

GREEN FLOW CONVERTER

Jieli Wang
25 / 08 / 2020

P5



INTRODUCTION

An aerial photograph of a city grid, likely San Francisco, with a semi-transparent grey overlay on the right side. The text "VALLEY OF GIANTS" is centered in the overlay. A white outline follows the city's coastline, and a dashed white line runs horizontally across the middle of the image.

VALLEY
OF
GIANTS

GIANT BUILDINGS



GIANT VALUE



GIANT COMMUTING VOLUME





CONGESTION

POLLUTION



MONEY LOSS

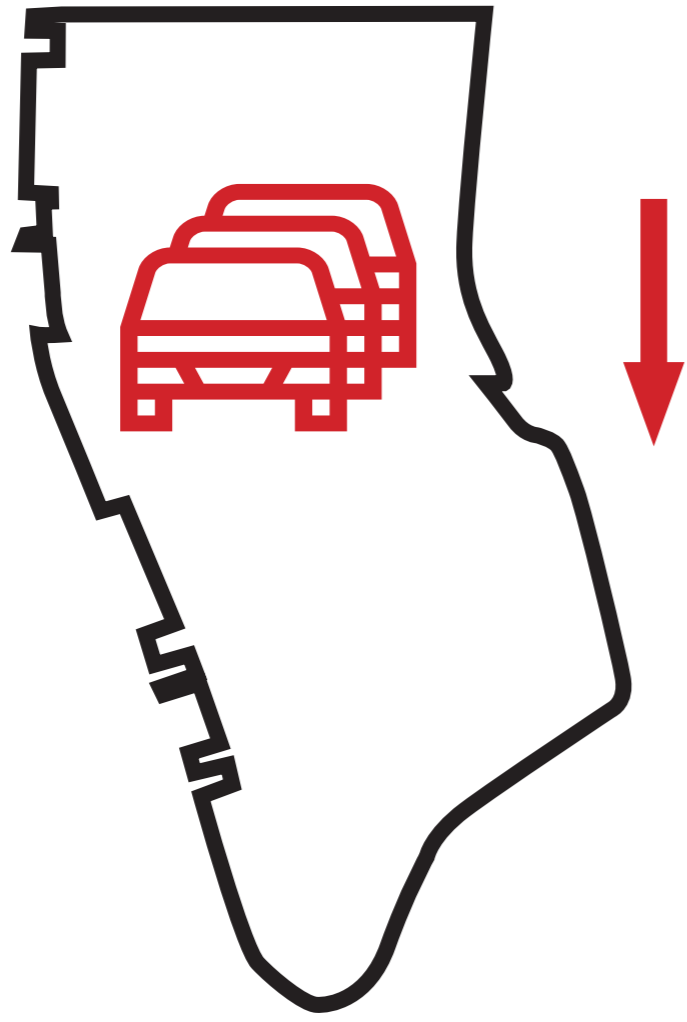


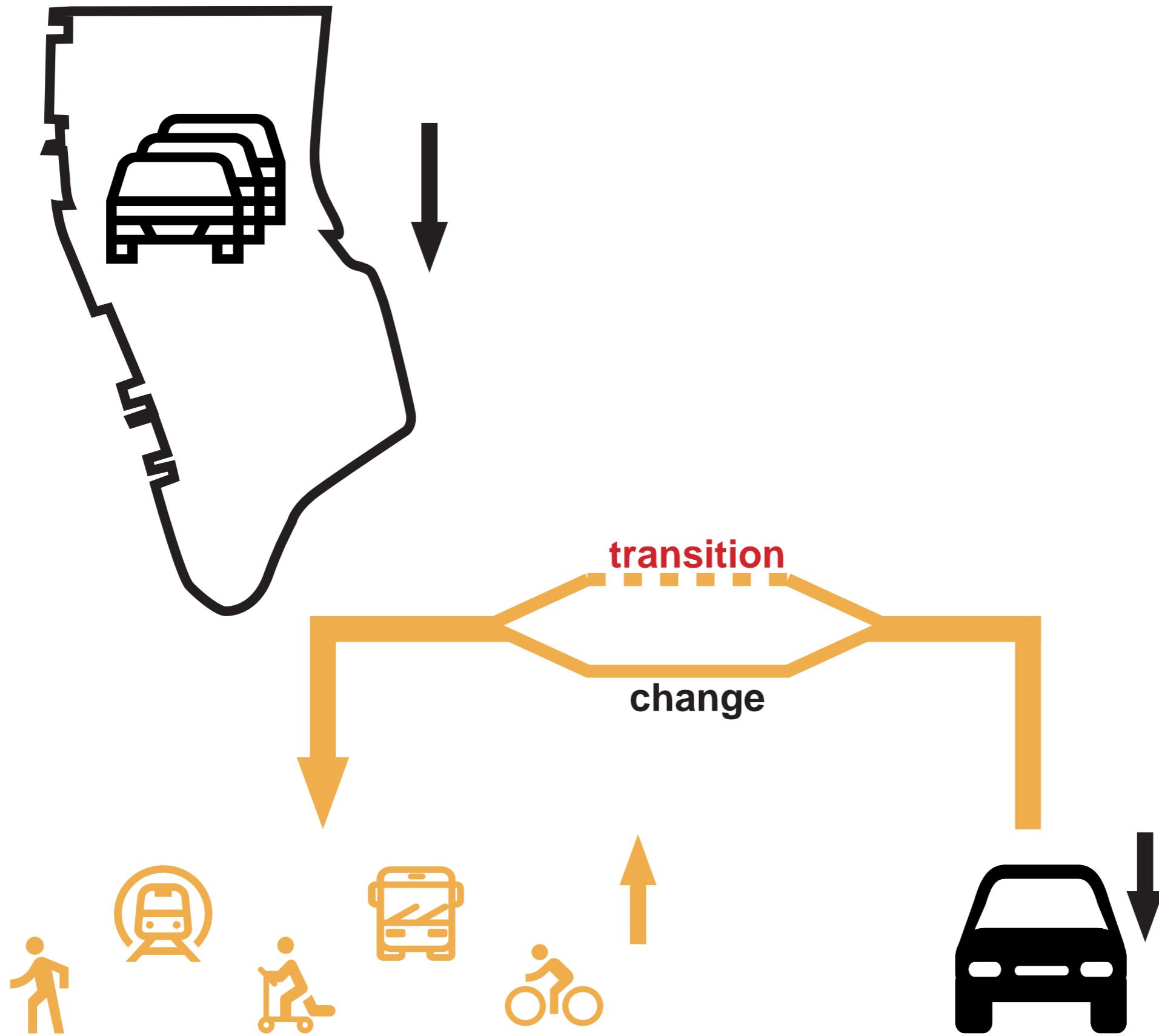
PUBLIC SPACE LOSS



UNSAFE STREET

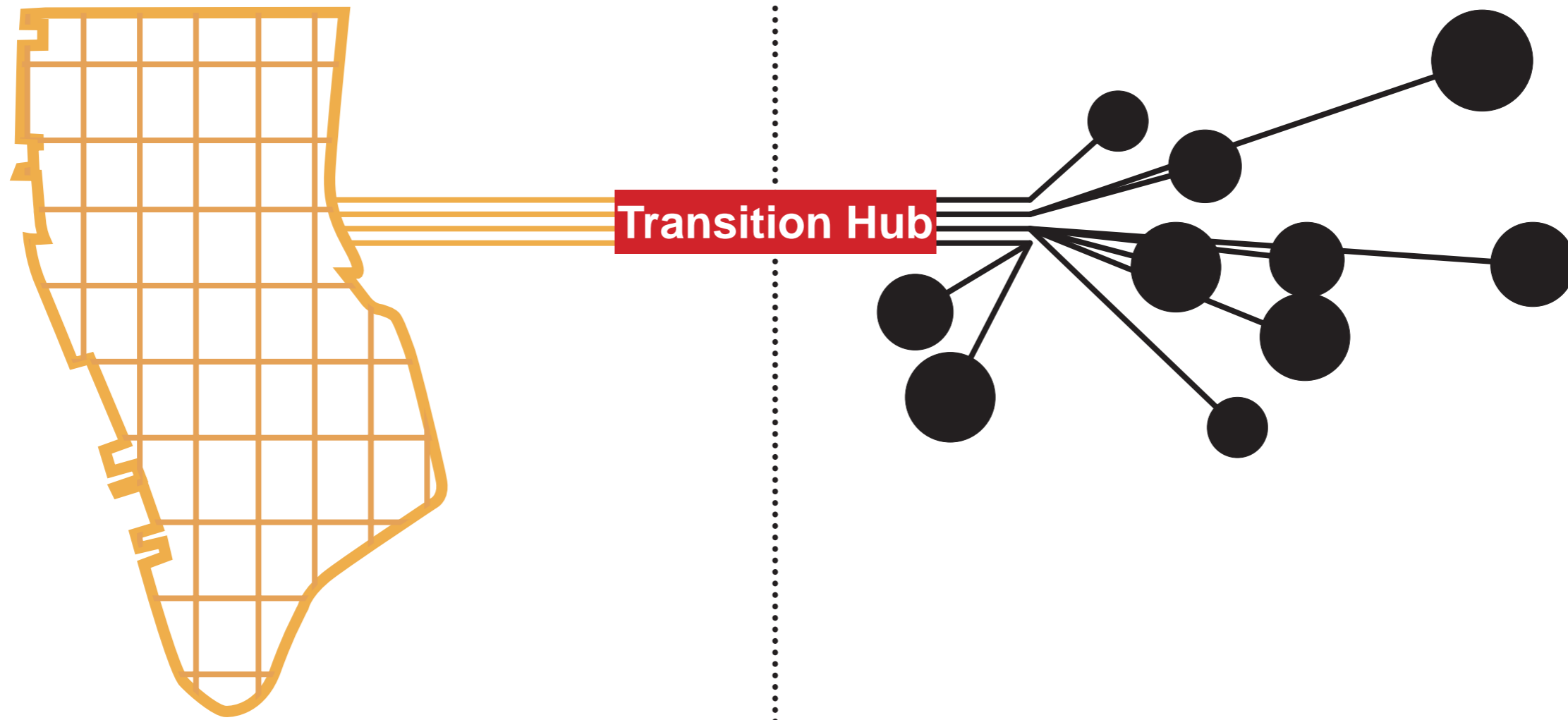






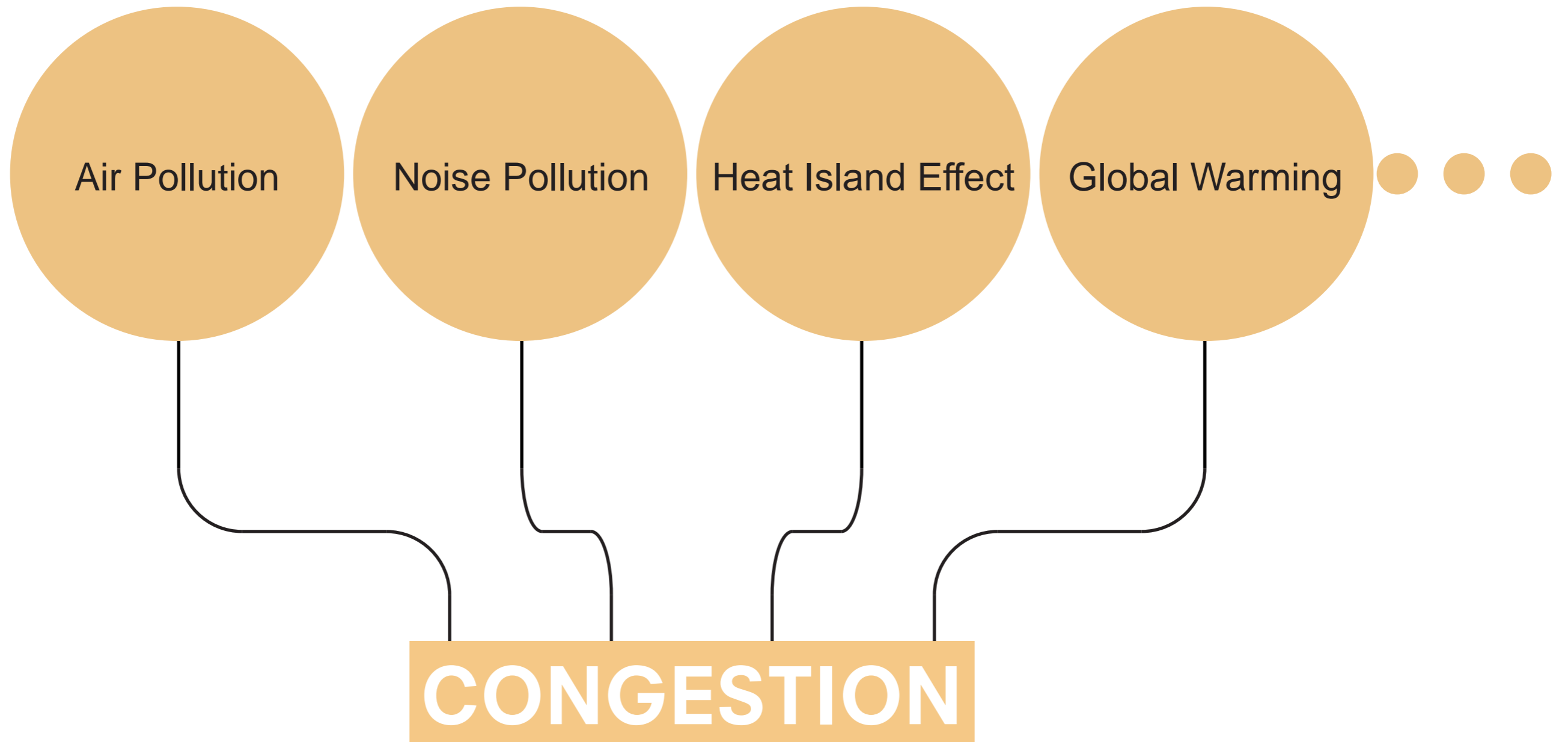
in-borough

cross-borough



RESEARCH

**Congestion contributes greatly to
MULTIPLE ENVIRONMENTAL PROBLEMS.**



ROAD TRANSPORT accounts for a significant portion of
AIR POLLUTION

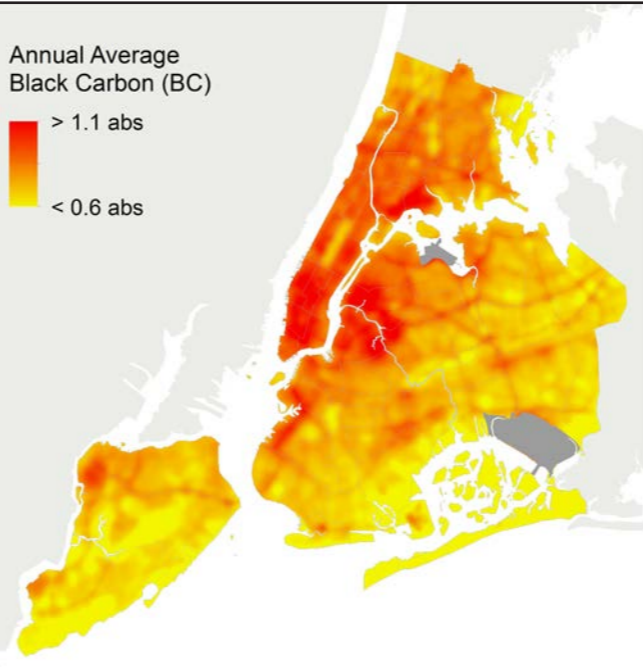
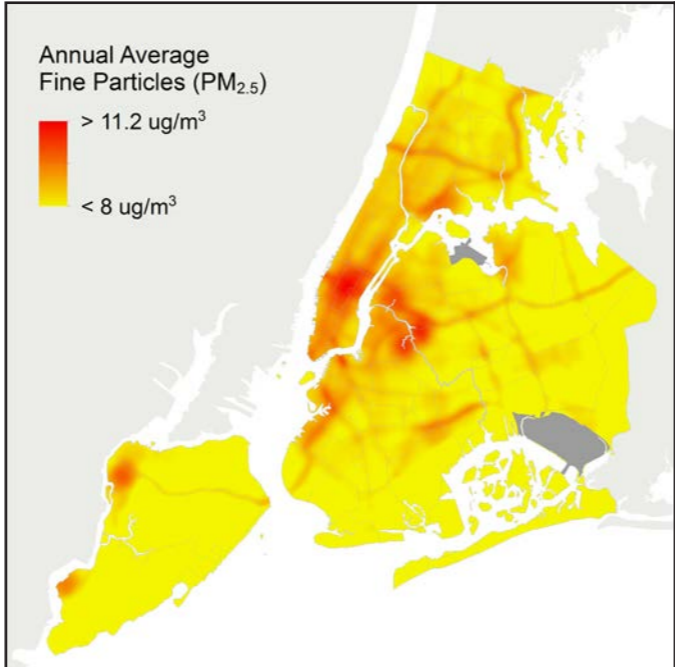


CONGESTION GREATLY AGGRAVATES AIR POLLUTION
with underburnt fuel in slow and discontinuous movement.



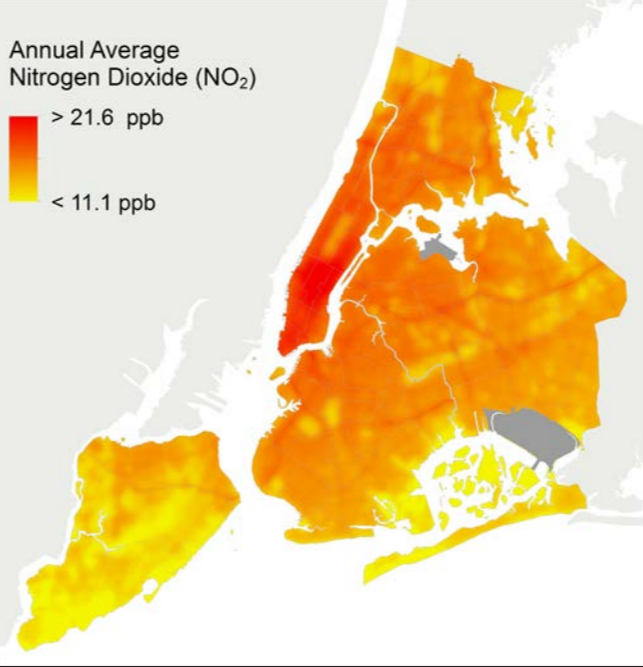
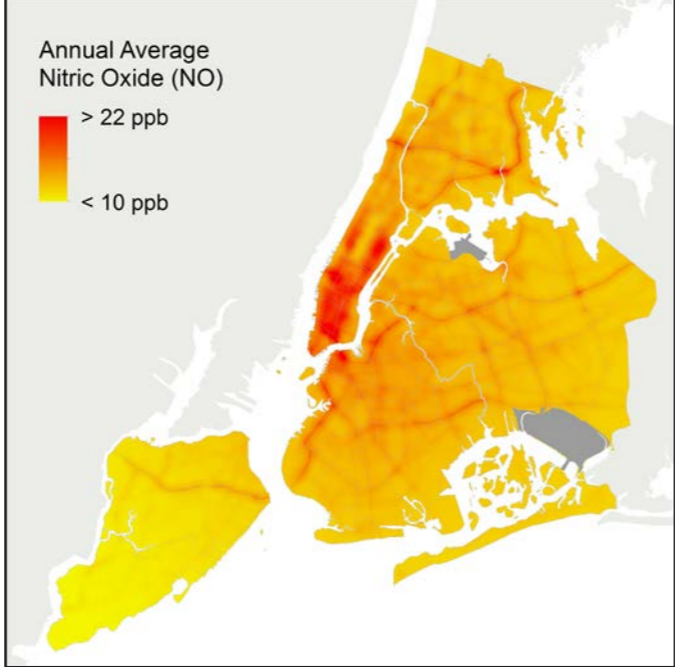
MIDTOWN HAS THE WORST AIR IN NEW YORK.

PM2.5



Black Carbon

NO



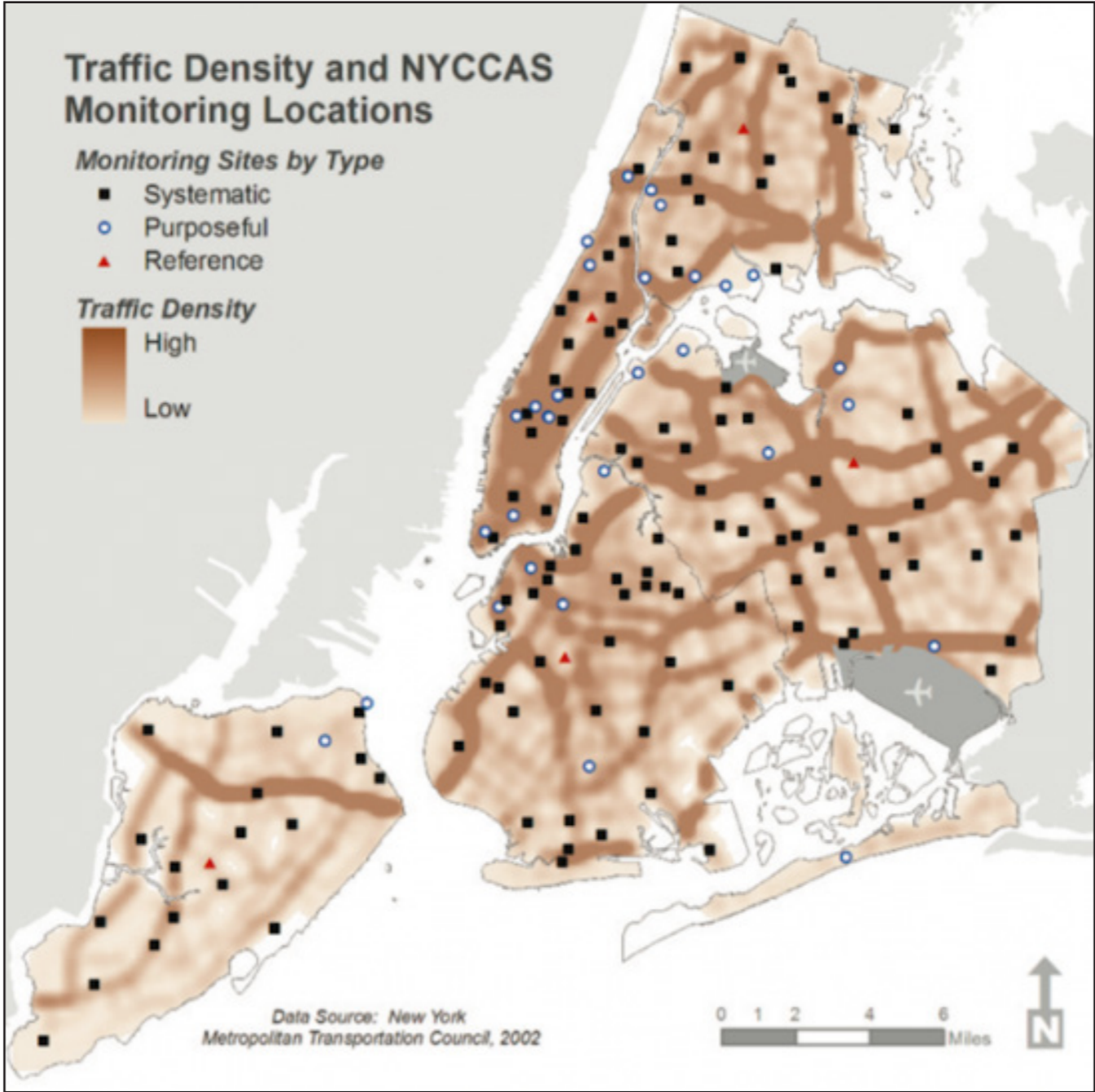
NO2

The New York City Community Air Survey:
Neighborhood Air Quality 2008-2017

EMISSION IS HIGHLY RELATED TO TRAFFIC DENSITY.

PM2.5
17%

NO



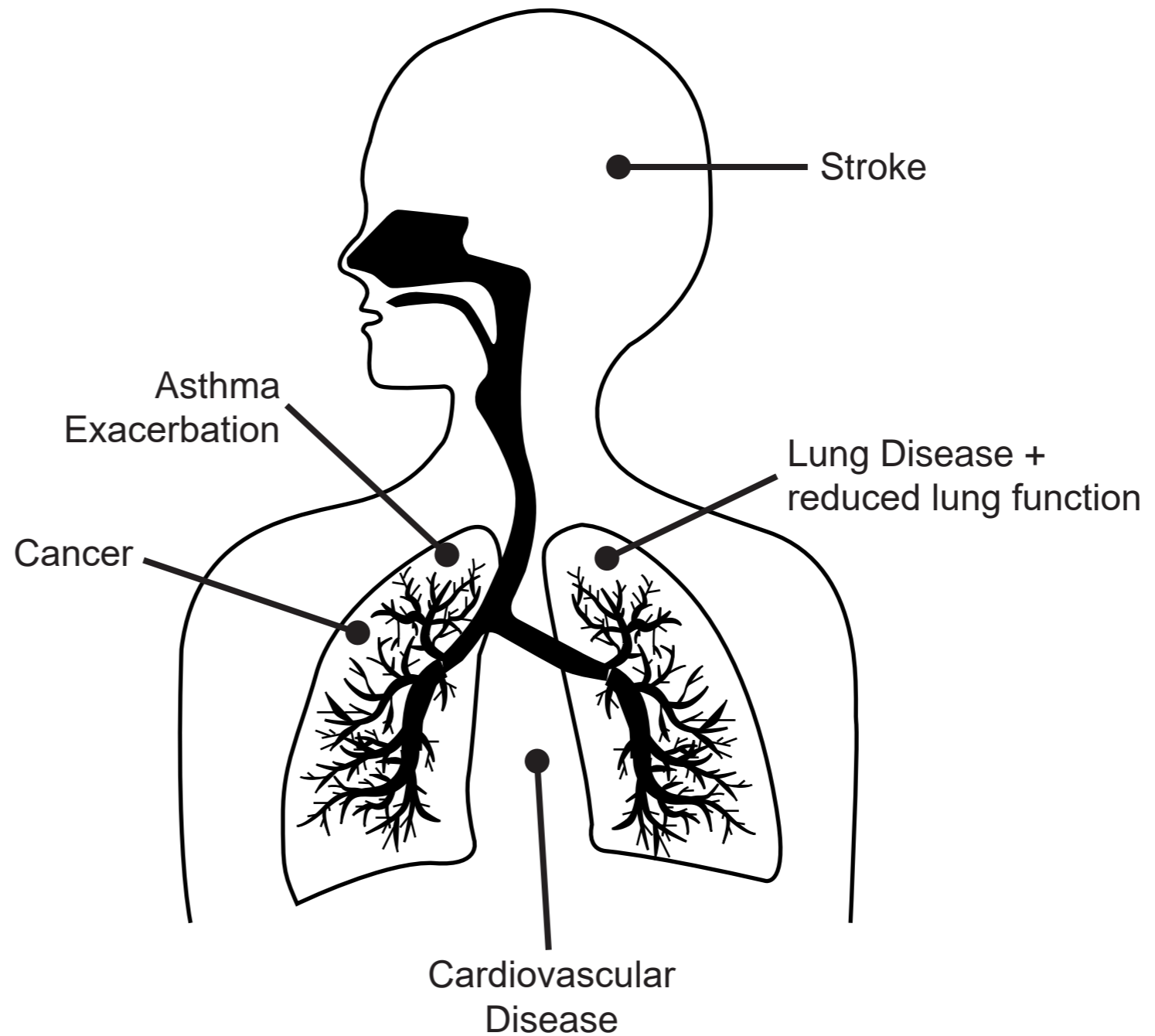
Black Carbon

NO2

The New York City Community Air Survey:
Neighborhood Air Quality 2008-2017

AIR POLLUTION CAUSES HEALTH PROBLEMS.

PM2.5
↓
2300 DEATH (5%)
+
6300 EMERGENCY (6%)



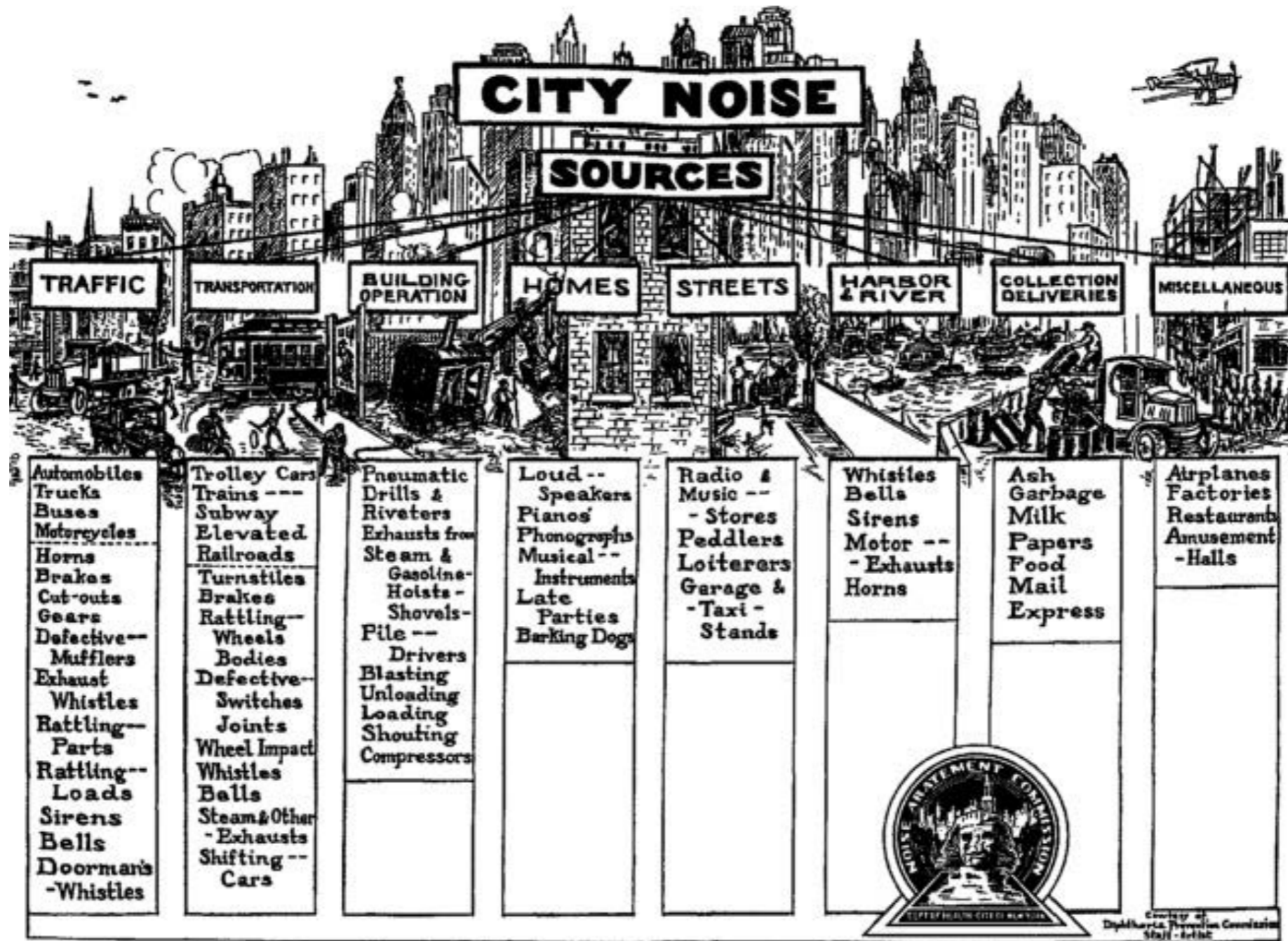
The Public Health Impacts of PM2.5 from Traffic Air Pollution, DOH

CONGESTION LEADS TO NOISE
with booming engines and excessive use of alarms.



Noise in New York City Neighborhoods, Thomas P. DiNapoli, State Comptroller

Since 1930 in New York, traffic has been
THE GREATEST SOURCE OF NOISE.



Edward Brown et al., Soundscape of the modern city, New York Department of Health 1930.

Midtown is THE NOISIEST NEIGHBORHOOD.

RANK	NEIGHBORHOOD	COMPLAINTS PER THOUSAND RESIDENTS
1	Midtown/Midtown South	104.51
2	North Side/South Side	75.59
3	SoHo/Tribeca/Civic Center/Little Italy	75.57
4	Battery Park City/Lower Manhattan	59.98
5	West Village	59.96
6	East Village	58.64
7	Washington Heights North	56.85
8	East Williamsburg	56.79
9	Hudson Yards/Chelsea/Flatiron/Union Square	56.34
10	Clinton	56.21

Mapping New York's Noisiest Neighborhoods By Ben Wellington

The noise level of Midtown traffic is as high as **70-85dB.**



WHISPER	30dB
NORMAL CONVERSATION	50-65dB
VACUUM CLEANER	70dB
WASHING MACHINE	78dB
MIDTOWN TRAFFIC	70-85dB
MOTORCYCLE	88dB
LAWNMOWER	85-90dB
TRAIN	100dB
JACKHAMMER	110dB
THUNDER	120dB
STEREO	110-120dB
NEARBY JET	130dB



In New York, nearly **ONE IN SIX** adults report ringing in their ears or hearing loss due to exposure to loud noise.



MULTIPAL MENTAL AND PHYSICAL DAMAGE AS WELL.






Congestion is New York's BIGGEST ENVIRONMENTAL THREAT.



Congestion is New York's BIGGEST ENVIRONMENTAL THREAT.

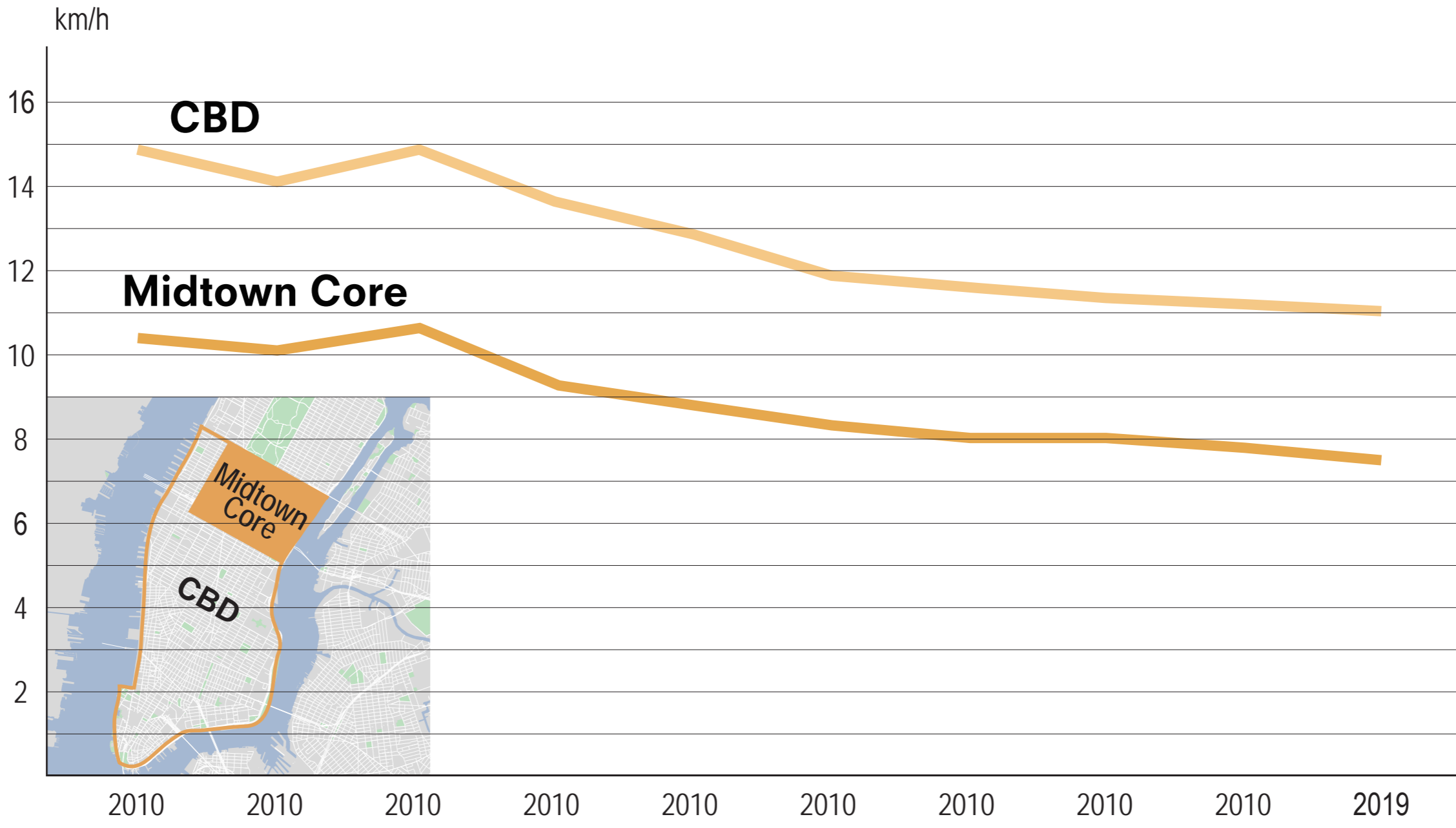


New York is the **3rd MOST CONGESTED CITY** in the world

	RANK	CITY	ANUAL HOURS SPENT IN CONGESTION	AVERAGE CONGESTION RATE
	#1	Los Angeles	102	12%
	#2	Moscow	91	26%
	#3	New York City	91	13%
	#4	Sao Paulo	86	22%
	#5	San Francisco	79	12%

percentage of the total drive time spent in congestion

Midtown is 30% SLOWER than the average CBD level.



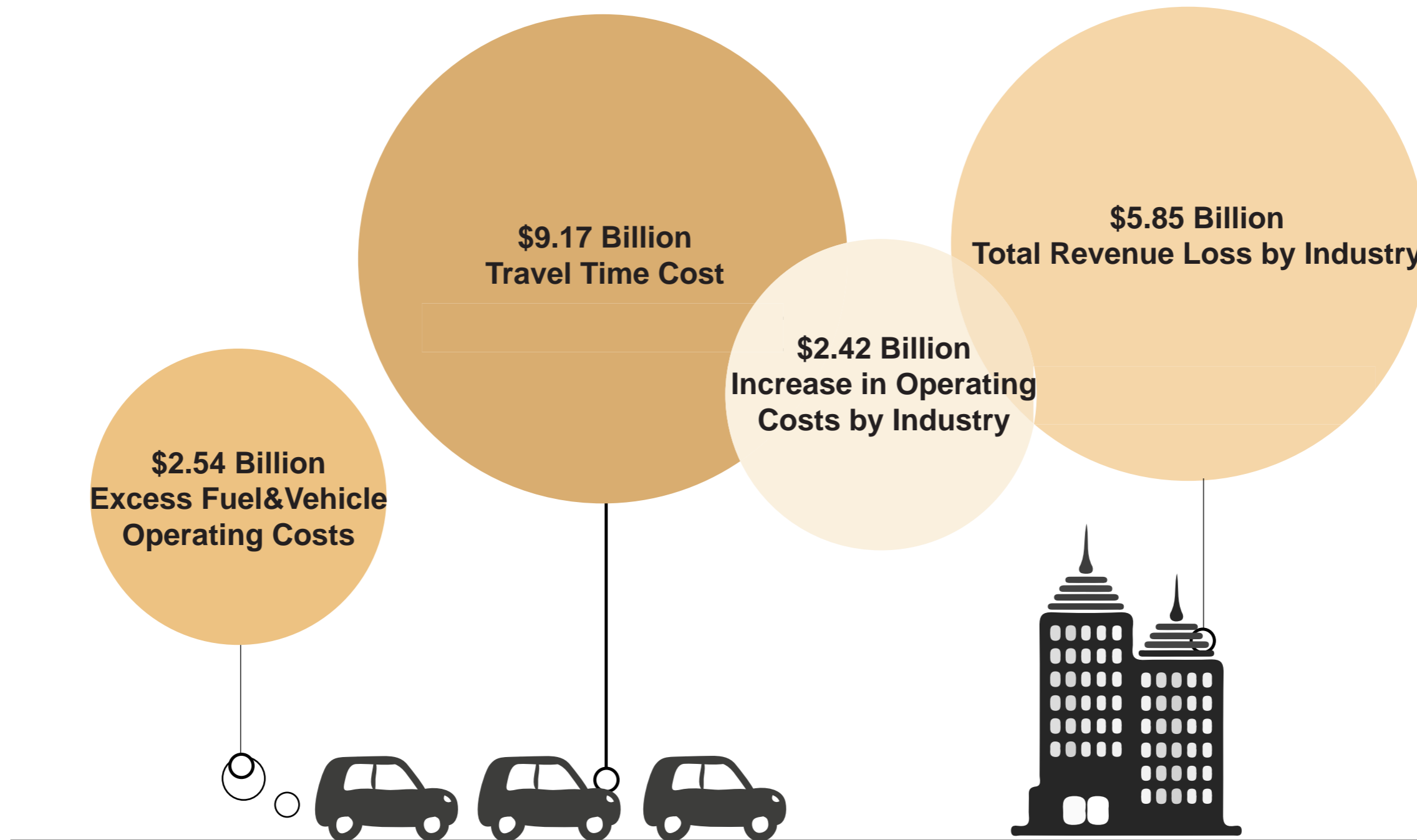
Mobility Report by DOT

TIME IS MONEY.



