Executive Summary

The Renaissance Project has requested of the University of Minnesota three allied design projects that contribute to its mission of improving the quality of life for the Lower Ninth Ward in New Orleans. These projects serve as the production, cultivation, and distribution branches of the Renaissance Project's involvement with community supported agriculture by increasing access to locally grown and marketed produce for community members. The vision of these projects is to bolster the reconstruction efforts of the neighborhood through increased community involvement, education, and sourcing of fresh local food.

Following the catastrophic flooding of the city resulting from Hurricane Katrina in 2005, the Lower Ninth Ward was quickly recognized as one of the most heavily devastated areas. With home occupancy rates still at a fraction of pre-hurricane levels, the community faces the daunting task of rebuilding as a fully functional part of the city. The marked absence of supermarkets in the Lower Ninth for over three decades and the slow dissolution of small, family run grocery stores, has created a pressing need for a fresh food source. Currently, a handful of restaurants and gas stations act as inadequate stand-ins. The current redevelopment brings forth an opportunity not only to improve the quality of life, but also to build access to quality foods, which were previously scarce in the neighborhood. The proposed solution to this problem


St. Roch
St. Roch Av
Florida
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Florida
Area
St. Claude
Gallier St
N Villete St
Marais St
Marigny
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Mandeville St
Bywater
Desire St
N Rampart St
St. Claude Av
Law St
N Dorgenois St
N Rocheblave St
Andry St
Choctaw St
Lamanche St
N Prieur St
N Roman St
Lower Ninth Ward
Caffin St
Marais St
Holy Cross
Flood St
Algiers Point
Mississippi
N
Streets
Neighborgoods
Garden Structures
Greenhouse
Market Furniture

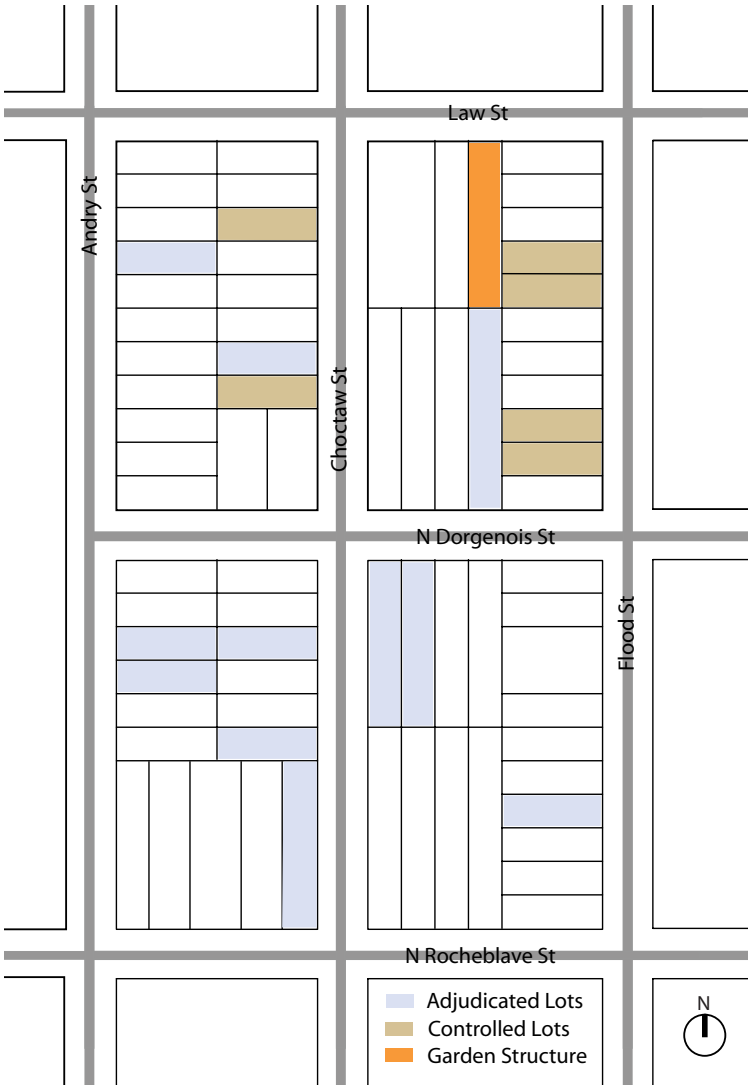
is the implementation of three projects in collaboration with the Renaissance Project to put local food in the hands of residents: The Dunson Memorial Greenhouse for growing seedlings for local gardens and farmers markets, the Dunson Memorial Garden Structure (WaterShed) to serve community gardens, and the Downtown Neighborhood Market Consortium Furniture to allow growers to sell their produce at local farmers markets. In addition to providing the supply of produce, these projects will begin to mend the fractured neighborhood identity by laying a foundation for community interaction.

As a 501(c) (3) organization, the Renaissance Project has been committed to improving the quality of life in the Lower Ninth Ward of New Orleans since its founding in 2001. Post-Katrina, the boundaries of its target area have expanded to include the Upper Ninth Ward and portions of the Eighth Ward. The Renaissance Project's focus is on community development, which promotes economic growth, food access, public education, arts, and cultural programming. The response by the University of Minnesota has been the development of these three projects in a socially, economically, and environmentally conscious manner aligned with the aims of the Renaissance Project to nurture the needs of the community.

Finance and Land Acquisition

The objective of the Food for Growth Urban Garden and Market Network projects center on low-cost and high-impact development. The financial cost required to construct and operate the following projects will be minimal, by using as many reclaimed materials and sustainable practices as possible.

Land acquisition for the project is currently in progress. The Renaissance Project is working to obtain control or permission for use of the four block area in the Lower Ninth Ward bounded by Law Street, North Rocheblave Street, Andry Street, and Flood Street. Already, the Project owns the lot on 5440 Law Street, the future home of the Dunson Memorial Garden, and has tax titles to six



