

architectu(re)mergence:  
a solution for the modern american grocery store  
cheryl moy. master of architecture in architecture. thesis.

architectu(re)mergence:  
a solution for the modern american grocery store

Cheryl Moy

Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

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Approved by

Marcia F. Feuerstein  
Paul F. Emmons  
Jaan Holt

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#### ABSTRACT

Imagine a grocery store that physically helps you to make healthy decisions for you. Your Twinkies, Hoho's, and other processed foods are all available and within sight, but you've got to work for them.

In the wake of challenges that Americans face every day, this thesis project is putting a magnifying glass to (hi)stories and the human experience, and promoting change for American suburban and urban grocery stores to be health-fitness machines that we need them to be in order to help those of us on a quest to stay fit and healthy.

With the information age pretty much exploding- as we are able to do a search for just about anything on Google, lack of information is not necessarily the problem. While gimmicky short term dieting fads come and go, an architectural model solution can set the foundation and structure to sustain progress. Let's look to the origins of architecture, labyrinths are built of walls, but if we are not careful, we can let them lead us to dead ends. Let's look to the origins of the marketplace, where fresh foods are taken directly from the source. For many of us, the modern American grocery store is the origin of our energy, where we will return again and again. It is our food source. It might be one root of our society's increasing levels of unhealthy weight gain, but also the source of opportunity to challenge the current design of the boxed store.

for all those with a vested interest in the progress of mankind,  
for those who reach just beyond what they are capable to achieve,  
for my loving parents and brother,  
for great friends, new and old,  
and of course, last but not least, for cct.  
thank you.

A special thanks to my triad: Marcia, Paul, and Jaan.  
You've been an exceptional thesis committee,  
thank you for your great wisdom, anecdotes,  
and dedication to our profession.

# architectu(re)mergence: a solution for the modern american grocery store

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## introduction

Everyone needs a story...  
to relate to.  
to ground themselves.

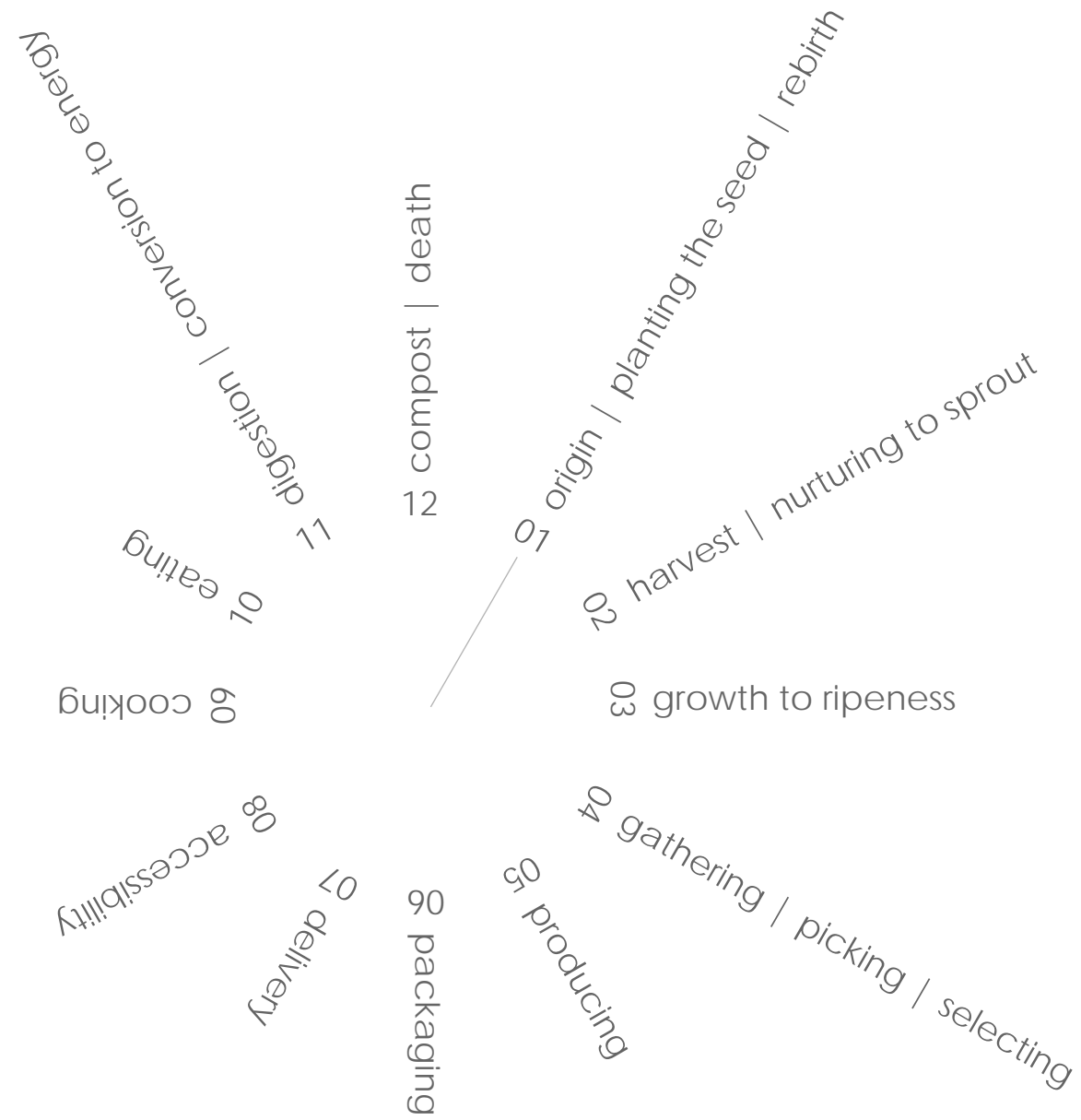
I first started this journey investigating...  
searching for the answers.  
In a labyrinth... trapped much like the centaur.  
I needed to dig back  
to the origins of dwelling.  
to the origins of architecture.

The mundanity of getting fuel.  
Simple actions.  
Daily cycle for survival.  
Rest.  
Obtain the food.  
Eat.  
Repeat.

Whether it's the young professional couple that meets across the produce aisle.  
Or the guy training for his first 5K.  
There is human connection with environment.  
Moments are cropped.

We as architects can do better in helping to shape these moments.





## A DISCOVERY-FILLED VOYAGE THROUGH SPACE AND TIME.

origins

site

old town alexandria  
 historic canal  
 the cosmos - a clock by the river

precedents

reading terminal  
 italian market  
 pike's place  
 dean & deluca  
 alexandria farmer's market

today's local box store

shoppers  
 giant





[upper left] Representation of an orange tree symbolizing the Tree of Knowledge. Leaves are excerpts from the Book of Genesis.

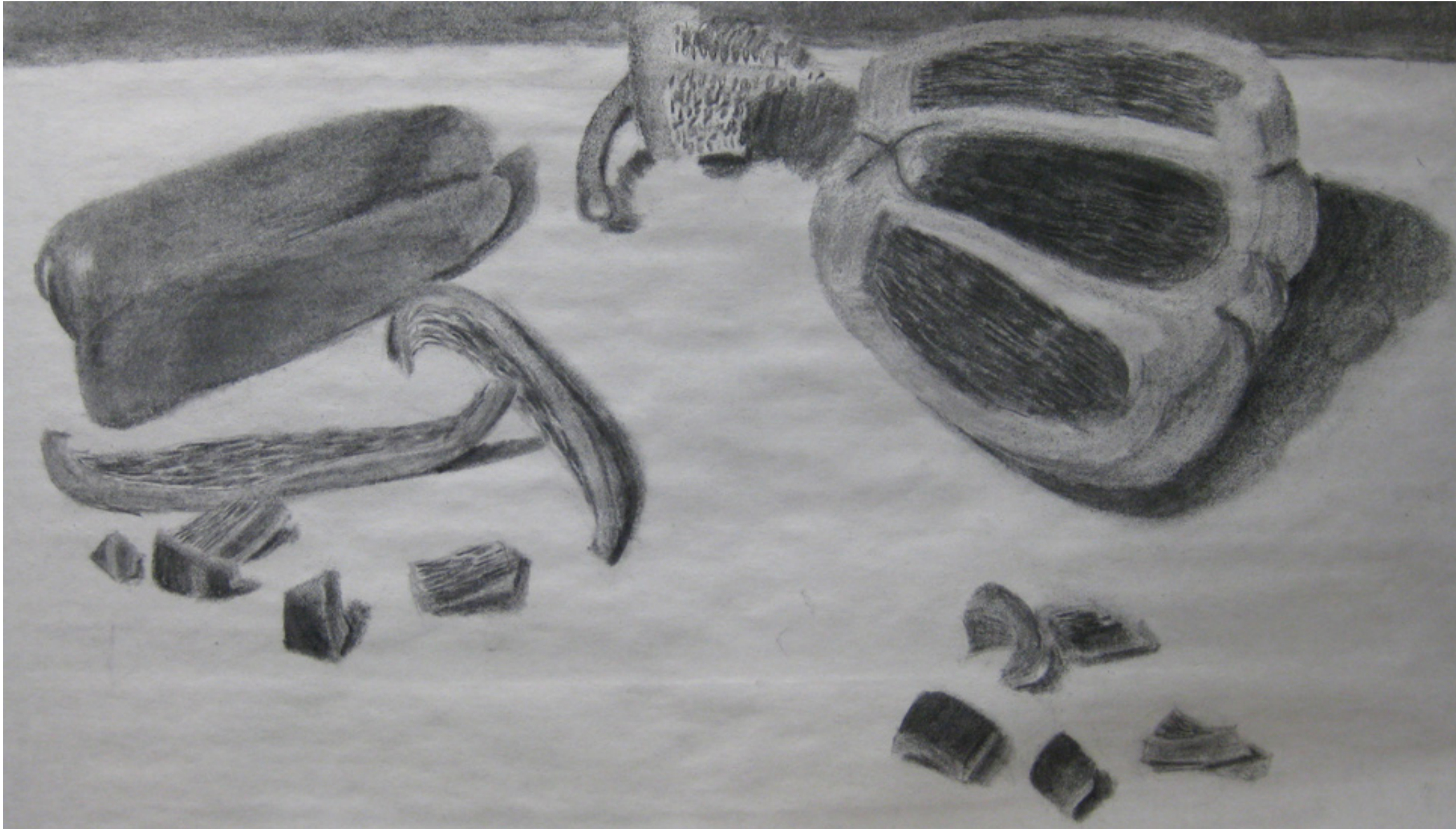
[preceding page] The Life-Cycle of Man's Relationship with food.

When searching for answers, it is not an unwise idea to look at the past stories and histories to investigate the cause of the current condition, to assess, make decisions, and adjust the course of action, accordingly.

The iconic legend of Adam and Eve's listening to the snake and eating the apple from the tree of knowledge and the fabled tale of young Washington chopping down the cherry tree are two examples of stories which in broad terms, demonstrate the powerful relationship man has with nature. Despite compassion for the land, man can make mistakes. Sometimes one can fall victim to consequence if choices are made by false facts or ill informed judgements. Perhaps Washington should not have cut down that tree. And maybe Eve should not have pulled an apple from the sacred tree for Adam to eat. It's hard to say. Circumstances allow for present day society to take their lessons-learned and build upon them: to intend to make wise decisions and to be honest, to be thorough and to follow through with plans, and to take the outcome, whether a success or mistake, as preparation for the next exploration.

Simultaneously, man's relationship to architecture is equally as compelling. A dwelling contains four walls and a roof for protection, a hearth for warmth and a means to cook food, and for bringing people together. A labyrinth contains a framework built of walls. Structure is established only to navigate within. The arrangement of the walls of a tea house provides distinct order within space and time for the processional ritual experience. Both types have destination. Both have purpose. Form follows function for one, but perhaps not for the other.

The ultimate selection of a site is often derived from spaces that are available. But in the circumstances of this this thesis, the project selected its site for its connectivity to the urban fabric and to its history.

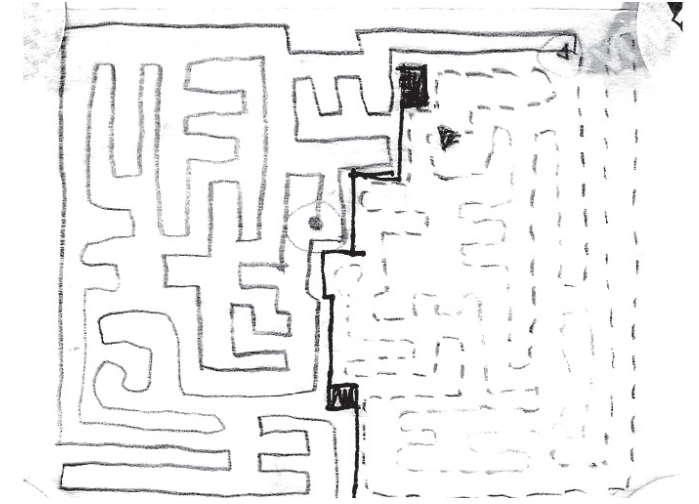


[above] Fresh Produce: The Green Pepper, in Easy Pieces.

A vegetable that which comes from nature is dissected to examine its architectural make-up:

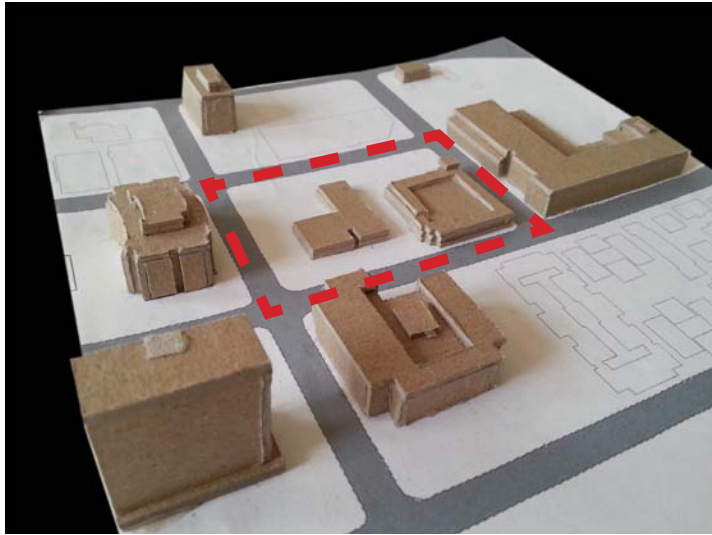
Life-cycle of origins and rebuilding, foundation and growth, materiality, texture and structure of the core and skin, solids and voids, expansion and compression, circulation, flexibility, orientation.

## ORIGINS.



[upper right] Representation of a labyrinth and a diagram expressing the solution from start to destination. There is a critical point within the path that the meanderer determines the direction and experience that remains.





[above] Physical site model of the existing conditions. On the city block currently there are a couple of retail buildings surrounded by asphalt lined with parking spaces.

[upper right] Site plan diagram representing observations of vehicular circulation, as well as public and private building types.

[lower right] Conceptual plan/perspective representing the site at the center, facing south toward King Street. The Masonic Temple is located West, on the right, and the Potomac River is East, on the left.

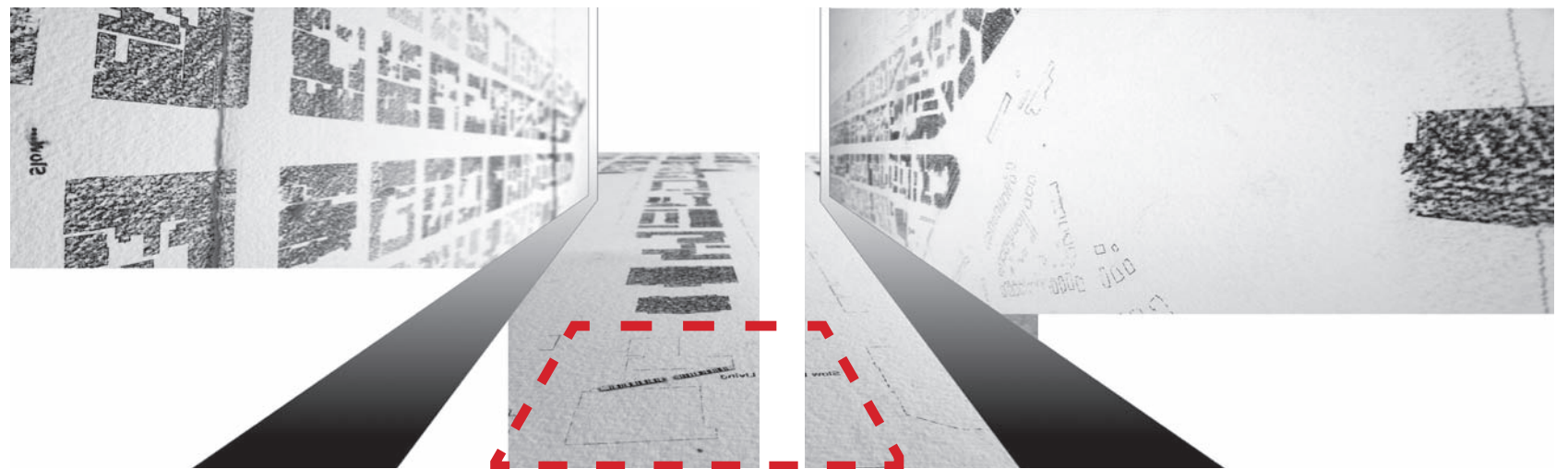
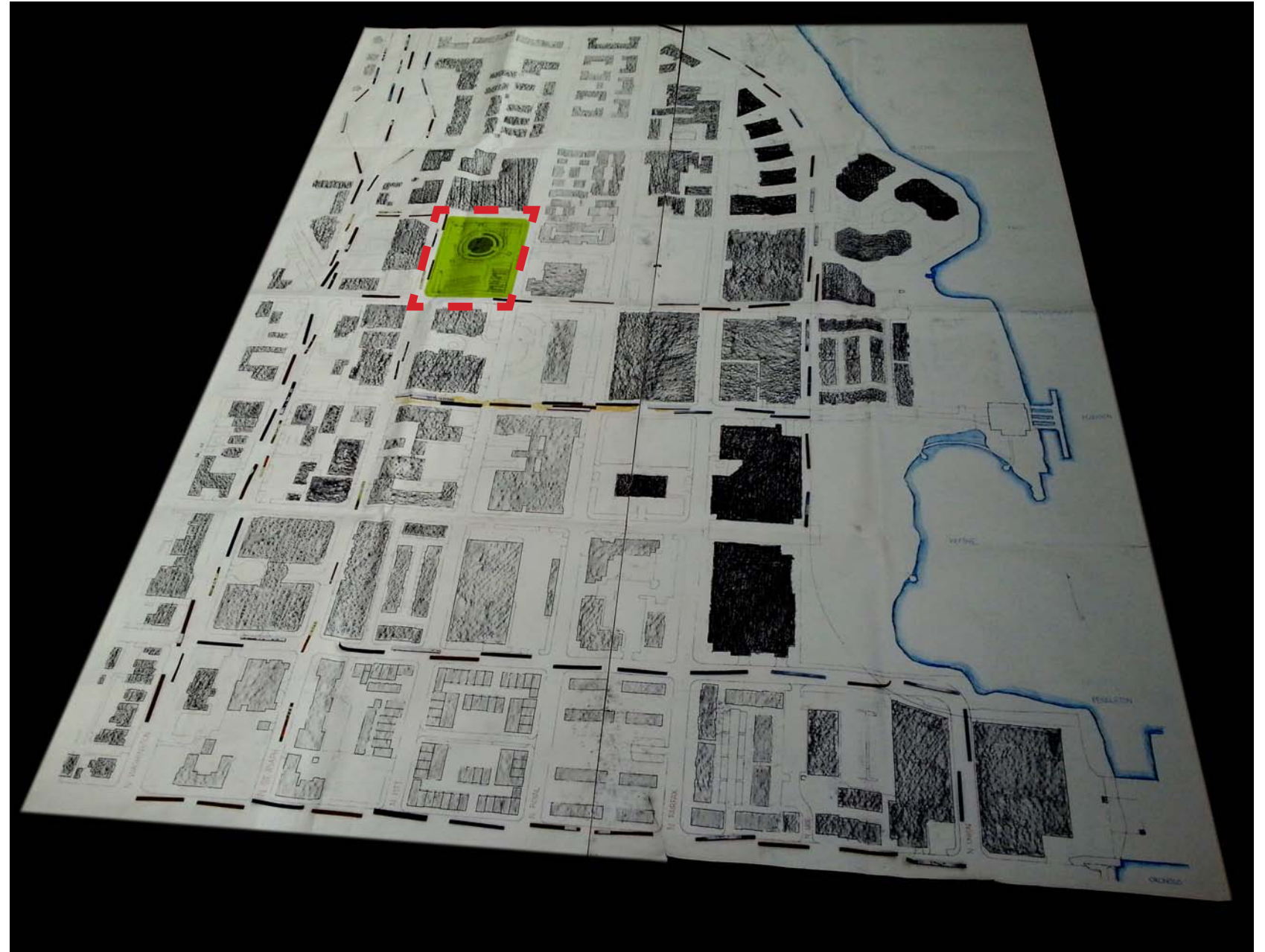
[far right] Contextual site plan which notates local amenities.

This thesis project site is situated just north of Old Town Alexandria, Virginia at the full city block between First Street & Montgomery Street, and North Saint Asaph Street & North Pitt Street.

2ND BLOCK from Washington Street (George Washington Parkway)  
[access route to National Airport and Washington, DC].

5TH BLOCK from the Potomac River [Virginia's borderline to Washington, DC and Maryland].

9TH BLOCK from King Street (Route 7) [the spine of Old Town Alexandria].



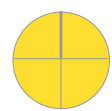
## 4 A DISCOVERY-FILLED VOYAGE THROUGH SPACE AND TIME ...



★ Site: 530 First St, Alexandria, VA 22314

- 1 **Car Rental:** Enterprise Rent-A-Car, 801 N St. Asaph St
- 2 **Hotel:** Holiday Inn Hotel & Suites Alexandria-Historic District, 625 First St
- 3 **Hotel:** Crowne Plaza Old Town Alexandria, 901 N Fairfax St
- 4 **Hotel:** Sheraton Suites Old Town Alexandria, 801 N St Asaph St
- 5 **Park:** Montgomery Park, 901 N Royal St
- 6 **Spa:** Serenity Day Spa, 209 Madison St
- 7 **Gym:** Sport&Health Club: Old Town, 209 Madison St
- 8 **Gym:** Crossfit Oldtown, 805 N Royal St
- 9 **Gym:** FitOne Personal Training Studio, 814 N St Asaph St
- 10 **Bank:** PNC Bank, 825 N Washington St
- 11 **Medical:** Chesterfield Health Services Inc, 801 N Pitt St
- 12 **Medical:** Elaine A. Macchio, MS, 400 Madison St
- 13 **Dentist:** Ashley S Nguyen DDS, PLLC, 901 N Washington St
- 14 **Coffee Shop:** Extra Perks Coffee Shop, 822 N Fairfax St
- 15 **Restaurant:** The Perfect Pita, 951 N Fairfax St
- 16 **Restaurant:** T.J. Stone's, 608 Montgomery St
- 17 **Restaurant:** Villa D' Este, 600 Montgomery St
- 18 **Gas Station:** Shell Gas Station, 801 N Washington St
- 19 **Gas Station:** Old Town Gas Station, 834 N Washington St
- 20 **School:** Art League Madison Annex, 305 Madison St
- 21 **School:** Seichou Karate Limited, 807 N Royal St
- 22 **Dry Cleaner:** Michael's Dry Cleaner, 610 Madison St
- 23 **Shop:** Wheel Nuts Bike Shop, 302 Montgomery St
- 24 **Shop:** Renaissance Tile & Bath, 816 N Fairfax St

(B) Bus Stop



SITE PLAN

# SITE PLAN AND EXISTING ADJACENT AMENITIES



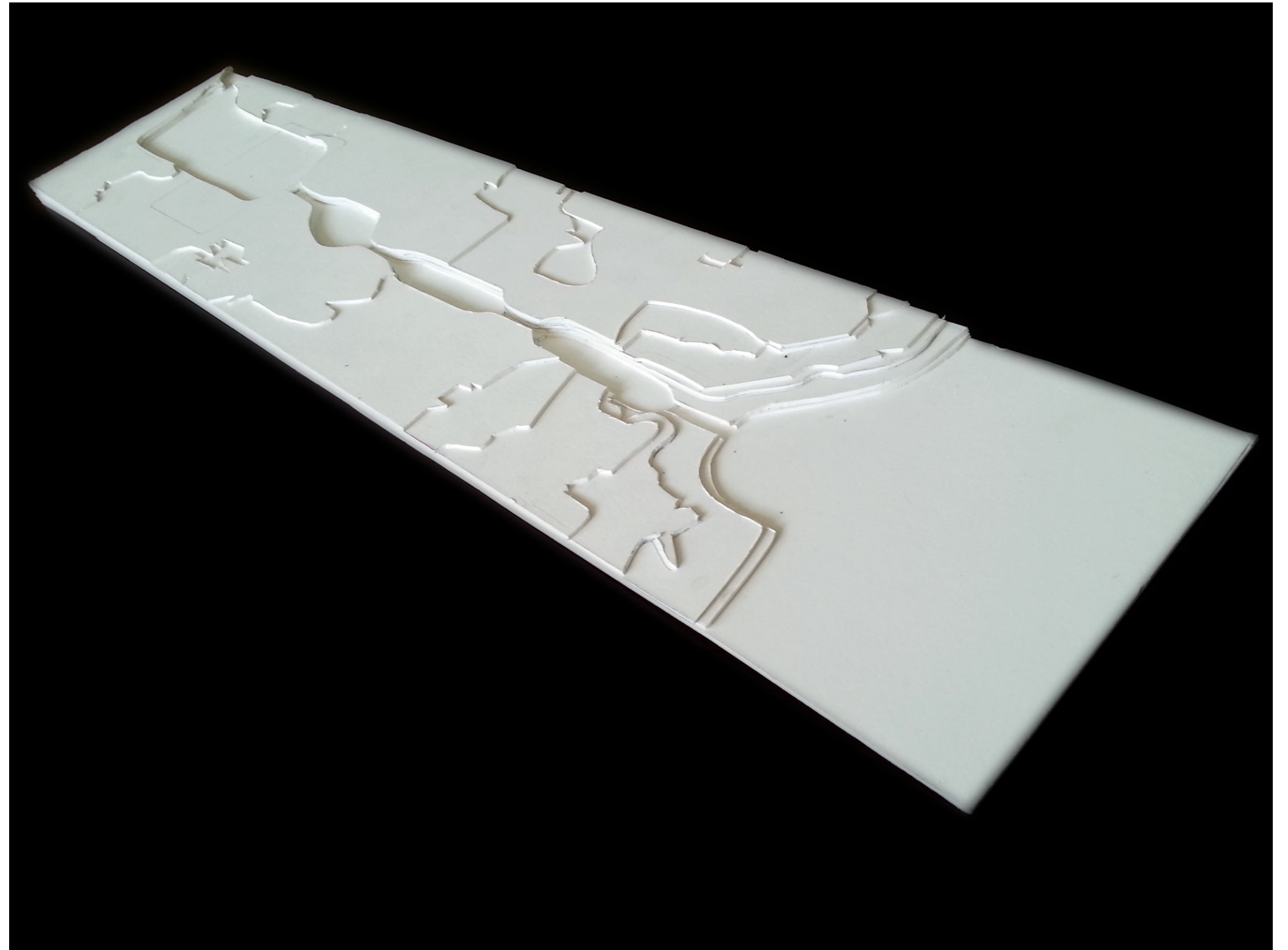
[right] Physical white model representative of the locks of the historic Alexandria Canal.

Congress granted a charter to the Alexandria Canal Company in 1830 for a canal that would cross the Potomac River in an aqueduct bridge between Georgetown and Rosslyn, and run at ground level 7 miles to the edge of Alexandria, and terminate in a large basin. By the end of the nineteenth century, the canal was abandoned due to the rapid development of railroads and steamships. The canal as a means of transporting goods was significantly slower and less efficient by comparison. This thesis project is at the site where this historic canal once passed through.

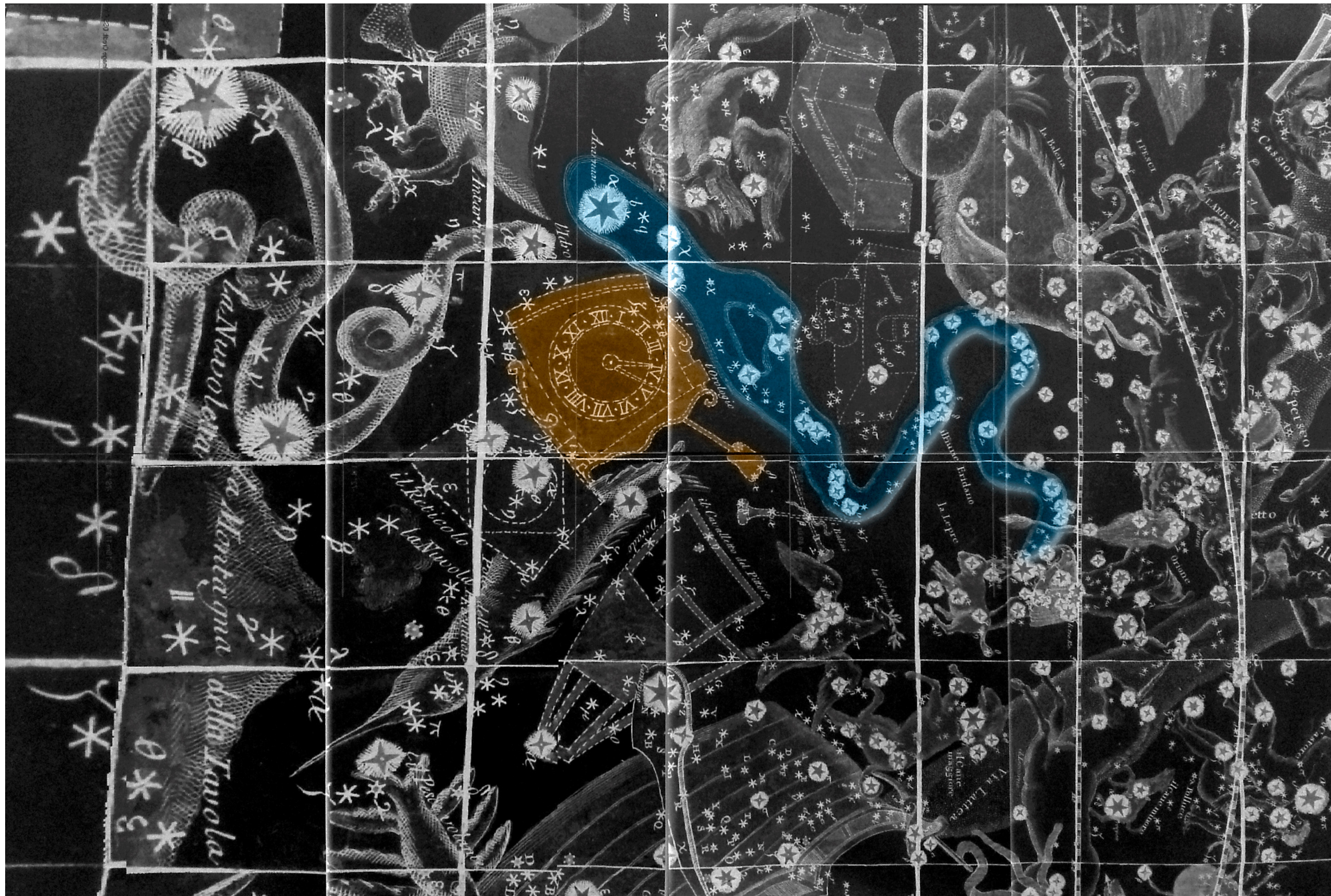
Typical products shipped by way of the old historic canal:

To Alexandria:  
Wheat, corn, whiskey, cornmeal, and flour.

From Alexandria:  
Fish, salt, plaster, and lumber.







[left] Highlighted star map interpretation of Eridanus, and its surroundings.

The constellation called Eridanus was named after a river, "Eridanos" which was a mythical river flowing from northwestern Europe into the ocean. It was said that the Eridanos disappeared during the first Ice Age, 700,000. It has also been associated with the brook underneath the Acropolis, in Athens, Greece.

The constellation, l'Orologio, "The Clock" rests alongside the river.

## THE CANAL AND THE COSMOS.





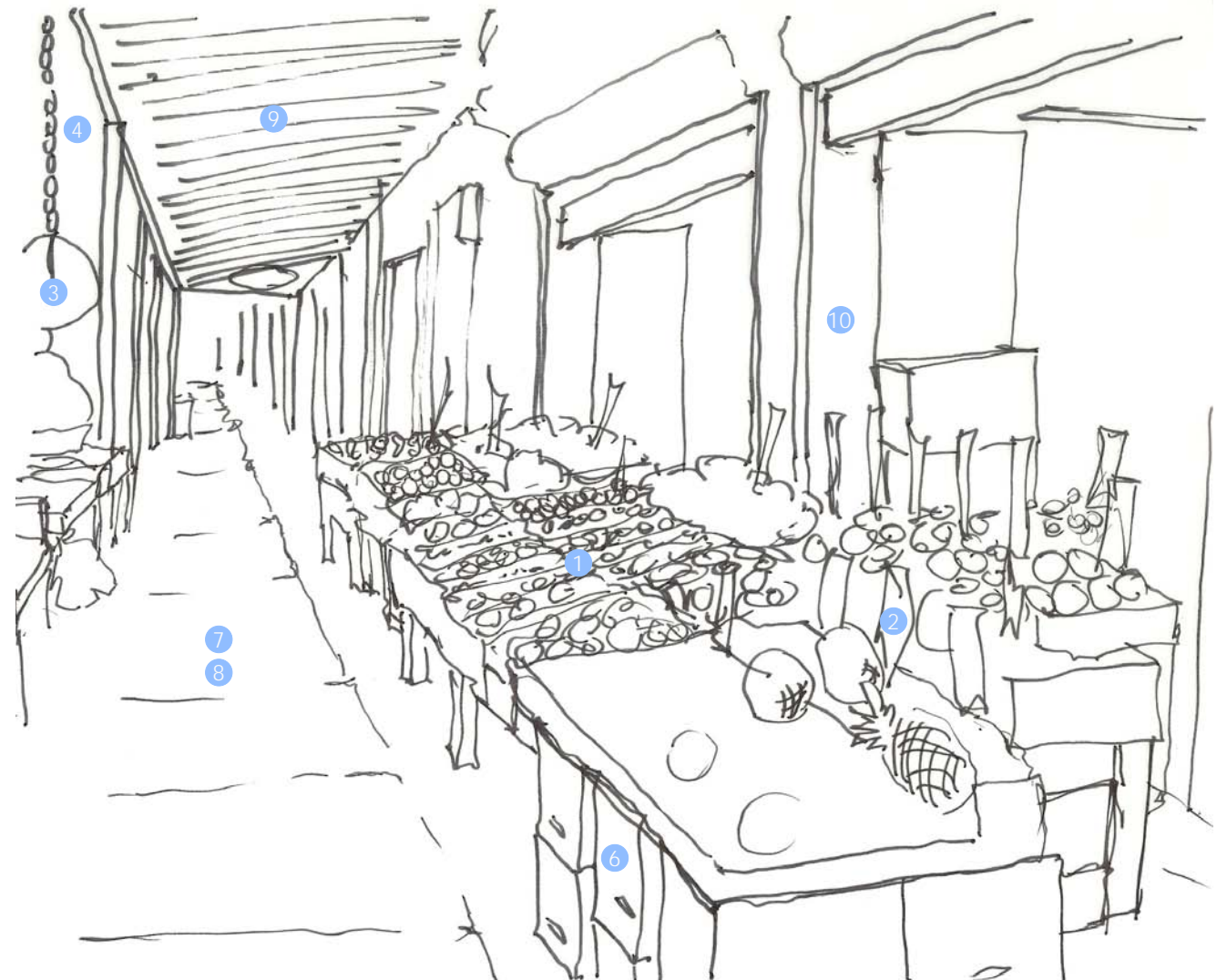
# MARKET PRECEDENTS - THE ISLAND

OBSERVATIONS.



- 1 products clustered via boxes, bags, or casework create central islands and influence customer and service circulation
- 2 single signage for each bag or box, otherwise unidentified
- 3 nearby weigh station
- 4 ambient lighting provided from a side angle, via daylighting or along back wall)
- 5 pre-packaged boxes and bags organized along back wall
- 6 storage opportunities underneath
- 7 service aisle
- 8 customer aisle
- 9 overhang provides protection from the elements
- 10 indoor/outdoor transparency

[far left] my sketch at Reading Terminal, Philadelphia, PA  
 [left] my sketch at Dean & DeLuca, Washington, DC  
 [below] my sketch at the Italian Market, Philadelphia, PA

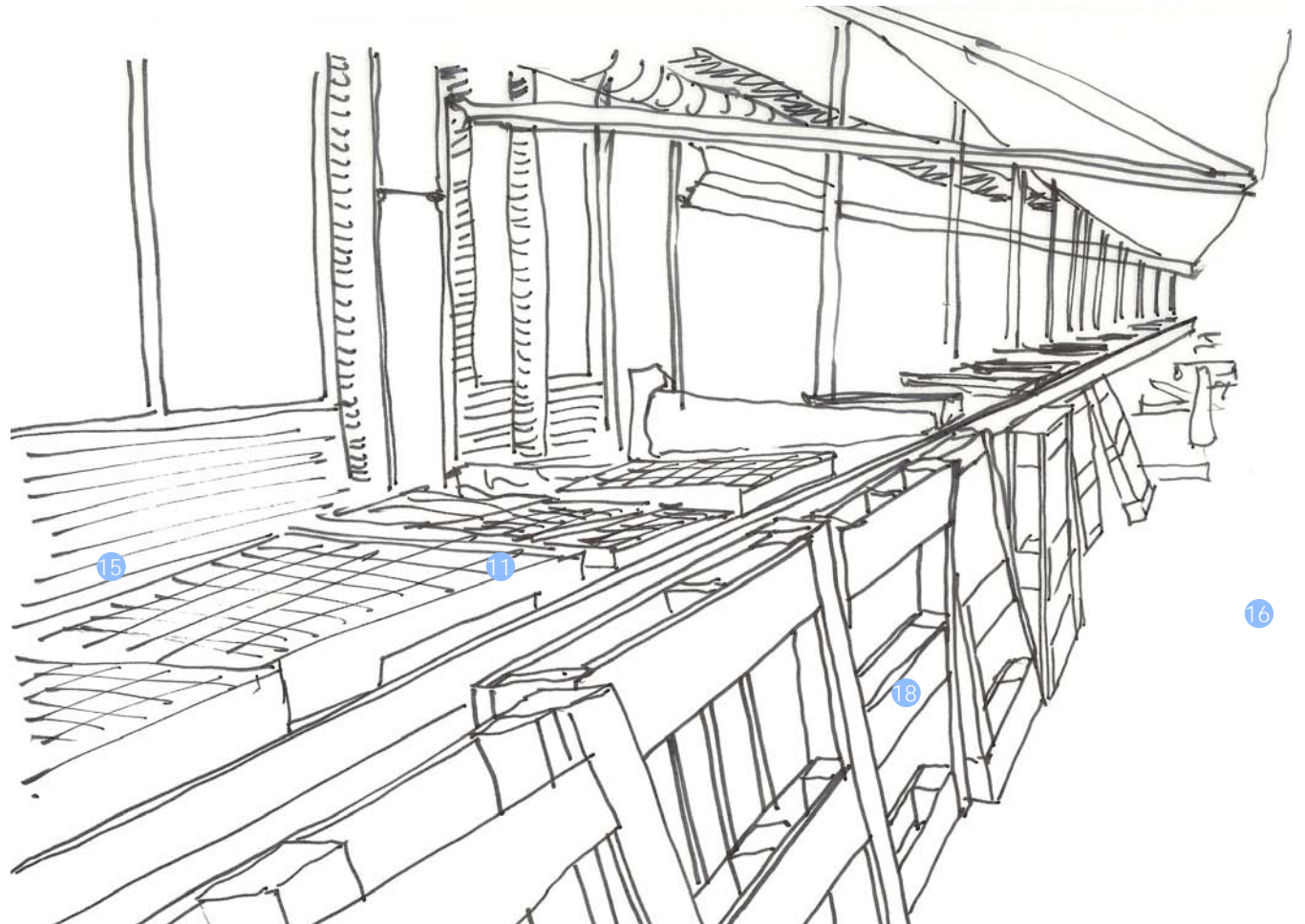
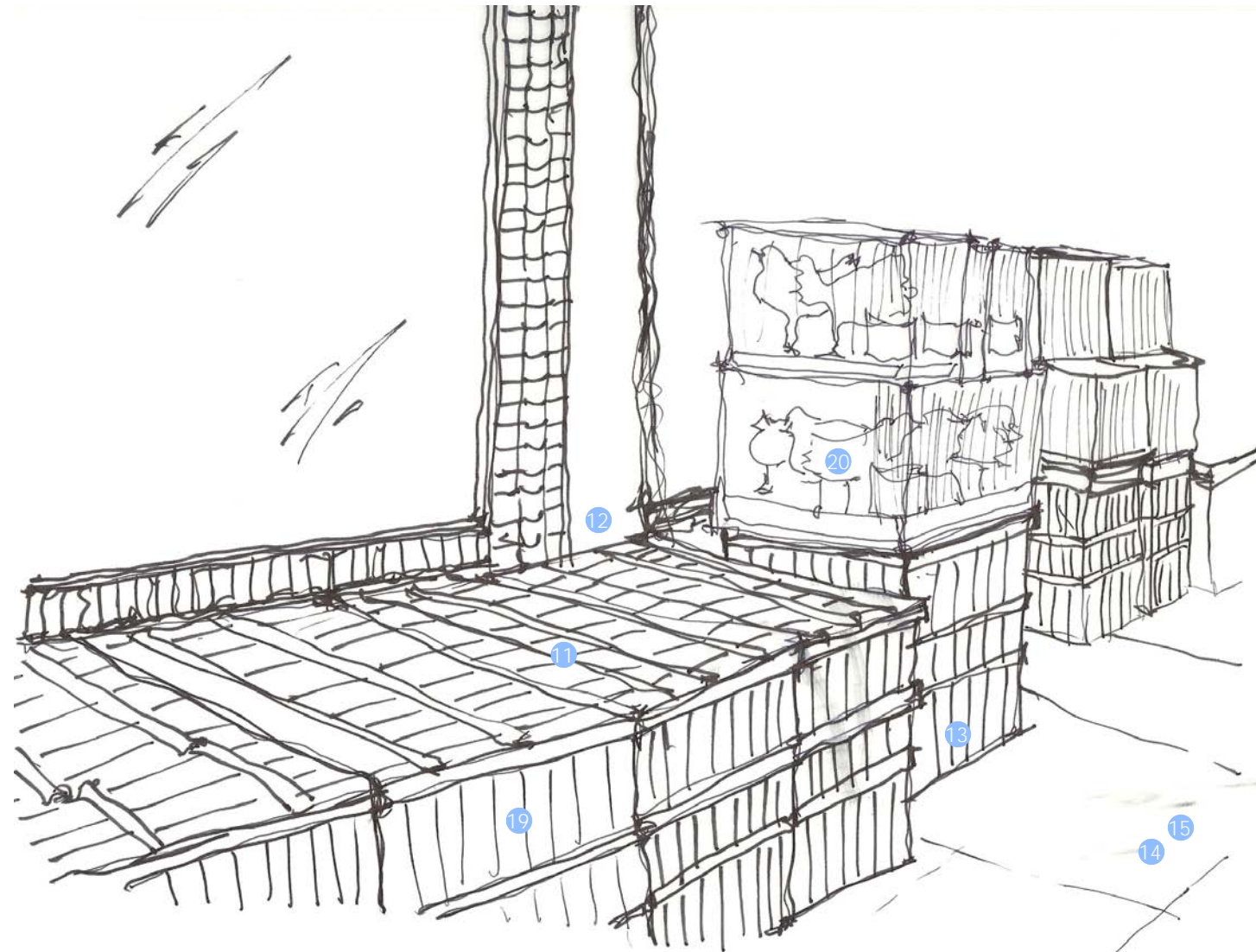
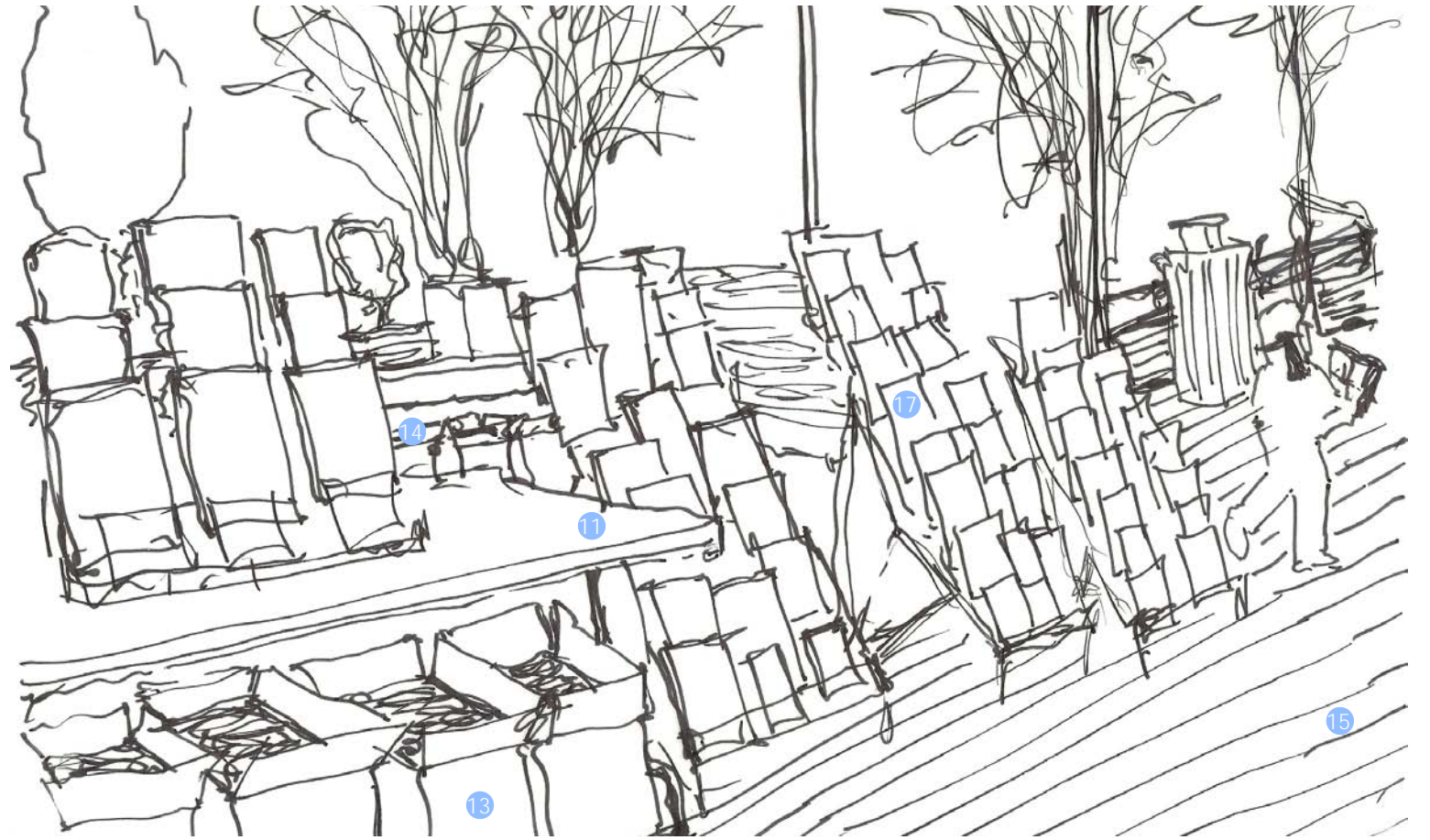


# MARKET PRECEDENTS - THE WALL

OBSERVATIONS.