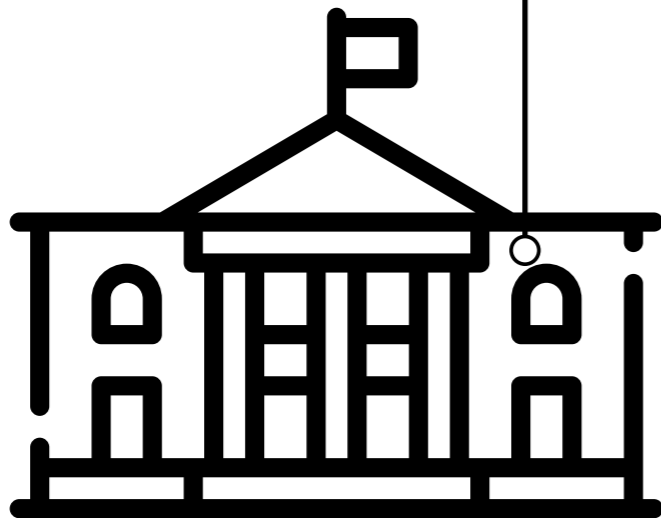
--Benjamin Franklin

Congestion in New York annually costs about **\$20 BILLION.**

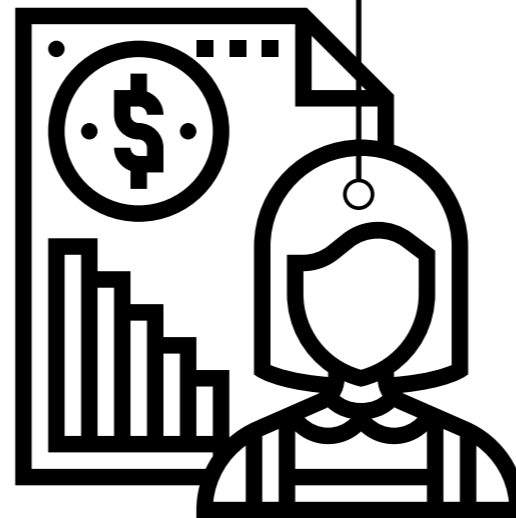


CONGESTION ISSUES DESERVE INVESTMENTS!

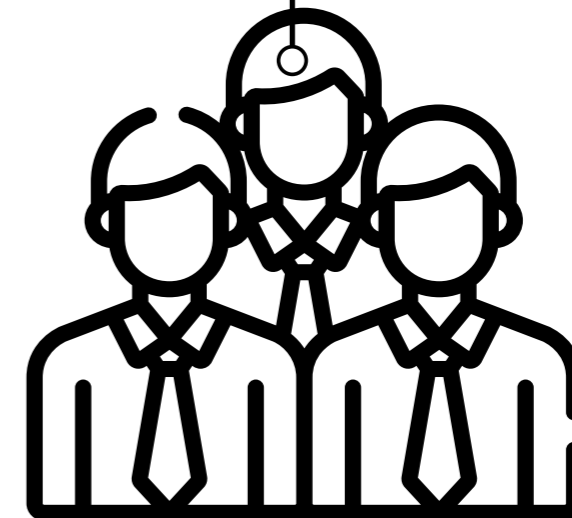
**Over \$1 Billion
Annual Revenue Loss
for Government**



**\$2,828
Annual Average Loss
Each Driver**



**52,000
Annual Job Loss**

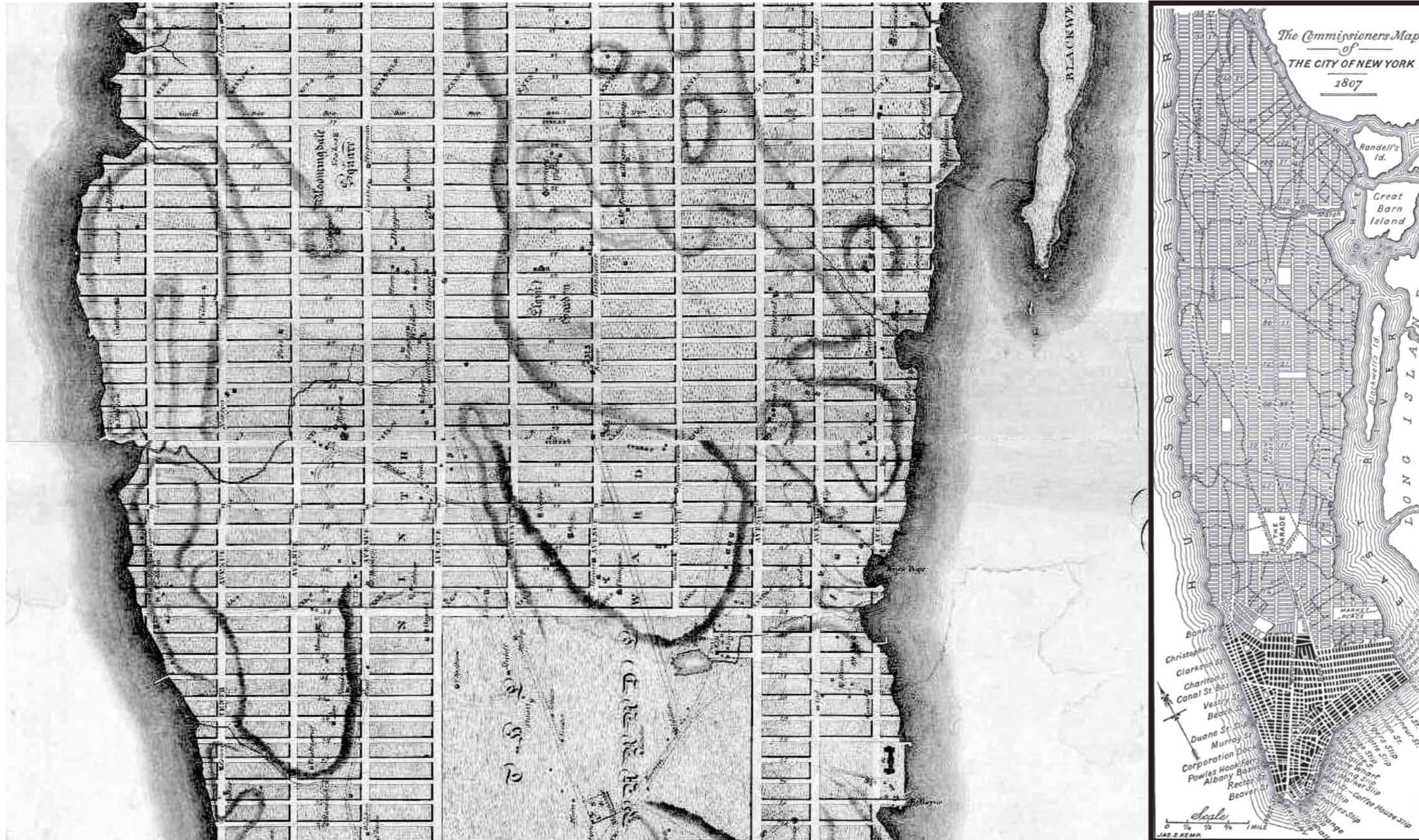


WHAT MAKES UP THE CONGESTION?

URBAN DEVELOPMENT

A COMPROMISE TO THE CAR ERA

The Commissioners' Plan settle the grid of midtown in **1811**.



**The 1811 Commissioners Plan was the product of the
CARRIAGE ERA.**



**Carl Benz invented the first motor car in
1886.**



**Ford started the first assembly line for mass production in
1913.**



ROAD EXTENSION



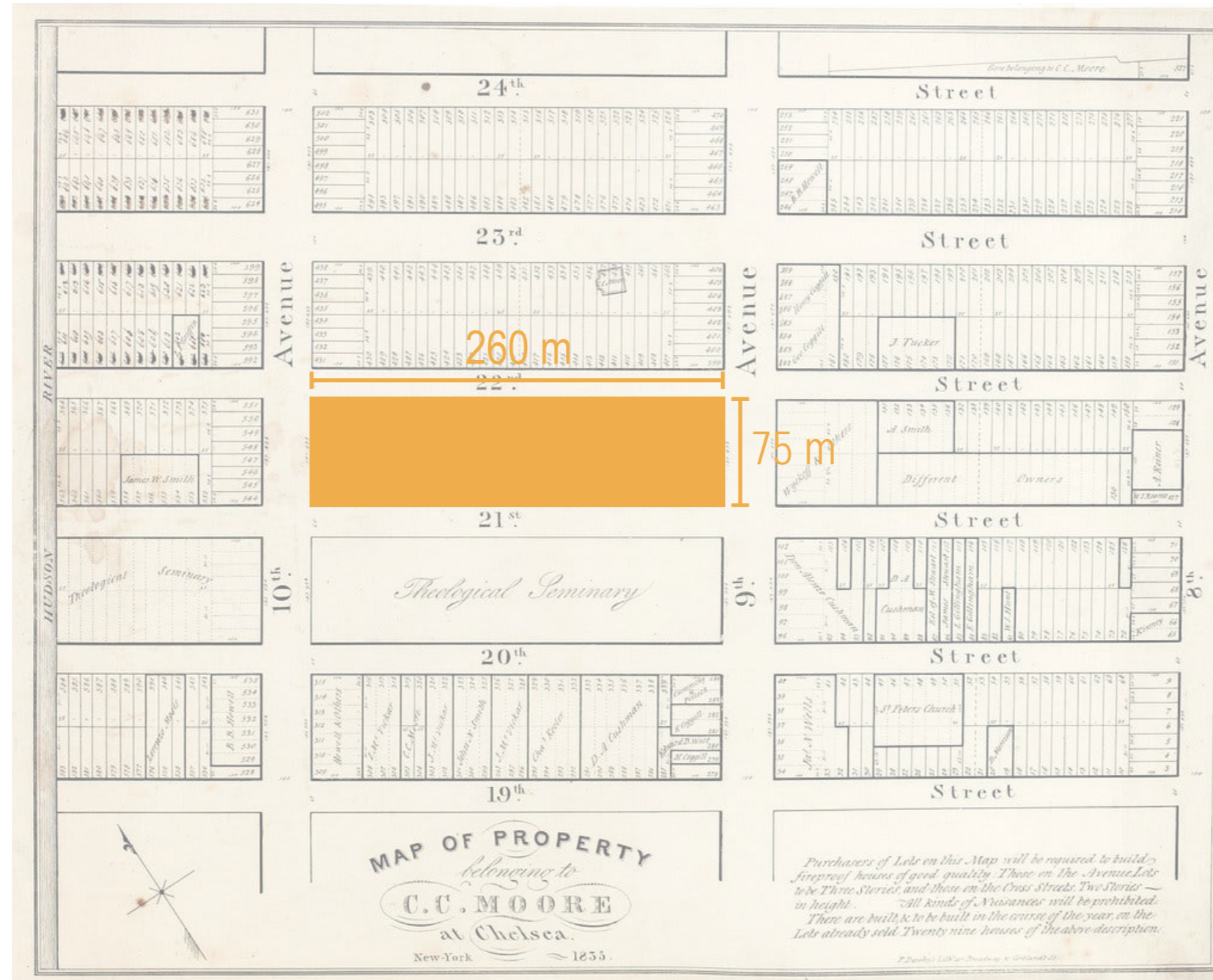
ONE WAY ROADS



Michael Tapp

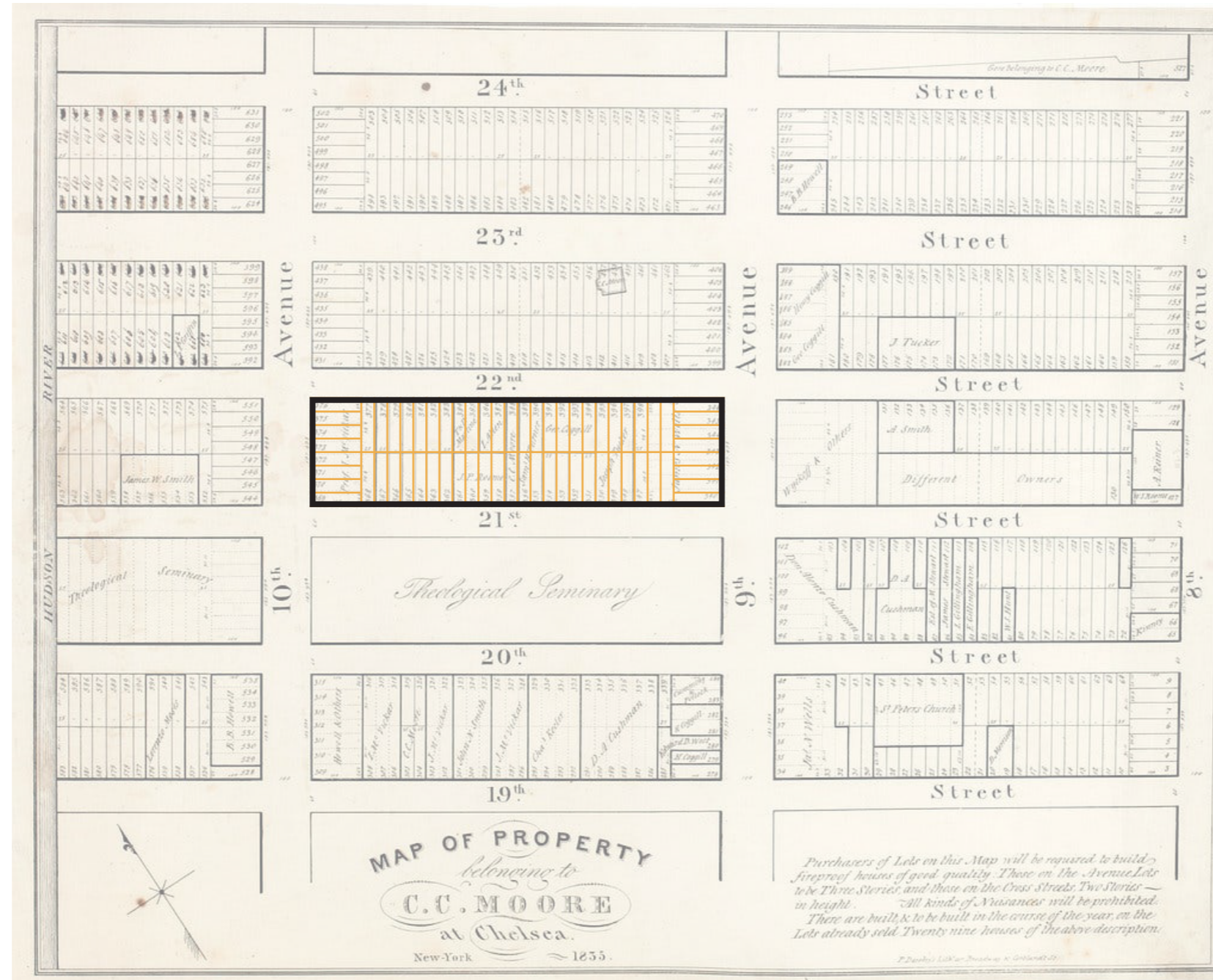
ECONOMIC-ORIENTED GRID

SMALL GIRD SCALE FOR MORE COMMERCIAL INTERFACE



Courtesy New York Historical Society

EFFICIENT AND FLEXIBLE LOT DISTRIBUTION



Courtesy New York Historical Society

EFFICIENT AND FLEXIBLE LOT DISTRIBUTION

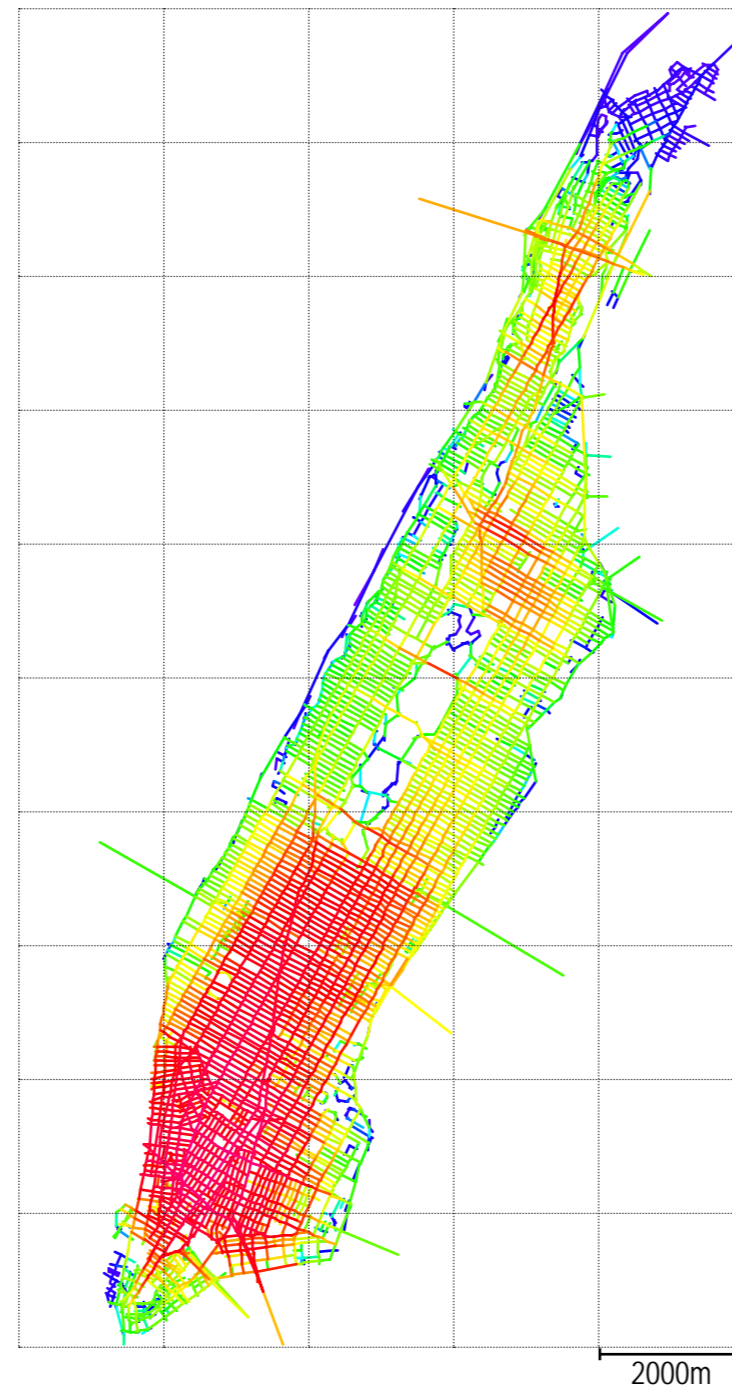


Courtesy New York Historical Society

Countless Intersections



SPACE SYNTAX ANALYSIS (Segment Angular Integration)



Ease of Access

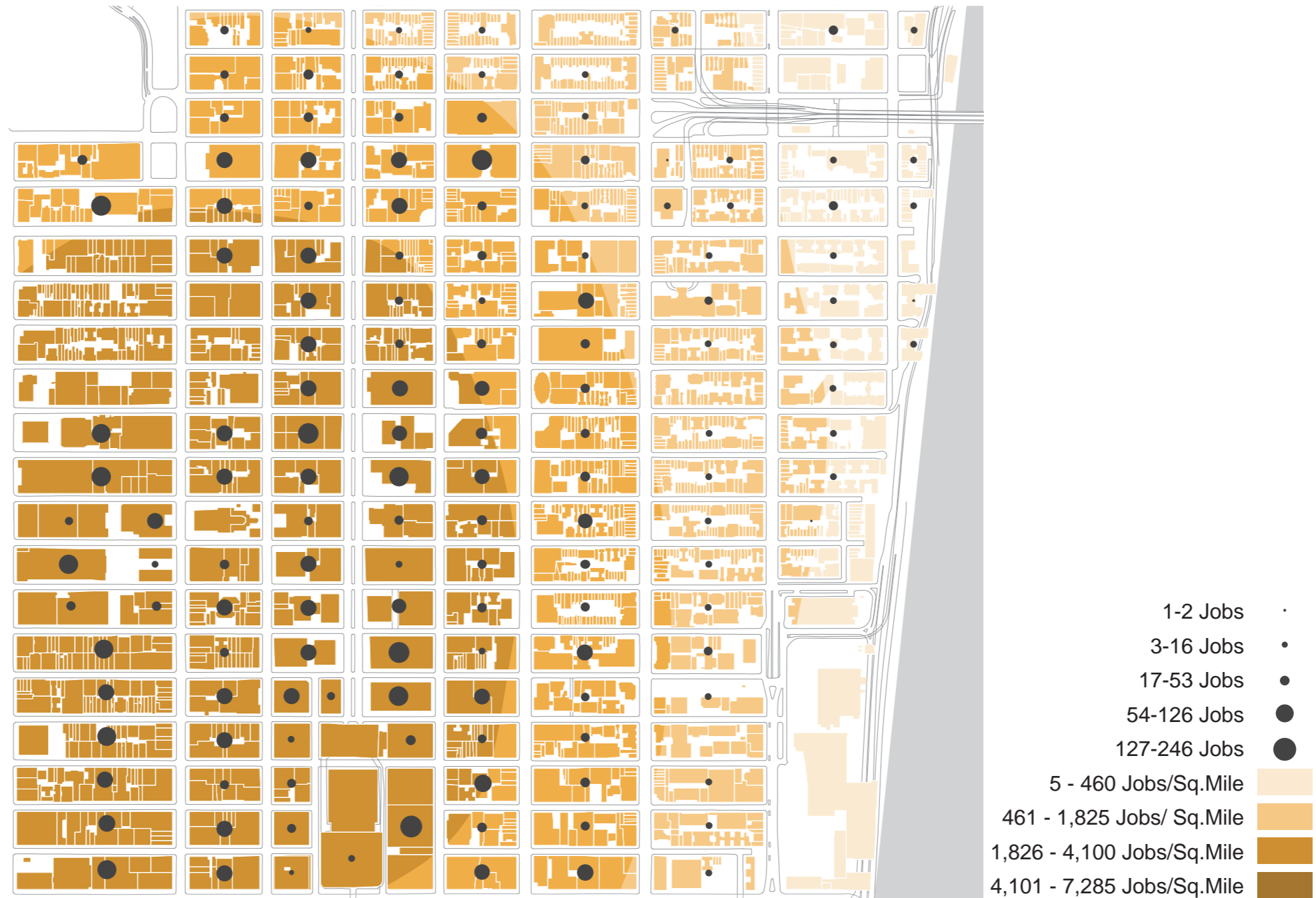
2009

Cities as Emergent Models, The Morphological Logic of Manhattan and Barcelona,
Kinda Al Sayed, Alasdair Turner, Sean Hanna

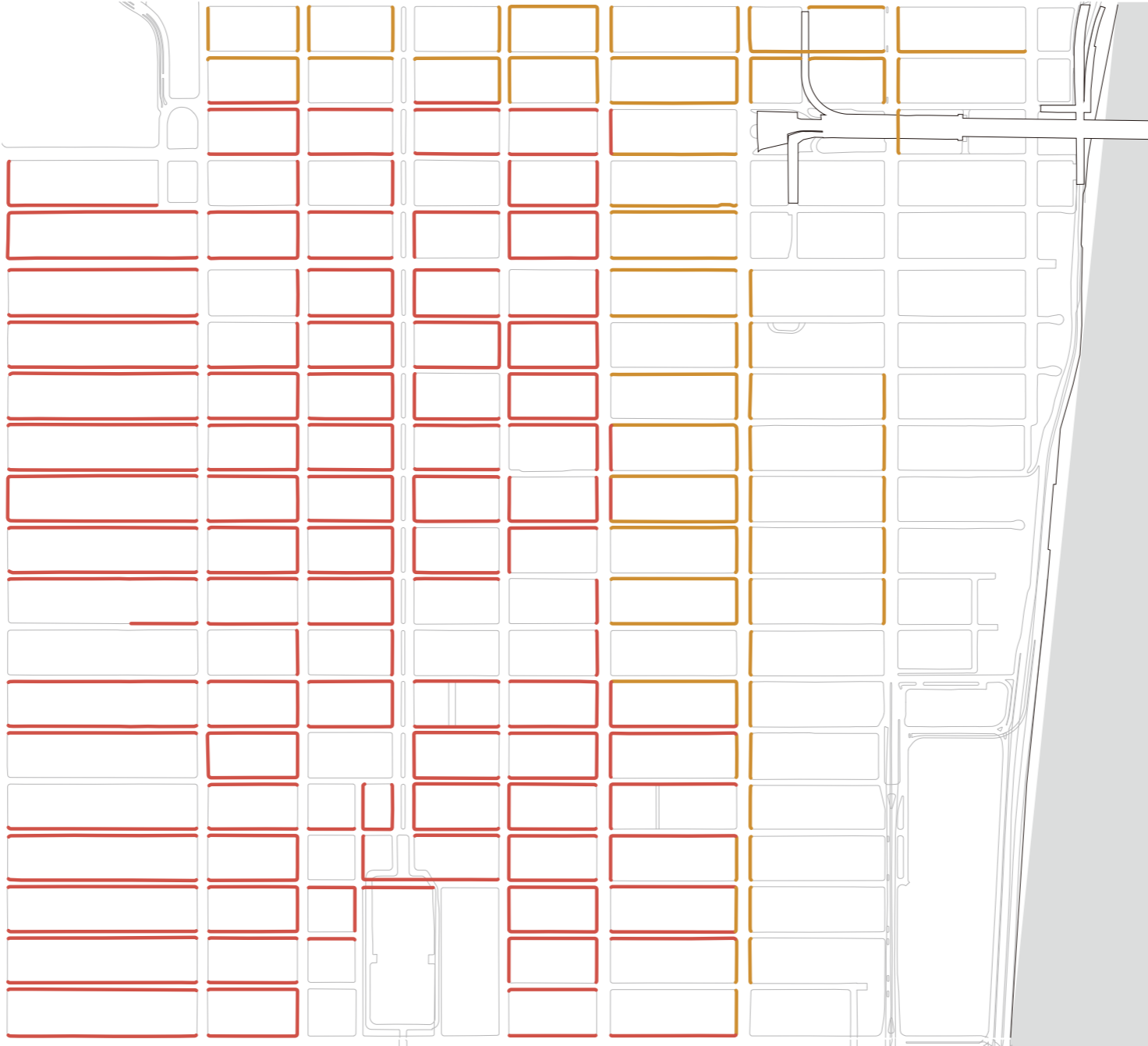
The grid planted a seed for the centralized business.



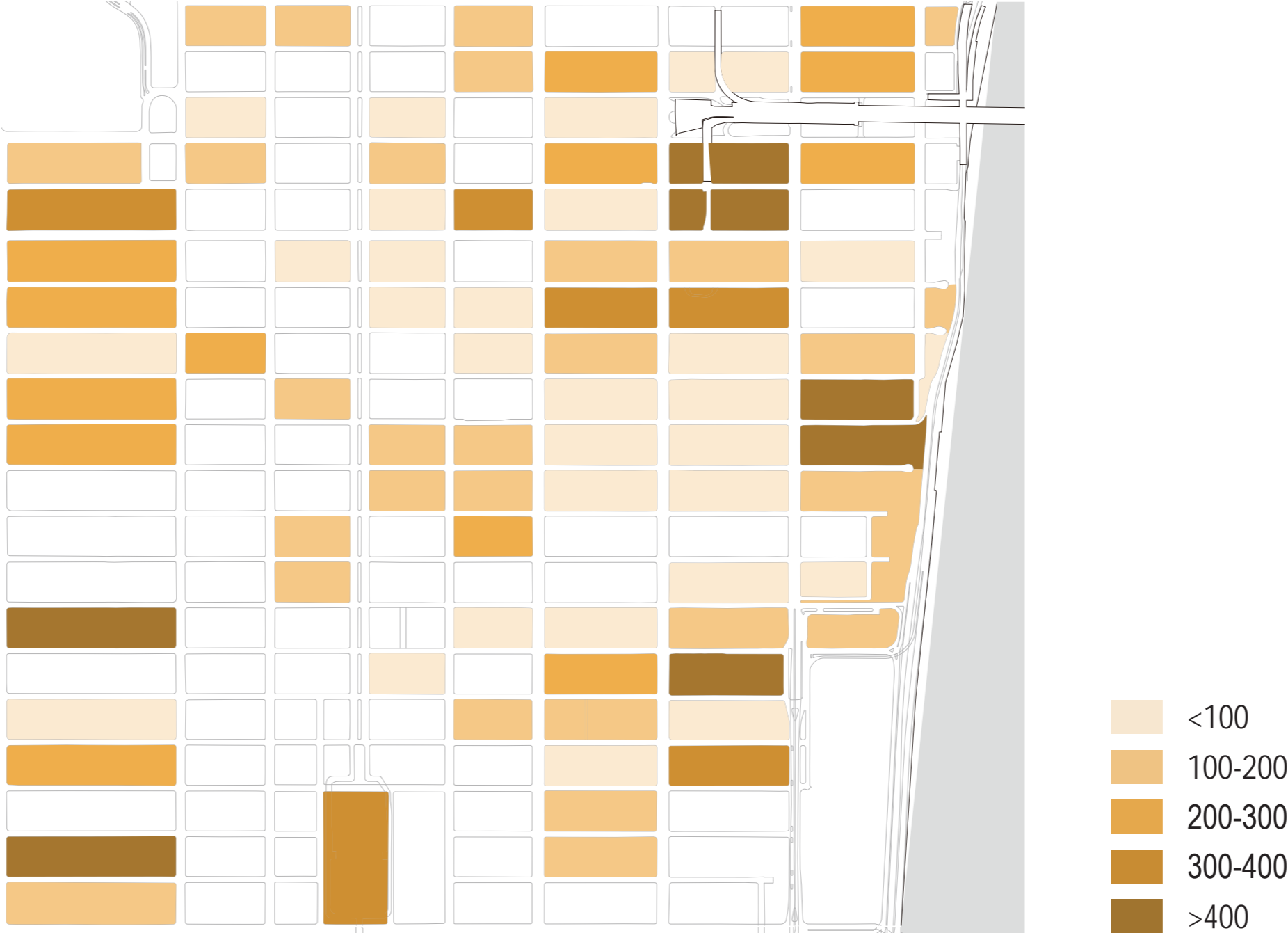
Jobs gather at Midtown Core.



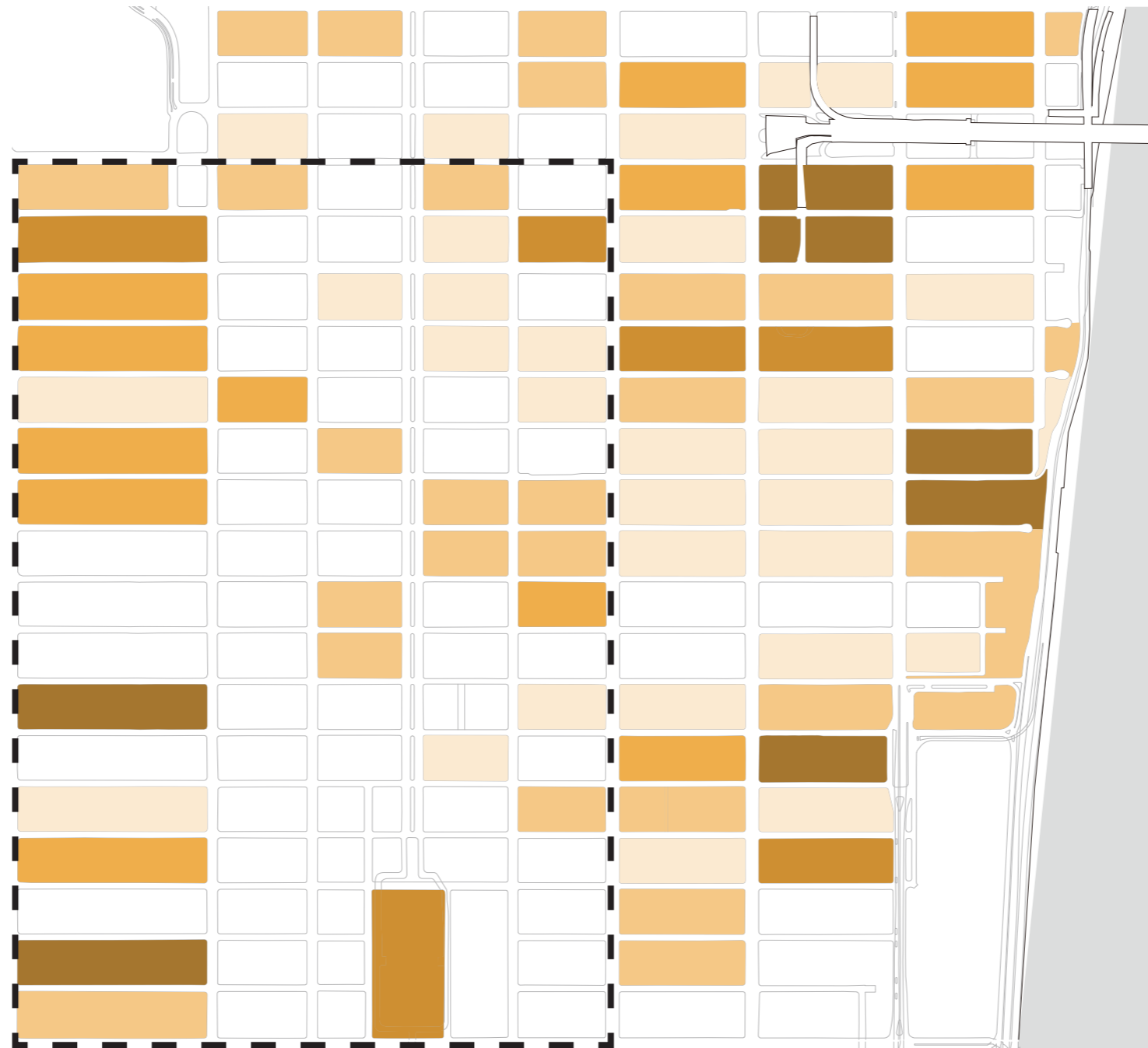
Street Parking Meters



Off-Street Parking Places

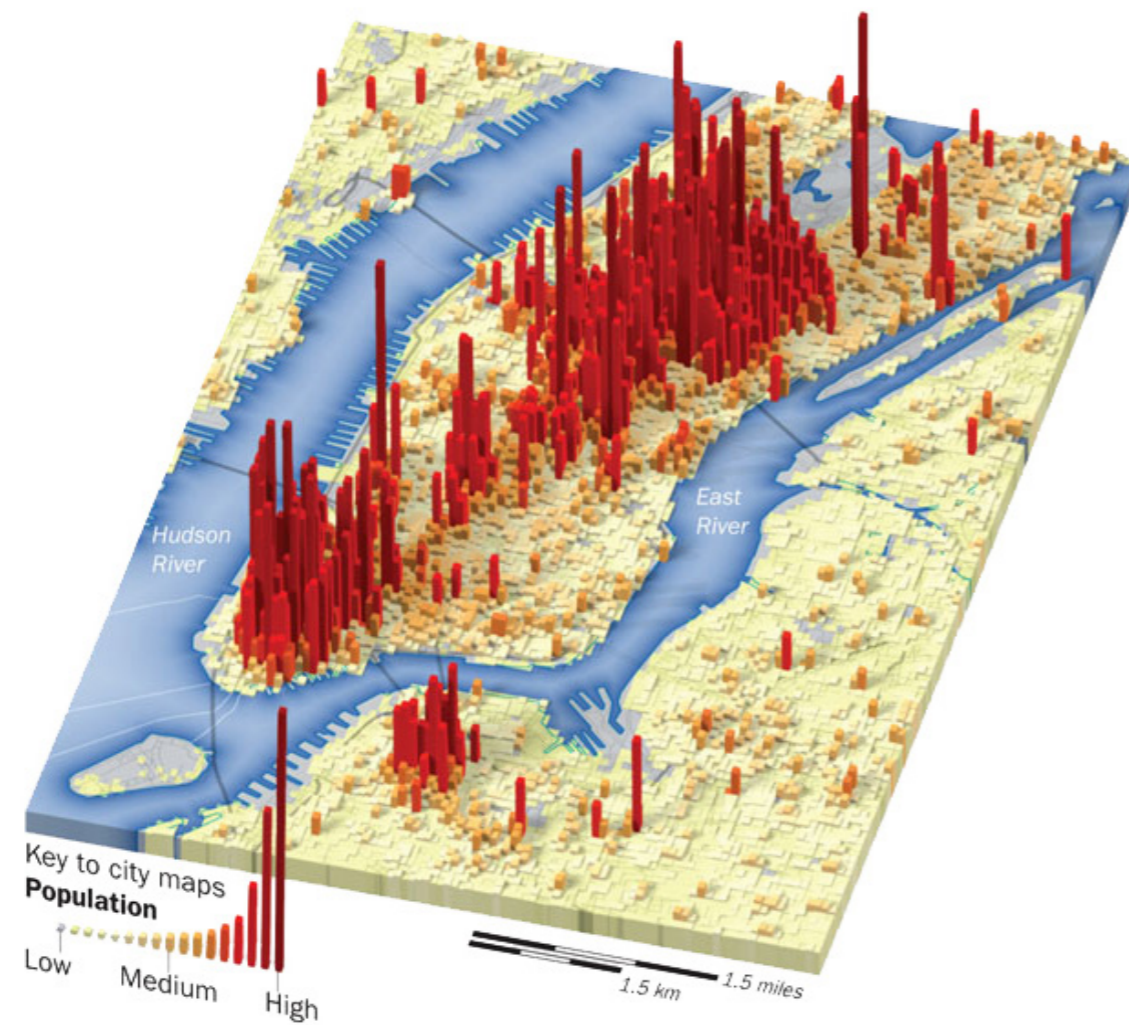


Auto commuters always have to roam for parking and move on after parking.

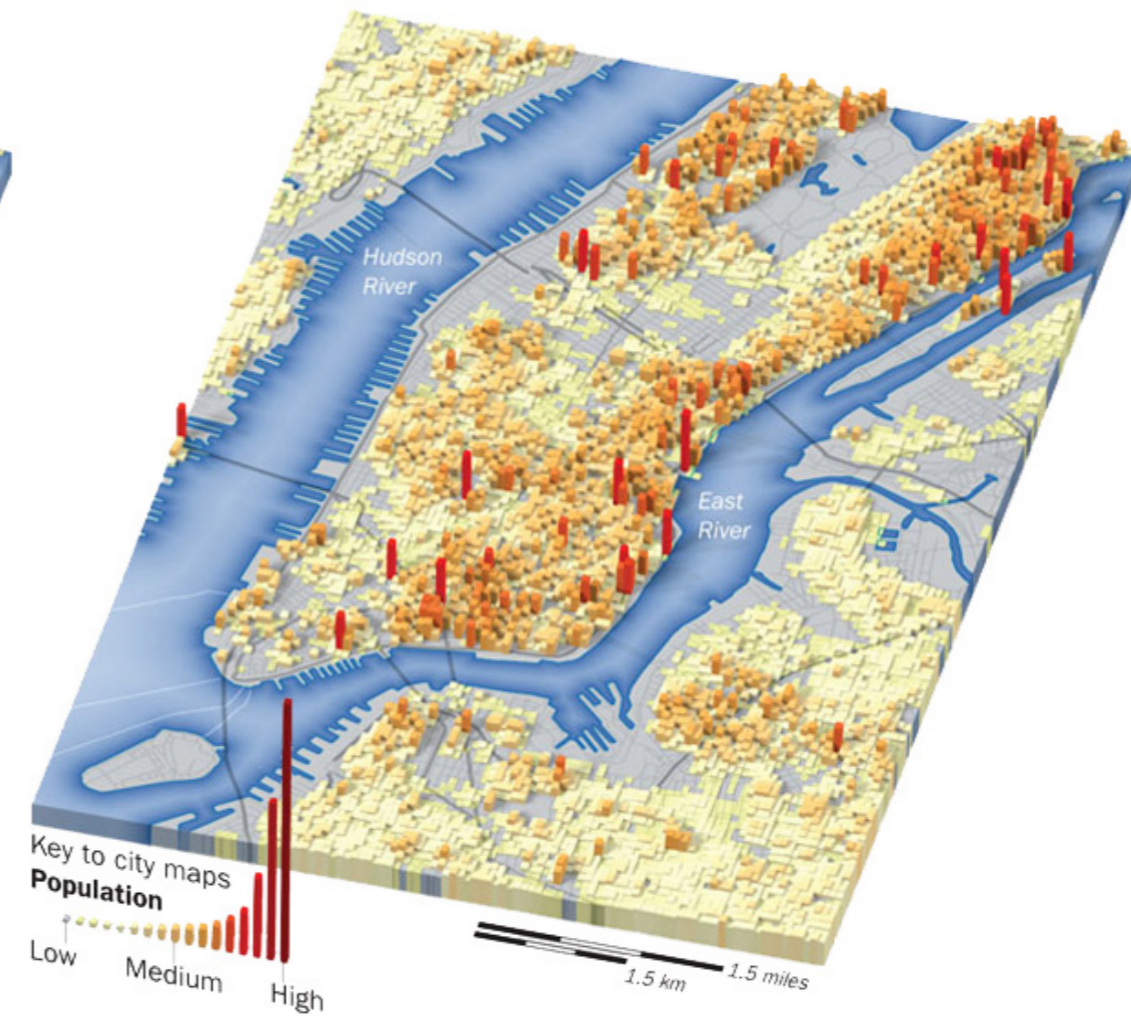


About 2 MILLION commuters come from outer boroughs.

