

GREEN PORTAL OF EMPIRE VILLAGE 2050



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Complex Projects

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L: Building
M: Structure
S: Facade
XS: Details

CIRCULATORY SYSTEM

Ventilation / Light / Water/ Material

CONCLUSION

Green portal of Empire Village 2050



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INTRODUCTION

New York is one of the most prosperous cities in the world, yet it has one of the world's most dysfunctional transportation systems."

(Editorial Board. July 30, 2018. NY Times)

INTRODUCTION

CP studio & Empire Village



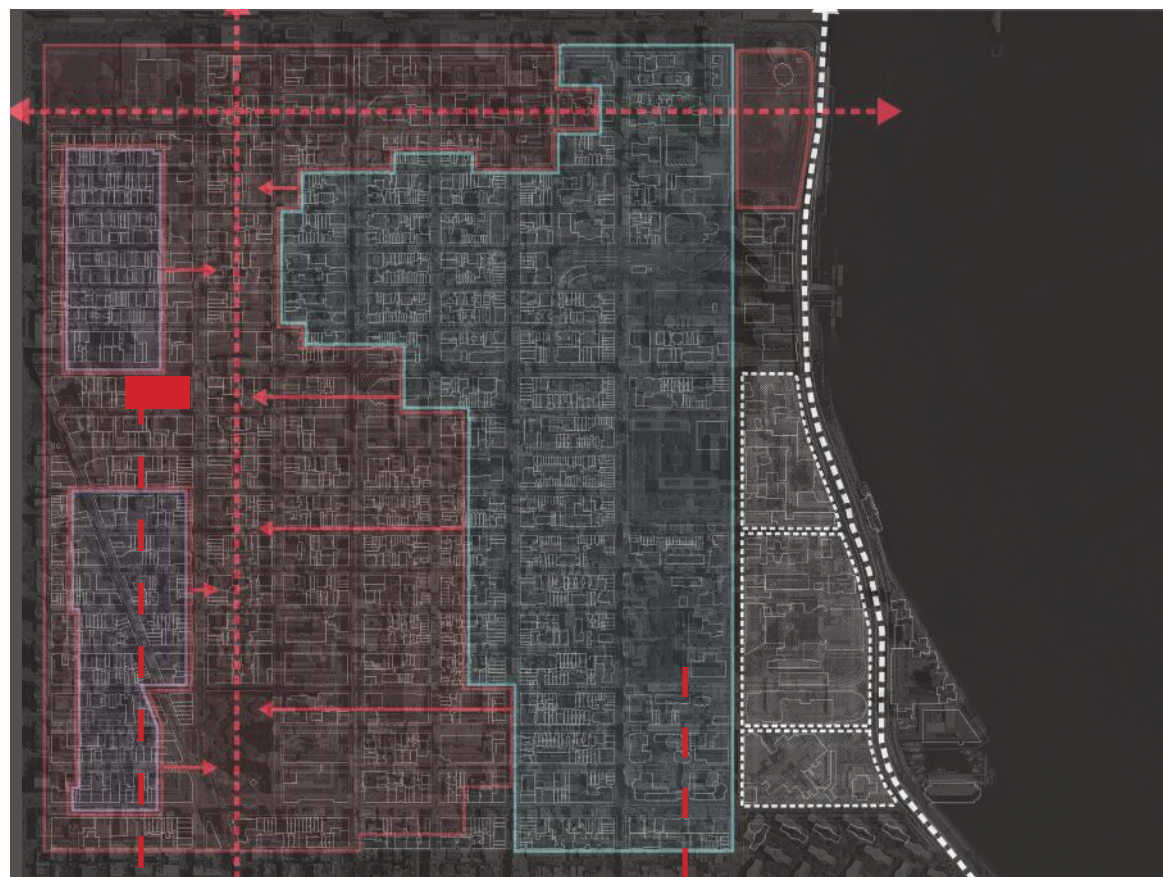
EMPIRE VILLAGE GROUP



2.4 X 2.6 KM



EMPIRE VILLAGE: DICHOTOMY



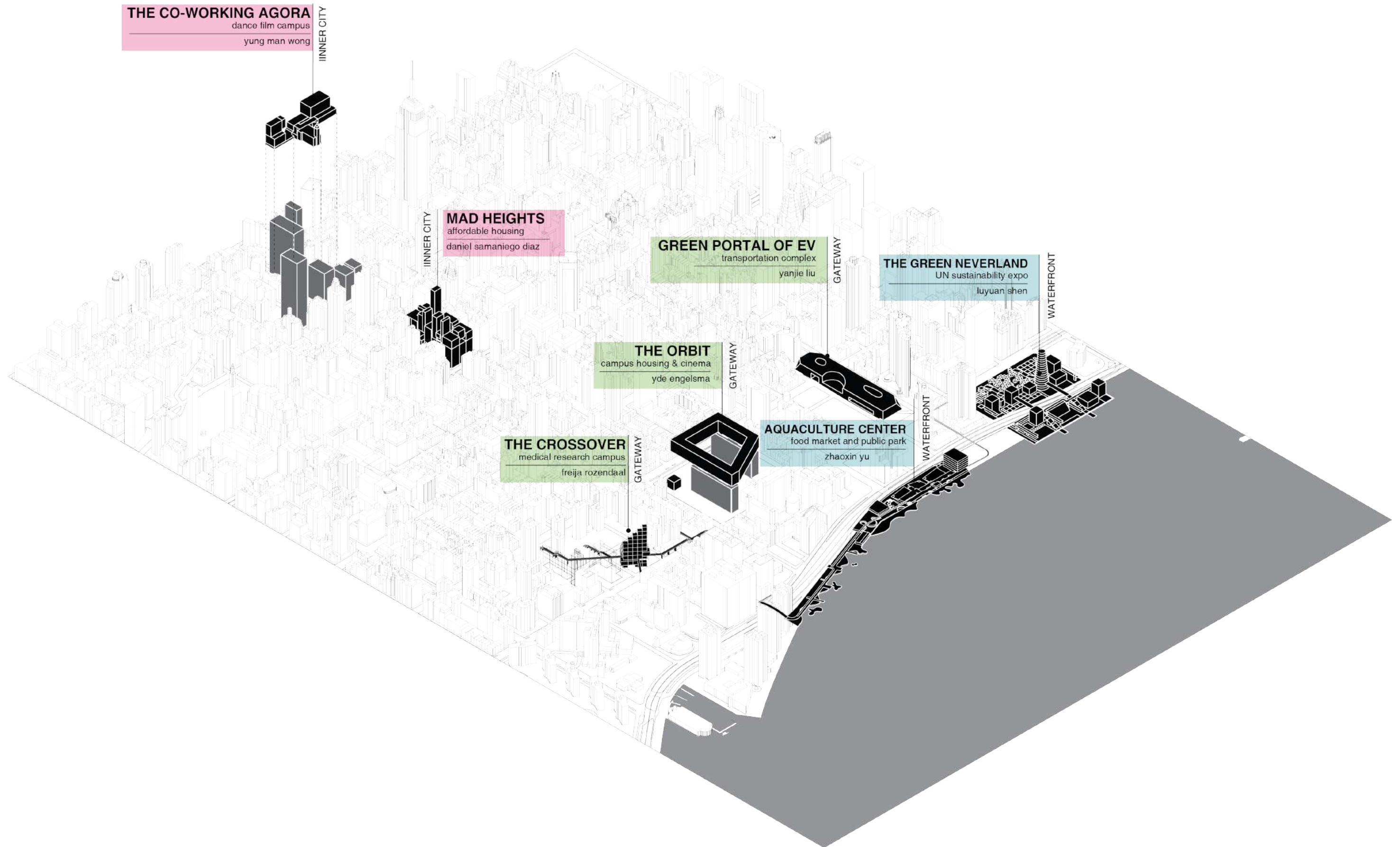
LANDMARK: EMPIRE STATE BUILDING
RESIDENTIAL AREA

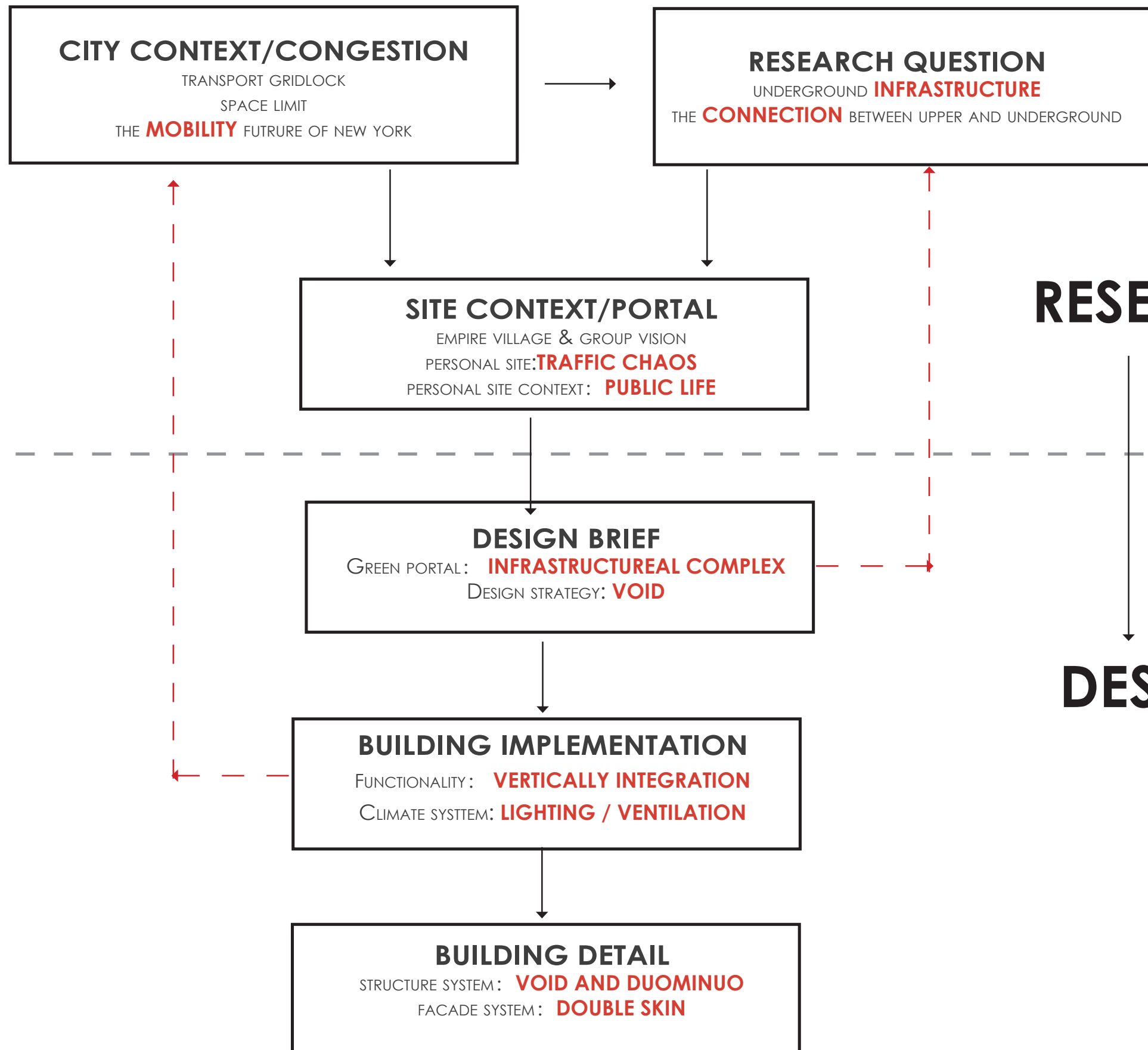


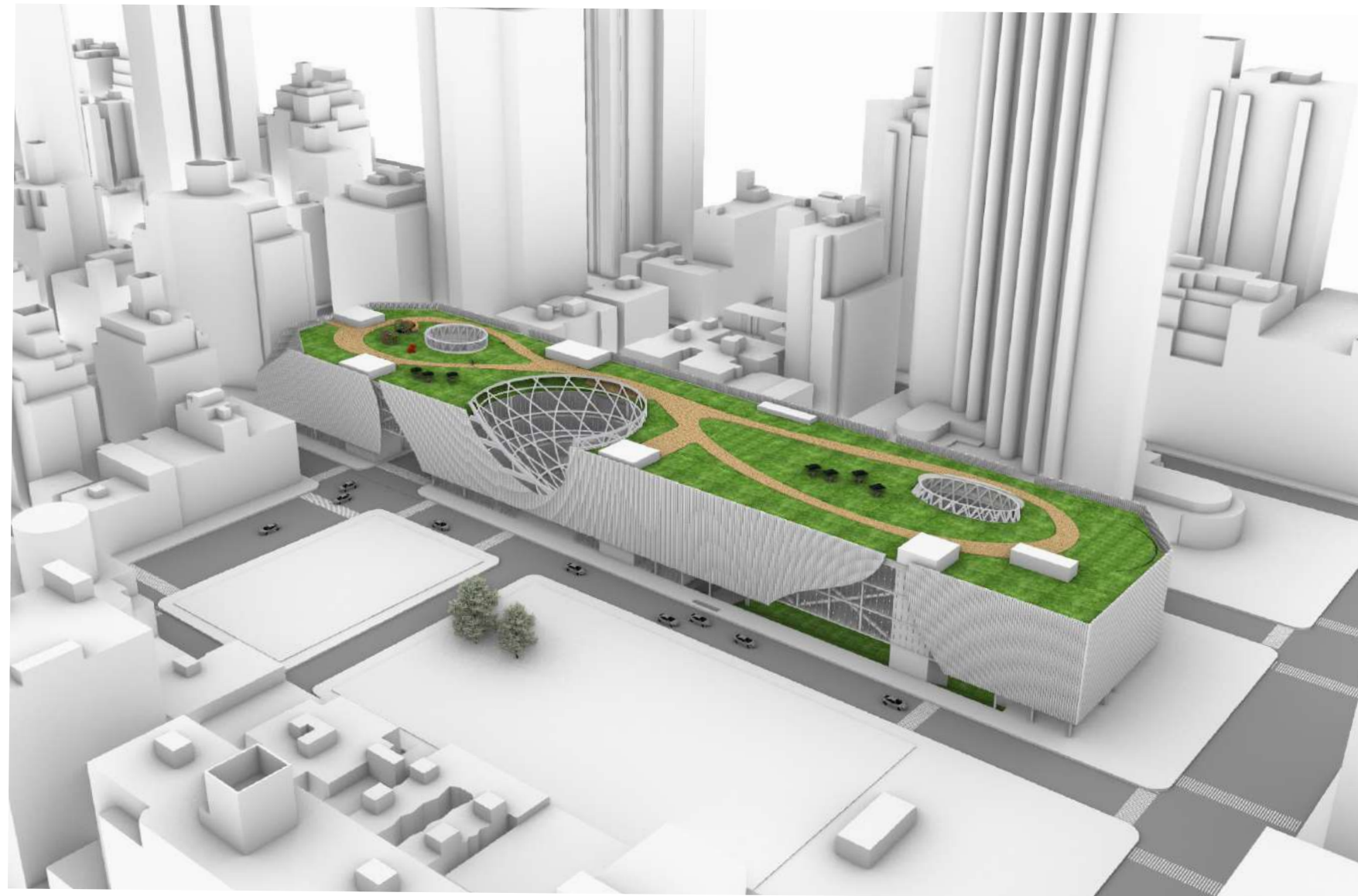
LANDMARK: EMPIRE STATE BUILDING
RESIDENTIAL AREA

INTRODUCTION

CP studio & Empire Village







GREEN PORTAL OF EMPIRE VILLAGE 2050

Mixed using Transportation Complex for future:
A Public shared from underground to upperground
*that serves as the portal to the EV and provides future capacity for the new
traffic volume and public life with green*



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RESEARCH

New York City
Mobility

Empire Village
Challenges





RIGHT LANE
MUST
TURN RIGHT

333
TOP VIEW
BUY TICKETS AT
TOPVIEWNYC.COM \$29

ONE WAY

W 45 St
W 45 St
George Abbott
BROADWAY

DRIVEN
MOTORCYCLE

An aerial, black and white photograph of Manhattan, New York, showing the dense grid pattern of streets and buildings. The Hudson River is visible on the left, and the East River on the right. The text is overlaid in the center.

MOBILITY OF MANHATTAN TODAY

CONGESTION

LESS PUBLIC TRANSPORT SPACE

TRAFFIC SAFETY

NEW TRANSPORTATION MODE

.....



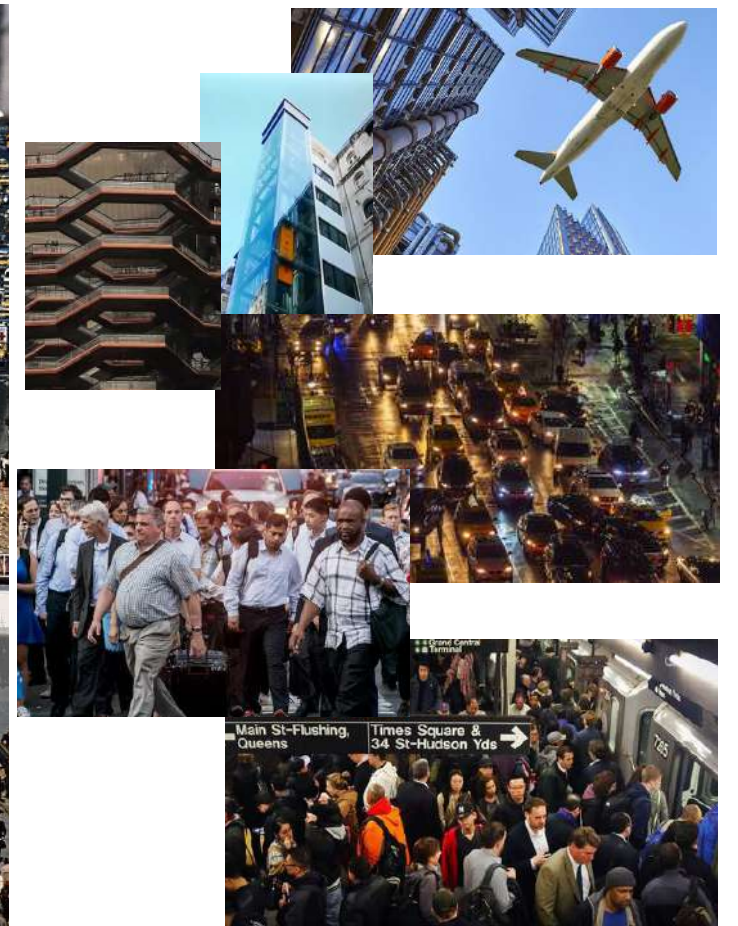
CONGESTION STYLE



1900s



1950s



2000s

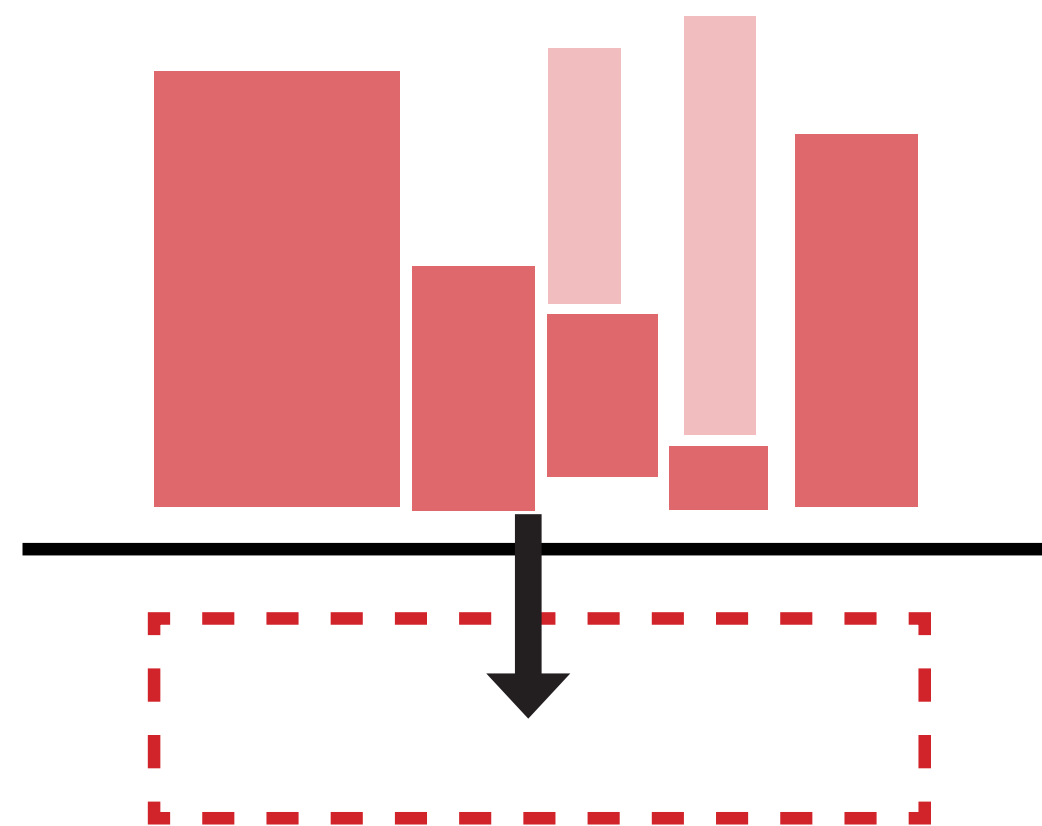
Congestion : Explosive growth with different layers of horizontal movement

VERTICAL DIFFLUENCE



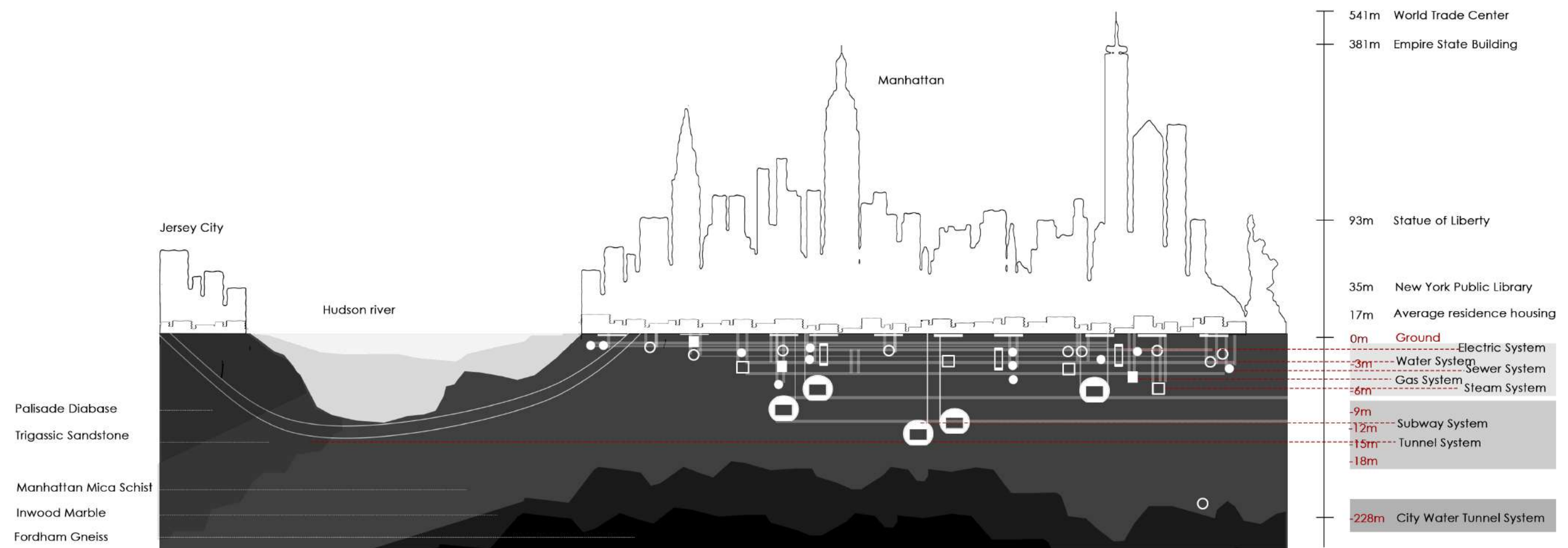
*Congestion is caused by transit happens on one layer and one site And the capacity is limited
The use of loop to divert different levels vertically*

LIMITED TRANSIT CAPACITY



Limited transportation capacity: underground expanding

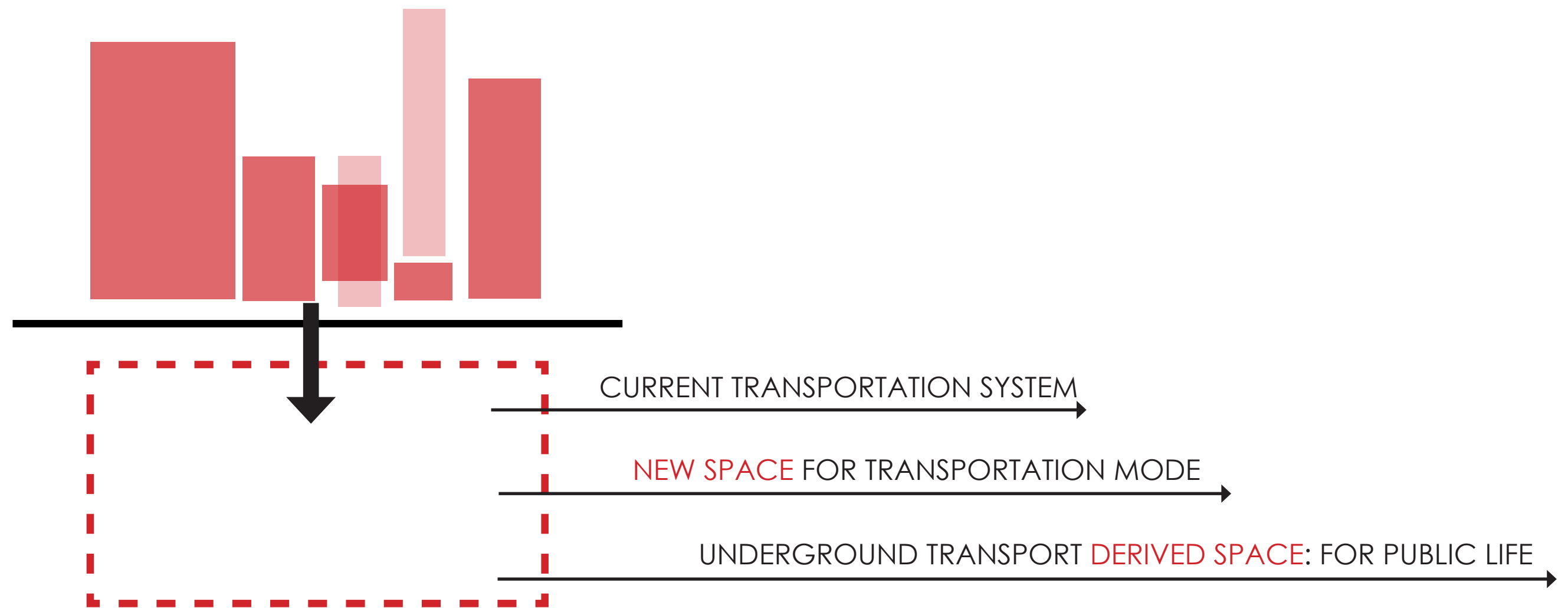
THE POTENTIAL OF UNDERGROUND SPACE



Among the existing underground spaces, especially the semi-underground and underground spaces derived by infrastructure have the most development possibilities and convenience.

New York is currently underdeveloped underground, mostly used by transportation infrastructure and not well utilized.

THE POTENTIAL OF UNDERGROUND SPACE



Vertical diffuence+ full use of underground transportation infrastructure

What kind of space destined for development does **infra-structure provide by the **underground areas** of New York?**

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How can public activities and culture in the **underground infrastructural space **be related** to the **upper ground**?**

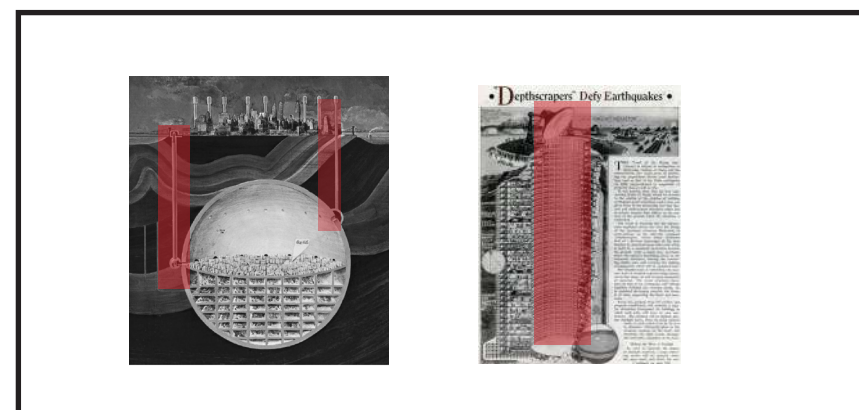
RESEARCH CONCLUSION



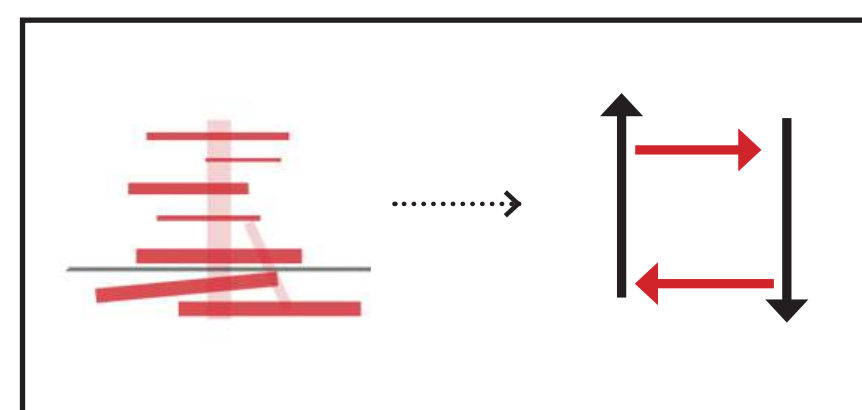
1. public semi-underground



2. Public art and Artificial nature



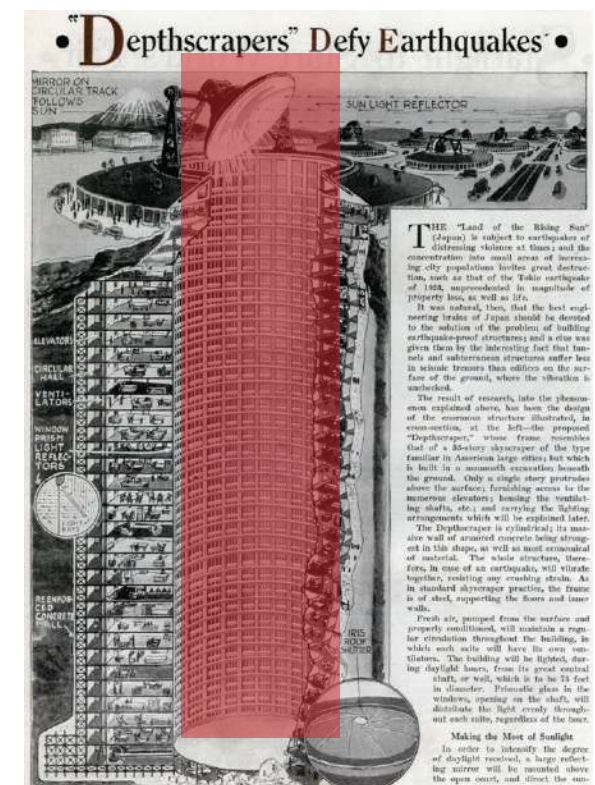
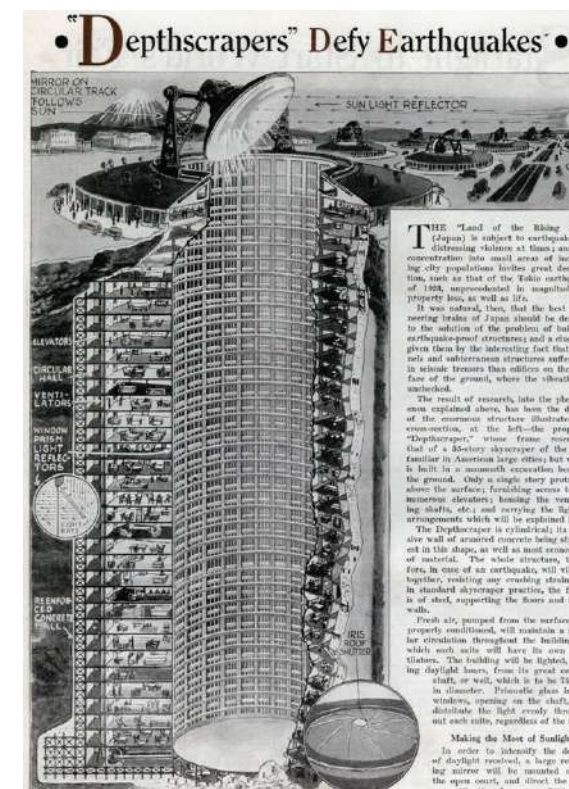
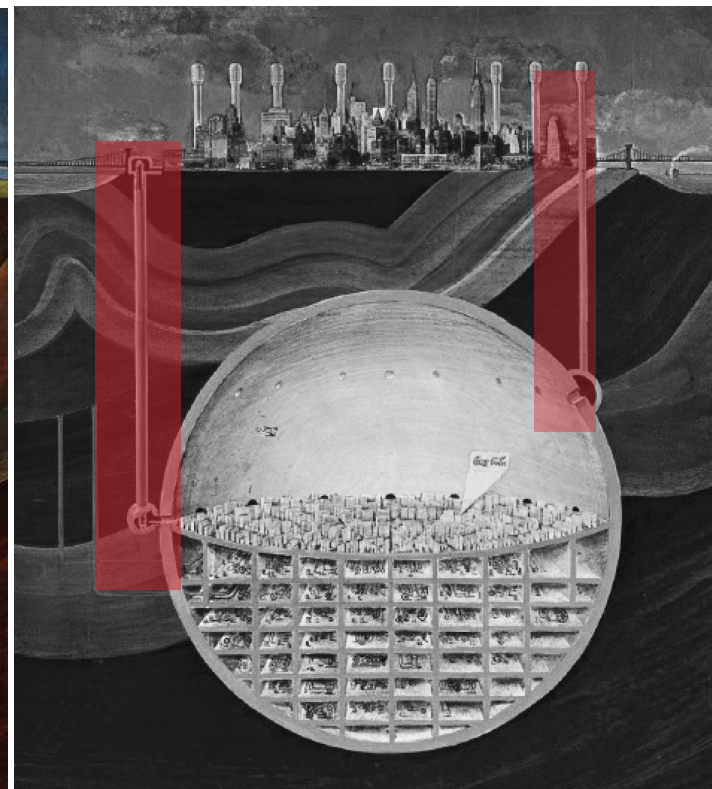
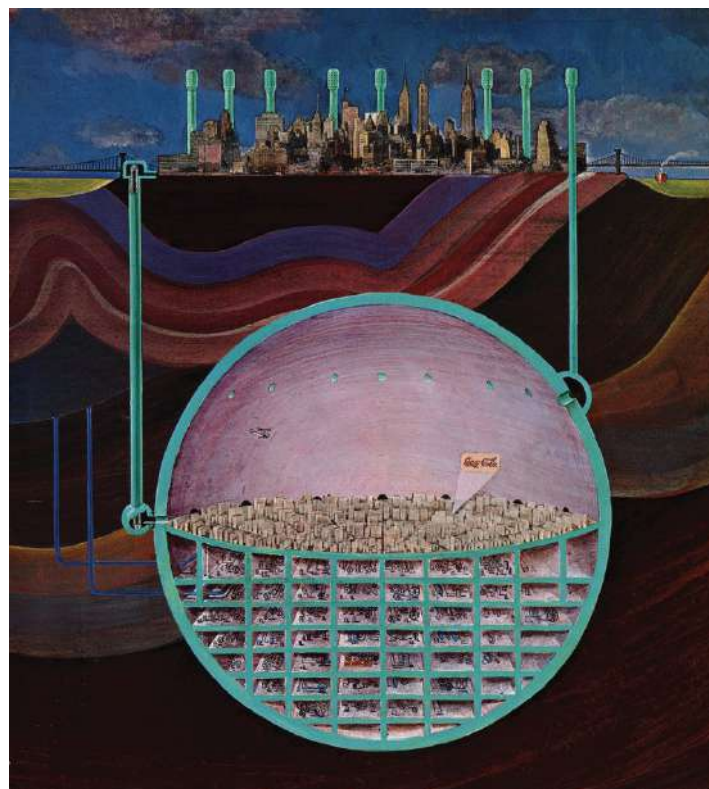
3. light, big, accessibility, air



4. Connection: loop

1. What are the forms and organization of *space* derived along with the underground transport?
2. What's the *cultural intention* and typical public perception for the underground space in NY?
3. What is the *difference* between upper ground space and underground space?
4. How can upper ground and underground be effectively *connected as a whole*?

UNDERGROUND CITY HYPOTHESIS 1950S



Elements of underground space development
Light, accessibility, big enough

RESEARCH

New York City
Mobility

Empire Village
Challenges



MOBILITY OF EMPIRE VILLAGE

NEGATIVE TRANSPORTATION

LESS PUBLIC GREEN SPACE

TRAFFIC SAFETY

NEW TRANSPORTATION MODE

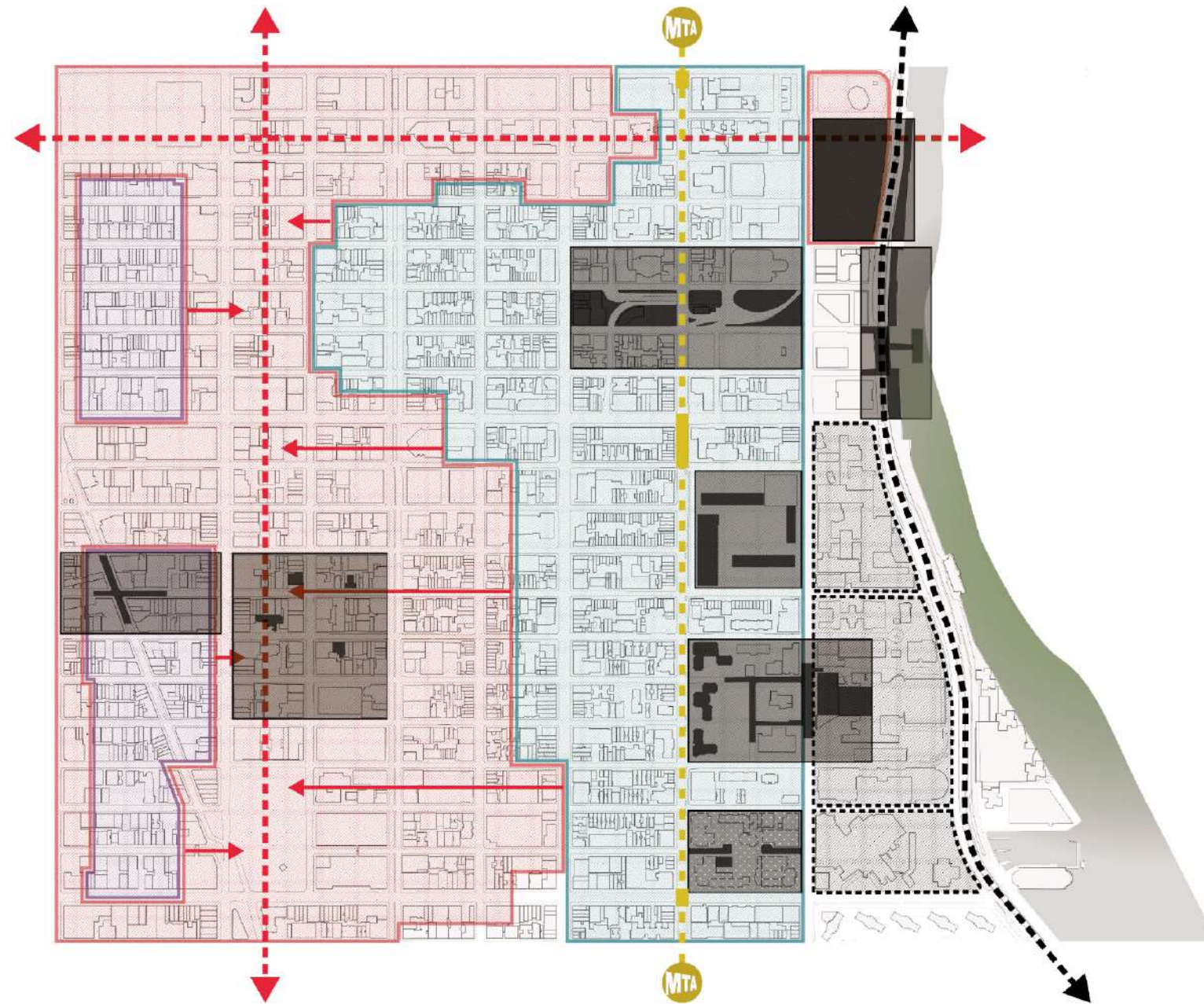
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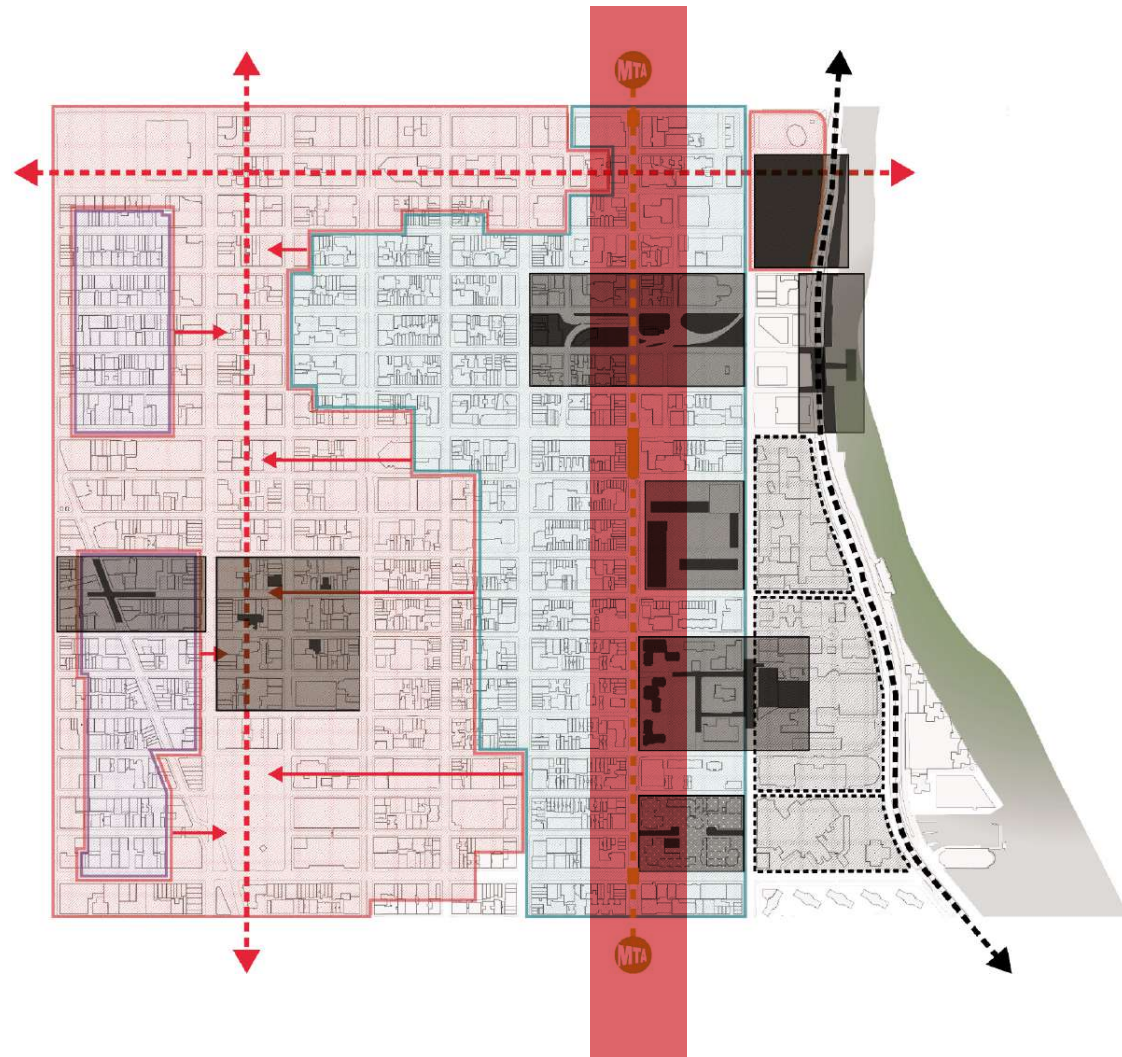
TRANSIT ACCESSIBILITY

NEGATIVE & NO TRANSPORT NODE

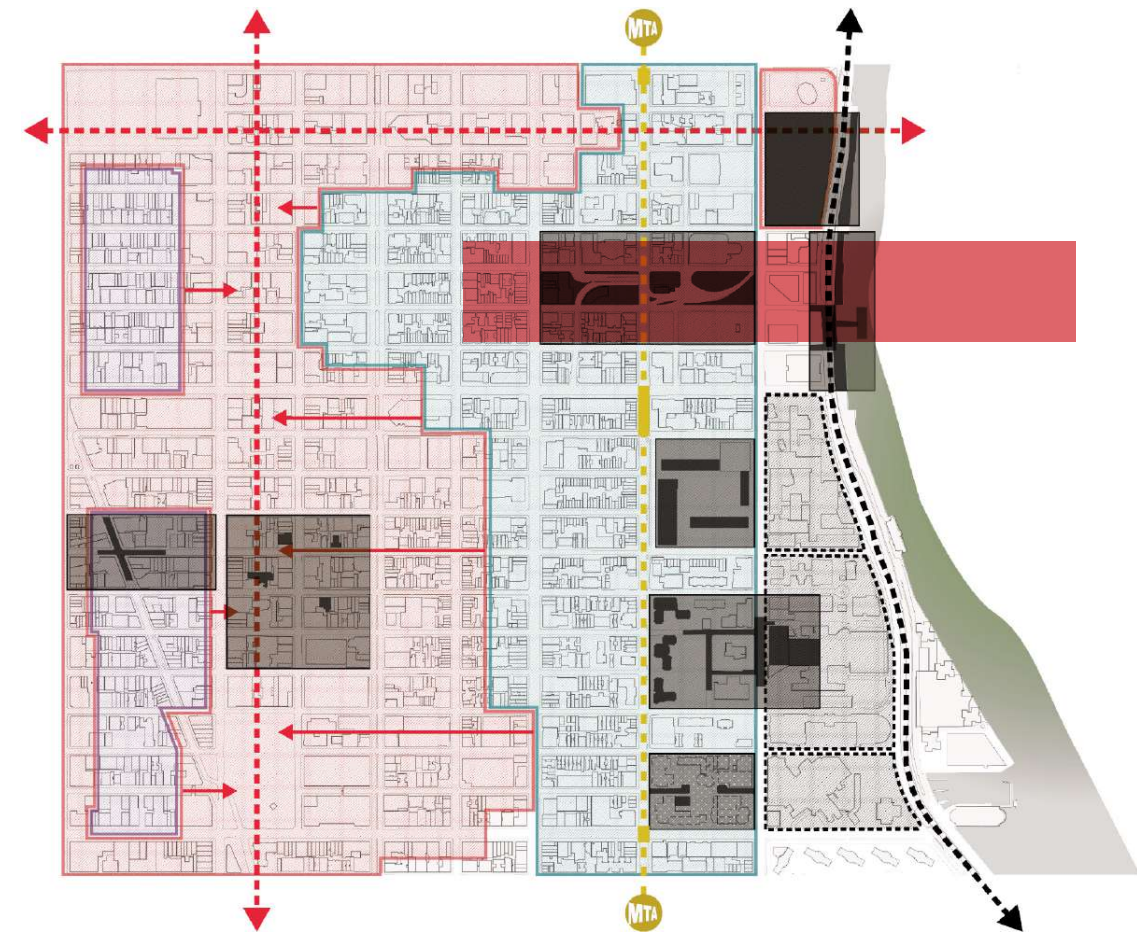


NEW CHALLENGE 2050

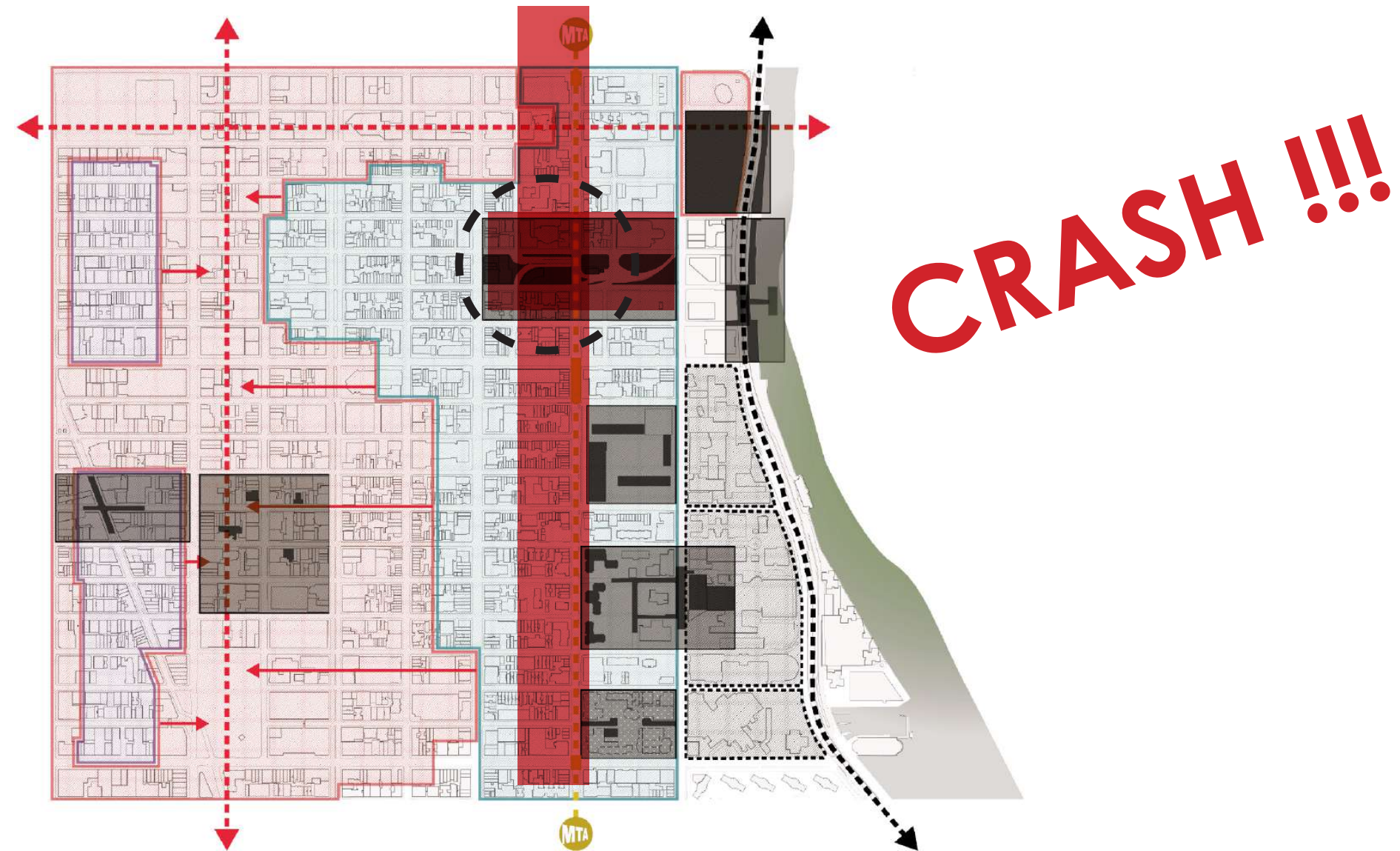
NEW SUBWAY LINE IN 2ND AVENUE 2050



NEW OPPORTUNITY
2nd Avenue Subway line 2050

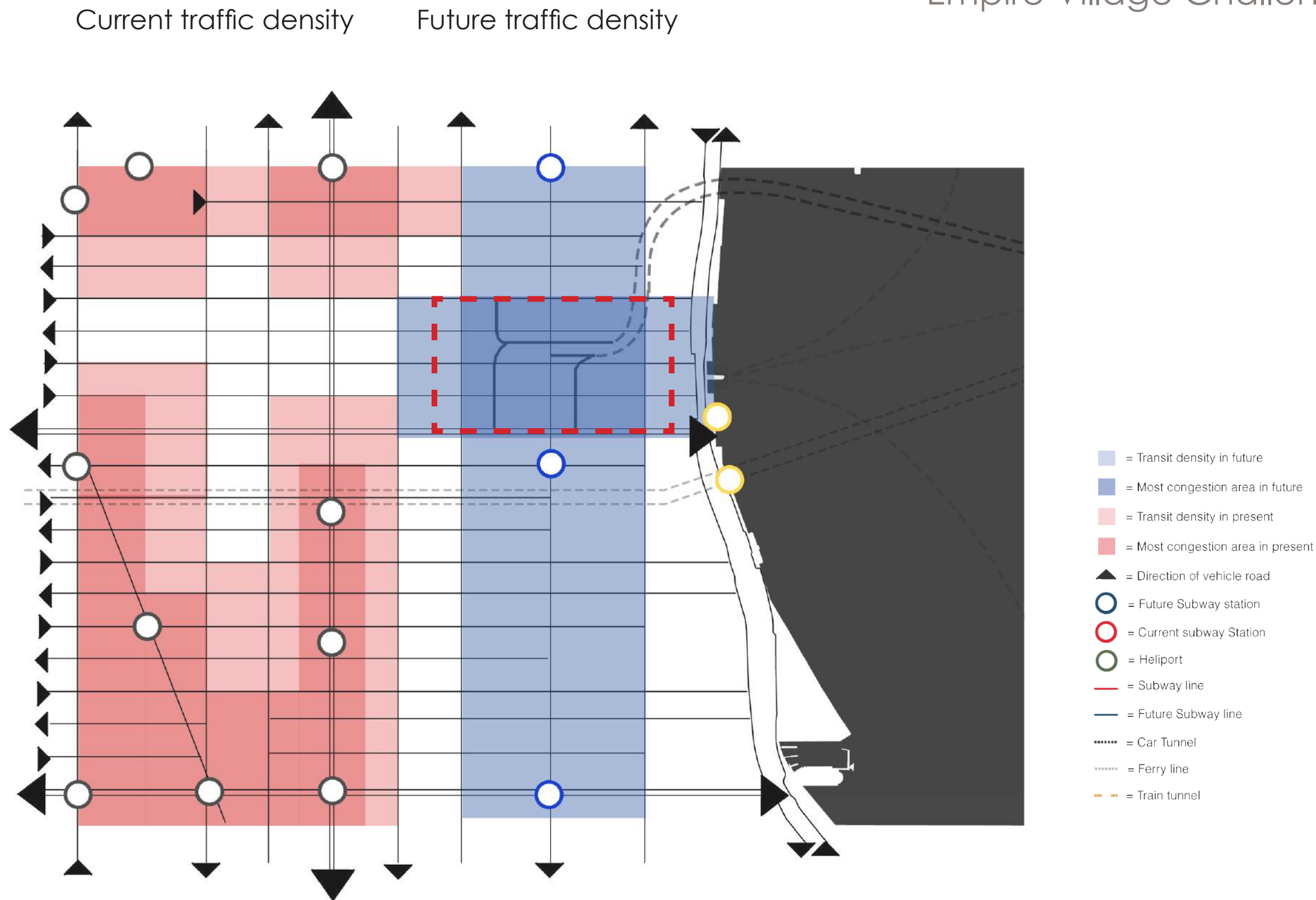


QUEEN-MIDTOWN TUNNEL
The Entrance of EV for vehicles



THE MOST CONFLICT 2050

THE 2ND AVENUE SUBWAY STATION AREA & TUNNEL ENTRANCE



THE MOST CONFLICT 2050

TRAFFIC ACEESIBILITY AND DENSITY

CHALLENGES



the traffic flow brought by the upcoming Second Avenue subway will be seriously conflicted with vehicle flow brought by Queen tunnel. How to solve this future collision caused by different transportation systems ?

OPPORTUNITY



*the capacity of underground space □ the possibility of the
development of the underground space of Second Avenue in the
residential area*

In the future with new subway line, the opportunity and challenge of Empire Village will coexist!



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Green portal of Empire Village 2050

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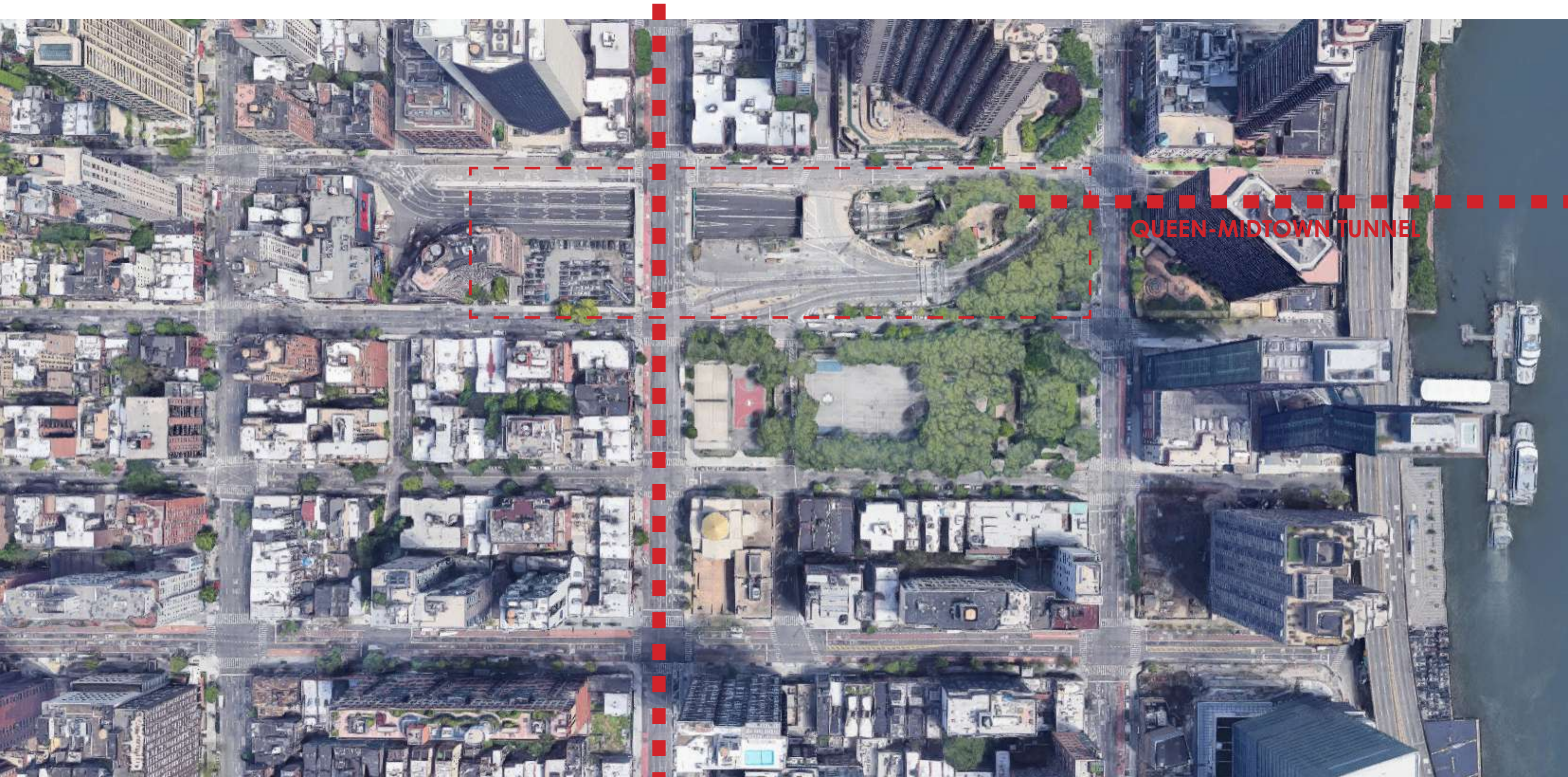
Site Context
The most conflict

Concept
Green portal

Strategy
Void

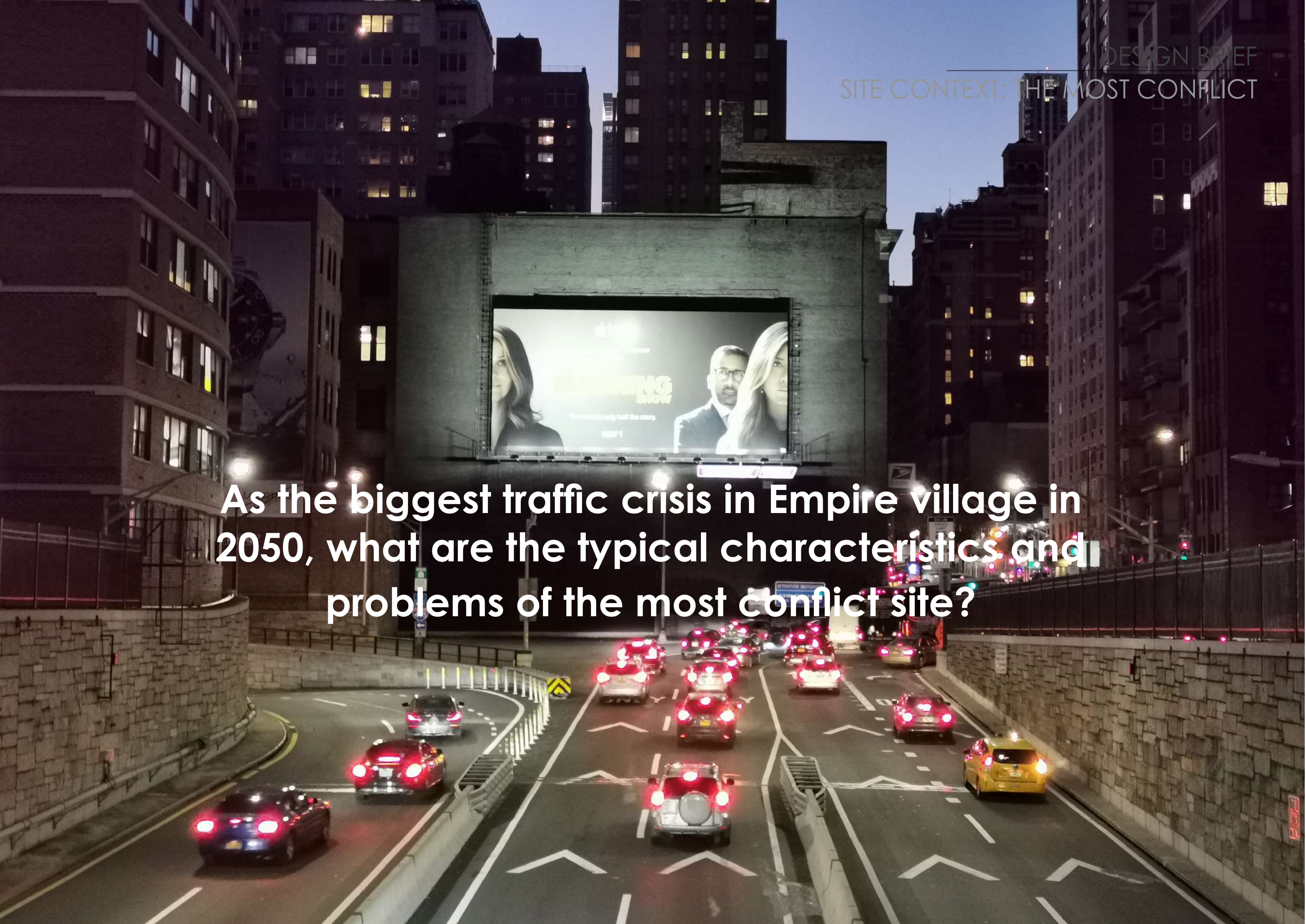
THE MOST CONFLICT

2ND AVENUE SUBWAY LINE 2050



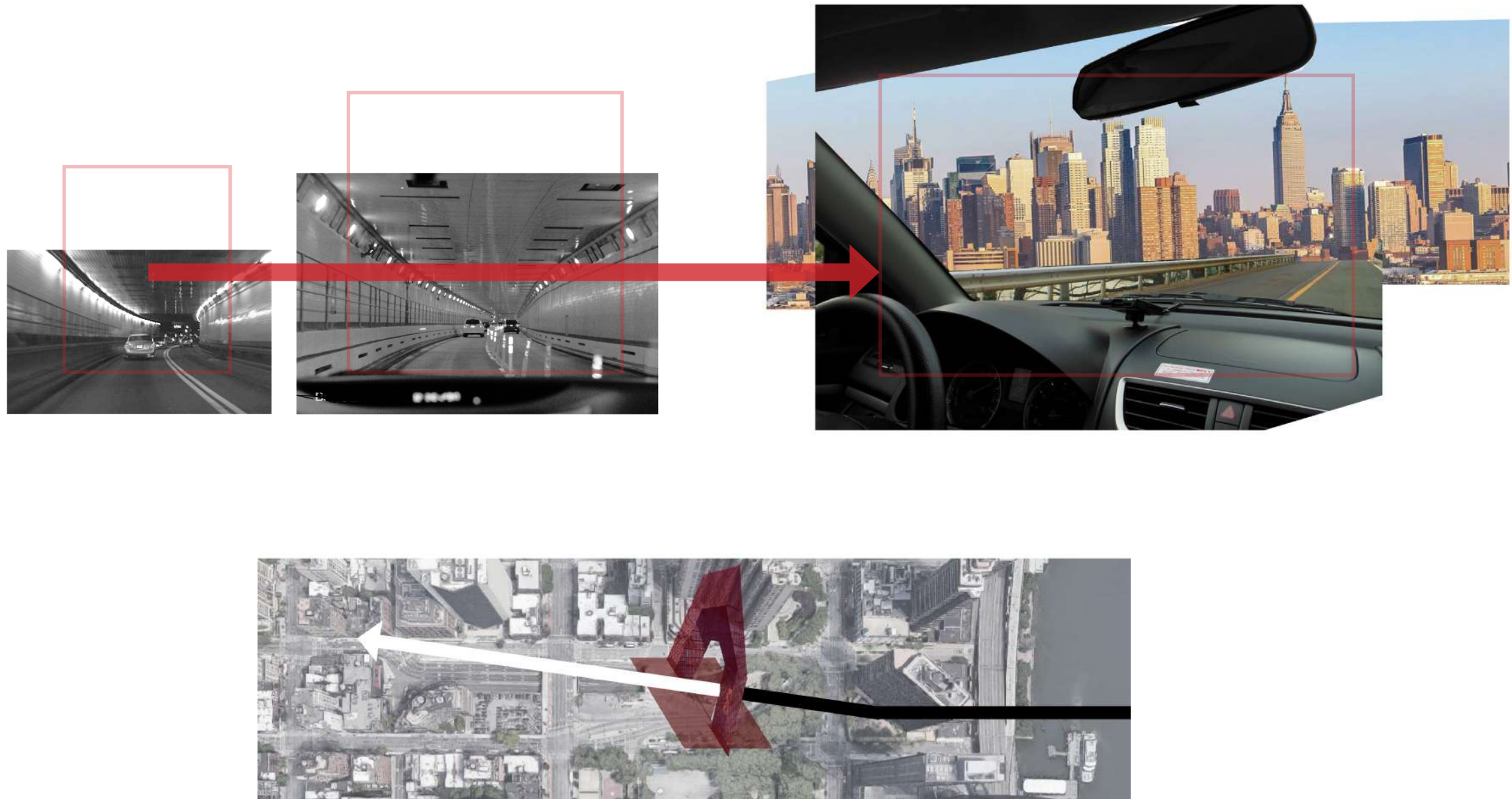
QUEEN-MIDTOWN TUNNEL

As the biggest traffic crisis in Empire village in 2050, what are the typical characteristics and problems of the most conflict site?



ONE TYPICAL CHARACTER

THE GATE TO ENTER EMPIRE VILLAGE BY VEHICLE





DESIGN BRIEF

SITE CONTEXT: THE MOST CONFLICT

1. TRAFFIC

Fow/ parking chaos

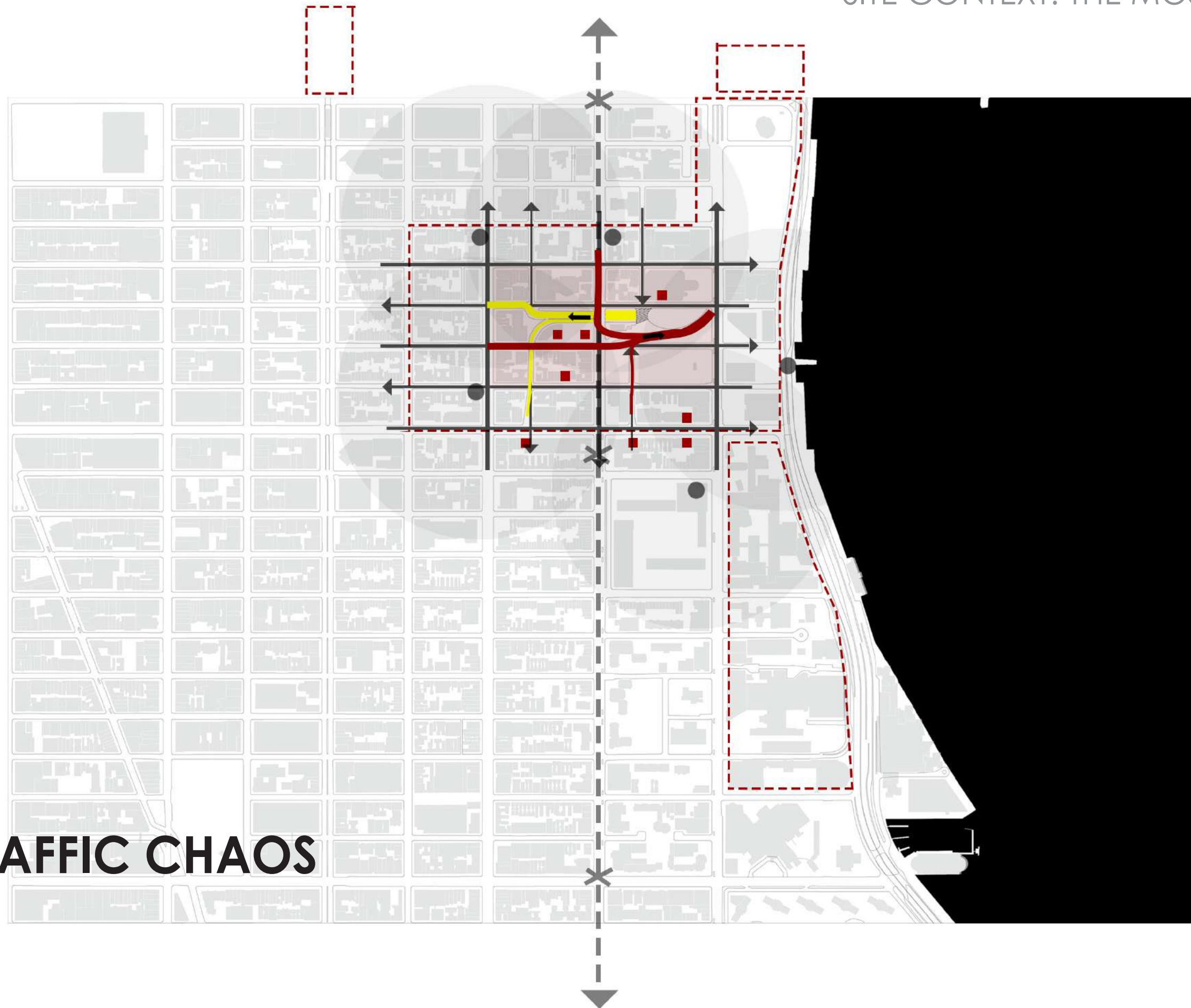
2. PUBLIC LIFE

Less space and unfriendly

3. ENVIRONMENT

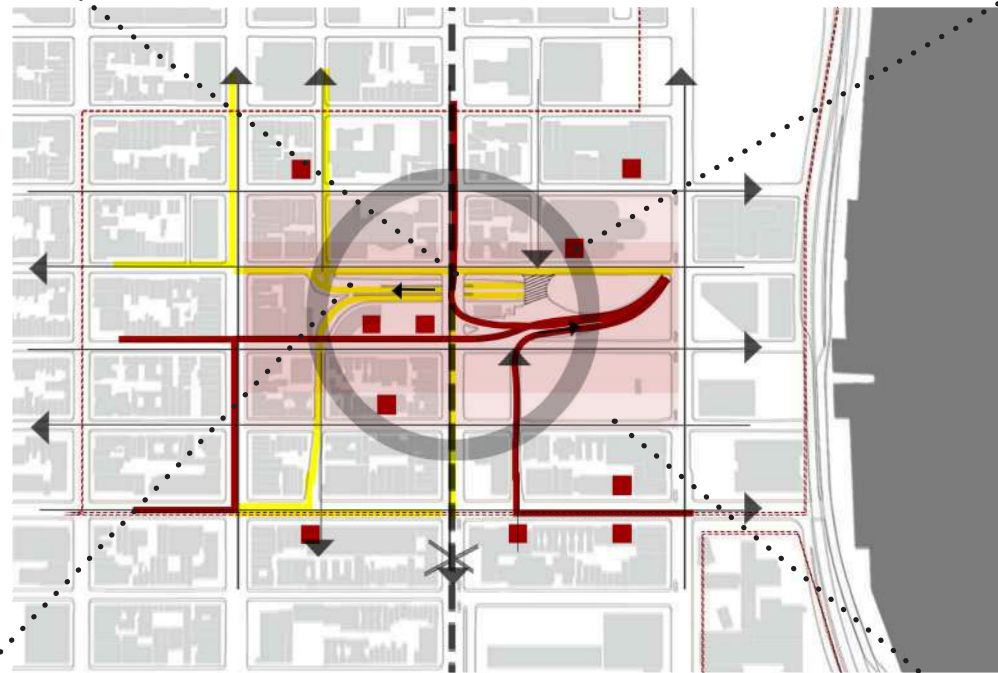
Sun Light and Green

TRAFFIC CHAOS



DESIGN BRIEF

SITE CONTEXT: THE MOST CONFLICT



1. TRAFFIC

Tunnel Flow/ parking chaos



TRAFFIC CHAOS

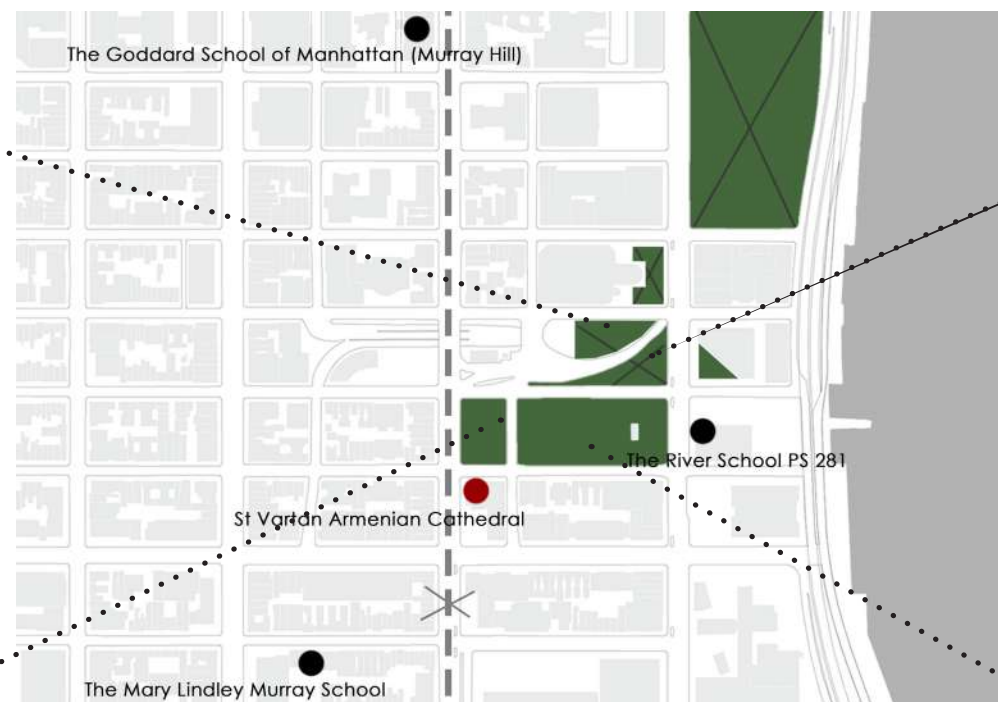
PEDESTRIANS WITH CARS ON THE STREET

DESIGN BRIEF
SITE CONTEXT: THE MOST CONFLICT



DESIGN BRIEF

SITE CONTEXT: THE MOST CONFLICT



2. PUBLIC LIFE

Less open public space



LESS PUBLIC SPACE FOR CHILDREN

Surrounded by three primary schools, only a small playground

DESIGN BRIEF

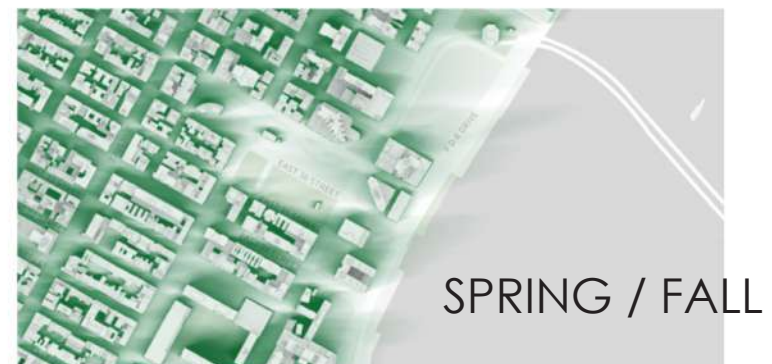
SITE CONTEXT: THE MOST CONFLICT



ENVIRONMENT

DESIGN BRIEF

SITE CONTEXT: THE MOST CONFLICT



SHADOW



BASIN

Climate Container
light / wind / green value
landscape for good view



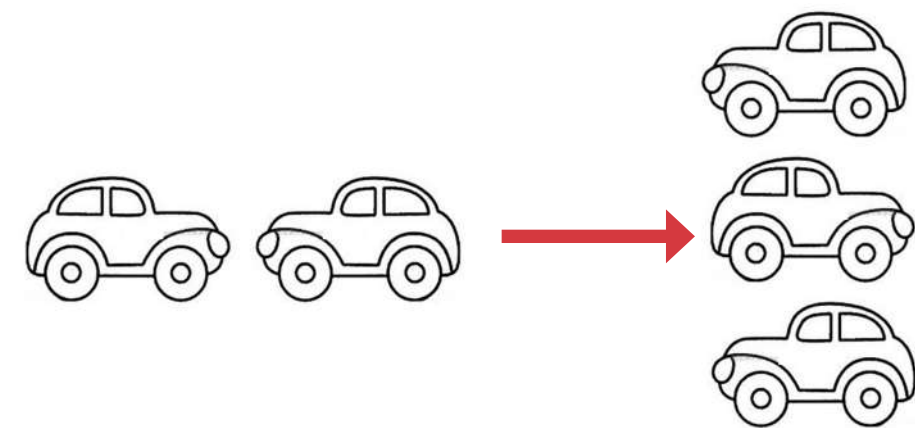
ENVIRONMENT

less shadow/more sunlight/nice ventilation

CONCLUSION

1. TRAFFIC: VERTICAL INTEGRATING

Dealing with the future congestion and providing future capacity with the separating of flow in different levels and vertical integrating of parking.

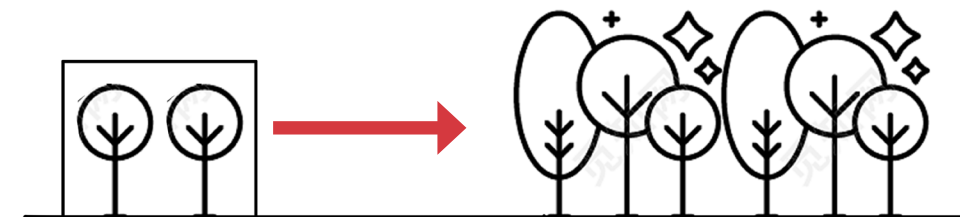


2. PUBLIC LIFE: MORE OPEN GREEN

Returning the public space occupied by tunnel to the citizen and make it becomes a new safe green shared hybrid centre under the demand of the neighbourhood

3. ENVIRONMENT

sufficiently using the positive sunlight, ventilated environment and bring them into underground, proper solar protection



DESIGN BRIEF

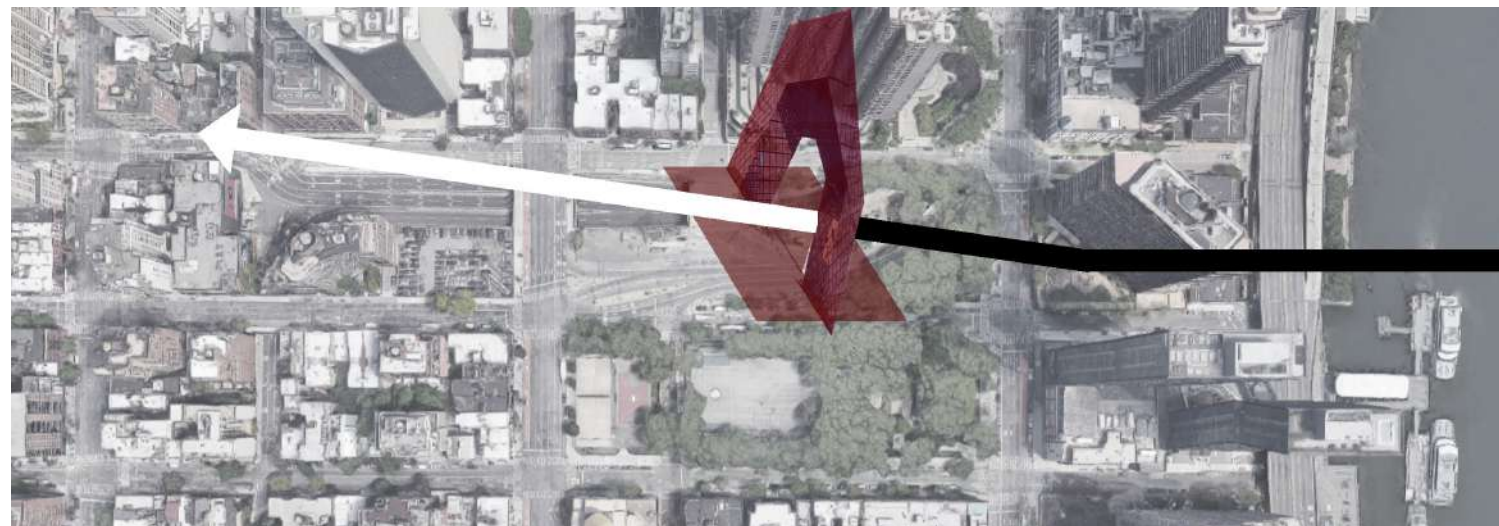
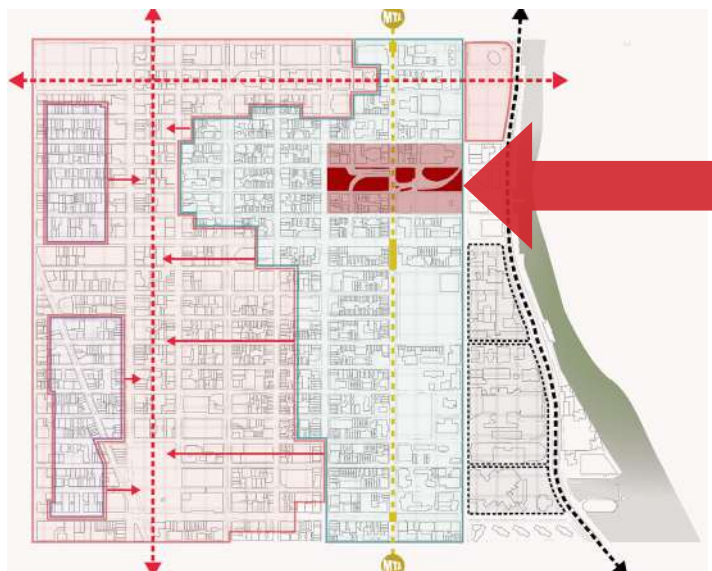
Site Context
The most conflict

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Green portal

Strategy
Void

CONCEPT

THE GATE TO ENTER EMPIRE VILLAGE



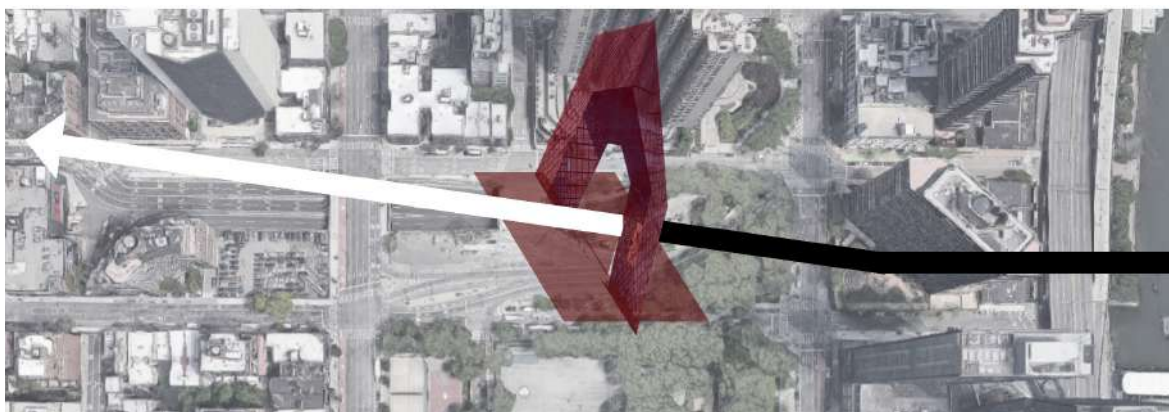
As the only portal to directly enter the Empire Village from the underground by vehicle, the transport complex aims to alleviate regional congestion and *provides future capacity* for the traffic volume brought by 2nd Ave Subway, by integrating the local horizontal traffic system to the efficient vertical loop and *creating enough public space* with green from underground to upper ground.

