). Having a more walkable community helps create a more vibrant dense city that emphasizes that a multitude of activities can happen in a single space.

Rushing stresses the importance of creating “healthy and creative recreation for teens (14).” This is extremely important especially when trying to lower crime rates and the amount of people going in and out of prison within the neighborhood. The creation of more public spaces is a way that can help this problem. Francis criticized how many new public spaces have been privatized and not accessible to a diverse population of the community(434). There are only exclusive purposes that the park can be used and unforeseen uses are unacceptable. Michael Walzer describes these as single-minded spaces. These spaces are only used for one type of activity. Walzer states that there needs to be more open-minded spaces which take into account multiple types of activities happening in an area both foreseen and unforeseen (Francis 434). Walter Hood stated “Social injustices are created when certain uses are ignored or not provided for... sometimes causing conflicts when unprogrammed uses occur (Francis 434).” In order to prevent social injustices and provide more positive opportunities for the community, the addition public spaces will help. The creation of a more cohesive public realm that understands and addresses all the various types of needs throughout the neighborhood constructs a dynamic space for different types of people to gather and learn from one another, thus creating a community.

Having the additions of greenways and gardens will help with food production. Ra and Kelly’s lectures at Powershift 2013 in Pittsburgh both stress the importance of the availability of fresh food, particularly in low-income areas. Often, urban areas, particularly those that are largely filled with low-income residents, have food deserts. Low-income areas typically do not have access to fresh produce, so that they cannot live a healthy lifestyle (Ra). If they do have fresh produce it is often low quality and if they have to go to a food pantry the food is most likely expired (Kelly). Kelly stated in his presentation “You Are What You
Eat, So What Are You?” that when someone else is feeding a community, the community is not in control. Having the ability to control food production can empower a community. This is particularly important in low-income areas. Often, these areas are not well represented within the larger context of the city because they do not have access or time to talk to officials. Having food production within the community is a way to help offset costs of living for these families and allow them to be able to access proper nutrition.

In order for East Garfield to be able to have a healthier living environment, the design will stress the importance of having adequate and accessible public green space, urban food production, walkability, and improving housing conditions.

Rushing stresses the importance of East Garfield’s history and how it should be showcased (9). East Garfield is one of Chicago’s most historic neighborhoods. Founded over 130 years ago, this neighborhood was geared towards those who worked in the neighboring factories (Rushing 2). Around the 1950’s, globalization started to take place and manufacturing started to leave the US and go to third world countries. The United States then moved into a more service based economy.

East Garfield has a large amount of the greystone houses in Chicago. Many of these need to be revitalized, and because of their historical significance, there are already plans and renovations taking place on these (Rushing 9). Having these historical houses helps create more quality and various economic levels of housing to help create the interesting and dynamic neighborhood East Garfield aspires to be. The historical sites found in East Garfield provide a great opportunity to bring in visitors to the site. These buildings and sites should be proudly presented to show how history has influenced the neighborhood.

Addressing the needs for East Garfield neighborhood will be a delicate task to take on. As Madanipour states when thinking about low-income areas two questions should be considered: “Are they living there by choice or force (489)?” and “Where would they live if they were free from discrimination, poverty, and fear (489)?” These are questions that I think are extremely important questions to ask when designing for this social class. The community has addressed a variety of wants and needs for the area. Improving safety, healthier living environments, accessibility to public green space, economic vitality and historic preservation will be major tasks of the design, however, being able to properly address these while not displacing them will be the major challenge of the design.

In conclusion, the needs of East Garfield Park are improving safety, decreasing crime, creating healthier living environments, economic improvement, and historic preservation. These concerns will be addressed through the use of some social mixing and mixed life approaches. Improvement of safety and decrease in crime are the major concerns and will be the hardest to achieve. This will be approached through education, overall site plan, site details such as lighting and streetscape design, and the repurposing the vast amount of vacant lots. Healthier living environments will be created by the additions of green spaces, food production on site, recreation spaces for varying age groups and activities, and better walkability on site. Economic improvement will happen when safety and healthy living environments are achieved.
Problem Statement & Significance
Problem Statement
Due to East Garfield Park's inability to bounce back from the decline of manufacturing, and the creation of suburbs, it is now one of the most poverty and crime ridden neighborhoods in the city of Chicago. The current needs of the residents include lowering cost of living, increasing safety, increasing economic opportunity, improving of environmental quality, and improving the physical well-being of the residents. This project focuses to meet the needs of the residents, minimize gentrification, and create resilience in the community while reconstructing a distinctive district in Chicago.