Weekday Population

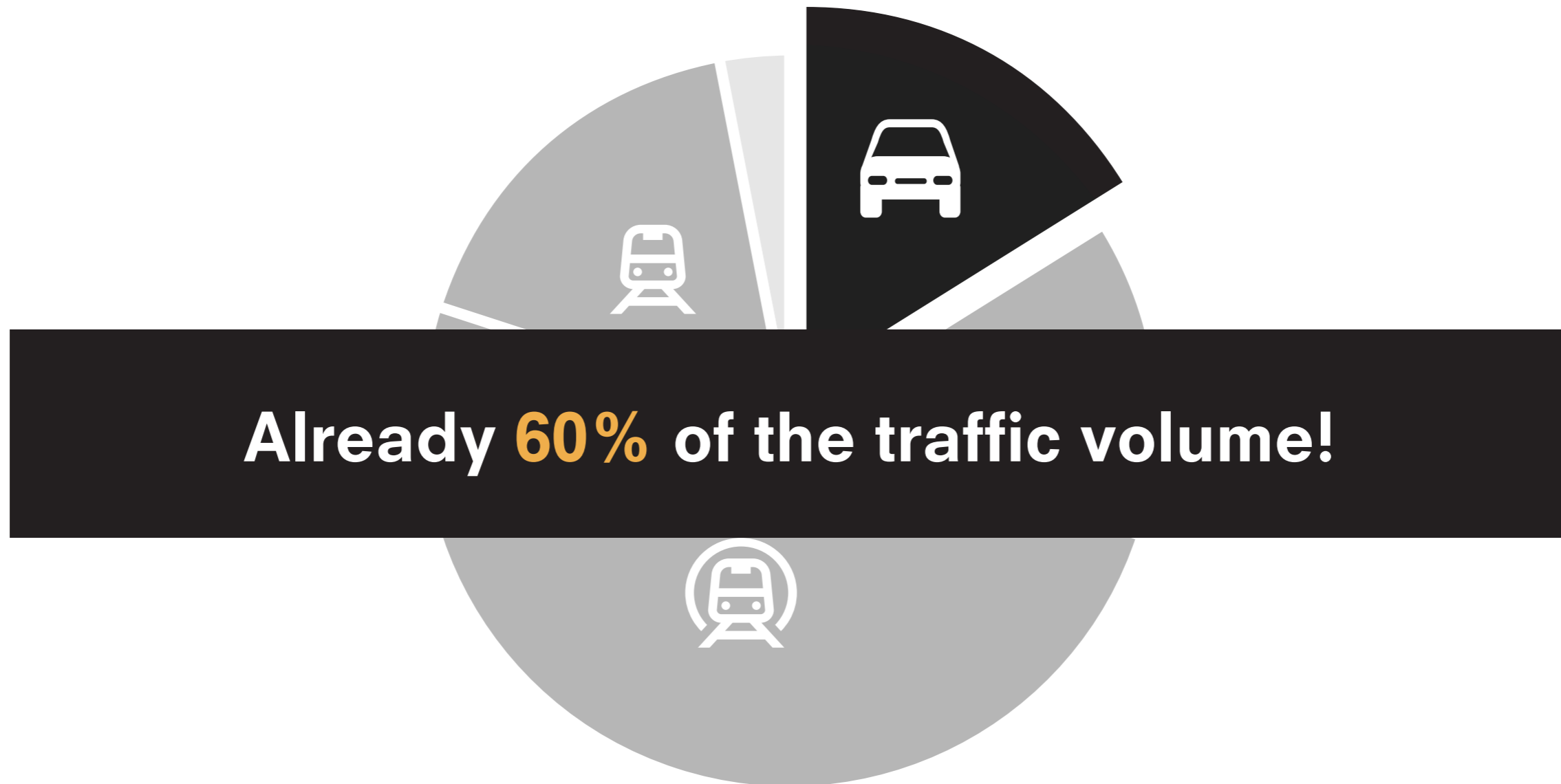


Weeknight Population



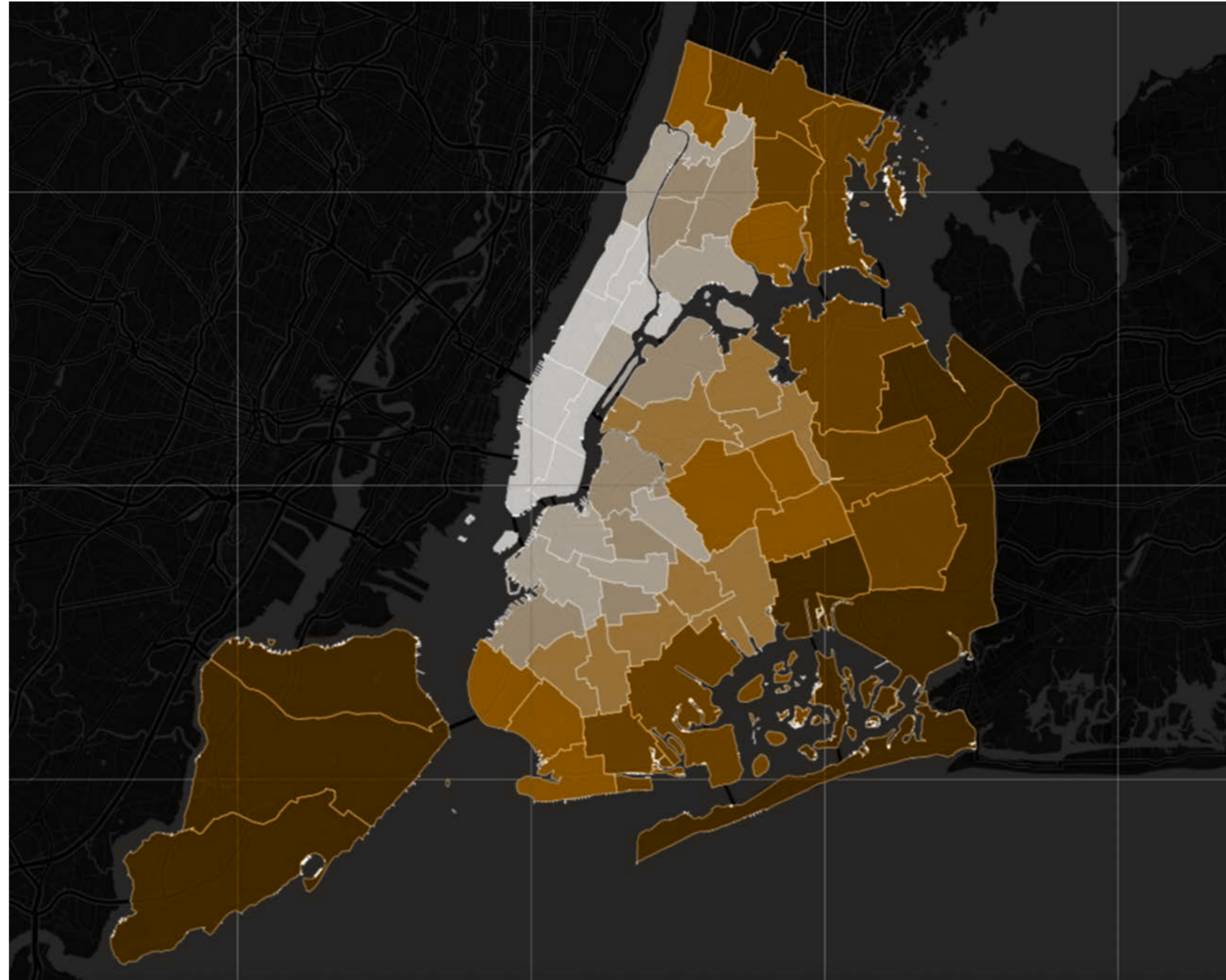
The Dynamic Population of Manhattan, Mitchell L. Moss and Carson Qing, March, 2012

16.2% of the outer borough commuters drive to work.



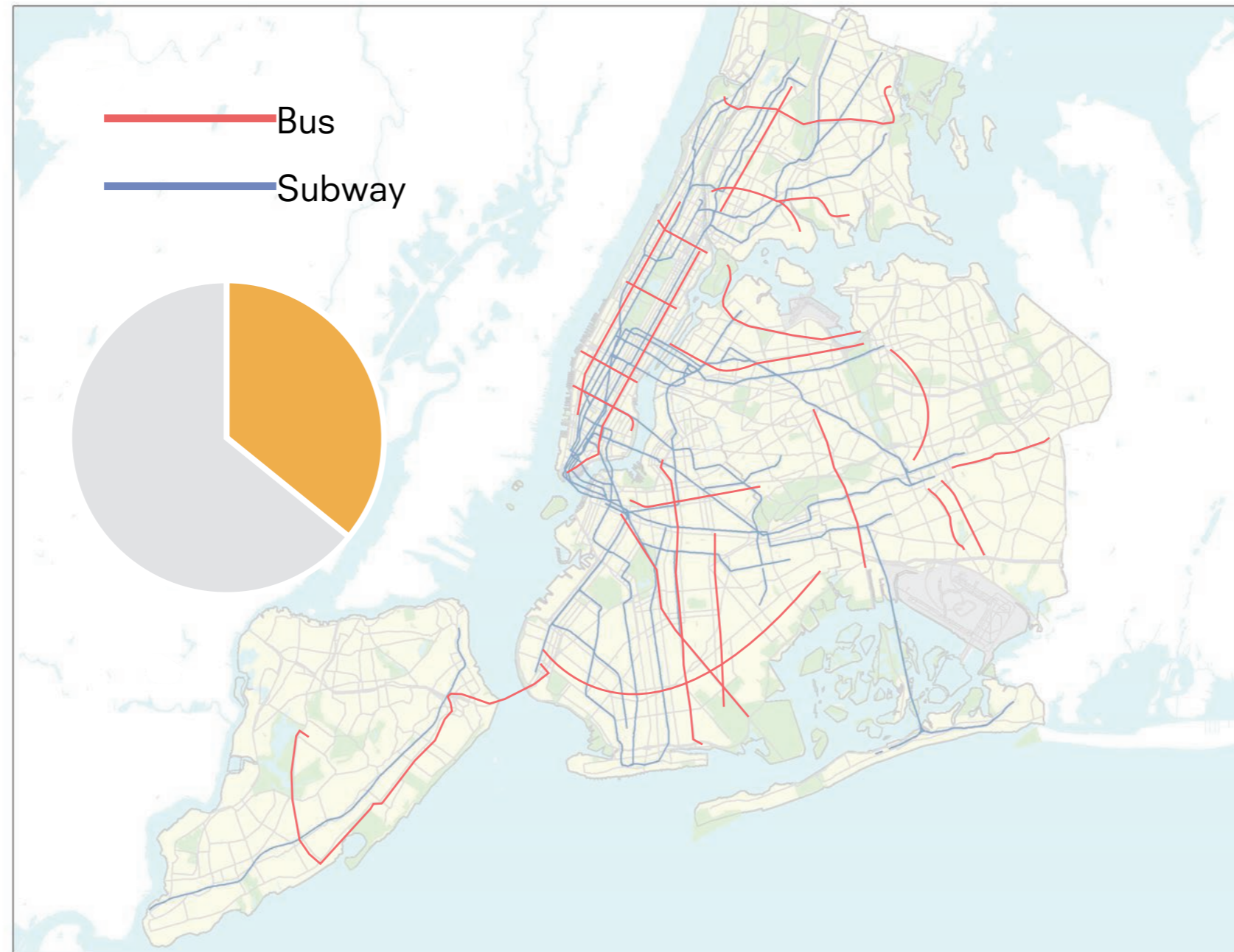
The Dynamic Population of Manhattan, Mitchell L. Moss and Carson Qing, March, 2012
Necessity or Choice? Why People Drive in Manhattan, Schaller Consulting, February 2006

**The closer to Manhattan,
the lower driving rates.**



source: FAST CITY, SLOW COMMUTE, Adam Forman, March 2016

36% of CBD auto commuters live in areas without convenient Mass Transits access.



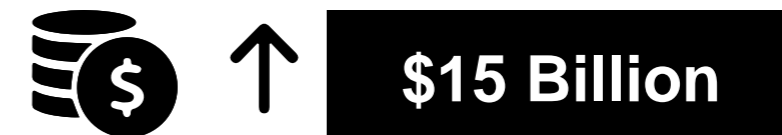
Bridges and Tunnels



CBD car speed is extremely low.



New York becomes **FIRST US CITY** to approve **CONGESTION PRICING**.

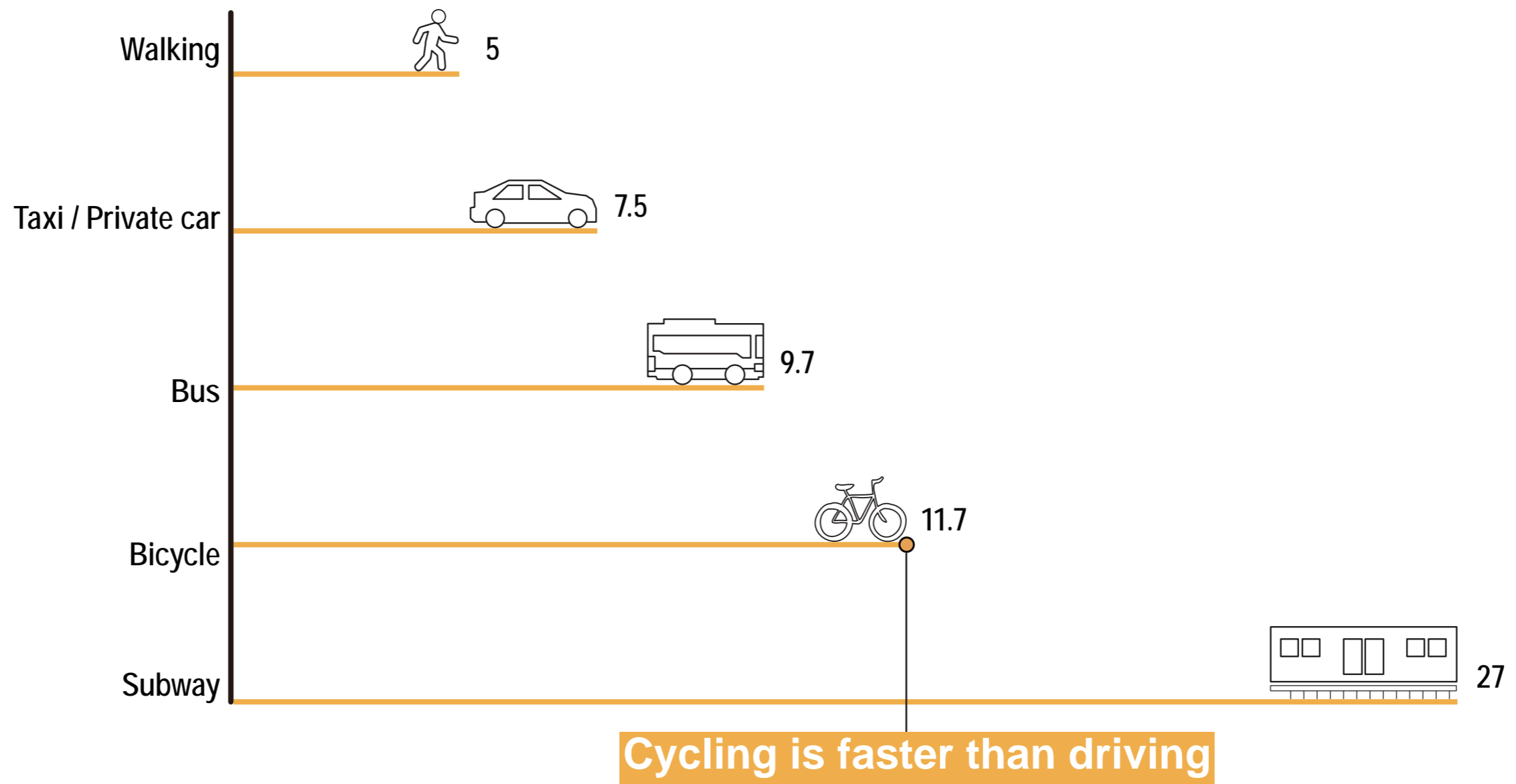


passed on April 1st, 2019,
go into effect by 2021

MTA: Metropolitan Transportation Authority

Cars in Midtown are slower than other transportations except walking.

Average Speed in Midtown by Mode (km/h)



**The border of Central Business District,
for drivers, is also the border of ...**



CONGESTION

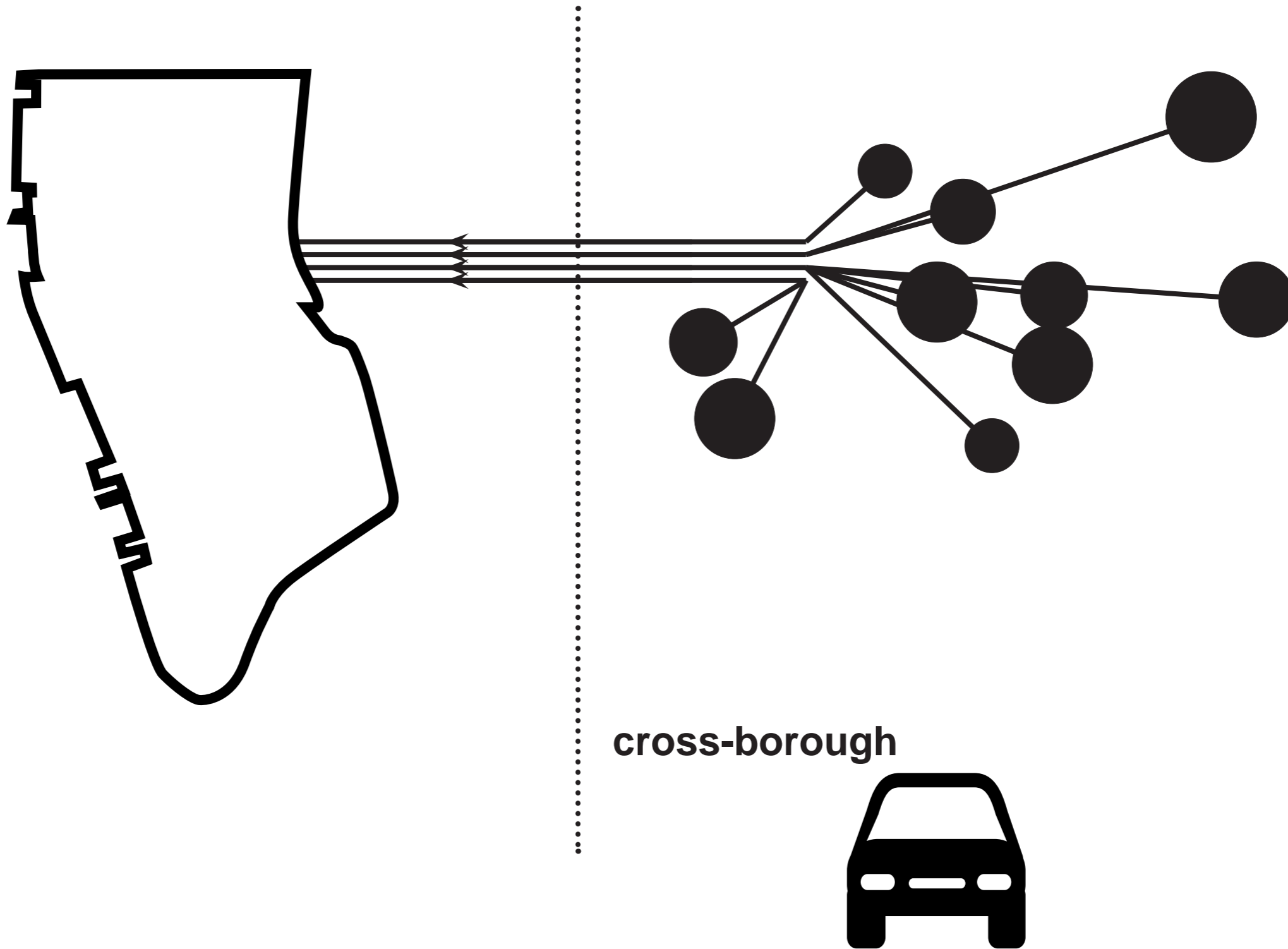
TOLL

SLOW SPEED

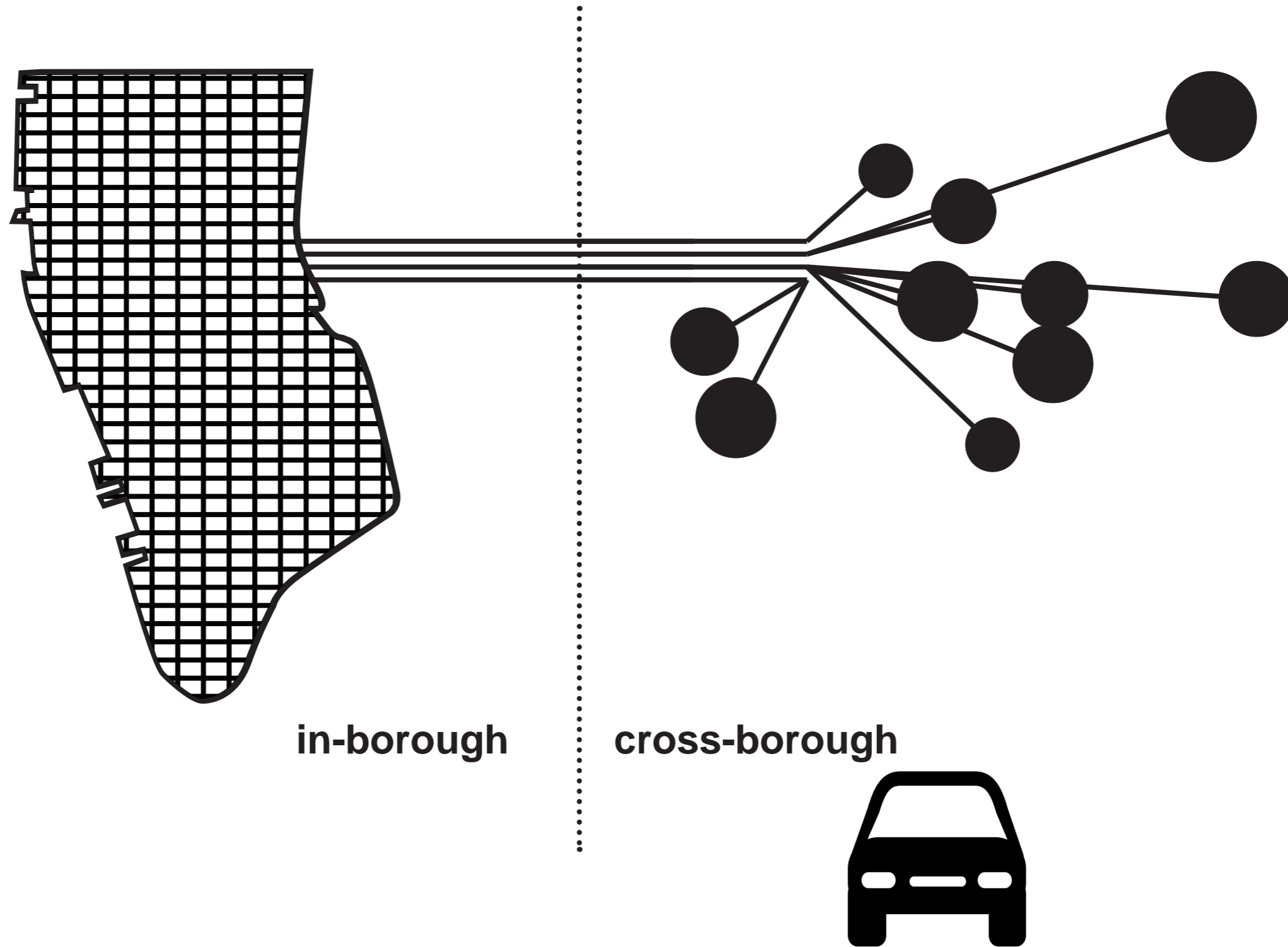
Cross-borough and In-borough

TRANSPORT

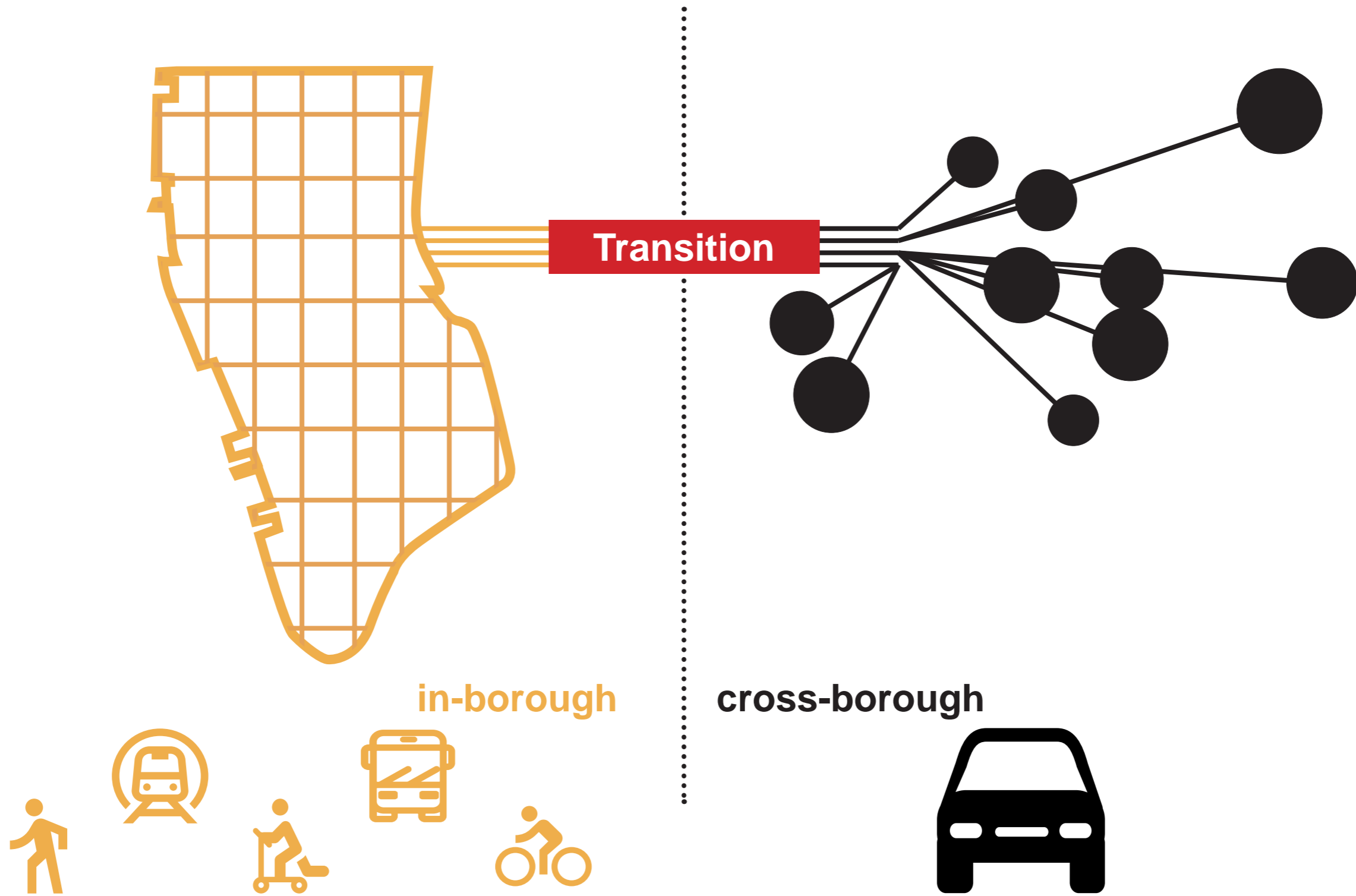
Cross-borough: from Residence to the Border



In-borough: from the Border to Workplace

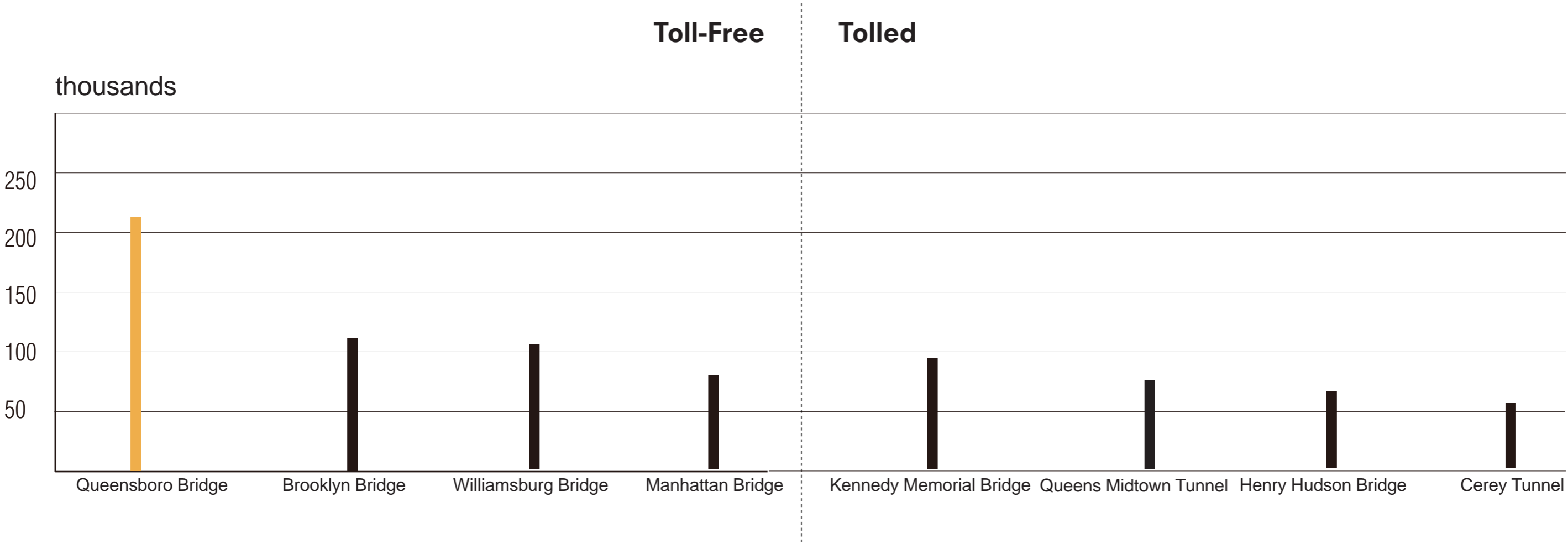


Transition between in-borough and cross-borough



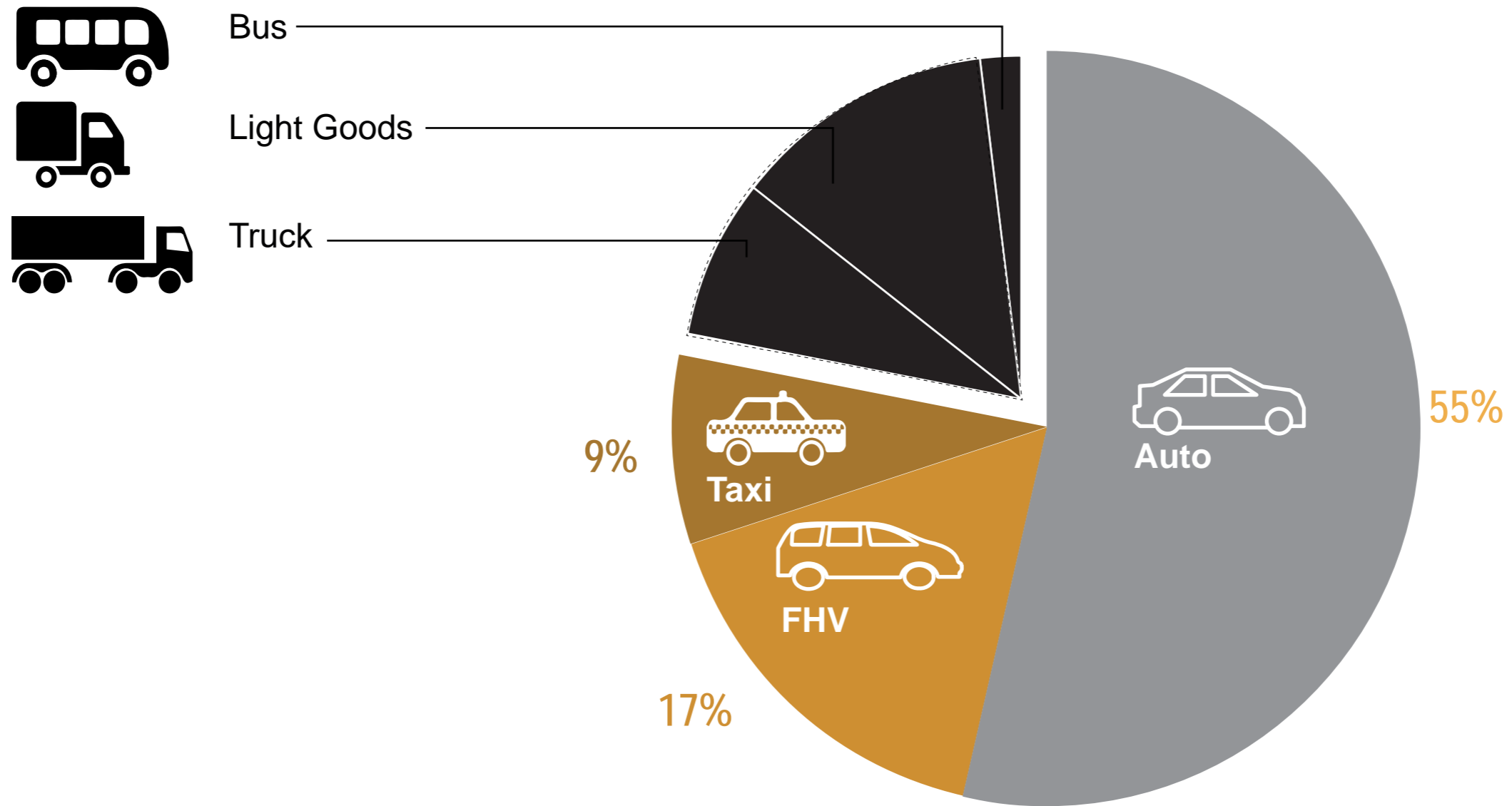
Queensboro Bridge has the **MOST** traffic volume among bridges and tunnels directly connected to Midtown.

Daily Traffic Volume (both direction)

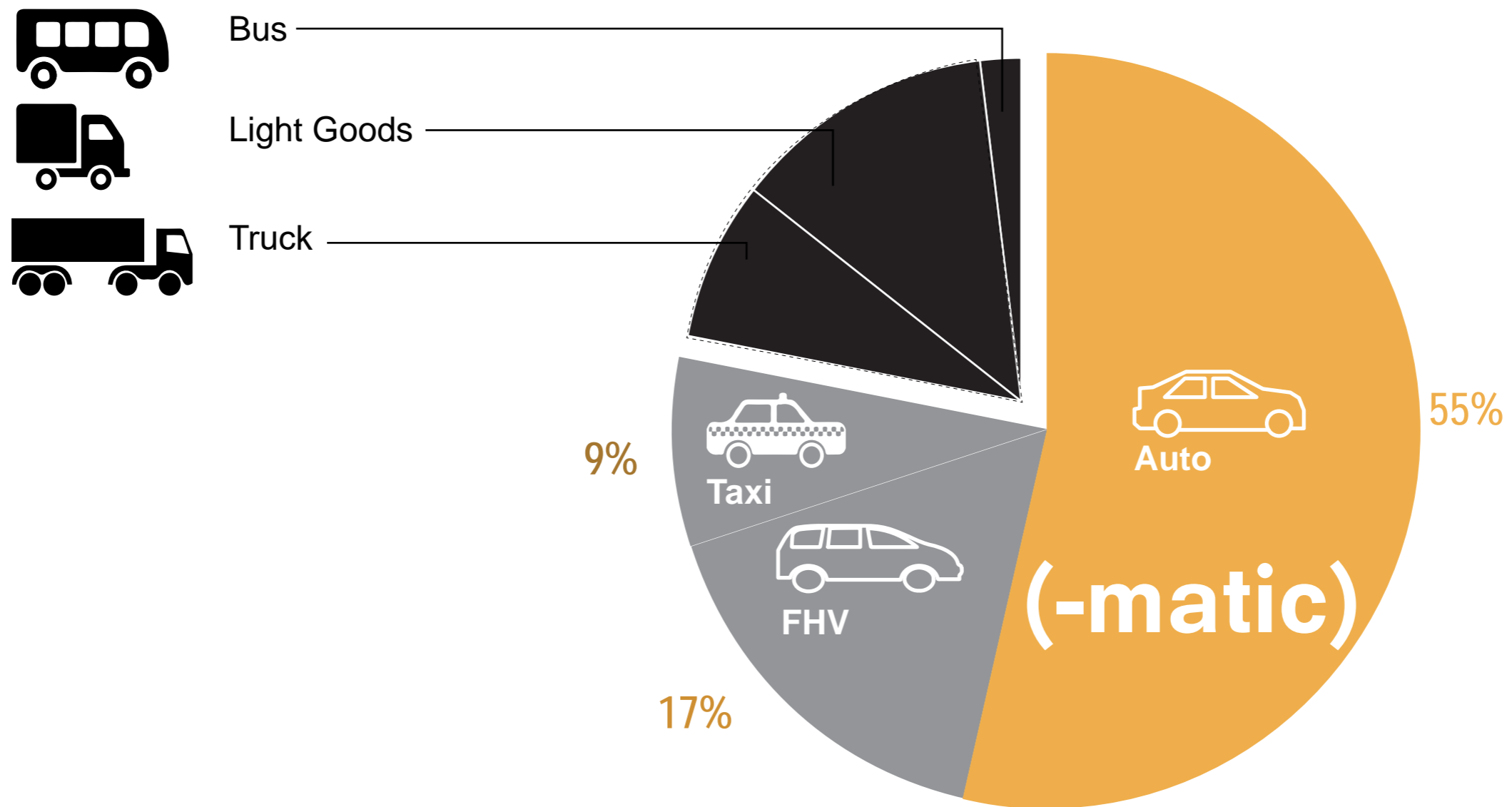


NYC Bridge Traffic Report 2016, DOT

The hub can provide Taxis and FHVs with **PICK-UP & DROP-OFF POINTS.**



The hub can provide **PARKING SPACES,**
that also support **SELF-DRIVING & RIDE-SHARING CARS.**



Tesla's "Robotaxi" plan in 2020: **SELF-DRIVING & RIDE-SHARING NETWORK**

HIGH UTILIZATION RATIO

FASTER TRANSITION

LOW CONSUMPTION

EXTRA CAPACITY

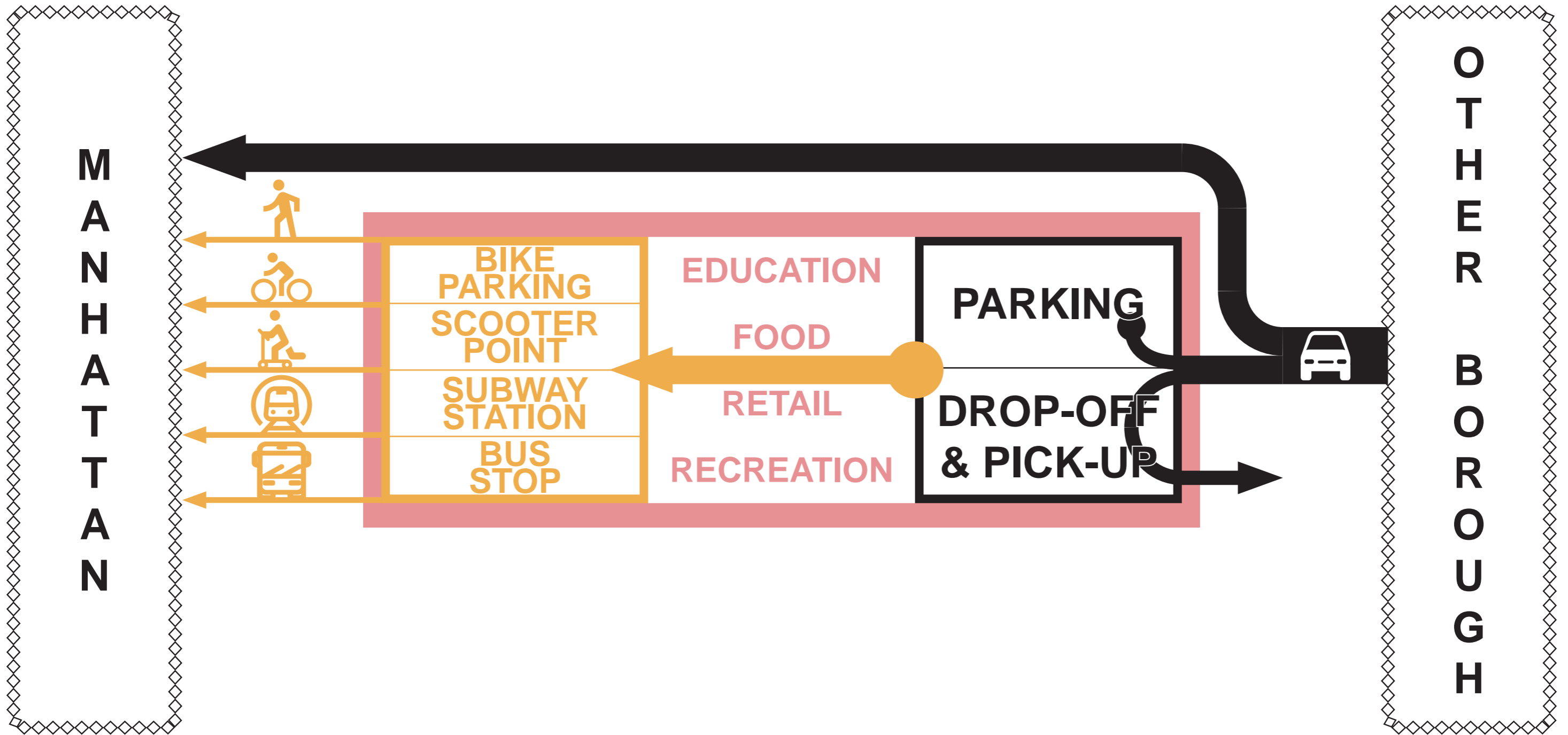
AFFORDABLE

RIDE-SHARING APP



TESLA

Functional Concept



PARKING

**DROP-OFF
& PICK-UP**

EDUCATION

FOOD

RETAIL

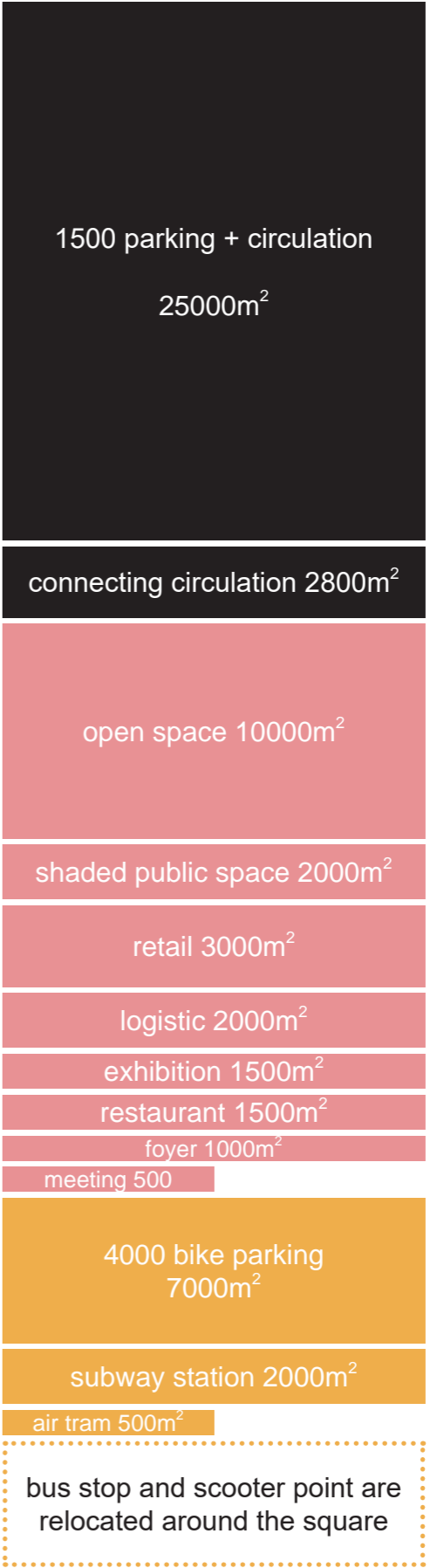
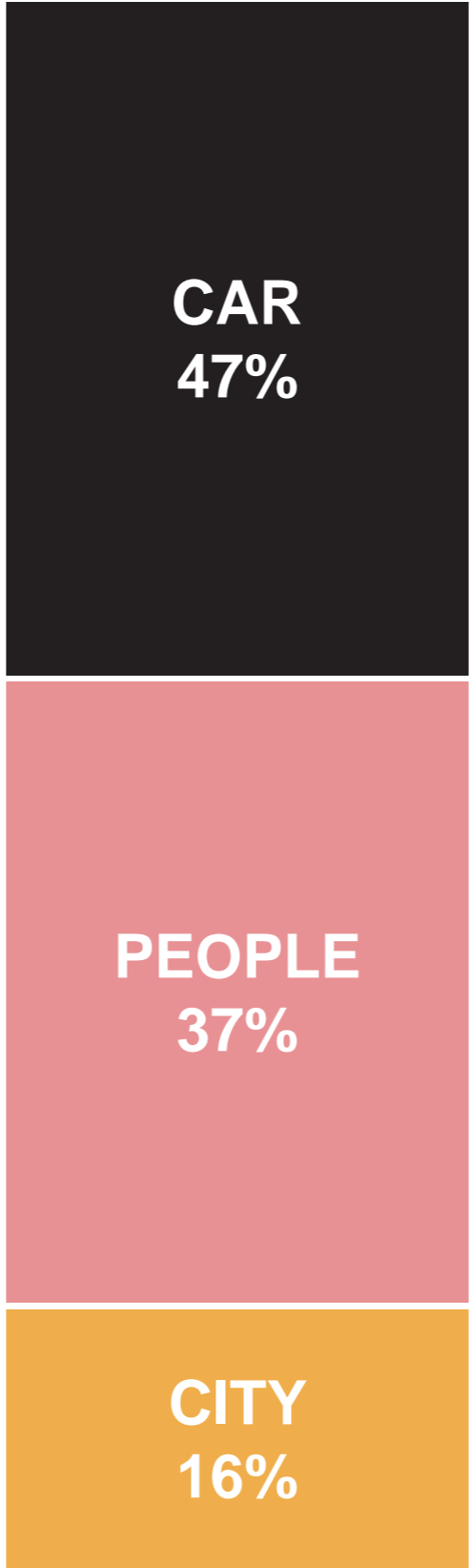
RECREATION