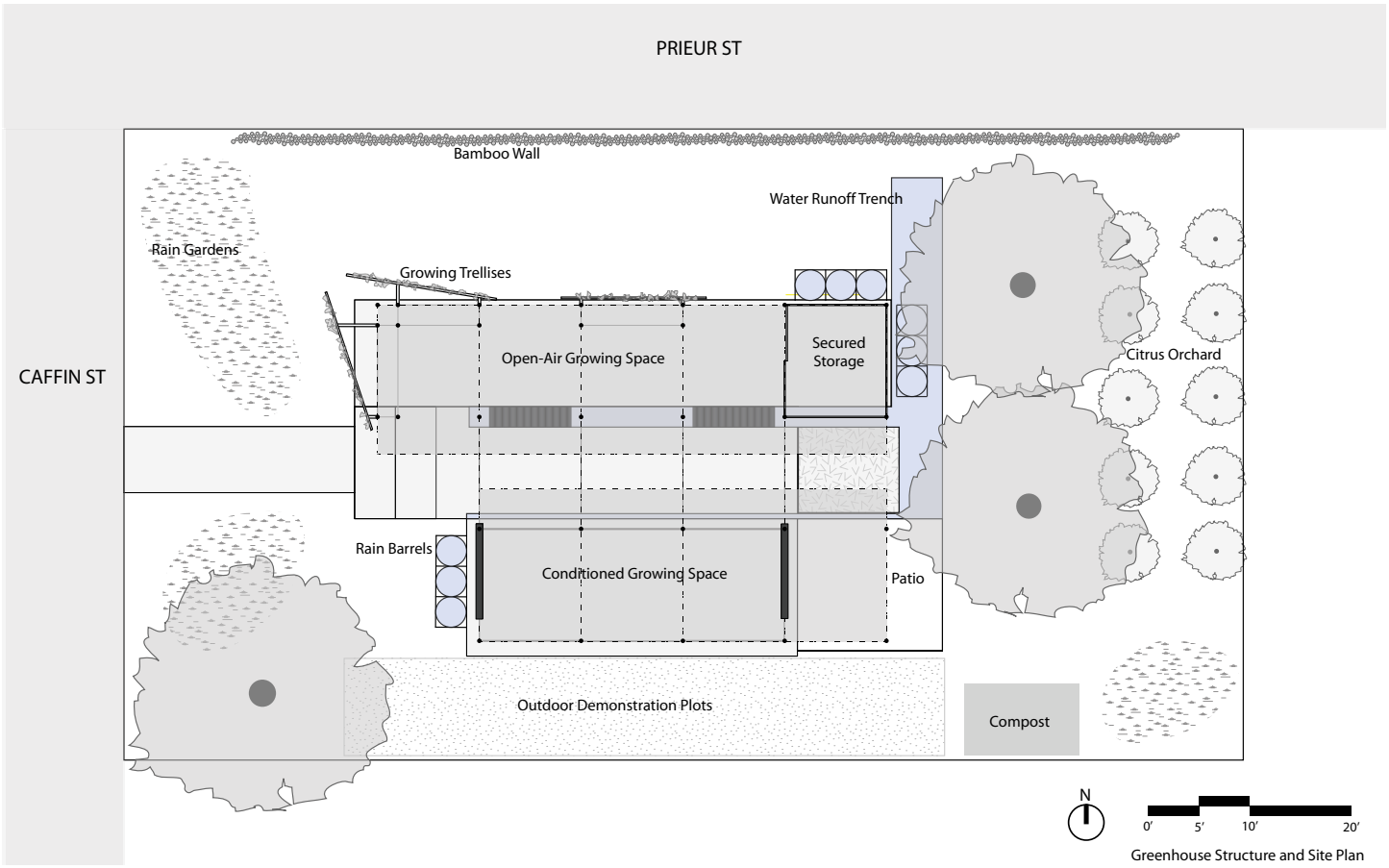
Dunson Memorial Greenhouse

Community Impact

The Dunson Memorial Greenhouse will serve as an economically, socially, and environmentally responsible food network platform. Functionally, the greenhouse will be a vital component of a system, which will ultimately provide food for local markets. Seedlings produced in the greenhouse will be available for purchase by both vendors and community members. The greenhouse infrastructure will help initiate a localized food network that is accessible to residents with limited transportation. In an impoverished area such as the Lower Ninth Ward, this project will provide a viable solution to the needs of the community.

Functional Utility

The greenhouse will act as a catalyst for reestablishing not only gardens, but also the social network of the neighborhood. Through the growth of seedlings, the greenhouse will serve as an educational tool to teach residents how to care for their own gardens. Sustainable construction methods and gardening practices in the greenhouse will exemplify environmental consciousness and further educate the community on how to apply these systems. Residents and volunteers involved in the operation and upkeep of the facility will help to demonstrate the importance of direct involvement with the reconstruction and growth of their community.



Greenhouse Structure and Site Plan

Design

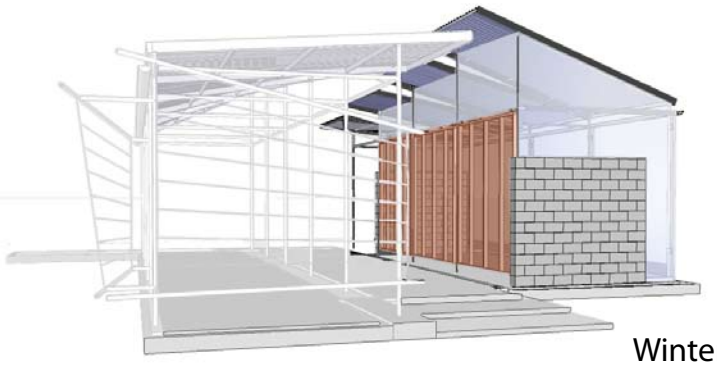
An empty slab on the vacant lot at Caffin Street and Prieur Street fueled the evolution of the greenhouse design. Divided into three bays, the greenhouse structure is set atop the foundation which was home to the aunt of Renaissance Project Director Greta Gladney prior to Hurricane Katrina. The tri-part system, generated from the original modular concept, consists of an unconditioned growing area, a transitional corridor, and a climatically adaptive conditioned growing space. A simple steel pipe frame and dimensional lumber roof system forms the structures of the two separate growing spaces and the central corridor positioned in between. The pipe frame, assembled on 10' by 11' bays, allows the opposing roof forms of each growing space to oscillate. When viewed from Caffin Street, the shed-roofs over the growing spaces, although never actually connecting, are reminiscent of the gabled roofs of the shotgun homes that dominated the area before Hurricane Katrina.

The southern portion of the structure is a conditioned growing space enclosed with a plastic poly film. The northern portion of the structure is an open-air, unconditioned growing area for plants requiring indirect sunlight. By separating the structure in such a way, the greenhouse becomes fully adaptable to the New Orleans climate by providing a variety of growing conditions to accommodate diverse seedlings. The

operable northern walls of the conditioned growing space allow for seasonal adaptation. With the use of a pulley system, the wall panels can be conveniently opened, connecting the bays of the two growing spaces and transforming the central corridor into a shaded walkway. In months when seedling growth is difficult, the operable structure converts the greenhouse into a community pavilion for public picnics and gatherings.

The proposed design of the exterior space on the site supplements the operation of the greenhouse. Outdoor planting beds offer space for additional plant production. This space is also ideal for facilitating garden practice demonstrations and classes. The small citrus orchard adds color and a direct source of food production to the greenhouse site. Additionally, a bamboo wall along Prieur Street becomes a protective fence alternative for the unconditioned growing space. Paired with the site landscaping, the greenhouse provides a versatile and efficient growing environment that maximizes seedling production, sustainable education, and community involvement.

