

# RURBAN AGRICULTURE: A NEW FORMWORK FOR DETROIT



ARIEL G. LONGTIN  
MASTERS OF ARCHITECTURE  
UNIVERSITY OF DETROIT MERCY  
SCHOOL OF ARCHITECTURE  
AR510 | AR520  
PROFESSOR JOHN MUELLER  
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**ABSTRACT**





The current state of disconnect within our society requires us to question our modes of interaction. As a byproduct of the disconnection amongst the communities within Detroit, the city has undergone many physical and social ills resulting in a derelict inner-city core which no longer contains infrastructure to support its existing population. Without the presence of an infrastructure which enables the residents to have a strong connection to their city, the communities within it will fall apart. Detroit needs unprecedented ground to base its existence upon which will compel its communities to interact with each other, helping to strengthen and revitalize the city.



## THESIS PAPER

Through exploring the current state of disconnect within our society, we begin to question how our modes of interaction have affected this condition. In looking at Detroit as an extreme example of what happens when the ill-effects of society influence an entire city, it is evident that time has come to implement new methods of interaction among its communities. By looking in depth at what plagues Detroit and at theories of landscape urbanism we can begin to find solutions which will encourage interaction among a disengaged society and prompt them to reform the city into a place with healthy and vibrant communities.

Detroit, like other post-industrial cities, is plagued by social and environmental issues that affect its communities in adverse ways. With a closer look at Detroit's history, we can see how changes in infrastructure have affected the city. When Detroit was first established by French settlers in 1701, the majority of its infrastructural support depended on agriculture. In fact, the land surrounding the Detroit River stretching from Ecorse to Lake St. Clair was almost entirely comprised of 'ribbon' farms. Farmers were given a strip of land on the riverfront which followed the shoreline for two-hundred to one-thousand feet and extended inland for two to three miles. The farmers had to agree to pay rent for the use of the land as well as a fee for trading privileges. The opening of the Erie Canal in 1825 connected Detroit's waterways with the East Coast and provided opportunities for its infrastructure to expand. Since industrial materials were transported mainly through waterways, the riverfront became the prime location for factories and warehouses. As industry grew along the river and into the city, Detroit's population swelled and its economy developed.<sup>1</sup> Detroit at this time was a thriving industrial city.

In the last half century, Detroit has gone from being one of the most populated cities in the United States (at 1,850,000 residents) to having less than 1 million residents by the year 2000. Within fifty years, many of Detroit's higher income residents along with

many of its manufacturing and industrial jobs were pushed out to the suburbs and beyond as a reaction to the increasing racial tension and crime prevalent within the city. The loss of population coupled with the decline of infrastructure, left behind massive amounts of vacant land and a society without the means to attain many of the essentials for living. Crime and poverty has been a continuous issue for the city of Detroit. This is partially due to a lack of jobs combined with insufficient public transportation. There are also very few grocery stores available to the residents of the city, requiring those who have adequate transportation to travel long distances for these essentials or, for those who do not have access to transportation, to shop at the numerous liquor stores on almost every thoroughfare. Along with these problems, the residents of Detroit have very few opportunities for positive social interaction. Schools are closing left and right with the majority of the education available being sub par. Many of the neighborhoods are also not safe for children to play in.

As a reaction to the issues Detroit has been facing for the past several decades, it is imperative that something be done to address them. The solution should focus on the needs of Detroit which encompass creating a new infrastructure to provide residents with opportunities for income and positive social interaction. The abandonment of industrial infrastructure has left much of the land unused to return to nature in a sense. It is almost natural that we would turn to Landscape Urbanism as a process of renewing the city rather than just rebuilding the land to suit people's needs. James Corner, in "Terra Fluxus" offers his view on Landscape Urbanism:

The union of landscape with urbanism promises new relational and systematic workings across territories of vast scale and scope, situating the parts in relation to the whole, but at the same time the separateness of the landscape from urbanism acknowledges a level of material physicality, of intimacy and difference, that is always nested deep within

the larger matrix or field.<sup>2</sup>

By thinking about everything that influences a project before designing or constructing it, the designer is able to bring a sense of stability to the design which will in turn induce wholeness in the participants of the building. This thesis will attempt to do this in several ways. The project will attempt to bring nature into the urban environment by converging landscape and the built environment. It will address the need of a new infrastructure for the city by creating a landscape that can be used for both enjoyment and utility which will create jobs and allow people the opportunity to interact with each other and their natural surroundings.

The location in which the project is situated and the opportunities that it provides are major influences on the success of this project. Many community groups throughout the city educate residents to take advantage of the vacant lots surrounding their homes by acquiring them through land acquisition in order to plant vegetable gardens to help sustain their families and the surrounding community. Capuchin Soup Kitchen in conjunction with Earthworks Garden is one such group which has acquired their own land to plant vegetable gardens in order to provide food to the surrounding community. Groups like this have a major positive impact, but they operate at a small scale and are not immediately visible to communities outside the direct locale. It would be interesting to see what would happen if a project like this was visible to many people and offered diverse activities and further opportunities for interaction other than gardening alone. This project will need to be located in an area of high visibility and with easy access to all who use it.

The city of Detroit needs both new infrastructures to create jobs as well as new opportunities for its communities to interact with each other in a positive environment. This project will attempt to do this through merging the distinction of landscape with the built environment. The project will provide

a place for people to interact with each other, to learn about and participate with the natural environment, and to strengthen their minds and bodies inside a building that merges with the natural environment itself. The rooftops of the buildings will double as inhabitable space for vegetable production as well as enjoyment and will, at certain points, merge with the ground plane. Gardens will be grown on the rooftops and extend down onto the ground plane of the site. This green space will originally be minimally designed. Only after the community has interacted with the building and the environment by renting the land and creating their own gardens, will forms in the landscape begin to take shape. Rem Koolhaas used similar concepts in his design for the competition at Park de la Villette:

[I]t is safe to predict that during the life of the park, the program will undergo constant change and adjustment. The more the park works, the more it will be in a perpetual state of revision... The underlying principle of programmatic indeterminacy as a basis of the formal principle of programmatic indeterminacy as a basis of the formal concept allows any shift, modification, replacement or substitutions to occur without damaging the initial hypothesis.<sup>3</sup>

This project is concerned with how the working surface changes over time. [It] is a kind of urbanism that anticipates change, openness and negotiation. <sup>4</sup> The program of the building will be designed with this concept in mind. There will be different functions within the building, but large portions of it will be made up of 'open space' left unprogrammed with the intent that chance meetings and events will take place. The occurrence of these unplanned events will allow the space to take on various forms at different times throughout the day. In this way, natural occurrences will begin to merge with the functions of the building in a similar way that the building and landscape merge to create a cohesive environment.

Instead of allowing open space, which is prevalent in a city like Detroit, to be a burden on the city, it can be seen as an opportunity to create productive green areas. In this project, there is an opportunity to ex-

plot agricultural production at the scale of the community garden to become a new infrastructural basis for Detroit. Many residents in the city currently do not have access to the food they need. Providing residents with a place to grow their own food or at least teach them how so they can grow it on their own property will help to ameliorate issues associated with the lack of grocery stores in Detroit. Perhaps, as a byproduct of this project community members who have the means will take it upon themselves to create more grocery stores throughout the city which provide food grown locally.

The integration of nature and infrastructure as well as health, recreation, and scenery enables the project to be a place with multiple functions and opportunities for interaction. The project will provide a place for the surrounding communities to grow their own food as well as interact with each other and the environment in a natural landscape that is integrated into the urban context for all to enjoy. The intent behind this project is to provide a prototype for other community groups to copy in other neglected areas of the city. The program for other projects does not have to be the same as this one. For example, they could intertwine the functions of an office building or a residential apartment complex with agriculture. The creation of projects like this will bring new vitality to disconnected communities in Detroit by encouraging their residents and people from other locales to interact with each other in a positive way.





## PRECEDENT ANALYSIS

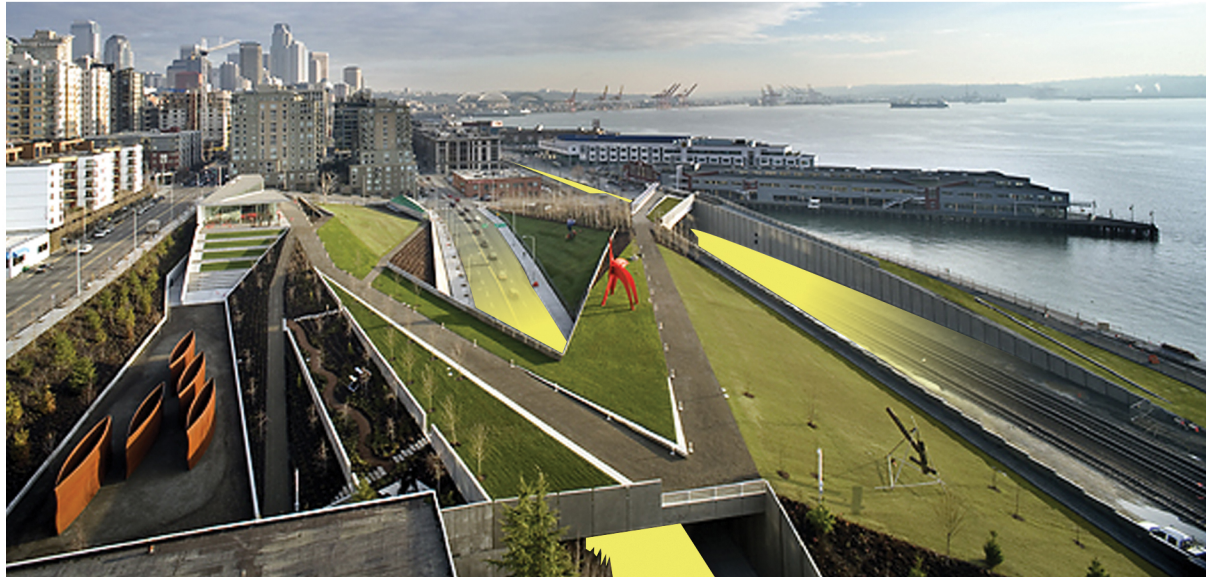
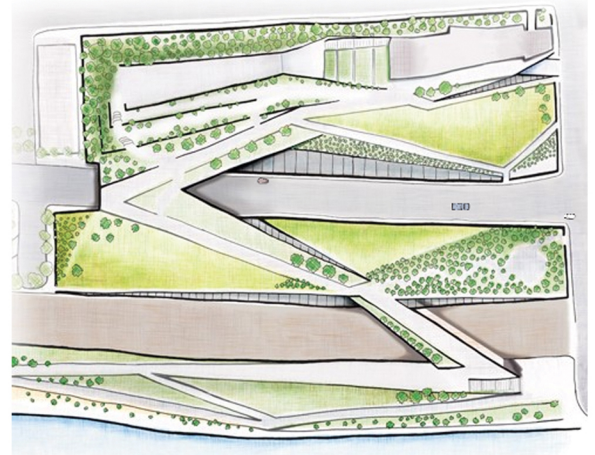
### Olympic Sculpture Park, Seattle, WA | Weiss/Manfredi

The Olympic Sculpture Park is a project that began as the winning design of an international competition hosted by the Seattle Art Museum. The park is located on the old industrial site of the UNOCAL petroleum transfer and distribution facility near the edge of the city on Seattle's waterfront. The shape of the park ultimately takes the form of an uninterrupted Z-shaped platform that crosses over an existing roadway and train tracks providing a connection from the urban core to the waterfront while still allowing traffic to flow unimpeded. The functions of the park vary from an outdoor art exhibition space to a method for filtering street runoff and restoring the environment of the site. The filtering system used for land restoration is enabled by a three-foot layer of engineered soil which reduces runoff as well as allowing rainfall to percolate and drain out to the waterfront. Engineered soil replicates what the site conditions were like before urban development and prevents draining water from needing treatment. The park also makes use of





dense tree canopies, native vegetation and groundcover, all of which contribute to the retention of rainfall above the soil surface (#). In addition to ecological aspects of the project design, the Seattle Art Museum makes the park as sustainable as possible by supporting the following practices: organizing volunteer groups to regularly clean the beach, refraining from the use of pesticides for grounds maintenance, composting, encouraging public transportation, biking and carpooling and offering on site recycling for visitors (#).



The Olympic Sculpture Park has several characteristics that coincide with the thesis. It is making use of an old industrial site that was underutilized and does so in a very poetic way. It makes use of existing infrastructure such as the vehicular roadways and sees them as a design opportunity rather than a force impeding on the project. It also combines different functions such as art with agriculture and recreational landscape. These are all aspects of the project that will be considered for the thesis.





## Capuchin Soup Kitchen & Earthworks Garden, Detroit, MI

Capuchin Soup Kitchen and Earthworks Garden located near Mt. Elliot and Lafayette in Detroit, Michigan work together to provide fresh, organic vegetables as well as educational programs about growing natural food to the surrounding neighborhoods. The purpose of the garden is to heal the earth, heal the neighborhood and gather people from every walk of life to work together, helping to heal them as well. Communities pay \$20, and individuals \$10, in return for hundreds of dollars worth of vegetables, plants, seeds, flowers, compost and other supplies so they can start their own productive food gardens. As part of the deal, participants must dedicate themselves to helping out with one activity a year. Earthworks garden also offers a series of urban gardening classes, volunteer opportunities, and potluck events.

Earthworks owns three separate gardens, each of which is within close proximity to the Capuchin Soup Kitchen. Altogether, the gardens cover an area of approximately 21,000 sq. ft. where various vegetables, bramble, grapes, and an assortment of different flowers are grown. Two 2,200 sq. ft. greenhouses with gas heat, ventilation, water, and electricity enable the farmers to get an early start on the vegetables in the spring so that the vegetables are less susceptible to late frosts and the gardens are more productive throughout the growing and harvest seasons.

