grocery urbanism: GR

A study of the future of grocery shopping in downtown Grand Rapids, MI

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A study of the future of grocery shopping in downtown Grand Rapids, MI

Alicia J. Miller

Kendall College of Art & Design
Master of Architecture Thesis

Adivsor: Greg Metz
Professors: Juli Brode & Travis Williams
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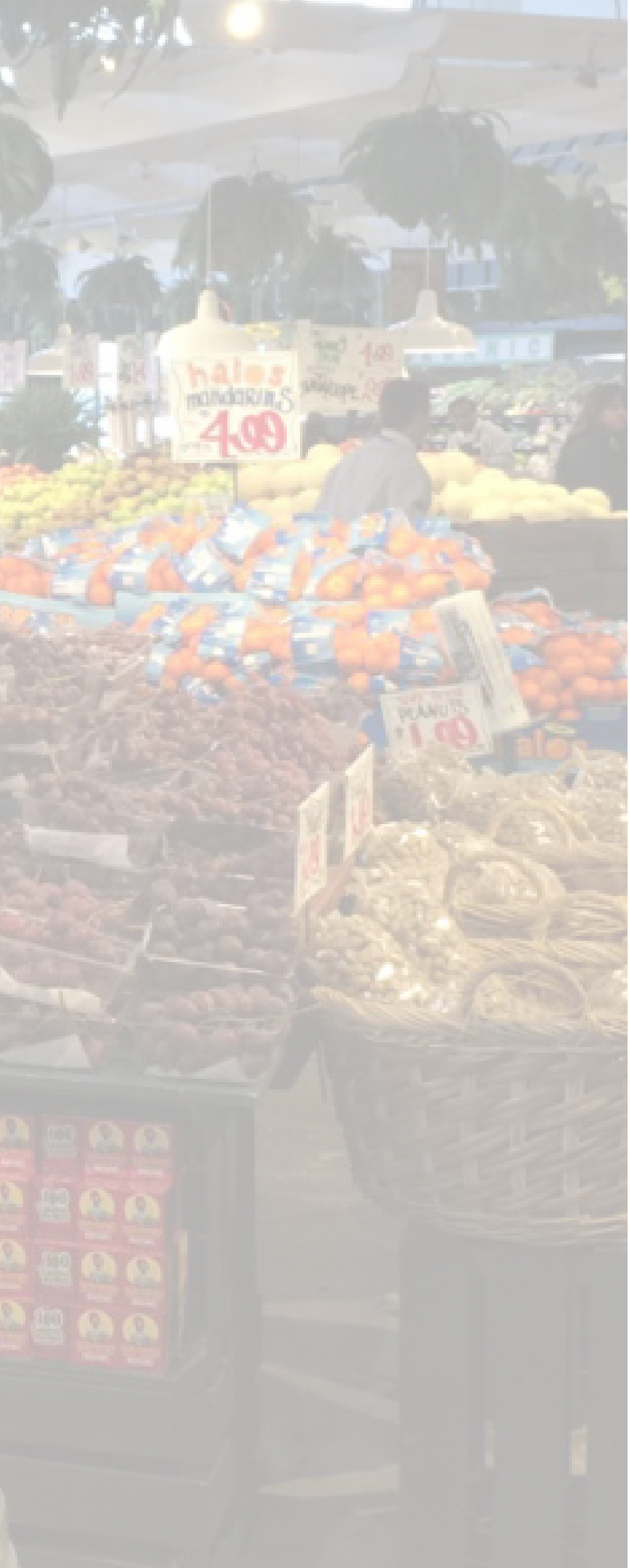
abstract

Grand Rapids, MI has a reputation as a rising mid-sized city with a lively art scene, a sizable stock of breweries, and regional amenities like Lake Michigan. However, despite being a social hub for the region, downtown Grand Rapids has not been able to attract basic resources for people living downtown such as a full service grocery store.

The city recently published market research which shows that large scale grocery stores will not look to open a location downtown until the city reaches a critical mass of 10,000 housing units, but how does the city reach critical mass without the basic resources to support its existing residents? This thesis proposes a new grocery store concept to replace the need for a traditional grocery store by taking into account today's rapidly changing culture. Today, people seek convenience. Our fast moving culture combined with developments in technology are pushing the future of grocery shopping toward the online market through pre-order and delivery programs. However, there is still a desire for people to be able to choose their own fresh produce and meat based on personal preference. As Grand Rapids begins to address the lack of access to food downtown it is important to acknowledge the future of grocery shopping and how it impacts the future of the grocery store.



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history & trends

Grocery stores in midsized American cities have been significantly transformed over the last 150 years. During the late 19th century and into the early 20th century groceries, mostly produce, meat and bulk dry goods, were bought and sold at large markets in the center of the city. People shopped frequently and purchased only a few days worth of fresh food at a time. Eventually, grocers developed small, full-service grocery stores in downtowns that were quicker and less crowded than the central markets. Over the last century, these small urban grocery stores have exploded into 250,000 square foot suburban supercenters offering thousands of food goods alongside general merchandise, housewares, electronics, and clothing. There are a number of drivers of the suburban supercenter but the most notable is the consumer's desire for convenience. As people moved to the suburbs driven by the introduction of automobiles and land values, the grocery stores followed. However, consumer shopping habits also changed. People were able to buy more goods per trip and shop less frequently by driving to the store. Now, at the beginning of the 21st century as people begin to return to urban living, the suburban supercenter is no longer convenient. Increasingly, people are trading individual automobiles for public transit, bicycles, and their own two feet. In the continual search for convenience, retailers will now deliver almost any item to a person's doorstep within hours. Looking to the future, people will likely pre-order their dry goods, refrigerated food, and frozen food online. However, in terms of fresh food, people have had a consistent desire to be able to see, feel, smell and choose their own fresh produce and meat based on personal preference.

bags per trip

automobiles allow
suburbs to grow rapi

public transit (street cars)
allow more people to live
outside the city center

at h
beco
hous

as cities grow land
vlaues rise sharply

packaged food
is introduced

city market houses
mid 19th century

chain stores emerge
late 19th century

small urban grocery
stores & wholesalers
mid 19th century

small urban grocery stores
move out of downtown
early 20th century

self service stores
are introduced
1916

chain stores
become national
corporations
1920's

sup
are i
193

grocery delivery com
target suburban hous
1930's

trips per week

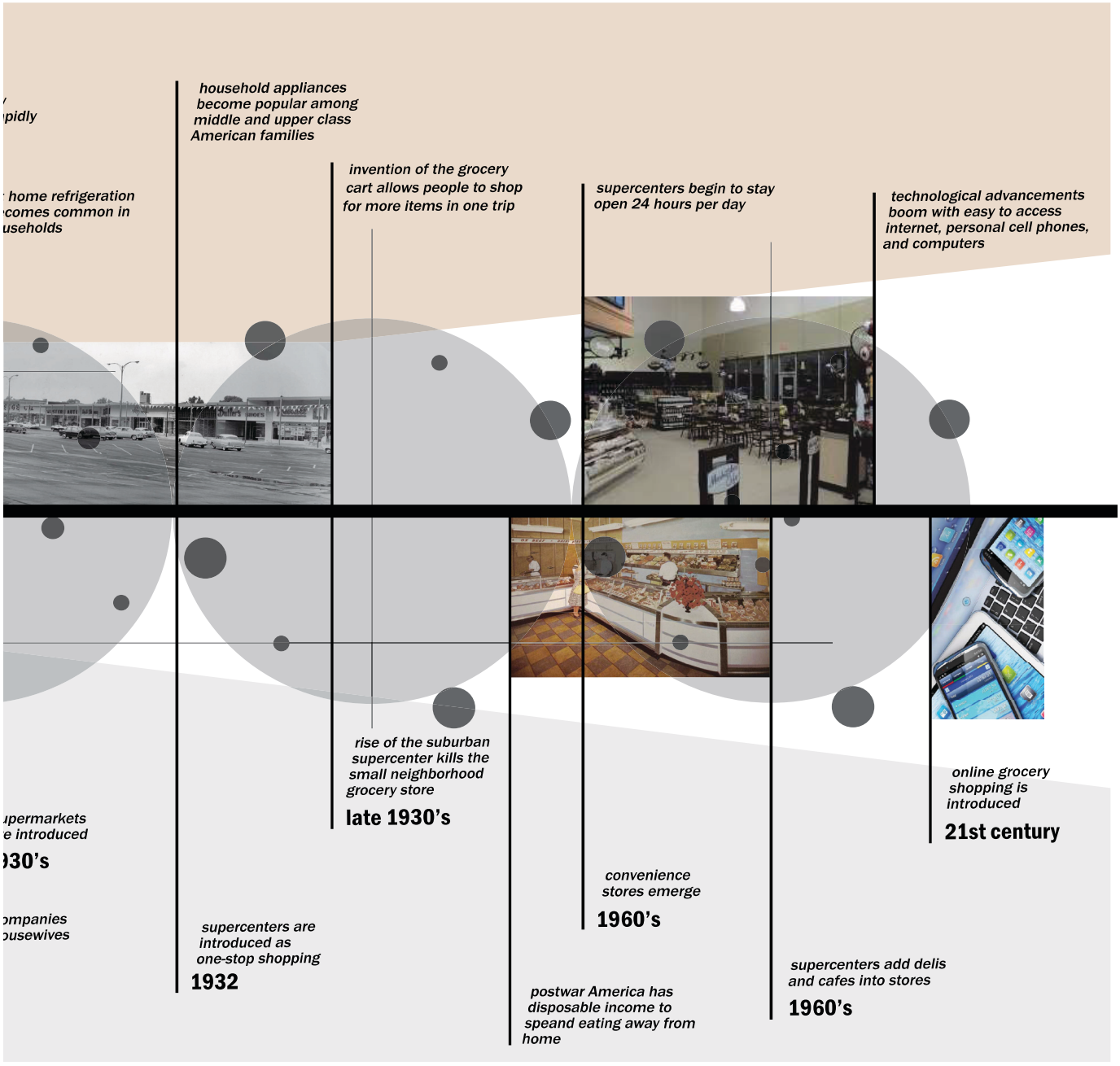

fig. 6 - grocery trends through the 20th century[1, 2, 3]

1 - Hamilton, 2009
2 - Mayo, 1993
3 - Tolbert, 2009

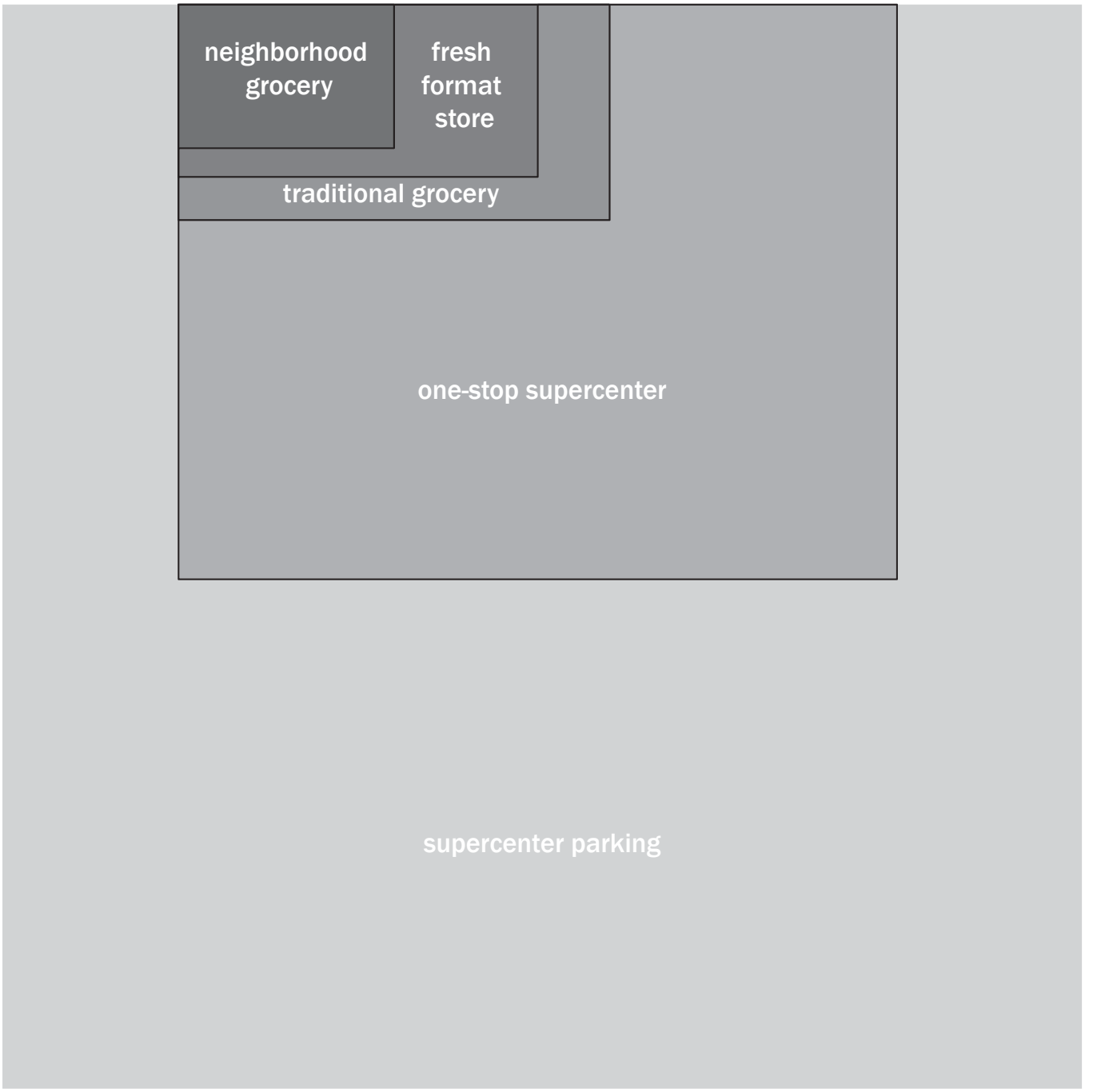

fig. 8 - traditional grocery typologies[1, 2]

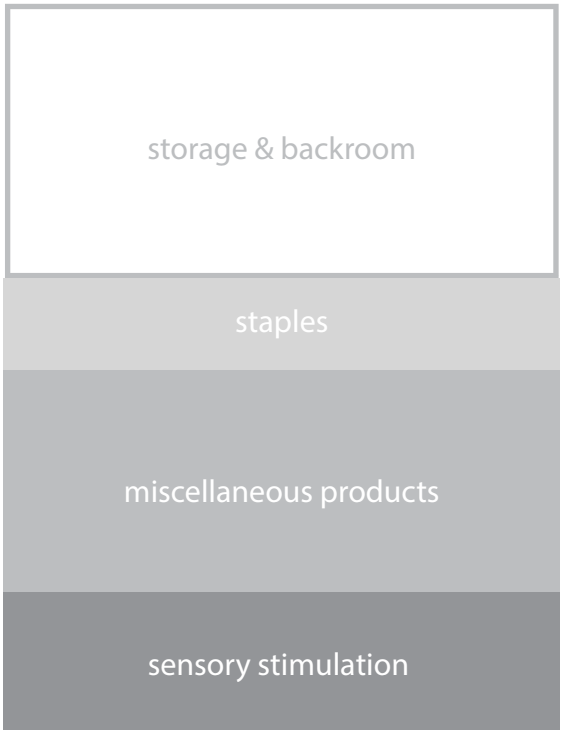

fig. 9a - spatial layers[1], [2]

traditional typologies

typology	average size
one-stop supercenter	250,000 sf + 600,000 sf parking
traditional grocery	45,000 sf
fresh format stores	30,000 sf
neighborhood grocery stores	15,000 sf

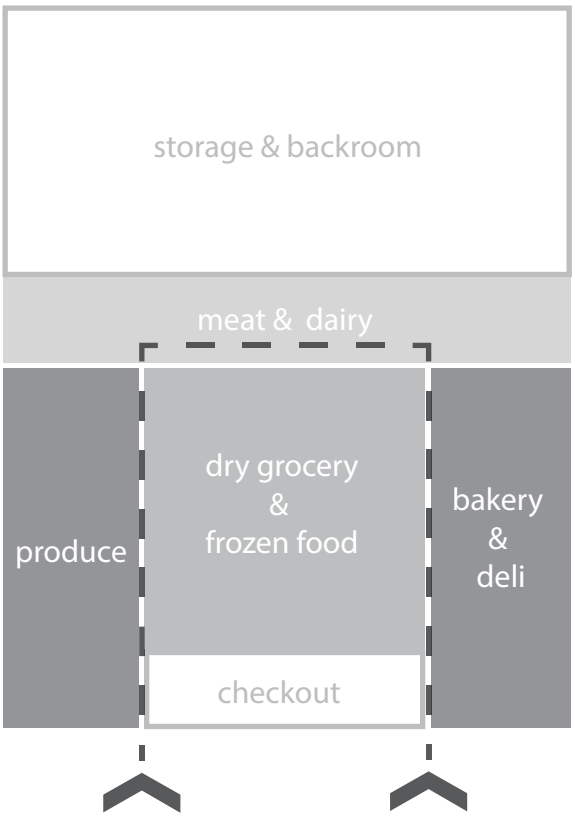

fig. 9b - typical grocery layout[1, 2]

typical grocery store layout

Since the appearance of self-service grocery stores in the early 20th century, the basic layout of the stores has stayed the same regardless of the size or location. The items which stimulate the senses such as a floral section, a bakery, cafe or the produce section all tend to be near the entry. The staples such as the dairy section, meat, and eggs are typically placed at the back of the store with miscellaneous dry good items in between. The configuration is meant to give consumers a positive sensory experience upon entry then force them to travel through displays of items they may not necessarily need before reaching the most basic necessities.

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1 - Byrne, 2015

2 - "U.S. Grocery Shopper Trends 2012 Executive Summary", 2012

Amazon Fresh	
Cost	prime fresh membership -$299/year deliveries free
Delivery	unattended & attended, predawn (before 7:00 am), 2-hour delivery
Refrigeration	temperature controlled tote bags & ice packs (guaranteed for 2 hours after set delivery time)
Supply Chain	personal shoppers in warehouses - delivery - consumer
Instacart	
Cost	$99/year (free delivery for orders over $35) nonmembers - $3.99-$5.99 delivery charge
Delivery	unattended & attended delivery, 2-hour delivery
Refrigeration	temperature controlled bags & coolers
Supply Chain	personal shoppers in store of choice - delivery - consumer
Google Express	
Cost	$10/month or $95/year (free delivery for orders over $35, nonmembers - $4.99 per store
Delivery	unattended & attended delivery
Refrigeration	limited selection (currently only nonperishables)
Supply Chain	personal shoppers in select stores - distribution center - delivery - consumer
Local Options	
Cost	20-30% of order, minimum $25
Delivery	attended delivery, next day
Refrigeration	N/A
Supply Chain	personal shopper in store of choice - delivery - consumer
Doorganics	
Cost	$30-$50 per order including the produce
Delivery	unattended & attended delivery - bin system
Refrigeration	N/A
Supply Chain	farmers - distribution center - delivery - consumer
Meijer Curb Side	
Cost	$5 per order
Delivery	pick-up only
Refrigeration	in store-storage
Supply Chain	personal shopper - consumer pick-up

fig. 10 - existing grocery delivery systems [1, 2, 3, 4, 5, 6]

grocery delivery systems

In large cities across America, grocery delivery systems have emerged as a new way to grocery shop by addressing the issue of convenience and efficiency in a new technological era. However, most of the systems are still in their infancy and are inherently flawed in their approach. Online shopping can be appropriate for general merchandise items and pre-packaged proccessed foods but there is a desire for people to be able to choose their own fresh produce and meat based on personal preference. There are also logistical issues balancing efficieny for the service on a large scale and convenience for the consumer.

A large scale grocery delivery system has not yet reached Grand Rapids. There are personal shoppers available in the area as well as Meijer Curb Side which is a pick up service through suburban Meijer stores. The personal shoppers are cost prohibitive for many Grand Rapids residents adding between 20% and 30% to grocery costs. They also typically do not provide the convenience that larger grocery delivery programs offer such as same day delivery and easy to use online interfaces.

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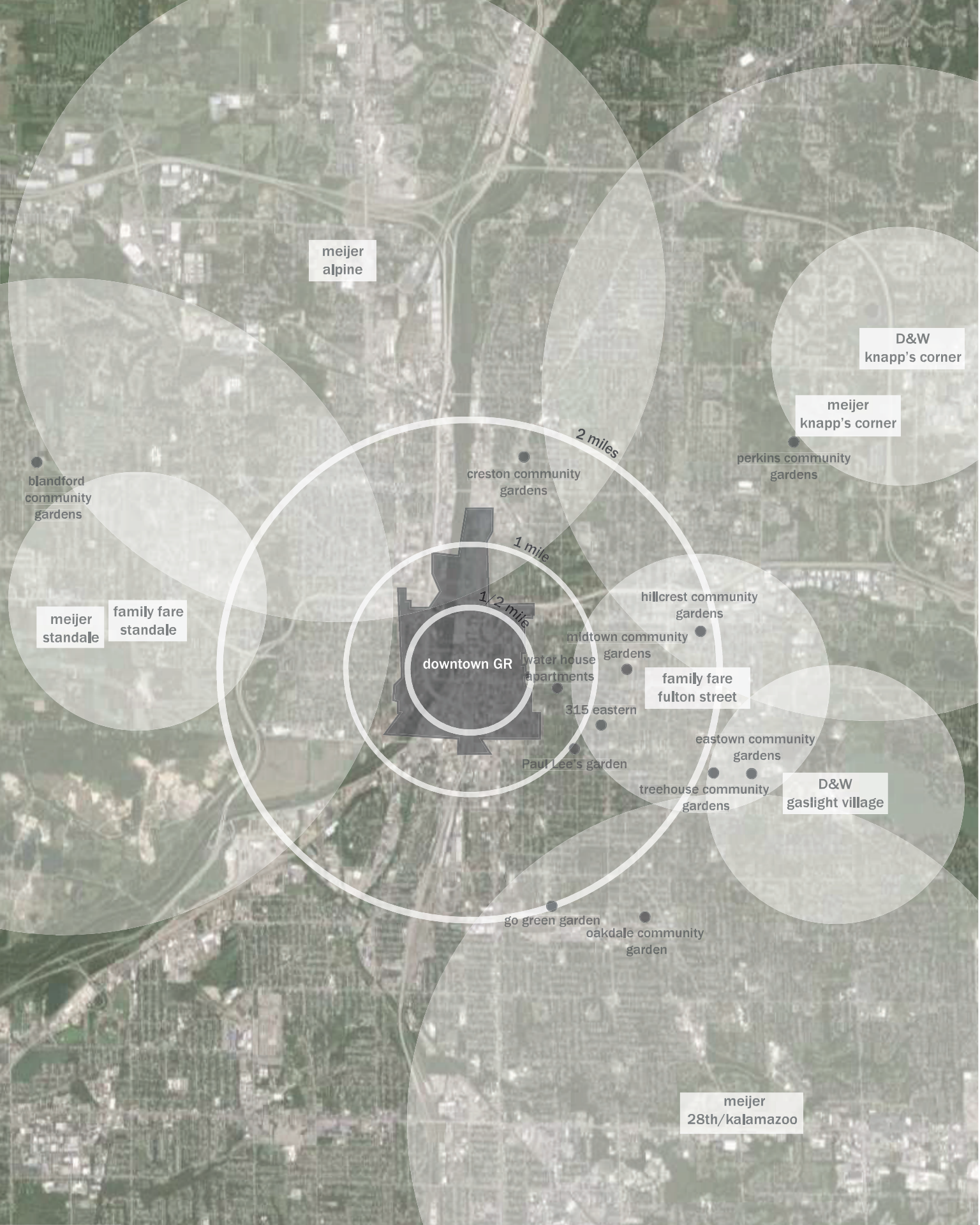
1 - https://fresh.amazon.com/about
2 - https://www.instacart.com/store/how_it_works
3 - https://support.google.com/shoppingexpress/answer/4561693?hl=en
4 - http://www.groceriesrus.net/
5 - https://www.doorganics.com/how-it-works
6 - http://www.meijer.com/content/content.jsp?pageName=curbside


WEEKEND
BRUNCH

place: downtown GR

Historically, downtown Grand Rapids was a lively and vibrant place to live, a city fueled by the furniture industry and the accessibility to other major cities and resources. A diverse mix of residences, offices, stores, and attractions drew both residents of downtown as well as those of surrounding rural areas. As the urban center grew, city leaders introduced streetcars to move people through town with ease. However, like many other midsized American cities, during the middle of the 20th century, people began to move out of downtown. With the addition of personal automobiles, people no longer needed to live within a mile of the downtwon core and could buy cheap land in the surrounding suburbs. With people leaving the downtown area many businesses and resources followed, including the grocery stores. For decades downtown Grand Rapids became either a place to work or an entertainment destination. People drove in from the suburbs in the morning or for an event or a special occasion and then drove home to the surburbs in the evening but there were very few people living downtown. The infrastructure became geared toward vehicular traffic with predominantly wide, fast roads and narrow sidewalks. Buildings were demolished only to be replaced by parking lots. Today, as downtown Grand Rapids seeks to attract residents back to the urban core, an attitude of suburbanism persists largely because the city continues to cater to those who drive into or through downtown. Most current residents feel the need to own a car because basic resources, such as grocery stores and drug stores, are still located in the suburbs. Although the city can be proud of a functioning bus system and a new bus rapids transit system (BRT), Grand Rapids' public transit options are limited and under-utilized. The existing infrastructure of the city makes driving a personal vehicle more convenient and often quicker than using public transit and more comfortable than walking or biking. Thus, along with the addition of resources, Grand Rapids must upgrade the city's infrastructure to create an environment which encourages alternative transportation and pedestrain traffic in order to, once again, create a thriving urban center.


meijer
alpine
D&W
knapp's corner
meijer
knapp's corner
perkins community
gardens
2 miles
creston community
gardens
blandford
community
gardens
1 mile
1/2 mile
meijer
standale
family fare
standale
downtown GR
hillcrest community
gardens
midtown community
gardens
water house
apartments
family fare
fulton street
315 eastern
eastown community
gardens
Paul Lee's garden
treehouse community
gardens
D&W
gaslight village
go green garden
oakdale community
garden
meijer
28th/kalamazoo

distribution

The greater Grand Rapids area is home to a variety of options for grocery shopping ranging from large supercenters serving 10,000 housing units to small neighborhood stores which may serve less than 1,000 housing units. However, all of these options are located at least 2 miles outside of downtown. Residents of the downtown core must drive out to the suburbs for basic day-to-day grocery shopping or use a Rapid Bus line adding at least 20 minutes each way for every grocery shopping trip.

Uniquely, Grand Rapids has a thriving culture of community gardens. Historically, these gardens were tended to by prominent women in town and were incorporated into the public school system to educate youth about locally, sustainably grown produce.[1] Today, most of the gardens are operated by a neighborhood association or are privately owned and operated by individual neighbors. For the 2016 growing season most, if not all, are operating at capacity proving a desire for residents to grow their own produce. Similarly to the distribution of grocery stores, these community gardens are found in the low density neighborhoods surrounding downtown but serve almost exclusively their immediate neighborhood. As the urban grid becomes more dense in the downtown core there is little to no space for urban agriculture eliminating the opportunity for downtown residents to maintain a garden and grow their own food.

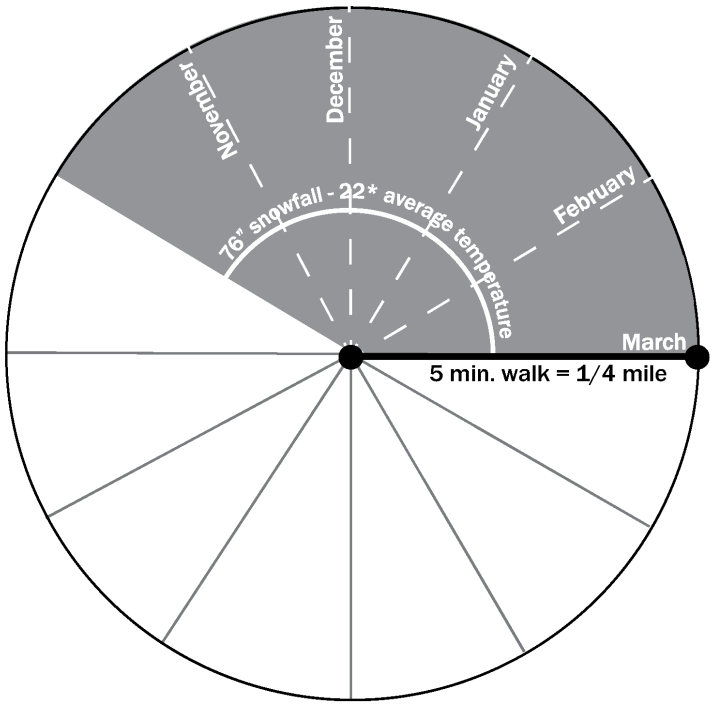
fig. 14 - grocery and community garden distribution - GR[1, 2]

1 - Ellison, 2012
2 - Amlotte, 2014

fig. 16a - winter conditions in Grand Rapids[1]

fig. 16b - pedestrian conditions in Grand Rapids

fig. 16c - pedestrian conditions in Grand Rapids



walkability

Downtown Grand Rapids has been growing in recent years with new restaurants, events, and housing units. However, the infrastructure in the city is outdated and breeds a culture of vehicular dependency. The streets are wide with narrow sidewalks making driving easy while biking and walking is uncomfortable. In addition, there is very little tree canopy to provide shade in the summer and Michigan's harsh winters cause a decline in outdoor activity for 4-5 months per year.

