

NATURAL DIMENSIONS

CULTIVATION IN INNER CITIES



GRADUATION PRESENTATION ANDREA NIENOORD JULY 3RD 2014

CONTENT

An aerial photograph of a city, likely New York City, showing a dense urban landscape with various buildings and skyscrapers in the background. In the foreground, a rooftop garden is visible, featuring green plants and several air conditioning units. The sky is overcast with grey clouds.

INTRODUCTION

- PROBLEM STATEMENT

RESEARCH

- RESEARCH QUESTION
- CASE STUDIES
- MOST IMPORTANT FINDINGS

MASTERPLAN

- SITE ANALYSIS
- GUIDELINES ARCHITECTURE

DESIGN

- IDEOLOGY
- CONCEPT
- THE LOCAL FOOD CYCLE
- CONSTRUCTION
- CLIMATE

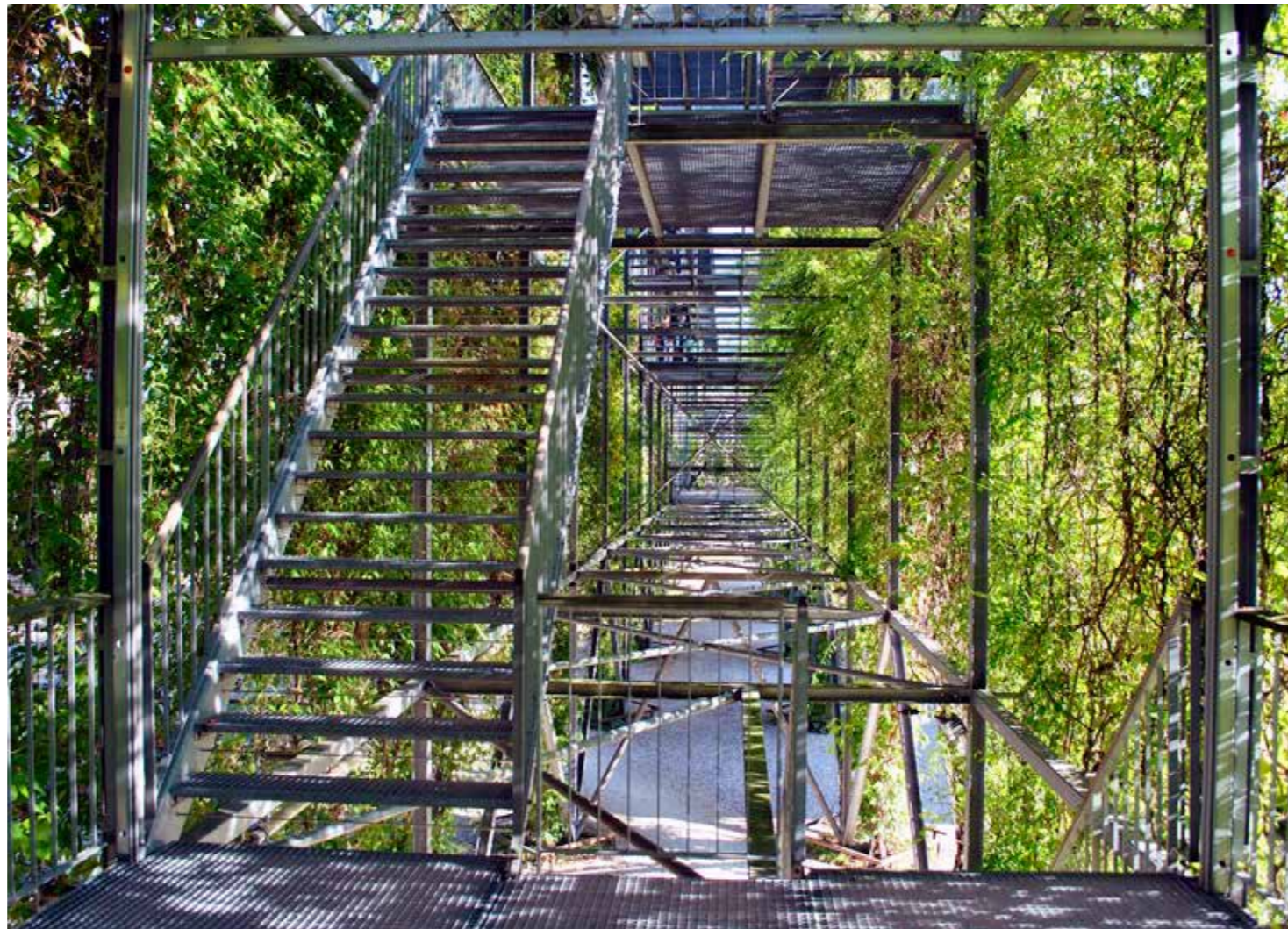
REFLECTION

CONCLUSION

INTRODUCTION

INTRODUCTION

REFERENCE



MFO PARK ZURICH BY BURCKHARDT + PARTNER AND RADERSCHALL
LANDSCHAFTSARCHITEKTEN AG



INTRODUCTION

REFERENCE



HIGH LINE NEW YORK CITY - FIELD OPERATIONS AND ARCHITECTS DILLER SCOFIDIO + RENFRO, WITH PLANTING DESIGN FROM PIET OUDOLF

INTRODUCTION

INTERNATIONAL ARCHITECTURE BIENNIAL ROTTERDAM

**URBAN
BY IABR-2014-
29 MEI - 24 AUGUSTUS
NATURE**

PROGRAMMA

MEI, 2014

29 - 24 **URBAN BY NATURE-**
MEI AUG

JULI, 2014

3 JUL **WIJ WILLEN GROEN!**
12:00 - 17:00
Conferentie

4 JUL **JAAR VAN DE RUIMTE**
2015
12:30 - 17:30
Conferentie

6 JUL **WILDPARK**
ROTTERDAM
15:00 - 17:00
Lezing

9 JUL **RUIMTE VOOR**
DUURZAME ENERGIE
IN 2050
14:00 - 17:00
Debat

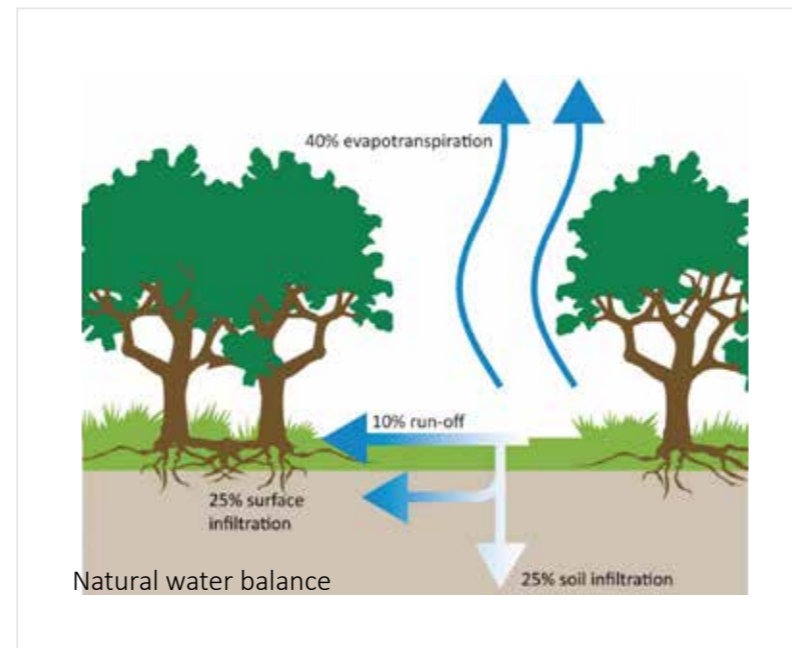
BEKIJK HET VOLLEDIGE
PROGRAMMA ▶

INTRODUCTION

ENVIRONMENTAL IMPACT OF CITIES



URBAN HEAT ISLAND



WATER BALANCE



AIR POLLUTION

INTRODUCTION

LOST AWARENESS



SOURCING



PREPARATION



DISTRIBUTION



CONSUMPTION

RESEARCH

RESEARCH QUESTION

In what way can urban farming be shaped, and become spatially integrated in existing urban areas in the Netherlands in a way that it will contribute to a sustainable living environment?

RESEARCH

CASE STUDIES

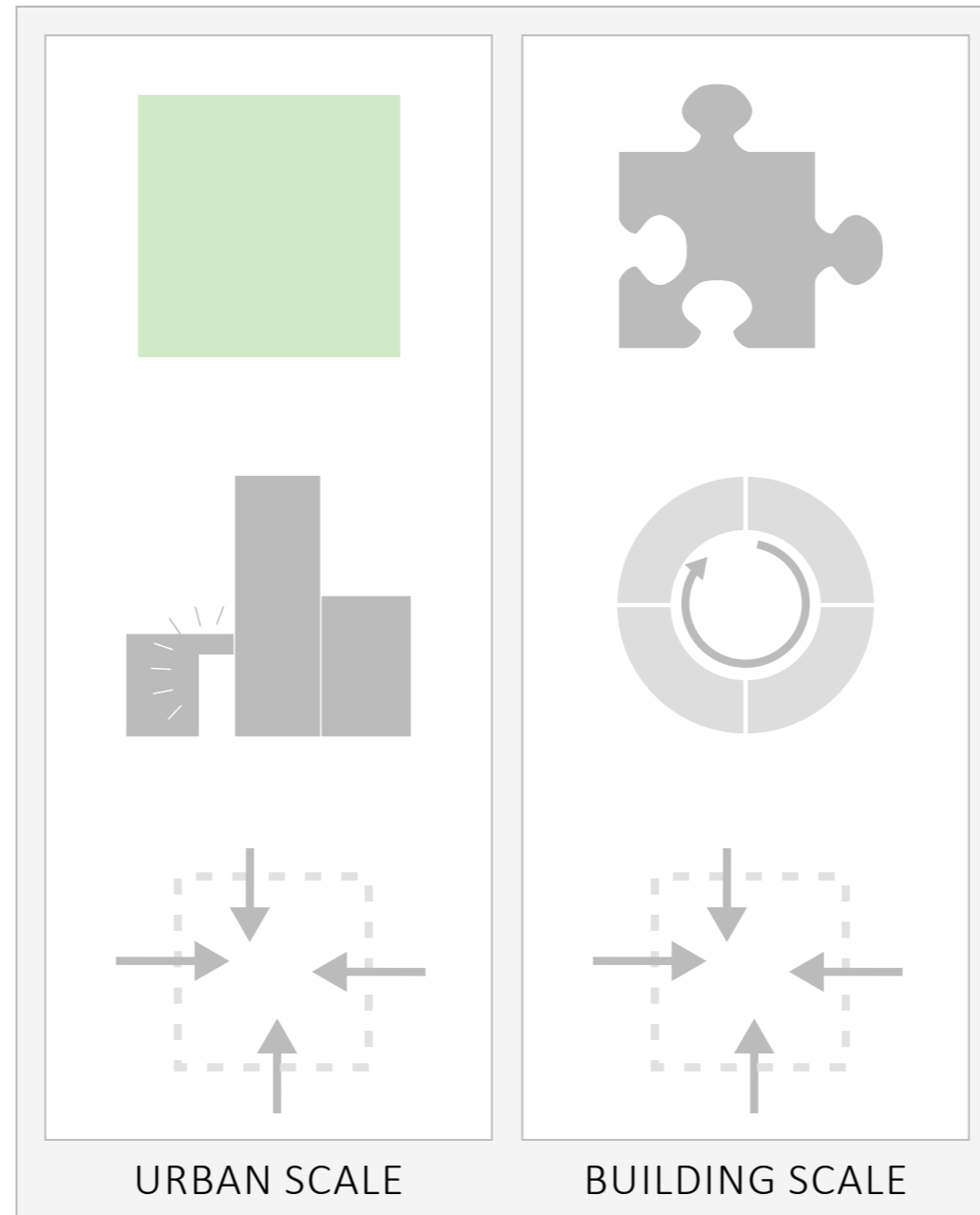


Source: facebook.com/Dakakkers



RESEARCH

MOST IMPORTANT FINDINGS



URBAN SCALE

BUILDING SCALE

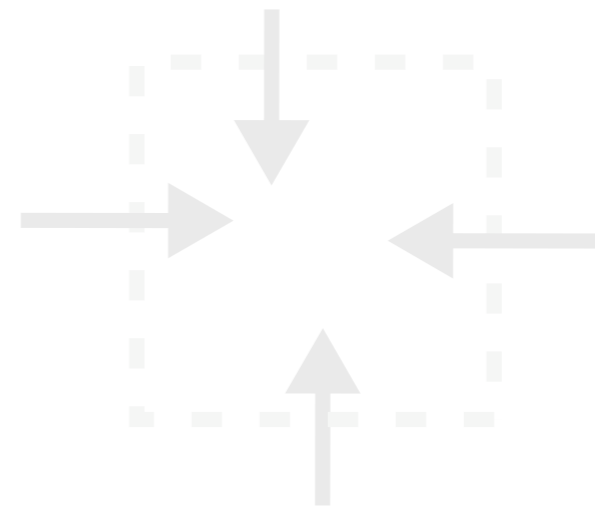
FRAMEWORK FOR A
SUSTAINABLE LIVING ENVIRONMENT

SITE

TRANSLATION MOST IMPORTANT FINDINGS FROM RESEARCH

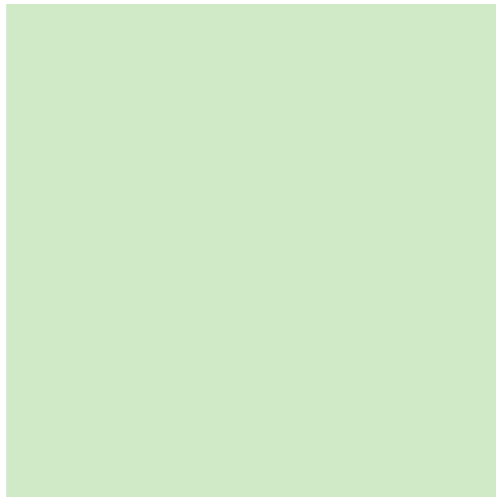


SCALE



SITE

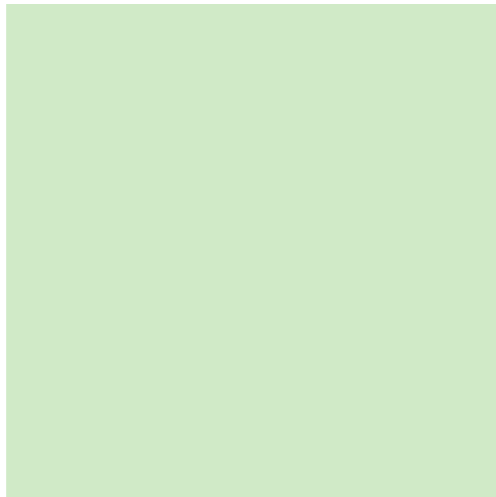
IDEOLOGY



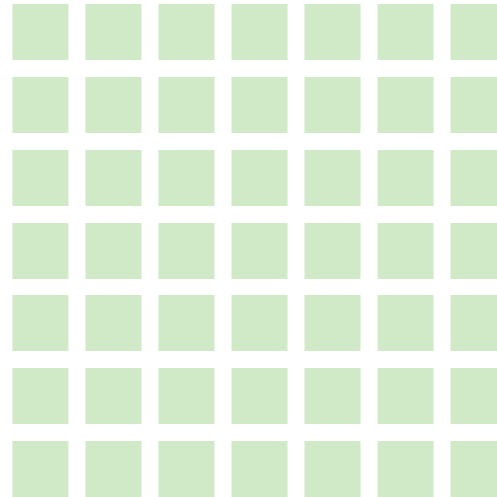
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SITE

IDEOLOGY



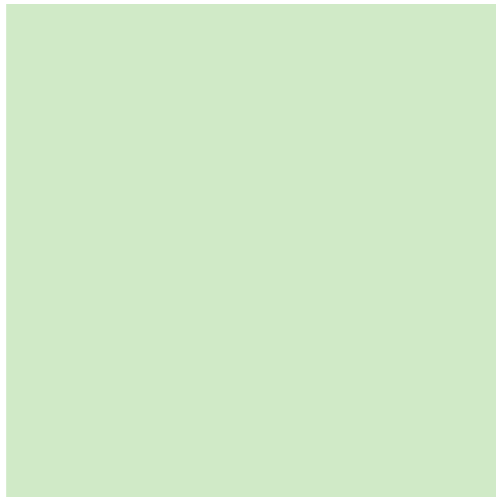
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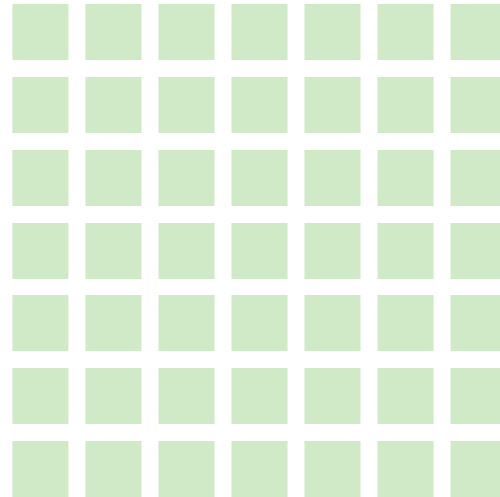
DIVIDED

SITE

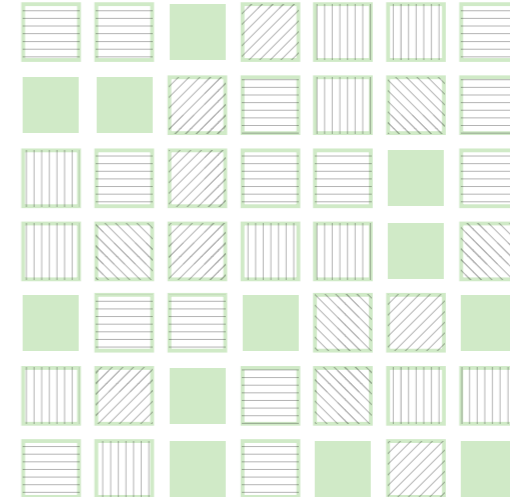
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SCALE



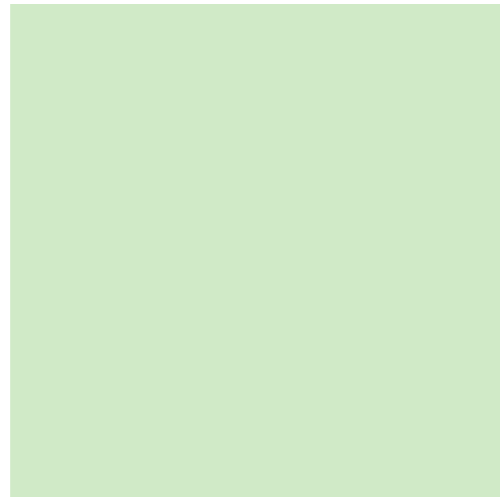
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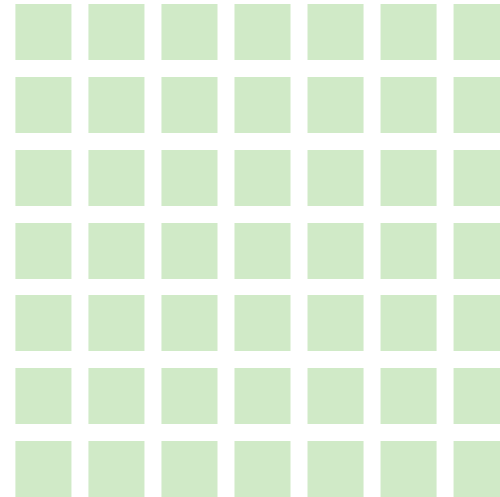
IDENTITY

SITE

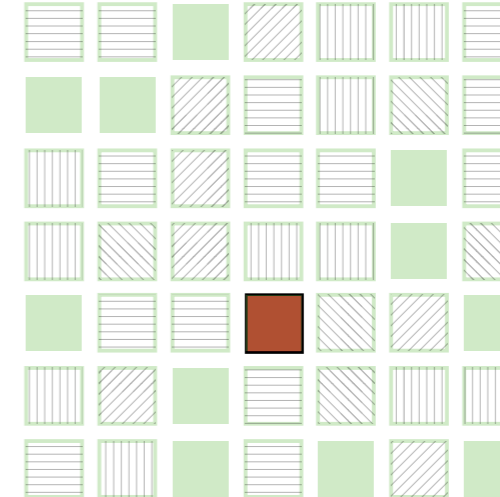
IDEOLOGY



SCALE



DIVIDED



EXAMPLE PROJECT

SITE

VEGETATION ANALYSIS



THE HAGUE



SITE INNERCITY

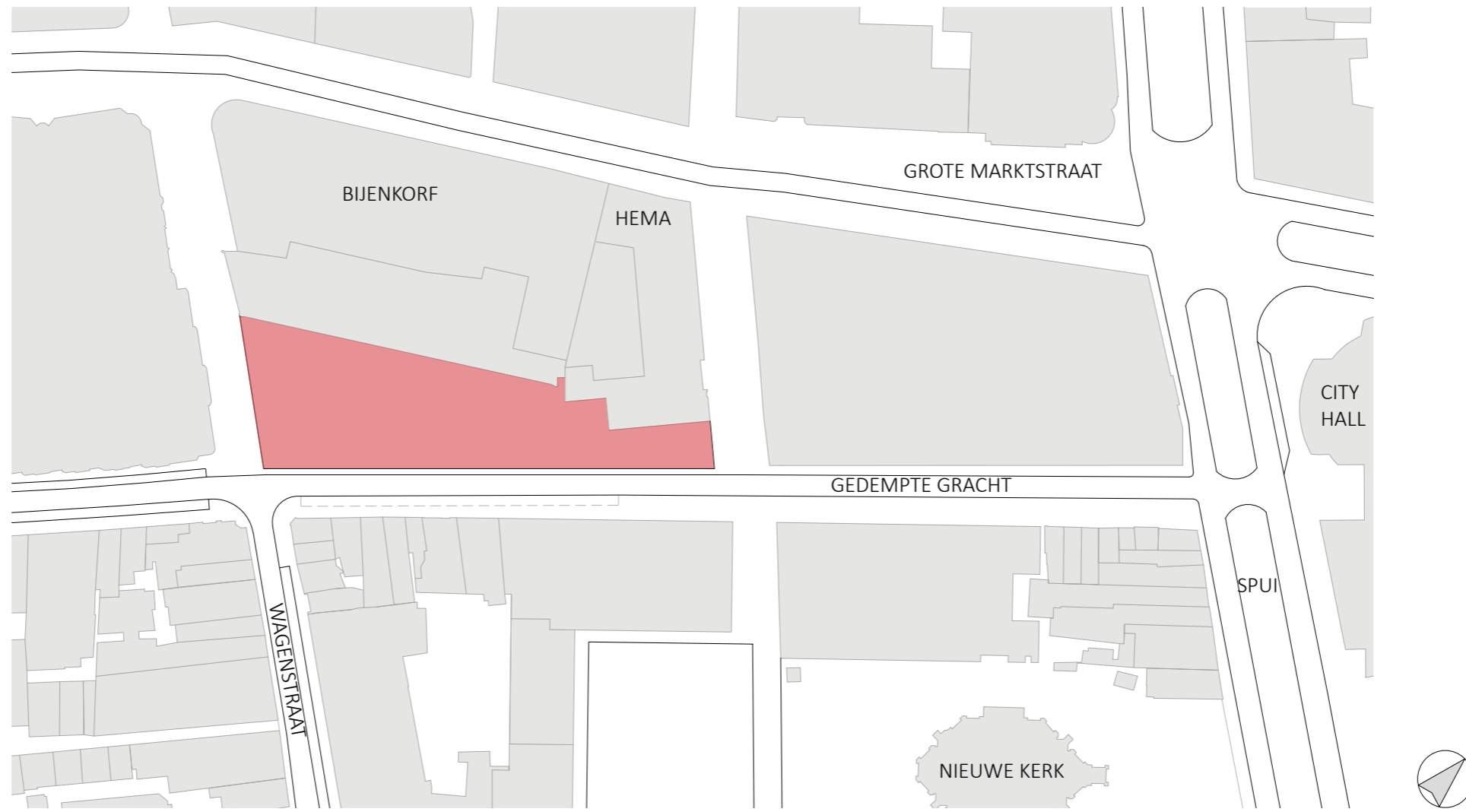


THE HAGUE



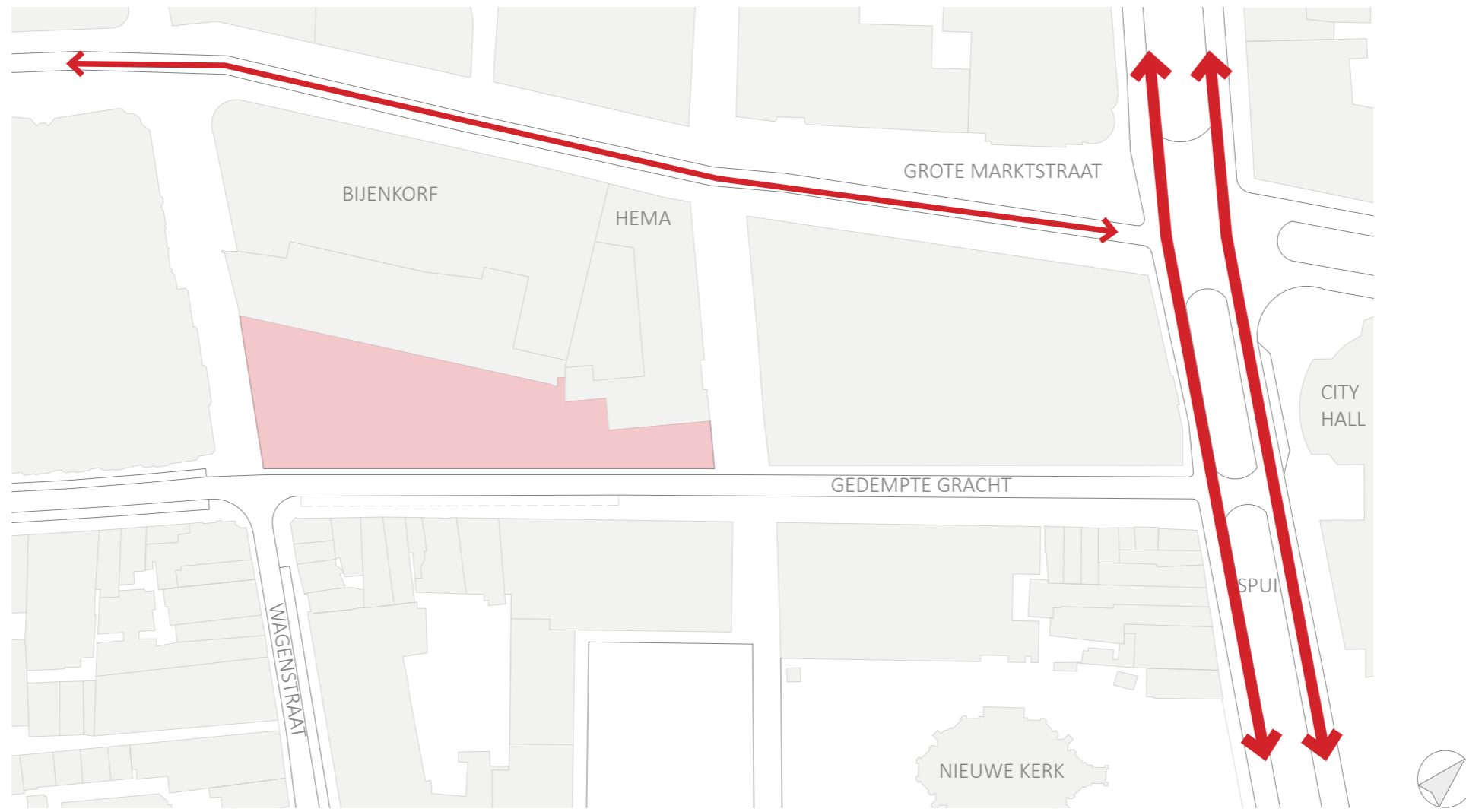
SITE

INNERCITY OF THE HAGUE

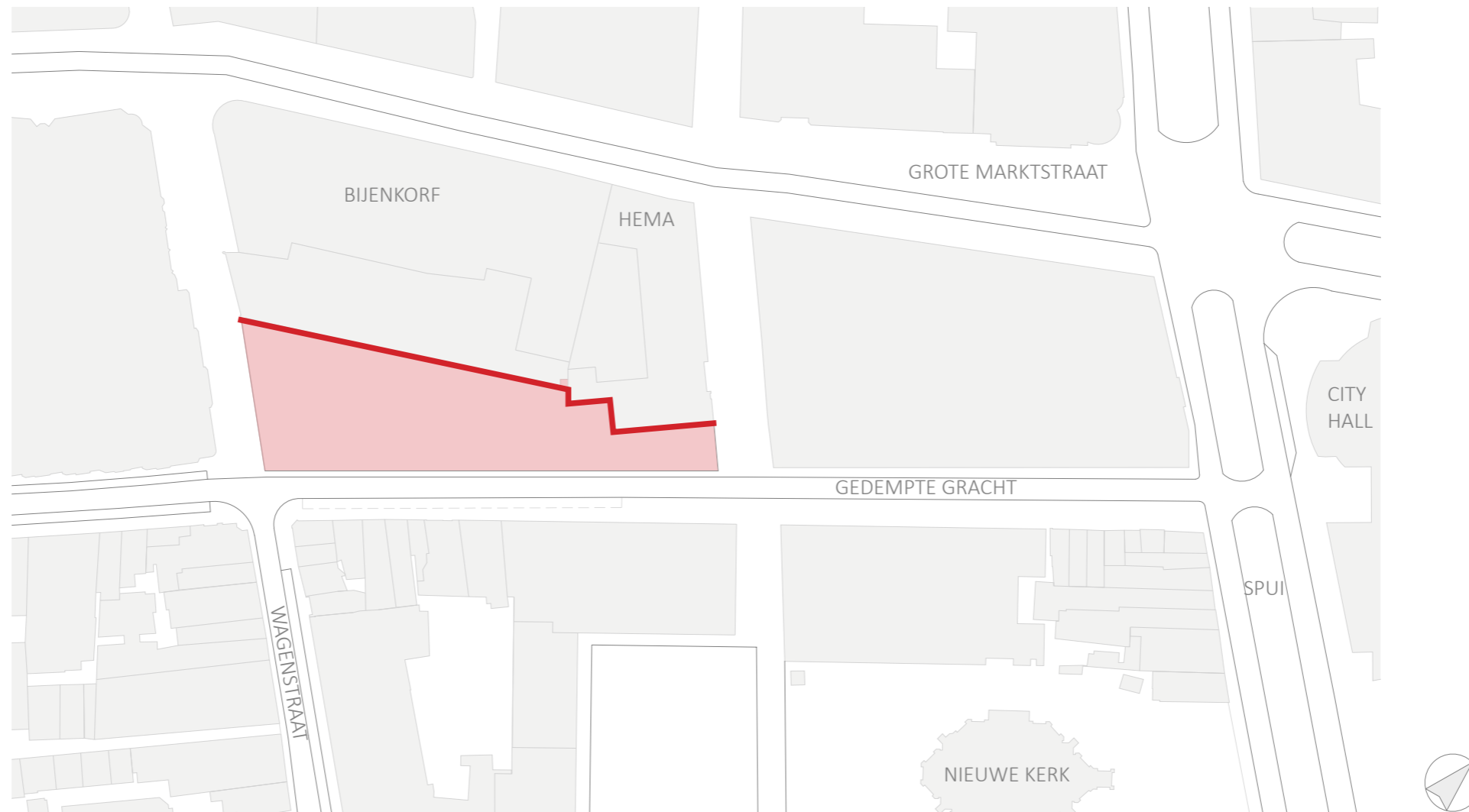


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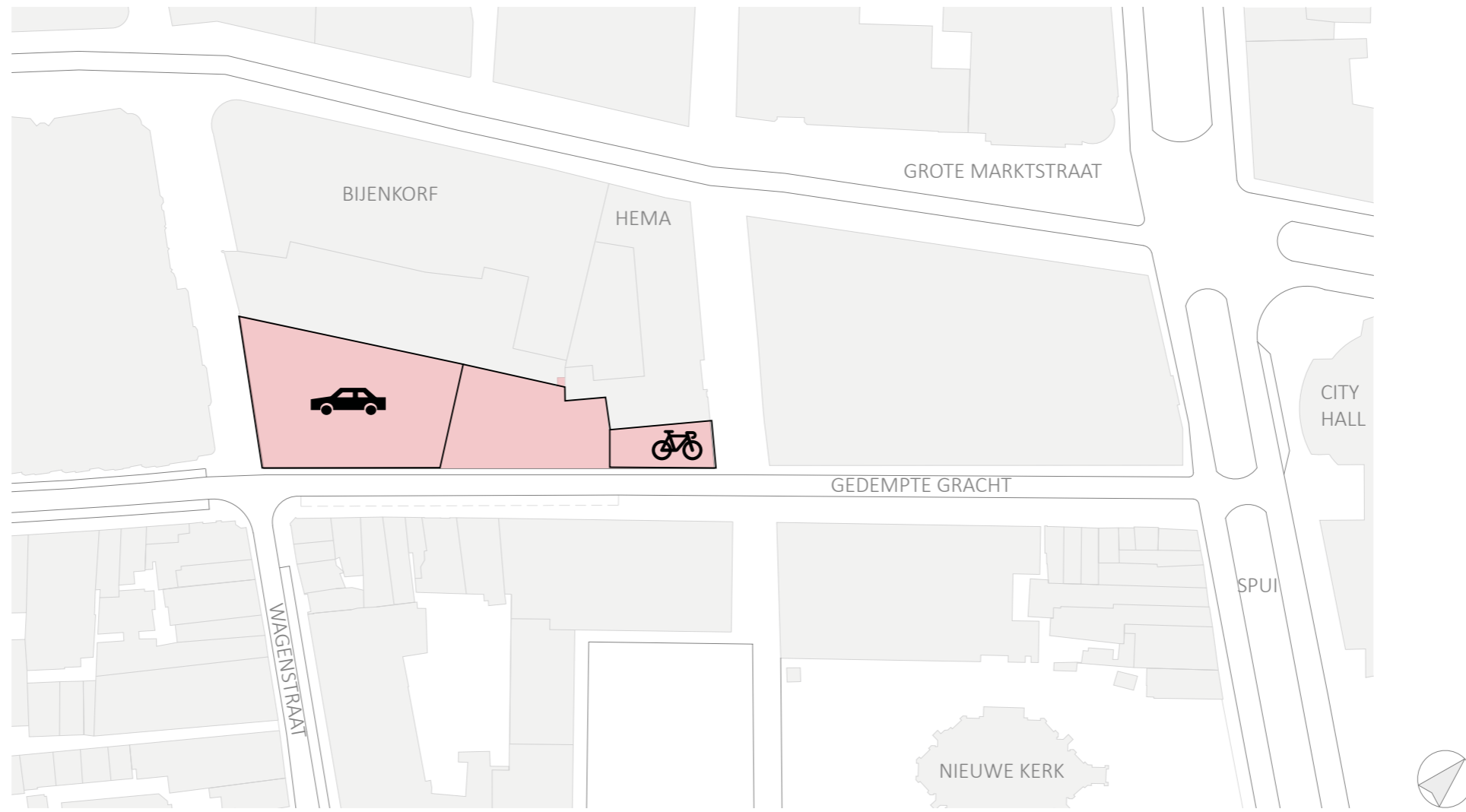
IMPORTANT ROUTING