Project Significance
Too often, depliated neighborhoods are turned over to developers to start anew. This creates a variety of problems because it displaces the existing residents, creates uninteresting streetscapes, have little regard to history and context, and often the new development is aimed to appeal to a very narrow group of people. Low-income neighborhoods do not have to equate to dangerous, and unhealthy living conditions, but can mean a dynamic, efficient, and hardworking neighborhood. This project aims to demonstrate how working with low-income neighborhoods is an opportunity rather than a commonly perceived constraint.
Mission Statement
Meet the needs of low-income residents through the integration of food and energy production and economic revitalization of the community
• Provide a healthier living environment
• Create a safe environment for the working class families already living in the community.
• Give residents the opportunity to have low cost high quality housing, safer and more welcoming streetscapes and economic opportunities
Goal 1: This project intends to decrease the amount of violent, property, and quality of life crimes and poverty on site.

Objective 1: This will be accomplished by improving streetscapes by having better lighting.

Objective 2: This will be accomplished by reducing of vacancy on site, through the addition of green spaces, housing, and businesses.

Objective 3: This will be accomplished by emphasizing the importance of children through education and extra-curricular opportunities. The addition of parks, open spaces, and community involvement will be used to help children stay away from crime activities (Fig 4).

Objective 4: This will be accomplished by the addition of economic opportunities and job placement on site. This will happen in the design by repurposing the vacant lots, and helping create a more diversified community.

Goal 2: This project intends to provide a healthier living environment for the current residents.

Objective 1: This will be accomplished by having accessible public green space for all residents to enjoy (Fig 5).

Objective 2: This will be accomplished by having the addition of urban food production in the neighborhood, so that the residents have easy access to fresh foods (Fig 5).

Objective 3: This will be accomplished by using more sustainable energy techniques such as photovoltaics to lower the carbon footprint of the site.

Objective 4: This will be accomplished by improving walkability on site to improve the physicality of current residents.

Goal 3: This project intends to provide a dynamic living community that more people will want to visit and enjoy.

Objective 1: This will be accomplished by working with the existing infrastructure and infilling.

Objective 2: This will be accomplished by creating a diverse character of the neighborhood through the types of businesses on site, a diversity of housing types, interesting spaces for people to enjoy, and a thoughtful redesign of the neighborhood (Fig 6).

Objective 3: This will be accomplished by creating more welcoming and unique streetscapes that capture the essence of the neighborhood.

Objective 4: This will be accomplished by having sustainable, high quality low-income housing that is well kept up and have the appropriate opportunities to meet the needs of the residents.
Design Process
Introduction to Design Process

The following pages describe the overall design process of the project. This process was constantly about going from a large, entire neighborhood scale to a smaller more intimate scale. The main purpose of this project is to revitalize the community, which is affected by various influences that need to be understood thoroughly. The process used in this endeavor helps to create a design that is able to comprehend how a lot size change can impact the neighborhood as a whole. It also helps to ensure that the design is working at various levels and is cohesive throughout the whole project.
Site Inventory and Analysis
Location/Vicinity

East Garfield Park is located on the west side of Chicago, IL (Fig 8). It has a great view of the Chicago skyline when looking east. It is close to the United Center, an arena used to host The Bulls and Blackhawks games. The adjacent neighborhoods, West Garfield Park, Humboldt Park, West Haven, North Lawndale and West Garfield Park all have similar issues to those found in East Garfield Park.

Figure 9 shows a satellite image of East Garfield Park. Garfield Park, one of the largest parks found in Chicago, is the west side border of the site. I-290 is the southern border of the site. Rail lines create the border for both the north and east sides of the site. This image also shows the chosen area of the neighborhood to be redeveloped. The site chosen was based due to its proximity and connection to Chicago Center for Green Technology (located on the north part of the site), and lack of green space access. It was also chosen based on Garfield Park. Garfield Park has a lot of issues in regards to crime and the blocks surrounding the park have much different needs than those on the east side of the neighborhood.
Figure 9: Satellite Image from Google Maps
Site Demographics
Area: 1.915 square miles
Population: 24,829

In order to better understand the overall character of the site, demographics of the site were researched. Findings compared to Chicago are presented in the graphs below. It shows that crime and poverty are much more prevalent in East Garfield than found in the majority of Chicago.

