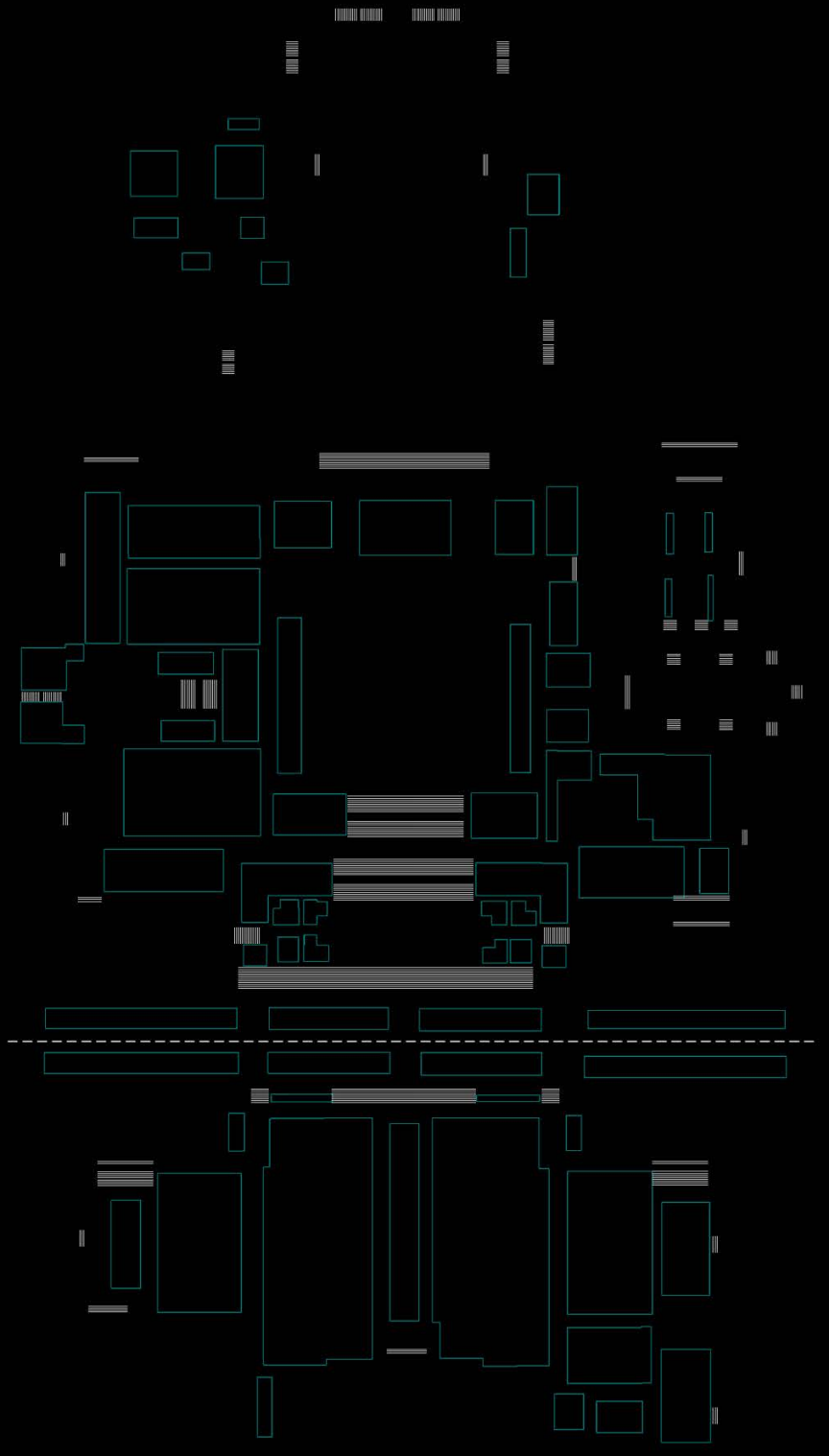
'PAUSE'



VINAY AGRAWAL

GRADUATION PORTFOLIO

MASTER OF SCIENCE IN ADVANCED ARCHITECTURAL DESIGN 2021-22

COLUMBIA UNIVERSITY
GRADUATE SCHOOL OF ARCHITECTURE, PLANNING AND PRESERVATION

‘PAUSE’

‘Pause’ refers to a temporary stop in action. It is basically a break in-between the flow.

Architecture is generally looked through the lens of flow, continuity and ceaseless intersections. While discontinuity, hindrance and pauses are in general neglected in this flow.These pauses are responsible in creating uncertain encounters in the flow which stays with us forever. It lets us celebrate architecture and its spatial components in the moment. It gives us time to digest and feel the narrative of tangible and intangible entanglements withing architecture. So, it is important to pause continuously to resume the flow again. For me, architecture is intersection of various pauses. Pauses to collide with, to understand, to experience, and lastly to feel. It makes it something that is continuously evolving with time.

This portfolio thus can be defined as a series of pauses to define my trajectory of architectural encounters at Columbia GSAPP. A pause that will remain with me forever. I hope you pause to enjoy the pauses narrated in this portfolio.

Let’s pause together !

Table of Contents

PAP-RODUCTION

Intersecting People and Production

SITE-NEWTOWN CREEK, NY

TEAM WORK- VINAY AGRAWAL, CHARUL PUNIA
SPRING 2022

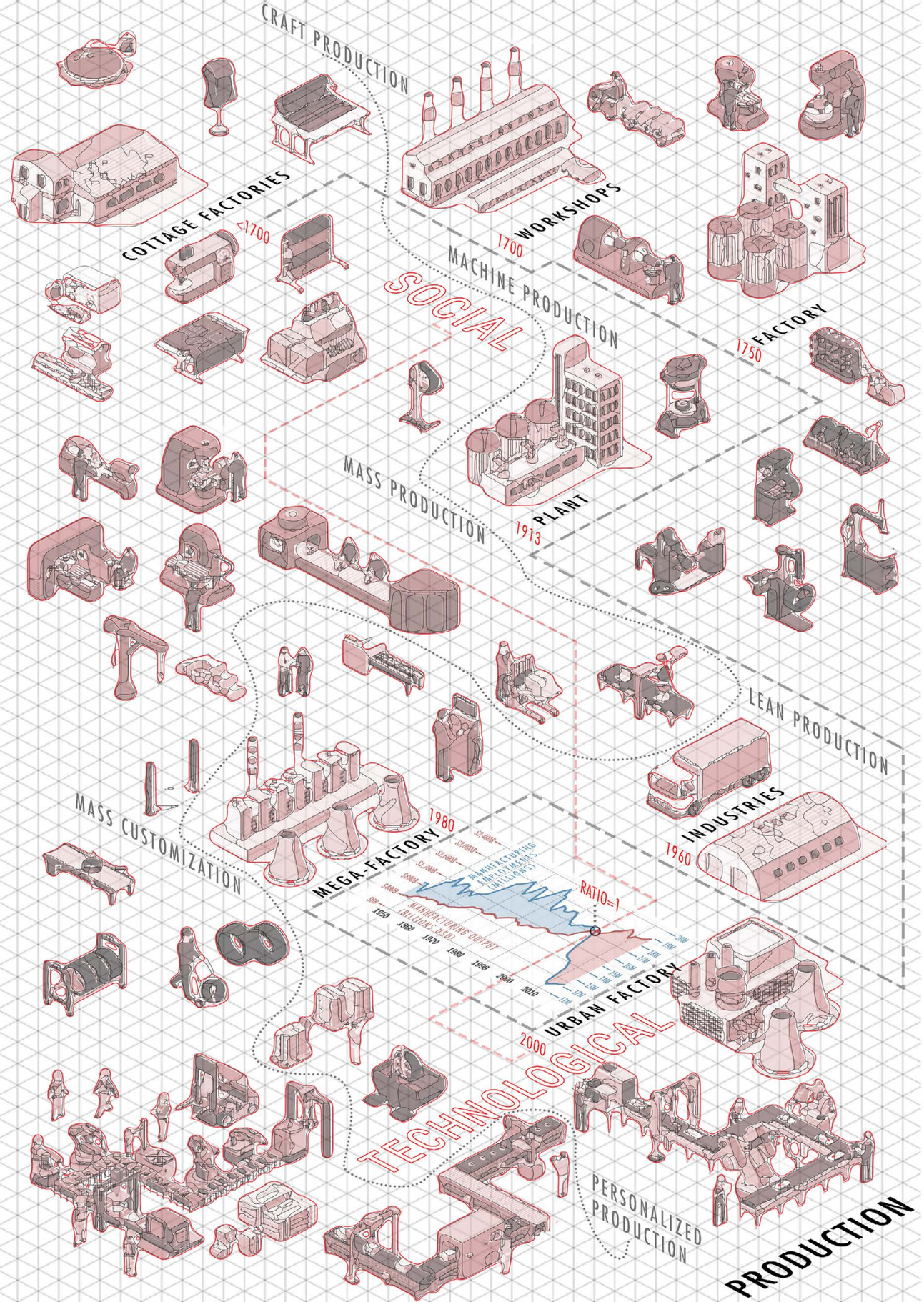
STUDIO- A FACTORY AS IT MAY BE
STUDIO CRITIC-MIMI HOANG

The paper and pulping industry is in many ways invisible, and yet the average person uses around 300 kilograms of paper, per year, in the United States. Our proposal brings to light the distance between individual consumers, factory workers,environmental costs and everything in between. The factory itself holds many scales of production within it. Our proposal celebrates a multiplicity of programs in order to bring awareness to the stages of production, and the value in recycled and less “finished”products that move through various agents, users, producers and bystanders .

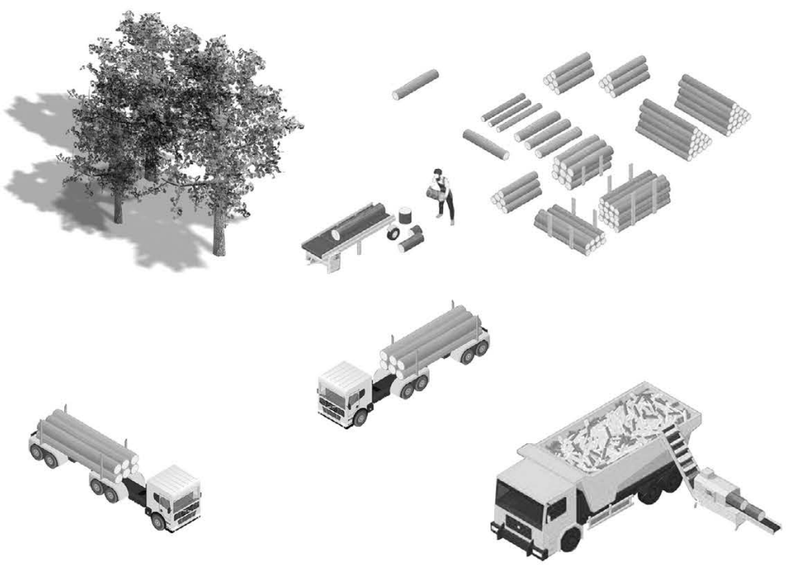
Our first goal was to formalize the flows that underlie the production processes.The main idea was to create movements to diffuse hierarchy between interior and exterior spaces, drawing on William Morris’ idea of the factory.The form of the factory follows a grid that maximizes the connections between spaces. The architectural wall system allows for both flows and pauses, in the form of courtyards, that mitigate links between landscape, manufacturing, and social programs both physically and visually.

We also extended the program to include a daycare center to bridge the intergenerational nature of factories.This addition would relay the importance of familiar and interpersonal relationships as they define our future approach to finite resources. Other programs, such as the commercial shop, library, cafe, and workshops further expand the publicness of the factories as they weave through the building.

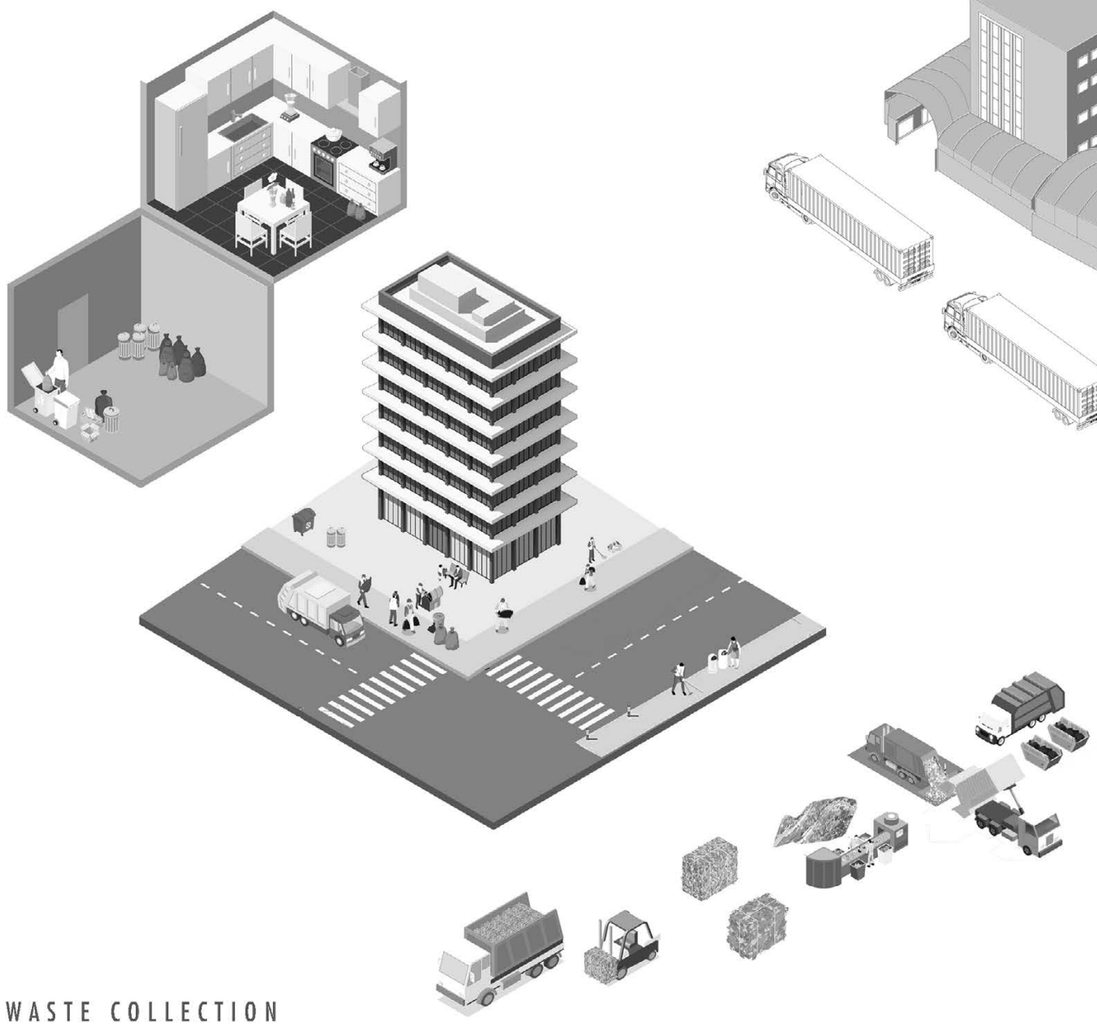
Our factory operates at the local and human scale, where in a neighborhood takes ownership of their relationship to manufacturing and consumption. This ideology draws on feudal and pastoral imaginaries of the factory.This future paper factory takes a wabi sabi approach to paper production and manufacturing through promoting a circular life cycle. Our factory becomes a series of linkages, between people, production and ecology.