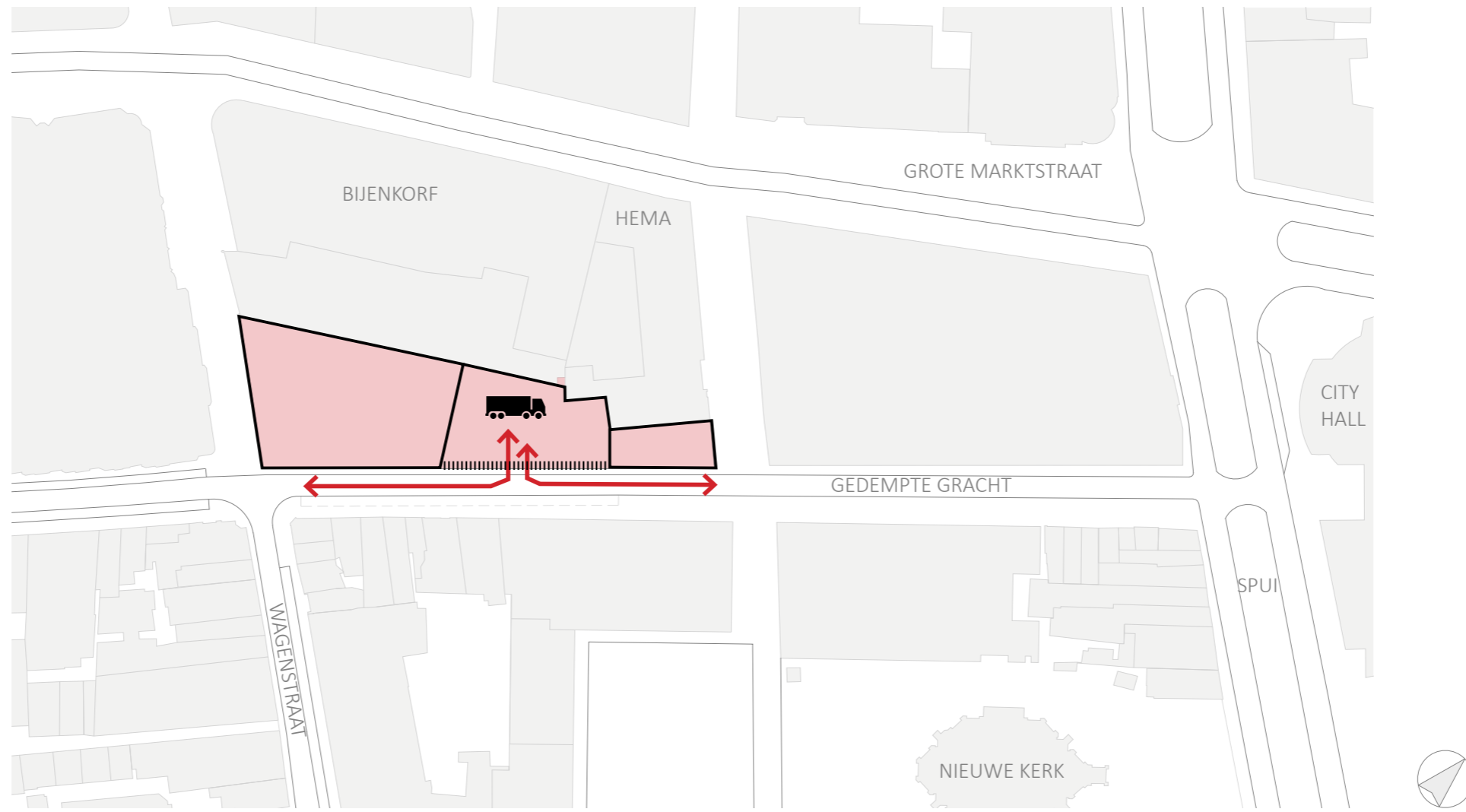
SITE MORPHOLOGY



SITE PROGRAM

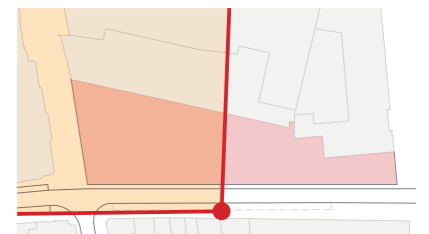


SITE PROGRAM



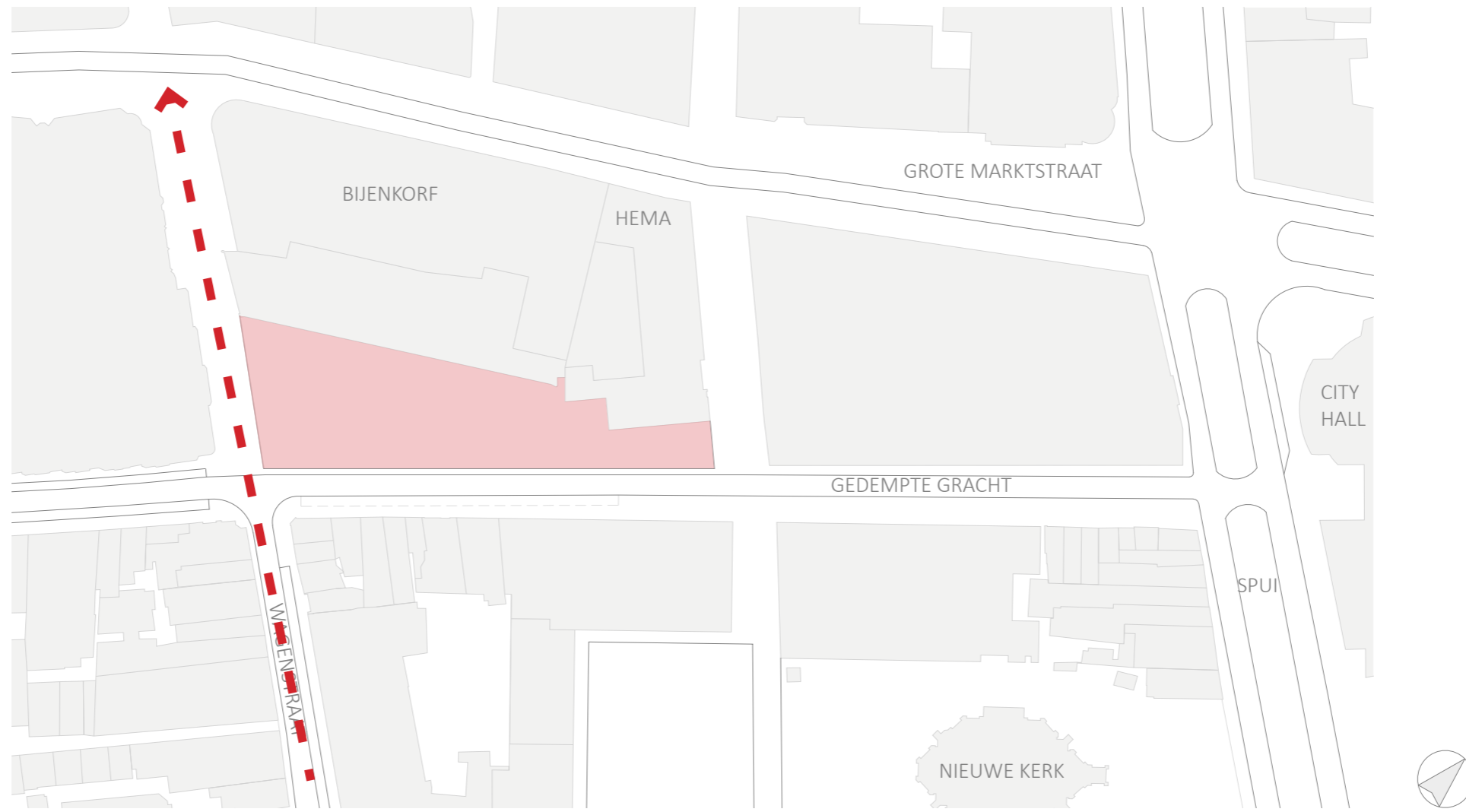
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PROJECT AREA



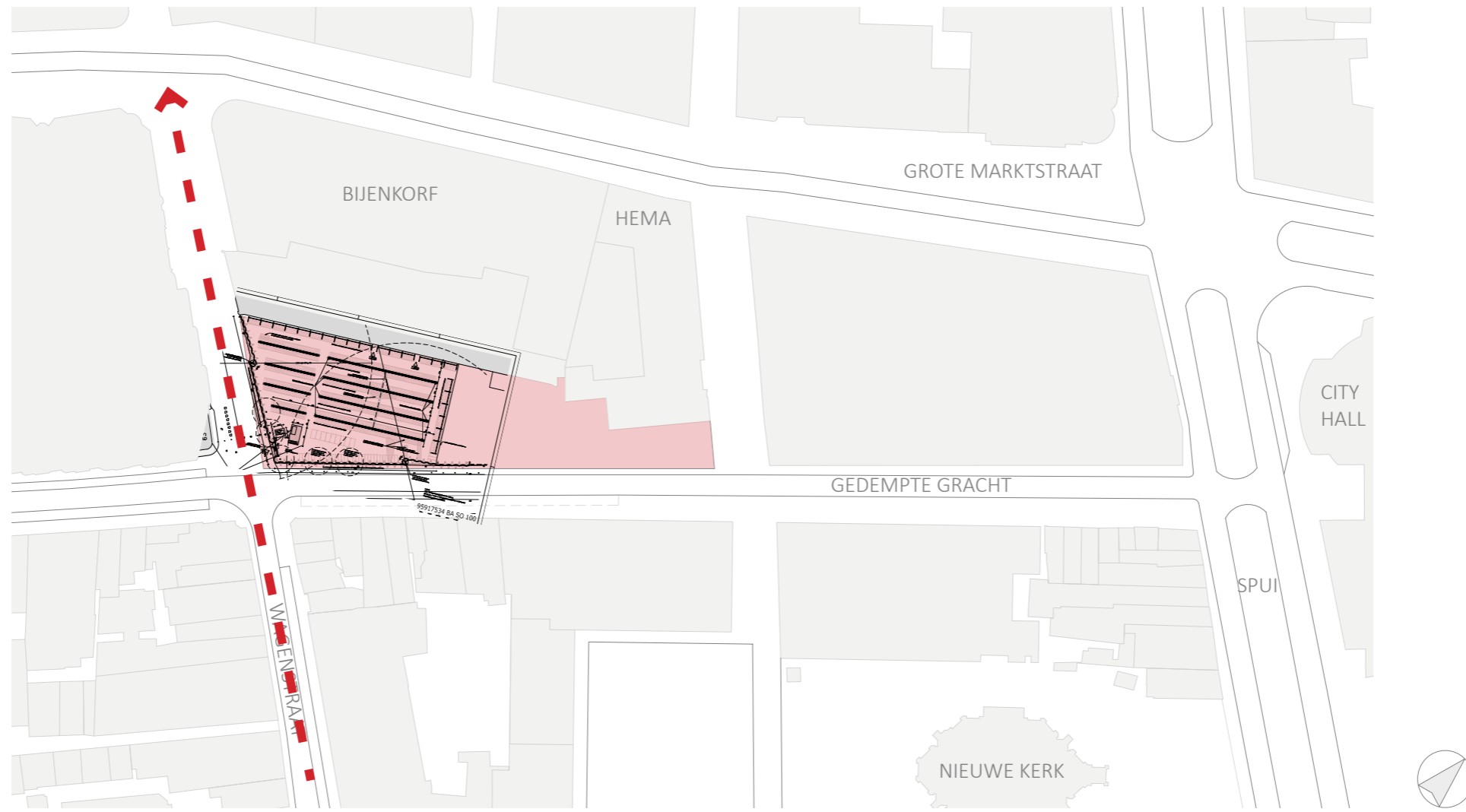
SITE

FUTURE AMBITIONS



SITE

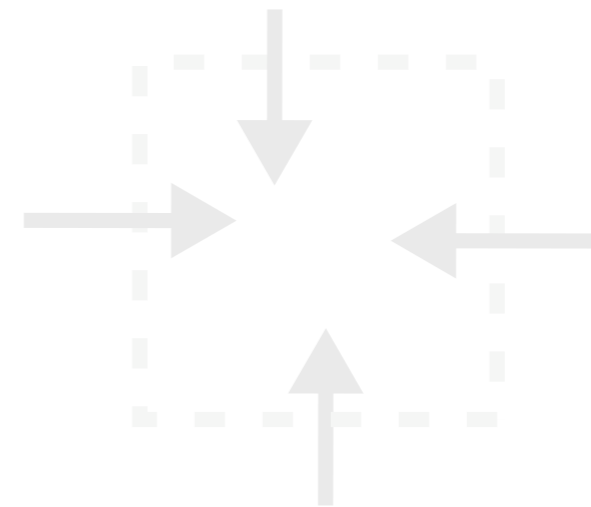
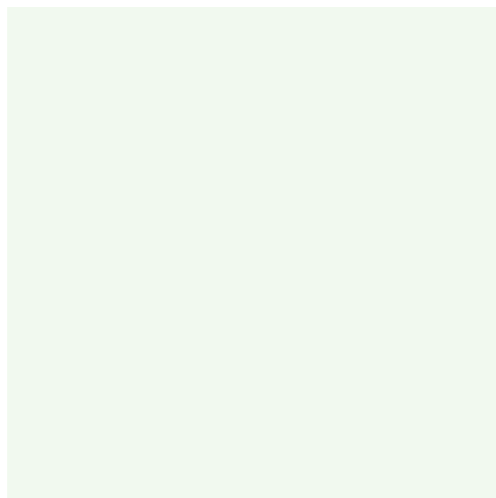
FUTURE AMBITIONS



MASTERPLAN

MASTERPLAN

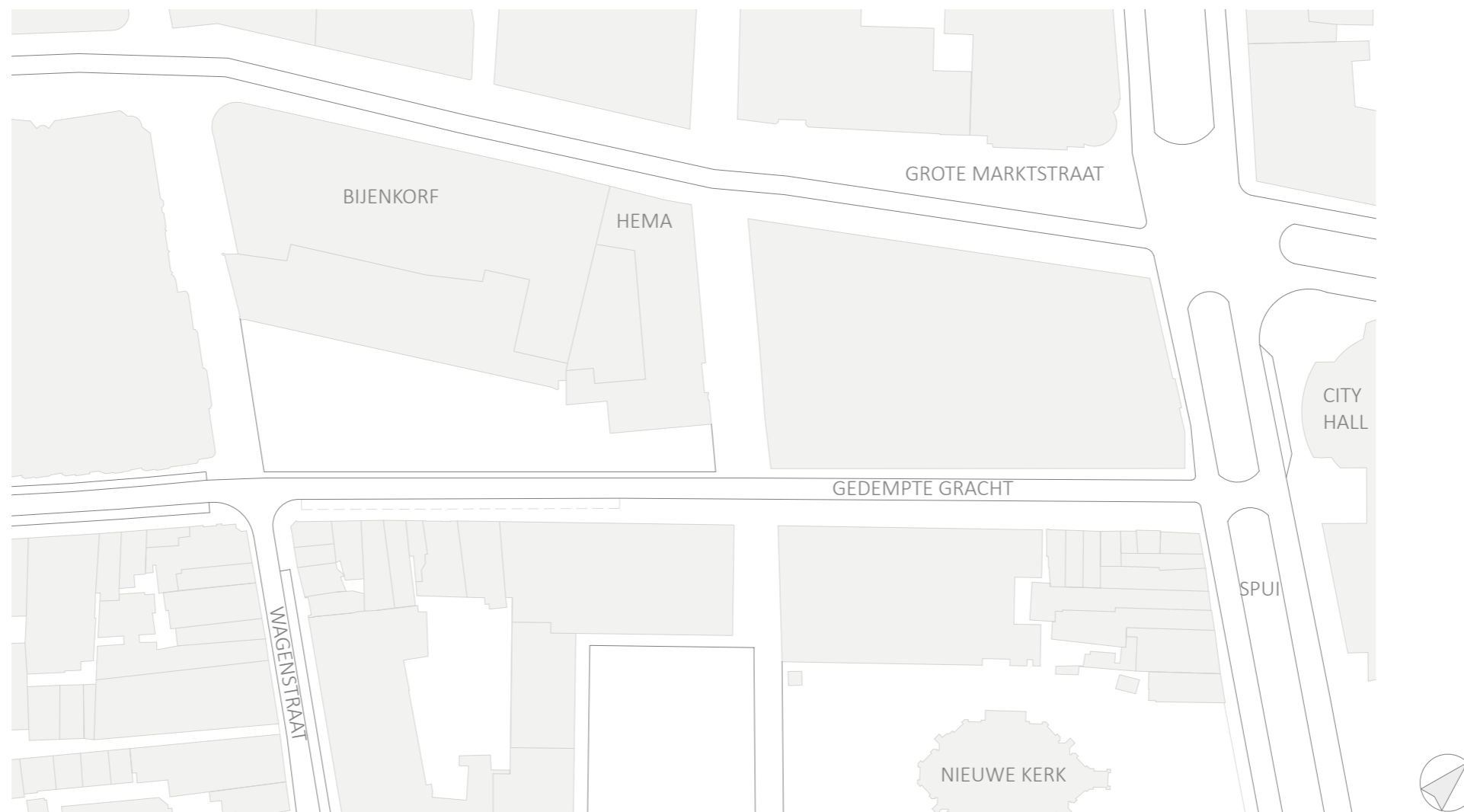
VISIBILITY



VISIBILITY

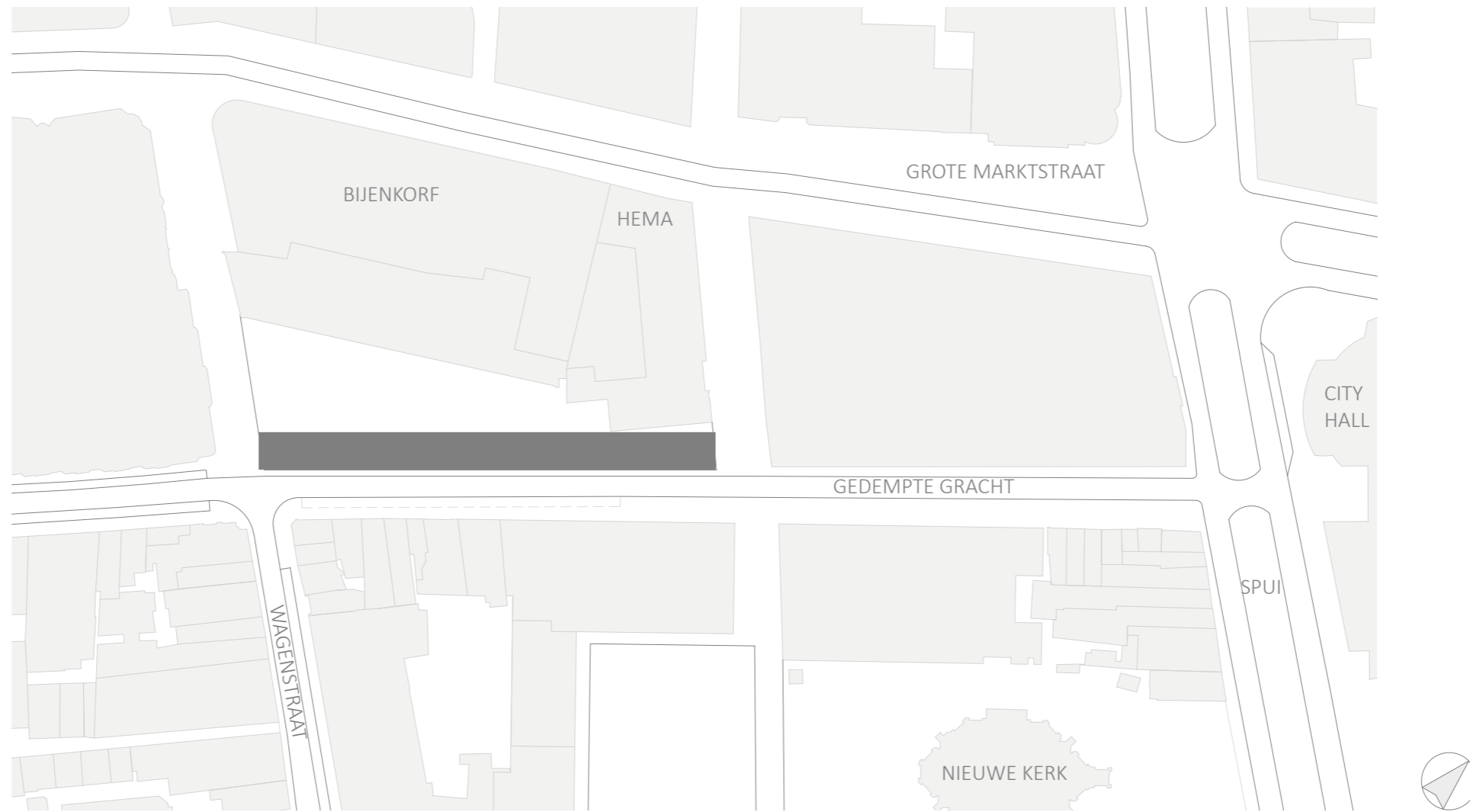
MASTERPLAN

DESIGN PROPOSAL



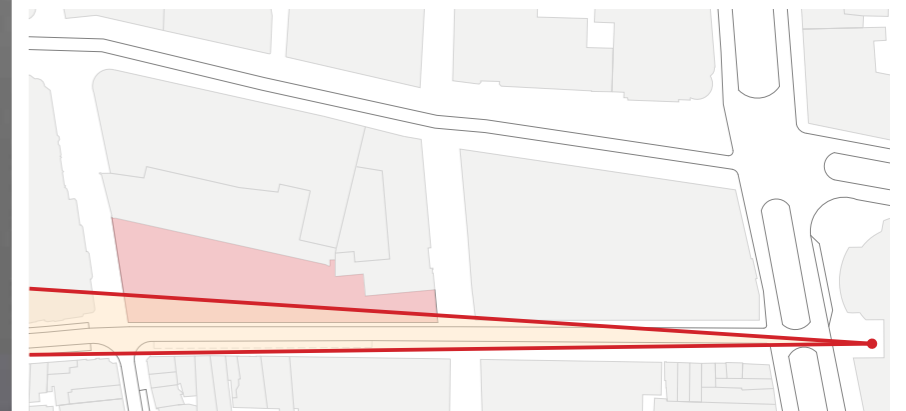
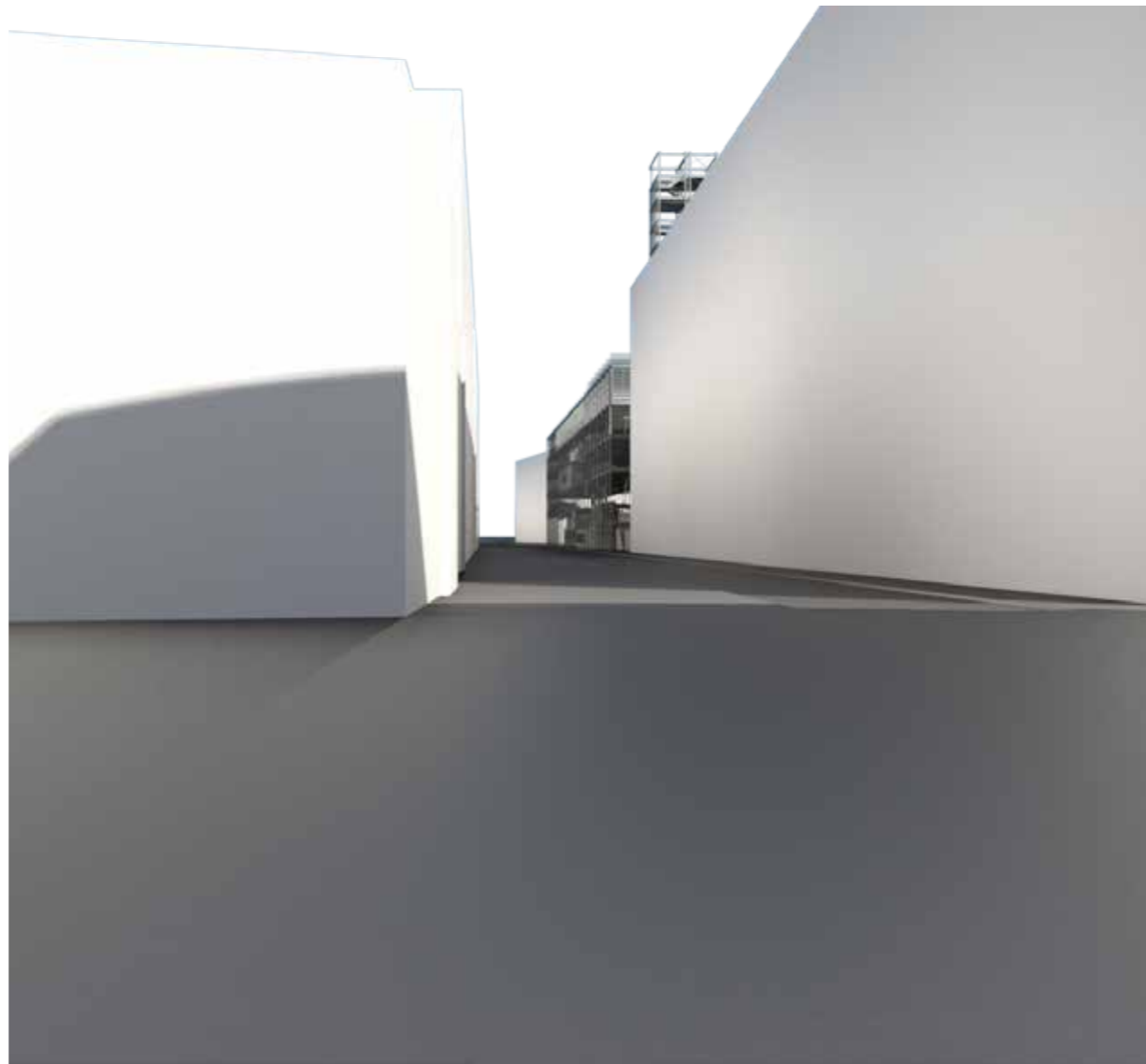
MASTERPLAN

DESIGN PROPOSAL



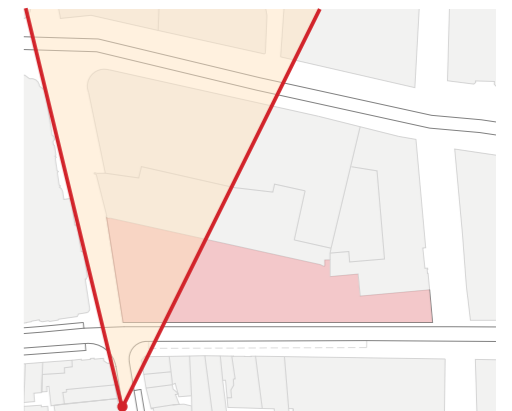
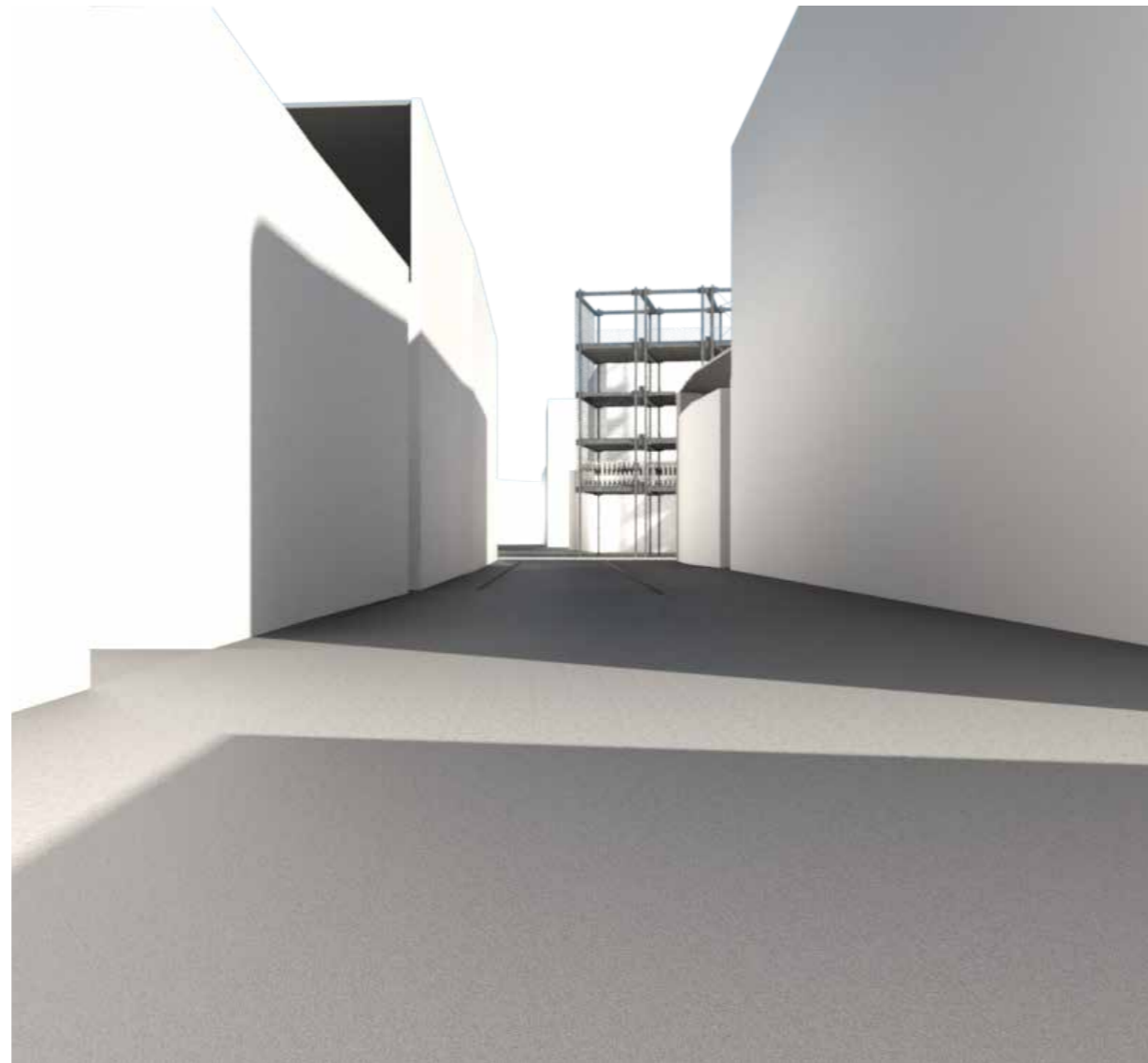
MASTERPLAN

VISIBILITY



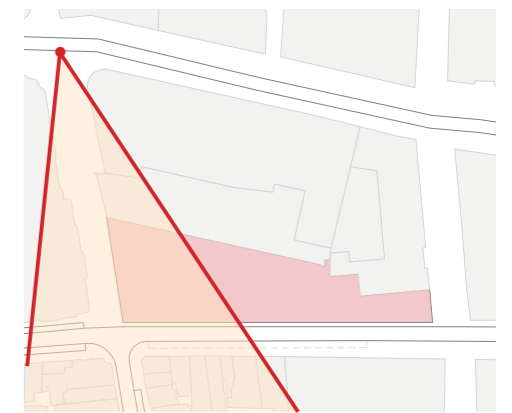
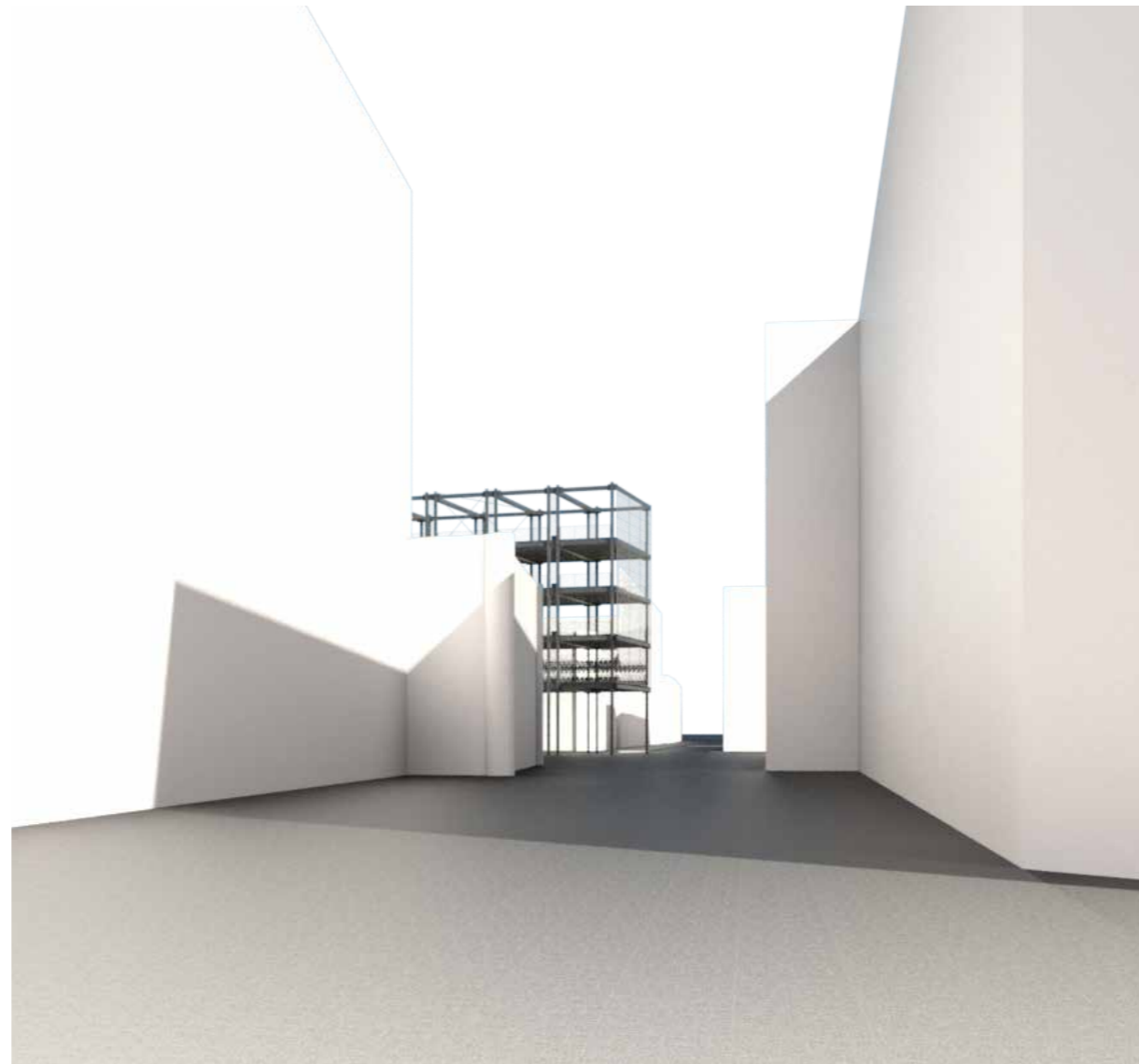
MASTERPLAN

VISIBILITY



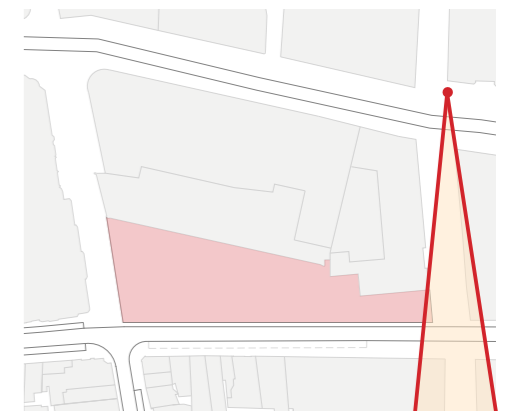
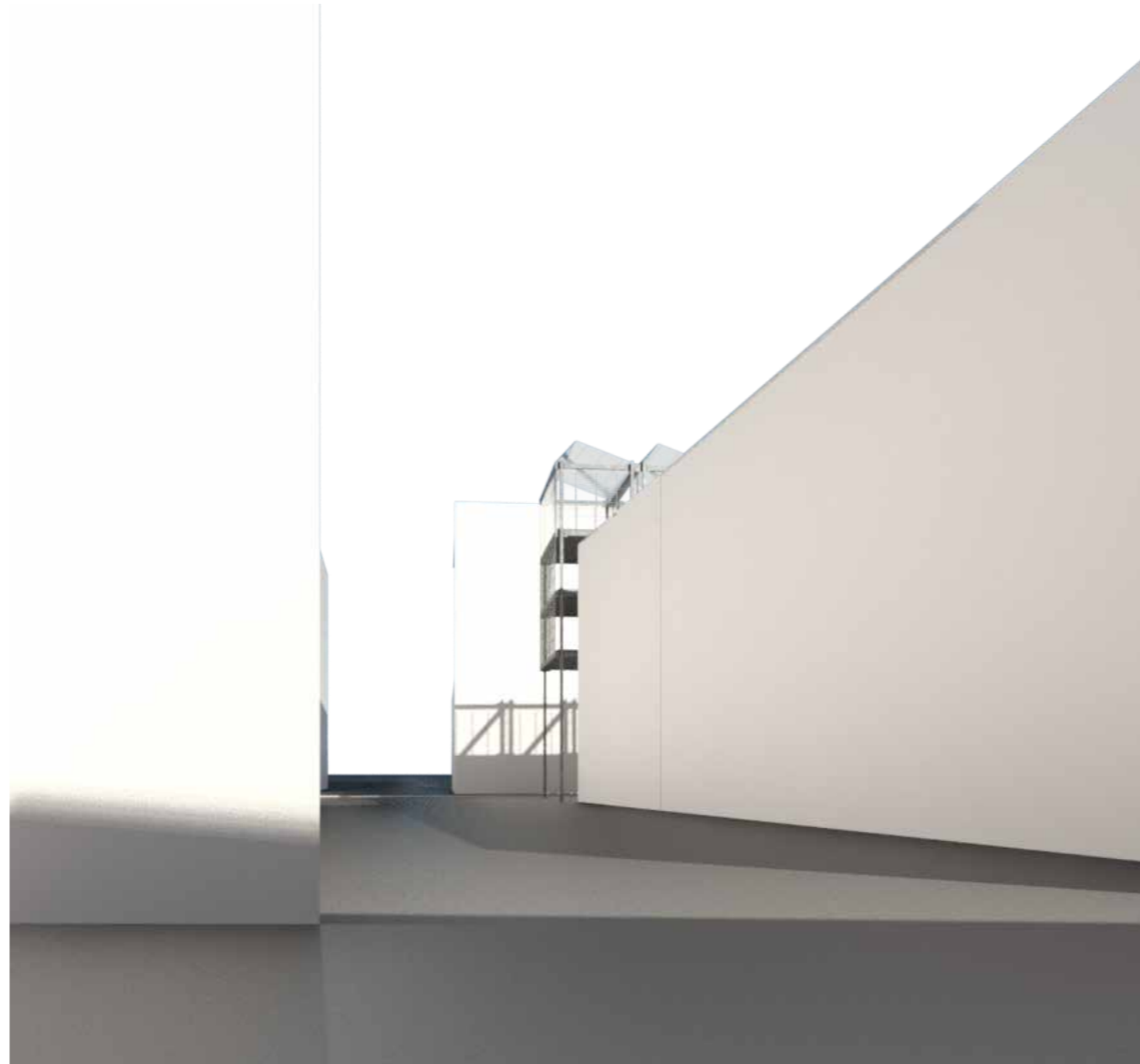
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VISIBILITY