- items organized in rows 11
- brick structural wall behind wall of items 12
- storage opportunities underneath 13
- pedestrian service aisle 14
- consumer aisle 15
- vehicle aisle 16
- wire racks for books 17
- wood pallets 18
- wood crates for chickens 19
- metal cages for chickens 20

[below] my sketch at the Italian Market, Philadelphia, PA  
[bottom right] my sketch at the Italian Market, Philadelphia, PA  
[top right] my sketch in front of City Hall, Alexandria, VA

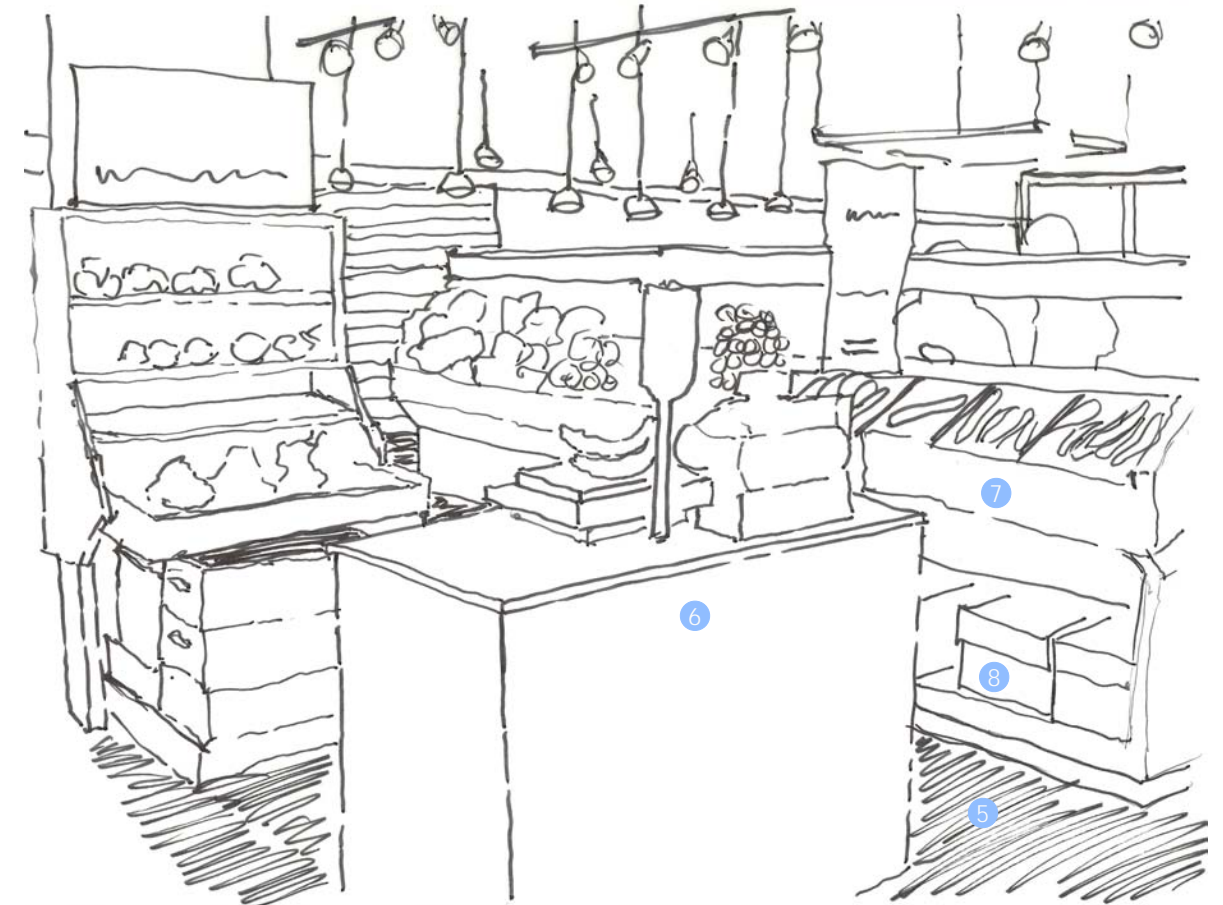
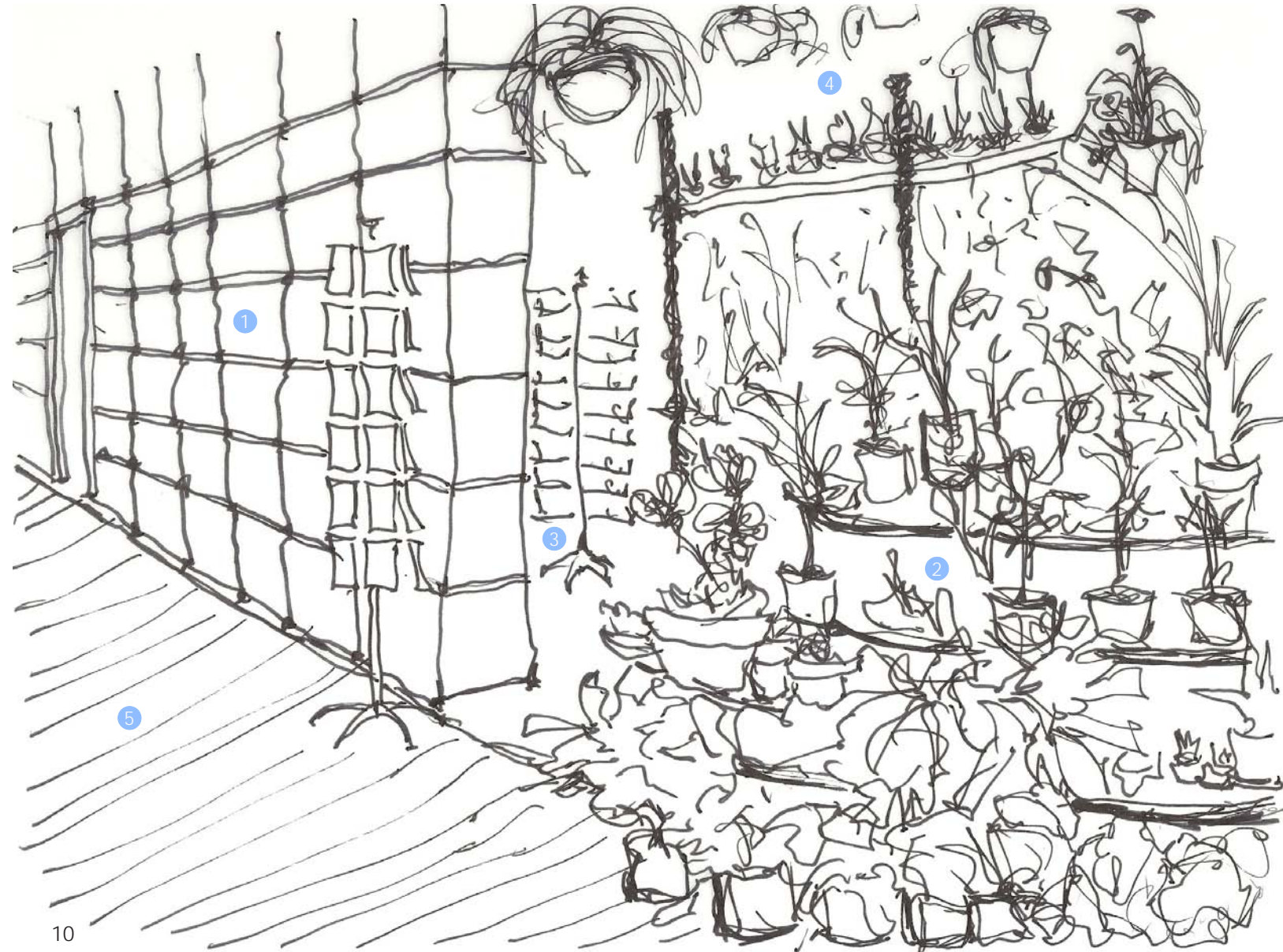


# MARKET PRECEDENTS - ZONES

OBSERVATIONS.

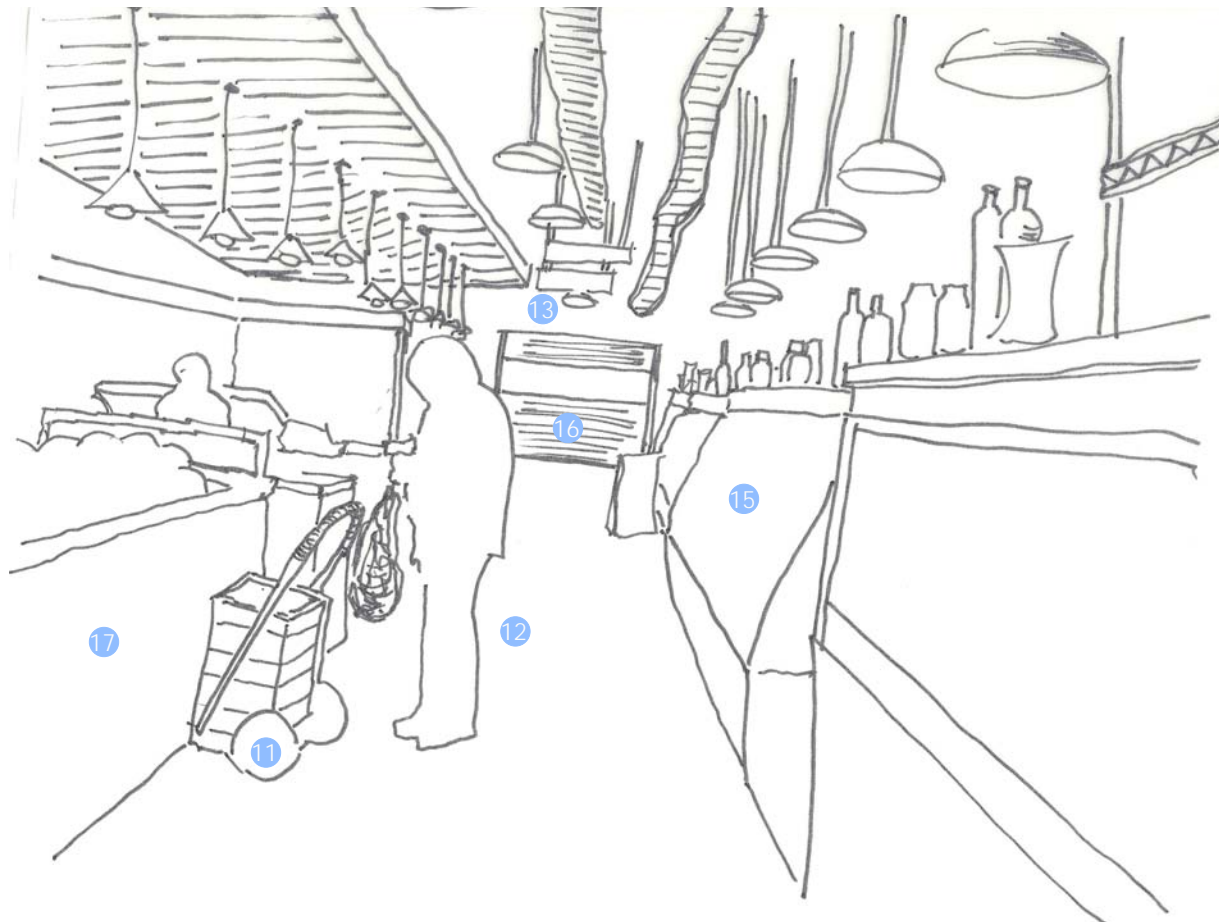
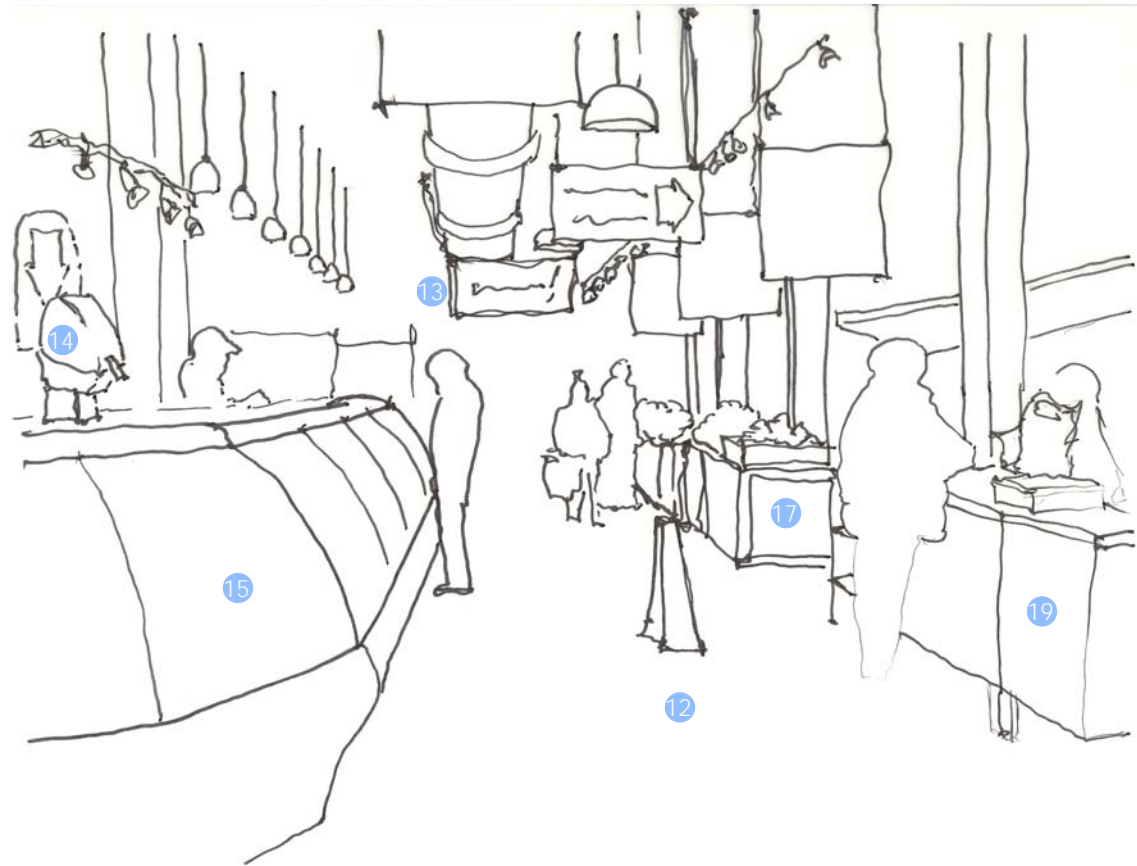
- wall ①
- terrace ②
- tree ③
- canopy ④
- path ⑤
- weigh station ⑥
- compartments ⑦
- storage ⑧
- water feature ⑨
- public gathering space ⑩

[below] my sketch at Reading Terminal, Philadelphia, PA  
[bottom right] my sketch at Reading Terminal, Philadelphia, PA  
[top right] my sketch in front of City Hall, Alexandria, VA



# MARKET PRECEDENTS - PROCESSION

OBSERVATIONS.



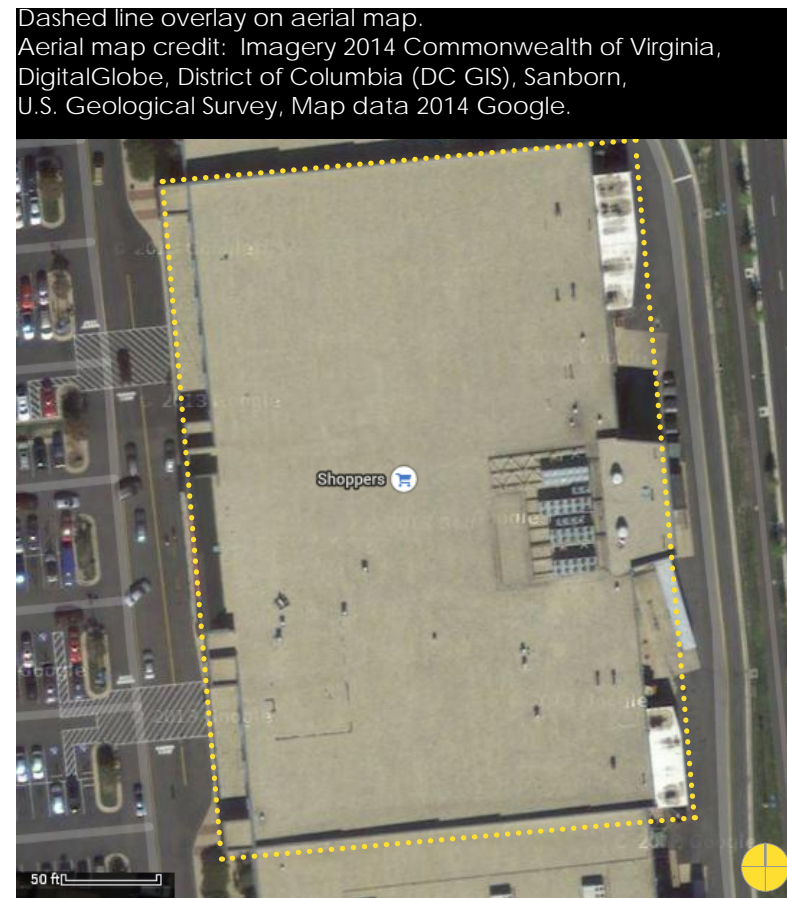
- 11 shopping cart
- 12 walkway
- 13 way-finding signage
- 14 deli counter ticket dispenser
- 15 cooler display
- 16 booth
- 17 produce display
- 18 atm machine
- 19 check out
- 20 shopping basket storage

[top left] my sketch at Reading Terminal, Philadelphia, PA  
[bottom left] my sketch at Reading Terminal, Philadelphia, PA  
[below] my sketch at Reading Terminal, Philadelphia, PA

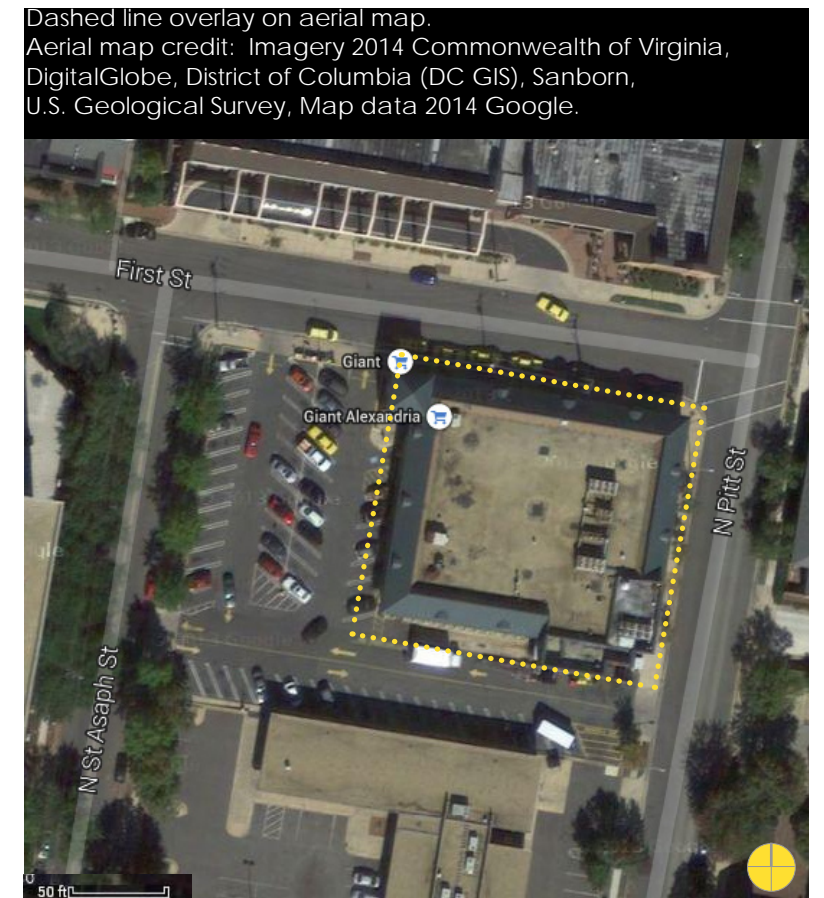
*[left]* Aerial views at Giant Food, Shoppers Food Warehouse, and Giant Food. Observational studies were taken of three "Boxed Stores" within the local community. Boxed Store #3, which was the smallest footprint (18,000 SF) was determined to have both the highest footage of linear shelving ratio to total store area, as well as the highest footage of linear shelving ratio to total store volume. Boxed Store #2 had the largest footprint (93,600 SF) and the lowest footage of linear shelving ratio to total store area, as well as the lowest footage of linear shelving ratio to total store volume. Primary attention was directed to the shelving out on the floor in which the consumer would associate. Back-of-house storage shelving was not included within these estimates.



**1** GIANT FOOD  
3131 DUKE ST, ALEXANDRIA



**2** SHOPPERS FOOD WAREHOUSE  
3801 JEFFERSON DAVIS HWY, ALEXANDRIA



**3** GIANT FOOD  
530 FIRST ST, ALEXANDRIA

Width	320 FT		360 FT		150 FT	
Length	200 FT		260 FT		120 FT	
<b>Building Footprint</b>	<b>64,000 SF</b>		<b>93,600 SF</b>		<b>18,000 SF</b>	
Height	22 FT		26 FT		18 FT	
<b>Store Volume</b>	<b>1,408,000 Cubic Feet</b>		<b>2,433,600 Cubic Feet</b>		<b>324,000 Cubic Feet</b>	
Average Aisle Length	30 paces		46 paces		24 paces	
	# of Aisles	Linear FT of Shelving	# of Aisles	Linear FT of Shelving	# of Aisles	Linear FT of Shelving
Prepared Foods	16.5	12,500 LF	14.5	16,700 LF	6	3,700 LF
Frozen Foods	2.5	1,900 LF	1.5	1,700 LF	1	600 LF
Fresh Foods	2.5	2,000 LF	3.5	4,200 LF	1.5	1,200 LF
<b>Total:</b>		<b>16,400 LF</b>		<b>22,600 LF</b>		<b>5,500 LF</b>
<b>Shelving Linear Footage to Total Store Area Ratio</b>	<b>25.60%</b>		<b>24.15%</b>		<b>30.56%</b>	
<b>to Total Store Volume Ratio</b>	<b>1.16%</b>		<b>0.93%</b>		<b>1.70%</b>	

## DIALOGUES, MEANDERINGS, & IMPORTANT DISCOVERIES WITH THE AVENTINE TRIAD.

The evaluation of the preceding elements: study of origins, site, the canal and the cosmos, marketplace precedence, and the local boxed store, helped to influence the formulation of a grocery store solution. Though the pages that follow were originally developed in a non-linear way, snapshots are organized in a manner to share the experience of the journey. Identification of the problem of an overweight global population emerged along the journey as did the refining of the response to it. The “Boxed Store” is a recent practice. And statistics on obesity weren’t prevalent at all 50 years ago. The Aventine Triad (Ceres, Liber, and Libera: those mythological characters who are responsible for the on-goings of agriculture) provide their support through iterative processes and experiential components.





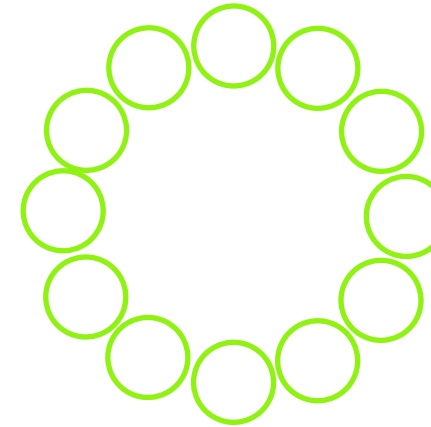
## ERECHTION

The caryatids are characters which quite literally support the structure of the Erechtheion atop the Acropolis in Athens, Greece. The first recording of the term was found in "On Architecture," by Roman architect, Vitruvius.

In the following pages, the twelve helper gods of Ceres, the Roman Goddess of Agriculture, help to represent and formally shape the iterative process of development.



## ROMAN & GREEK MYTHOLOGY INSPIRED

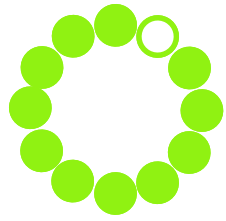


### TWELVE HELPER GODS OF CERES, THE ROMAN GODDESS OF AGRICULTURE

1. VERVACTOR - "he who ploughs"
2. REPARATOR - "he who prepares the earth"
3. IMPORCITOR - "he who ploughs with a wide furrow"
4. INSITOR - "he who plants seeds"
5. OBARATOR - "he who traces the first ploughing"
6. OCCATOR - "he who harrows"
7. SERRITOR - "he who digs"
8. SUBRUNCINATOR - "he who weeds"
9. MESSOR - "he who reaps"
10. CONUECTOR - "he who carries the grain"
11. CONDITOR - "he who stores the grain"
12. PROMITOR - "he who distributes the grain"

... & IMPORTANT DISCOVERIES WITH THE AVENTINE TRIAD

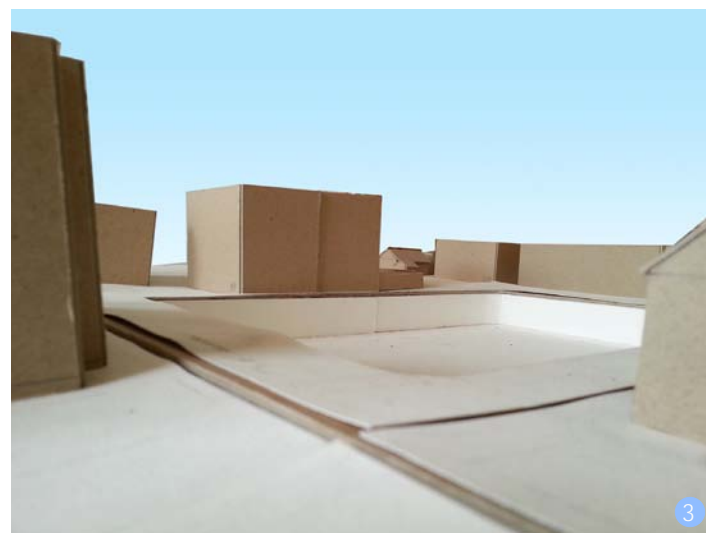




# VERVECTOR

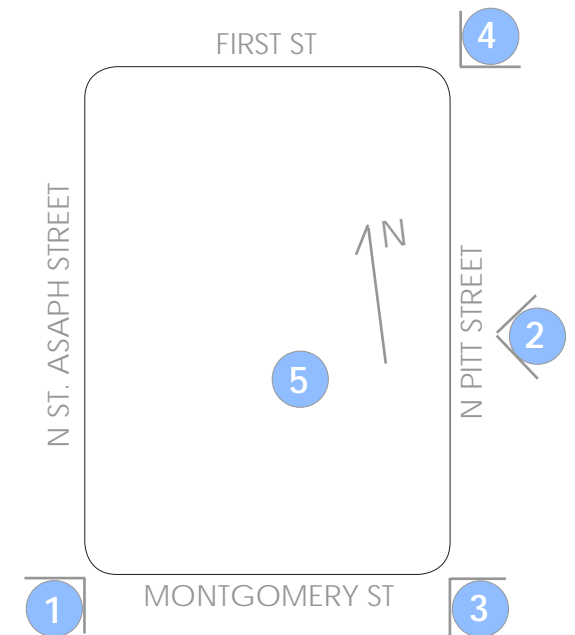
## HE WHO PLOUGHS

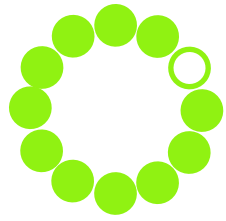
Throughout the process, I explored physical studies of form and function, program, circulation, massings, and materiality within the context of the site. The first challenge within the cycle was to develop the site. This 32nd scale model is aligned with the City of Alexandria grid, which is 7 degrees east of north. The city block of the site model is carved down to allow for various study models to be positioned within it and include sub-level analysis. The helper-god Vervector helped to plough through one of the initial phases of design: assess the immediately adjacent area through making a scaled model of it.



# ITERATIVE DESIGN

## FORM & FUNCTION

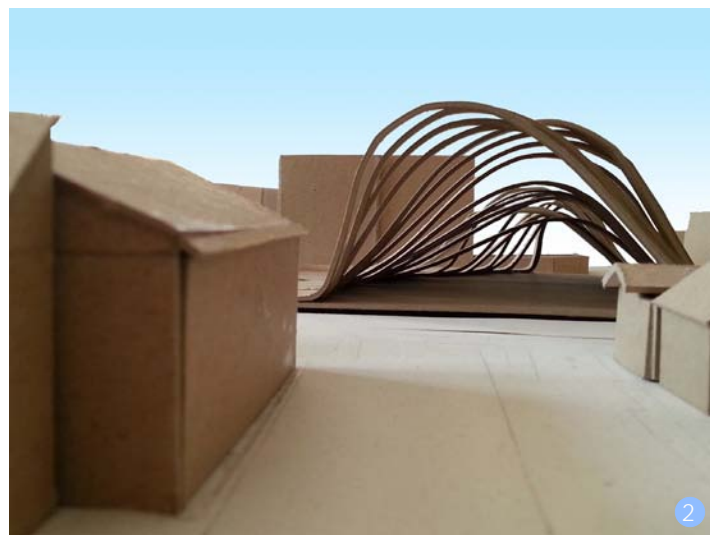




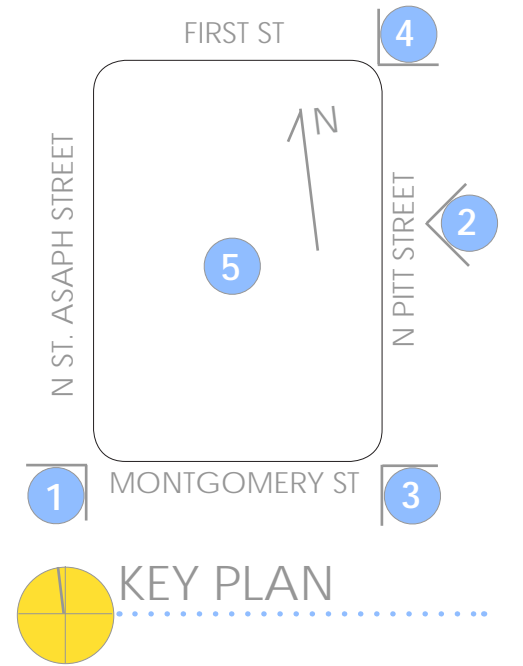
# REPARATOR

## HE WHO PREPARES THE EARTH

The helper-god Reparator helped to prepare the re-shaping of the earth on the project city block. Strips of chip-board respond to the natural day light with grand gestures: Crescendo to peak at the north end, and diminuendo at the southern end to submit to the office building across Montgomery Street. They gently press back into the earth to reveal the footprint of the old canal in plan.

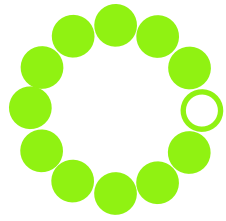


# ITERATIVE DESIGN FORM & FUNCTION



... & IMPORTANT DISCOVERIES WITH THE AVENTINE TRIAD



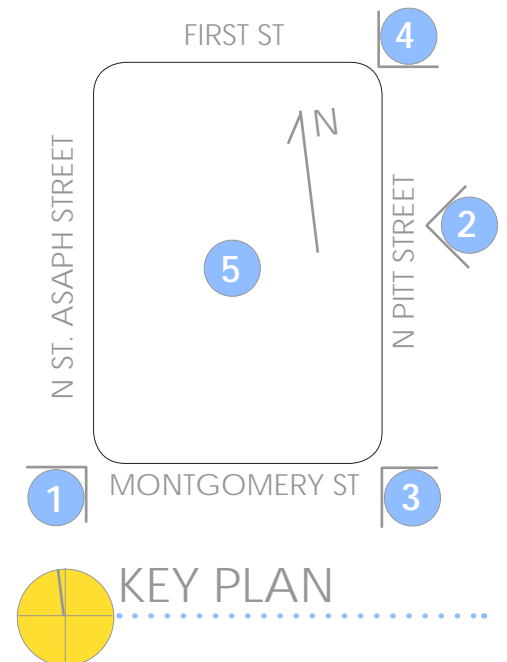


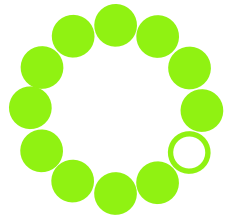
# IMPORCITOR HE WHO PLOUGHS WITH A WIDE FURROW

As the previous study implied value in a multi-story and multi-purpose space on the city block, the helper-god Imporcitor helped to establish a program that would drape across the site as a whole. The tallest portion of the building is on the north face, once again. Each of the bands terraced down toward the south end of the site. An open air natural food market would be the dominant feature of the building, represented by the colonnade extended across the site, penetrating each of the linear bands. It is open directly to the south to welcome pedestrians into the space.



## ITERATIVE DESIGN FORM & FUNCTION



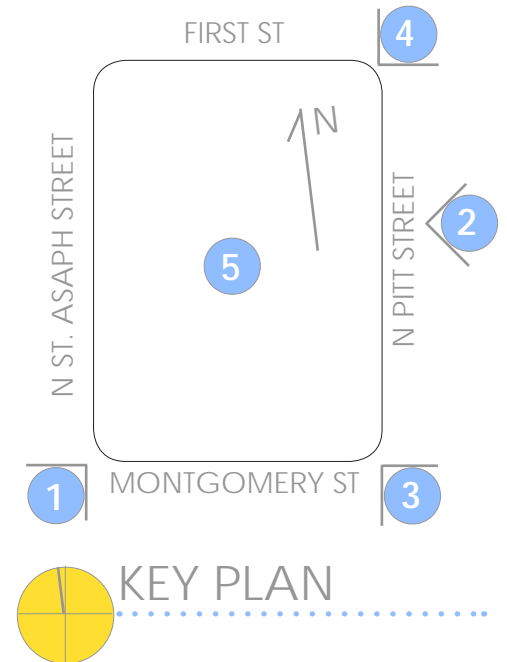


# INSITOR HE WHO PLANTS SEEDS

As requirements for additional program and human scale continued to shape, the next white model study emerged. Multiple stories of residential units needed to be on the north end of the building to prevent too much of the building to rest in dark shadow. The band of processed foods was located on the south end, in the shadow of the office building across Montgomery Street. The helper-god Insitor helped to plant seeds, massing ideas of how the new grocery store would sit on the land.

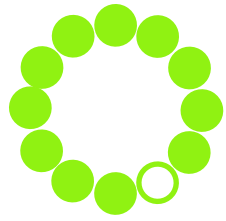


## ITERATIVE DESIGN FORM & FUNCTION



... & IMPORTANT DISCOVERIES WITH THE AVENTINE TRIAD



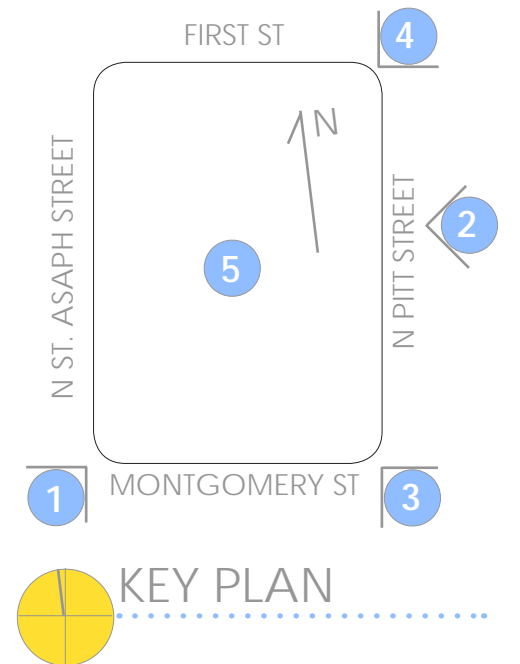


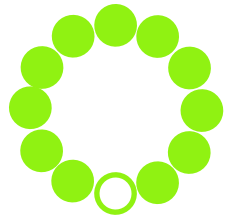
# OBARATOR HE WHO TRACES THE FIRST PLOUGHING

The helper-god, Obarator, traced the first ploughing of the previous massing study and integrated structure and materiality into the volumes. Residential units above parking spaces were still anchored to the north part of the site, and processed foods in compartments to the south. Individual stalls dedicated to fresh meats, dairy, seafood and the like were designated to the central band. Frozen food chambers were in the band between the residential tower and the central band. The in-between spaces offered opportunities for fresh produce and edible gardening. Community gardening plots on the northwest end of the block were introduced to the project, to connect the residents to the philosophies of the grocery store.



