

**FOOD NETWORK:
ARCHITECTURE OF CONNECTION IN THE LOWER NINTH WARD**

by

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Dedication

To Mom and Dad; to each for their head and heart.

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ABSTRACT

In August 2005, Hurricane Katrina devastated the city of New Orleans with widespread flooding and infrastructural damage. The Lower Ninth Ward has since experienced a slow recovery from the catastrophic flooding it endured. Among the various physical, social, and economic challenges still facing the neighbourhood, this thesis identifies the community's subsequent social disintegration following Katrina, and its continuing challenged access to nutritious food as primary arguments for a food hub co-operative in the center of the neighbourhood.

The power of the co-operative lies in the collectivization of social, physical, and financial assets of the currently fractured community. The food "hub" then becomes the heart of the neighborhood, facilitating social ownership, renewed purpose and responsibility, and financial empowerment. At an urban scale the centrally located food hub anchors an expansive food network, enabling a city ward currently devoid of collective means to get back on its feet.

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- My Liz and Oscar. You two are my world. Liz your love, support, and patience are what got me through the many challenges of the past months, and years. Without you I'd be lost, babe.

ACRONYMS

CDC - Center for Disease Control and Prevention

CSED - Center for Sustainable Engagement and Development

L9W - Lower Ninth Ward

NIH - National Institute of Health

GNOCDC - Greater New Orleans Community Data Center

NOFFN - New Orleans Food and Farm Network

NOHD - New Orleans Health Department

NOLA - New Orleans Louisiana

USDA - United States Department of Agriculture

CHAPTER 1: INTRODUCTION

Eating in New Orleans: Two Food Realities

We should be searching ... to open the land for the gainful occupation to larger numbers of people, whether it be on a full-time or a part-time basis, and to orientate all our actions on the land towards the threefold ideal of health, beauty, and permanence. (Schumacher 1974, 94)

New Orleans has a reputation for providing wonderful food. The 300 year old city's composition of "Spanish and French colonists, English mercantilists, African slaves, and later waves of German, Irish, Italian and other migrants" (Fussell 2007, under "New Orleans's Builders") has yielded an undeniably rich and diverse regional cuisine. In every guide book and on every corner of the French Quarter, locals and tourists alike are faced with delicious decisions between shrimp and okra po'boys or seafood gumbo; between spicy jambalaya or the simple and famous red beans and rice. All choices are delectable and available in apparent abundance.

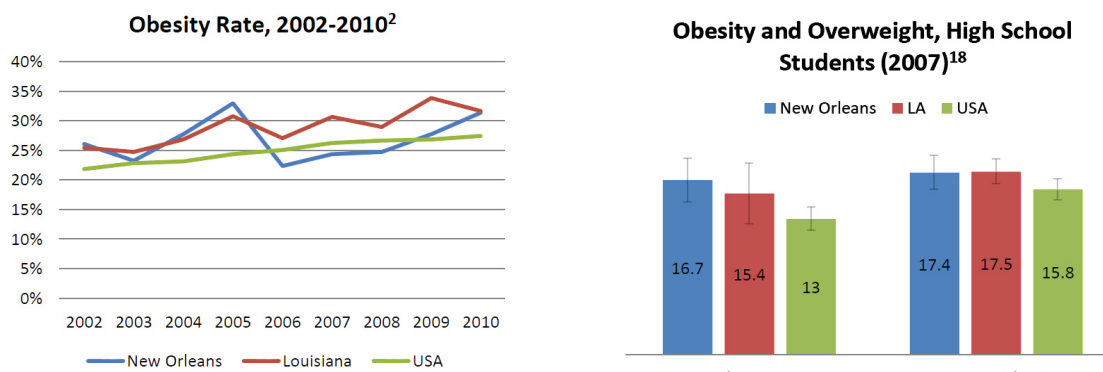
While often thought of as a mecca for a lover of food, New Orleans is less well known for its challenged access to food. Food disparity is a significant issue, with 1 in 5 New Orleansians experiencing food insecurity in 2010 (NOHD 2013). Food insecurity can be thought of as an inability to provide adequate food to all members of a household as a result of lack of money or other resources (Coleman-Jensen 2013, 4).

It is somewhat surprising that a major US city such as New Orleans could have an adult poverty rate of 29% in 2011, almost double the national average. Further, the child poverty rate was also nearly double the national average, coming in at a staggering 42% (GNOC-DC 2013). A significant proportion of New Orleansians also happen to be overweight or obese (CDC 2013), which is somewhat counterintuitive as one might expect to associate poverty with undernourishment, not obesity.

The New Orleans Health Department published "Healthy Lifestyles in New Orleans," an analysis of obesity rates, physical activity, health concerns and prevalence, as well as a general profile of the food environment in the city. The report found almost two-thirds of the adult population as being either overweight or obese in 2010. As well, 34% of high school students in 2007 were identified as being either overweight or obese, again above

the national average (NOHD 2013).

This is disconcerting as New Orleans is facing a crisis of an existing and upcoming generation of impoverished citizens, many who are challenged with access to food, yet are simultaneously overweight, and potentially stand to suffer the serious health implications of chronic malnutrition and obesity.



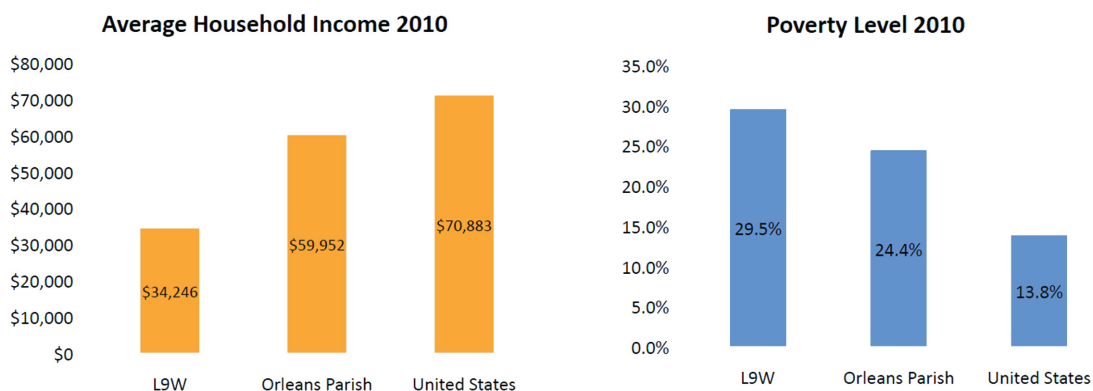
Statistics on the state of adult and student obesity in New Orleans (illustrations from NOHD 2013)

Food Desert, Food Swamp, and Disease

The United States Department of Agriculture (USDA) utilizes the term “food desert” to describe a region with challenged access to food, where “at least 500 persons or 33 percent of their population live more than a mile from a supermarket or large grocery store” (USDA 2011). In *Deserts in New Orleans?* Rose et al. (2009) point out that a region may or may not qualify as a food desert based upon the conceptual definition used, but that even conservative estimates yield multiple census tracts qualified as food deserts in New Orleans, including the Lower Ninth Ward (Rose et al. 2009, 10).

Rose coins the term “food swamp” as an alternative measure of food health and accessibility, defining it as an often low income region with an irregularly high ratio of unhealthy to healthy food (15-16). Where food deserts tend to be concerned with undernourishment, a food swamp highlights issues of over-consumption of low quality, calorie-dense foods and the resulting levels of overweight and obesity of a population (Hedley et al. 2004, in Rose et al. 2009, 15).

The Center for Disease Control correlates obesity with, but not limited to, increased risk of cardiovascular disease, type 2 diabetes, coronary heart disease, liver and gall bladder disease, stroke, and various cancers (NIH 1998). Based on data collected by Mead et al. (2008), non-Hispanic black populations are more susceptible to a multitude of serious and potentially life threatening illnesses when compared to white and other minority populations. This is due in part to variables “such as income, education, and work status, as well as poor housing, neighborhood segregation, and other environmental factors within communities,” (Mead et al. 2008, 19). Census.gov indicates New Orleans’ population is predominantly bi-racial, with the 2010 census indicating 60% of the population identifying as “black or African American alone,” and 33% identifying as “white alone.” A 2010 census analysis done by the NYtimes.com shows the population is highly segregated, however, and low-income neighborhoods like the Lower Ninth Ward were identified as being 96% black or African American as of 2010.



Average Household Income and Poverty Levels from U.S. U.S. Census (illustration from CSED 2013)

Local Food Movement in New Orleans

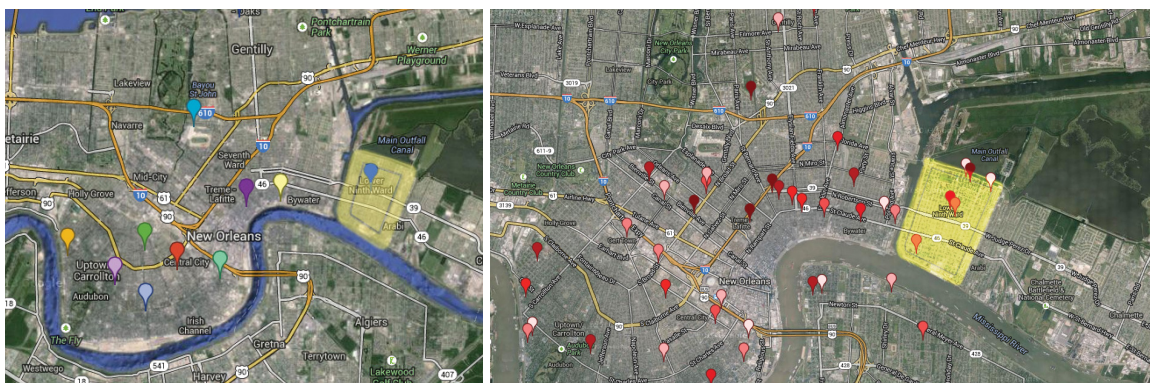
There is an existing network of community scale initiatives that aim to empower residents aspiring to challenge food security and access to nutritious food from the ground up. Backyard garden initiatives, urban farm incubators, urban orchards, and food based educational curricula are a selection of programs currently in place in New Orleans.

The New Orleans Food and Farm Network (NOFFN) is a volunteer based collective that

endeavors to make food based information and resources available to the public. Its website, NOFFN.org, provides information on vacant city lots and the means to get them developed as gardens, a New Orleans specific fruit and produce growing guide, and countless other resources that tie together the existing network of backyard gardens, including most of those found in the Lower Ninth Ward.

The website for the Edible Schoolyard Project promotes food curriculum as an essential component of schools, kindergarten to twelfth grade. The aim to develop nutritional competency at a young age has the potential to mitigate the youth obesity trends currently visible across the nation, with the possibility of fostering a food-paradigm shift for a future generation. New Orleans has a handful of schools that take part in the Edible Garden project, including Dr. Martin Luther King Elementary school in the heart of the Lower Ninth Ward.

It is evident that many of the local food endeavors in New Orleans benefit from their interconnectedness. As resources and information are aggregated, they are passed on and shared for the benefit of the developing community. By acting co-operatively, the local food community capitalizes on individual strengths and utilizes these strengths toward the greater common good.



Maps of New Orleans showing school yard gardens (left) and urban gardens (right). Lower Ninth Ward shown in yellow (maps from Parkway Partners)

The Co-operative Model

Generally, a co-operative is a democratically controlled and jointly owned business, designed to leverage the collective power of its autonomous members. Unlike a private or publicly held company where shares are held in uneven distributions amongst shareholders, every co-operative member has one vote to cast as decisions are made in the interest of the business. Nolafood.coop describes the four primary organizational structures for a co-operative as worker, consumer, producer, and shared services; the structure not only underlines a member's role but also is indicative of the overall ownership structure.

An example of a producer co-operative might be to unite a group of farmers and collectivizing processing, storage, cooling, marketing, distribution, and sales of their products (Barham 2011, 6). This would relieve much of the financial burden that small scale farmers might encounter while contending with large scale food producers. In the case of a potential grocery store, the appropriate structure would likely be a consumer co-operative where one obtains a membership in order to purchase goods and get a voting stake in the enterprise.

Aside from the financial advantages of collective organization, the social advantages of a co-operative may be considered more fundamental and culturally significant. Nolafood.coop describes their food co-operative founded upon "values of self-help, self-responsibility, democracy, equality, equity and solidarity. In the tradition of their founders, co-operative members believe in the ethical values of honesty, openness, social responsibility and caring for others."

Critical Position

This thesis provides grounds for reconnection to a fractured community through the medium of food. At a human scale, food is, first and foremost, fundamental to our nourishment, and at this level connects us all. Food also plays many complex roles in cultural and societal operations. Food forms the foundation to celebrate, mourn or grieve; to mark and honor lifetime milestones; to connect with strangers and family alike; and to identify and explain cultural heritage.

Inspiring shared concern is a first step in developing connections amongst people. At a

building scale, a food hub provides the physical infrastructure to facilitate shared experiences where connections can be reinforced and strengthened. By facilitating self-reliance and independence and tackling challenged access to food, the food hub has the potential to ignite a neighborhood into a burgeoning community.

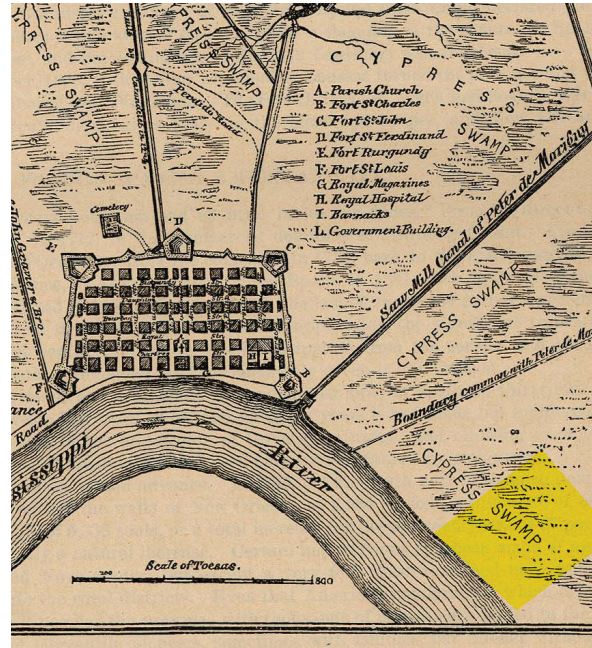
There is perhaps no more advantageous means to enable and connect a community than through its collective engagement in an essential and holistically beneficial endeavor. At an urban scale, a food network threads together a neighborhood with no current means to self-sustain or self-identify, through a shared investment in food.

Thesis Question

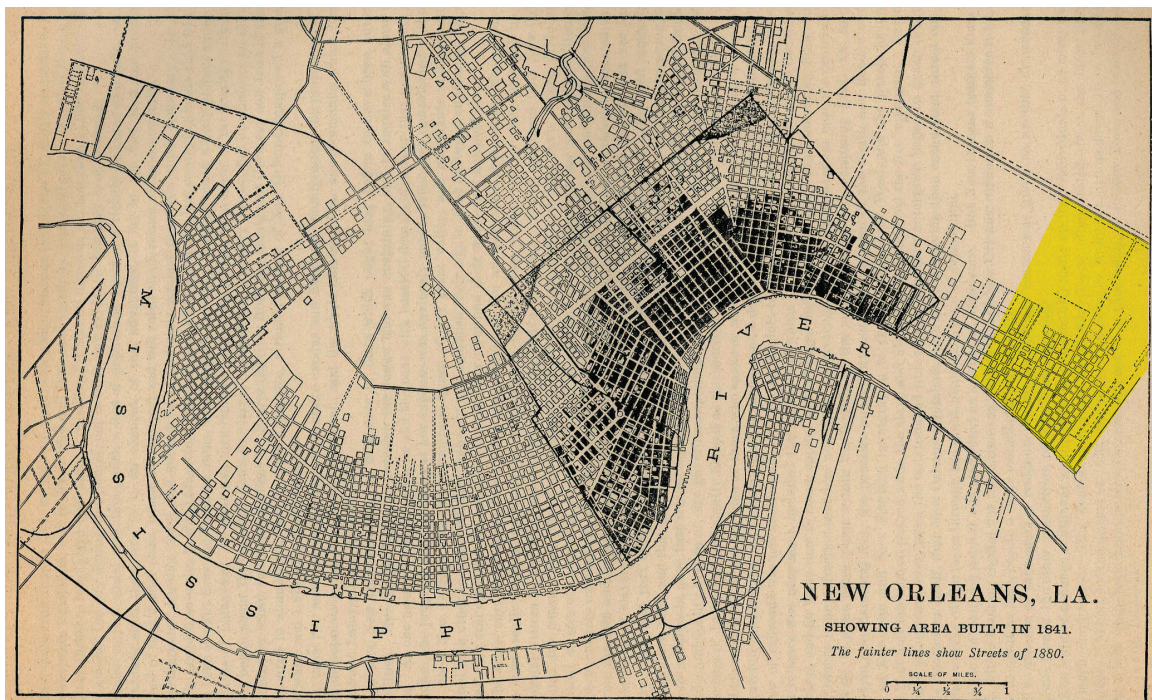
How can architecture spur, nurture, and sustain a community's investment in a food hub co-operative in the Lower Ninth Ward?

Description of Site

The Lower Ninth Ward historically was comprised of marshlands and cypress swamps, existing downriver from the rest of New Orleans. As development expanded in the 1800s, low lying neighborhoods such as the Lower Ninth Ward were developed and occupied mostly by new immigrants to the city or free people of color who could not afford to live in more geographically elevated neighborhoods (CSED 2013). Between 1940-1970, the racial divide in the neighborhood was exacerbated by the desegregation of schools and subsequent white flight to the suburbs (Fussell 2007, under "New Orleans Becomes"). A precursor to Hurricane Katrina, in 1965 Hurricane Betsy breached the levee walls along the industrial canal and flooded the low-lying, predominantly middle to low income, black neighborhood (Landphair 2007).



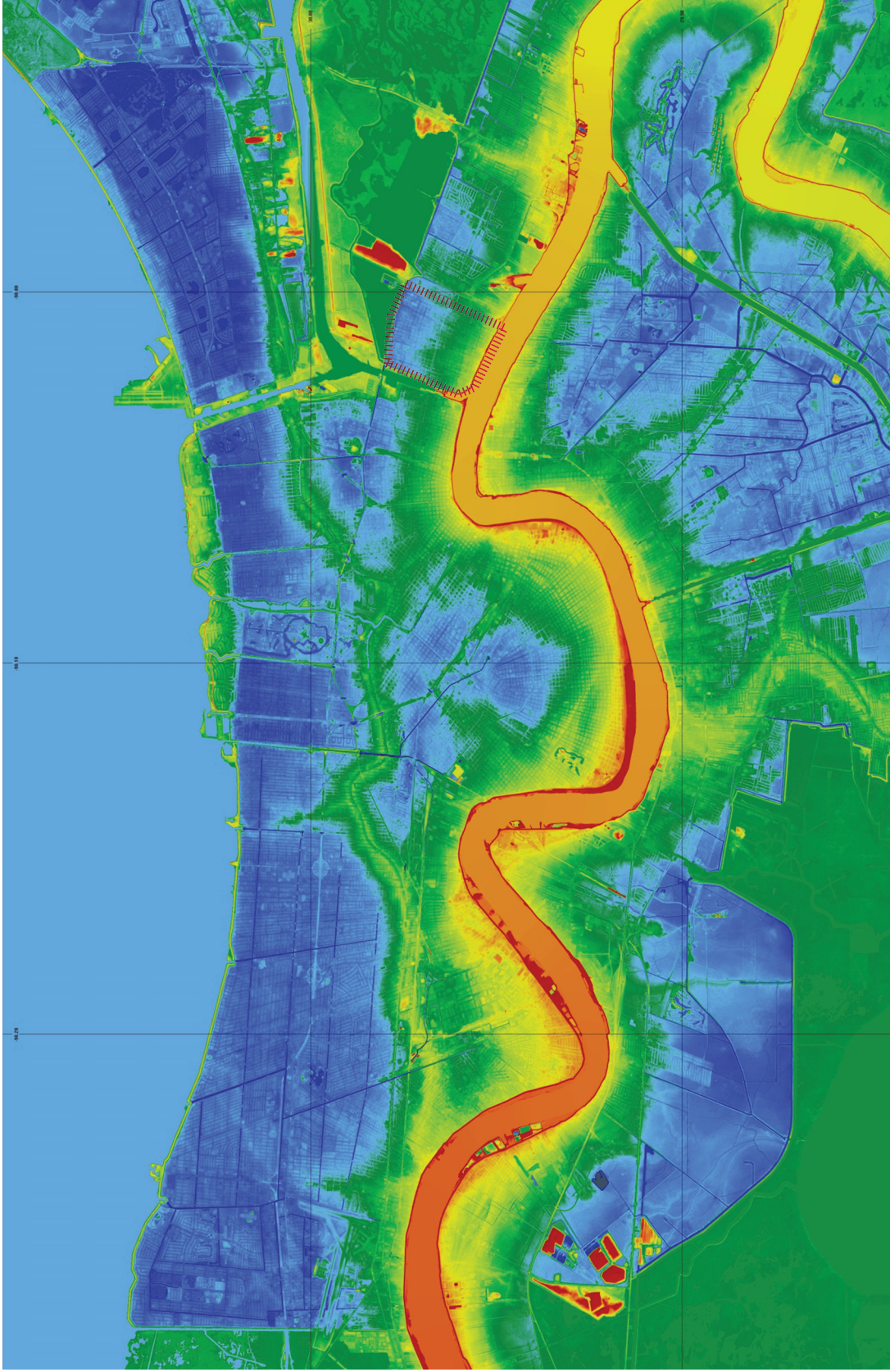
New Orleans in 1798, with the Lower Ninth Ward's location approximated in yellow (basemap from Waring 1886)



New Orleans in 1841, with The Lower Ninth Ward's location approximated in yellow (basemap from Waring 1886)