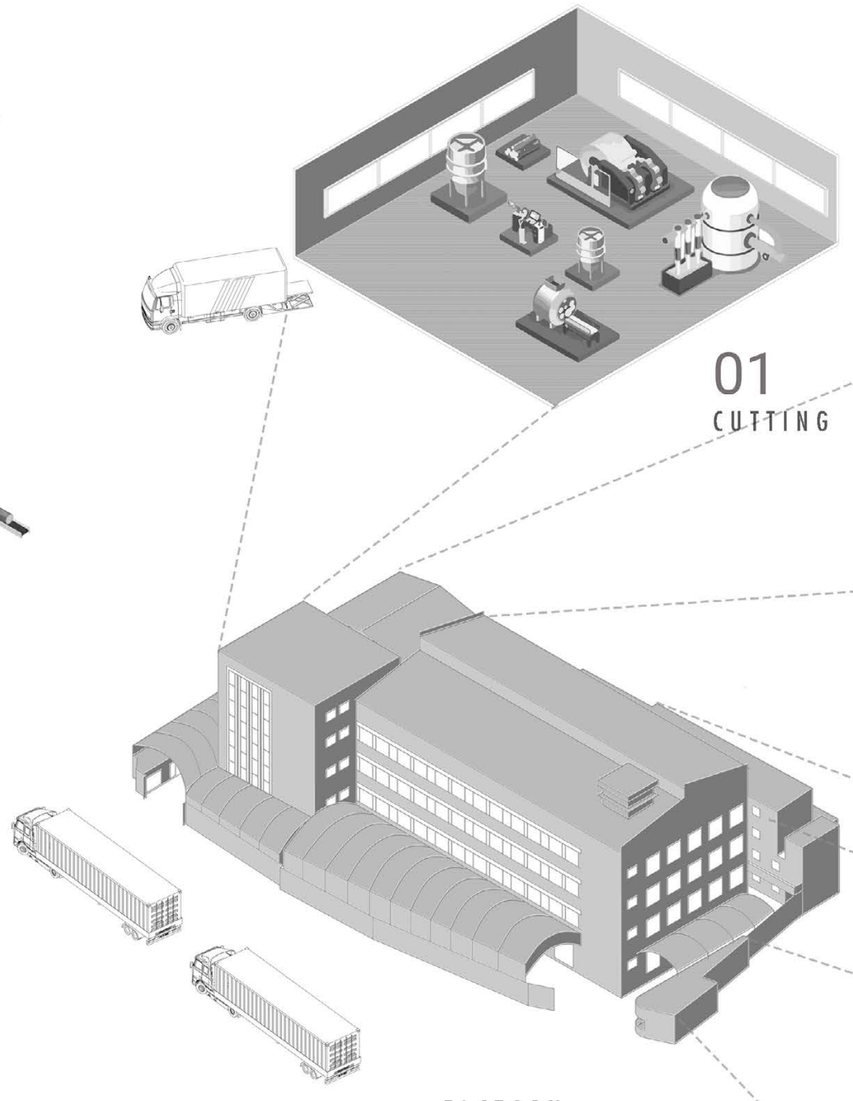
PAPER GRADIENT MODEL



WOOD COLLECTION

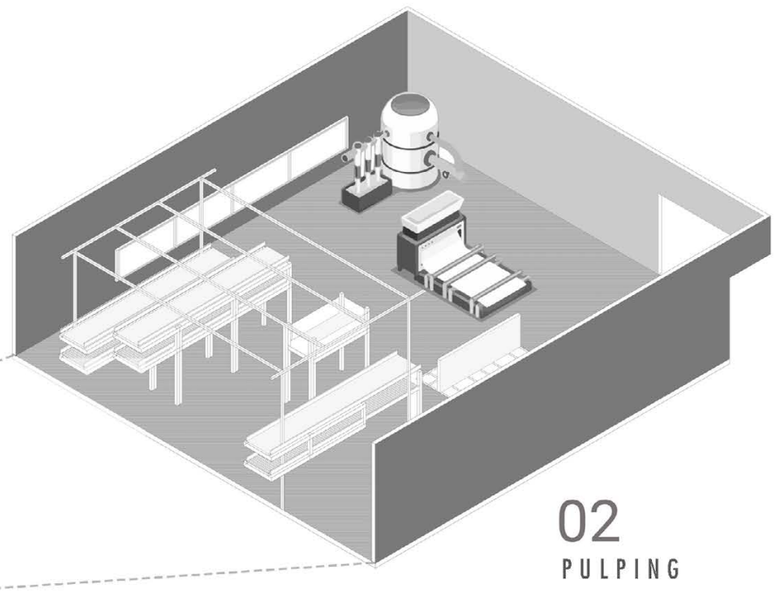


WASTE COLLECTION

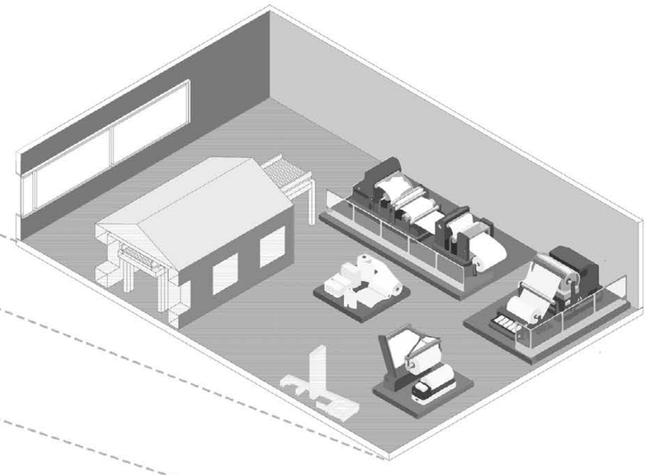


FACTORY

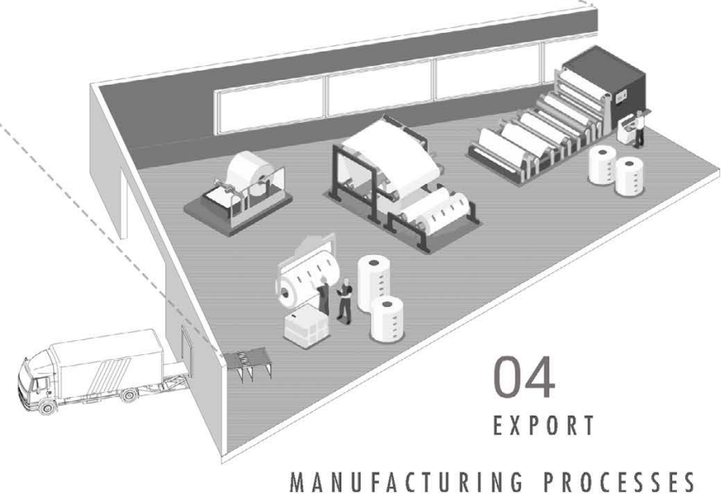
01
CUTTING



02
PULPING



03
PRODUCTION

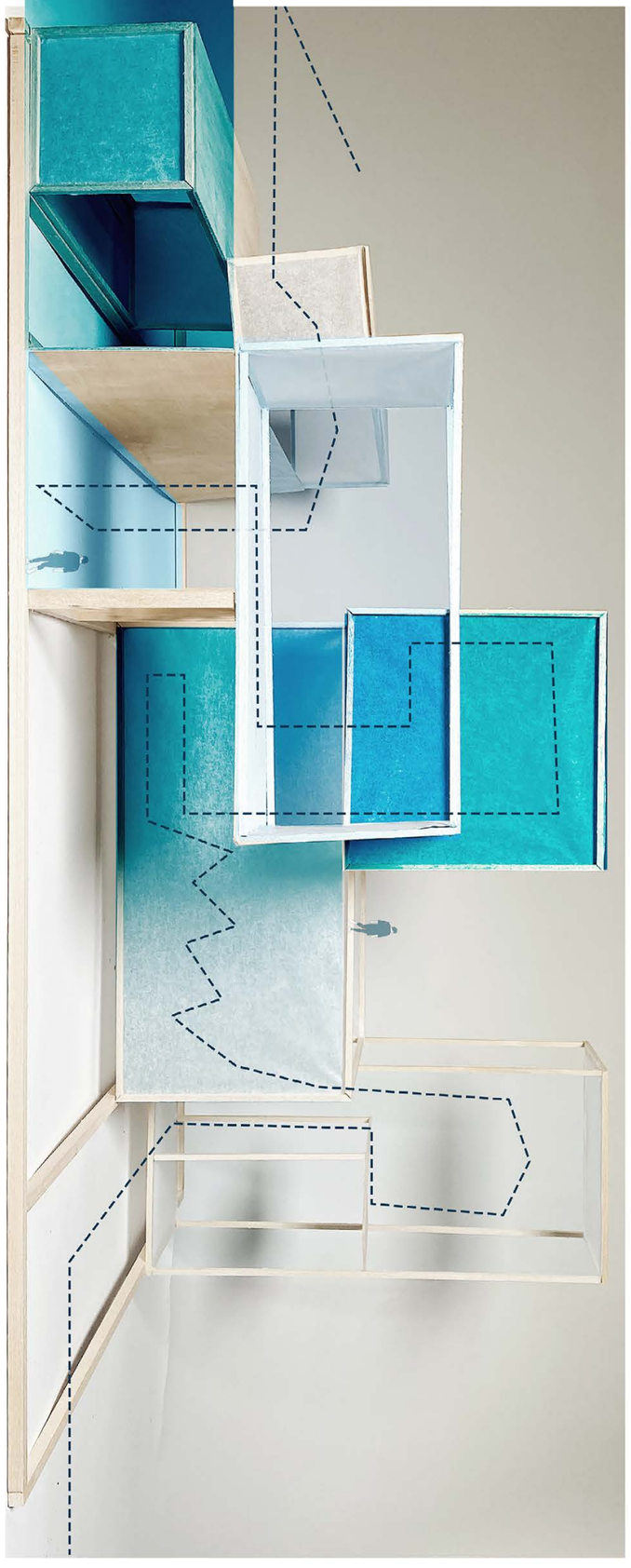


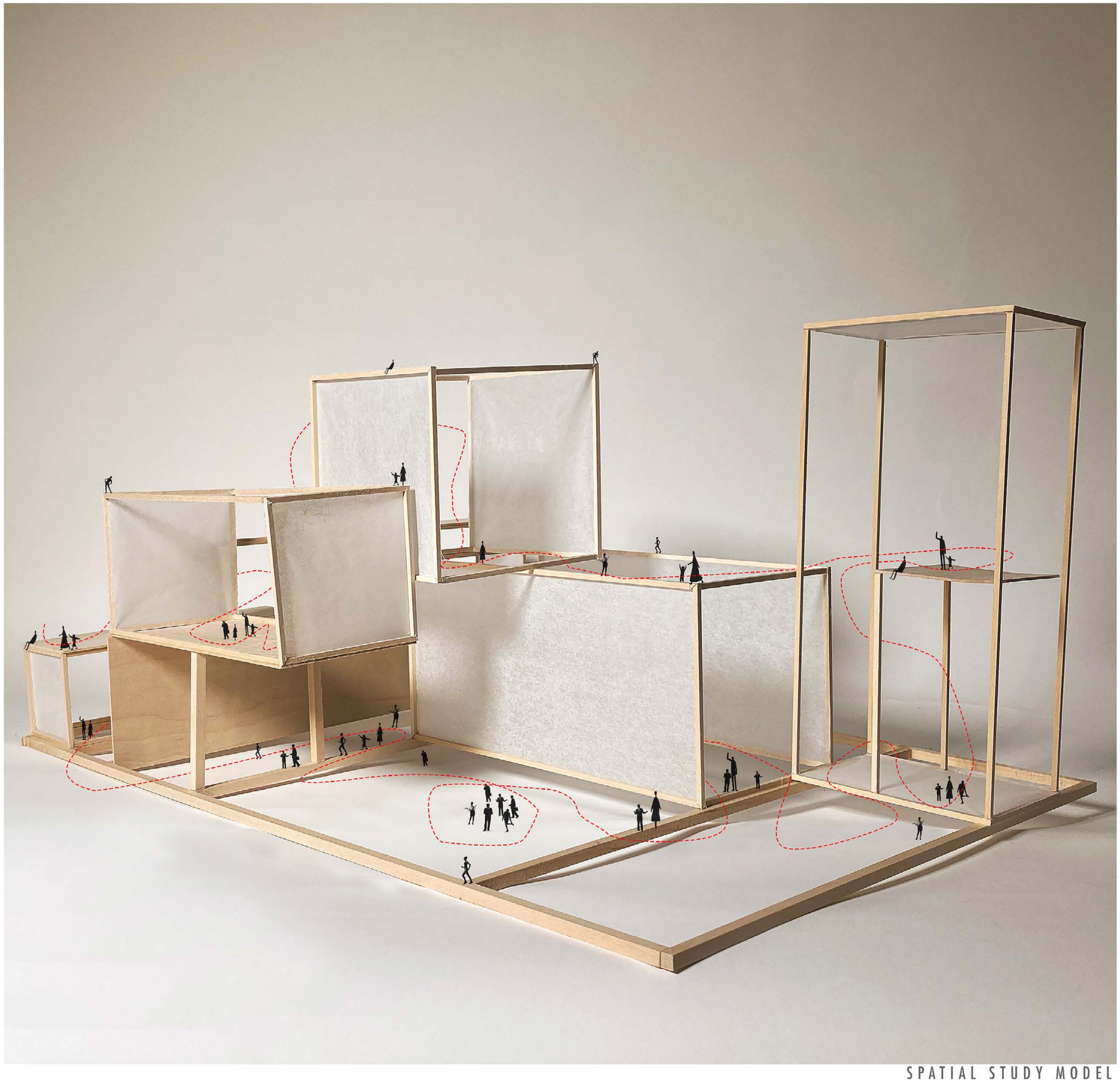
04
EXPORT

MANUFACTURING PROCESSES

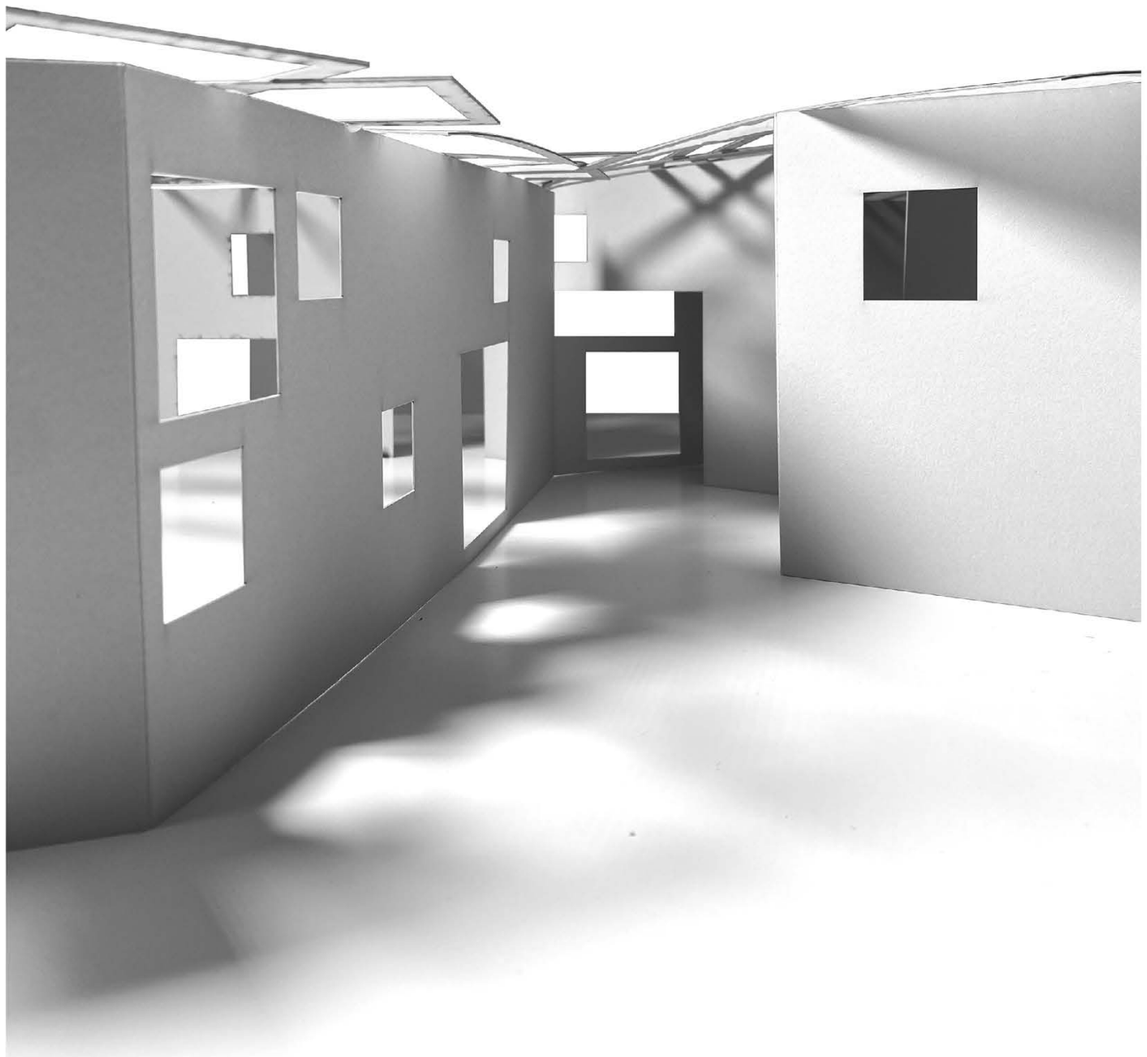
library
museum
factory
education

CONTEXT-NEWTOWN CREEK

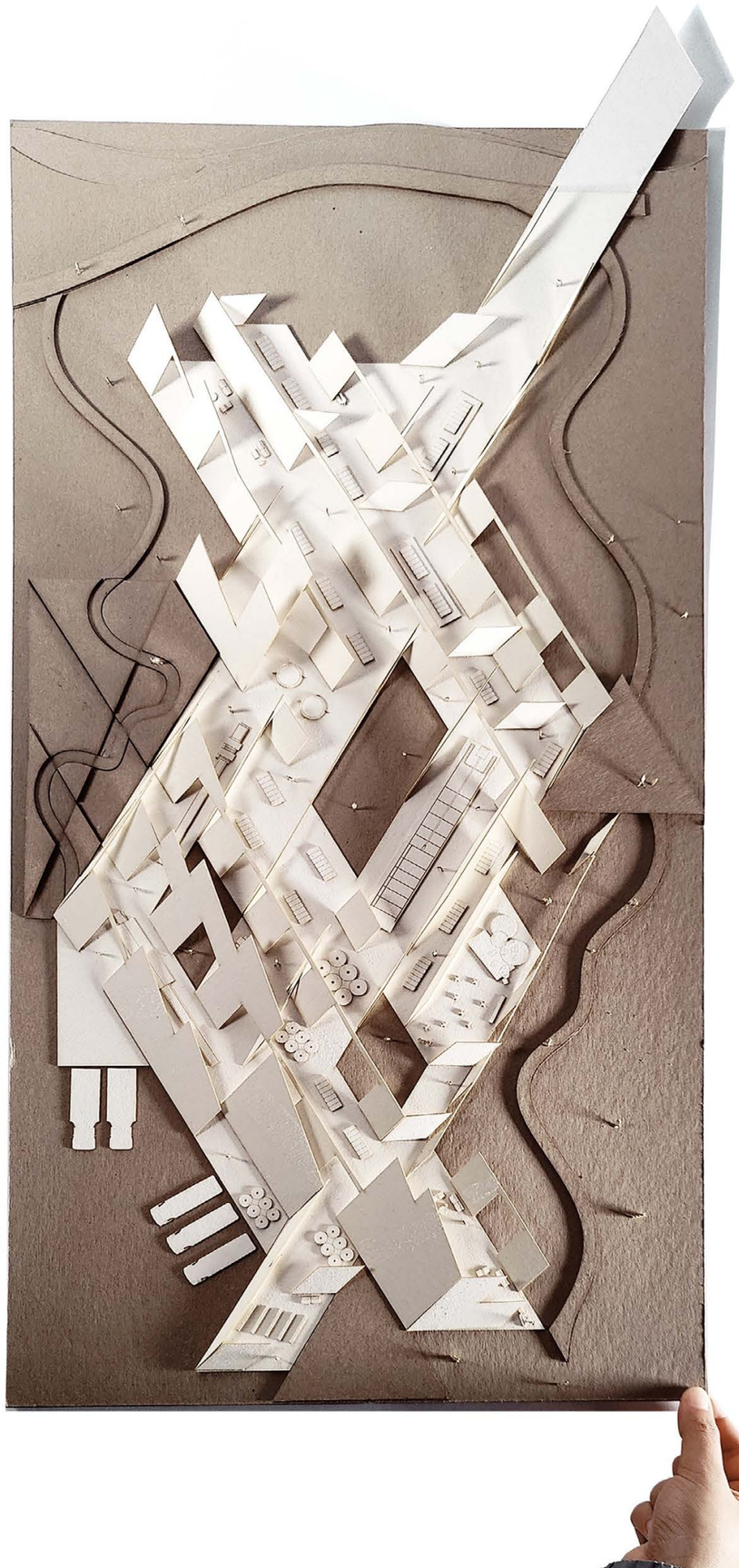




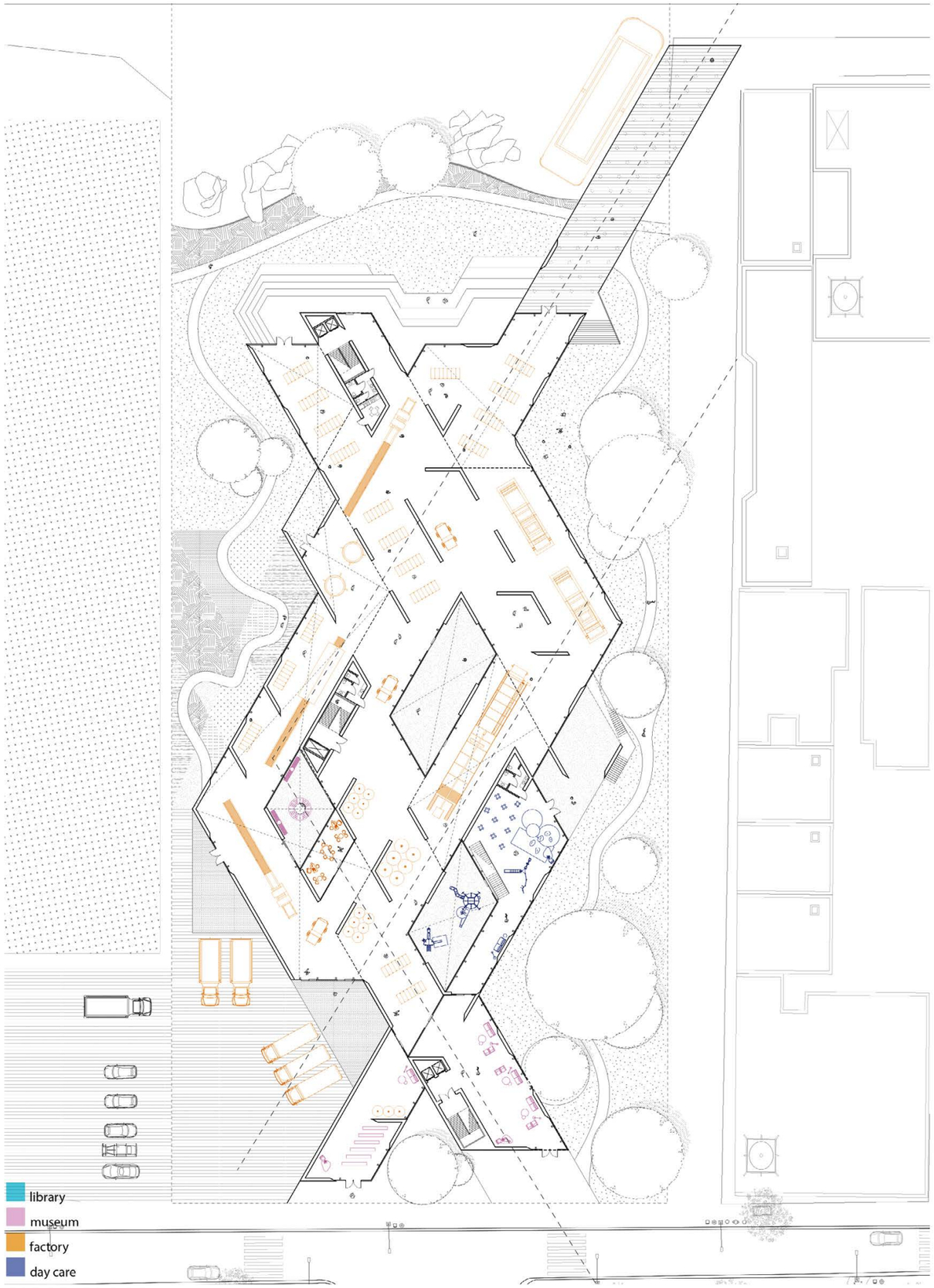
SPATIAL STUDY MODEL



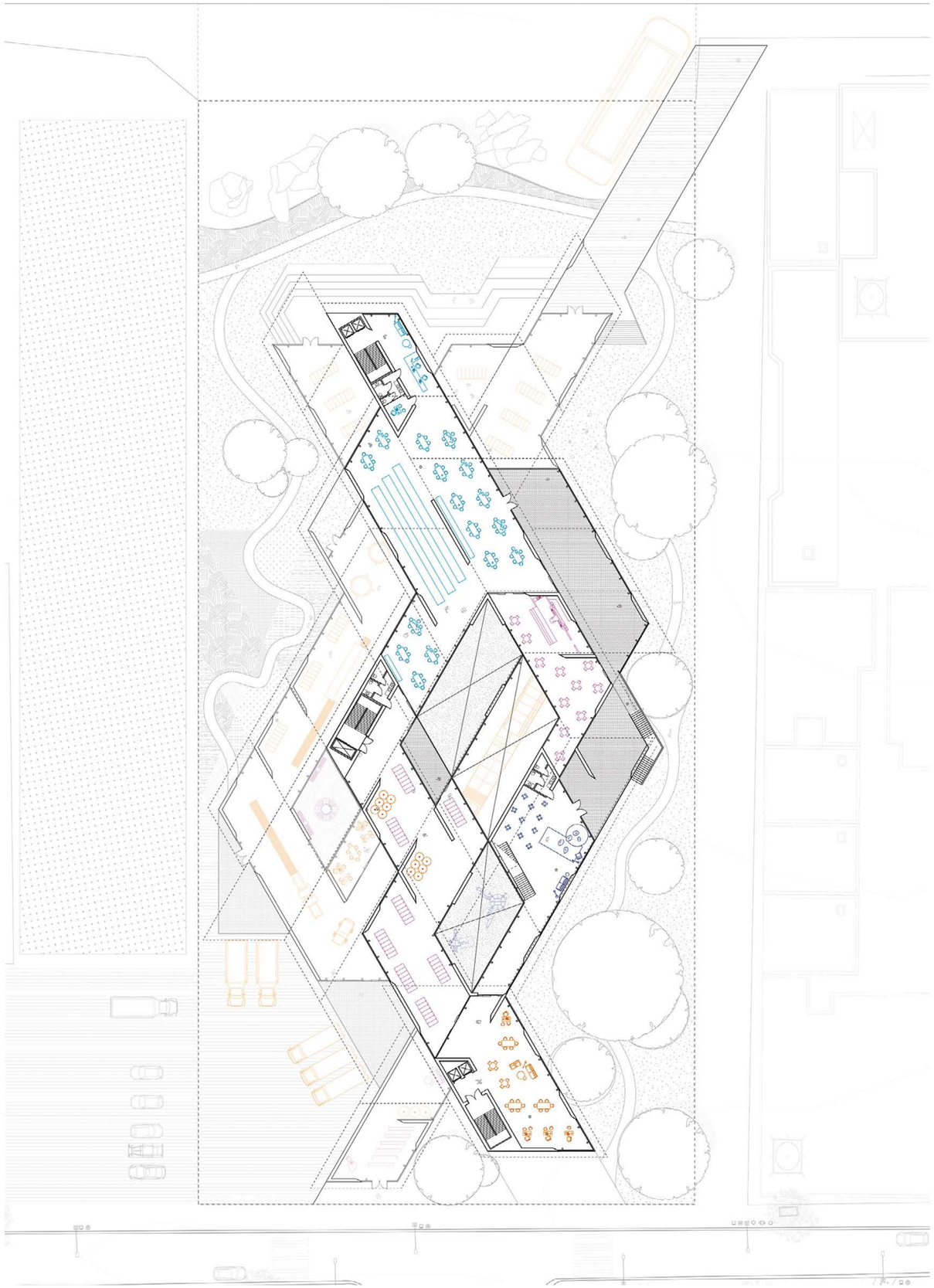
INTERSECTING WALL MODEL



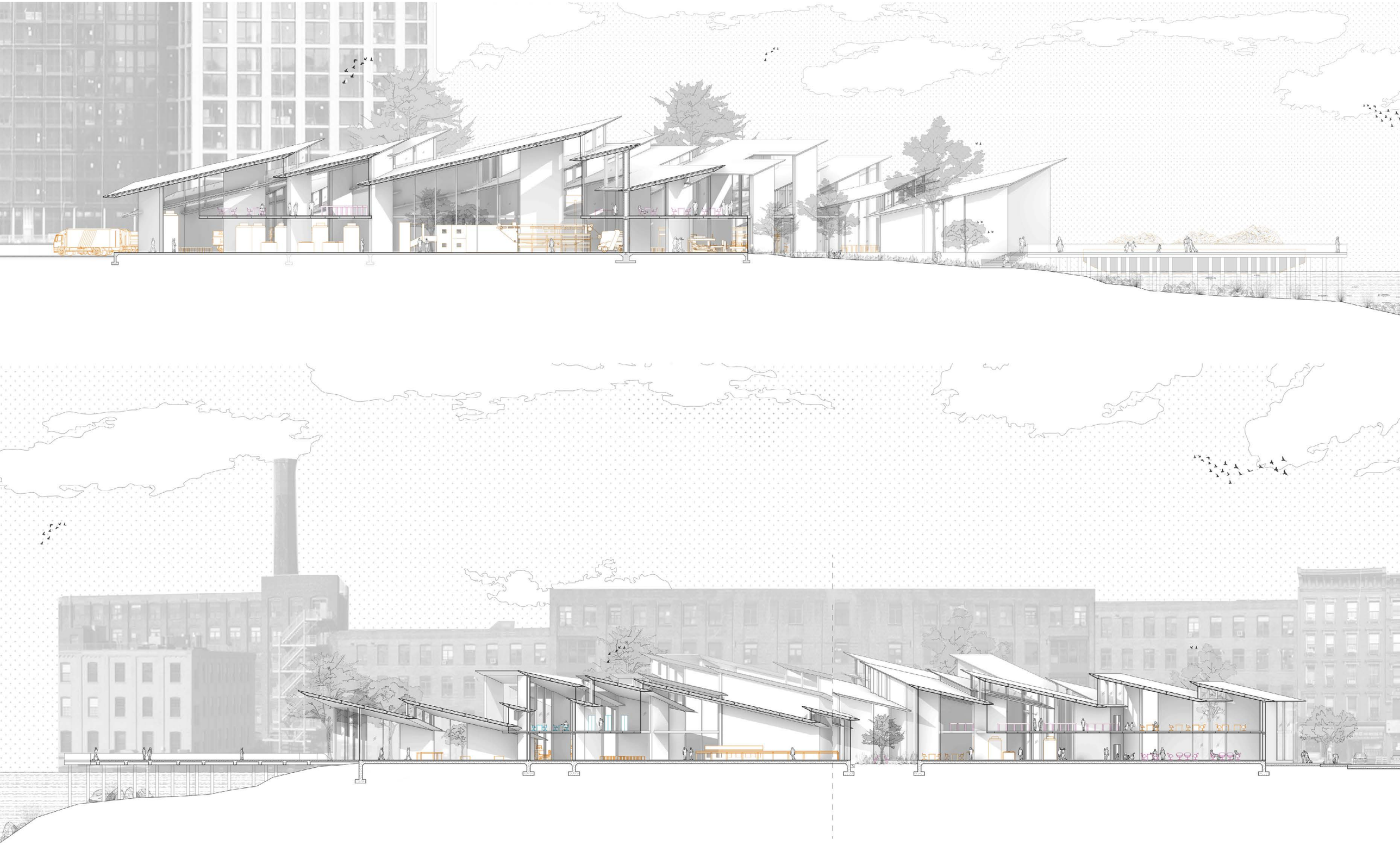
AXONOMETRIC MODEL



FIRST FLOOR

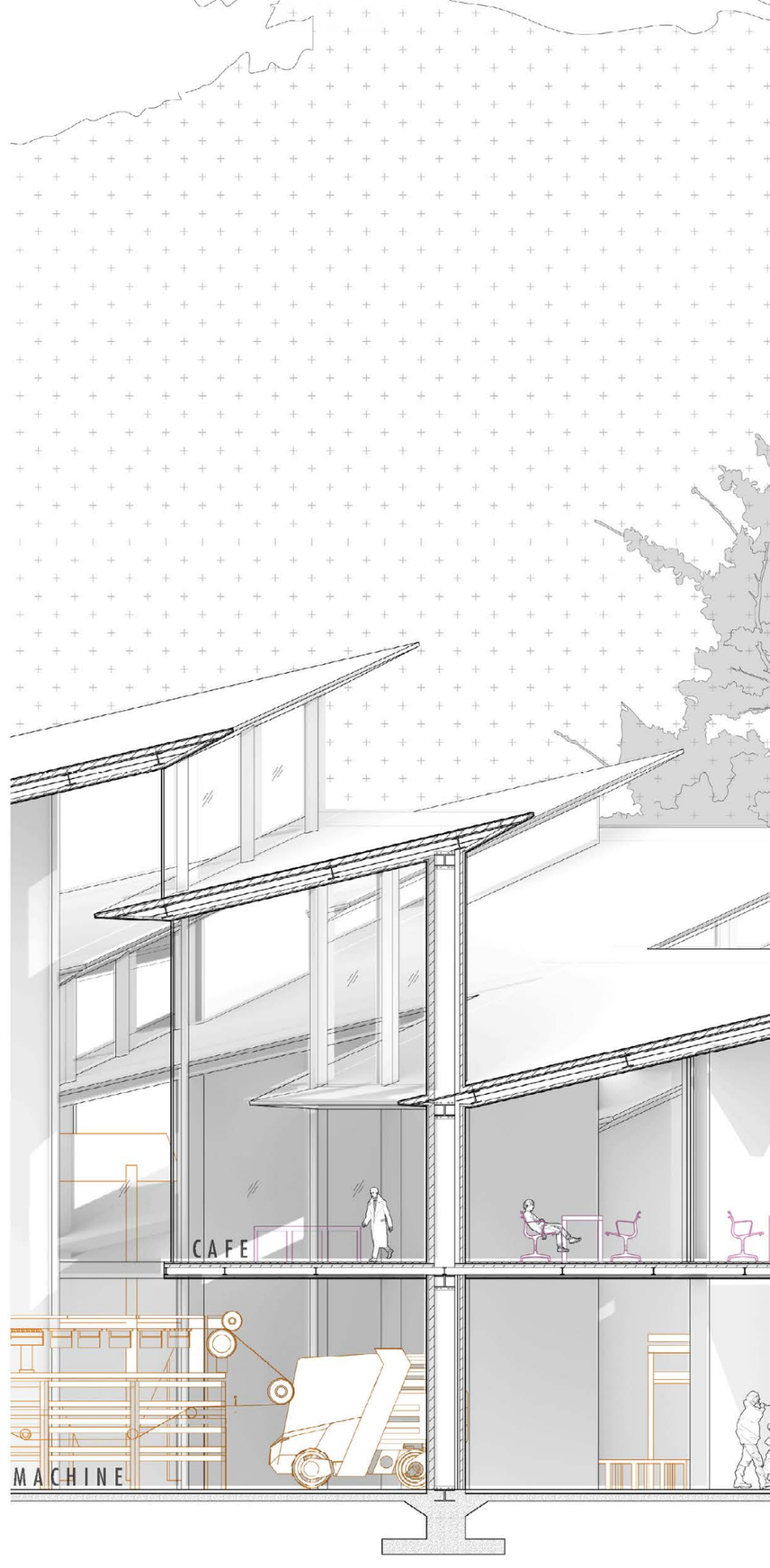


SECOND FLOOR




EXPORT


WORKSHOPS
PAPER ROLLS


CAFE
MACHINE

02
PULPING

LIBRARY

03
PRODUCTION

LIBRARY + CAFE

OFFICE

02

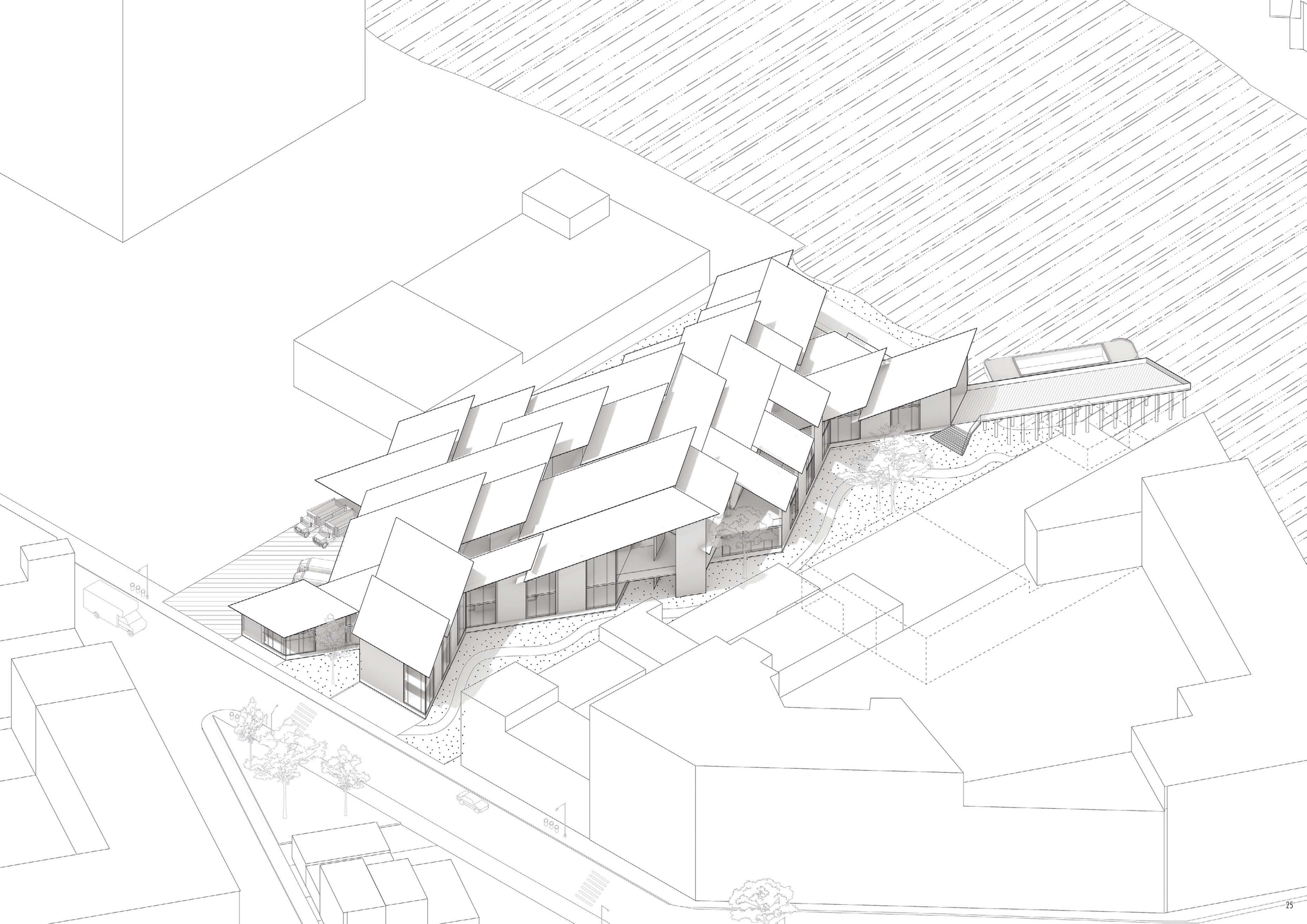
03

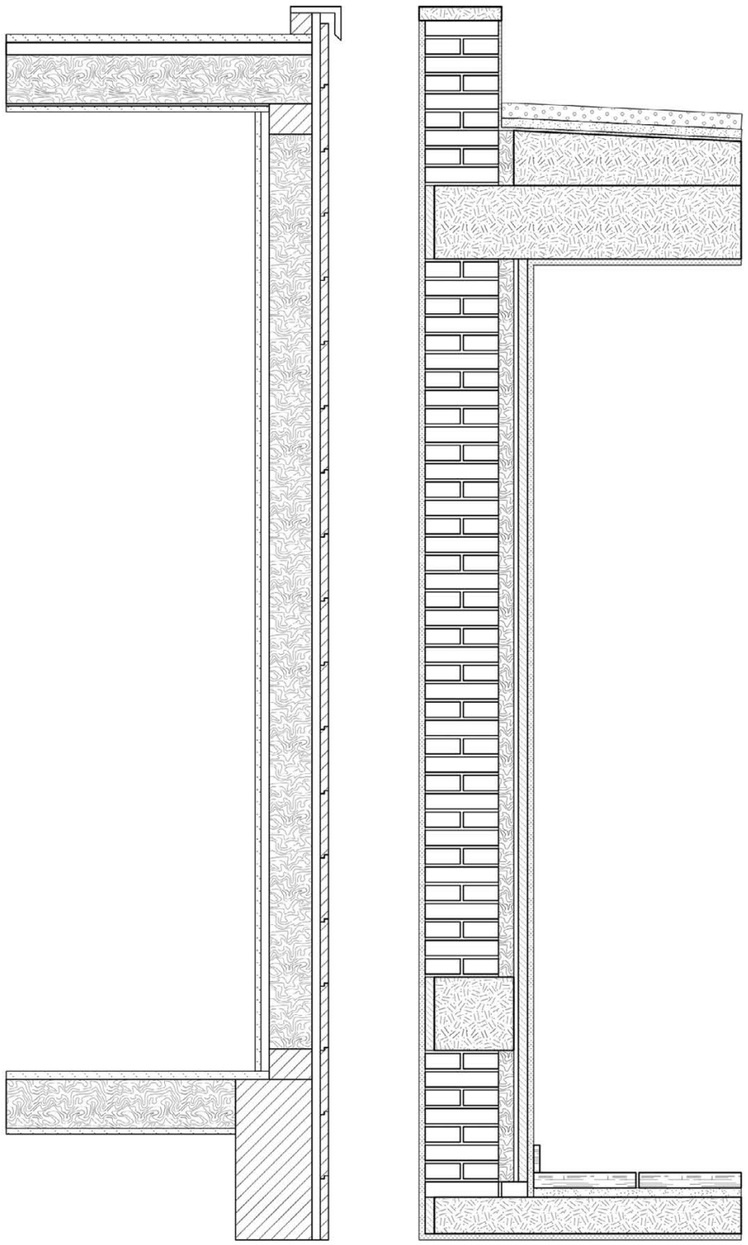
01

04

01
CUTTING

04
EXPORT





ECOLOGY AND SYSTEM BOUNDARY

INDIVIDUAL WORK
SPRING 2022

ELECTIVE- CONSTRUCTION ECOLOGIES IN THE ANTHROPOCENE
(BUILDING SCIENCE AND TECHNOLOGY)
INSTRUCTOR- THOMAS SCHAPERKOTTER

PROJECT 1-WEEKEND HOUSE IN VALLEMAGGIA
ARCHITECT- ROBERTO BRICCOLA, GIUBIASCO

PROJECT 2-URBAN DEVELOPMENT NEAR CADIZ
ARCHITECT- ACTA,RAMON P. AND JAVIER R., SEVILLE

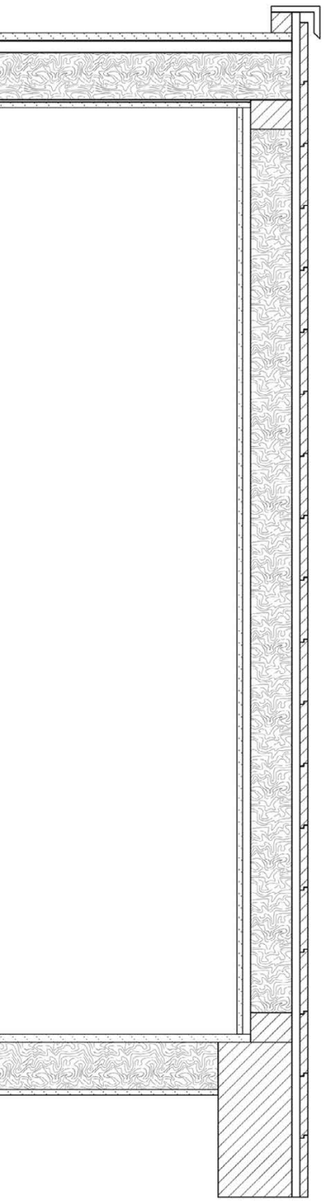
The impacts of architectural production extend far beyond a structural envelope. Regardless of disciplinary recognition, all buildings are temporary material and energetic assembles made with matter extracted (borrowed) from the earth's crust, indelibly altered for human purpose. These externalities are but one of many challenges underpinning the proposed epoch of the Anthropocene.

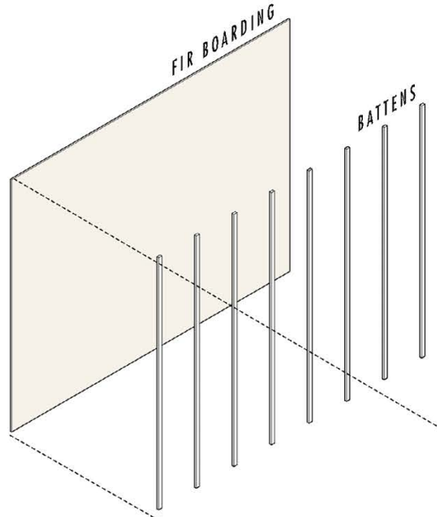
The research tries to compare two building envelopes by drawing and modeling the mass of the material assemblages as a first step in a more terrestrial and social description of architecture. Two building envelopes selected are wood and brick construction respectively.

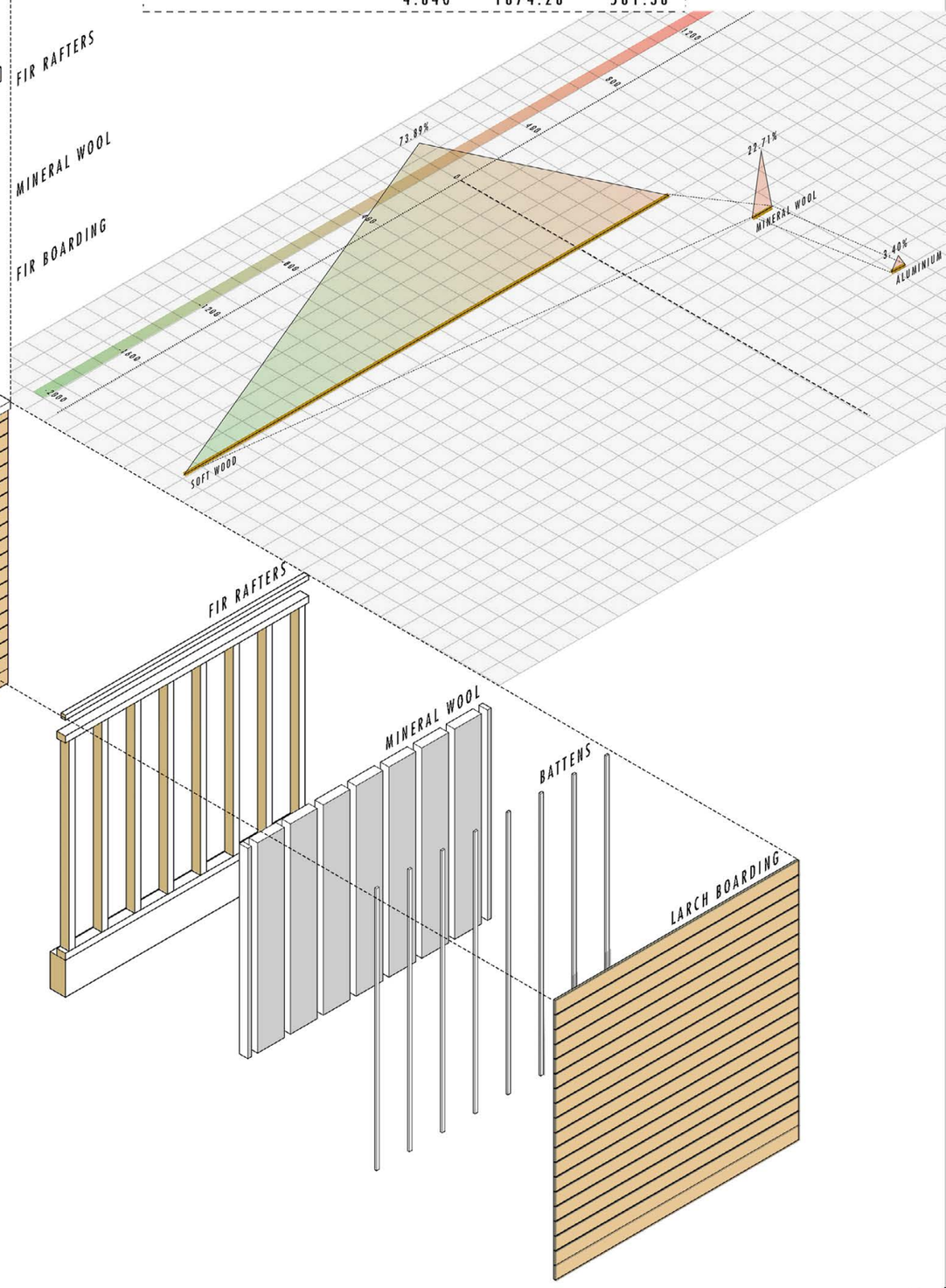
The analysis is done based on mass and volume of each type of construction with carbon keeping the wall length and height same for both cases. By comparing the two cases it was evident that wood construction was much more sustainable as compared to brick construction.

Moreover the research also combines material mass/volume and embodied carbon with sites of extraction and production that engendered those materials. This is done by thinking outside traditional boundaries of documentation in order to determine with some accuracy the sources of material and labor.

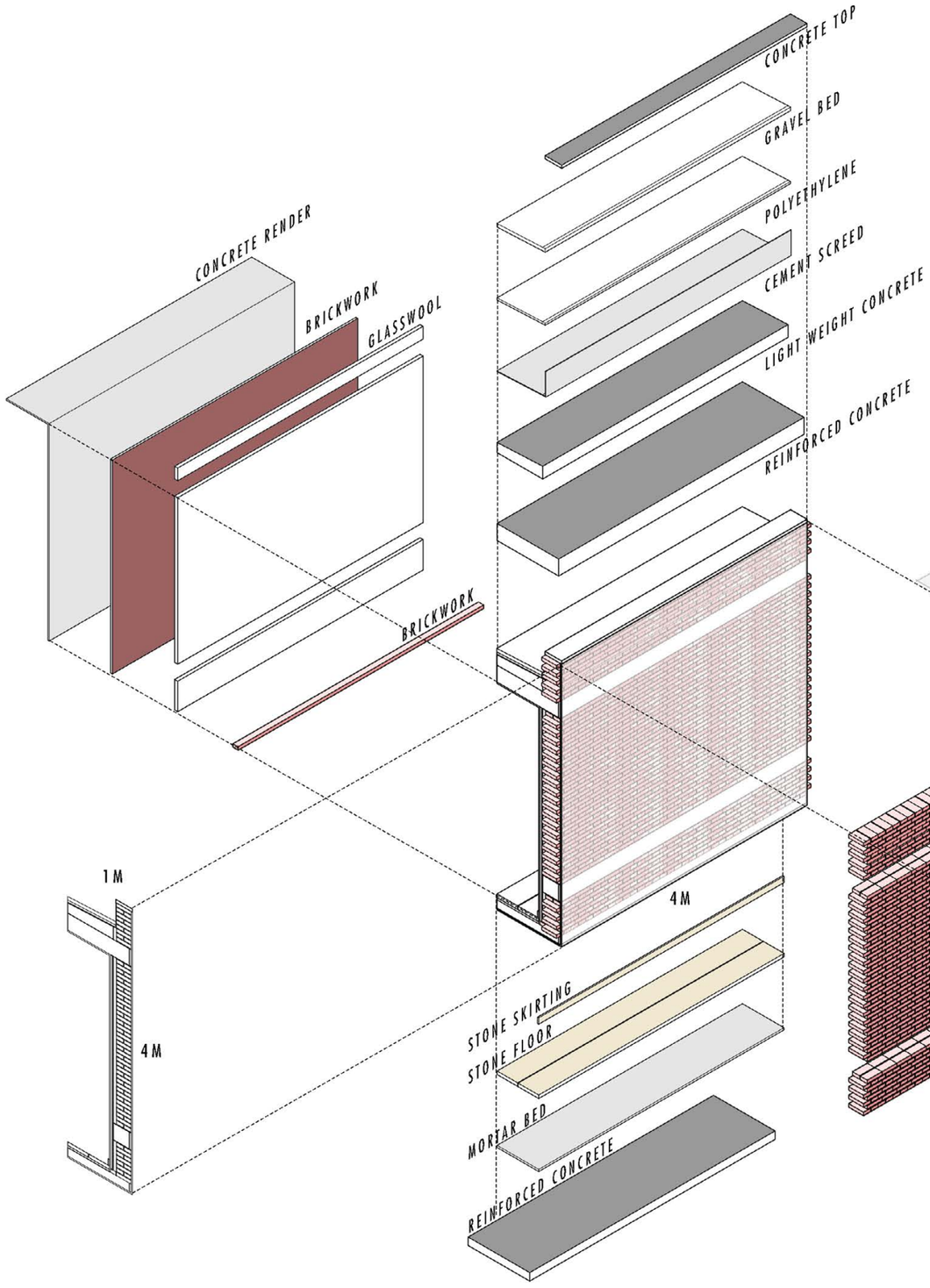
MATERIALS	VOLUME (M3)	MASS (KG)	CARBON (KGCO2E)
FIR BOARDING	0.538		
FIR RAFTERS	1.331		
LARCH BOARDING	0.453		
STAND BOARD	0.057	1237.08	-793.59
MINERAL WOOL	2.237	320.89	617.98
METAL FLASHING	0.021	56.91	736.99
	4.640	**1674.28**	**561.38**