**Population density:**
- Chicago: 11,919
- East Garfield Park: 12,963

**Median household income:**
- Chicago: $43,628
- East Garfield Park: $26,141

**Racial Diversity**
- Other 2%
- Black 98%
Transportation and Education
Figure 9 is a GIS map showing the locations of public transportation and schools. As shown in the map, the site is well connected to the rest of Chicago through public transportation. There are ample bus stops and rail lines that have routes throughout Chicago and the neighboring suburbs. There are also several schools found on site. Most of these are elementary schools. These create an opportunity to be able to connect to the children on site and be able to teach them about sustainable technologies, and food systems.

Vacancies within Redevelopment Site
As shown in Figure 10, the redevelopment site has over 800 vacant lots on site. This contributes to the derelict quality of the neighborhood. Having a high frequency of vacant, underutilized on often contributes to crime rates.
New Communities Quality of Life Assessment Plan

In 2005, New Communities, a program created by the city of Chicago, created a Quality-of-Life Plan for East Garfield Park amongst many others. When trying to pick out a site for this project, several assessment plans were researched. East Garfield was most appealing for the purpose of this project because the residents wanted to have a more sustainable lifestyle associated with their neighborhood to combat the hardships of the community. The assessment plan created by New Communities was very thorough and also had a framework plan of what they thought would be best for the community. Not much was done with the proposed framework plan since it was created making the information given was still relevant for this project’s purposes.

Figure 12: Framework created by New Communities

1. Green Corridor
2. Encourage TOD mix-uses near “el” stations
3. Encourage mixed employment and residential areas
4. Encourage multi-family housing
5. Madison: Emphasis on commercial
6. Encourage townhouses
7. Encourage mixed density
8. Encourage multi-family
9. Campus park for high school
10. Expanded Bethany Hospital
Analysis Introduction
After looking at GIS maps, visiting the site, and reading the New Communities Quality of Life plan, an analysis of the site was created. Opportunities and constraints of the site were identified and shown in plan and street view. First, opportunities and constraints of the whole site, were identified and then a closer look at the street level was looked at.

Opportunities
The first opportunity of the site is the vast amount of vacant space on the site. This provides a large amount of land that can be repurposed without having to relocate current residents. The highest amount of vacancy was found around 5th Ave. This is the only diagonal road on site, which also provides an interesting opportunity with all of the atypical intersections it creates. Because of the high percentage of vacancy, 5th Ave can be completely redeveloped.

Another opportunity is the large amount of historic greystones found on site. East Garfield is a historic neighborhood that still has many of the original homes when the neighborhood was first developed. While many of the housing structures need to be revitalized, they are not in a complete disrepair and should be celebrated. The neighborhood has quite a history, which could be exemplified with these restored homes.

Transportation within East Garfield is already very successful. Vehicular traffic is fairly low and most people take advantage of the bus and EL systems on site. This is crucial for any low-income areas because they often cannot afford to have a car. It is also a great asset to help contribute to the sustainable lifestyle that will be prominent in the area.
The neighborhood's proximity to Chicago's Center for Green Technology is also a huge asset for the community and meeting its sustainability and education roles. East Garfield will be able to have a direct relationship with the Center. The center will be able to test out new technologies within the community to see how successful they are and if they do work, show other communities how they might be able to implement these designs into their community. Chicago's Center for Green Technology already has a educational aspect for those in Chicago and this relationship would be able to push that educational aspect even further.

Education in sustainable practices would also be able to be implemented through the various schools on site. The schools could have their own educational facilities for their students and faculty to use and learn about how future cities can move forward. It will also give the students real world application for the ideas brought up in class.

Lake St is one of the most unique streets found on site. The reason this street is interesting is because it has the EL on top of the road. This creates a unique relationship between the various modes of transportation. Currently, this road is very vacant, so the only transportation utilized on this road is the EL with the occasional car traffic.

**Constraints**

The first constraint of the site is the amount of crime found on site. This is one of the most dangerous neighborhoods in the city of Chicago, which poses a lot of different problems than many other neighborhood revitalizations. With smart reuse of vacant lots, the introduction of quality jobs for current residents, and better availability of extracurricular activities for children, the crime level should lower greatly.

While Lake St provides an interesting relationship between various forms of transportation, it is clearly not working right now. Currently, it is an unattractive and highly vacant street. Proper redesign of the ground plan with better usage of lighting and overhead plane created from the EL will be able to make it a street more welcoming to residents and visitors. The addition of local businesses will also help to create a more dynamic streetscape.