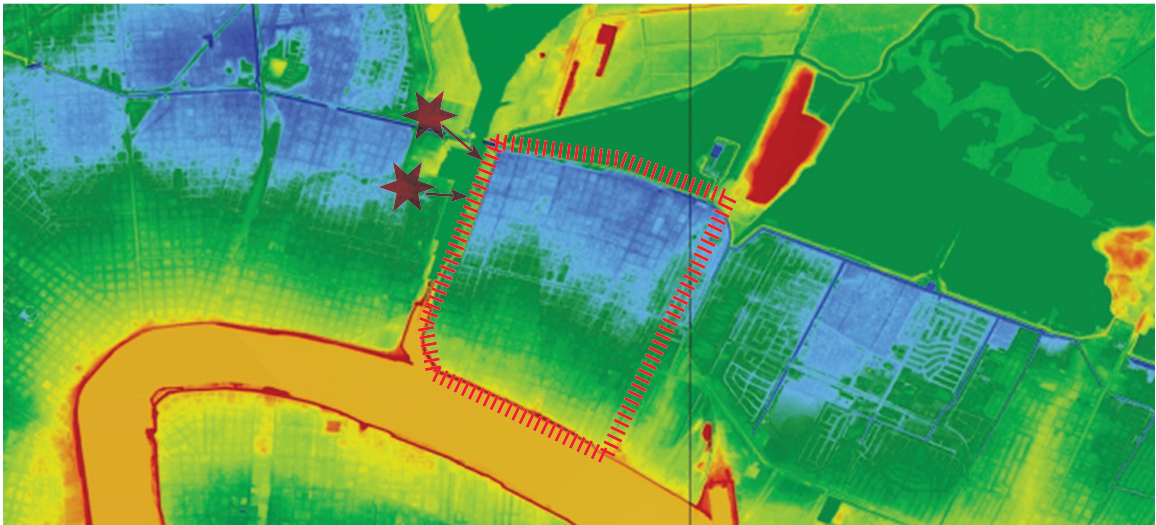


Map showing the Lower Ninth Ward in context within New Orleans (basemap from Google Maps 2013)



Map showing citywide elevation in New Orleans. Green indicates sea level, blue indicates a region below sea level, and yellow is above sea level. Lower Ninth Ward is dashed red at right (New Orleans Elevation, Lynch)

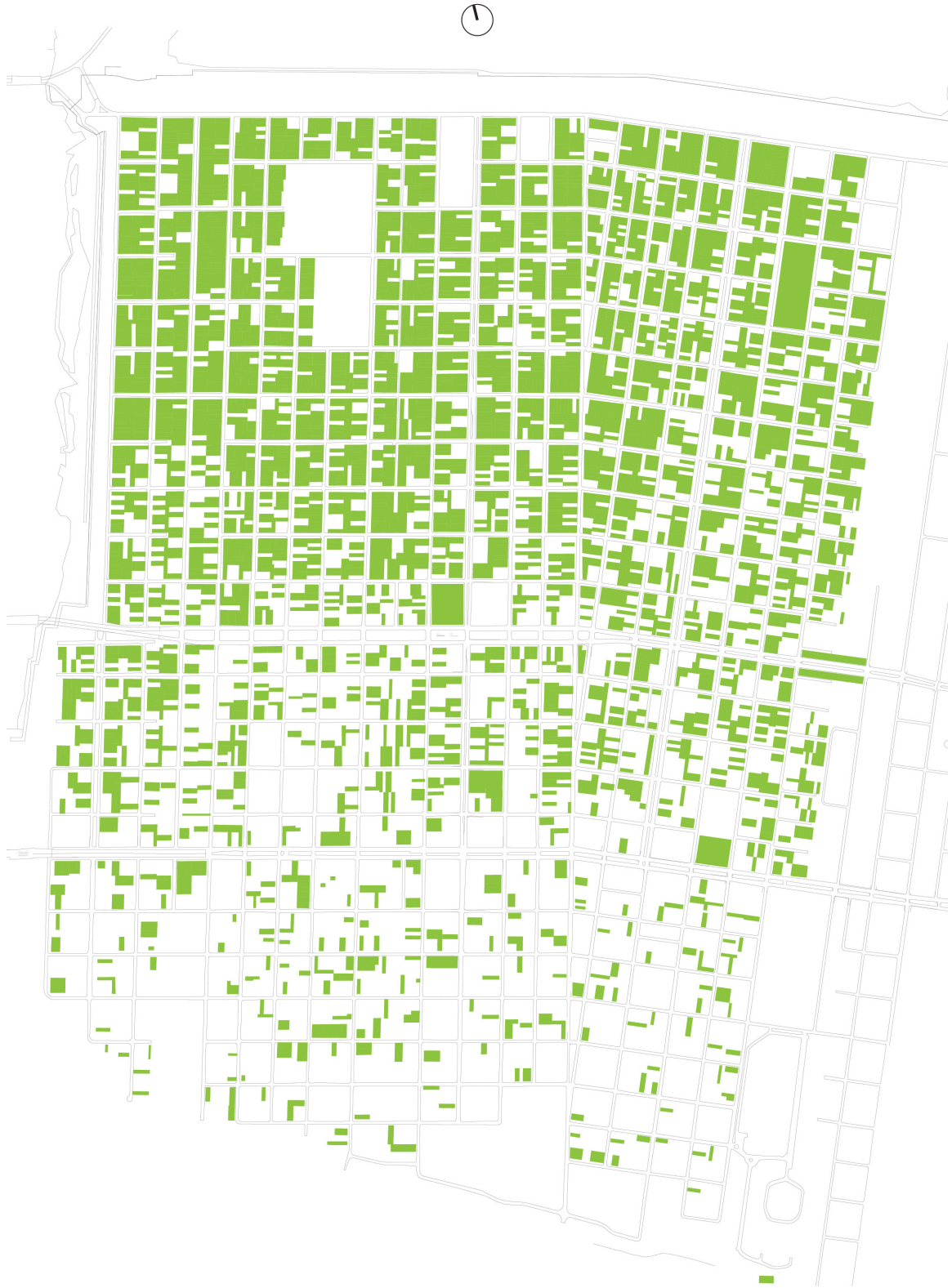
The neighborhood elevation is highest along the natural levee on its southern boundary with the Mississippi, and gradually reaches 4-6 feet below sea level along its northern boundary with the cypress marsh. The unfortunate circumstance of the levee breaks occurring in the northern half of the Lower Ninth Ward yielded both devastating damage from the initial surge as well as from up to 10 feet of standing water immediately thereafter. A subsequent plotting of the vacant lots in 2012 illustrates a significant drop in density from south to north following the effects of Hurricane Katrina.



Map illustrating ground elevations in the Lower Ninth Ward (dashed red). Green indicates sea level, blue indicates a region below sea level, and yellow is above sea level. Levee breaks shown as red stars (New Orleans Elevation, Lynch)



Image showing the breaks in the levee wall during Hurricane Katrina, with northern half of the Lower Ninth Ward at right (AP Image / Phillip 2005)



Map illustrating vacant lots in 2012, shown in green (data from Living Lots)

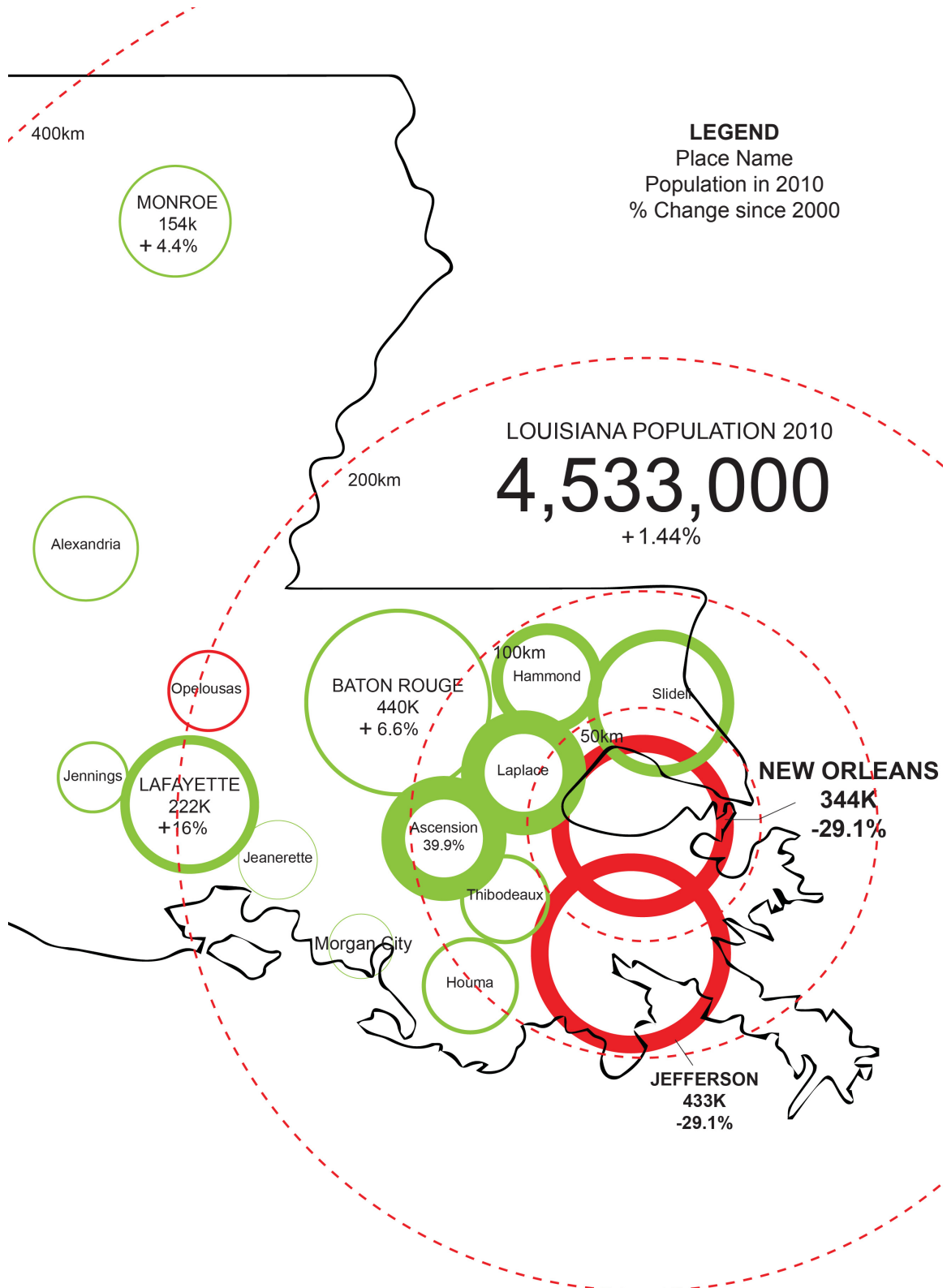


Illustration showing population trends of cities in Louisiana from 2000 - 2010. The diameter of the circle indicates relative population (larger diameter = larger city). The thickness of the circle indicates relative change from 2000 - 2010 (thicker circle = greater population change). Red indicates population drop while green indicates growth (data from U.S. 2010 Census)

Architectural Characteristics

Portal Frame Structure

A derelict steel structure located in the northwest quadrant of the Lower Ninth Ward provided the impetus for the form and structure of the food hub. Originally used as a covered basketball court, the structure appears to be an exaggerated use of steel given its relatively simple intended use, particularly now in its abandoned condition.

Examples of the portal frame are found throughout the industrial zones in the Lower Ninth Ward, visible in the sugar processing plant in the south along the Mississippi; in the dock warehouses also along the river; and in the various general storage warehouses that litter the southern half of the neighborhood. Relatively simple in construction, the functionally designed structure appears easily erectable as well as versatile in its scalability given its basis upon standard bay sizing.

Embodying the spirit of salvage and reclamation following Hurricane Katrina, the adoption of the structure for rehabilitation was initially considered as an option for the food hub co-operative. The siting, however, was not desirable as it would have left the food hub co-operative isolated and too great a distance from the primary transportation and commercial arteries. Instead, the essence of the structure was embraced as the basis for a language that would be used in the food hub co-operative as well as in the nodes in the surrounding food network.



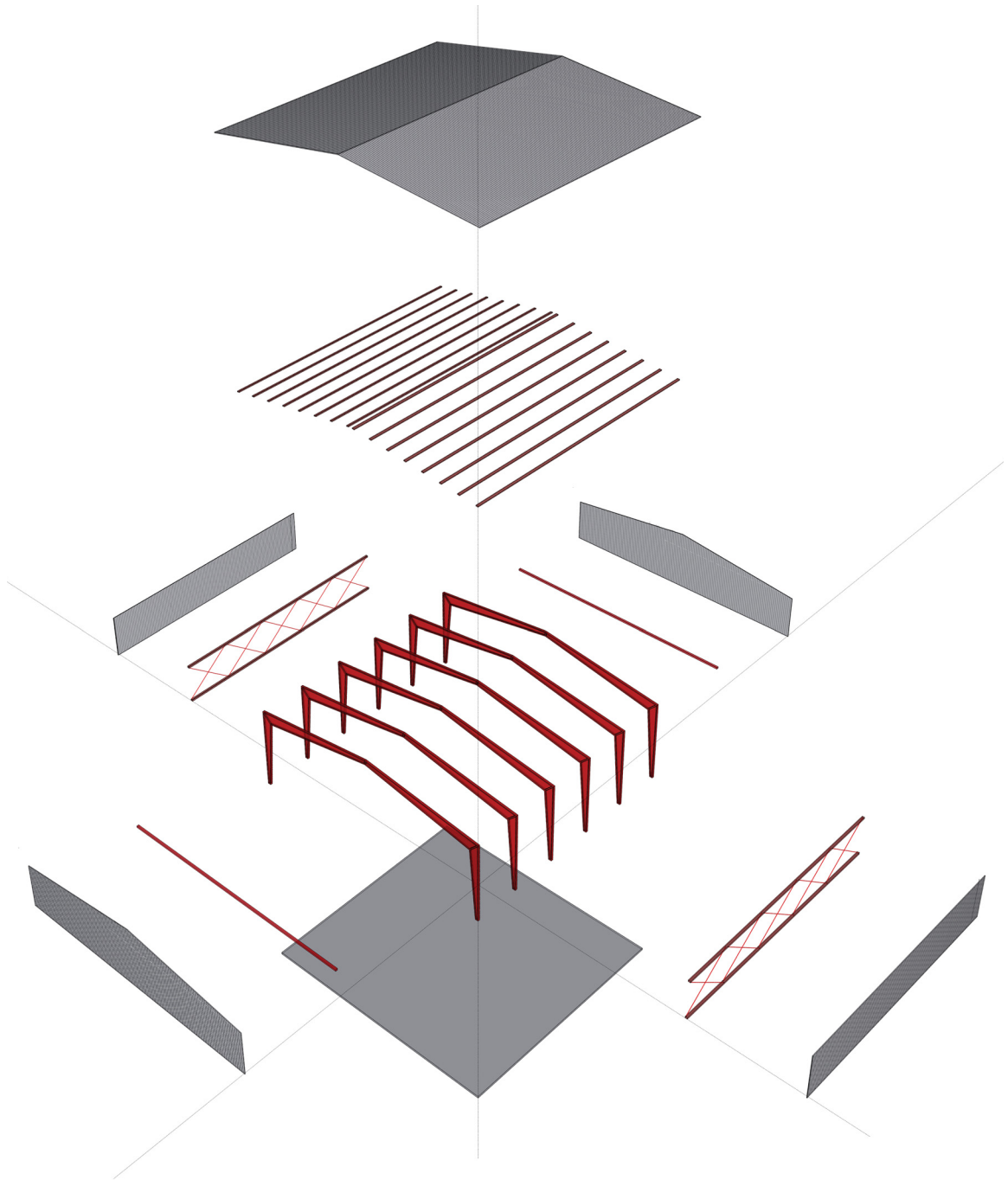
Aerial view showing the site of the derelict portal frame structure (basemap from Google Maps 2014)



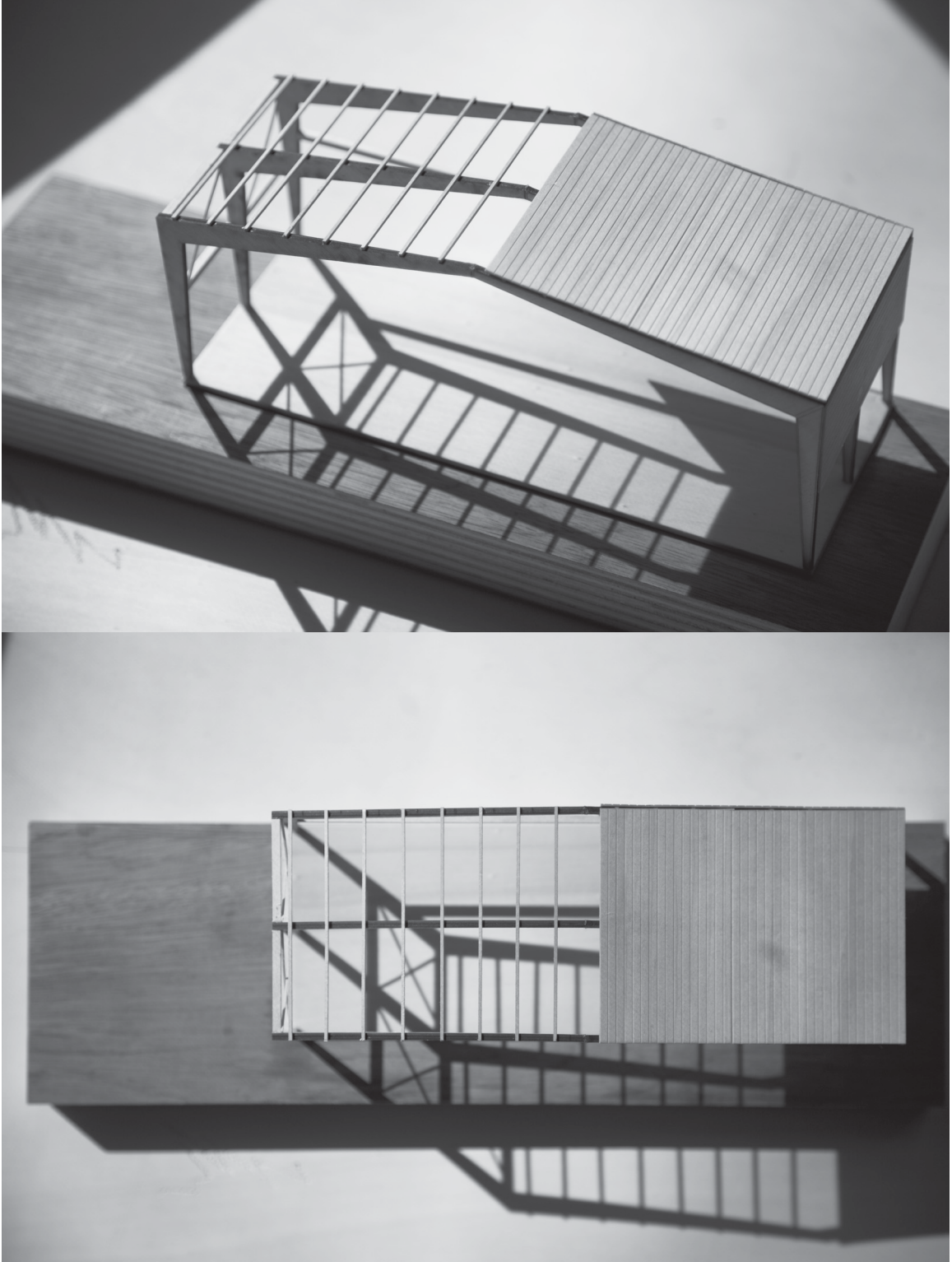
Map of the Lower Ninth Ward showing the derelict portal frame structure (red) in relation to the food hub co-operative building lot (center, green).



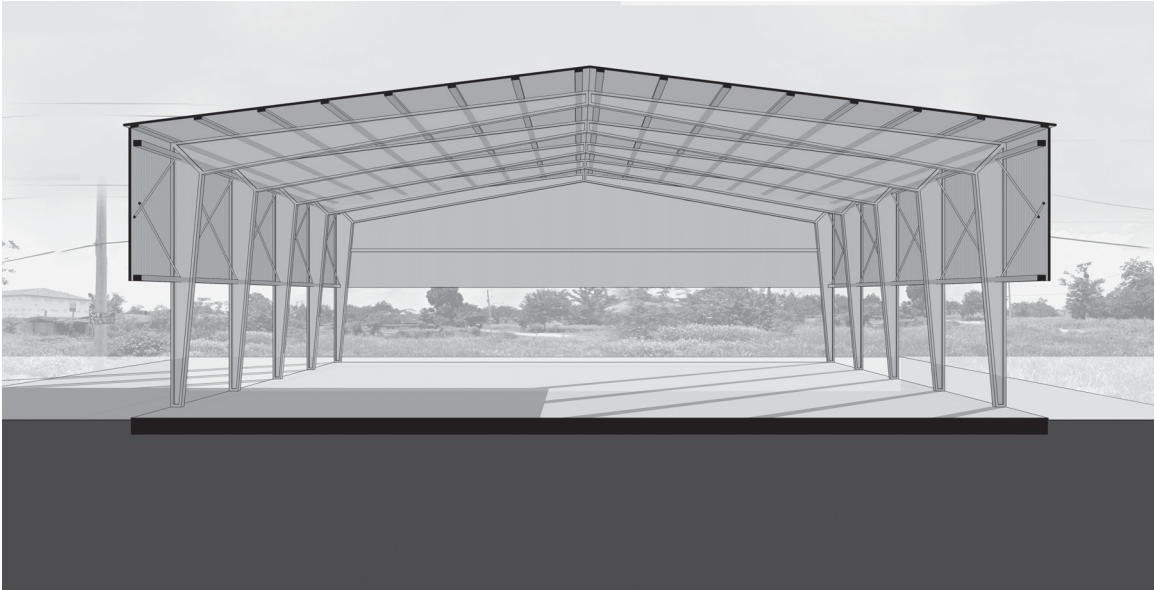
Images of the derelict portal frame structure (Google Maps 2014)



Exploded axonometric view of the derelict portal frame structure.



