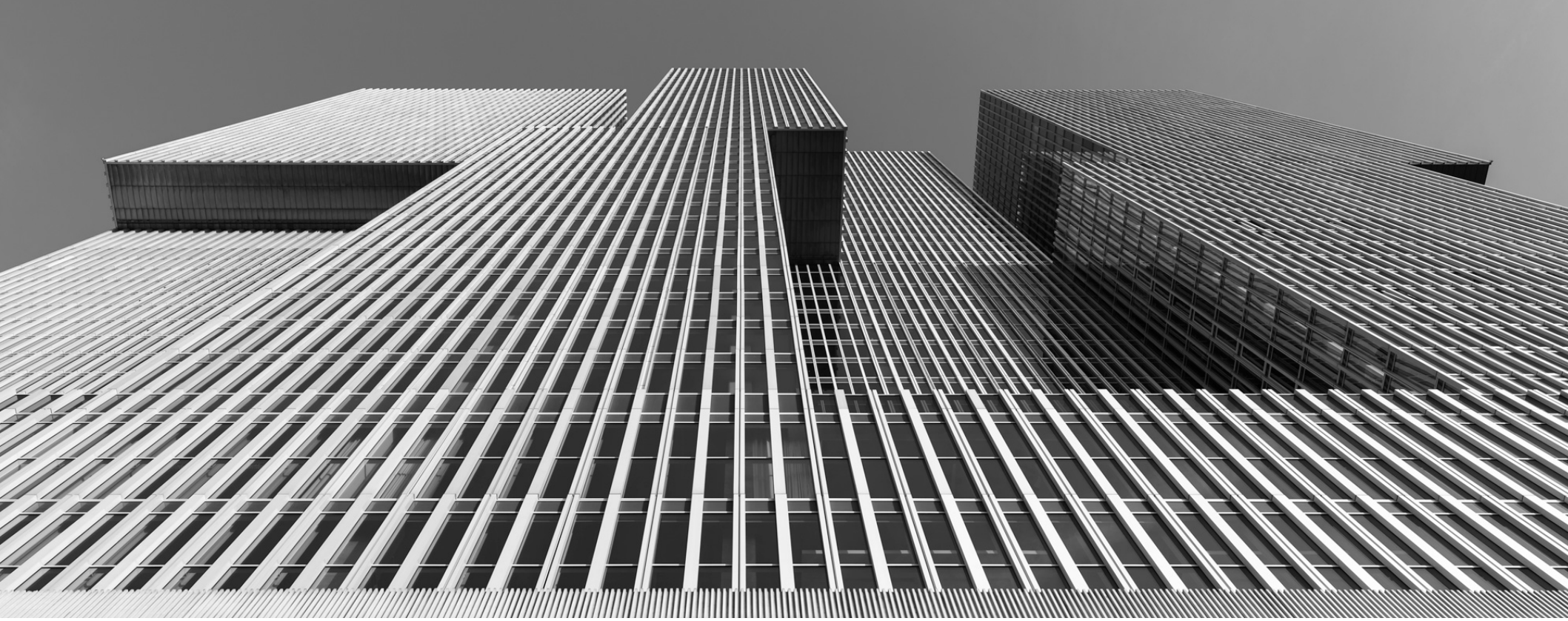


BEYOND IVORY TOWERS

the **cornerstone** to a community-driven economy

Jorn Steenbergen | 4345495 | Hotel New York

J. van Zalingen | S. Holst | H. Smidhen | A. Wandl

complex projects

21/01/2021

Introduction

The Duality of Density

The Skyscraper Economy

Design Concept

Implementation

Conclusion

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COMPLEX PROJECTS



COMPLEX PROJECTS INVESTIGATES **SETTLEMENTS AROUND THE WORLD** THAT ARE OFTEN AMBIGUOUS IN THEIR DEVELOPMENT AND EMBEDDED IN **THE PROCESS OF GLOBALIZATION.**

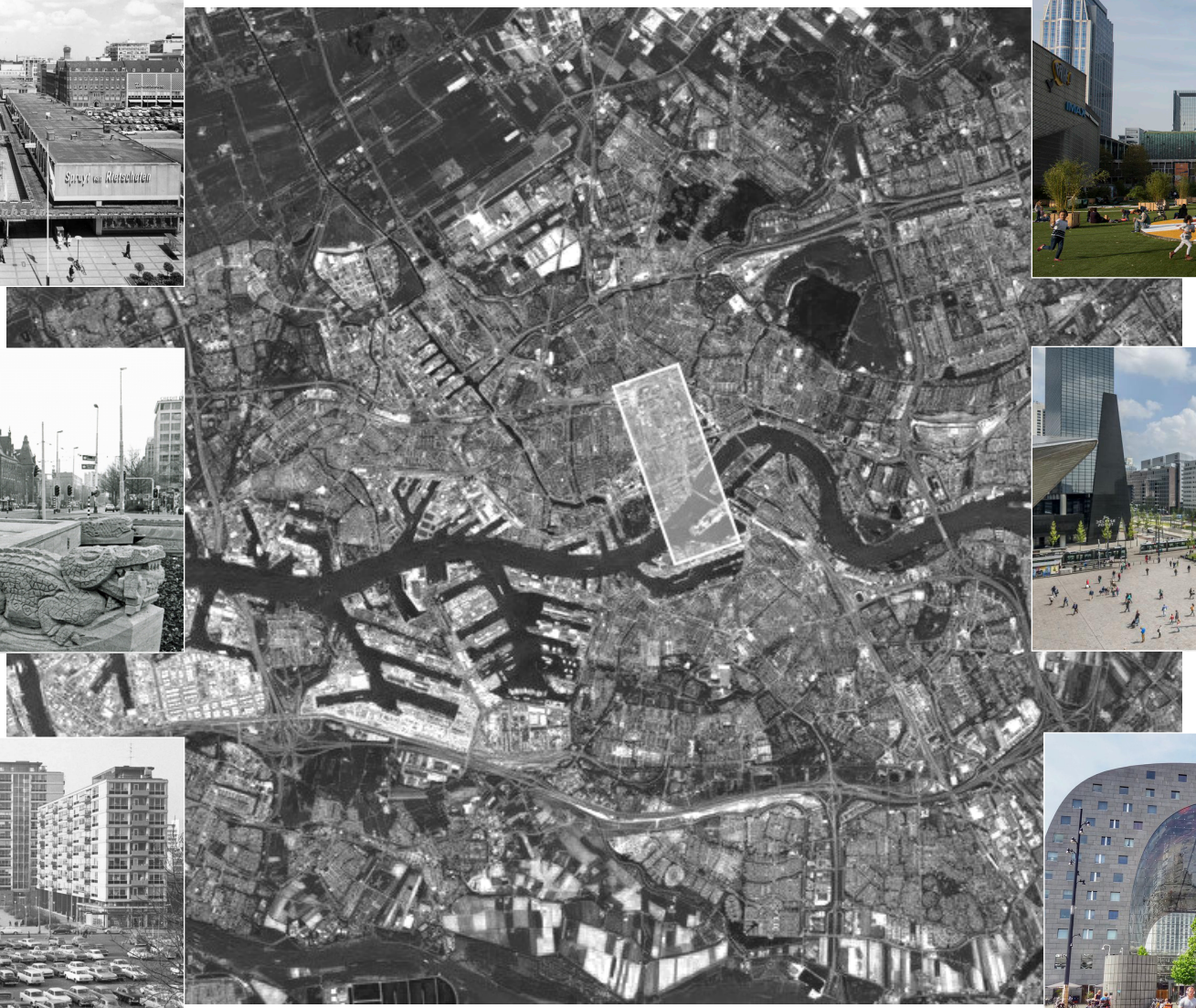
ROTTERDAM

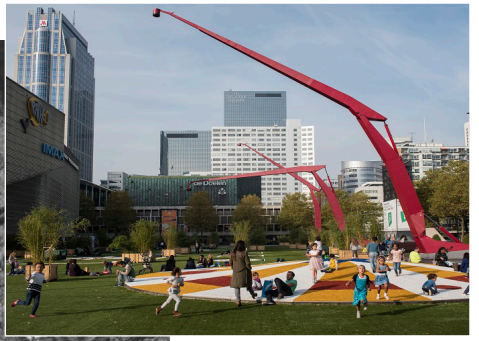


the migration of ideas through the port of Europe

A STATE OF CONSTANT CHANGE



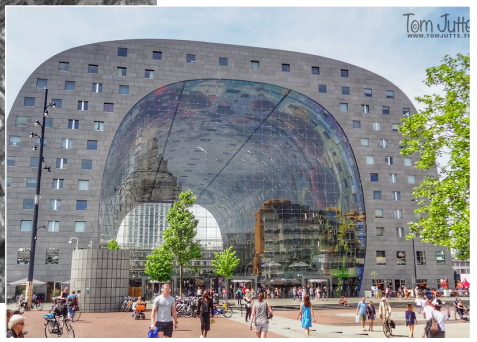










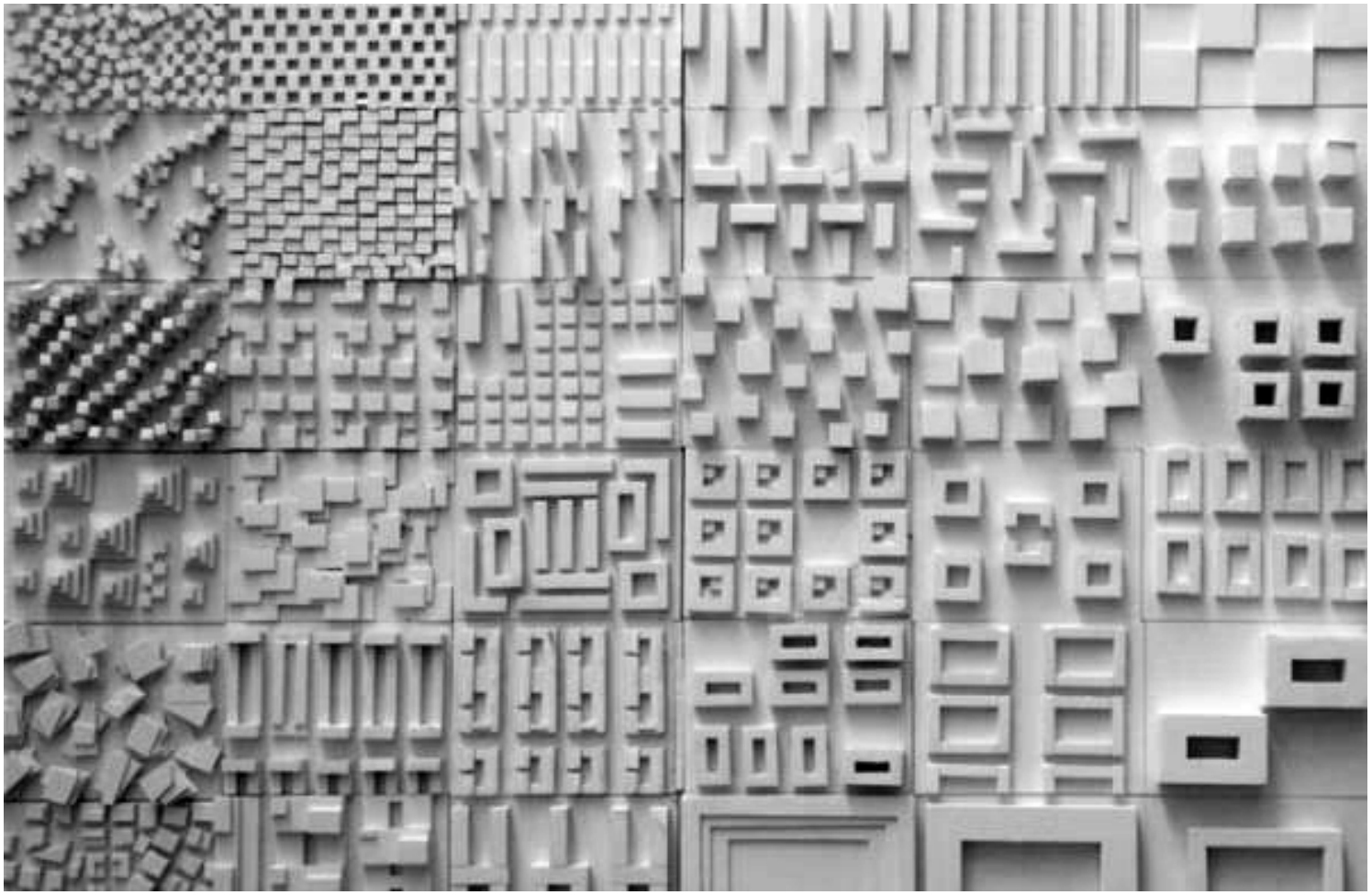


ROTTERDAM TOMORROW



residential tower **BOOM**

PROJECT STATEMENT



DENSITY IS NOT DESIGN

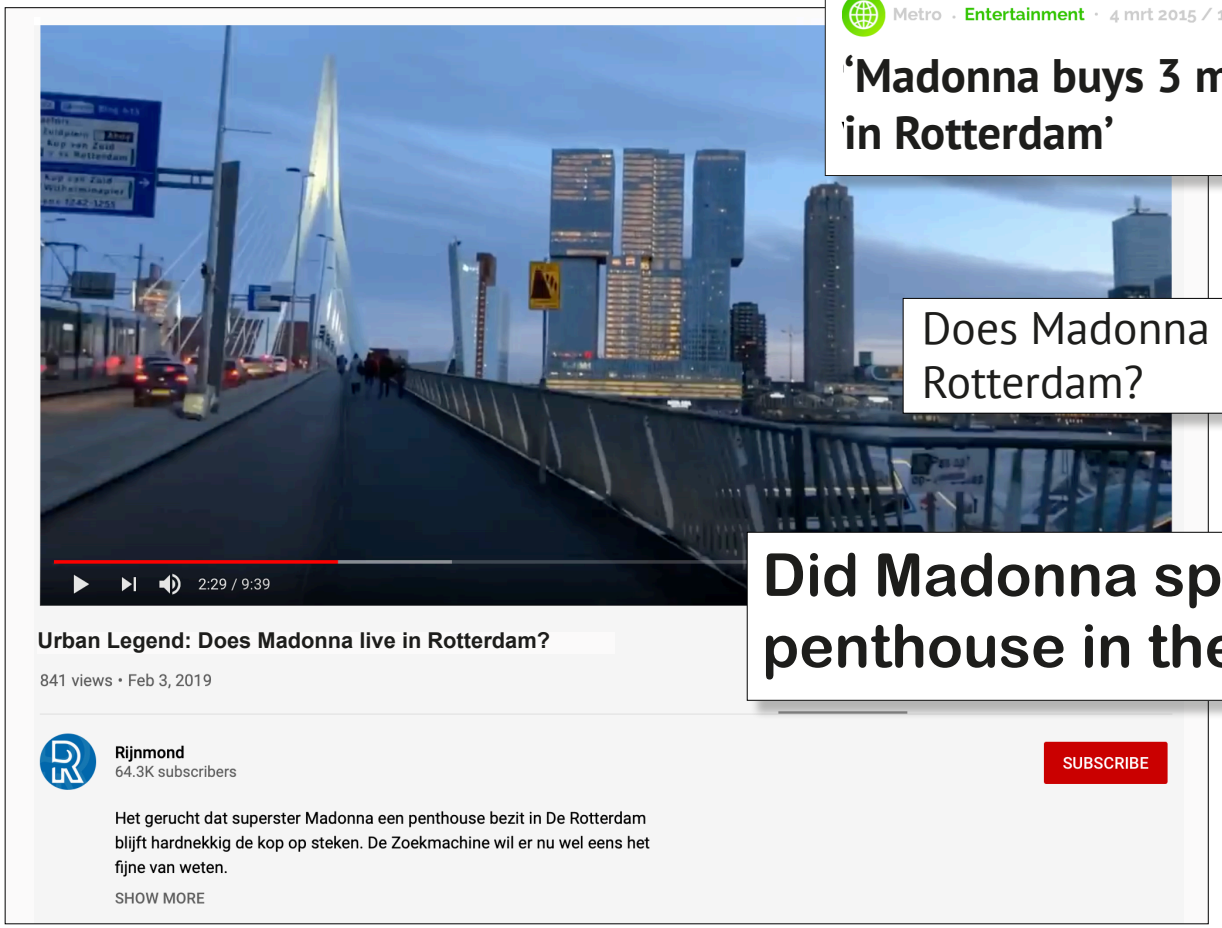
SKYSCRAPER SUBURBS

"THIS RUSH TO DENSITY, **THIS IDEA THAT DENSITY CREATES ECONOMIC GROWTH IS WRONG**. IT'S THE CREATION OF REAL, WALKABLE URBAN ENVIRONMENTS THAT STIR THE HUMAN SPIRIT. **SKYSCRAPER COMMUNITIES ARE VERTICAL SUBURBS**, WHERE IT IS LONELY AT THE TOP. "

Richard Florida author of 'The Rise of the Creative Class'



THE MADONNA PENTHOUSE



Metro · Entertainment · 4 mrt 2015 / 18:50 uur

‘Madonna buys 3 million dollar penthouse in Rotterdam’

Does Madonna really live in the city of Rotterdam?

Did Madonna spent millions on a penthouse in the Rotterdam?

urban legend or..

VERTICAL DISCONNECTION



illustration by Chloe Cushman

VERTICAL DISCONNECTION



illustration by Chloe Cushman

VERTICAL DISCONNECTION

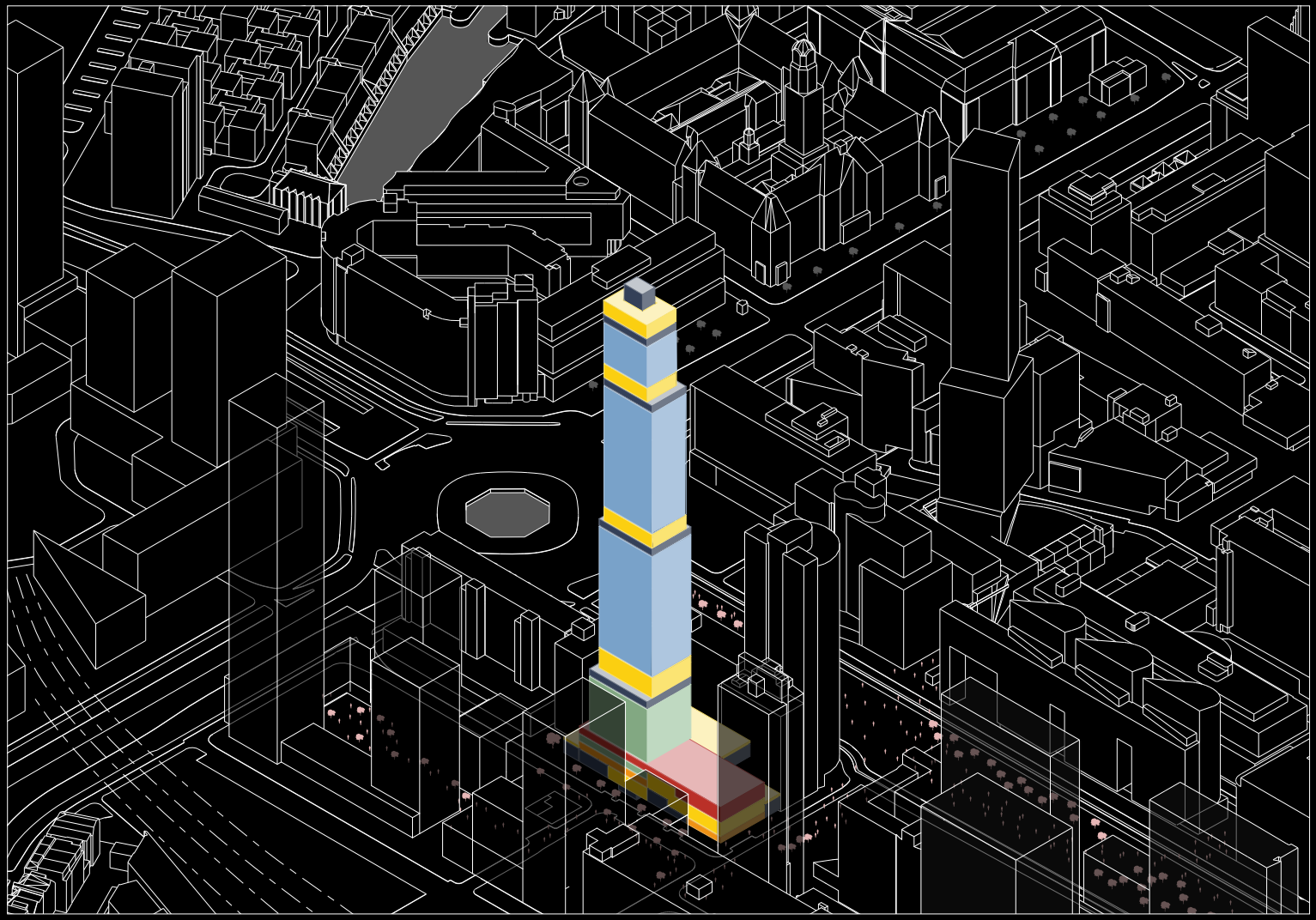


illustration by Chloe Cushman

RESEARCH QUESTION

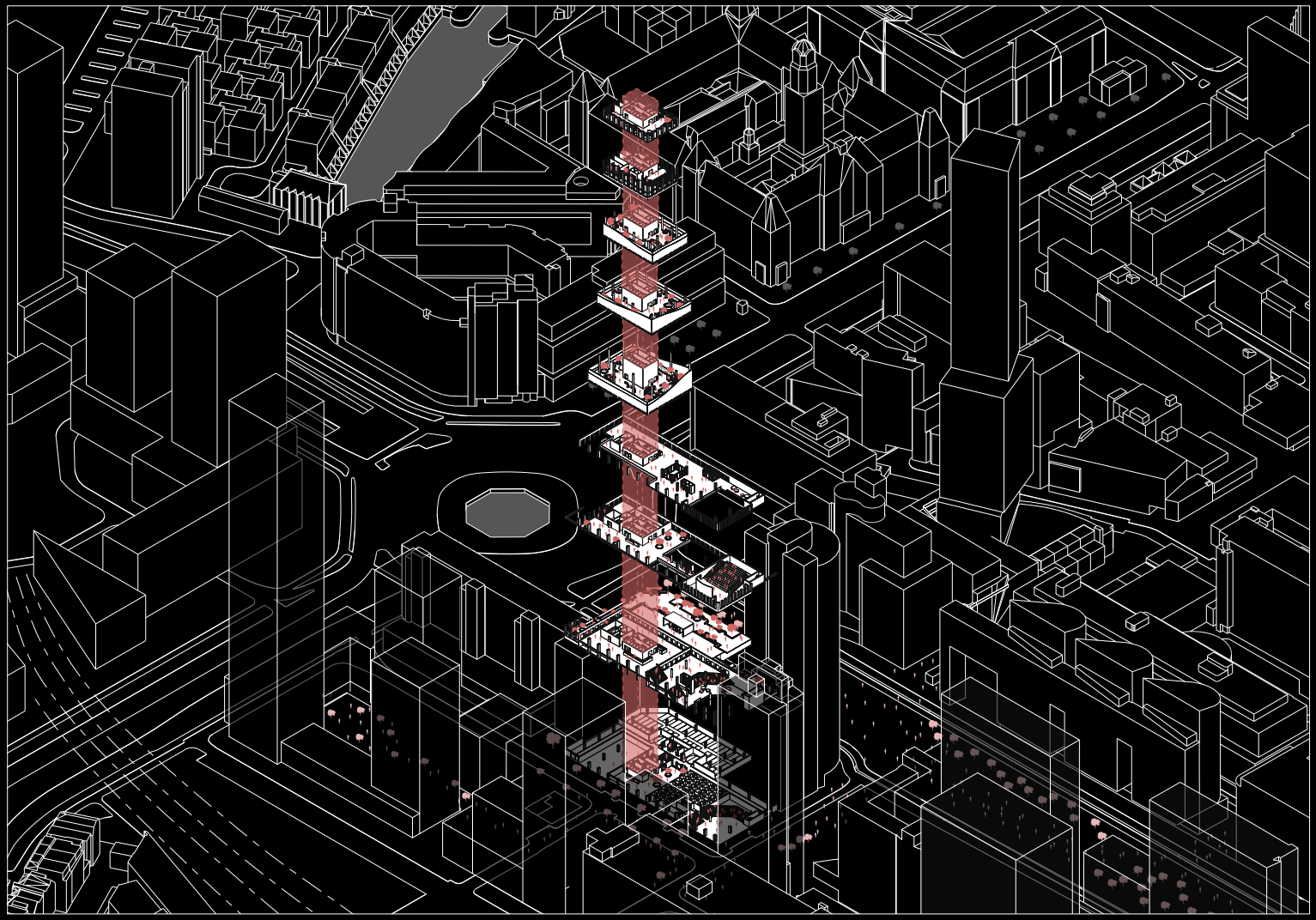
HOW CAN ROTTERDAM INCREASE ITS **INNERCITY DENSITY** WHILST SHAPING **SOCIALLY INTERACTIVE** LIVING ENVIRONMENTS?

THE CORNERSTONE



residential hotel office amenities commercial functional

THE CORNERSTONE



a **skyscraper** that engages the **community**

Introduction

The Duality of Density

The Skyscraper Economy

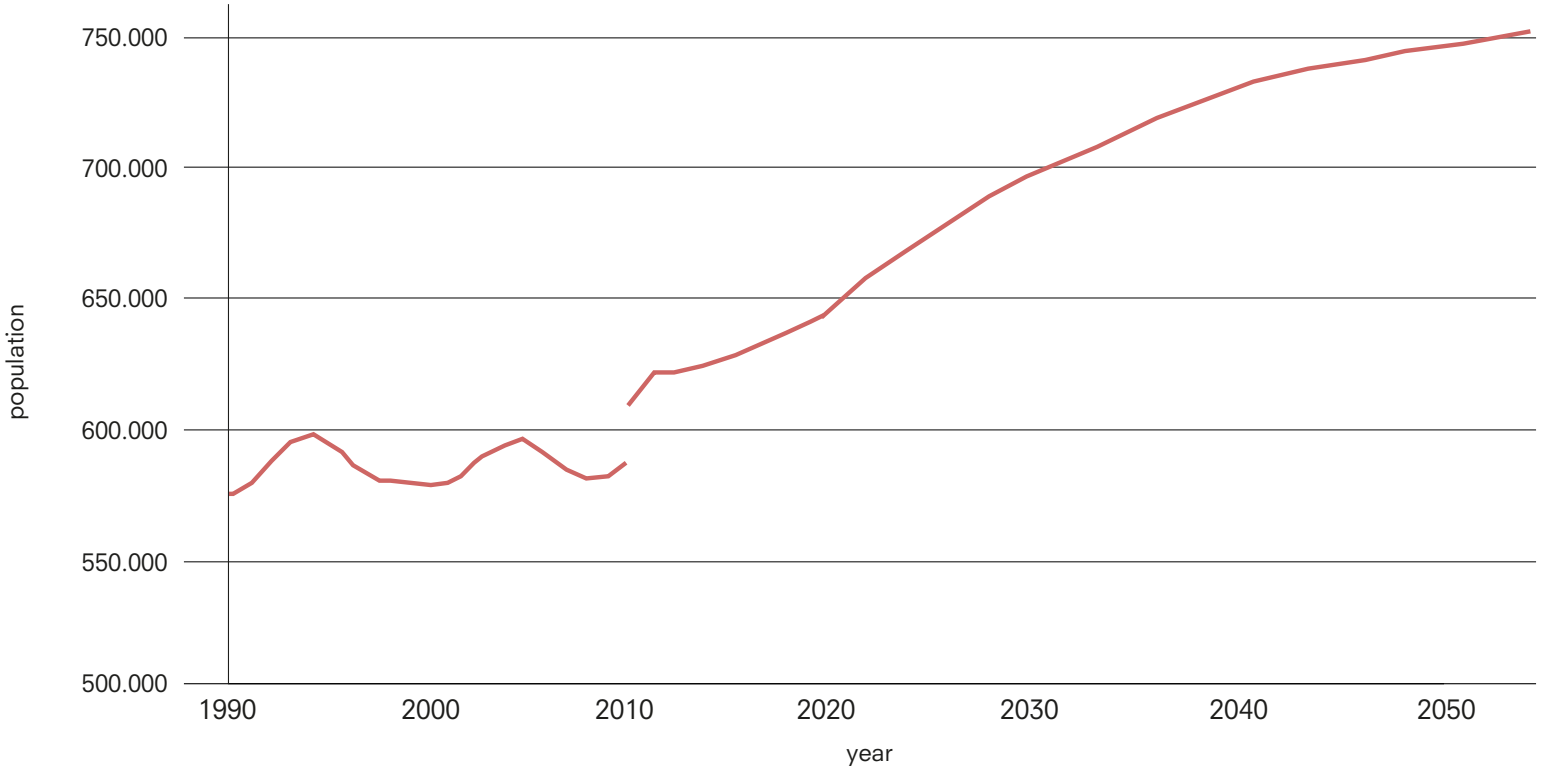
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CITIES ARE GROWING



the United Nations predicts that by 2050 **68% of the worlds population** will live in urban area's
and Rotterdam is no exception to this new wave of urbanisaton

INTERNAL FOCUS



urban growth predictions by the municipality of Rotterdam

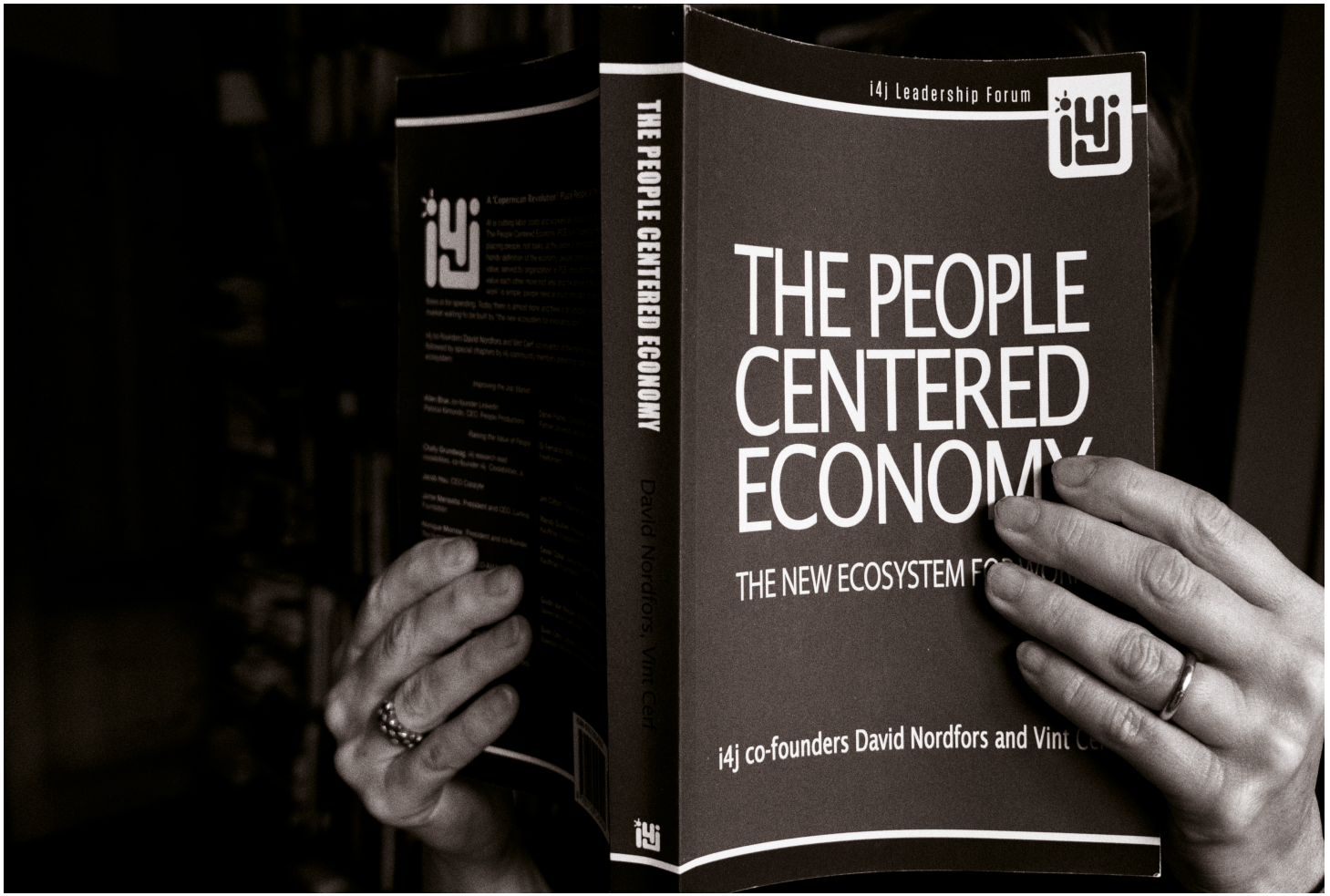
DENSITY = GROWTH

"URBAN AGGLOMERATIONS ARE CONSIDERED **AN ENTRY POINT FOR OUR SUSTAINABLE DEVELOPMENT GOALS**. BECAUSE **THEIR DENSITY, ECONOMIES OF SCALE AND PROXIMITY** ARE AKIN TO AN INVISIBLE STRING THAT BRINGS ALL THE DEVELOPMENT GOALS TOGETHER."

Ms. Maimunah Mohd Sharif, Executive Director of UN-Habitat



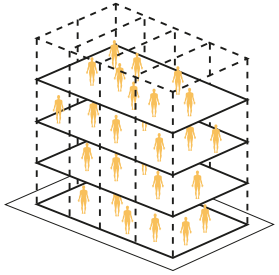
A NEW ECONOMY



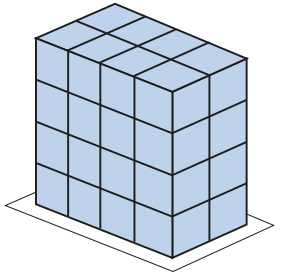
where people are considered the **cornerstone** to economic production
and where interaction and efficiency are used to push boundaries

A COMPLEX CONCEPT

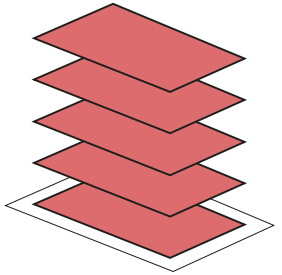
POP
Population per Area



DU
Dwelling Units per Area



FAR
Floorspace per Area

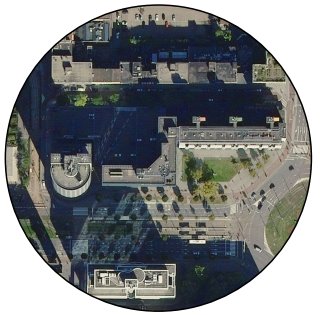




city



neighbourhood



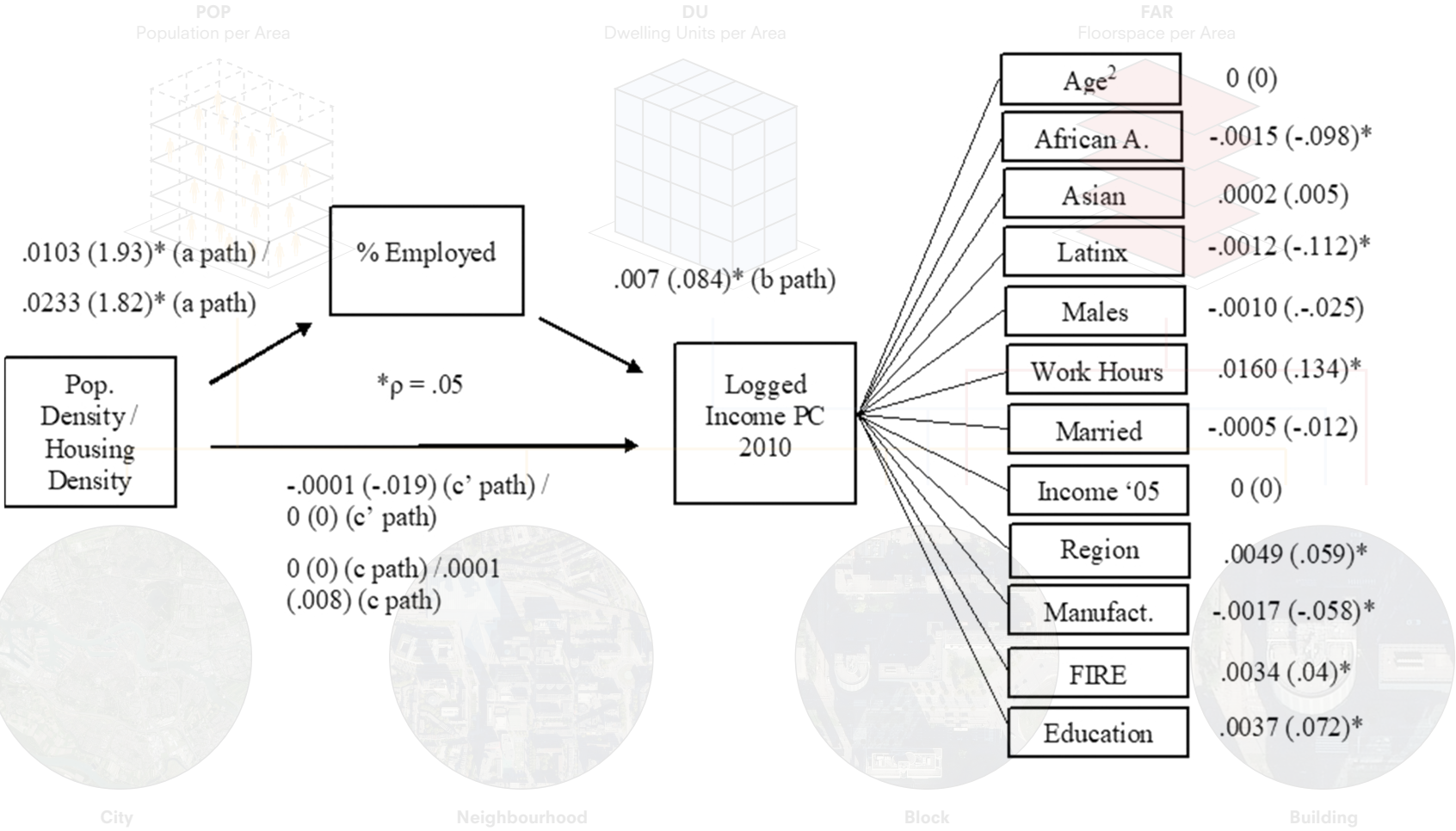
block



building

different methods of measurement
operating on different urban levels and scales

A COMPLEX CONCEPT



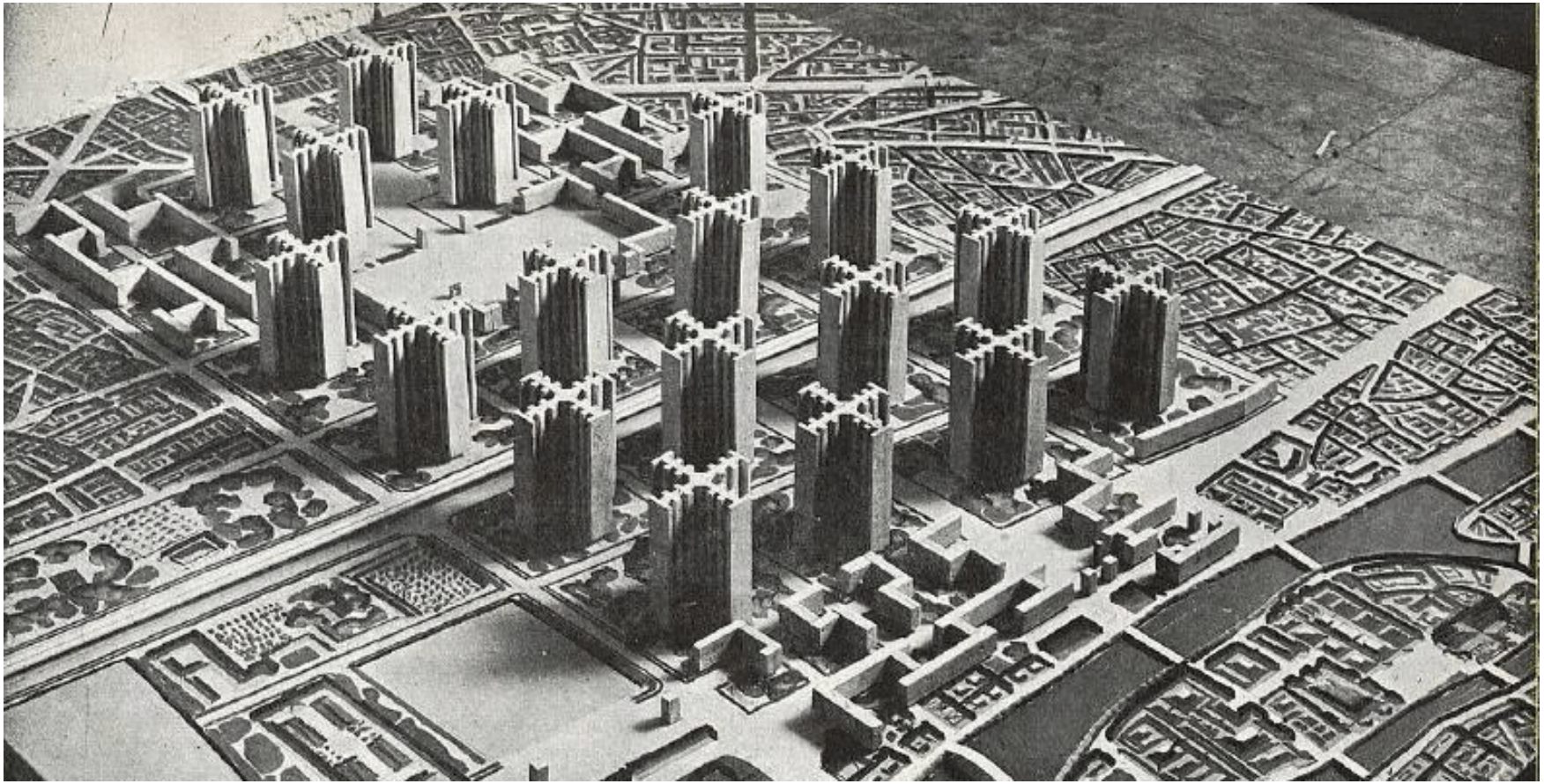
all driven by elaborate macro-economic formulas and ideas

THE VALUE OF DENSITY

WHAT IF WE STOP APPROACHING DENSITY FROM THE PERSPECTIVE OF A DATASHEET

BUT INSTEAD TRY TO GRASP THE MEANING AND VALUES BEHIND THE ARCHITECTURAL CONCEPTS USED TO ACHIEVE IT

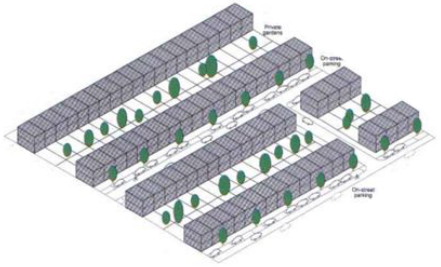
FUNCTION / INTERACTION



Le Corbusier's 'Contemporary City of Three Million People'