**BIKE
PARKING**

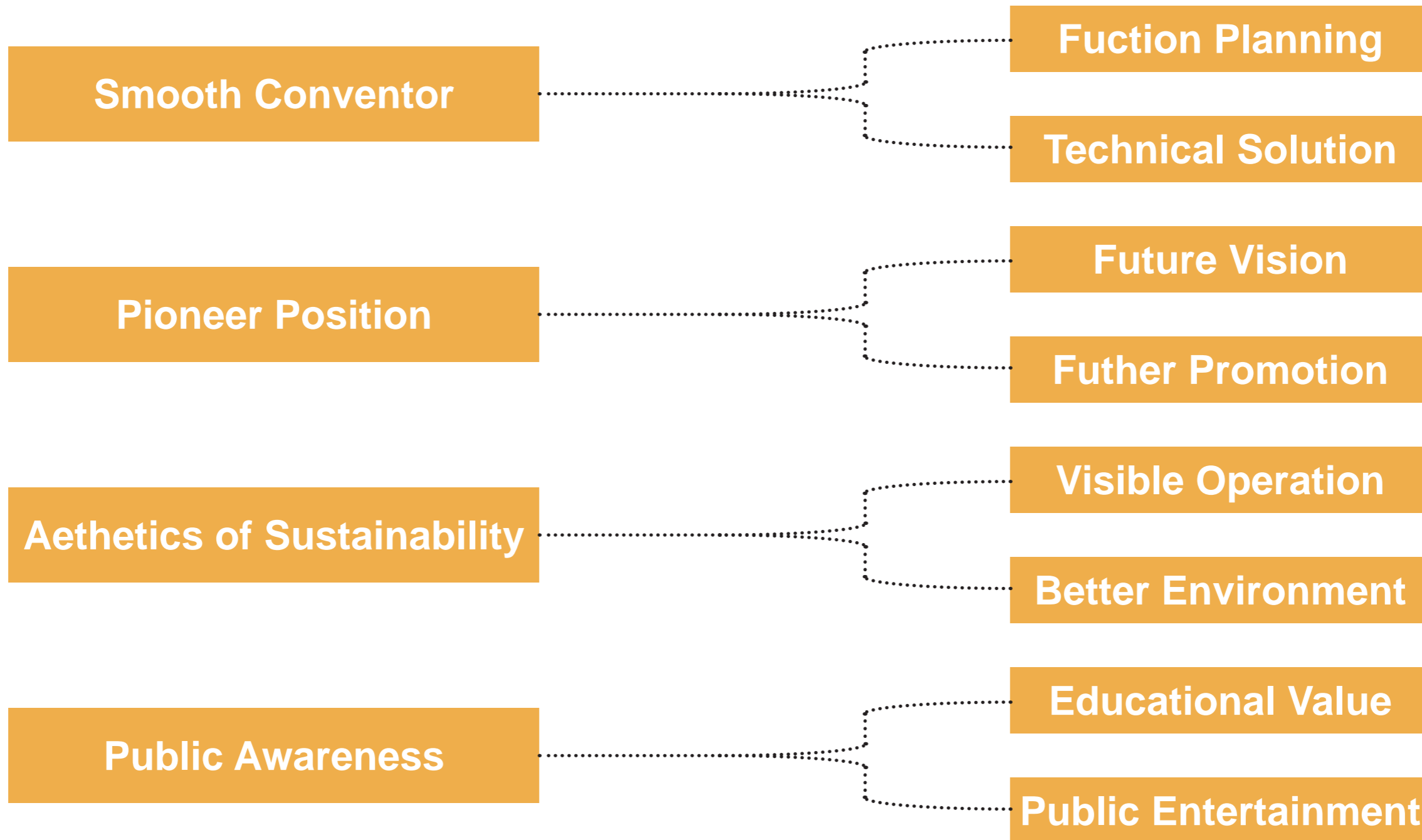
**SCOOTER
POINT**

**SUBWAY
STATION**

**BUS
STOP**



AMBITION





Urban Improvement

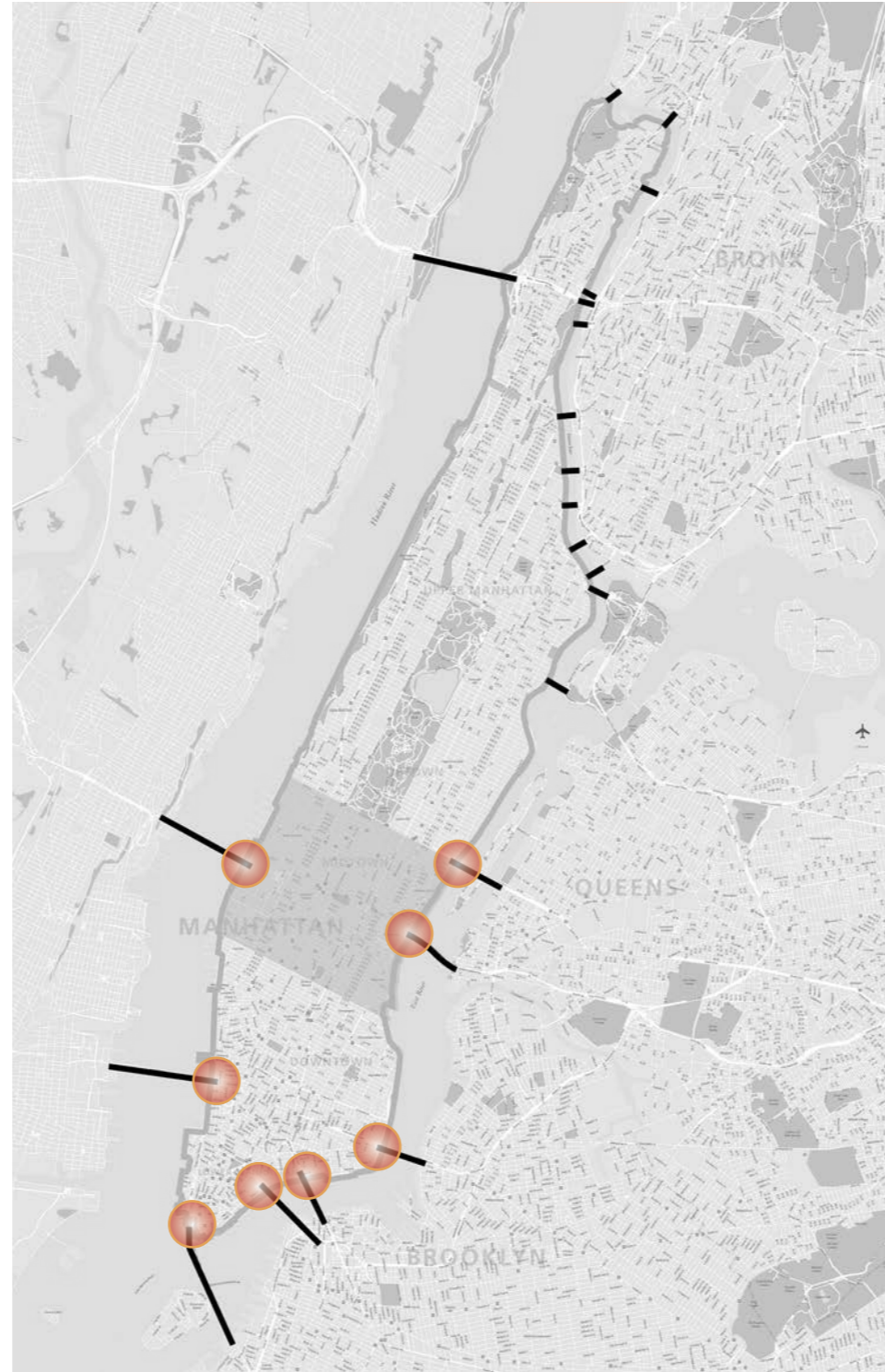


Group Vision

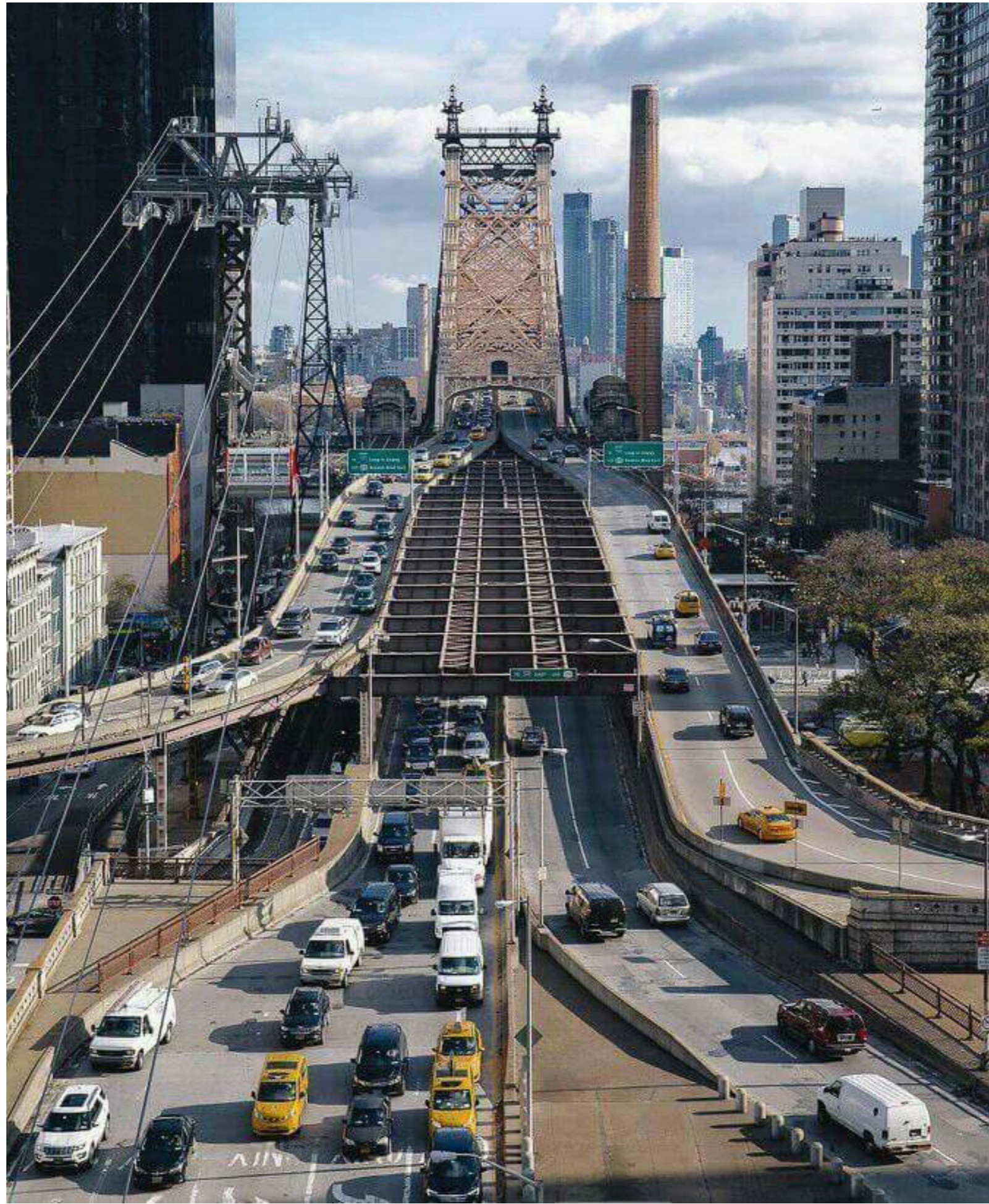




Long-term Development: Manhattan Central Business District



SITE



Location:
the West End of Queensboro Bridge



Zoning



Transportation Facilities: 3 Bus Stops



Transportation Facilities: Subway Line



Transportation Facilities: Air Cable Car



Transportation Facilities: Bike Lanes & Shared Bikes



Greenary Corridor: Connection between Central Park and Waterfront



Vacant Lands



UNACCESSIBLE Islands



minty cai flickr

VACANT Land



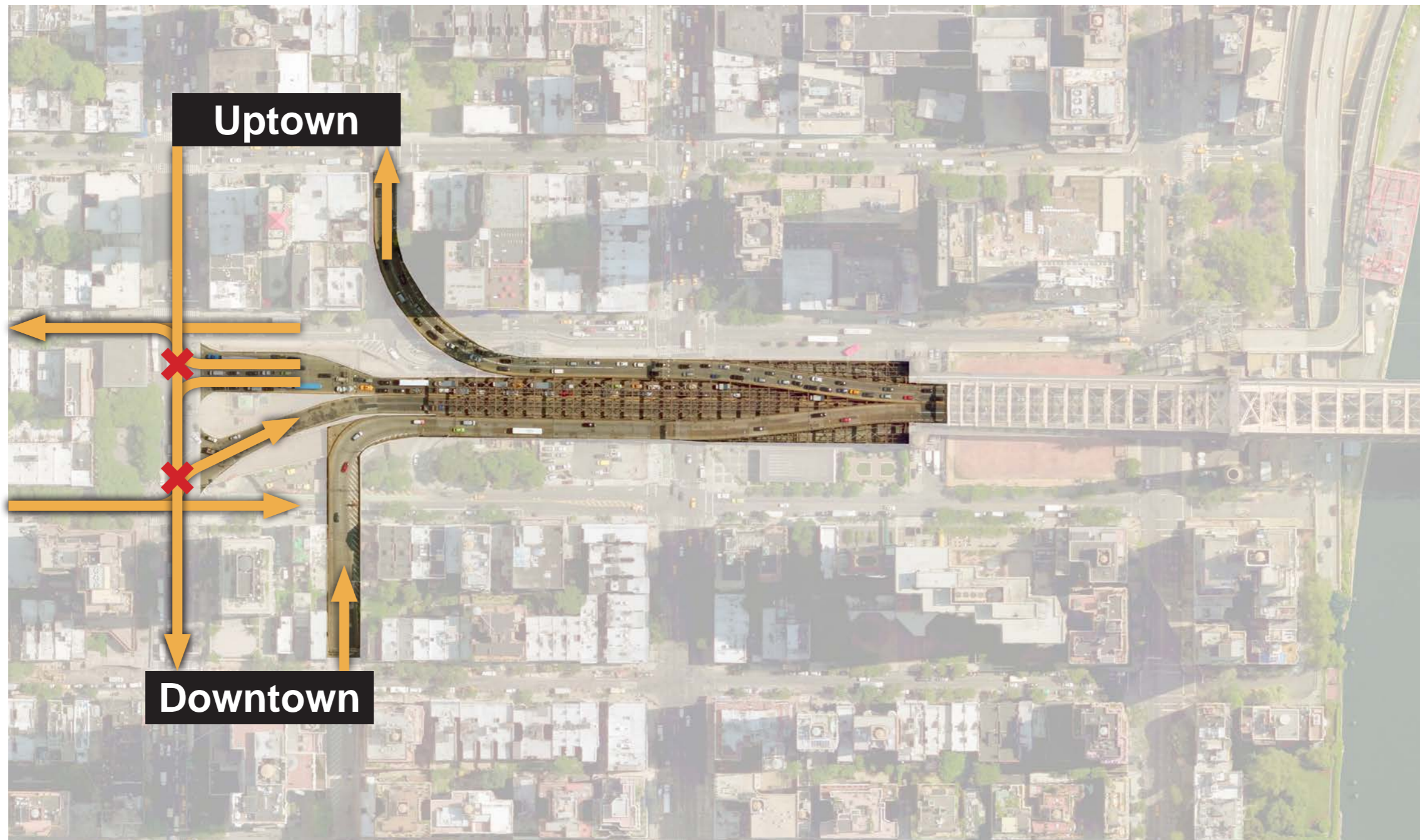
Upper Roadway



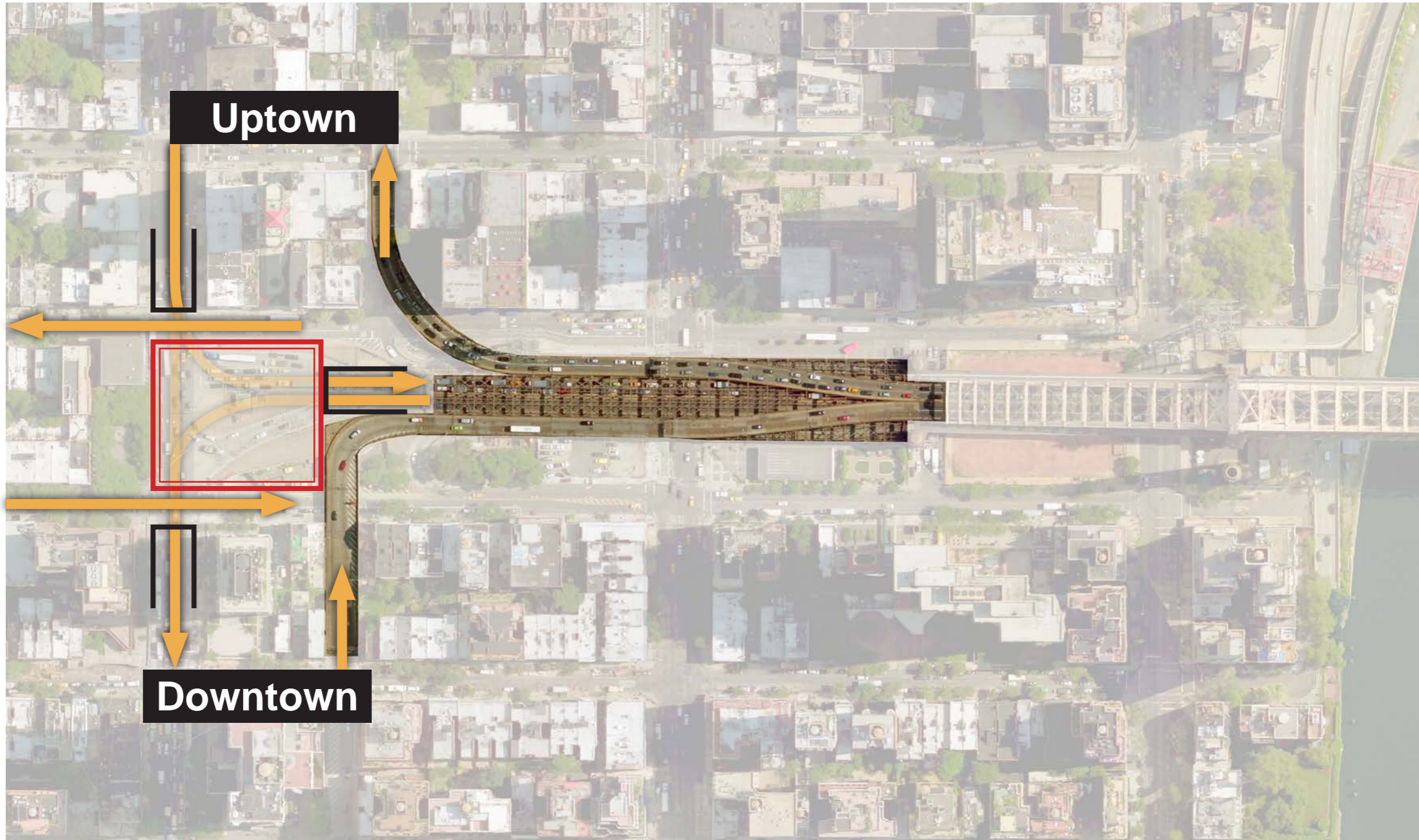
Upper Roadway & Lower Roadway



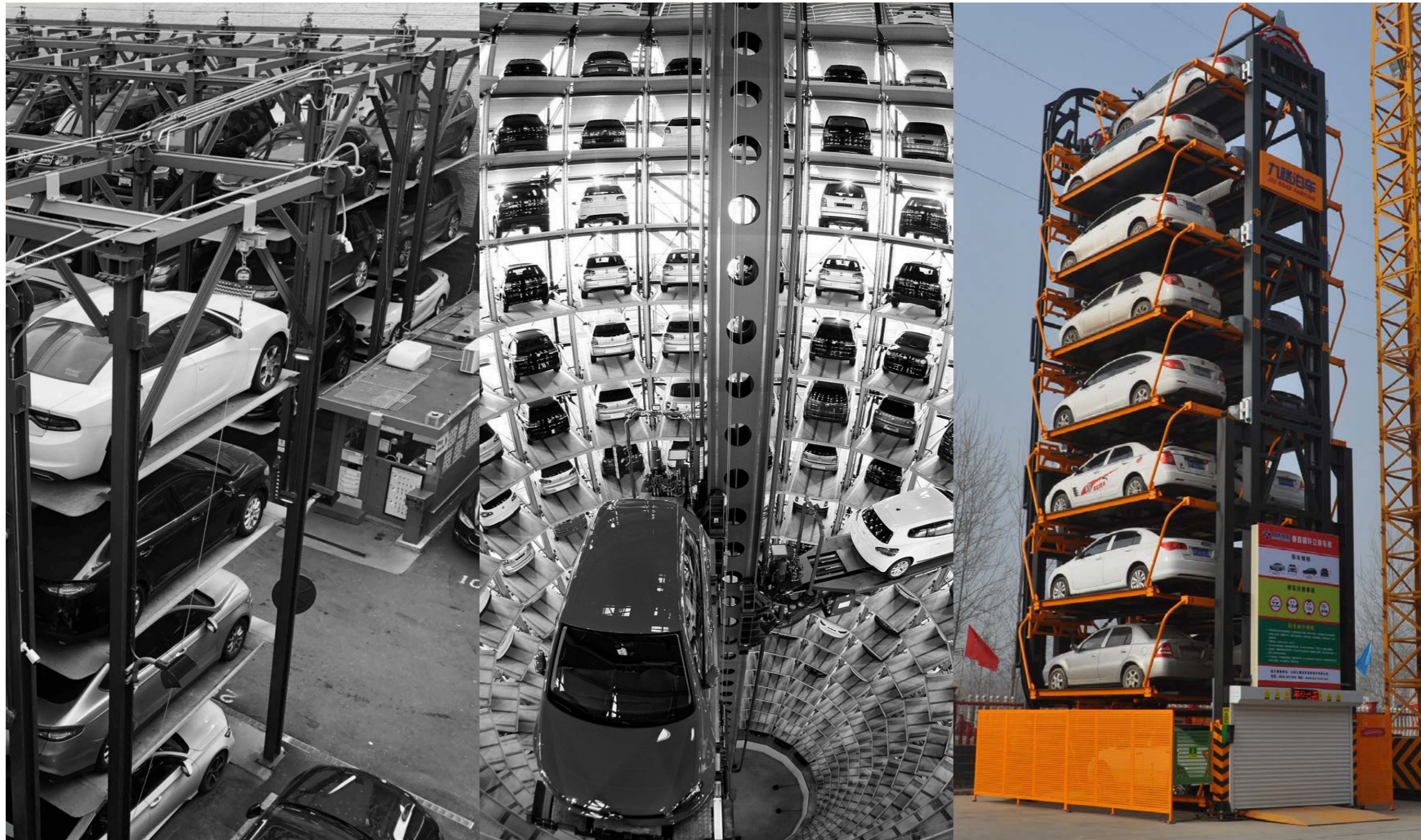
Intersections Decrease the Connection Fluency