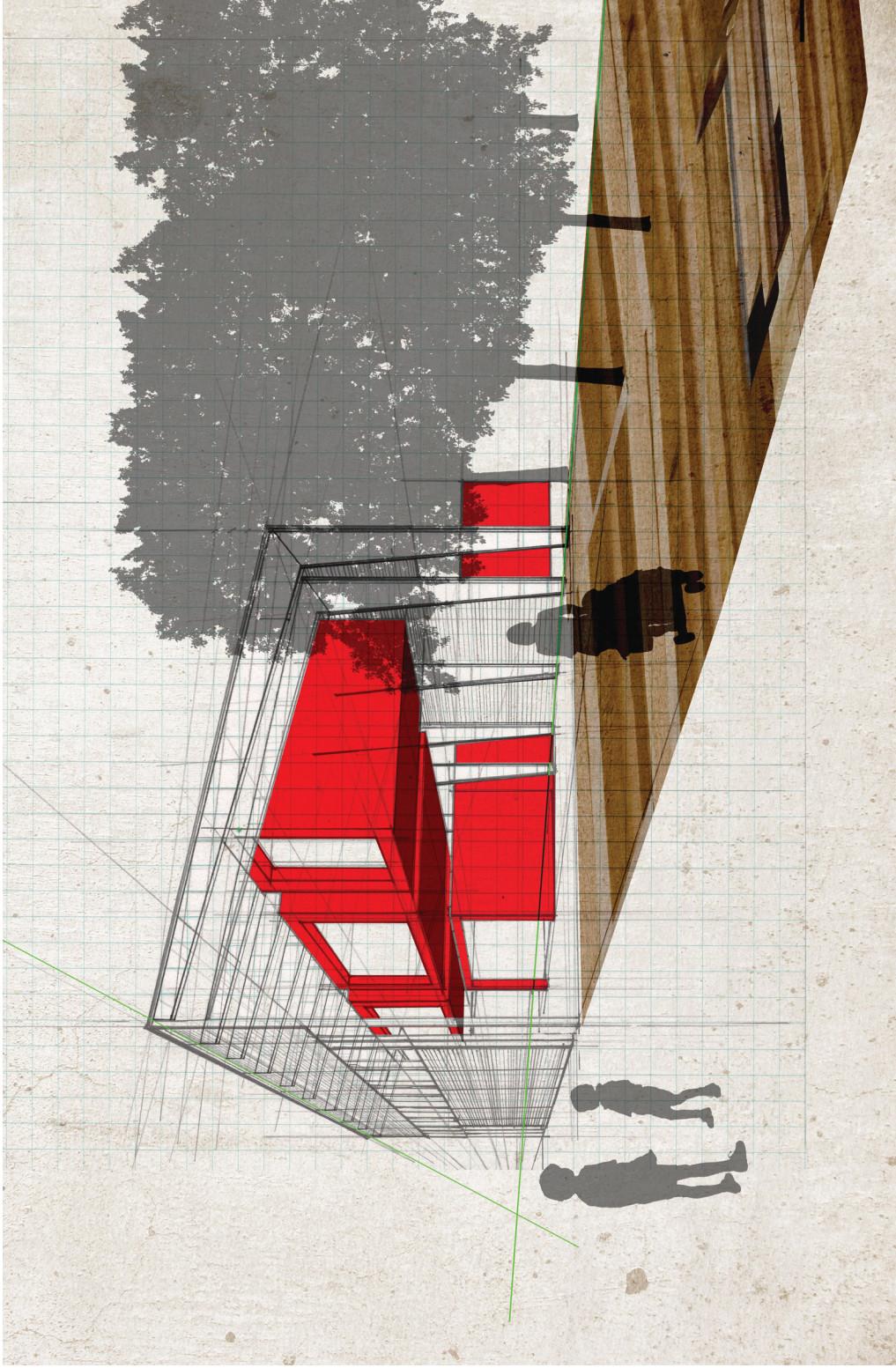
Model showing one bay of the derelict portal frame structure.



Composite sectional rendering illustrating the assembly and interior volume of the derelict portal frame building (base image from Google Maps 2014)



Composite rendering showing the physical model in situ with surrounding context (base image from Google Maps 2014)



Rendered view of a modified portal frame structure with suspended program volumes.

CHAPTER 2: DESIGN

Food Hub Co-operative

The food hub co-operative centralizes various food related, neighborhood scale initiatives at one location. It acts as common ground for the existing number of unconnected backyard growers in the Lower Ninth Ward as well as for those individuals potentially considering food related endeavors in the future. It develops the foundations and community upon which a network can grow and evolve as neighborhood investment increases.

Description of Program

The practical program elements of the food hub co-operative include a co-operatively operated local grocery to act as a much needed daily sales point for sellers and buyers alike; a seasonal farmers' market for selling fruit, produce and other goods; a local seed repository; and a facility for cleaning, processing, and storing fruits and produce.

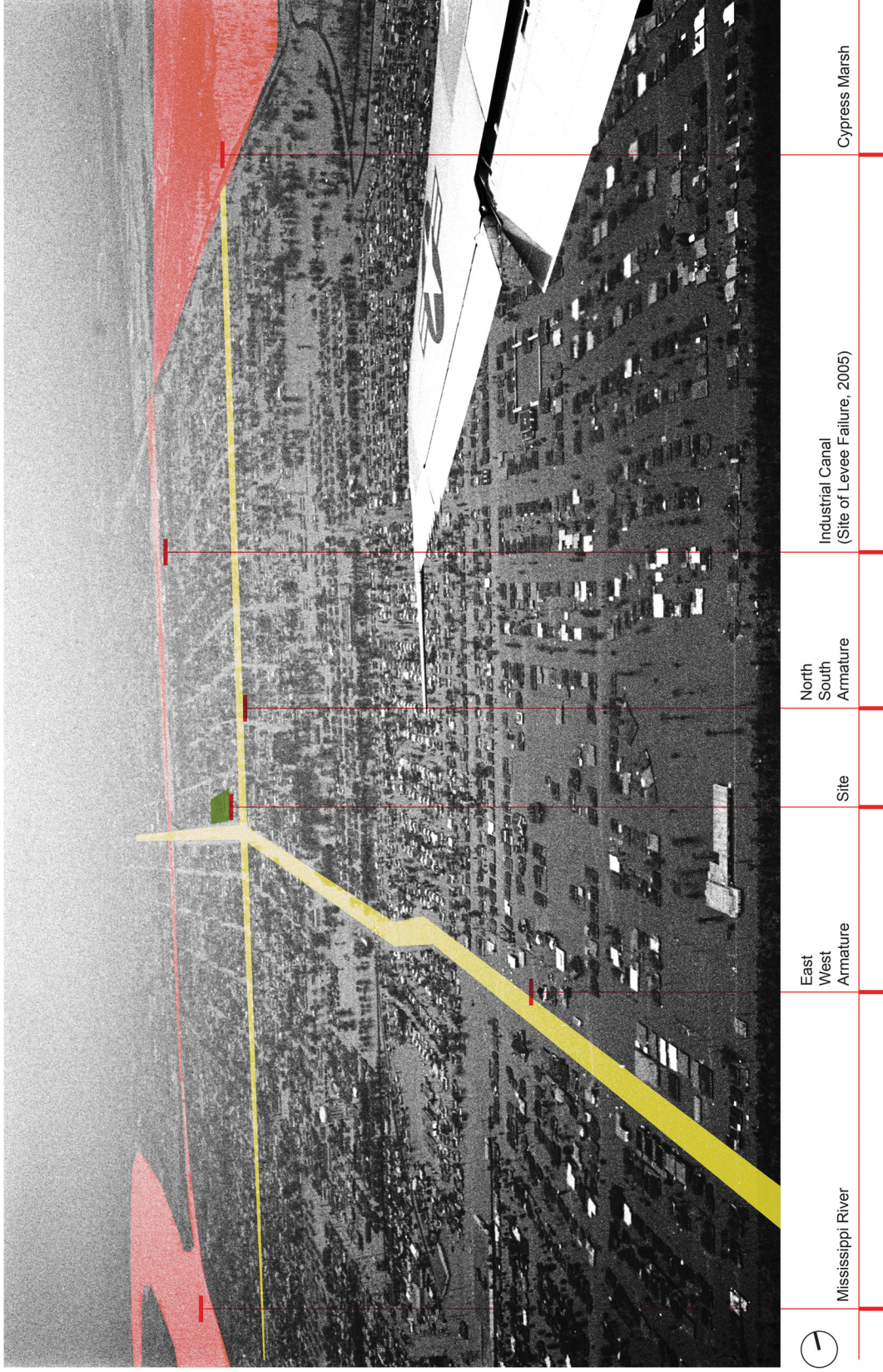
The food hub extends a social arm with a community kitchen intended for cooking, congregation, and youth and adult education; and education space for any number of youth and adult development programs such as growing, nutrition, and food justice curricula. The food hub also has a significant area for outdoor gardens, two hoop houses for environmentally sheltered growing, and a sizeable orchard. The Dr. Martin Luther King Elementary School across the street, which already maintains a garden and food curriculum, can take further advantage of the expansive growing infrastructure in place on the food co-operative's site. All management and administration for the various co-operative endeavors occurs on site.

Siting

The building site is a vacant lot located in the heart of the Lower Ninth Ward. It anchors the intersection between the primary east-west vehicle artery, North Claiborne Avenue, and the north-south commercial artery, Caffin Avenue. The former provides access to public transport and the latter links the less developed northern half of the neighborhood with the higher density southern half. Adjacent to the site is Dr. Martin Luther King Elementary School and public library.



Map of the Lower Ninth Ward showing food co-operative at center (red buildings); north-south armature and east-west armature (yellow); Dr. Martin Luther King Elementary and Public Library (green); and Hurricane Katrina levee breaks (red stars).



Map highlighting the bounding water bodies (orange); east-west and north-south armatures (yellow); and site (green) (base image from Okamoto 1965)



View west-southwest showing the east-west park armature flanked on either side by North Claiborne Avenue (colorized); north-south commercial armature of Caffin Avenue (yellow); and building site shown in green at center (base image from Maclean 2011)



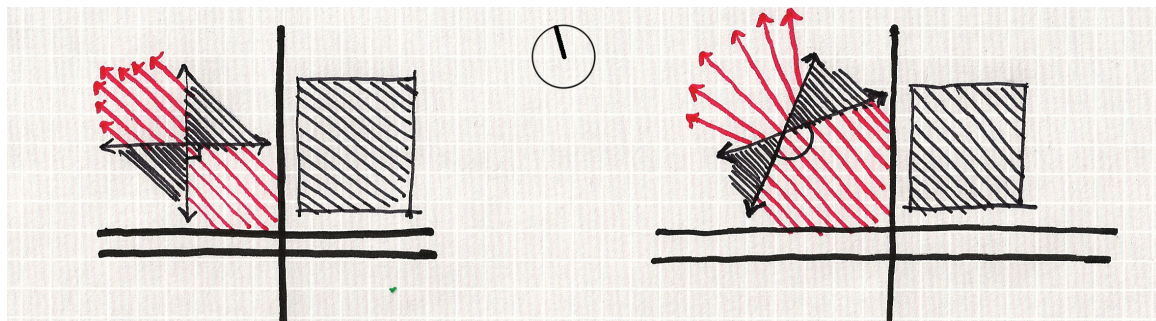
View north showing the site (green); and Dr. Martin Luther King Elementary school and public library adjacent and to the right (base image from Maclean 2011)

Orientation

The food hub co-operative's south facades act as public faces to the street, inviting public access from the major intersection between Caffin Avenue and North Claiborne Avenue, from Dr. Martin Luther King Elementary and public library on the adjacent site to the east, from the public transportation stop on the same block, and from pedestrian foot traffic from the North Claiborne Avenue boardwalk. The building's highly transparent north facade looks out to the gardens, hoop houses and orchard, maintaining connection between the interior functionality of the food hub co-operative with the practical hands on work it facilitates out in the dirt.

The corrugated cladding of the building emerges from the portal frame structure, a simple and cost effective solution for the New Orleans climate. Ground level cladding is designed to open and provide human scale solar shelter while simultaneously removing the threshold between indoor and outdoor space. In the case of a significant weather event, closing the cladding system is designed to protect the building and provide means for refuge and shelter as necessary. While the upper levels of the building's south facade are heavily guarded from solar exposure, strategic fenestration takes advantage of natural ventilation in the summer months while allowing ample natural light into program spaces during the winter months.

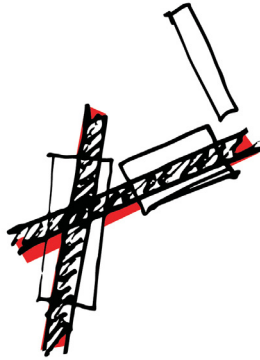
The two buildings that make up the food hub co-operative are sited to create a funnel effect, condensing pedestrian traffic on site for entry to the buildings or release into the gardens and orchard to the north. This is achieved by breaking from the Cartesian grid layout of the typical neighborhood block and utilizing an open, obtuse angled grid to address and welcome pedestrians from the Caffin Avenue and North Claiborne intersection.



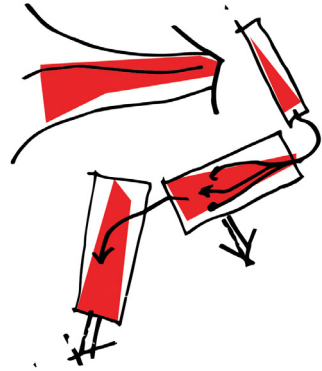
Schematic diagrams illustrating orientation of axes and resultant effect on pedestrian access to site. The left illustrates a layout based upon the typical Cartesian block layout, while the right adapts a less congruent approach in order to increase welcoming to the street.



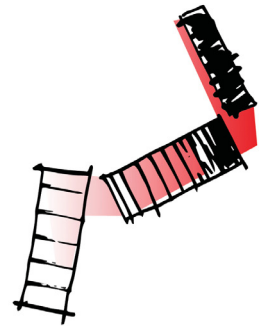
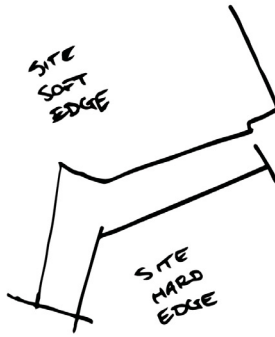
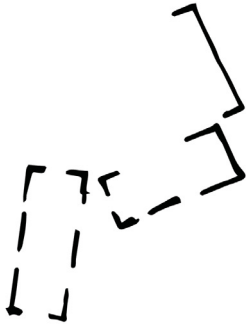
confluence, pressure, release.



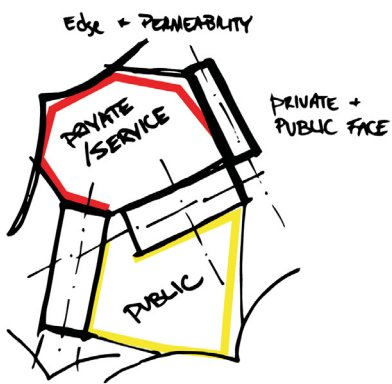
Significant Axes



FOOD PATH IN BUILDING

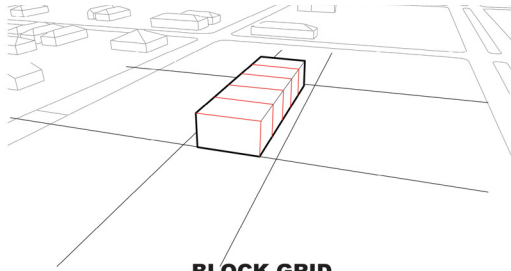


PRIVATE / SERVICE TO PUBLIC THRESHOLD BUILDING



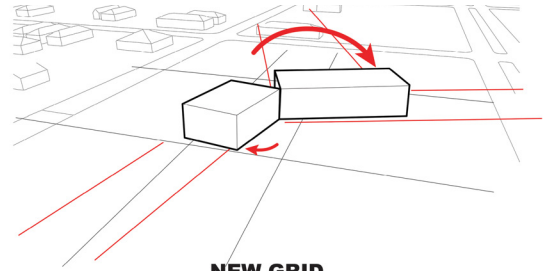
SITE ENVELOPE + REFUGE

Schematic diagrams illustrating potential massing and site qualities of a hinged building and program.



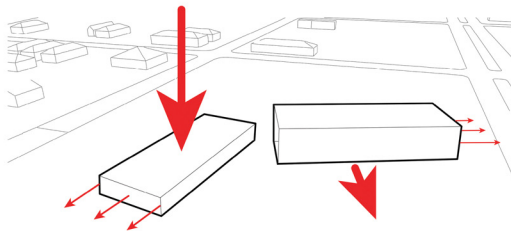
BLOCK GRID

A scaled-up, typical five bay, shotgun house contained within a common block layout of the Lower Ninth Ward.



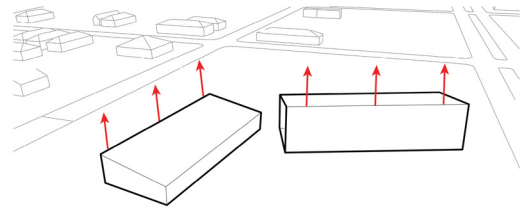
NEW GRID

New grid and massing orientation references significant buildings in the neighborhood's existing Food Network.



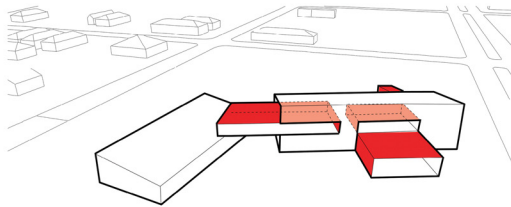
SCALE

A primary and secondary mass are identified, while both masses are extended to add additional bays and space.



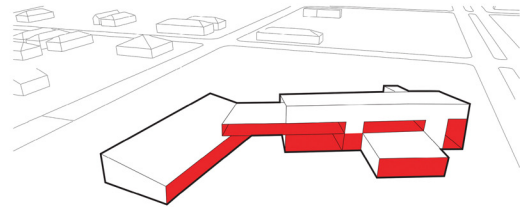
LIFT

Interior space is modified with an adjustment to the roof pitch, as well creating address to the street.



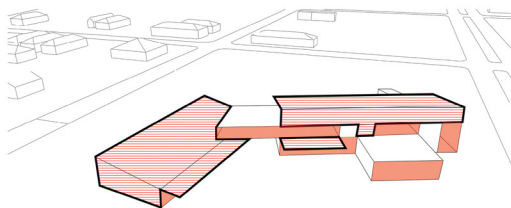
CONNECTORS

Program Volumes are drawn out to create interconnection between the masses as well as the public street.



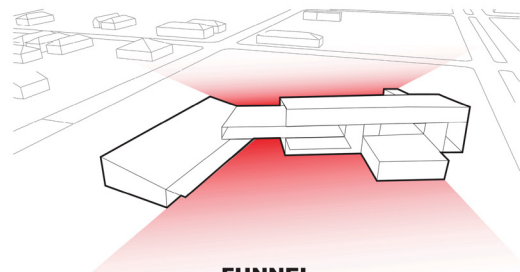
GLAZING

Glazing is added to accentuate the Program Volumes as well encouraging public entry at grade.



OPERABLE CLADDING

Operable cladding opens to encourage access to the market and amenities or closes to shield from solar gain or protect from significant weather events.



FUNNEL

Building orientation creates a pinch point, naturally funneling the public into the building space or the rear gardens.

Diagrams illustrating the formal decisions made in the design of the food hub building.



Map illustrating the building lot and immediate context. Shown are food co-operative (red); a section through the site (top); the Public Library and Dr. Martin Luther King Elementary (green); and walking boulevard (filled green).



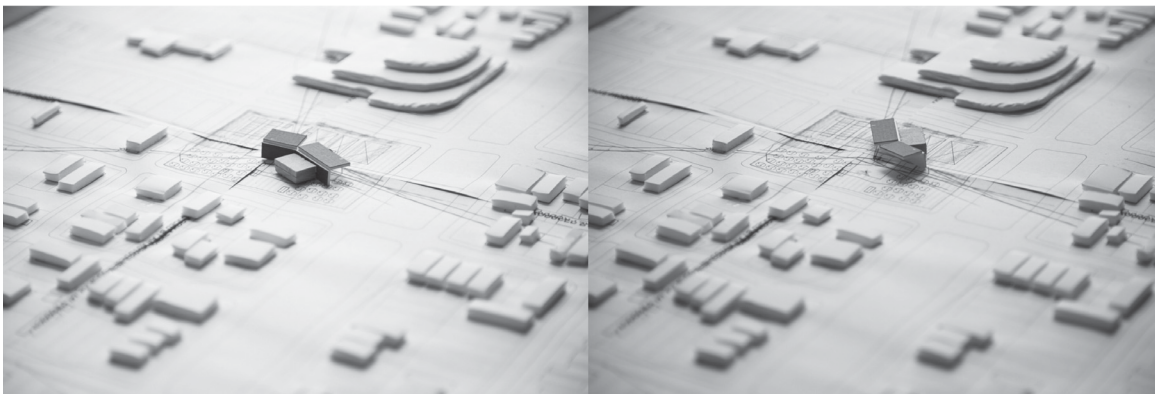
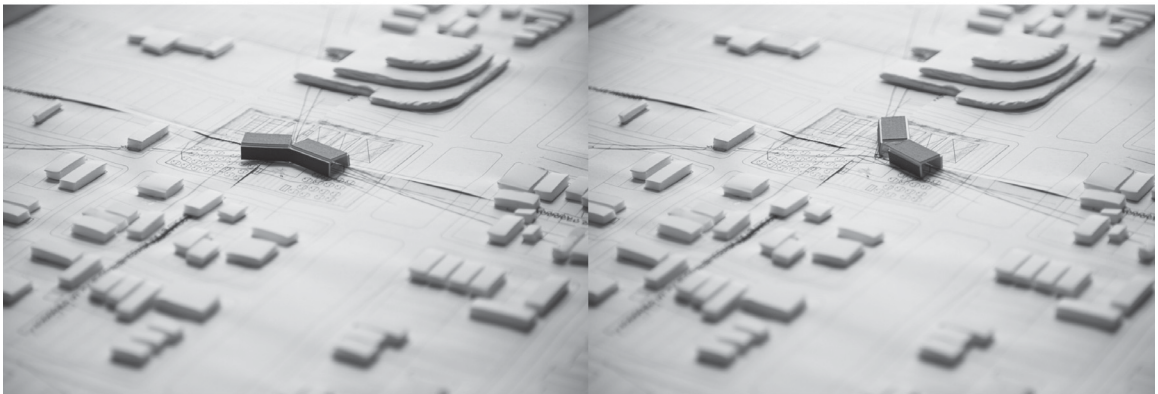
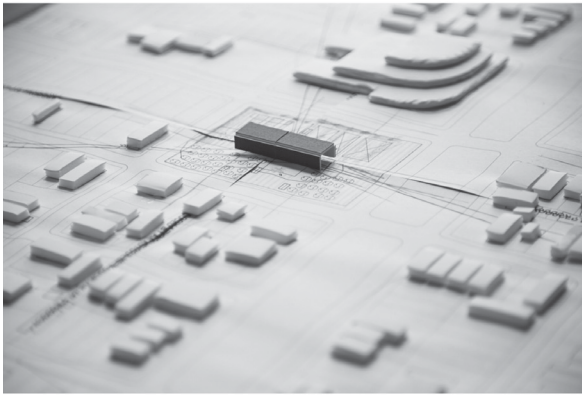
BUILDING LOT

1. Food Hub Co-Op (*proposed)
2. Orchard (*proposed)
3. Greenhouses (*proposed)
4. Gardens (*proposed)
5. Firehall (*removed)
6. Dr. Martin Luther King Elementary + Public Library



25m

Map illustrating building siteplan and the immediate surrounding context.