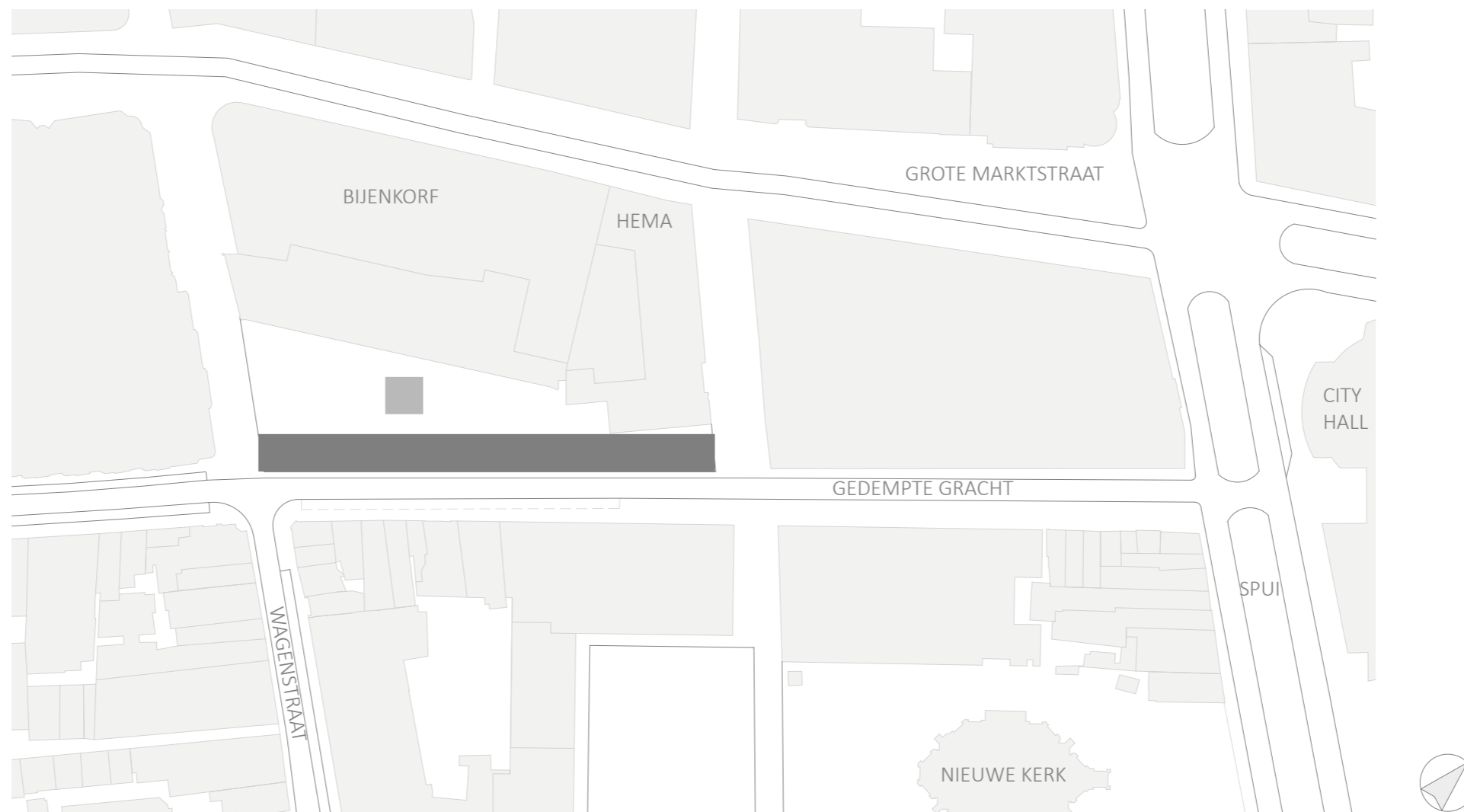
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VISIBILITY



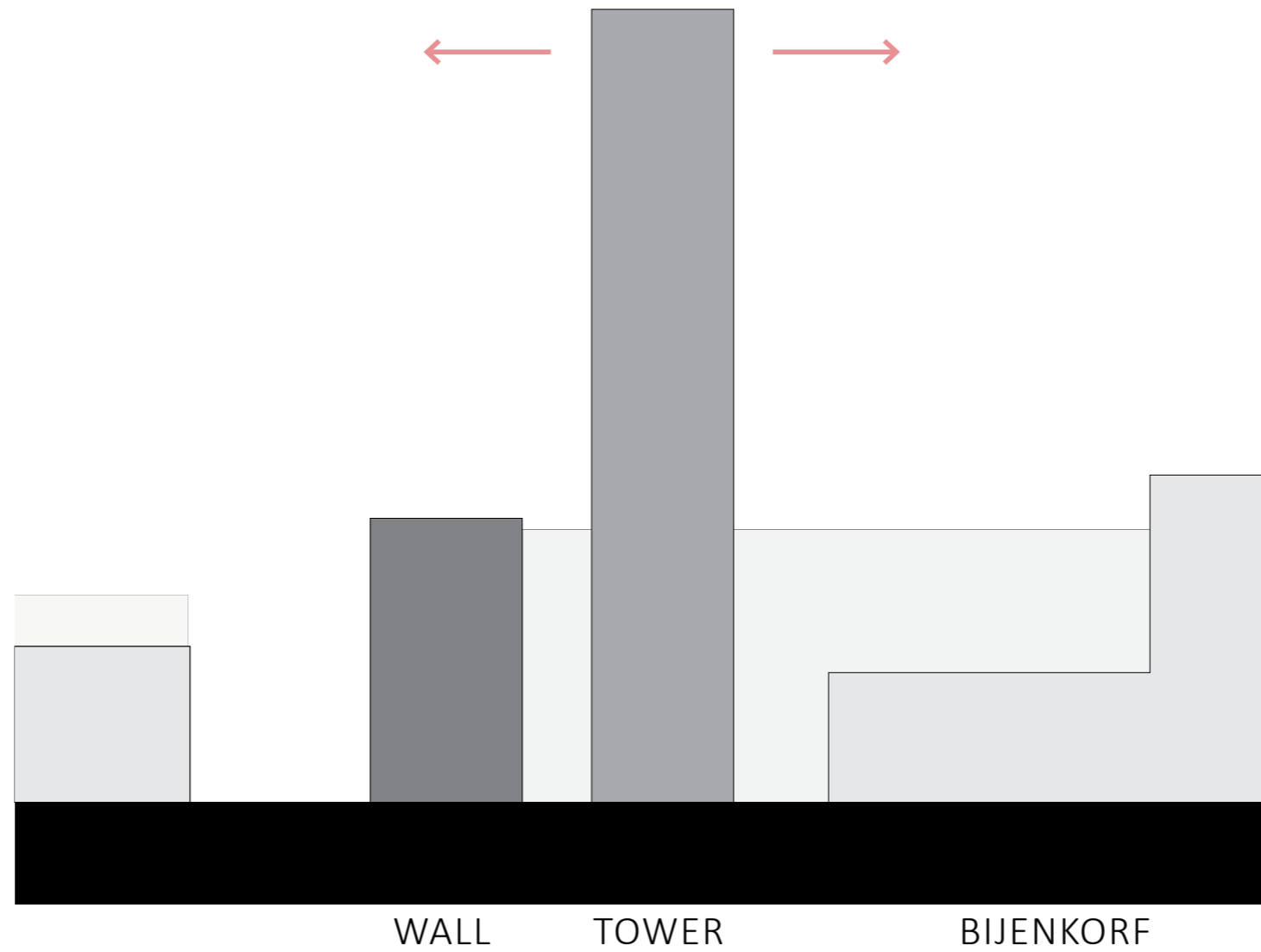
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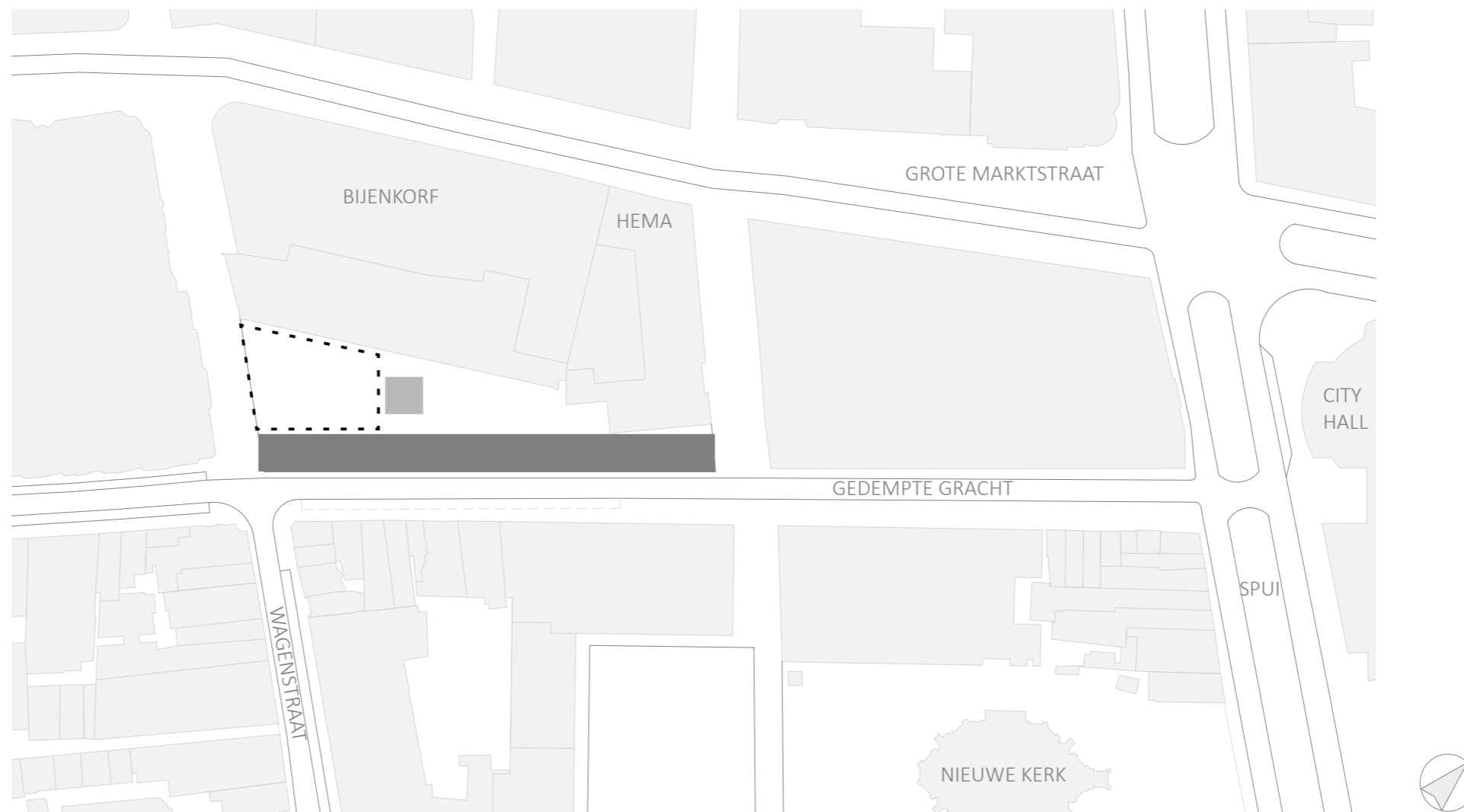
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DESIGN PROPOSAL



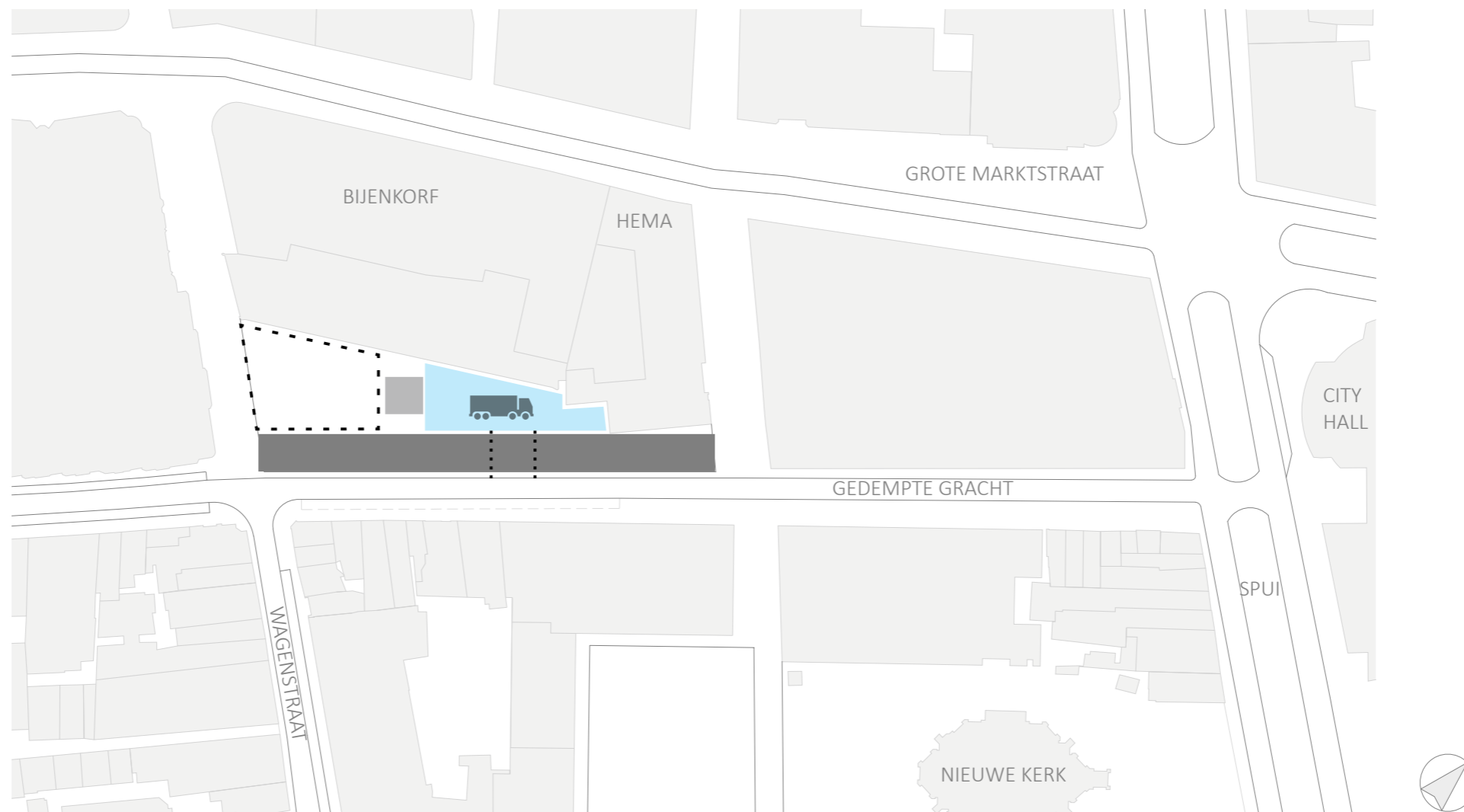
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DESIGN PROPOSAL



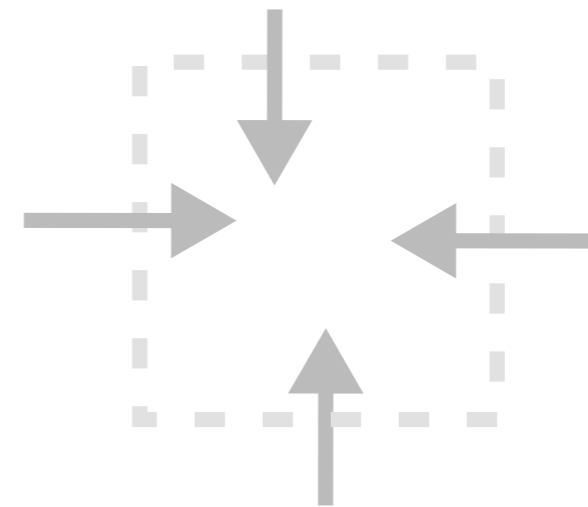
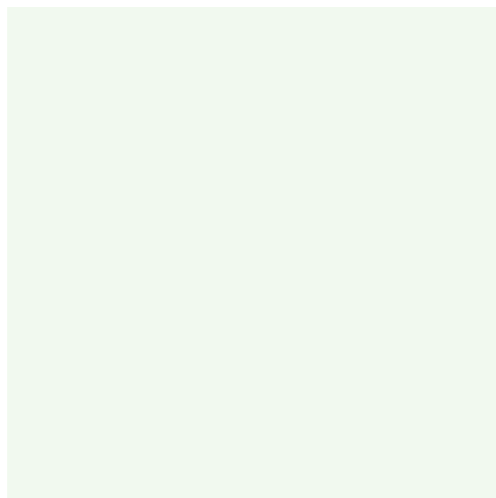
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DESIGN PROPOSAL



MASTERPLAN

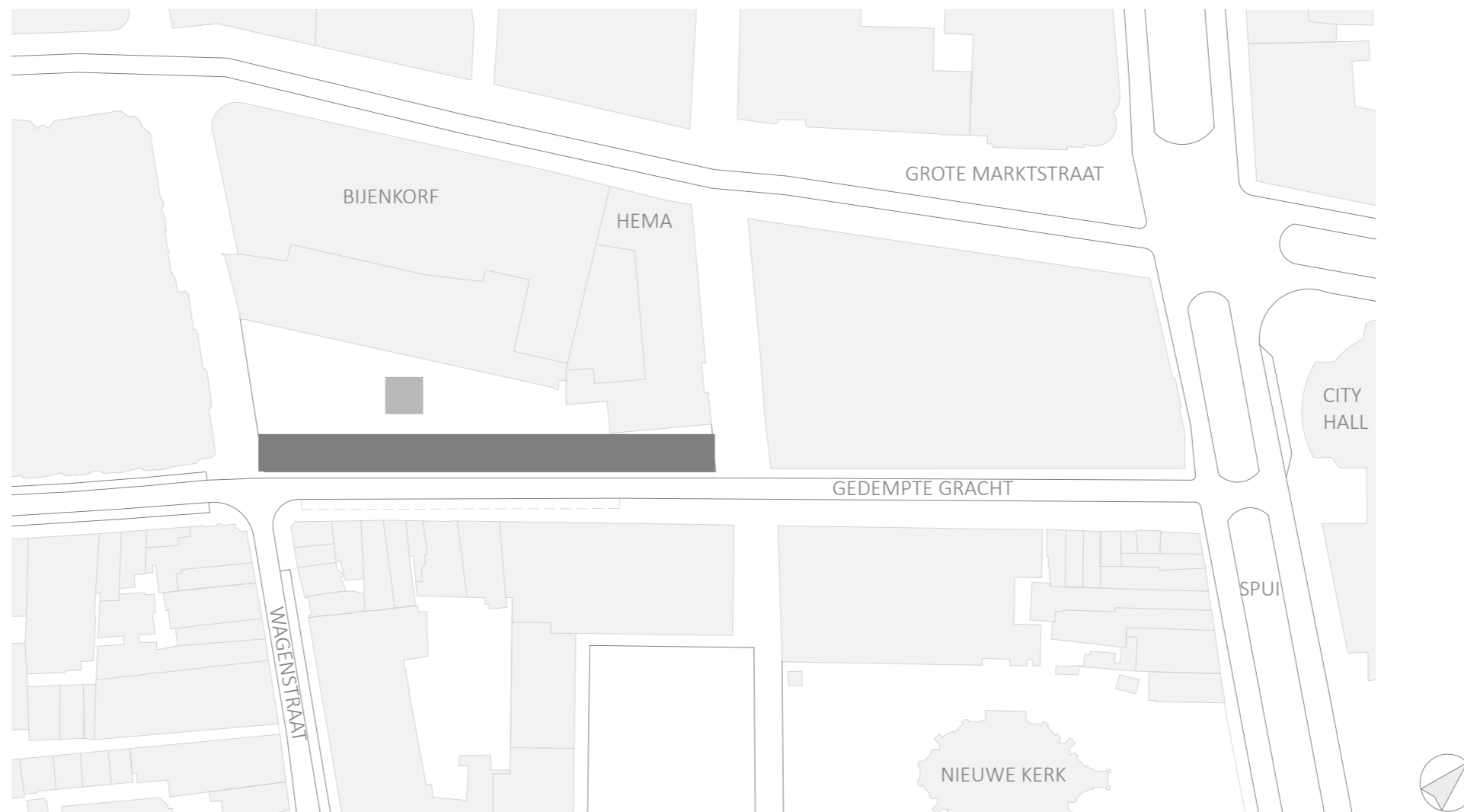
ACCESSIBILITY



ACCESSIBILITY

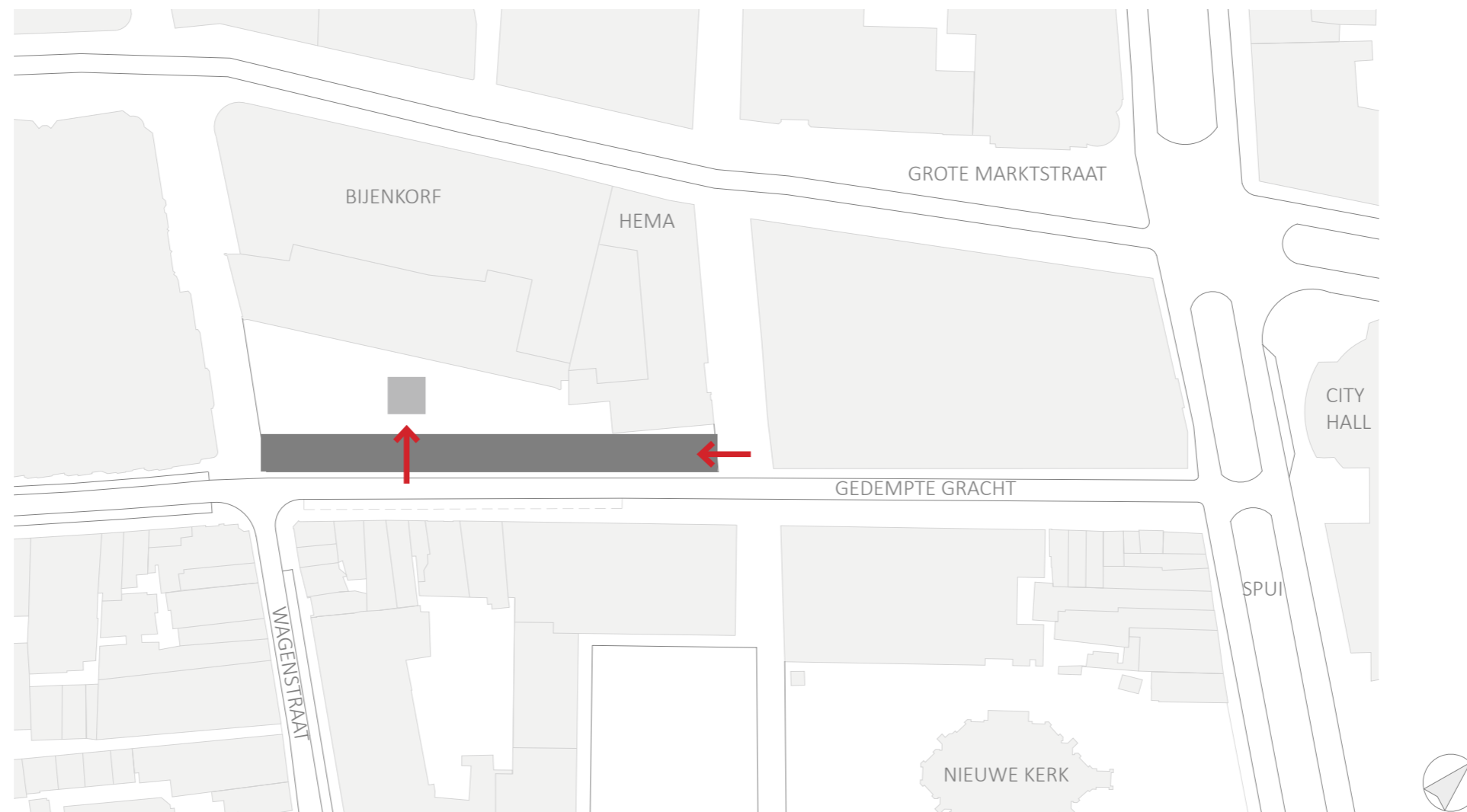
MASTERPLAN

ACCESSIBILITY



MASTERPLAN

ACCESSIBILITY



DESIGN

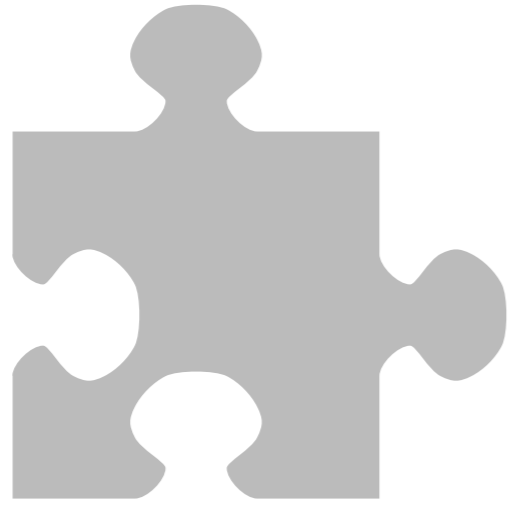
DESIGN

IMPRESSION

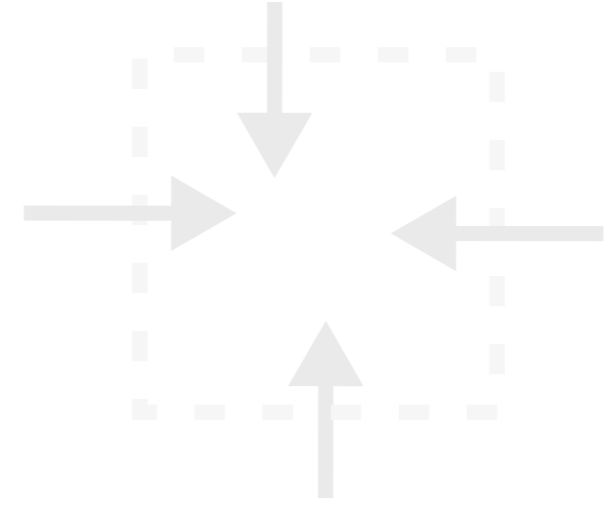


DESIGN

CONCEPT

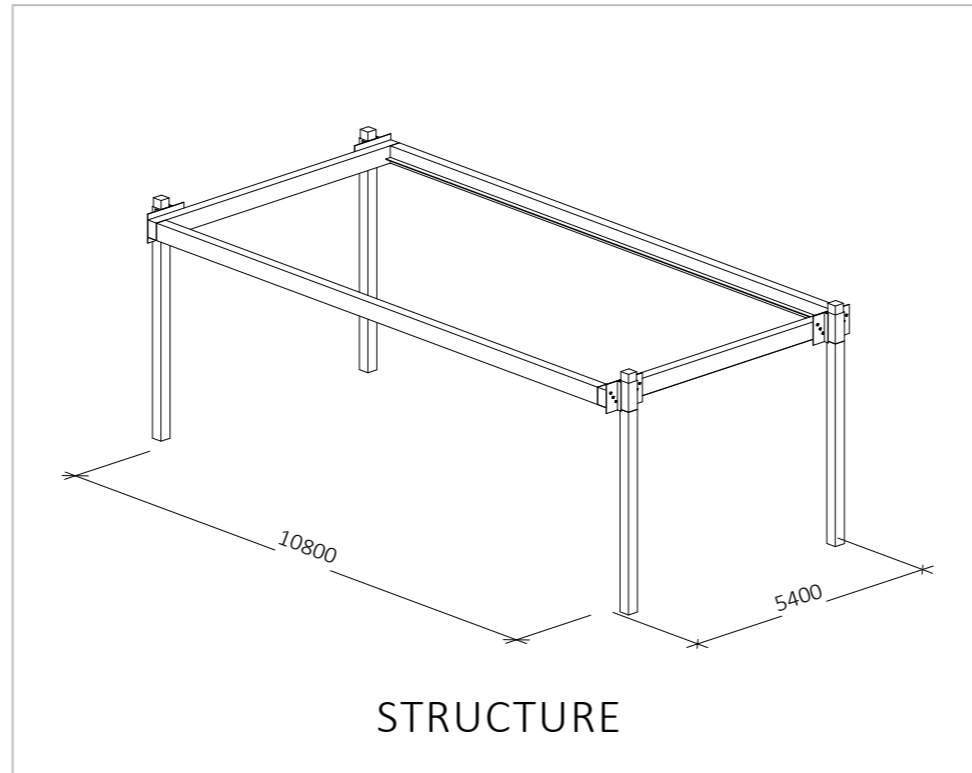


GENERIC SYSTEM



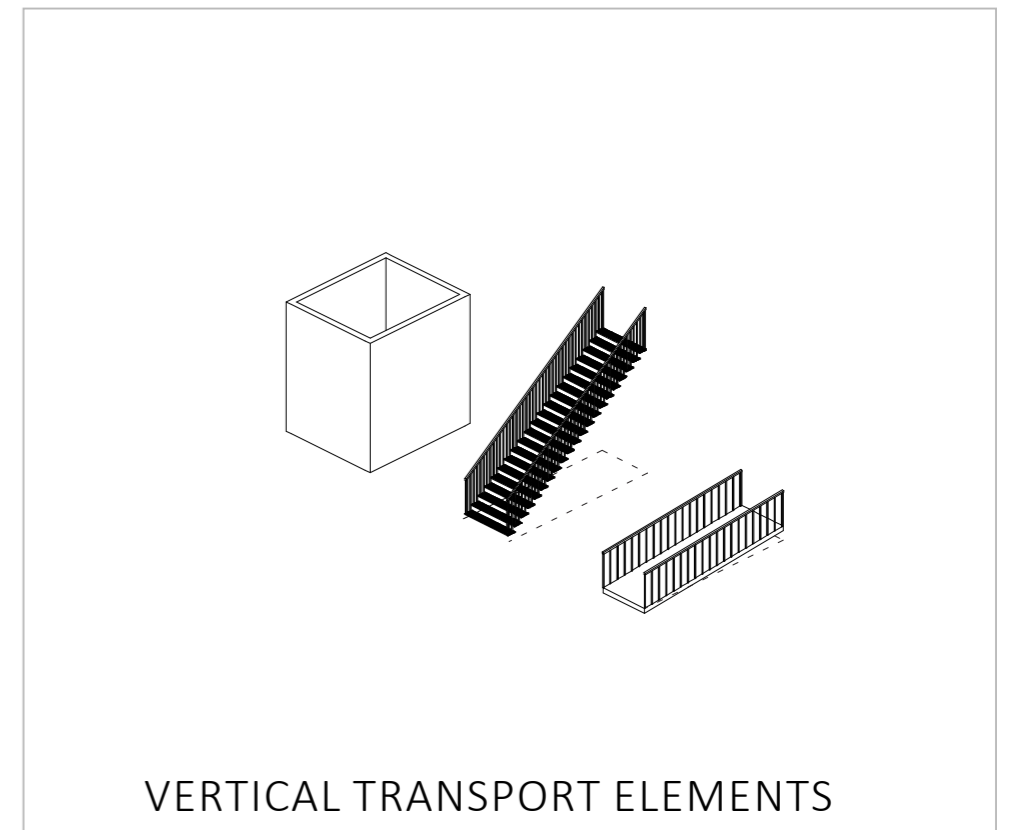
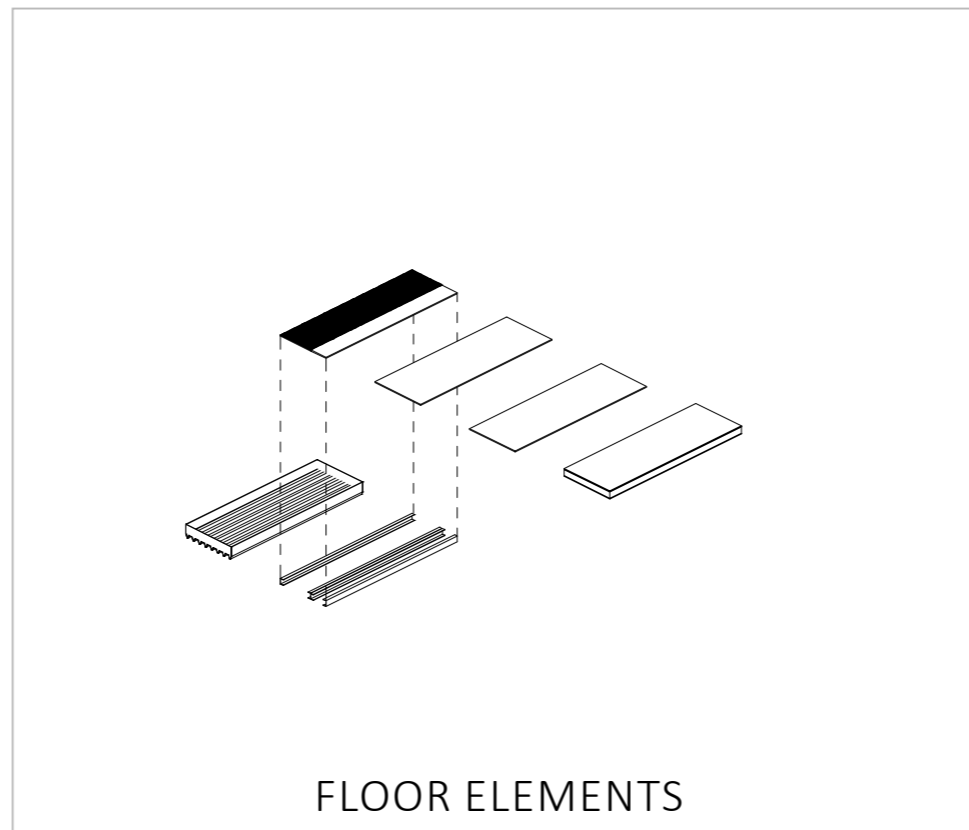
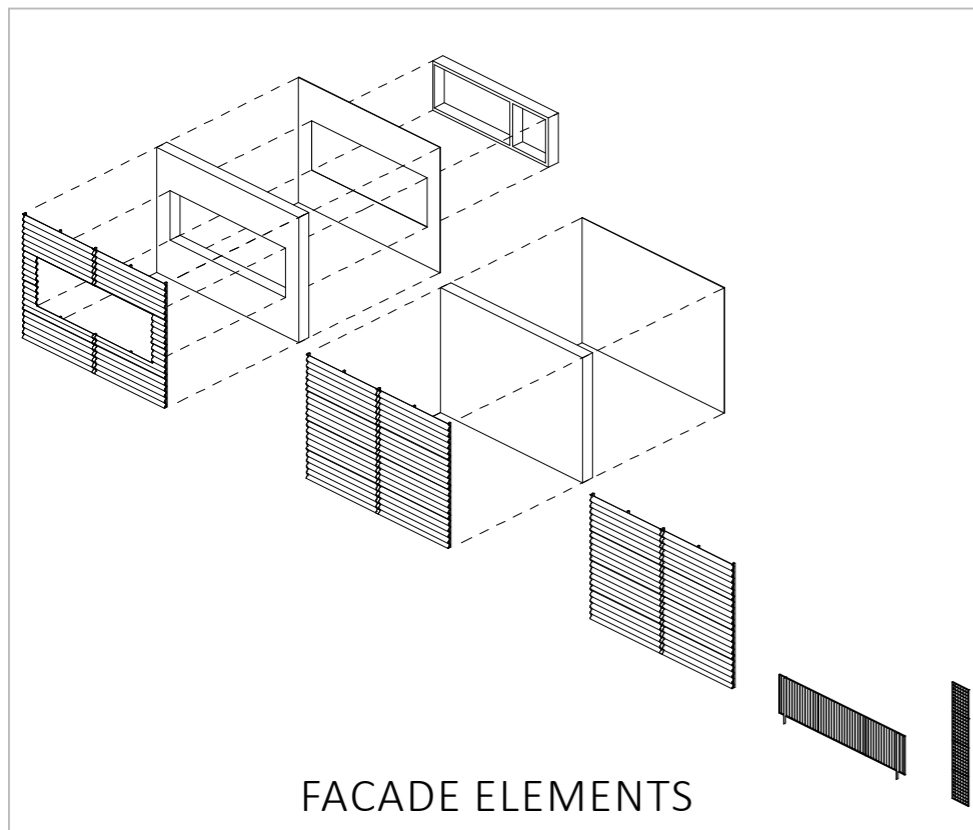
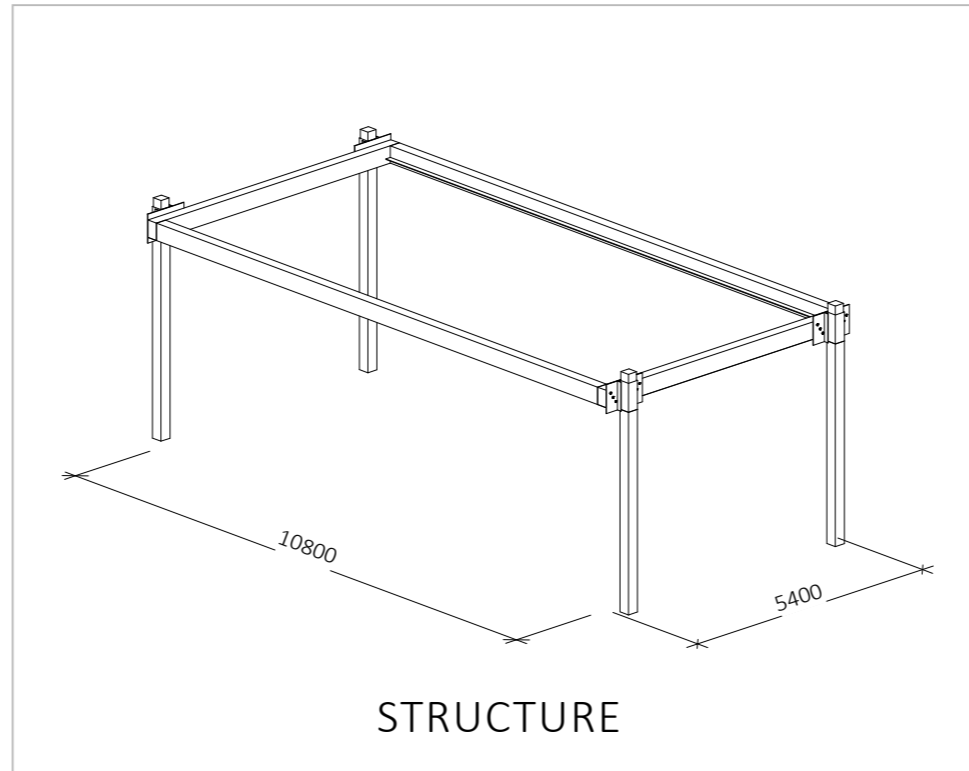
DESIGN