DESIGN AMBITION

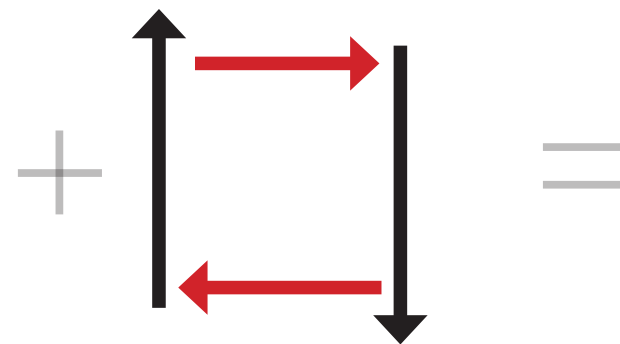
GREEN PORTAL : A GATE TO ENTER EMPIRE VILLAGE

*Mixed using Complex for future:
A Public shared from underground to upperground*

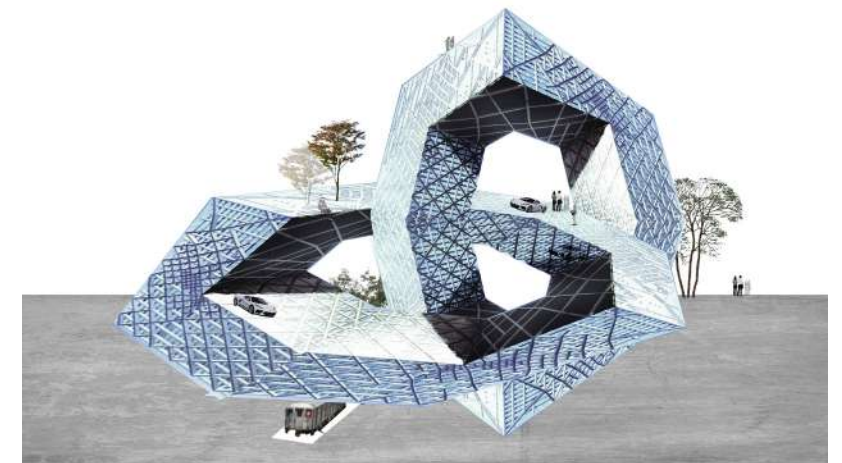
that serves as the portal to the EV and provides future capacity for the new traffic volume and public life with green



the PORTAL of Empire village



the LOOP from upper to underground



DESIGN BRIEF

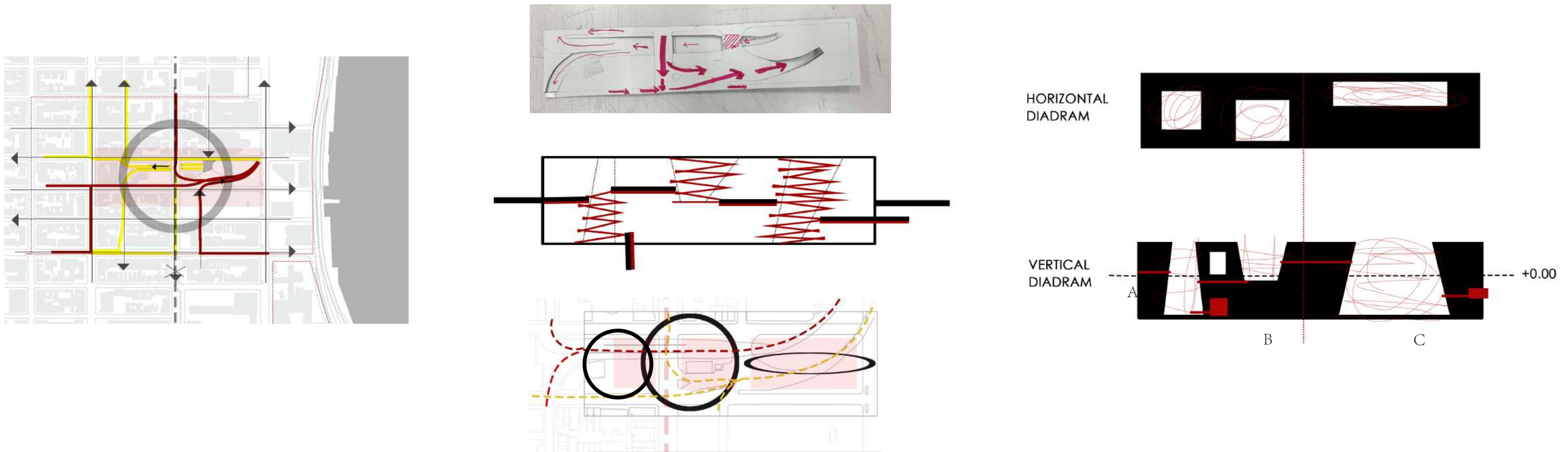
Site Context
The most conflict

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Void

DESIGN STRATEGY

CONGESTION: VERTICALLY INTERGRATING OF DIFFERENT FLOW

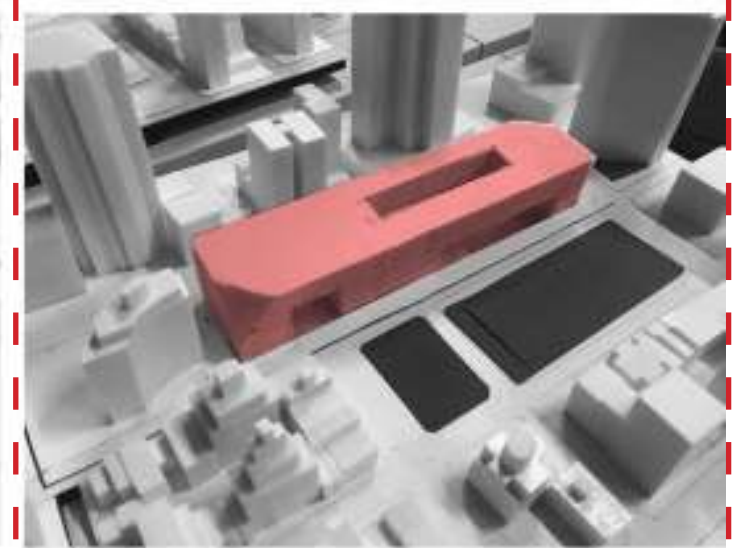
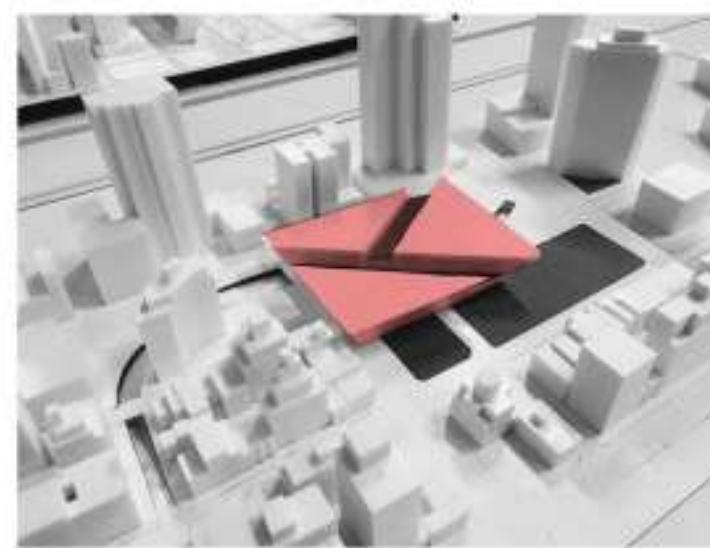
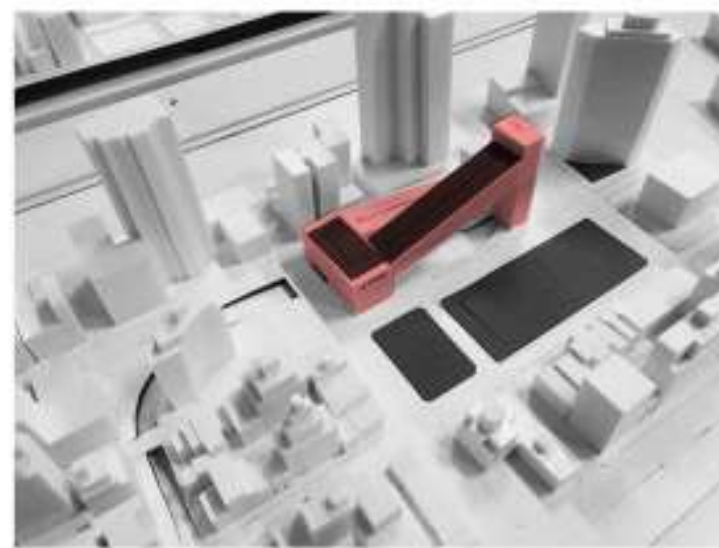
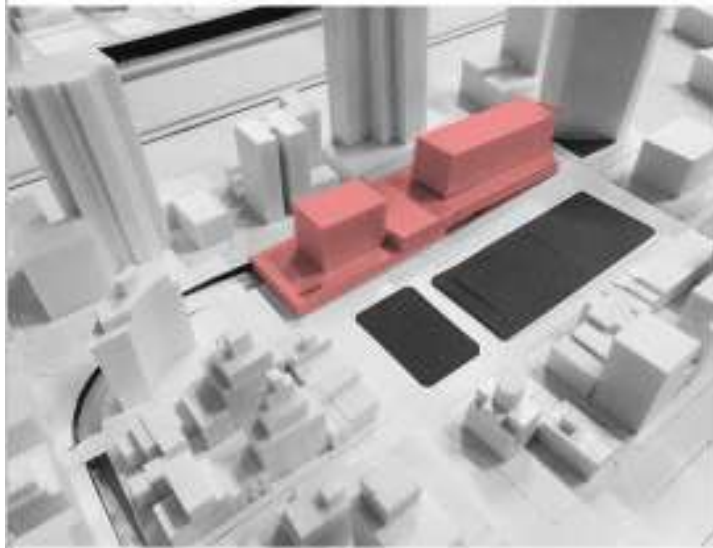


- 1, Integrating the local horizontal traffic system to the efficient vertical loop (C) with the parking lot.
2. provides future capacity for the traffic volume brought by 2nd Ave Subway by a vertical loop for Pedestrian (A) and a transfer loop for changing the transport modes between car, bus, bike and pedestrian (B).
3. Integrating the main needed public function in several blocks (like gallery, theatre, retail, supermarket and playground...)

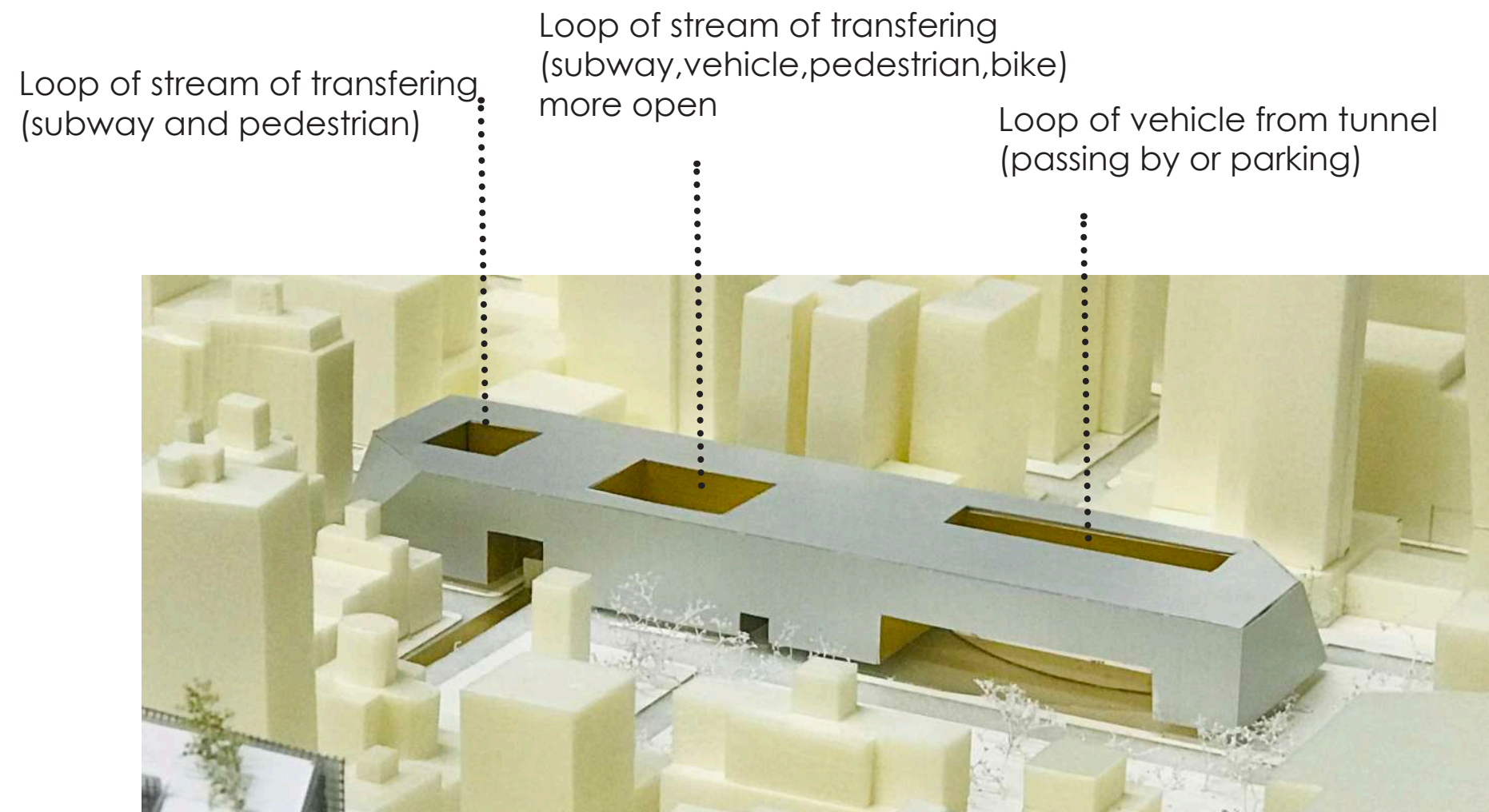
SITE AREA



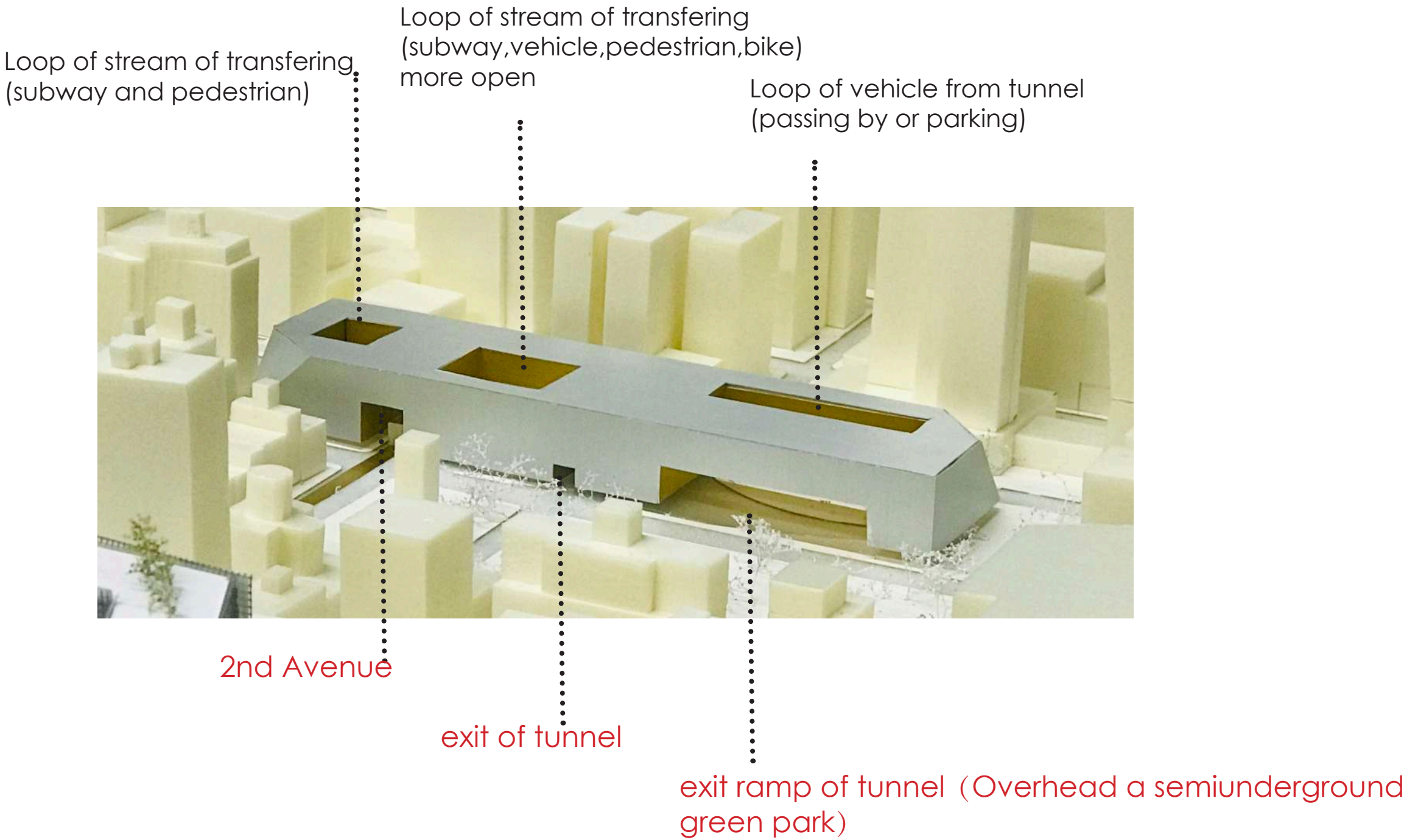
MASSING



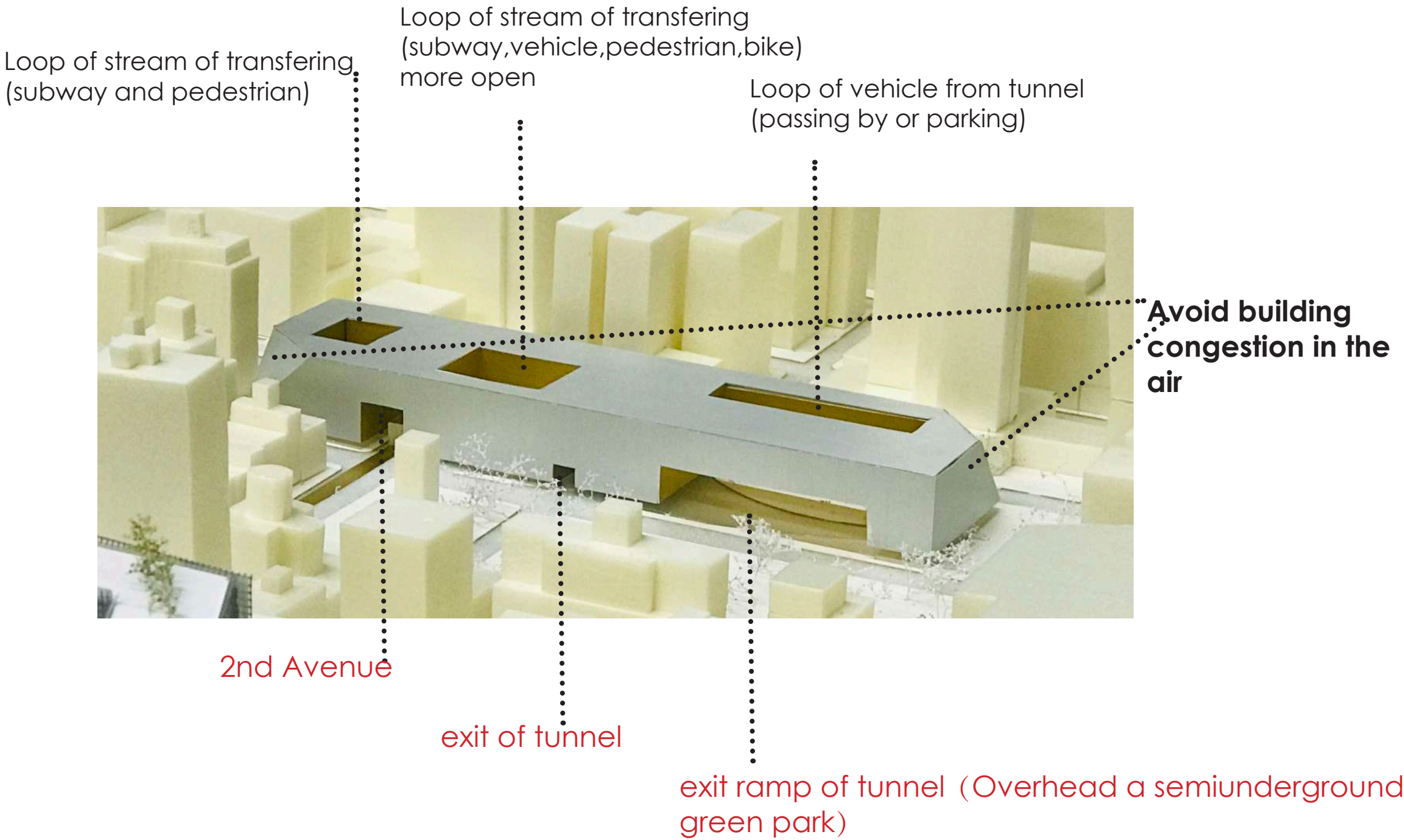
SHAPING THE BUILDING



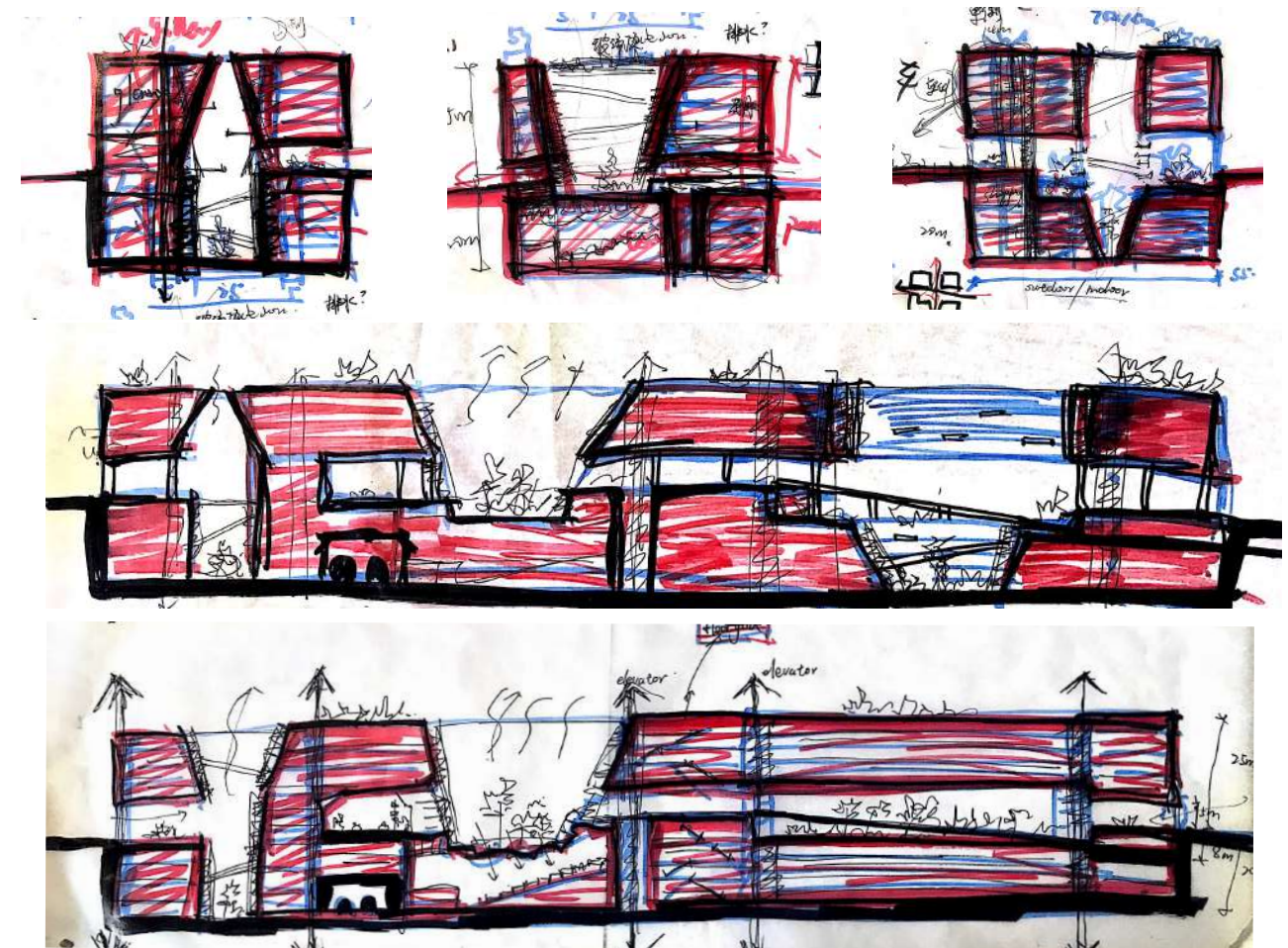
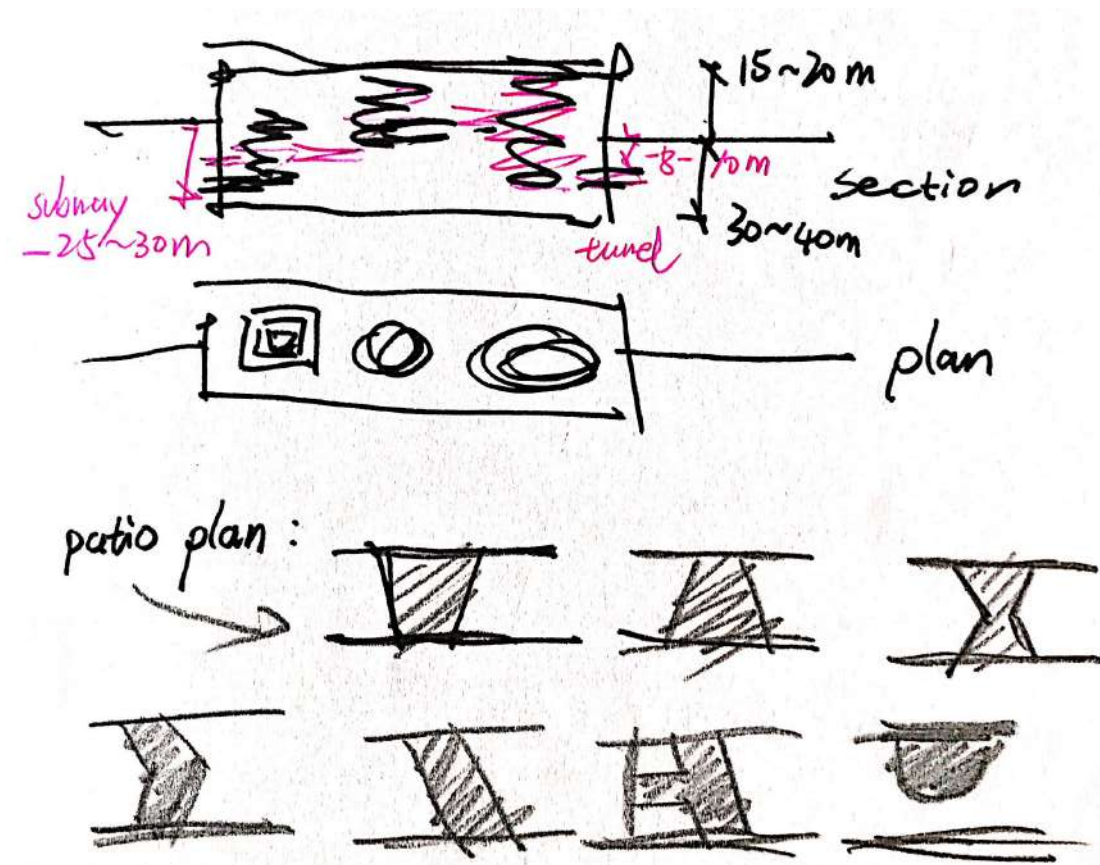
SHAPING THE BUILDING



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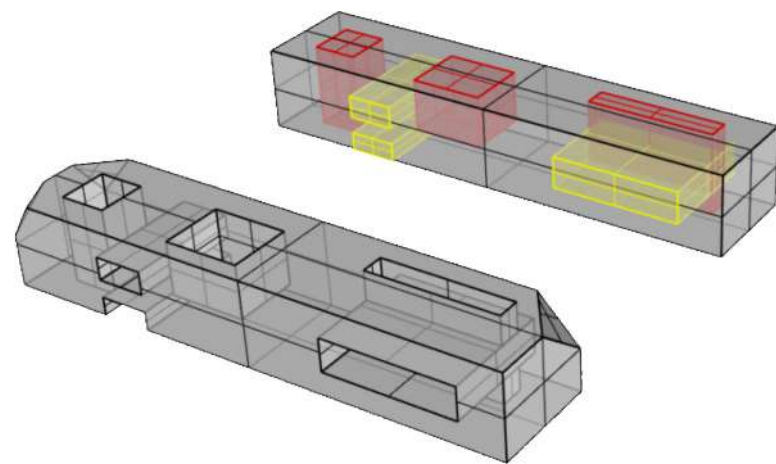


FORM OF VOID



VOID CONCEPT
SECTION SKETCH

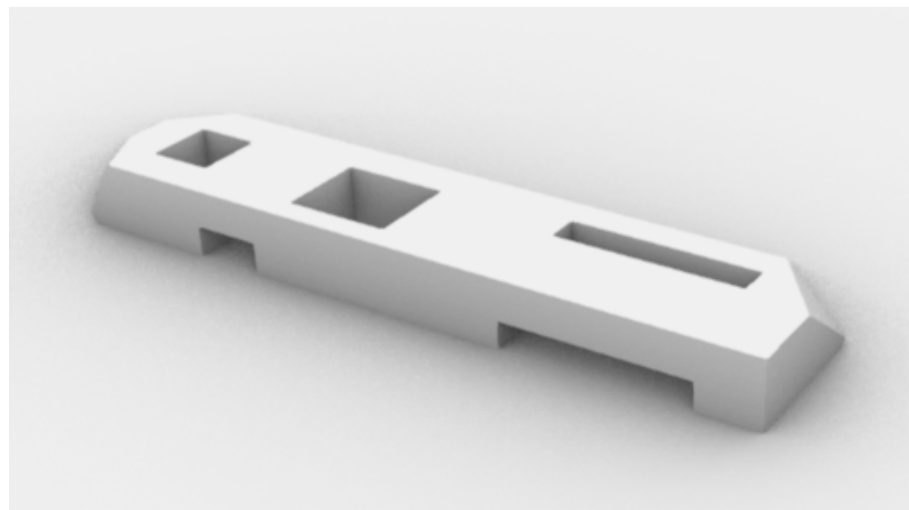
FORM OF VOID



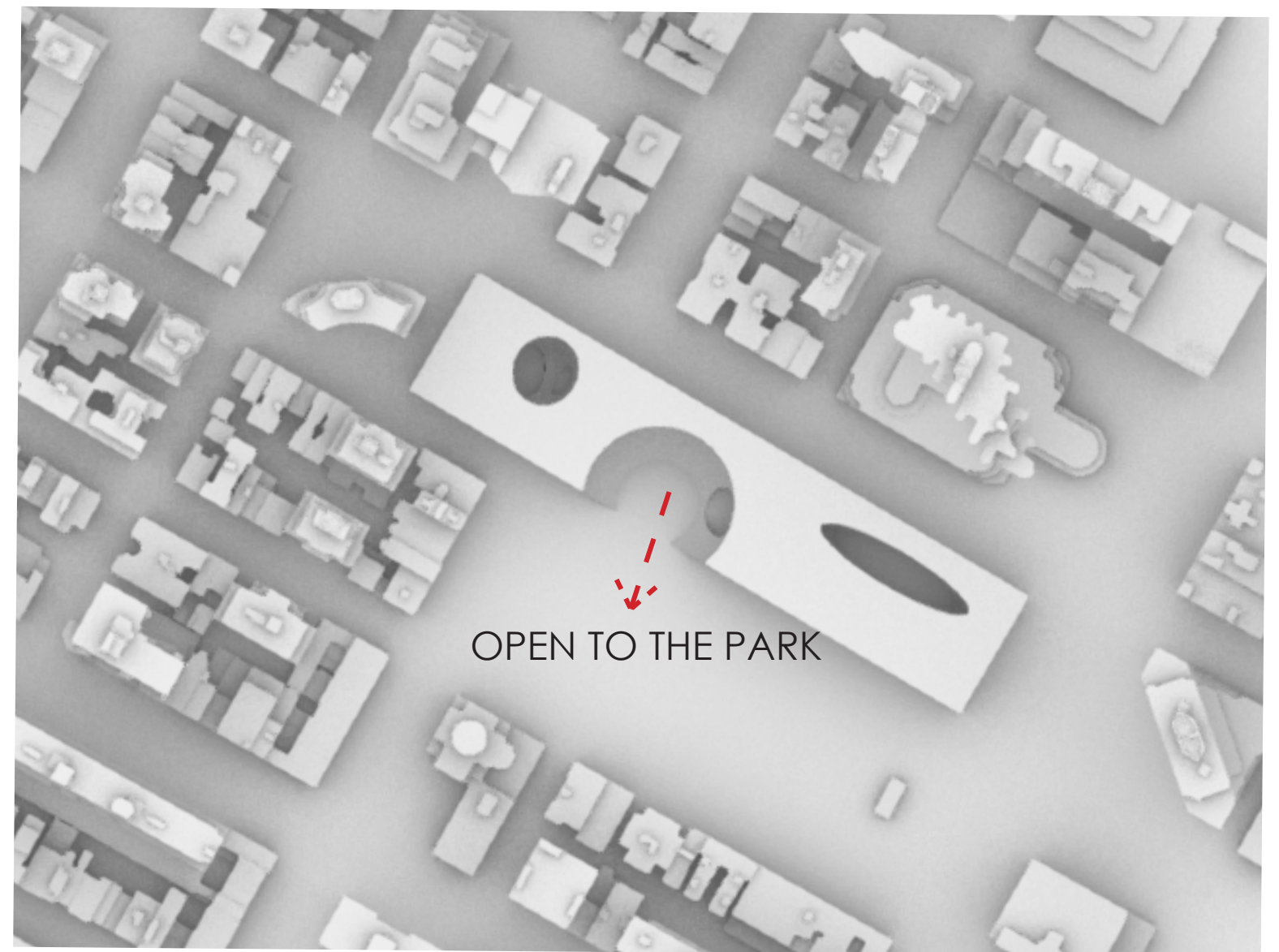
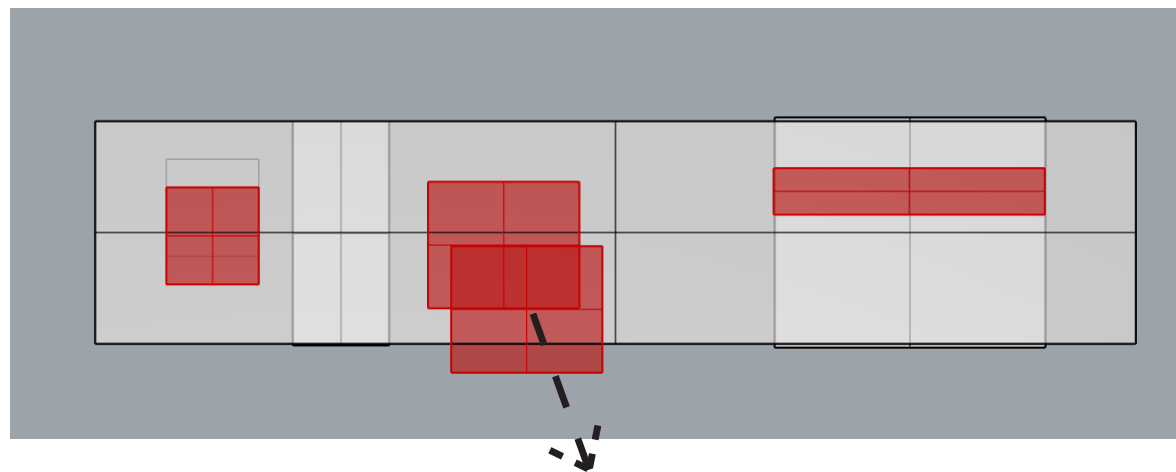
WHAT IS THE MOST SUITABLE FORM?



1. SPHERE
2. CIRCULAR TUBE
3. POLYGONAL TUBE
4. ROTATED CUBE

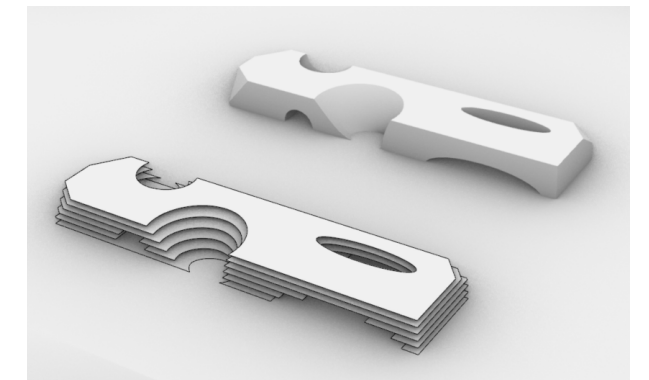
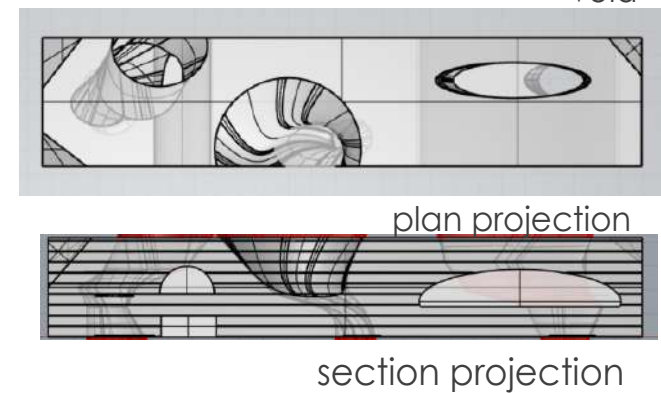
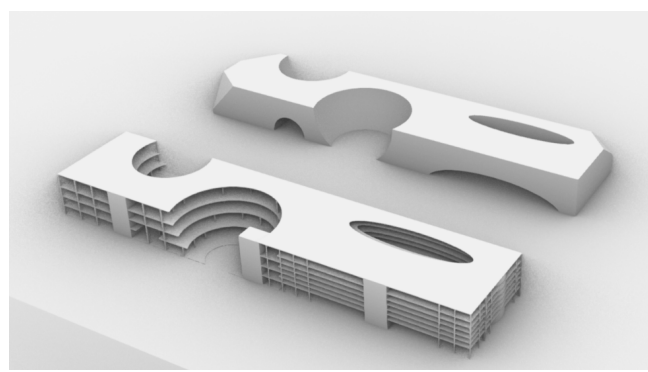
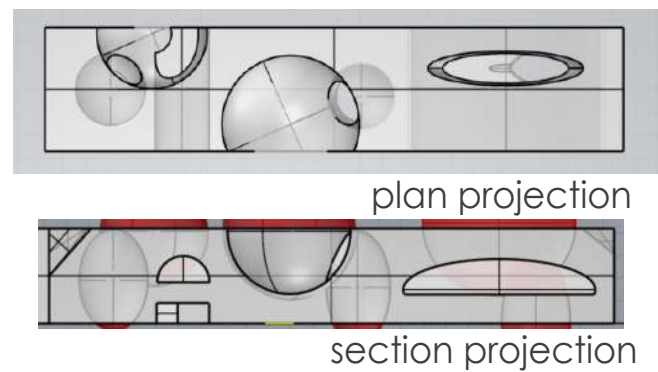
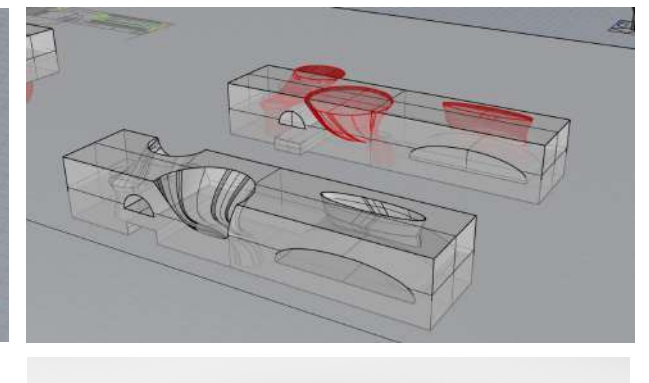
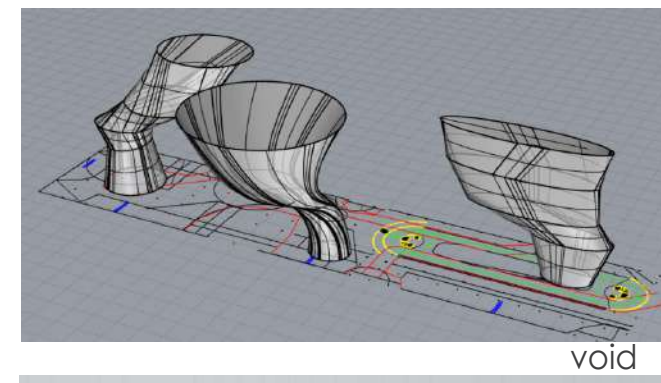
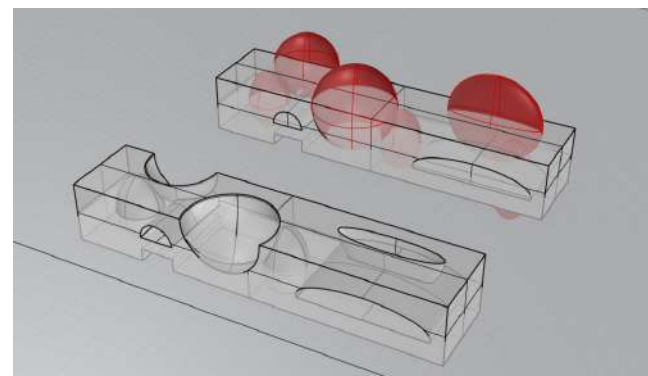
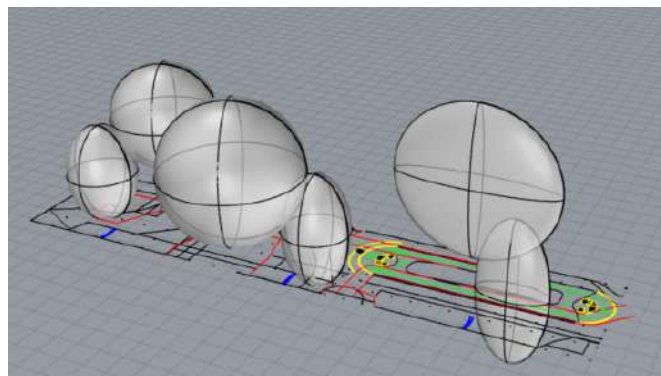


FORM OF VOID



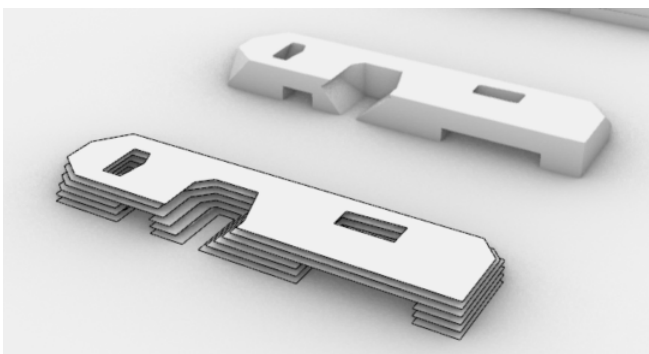
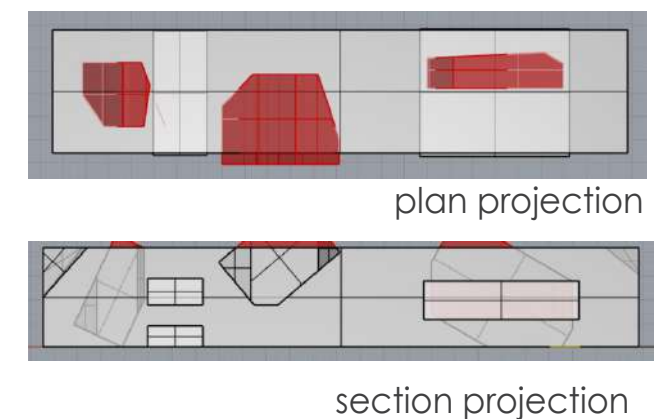
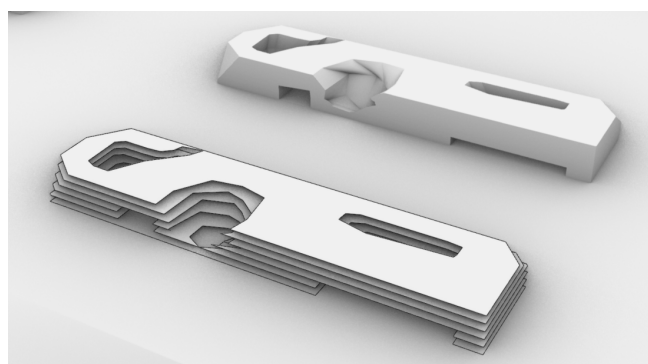
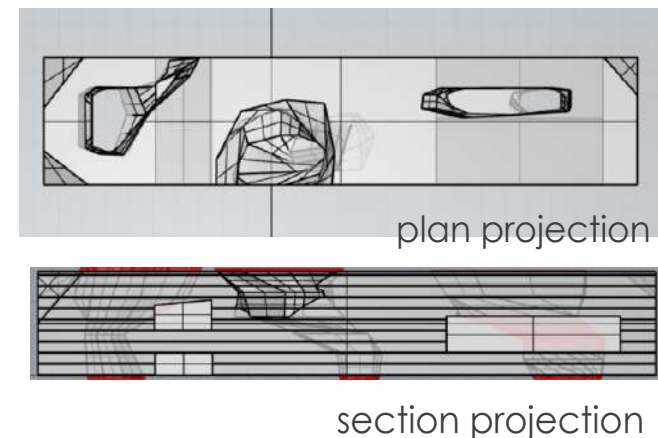
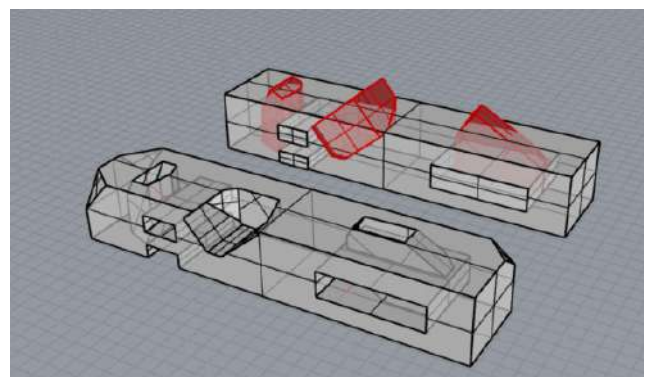
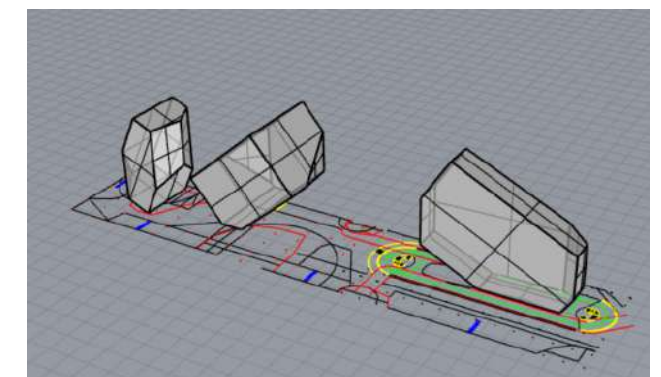
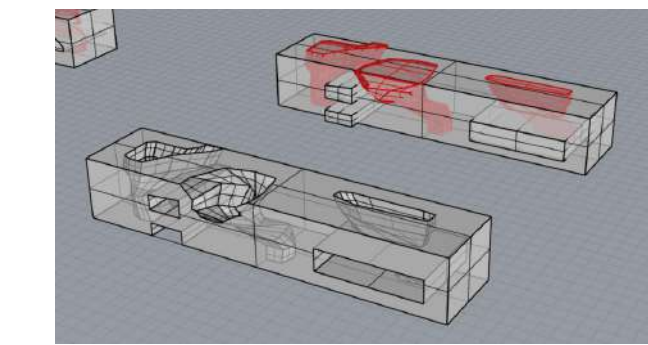
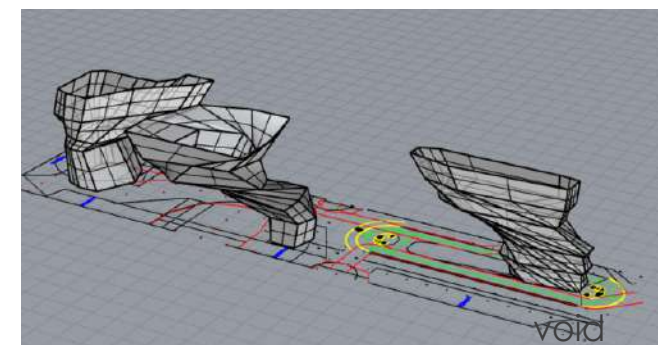
DESIGN BRIEF

STRATEGY: BLOCK AND VOID



SPHERE

CIRCULAR TUBE

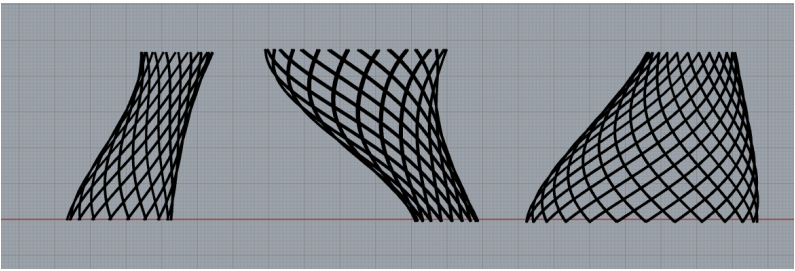
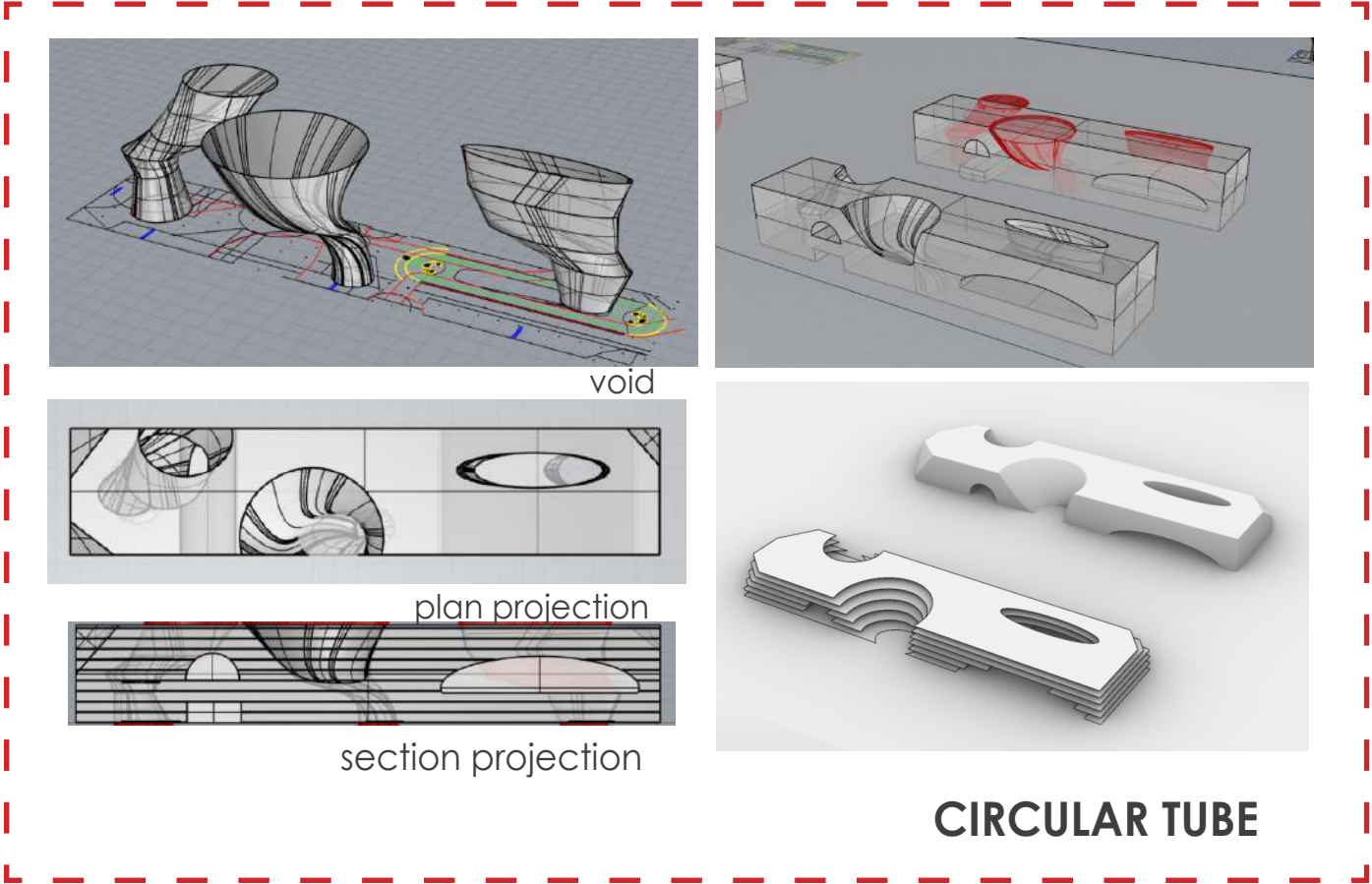
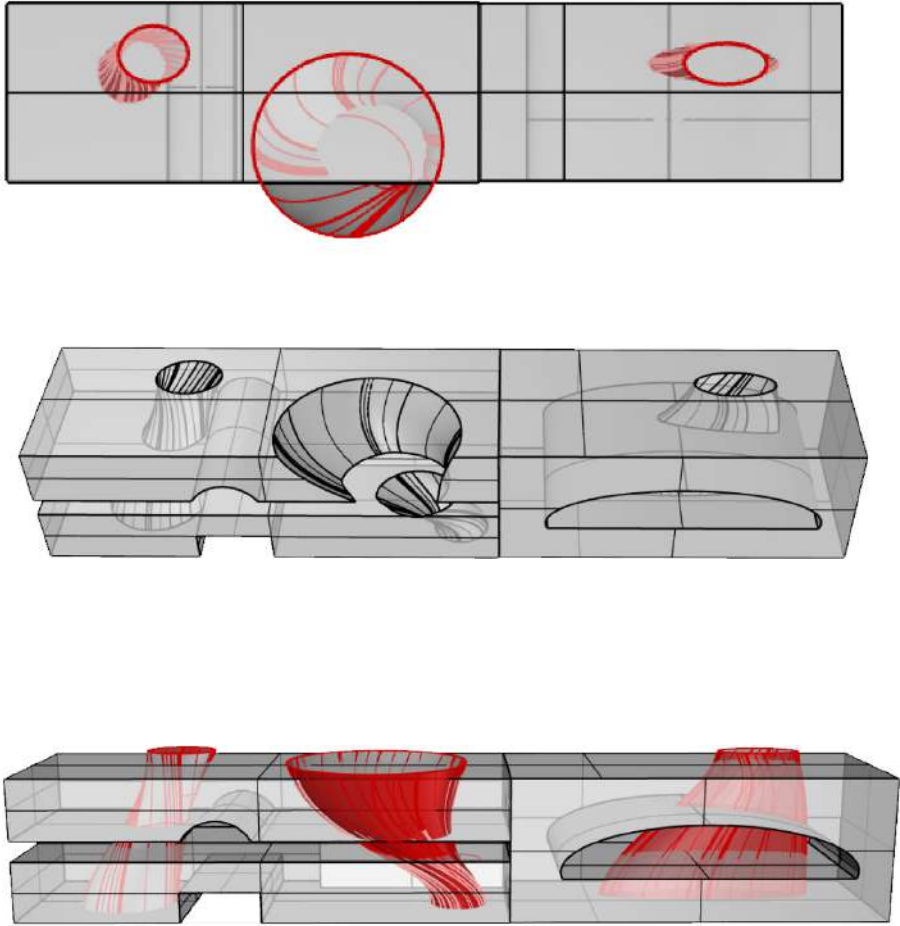


POLYGONAL TUBE

ROTATED AND CUTTED CUBE

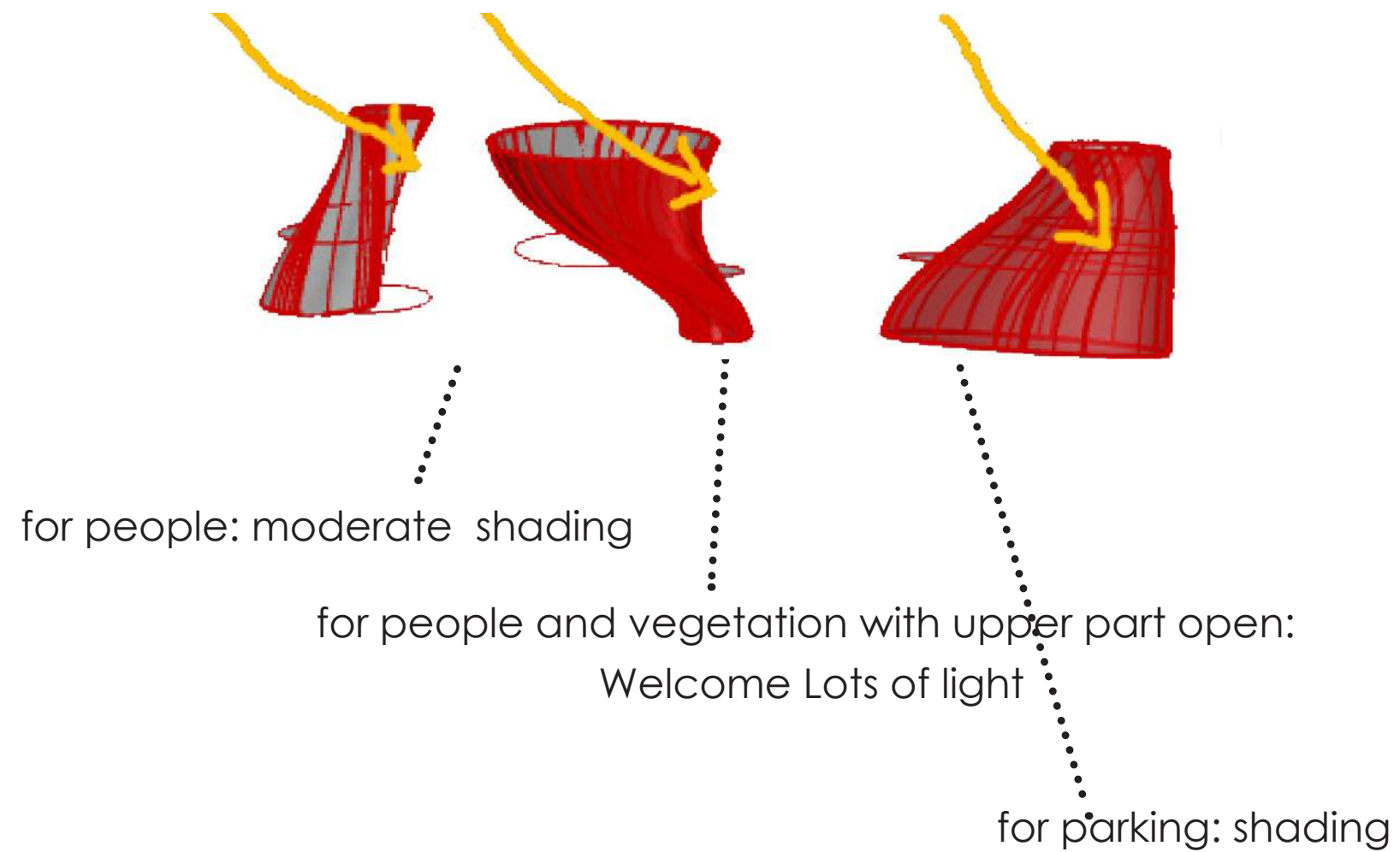
DESIGN BRIEF

STRATEGY: BLOCK AND VOID



STRUCTURAL STABILITY

SOUTHWEST LIGHTING





INTRODUCTION

Studio & Assignmant

RESEARCH

New York City: Mobility
Empire Village: Challenges

DESIGN BRIEF

Site context: The most conflict
Design Strategy

DESIGN IMPLEMENTATION

XL: Urban Position
L: Building
M: Structure
S: Facade
XS: Details

CIRCULATORY SYSTEM

Ventilation / Light / Water/ Material

CONCLUSION

Green portal of Empire Village 2050

DESIGN IMPLEMENTATION

XL
Urban Position

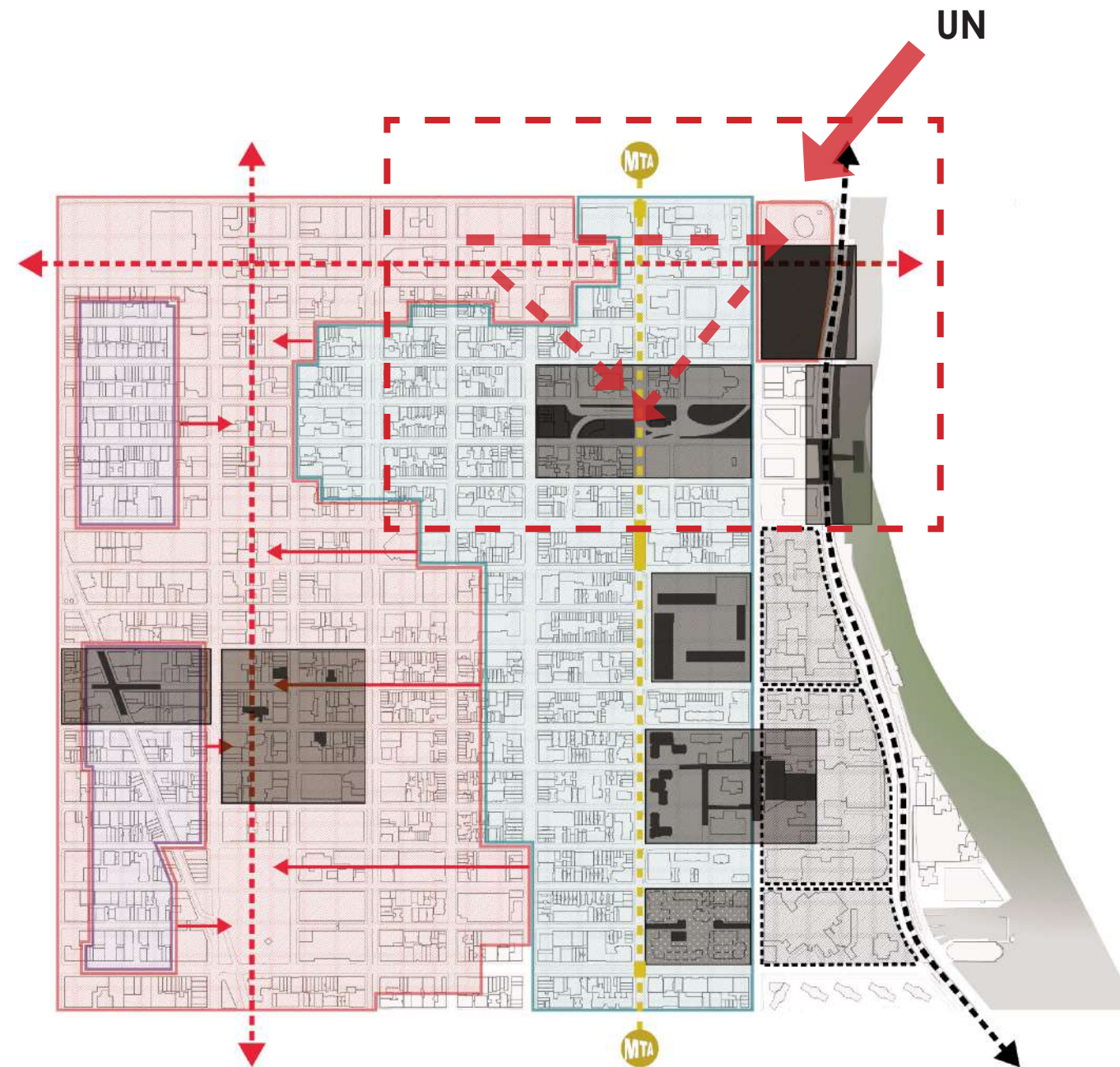
L
Building

M
Structure

S
Facade

XS
Details

URBAN CONTEXT

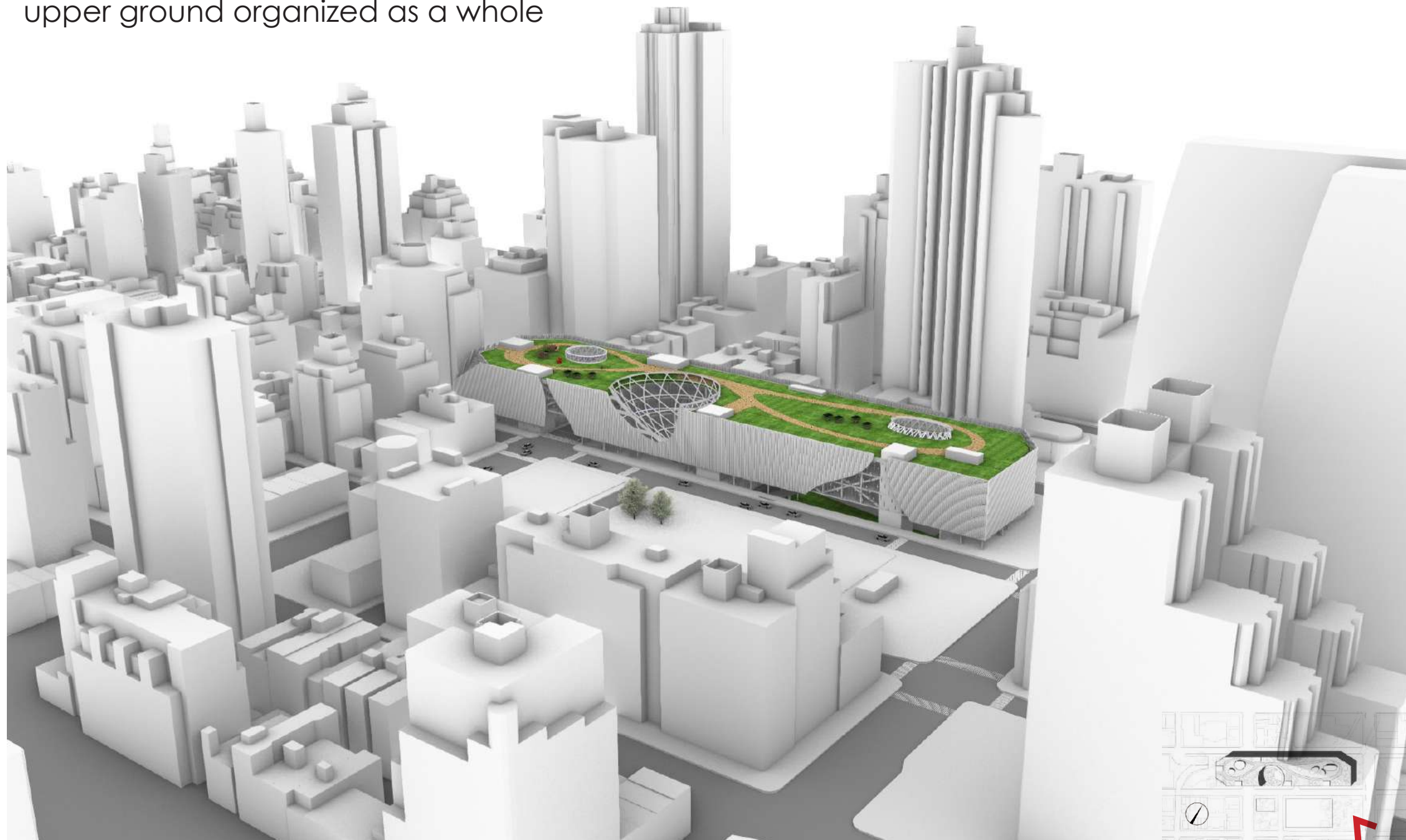


COMBINE? NEW ATTRACTION?