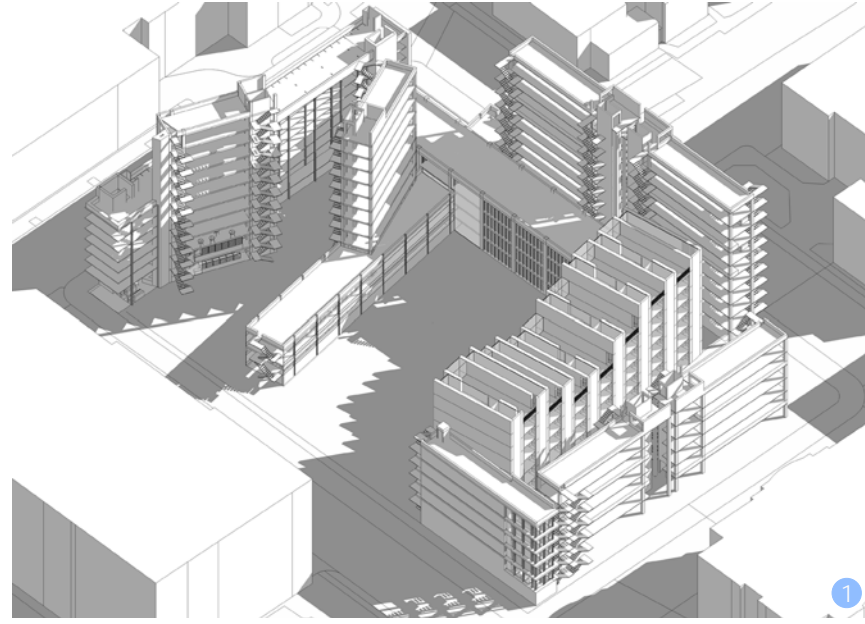
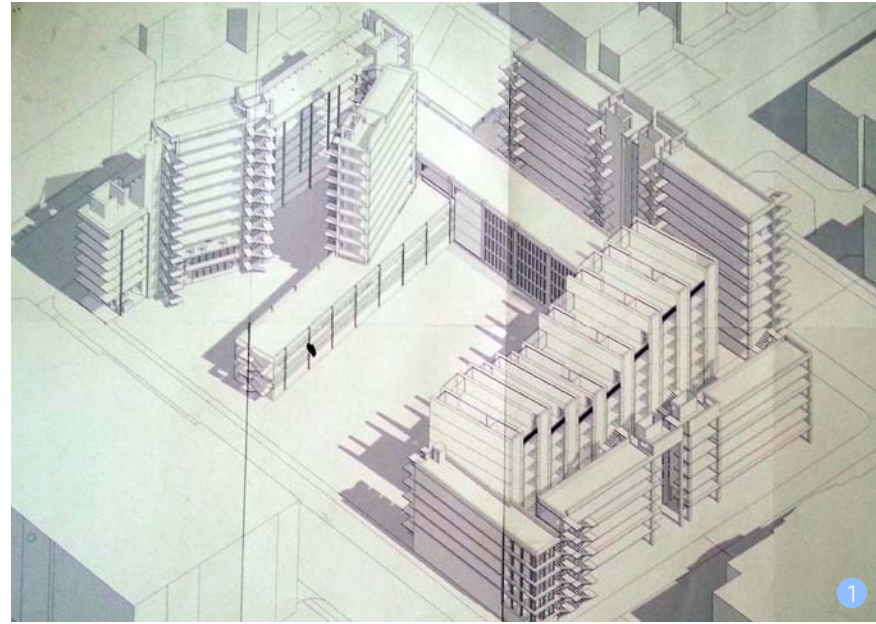
## ITERATIVE DESIGN FORM & FUNCTION





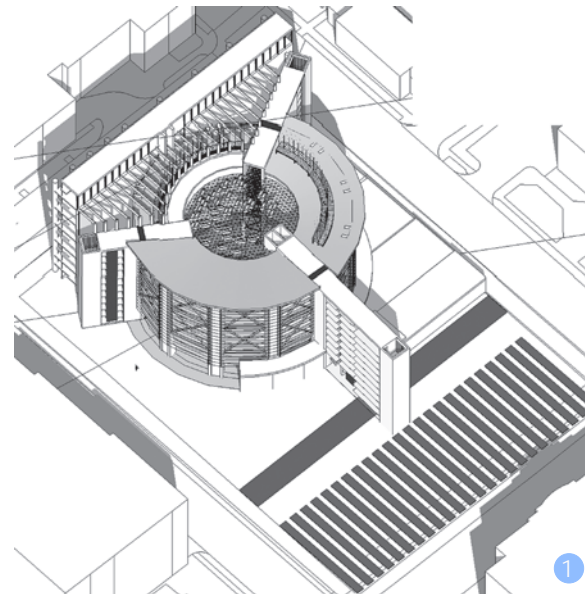
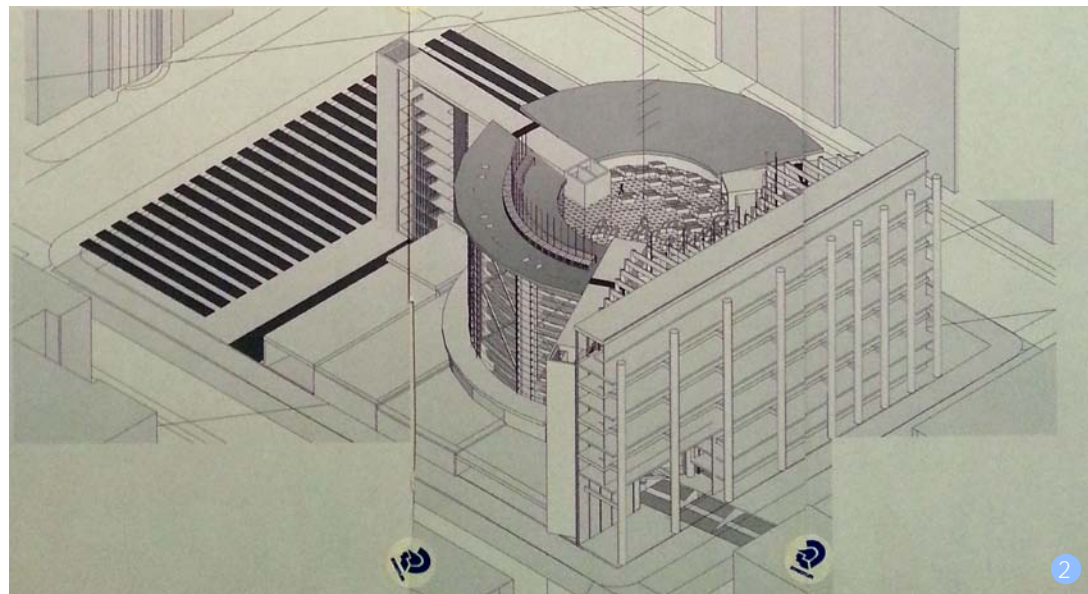
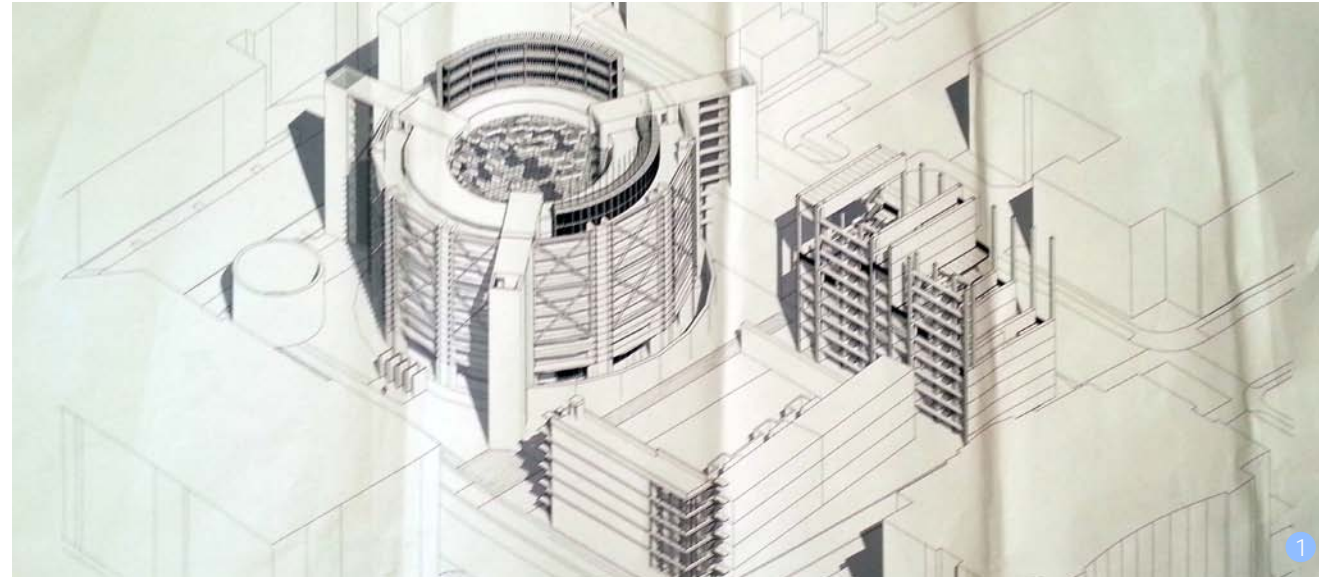
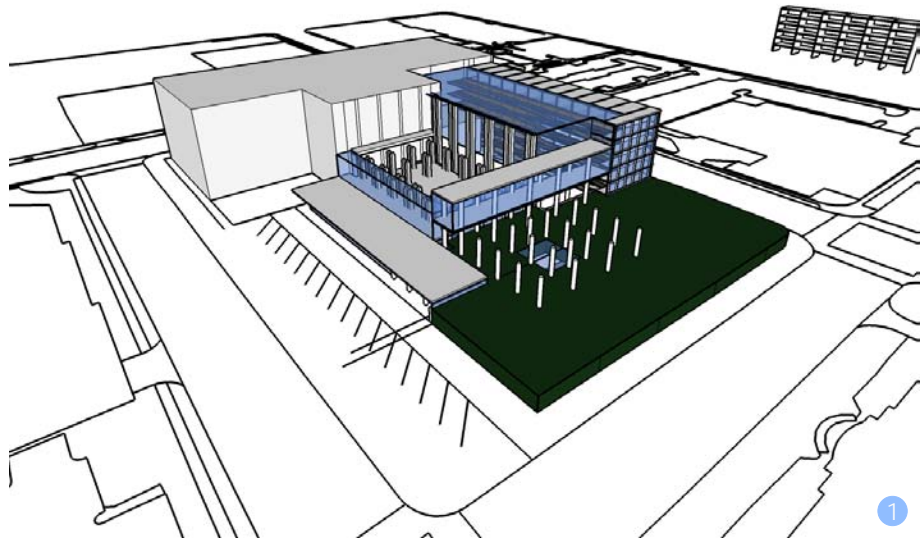
# OCCATOR HE WHO HARROWS

The helper-god, Occator offered his harrowing tool, and with each spike that pierced the soil, form became more refined.



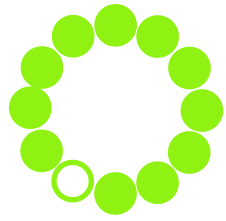
## ITERATIVE DESIGN PROCESSING

While maintaining elements of the grocery store program, the project transformed from a multi-use urban block with segregated areas of food merchandising and many new residential units to a more cohesive grocery store that would draw residents from the surrounding neighborhood and create a hub for community gathering. The large scale high density project required analysis of solar passage as well as studies of consumers' various angles of approach. As the project evolved, the need for more focus on the fresh foods market core grounded and the supporting roles of the cookbook library and community garden plots emerged.



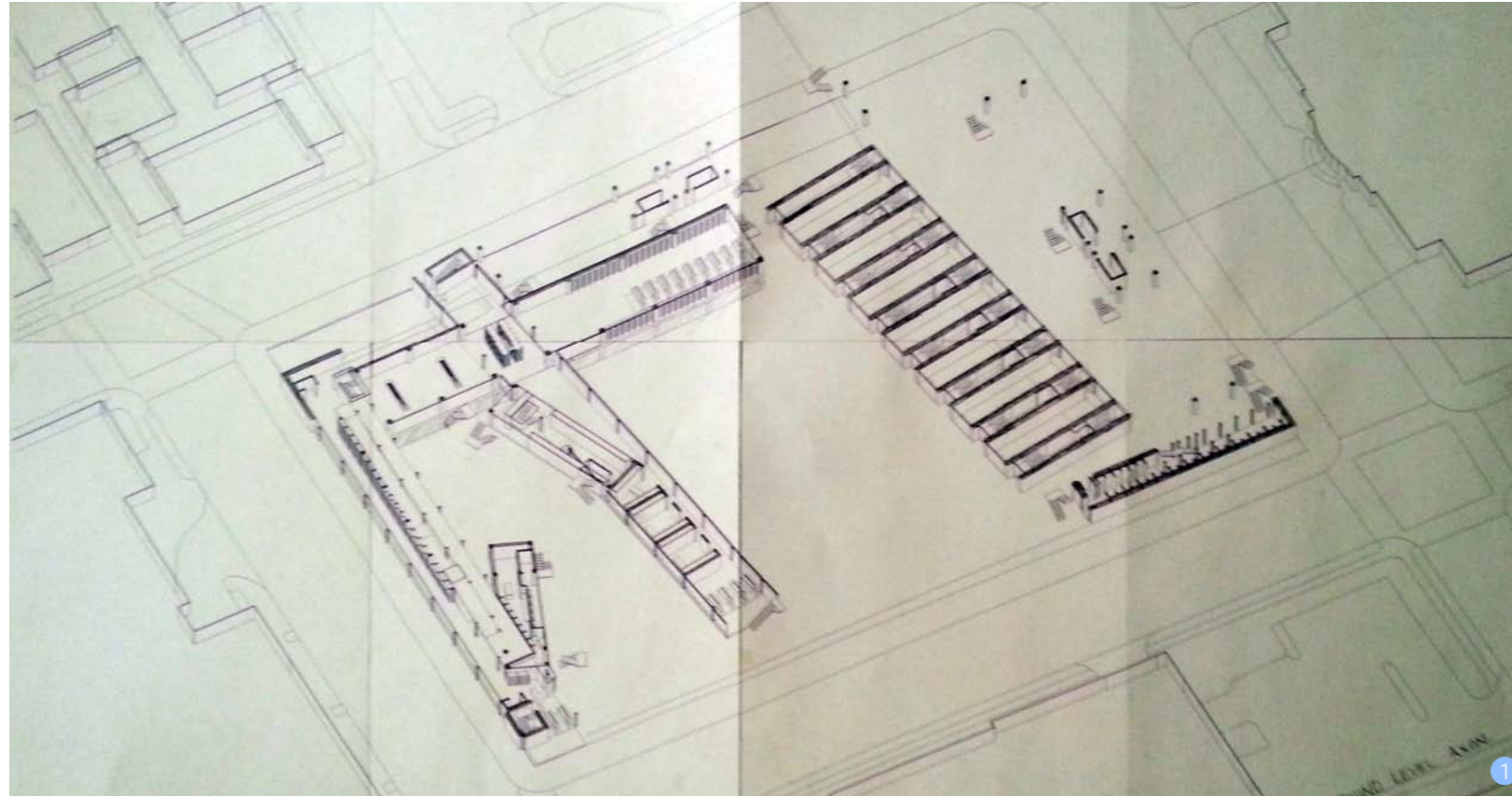
### ... & IMPORTANT DISCOVERIES WITH THE AVENTINE TRIAD





## SERRITOR HE WHO DIGS

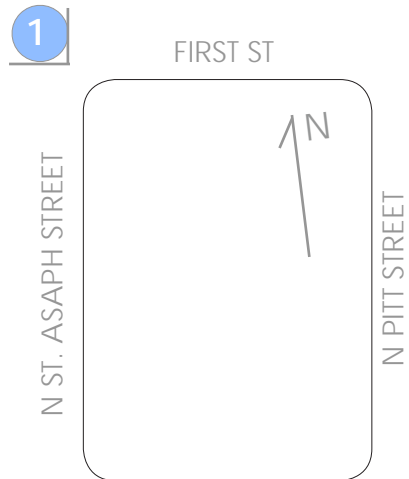
The helper-god, Serritor helped to dig out the simple elements that the city block needed. The need to have a residential component of the project that had once surfaced was ultimately re-covered as the more grandiose grocery store emerged and would draw consumers from the already existing community. Serritor encouraged to dig deeper.



## ITERATIVE DESIGN SLIVERS & SLOTS

In the early stages of design, the site, circulation through rectilinear order, and program primarily influenced the form and structural decisions. There wasn't a higher sense of order yet present.

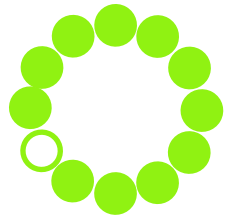
Residential units, "slivers" offered a piece of program per floor, (each bedroom, living room, kitchen, and the like) with verticality being the dominant form of circulation and allowed for a small footprint in the urban context. In contrast, "slots" were individual units on singular horizontal floors and offered maximum daylighting to the unit, from sunrise to sunset.



2  
MONTGOMERY ST

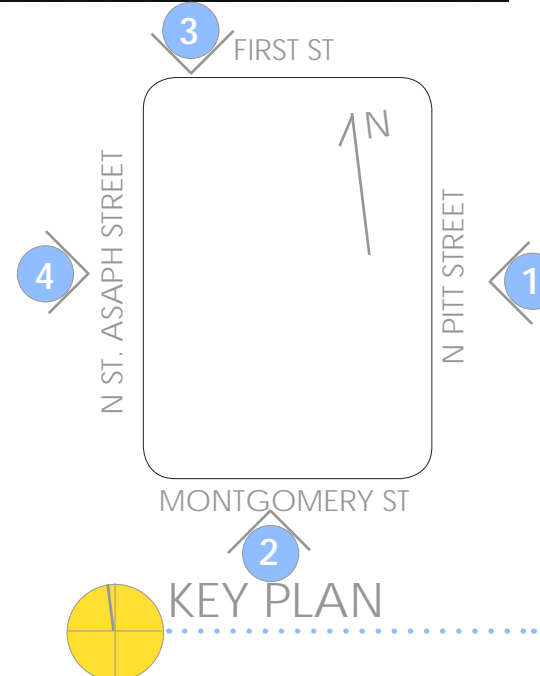
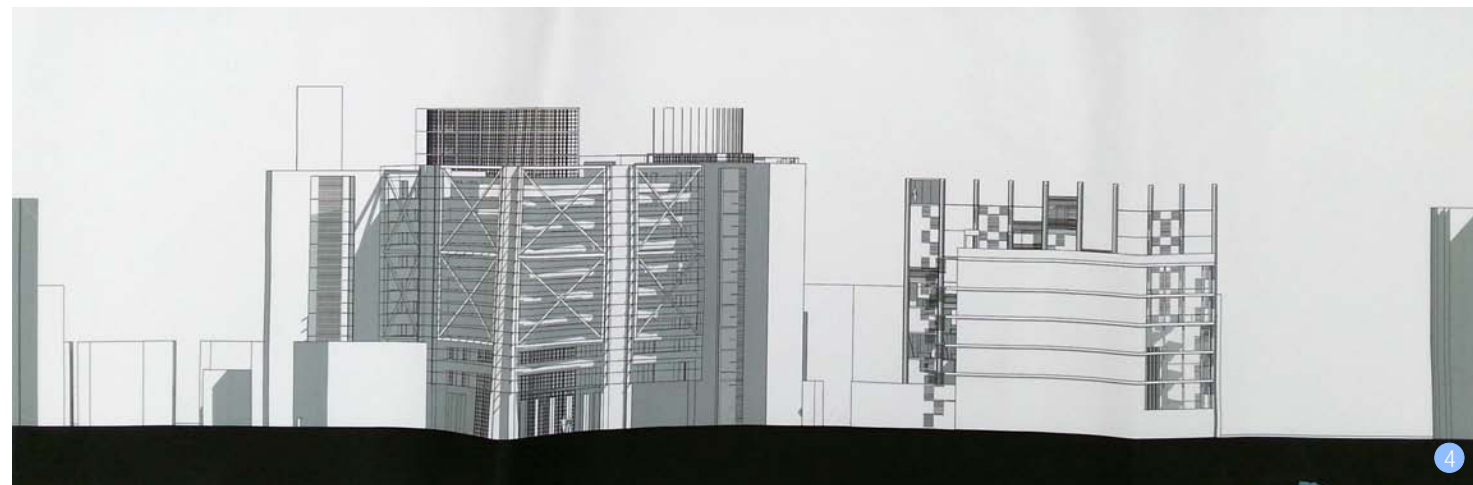
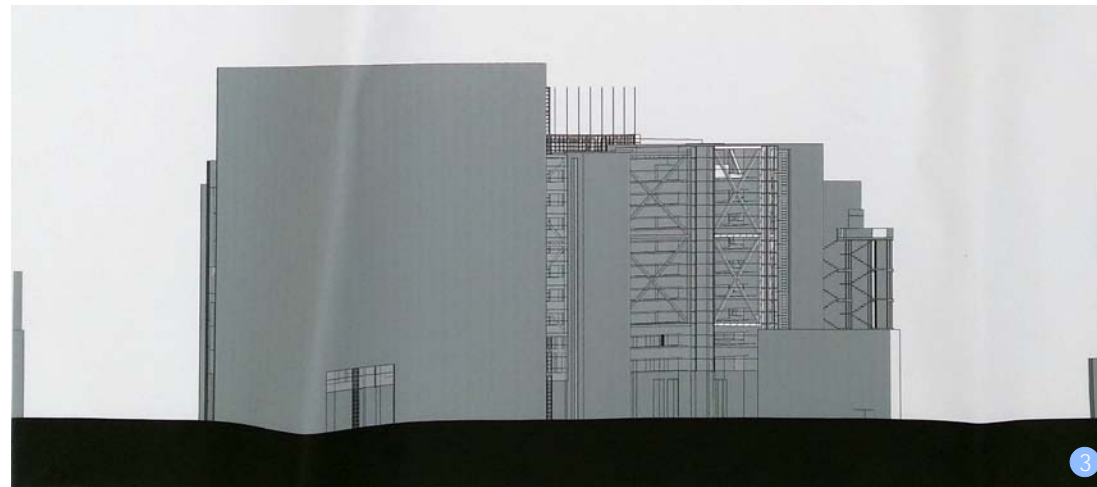
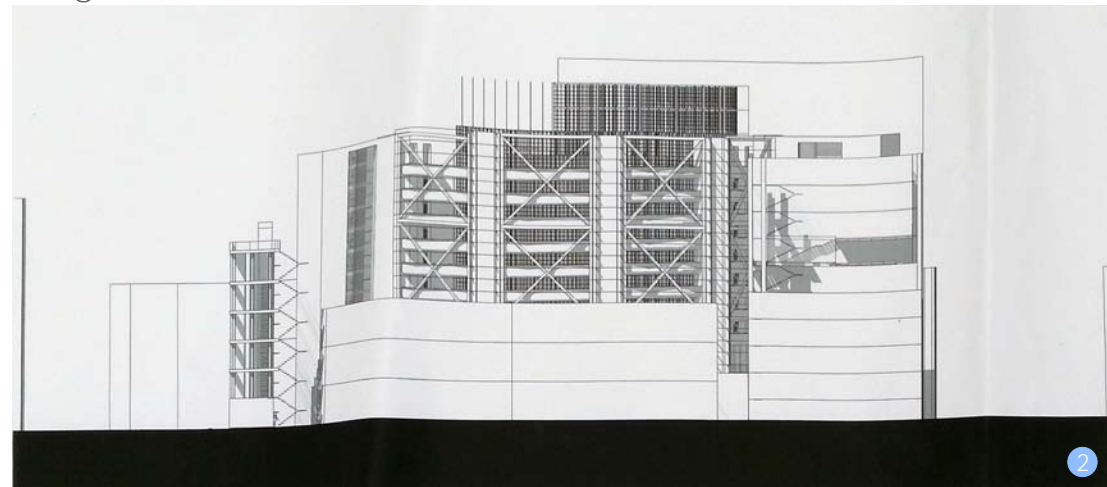
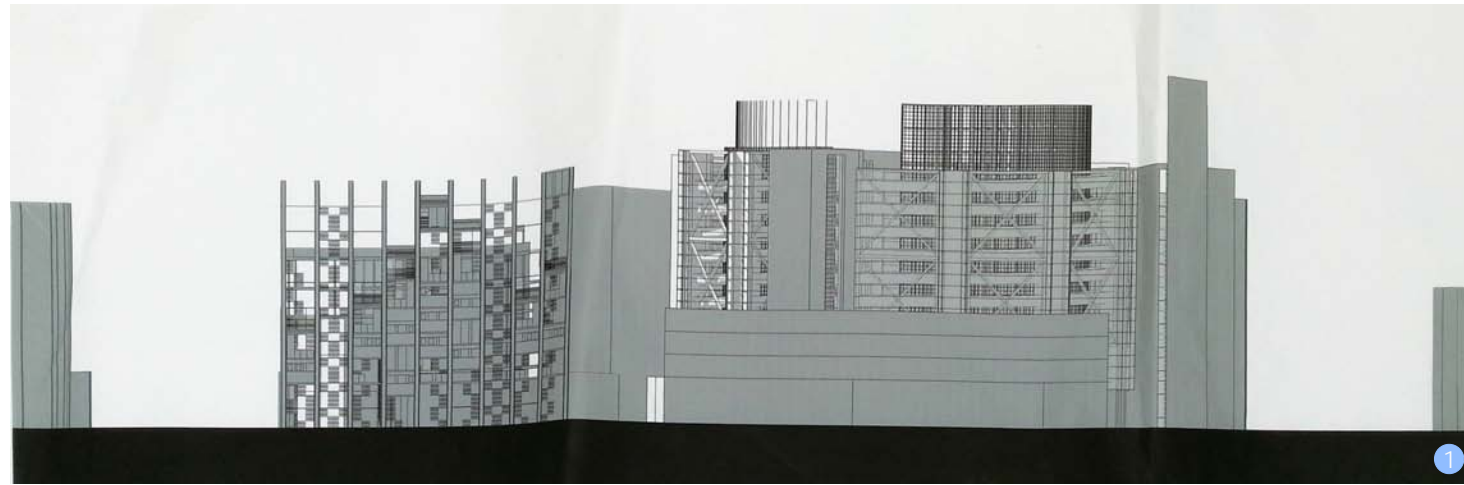






# SUBRUNCINATOR HE WHO WEEDS

The helper-god, Subruncinator, worked alongside Serritor to weed out any unnecessary and unintentionally arbitrary elements of the project that would distract from the design intent.



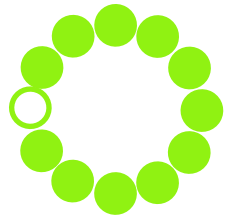
## ITERATIVE DESIGN CIRCULAR CORE

A break-through in design came through a circular organization. Whole and natural foods would be at the base of the structure. An upper ramp circulated around the atrium, so that consumers would look to the site surroundings in one direction, and shelving full of processed foods in the other. At the time, the service core would be situated at the inner ring so that consumers would have views to the outside. Each elevation was unique as new residential units would surround the site, along the north, east, and south portions of the block. Community gathering requires the circulation and perspective to be drawn inward, not outward.

- 1 Two different types of residential units dominate the eastern elevation. On the north side, the height of the buildings are low in order for sunlight to extend beyond them and reach main grocery store building.
- 2 Similarly, the southern residential units are a few stories high in order for consumers of the grocery store who are shopping on the upper floors to receive maximum daylighting and views.
- 3 The north elevation is dark in shadow. The short but solid cookbook library provided a portal for the vehicular entrance into the grocery store. books would be protected from UV damage.
- 4 The most active elevation of the building is on the west end, closest to the main street of access, Washington Street. The steel and concrete structure towers above the grand entrance on the north end. Flat residential units have some exposure to the afternoon sun and the glass volume at the southern end draws daylight into living space.

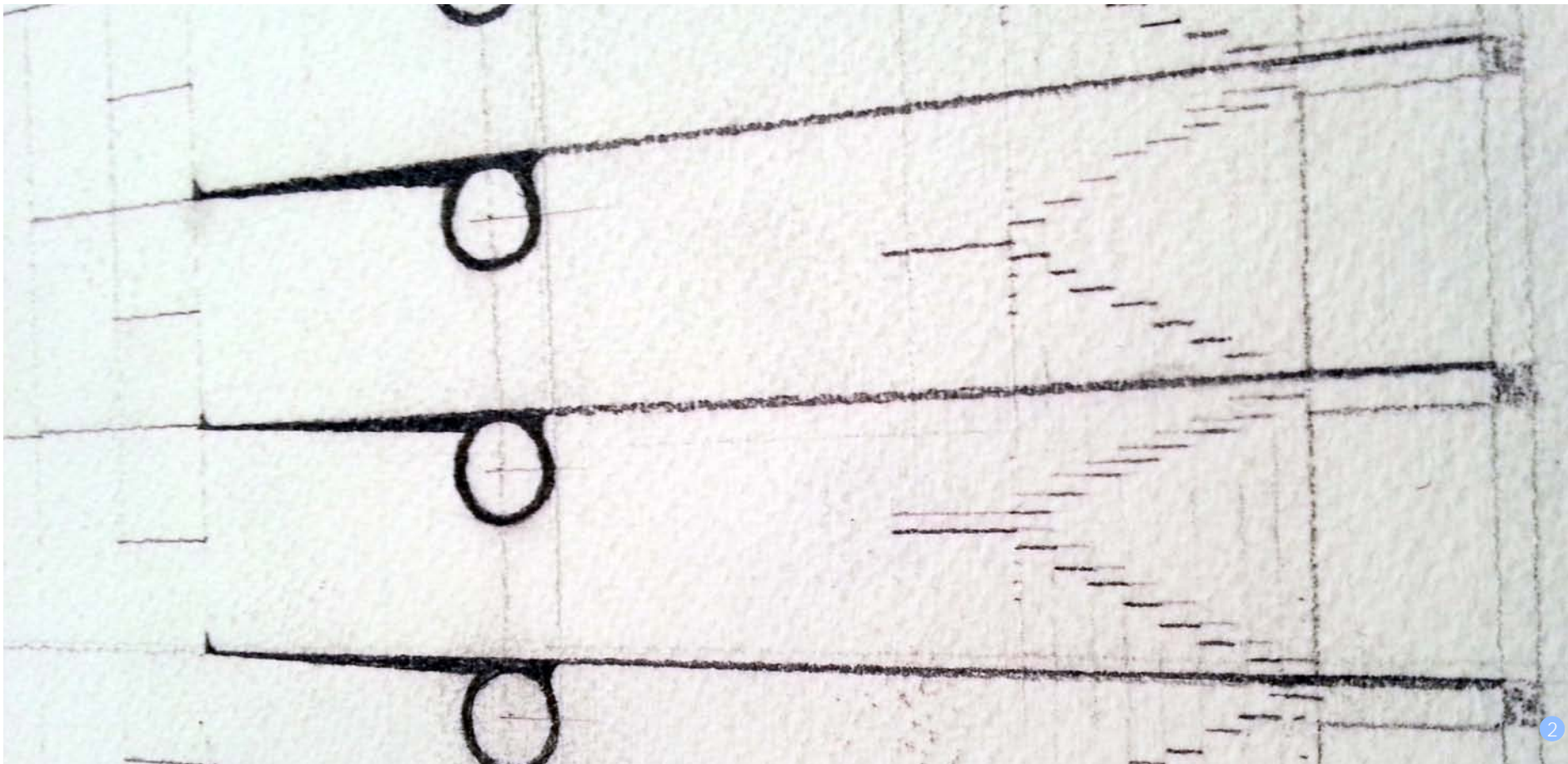
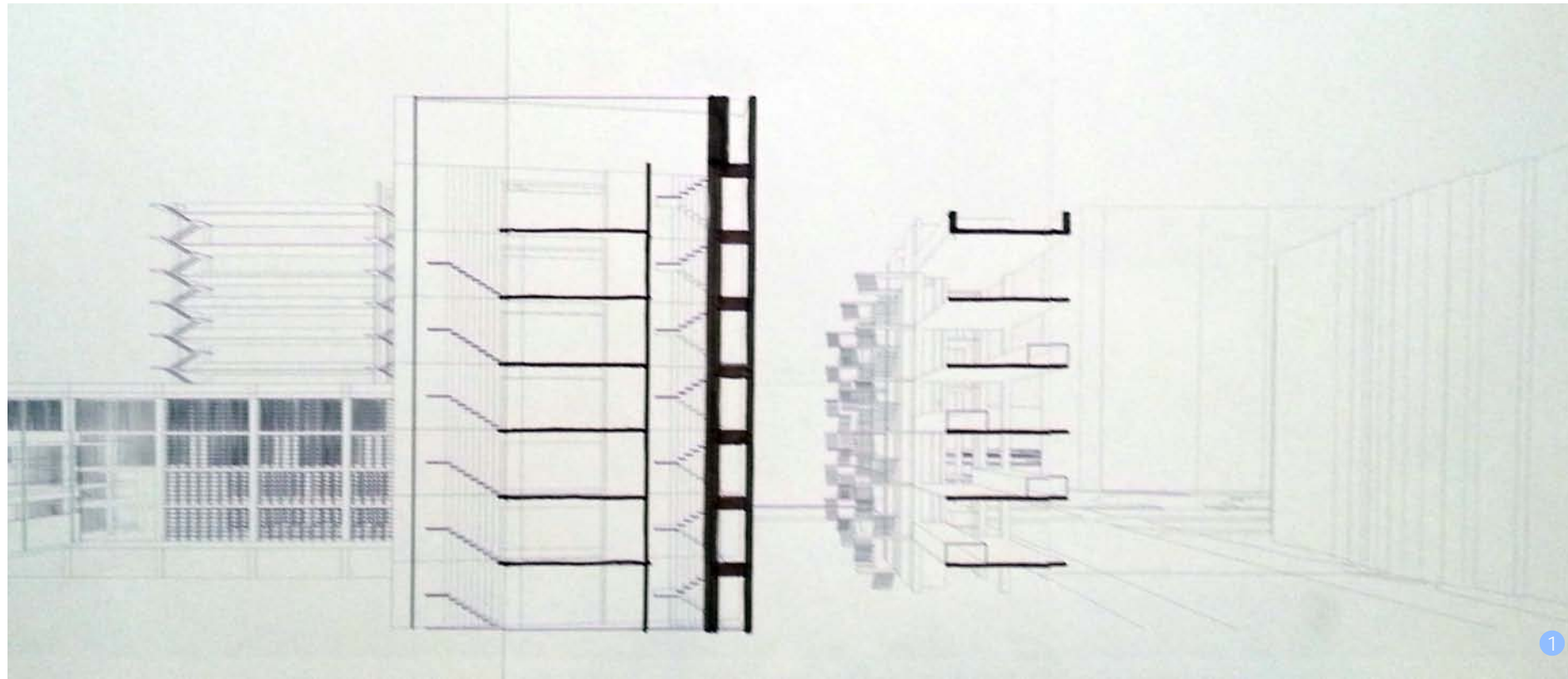
### ... & IMPORTANT DISCOVERIES WITH THE AVENTINE TRIAD





# MESSOR HE WHO REAPS

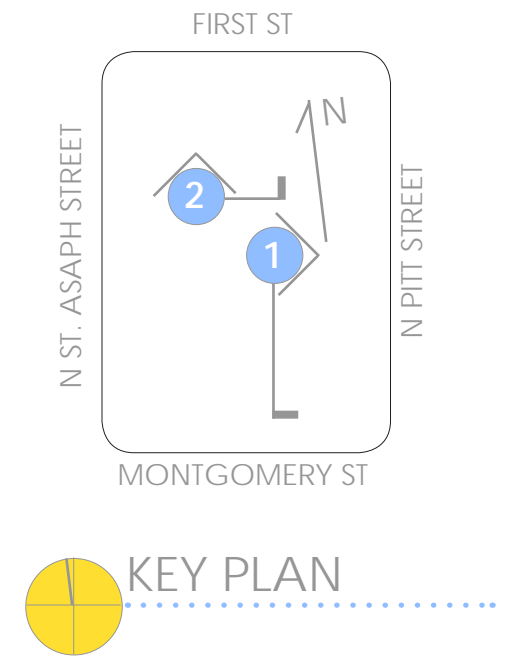
The helper-god, Messor, helped to reap methods for storing products.: From a vertical labyrinth, to a shelf that is also a stair, to a wall that which establishes hierarchy and order.

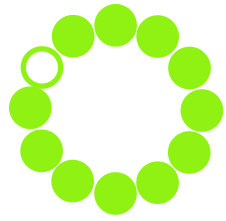


## ITERATIVE DESIGN VERTICAL LABYRINTH

The previous design featured stairs within walls of shelving. Each step was also a shelf.

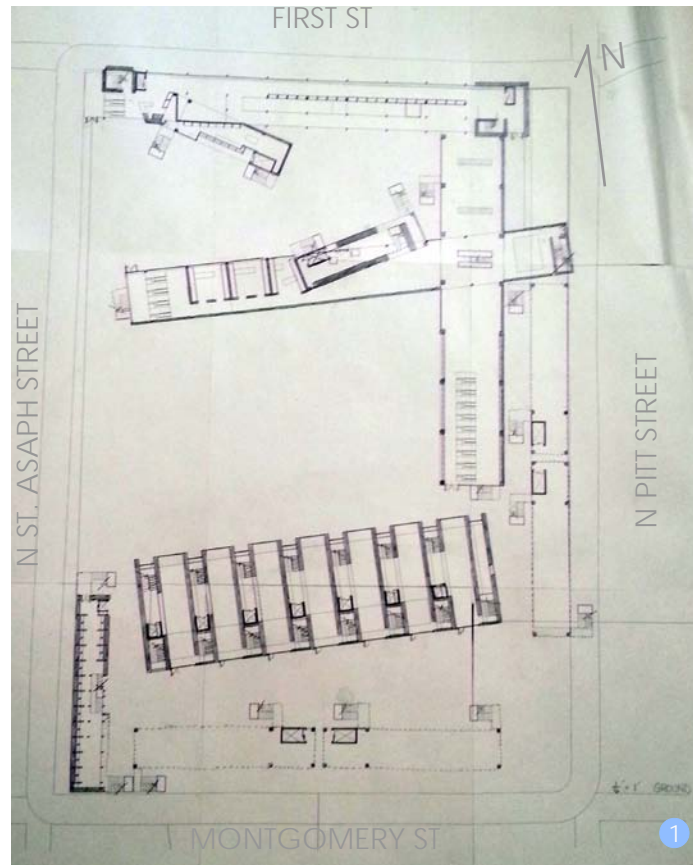
A new ramp which supported shelving for consumable products AND provide spatial organization would need to be sized to hold a ramp track that was 1/2 of a mile in length.





# CONUECTOR HE WHO CARRIES THE GRAIN

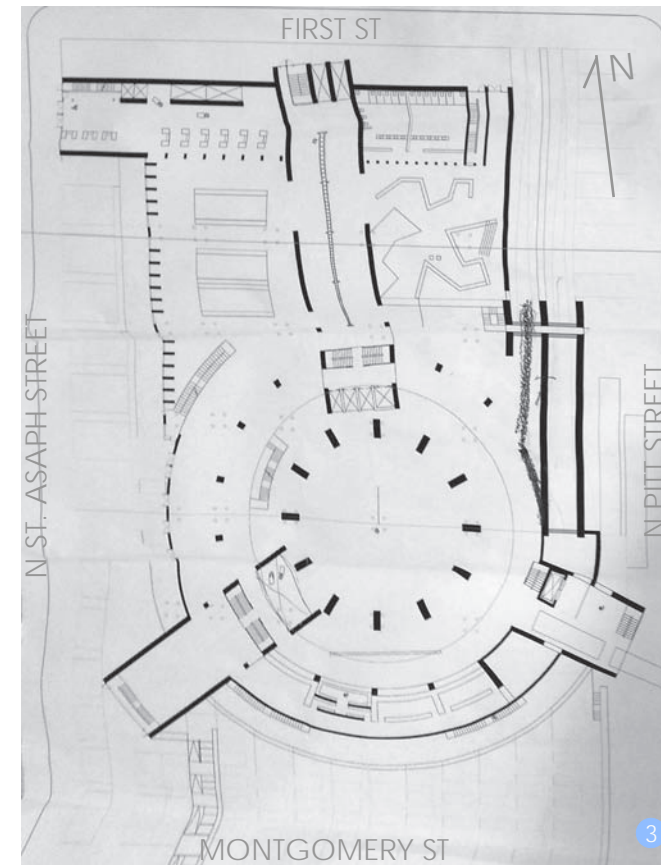
The helper-god, Conuector helped to re-emphasize the requirement of the service circulation to be equally as important as the consumer.



GROUND LEVEL

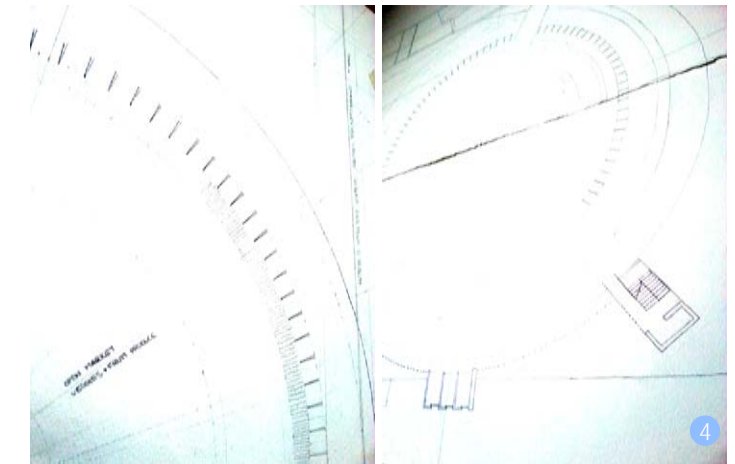


AERIAL VIEW



GROUND LEVEL

## ITERATIVE DESIGN FORM & FUNCTION

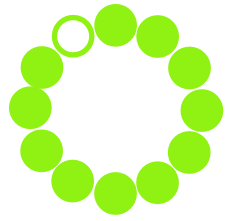


Series of floor plan design iterations.

- 1 In one of the initial studies, each bar housed a piece of the program. As they stretched across the city block I explored the significance of scale. Density was difficult to achieve, as was the deliberate positioning of the bars within the urban fabric.
- 2 Circular form, the memory of the historic canal, and the Aventine Triad [Ceres, Libera, and Liber] emerged. The line of the historic canal divided the block between the grocery program and the residential units. Subdivision of food types shaped significance. Natural foods would be at the ground level. Processed foods would be on all of the upper floors. The towers were treated as equals, lacking hierarchy and clear way to lock the circle in place. The size of the circle was not yet proportional to the site.
- 3 The bar of knowledge which is the cook book library locked the cycle into place. The circle, spiraling up to a typical unit of measure for physical fitness, was also to the grand scale of the site. The helper gods of the Goddess of Agriculture dialed in for their supporting role. Four sides of the block balanced between pedestrian and vehicular traffic, consumers and service providers. Community garden plots linked to the memory of the historic canal to be irrigated.
- 4 Proper sizing of shelving units for consumable processed goods was explored and established. The open market of vegetables and fruits would be in the core, specialized areas for seafood, meat, dairy, and the like would require separate attention as they needed more frequent human and a temperature control.