NO DEFINITIVE ANSWER

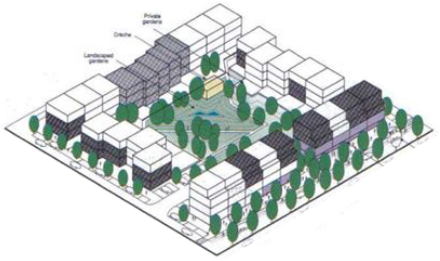
Low-Rise Density
High Coverage





De Pijp, Amsterdam
23.485 p per km²

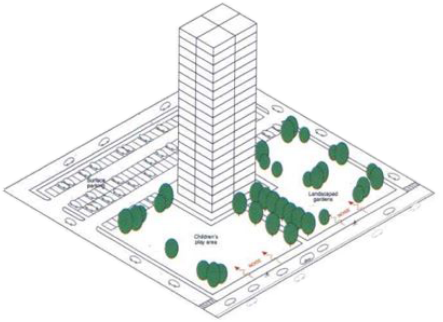
Mid-Rise Density
Medium Coverage





3rd Arrondissement, Paris
29.974 p per km²

High-Rise Density
Low Coverage





Yorkville, New York City
28.342 p per km²

multiple solutions can be found to achieve a sustainable form of density
bound to set historic and contextual conditions

ROTTERDAM TODAY



population density | **8.571 p per km²**

ROTTERDAM TOMORROW



population density | **14.285 p per km²**

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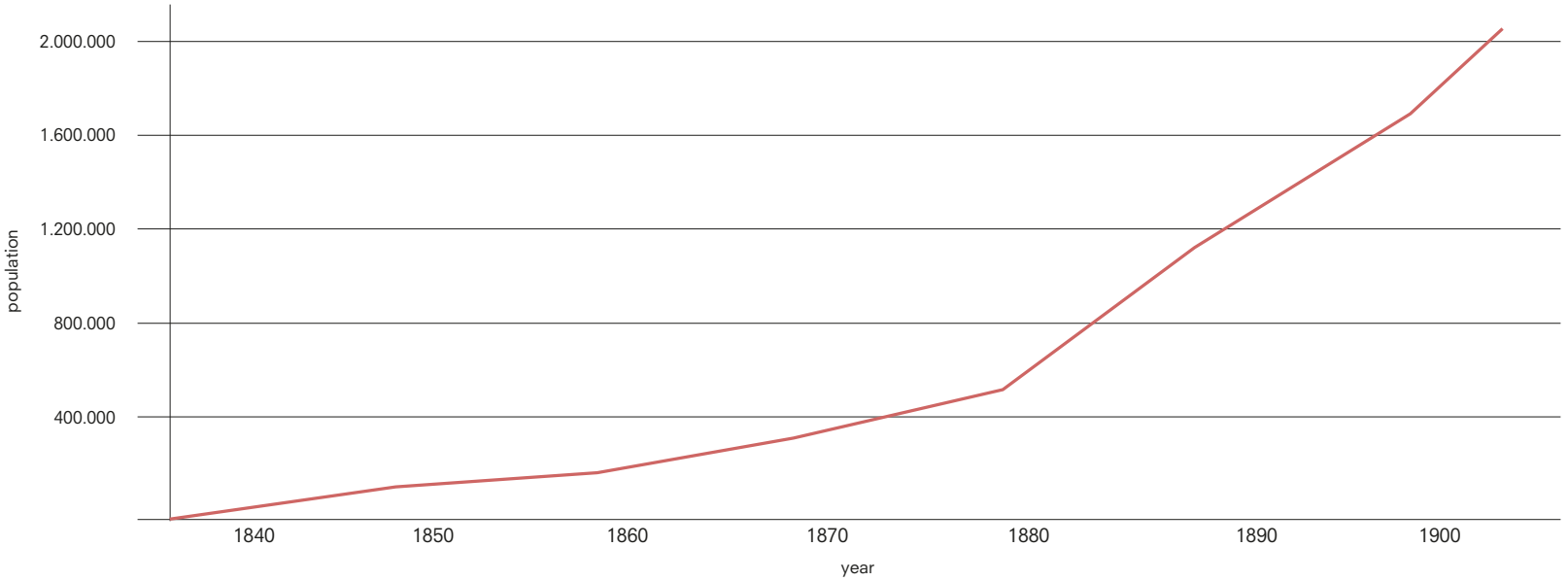
NORTH-AMERICA



the first modern skyscraper

THE RISE OF CHICAGO

gpopulation Growth



timeline

1848
firs railroad connection

1871
THE GREAT CHICAGO FIRE

1893
Wold's Columban Exposition

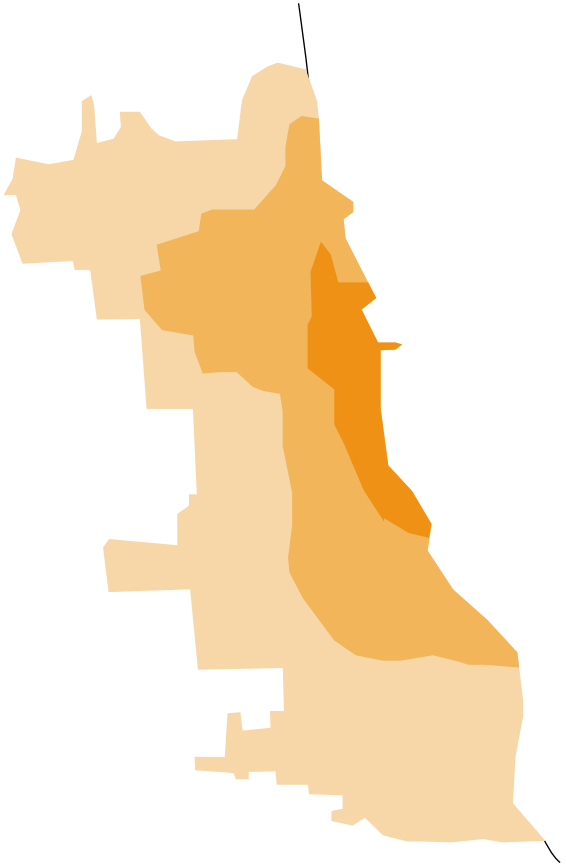
1833
founding of Chicago

1854
largest grain port in the world

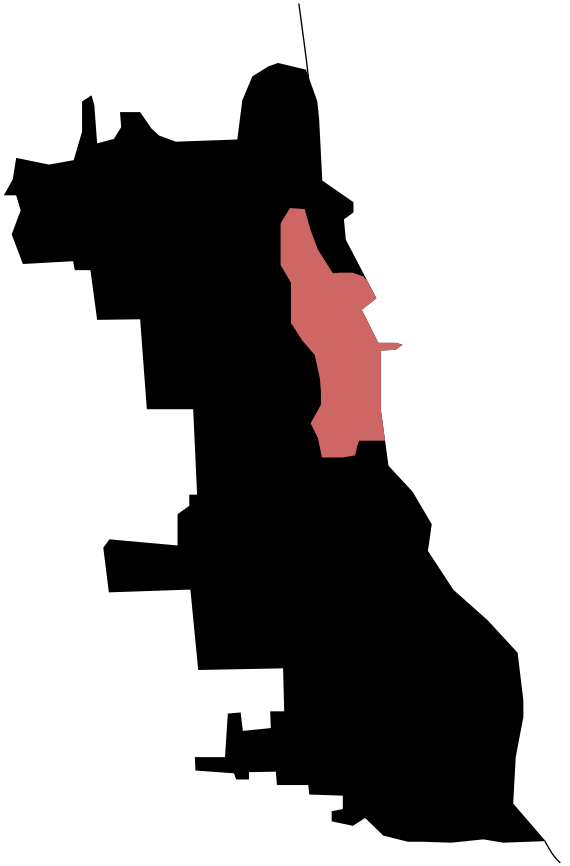
1884
THE WORLD'S FIRST SKYSCRAPER

thriving on industrialisation

LAND PRICES



land value



destroyed area

the most expensive land in the city was suddenly open for redevelopment

THE HOME INSURANCE BUILDING



the world’s first skyscraper

THE SKY IS THE LIMIT



1873 Equitable Life Building

1889 Auditorium Building

1890 New York World Building

1894 Manhattan Insurance

1899 Park Row

1908 Singer Building

1909 Metropolitan Life

1913 Woolworth Building

1929 40th Wall Street

1930 Chrysler Building

1931 Empire State Building

empire state of mind

THE SKYSCRAPER INDEX



construction climax predicts economic downfall

CORPORATE WELFARE

“THE HEIGHT OF THE BUILDING IS A CONCRETE METAPHOR FOR THE COMPANY TURNOVER, ONLY THOSE ABOVE YOU, OR YOUR ‘SUPERIORS’, COUNT, WHILE YOUR ‘INFERIORS’ FADE QUIETLY INTO INSIGNIFICANCE.”

Marco D’Eramo in ‘The Pig and the Skyscraper’



THE PIKKETYSCRAPERS

The Telegraph

Why Billionaires Don't Pay Property Taxes i New York

KRISTON CAPPS MAY 11, 2015

from owners to

57 supertall
tered all

URBAN HUB
People Shaping Cities

NEW DEVELOPMENTS, REAL ESTATE TRENDS

Pikettyscrapers: What You Call Those Expensive Supertall Buildings Nobody Lives In

POSTED ON THU, MARCH 12, 2015 BY DIANE PHAM

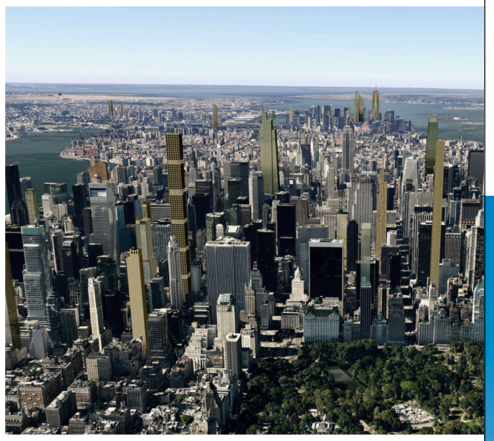


Image: NYC's 2018 future skyline via CityRealty

Supertall, pencil tower, megatall, superslim, skinnyscraper... A
describe all the glass and stone towers popping up in Manhattan, we've come to notice that
not one person has come up with a way to describe all those skyscrapers being scooped up,

The Guardian

The long read

Super-tall, super-skinny, super-expensive: the 'pencil towers' of New per-rich

ation of wealth in a city
or sale has produced a
ike tower. By Oliver

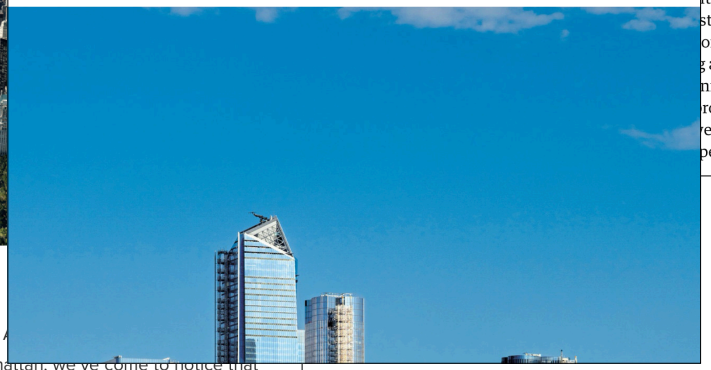
y of architecture for a new type of building to
s' discovery of concrete birthed the great domes
its empire. The Victorians' development of steel
stic bridges and vaulted train sheds. The
of the elevator created the first skyscrapers in
a new type of structure that perfectly embodies
nical ingenuity and extreme inequality. A heady
rowess, zoning loopholes and an unparalleled
ealth have together spawned a new species of
per-expensive spire.

The New York Times

New York City's Evolving Skyline

A high-rise building boom, mostly of luxury condos, has transformed New York City's skyline in recent years — and there's more to come.

By Stefanos Chen • June 5, 2019



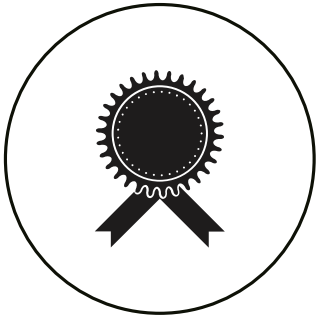
WHY WE BUILD HIGH



Economic Growth



Land Value



Corporate Prestige



Wealth Investment

POST-WAR EUROPE



a different sentiment

STALIN'S SEVEN SISTERS

"WE WON THE WAR. FOREIGNERS WILL COME TO MOSCOW, WALK AROUND, AND THERE ARE NO SKYSCRAPERS. IF THEY COMPARE MOSCOW TO CAPITALIST CITIES, IT'S A MORAL BLOW TO US"

Joseph Stalin as recalled by Nikita Khruschev



THE STACKED KHRUSHCHYOVKA



mass urban housing in a microcrayon

WHY WE BUILD HIGH

Economic Growth

Land Value

Corporate Prestige

Wealth Investment



Recognition



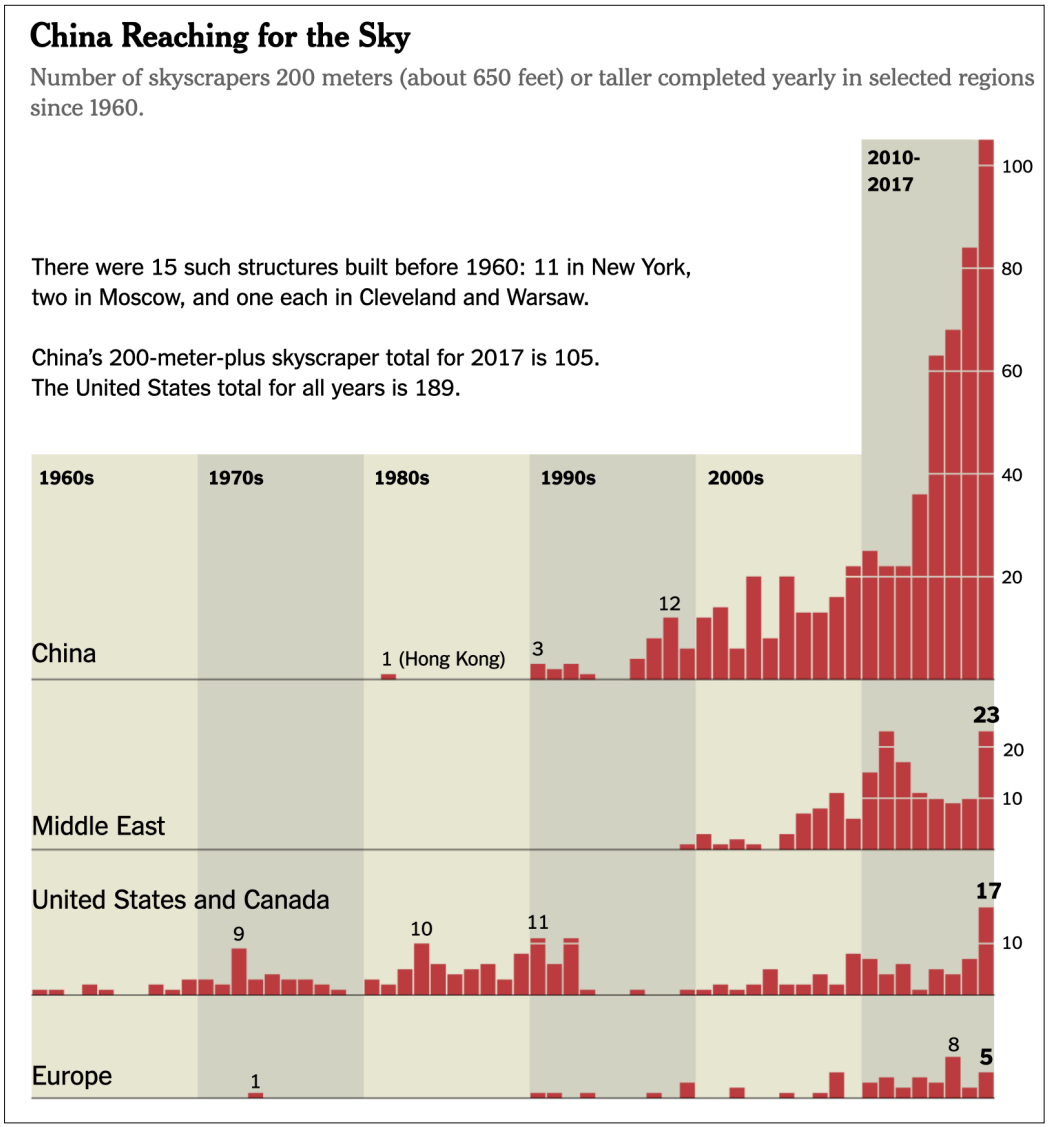
Urbanisation

MODERN CHINA

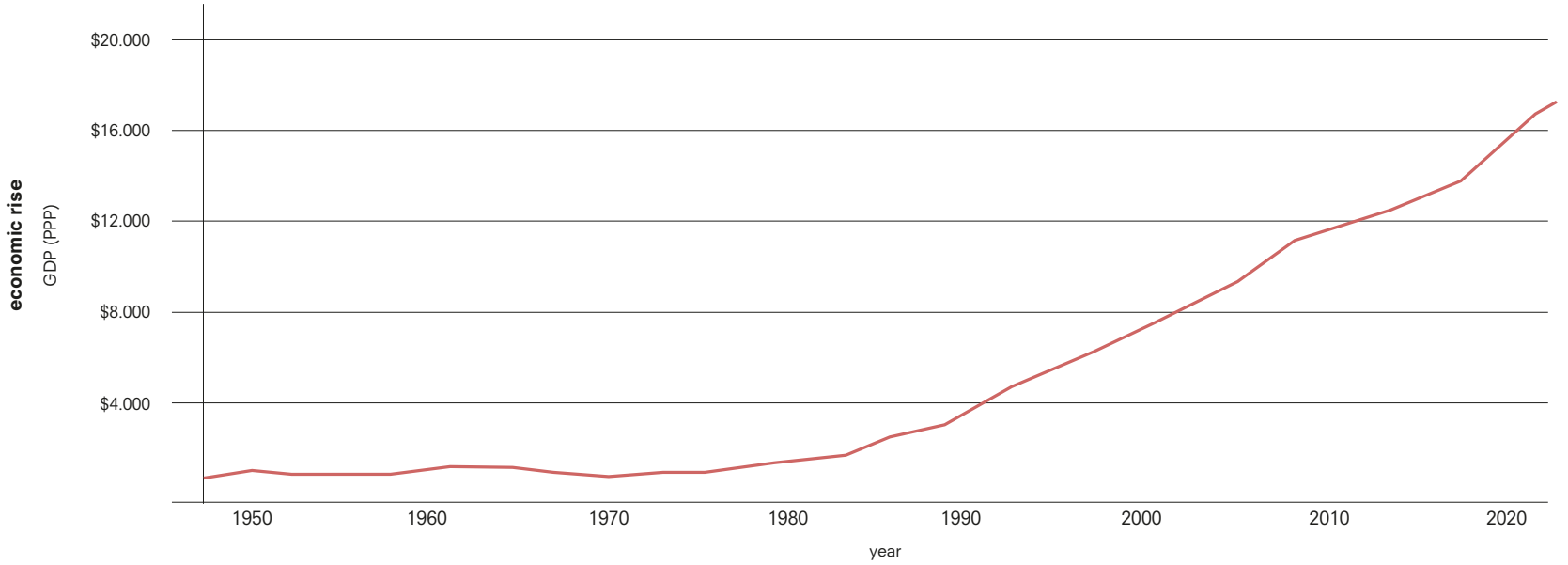


a new world leader

SKYSCRAPER BOOM



THE REFORMS OF CHENG



timeline

1949 founding of China's people's republic

1959 lushan conference

1976 passing of Mao Zedhong

1978 **OPEN DOOR POLICY**

1992 **SHANGHAI BECOMES A SEZ**

2001 entry in the WTO

2017 'XI Jingping Thought'

directly connected to China's social-economic rise

EXTREME URBANISATION

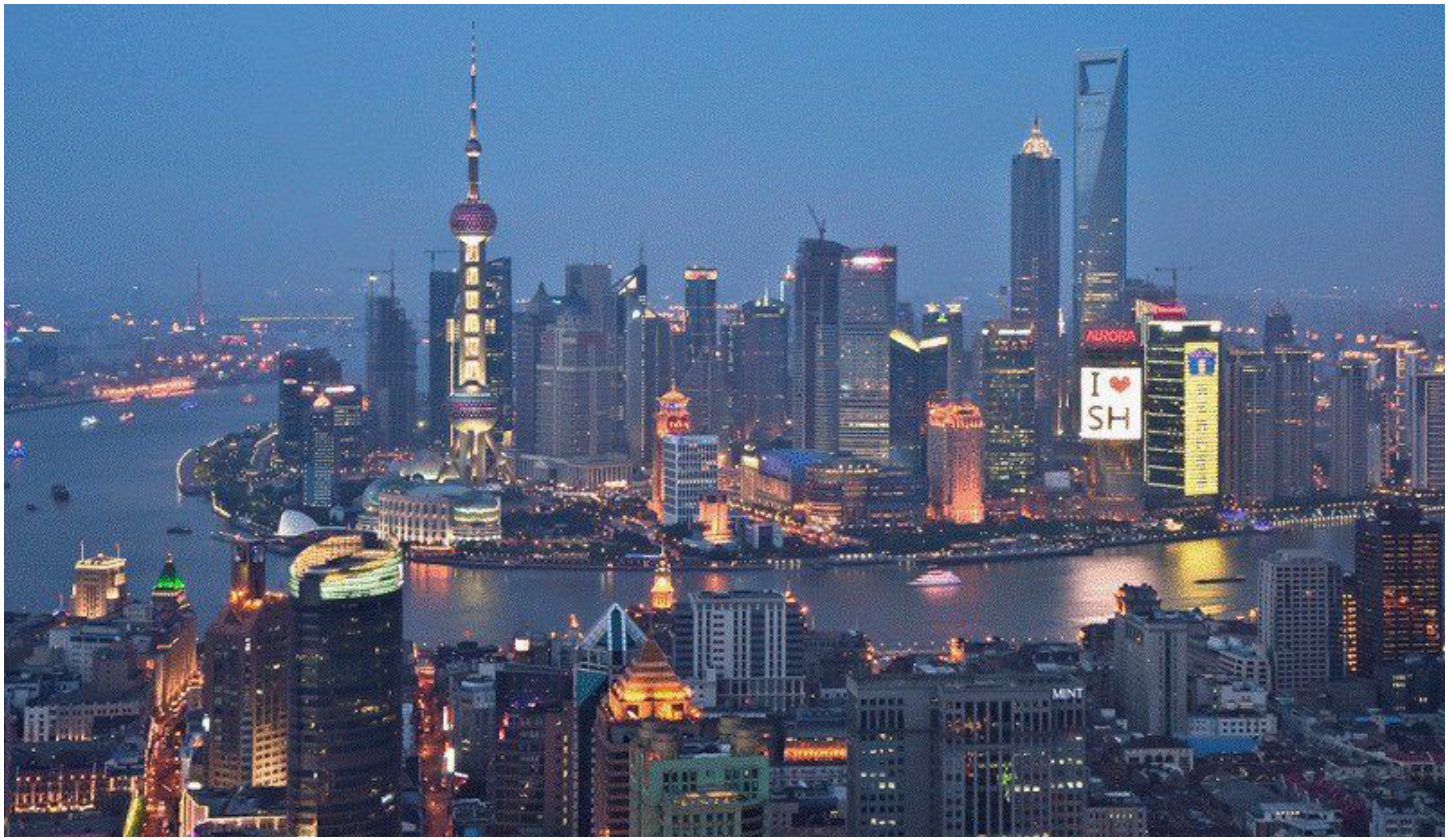


“THE GREATEST INTERNAL MIGRATION IN HUMAN HISTORY”

The New York Times

in 1979, 19% of Chinese people lived in cities

EXTREME URBANISATION



“THE GREATEST INTERNAL MIGRATION IN HUMAN HISTORY”

The New York Times

today, 60% of Chinese people lives in cities

WHY WE BUILD HIGH



Economic Growth



Land Value

Corporate Prestige

Wealth Investment

Recognition



Urbanisation

THE MIDDLE-EAST



if we built it, they will come

BEYOND OIL



the dependency of Dubai’s GDP on oil has shifted from 50% in the 1970’s..

BEYOND OIL



the dependency of Dubai's GDP on oil has shifted from 50% in the 1970's..
towards **less than 1% percent** in todays economy

WHY WE BUILD HIGH

Economic Growth

Land Value

Corporate Prestige



Wealth Investment



Global Recognition

Urbanisation



Economic Attraction



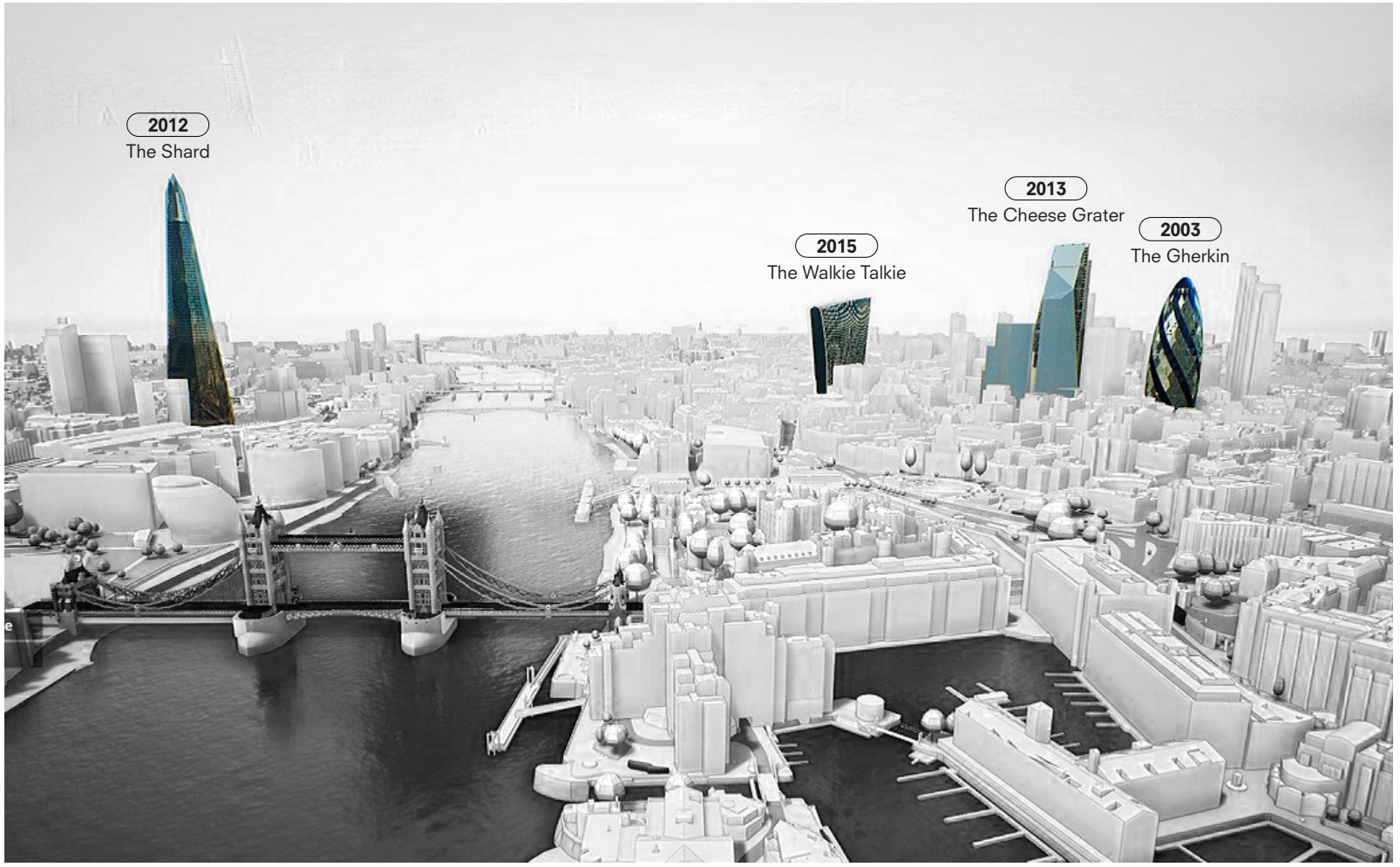
City Branding

EUROPE



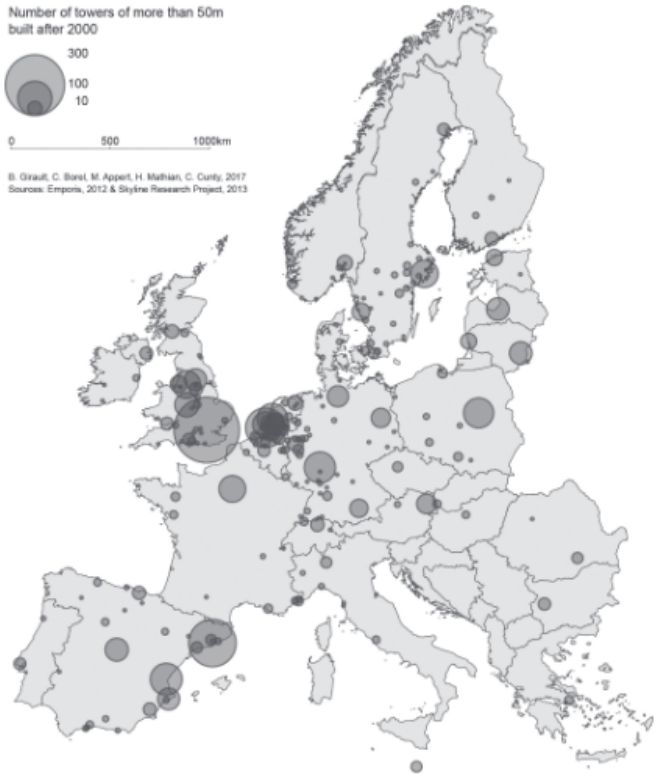
the normalisation of a typologie

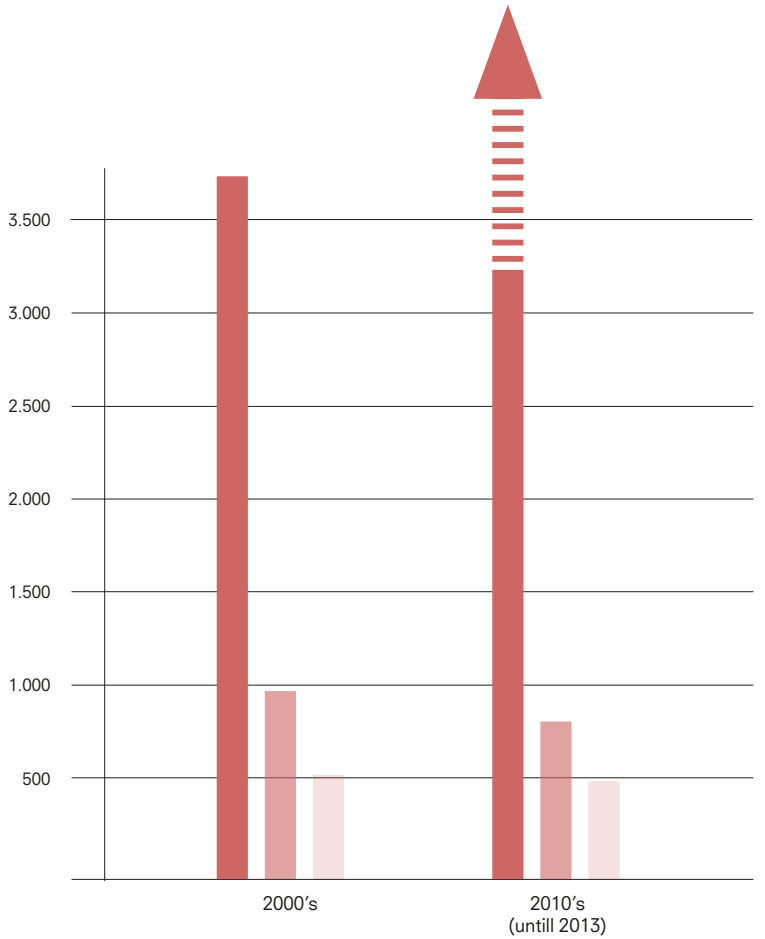
GROWING ACCEPTANCE



iconic skyscrapers start to rise in the historic City of London

LIVING IN THE CLOUDS





high rise has moved beyond its iconic stature into a well-accepted residential typologie

residential corporate other

THE NETHERLANDS



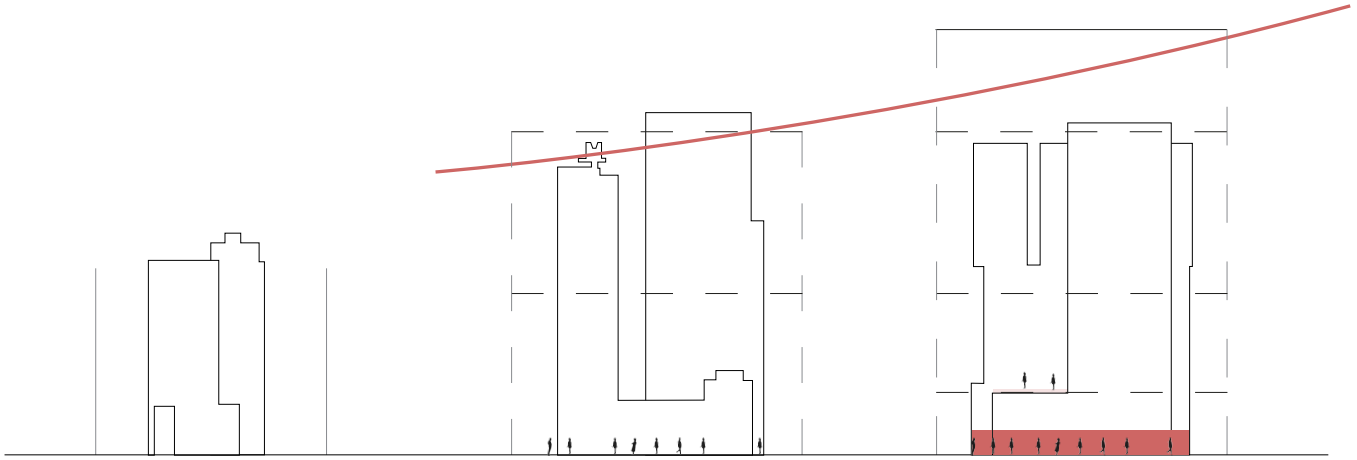
the Dutch frontrunner

POST-WAR RECONSTRUCTION



modern yet not vertical

HIGH RISE VISION



1993 **inner city plan** 2000 **high-rise policy** 2011 **high-rise vision**

MODERN CITY STRUCTURE

WHY?



Land Value



maximising spatial use within the wide post-war urban framework

MODERN CITY 2.0

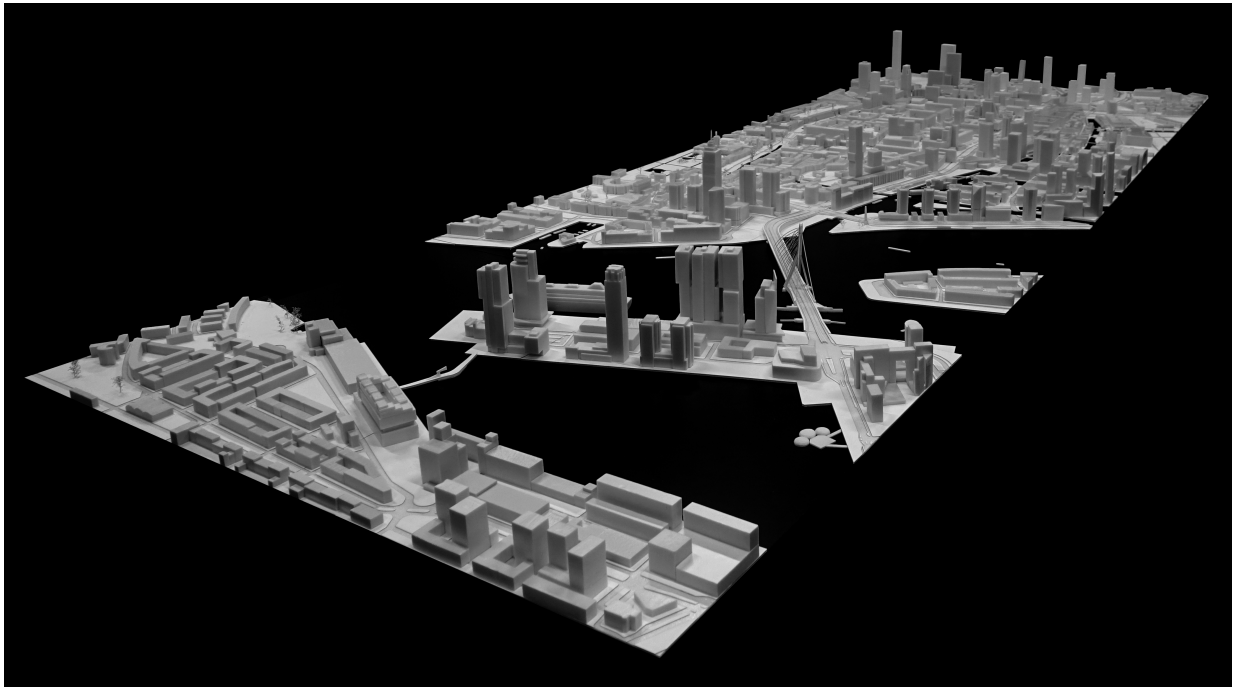
WHY?



Land Value



City Branding



within the top 50 heighest buildings in the Netherlands 21 are located in Rotterdam
that is more than in Amsterdam (9) and The Hague (8) combined

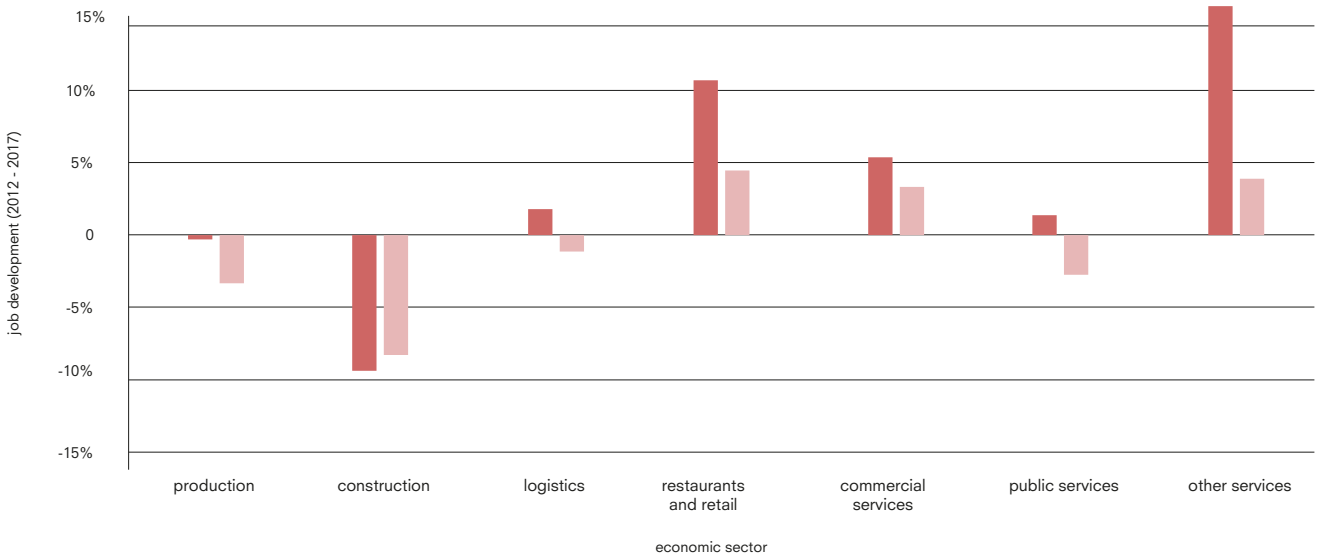
THE NEW ECONOMY

WHY?

Land Value

City Branding

Economic Attraction



an econonomy build around people instead of corporations

Rotterdam The Netherlands

DENSITY = GROWTH

WHY?

Land Value

City Branding

Economic Attraction

Urbanisation



internally building a city the size of Delft

WHERE ECONOMY MEETS HEIGHT



Shell II, 1976

WHERE ECONOMY MEETS HEIGHT



Delftse Poort, 1992

WHERE ECONOMY MEETS HEIGHT



Milleniumtoren, 2000

WHERE ECONOMY MEETS HEIGHT



First Rotterdam, 2015

THE ROTTERDAM CENTRAL DISTRICT



INJECTING RESIDENTIAL



improving the interactive streetscape by redeveloping the Schiekadeblok

INTERACTIVE STREETSCAPE?

