

researches on productive environments

material

cultural

food

image

system

social

productions

1 greetings from gowanus_4_

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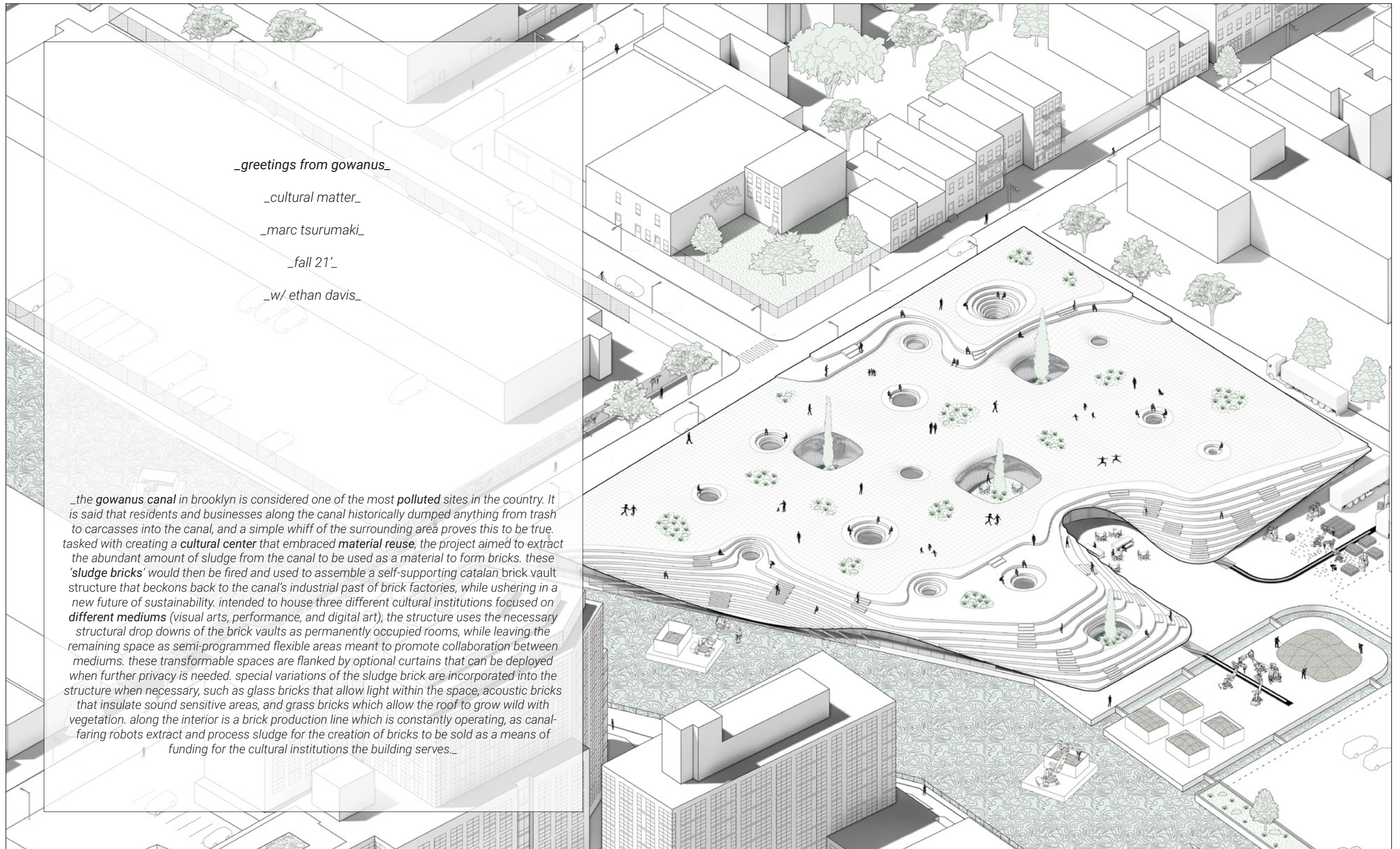
4 reflections of high line_66_

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index



greetings from gowanus

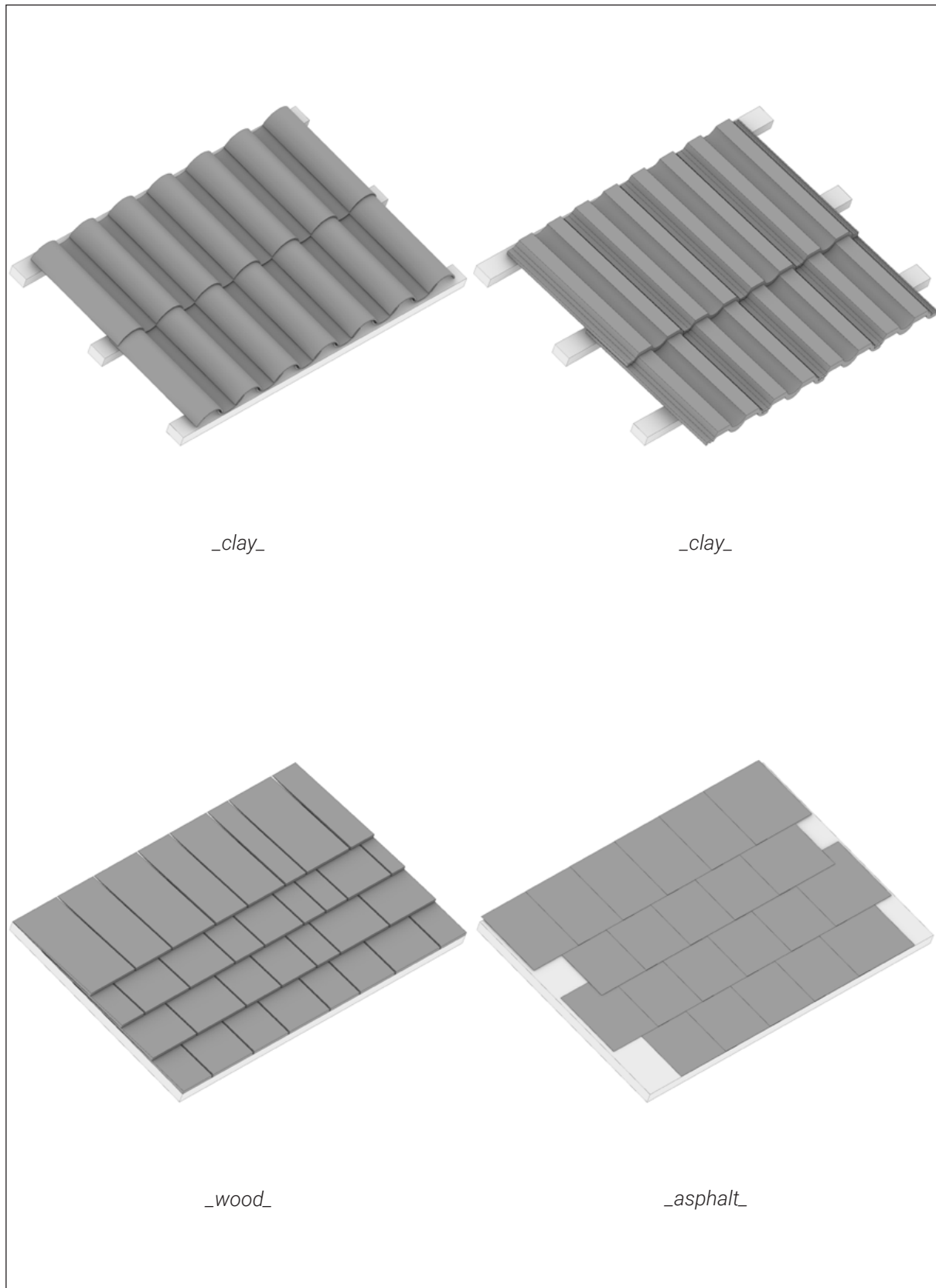
cultural matter

marc tsurumaki

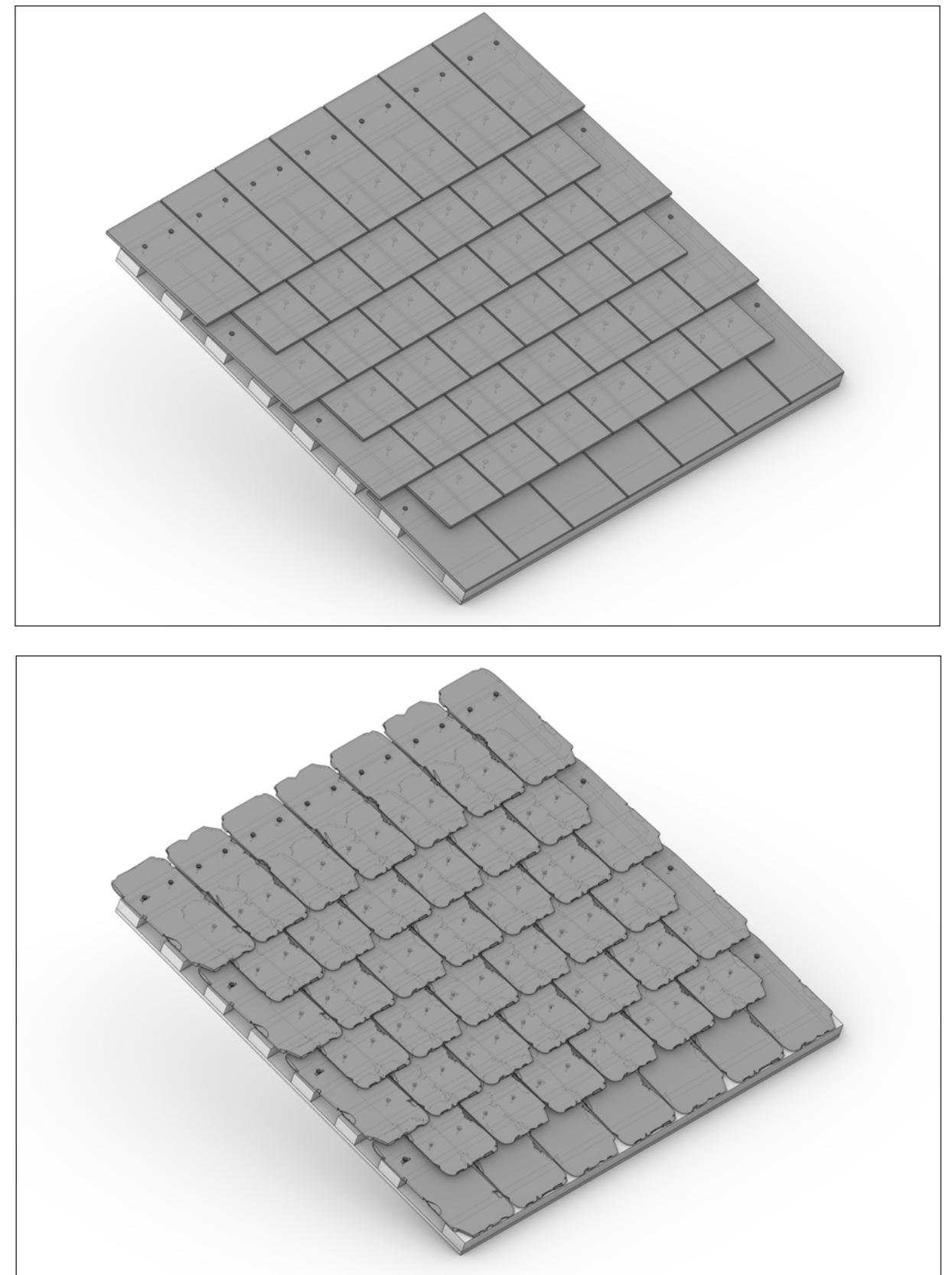
fall 21'

w/ ethan davis

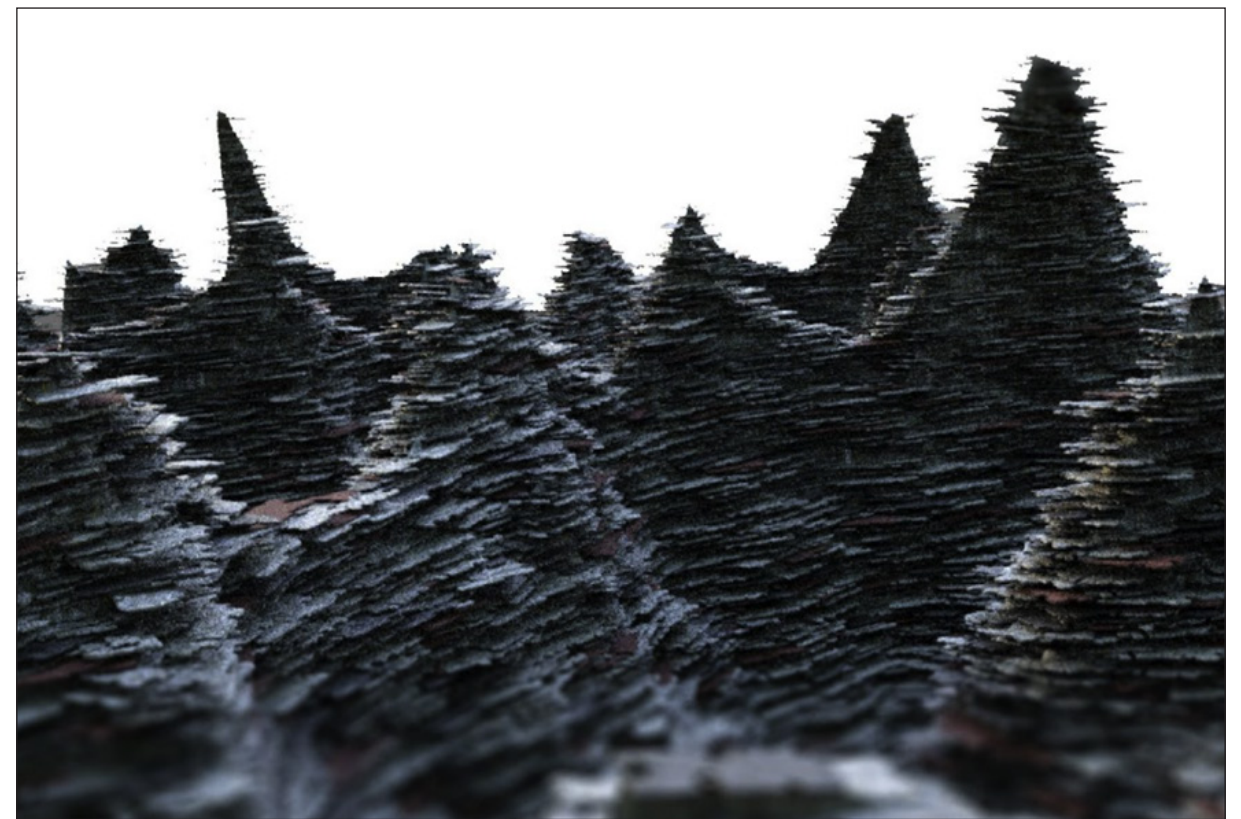
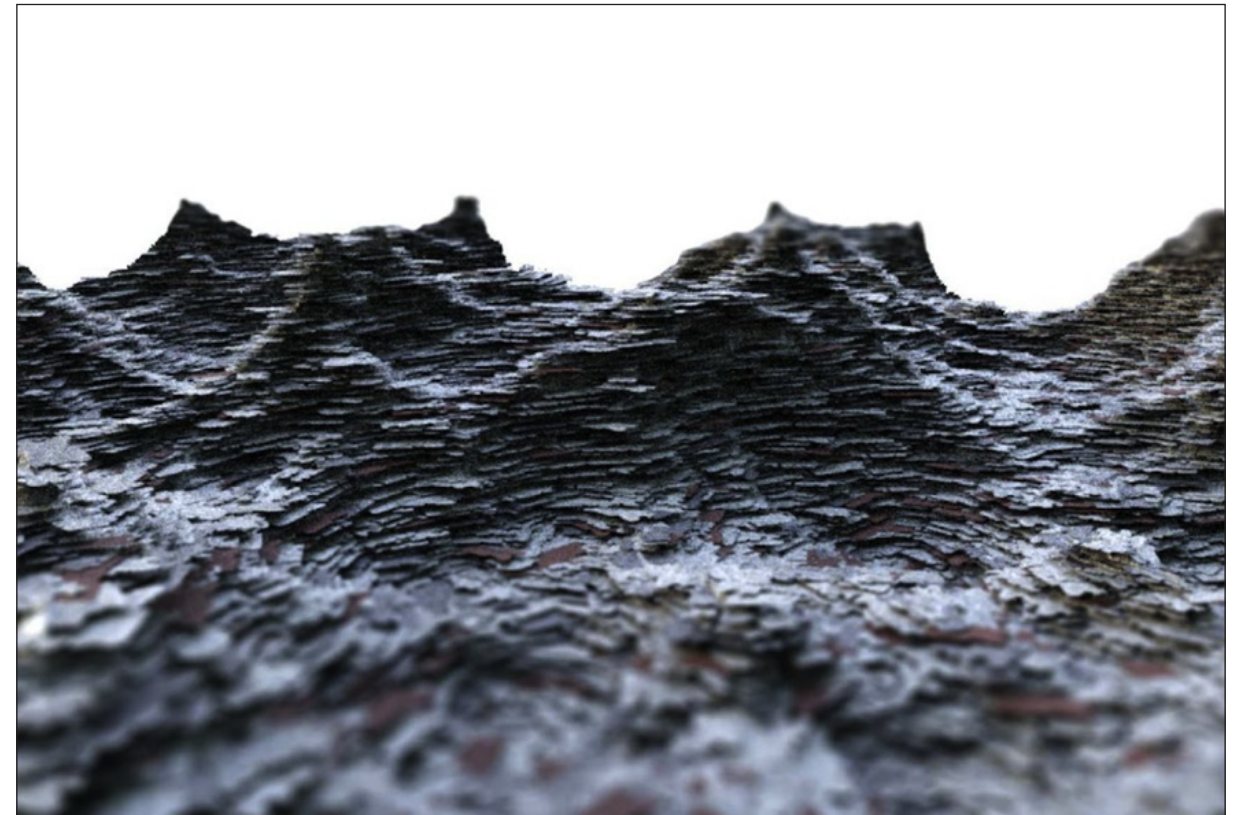
the gowanus canal in brooklyn is considered one of the most polluted sites in the country. It is said that residents and businesses along the canal historically dumped anything from trash to carcasses into the canal, and a simple whiff of the surrounding area proves this to be true. tasked with creating a cultural center that embraced material reuse, the project aimed to extract the abundant amount of sludge from the canal to be used as a material to form bricks. these 'sludge bricks' would then be fired and used to assemble a self-supporting catalan brick vault structure that beckons back to the canal's industrial past of brick factories, while ushering in a new future of sustainability. intended to house three different cultural institutions focused on different mediums (visual arts, performance, and digital art), the structure uses the necessary structural drop downs of the brick vaults as permanently occupied rooms, while leaving the remaining space as semi-programmed flexible areas meant to promote collaboration between mediums. these transformable spaces are flanked by optional curtains that can be deployed when further privacy is needed. special variations of the sludge brick are incorporated into the structure when necessary, such as glass bricks that allow light within the space, acoustic bricks that insulate sound sensitive areas, and grass bricks which allow the roof to grow wild with vegetation. along the interior is a brick production line which is constantly operating, as canal-faring robots extract and process sludge for the creation of bricks to be sold as a means of funding for the cultural institutions the building serves.

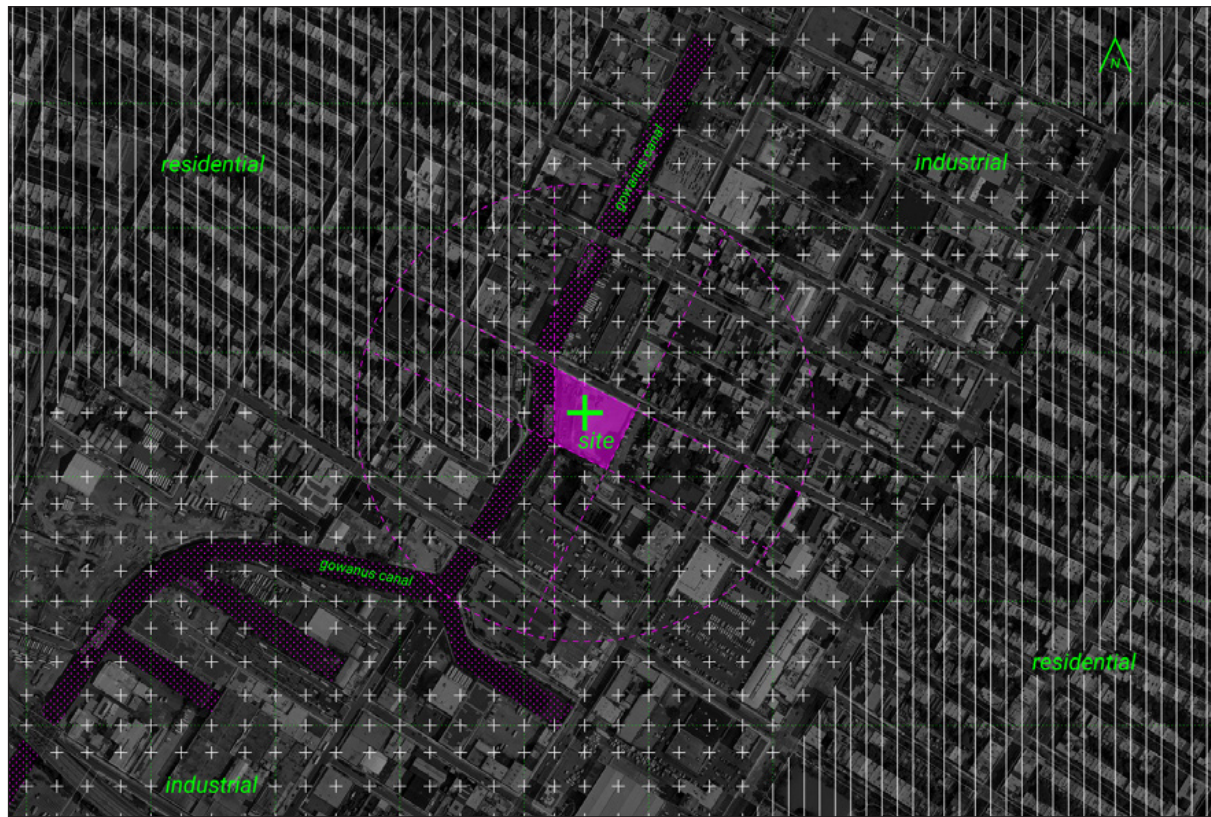
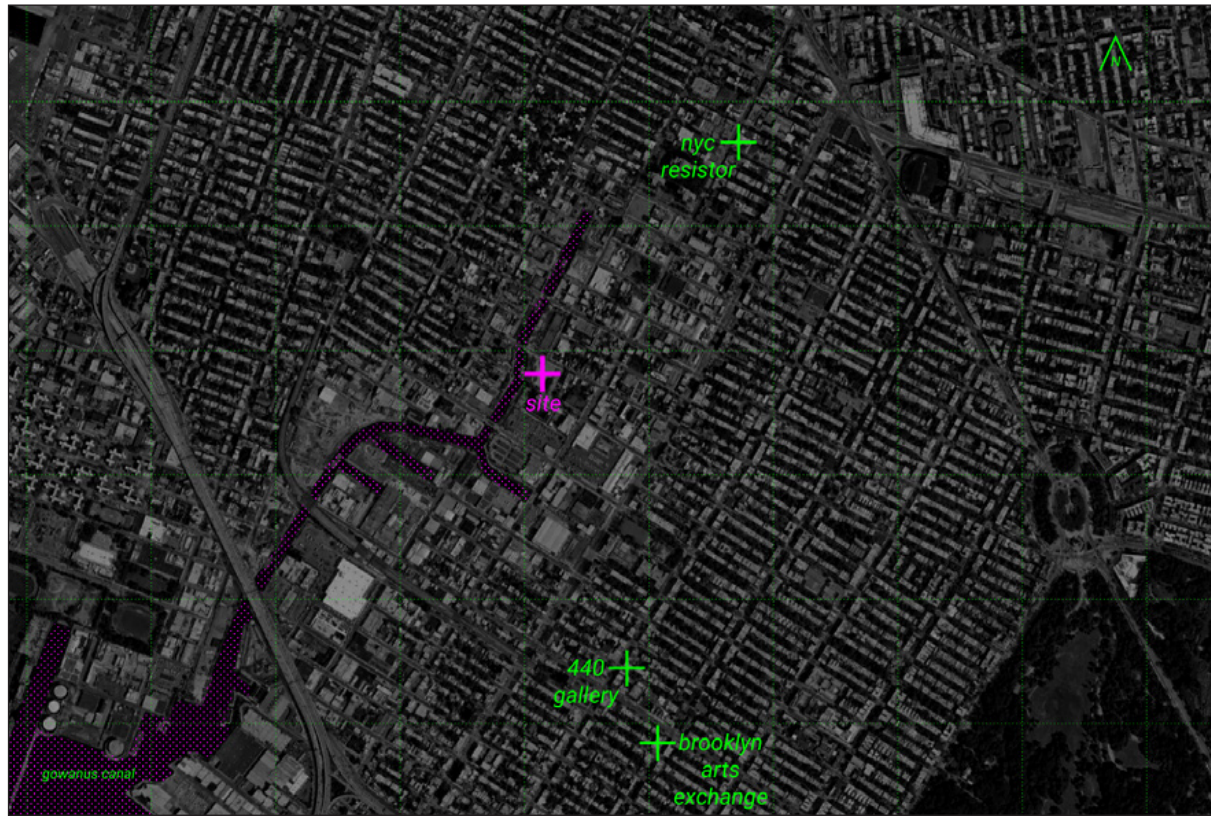


shingle types

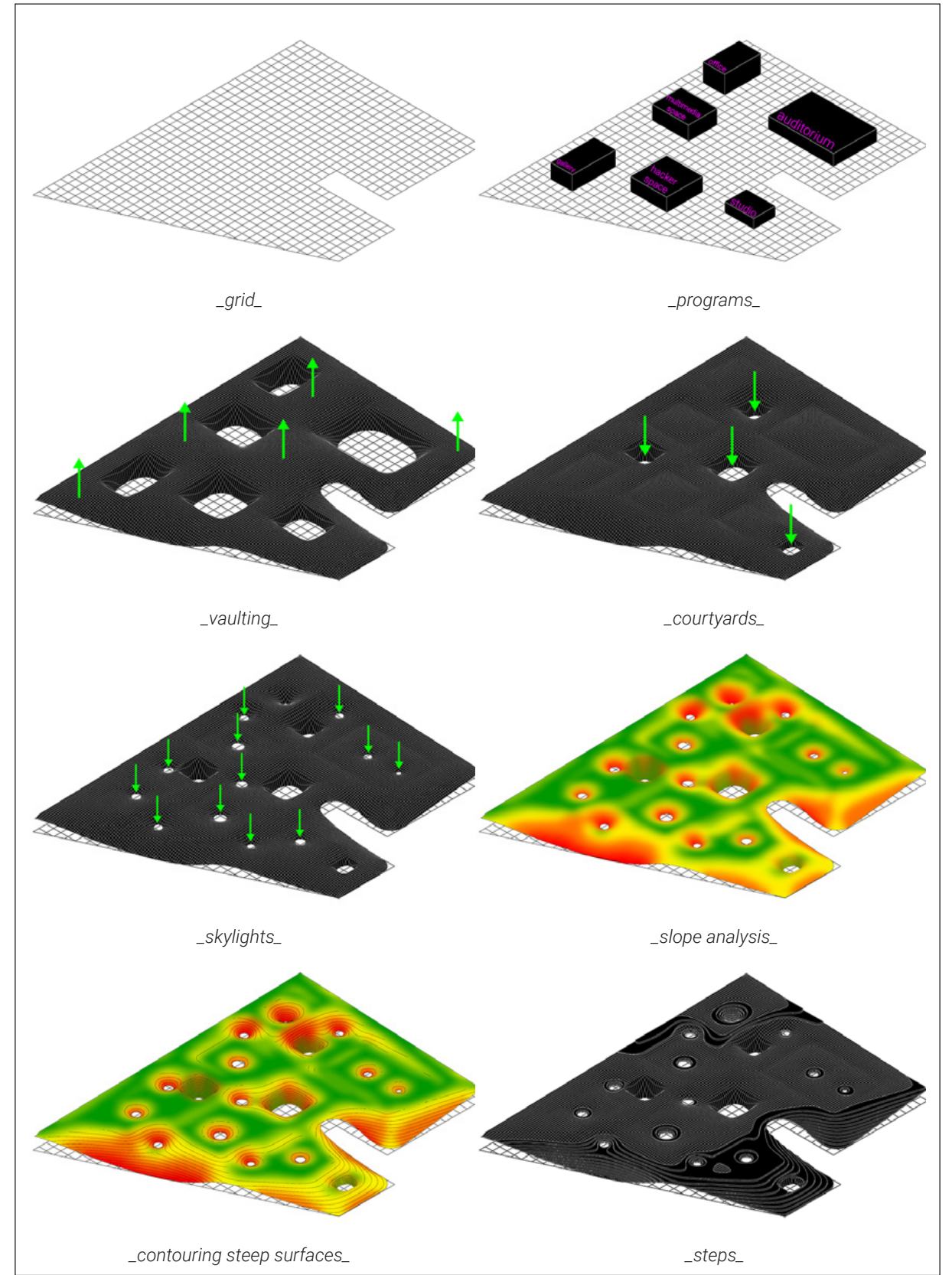


slate tile deformation

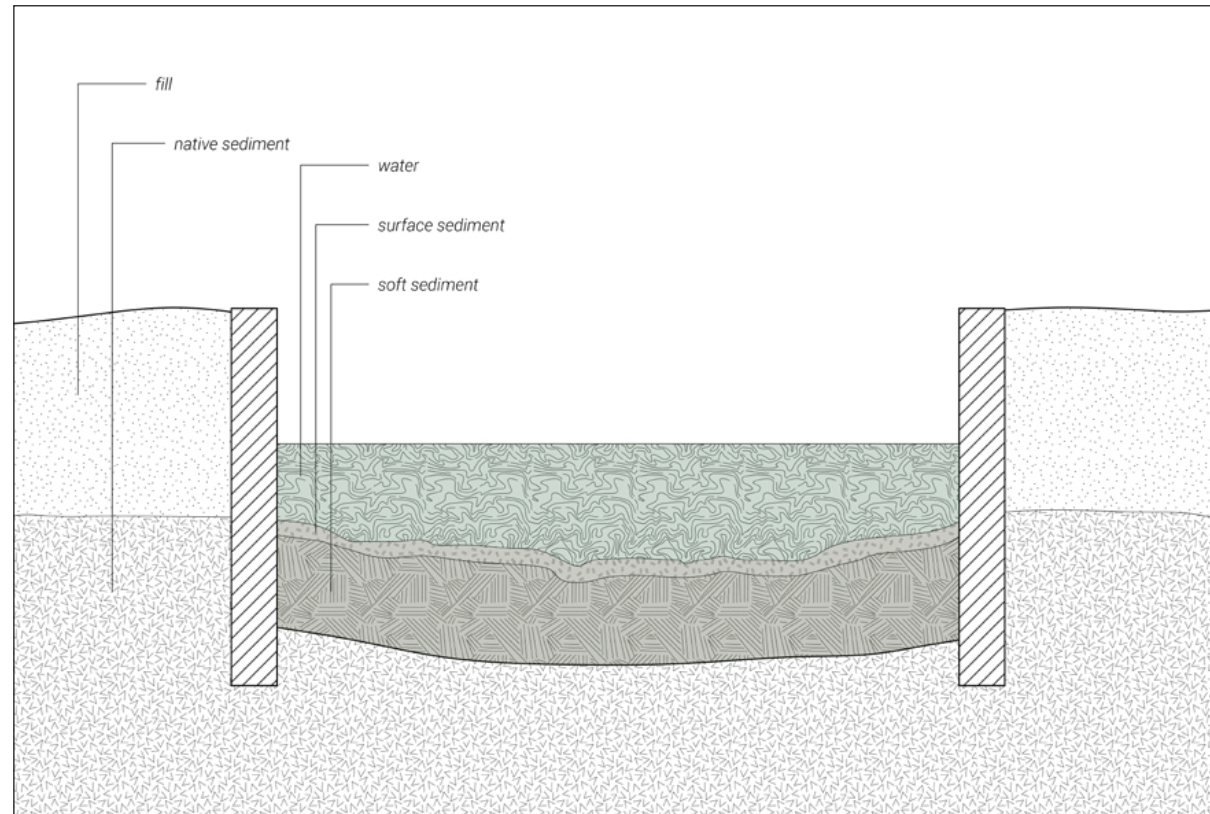




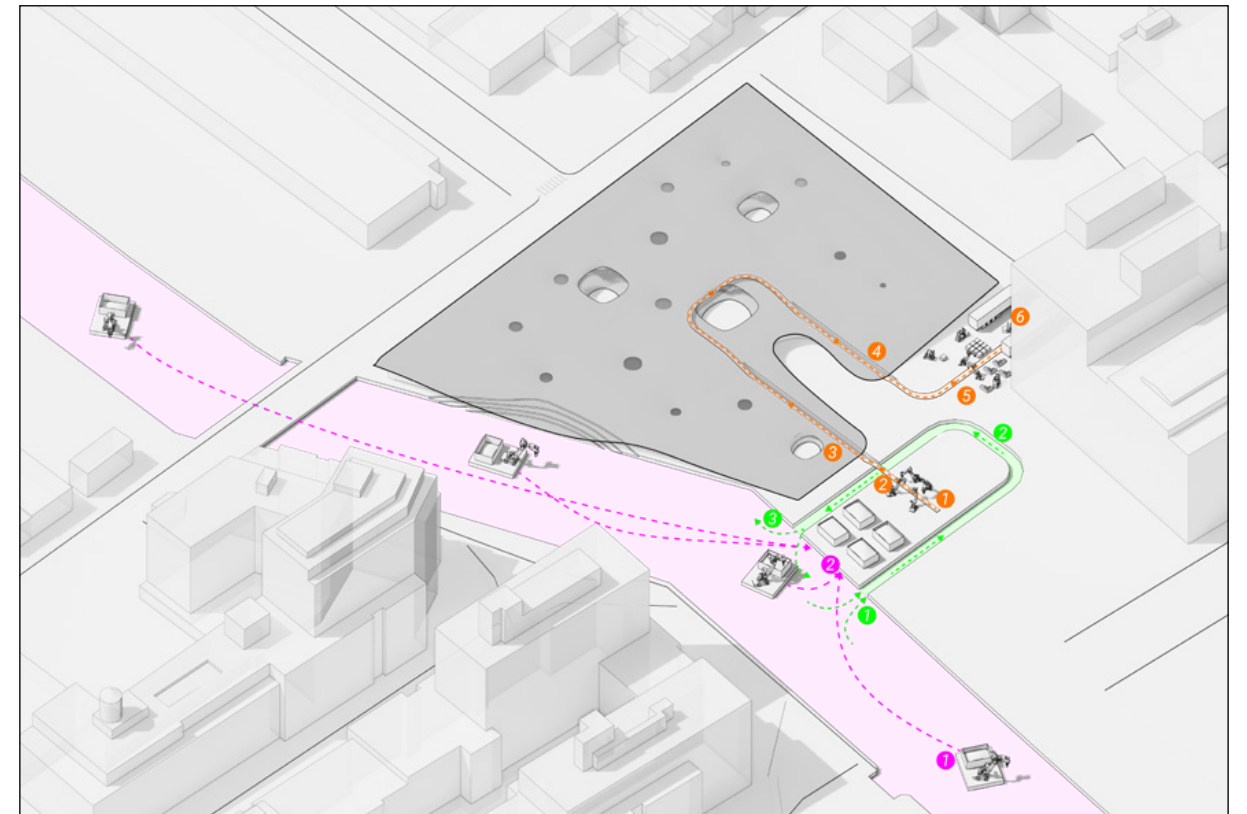
site plan



form formation



canal section



_sludge collecting

- 1 __robots collecting sludge from Gowanus
- 2 __gathering the sludge on the shore