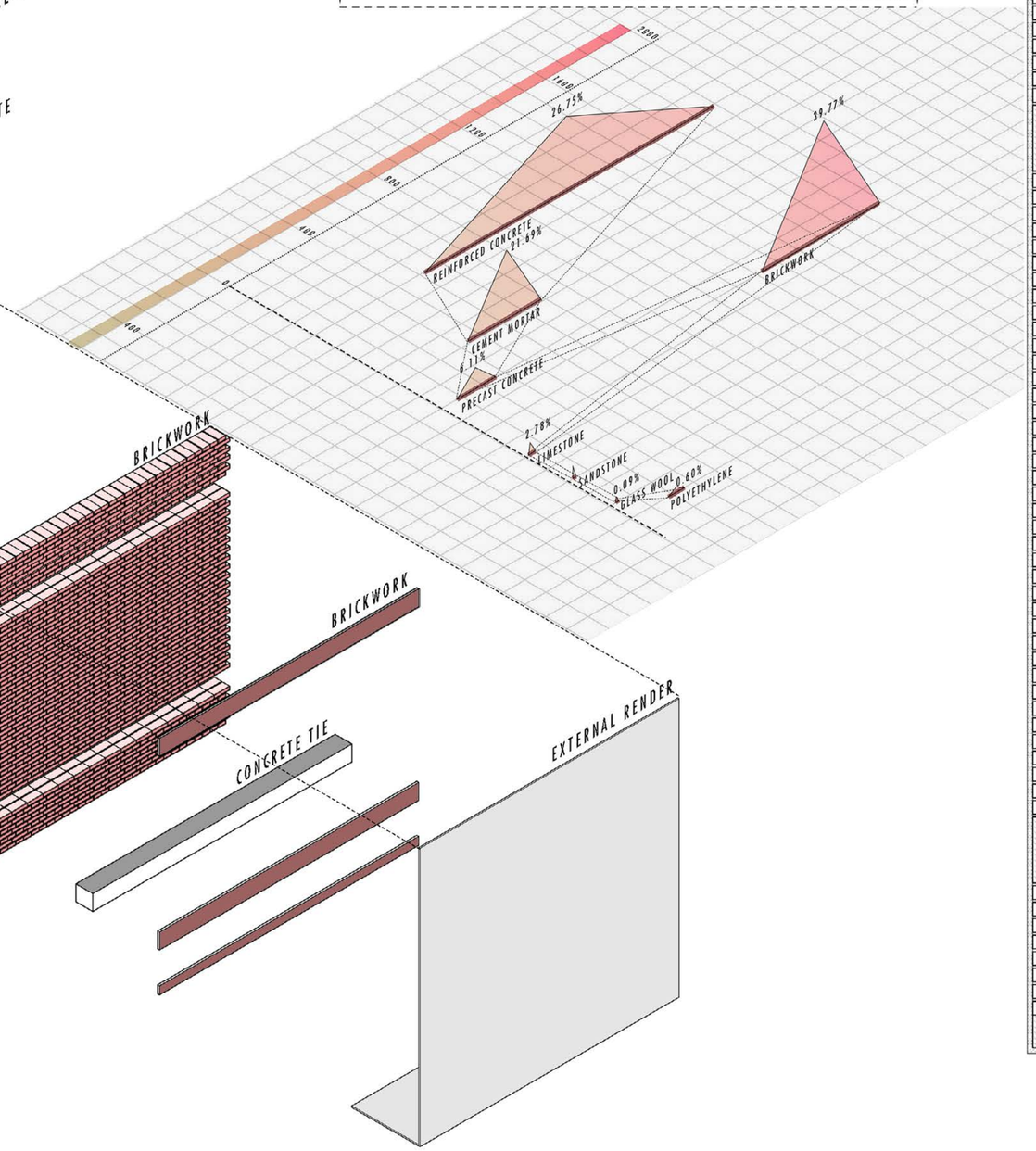


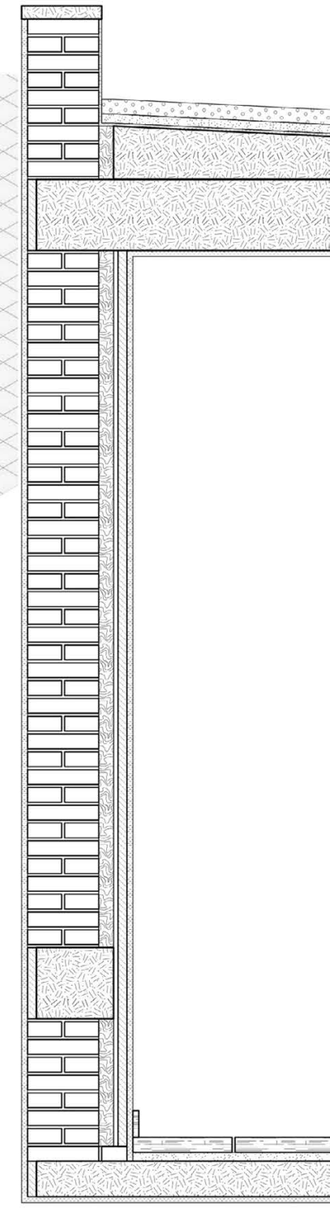


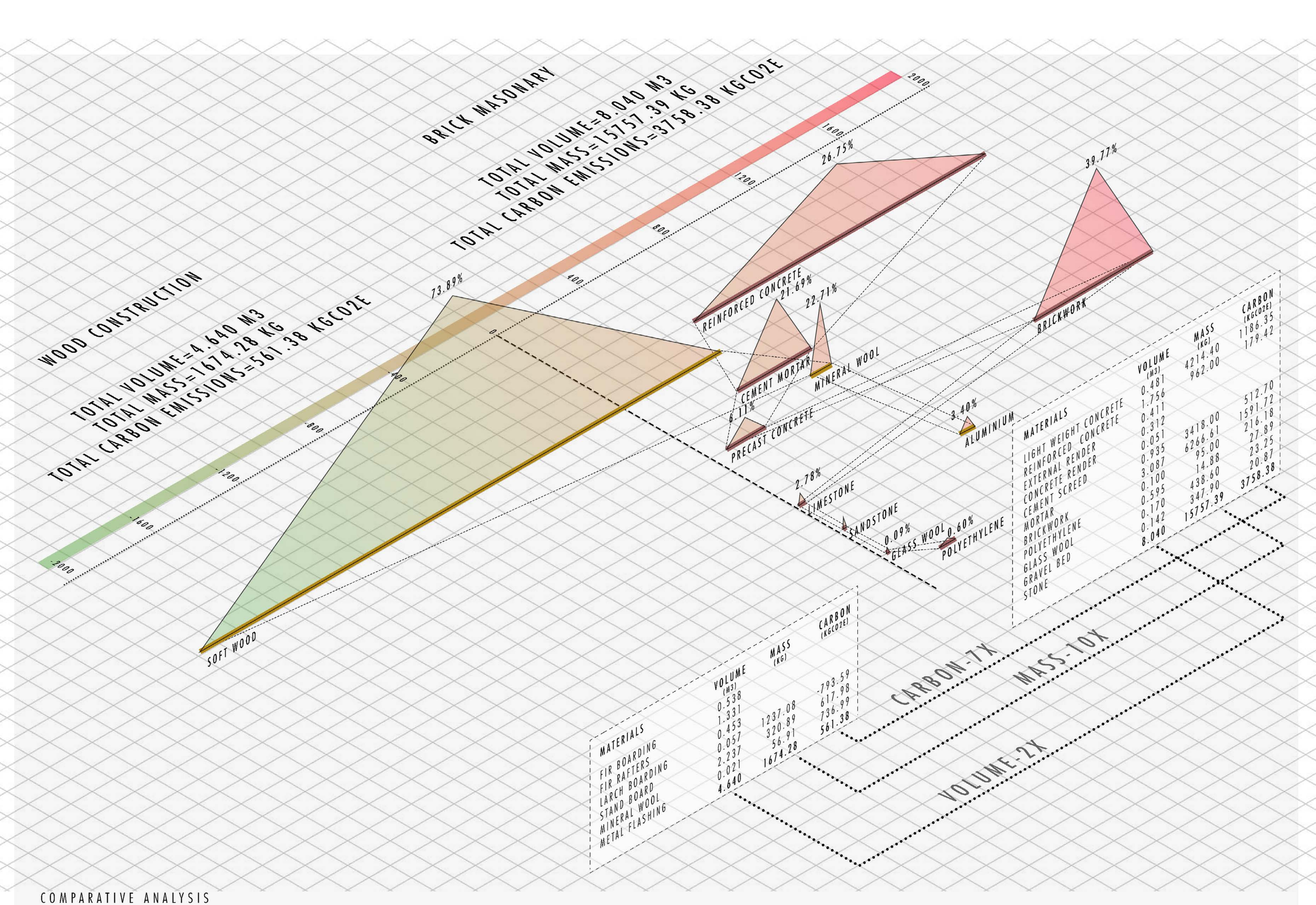


MATERIALS	VOLUME (M3)	MASS (KG)	CARBON (KGCO2E)
LIGHT WEIGHT CONCRETE	0.481	4214.40	1186.35
REINFORCED CONCRETE	1.756	962.00	179.42
EXTERNAL RENDER	0.411		
CONCRETE RENDER	0.312		
CEMENT SCREED	0.051		
MORTAR	0.935	3418.00	512.70
BRICKWORK	3.087	6266.61	1591.72
POLYETHYLENE	0.100	95.00	216.18
GLASS WOOL	0.595	14.88	27.89
GRAVEL BED	0.170	438.60	23.25
STONE	0.142	347.90	20.87
	8.040	**15757.39**	**3758.38**








WOOD CONSTRUCTION
TOTAL VOLUME=4.640 M3
TOTAL MASS=1674.28 KG
TOTAL CARBON EMISSIONS=561.38 KGCO2E
BRICK MASONARY
TOTAL VOLUME=8.040 M3
TOTAL MASS=15757.39 KG
TOTAL CARBON EMISSIONS=3758.38 KGCO2E
2000
1600
1200
800
400
0
400
800
1200
1600
2000
73.89%
SOFT WOOD
26.75%
REINFORCED CONCRETE
21.69%
CEMENT MORTAR
22.71%
MINERAL WOOL
6.11%
PRECAST CONCRETE
3.40%
ALUMINIUM
39.77%
BRICKWORK
2.78%
LIMESTONE
SANDSTONE
0.09%
GLASS WOOL
0.60%
POLYETHYLENE
MATERIALS
FIR BOARDING
FIR RAFTERS
LARCH BOARDING
STAND BOARD
MINERAL WOOL
METAL FLASHING
VOLUME (M3)
0.538
1.331
0.453
0.057
2.237
0.021
4.640
MASS (KG)
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8.040
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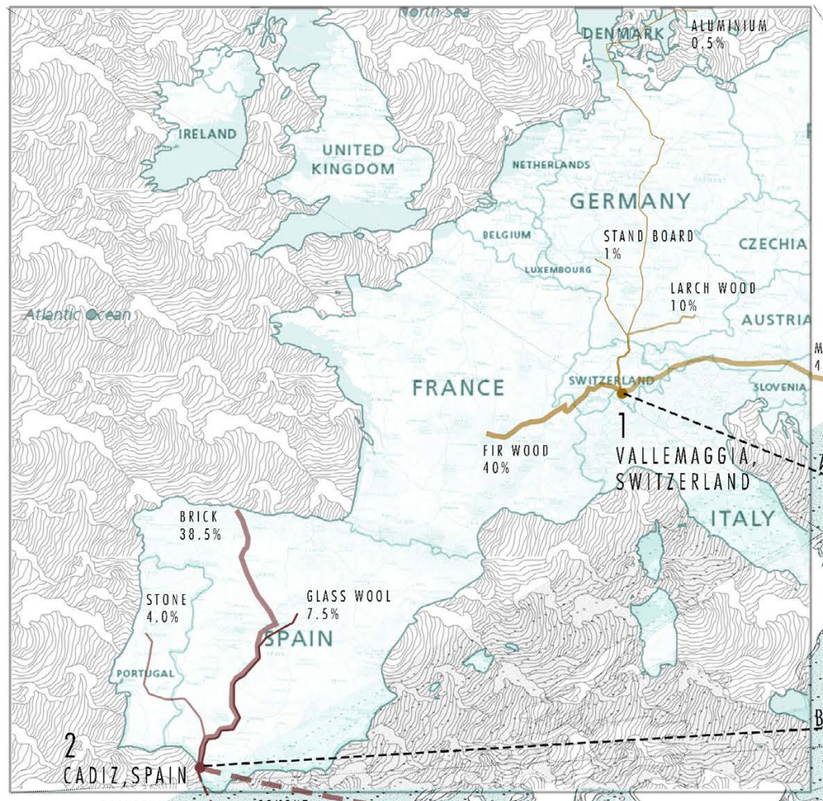
4214.40
962.00
3418.00
6266.61
95.00
14.88
438.60
347.90
15757.39
CARBON (KGCO2E)
1186.35
179.42
512.70
1591.72
216.18
27.89
23.25
20.87
3758.38
CARBON-7X
MASS-10X
VOLUME-2X



MINERAL WOOL
18.5%

WOOD CONSTRUCTION

BRICK MASONARY

MATERIALS	VOLUME (M3)	MASS (KG)	CARBON (KGCO2E)
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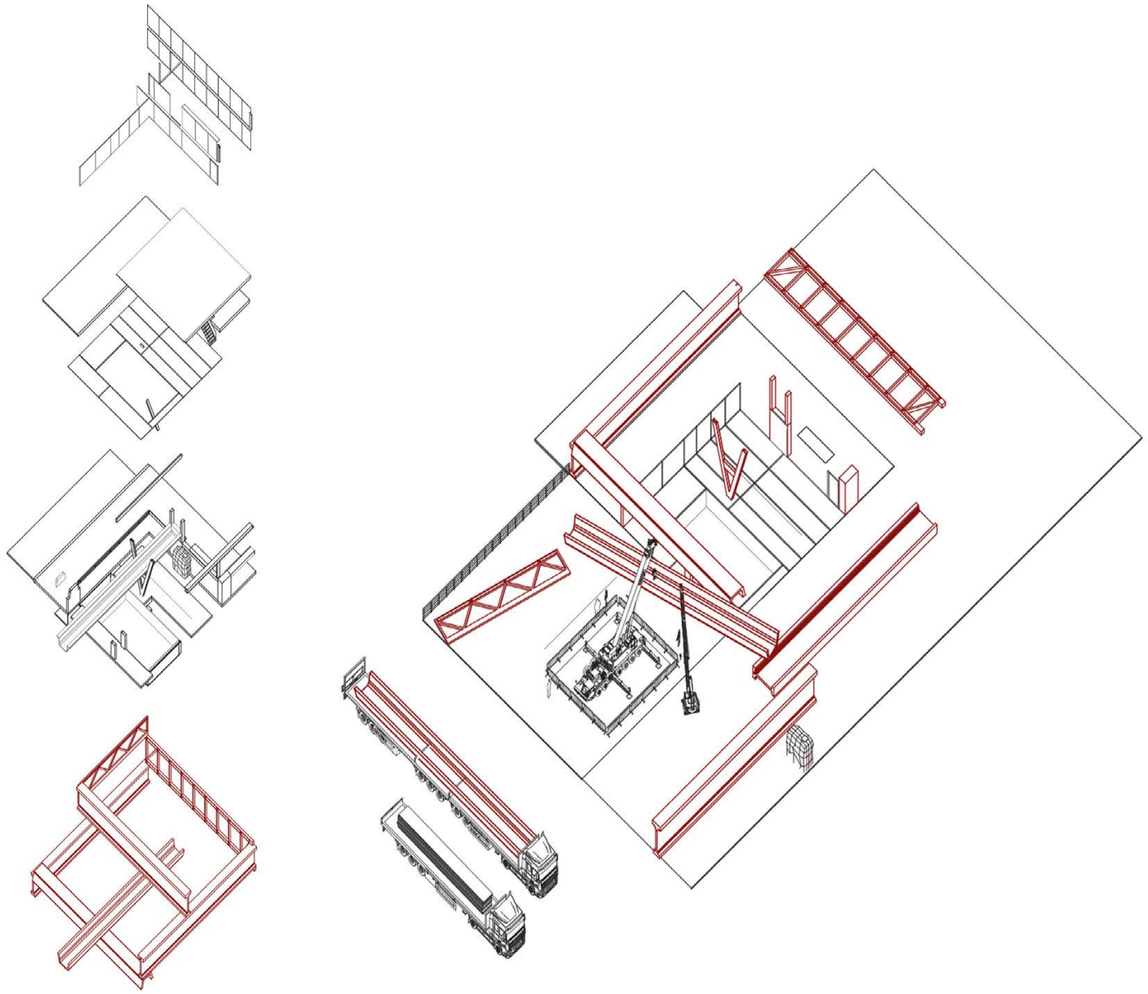
STONE	0.142	**15757.39**	
	8.040		

TRAJECTORY OF MATERIALS FROM EXTRACTION TO SITE



AGNOTOLOGY OF PREFABRICATION

INDIVIDUAL WORK
SPRING 2022

ELECTIVE- CONSTRUCTION ECOLOGIES IN THE ANTHROPOCENE
(BUILDING SCIENCE AND TECHNOLOGY)
INSTRUCTOR- THOMAS SCHAPERKOTTER

PROJECT-HEMEROSCOPIUM HOUSE
LAS ROZAS,MADRID,SPAIN(2008)
BY ENSAMBLE STUDIO

Agnotology is the field of study that examines the cultural production of ignorance.It is a form of knowledge that considers on how ignorance is developed and gains momentum.

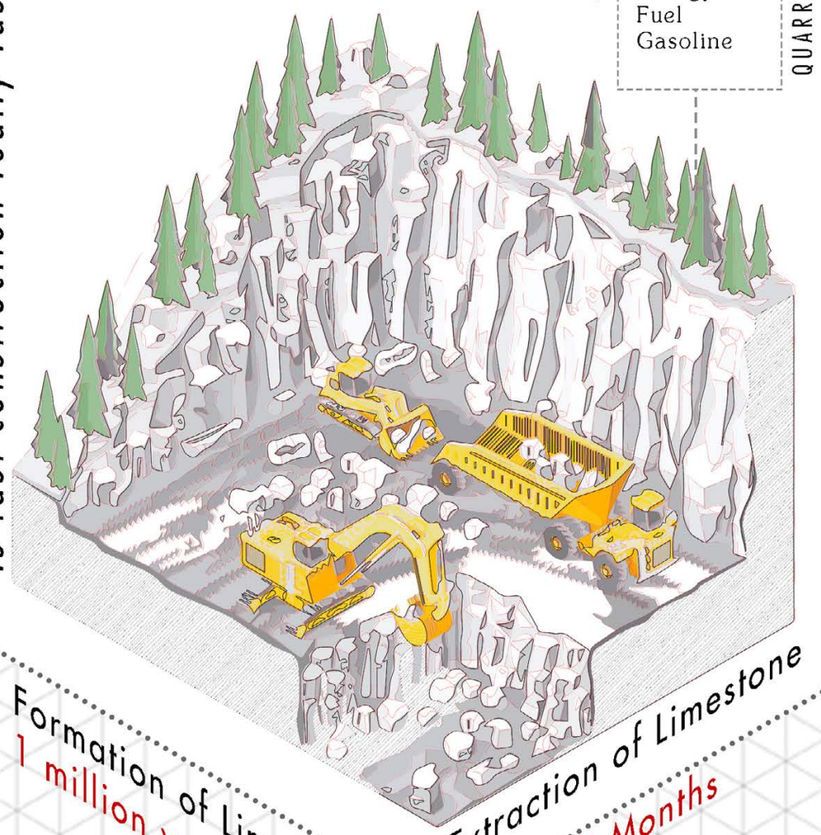
The project Hemeroscopium House by Ensamble Studio is known for its unconventional usage of heavy prefabricated elements. It is often described as ecofriendly prefab house. But there are many things ignored while taking about this project.

Through my project I would like to unfold some of the ignorance and agnotology that is based on prefabrication through examining this house. Prefabrication is also successfull in shifting the visible on-site process of construction to hidden industrial process of construction hiding many truths and impacts on various levels. So here, I will try to unfold the agnotology based on three aspects-

1- TIME
2- LIGHTNESS
3- NARRATIVE

I would also like to highlight this ignorance keeping in mind the ecological aspect of construction and material formation. There can be many more ways through which this can be unfolded and interpreted. Here, the major aim is to question and highlight the materiality and environmental impacts of the architectural decisions on the planet. The aim is also to see different kinds of narrative that surrounds architectural practice at various levels.

Is fast-construction really fast?

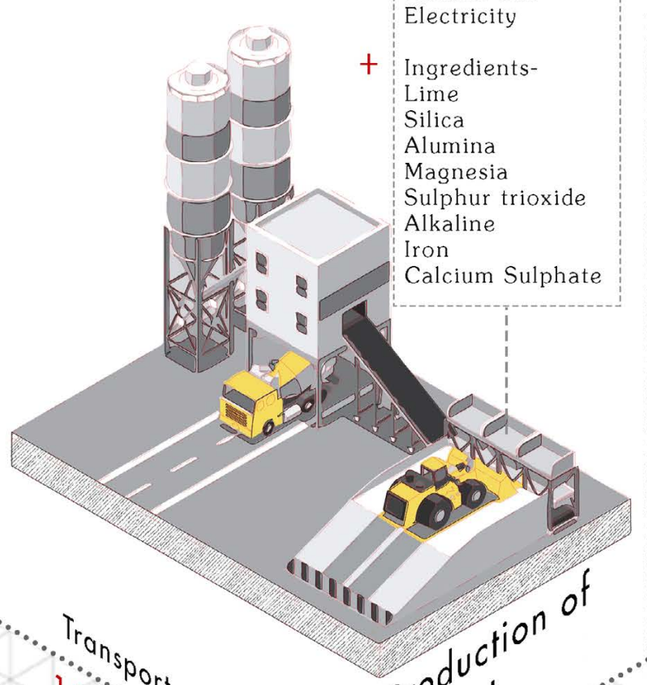


Formation of Limestone
1 million years

Extraction of Limestone
2 Months

QUARRY
+ Energy-
Fuel
Gasoline

Transport
15 days

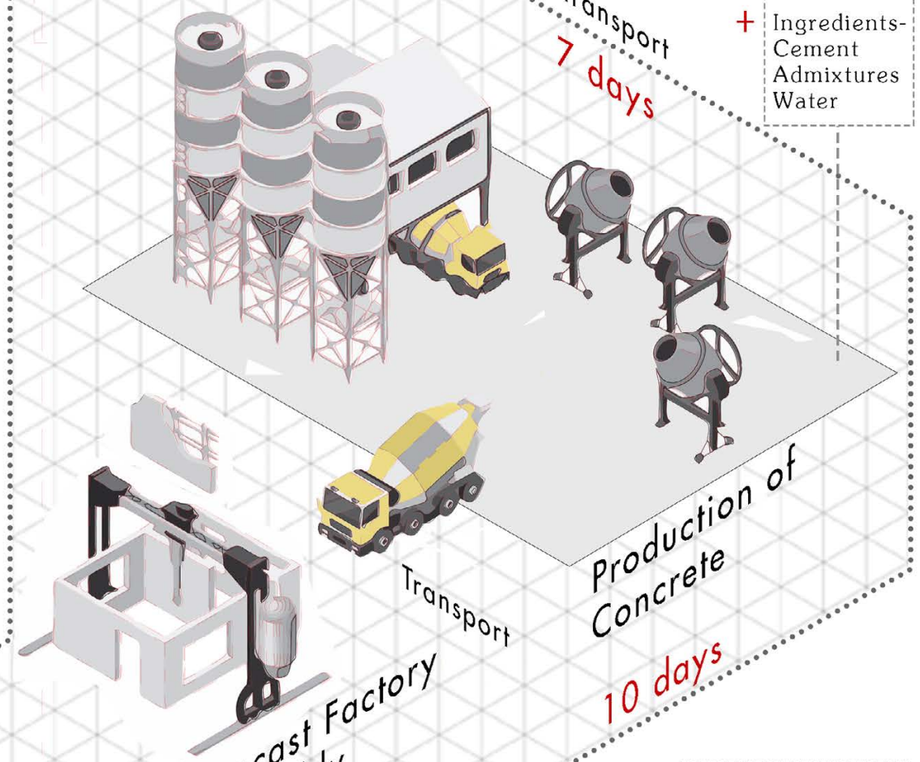


Production of Cement
25 days

CEMENT
+ Energy-
Coal
Fuel
Petro Coke
Natural Gas
Electricity

+ Ingredients-
Lime
Silica
Alumina
Magnesia
Sulphur trioxide
Alkaline
Iron
Calcium Sulphate

Transport
7 days



Production of Concrete
10 days

CONCRETE
+ Energy-
Coal
Fuel
Natural Gas
Electricity

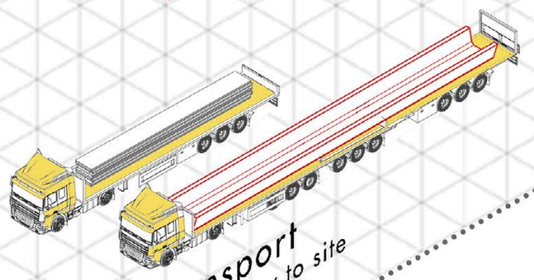
+ Ingredients-
Cement
Admixtures
Water

Transport

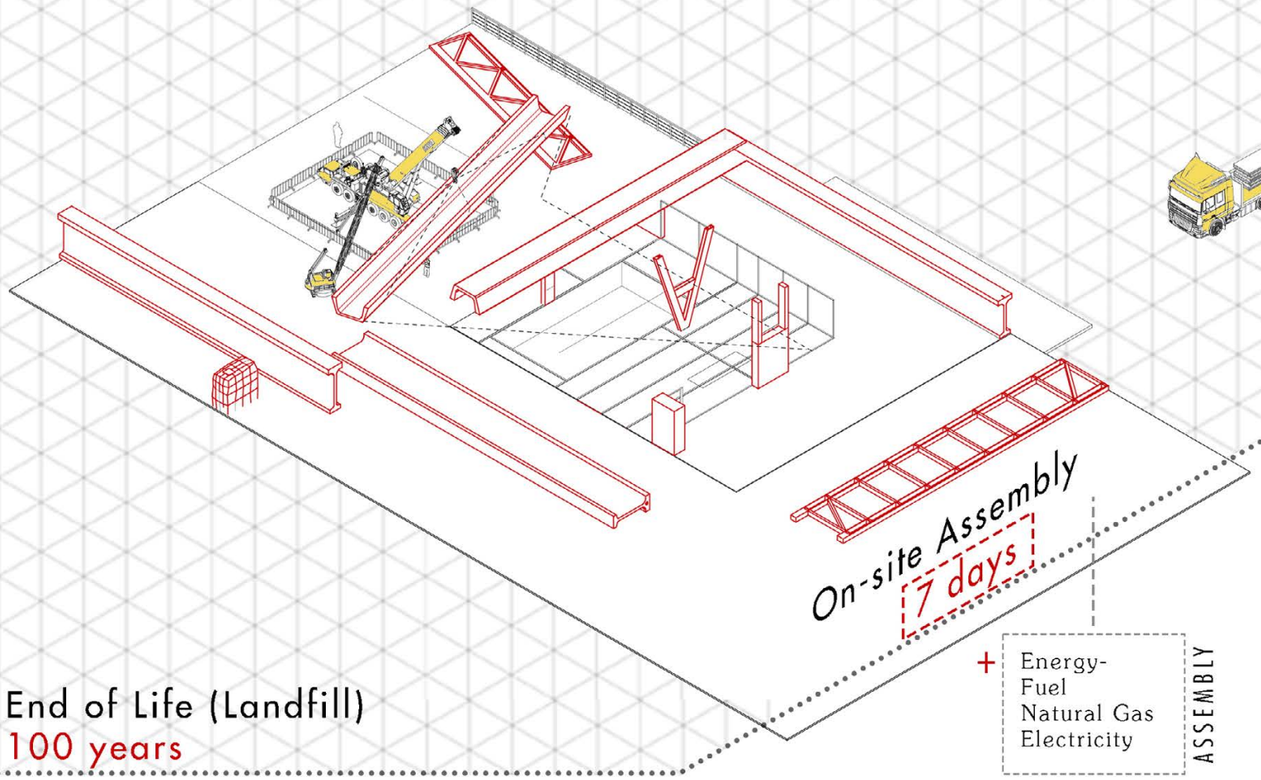
Precast Factory Assembly
4 months

CASTING
+ Energy-
Coal
Fuel
Natural Gas
Electricity

+ Ingredients-
Concrete
Reinforced Steel



Transport
from factory to site
15 days



On-site Assembly
7 days

ASSEMBLY
+ Energy-
Fuel
Natural Gas
Electricity

End of Life (Landfill)
100 years

AGNOTOLOGY OF TIME

Time is very important aspect of architecture which is in general neglected. Prefabrication and technology have made it even more difficult to understand the time taken to for the formation of a building. Here in the case of Hemeroscopium House, it is described as a house built in just 7 days neglecting all the aspects of material and energy needed to make the same house. This kind of Agnotology based on time is responsible for hiding the truth of actual impact of architecture on planet.

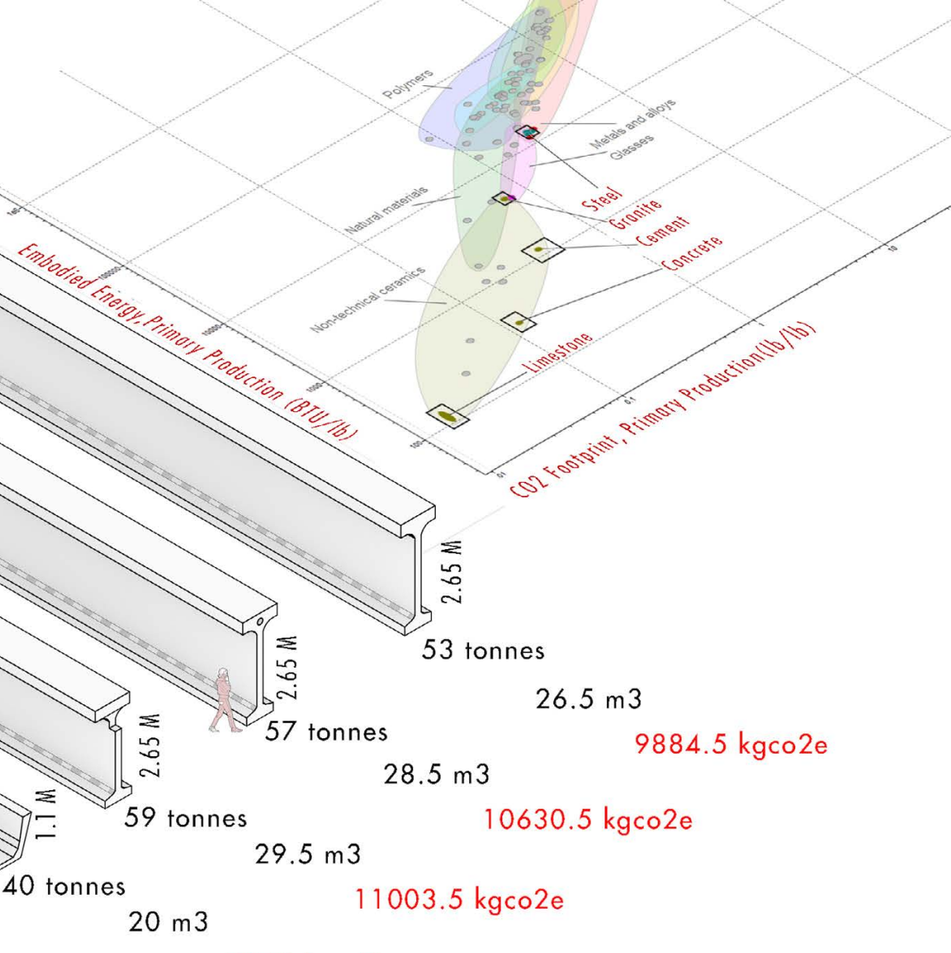
The above drawing demonstrates the hidden truth based on time. Only the assembly took 7 days does not mean that rest of the time taken can be neglected. Even on-site, it took 7 days to assemble only this 7 elements which are just a part of the entire house It also hides the site development, supports and other finishing work which took around 2 years in itself. So the time in which architecture is built can not just be defined by a very small part like assembling of prefabricated components, rather it is much beyond that. At planet level the time taken for this house to be constructed is more than 1 million years which starts from the formation of limestone while on the site level it took around 2 years.

284 tonnes of material for structure

Embodied Carbon 98558 kgco2e

How light is light enough?

GRANITE CROWNING STONE
VIERENDEL TRUSS
WARREN TRUSS
REVERSED ARTESIAN BEAM
ARTESIAN BEAM
1ST DOUBLE -T
2ND DOUBLE -T
3RD DOUBLE -T



2.65 M
53 tonnes
26.5 m3
9884.5 kgco2e

2.65 M
57 tonnes
28.5 m3
10630.5 kgco2e

1.1 M
59 tonnes
29.5 m3
11003.5 kgco2e

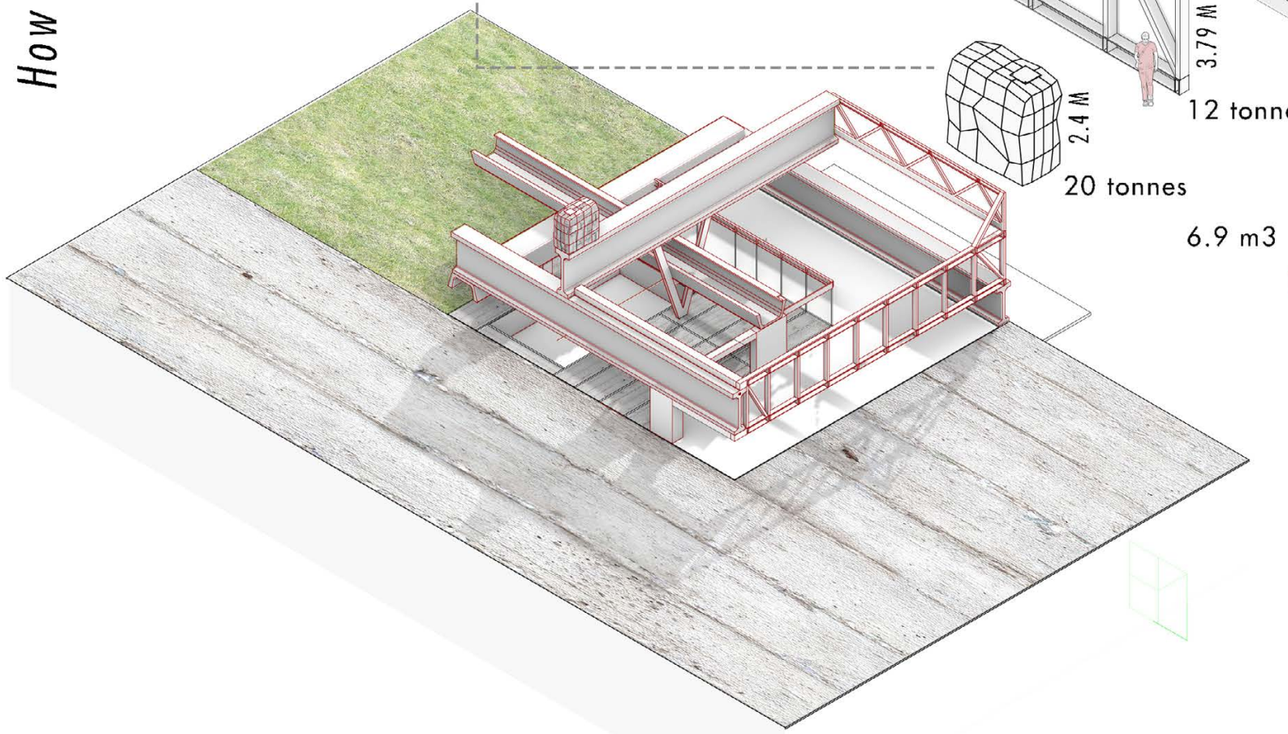
1.1 M
40 tonnes
20 m3
7640 kgco2e

2.65 M
39 tonnes
19.5 m3
7273.5 kgco2e

3.79 M
4 tonnes
0.512 m3
9484.73 kgco2e

2.4 M
12 tonnes
1.54 m3
28528.5 kgco2e

20 tonnes
6.9 m3
14113 kgco2e

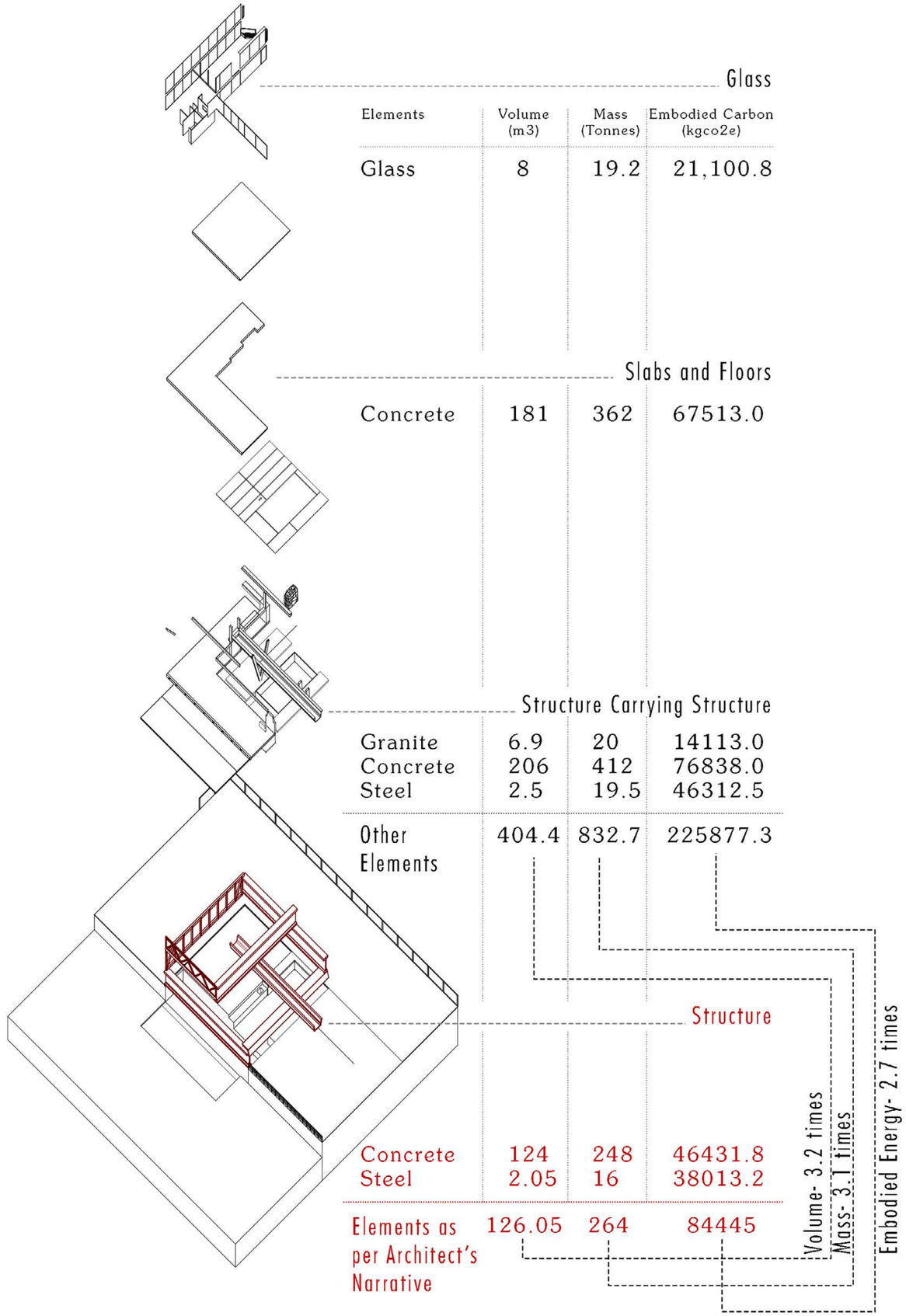


AGNOTOLOGY OF LIGHTNESS

Lightness means 'the state or quality of being light in weight'. But it can also be misinterpreted as in the case of Hemeroscopium House. The project is described as a building which has a sense of lightness and transparency. But is the project actually light? How light is light enough? This reminds me of the documentary- 'How much does your building weigh, Mr. Foster?'. How much does this so called lightness depicting elements weigh in case of this house?