The gardens in Earthworks are grown using sustainable and organic production methods. Instead of using pesticides or fertilizers, Earthworks uses methods such as companion planting, crop rotation and compost application. In companion planting, two or more plants are grown in close proximity to one another so that they may benefit each other. An example of this is three-sisters planting where corn, squash, and beans are grown together. The three vegetables help each other by maximiz

ing growing conditions for one another. The corn grows in the center of a circular bed and serves as a support for the pole beans. The beans put nitrogen into the soil, which the corn needs in order to grow strong and healthy. The squash covers the ground surrounding the corn and beans which helps to hold moisture in the soil. Crop rotation is used to enable the different plants to offer their benefits to the entire field over time so that no one portion is overly depleted. It also offers a form of pesticide.. Pests have a tendency of going back to the same location for the particular plant that they eat, if the plant is moved they get confused and have to find it all over again. This gives the plants a little more time to grow before being eaten by pests. Earthworks uses compost in all its gardens. Materials are collected weekly from the Capuchin Soup Kitchen, Starbucks, and Avalon Bread Bakery. These food scraps are combined with leaves and woodchips to make compost for field bedding. Compost is rich in nitrogen and helps to grow healthy vegetables.

Earthworks Garden provides a very positive impact for its surrounding neighborhoods, however, it seems that it does not reach as many people as a project such as this could. This proves that perhaps it is necessary for these developments to be more visible to the general public by operating at a larger scale and combining them with other functions.







## Delft University of Technology Library, NL | Mecanoo Architects

Mecanoo's design pulls up the landscape towards the east like a floating carpet of grass. The only breakage of the landscape is the entrance and a centralized concrete cone. By having the library underneath a grass landscape, the building makes little impact on the view from the lecture hall, and the contrast of the concrete cone even enhances its presence. The landscaped roof also incorporates a green building technique. The landscape is lifted towards the east with a tilted ventilated glass facade on a mullion and transom frame which envelopes the building on its northern, eastern and southern edges. By having a landscaped roof the building can be used for informal activities, such as picnicking on the lawn, taking a nap between classes or even just taking a midday stroll.

The library incorporates three major 'green' elements: the grass roof, cold storage, and climate facades. The mass of the grass roof provides heat-accumulation and insulating properties so the interior of the building is not as affected by temperature changes. The mass also provides excellent sound-proofing. The vegetation holds rain water longer which allows it to evaporate gradually, providing natural cooling in the summer. Since the water stays on the roof longer it also avoids over taxing of the drainage systems.

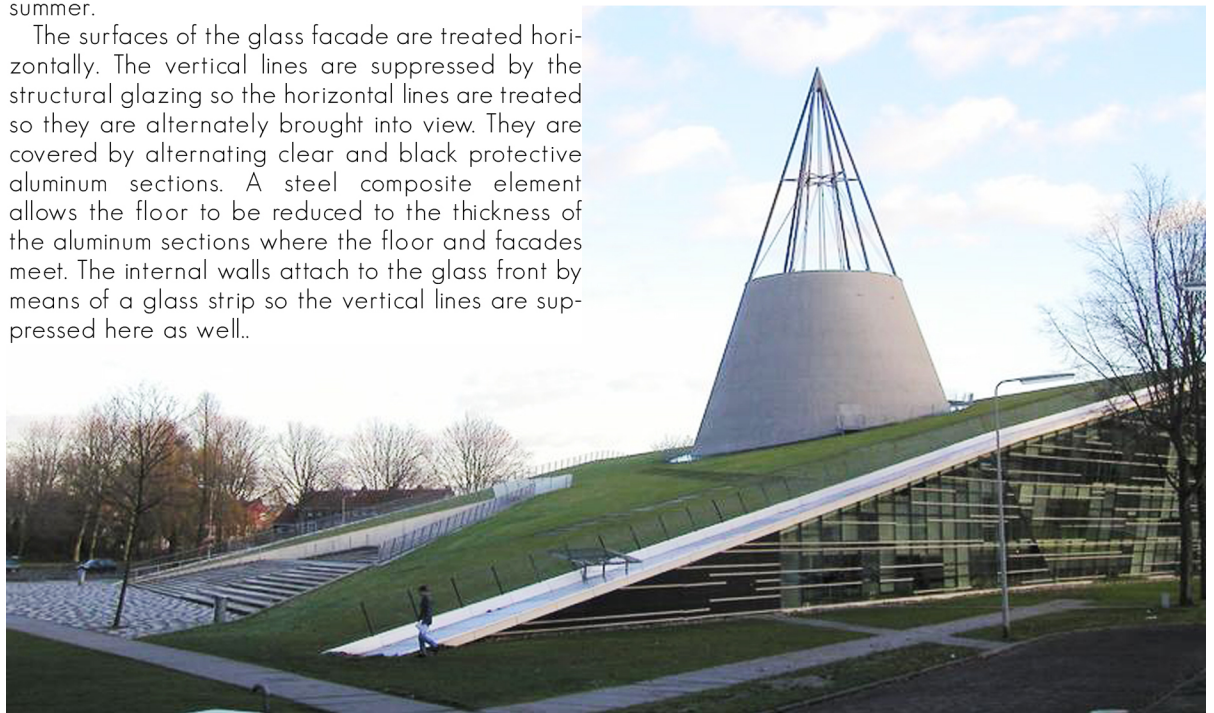
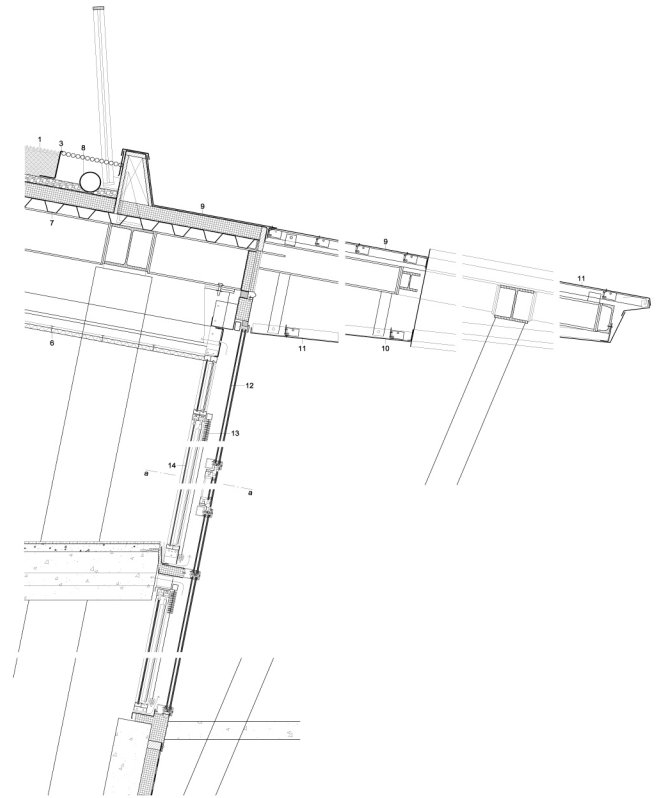
Cold storage makes it possible to cool the air in the library during the summer months when excessive heat is accumulated from lighting and computers. Cold or heat, if it is needed, is stored in ground water tubes layed 60 meters apart in a layer of sand 45 to 70 meters below ground level and sealed with an impenetrable layer of clay. During the winter, 17 degree centigrade water is pumped through a heat source tube and cooled in the open air to 6 degrees centigrade and then pumped back into the other cold source tube. During the summer, the procedure occurs in the opposite order. The only areas of the building cooled with cooling



units are the computer labs in the northern end. Climate facades allow for the desired transparency in the design of the building and for climate control. It maintains the temperature inside the library by preventing cold drafts in the winter and removing heat from the sun's warmth in the summer. It also makes efficient use of space by avoiding the need for radiators along the facade. The system is made up of an external glazing leaf, a ventilated interior cavity with louvers for shading, and a sliding interior glazing leaf. The external glazing consists of insulated glass with a U-value of  $1.5 \text{ W/m}^2\text{K}$ . It is made of an 8mm outer sheet, a 15mm cavity and a 6mm inner sheet with a low-E coating. The outer leaf is attached to the frame of aluminum profiles with pressure caps at the upper and lower edges and at the sides using a silicon seal. The inner glazing is an 8mm sheet of toughened glass which is designed as a sliding door to give access to the cavity between the glazing systems.

The cavity between the glazings is 14cm wide. It is ventilated and contains louvers for solar shading. Air enters the cavity through slits in the floor and is spread evenly between the solar shading and the outer glazing. On each floor the cavity is interrupted where air is brought together in ducts in the concrete floor through a split at the top and then sucked out per by storey. This prevents heat from building up at the top of the glazed facades in the summer.

The surfaces of the glass facade are treated horizontally. The vertical lines are suppressed by the structural glazing so the horizontal lines are treated so they are alternately brought into view. They are covered by alternating clear and black protective aluminum sections. A steel composite element allows the floor to be reduced to the thickness of the aluminum sections where the floor and facades meet. The internal walls attach to the glass front by means of a glass strip so the vertical lines are suppressed here as well.



## SITE ANALYSIS



The project is located on a site in the lower east side of Detroit a couple blocks off the riverfront known as the Warehouse District. This location was chosen with the many opportunities it provides for interaction in mind. The site is currently a target for the development of high-end residential lofts and for new parks and recreation facilities. It is adjacent to the existing Riverwalk and the Dequindre Cut, which is currently being converted from an obsolete rail line to a new pedestrian walkway and transit line. The site is also easily accessible from Jefferson. Being situated close to the Detroit River, downtown, Tricentennial Park and the Eastern Market makes the site a prime location for a node of interaction since pedestrians will be traveling along the route to access all four places.

If one were to visit this site today they would notice the abundance of vacant space and abandoned buildings. This condition is reminiscent of much of Detroit and is partially the reason why the project is situated in this location. Many of the abandoned buildings on the existing figure ground are demolished to make room for new developments with the intent that many of the building materials will be salvaged for reuse.

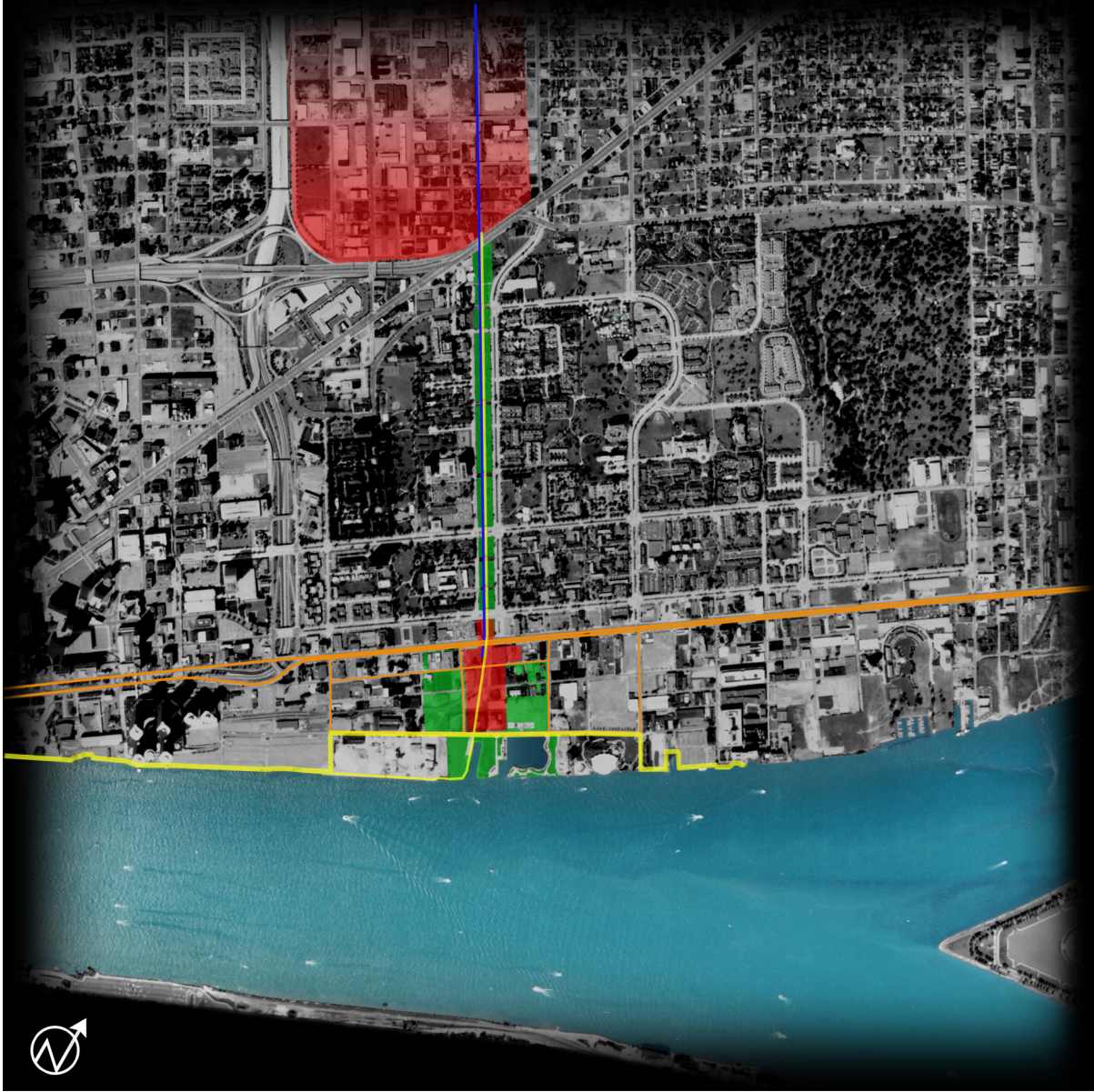
This location is also a prime spot for an agricultural development due to its access to the riverfront for irrigation purposes. To make irrigation even more accessible the existing boat slip next to Tricentennial Park is extended up towards the Dequindre Cut through the middle of the project site. Having a transit line and pedestrian path that connects the site to Eastern Market is a benefit for an agricultural development as well. This provides an opportunity for any produce being grown to be sold at the Market for profit to support the development.