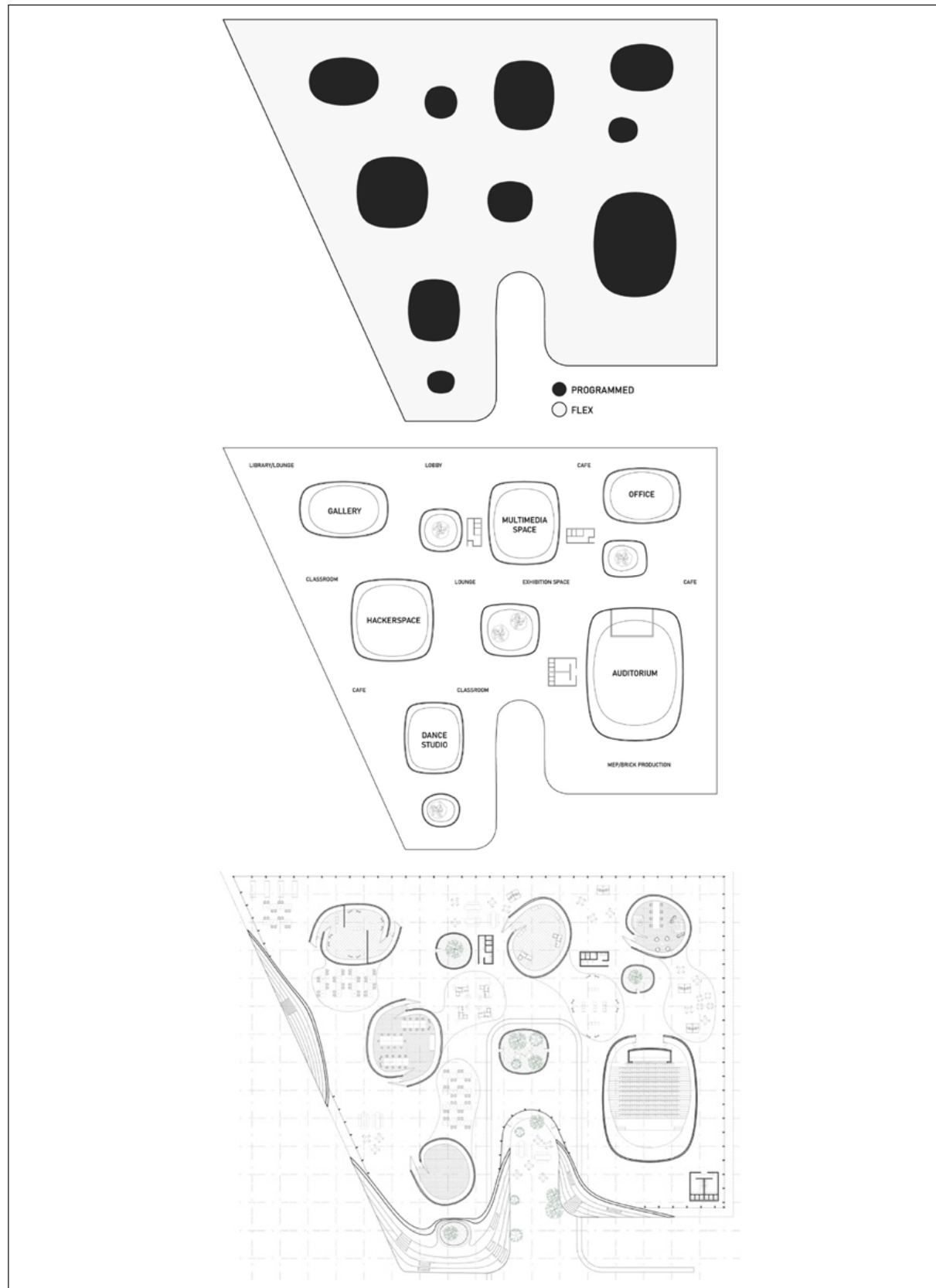
_water filtering

- 1 __water gets into the filtering pool
- 2 __filtering through various layers
- 3 __filtered water goes back to the canal

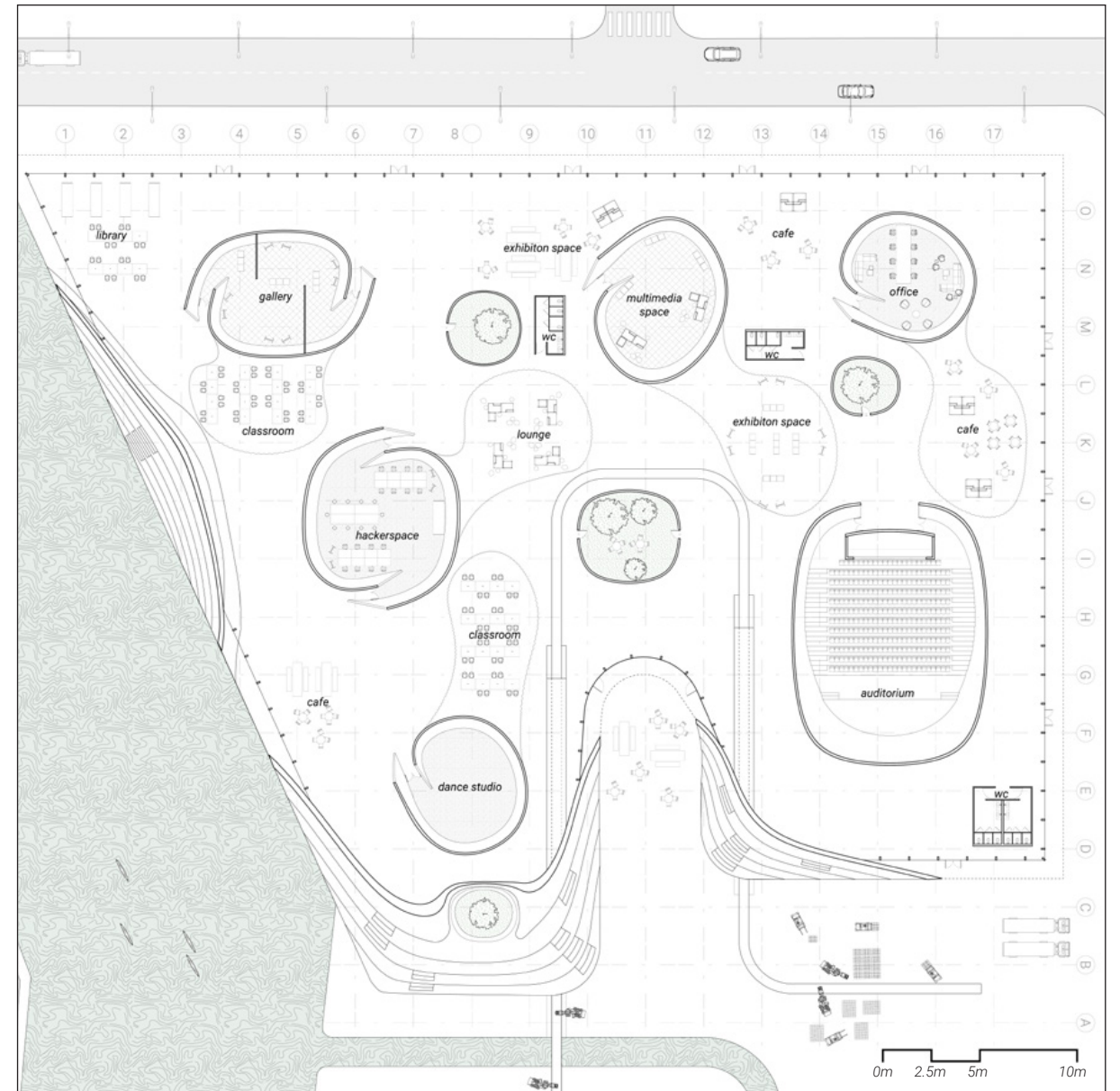
_brick production

- 1 __collected sludge being prepared for production
- 2 __aggregate mix with filtered water
- 3 __molding according to the desired size
- 4 __air drying
- 5 __bricks getting ready for shipping
- 6 __loading into trucks for shipping

production diagram



plan diagram

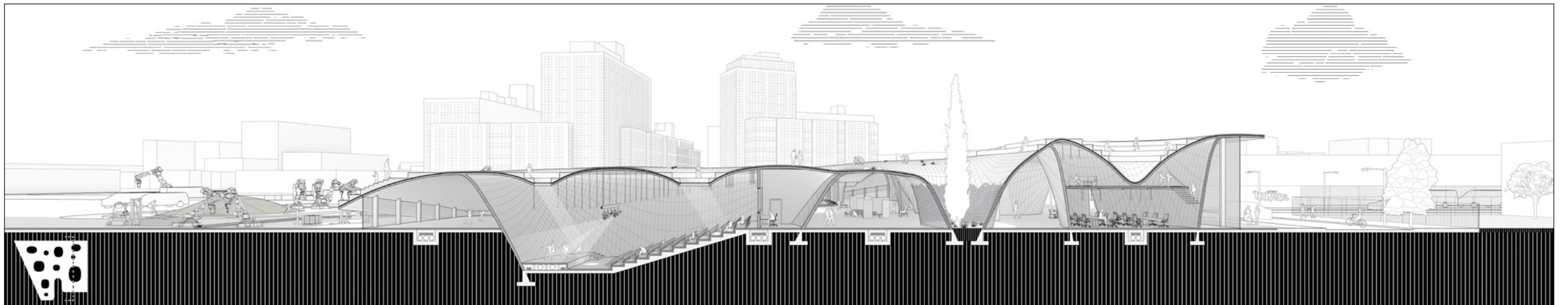
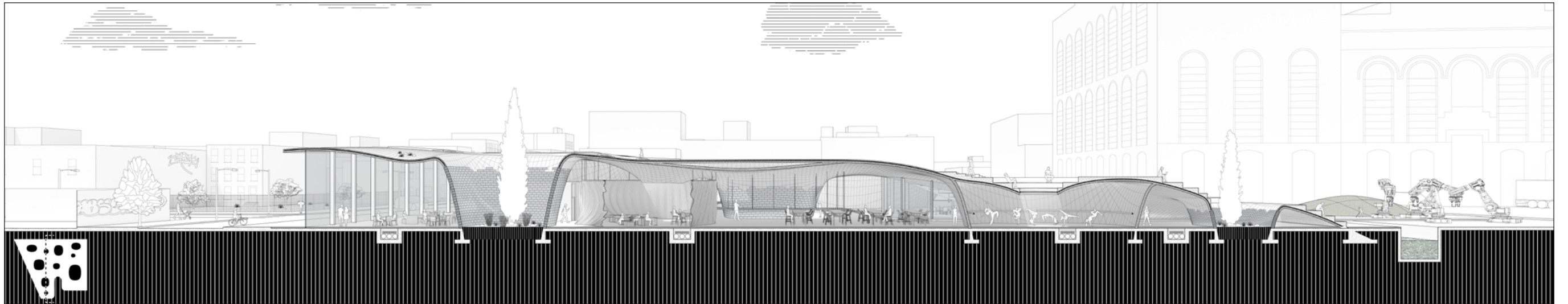
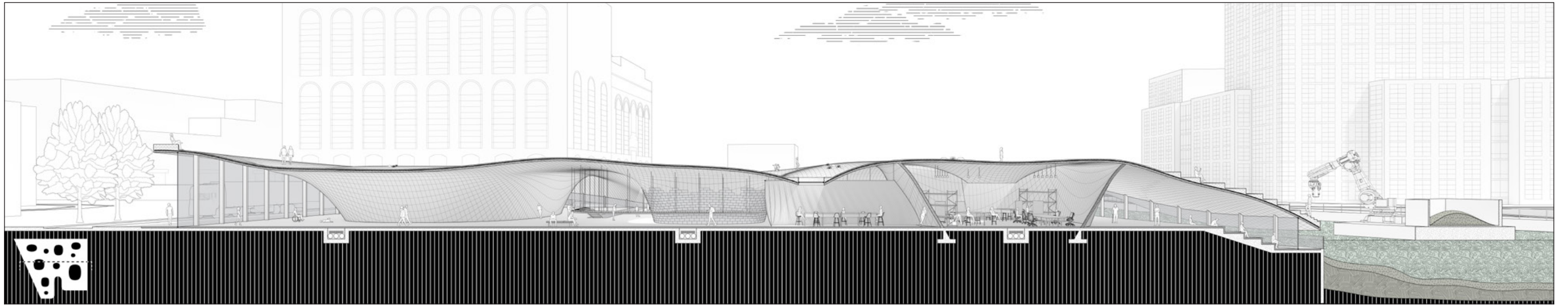


ground floor plan



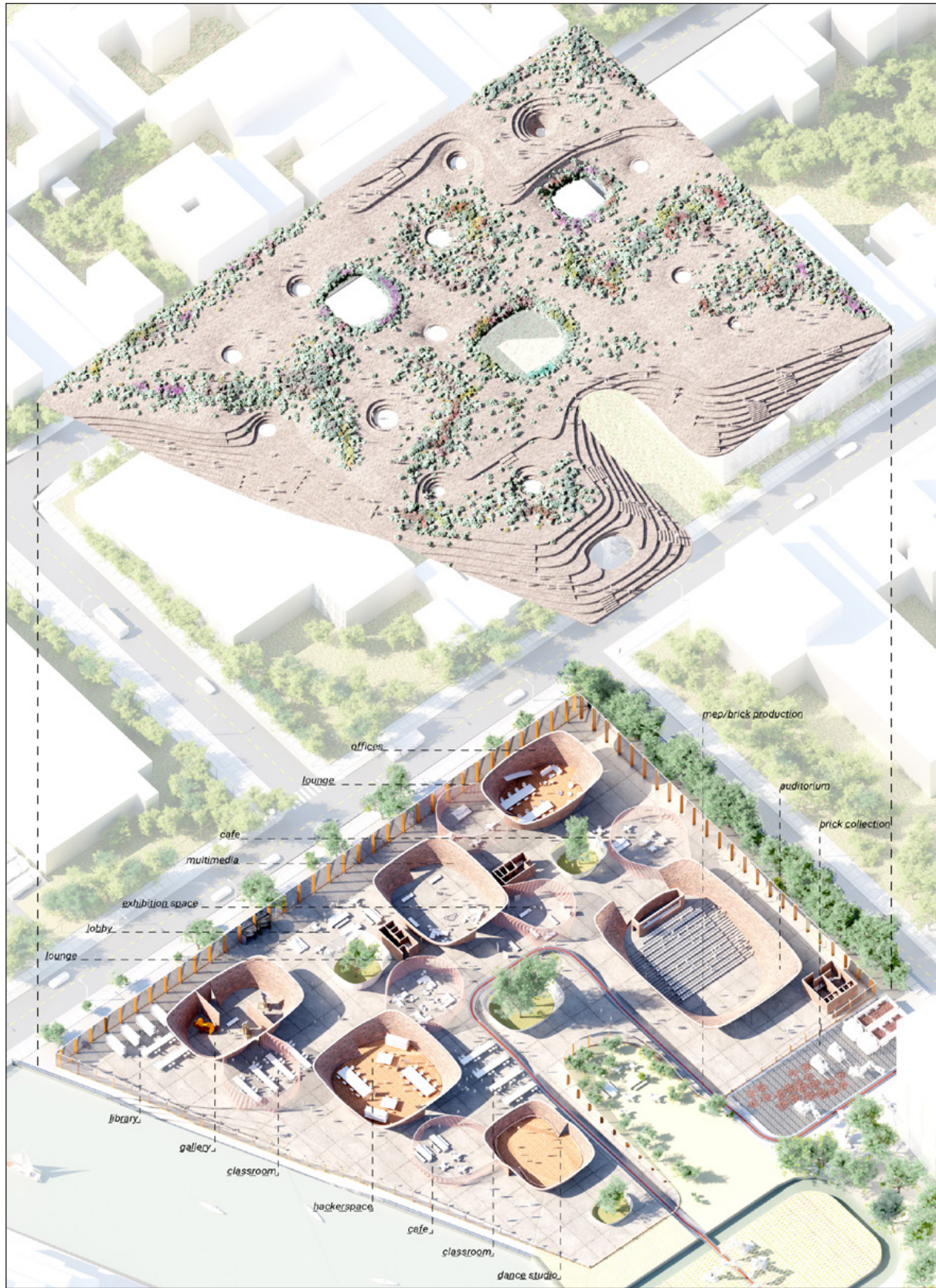
site axonometric

site axonometric



sections

sections



exploded axonometric

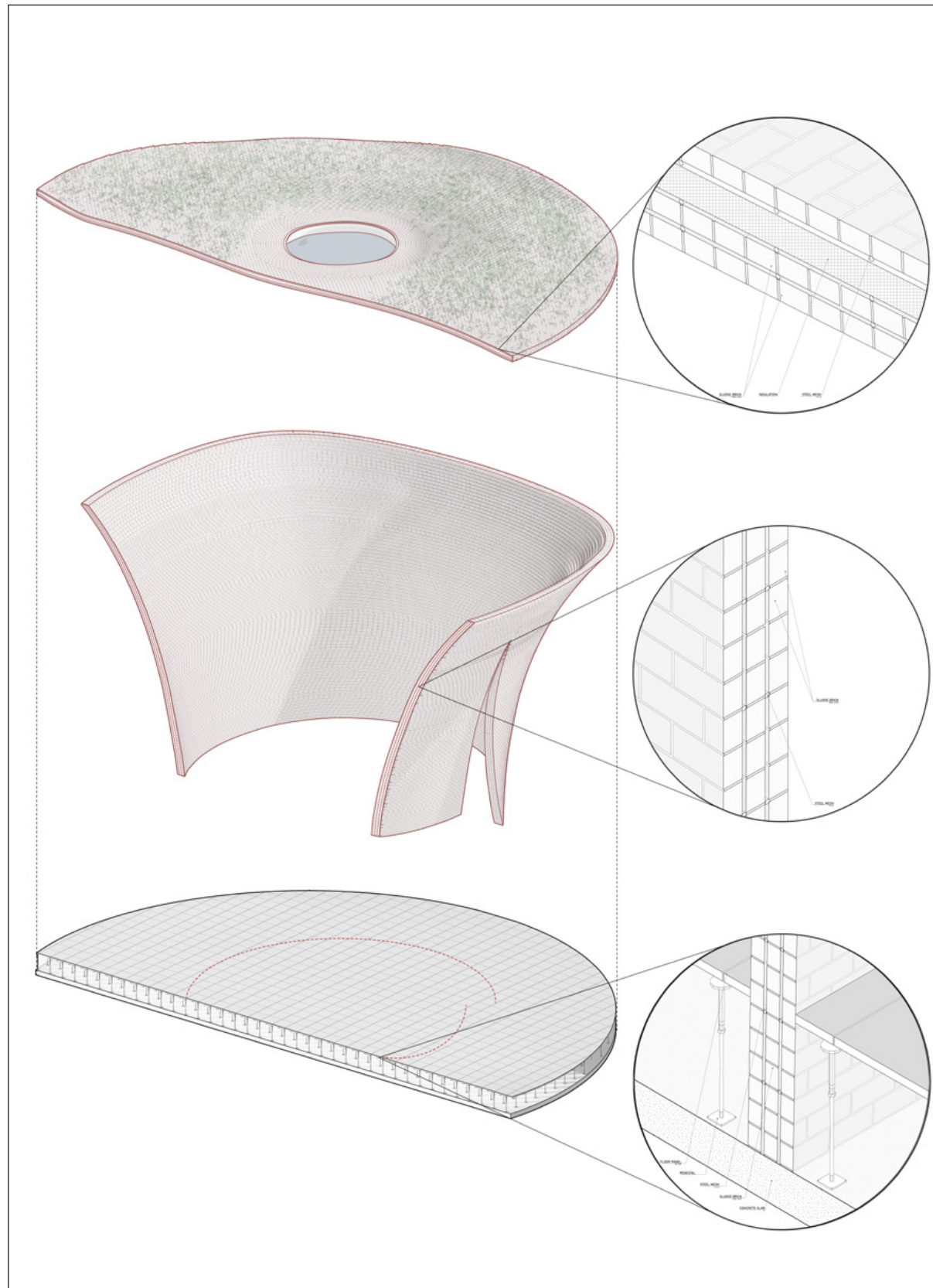


street views

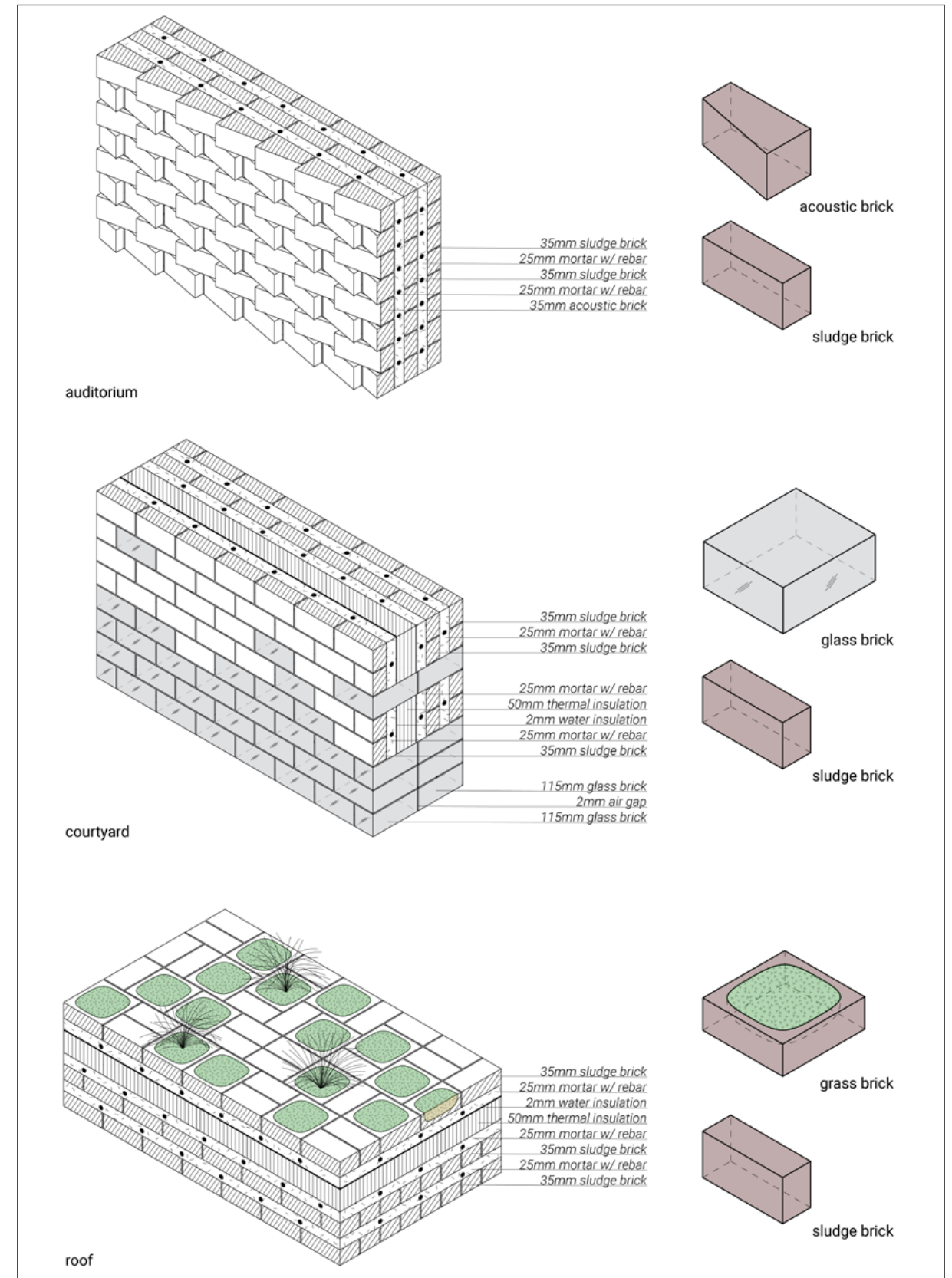


lobby

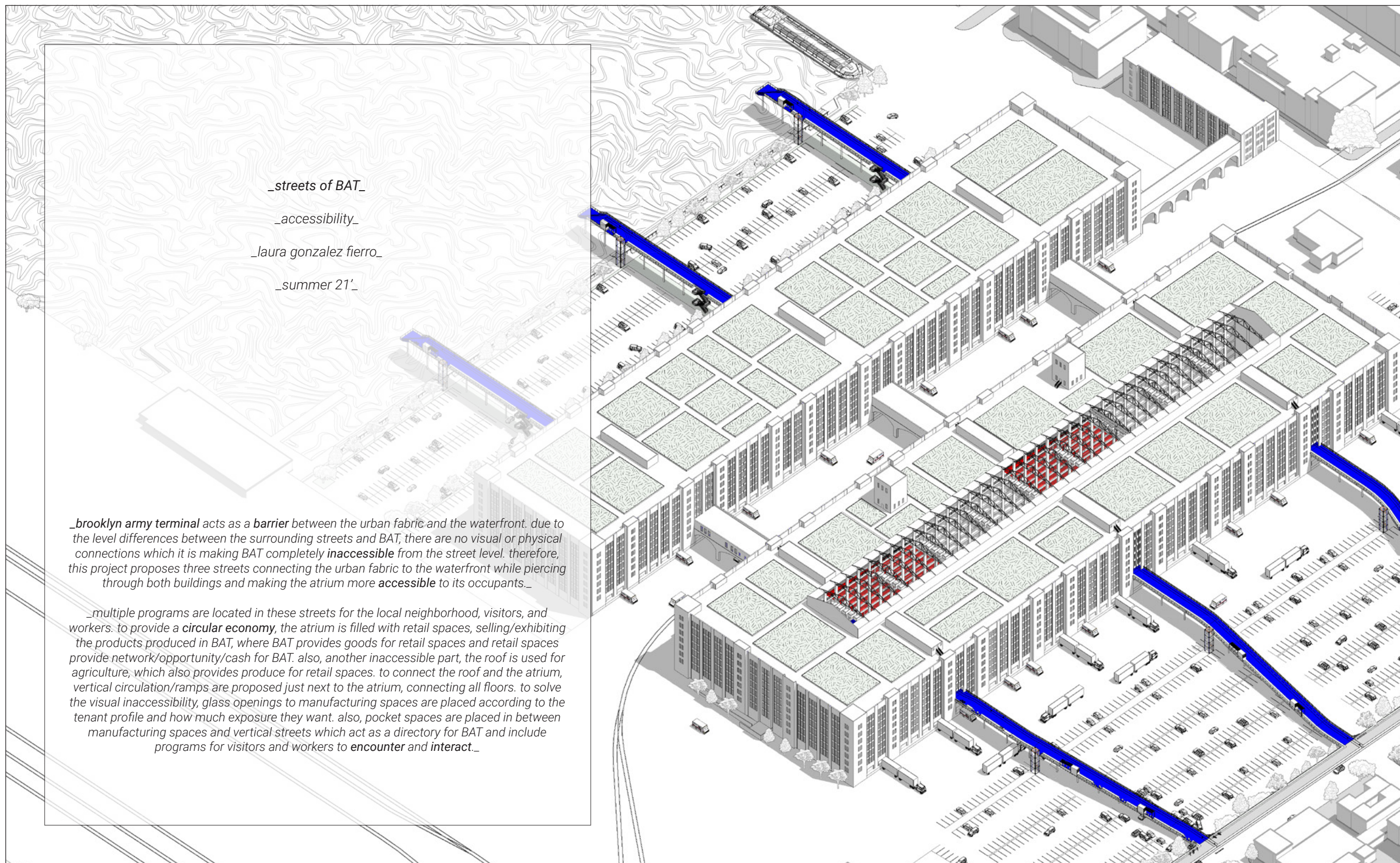
lobby



details



brick types



streets of BAT

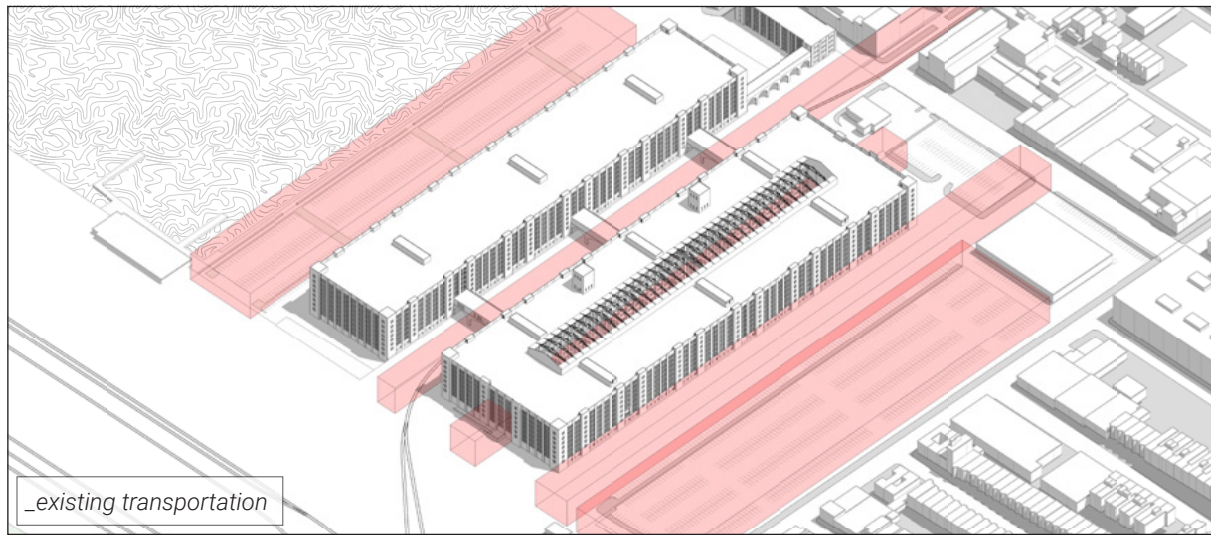
accessibility

laura gonzalez fierro

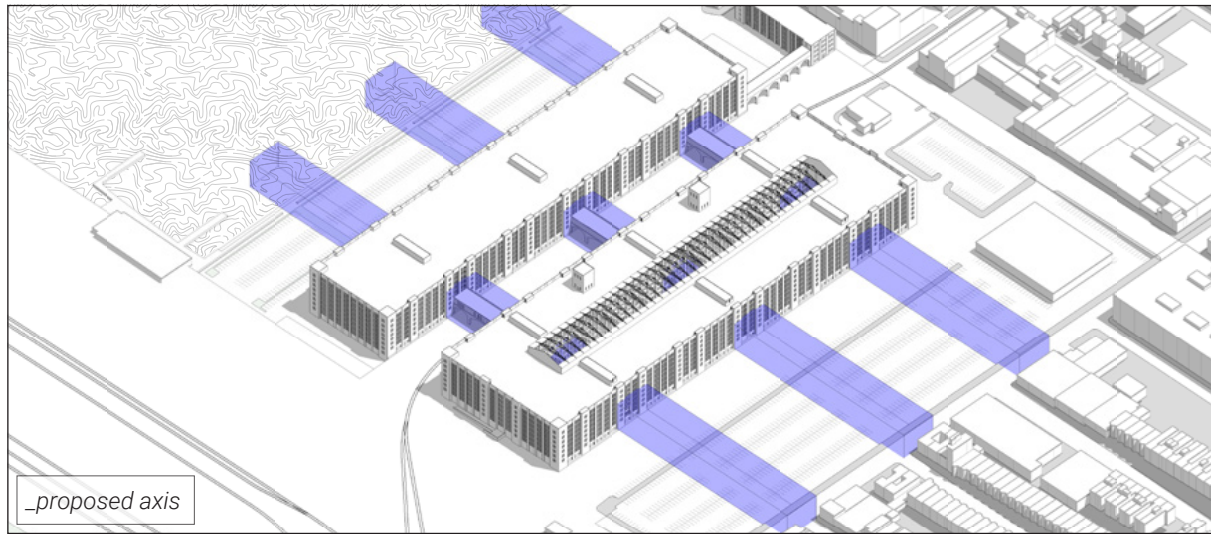
summer 21'

brooklyn army terminal acts as a barrier between the urban fabric and the waterfront. due to the level differences between the surrounding streets and BAT, there are no visual or physical connections which it is making BAT completely inaccessible from the street level. therefore, this project proposes three streets connecting the urban fabric to the waterfront while piercing through both buildings and making the atrium more accessible to its occupants.