As of right now, the neighborhood lacks economic vitality. There are very few businesses found within East Garfield. The few businesses still found on site are in poor condition and are often subject to crime. Finding a way to bring in new business in crucial in helping to create a better economy for the residents. Currently, site is a food desert. There are no grocery store or urban agriculture found in the neighborhood. The residents have to either leave the neighborhood to go grocery shopping, or shop and convenience and liquor stores for their food.

The site is rather isolated from the adjacent neighborhoods. This is an issue because of the railroads and highway that create barriers and 3 out of the 4 sides of the neighborhood. Understanding how to address these barriers and still be able to connect with the adjacent neighborhoods is key to bring in rise of economic success.

The existing economic status of the residents is also a constraint. Currently, most of them cannot afford everyday necessities. Being able to properly combat this and be to create an affordable yet healthy and successful community is key for the success of this project.
This street view of Lake Street shows how underutilized this site is. There is only one building on the street and it looks like it has a high potential of being vacant. The design for this area needs to make sure to add reasons as to why someone would want to come to this area of the site.

This street view also emphasizes the underutilization of the streetscapes. 5th Ave seems to be more geared towards the comfort of the vehicle rather than the comfort of the pedestrian. Walkability is key in creating a successful neighborhood. Creating a safe environment for pedestrians is key in helping improve 5th Ave. Vacancies are also very prevalent on this street.
The street view of Madison shows how the amount of underutilized asphalt on the site. The street here could definitely be narrowed. This could add more room for street trees on site. There are a lot of positives in this image. The street art starts to create a distinctive character for the site and there is a great view of the loop from this viewpoint. The bus stop is also being used, but could improve with a redesign of the stop to emphasize the originality of the neighborhood.

Sacramento Ave has similar issues as many of the other streets. While it does have the beginnings of a street wall, there is still an immense of vacant space found on site. The street is also too wide for the amount of traffic on the street. This could lead to narrowing of this street as well and the addition of bike lanes.
Case Studies
Introduction

Before designing, several case studies were looked at to see the success of low-income redevelopments. Many of these case studies went into depth about the economic success of these areas and the savings that can be seen over a period of time. This was very useful when deciding on the types of systems and technologies would be best for the neighborhood.

The two most relevant case studies for this project were Via Verde in the Bronx, and the Pearl District in Portland. These are two very different scales and project types in comparison to East Garfield, but they hold similar constraints and goals for their projects.
Via Verde, Bronx, New York City, NY
151 apartment complex

One of Phipps Houses and CDC's most recent projects is Via Verde located in the Bronx. In "Low-Income Housing in the Bronx Gets Healthy and Green," shows how much the Bronx has changed in the past 50 years. Via Verde currently has a waiting list for residents. Residents are able to see greenery from almost every vantage point of the building (Low-Income). The vision for the site was to create an affordable, safe, healthy, environmentally sound and sustainable design for the residents (Low-Income). This design was the winner in a 2006 design competition hosted by New York City Department of Housing, Preservation and Development (Low-Income).

By having a large amount of green space throughout their design, Via Verde has become a very successful and desirable place to live. They have been able to make sure to reach the needs of those residents in need of affordable housing while giving them amenities, such as a rooftop garden, they have never had access to before and it still be affordable for them. Just like Arigoni stated in Affordable

Housing and Smart Growth, multiple issues need to be addressed in order to make a significant difference in a community. Via Verde was able to create a walkable community, create new open space, and take advantage of compact building design.
Pearl District, Portland, OR

Portland has been the “poster child for smart growth (Argoni 18).” Its residents are environmentally focused, it is one of the most walkable and easily accessible by public transportation cities in America, and has an urban growth boundary. However, there have been some discrepancies about whether limiting an urban boundary is beneficial or if it is harmful to those who need affordable housing. This is critical to address, because East Garfield currently has a distinct boundary and gentrification will be avoided as much as possible for the neighborhood. Critics feel that limiting the quantity of land available for quality development will drive up housing costs (Argoni 19). Even though housing prices have risen in Portland, it’s hard to say it’s because of the urban growth boundary. For example, Salt Lake City, UT has seen similar rises in housing costs and they do not have an urban boundary.

It seems that regardless of having an urban growth boundary and if housing prices rise, as long as the city makes sure to keep affordable housing as a priority, it will be exist in the city. The Portland Development commission has done just that. They also have used parks as incentive for creating affordable housing. The Pearl District is a perfect example of this. Due to the addition of affordable housing, there has been an influx of children in the neighborhood (Harnik, Smart 6). The former rail yard was able to transform into a very pleasant neighborhood through the addition of affordable housing and parks. In order for there to be quality affordable housing and enough of it, the city of Chicago needs to make it a priority and somehow provide incentive for the neighborhoods to not only build it, but to also upkeep it.