Operable Wall System

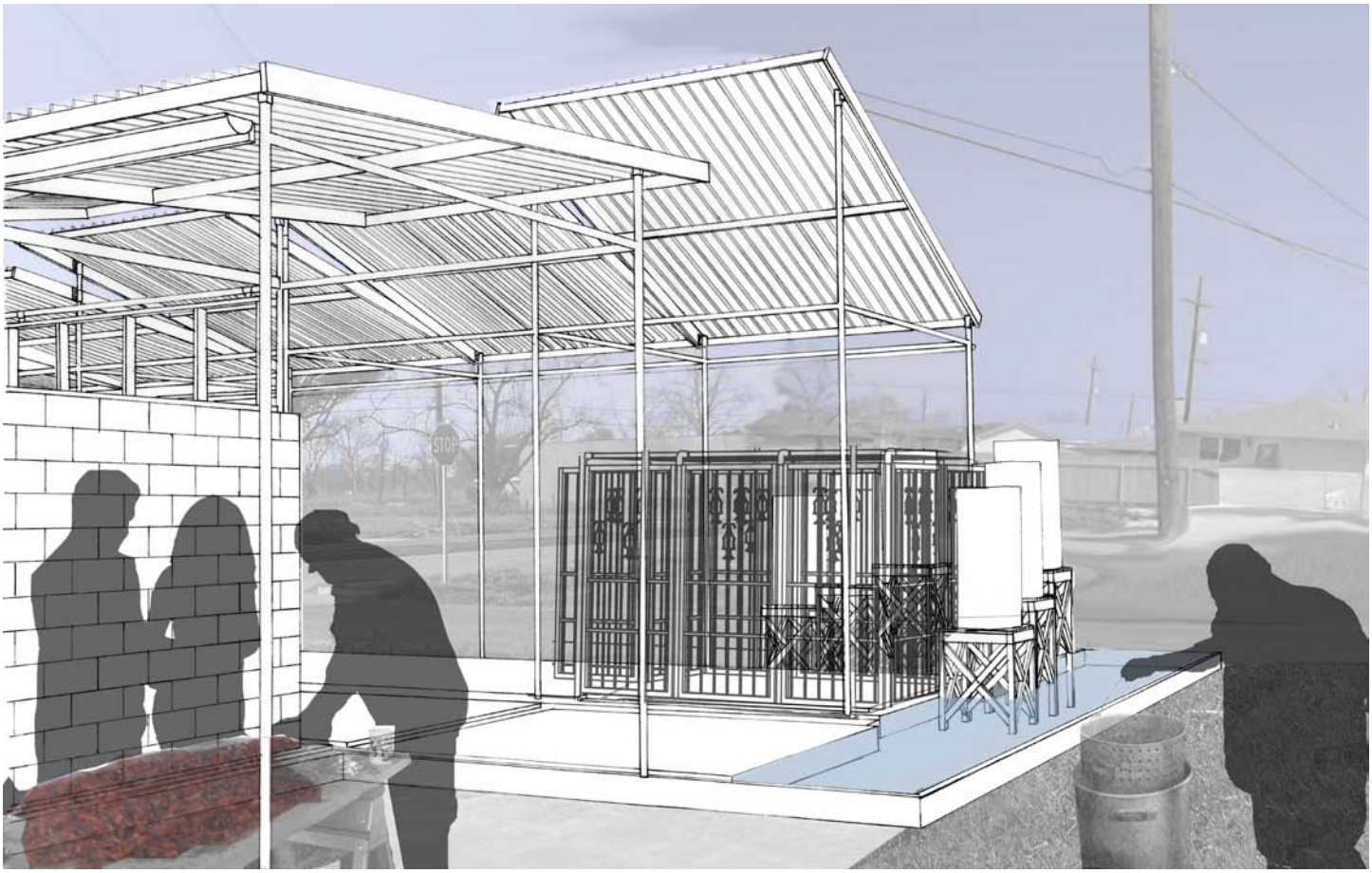


Winter

Spring/Fall

Summer

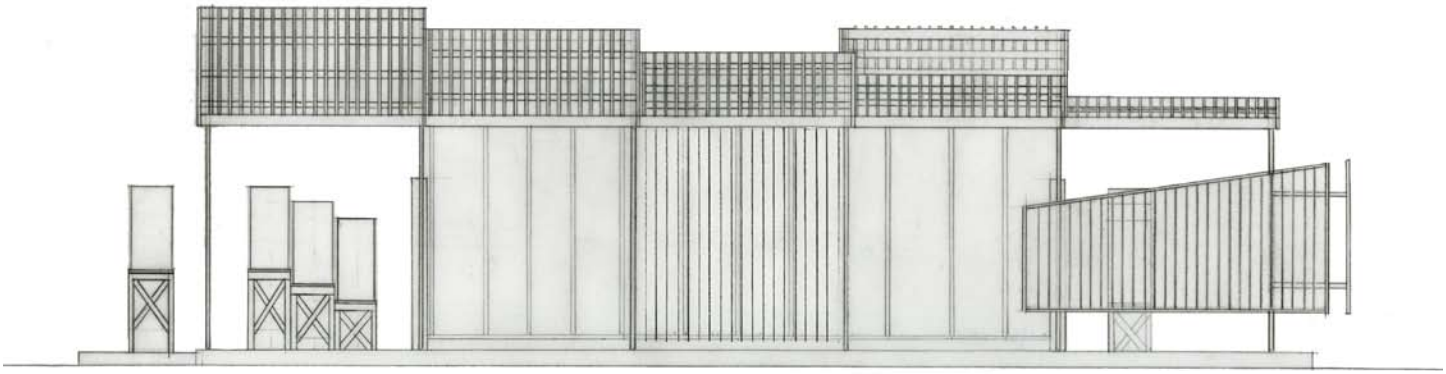
Above: Entrance perspective displaying unconditioned growing beds and oscilating roof structure.
Below: View of the operable wall system from the unconditoined growing space.



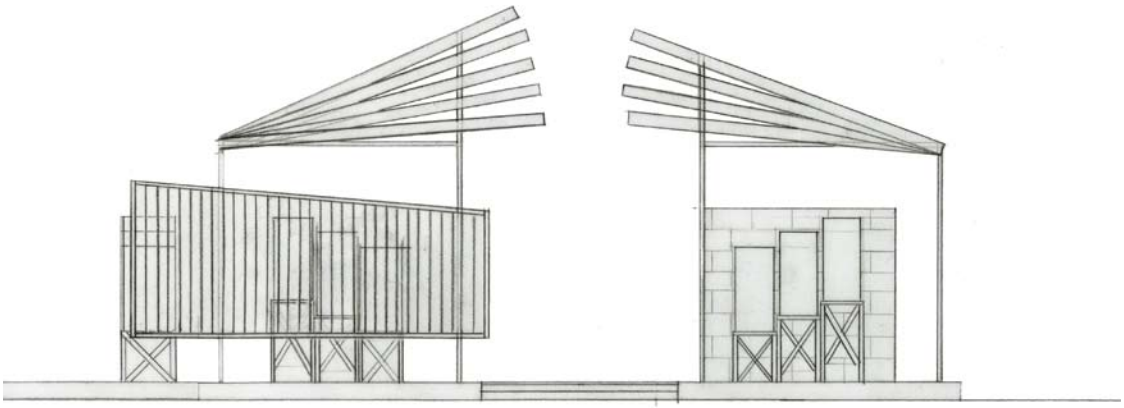
Above: The back of the structure becomes a versatile community environment for gatherings and celebrations.

Sustainability

Addressing environmental responsibility through elements of sustainable design such as orientation, ventilation, and water retention will maximize self-sufficiency of the greenhouse. The structure's east-west orientation takes advantage of southern exposure for the growing spaces, allowing beds to receive the most sun throughout the day. In the hottest summer months, the plants will be protected from overheating by the shade screens attached to the roof system. The orientation and form of the greenhouse will also provide passive ventilation and cooling systems that allow southerly winds to pass through the operable walls of the conditioned space and out to the rest of the structure. The oscillating roof system will direct rainwater into three sets of rain barrels around the perimeter. The stored water will be used for watering the seedlings, reducing the greenhouse's dependency on city water supplies. Overflow from the rain barrels and runoff from the seedling beds is managed through the trenched water feature that cuts across the greenhouse slab and extends to the eastern perimeter. Water not captured by the roof will be collected throughout the site by a series of rain gardens. The rain gardens, composed of native plant species, offer a unique