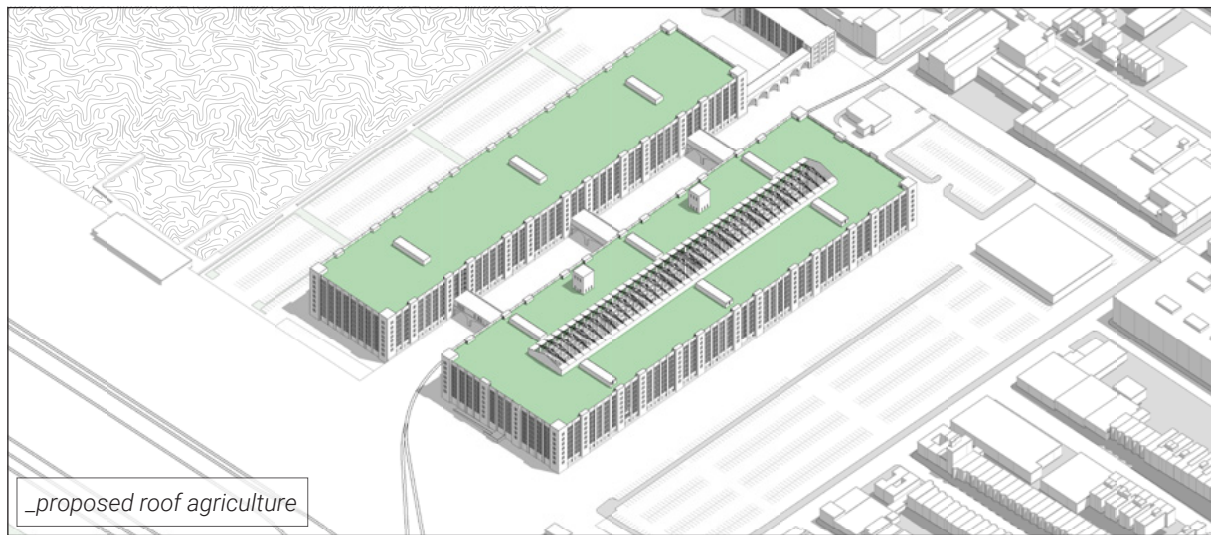
multiple programs are located in these streets for the local neighborhood, visitors, and workers. to provide a circular economy, the atrium is filled with retail spaces, selling/exhibiting the products produced in BAT, where BAT provides goods for retail spaces and retail spaces provide network/opportunity/cash for BAT. also, another inaccessible part, the roof is used for agriculture, which also provides produce for retail spaces. to connect the roof and the atrium, vertical circulation/ramps are proposed just next to the atrium, connecting all floors. to solve the visual inaccessibility, glass openings to manufacturing spaces are placed according to the tenant profile and how much exposure they want. also, pocket spaces are placed in between manufacturing spaces and vertical streets which act as a directory for BAT and include programs for visitors and workers to encounter and interact.