The house, being known for the unconventional usage of huge, industrial prefabricated bridge structural elements, uses more than 284 tonnes of material just for these elements. İt took millions of years for this material to form on the earth's surface. And this kind of materials being used for heavy bridge construction has a purpose to fulfill. But here, the same material is used for a house which will accommodate 4 people including the architects themselves. And this is not the only material but rather a part of the house. All of the elements are huge and more than human scale. So the question arises: Does supporting a heavy element on top of other heavy elements depict lightness?

Which elements makes a building?



Glass

Elements	Volume (m3)	Mass (Tonnes)	Embodied Carbon (kgco2e)
Glass	8	19.2	21,100.8

Slabs and Floors

Concrete	181	362	67513.0

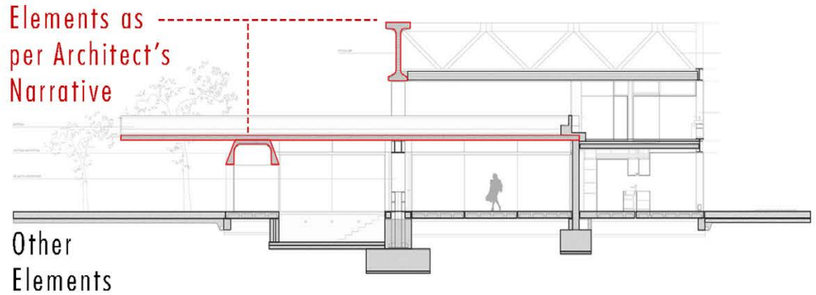
Structure Carrying Structure

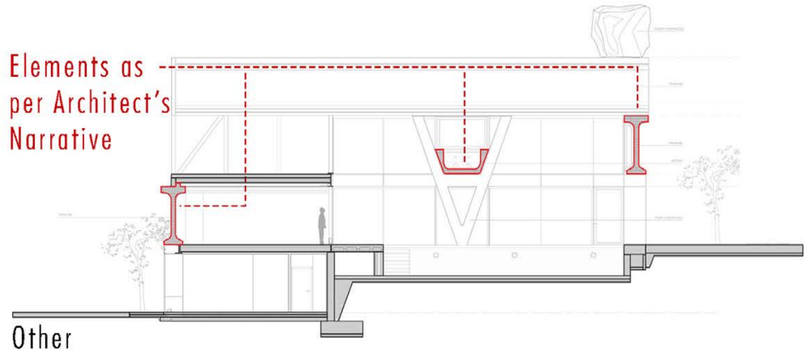
Granite	6.9	20	14113.0
Concrete	206	412	76838.0
Steel	2.5	19.5	46312.5
Other Elements	404.4	832.7	225877.3

Structure

Concrete	124	248	46431.8
Steel	2.05	16	38013.2
Elements as per Architect's Narrative	126.05	264	84445

Volume- 3.2 times
Mass- 3.1 times
Embodied Energy- 2.7 times

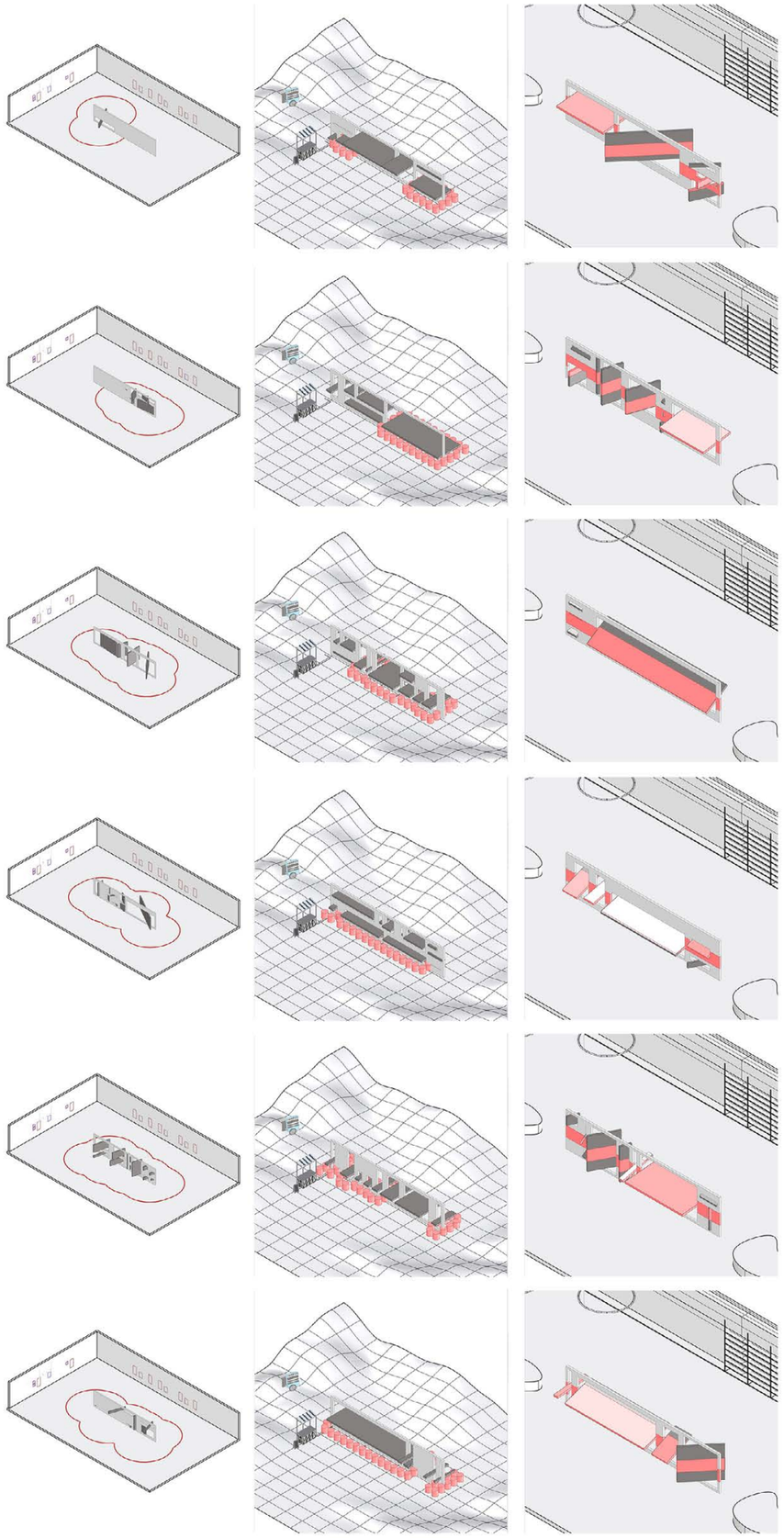




AGNOTOLOGY OF NARRATIVE

Narrative plays an important part in architecture. It helps architects sell there idea through a story. In case of Hemeroscopium House, it is usually described as house built with just 7 elements. But this kind of narrative is most of the time misunderstood. So the question here arises: What elements make a building?

The elements shown in red in the above drawings are the elements that make the house as per the narrative. But the rest of the elements are not part of the narrative as sold by the architect. So is it possible to consider this as a house without other elements that are not considered by the architect in its narrative? Other elements comprise of supports that are needed for these 7 elements to stand. It also consists of slabs and glass for enclosures. Other elements can be many things which are neglected. Here it can be seen that the neglected elements consist of almost 3 times more volume, mass and embodied carbon than the narrated elements. It can also be seen in sections that how many element are neglected. There is a huge conflict between how the architect narrates a building and how a building is actually narrated on a planetary level.



GENERATIVE WALL

TEAM WORK- VINAY AGRAWAL,MALVINA MATHIOUDAKI, QIWEI SUN
SPRING 2022

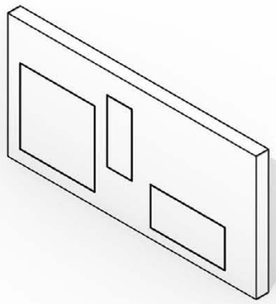
ELECTIVE- GENERATIVE DESIGN
(VISUAL STUDIES/BUILDING SCIENCE AND TECHNOLOGY)
INSTRUCTOR- DANIL NAGY

This project explores a design of a wall that could be used in various circumstances. The walls are generated through rotating multiple openings in the wall. The rotations could be horizontal or vertical, and could be along any vertical or horizontal axis within the openings, and at any angle.

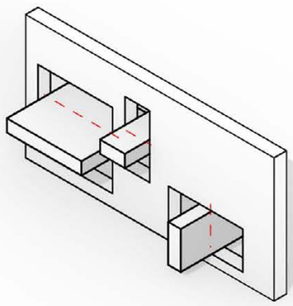
This project defines three circumstances, exhibition, outdoor dining and duty-free shops. In each circumstance, certain restrictions are applied to make suitable designs. The design includes a group of random parameters and could generate a great number of designs. Discover is used to optimize the designs towards different goals according to the circumstances.

This project developed a strategy of generating wall designs for different uses. A total of five input parameters are used to generate random options. So the generation of optimal designs need more tryouts, on which generative design really helped a lot. The vision is to make a wall versatile through making openings and rotation of the openings. A random sense is expected to make the design more interesting. As a result, generative design methods are applied to generate random design options, from which the optimal options are selected. In the circumstances, designs with maximum usage tend to have fewer openings. So, the number of openings is set as another optimization goal to make more openings in the designs for more versatile results. More restriction options could be further explored to generate different designs towards different functions and under different circumstances. And more optimization goals could be achieved.

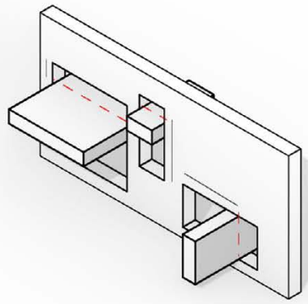
Variables/Parameters



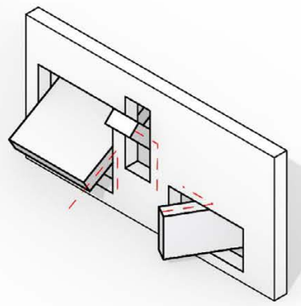
Dimensions of the
Movable unit



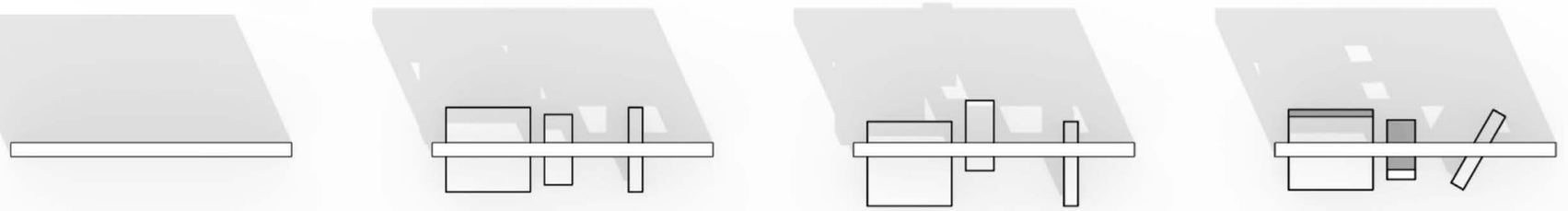
Type of Rotation-
Horizontal/Vertical



Rotation axis position
Along the movable unit

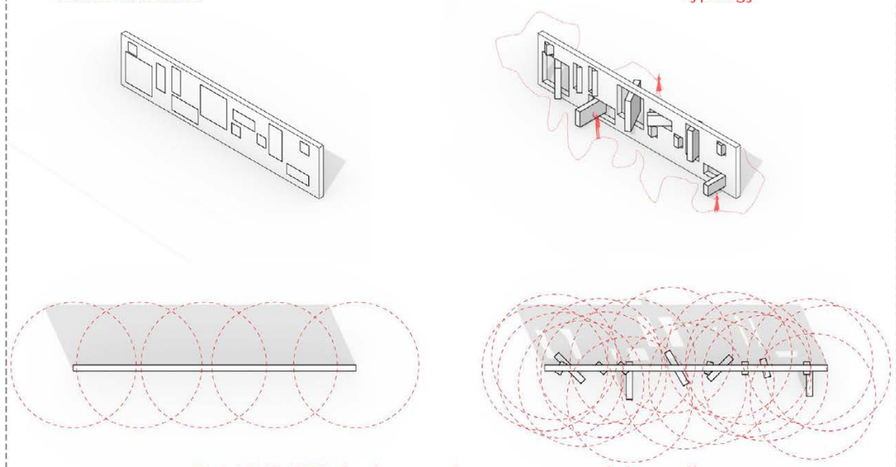


Angle of rotation
with the wall



Option 1
Vertical Rotations

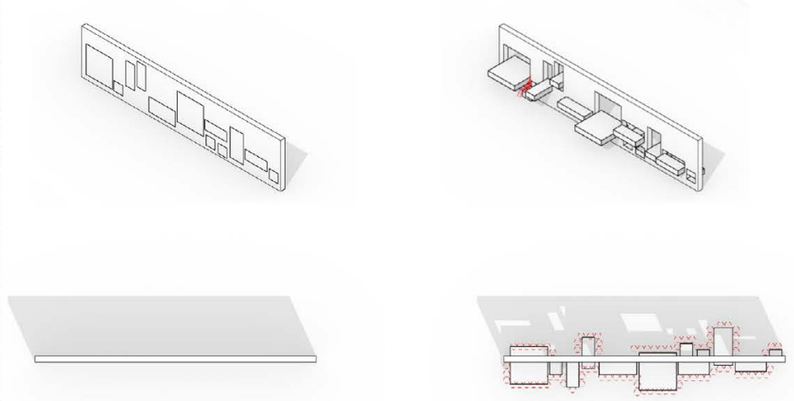
Exhibition/Museum
Typology



To MAXIMIZE the interactive area around the wall

Option 2
Horizontal Rotations

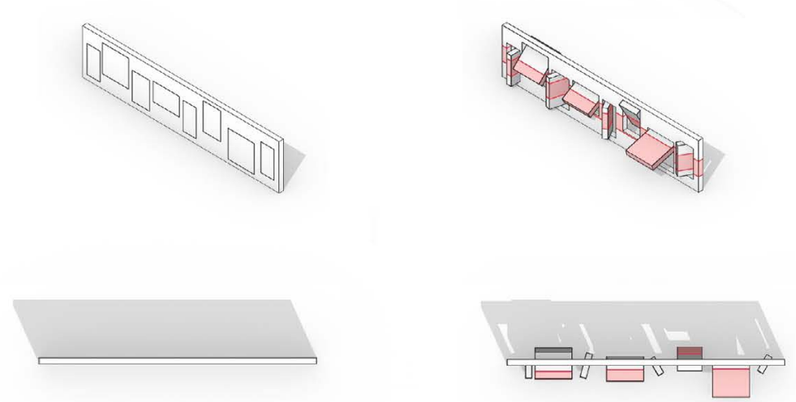
Restaurant/Cafe
Typology



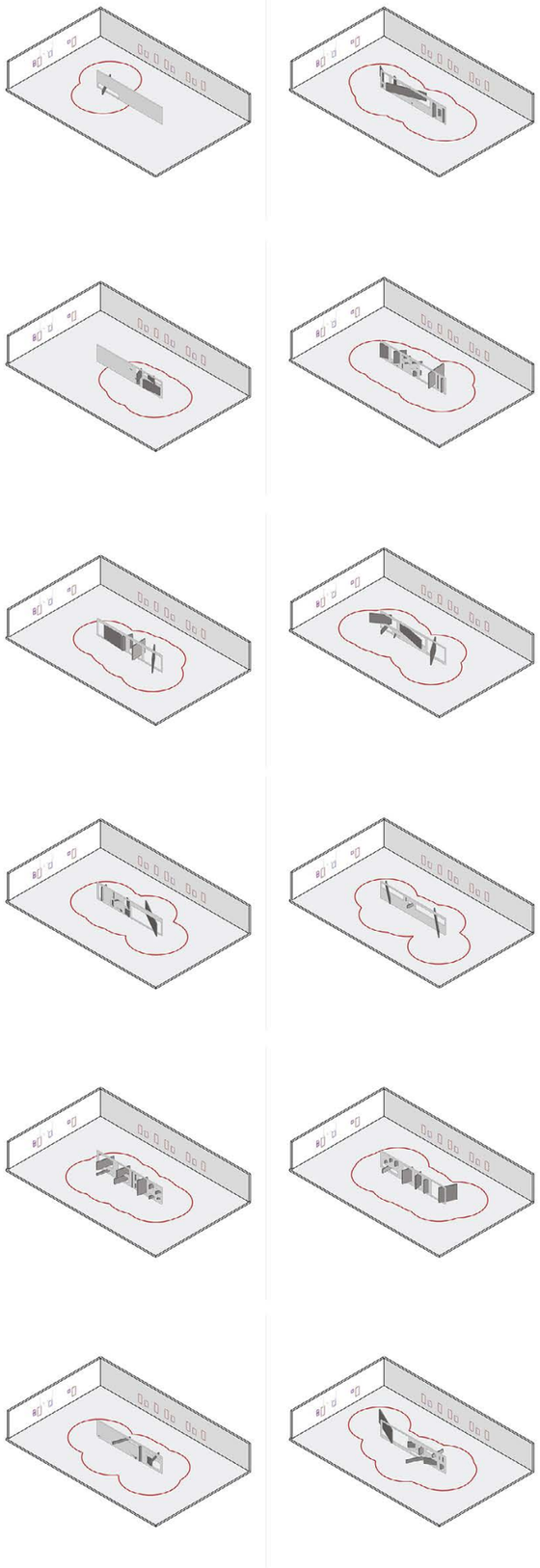
To MAXIMIZE the total number of seating without congestion and
MINIMIZE the length to the wall for a given set of openings

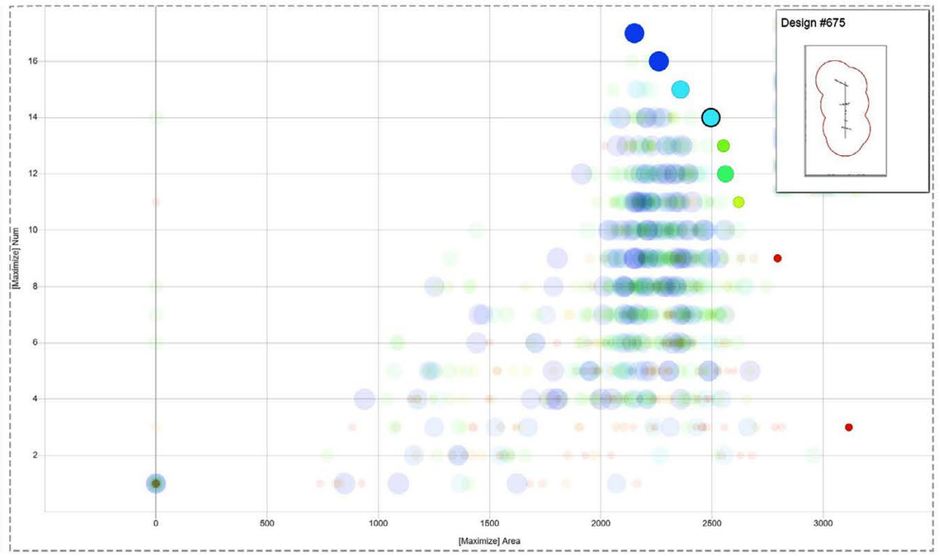
Option 3
Both Rotations

Duty Free Shelves
Typology



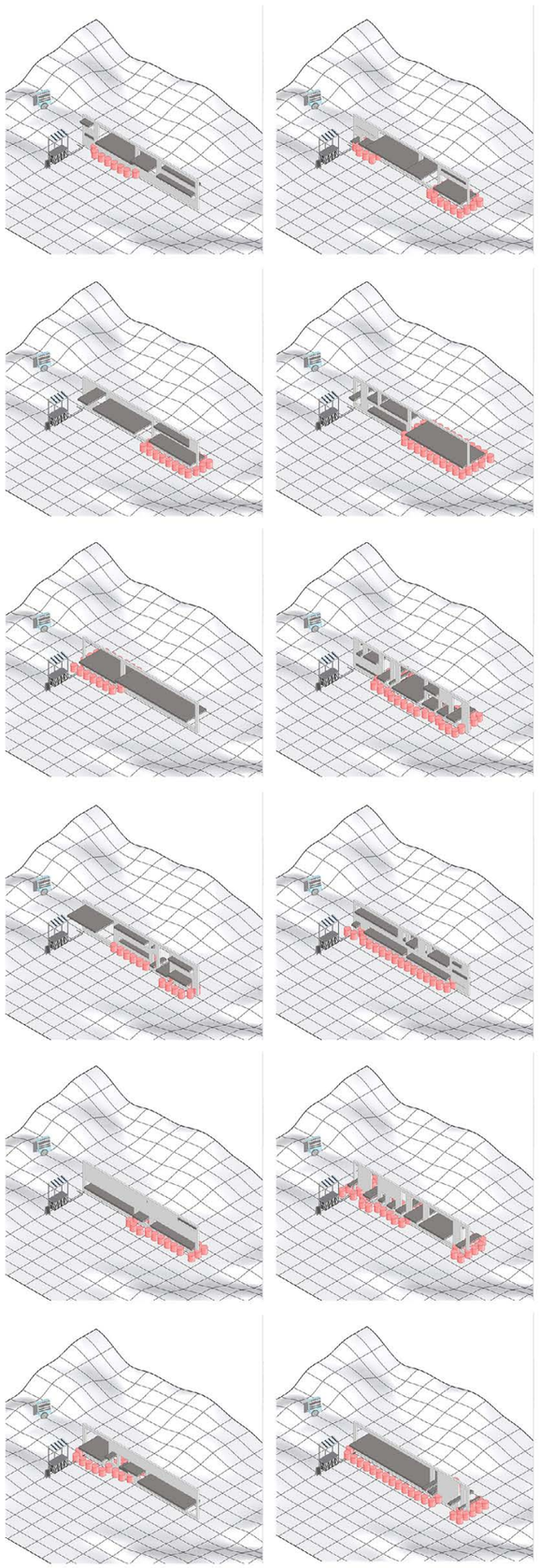
To MAXIMIZE the total volume of shelves in between 3'-6' height

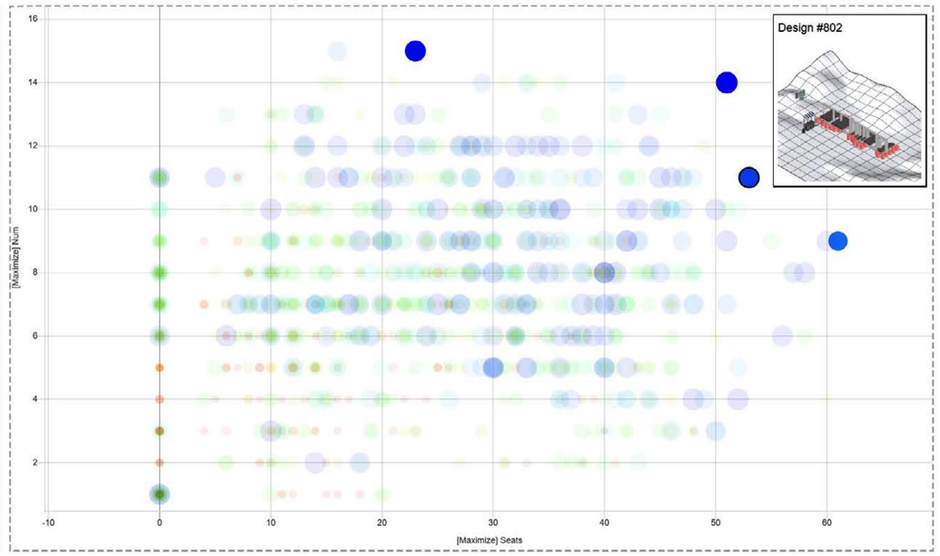



Design #675
[Maximize] Num
[Maximize] Area
16
14
12
10
8
6
4
2
0
500
1000
1500
2000
2500
3000