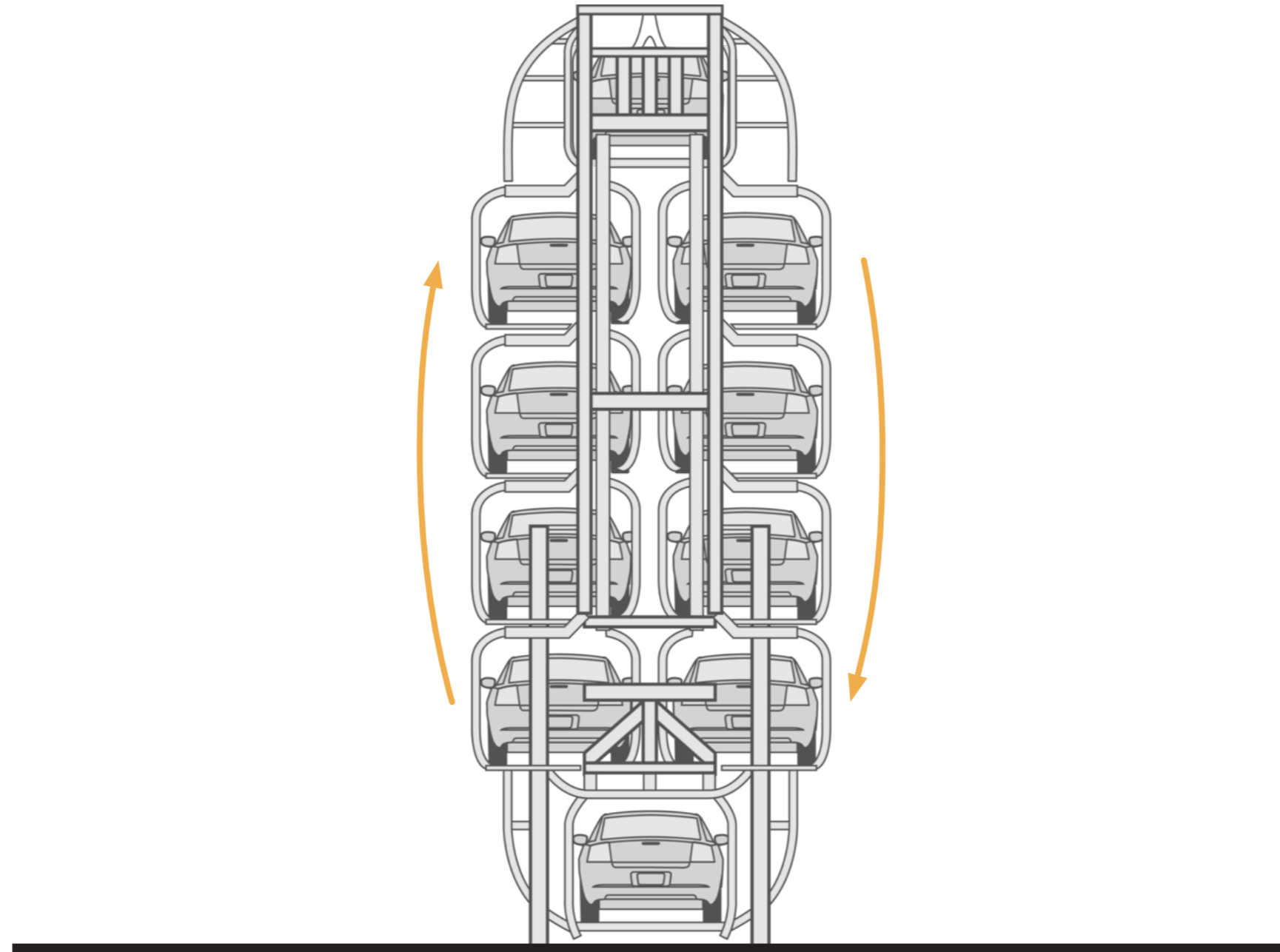
Accessible Land



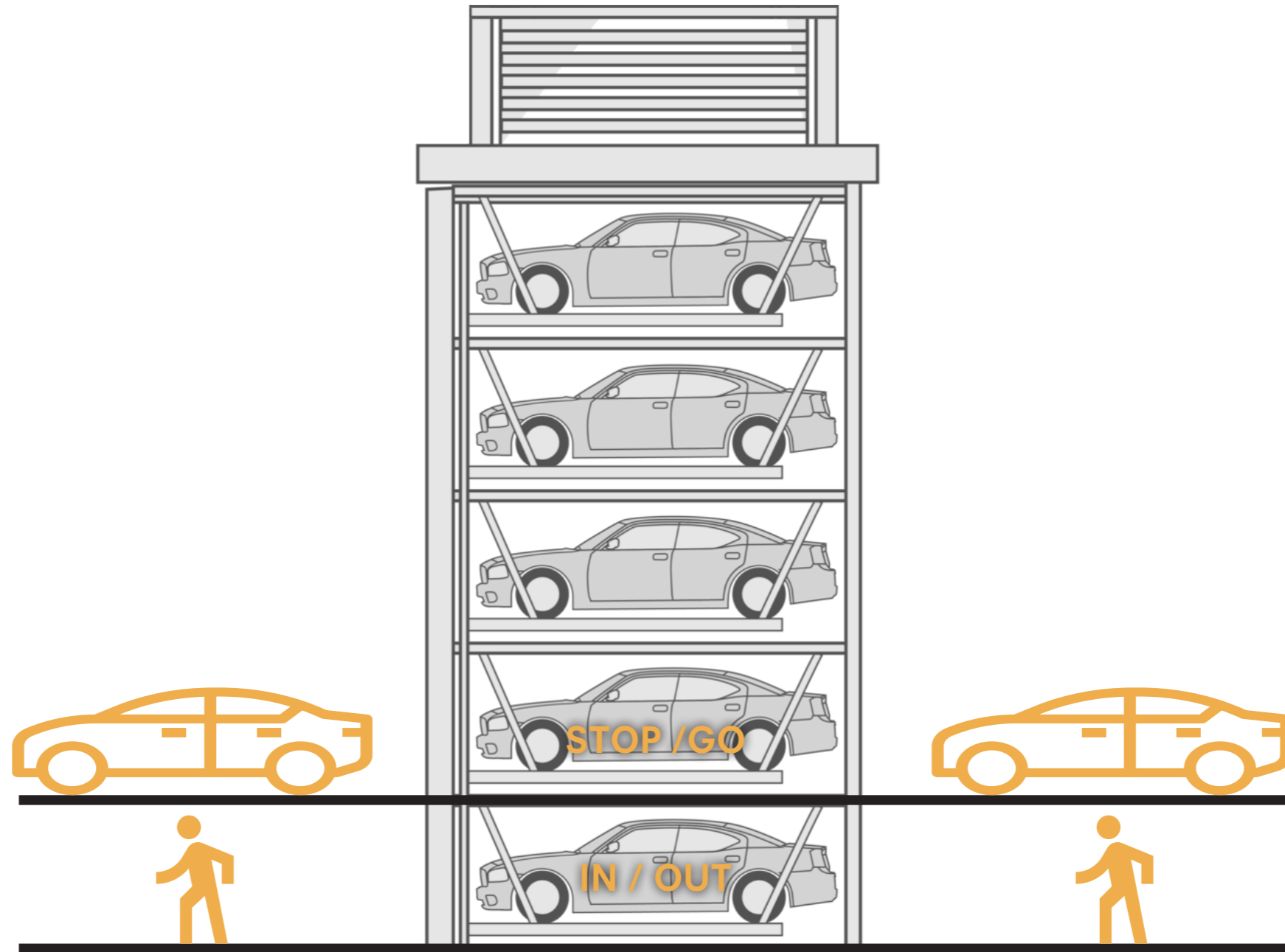
Capacity & Efficiency

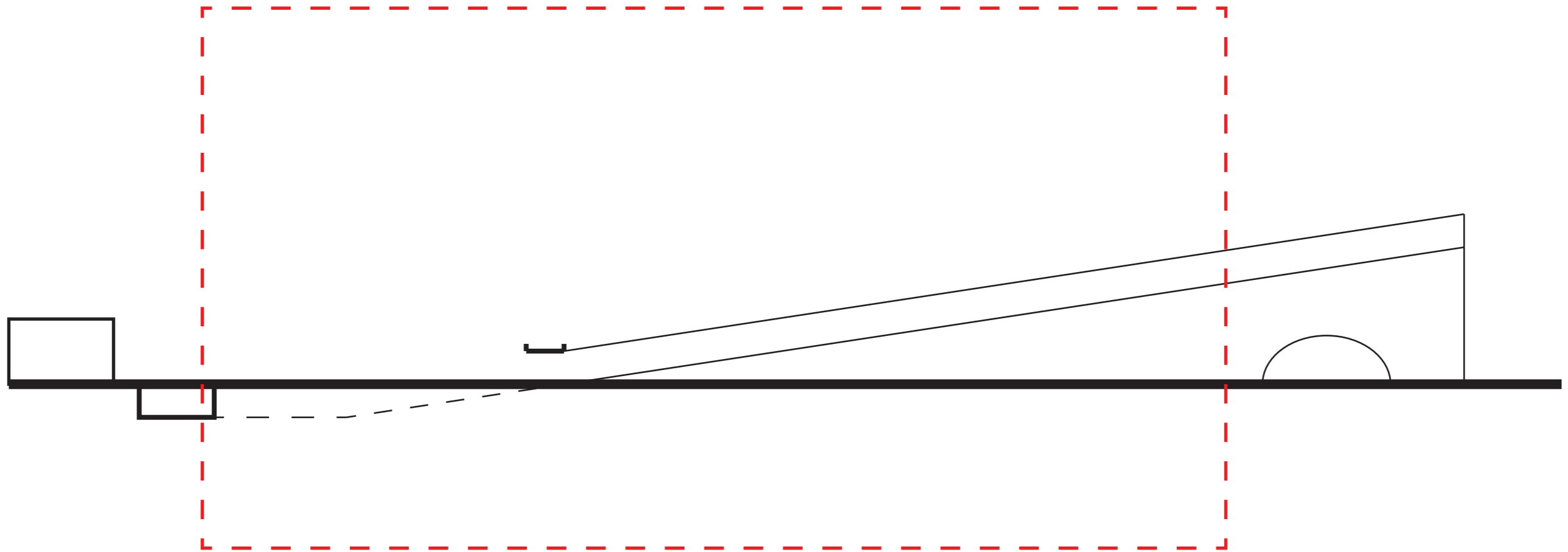


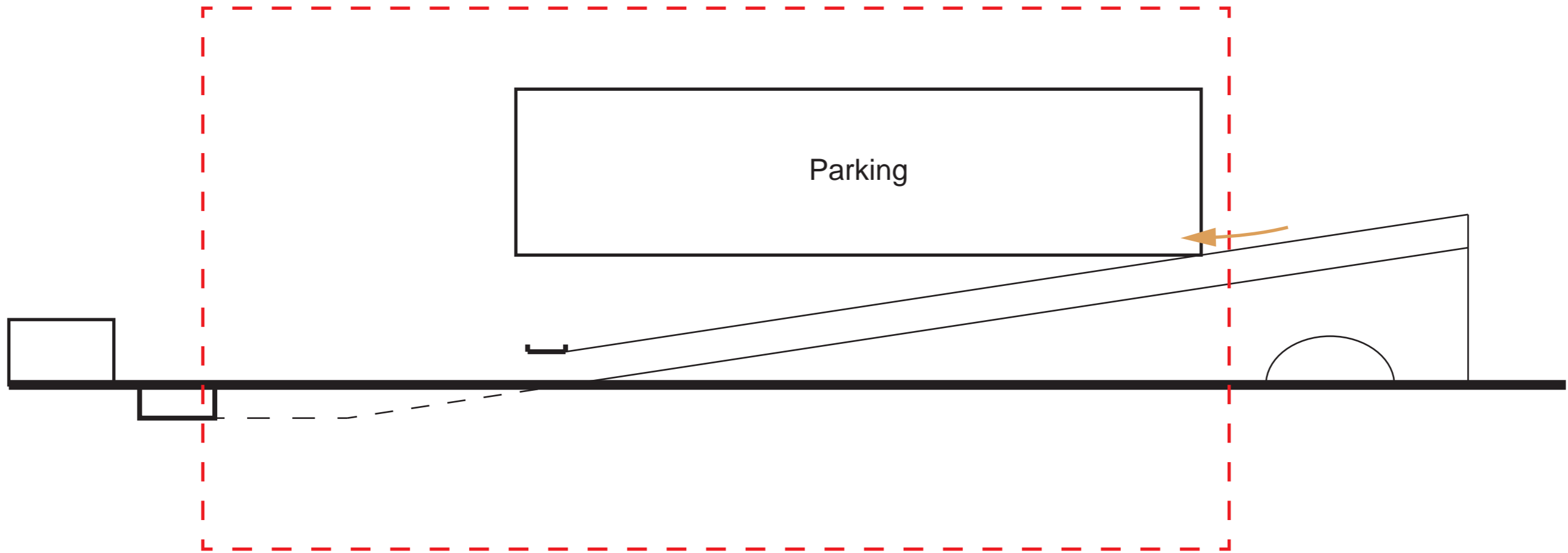
Rotary Parking System

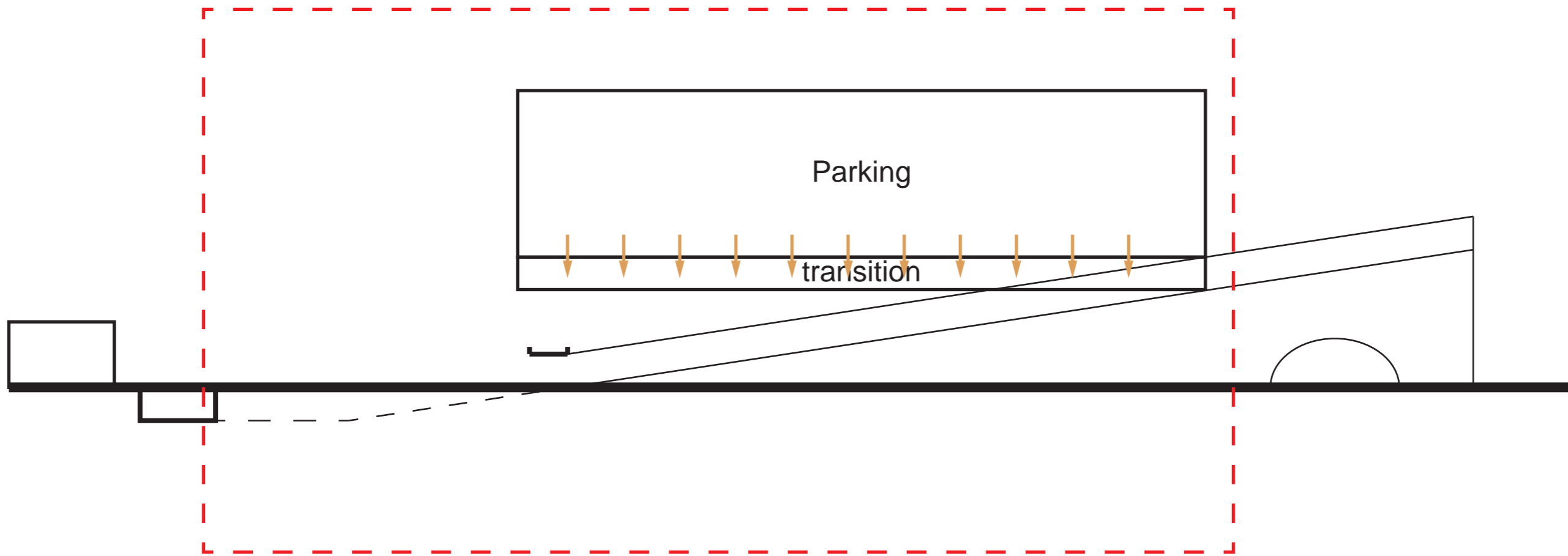


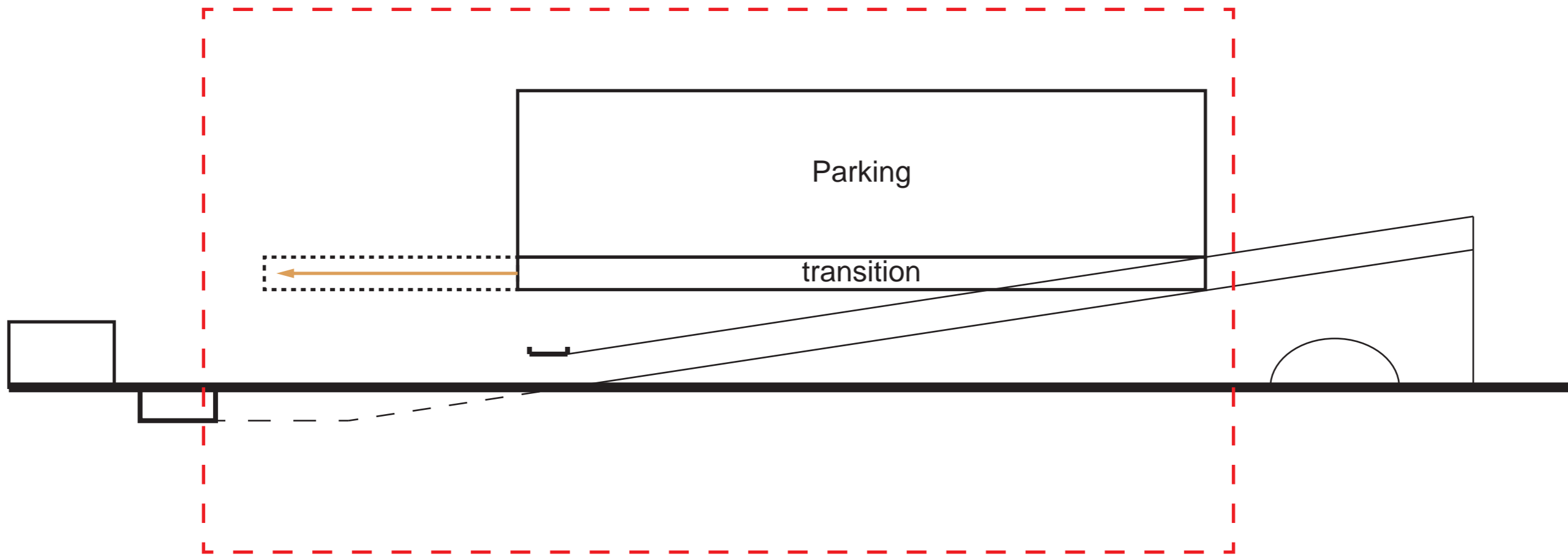
Potential Floor Usage

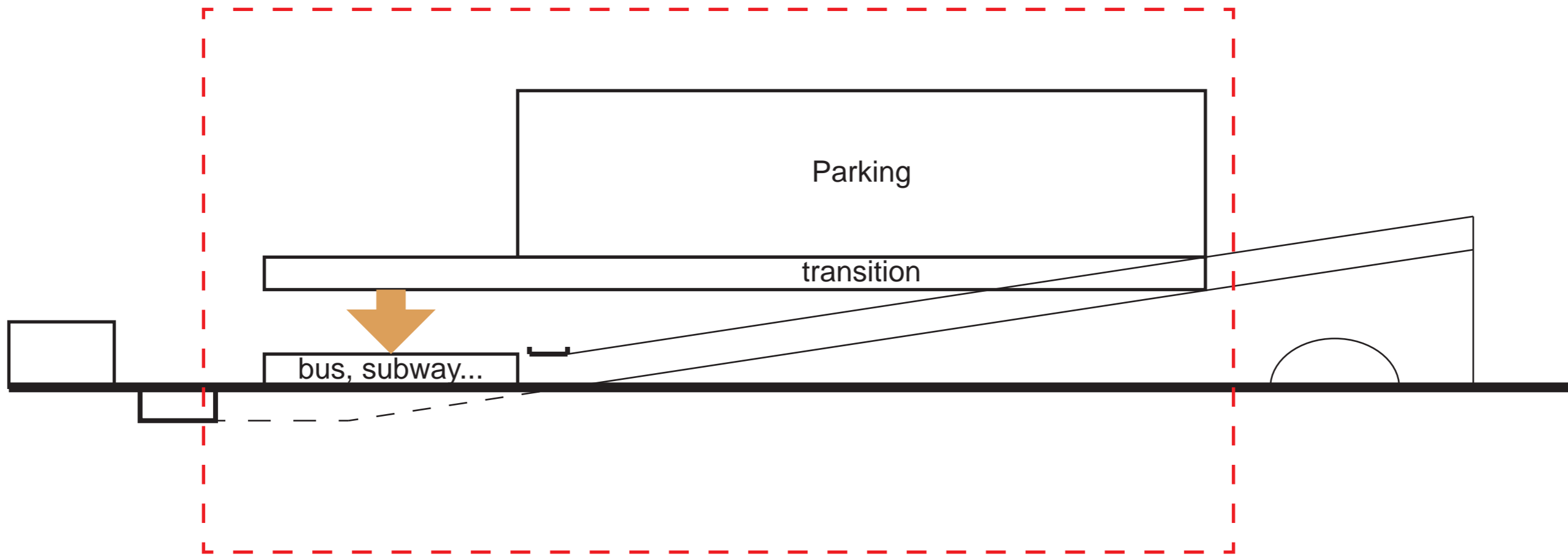


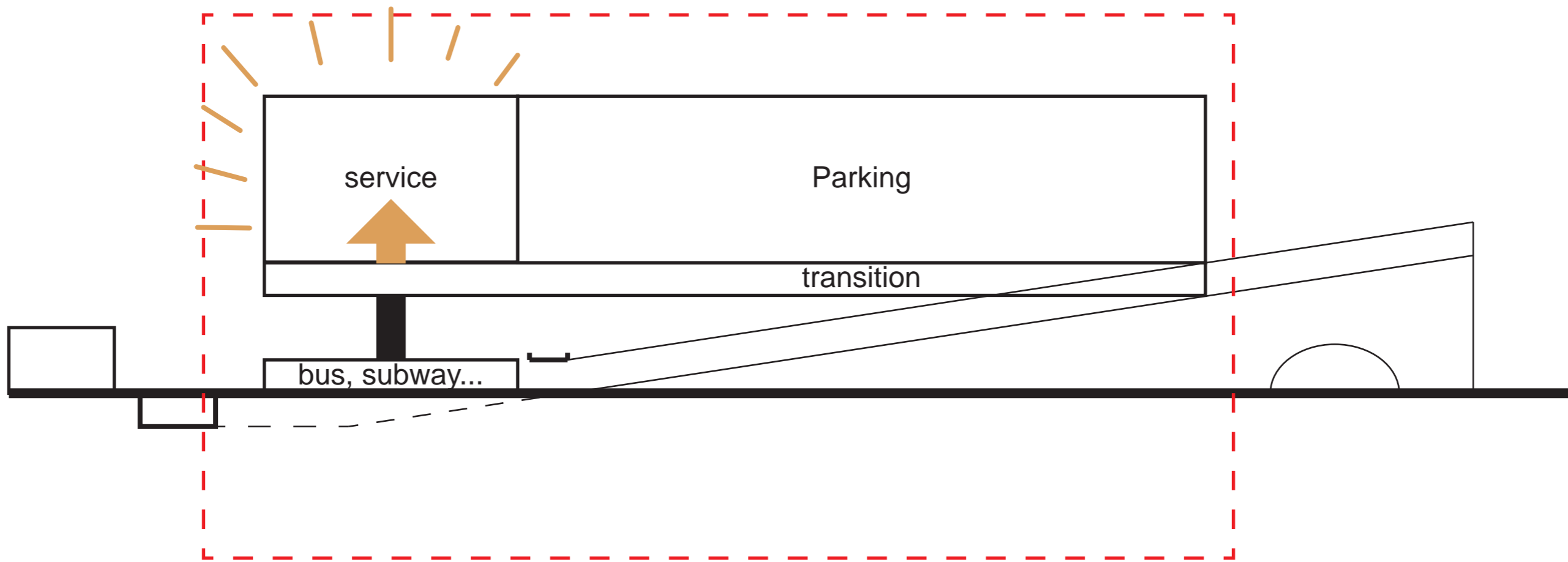


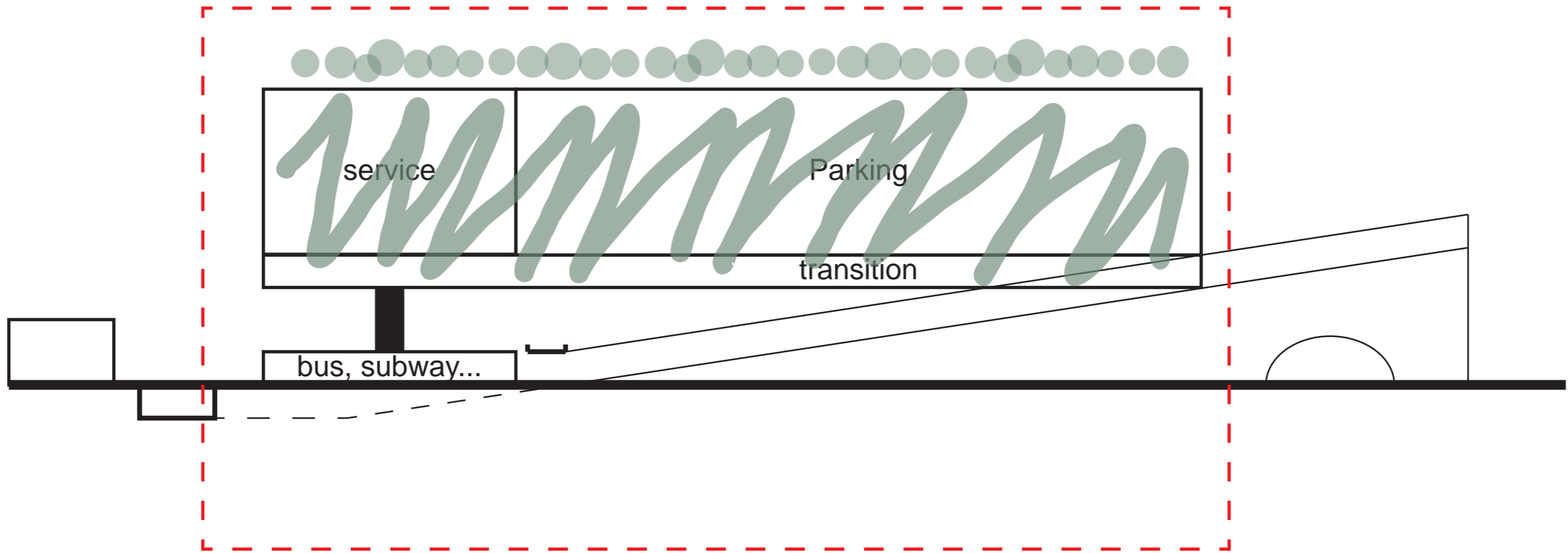


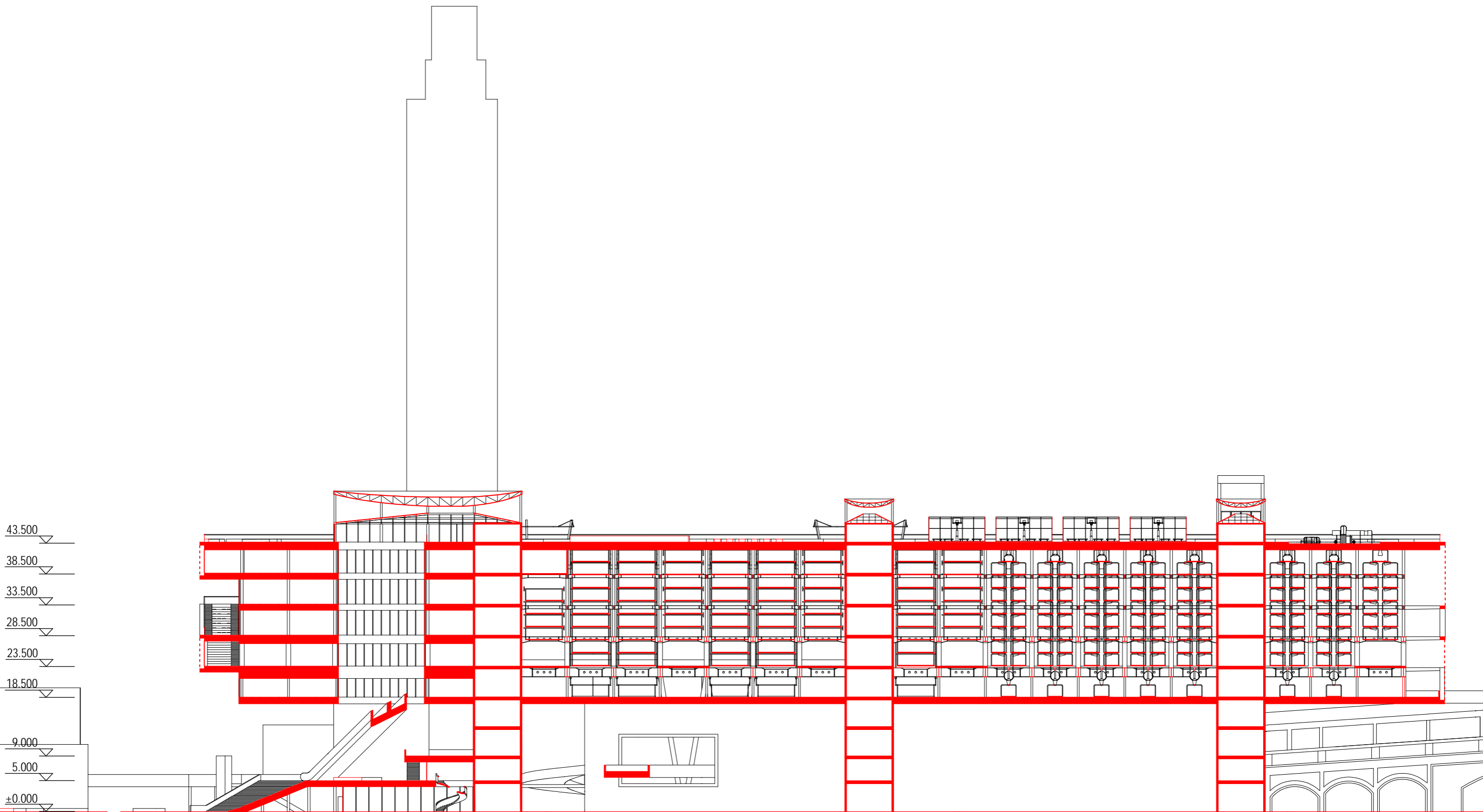




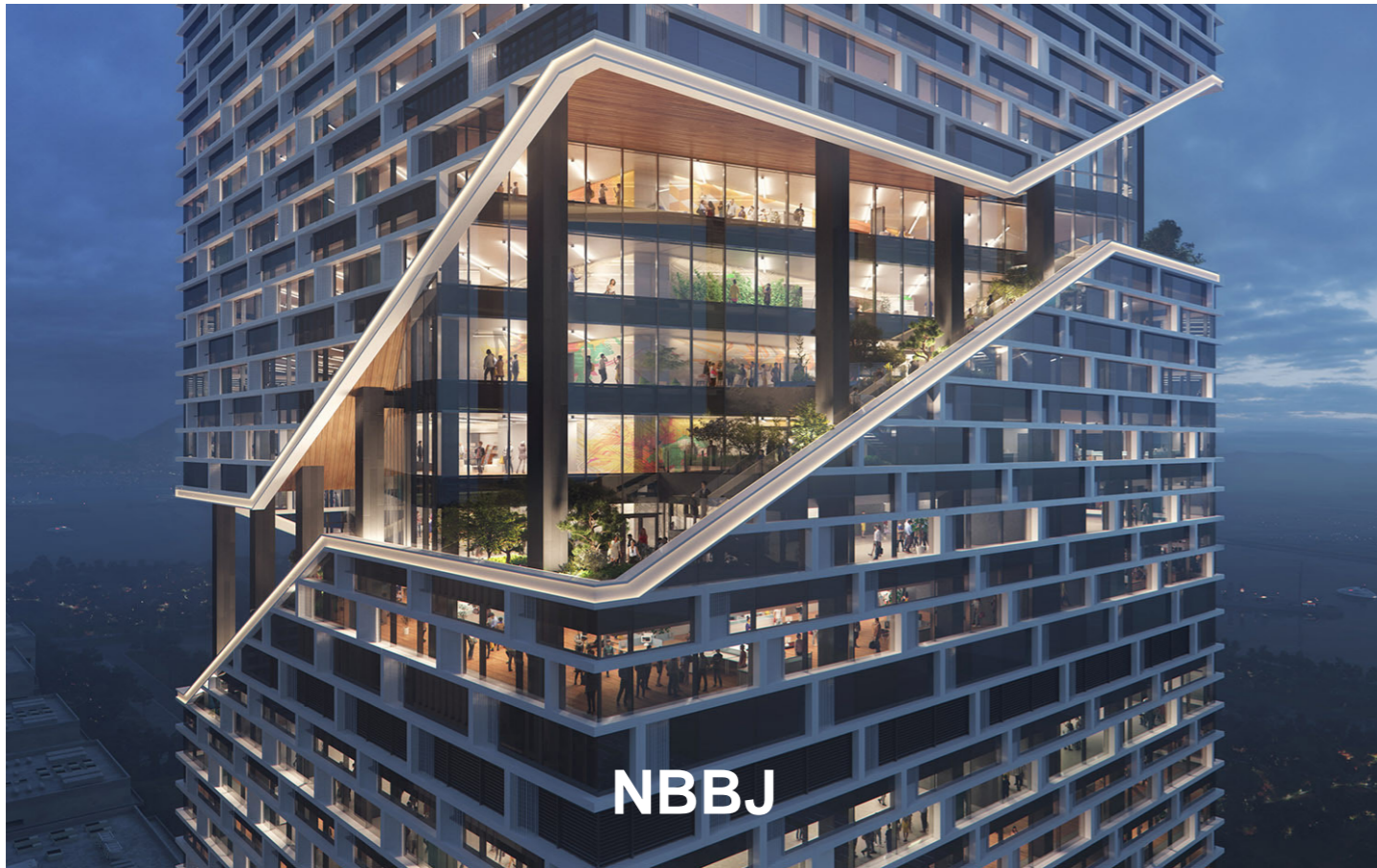








Aesthetics
Sustainability
Stability
Functionality



NBBJ



TADAO ANDO



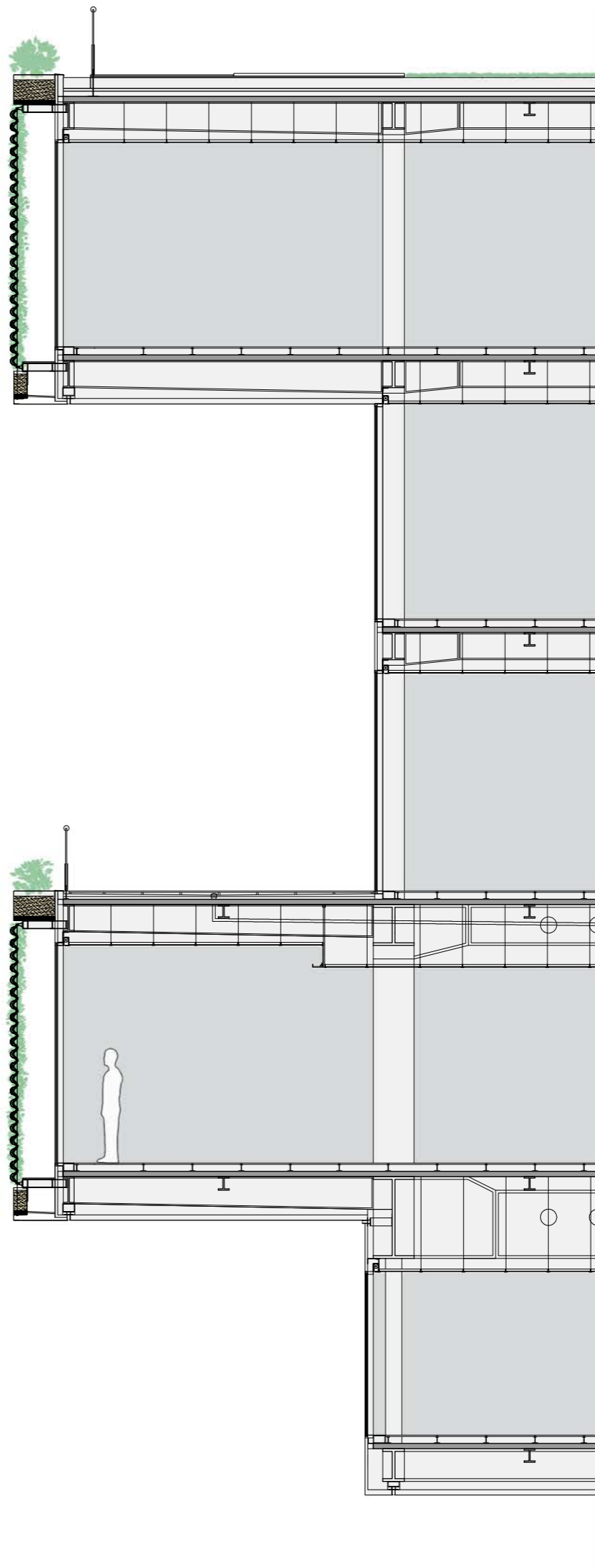
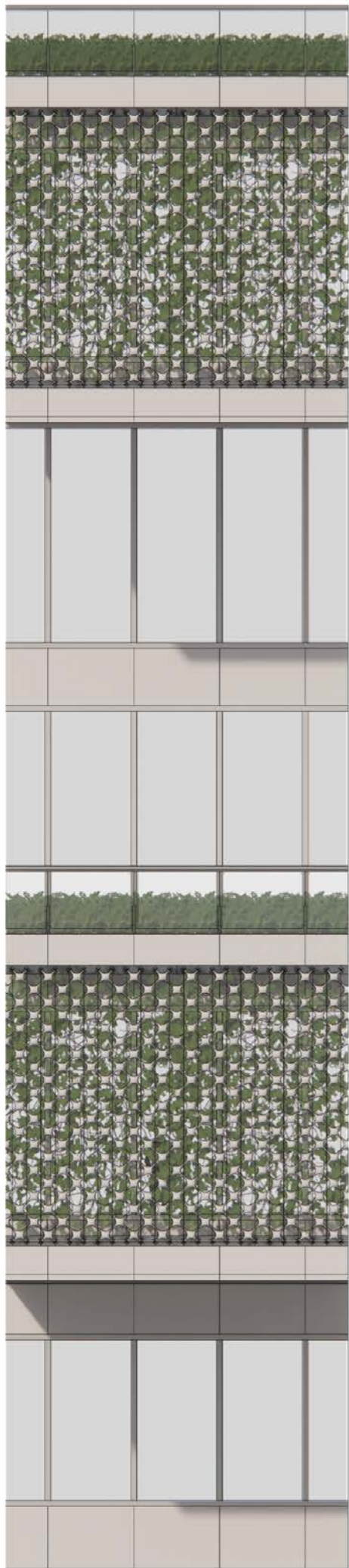
DOOJIN HWANG



AEDAS



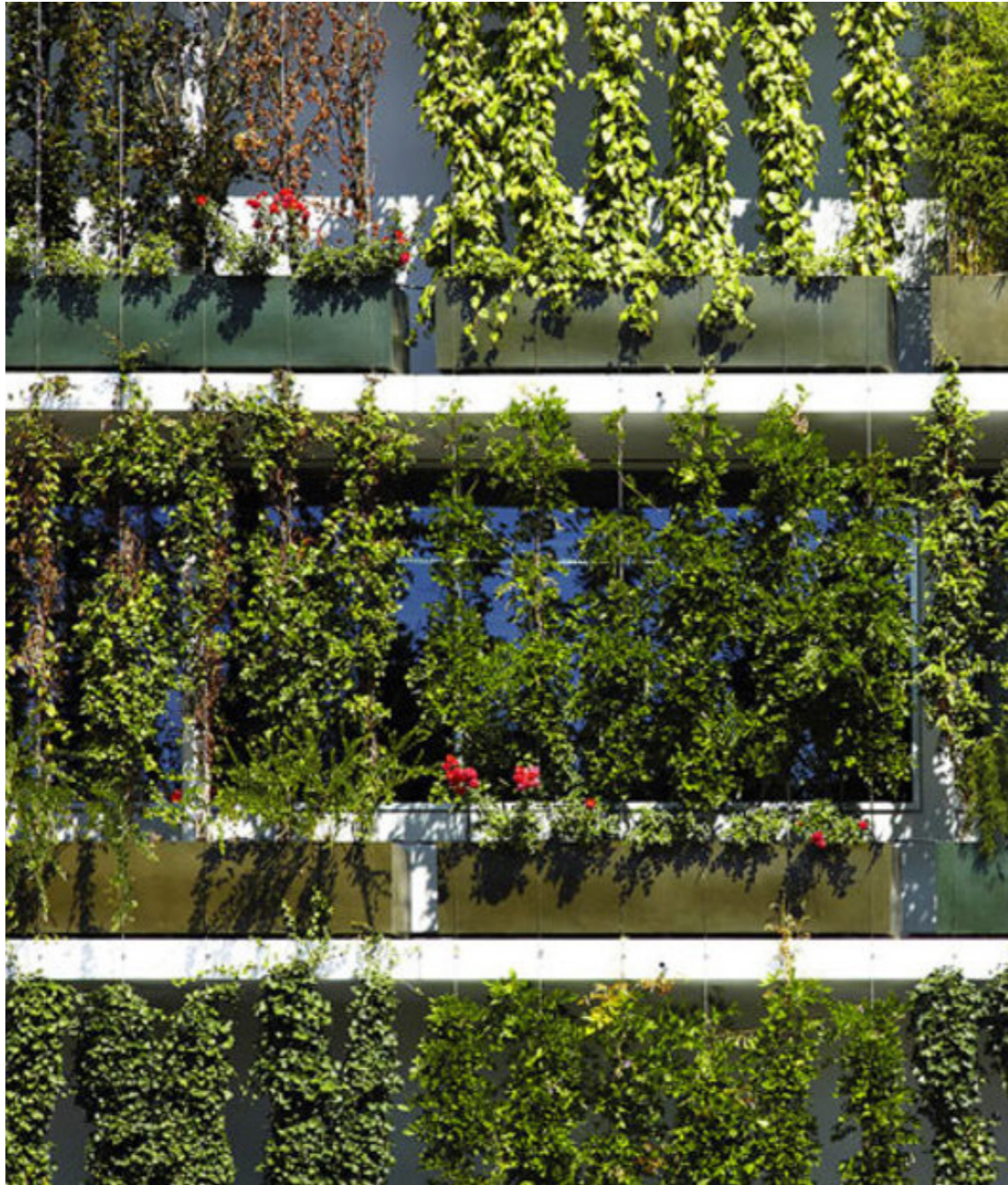




Green Facade



Green Facade



Titaniumdioxide Facade



Titaniumdioxide Facade



Green Titaniumdioxide Facade



+

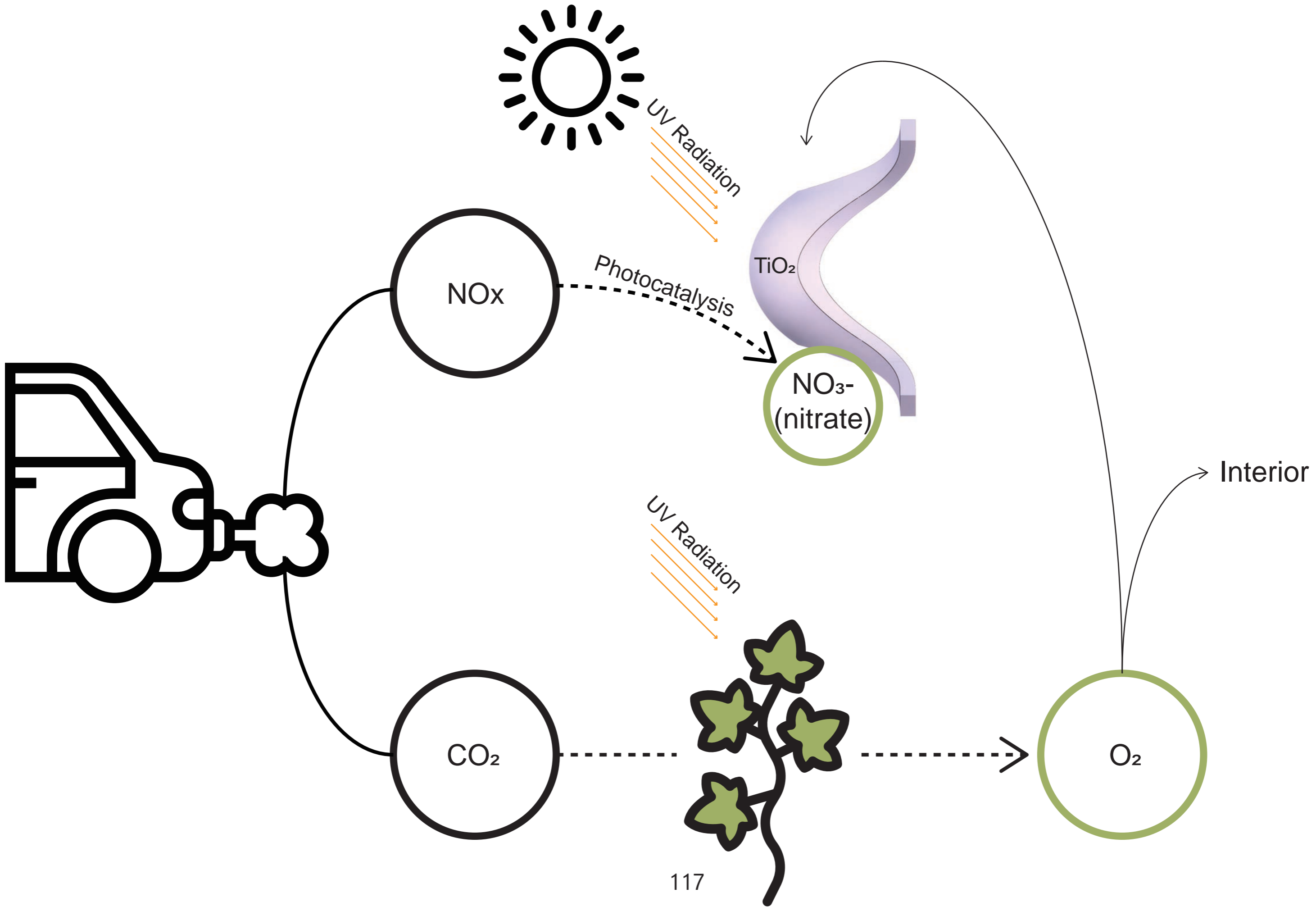


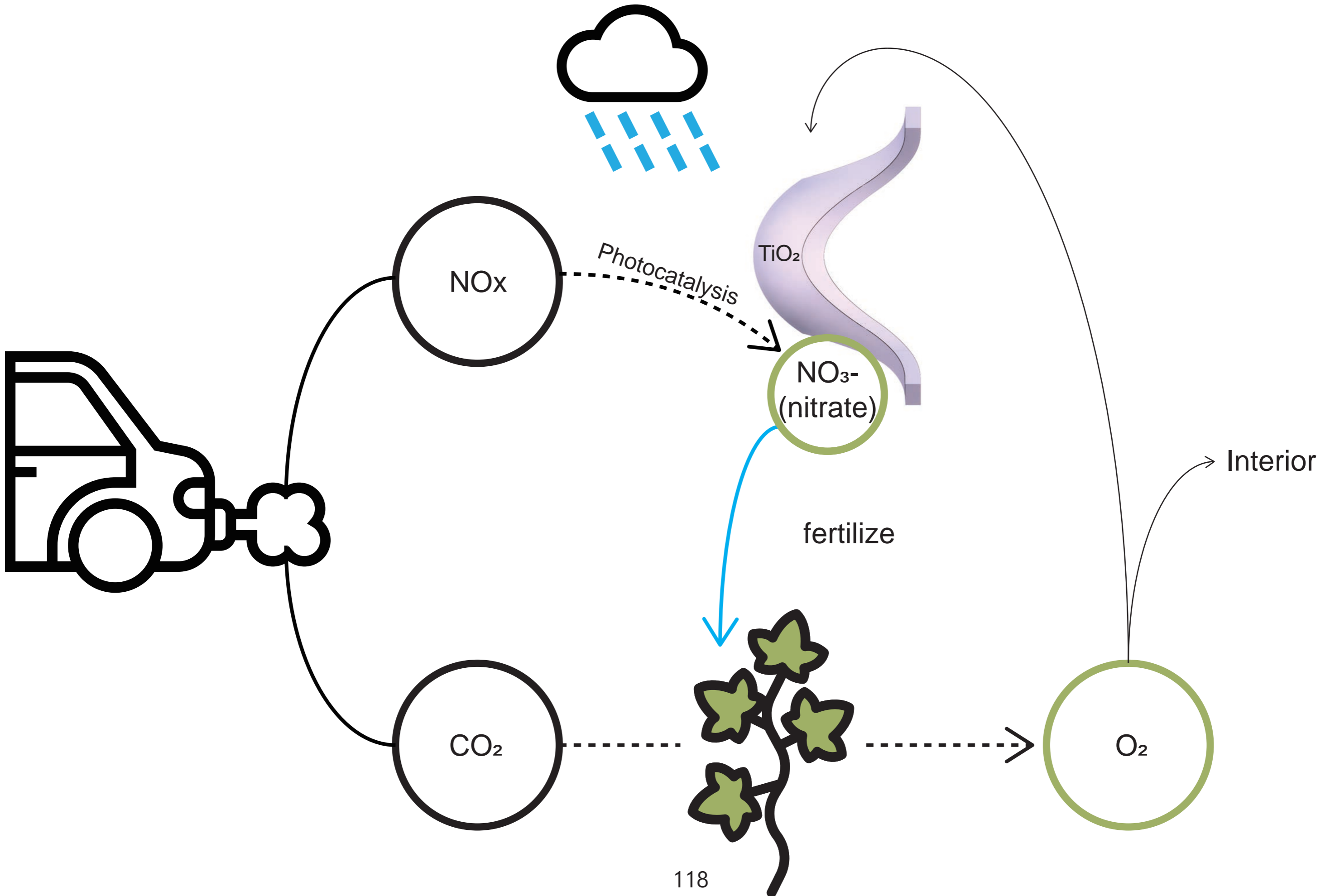
Green Titaniumdioxide Facade



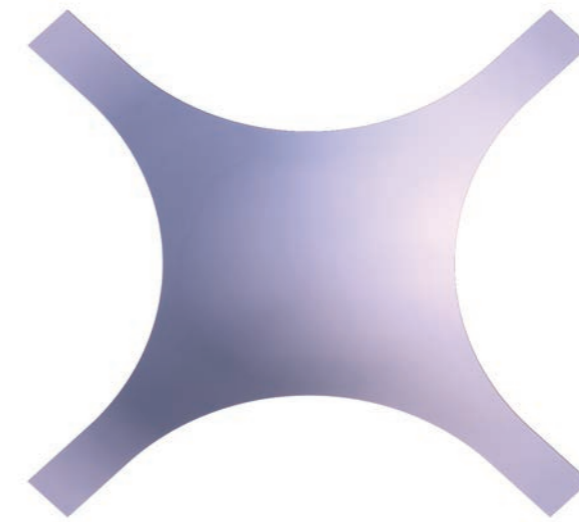
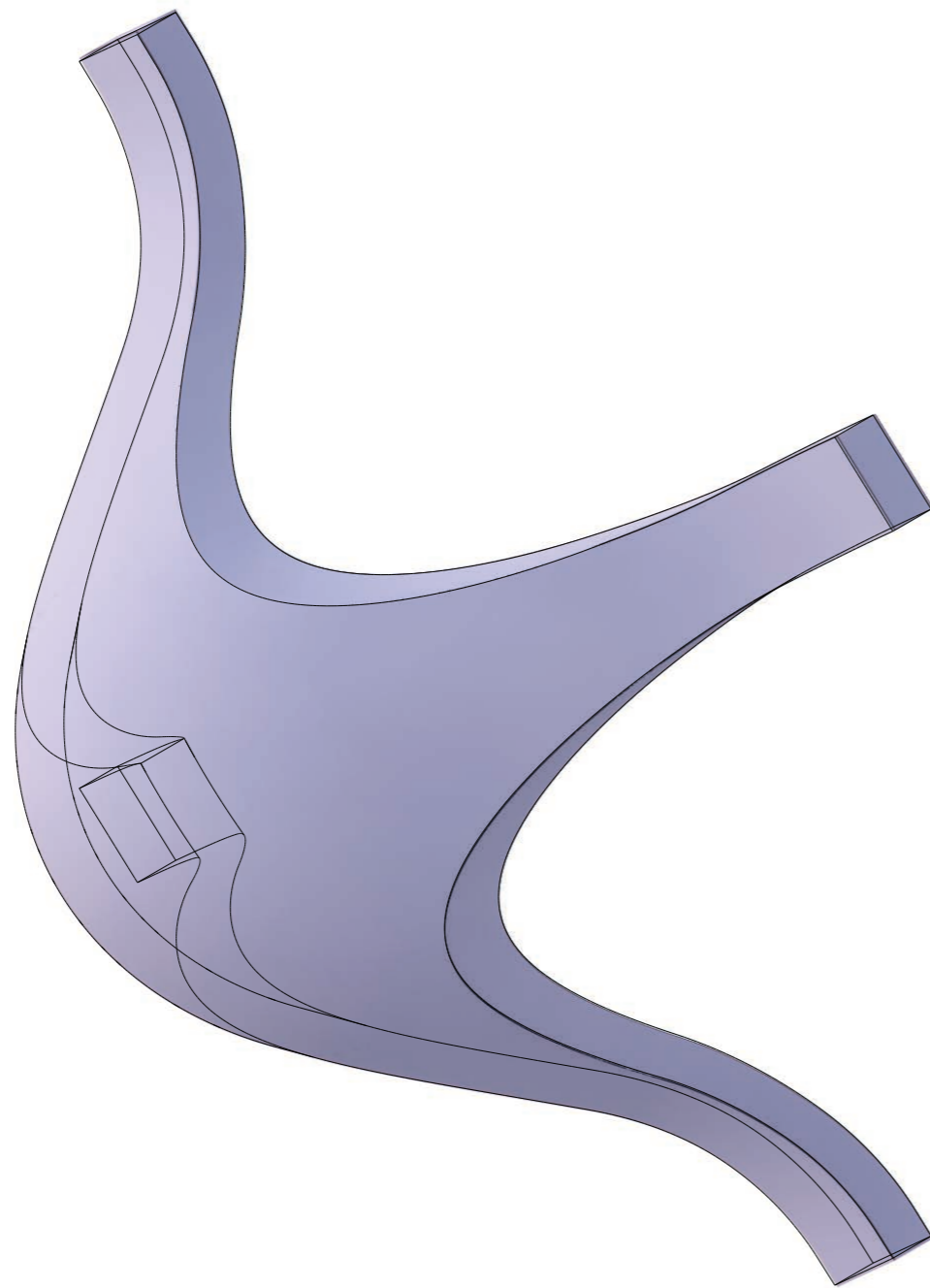
?