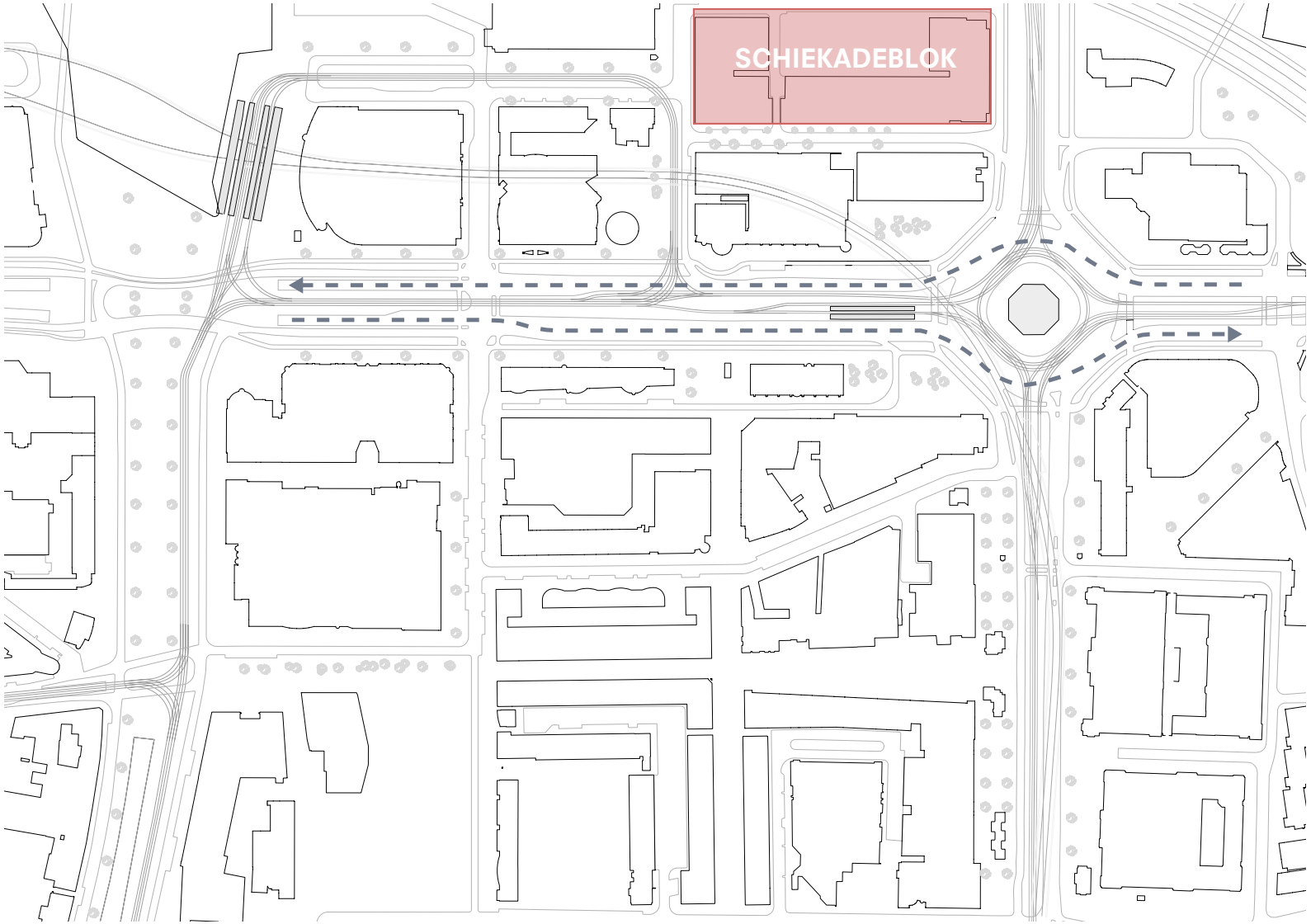


THE DUALITY OF DENSITY



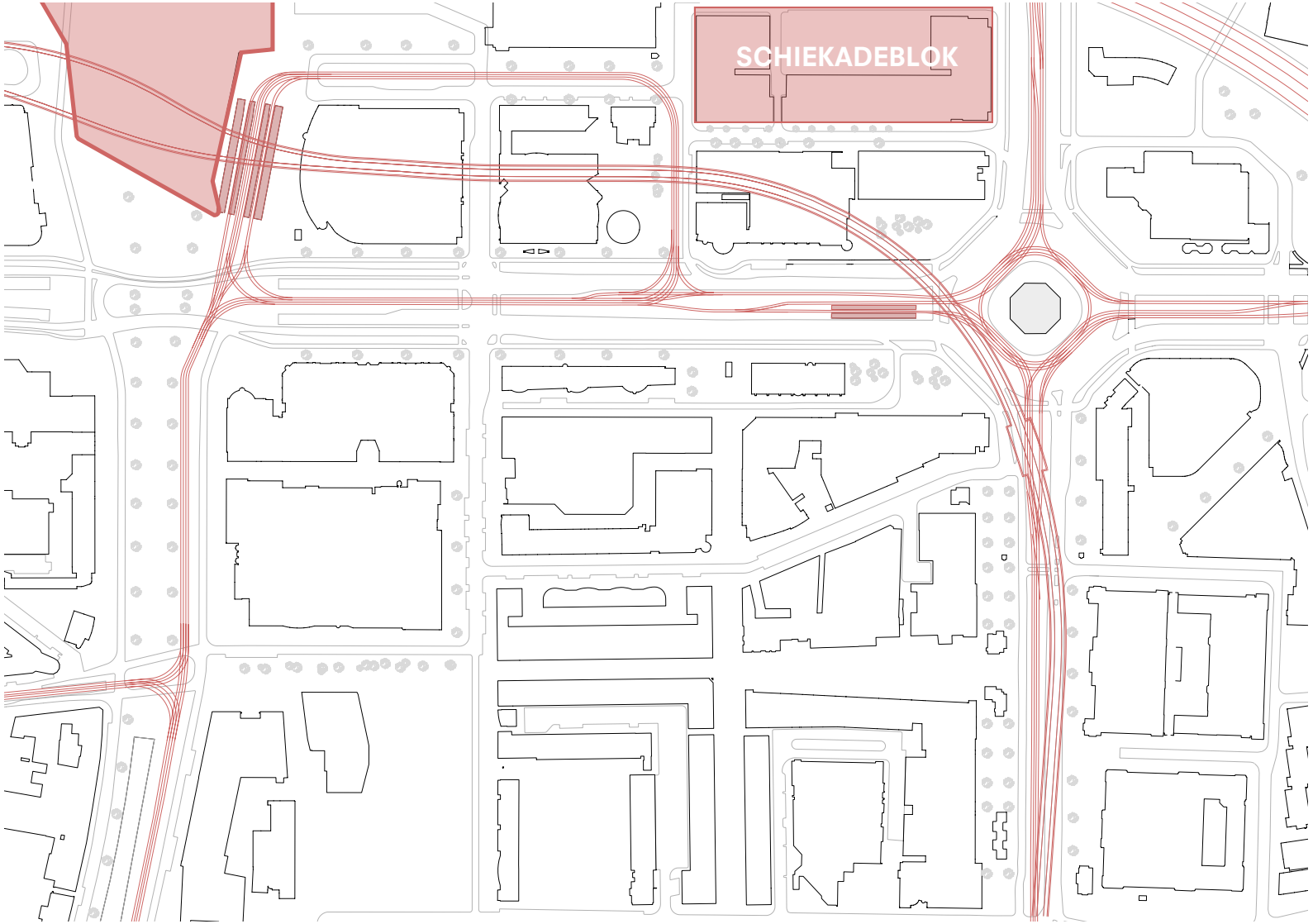
interactive cities also need **functional** backstreets

WEENA BOULEVARD



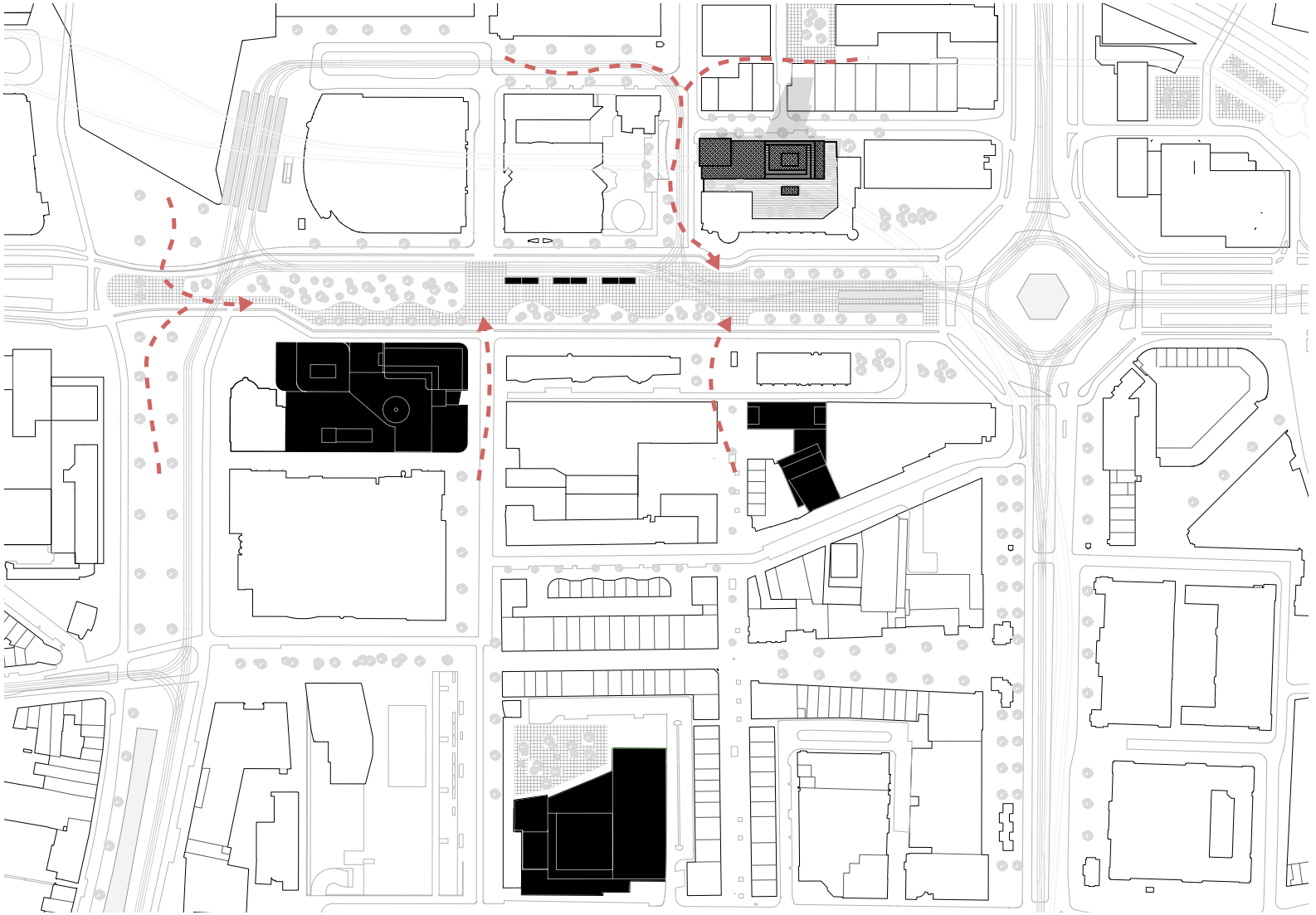
a car oriented infrastructure

SHIFTING FOCUS



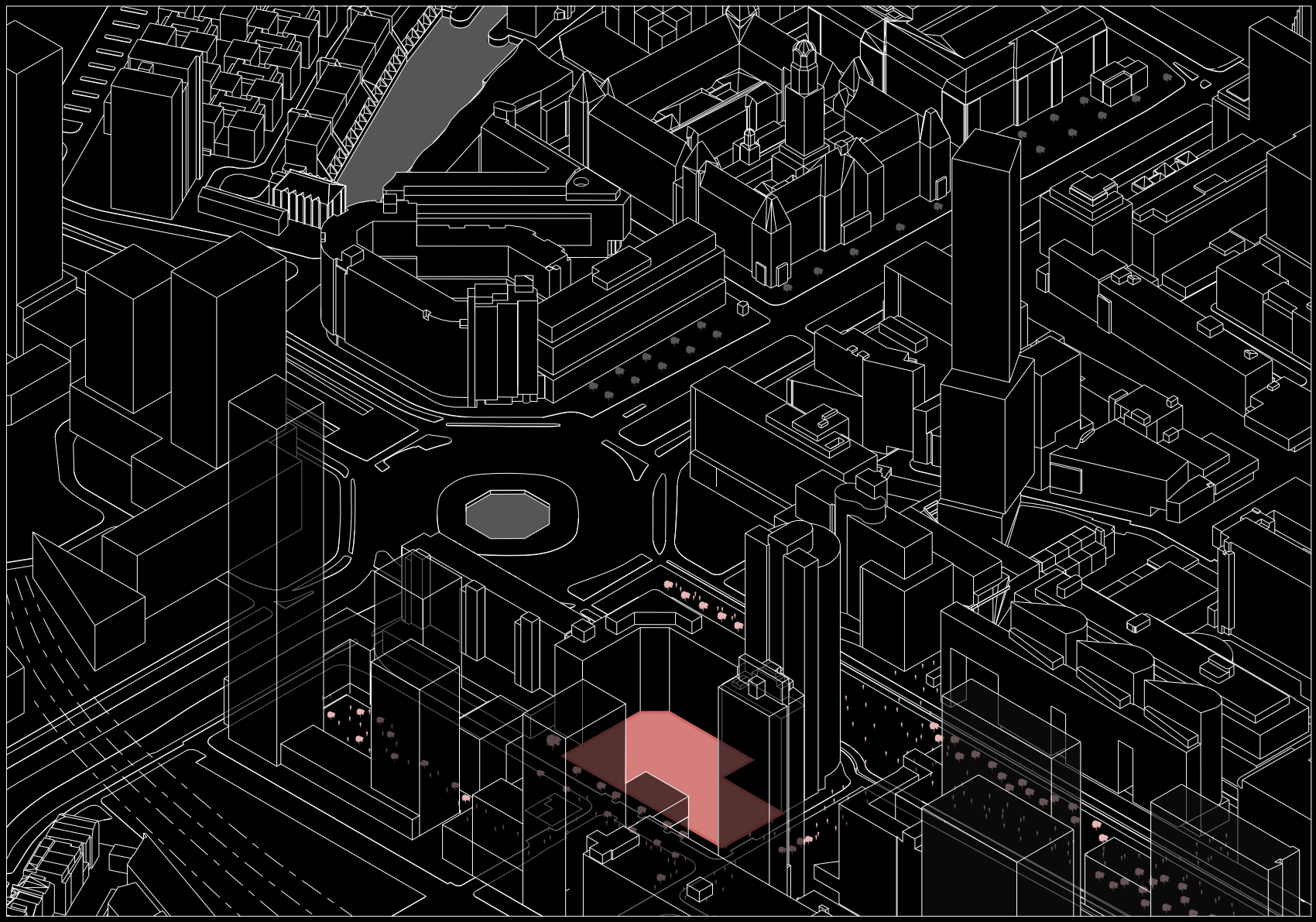
the impact of the new central station

WEENA REDEVELOPED



turning the car oriented boulevard into a pedestrian meeting place

THE CORNERSTONE



Introduction

The Duality of Density

The Skyscraper Economy

Design Concept

Implementation

Conclusion

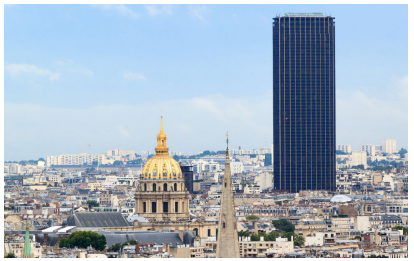
INDEX

DESIGN CONCEPT

Europe
urban embedding


De Rotterdam, Rotterdam


The Shard, London


'New' Tour Montparnasse, Paris

North-America
hierarchy


Chrysler Building, New York


Seagram Tower, Chicago


432 Park Avenue, New York

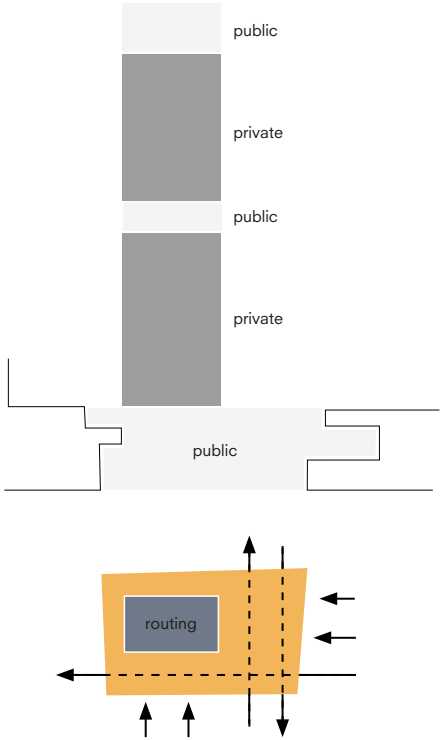
Asia
mixed-use


Burj Khalifa, Dubai

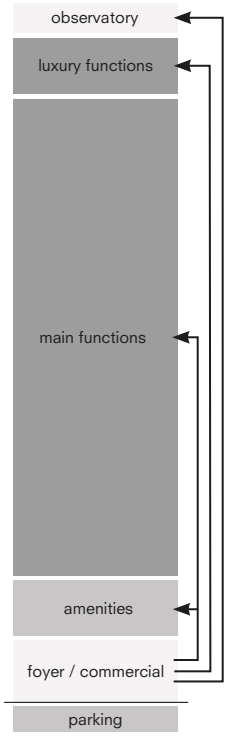

Abeno Harukas, Osaka


Lotte World Tower, Seoul

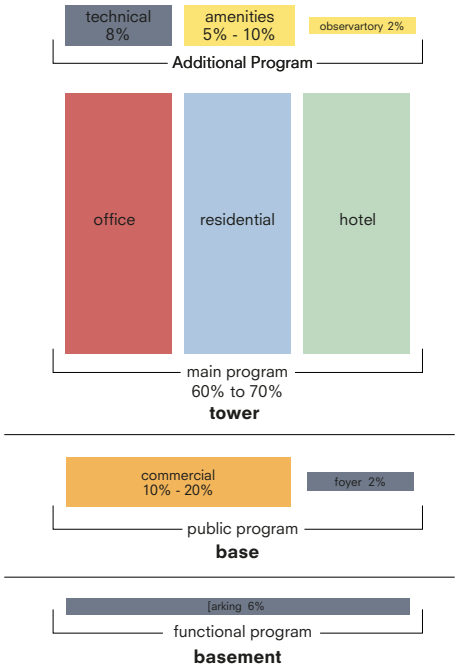
PROGRAM ANALYSIS



Europe
urban embedding



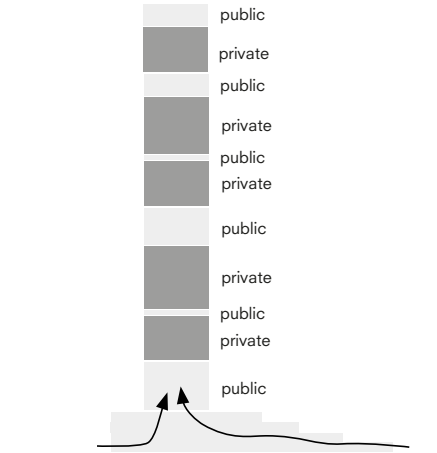
North-America
hierarchy



Asia
mixed-use

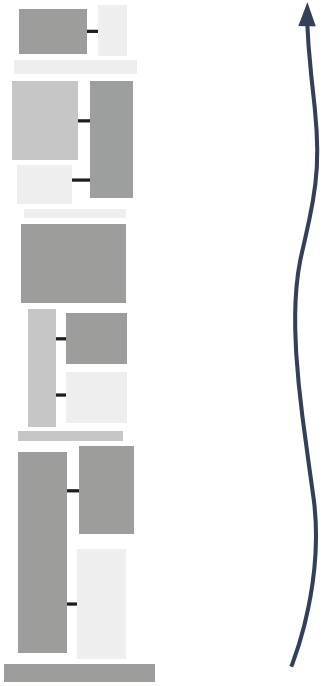
residential hotel office amenities commercial functional
private semi-public public

PROGRAMMATIC STARTING POINTS



base
mobility networks

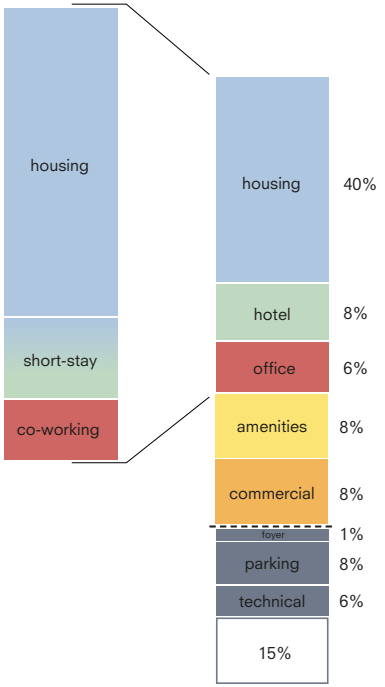
connect with the city



funtions
horizontal connections

routing
one main route

rethink the hierarchy



main program
rotterdam specific

rule of thirds
design for circulation

fit in the porgram

residential hotel office amenities commercial functional
private semi-public public

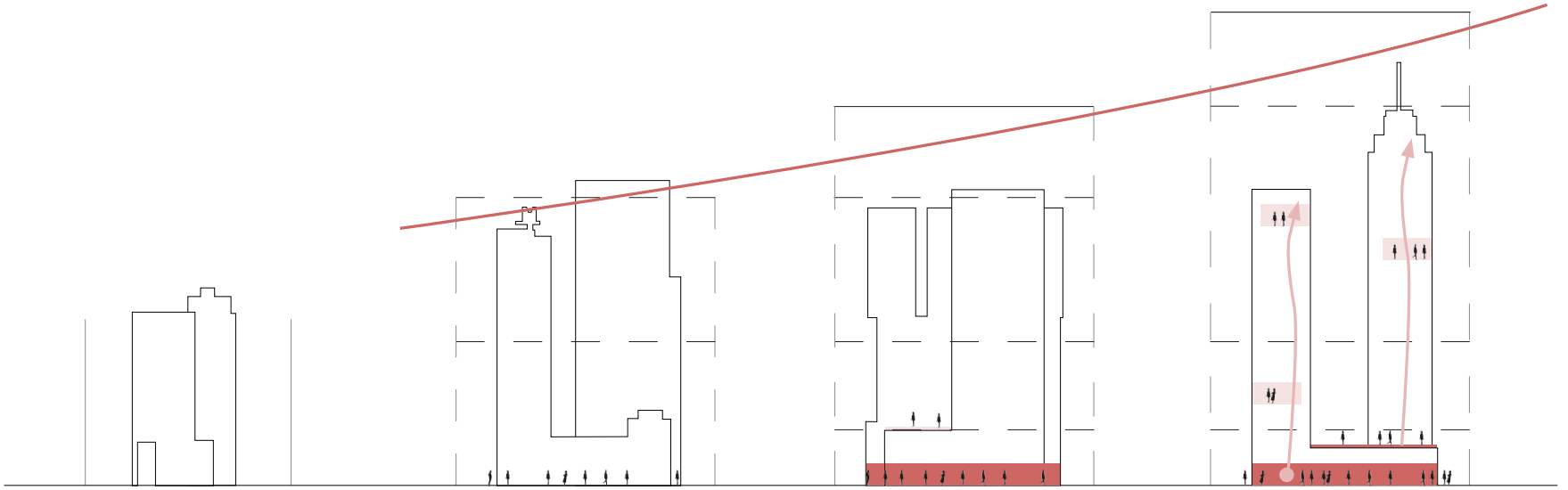
VERTICAL SUBURBS

"THIS RUSH TO DENSITY, **THIS IDEA THAT DENSITY CREATES ECONOMIC GROWTH IS WRONG**. IT'S THE CREATION OF REAL, WALKABLE URBAN ENVIRONMENTS THAT STIR THE HUMAN SPIRIT. **SKYSCRAPER COMMUNITIES ARE VERTICAL SUBURBS**, WHERE IT IS LONELY AT THE TOP. "

Richard Florida author of 'The Rise of the Creative Class'



HIGH-RISE VISION



RESEARCH QUESTION

HOW CAN ROTTERDAM INCREASE ITS **INNERCITY DENSITY** WHILST SHAPING **SOCIALLY INTERACTIVE** LIVING ENVIRONMENTS?

ROTTERDAM CO-HOUSES?



Simmons Hall, Massachuets



8 House, Copenhagen



The Interlace, Singapore

co-housing
community spaces

meets

dutch tower dwellings
residential program



De Kroon, Den Haag



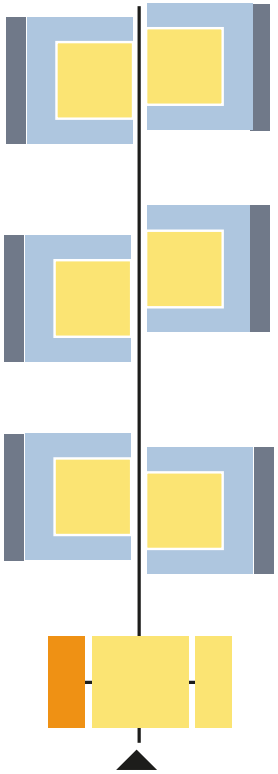
Xavier Amsterdam, Amsterdam



Cooltoren, Rotterdam

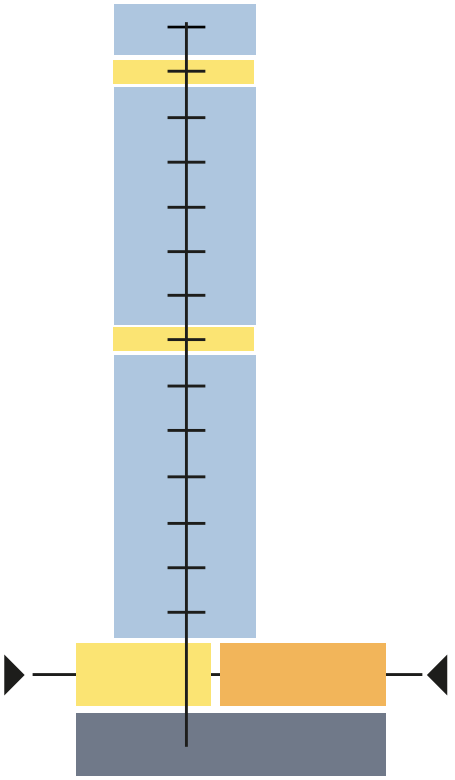
horizontal interaction in a vertical typologie

ROTTERDAM CO-HOUSES?



organisations around plazas

meets

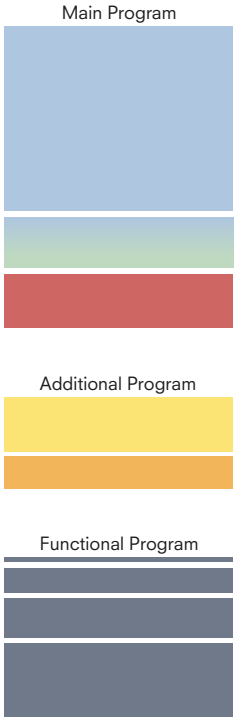


efficient and logical stacking

residential hotel office amenities commercial functional

THE PROGRAM BAR

Gross Floor Area: **68.500 m²**



42% Residential

14% Short-Stay

8% Co-Working

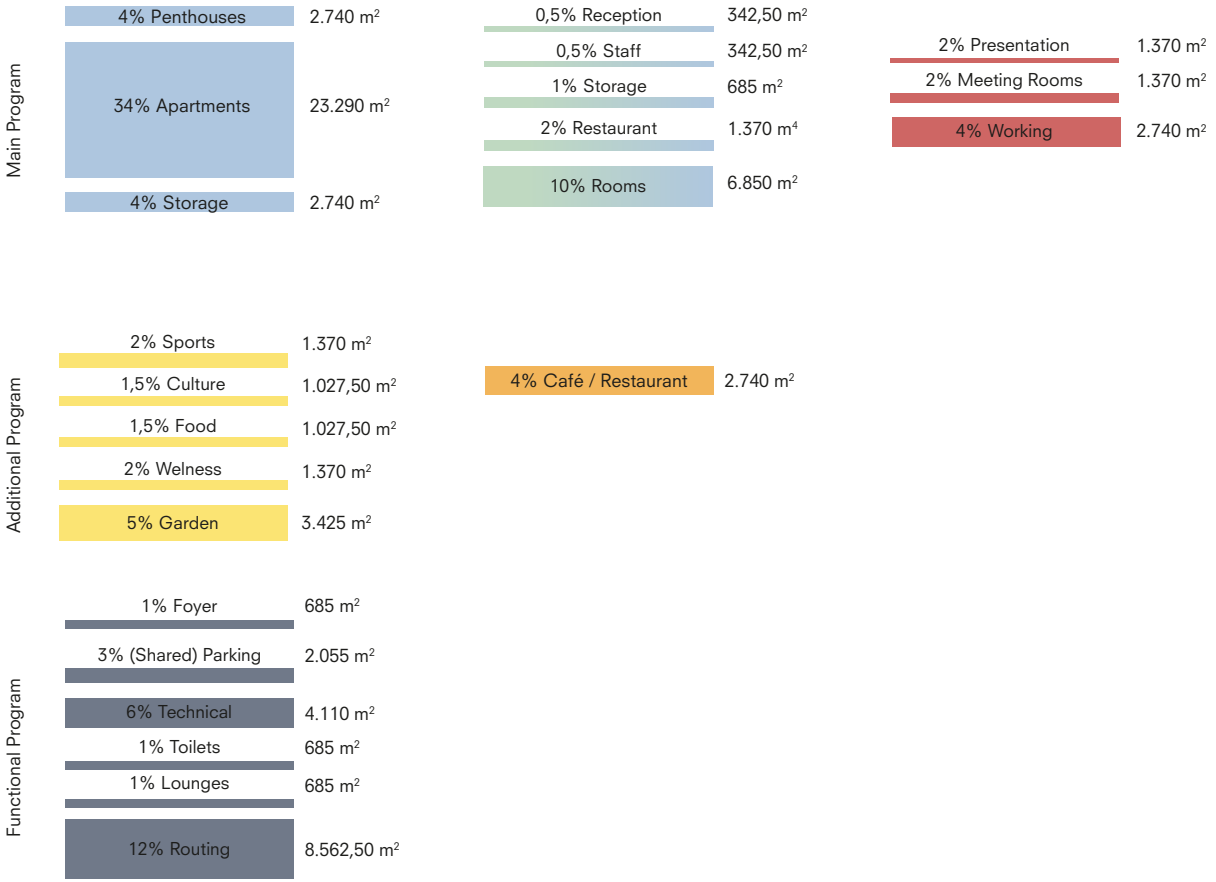
12% Amenities

4% Commercial

1% Foyer / Plaza
3% Parking

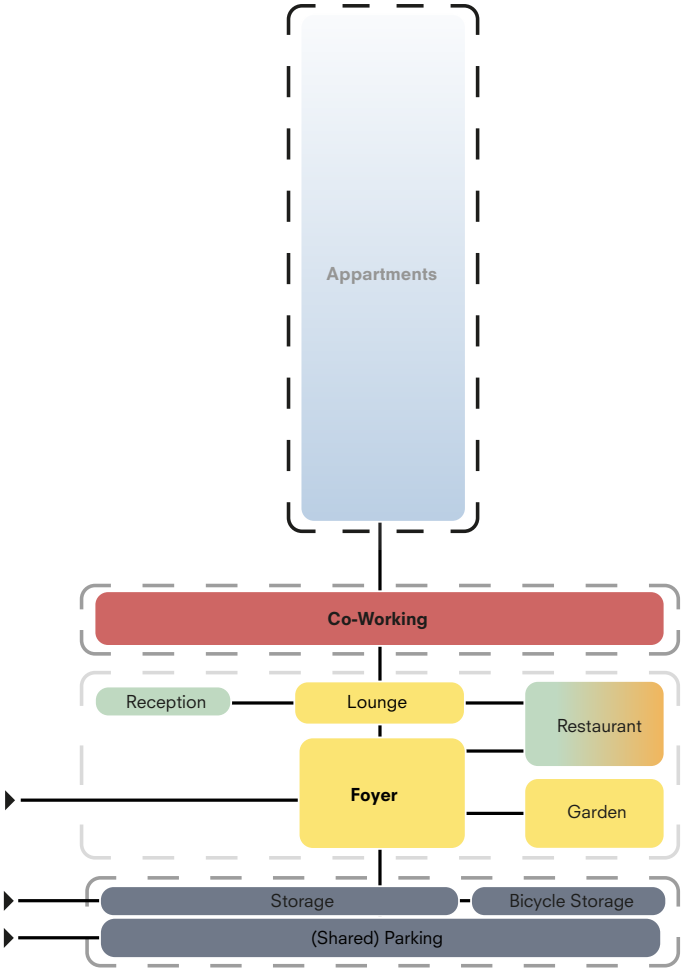
6% Technical

14% Common Space



residential hotel office amenities commercial functional

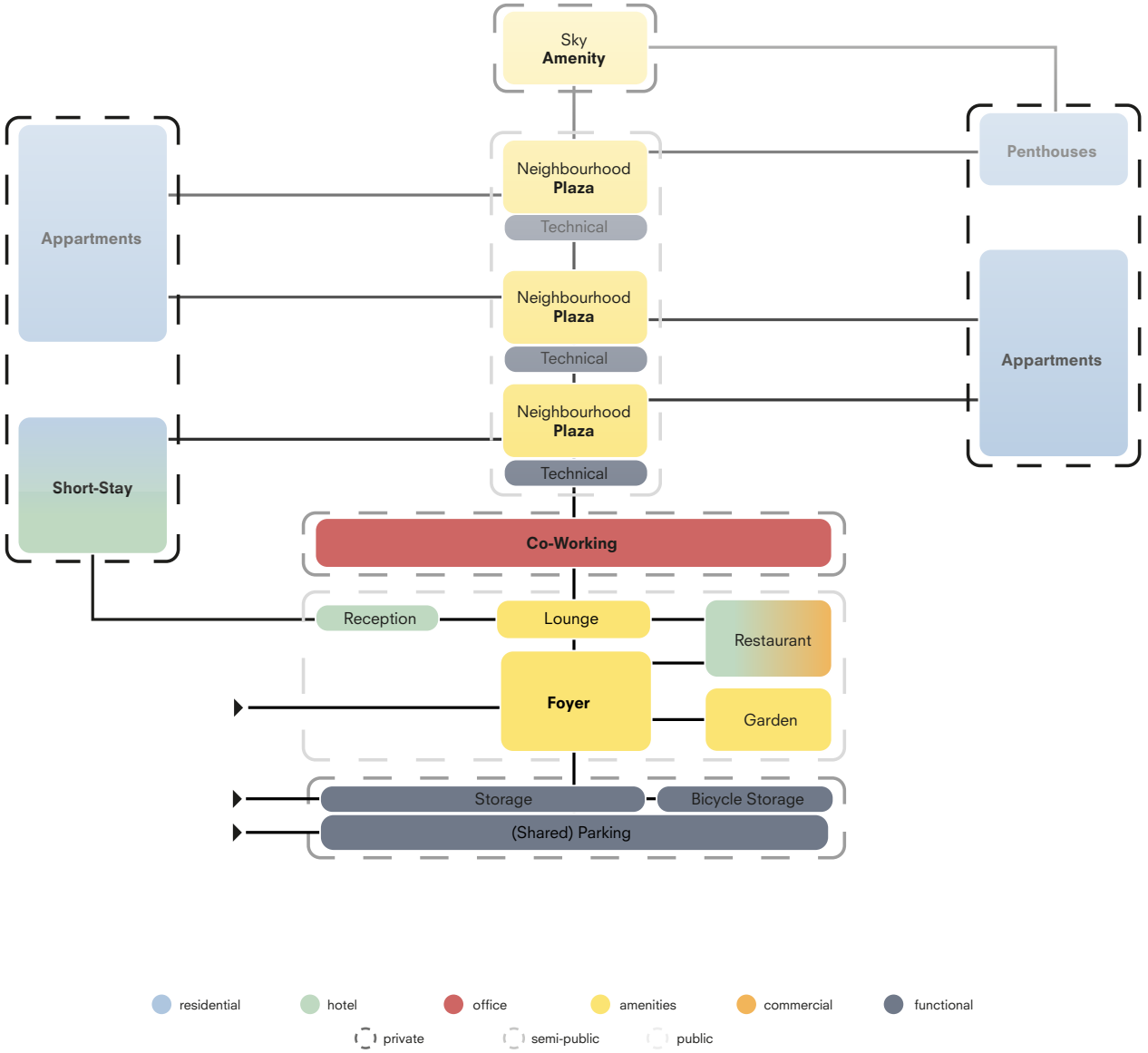
THE PROGRAM SCHEME



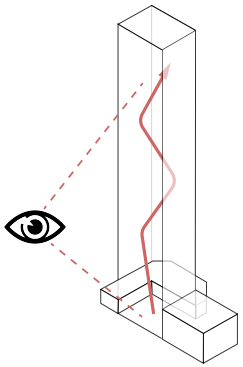
residential hotel office amenities commercial functional

private semi-public public

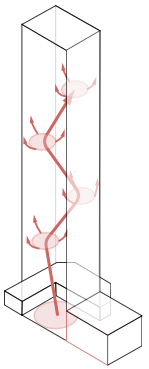
THE PROGRAM SCHEME



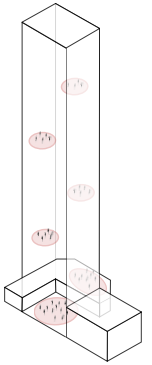
ROUTING PRINCIPLES



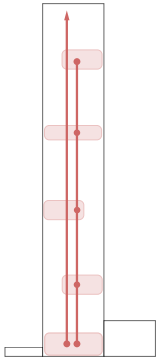
visible routing



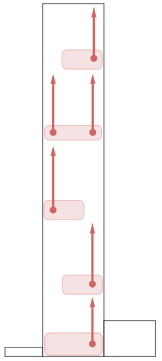
main route + branches



neighbourhood plazas

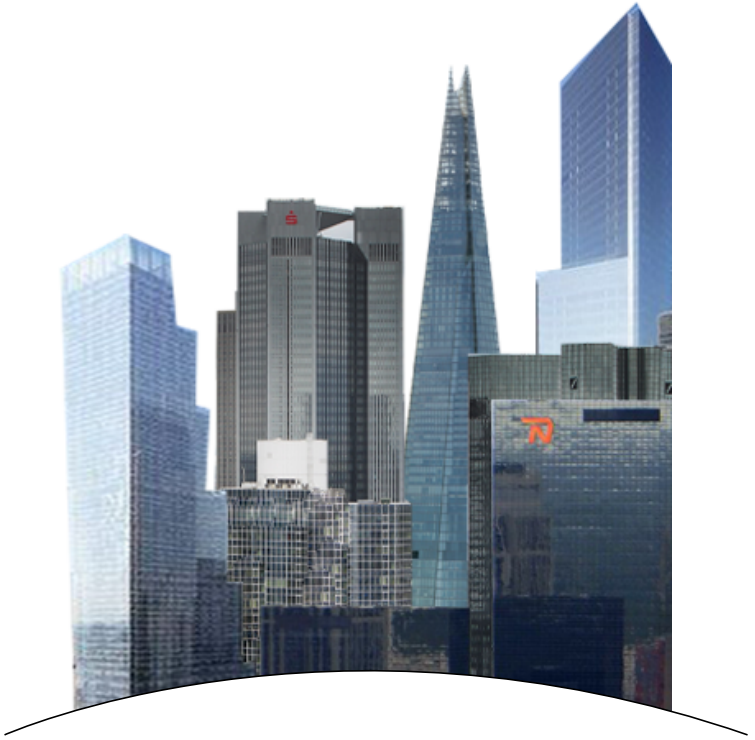


building elevators



neighbourhood elevators

VISUAL EXPERIENCE



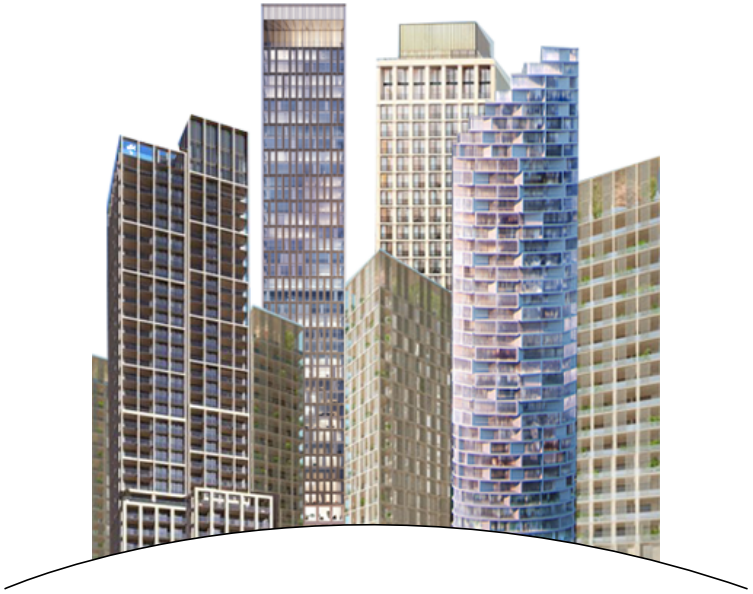
no glass monolith



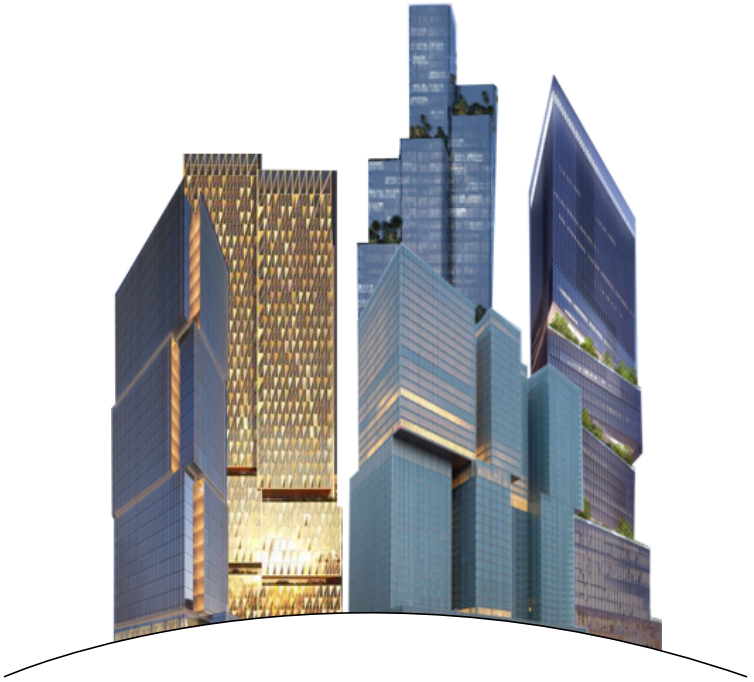
no excentric expressions

not a new **icon** for the city

VISUAL EXPERIENCE



add **rhytm and dept**



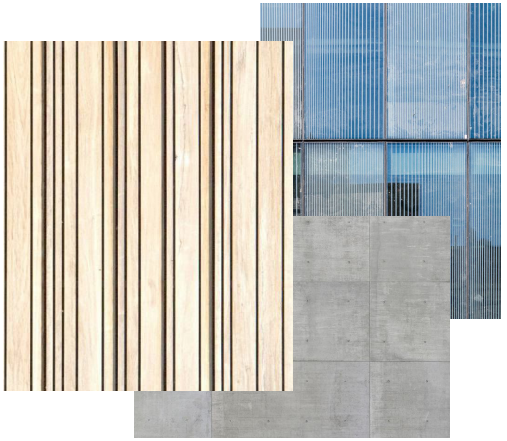
create **a volumtetric composition**

not a new **icon** for the city

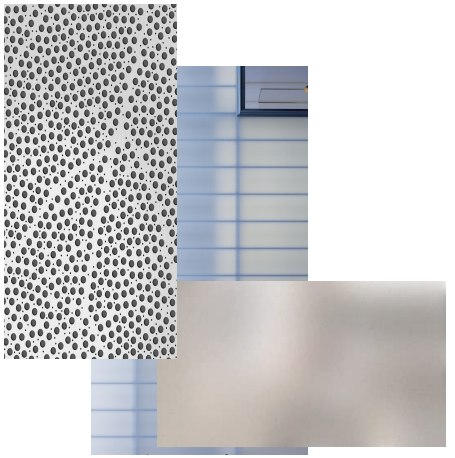
but a clear **addition** to the growing skyline