Based on these factors and considering the excess load associated with grocery shopping, the ideal radius for a walkable access to grocery is 1/4 -1/2 mile or a 5-10 minute walk.

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1 - http://www.mlive.com/news/index.ssf/2012/10/so_long_snowpocalypse_weather.html

2 - Moudon, 2003

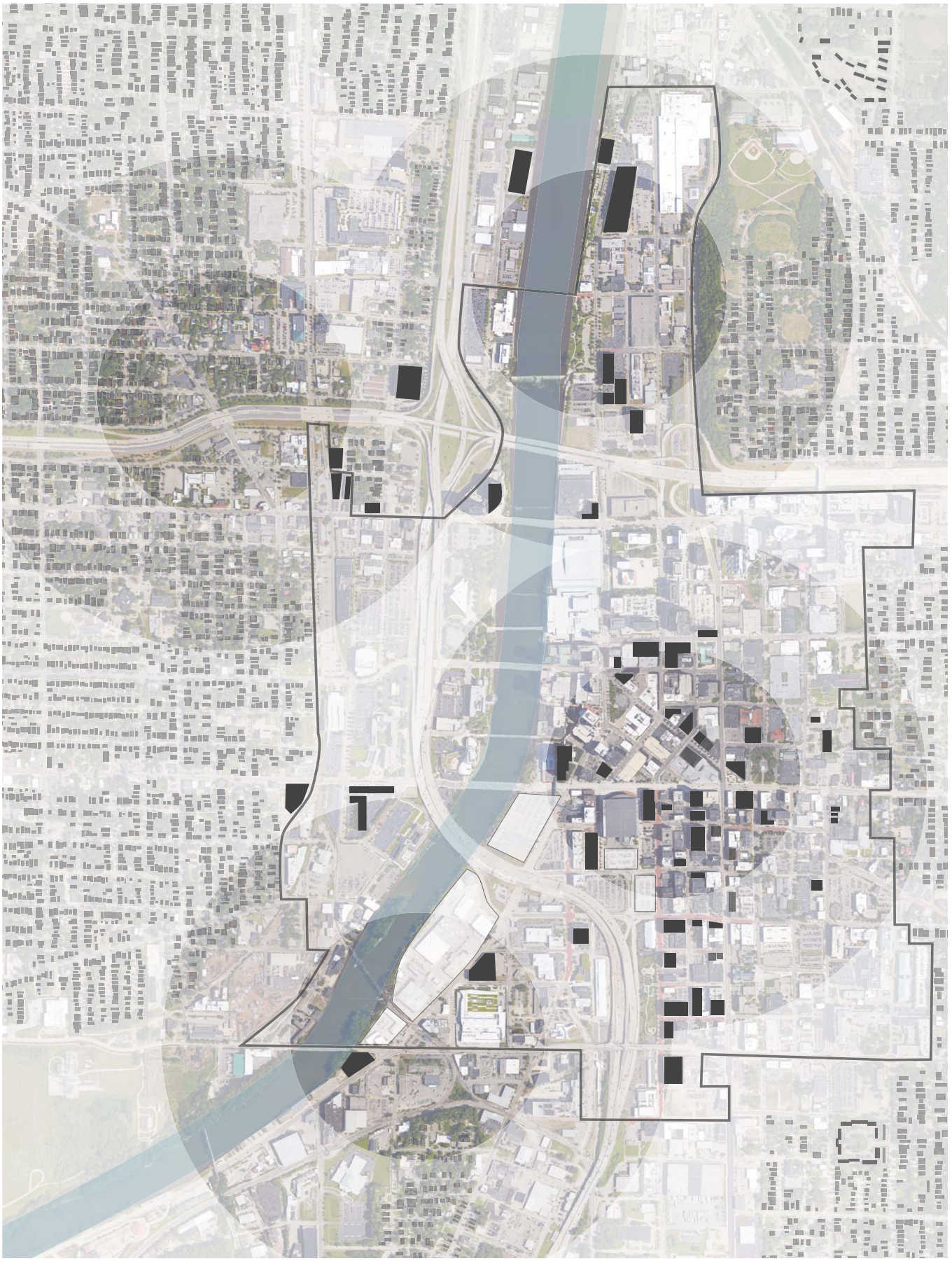
residential distribution

The city of Grand Rapids has set a goal of reaching a critical mass of 10,000 housing units within downtown in order to attract more resources including a full service grocery store. Currently, there are roughly 5,000 existing units within the downtown core and hundreds more in the adjacent low density neighborhoods.[1] The most densely populated area of the city is at the center although that density is projected to expand rapidly to the west, north and eventually the south.

fig. 18
existing residential distribution

\- density +

1 - “GR Forward Downtown & River Action Plan.”, 2015



masterplan

Downtown Grand Rapids is slightly larger than 1 square mile in area. In order to provide walkable access to groceries for all residents of downtown, the masterplan calls for 4 locations of grocery infrastructure centered around existing and projected densities of residential units. The locations are intended to be implemented in phases to coincide with development in each area such that, eventually, each location would be serving roughly 2,500 housing units as the city reaches critical mass.

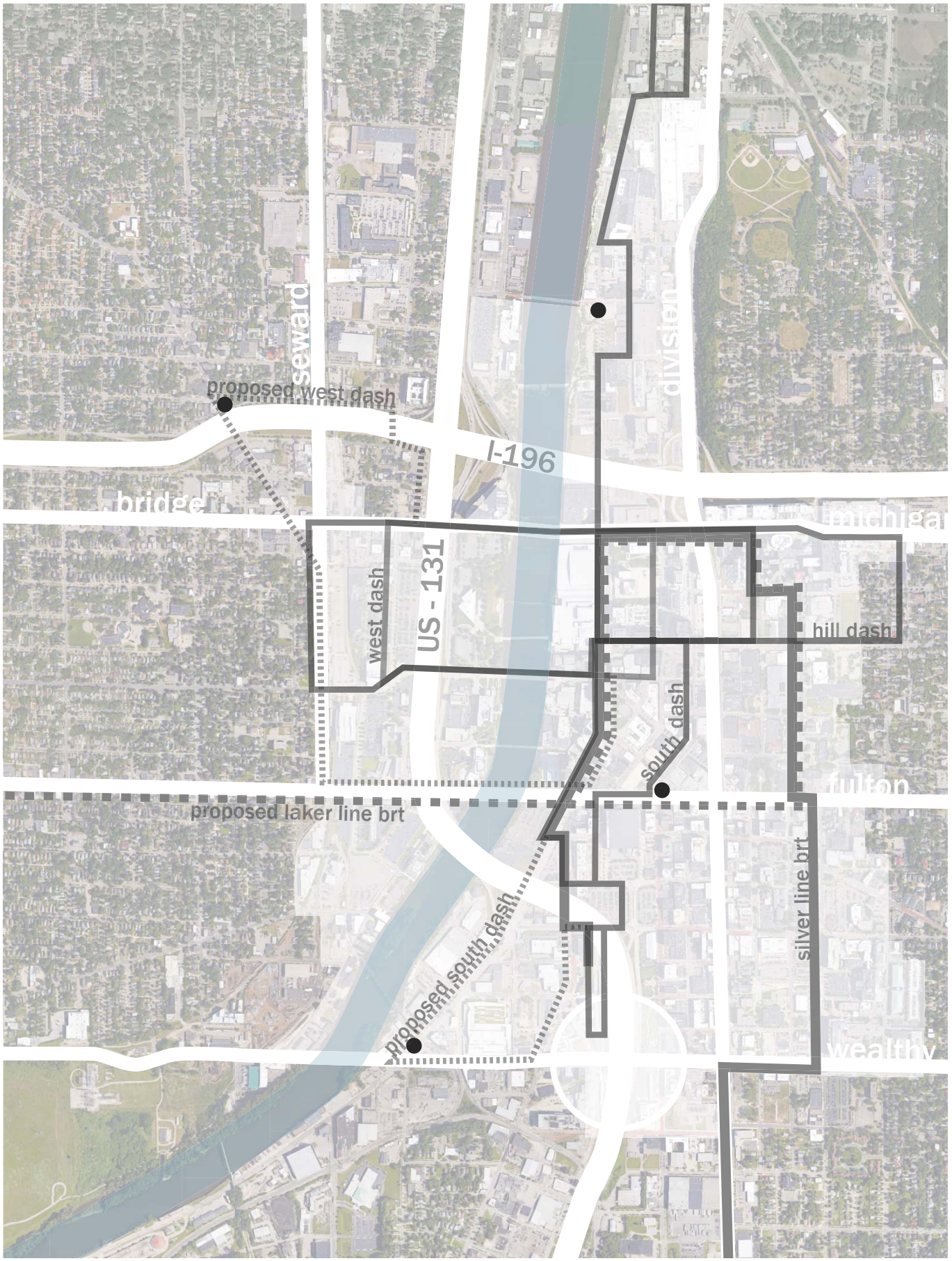
Phase 1: City Center - Fulton & Ionia

Phase 2: West Side - Stocking & 3rd

Phase 3: Monroe North - Monroe & 6th

Phase 4: South Heartside - Market & Wealthy

fig. 20
grocery infrastructure masterplan


seward
division
proposed west dash
I-196
bridge
michiga
west dash
US - 131
hill dash
south dash
fulton
proposed laker line brt
silver line brt
proposed south dash
wealthy

transit

As the city grows in population, public transit will become more of a priority. Ideally, people will be commuting into the city via the BRT system and utilizing the DASH buses to access the city from outlying parking areas. There is an opportunity to maximize access to groceries downtown for residents as well as non residents who may be working or going to school downtown. Addressing alternative transportation including, biking, public transit, and walkability will be key to the success of new grocery infrastructure in Grand Rapids.

fig. 22 - transit & traffic patterns

● proposed grocery infrastructure

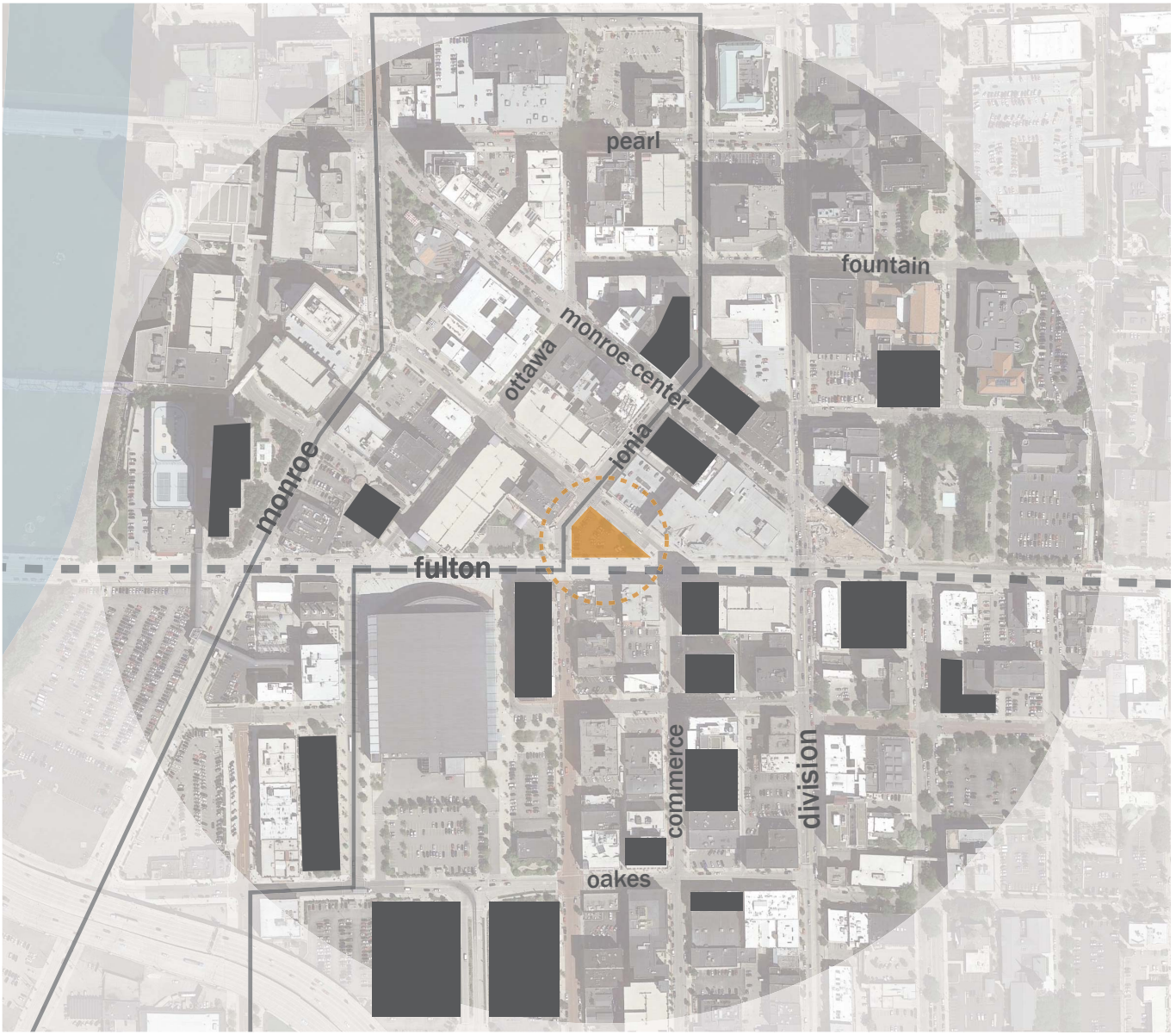
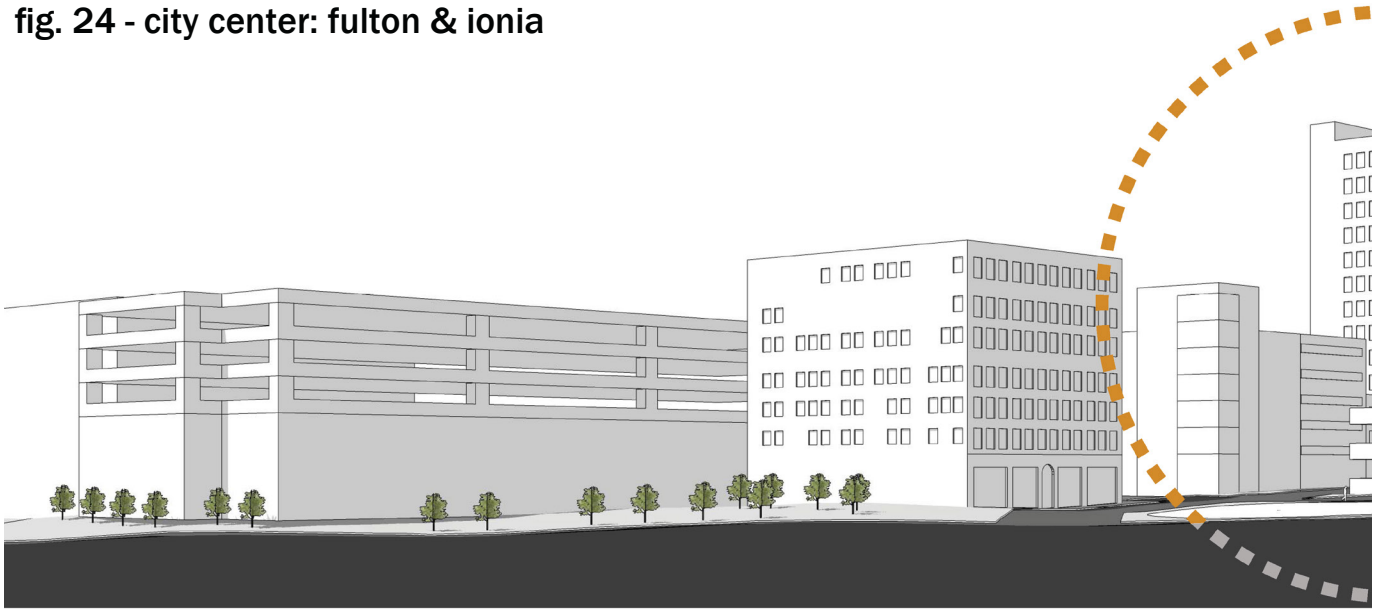
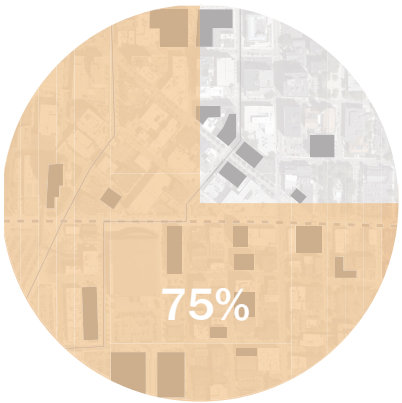
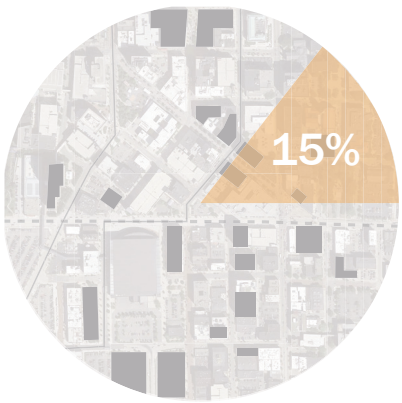


fig. 24 - city center: fulton & ionia

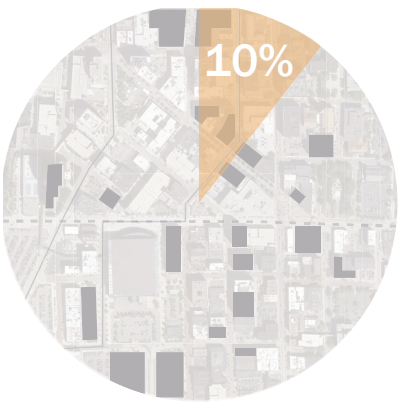




market rate & luxury apartments



income restricted apartments



luxury condos

fig. 25b - city center residential distribution

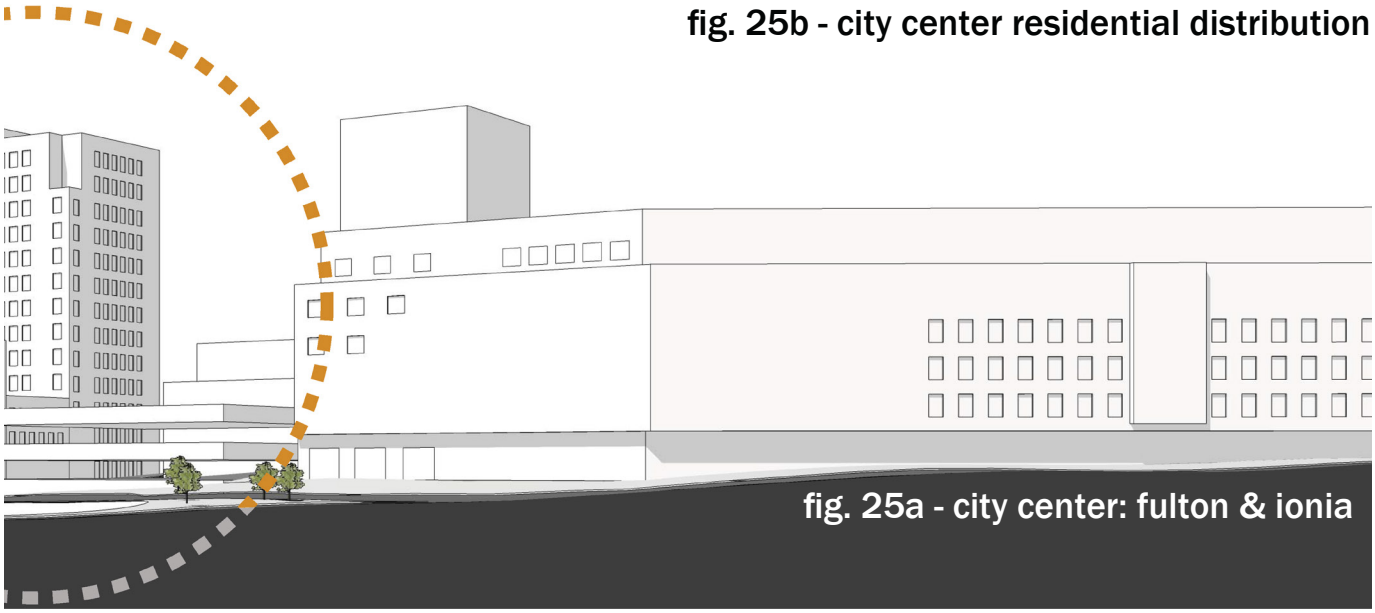
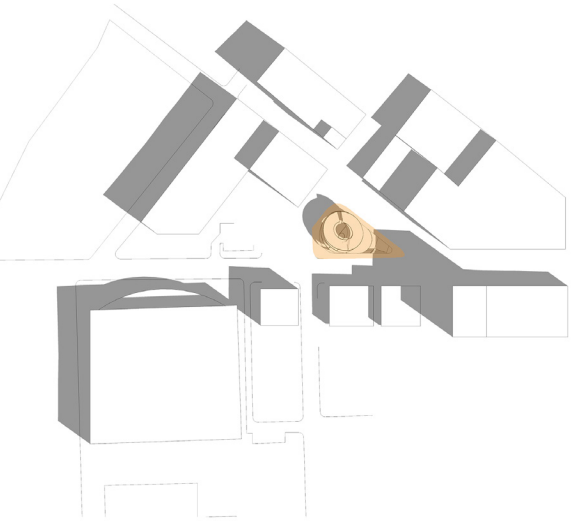
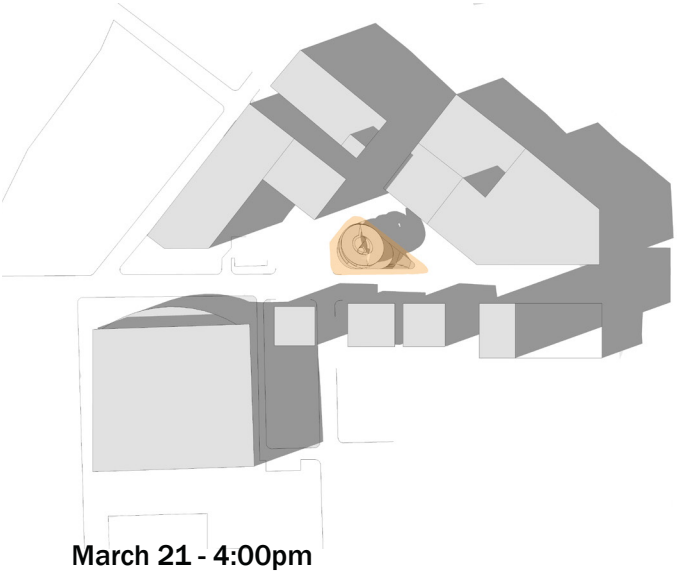