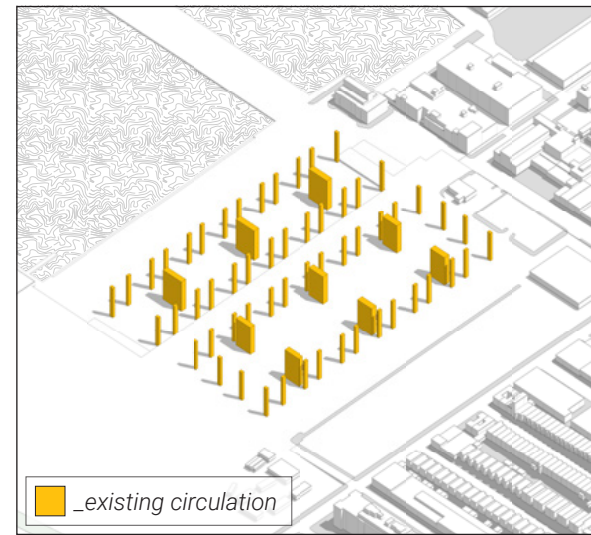
_existing transportation



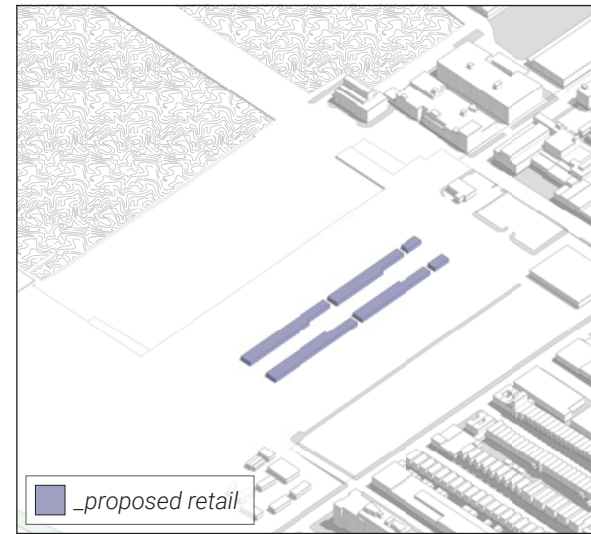
_proposed axis



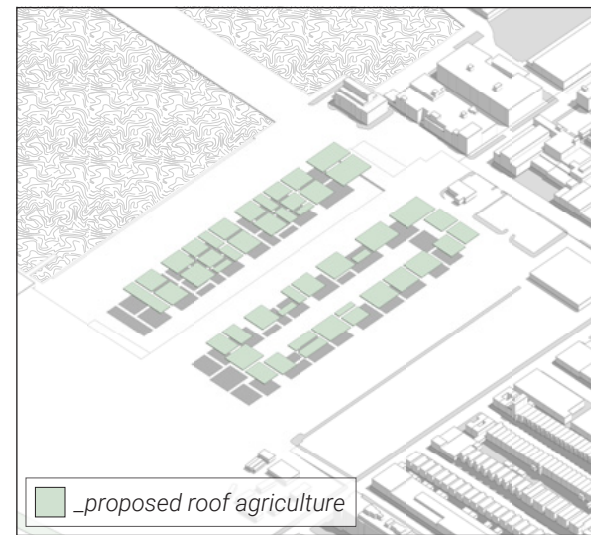
_proposed roof agriculture



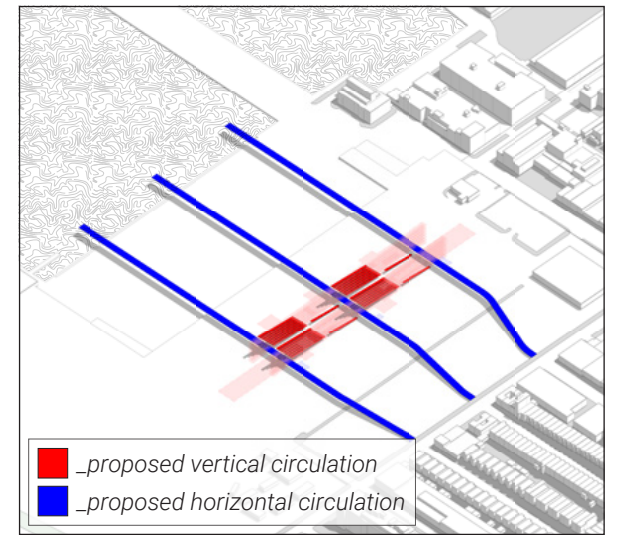
_existing circulation



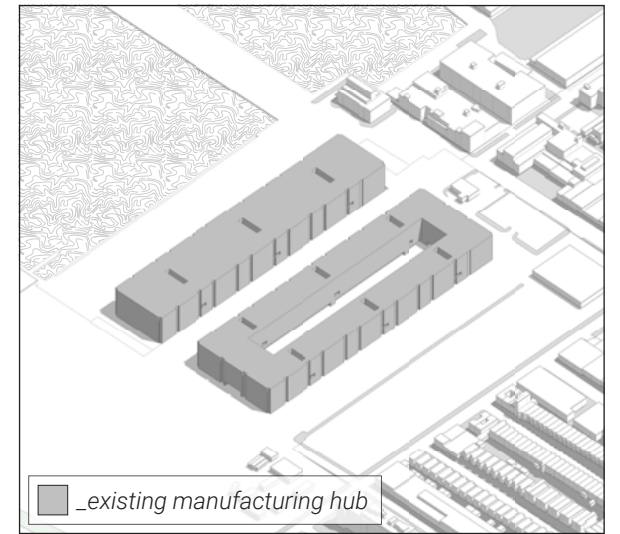
_proposed retail



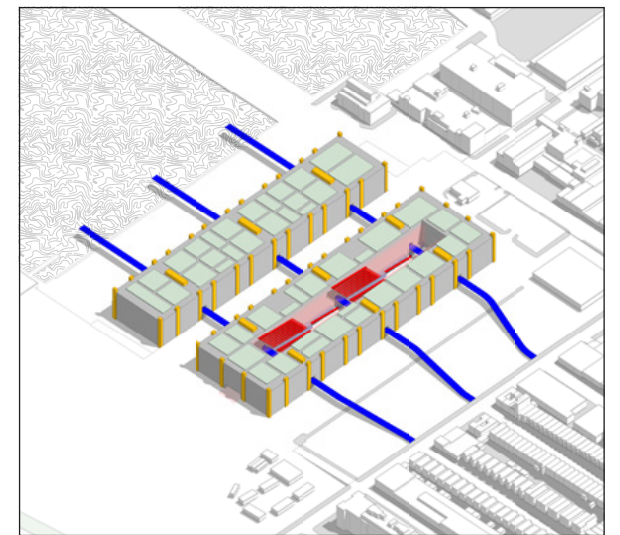
_proposed roof agriculture

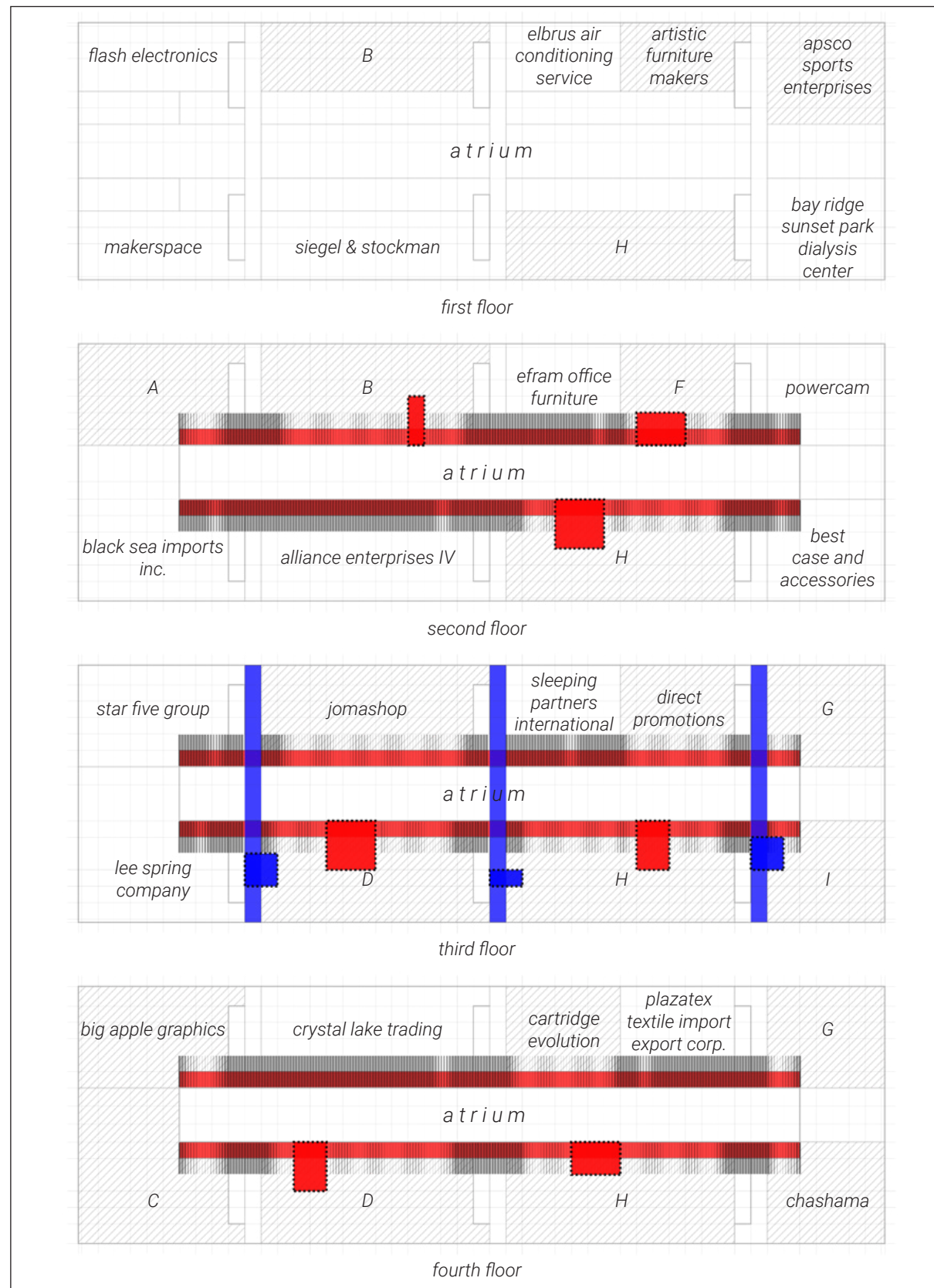


■ _proposed vertical circulation
■ _proposed horizontal circulation

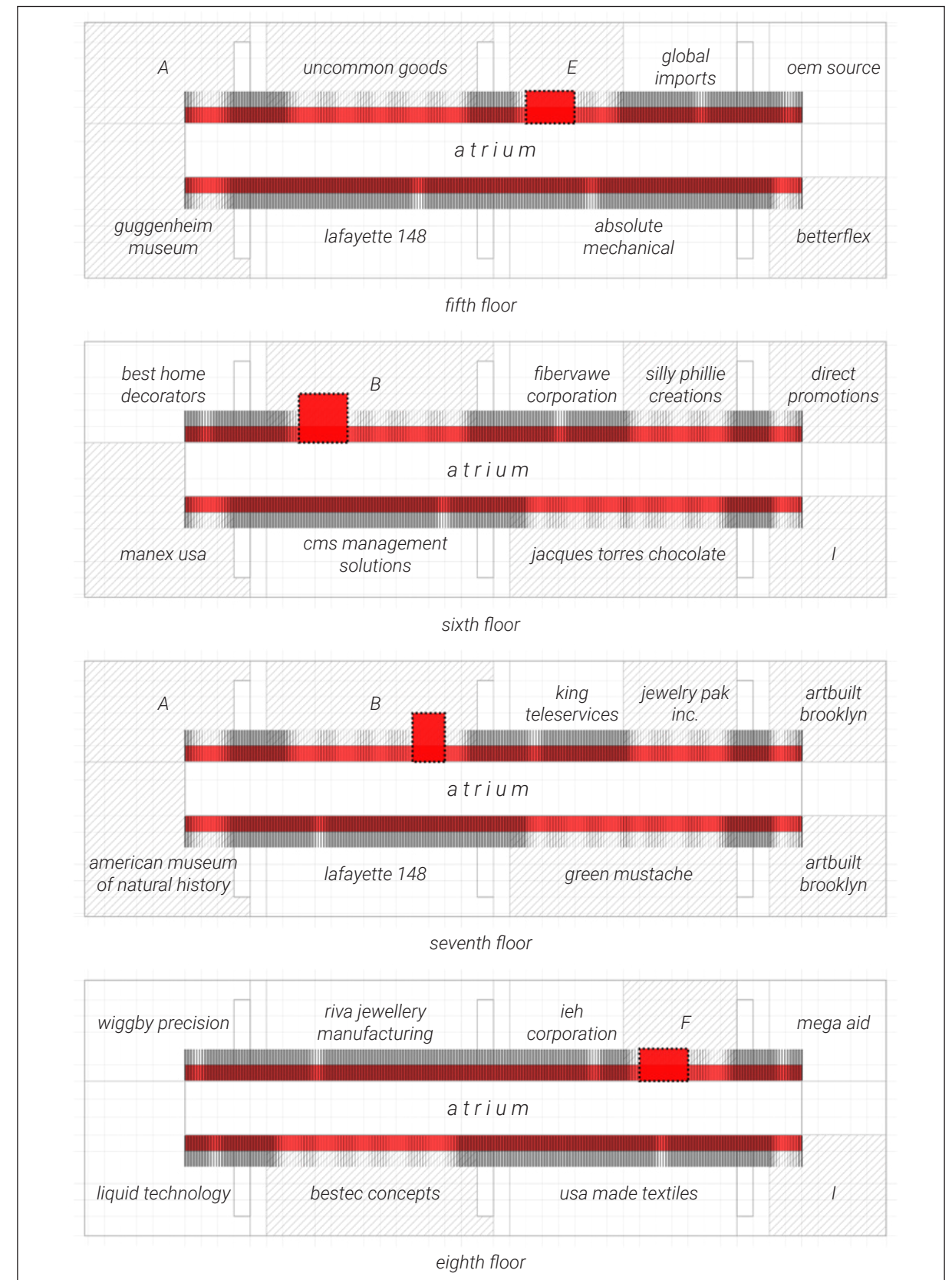


_existing manufacturing hub

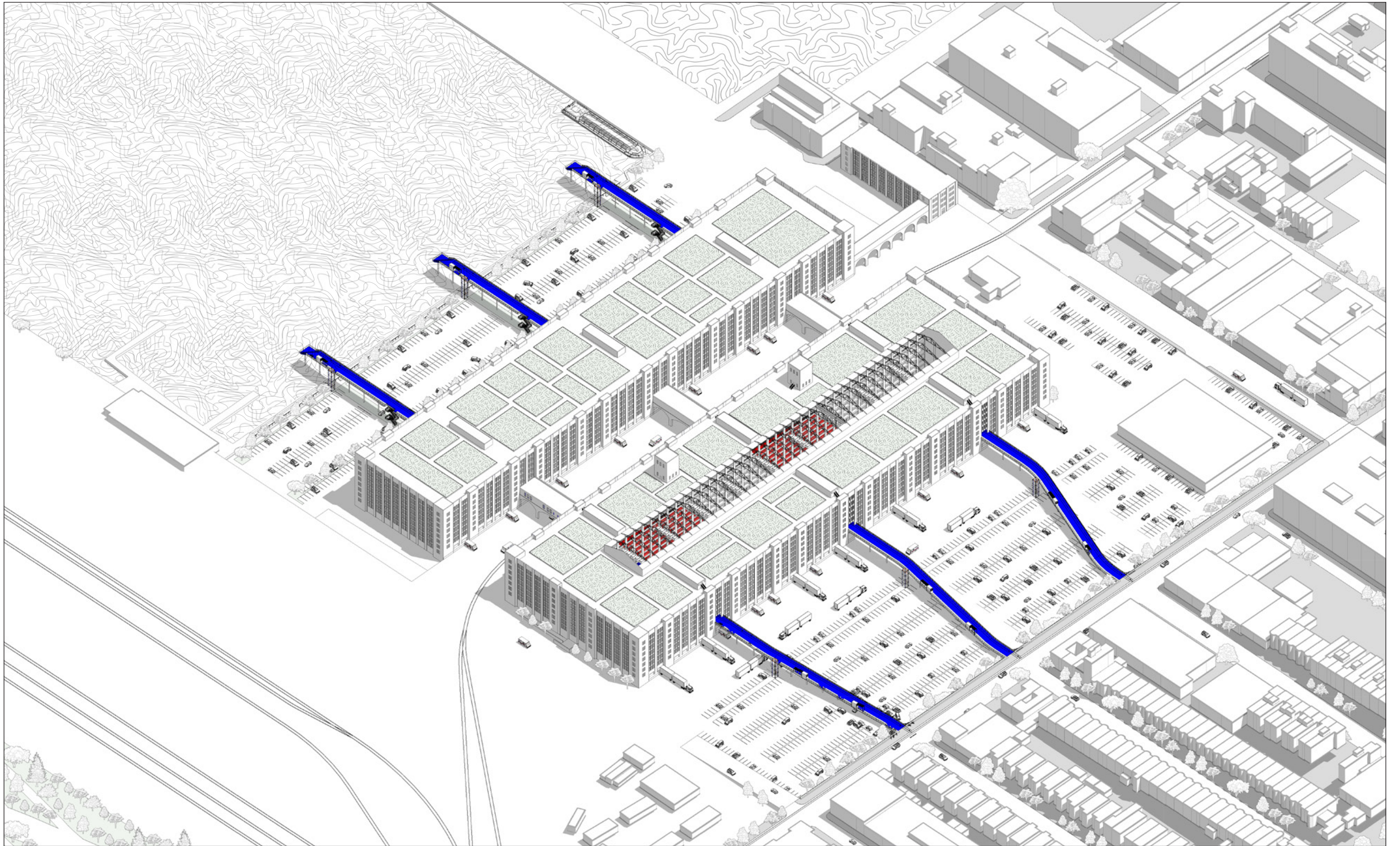




plan permeability diagram

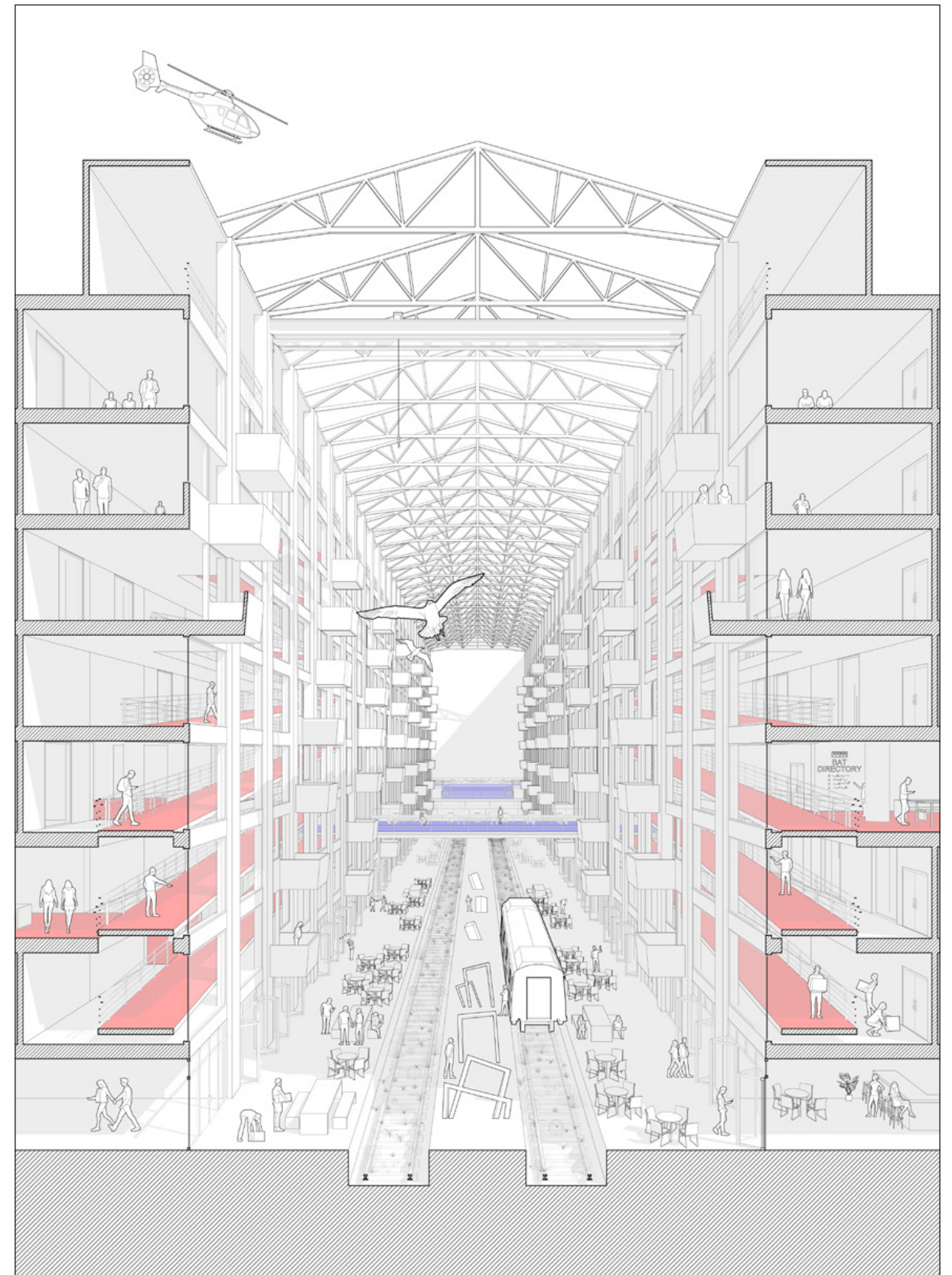


plan permeability diagram

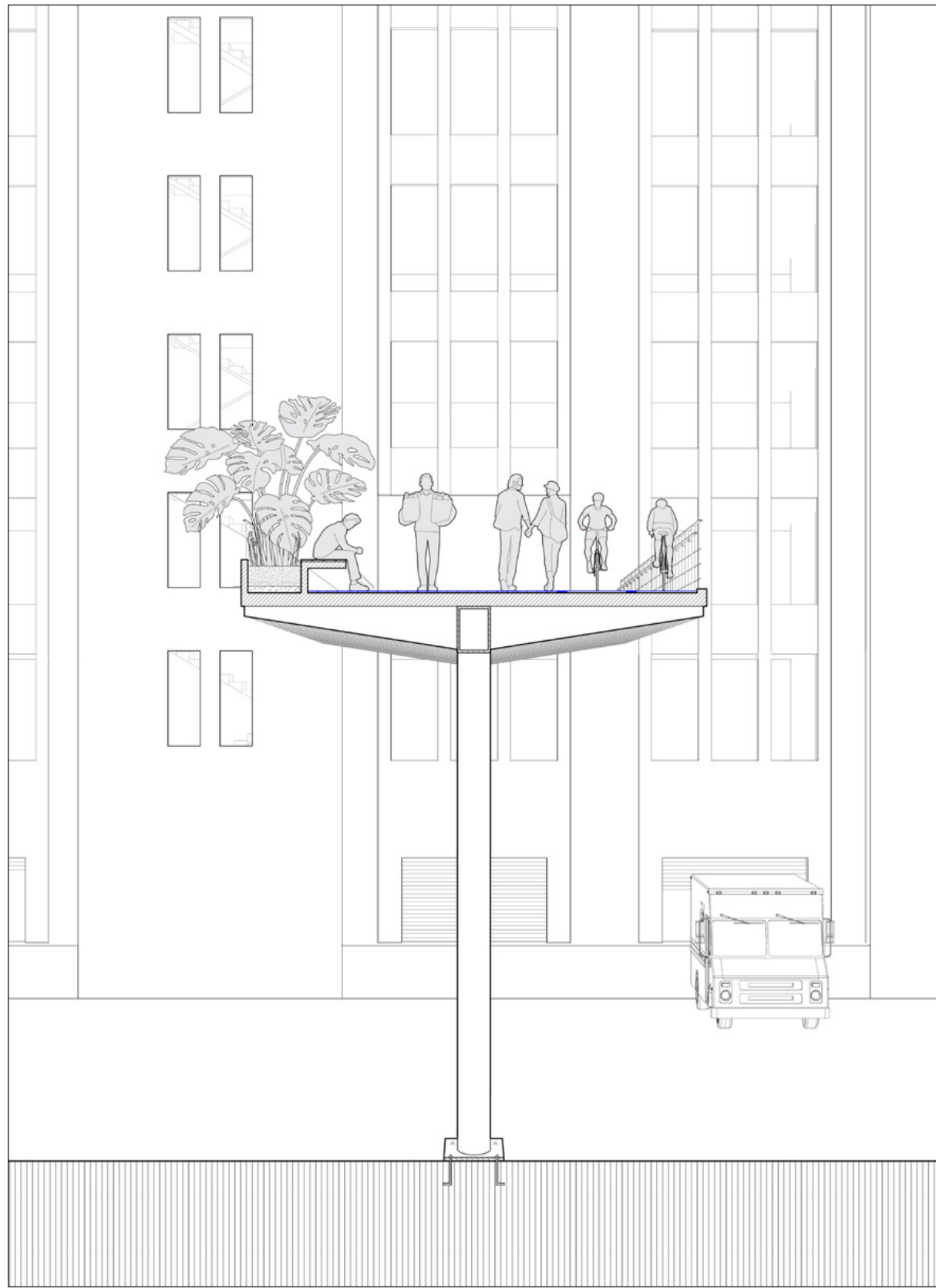


site axonometric

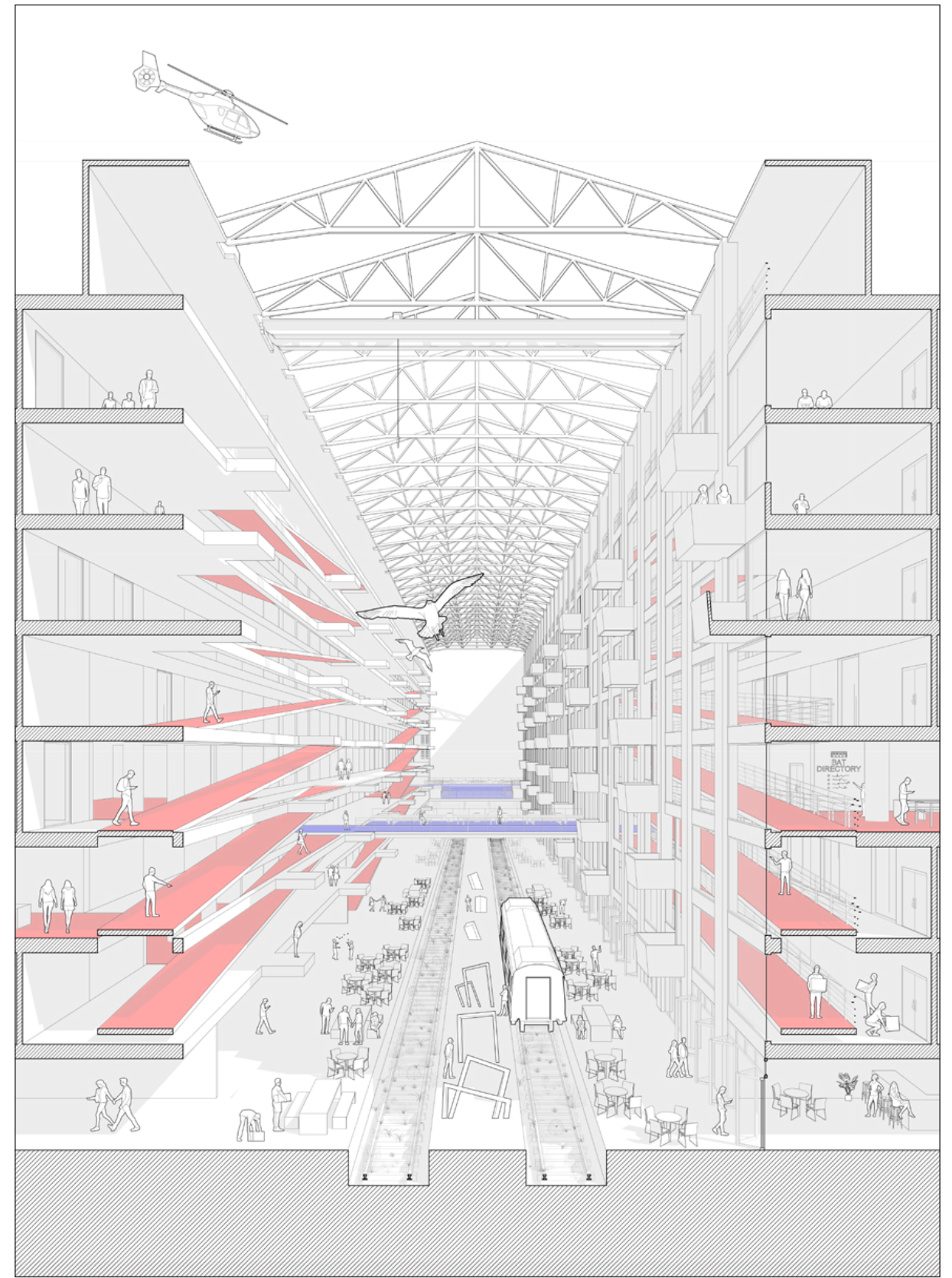
site axonometric



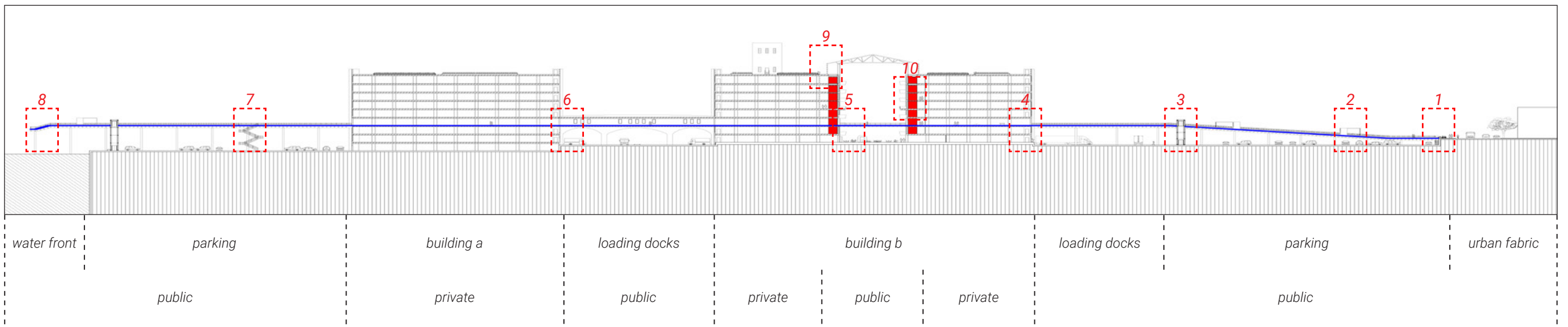
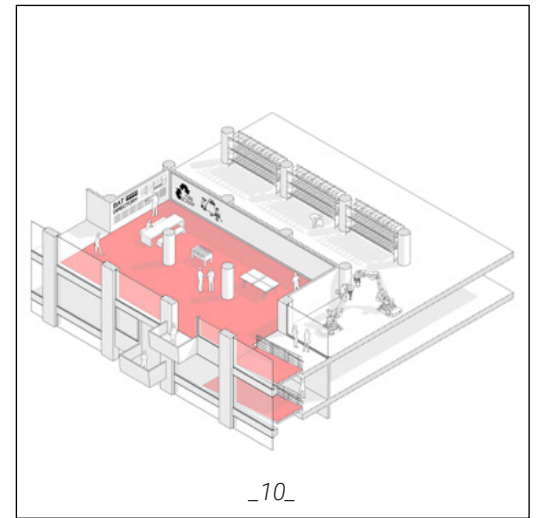
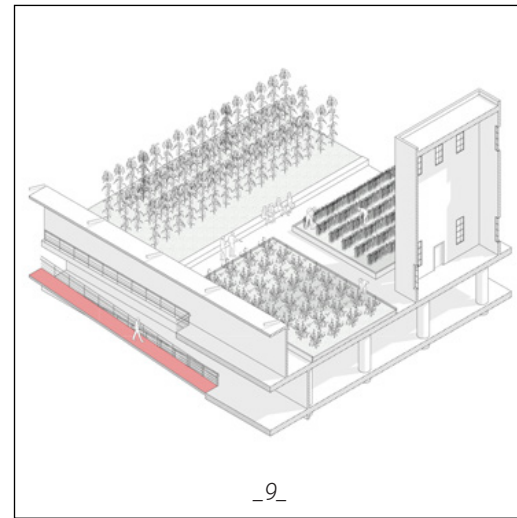
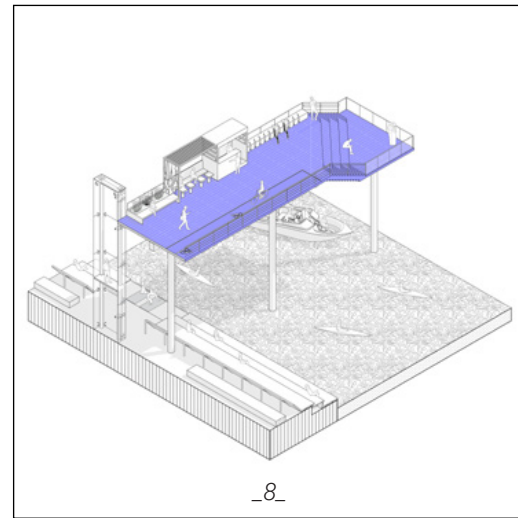
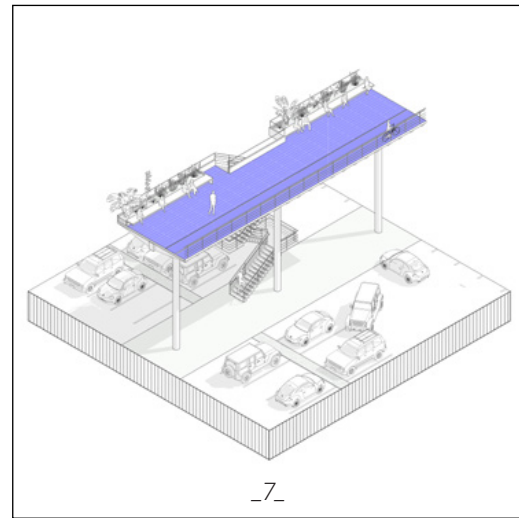
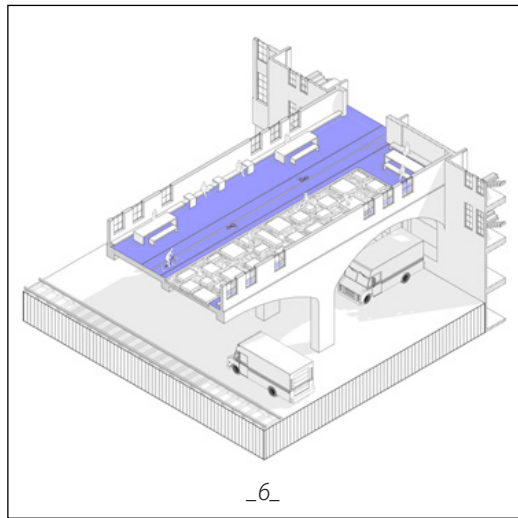
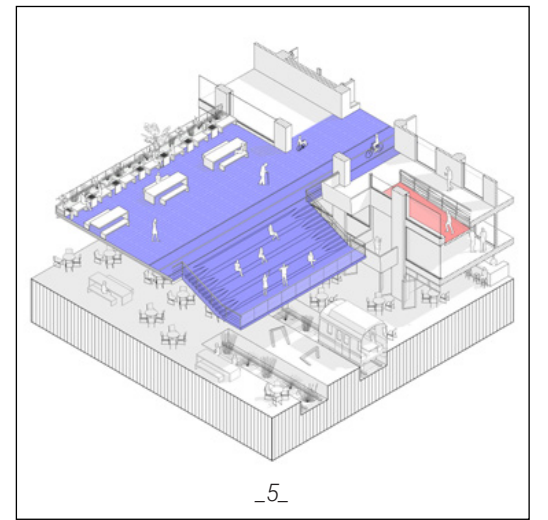
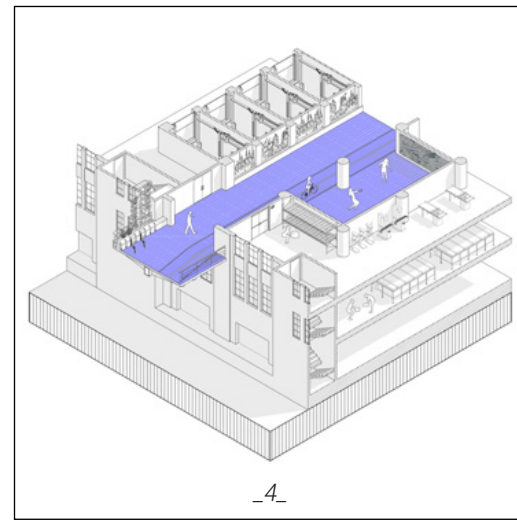
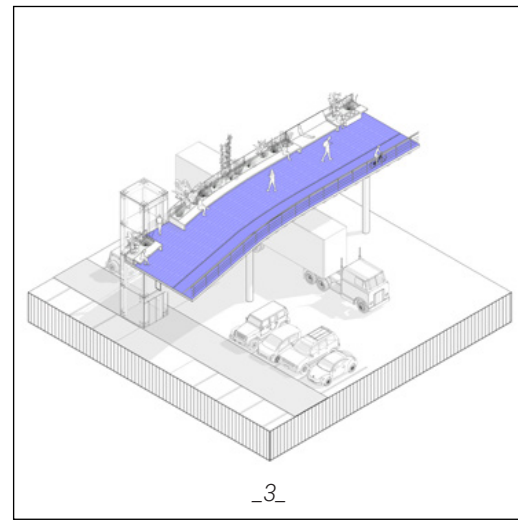
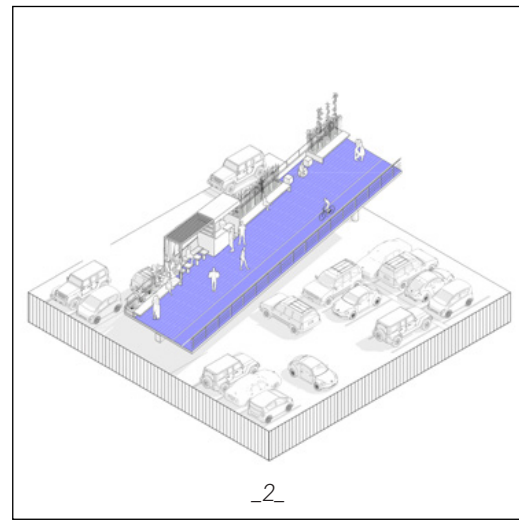
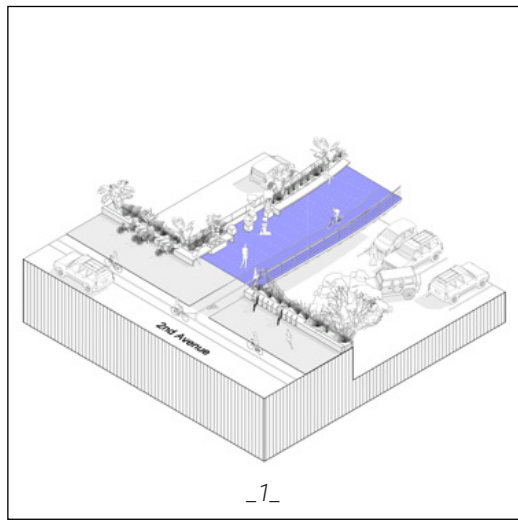
atrium section

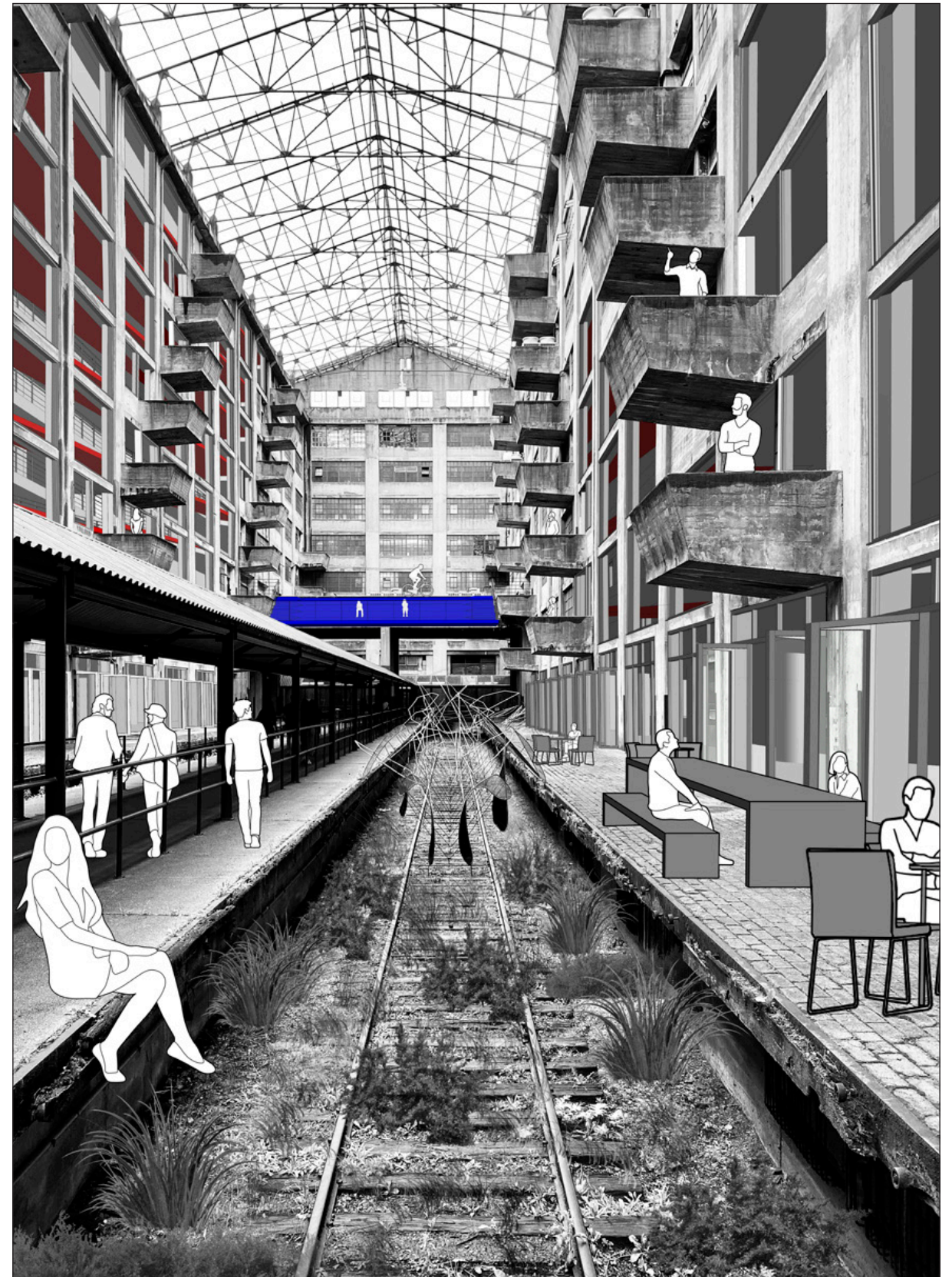
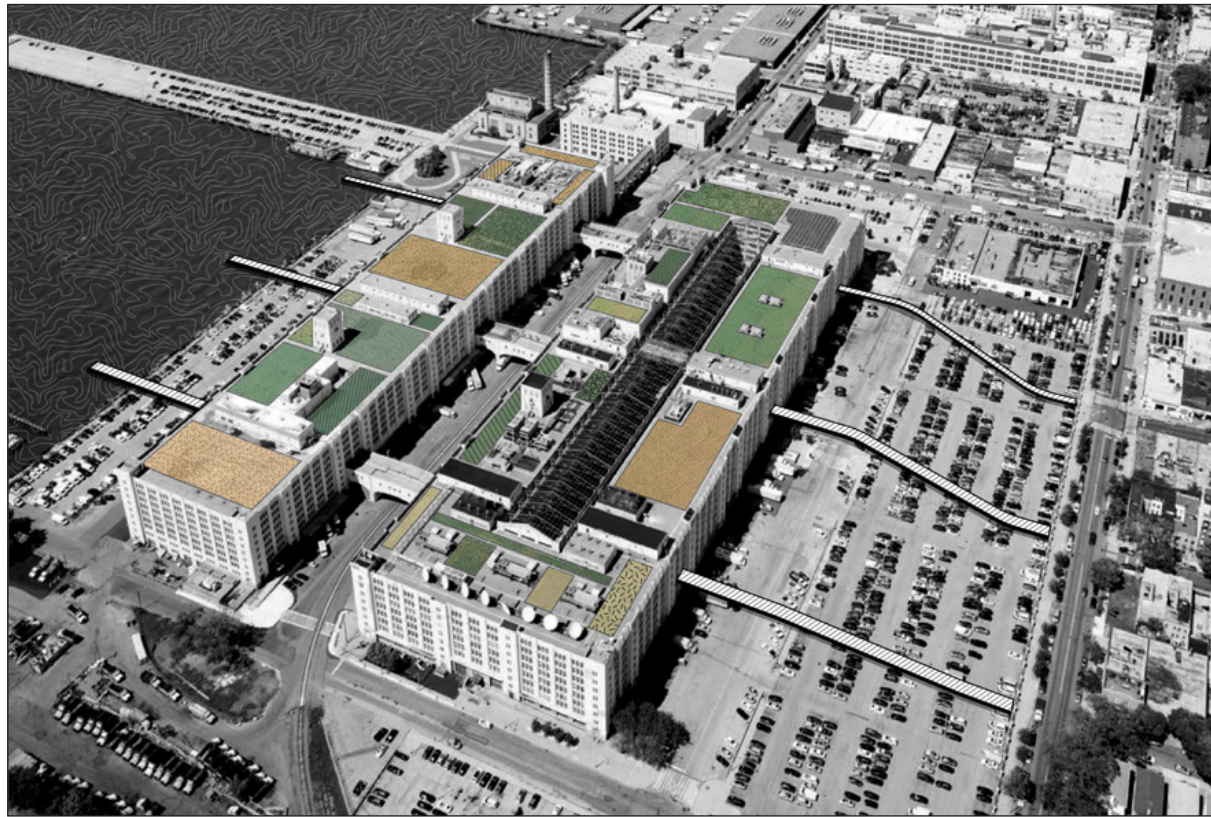


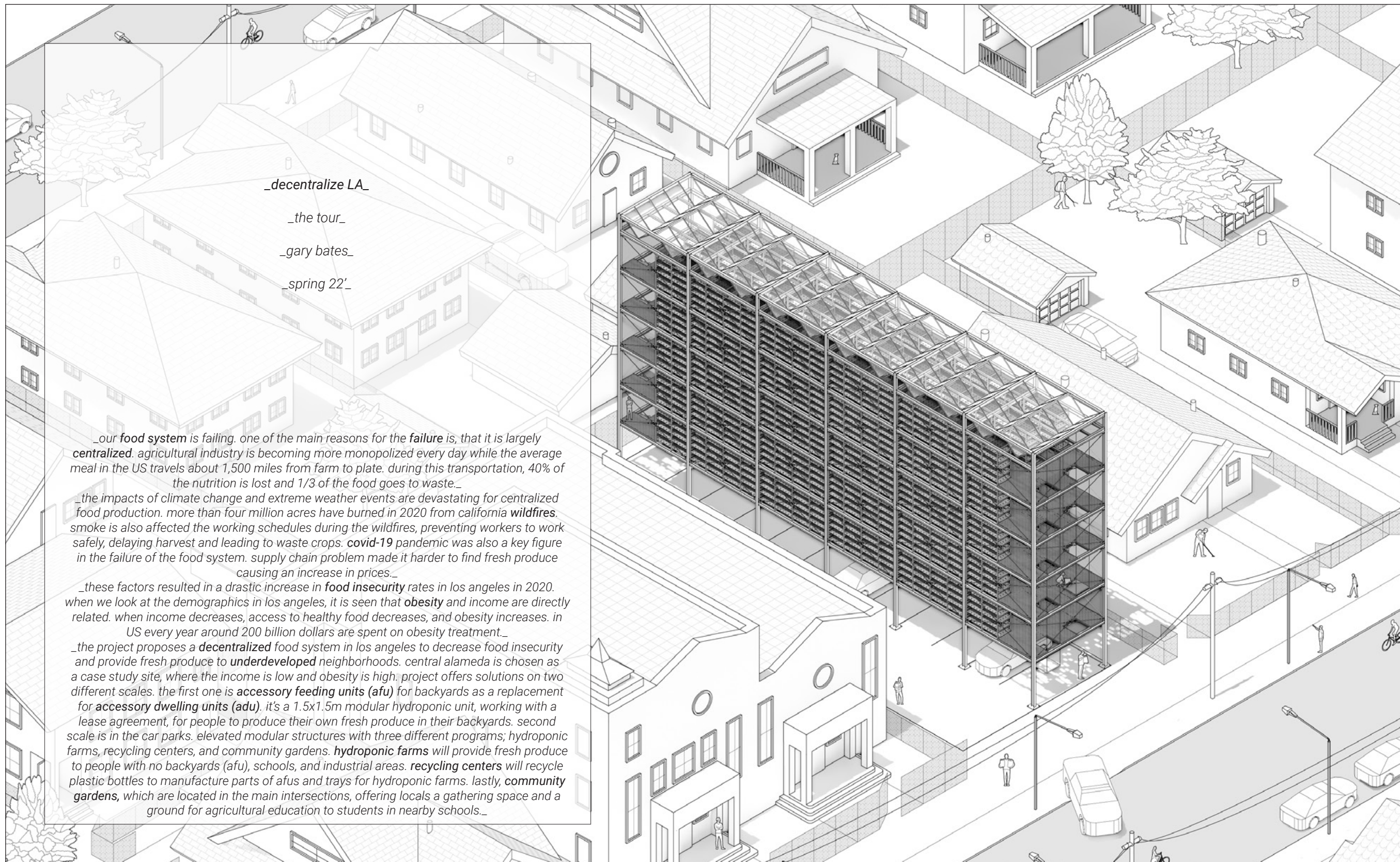
platform section



atrium section







decentralize LA

the tour

gary bates

spring 22'

our food system is failing. one of the main reasons for the failure is, that it is largely centralized. agricultural industry is becoming more monopolized every day while the average meal in the US travels about 1,500 miles from farm to plate. during this transportation, 40% of the nutrition is lost and 1/3 of the food goes to waste.

the impacts of climate change and extreme weather events are devastating for centralized food production. more than four million acres have burned in 2020 from california wildfires. smoke is also affected the working schedules during the wildfires, preventing workers to work safely, delaying harvest and leading to waste crops. covid-19 pandemic was also a key figure in the failure of the food system. supply chain problem made it harder to find fresh produce causing an increase in prices.

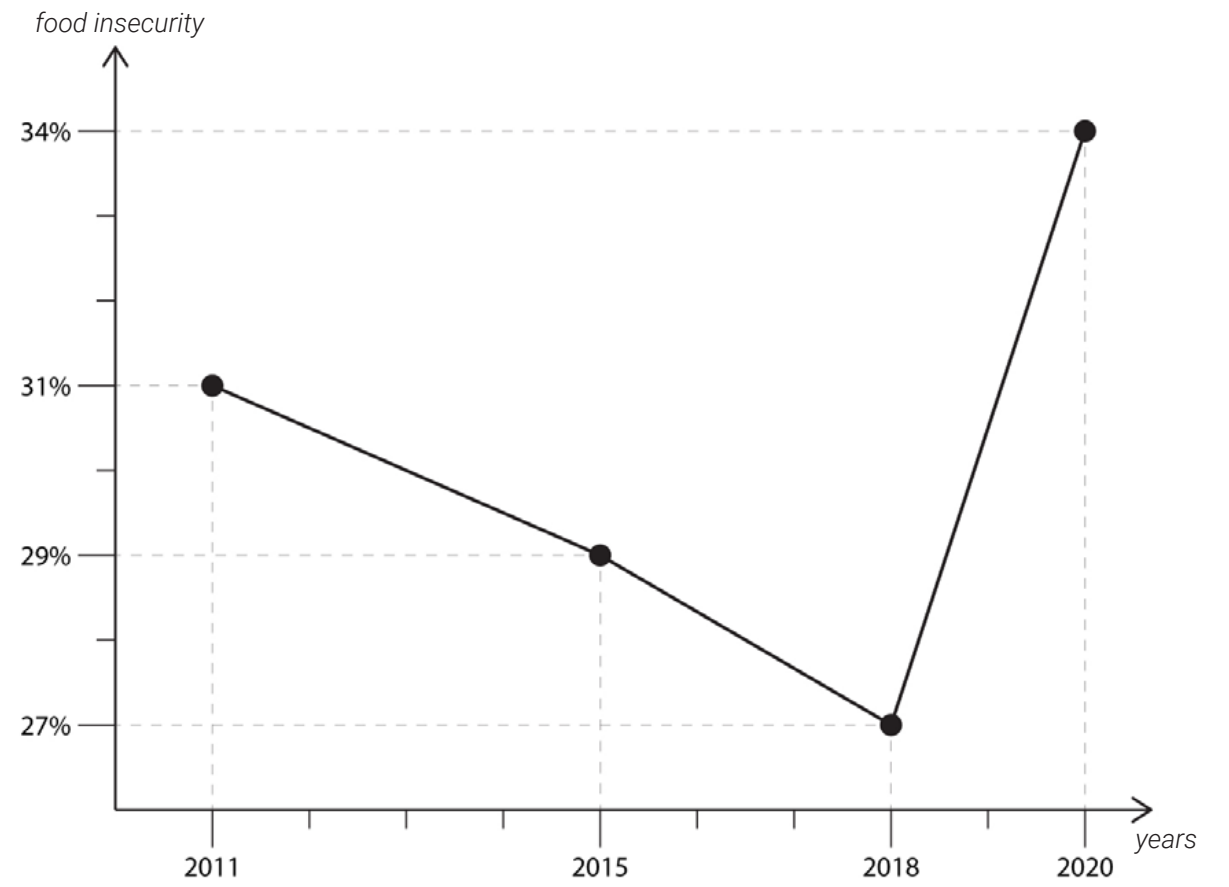
these factors resulted in a drastic increase in food insecurity rates in los angeles in 2020. when we look at the demographics in los angeles, it is seen that obesity and income are directly related. when income decreases, access to healthy food decreases, and obesity increases. in US every year around 200 billion dollars are spent on obesity treatment.

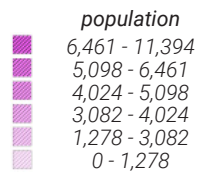
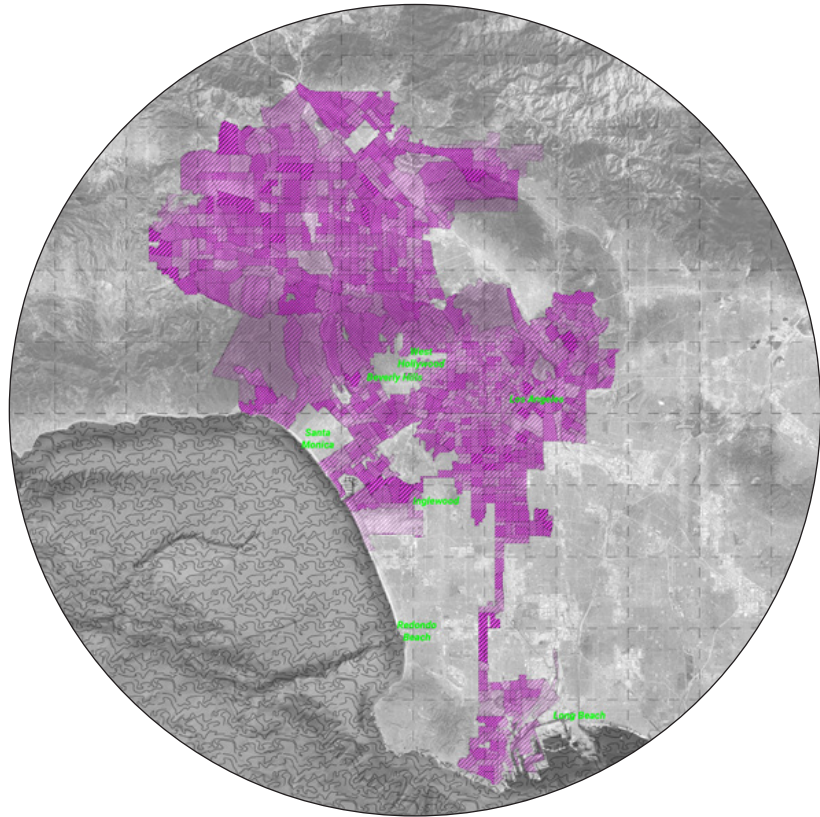
the project proposes a decentralized food system in los angeles to decrease food insecurity and provide fresh produce to underdeveloped neighborhoods. central alameda is chosen as a case study site, where the income is low and obesity is high. project offers solutions on two different scales. the first one is accessory feeding units (afu) for backyards as a replacement for accessory dwelling units (adu). it's a 1.5x1.5m modular hydroponic unit, working with a lease agreement, for people to produce their own fresh produce in their backyards. second scale is in the car parks. elevated modular structures with three different programs; hydroponic farms, recycling centers, and community gardens. hydroponic farms will provide fresh produce to people with no backyards (afu), schools, and industrial areas. recycling centers will recycle plastic bottles to manufacture parts of afus and trays for hydroponic farms. lastly, community gardens, which are located in the main intersections, offering locals a gathering space and a ground for agricultural education to students in nearby schools.

Food insecurity

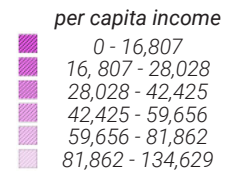
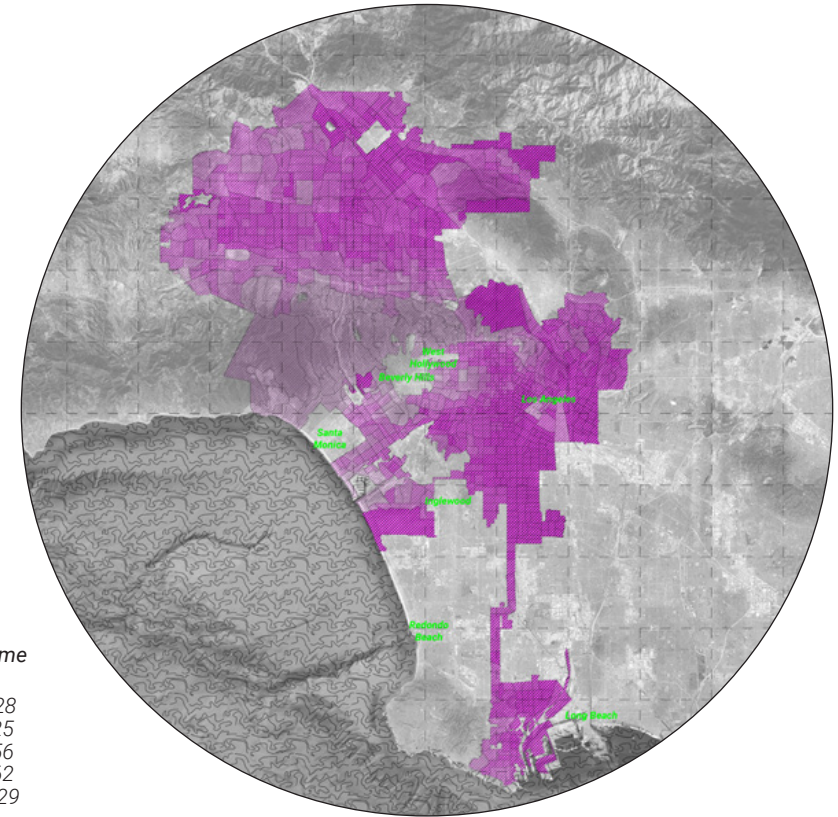
is the lack of consistent access to enough food for an active, healthy life.

The U.S. Department of Agriculture (USDA)

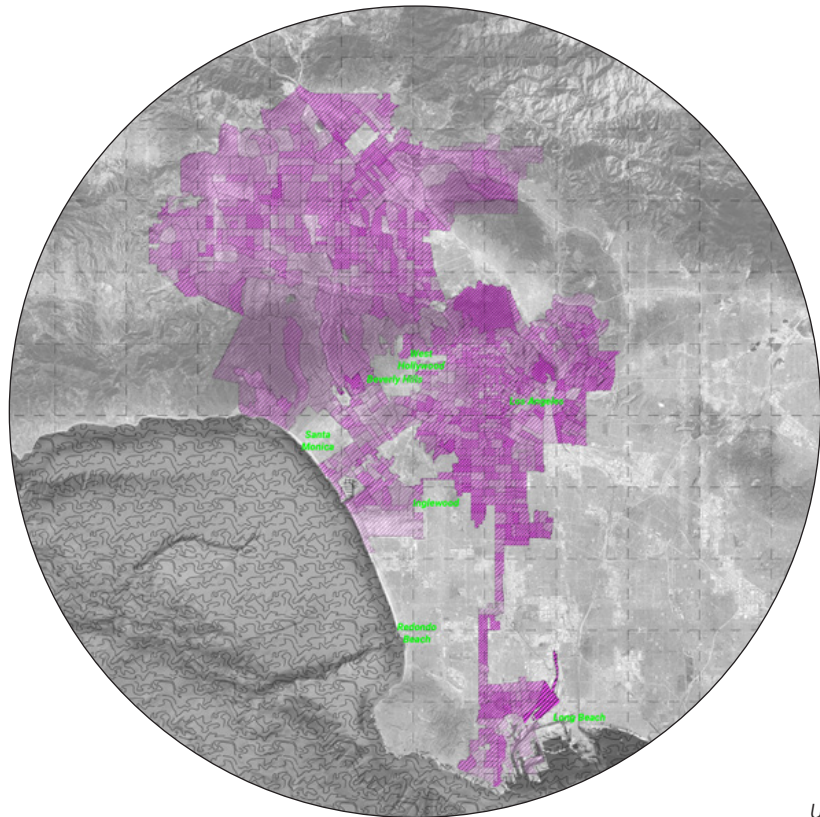




population_

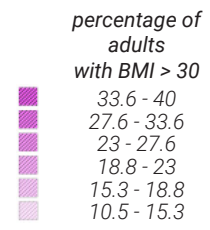
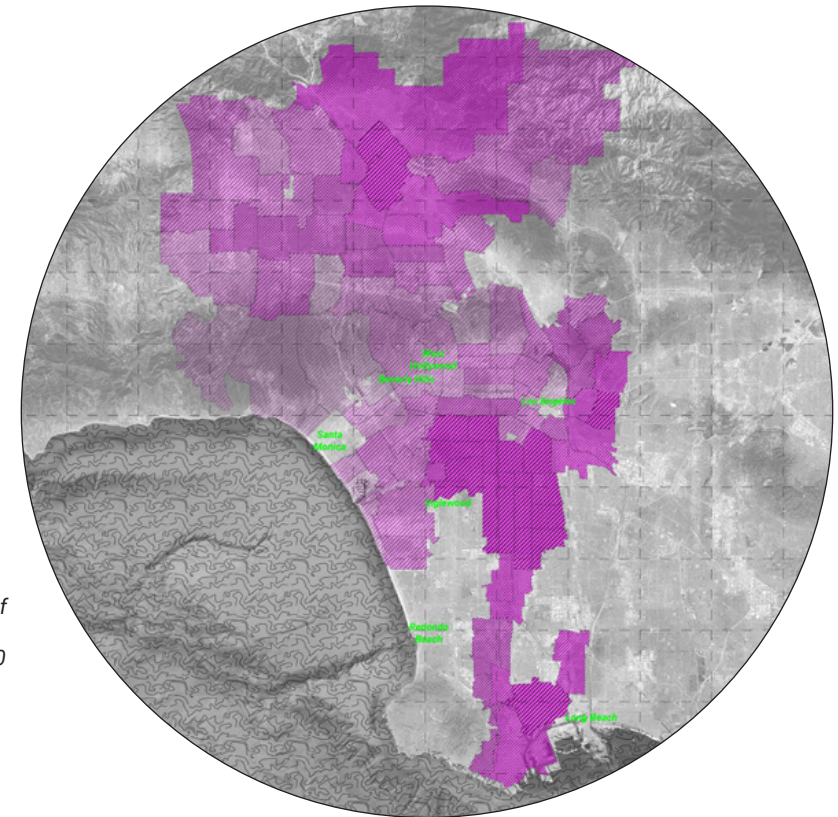