North Elevation



West Elevation

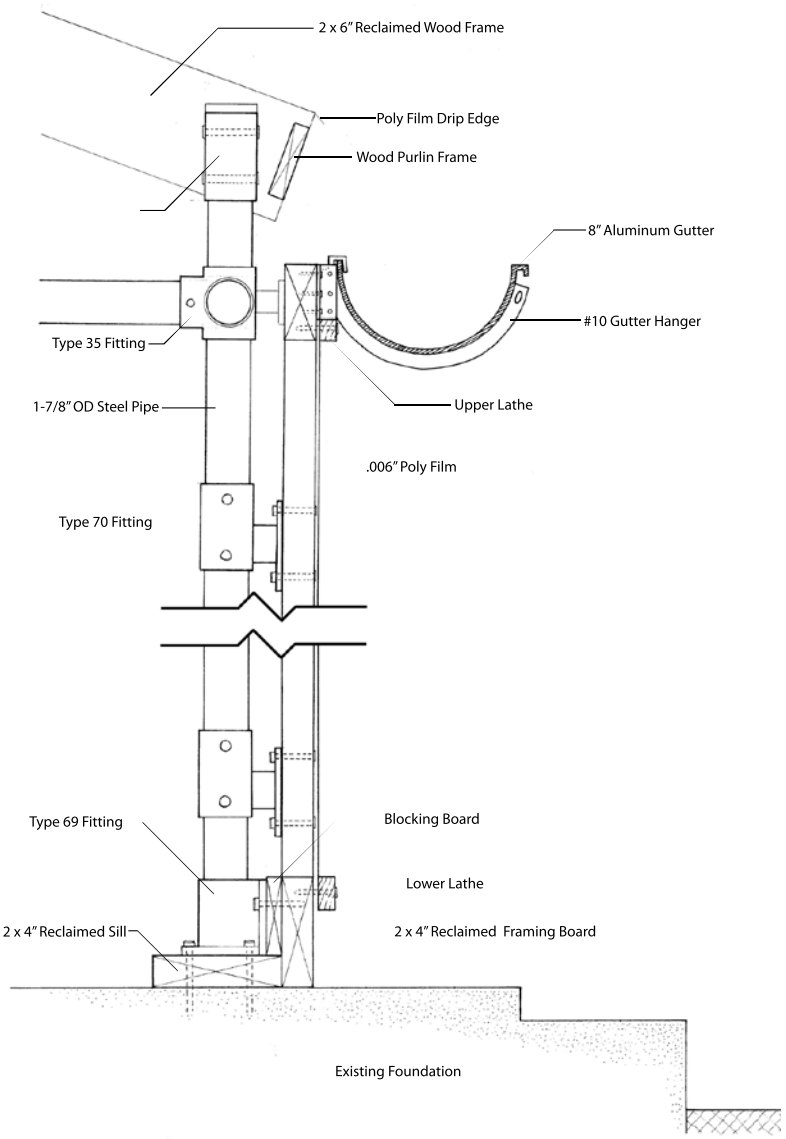
landscape that percolates the water, directly reducing runoff that could otherwise contaminate or flood the site. An on site compost bin effectively manages organic waste generated from the greenhouse and the surrounding community. In addition to being environmentally sustainable, the integrated passive systems for conditioning, shading, and water storage will reduce operational expenses.

Budget

Sourcing the material and funding for both the project construction and operation will rely on collaboration between local businesses, neighborhood organizations, and community volunteers. Being the first of its kind in the Lower Ninth, the design and construction of the greenhouse will be a prospective recipient for financial, labor, and in-kind donations. Aside from a limited amount of skilled labor, physical construction will depend on volunteers working with the Renaissance Project. Many of the building components can be reclaimed or donated (these materials are highlighted in gold on the budget table), greatly reducing the building cost of the greenhouse. The roofing system and the conditioned space are

wrapped in a poly film which, when subjected to hurricane force winds, will simply tear off, leaving the frame intact. At that point, another layer of poly film is simply stapled on and secured with a small wood lathe, (see section detail). This measure provides an inexpensive solution to hurricane damage.

Post-installation, the greenhouse will require funding for successful operation; this includes buying seedling materials, occasionally replacing the poly film, and powering a small water pump for the water retention trenches. The operating cost is thus estimated to be roughly $1,200 annually. Financial revenue generated from the sale of seedlings will contribute to the utility and maintenance costs required to successfully run the greenhouse while volunteer efforts provide the necessary care for plant production. Because volunteer efforts and donations cannot be conclusively projected, the budget listed shows the cost of new materials with the highlighted portions being those that have the highest prospect of being donated or reclaimed.



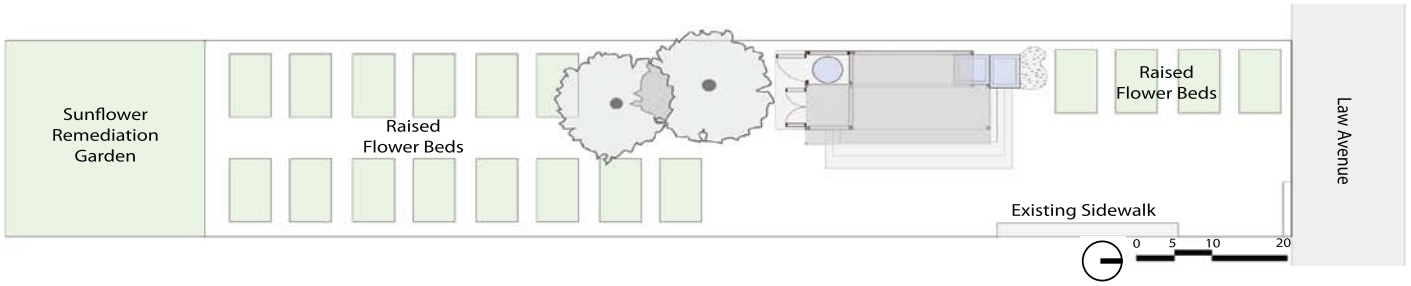
Section Detail Assembly

Item	Cost
Rain Barrel System	$1,580.70
Poly Film	$151.34
Wood Frames and Purlins	$1,495.00
Pipe System	$874.13
Fittings	$1,638.21
Bolts	$200.00
Lathes	$150.00
Gutter System	$366.03
Burglar Bars	$400.00
Shade Cloth	$96.00
Water Feature	$326.50
Reclaimed Bricks	$500.00
Grates	$100.00
CMU plus Labor	$1,492.80
Operable Door System	$135.42
Total Greenhouse Cost	$9,506.13
Total Cost with Donations	$5,494.20

The Dunson Memorial Garden Structure (WaterShed)

Functional Utility

The WaterShed is a structure designed to service The Dunson Memorial Garden, located in the Lower Ninth Ward recovery zone. The lot was once part of a dense residential neighborhood, but it is now vacant and overgrown. Upon evolving to an urban garden space, the garden plots available to neighborhood residents will promote local food growth and community interaction. The programmatic considerations made for the WaterShed reflect the community need and strengthen the mission of the Renaissance Project. The WaterShed design nurtures the food network within urban community garden spaces while simultaneously providing a sustainable solution to water management and on-site gardening tool storage. Community interaction promoted by the WaterShed will reestablish a sense of ownership, pride, and local identity in the Lower Ninth Ward neighborhood.