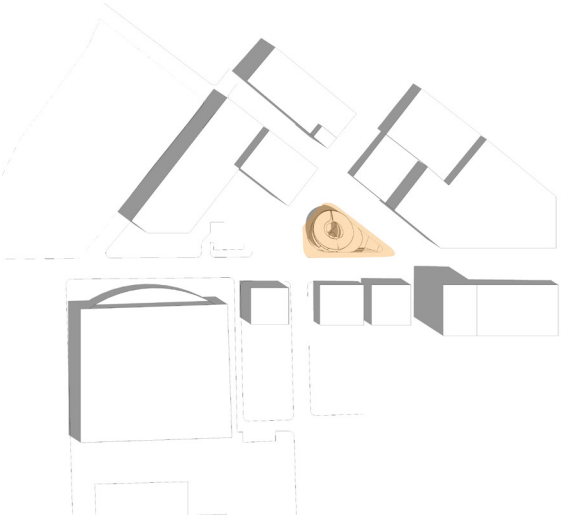
fig. 25a - city center: fulton & ionia



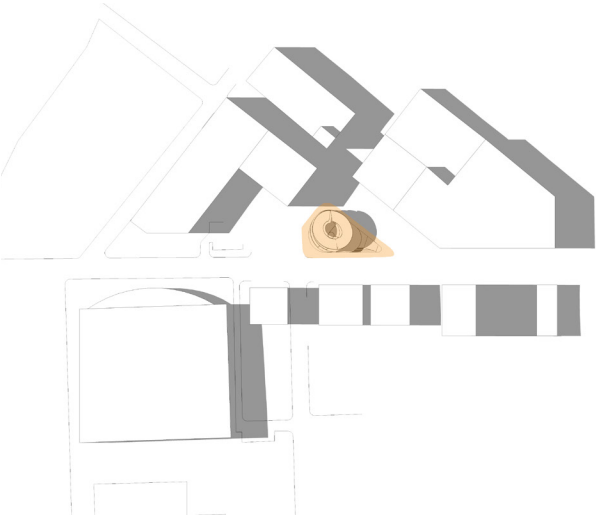
March 21 - 10:00am



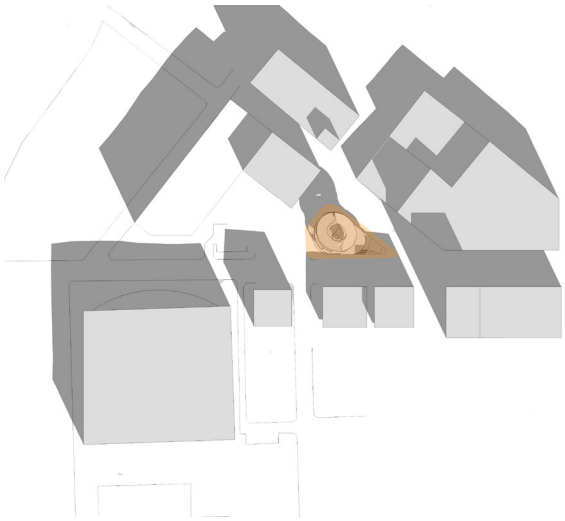
March 21 - 4:00pm



June 21 - 10:00am



June 21 - 4:00pm



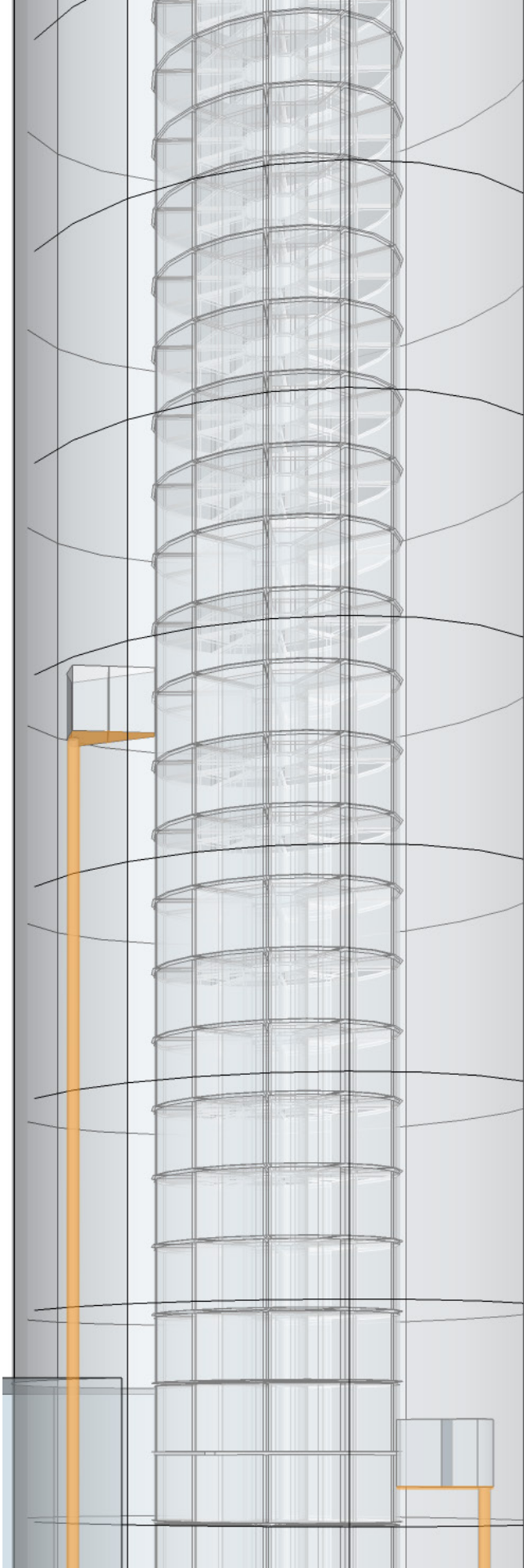
December 21 - 10:00am

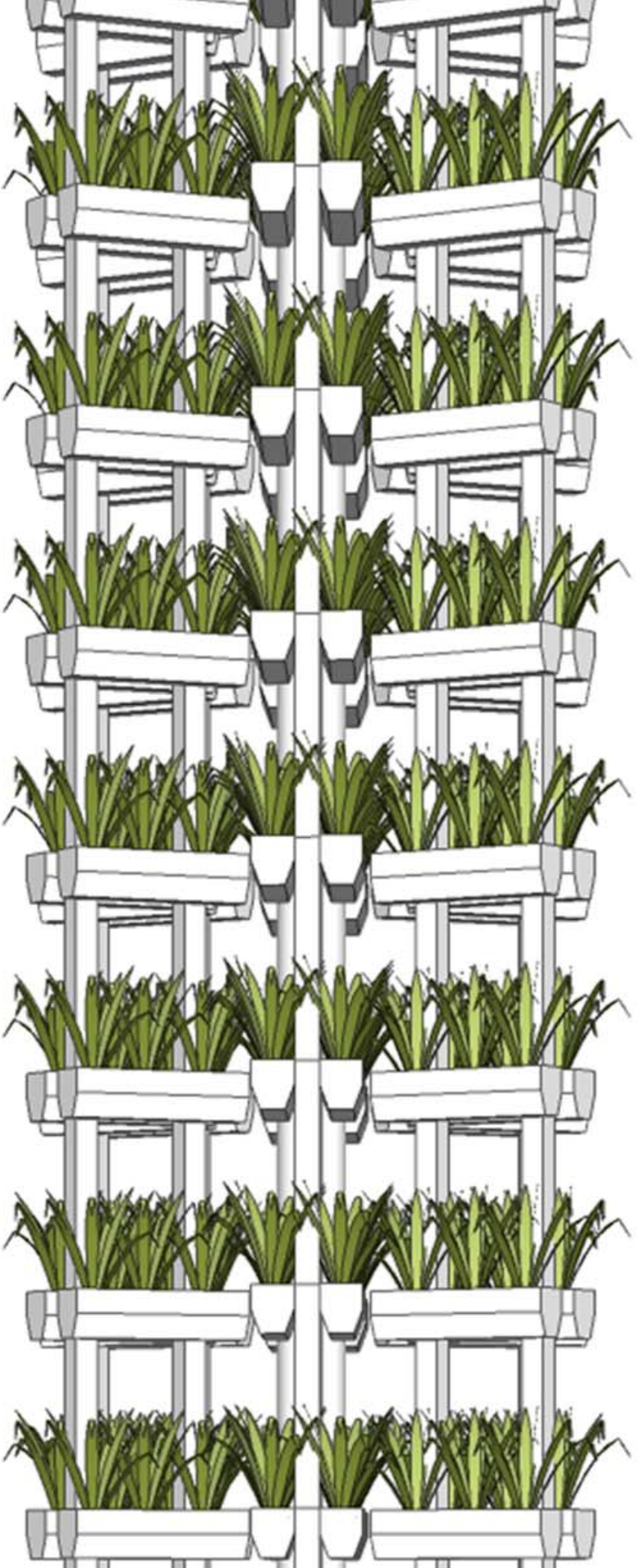
December 21 - 4:00pm

fig. 27b - site photo

fig. 27a - site photo

fig. 26 - shadow study fulton & ionia





systems/concepts

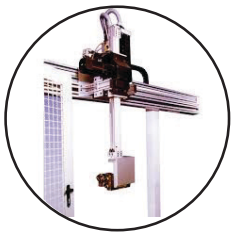
In order to address the need for access to food downtown in a way that acknowledges the culture of today a new concept of grocery shopping is necessary. The new concept of the Food Hub combines the convenience of pre-ordered groceries with the experience of shopping for fresh, local produce and meat. Removing the dry goods, refrigerated, and frozen foods from the program allows the Food Hub to occupy significantly less square footage than a traditional grocery store, ideally suiting it to urban locations where land is often more expensive than in the suburbs. It reacts to the shift in culture toward using technology to increase convenience. The juxtaposition of the traditional and the new is represented at various levels within the Food Hub both physically through the architecture and conceptually through the programmatic elements. The enviornment for shopping is reminiscent of a traditional marketplace with fresh local produce on display and a butcher shop. However, at the center, the automated storage tower creates a spectacle of how shopping has changed.

eat



grow





shop




fig. 30 - the food hub program

fig. 31a - the food hub concept

fig. 31b - the food hub adjacencies

the food hub concept

The concept of the Food Hub provides access to food at three basic levels: shopping, growing and eating on one compact site.

Shopping: Storage for pre-ordered packaged and processed food, a produce section, and a butcher shop. This combines the convenience of the pre-order and delivery systems with the opportunity for the personal preference and freshness of a local market.

Growing: Hydroponic production garden providing greens, vegetables, and herbs to be sold in the grocery as well as a community garden available to residents or businesses downtown who want their own growing space year-round.

Eating: A cafe easily accessible to customers of the grocery as well as the general public passing by or looking for a place to touch down for work or play. It serves light fare inspired by the produce being grown in the greenhouse with coffee available throughout the day and wine and spirits in the afternoon and evening.

The food hub revolves around the idea of pre-ordered grocery storage and supports strategic adjacencies allowing access between each food level visually or physically. The shopping and eating components have a direct connection allowing easy movement. The controlled environment of the greenhouses must physically be separated from the shopping and eating however, visual connectivity is imperative in order to emphasize the experience of locally grown food in a dense urban area.

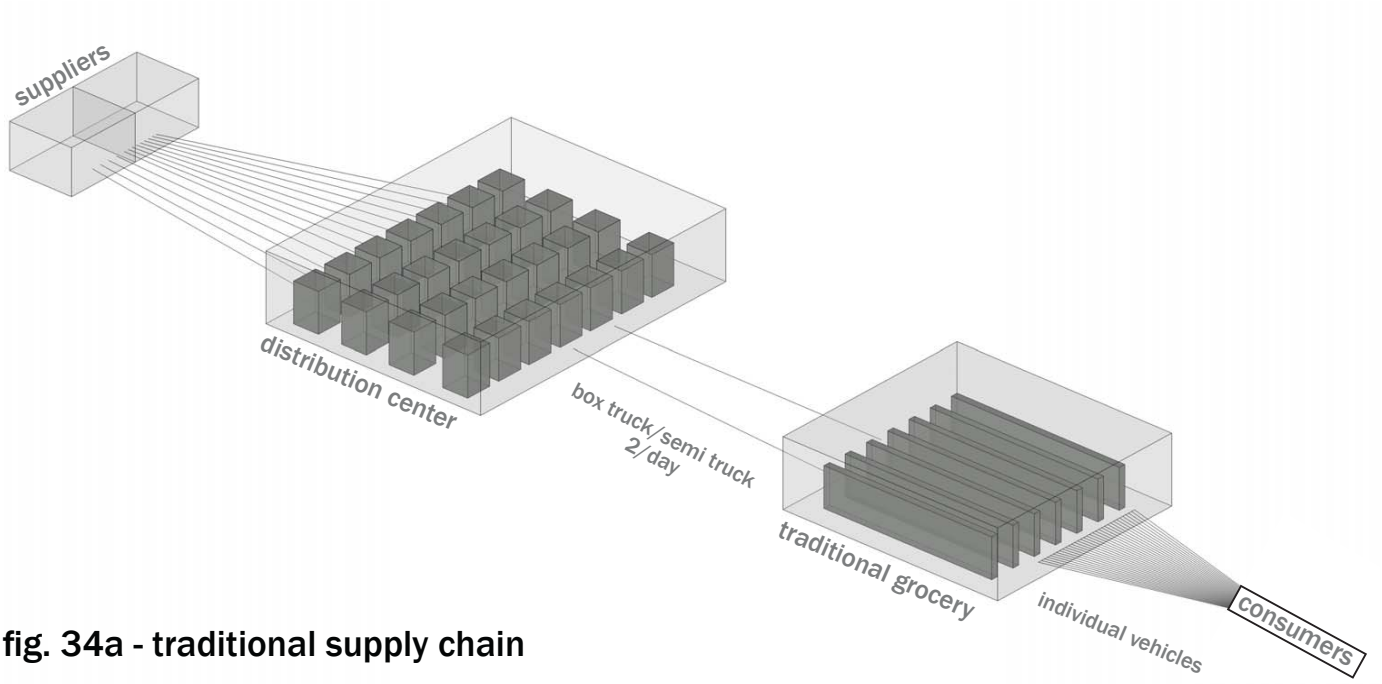


fig. 34a - traditional supply chain

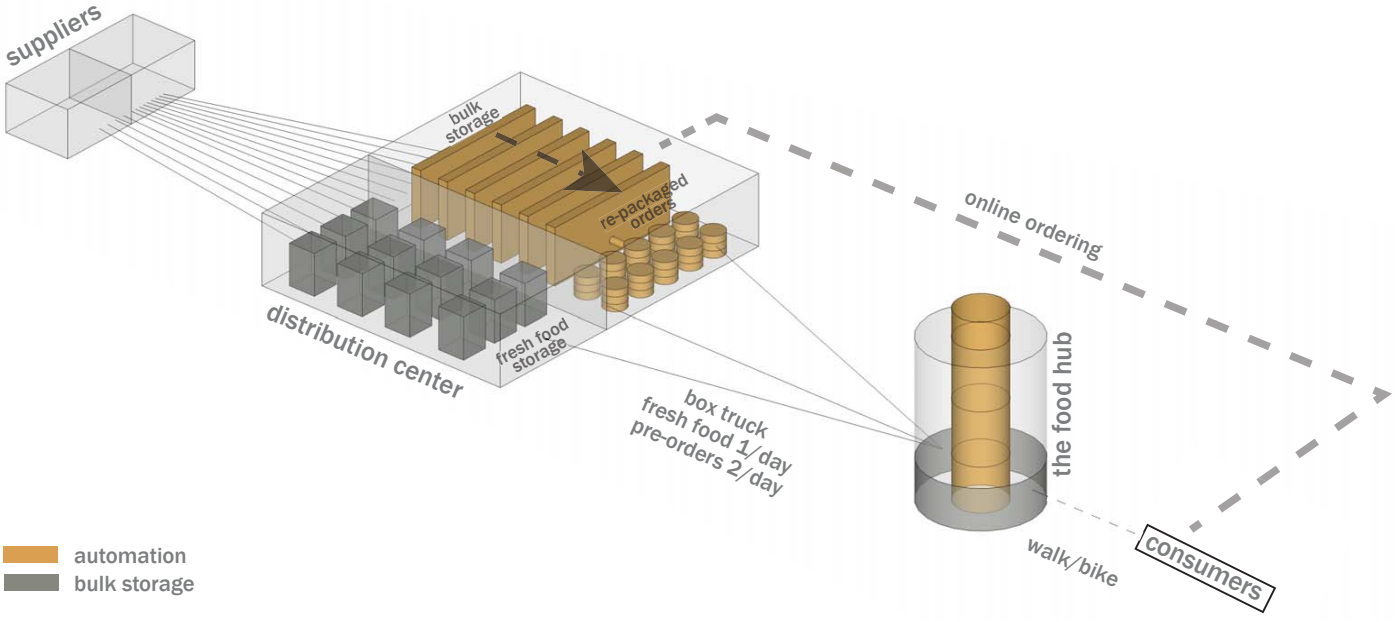


fig. 34b - the food hub supply chain

supply chain

A traditional grocery supply chain utlizies a distribution center that is typically centrally located to the stores it is serving. There, products from suppliers are collected in large quantities and then divided and shipped to indivdual stores. The stores typically have a back-of-house space where shipments are kept before the products are taken out to the floor and eventually purchased by the consumers. Currently, Grand Rapids residents most often drive individual vehicles to do their weekly grocery shopping, typically traveling 3-5 miles out of downtown.

The supply chain for the Food Hub is not entirely different from a traditional system. However, there are elements which allow the Food Hub to improve efficiency from a typical grocery supply chain. First, there is significantly more responsibilty placed on the distribution center for the Food Hub. Because of the pre-ordered grocery component, the Food Hub distribution center receives orders electronically and utliizes automation to repackage the goods provided by suppliers into individual orders. The orders are then loaded into cassettes which are then shipped to the deisgnated Food Hub location. The fresh food is received and shipped out just as it would be in a typical supply chain.

The deliveries of pre-ordered goods occur twice daily to allow maximum convenience to the consumer with same day delivery while the fresh food will be delivered once daily. The locations and urban context of the Food Hubs promote walkability and alternative transit with the idea that people will no longer be driving to do their weekly grocery shopping. Rather, people will be walking or biking to shop every 2-3 days at locations no more than 1/4 mile from where they are living or working.

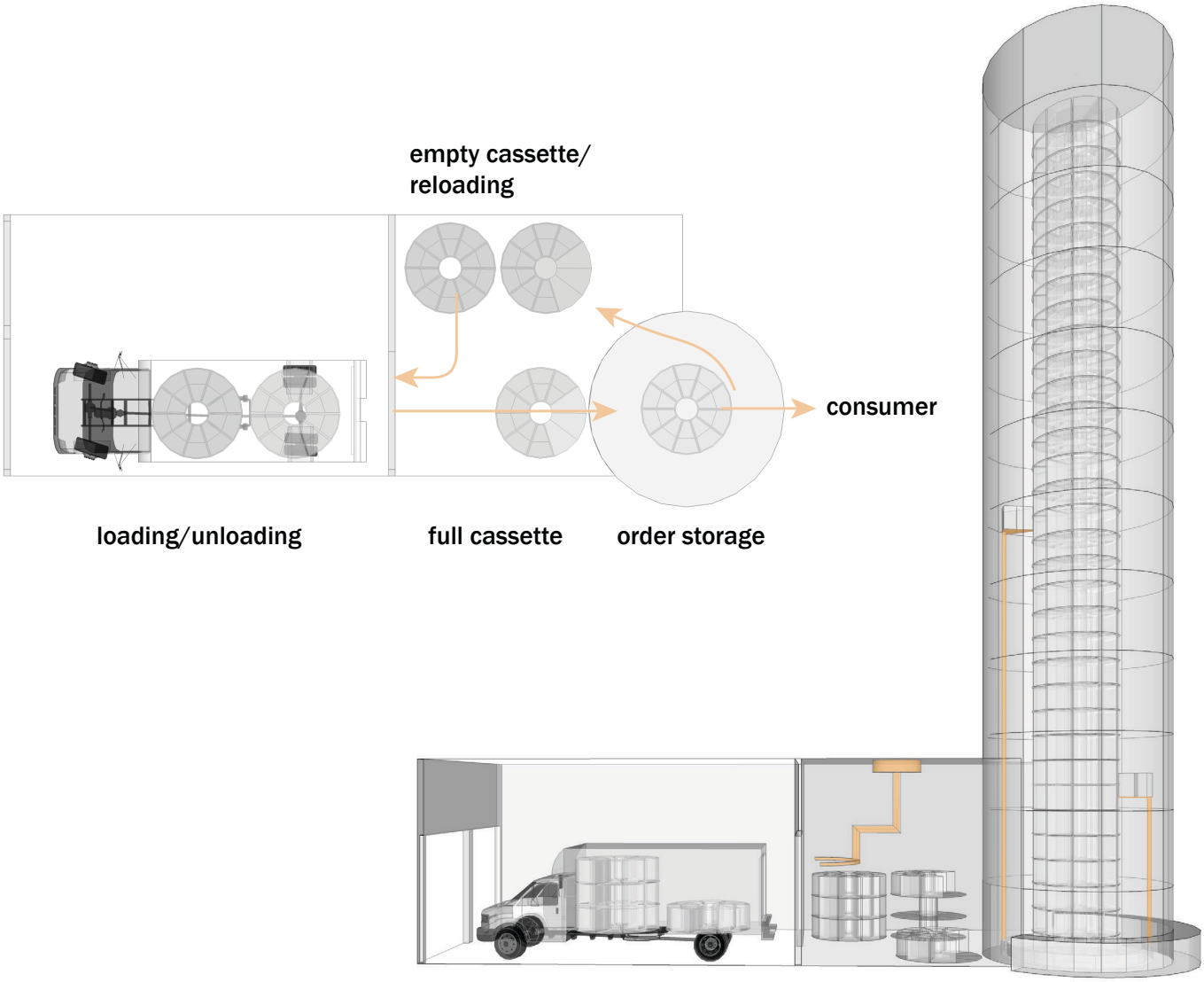


fig. 36a - loading/unloading

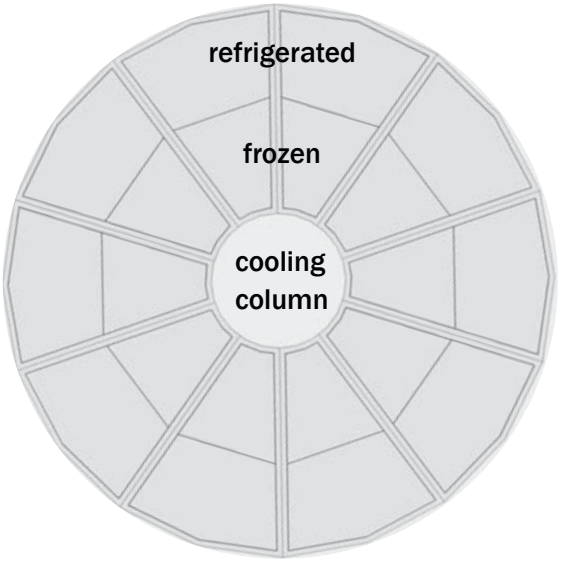


fig. 36b - cassette

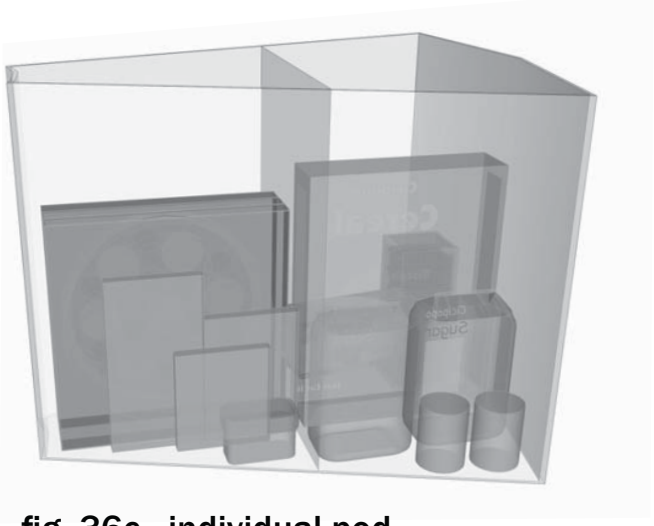


fig. 36c - individual pod

loading/unloading

Once delivered to the Food Hub, an automation system does the work of storing the groceries in a temperature controlled tower and retrieving them as customers come to pick them up. The cassettes are unloaded from the truck where the individual order pods are inserted into open spaces within the storage tower. As consumers come to pick up their orders the empty pods are placed back into the empty cassettes and the cassettes are then taken back to the distribution center to be repacked for subsequent orders.

cassettes

Each cassette is sized to fit in the back of a box truck and able to hold 10 individual order pods.
The cassettes are stackable and designed to allow conditioned air to circulate from the central chamber to the exterior edge.

individual pods

The individual order pods are divided into two compartments: one for frozen food and the other for refrigerated and dry goods. The center panel controls the temperature of the refrigerated compartment by allowing more or less cold air to move between compartments. The control factor for the size of pod is dictated by frozen pizza boxes in the frozen compartment and large cereal boxes in the refrigerated compartment to ensure all grocery items can be accomodated. Because the food hub encourages consumers to shop more frequently buying less per trip, each typical order can be accomodated with a single pod. Should there be an atypically large order, it can be accomodated with multiple pods.

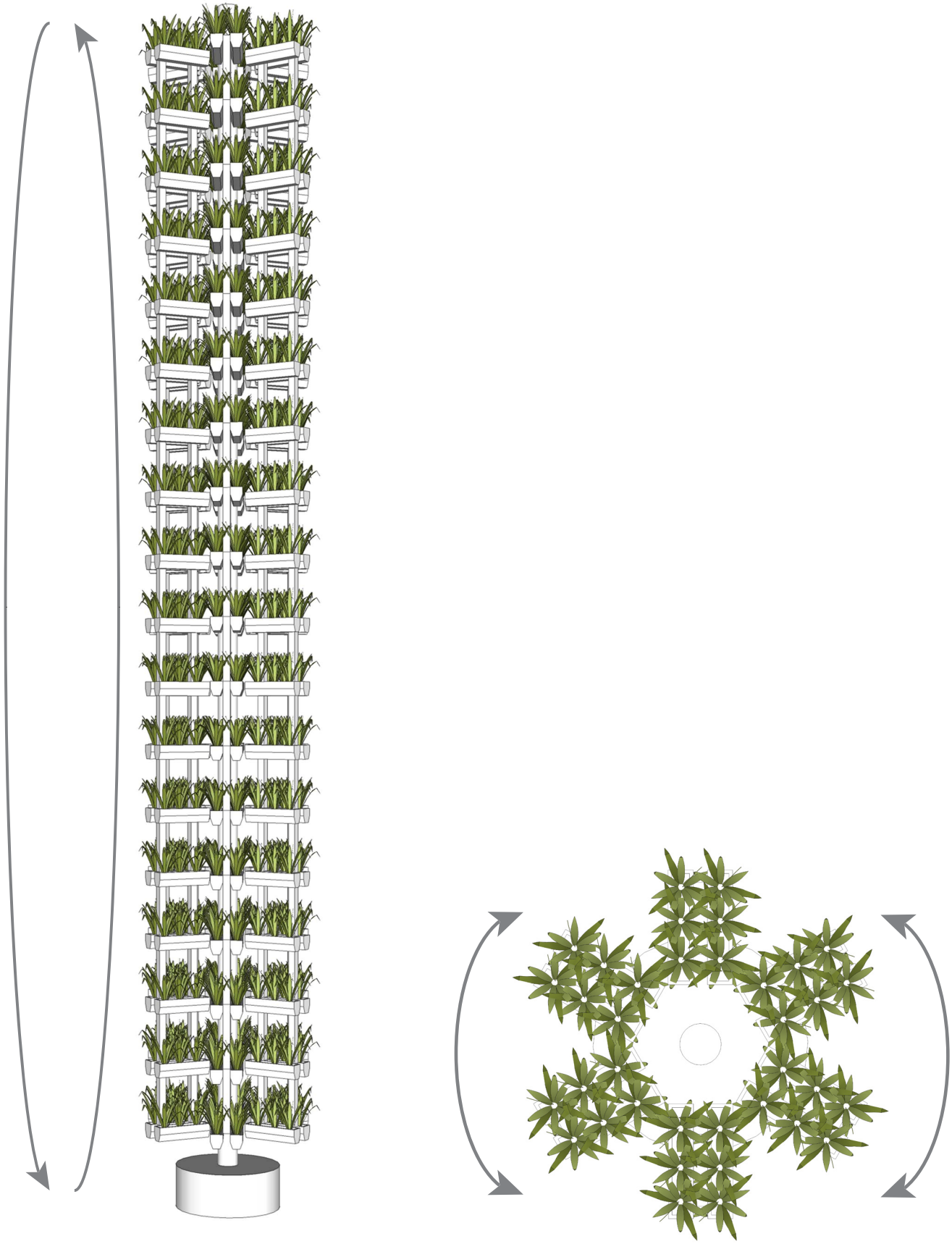


fig. 38 - hydroponic carousel

production gardens

Hydroponics are ideally suited to urban greenhouses because they can grow a consistant volume of crops year round and typically can yield twice as much produce as conventional gardens in half as much time. They also do not require soil to be brought in and when controlled properly use roughly 1/10th the amount of water as conventional gardens.[1]

The hydroponic production gardens occupy a single but voluminous floorplate. The plants are grown in 50 foot tall carousels which rotate horizontally to allow even sunlight to all of the plants. They also rotate vertically to allow easy loading and harvesting. The 19 carousels at each Food Hub provide over 100,000 pounds of produce, greens and herbs per year which are then sold in the grocery store on the lower level.[1]

community gardens

The community gardens are designed to be flexible. They are capable of supporting both conventional gardens and hydroponics again juxtaposing the new with the old. Each Food Hub will provide (24) 150 square foot plots which could be divided or shared if desired. The greenhouse not only provides residents or businesses of downtown the opportunity to have a garden but to grow their own produce, plants or flowers year round (a luxury hard to come by even in the suburbs).