income_



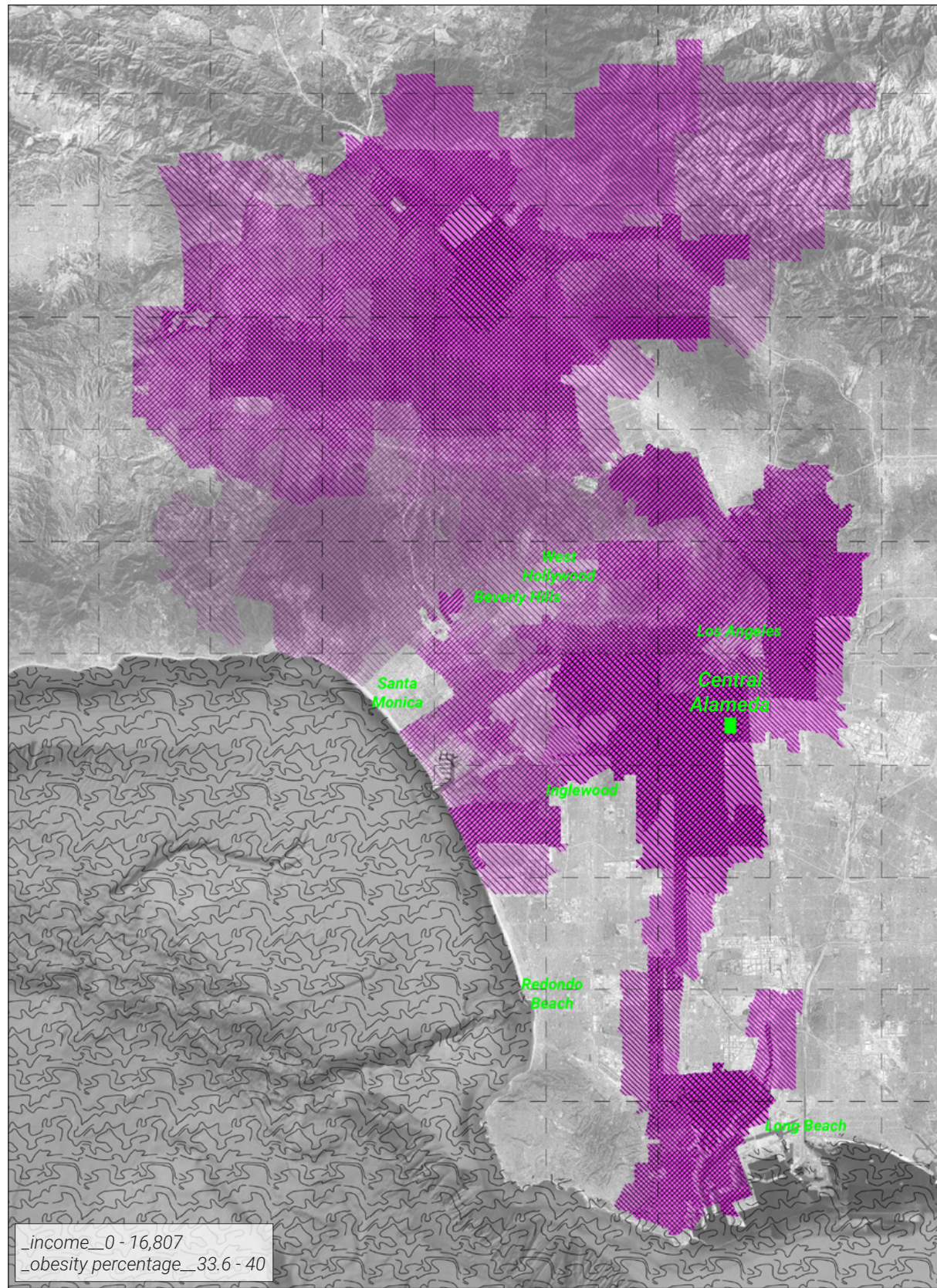
unemployment_

analysis

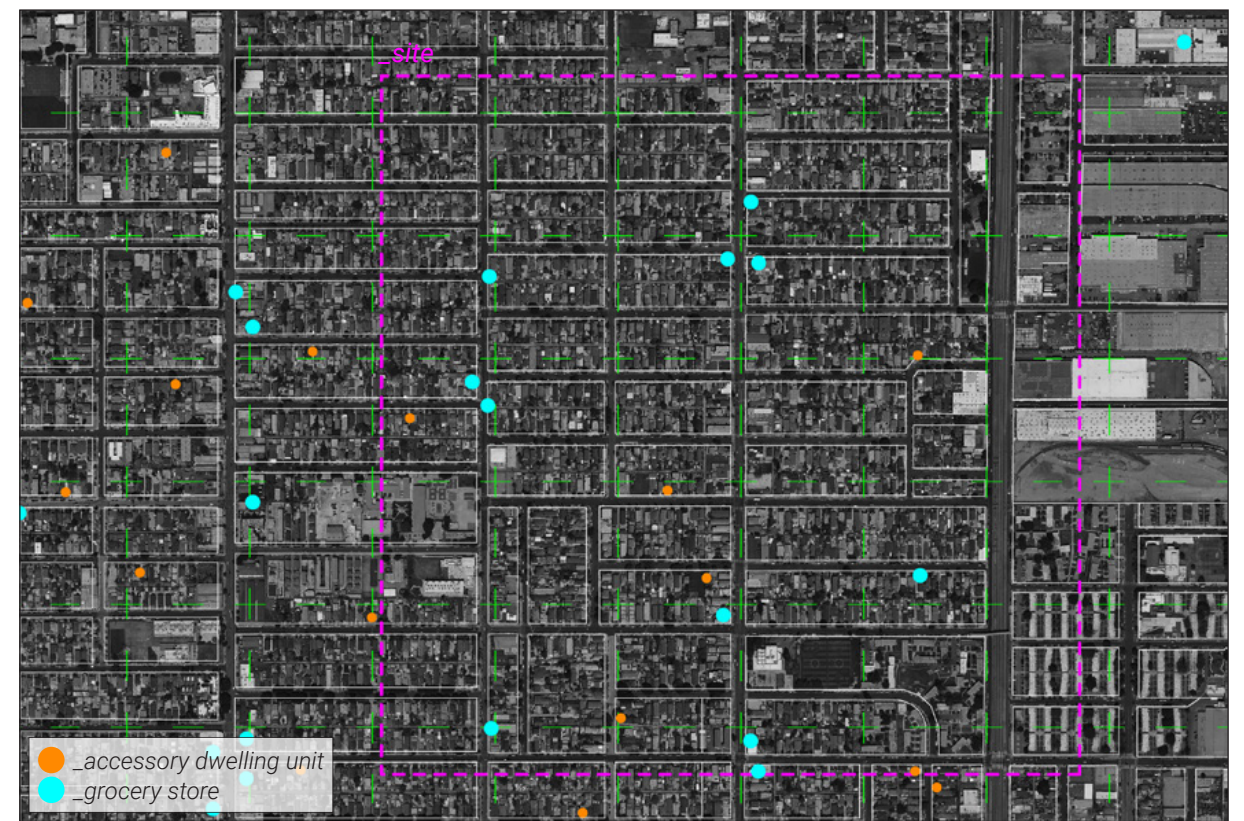
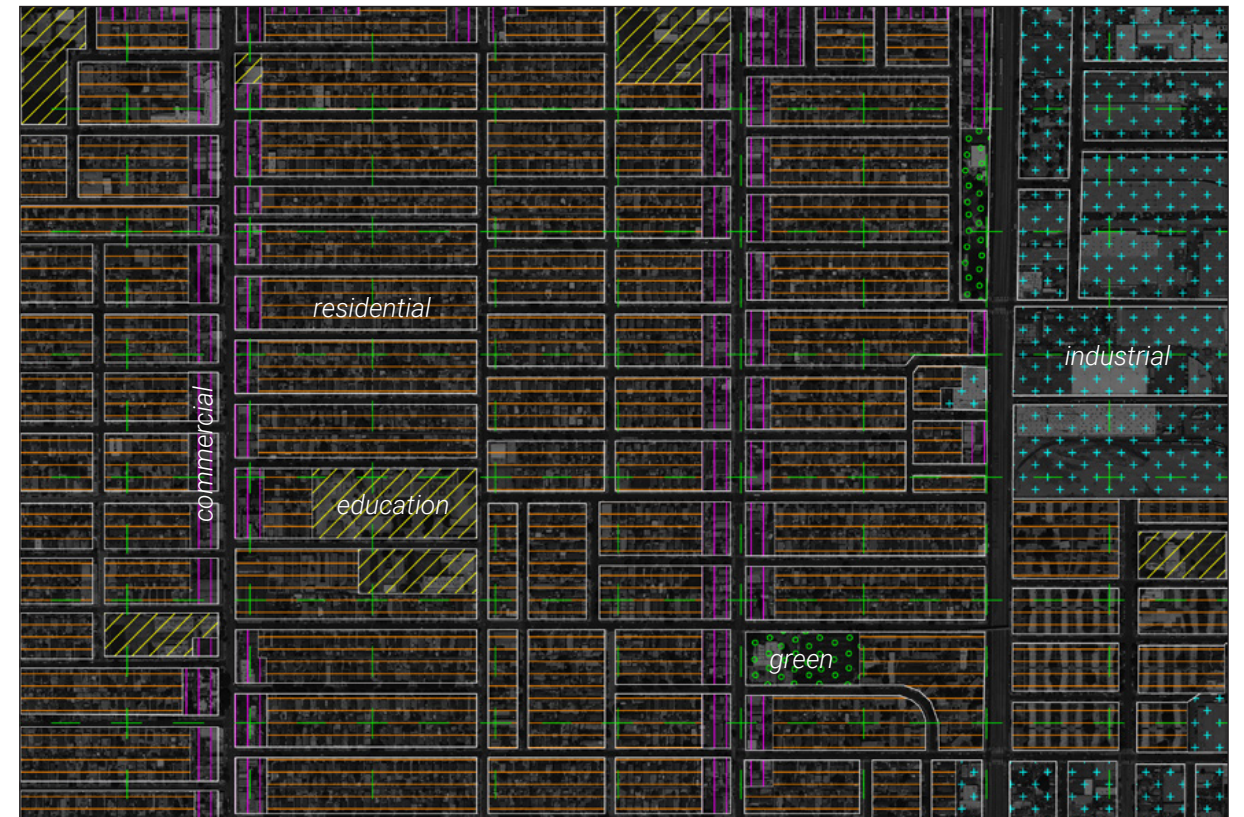


obesity_

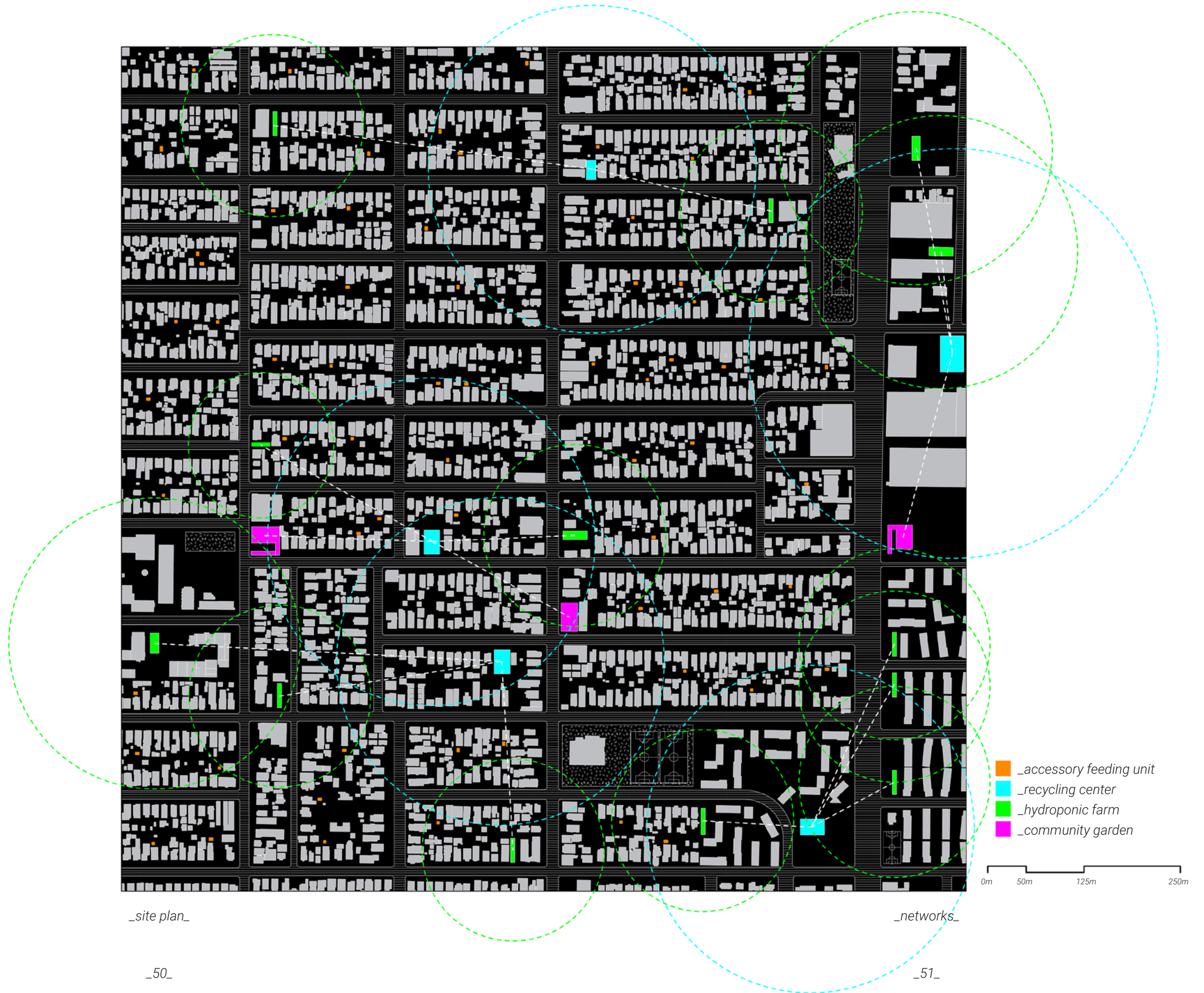
analysis



obesity & income

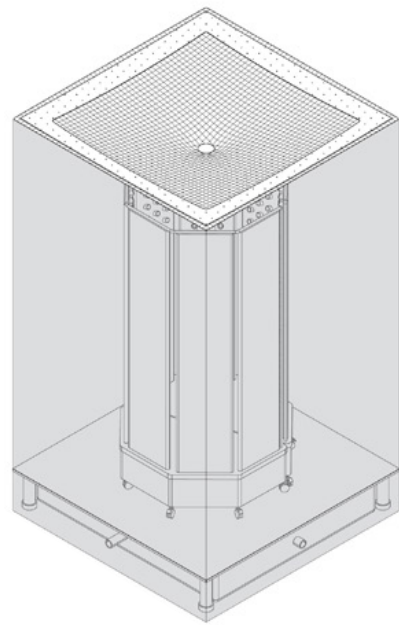


analysis



site plan

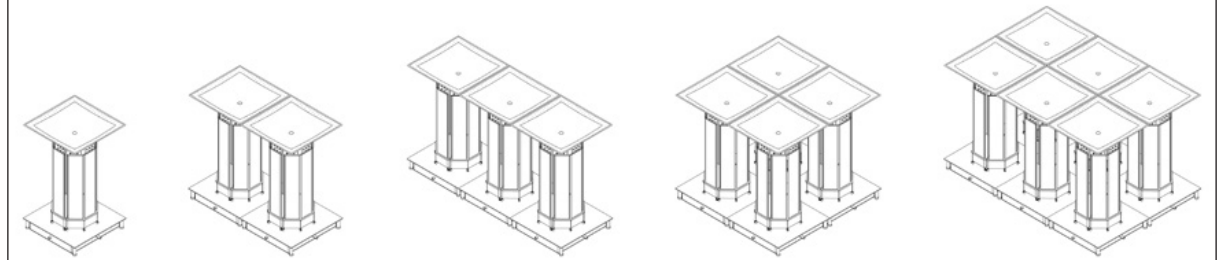
networks



can produce more than 25 pounds of fresh produce per month

\$3,000 per unit _ \$1,000 government fund
300 pounds of produce per year _ \$1,800
compensate in ≈1 year