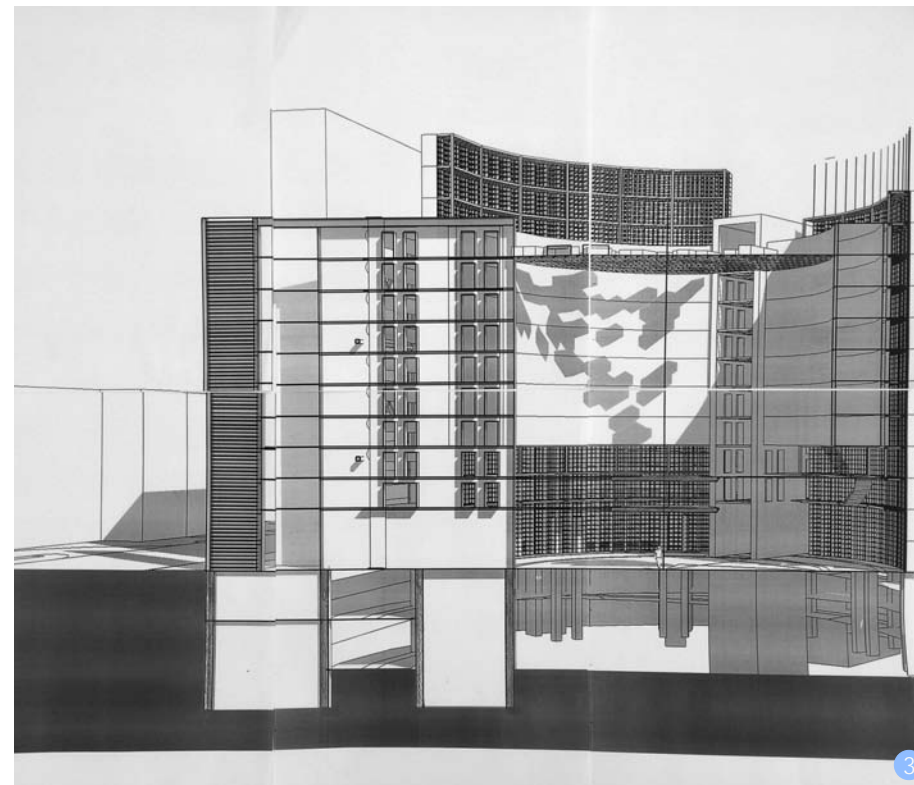
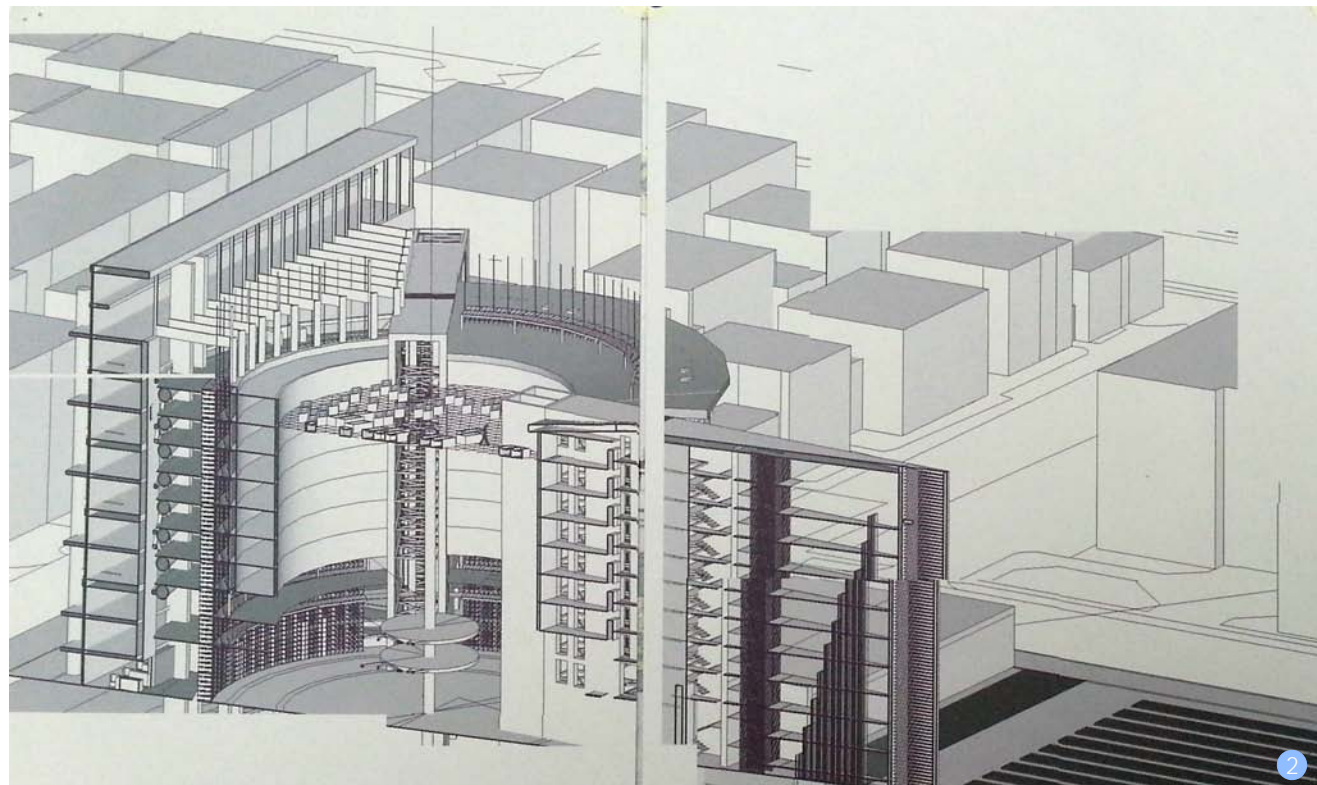
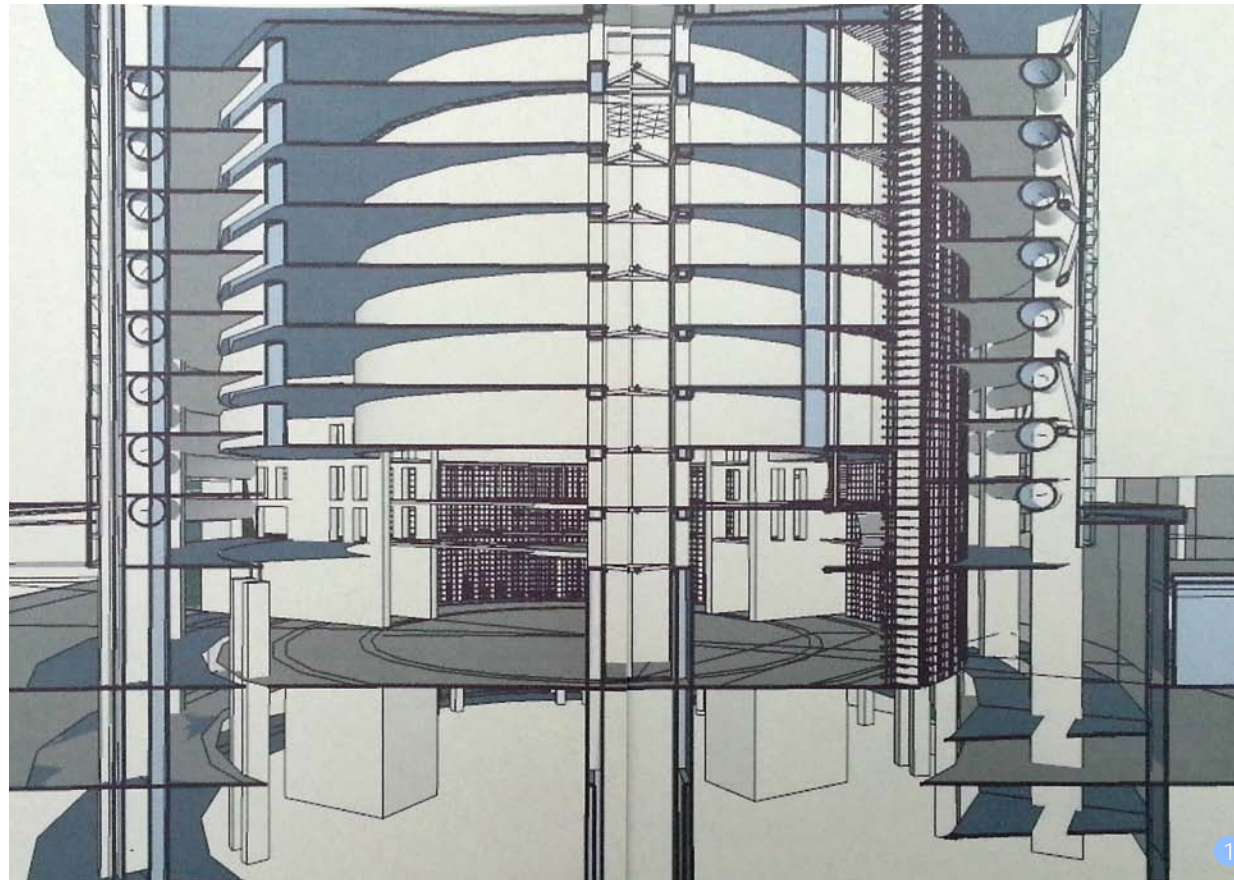
... & IMPORTANT DISCOVERIES WITH THE AVENTINE TRIAD





## CONDITOR HE WHO STORES THE GRAIN

The helper-god, Conditor, helped to define a more clear spatial order to store the grain. To store goods once they are shipped into the grocery store, so as not to negatively impact the consumer experience.

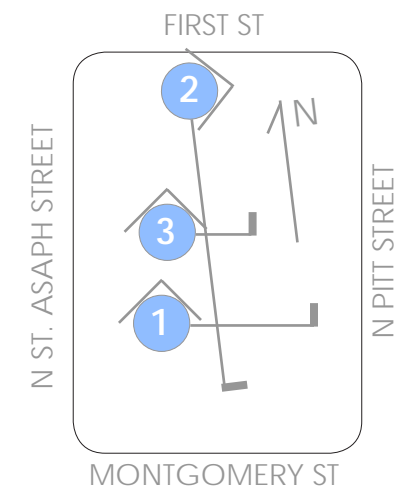


## ITERATIVE DESIGN FORM & FUNCTION

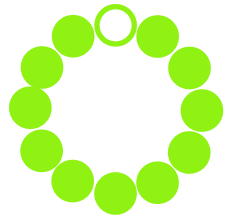
Section perspectives through the Aventine Triad Towers and a cross section.

Following this iteration was the pivotal moment in the design when the service core would be on the exterior of the space so that the atrium space could be the public area, not a silo.

- 1 This cross section through the initial "ceres" tower shares the solid harsh enclosure of the service area above an open market. Structure and skin and the consumer experience are all within the same radius. The ramp is passing through this tower gradually upward from the west to the east.
- 2 This longitudinal section through the initial "ceres" tower had the long verticality of the wall of beverages associate with the garden plots on the earth.
- 3 This section expresses the balance between the grounded "libera" tower against the spiraling ramp. Unfortunately, only at the intersection of these towers are consumers able to pause and walk toward the atrium space to re-establish their sense of orientation within the building.

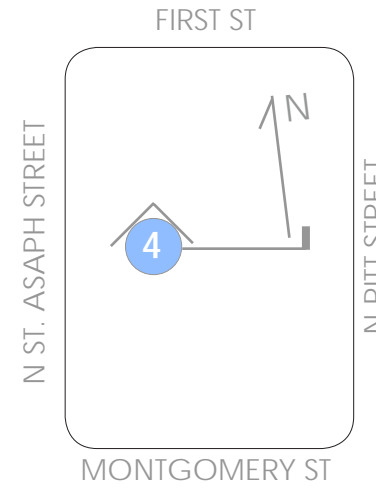
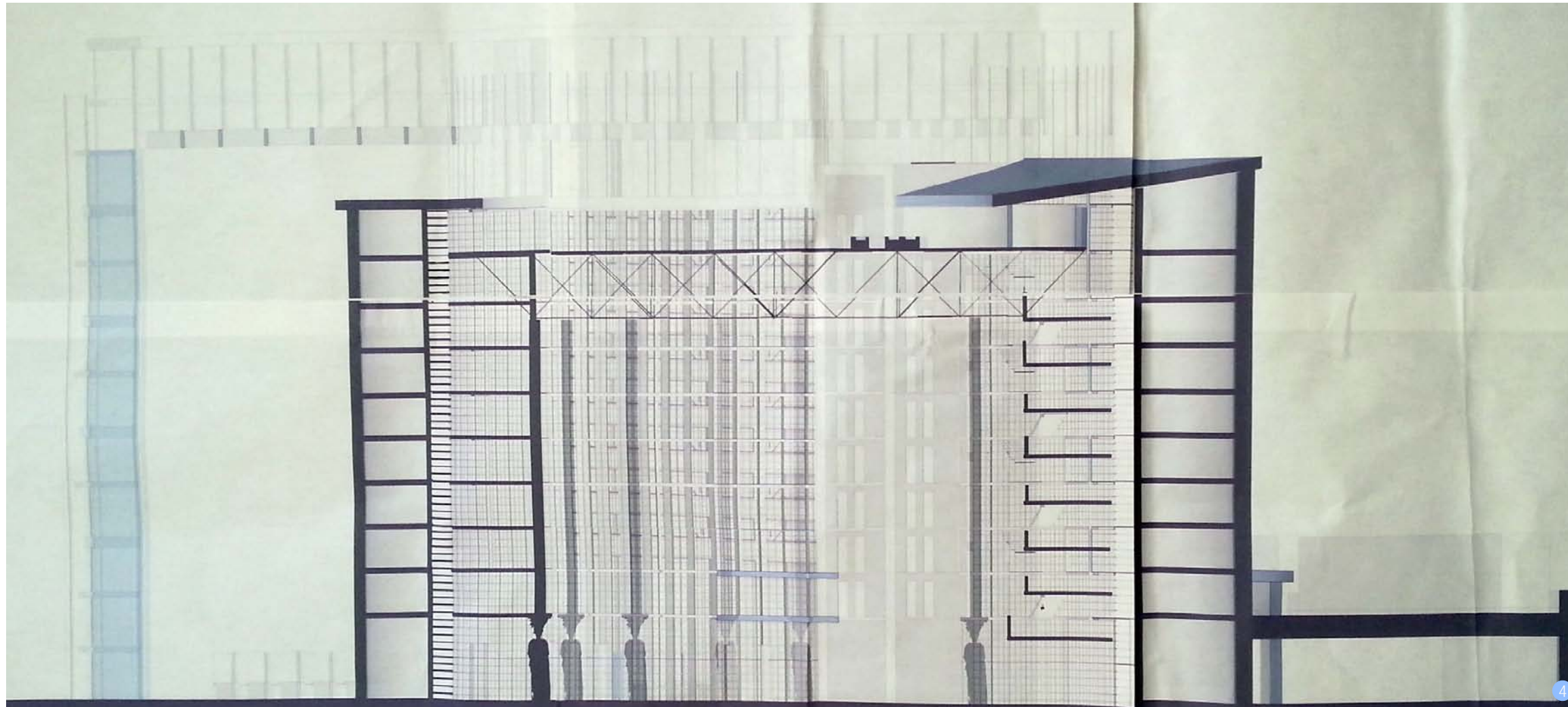


KEY PLAN



# PROMITOR HE WHO DISTRIBUTES THE GRAIN

The helper-god, Promitor, helped to promote the distribution of the grain, acknowledging the rigor of exploration as a means to acquire and then disseminate knowledge..



KEY PLAN

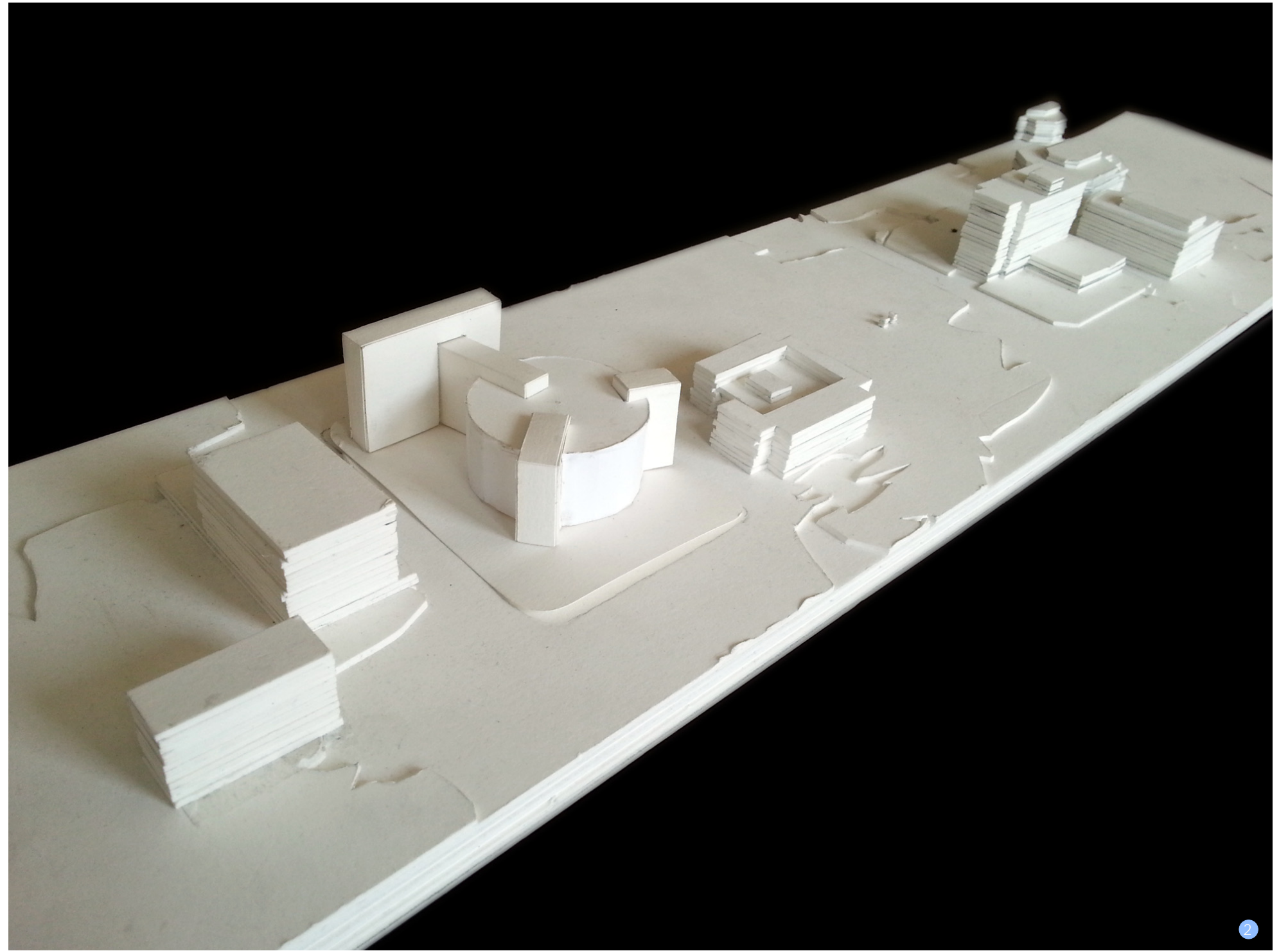
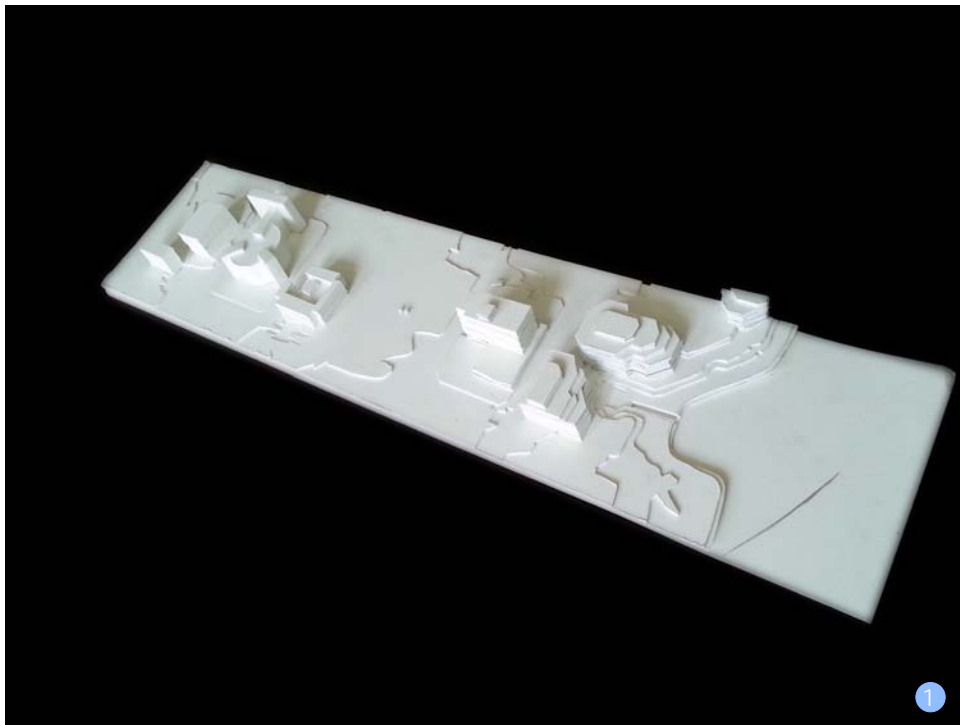
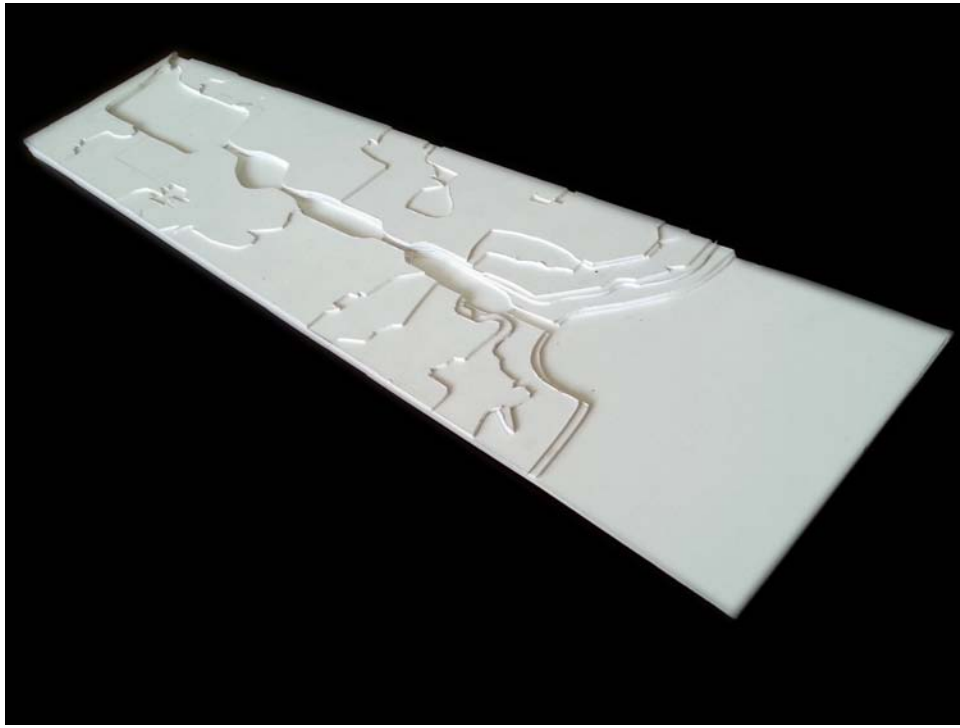
## ITERATIVE DESIGN FORM & FUNCTION

Cross section study.

Structurally, the roof of the central atrium would need to be supported by the twelve pillars of the agricultural subgods, he who ploughs, he who prepares the earth, he who ploughs with a wide furrow, he who plants seeds, he who traces the first ploughing, he who harrows, he who digs, he who weeds, he who reaps, he who carries the grain, he who stores the grain, he who distributes the grain.

... & IMPORTANT DISCOVERIES WITH THE AVENTINE TRIAD





pairing of 3D physical white models of the project in its context, position of the site is bracketed by Washington Street and the Potomac River. bird's eye view from the southeast. topography is the constant. comparison of the historic canal locks [left above] and the proposed design within the current site context [left below]

bird's eye view from the southwest of 3D physical white model of the project site: proposed design within the current site context.

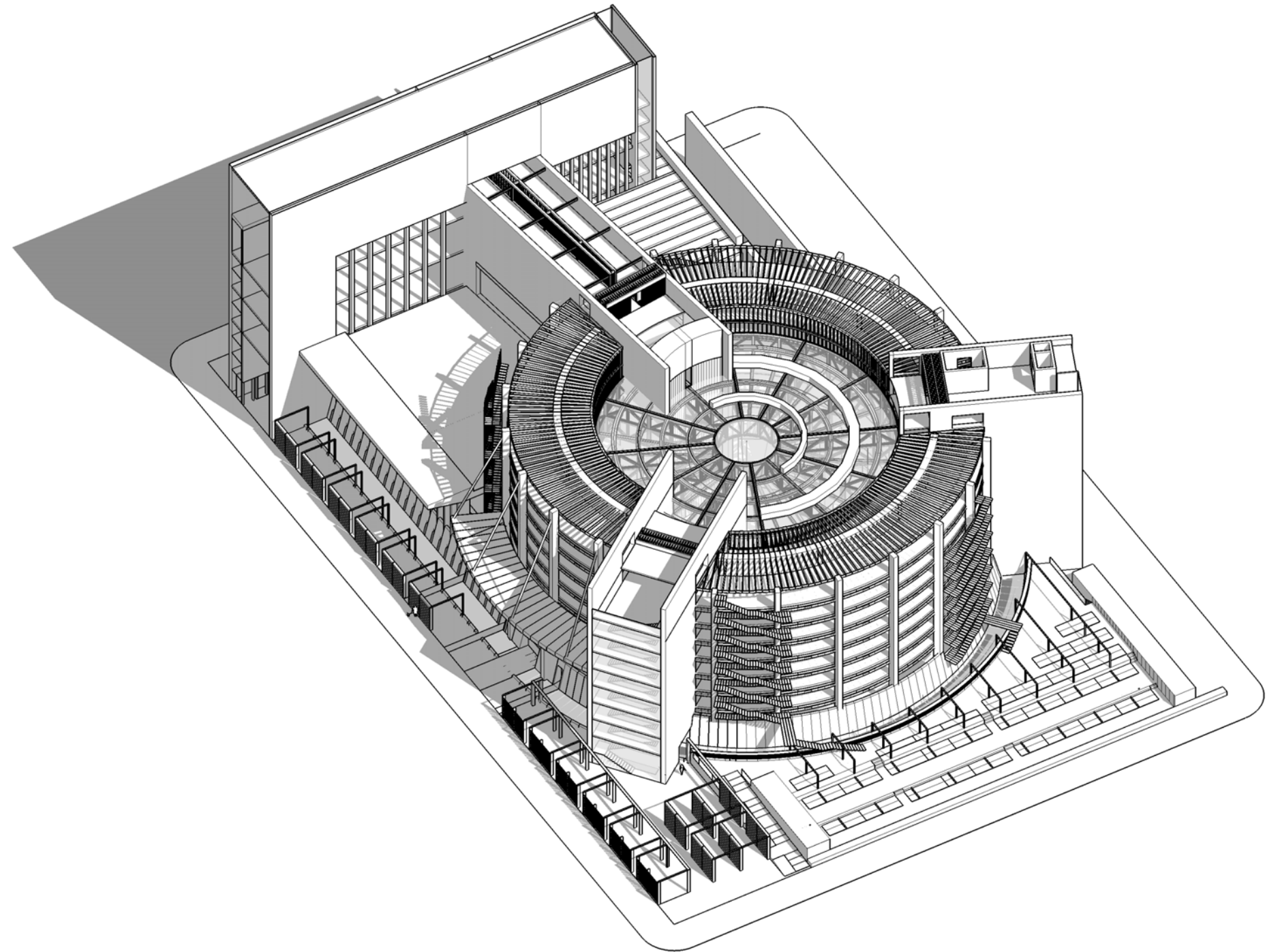
## SETTLING INTO A GIANT TREE.

final solution on site, building plans sections and elevations, renderings  
final solution on the site of the old canal  
final solution analysis to boxed stores



1 axonometric drawing of the final project within its city block expanse.

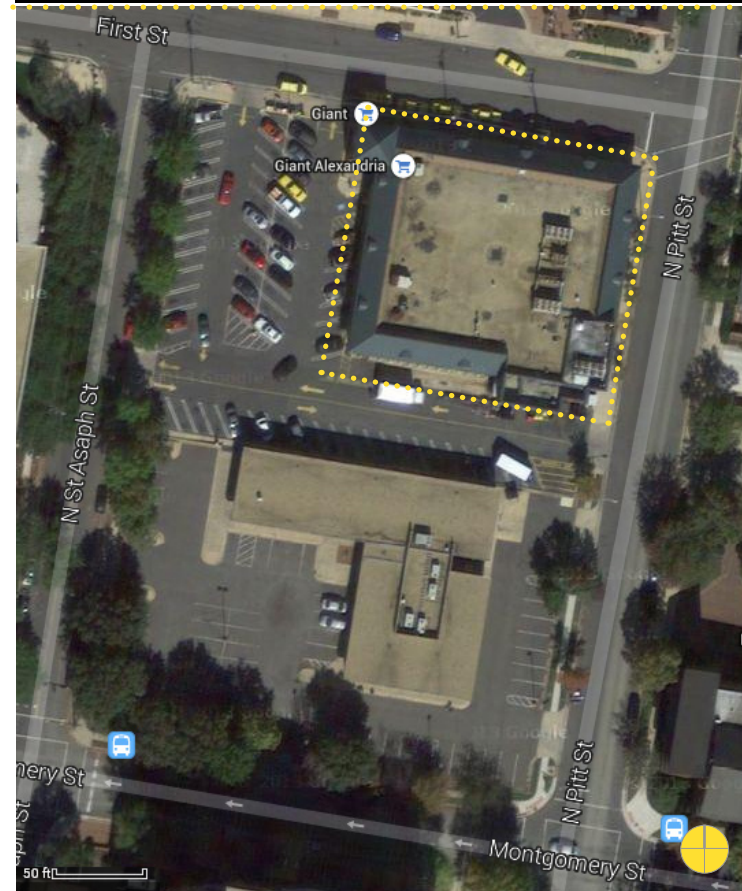
2 aerial view of 3D physical white model of the project site, bracketed by Washington Street and the Potomac River.





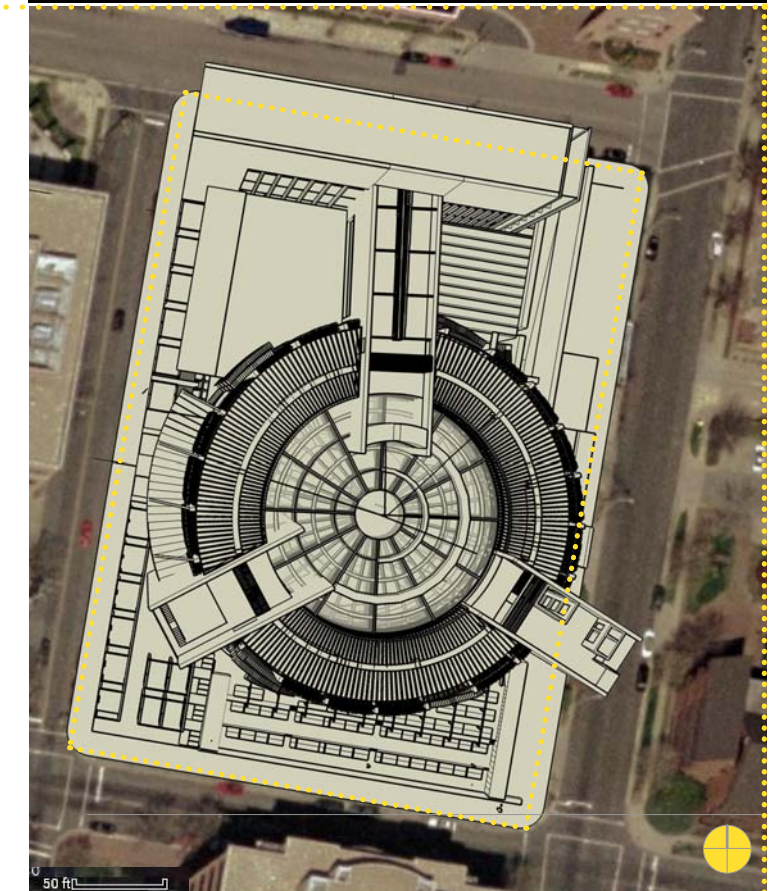
Aerial map credit: Imagery 2014 Commonwealth of Virginia, DigitalGlobe, District of Columbia (DC GIS), Sanborn, U.S. Geological Survey, Map data 2014 Google.

**1 GIANT FOOD**  
530 FIRST ST, ALEXANDRIA



**2 PROPOSED GROCERY STORE**  
530 FIRST ST, ALEXANDRIA

Proposed building superimposed on site plan.  
Aerial map credit: <MSN Maps>



Width	150 FT
Length	120 FT
<b>Building Footprint</b>	<b>18,000 SF</b>
Height	18 FT
<b>Store Volume</b>	<b>324,000 Cubic Feet</b>

Average Aisle Length	24 paces
----------------------	----------

	# of Aisles	Linear FT of Shelving
Prepared Foods	6	3,700 LF
Frozen Foods	1	600 LF
Fresh Foods	1.5	1,200 LF
<b>Total:</b>		<b>5,500 LF</b>

Shelving Linear Footage to Total Store Area Ratio: **30.56%**  
to Total Store Volume Ratio: 1.70%

Width	~241 FT
Length	~280 FT
<b>Building Footprint</b>	<b>46,522 SF</b>
Height	81 FT
<b>Store Volume</b>	<b>3,768,282 Cubic Feet +</b>

Prepared Foods at ramp (Linear FT of Shelving)	12,312 LF
Prepared Foods at stairs (Linear FT of Shelving)	5,184 LF
Drinks (Linear FT of Shelving)	70 LF
Frozen Foods (Linear FT of Shelving)	1,152 LF
Cookbooks (Linear FT of Shelving)	1,392 LF

**Total:** 20,110 LF  
Plus Restaurant & Fresh Foods & Garden Open Areas

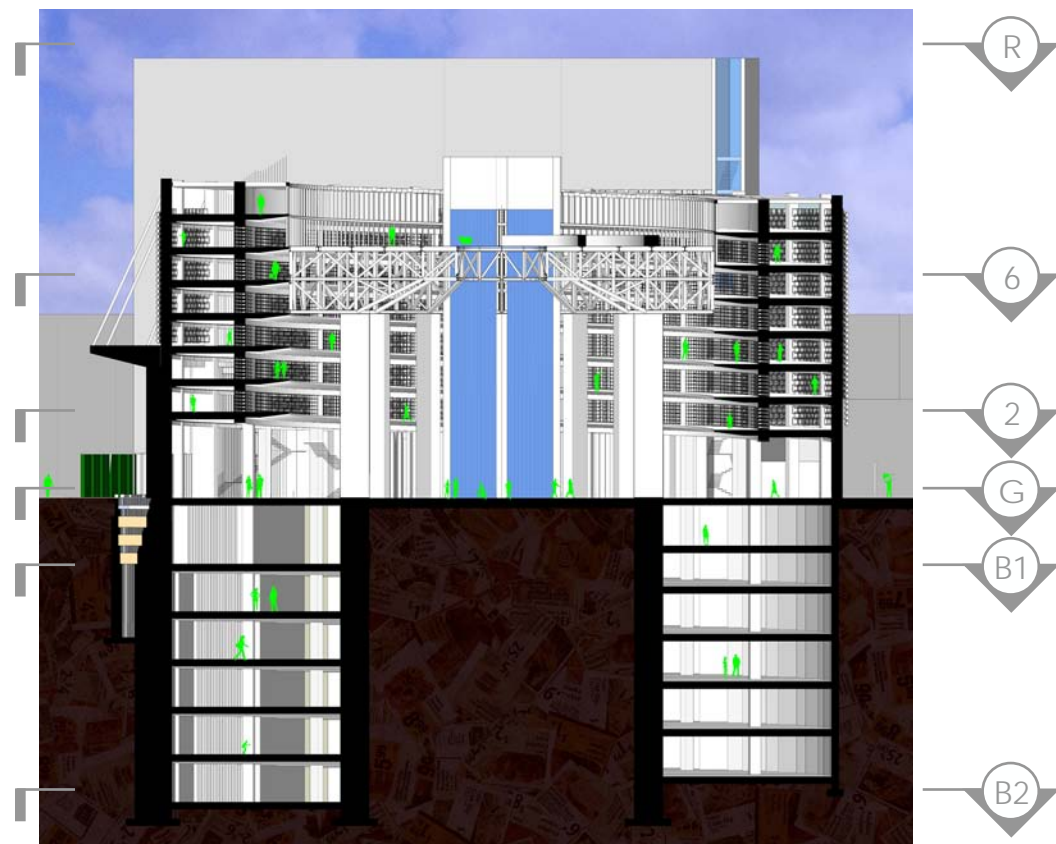
Shelving Linear Footage to Total Store Area Ratio: **43.23%**  
to Total Store Volume Ratio: 0.50%

**EXISTING VS. PROPOSED DESIGN COMPARISONS**

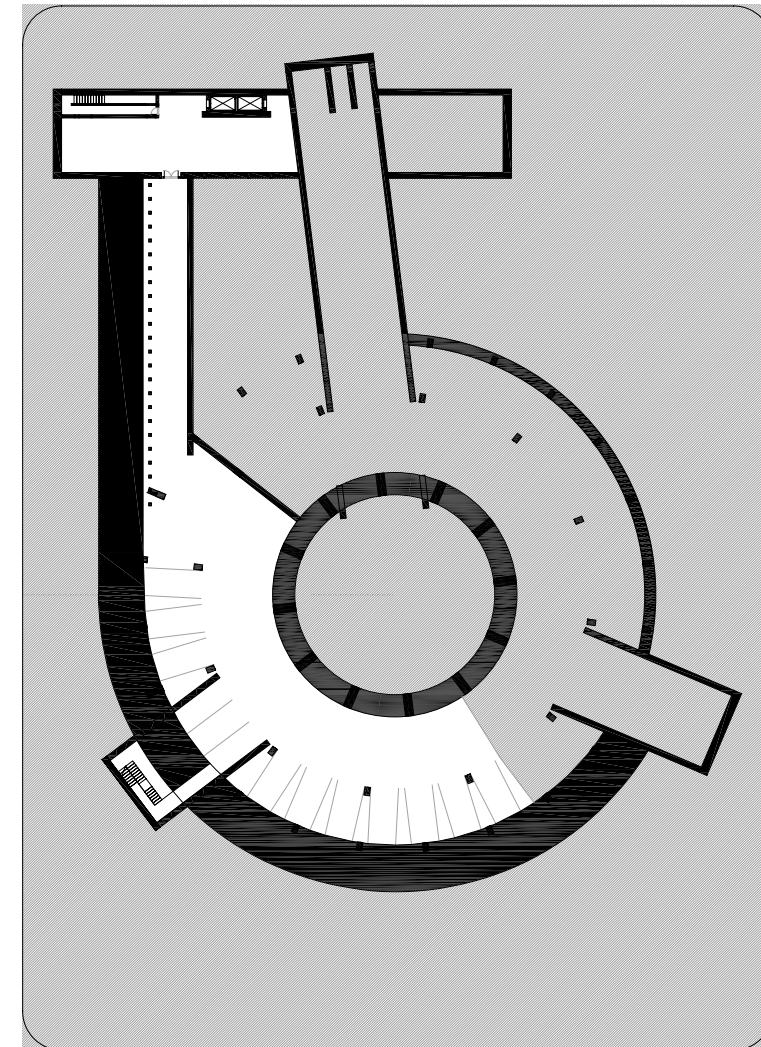


# BUILDING FLOOR PLANS - AT A GLANCE

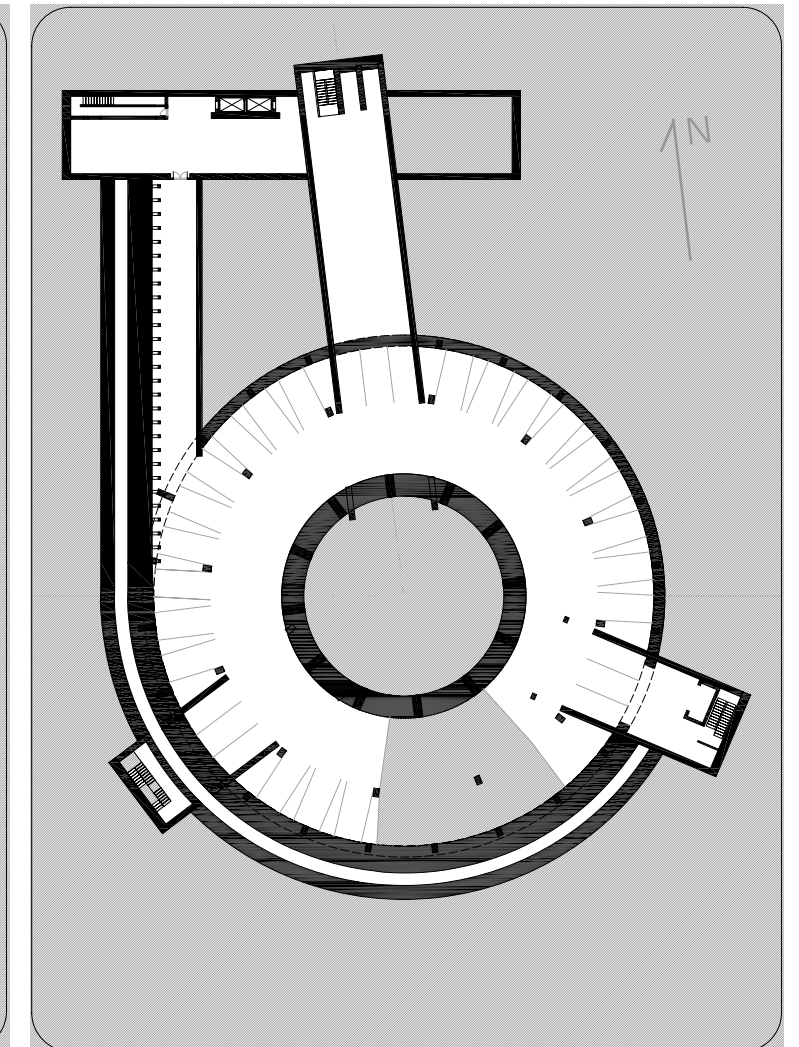
These building plans represent the procession from the earth to the heavens.