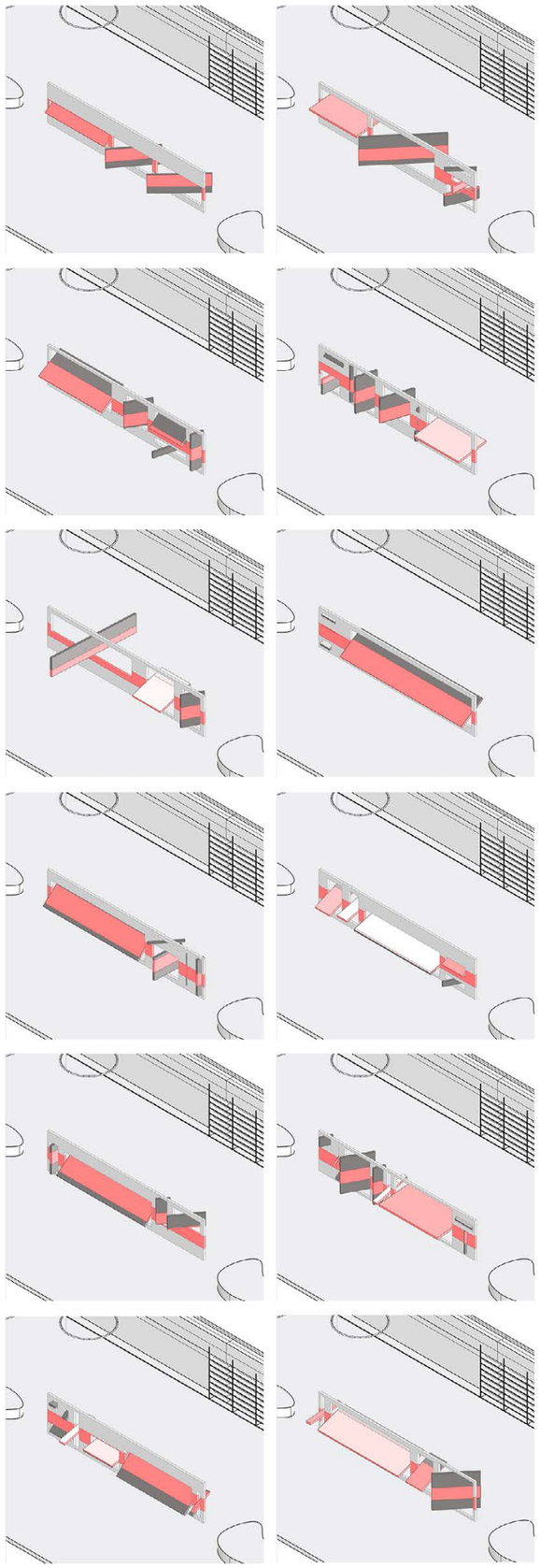
EXHIBITION

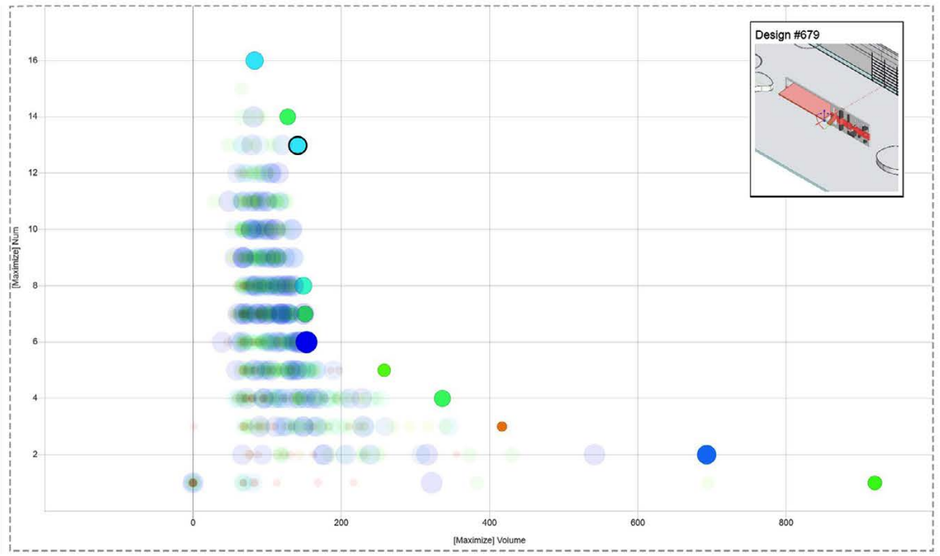

Jean-Michel Basquiat



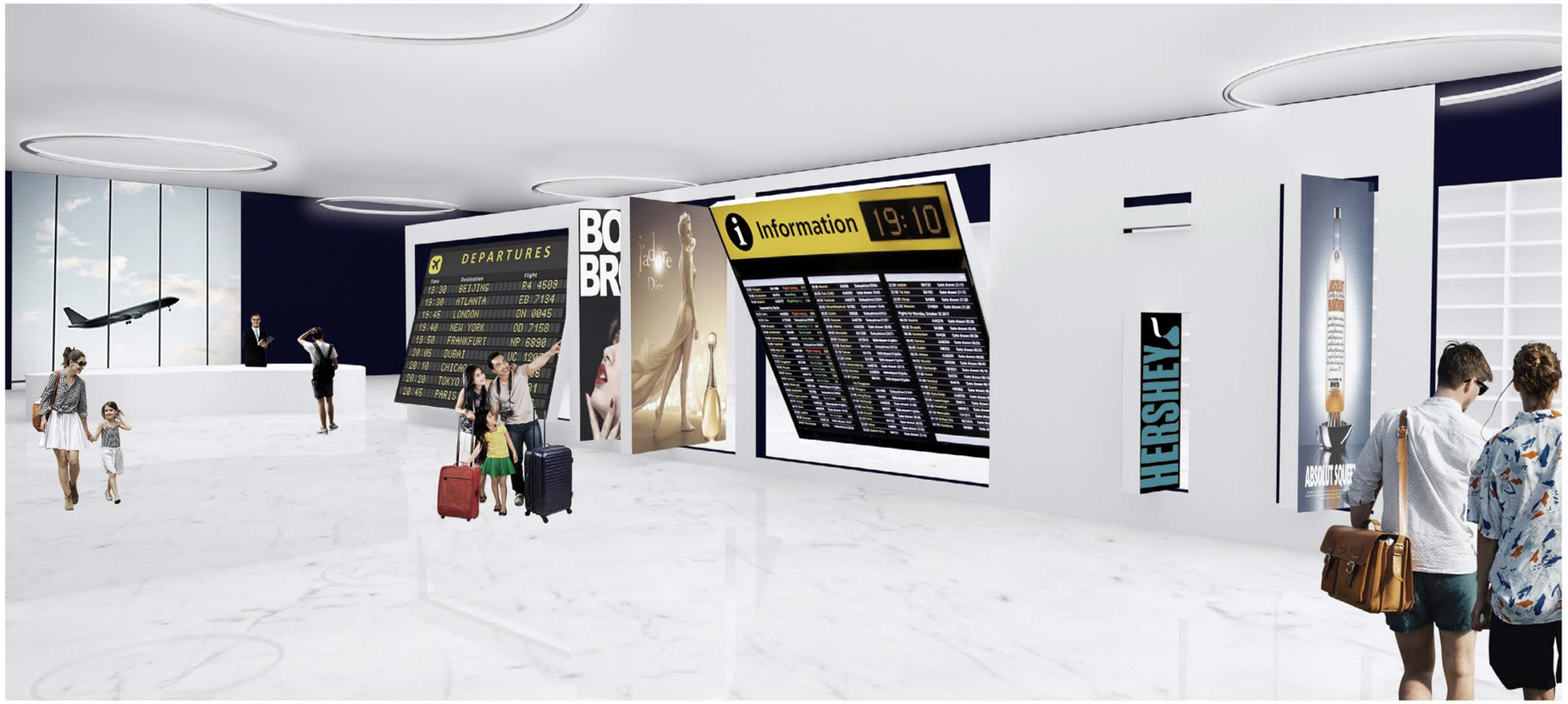


OUTDOOR DINING





AIRPORT SHELVES

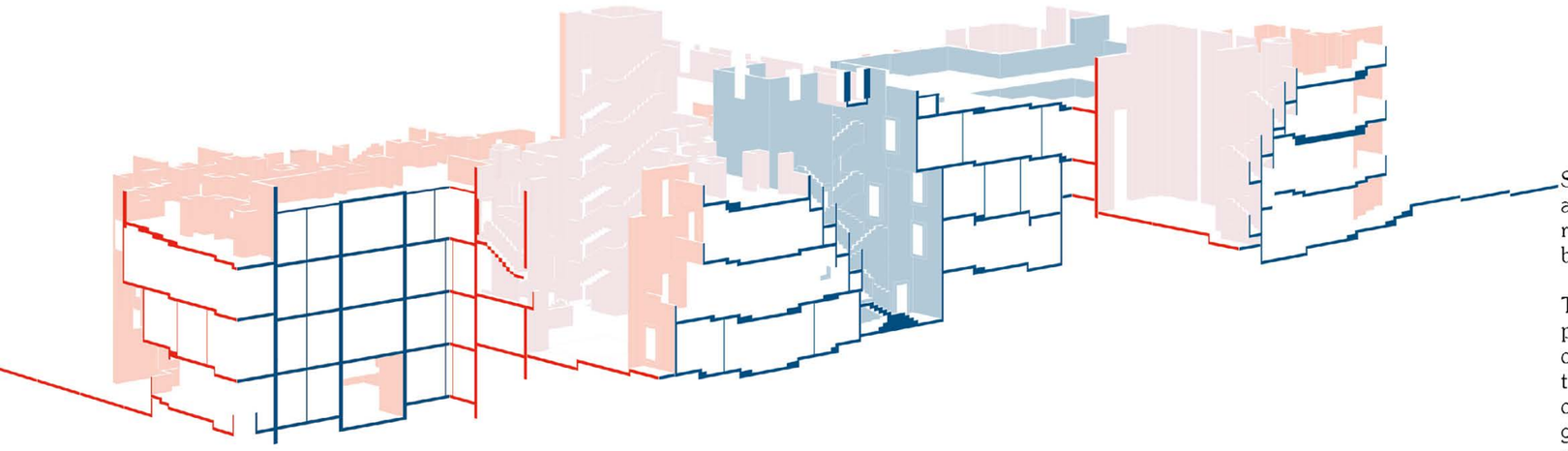


BOFILL'S SECTION

INDIVIDUAL WORK
SPRING 2022

ELECTIVE- SEMINAR OF SECTION
(VISUAL STUDIES)
INSTRUCTOR- MARC TSURUMAKI

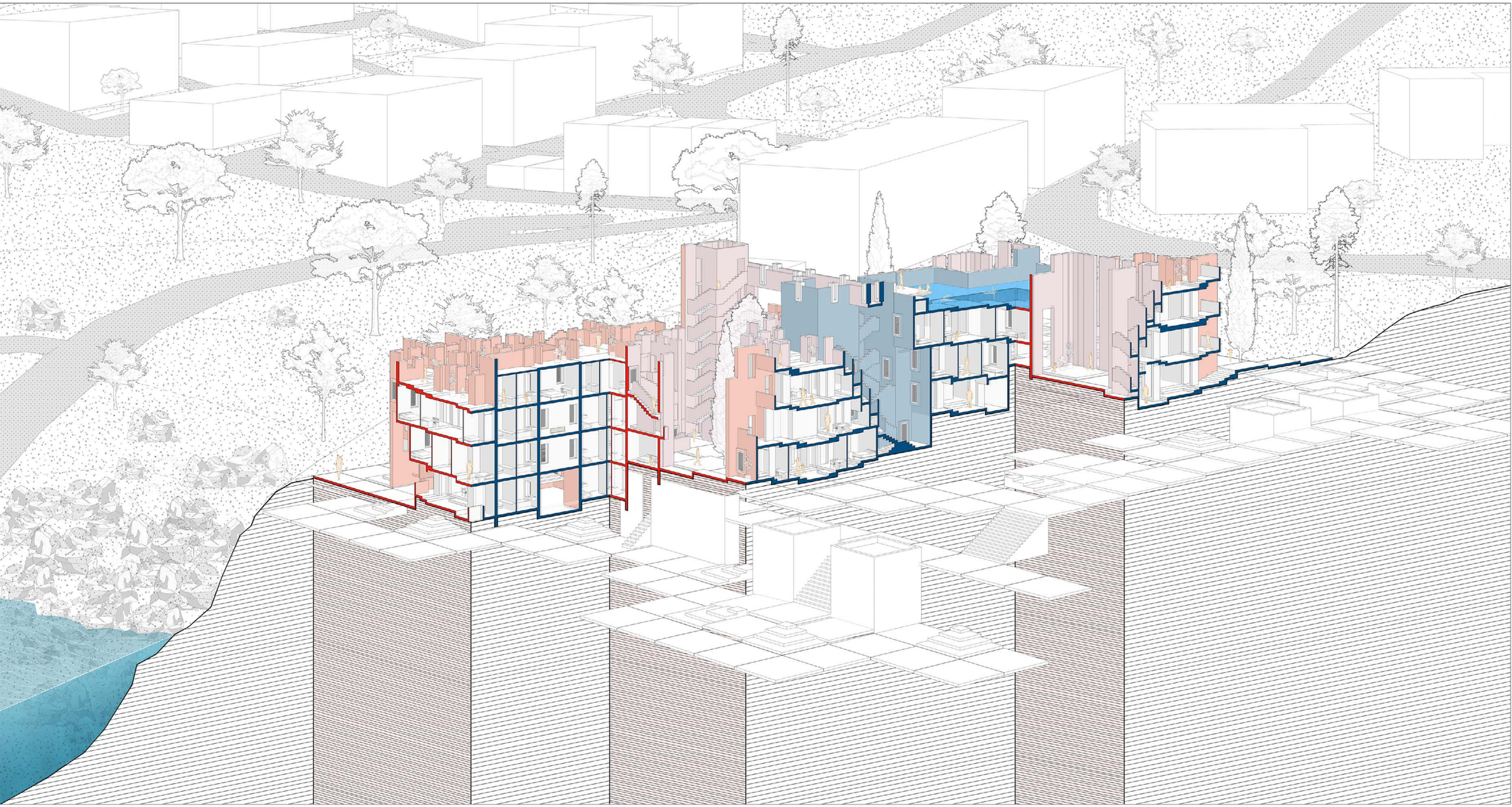
PROJECT-LA MURALLA ROJA
CALPE,SPAIN(1973)
ARCHITECT-RICARDO BOFILL

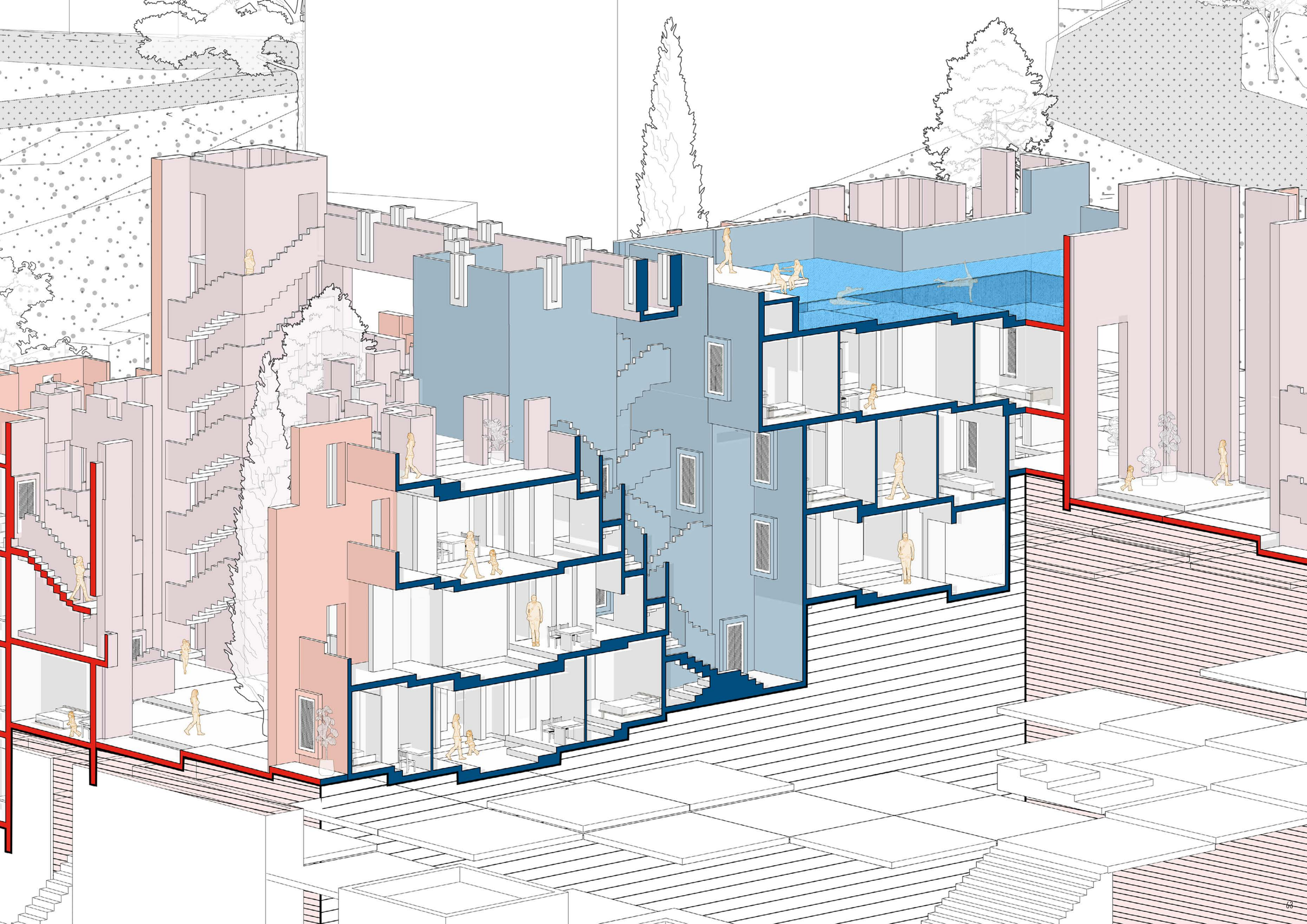


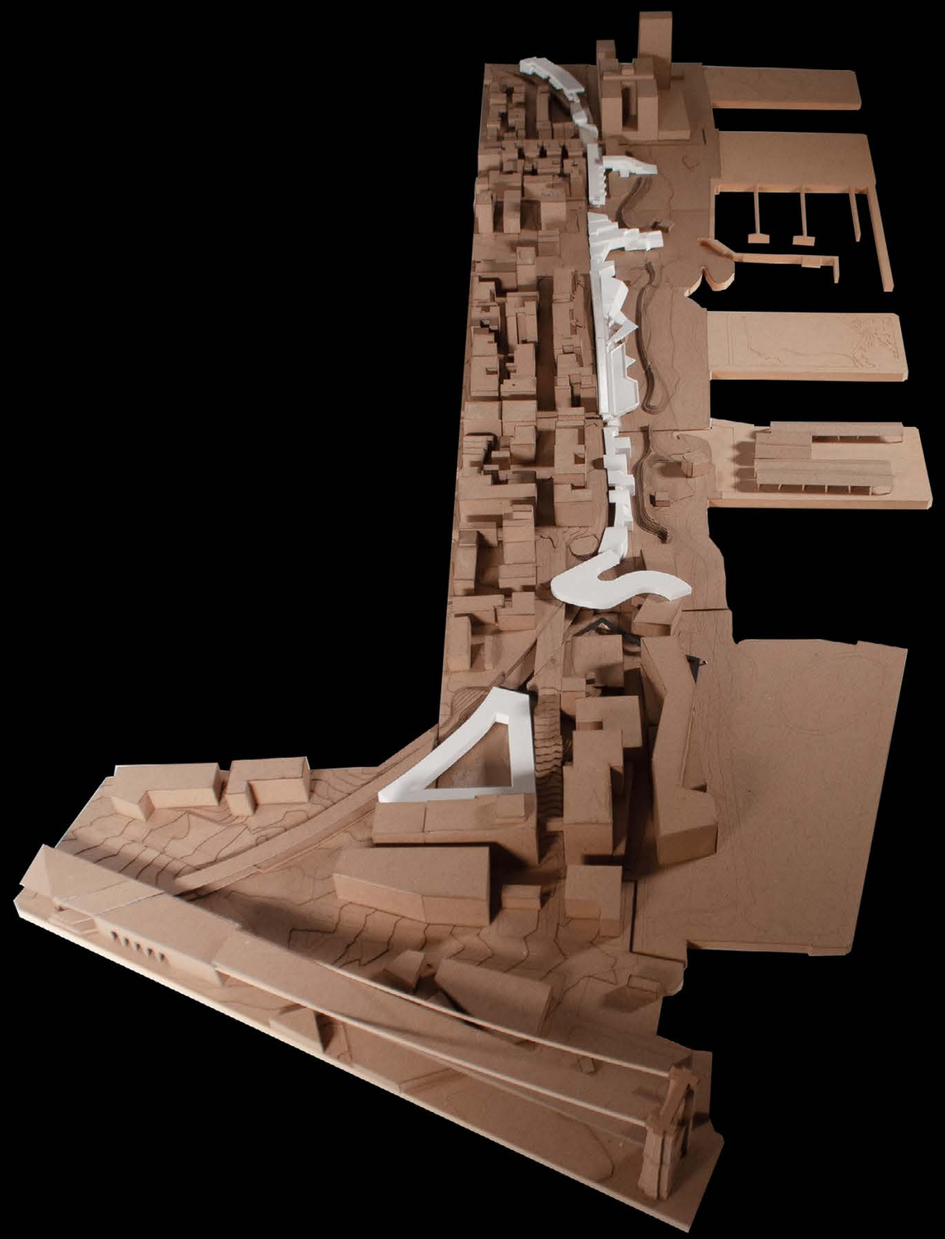
Sections are not just a kind of drawing but a tool to investigate and understand the morphology of a building. It helps in revealing interstitial spaces and voids which otherwise can not be visualized.

The project La Muralla Roja is one of the popular housing projects by Ricardo Bofill. Almost 50 years after its construction it is still successful attracts people throughout the year. The project is well- known for the usage of vibrant colors, staircases and courtyards. The design involves cubic geometries following simple square-grid. But the simple grid shifted, sheared and mirrored in plan and section to create complex and flexible interstitial spaces. The housing project characterises whole neighbourhood and provide the basis for a reflection on the idea of the city.

To understand this layered configuration of the project it becomes important to understand it through section. The building near sea and sits on a hilly terrain which makes the whole project cascade down. The project also uses red, pink and blue colors from outside environment to internal courtyard and the walls are extended to make it look like a fort. The whole complex is connected via series of staircases, bridges, courts and walls for continuous flow within the complex. The roof is also connected with swimming pool at the center. So to unfold all this complexity and hierarchy it is important to see it through folded section which reveals contours, context, colors, connections, staircases and level difference in the landscape element which is shown by projecting it out of the cutting plane.







U R B A N B A T H

Socio-cultural Intervention at BQE

SITE-BROOKLYN HEIGHTS, NY

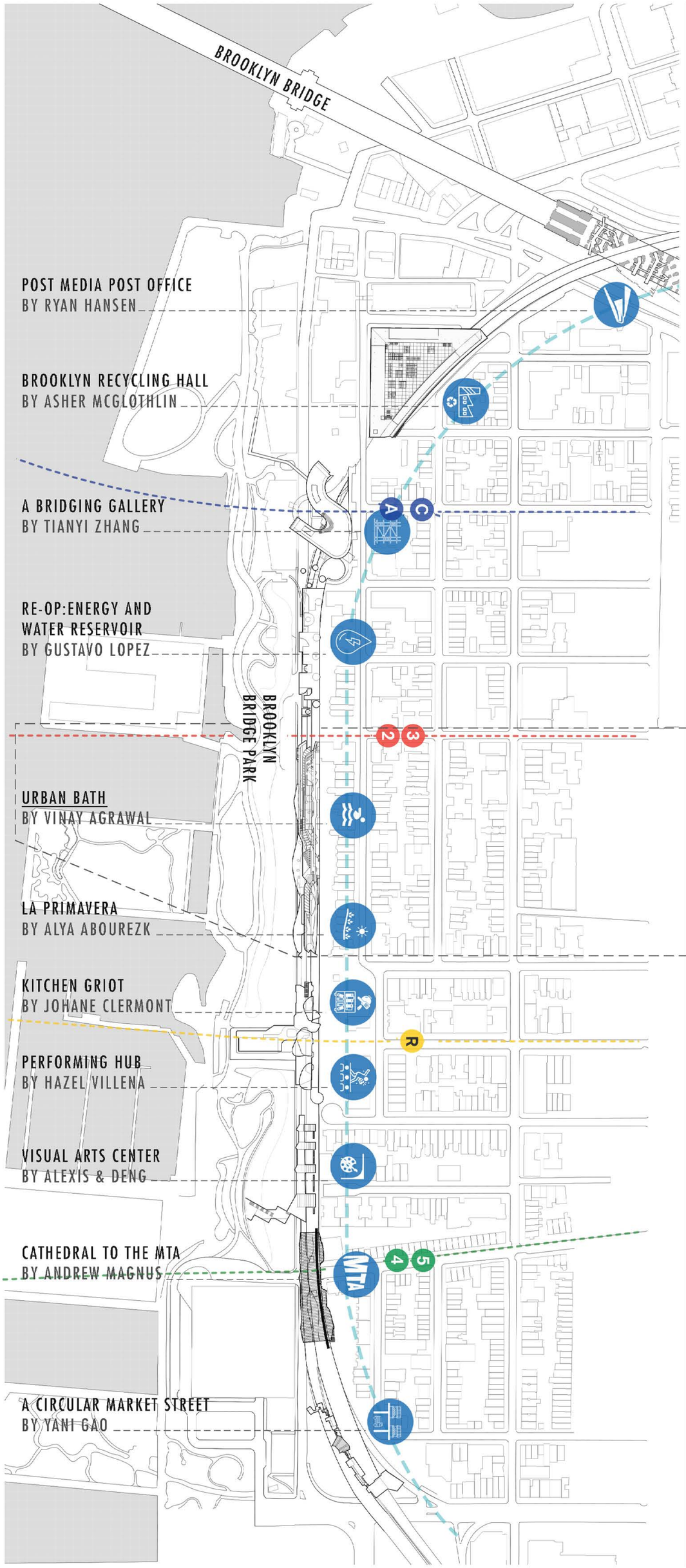
INDIVIDUAL WORK
FALL 2021

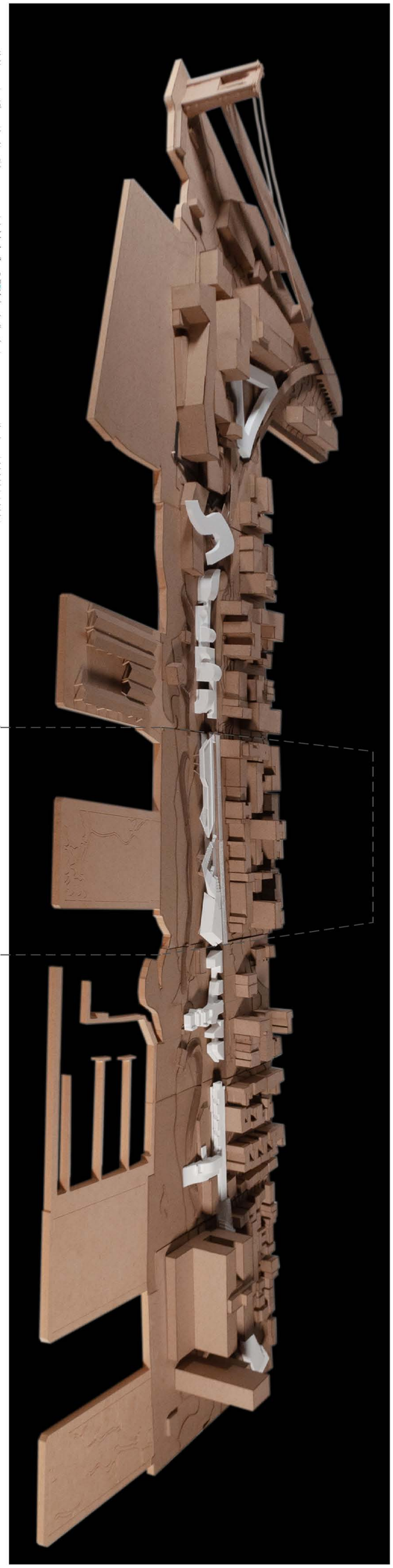
STUDIO- EXTREME SCALES:
SPECULATING NEW FUTURES FOR BODIES, BUILDING, AND THE BQE
STUDIO CRITIC-LAURIE HAWKINSON

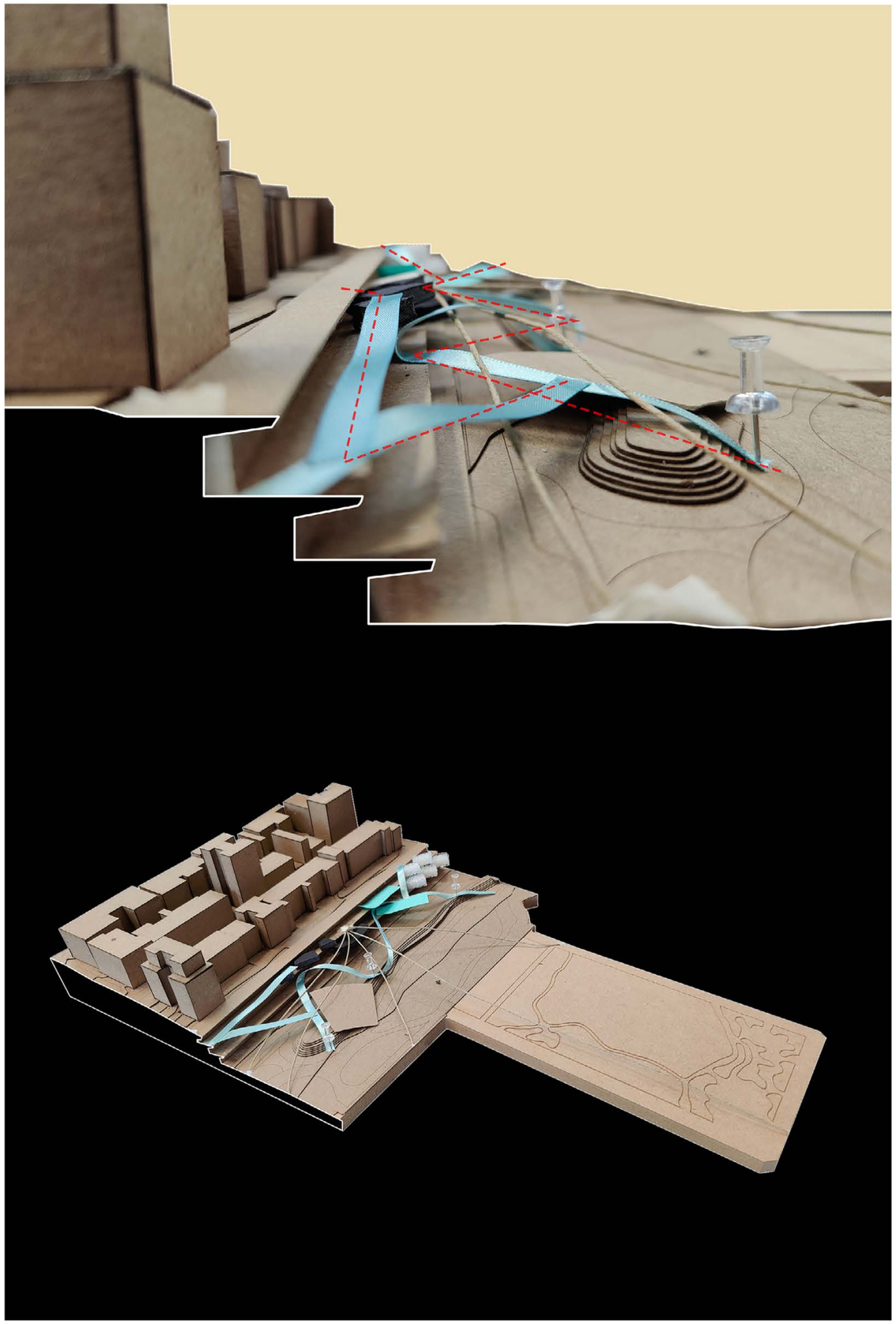
The project 'Urban Bath' attempts to reestablish the meaning of 'Bath,' which means 'an act or process of immersing and washing one's body in a large container of water.' And is located at the center of the promenade in the triple cantilevered section of Brooklyn-Queens Expressway. Because of the elevation of BQE, this area gets magnificent views of the Manhattan skyline, Brooklyn bridge, and the statue of liberty at different times of the day. It is also well-centered between Brooklyn bridge park and Brooklyn heights hence lying at the center of view plane restriction.

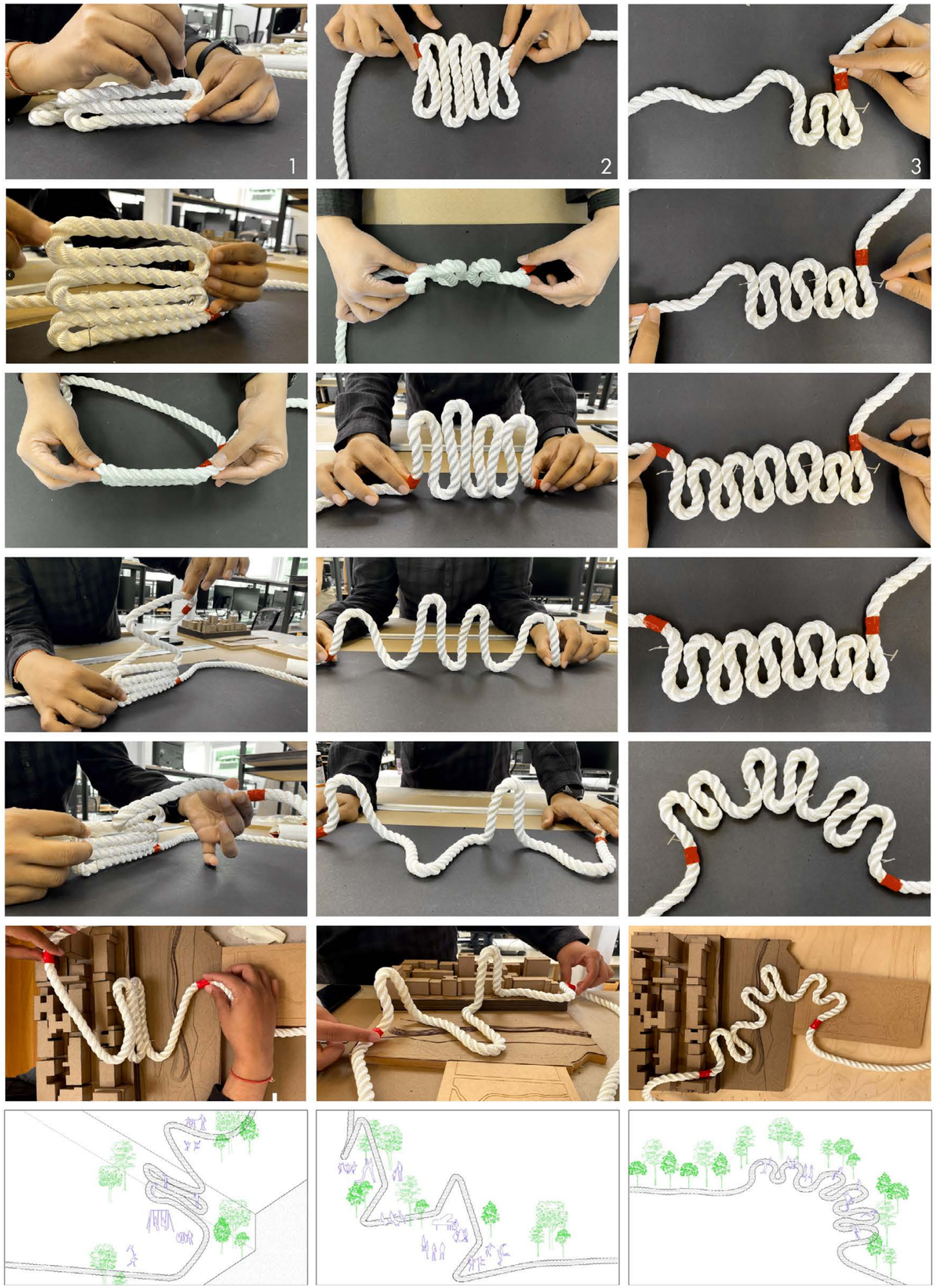
The people's history of bathing is one of a shared space. Histories and practices of baths belong to commons. Bathing routines are cultural rituals, architectural forms, and natural environments combined to make arts out of everyday necessity. From civic civilization through Rivers, Pools, Waterfalls, Springs, and Sea-These urbanized states of the bath are places where we like to immerse ourselves each day.

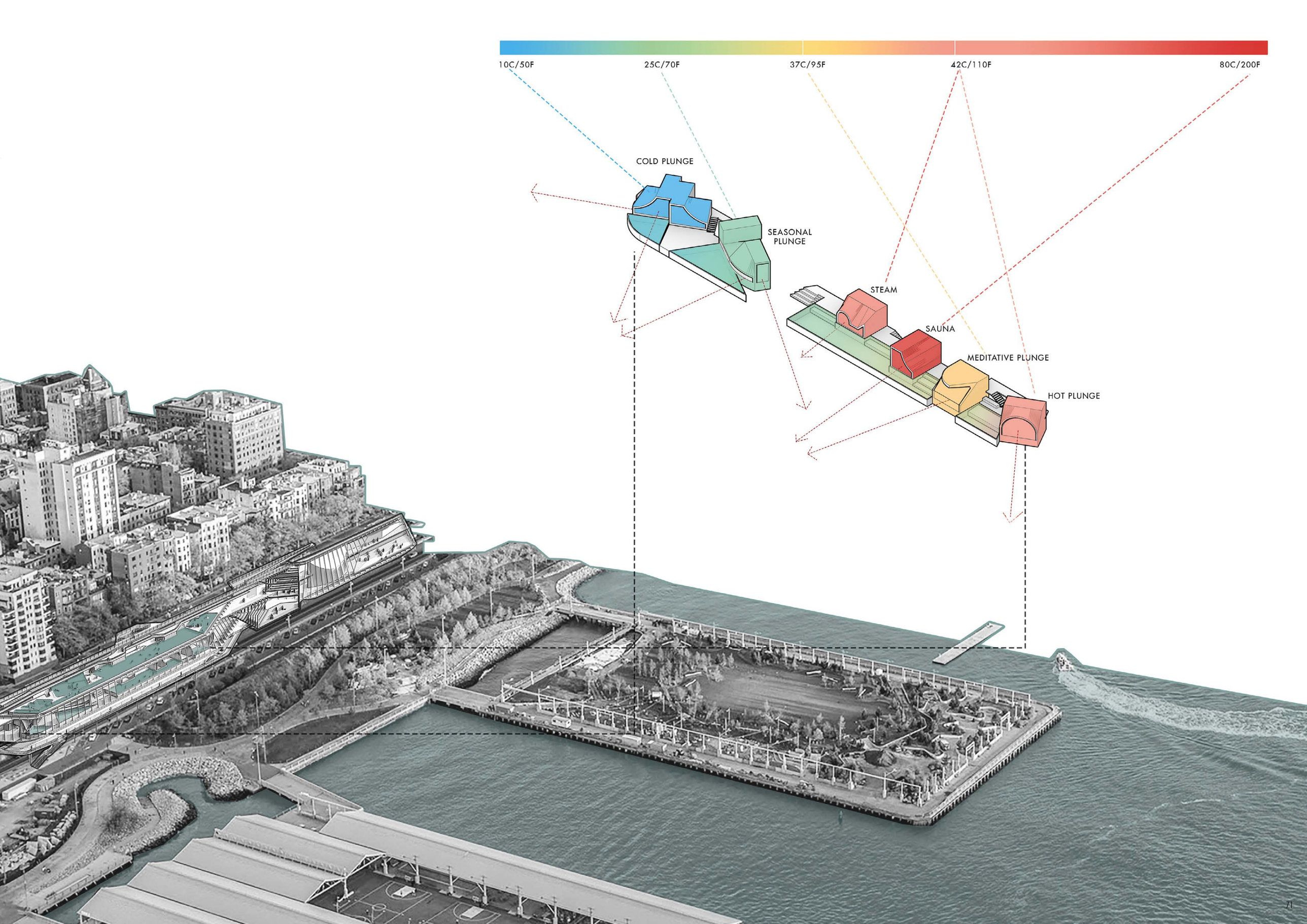
The urban bath entangles with water, environment, and technology to provide immersive experiences to the users. The project explores the 'immersive experiences' it can unfold in the present and future by forming meaningful relationships between built form, landscape, experience, and social life. They function as a communal space where diverse, multi-cultural, and multi-generational neighborhood residents can gather. As new construction, the bathhouse will redefine boundaries between public and private, intimate and societal. It will encourage the identification and communication of citizens with their neighborhood. This bathhouse is for residents, families with children and without, lonely seniors, students with dirty bathrooms, and business people looking to relax after work.