accessory feeding unit



25 pounds per month

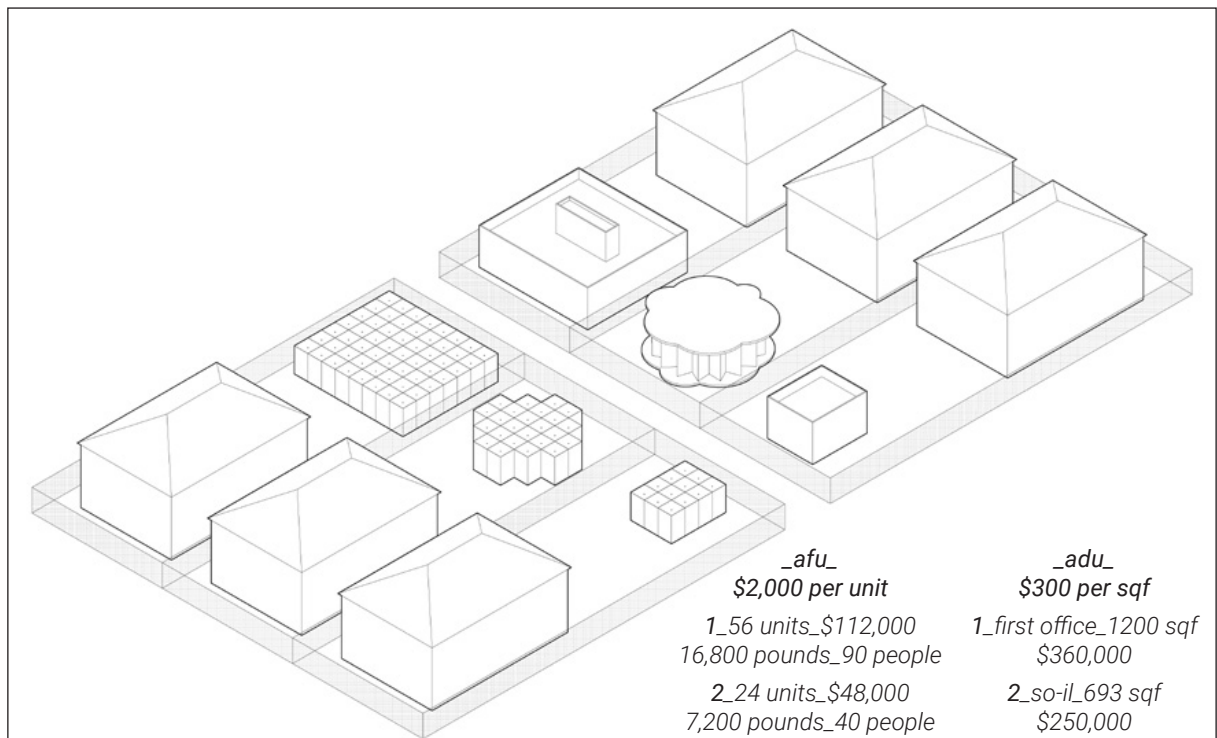
50 pounds per month

75 pounds per month

100 pounds per month

150 pounds per month

monthly leafy green consumption of an average person_15 pounds



afu
\$2,000 per unit

1_56 units_\$112,000
16,800 pounds_90 people

2_24 units_\$48,000
7,200 pounds_40 people

3_12 units_\$24,000
3,600 pounds_20 people

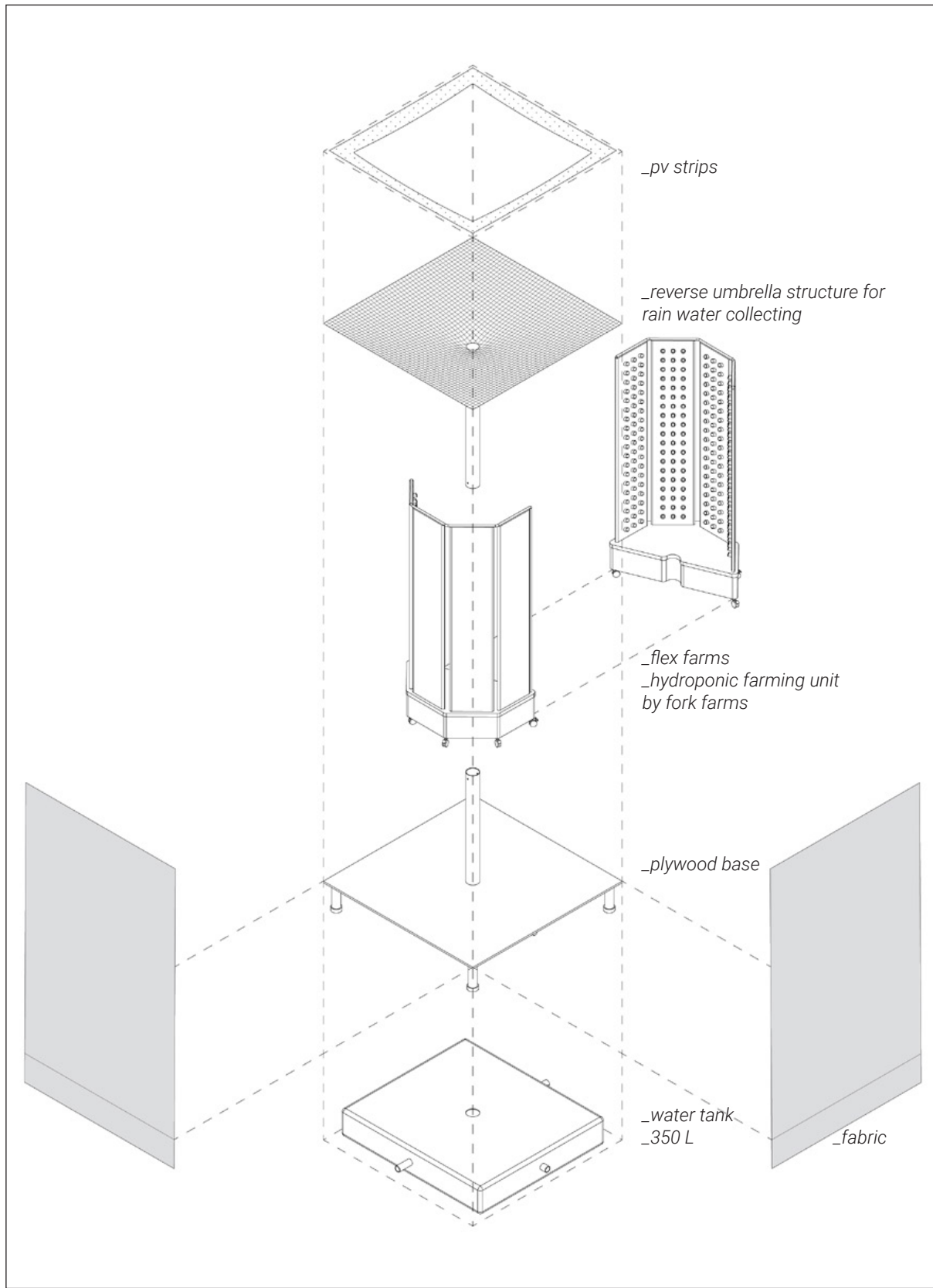
adu
\$300 per sqf

1_first office_1200 sqf
\$360,000

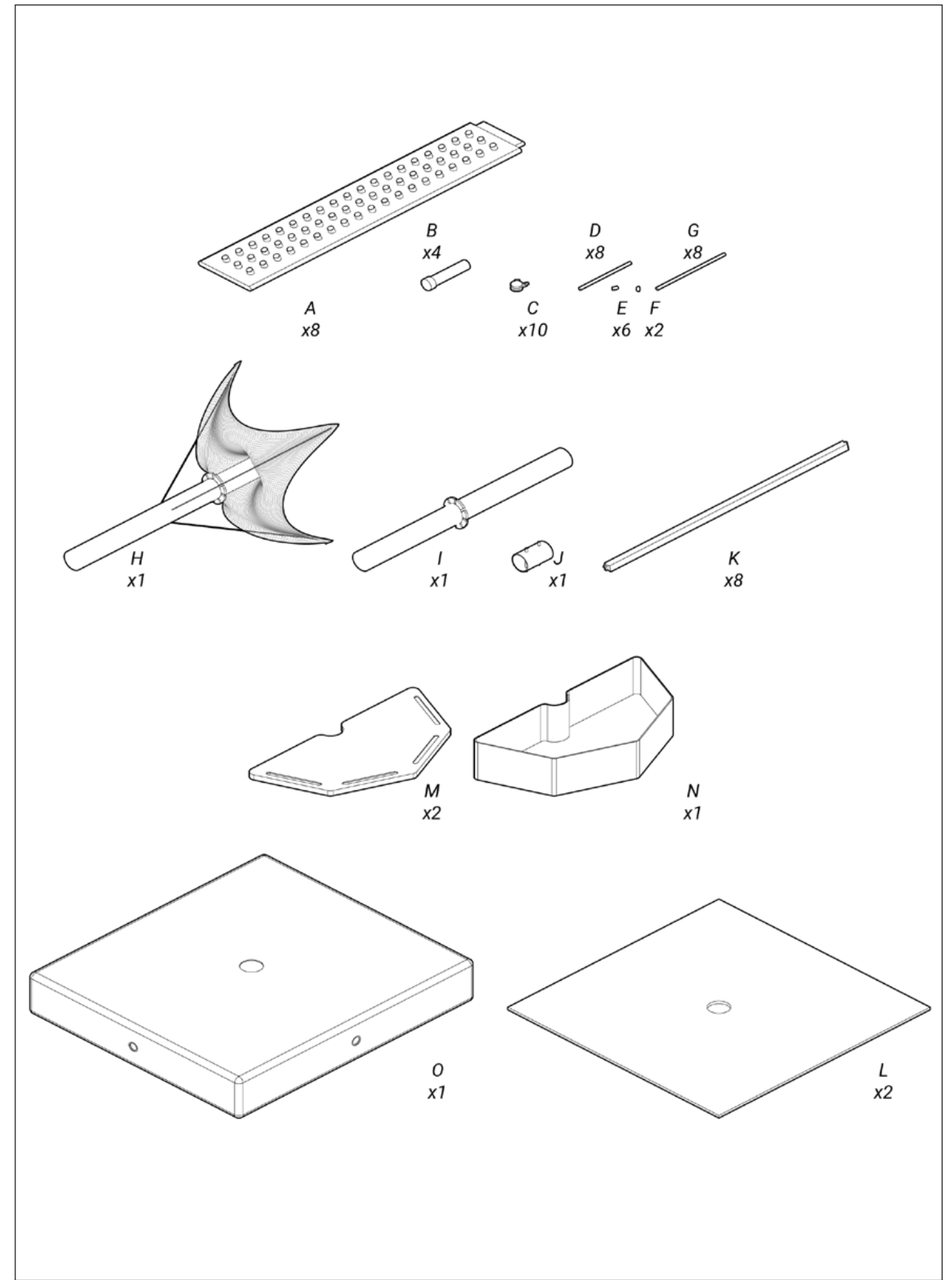
2_so-il_693 sqf
\$250,000

3_first office_350 sqf
\$105,000

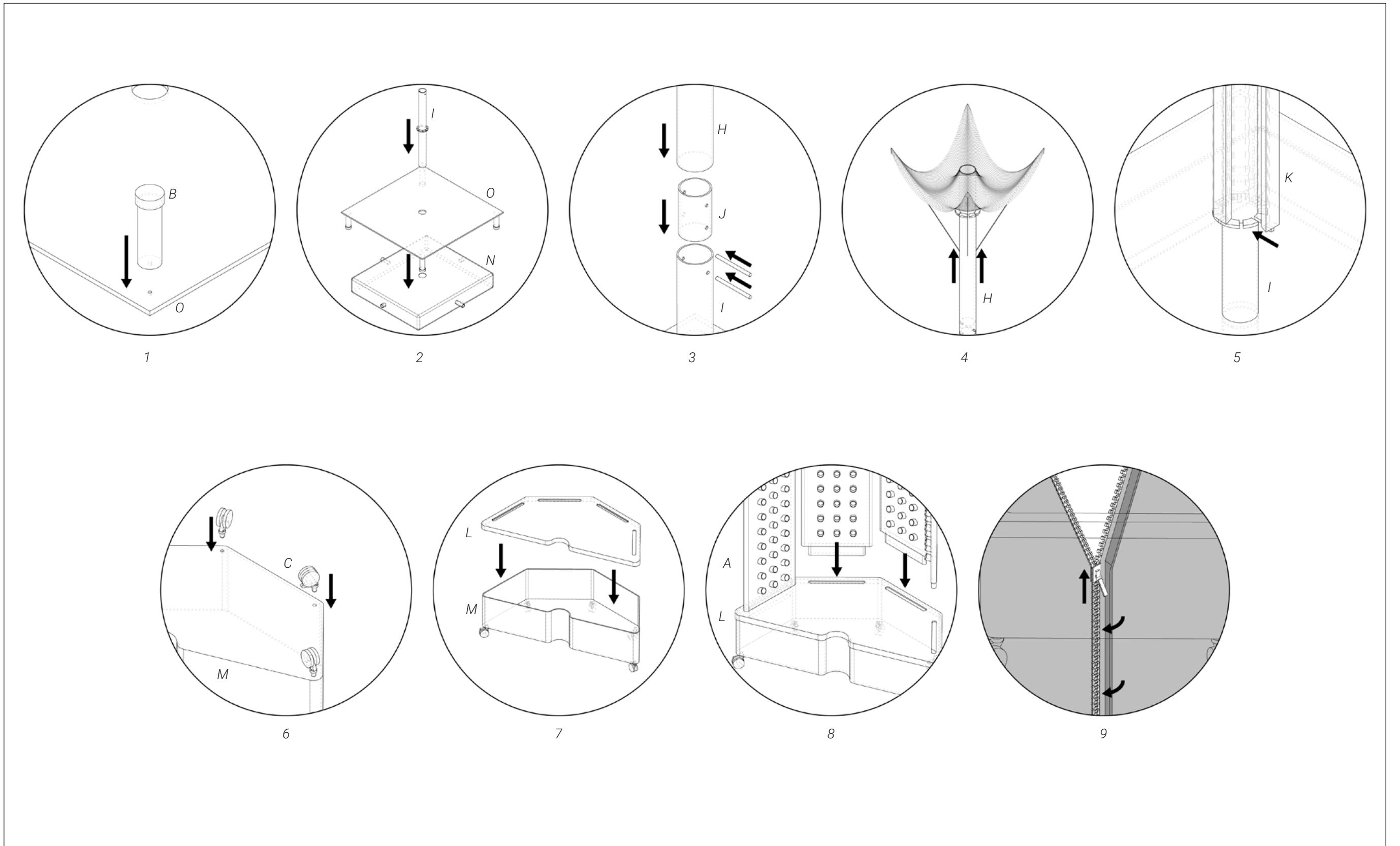
afu vs. adu

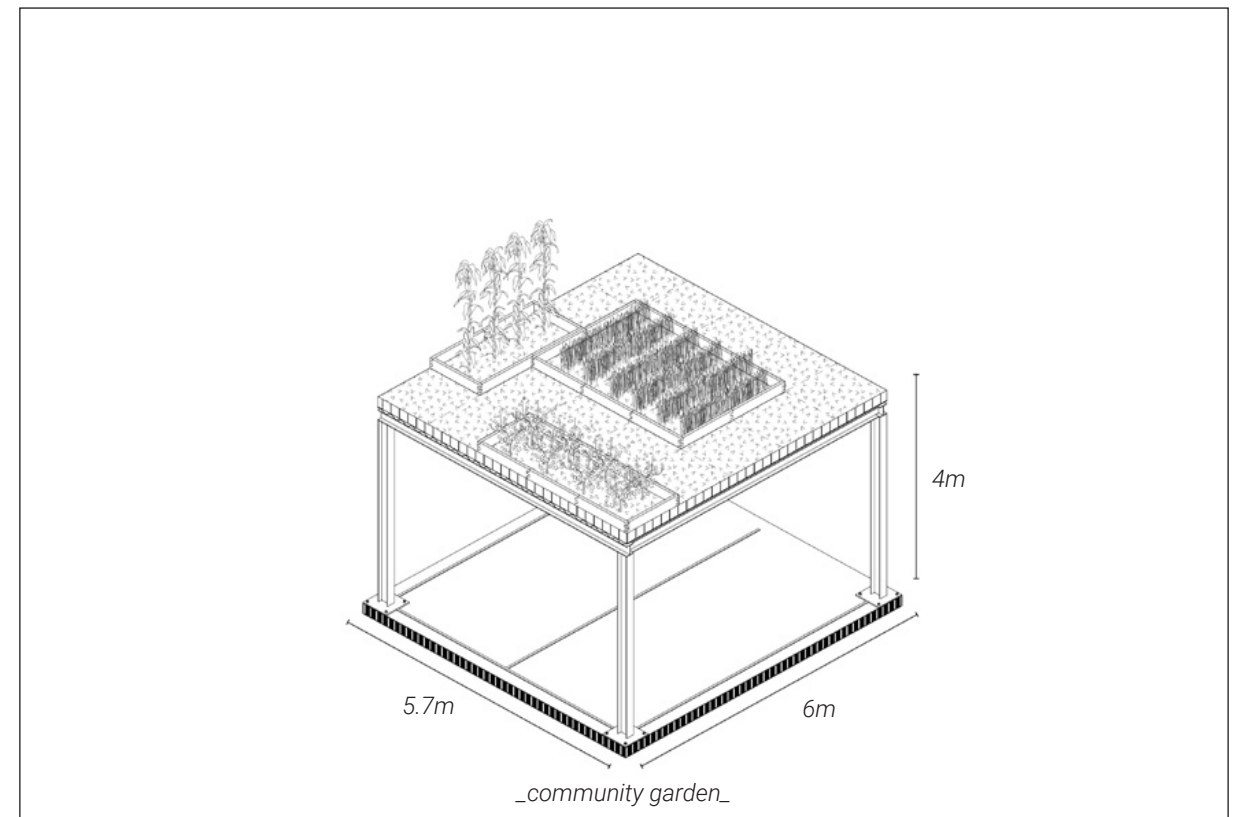
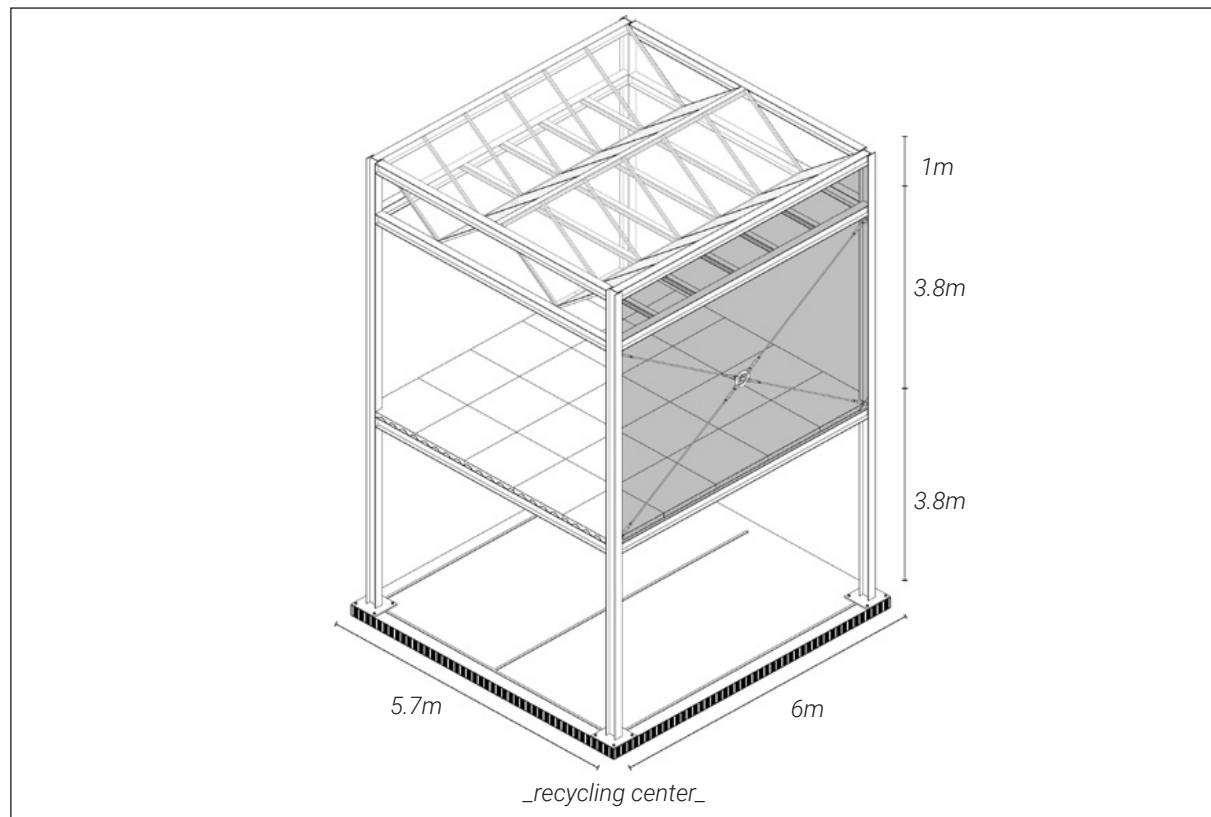
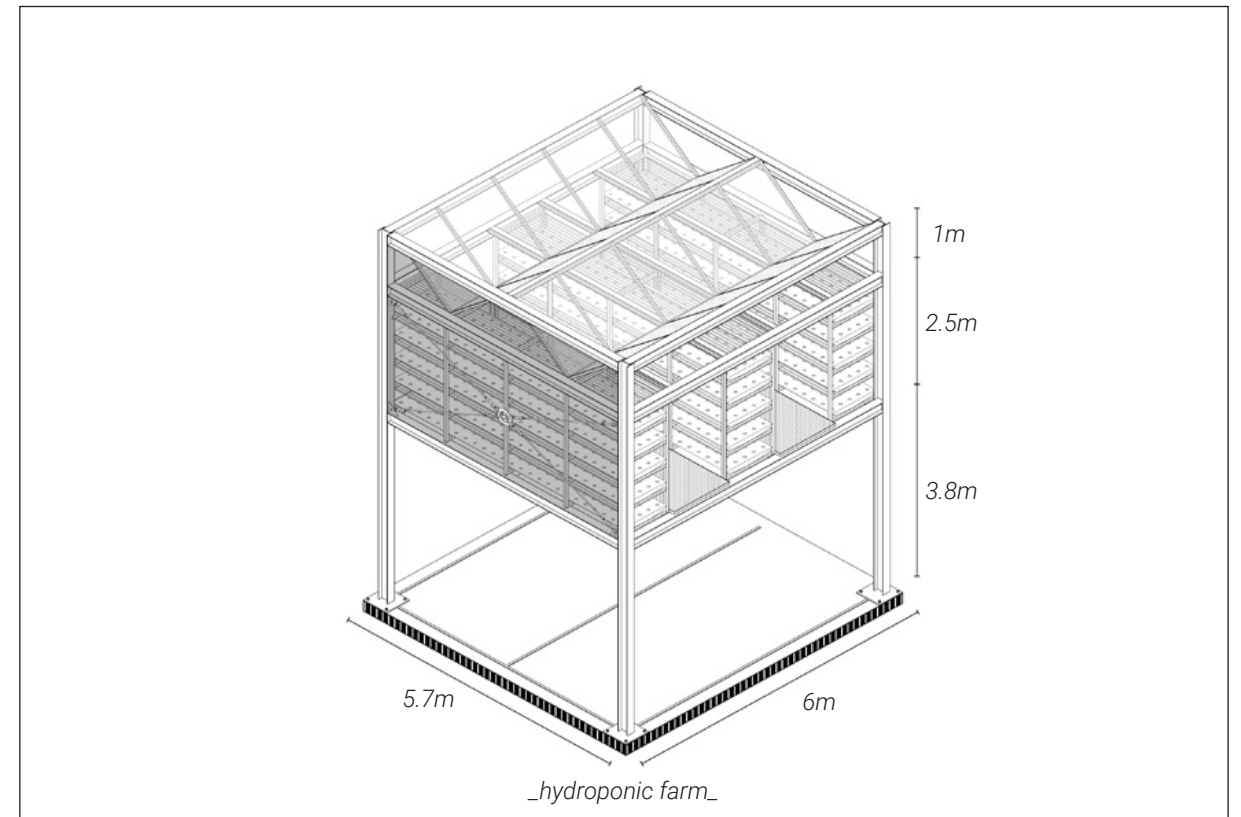
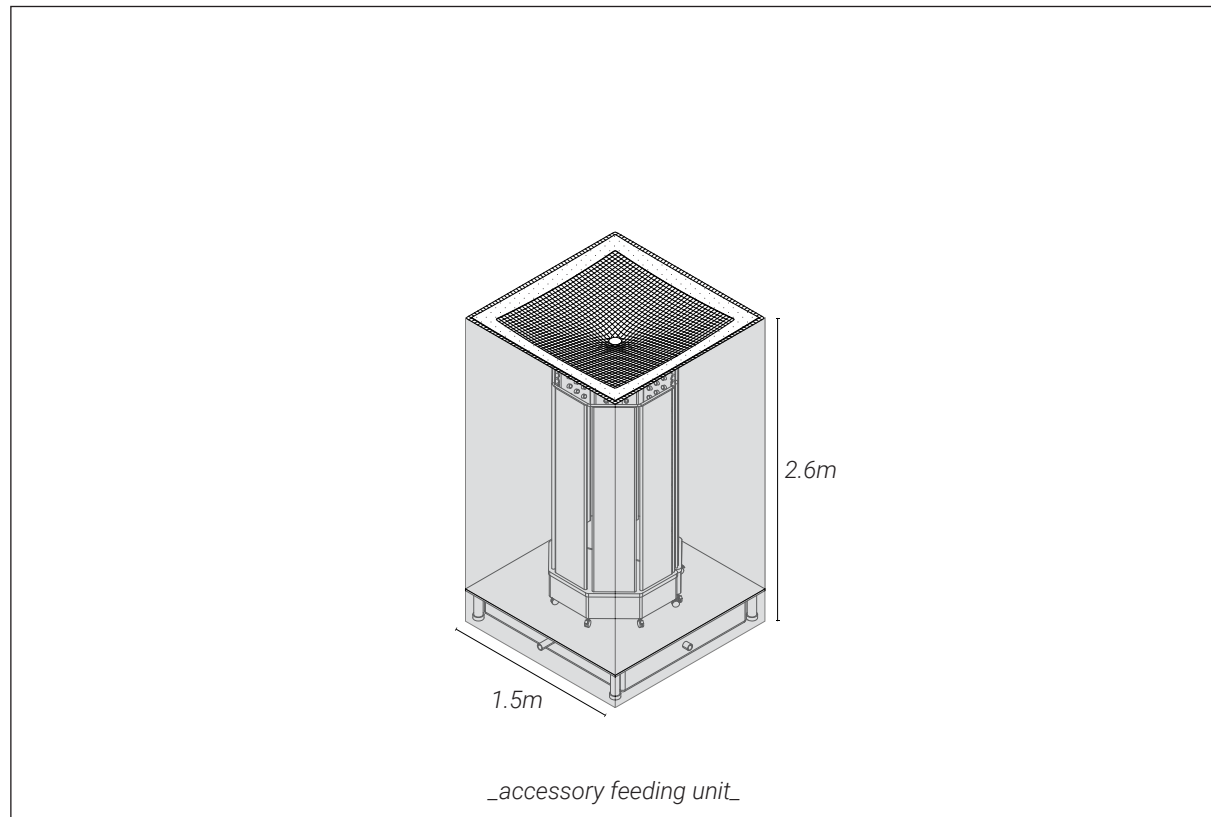


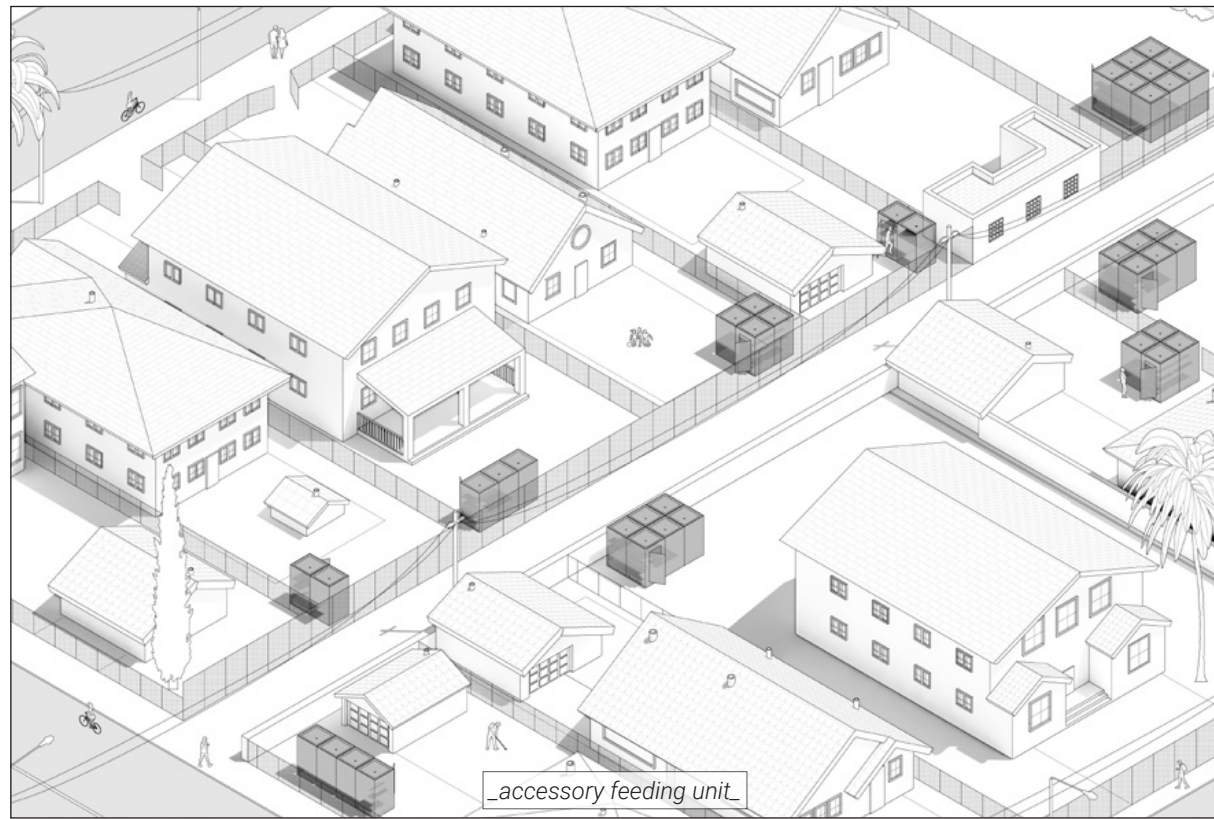
exploded



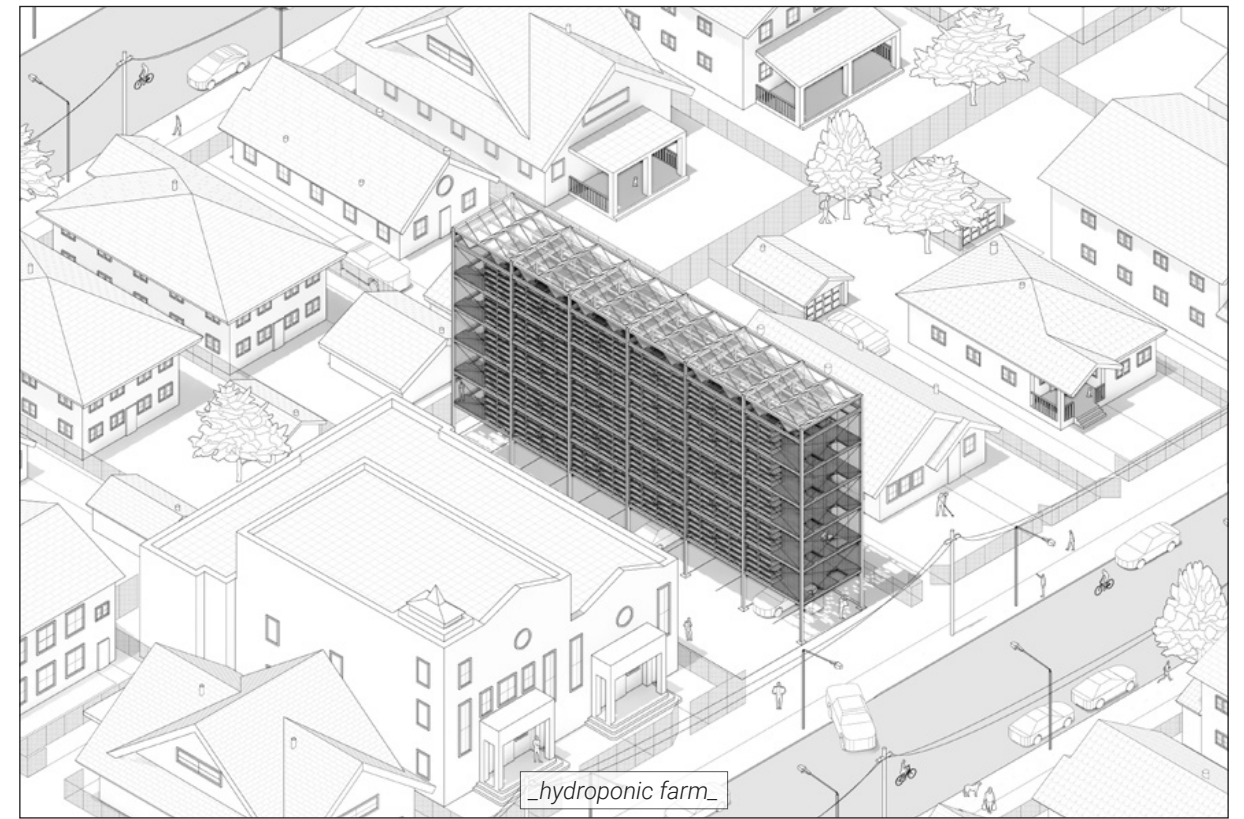
what's in the box







accessory feeding unit

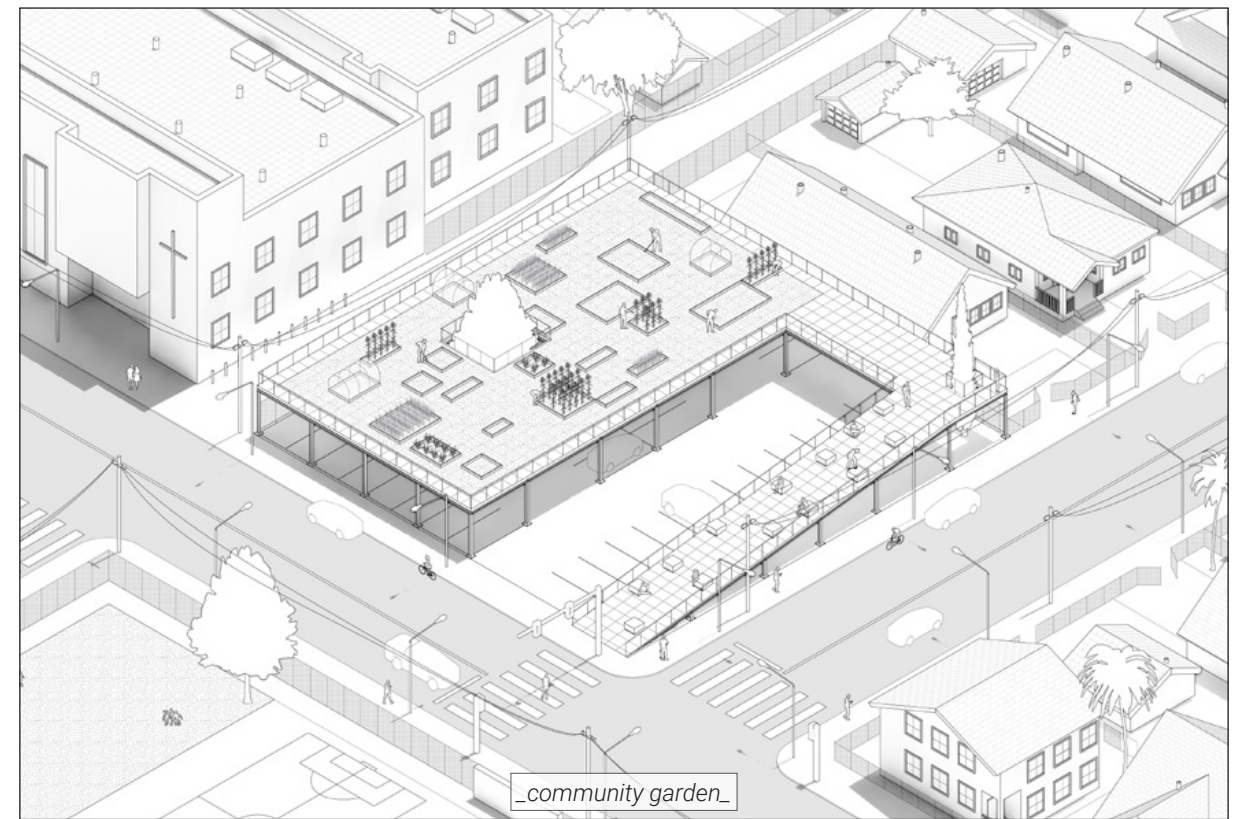


hydroponic farm



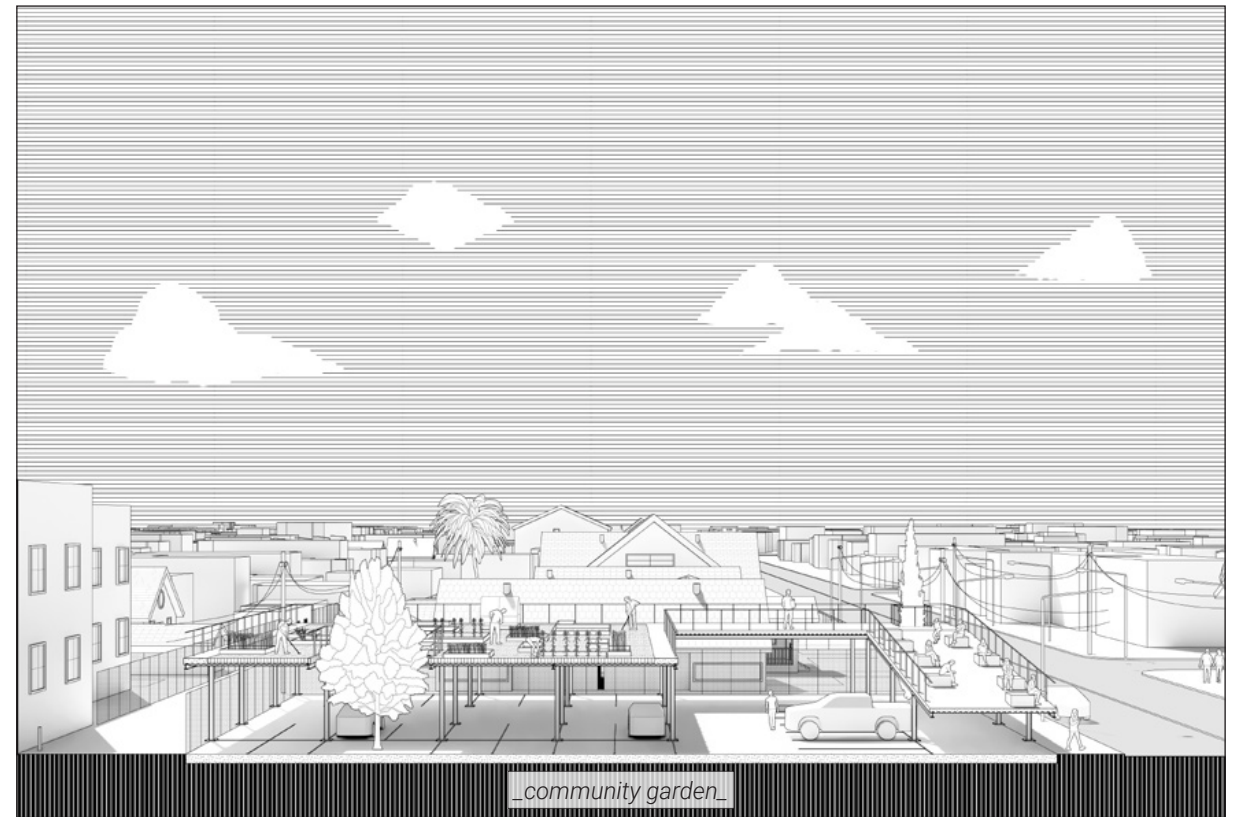
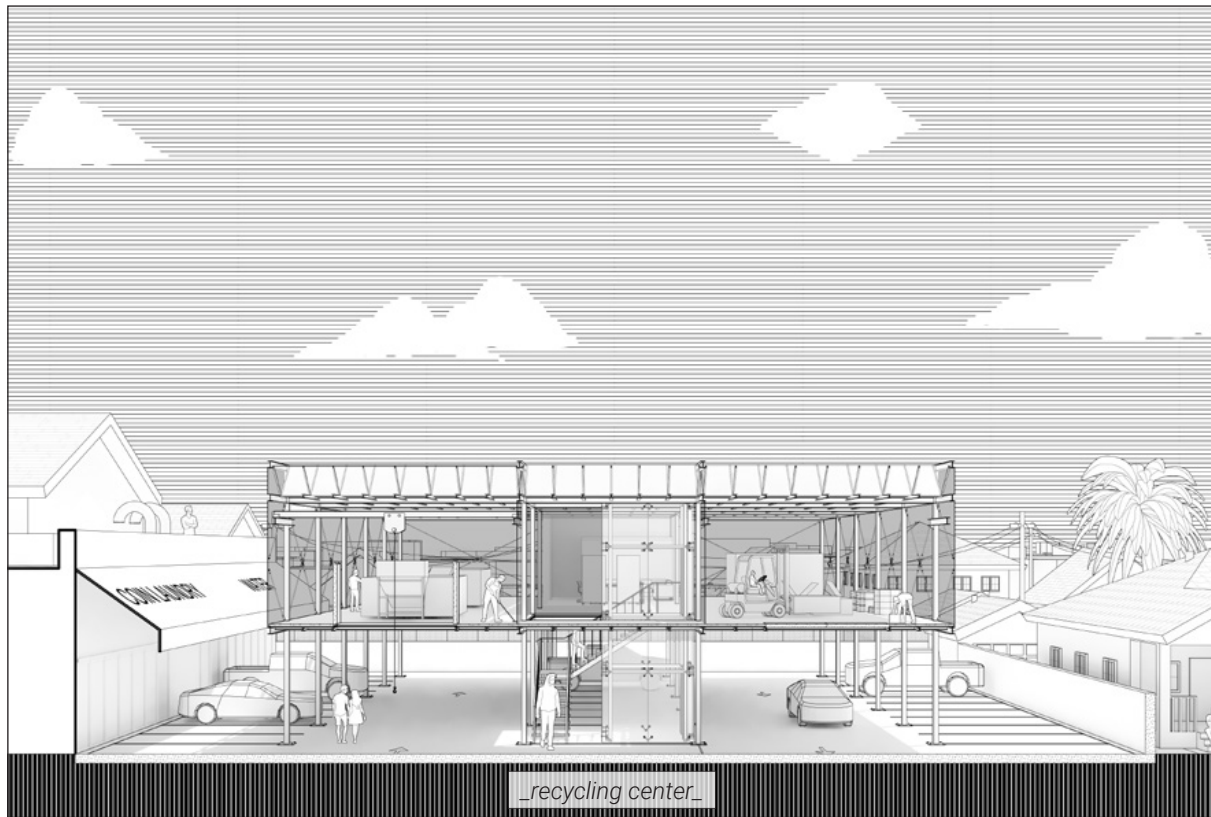
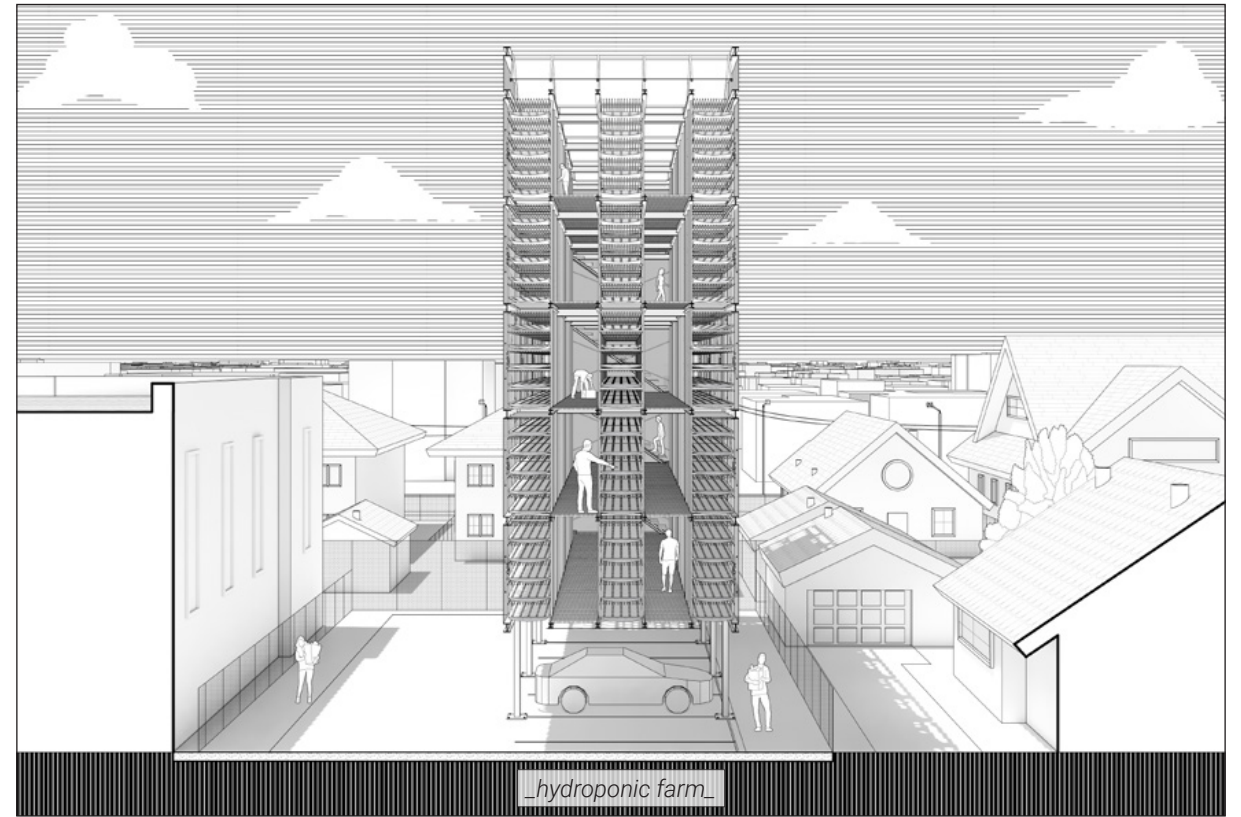
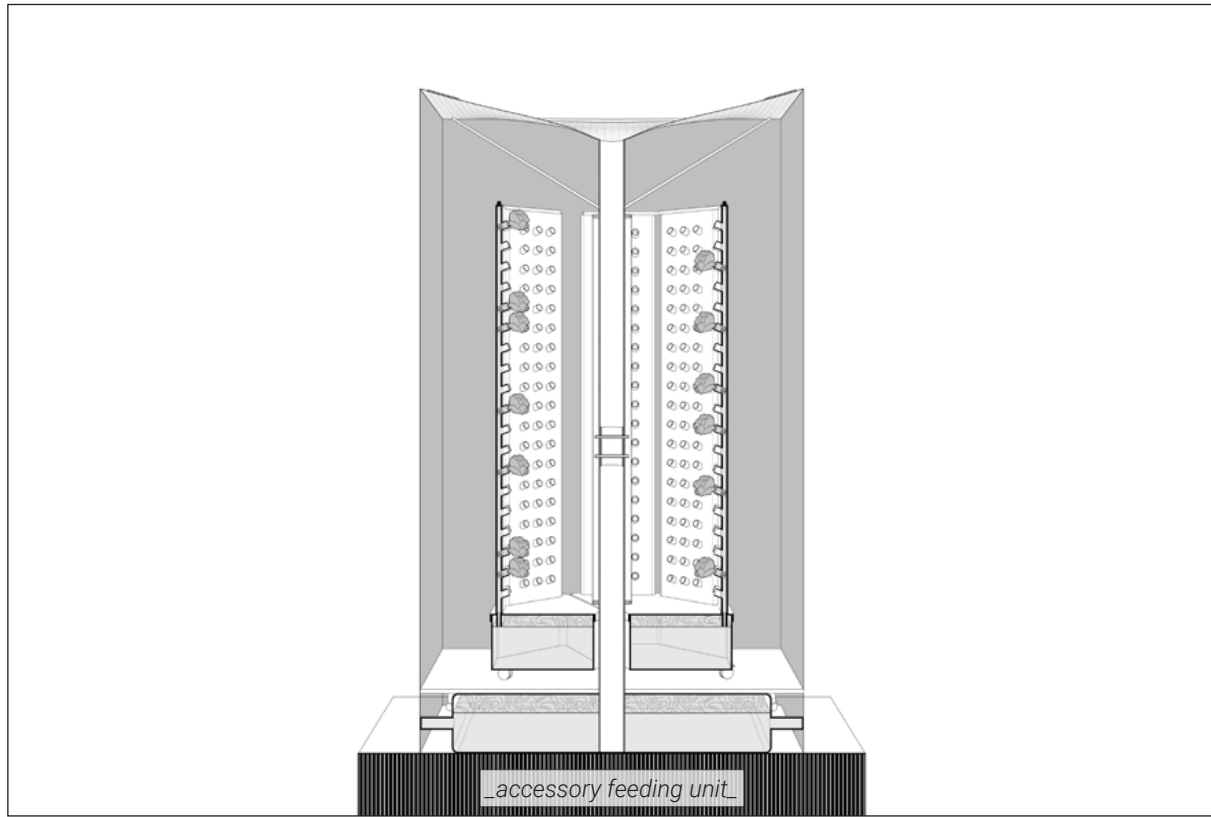
recycling center