Titanium Panel coated with Titanium Dioxide

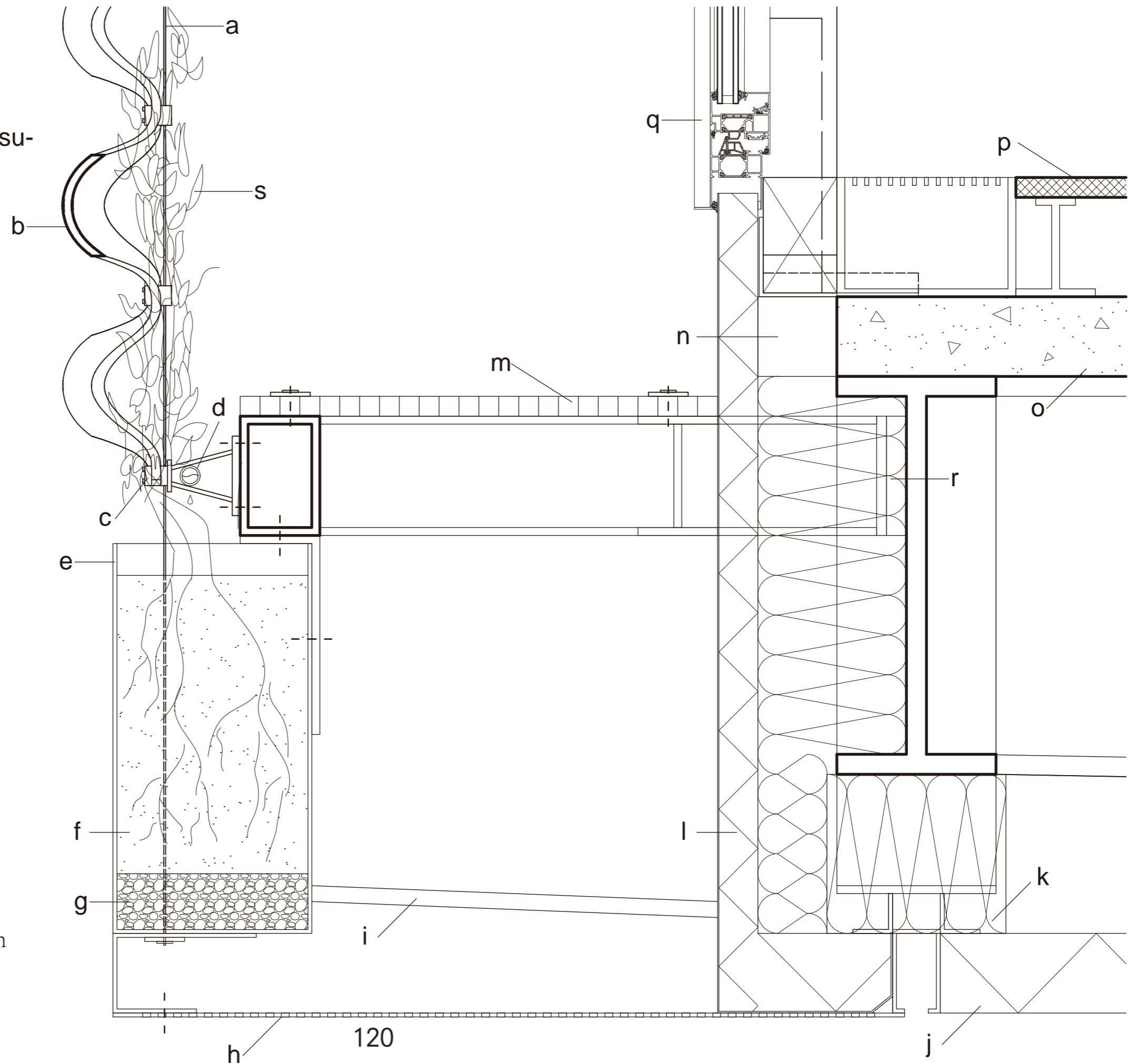


25cm

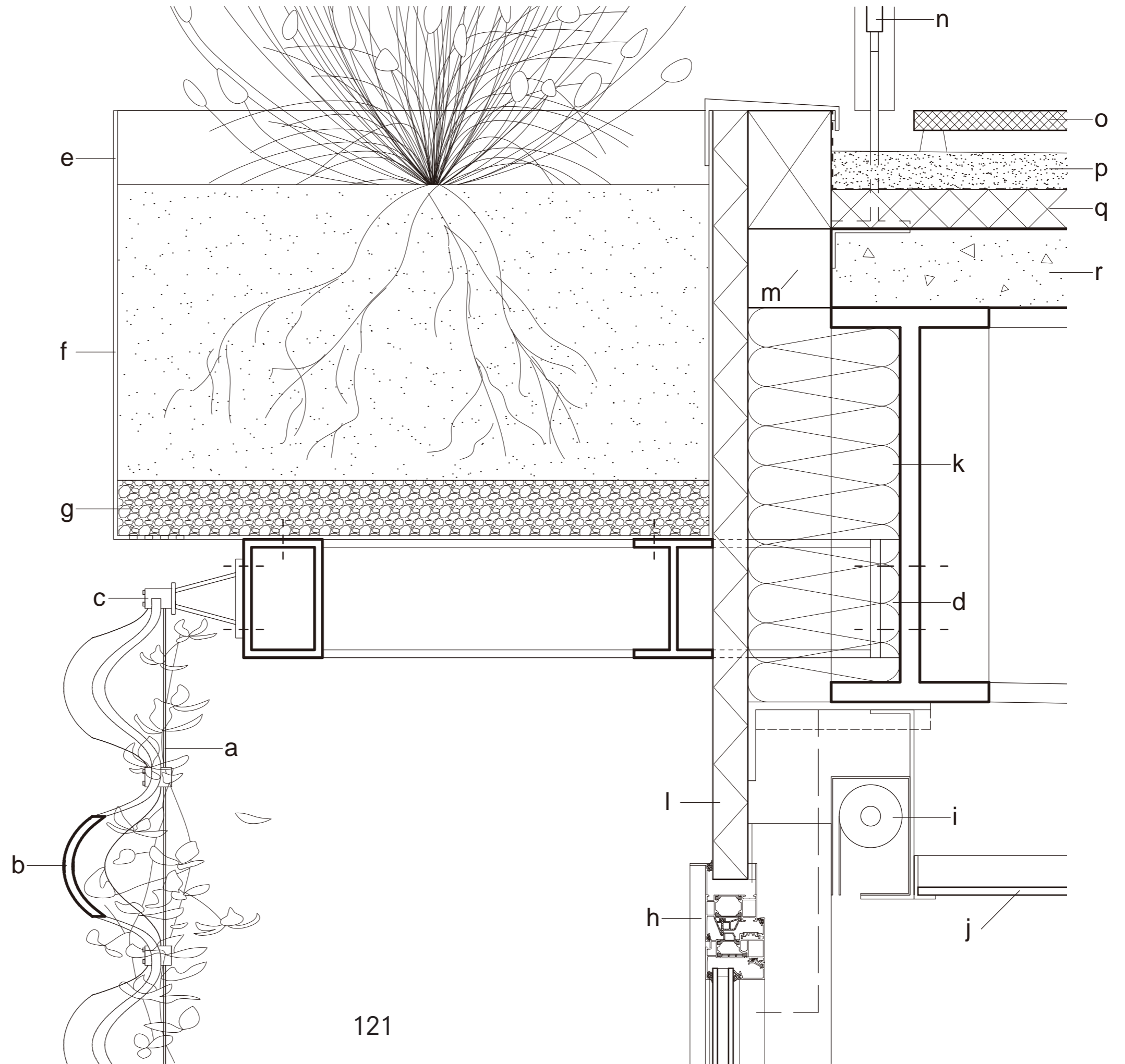


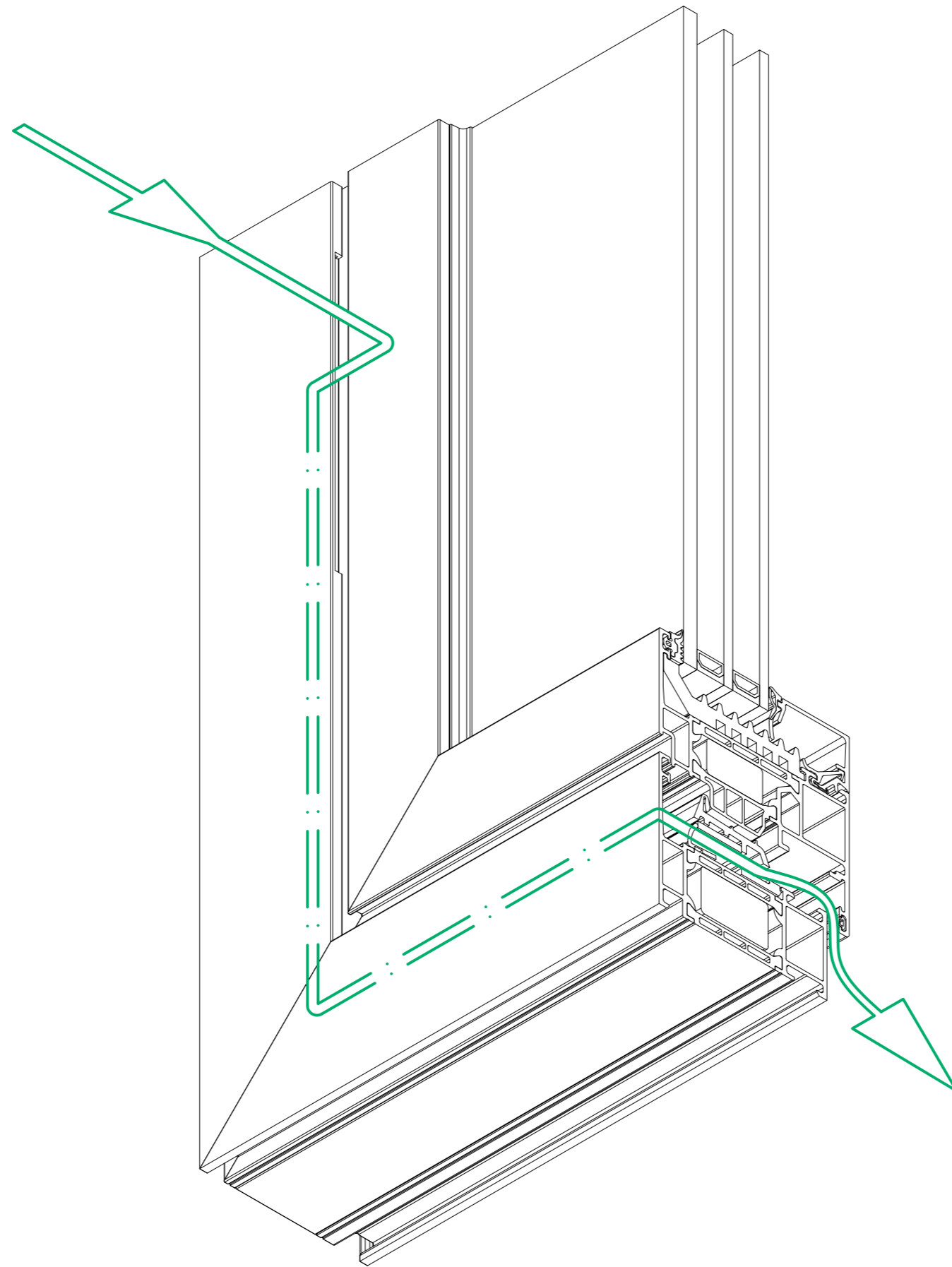
- a steel cable
- b titanium panel coated with a superfine titanium dioxide
- c cable fixer
- d drip irrigation pipe
- e steel pot
- f soil
- g gravel
- h perforated steel panel
- i drain pipe
- j steel sandwich panel
- k mineral wool (windproof)
- l insulated panel
- m steel grid panel
- n firestop
- o concrete slab
- p computer floor panel
- q ventilation frame with double glazing
- r thermal break plate
- s Boston Ivy

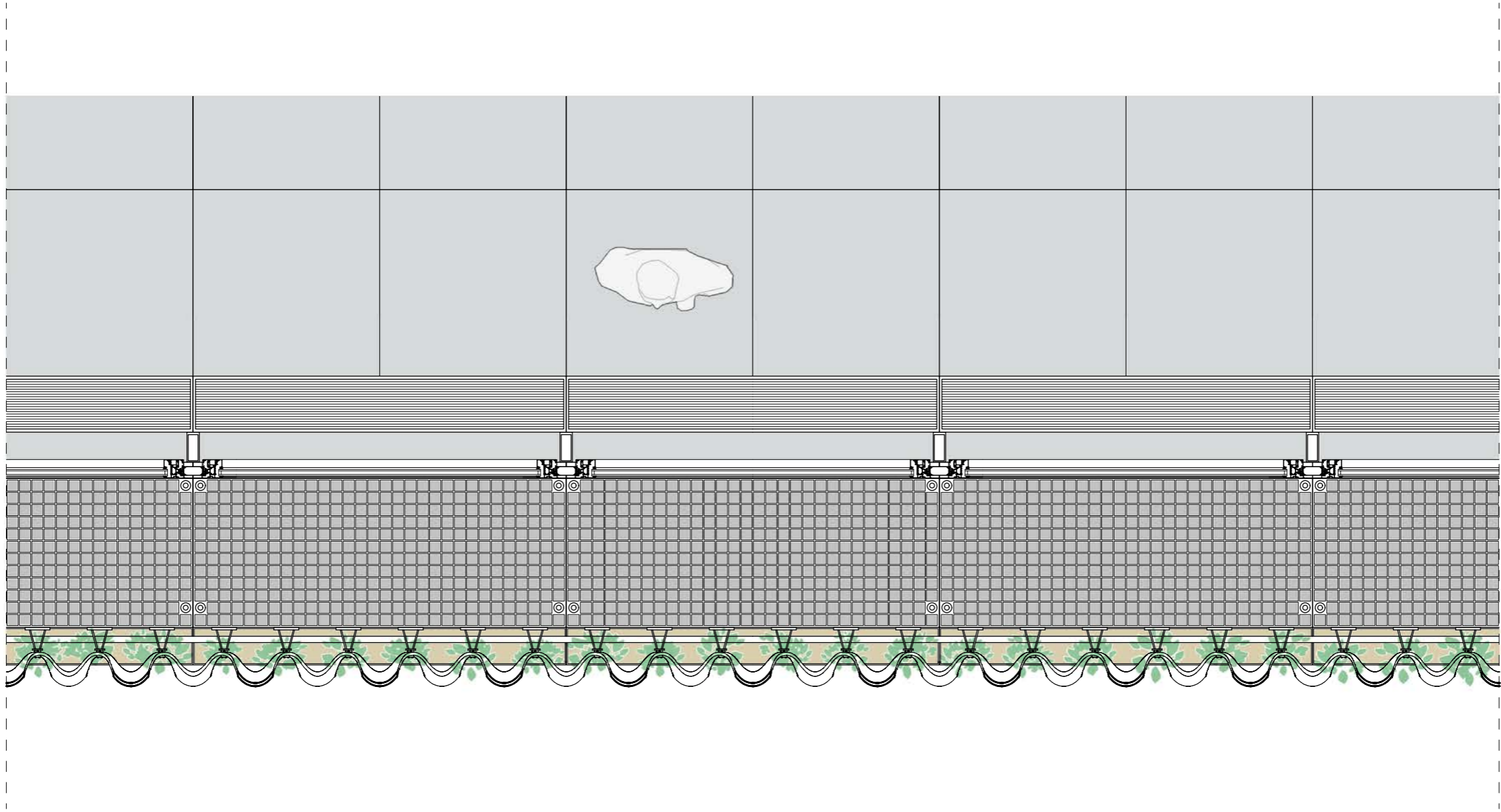
0 50 100 250mm



- a steel cable
- b titanium panel coated with a superfine titanium dioxide
- c cable fixer
- d thermal break plate
- e steel pot
- f soil
- g gravel
- h ventilation frame with double glazing
- i blind
- j ceiling
- k mineral wool
- l insulated panel
- m firestop
- n glass railing
- o computer floor panel
- p slope making
- q insulation
- r concrete slab







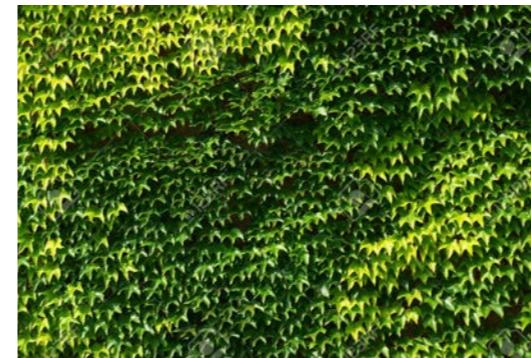
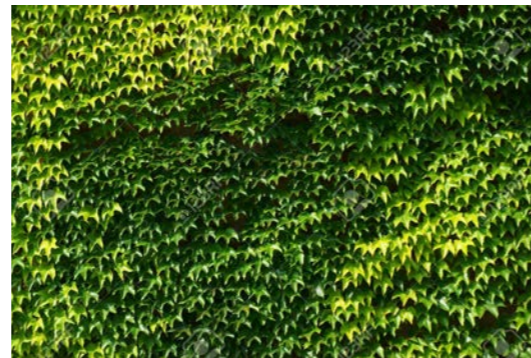
Boston
Ivy