Dunson Memorial Garden Site Plan

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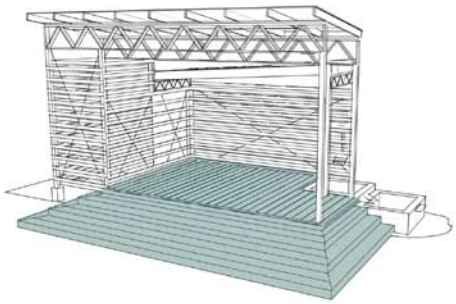

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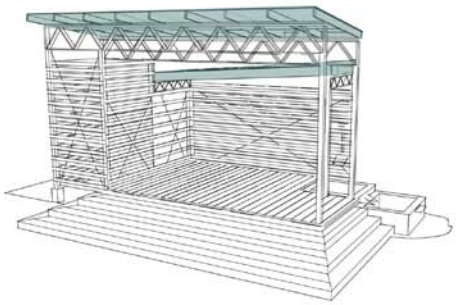

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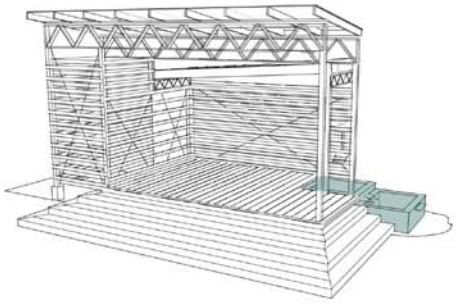

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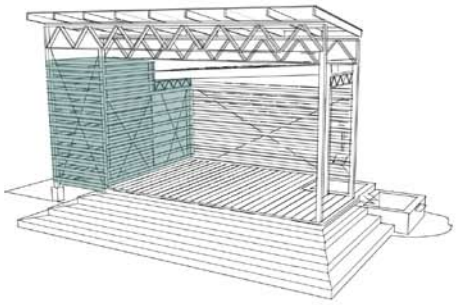
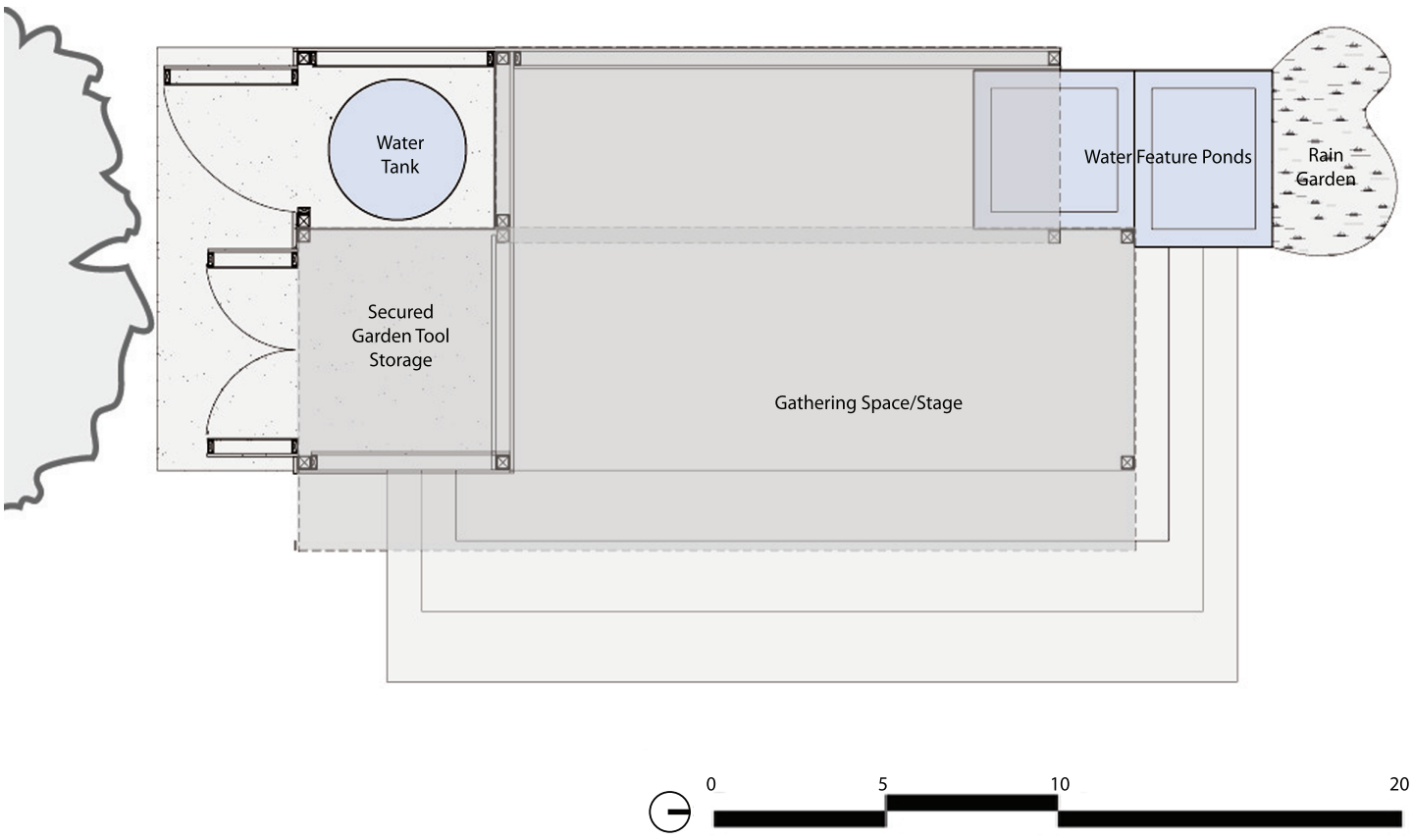


The WaterShed is comprised of four parts:

1. Community Gathering Space/ Stage
2. Harvesting Rainwater Canopy
3. Water Feature
4. Tool, Garden Supply, and Tank Storage

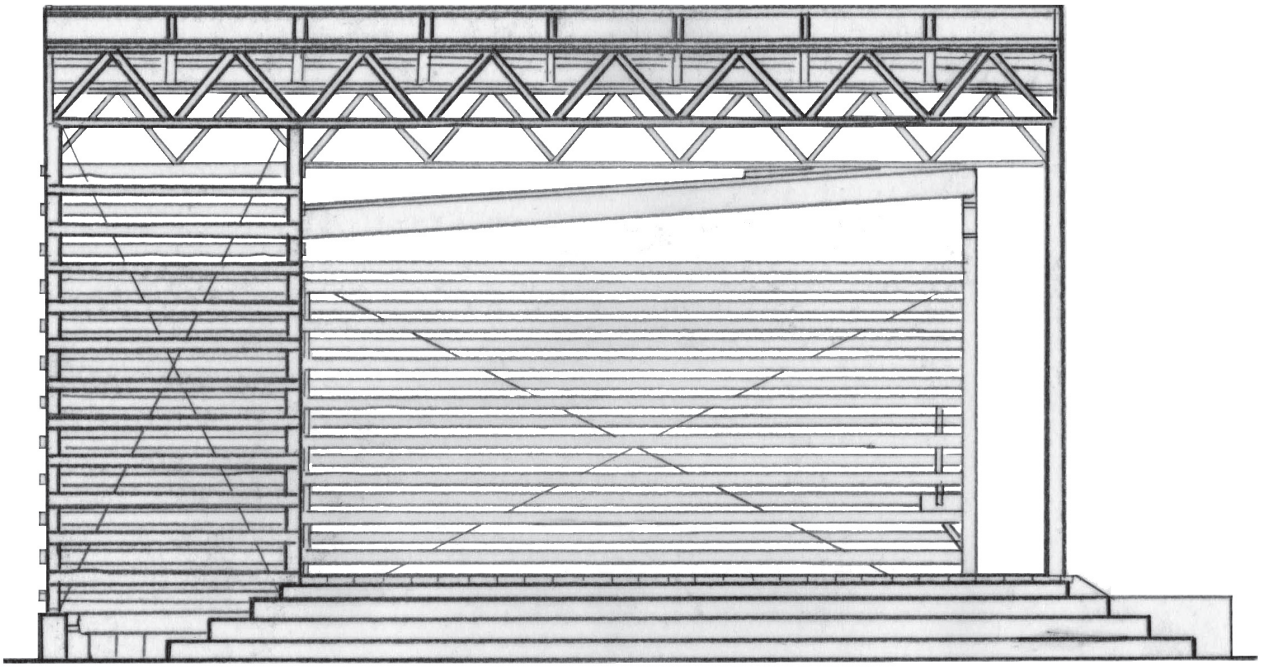
The community gathering space incorporates a stage that is optimal for educational demonstrations and musical performances, in turn complimenting the arts and culture of the Lower Ninth Ward. The rainwater harvesting canopy also serves as a shade structure offering relief from the intense Louisiana sun. Integrated into the WaterShed design is a tiered water feature visually highlighting the sustainable practice of rainwater harvesting. The collection ponds present an opportunity for residents to interact with the rainwater harvesting system. Lastly, an integrated enclosure serves to provide a safe and secure space for tools, garden supplies, and tank storage for servicing the garden plots.