The Pearl District in Portland is a good precedence for East Garfield because it exemplifies that affordable housing can be a part of a successful neighborhood. A diversity of incomes helps create a more successful economy for the neighborhood. Park space benefits everyone, so using it as incentive to make affordable housing a priority is a good idea in regards policy. In regards to landscape architecture, parks help create character for the neighborhood, and provide a place for residents for recreation and relaxation. The Pearl District also celebrates its past to help create an image for it and has helped make the neighborhood so successful. The redevelopment for East Garfield should take this into account and somehow showcase the neighborhood’s glory days.
Program
There are six different programmatic elements that are implemented on the redesign of East Garfield Park. These elements are: create a healthier living environment, create a sense of security, create a sense of community, create a Green Makers Corridor, add energy and food infrastructure on site, and add educational opportunities.

A healthier living environment will be created through the implementation of green space on the vacant lots, added food security and better access to fresh produce on site, and safer walking and cycling environments through better pathways.

A sense of security will be created through the implementation of enhanced lighting, a reduction in vacant lots, and reinvention of access nodes. A sense of community will be created through individualized street furniture, characterization of neighborhood signage, and better accessibility to adjacent neighborhoods.

A Green Maker’s Corridor will be created through a centralized economic area for the neighborhood, attracting local businesses focusing on sustainable technologies and processes, and the redevelopment of Lake Street and its relationships with its multiple transportation typologies.

Energy infrastructure will be added on site through the implementation of solar panels on existing structures.

Educational opportunities will be created by having a direct relationship with schools on site and Chicago Center for Green Technology.
Conceptual Design
After the inventory and analysis were completed there seemed to be three roads that seemed to stick out the most. These roads were Lake St, 5th Avenue and Sacramento Ave. For the revitalization plan for East Garfield Park, it was broken up into three main redevelopment areas with the streets mentioned above as shown in Figure 24. These areas help to break down all the numerous goals on site.

Lake Street has the most opportunity for handling the most amount of traffic. Because of this asset and that it is in the center of the community, it has been deemed the Green Makers Corridor. This area will sell locally sourced goods and services. It will provide an area for local businesses to thrive and an easy access point for visitors.

5th Avenue and the blocks surrounding 5th Avenue will become a microcommunity. This microcommunity will be heavily focused on how food and energy production systems can be well integrated in dense urban context. Vacant lots will be composed of food production sites and parks for the residents to use. This site will be a part of the Chicago's Center for Green Technology's Experimental Lab and it will also be used to grow food to be sold and used in restaurants located
Sacramento Ave will become the great connector street. This street connects the microcommunity, green makers corridor and Chicago Center for Green Technology together. It will be the main N-S arterial road for the neighborhood. Those coming from far away will use I-290 to arrive to the site, and the exit they would be using would be Sacramento. The street will be redeveloped to have bike lanes and become a more welcoming street into the neighborhood through the character it brings.

As shown in the diagram (Fig 25), these three areas are highly interconnected to make East Garfield Park. All three areas have their distinctive qualities and help to bring a different part of the triple bottom line of sustainability. In order for sustainability to work, there are three parts that must be thought about. Those three ideas are economic, social, and environmental. Lake St brings in the economic value of the site, the microcommunity brings in the social value, and the Chicago Center for Green Technology brings in the environmental value.
Land use plan

This land use diagram (Fig 26) further reiterates the different zones and how they relate to one another. Most of the green space is found nearby residential areas, manufacturing and offices are close to the rail lines for easy accessibility, and the main commercial area is in a centralized location for the neighborhood to help bring in people from all over the neighborhood, and Chicago to the area.
When starting to conceptualize Lake Street, a quick zoom in plan was created and concept considerations were found. This place would be a very dynamic place for people to visit. As shown in the concept plan (Fig 27), buildings would be setback to create a buffer zone from the EL and the building. Parking would be placed in the back of the buildings instead and bike lanes would be added to Lake St. As shown in the concept consideration images (Fig 28-30), this would be a very interactive place for people to buy all sorts of local produce, meals, sustainable technologies, art, and more.
When conceptualizing Sacramento Ave, how the bike lanes were going to be added was crucial to the design development of the road. Because it is a main arterial road, it's projected to become much busier than what it is currently. Cyclists need a safe way to be able to travel. The decision made was to redesign Sacramento as a boulevard with the bike lanes in the center of the road. This way, the cyclists have their own lane and do not have to worry as much about sharing the road with cars.
Detailed Design: Microcommunity
Introduction
The microcommunity was decided to be the main area of the redesign because it worked the most with the original goals and objectives for the area. It also had the highest amount of integration with the residents which was a challenge that needed to be looked at with a larger focus.