CHARACTER

materials



modest



translucent

qualities



porous



active

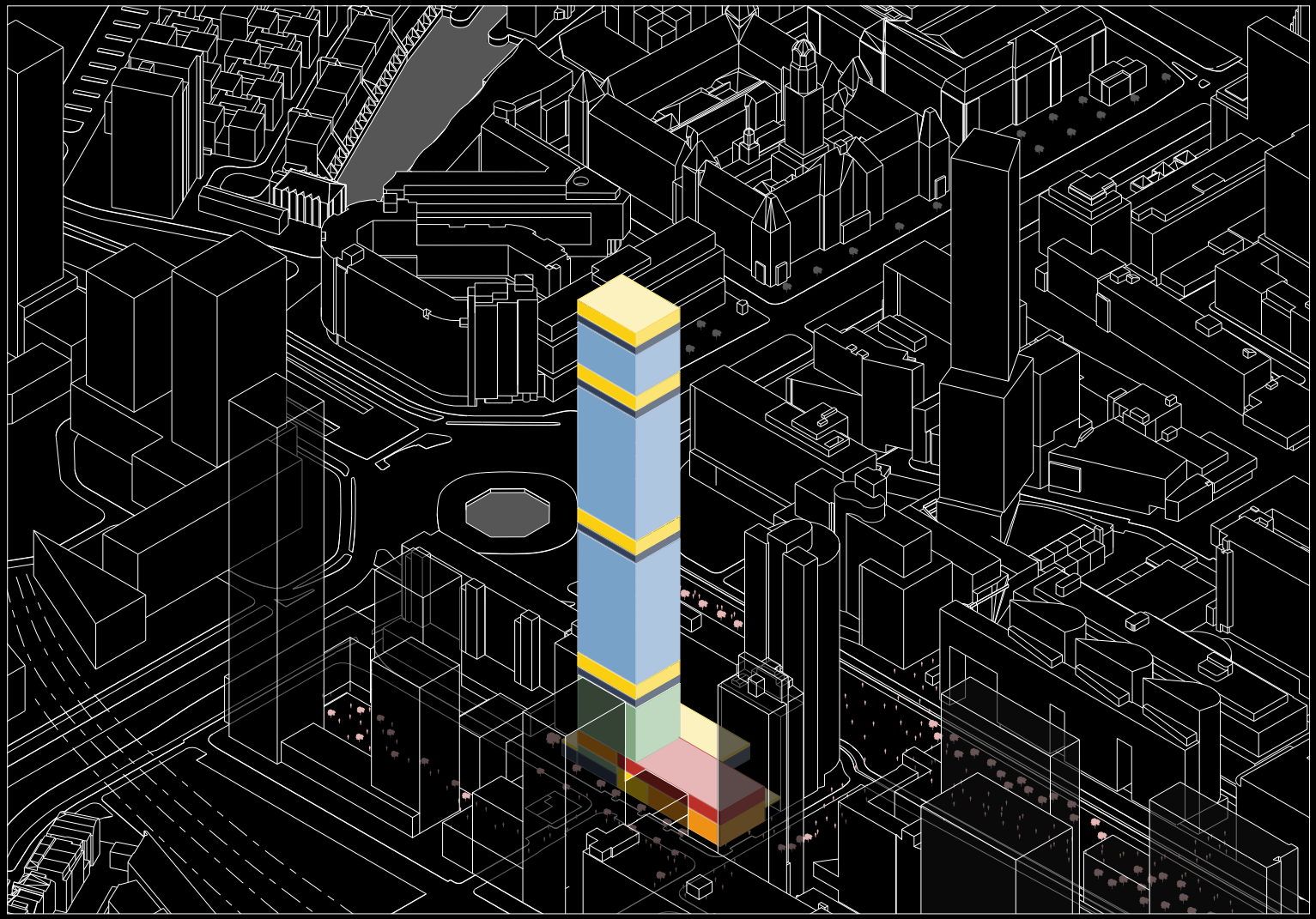
CHARACTER



an interactive interior that breaks through the boundaries of a modest block

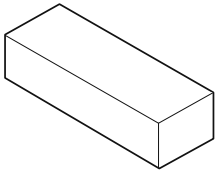
Design Concept

THE CORNERSTONE

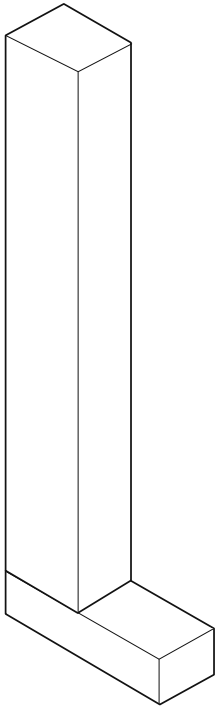


residential hotel office amenities commercial functional

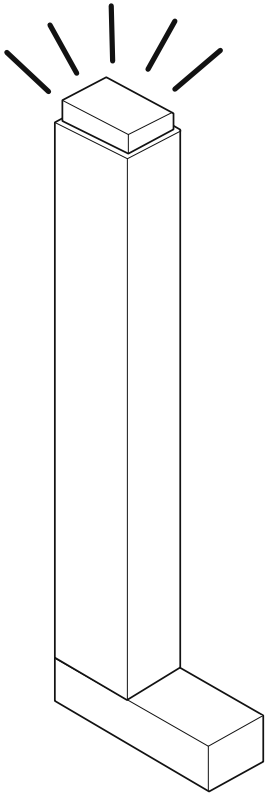
THE ‘STANDARD’ TYPOLOGIE



podium
‘embed’

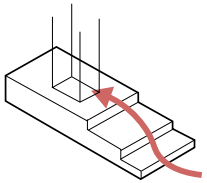


tower
‘operate’

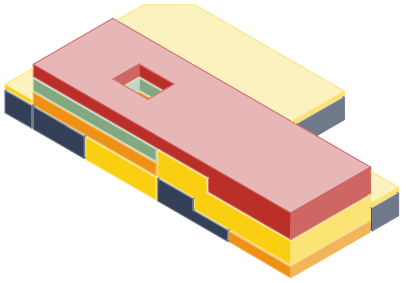


crown
‘display’

EMBED & INVITE

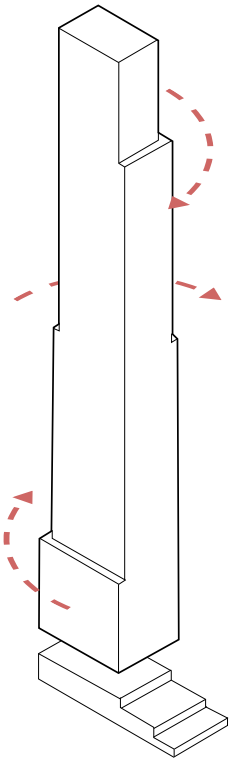


podium

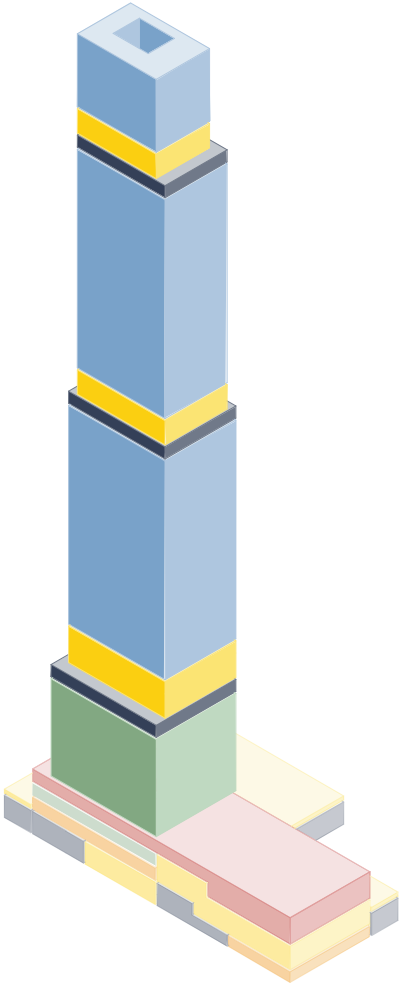


residential hotel office amenities commercial functional

OPERATE & ENGAGE

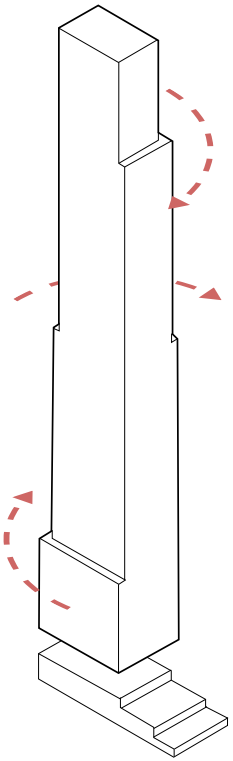


tower

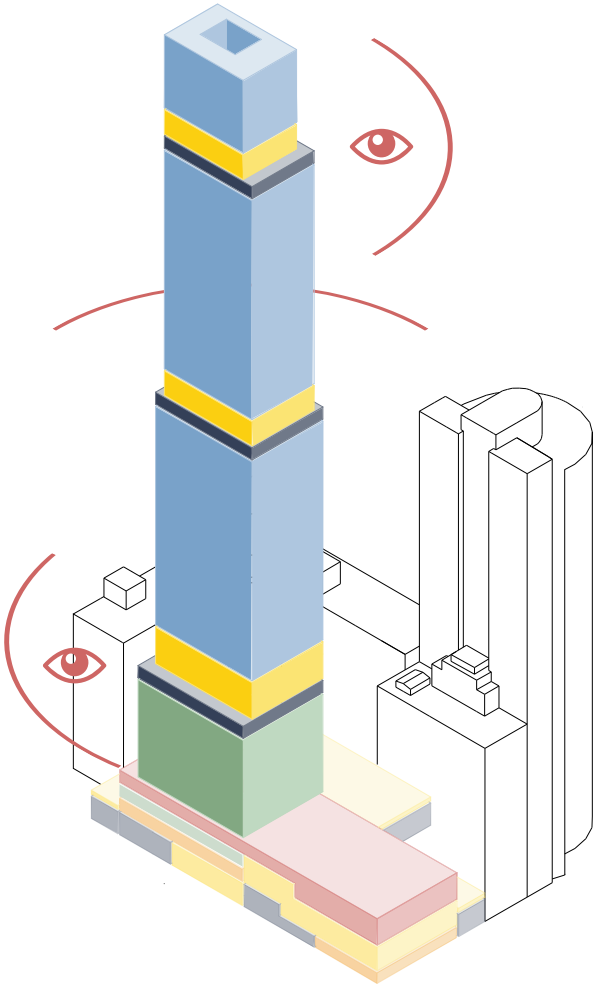


residential hotel office amenities commercial functional

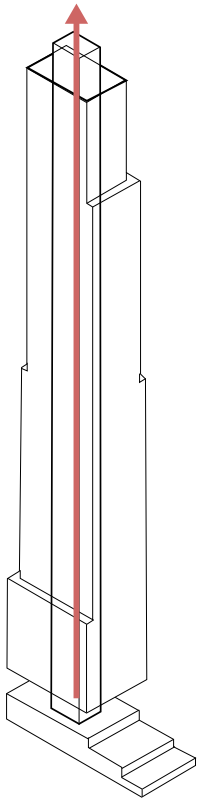
OPERATE & ENGAGE



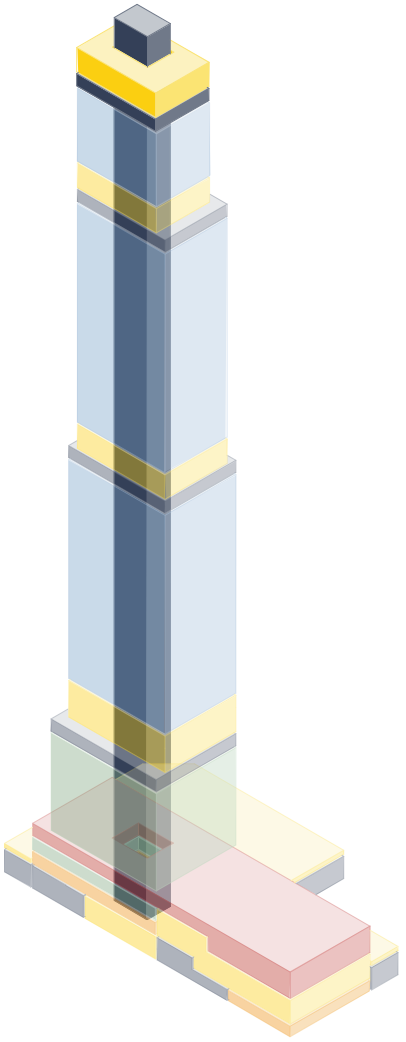
tower



DISLPAY & ATTRACT

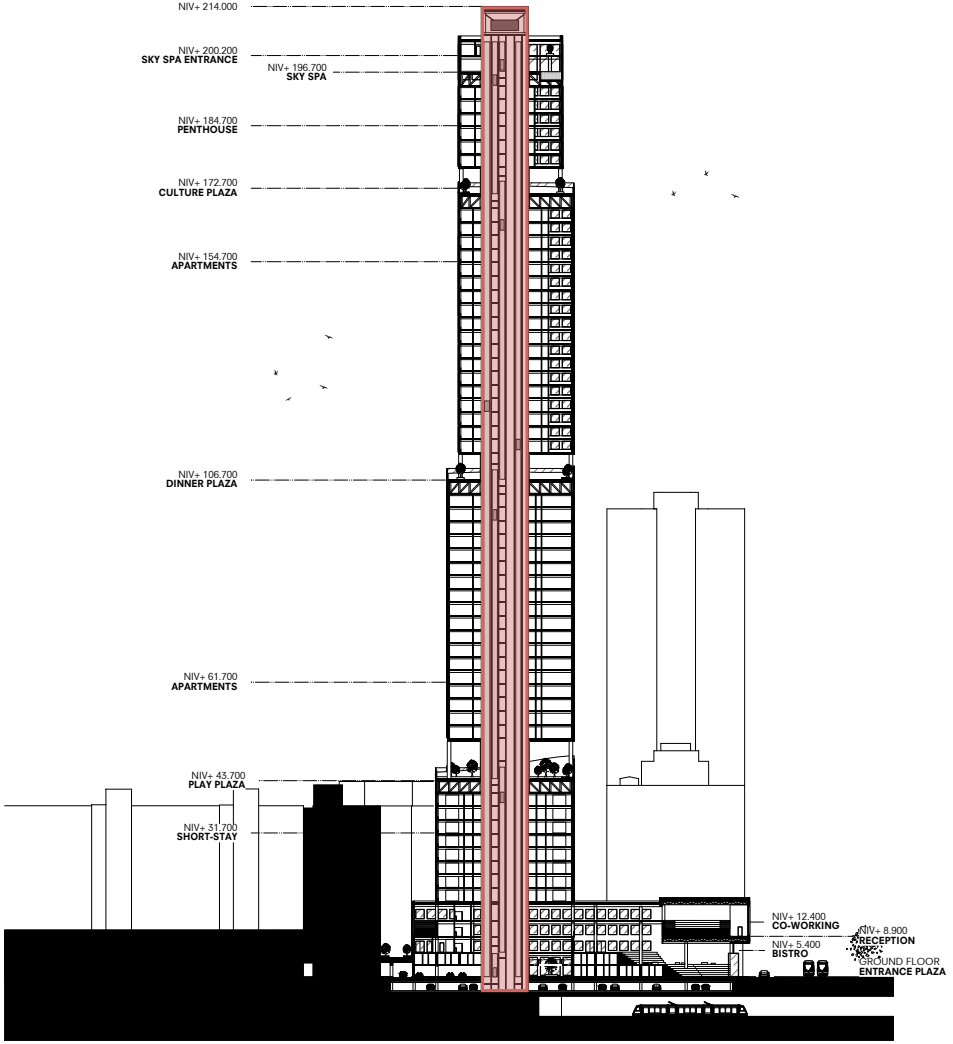


crown



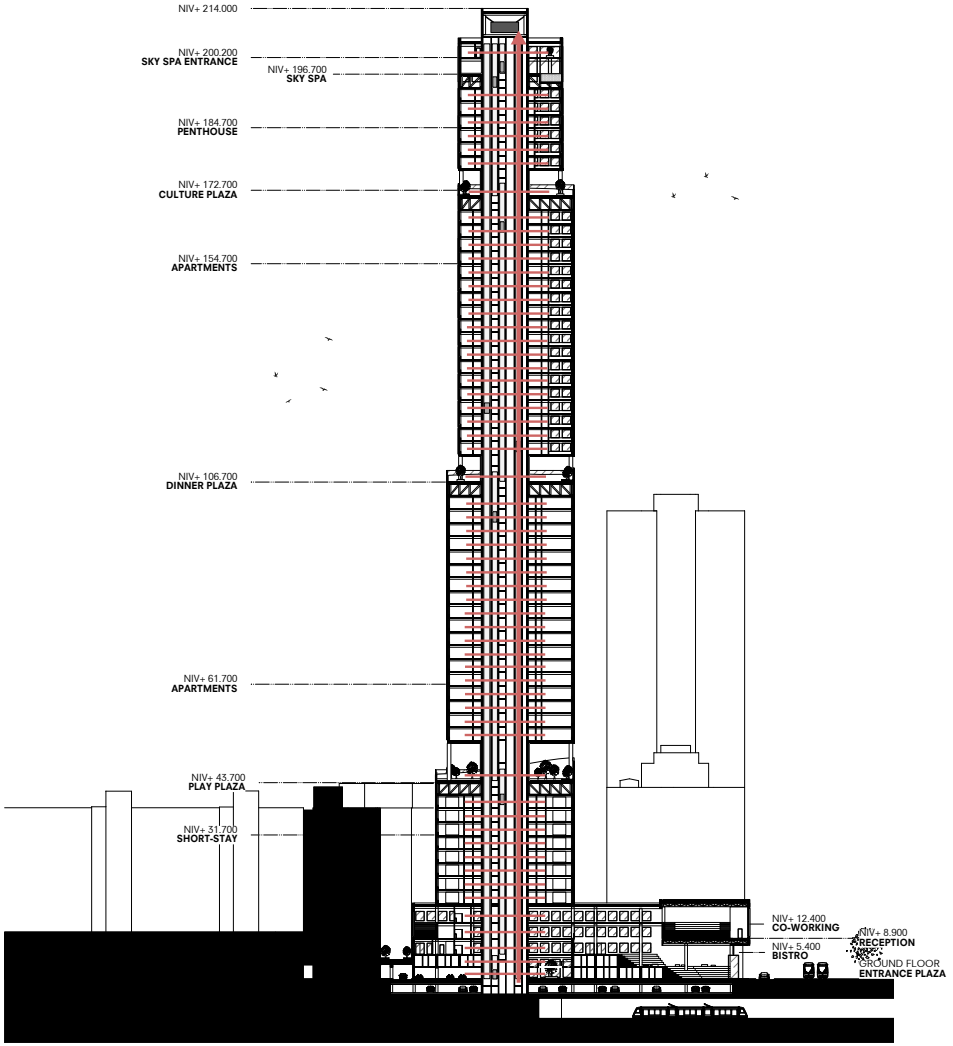
residential hotel office amenities commercial functional

THE CORE



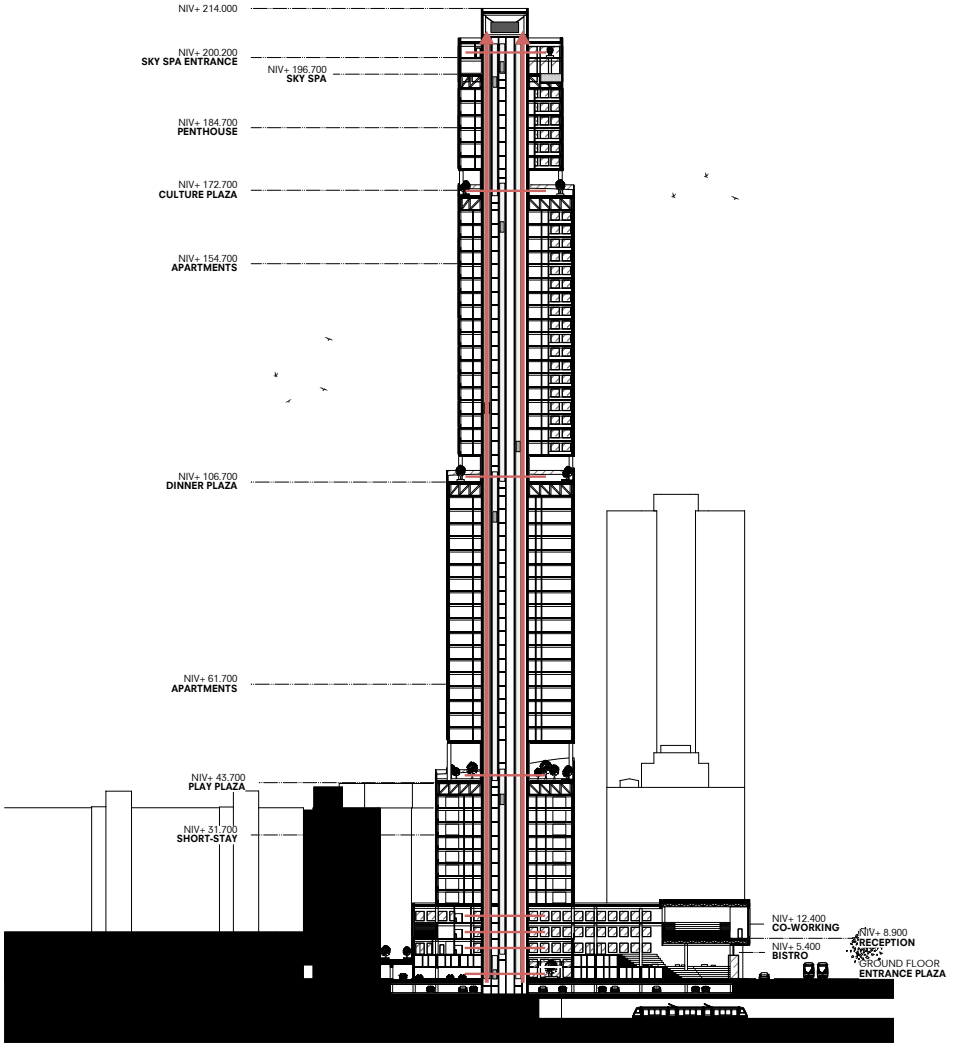
the vertical heart of the skyscraper

SPLITTED ROUTING



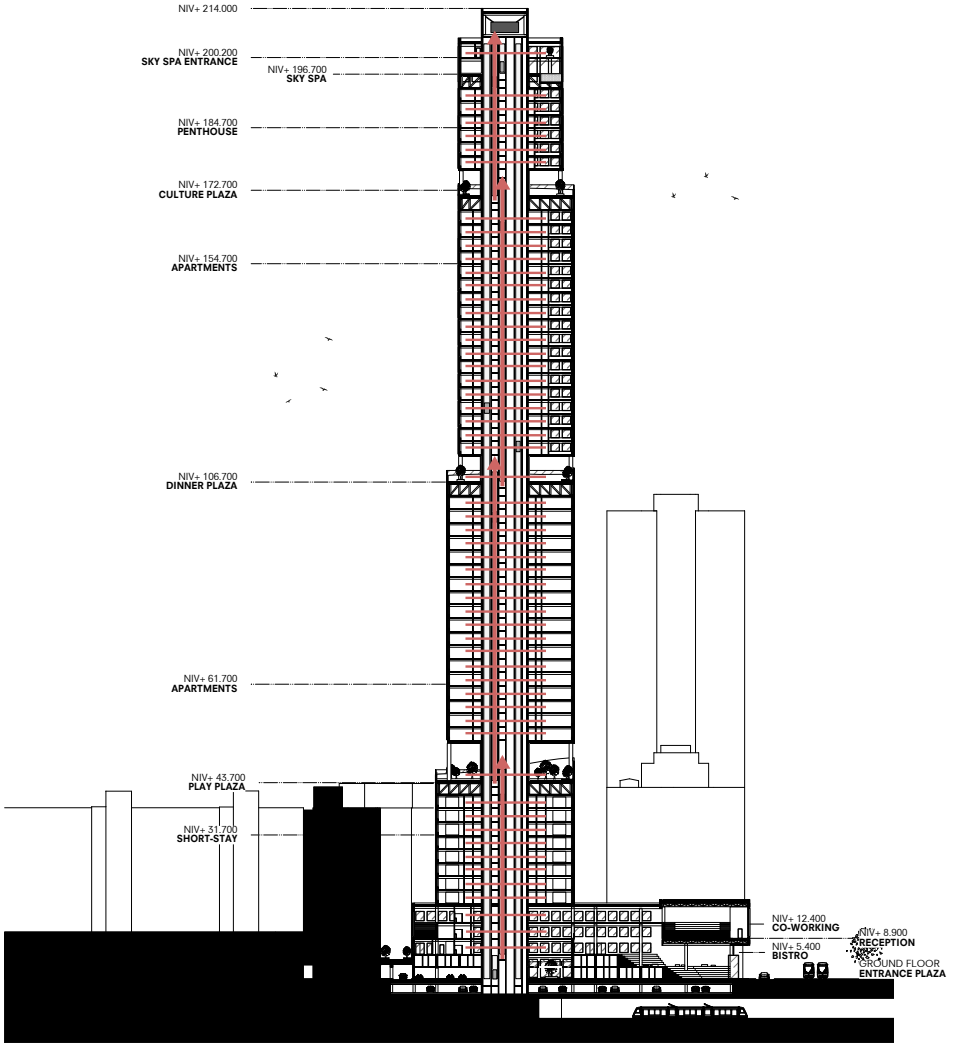
building elevator

SPLITTED ROUTING



plaza elevators

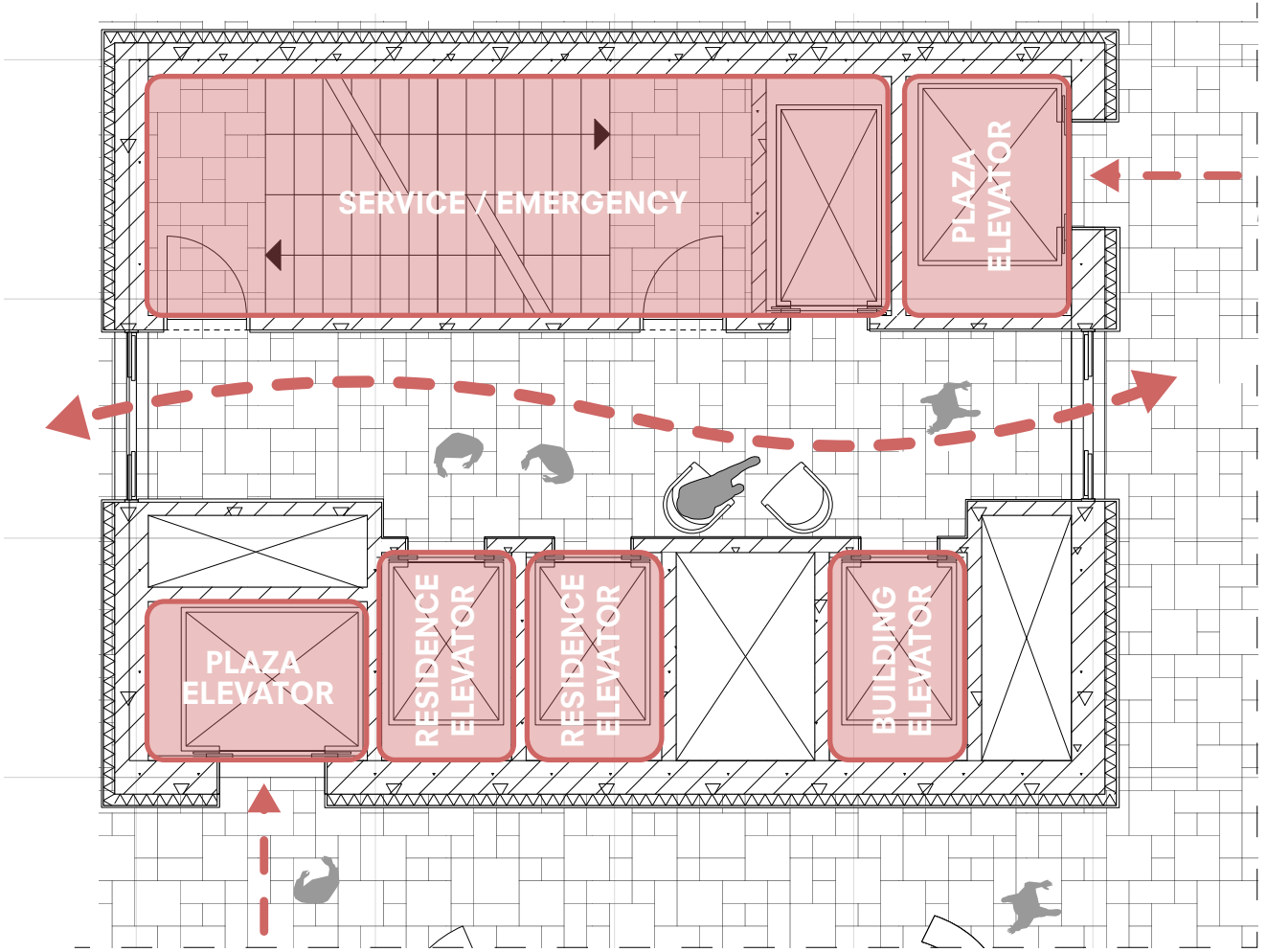
SPLITTED ROUTING



residence elevators

Design Concept

‘INSIDE-OUT’



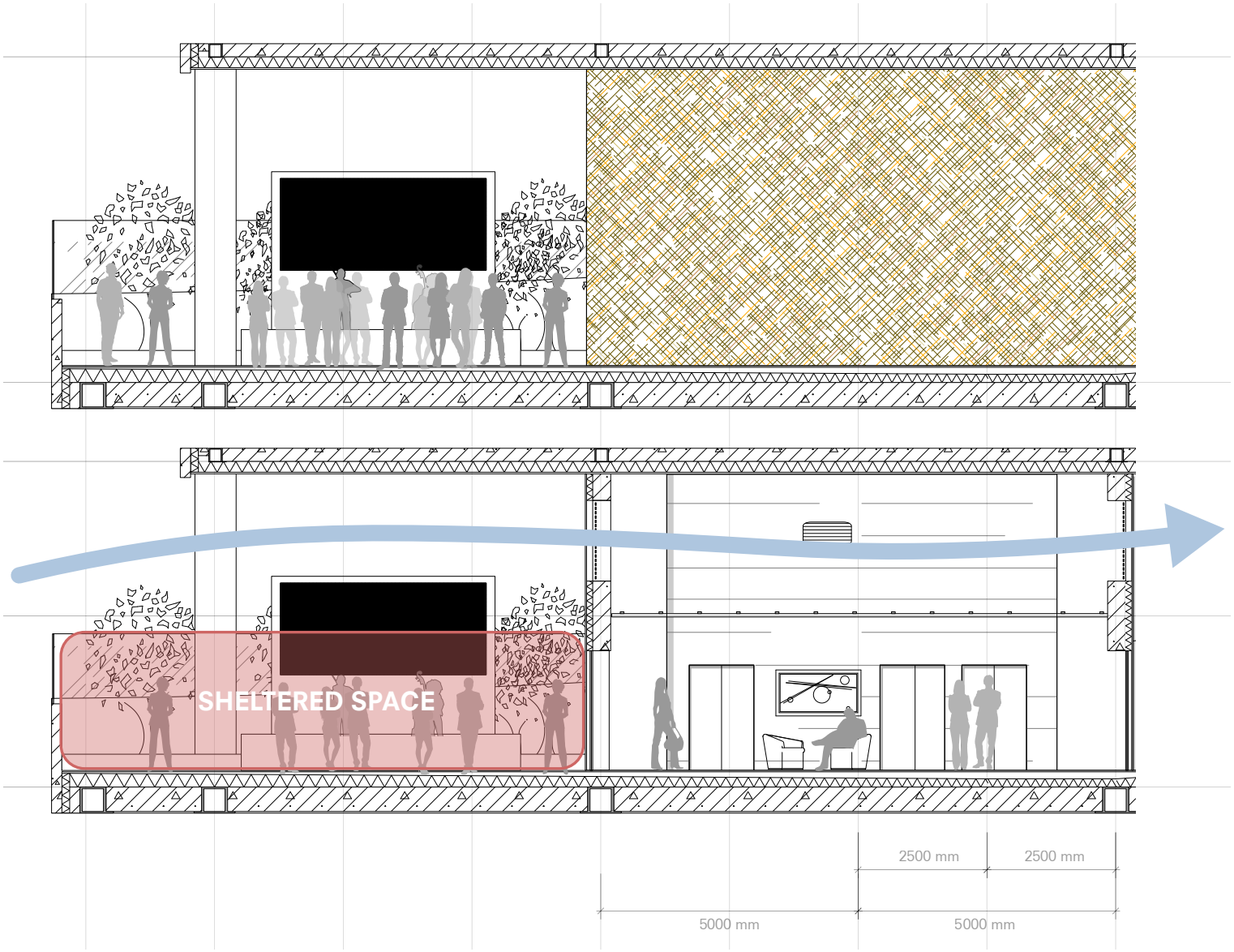
the **exterior core** forms the **public route**
whilst the **interior core** serves the **residents**