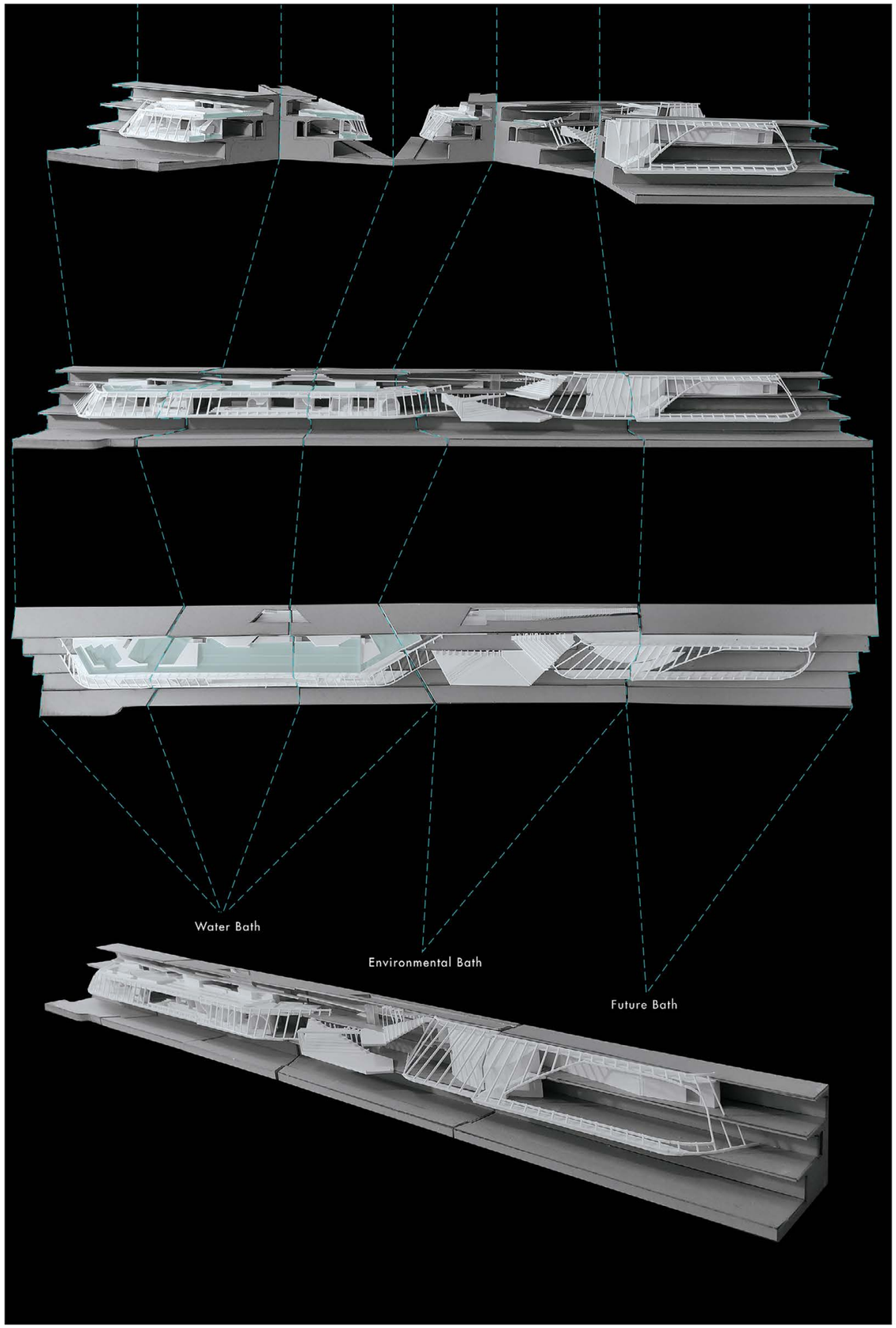

BROOKLYN BRIDGE
POST MEDIA POST OFFICE
BY RYAN HANSEN
BROOKLYN RECYCLING HALL
BY ASHER MCGLOTHLIN
A BRIDGING GALLERY
BY TIANYI ZHANG
RE-OP:ENERGY AND
WATER RESERVOIR
BY GUSTAVO LOPEZ
BROOKLYN
BRIDGE PARK
URBAN BATH
BY VINAY AGRAWAL
LA PRIMAVERA
BY ALYA ABOUREZK
KITCHEN GRIOT
BY JOHANE CLERMONT
PERFORMING HUB
BY HAZEL VILLENA
VISUAL ARTS CENTER
BY ALEXIS & DENG
CATHEDRAL TO THE MTA
BY ANDREW MAGNUS
A CIRCULAR MARKET STREET
BY YANI GAO
A
C
2
3
R
MTA
4
5

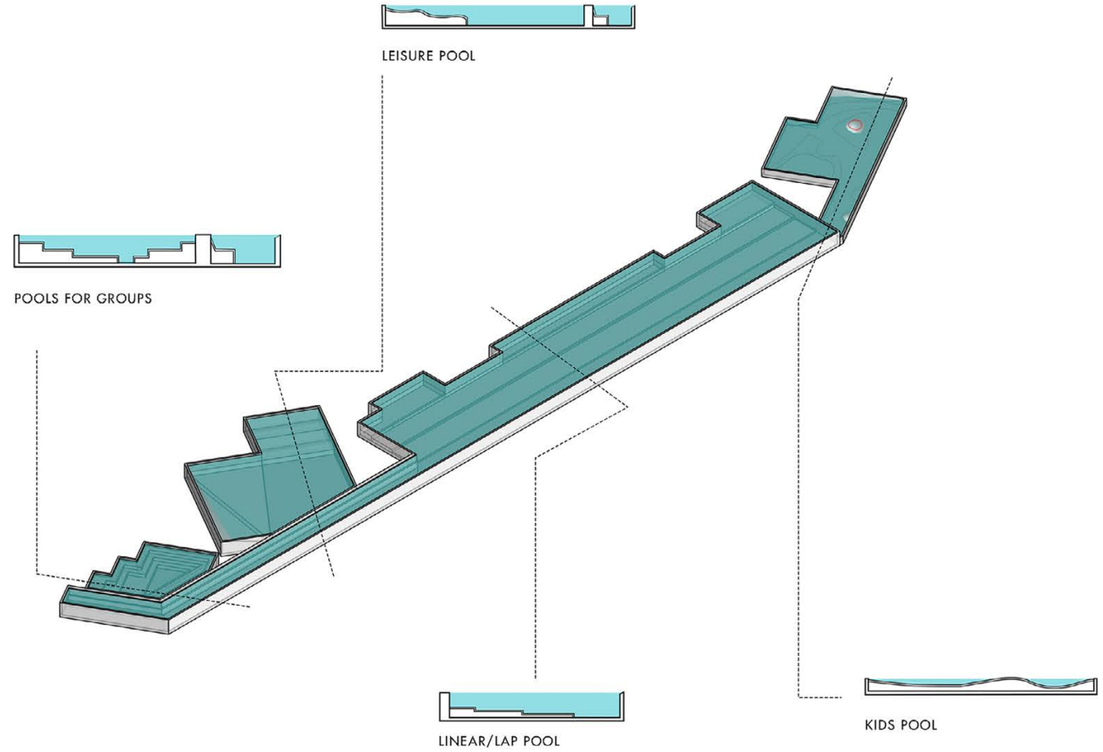




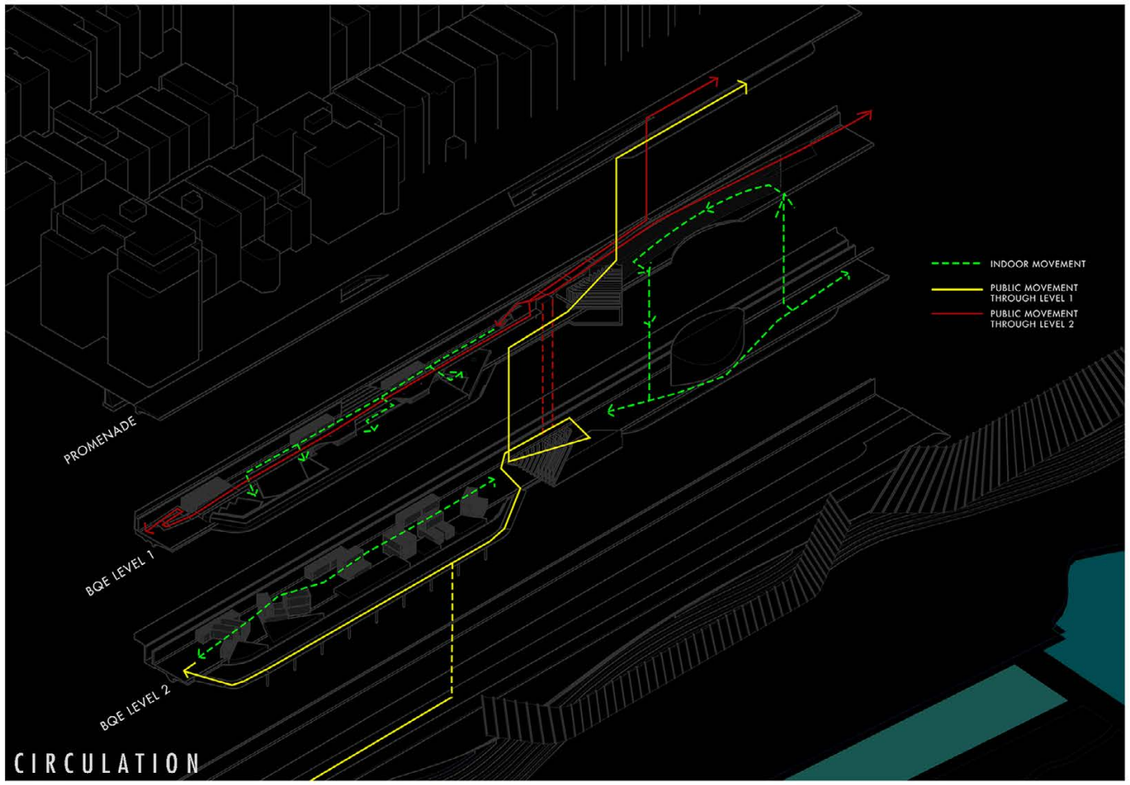

1
2
3


10C/50F
25C/70F
37C/95F
42C/110F
80C/200F
COLD PLUNGE
SEASONAL PLUNGE
STEAM
SAUNA
MEDITATIVE PLUNGE
HOT PLUNGE

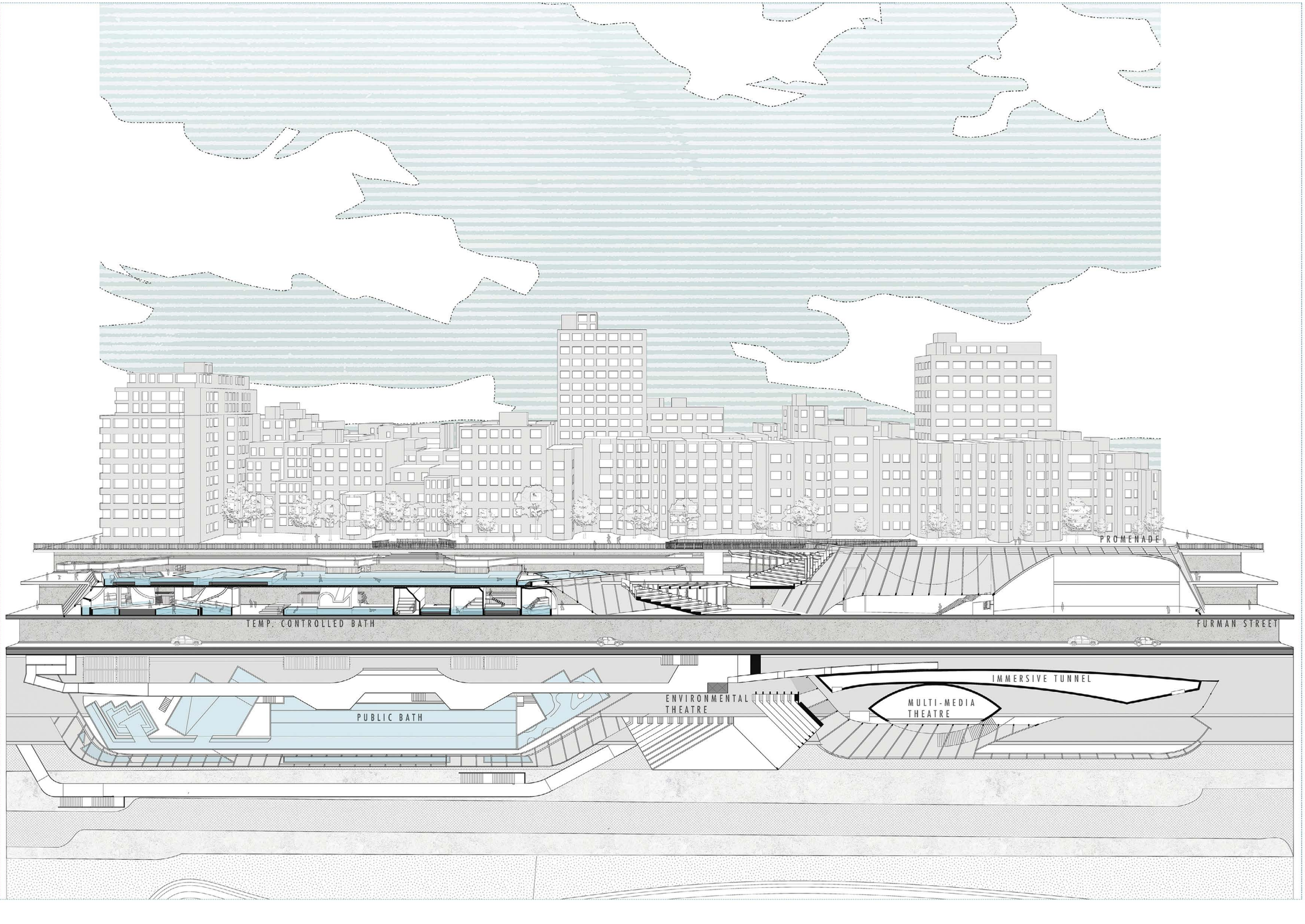


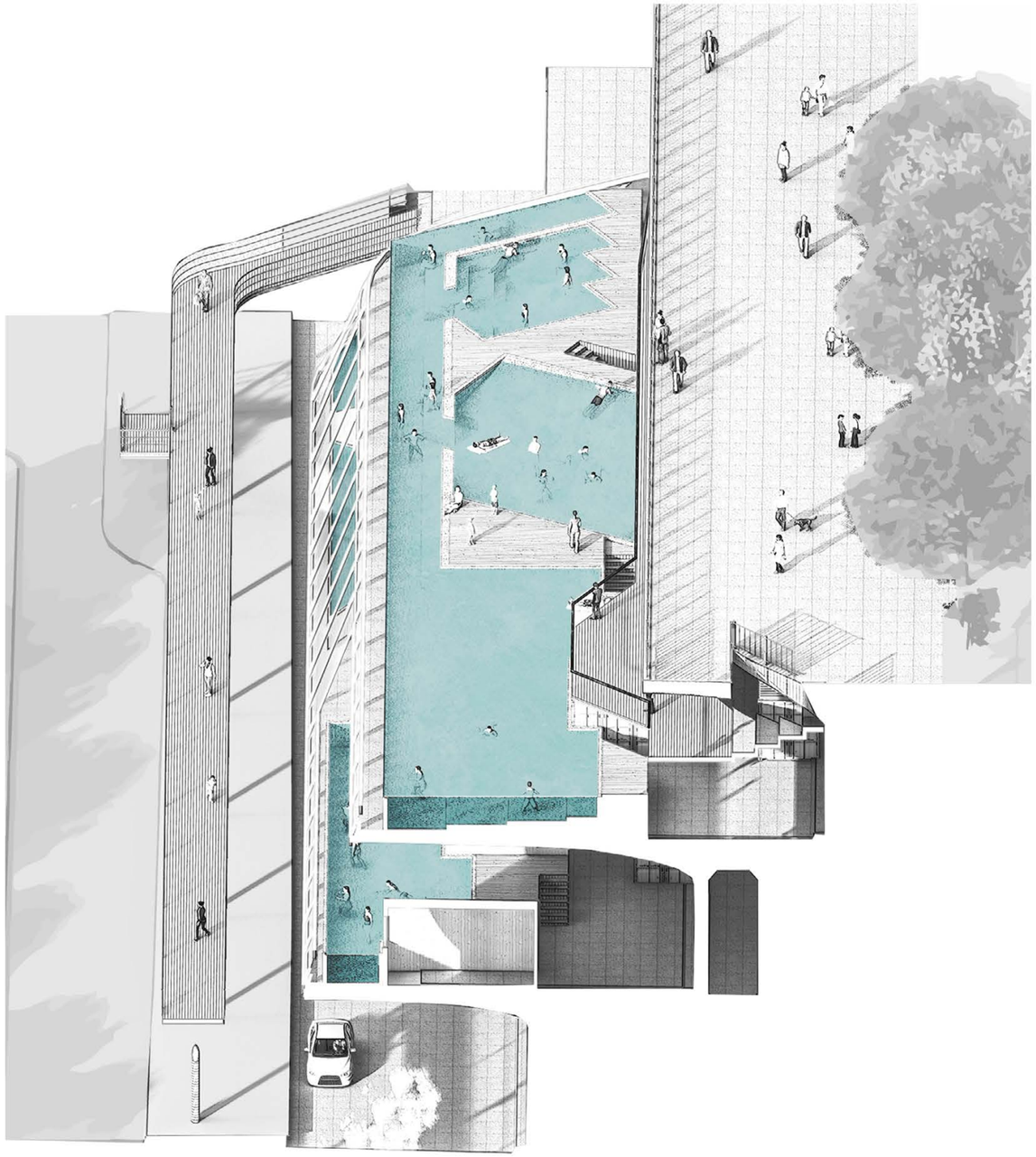


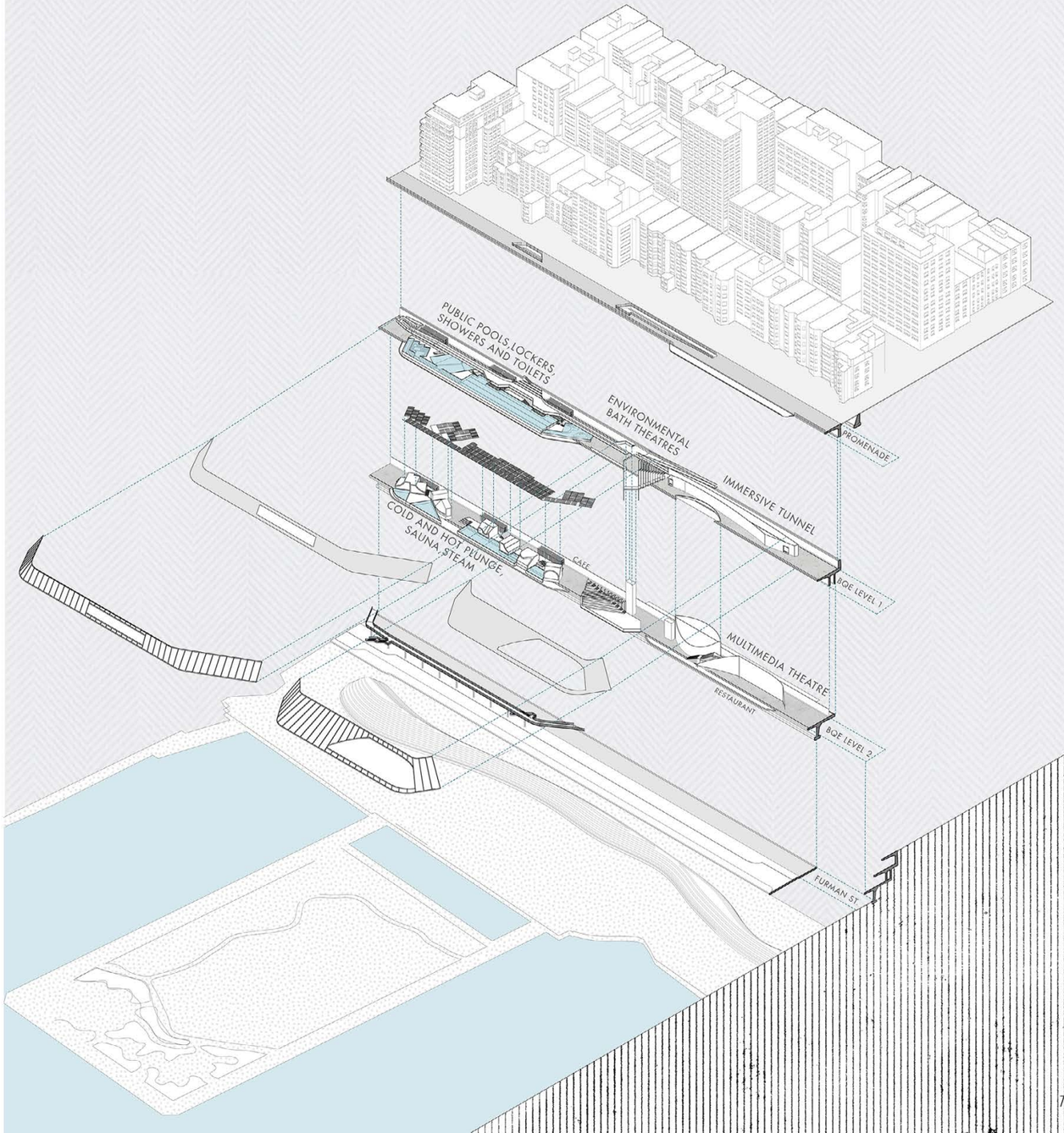
SECTIONS OF DIFFERENT TYPES OF POOLS

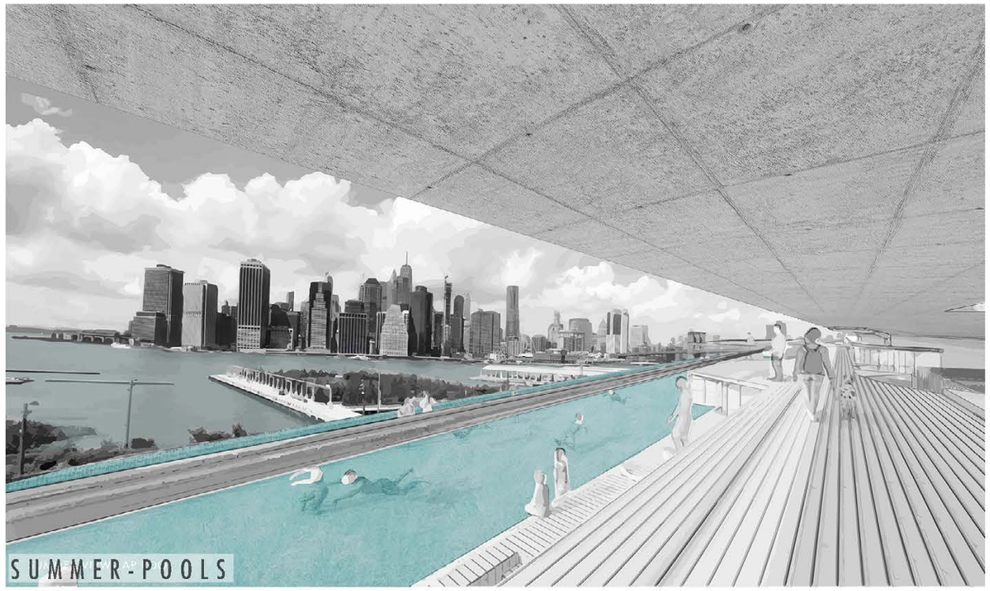


CIRCULATION

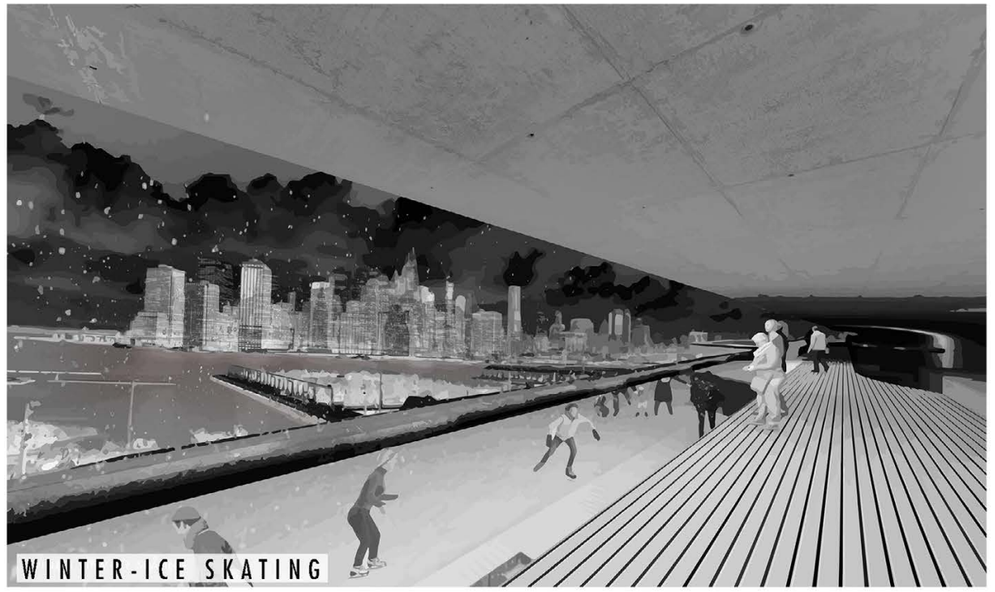

PROMENADE
TEMP. CONTROLLED BATH
FURMAN STREET
IMMERSIVE TUNNEL
ENVIRONMENTAL THEATRE
MULTI-MEDIA THEATRE
PUBLIC BATH




PUBLIC POOLS, LOCKERS, SHOWERS AND TOILETS
ENVIRONMENTAL BATH THEATRES
PROMENADE
IMMERSIVE TUNNEL
COLD AND HOT PLUNGE, SAUNA, STEAM
GATE
BQE LEVEL 1
MULTIMEDIA THEATRE
RESTAURANT
BQE LEVEL 2
FURMAN ST.

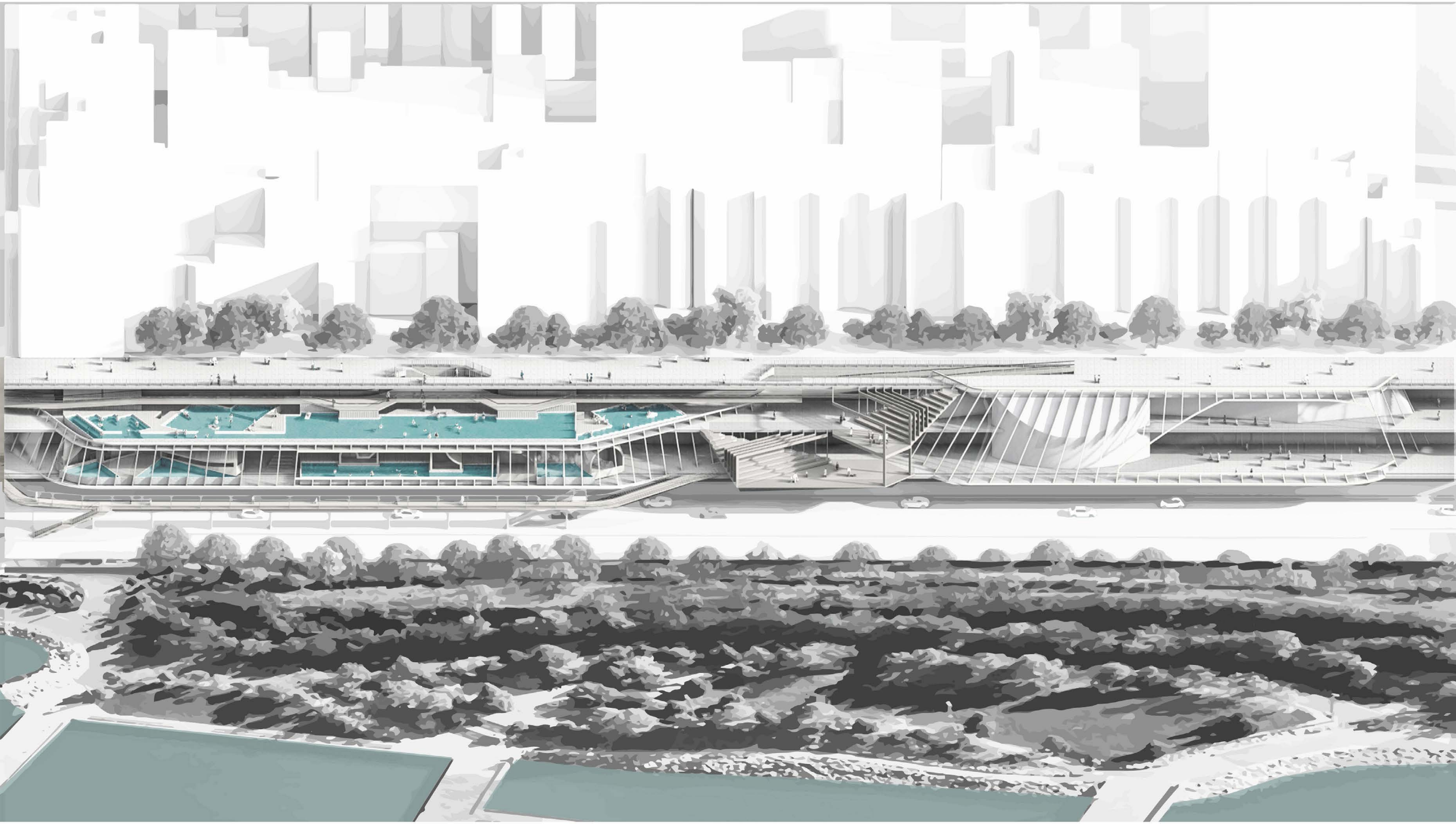


SUMMER-POOLS



WINTER-ICE SKATING

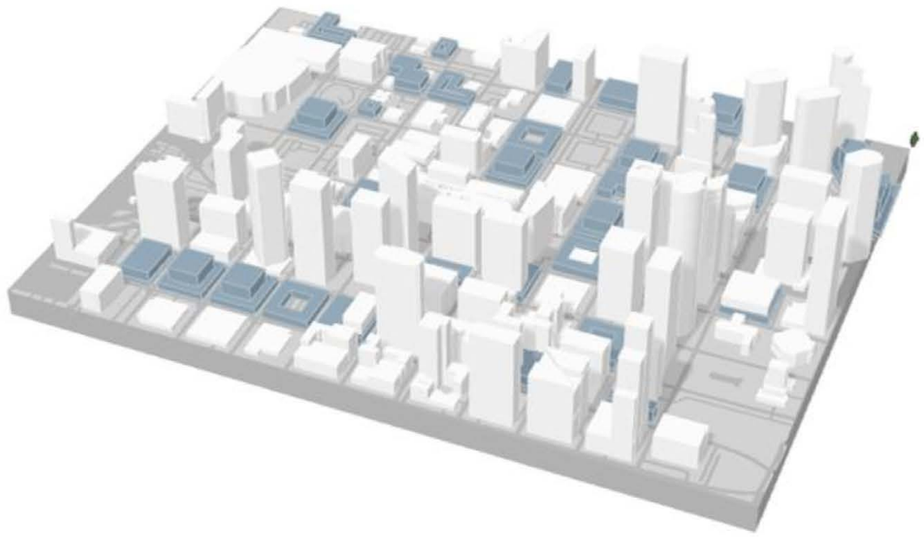
LEISURE AND LAP POOLS



HOUSTON'S PROBLEM

TEAM WORK-VINAY AGRAWAL, BISHER TABBAA,
NAYEF ALSABHAN, FARAH AHMED
FALL 2021

ELECTIVE- X-INFORMATION MODELING
(VISUAL STUDIES/BUILDING SCIENCE AND TECHNOLOGY)
INSTRUCTOR- SNOWERIA ZHANG



Downtoun Houston has more than 100,000 parking spaces which is equivalent to 3 parking space per resident in that area. This is because Houston has no zoning law which makes a striking difference in density distribution filled with empty parking lots. This has lead to a district that is unwalkable and does not utilize its space efficiently.Commercial buildings make up most of the districts building program. This scale of commercial buildings does not lend itself to an inhabitable cohesive neighbourhood.

Strategies-
1-Studies shows that decreasing the number of parking spots is a crucial step towards walkability.

2- To design a series of alternate uses of parking lots while maintaining transportation needs.

3- Mixed use districts create more liveable spaces.

4-Reprogramming Parking lots would increase the livability in downtown Houston.

So keeping in mind this strategies we proposed different options and mixes for future development of downtown Houston to make it more equitable and balanced. It will also help the city to generate more shaded and walkable street spaces, increase in energy production through renewable solar exposure and also more daylight filled working and living spaces in new and existing buildings.

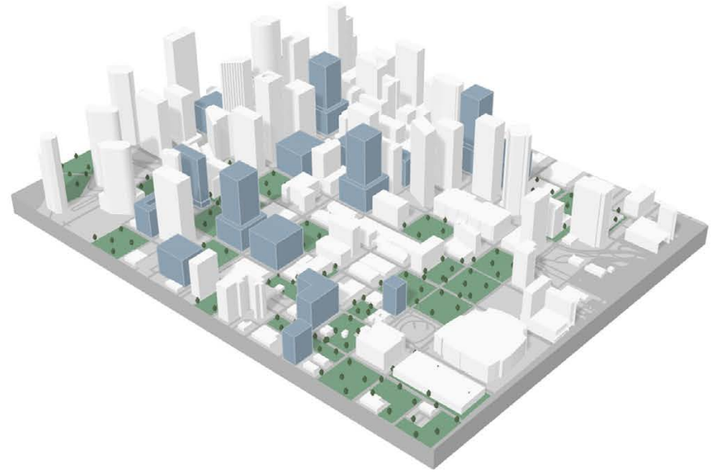
PERCENTAGE OF PARKING LOTS CHANGED

35%

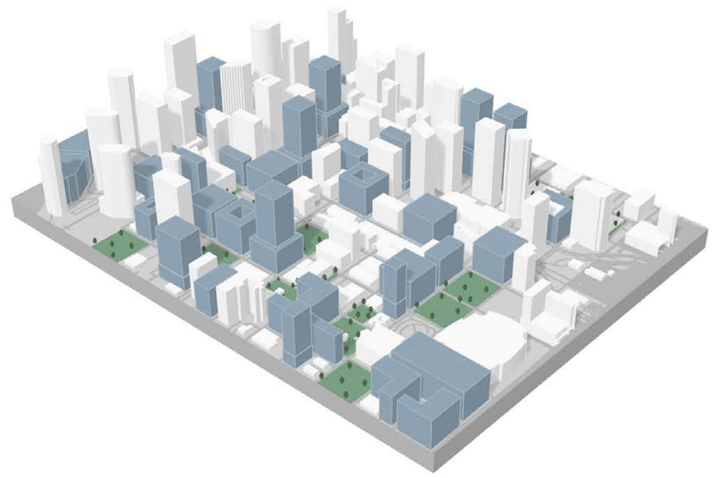
70%

100%

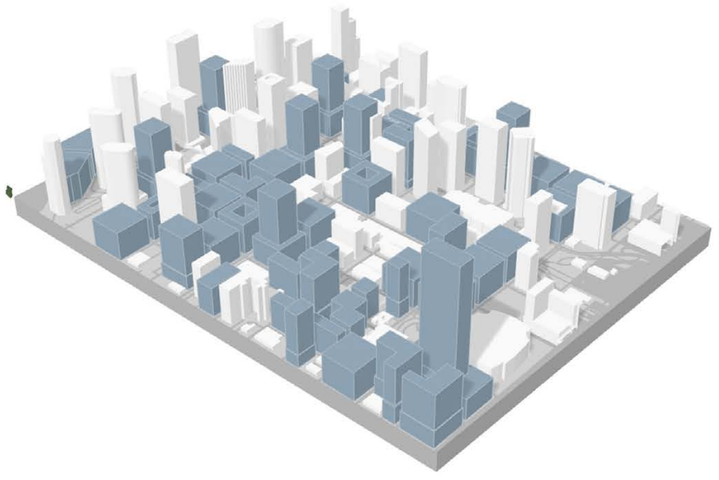
GREEN SPACE PERCENTAGE



35%



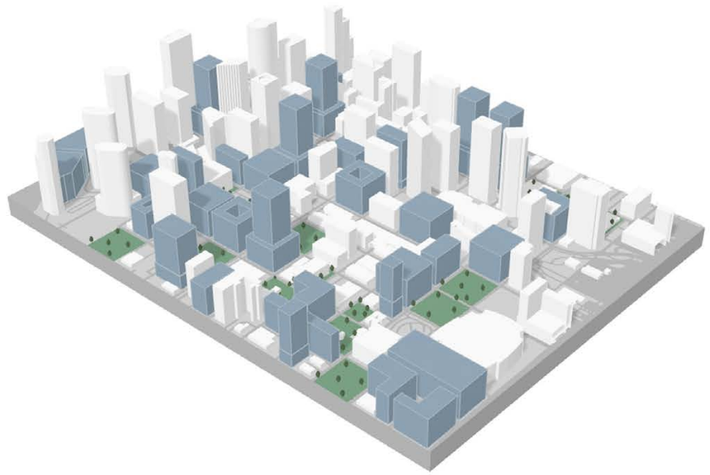
70%



100%

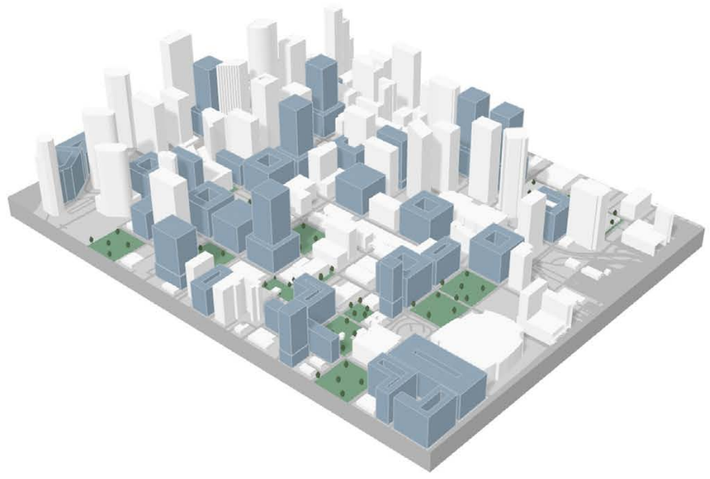
BUILDING PROGRAM

DENSITY DISTRIBUTION



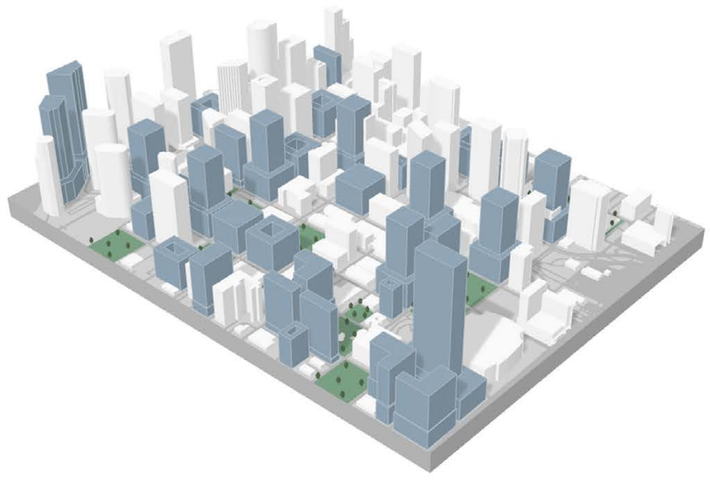
MIX 1
60% Parking
30% Mixed-use
10% Residential