This area was designed to be as self-sustaining as possible with the intention of creating long term resilience. Jobs, open space, healthier living standards and better connectivity are some of the positive outcomes that come out of this design.
Microcommunity: EcoBalance

**Air**

To Breathe:

\[ \text{Number of Trees} = \frac{\text{Population}}{\text{Number of Trees per Person}} \]

Population: 1,790

\[ \text{Number of Trees} = \frac{1,790}{5} = 358 \]

To Offset Fossil Fuel Emissions:

\[ \text{Area Needed} = \frac{\text{Population} \times \text{Area Needed per Person}}{\text{Efficiency}} \]

Population: 1,790

\[ \text{Area Needed} = \frac{1,790 \times 9 \text{ acres}}{0.445} = 39,953 \text{ acres} \]

Goal: Have at least 8,950 trees on site

**Food**

Traditional Urban Agriculture:

\[ \text{Area Needed} = \frac{\text{Population} \times \text{Area Needed per Person}}{\text{Efficiency}} \]

Population: 1,790

\[ \text{Area Needed} = \frac{1,790 \times 9 \text{ acres}}{0.445} = 39,953 \text{ acres} \]

Goal: Have at least 8,950 trees on site

Aquaponics

- 10x more productive than traditional urban agriculture
- Can provide up to 125% of food needed
- Can use up to 95% less water and not dirt
- After 1st year, not much work: just 30 minutes a day
- Pays for itself in 2-2.5 years

Goal: 75% of food consumed will be produced on site

**Energy**

Solar Panels

- Area of Solar Panels Needed
  - 1000 ft² per person
  - 250 ft² per car

- There's 890,721 ft² of available rooftop space

- By having solar panels on the rooftops, 50% of all energy needed for lighting and appliances on site would be created

- This means households are saving over $700 a year

Goal: Use all viable roof space for solar energy production

**Water**

- Average family in Chicago uses 326 gal/day
- Average rainfall: 38 in/yr

Currently:

- Site uses 61,160,860 gal/yr
- Site receives 81,149,823 gal/yr or 132% of needed water

Goal: Collect rainwater from roofs and use water for landscape and potentially as graywater inside buildings

Goal: Reduce amount of impervious surfaces on site
Since 5th Avenue plays such a crucial role in the development of the micro-community, concepts surrounding the streetscape were created. Various ideas (Fig 34-37) about the layout of the streetscape were diagrammed. Due to the nature of the road alignments of the connecting streets to 5th Ave, the woonerf idea was selected. A woonerf is where all modes of traffic, vehicular, pedestrians, and cyclists use the same road and there’s no separation of spaces. This would create a pedestrian oriented pathway where cars are allowed to also use the space.

Figure 38 shows the relationships between food production, housing, 5th avenue and pedestrian and vehicular circulation.
Figure 39: 1" = 60' plan
Microcommunity Plan

This plan shows the relationship of where the aquaponic greenhouses and outdoor park space would go. As stated in the ecobalance information page, 13 acres of the available vacant land would go towards aquaponic production to meet the goal of producing 75% of the amount of food consumed on site. Most of the aquaponic production sites are located on 5th Ave, making it become the hub of the food systems in the neighborhood.
Systems found on site (Fig 40)

Pedestrian Circulation
5th Ave will be the most active pedestrian wise within the microcommunity. All roads will have pedestrian access. There will be some pathways created through the green space throughout the neighborhood.

Vehicular Circulation
Most of the roads on site are residential so they will not be seeing so much traffic. Sacramento Ave will be seeing the most amount of traffic since it is the main connector throughout the site.

Stormwater Collection
Stormwater management techniques will be happening throughout the site. Currently the site is highly impervious and the groundwater recharge happening on site is close to nonexistent. Small scale stormwater management techniques such raingardens and the addition of permeable pavers (especially located on 5th Ave) will help alleviate the current sewage infrastructure. Most of these additions will be happening along streetscapes.