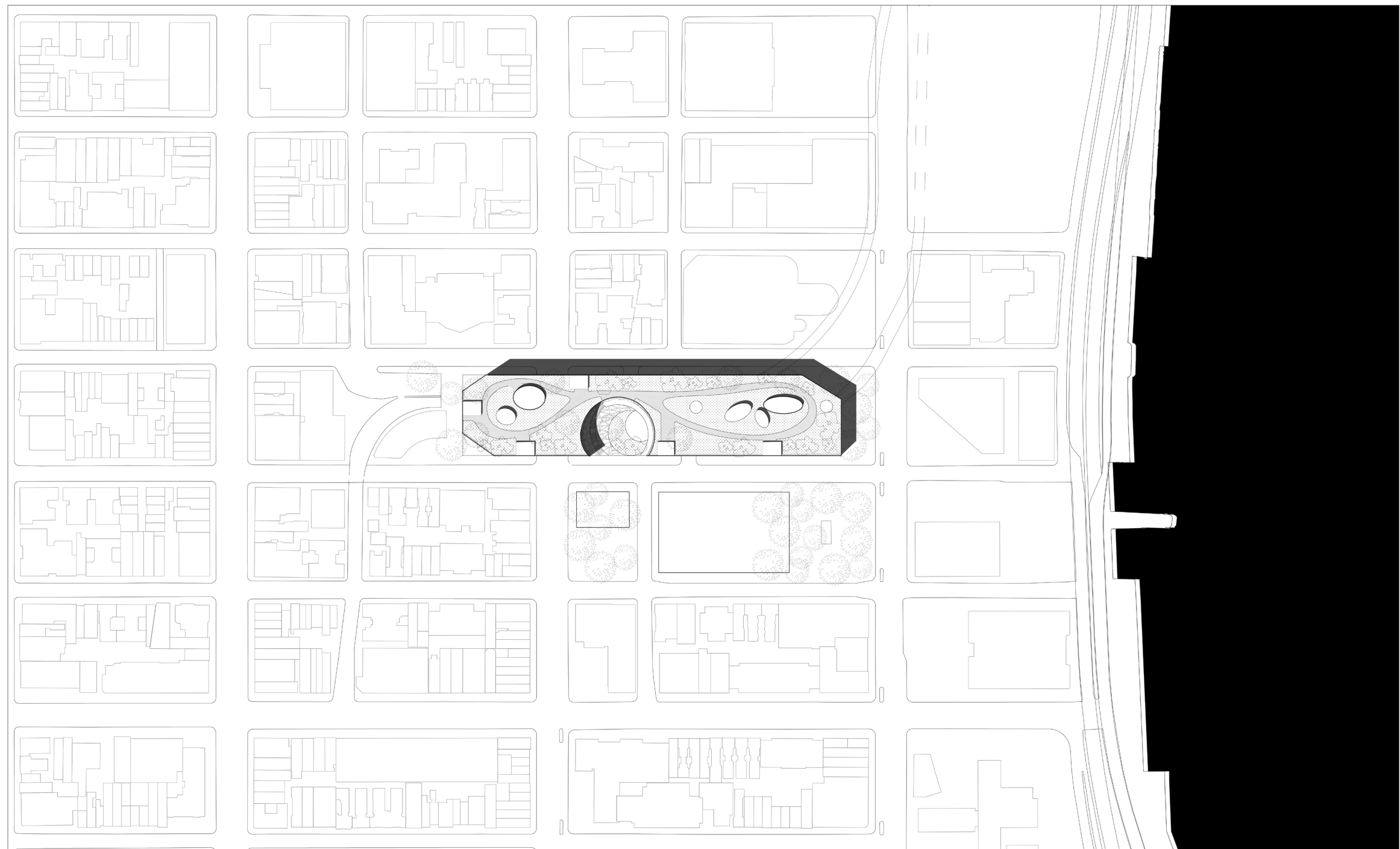
URBAN POSITION

FOR CITY: urban landscape : bonsai

FOR BUILDING: native ventilation and light with three huge void / make the underground and upper ground organized as a whole



SITE PLAN 1:1000

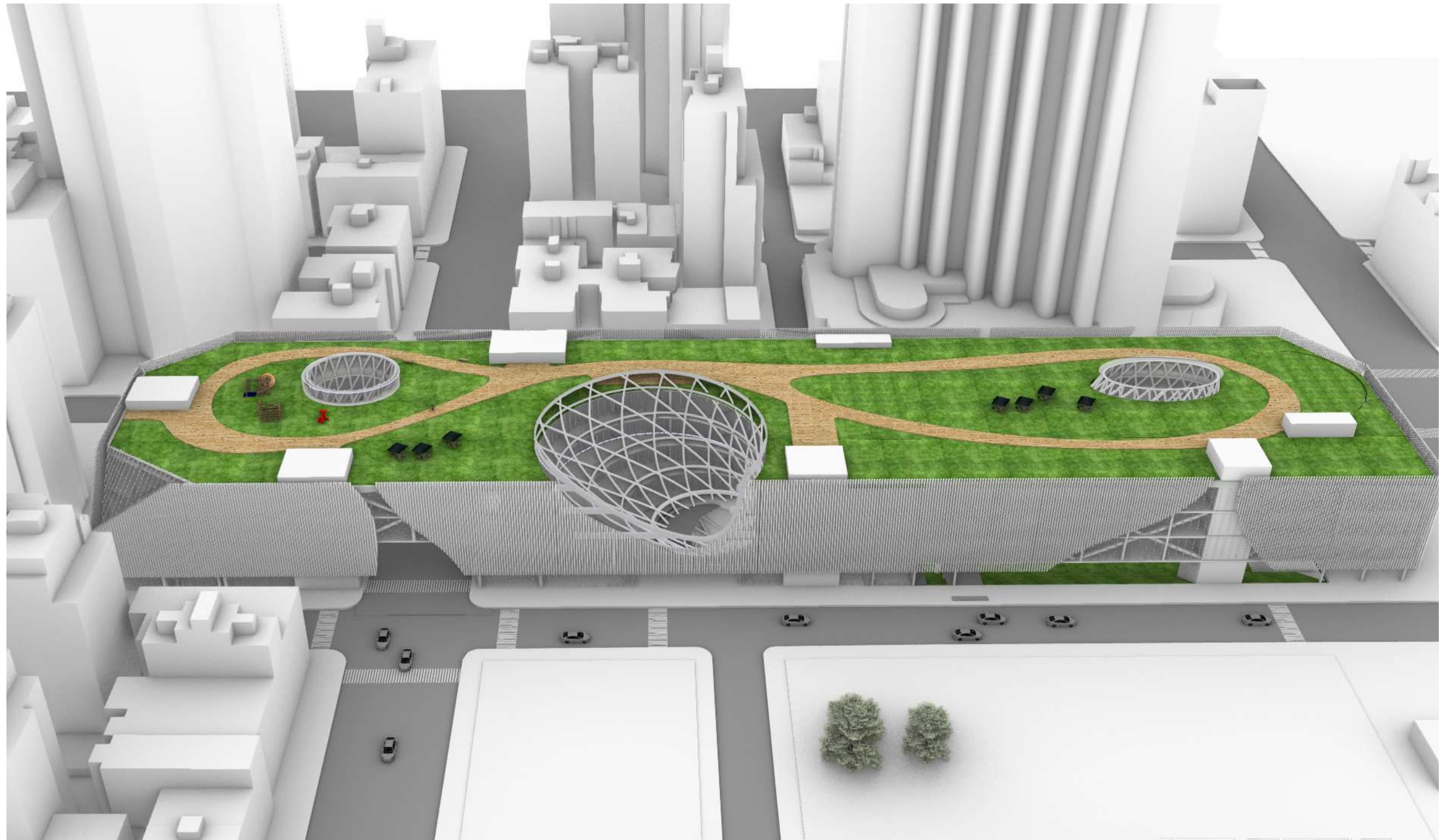


1:1000 SITE PLAN

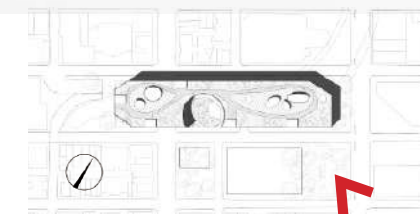


0 30m 60m

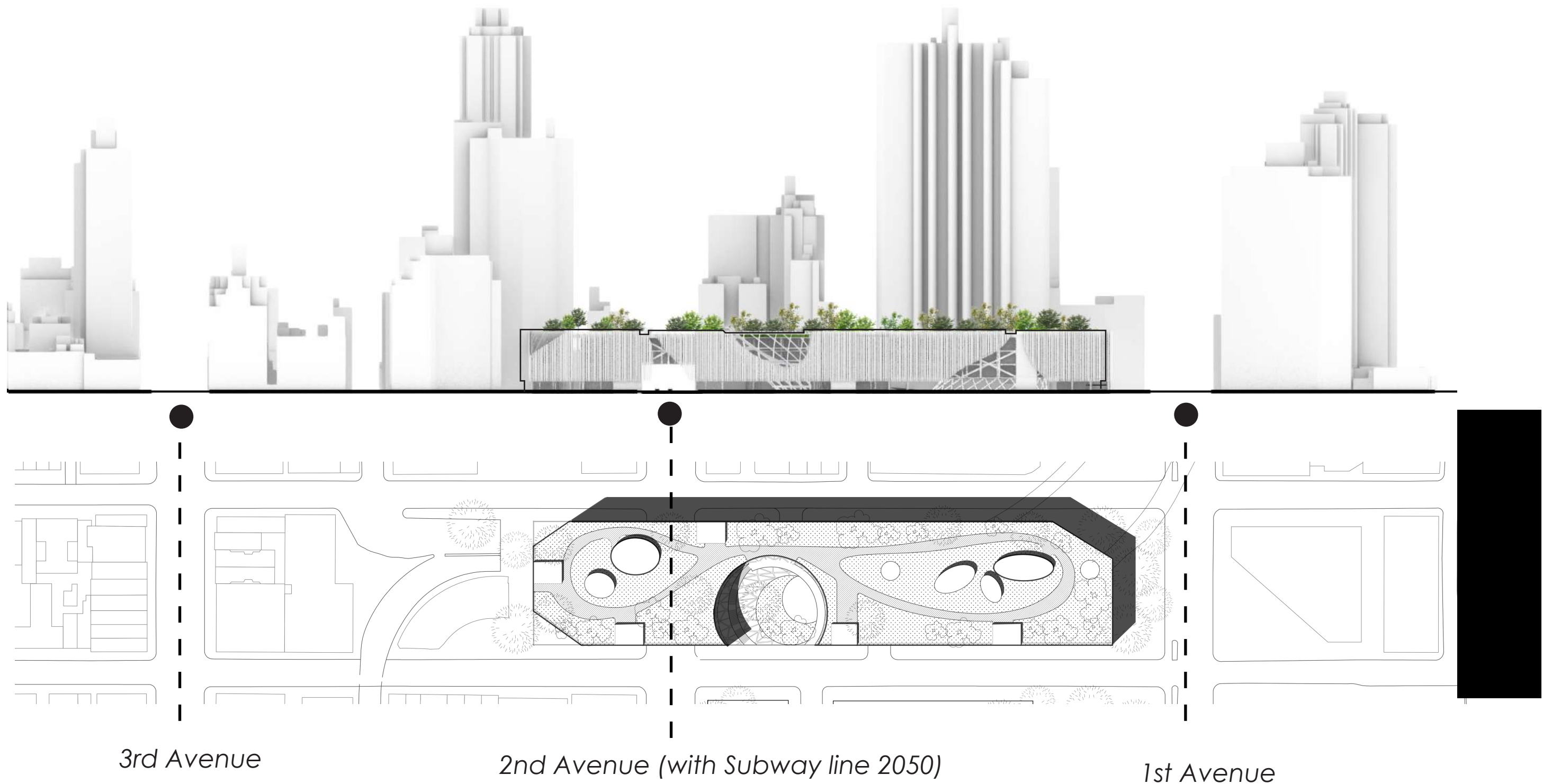
SITE AERIAL VIEW



2nd Avenue (with Subway line 2050)



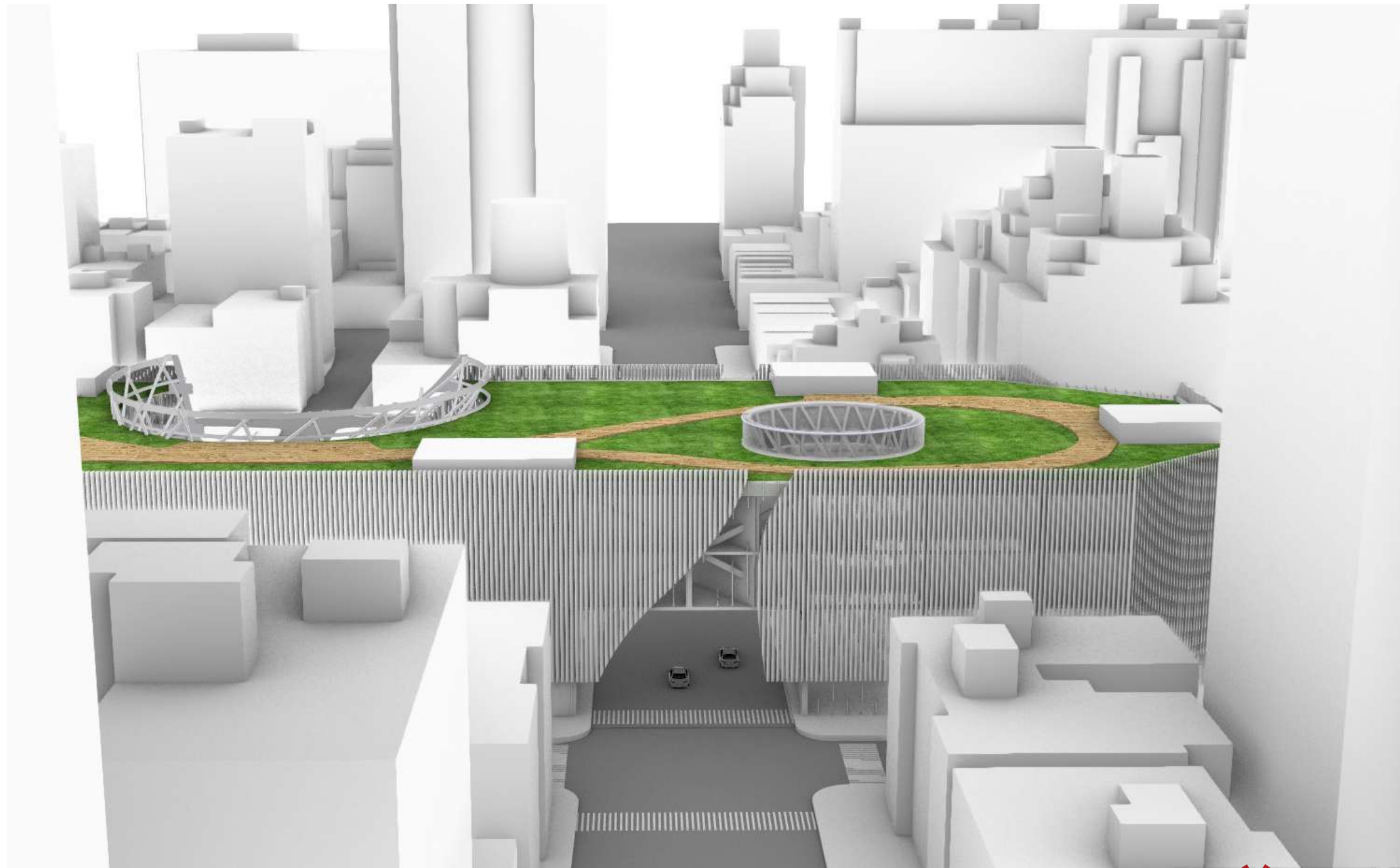
URBAN ELEVATION



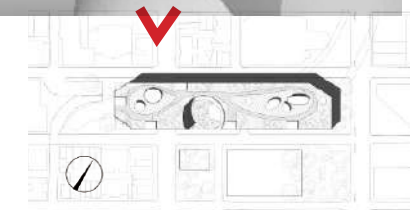
URBAN ELEVATION



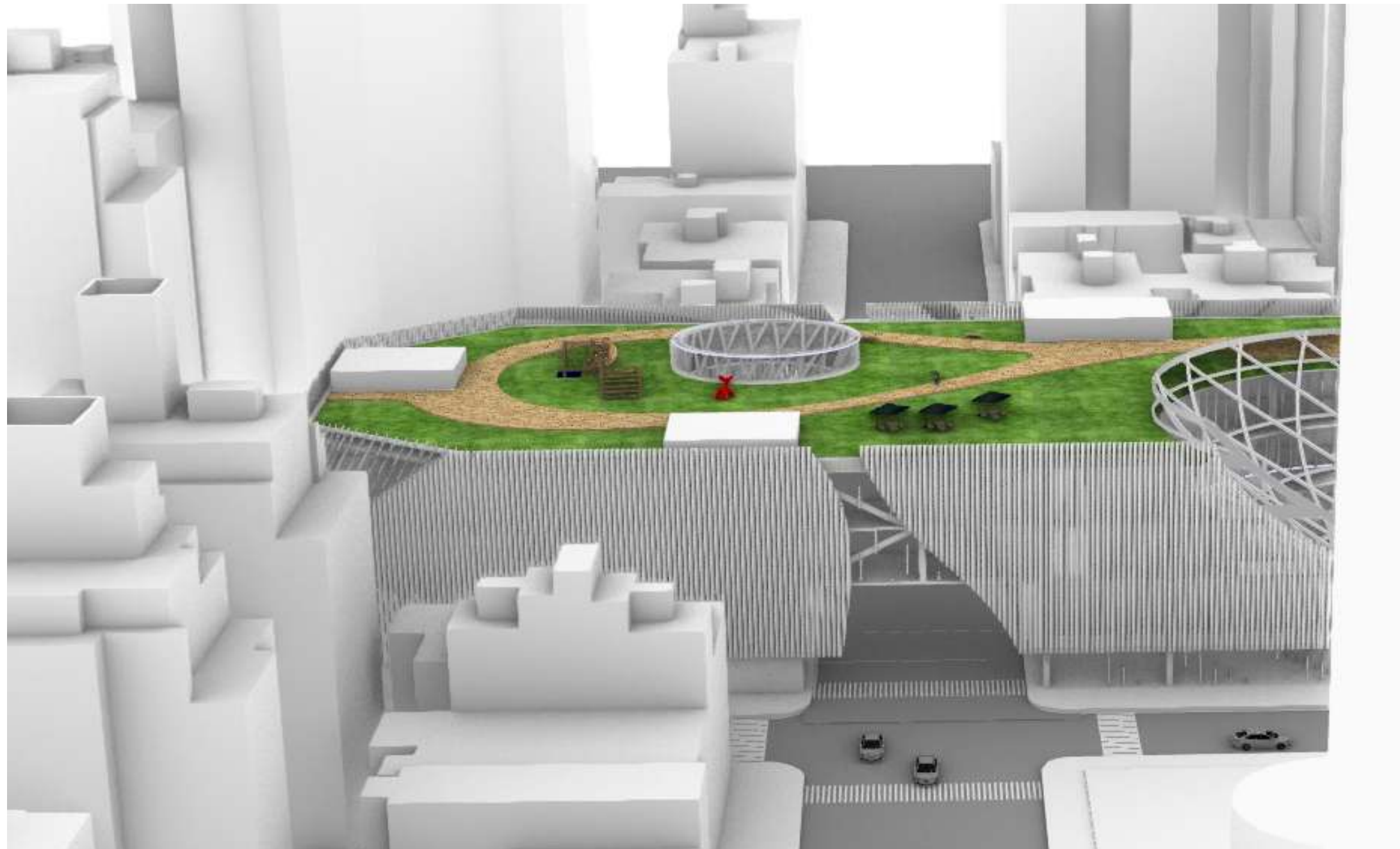
NOUTH-EAST VIEW



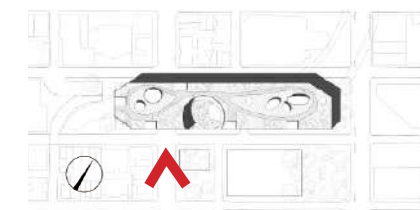
2nd Avenue (with Subway line 2050)



SOUTH-WAST VIEW



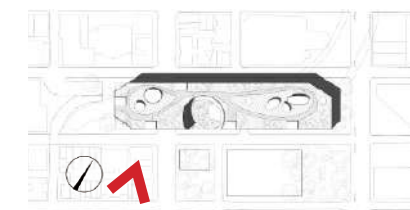
2nd Avenue (with Subway line 2050)



SOUTH-WEST VIEW

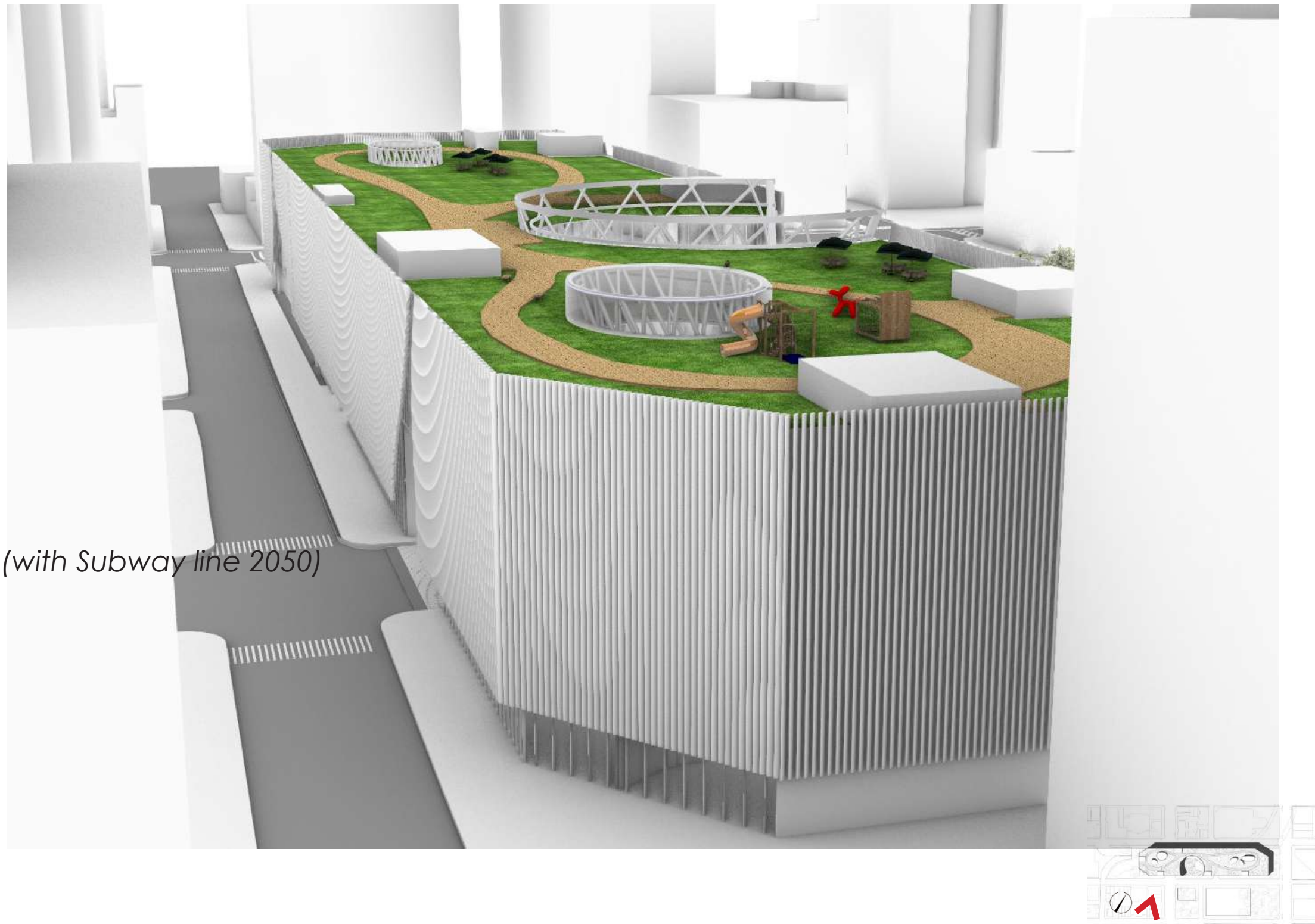


2nd Avenue (with Subway line 2050)



NOUTH-WAST VIEW

2nd Avenue (with Subway line 2050)



DESIGN IMPLEMENTATION

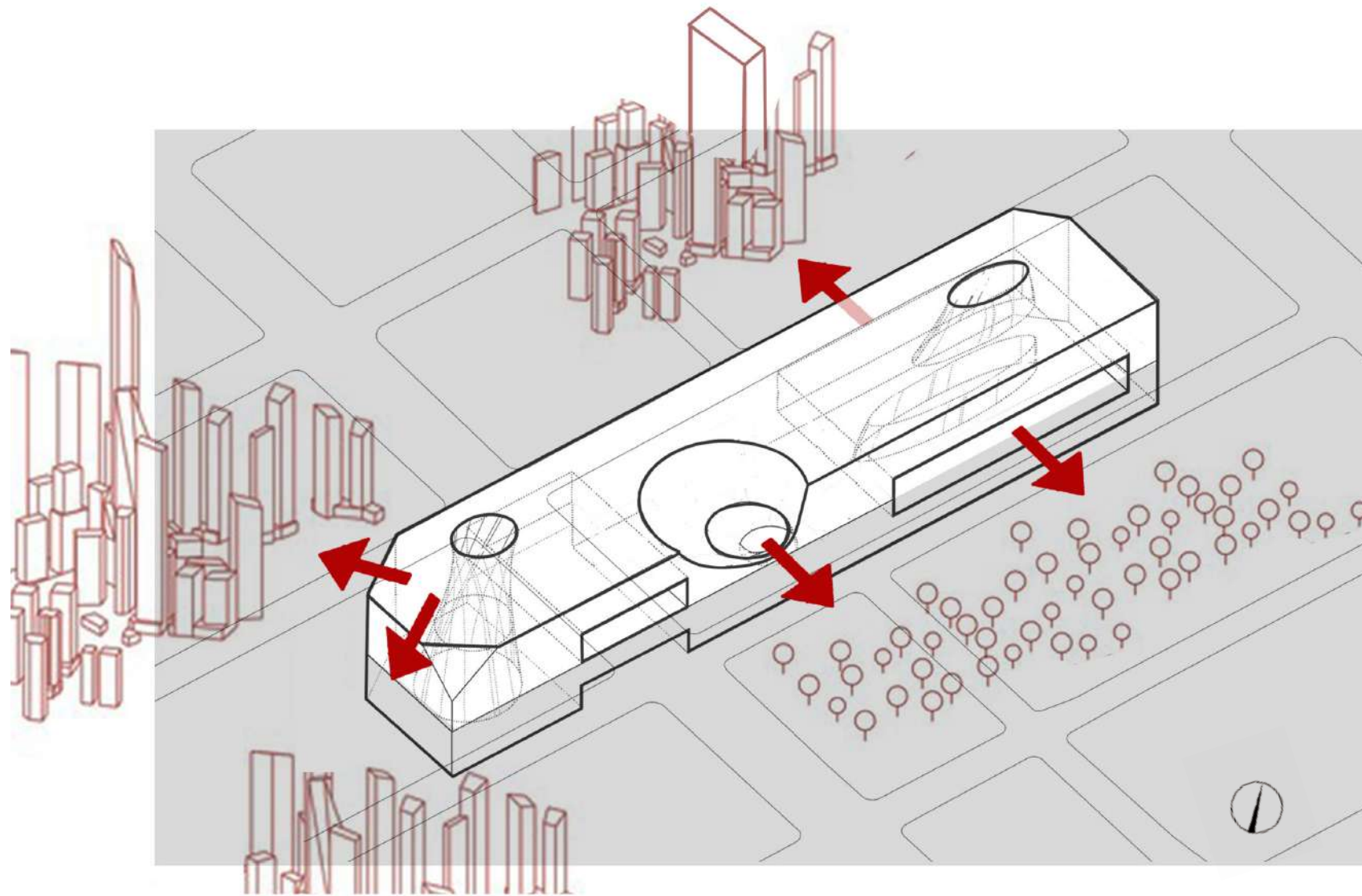
XL
Urban Position

L
Building

M
Structure

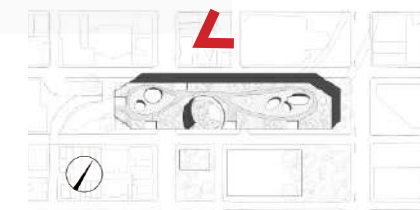
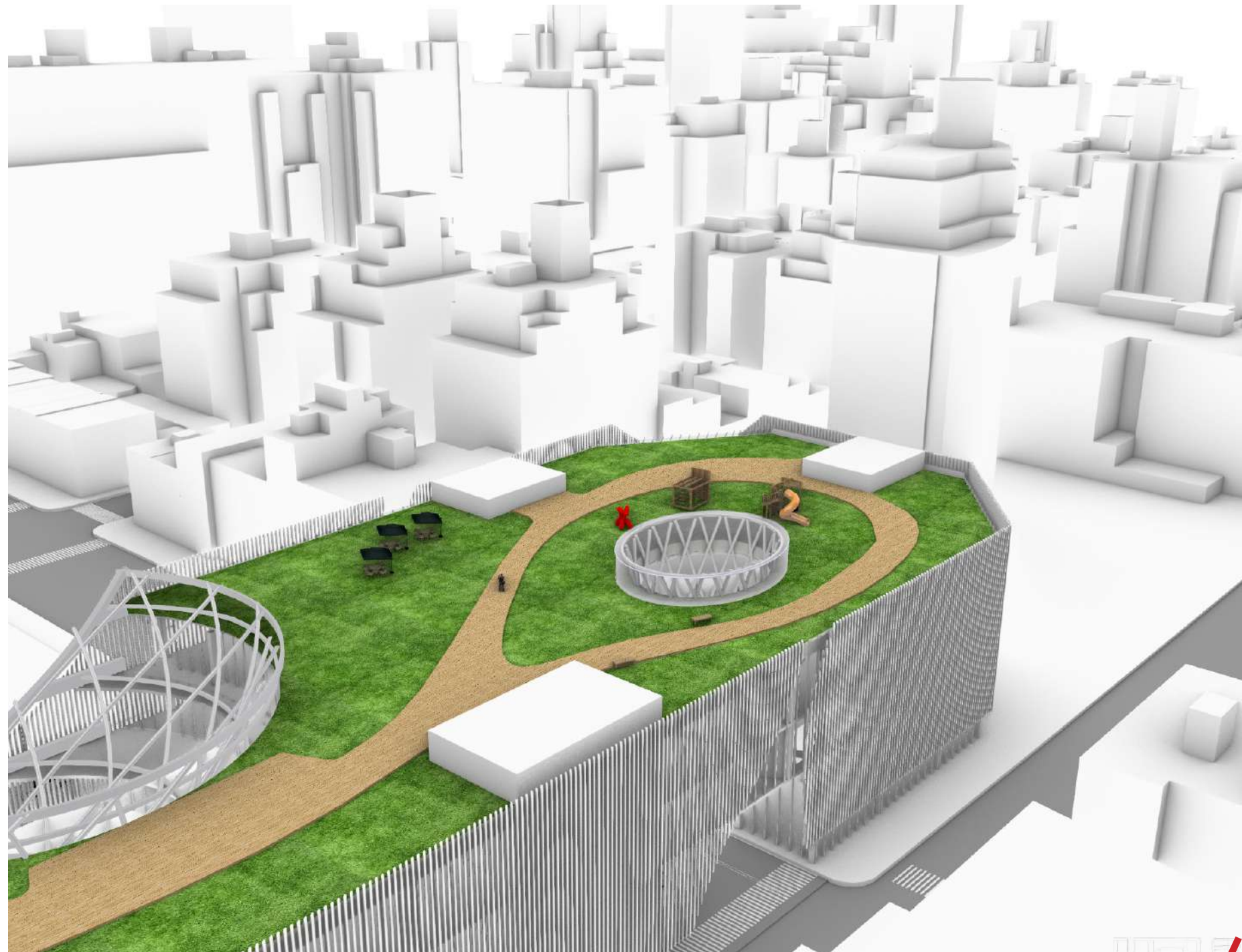
S
Facade

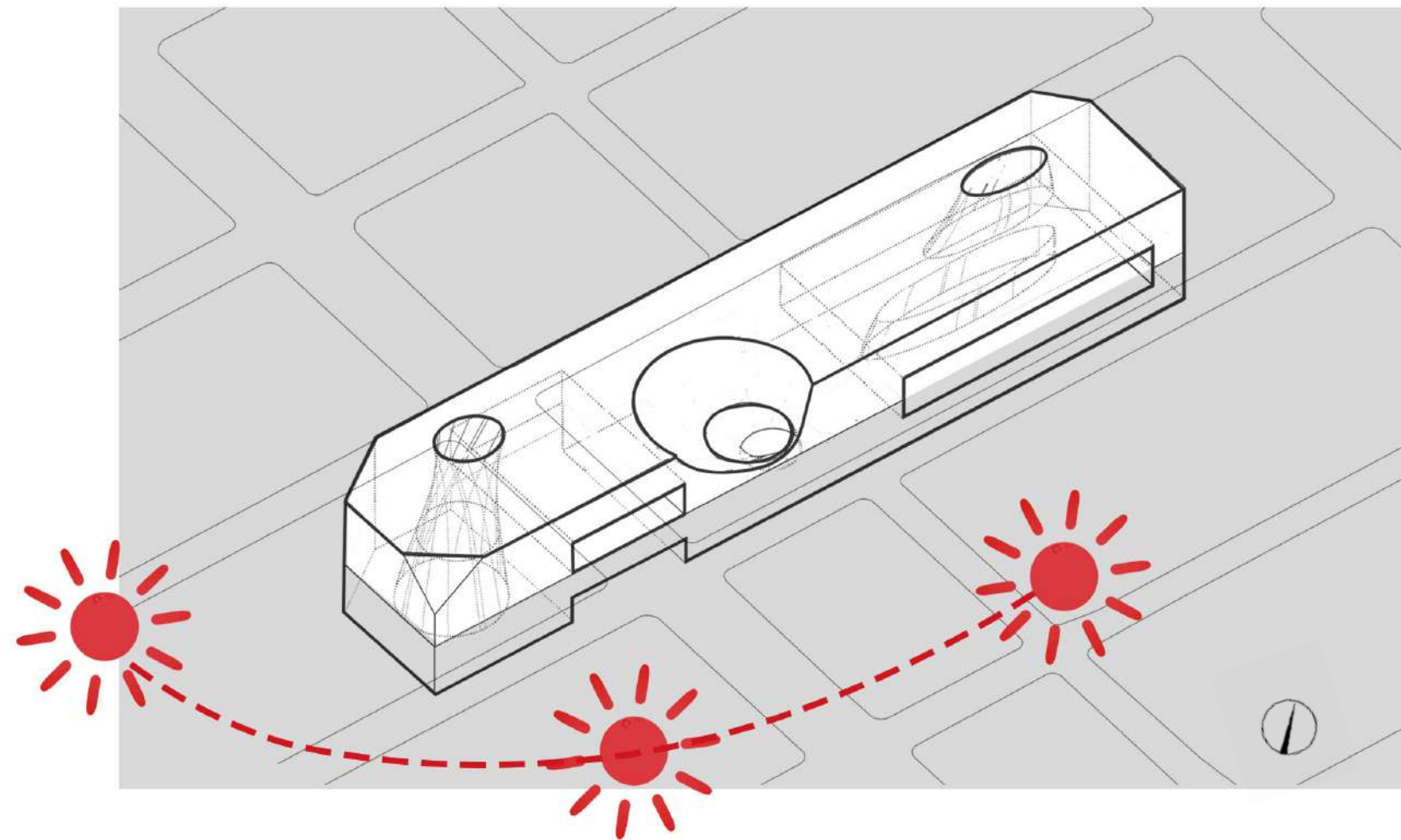
XS
Details



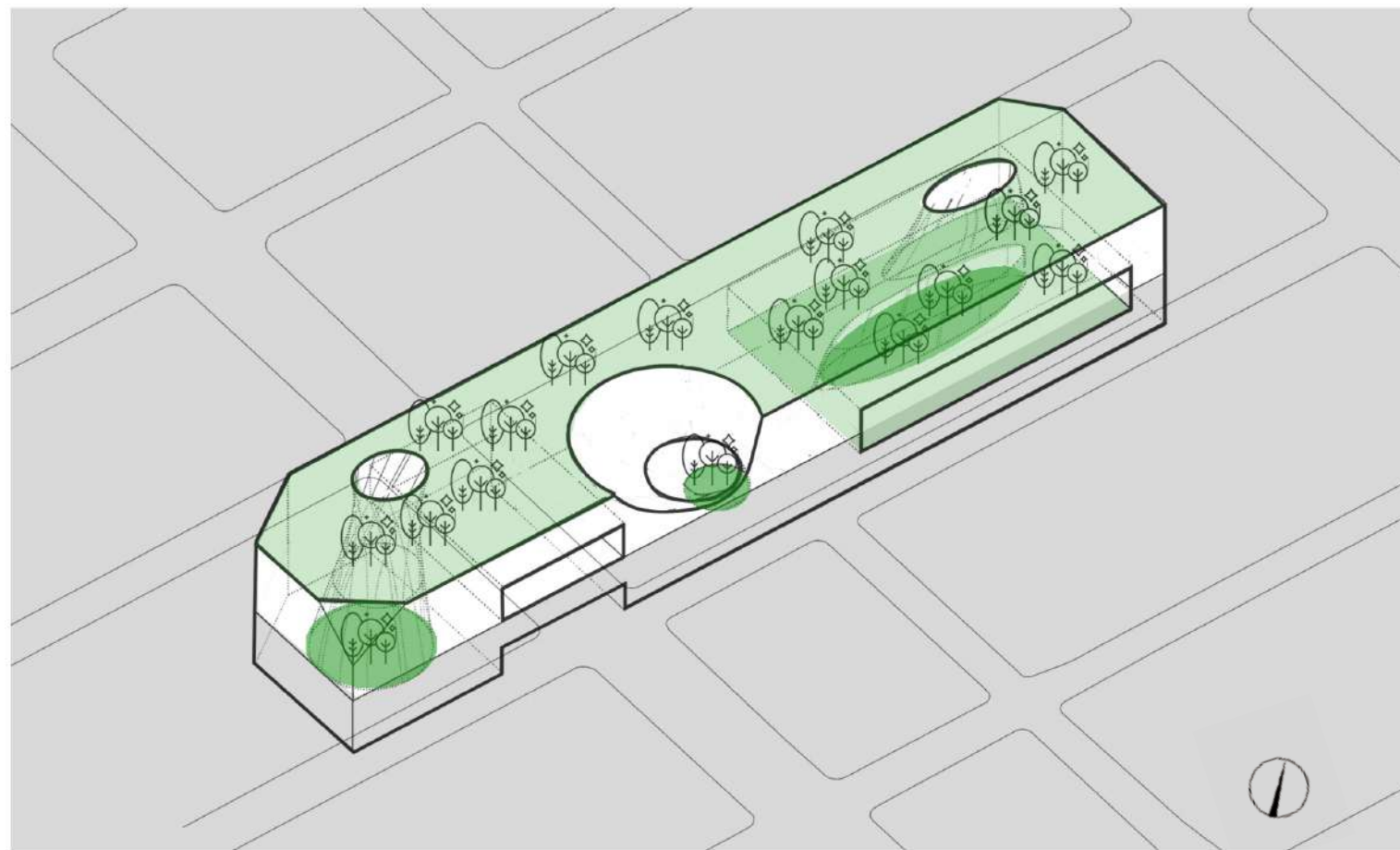
URBAN VIEW

VIEW TO MANHATTAN MIDTOWN

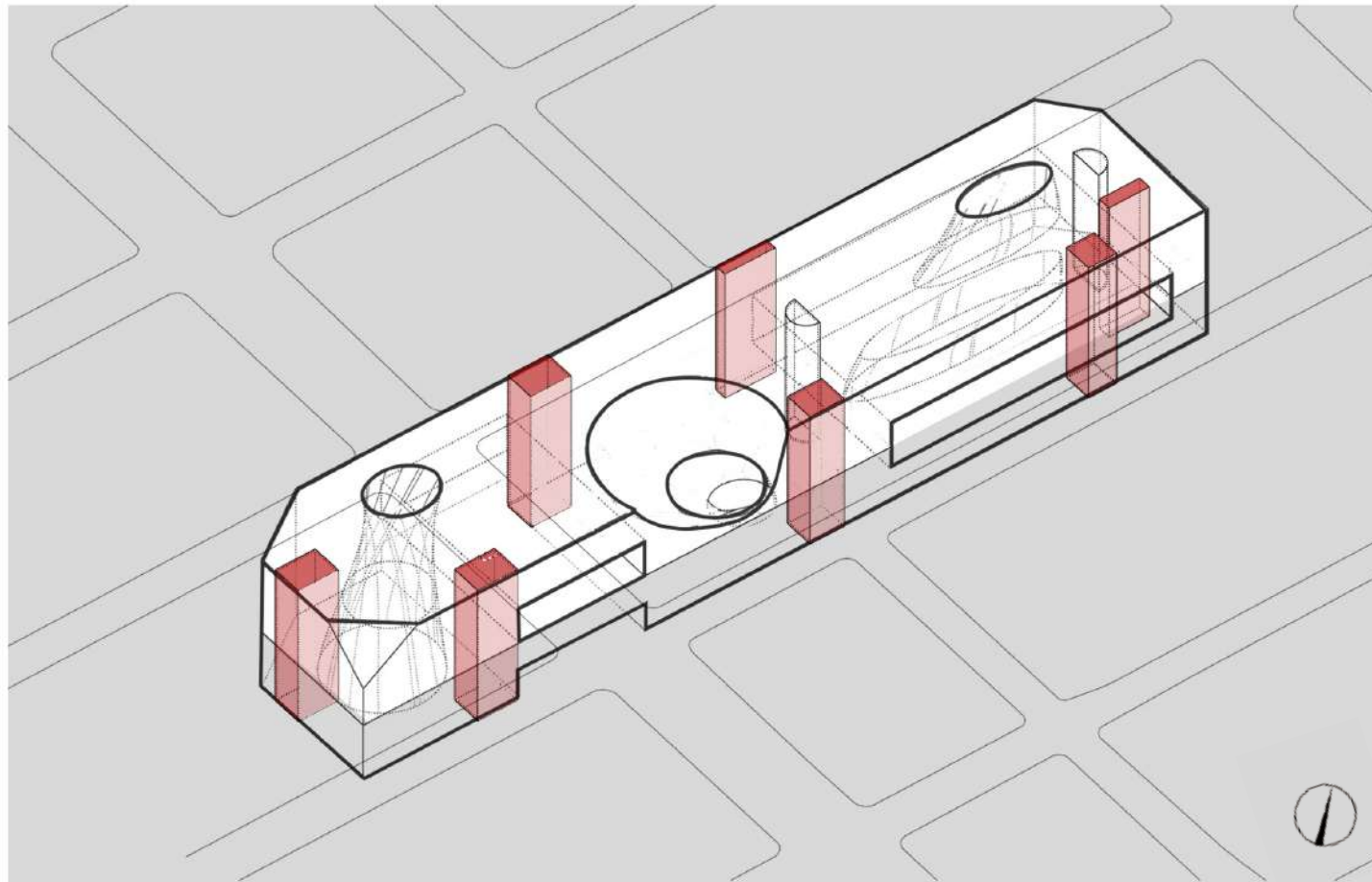




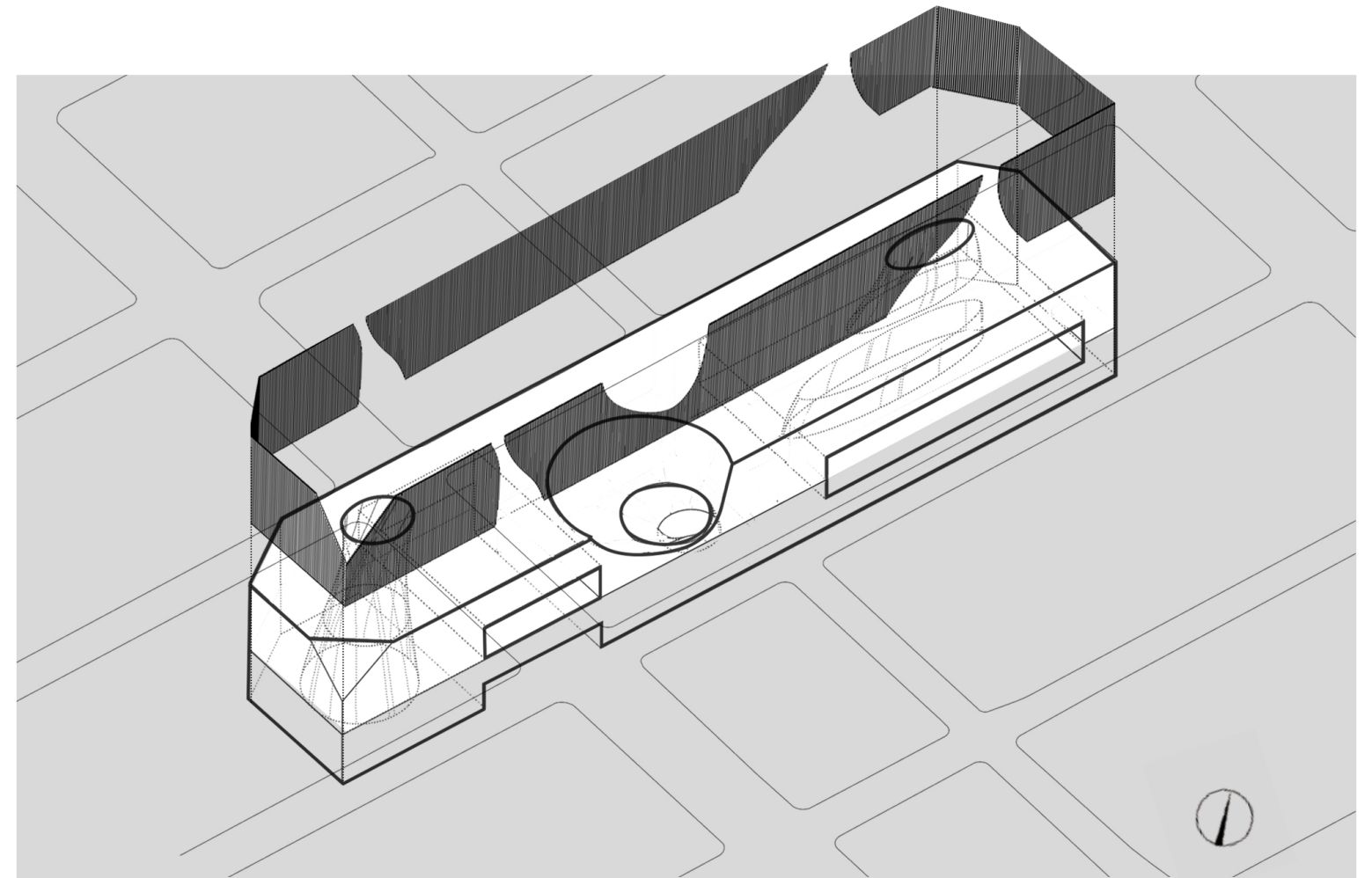
SUN LIGHT



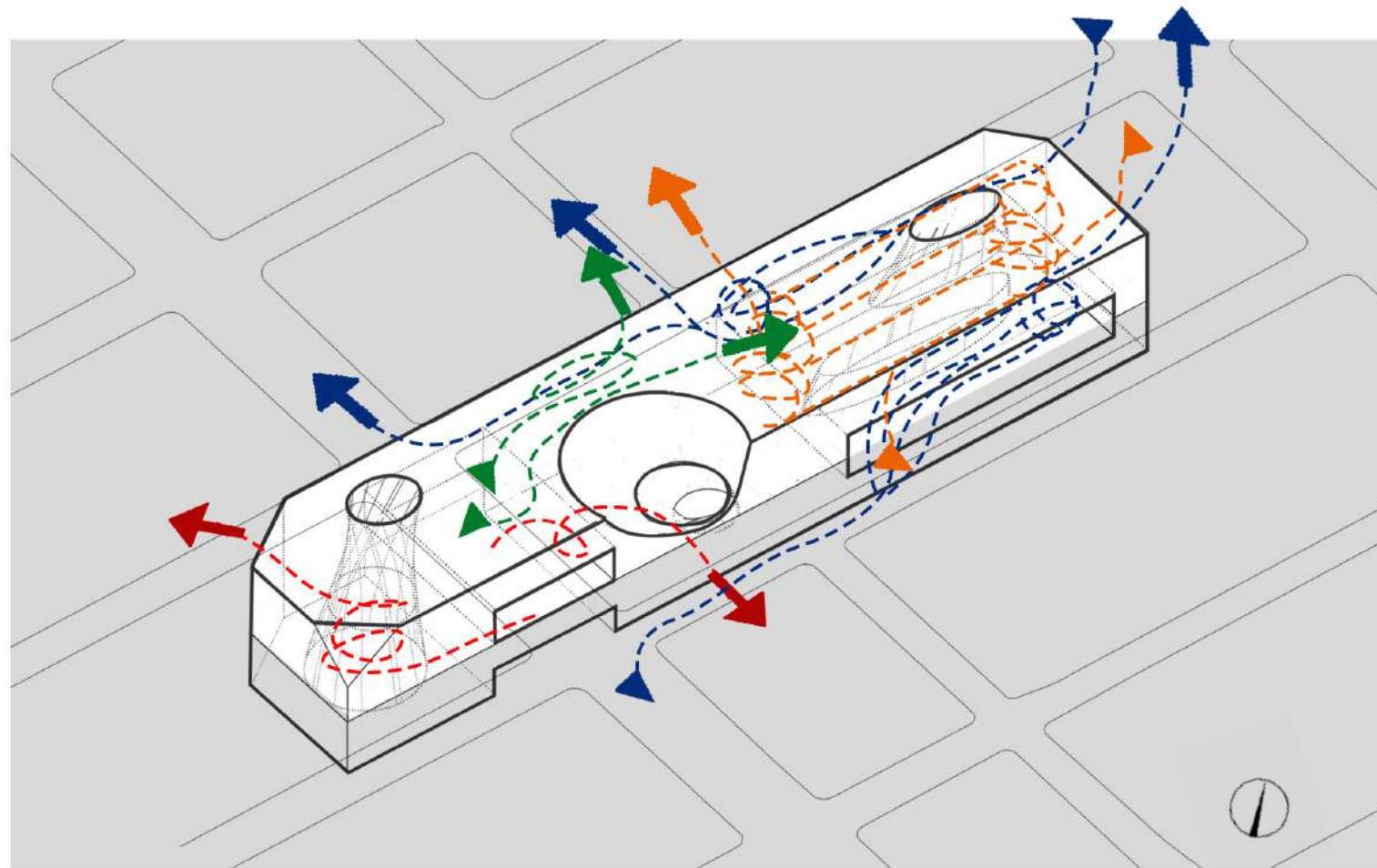
GREEN



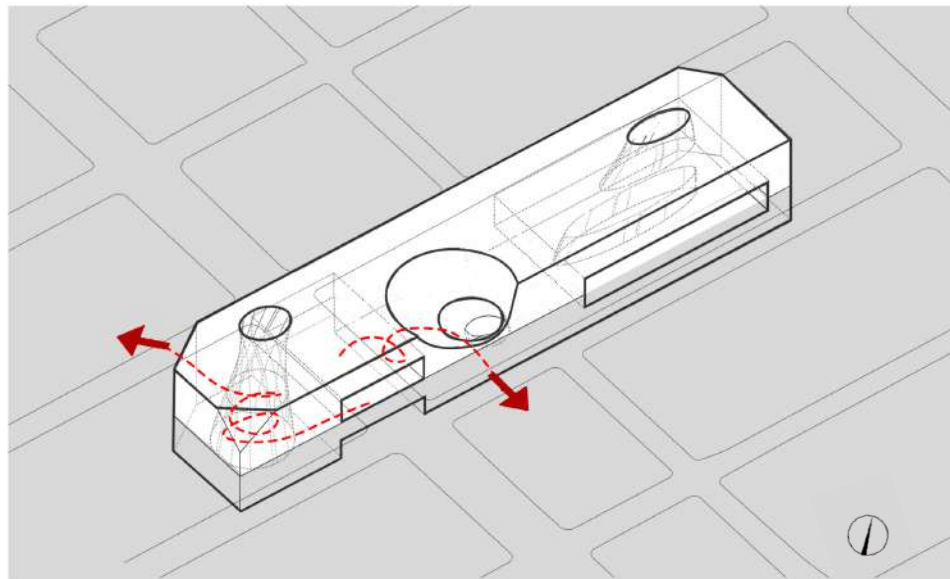
BEARING CORES



SOLOR PROTECTION

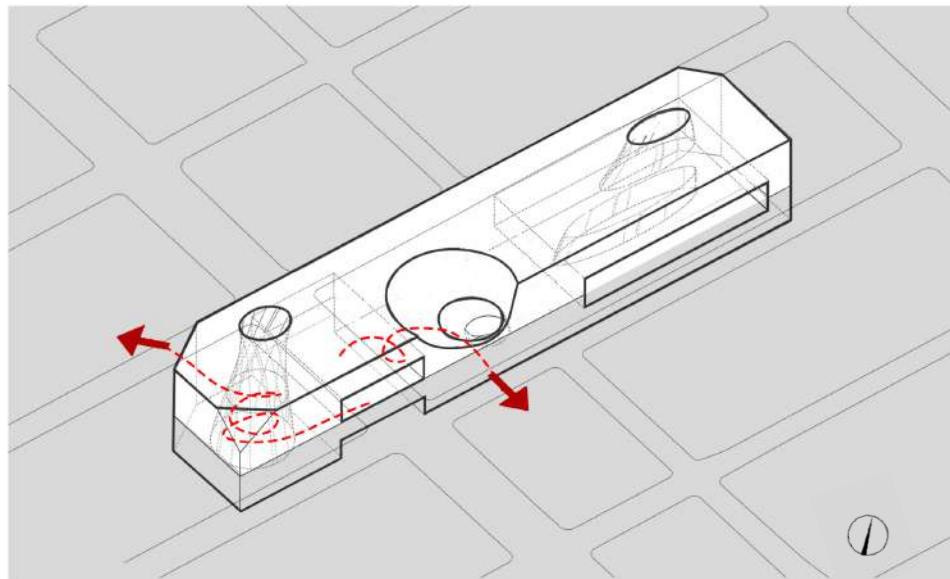


TRAFFIC FLOWS

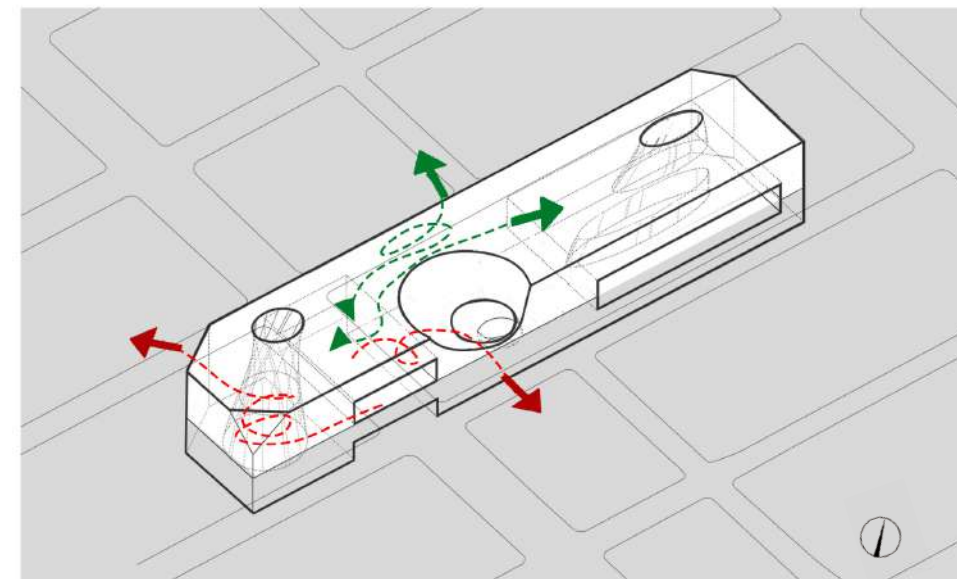


SUBWAY-PEDESTRIAN

TRAFFIC FLOWS

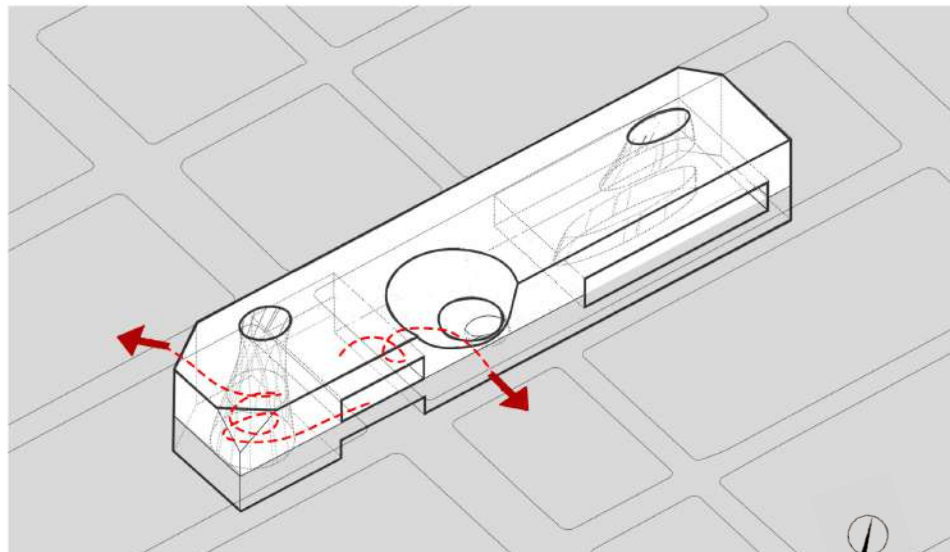


SUBWAY-PEDESTRIAN

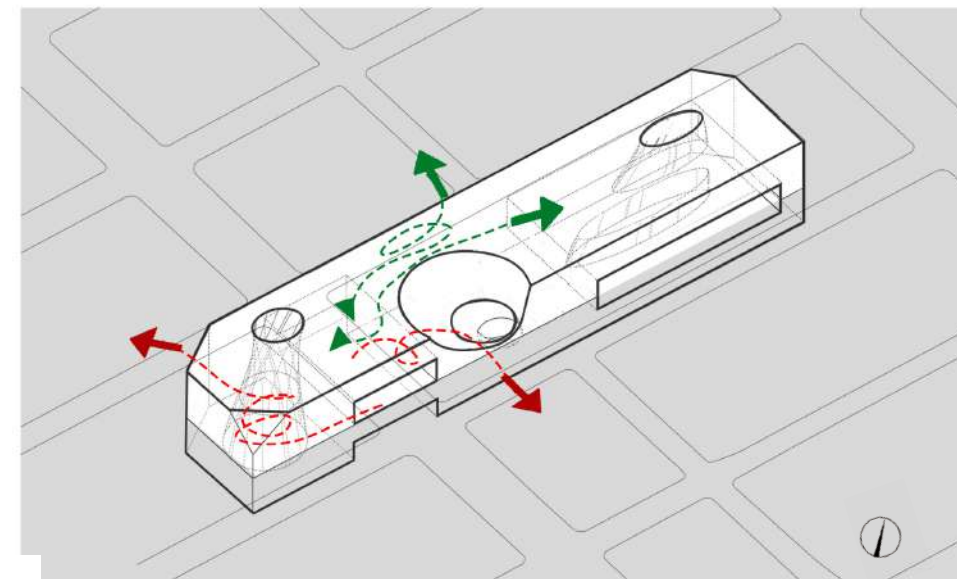


TRANSFER SUBWAY-BICYCLE/CAR

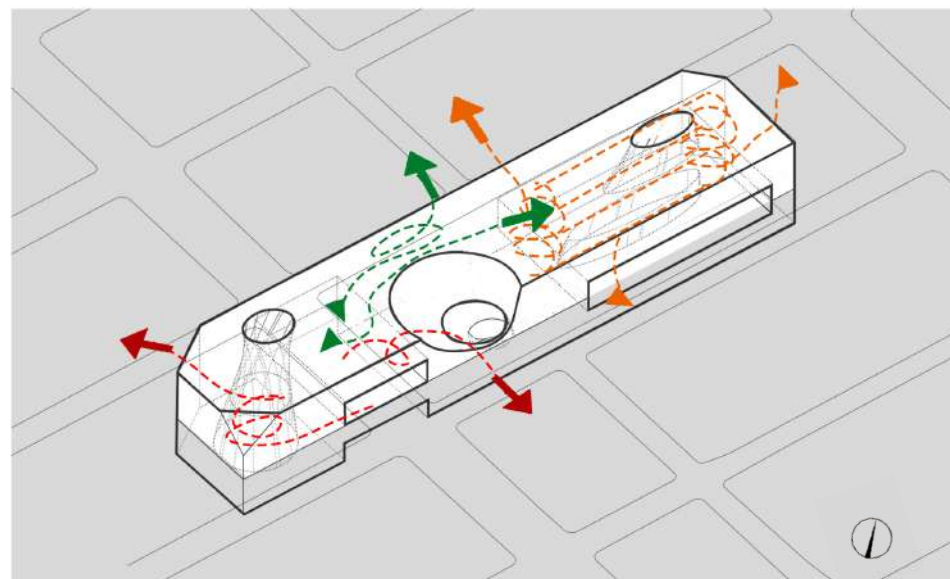
TRAFFIC FLOWS



SUBWAY-PEDESTRIAN

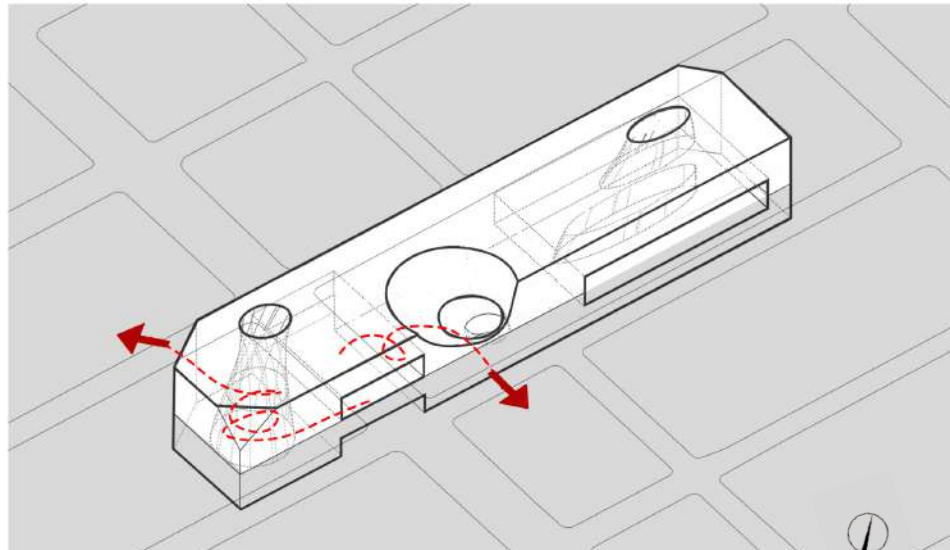


TRANSFER SUBWAY-BICYCLE/CAR

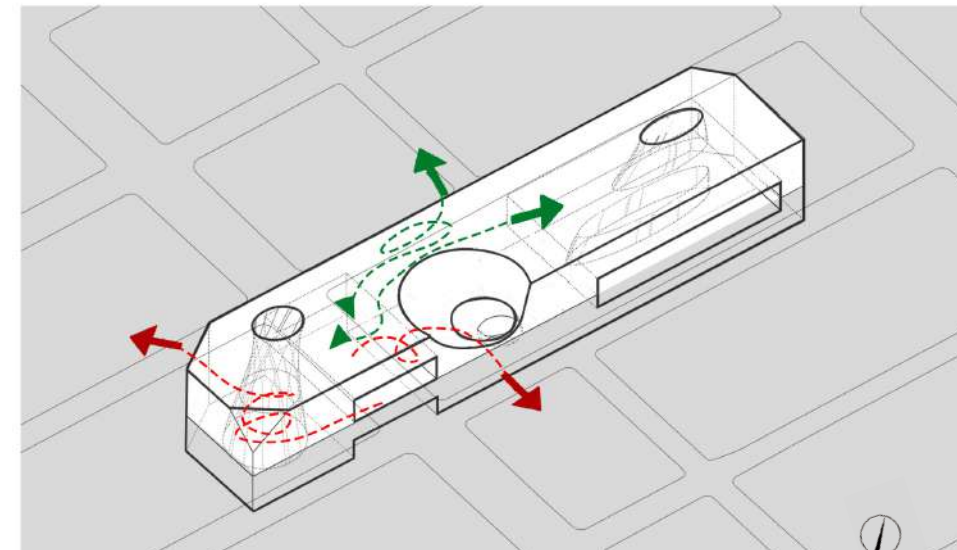


CAR PARKING

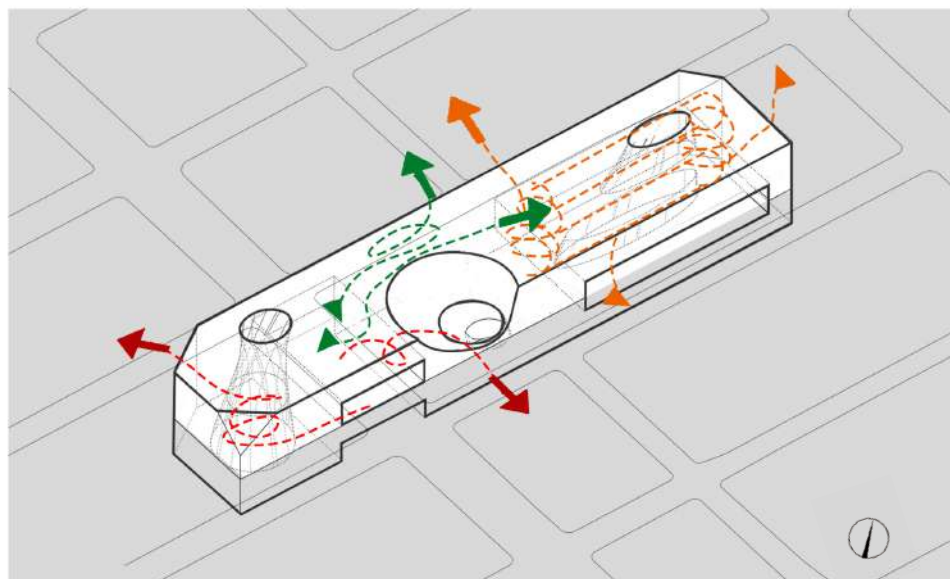
TRAFFIC FLOWS



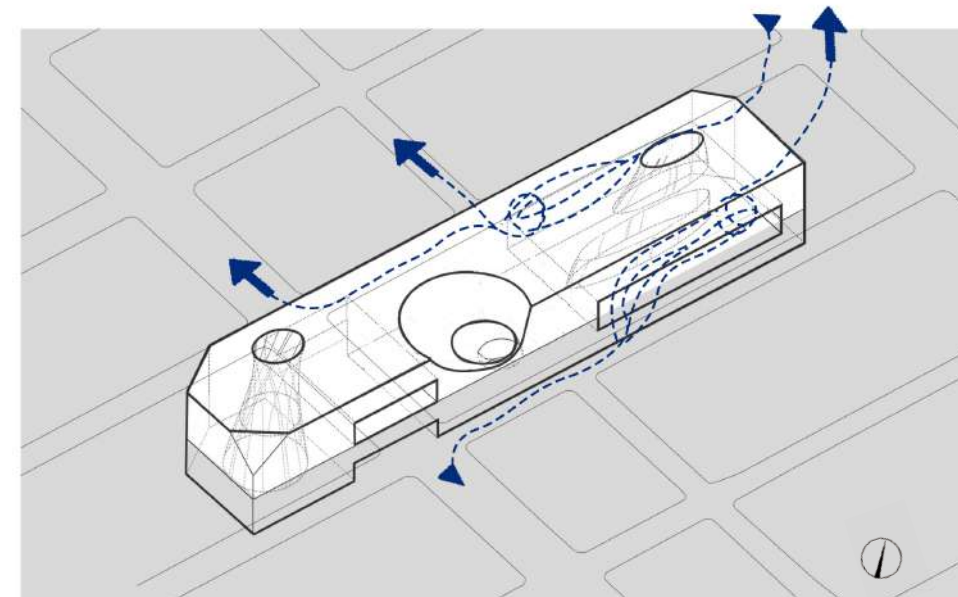
SUBWAY-PEDESTRIAN



TRANSFER SUBWAY-BICYCLE/CAR



CAR PARKING

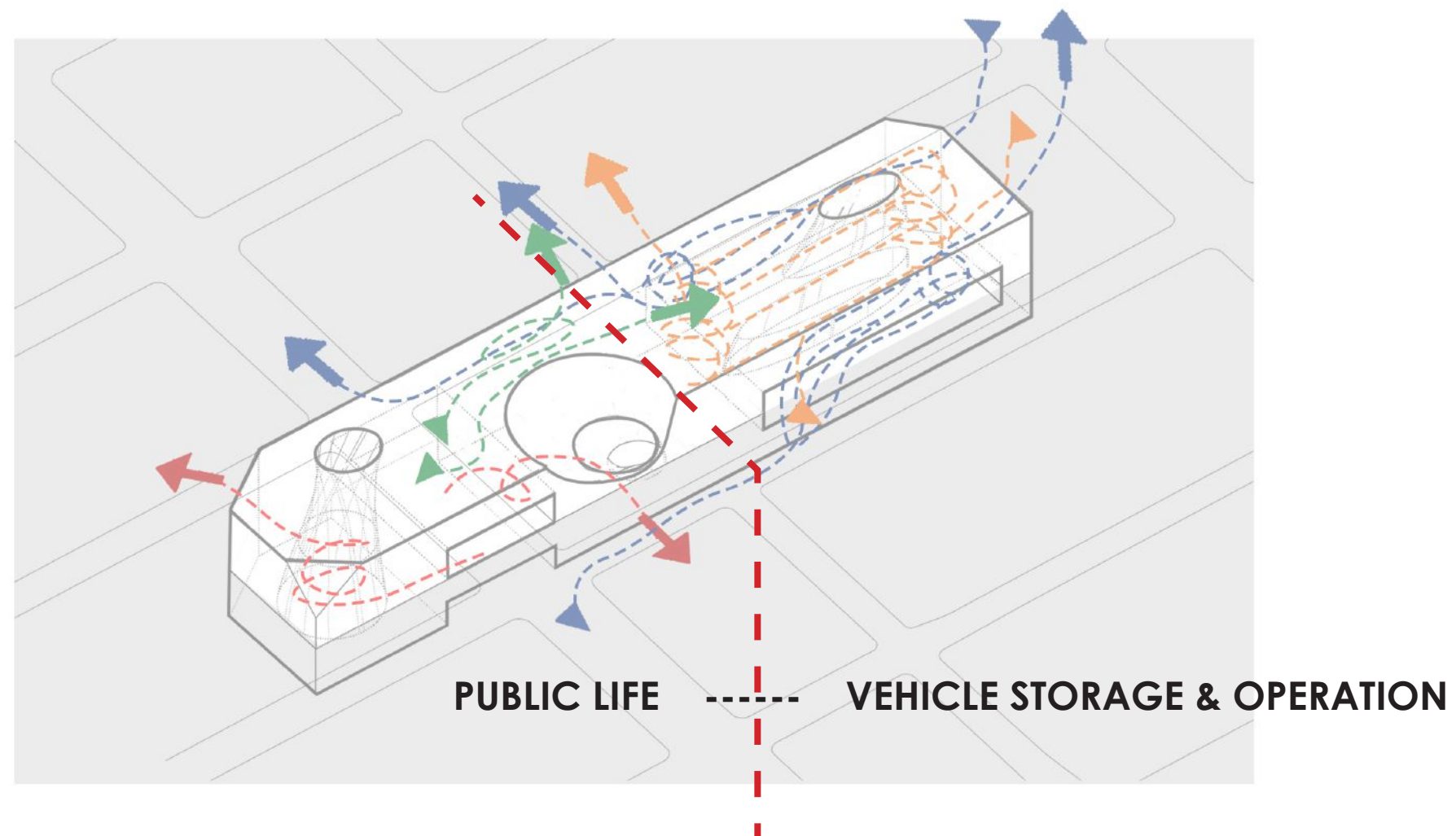


TUNNEL - CARS

TRAFFIC FLOWS

TRAFFIC TRANSITION

USERS: PEOPLE + VEHICLE



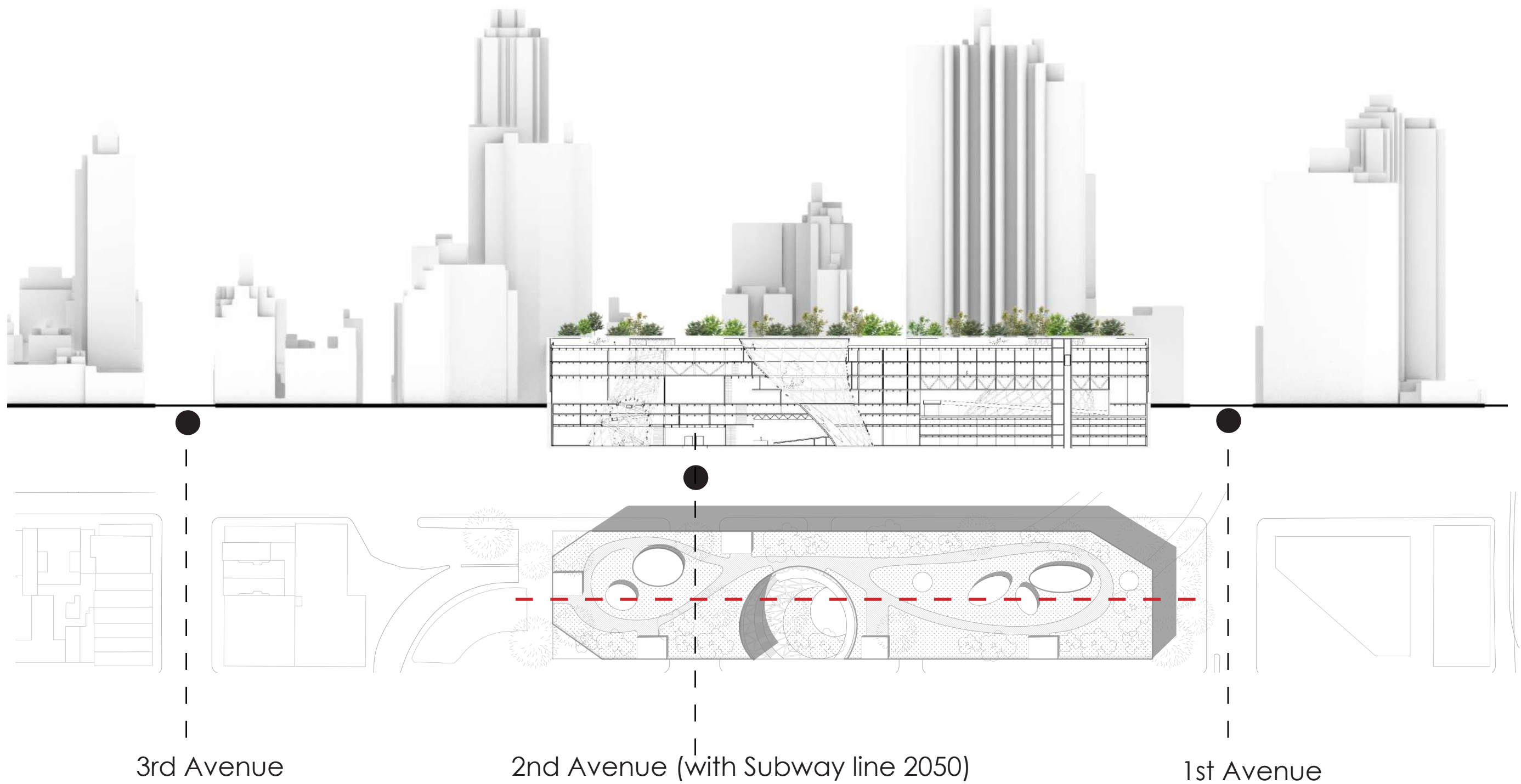
PEOPLE : OPEN ---- MOST OPEN ---- CLOSED



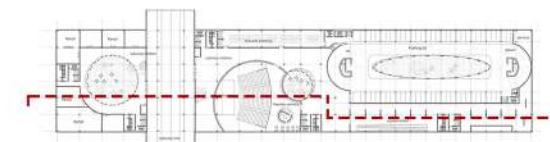
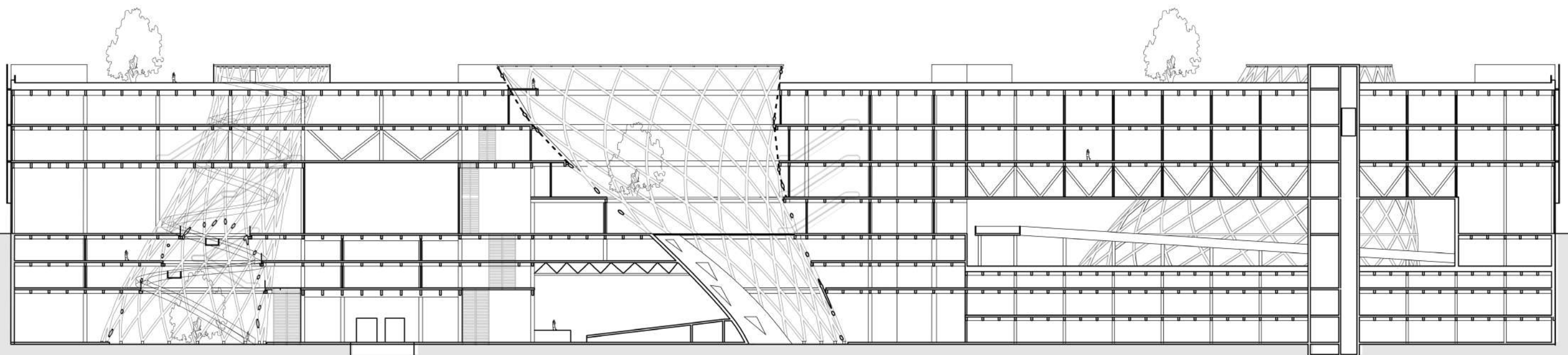
VEHICLE : LIMITED -- TRANSFER ---- OREN



URBAN SECTION



SECTION 1: 300

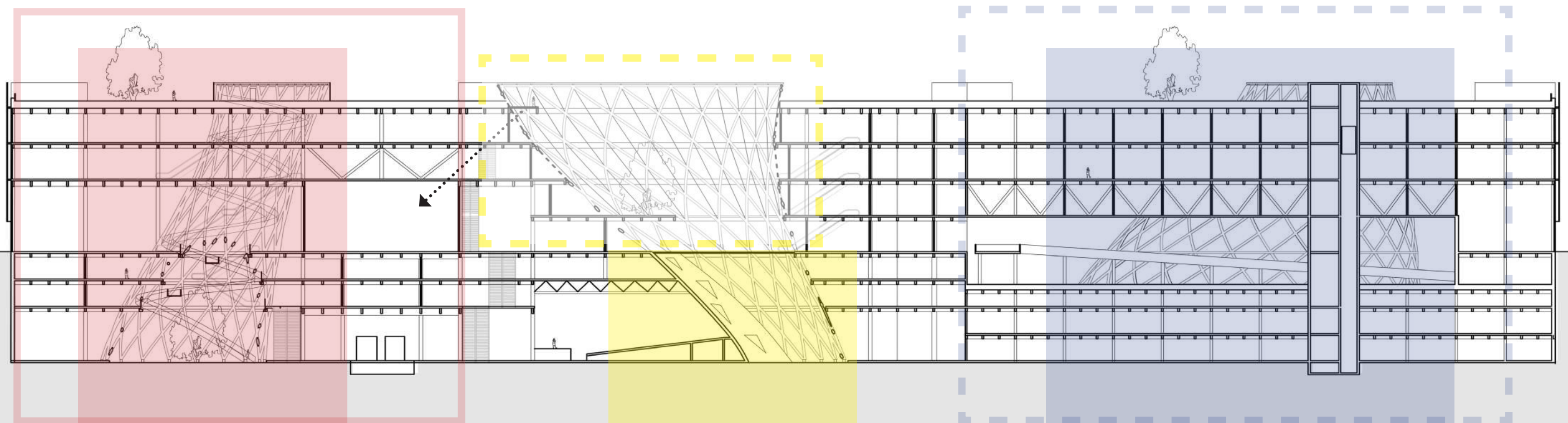


1: 300 SECTION A

0 10 m 20 m

VOID CHARACTERS

PUBLIC LIFE ----- VEHICLE STORAGE & OPERATION



SUBWAY VOID

DICHOTOMY VOID

PARKING VOID

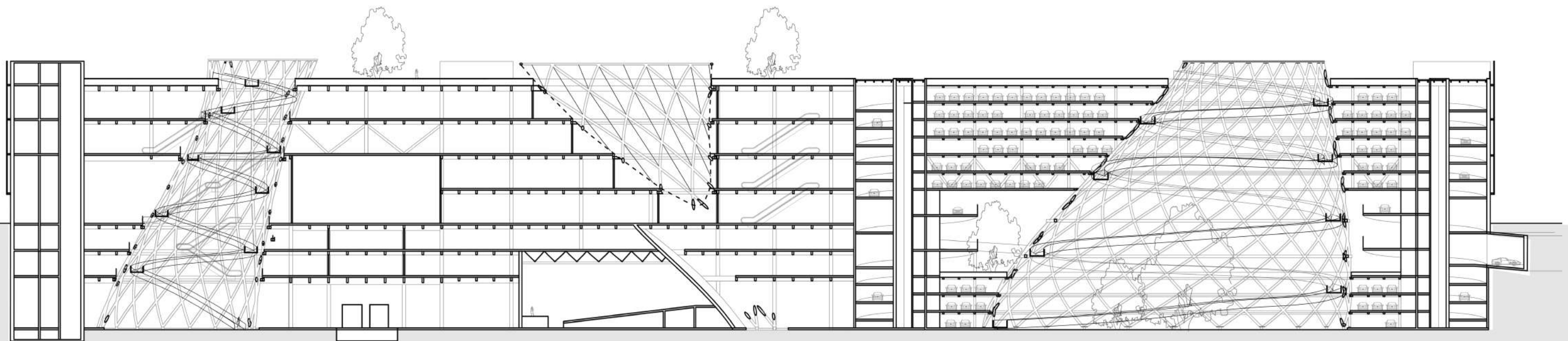
PEOPLE : OPEN ---- MOST OPEN ---- CLOSED



VEHICLE : LIMITED -- TRANSFER ---- OPEN



SECTION 1: 300

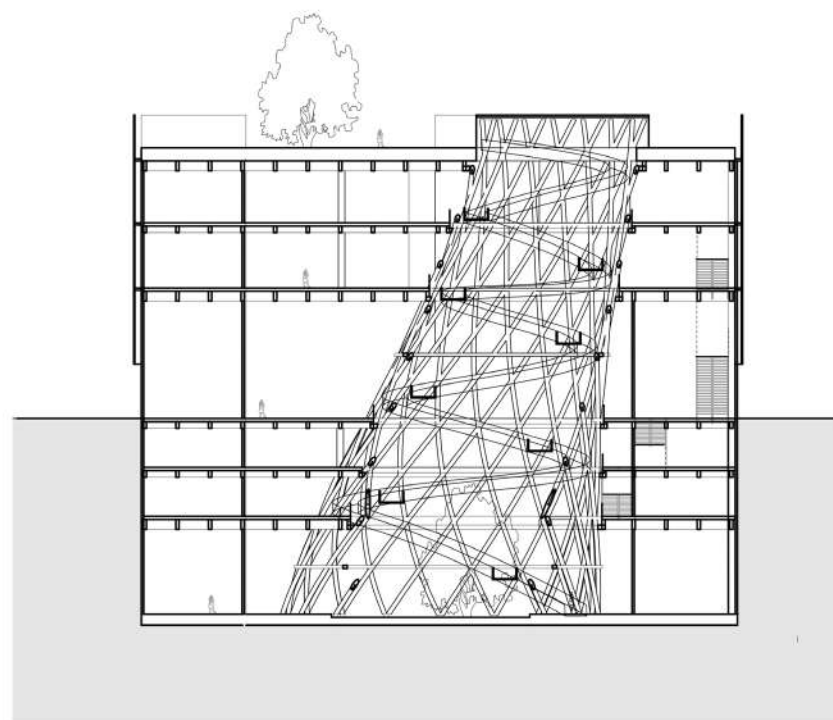


1: 300 SECTION B

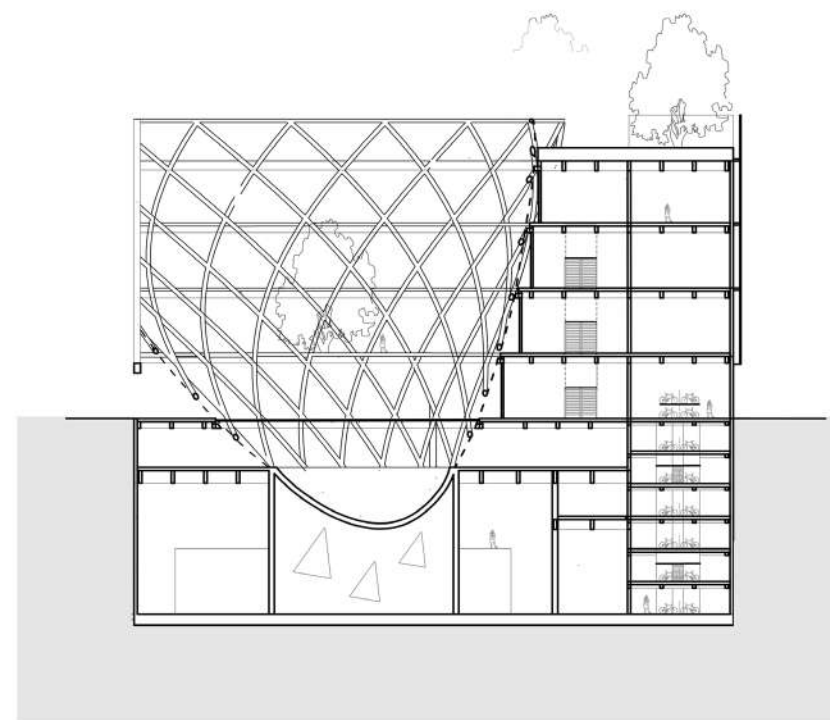
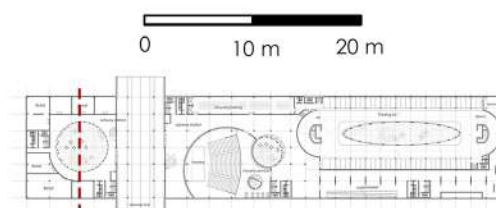


0 10 m 20 m

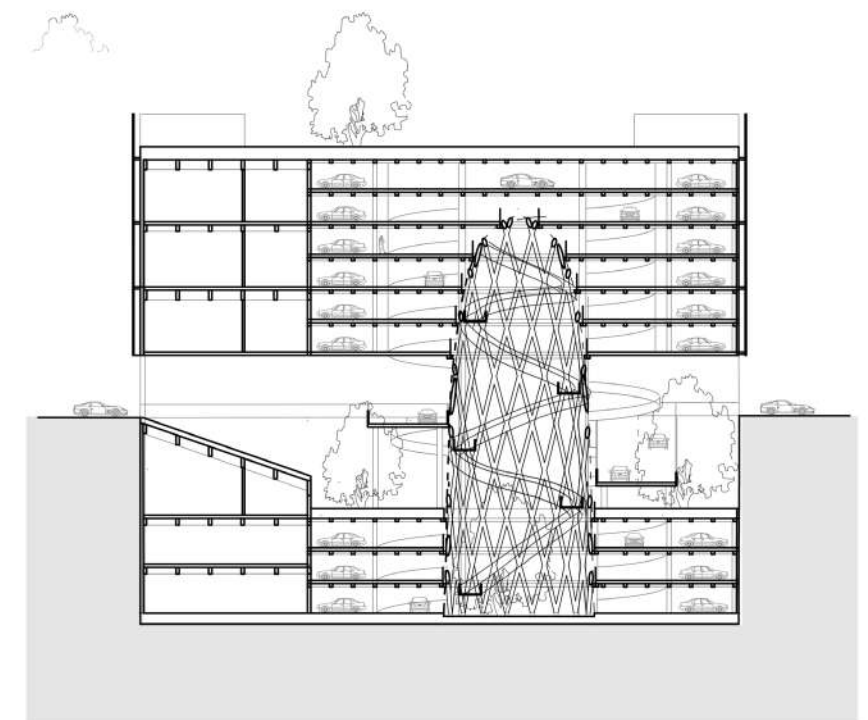
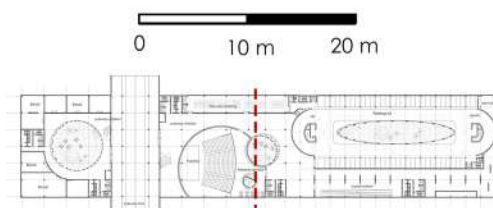
SECTION 1: 300



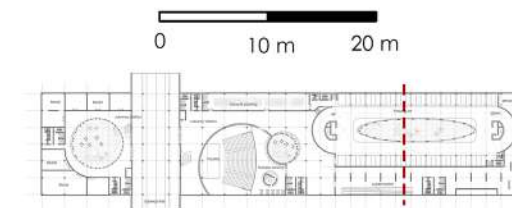
1: 300 SECTION C



1: 300 SECTION D



1: 300 SECTION E



PROGRAM INSPIRATION

Artificial nature,green



New yorkrer style:
chaos parking



commercial
(supermarket,retail)