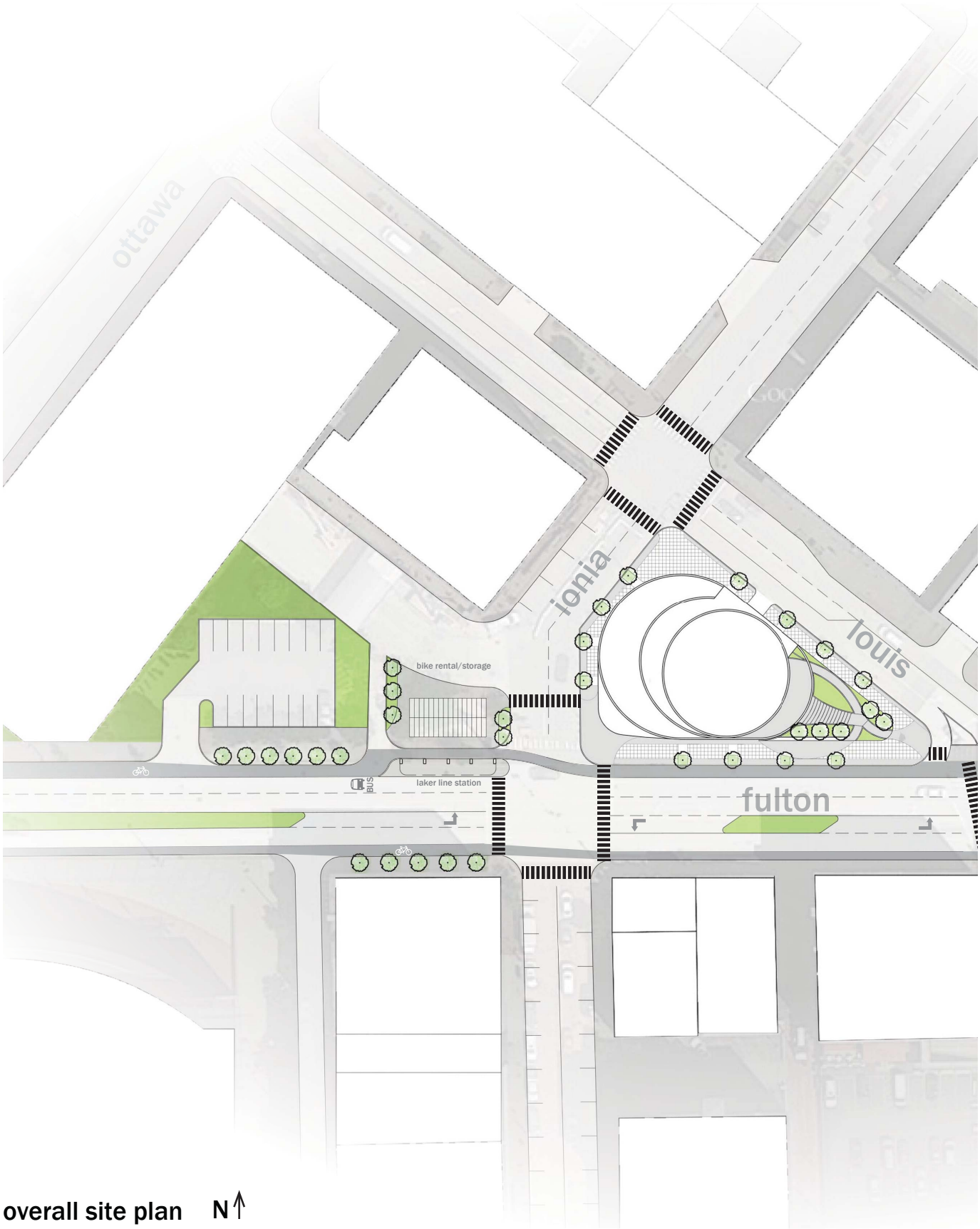
---

1 - Vertical Harvest


the HUB

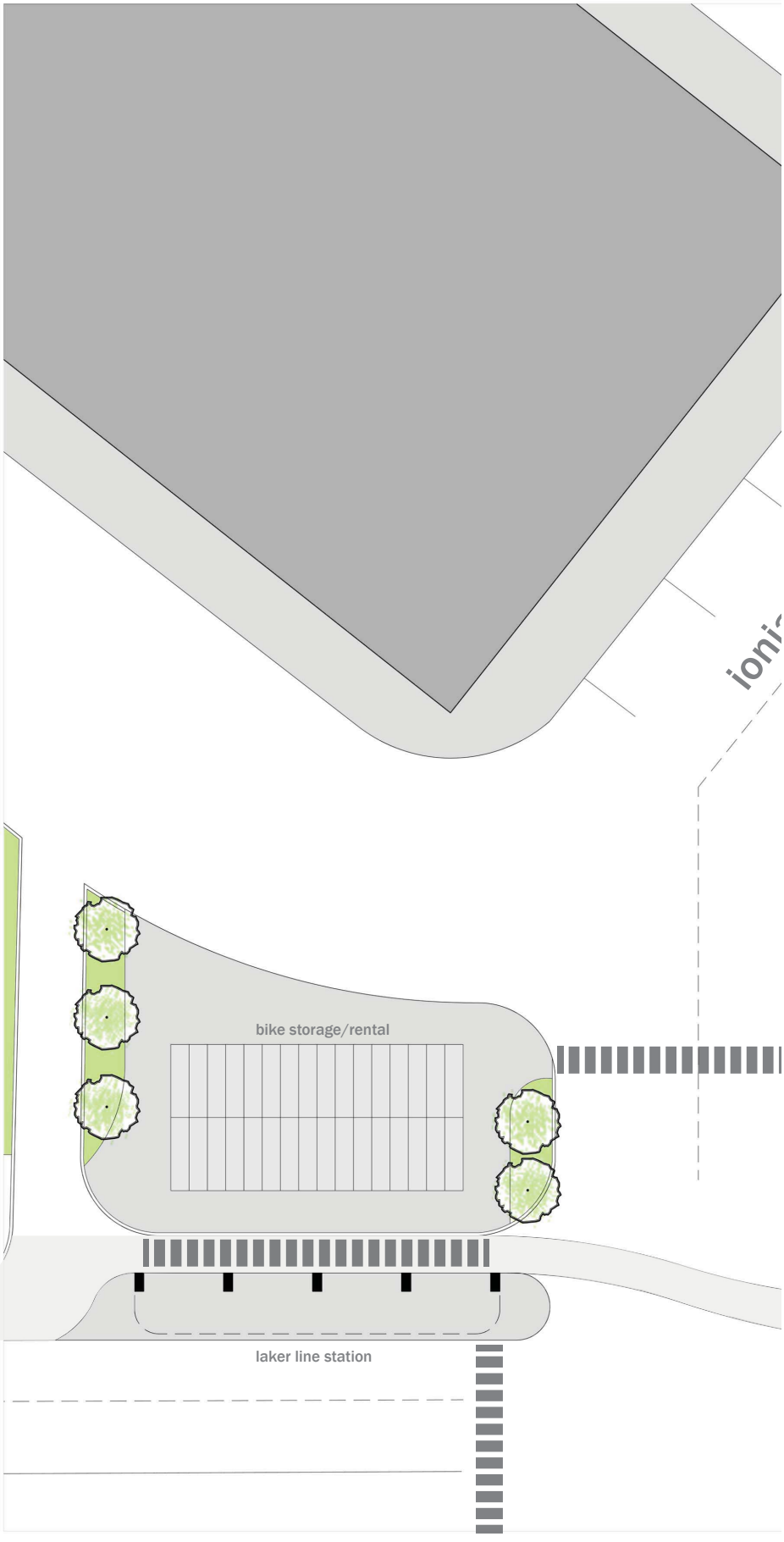
design proposal

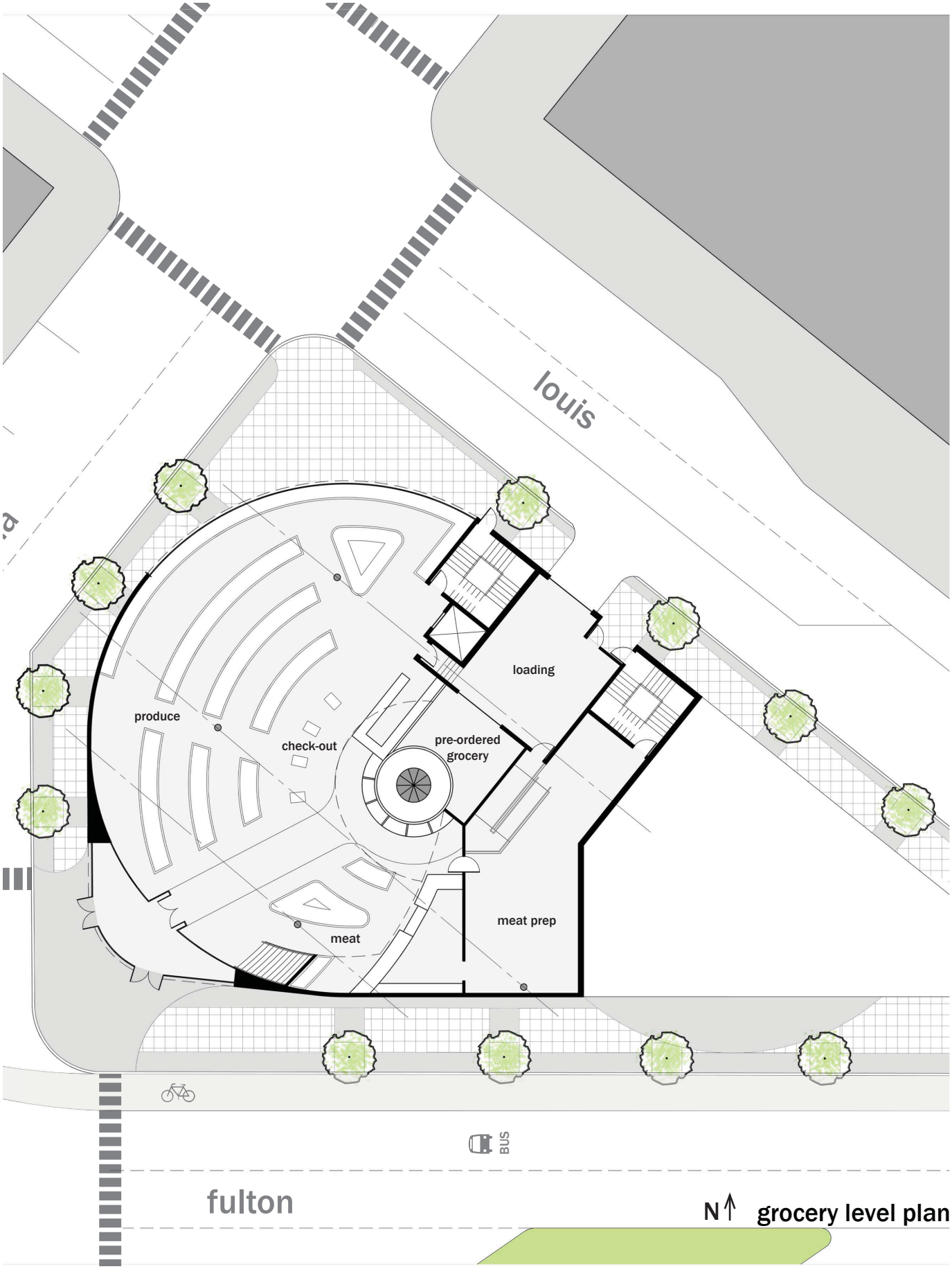
The architecture of the Food Hub continues to support the juxtaposition of new and old. The mostly glass facade with smooth, light accents contrasts the existing mostly masonry context. The Fulton and Ionia site is situated such that there is 360º circulation. The curving form facilitates movement around the site and draws attention to the entry points at the two major intersections. The extensive glazing system allows for a functioning greenhouse in an urban setting and also gives passersby the opportunity to perceive what is happening inside. It was important to also design an urban environment which breaks out of the confines of the site in order for the design to be successful. Fulton Street is configured with bus and bike lanes as well as new transit stops and bike parking to take some emphasis away from automobiles. New medians and islands create a more comfortable atmosphere for pedestrians and slow traffic which is imperative throughout the city to create a walkable network.



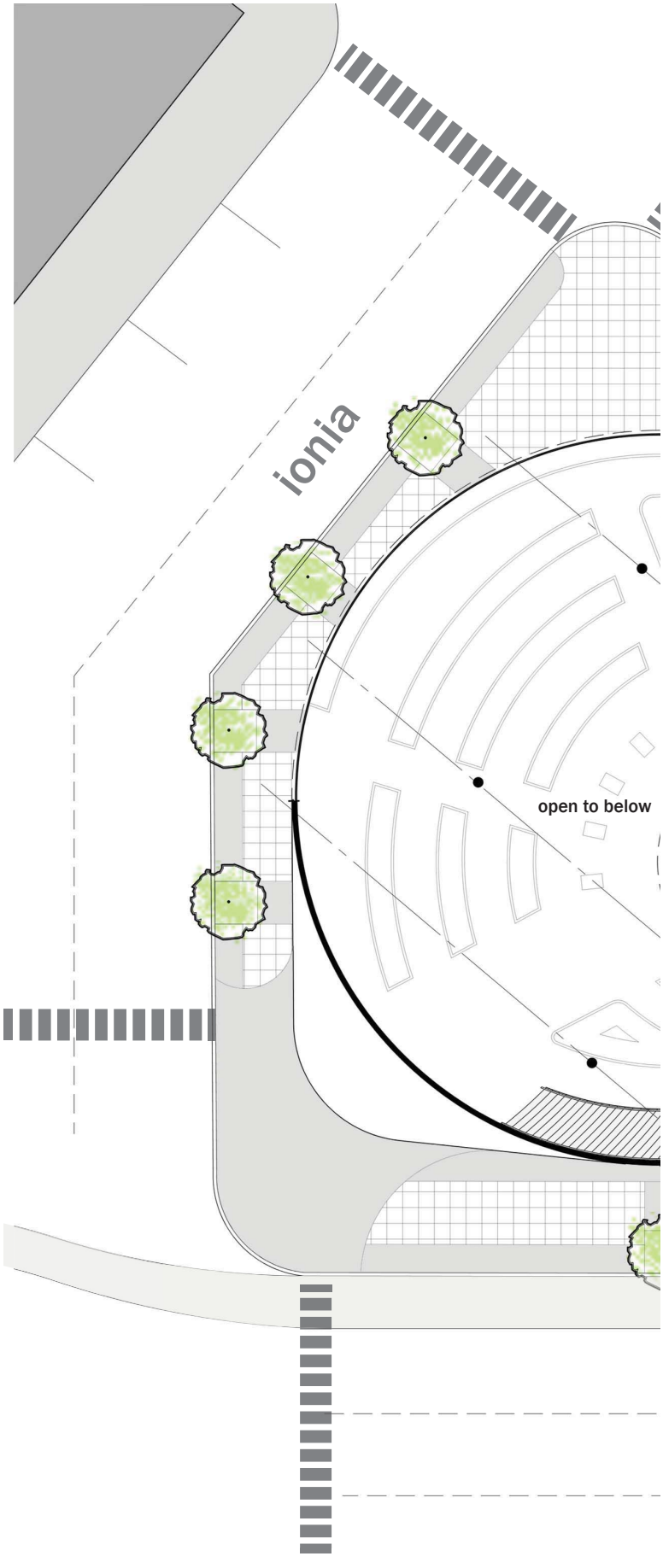
overall site plan N

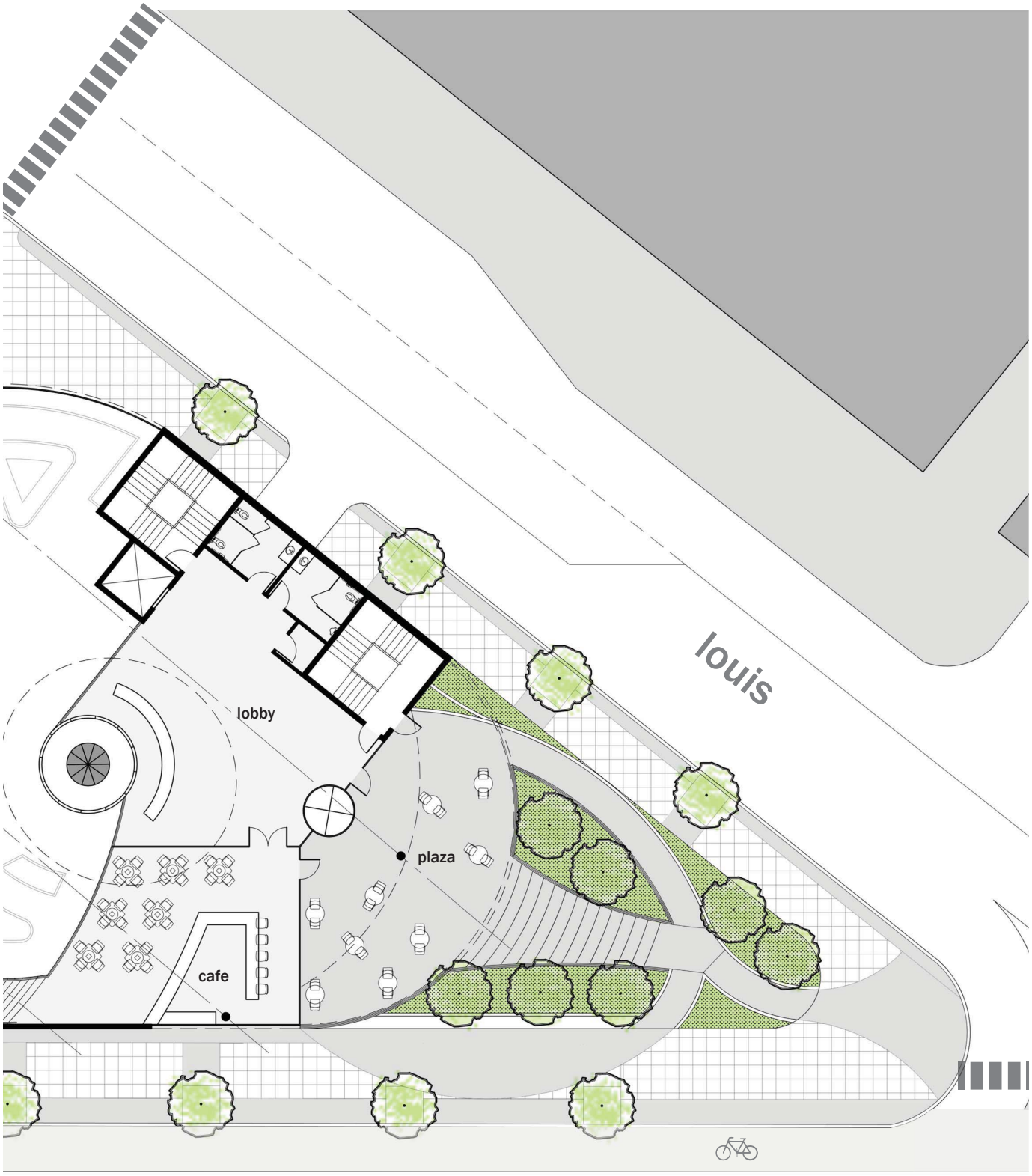

monroe center
BUS


bike storage/rental
laker line station

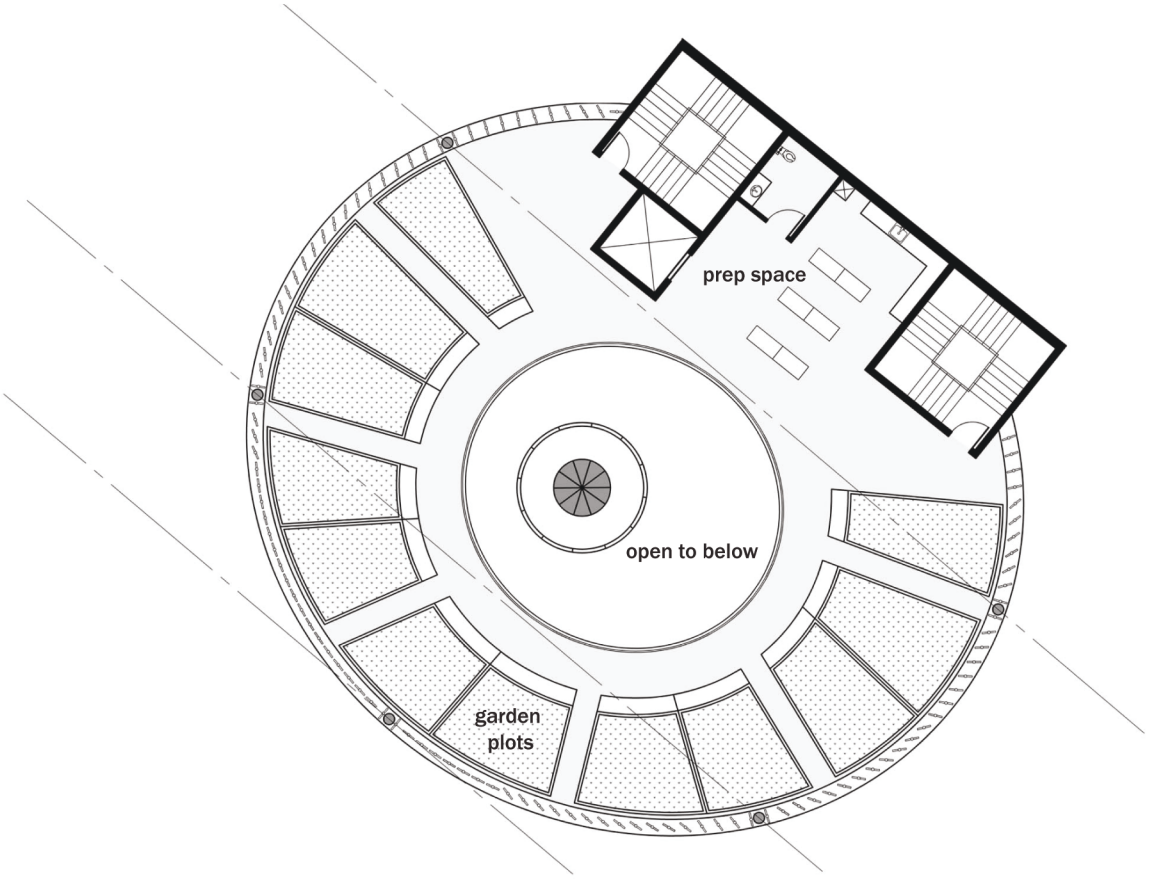


grocery level plan

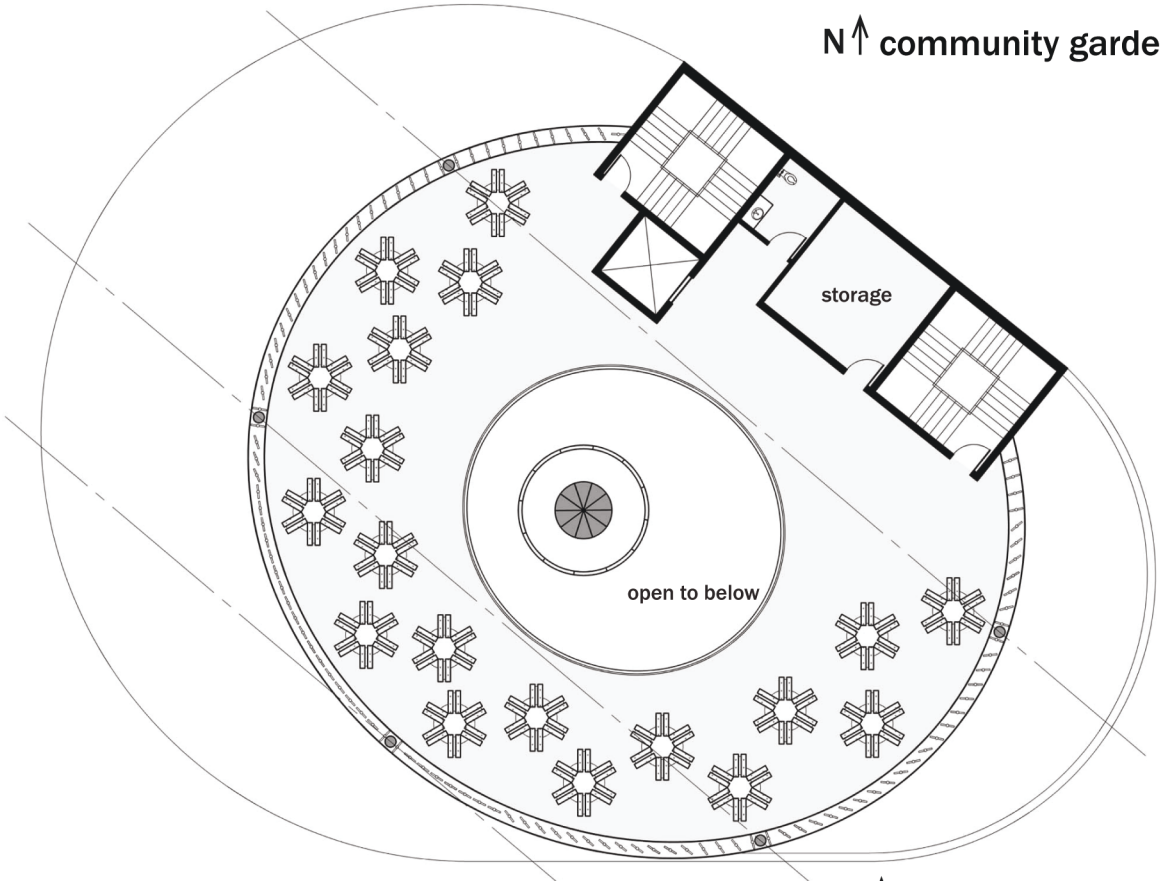

ionia
open to below



cafe & plaza level plan



N community garden levels



N production garden level

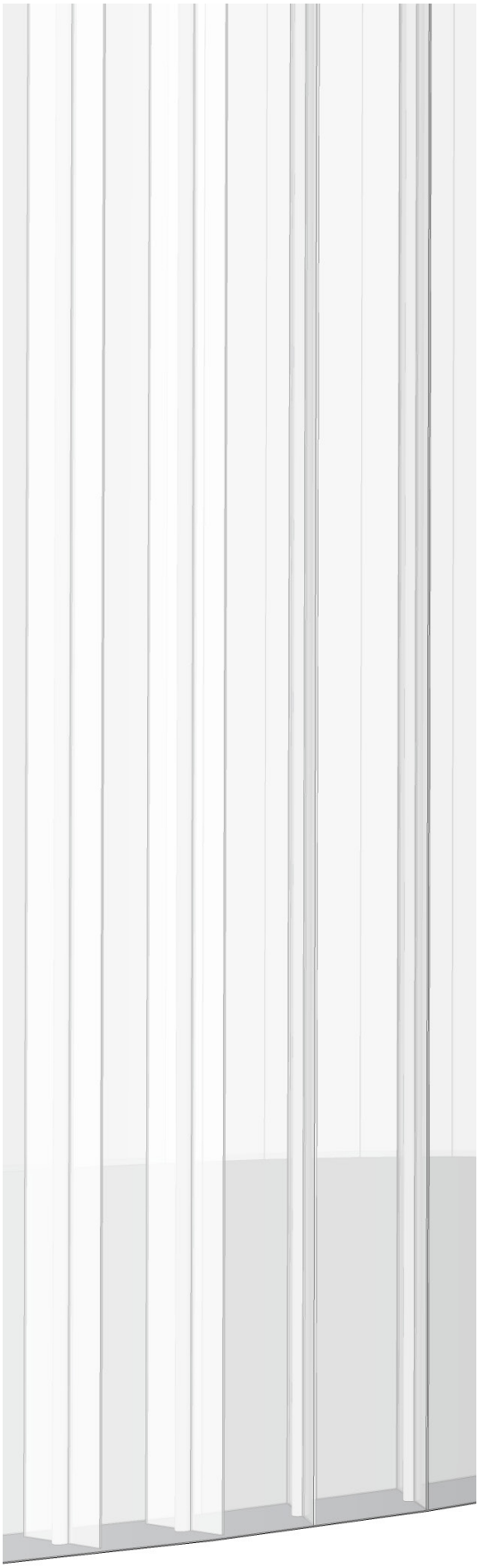
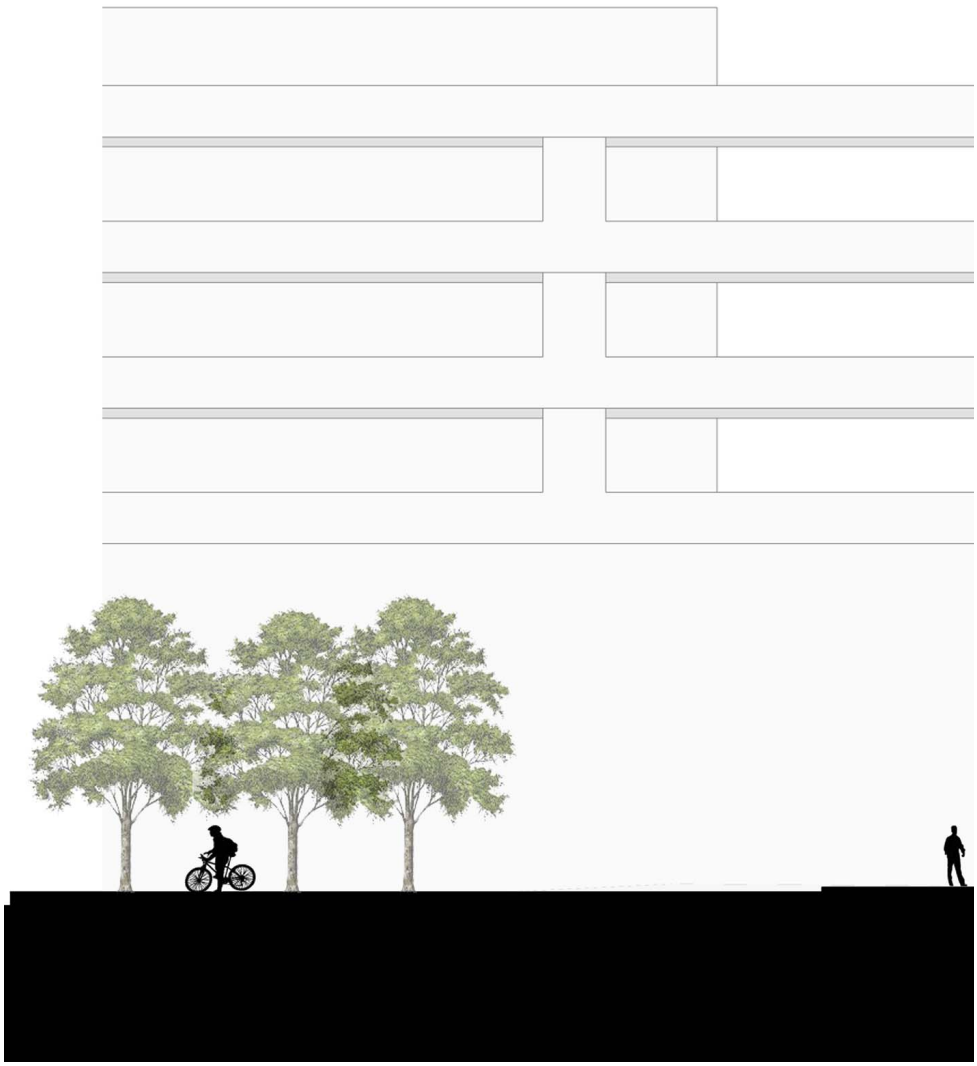