Green Space
Open green space accessible to all residents of the community. These areas are meant to give the current community members places to relax and get away from the busy city life, even if it’s only for a couple of minutes. These were placed strategically so that no one would have to walk further than a block to access outdoor recreation space.

Aquaponic greenhouses
As stated before, there will be many greenhouses on site to help meet 75% of the current food consumption rate on site. These areas will be producing various types of fish and produce for the community to enjoy and sell if they’d like.

Location of photovoltaics
All currently used buildings within the microcommunity will be retrofitted with solar panels. This will make up 50% of the current energy consumption, which will lower the costs of electricity bills for the families living there.

Aquaponics and greenhouses
Aquaponics is a method of combining hydroponic and aquaculture into a closed loop system of food production (Fig 41). They are highly productive and can produce up to 10x more food than the traditional urban agricultural system. Because of that high productivity level, it makes it the perfect system to use in an urban setting.
Aquaponics and Greenhouses

Aquaponics will be happening at three different scales: hoophouses (Fig 42), repurposed glass greenhouses (Fig 43), and large scale glass greenhouses (Fig 44). All of these areas will be taken care of by residents within the site, creating a co-op type of residency. The hoophouses will be the most common form of greenhouses on site. The repurposed glass greenhouses will be created using salvaged materials from houses that had to be taken down. The large scale glass greenhouses will be where people can come to visit and see how the system works. They will also double as park space and will use aquaponics in such a way to become an aesthetically pleasing way of growing food.
A Closer Look at the Design
This plan (Fig 45) starts to show more of the character of the streetscapes and the relationships between the residencies, parks and greenhouses. The addition of street trees, narrowing of the streets, adding a plaza, and the massive redesign of 5th Ave can be seen in this drawing.
This plan (Fig 46) really begins to start to show the quality of the space. The layout of the woonerf, location of the photovoltaics, layout of inside one of the major greenhouses, and the types of materials used on site can be seen here. Various permeable paving types will be used on 5th Ave to signify various relationships and connections happening.

The plaza is set in the middle of the microcommunity as a large gathering space. Events will be able to take place here such as farmer's markets and
various celebrations.

Inside the greenhouse, is the aquaponic production system. A large pond in the center of the space is where the fish are kept, and the food production happens on the left and right side. Having the curvilinear types of planter beds creates a unique aesthetic unique to the greenhouse. It also helps to create a variety of spaces for visitors and employees can enjoy.

On the bottom right, you can see one of the pathways into one of the pocket parks found in the neighborhood. These small parks are meant to be interactive spaces for people who live in the surrounding area can enjoy and get to know their neighbors.
Woonerf section
Figure 47 shows how the woonerf relates to the plaza and residential housing. New lighting systems, ample seating and vegetation will be added to create an exciting place for the residents to live in and for people to visit.

Environmental art will help create a sense of place within the community. On the left hand side on the residential building is an example of what could happen on site. These art installations would be created from repurposed material.
Figure 48 shows how the two tiered aquaponic system will be laid out and starts to show the spaces created by them there. These will be put together with reclaimed wood. There will also be lower planter beds created with aluminum planters.
Exterior of greenhouse

Figure 49 shows how the plaza and greenhouse interact with one another. This greenhouse is extremely large which is why it was important to create an almost park like setting inside the greenhouse so it didn’t seem as intrusive.
Aquaponic systems inside of greenhouse

The ways the water is moved throughout the greenhouse is shown through Figures 50 and 51. Figure 50 shows how the water is pumped up to the top tier of the planter and then as it slowly works itself through the top tier it moves down to the first tier which will again work itself through the whole planter bed and then be transferred back into the fish pond.
Perspective of Inside the Greenhouse

Figure 52 shows a view of the fish pond. Some decorative planters made from salvaged materials would be at the front of the pond. There would be seating along the side of the pond for people to enjoy the recreational space.
Perspective of Sign Design for the Neighborhood

Figure 53 shows a potential idea for signage into East Garfield. It too uses reclaimed material to signify the rebirth of this industrial community.
Conclusion
In conclusion, project is revitalizing the community of East Garfield through many different aspects. It is creating a healthier lifestyle for the residents through implementation of solar panels and food production systems. It is creating economic vitality through the creation of jobs necessary to run the aquaponic food production, and added businesses on Lake St Green Makers Corridor. It is creating a place to learn through its relationships with the surround school system and Chicago Center for Green Technology. The project is also being more ecologically sensitive by adding more permeable pavers, open space, vegetation and sustainable energy systems.
Appendices
Definitions

Affordable housing- Housing that is affordable to low-income families. The Illinois Affordable Housing Planning and Appeal Act considers a mortgage “affordable” when a person who earns 80% or less of the area’s median income can pay for it using 30% or less of his or her income. For renters the line is for people earning 60% or less of area’s median income. As of 2011, in Chicago for a one-person household $41,900/yr is 80% of the median income and $31,425/yr is 60%. For a 2-person household, $47,900/yr is 80% of the median income and $35,925 is 60% (Facts).