Testing a hinged massing against the surrounding context massing. 1:1000 model.

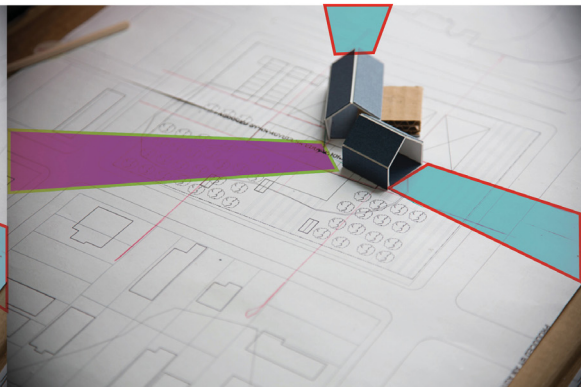
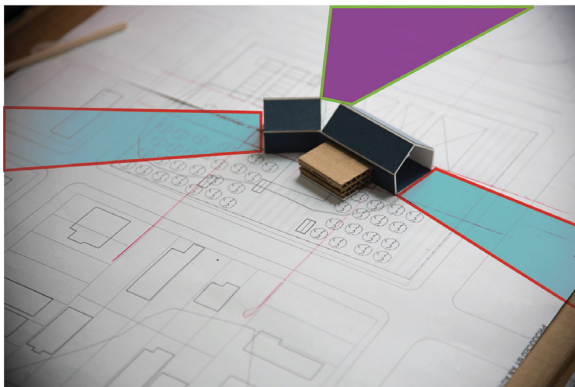
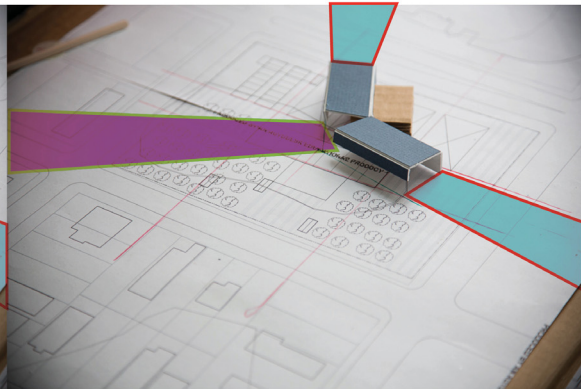
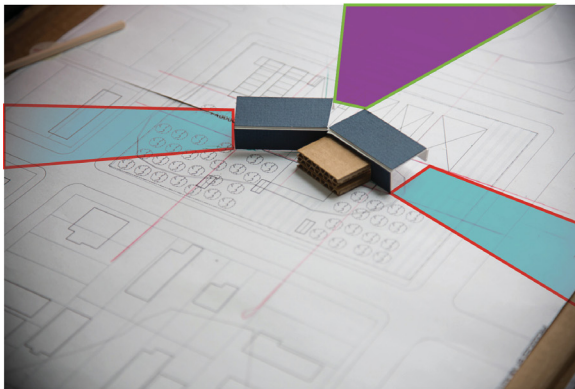
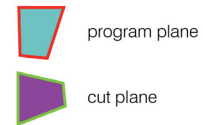
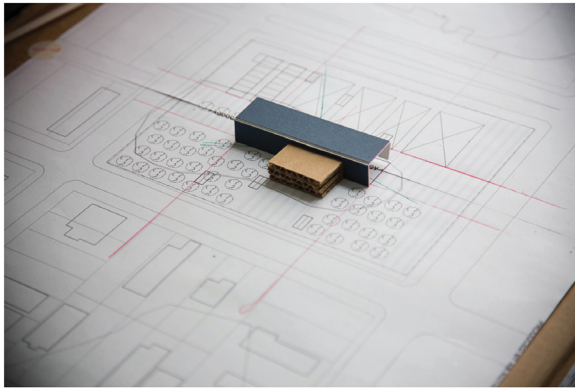
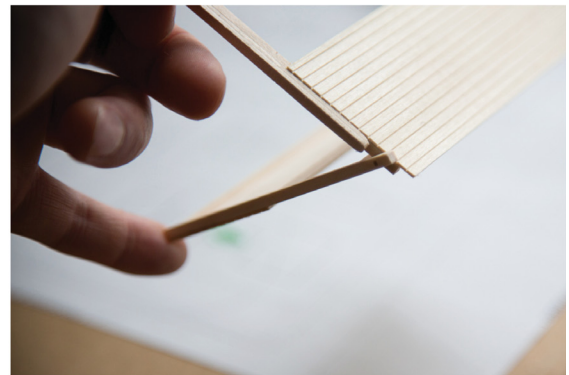
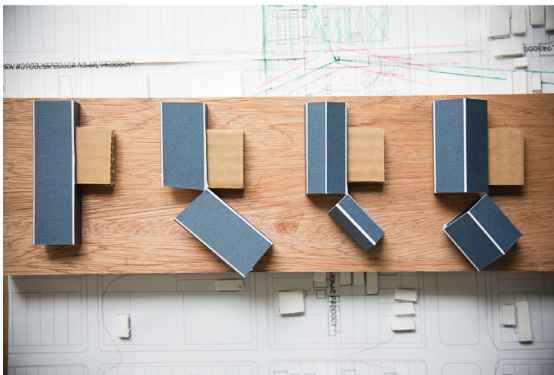
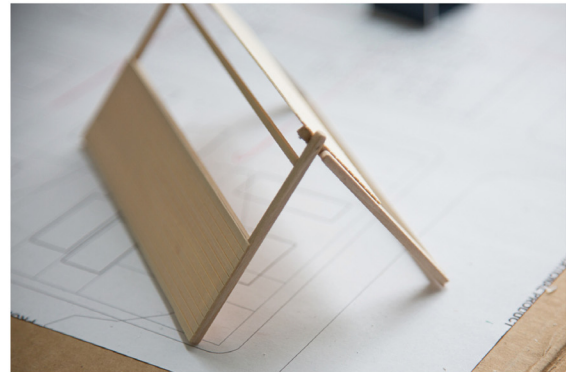
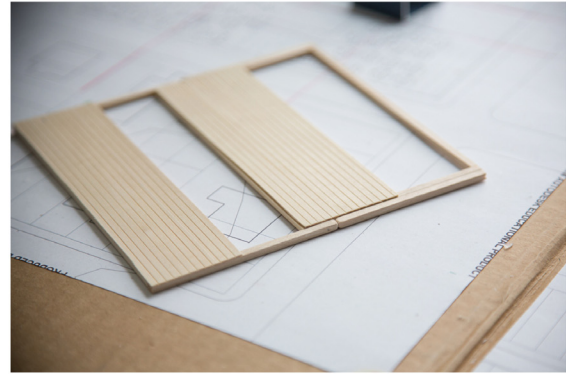
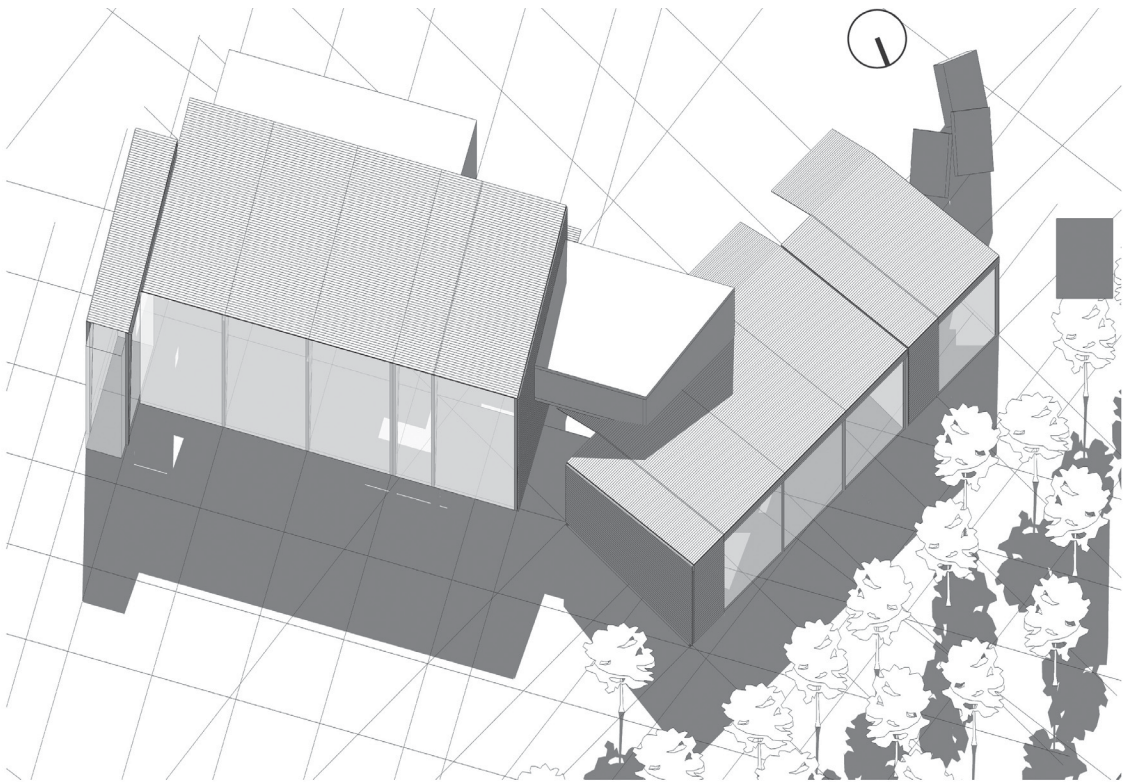
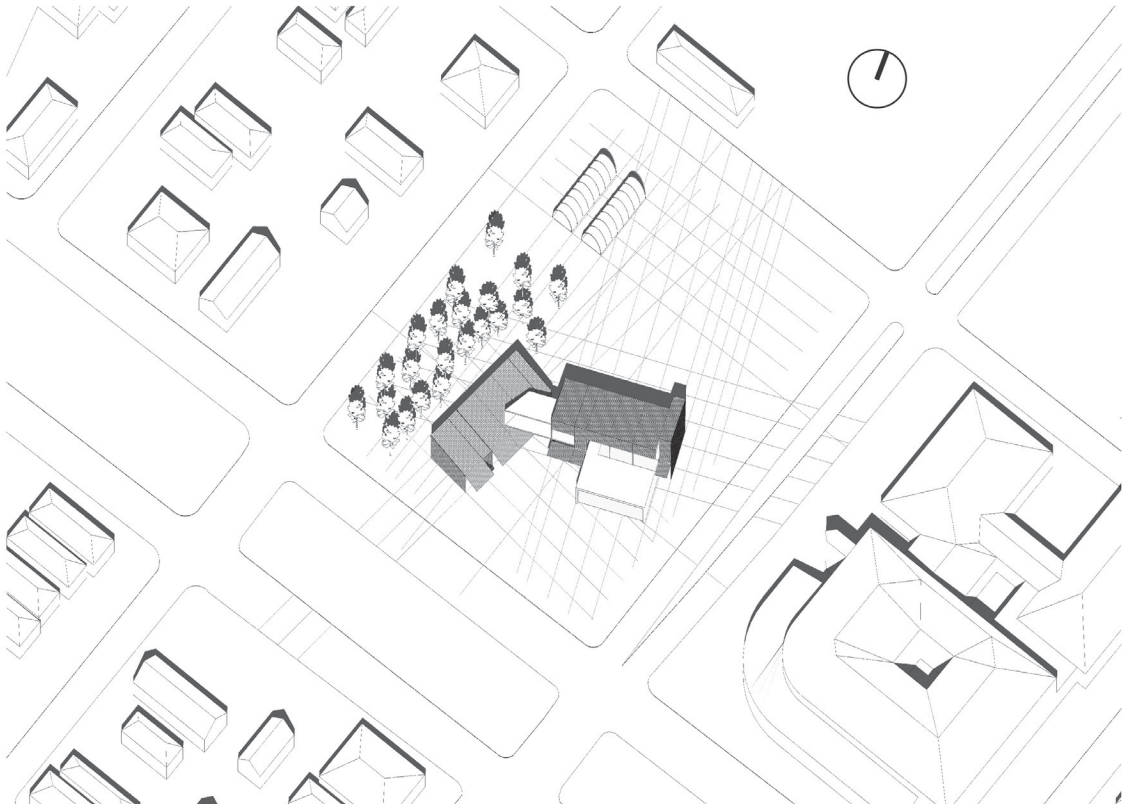


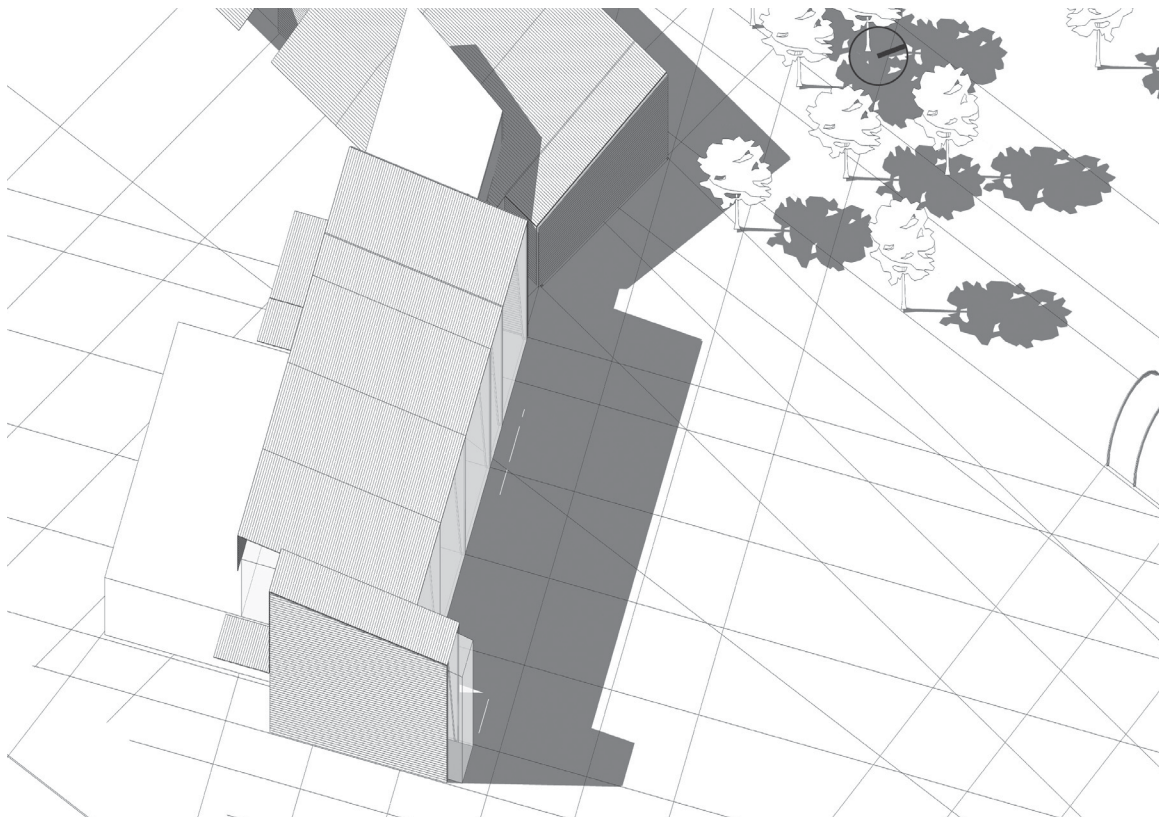
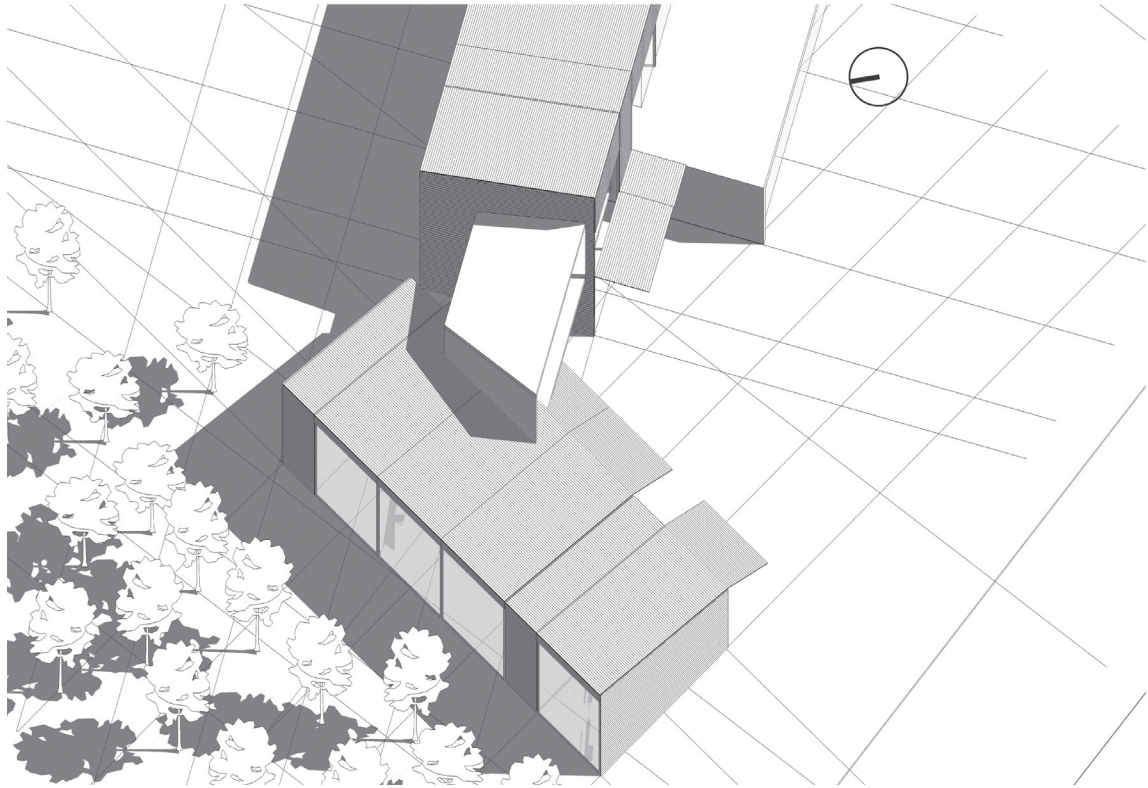
Illustration of form, program study, and change in building “outreach” as the mass is hinged and orientation is tested. 1:500 model.



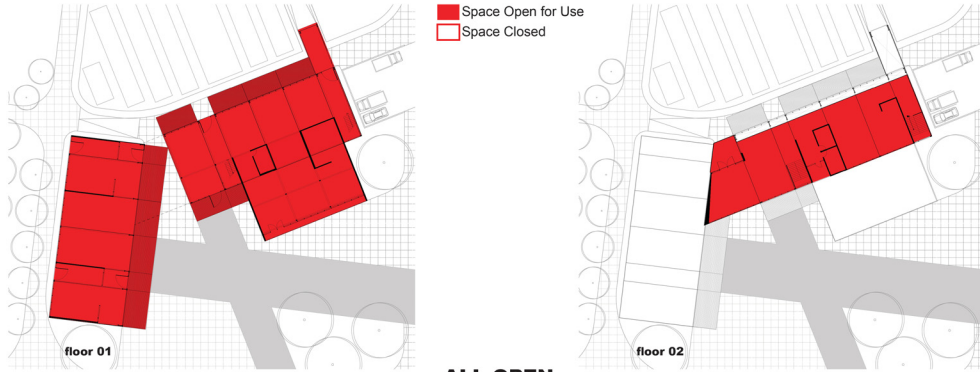
Formal explorations for hinged massing with models at 1:500 (left) and expressing a similar hinged language in the door assemblies at 1:25 model (right).



Building axonometric view illustrating food hub co-operative's massing on site.

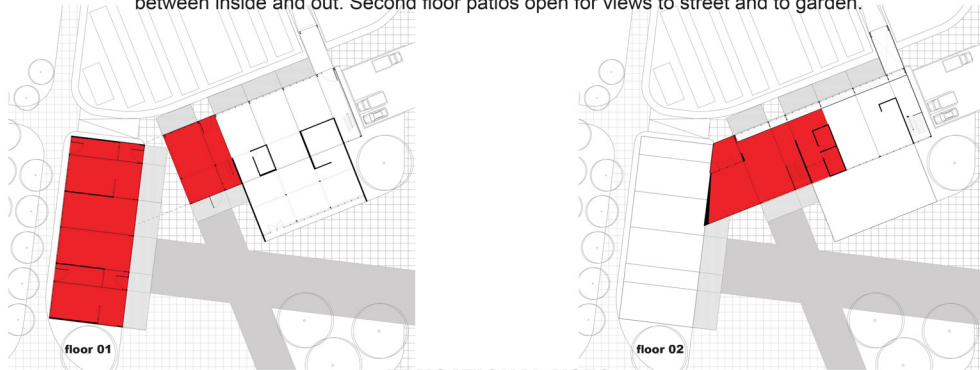


Building axonometric view illustrating food hub co-operative's massing on site.