The Riverwalk path that passes by the site at Atwater Street is rerouted through Tricentennial Park towards the river to bring pedestrians near the water at a closer point than is now available.

The climate presents a concern to include snow load and solar gain as an influence to the project design. The average temperature in the summer is in the mid to high 70's and the average winter temperature is in the 20's. This will influence the design since obviously plants cannot grow in extreme cold. Greenhouses will be provided in an attempt to get an early start on the growing season.

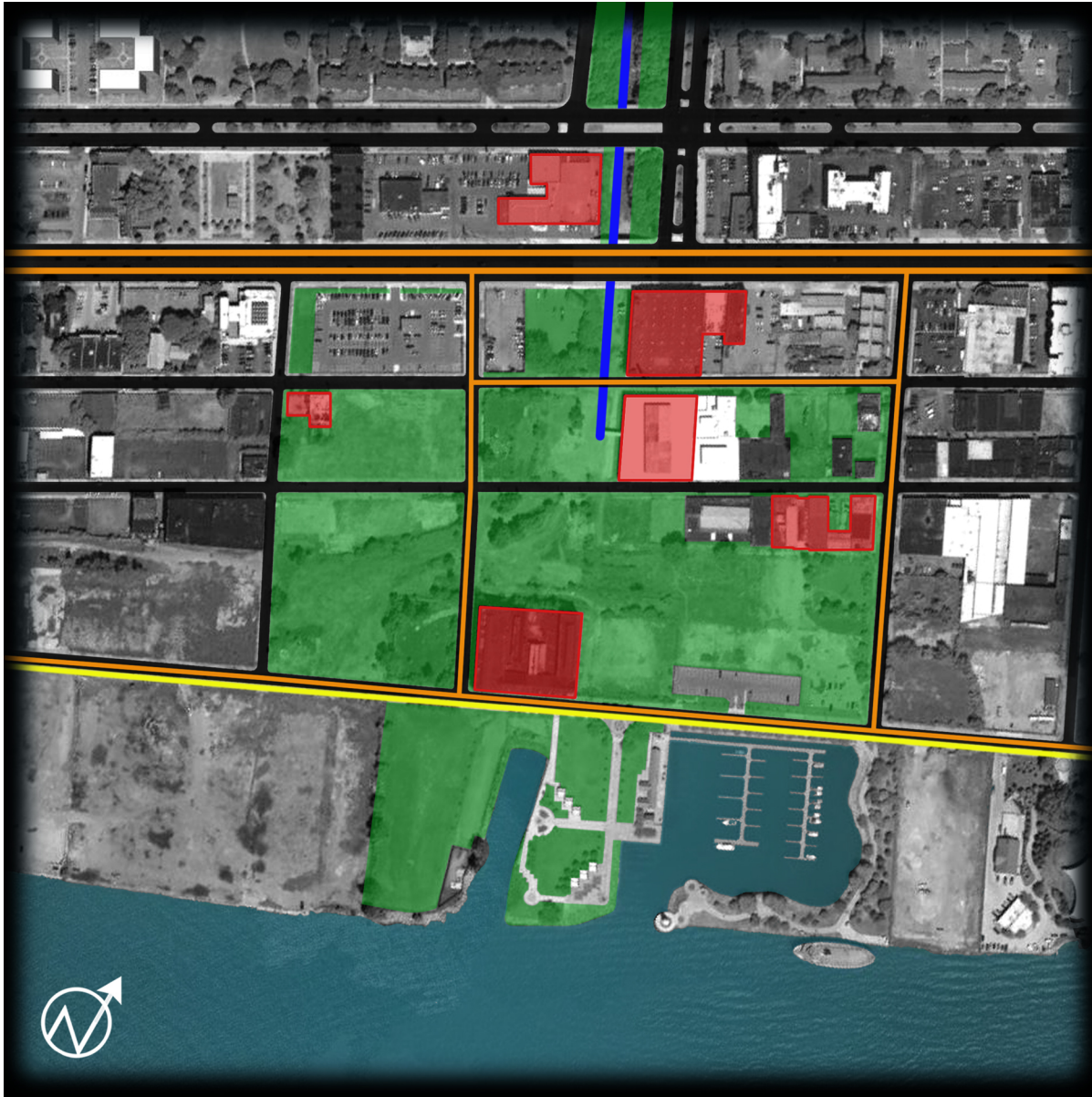







Macro Analysis



- site location
- green space
- pedestrian path
- public transport
- vehicular transport

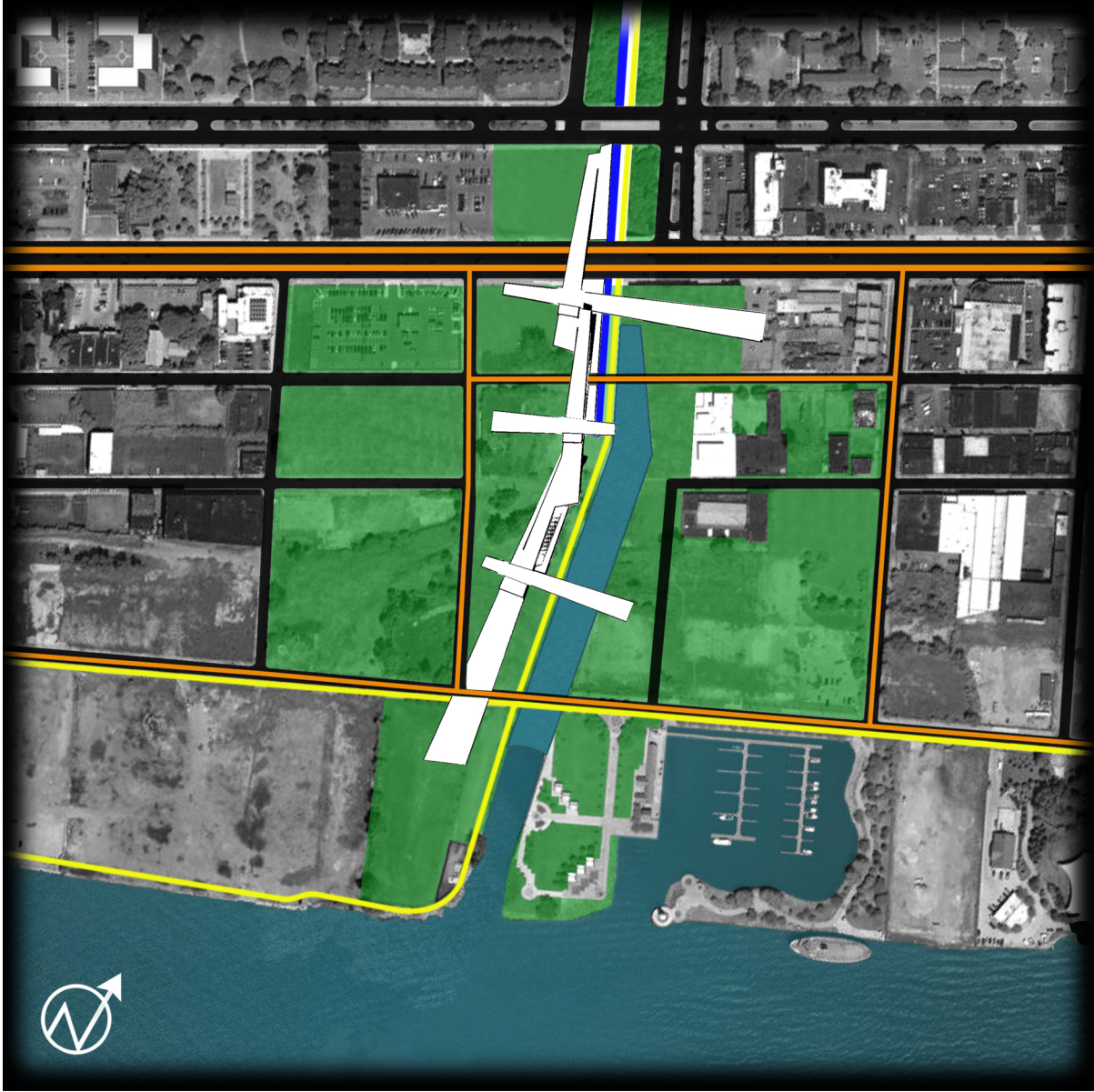
### Existing Figure Ground



-  demolish
-  green space
-  pedestrian path
-  public transport
-  vehicular transport



New Figure Ground



- green space
- pedestrian path
- public transport
- vehicular transport



# PROGRAM INTENT



The intent of the program is to create a space for people from the surrounding community to interact with each other and their environment in a positive setting where they will learn new ways to bring positive influences into their lives and their city. The underlying function of the building is a community center with agricultural functions merged throughout. The different functions of the community center are separated into zones which are all accessible from the interior. The intent was to encourage the community to make use of the different activities provided and to view them all as part of a whole system that makes up the center.

## PROGRAM QUANTITATIVE SUMMARY

Space Name	# Units	NSF/Unit	Total Net Area
<b>Agricultural Center</b>			
Garden Plots	45	2,444	110,000
Office	4	300	1,200
Meeting Room	1	540	540
Public Gathering Space			4,000
Greenhouses	3	1,700 2,000 2,000	5,700
Wokroom/Storage	3	825 940 1,670	3,435
Work/Storage Rental Units	45	32.5-75	2,500
Soils Tesing Laboratory	2	825 885	1,710
Lecture Hall	1	2,375	2,375
Lecture Hall Control Room	1	200	200
Gallery Space	4	750	3,000
Washrooms	2	290	580
<b>Fitness Center</b>			
Welcoming	1	440	440
Office	3	300	900
Helath/Fitness Consultation	1	550	550
Workout Area	1	12,500	12,500
Fitness Classrooms	4	1,500	6,000
Large Fitness Classroom	1	2,250	2,250
Smoothie Bar	1	300	300
Dining   Lounge	1	1,145	1,145
Storage	1	120	120
Washrooms	2	350	700
Lockerooms	2	1,500	3,000

Space Name	# Units	NSF/Unit	Total Net Area
<b>Culinary Center</b>			
Office	2	170	340
Public Gathering Space		1,000	1,000
Culinary Classrooms	2	840	1,680
Food Storage	2	60	120
Kitchen	1	575	575
Bar	1	250	250
Dining	1	2,200	2,200
Exterior Dining	1	2,000	2,000
Washrooms	2	130	260
<b>Library</b>			
Office	2	200 450	650
Public Gathering Space			2,600
Computer Lab	1	1,350	1,350
Library Stacks	1	4,790	4,790
Classrooms	3	700	2,100
Washrooms	2	130	260
<b>Miscellaneous</b>			
Janitorial	3	30	90
Mechanical	2	300	600
Boiler Room	1	1,600	1,600
Circulation			33,600
Parking Lots	2	15,753 7,074	22,827
Total Interior:			109,210 SF
Total Exterior:			132,827 SF

## PROGRAM SPACE DESCRIPTIONS

### Offices

These spaces are for individuals who conduct the processes of the community center and make everything work cohesively. Each 'zone' has its own individual office space, so that the people who direct those areas are easily accessible at all times. The offices are spread out through the building according to the functions. Each office will be furnished with a desk and three chairs.

Size - 11 offices totaling 3,090 SF

### Meeting Room

The meeting room is for all administration throughout the building to conduct meetings. This space will be furnished with a conference table and an ample amount of chairs to seat all administration.

Size - 540 SF

### Public Gathering Space

Public gathering space is found around almost every corner in the building. These are spaces for people from the community to gather, relax, meet new people, spend time with old friends, and to study. All gathering spaces will be furnished with tables, chairs and benches.

Size - 8,050 SF

### Agricultural

#### Garden Plots

There will be space for 45 rental gardens on the roofs of the buildings. Each garden will be about 2,444 SF. The majority of the plots are not in predetermined locations, but will form a pattern as the community begins to rent them out.

Size - 110,000 SF or 2 ½ acres

#### Greenhouses

Three greenhouses service the agricultural spaces. These are used to grow vegetables during the cold season as well as for growing 'starts' in the early spring which will be transferred outdoors once it is warm enough. The greenhouses have large doors for ventilation and thermal mass walls which will help to warm the adjacent spaces during the winter season. Furnishings and equipment will include tables and shelving to stack flats on and a sprinkler system to water the plants.

Size - 3 greenhouses totaling 5,700 SF

#### Work | Storage Rental Units

These units will be used by the people who rent garden plots. They will provide storage of small tools and individual workspace for planting and harvesting vegetables and plants from the garden.

The units will be furnished with a countertop and lockable cabinets beneath. They will be located in close proximity to the greenhouses and access to the rooftop gardens.

Size - 5 units totaling 2,500 SF

#### Soils Testing Laboratories

These will be used by scientists who work for the agricultural center. They will provide soils testing services for anyone who brings soil to them as well as perform soil tests for the agricultural center to ensure the soil in the gardens have essential nutrients for growing healthy plants. The laboratories are located on ground level with easy access to both the rooftops and the street level entrance. They will be furnished with counters, sinks and testing equipment.

Size - 2 testing labs totaling 1,710 SF

#### Lecture Hall

The lecture hall is located at the north end of the building close to the main entrance from the Dequindre Cut and the gallery spaces. The lecture hall seats up to 160 people at a time and will be used for various lectures revolving around the topic of agriculture or anything which contributes to healthy lifestyles. The lecture hall is serviced by a control room which houses a project and sound controls.

Size- Lecture hall and control room = 2,575 SF

#### Gallery Spaces

Four gallery spaces are located near the main entrance from the Dequindre Cut at the north end of the building and the lecture hall. These spaces have a couple permanent exhibits which display the history of the site and facts about agriculture as well as rotating exhibits displaying new things which coincide with lectures or events.