Low-income- A household income that is 80% or less of the area’s median income.

Very Low-Income- A household income that is 50% or less of the area’s median income

Sustainability- A methodology that understands the interconnectivity among the economy, society and environment, and is able to provide an adequate quality of life for current and future generations.

Aquaponics: A closed loop food system combining aspects of hydroponics and aquaculture to create a highly productive agricultural system.

Ecobalance: A method to understand how many resources and area uses; used to create net zero spaces

Food Desert: An area where it is difficult to obtain nutritious food without the usage of a vehicle.

Makers Market: A place where local residents make things to sell in the community
Figure List

Figure 1: Picture taken Jan 2014 of East Garfield Park

Figure 2: Typical streetscape found in East Garfield

Figure 3: Lake Street

Figure 4: http://blogs.vancouversun.com/2012/01/09/teaching-kids-how-to-grow-food/

Figure 5: http://prolandscapermagazine.com/edible-bus-stop-opens-as-part-of-chelsea-fringe/

Figure 6: Wicker Park, Chicago. Successful neighborhood on North Side http://yochicago.com/wicker-park-week-extended-due-to-neighborhood-demand/2633/

Figure 7: Site photo of 5th Ave

Figure 8: GIS vicinity map

Figure 9: Google Map Satellite Image

Figure 10: GIS map of transportation and education systems

Figure 11: GIS map of vacant lots found in redevelopment area

Figure 12: Framework created by New Communities (Rushing)

Figure 13: Exploded Axon Analysis

Figure 14: Lake St Analysis

Figure 15: 5th Ave Analysis

Figure 16: Madison Analysis

Figure 17: Sacramento Analysis

Figure 18: Via Verde http://viaverdenyc.com/

Figure 19: Via Verde http://viaverdenyc.com/

Figure 20: Via Verde http://viaverdenyc.com/

Figure 21: Pearl District http://blog.seattlepi.com/bellevue-pi/files/library/pearl-district-tod.jpg

Figure 22: Pearl District http://encorepearl.com/pearl-district.html

Figure 23: Pearl District http://cmt-stl.org/transit-oriented-development-clearinghouse/transit-oriented-development-resources/

Figure 24: Concept

Figure 25: Intersectionality diagram

Figure 26: Land use plan

Figure 27: Lake St Concept plan

Figure 28: Concept consideration; People inside http://www.kingston.vic.gov.au/Explore-Kingston/Kingston-Arts/Markets/Makers-Market

Figure 29: People strolling http://www.generocity.org/department-of-commerce-unveils-forgivable-loan-program-to-boost-commercial-corridors/

Figure 30: People outside http://www.theguardian.com/public-leaders-network/2013/jul/04/public-private-new-market-makers

Figure 31: Sacramento concept plan

Figure 32: Concepts for street layout

Figure 33: Concept consideration http://www.peopleforbikes.org/blog/entry/memphis-on-broadway1

Figure 34: Woonerf

Figure 35: Business as usual
Figure 36: Pedestrian only

Figure 37: Smaller vehicular corridor

Figure 38: Concept surrounding 5th ave

Figure 39: 1"= 60' plan

Figure 40: Exploded Axon

Figure 41: Aquaponics Diagram

Figure 42: Hoop house http://www.hubcityfm.org/for-farmers/upcoming-events/high-tunnel-example/

Figure 43: Repurposed windows greenhouse http://www.greenhomebuilding.com/QandA/growyourfoodQandA.htm

Figure 44: Large scale glass greenhouse http://www.tgrok.com/es/invernaderos.html

Figure 45: 1"=30' master plan

Figure 46: 1"=10' zoom in plan

Figure 47: Woonerf section

Figure 48: Interior greenhouse section

Figure 49: Exterior greenhouse section

Figure 50: Section of planter bed
Bibliography


Harnik, Peter and Welle, Ben, (2009), “Complete Communities: Green Space and Affordable Housing”, Communities and Banking, issue Sum, p. 6-8.