A FOCAL POINT

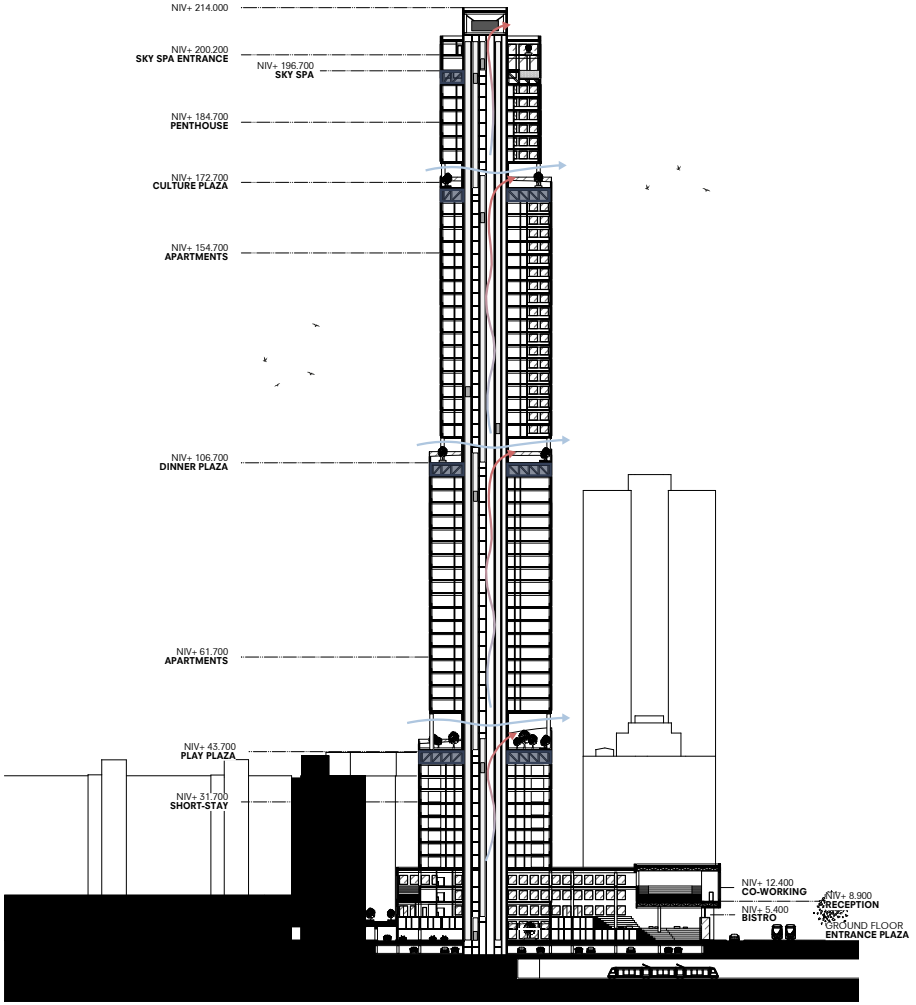


the ~~vertical~~ heart of the skyscraper

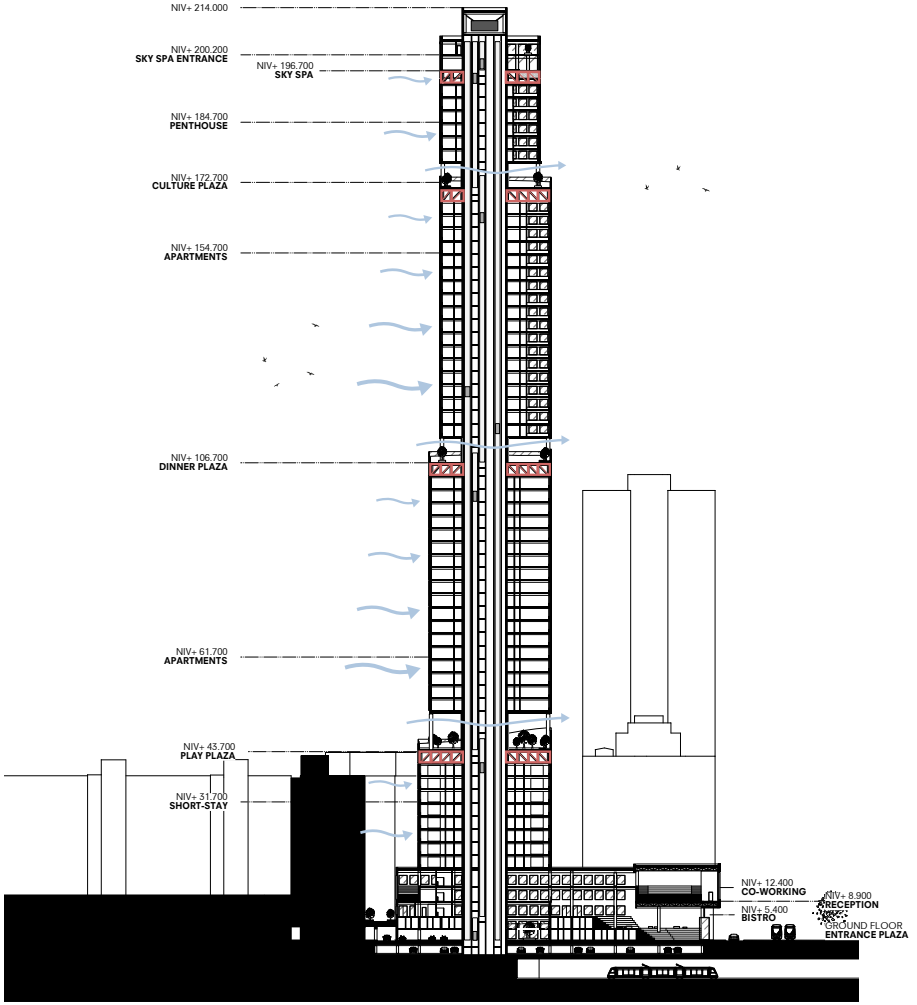
OPEN AIR PLAZAS



FACILITATING THE BLOCKS

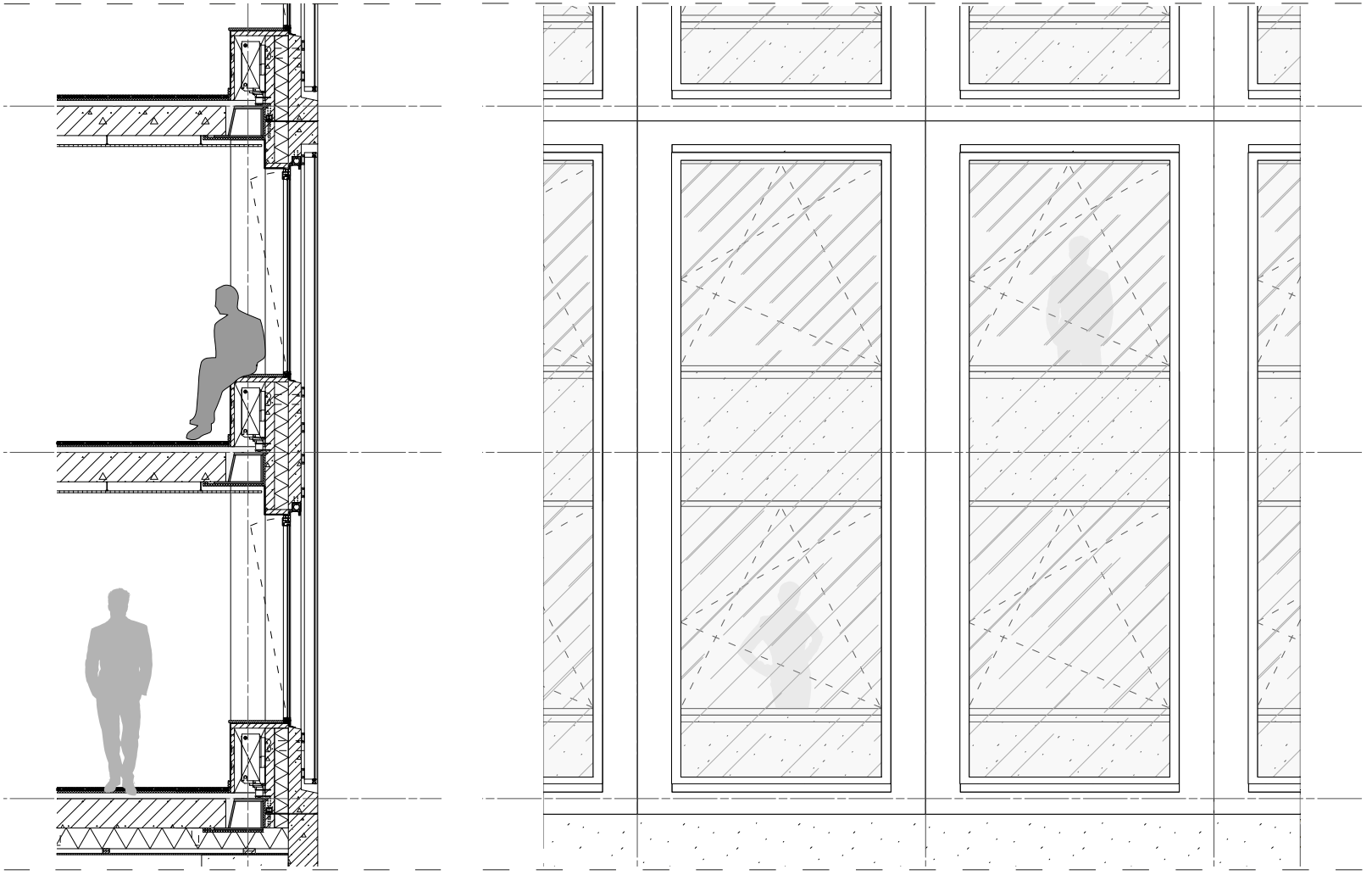


climate



construction

RHYTMIC FACADES

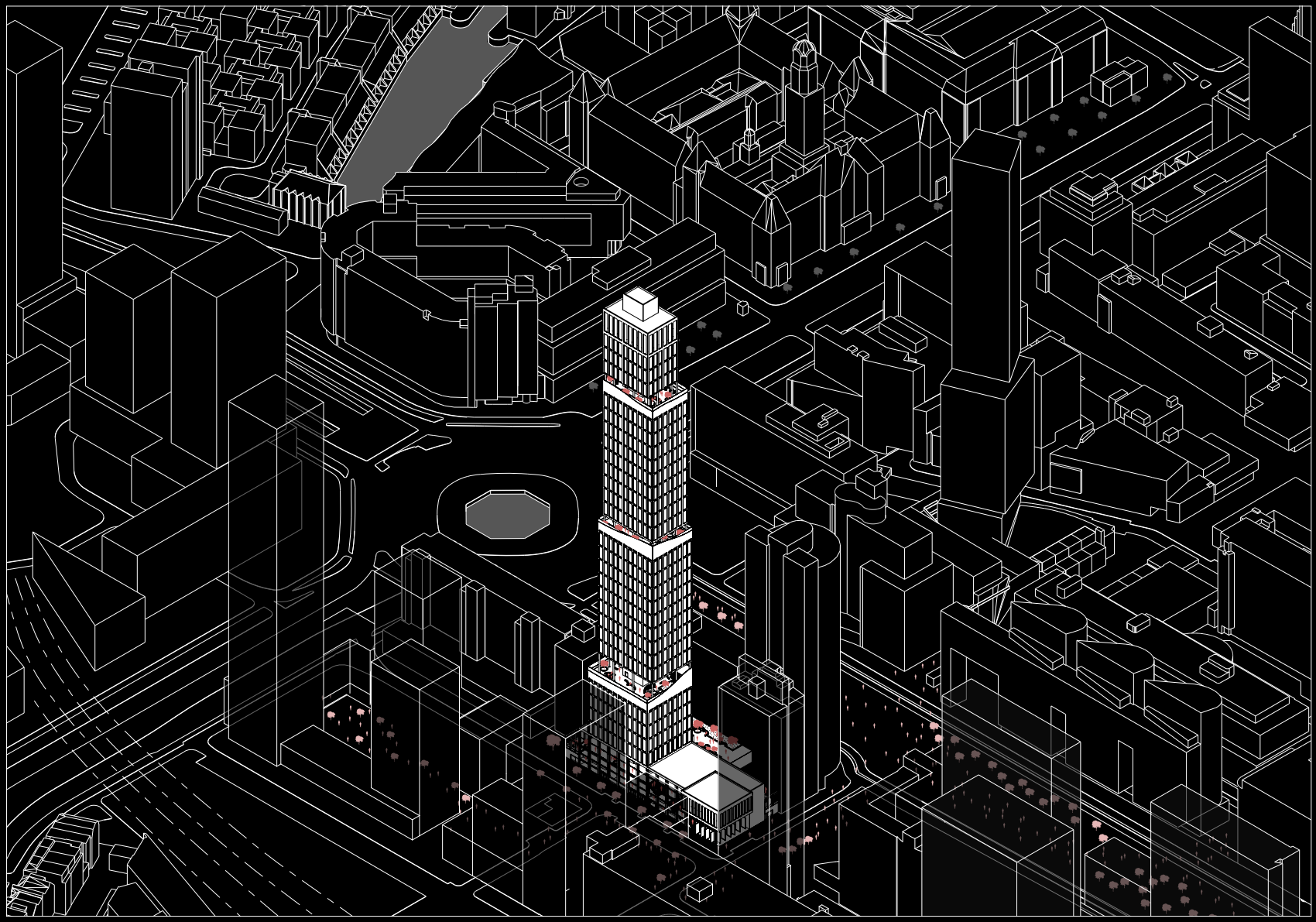


double height concrete sandwich panels

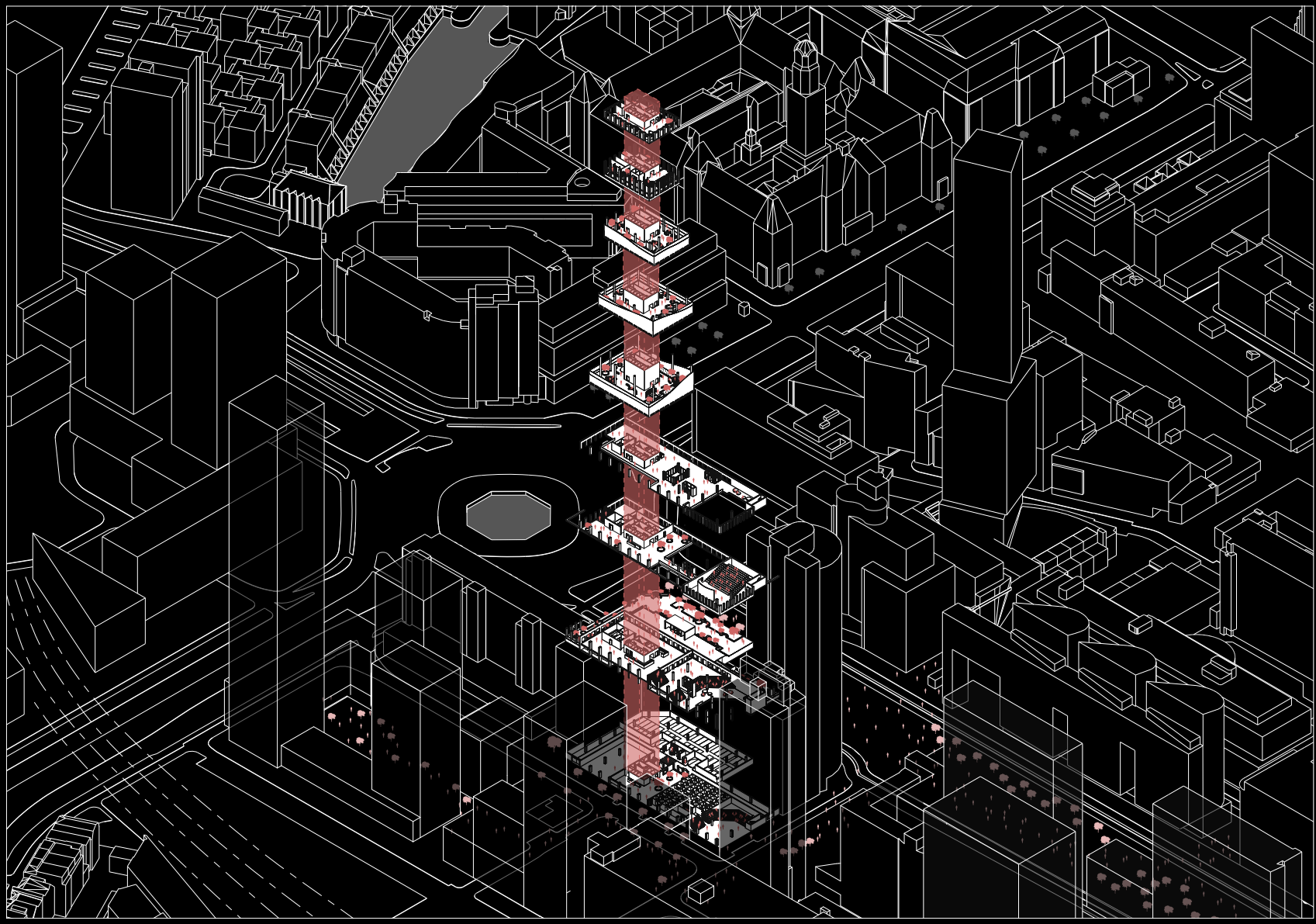
A UNIQUE PRESENCE



THE CORNERSTONE



THE CORNERSTONE



Introduction

The Duality of Density

The Skyscraper Economy

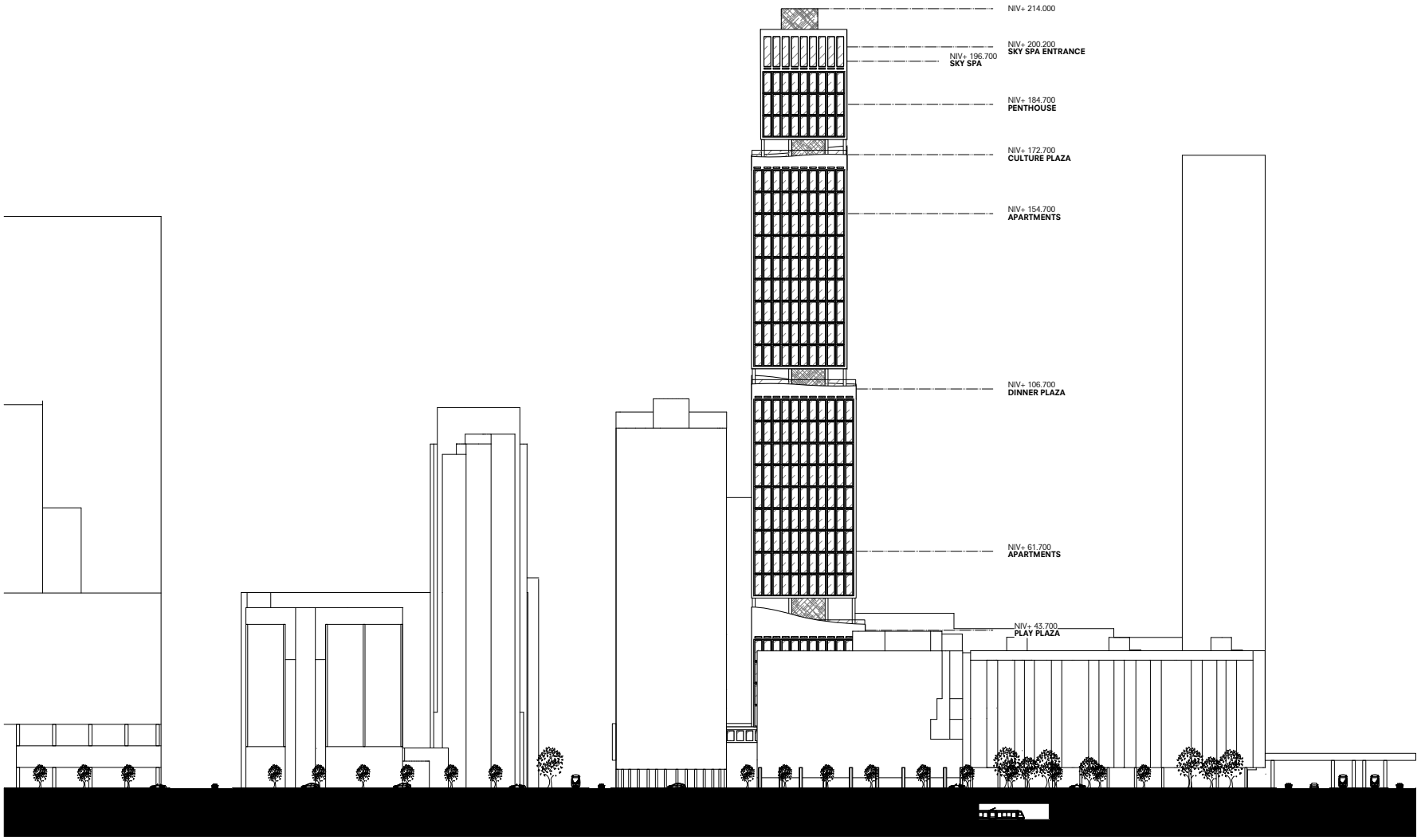
Design Concept

Implementation

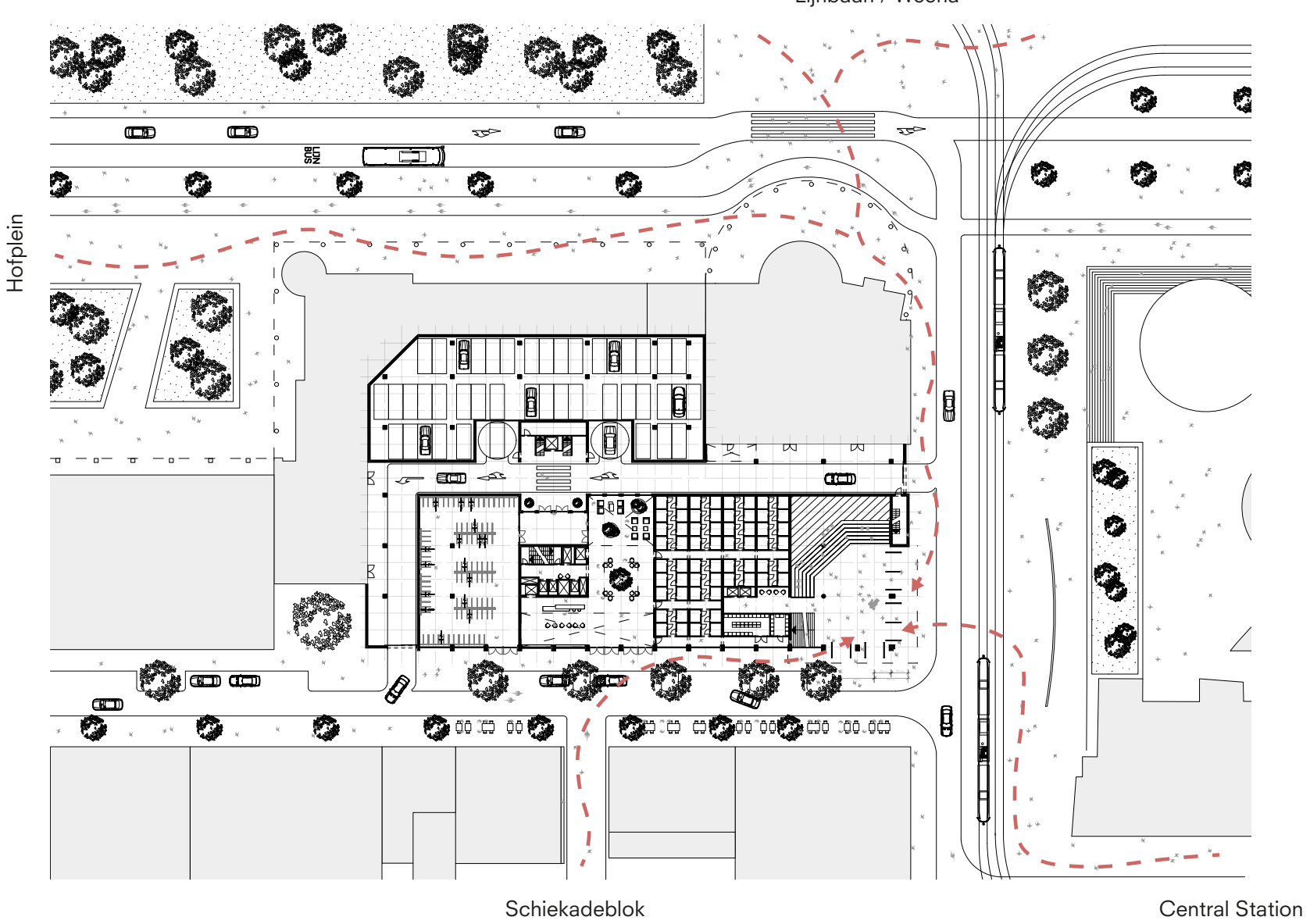
Conclusion

INDEX

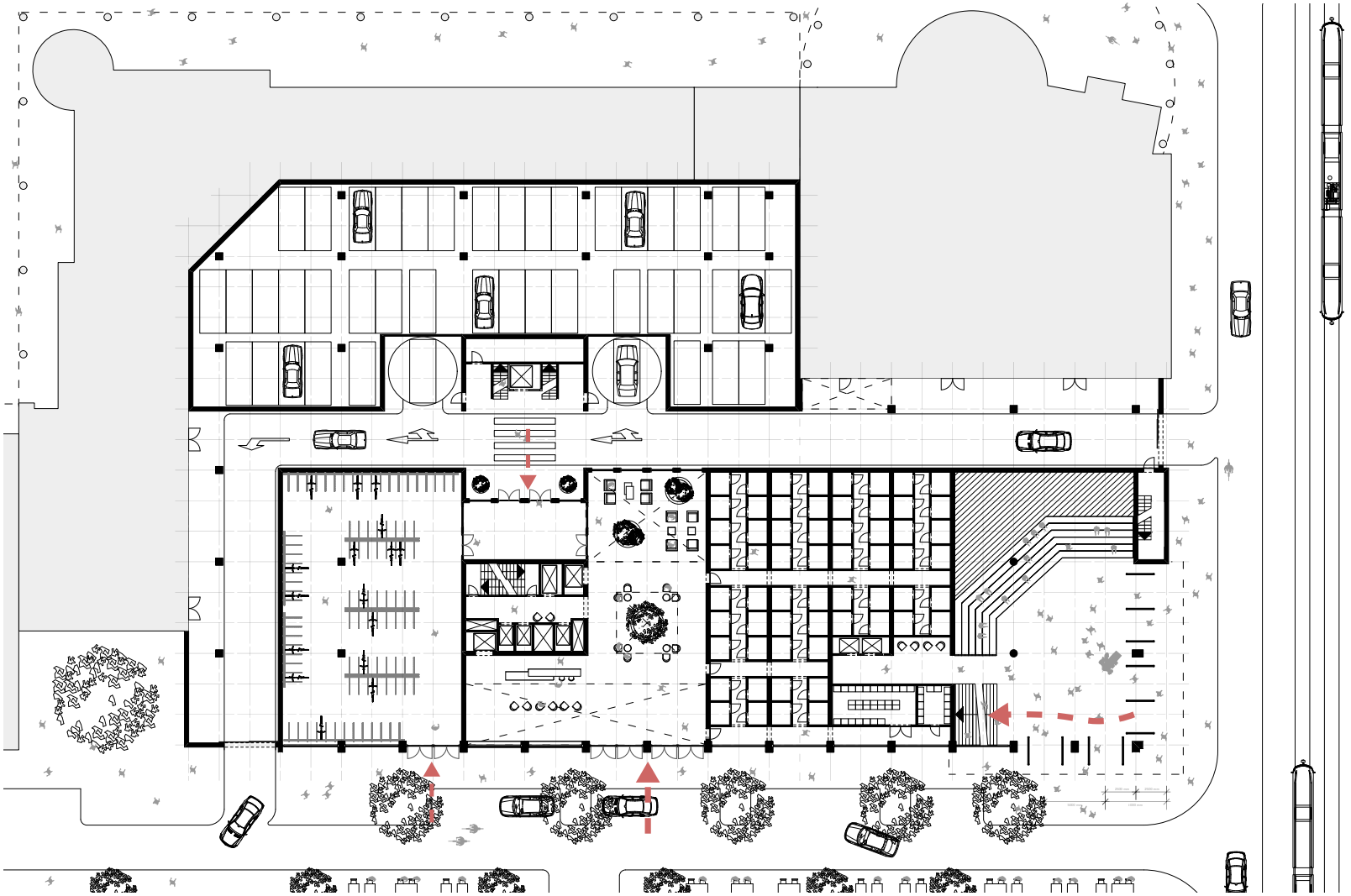
THE SKYLINE OF WEENA



PEDESTRIAN NETWORK



ENTRANCE POINTS



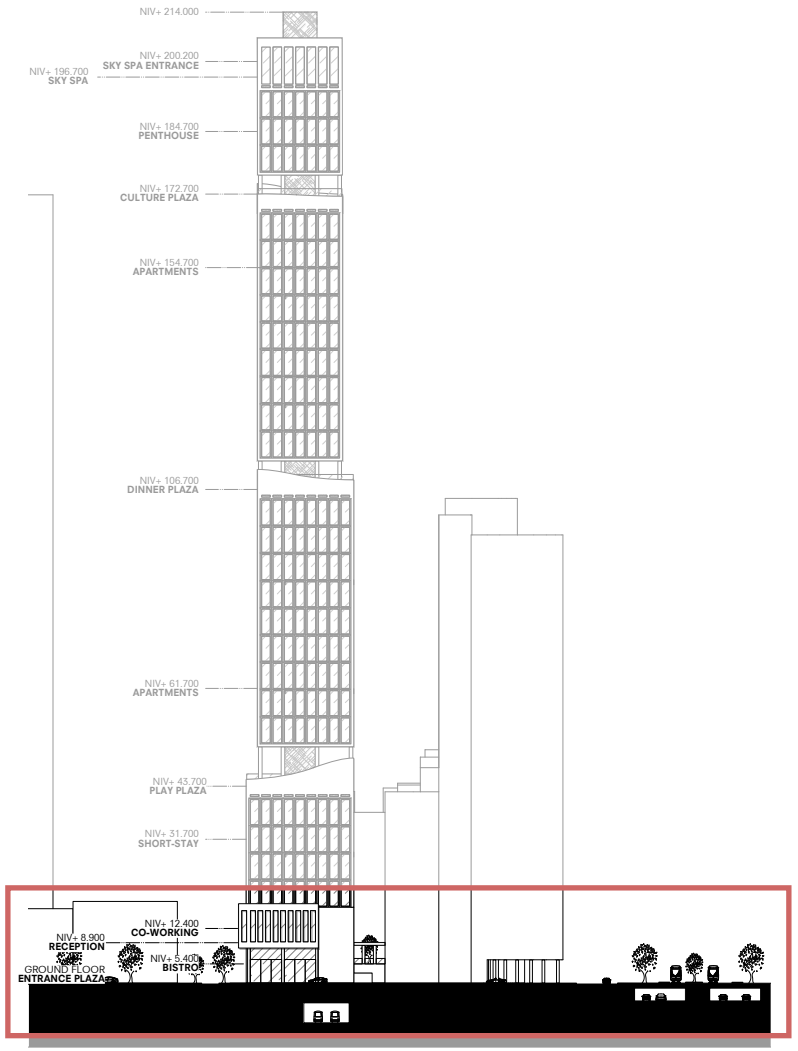
efficiency for residents and **experience** for the public

ENTRANCE POINTS



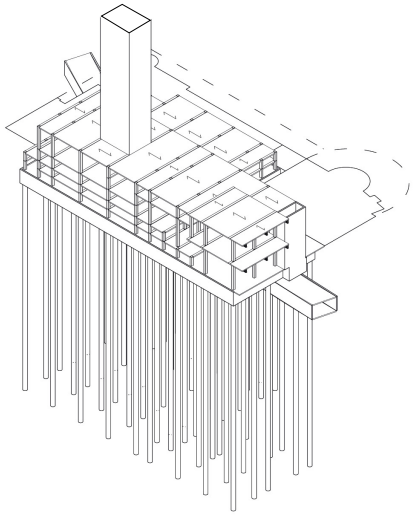


PUBLIC ENTRANCE

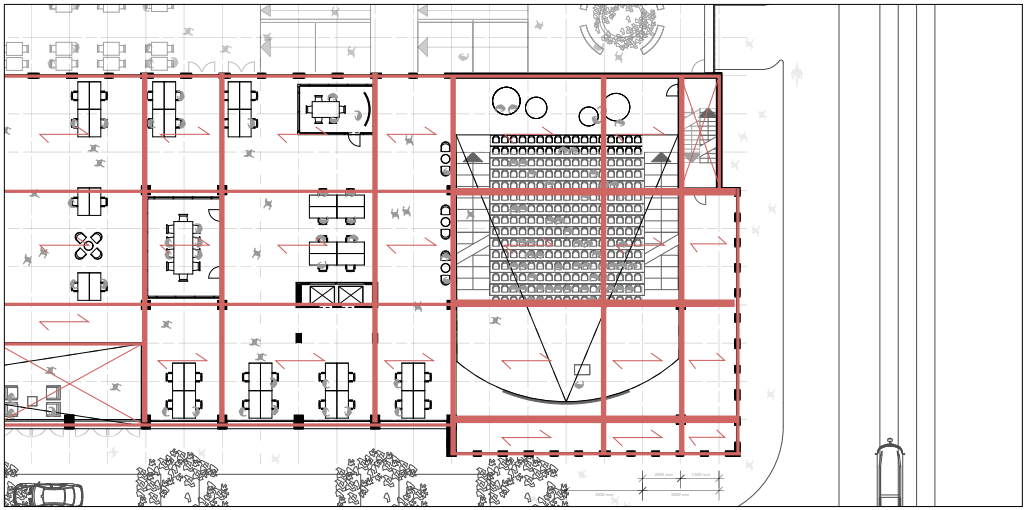


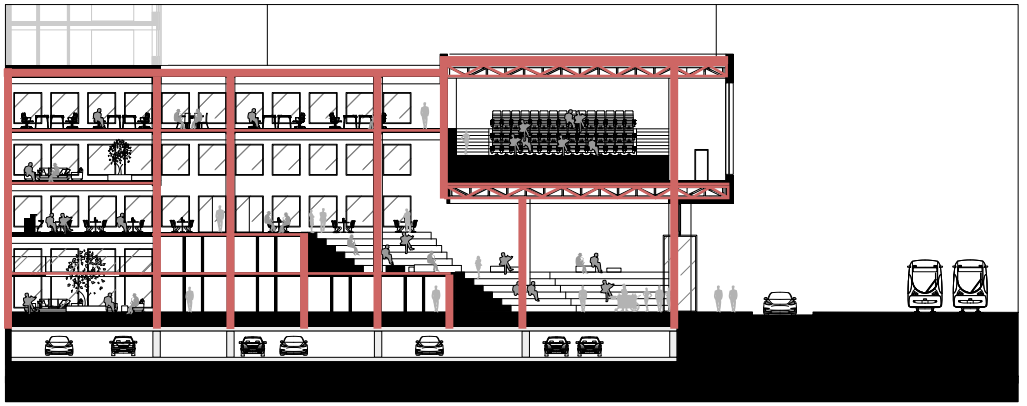


AUDITORIUM CONSTRUCTION

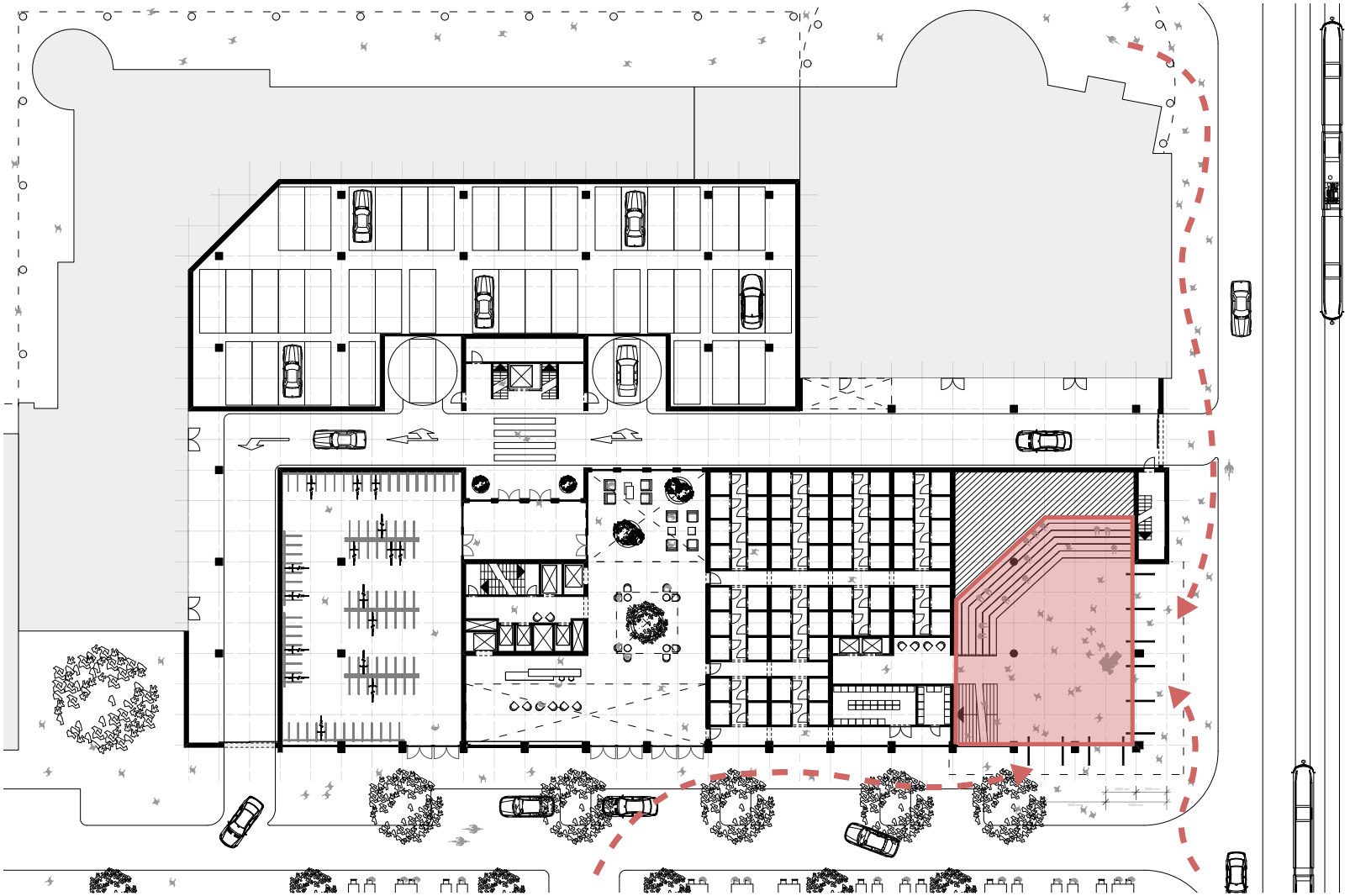


600 mm concrete columns
265 mm steel THQ-beams / 800 mm steel trusses





THE CORNER IS KEY



an interactive space that becomes part of the city

ENTRANCE PLAZA BY DAY



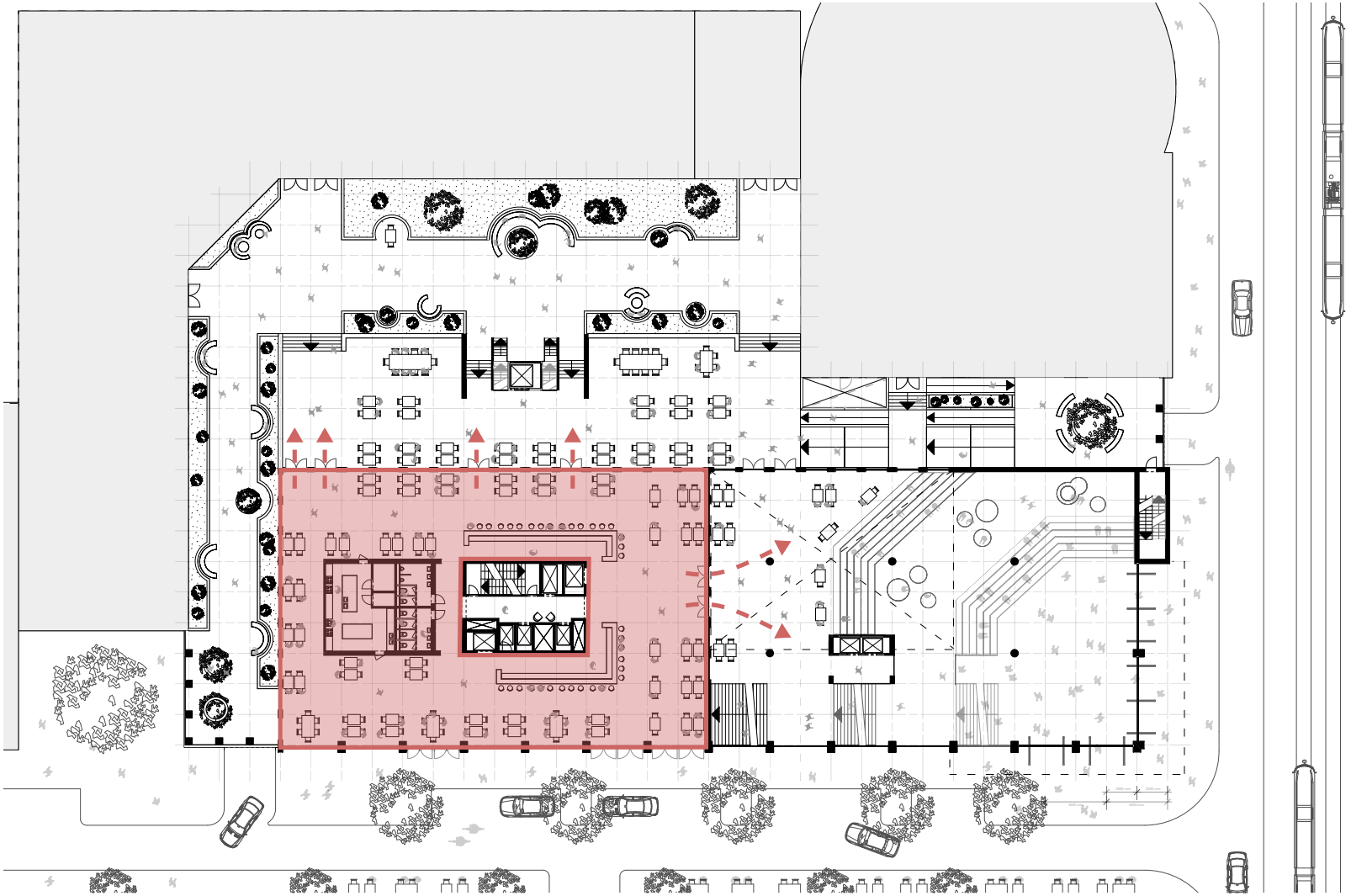
part of the network from 9:00 to 17:00

ENTRANCE PLAZA BY NIGHT



a destination when the working day ends

BAR & BISTRO

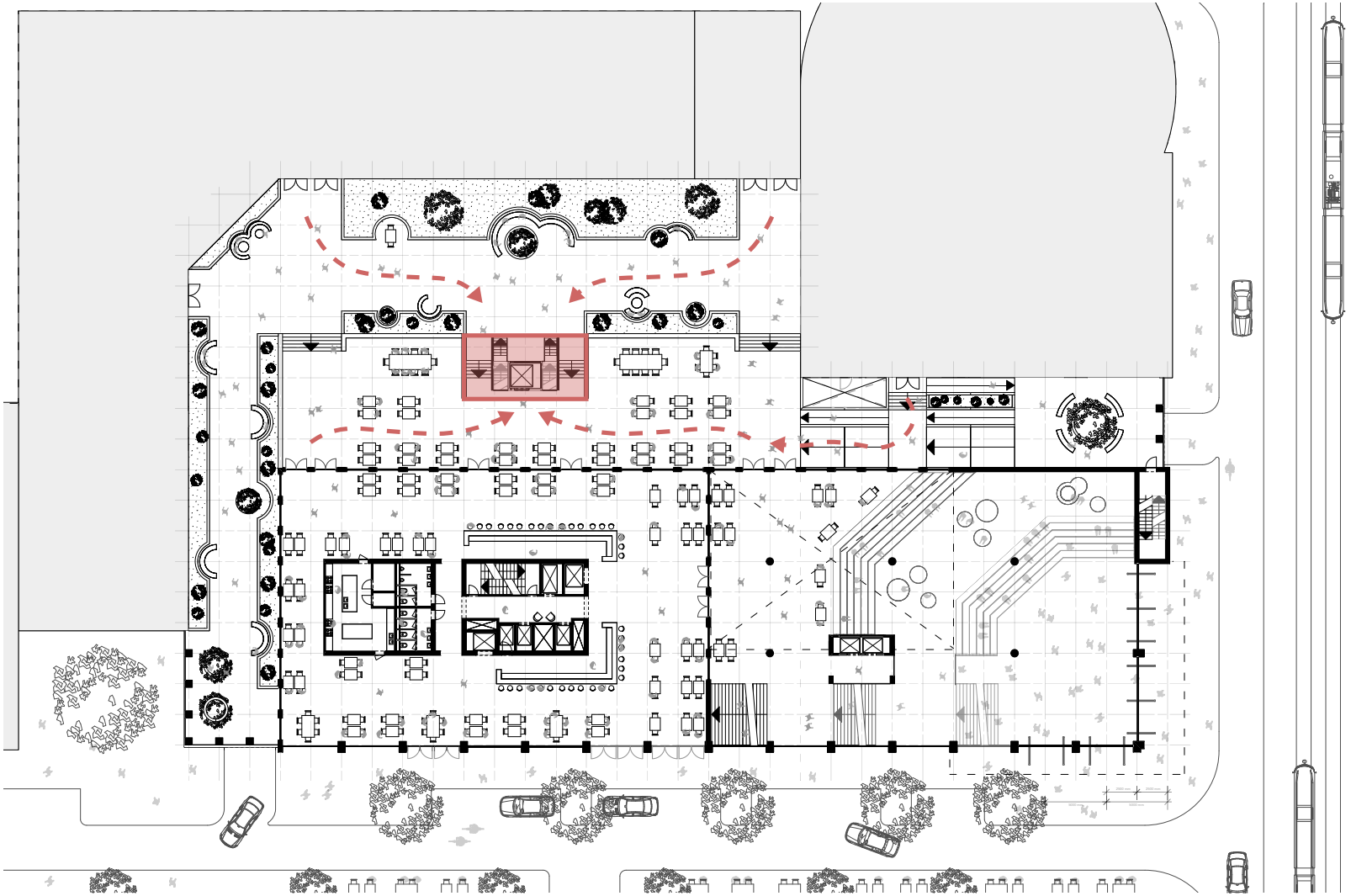


with an interior and an exterior terrace

LITTLE GRAMARCY PARK

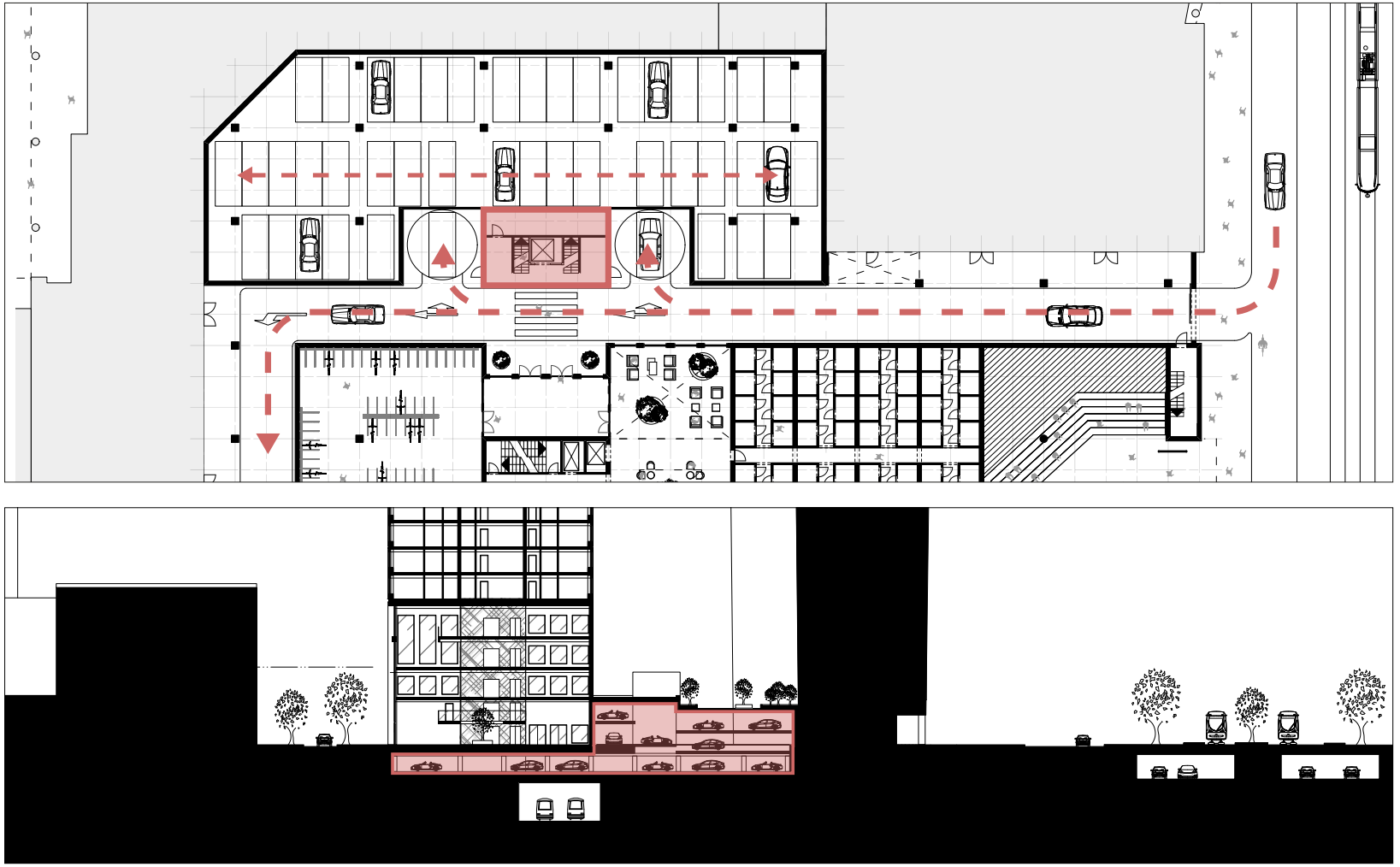


A FUNCTIONAL CONNECTOR



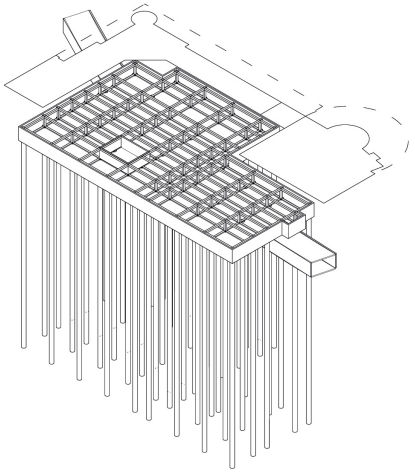
where the block comes together

IN-BLOCK PARKING

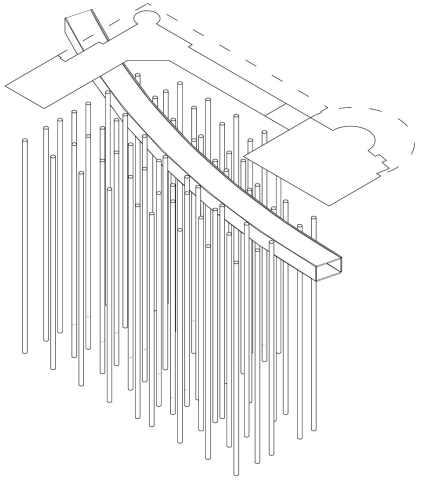


autmated parking system maximises floor space usage

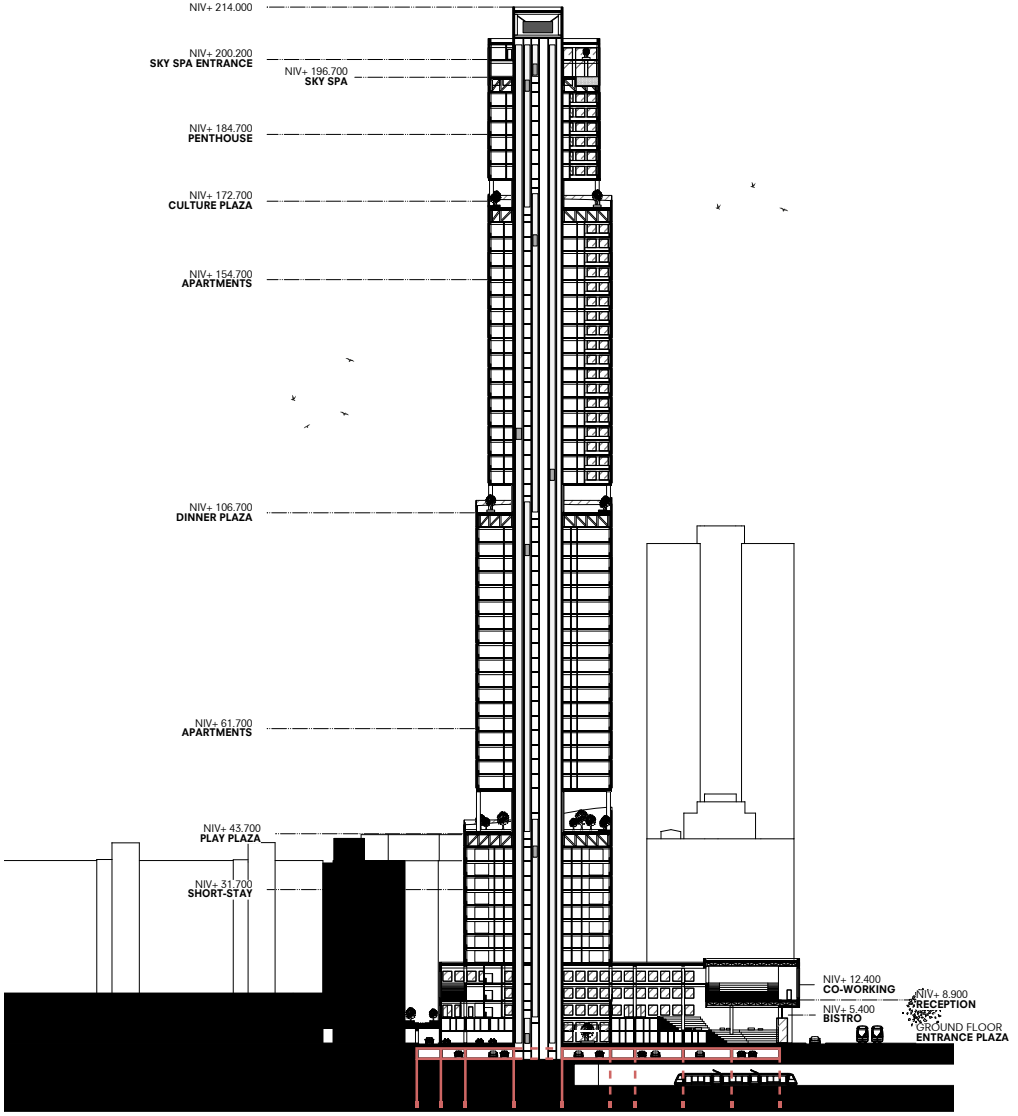
PARKING CONSTRUCTION



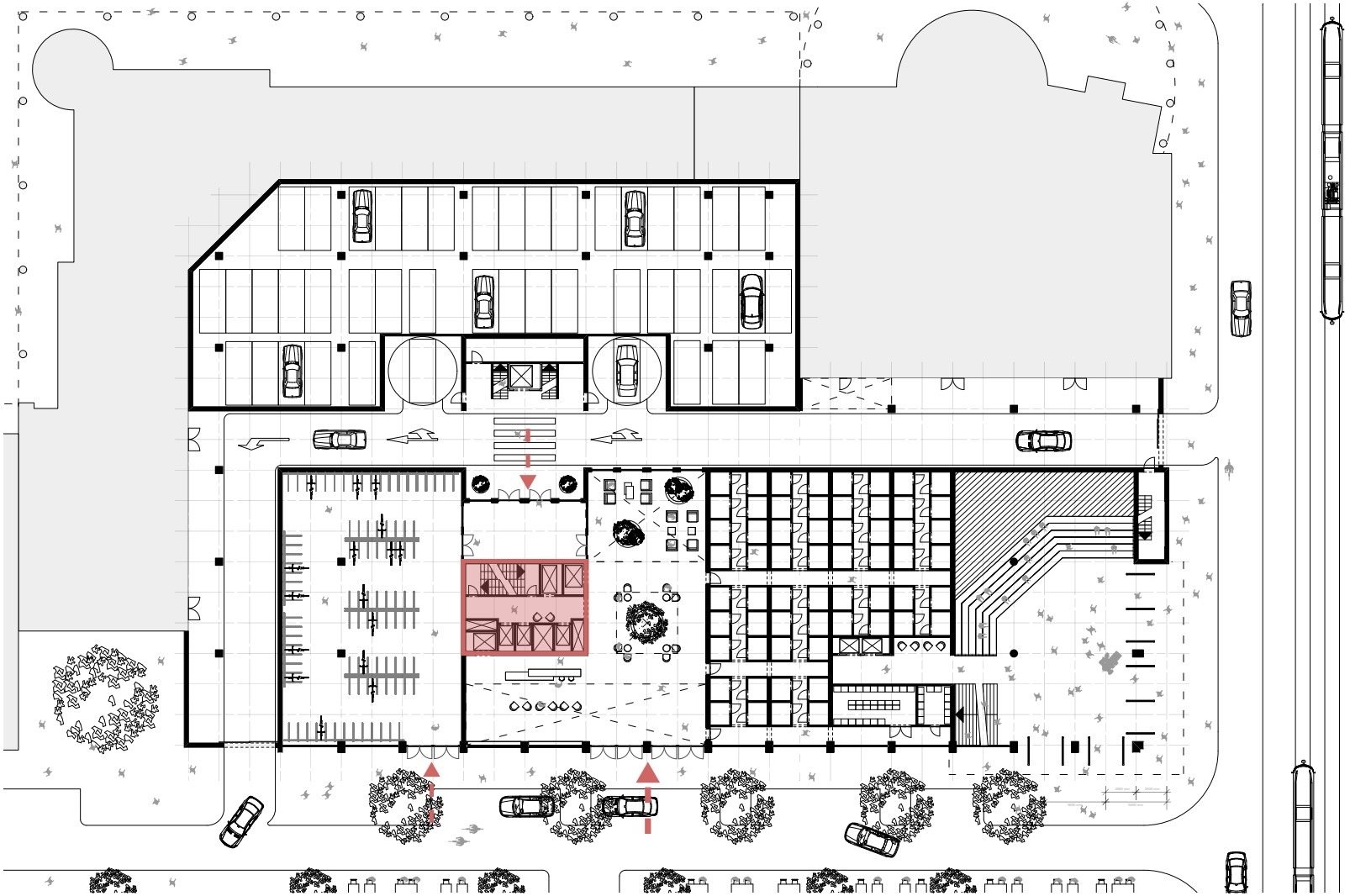
2,8 m high vierendeel transfer trusses
watertight in-situ concrete encasing