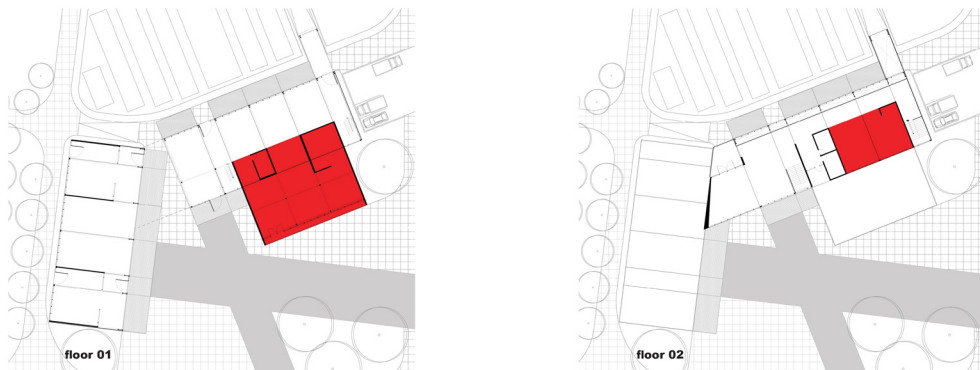
ALL OPEN

All services and program spaces open to public. All shutter doors open to create shaded outdoor space, and seamless threshold between inside and out. Second floor patios open for views to street and to garden.



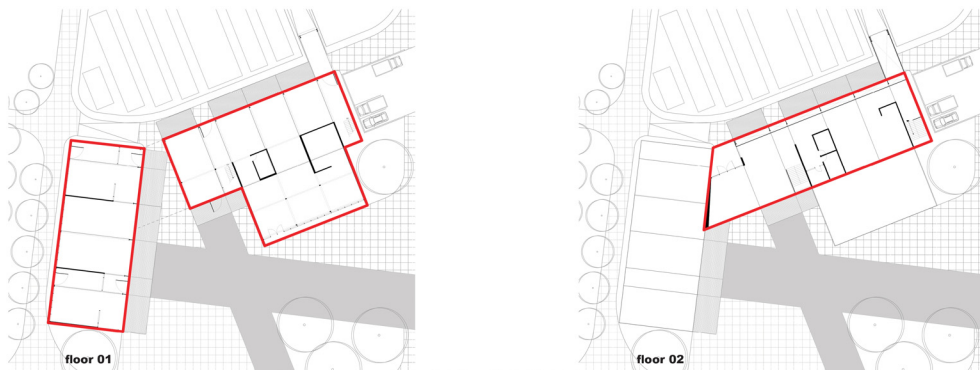
EDUCATIONAL USES

Adult and youth education programs, cooking classes, and community functions in the main and second floor program spaces.



CO-OP GROCERY AND ADMINISTRATION

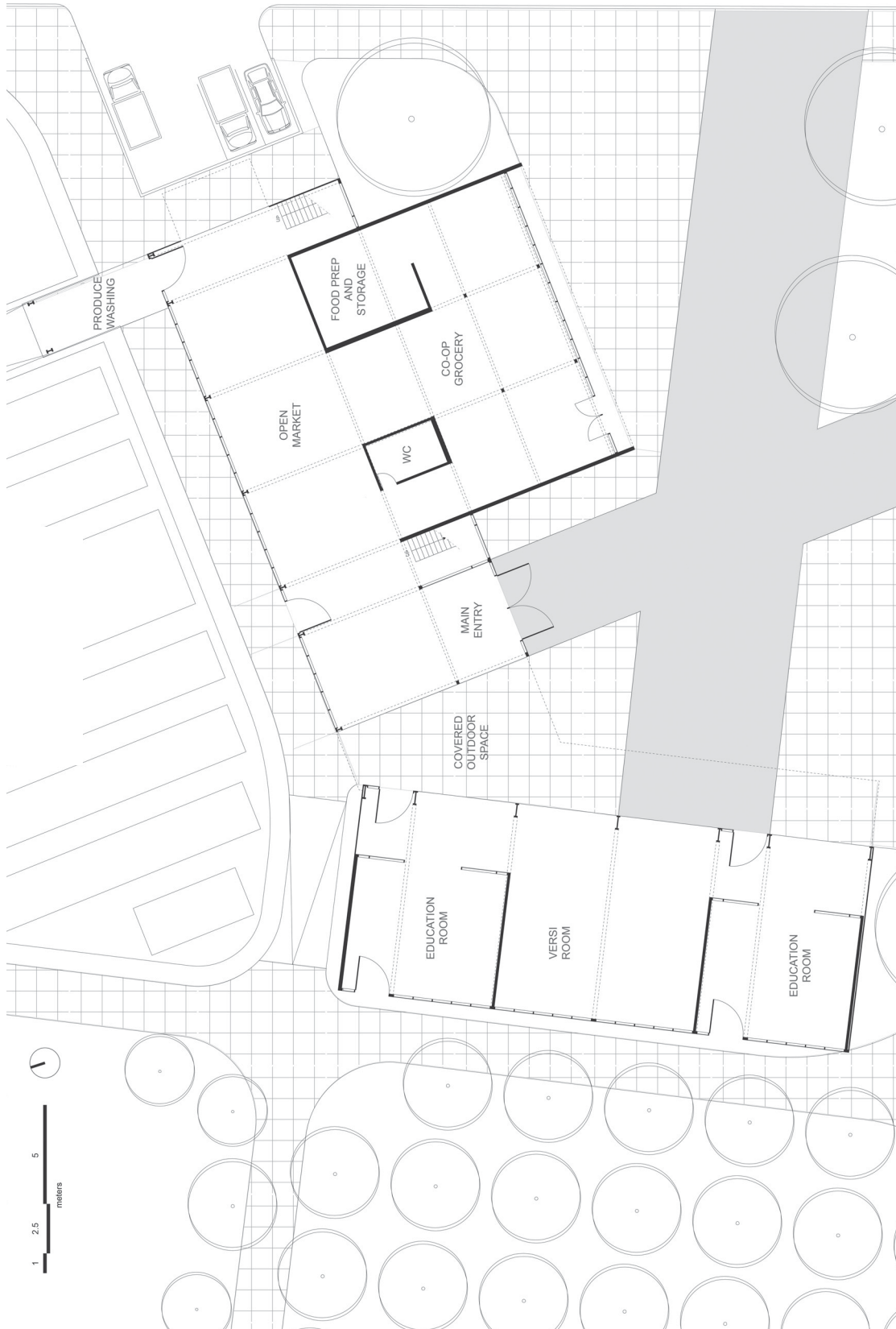
Ground level co-op grocery open to public with street access. Co-op administration shown on second level.



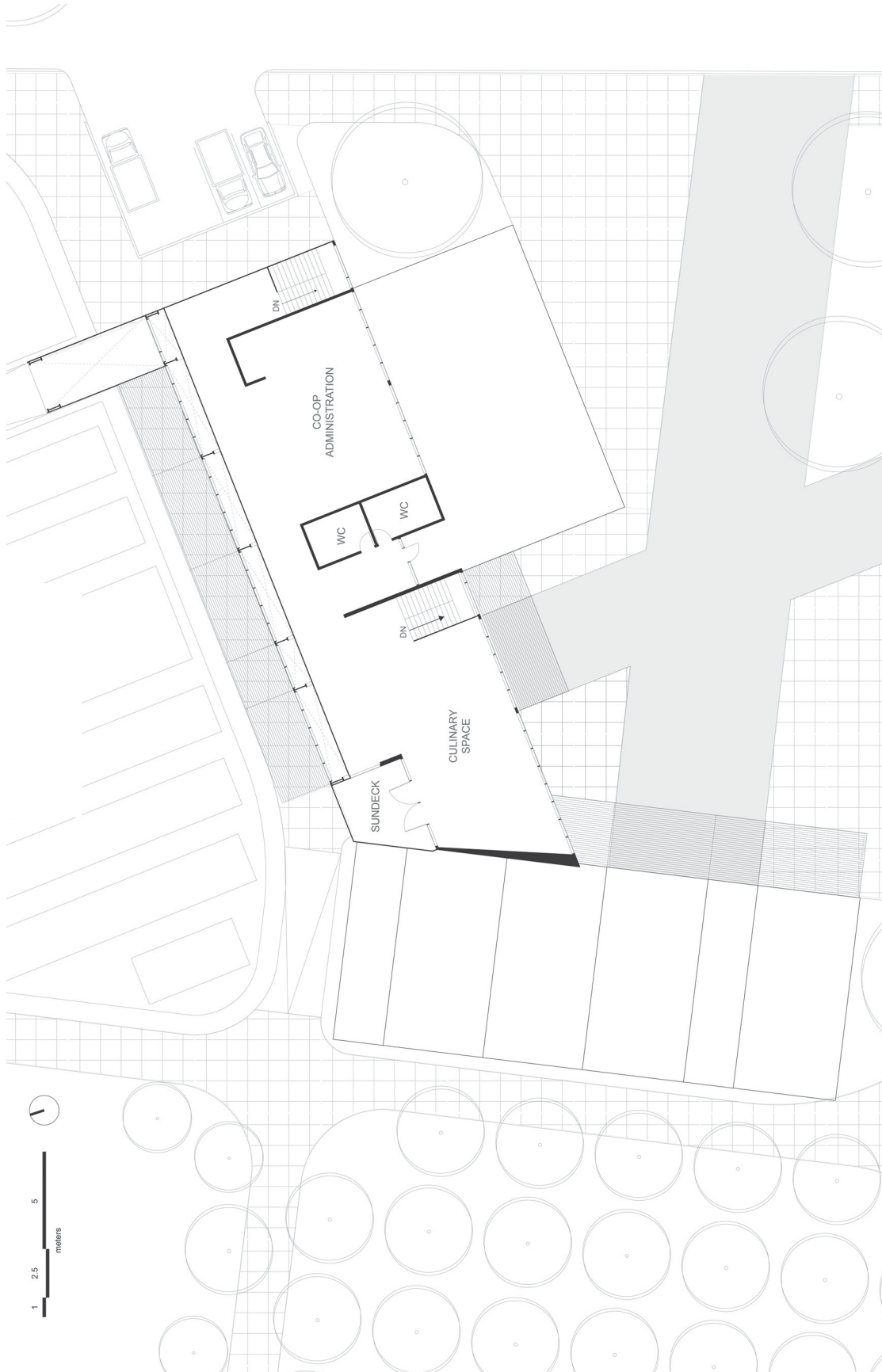
ALL CLOSED

Overhead doors shuttered to close building at night or during significant weather events like hurricanes.

Schematics of programming and usage and the open and close of the building to suit needs.



Plan of the first level of the food hub co-operative.



Plan of the second level of the food hub co-operative.



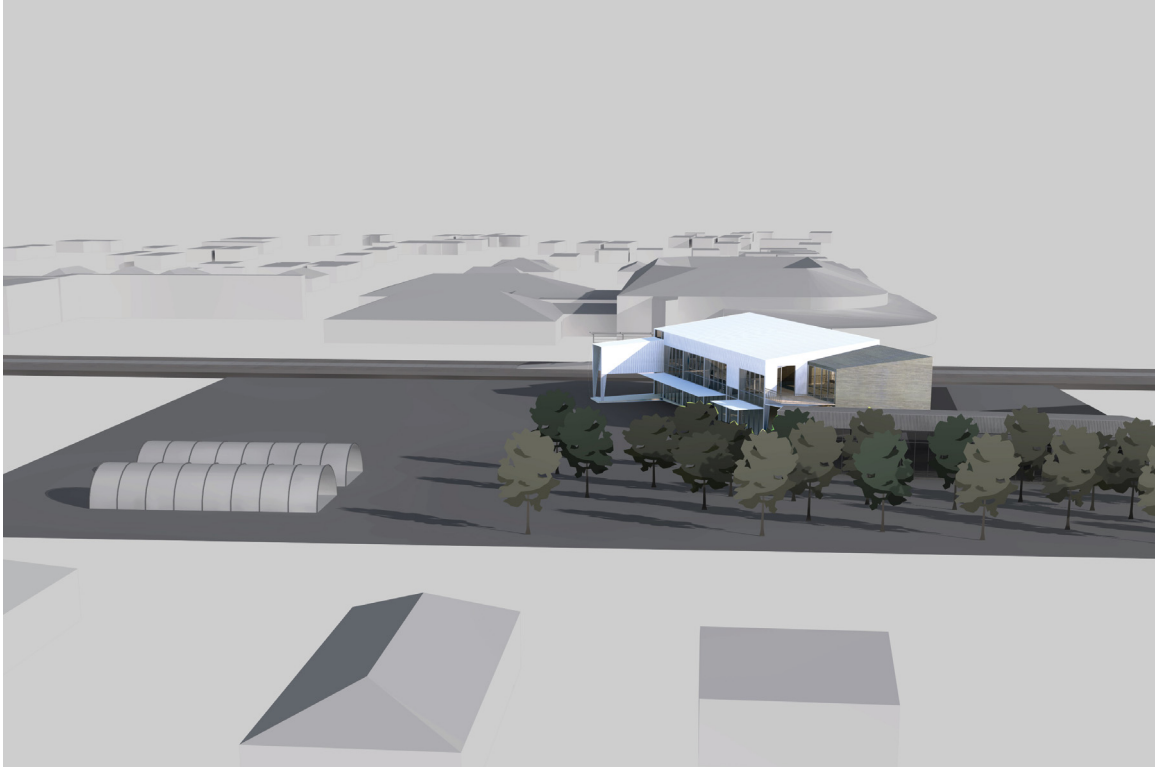
Perspective view north showing the scale of the food hub co-operative in relation to the street (base image from Google Maps 2013)



Perspective view north showing the scale of the food hub co-operative in relation to the street (base image from Google Maps 2013)



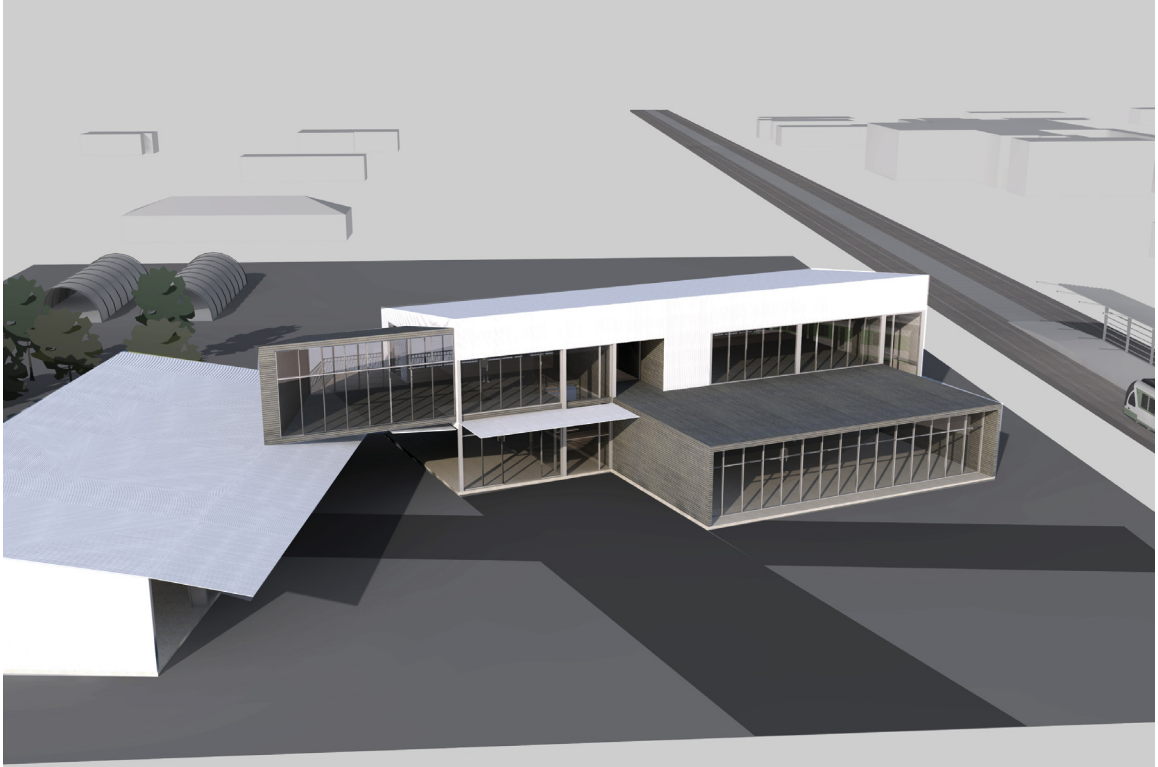
Perspective view southeast illustrating transparency of the north face of the food hub co-operative (base image from Google Maps 2013)



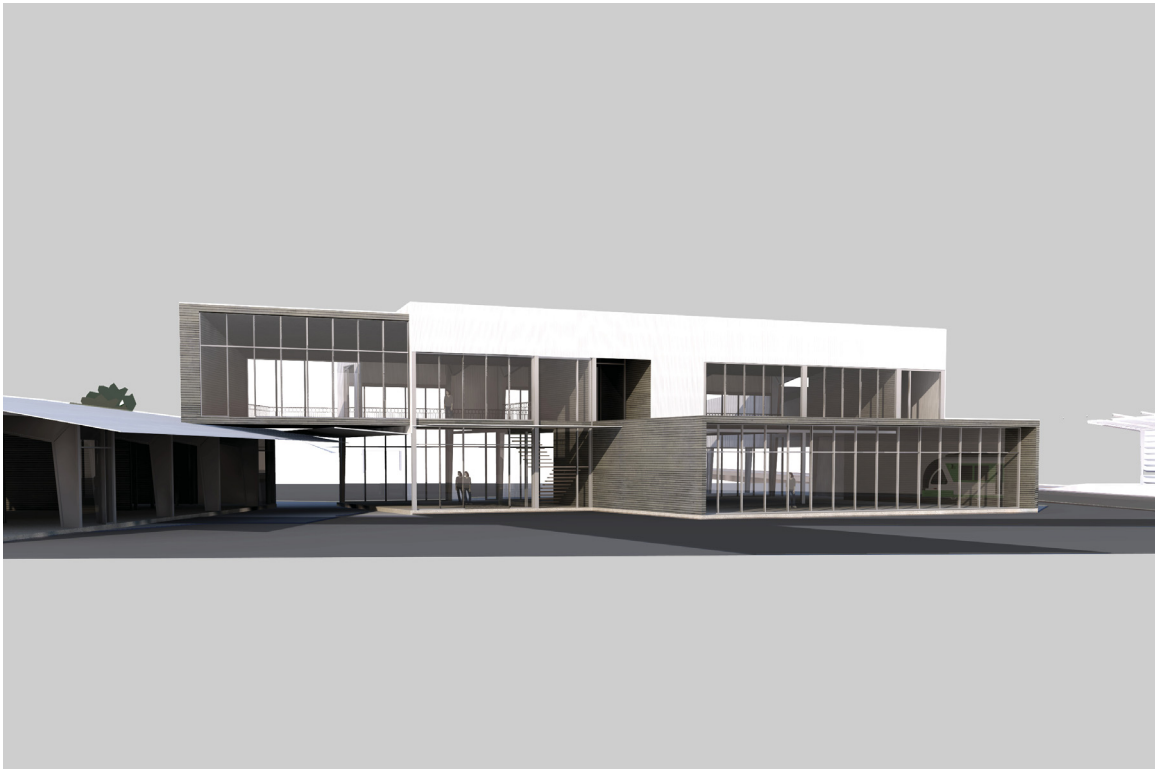
View east of the food hub co-operative.



View northwest of the food hub co-operative and streetcar line.



View north of the food hub co-operative.



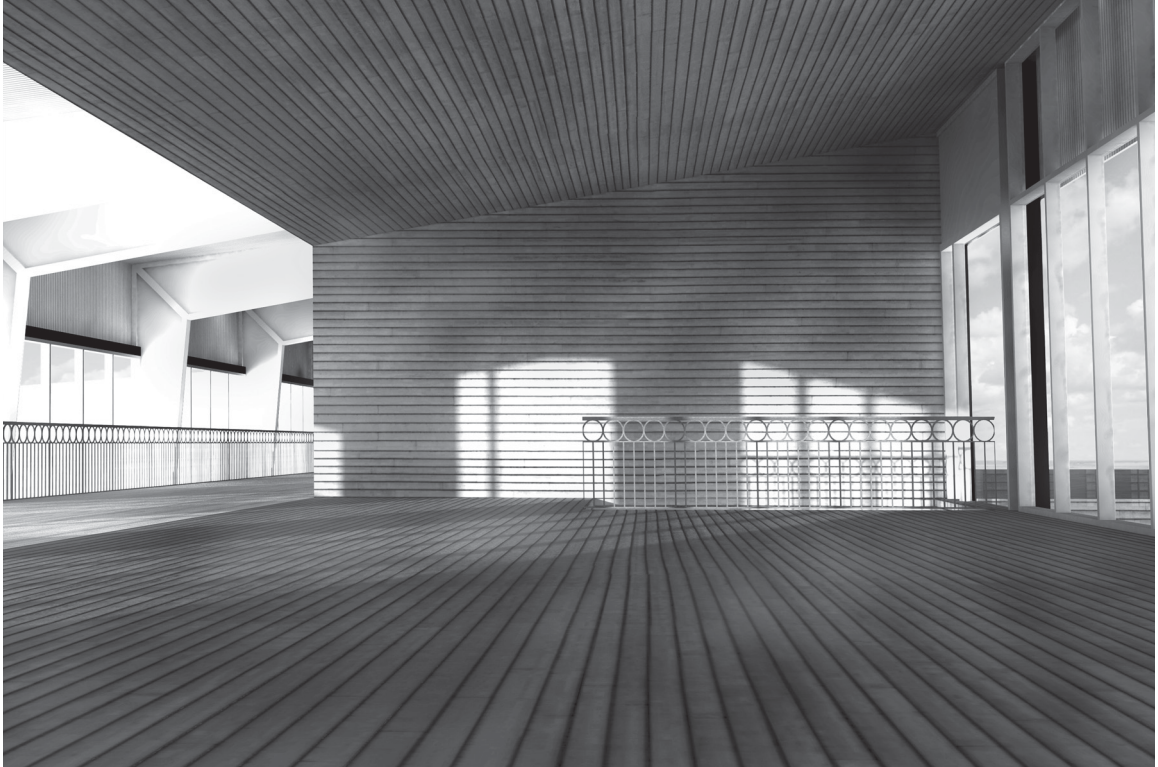
Street level view north of the food hub co-operative.