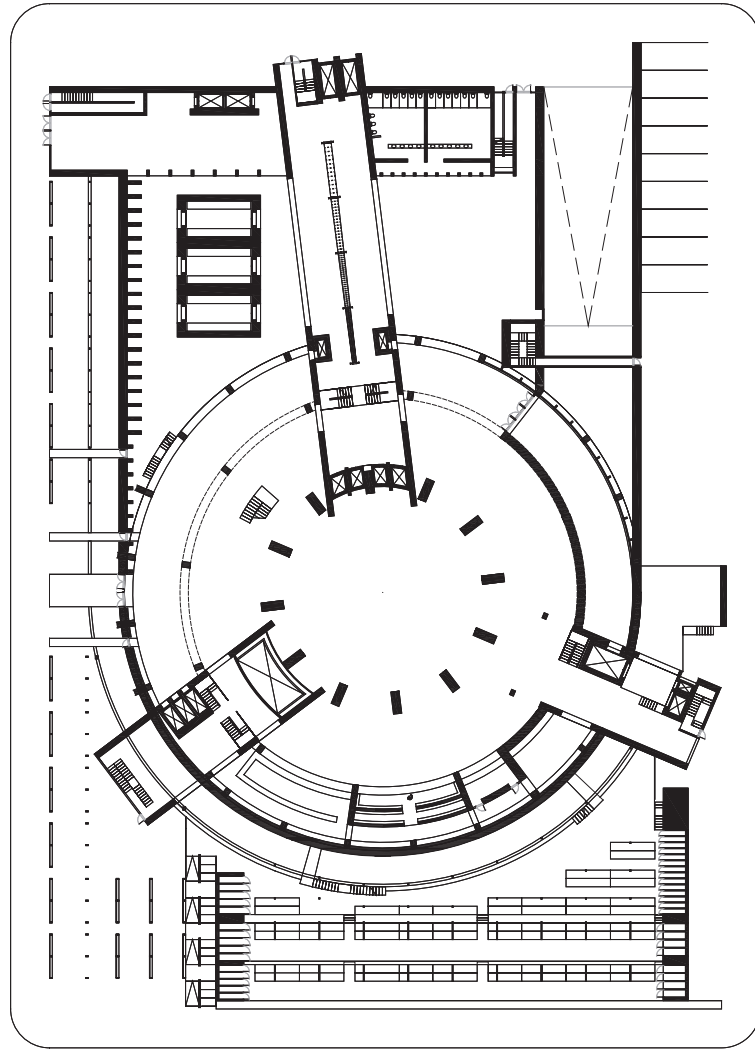
KEY SECTION  
[CROSS SECTION EAST-WEST AXIS]



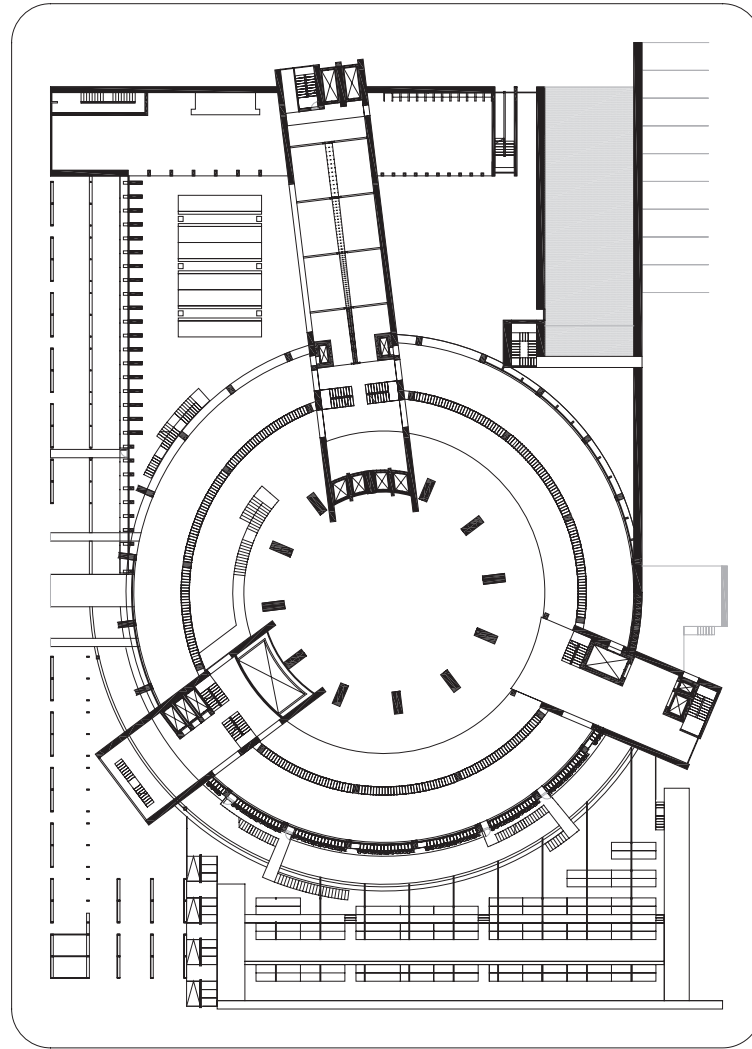
B2 - LOWER BASEMENT LEVEL  
PARKING



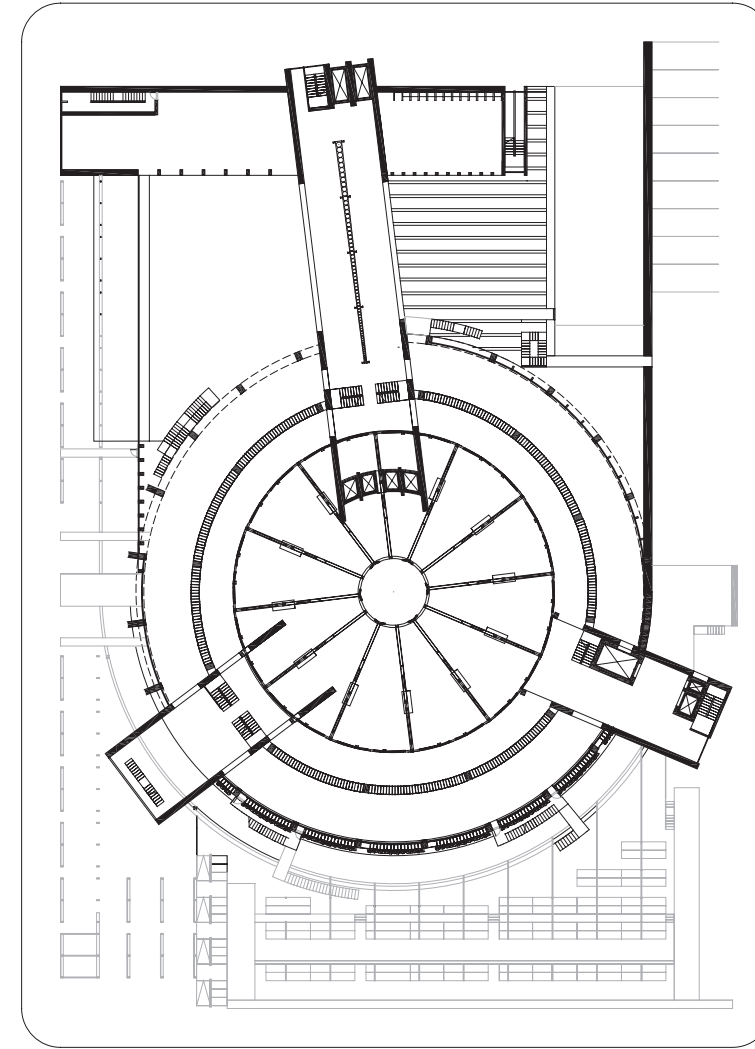
B1 - UPPER BASEMENT LEVEL  
PARKING



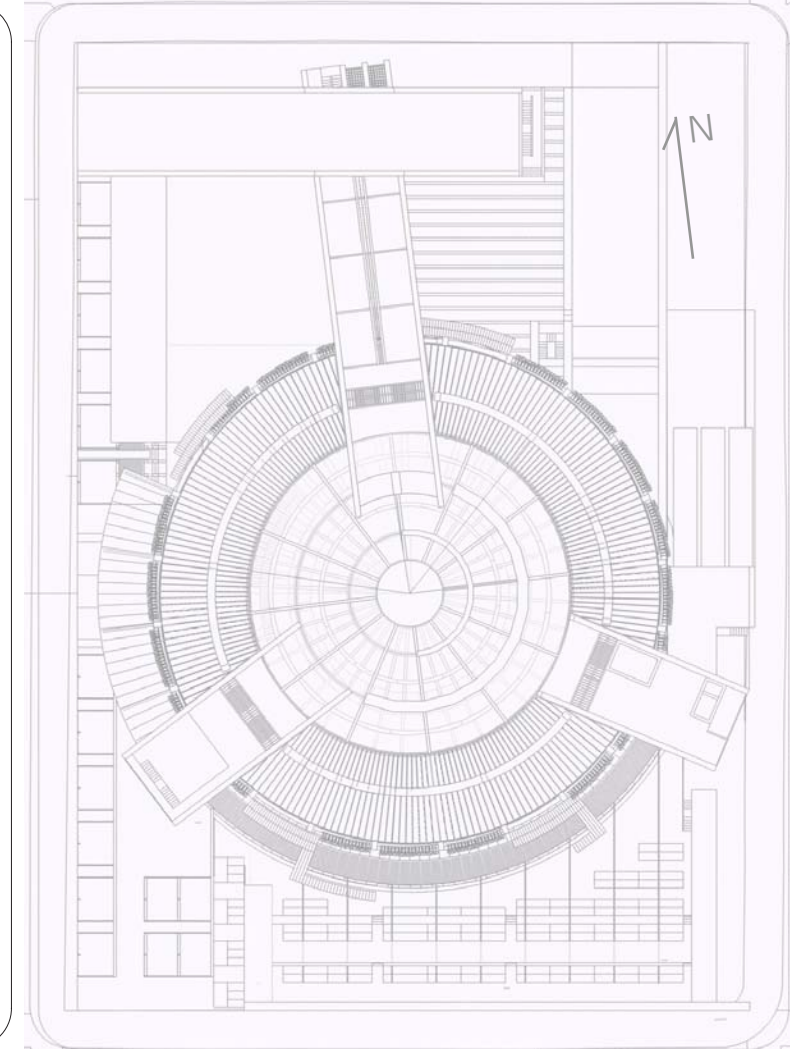
G - GROUND LEVEL



2 - AT THE RAMP STARTING LINE



6 - HYDROPONIC CHAMBER

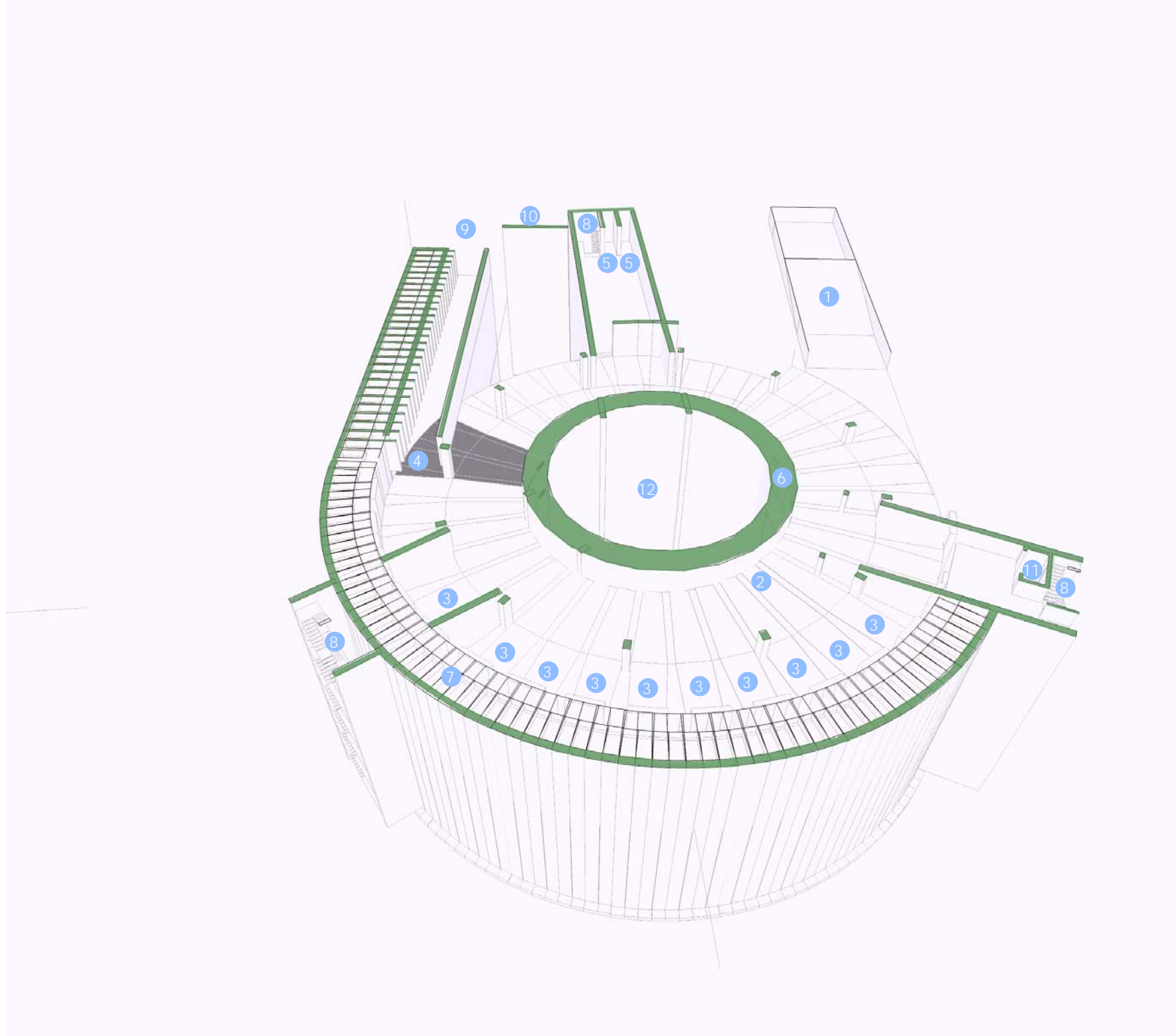


R - ROOF LEVEL

50 ft 



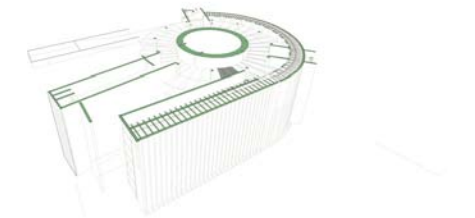
# BASEMENT LEVEL



Ba

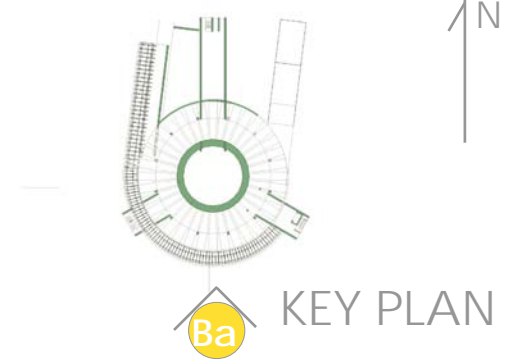
BASEMENT LEVEL FLOOR PLAN PERSPECTIVE

- 1 start of parking ramp from street
- 2 spiraling parking ramp
- 3 parking space
- 4 pedestrian walk
- 5 check-out elevator
- 6 concrete core
- 7 footing below water feature tribute to historic canal
- 8 stairs
- 9 stairs from main check-out
- 10 elevator from main check-out
- 11 service elevator
- 12 earth



Bb BASEMENT LEVEL FLOOR PLAN PERSPECTIVE

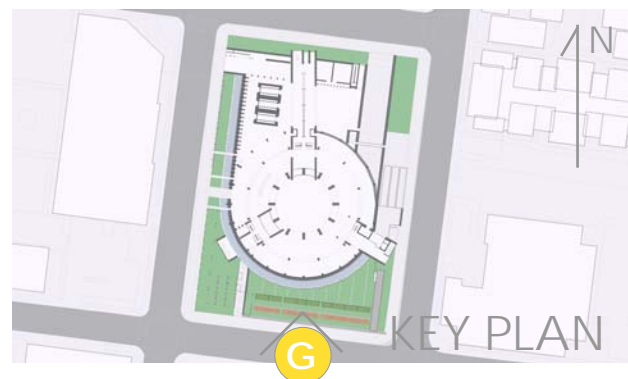
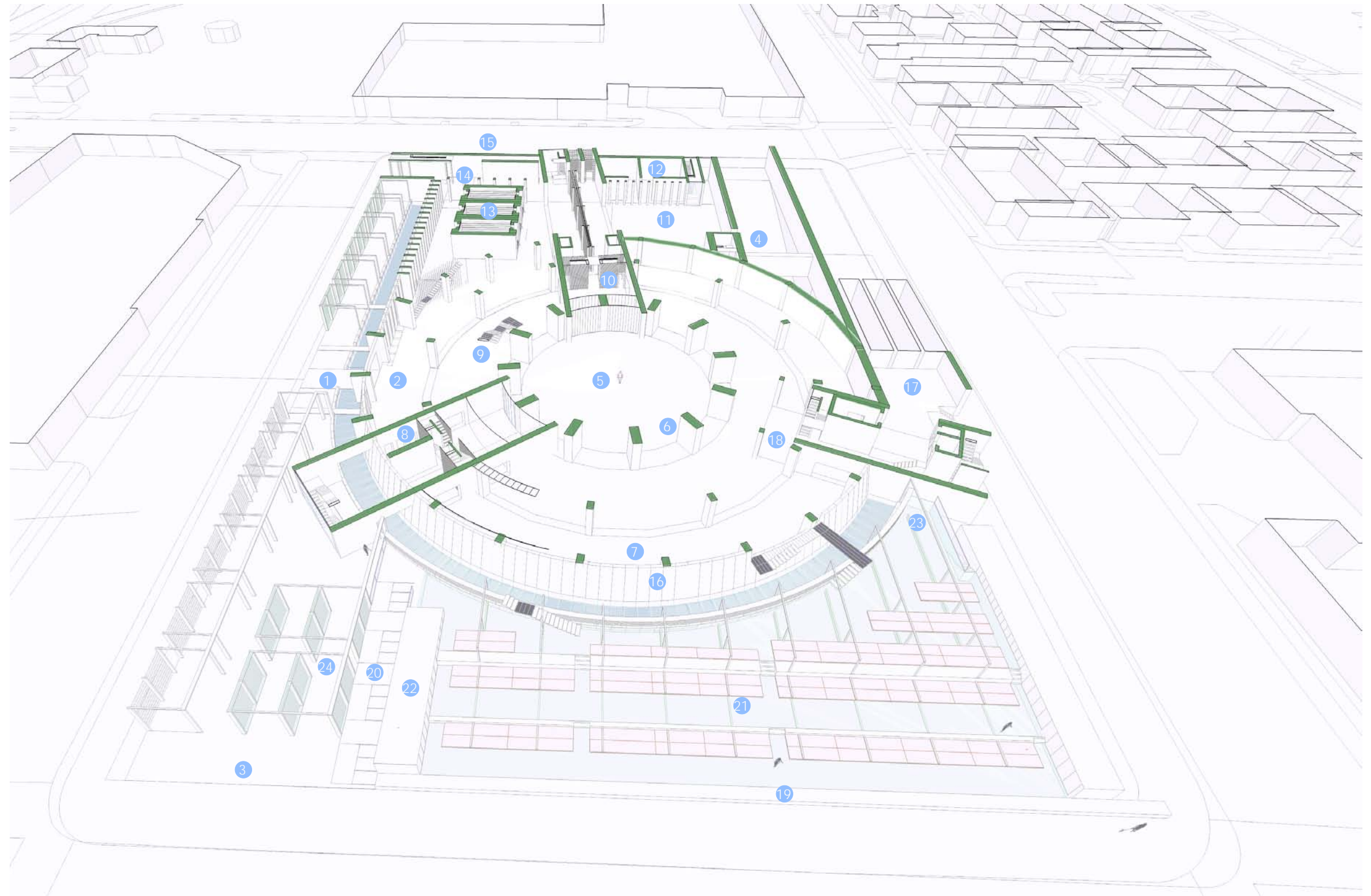
Bb



Ba KEY PLAN

# GROUND LEVEL

- 1 moat, tribute to Alexandria's historic canal
- 2 public pedestrian entrance
- 3 bus stop
- 4 parking entrance
- 5 natural foods market
- 6 12 subgods supporting atrium roof
- 7 deli, butchery, seafood, dairy, florist, bakery
- 8 grand elevators to ramp
- 9 grand open stairs to upper floors
- 10 food stocked stairs
- 11 cooking demonstrations
- 12 restrooms
- 13 frozen foods
- 14 main check out
- 15 elevators to parking
- 16 canal retention wall
- 17 service entrance
- 18 truck access to atrium
- 19 garden retention wall
- 20 terrace steps
- 21 community garden plots
- 22 garden lockers
- 23 irrigation lines
- 24 espalier garden



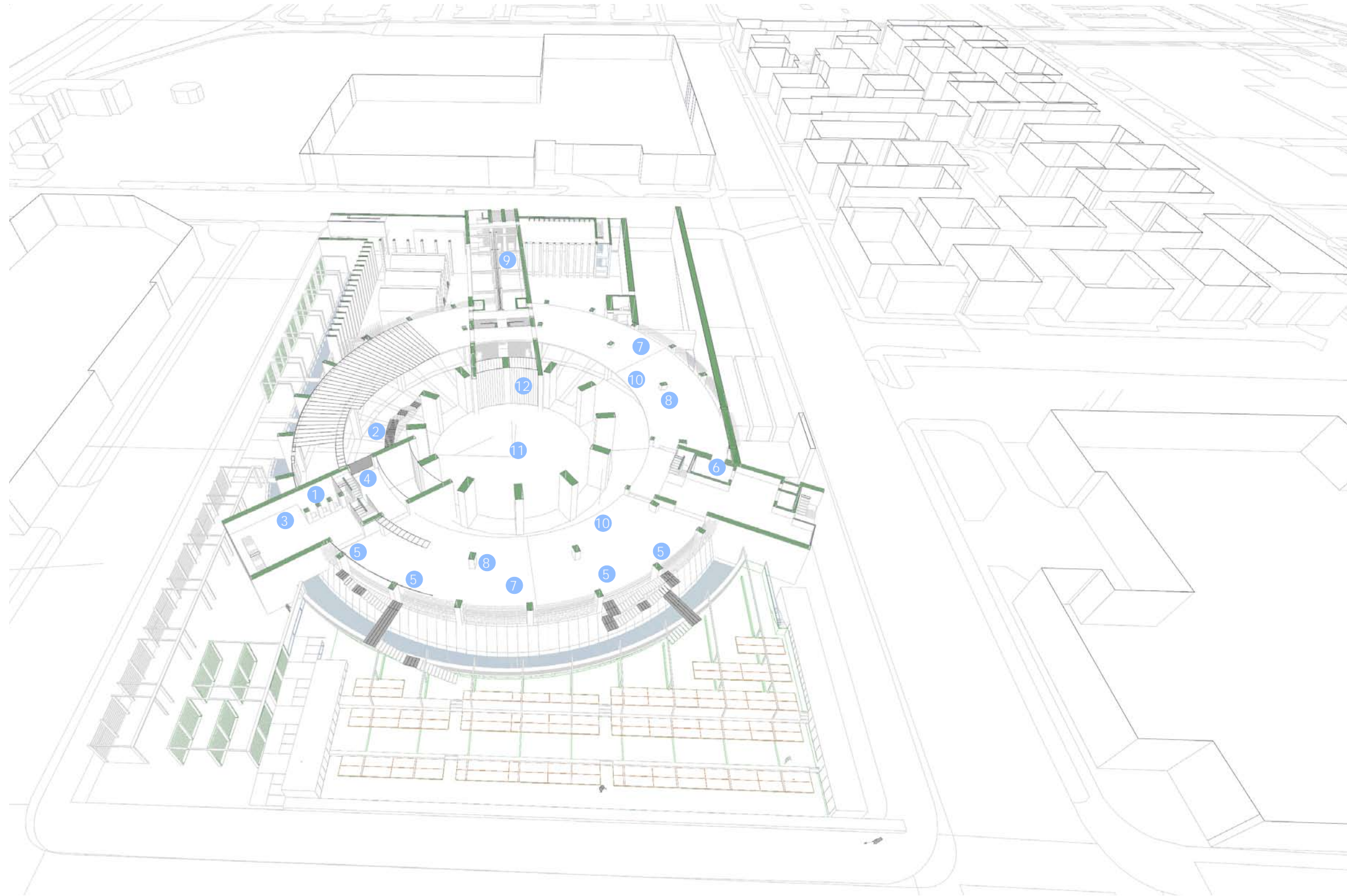
KEY PLAN



GROUND LEVEL FLOOR PLAN PERSPECTIVE



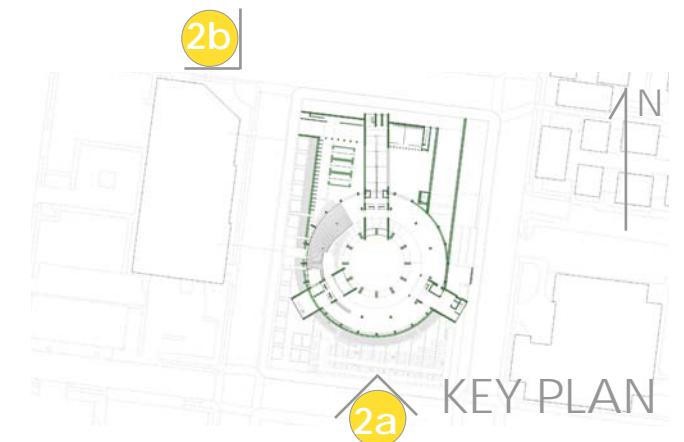
# SECOND LEVEL - AT THE RAMP STARTING LINE



- 1 grand elevators to ramp
- 2 grand open stairs to upper floors
- 3 shopping cart storage
- 4 ramp starting line
- 5 emergency exit
- 6 service elevator
- 7 main service path
- 8 food wall
- 9 beverage wall
- 10 main consumer path
- 11 open atrium
- 12 glass elevator



**2b** SECOND LEVEL FLOOR PLAN PERSPECTIVE

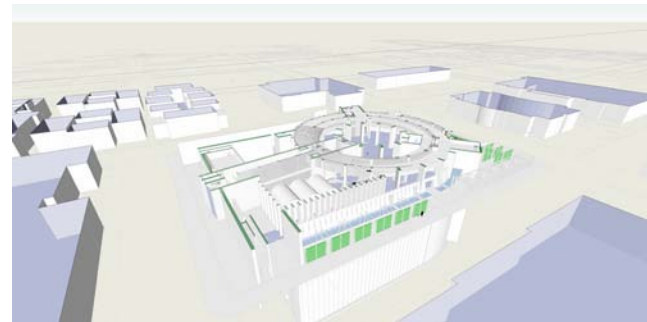
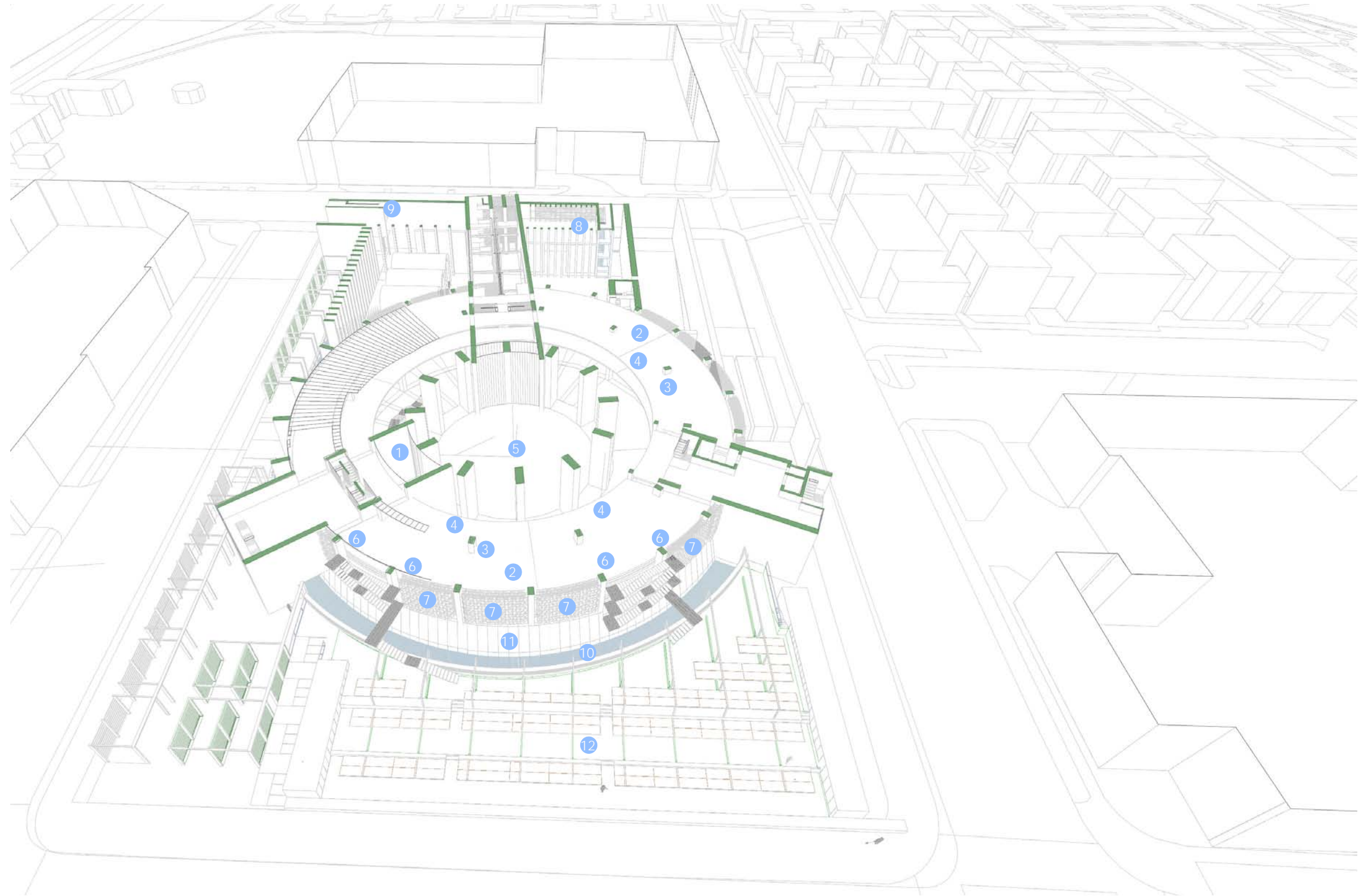


**2a**

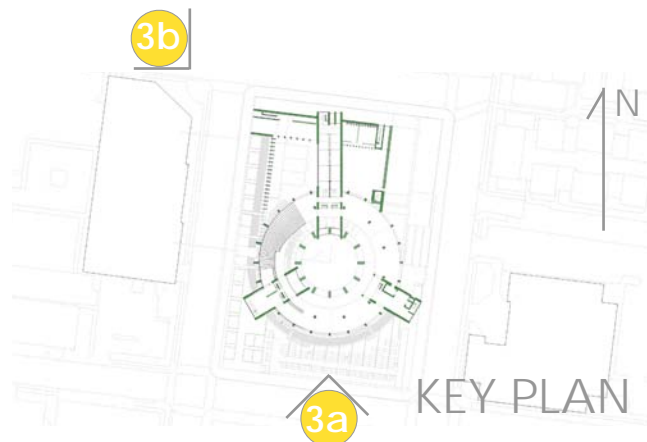
SECOND LEVEL FLOOR PLAN PERSPECTIVE

# THIRD LEVEL - LAPS FOR RUNNING

- 1 food stocked elevators
- 2 main service path
- 3 food wall
- 4 main consumer path
- 5 open atrium
- 6 emergency egress
- 7 flare façade
- 8 cook book library
- 9 stairs to parking
- 10 tribute to Alexandria's historic canal
- 11 canal retention wall
- 12 community garden plots



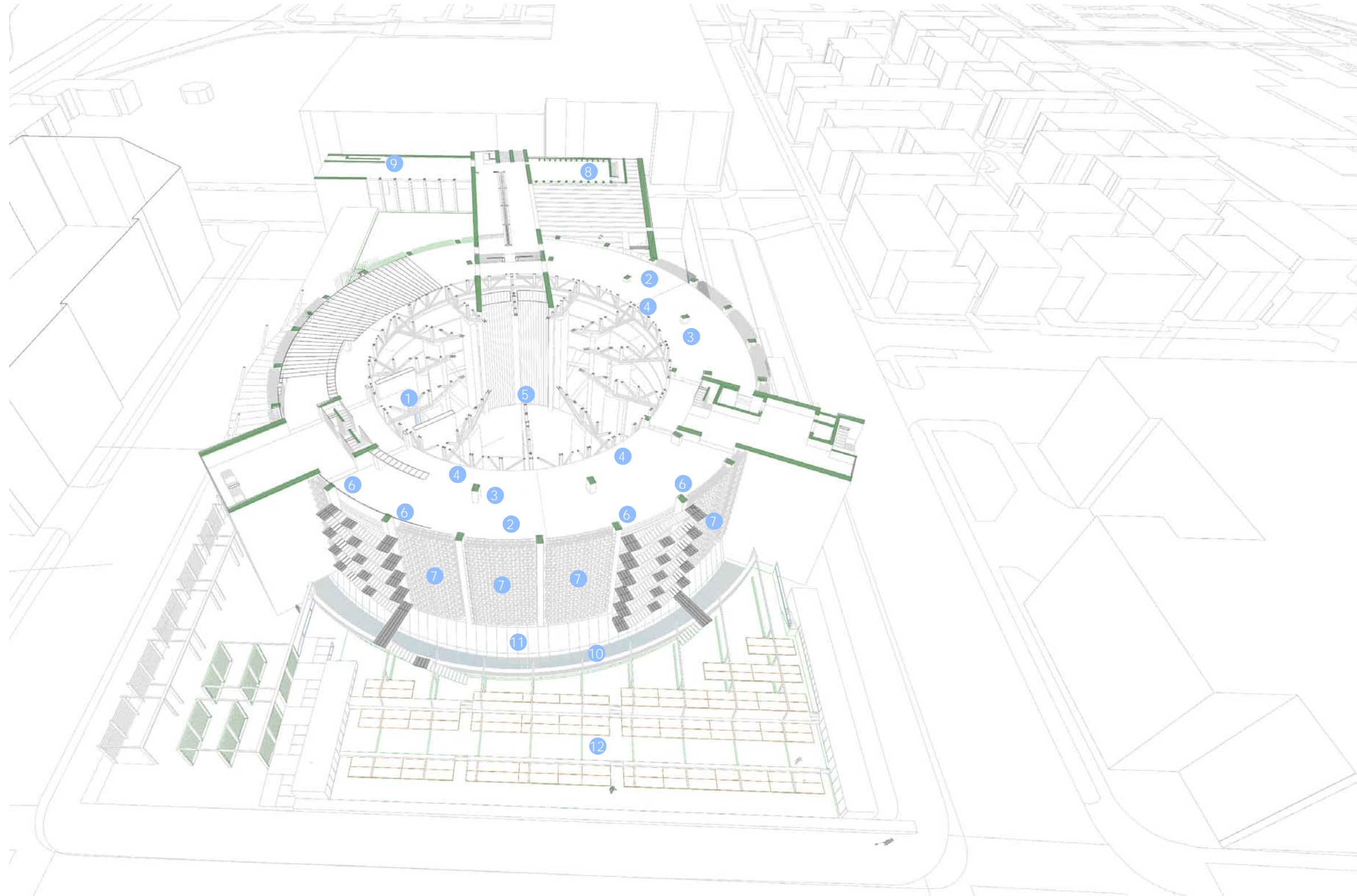
**3b** THIRD LEVEL FLOOR PLAN PERSPECTIVE



**3a** THIRD LEVEL FLOOR PLAN PERSPECTIVE



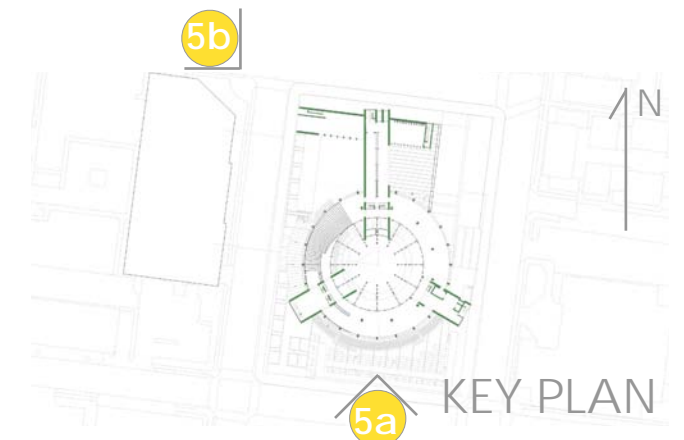
# FIFTH LEVEL - LAPS FOR RUNNING



- 1 food stocked elevators
- 2 main service path
- 3 food wall
- 4 main consumer path
- 5 open atrium
- 6 emergency egress
- 7 flare façade
- 8 cook book library
- 9 stairs to parking
- 10 tribute to Alexandria's historic canal
- 11 canal retention wall
- 12 community garden plots



**5b** FIFTH LEVEL FLOOR PLAN PERSPECTIVE



**5a** KEY PLAN

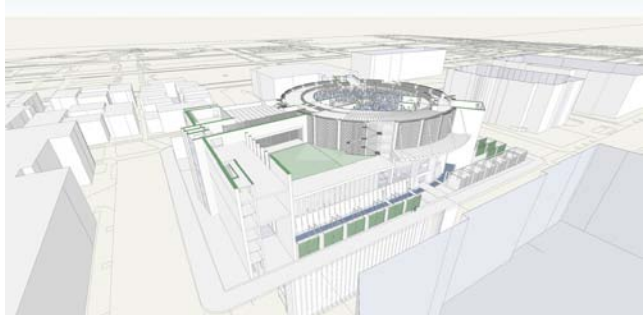
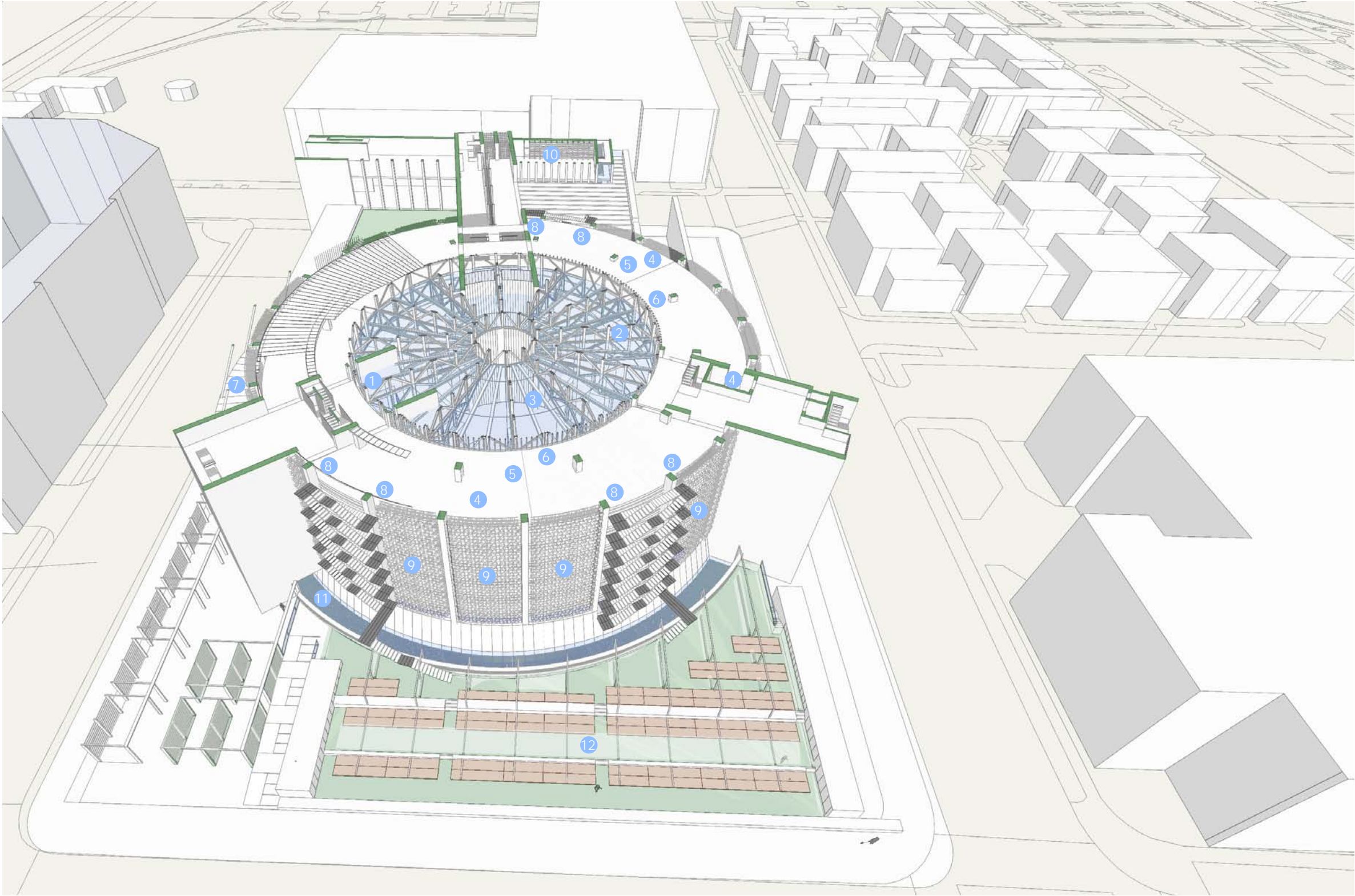
**5a**

FIFTH LEVEL FLOOR PLAN PERSPECTIVE

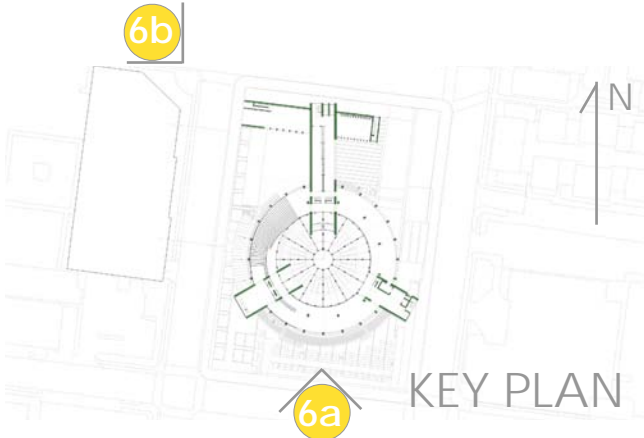


# SIXTH LEVEL - HYDROPONIC CHAMBER

- 1 entry to hydroponic chamber
- 2 steel truss structural support
- 3 glass floor
- 4 main service path
- 5 food wall
- 6 main consumer path
- 7 entry canopy
- 8 emergency egress
- 9 flare façade
- 10 cook book library
- 11 tribute to Alexandria's historic canal
- 12 community garden plots