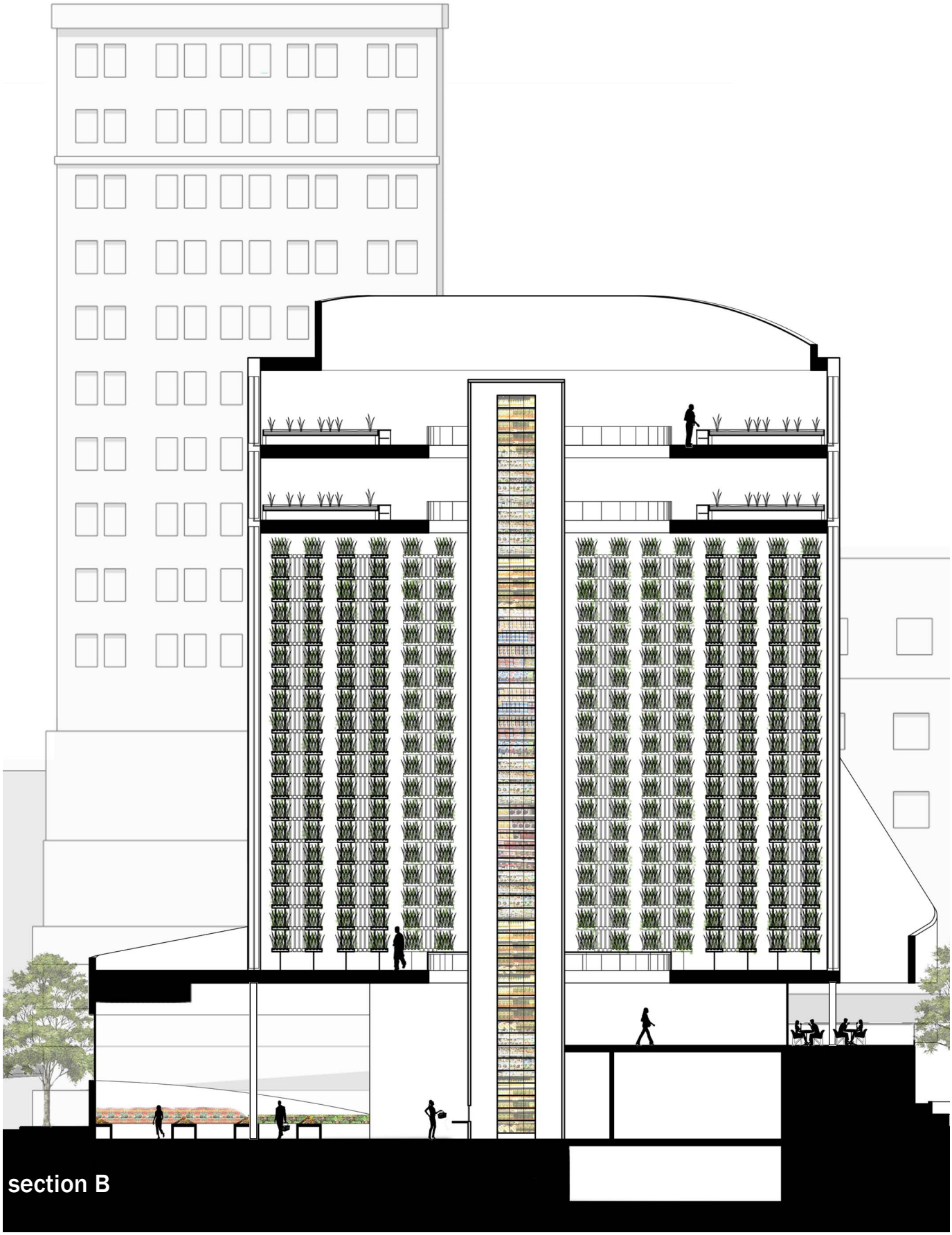
fig. 47 - community garden levels

community gardens

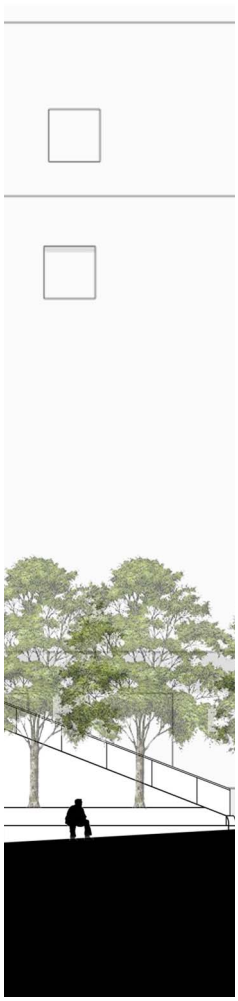
The skin of the greenhouse levels is made up of a double glazing system with translucent fins between the layers of clear glazing. The fins are operable and controlled with automation to allow varying levels of sunlight into the greenhouses depending on the time of day, time of year and what is growing at any given time. On the interior, the system regulates thermal heat gain and loss by blocking or allowing direct sunlight into the space. On the exterior, the rotating fins create an ever-changing facade that will evolve throughout the day and the year. Because of the difference in methods between the community gardens and production garden, the fins are split at the community garden level to be controlled separately.



section A



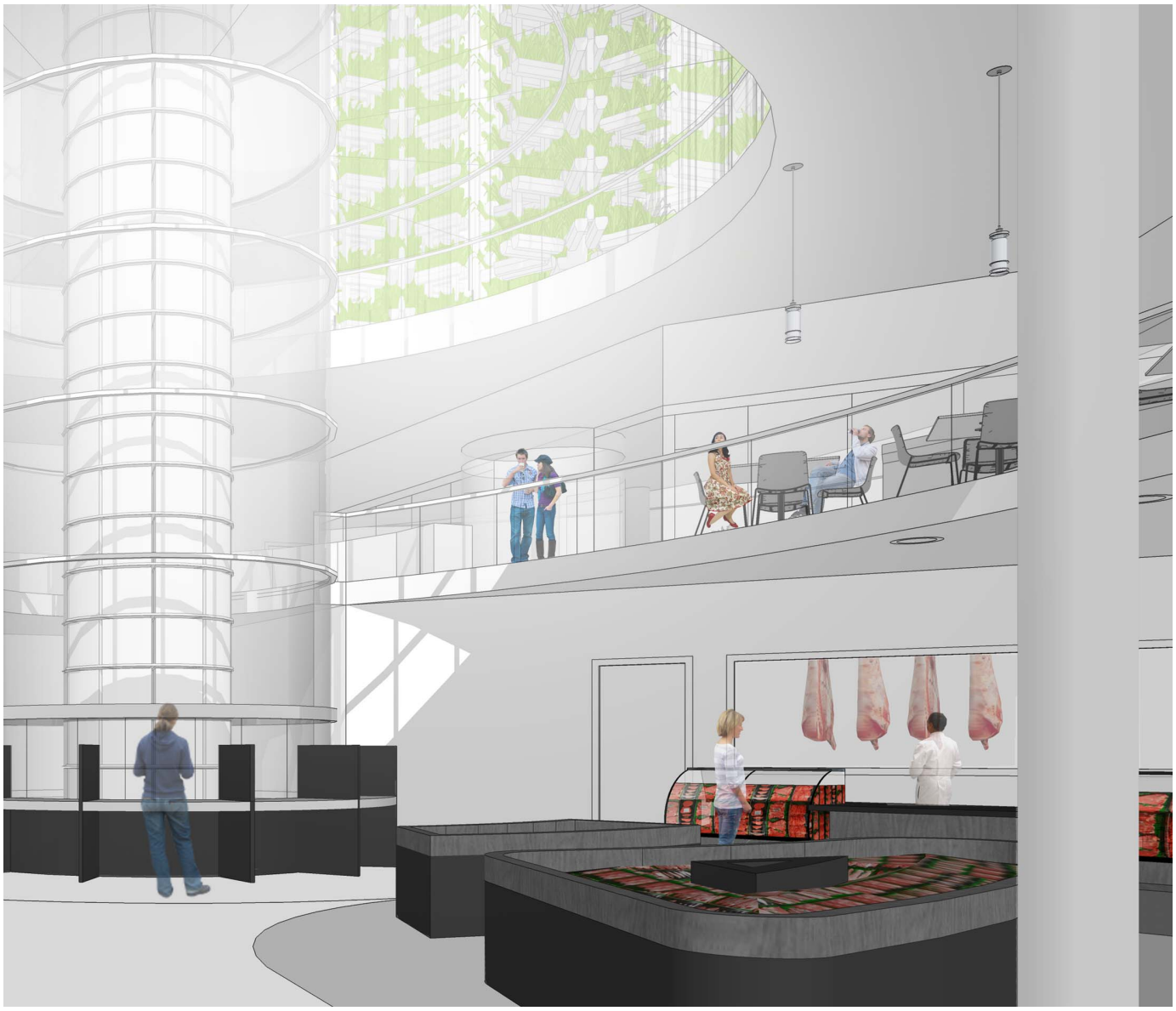
section B



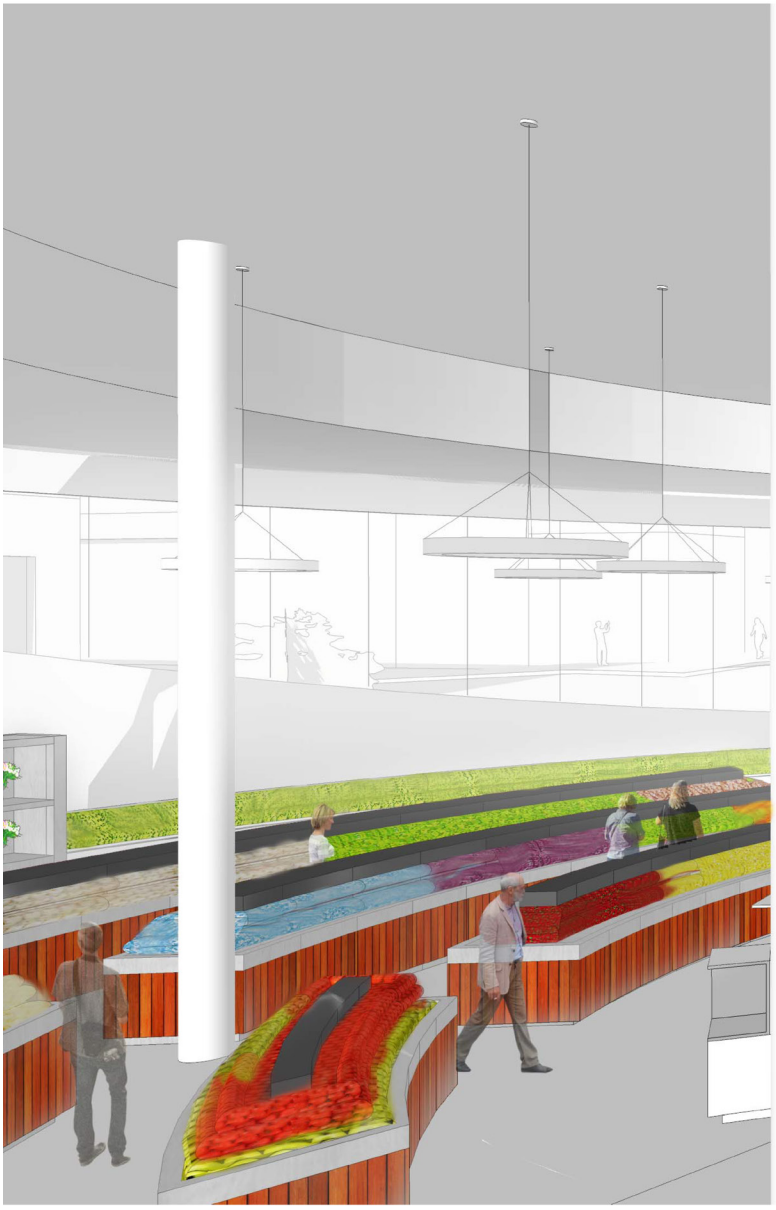
The concept of the Food Hub is ideologically and physically centered around the pre-ordered groceries. The grocery storage tower is placed such that from anywhere in the Food Hub people can see the spectacle of the automation retrieving orders. The central void creates a connection from people growing their own food in the community gardens through the production gardens into the grocery below.

The tower is also located such that people are able to stop in, swipe their card, and retrive their pre-ordered goods or do their fresh foods shopping first and conveniently retrieve their order on their way out. Grocery shopping has been reduced to a matter of minutes rather than hours.

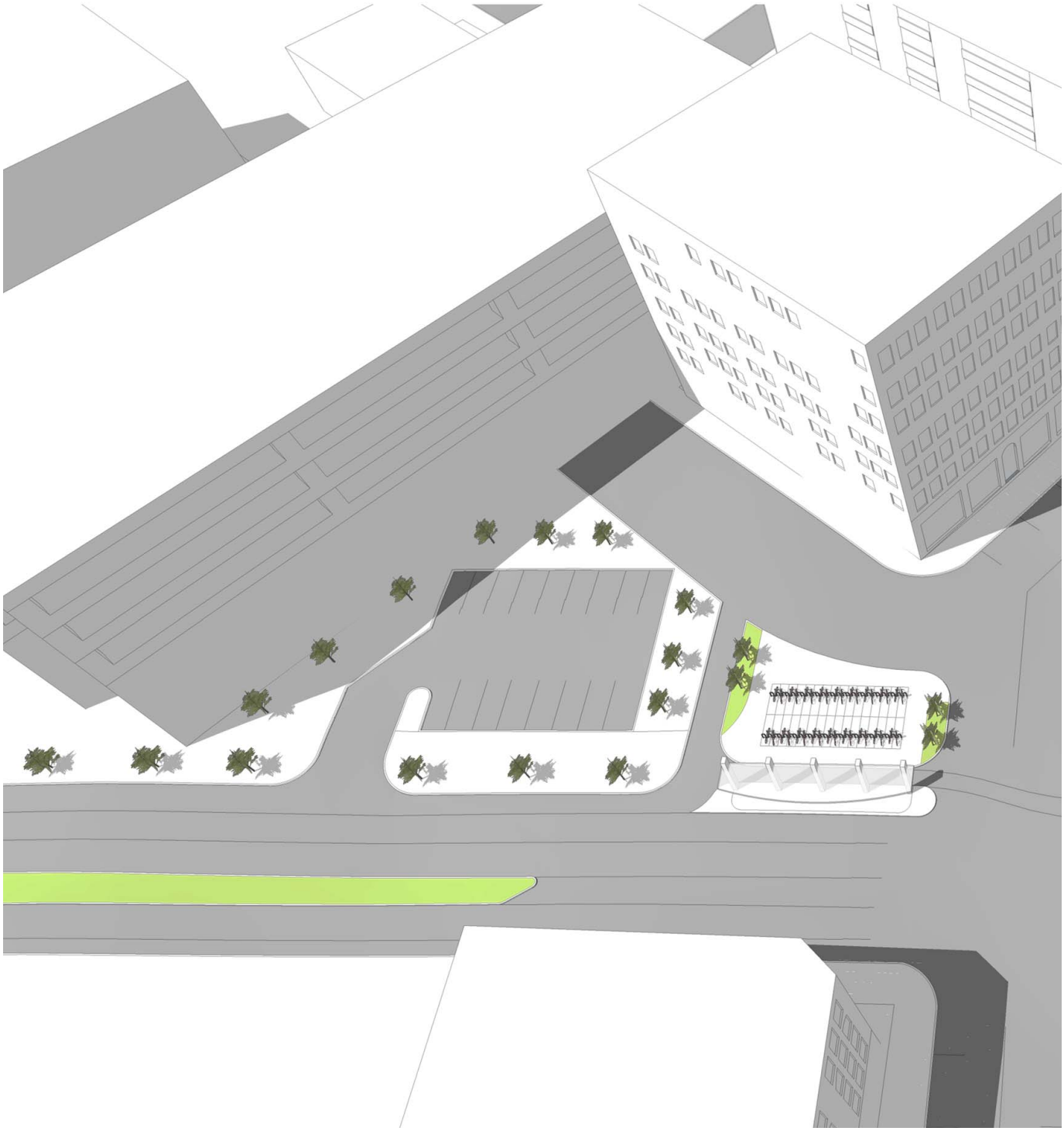
The entire first two levels are accessible to the public allowing people to enter from either side and make their way to the grocery either directly off the street or through the lobby or cafe. Although the grocery component was designed for efficiency and ease of navigation, the cafe and outdoor plaza were intended to allow people to spend more time and experience a new atmosphere in the city.