site axonometrics



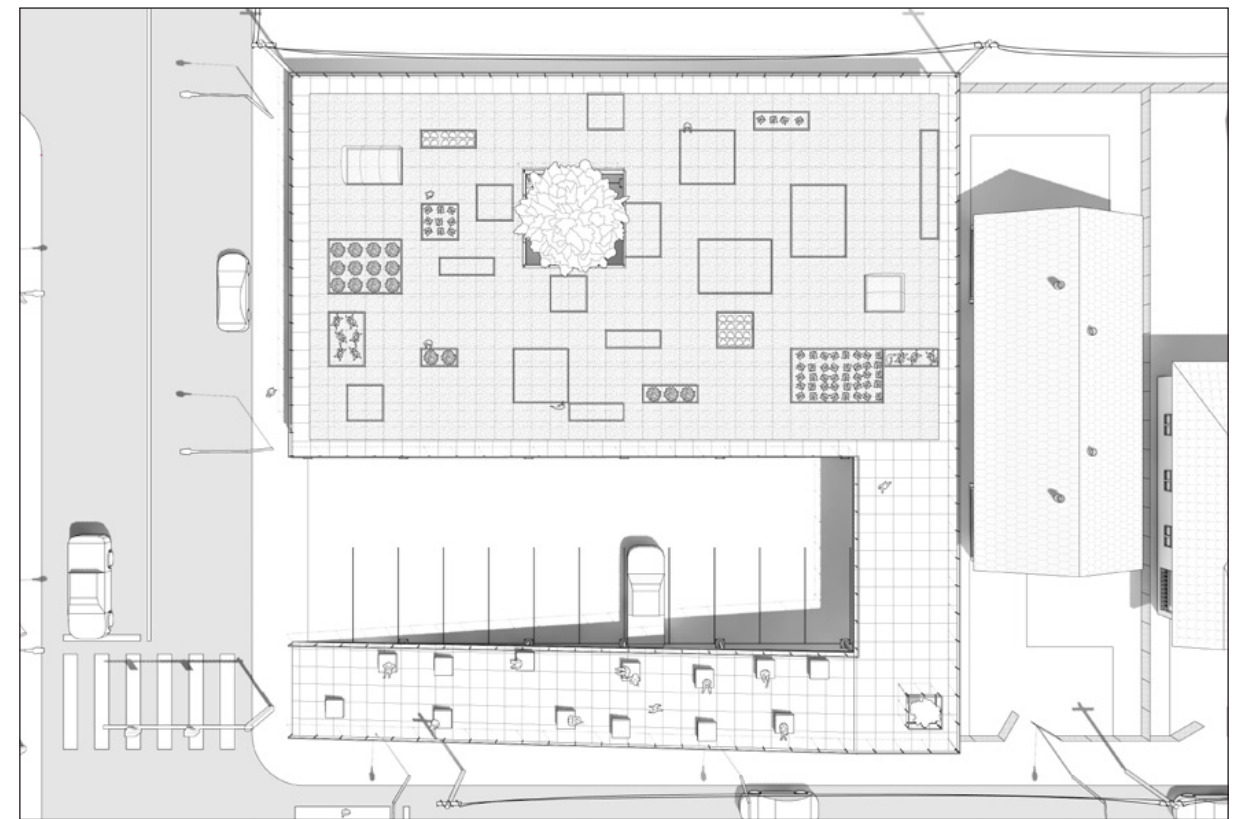
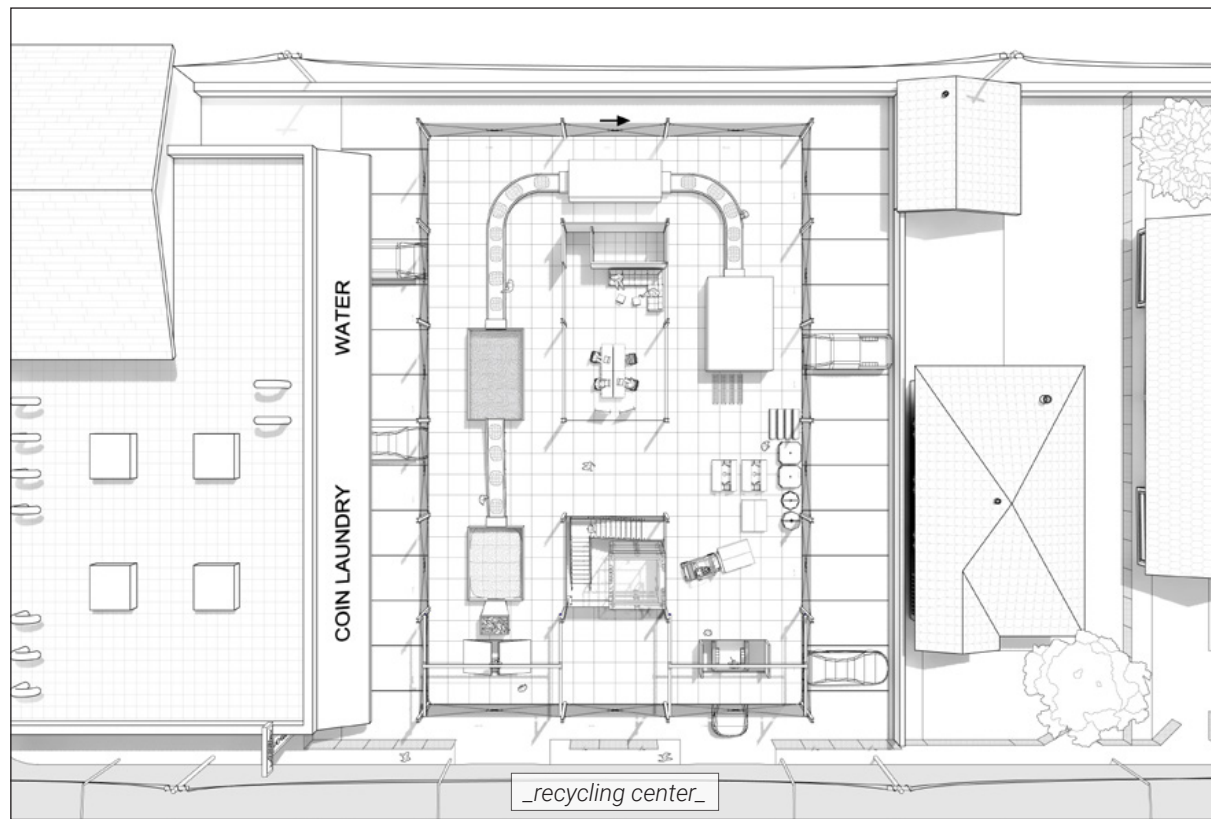
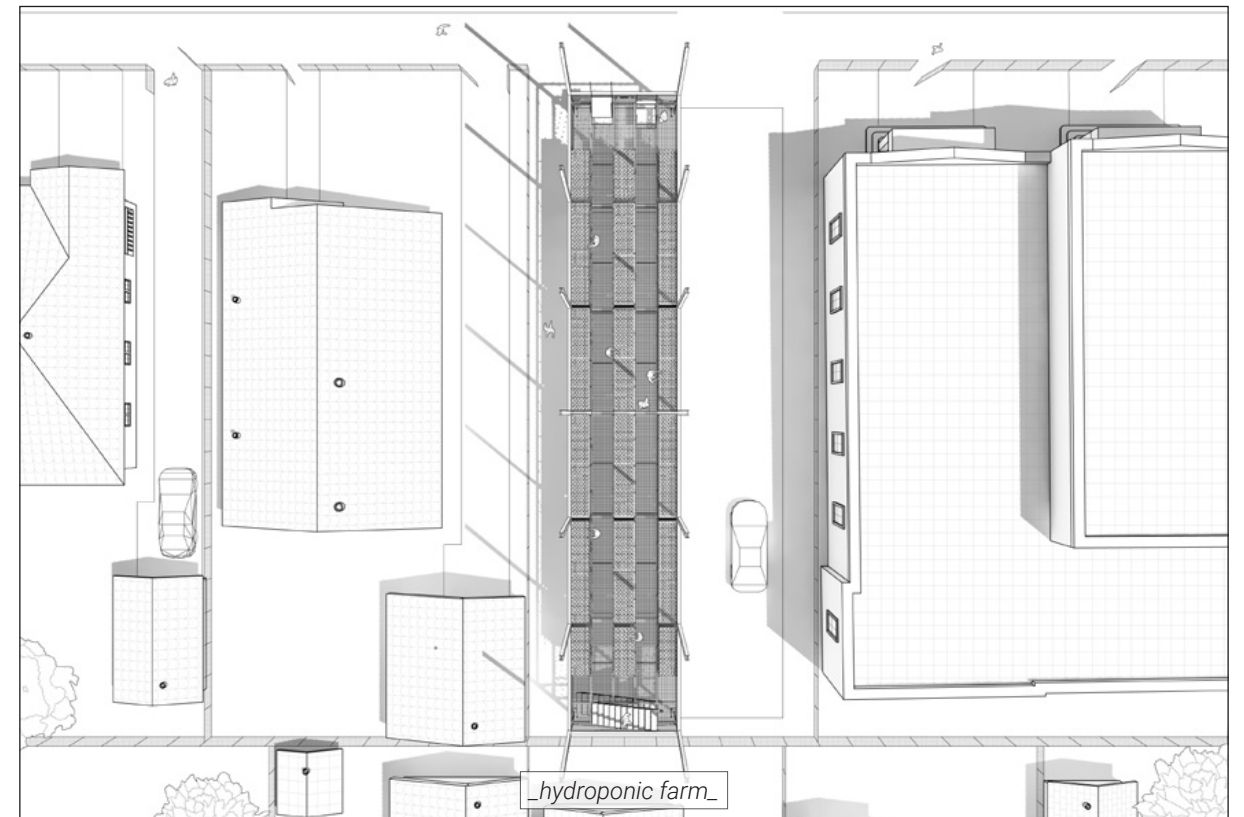
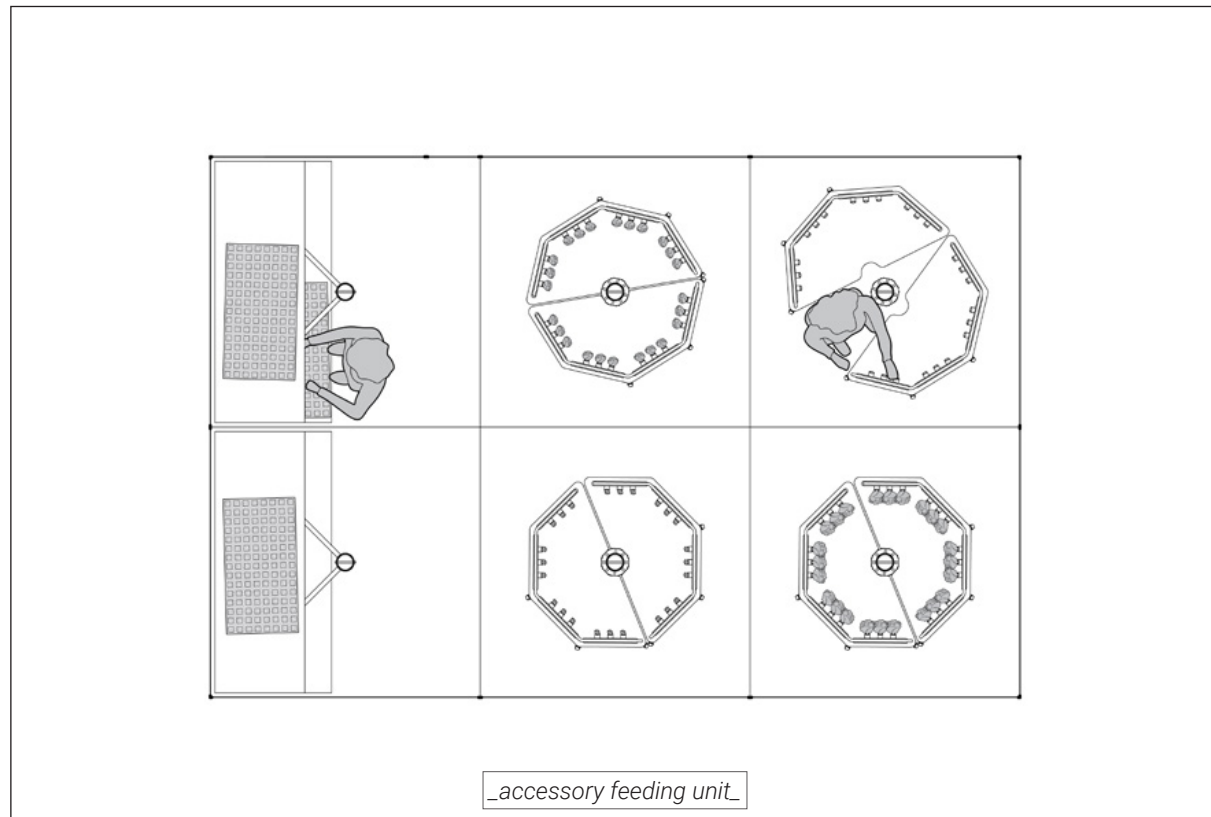
community garden

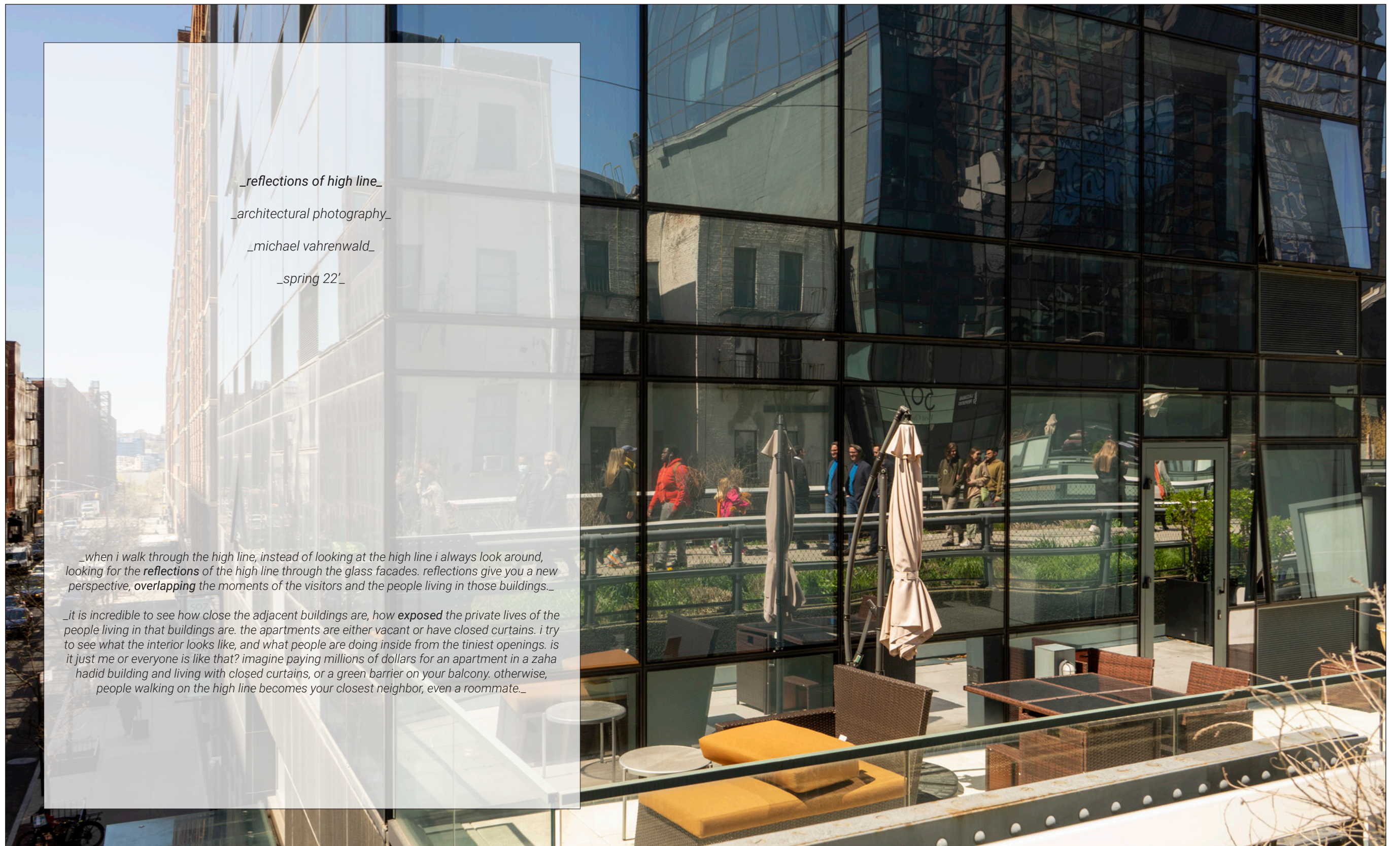
site axonometrics



sections

sections





reflections of high line
architectural photography
michael vahrenwald
spring 22'

*_when i walk through the high line, instead of looking at the high line i always look around, looking for the **reflections** of the high line through the glass facades. reflections give you a new perspective, **overlapping** the moments of the visitors and the people living in those buildings._*

*_it is incredible to see how close the adjacent buildings are, how **exposed** the private lives of the people living in that buildings are. the apartments are either vacant or have closed curtains. i try to see what the interior looks like, and what people are doing inside from the tiniest openings. is it just me or everyone is like that? imagine paying millions of dollars for an apartment in a zaha hadid building and living with closed curtains, or a green barrier on your balcony. otherwise, people walking on the high line becomes your closest neighbor, even a roommate._*



reflections



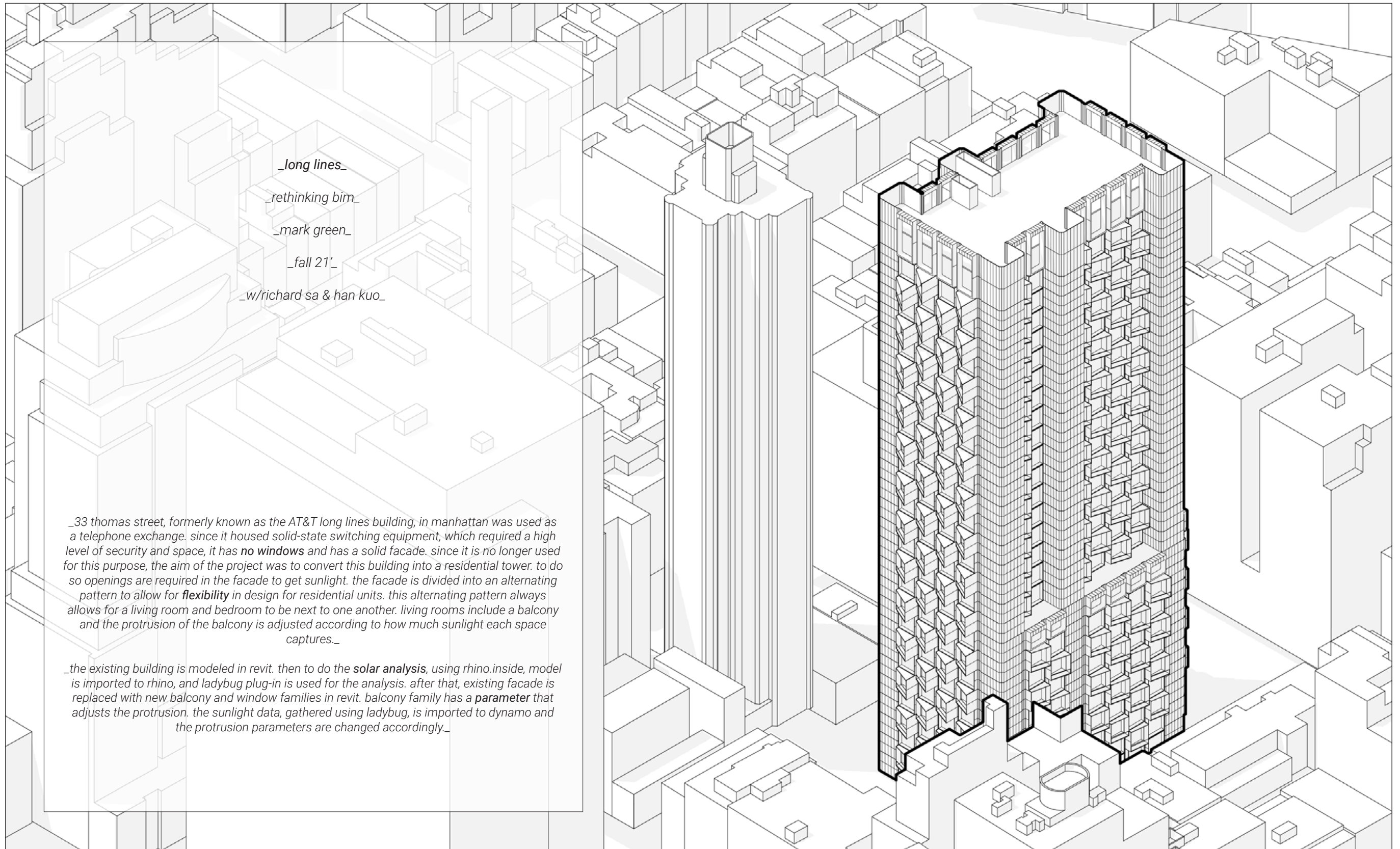
reflections



reflections



reflections



long lines

rethinking bim

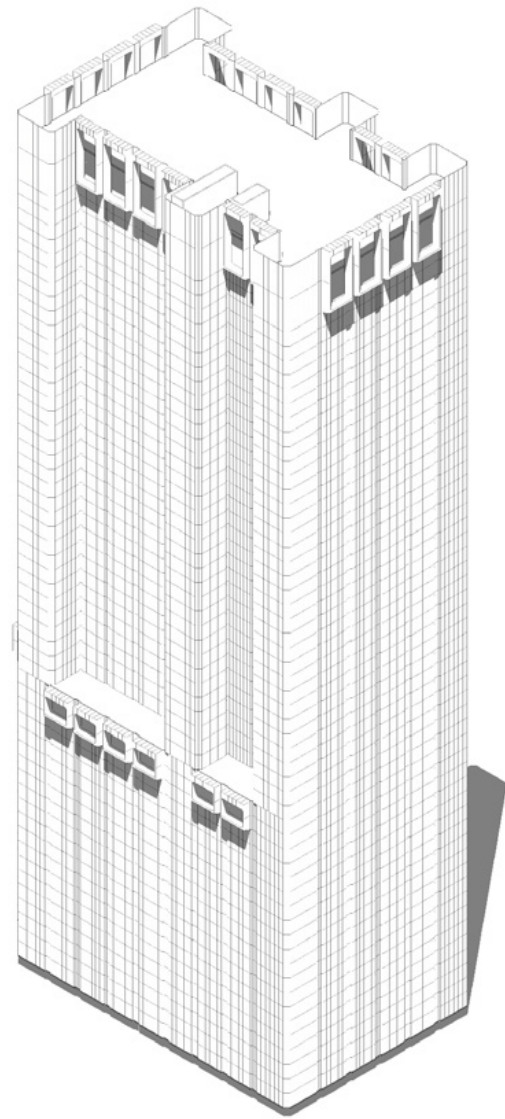
mark green

fall 21'

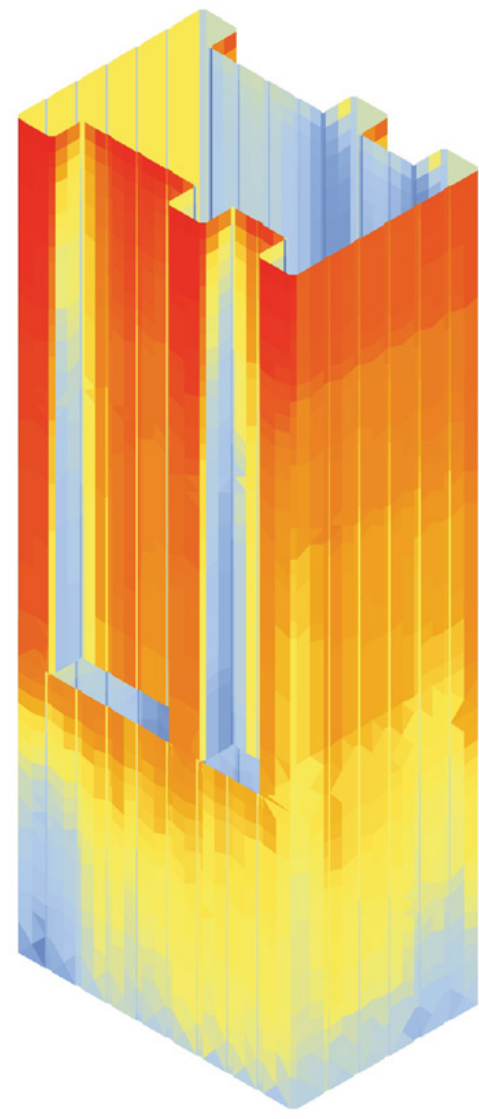
w/richard sa & han kuo

*_33 thomas street, formerly known as the AT&T long lines building, in manhattan was used as a telephone exchange. since it housed solid-state switching equipment, which required a high level of security and space, it has **no windows** and has a solid facade. since it is no longer used for this purpose, the aim of the project was to convert this building into a residential tower. to do so openings are required in the facade to get sunlight. the facade is divided into an alternating pattern to allow for **flexibility** in design for residential units. this alternating pattern always allows for a living room and bedroom to be next to one another. living rooms include a balcony and the protrusion of the balcony is adjusted according to how much sunlight each space captures._*

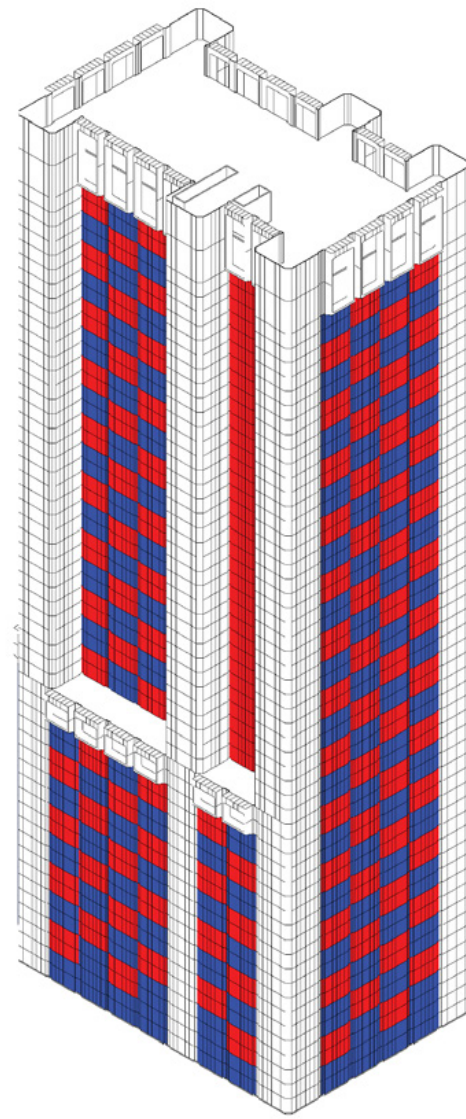
*_the existing building is modeled in revit. then to do the **solar analysis**, using rhino.inside, model is imported to rhino, and ladybug plug-in is used for the analysis. after that, existing facade is replaced with new balcony and window families in revit. balcony family has a **parameter** that adjusts the protrusion. the sunlight data, gathered using ladybug, is imported to dynamo and the protrusion parameters are changed accordingly._*



existing



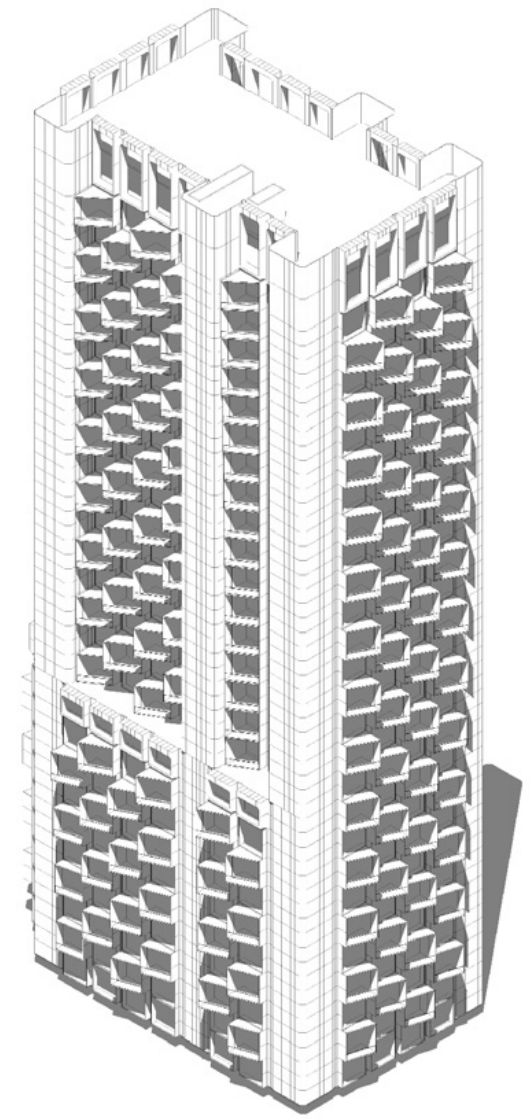
solar analysis



pattern



solar analysis grid



residential units

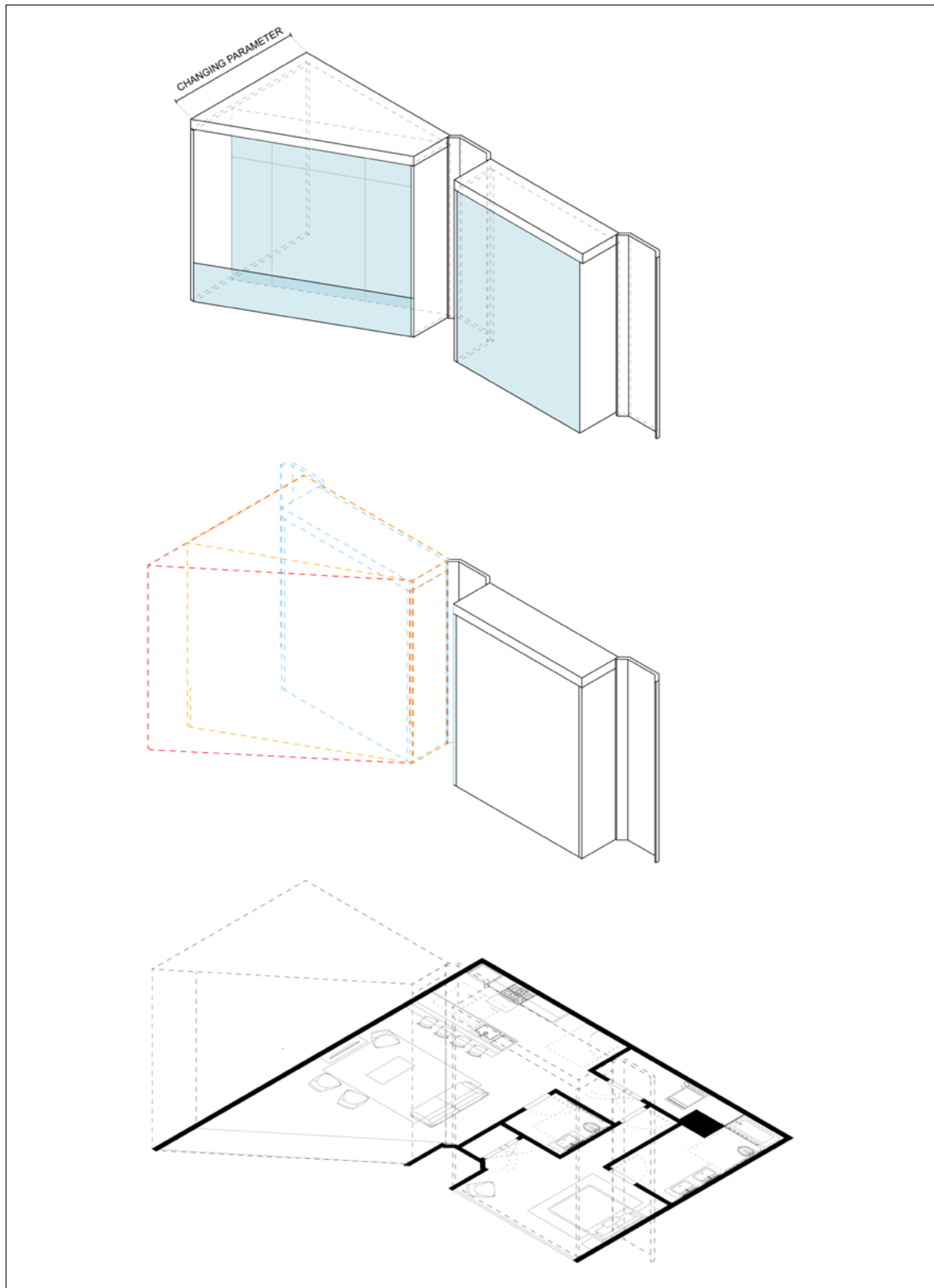
the façade at 33 thomas street, formerly known as the AT&T long lines building, reflects the original use of the building. the windowless skyscraper was used for the telephone exchange. the façade is made of precast concrete panels clad with granite.

the upper floors of the façade capture most of the sunlight. on this diagram, red represents the most time exposed to the sun. while blue represents the least amount of time exposed to the sun.