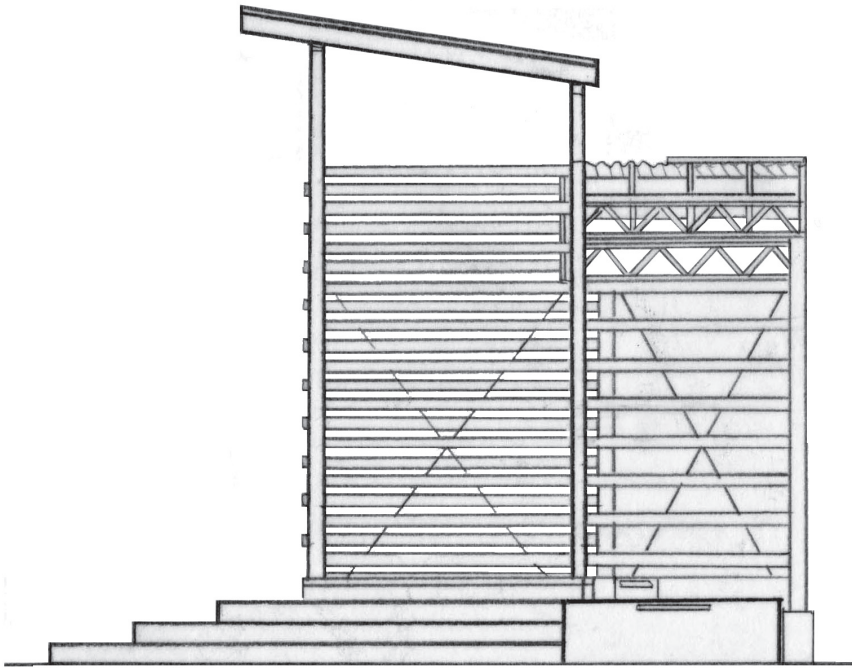
Dunson Memorial Garden Watershed Plan

Sustainability

The wall construction of the WaterShed is a laterally screened pattern of dimensional lumber. This technique allows both light and air to pass through the structure, yet still creates a safe space for storage. In warmer months, when the WaterShed will be used as a shade structure, it is important to allow breezes to pass through to cool the occupants underneath. The collection canopy of the WaterShed serves the purpose of collecting rainwater while protecting the space beneath. This addresses the need for a supplementary water supply system that will water the garden plots when natural rain cycles are insufficient. The primary roof plane is a taut fabric that can be rolled back to adapt to storm conditions or allow for additional lighting. The secondary roof plane is a permanent corrugated metal canopy that faces south on the Dunson site. Both roof planes direct water to a collection basin within the storage shed container. The water then passes through a filtering system and into a 550-gallon tank. When the tank reaches its maximum storage capacity, the water overflows through the wall of the WaterShed to a tiered pond system. This visual element helps to highlight the WaterShed's sustainable technologies.



East Elevation



North Elevation

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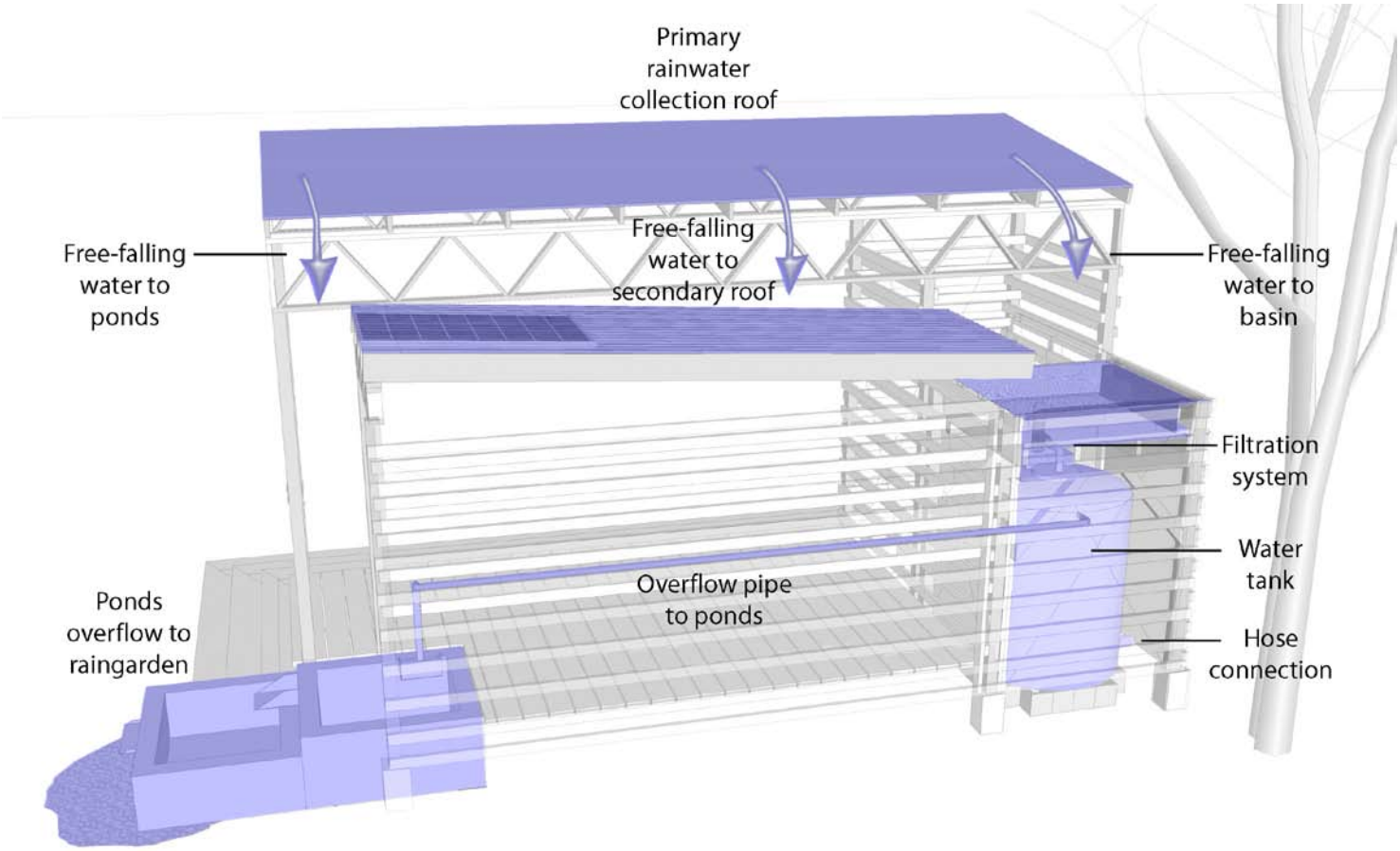
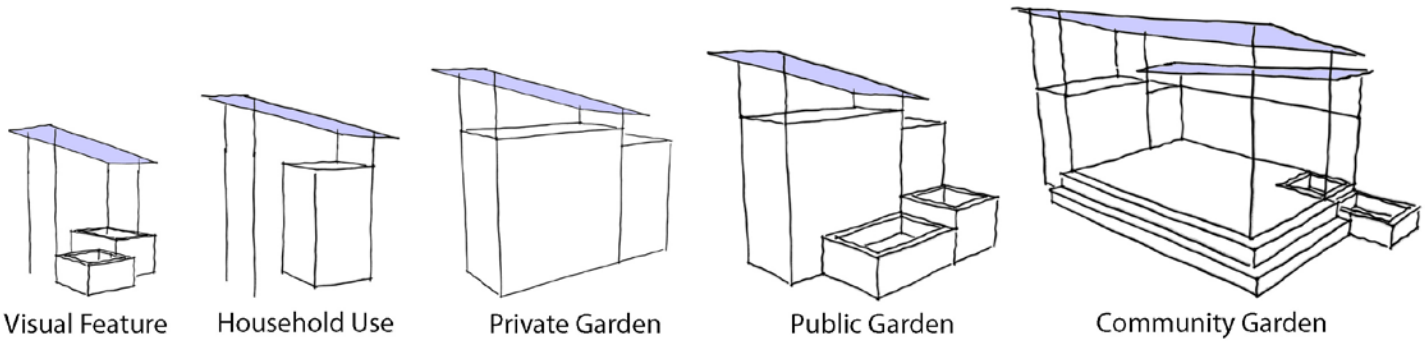