**6b** SIXTH LEVEL FLOOR PLAN PERSPECTIVE

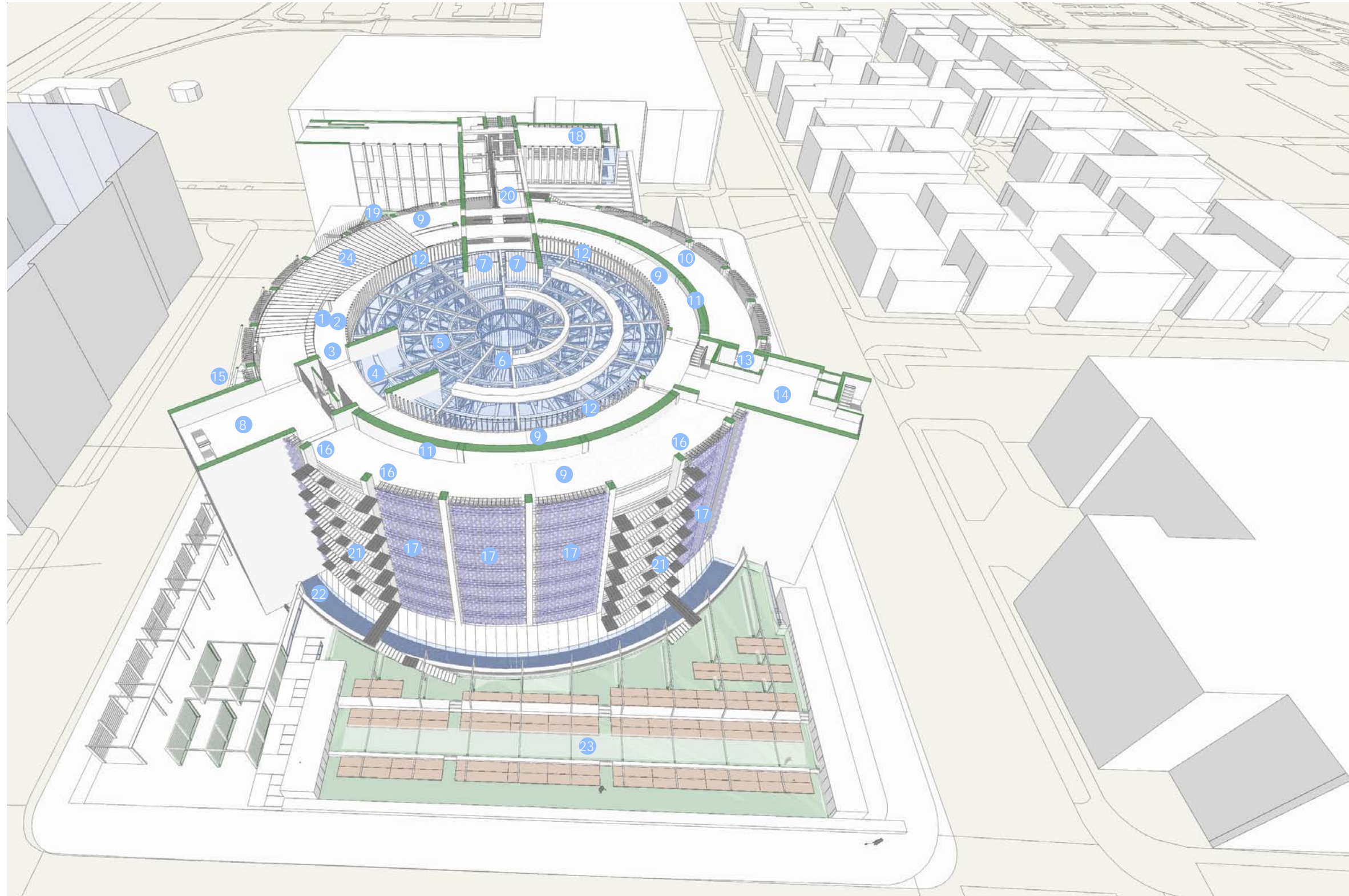


**6a** KEY PLAN

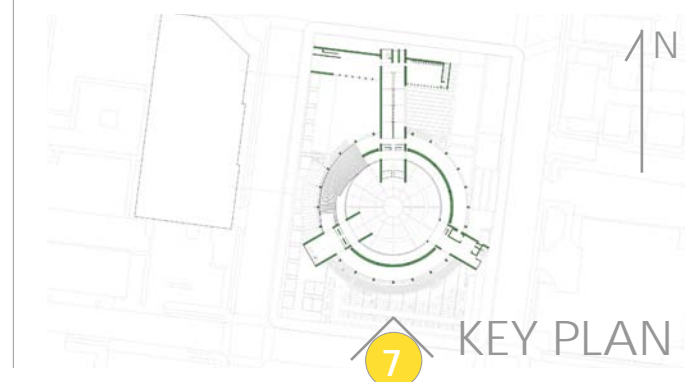
**6a** SIXTH LEVEL FLOOR PLAN PERSPECTIVE



# SEVENTH LEVEL - RESTAURANT & ROOF GARDEN



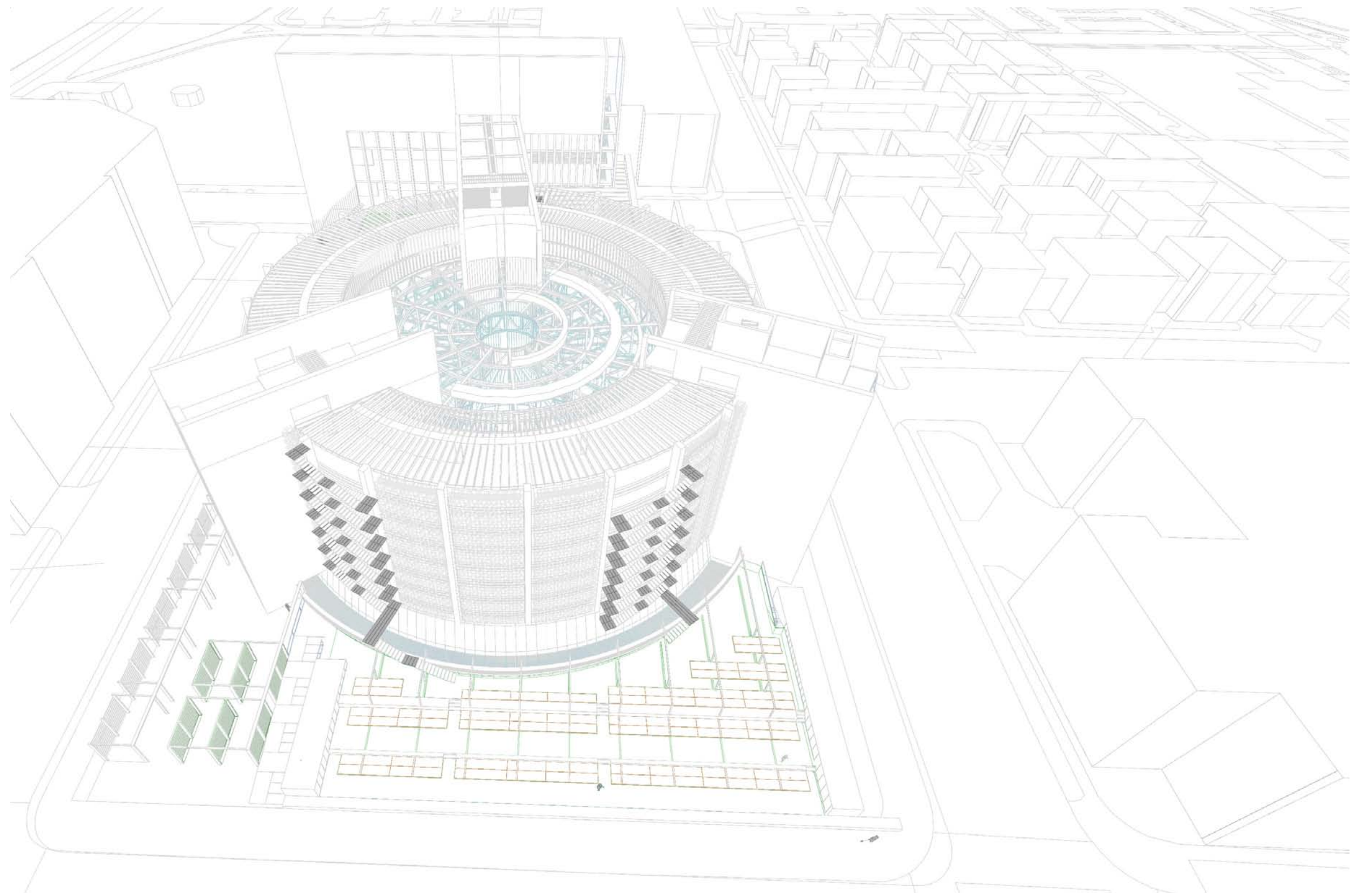
- 1 food wall
- 2 main consumer path
- 3 ramp running track termination
- 4 roof garden entrance
- 5 glass roof
- 6 roof garden planter
- 7 glass elevator
- 8 restaurant waiting lounge
- 9 restaurant seating
- 10 restaurant kitchen
- 11 partition
- 12 glass curtain
- 13 service elevator
- 14 restaurant support area
- 15 entry canopy
- 16 emergency egress
- 17 flare façade
- 18 cook book library
- 19 garden terrace
- 20 wine-wall overlook
- 21 hanging garden
- 22 tribute to Alexandria's historic canal
- 23 community garden plots
- 24 underside of ramp roof



7

SEVENTH LEVEL FLOOR PLAN PERSPECTIVE

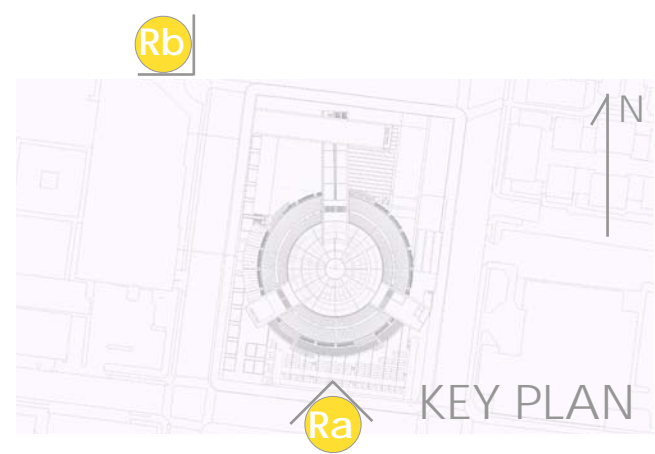
KEY PLAN



**Ra** ROOF LEVEL FLOOR PLAN PERSPECTIVE



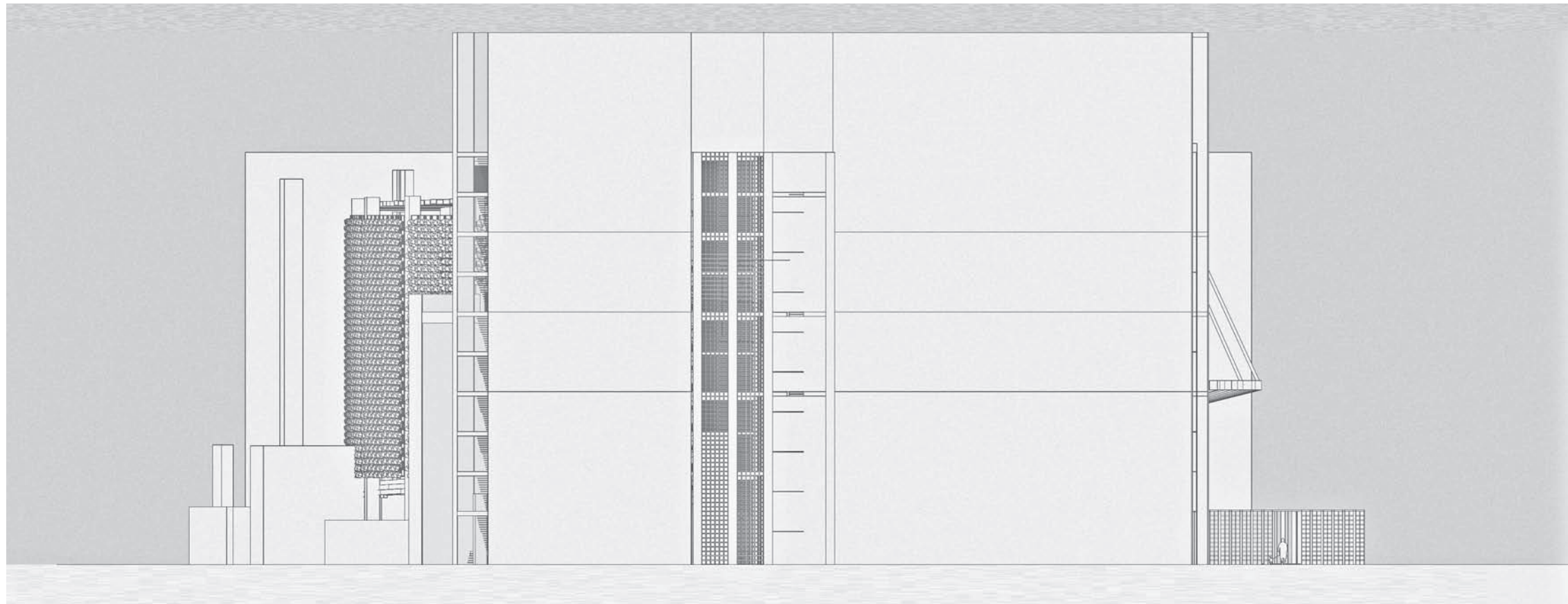
**Rb** ROOF LEVEL FLOOR PLAN PERSPECTIVE



KEY PLAN

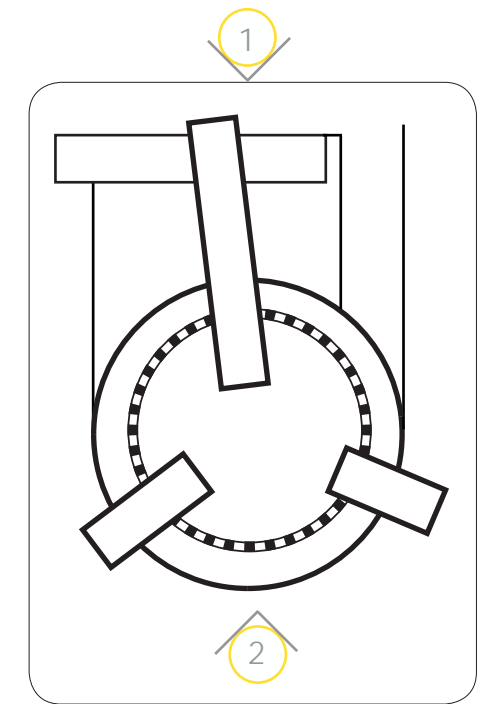


# BUILDING ELEVATIONS

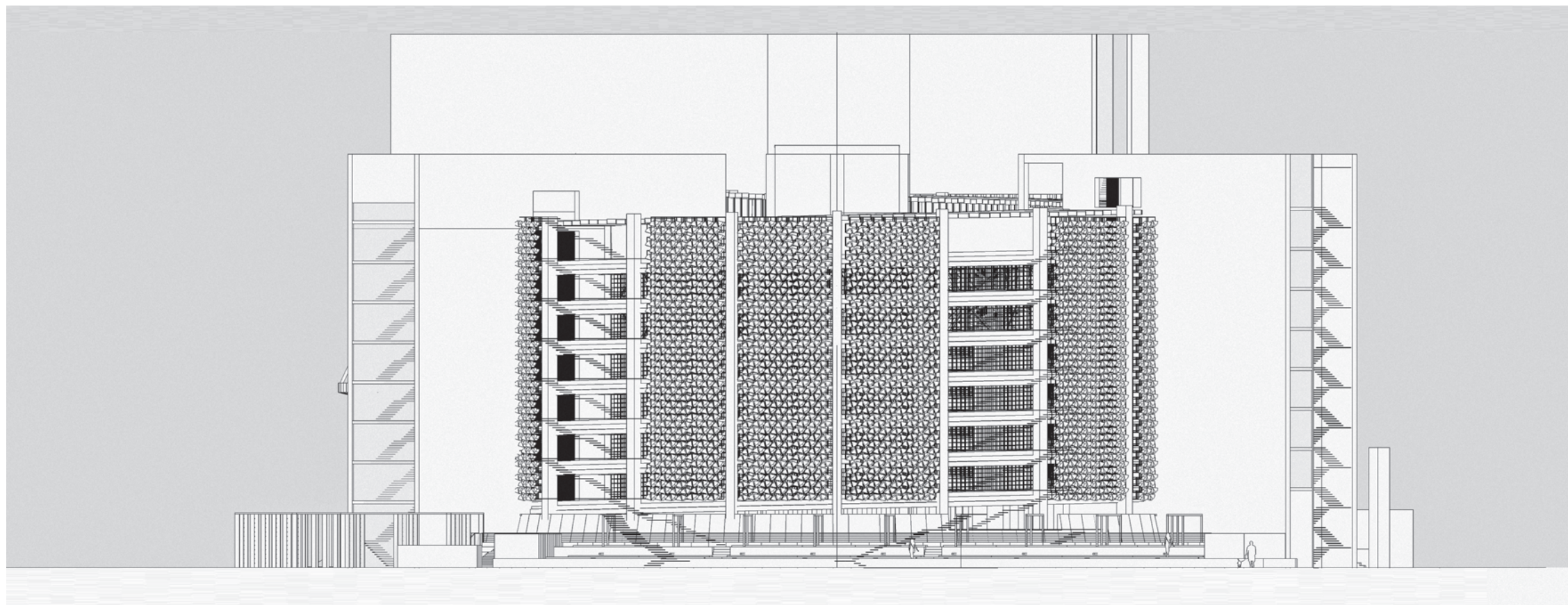


1 NORTH ELEVATION - COOKBOOK LIBRARY  
530 FIRST ST, ALEXANDRIA

50 ft



KEY PLAN

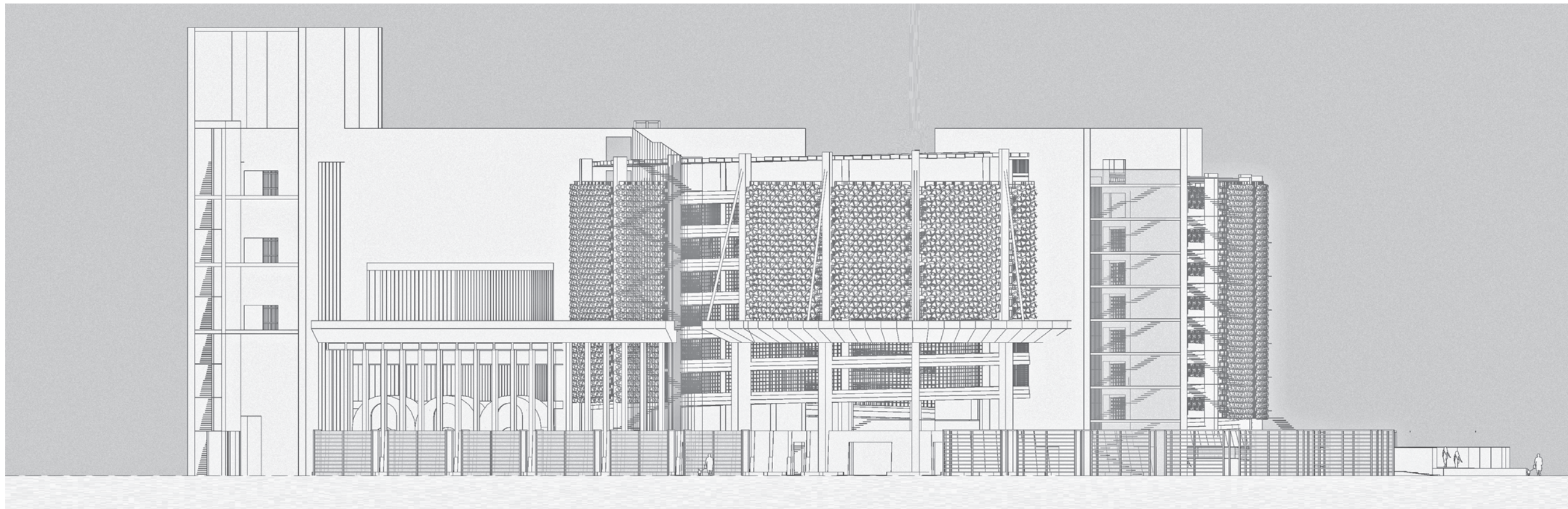


2 SOUTH ELEVATION - COMMUNITY GARDEN  
530 FIRST ST, ALEXANDRIA

50 ft



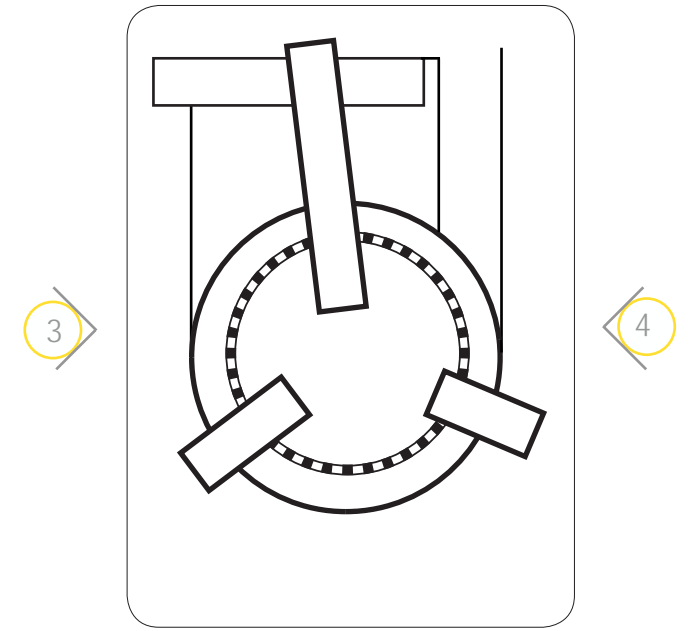
# BUILDING ELEVATIONS



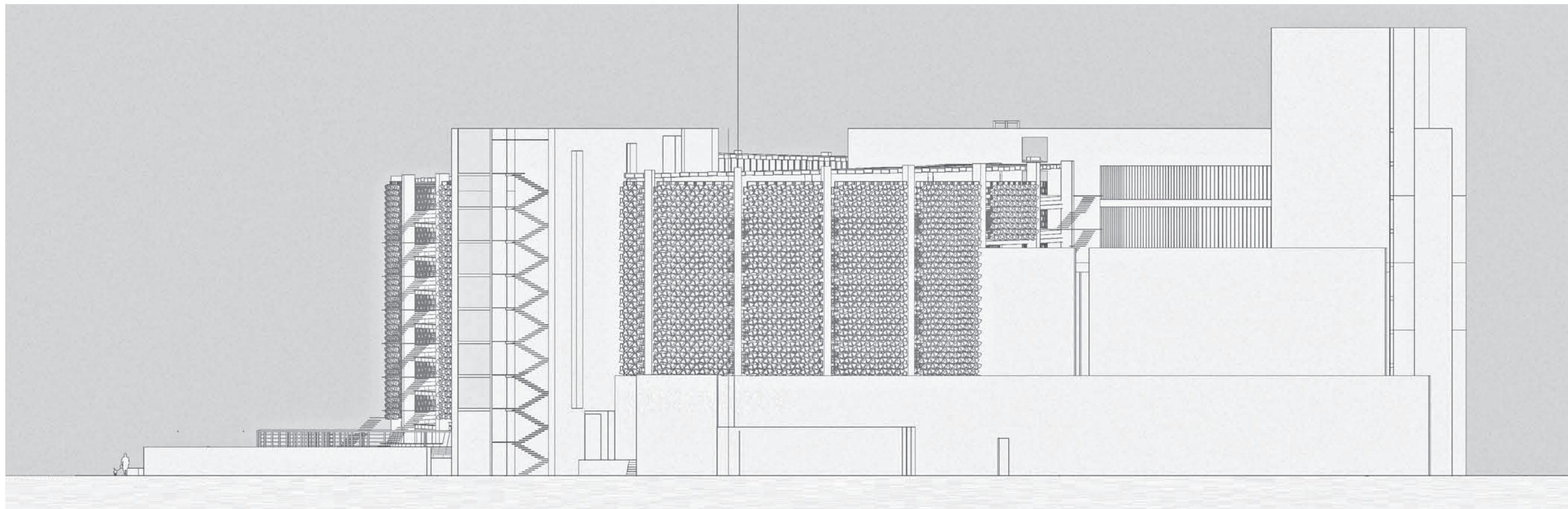
3

WEST ELEVATION - MAIN ENTRY  
530 FIRST ST, ALEXANDRIA

50 ft

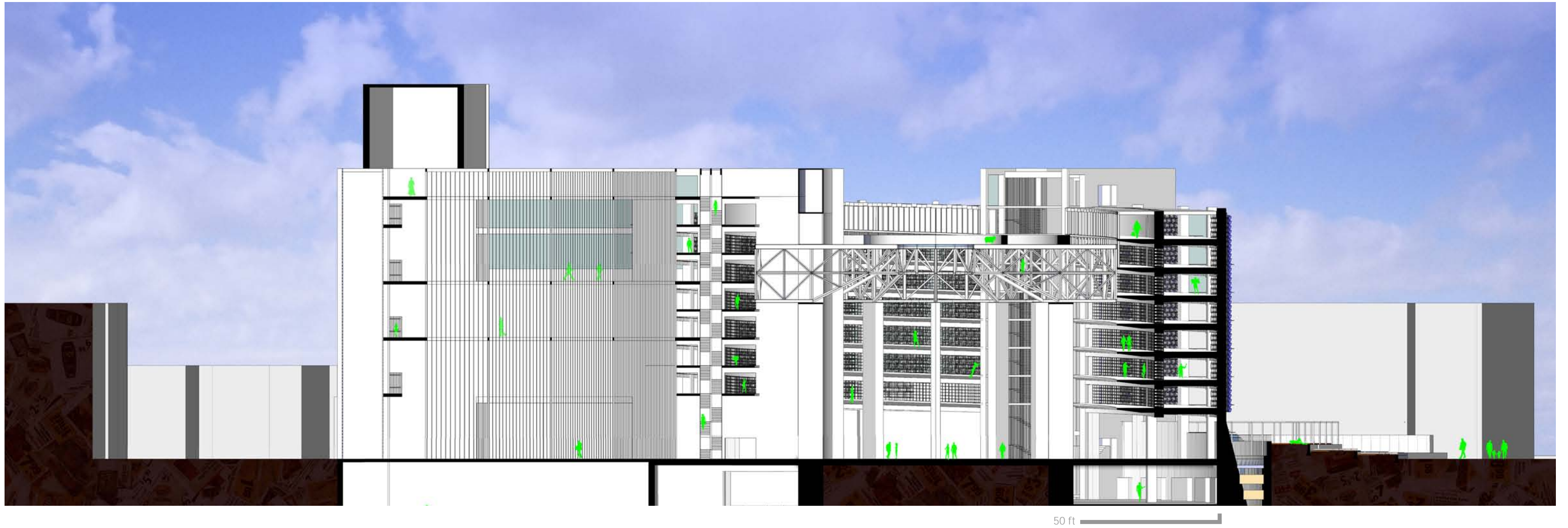


KEY PLAN



4 EAST ELEVATION - SERVICE/DELIVERY  
530 FIRST ST, ALEXANDRIA





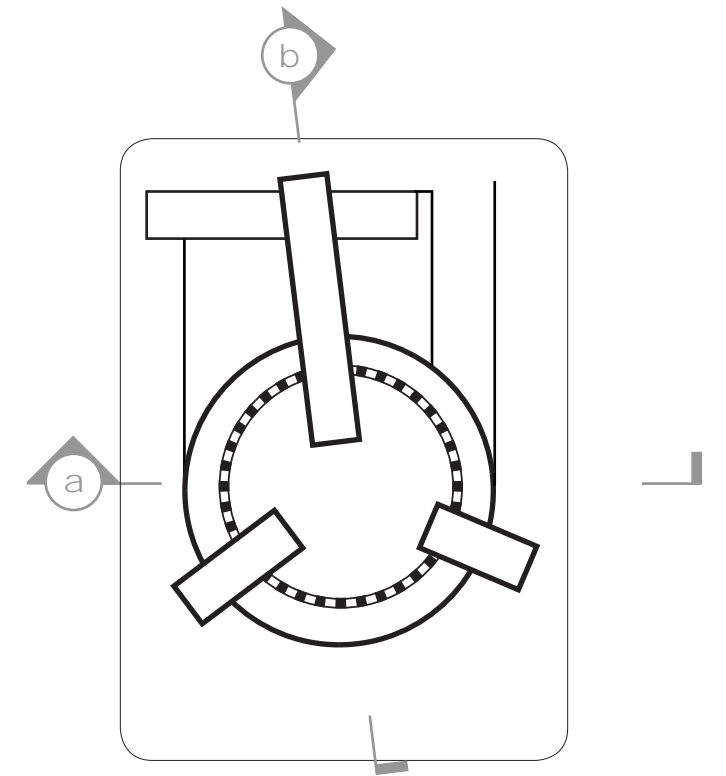
b LONGITUDINAL SECTION





50 ft

a CROSS SECTION



KEY PLAN



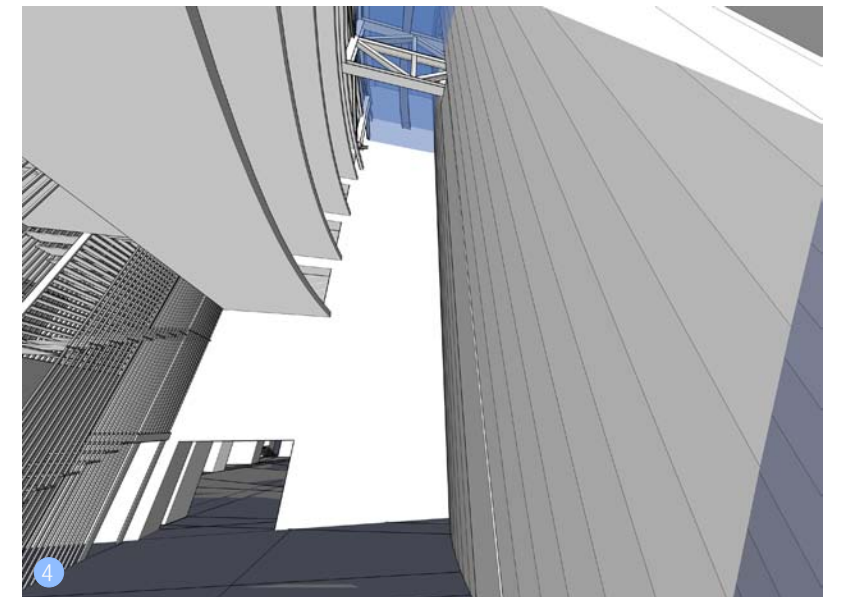
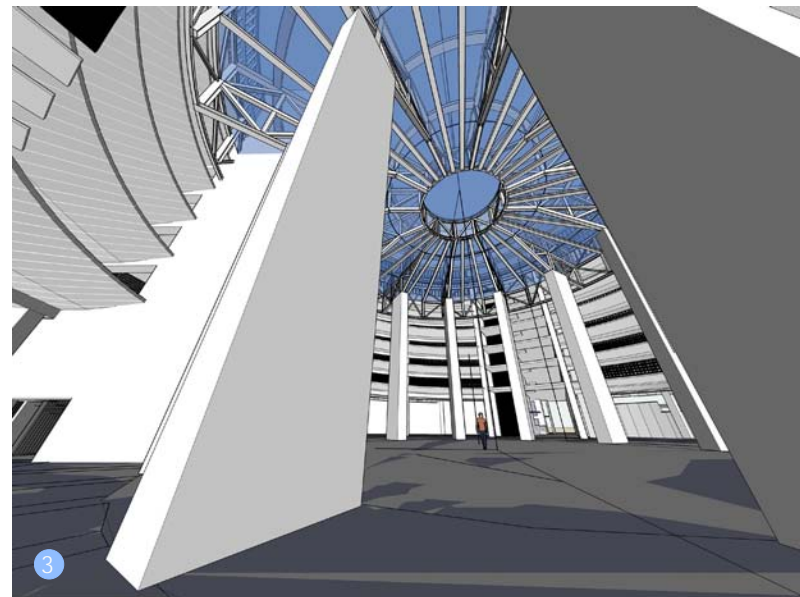
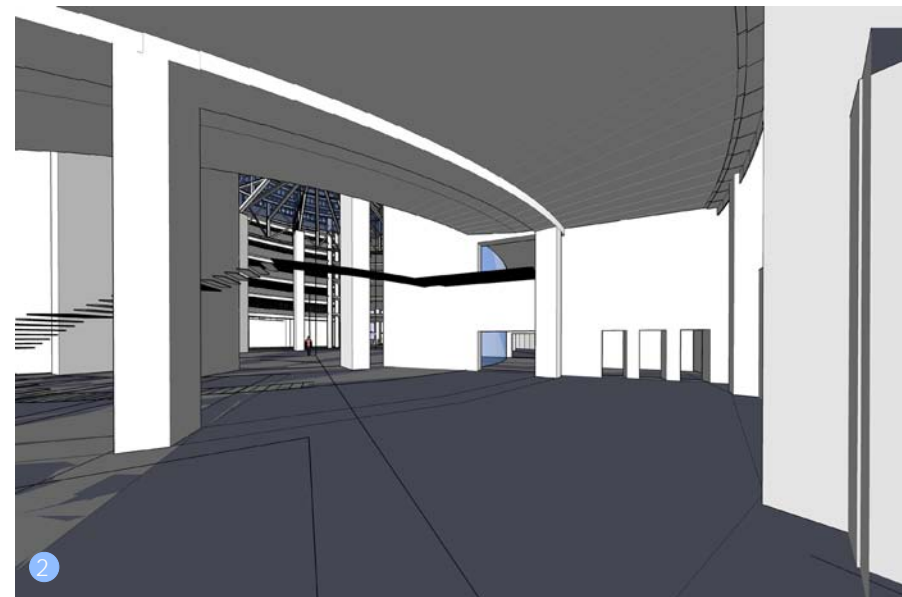
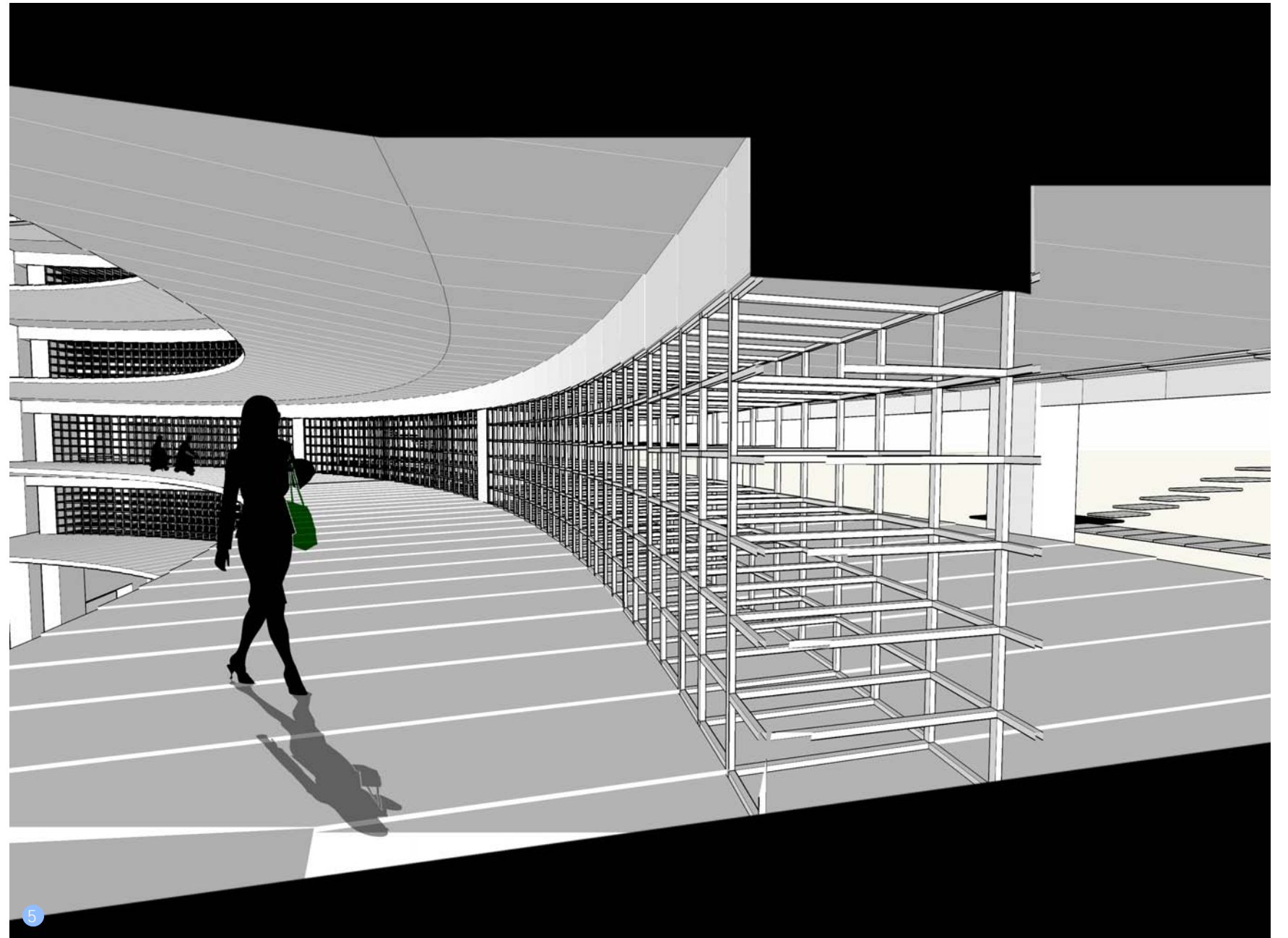
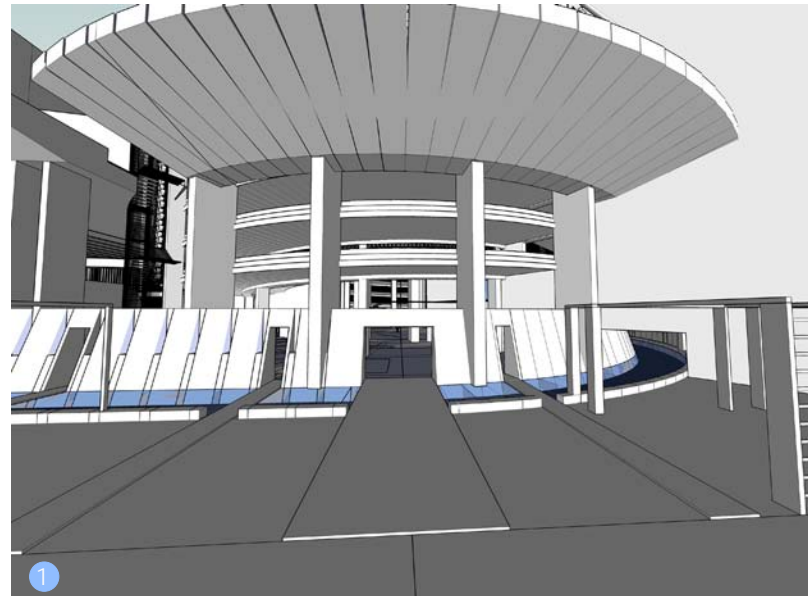
moat, tribute to Alexandria's historic canal ①

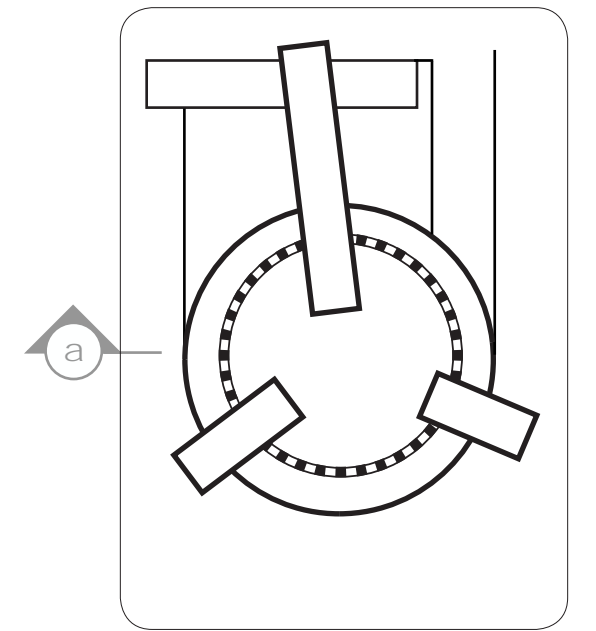
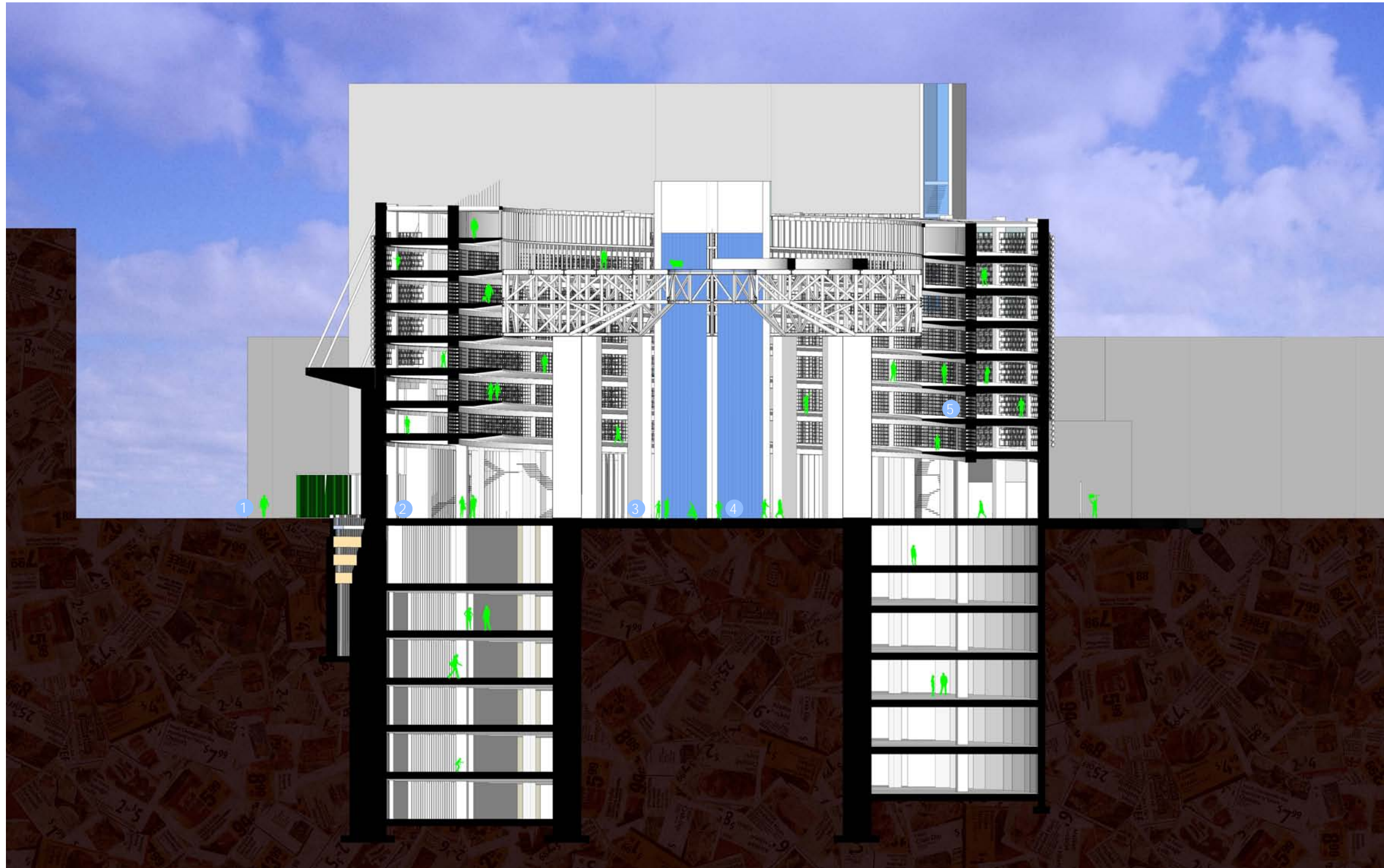
public pedestrian entrance ②

natural foods market ③

tower at shelving stairs ④

consumer ramp ⑤





KEY PLAN

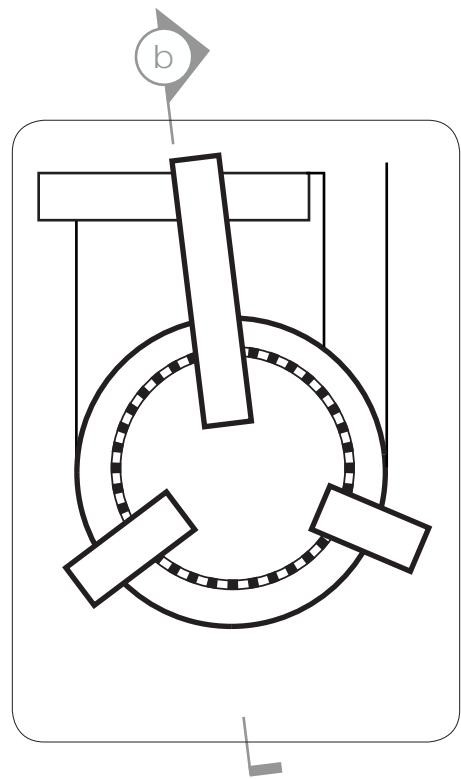
a KEY SECTION

50 ft

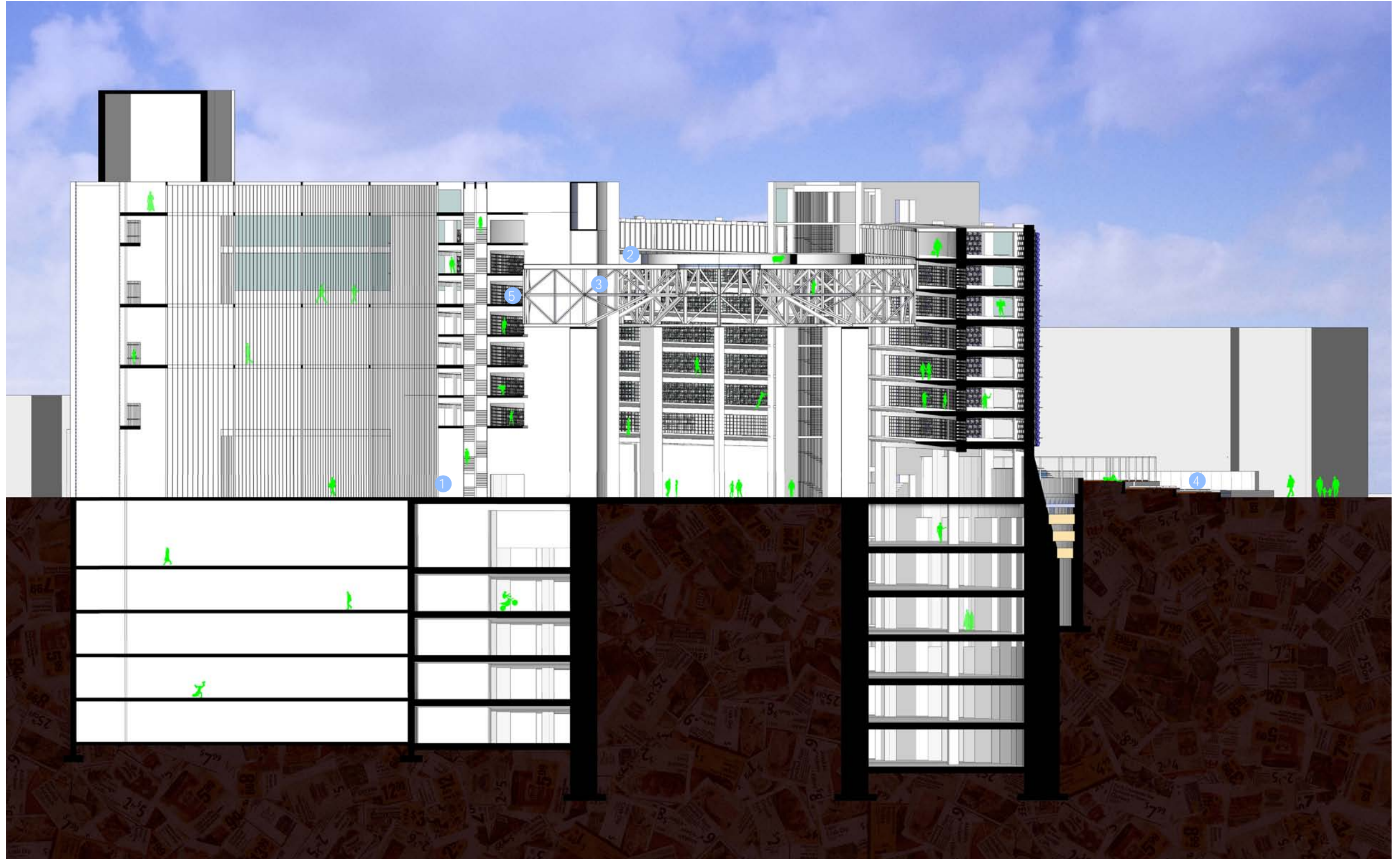
SETTLING INTO A GIANT TREE....