66 m (2 x 33 m) screw pile foundation columns



RESIDENT ENTRANCE



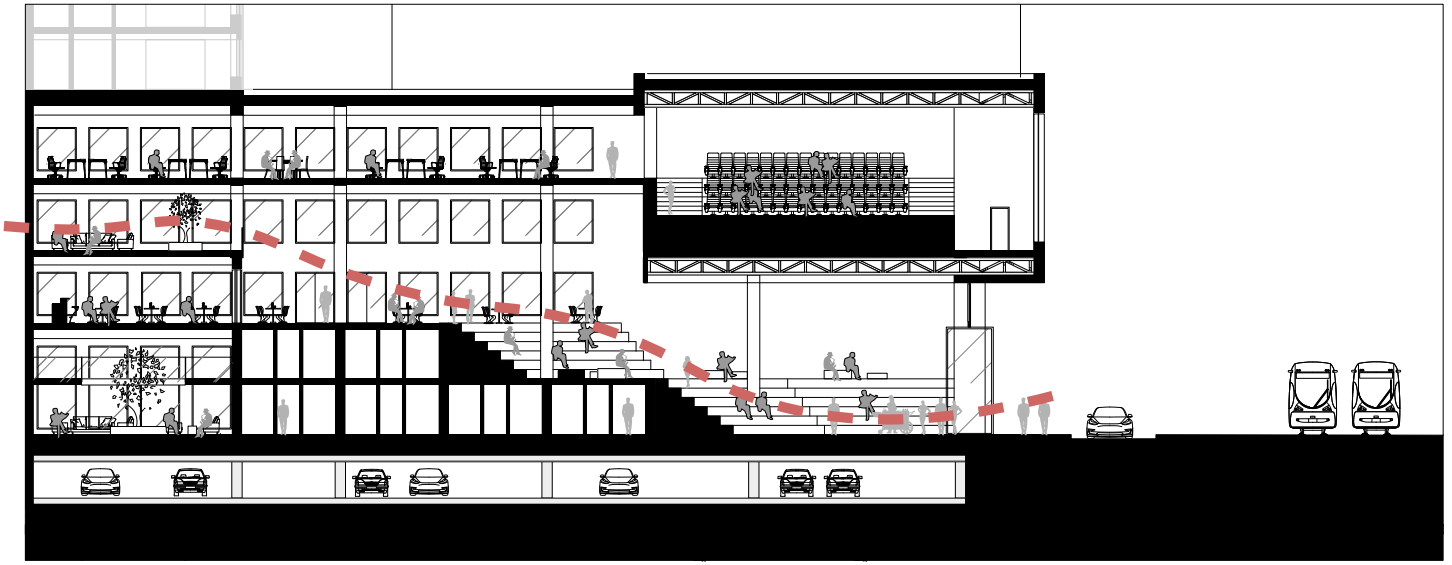
directly connected to the core

RESIDENT ENTRANCE



PUBLIC ROUTE





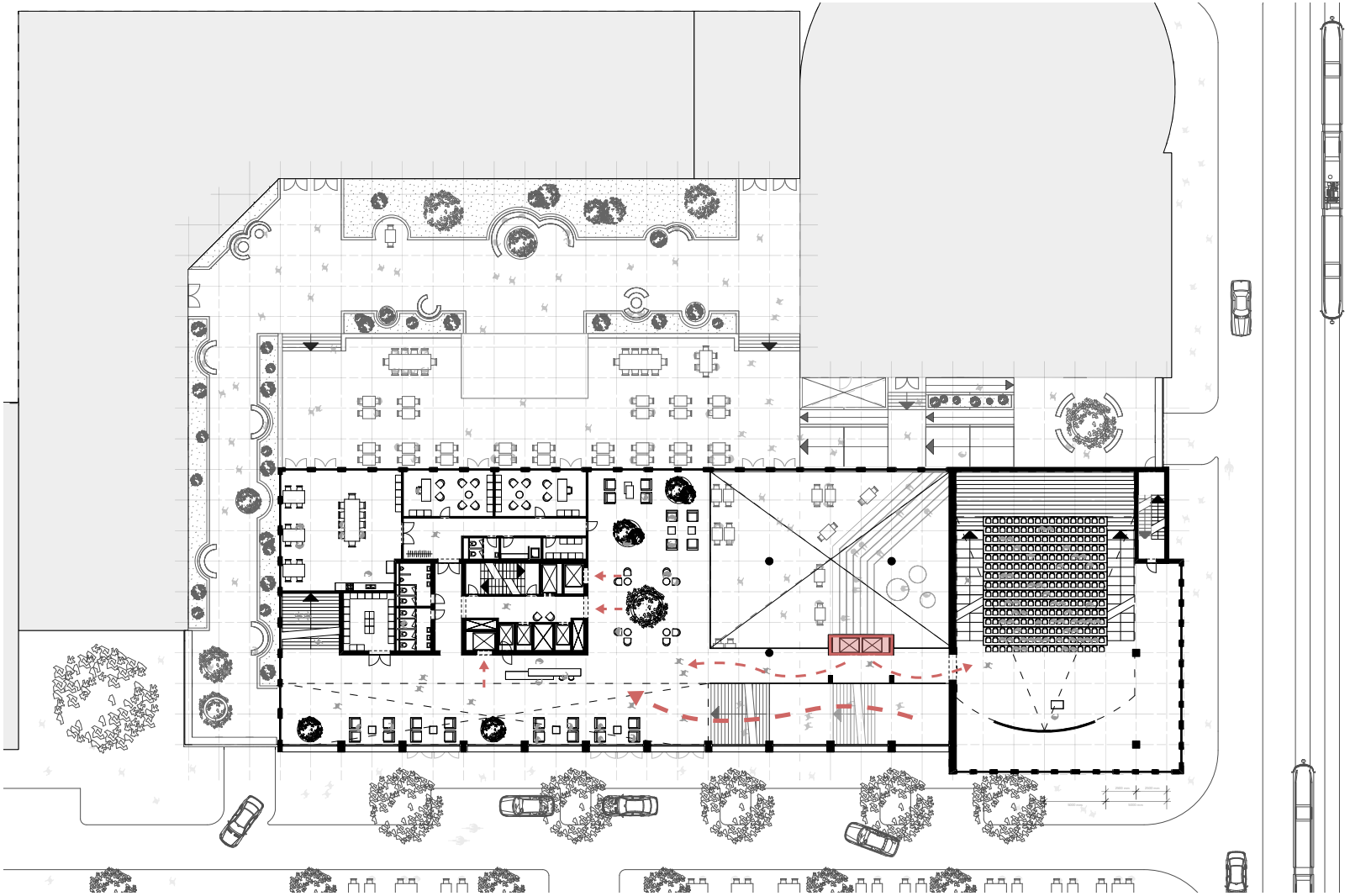
PUBLIC ROUTE



PUBLIC ROUTE



PUBLIC ROUTE

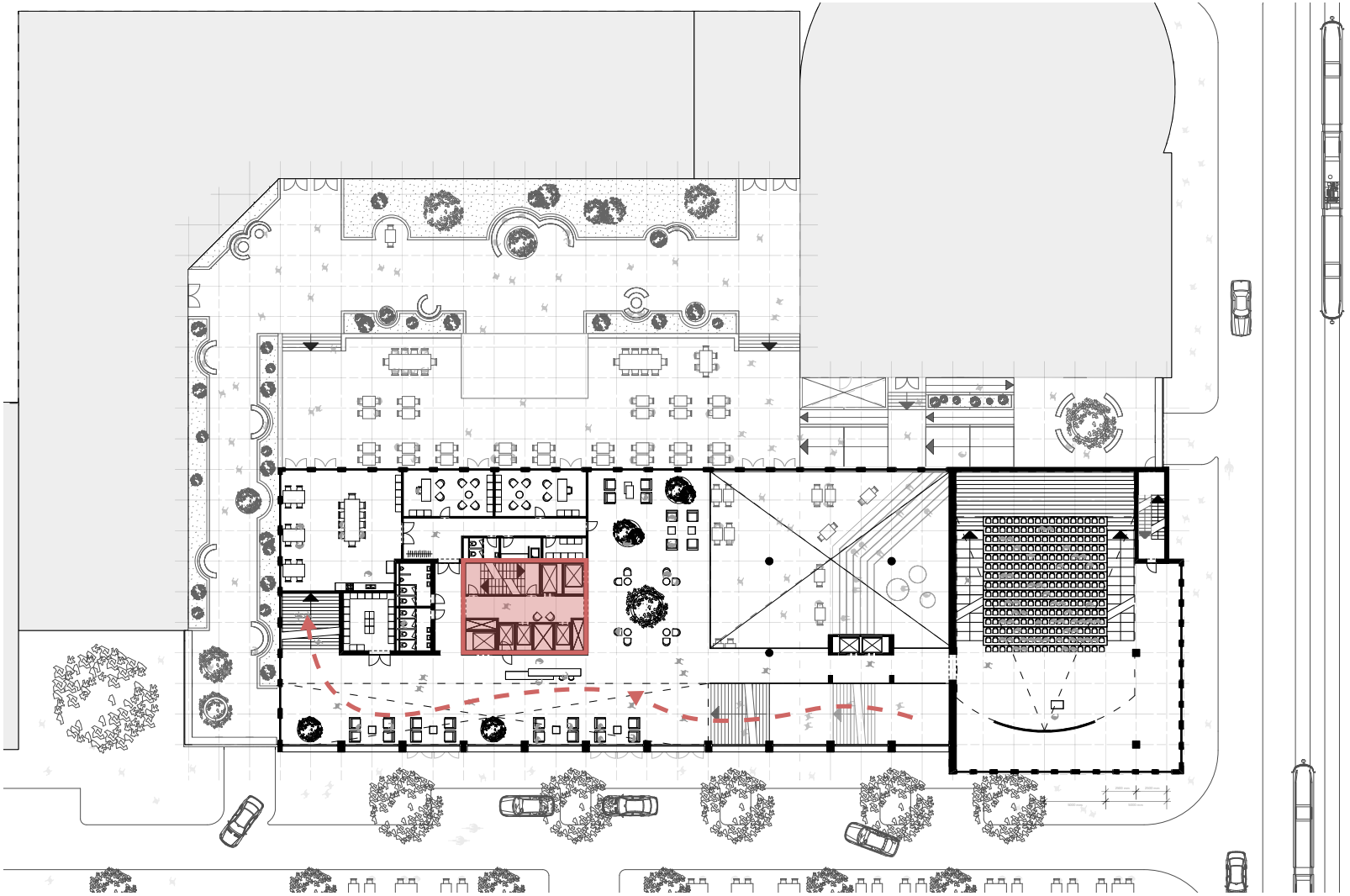


stepping up towards the core

RECEPTION HUB

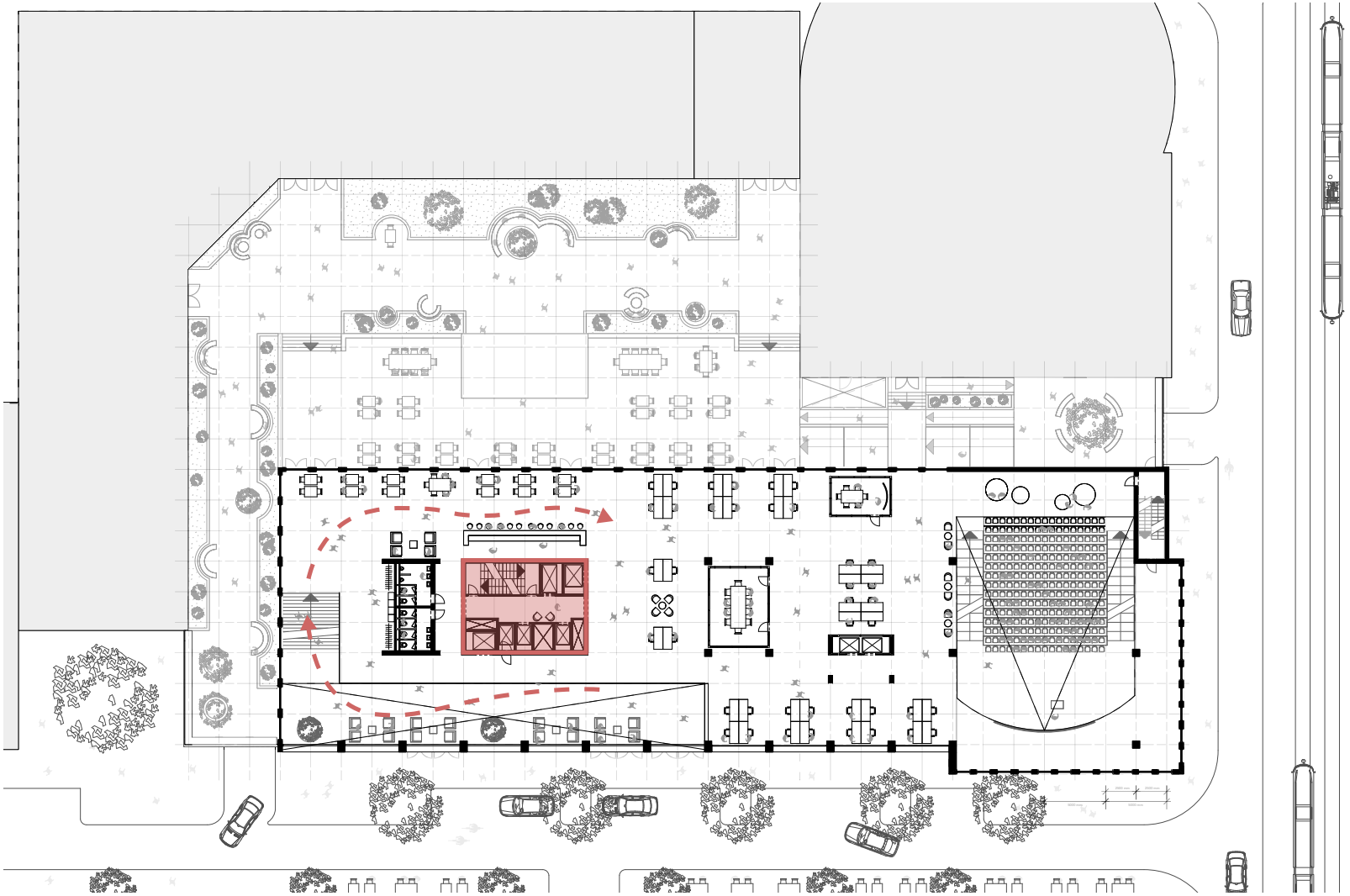


THE CORE



the ~~vertical~~ heart of the skyscraper

CO-WORKING

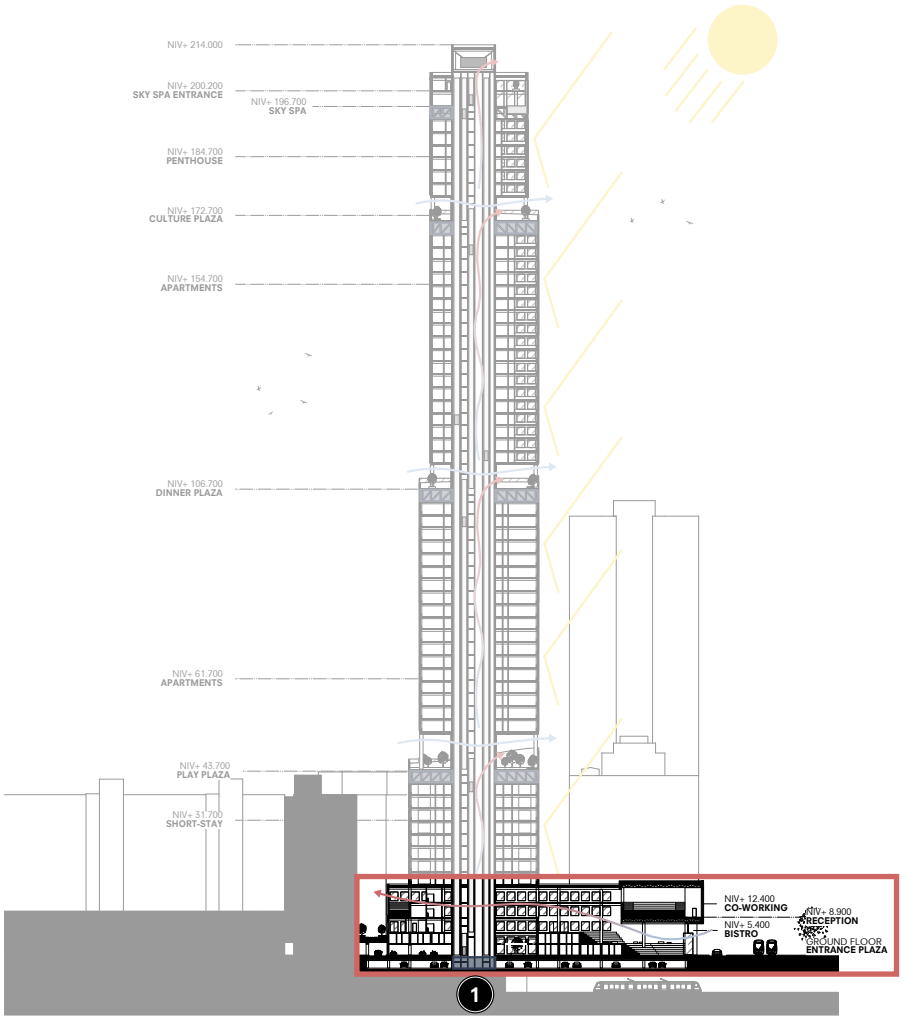


a connected yet secluded workplace

BASE CLIMATE

technical space

1. technical space is located in the base of the core



ventilation

2. natural air flows ventilate the entrance plaza

3. climate ceiling panels mechanically regulate individual zones

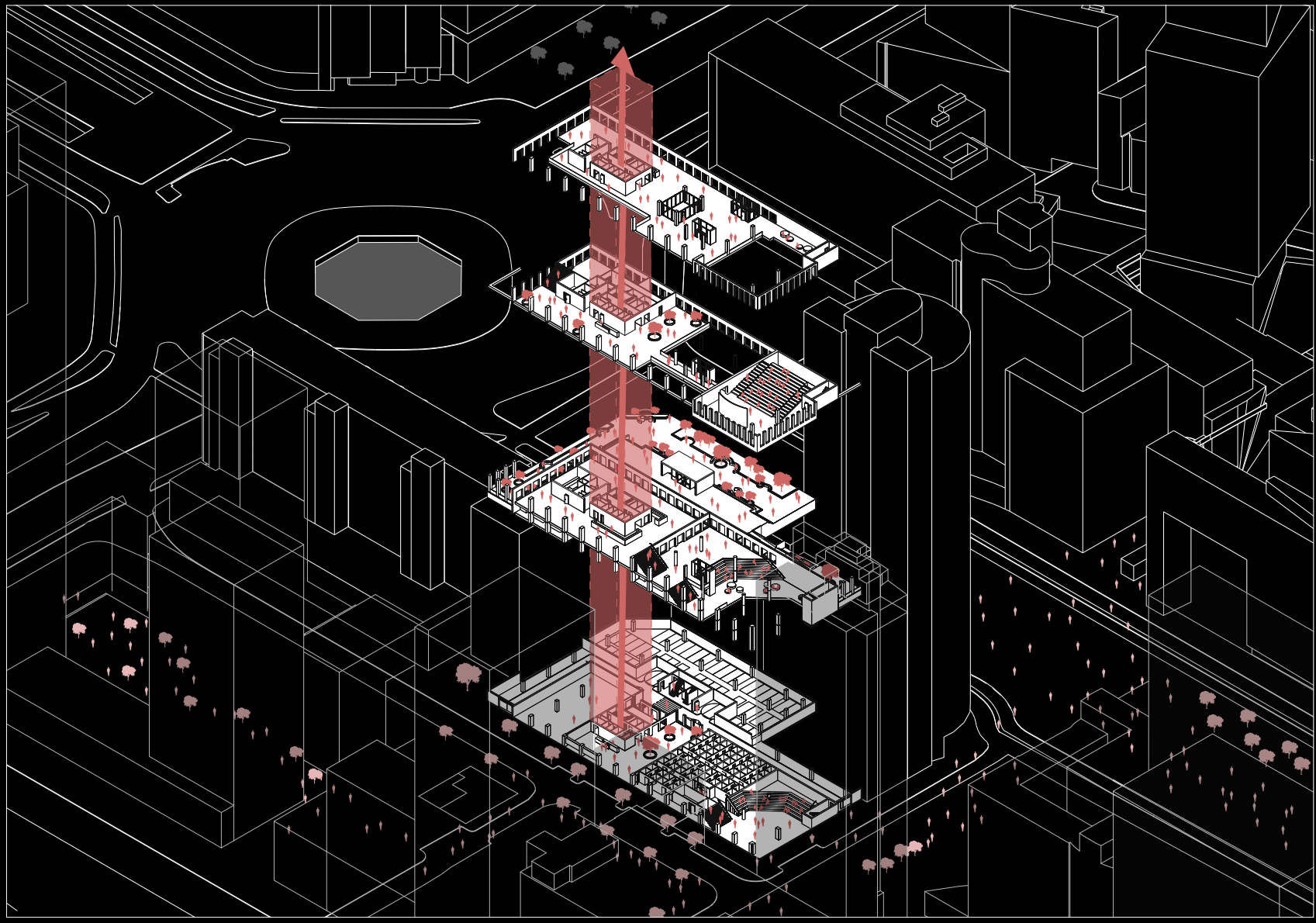
heating

4. the entrance plaza acts as a heat buffer zone

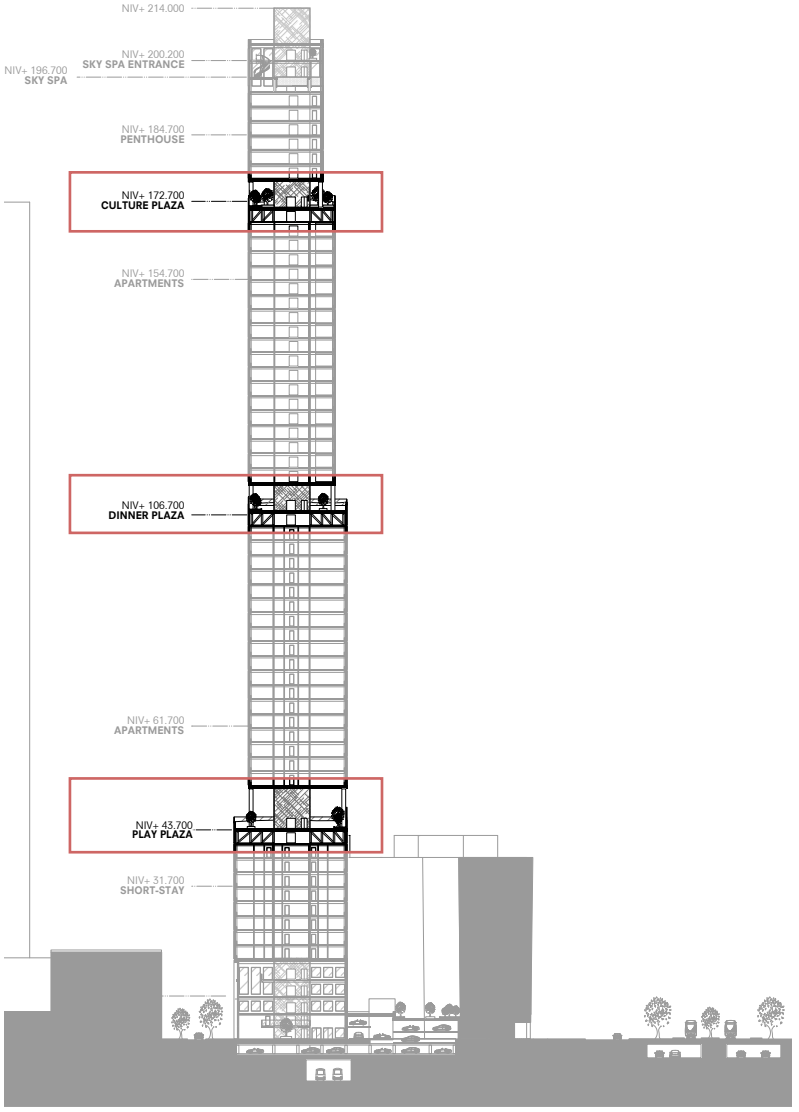
5. radiant ceiling panels allow for individual heating / cooling regulation

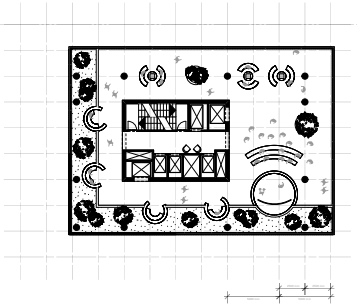


THE CORNERSTONE

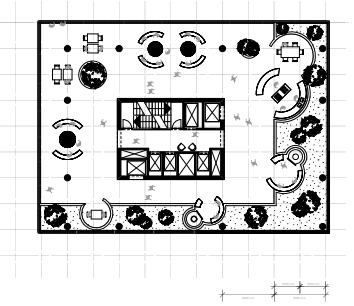


NEIGHBOURHOOD PLAZAS

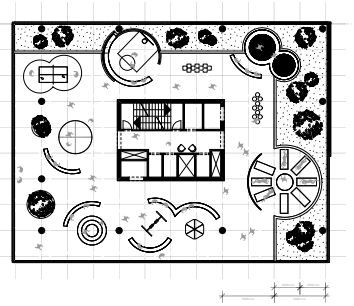




culture plaza

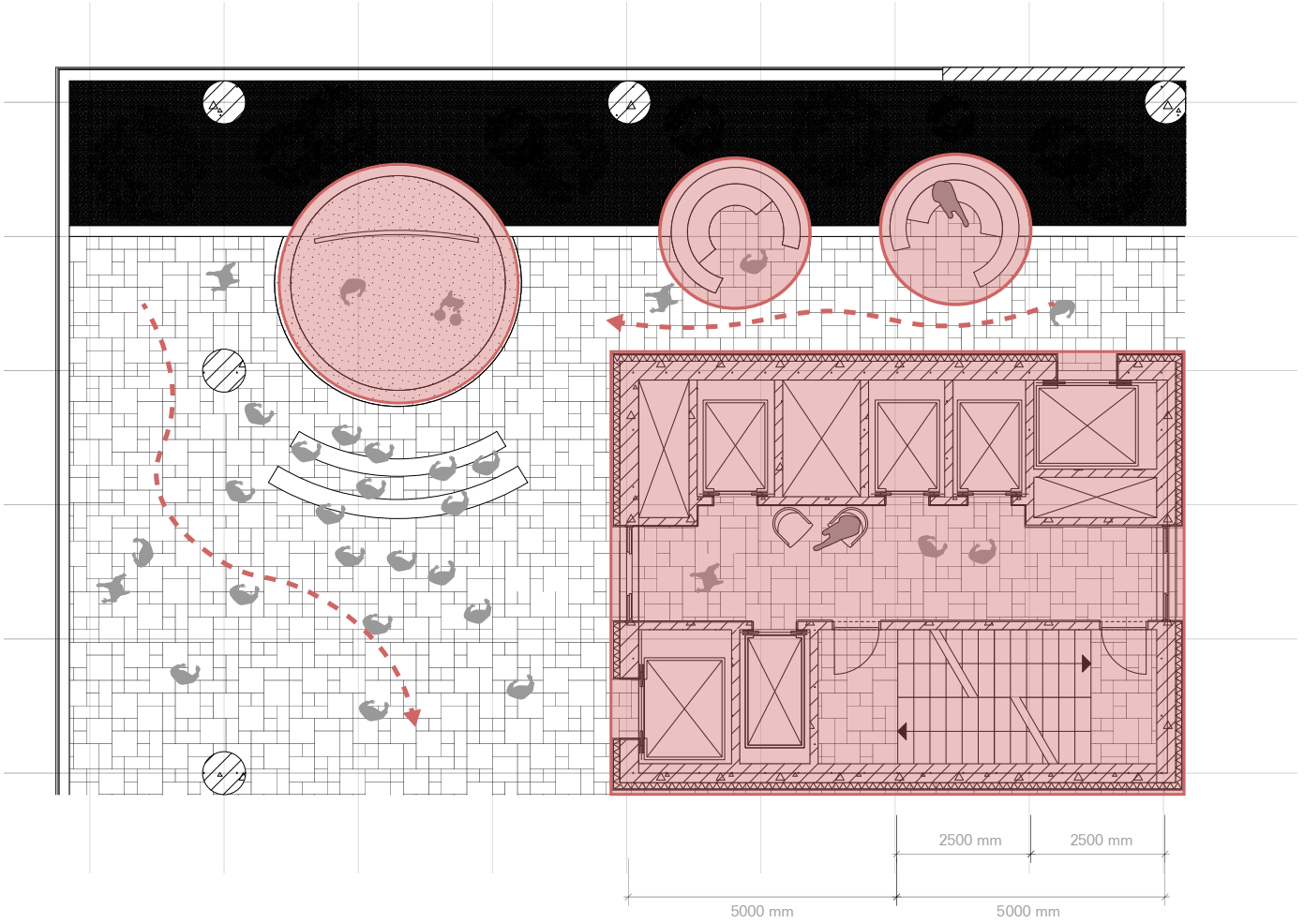


dinner plaza



play plaza

ACTIVITY PAVILLIONS



free-flowing spaces that are placed around the central core

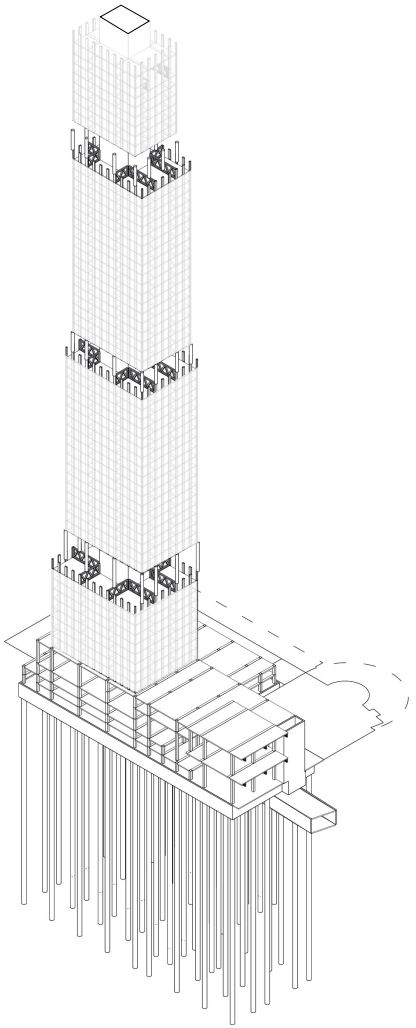
INTIMATE IN THE GREEN



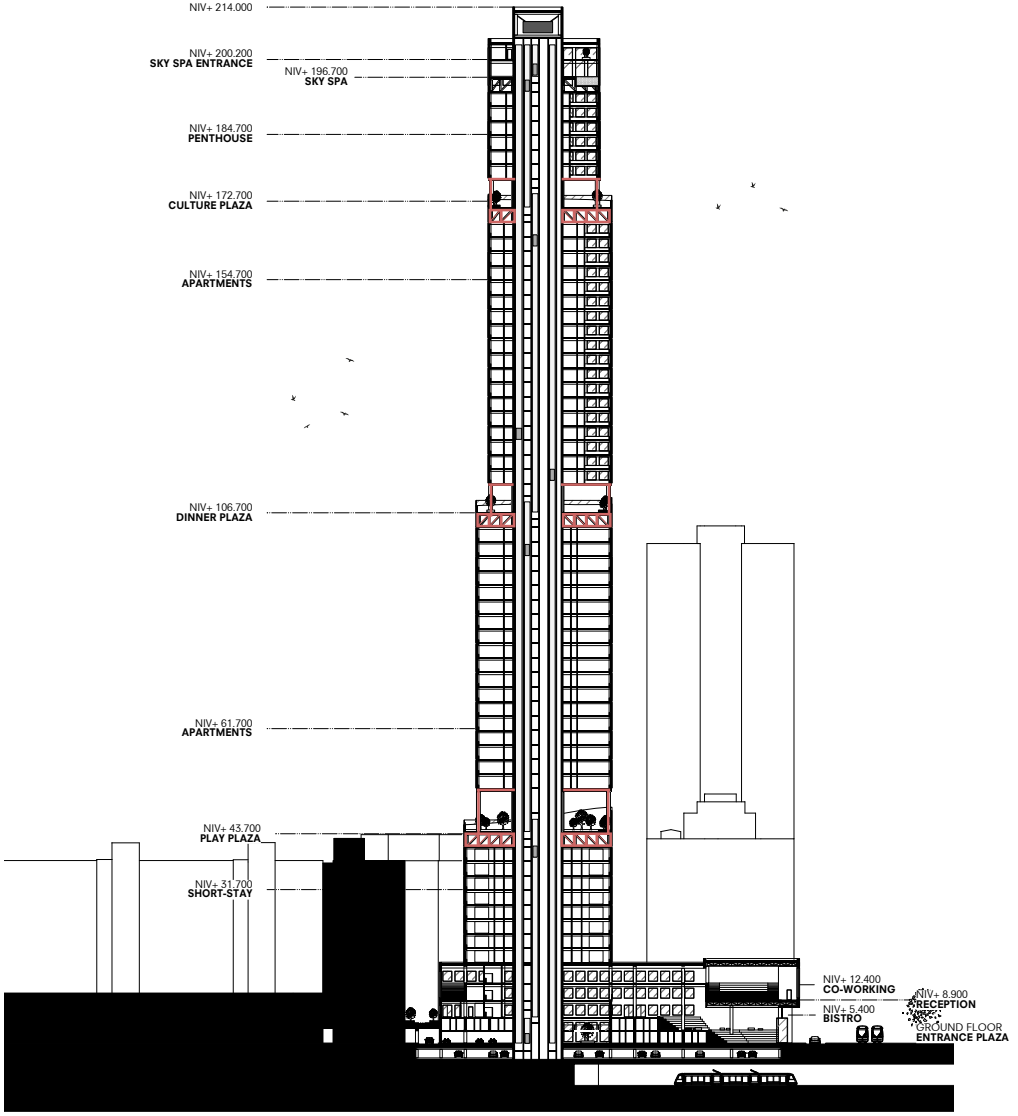
OPEN TOWARDS THE CITY



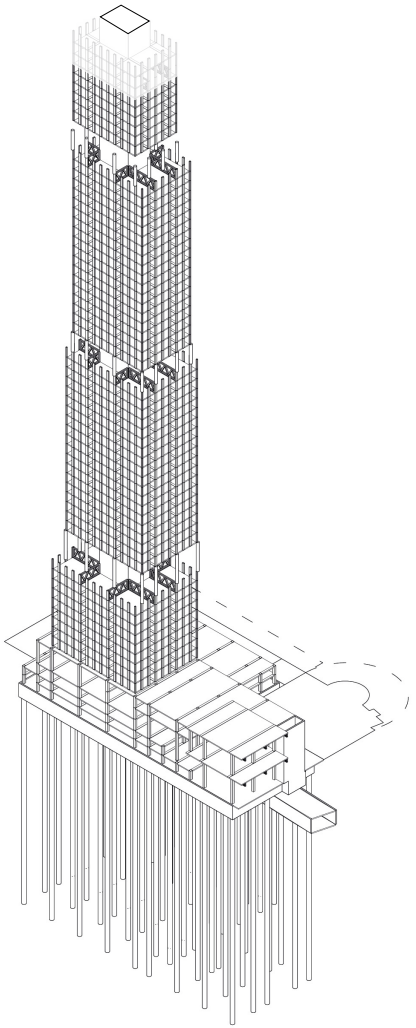
PLAZA CONSTRUCTION



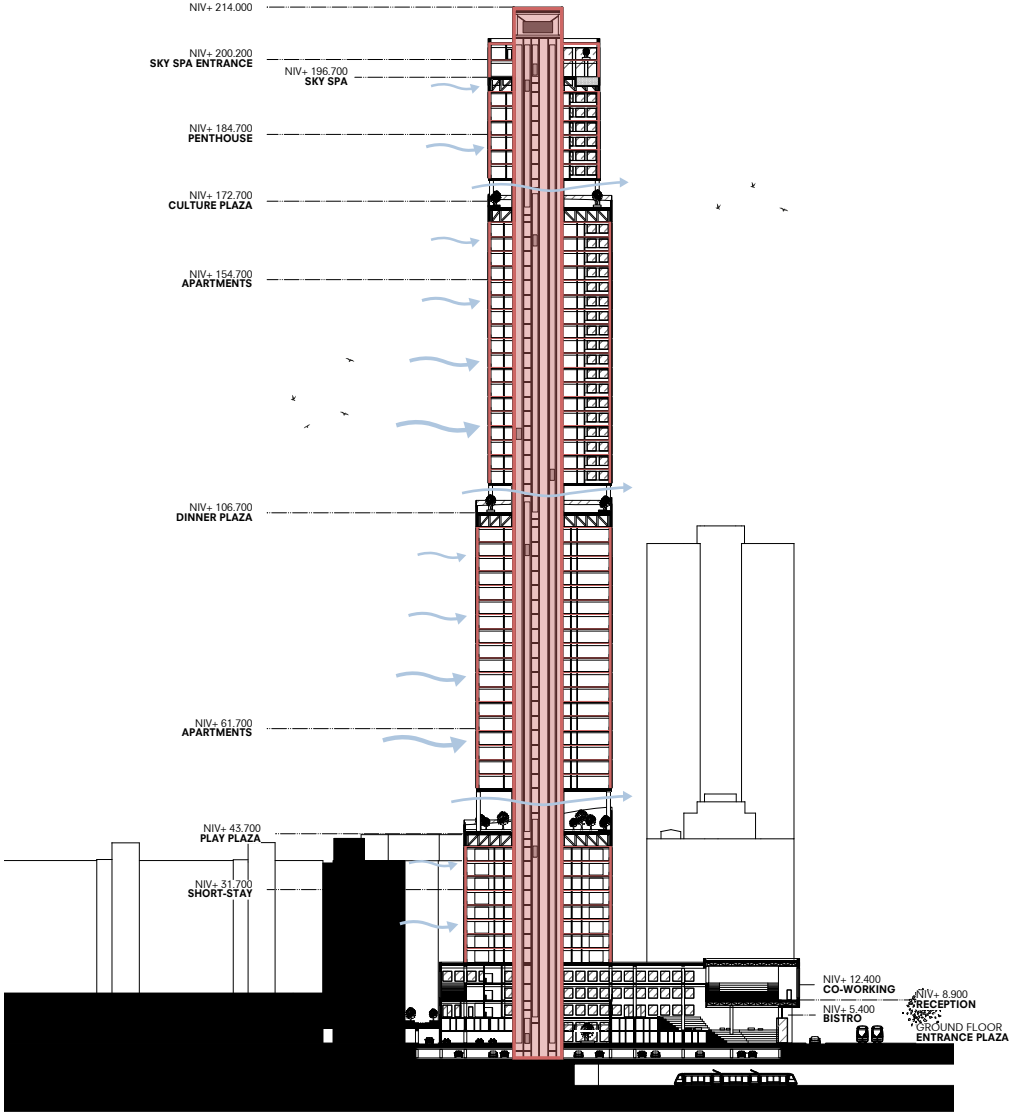
3 m high transferring outrigger trusses
800 mm concrete connection columns