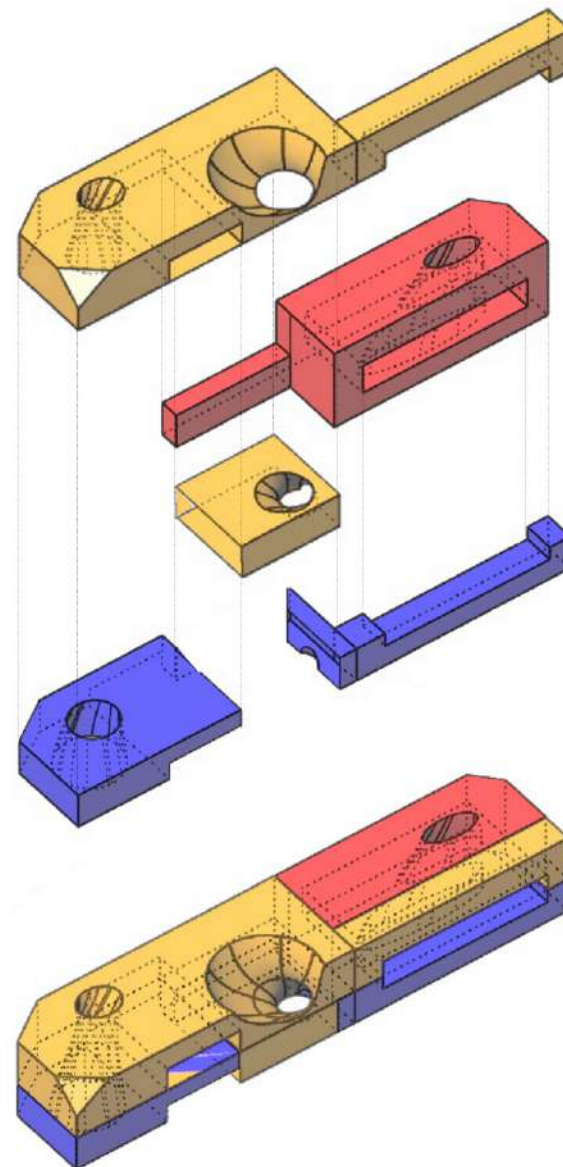


New yorkrer style
subway culture



residential demand:
playground,green,gym,library

PROGRAM RATIO



PUBLIC LIFE: open exhibition/library

VEHICLE STORAGE: car parking / bicycle parking

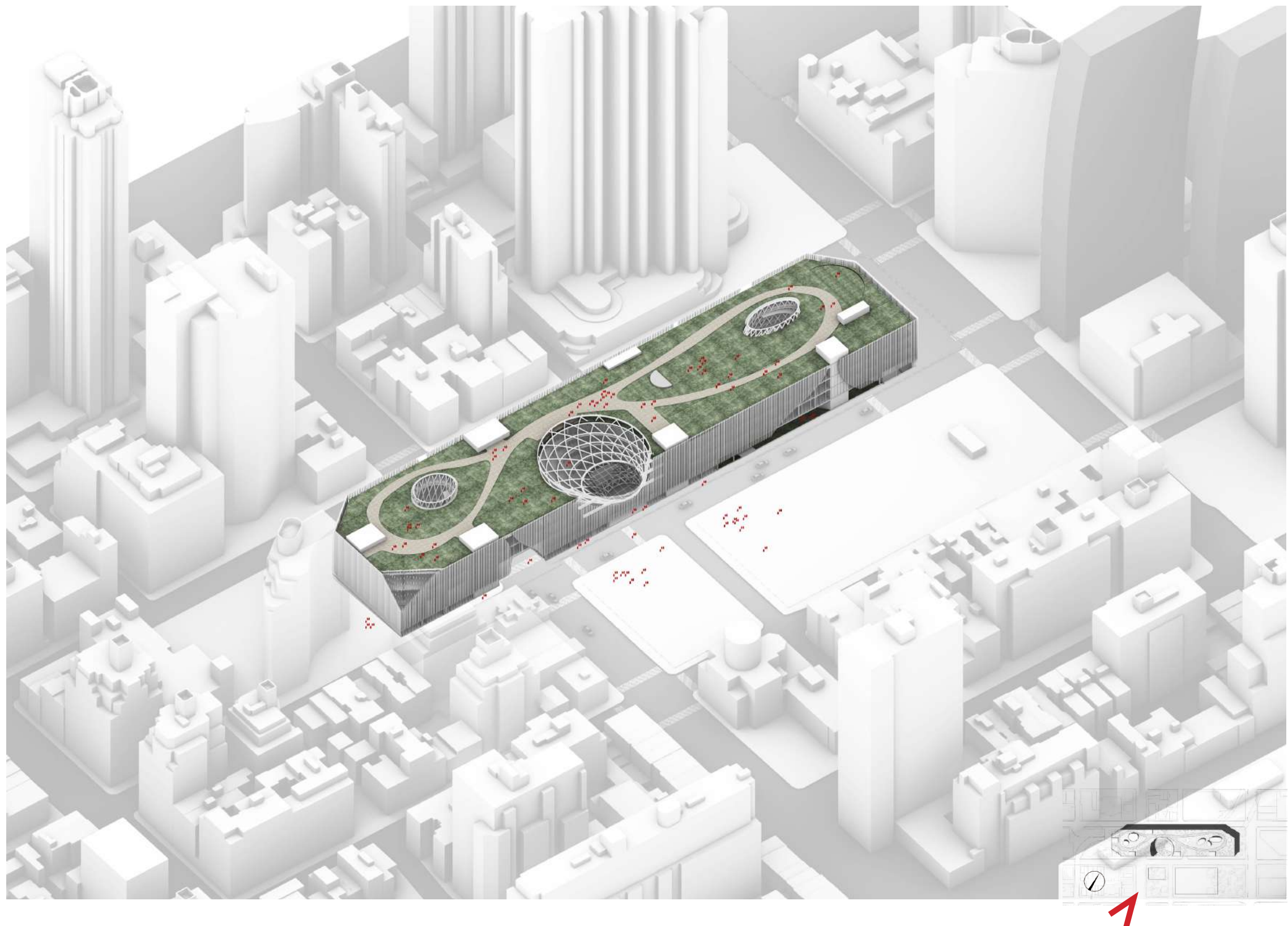
PUBLIC LIFE: theatre

PUBLIC LIFE: retail/ supermarket/Fitness center

TRANSPORT INFRASTRUCTURAL COMPLEX

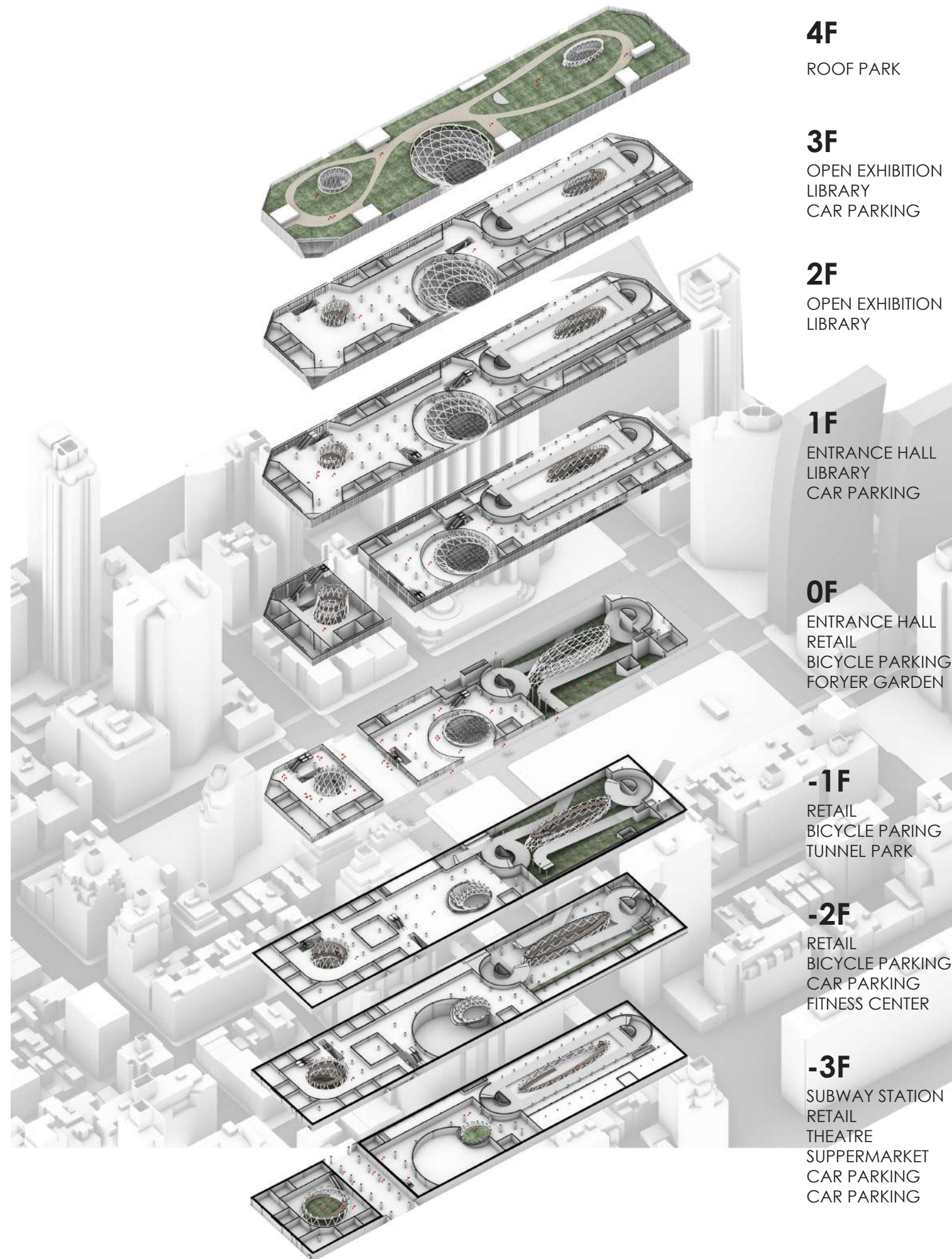
DESIGN IMPLEMENTATION

L: BUILDING / FUNCTIONALITY

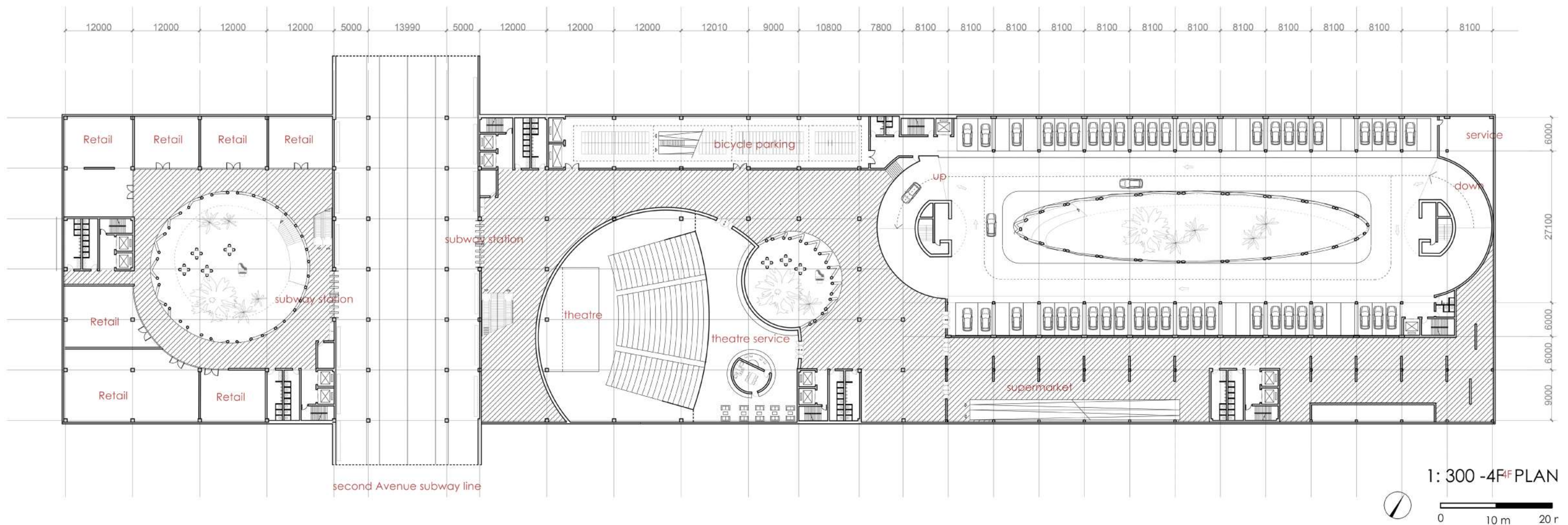


DESIGN IMPLEMENTATION

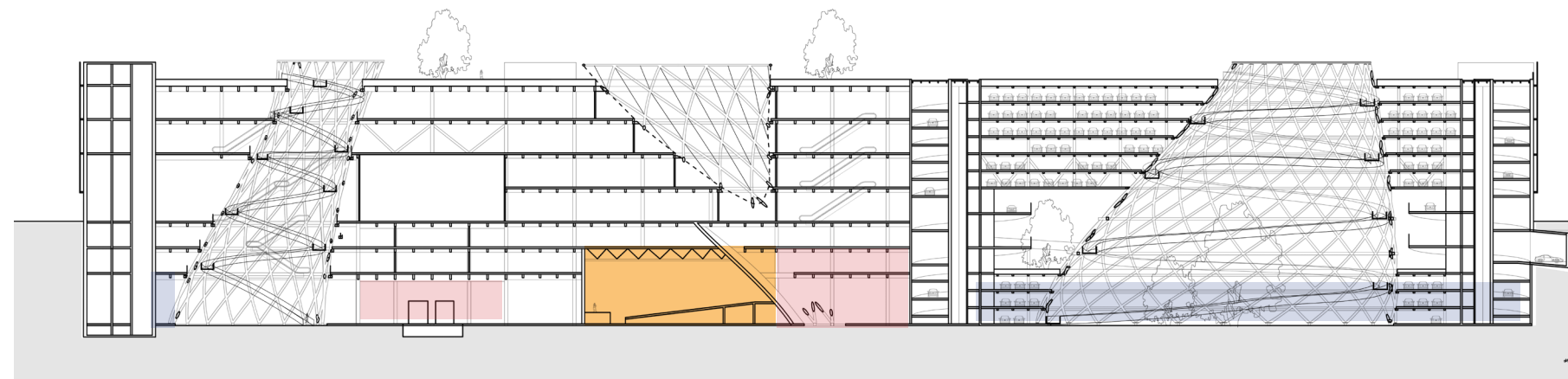
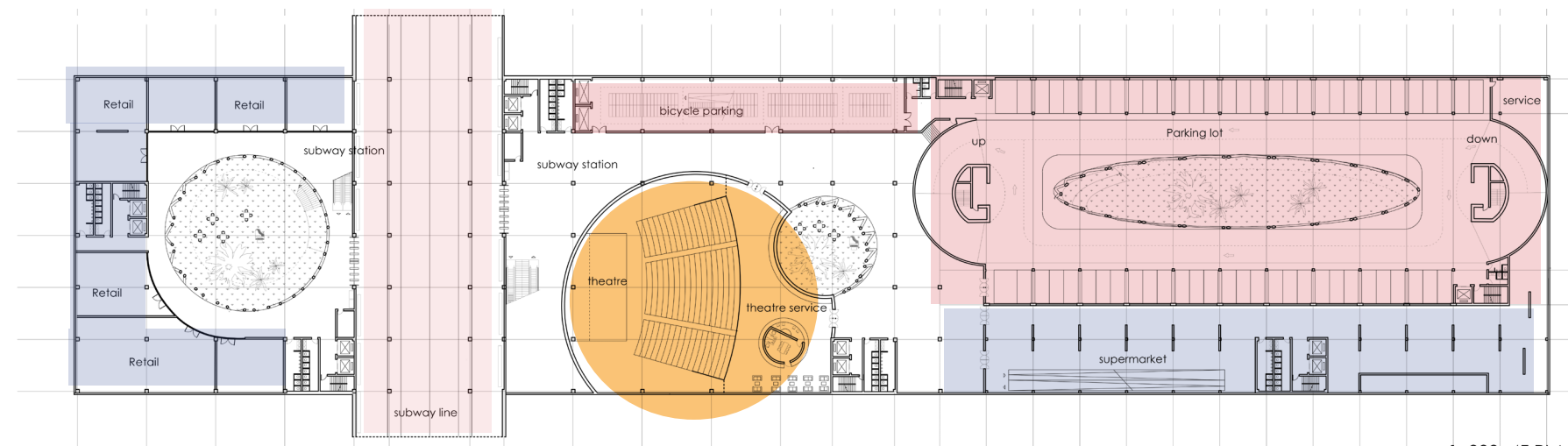
BUILDING / FUNCTIONALITY



-3F PLAN 1:300

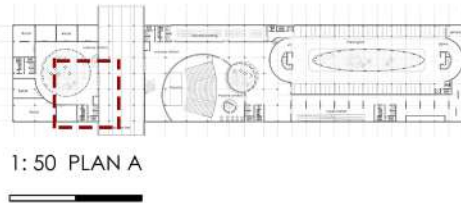
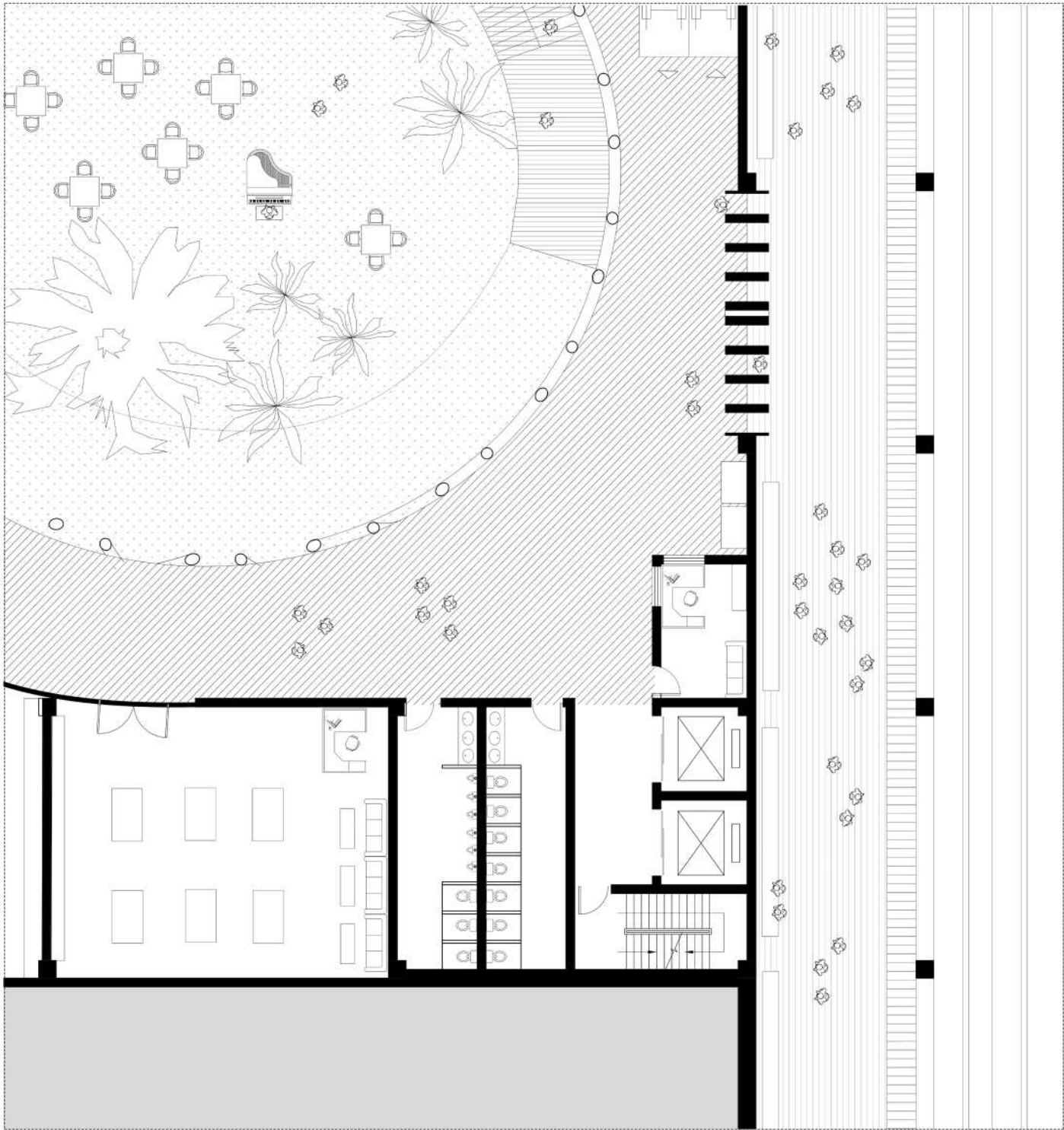


PROGRAM ZONING



- THEATRE
- 2ND AVE SUBWAY STATION
- RETAIL
- FOYER
- GALLERY / OPEN EXHIBITION
- SUPERMARKET
- PARKING LOT
- GYM
- BICYCLE PARKING

ZOOM IN...SUBWAY STATION

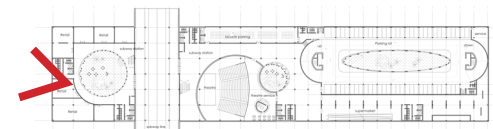


DESIGN IMPLEMENTATION

L: BUILDING / INTERIOR

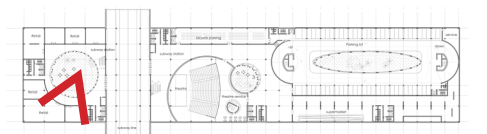


SUBWAY STATION



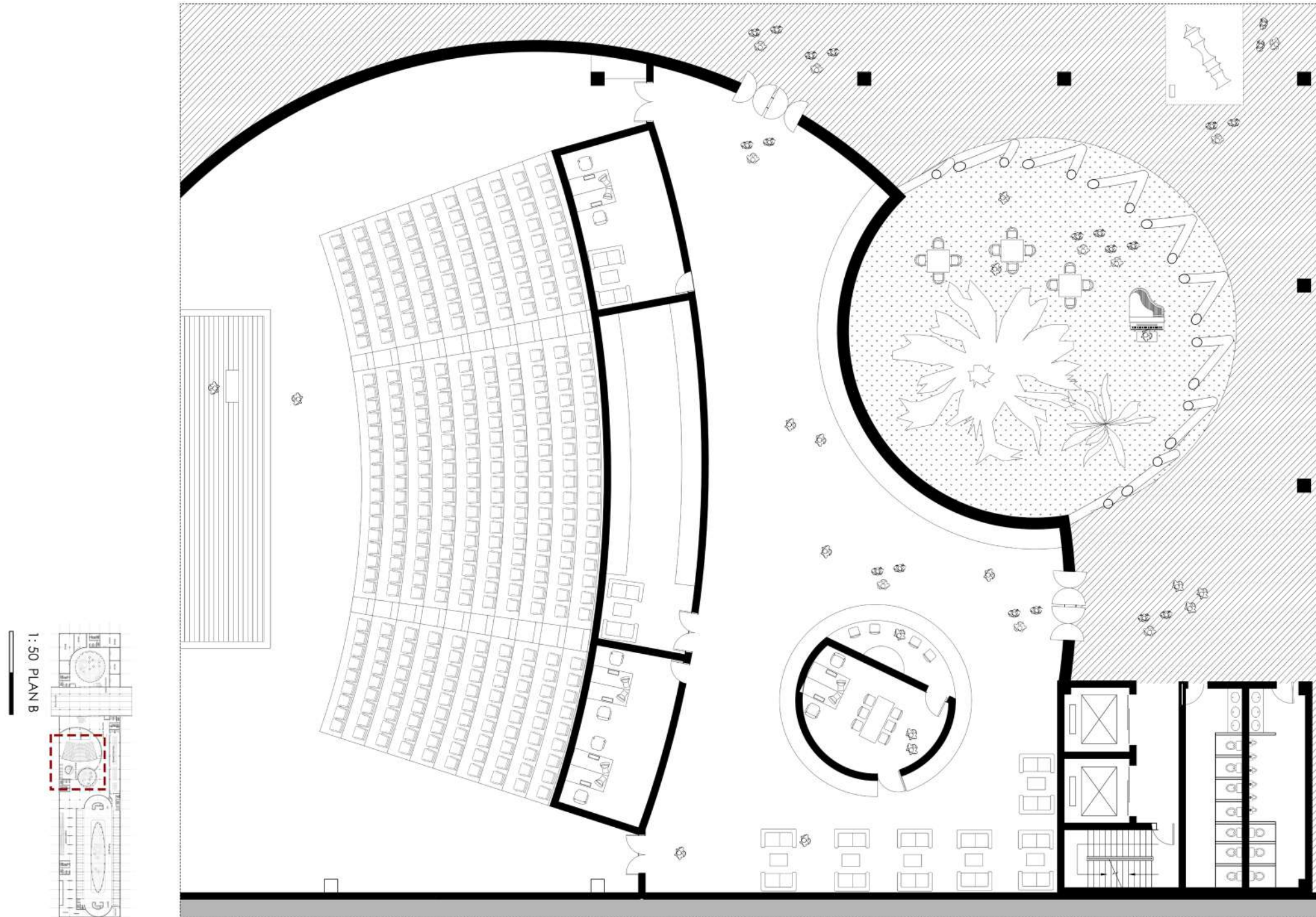


LANDSCAPE RAMP

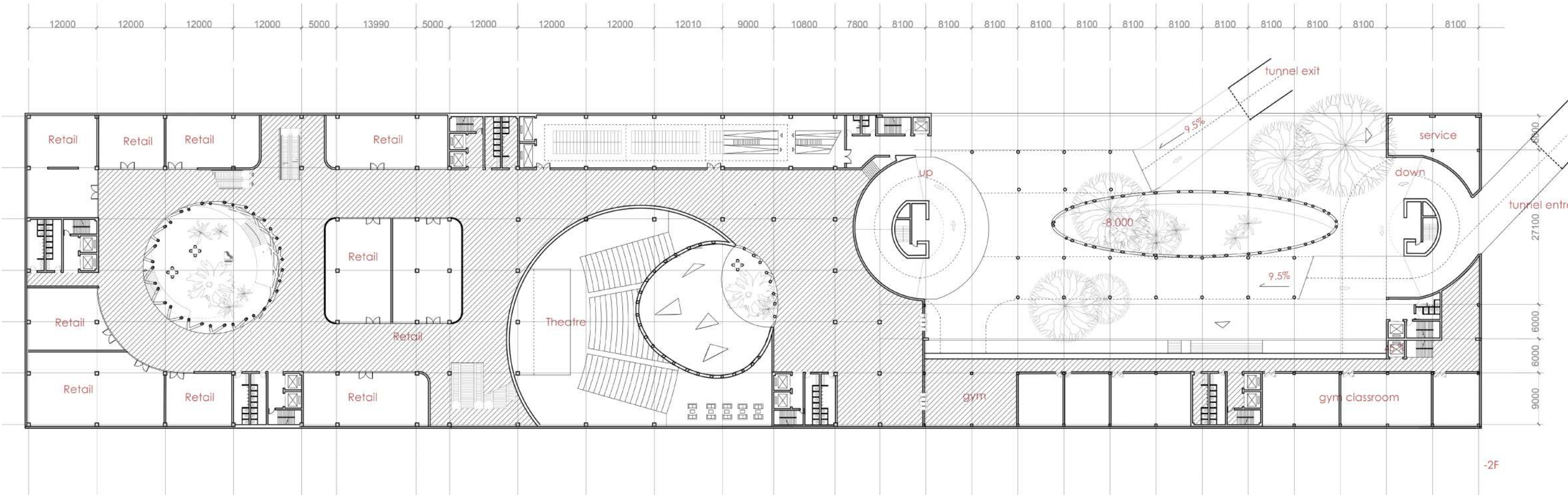


ZOOM IN...THEATRE

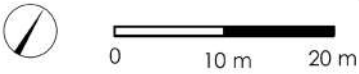
DESIGN IMPLEMENTATION
L: BUILDING / FUNCTIONALITY



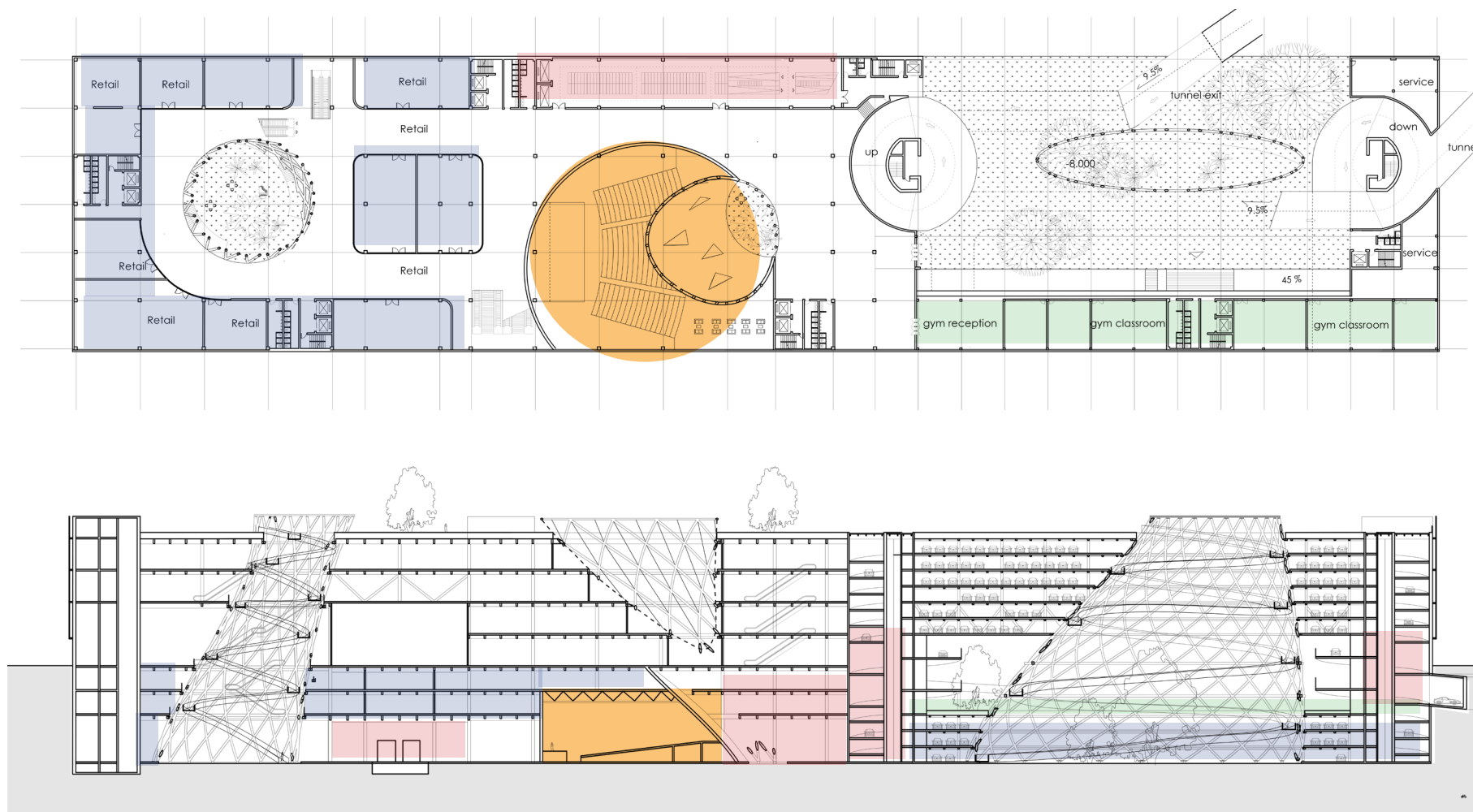
-2F PLAN 1:300



1: 300 -2F PLAN /



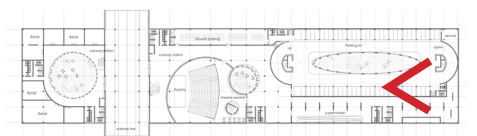
PROGRAM ZONING



- THEATRE
- 2ND AVE SUBWAY STATION
- RETAIL
- FOYER
- GALLERY / OPEN EXHIBITION
- SUPERMARKET
- PARKING LOT
- GYM
- BICYCLE PARKING

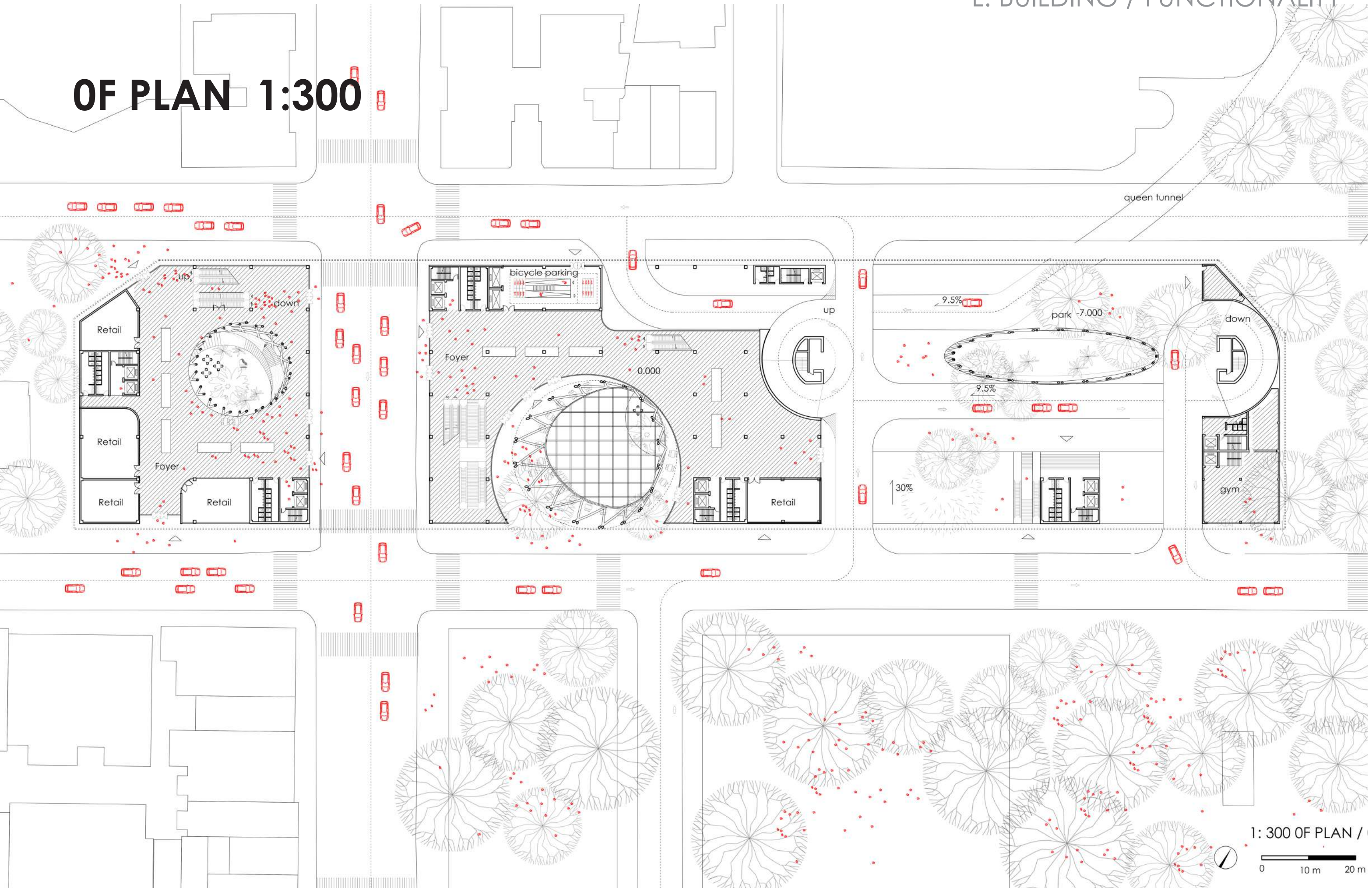


UNDERGROUND PARKING LOT

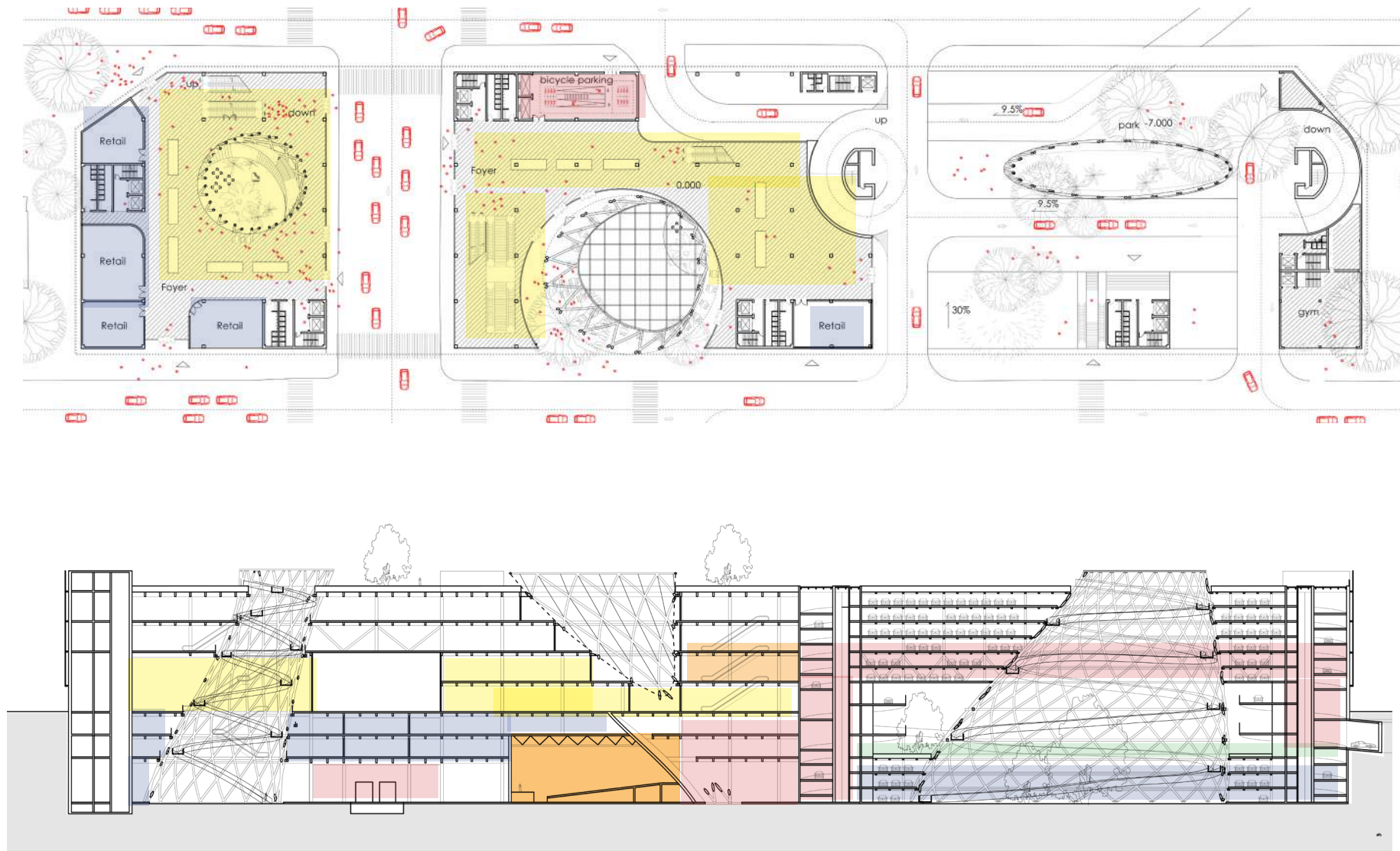


DESIGN IMPLEMENTATION
L: BUILDING / FUNCTIONALITY

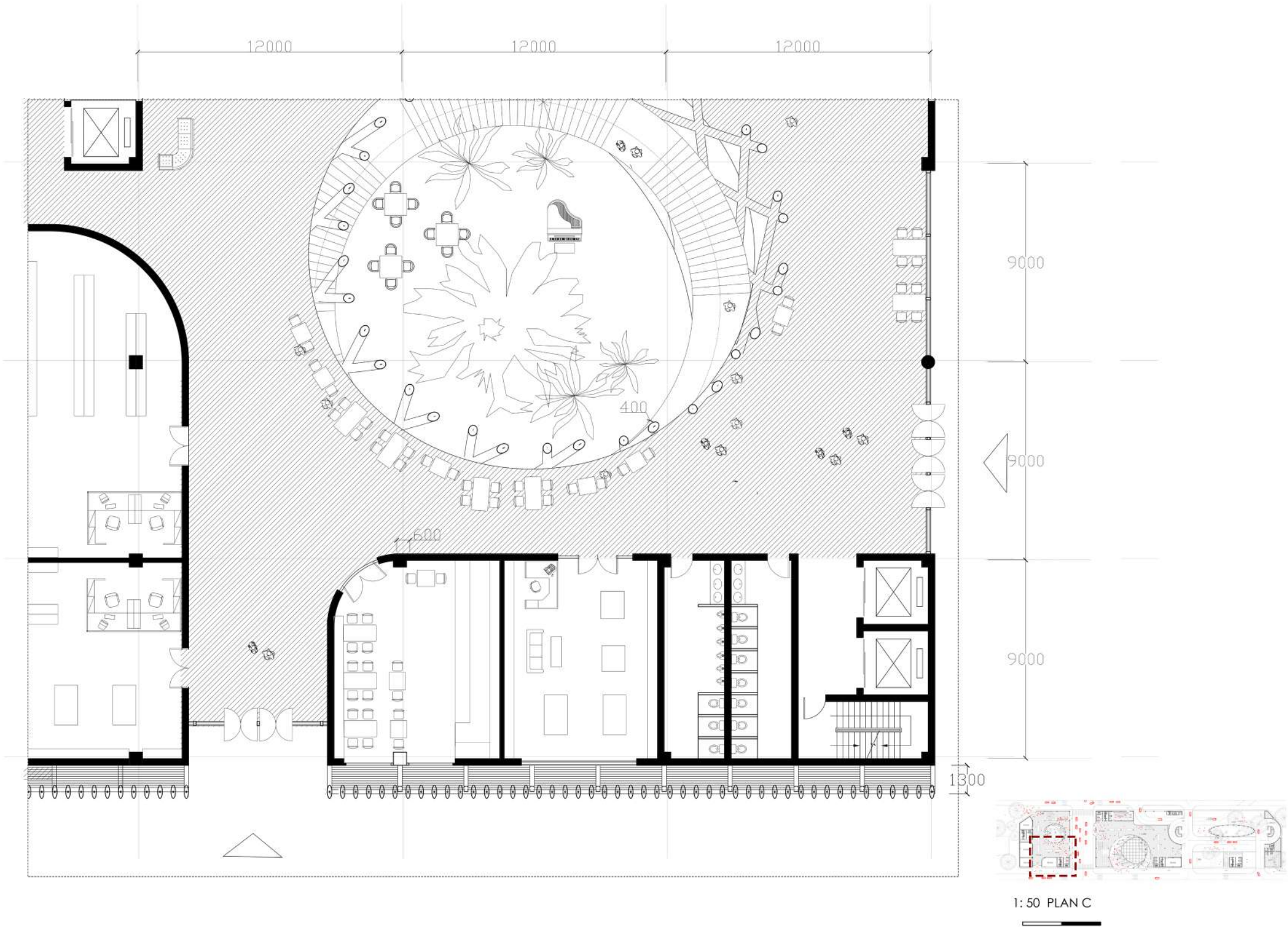
OF PLAN 1:300



PROGRAM ZONING

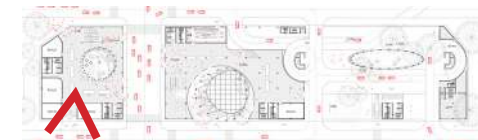


ZOOM IN...FOYER





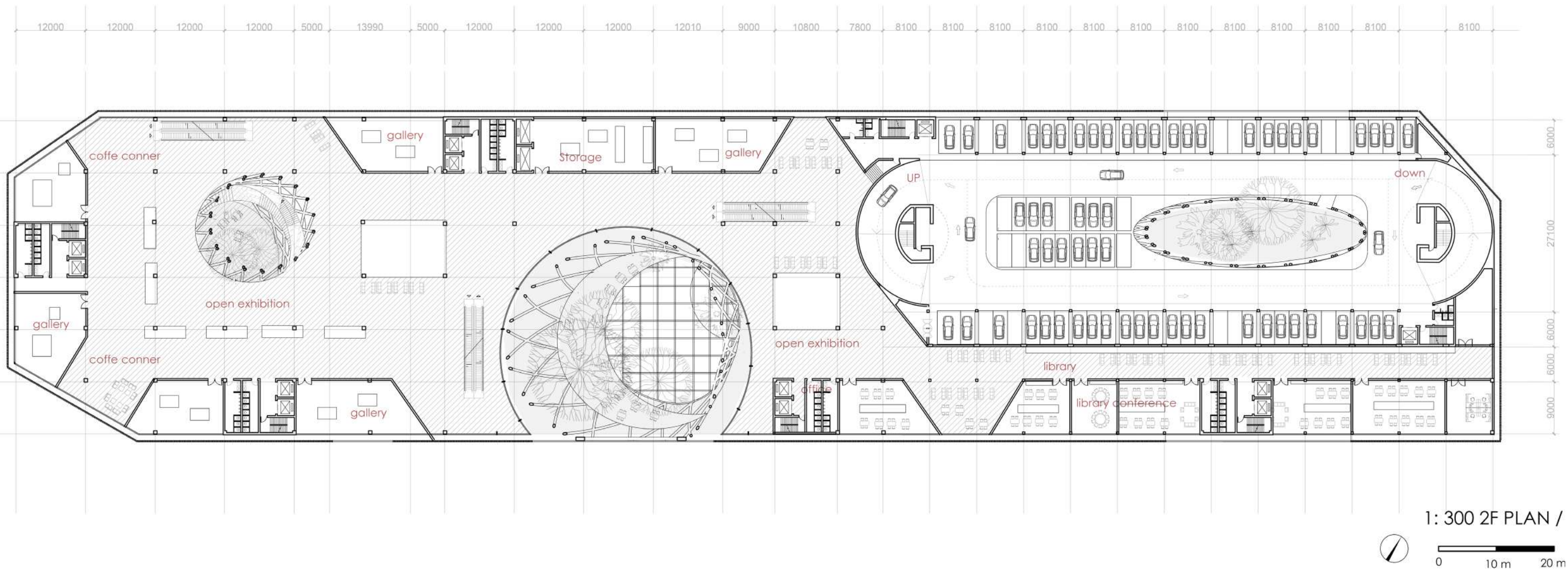
MAIN ENTRANCE SE



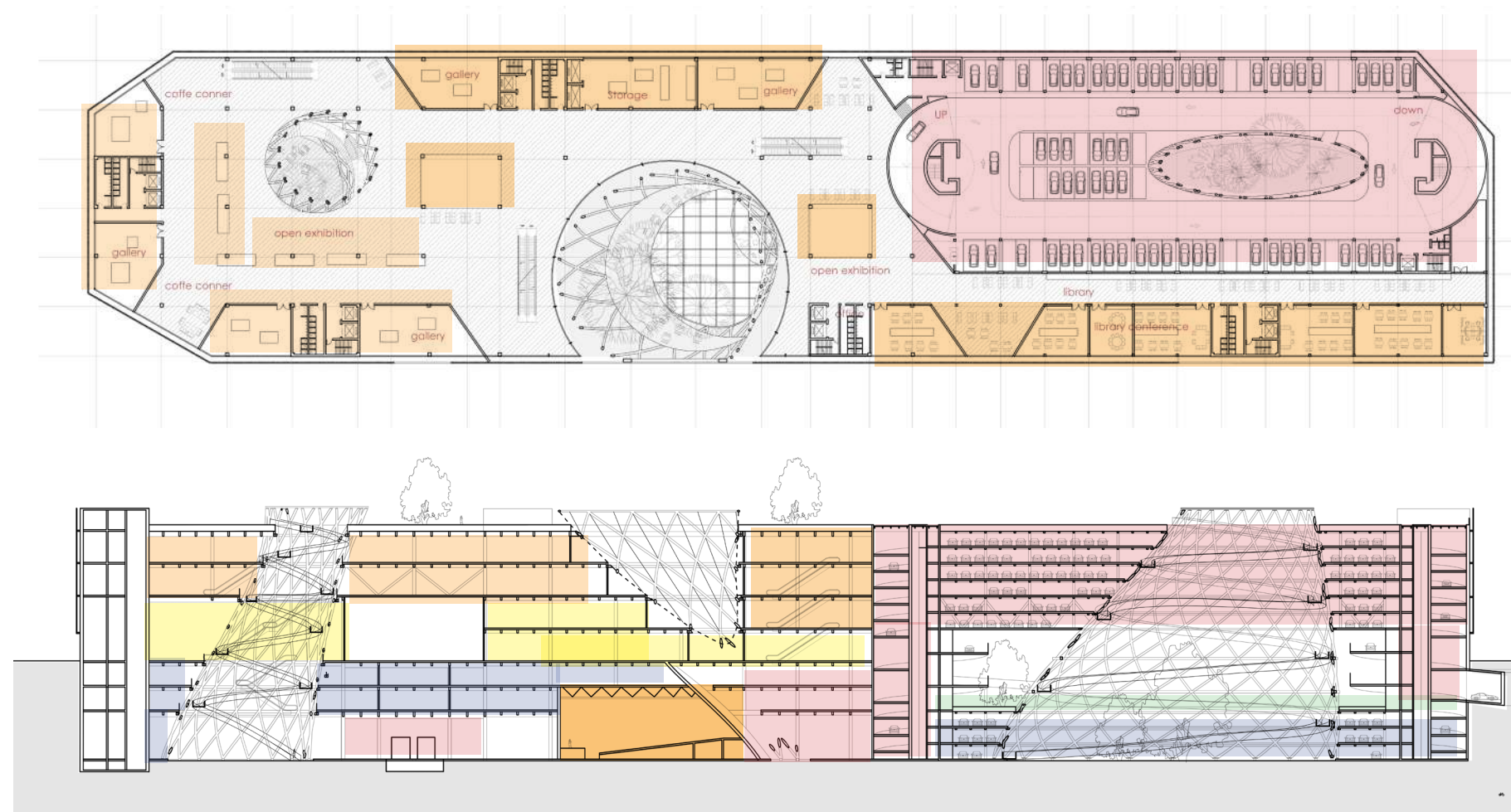


MAIN ENTRANCE SW

2F PLAN 1:300



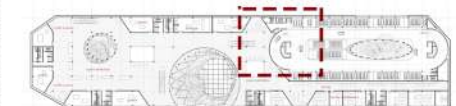
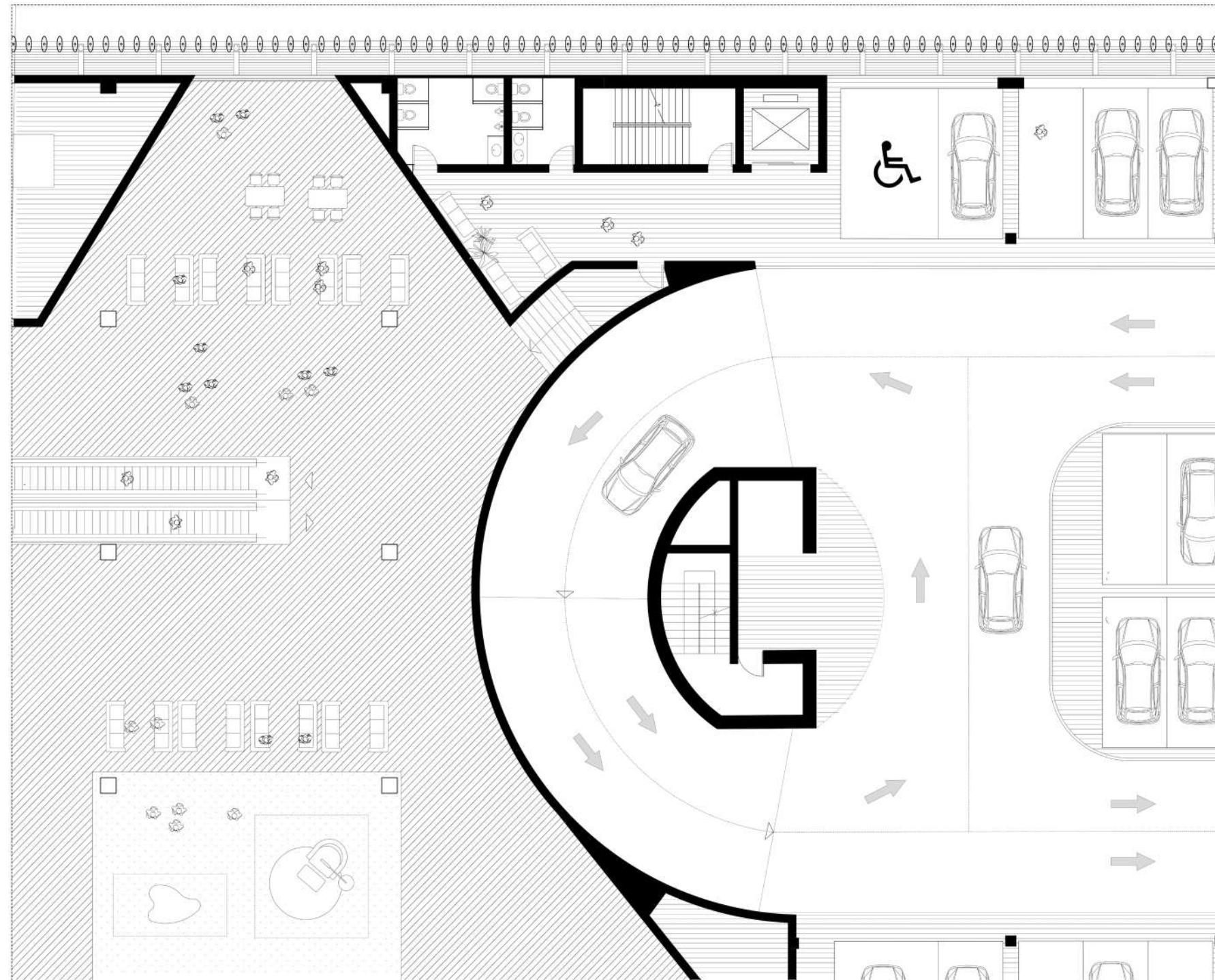
PROGRAM ZONING



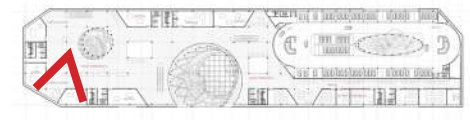
- THEATRE
- 2ND AVE SUBWAY STATION
- RETAIL
- FOYER
- GALLERY / OPEN EXHIBITION/LIBRARY
- SUPERMARKET
- PARKING LOT
- GYM
- BICYCLE PARKING

ZOOM IN..OPEN EXHIBITION & PARKING

DESIGN IMPLEMENTATION
L: BUILDING / FUNCTIONALITY



1: 50 PLAN D



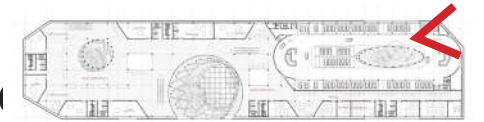


EXHIBITION CORNER

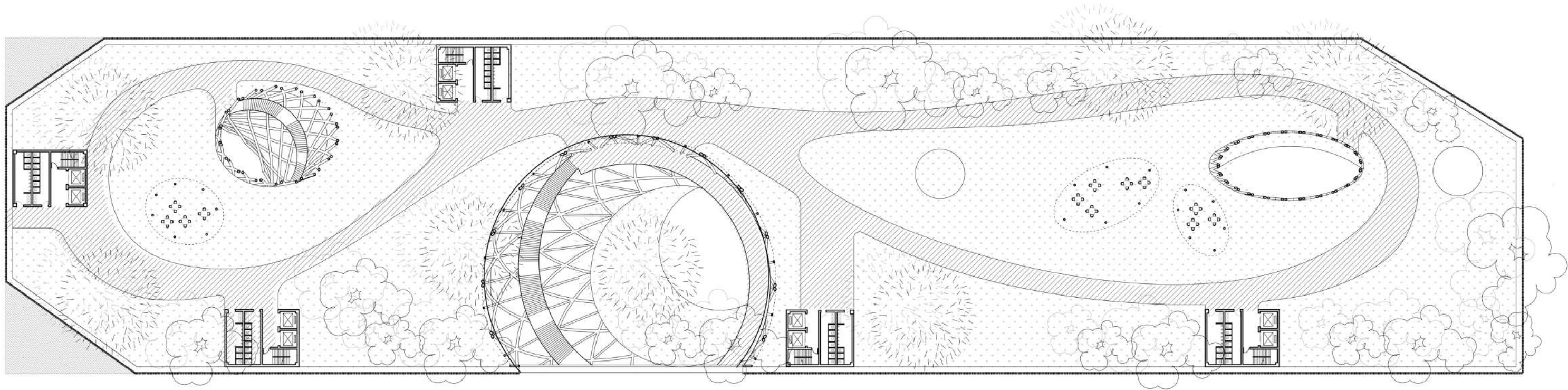





UPPERGROUND PARKING L



ROOF PLAN 1:300

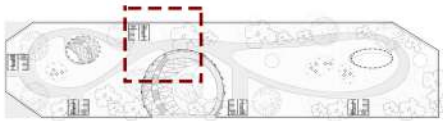
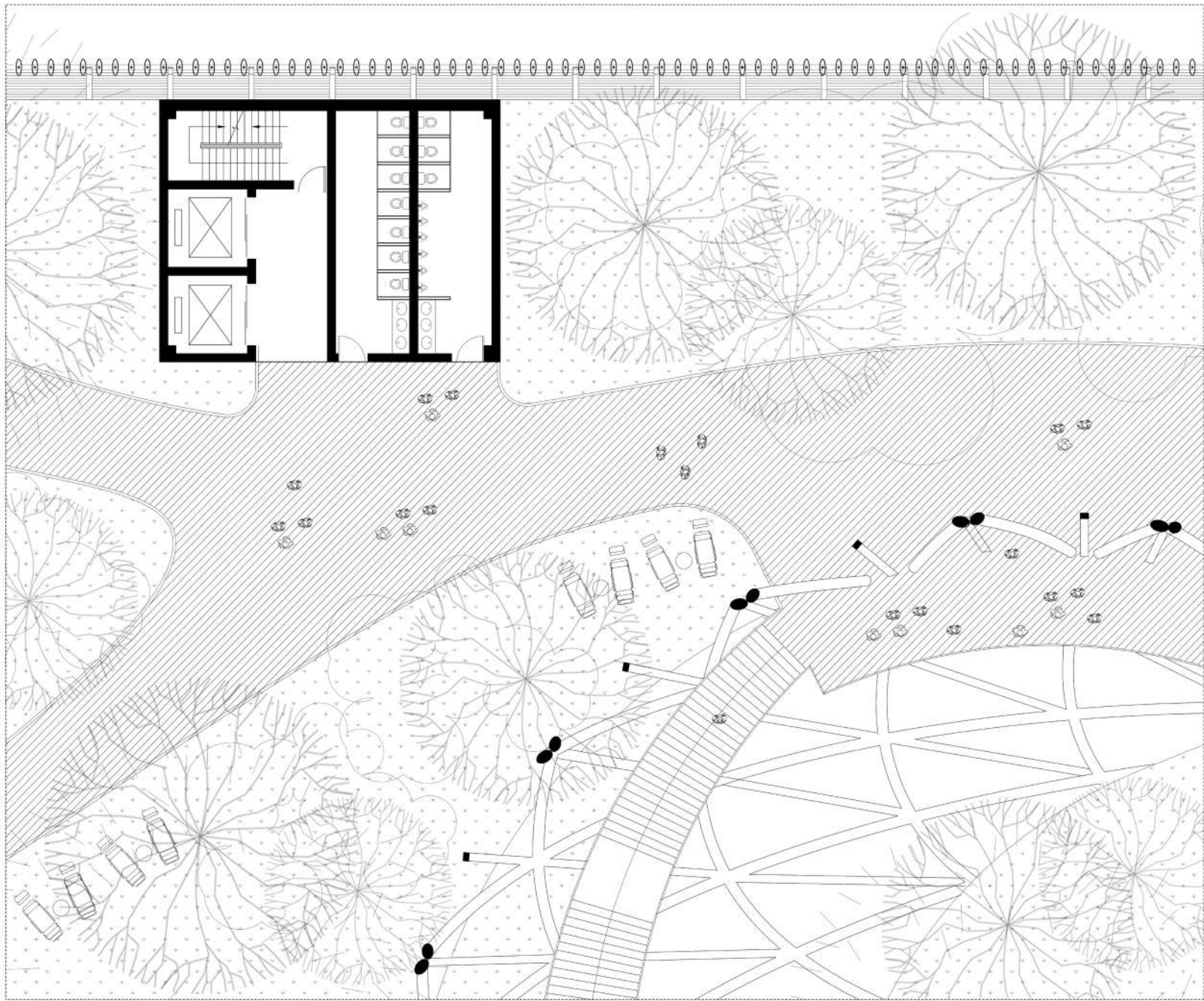


1: 300 ROOF PL



0 10 m 20 m

ZOOM IN..PART

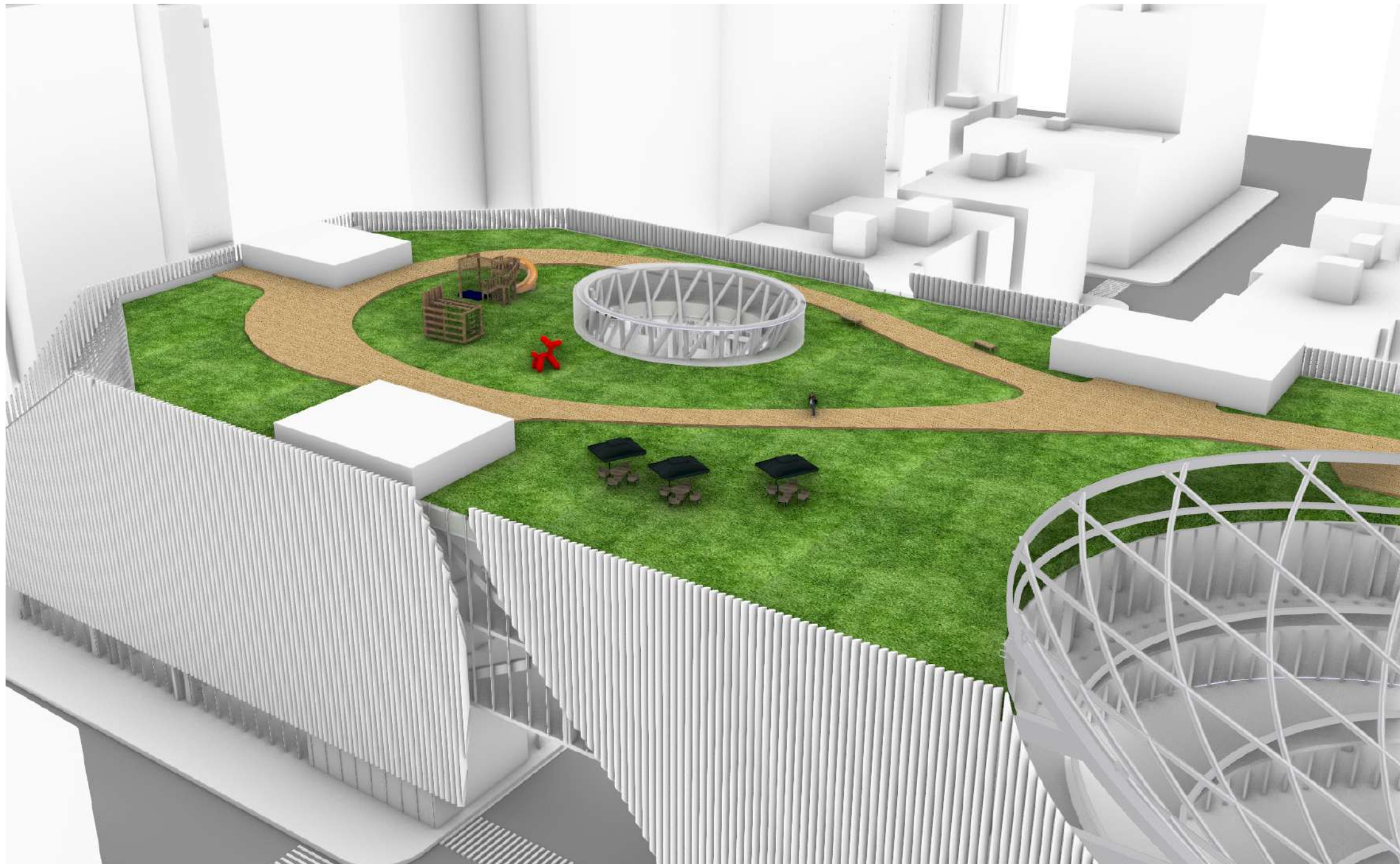


1: 50 PLAN E



DESIGN IMPLEMENTATION

L: BUILDING / FUNCTIONALITY

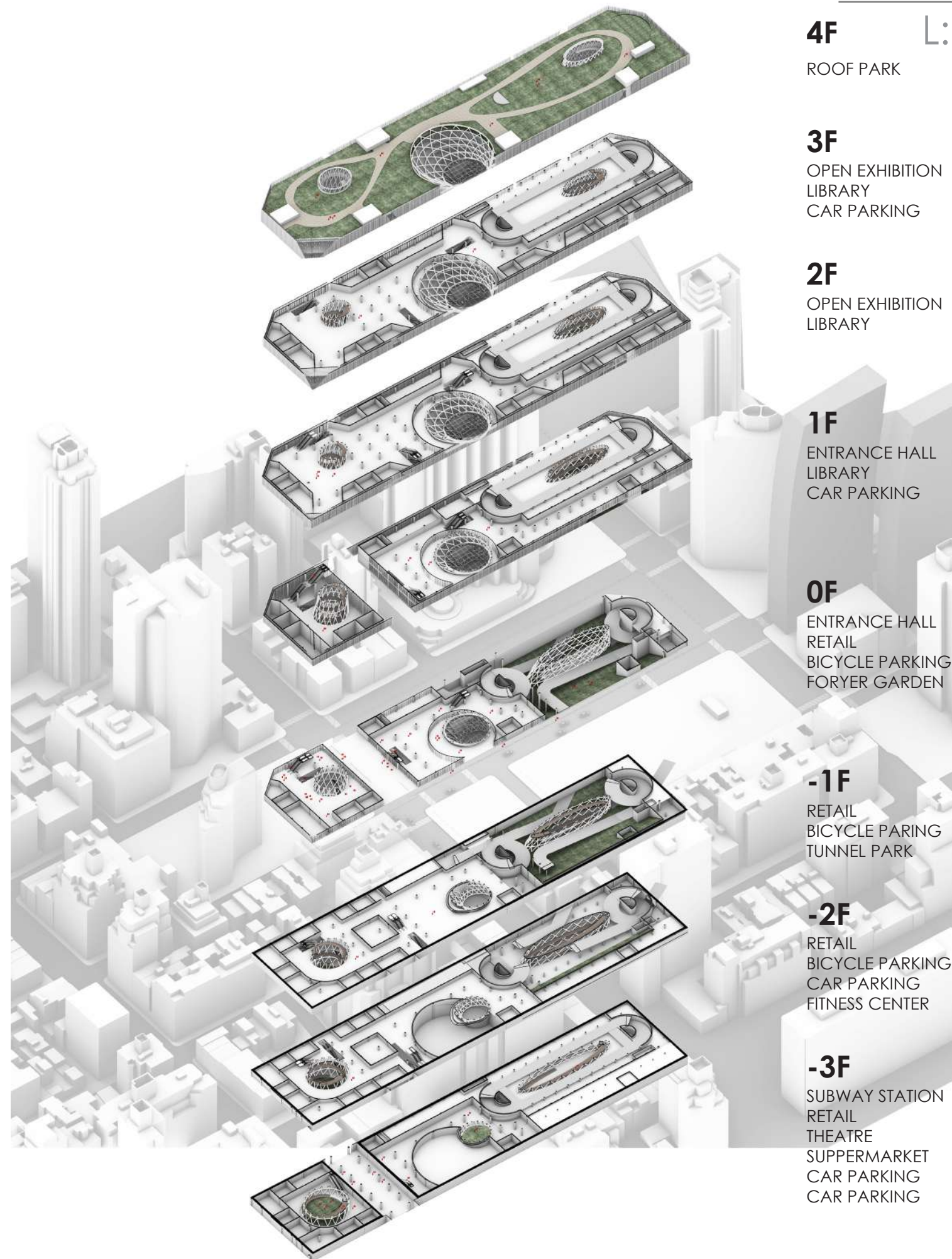


ROOF PARK



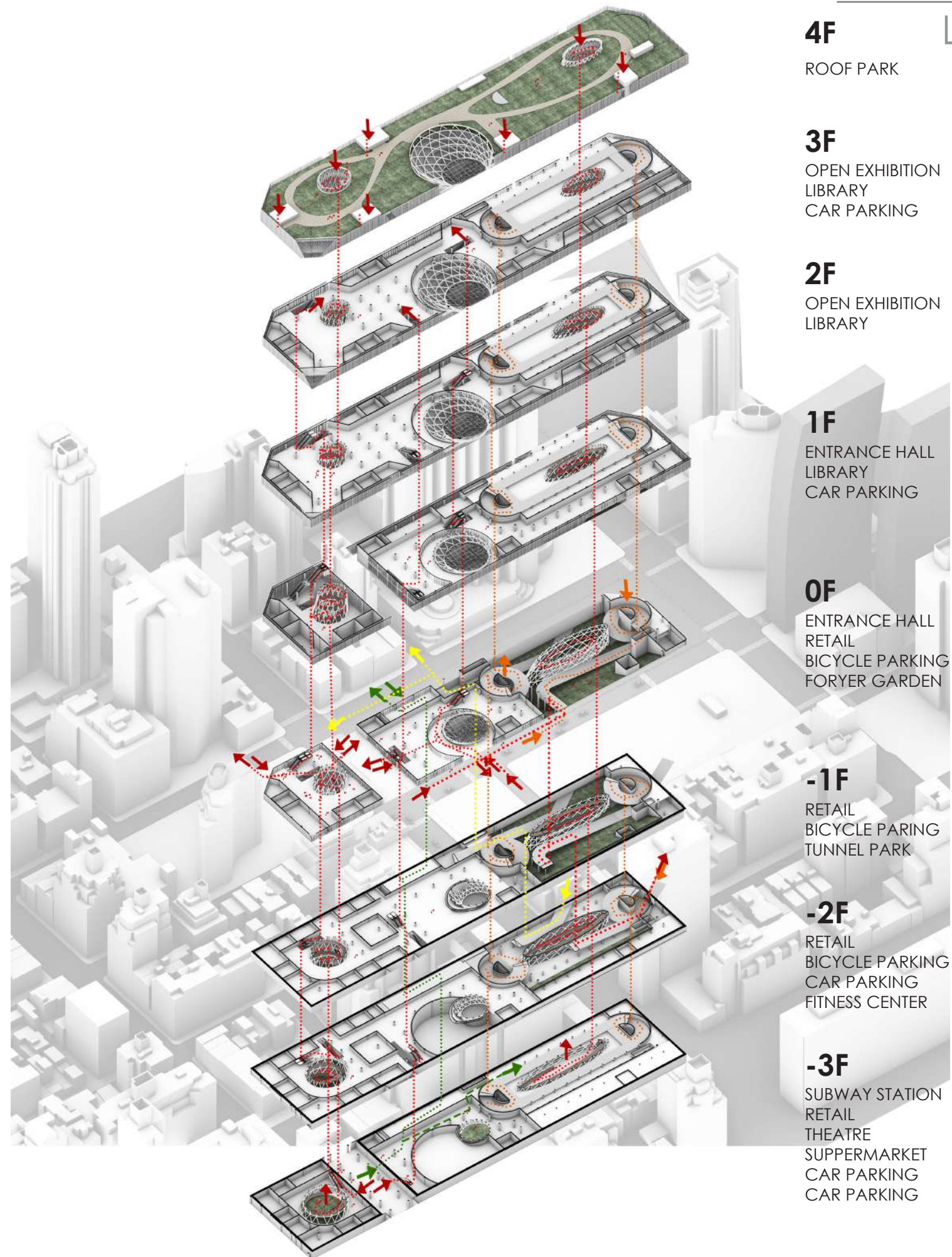
DESIGN IMPLEMENTATION

L: BUILDING / FUNCTIONALITY



DESIGN IMPLEMENTATION

L: BUILDING / TRAFFIC FLOW



4F
ROOF PARK

3F
OPEN EXHIBITION
LIBRARY
CAR PARKING

2F
OPEN EXHIBITION
LIBRARY

1F
ENTRANCE HALL
LIBRARY
CAR PARKING

0F
ENTRANCE HALL
RETAIL
BICYCLE PARKING
FORYER GARDEN

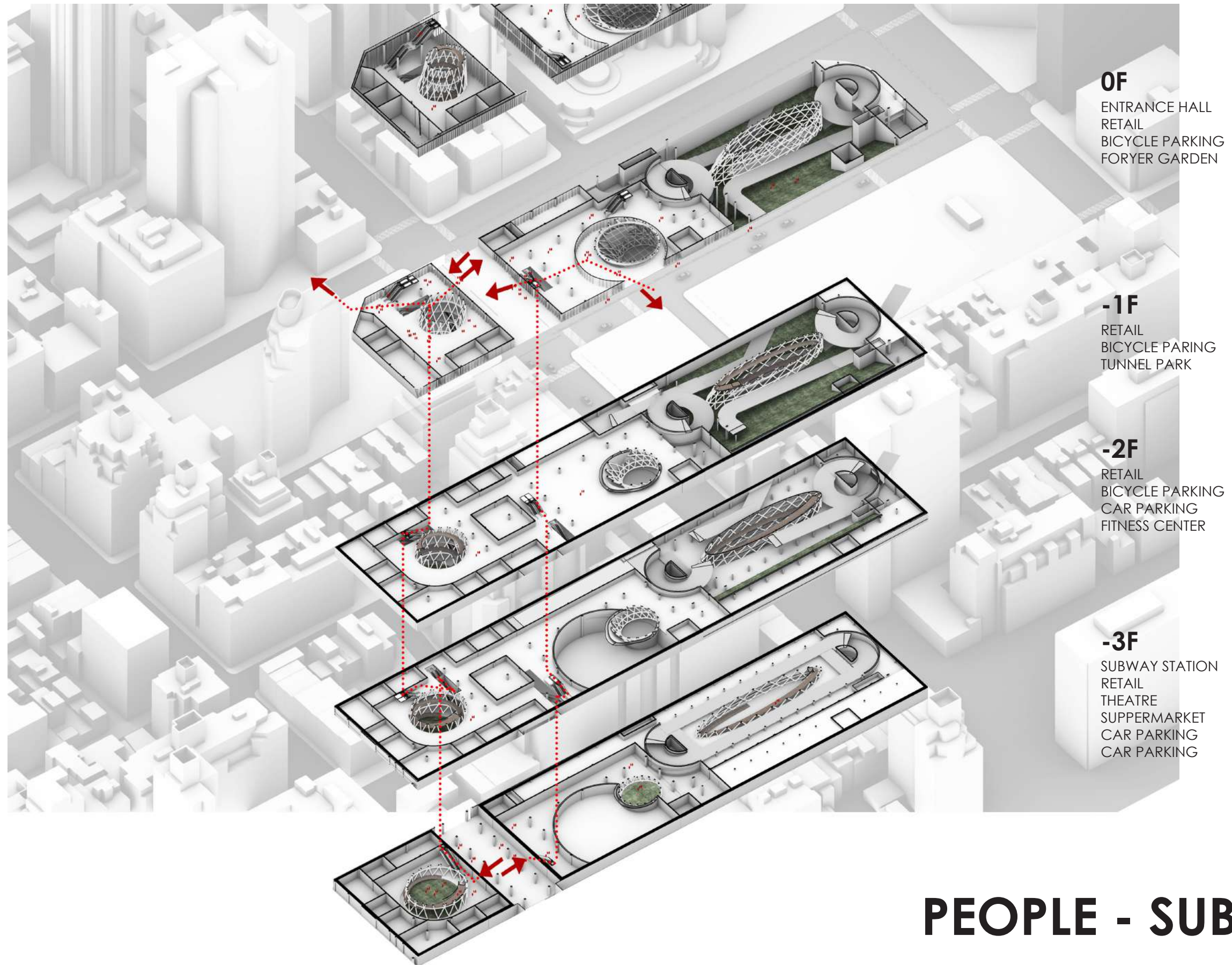
-1F
RETAIL
BICYCLE PARING
TUNNEL PARK

-2F
RETAIL
BICYCLE PARKING
CAR PARKING
FITNESS CENTER

-3F
SUBWAY STATION
RETAIL
THEATRE
SUPPERMARKET
CAR PARKING
CAR PARKING

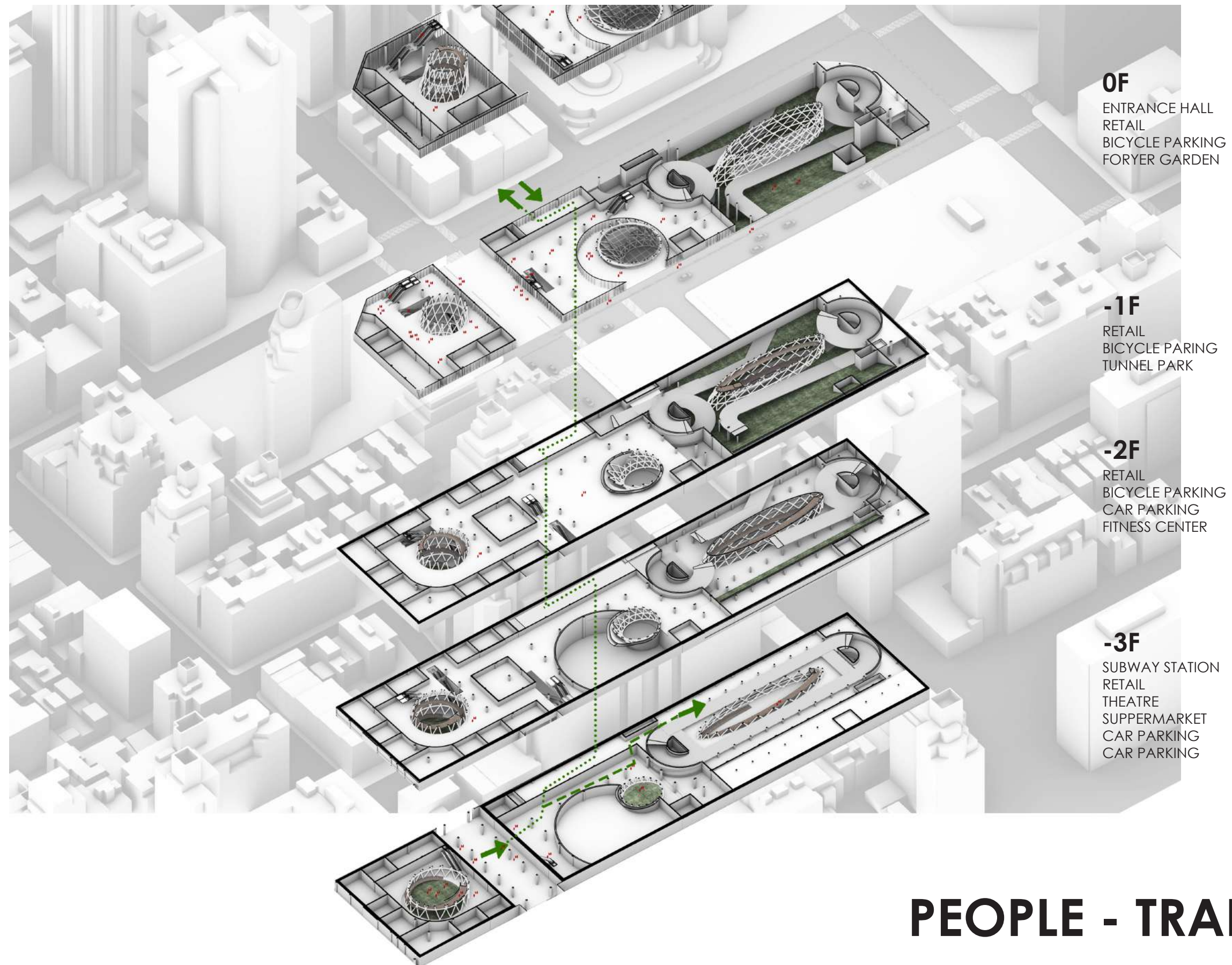
DESIGN IMPLEMENTATION

L: BUILDING / TRAFFIC FLOW



DESIGN IMPLEMENTATION

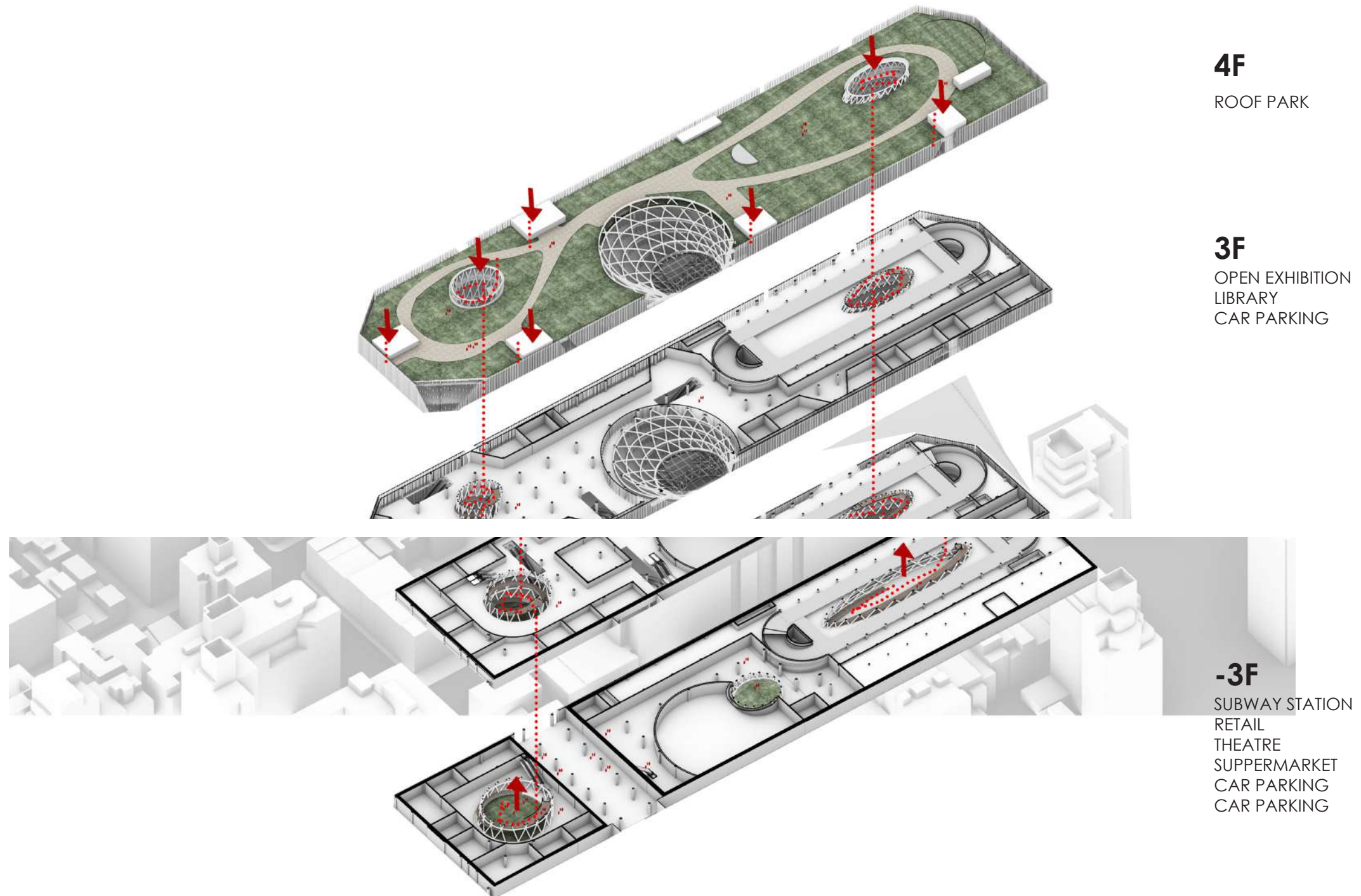
L: BUILDING / TRAFFIC FLOW



PEOPLE - TRANSFER

DESIGN IMPLEMENTATION

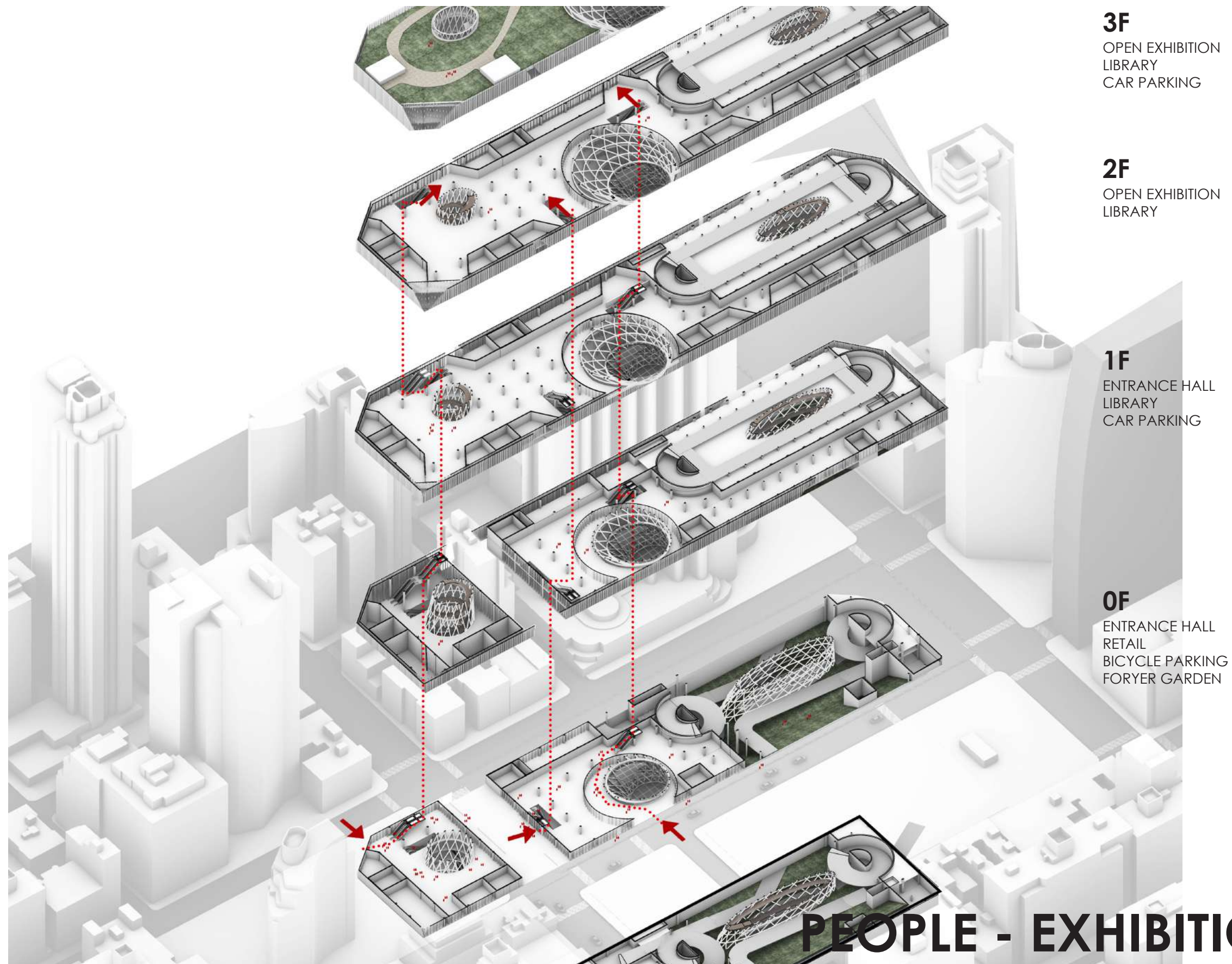
L: BUILDING / TRAFFIC FLOW



PEOPLE - LANDSCAPE

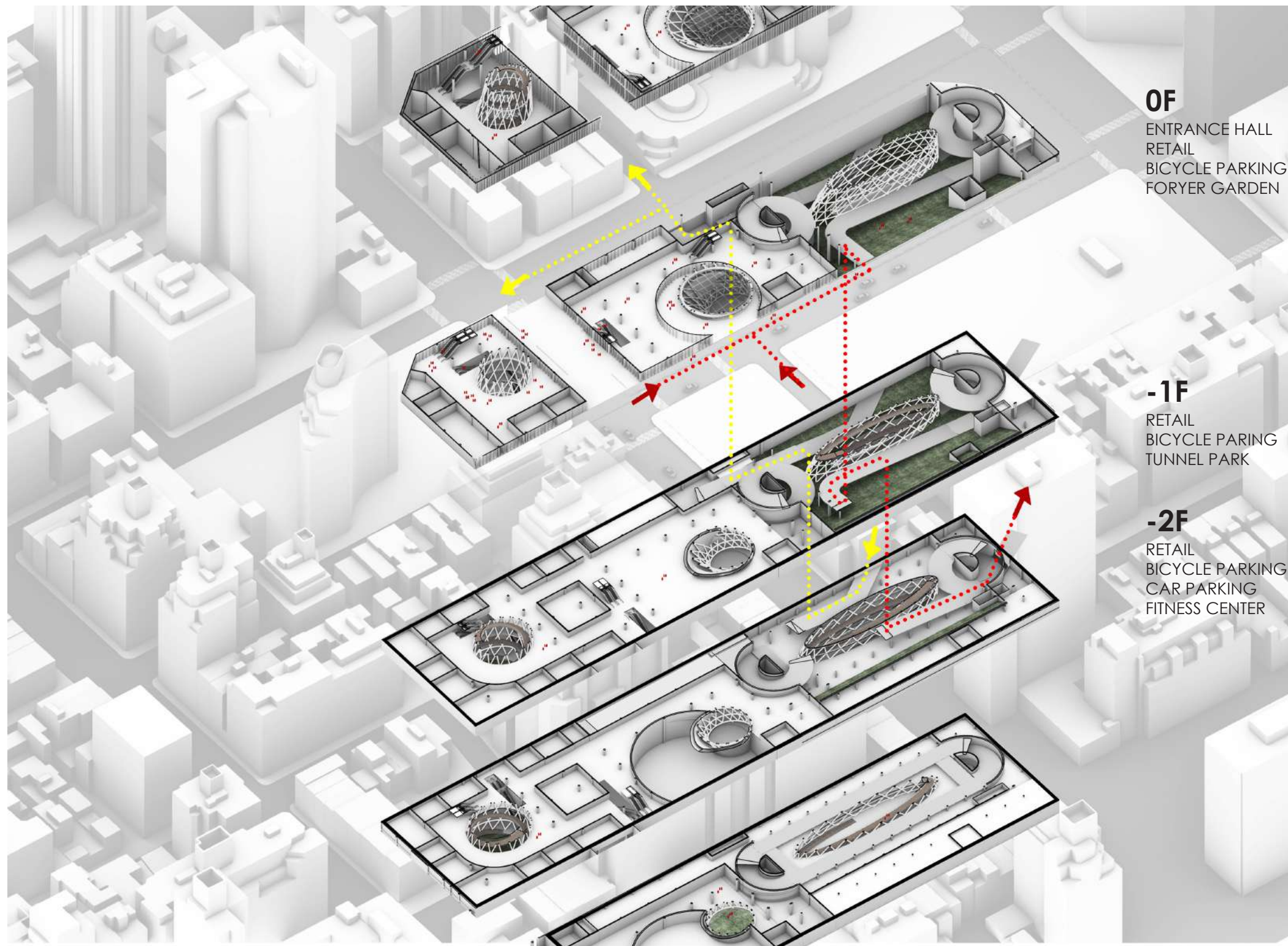
DESIGN IMPLEMENTATION

L: BUILDING / TRAFFIC FLOW



DESIGN IMPLEMENTATION

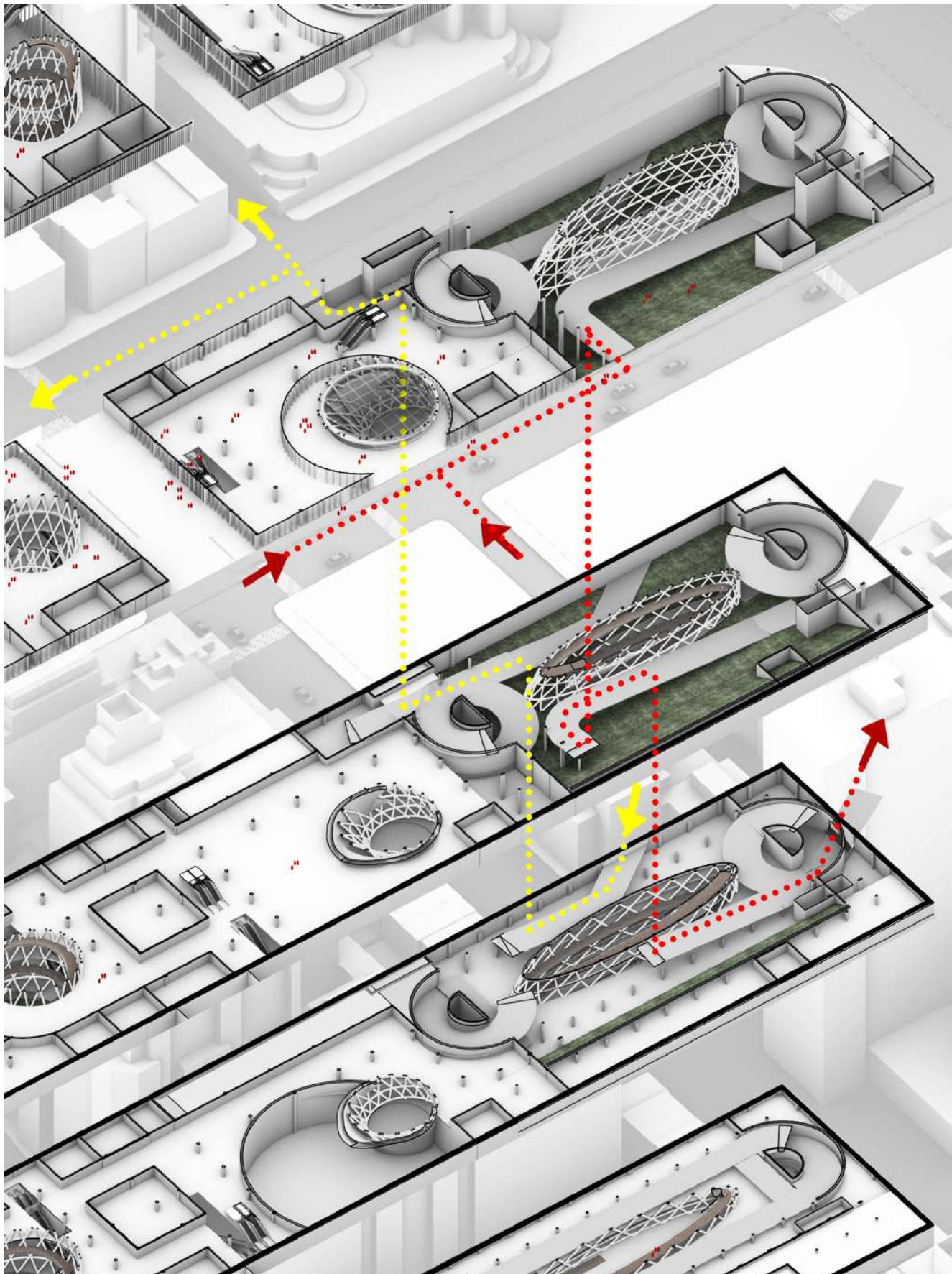
L: BUILDING / TRAFFIC FLOW



CAR- TUNNEL

DESIGN IMPLEMENTATION

L: BUILDING / TRAFFIC FLOW



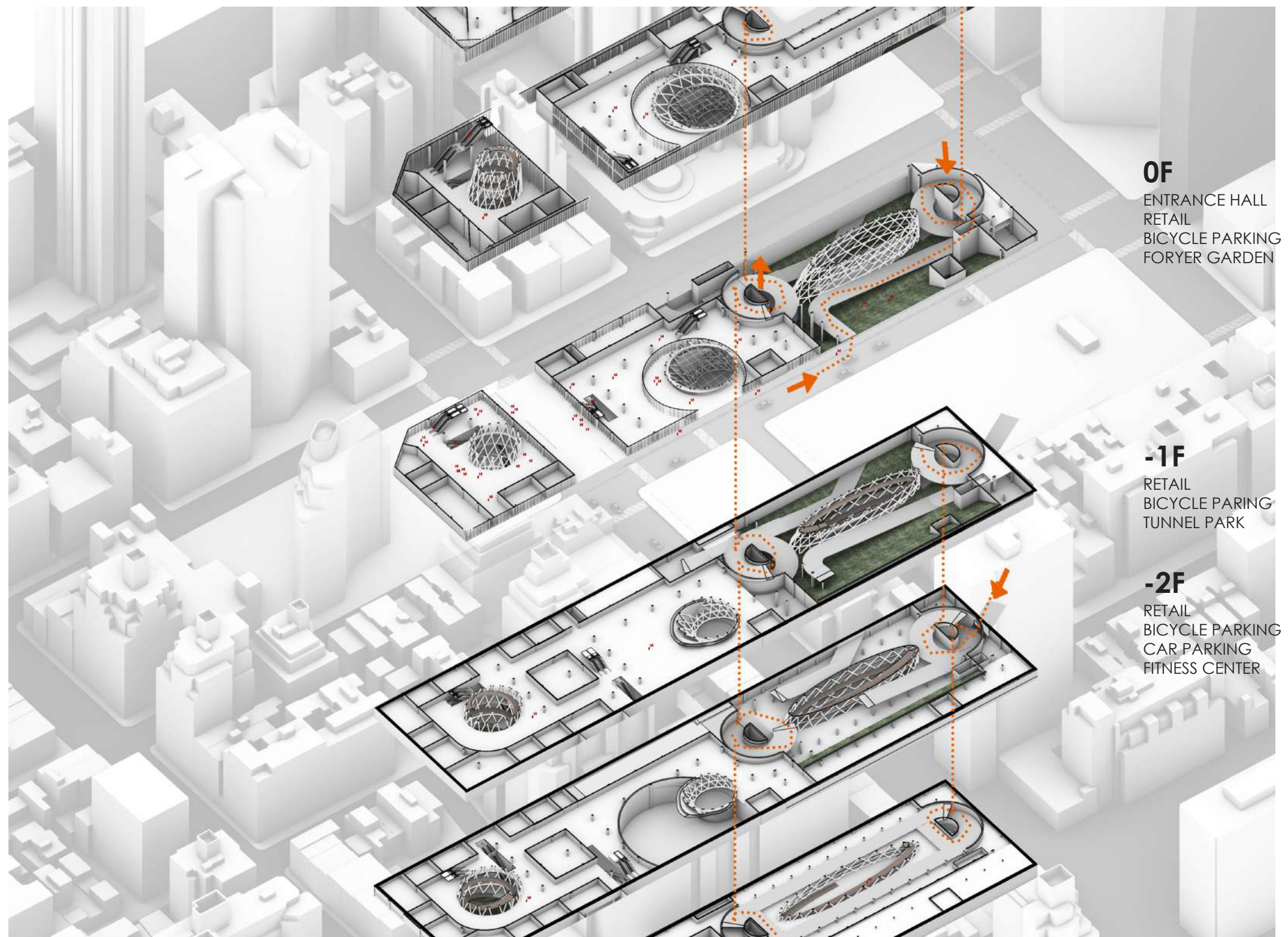
parking directly during people go out of the tunnel, to prevent the previous chaotic parking on the ground street after coming out of the underground tunnel

original expansion of tunnel ramp:
height 8m --- 5% (Urban overpass) ---
distance : 150m