VIGNETTES



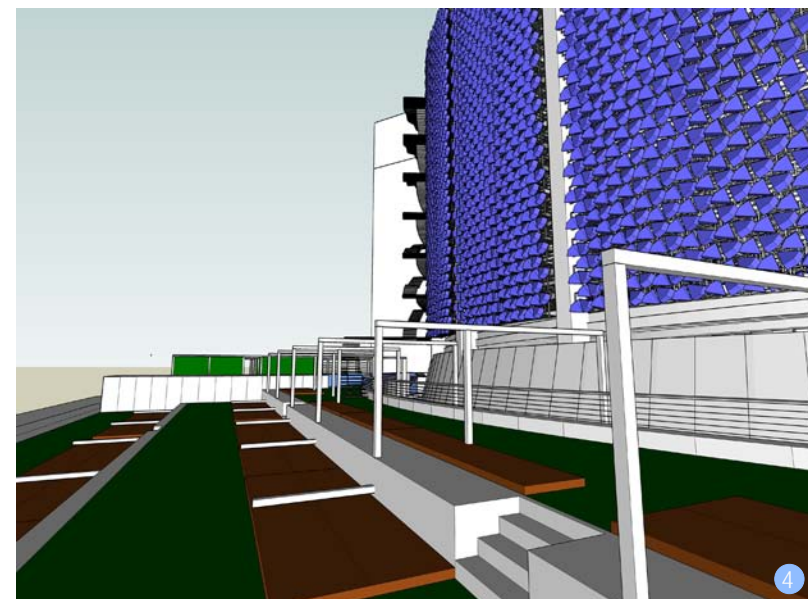
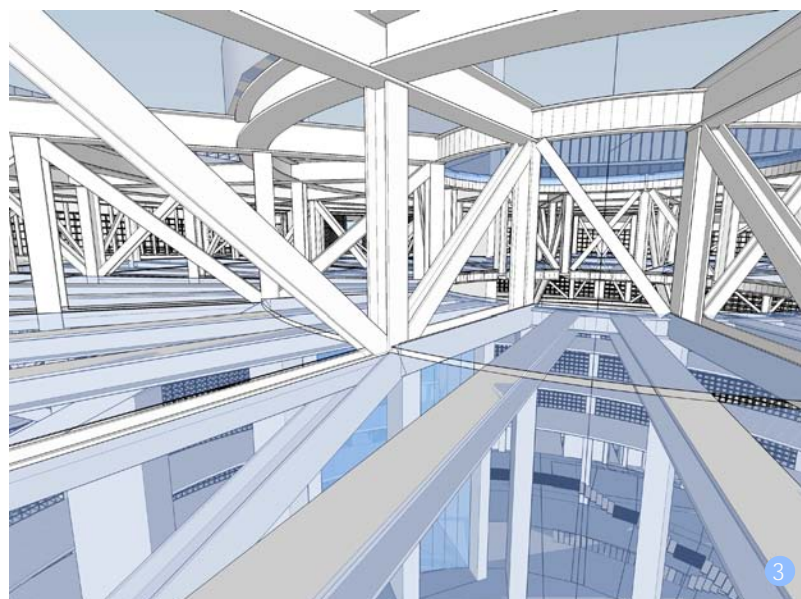
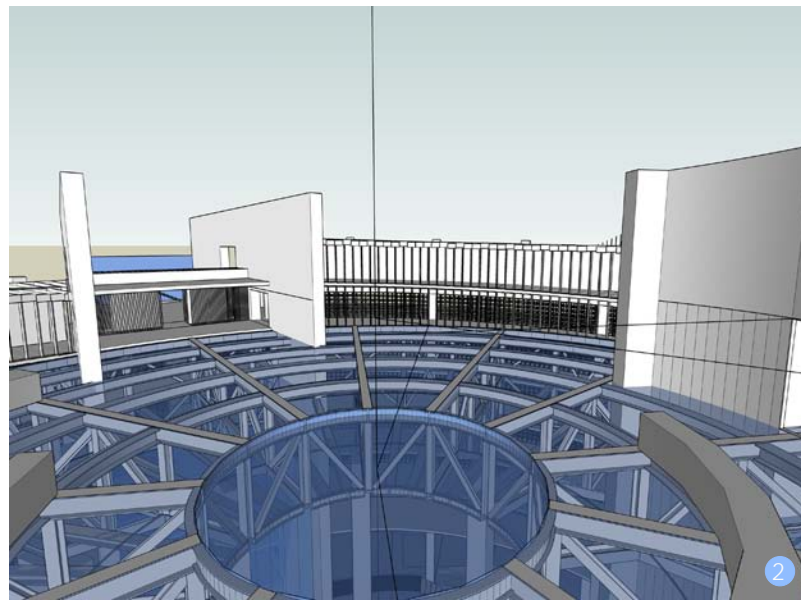
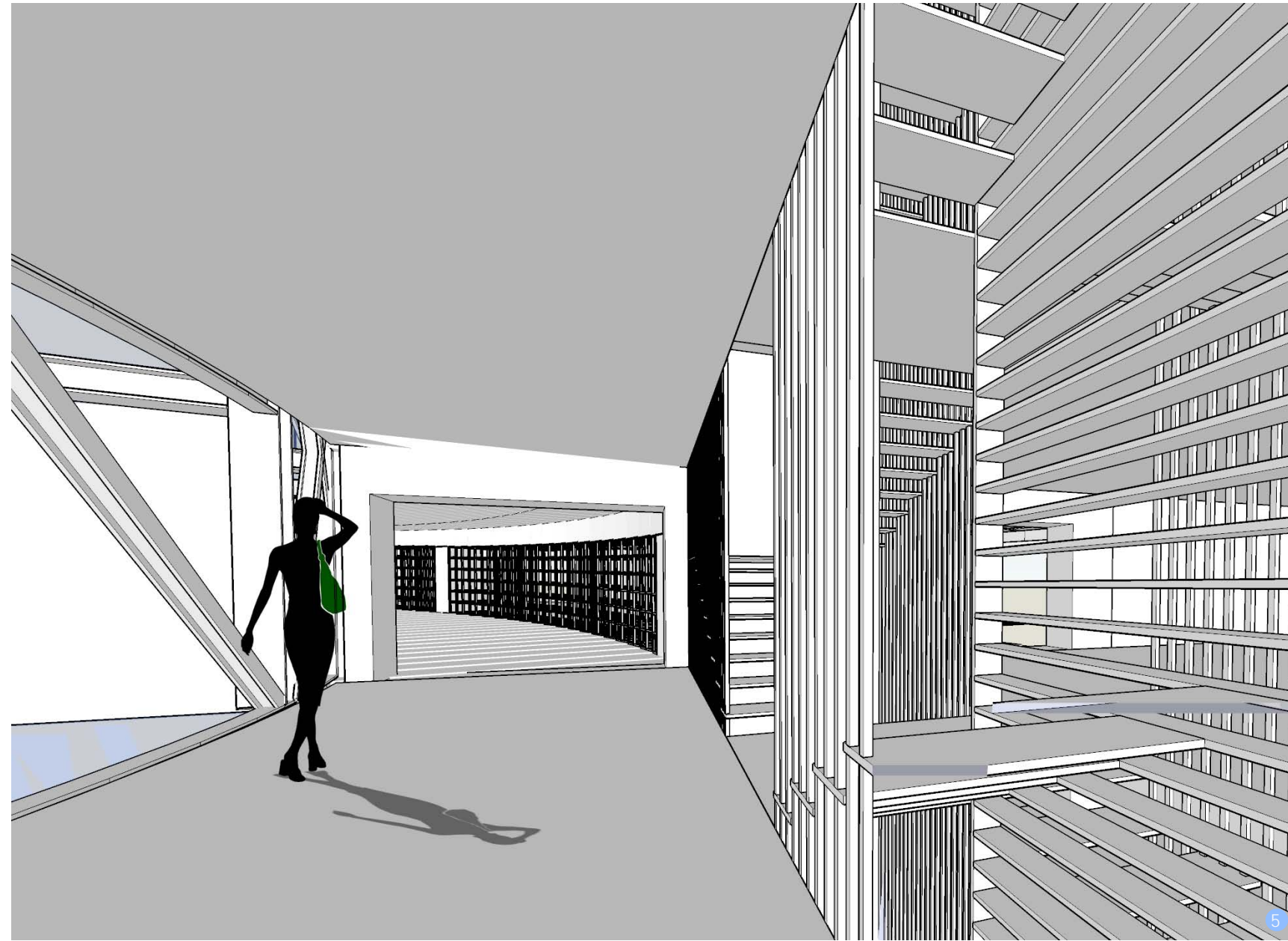
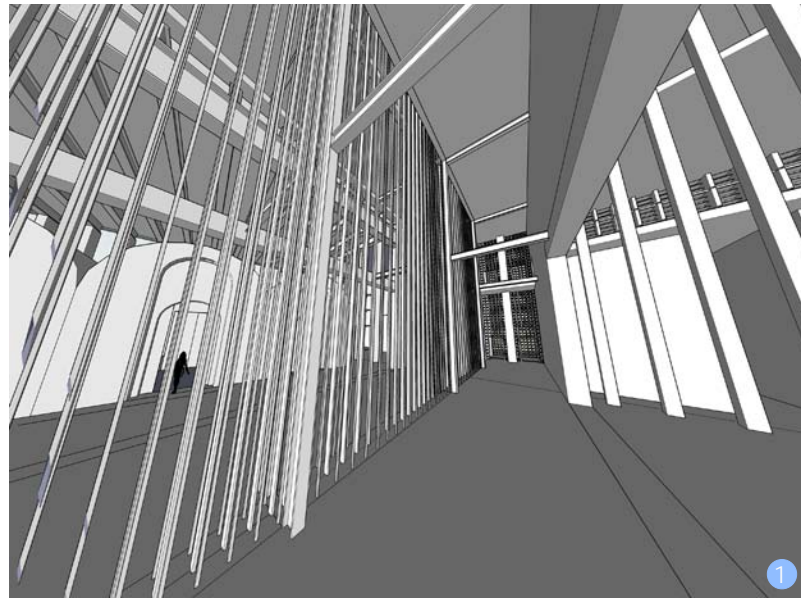


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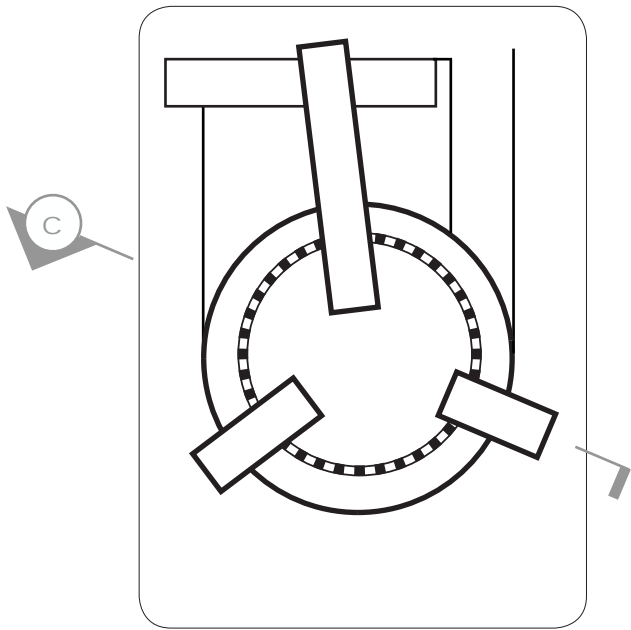
b KEY SECTION

50 ft

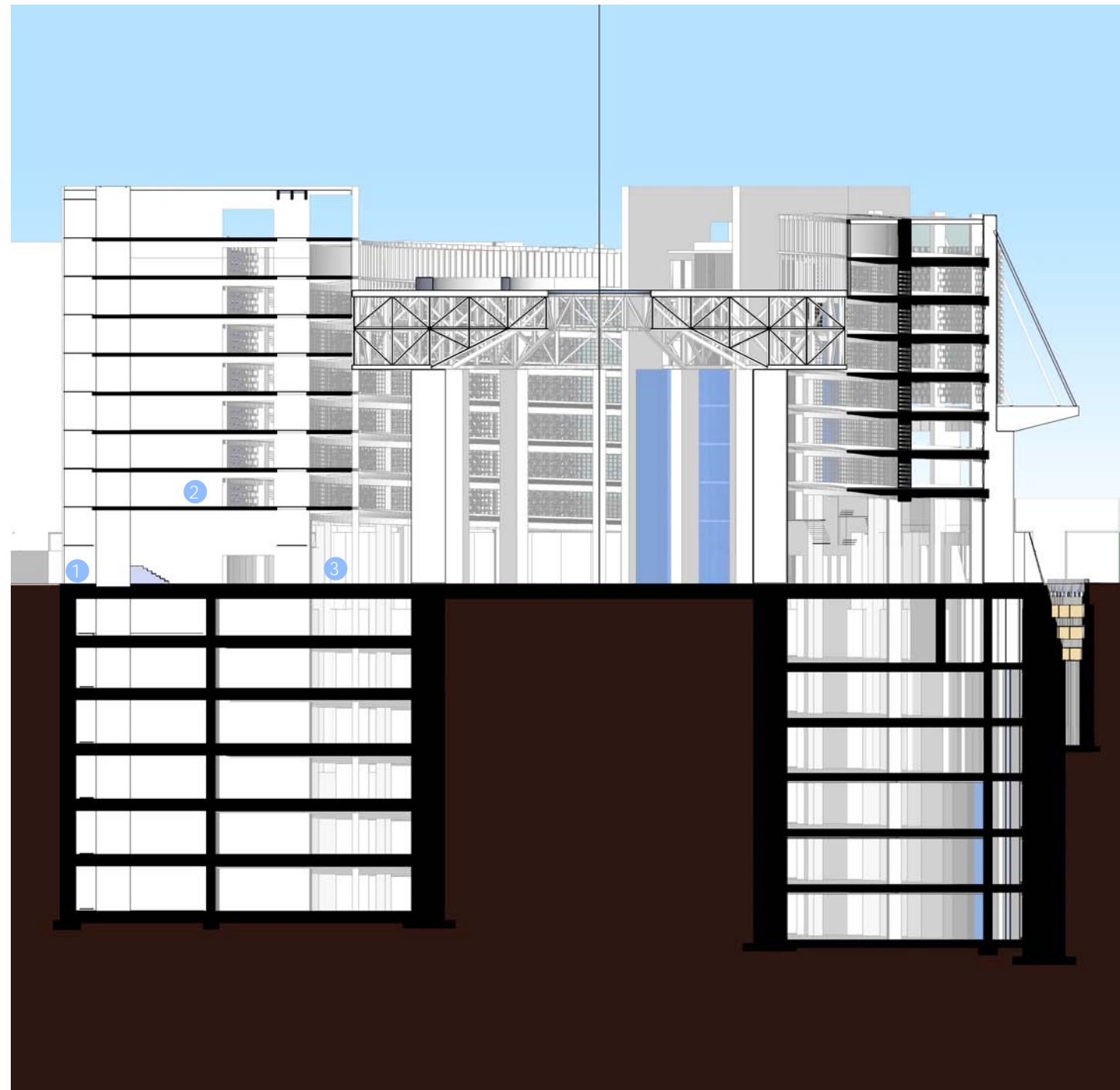


- 1 beverage wall
- 2 roof garden
- 3 hydroponic chamber
- 4 community garden
- 5 (sim) at tower, consumer corridor at hydroponic chamber adjacent to shelving stairs.



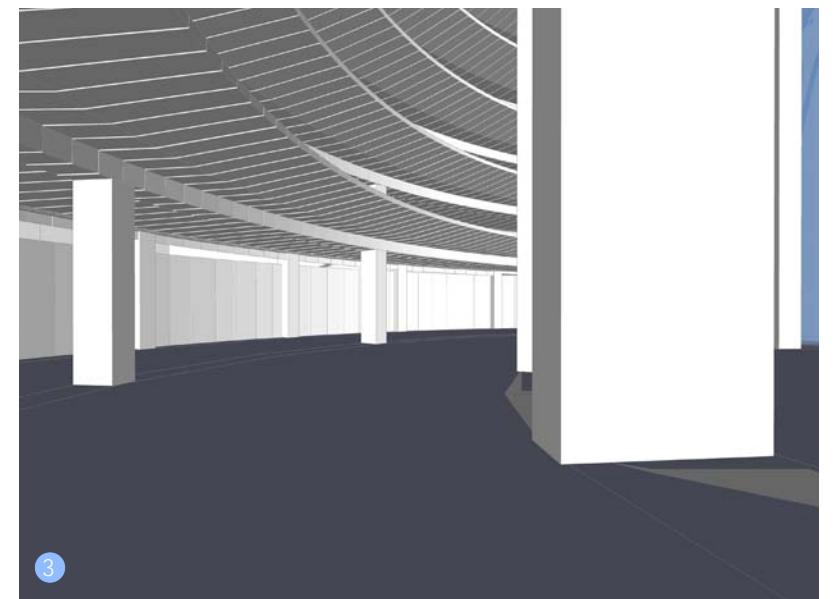
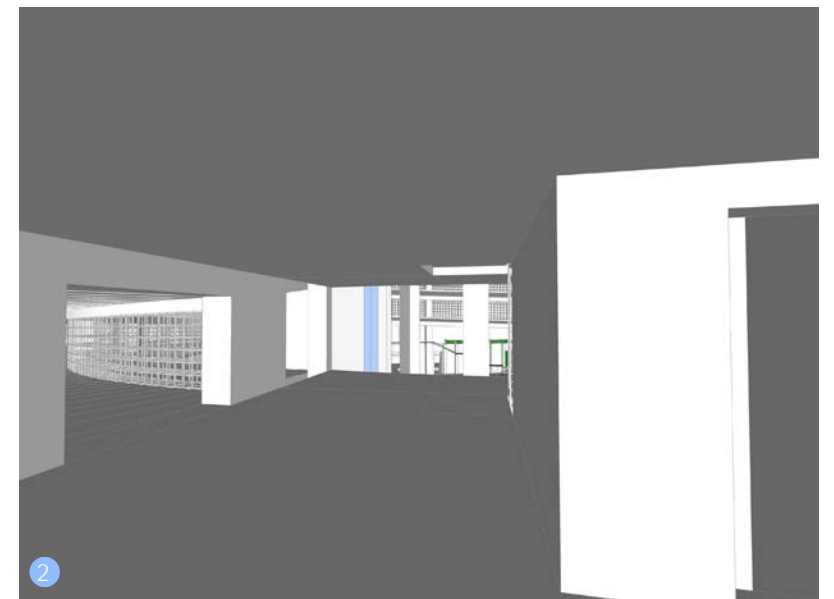


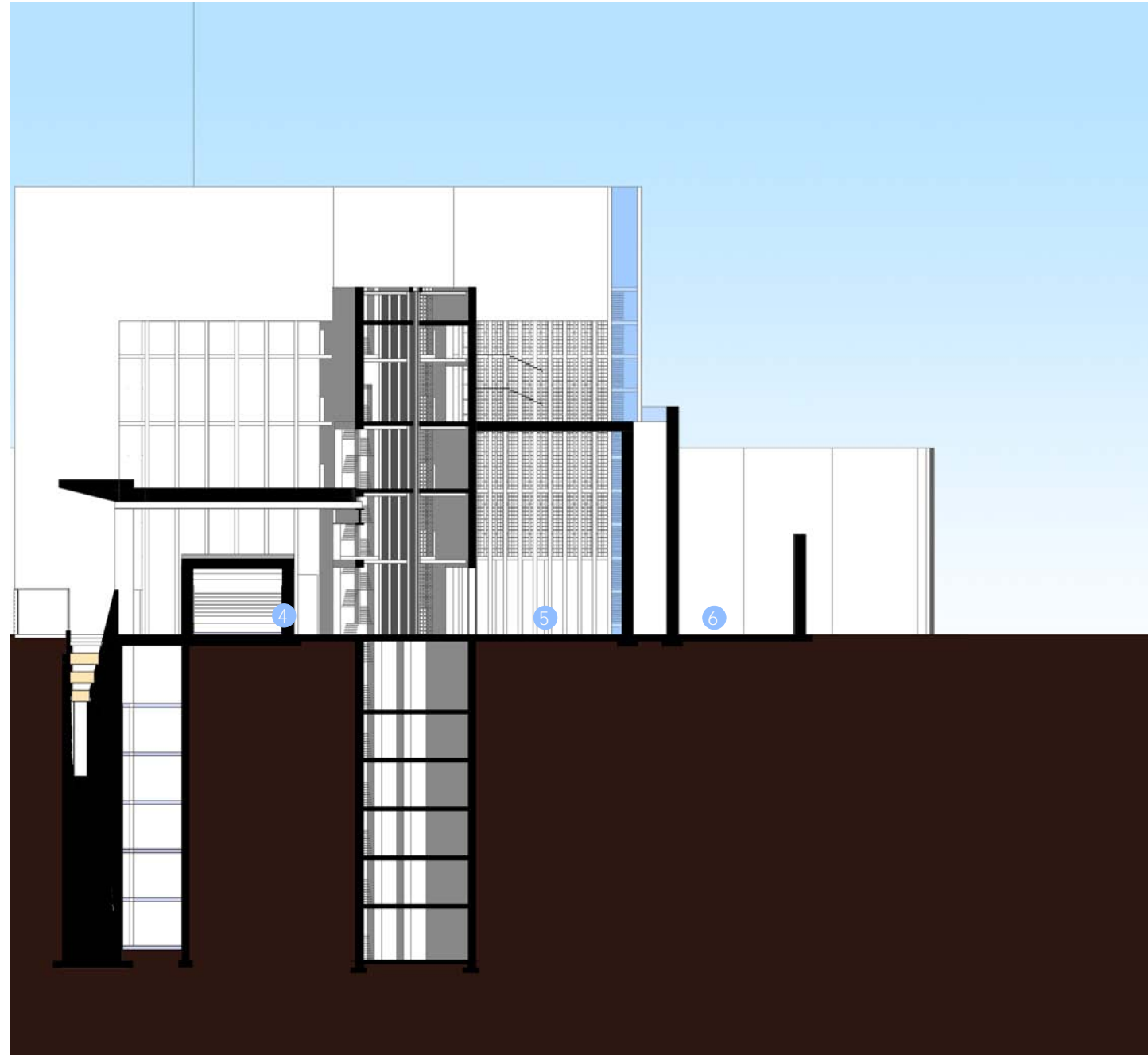
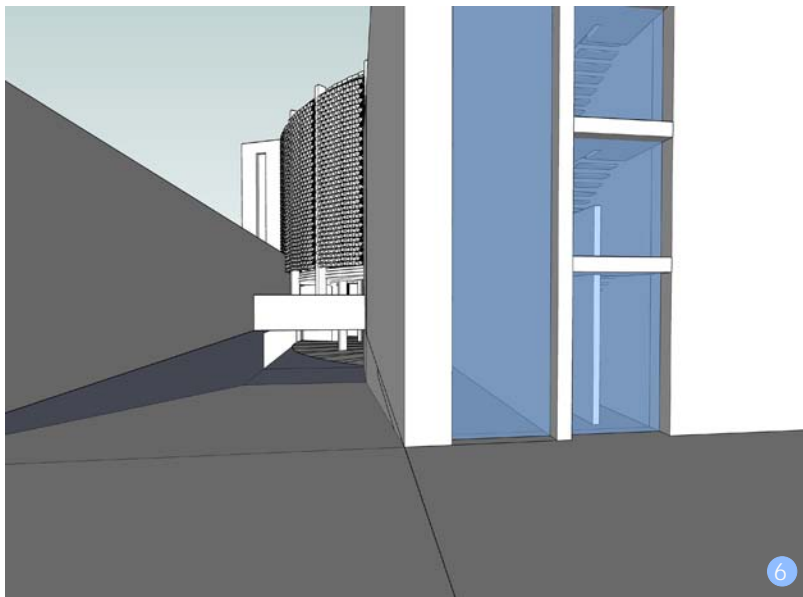
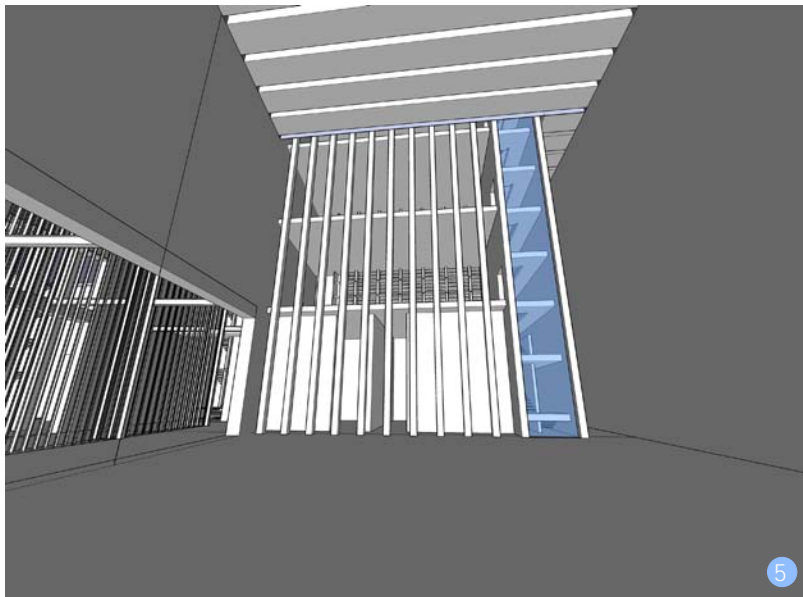
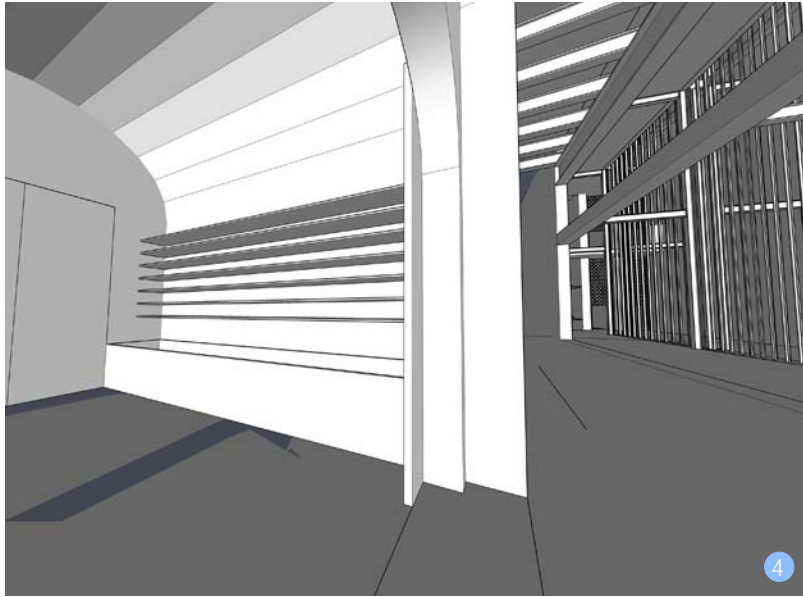
KEY PLAN



KEY SECTION

- 50 ft
- 1 fresh foods market delivery truck entrance
  - 2 service area of tower
  - 3 fresh foods zone