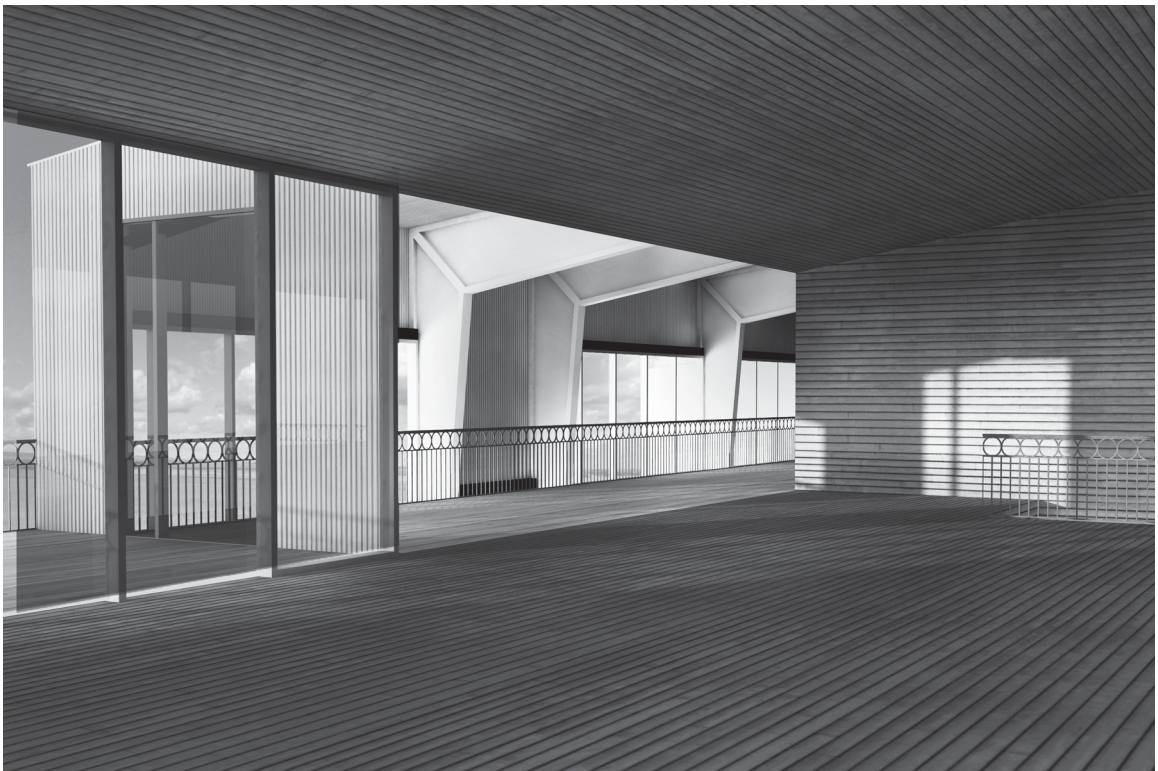
Sectional render illustrating the pinch point between the two main structures, the overhead volume, and the various interior spaces.



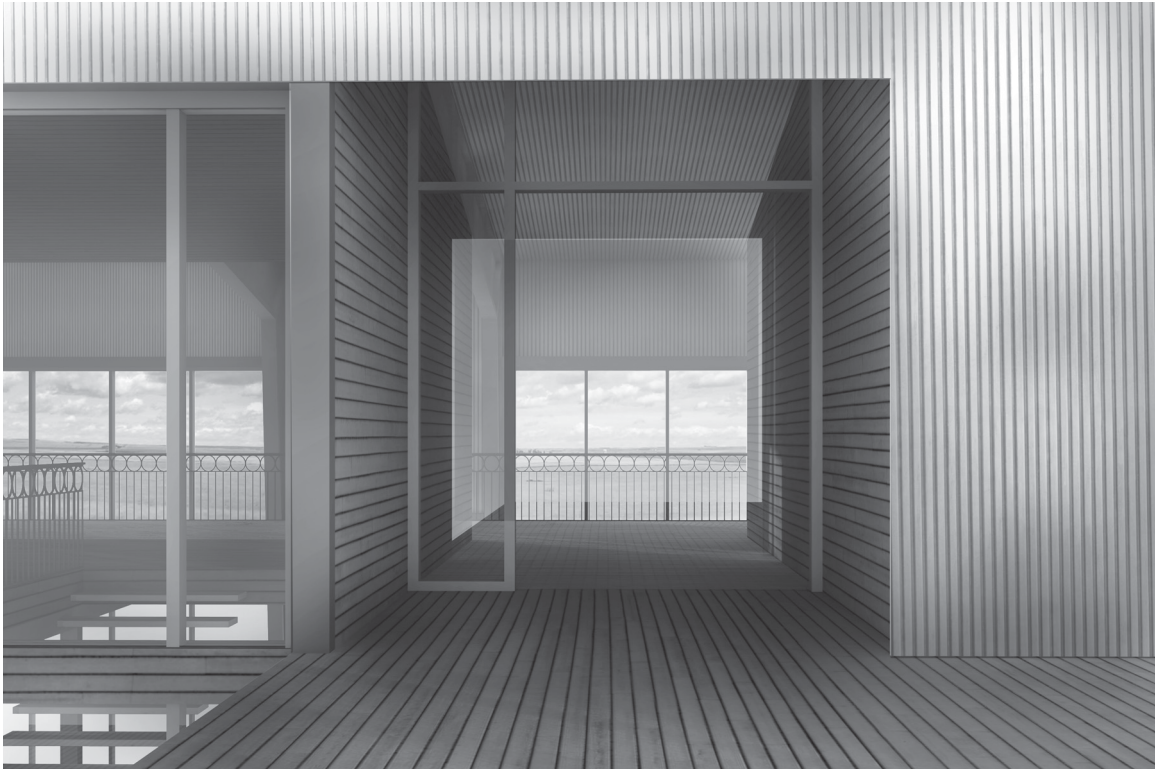
Sectional render illustrating qualities of shading and light in the east stair, the northern garden and orchard, and the transition from interior to exterior.



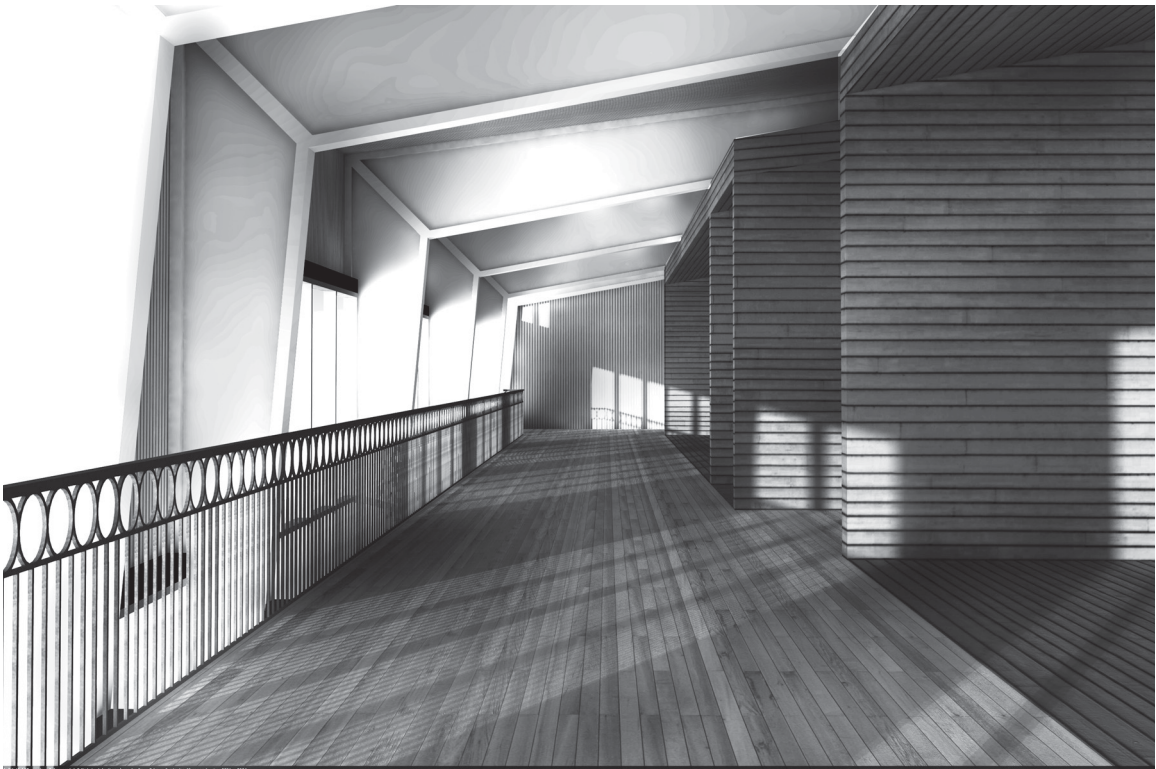
Interior render of the food hub co-operative's upper educational room.



Interior render of the food hub co-operative's upper educational room and circulation access.



Exterior render looking from the roof of the co-operative grocery towards the interior.



Interior render of the food hub co-operative's upper level circulation.



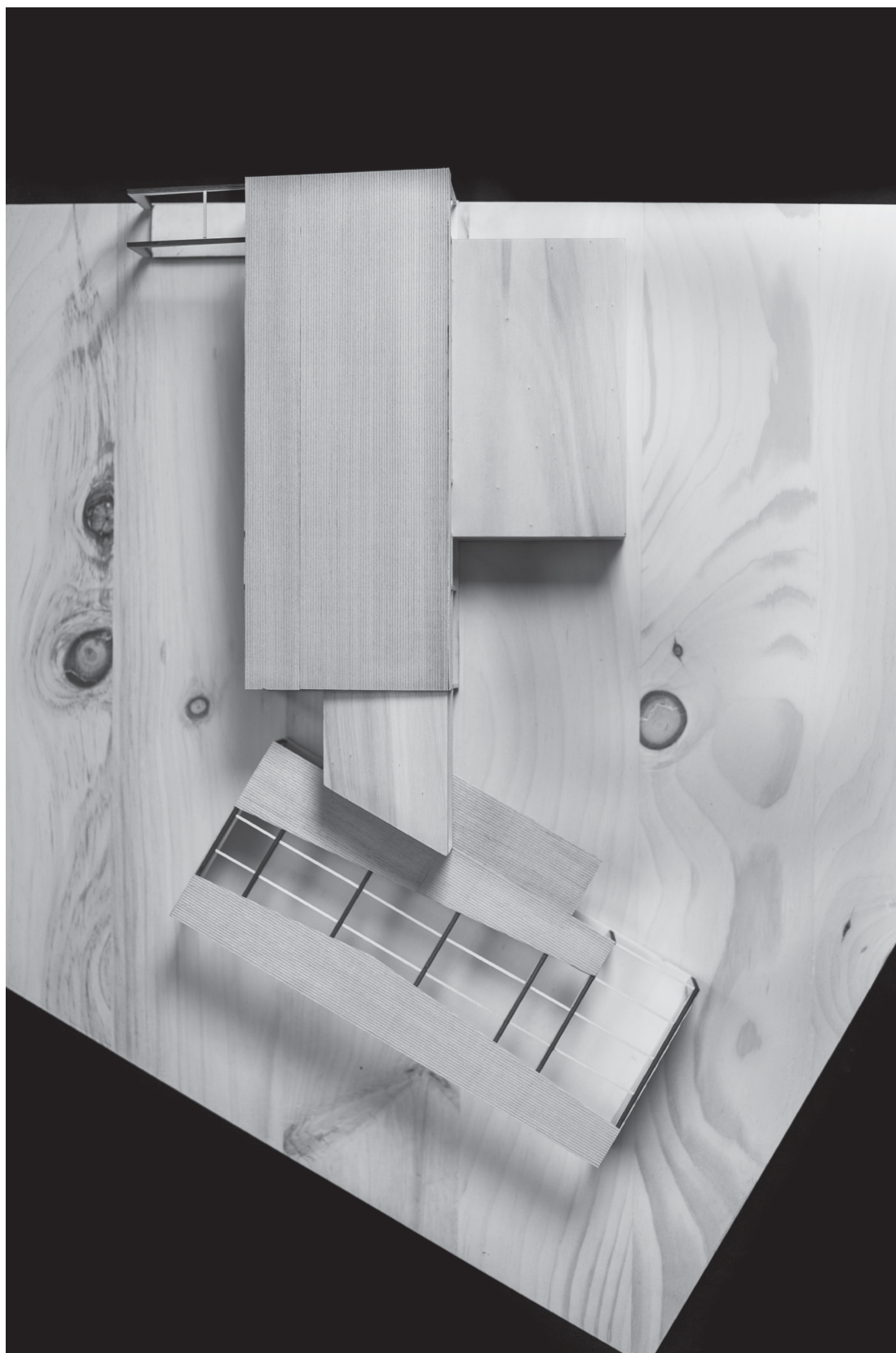
Exterior render illustrating the upper educational room and lower main entry with access doors open.



Exterior render of the food hub co-operative's exterior cladding and fenestration.



View of the presentation model.



View from above of the presentation model.

Food Network

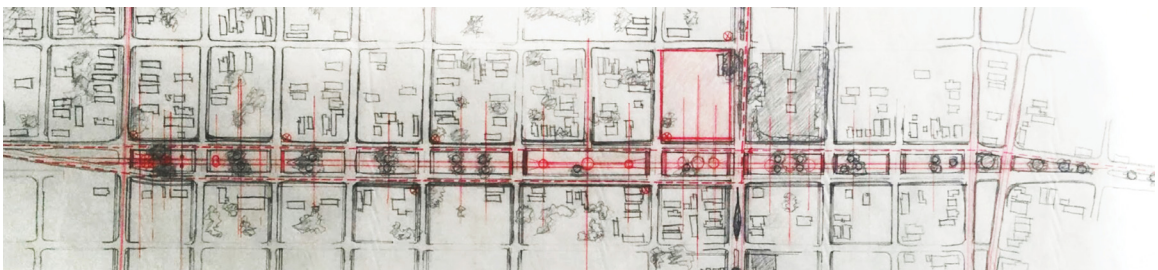
The food network is the embodiment of the food hub co-operative at a neighborhood scale. In order to support a region that is more than 4 square kilometers in size, a three phase expansion was designed to gradually extend the network's reach in the region as adoption of the food concept takes hold in the Lower Ninth Ward.

The phases each take a unique approach to integrate food into their respective zones and were sited accordingly to achieve their respective intentions. The primary variables considered in the design of the phases include transportation and commercial corridors, relative population densities, existing and proposed public transportation, municipal parks and public infrastructure, speculative land valuation, and the abundance of vacant land plots in the surrounding area.

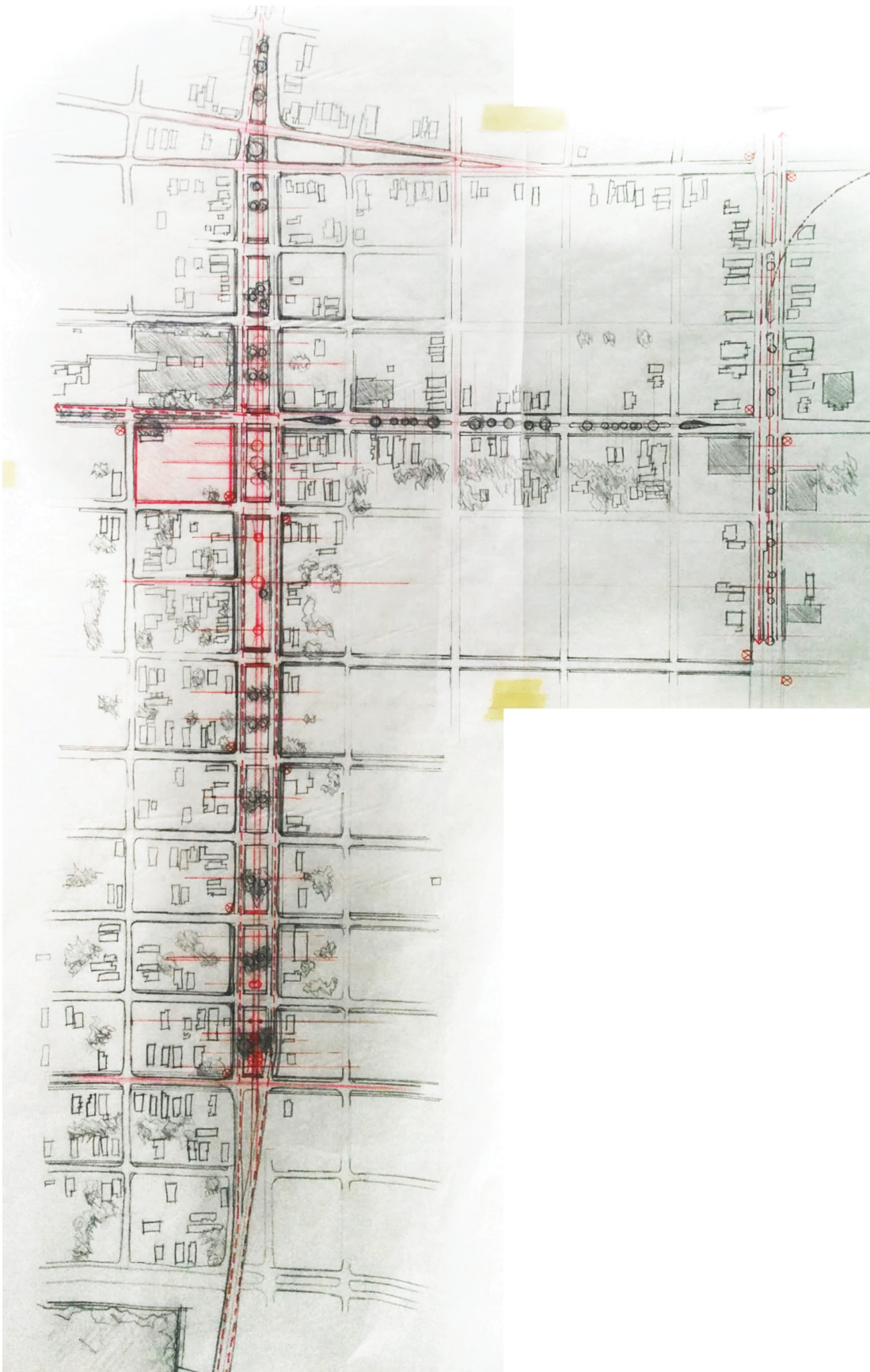
The network's phases grow in scale to accommodate increasingly ambitious initiatives. Given its siting at the junction of the major transportation and commercial arteries, the food hub co-operative remains the imperative foundation of the network and therefore is accordingly phased 0. Where it operates at a building scale to provide individuals and small groups with support about food related endeavors, phase 3 operates at a landscape scale and assumes widespread community adoption to pave the way for the phase's urban agricultural proposal.

Nodes

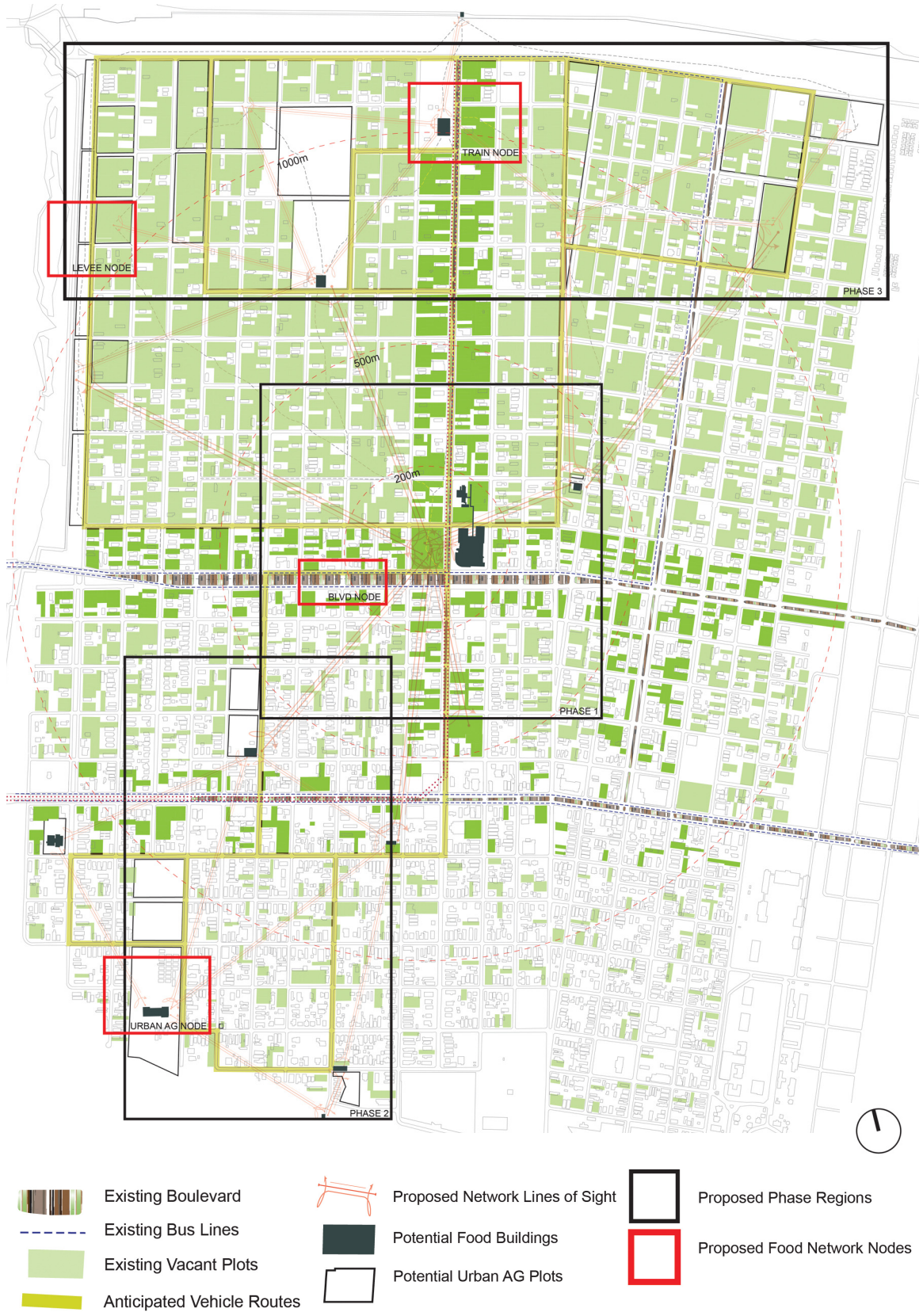
Designed in the same language as the portal frame structure, the phases are articulated by built nodes, the physical representation of each phase's conceptual design intent. They become the architectural annotation for the neighborhood, taking form in the way of a pedestrian boardwalk node, a community node, and a streetcar station node.