Size - 4 galleries totaling 3,000 SF

### Fitness

#### Fitness Consultation Room

This room is used by employees to educate the community about health and fitness, help to get them on a regular fitness program or healthy diet and answer any questions they may have. It is also used for meetings amongst the fitness center staff. The room will be furnished with a conference table and chairs. It is located directly adjacent to workout area and administrative offices.

Size - 550 SF

#### Workout Area

This is the main space used by visitors to the fitness center. It is furnished with workout equipment



and weights. It is located on the same level as the pedestrian path on the Dequindre Cut. This location was chosen so that people walking or running on the path can look in and see people working out possibly sparking an interest in them using the facilities as well.

Size - 12,500 SF

#### Fitness Classrooms

These classrooms are for classes taught by the fitness center staff such as yoga, tai chi, pilates, etc. Each room is furnished with shelving units in the back for storing shoes and other personal items. Each room also has a large door on the glass façade to provide natural circulation when they get too hot or stuffy. The classrooms are located at the lower end of the fitness center.

Size - 5 classrooms totaling 8,250 SF

#### Smoothie Bar & Lounge

The smoothie bar is located one floor above the fitness center and looks over the workout area. It is provided for anyone who wants a shake, smoothie or coffee, but specifically for people working out in the fitness area when they want to take a break. The smoothie bar will be furnished with all the necessary shake and coffee making equipment and stools for people to sit on. The lounge will be furnished with tables and chairs.

Size - smoothie bar & lounge totaling 1,445 SF

#### Culinary

##### Culinary Classrooms

These rooms are used for cooking classrooms to teach the community unique ways to cook natural and healthy food and new ways to incorporate vegetables into their diets. Each classroom has a small kitchen with a large island where students can gather and watch what is being made. Each room is also equipped with a pantry for storing any perishable food. The classrooms are located with easy access to street level and a short walk to the rental work | storage units and the rooftop gardens.

Size - 2 classrooms & pantries totaling 1,800 SF

##### Restaurant

This is a natural foods restaurant which mainly cooks food provided by the gardens grown around the community center. The restaurant has indoor and outdoor seating which overlooks the pedestrian path and the canal. It can also be rented out by members of the community center if they wish to hold special events there.

Size - kitchen, bar, indoor & outdoor seating = 5,025 SF

#### Library

##### Computer Lab

This lab is provided for the community center guests to have access to computers. The lab will be furnished with desks, chairs and computers.

Size - 1,350 SF

##### Library Stacks

The majority of the books in the library will be about agriculture and anything to do with maintaining a healthy lifestyle. There will also be a children's section.

Size - 4,790 SF

##### Classrooms

These classrooms will provide a space for various classes ranging from courses about health to art. The classrooms will be furnished with tables and chairs and other equipment according to the subject matter taught in each classroom.

Size - 3 classrooms at 2,100 SF

#### Mechanical Integration

##### Mechanical Rooms

The two mechanical rooms will house water heaters and air circulation equipment. They are both located on the lower level of the building and at opposite ends.

Size - 2 rooms totaling 600 SF

##### Boiler Room

The main boiler supplies the entire building with radiant heating which is delivered via pipes imbedded into the concrete floor. This type of heating is used because it is the least likely to dry out the building, making it most beneficial to the plants in the greenhouses.

Size - 1,600 SF

##### Irrigation

Irrigation is provided to the rooftops by pipes that pump water out of the canal and deliver it to the rooftops. The structure of the roof provides a gentle inward slope and drainage points which transfer the water back out to the canal so stagnant water does not build up.

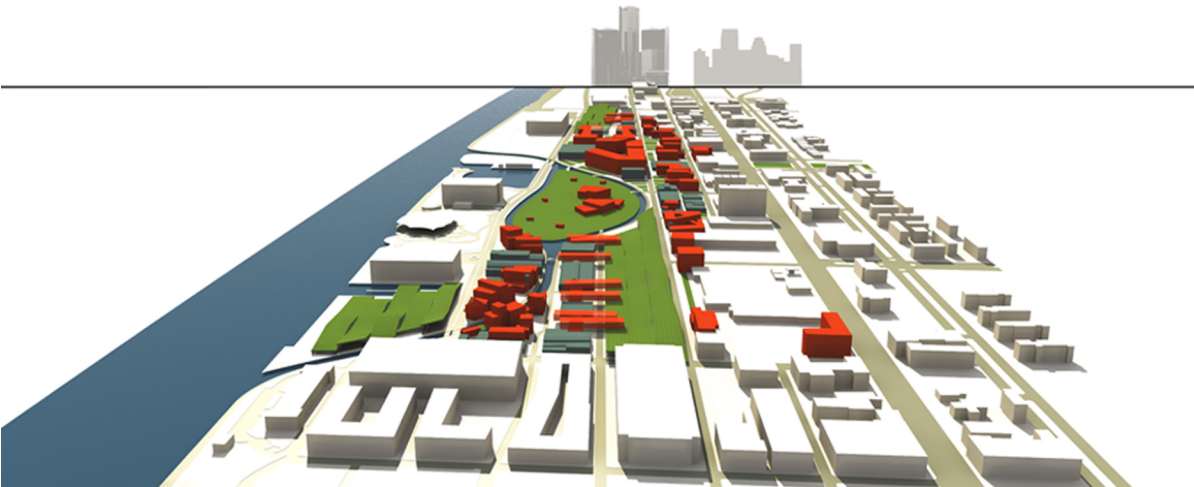
## DESIGN PROCESS



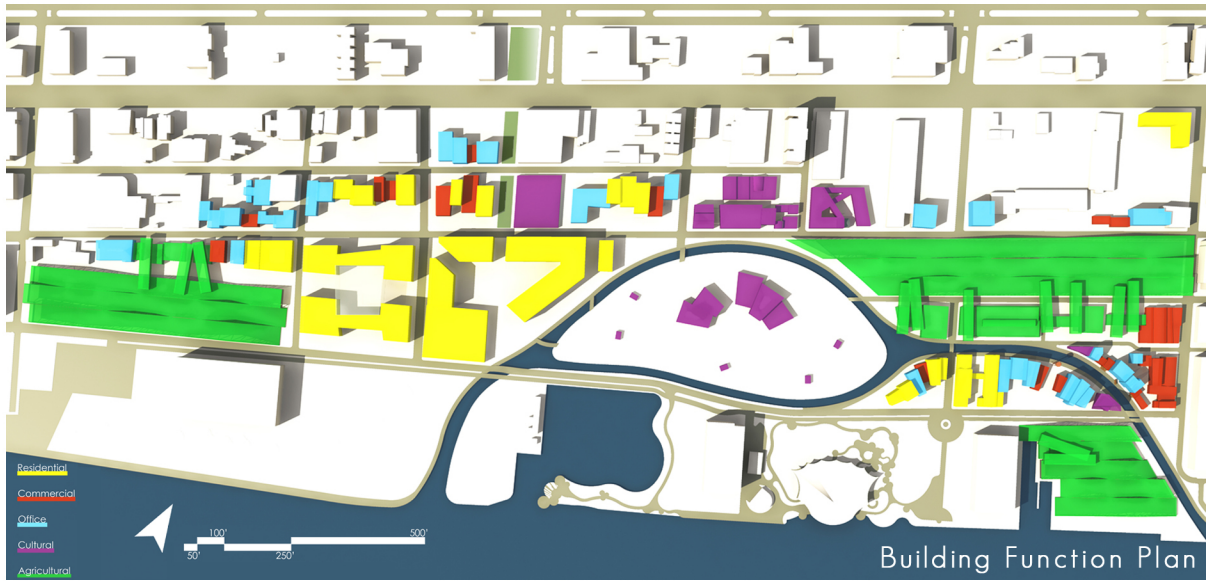
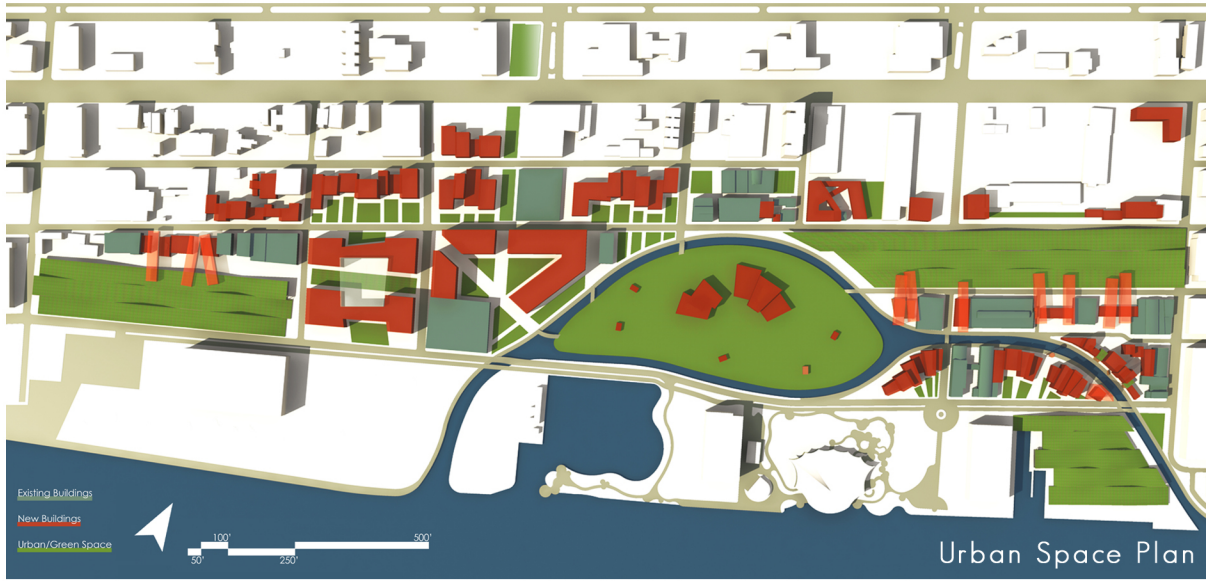
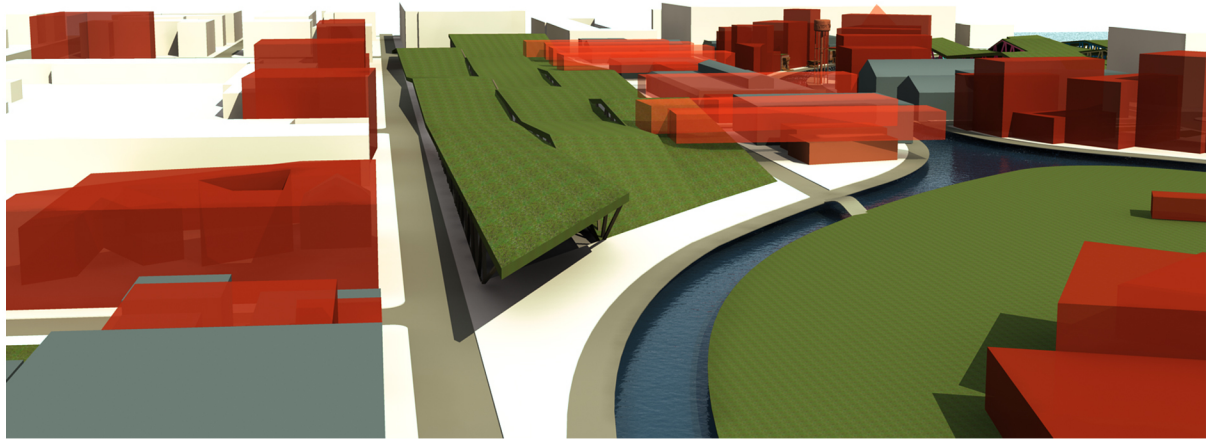
### First Direction

The design process took several different directions throughout the course of the year. The project began as a master plan encompassing the entire site of the Warehouse District bordered by Jefferson to the North, Joseph Campau to the East, Atwater Street to the South and Rivard Street to the West. The focus was to revive the area by re-establishing existing buildings and by inserting new buildings with functions that would provide recreation as well as new jobs and places of residence for the surrounding communities. The site was divided into several districts with an agricultural theme permeating the whole. The districts included: residential, business, cultural, entertainment, and agricultural zones which were clustered where there was a need for parking. These areas became parking structures at grade level with agricultural ramps above. At the center of site an island was created that housed a retreat center. The idea was that people would come to the city in order to 'get away' instead of traveling long distances. The retreat center would provide a spaces for people to find serenity as well as interact with each other in a positive environment.

It was soon apparent that this approach to revitalizing a neighborhood was too encompassing and heading in the wrong direction. The focus was narrowed down by diverting the majority of attention towards the agricultural functions of the project.