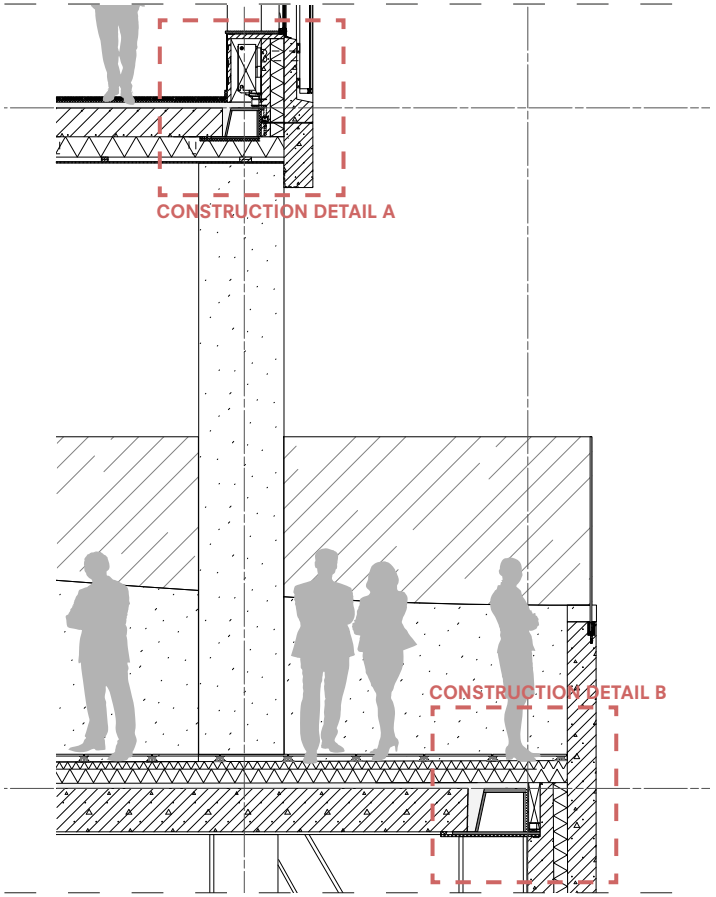
TOWER CONSTRUCTION

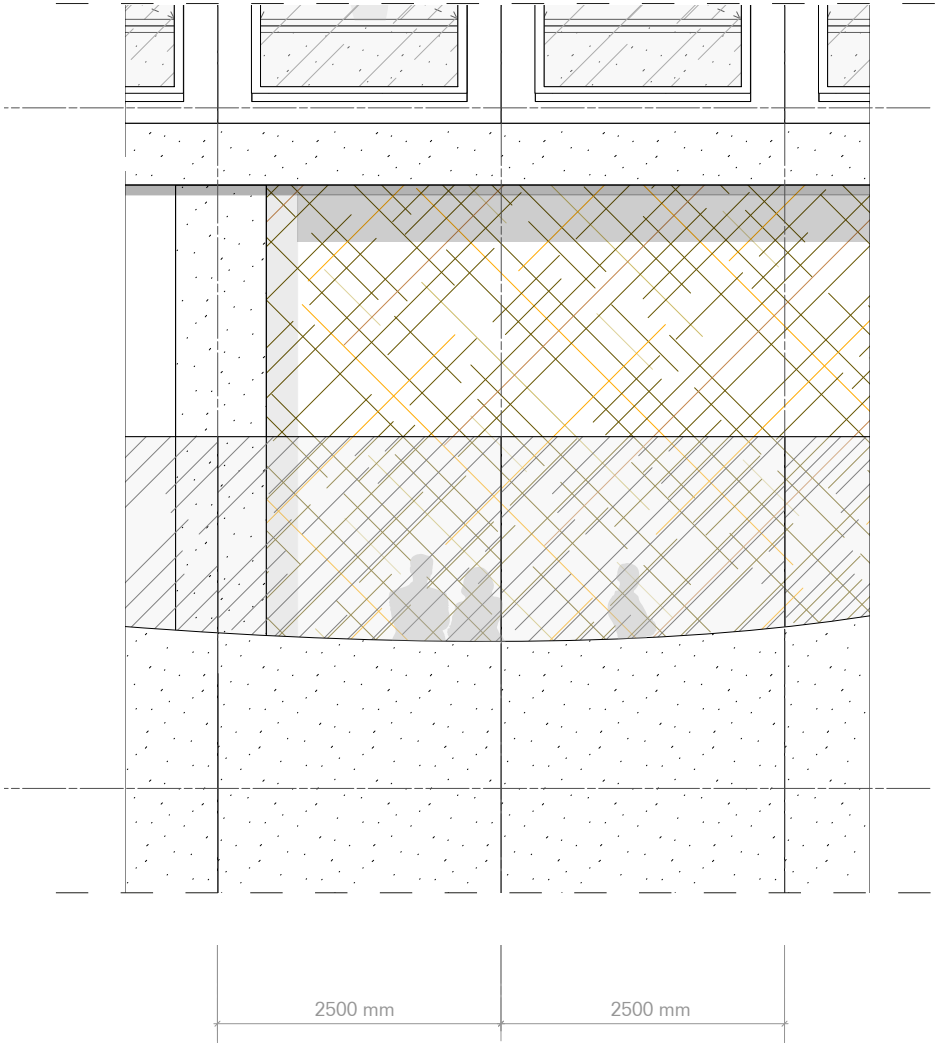


300 mm by 600 mm concrete facade cloumns
320 mm prefab load-carying concrete sandwich panels

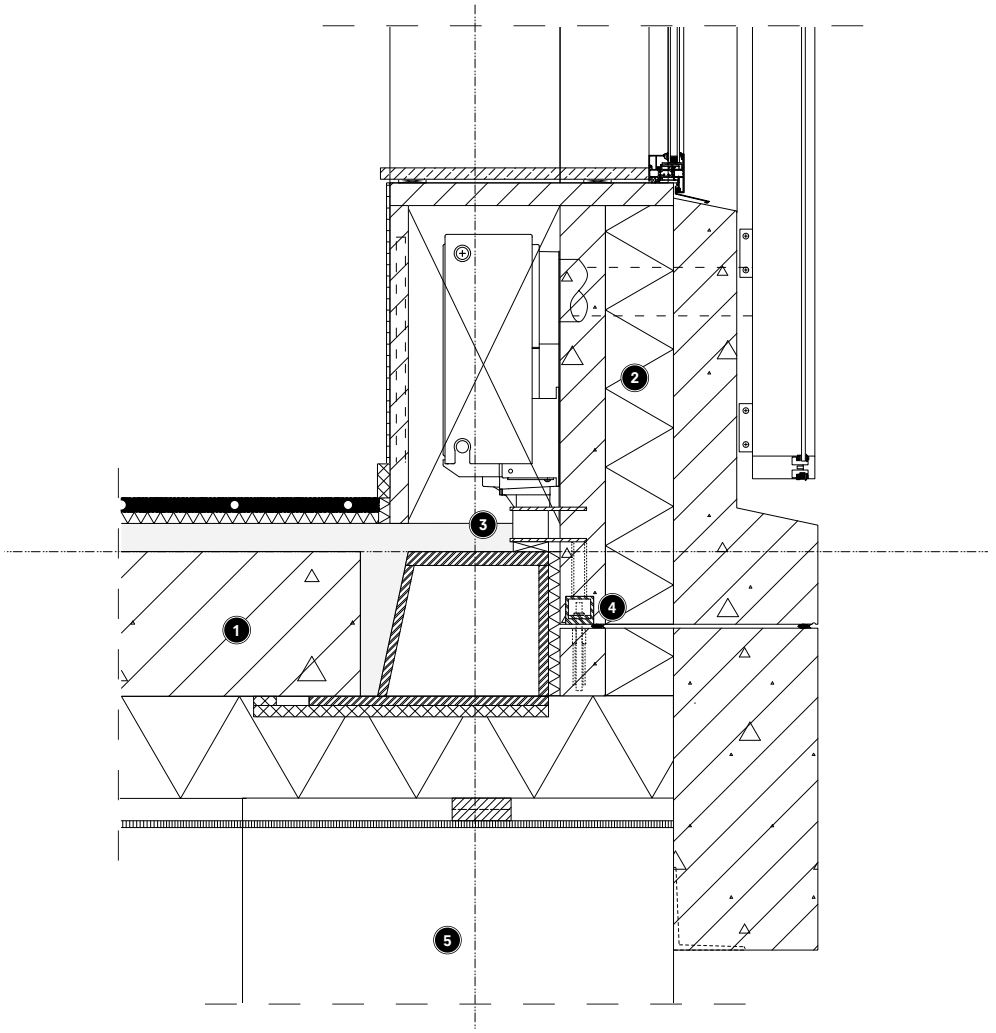


CONSTRUCTION FRAGMENT



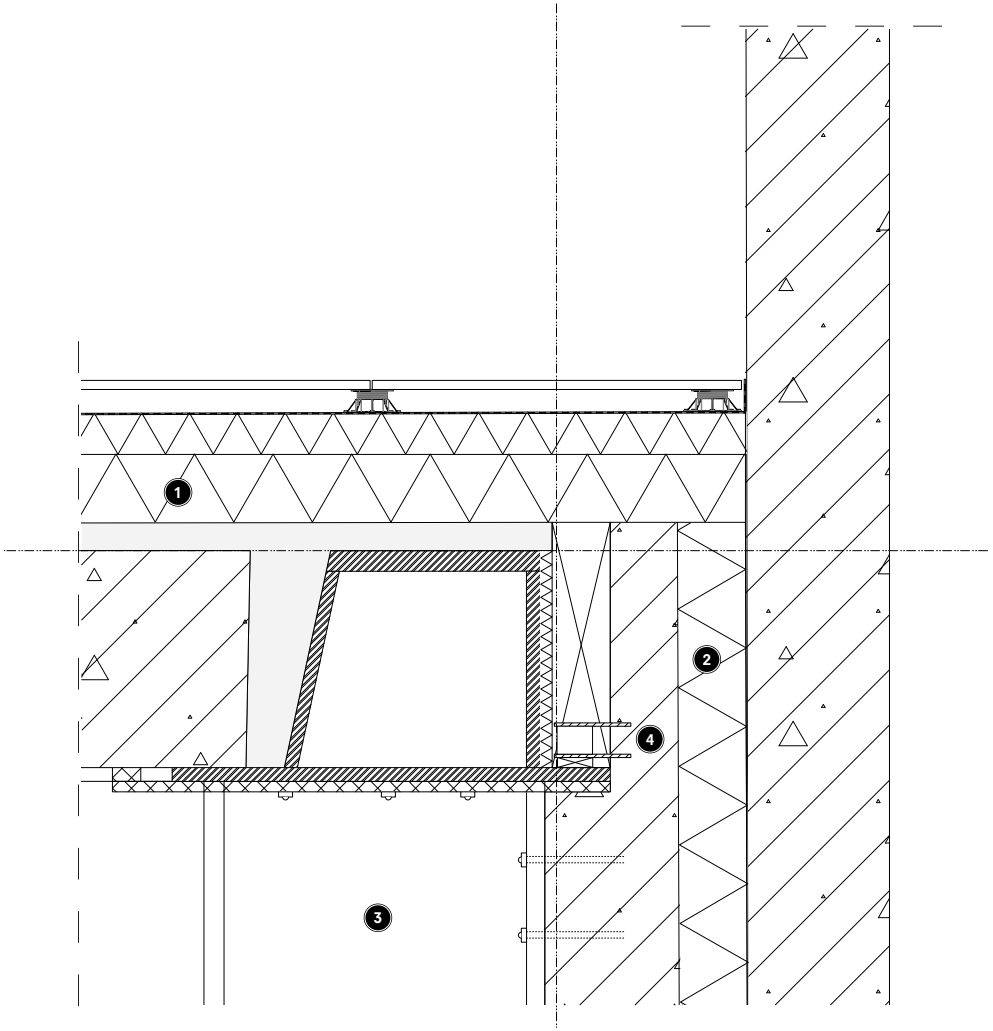


CONSTRUCTION DETAIL A



1. floor structure
   - floating screed flooring
   - concrete topping
   - 255 mm concrete hollow-core slabs
   - 265 mm steel THQ-beams
   - foam insulation layer
   - finishing outer plate
2. facade structure
   - pre-fabricated concrete sandwich panels
   - sequentially cast terrazo finish
3. adjustable tie back panel to beam connector
4. dowel pin sadwich panel connector
5. 800 mm concrete exterior column

CONSTRUCTION DETAIL B

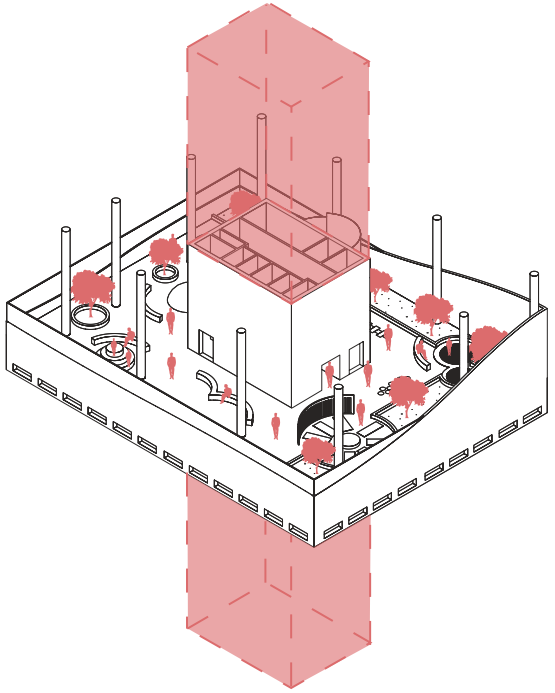


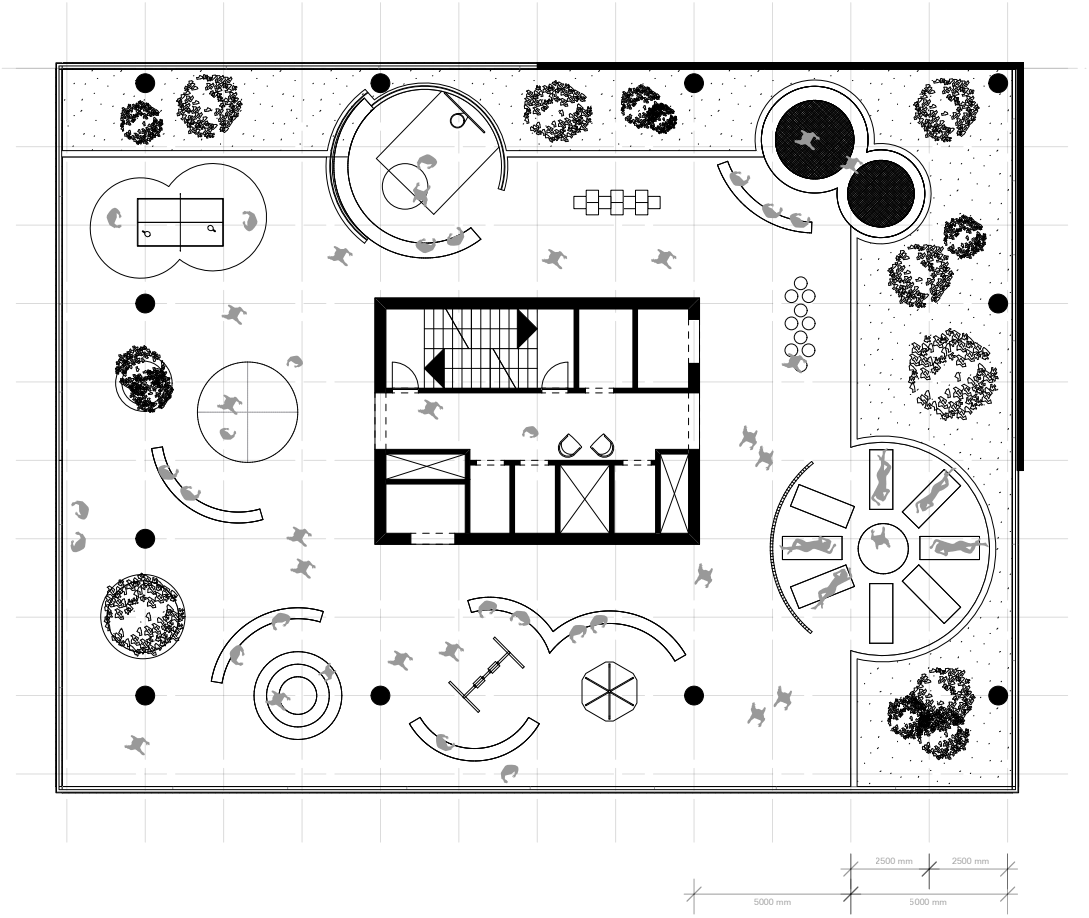
1. floor structure
   - concrete floor tiles
   - terrace pedestals
   - sloped isulation sheets
   - rigid foam insulation sheets
   - concrete topping
   - 400 mm concrete hollow-core slabs
   - 420 mm intergrated THQ-beams
2. facade structure
   - pre-fabricated concrete sandwich panels
   - sequentially cast terrazo finish
3. floor high steel transfer truss
4. adjustable tie back panel to beam connector

POROUS LUXURY



PLAY PLAZA



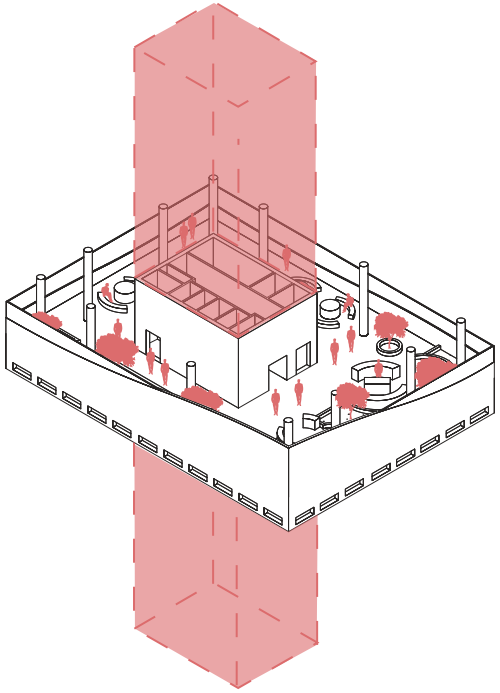


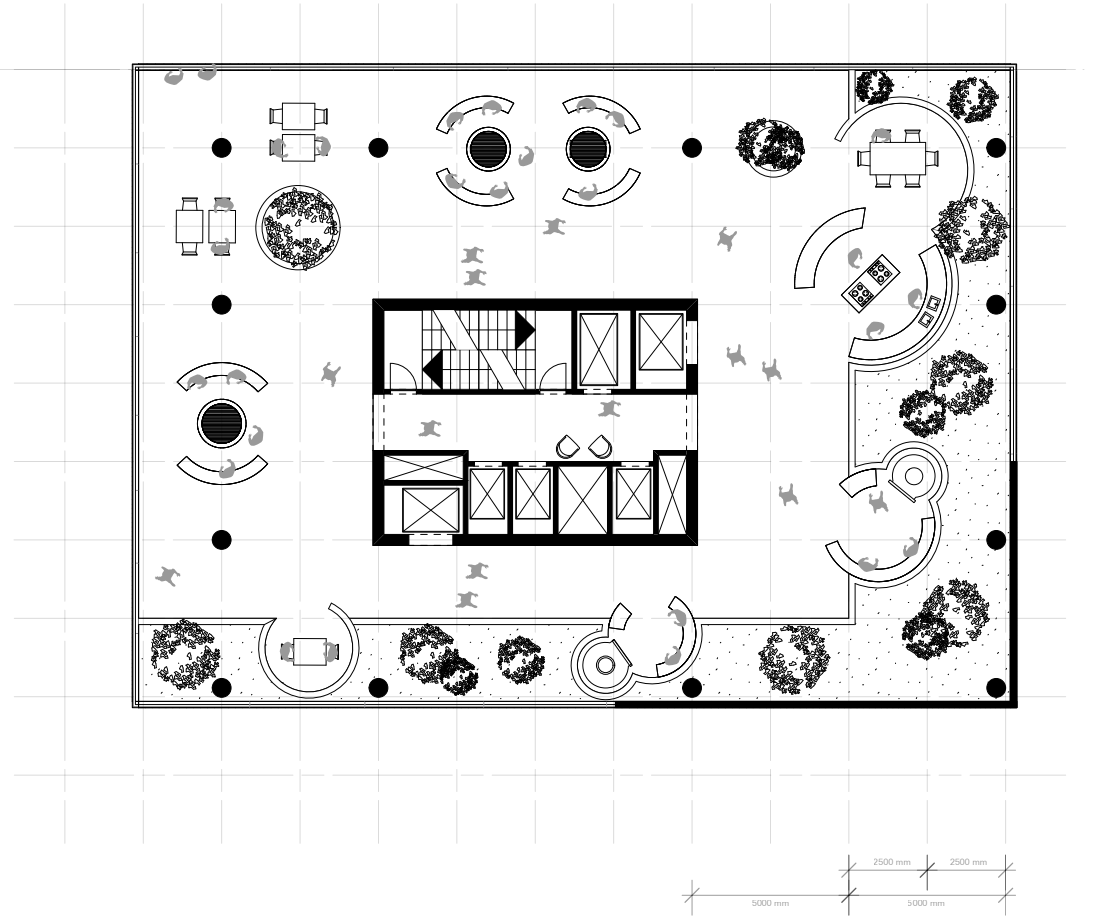
yoga / playground / basketball / trampolines / ping-ping

YOGA PAVILION



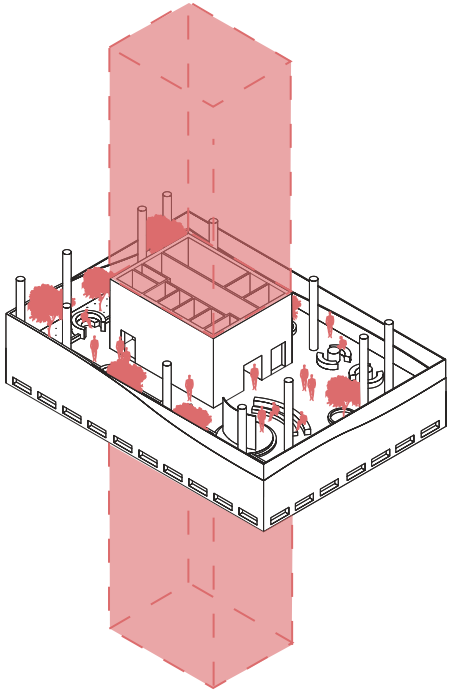
DINNER PLAZA

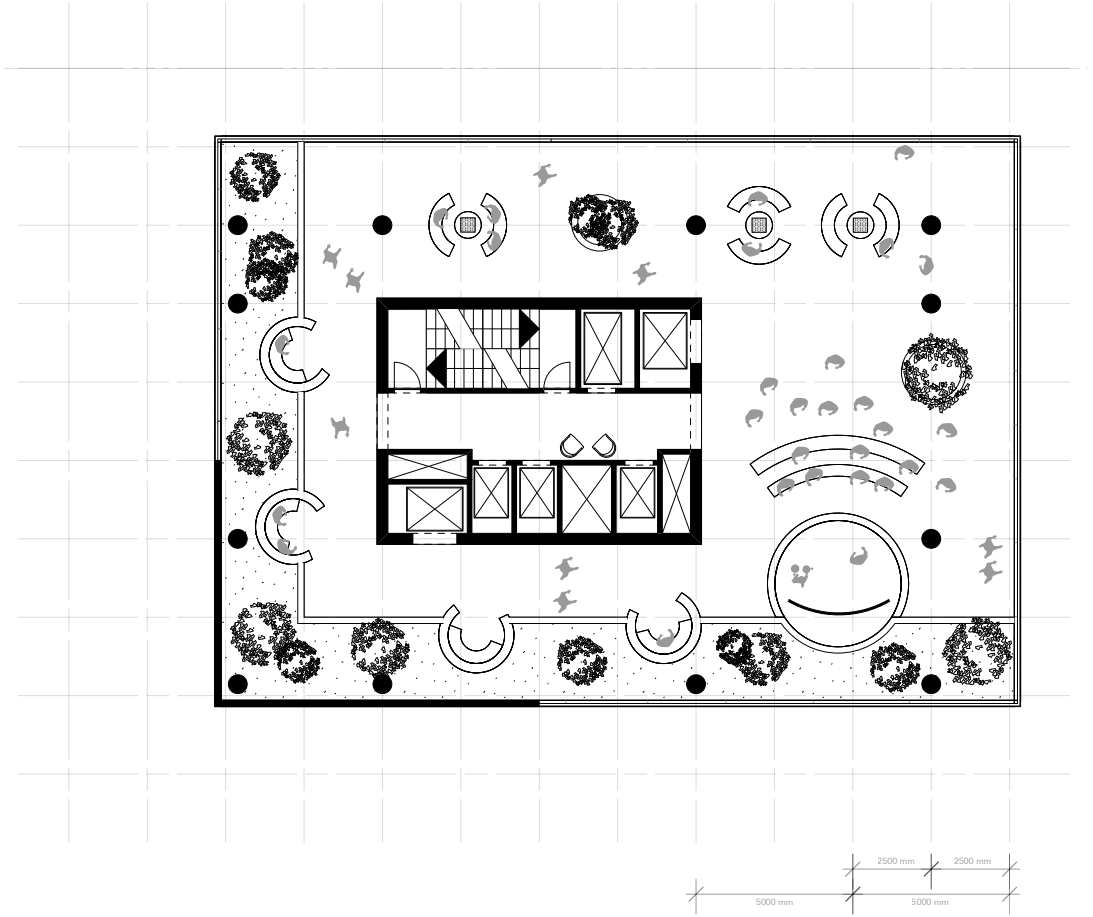




barbecue’s / outdoor kitchen / pizza ovens / dining spots

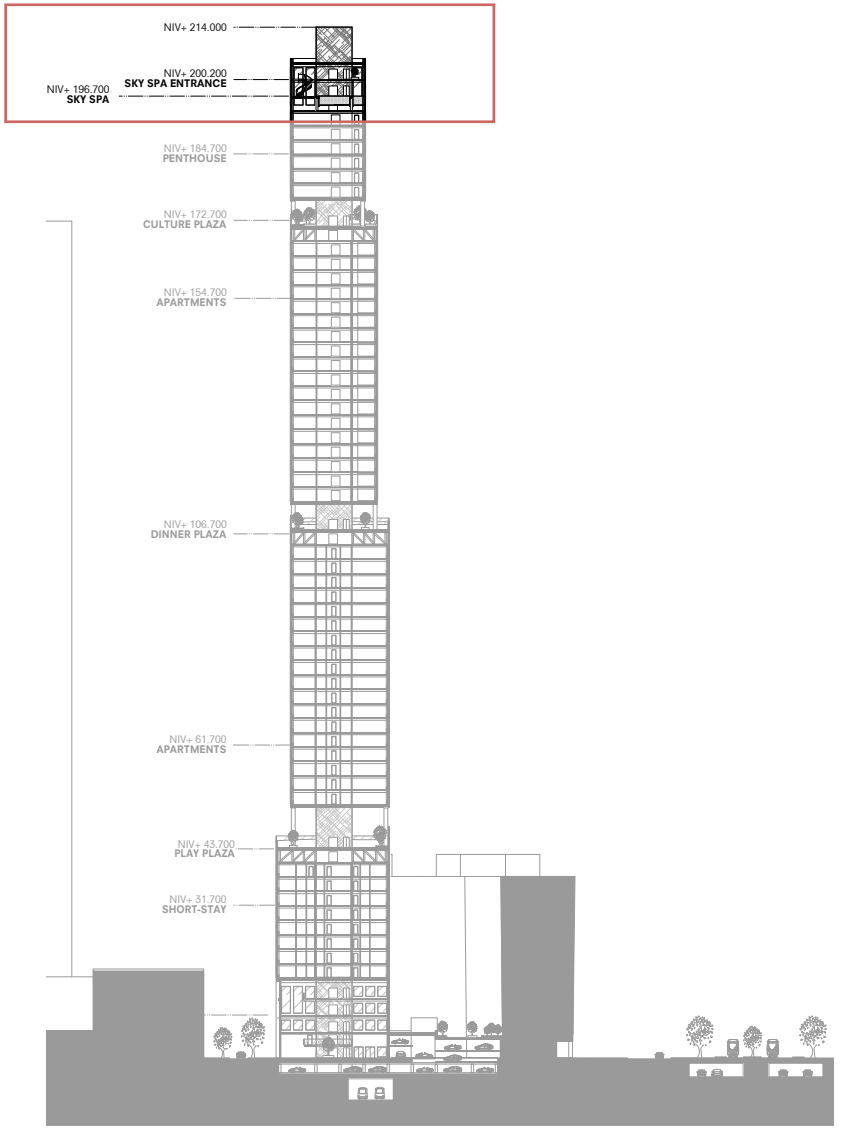
CULTURE PLAZA

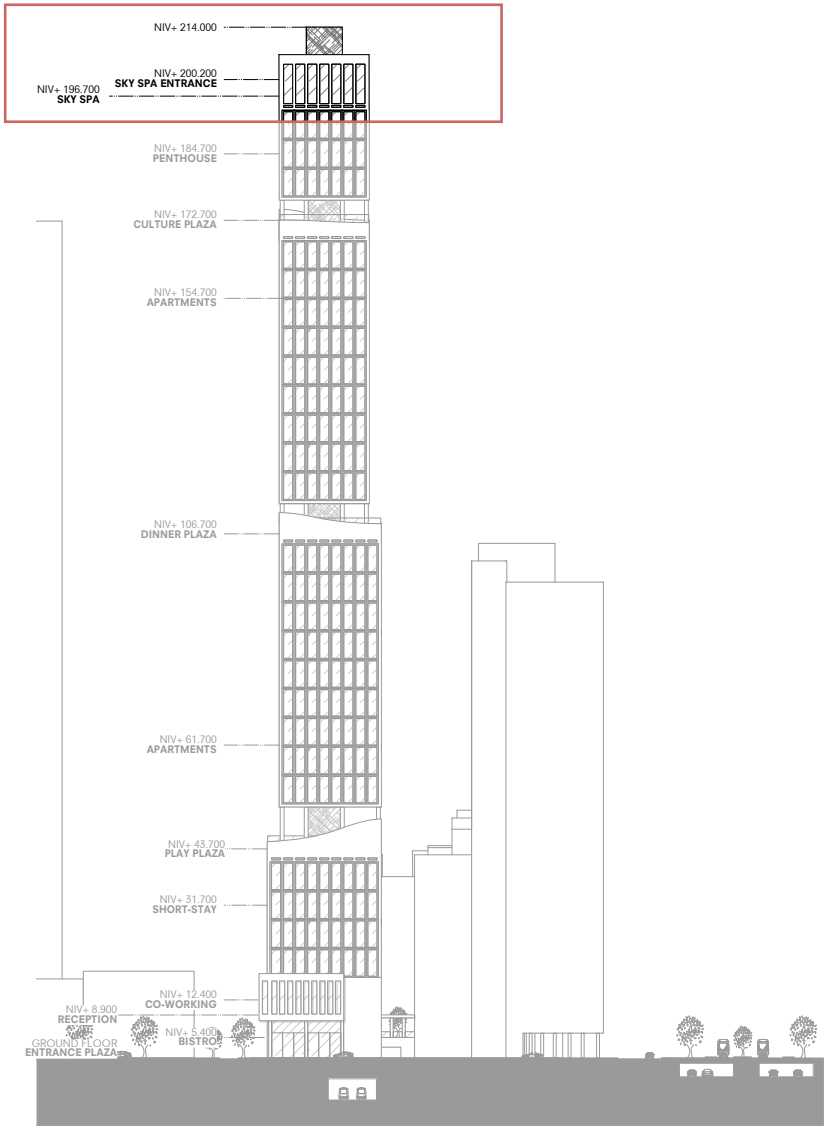




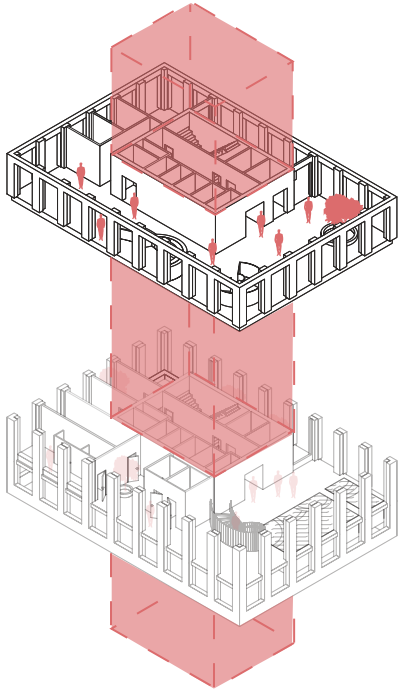
book exchange / reading spots / community theatre / chess tables

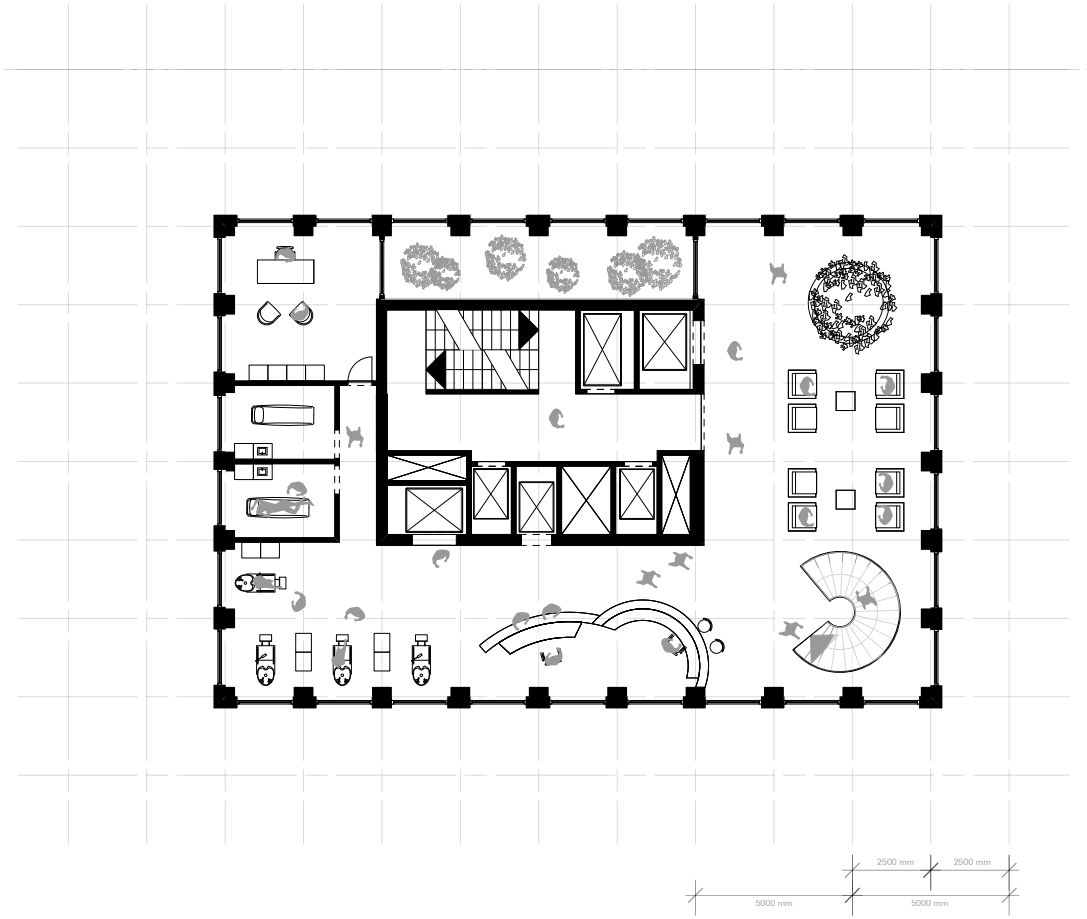
THE CROWN


NIV+ 214.000
NIV+ 200.200
SKY SPA ENTRANCE
NIV+ 196.700
SKY SPA
NIV+ 184.700
PENTHOUSE
NIV+ 172.700
CULTURE PLAZA
NIV+ 154.700
APARTMENTS
NIV+ 106.700
DINNER PLAZA
NIV+ 61.700
APARTMENTS
NIV+ 43.700
PLAY PLAZA
NIV+ 31.700
SHORT-STAY


NIV+ 214.000
NIV+ 200.200
SKY SPA ENTRANCE
NIV+ 196.700
SKY SPA
NIV+ 184.700
PENTHOUSE
NIV+ 172.700
CULTURE PLAZA
NIV+ 154.700
APARTMENTS
NIV+ 106.700
DINNER PLAZA
NIV+ 61.700
APARTMENTS
NIV+ 43.700
PLAY PLAZA
NIV+ 31.700
SHORT-STAY
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CO-WORKING
NIV+ 8.900
RECEPTION
NIV+ 5.400
BISTRO
GROUND FLOOR
ENTRANCE PLAZA