--- 9.5% (NEW, IN BUILDING WITH SPIRAL)----- 150m : 85 m

DESIGN IMPLEMENTATION

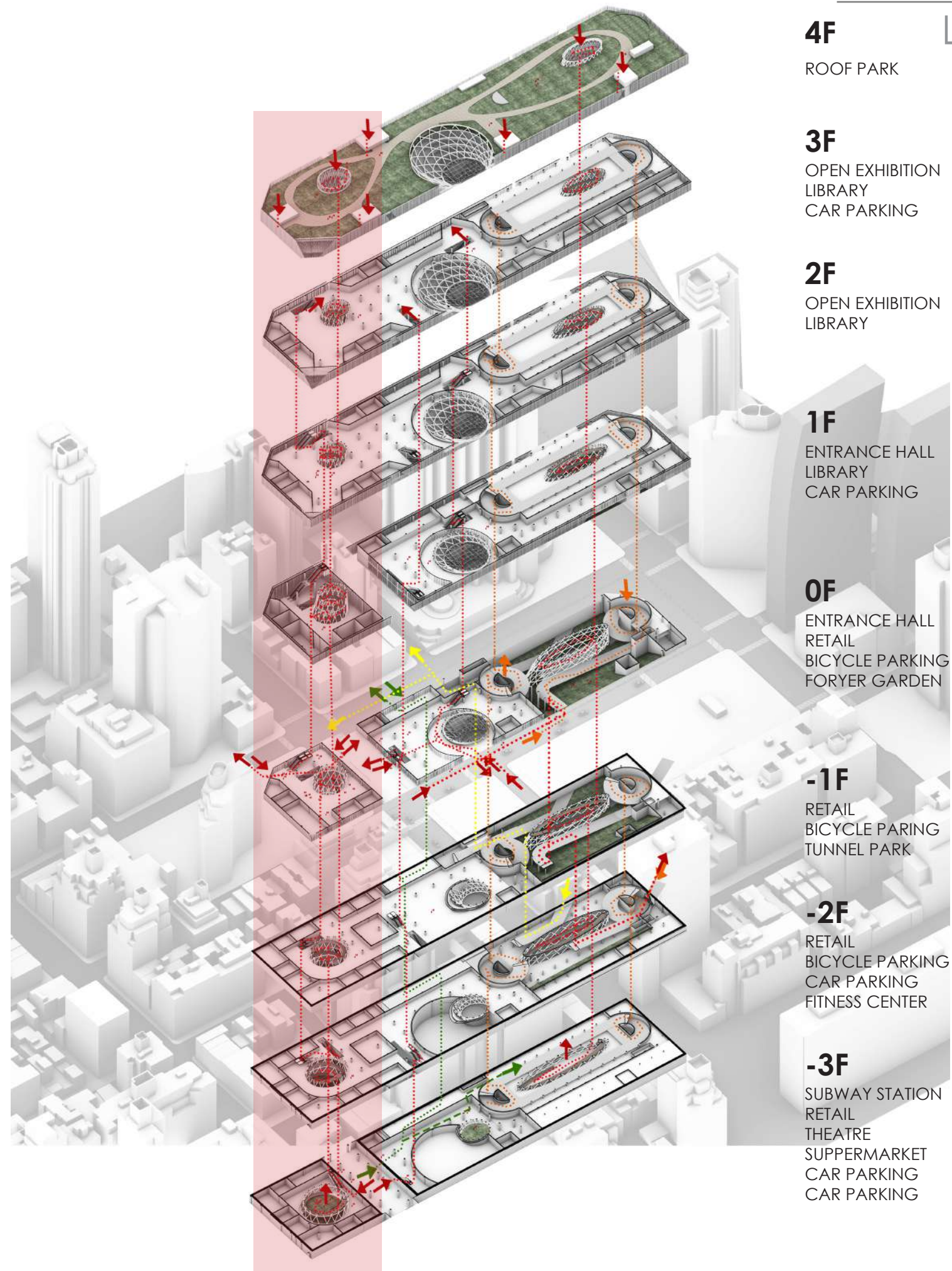
L: BUILDING / TRAFFIC FLOW



CAR- PARKING

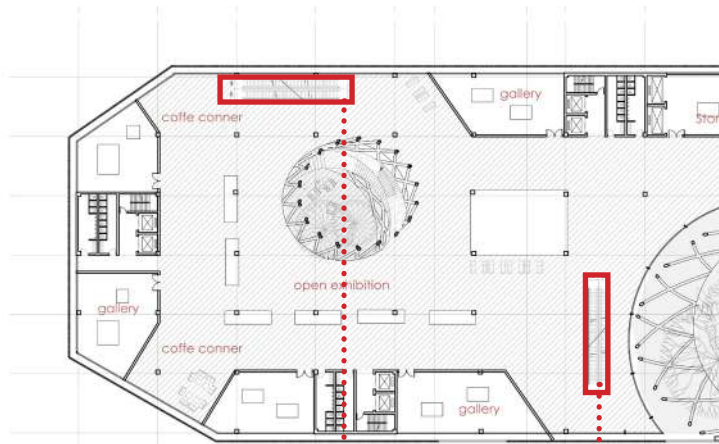
DESIGN IMPLEMENTATION

L: BUILDING / TRAFFIC FLOW

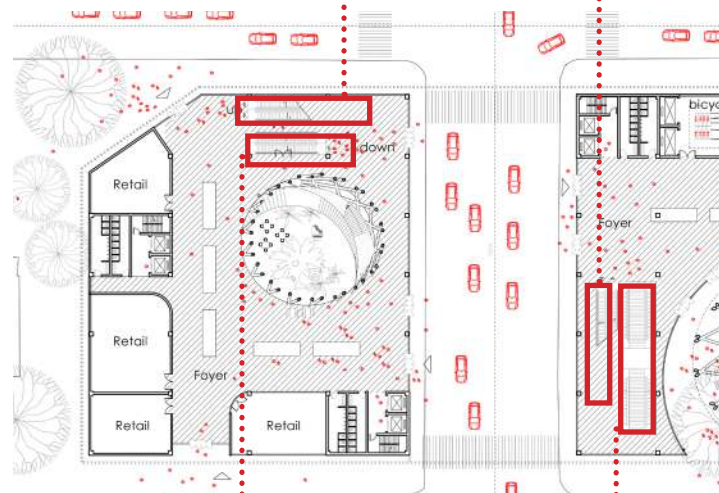


SUBWAY VOID

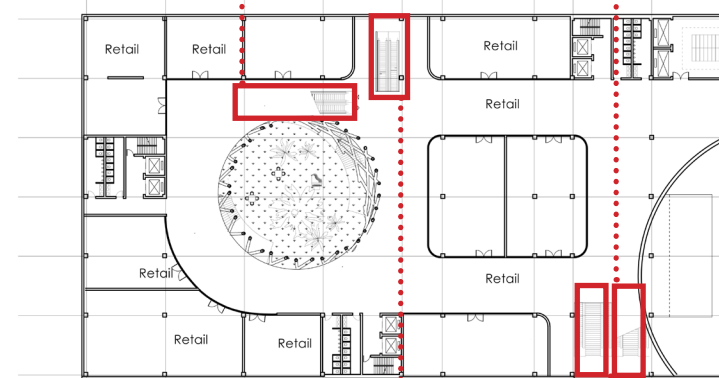
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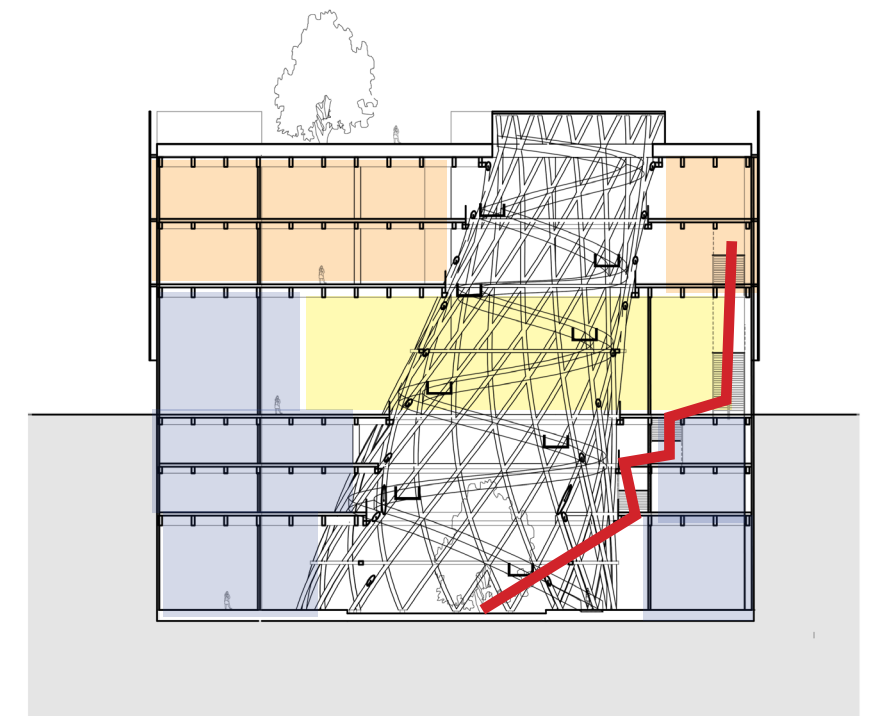
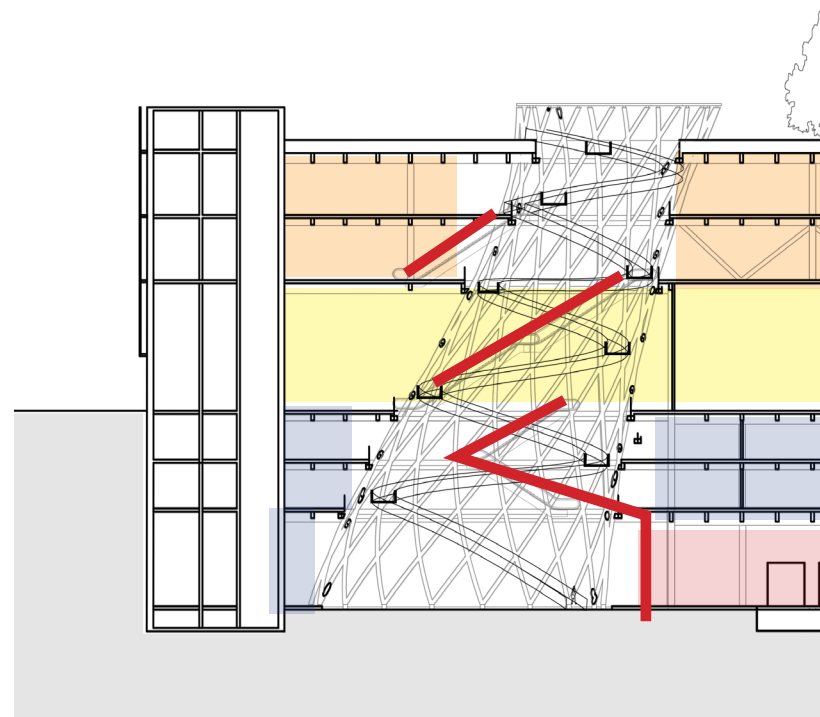
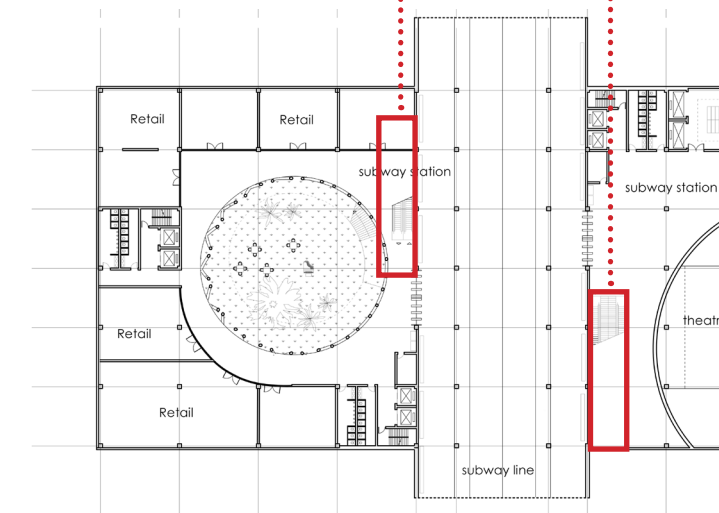
0F



-2F



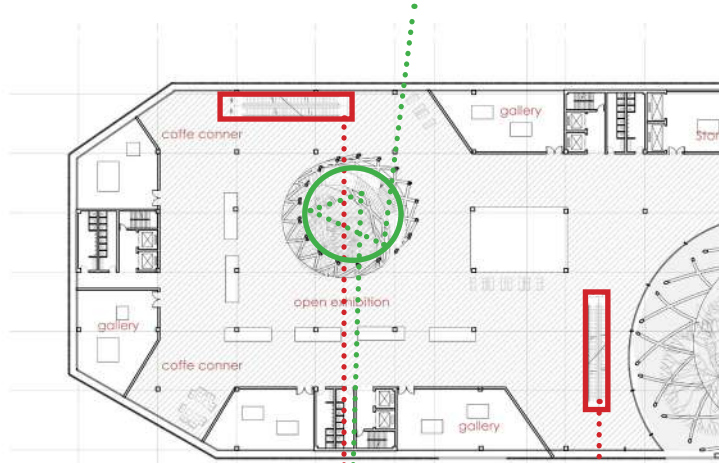
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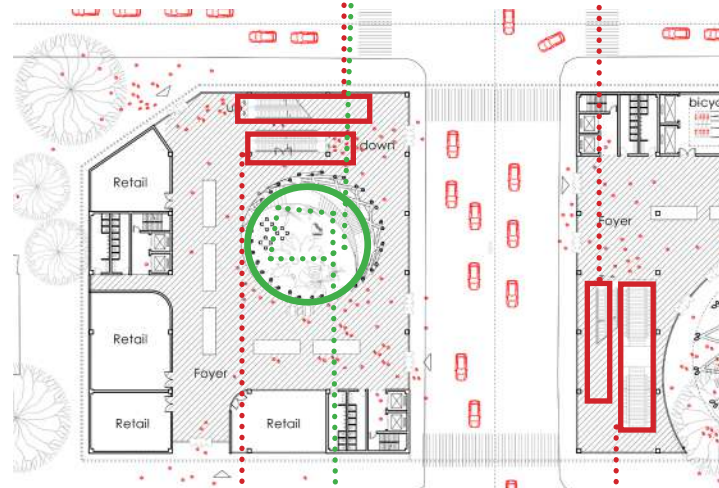
— ESCALATOR
.....

SUBWAY VOID

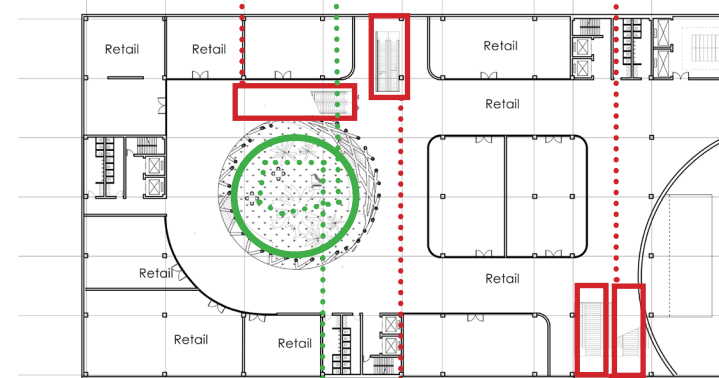
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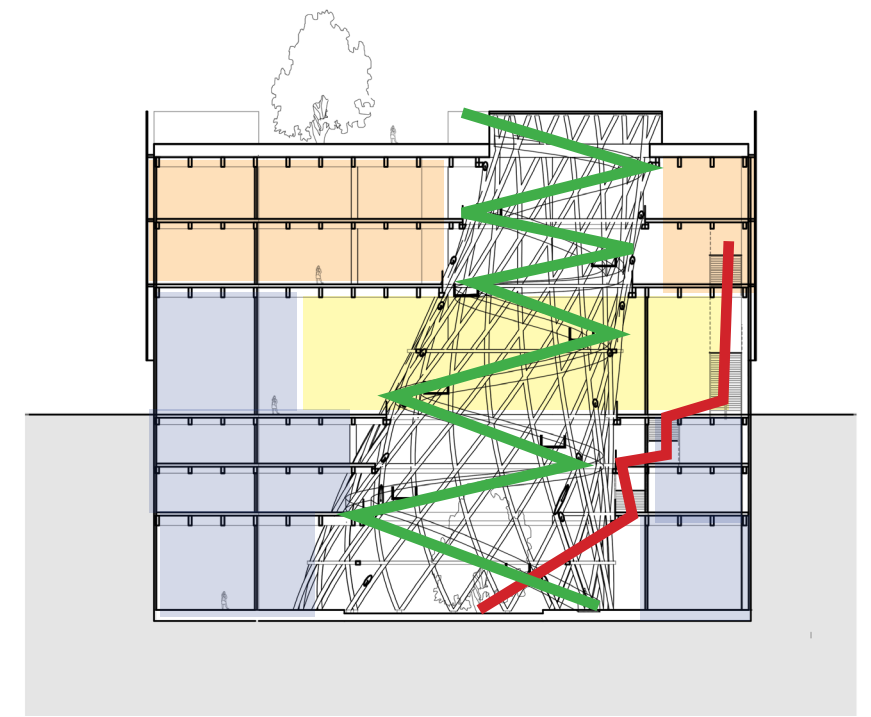
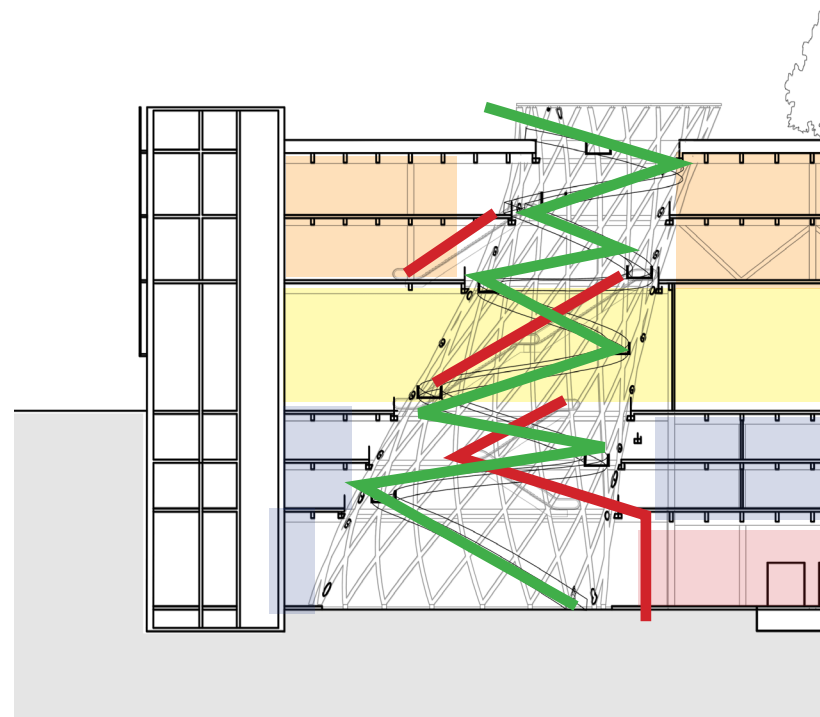
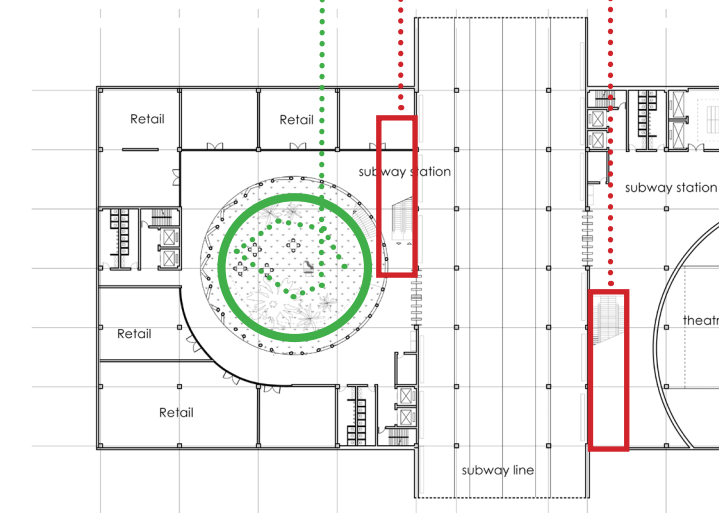
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-2F



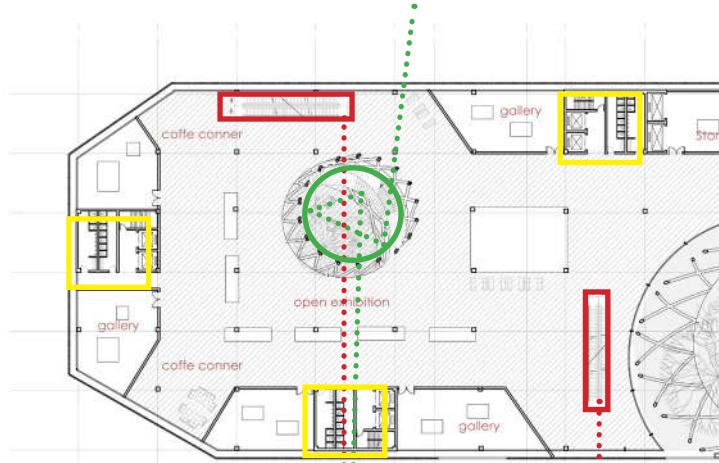
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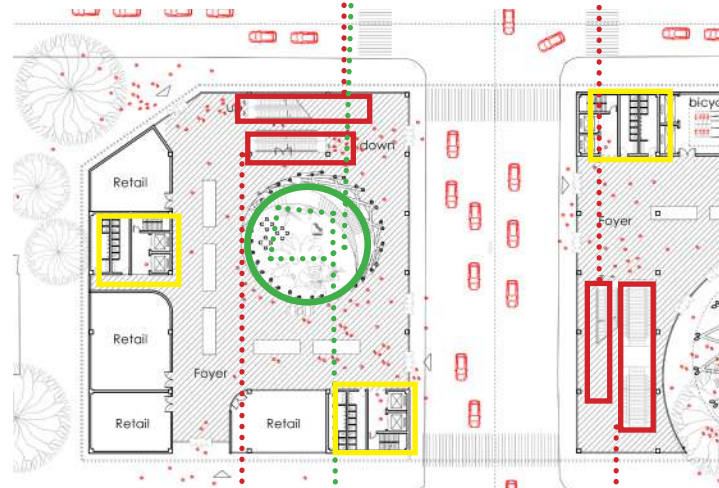
- LANDSCAPE STAIRS
- ESCALATOR

SUBWAY VOID

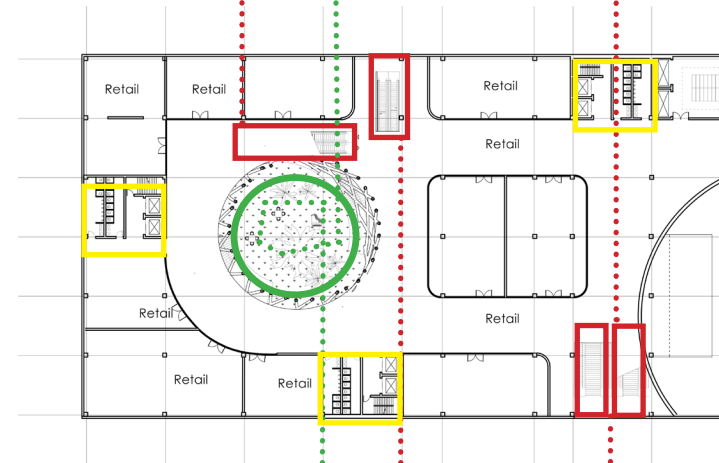
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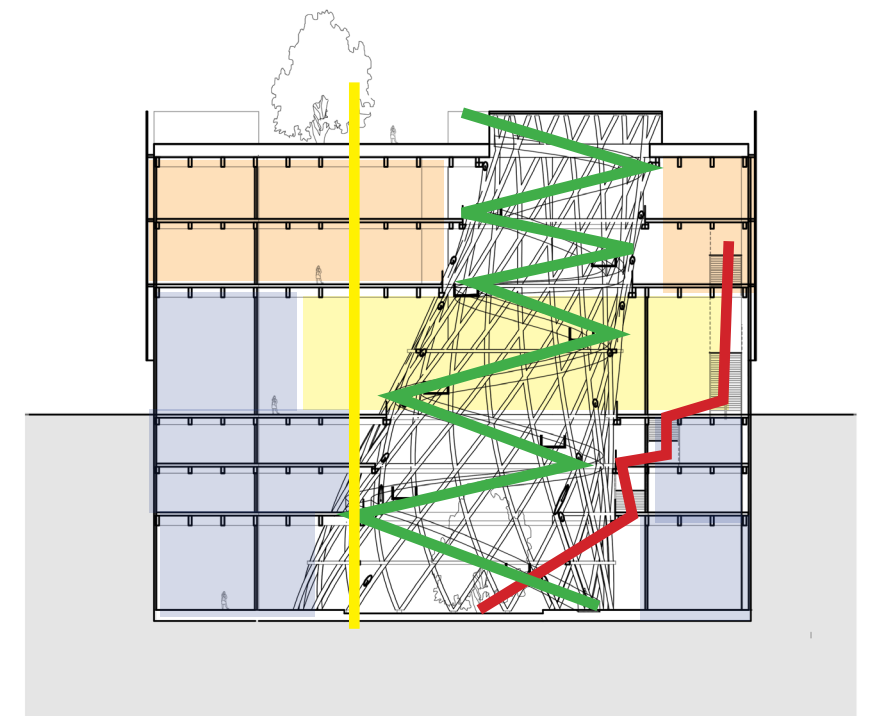
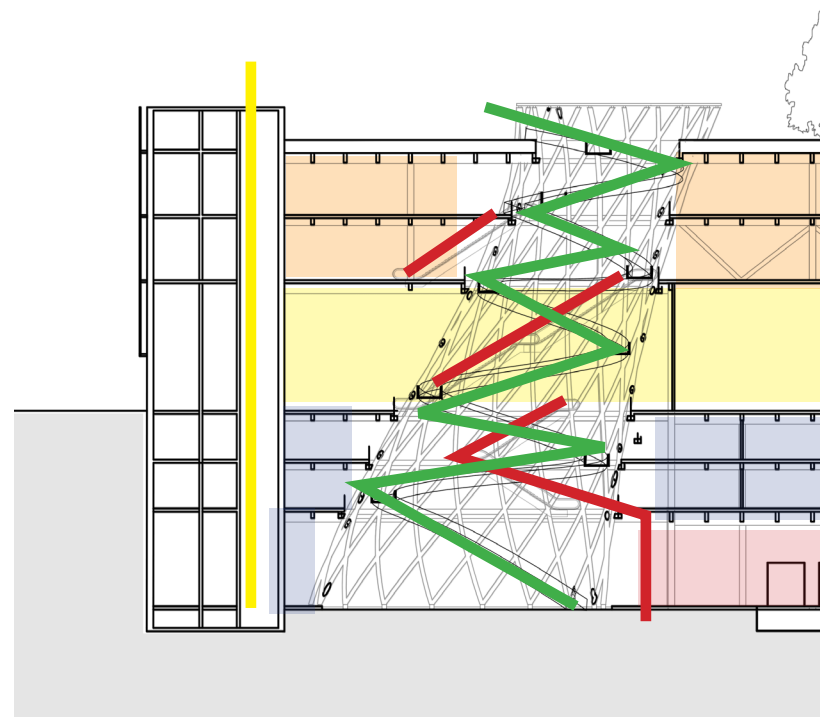
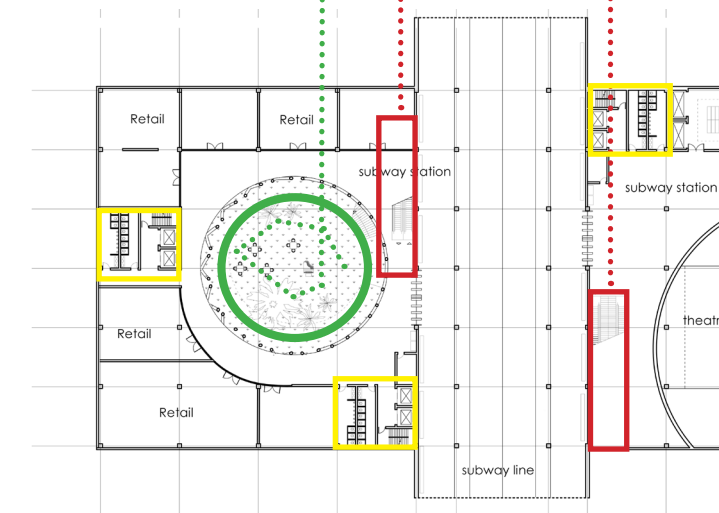
0F



-2F



-3F



LANDSCAPE STAIRS



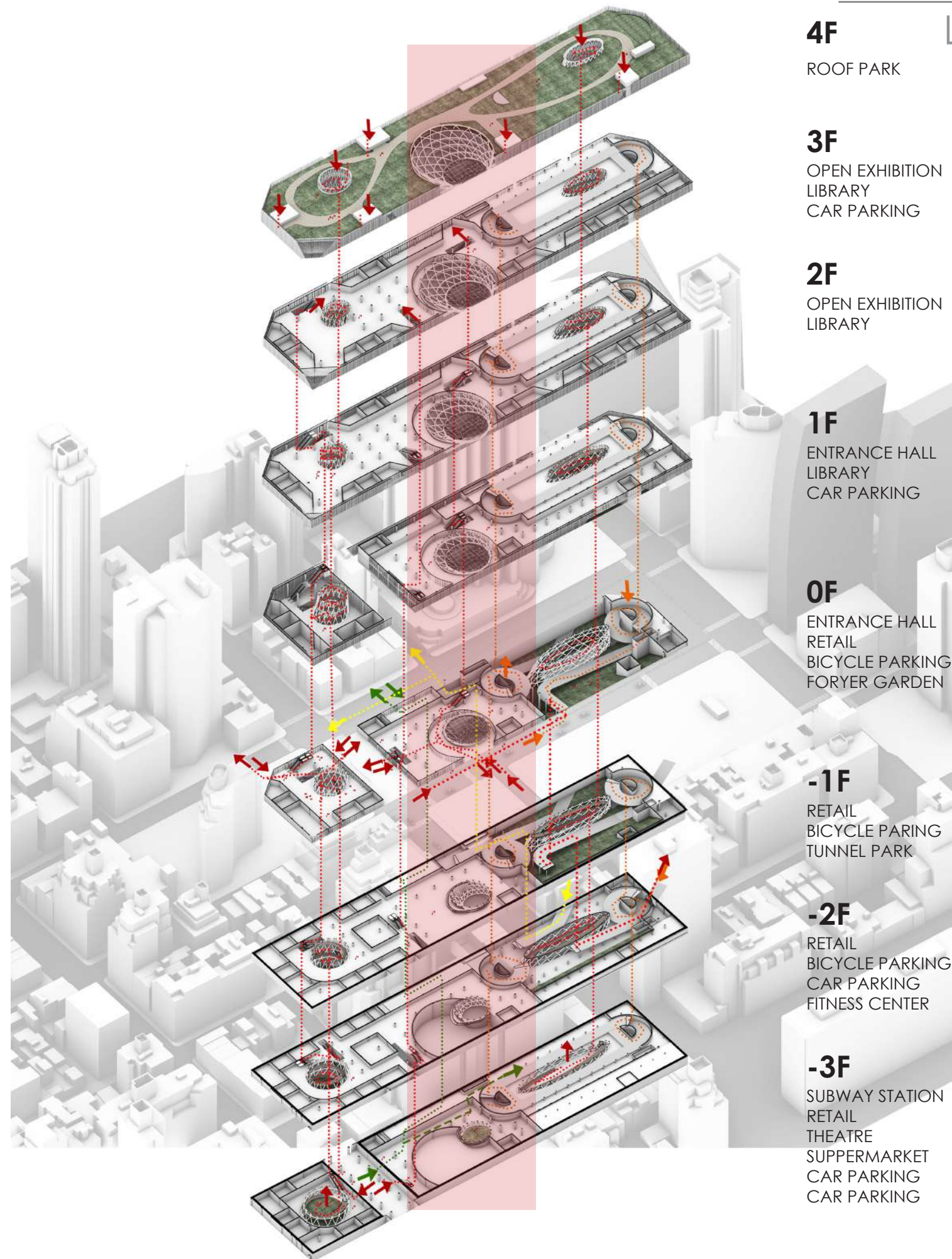
ESCALATOR



LIFT (FIRE STAIRCASE)

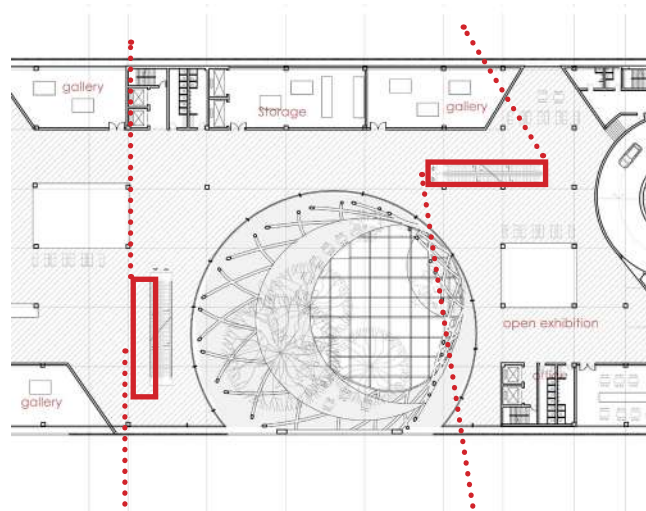
DESIGN IMPLEMENTATION

L: BUILDING / TRAFFIC FLOW

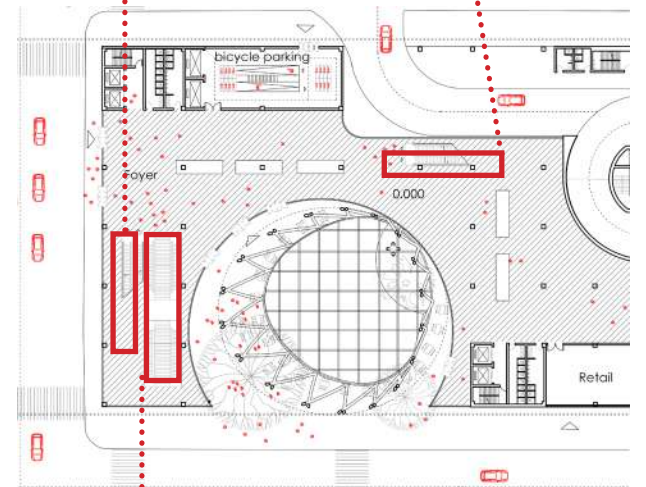


DICHOTOMY VOID

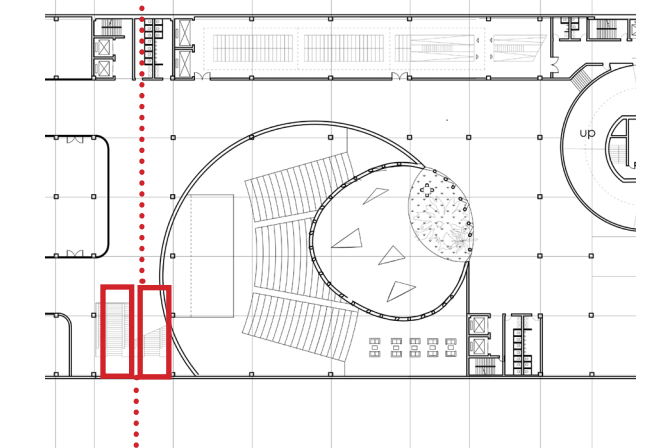
2F



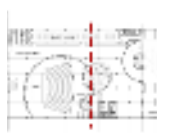
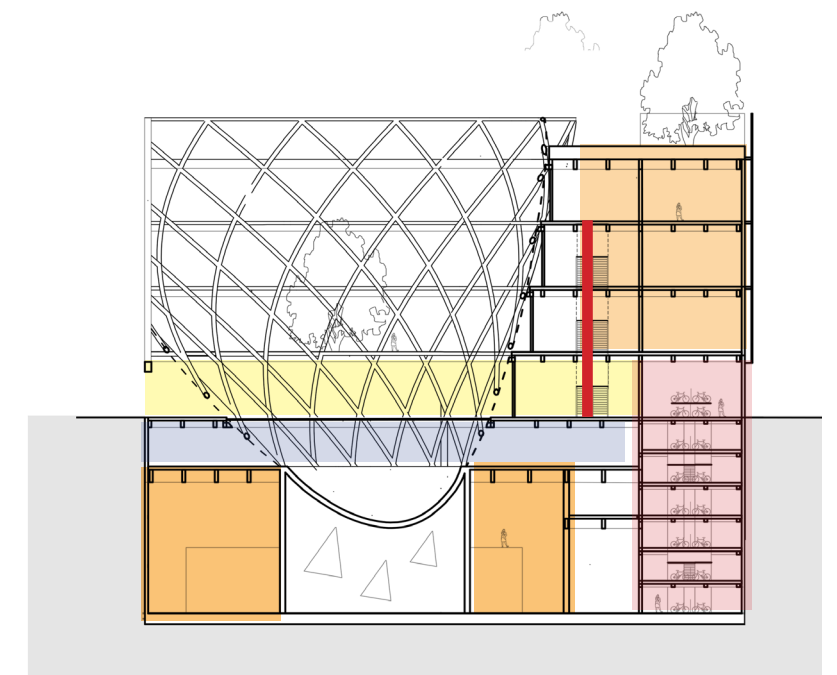
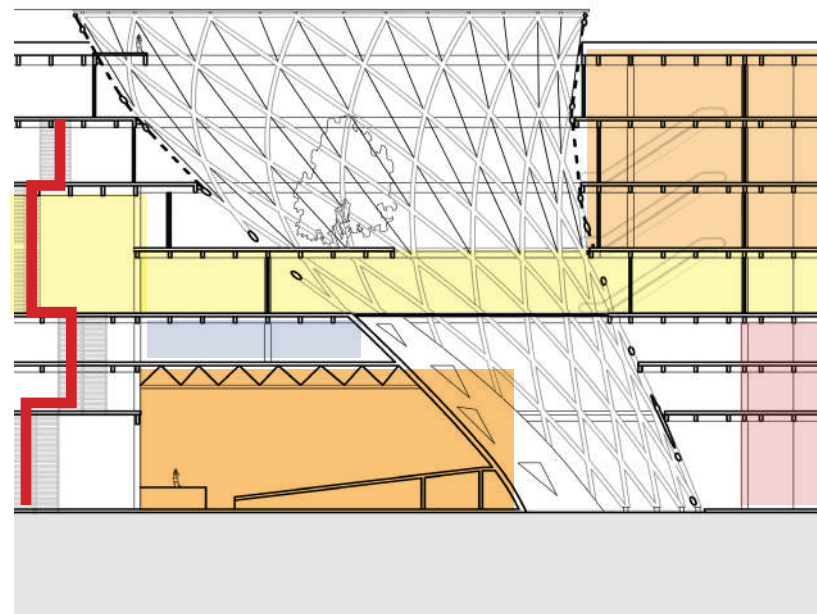
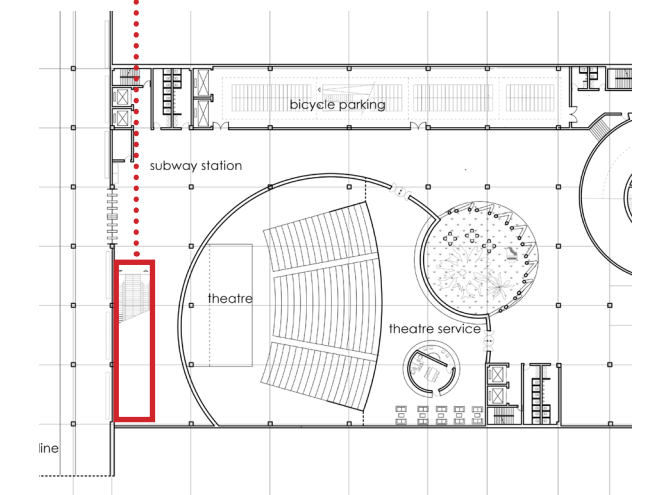
0F



-2F



-3F

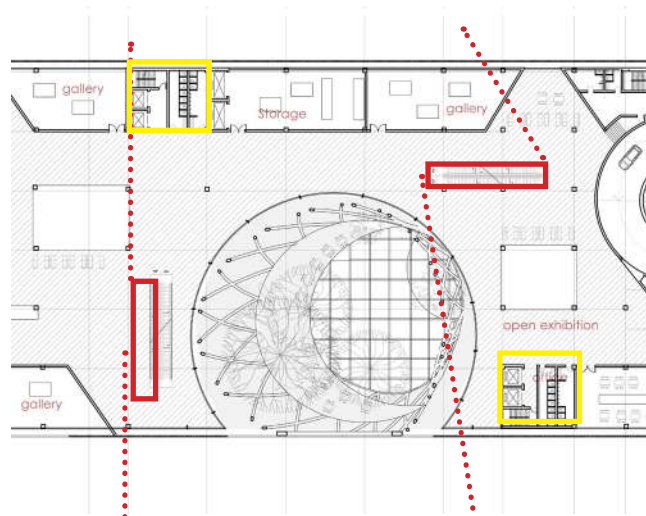


— ESCALATOR

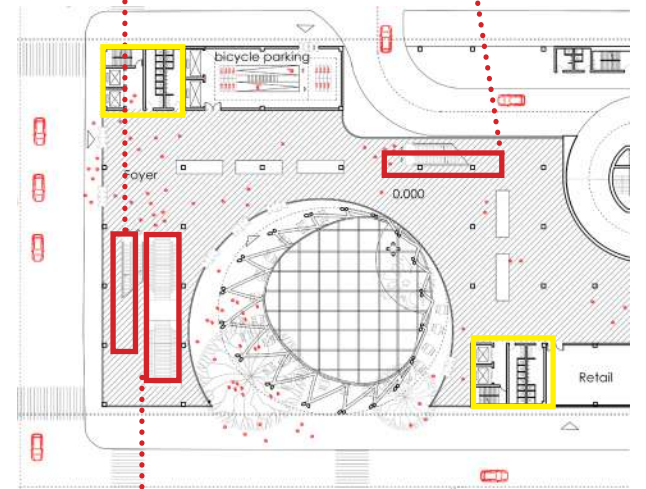


DICHOTOMY VOID

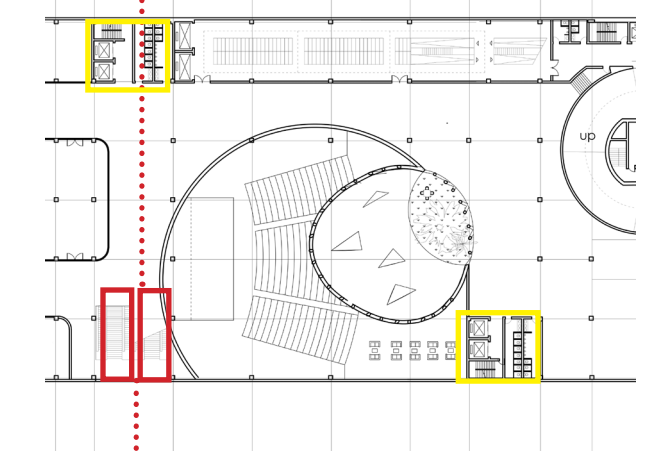
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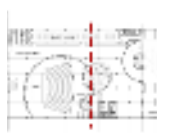
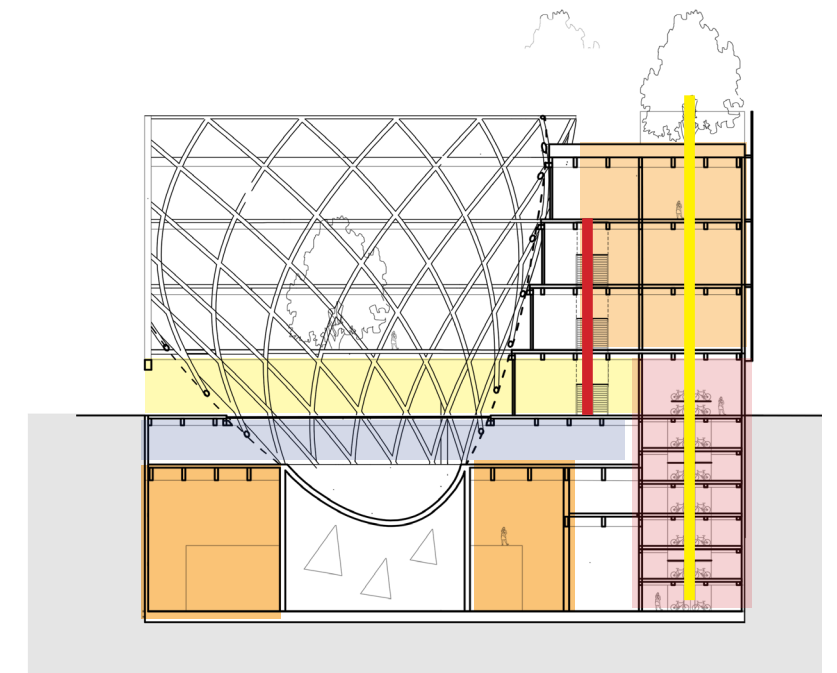
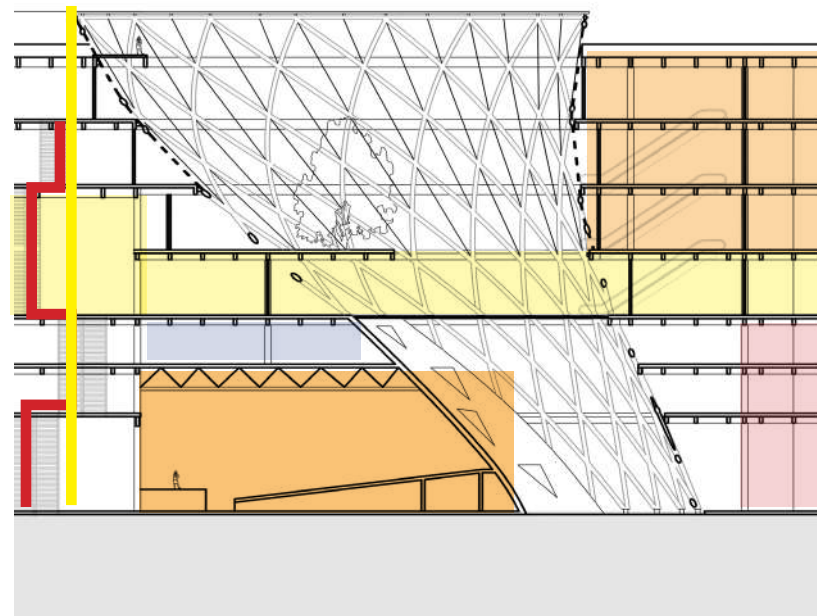
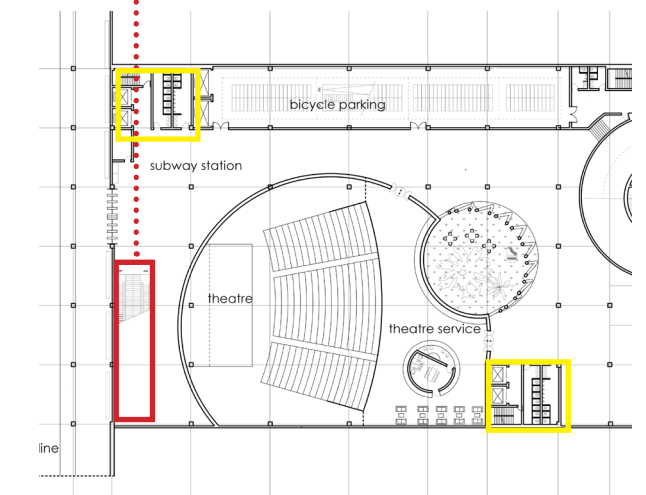
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-2F



-3F



LANDSCAPE STAIRS



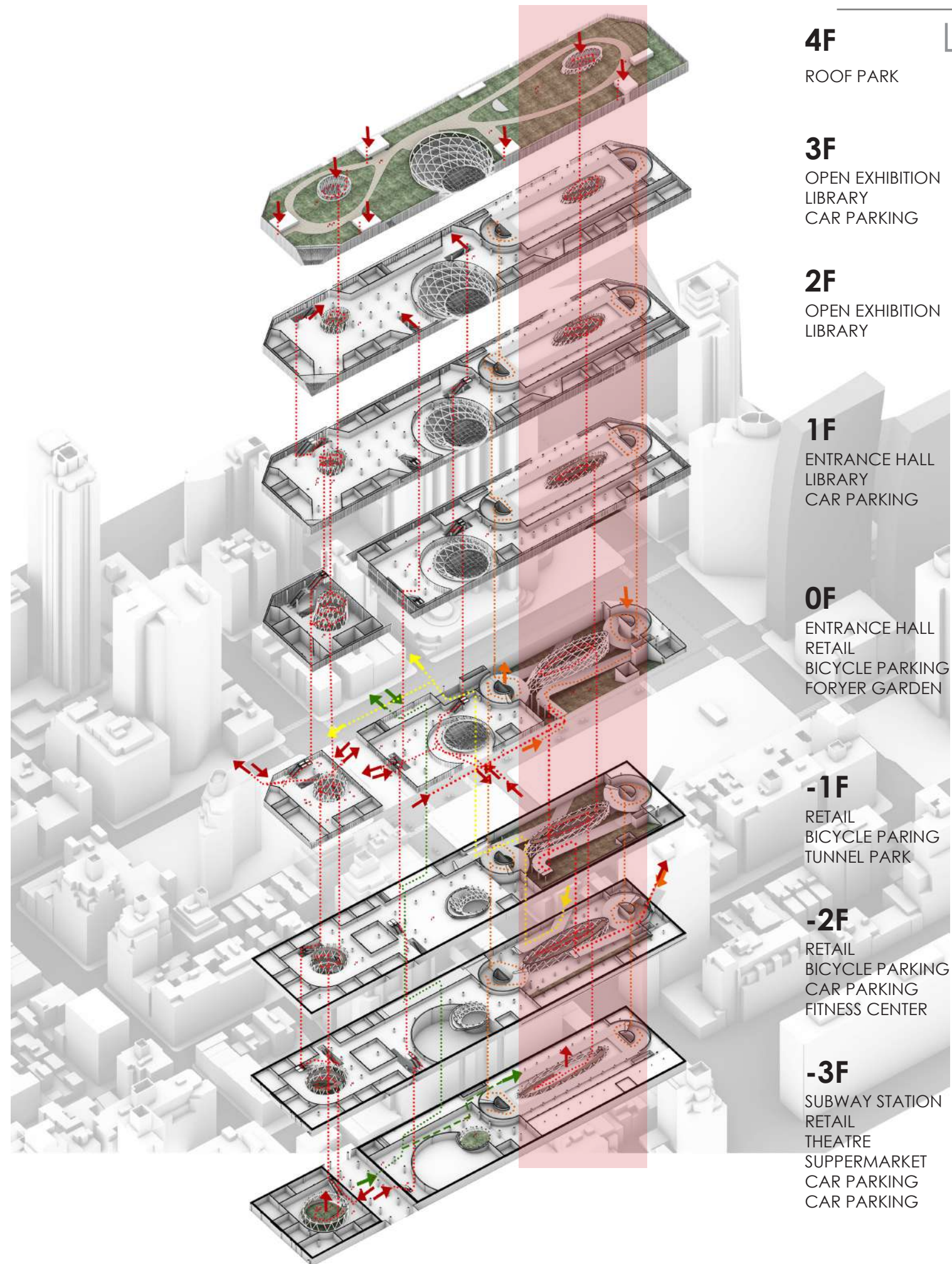
ESCALATOR



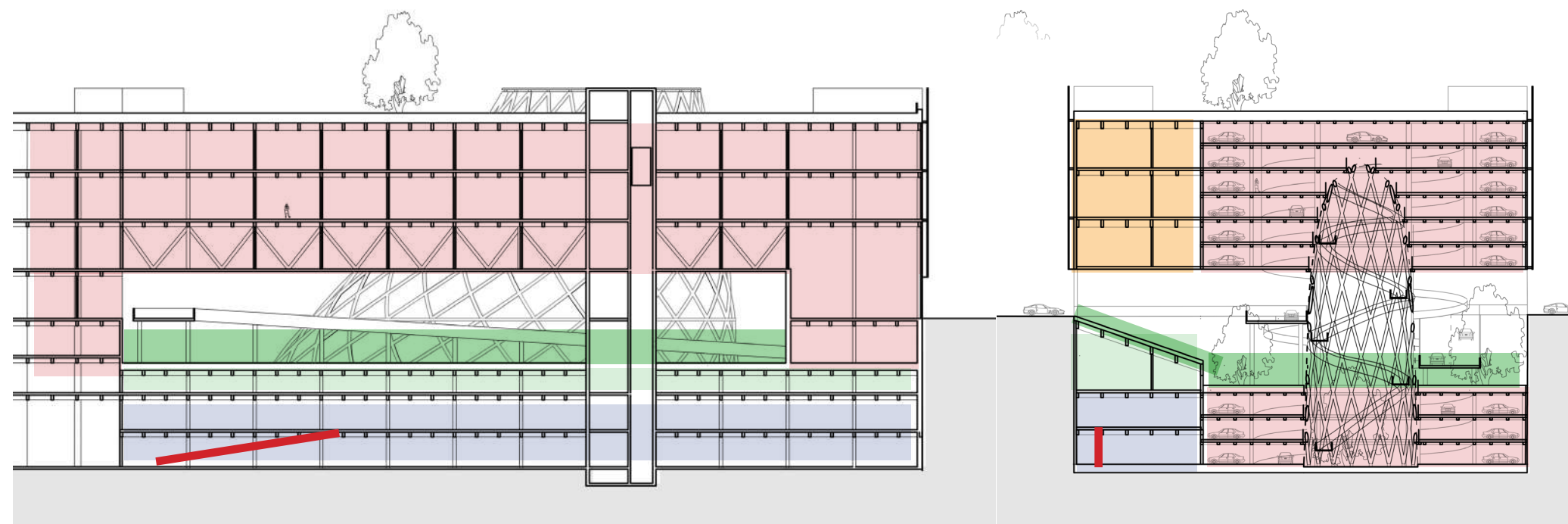
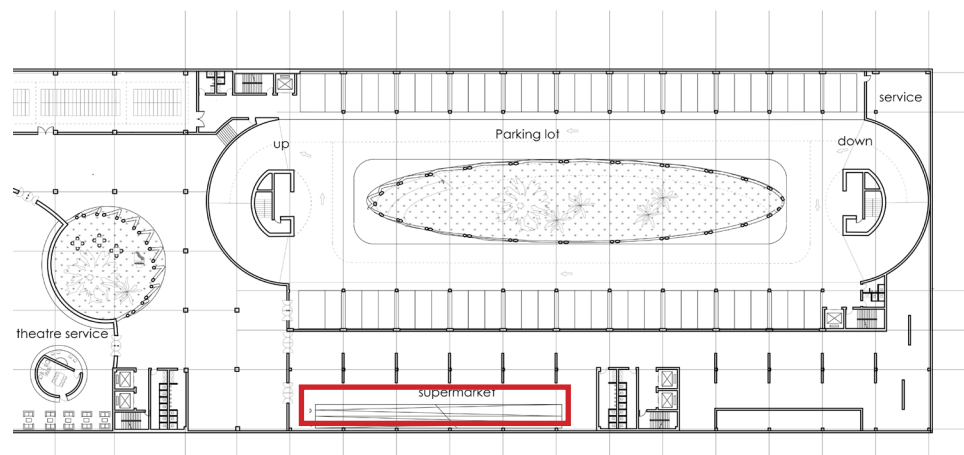
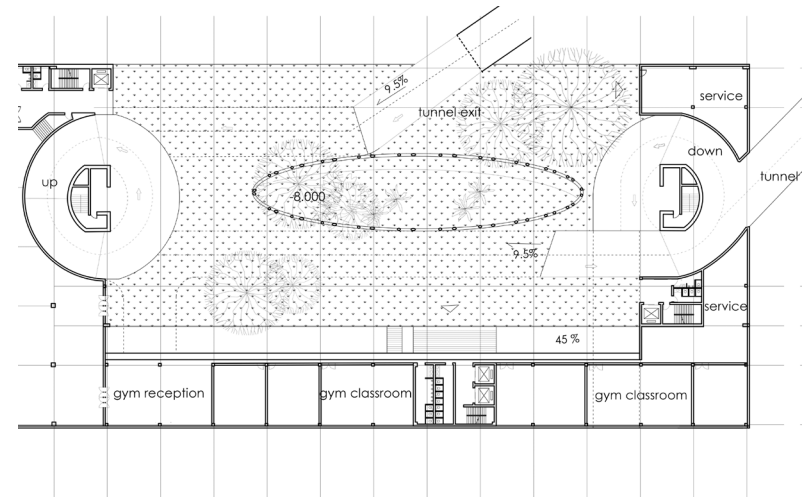
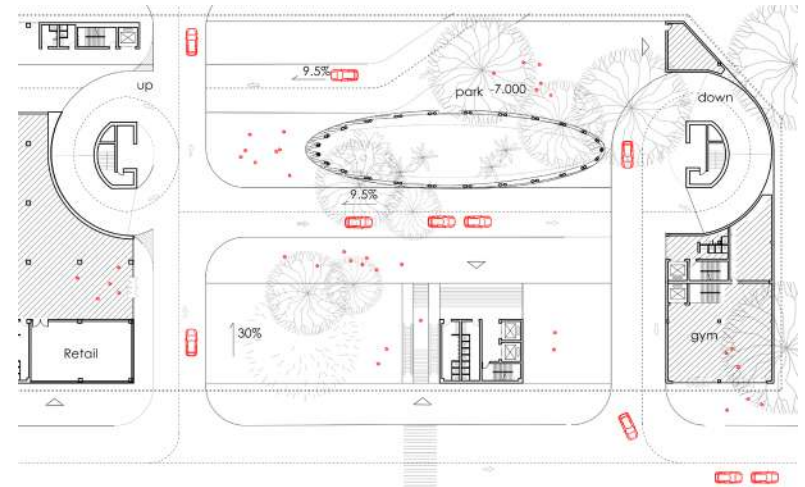
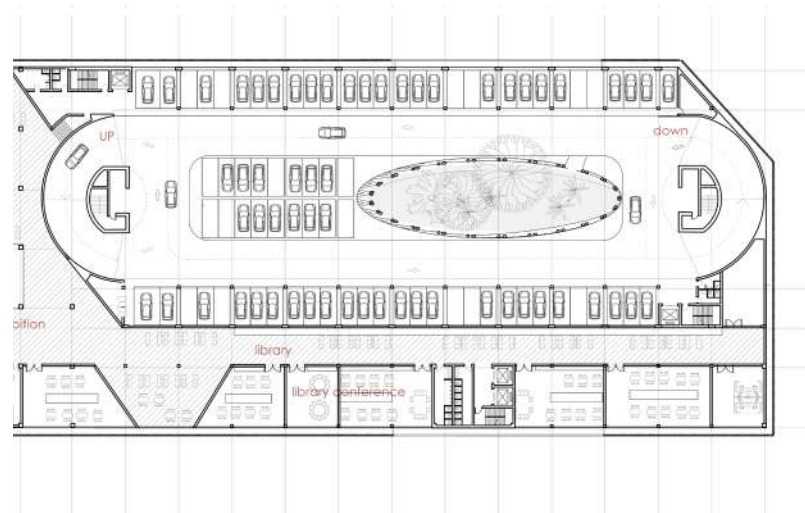
LIFT (FIRE STAIRCASE)

DESIGN IMPLEMENTATION

L: BUILDING / TRAFFIC FLOW

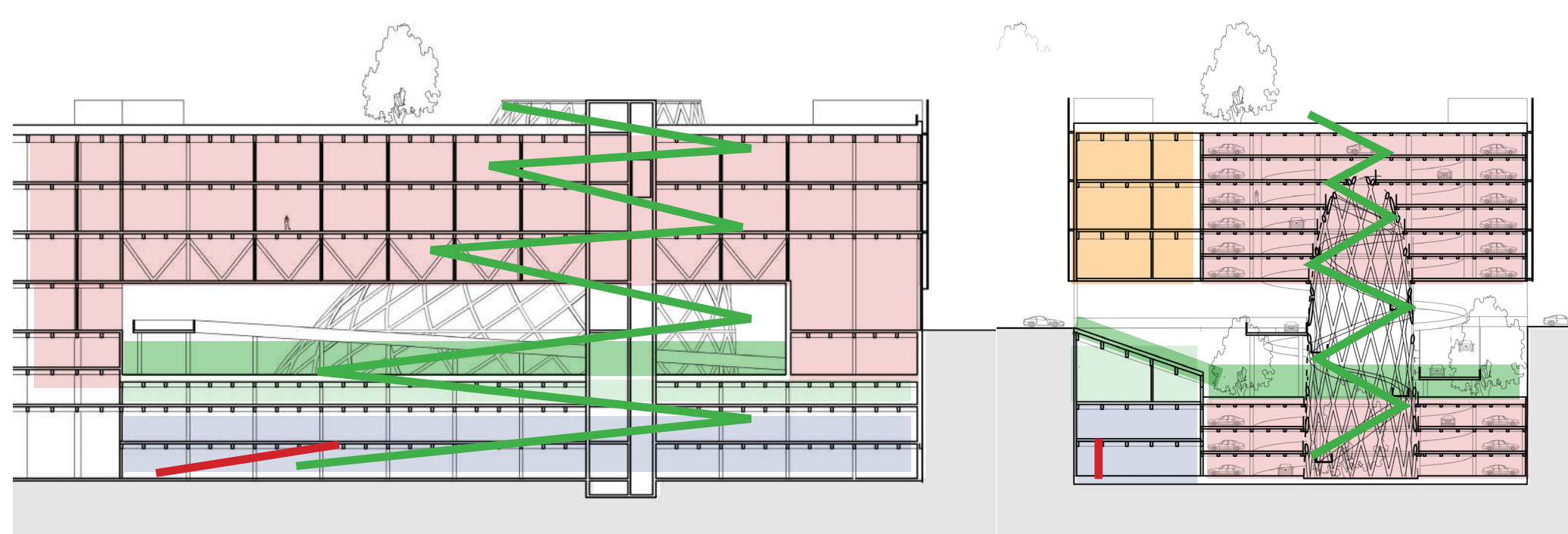
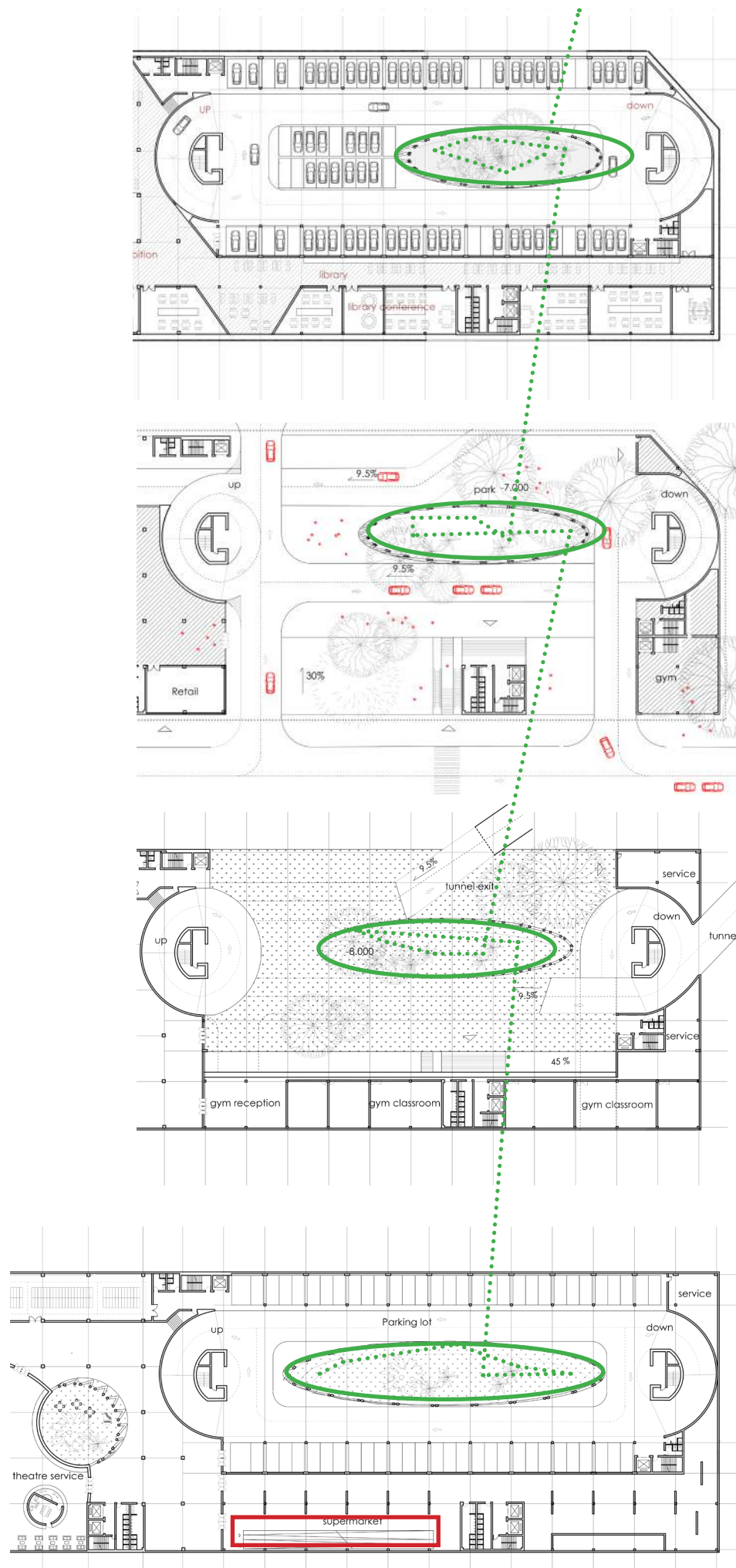


PARKING VOID



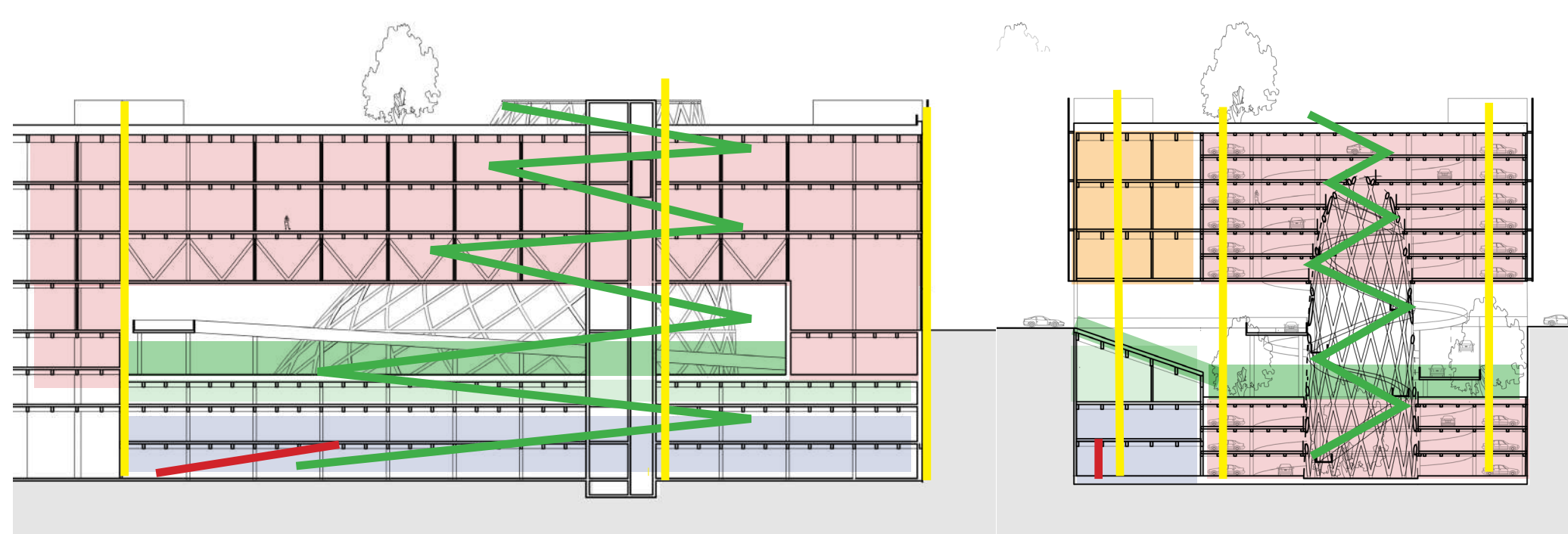
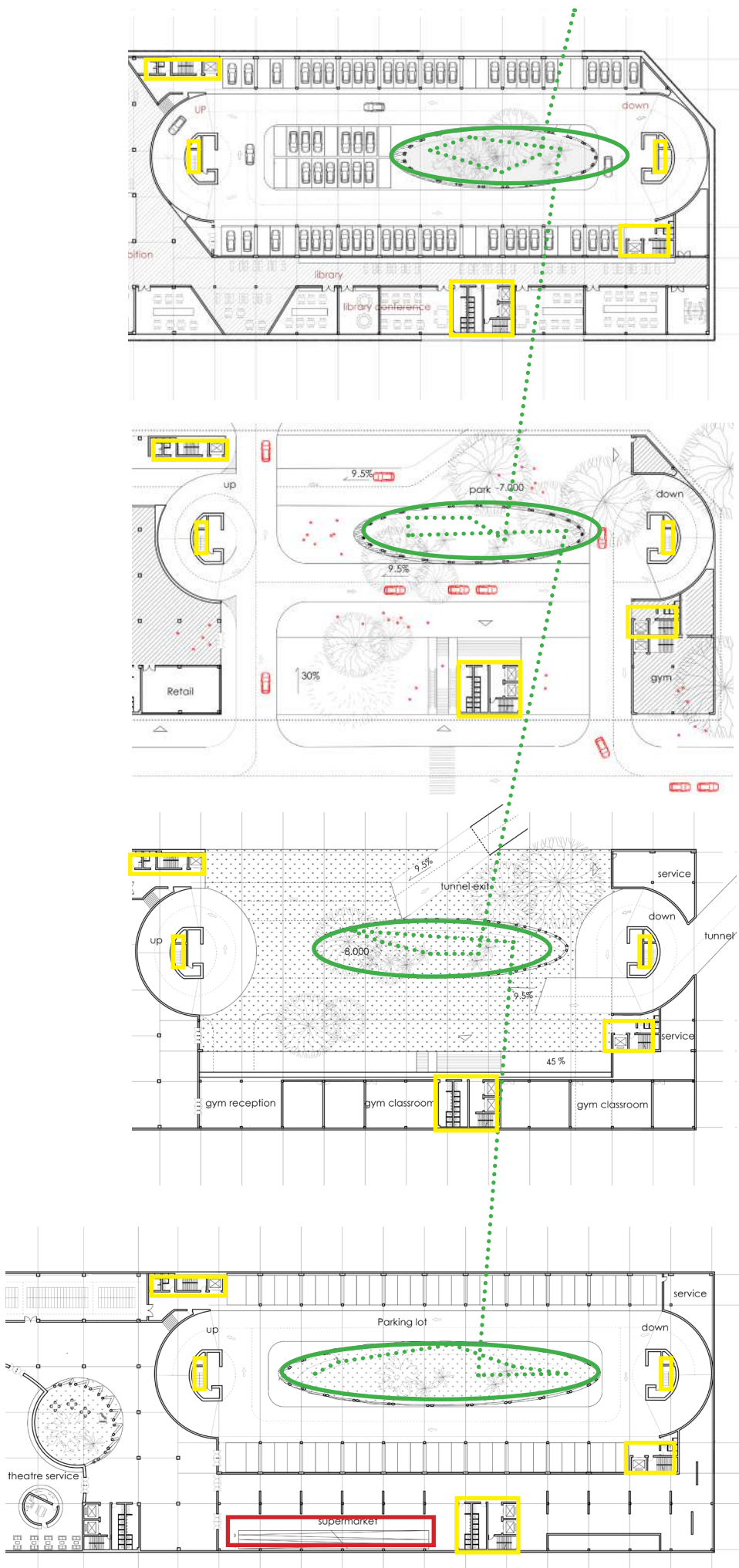
ESCALATOR

PARKING VOID



- LANDSCAPE STAIRS
- ESCALATOR

PARKING VOID



- LANDSCAPE STAIRS
- ESCALATOR
- LIFT (FIRE STAIRCASE)