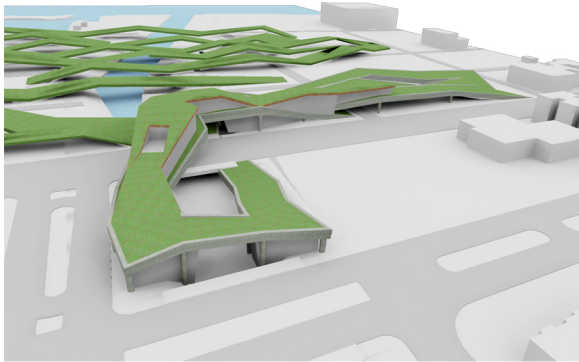
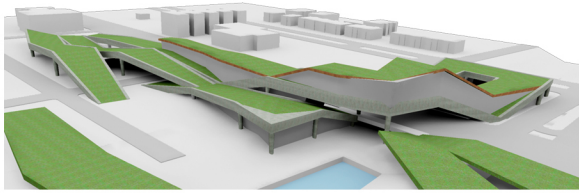


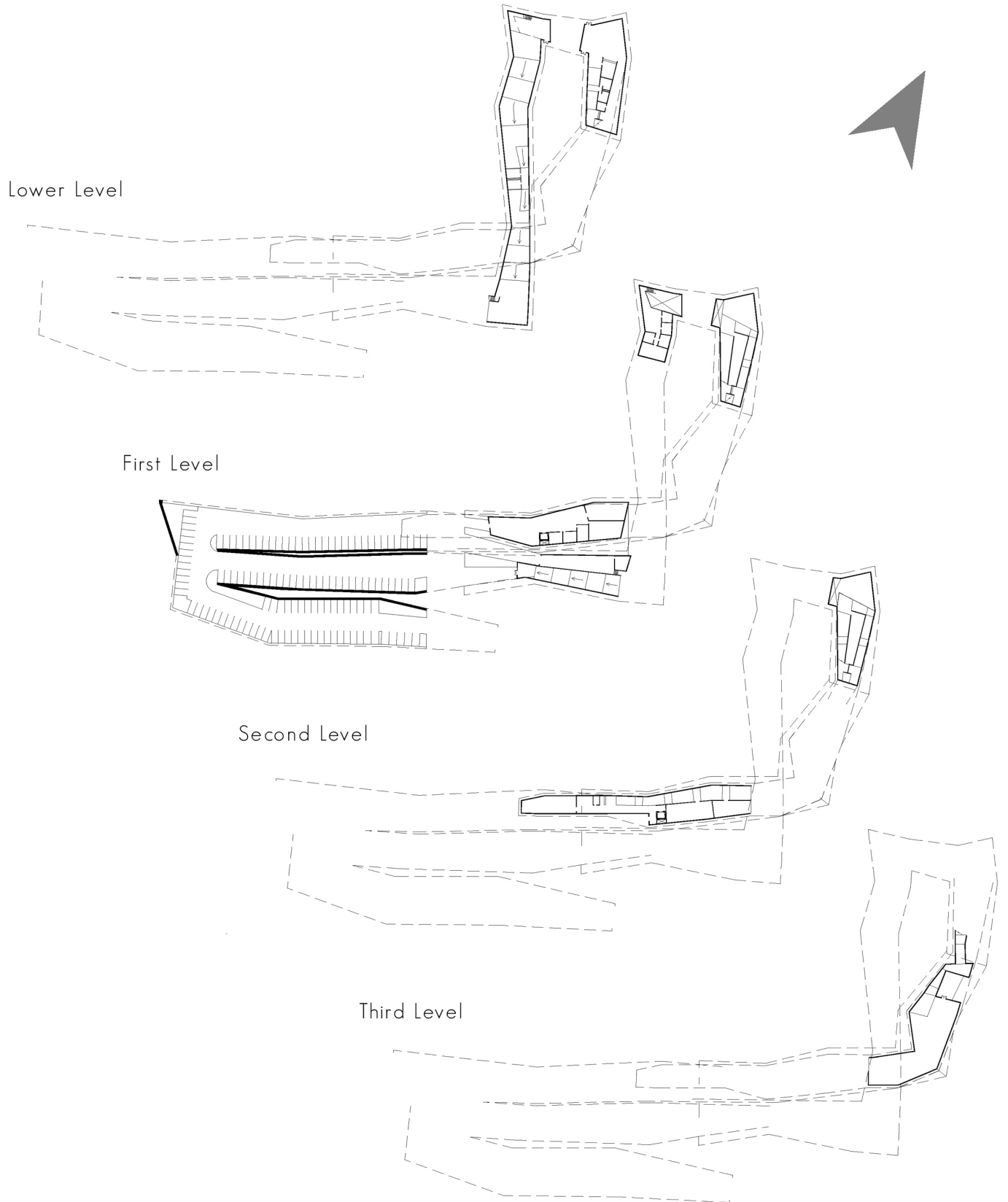


## Second Direction

The focus in the second stage of the project is on creating a community center that grows into an agricultural development. The area that the project covers is narrowed down by the width of one block to the east and west. The project begins by taking advantage of the existing Dequin-dre Cut which enters the site under Jefferson. The community center straddles the Cut and passes above and below Jefferson before expanding out onto the rest of the site. The main purpose of this project is to combine existing and new infrastructure with agricultural functions. The majority of the crops grown are transported to the Eastern Market via the Dequin-dre Cut and sold for profit to help sustain the community center. The community center provides a location for surrounding residents to interact with each other and also provides them with opportunities for work.

The primary issue with this direction is the location and design of the agricultural ramps. They are placed too randomly, are too clustered and the functions beneath them need to be further developed.



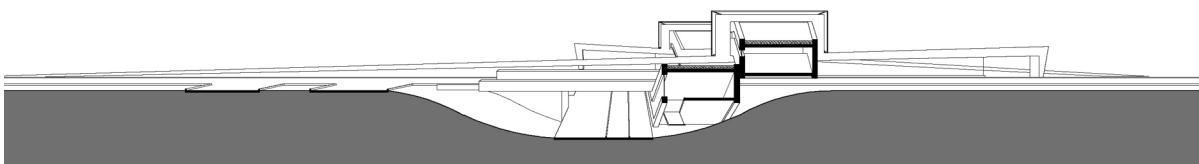
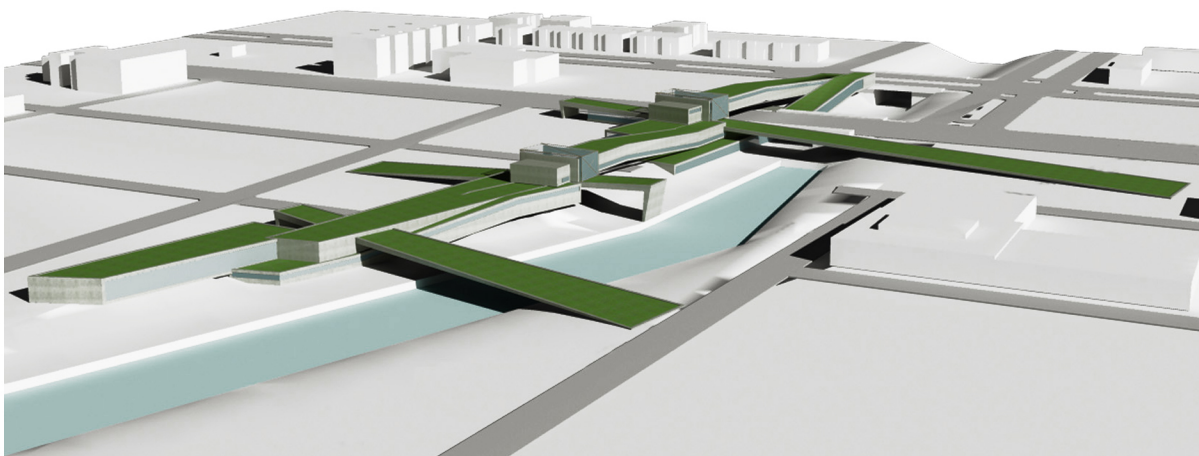




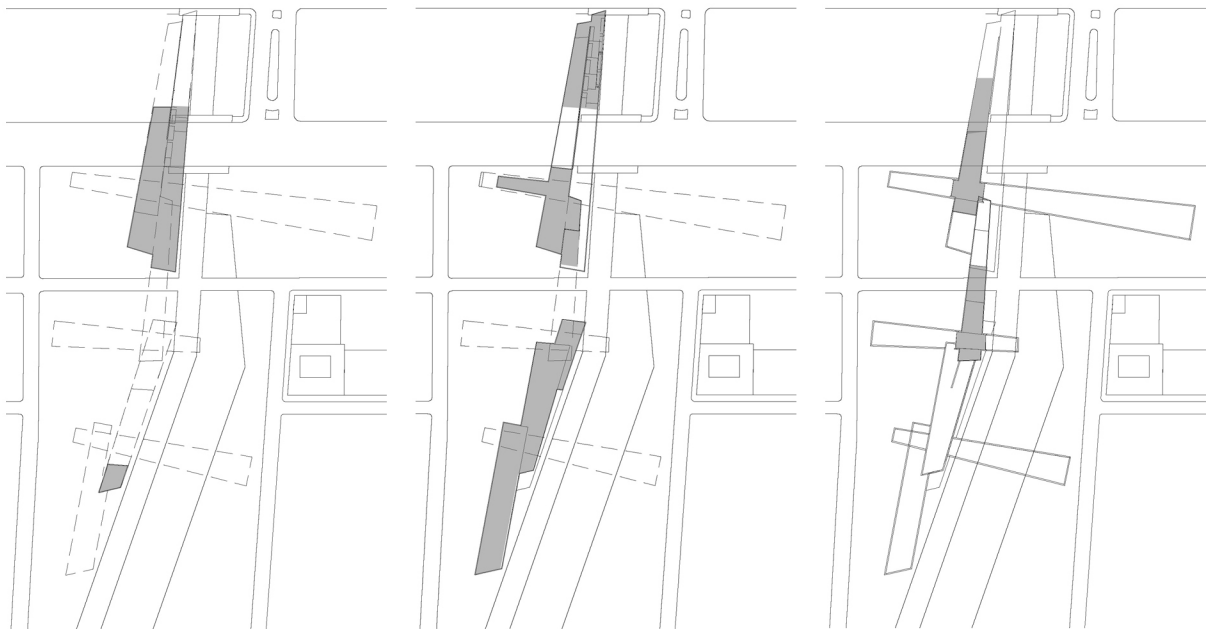
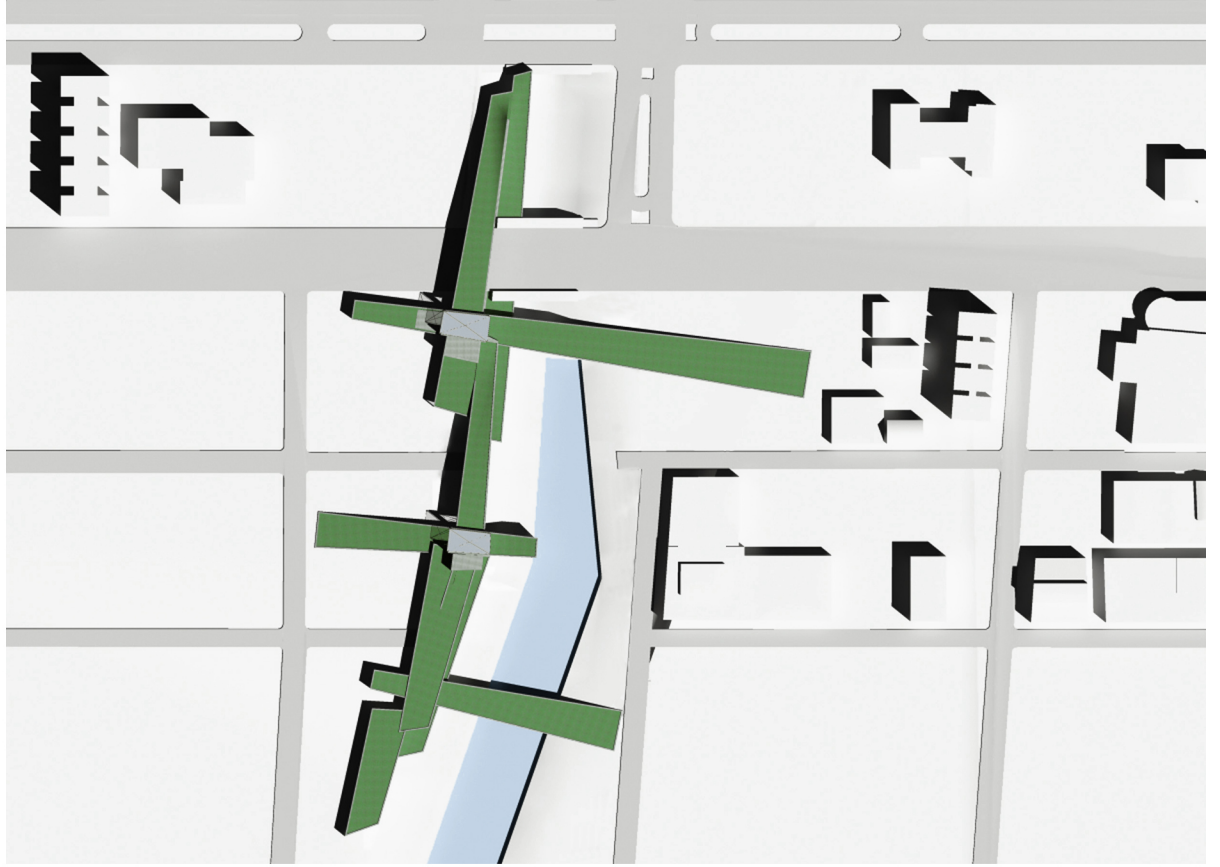
### Third Direction

In the third direction, the site is narrowed down to encompass even less space. At this scale the project becomes more manageable while still performing the same functions and meeting the same expectations as previous designs. Agriculture and infrastructure are combined in one gesture as a node for the community. This node provides opportunities for the community to learn about agriculture in a hands-on approach by allowing people to rent individual garden plots. This community node also serves as a meeting place that is easily accessible by being conveniently situated adjacent to major pedestrian pathways, transit lines, and vehicular routes. The community center gives participants a place to learn about and engage themselves in activities based on healthy living.

The main spine of the building is reminiscent of the original ribbon farms that occupied the site in the late 1700's, while the perpendicular ramps reach out as an inviting gesture to the surrounding community.