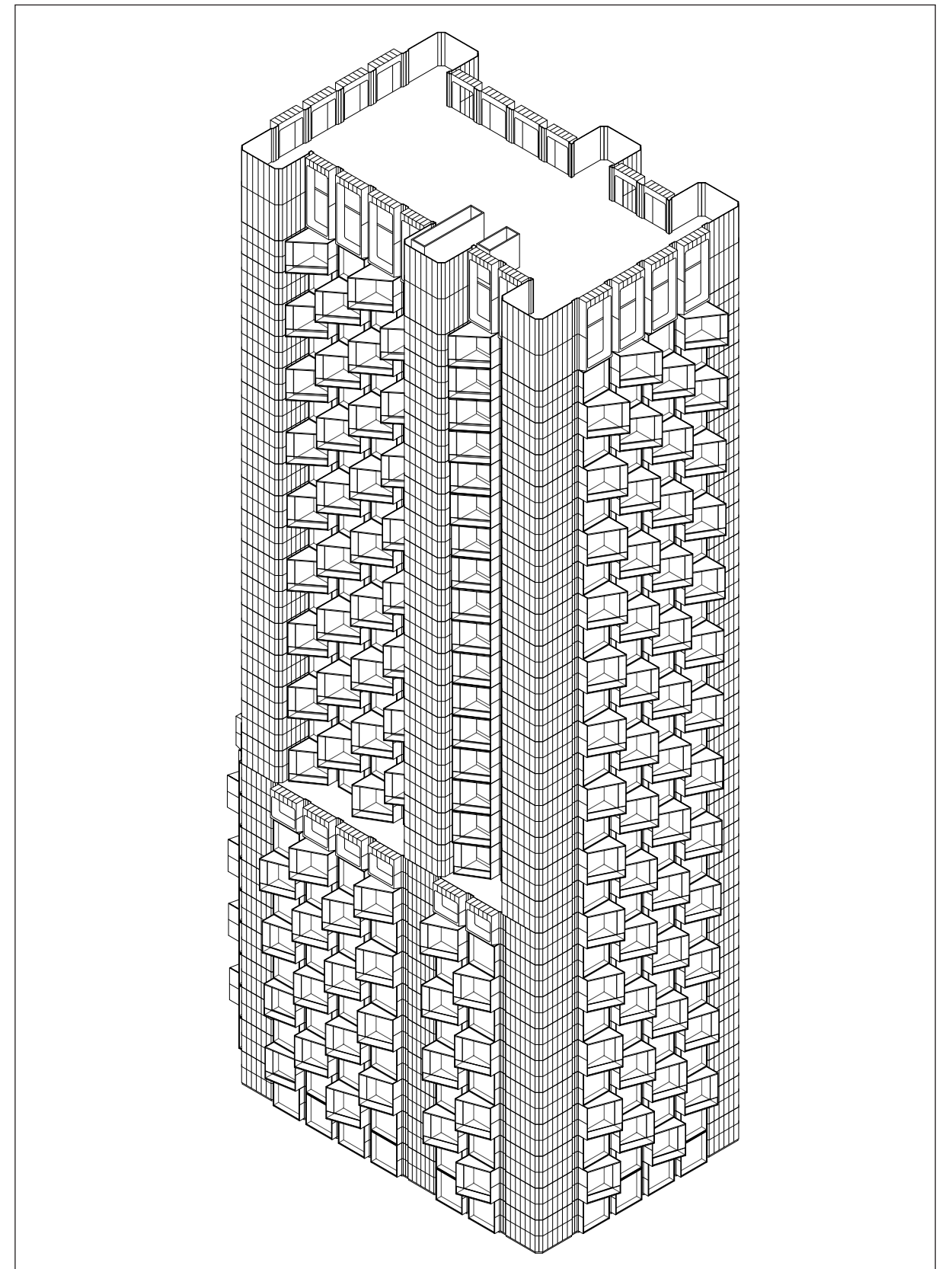
our proposal is to convert 33 thomas street into a residential tower. the facade is divided into an alternating pattern to allow for flexibility in design for residential units. this alternating pattern always allows for a living room and bedroom to be next to one another.

by extracting the living room modules we are able to see how much sunlight each living room captures during the day.

the living rooms of each unit would include a balcony. this balcony is the changing parameter within our design process. the protrusion of the balcony is adjusted according to how much sunlight each space captures.



adaptable facade



south-east facade



gsapp web

outside in project

laurie hawkinson

galia solomonoff

spring 22'

faculty

laurie hawkinson
galia solomonoff
zina berrada

mark taylor
joshua jordan
yonah elorza

advisors

hubert chang
anne shellum
natalia serra
quim rabassa

students

abriannah aiken
ata gun aksu
priscilla auyeung
omar badriek
aahana banker

rourke brakeville

ece cetin

kurt cheang

lucas de menezes pereira

anoushae eirabie

ryan hansen

bisheng hong

sunghyun kim

yining lai

vasco li

gustavo lopez mendoza

andrew manion

eugene massey

zakios meghrouni-brown

risa mimura

keneilwe ramaphosa

maria ramirez

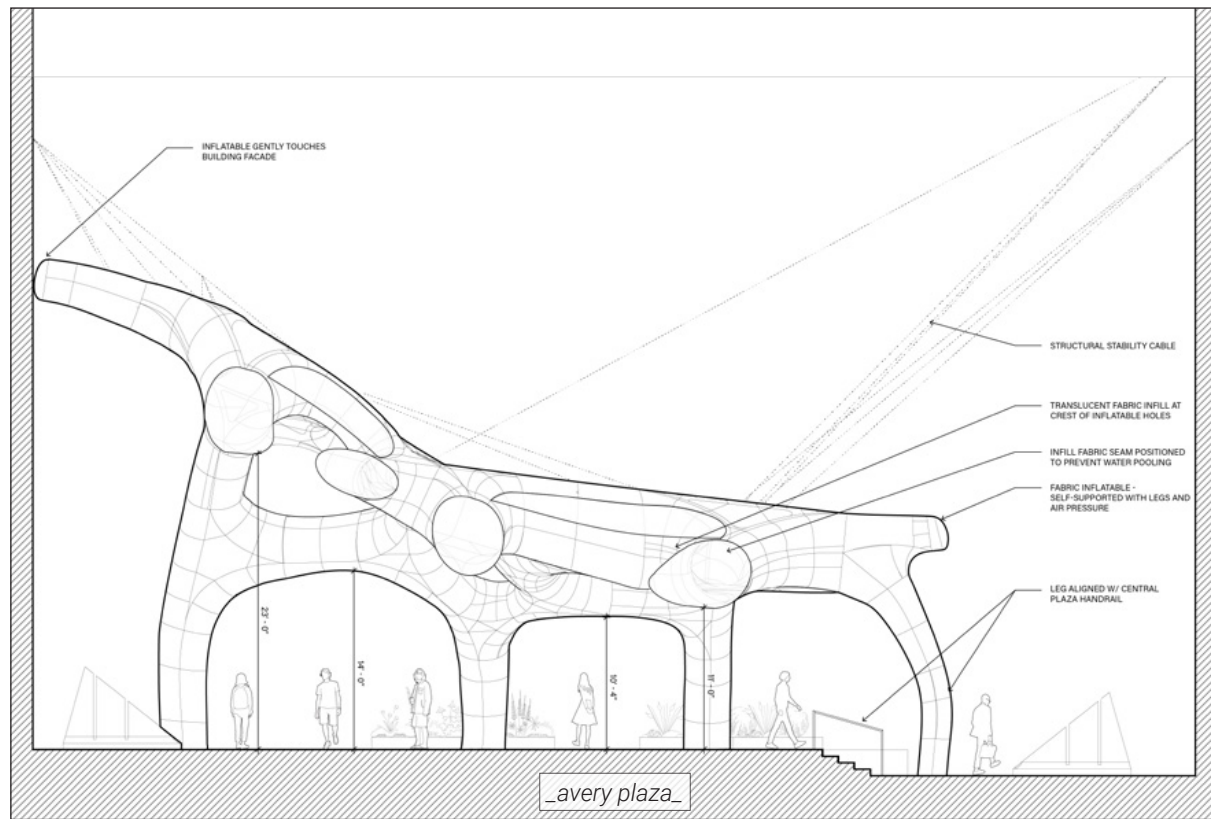
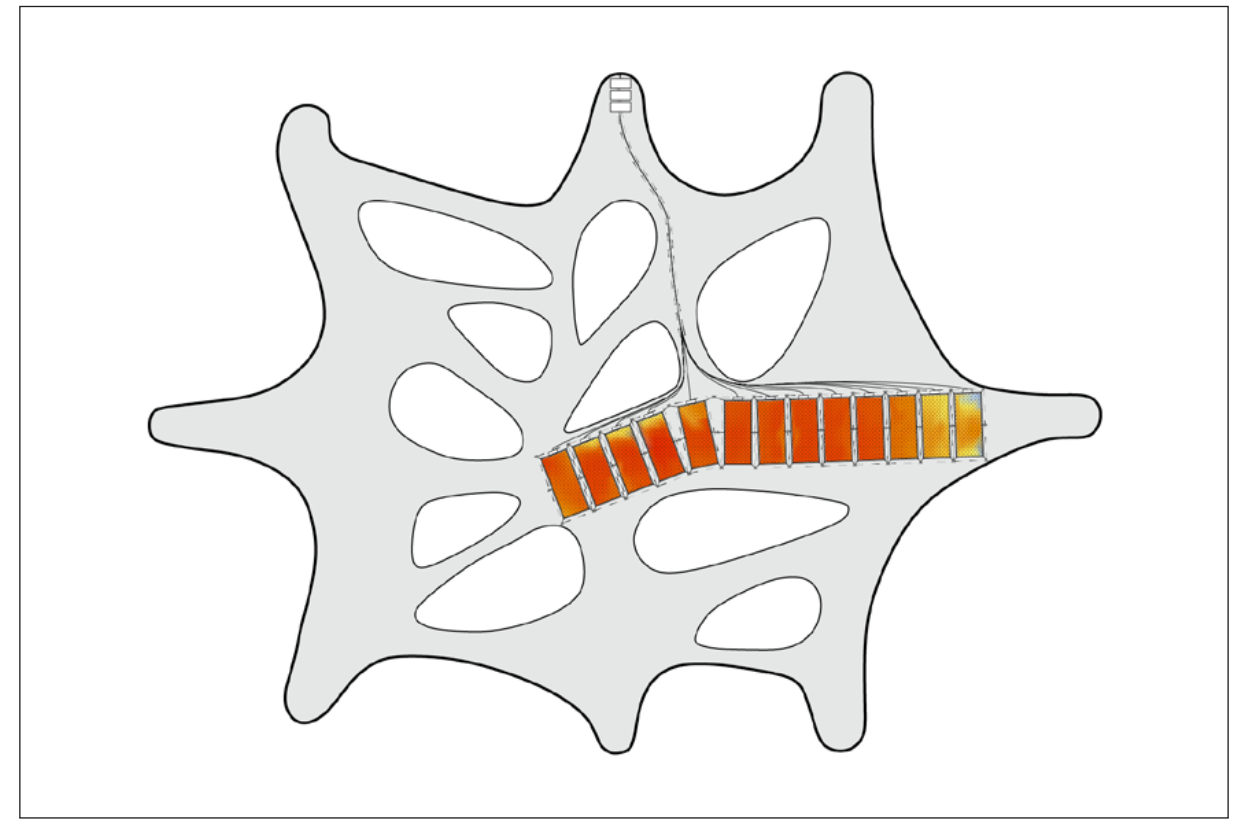
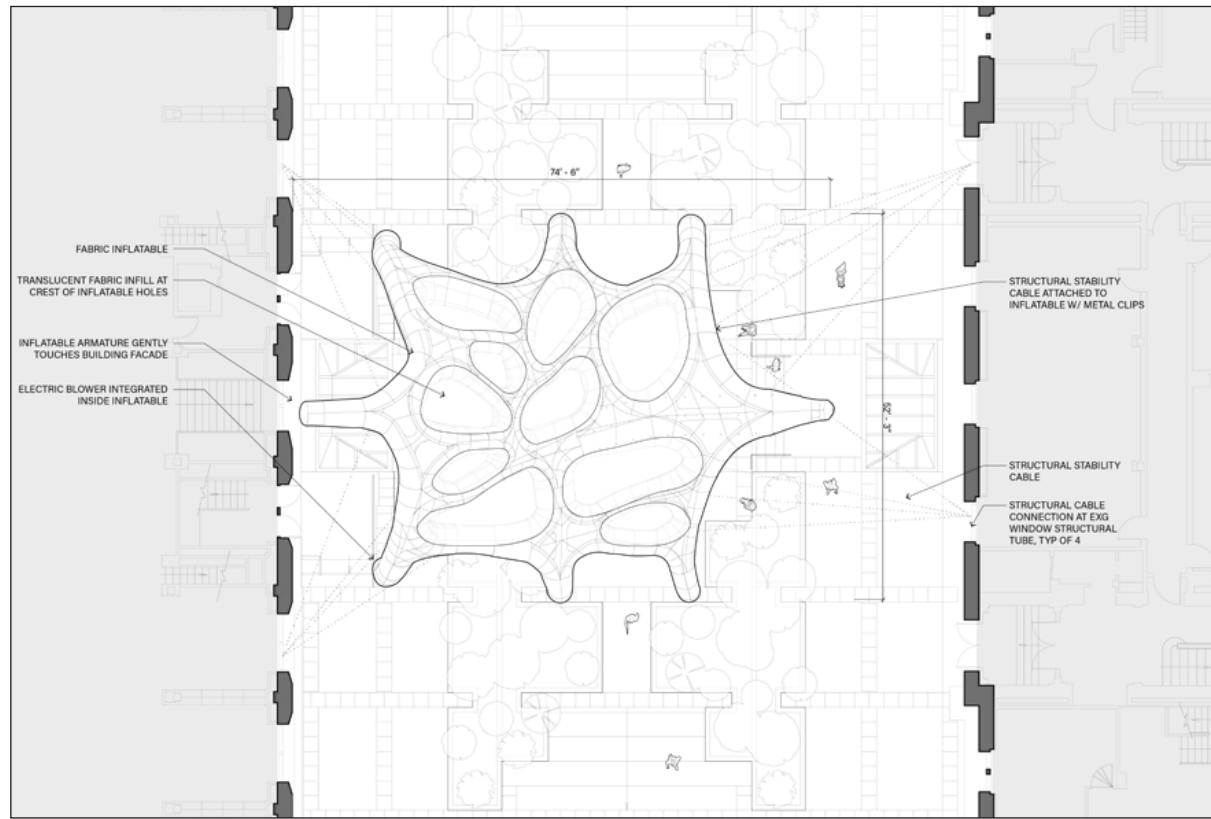
hannah stollery

jordan trager

yusuf urlu

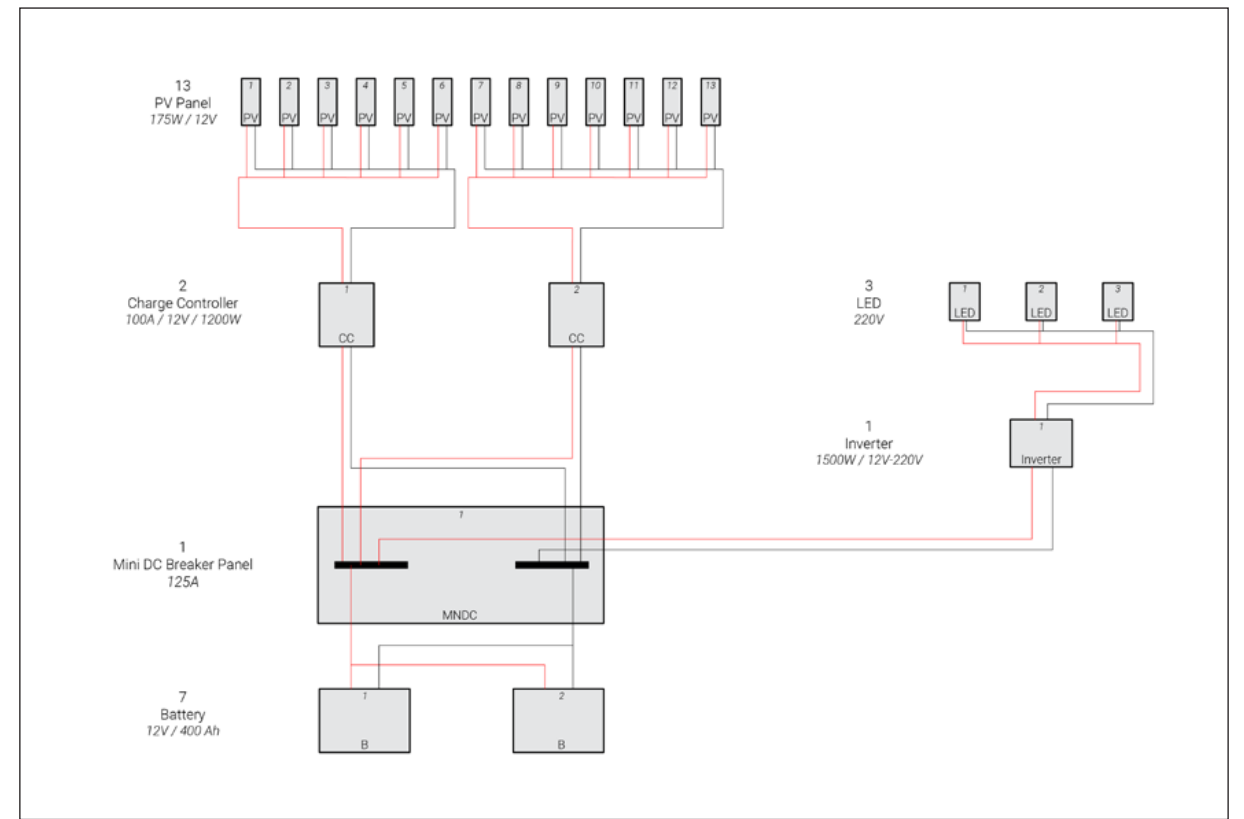
hazel villena

hyosil yang



avery plaza

plan & section



solar studies



redesigning dodge

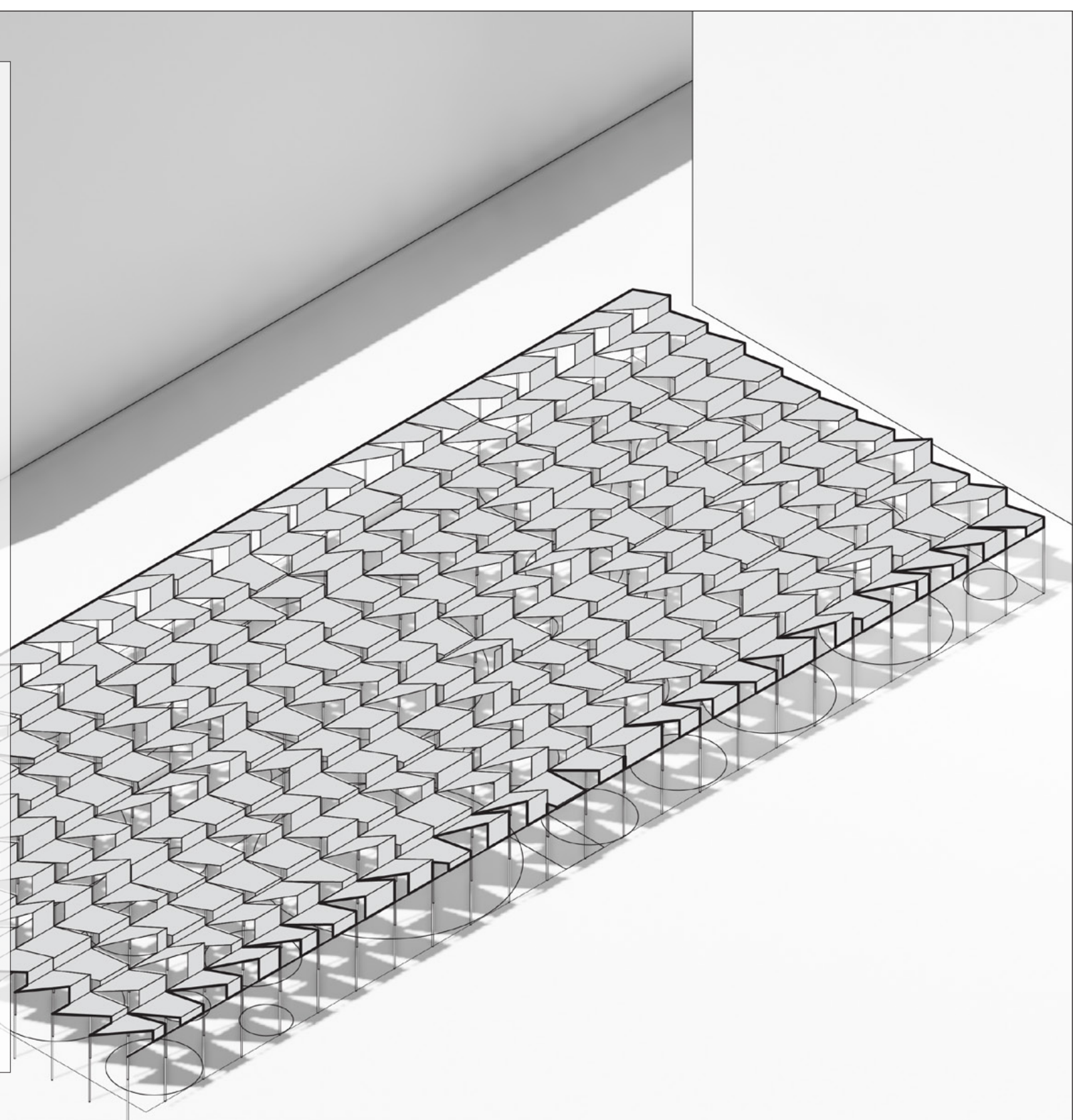
generative design

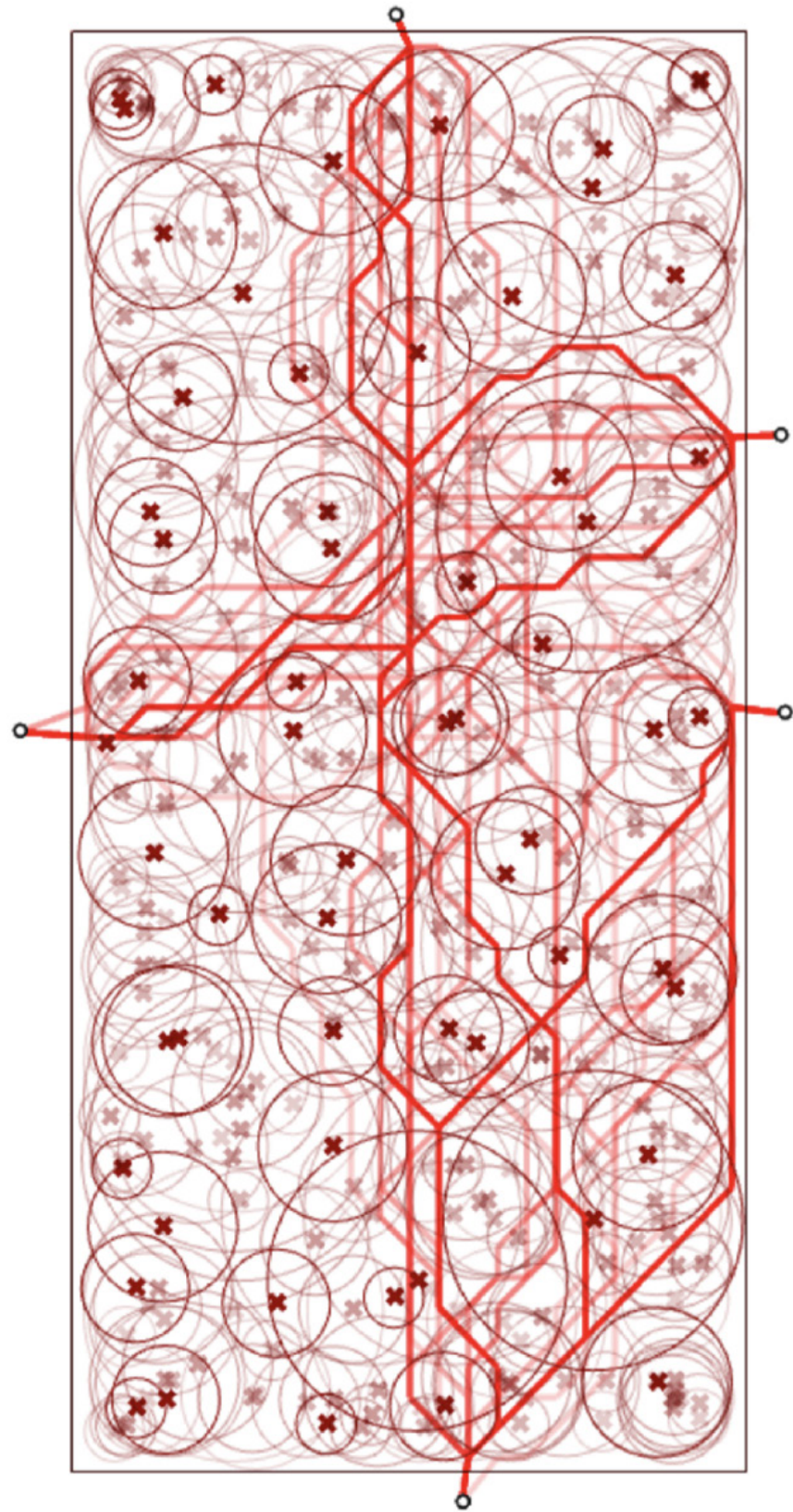
danil nagy

fall 21'

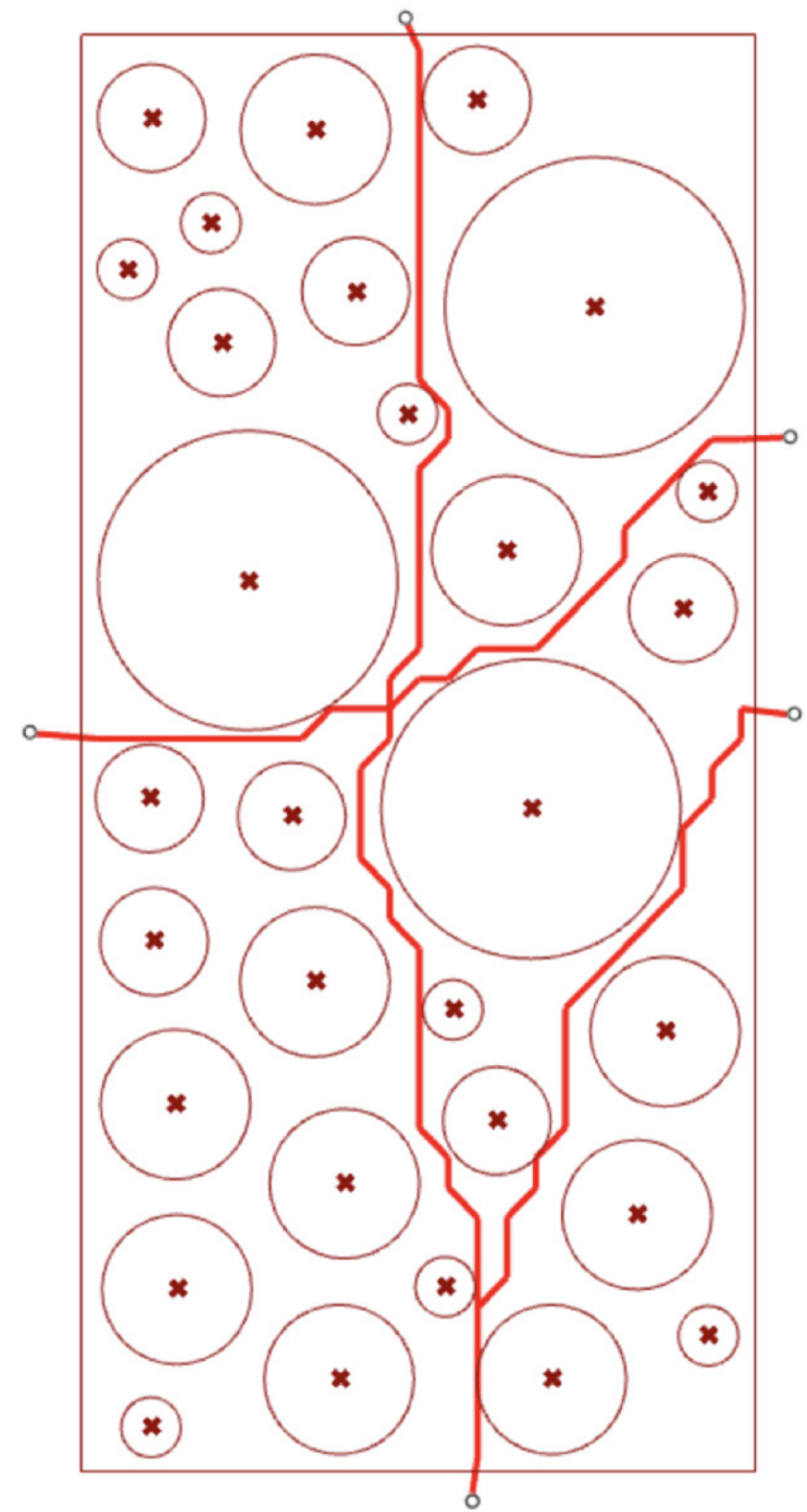
w/ ece cetin & max cai & zhanhao fan & alonso ortega

columbia university's morningside campus offers grass and hardscape areas that can be used for a variety of outdoor or tented events. the existing plaza layouts are organized more generically and have not been designed to allow for **flexibility** of uses. our approach is to introduce **singularity** to the design of the plaza by **optimizing** the interior layout for circulation, designing for sun light, and introducing plan distribution of four program types. these programs would include a large event, dining, workstation, and a leisure area that is manageable through the use of a multipurpose seating device. through this, we are aiming to activate the plaza as a **dynamic** point on campus. the modularity of the canopy design and the generative design approach makes it possible for the project to be incorporated into other outdoor event spaces on campus such as dodge plaza which also lacked a clear approach.

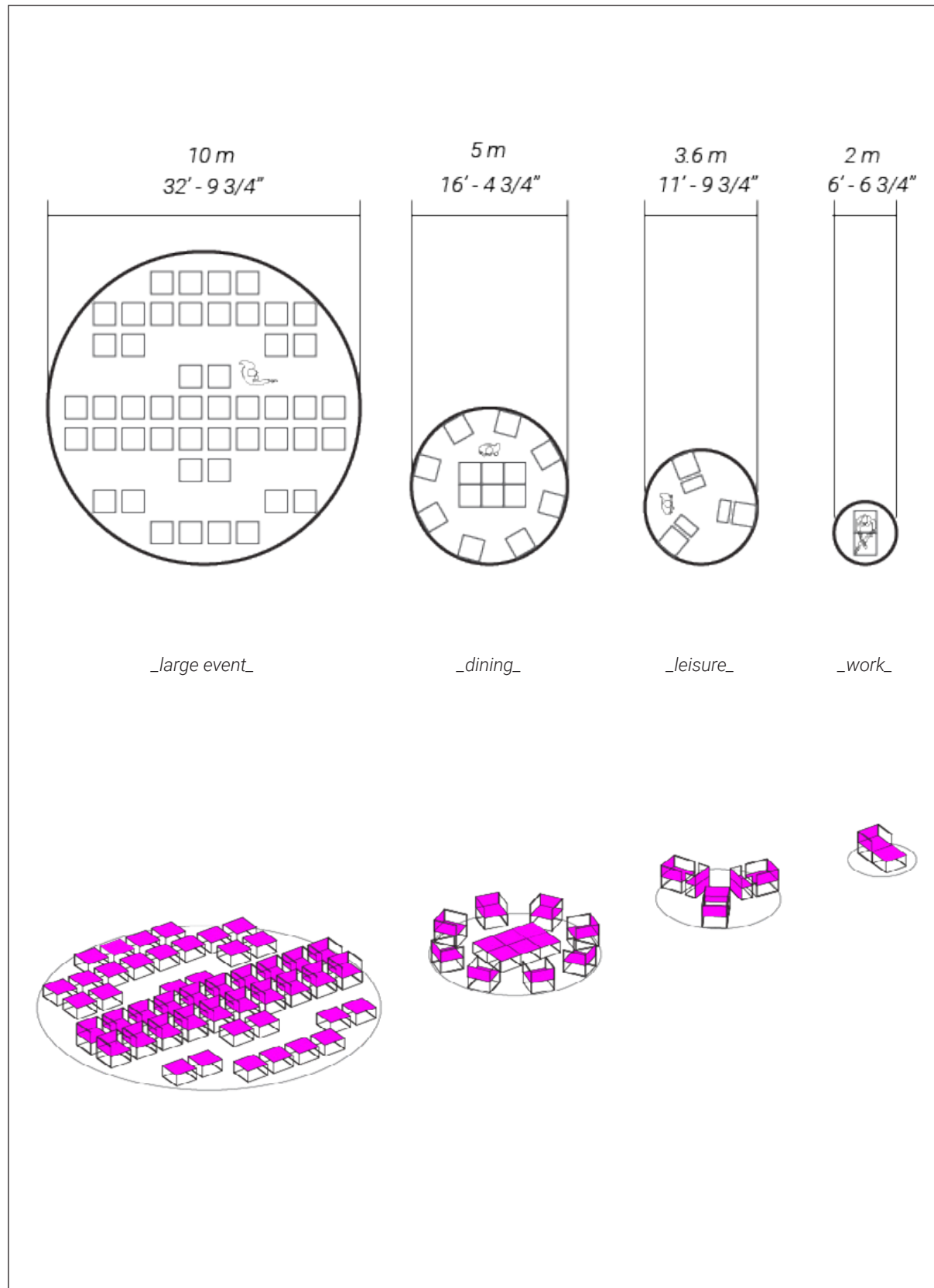




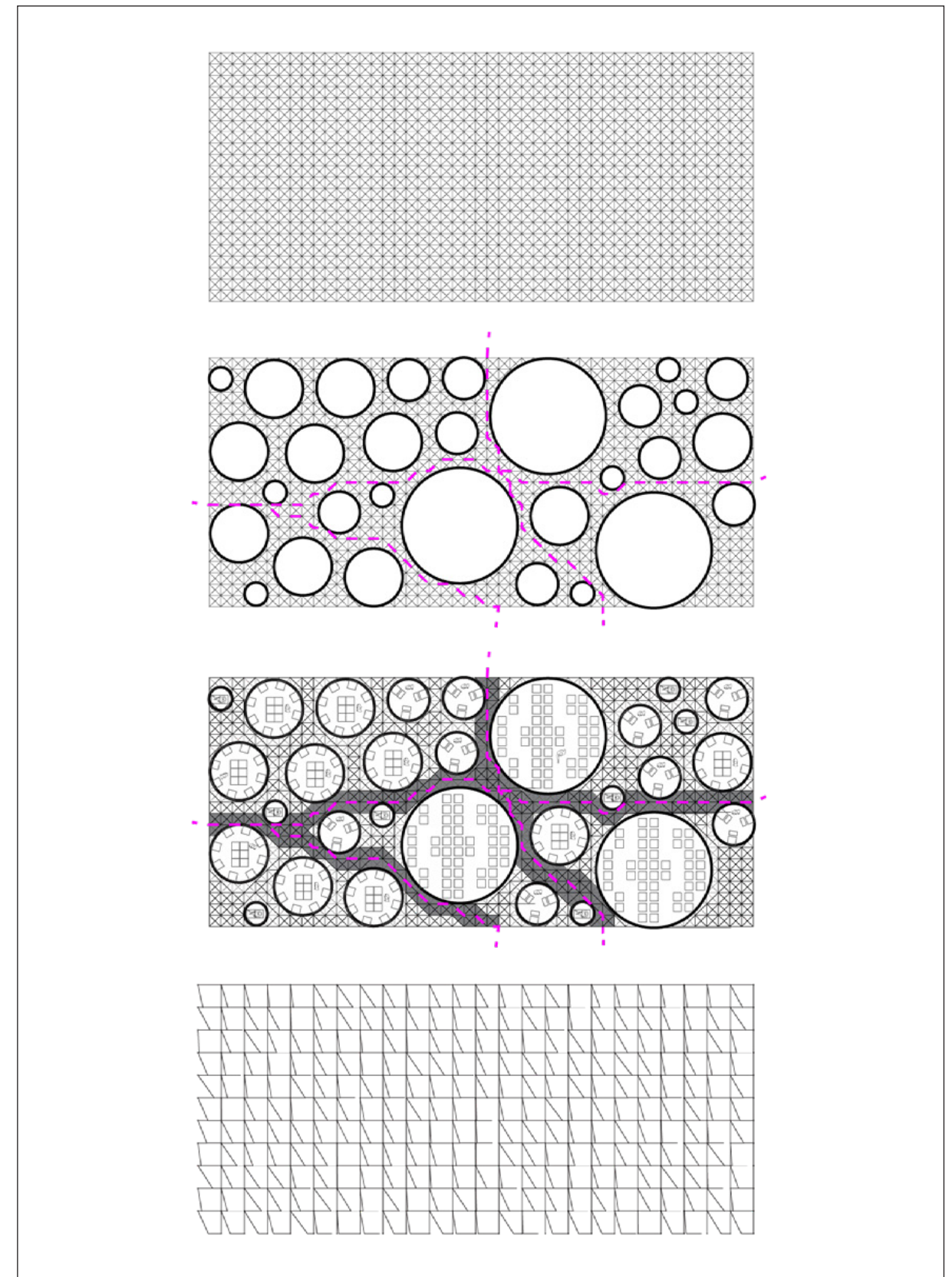
shortest walk optimization



optimal outcome



space types



space formation