GENERIC SYSTEM



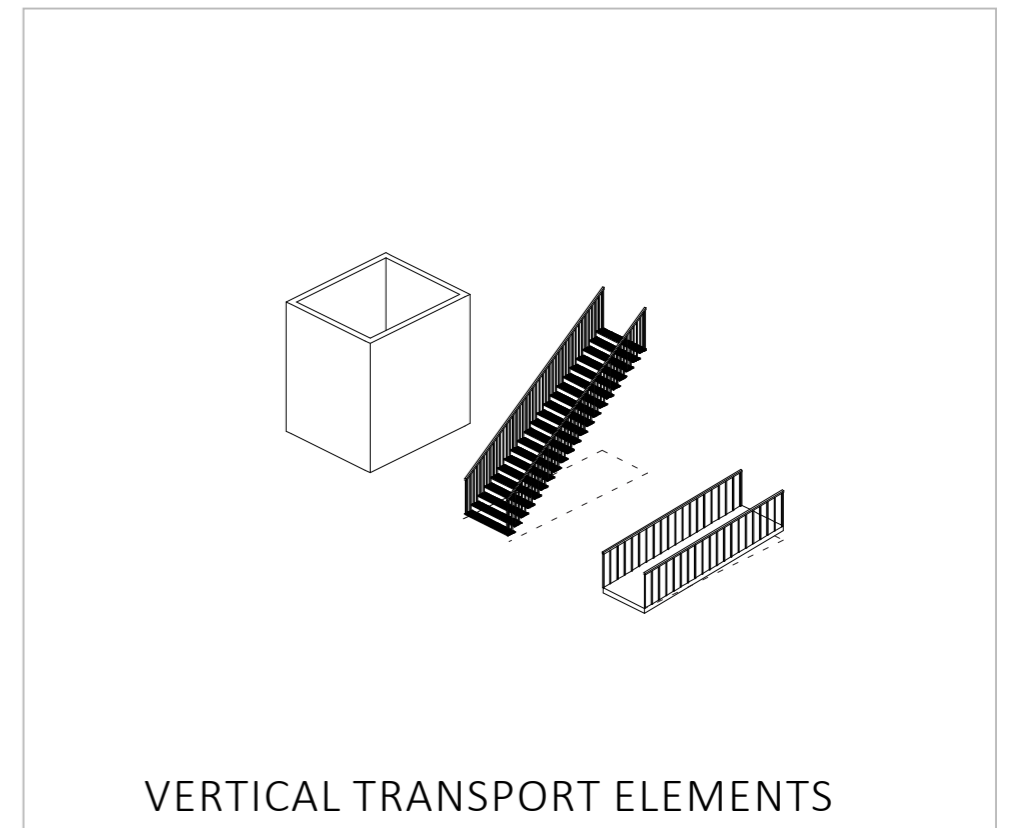
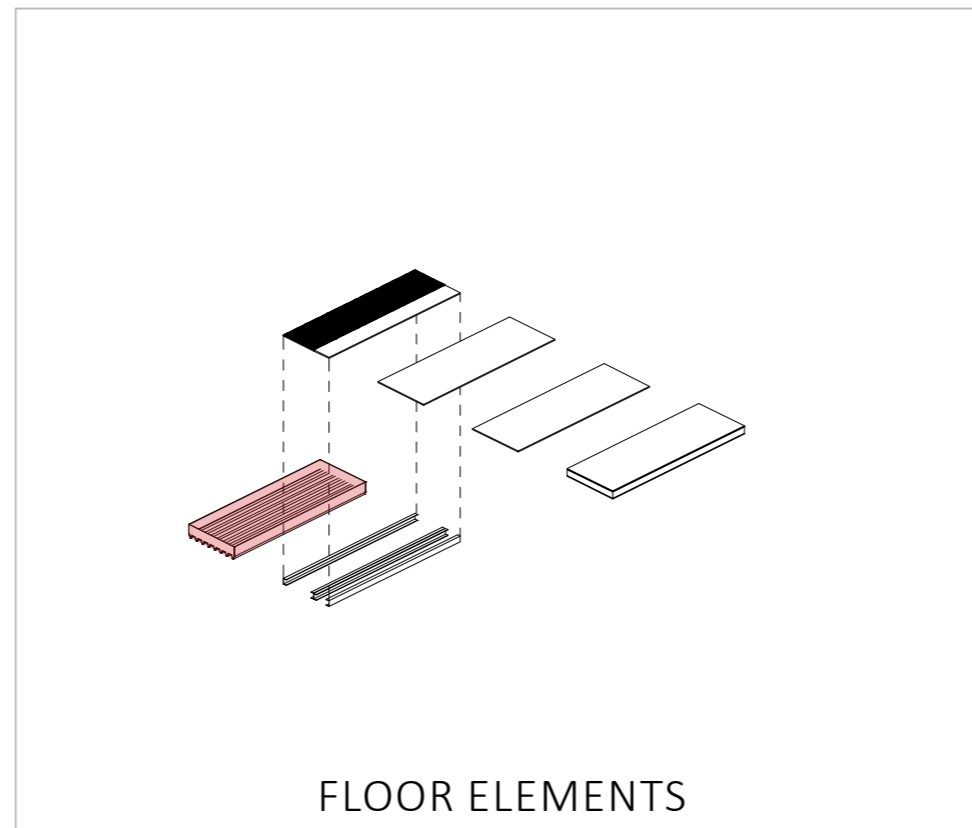
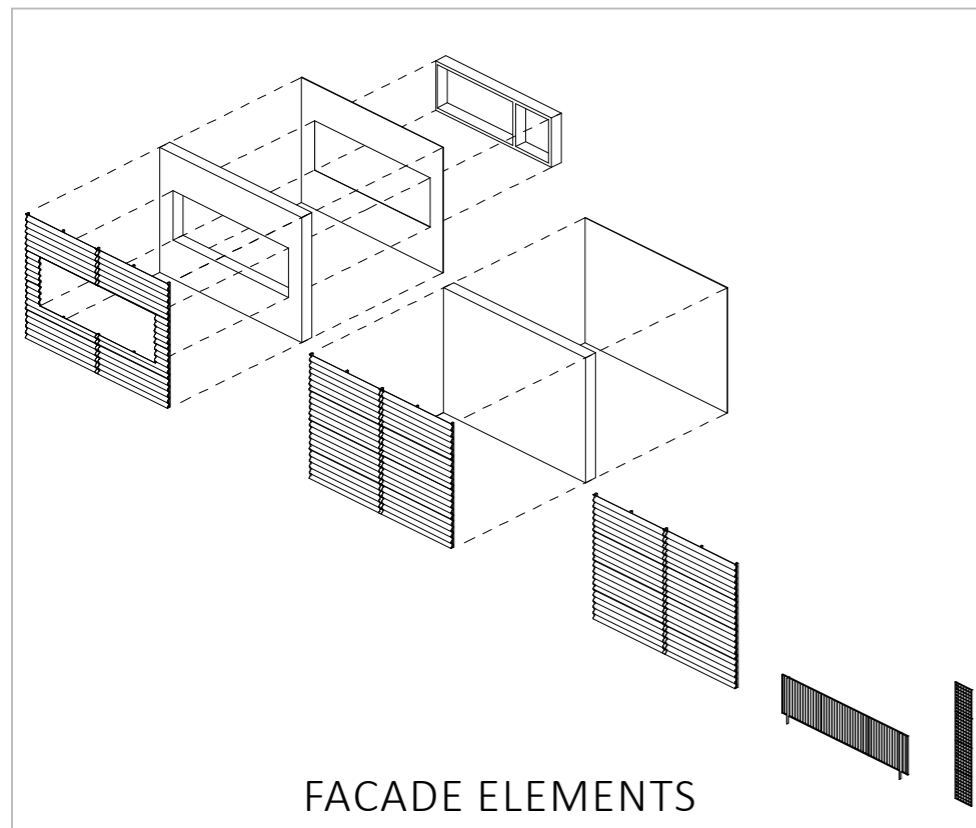
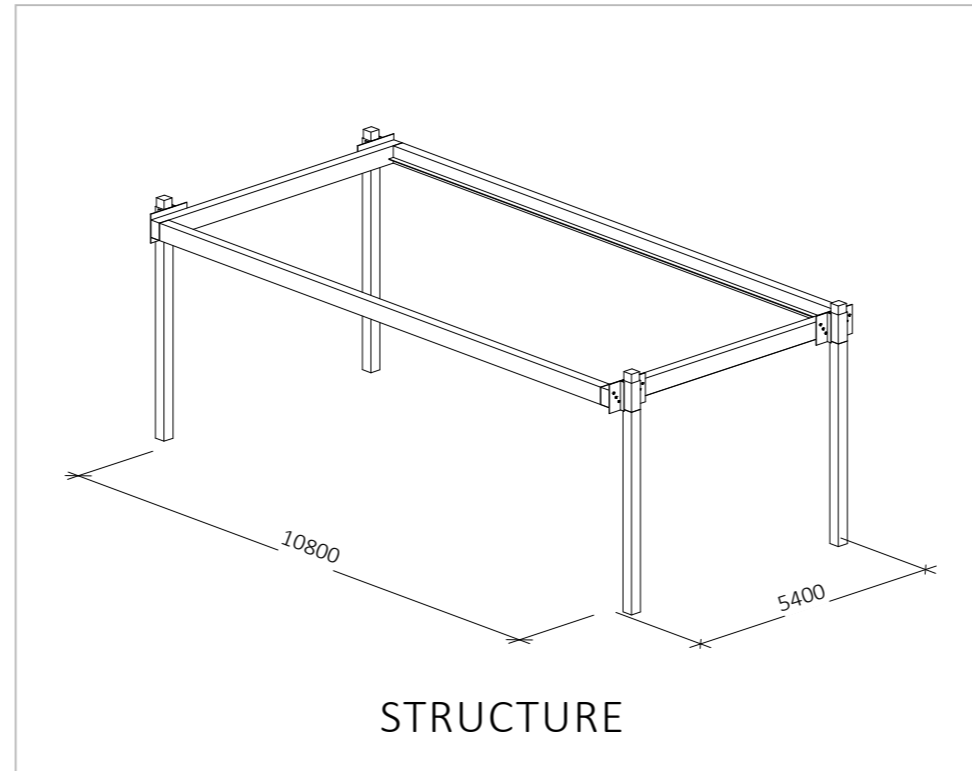
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GENERIC SYSTEM



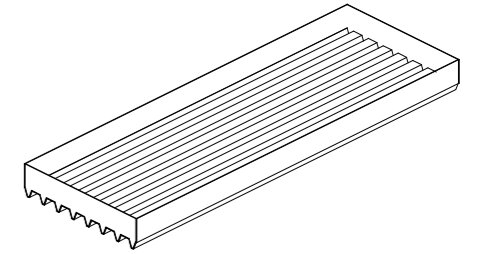
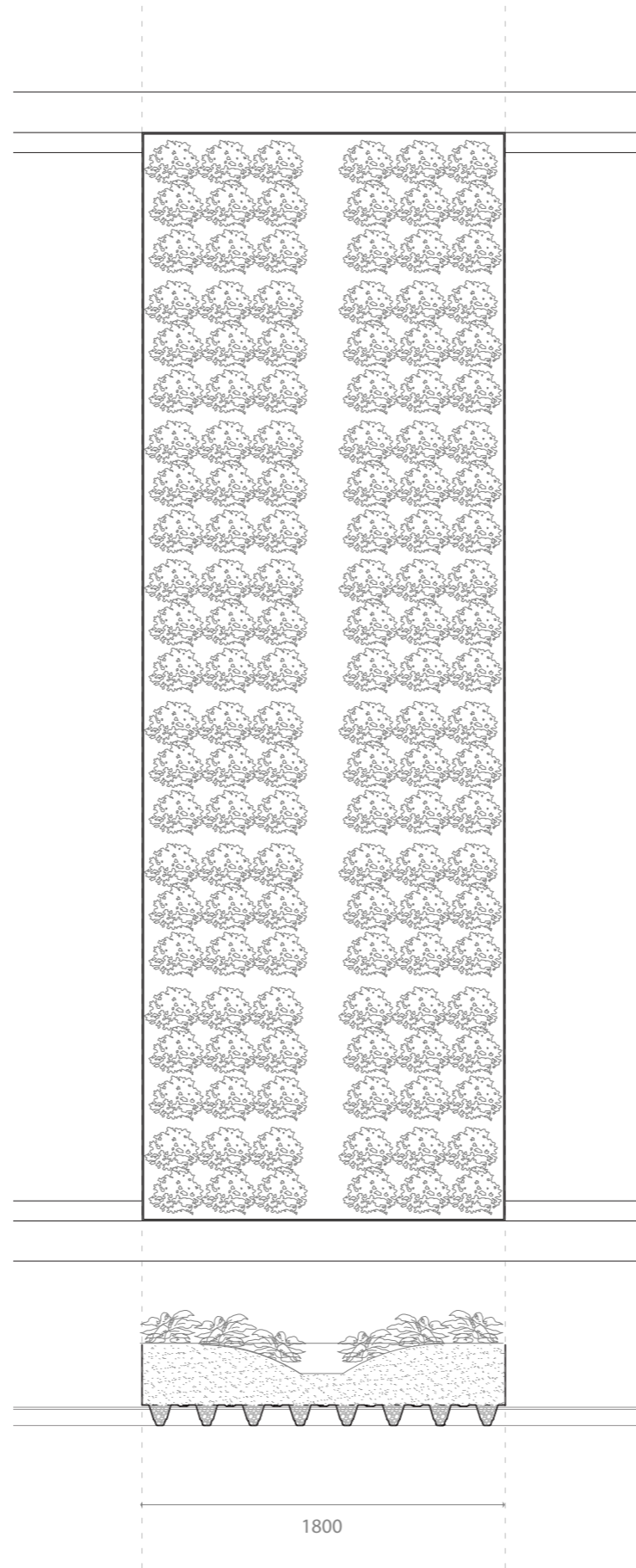
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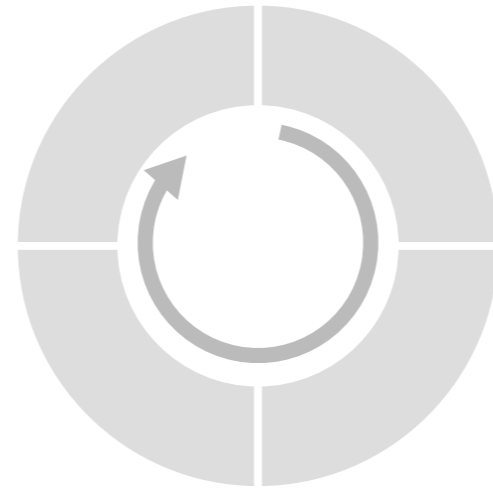
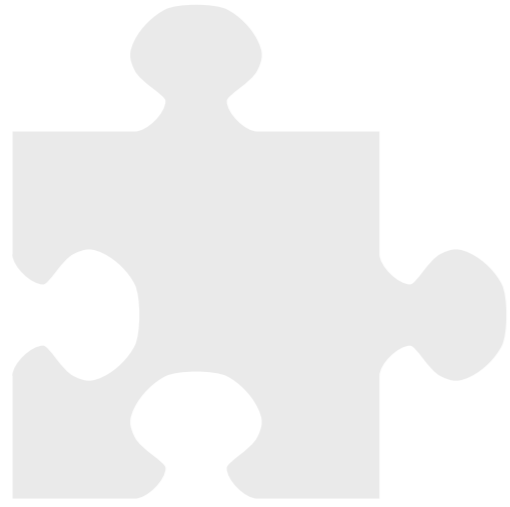
DESIGN

FLOOR ELEMENT - CULTIVATION

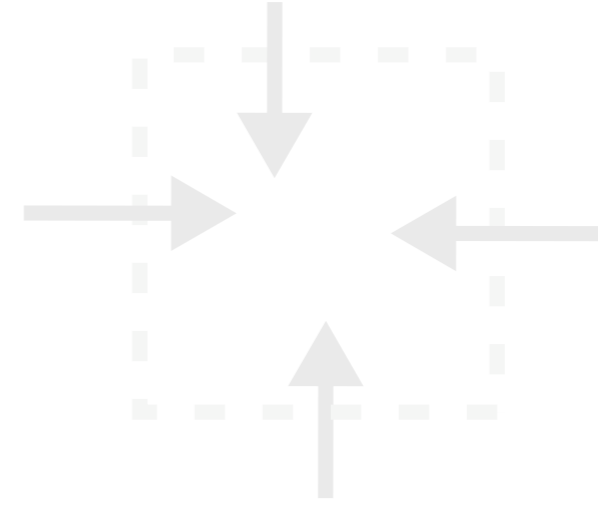


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CONCEPT

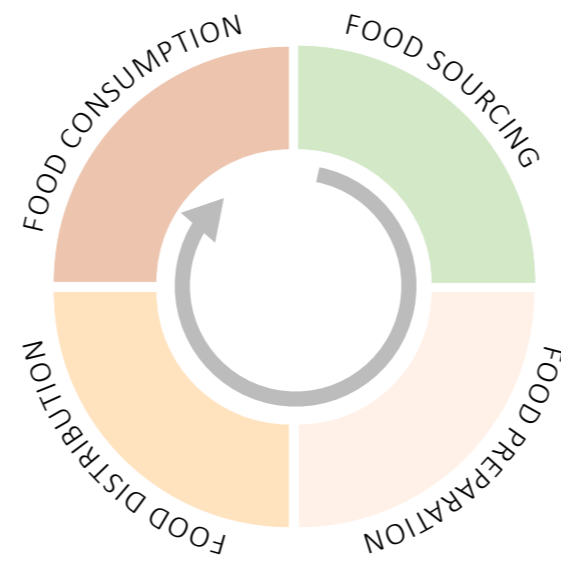


AWARENESS



DESIGN

AWARENESS



THE LOCAL FOOD SYSTEM

DESIGN

PROGRAM

	MARKET	580			
	CULTIVATION GROUND	2530			
	STORAGE	250			
	DISTRIBUTION	100		RESTAURANT	190
	BICYCLE STORAGE	1500		KITCHEN	120
	COMPOST	25		WORKSHOP SPACE	190
	GLASSHOUSE	360		STORAGE	25

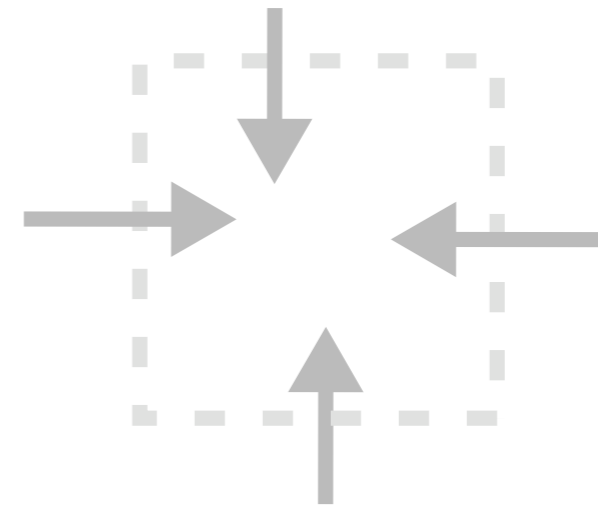
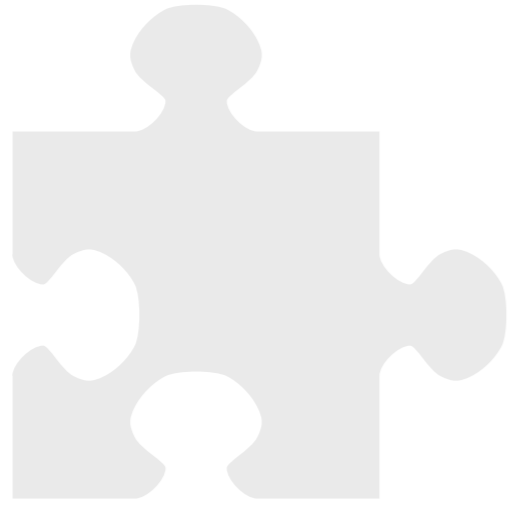
DESIGN

PROGRAM - AWARENESS



DESIGN

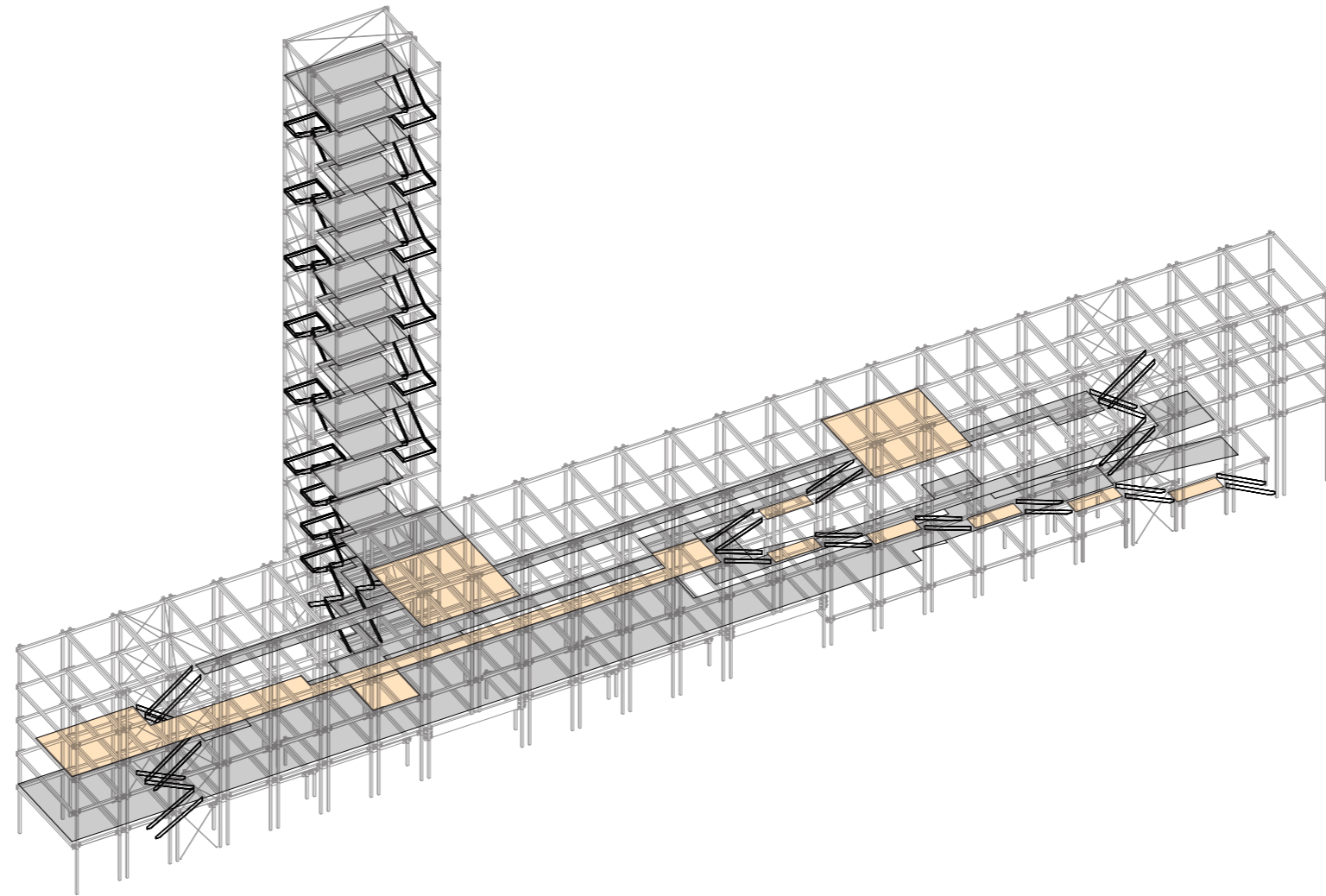
CONCEPT



ACCESSIBILITY

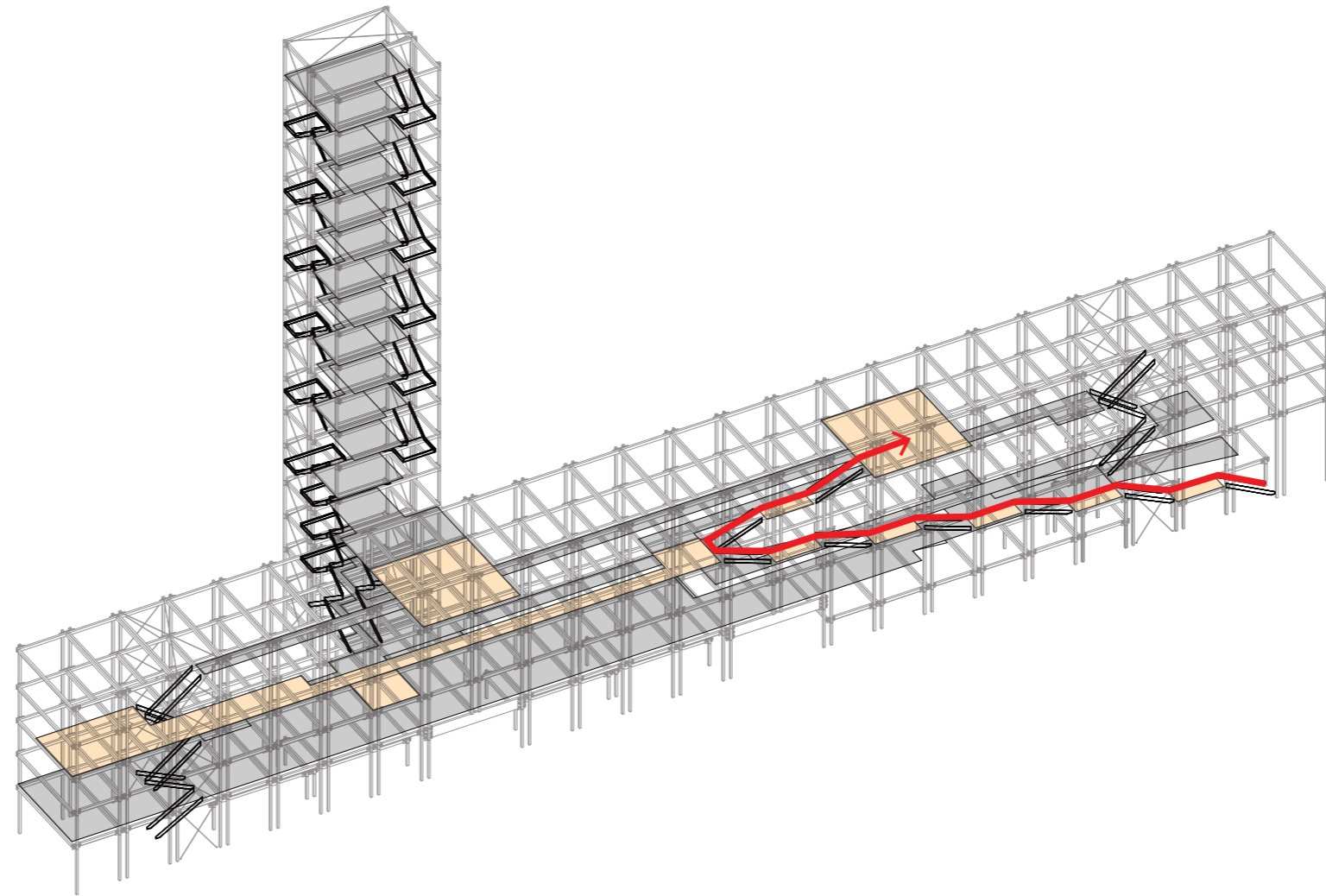
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ACCESSIBILITY



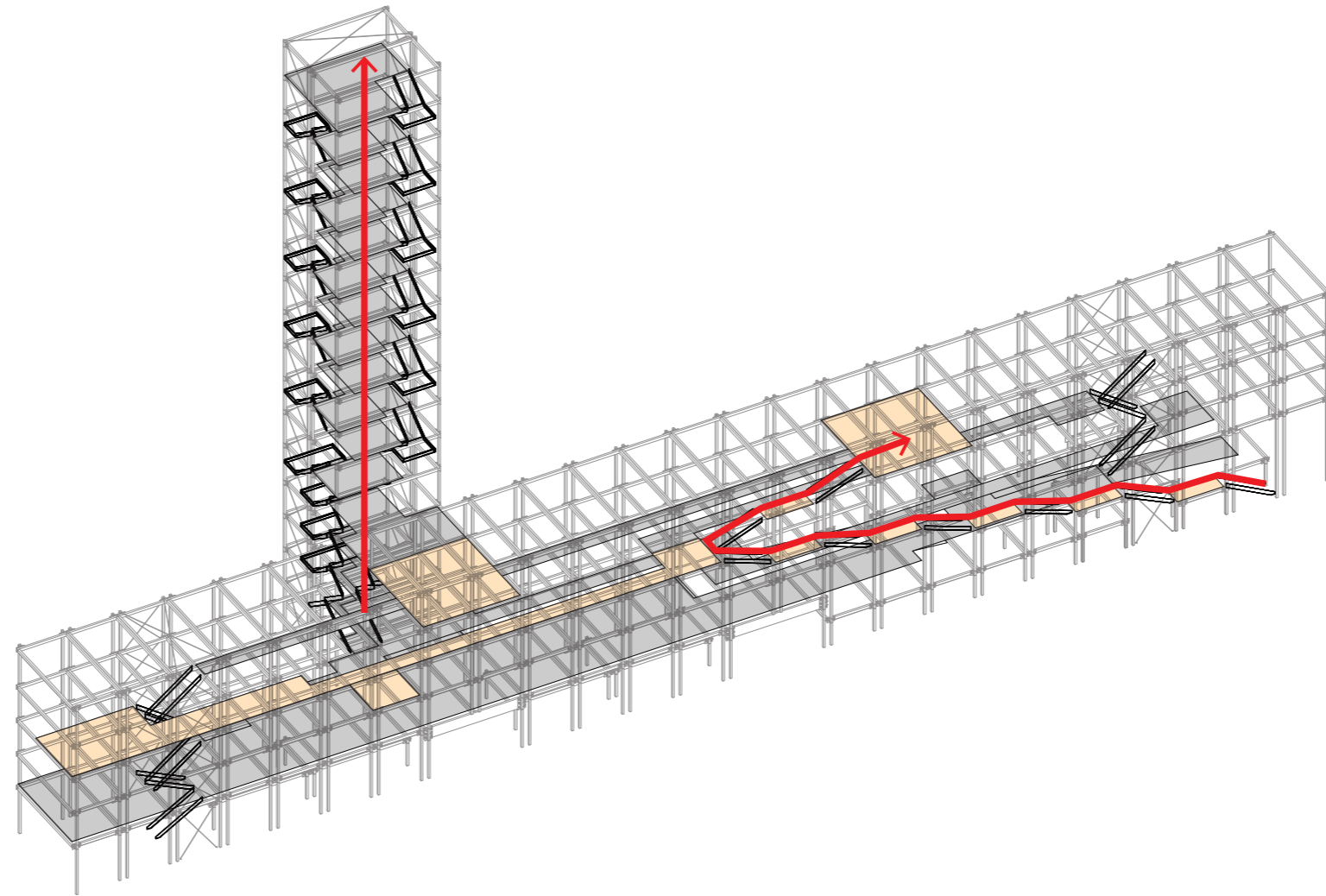
DESIGN

ACCESSIBILITY



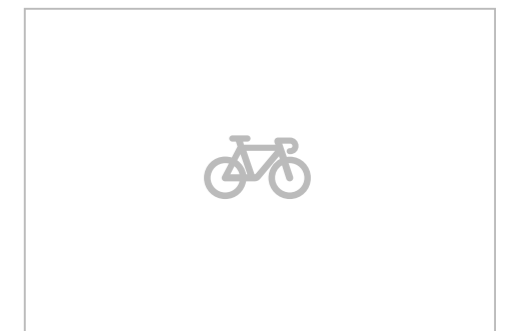
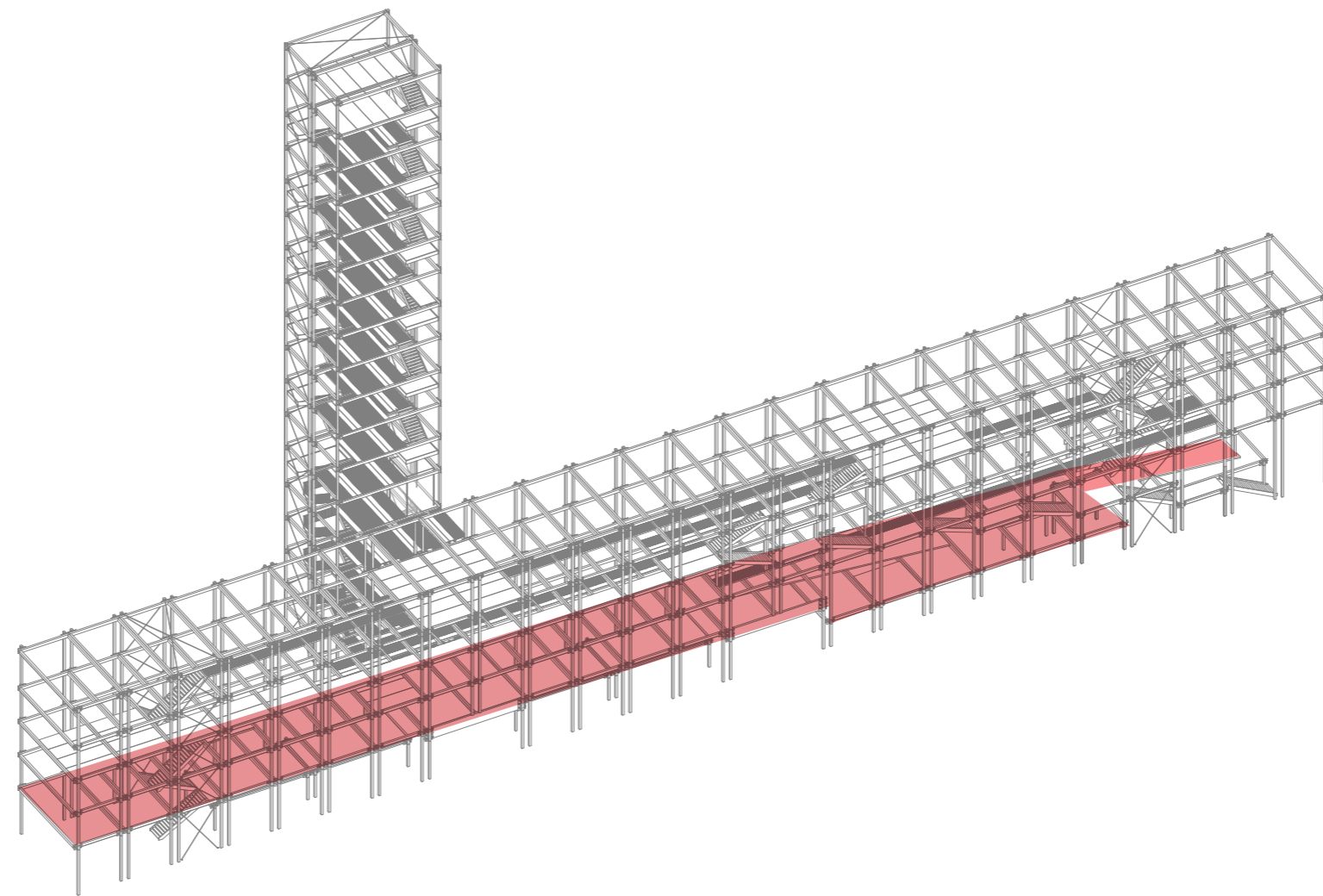
DESIGN