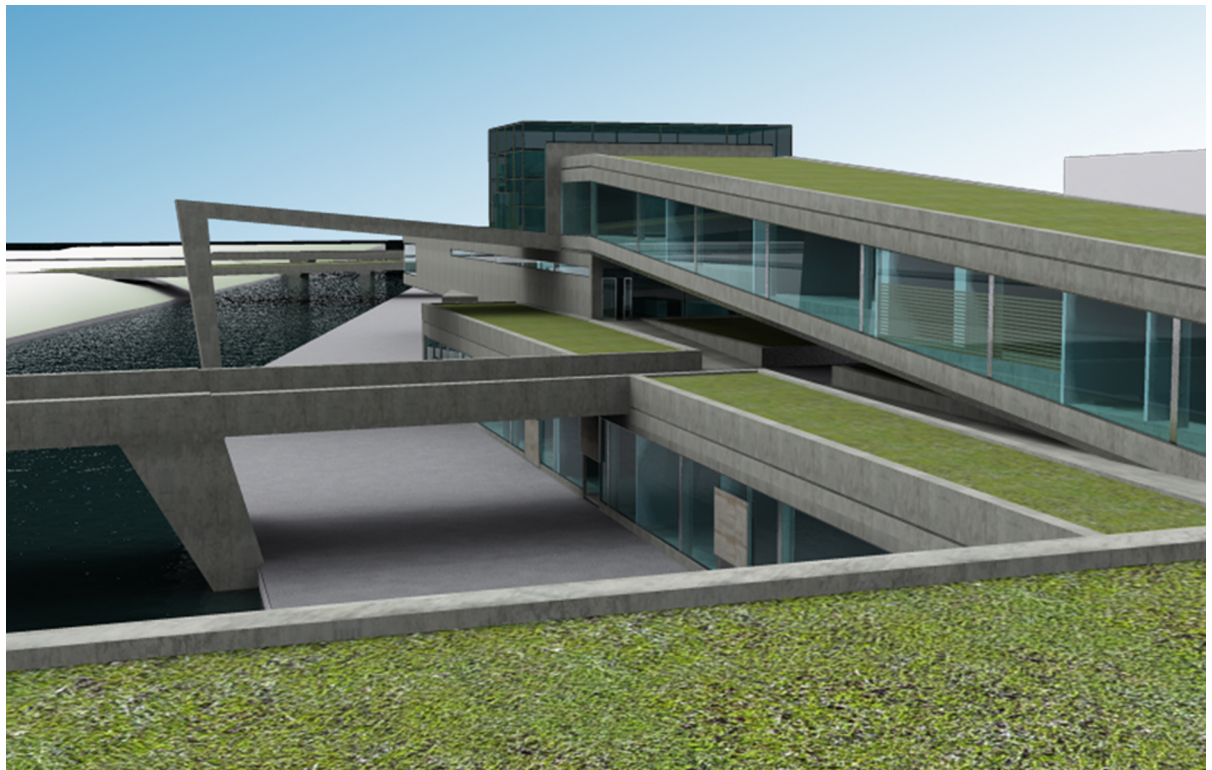
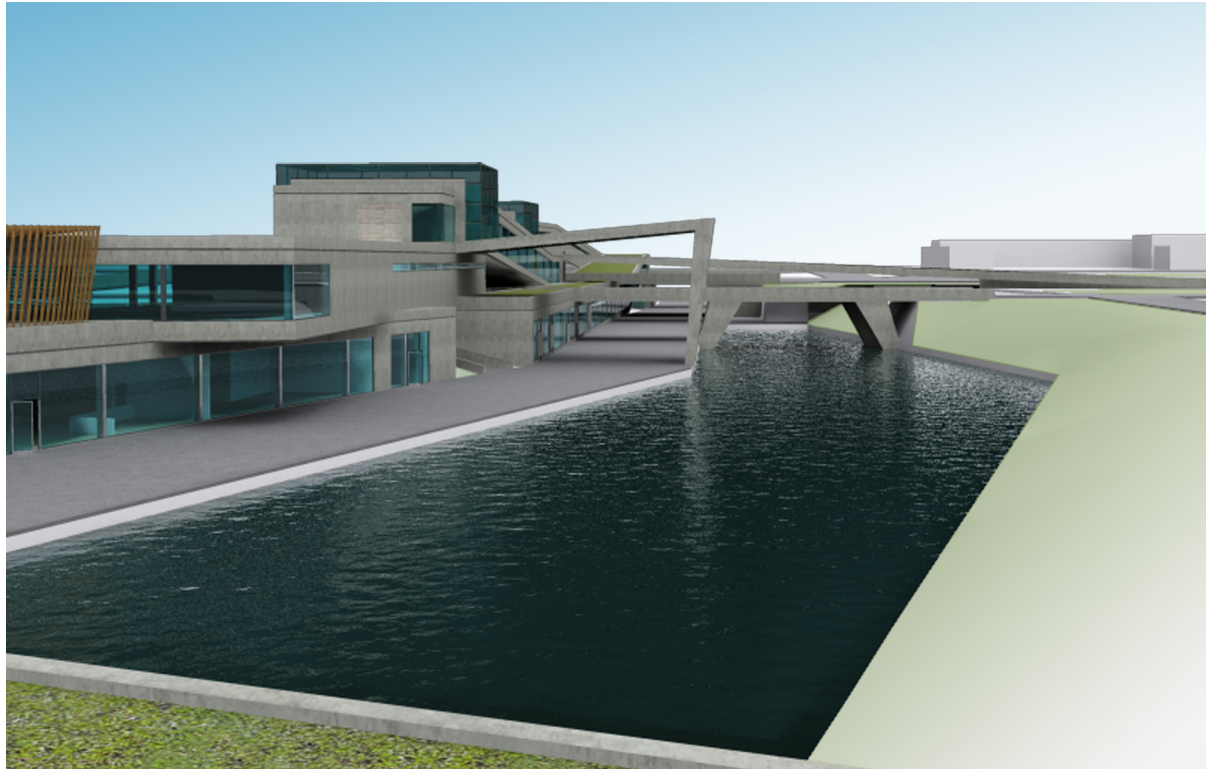


## FINAL DESIGN



The final design expands upon what was started in the third approach to the design process. The project becomes a community node that connects the Dequindre Cut to the riverfront through Tricentennial Park. Within this node are opportunities for a myriad of great activities to occur which help to strengthen the health and interaction of the surrounding communities. Zones include an agricultural center, a fitness center, a culinary center, and a library.

The creation of a community center located at a major pedestrian node near Detroit's waterfront will bring many opportunities for the residents of Detroit and its surrounding cities to interact with each other in a positive setting. It will teach people about the importance of taking care of themselves and the environment. The project will also express that it can be easy to create opportunities for positive social interaction mixed with infrastructure in other areas of the city and that through doing this, will help to give Detroit a new image.

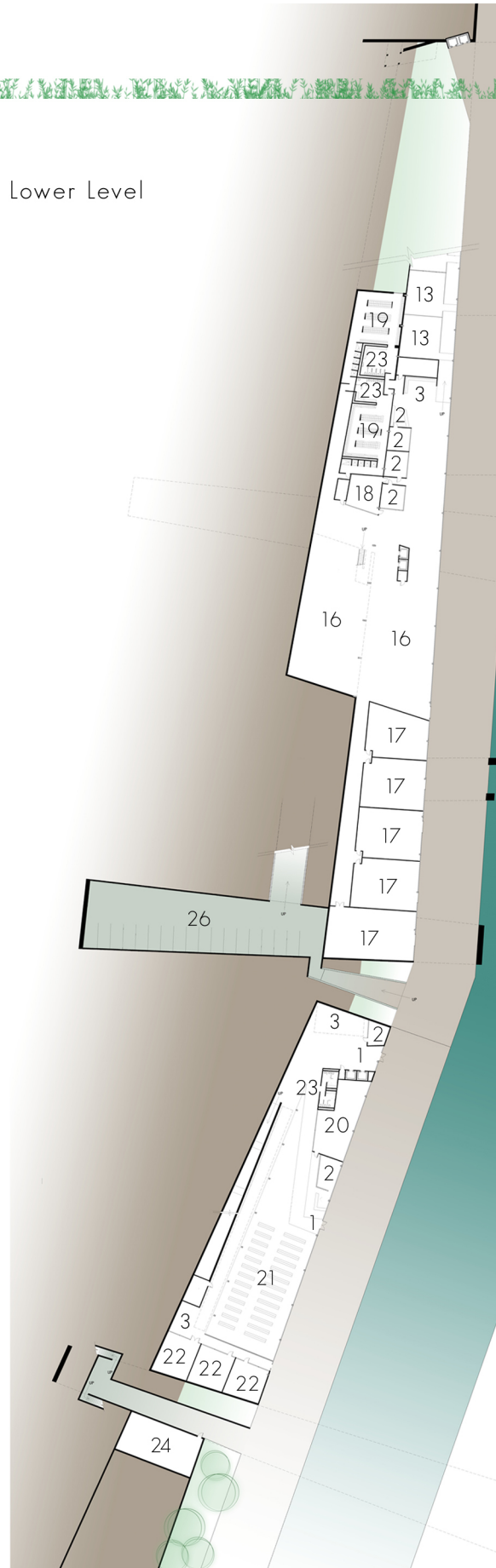






- 1 - Entry
- 2 - Administration
- 3 - Public Gathering Space
- 4 - Greenhouse
- 5 - Workroom | Storage
- 6 - Community Rental Work | Storage Units
- 7 - Soils Testing Laboratory
- 8 - Dining
- 9 - Kitchen
- 10 - Coffee | Smoothie Bar
- 11 - Cooking Classroom
- 12 - Pantry
- 13 - Gallery Space
- 14 - Lecture Hall
- 15 - Lecture Hall Control Room
- 16 - Fitness Center Workout Area
- 17 - Fitness Classrooms
- 18 - Fitness Consultation Room
- 19 - Locker Room
- 20 - Computer Lab
- 21 - Library Stacks
- 22 - Classrooms
- 23 - Washrooms
- 24 - Mechanical
- 25 - Storage
- 26 - Parking

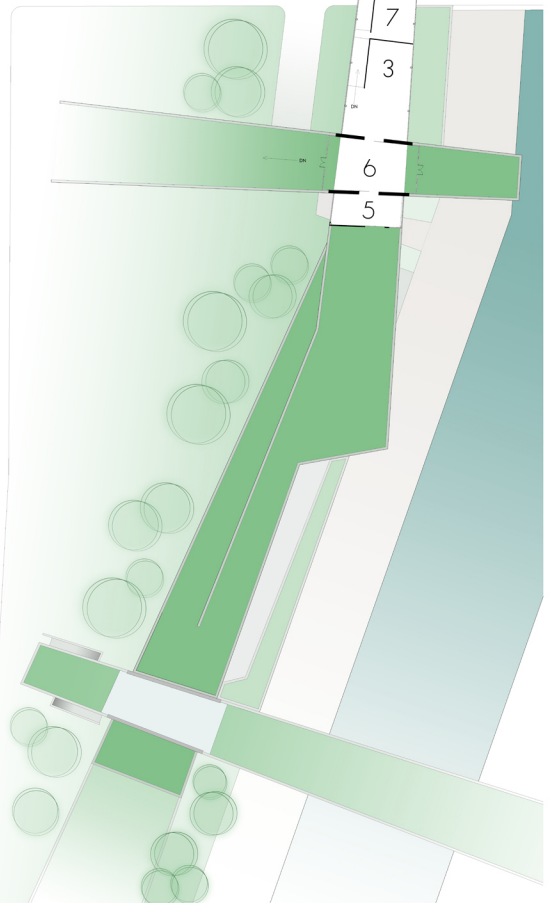
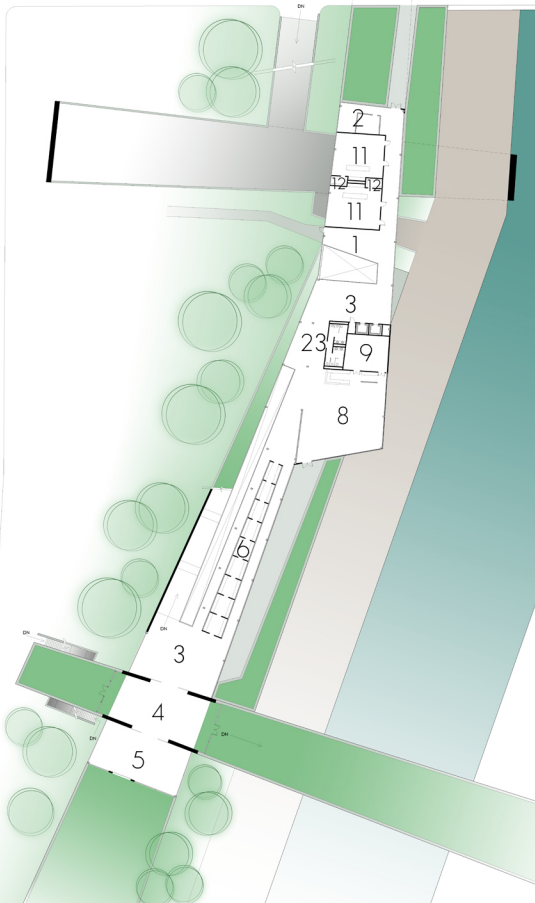
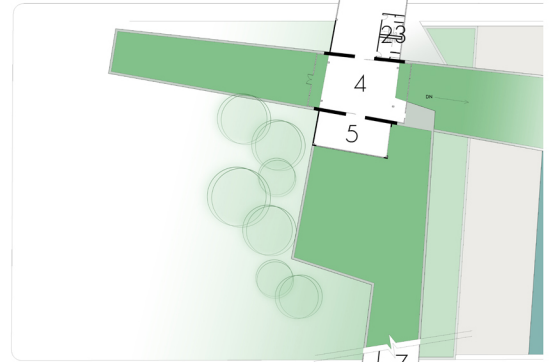
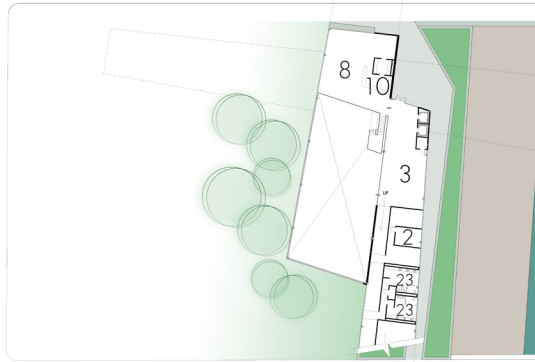
Lower Level