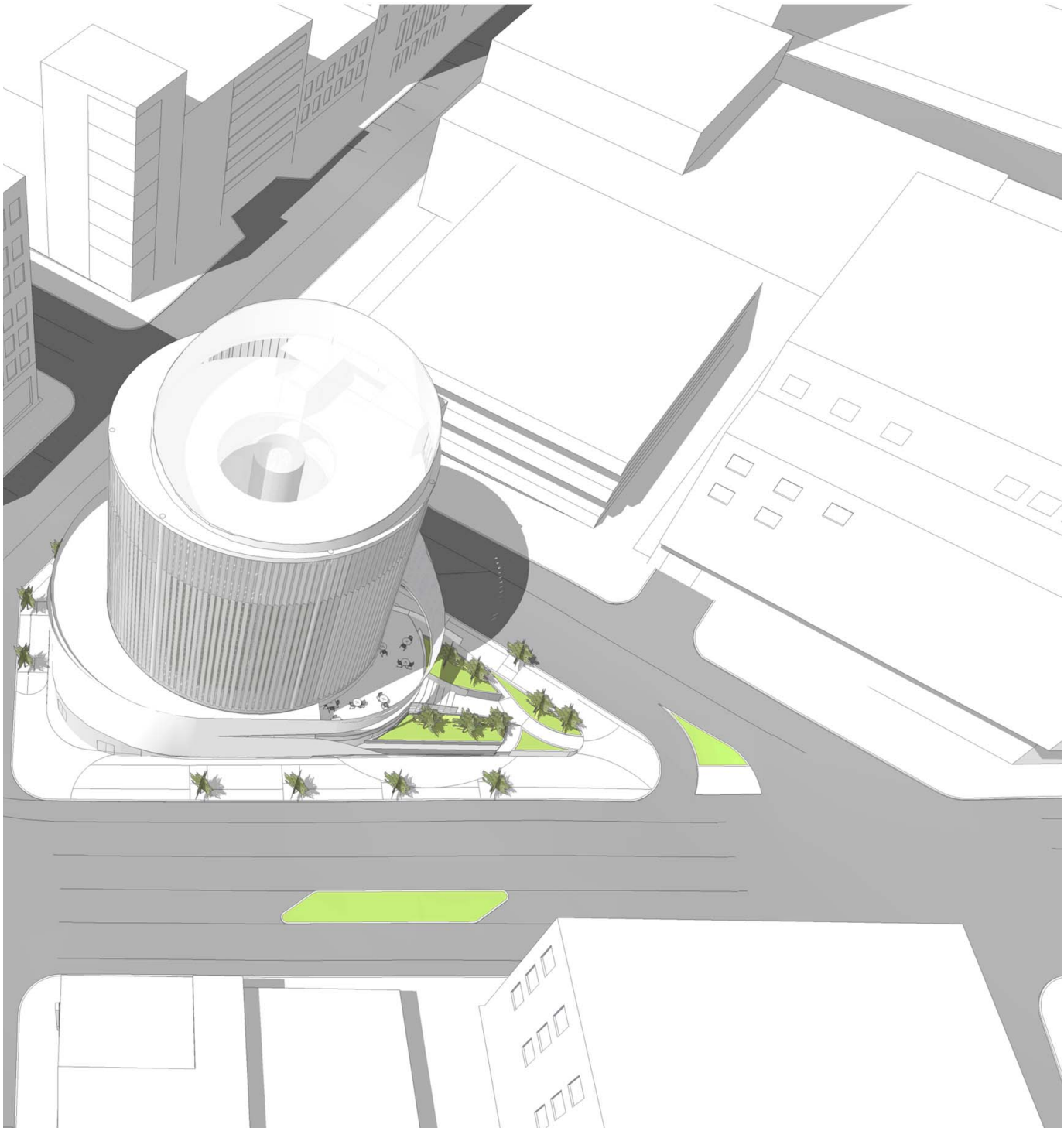


view at grocery entry



view from cafe stair



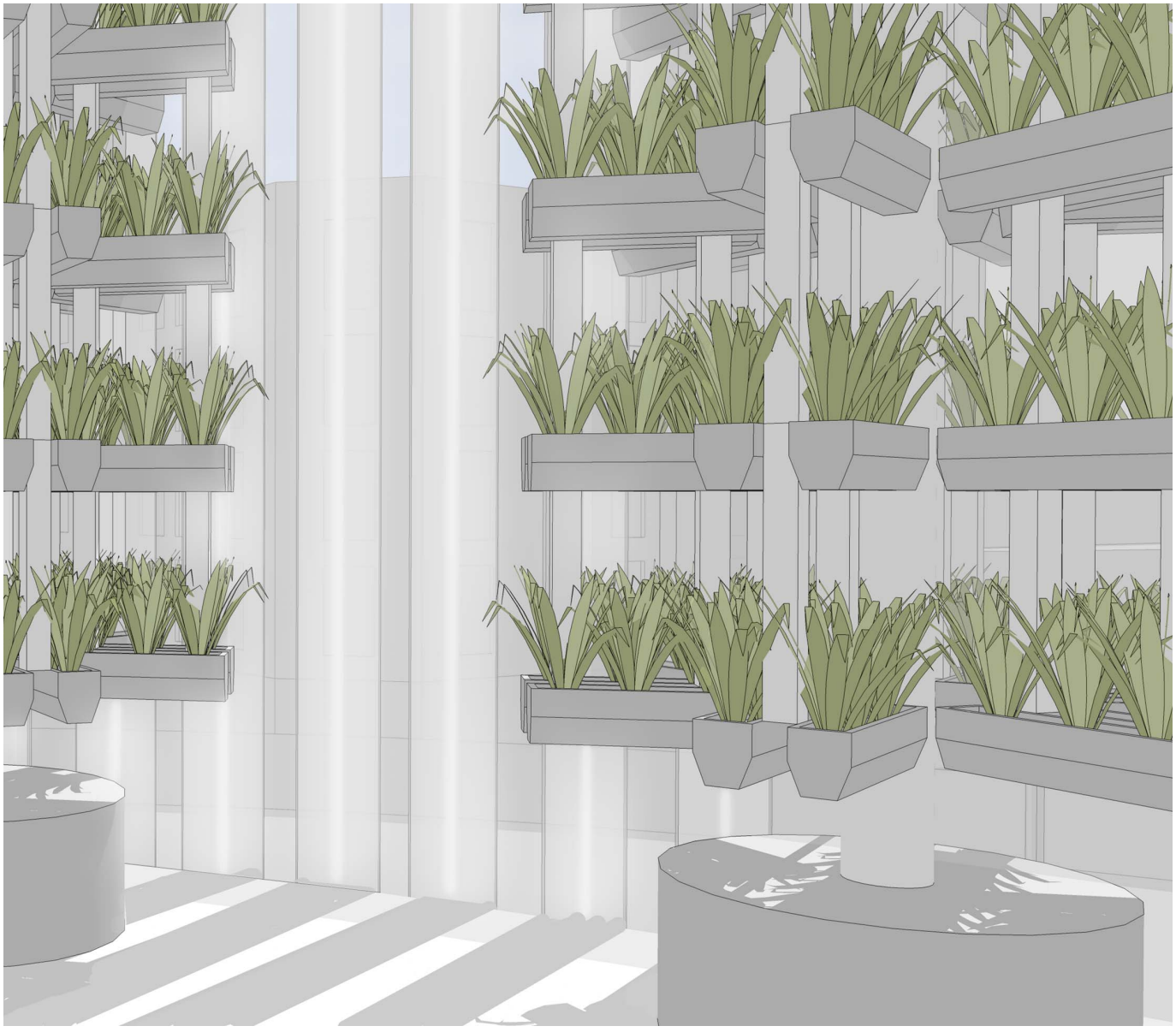


aerial view

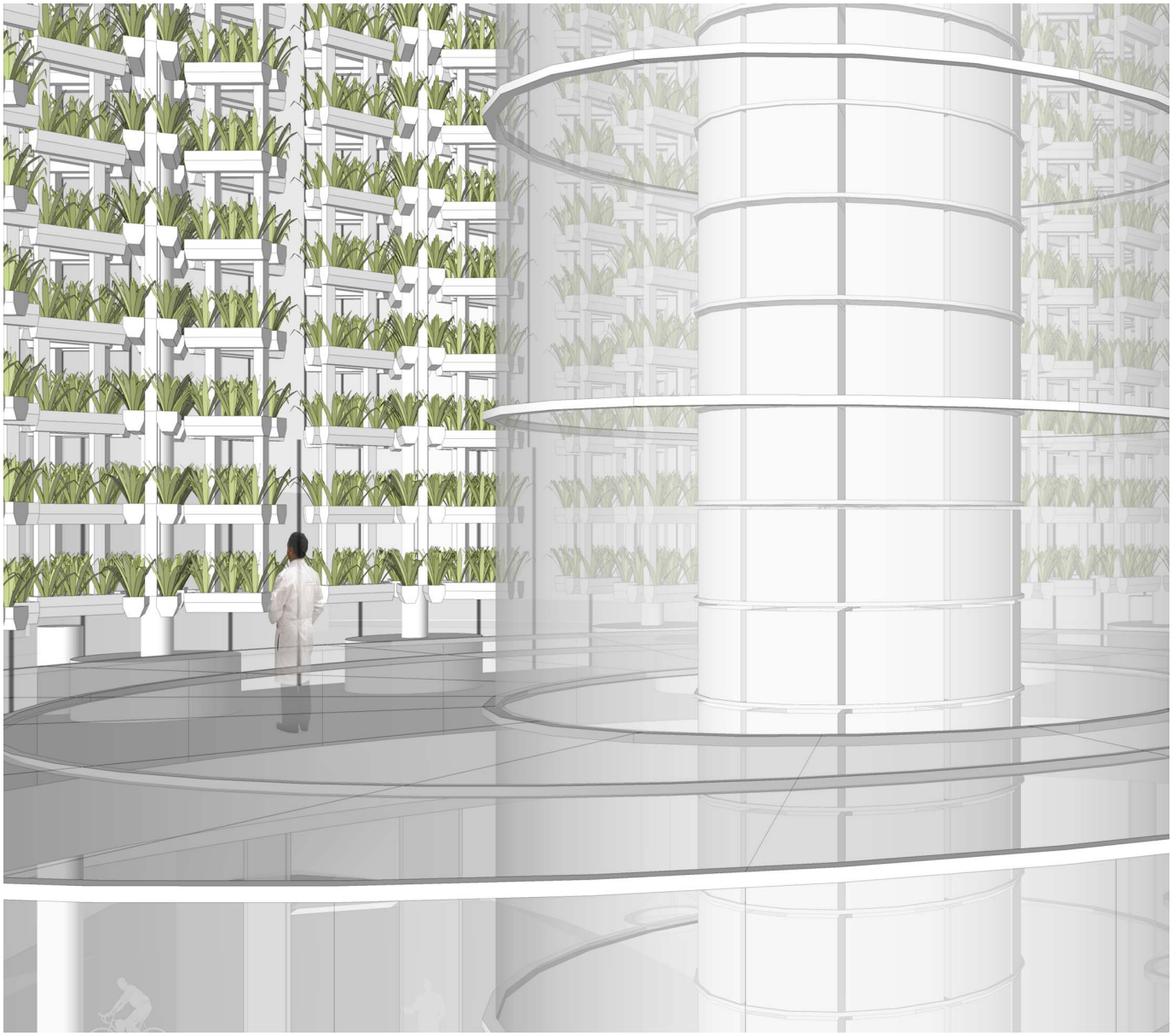
view at plaza entry

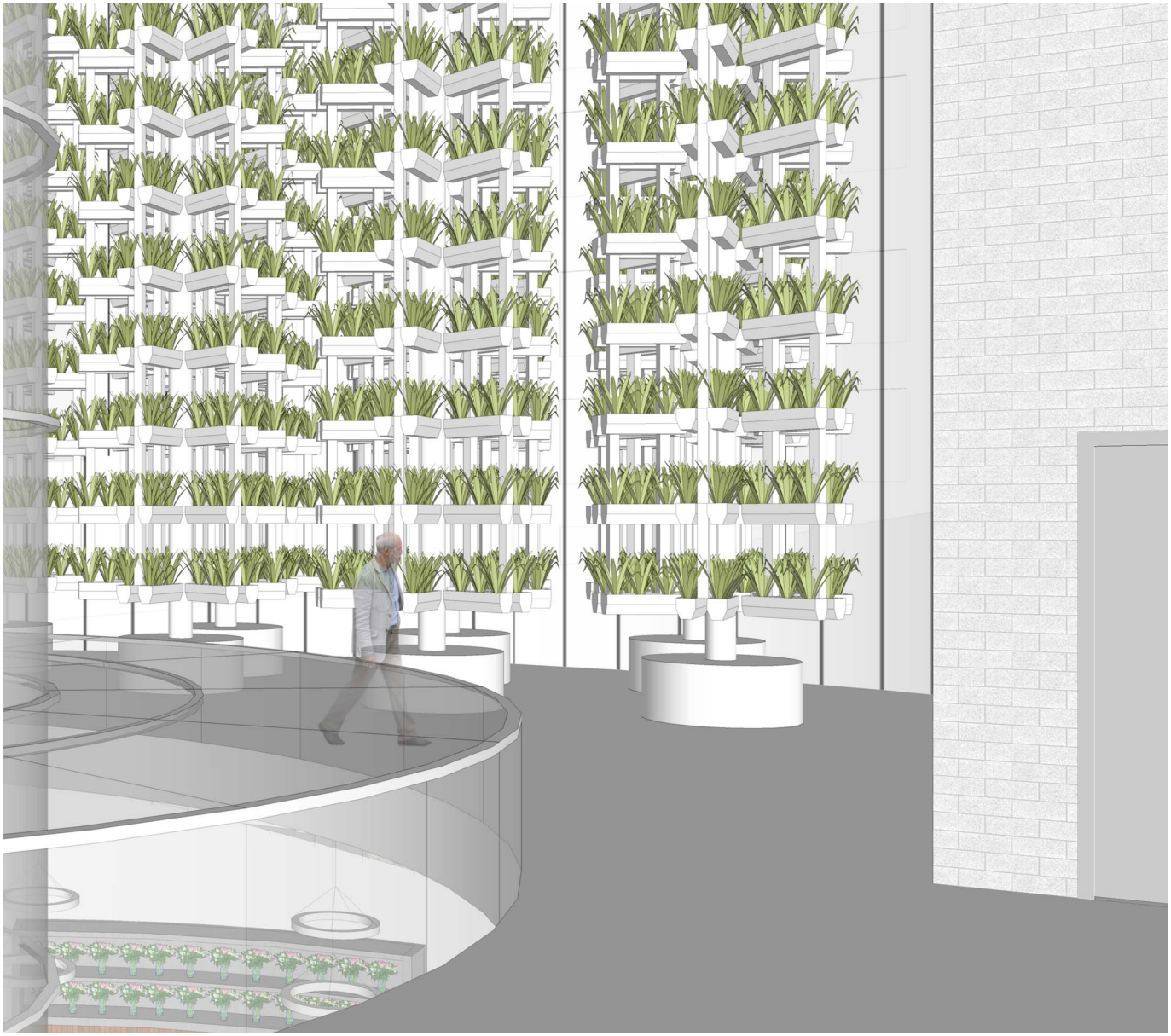
view from Louis/Fulton intersection

view from Ionia/Fulton intersection

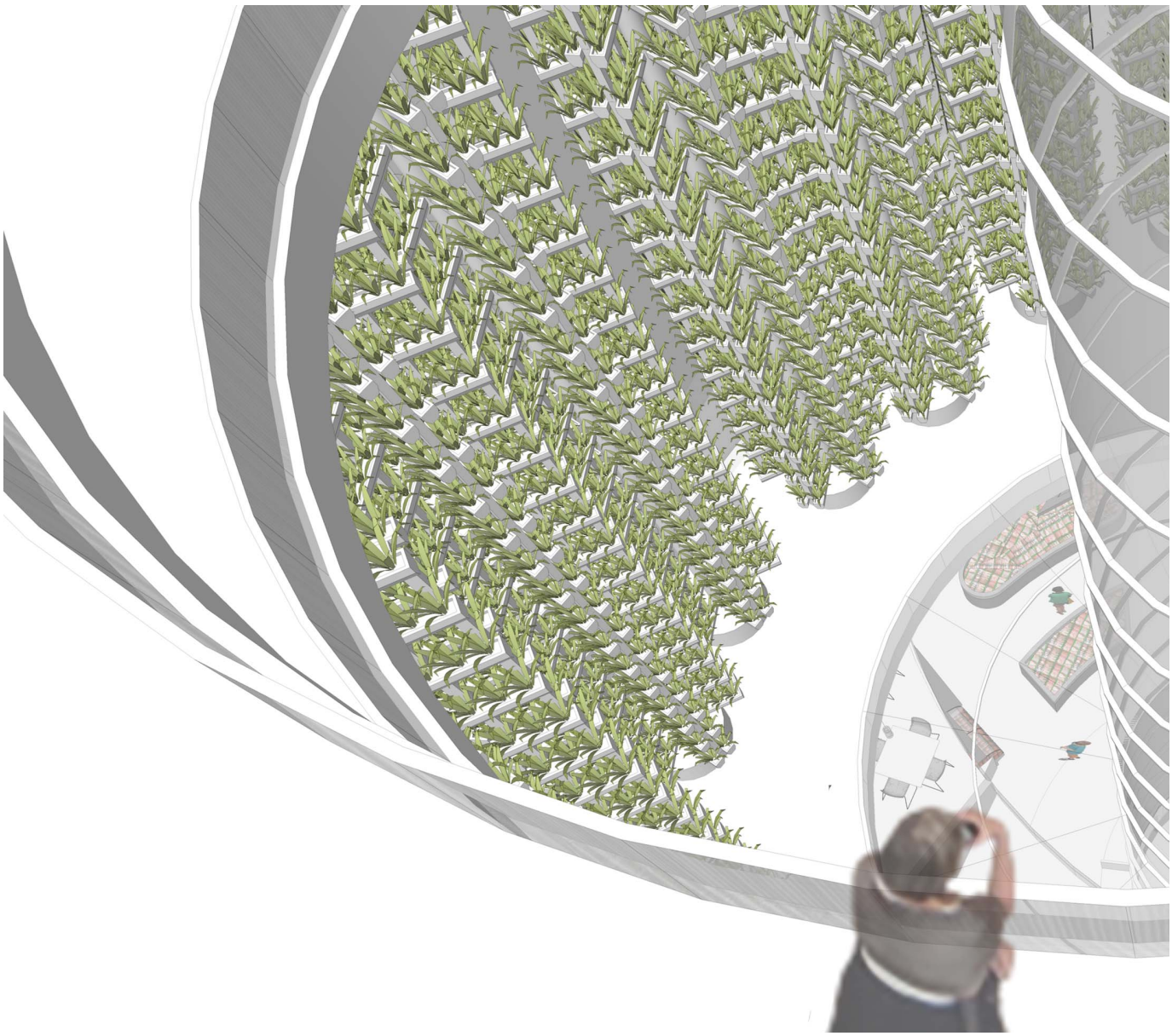


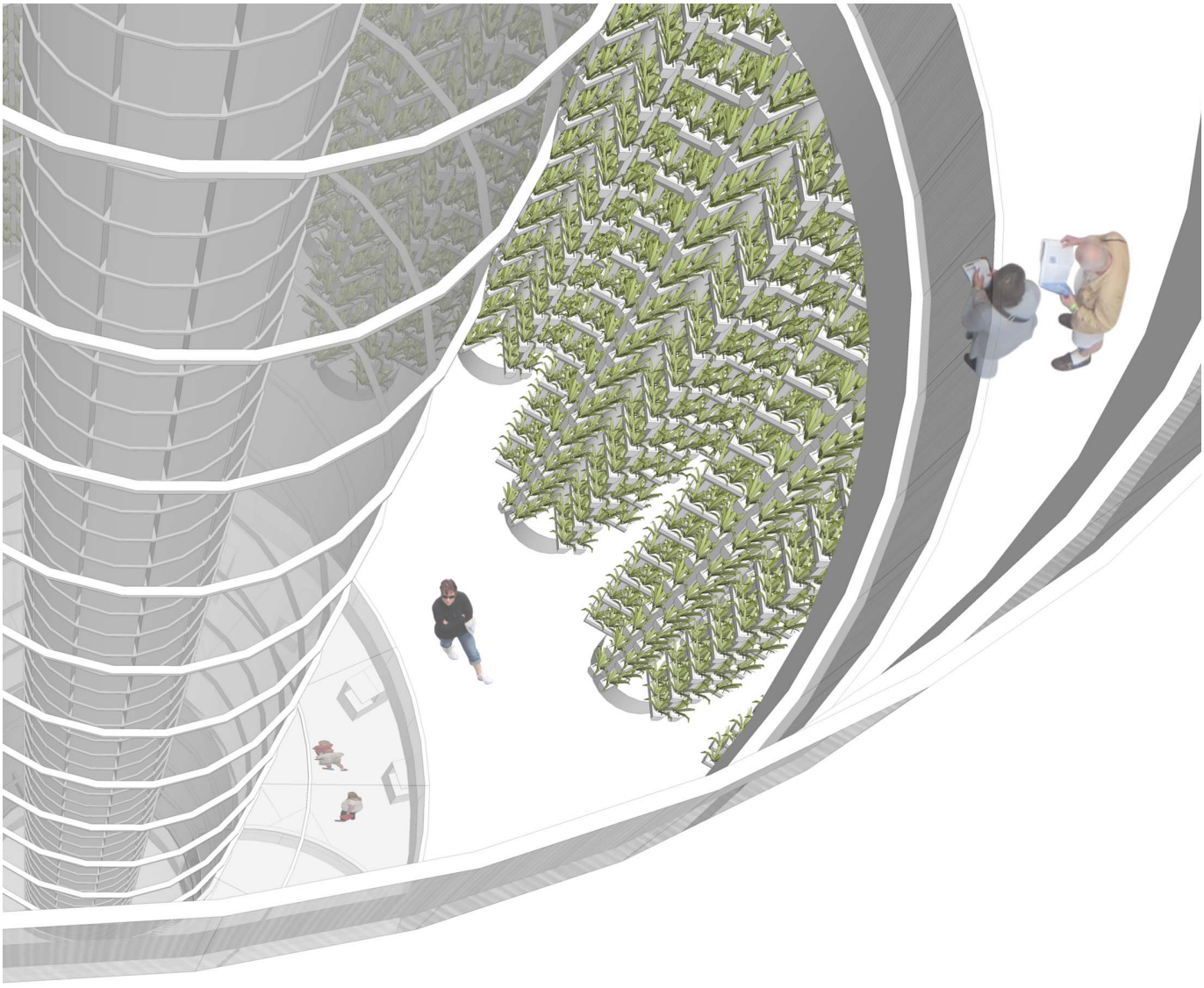
view at production garden





view at production garden





view at community garden

Appendix

"Our aim is to achieve architecture that is as open and tangible as possible to the community, and this is reflected in the circular geometry that creates a building that is accessible and recognisable from multiple directions"
- Kengo Kuma

The Darling Exchange
Kengo Kuma & Assoc.

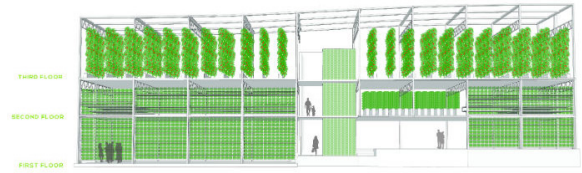
Stories: 6
Use: Multi-use civic center
- library
- tech startup space
- market hall
- childcare center
- rooftop bar/restaurant
- public plaza

http://www.designboom.com/architecture/kengo-kuma-the-darling-exchange-sydney-library-circular-tower-03-15-2016/

Blavatnik School of Government - Oxford
Herzog & de Meuron

Stories: 5
Use: - classroom
- research facility
- public forum
- administration

http://www.archdaily.com/783390/blavatnik-school-of-government-herzog-and-de-meuron

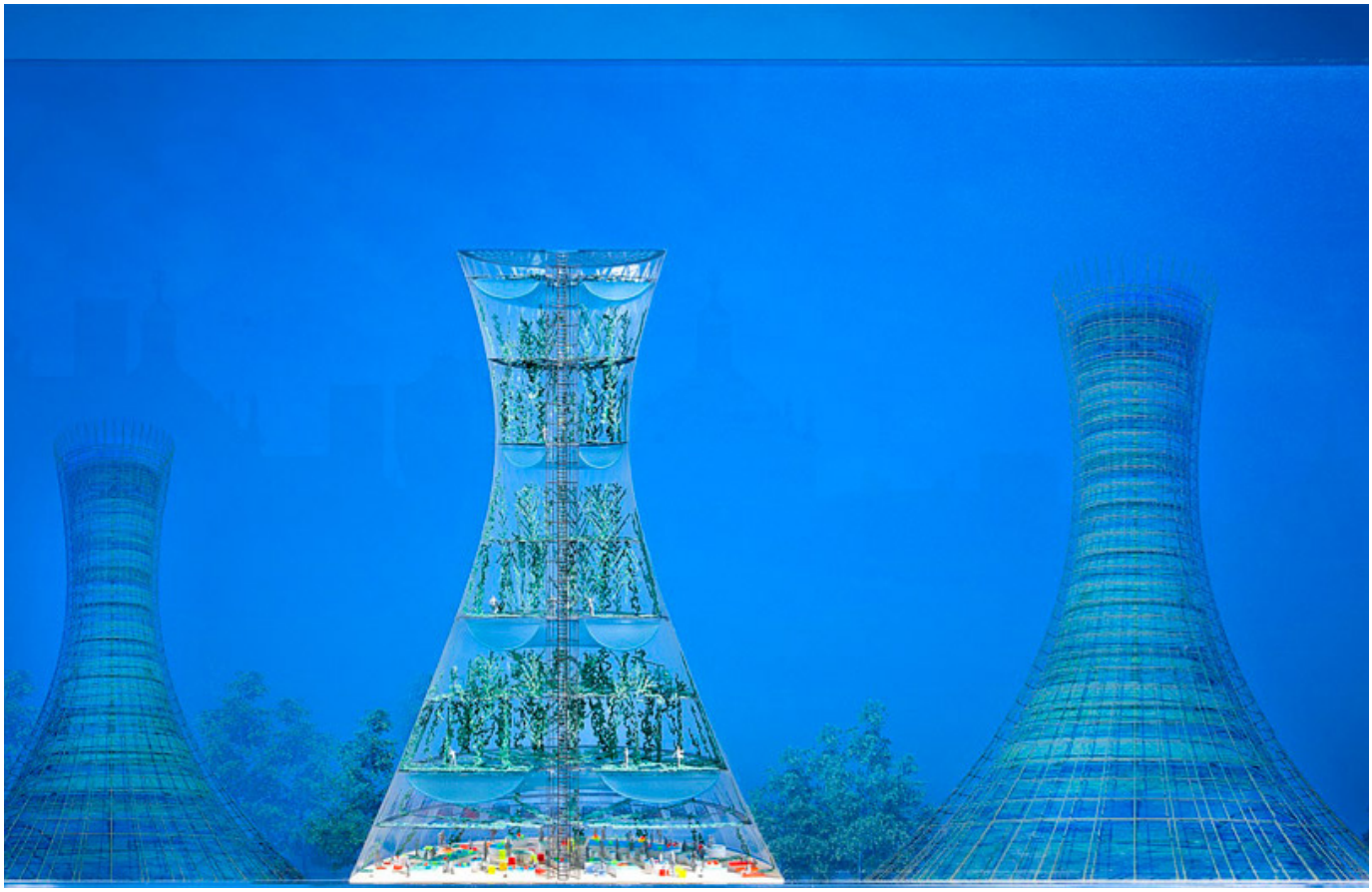


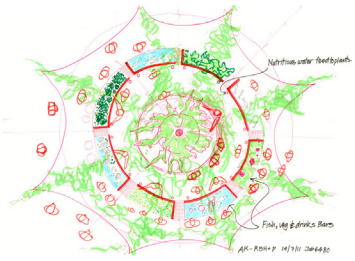
Vertical Harvest - Jackson

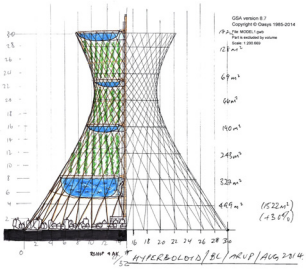
A 30 foot by 150 foot sliver of land located next to a parking lot in Jackson, Wyoming is set to be transformed into a vertical farm that will produce up to 100,000 lbs of produce each year Using 90 percent less water than conventional farming, and absolutely no pesticides.

Stories: 3
Use: - hydroponic greenhouse
- tomatoes
- greens
- herbs

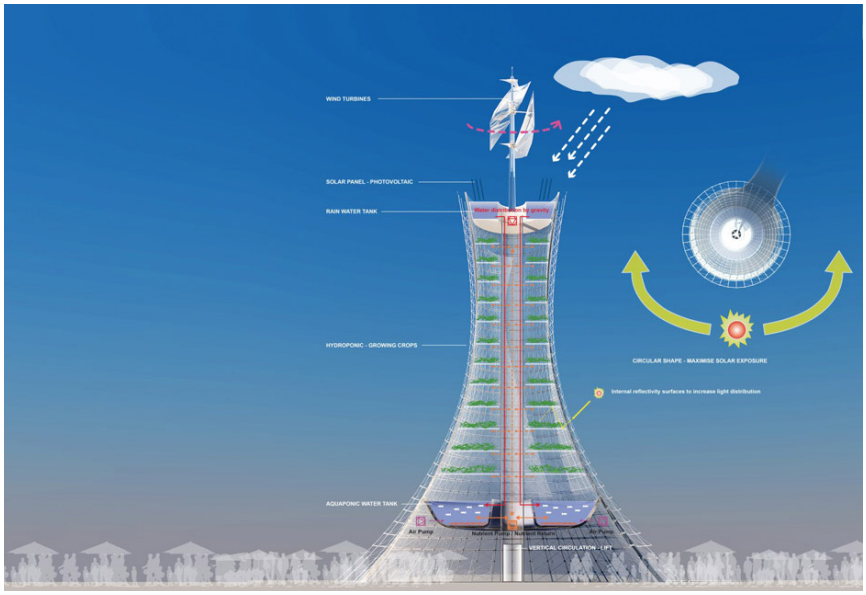
http://inhabitat.com/this-vertical-farm-will-provide-wyoming-residents-with-100000lbs-of-fresh-produce-each-year/





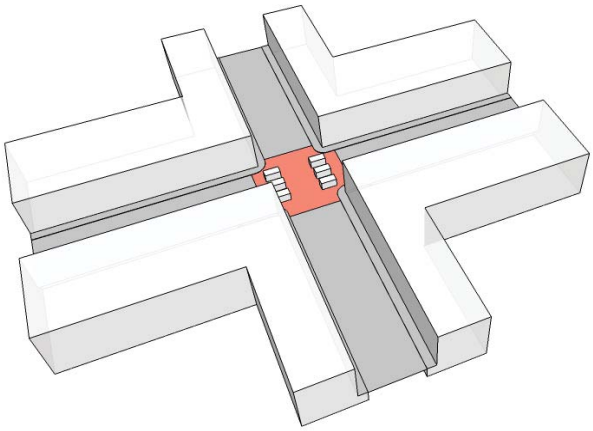


Skyfarm - Rogers Stirk Harbour & Partners



Stories: 30
Use: - hydroponic growing
- aquaponics
- conventional farming
- market & restaurant
- energy generation

http://www.dezeen.com/2016/03/17/skyfarm-rogers-stirk-harbour-partners-global-food-crisis-vertical-farm-concept-bamboo/



Program

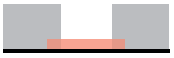
- meat
- dairy
- frozen food
- produce

Strengths

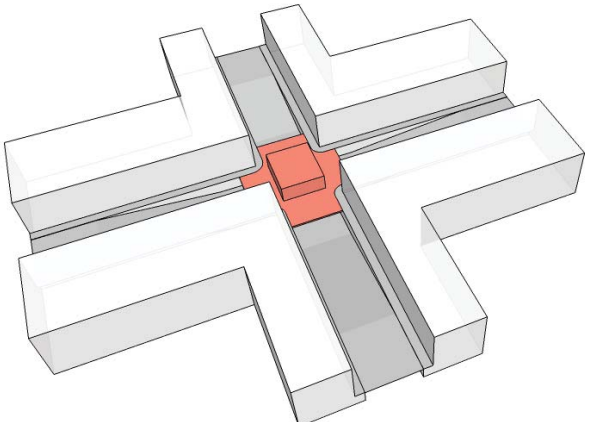
- makes pedestrian environment a priority
- allows public transit to be more visible
- potentially could use existing distribution systems through larger grocers
- minimal infrastructure/space during off hours

Opportunities

- only functions during afternoon rush hour
- scheduling/logistics



Grocery Intersections - Street Market



Program

- meat
- dairy
- frozen food
- produce

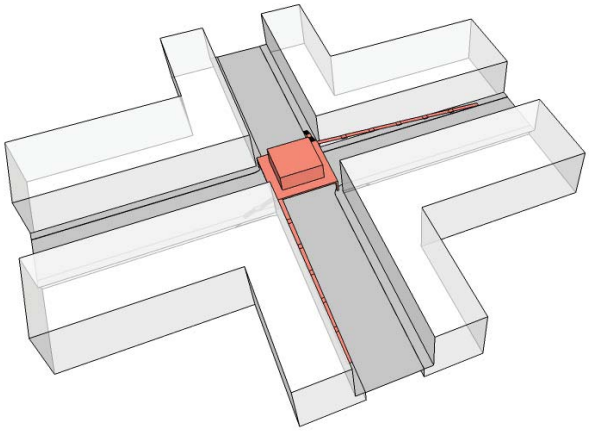
Strengths

- Creates an alternate pedestrian experience while allowing traffic to flow
- Gives prioroity to the pedetrian environment
- Flexible hours of operation

Opportunities

- Existing infrastructure

Grocery Intersections - Pedestrian Plaza



Program

- meat
- dairy
- frozen food
- produce

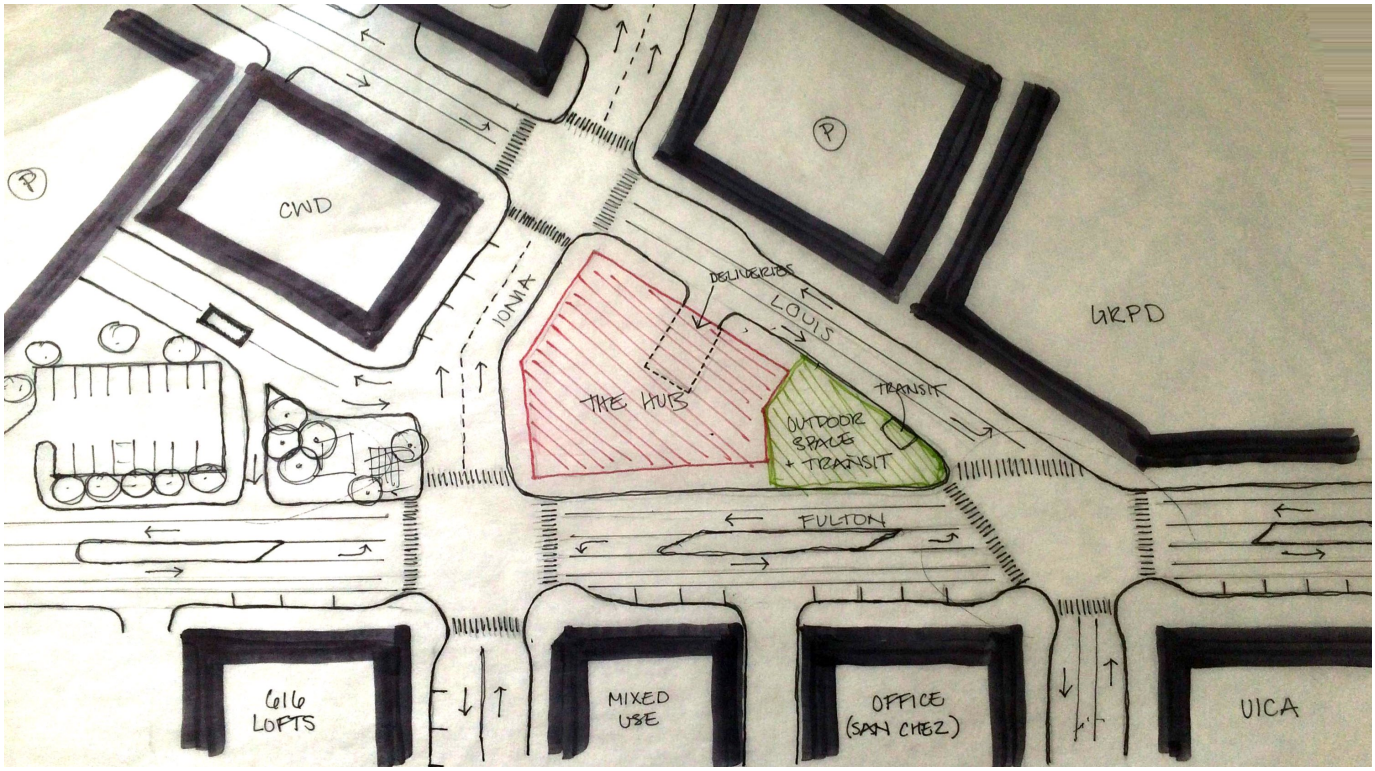
Strengths

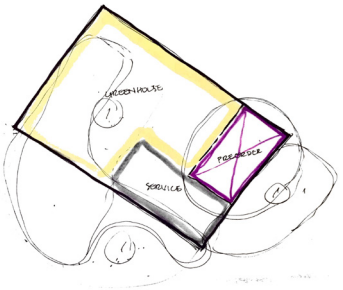
- Creates an alternate pedestrian experience while allowing traffic to flow
- Flexible hours of operation

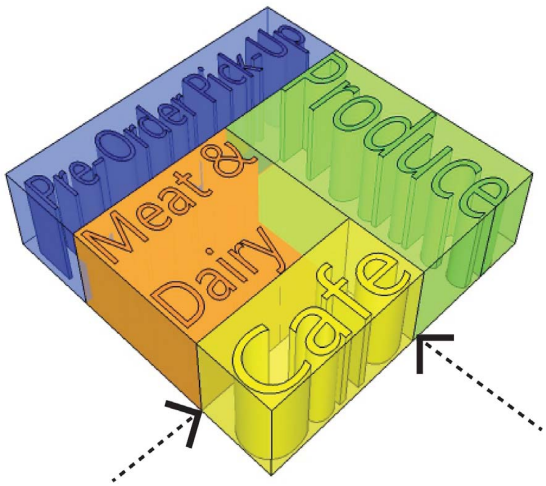
Opportunities

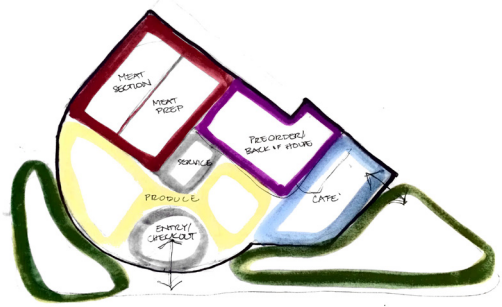
- Experience at the street level
- Integration with buildings

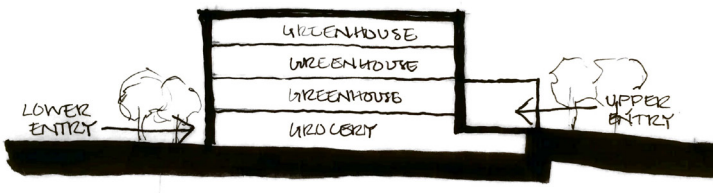
Grocery Intersections - Raised Platform

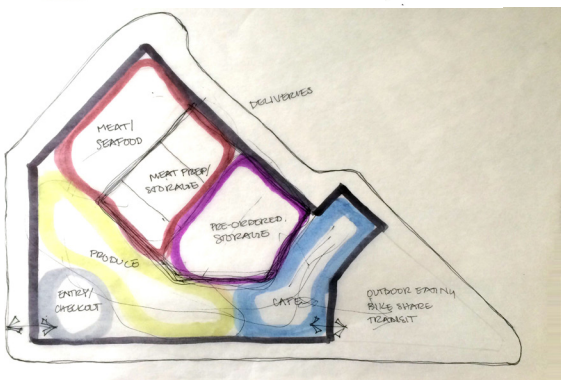

CWD
P
P
IONIA
DELIVERIES
LOUIS
GRPD
THE HUB
TRANSIT
OUTDOOR SPACE + TRANSIT
FULTON
6116 LOFTS
MIXED USE
OFFICE (SAM CHEZ)
UICA