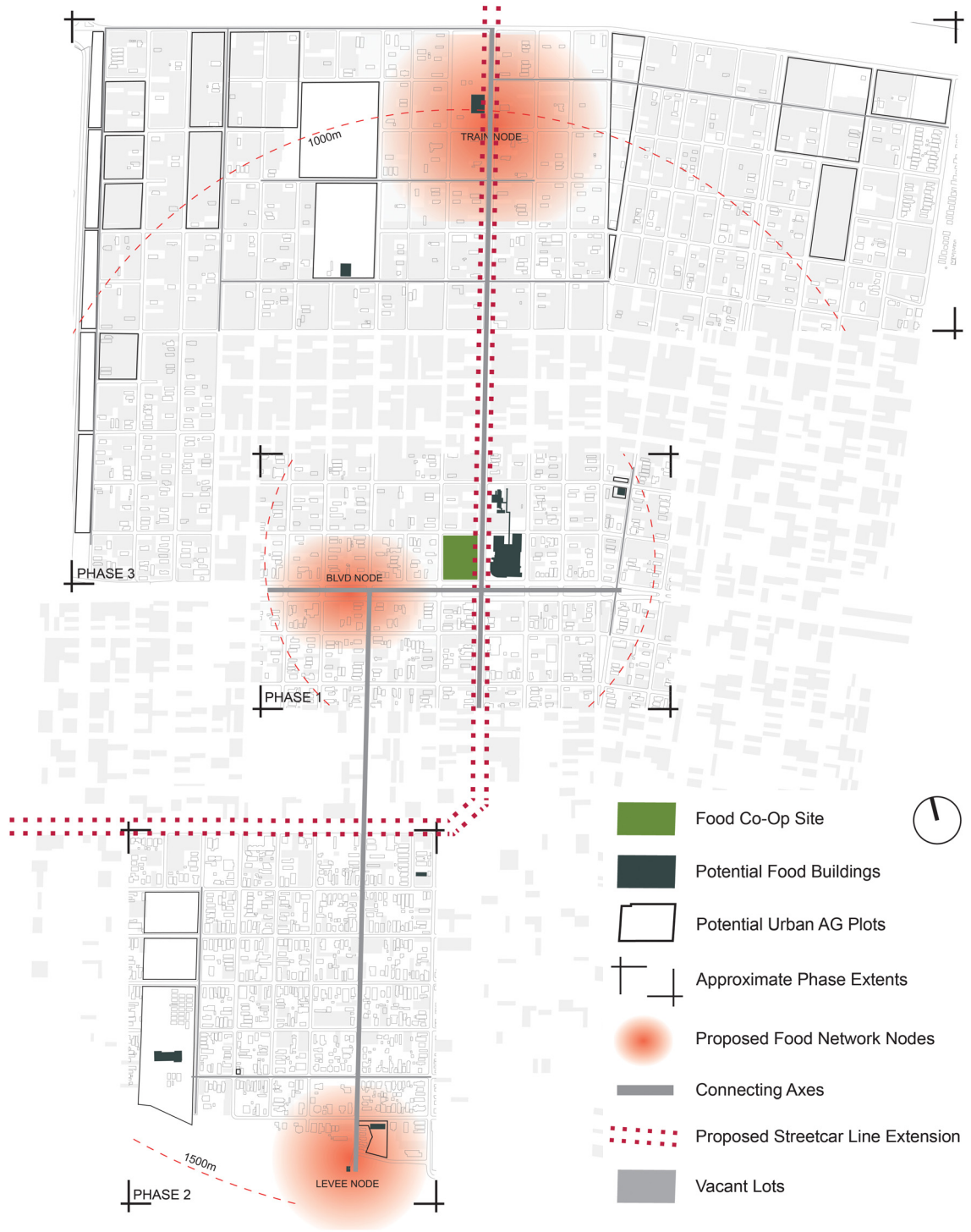
Drawing the site (in red, center) as it anchors to the east-west transportation armature North Caliborne Avenue.



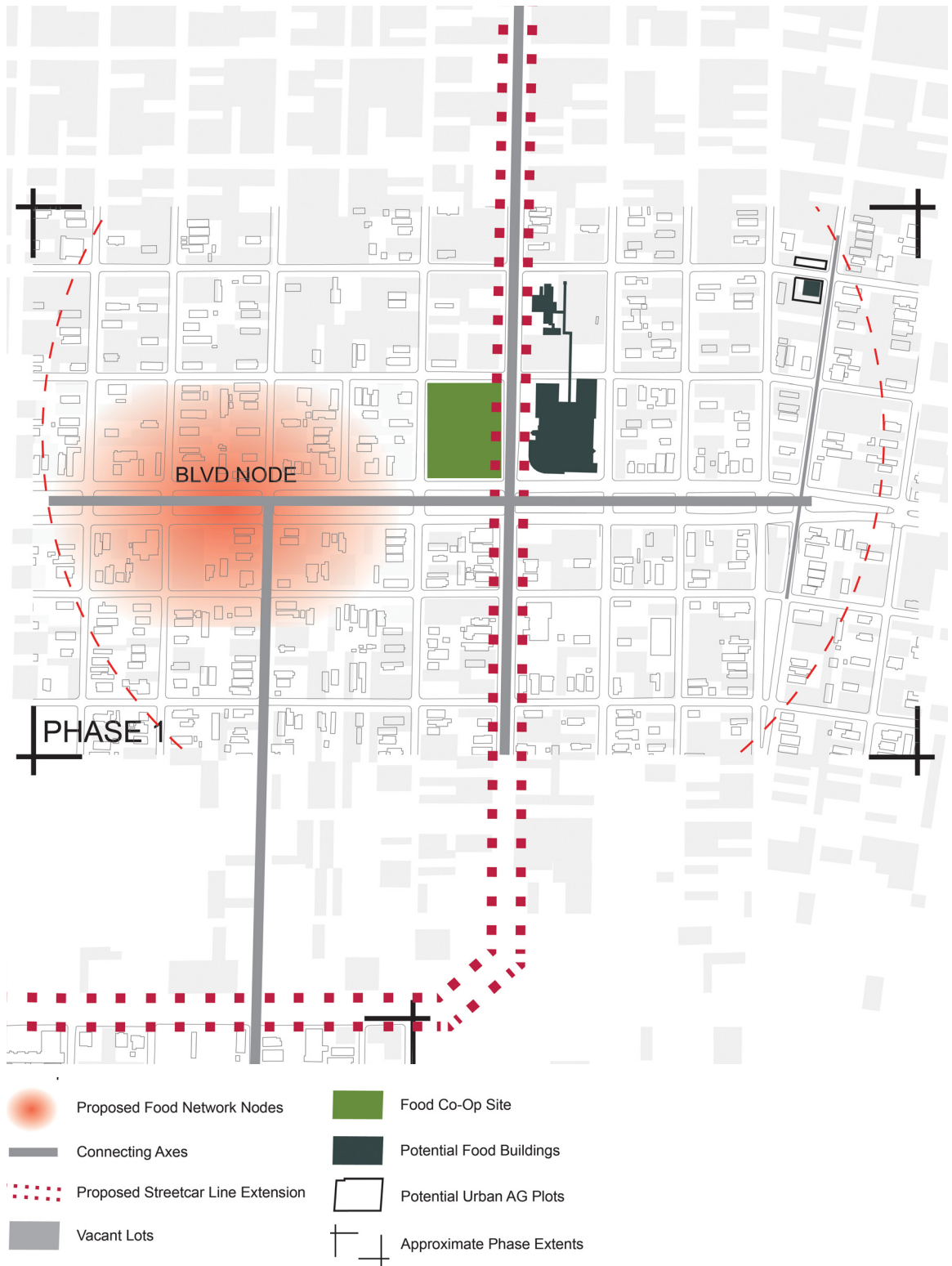
Drawing the site (in red, upper center); and the intersection of the east-west park armature and the north-south commercial armature.



Map illustrating a layered reading of the Lower Ninth Ward as it relates to the Food Network.



Map illustrating the approximate phasing boundaries of the food network in the Lower Ninth Ward.



Crop of Phase 1: 500m outreach to neighborhood initiated by the boardwalk node.

Phase 1

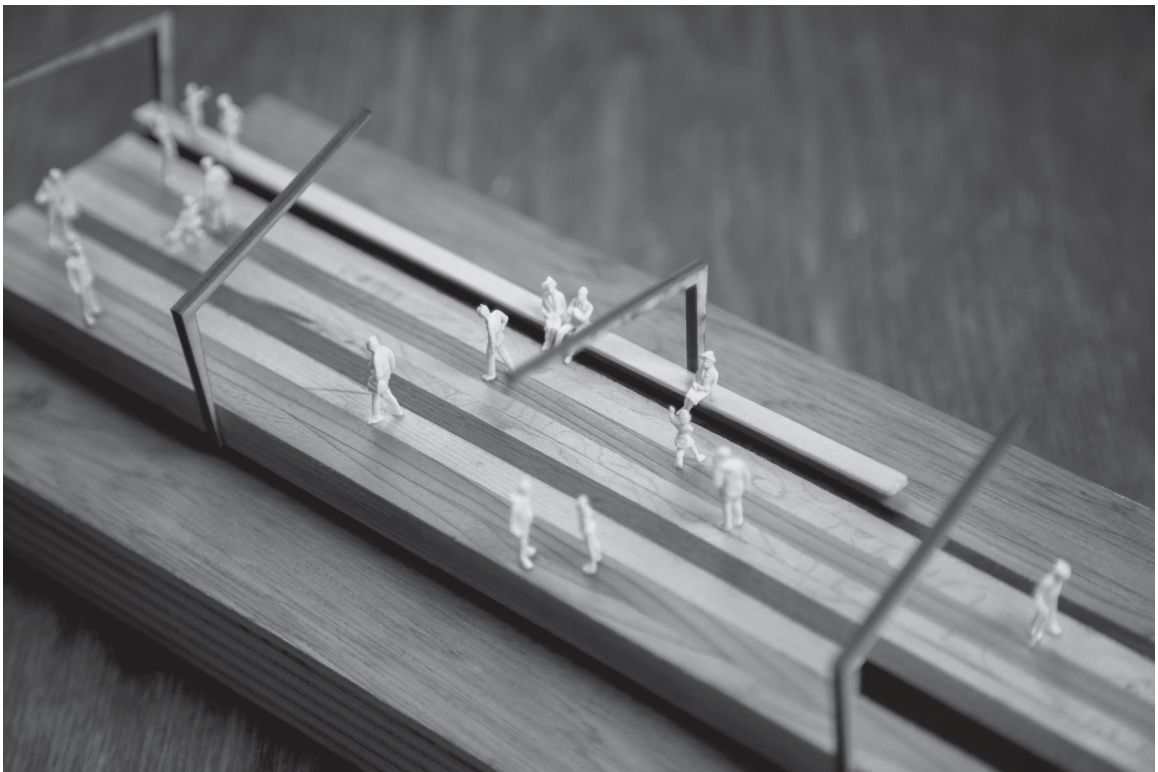
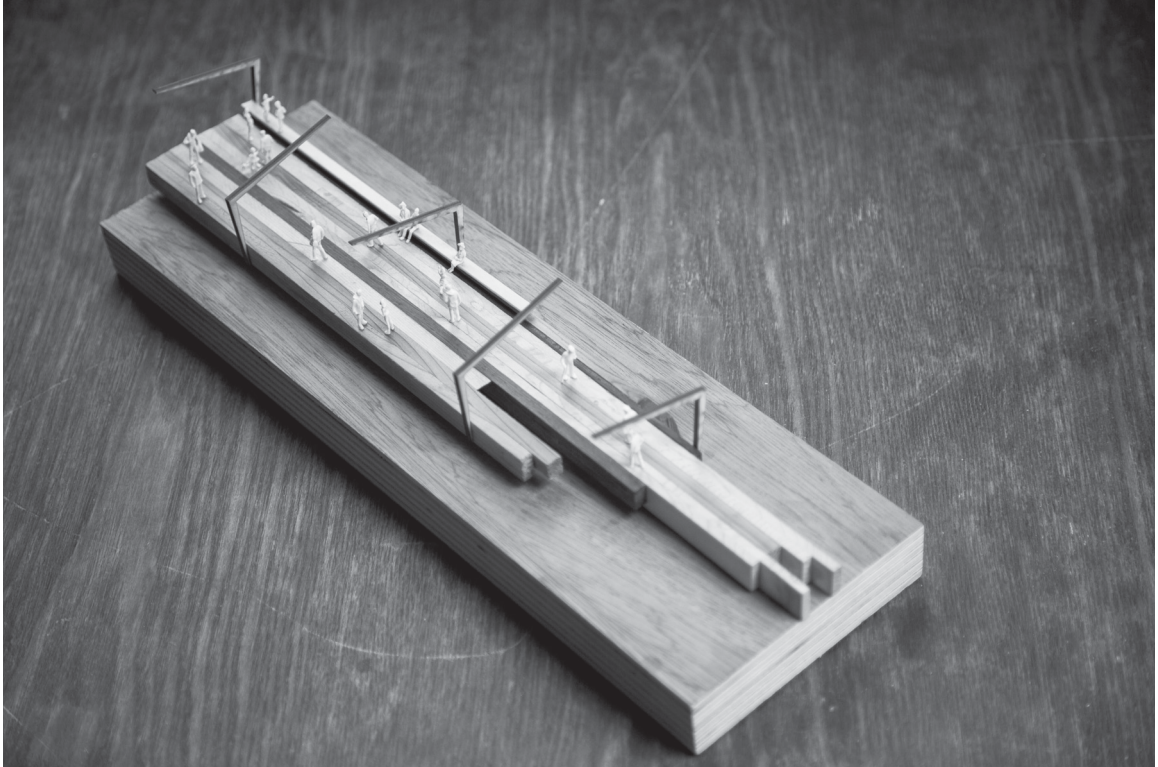
Phase 1 is the first initiative to define a region beyond the food hub co-operative's physical building lot. Based upon metrics for defining food deserts, Phase 1 defines an approximate half mile range as control for estimating those most likely to experience the effect of the food hub co-operative in this early stage of community investment and outreach. The external influence on Phase 1 is anticipated to come primarily from consumers to the grocery store within this half mile range and, secondarily, from local producers who will sell and distribute via the food hub co-operatives's grocery store and seasonal market.

Boardwalk Node

The boardwalk node is the physical expression of the Phase 1 outreach, becoming the thread that will weave together the nodes, phases and regions of the neighborhood. Framed by arches borrowed from the portal frame structure, the boardwalk develops continuity, procession, and connection between the food hub co-operative and the community as well as outwards into the proposed food network.



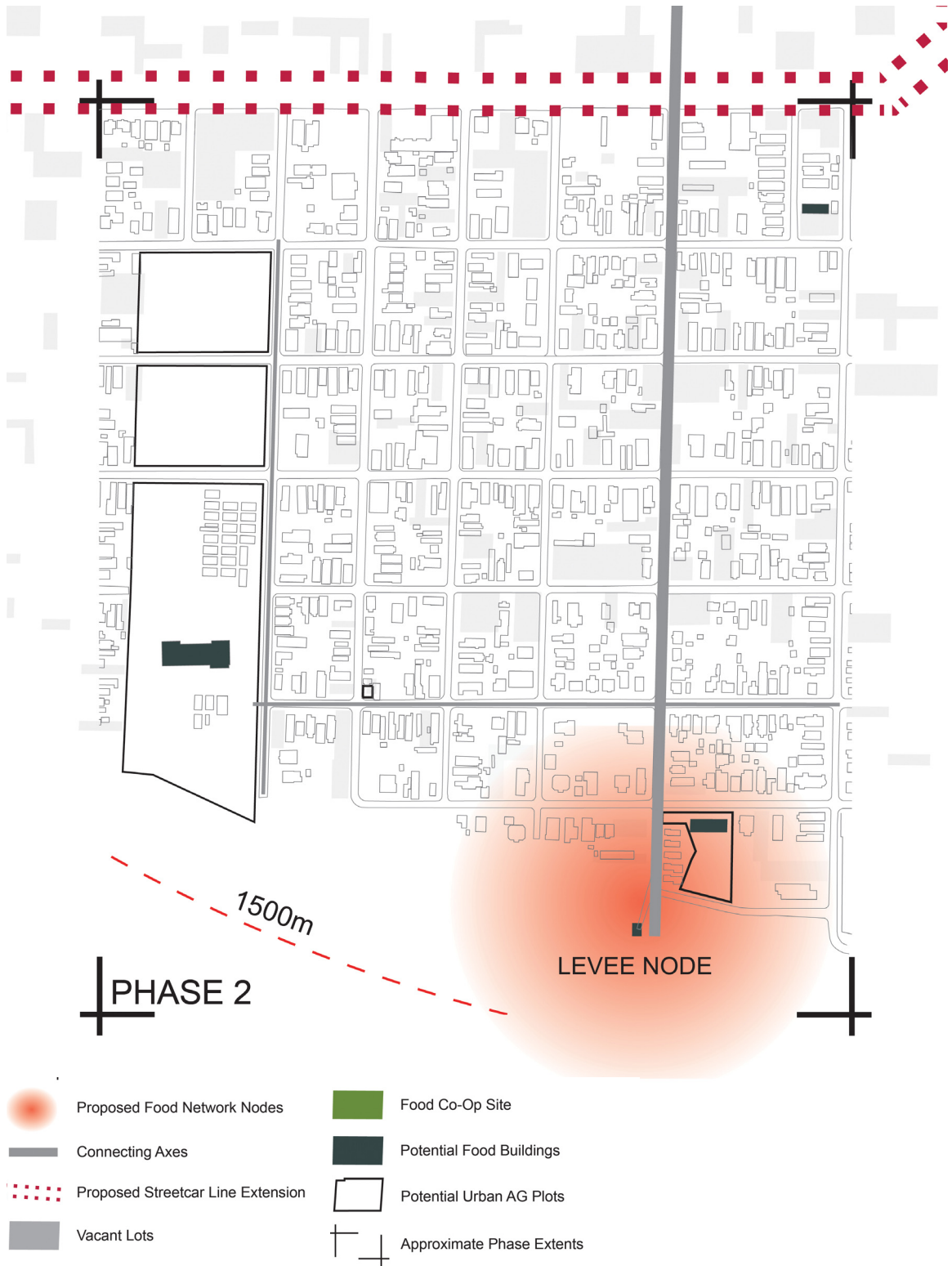
Model of Phase 1 showing the portal frame language in the framing of the pedway.



Images showing Phase 1 boardwalk node model.



Composite images showing Phase 1 boardwalk node model in situ along levee wall (base images from Google Maps 2013)



Crop of Phase 2: 1500m outreach to the higher density southern half of the Lower Ninth Ward to initiate a first instance of a levee based community node.