ACCESSIBILITY



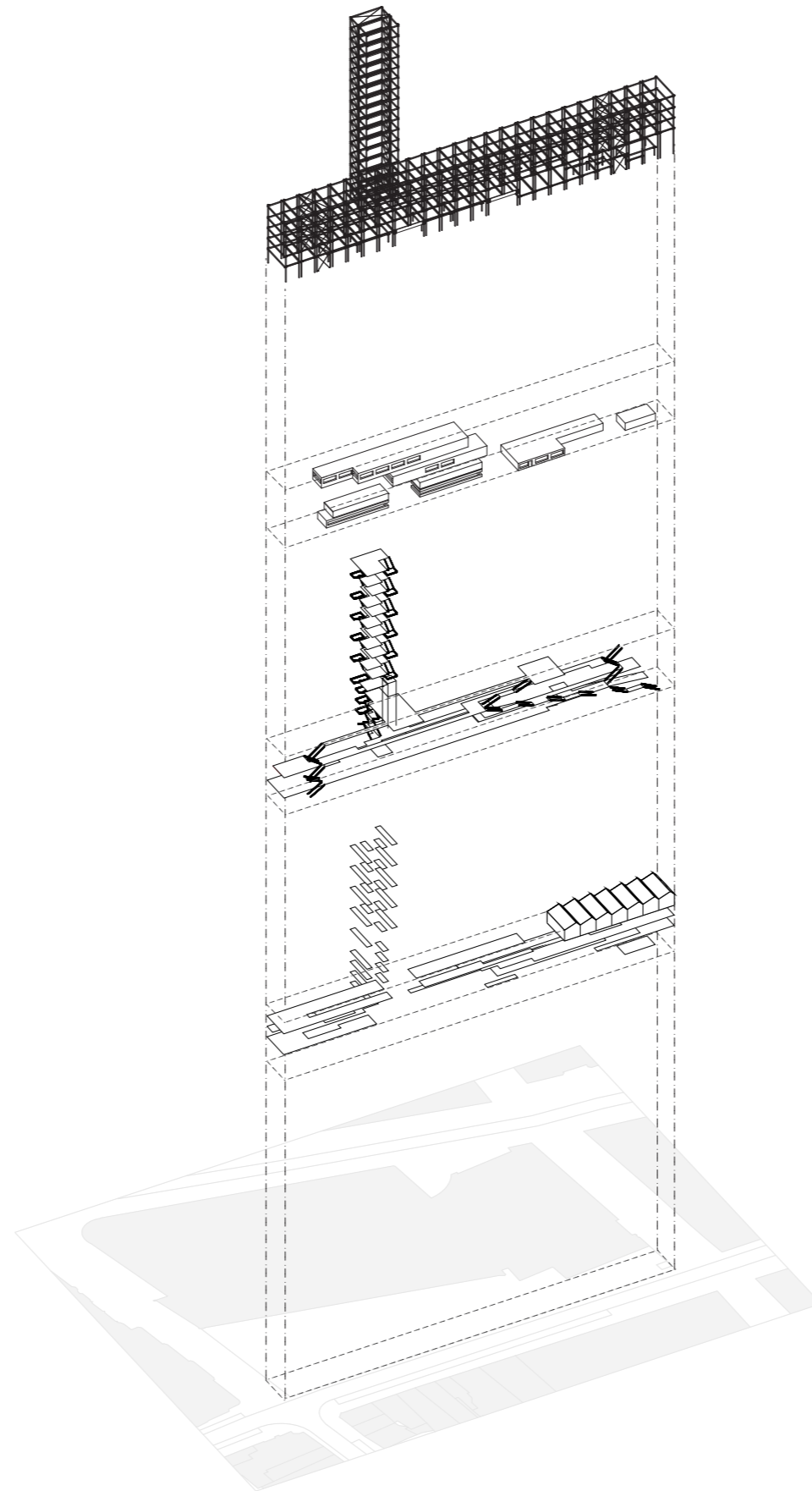
DESIGN

ACCESSIBILITY



DESIGN

EXPLODED VIEW



STRUCTURE

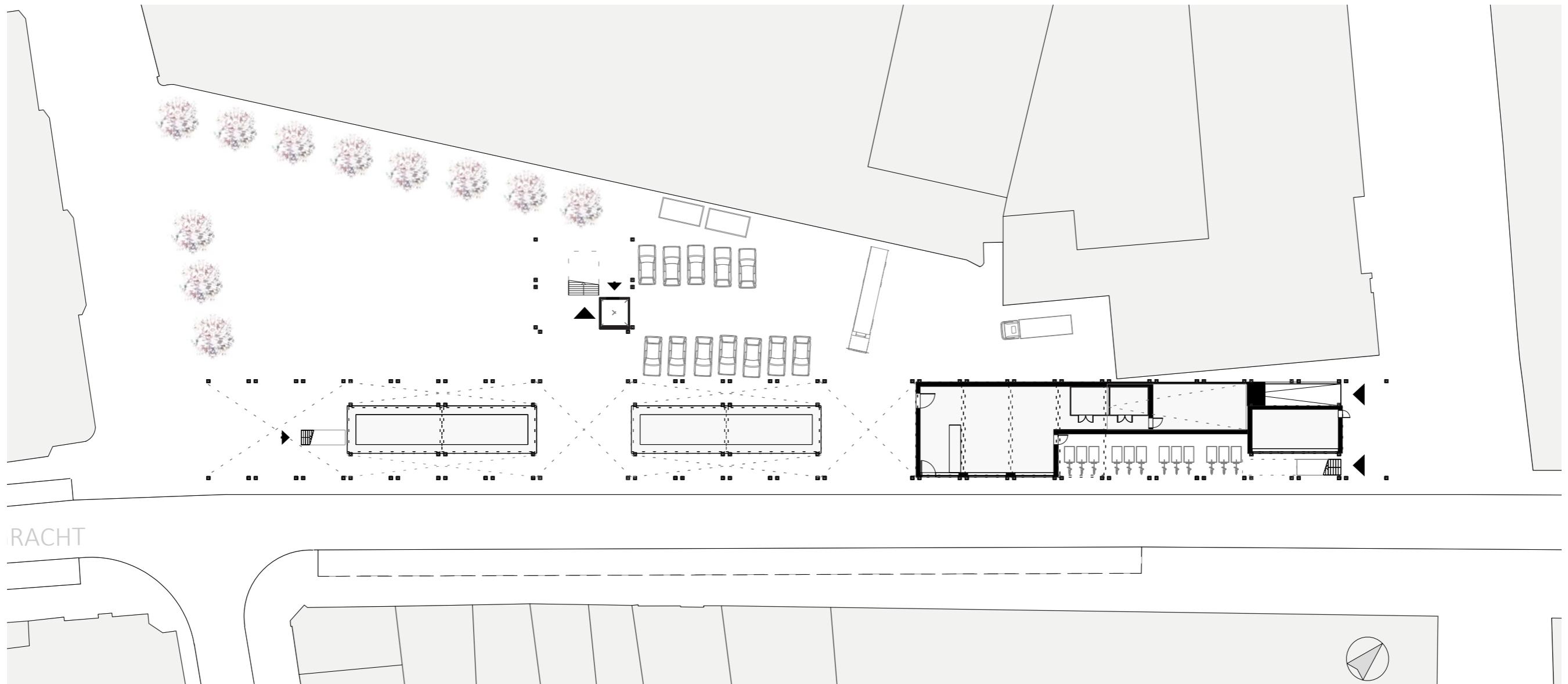
VOLUMES

INFRASTRUCTURE

CULTIVATION

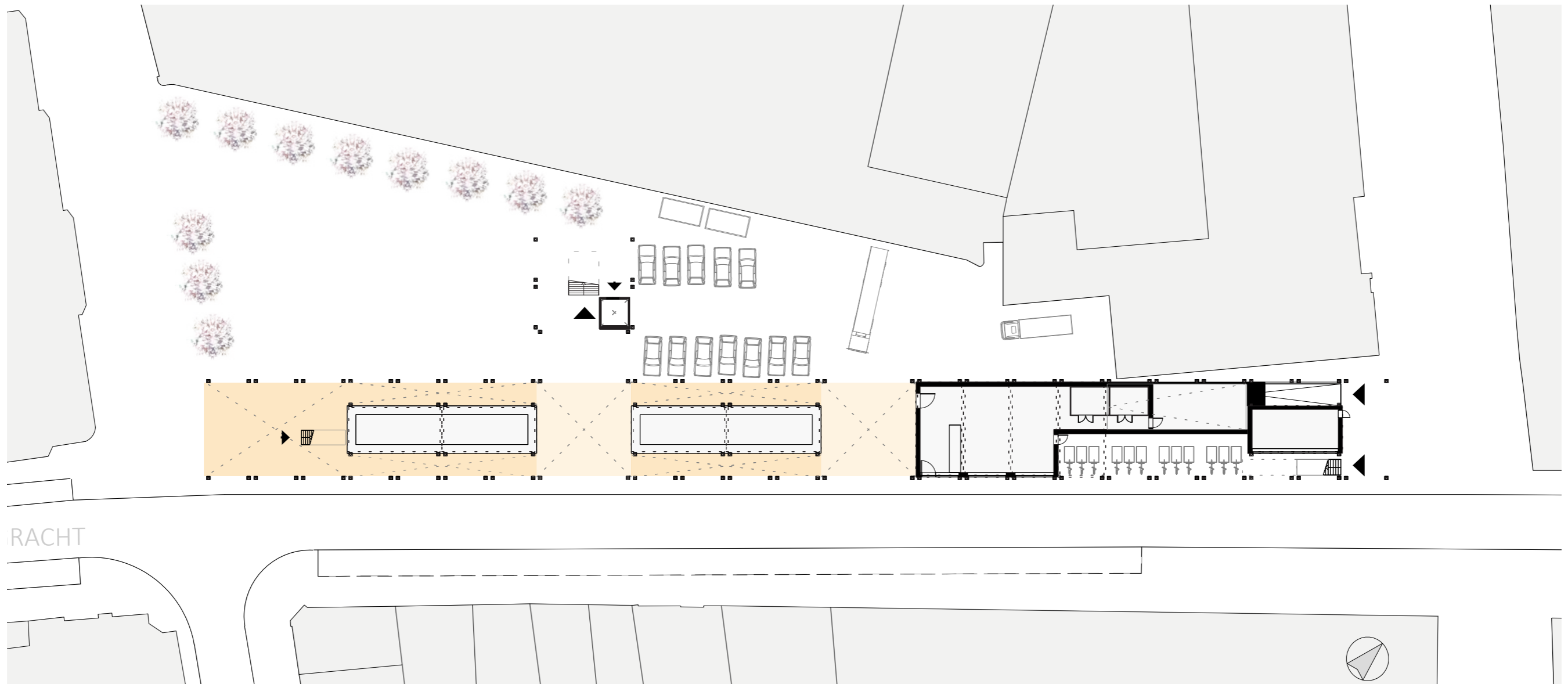
DESIGN

GROUND FLOOR PLAN



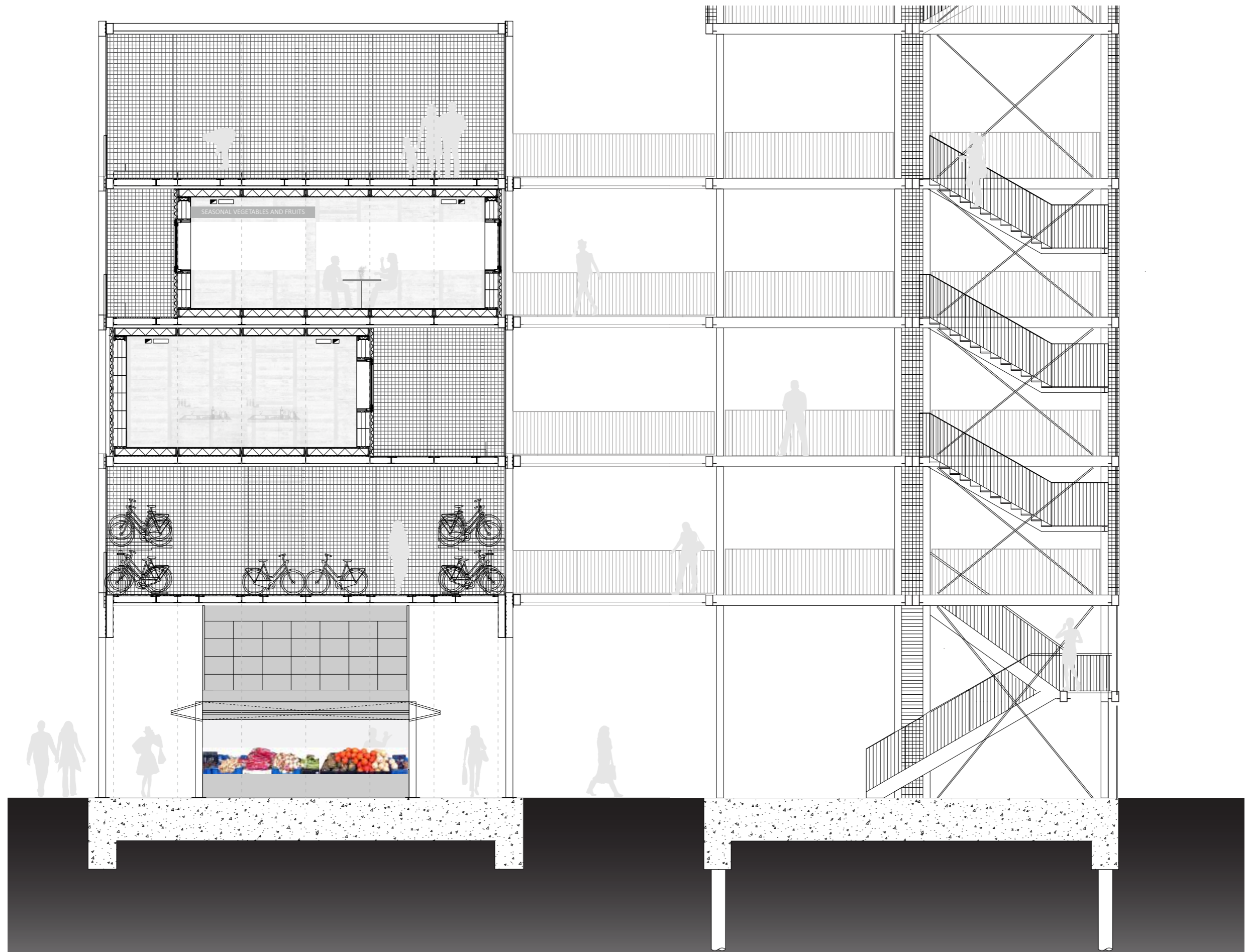
DESIGN

GROUND FLOOR PLAN



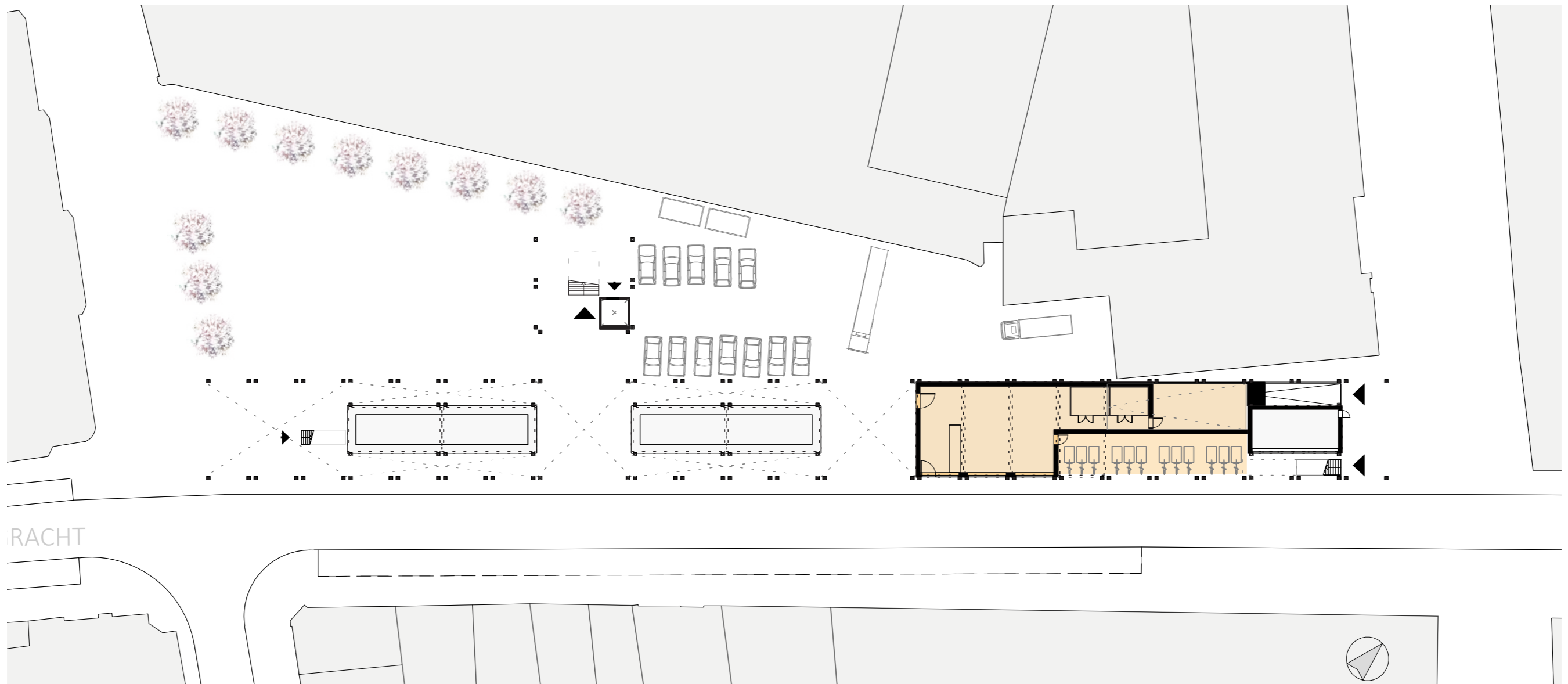
DESIGN

CROSS SECTION



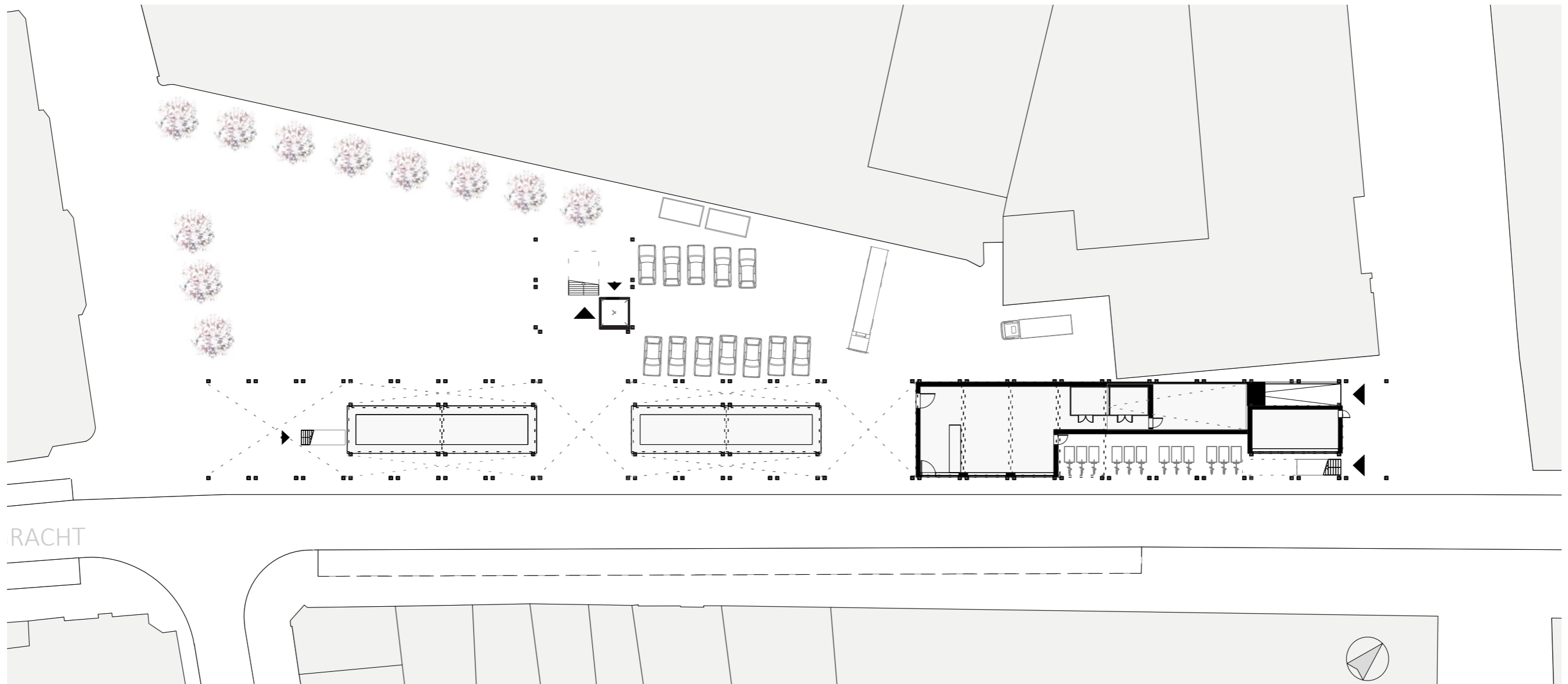
DESIGN

GROUND FLOOR PLAN



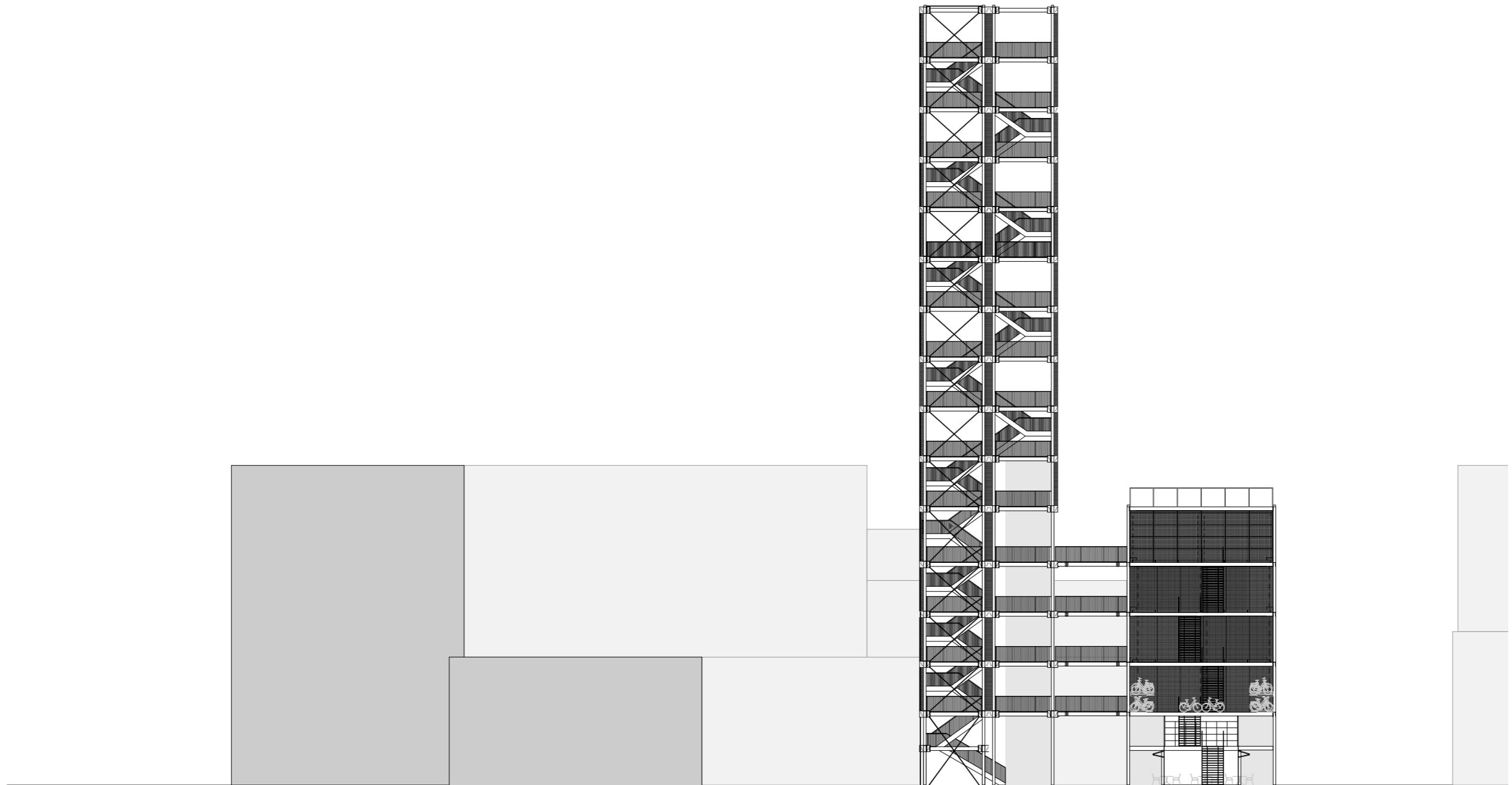
DESIGN

GROUND FLOOR PLAN



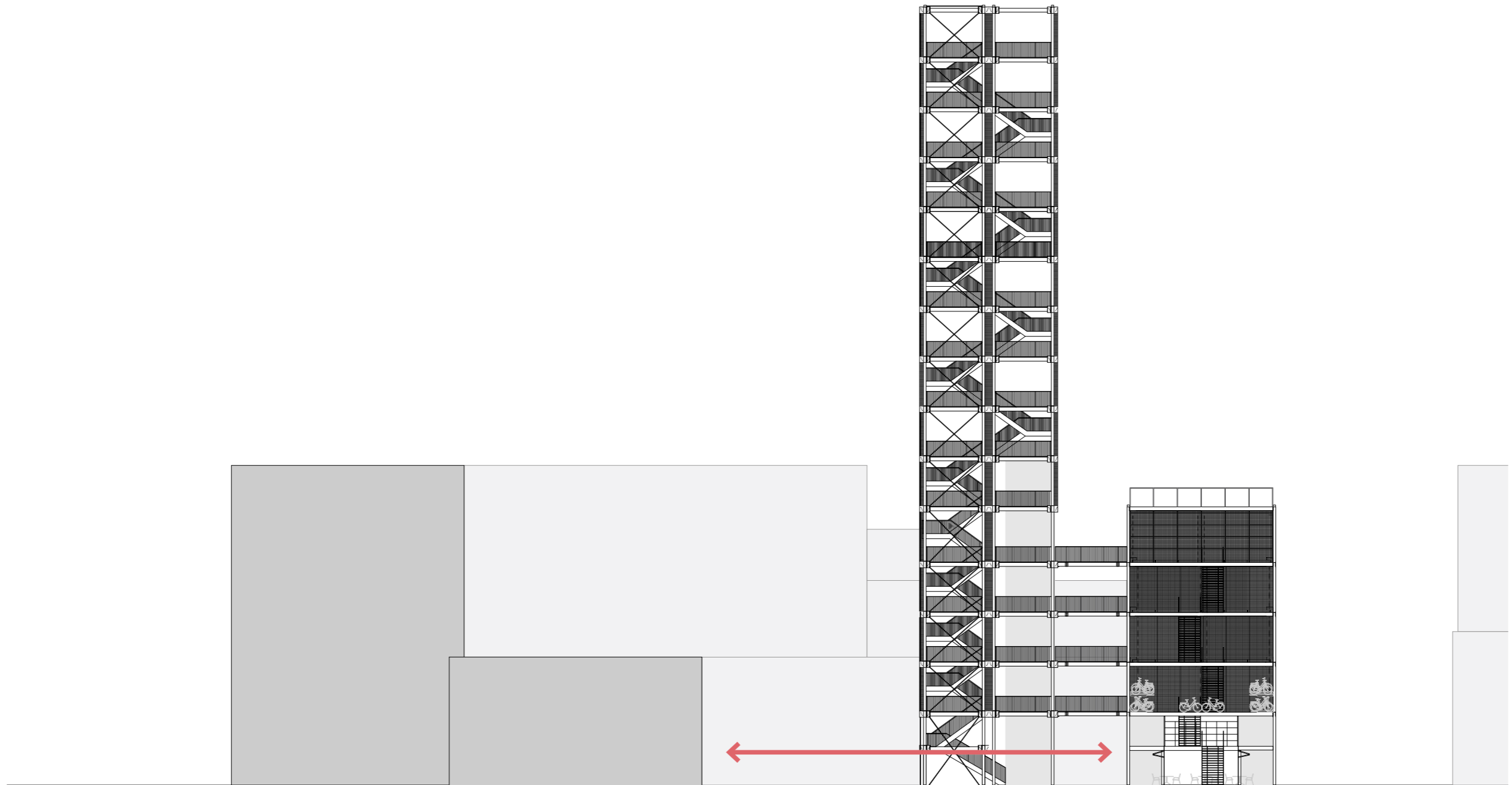
DESIGN

SOUTH WEST ELEVATION



DESIGN

SOUTH WEST ELEVATION



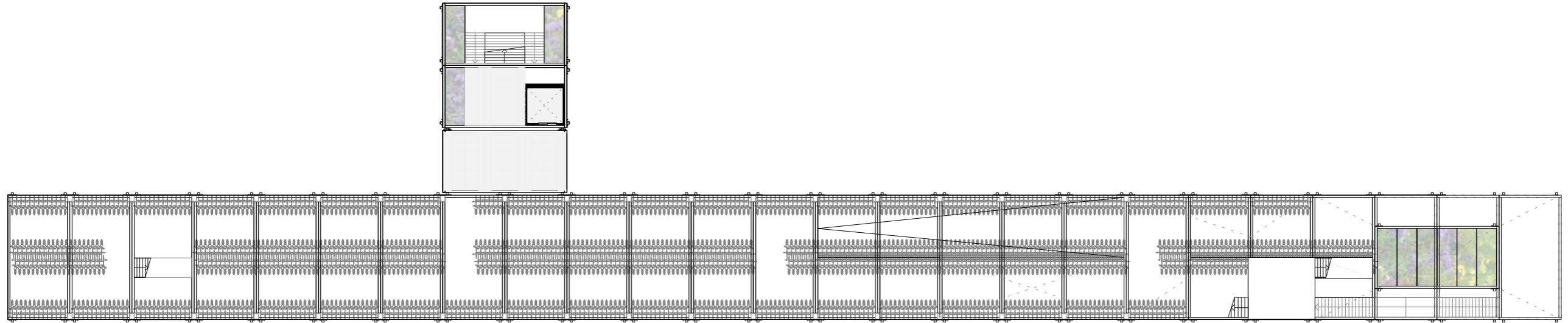
DESIGN

IMPRESSION



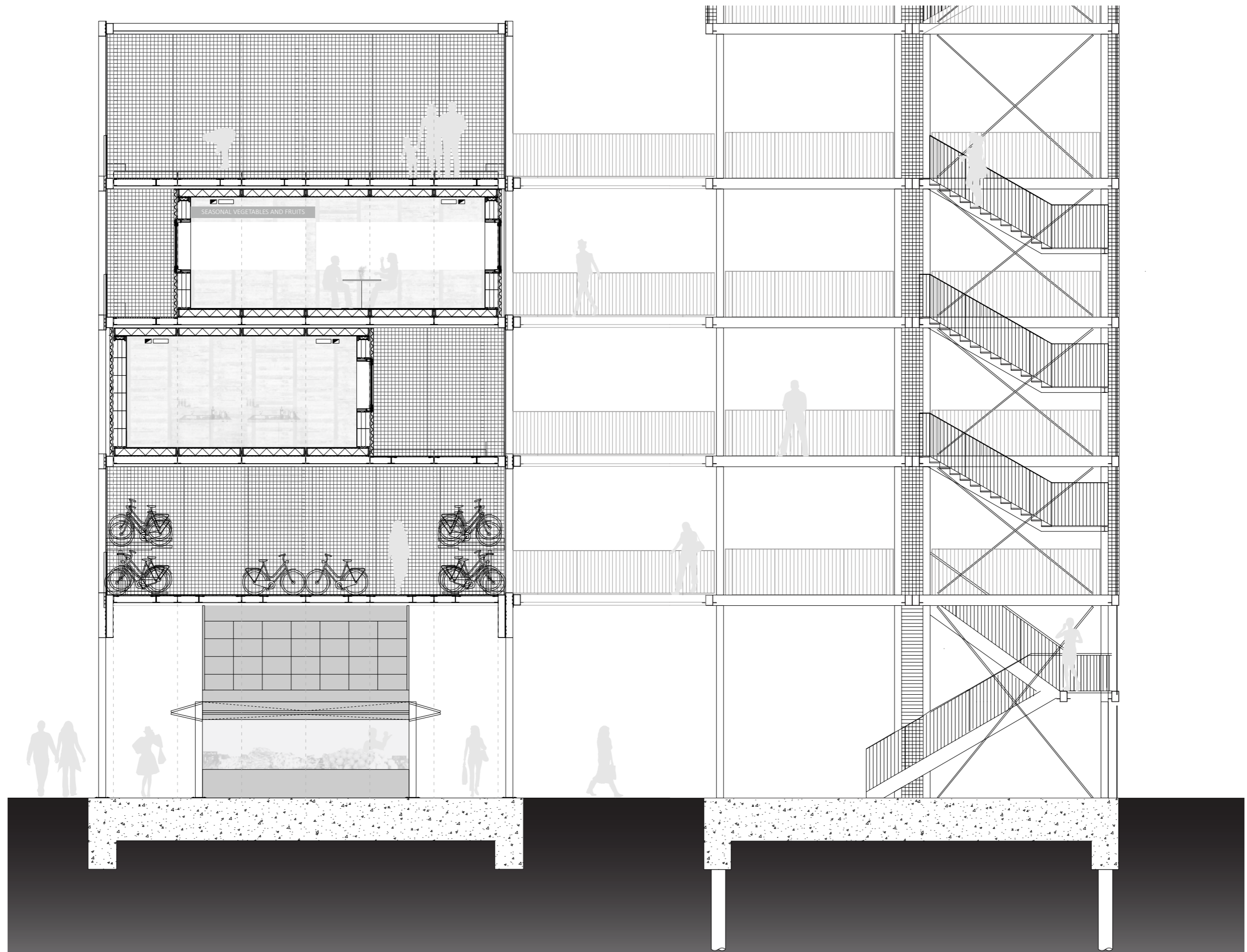
DESIGN

FIRST FLOOR PLAN



DESIGN

CROSS SECTION



DESIGN

IMPRESSION



DESIGN

SECOND FLOOR PLAN



DESIGN

IMPRESSION



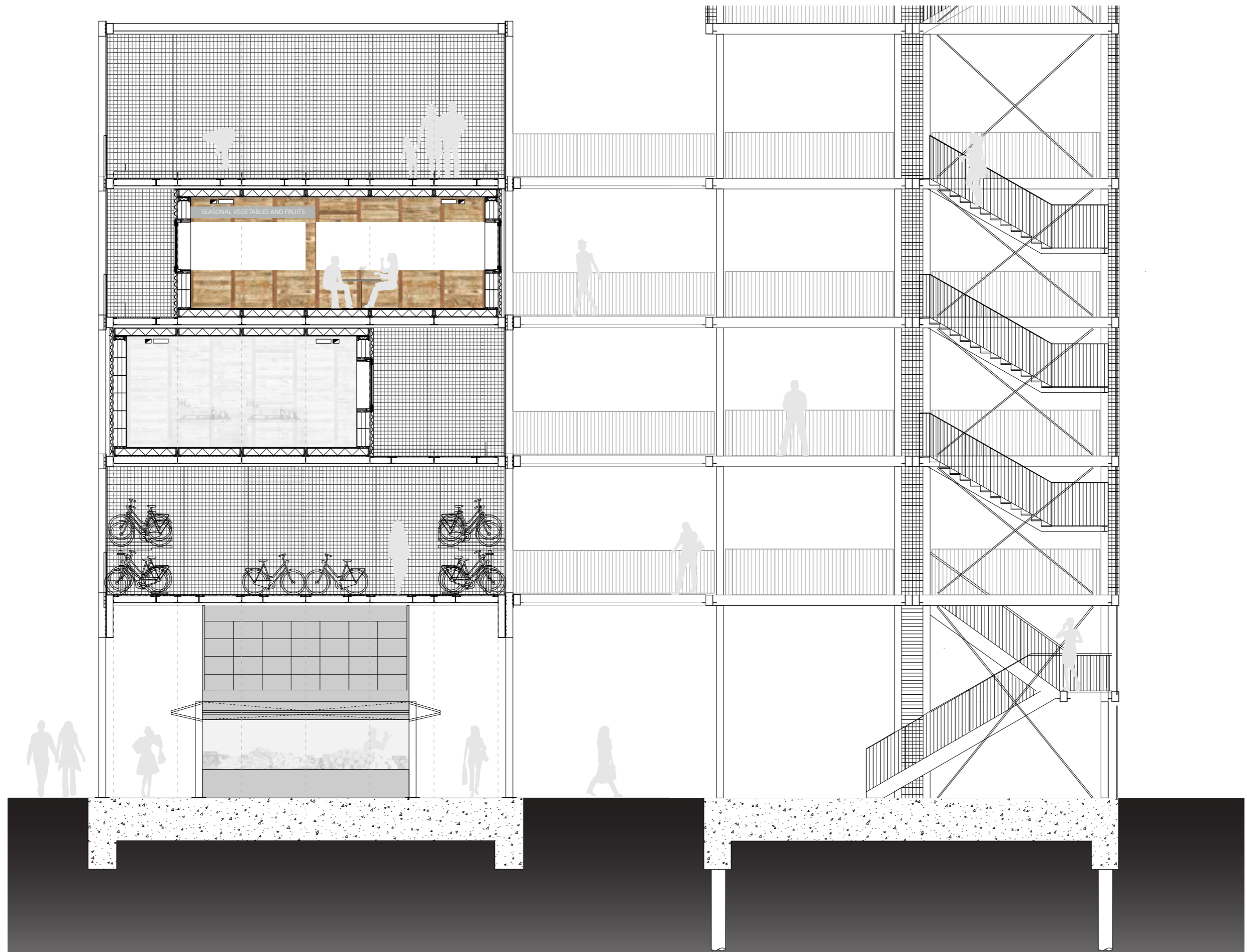
DESIGN

THIRD FLOOR PLAN



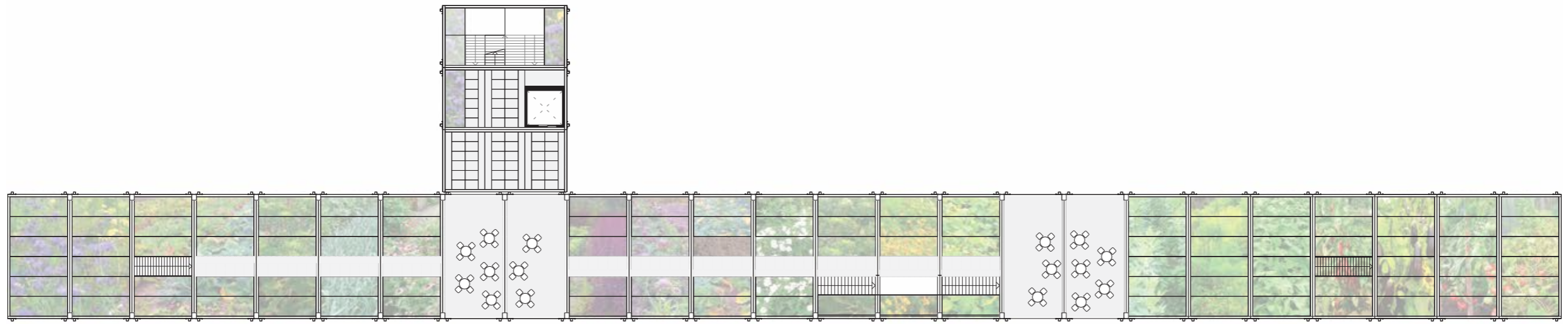
DESIGN

CROSS SECTION



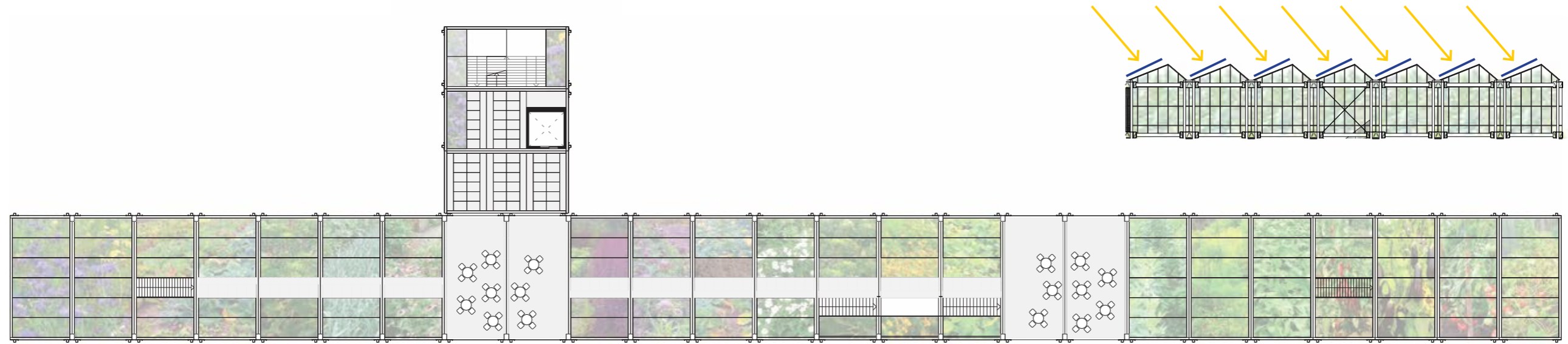