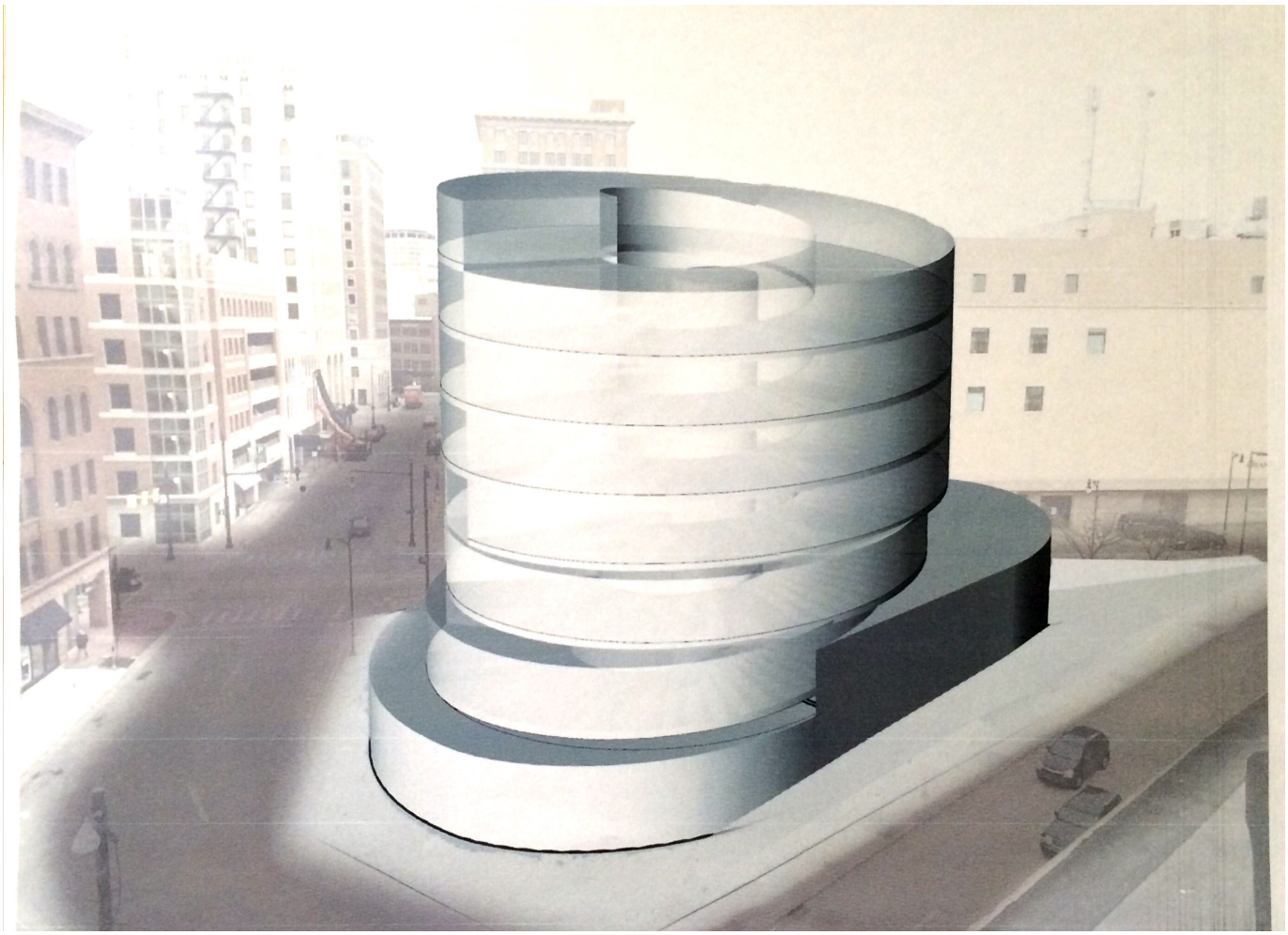

GREENHOUSE
PRE-ORDER
SERVICE

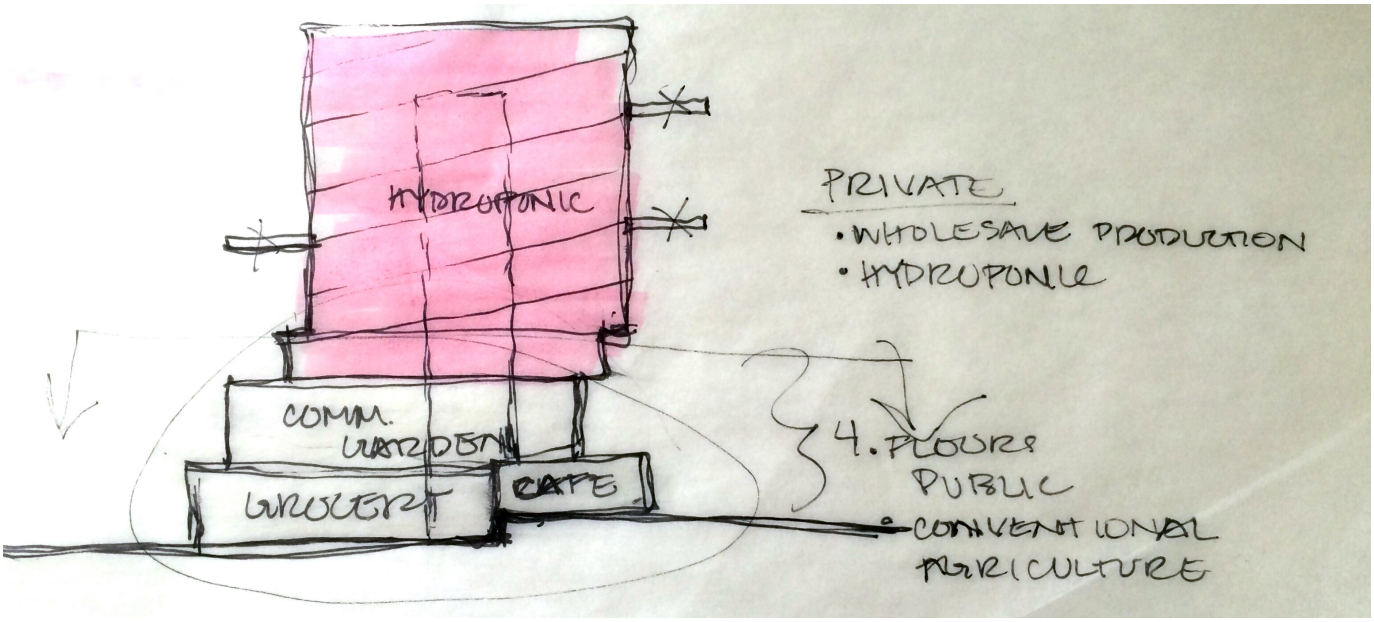

Pre-Order Pick-Up
Produce
Meat & Dairy
Cafe


MEAT SECTION
MEAT PREP
PRE-ORDER/ BACK OF HOUSE
SERVICE
PRODUCE
CAFE
ENTRY/ CHECK-OUT

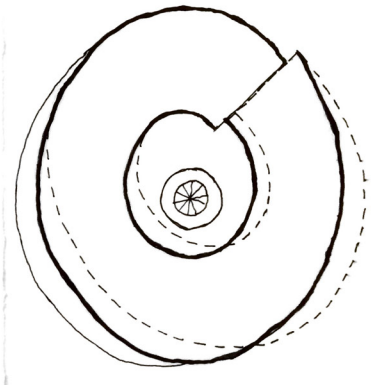

GREENHOUSE
GREENHOUSE
GREENHOUSE
GROCERY
LOWER ENTRY
UPPER ENTRY

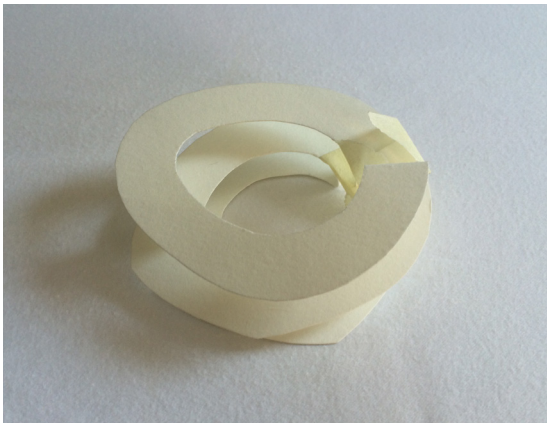

DELIVERIES
MEAT/ SEAFOOD
MEAT PREP/ STORAGE
PRE-ORDERED/ STORAGE
PRODUCE
ENTRY/ CHECKOUT
CAFE
OUTDOOR SEATING BIKE SHARE TRANSIT

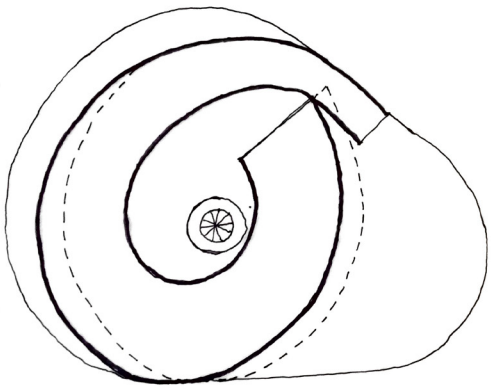


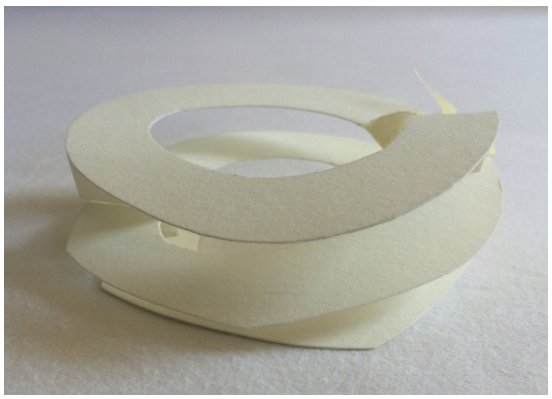


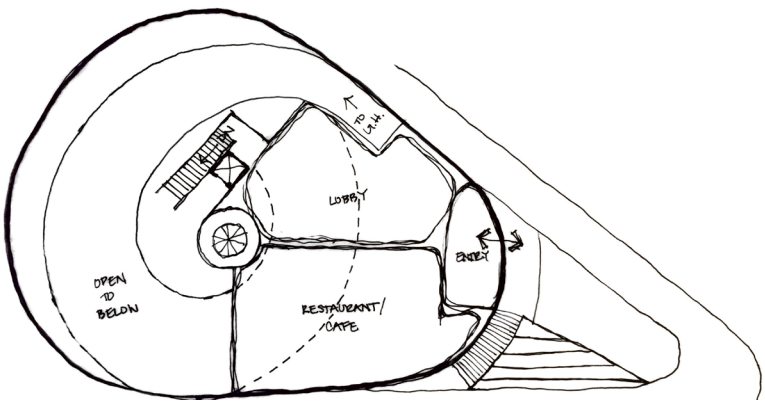
process work

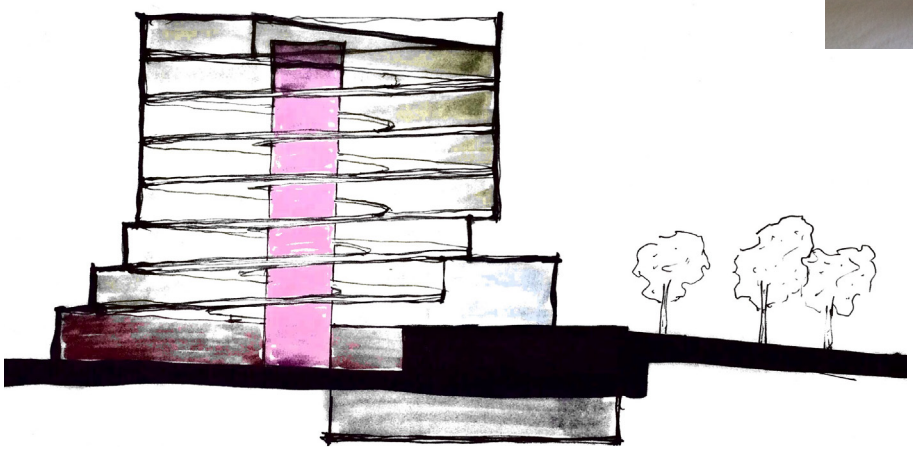


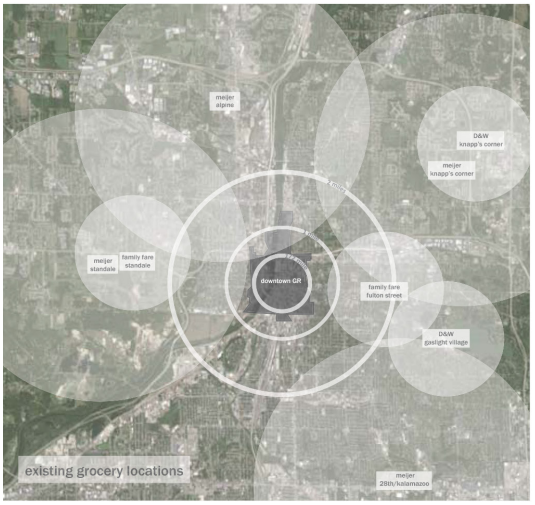


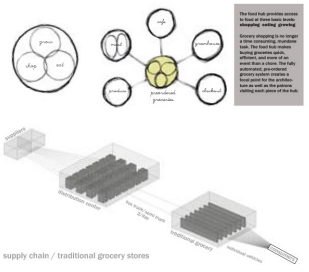


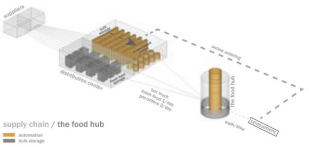


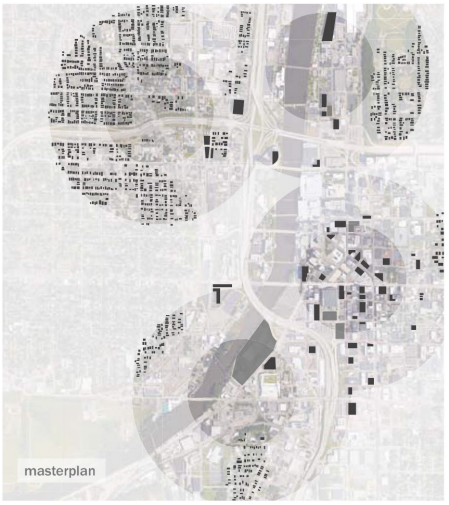

TO L.H.
LOBBY
ENTRY
OPEN TO BELOW
RESTAURANT/ CAFE

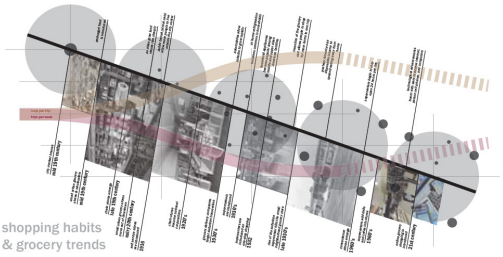


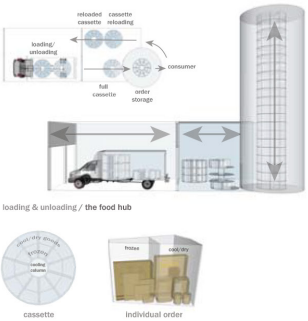


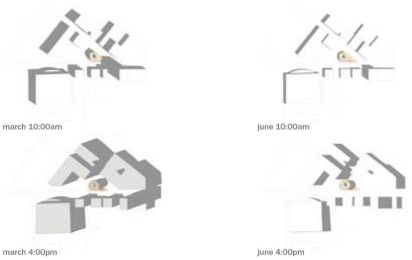


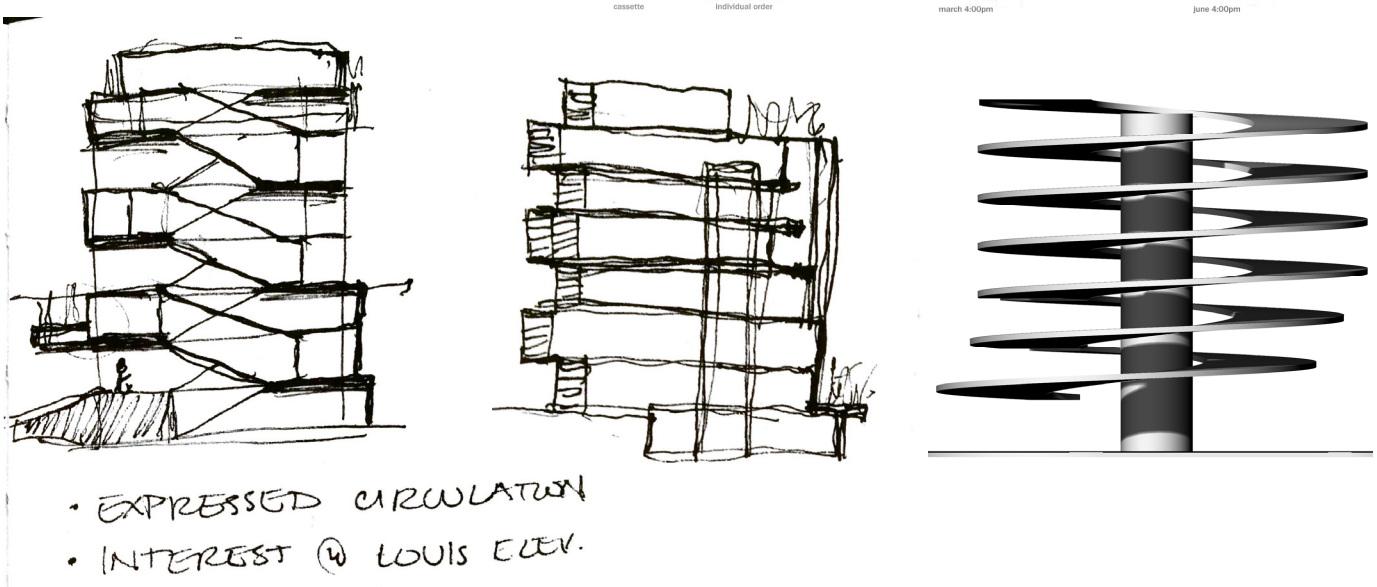


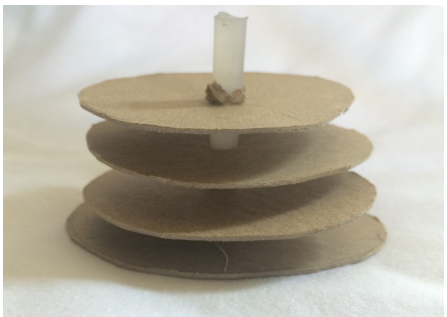






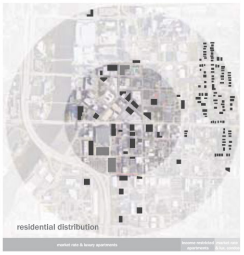




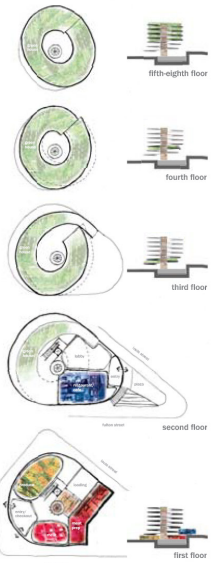


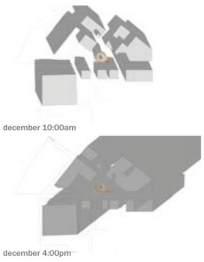
process work


transit & traffic
wealthy

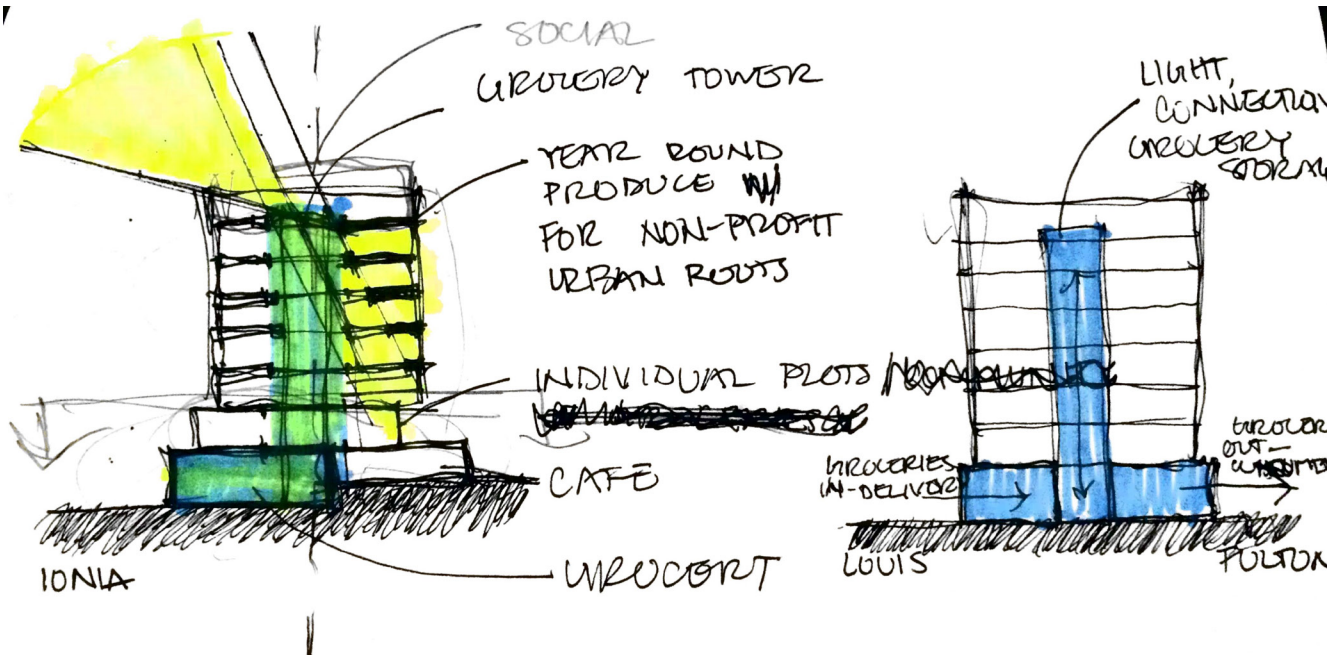

residential distribution

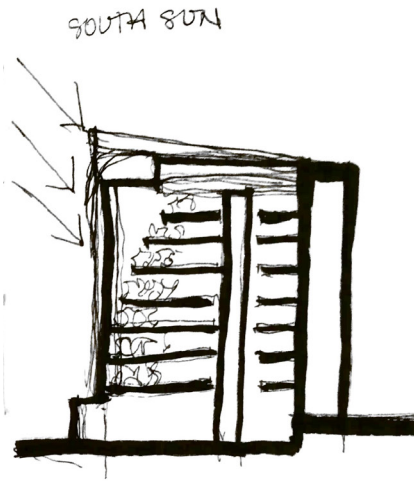

mixed use
CWD
GRPD
the 8.9.8
monument park
fulton street
van andel arena
site plan

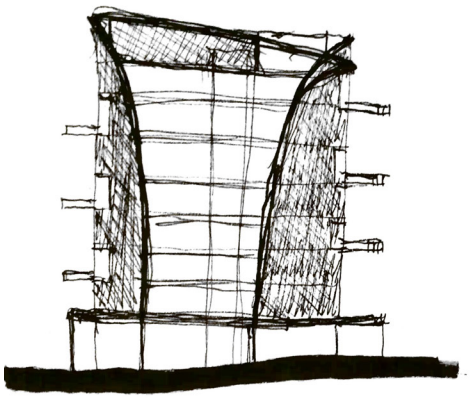

fifth-eighth floor
fourth floor
third floor
second floor
first floor

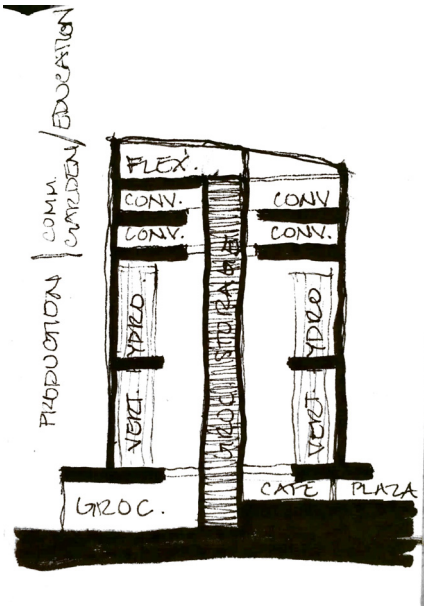

december 10:00am
december 4:00pm


ionia avenue
fulton street

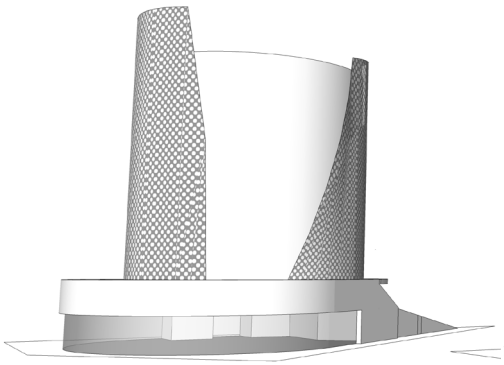

SOCIAL
GROCERY TOWER
YEAR ROUND
PRODUCE
FOR NON-PROFIT
URBAN FOODS
INDIVIDUAL PLOTS
CAFE
IONIA
LIGHT,
GROCERY
GROCERIES
LOUIS
FULTON

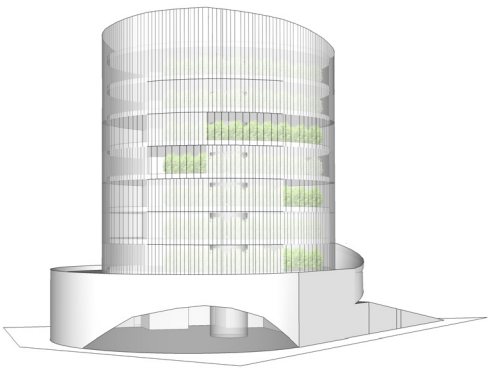


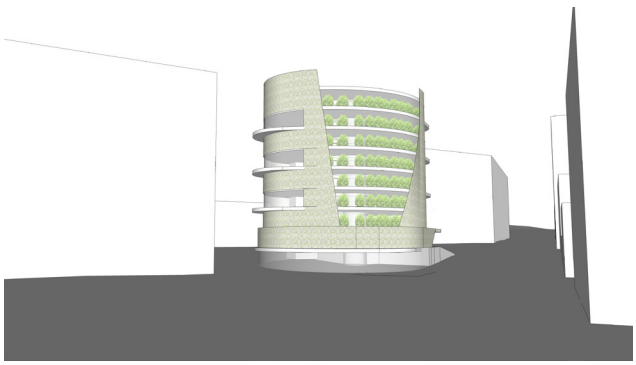




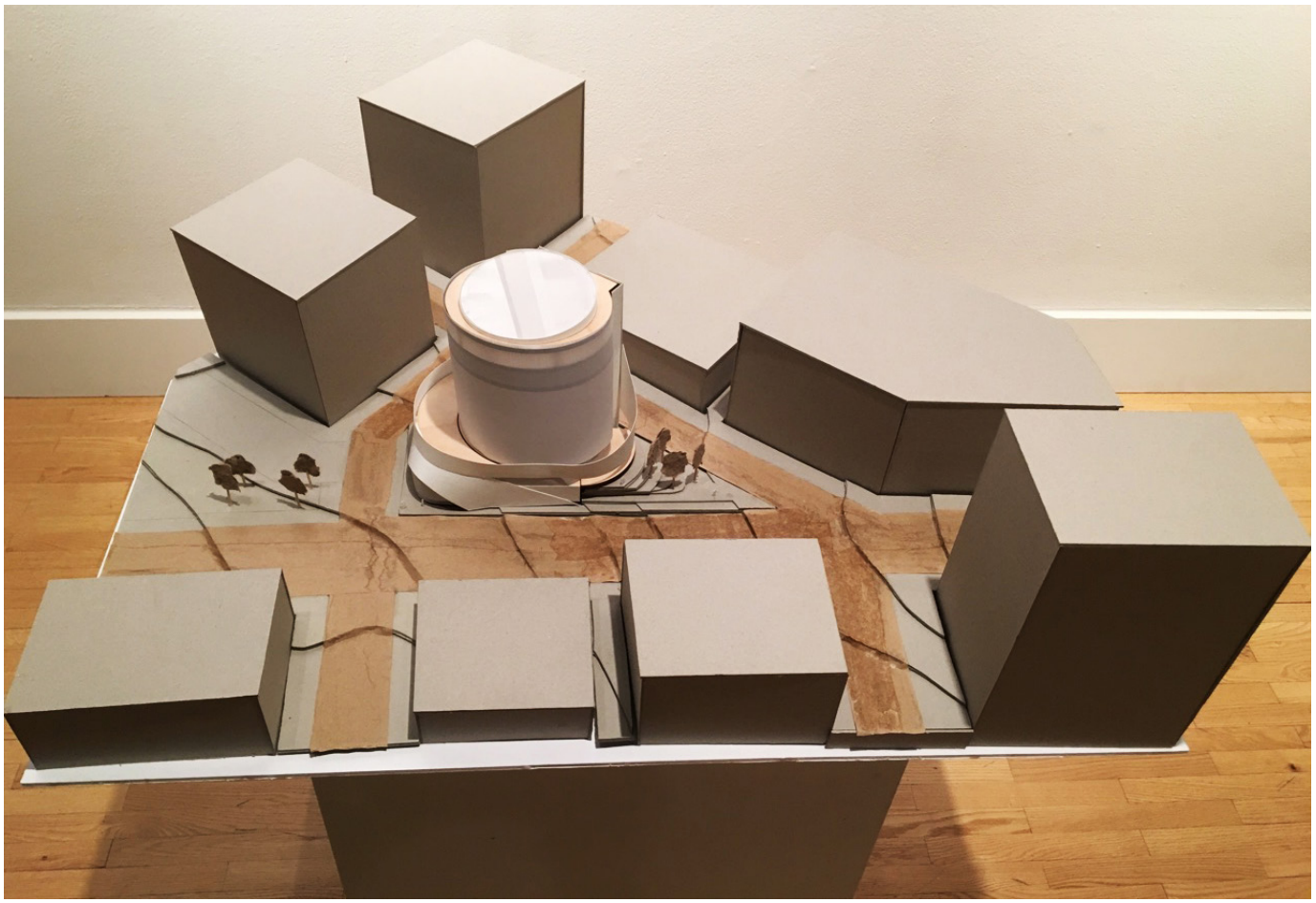
- GREENHOUSE TOWER
- SKIN W/ SOUTHERN EXPOSURE
- GROWING DECKS @ EAST
- OCCUPIED BALCONIES @ WEST