Water collection system

Storm water overflow drains from the ponds into a rain garden that facilitates slow percolation into the ground, reducing runoff. Photovoltaic panels atop the secondary roof plane capture solar energy. Collected energy will be used to continually pump water through the overflow collection ponds and provide lighting for the space. Furthermore, implementation of a rainwater harvesting system eliminates the garden's need for use of the city's water supply, allowing for the garden to flourish without a dependency on the city grid.

The watershed is designed with simple construction methods. Every element of the core structure is composed of standard dimensional lumber that is readily available in the Orleans parish. Our field research in New Orleans led us to The Green Project, which is a local supplier of recycled materials. Ideally, as the watershed project is moved into construction, materials will be obtained from this source. Hurricane Katrina caused immense destruction to the physical infrastructure of the Gulf Coast. Recycling, reusing and re-purposing remnant materials in new construction are ideal solutions to salvage generated waste.



Versatile structure size allows varying scales of operation

Expansion and Growth

Rainwater harvesting is a sustainable technology that can be implemented in any garden setting as the urban community garden movement expands. The Renaissance Project plans to develop additional community gardens throughout the Orleans parish. The watershed is designed in such a manner that it can be scaled and changed to fit the programmatic needs of any garden (see above diagram). The simple means of construction and use of standard dimensional lumber strengthens this replication.

Budget

The WaterShed structure is designed in such a manner that it can be easily constructed by volunteer labor accompanied by minimal professional guidance. Consequently, construction costs are limited to material acquisition. This method of low-cost, high-impact design is an appropriate means of rebuilding the community of the Lower Ninth Ward, for great means can be accomplished with minimal funding. The use of recycled or donated materials allows for even more cost-effective construction. While these sources can at times be unpredictable or unavailable, a construction budget has been generated with the use of only new materials with the highlighted portions being those that have the highest prospect of being donated or reclaimed. The WaterShed constructed out of new materials will cost $5,381. This budget dramatically decreases when recycled or donated materials are integrated into construction; in this case, the cost will be $2,950.

Item	Cost
Rain Collection System	$630.00
Wood Frame Structure	$2,951.00
Corrogated Roofing	$100.00
Soft Roof	$200.00
Footings and Foundation	$1,200.00
Ponds and Raingarden	$100.00
Total WaterShed Cost	$5,181.00
Total Cost with Donations	$2,950.00

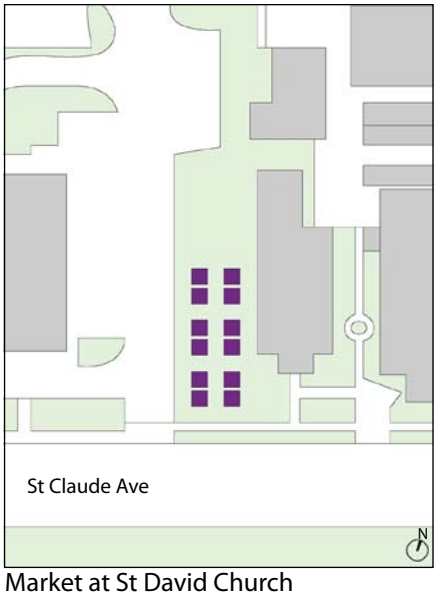
Downtown Neighborhood Market Consortium Furniture

Community Impact

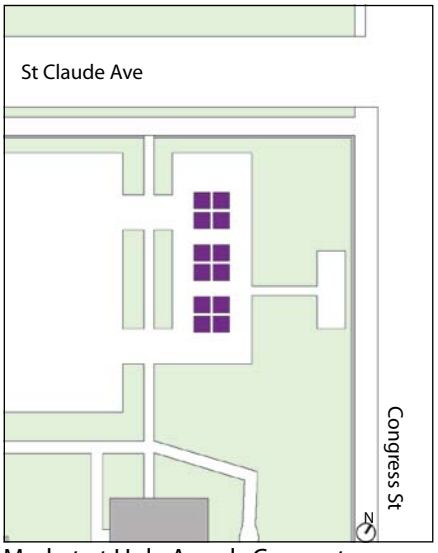
Market place furniture is a small but principle component in the revitalization of the Lower Ninth Ward community. The lack of amenities in this portion of the city has given citizens little reason to return and little support to those who have. Urban agriculture is a way to both restore devastated neighborhoods and feed a city; the return of the Renaissance Project farmers markets will once again offer amenities to the community through access to fresh foods. The iconic market place booths and tables will aid the Renaissance Project in its efforts to both identify with the community and bring quality foods into the Lower Ninth Ward. The booths, peaking at about $300 in cost, will uphold standards for sustainability, reuse, and local identity. The overall design aims to evoke a feeling of importance and permanence in the realm of an impermanent market by using the physical and aesthetic relationships of individual booths to create a cohesive market on a large community scale.