DESIGN

FOURTH FLOOR PLAN



DESIGN

FOURTH FLOOR PLAN



300 M2
35.000 KWH / YEAR

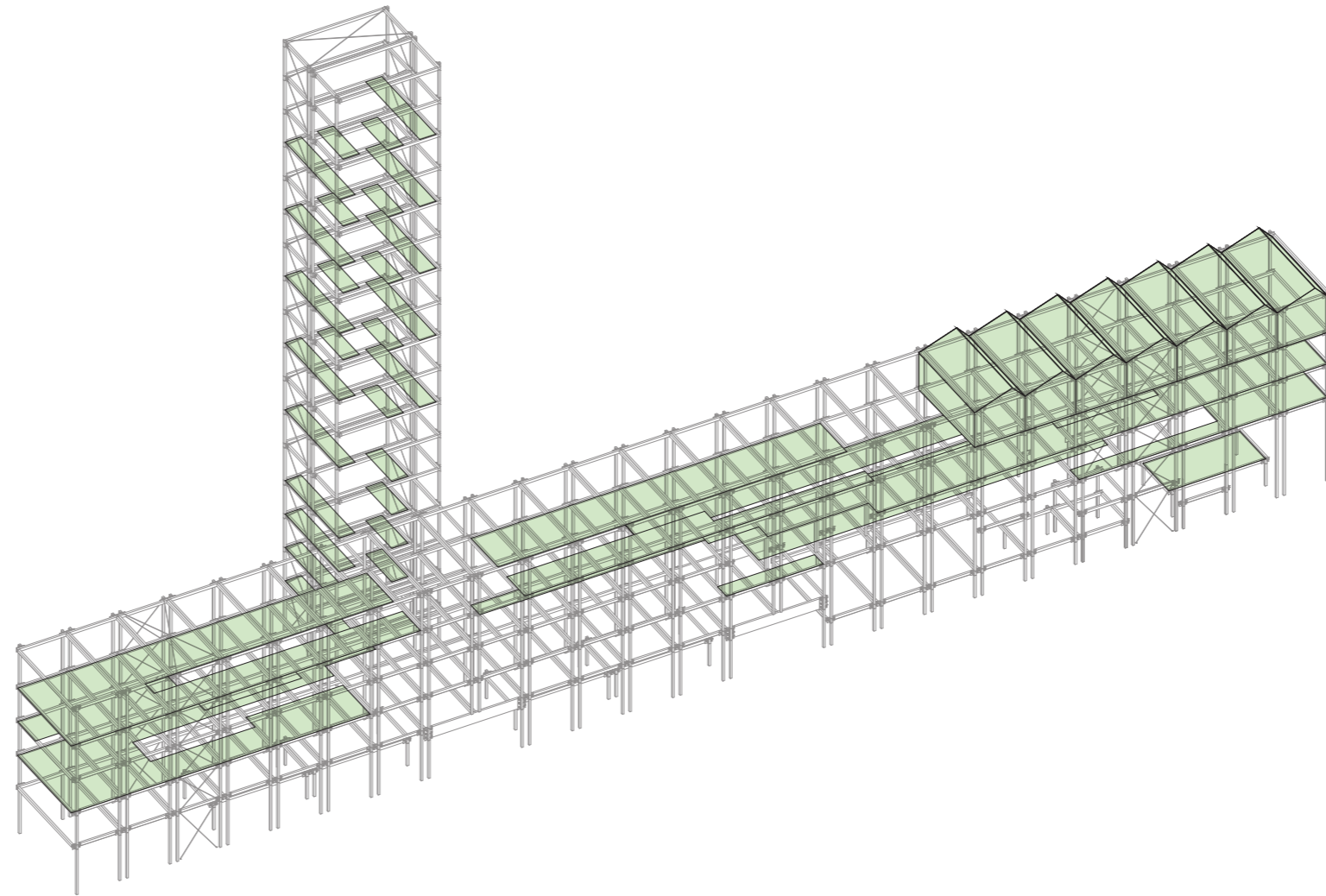
DESIGN

IMPRESSION



DESIGN

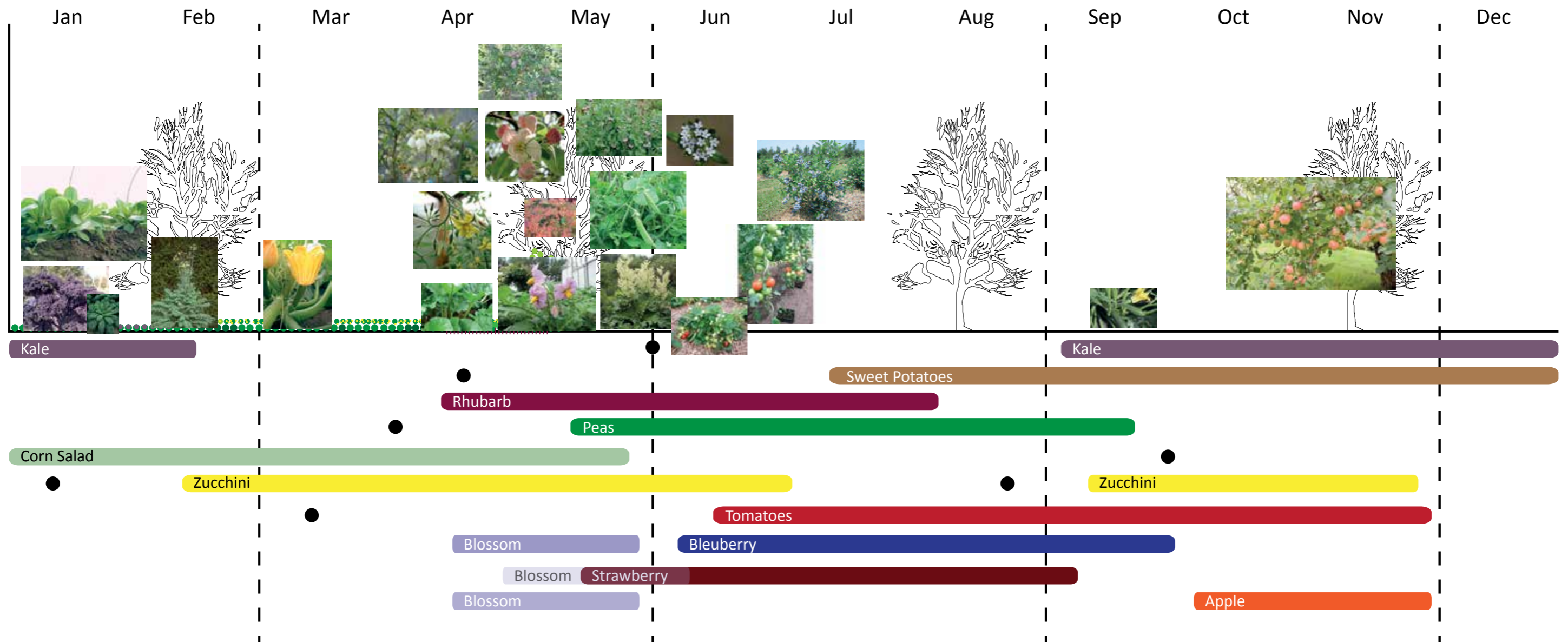
CULTIVATION GROUND



2.500 M2

DESIGN

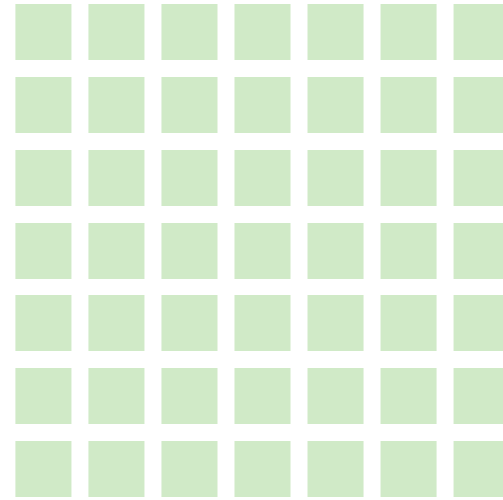
PLANT GROWTH INDICATION



CONSTRUCTION

CONSTRUCTION

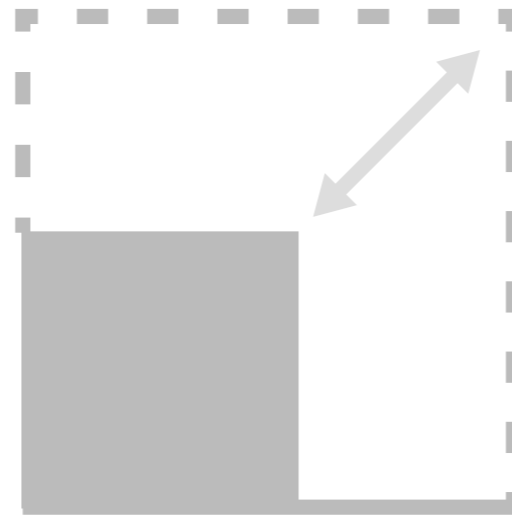
GENERIC SYSTEM



DIVIDED

CONSTRUCTION

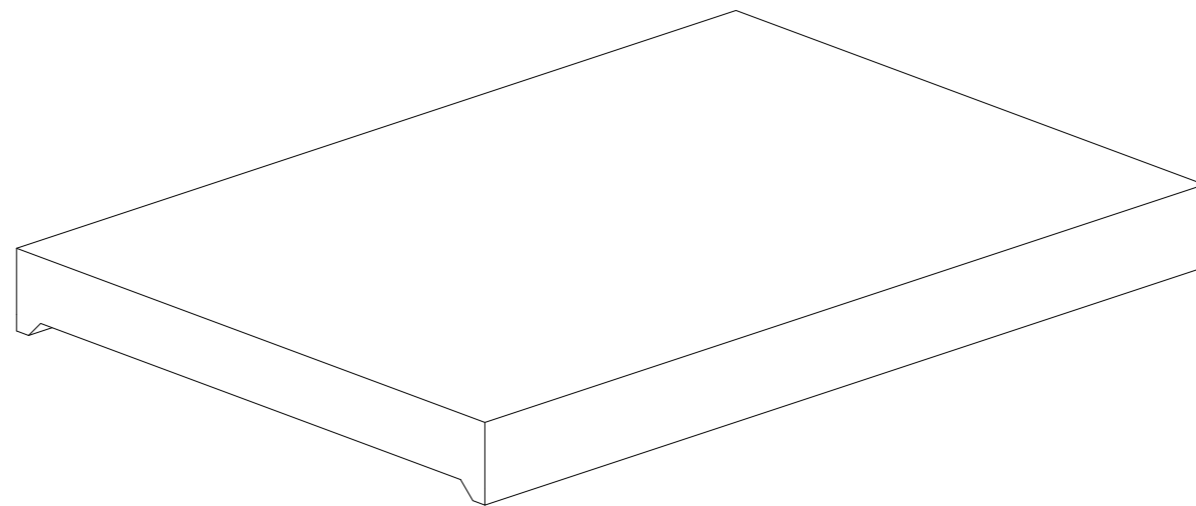
CONCEPT



HORIZONTAL VS VERTICAL

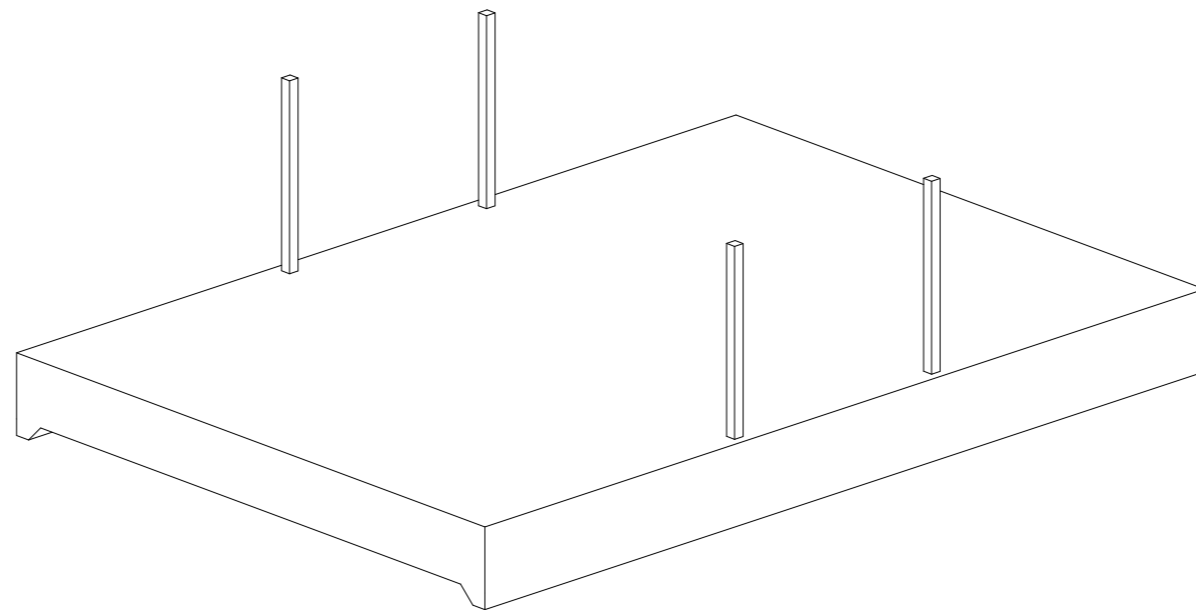
CONSTRUCTION

BUILDING SEQUENCE



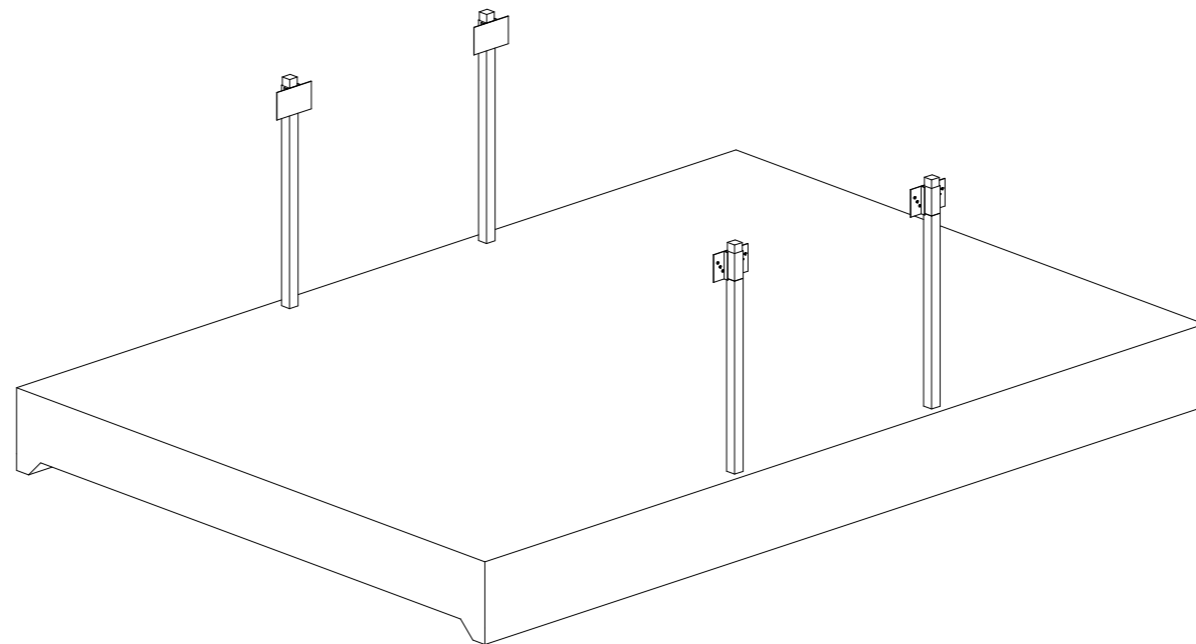
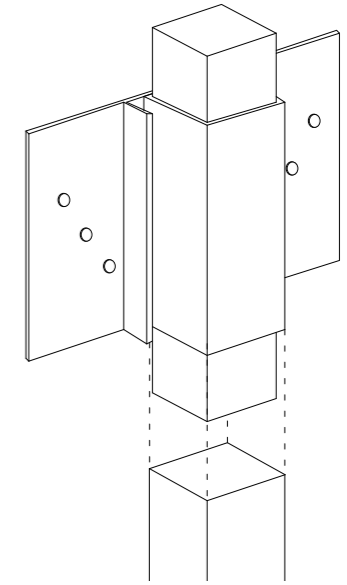
CONSTRUCTION

BUILDING SEQUENCE



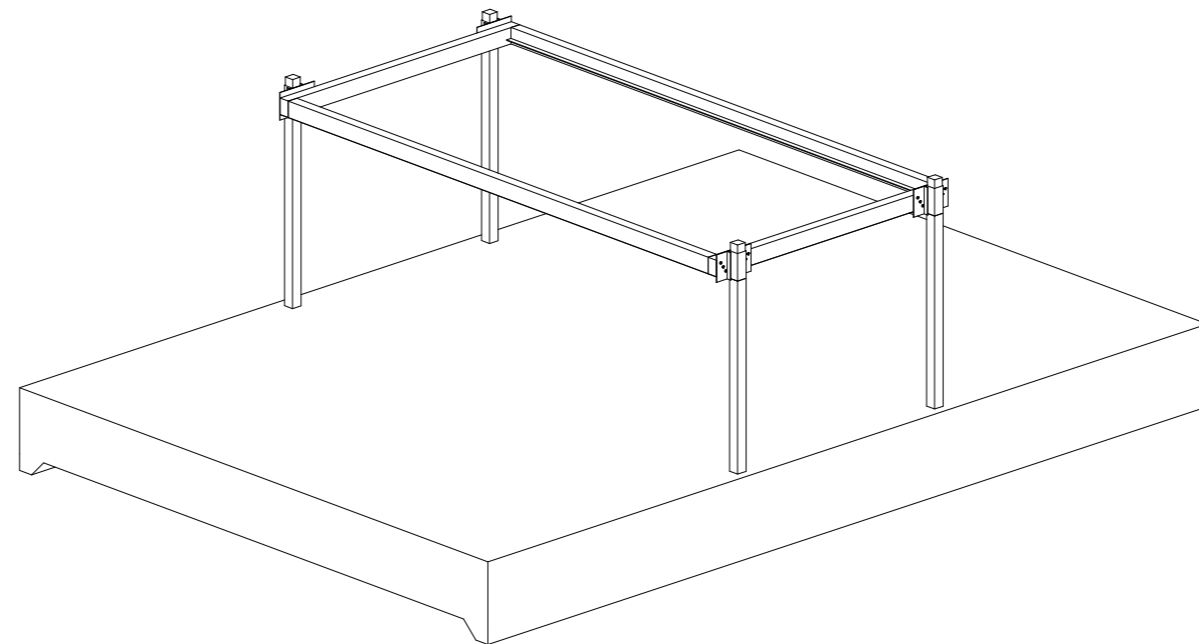
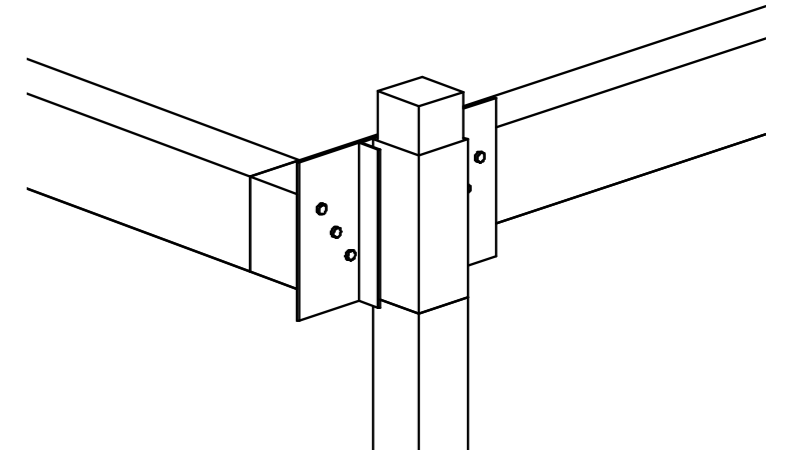
CONSTRUCTION

BUILDING SEQUENCE



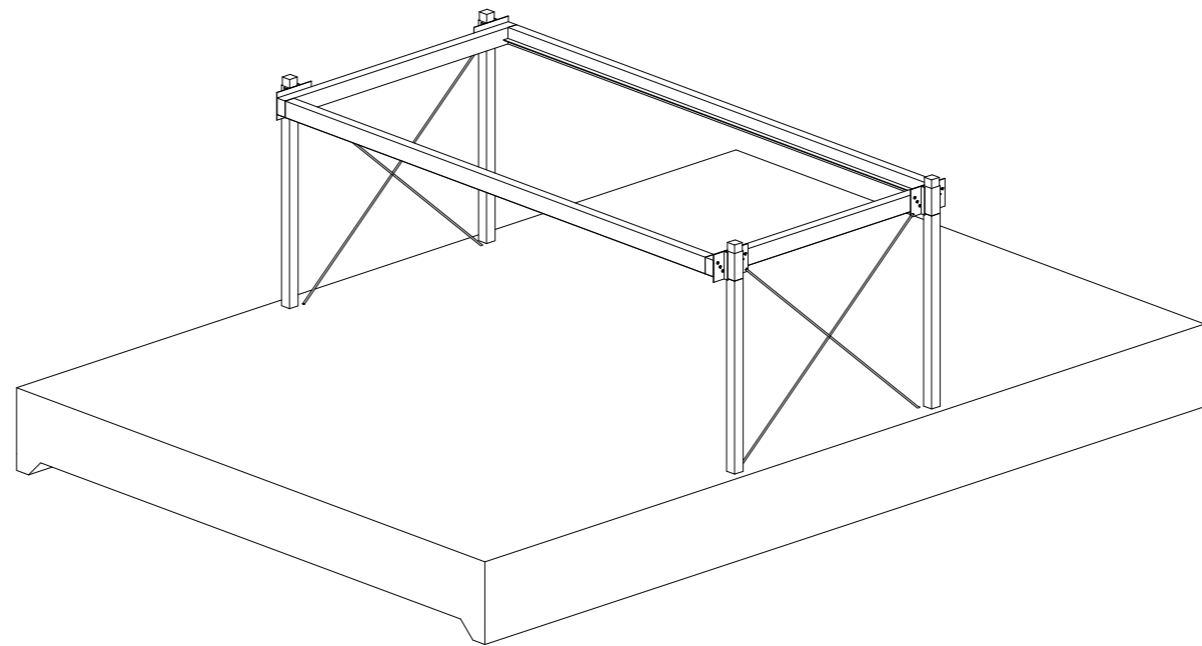
CONSTRUCTION

BUILDING SEQUENCE



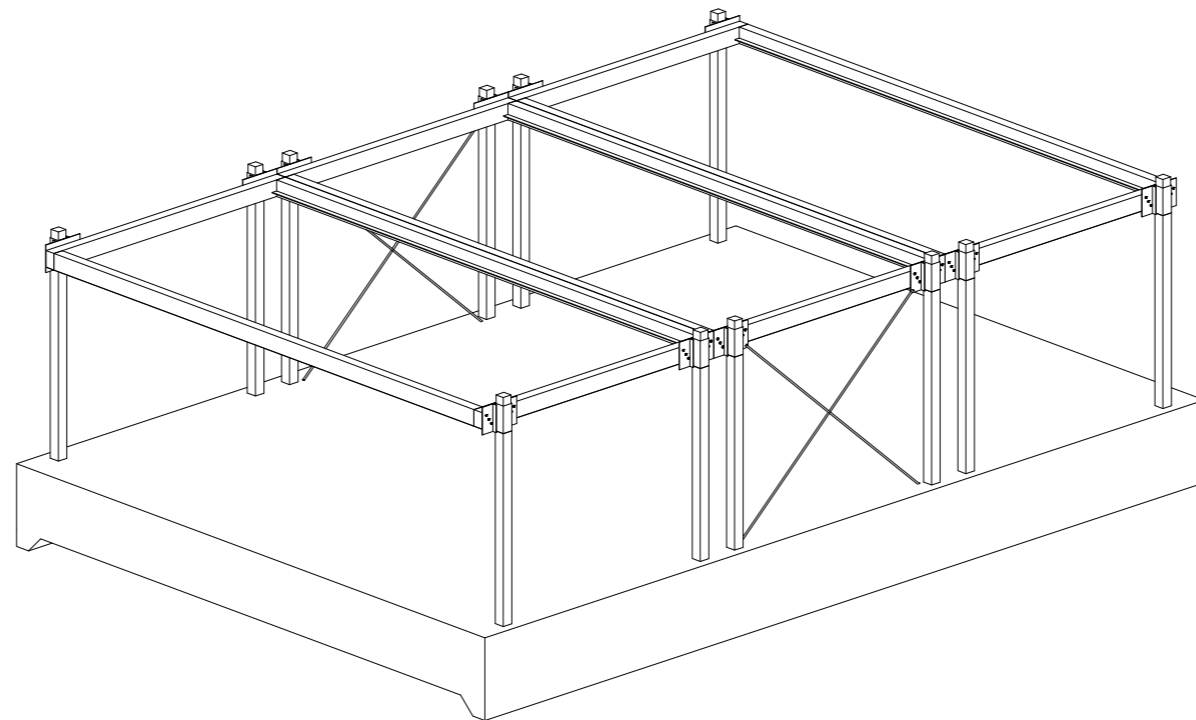
CONSTRUCTION

BUILDING SEQUENCE



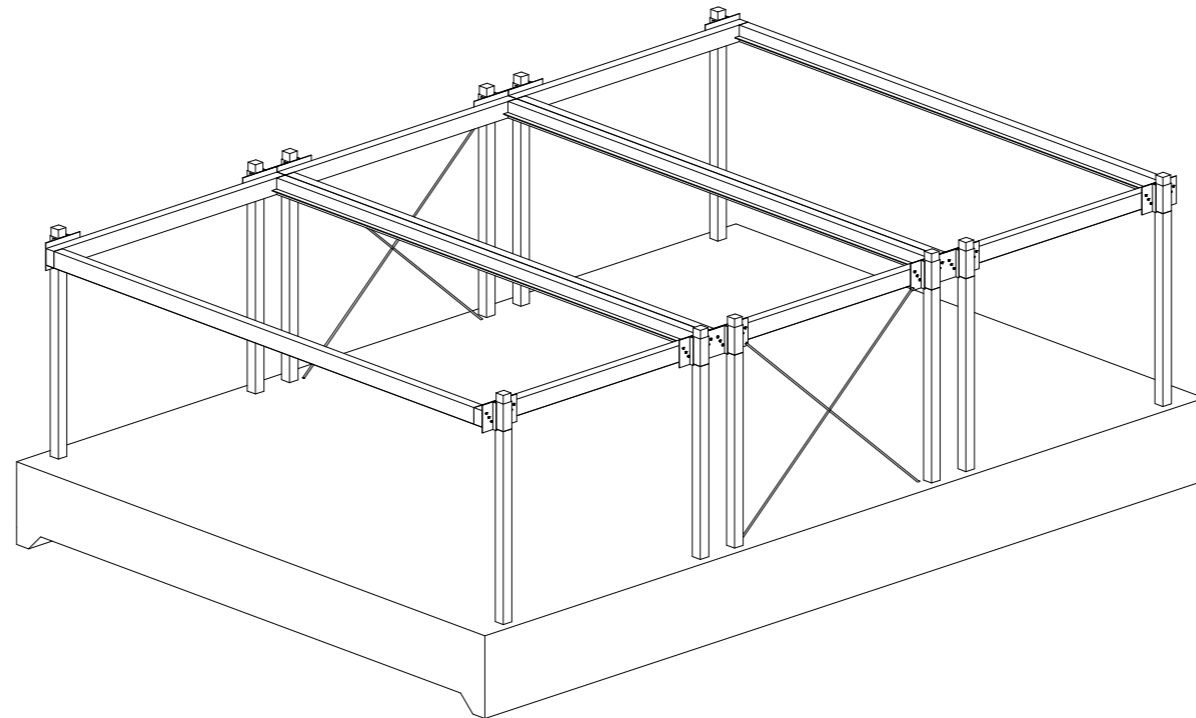
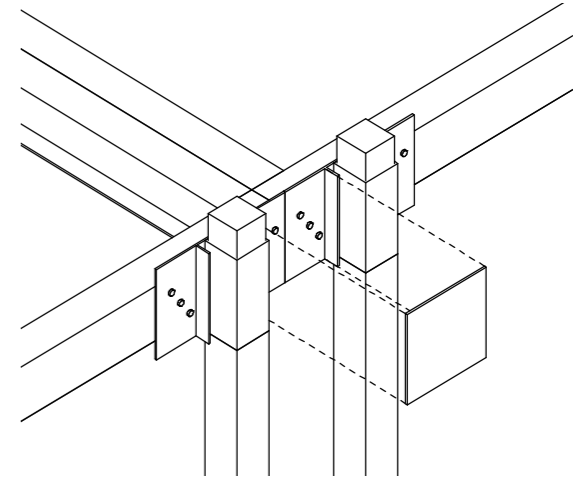
CONSTRUCTION