English
Ivy

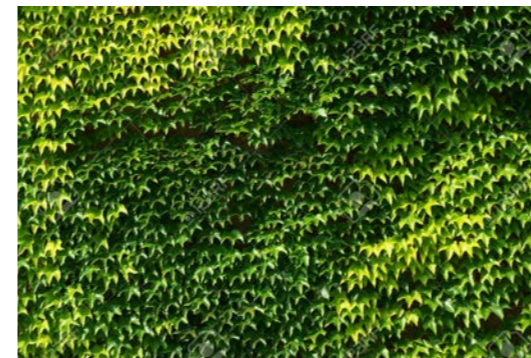
Spring



Summer

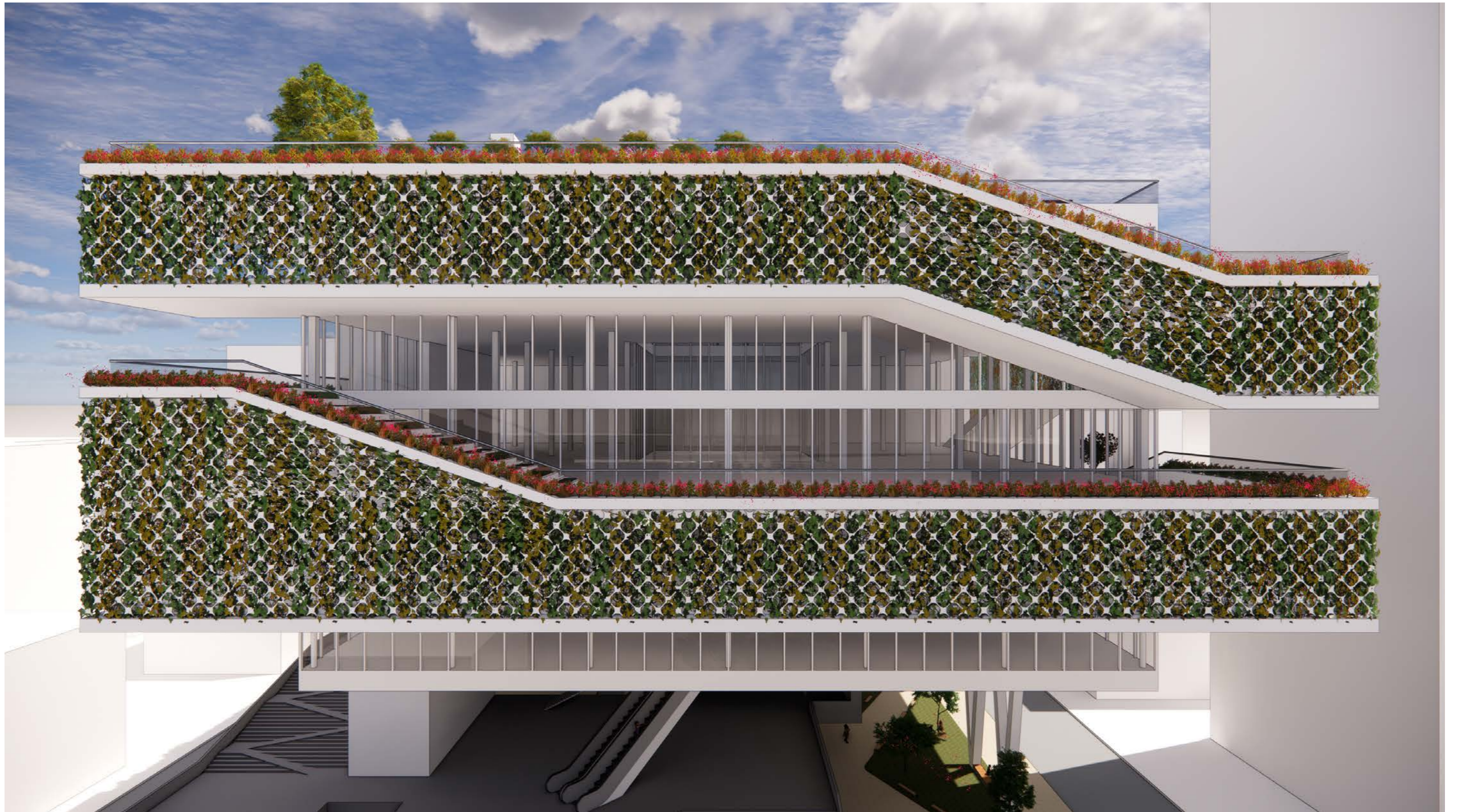


Autumn

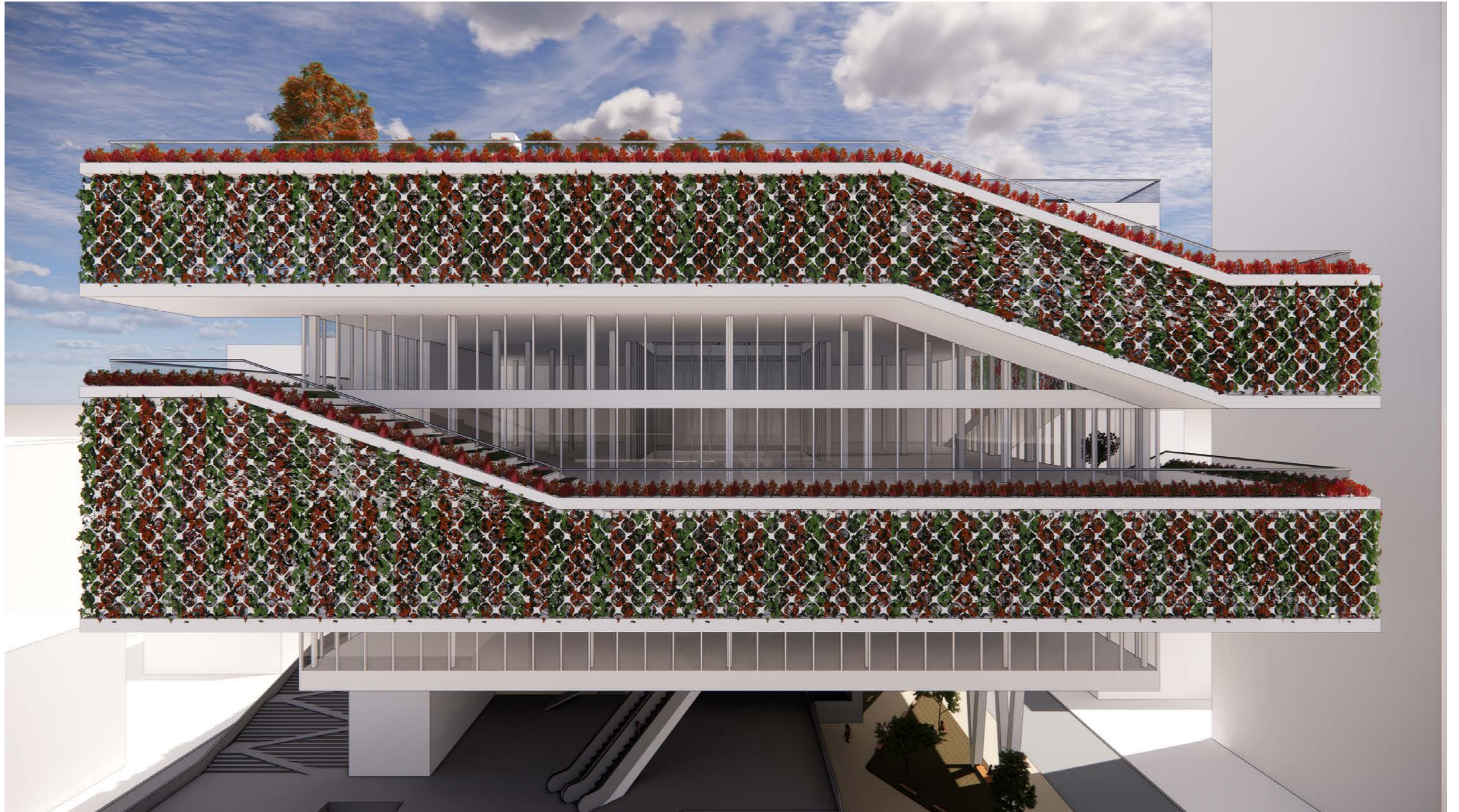


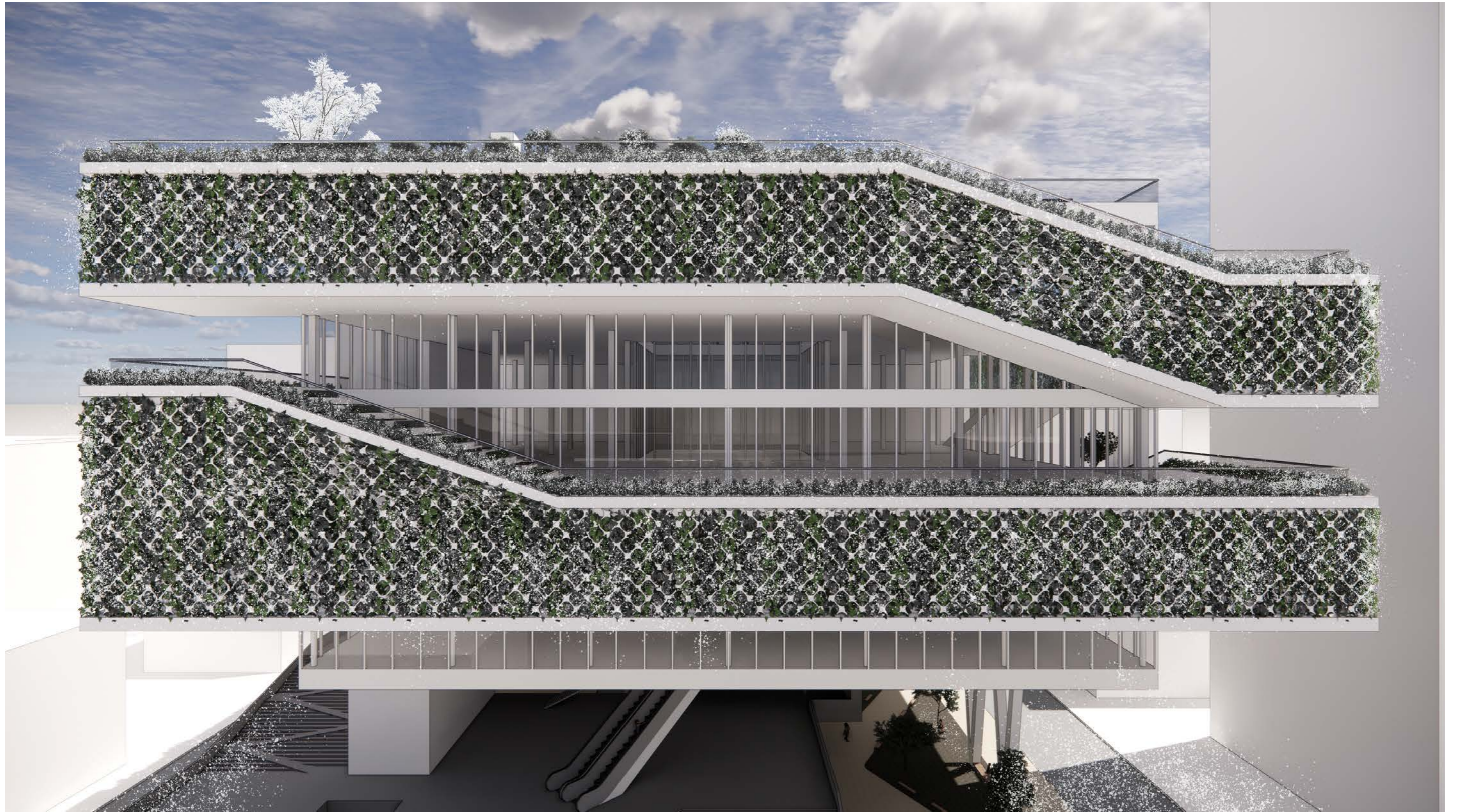
Winter

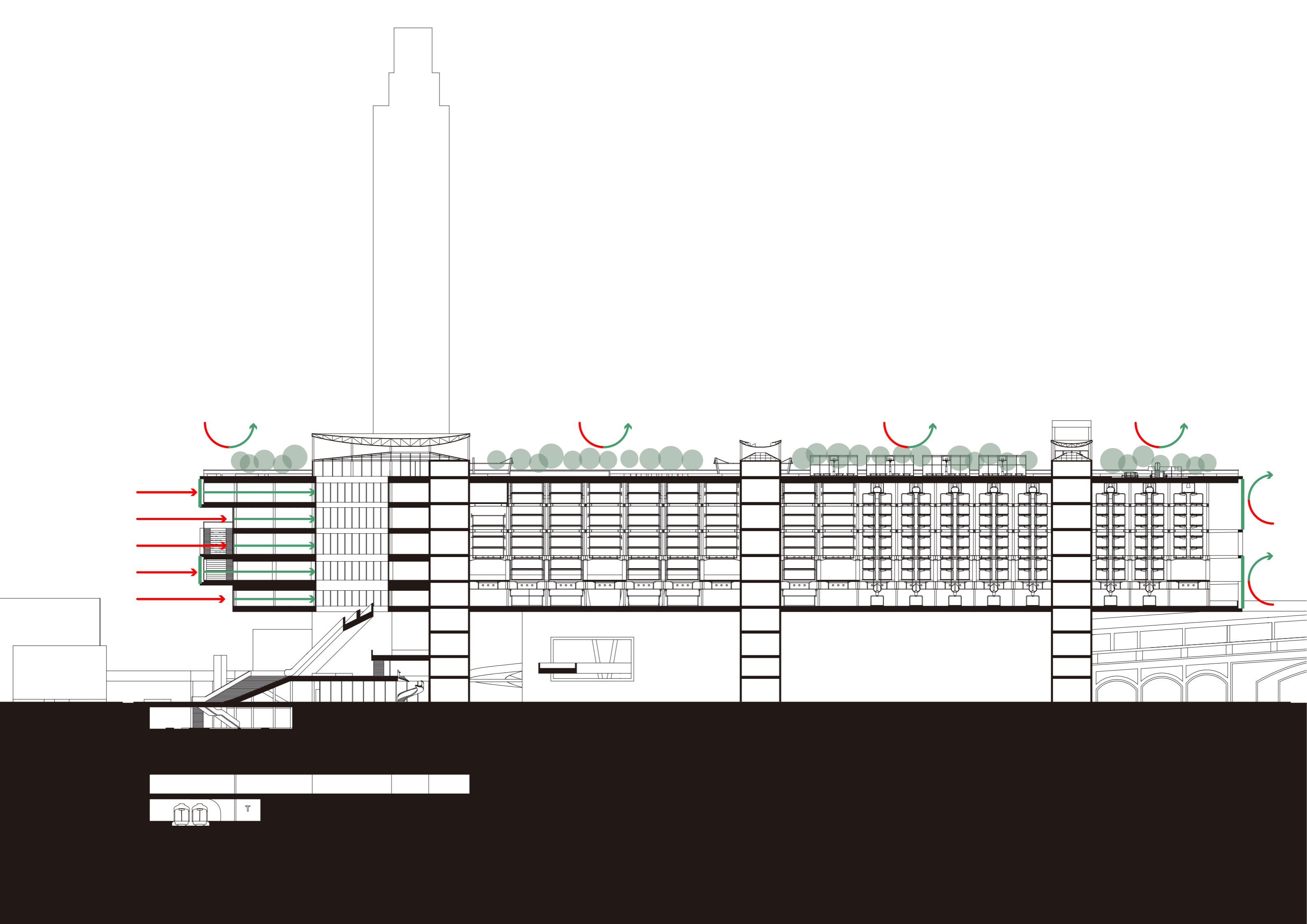


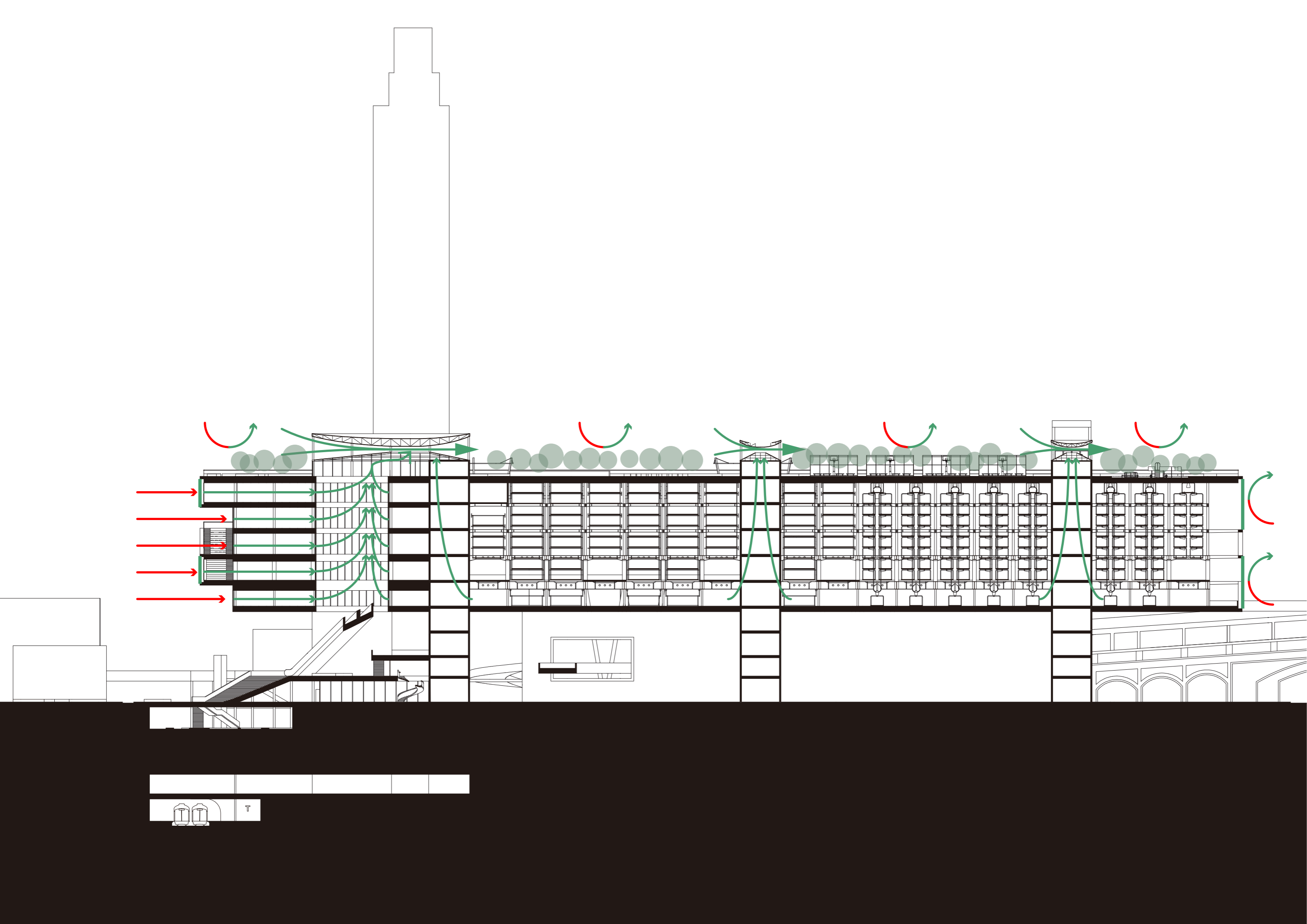


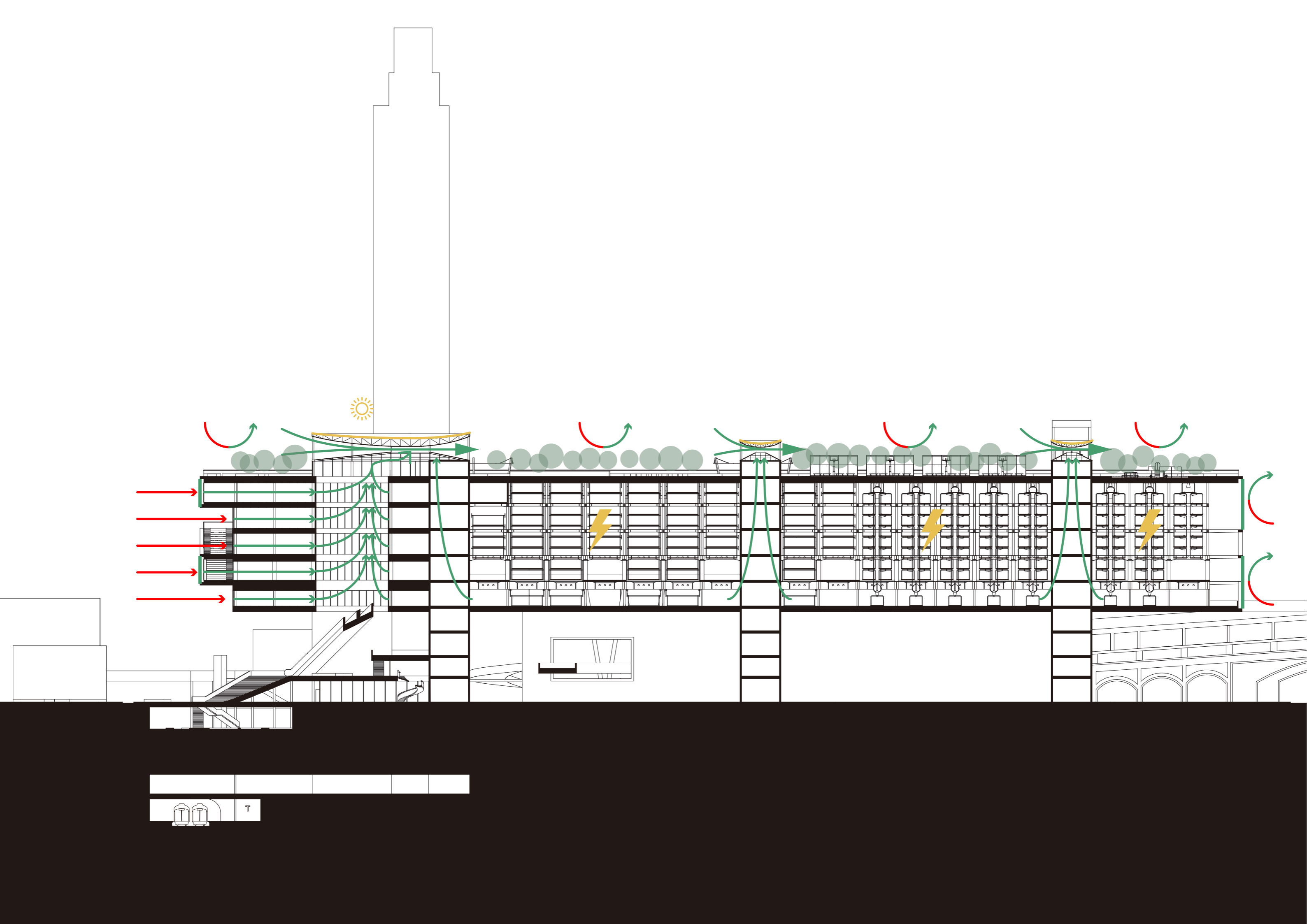


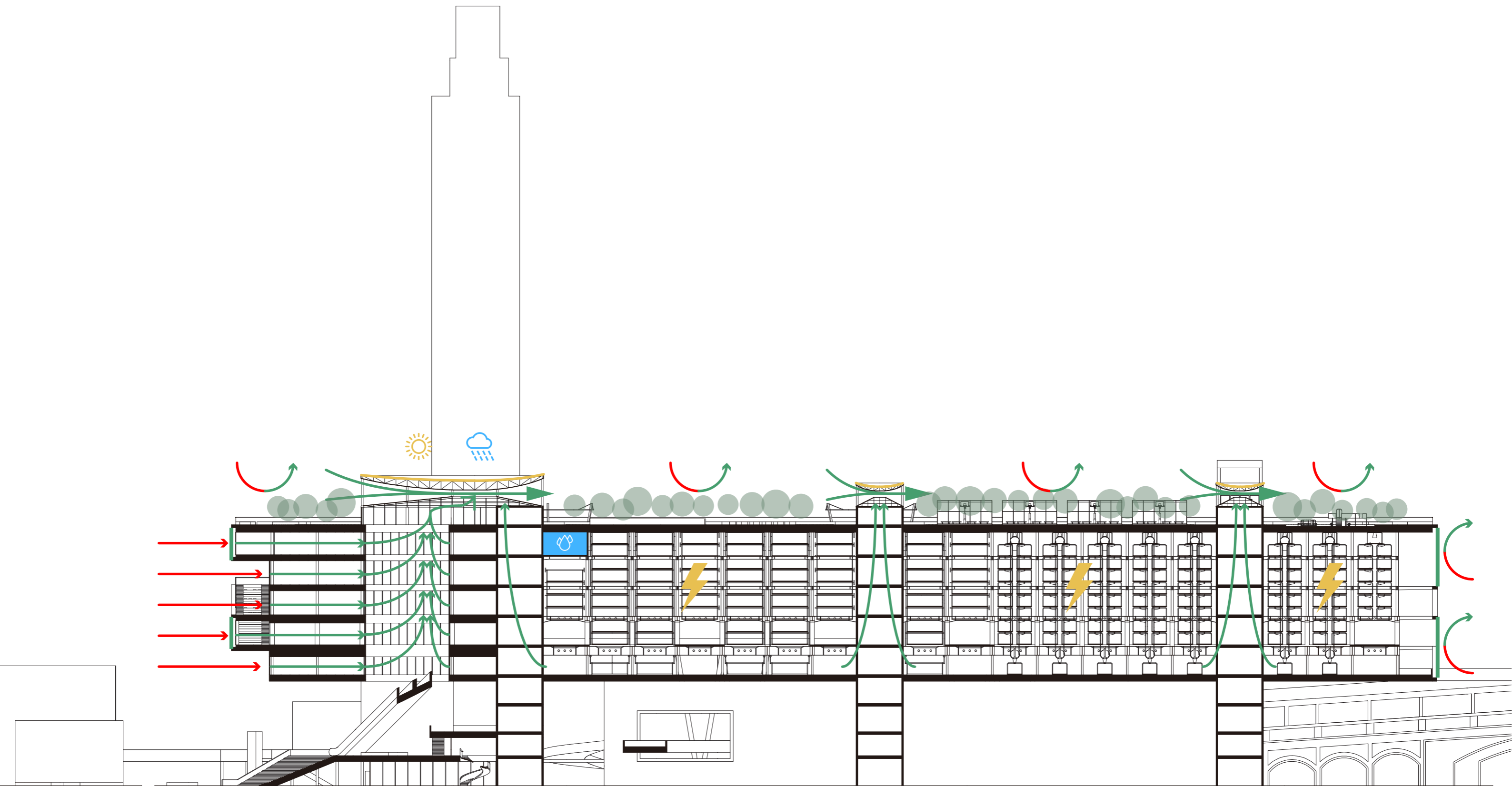


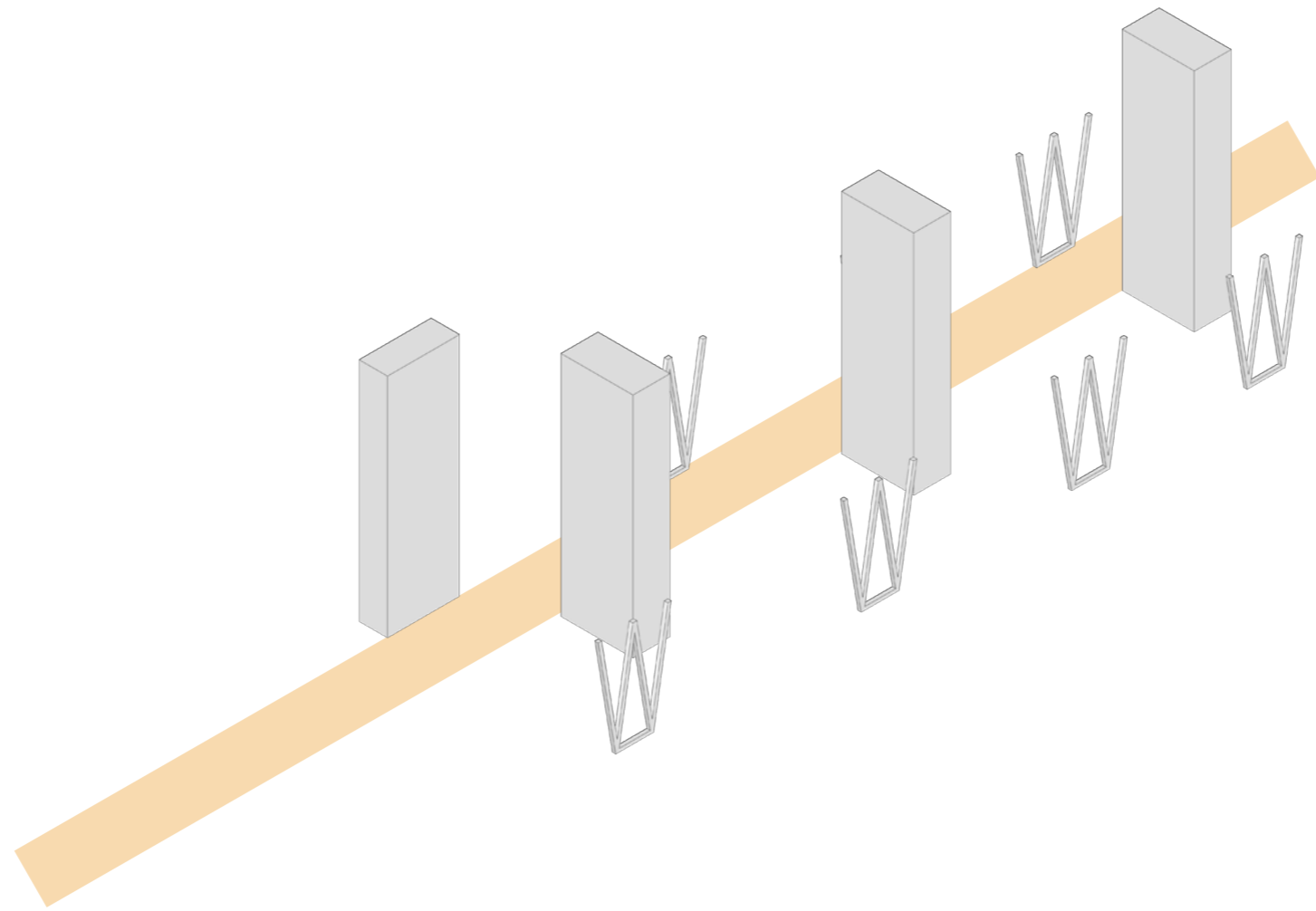


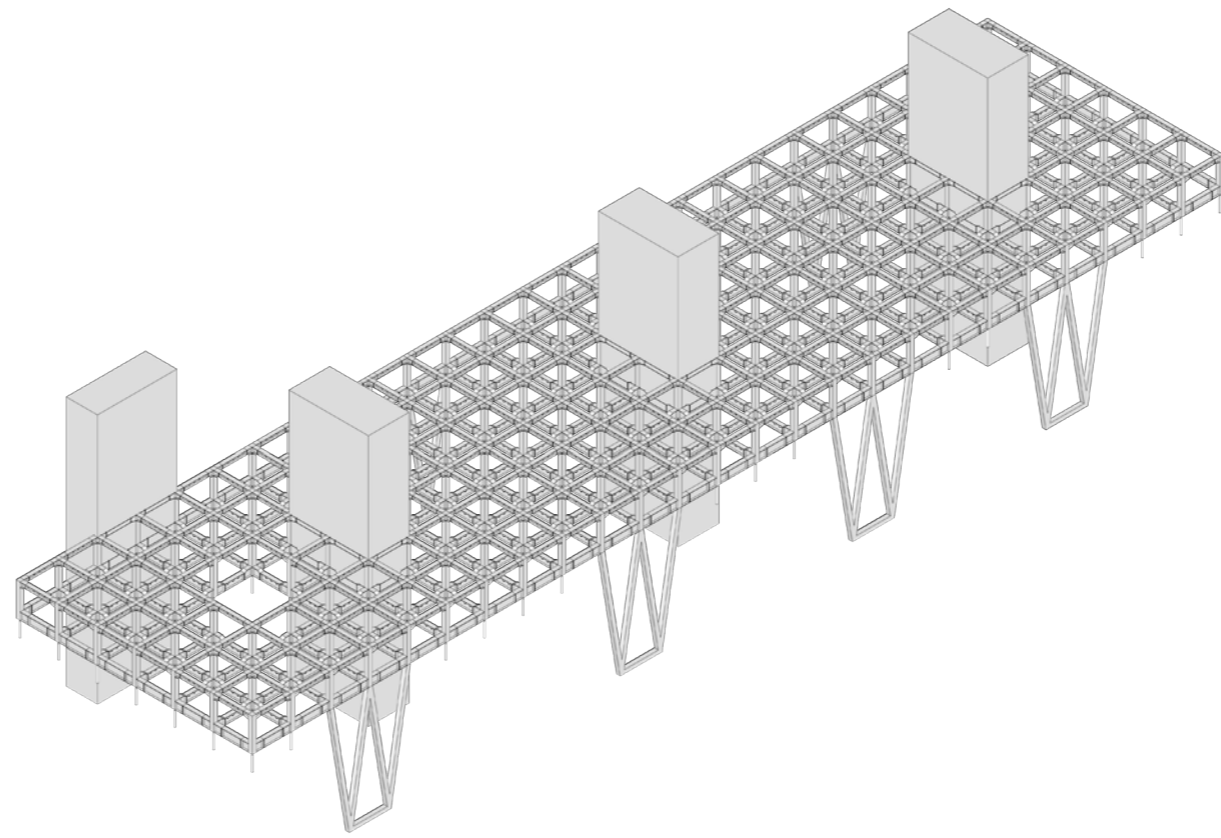


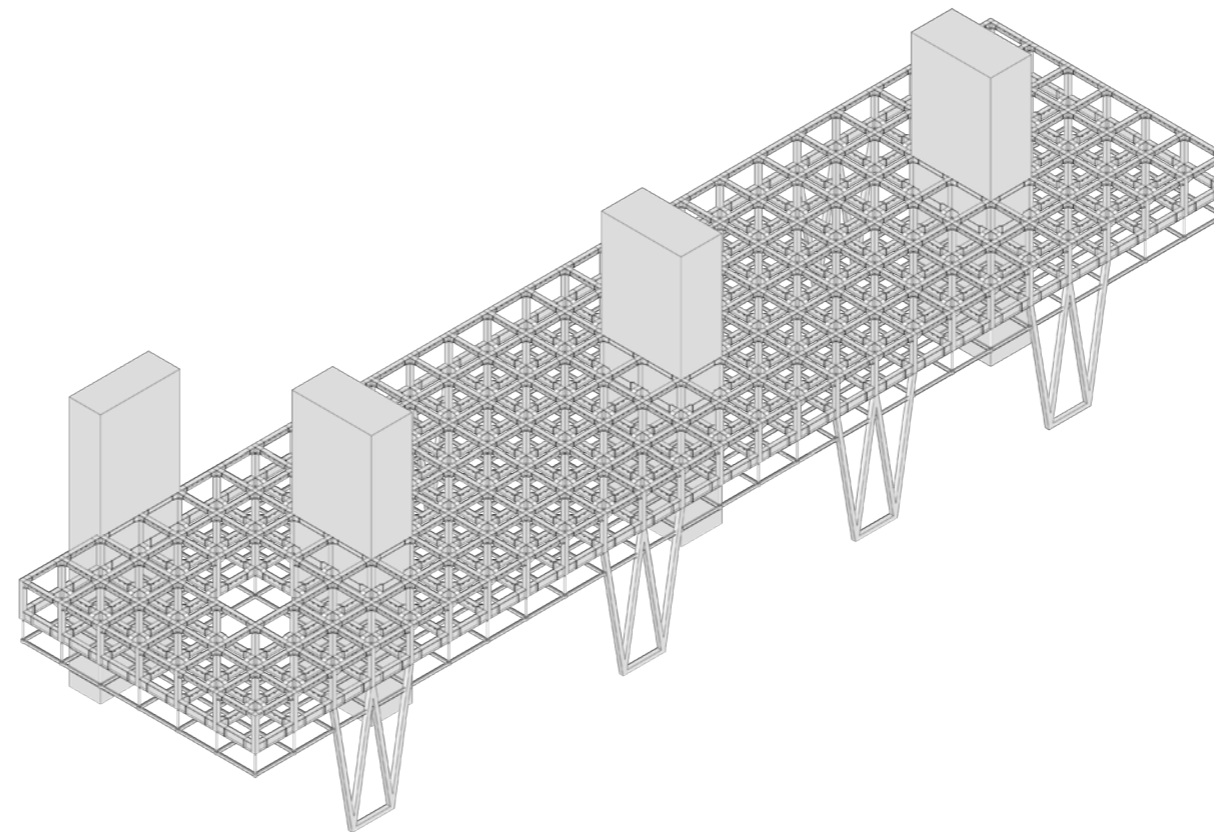


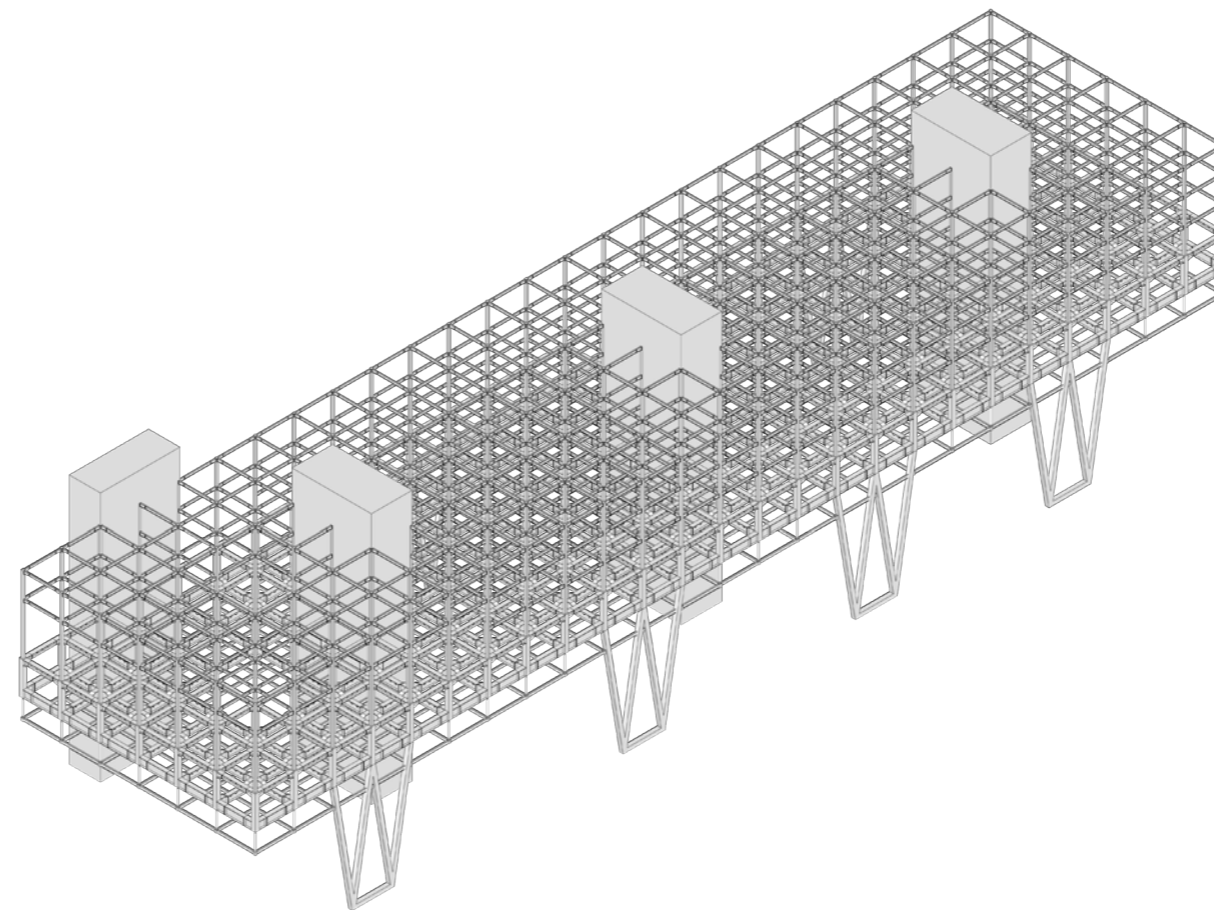


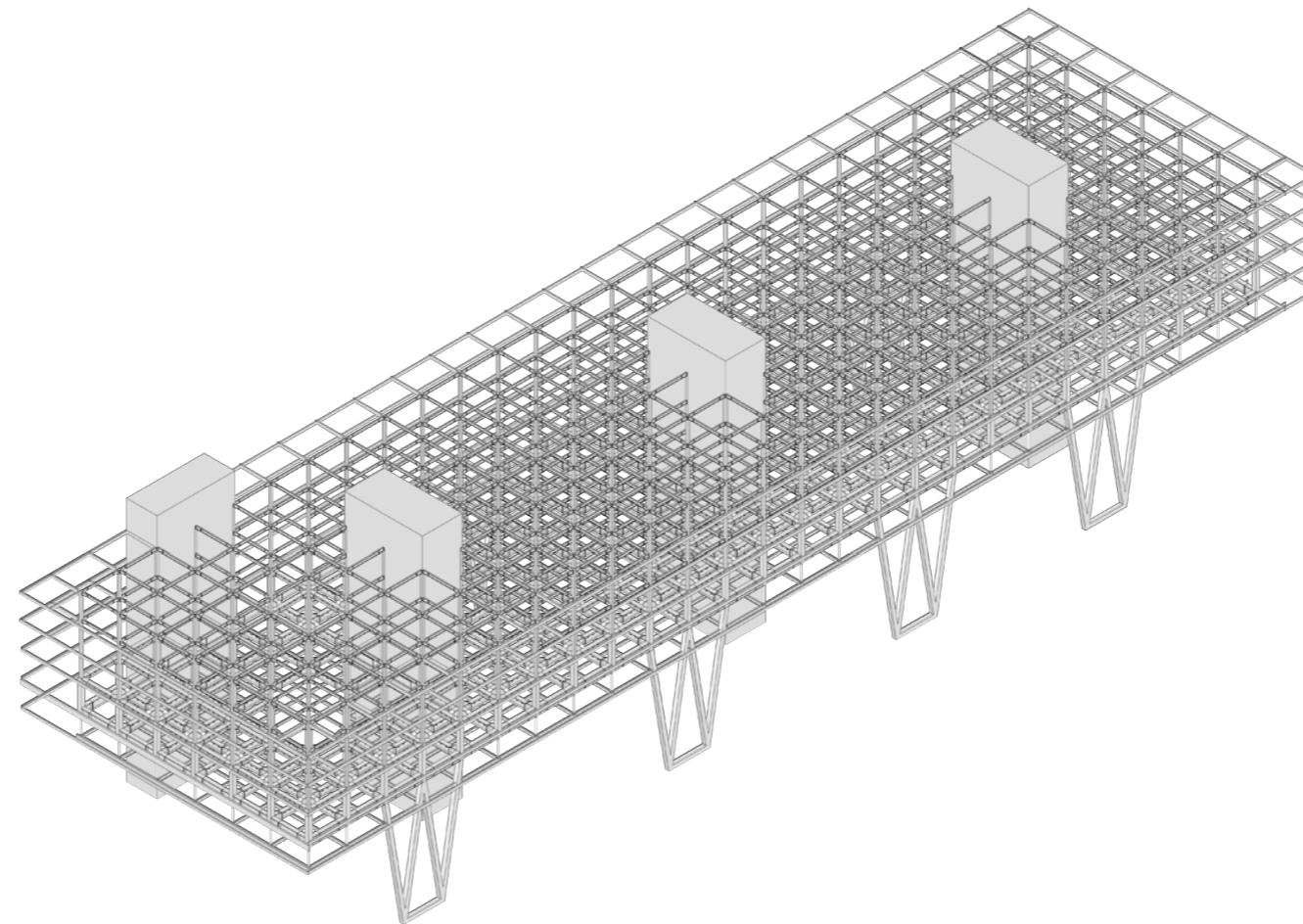


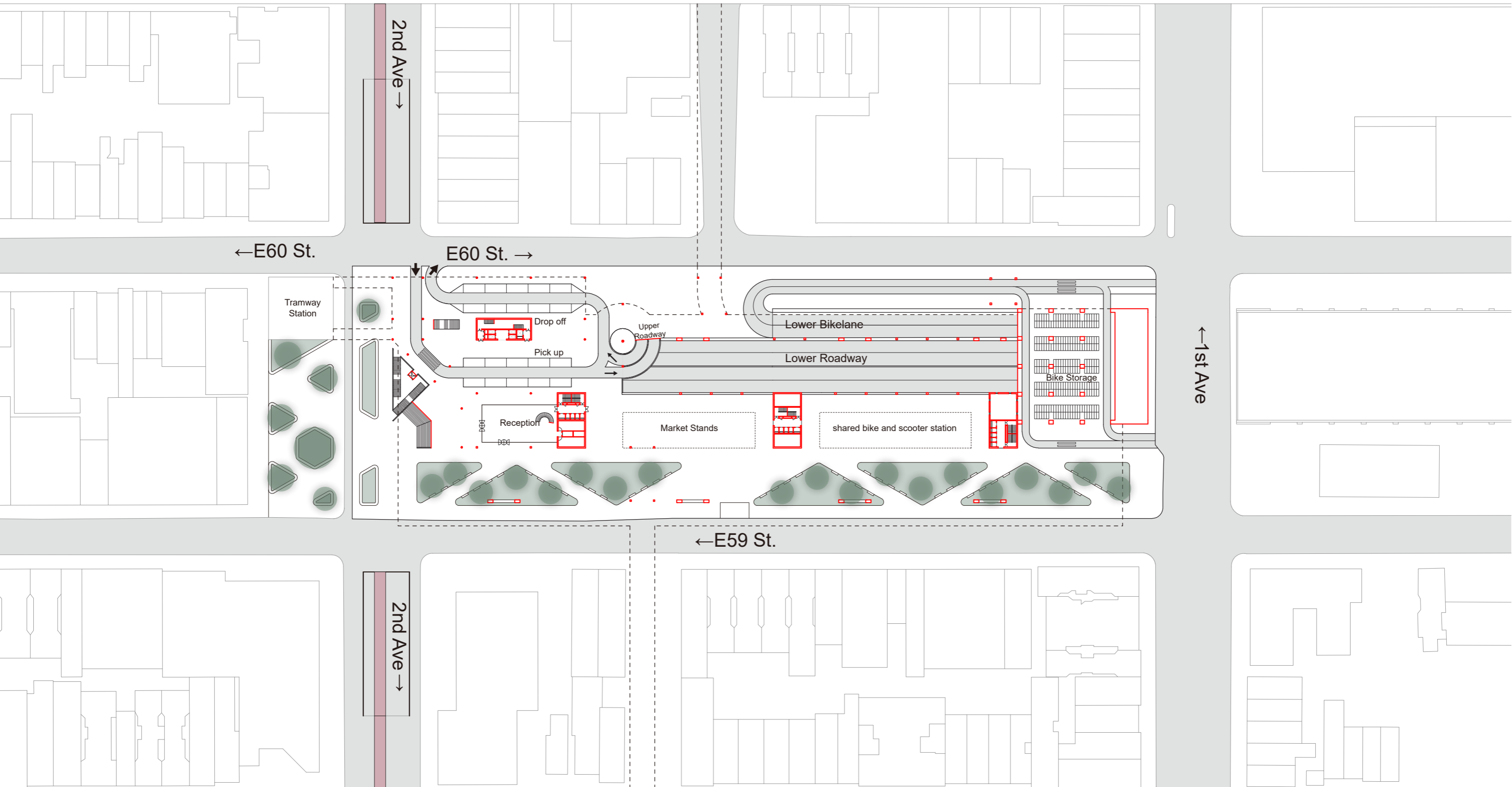


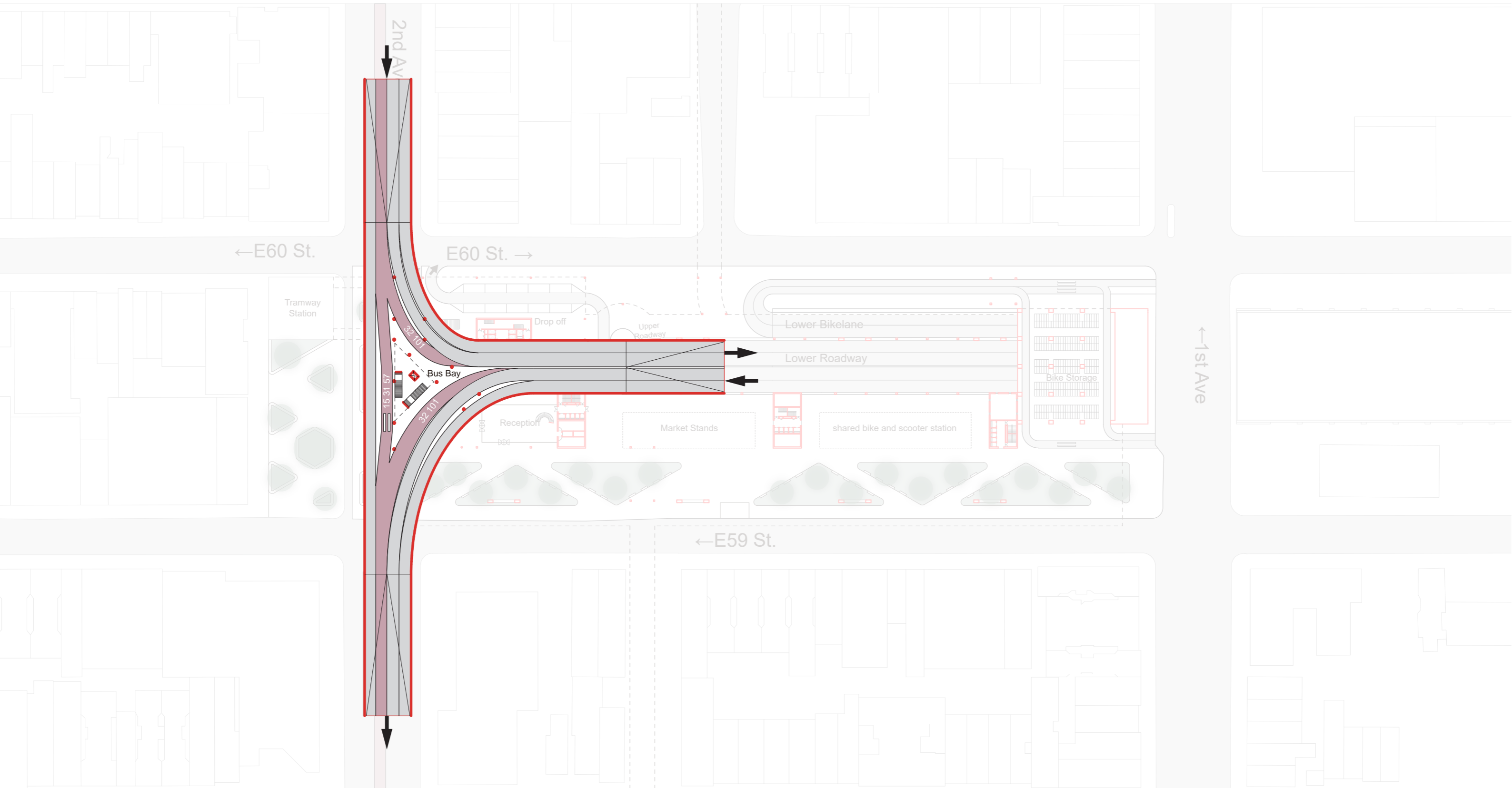


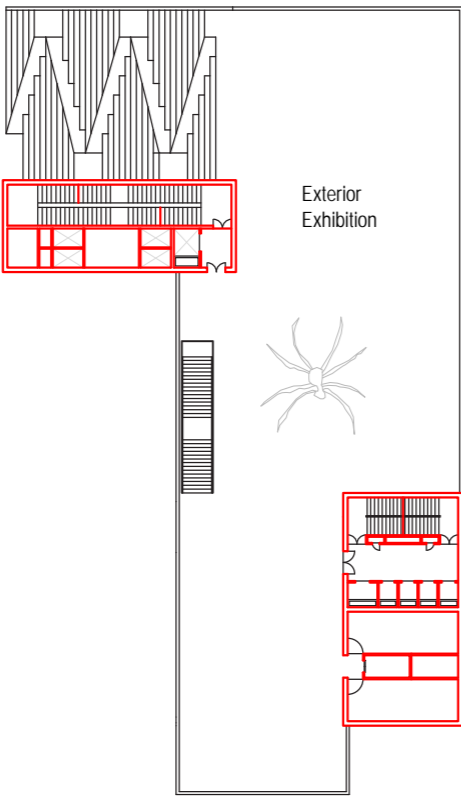




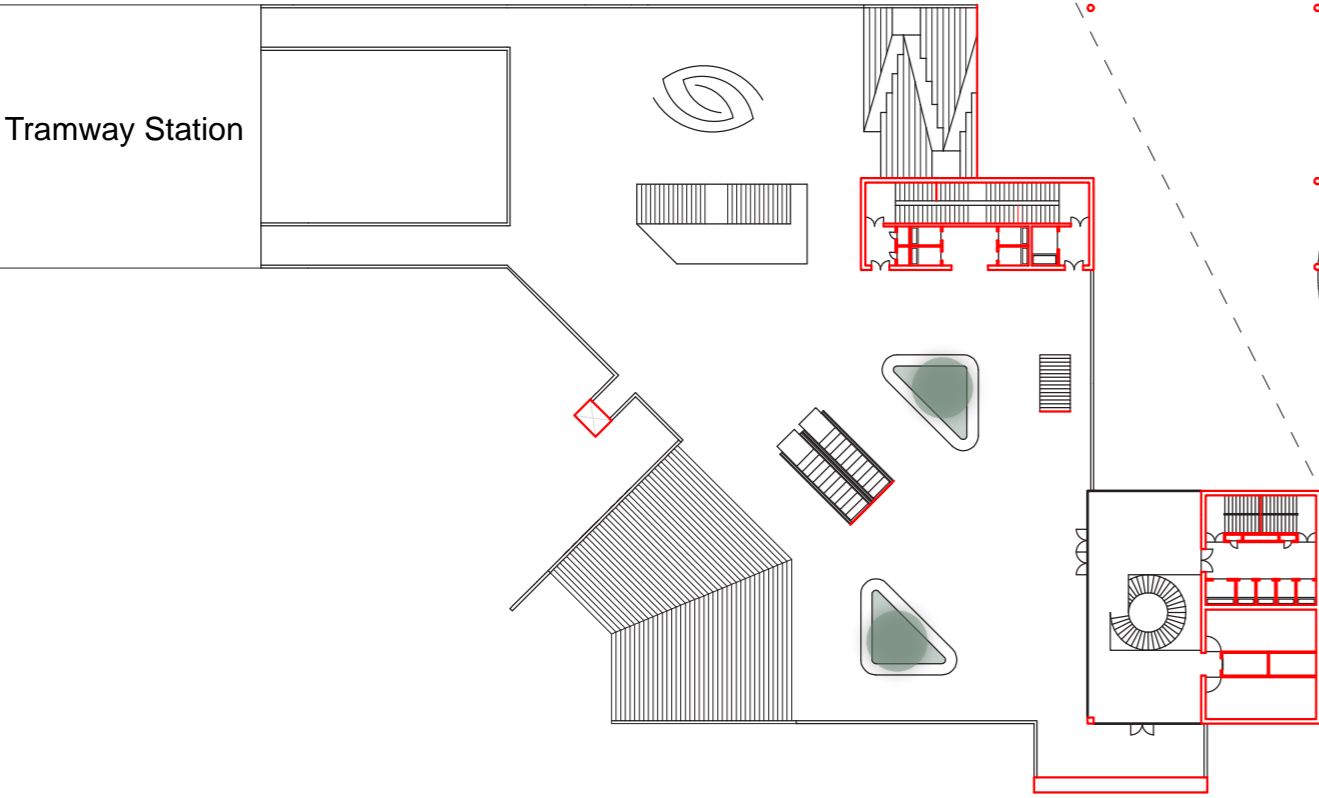




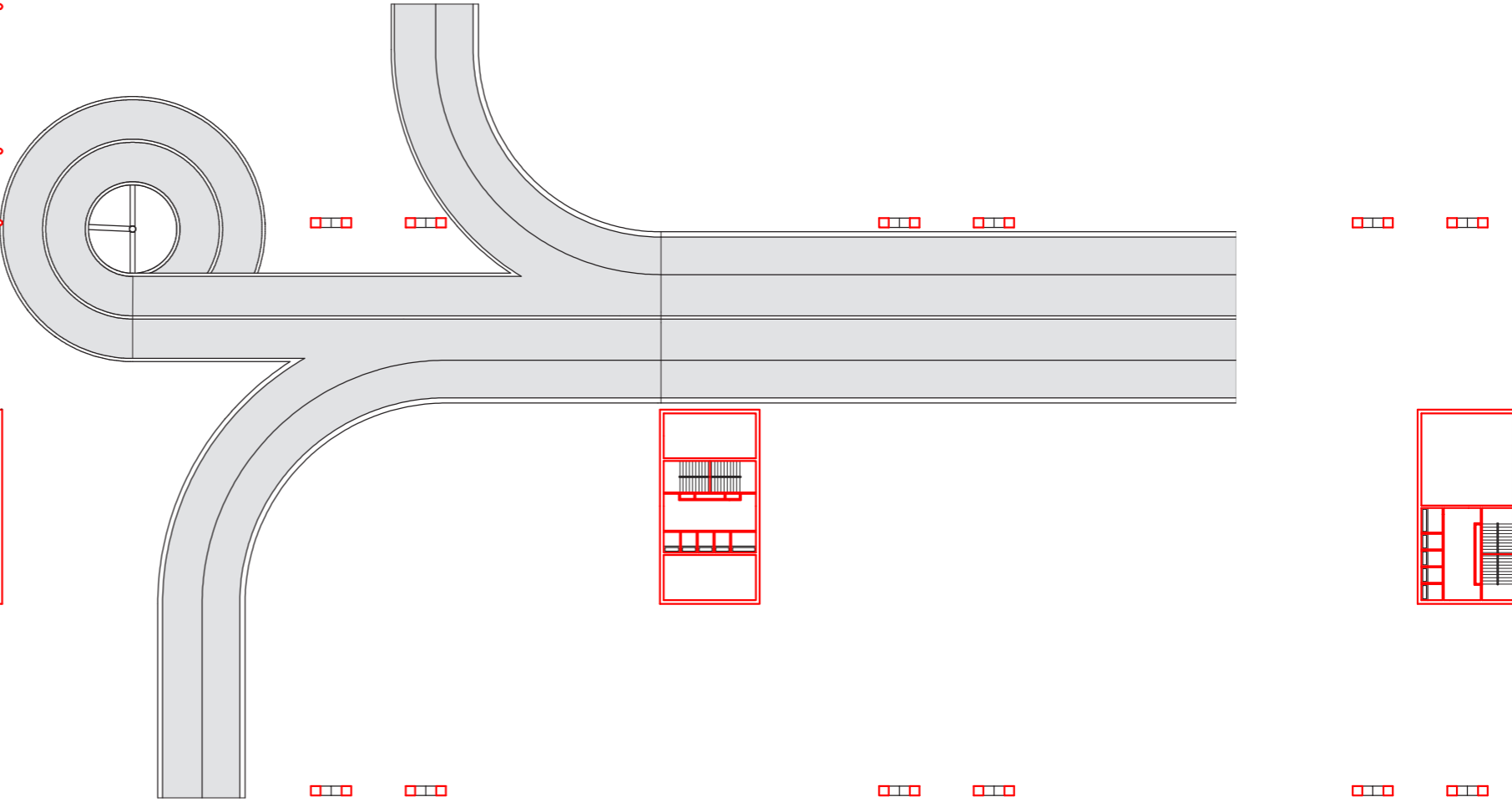




Exterior Exhibition



Tramway Station



140

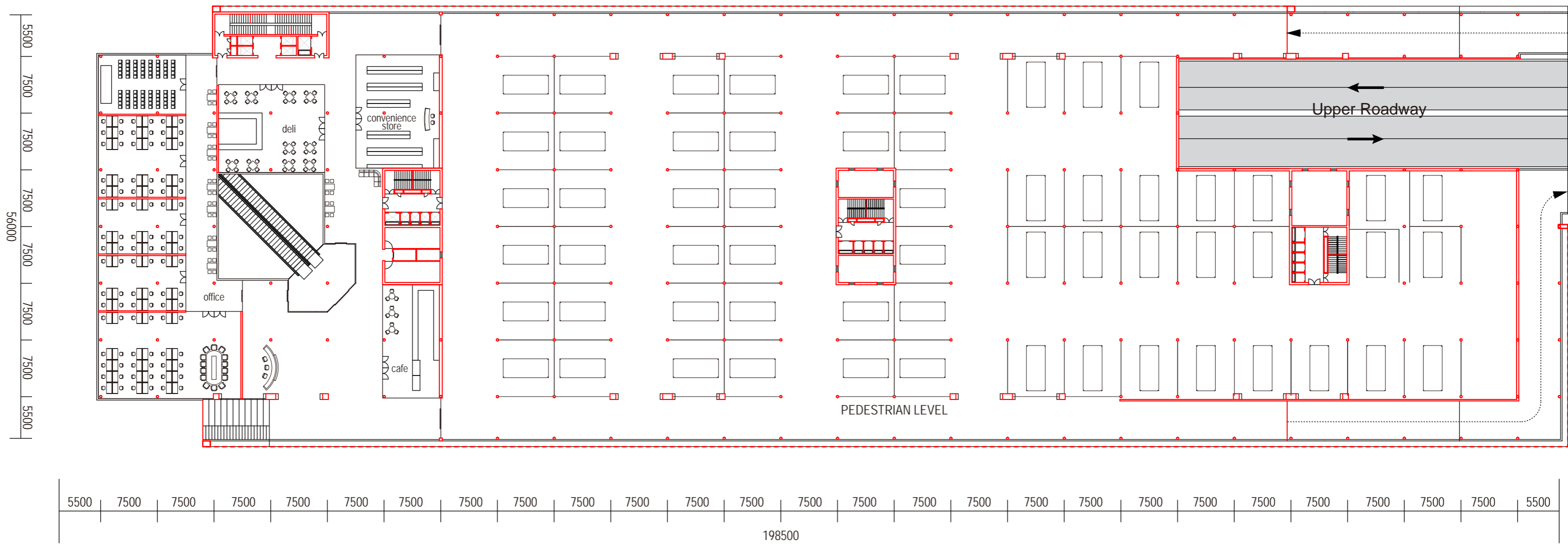
0 5 10 20m



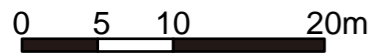


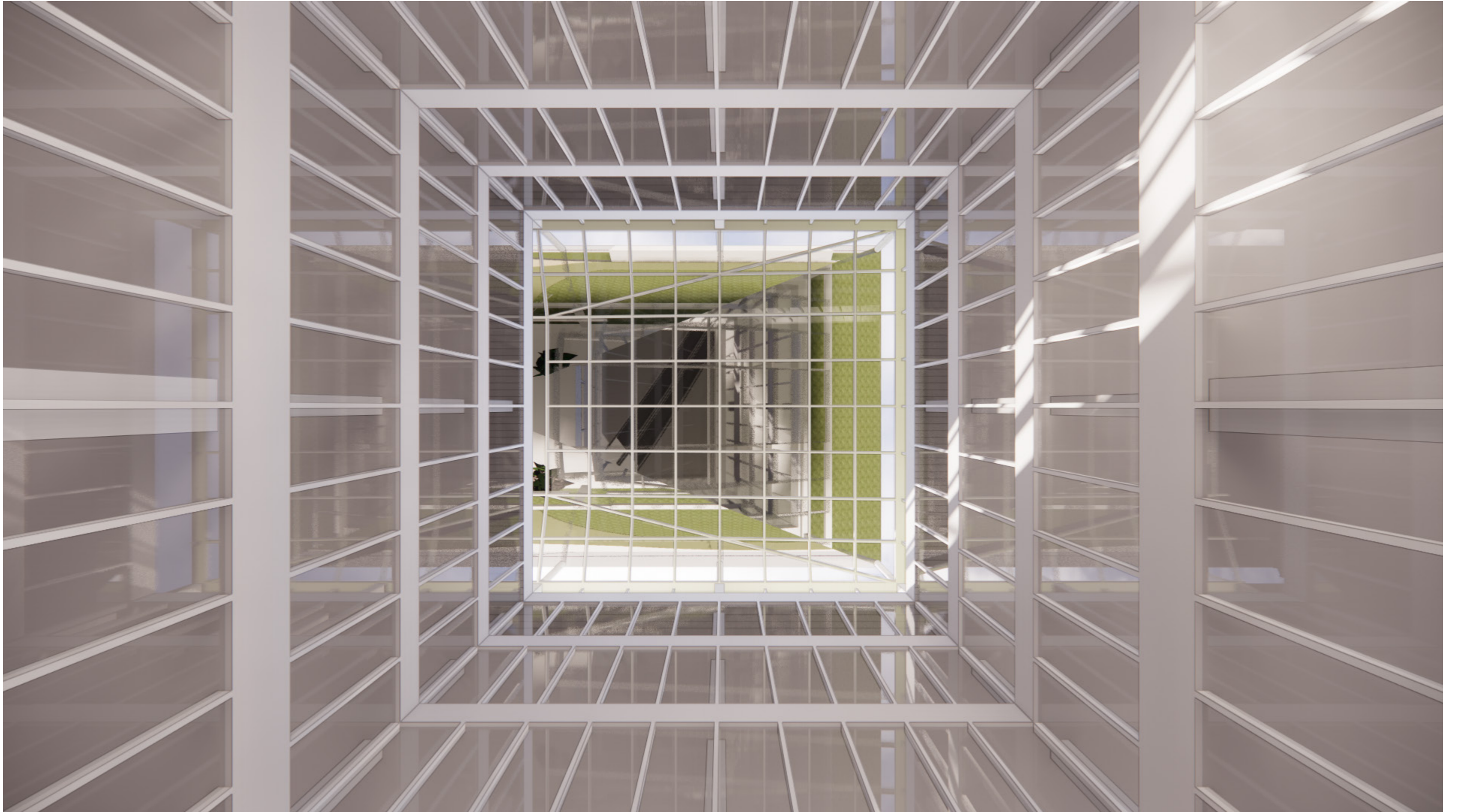






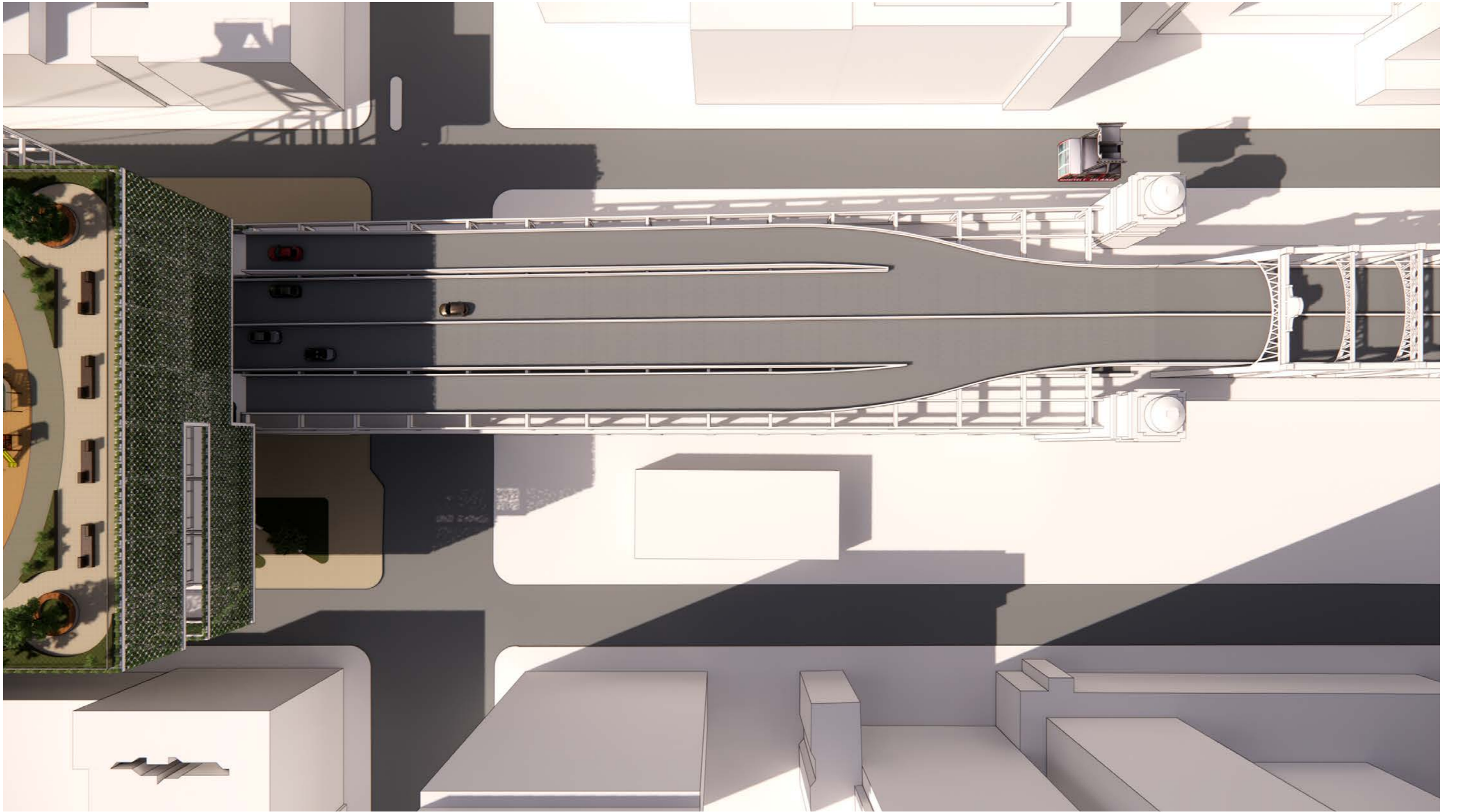
1F





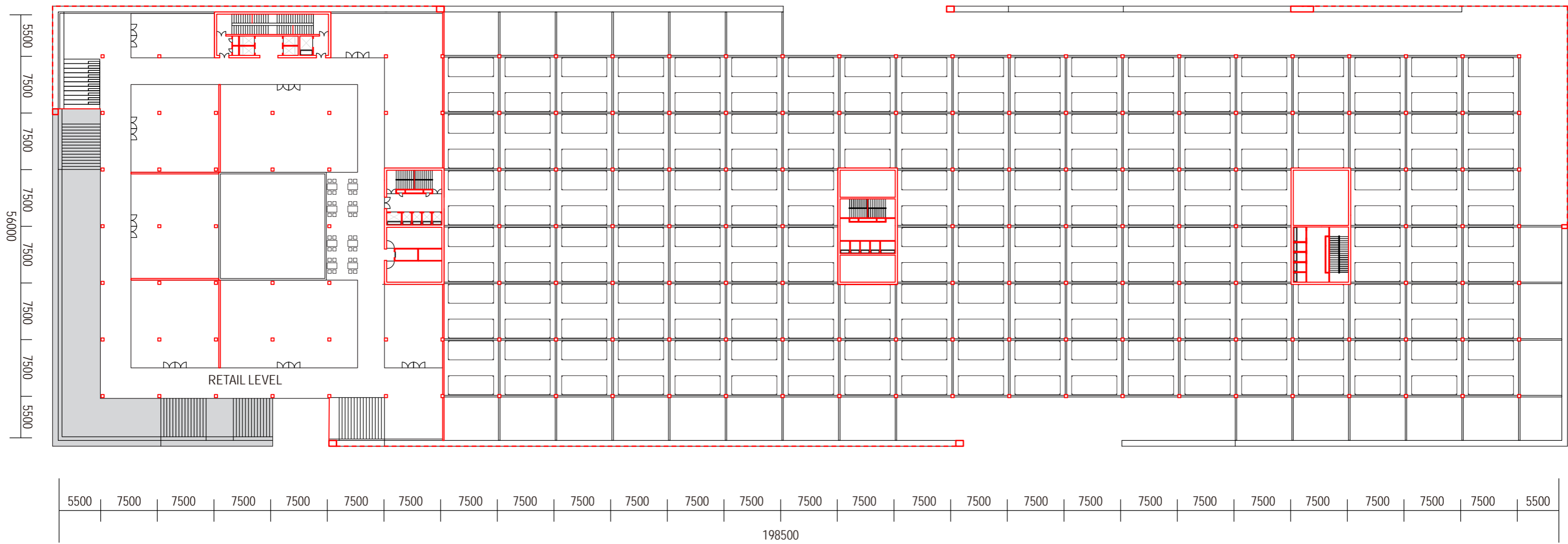




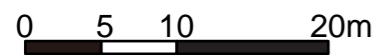


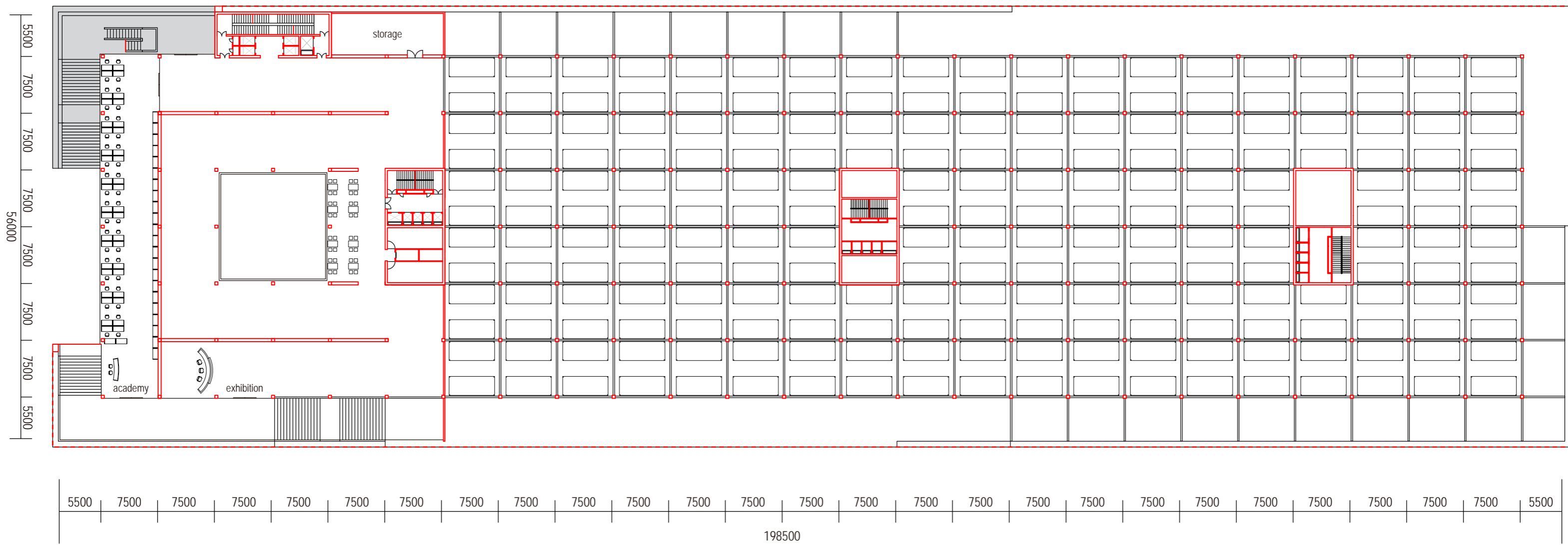