Design Strategy and Proposal

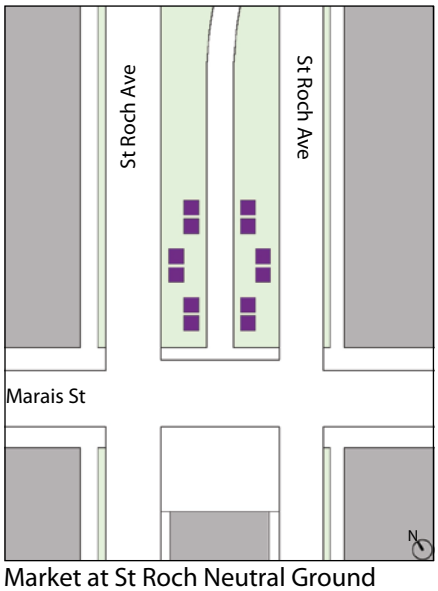
The design of the market place furniture was approached with a list of key goals. The design of the booths address the need to be light weight, affordable, and collapsible for storage while simultaneously being easy to assemble on and off site. Minimal labor and minimal waste is incorporated by using parts that are readily available and sustainable. Each component of the tent structure, which weighs no more than 30lbs, is based on the design concept that an individual of average stature must be able to transport the parts on their own. The heaviest piece, the table top with hinged legs, has a simple dolly system for mobile convenience. In order to achieve a lightweight structure, materials such as aluminum poles,



Market at St David Church

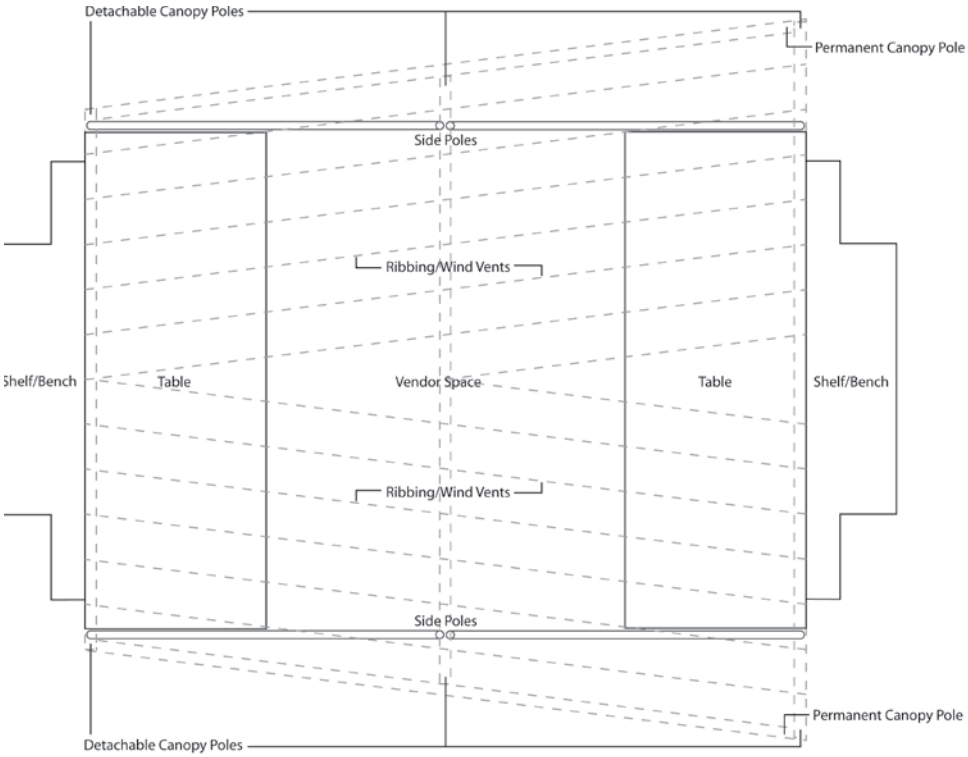


Market at Holy Angels Convent

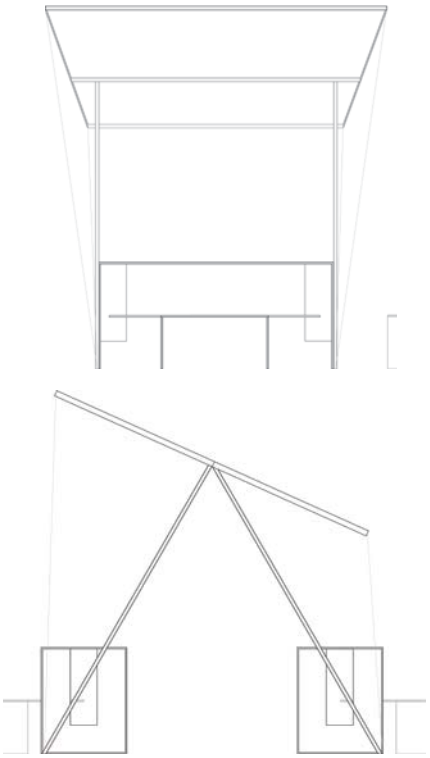


Market at St Roch Neutral Ground

Grass Structures Booths



Market Furniture Plan



Market Furniture Elevations

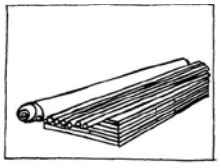
both which are light in weight and recyclable, are used in the canopy frame and supports. A thin ½" sheet of plywood is used to create a sturdy table, that is light in weight when broken down into its parts, but when pieced together on site is heavy enough (roughly 50 lbs each) to hold down the canopy in strong winds.

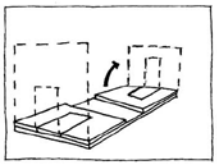
Many of the materials used in the table can be purchased new, acquired by donation, or purchased at a reuse center to decrease final costs. The design proposed is budgeted for new materials at low-cost, with the exception of the canopy fabric. The canopy is composed of used sail fabric that will most likely be acquired through donations; making use of fabric that would otherwise be disposed of while drawing on the symbolic nature of the sail in the coastal community. Through the application of water sealant, UV protection, and covered wind vents, the canopy is designed to withstand the worst of sun exposure and unexpected New Orleans weather. With simple pin, hinge, aluminum fitting, and slot connections, the booth as a whole collapses relatively flat to a dimension of 2' x 8' x 6", allowing numerous units to be easily stacked side by side in a truck bed. By using the entirety of a 4' x 8' sheet of plywood, and using full lengths of 8' aluminum pipes (with the exception of two pipes cut slightly shorter), waste is minimal.

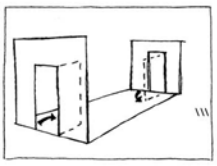
Budget

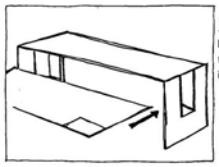
The major benefit of the Renaissance Project's markets is the accessibility of healthy, fresh food for residents. However, the benefits extend beyond this. The farmers markets will provide a platform to encourage economic growth and recirculation within the community. Because the market are reflective of both the unique local culture and its residents, it will draw in revenue from visitors and tourists who seek to participate in New Orleans based activity. With the exception of repair parts, all initial construction costs for the market furniture are final. As the market furniture is a mobile unit, there are no additional land acquisition expenditures. This project has a low cost, high impact pay-off.

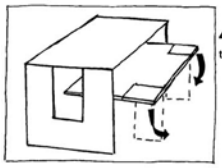
Item	Cost
Aluminum Pipe	$1,202.40
Fittings	$724.80
Hinges	$430.40
Plywood	$360.00
Bolts	$324.40
Cables	$100.00
Sail	Donated
Total 10 Unit Set Cost	$3,142.00
Total Cost with Donations	$2,410.60

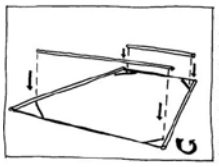


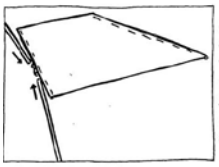


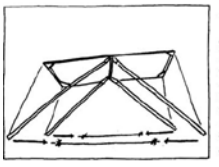


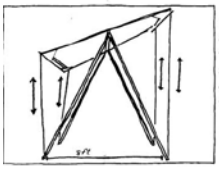


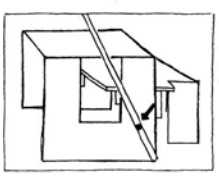












Assembly Directions

Market at St. David Church

Market at Holy Angels Convent

Market at St. Roch Neutral Ground