BUILDING SEQUENCE



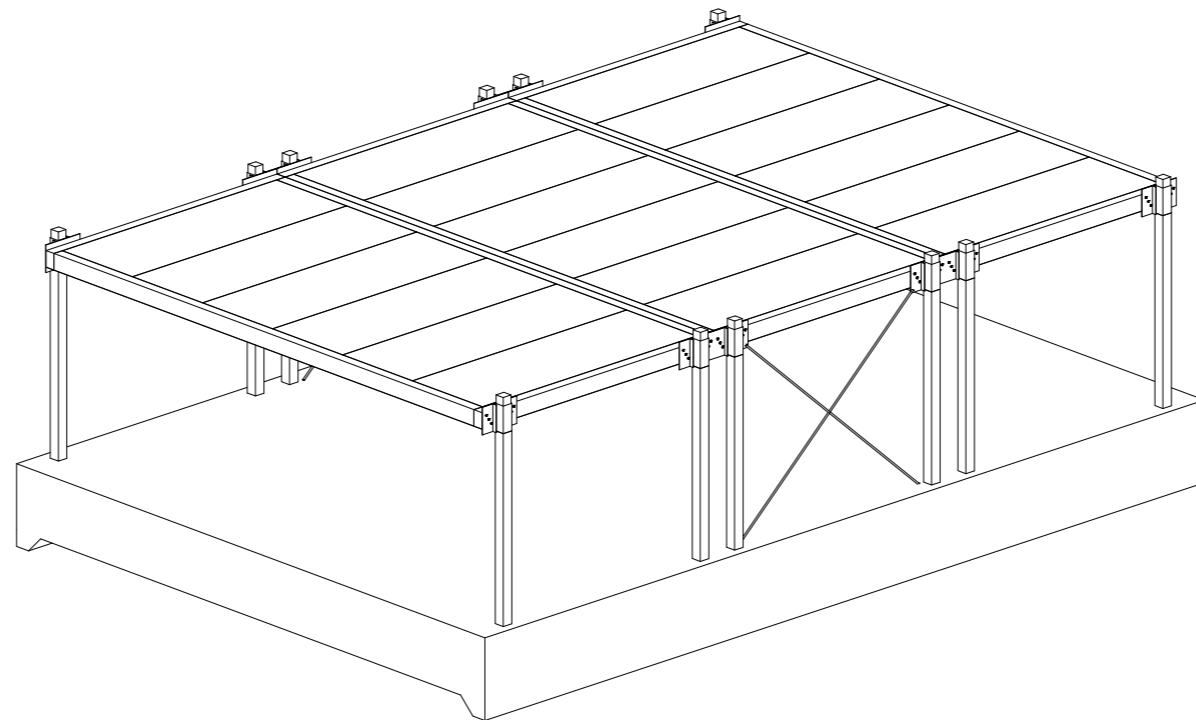
CONSTRUCTION

BUILDING SEQUENCE



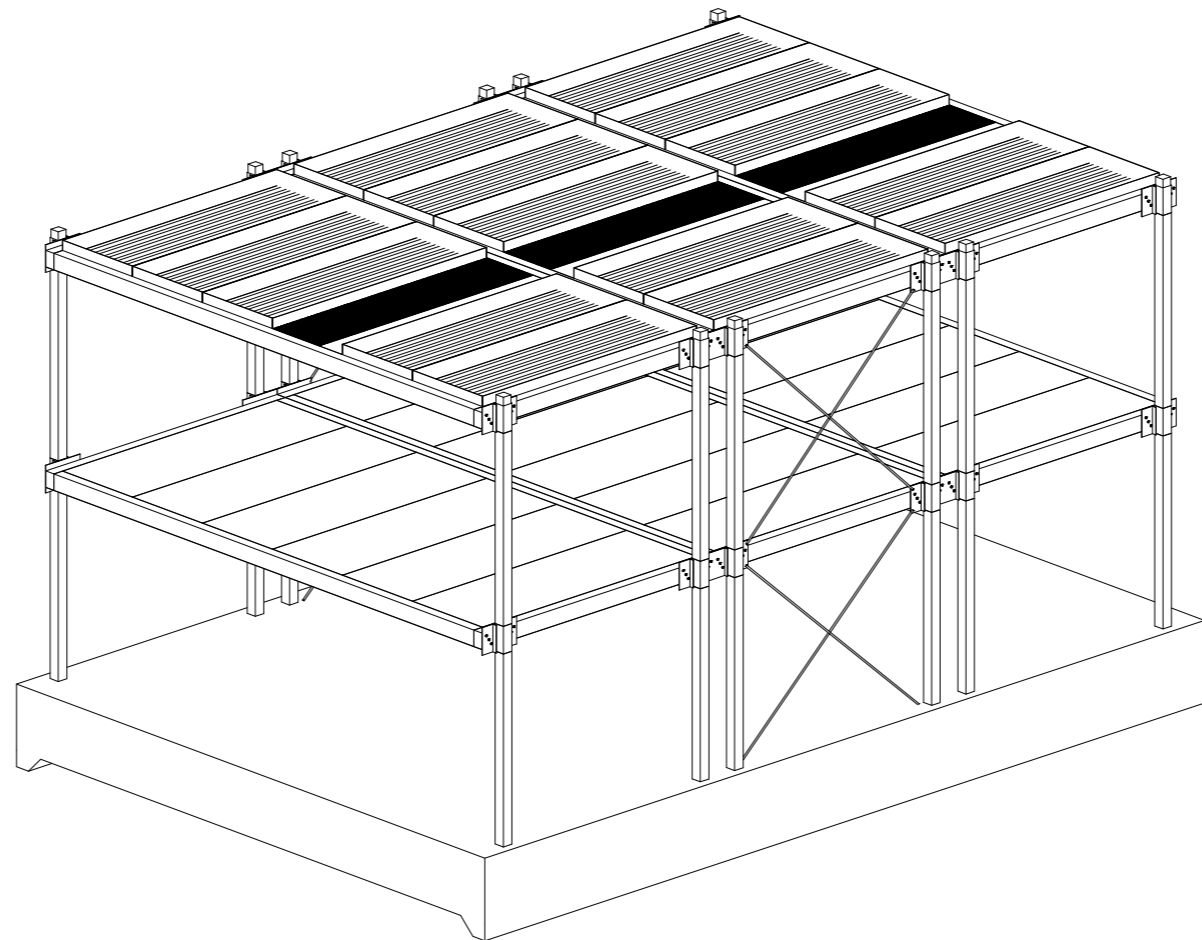
CONSTRUCTION

BUILDING SEQUENCE



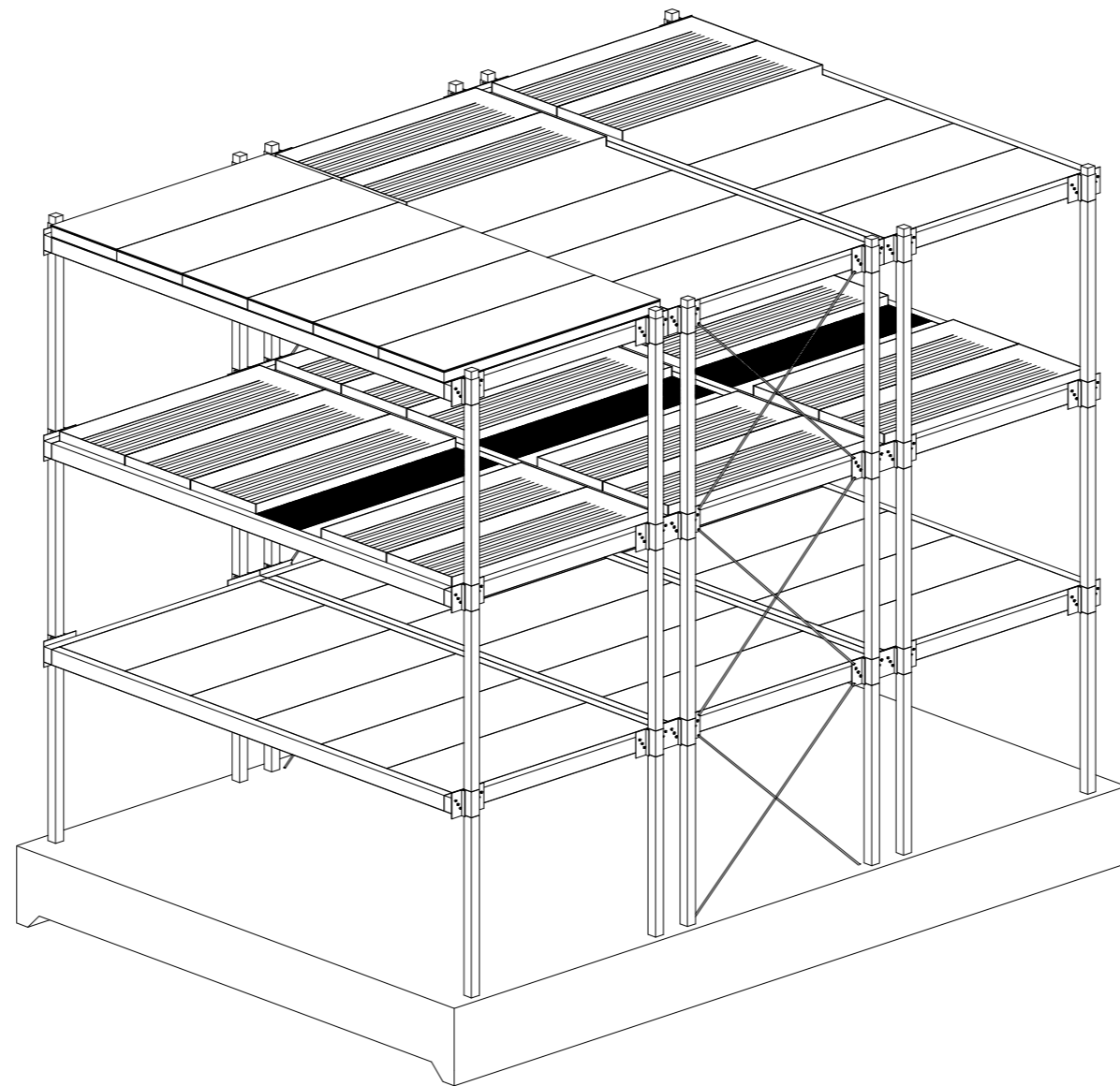
CONSTRUCTION

BUILDING SEQUENCE



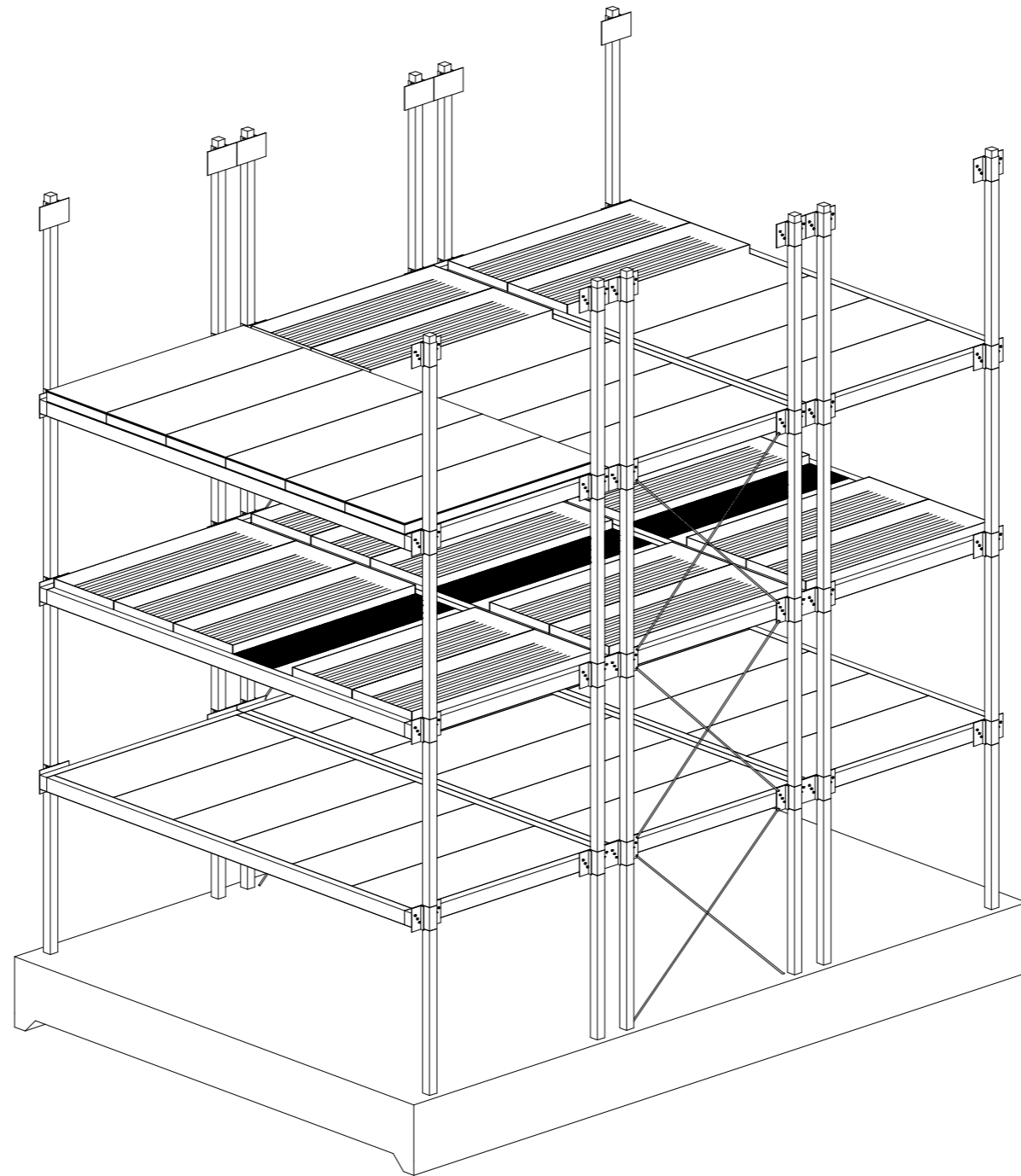
CONSTRUCTION

BUILDING SEQUENCE



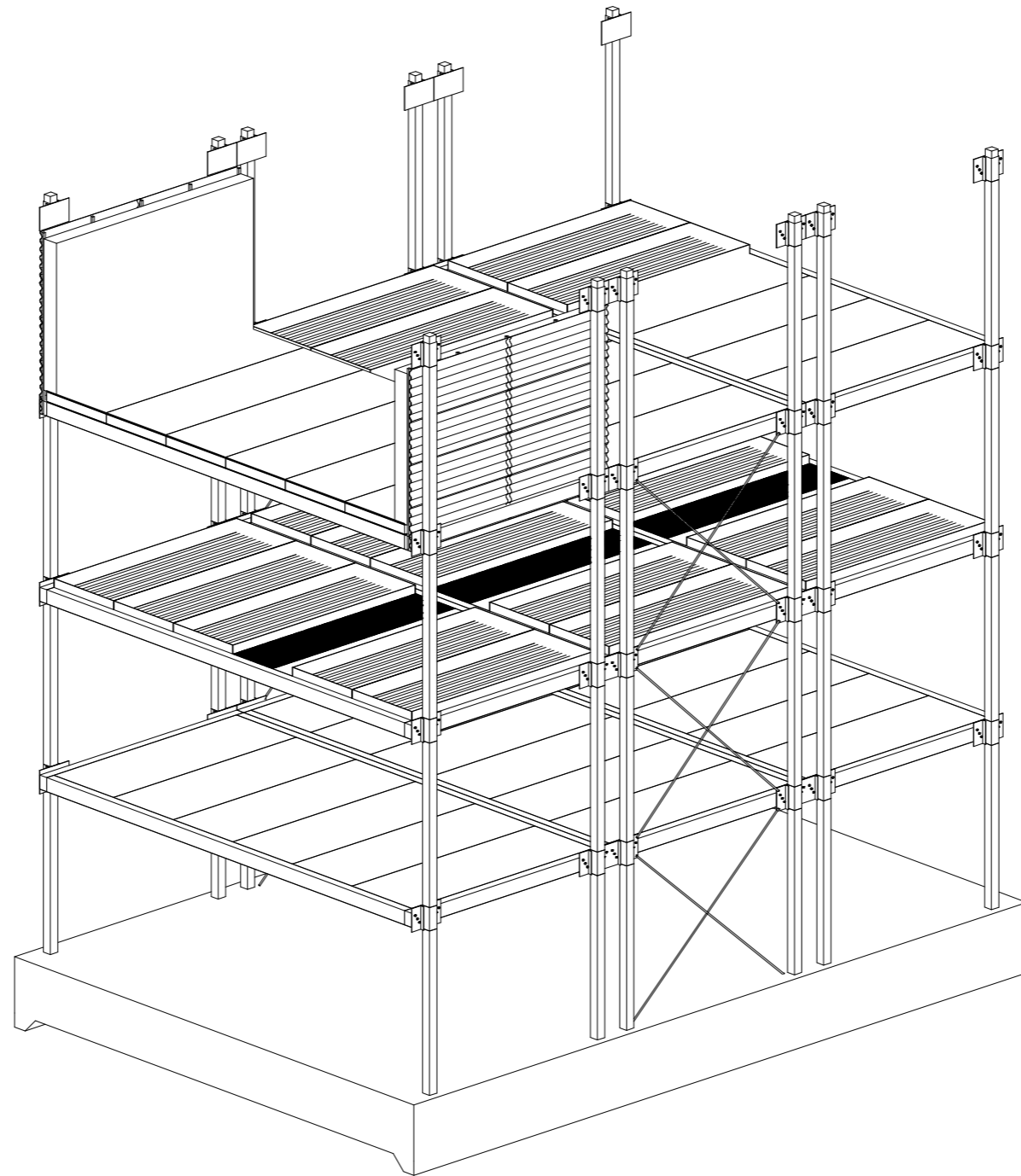
CONSTRUCTION

BUILDING SEQUENCE



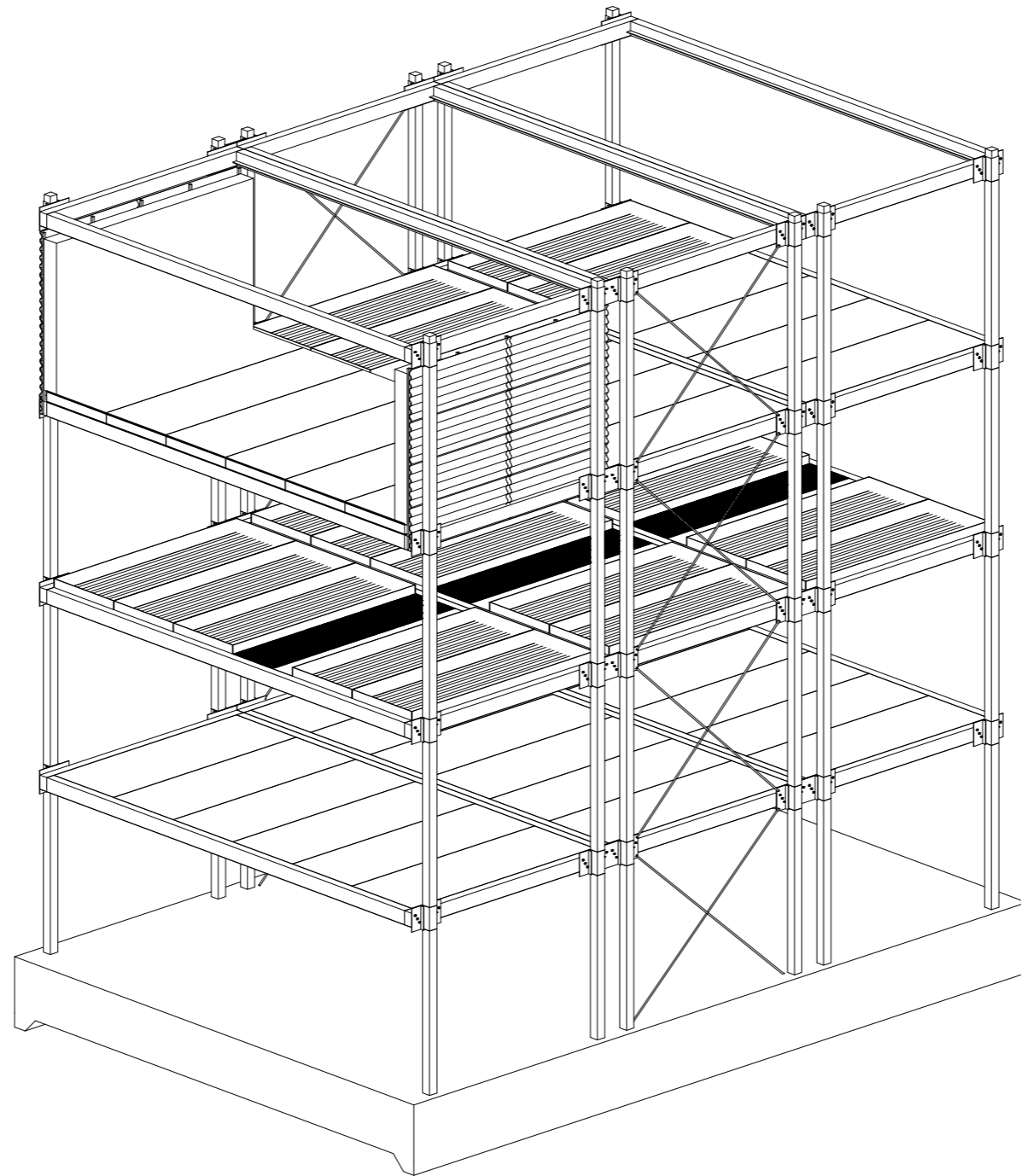
CONSTRUCTION

BUILDING SEQUENCE



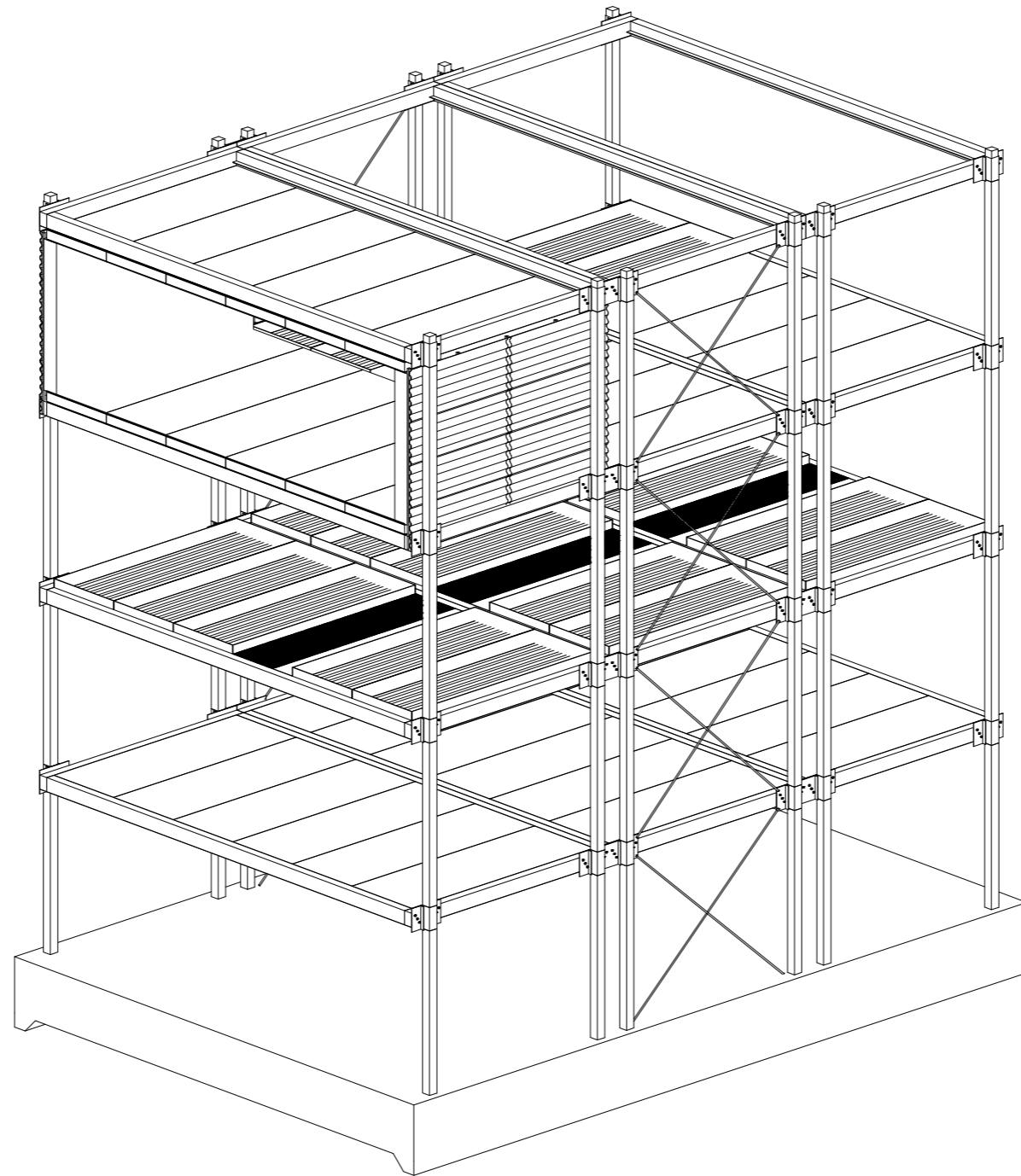
CONSTRUCTION

BUILDING SEQUENCE



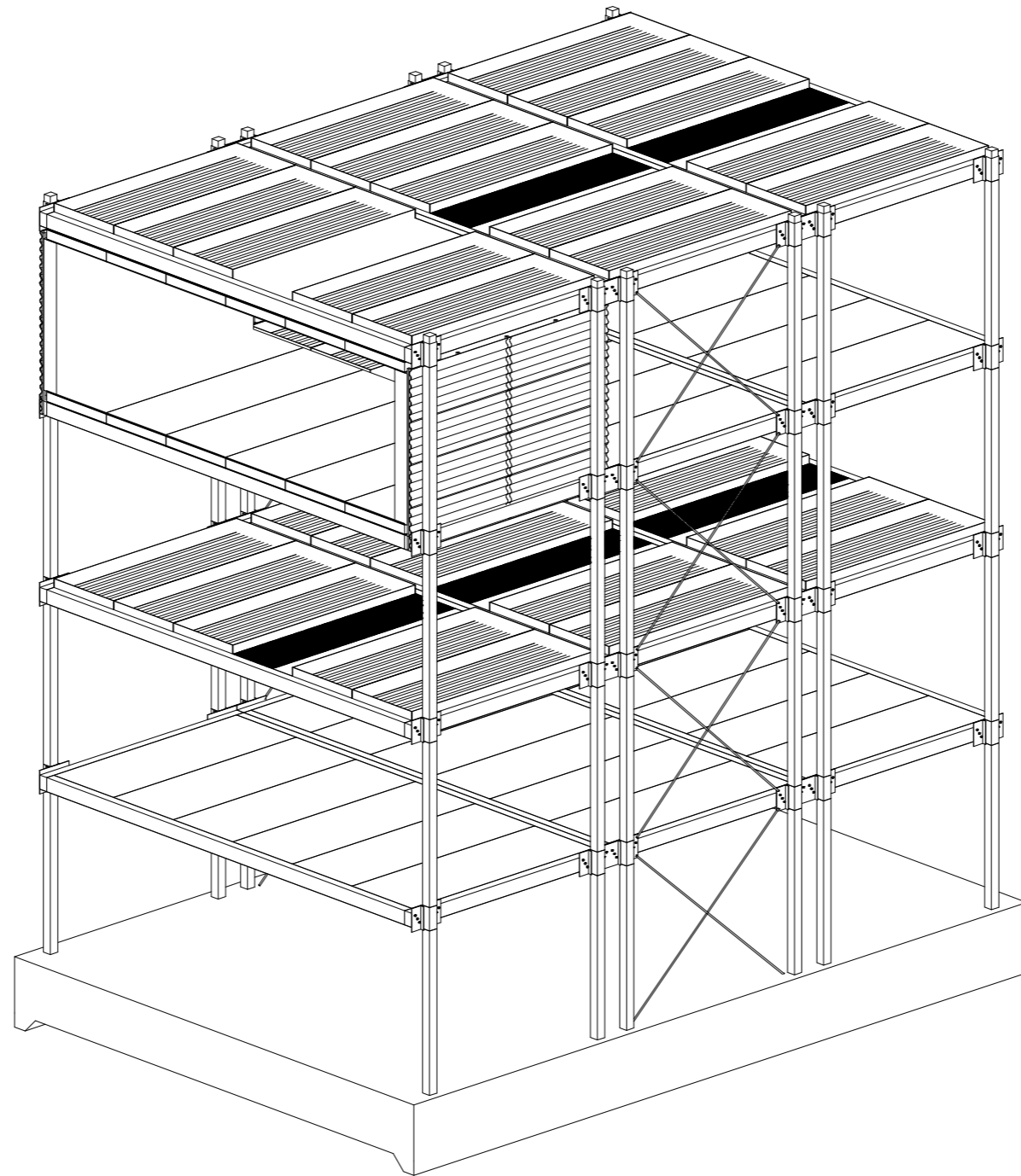
CONSTRUCTION

BUILDING SEQUENCE



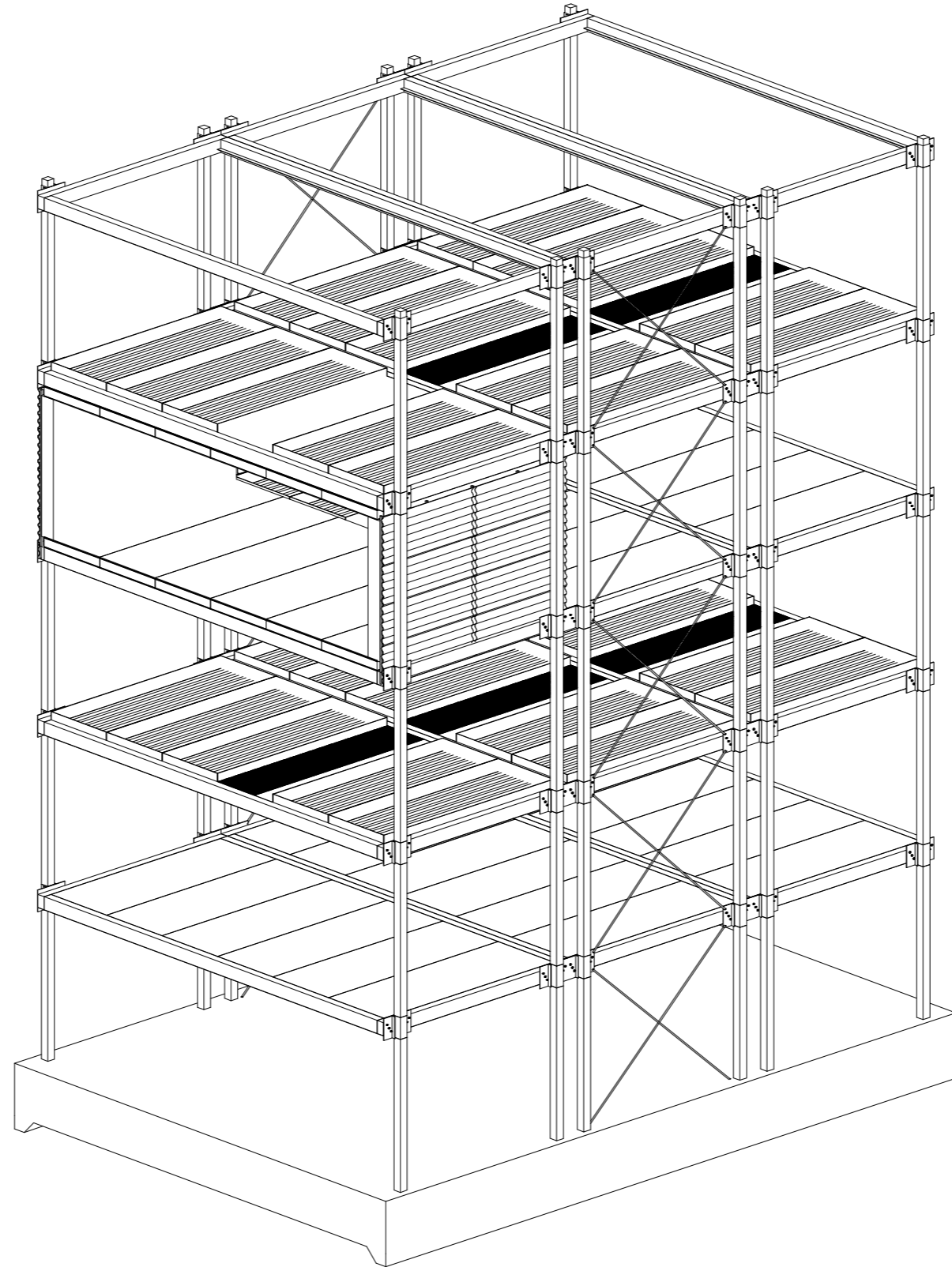
CONSTRUCTION

BUILDING SEQUENCE



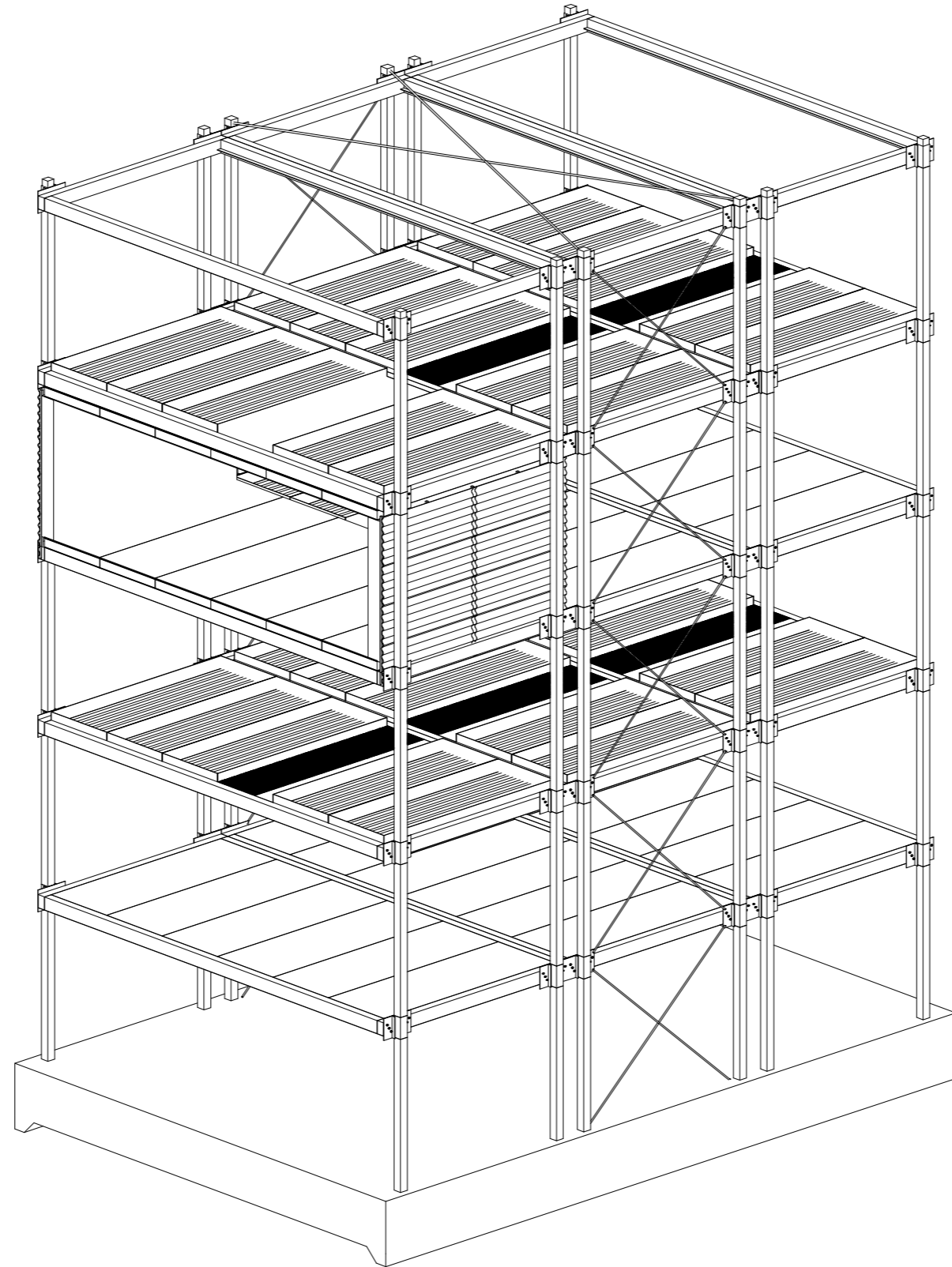
CONSTRUCTION

BUILDING SEQUENCE



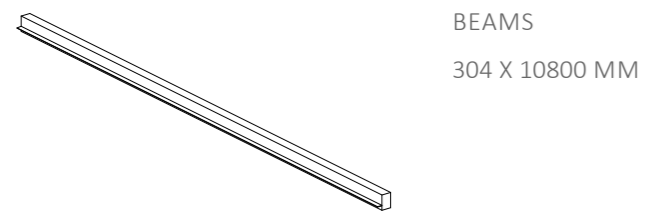
CONSTRUCTION

BUILDING SEQUENCE

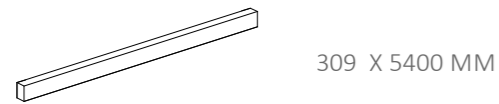


CONSTRUCTION

ORDER OF MAGNITUDE



BEAMS
304 X 10800 MM



309 X 5400 MM

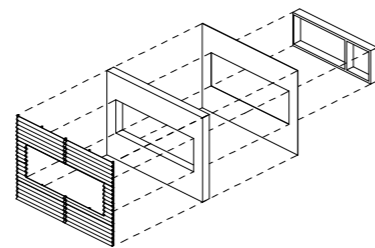


JOINTS
612 X

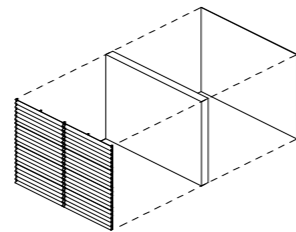


COLUMNS
52 X 2600 MM
312 X 3400 MM
108 X 4000 MM
52 X 5300 MM
36 X 6000 MM

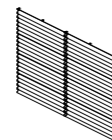
STRUCTURAL ELEMENTS



STRAW WITH GLASS



STRAW

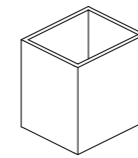


TRANSLUCENT CORRUGATED S

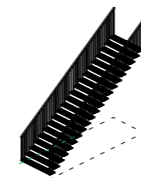


RAILINGS

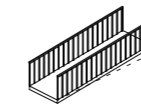
FACADE ELEMENTS



ELEVATOR
1

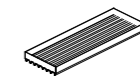


STAIRS
30



RAMPS
2

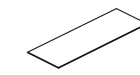