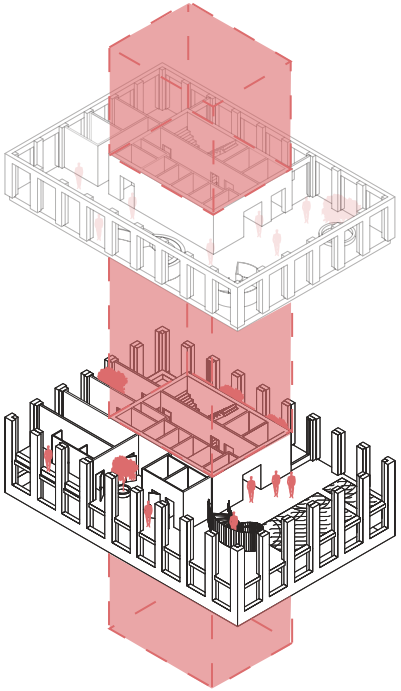
SKY PLAZA

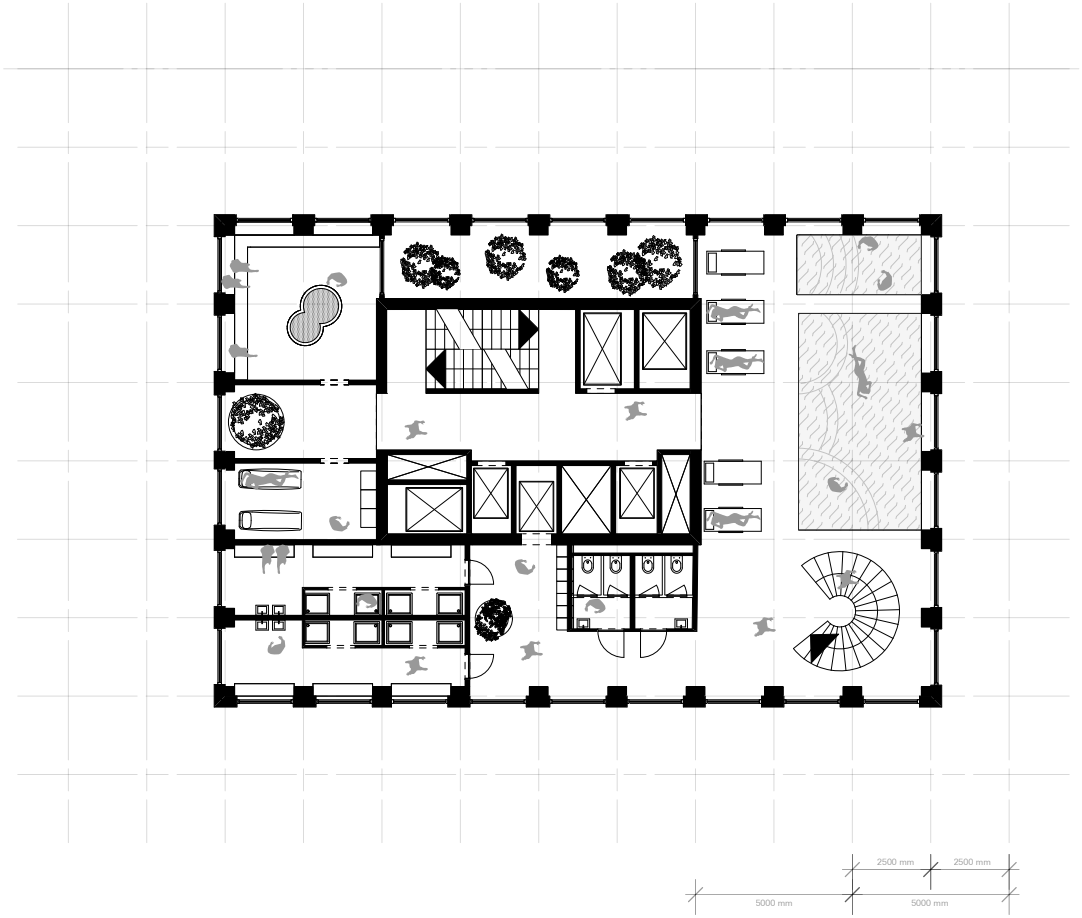




massages / beauty parlor

SKY SPA



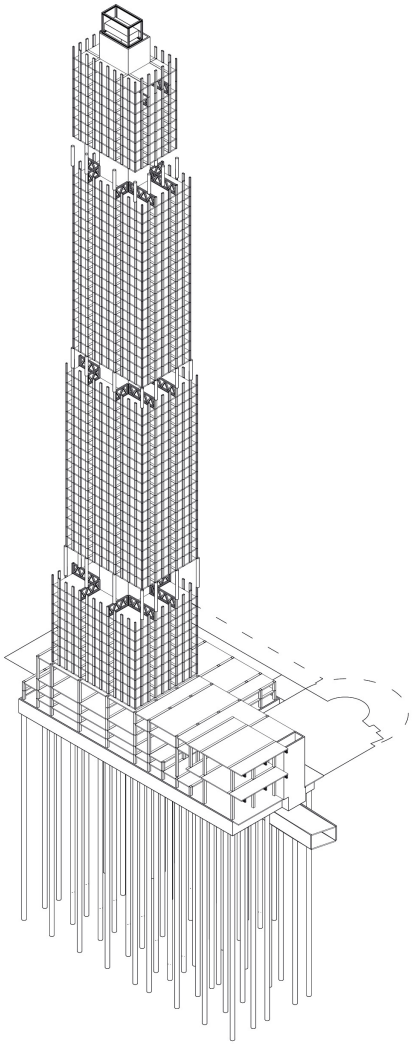


sauna / pool / jacuzzi / solarium

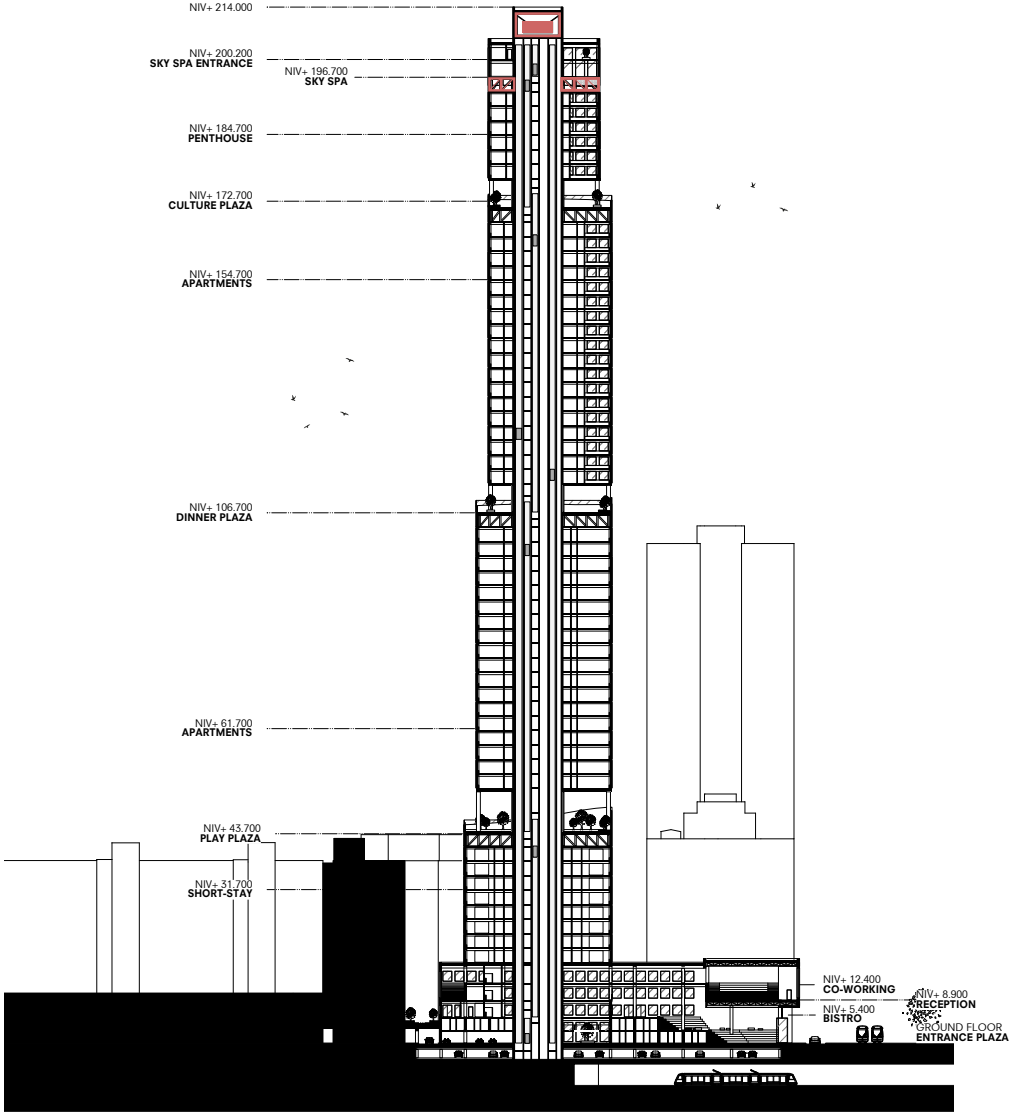
INTIMATE LUXURY



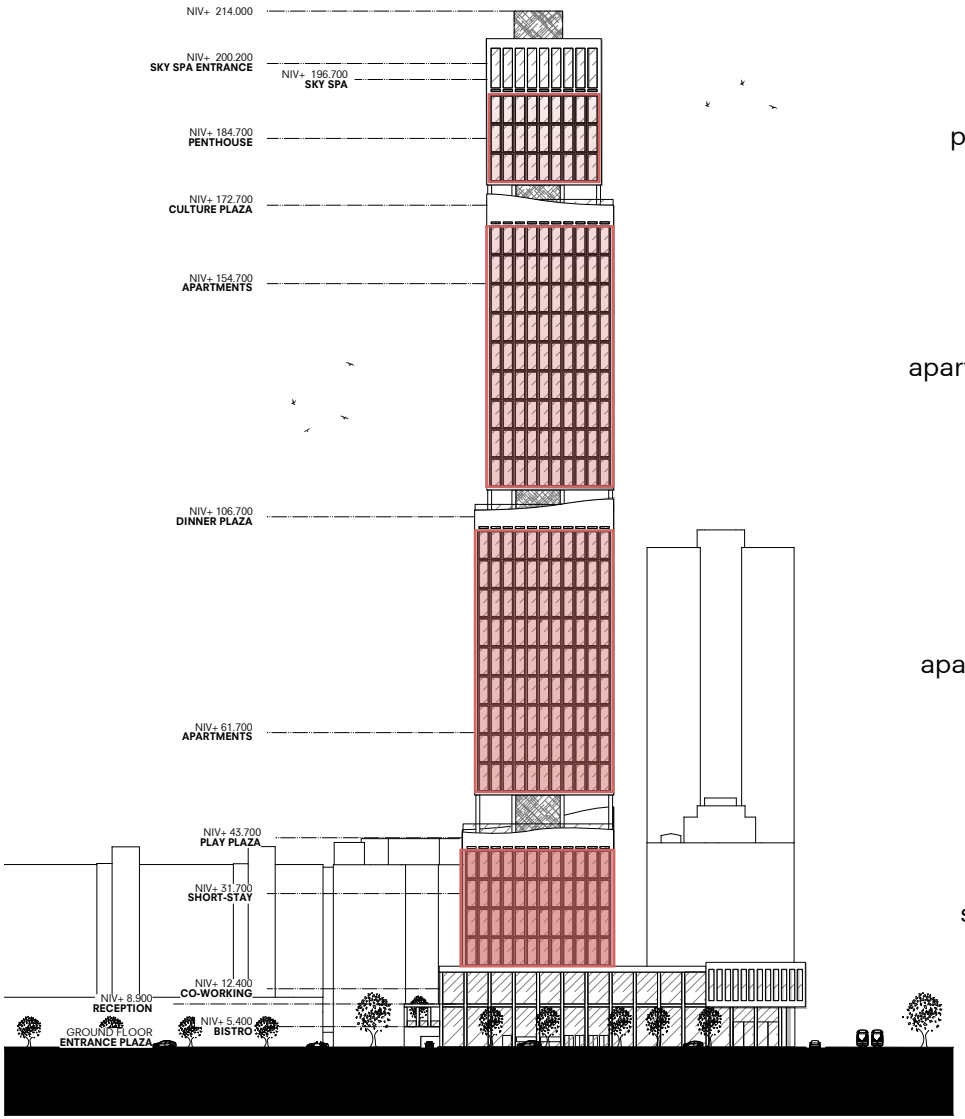
SKY PLAZA CONSTRUCTION



steel transfer truss underneath the pool
tuned mass damper



FADING BLOCKS



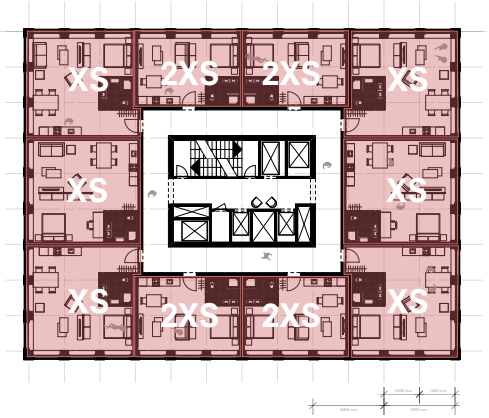
penthouses

apartments M - XL

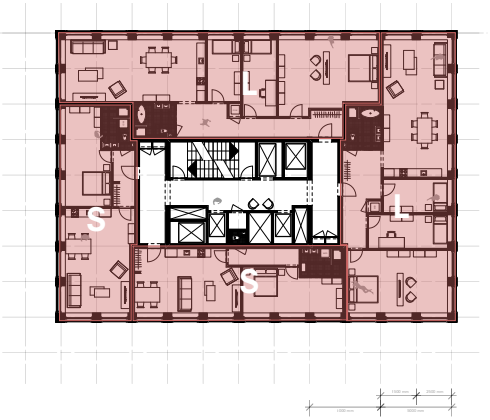
apartments S - L

short-stay

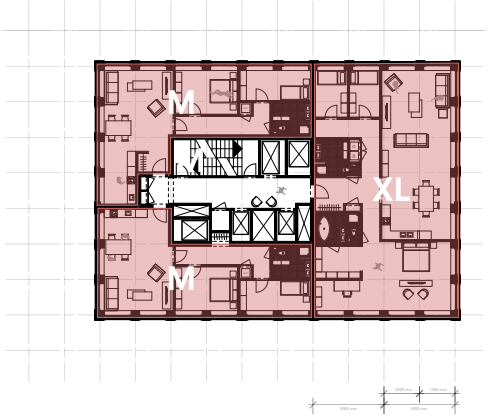
RESIDENTIAL TYPOLOGIES



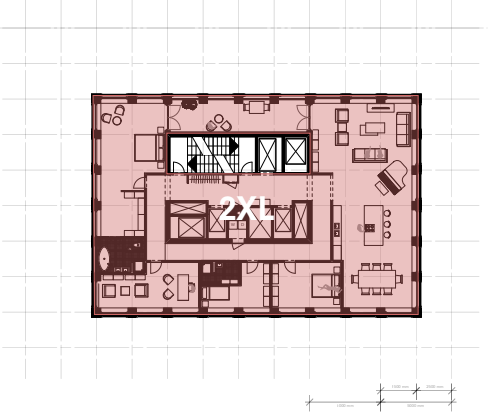
short-stay



apartments

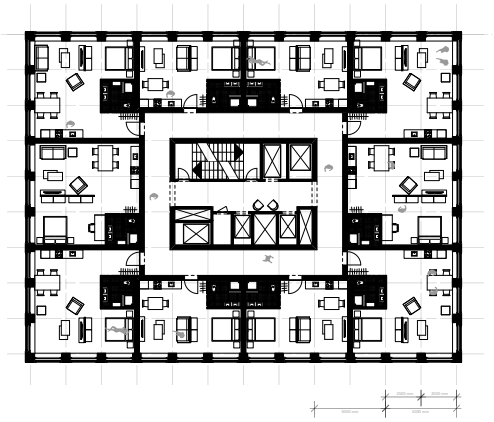


apartments

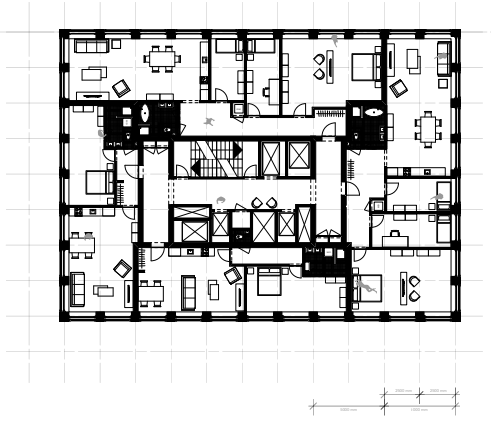


penthouse

RESIDENTIAL PLANS



short-stay



apartments



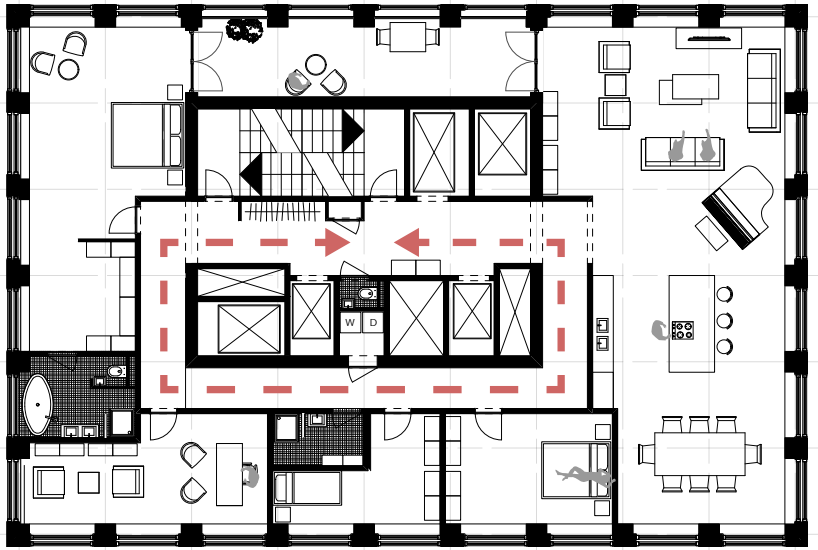
apartments

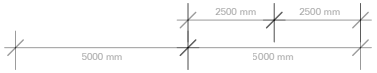
penthouse

THE PENTHOUSE



THE PENTHOUSE



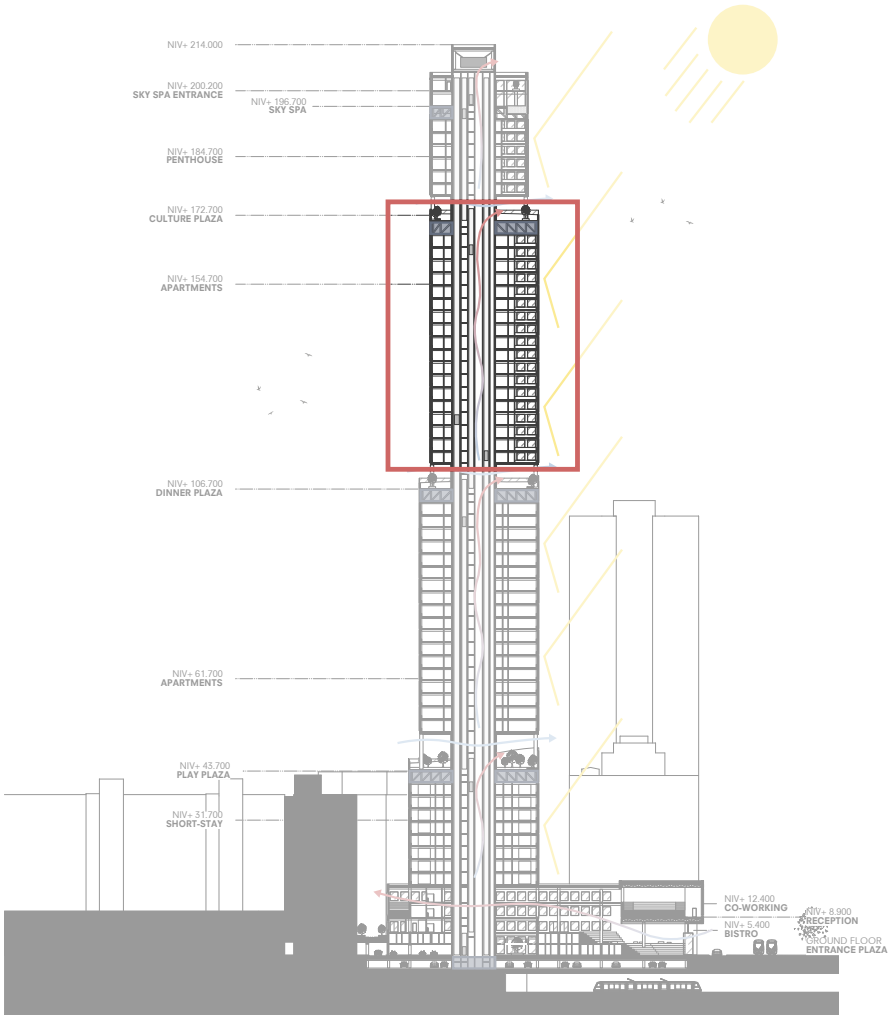


take in the core and enjoy the city view

CLIMATE SCHEME

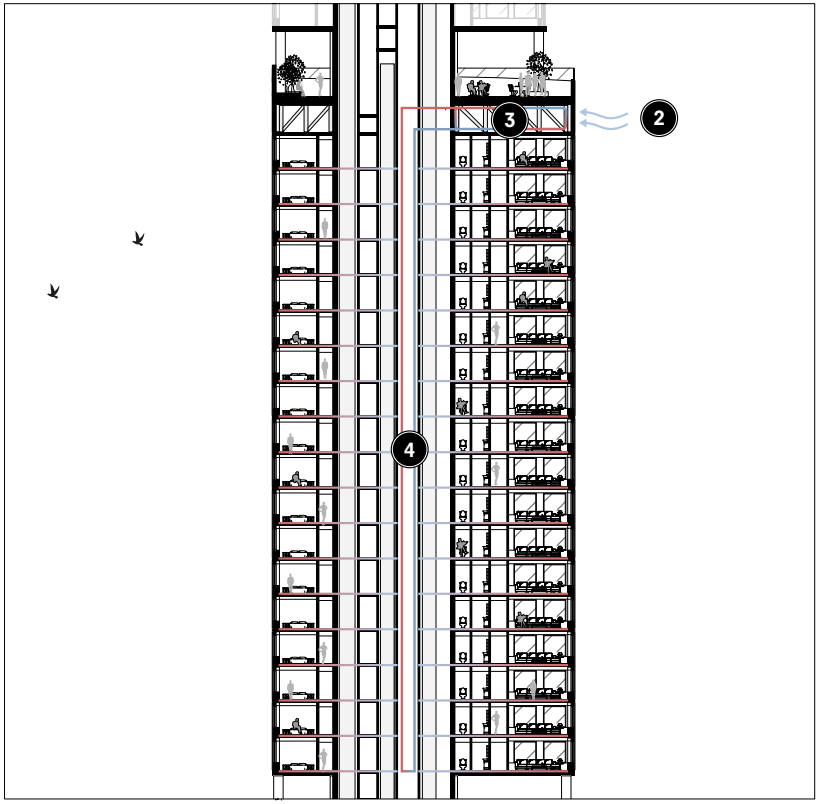
technical space

1. technical space is located underneath the neighbourhood plazas



heating

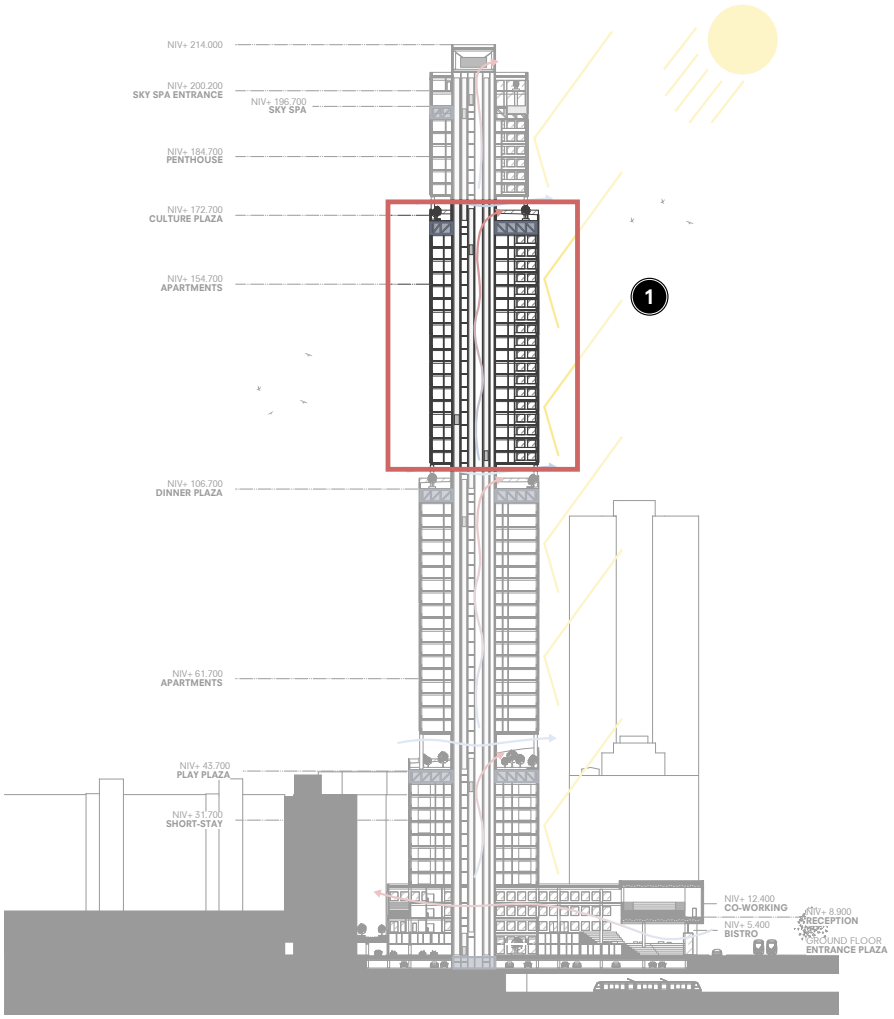
2. air sourced heat pumps
3. a heat recovery unit can be used to regain heat from exhaust air
4. low-temperature floor heating is used to heat appartments



CLIMATE SCHEME

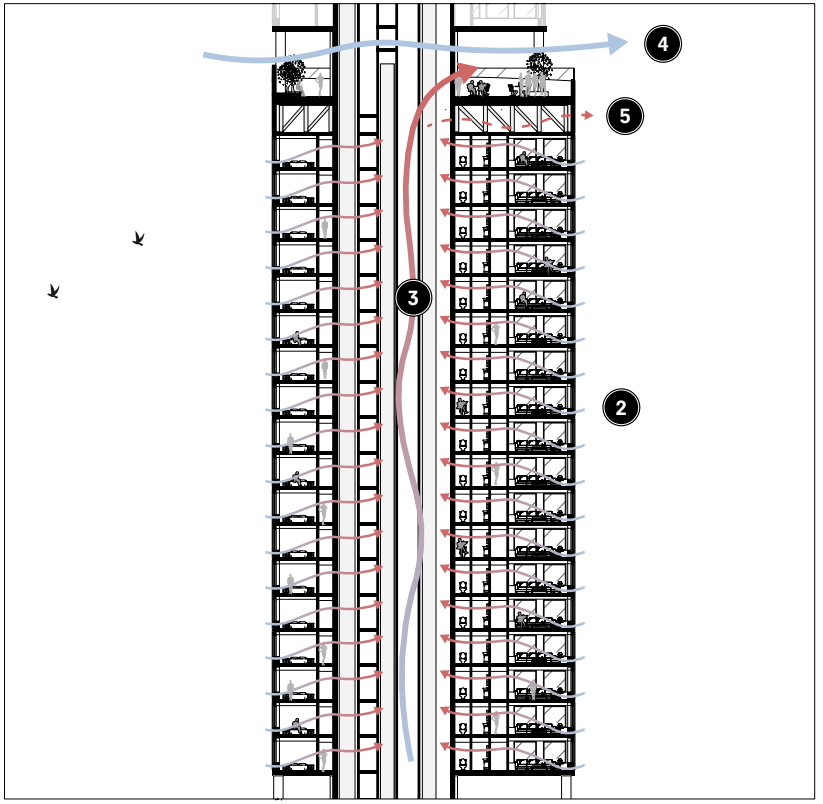
solar shading

1. the second-skin cavaties accumalate heat in winter yet intergrated solar shading shelters residents from direct sunlight

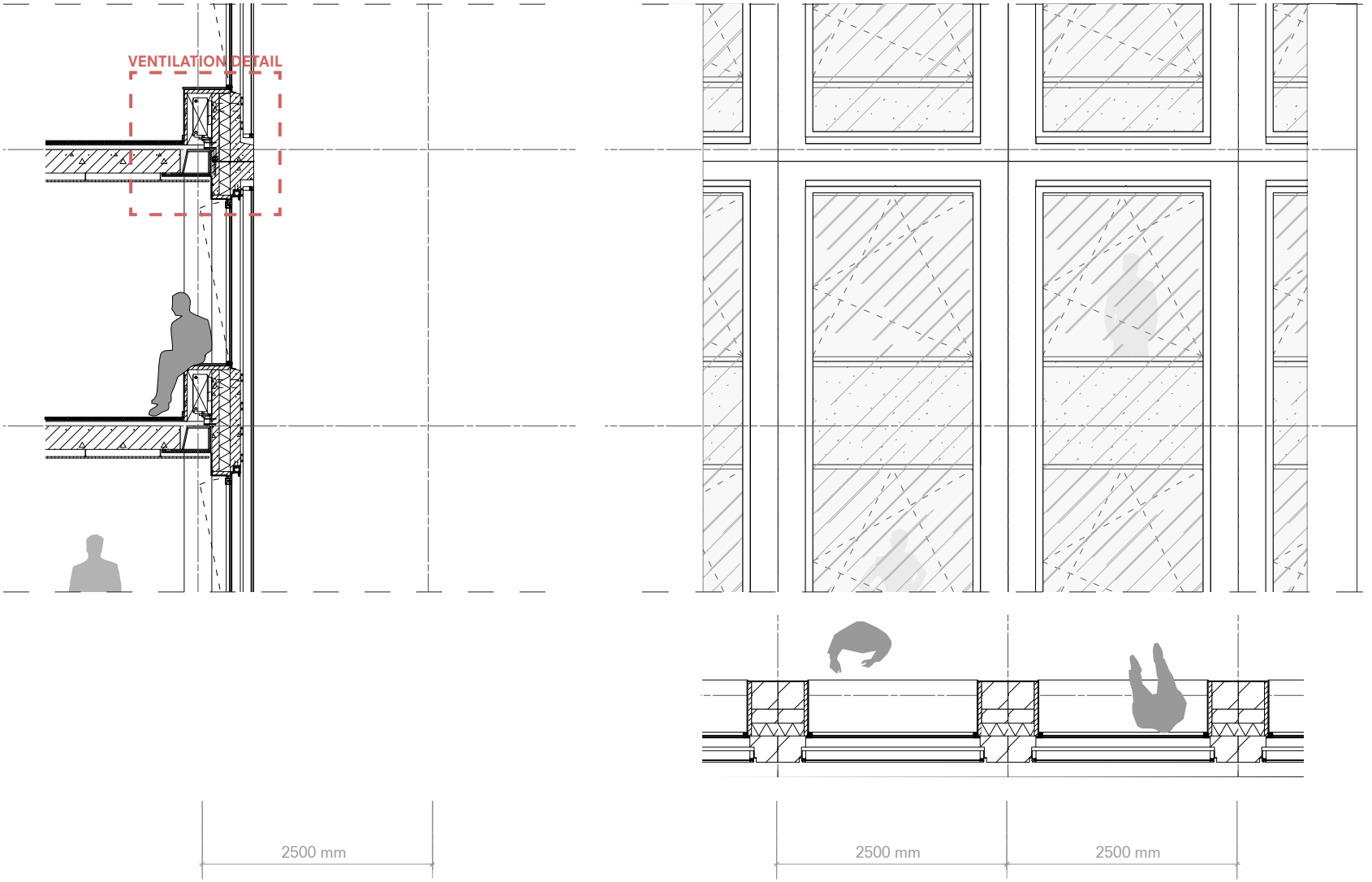


ventilation

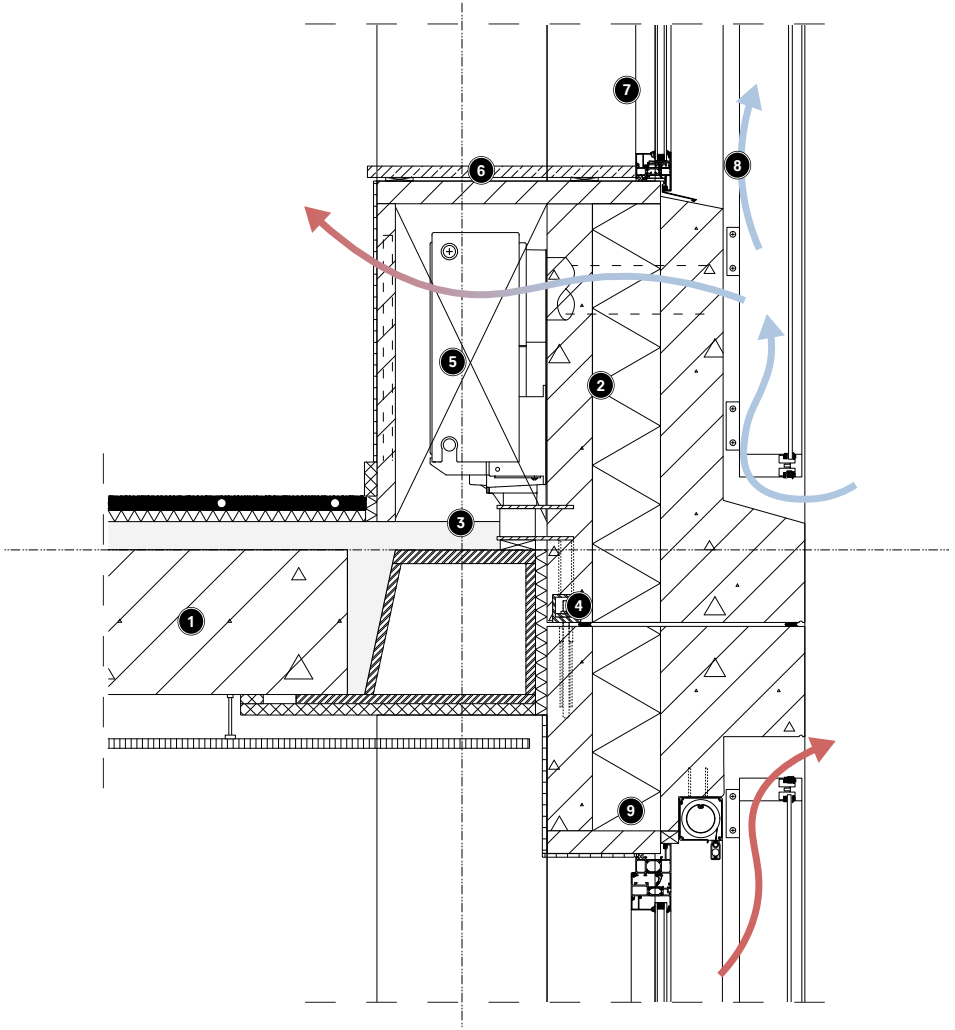
2. dwellings air naturally ventilated through second-skin cavaties
3. exhaust air is drawn upwards through the buildings core
4. sheltered open-air plaza's take away exhaust air through venturi flows
5. assisting mechanical exhaust systems are in place as a back-up



FACADE PANELS

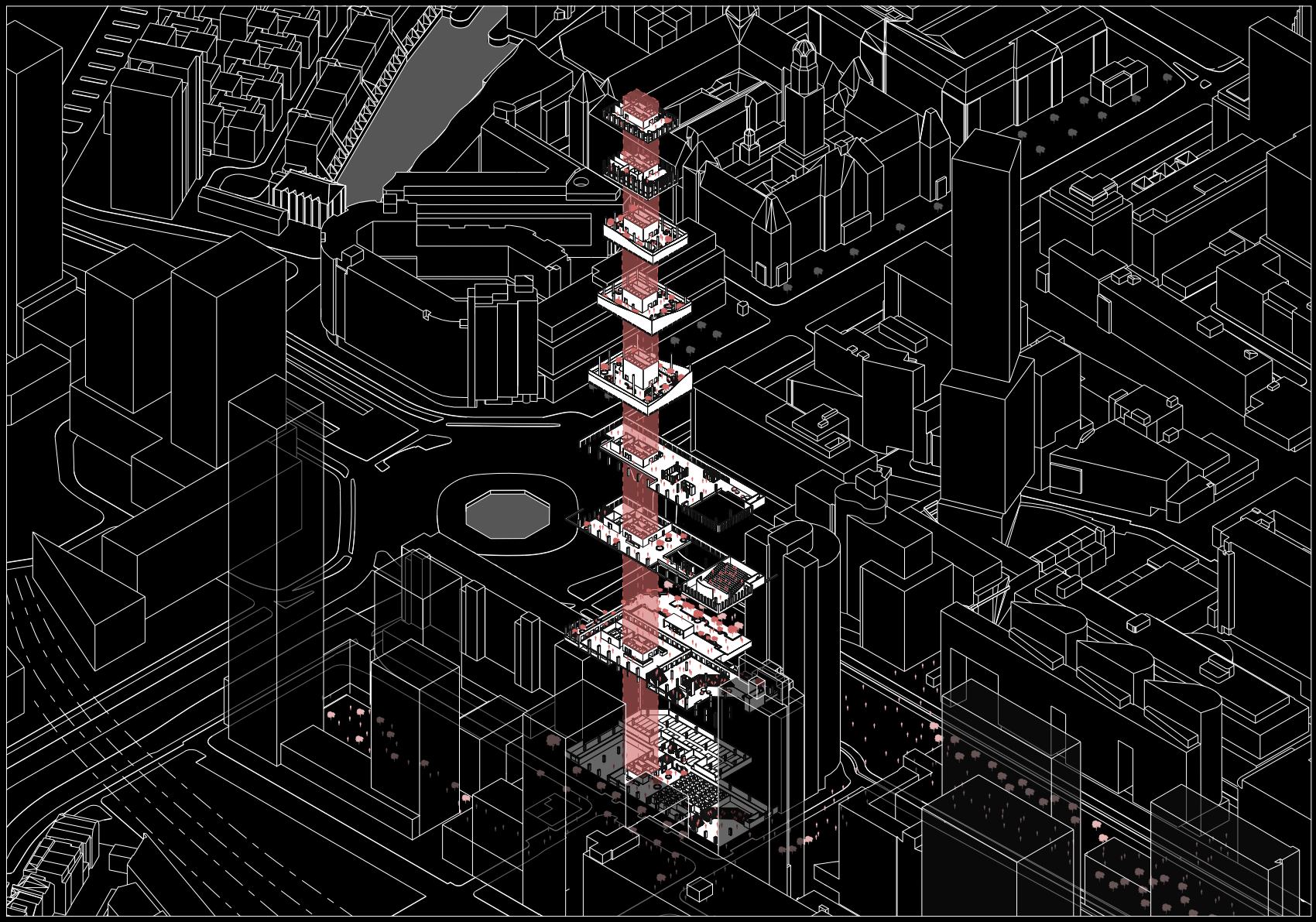


VENTILATION DETAIL

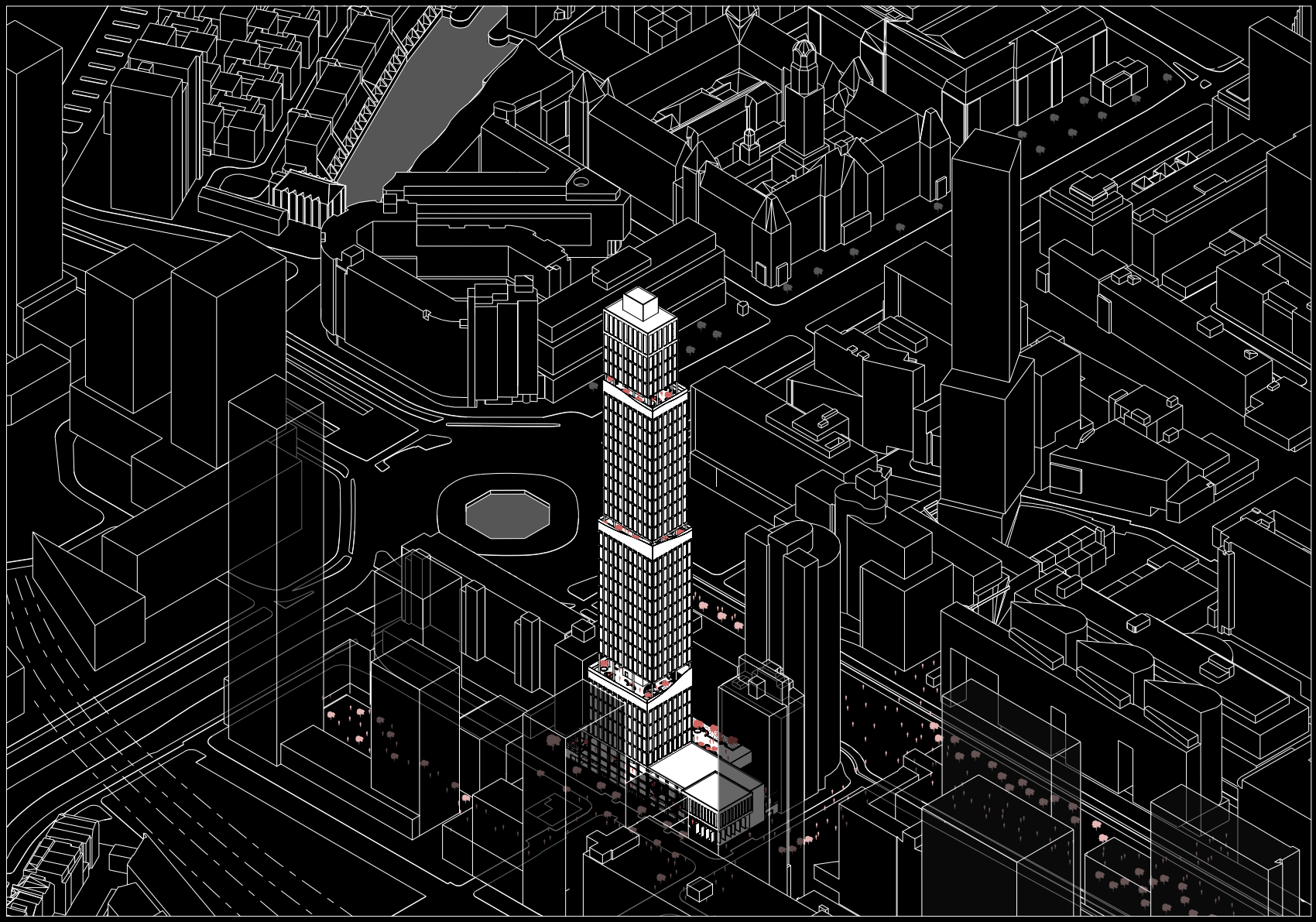


1. floor structure
   - floating screed flooring
   - concrete topping
   - 255 mm concrete hollow-core slab s
   - 265 mm steel THQ-beams
   - suspended gypsum ceiling
2. facade structure
   - pre-fabricated concrete sandwich panels
   - sequentially cast terrazo finish
3. adjustable tie back panel to beam connector
4. dowel pin sadwich panel connector
5. intergrated fan coil unit
6. high-end marble windowsill
7. aluminium tilt & turn windowframe with HR++ glazing
8. aluminium single glazed facade panel
9. intergrated automated solar shading

THE CORNERSTONE



THE CORNERSTONE



Introduction

The Duality of Density

The Skyscraper Economy

Design Concept

Implementation

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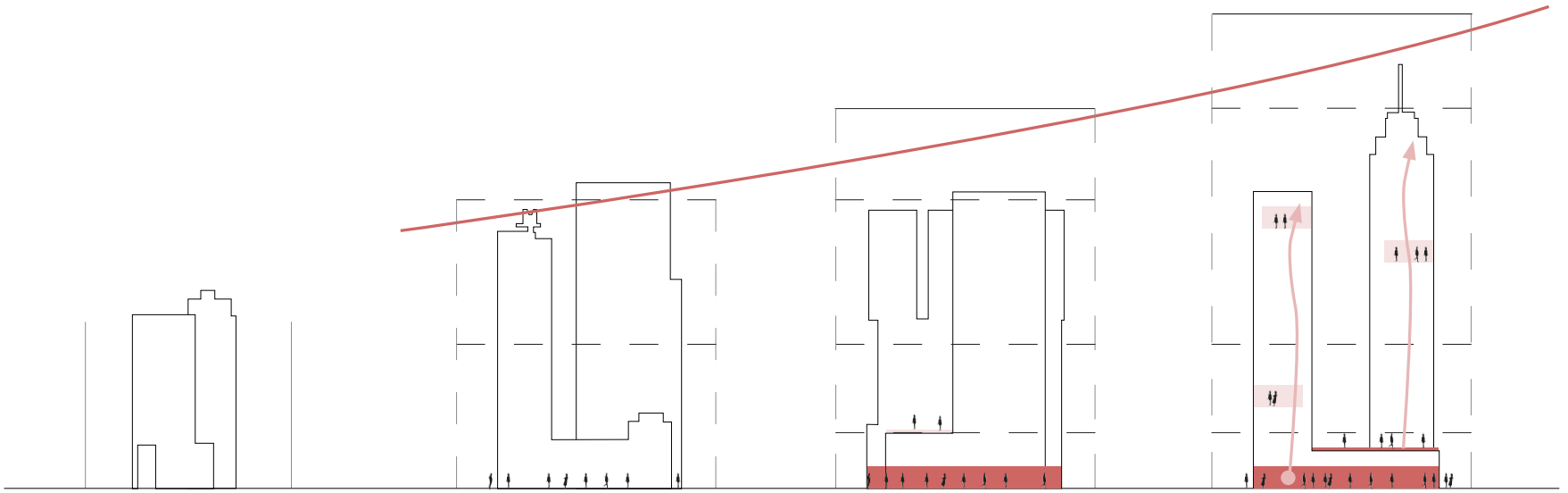
SYMBOL OF A CENTURY

"THE SKYSCRAPER'S **CHARACHTERLESS, IMPERSONAL SPACE** CREATES THE RECOGNIZABLE, CHARISMATIC MONUMENTS AND **THE ENDURING IMAGE OF TWENTIETH CENTURY CITIES**."

Ada Louise Huxtable in 'On Architecture: Collected Reflections on a Century of Change'



SYMBOL OF CHANGE



RESEARCH QUESTION

HOW CAN ROTTERDAM INCREASE ITS **INNERCITY DENSITY** WHILST SHAPING **SOCIALLY INTERACTIVE** LIVING ENVIRONMENTS?

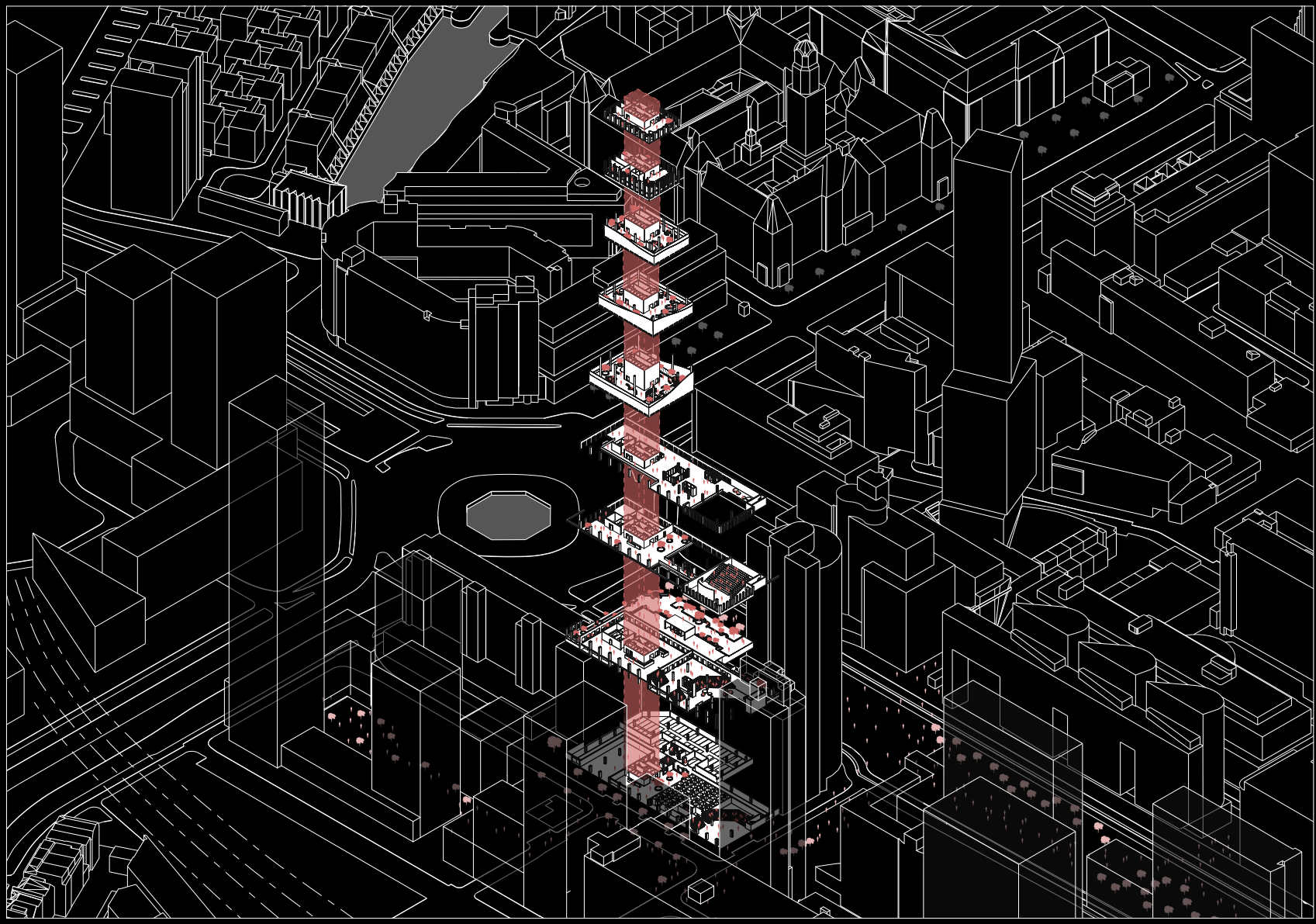
VERTICAL CONNECTION



VERTICAL CONNECTION



THE CORNERSTONE



THE VALUE OF HEIGHT

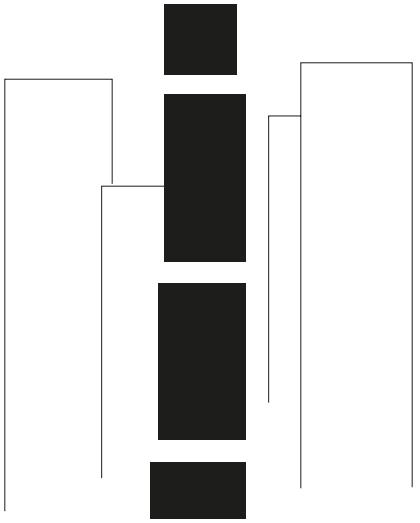


the value of height lies within the unique **experience of the city**

THE VALUE OF HEIGHT



but even though height is seemingly limitless, the urban experience is not



THANK YOU.

complex projects