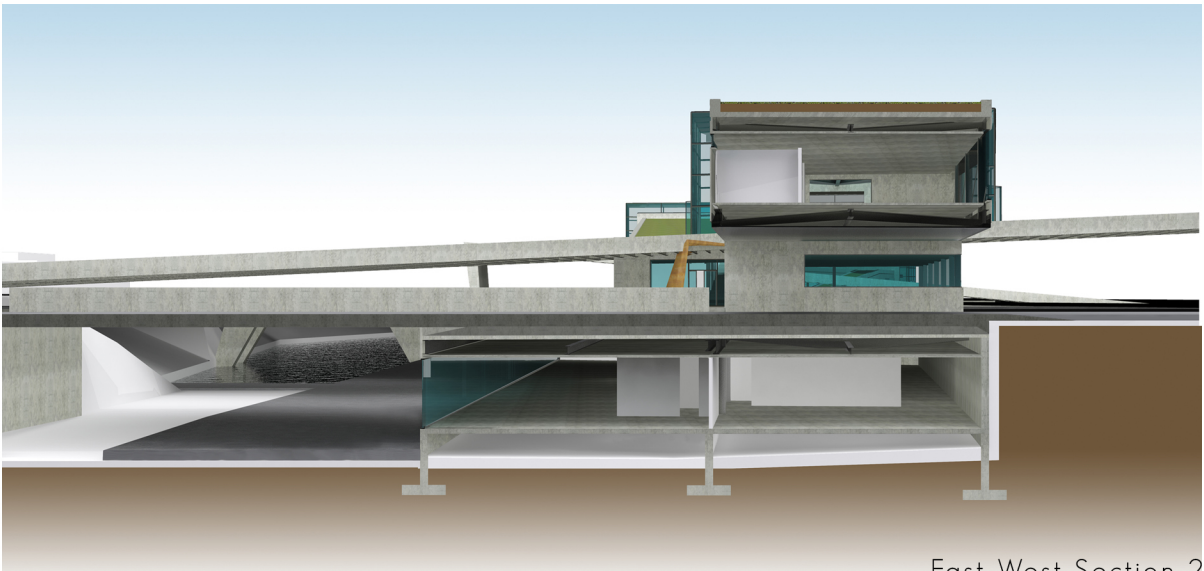
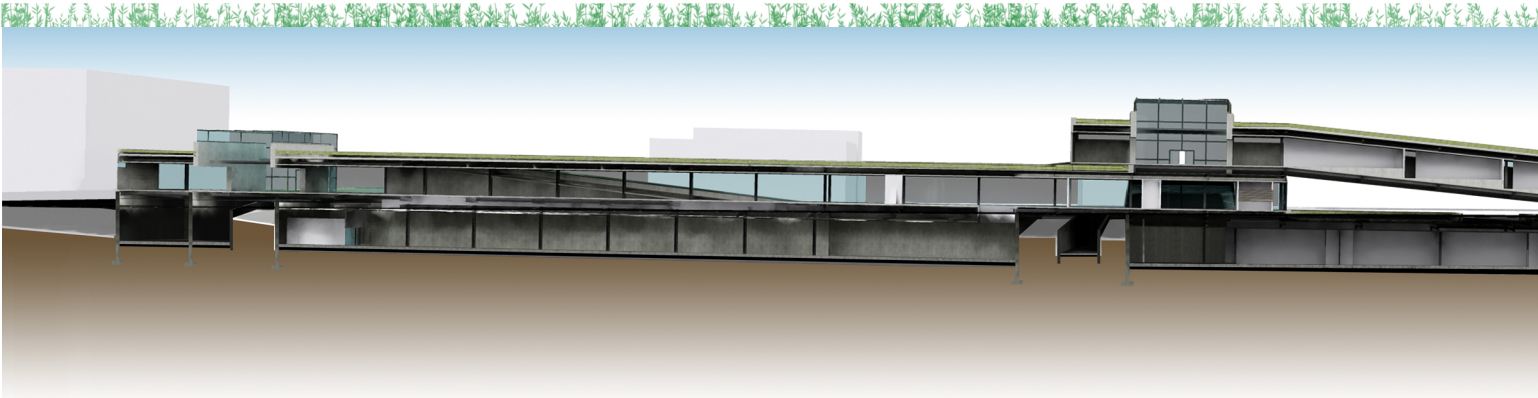


Ground Level



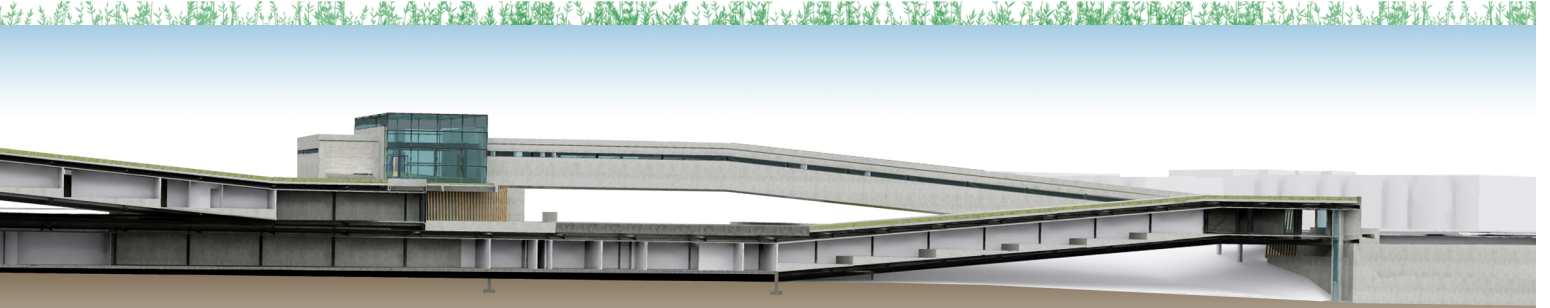
Upper Level



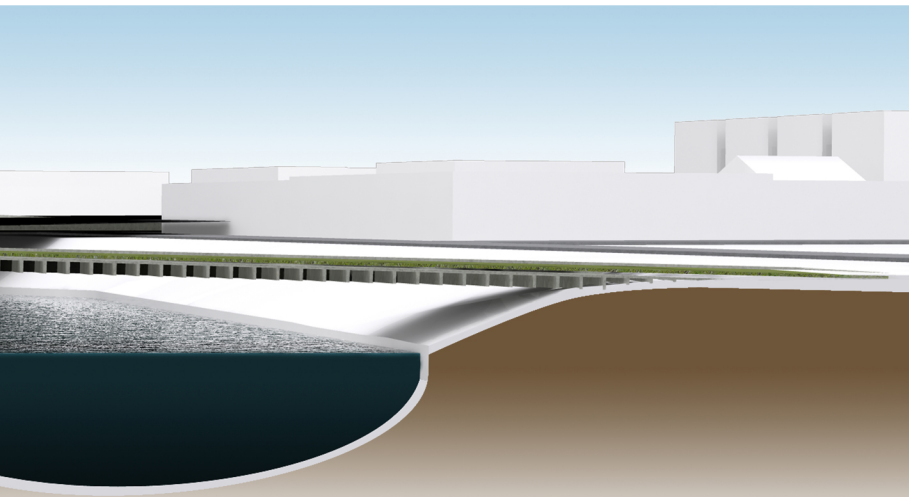


East-West Section 2

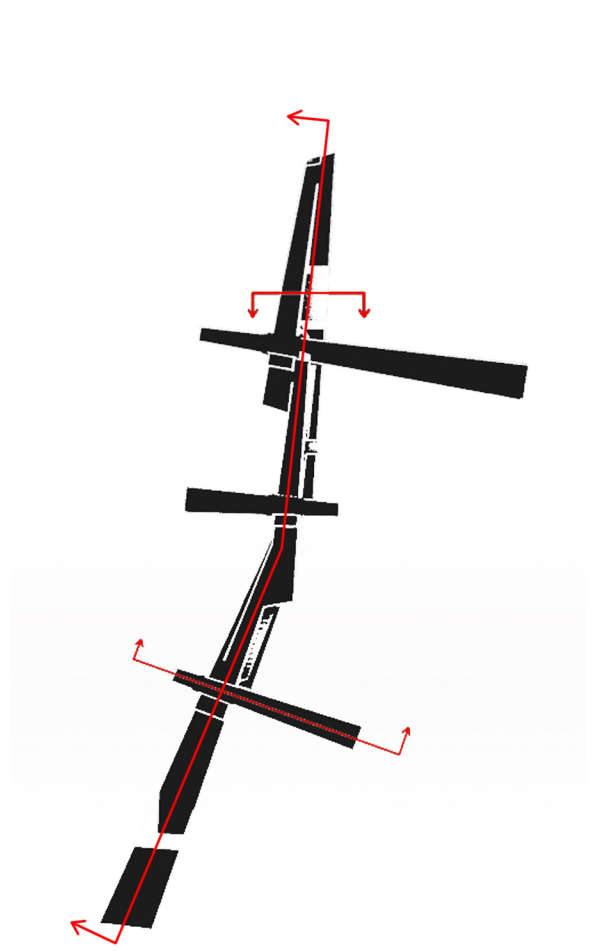


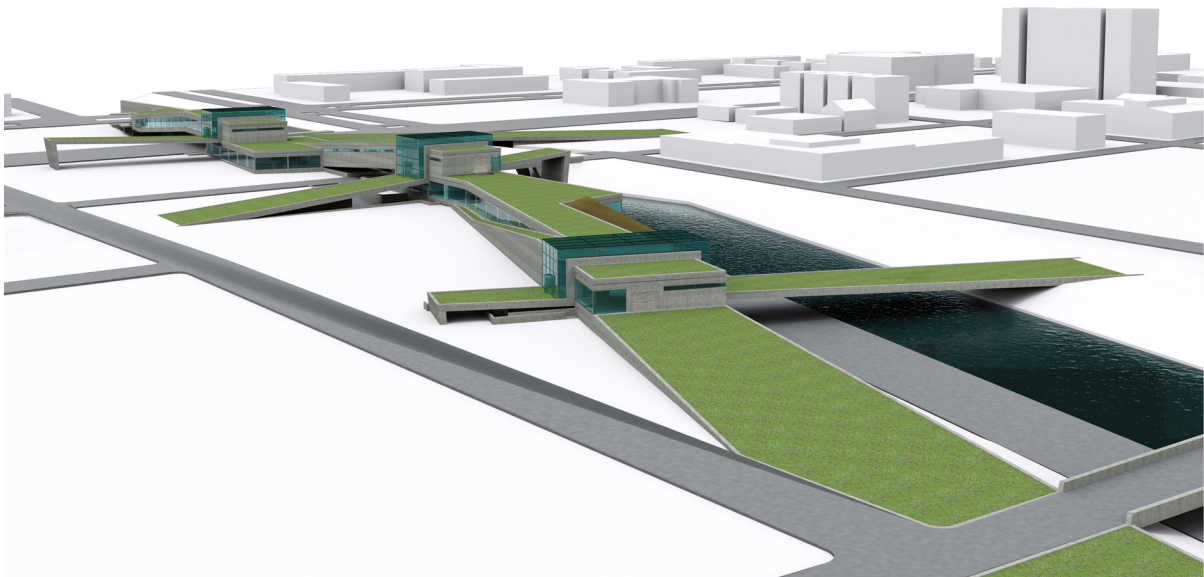
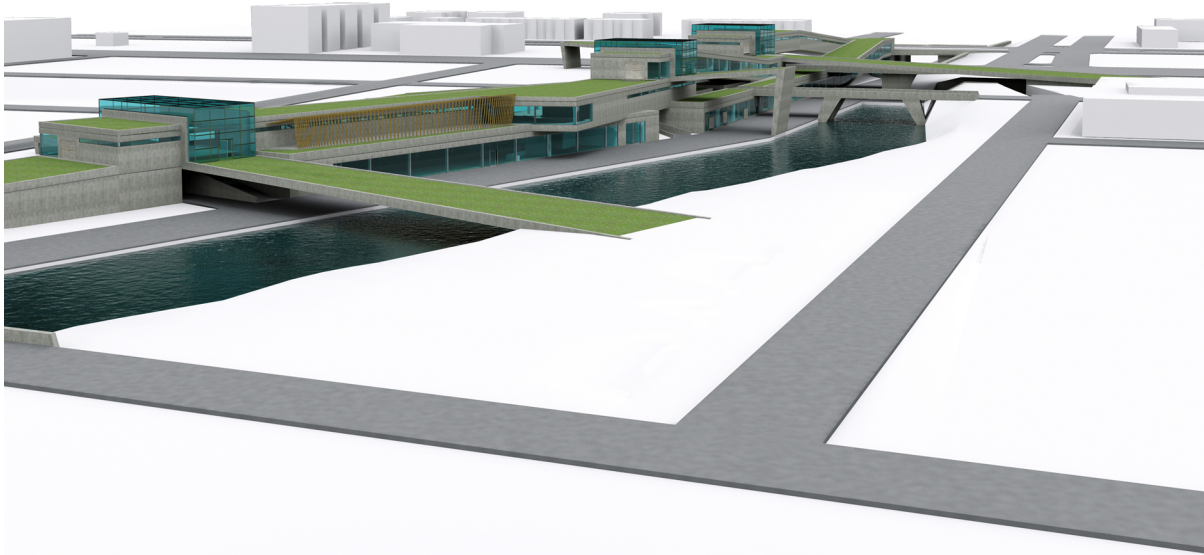