DESIGN IMPLEMENTATION

XL
Urban Position

L
Building

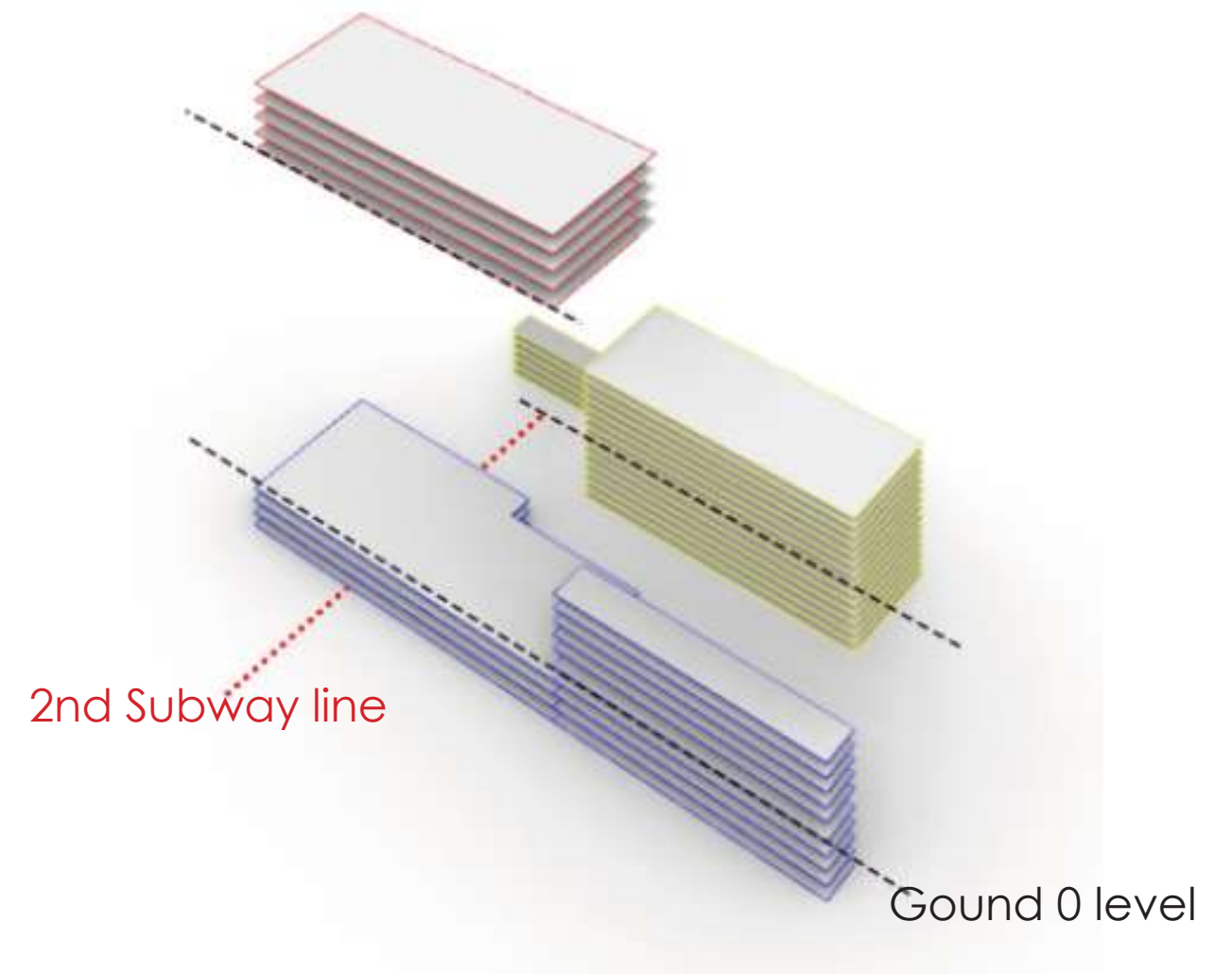
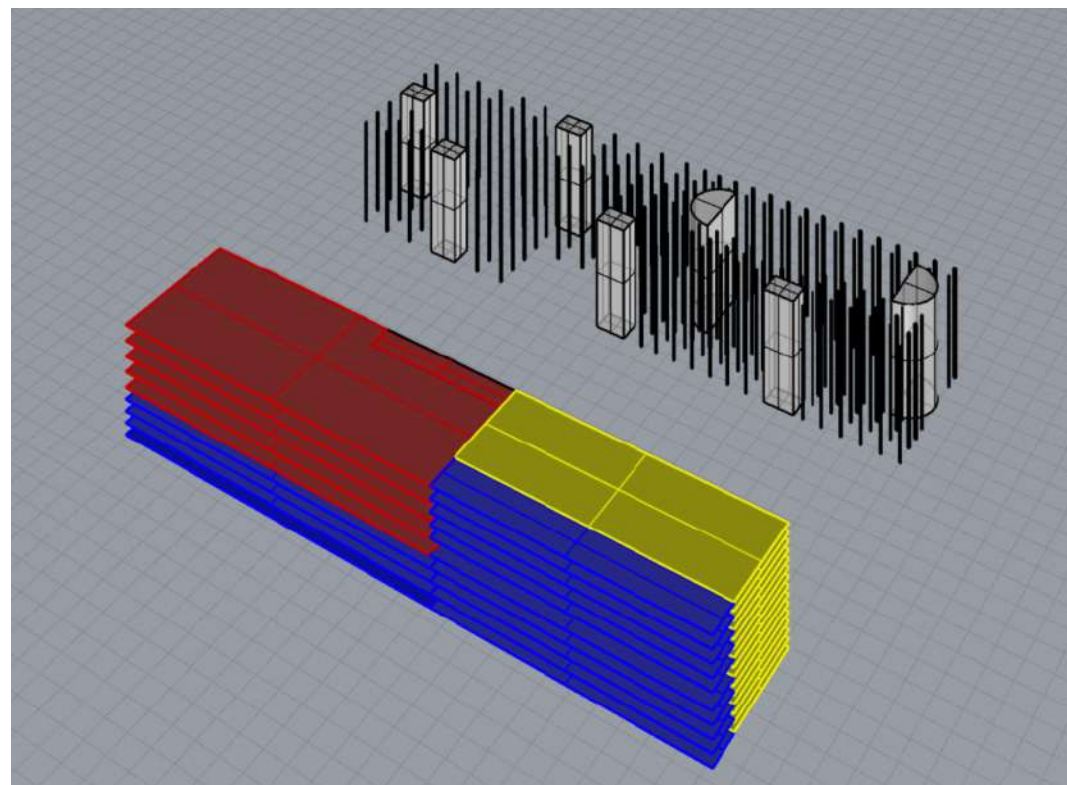
M
Structure

S
Facade

XS
Details

FLOOR HEIGHT

red area(public life and art) : 6m
blue area(commerce /office): 4.5m
yellow area Storage(parking): : 3m



COLUMN GRID

COLUMN:

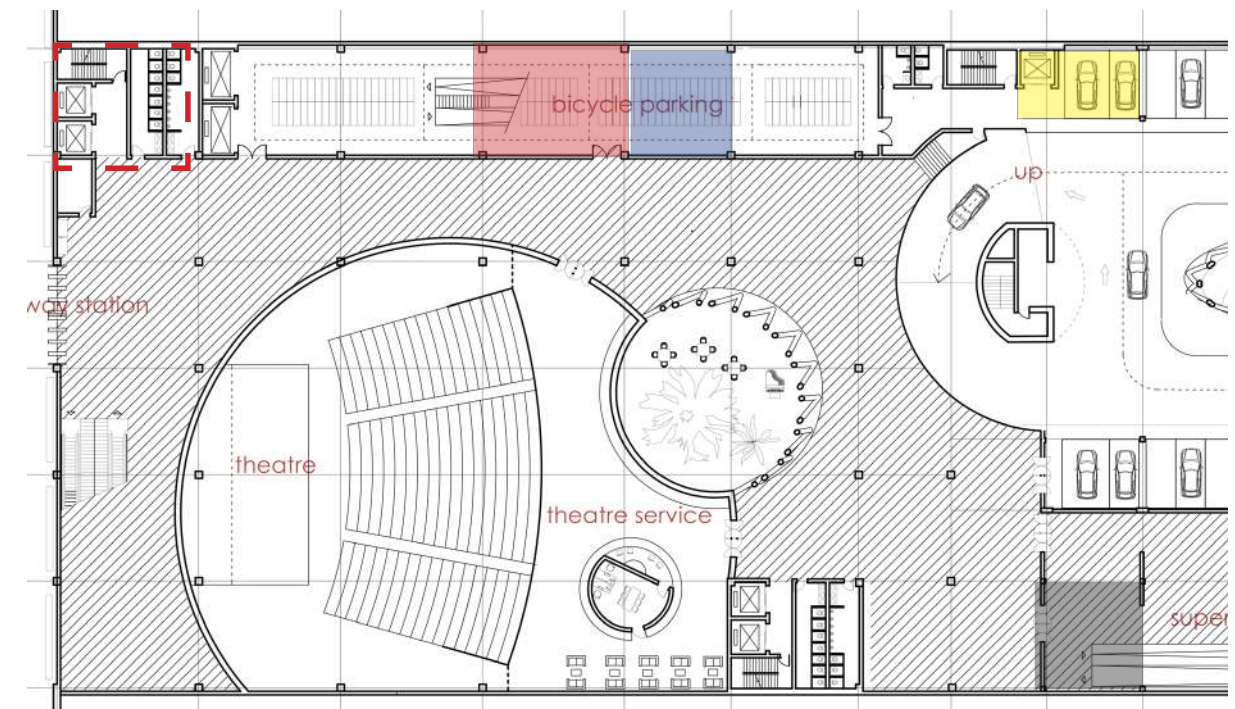
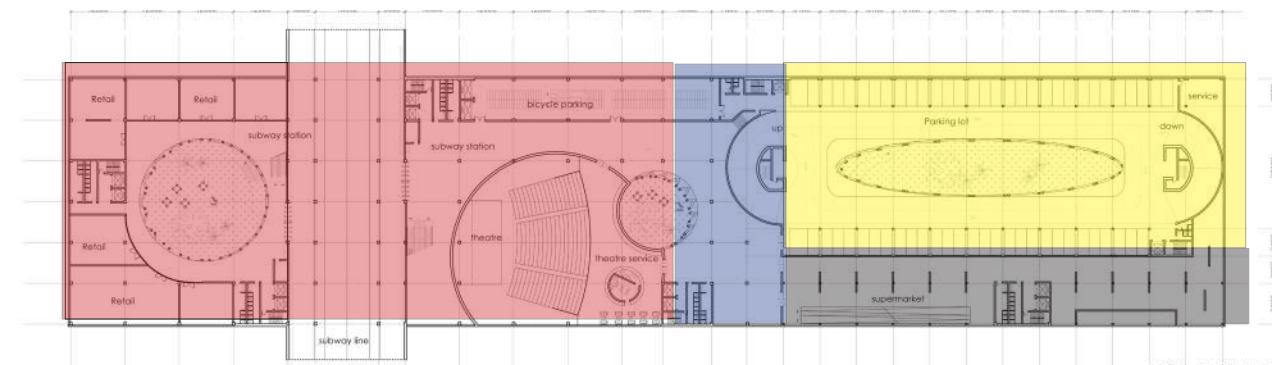
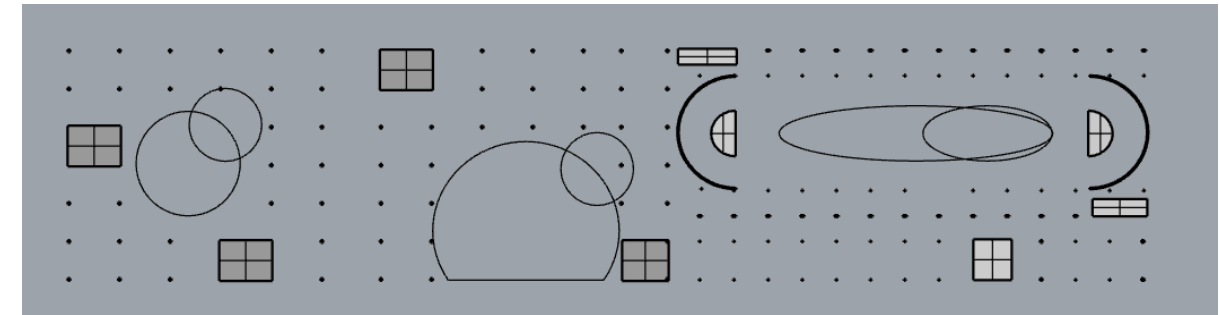
red area: 12 m x 9m

blue area: 7.5m x 9m

grey area: 8.1m x 9m

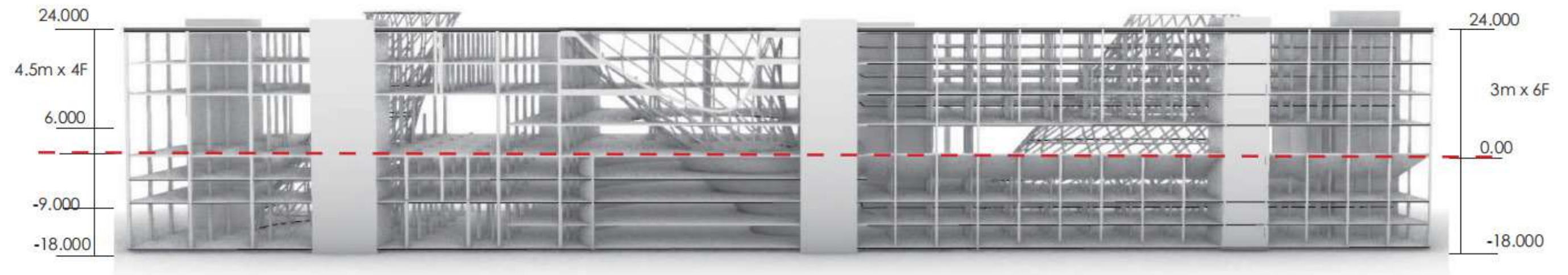
yellow area: 8.1m x 6m

transit core : 12m x 9m

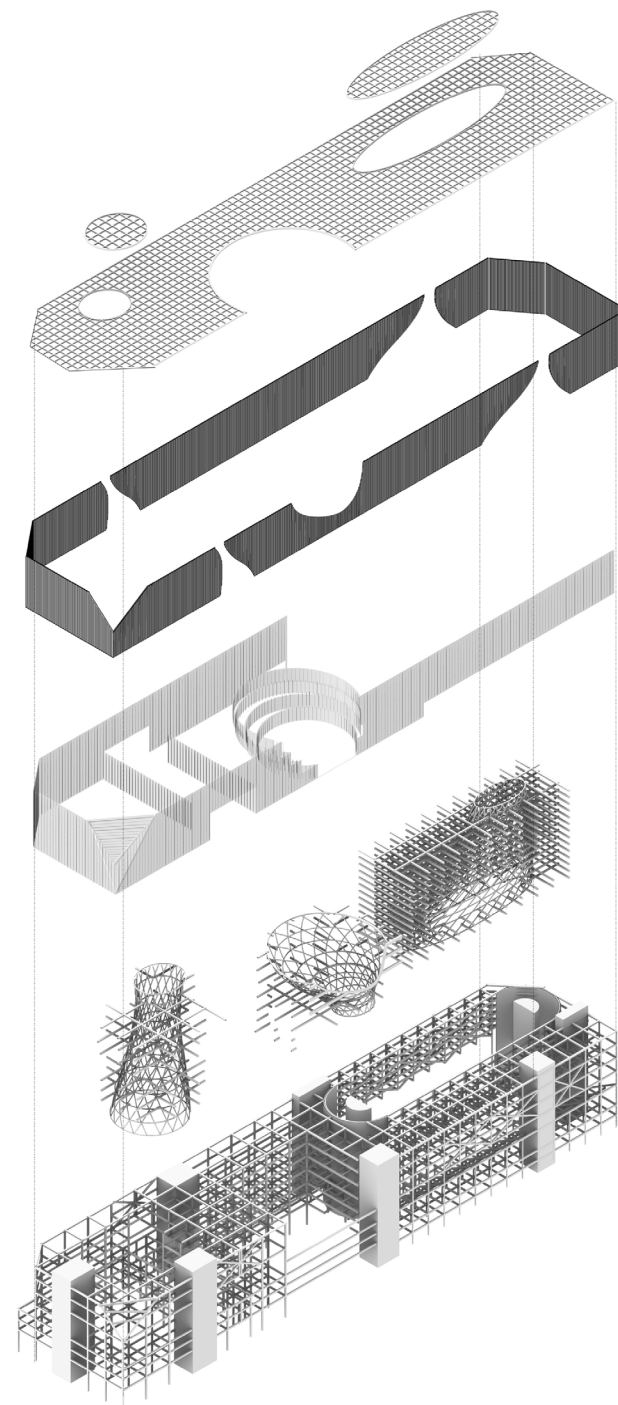


DESIGN IMPLEMENTATION

STRUCTURE SYSTEM: OVERALL FRAME



OVERALL STRUCTURE SYSTEM



ROOF STRUCTURE

3m x 3m I-BEAM

FACADE SYSTEM

Perforated aluminum vertical louvers
Glass

LOAD-BEARING FRAME

VOID FRAME

steel tube with mesh (r-420mm)

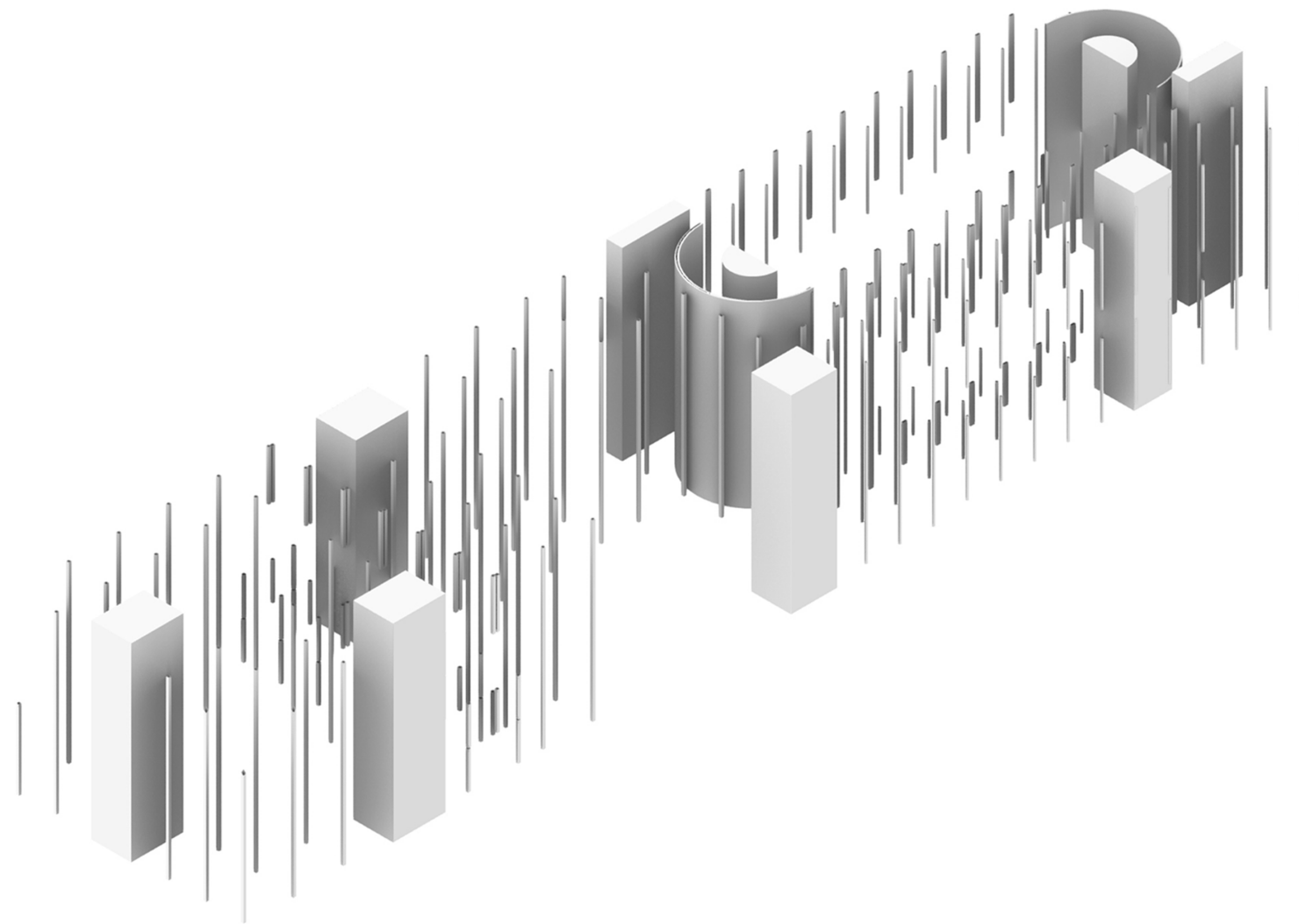
BEAM-COLUMN FRAME

upper ground: I-beam

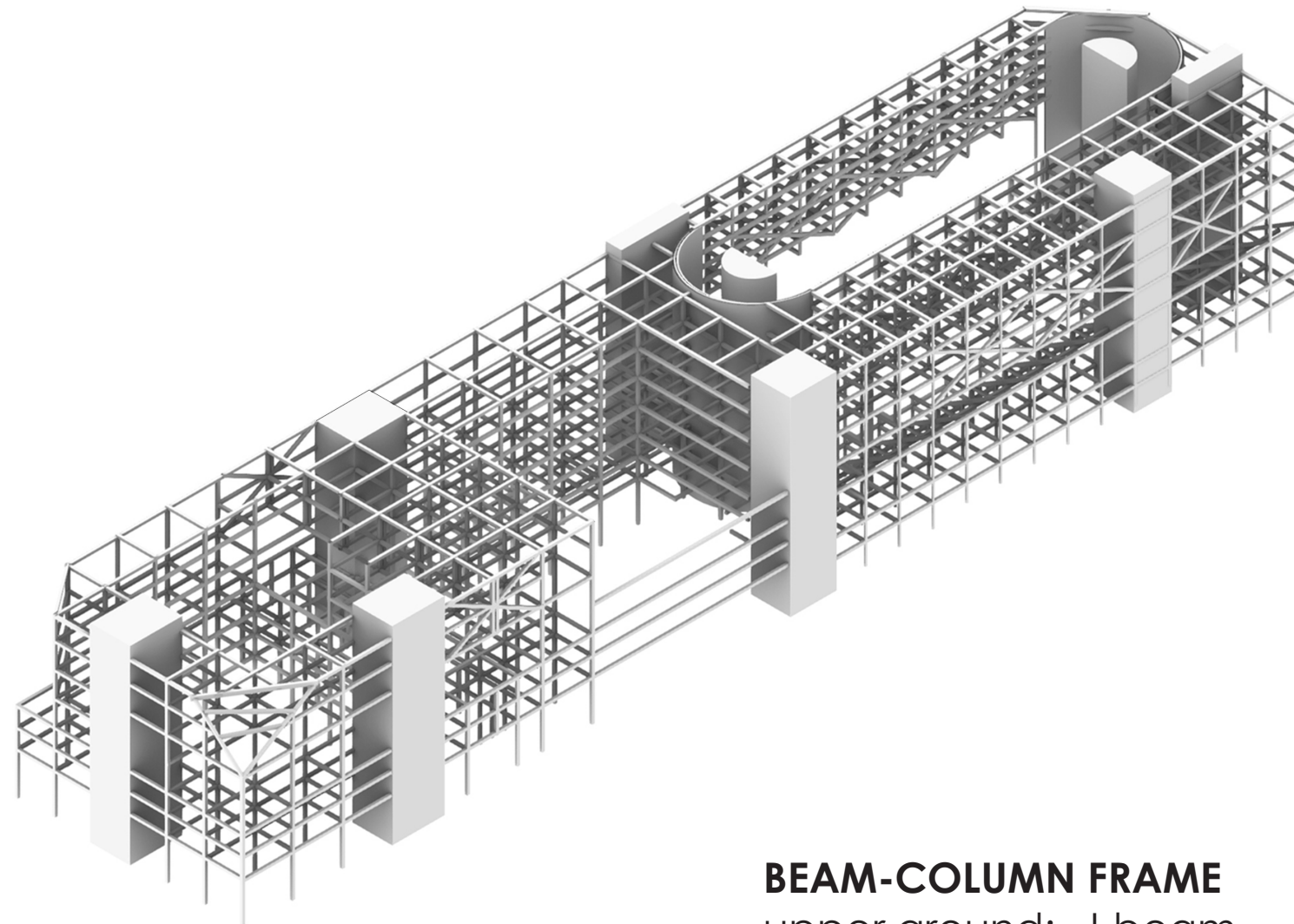
undderground: I-beam /Shear wall

STRUCTURAL CORE:

CONCRETE



STRUCTURAL CONCRETE

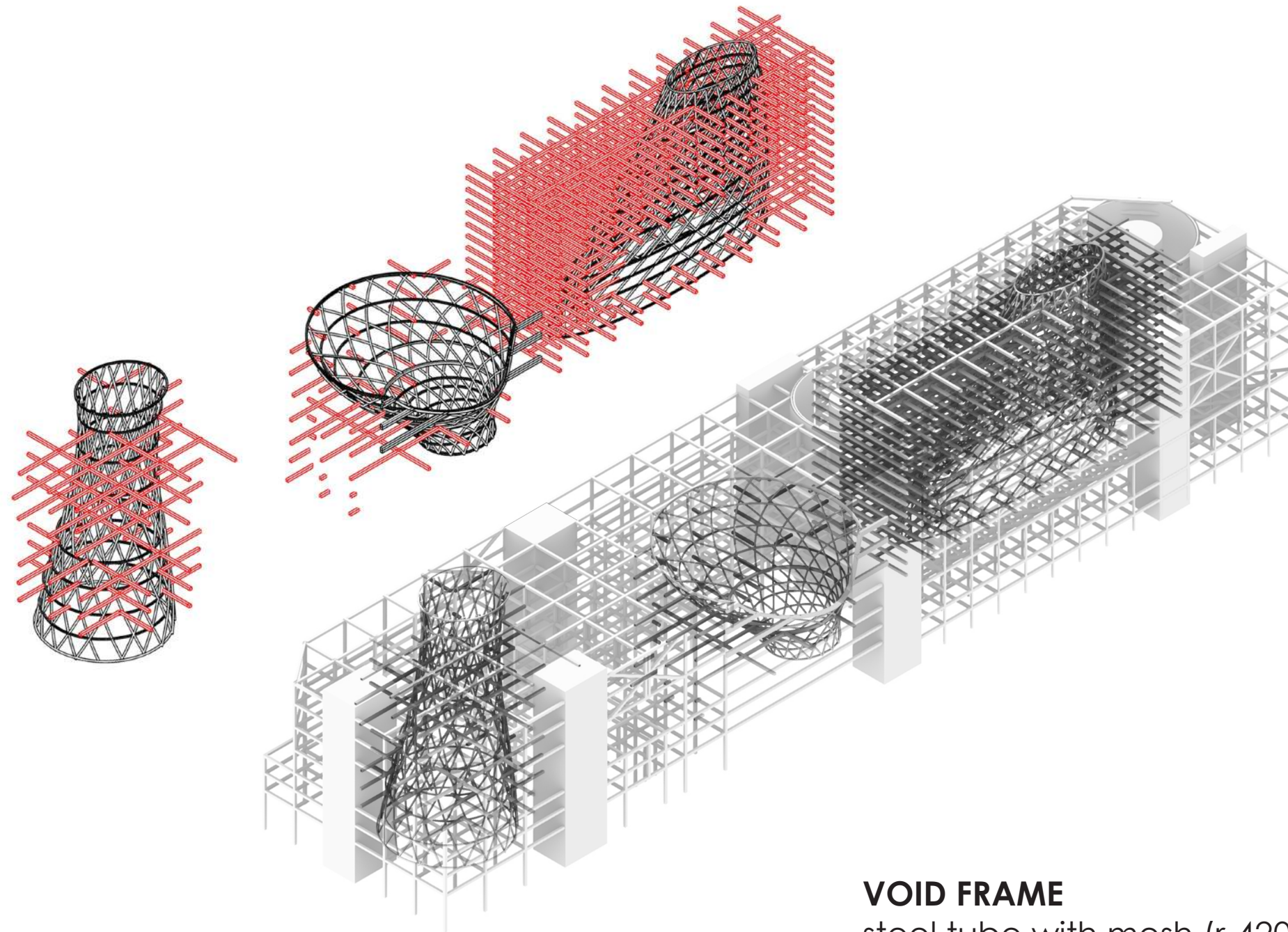


BEAM-COLUMN FRAME

upper ground: I-beam

undderground: I-beam /Shear wall

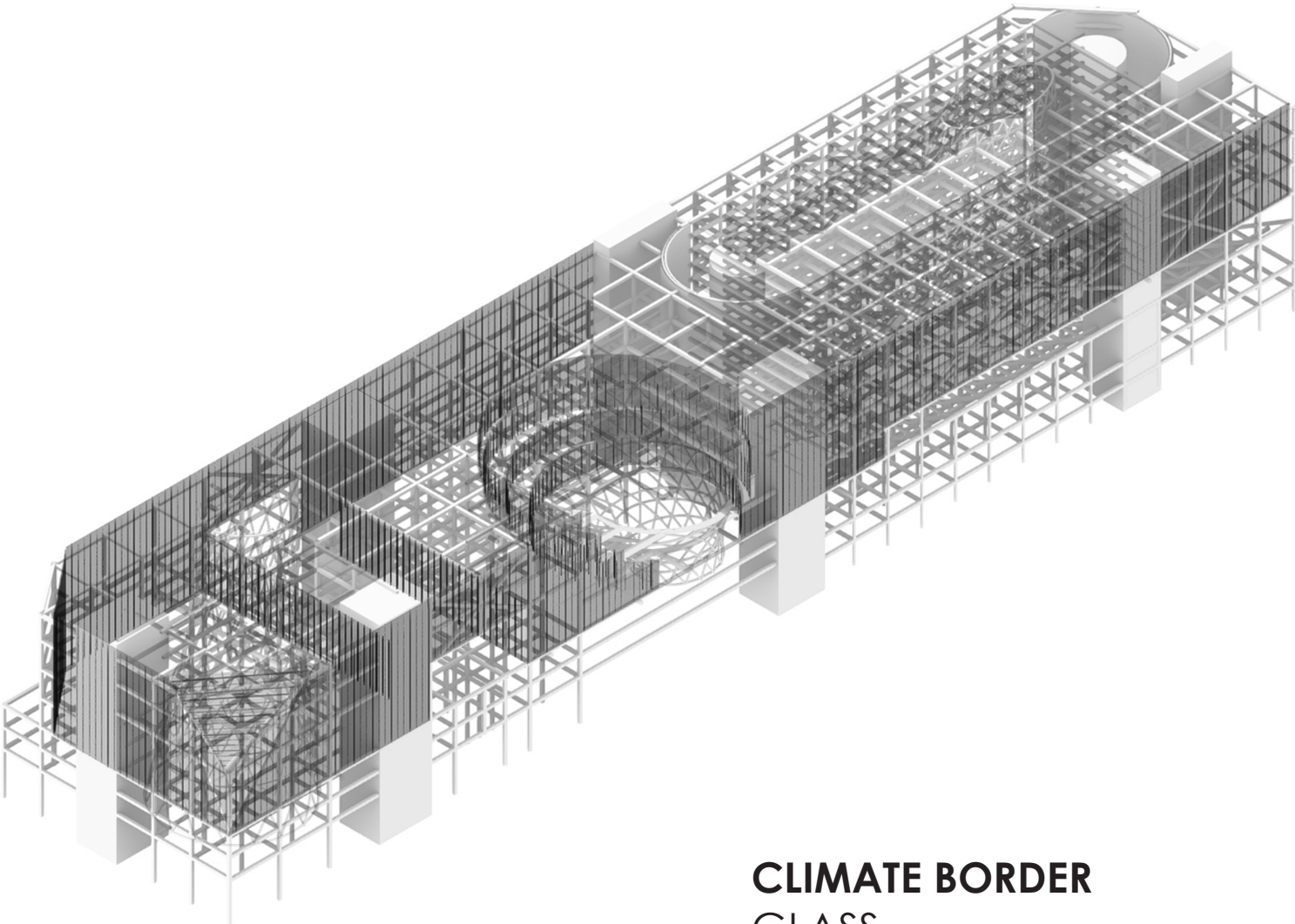
MAIN STRUCTURE



VOID FRAME
steel tube with mesh (r-420mm)

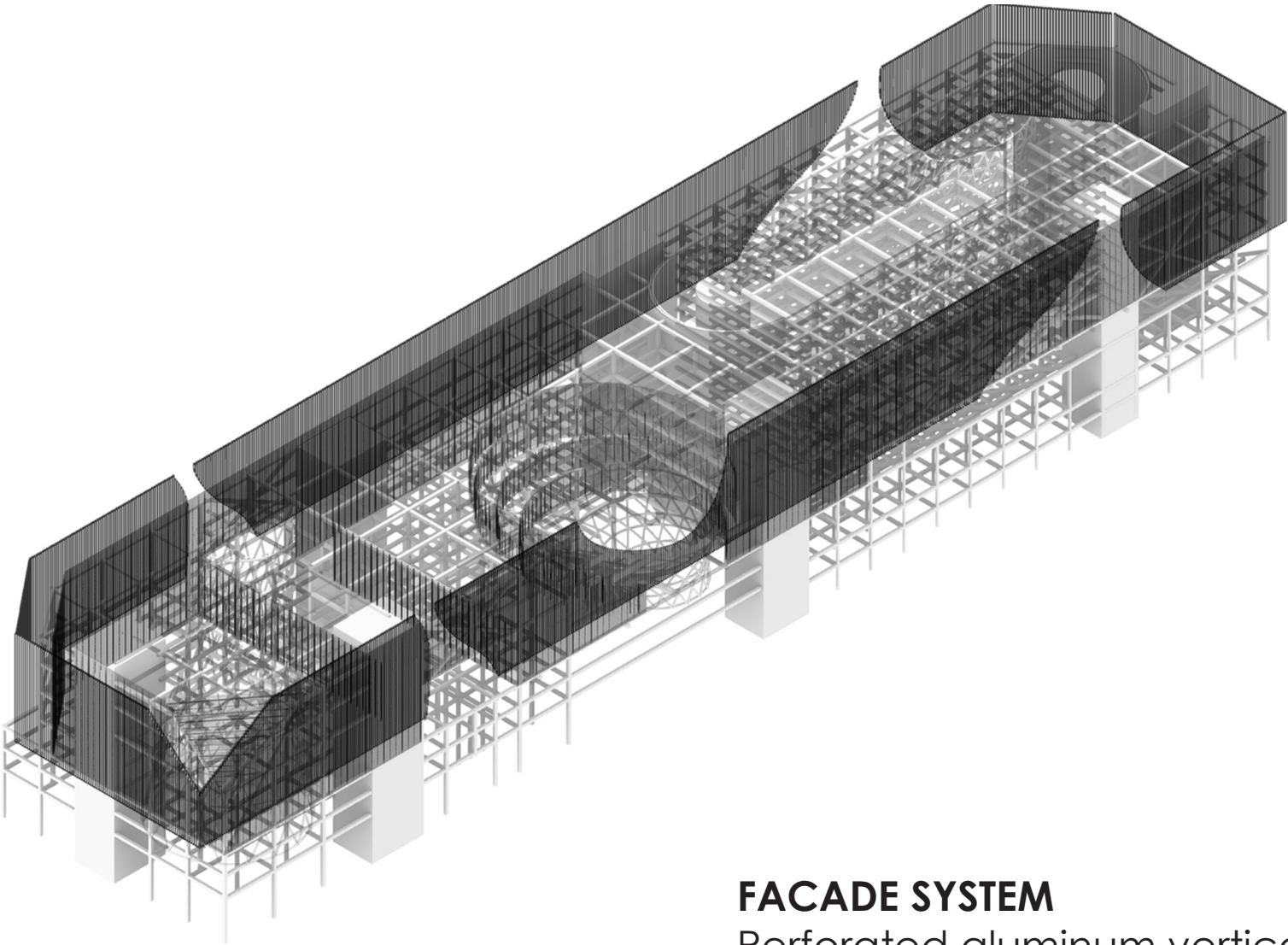
SECOND BEAM

VOID FRAME



CLIMATE BORDER
GLASS

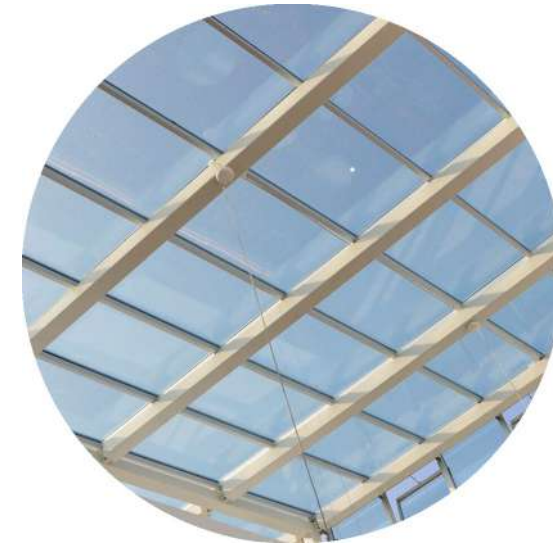
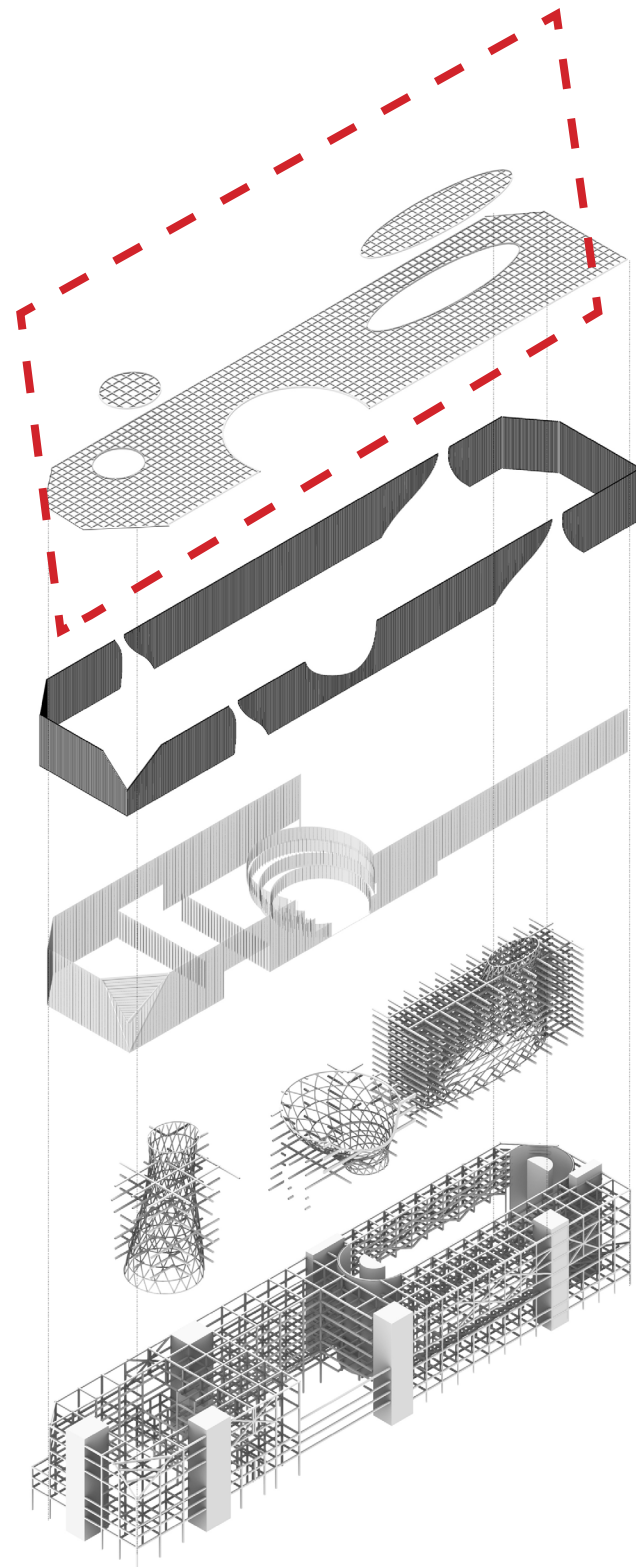
CLIMATE BORDER



FACADE SYSTEM
Perforated aluminum vertical louvers

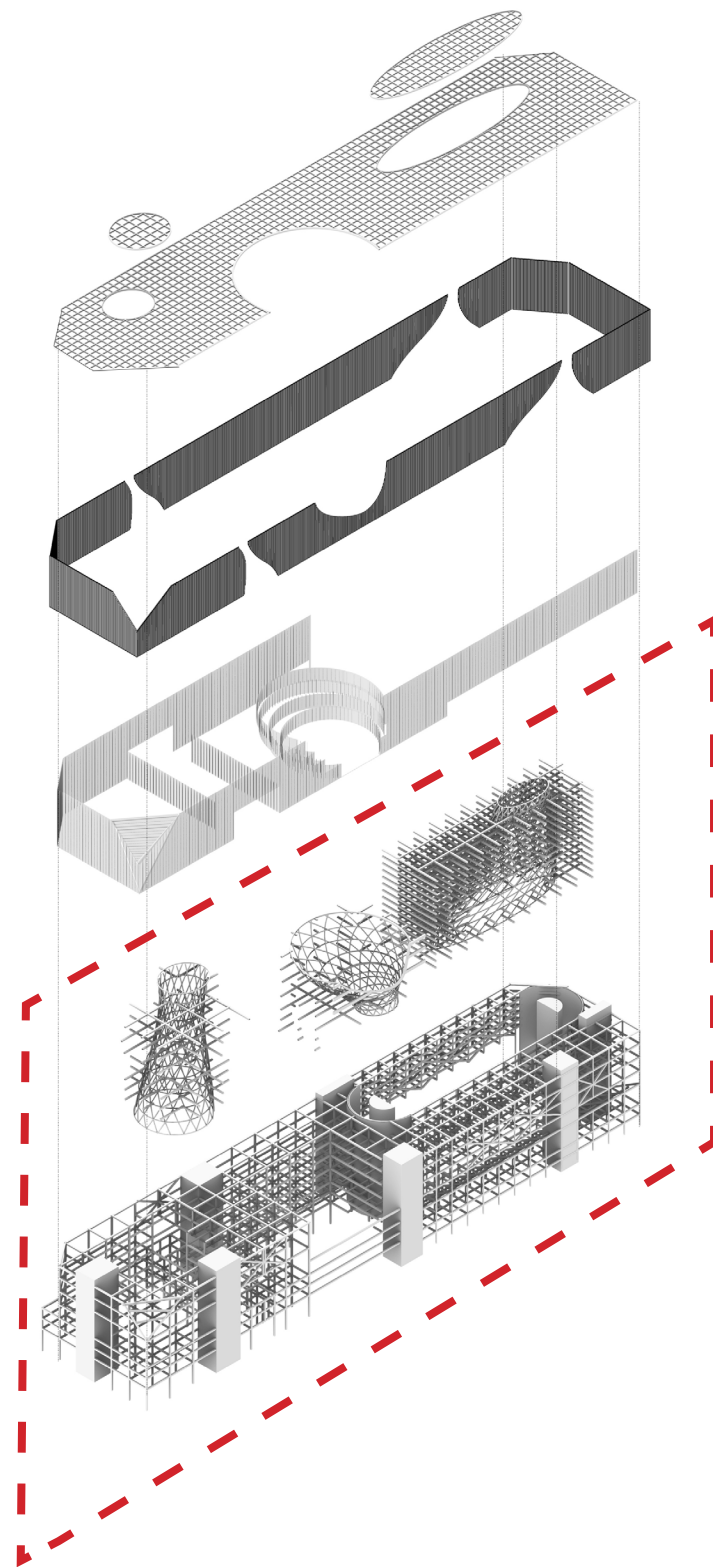
FACADE SYSTEM

ROOF STRUCTURE



3m x 3m GRID
900MMX 300MM I-BEAM

MAIN STRUCTURE



VOID FRAME

steel tube with mesh (r-420mm)

BEAM-COLUMN FRAME

upper ground: I-beam

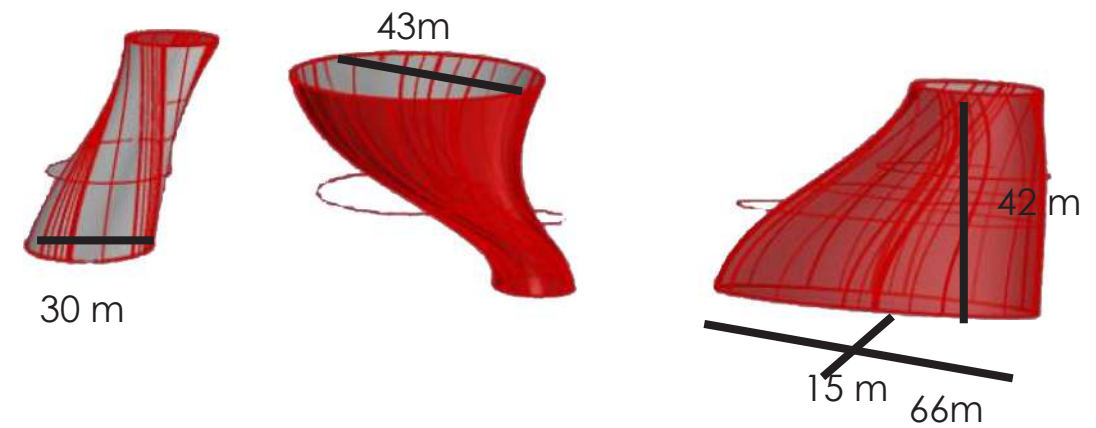
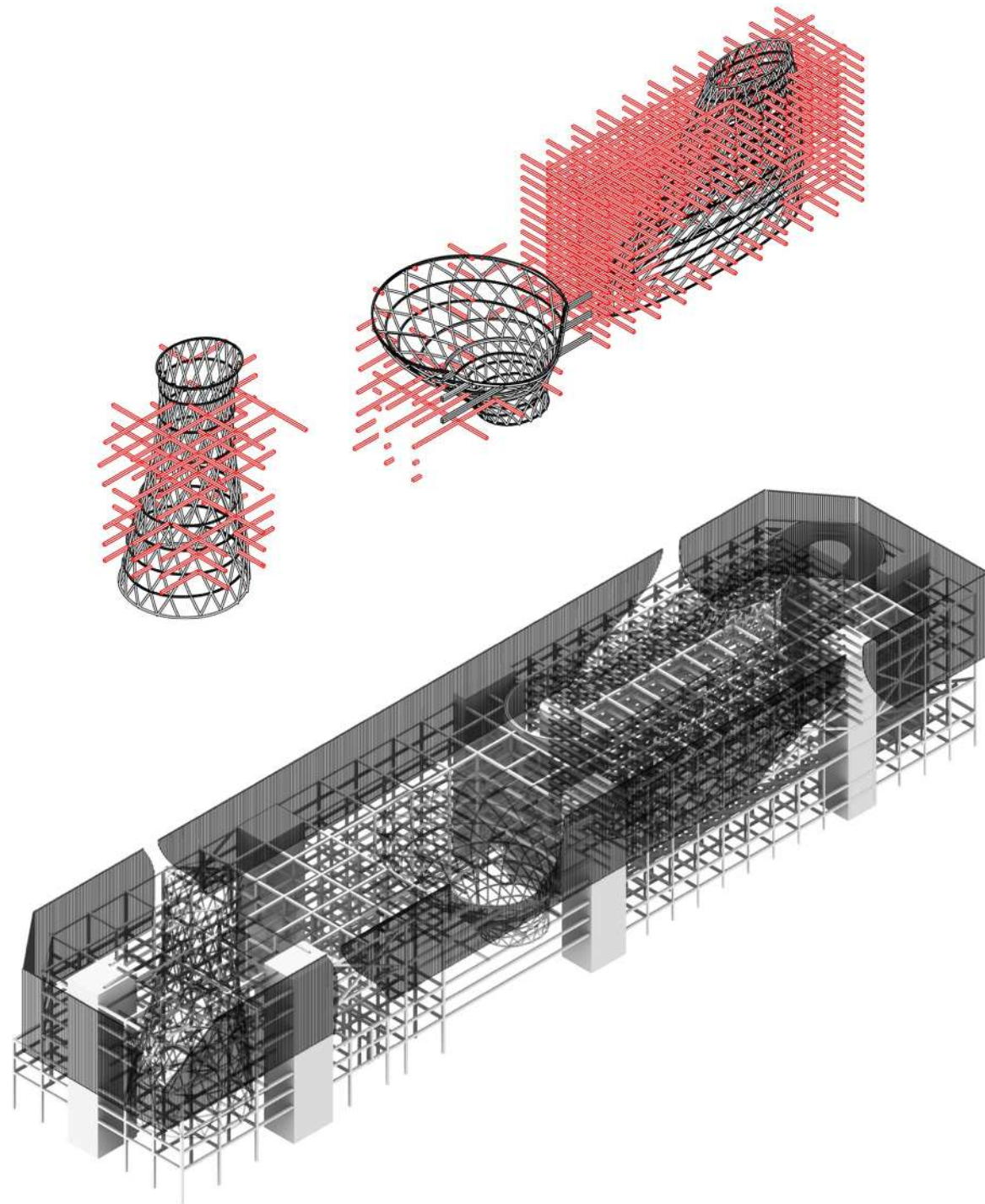
underground: I-beam /Shear wall

STRUCTURAL CORE

CONCRETE

VOID FRAM

VOID = Light column/ structure/ circular tube



STRUCTURE LECTOTYPE

DESIGN IMPLEMENTATION
STRUCTURE SYSTEM: VOID FRAME

1. ring beam + "tree" steel tube



2. ring beam + "tree" steel tube



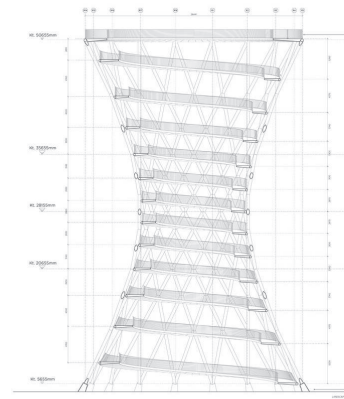
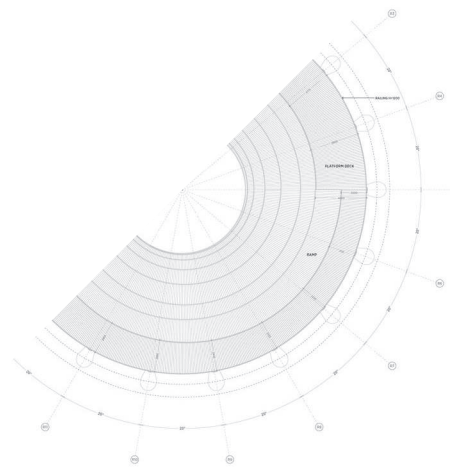
3. 3.arc steel plate + "rhombus mesh" steel tube/ not whole circle



HOW TO DO?

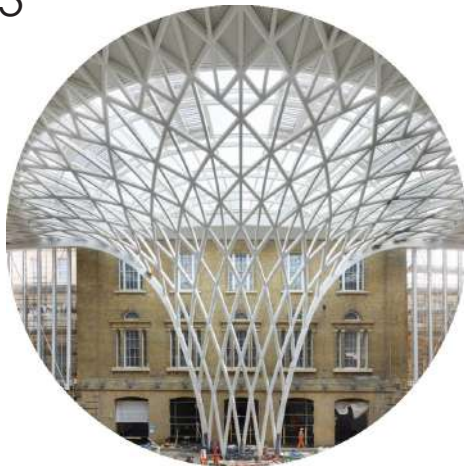
SUBWAY AND PARKING VOID : 1+2. ring beam +" rhombus mesh" steel tube
DICHOTOMY VOID: 3. plus arc steel plate for upper part

1+2.



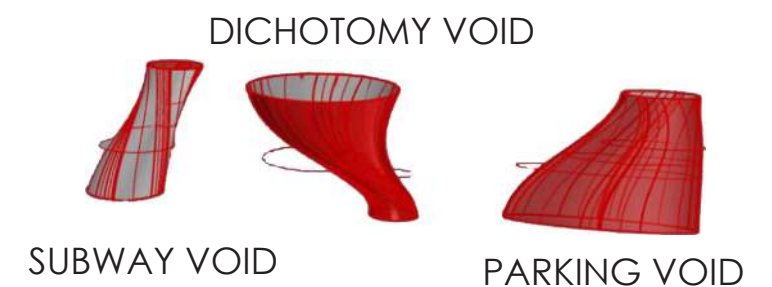
Height: 45m
diameter: 15~23m
Circle number: 18 steel tubes
(20 ° per tube) ($\Phi \sim 420\text{mm}$)
Bearing structure with walking ramp

3



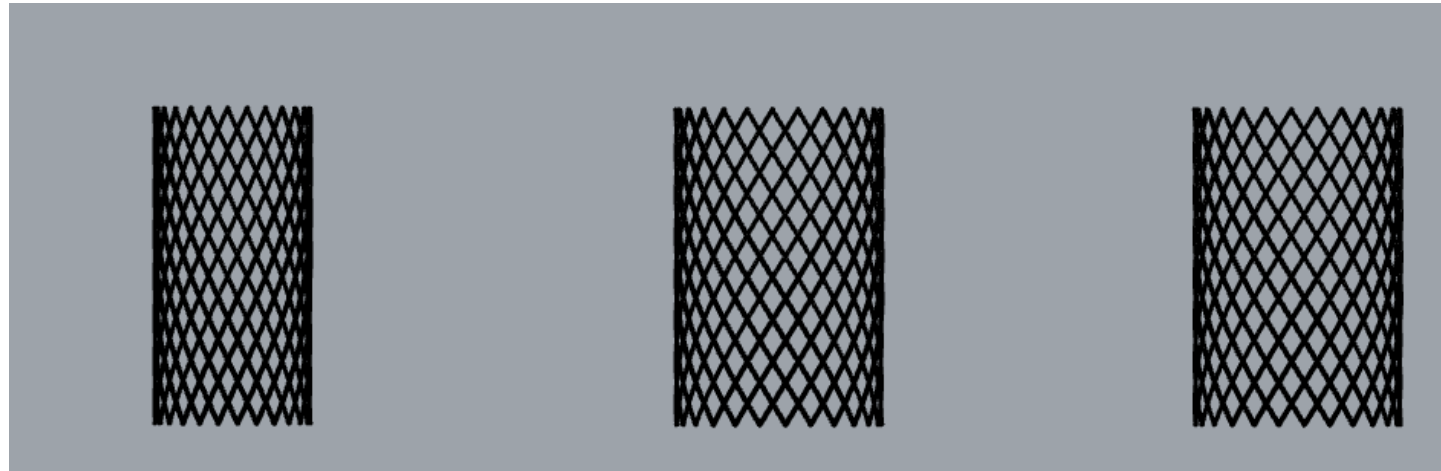
load-bearing
structure
steel tube
($\Phi 325\text{mm}/20\text{mm}$)

Not a whole circle,
the edges are fixed by
CURVED STEEL PLATE (450MM)

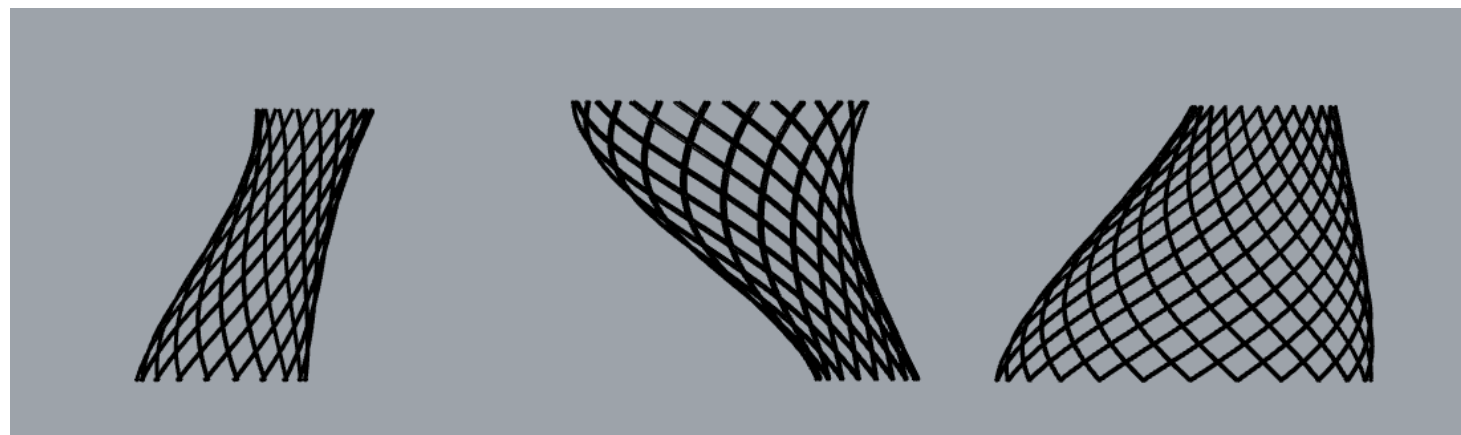


DESIGN IMPLEMENTATION

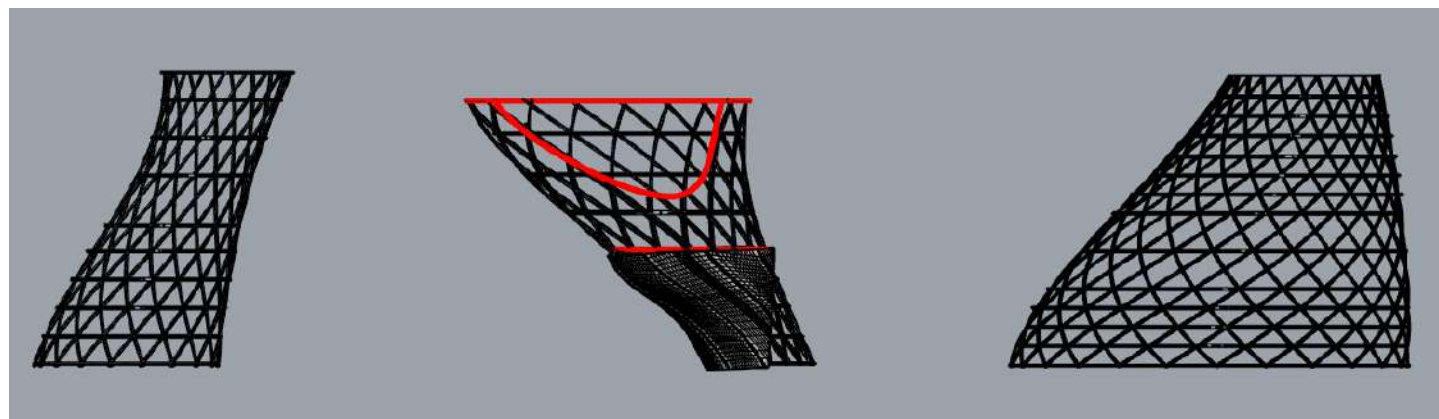
STRUCTURE SYSTEM: VOID FRAME



Basic form



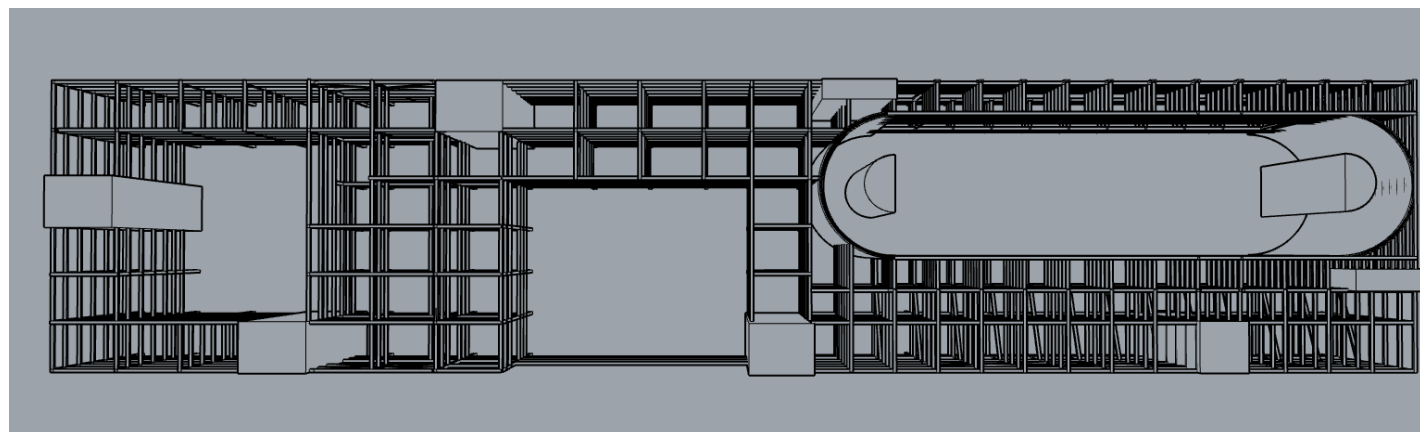
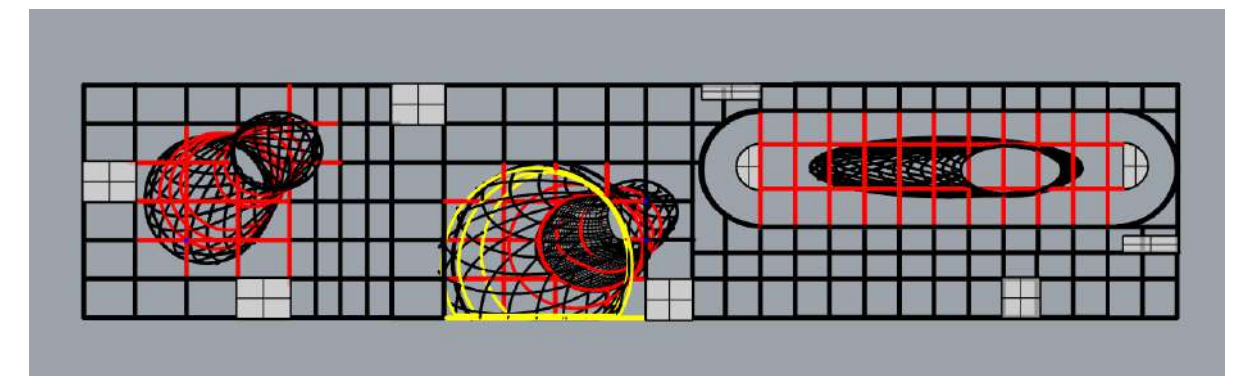
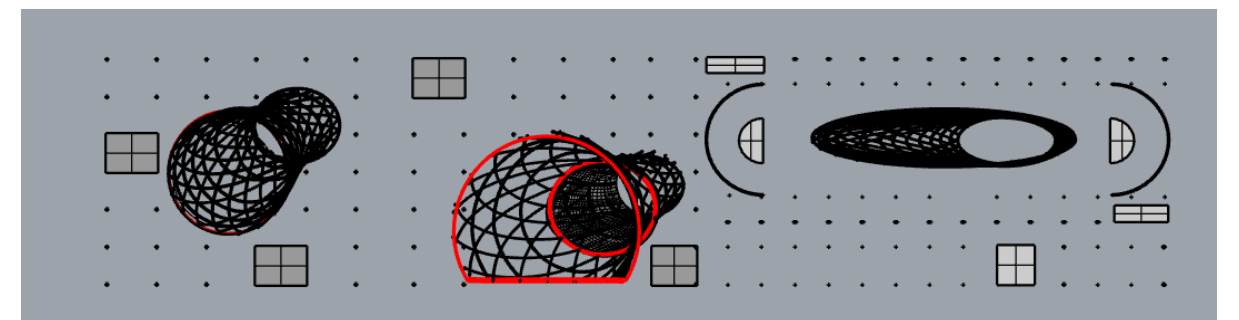
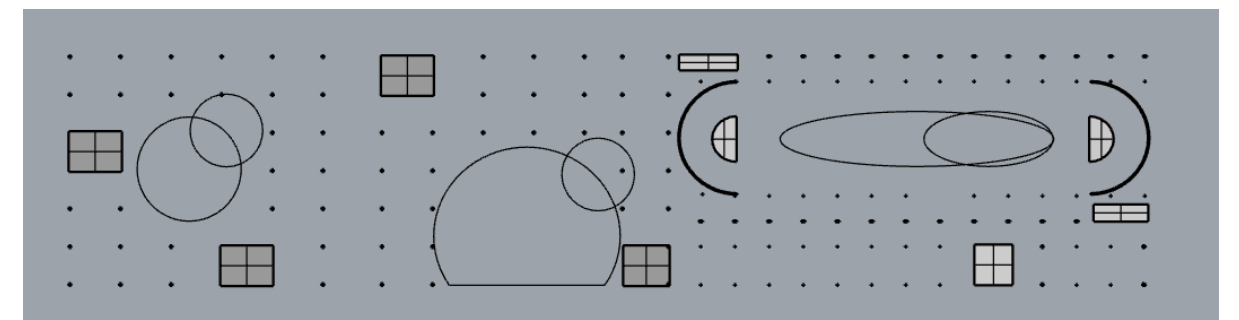
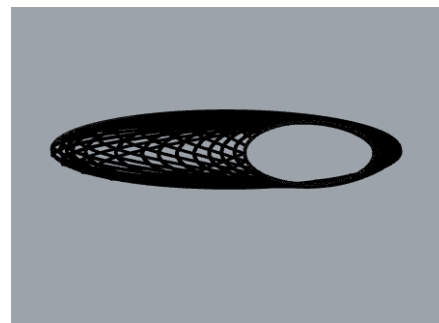
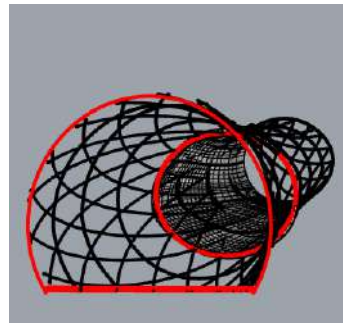
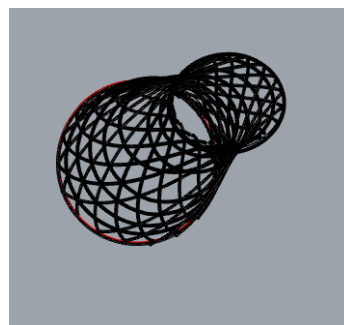
Torsional deformation



Secondary deformation and reinforcement

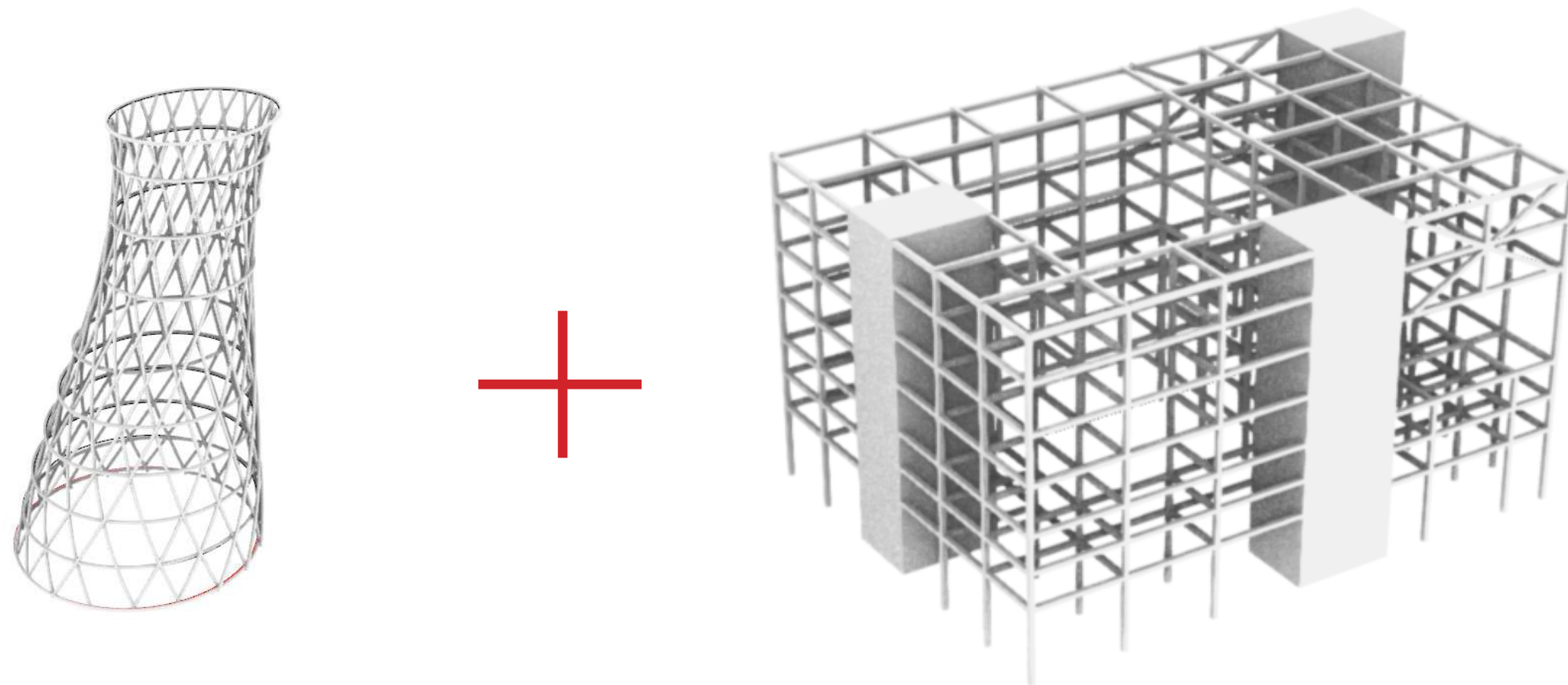
OVERALL STRUCTURE FRAME

Rhombus steel mesh frame + Domino steel Frame+concrete core



DESIGN IMPLEMENTATION

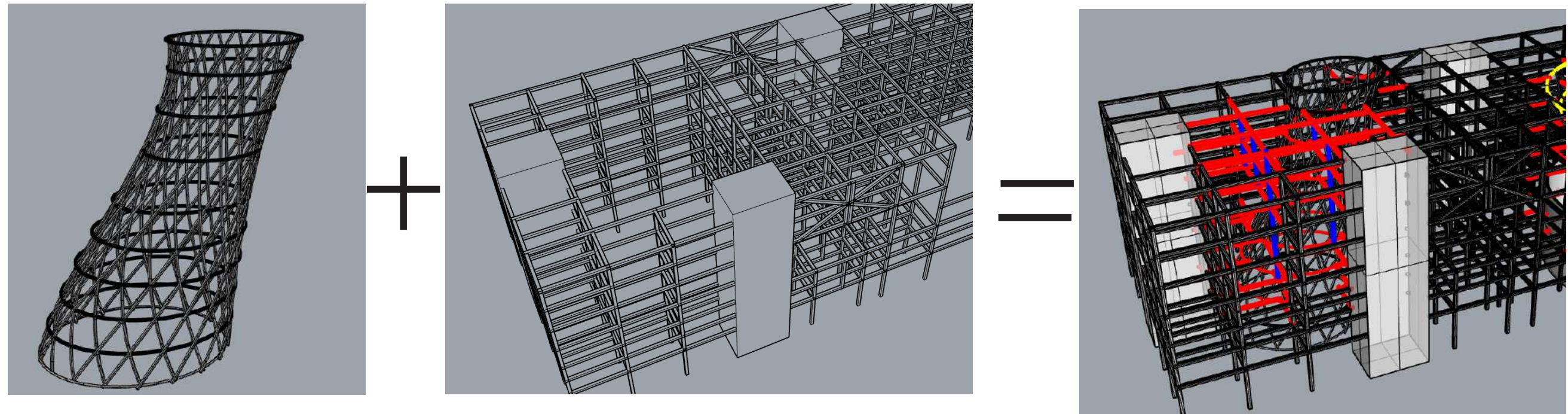
STRUCTURE SYSTEM: VOID MESH+DOMINO



rhombus steel mesh frame + Domino steel frame+concrete core

DESIGN IMPLEMENTATION

STRUCTURE SYSTEM: VOID MESH+DOMINO



PUBLIC VOID

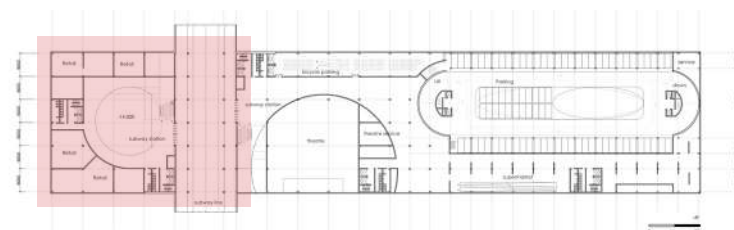
ring beam + "rhombus mesh"

LOAD-BEARING STRUCTURE:

I-BEAM (600 X 300mm)

VOID MESH: STEEL TUBE(Φ 420mm)

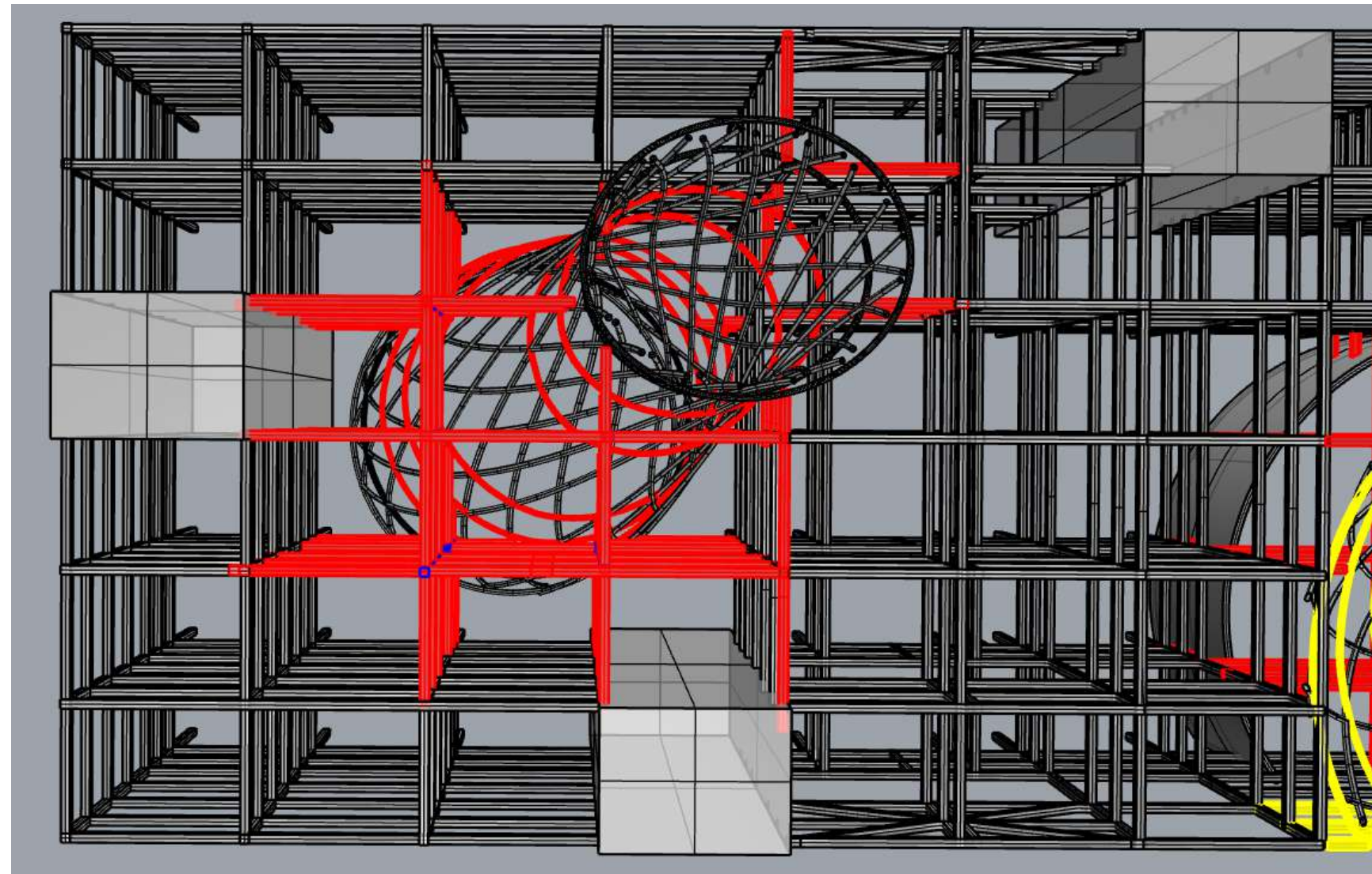
STRUCTURAL CORE:
CONCRETE



PARTIAL STRUCTURE FRAME

DESIGN IMPLEMENTATION

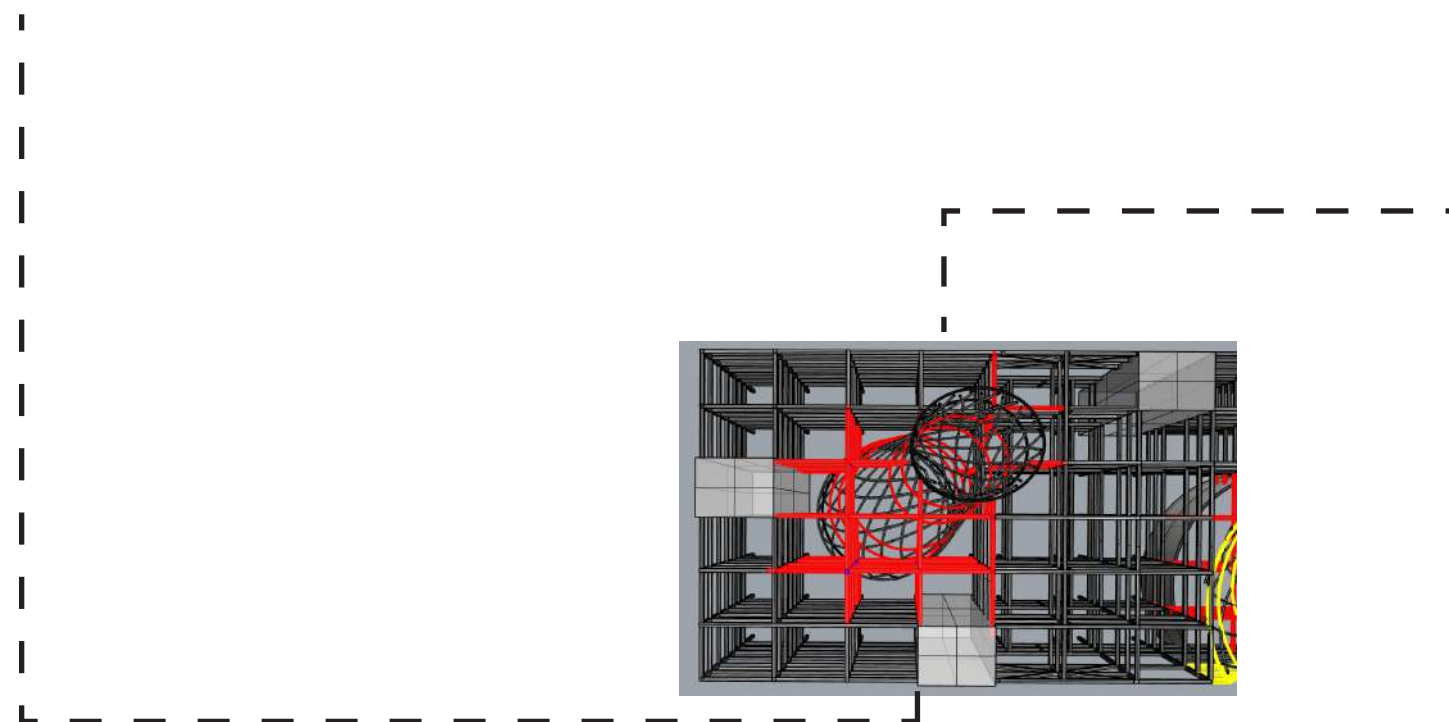
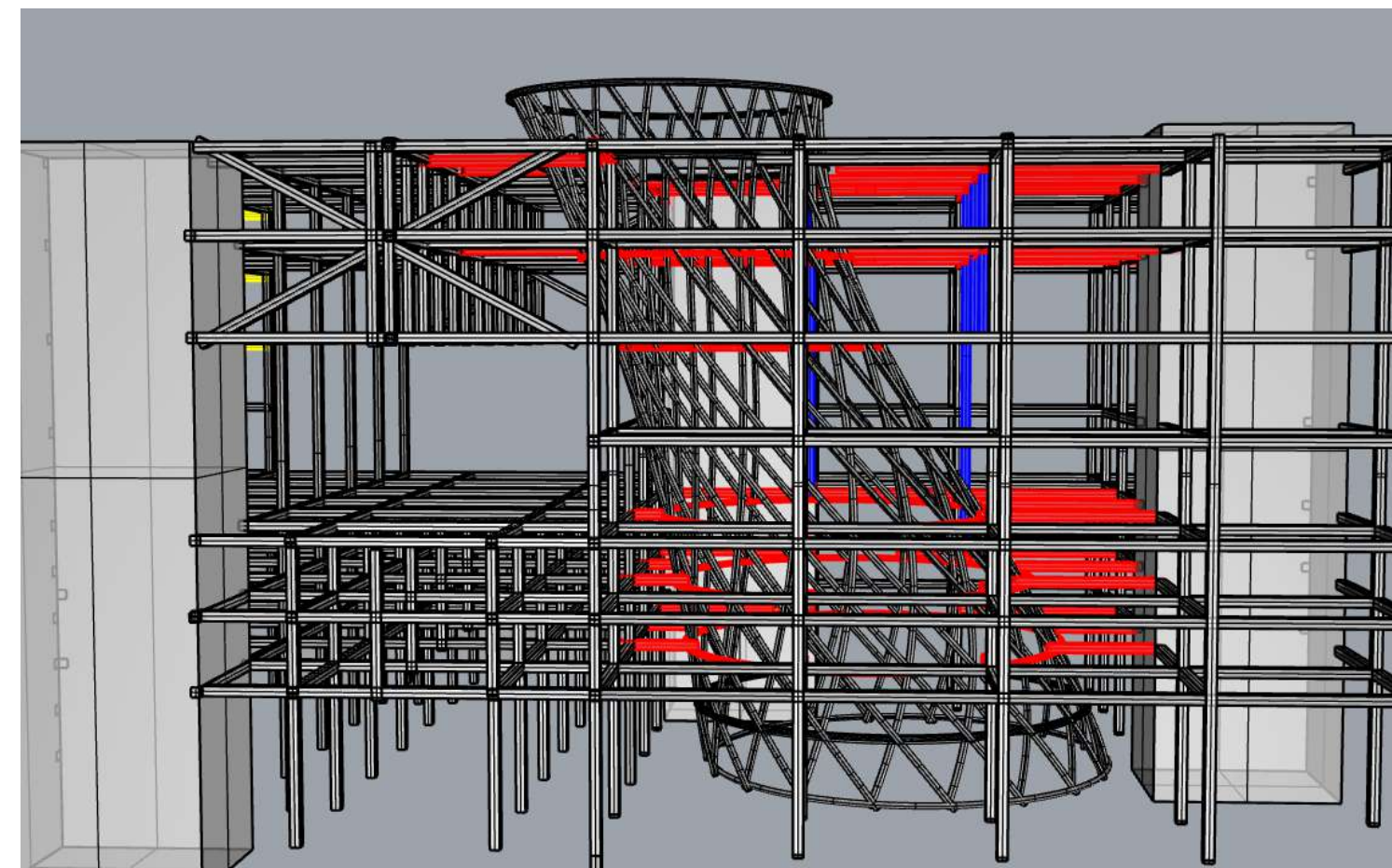
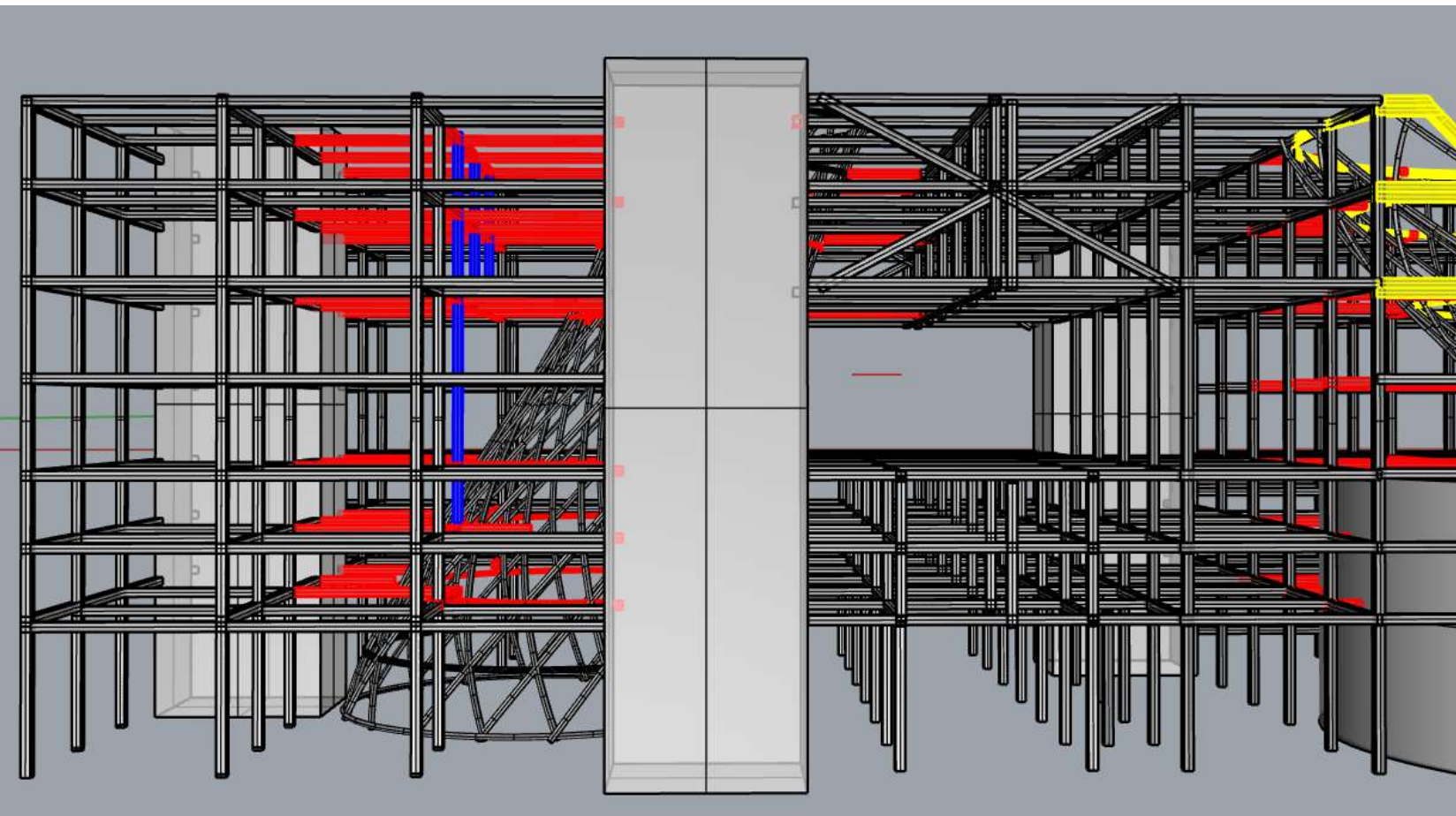
STRUCTURE SYSTEM: VOID MESH+DOMINO