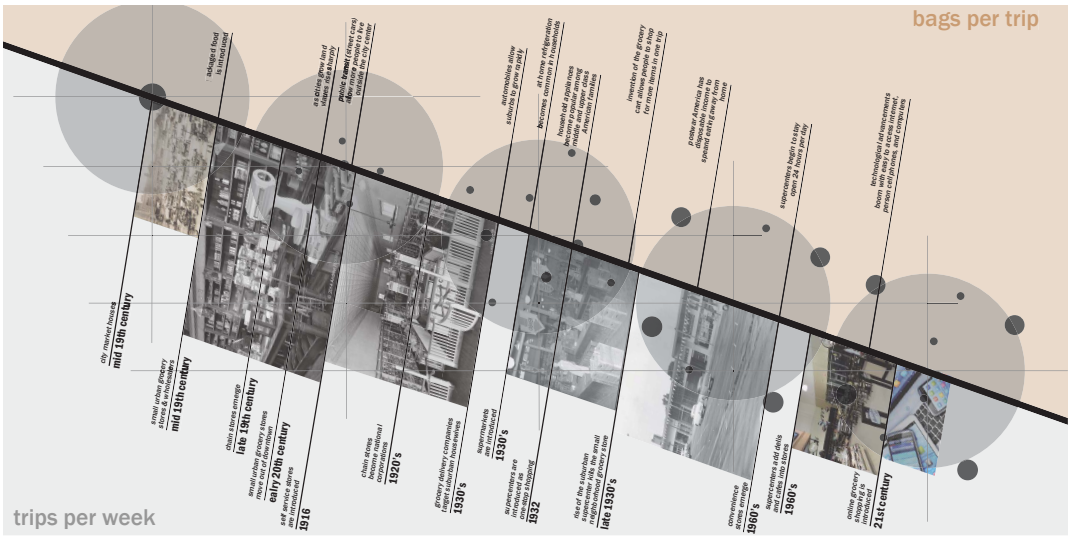




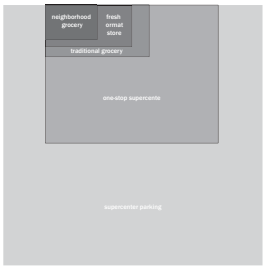


process work

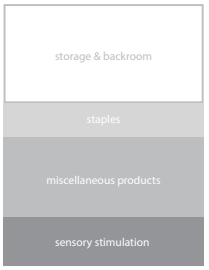


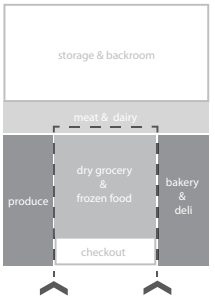


grocery urbanism: GR

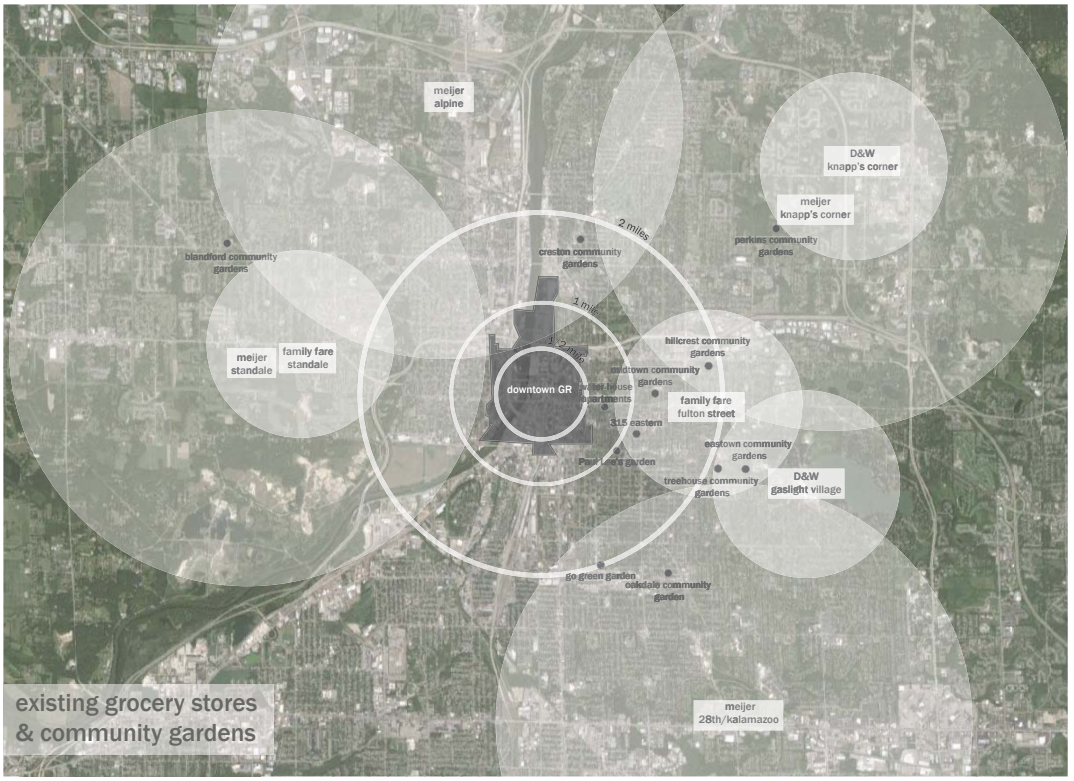


existing grocery typologies

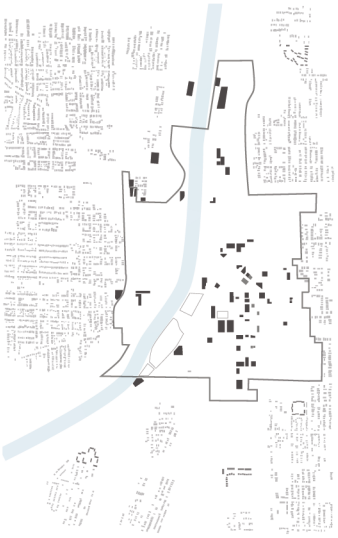




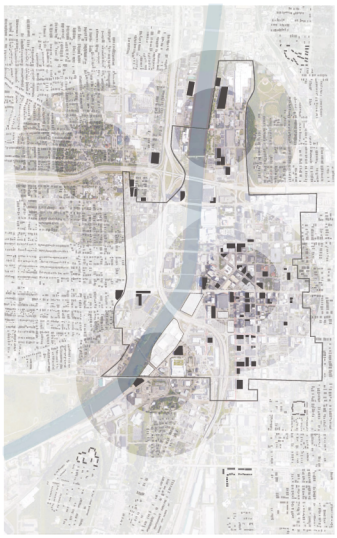
typical grocery spatial layouts



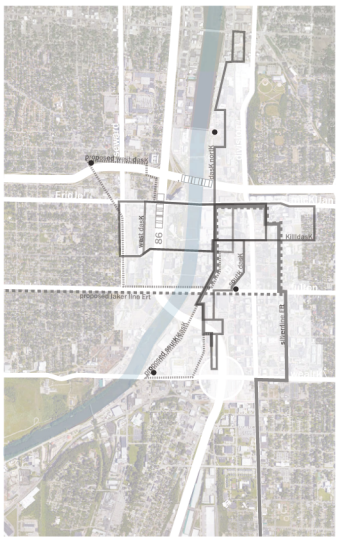
existing grocery stores & community gardens



residential distribution



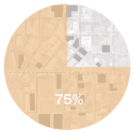
grocery infrastructure masterplan



existing & proposed transit

market rate &
luxury condos

income restricted
apartments

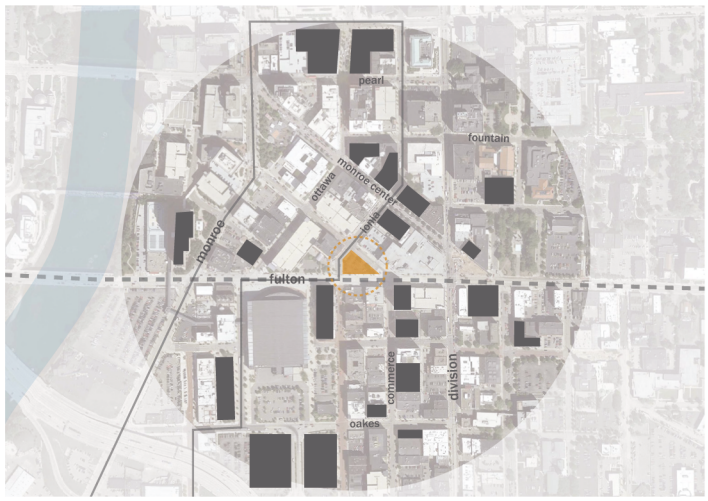


market rate &
luxury apartments

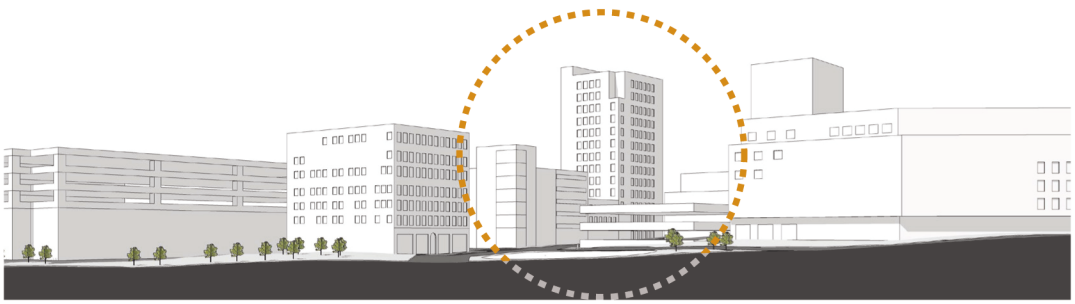
The city of Grand Rapids claims that a full service grocery store downtown will not be economically viable until the city reaches a critical mass of 10,000 housing units within the downtown core. However, there are around 5,000 existing and proposed housing units in the downtown core currently whose residents must drive out to the suburbs in order to buy their day to day groceries.

There is an opportunity to introduce a new model of grocery store that responds to today's fast moving, convenience driven culture that could serve today's existing population as well as the eventual critical mass of population. In order to be successful, the model must capitalize on the convenience of walkability for residents in downtown Grand Rapids by locating within a 1/2 mile radius, or a 10 minute walking distance of high density residential areas.

As the city is projected to grow in population, striving for critical mass, eventually there will be a need for 4 locations of new grocery infrastructure in order to serve residents in all areas of the downtown core. Each location will serve approximately 2,500 people. Implementing in phases, the first location is needed at the center of the city where there is an existing high density of residential units.



fulton street site

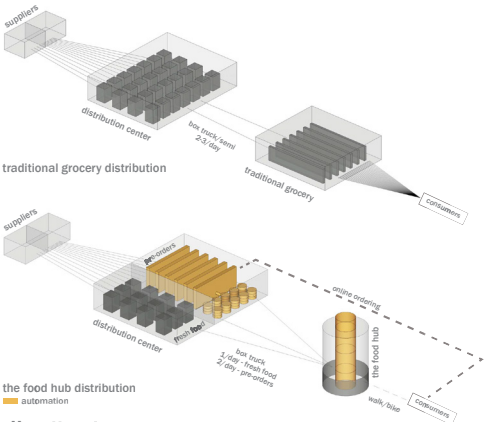


the food hub: GR

The Food Hub concept provides access to food at 3 levels: shop, grow, eat.

The Food Hub combines the convenience of the recent pre-ordered grocery trend with the opportunity for personal preference when shopping for fresh, local produce and meat similar to a traditional market experience. Dry goods, refrigerated food and frozen food are ordered online with the opportunity for same day pickup. Removing the dry goods, refrigerated, and frozen food sections from the program allows The Food Hub to occupy significantly less square footage than a traditional grocery store.

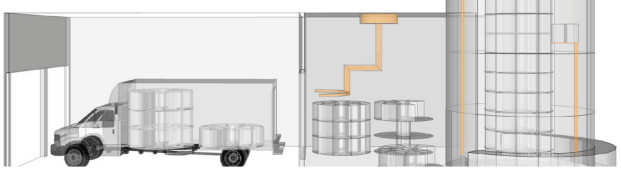
The Food Hub utilizes automation in key places to improve efficiency and convenience. The pre-ordered groceries are stored in a fully automated, temperature controlled storage tower which consumers can retrieve simply by swiping their credit card. The hydroponic production greenhouse is able to produce 200,000 pounds of greens, vegetables, and herbs per year and provide the opportunity for year-round local produce grown in the heart of the urban center.

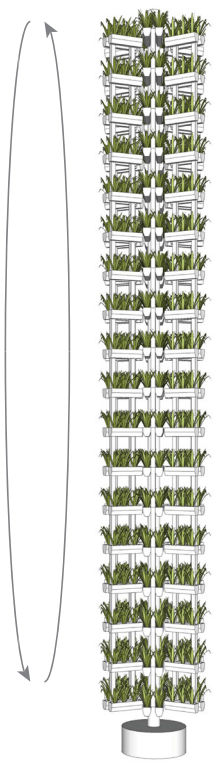


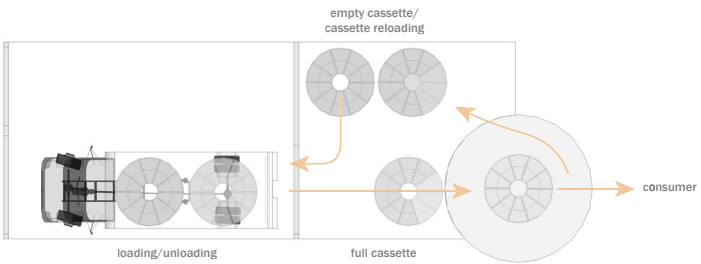
distribution system

individual order

cassette

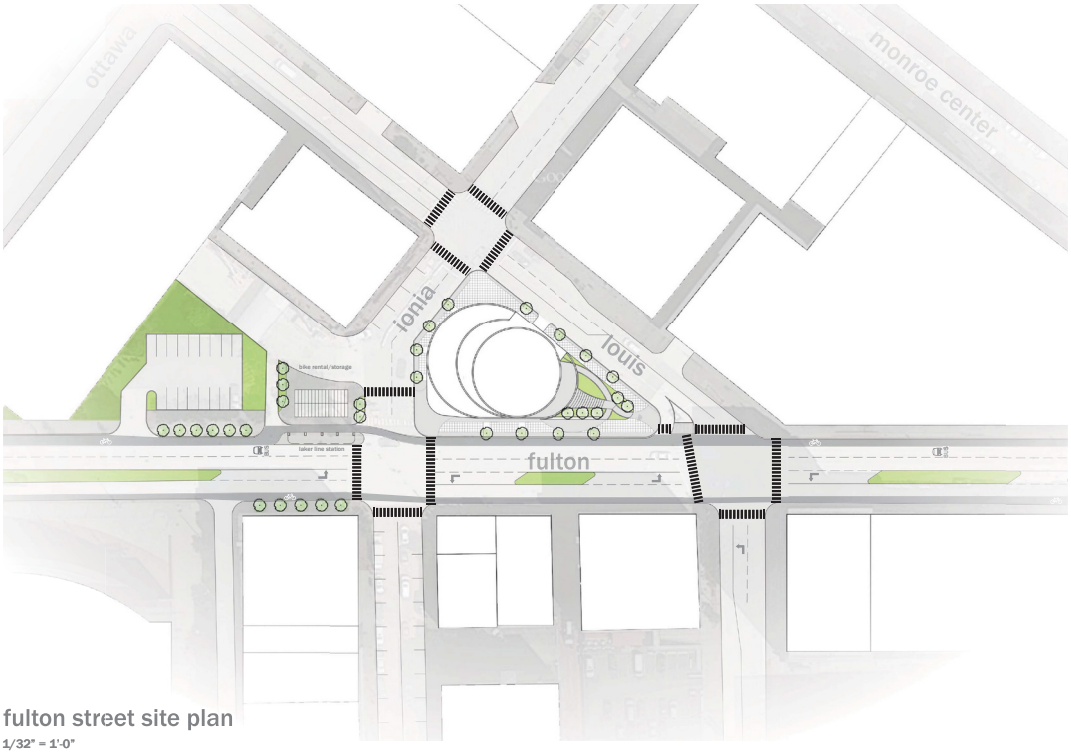






pre-ordered grocery storage

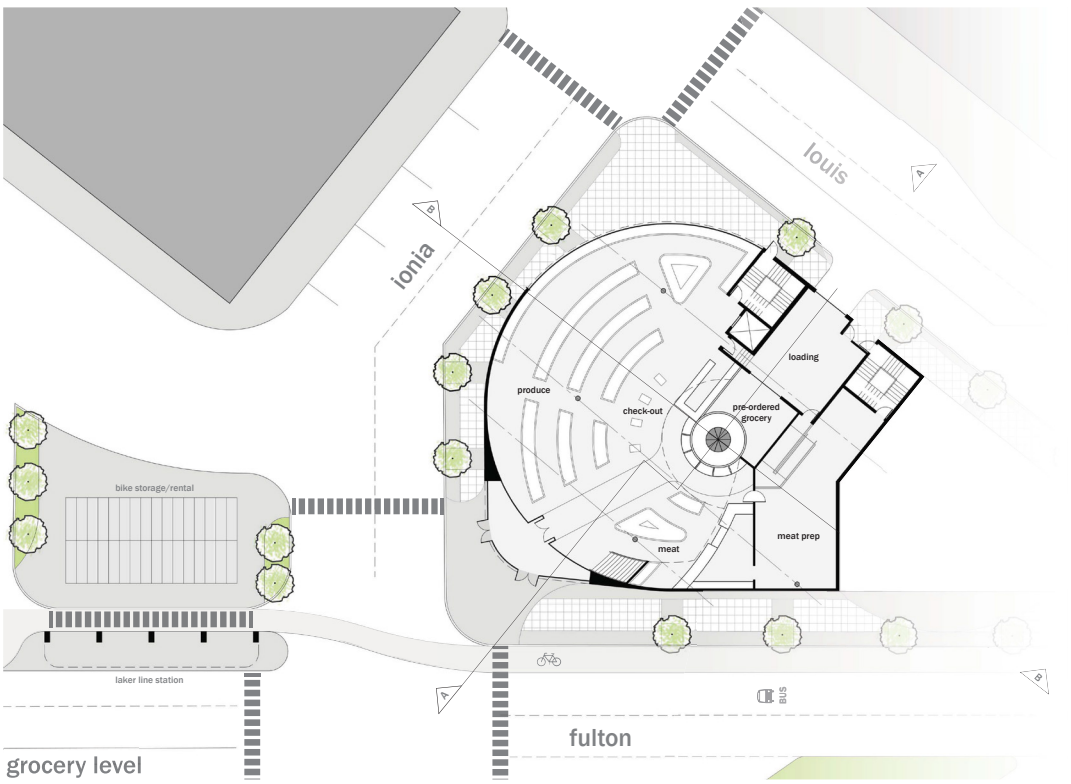
hydroponic production



fulton street site plan

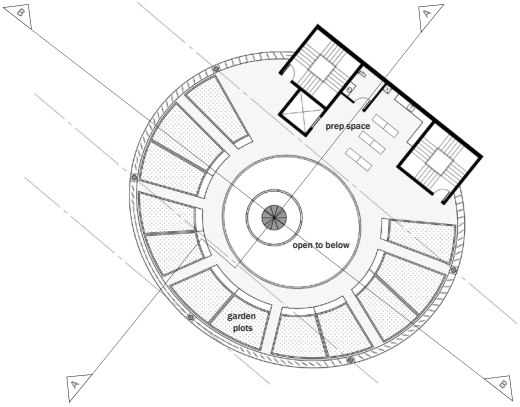
1/32" = 1'-0"

March 21 - 10:00am | March 21 - 4:00pm | June 21 - 10:00am | June 21 - 4:00pm | December 21 - 10:00am | December 21 - 4:00pm



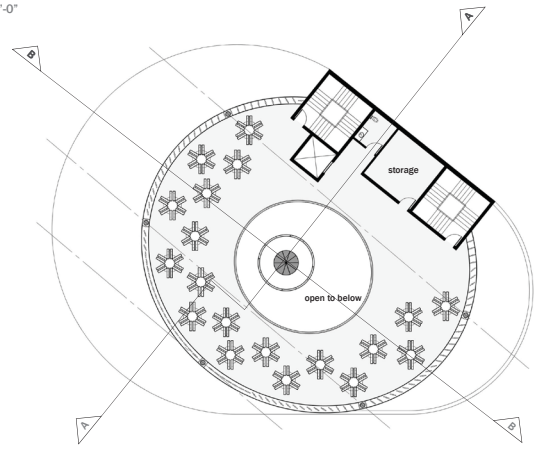
grocery level

3/32" = 1'-0"



community garden levels

3/32" = 1'-0"



production garden level

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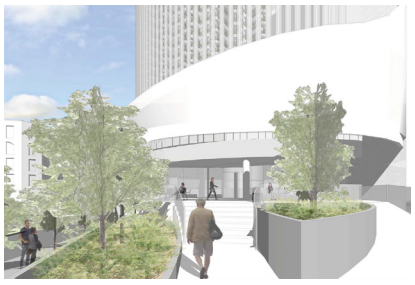

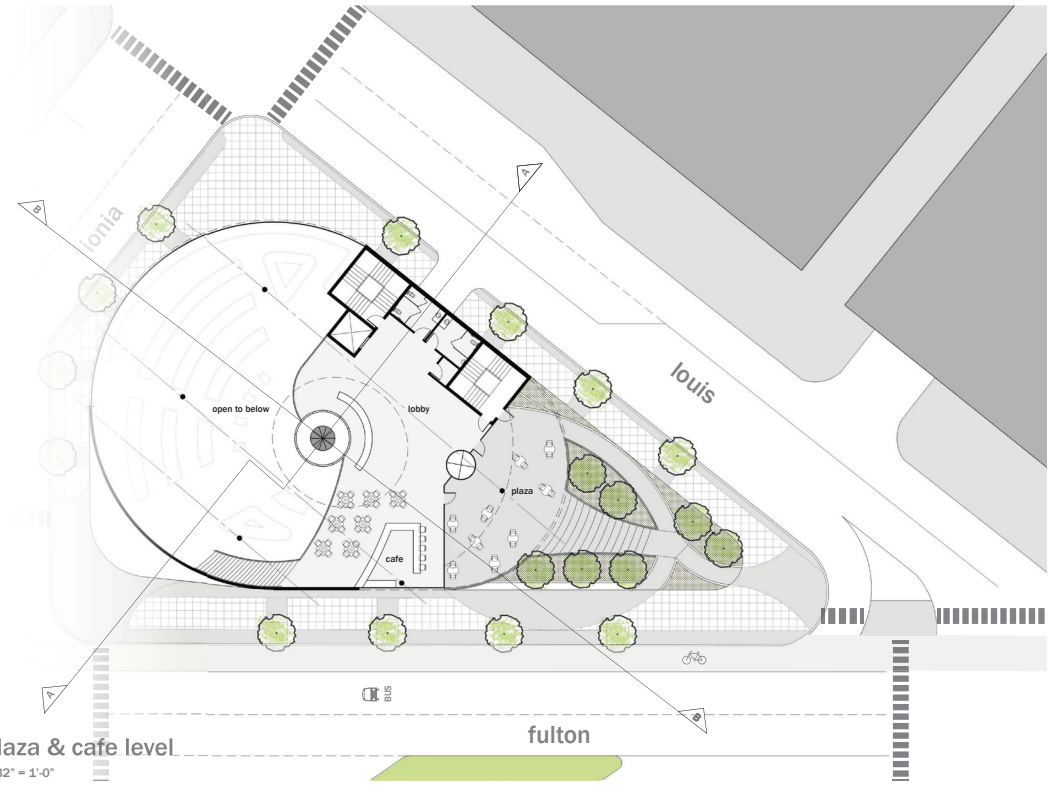

plaza & cafe level

3/32" = 1'-0"

section A

3/32" = 1'-0"

section B

3/32" = 1'-0"

Grocery Shopping Trends Through History

Over the last 150 years, shopping for groceries in America has changed significantly. From street markets in the middle 19th century to what are known today as supercenters, grocery stores have both influenced and been influenced by changing culture, and technological advances.

During the late 19th century as American cities became more industrialized, the existing disorganized street markets where all food for the city was bought, sold and traded, were moved into central public market houses. The street markets were no longer adequate for the quantity of goods being exchanged and there was increasing pressure from transportation for use of the roadways. The consumer experience at the street markets was thought of as an event. The markets were typically only open a few days per week. However, the public market houses eventually evolved into sophisticated systems of vendors selling all types of goods open every day of the week. The predictability and organization of the market houses made the experience more of a ritual than an event. (Mayo, 1993)

As cities grew, land values started to drive residences out of the city center. Small 600 sf grocery stores quickly followed. Similarly, the grocery trade by nature is a business of slim margins and land values were too high to locate in the city center. There was also added competition in the city center from the market houses and locating nearer to the new residential areas of town gave the small grocers the added advantage of convenience. In the early 20th century, these grocery stores operated through pre-ordering. Typically housewives would place their orders by phone in the morning and either the shopkeeper would deliver the order in the afternoon or husbands would pick the order up on their way home from work. (Mayo, 1993) Often, the small neighborhood grocery stores became a social gathering place for men. Many of the shopkeepers played the role of bartender during the post-work rush and the men would sit, have drink, then grab their per-ordered groceries and head home. (Tolbert, 2009)

As grocery stores moved toward the suburbs, they began to change physically as well as operationally. The stores grew larger and started to carry more items. In the mid 1930's the first self-service store was introduced which significantly changed the way people shopped. No longer did consumers rely on a personal relationship with their grocer to be able to negotiate prices or to special order products, they were able to shop for themselves at whatever pace they wanted, and see the full selection of products for themselves. As this transition happened, there was a simultaneous shift in shoppers. More women became the primary shoppers for their households because stores in general were much more pleasant to visit with organized shelves, and pre-packaged goods rather than the messy, bulk products haphazardly arranged behind a counter like in the early 20th century. (Mayo, 1993)

There were also advances in technology which shaped the way American's were able to shop. For example, home refrigeration and automobiles allowed people to buy more goods per trip with easy transportation and assured freshness for a longer period of time. The invention of shopping carts further allowed people to shop for more goods per trip and the appearance of other household appliances like vacuums and washing machines helped to perpetuate the idea of a one-stop-shop and ever-growing store size as well as product count (Mayo, 1993). These suburban super stores continued to expand in a vicious cycle of needing more space for both products and cars which necessitated more land which meant stores moved further and further away from the cities and increased the need for people to drive personal vehicles. This continued for decades and is still happening today. Over the 20th century, grocery stores expanded form roughly 600 s.f. located in the city's core to 200,000 s.f. with an additional 3-4 times that in parking miles from any urban setting.

Today, advancements in technology have created a culture of 'quicker, easier, cheaper'. The suburban supercenter is no longer quick or convenient enough to meet the needs of this new generation. The shear size of the store is prohibitive of a quick trip with the addition of finding a parking space and waiting in line at the checkout, grocery shopping has become a chore. For this reason, over the last decade many pre-ordered and grocery delivery systems have been introduced. These systems provide access to food while skipping the actual grocery shopping.

Looking to the Future

Historically, grocery shopping has influenced and been influenced by the changing culture of urbanism. As the American urban landscape has expanded and contracted, the grocery industry has adapted to meet the needs of consumers. Mid-sized American cities whose populations suffered during the mid to late 20th century due to suburban sprawl are once again seeing a growth in population. One of the major trends throughout the grocery industry's long history is that the grocery stores physically follow the consumers, their market. With more people moving back to cities, the grocery stores must also return to the cities. With this return to urbanism, the culture of convenience has not disappeared. In fact the continued advancements in technology have only perpetuated a fast paced culture which wastes no time and expects results instantly. People are seeking convenience in cities through a concentration of resources in walkable proximity, typically eliminating the need to own a personal vehicle. However, land values in cities are still expensive and the grocery business has not vastly improved margins. Today's typical 200,000 square foot supercenter would not be economically feasible in a downtown setting.

The grocery industry has the opportunity to change the way urban dwellers grocery shop by creating a new typology that takes into account the continuing pursuit for convenience with the economic pressures and land constraints of an urban environment. A revised system of pre-ordered groceries combined with on-site fresh items saves the consumer from spending valuable time shopping and guarantees quality expectations are met for items which are not standardized through processing. As has been consistent through grocery store history, the location of the new grocery concept is key. It must be situated within walkable context, and in close proximity to residences as well as transit options in order to be successful.

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Blavatnik School of Government at Oxford University - Herzog & de Meuron

Vertical Harvest - Jackson Wyoming

Skyfarm - Rogers, Stirk, Harbour & Partners

Kendall College of Art & Design
Master of Architecture Thesis