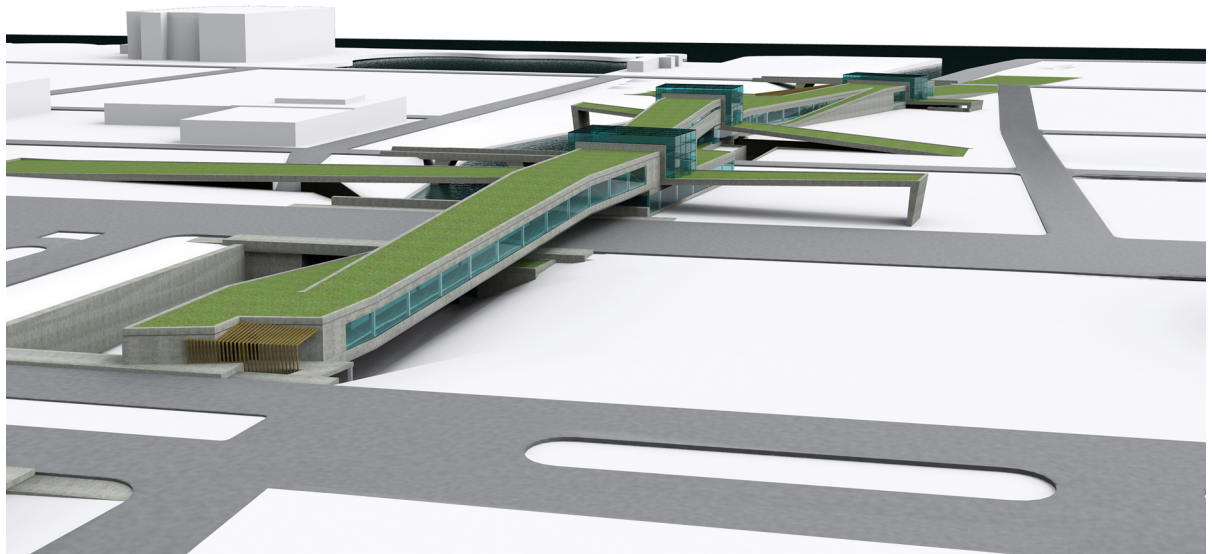
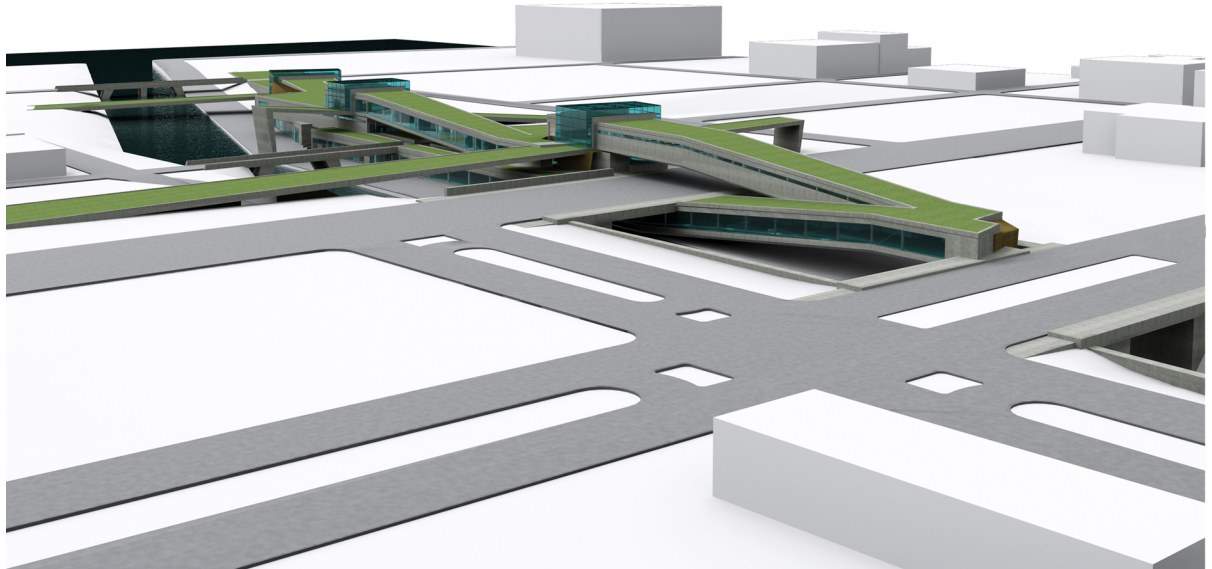
North-South Section



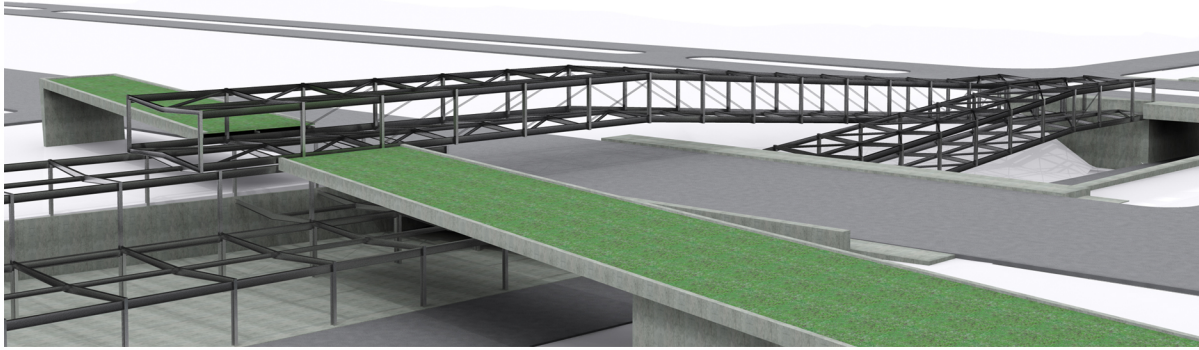
East-West Section 1



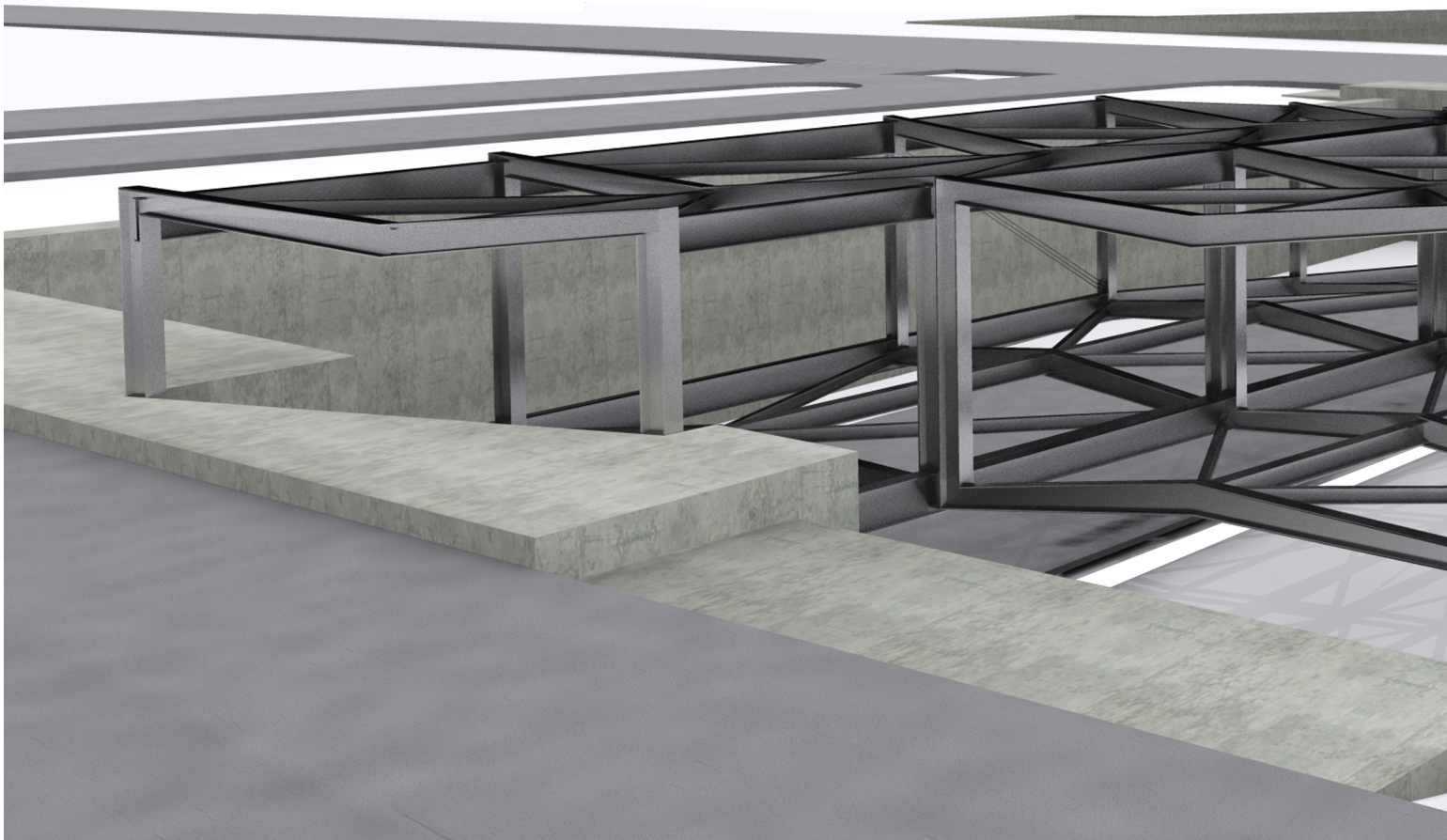


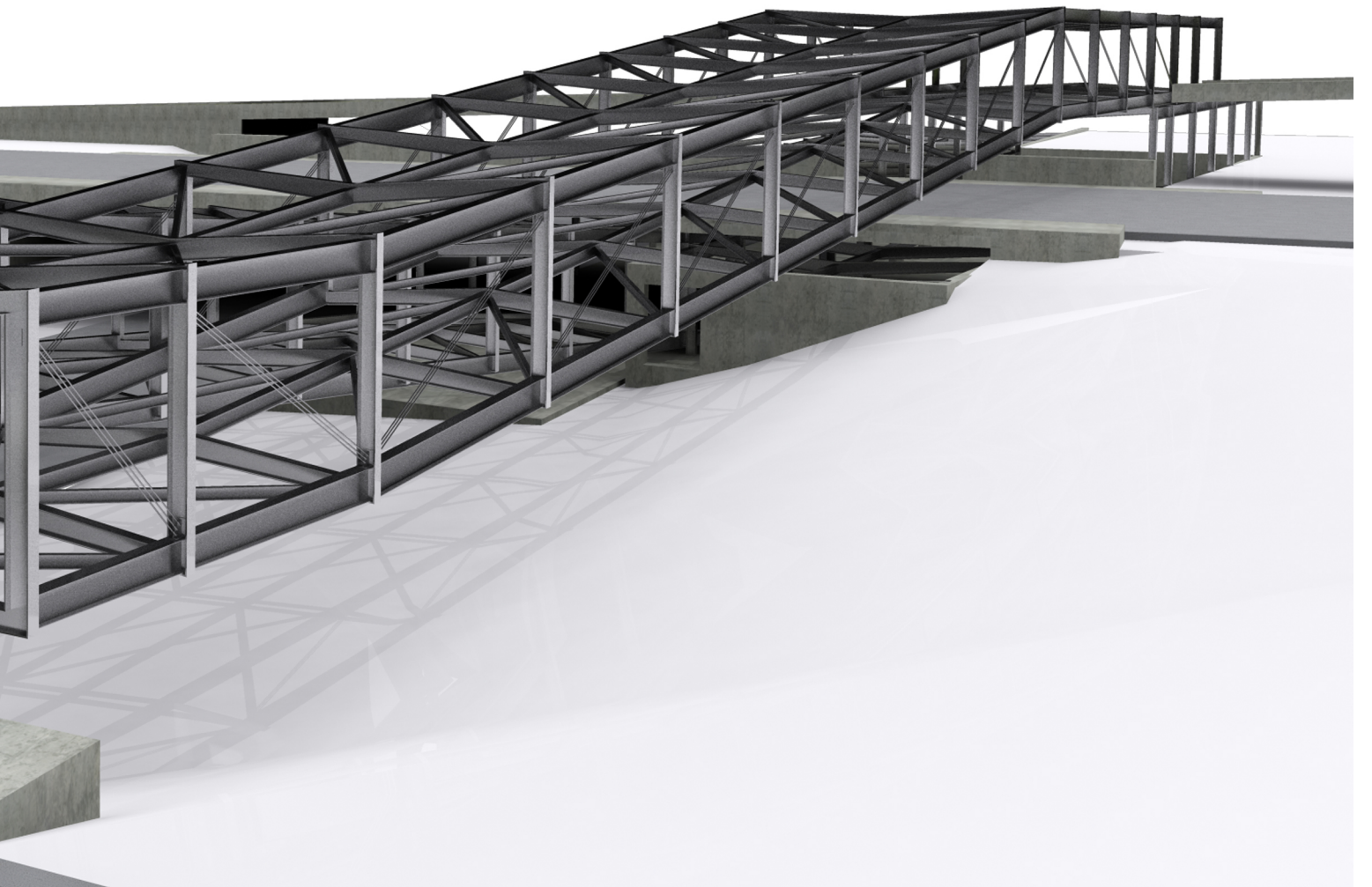






Due to the long spans that portions of the building are to extend, the structure is composed of a steel box truss with the interior housing the functions of the building. The agricultural ramps which are perpendicular to the main spine of the building are supported with a concrete waffle slab and concrete bearing walls.











<sup>1</sup>Redevelopment of Detroit's Riverfront. U of M, 2005. 20 March 2008 <<http://www.umich.edu/~econdev/detroitriverfront/index.htm>>.

<sup>2</sup>James Corner, "Terra Fluxus," *The Landscape Urbanism Reader*, (New York: Princeton Architectural Press, 2006) 33.

<sup>3</sup>Rem Koolhaas, "Congestion without Matter," *S,M,L,XL*, (New York: Monacelli, 1999) 921.

<sup>4</sup>James Corner, "Terra Fluxus," *The Landscape Urbanism Reader*, (New York: Princeton Architectural Press, 2006) 31.

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