3.8

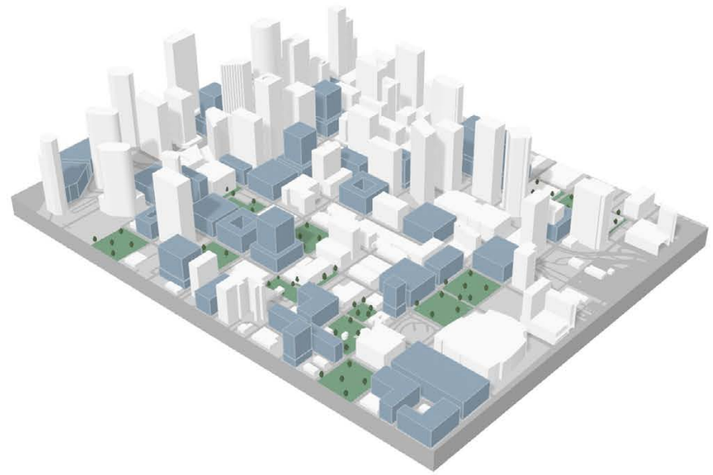


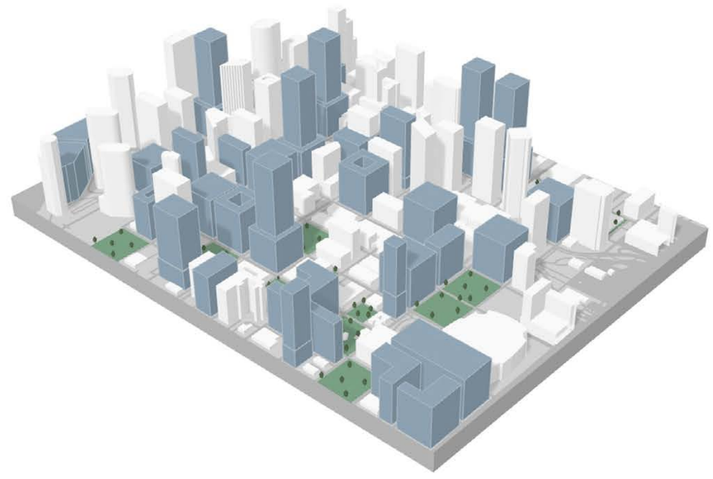
MIX 2
60% Residential
30% Mixed-use
10% Parking

6.0



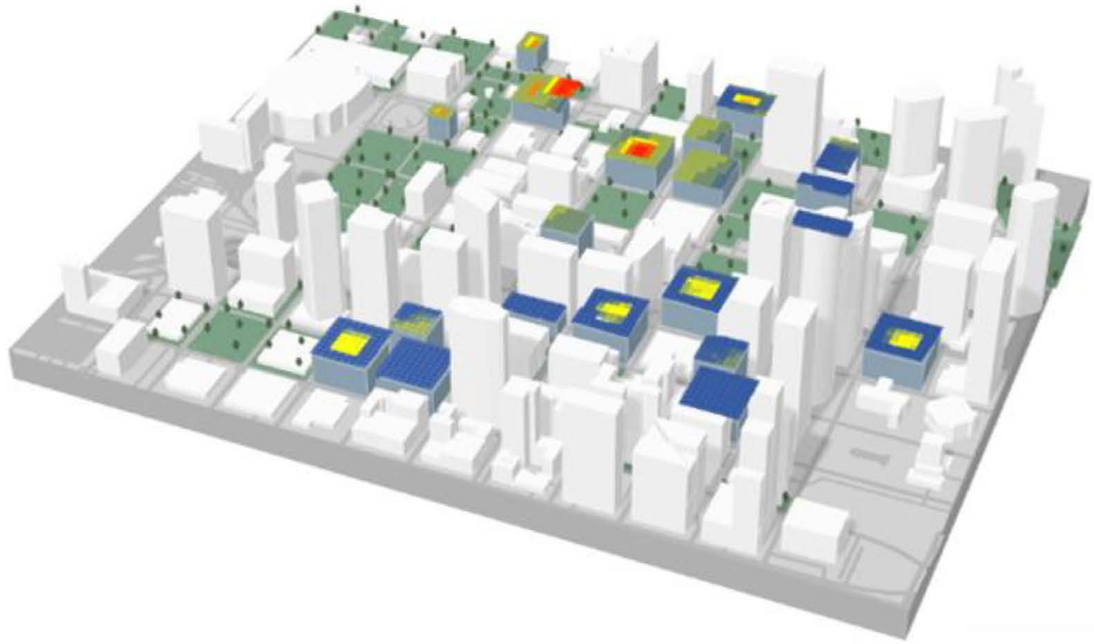
MIX 3
60% Mixed-use
30% Residential
10% Parking



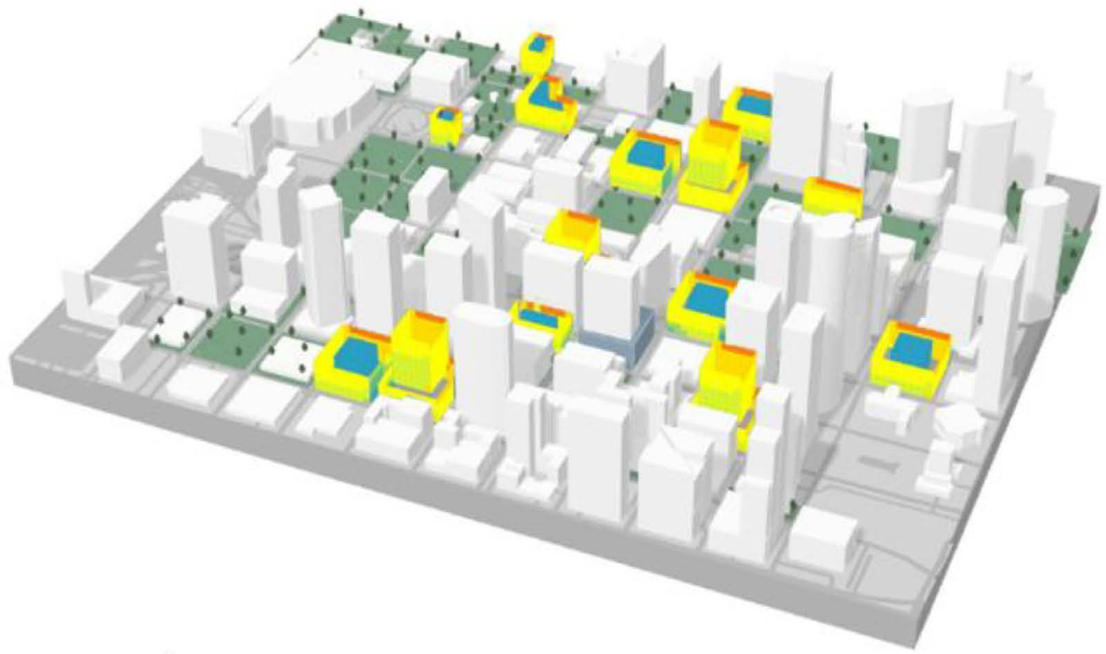


10.0

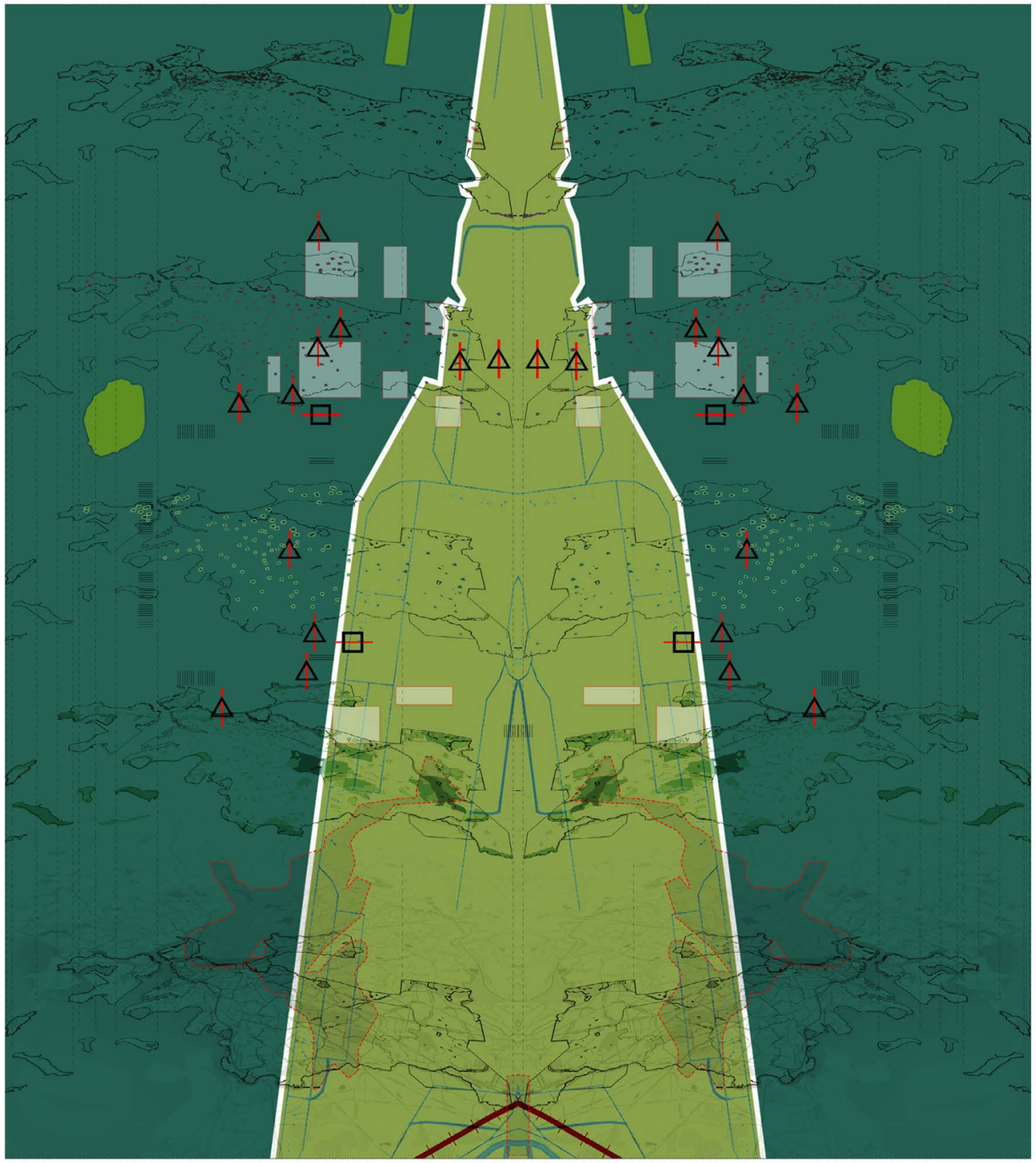
METRICS| SHADE



METRICS| ENERGY GENERATION



METRICS| SOLAR EXPOSURE



CARTOGRAPHIES OF INVESTIGATION

INDIVIDUAL WORK
FALL 2022

ELECTIVE- METHODS IN SPATIAL RESEARCH
(VISUAL STUDIES)
INSTRUCTOR- DARE BRAWLEY

1- Boston Inconsistencies

The map examines the relationship between the density of different typology with green spaces in the city of Boston. It investigates on the distribution and highlights that the public school and polling stations are uniformly distributed in the city while restaurants and green spaces are inversely dense to each other.

What are the relationship between this typologies in determining the city center?

2- From Bombay to Mumbai

The map depicts the relationship between transportation and expansion of the city by showcasing the encroachment of Mumbai towards the sea and hence increasing the coastal belt. Co-incidentally, those are the same areas in which railway corridor has been constructed which plays a vital role in urban expansion.

How transportation is linked to urban expansion of a city?

3- Trashing Statues

The map locates and examines the density of two contrasting public elements that are statues and trash cans in Columbia University's Morningside campus. Both the elements are somewhat related to the people using outdoor spaces and their eating environments.

Is there any relationship between location of aesthetic element like statues and waste element like trash cans that makes them co-exist together?

4- Deep Water Horizon

These maps demonstrates the spilling of oil on April 20,2010, operating in the Macando prospect in the Gulf of Mexico,exploded and sank resulting in the death of 11 workers on the Deepwater Horizon and the largest spill of oil in the history of marine oil drilling operations. 4 million barrels of oil flowed from the damaged Macando well over a 87-day period,before it was finally capped on July 15,2020.The area of the spill can be examined on specific dates to identify the environmental damage it caused.

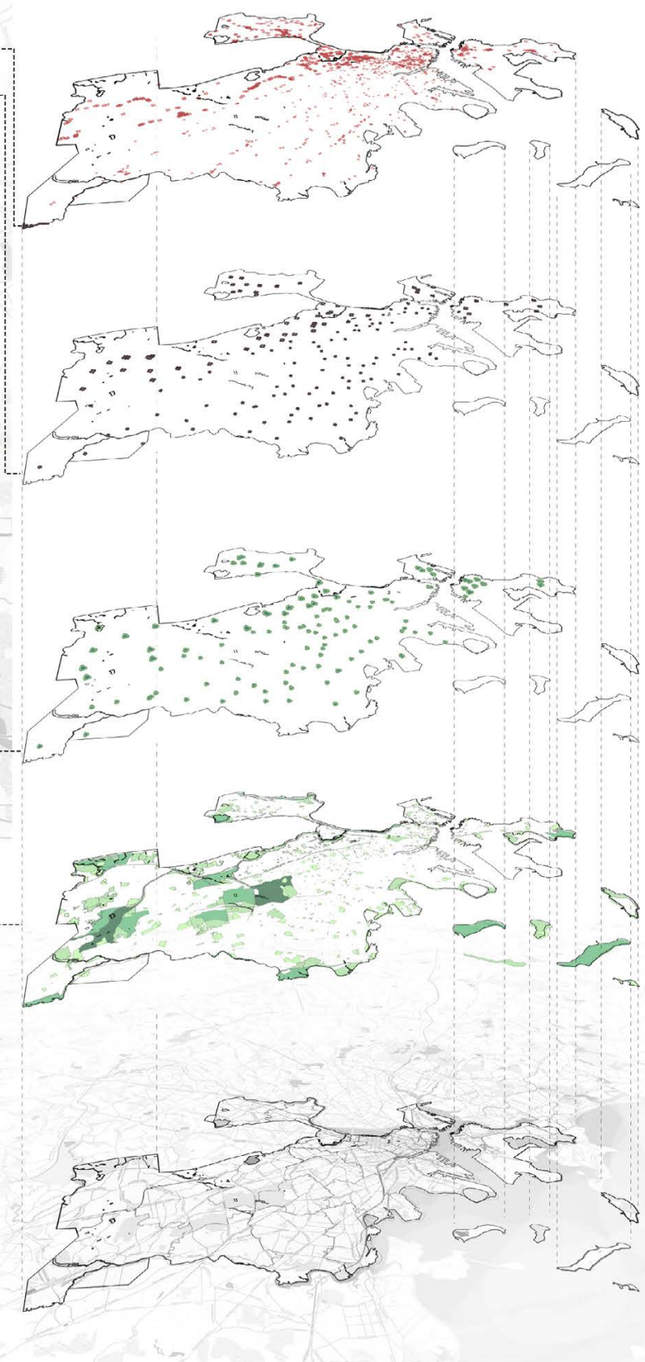
How can the impact of such environmental damage caused in the anthropocene be understood by the humans?

BOSTON INCONSISTENCIES

Typology-Density Distribution

ZIP CODES
RESTAURANTS
POLLING STATION
PUBLIC SCHOOLS
OPEN SPACE(ACRES)
0-30
30-100
100-250
250-392
CITY BOUNDARY
WATERBODY

0 2.5 5 km




FROM BOMBAY TO MUMBAI
Urban Expansion with Time
1855 Railway Lines
2021 Railway Lines
1855 Coastal Line
2021 Coastal Line
0
750 m
Maulana Shaukat Ali Marg (Grant Road)
Vithalbhai Patel Marg
Jagannath Shankarsheth Marg
Maharshi Karve Road
Netaji Subhash Chandra Bose Road
Lockmanya Tilak Marg
Mahapalika Marg
Kalbadevi Road
P D'Mello Road
Dr Dadabhai Naoroji Road
Sir Jamshetji Jeejeebhoy Road

LEGENDS

TRASH CANS

STATUES

STEPS

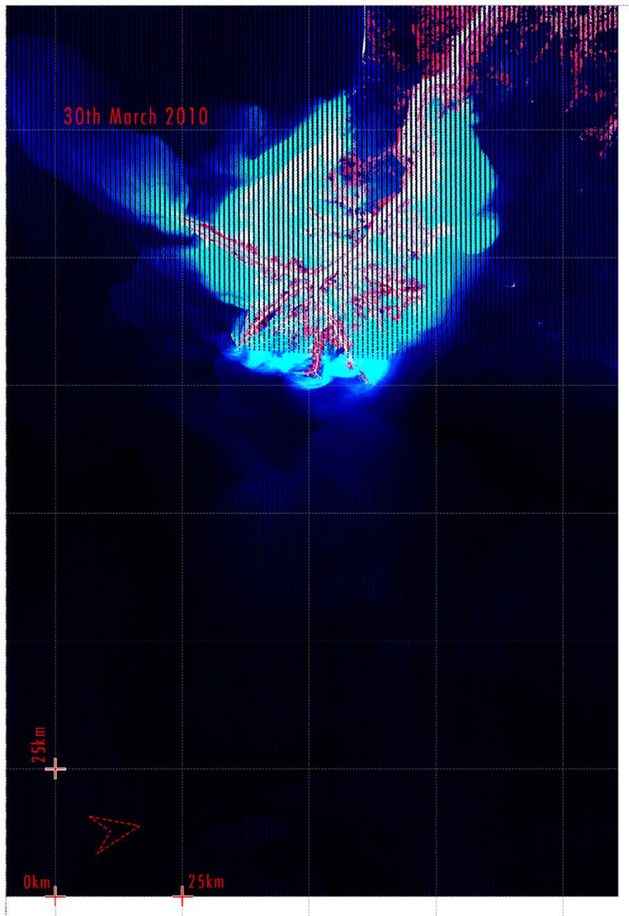
GREEN SPACES

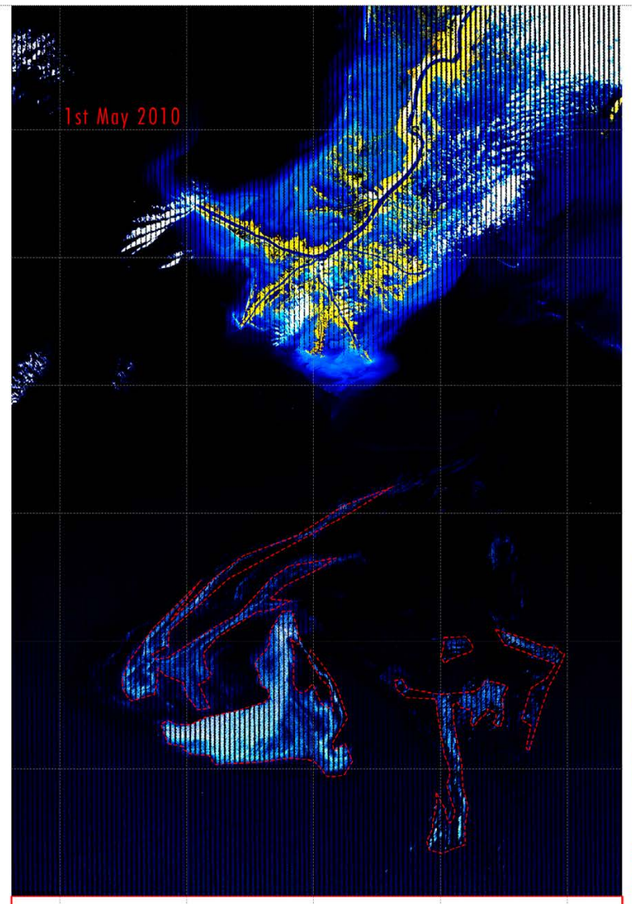
COLLEGE WALK

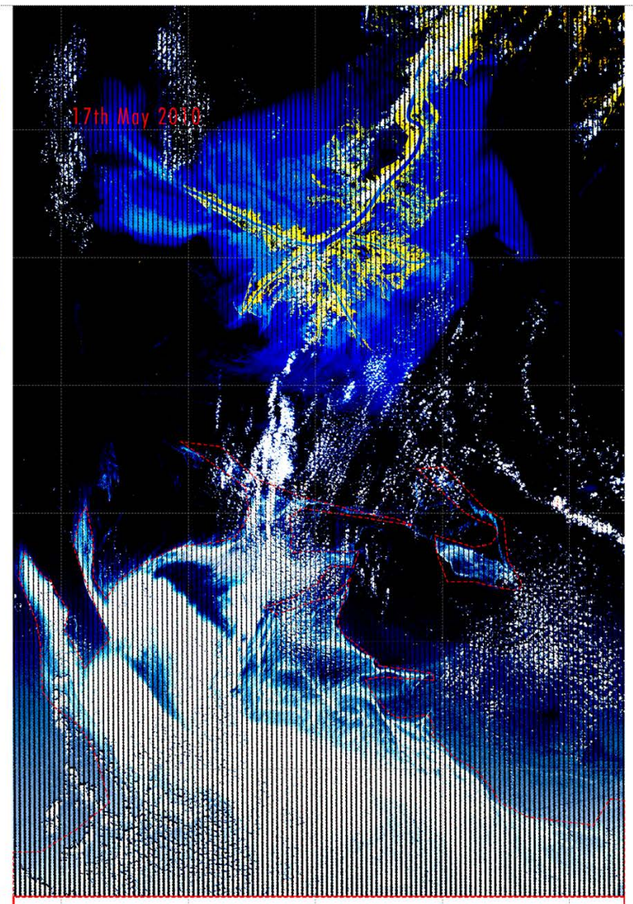
0 125 250'

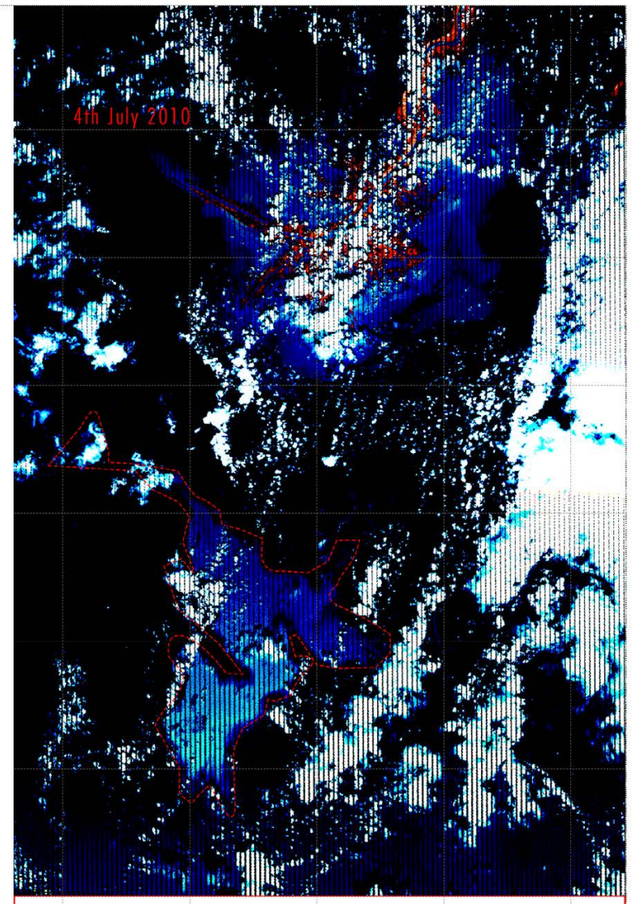
TRASHING - STATUES

Columbia University, NYC



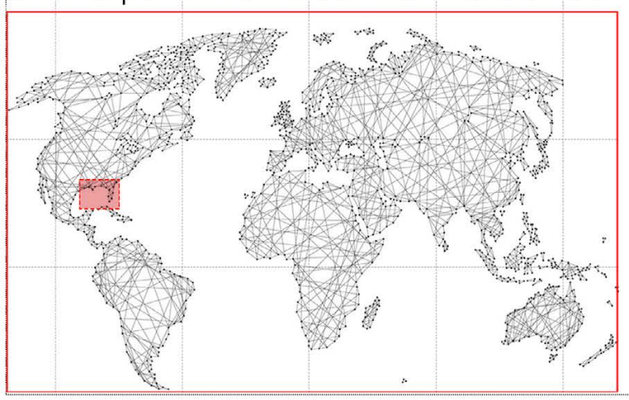


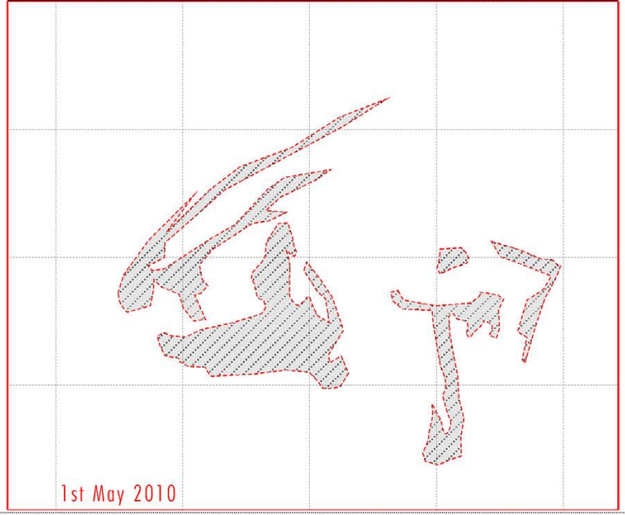


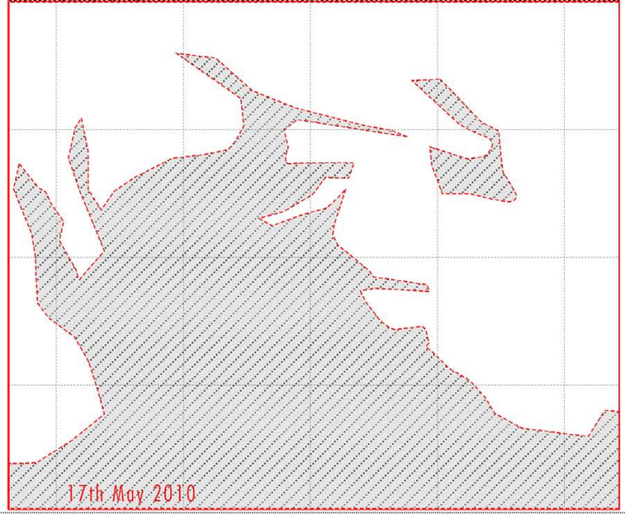


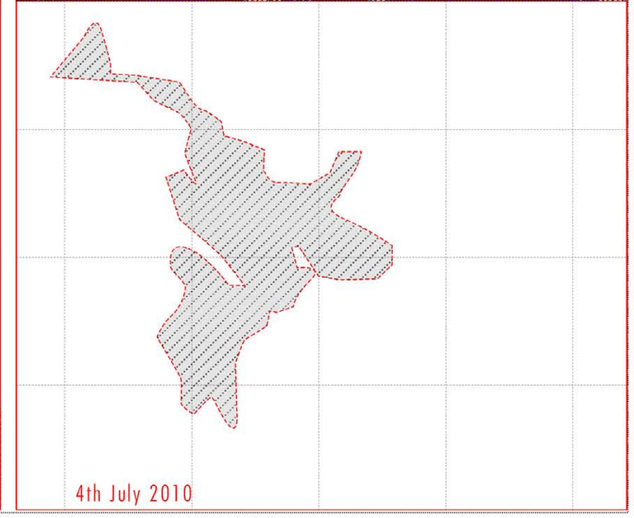
DEEP WATER HORIZON

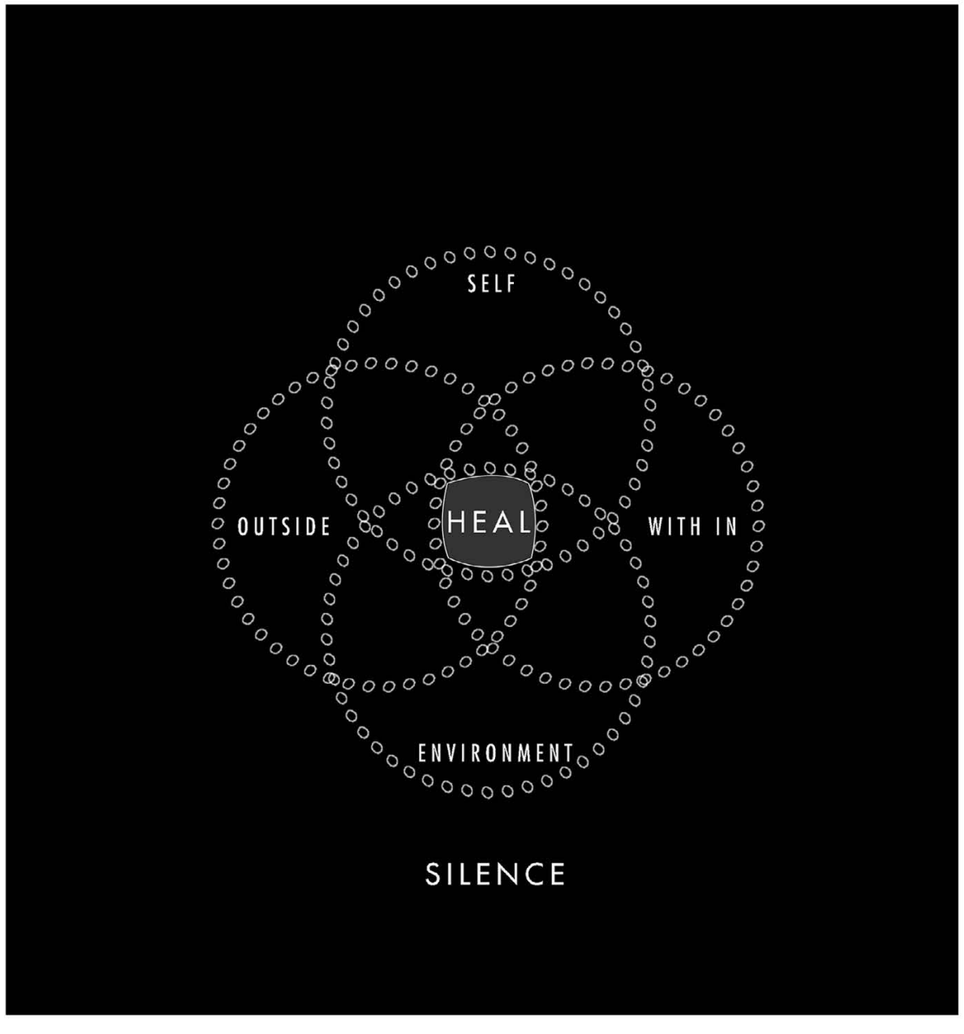
Oil Spill in Gulf of Mexico











LIFE IN-BETWEEN DEATH

Architecture for Healing

SITE-NEW DELHI, INDIA

INDIVIDUAL WORK
SUMMER 2021

STUDIO- THE ART OF POETIC ENVIRONMENTAL ARCHITECTURE
STUDIO CRITIC-YUSSEF AGBO-OLA

Different kinds of deaths surround us-
SLOW-----FAST
TANGIBLE-----INTANGIBLE
PREDICTABLE-----UNPREDICTABLE

The project attempts to make people aware of these kinds of deaths and tries to reinforce life in it. The site is in the capital city of India, i.e., New Delhi. It suffers from a high level of air and water pollution, making it difficult for 20 million people to survive in this city.

The idea is to design an apparatus on the theme of 'Silence' which is interpreted here as 'heal.' Heal- from 'within and outside' and 'also to self and environment'.Life is surrounded by death, predictable and also unpredictable, tangible and also intangible, slow and also fast. My project tries to shed light on this kind of death and reinforce life in it. Death here refers to the pollution in the Yamuna River that flows through India's capital, New Delhi. The sacredness and interdependence of people on rivers have converted the holy river into a massive sewer without life. This interdependence affects both people and the ecosystem.

The context of the project lies at the interjunction of Najafgarh Drain with the river, which continues to be the source of contamination spreading into the sacred river. The proposal starts with the sacred Parikrama, or circulation, located above the junction. This site is proposed as an in-between public space, bridge, and pavilion. Movement is reinforced with a water-healing mechanism through a network of natural means consisting of a perforated wall, aeration, sedimentation, constructed wetlands, and micro-algae photo bio-reactors.

POLLUTION IN YAMUNA RIVER AND ITS MAJOR SOURCES

POINT SOURCES

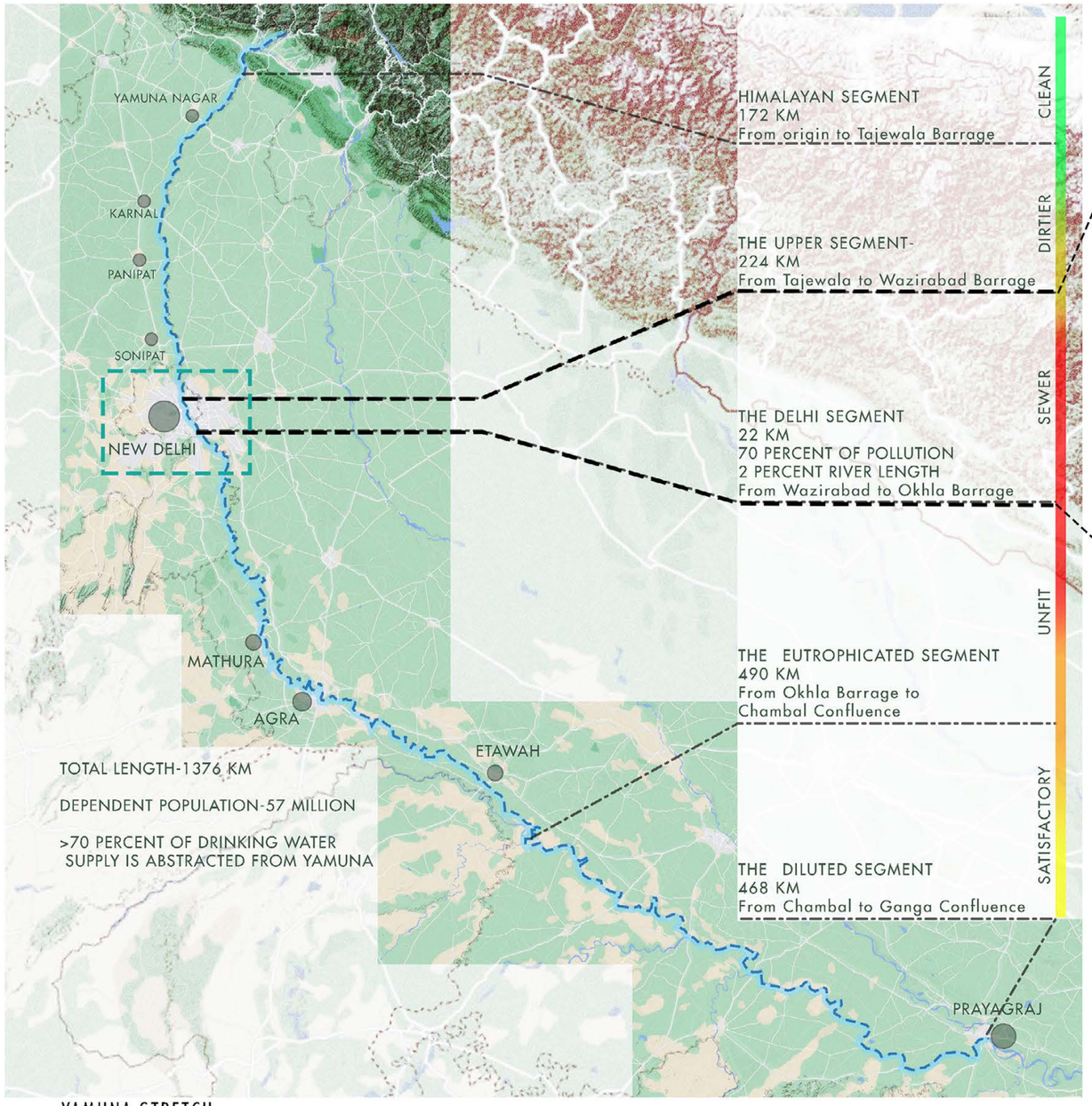
DOMESTIC POLLUTION
Comprises of organic matter,microorganisms, detergents,nutrients, grease,oil and others

INDUSTRIAL POLLUTION
Textile,Thermal Power, Chemical,Sugar, Paper and Pulp Leather, Fertilizers, Pharmaceuticals,Oil refineries, food industries etc.