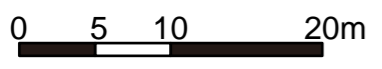


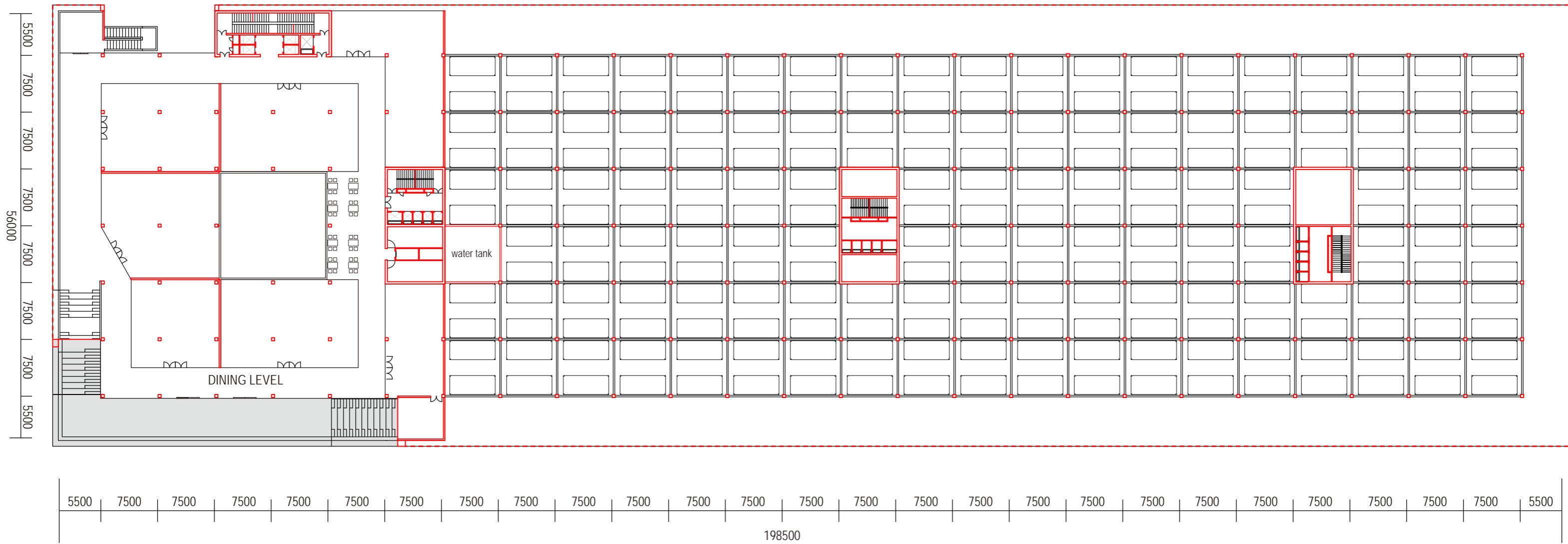
3F



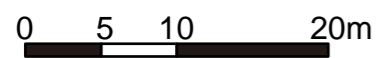


4F



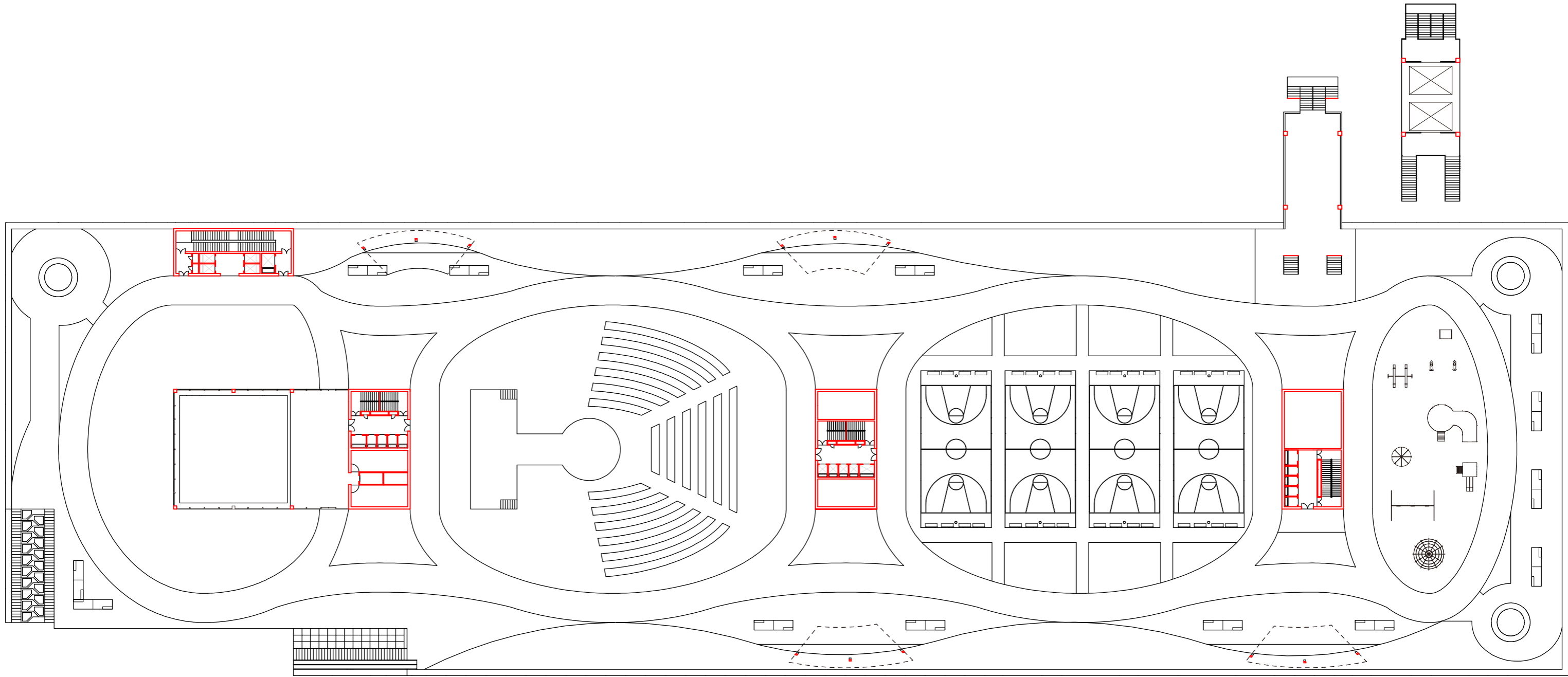


5F

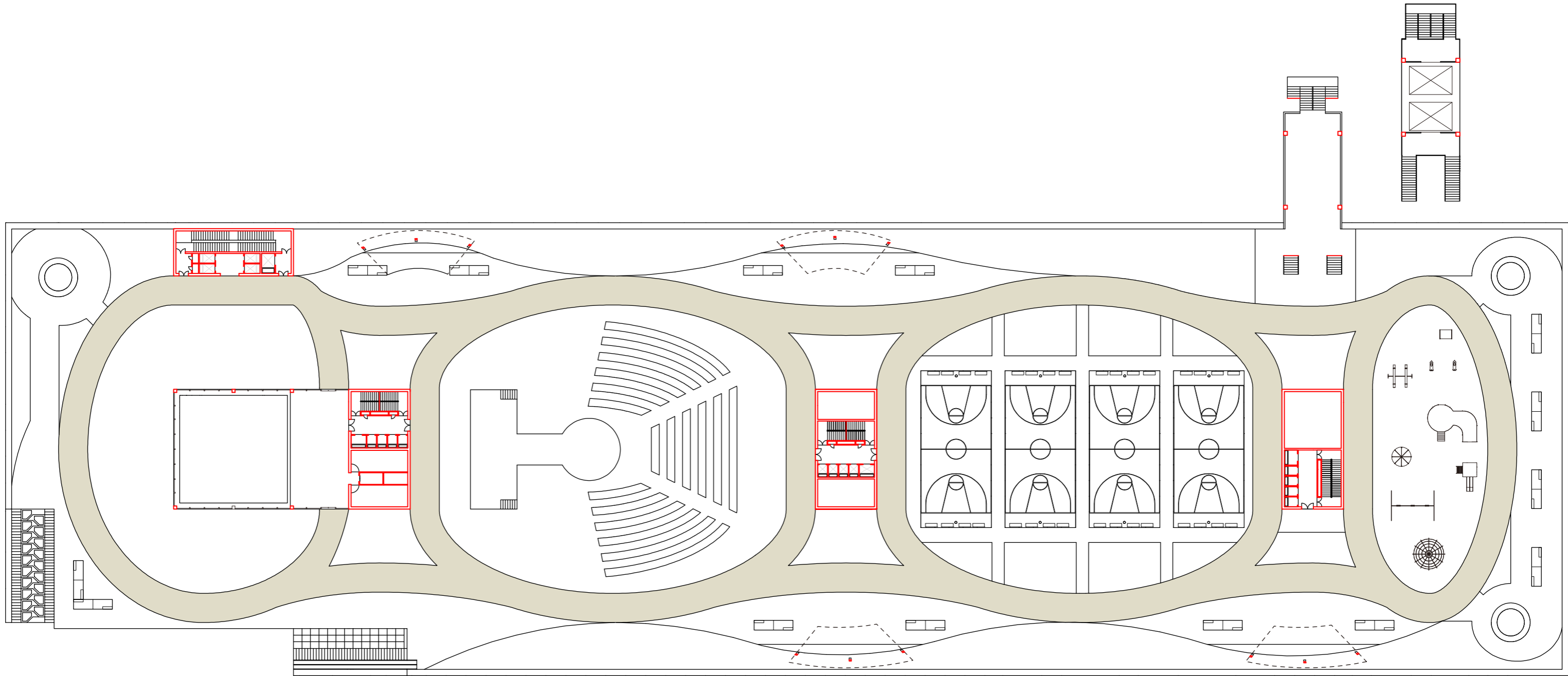






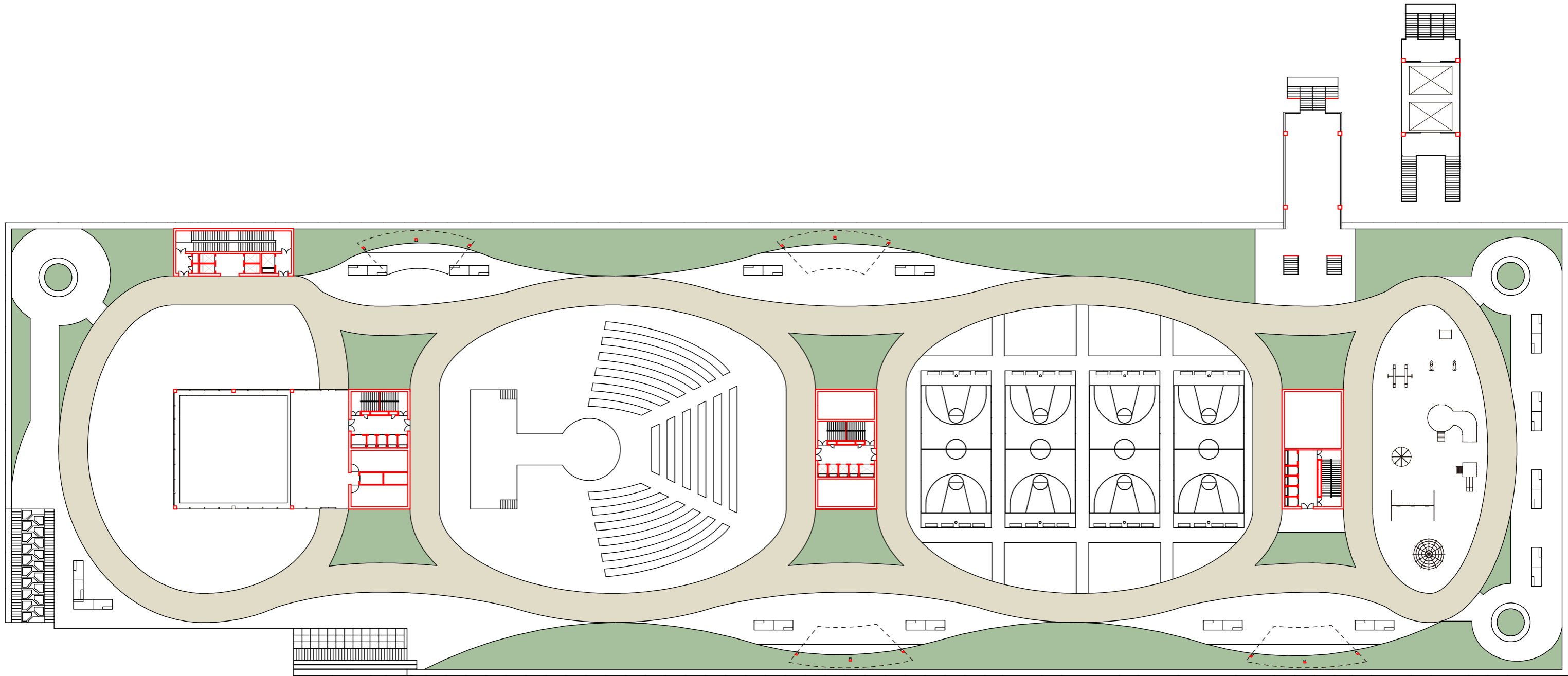


0 5 10 20m



Pathway

0 5 10 20m

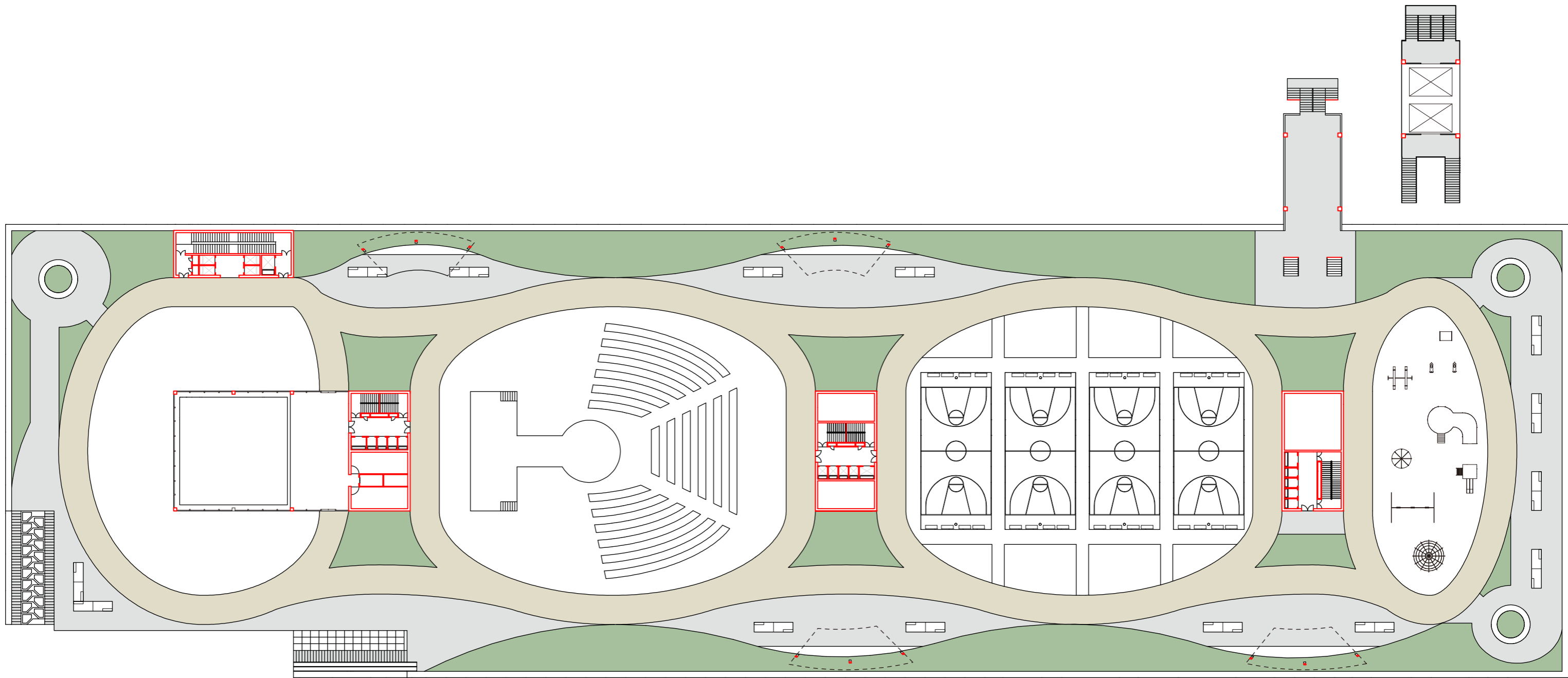


Pathway



Bushes
&
Flowers

0 5 10 20m



Pathway

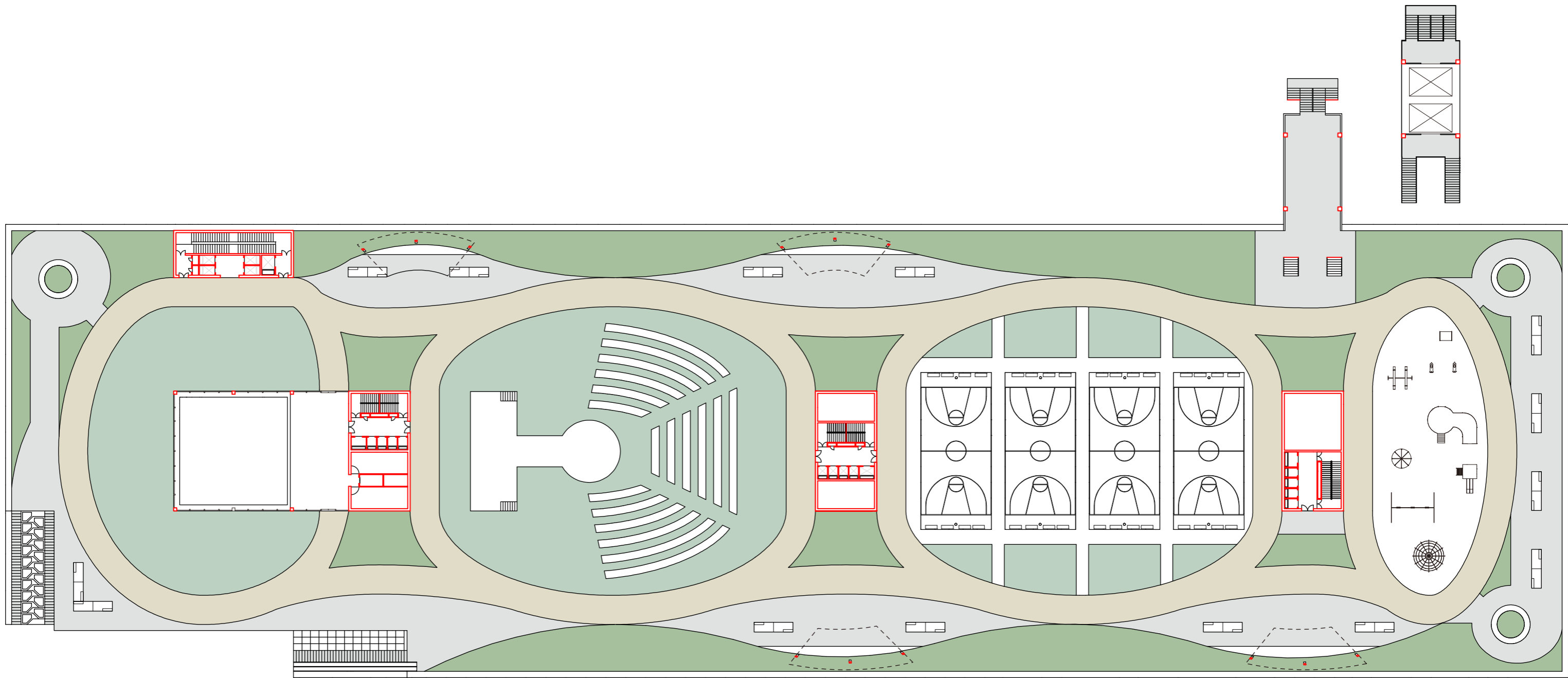


Bushes
&
Flowers



Hard Paving

0 5 10 20m



Pathway



Bushes
&
Flowers

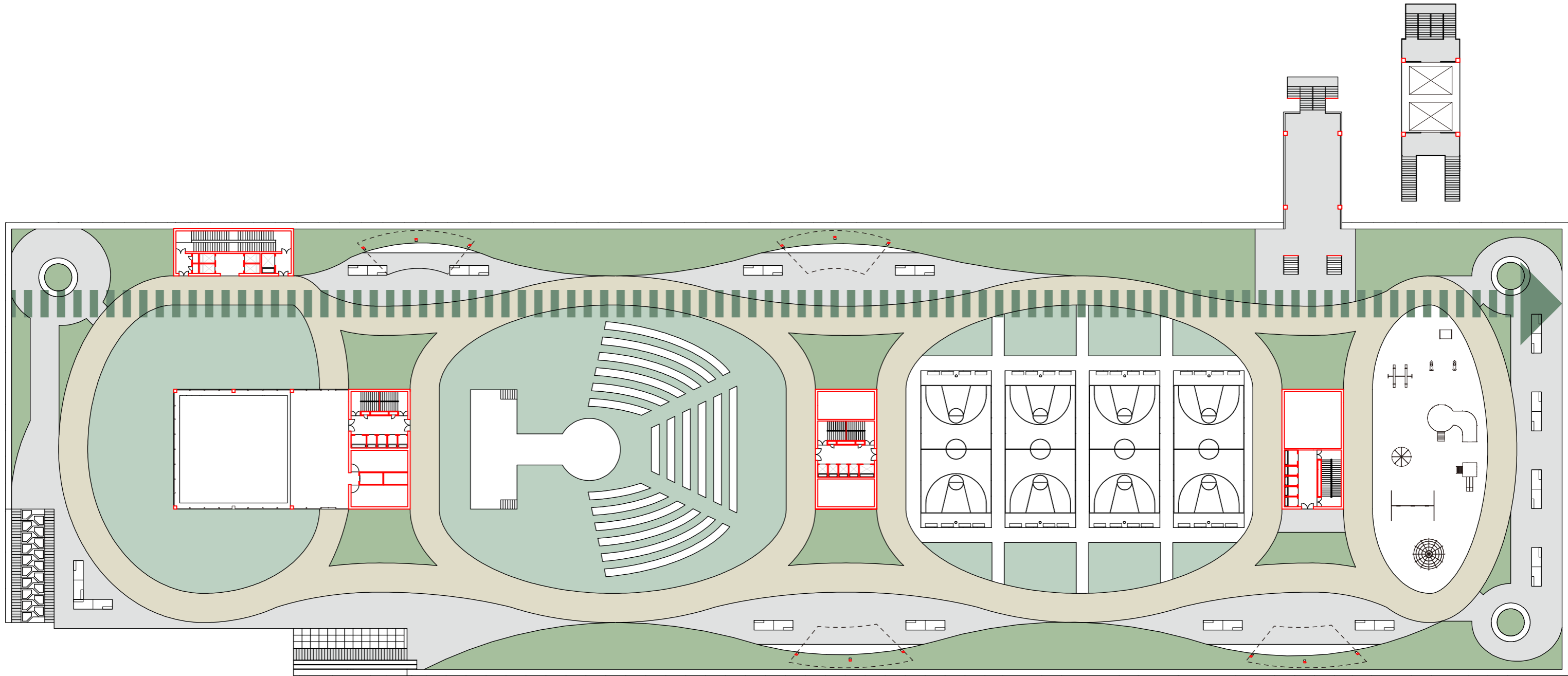


Hard Paving



Grass

0 5 10 20m



Pathway



Bushes
&
Flowers

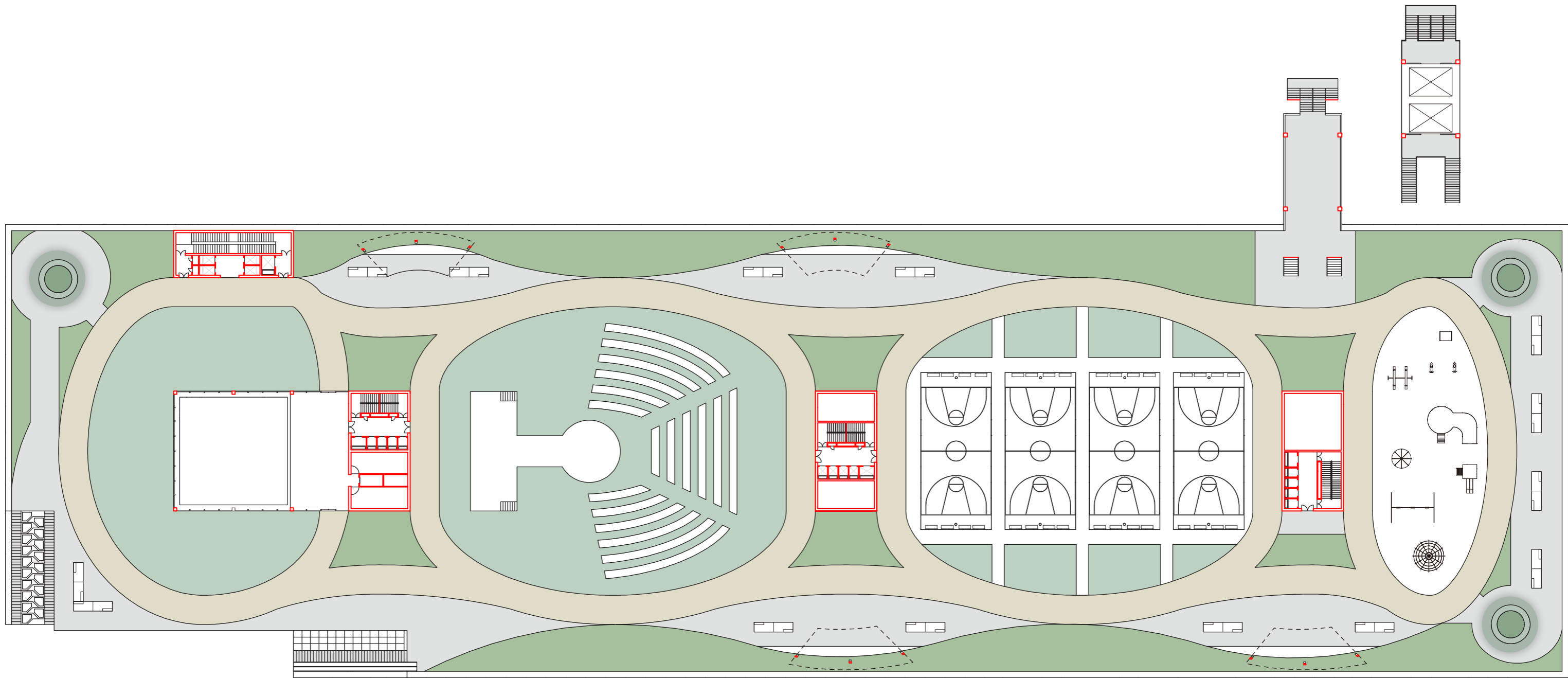


Hard Paving



Grass

0 5 10 20m



Pathway



Bushes
&
Flowers



Hard Paving

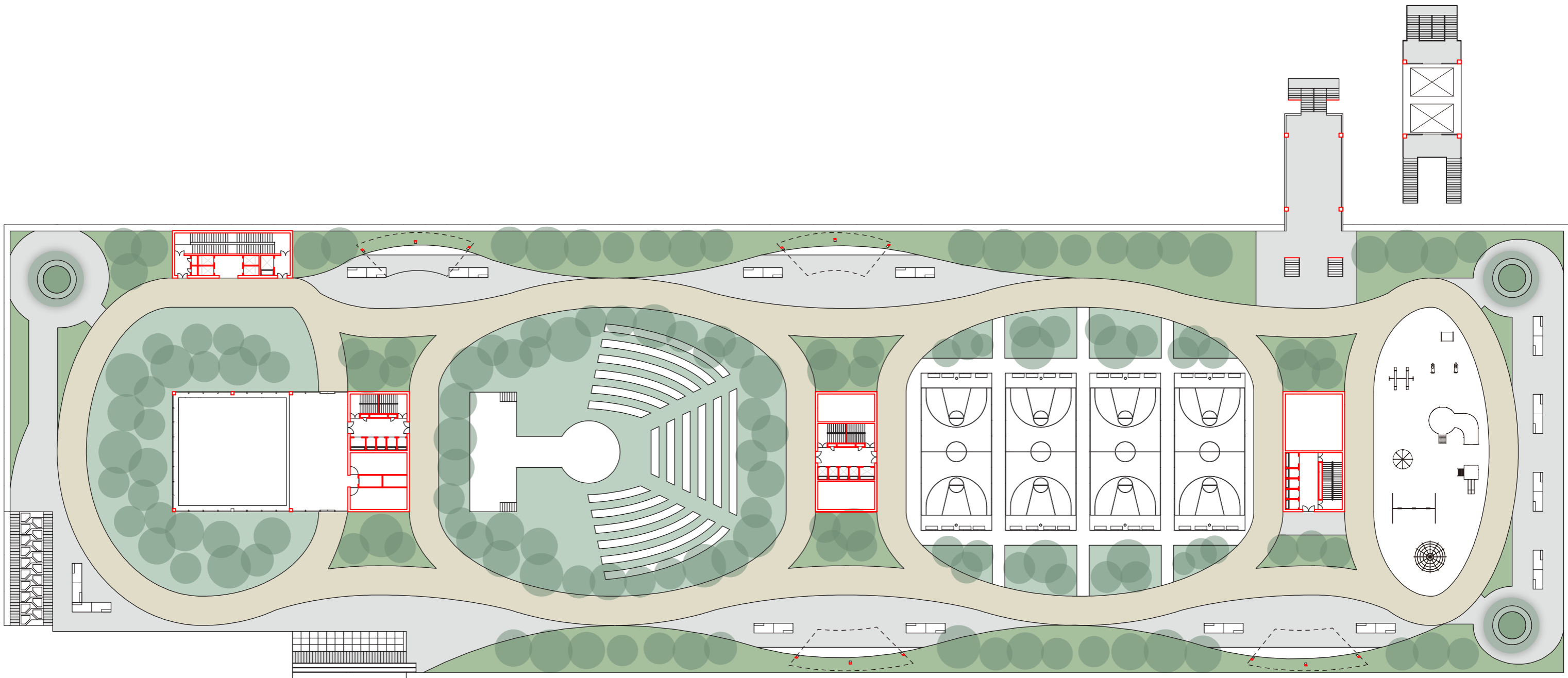


Grass



Big Tree
10m

0 5 10 20m



Pathway



Bushes
&
Flowers



Hard Paving



Grass



Big Tree
10m



Small Trees
5-7m



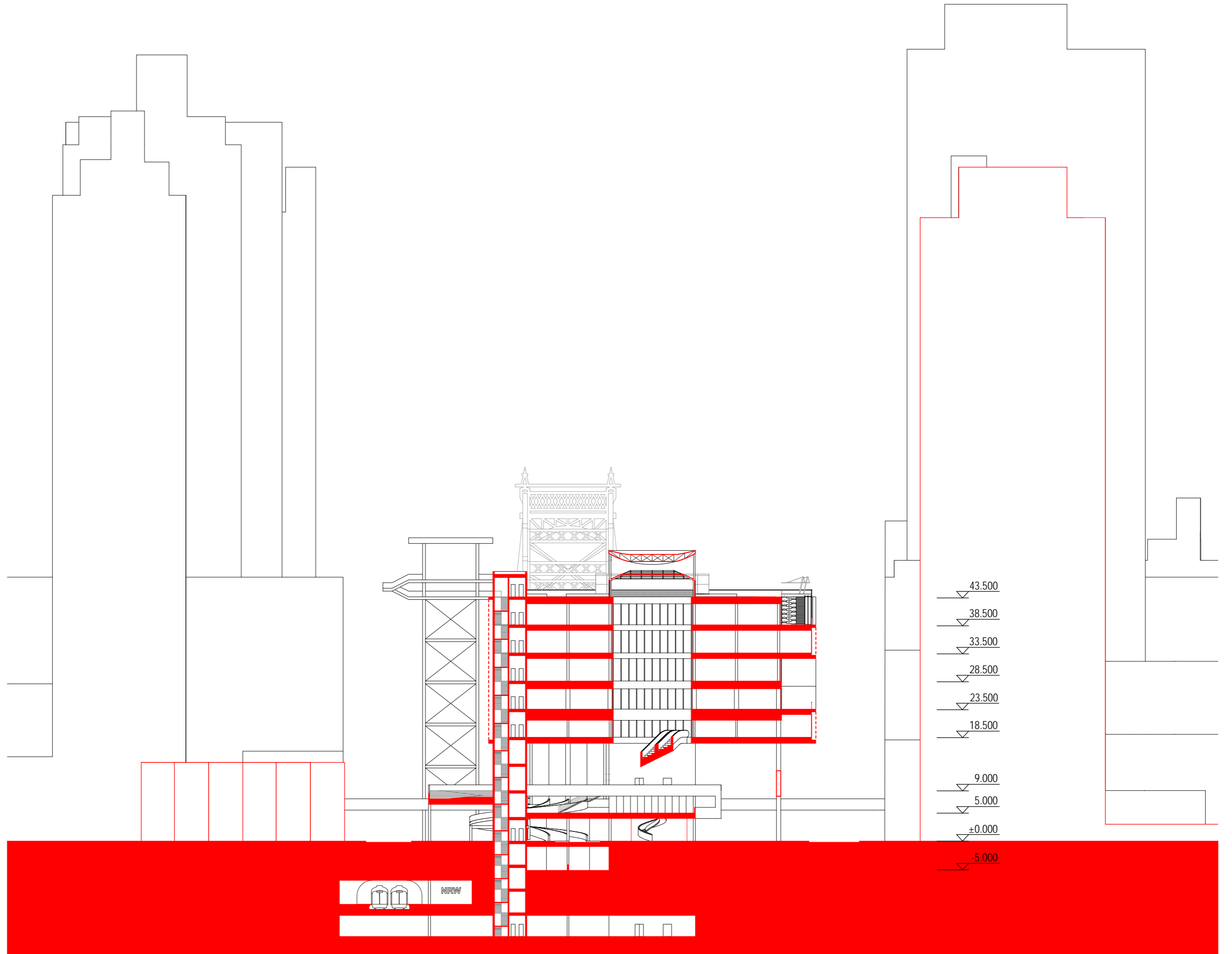














Green Flow Converter



Green Flow Converter

Traffic



Green Flow Converter



Air

Traffic

Green Flow Converter

Consciousness

Air

Traffic



Green Flow Converter

Thanks!