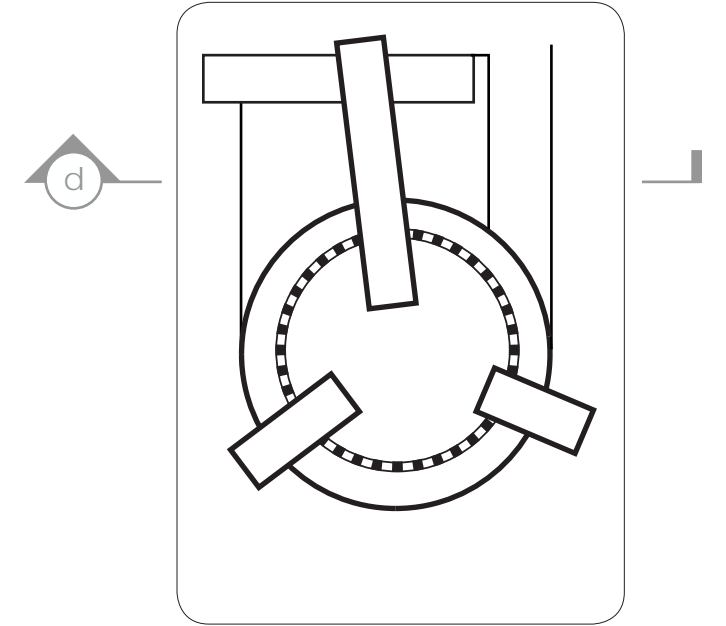




50 ft

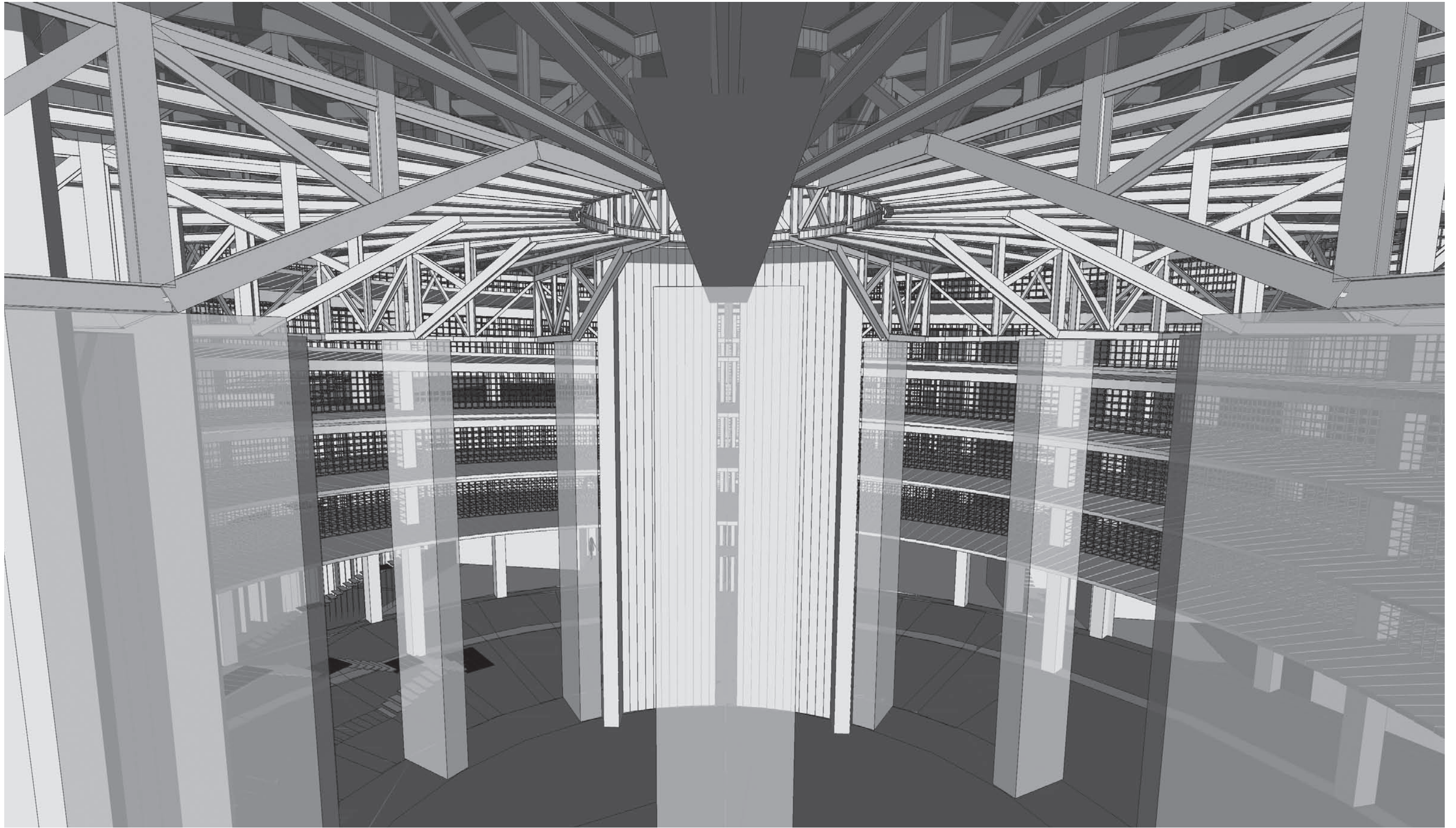
d KEY SECTION

- 4 frozen foods
- 5 culinary workshop
- 6 vehicular ramp to parking garage



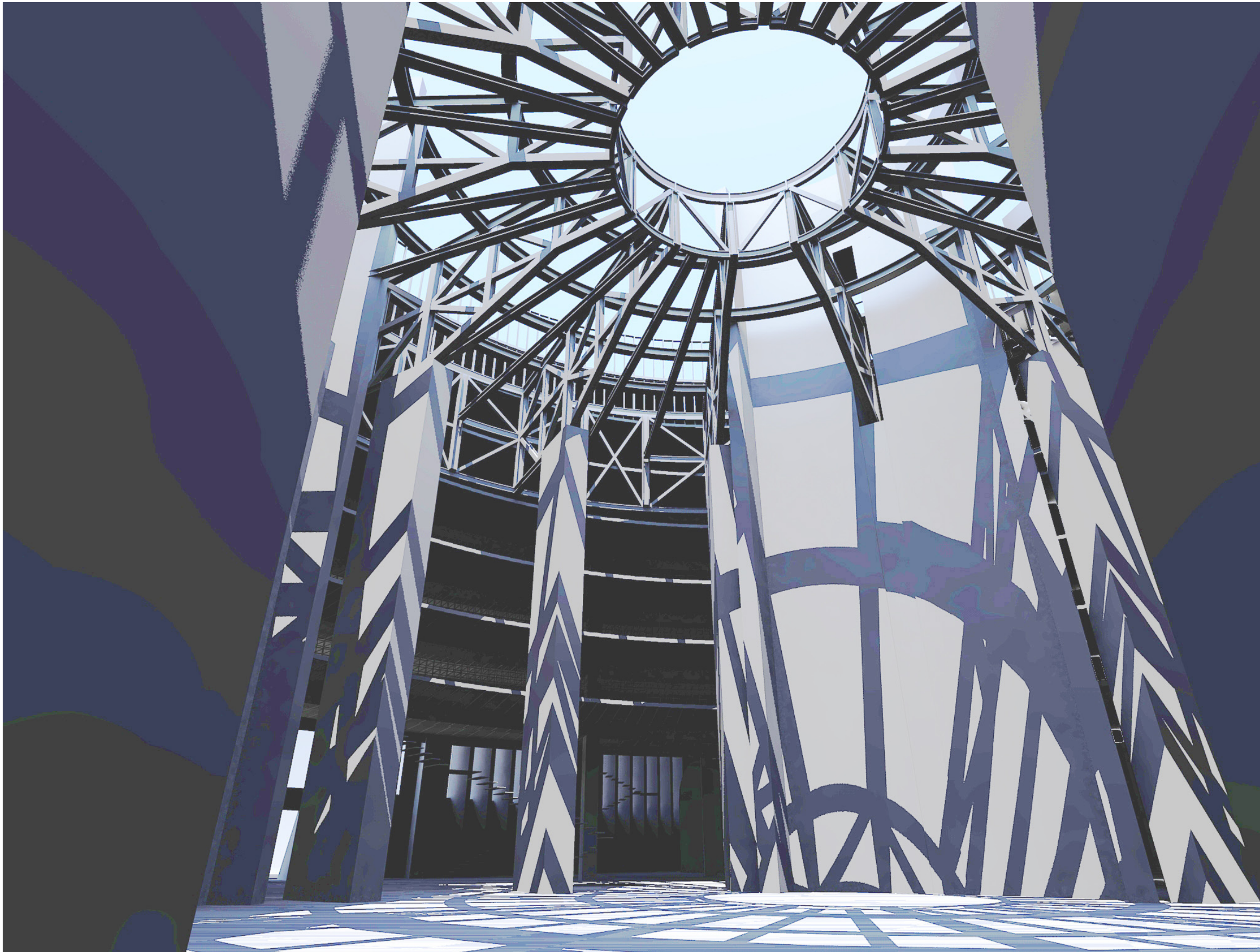
KEY PLAN







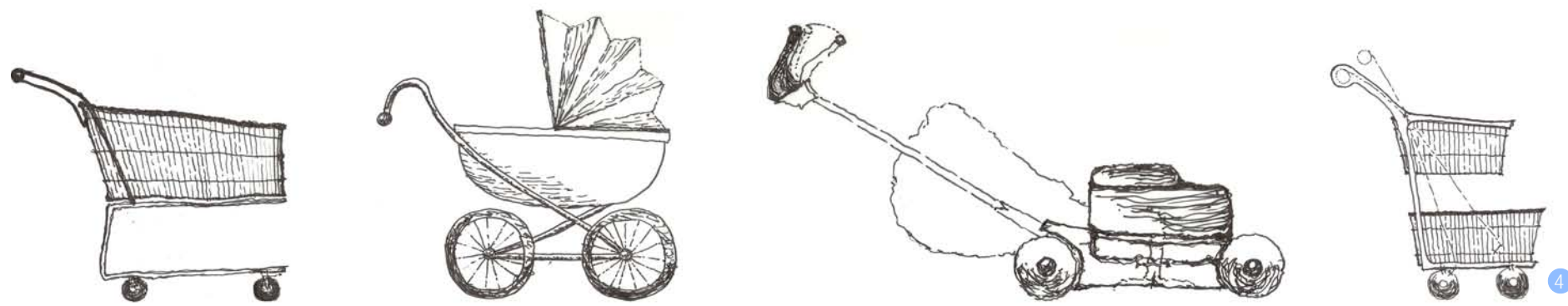
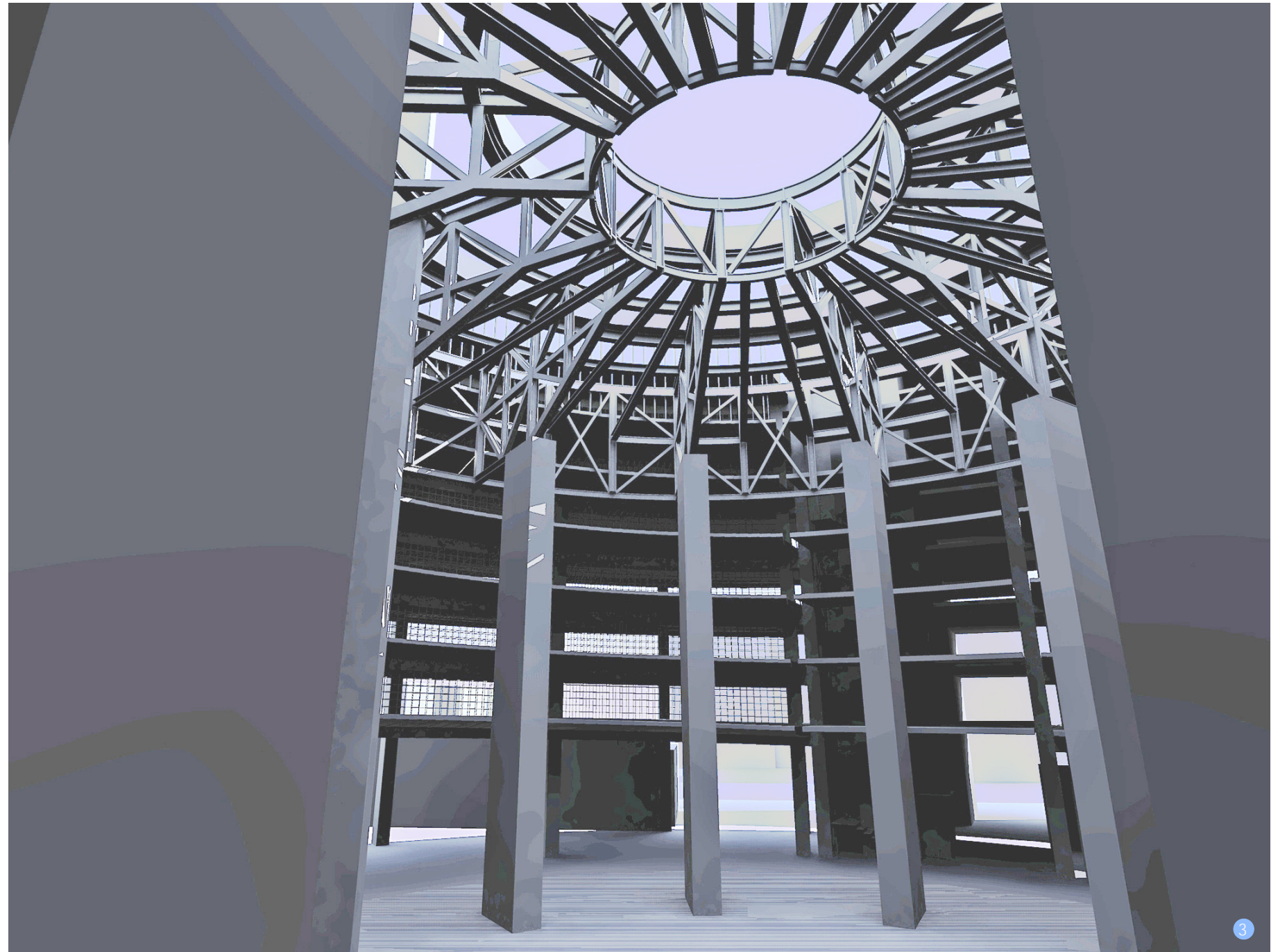
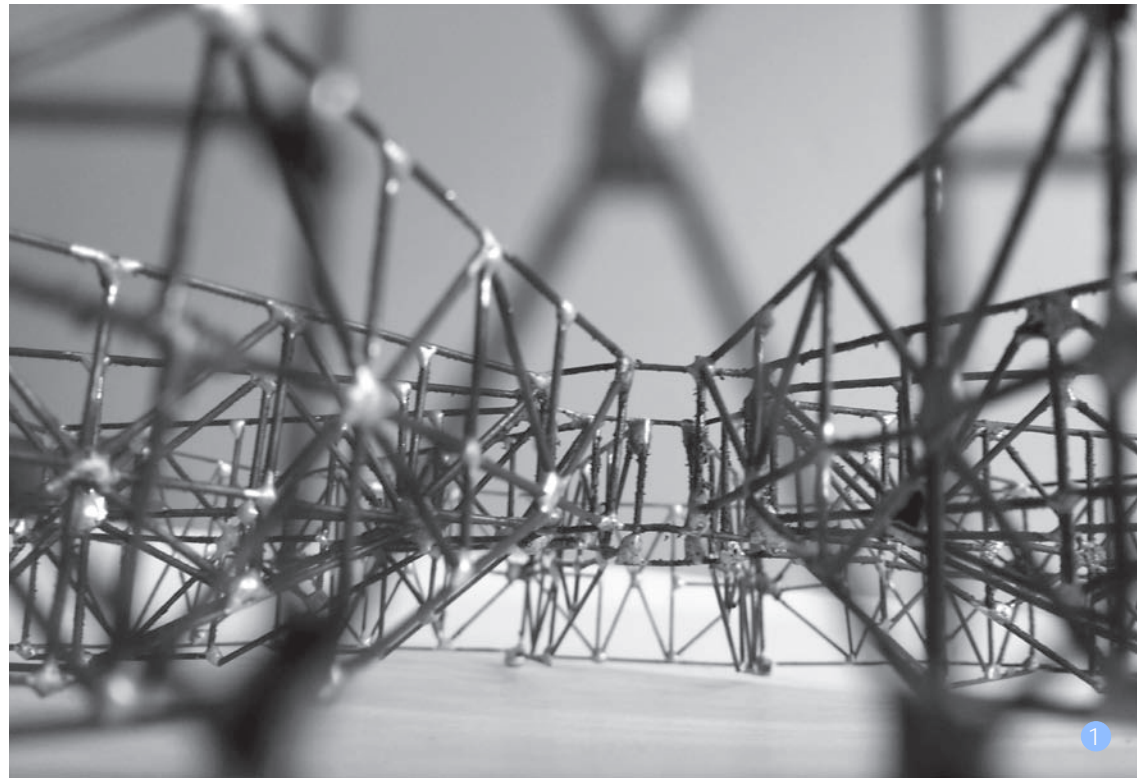
# ATRIUM PERSPECTIVE



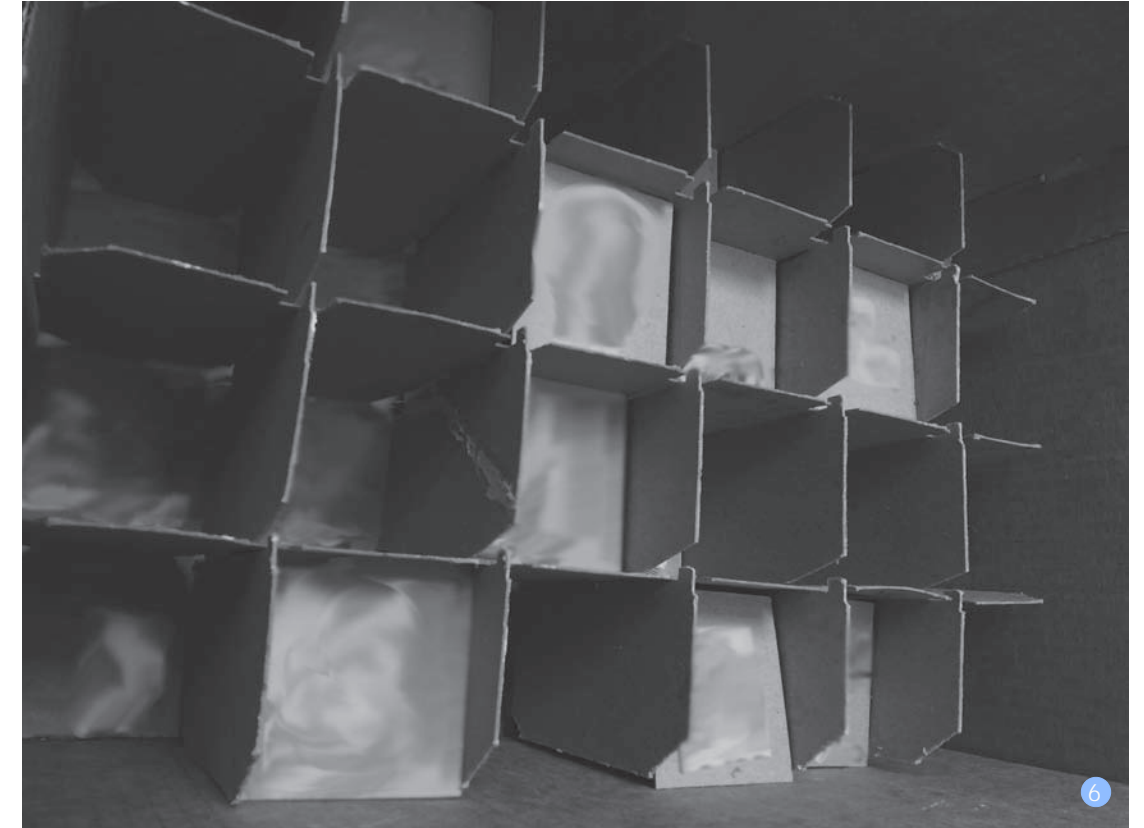
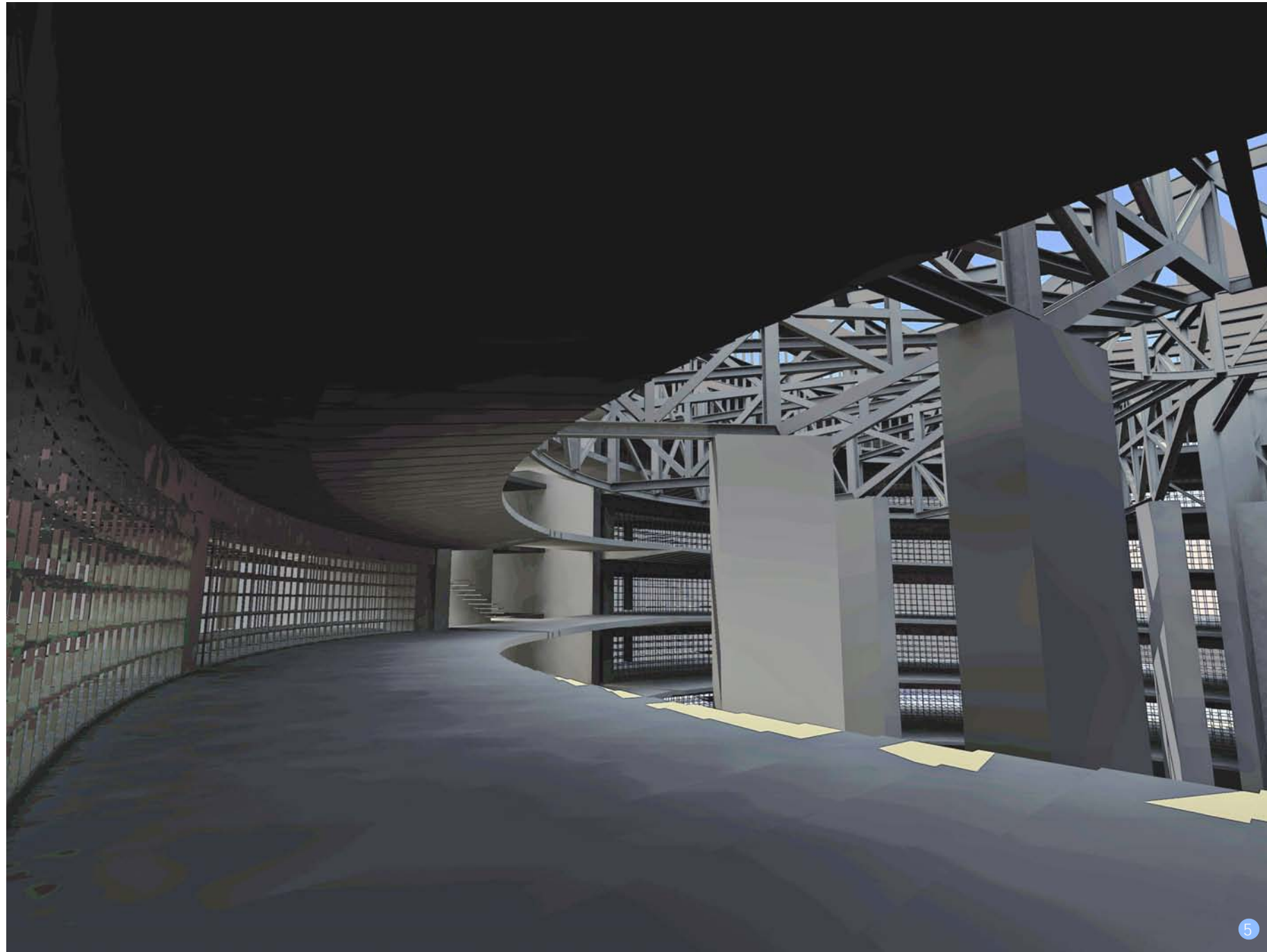
- 1 atrium perspective view from upper ramp
- 2 atrium perspective view from ground level

The atrium ceiling was conceived as an oculus to allow maximum natural light to cast down into the natural foods market. The positioning would also allow one to tell the time during daylight hours. l'Orologio, "The Clock".





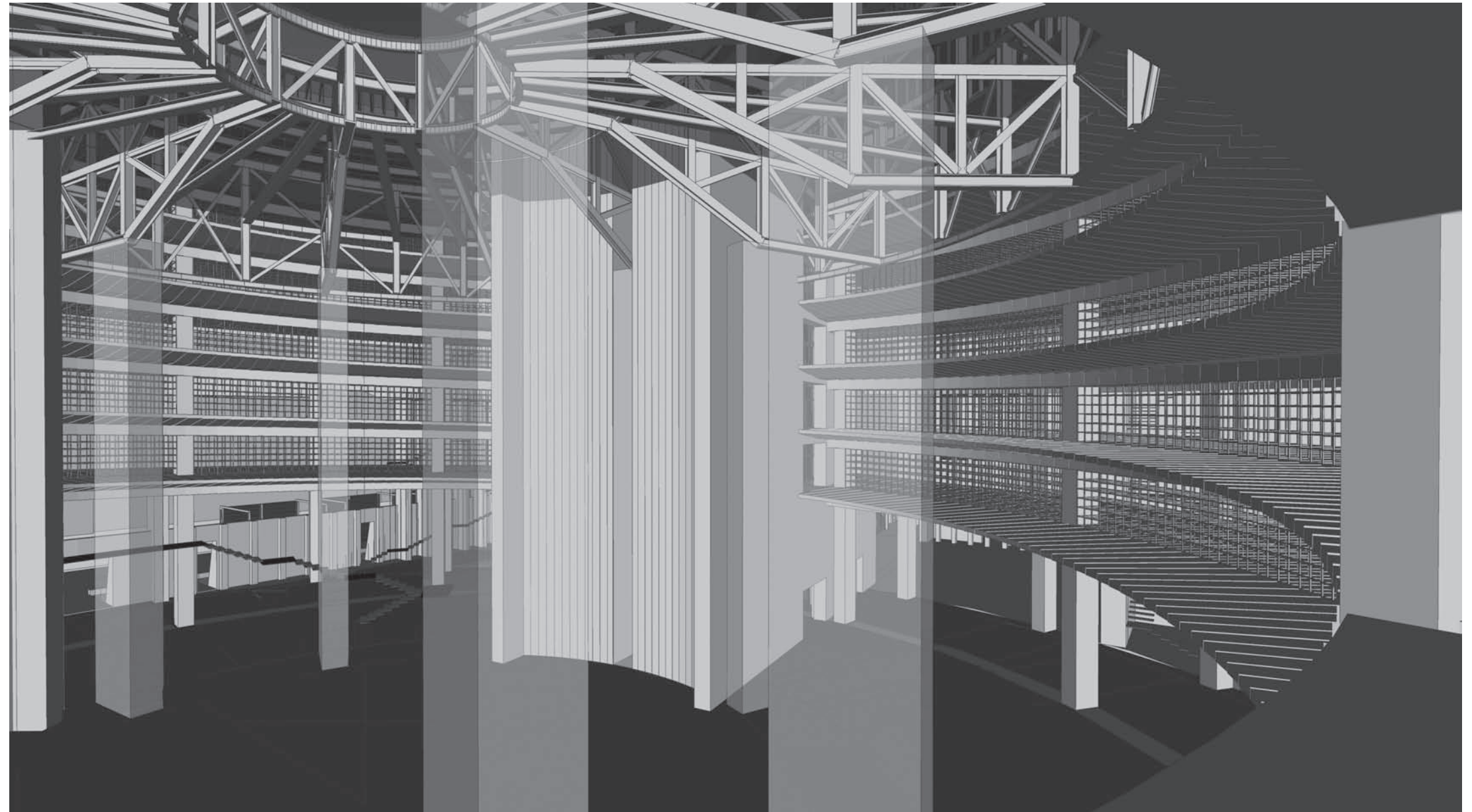
# FOOD RAMP



- 1 View of physical model of the atrium roof structure.
- 2 Shopping bags to tote through the grocery store would be made by the process of felting wool: natural materials, low energy process, and a durable resultant product.
- 3 View of 3D model of the atrium space.
- 4 The shopping carts at this grocery store need to address the concern of their rolling, away from consumers, down the ramp. Much like the mechanisms of baby carriages and lawn mowers, these carts would be set to lock the wheels while they are isolated and unlock when they are actively being pushed.
- 5 View of 3D model of the consumer side of the ramp.
- 6 Products organized on multiple accessible levels allow consumers to see more than just the contents that are directly in front of them. They can actually see the products rather than relying on signage to be the primary means of way-finding. Labyrinth.



# RAMP OVERLOOKING NATURAL FOOD MARKET PERSPECTIVE

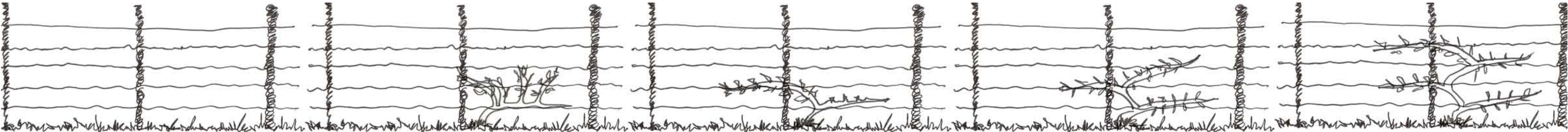


Throughout the experience of walking (or running) along the processed foods ramp, there is always an opportunity for one to look to where she or he has come from, and to what lies ahead. Fresh foods and each of the columns of the subgods and the towers of the aventine triad are always within view for support and for orientation. The labyrinth of foods is untangled and laid out for the consumer.

# EXTERIOR PERSPECTIVE ESPALIER

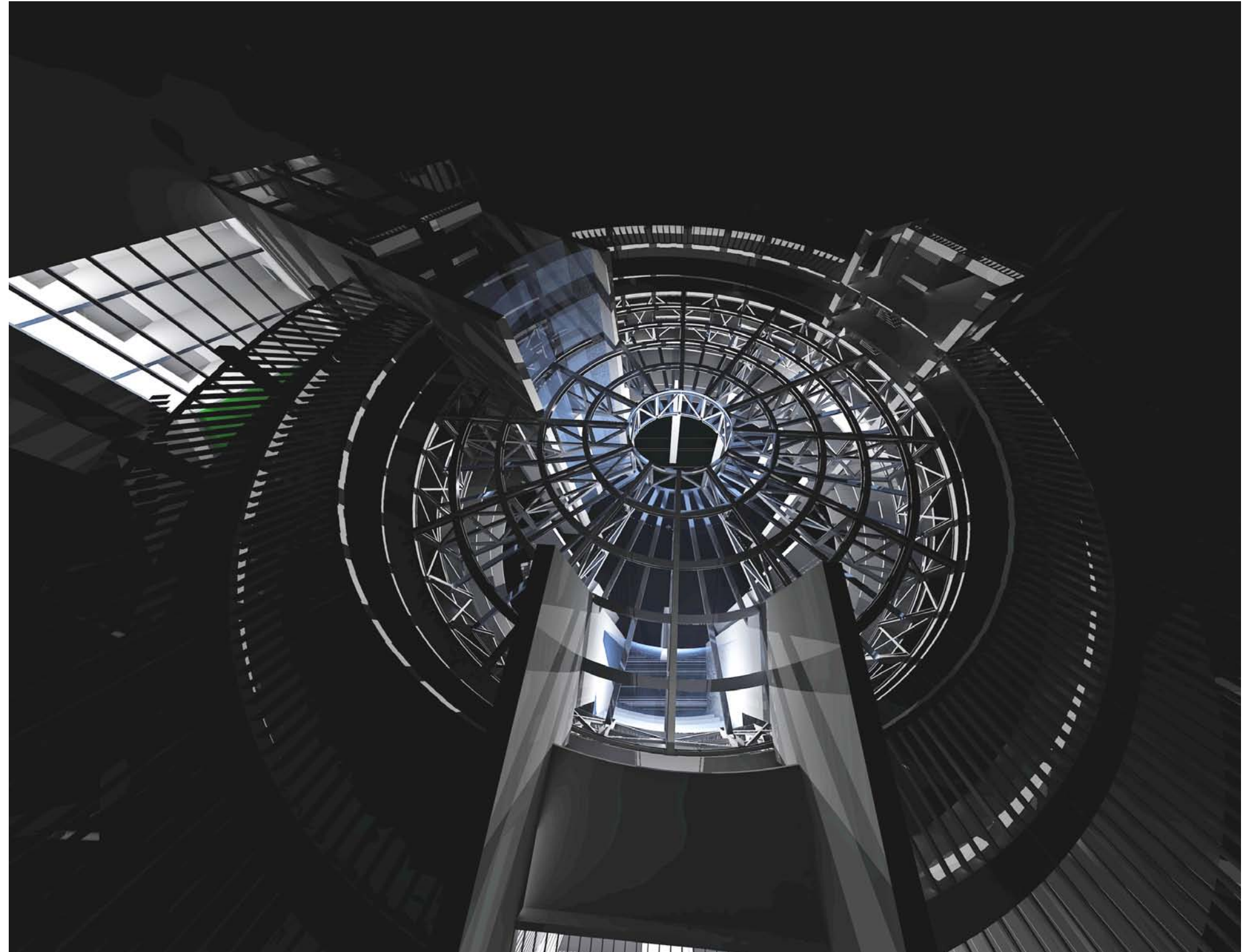


Just outside of the main entrance of the grocery store, there are several plots of land with espalier, structures for plants to be formed vertically and sculpted over the lifetimes of the plants. These yield orderly grooming, as compared to the southern community garden plots of land.

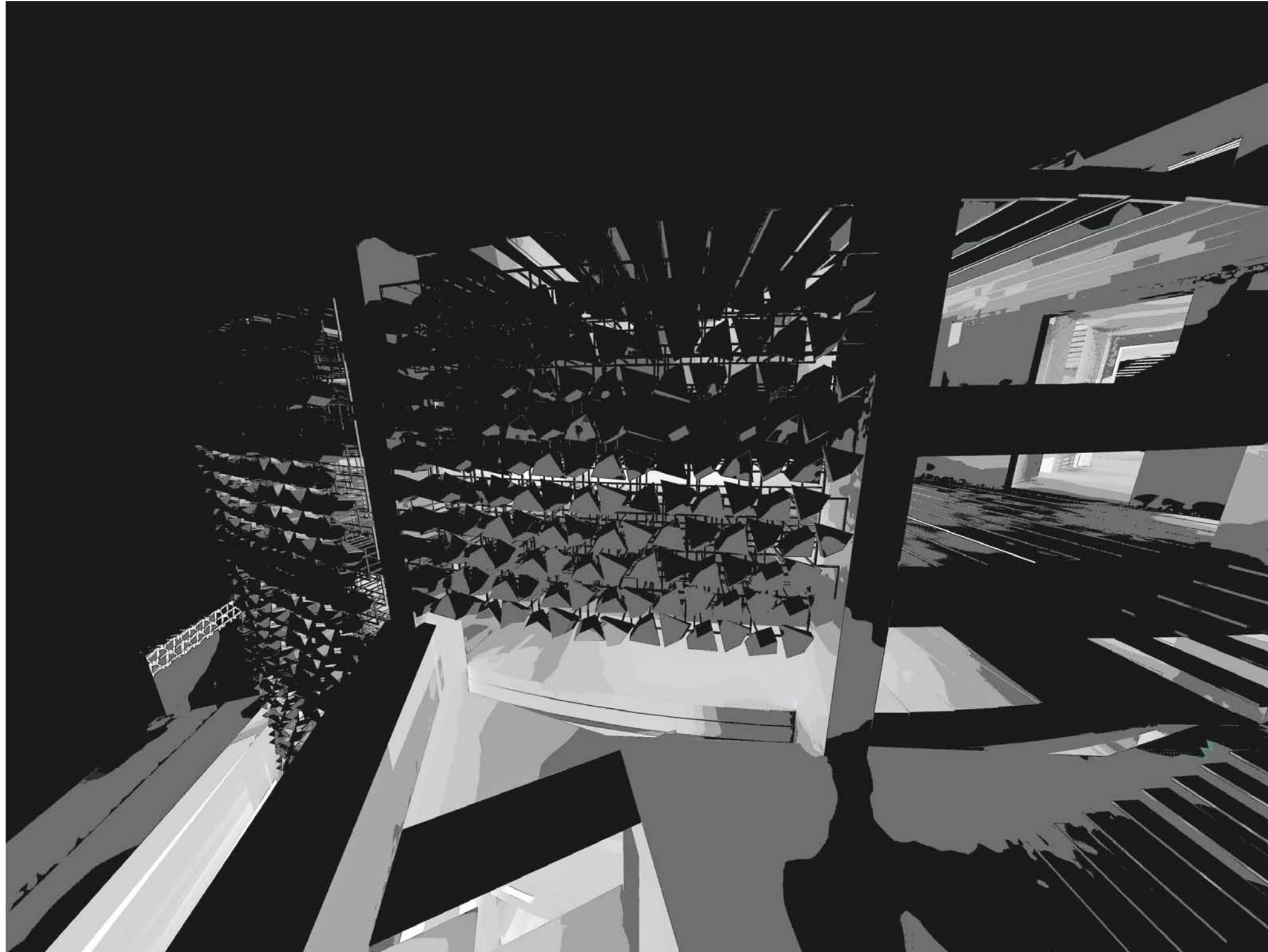


# EXTERIOR PERSPECTIVE ROOF

This bird's eye perspective highlights the glass roof over the atrium and hydroponic chamber. Even on the roof level, the surrounding ramp passes through each of the towers. The cookbook library is lit up, beyond.

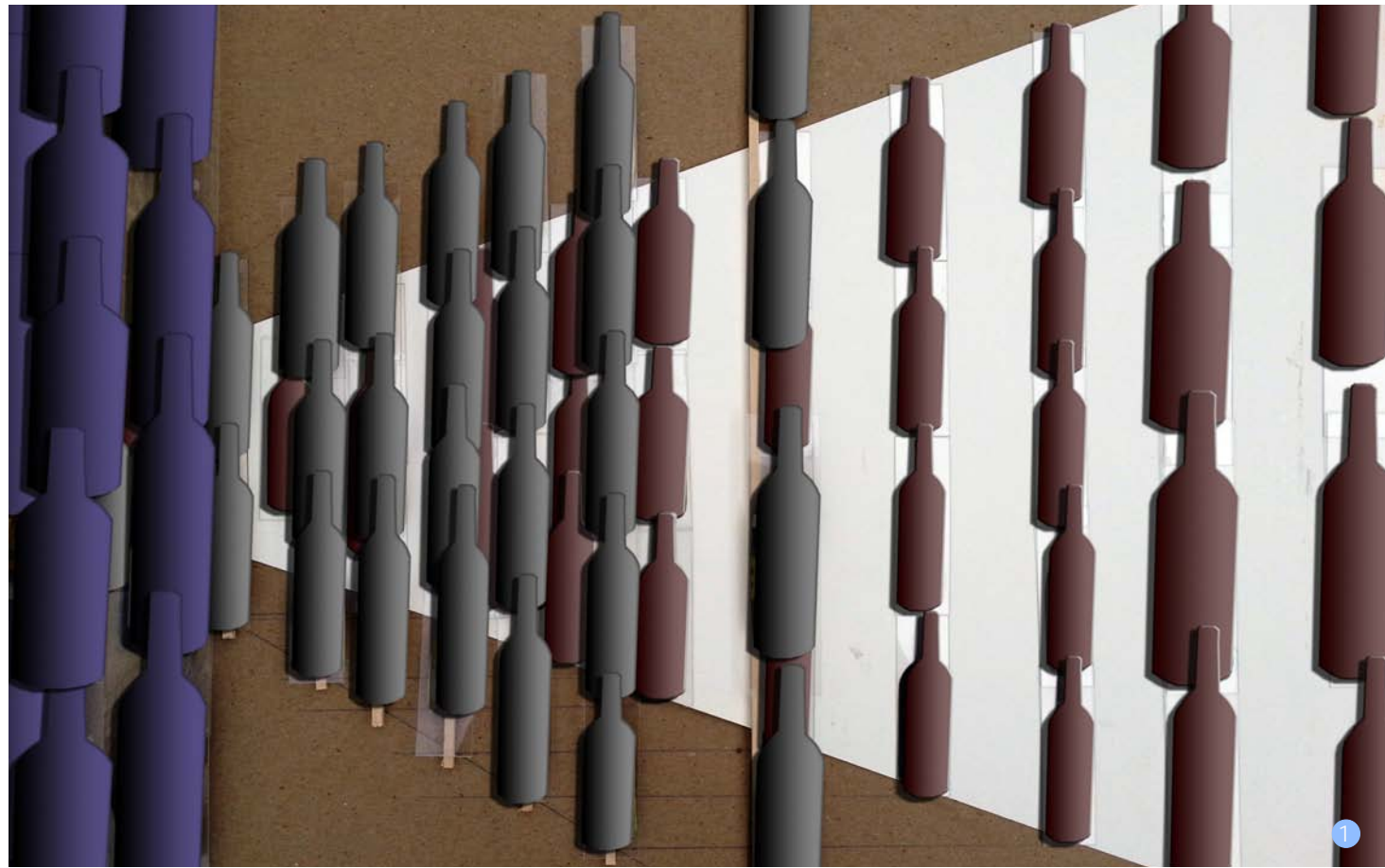


# EXTERIOR PERSPECTIVE KINETIC MEMBRANE OF SOLAR CELLS



This kinetic membrane of solar cells is inspired by the "Flare Facade" system, that which the orientation of multi-faceted objects is controlled electronically. The push and pull of hydraulic pistons allow the objects to pivot, providing field that simulates dynamic movement within a framework. For this project, an added feature would be the collection of our sun's energy through solar cells affixed to the sides of each faceted object. The objects would be electronically programmed to tilt in a manner that would gain maximum solar exposure and consequently collect the maximum energy to support the operations of the grocery store building.

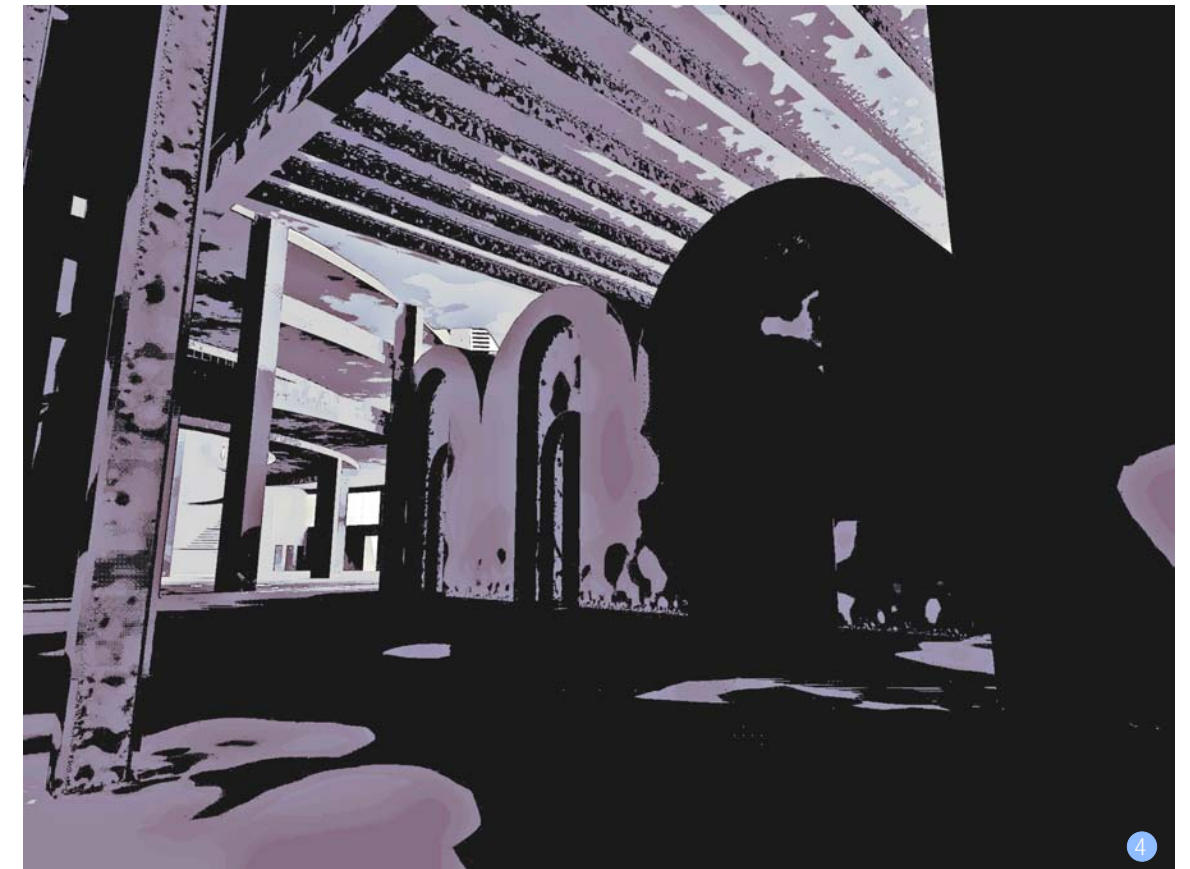
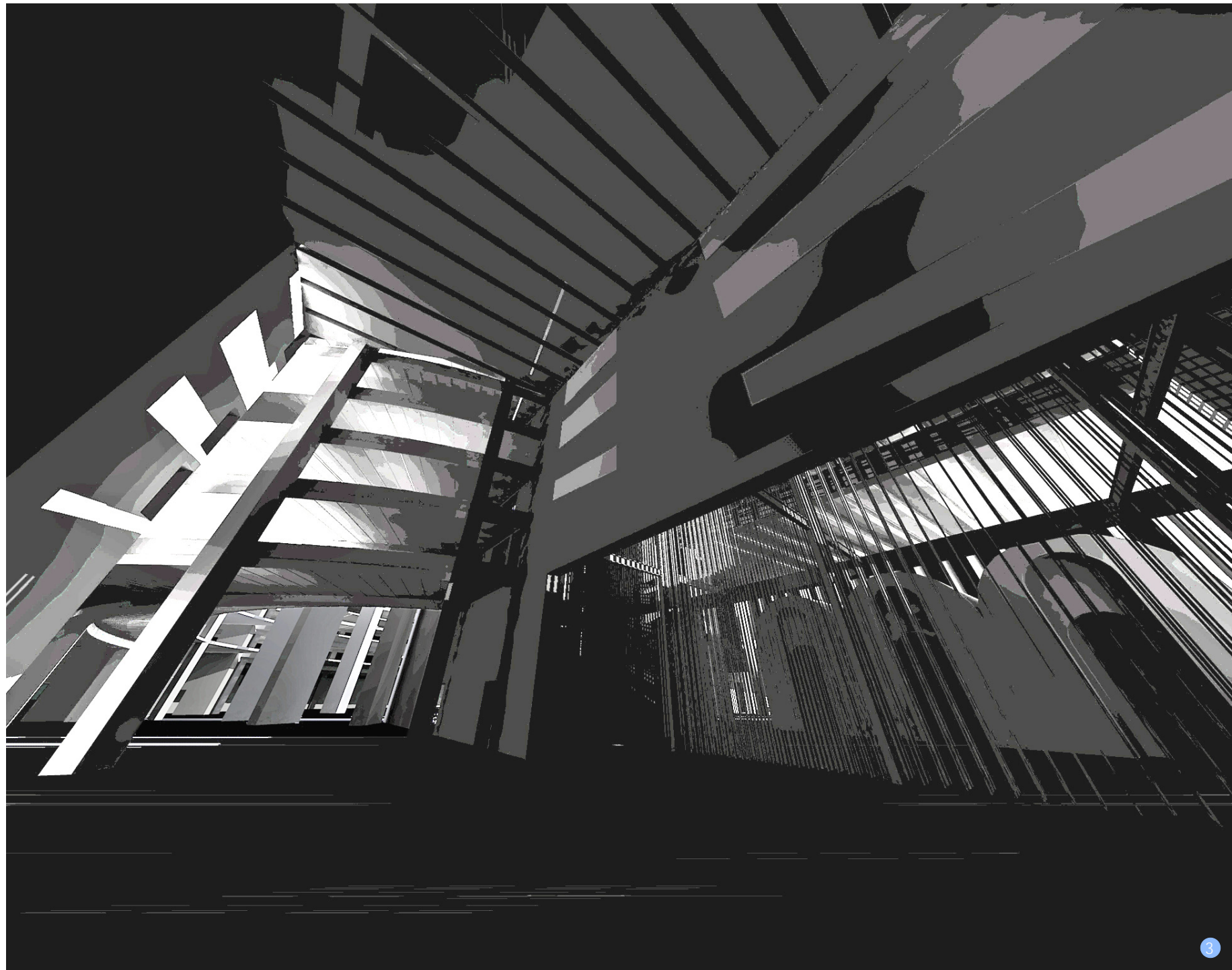




- 1 Conceptual representation of the wall of beverages.
- 2 Textural and experiential study, distinguishing the physical barrier but visual openness between spaces, and the clear direction toward the destination.
- 3 3D perspective view of the frozen food section past the wall of beverages.
- 4 3D perspective view of the frozen food section.
- 5 Bird's eye view of a conceptual representation of the frozen foods section.
- 6 View upon approach of the conceptual representation of the frozen foods section.



# FROZEN FOOD CHAMBERS & WALL OF BEVERAGES PERSPECTIVES





# CLOSING REMARKS

What once started as an exercise in exploring the sacred in the mundane (in the simplest of terms, every human in every society needs a supplier for food for survival) evolved into an exploration through time and space. The American Grocery store has evolved from the market to what is currently the Box Store. Its design is mercantile driven, form follows function, processed foods are organized with focus on efficiency. Obesity is on the rise. This thesis project offers a solution to respond to it.

Through this thesis, I challenge the boxed store merchants out there to consider the organization and materiality of their buildings as they influence their consumers lives, not just in the moments that they experience the space, but in the reflections and the consequences beyond.

Stack toward the cosmos.

Seek wisdom from the Aventine Triad, the Goddess of Agriculture will share her support team, over-arching principles, and iterative processes.

Cross the threshold of the past and emerge into the present and begin the procession.

Utilize the sun...  
harvest solar power  
use it to tell the time

Provide a community gathering space.  
Make efficient use of the Earth.  
Cultivate horizontal and vertical gardening spaces.  
Shop the shelves within the stairs.  
Run a mile through the aisle (in this case, yes, it is singular.)  
Watch where you are going.  
Check-out in the elevator.

Stop by the cook-book library or culinary workshop.  
See healthy food demonstrations, instead of simply relying on the Food Network, or 5 minutes in the morning segment on the Today Show. Be activated. Stimulated. Inspired.

Utilize existing and modern technologies and building systems.

Where appropriate, allow for moments to connect...  
In others, offer a Disneyland type of strategy, and hide the characters behind the scenes.

Establish balance.  
Find joy in even the mundane... Rest. Obtain the food. Eat. Repeat.

Inspired by the renowned words of Dr. Jonas Salk, I believe that our greatest responsibility -as design professionals, as leaders, as architects- is to actively draw the inhabitants of our culture to become better ancestors for future generations.

May we continue to look upon what worked in the past. And dream of the potential of the future.





REVERIE.

references  
figures





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pg 4, Map of City of Alexandria, VA. Provided by city, Public domain. City of Alexandria, Virginia, GIS & Maps, <http://alexandriava.gov/gis/info>

pg 5. Aerial view underlay, Map Data: <MSN Maps> Date accessed, December 4, 2009.

Pg 7: Eridanus Constellation diagram, portion of the historical sky drawing in classical form by Giovanni Maria Cassini (1792 print) as underlay, DSS Consortium, SDSS, NASA/ESA. Accessed via <https://www.google.com/sky/> August 17, 2009. Author overlaid colors.

pg 12. Google maps aerial view underlay, GIANT FOOD, 3131 DUKE ST, ALEXANDRIA Aerial map credit: Imagery 2014 Commonwealth of Virginia, DigitalGlobe, District of Columbia (DC GIS), Sanborn, U.S. Geological Survey, Map data 2014 Google.

pg 12. Google maps aerial view underlay, SHOPPERS FOOD WAREHOUSE, 3801 JEFFERSON DAVIS HWY, ALEXANDRIA Aerial map credit: Imagery 2014 Commonwealth of Virginia, DigitalGlobe, District of Columbia (DC GIS), Sanborn, U.S. Geological Survey, Map data 2014 Google.

pg 12. Google maps aerial view underlay, GIANT FOOD, 530 FIRST ST, ALEXANDRIA Aerial map credit: Imagery 2014 Commonwealth of Virginia, DigitalGlobe, District of Columbia (DC GIS), Sanborn, U.S. Geological Survey, Map data 2014 Google.

pg 31. Google maps aerial view underlay, GIANT FOOD, 530 FIRST ST, ALEXANDRIA Aerial map credit: Imagery 2014 Commonwealth of Virginia, DigitalGlobe, District of Columbia (DC GIS), Sanborn, U.S. Geological Survey, Map data 2014 Google.

pg 31. Proposed Grocery Store aerial view underlay, Map Data underlay: <MSN Maps> Date accessed, December 4, 2009.

pg 32, 46, 49, 50. "earth" texture graphic by author is made of collaged coupons extracted from 2009 Costco advertisements, 2009.