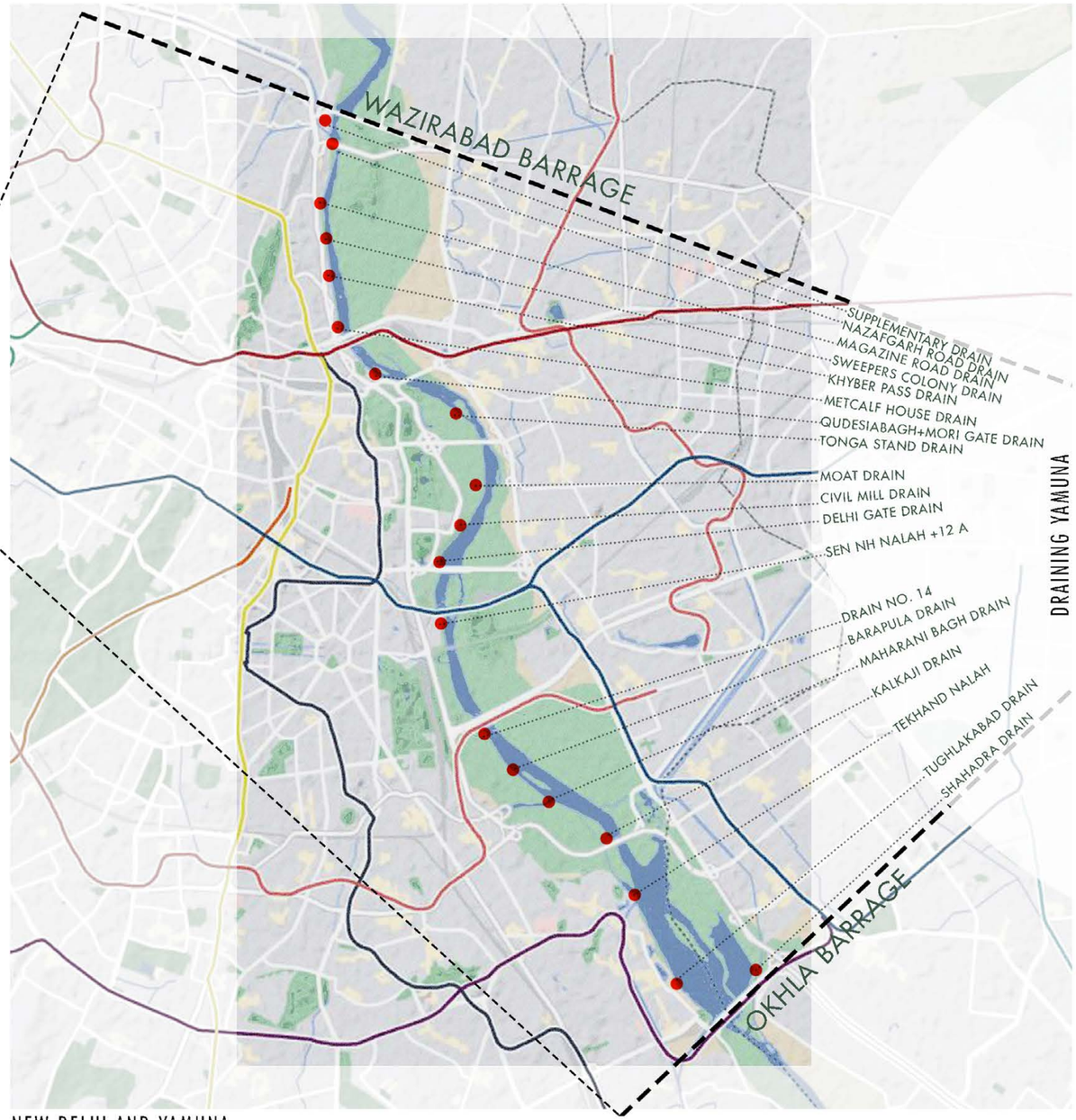
NON-POINT SOURCES

DIFFUSED POLLUTION
Agricultural Runoffs, Solid Waste, Dead Bodies, Carcasses, Immersion of Idols, Flowers,Ashes, Bathing, Washing, Cattle Wading, Open Defecation

FROM SACRED TO 'DEAD'

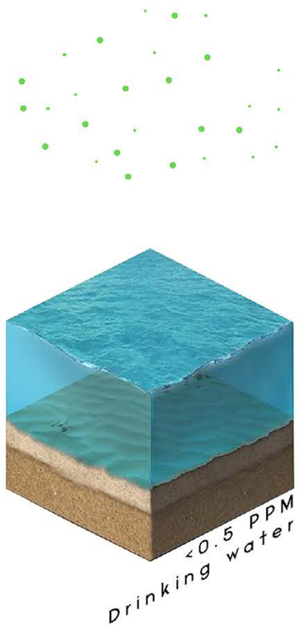


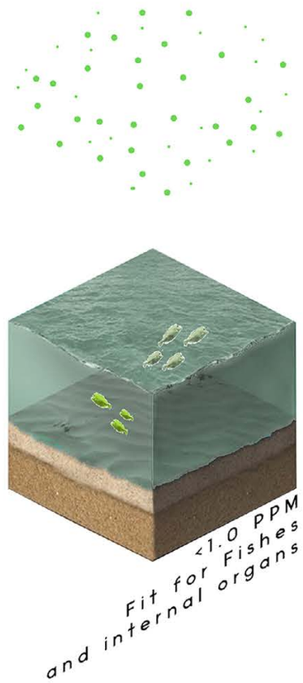
YAMUNA STRETCH

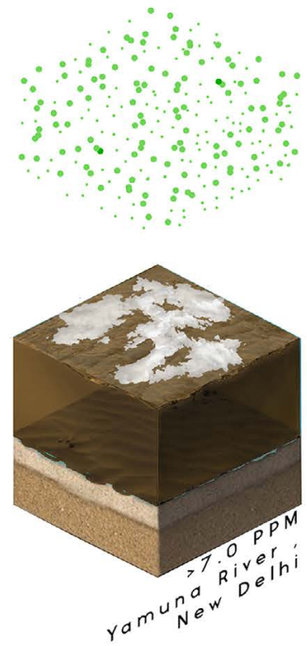


NEW DELHI AND YAMUNA

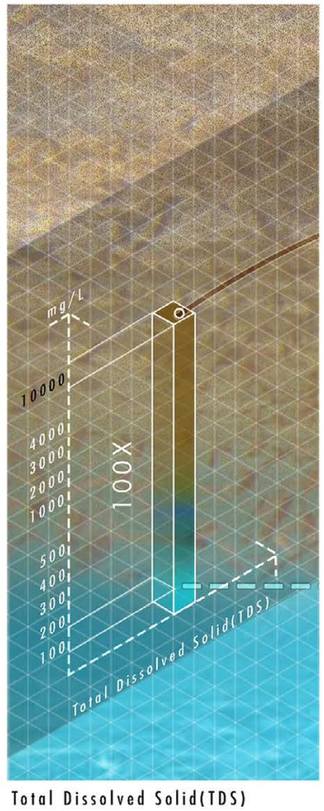
Life .....In-Between.....Death



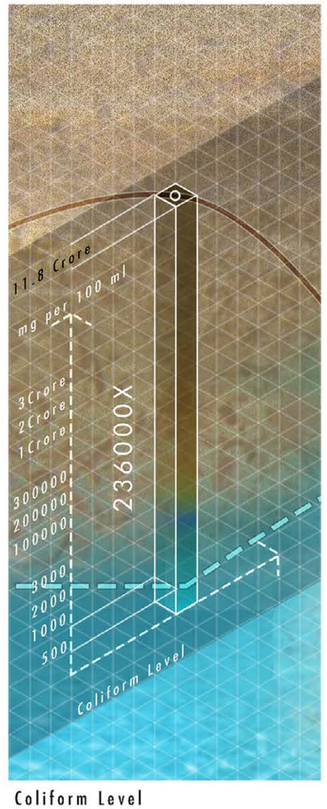




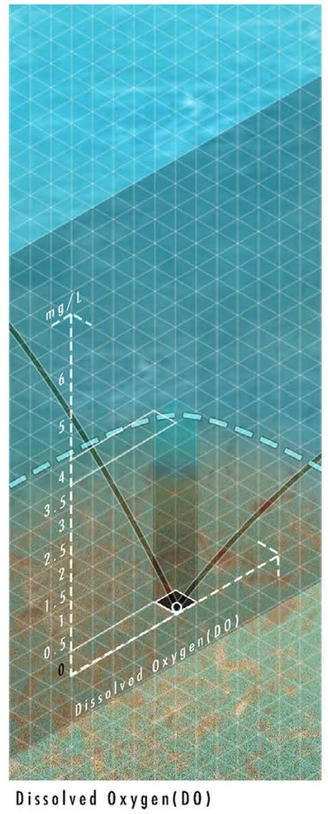
AMMONIA CONTENT IN WATER



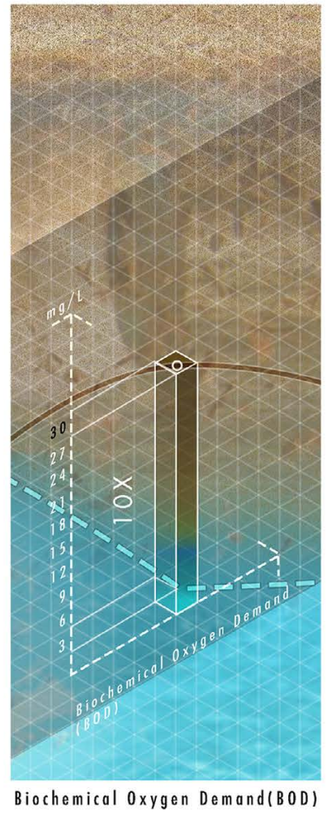
Total Dissolved Solid(TDS)



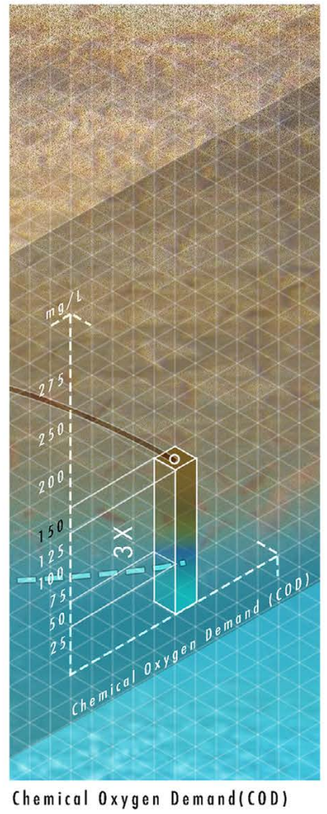
Coliform Level



Dissolved Oxygen(DO)

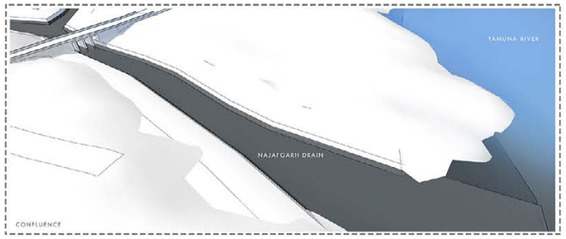


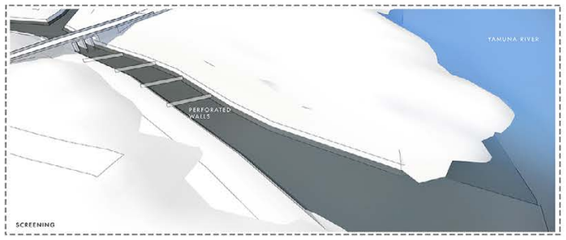
Biochemical Oxygen Demand(BOD)

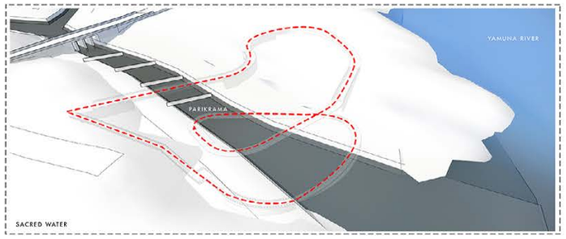


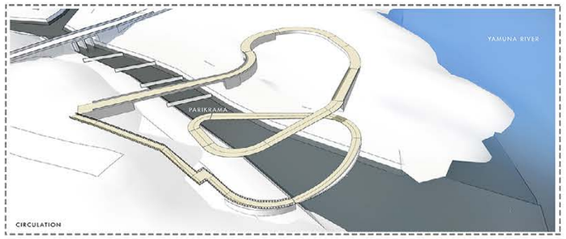
Chemical Oxygen Demand(COD)

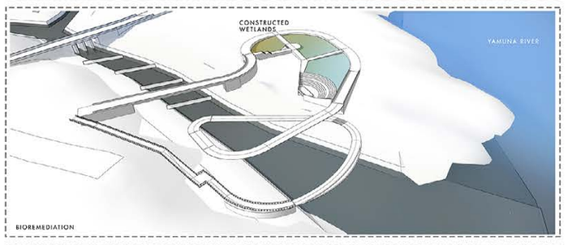
WATER QUALITY LEVEL OF YAMUNA RIVER

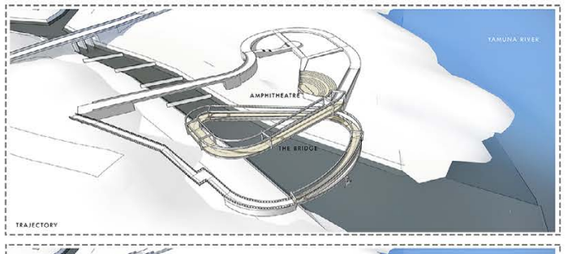

YAMUNA RIVER
NAJAFGARH DRAIN
CONFLUENCE

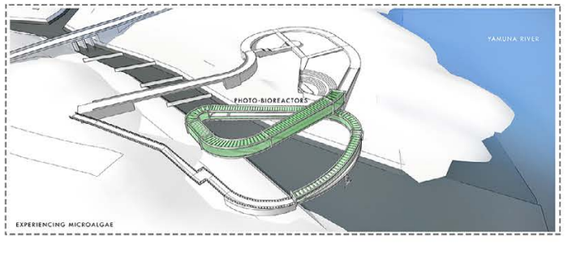

YAMUNA RIVER
PERFORATED WALLS
SCREENING

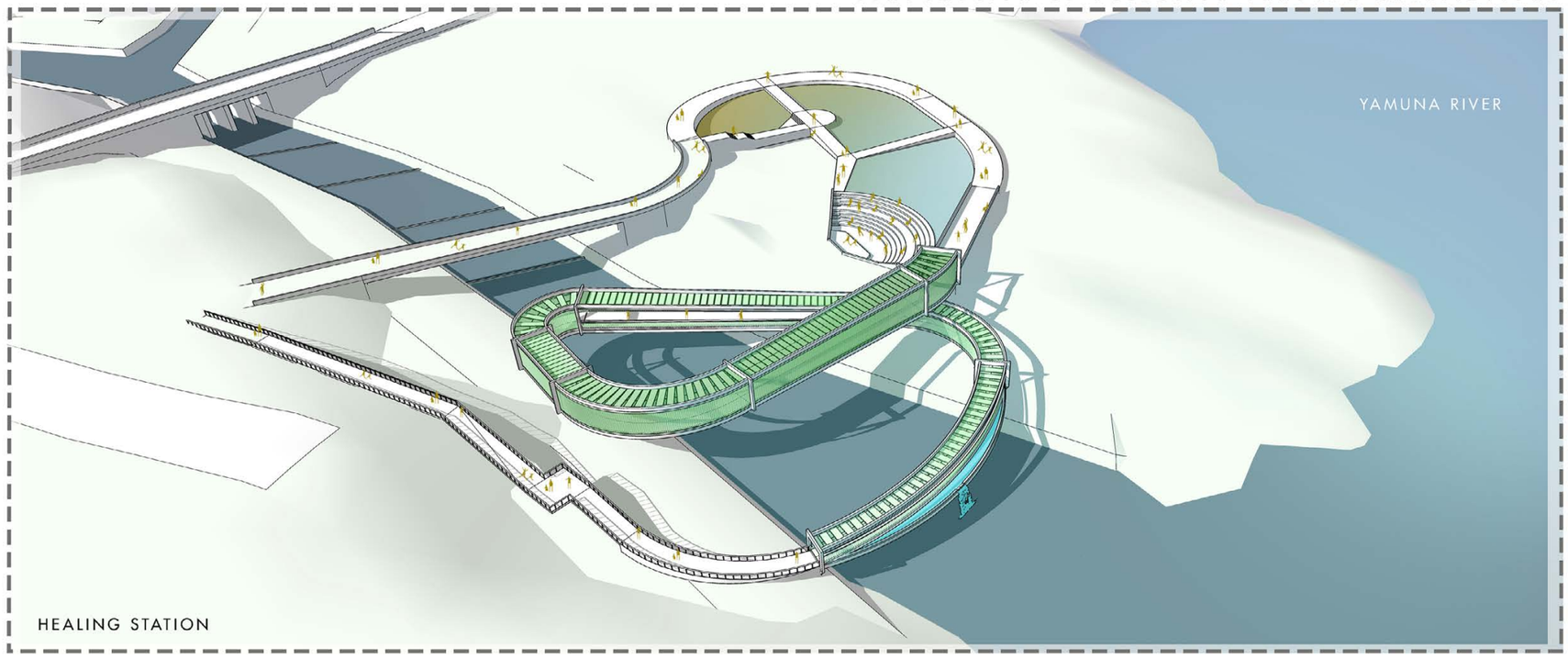

YAMUNA RIVER
PARIKRAMA
SACRED WATER

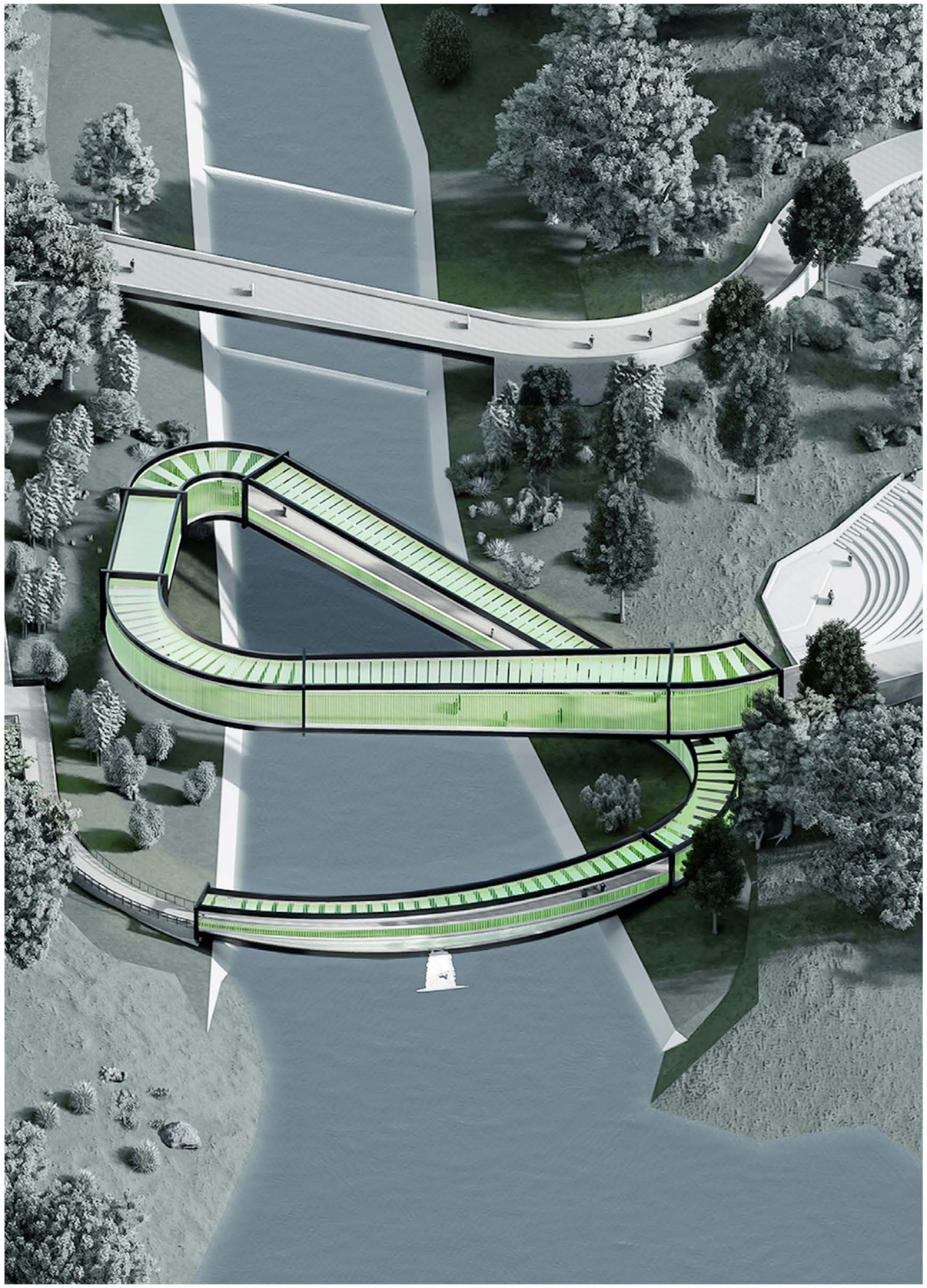

YAMUNA RIVER
PARIKRAMA
CIRCULATION


CONSTRUCTED WETLANDS
YAMUNA RIVER
BIOREMEDIATION

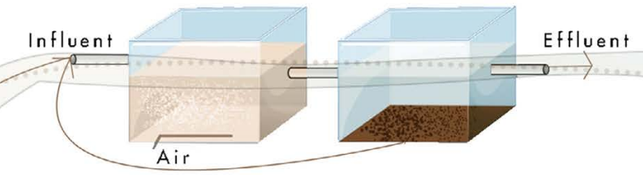

YAMUNA RIVER
AMPHITHEATRE
THE BRIDGE
TRAJECTORY


YAMUNA RIVER
PHOTO-BIOREACTORS
EXPERIENCING MICROALGAE


YAMUNA RIVER
HEALING STATION



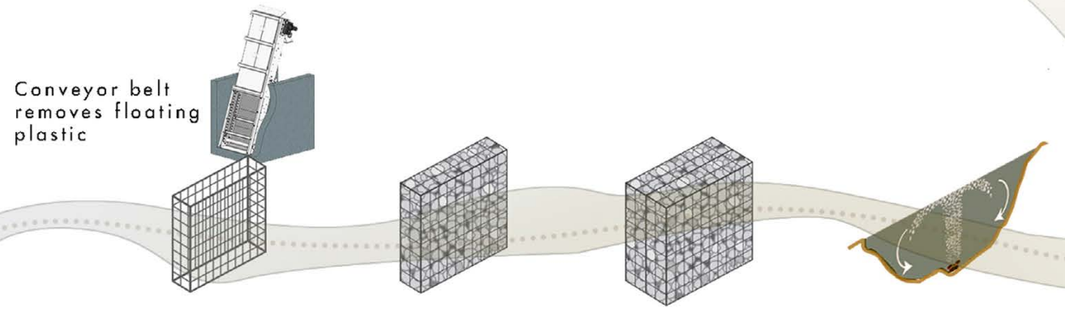
PERCOLATING LIFE



Aeration Tank

Activated Sludge
Settling Tank

SCREENING EXISTENCE



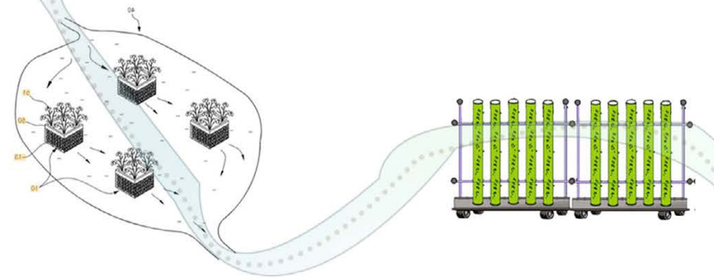
Bar Screening

Gabion Wall

Dense
Gabion Wall

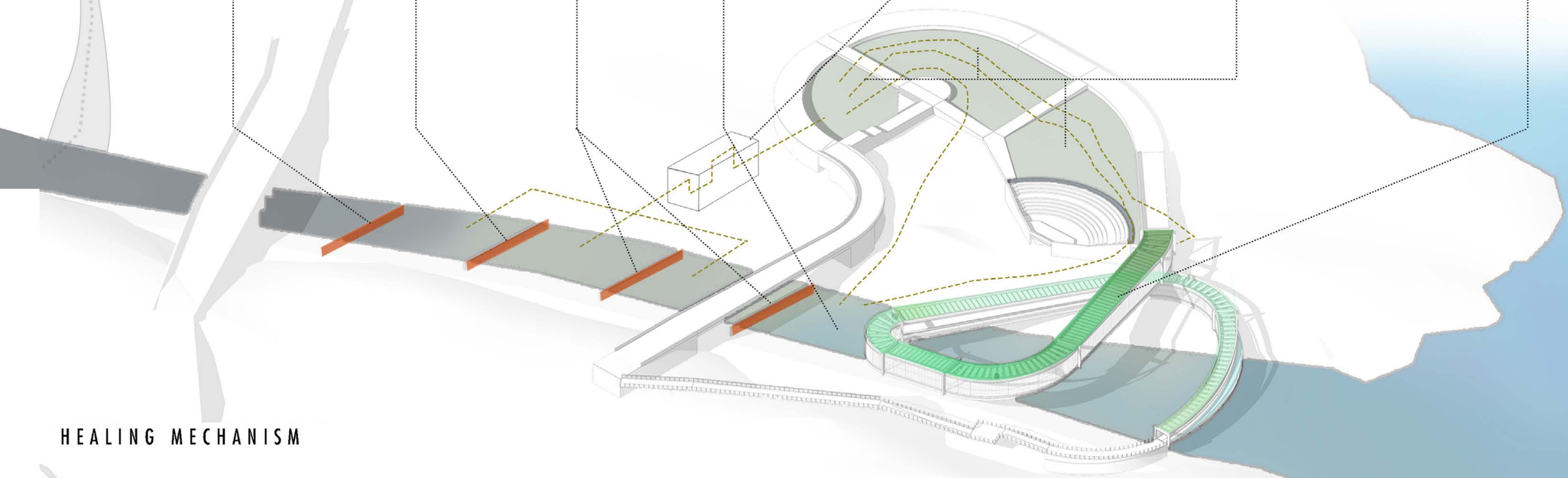
Aeration

REVIVAL FROM DEATH

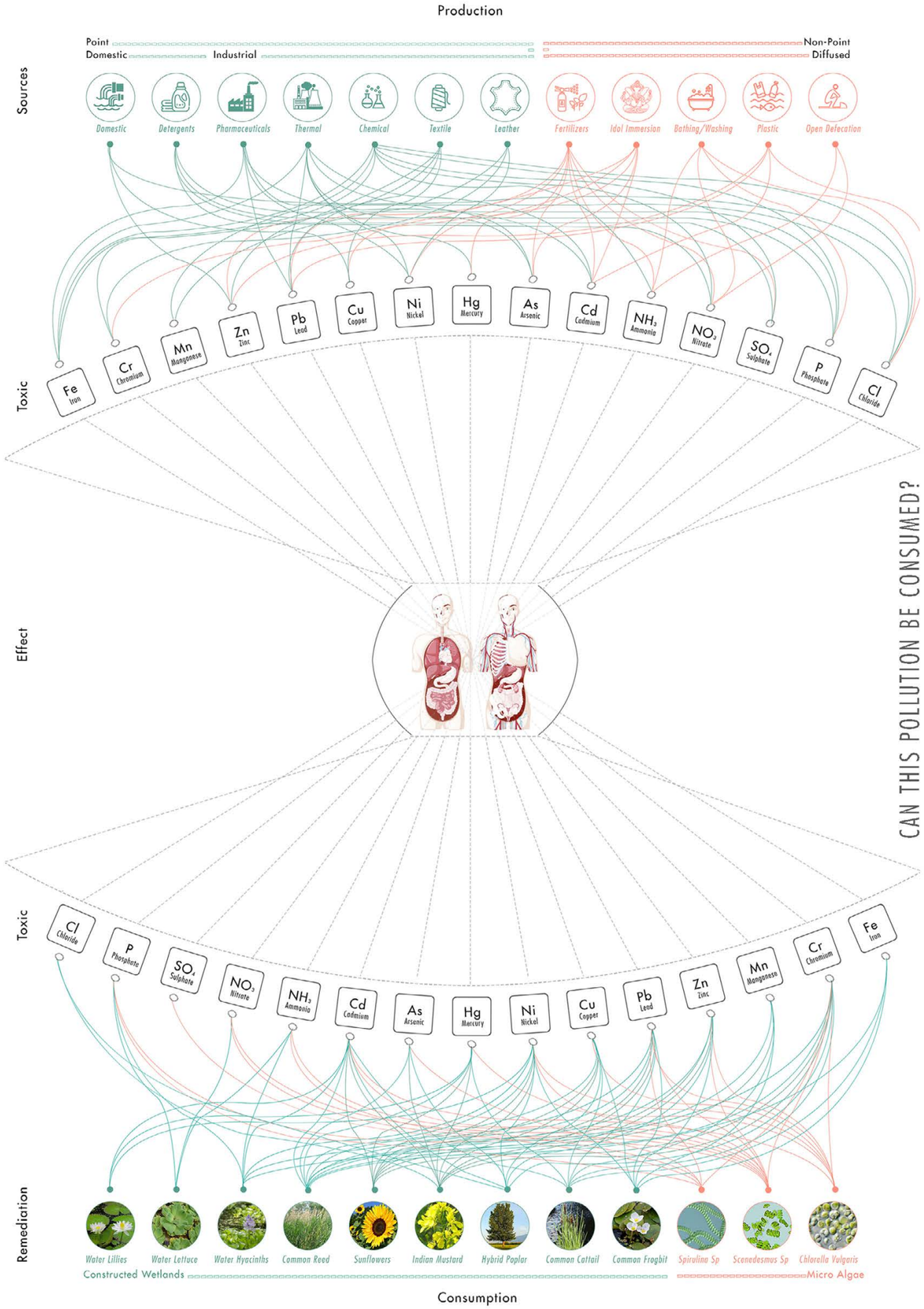


Constructed Wetlands

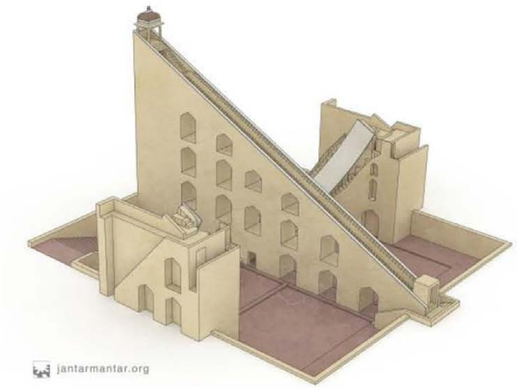
Microalgae Harvesting

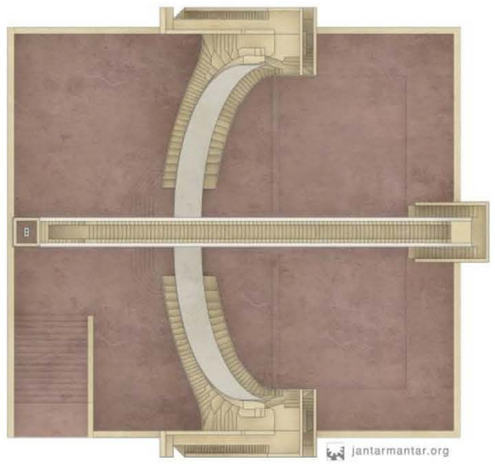


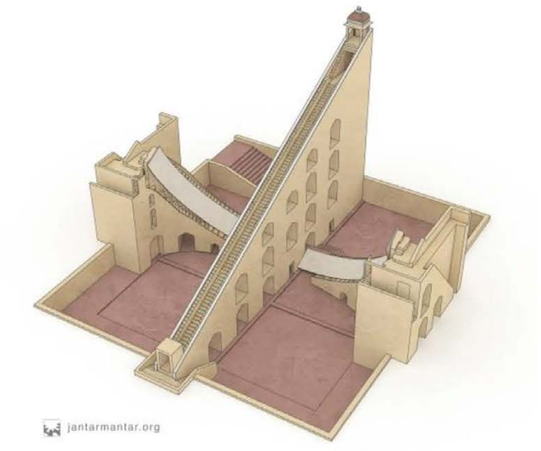
HEALING MECHANISM



CAN THIS POLLUTION BE CONSUMED?







Plan and Views of Samrat Yantra (Giant Sundial) , Jaipur
(Source-jantarmantar.org)

POSITIONAL ASTRONOMY AND SOCIAL ARCHITECTURE

INDIVIDUAL WORK
SUMMER 2021

TRANSSCALARITIES:THE INTERSECTIONAL DESIGN OF CLIMATE
(THEORY)
INSTRUCTOR- ANDRES JAQUE
PHD INSTRUCTOR-BENJAMIN WEISGALL

The term 'Jantar Mantar' means 'instruments for calculation.' These are the observatories located in five locations in India (Delhi, Jaipur, Mathura, Ujjain, and Benaras), built by Maharaja Jai Singh II in the early 18th century, consists of instruments relating to celestial bodies which are responsible for providing a good degree of accuracy through its enormous scale and permanence. The observatory is an assemblage of different structures that appear to be sculptures at first glance but are designed for a specific purpose like measuring stars, altitude, azimuth, and calculating eclipses. This made it a gathering space where people can come individually or in groups to look at the sky and connect themselves with the cosmos.

The observatories not only act as a laboratory for teaching positional astronomy but also engages visitors with their aesthetic architectural presence. The monumentality of the instruments built out of locally available stone, brick, rubble, and lime plaster gives it an architectural scale. Each element has a deep-rooted meaning. For instance, the angle to the right angle triangle of the giant sundial is equal to the latitude of observatory location, making the hypotenuse parallel to the earth's axis of rotation. There is also a separate structure for each zodiac sign. The scale of the form can calculate the most auspicious time of each person relating it to their horoscope, which shows the cultural entanglement of the architecture. People come here to interact with the marking in the instruments, and shadows falling in it tells the time. The scale makes it possible for people also to recognize the moving shadow of the sun as it is accurate to 2 seconds.

The Great Jai Prakash Yantra, Jaipur for finding positions of the heavenly bodies. The gaps were made accessible from underground, i.e. steps and passage ways in between the slabs were built so that the observer could walk right up to the edge of the slabs, align their eye to the surface level of the slab and then to the star they wished to observe.

Jantar Mantar was also crucial for Hindu culture where observation of natural phenomena, including the movement of celestial bodies, is essential in determining life processes from agricultural practices, to religious rituals, to the personal decision of when and who to marry. Ironically, it was built almost 120 years after the invention of the telescope, which raises many questions like, Was these monumental instruments needed when a smaller and more advanced telescope can help track the movement of celestial bodies? The answer may lie with its broader impact on society. People are engaged through the scale and become part of the instruments that were not the potential of individualistic instruments like a telescope. Moreover, formerly these spaces accommodated academic seminars, conferences, and discussions to prepare zodiac charts and almanac, which justifies it within the 'social architecture' domain. Astrologers still use it to predict monsoon rains and subsequent crop success or failure. This social architectural observatory has its inspiring presence in public space and provides a hands-on astronomy experience for anyone visiting it.

Though the idea was replicated at different locations, the scale of instruments, materiality, and sensitivity regarding the longitude and latitude of a place make it unique to its context. Moreover, despite being a static architecture, it keeps changing every second with people, sun, earth, and other celestial bodies, making it dynamic and timeless. Also, based on Le Corbusier's characterization of a house at the beginning of the 20th century as a 'machine to live in', these observatories from 18th century show that architects from the previous generation already knew the importance of what it was like to live and engage 'with' machines.

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LET'S CELEBRATE 'PAUSE', TO FLOW AGAIN.

THANK YOU

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