Phase 2

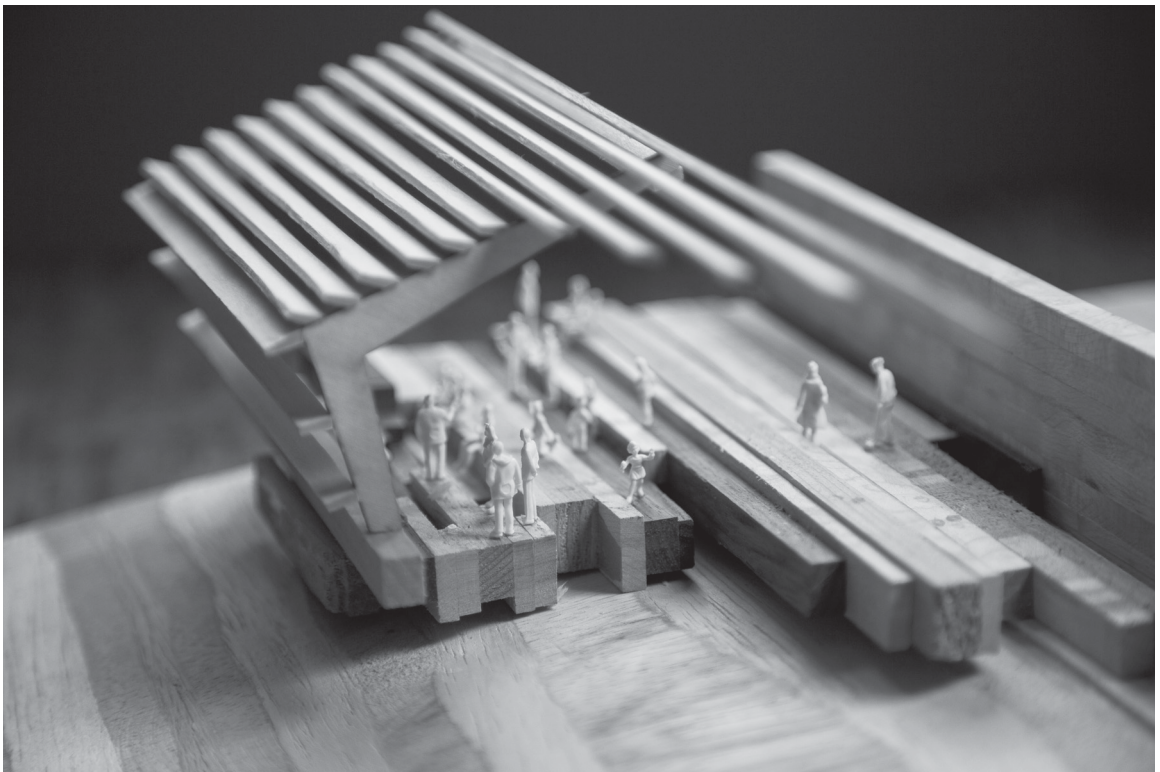
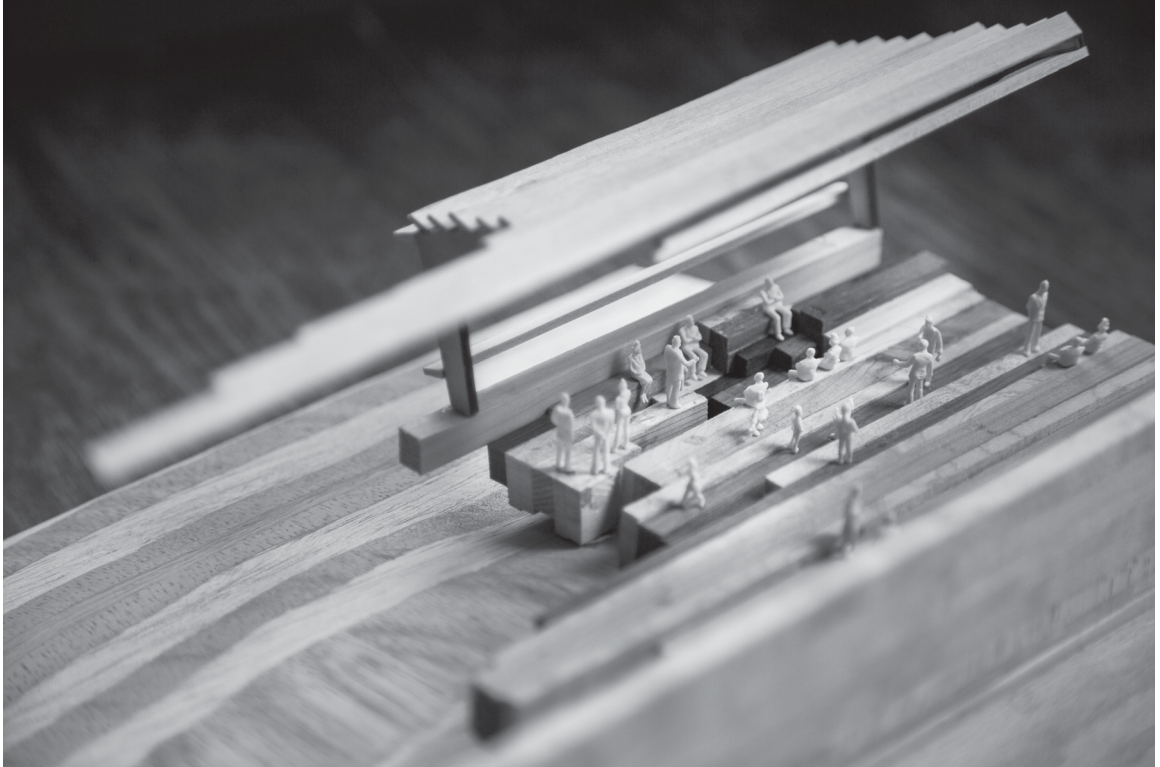
Based upon the higher population density found in the southern half of the Lower Ninth Ward, Phase 2 expands with the intention of reaching an increased local audience. As compared with Phase 1's exposure to those passing the food hub co-operative en route through the neighborhood, Phase 2 engrains itself in amongst those living in the Lower Ninth Ward. Despite higher density overall, there are still large lots for larger scale gardens to develop. Building upon the foundations set in place by the food hub co-operative and Phase 1, Phase 2 intends to embed the local food dialogue amongst Lower Ninth Ward residents.

Community Node

The community node takes food beyond the level of sustenance by encouraging and enabling strangers, friends, and family alike to enjoy the ritual of enjoying food collectively. Whether situated along earthen or walled levees, in wide open fields or on intimate plots of vacant land, the community node is a defined space to draw people together in celebration of food. Of the same language as the food hub co-operative and the boardwalk node, the network further instills a sense of cohesion and community.



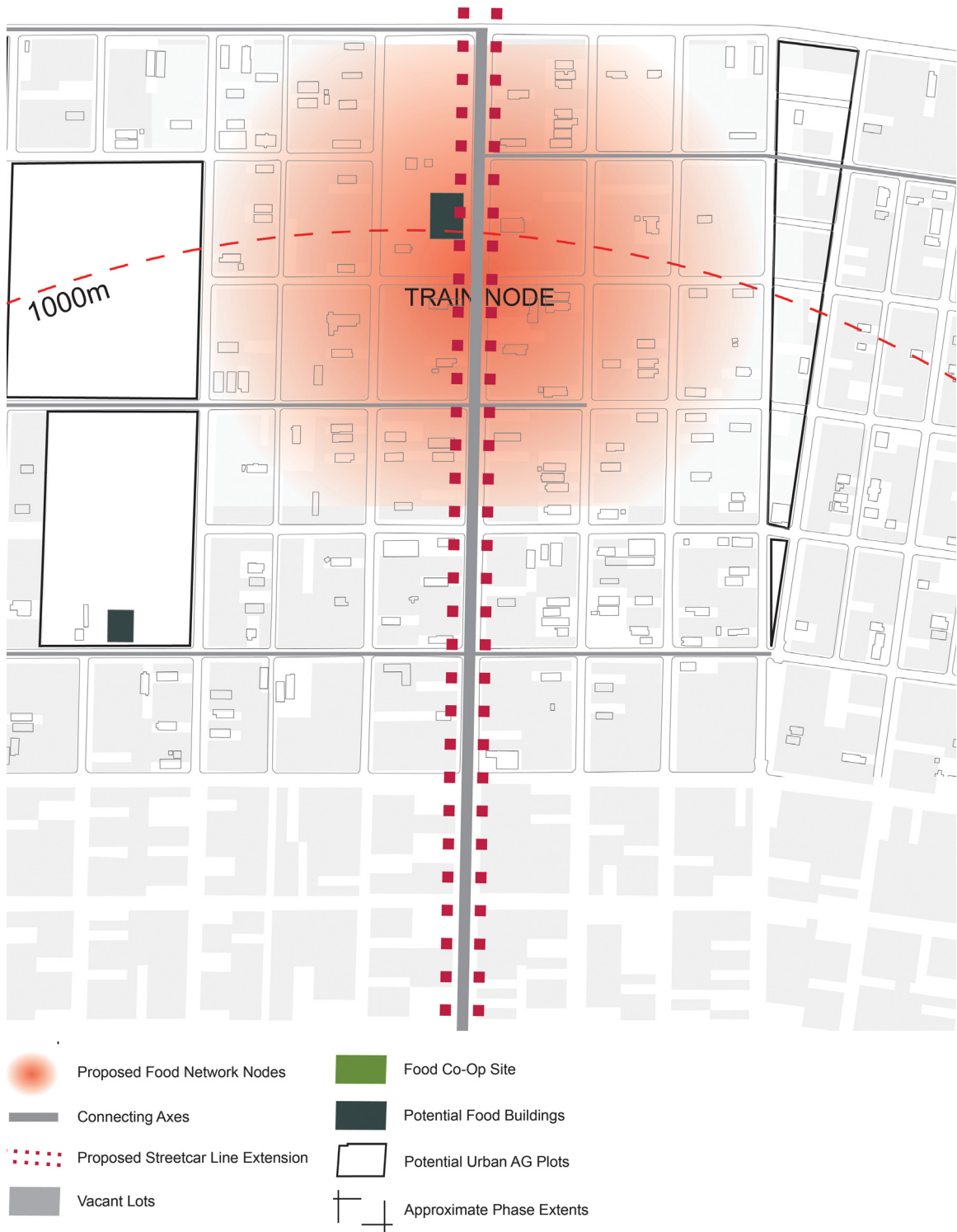
Images showing Phase 2 community node model in plan.



Images showing Phase 2 community node model.



Composite images showing Phase 2 community node model in situ along levee wall (base images from Google Maps 2013)



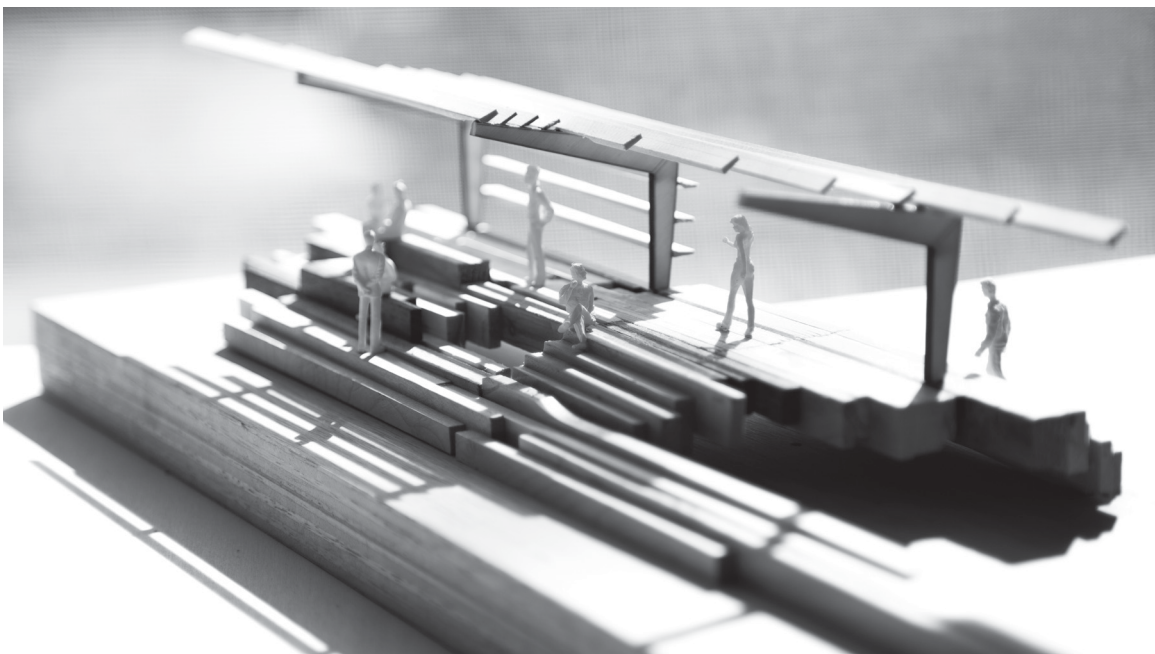
Crop of Phase 3: 1000m outreach to the lower density northern half of the Lower Ninth Ward to initiate a streetcar stop and train node at the end of the commercial boulevard Caffin Avenue.

Phase 3

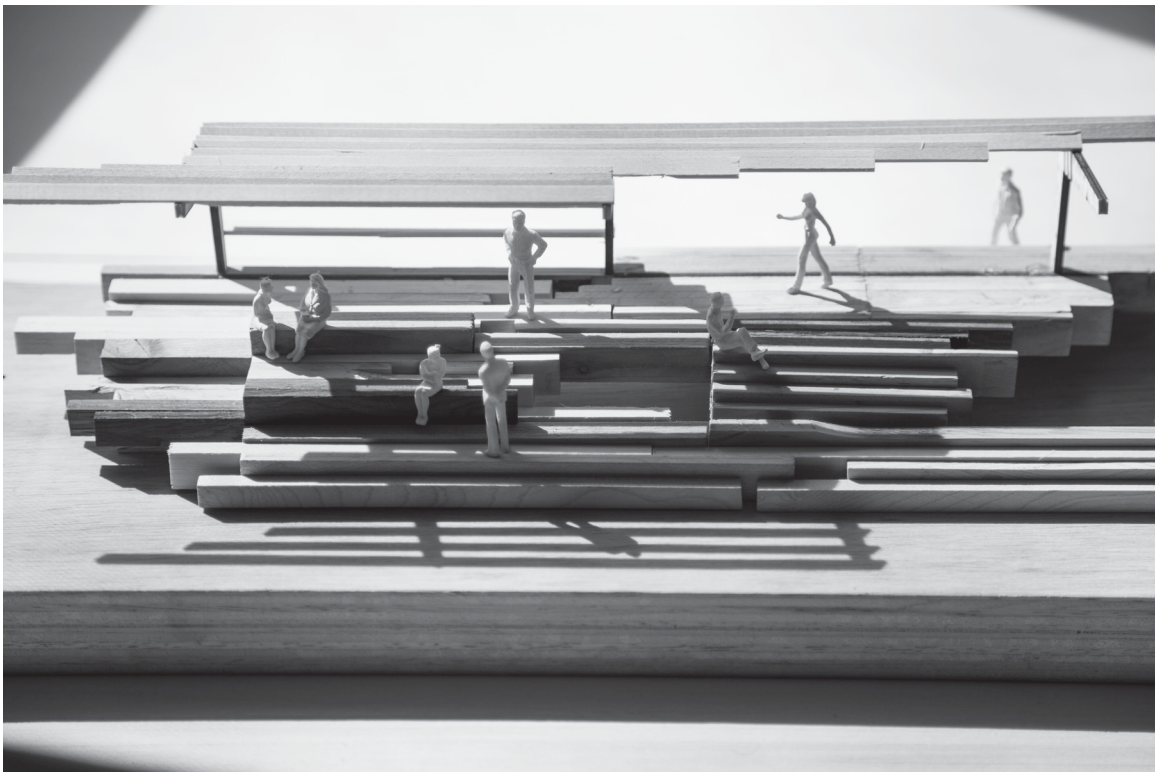
In contrast with Phase 2, Phase 3 develops in the lower density northern half of the Lower Ninth Ward amidst the highest proportion of lot vacancy in the neighborhood. Harnessing the community wide awareness and embracement of local food, Phase 3 leverages these available lots into a large scale urban agricultural initiative. As the community continues to benefit from the collaborative spirit set in motion by the food hub co-operative, larger scale food production becomes more feasible and sustainable. Phase 3 takes the neighborhood one step further toward self-reliance, empowerment, financial stability, nutritional balance, and a renewed sense of identification and pride. The neighborhood, then, takes a critical step forward toward healing itself amidst immeasurable challenge and reintegrating itself into New Orleans.

Streetcar Node

A proposed extension of the New Orleans famous streetcar line serves to connect the three phases of the food network, to draw together the upper and lower halves of the neighborhood, and to reach out and reunite the physically separated Lower Ninth Ward with the rest of New Orleans, physically and metaphorically. The streetcar node becomes the first point of contact for those engaging the Food Network from outside the neighborhood, while simultaneously providing an outlet for the community to reach out as well.



Model of Phase 3 showing the portal frame language in the structure of the streetcar node.



Composite images showing Phase 2 community node model in situ along levee wall (base images from Google Maps 2013)



Composite image showing the Phase 3 streetcar node model in situ along Caffin Avenue in the Lower Ninth Ward (base image from Google Maps 2013)



Composite image showing the Phase 3 streetcar node model in situ along St. Charles Ave, New Orleans (base image from Google Maps 2013)

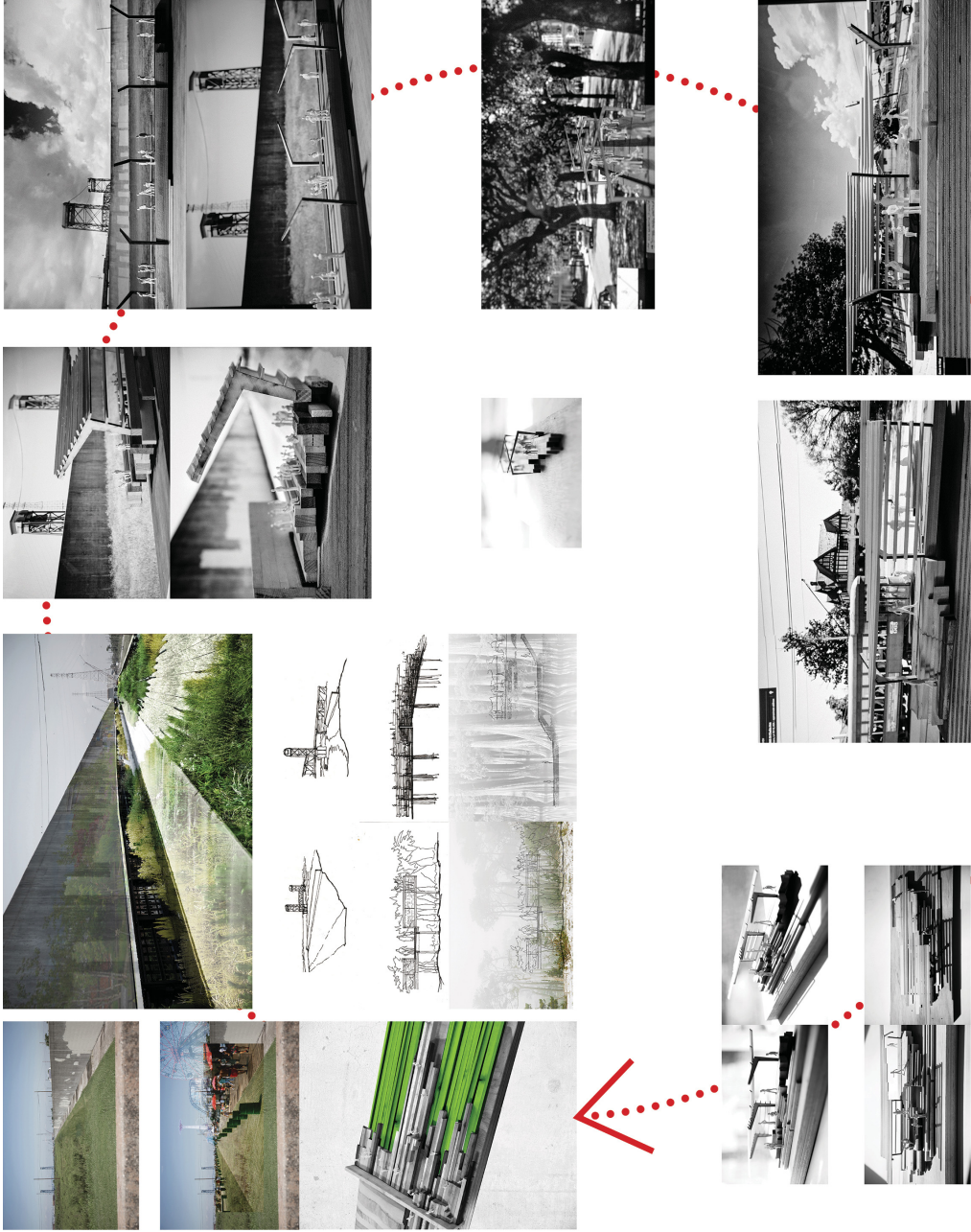


Illustration showing the architectural annotation of a building site, a neighborhood, and a city.

CHAPTER 3: CONCLUSION

This thesis asks: How can architecture spur, nurture, and sustain a community's investment in a food hub co-operative in the Lower Ninth Ward? While the second half of the question - *in a food hub co-operative* - was intended to focus the thesis at a building scale, it is now apparent that the first half of the question - *how can architecture spur, nurture, and sustain a community's investment in* - unintentionally led to an urban reading of a neighborhood and its infinite social dynamics and complexities. In retrospect, the wording of the question could simply be altered to refocus the thesis at the building scale but would no longer be representative of the project's scope. As well, the original wording reveals an essential about the author and the subsequent project that emerged.

At a building scale architecture may reasonably produce spaces for dwelling, living, or working that accurately satisfies use and demand. However, it becomes exceedingly difficult to assess the impact these initiatives have at scales of the neighborhood, and the more abstractly defined scale of community. Measurable and definable variables to be considered at the urban scale include traffic and transportation patterns, population density, income and racial makeup, vernacular and precedent, and need and use of civic space. Nevertheless, non-numerical based assessments of the social landscape are fraught with challenge as human subjects seem susceptible to subjective analysis. Conversely, objective data such as that provided by the U.S. Census drives innumerable measures of the social landscape but seems unable to quantify the abstract elements that more readily define us as individuals or as a community.

This highlights the primary challenge in defining various design parameters for this project. While one half of the project could be fuelled by hard numbers and data, there was also a subjective element present that proved difficult to harness and, in turn, design for the community "scale." If the food hub co-operative is an architectural building project intended to foster and enrich community, one needs ask who is the community, how is that community defined and why is the community defined in that way? Beyond the scope of the thesis, developing a sound methodology for defining existing and potential "community" as it relates to the Lower Ninth Ward becomes an opportunity for further investigation and research.

Speculative phasing is a second challenge of this thesis. The phasing starts with the food hub co-operative and a concept of local and nutritious food, and grows to a local food landscape at the neighborhood scale. While ambition increased with each phase, every subsequent phase was founded upon the notion that the previous phase(s) had first seen widespread adoption. It is plausible to reason that the community could reject the project upon its inception, thus rendering subsequent phases irrelevant. While speculative phasing helps develop a scope for the project, it must be understood that the detailing of the specific phases is beyond the capacity of this thesis and would require more developed methods of research and community outreach to move beyond schematic design.

Finally, practical design and programming of the food hub co-operative could be evaluated in more detail. A specific co-operative ownership structure alone could easily result in modifications to the required size or need of the proposed growing infrastructure. The building size could be reduced drastically if community outreach revealed a desire for certain program elements to be separated or located in particular regions in the community that were not revealed in the readings of the neighborhood. Community outreach would reveal substantive verification that empirical evidence did not, and would therefore benefit the project immeasurably. Acknowledging that additional qualitative and quantitative approaches are required for further development of this thesis seems appropriate and, ironically, deems this line of inquiry a success.

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