RED PART: the connected beam between normal structure and tube structure

DESIGN IMPLEMENTATION

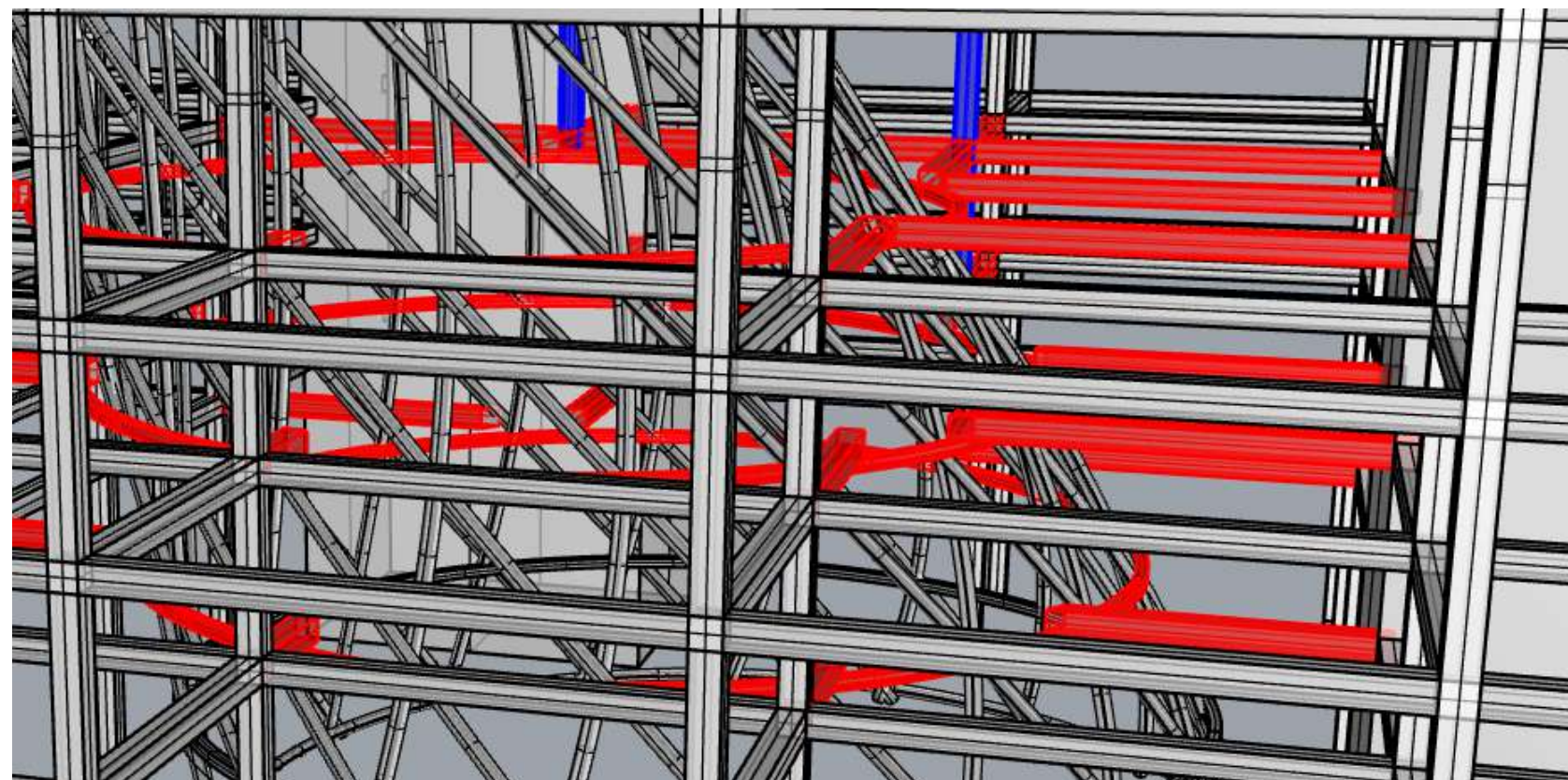
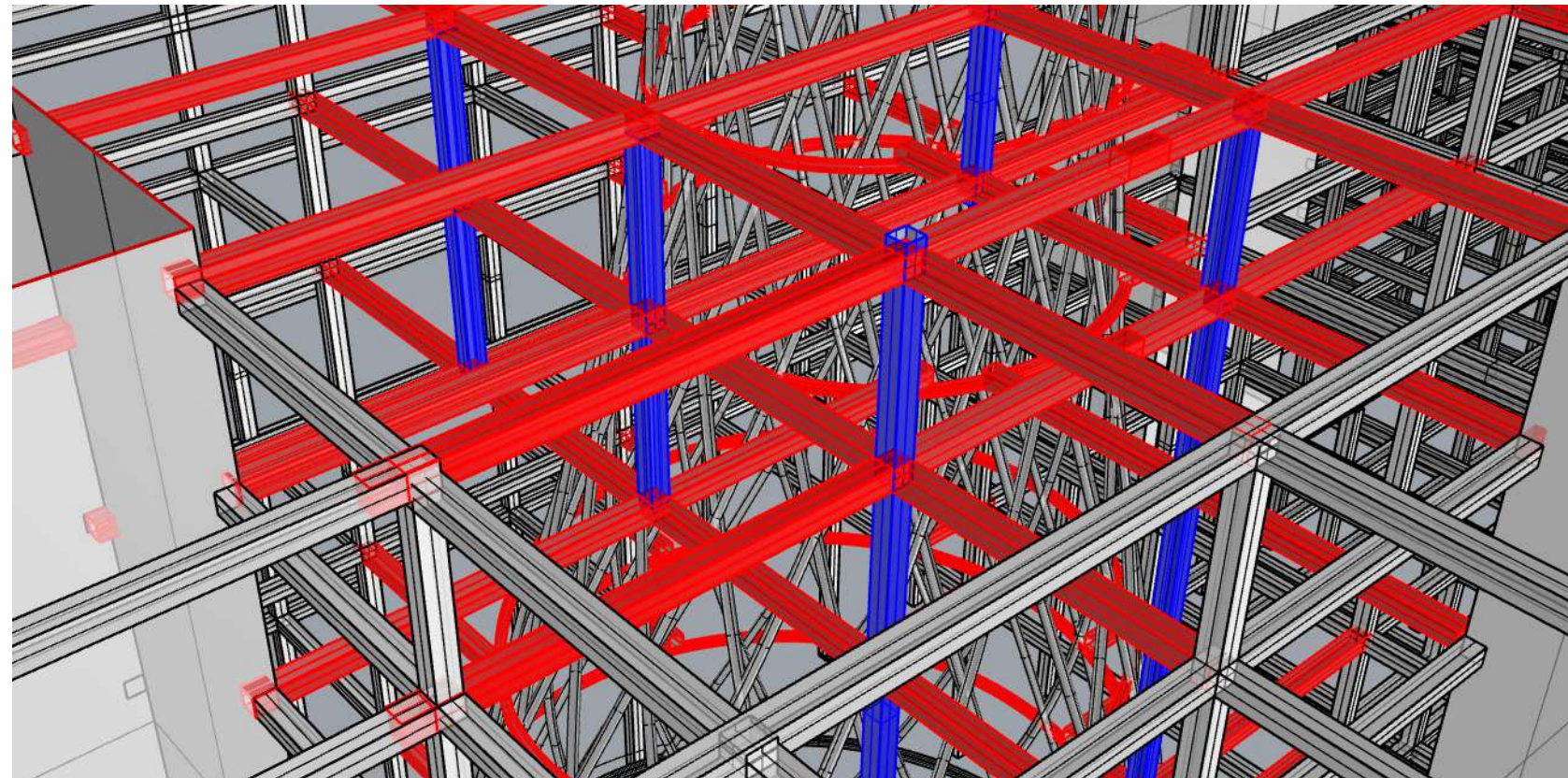
STRUCTURE SYSTEM: VOID MESH+DOMINO



DESIGN IMPLEMENTATION

STRUCTURE SYSTEM: VOID MESH+DOMINO

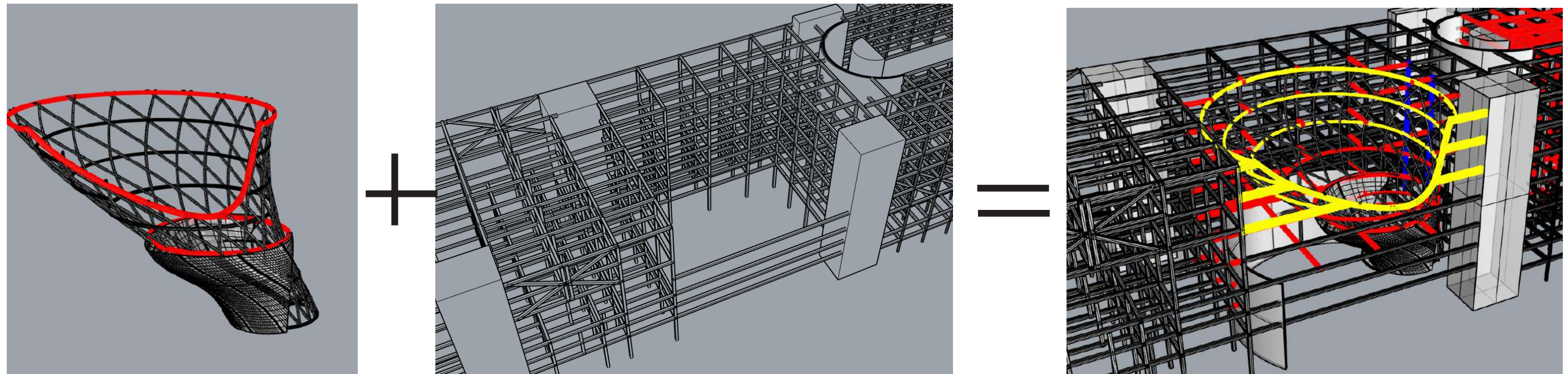
RED PART:
second beam
to connecting
void structure and
nomalstructure



BLUE PART:
Additional conlum

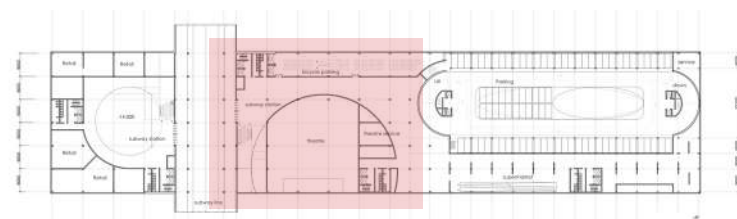
DESIGN IMPLEMENTATION

STRUCTURE SYSTEM: VOID MESH+DOMINO



DICHOTOMY VOID

ring beam + "rhombus mesh" steel tube + arc steel plate steel tube



PARTIAL STRUCTURE FRAME

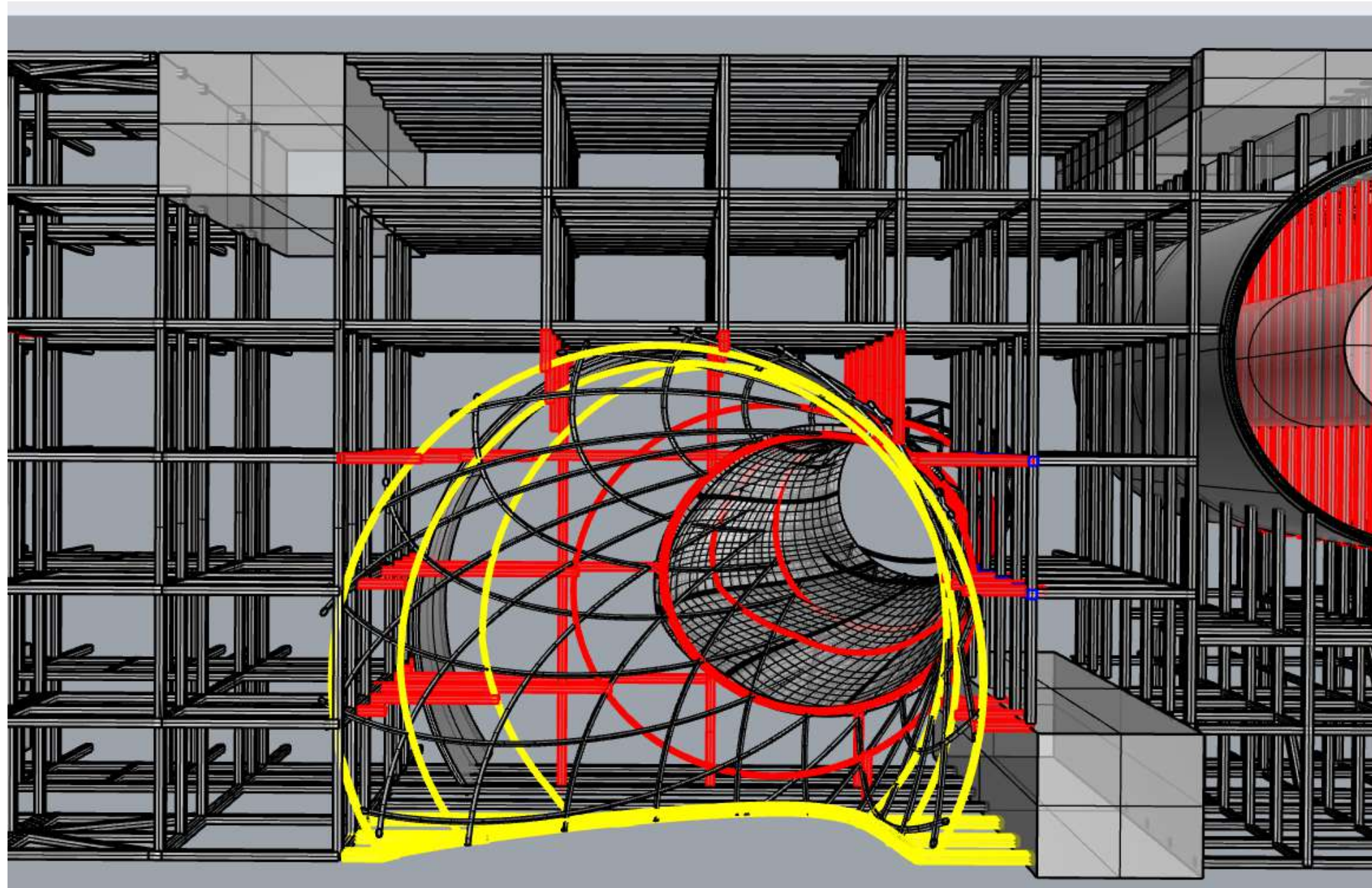
LOAD-BEARING STRUCTURE:

I-BEAM (600 X 300mm)
VOID MESH: STEEL TUBE(Φ 400mm)
RING BEAM: 400mm

STRUCTURAL CORE:
CONCRETE

DESIGN IMPLEMENTATION

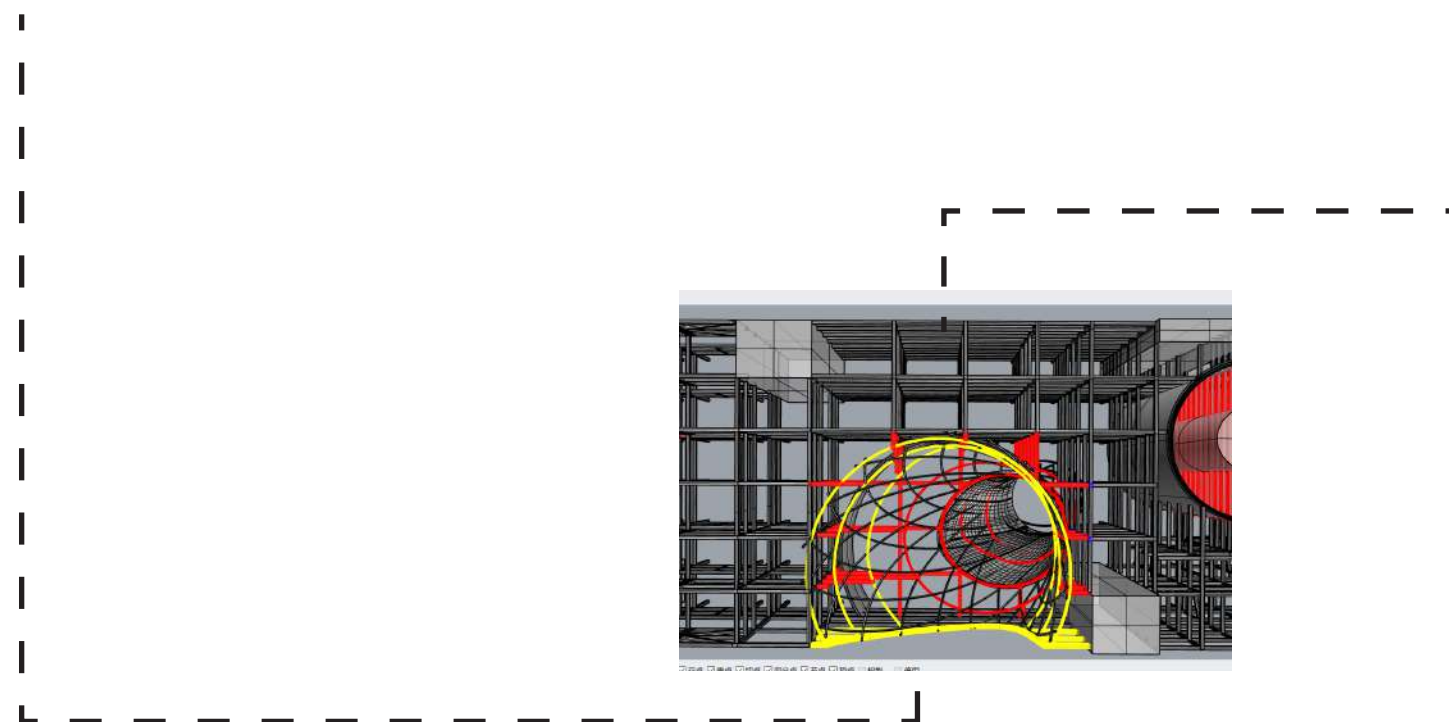
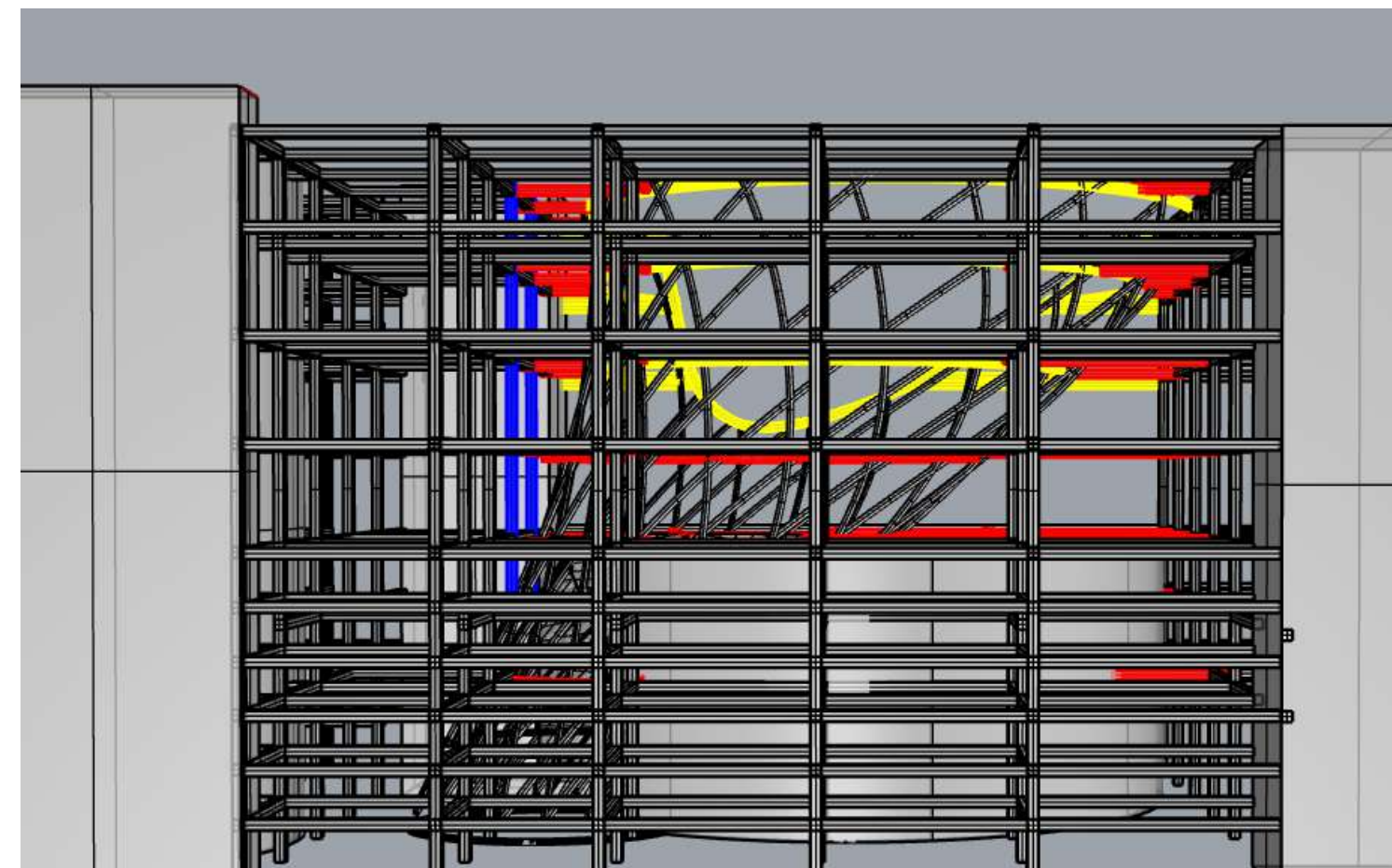
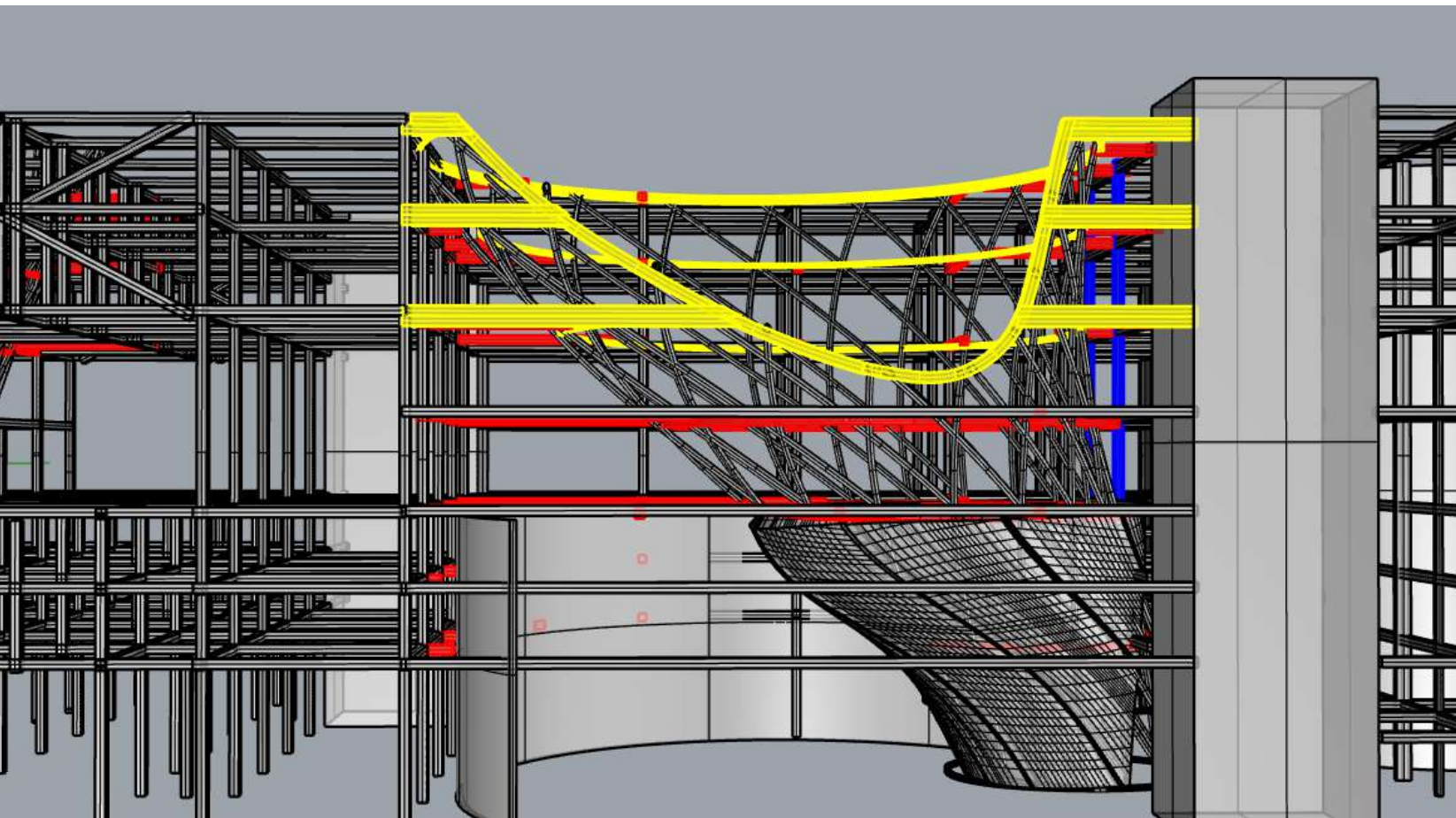
STRUCTURE SYSTEM: VOID MESH+DOMINO



RED PART: the connected beam between normal structure and tube structure
YELLOW PART:

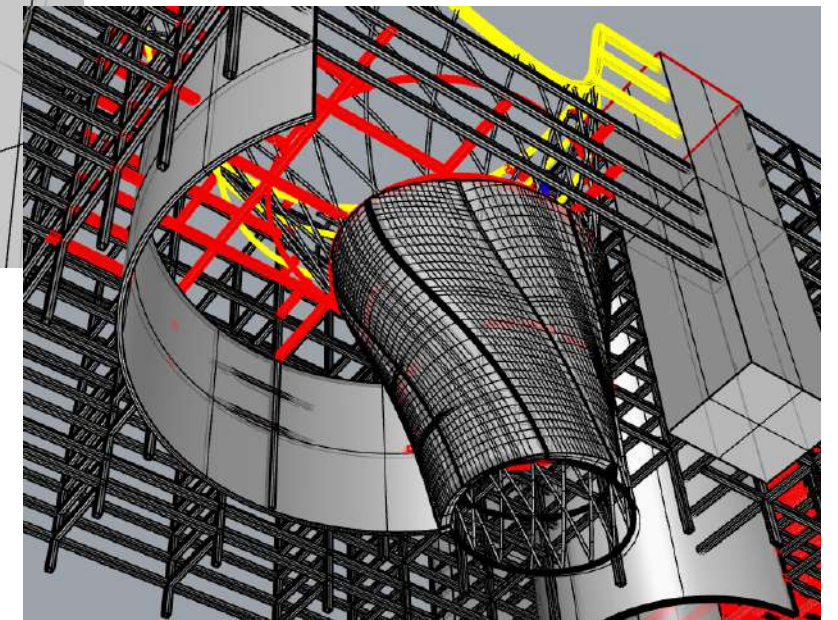
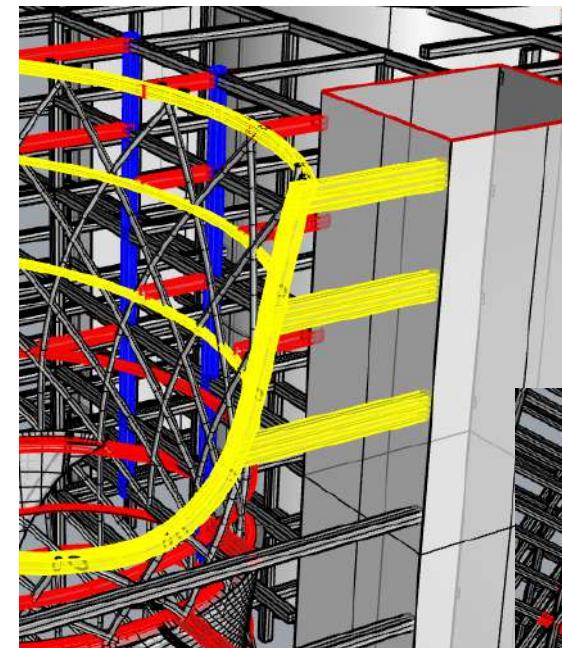
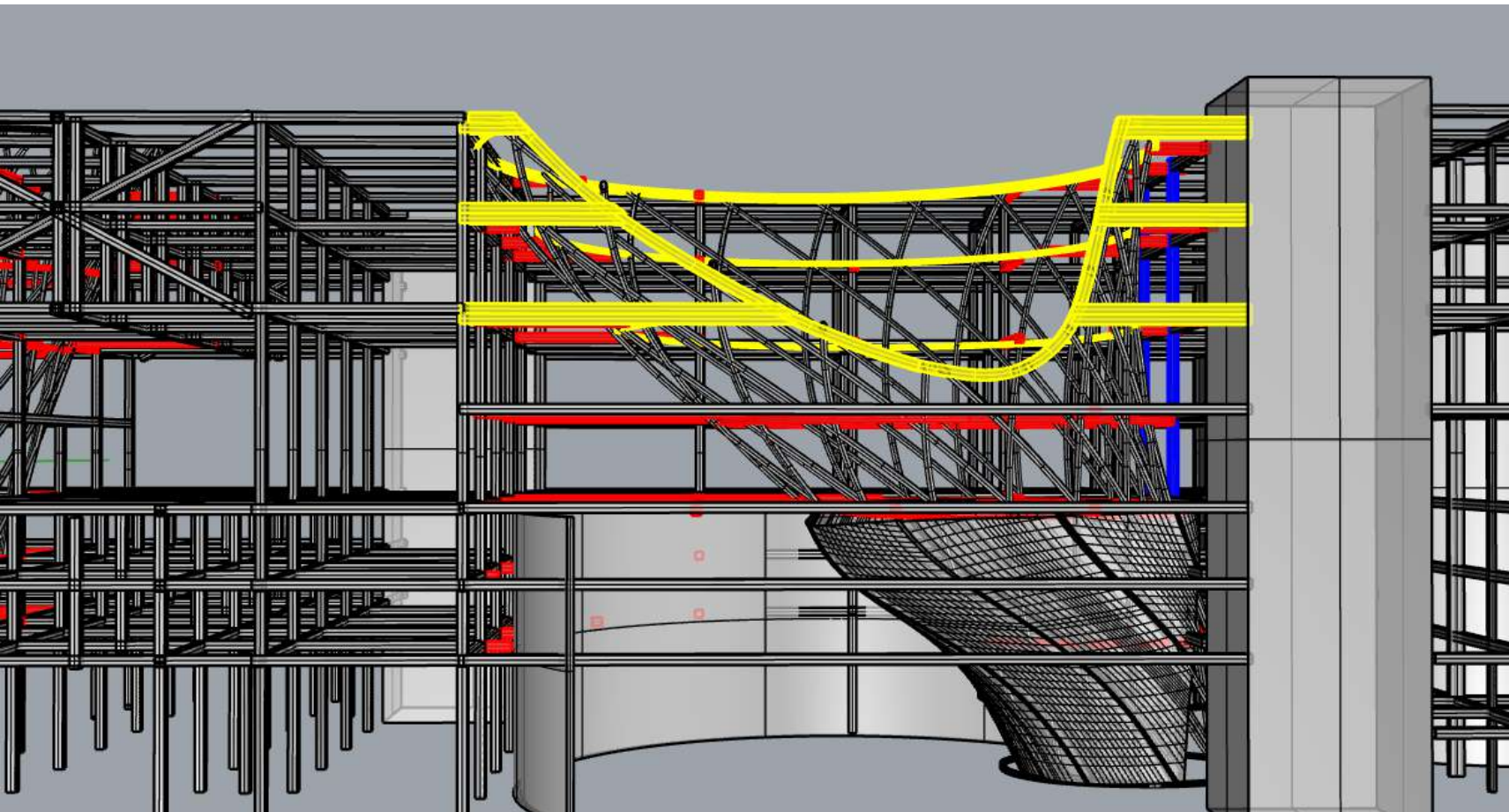
DESIGN IMPLEMENTATION

STRUCTURE SYSTEM: VOID MESH+DOMINO

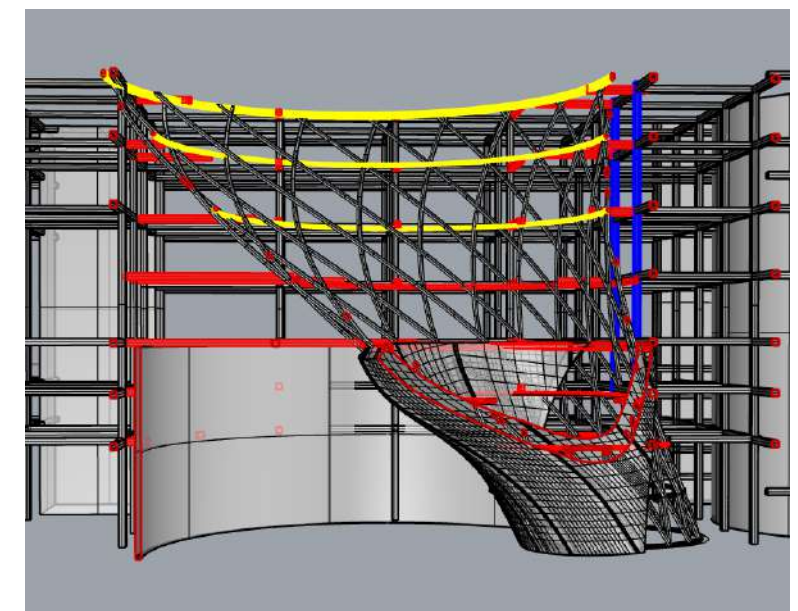
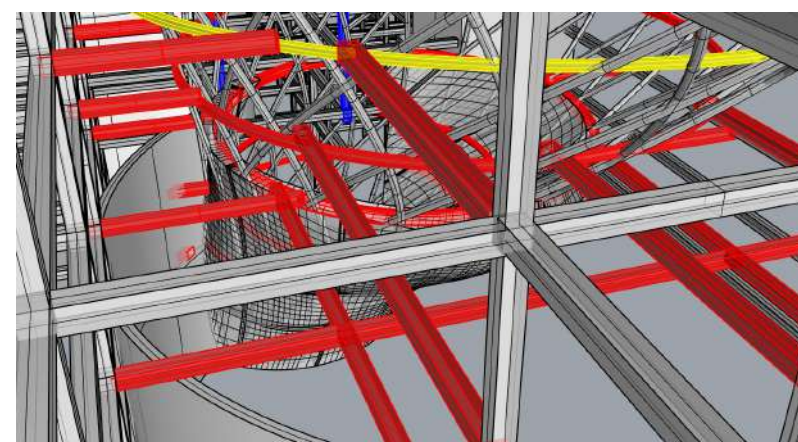


DESIGN IMPLEMENTATION

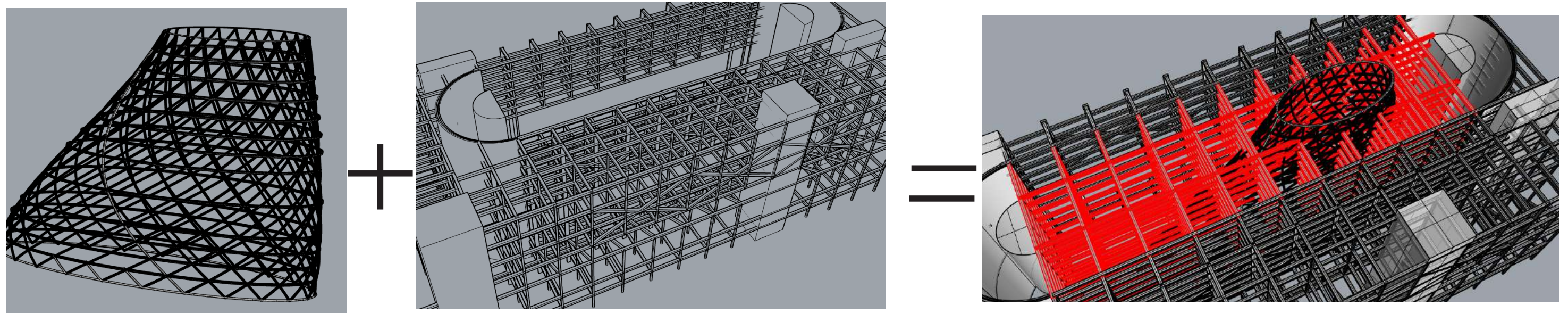
STRUCTURE SYSTEM: VOID MESH+DOMINO



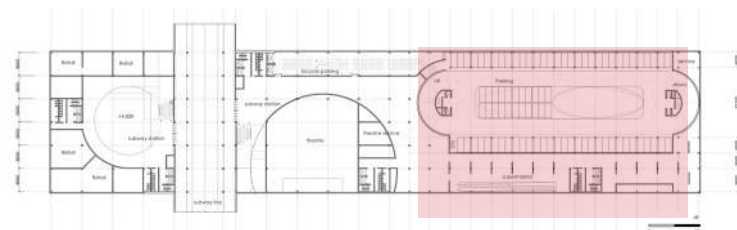
special: upper/ outside/arc steel plate
under: half concrete wall
(along with the mesh of steel tube)
/ half mesh



DESIGN IMPLEMENTATION
STRUCTURE SYSTEM: VOID MESH+DOMINO



PARKING VOID
ring beam +" rhombus mesh" steel tube



PARTIAL STRUCTURE FRAME

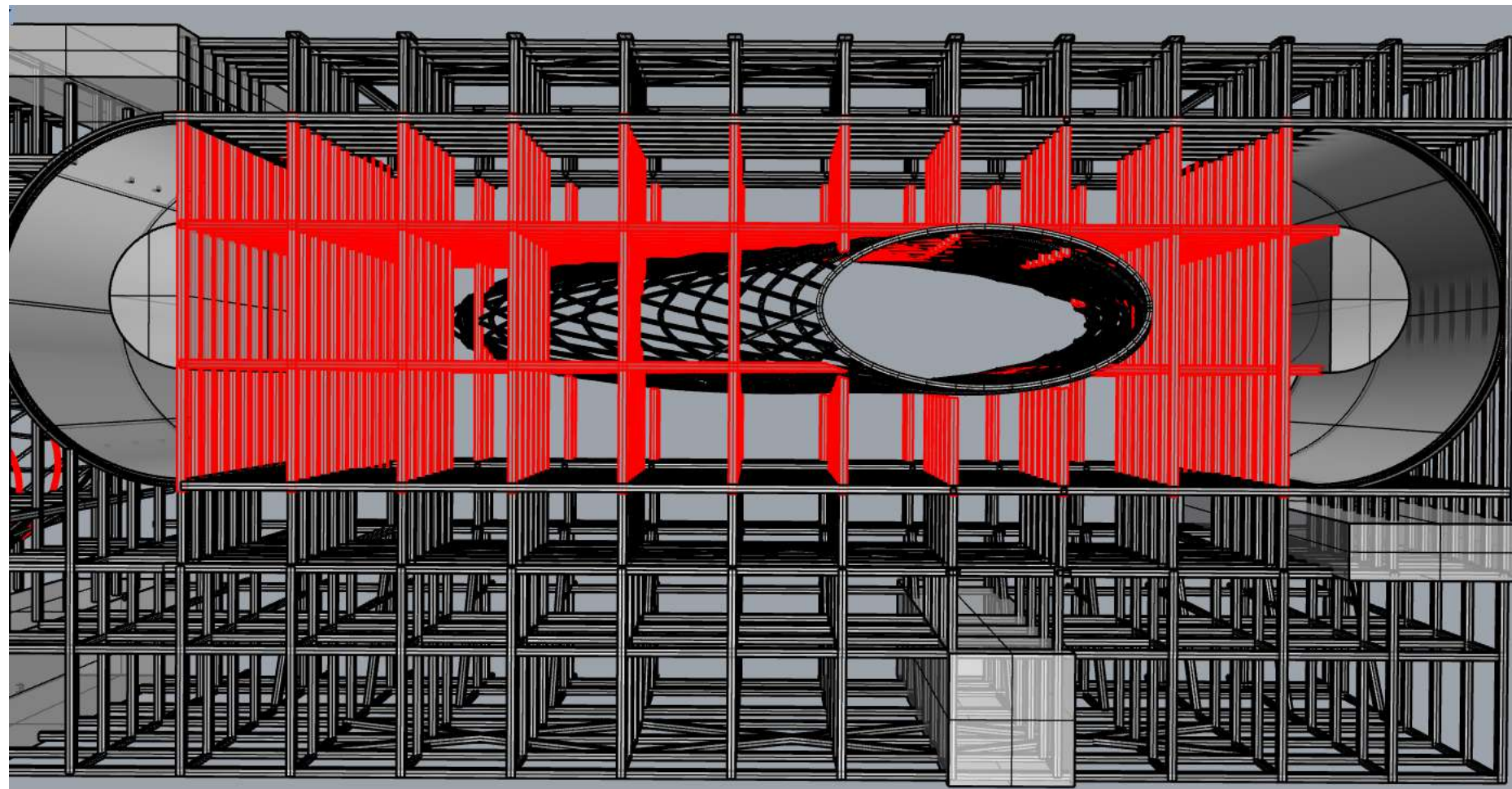
LOAD-BEARING STRUCTURE:

I-BEAM (600 X 300mm)
VOID MESH: STEEL TUBE(Φ 420mm)
RING BEAM: 400mm

STRUCTURAL CORE:
CONCRETE

DESIGN IMPLEMENTATION

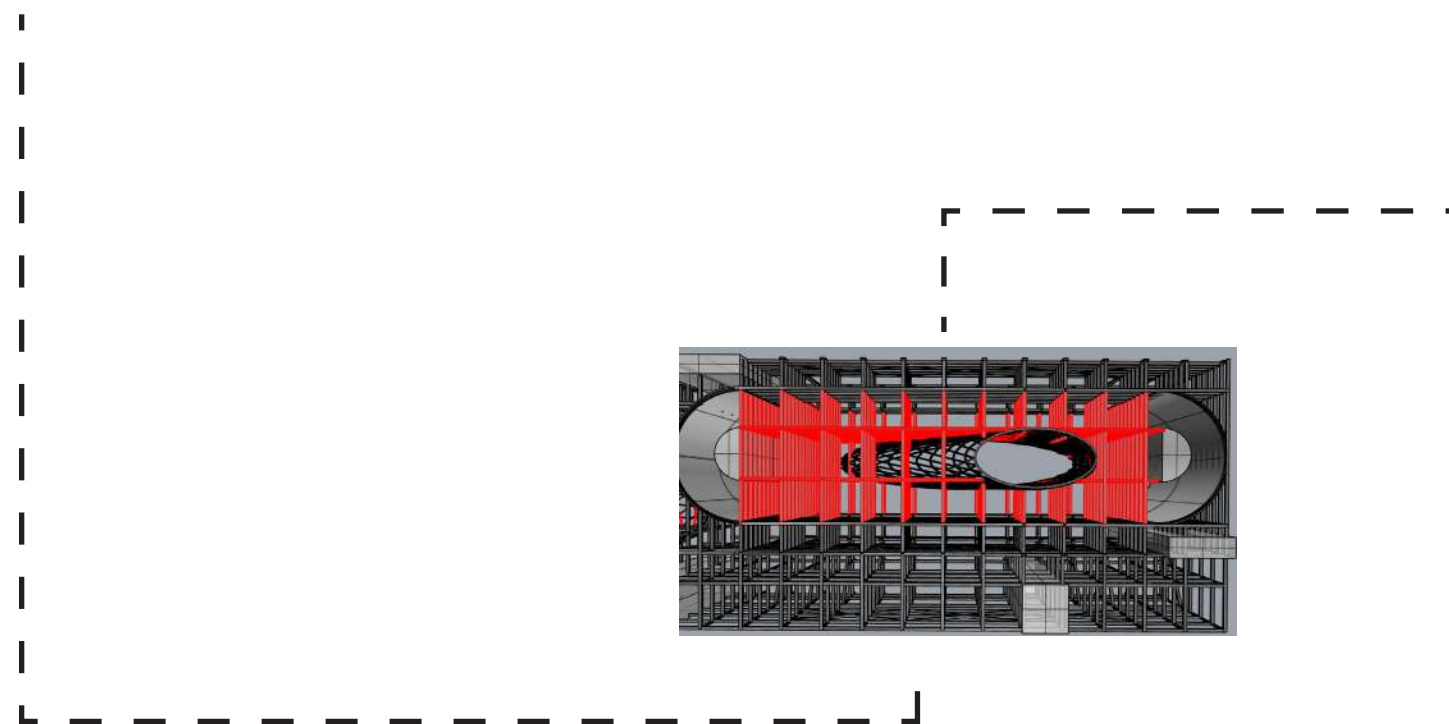
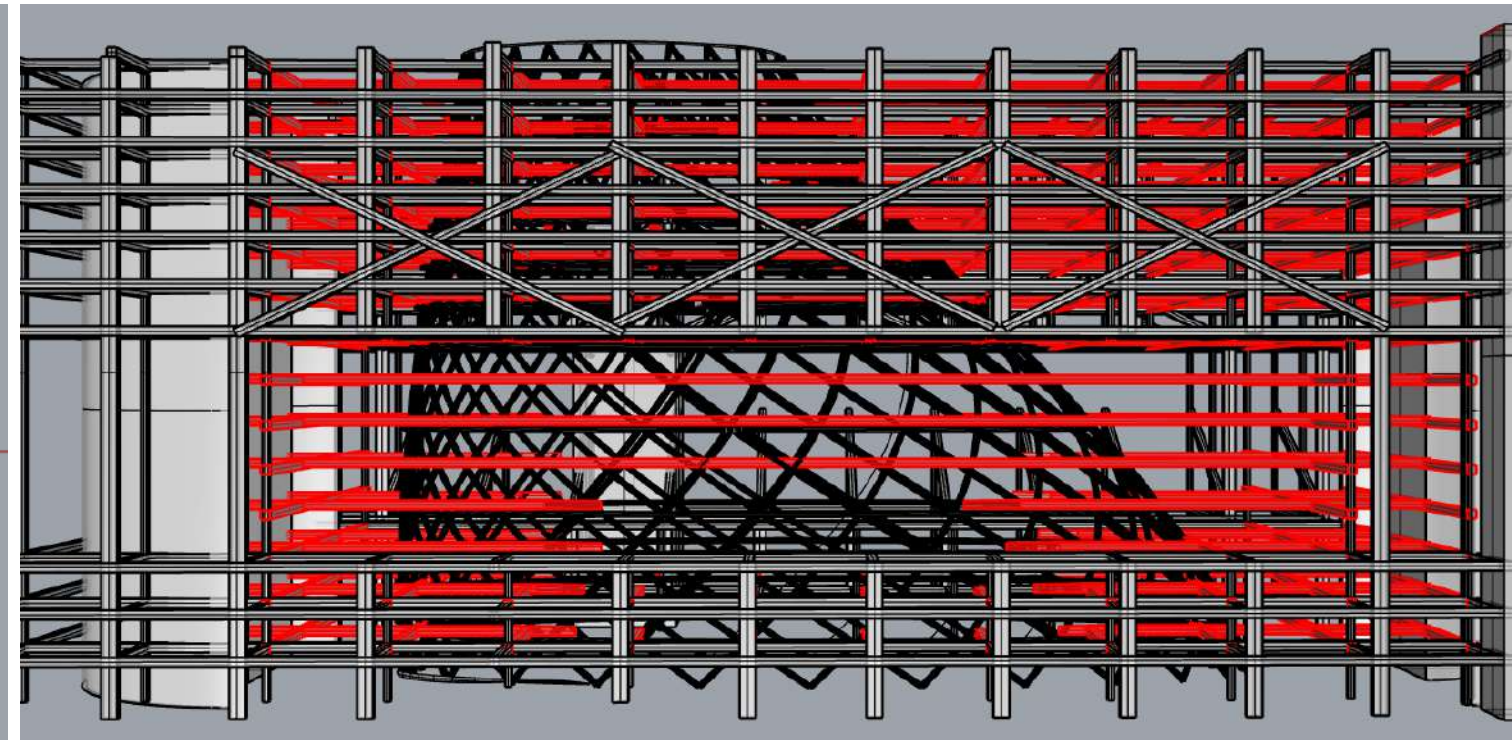
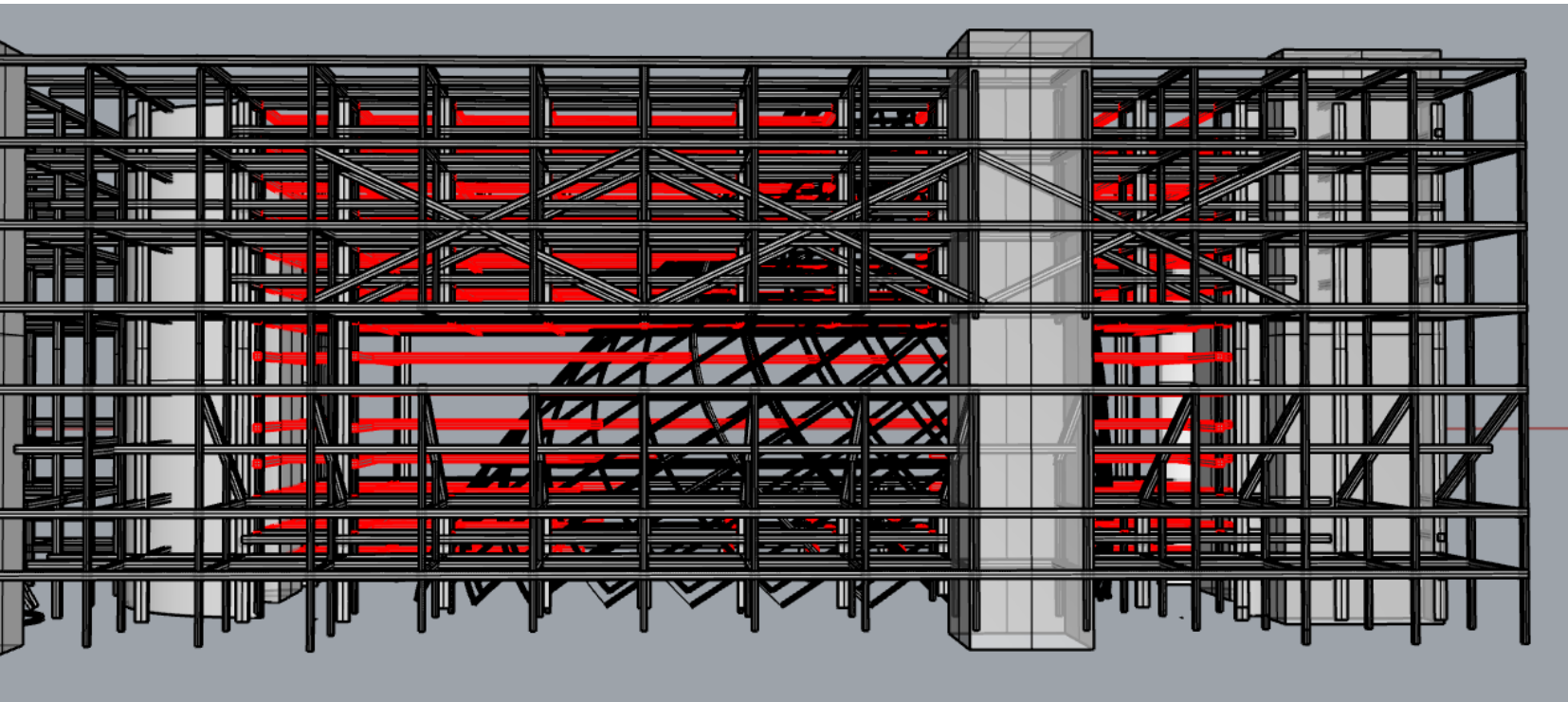
STRUCTURE SYSTEM: VOID MESH+DOMINO



RED PART: the connected beam between normal structure and tube structure

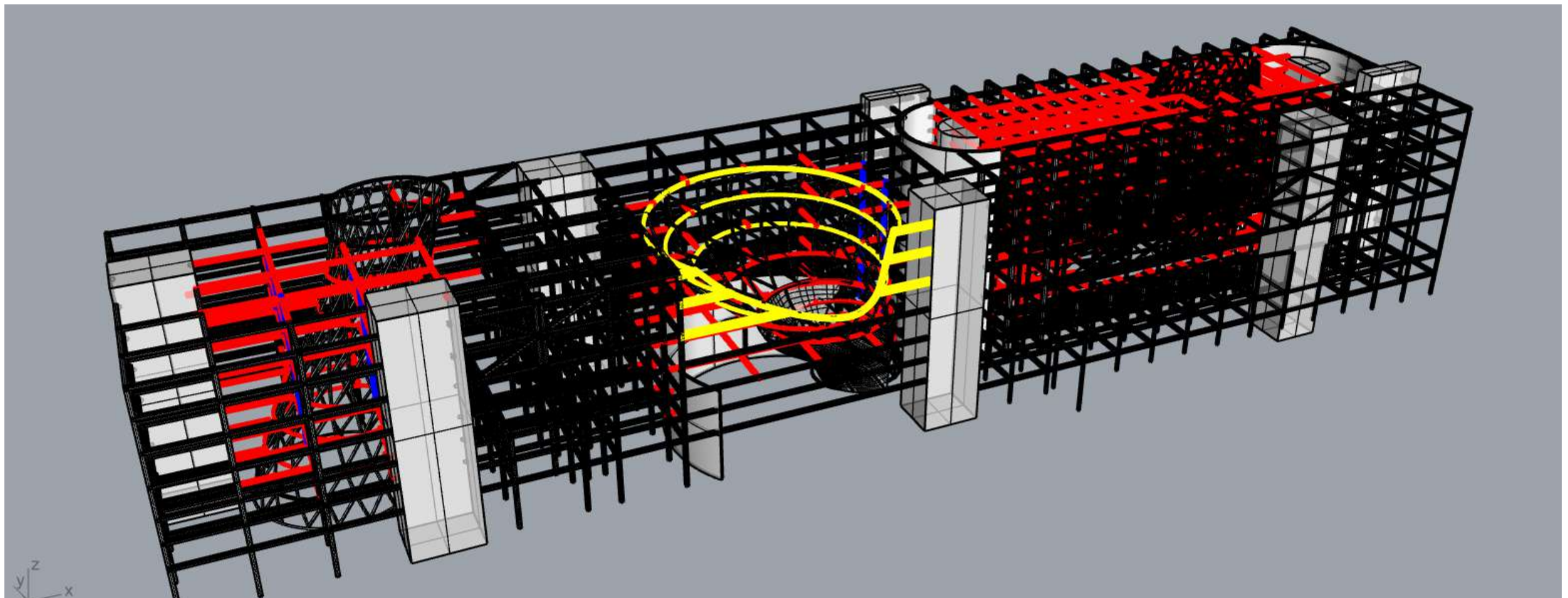
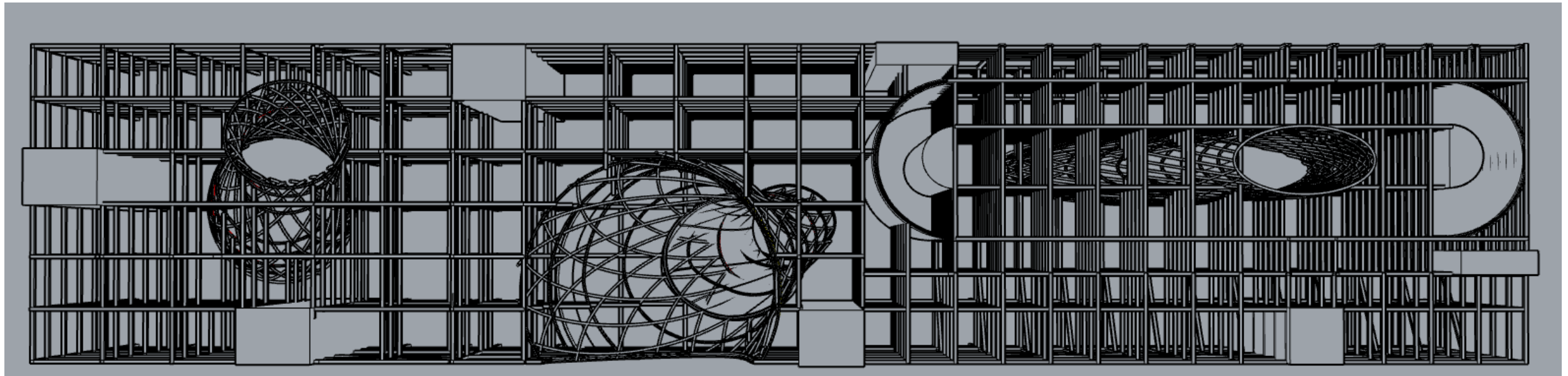
DESIGN IMPLEMENTATION

STRUCTURE SYSTEM: VOID MESH+DOMINO



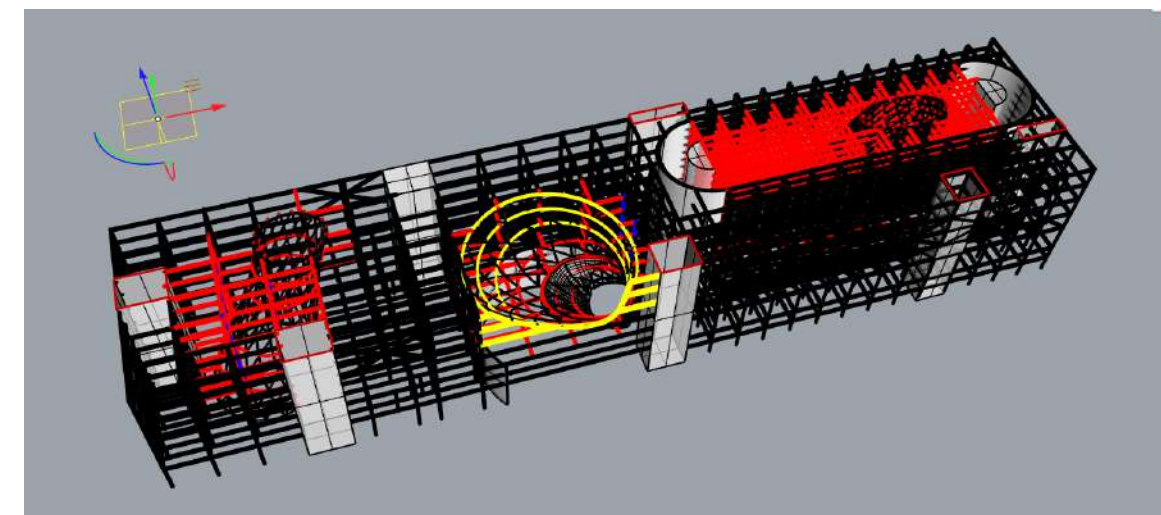
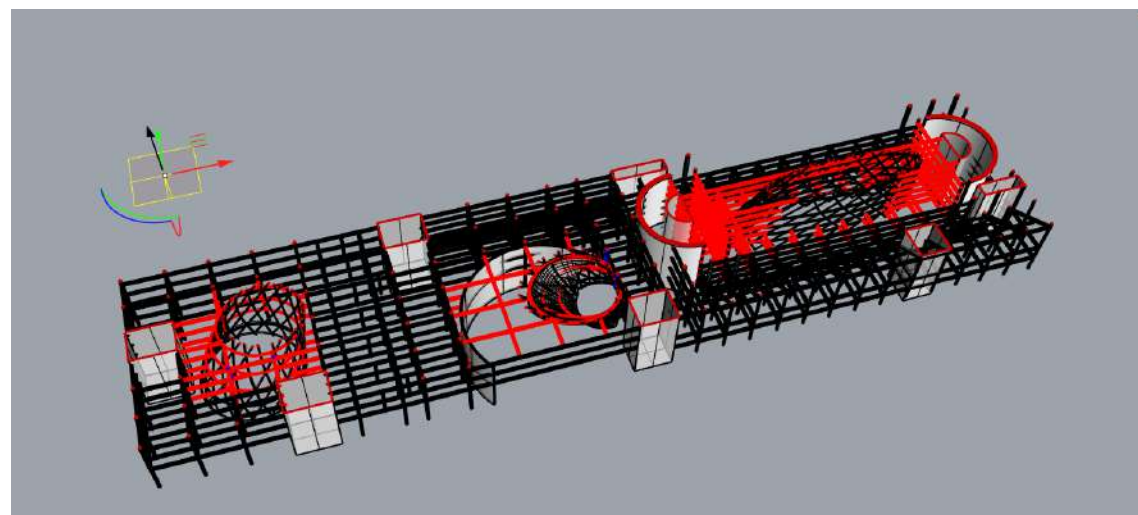
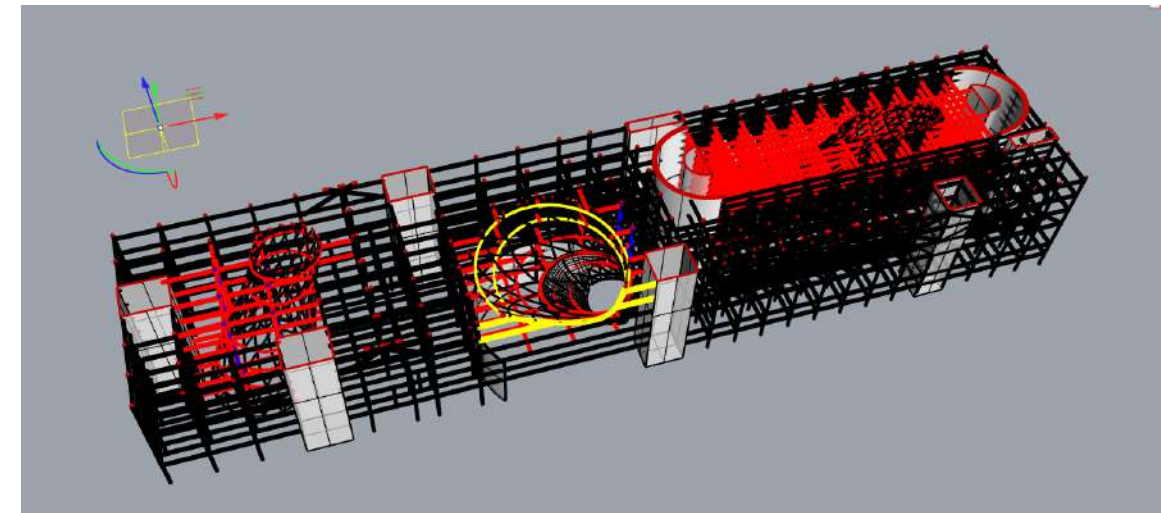
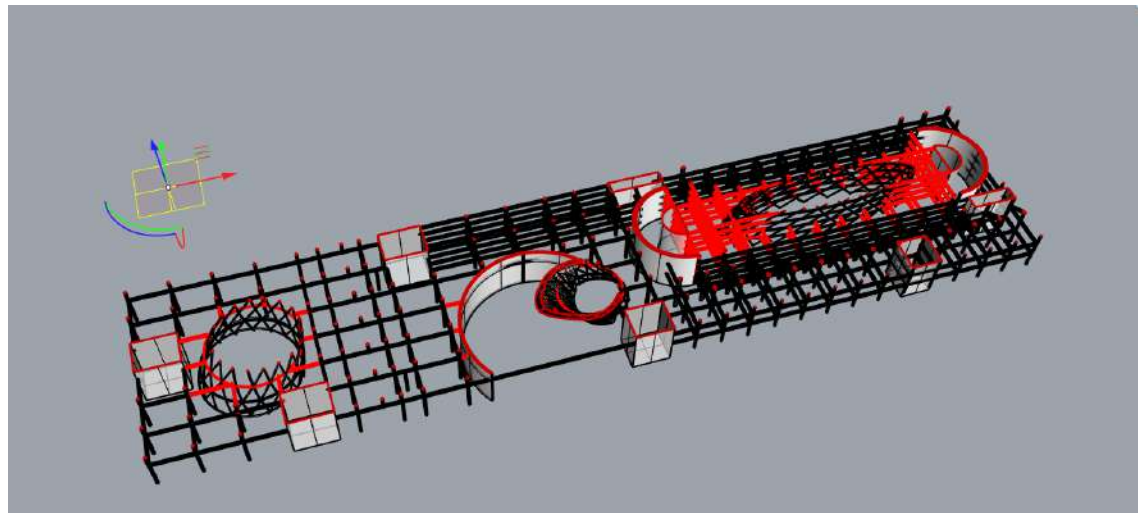
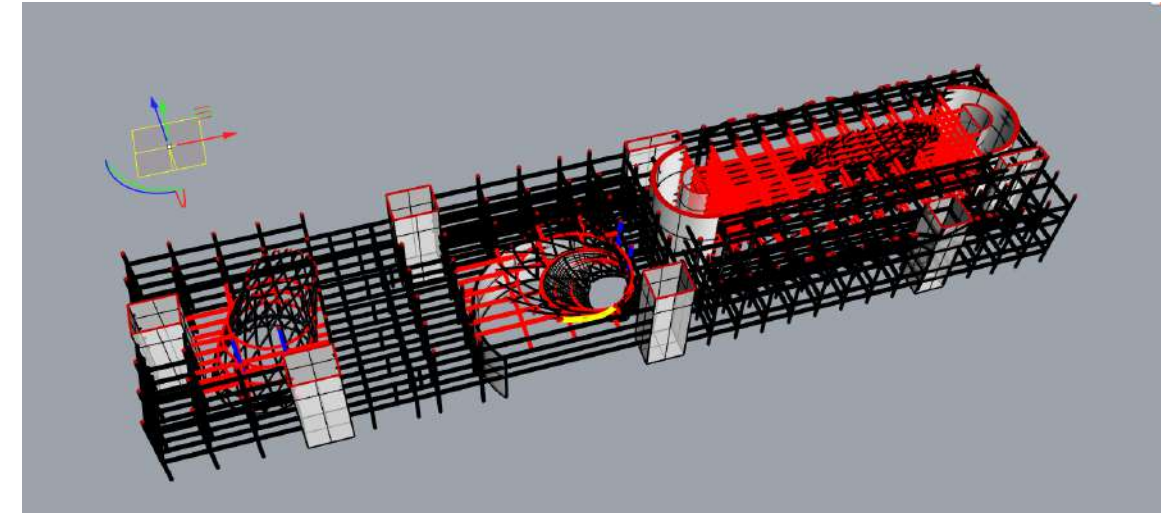
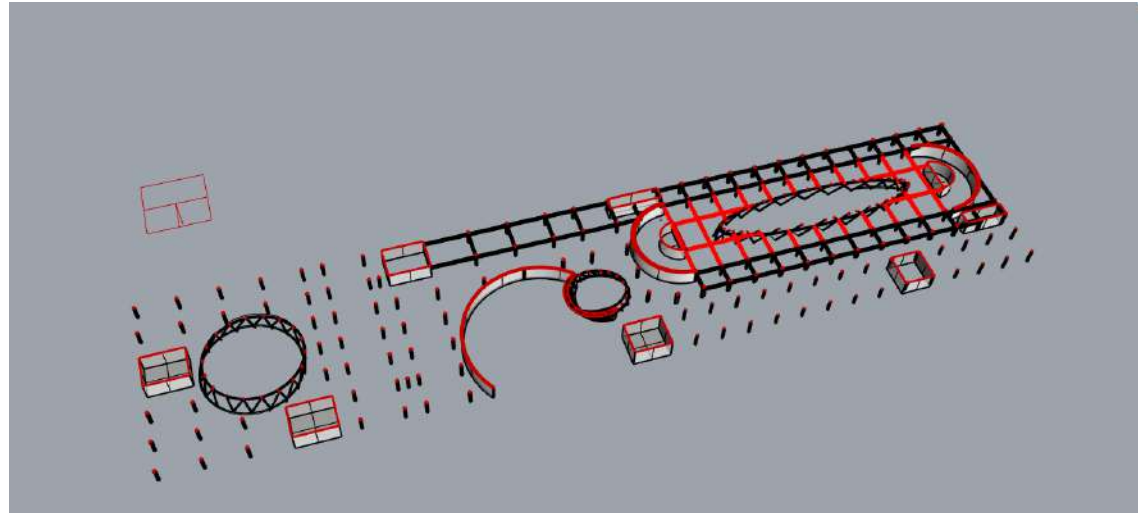
DESIGN IMPLEMENTATION

STRUCTURE SYSTEM: VOID MESH+DOMINO



DESIGN IMPLEMENTATION

STRUCTURE SYSTEM: VOID MESH+DOMINO



DESIGN IMPLEMENTATION

XL
Urban Position

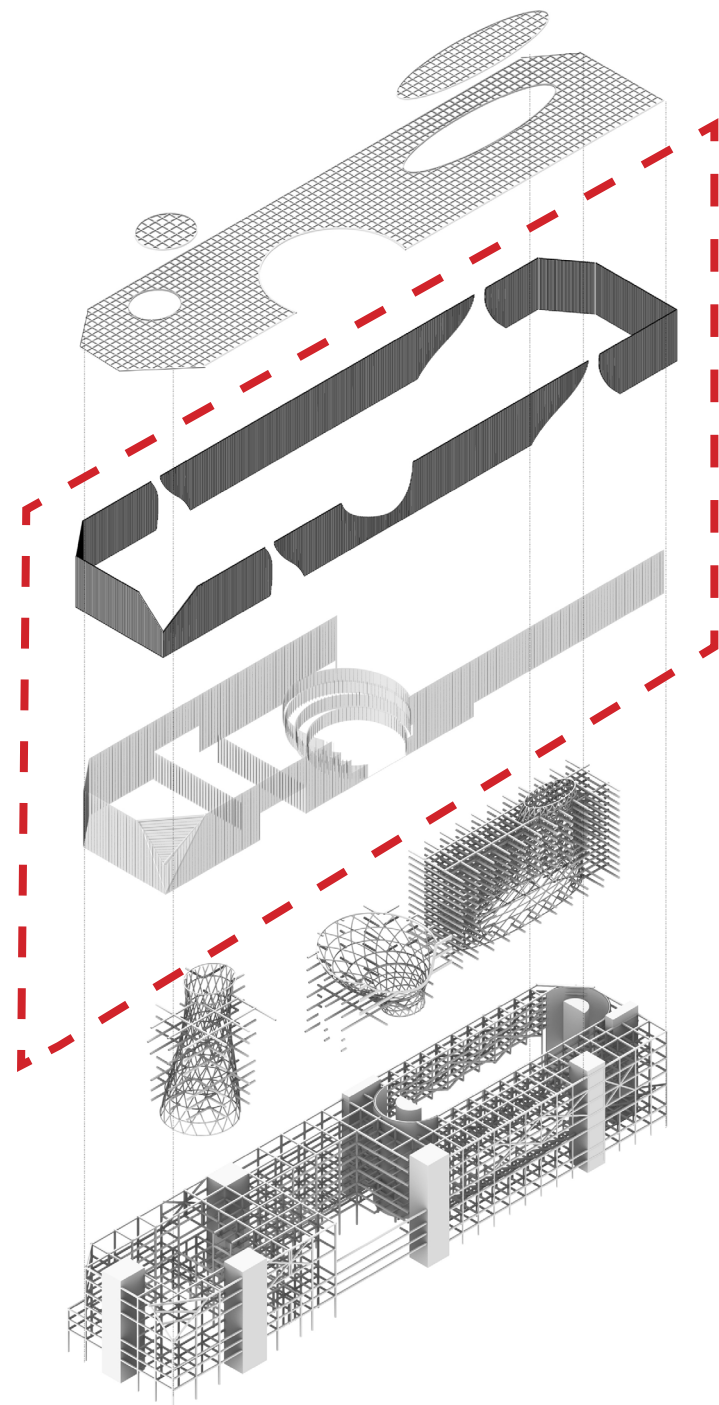
L
Building

M
Structure

S
Facade

XS
Details

FACADE SYSTEM



ROOF STRUCTURE

3m x 3m I-BEAM

FACADE SYSTEM

Perforated aluminum vertical louvers
Glass

LOAD-BEARING FRAME

VOID FRAME

steel tube with mesh (r-420mm)

BEAM-COLUMN FRAME

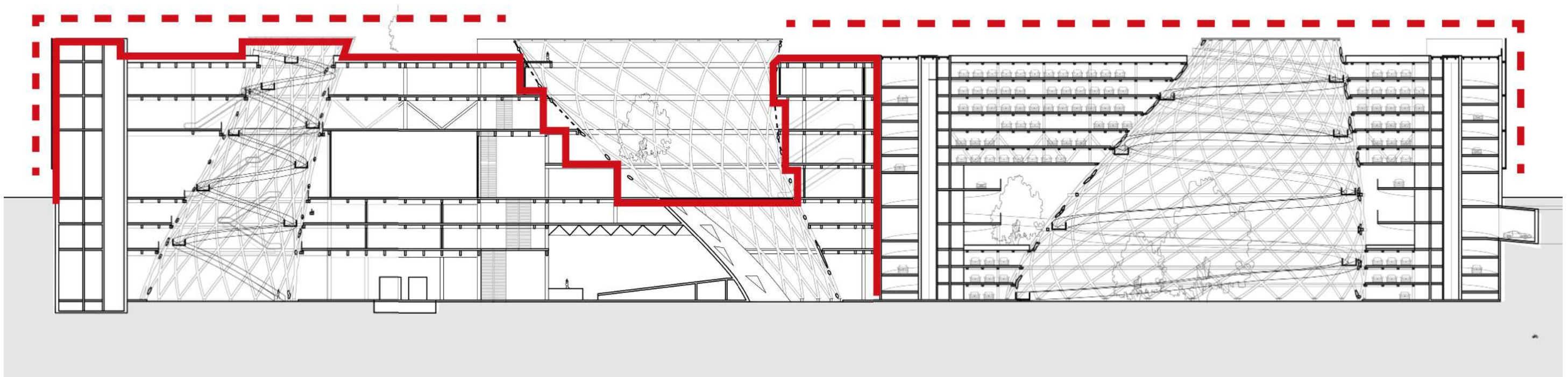
upper ground: I-beam

undderground: I-beam /Shear wall

STRUCTURAL CORE:

CONCRETE

CLIMATE BOUNDARY



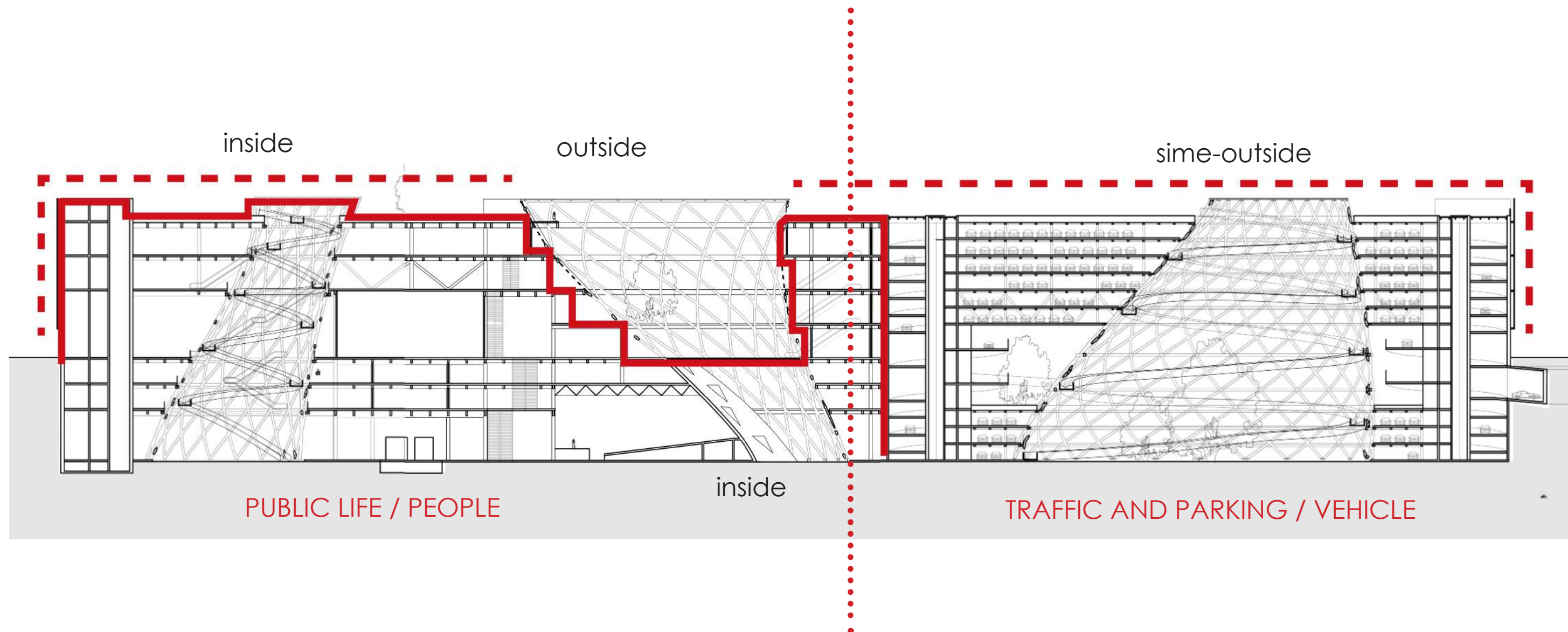
TWO SKINS:

OUTSIDE FACADE: perforated aluminum vertical louvers -- solar protection

INSIDE FACADE: glass-climate boundary

DESIGN IMPLEMENTATION

S: FACADE SYSTEM



PEOPLE : OPEN ---- MOST OPEN ---- CLOSED



VEHICLE : LIMITED -- TRANSFER ---- OREN

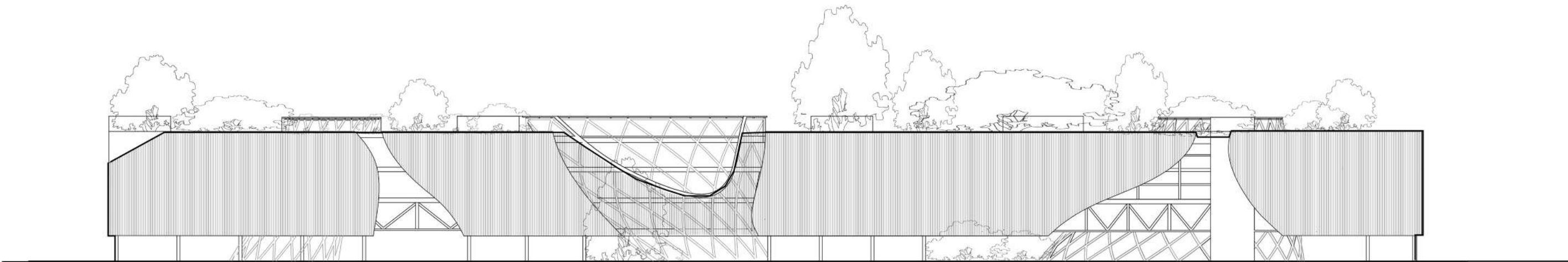


Partition of inside and outside

Outside: Park, Playground

semi-outside: Parking lot/ transfer area/ open Market /outside exhibition

Inside: Theatre / Service / Retail / library /Gallery



1: 300 SOUTHWEST ELEVATION

0 10 m 20 m

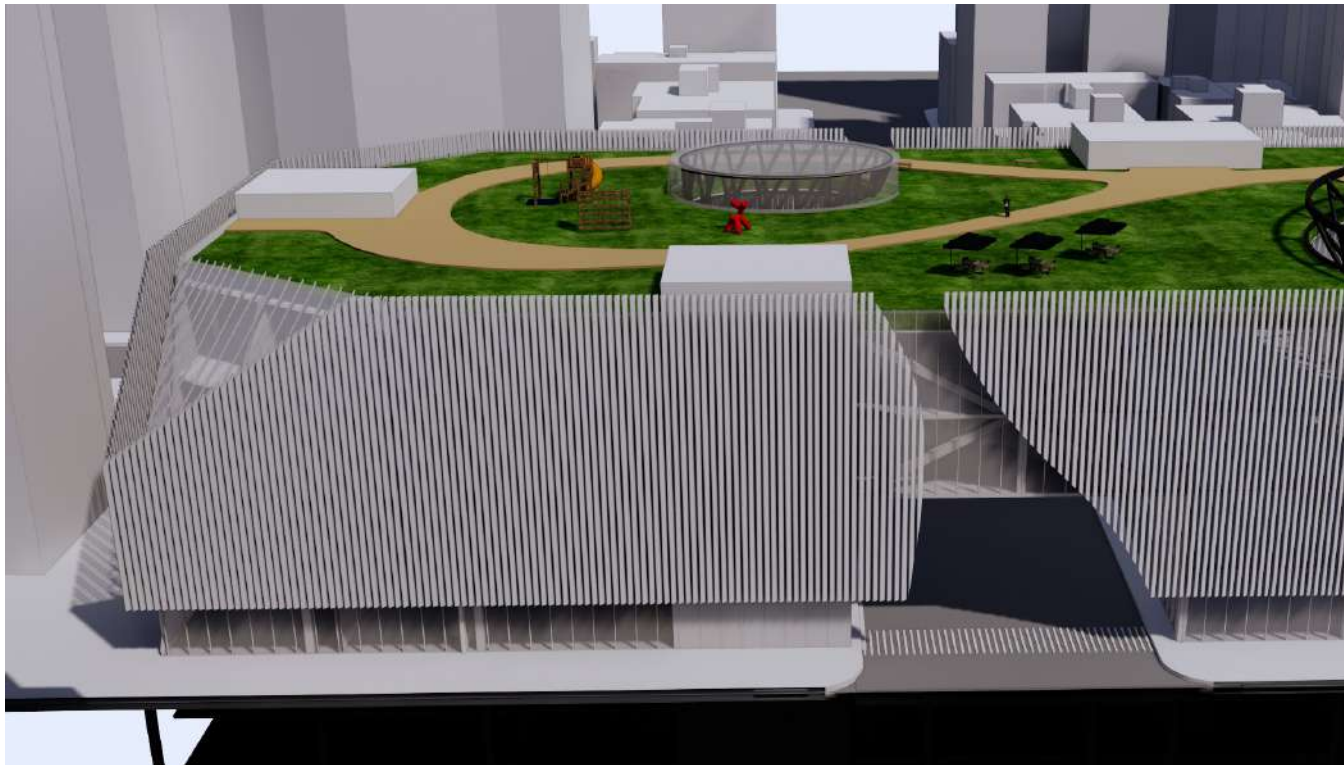


1: 300 NORTHEAST ELEVATION

1 : 300 ELEVATION

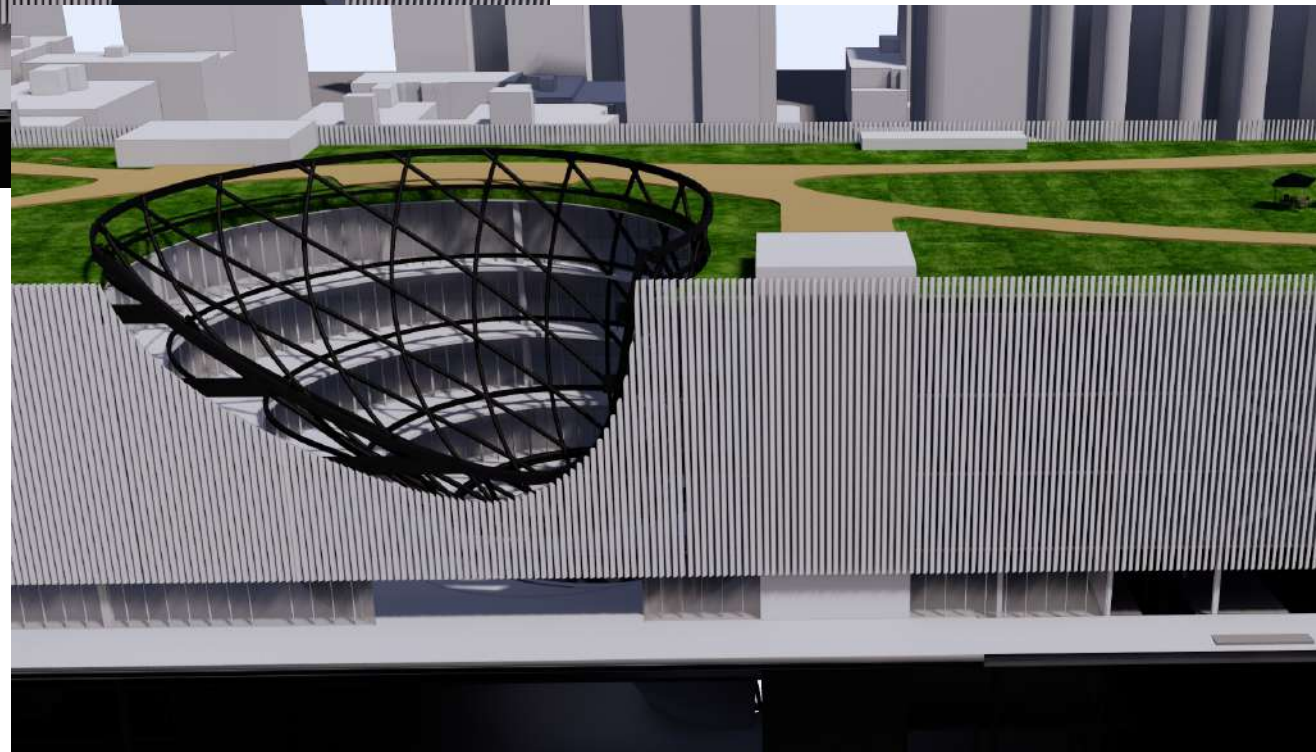
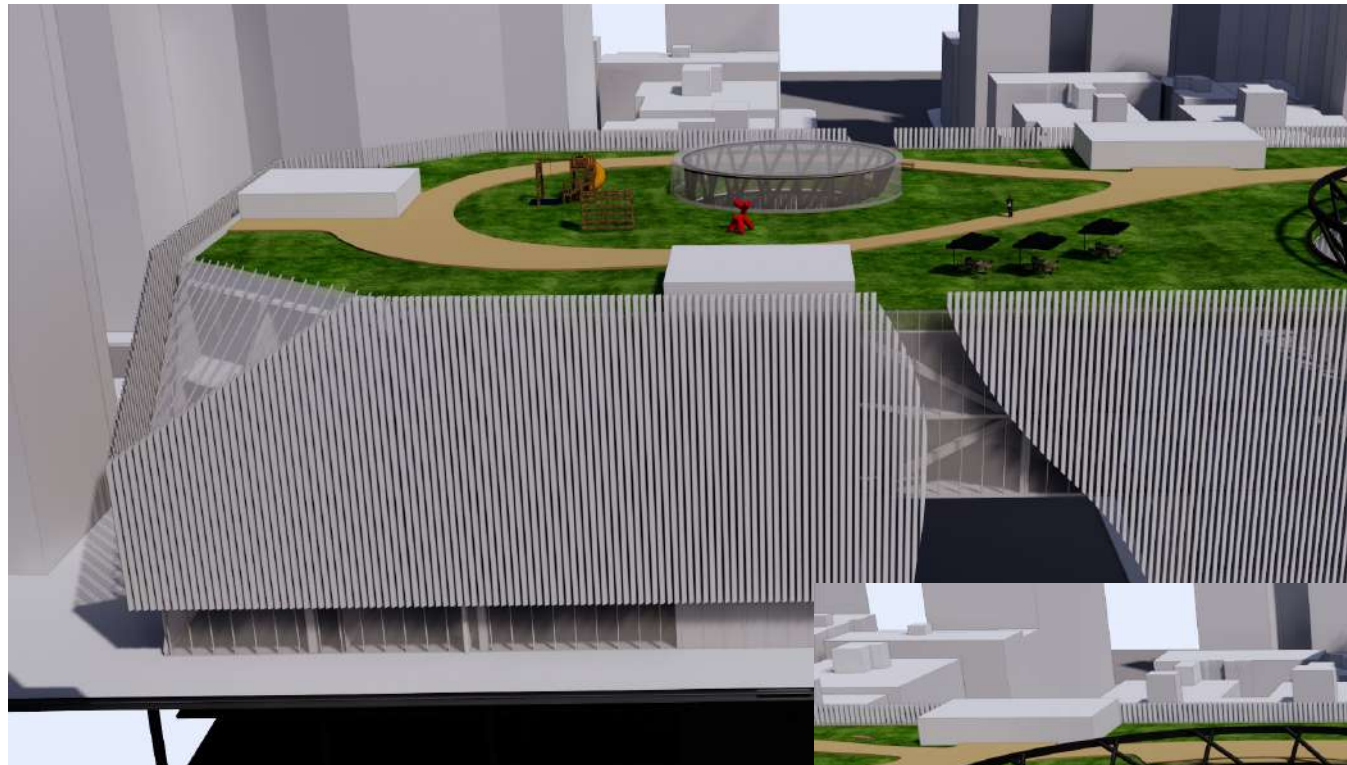
DESIGN IMPLEMENTATION

S: FACADE SYSTEM



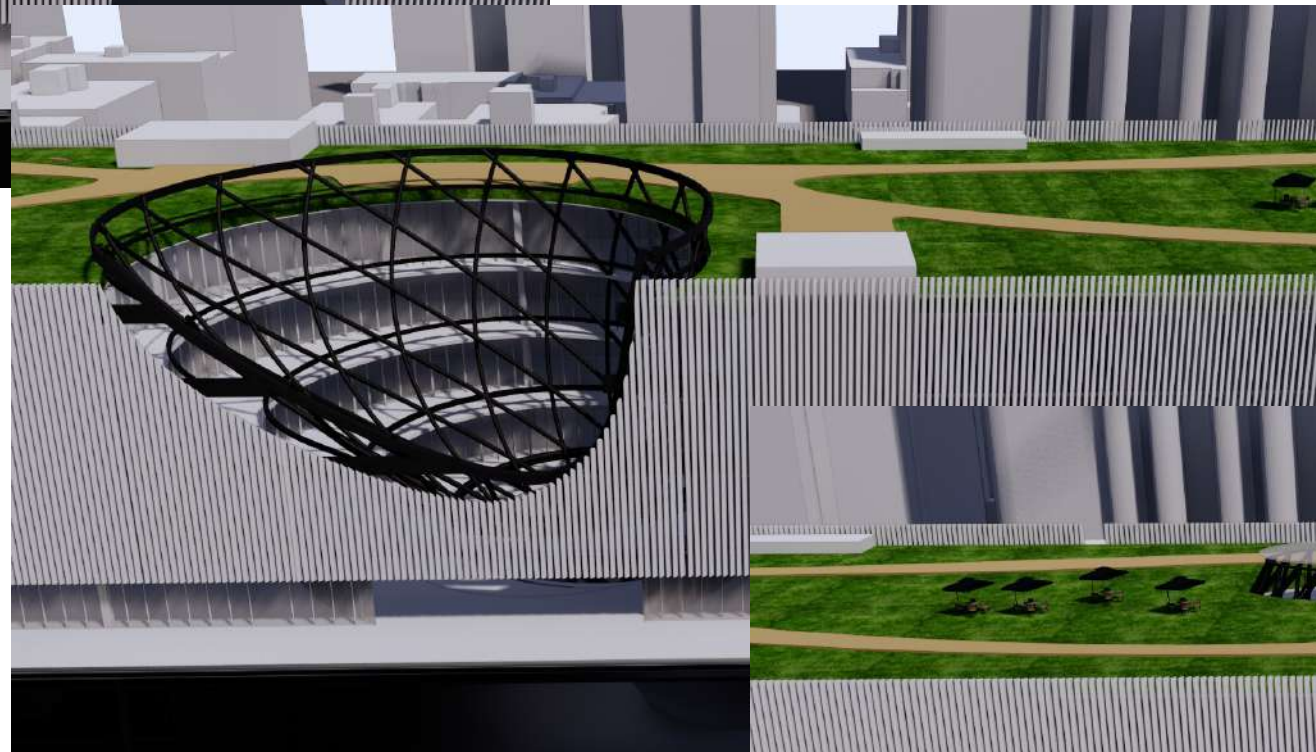
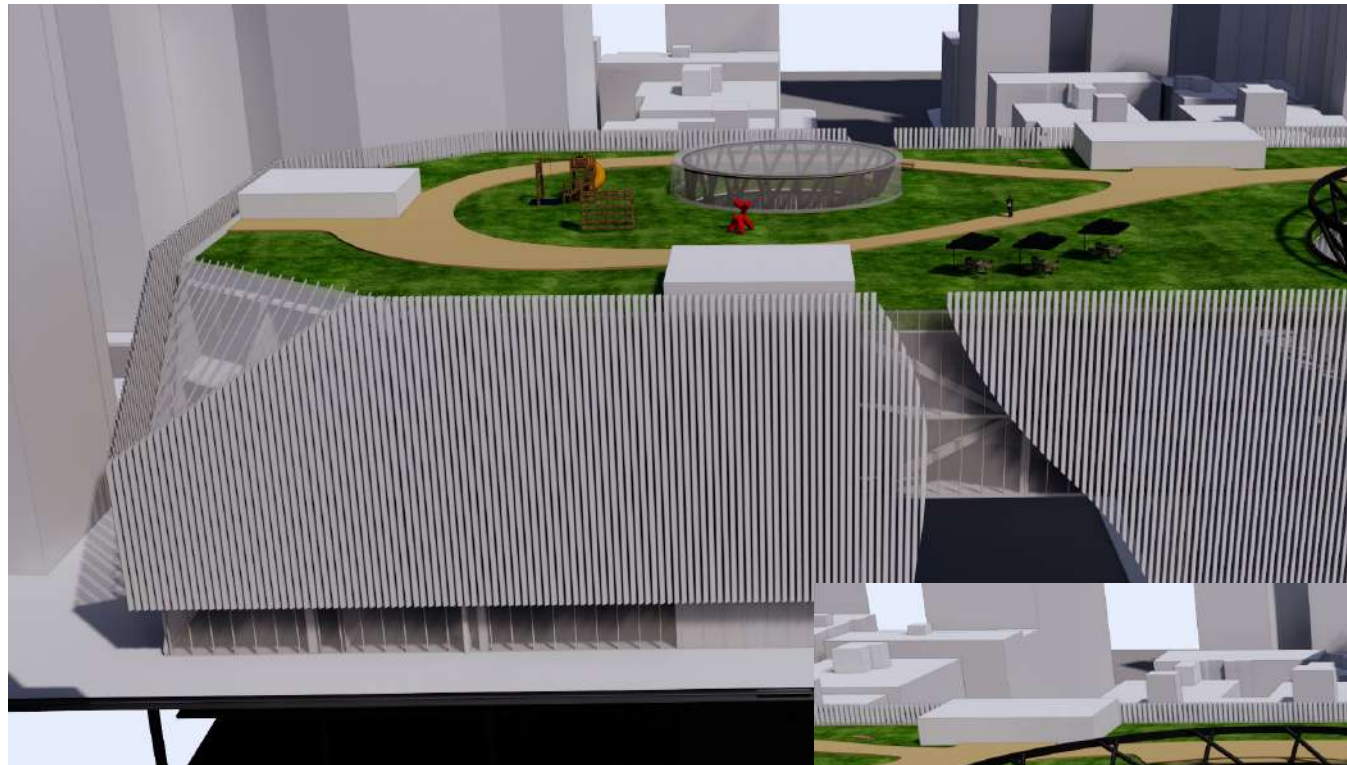
DESIGN IMPLEMENTATION

S: FACADE SYSTEM



DESIGN IMPLEMENTATION

S: FACADE SYSTEM



DESIGN IMPLEMENTATION

XL
Urban Position

L
Building

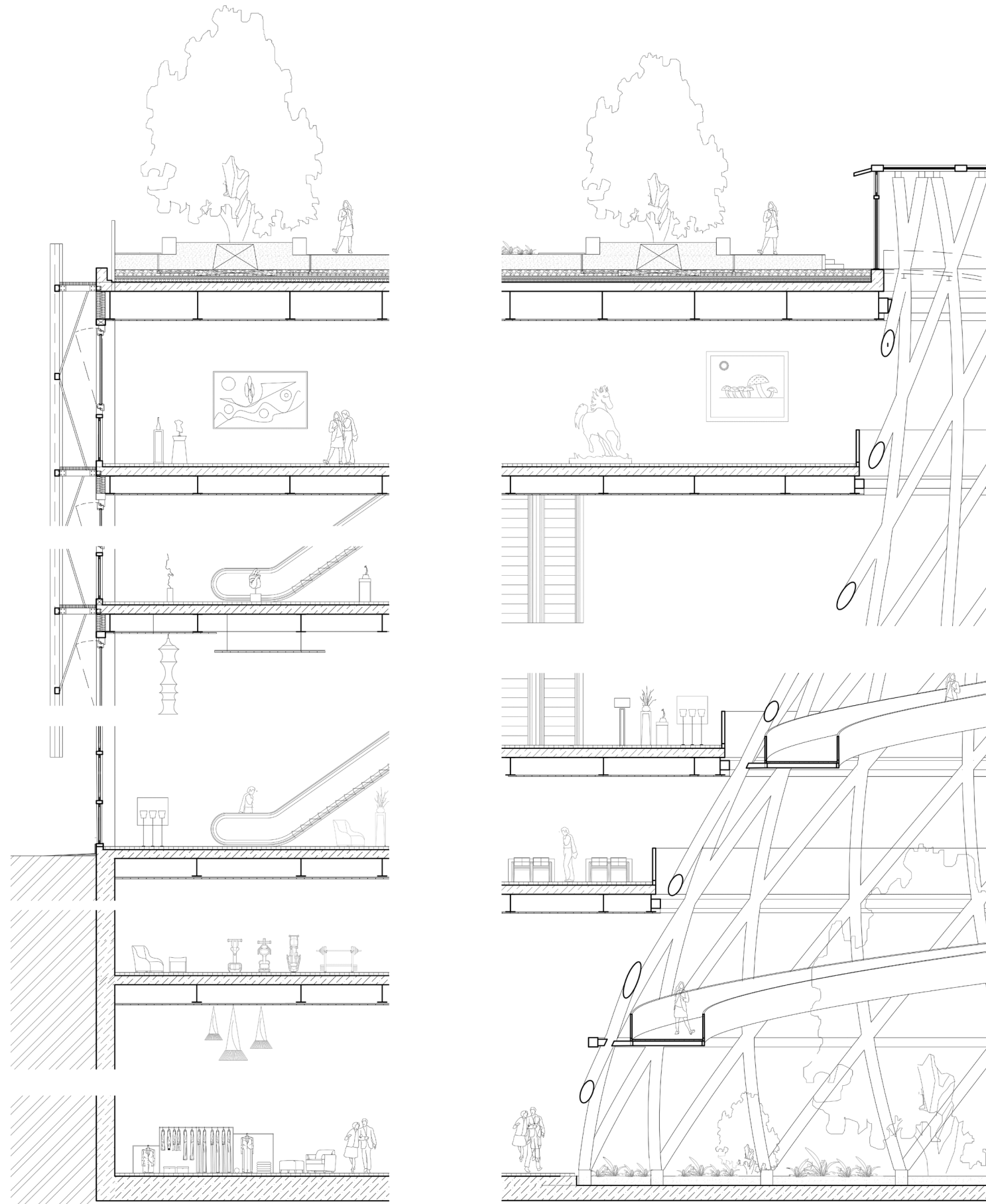
M
Structure

S
Facade

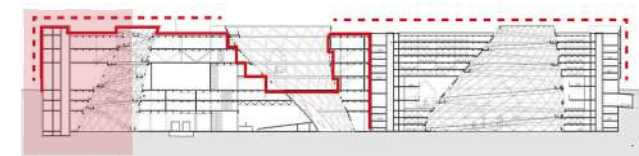
XS
Details

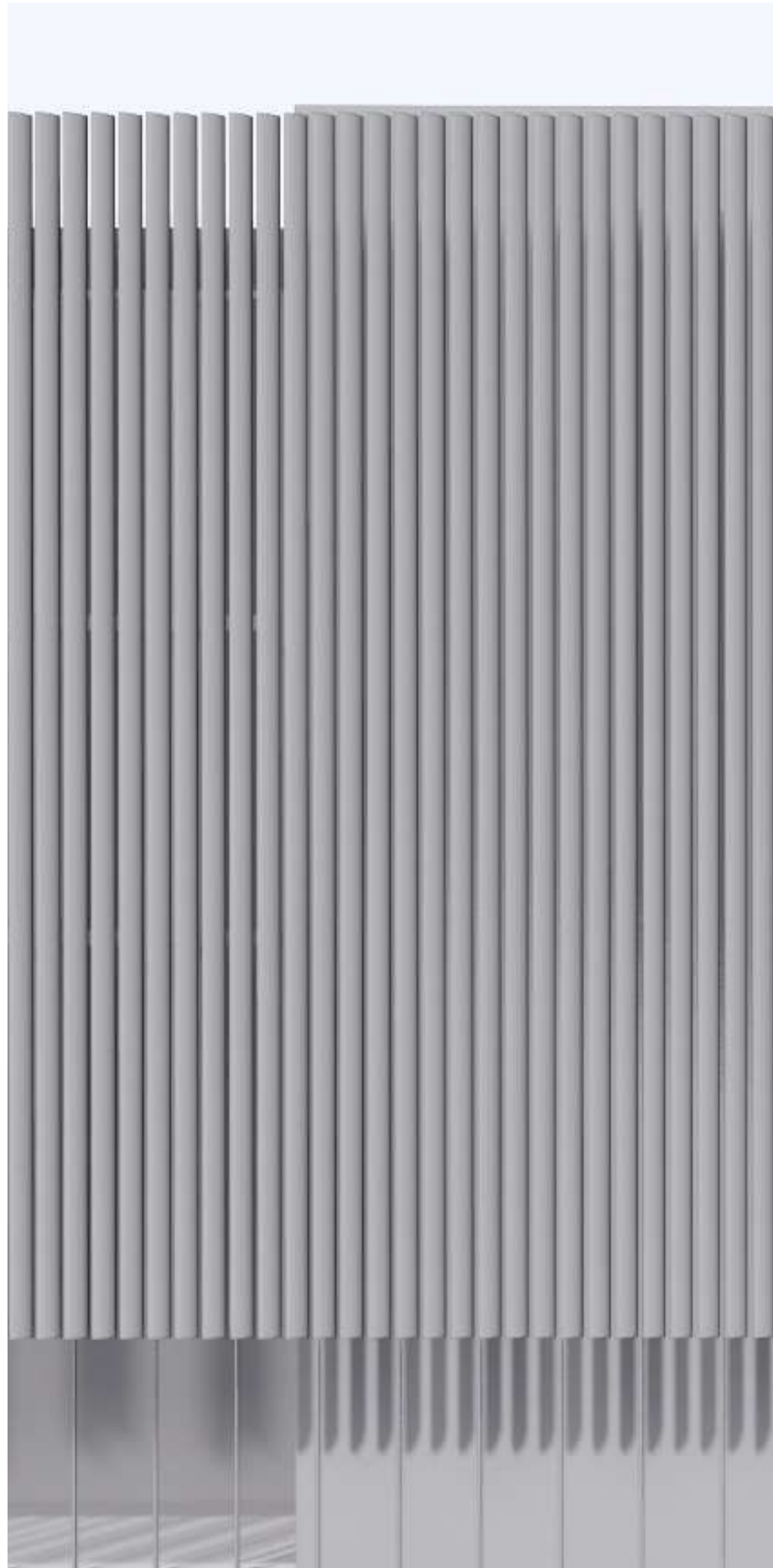
DESIGN IMPLEMENTATION

XS: DETAILS

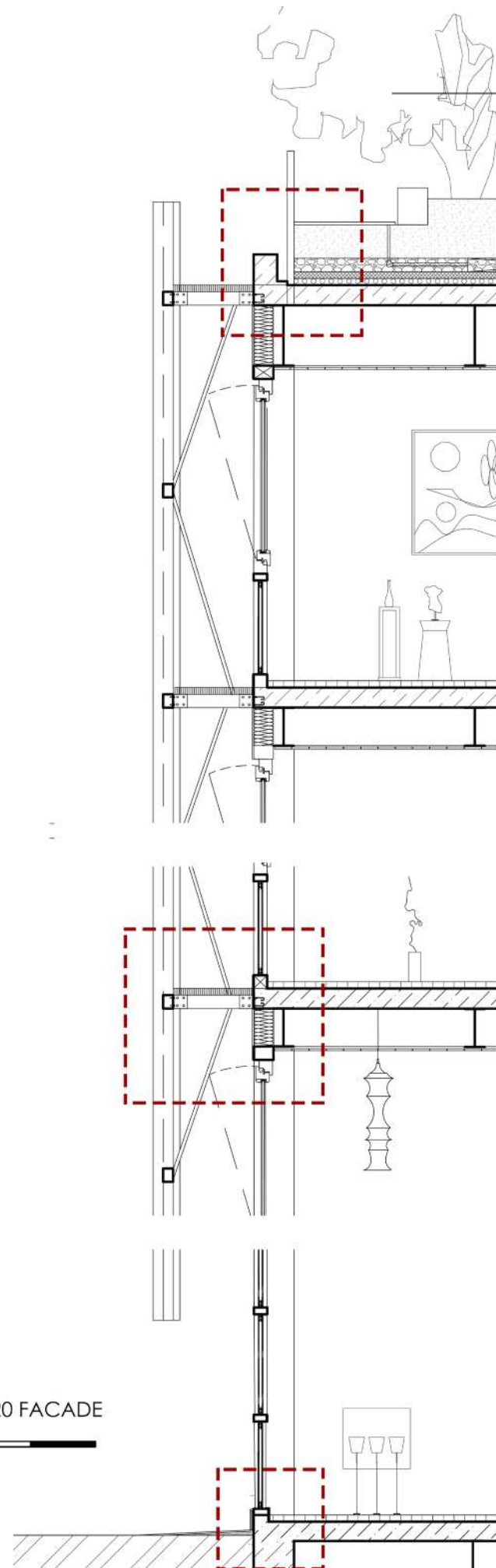


1:50 FRAGMENT





1: 20 FACADE



DESIGN IMPLEMENTATION

S: FACADE SYSTEM

TWO SKINS:

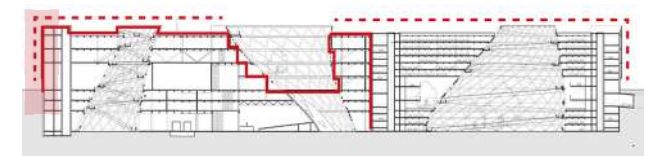
OUTSIDE

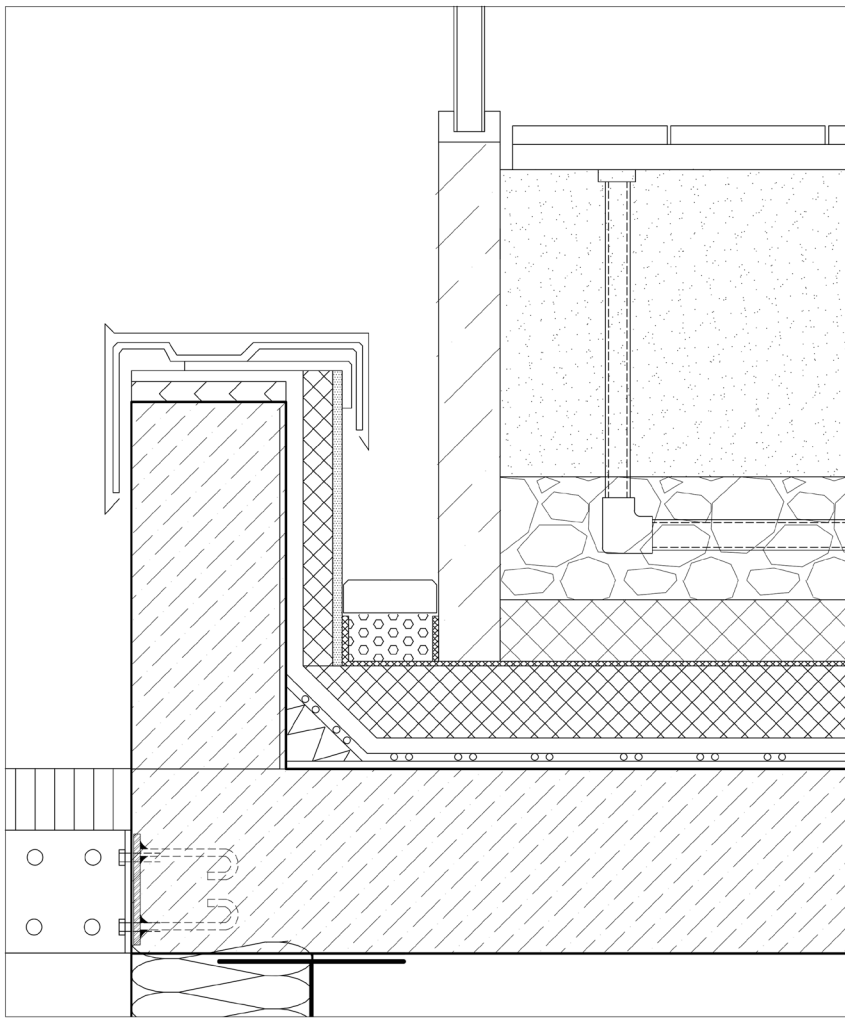
Perforated aluminum
vertical louvers
solar protection

INSIDE

Glass (can open)
climate boundary

1:20 FACADE

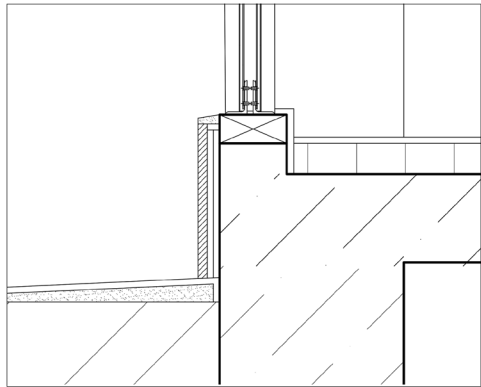




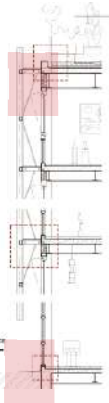
1: 5 EAVE DETAIL



concrete with sloping floor
leveling layer
protective layer
PVC waterproofing
ROOFMATE SL
geotextile filter layer
soil base
slab surface
thermal insulation material
geotextile
grits - drainage layer
lining
Roofmate
wooden washer
overlap

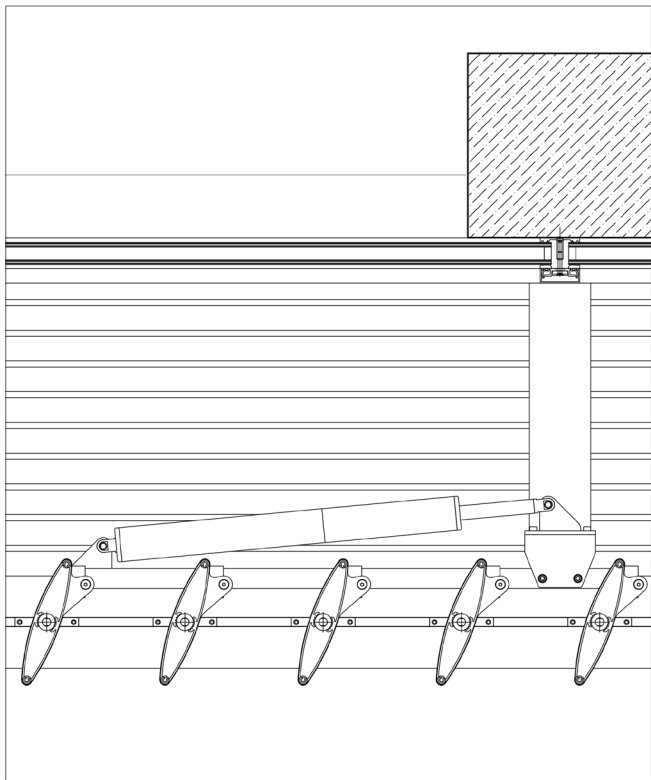
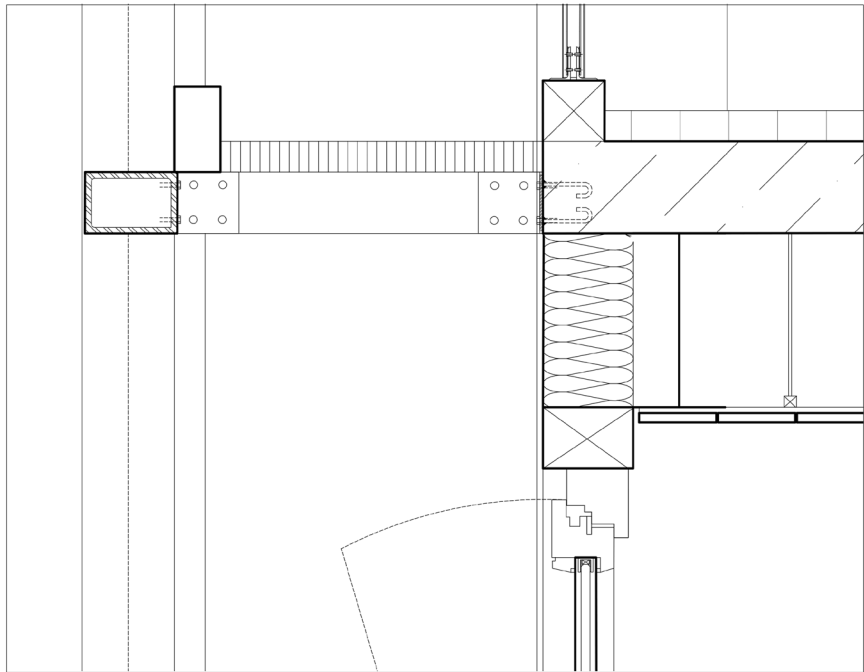


1: 10 Curtain wall foundation



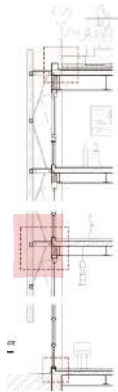
ROOF DETAIL
FOUNDATION

1:10 DETAIL



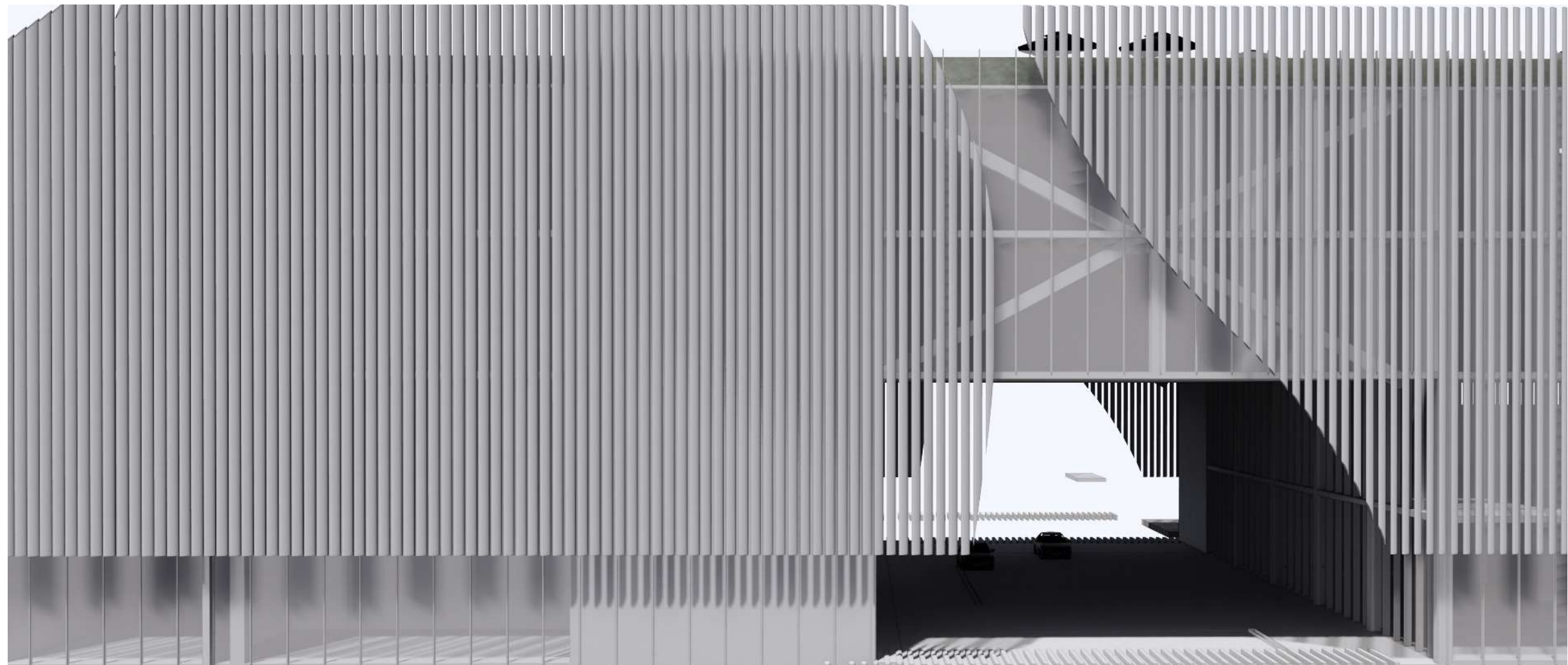
Building structure
Curtain wall with glazing(Partially openable)
Electronically controlled pneumatic arm
Horizontal fin supports
Perforated aluminum vertical louvers(450mm)

1: 10 ALUMINUM LUVER DETAIL

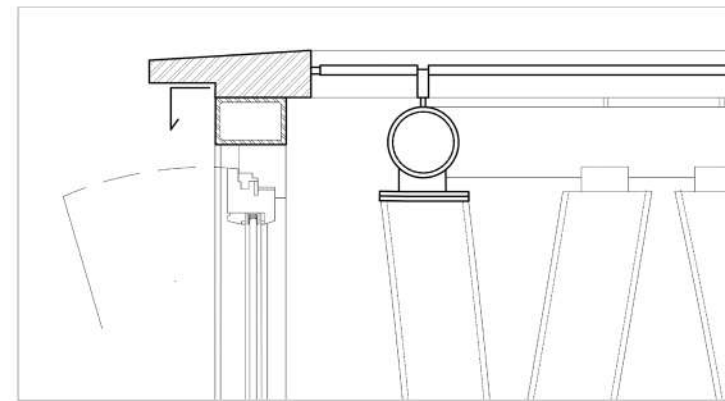
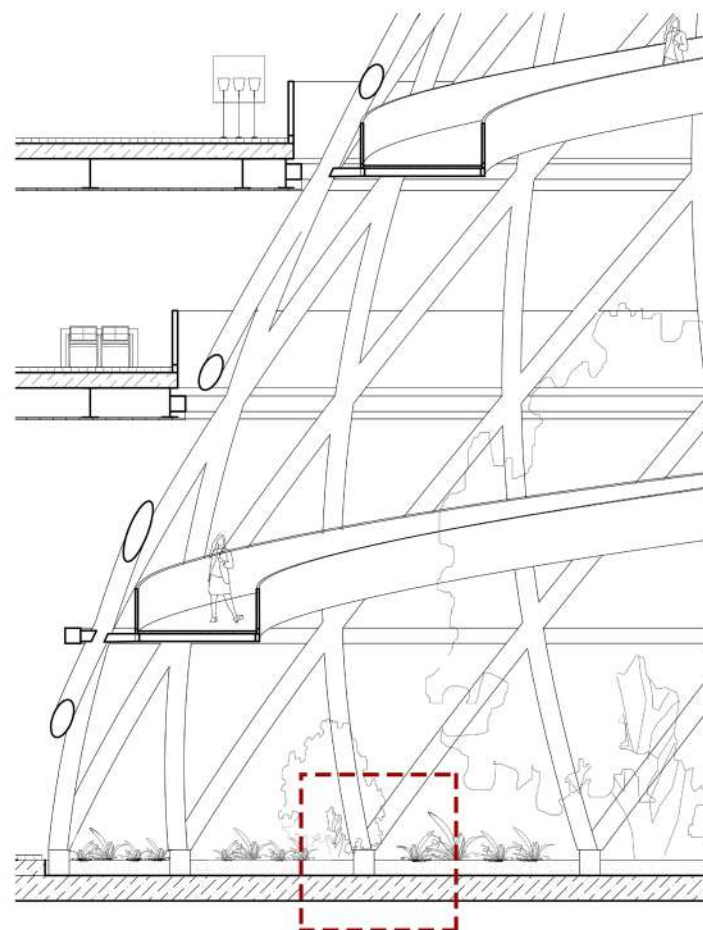
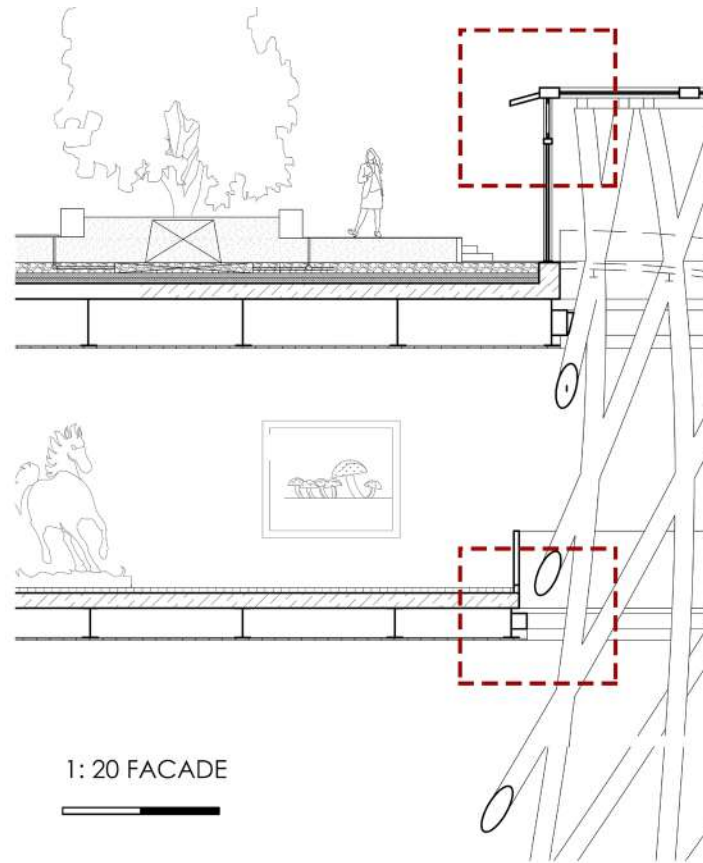


Aluminum vertical louvers
Electronic control solar
protection
Changed follow sunlight

1:10 DETAIL

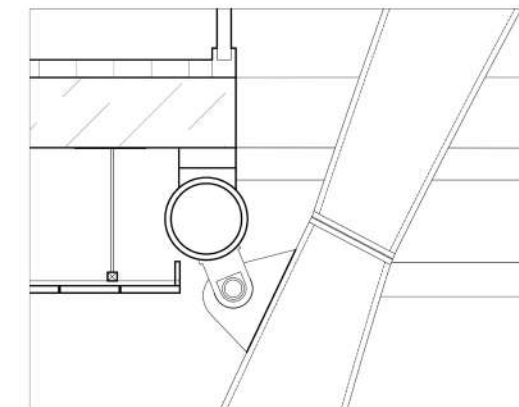


INSIDE DETAIL 1:10

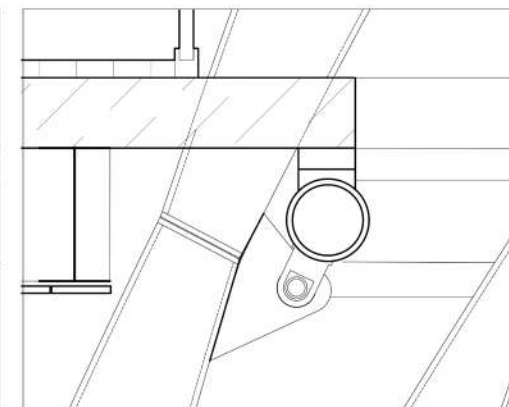


roof element:
2.5mm anodized-aluminium sheeting
70 mm mineral wool
3 mm galvanized steel sheeting

1: 10 ROOF DETAIL



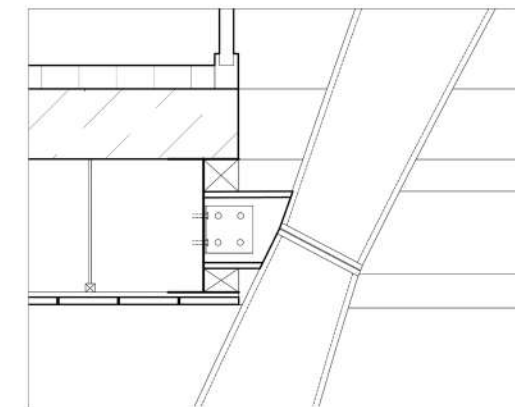
Wooden pavement / 100 mm maple wood
200 mm concrete floor
600/300 mm I-beam
laster board ceiling



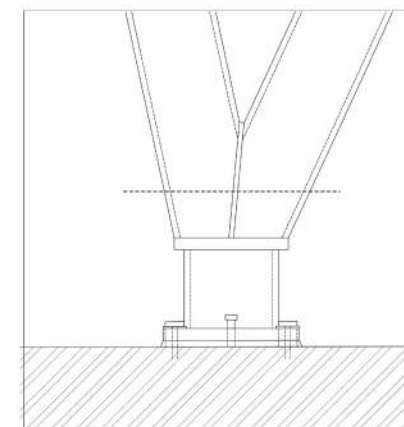
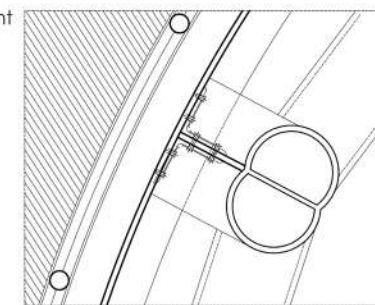
Bolted joint

Load-bearing structure
I-beam (600 x 300mm)
void mesh: steel tube (Φ 420/25mm)
ring beam: 300mm

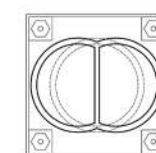
1: 10 JOINT DETAIL



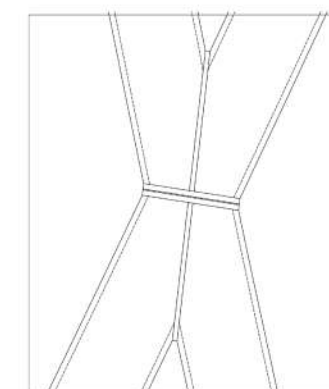
Welding joint



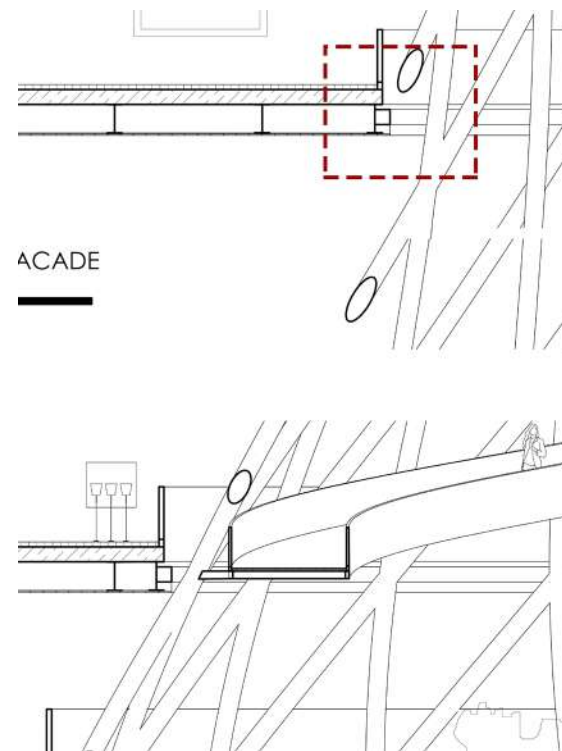
1: 10 ROOT DETAIL



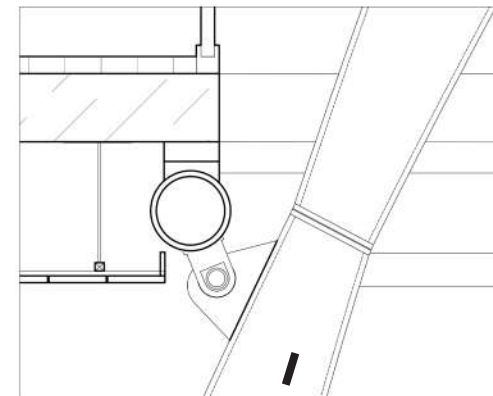
25mm steel plate
Φ 420/25mm steel tube
20 mm steel plate
400/400/50 mm steel plate



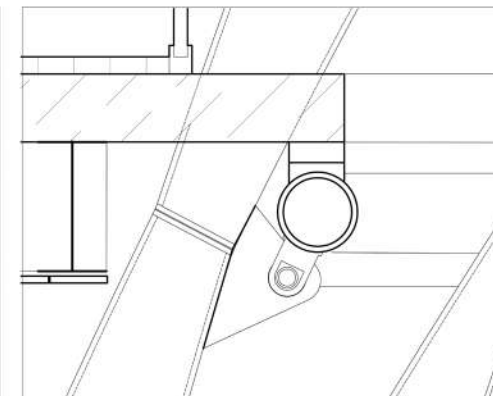
INSIDE - VOID STRUCTURE



ACADE

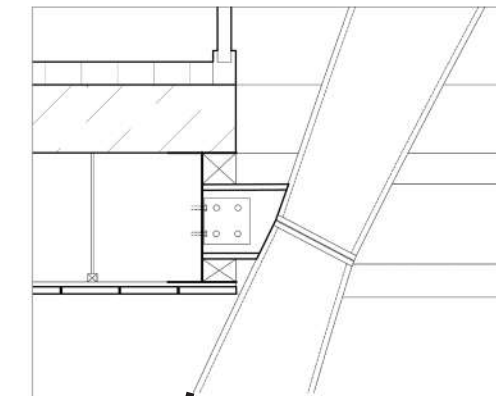


Wooden pavement / 10 mm maple wood
200 mm concrete floor
600/300 mm I-beam
laster board ceiling

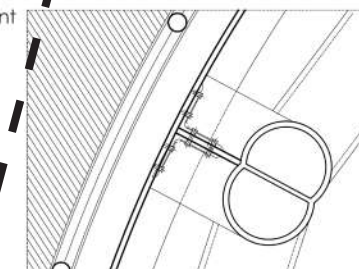


Bolted joint

Load-bearing structure
I-beam (600 x 300mm)
void mesh: steel tube (Φ 420/25mm)
ring beam: 300mm



Welding joint



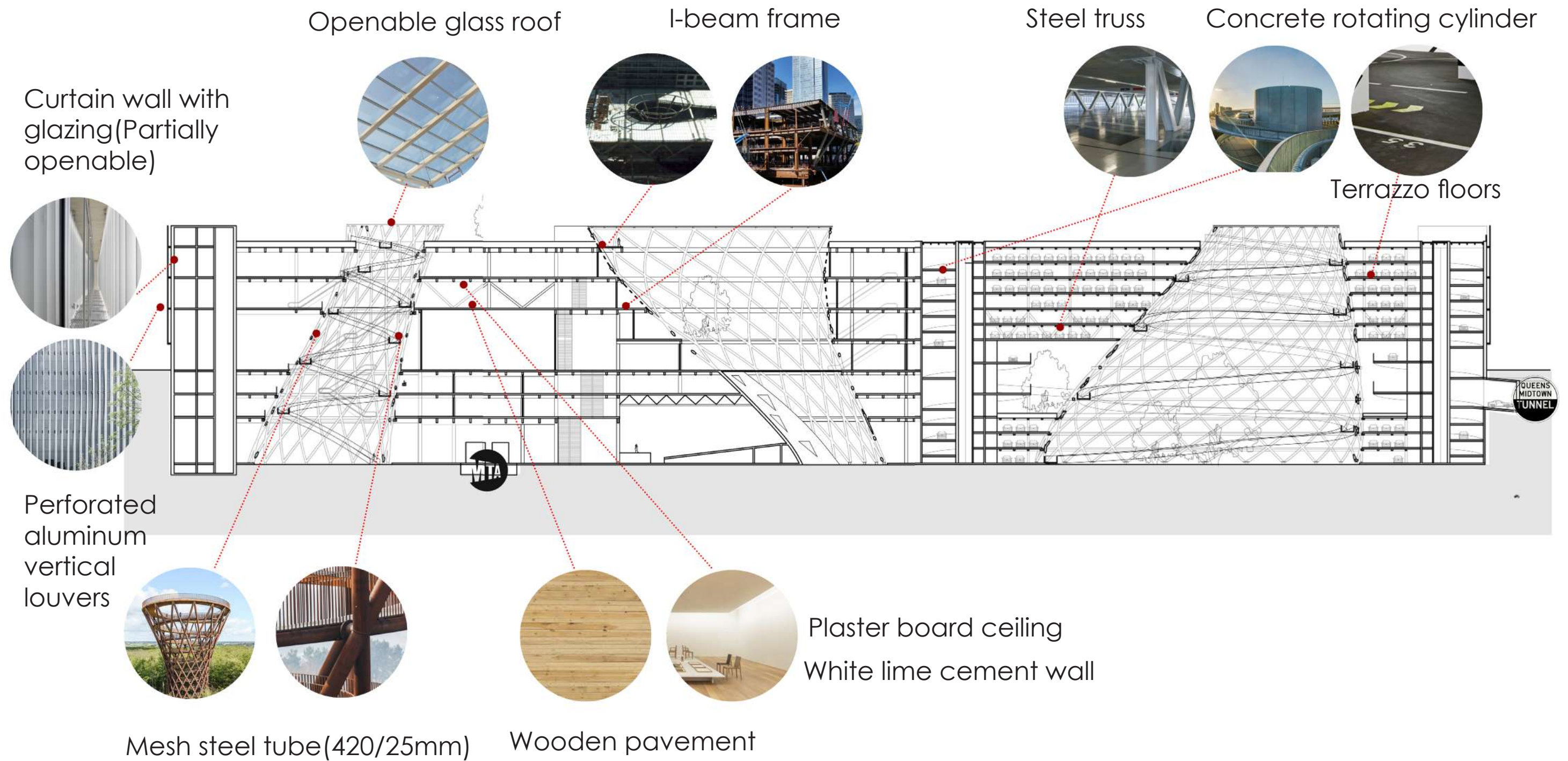
BOLTED JOINT

Movable, fitting for all angles
stability? load-bearing capacity ?



WELDINT

stability, prefabricated, Sustainable?



CIRCULATORY SYSTEM

MATERIAL



MATERIAL



INTRODUCTION

Studio & Assignmant

RESEARCH

New York City: Mobility
Empire Village: Challenges

DESIGN BRIEF

Site context: The most conflict
Design Strategy

DESIGN IMPLEMENTATION

XL: Urban Position
L: Building
M: Structure
S: Facade
XS: Details

CIRCULATORY SYSTEM

Ventilation / Light / Water/ Material

CONCLUSION

Green portal of Empire Village 2050

CIRCULATORY SYSTEM



SOUTHWEST LIGHTING



for people: moderate
shading

for parking: shading

for people and vegetation
with upper part open:
Welcome Lots of light

CLIMATE ENVIRONMENT

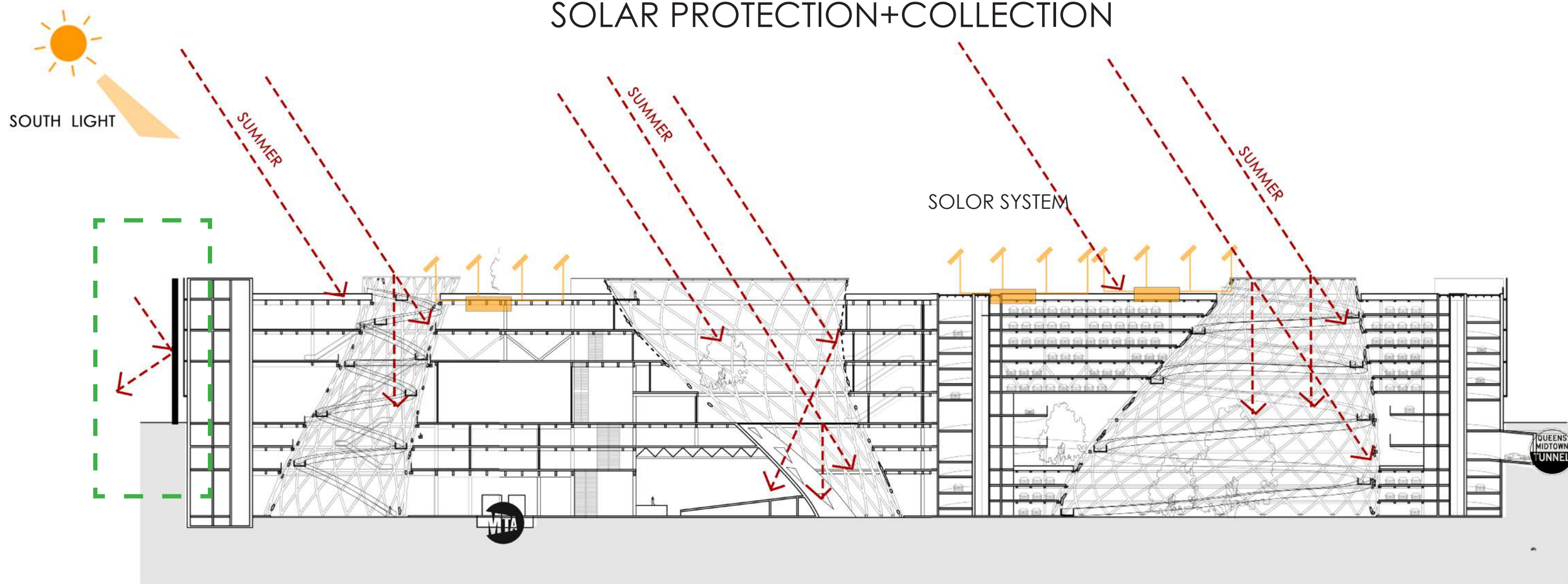
Passive Design

Natural systems of lighting and ventilation

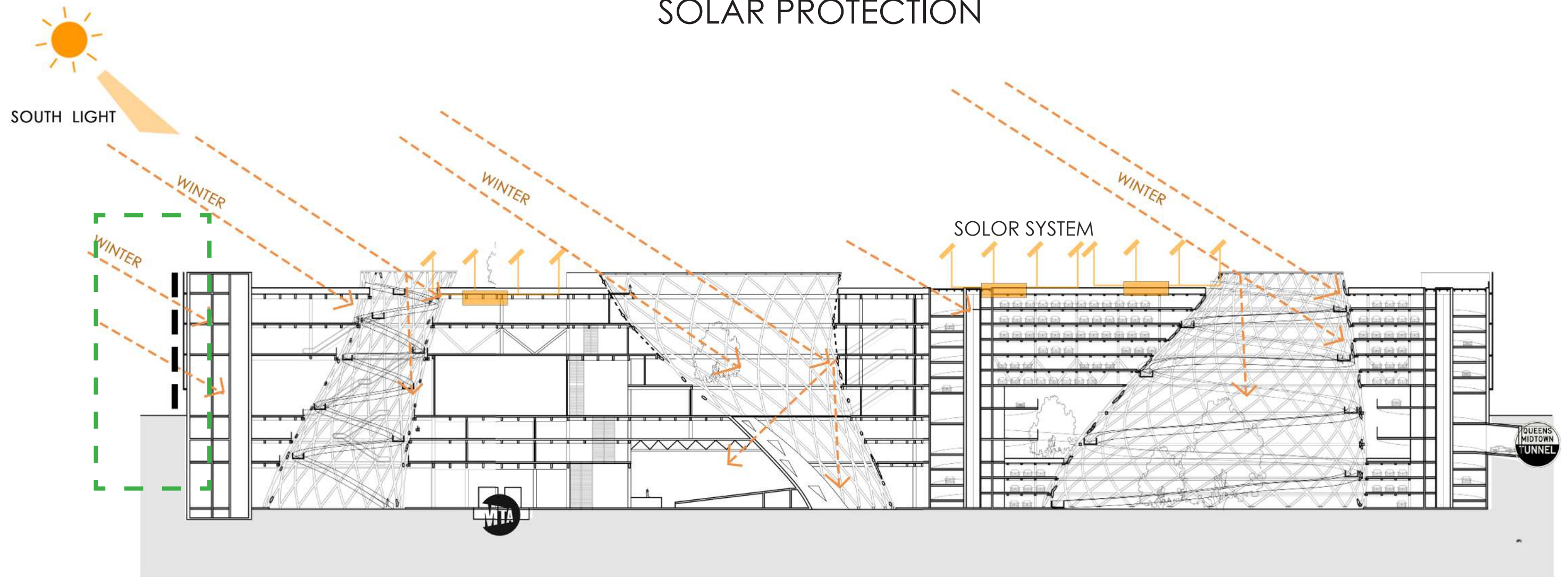


SUMMER

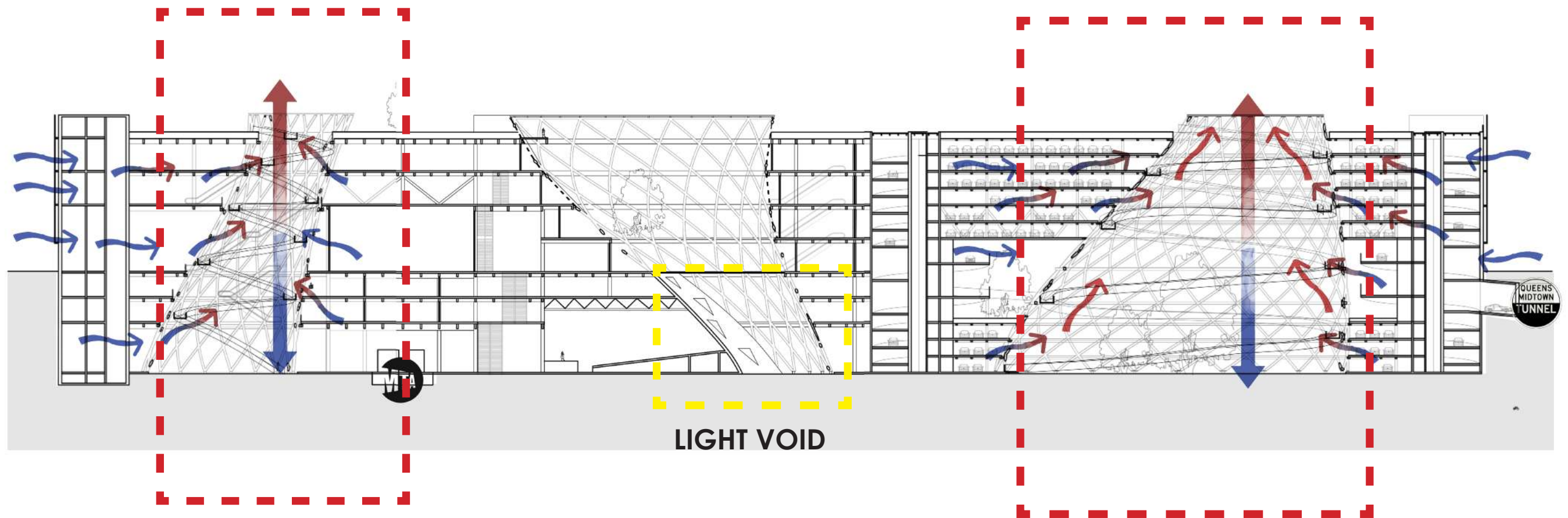
SOLAR PROTECTION+COLLECTION



WINTER SOLAR PROTECTION



VENTILATED CONTAINER

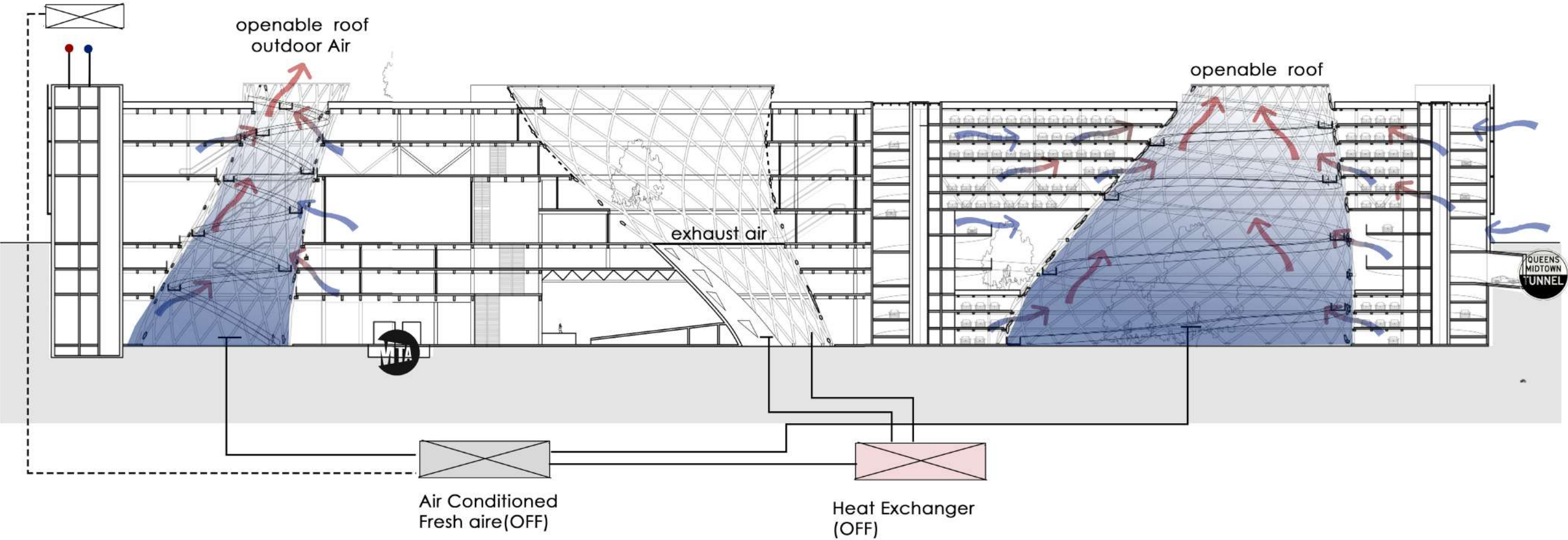


VENTILATION/LIGHT VOID

VENTILATION /LIGHT VOID

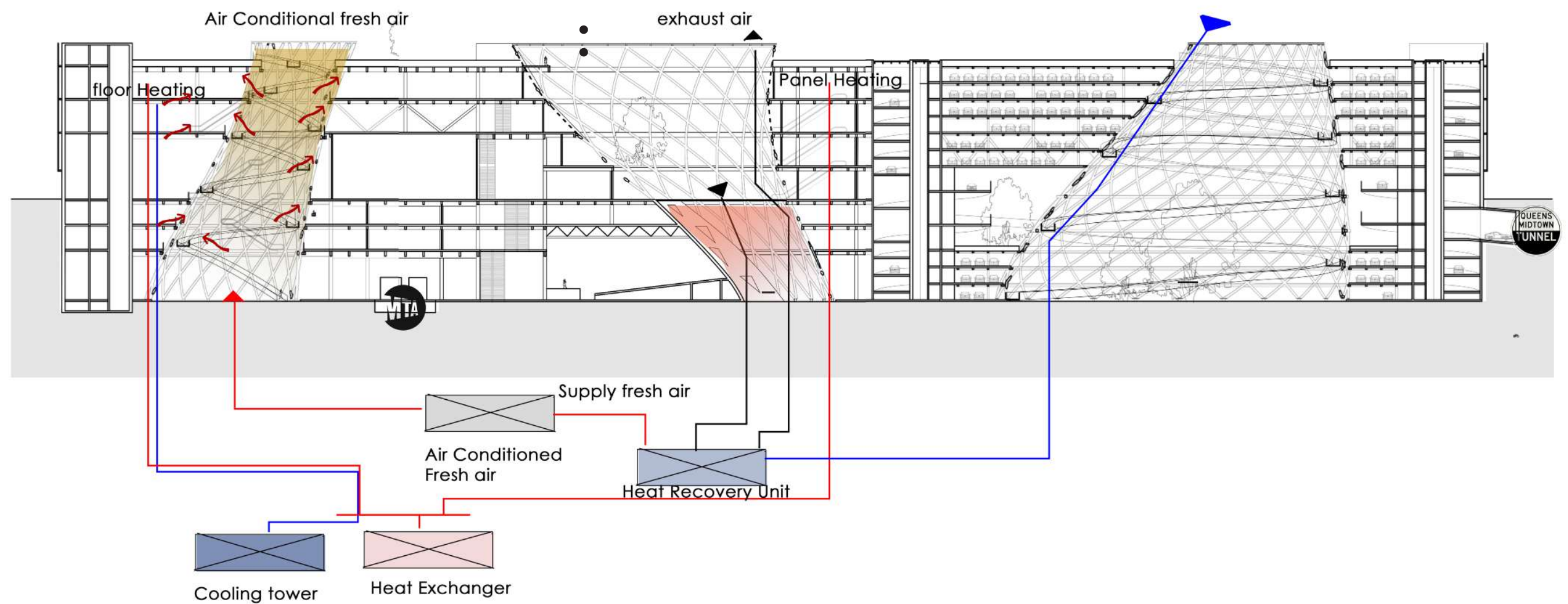
SUMMER
NATURAL VENTILATION

Natural Ventilation Control Unit

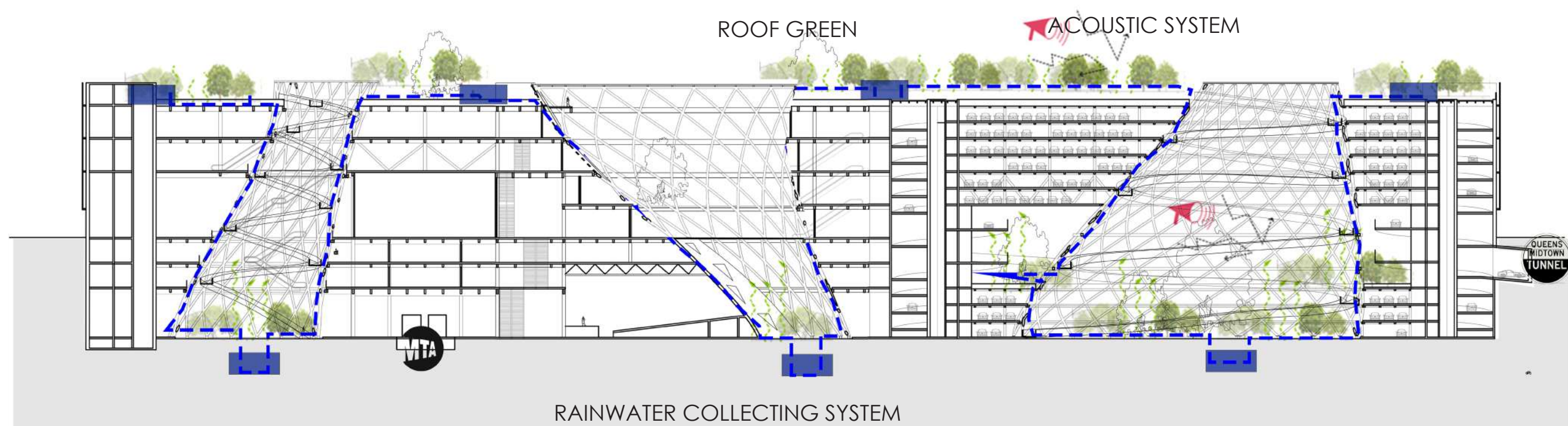


WINTER

MACHINE VENTILATION /HALF

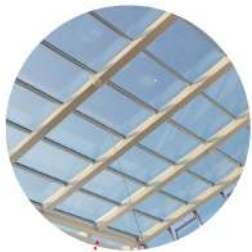


RAIN AND VEGETATION



CIRCULATORY SYSTEM
MATERIAL

Openable glass roof



I-beam frame



Steel truss



Concrete rotating cylinder



Terrazzo floors

Curtain wall with glazing (Partially openable)



Perforated aluminum vertical louvers

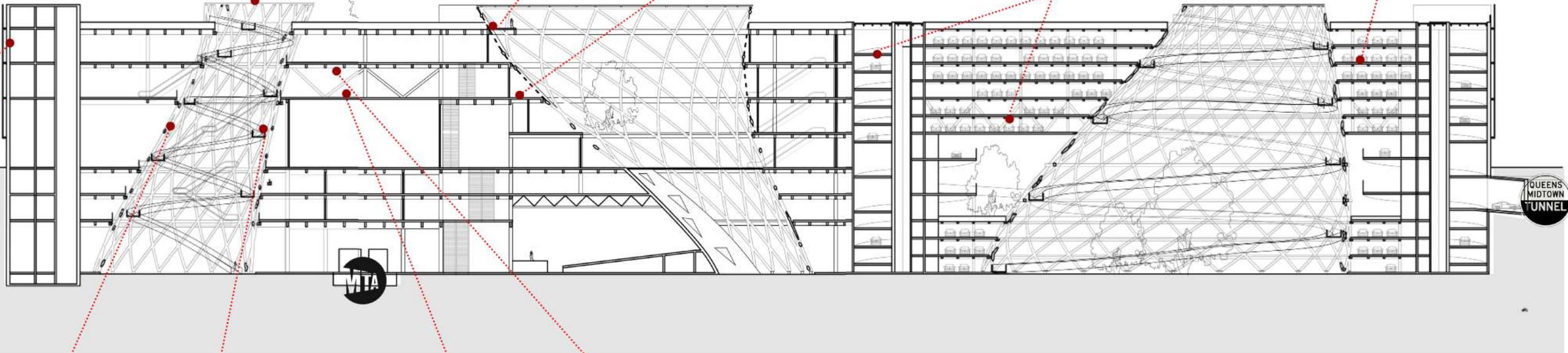


Mesh steel tube (420/25mm)

Wooden pavement



Plaster board ceiling
White lime cement wall



MATERIAL



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L: Building
M: Structure
S: Facade
XS: Details

CIRCULATORY SYSTEM

Ventilation / Light / Water/ Material

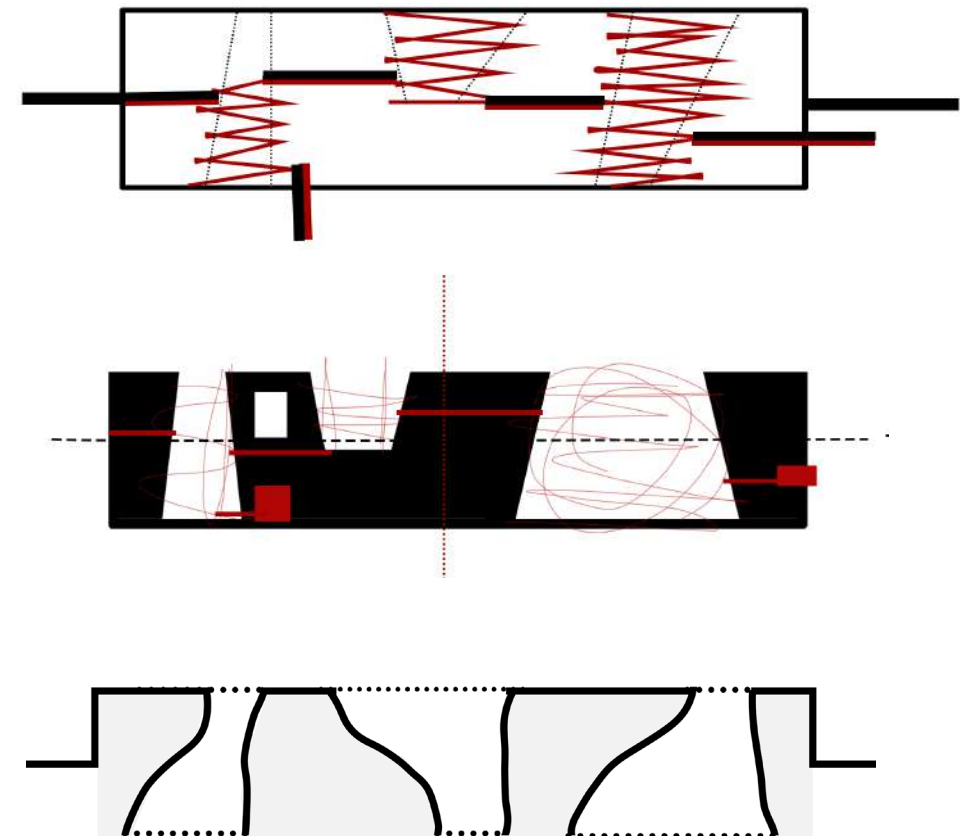
CONCLUSION

Green portal of Empire Village 2050

IMPLEMENTATION

Taking off from climate condition and vertical traffic integration, the whole project is organized by void spaces in series.

The design strategy is the mixture and balance of three void space in a mass solid. From the climate condition of the site, which is surrounded by northeast high-rising building and southwest green park, the whole building is in a good solar condition of an urban basin with southwest sunlight without shadow all year, which has the possibility to become a city landscape and public life in the lower layer. Three huge void space and green roof park will continue the nice nature condition in the interior and exterior. Not only having structure and climate meaning, but these three voids also have different characters.



AMBITION

1. to create a green portal to enter Empire Village and the key strategies are the loop from upper to the underground.
2. a mixed using transportation infrastructural complex for future and become a public hybrid building shared from underground to upper ground
3. redefine the form of transportation infrastructure and the use-value of derived space, and balance the dichotomy of the commercial significance and public social activities.

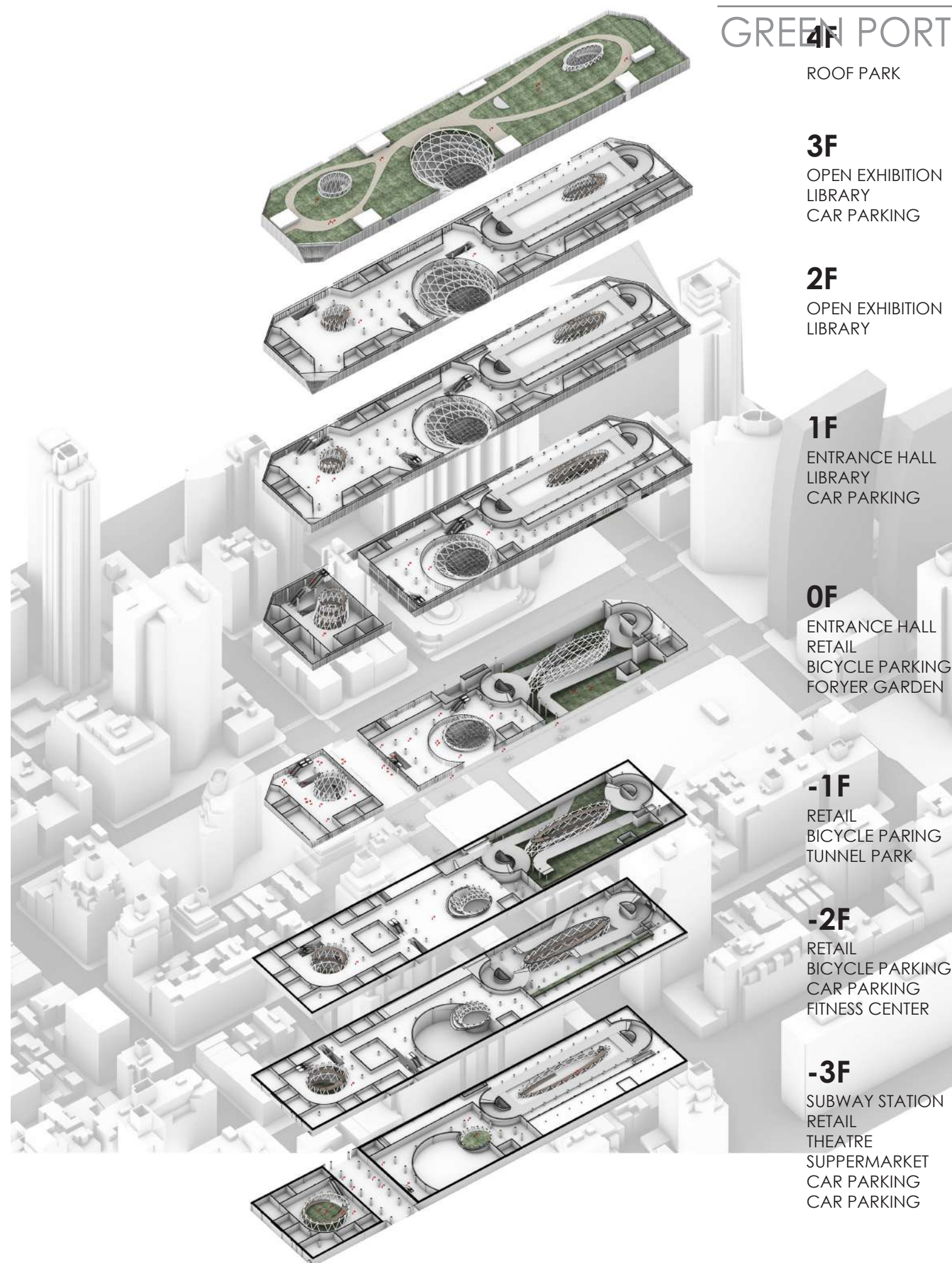


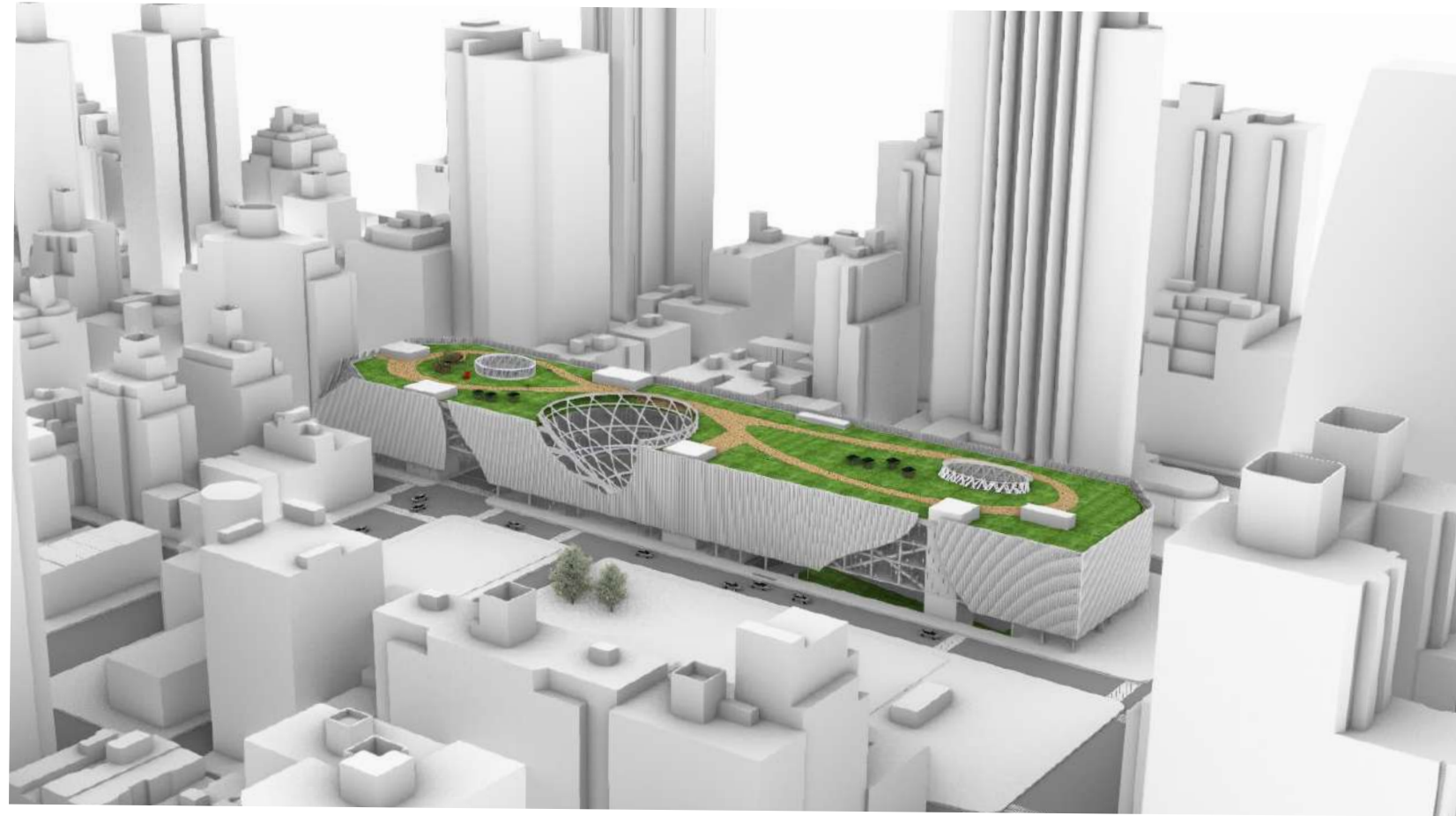
GREEN PORTAL OF EMPIRE VILLAGE 2050

*Mixed using Complex for future:
A Public shared from underground to upperground*

CONCLUSION

GREEN PORTAL OF EMPIRE VILLAGE 2050





GREEN PORTAL OF EMPIRE VILLAGE 2050