VERTICAL TRANSPORT



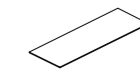
CULTIVATION
310



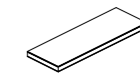
SLATTED GRID
155



CHECKERED PLATE
100



DOUGLAS
75



INSULATED
60

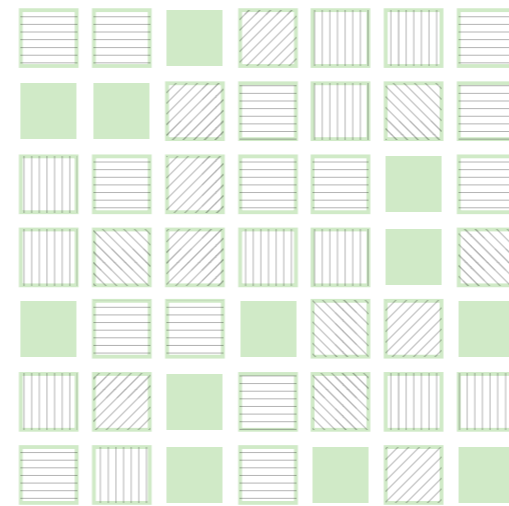


STRUCTURE
1000

FLOOR ELEMENTS

CONSTRUCTION

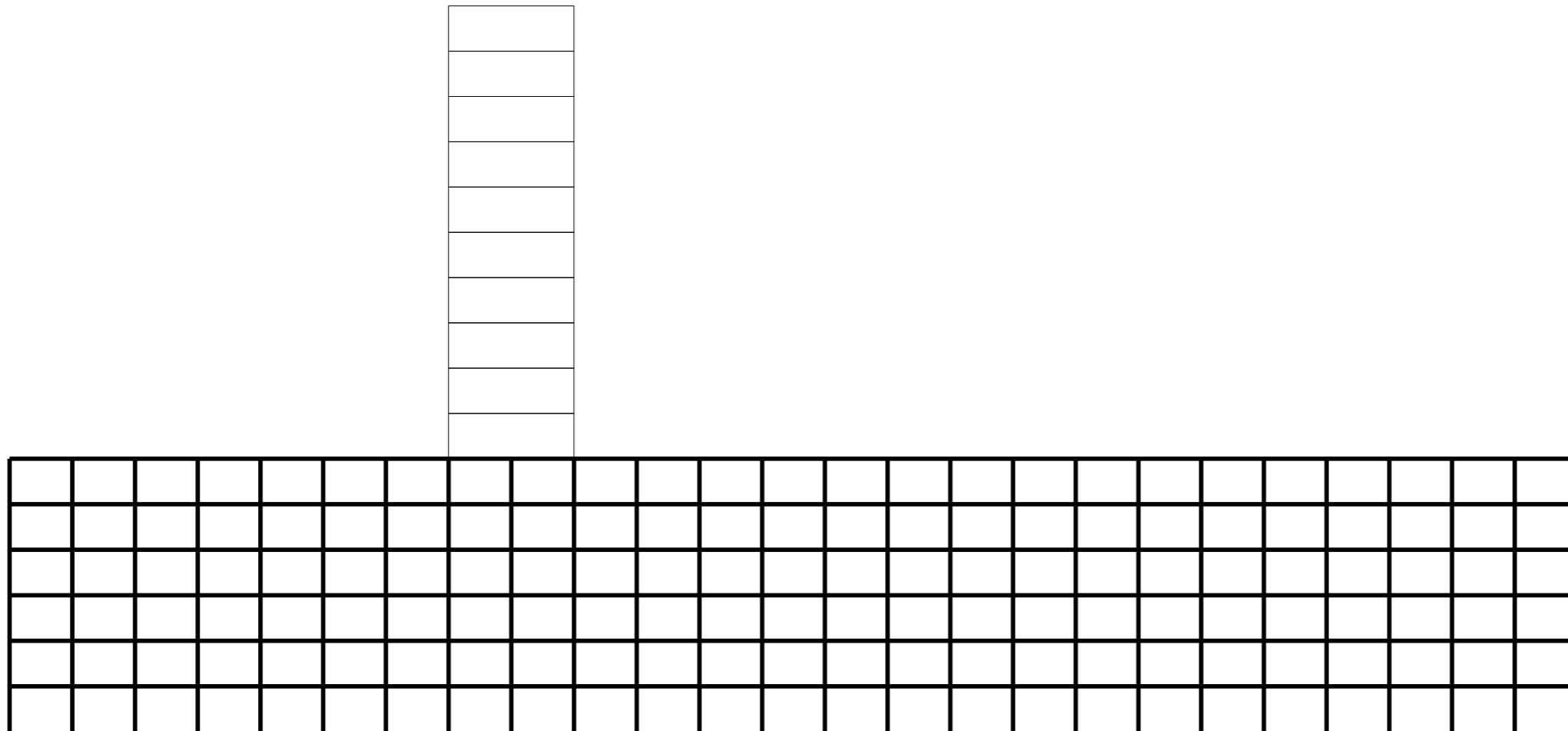
GENERIC SYSTEM



IDENTITY

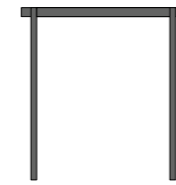
CONSTRUCTION

GENERIC TO SPECIFIC

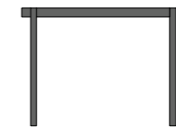


CONSTRUCTION

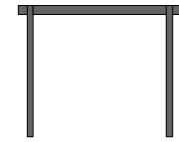
GENERIC TO SPECIFIC



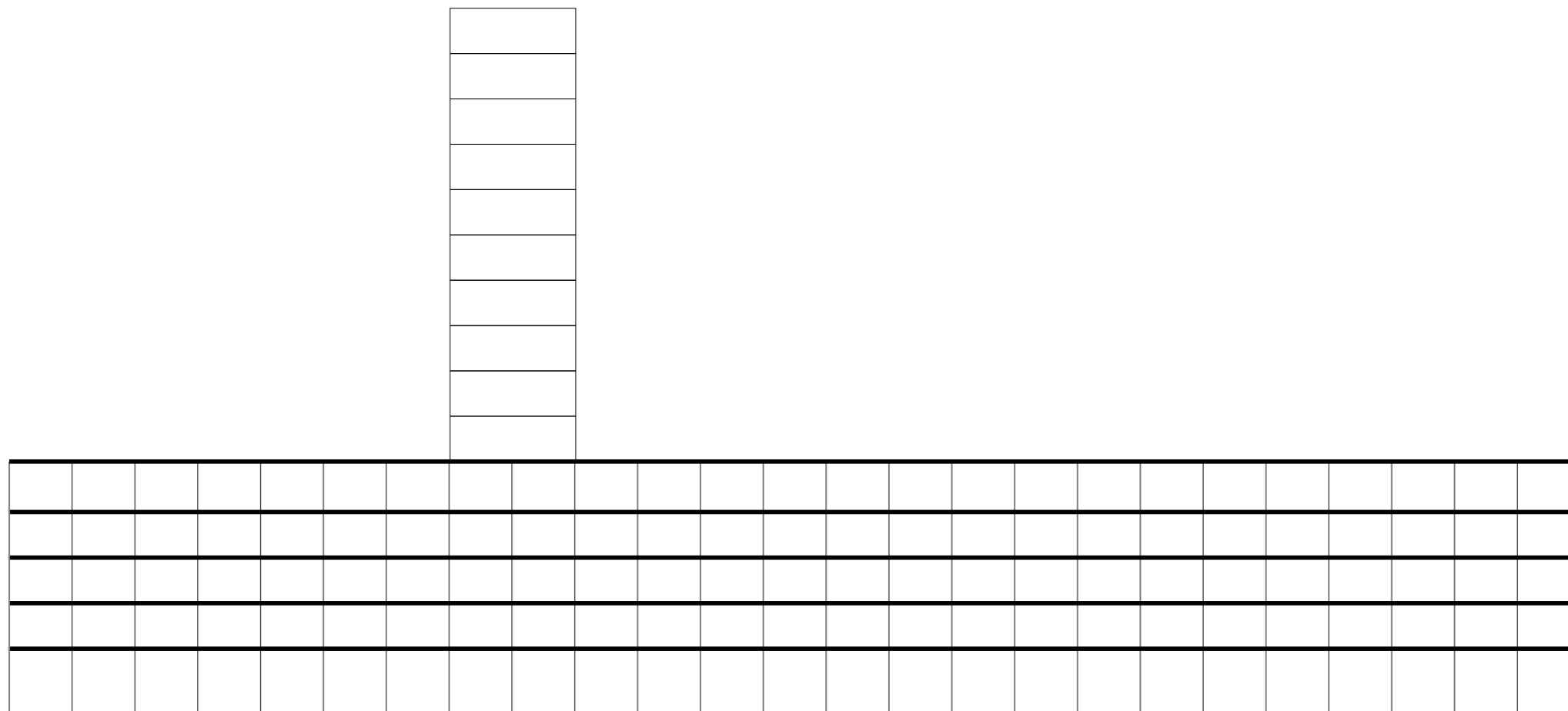
1:1



2:3

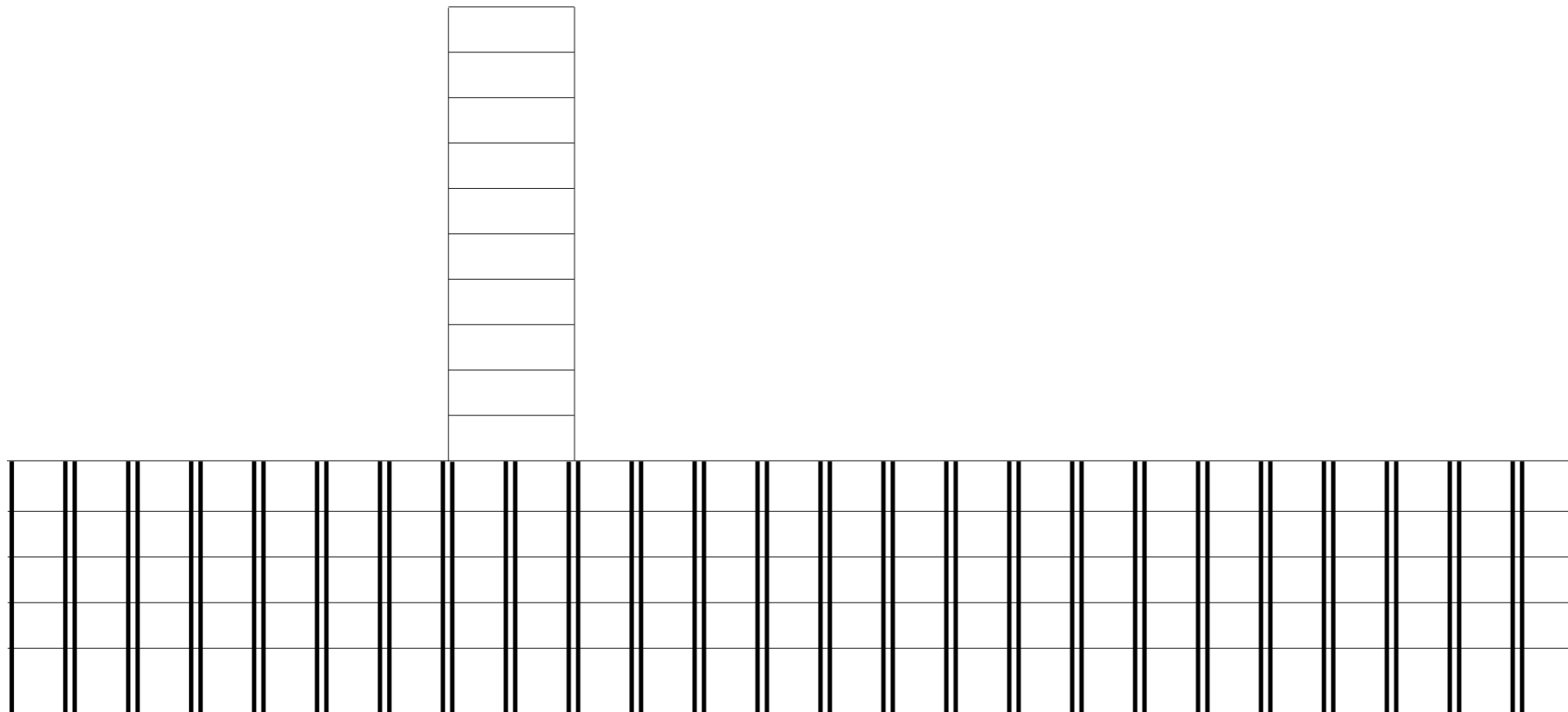
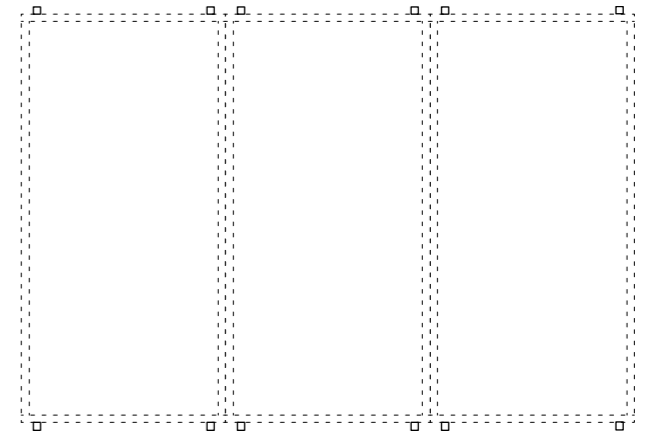


3:4



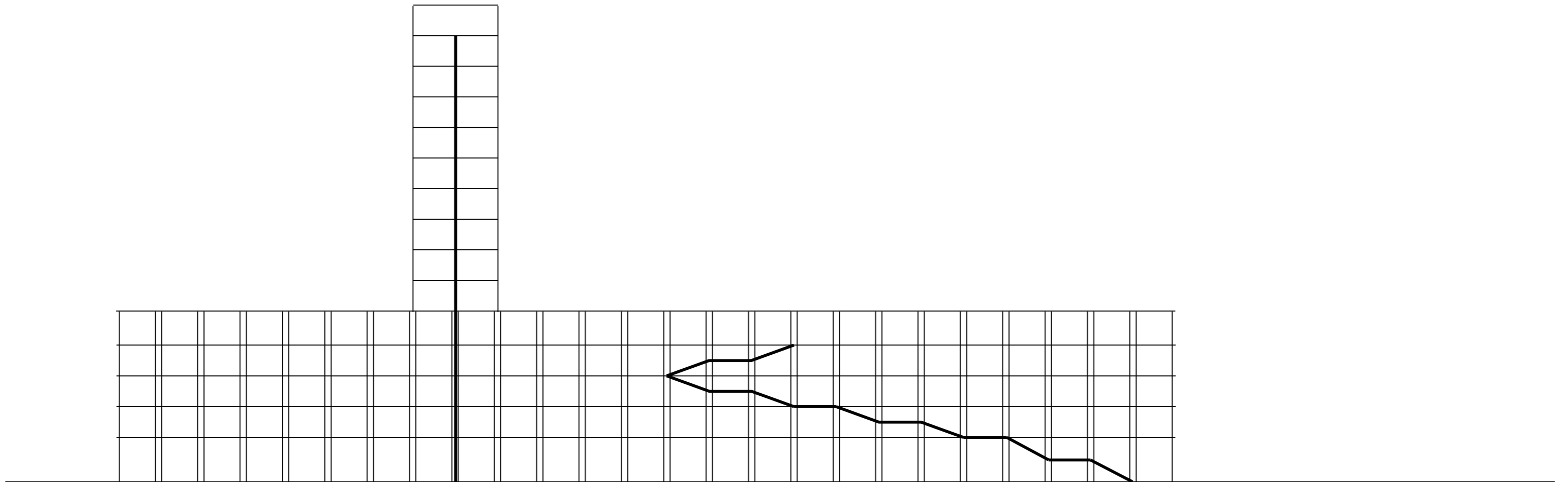
CONSTRUCTION

GENERIC TO SPECIFIC



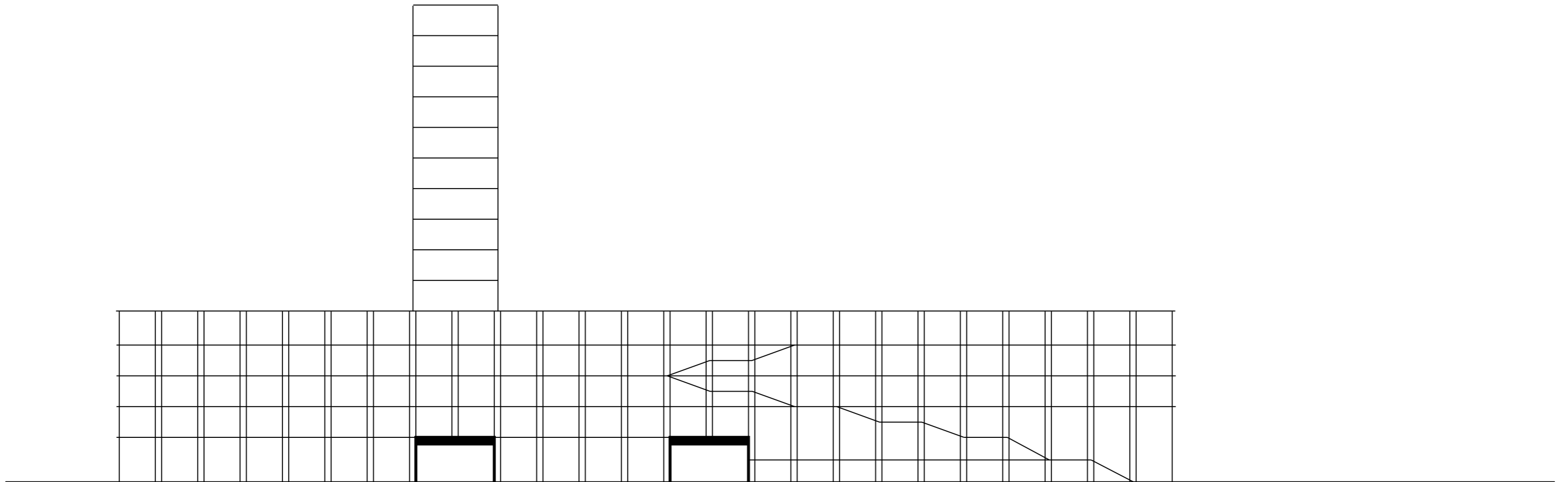
CONSTRUCTIONS

GENERIC TO SPECIFIC



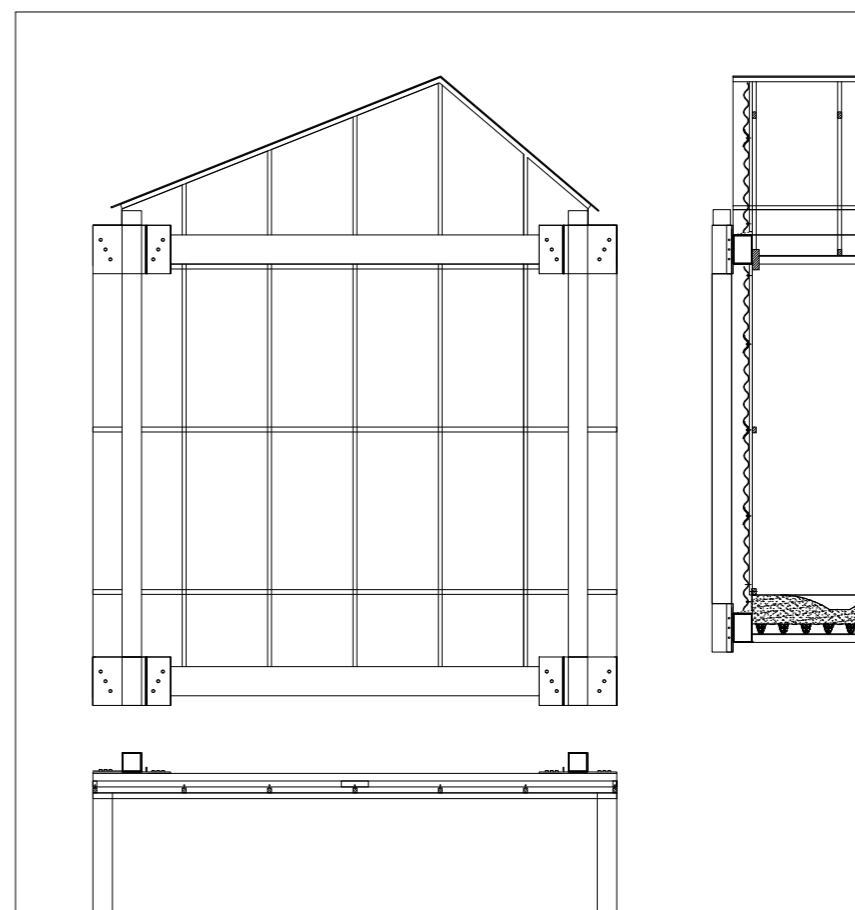
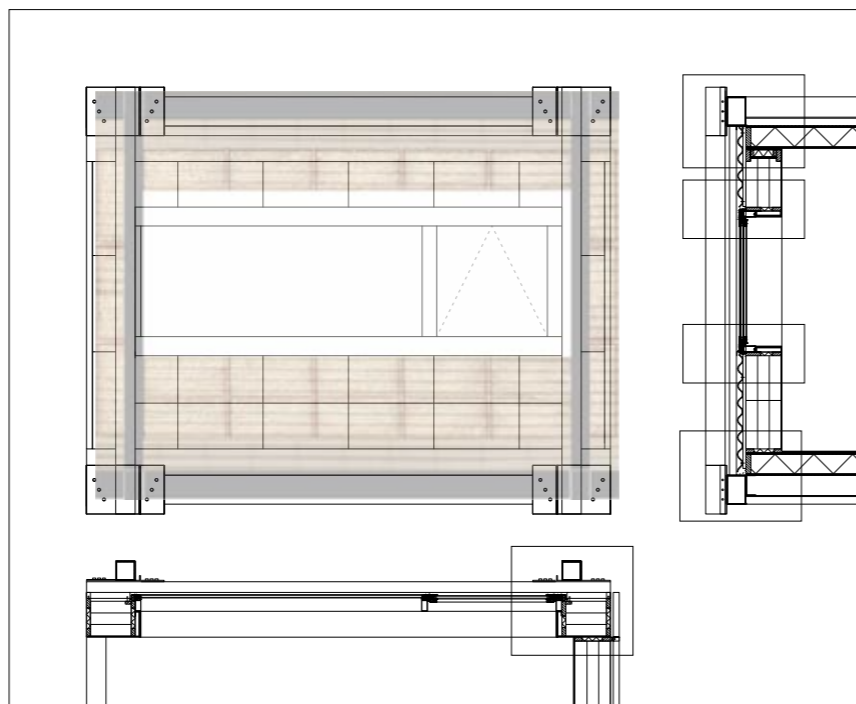
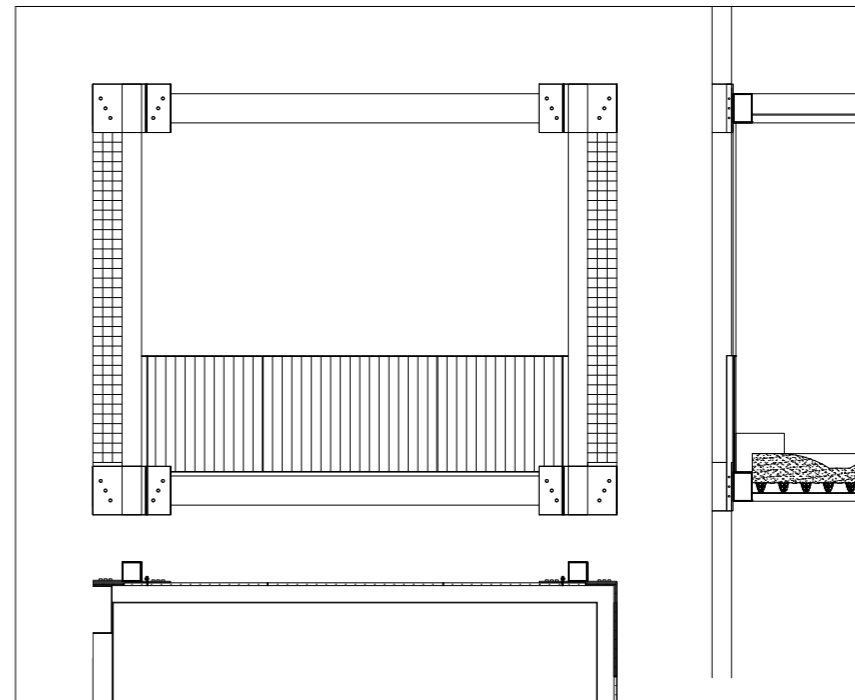
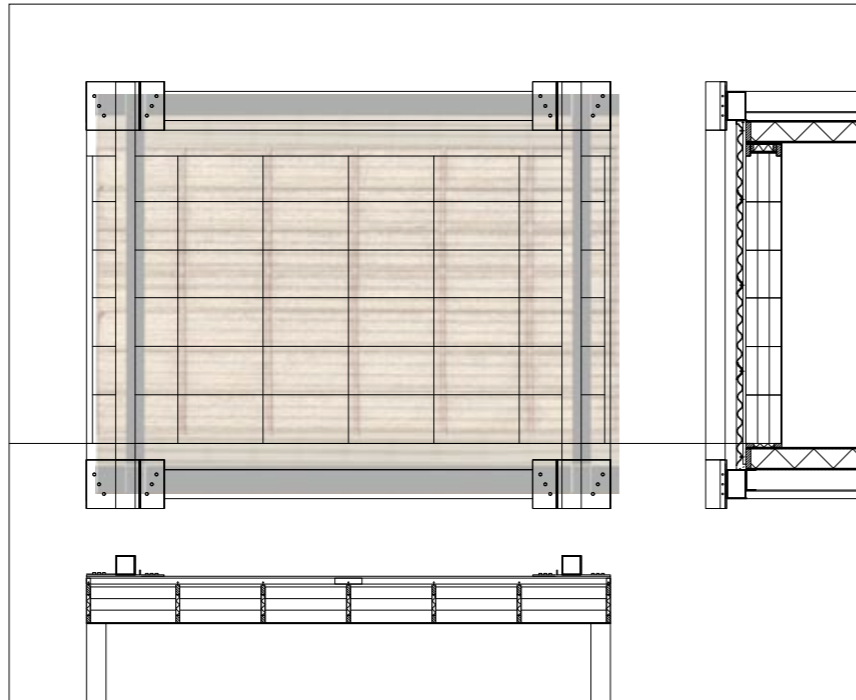
CONSTRUCTION

GENERIC TO SPECIFIC



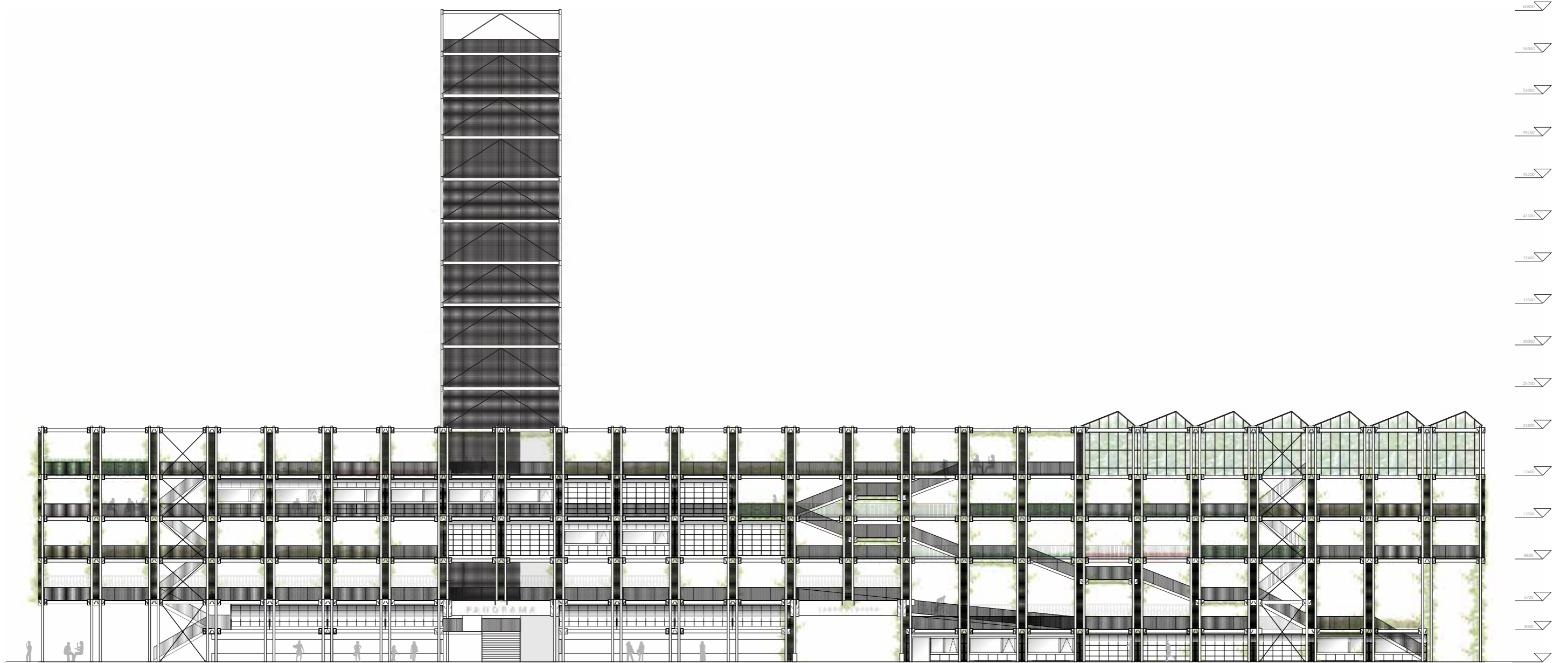
DESIGN

FACADE ELEMENTS










DESIGN

SOUTH EAST FACADE





CLIMATE

CLIMATE PROGRAM

	MARKET	580
	CULTIVATION GROUND	2530
	STORAGE	250
	DISTRIBUTION	100
	BICYCLE STORAGE	1500
	COMPOST	25
	GLASSHOUSE	360

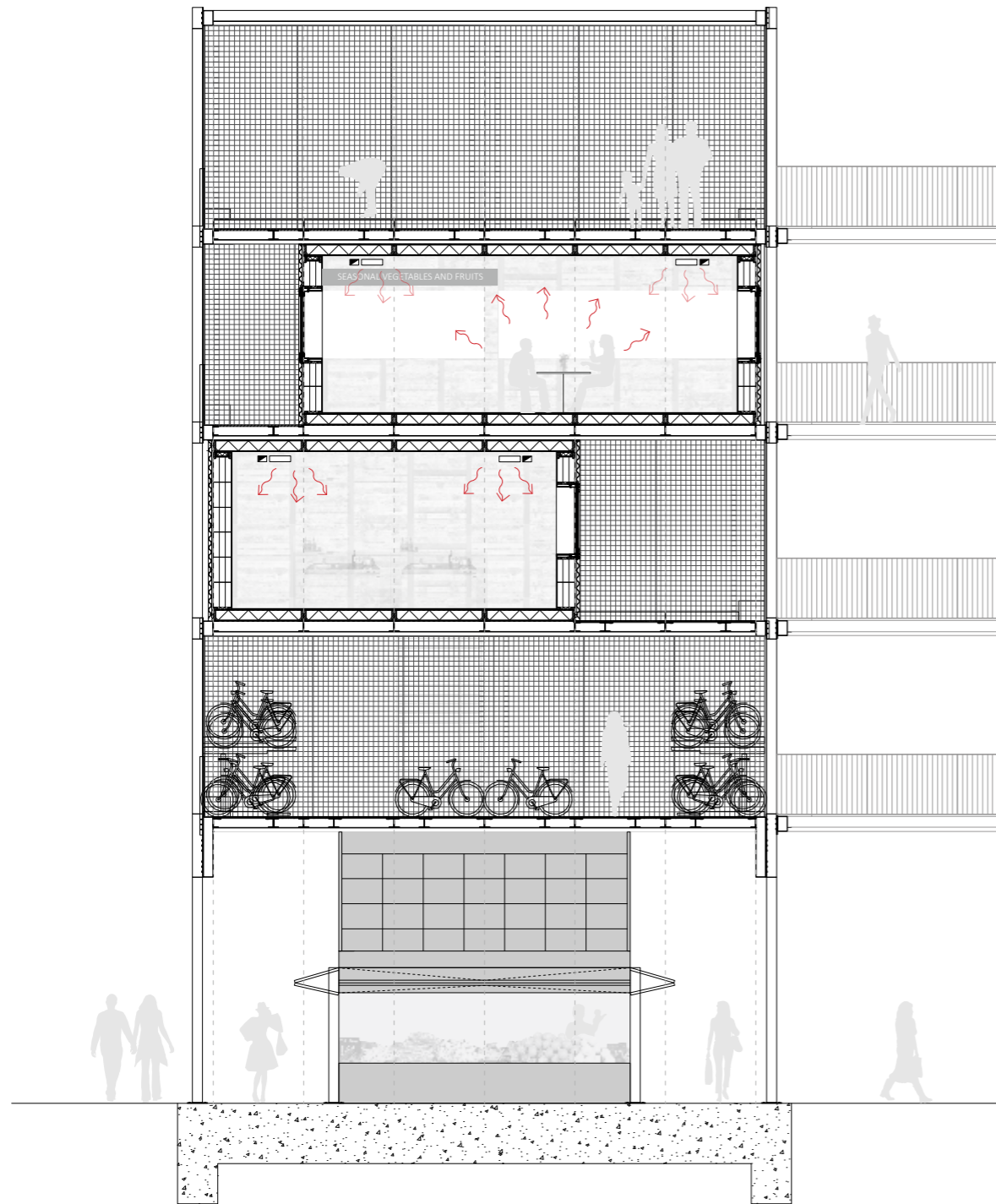
NO CLIMATE CONTROLLED USER FUNCTIONS

	RESTAURANT	190
	KITCHEN	120
	WORKSHOP SPACE	190
	STORAGE	25

CLIMATE CONTROLLED USER FUNCTIONS

CLIMATE

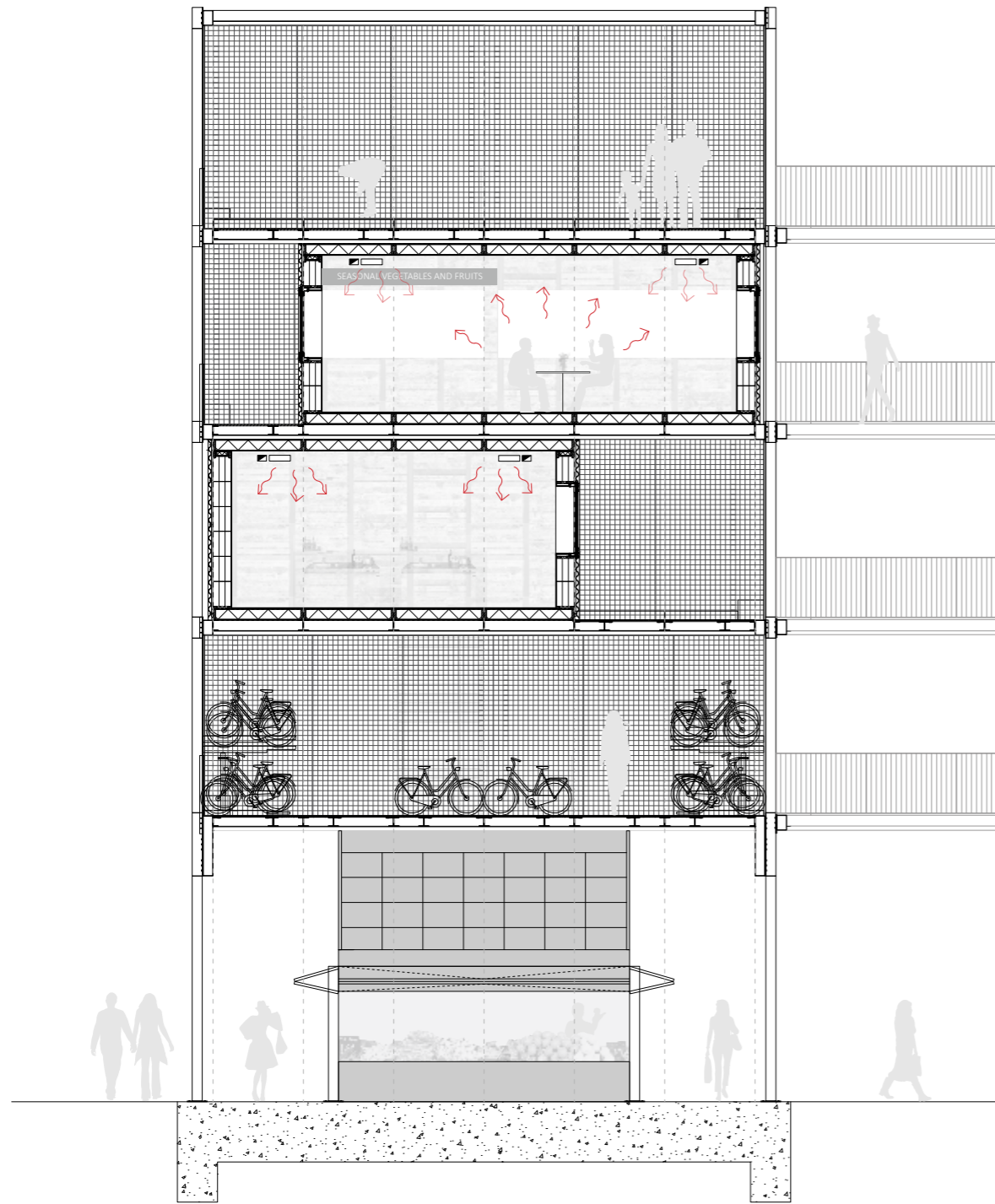
HEATING



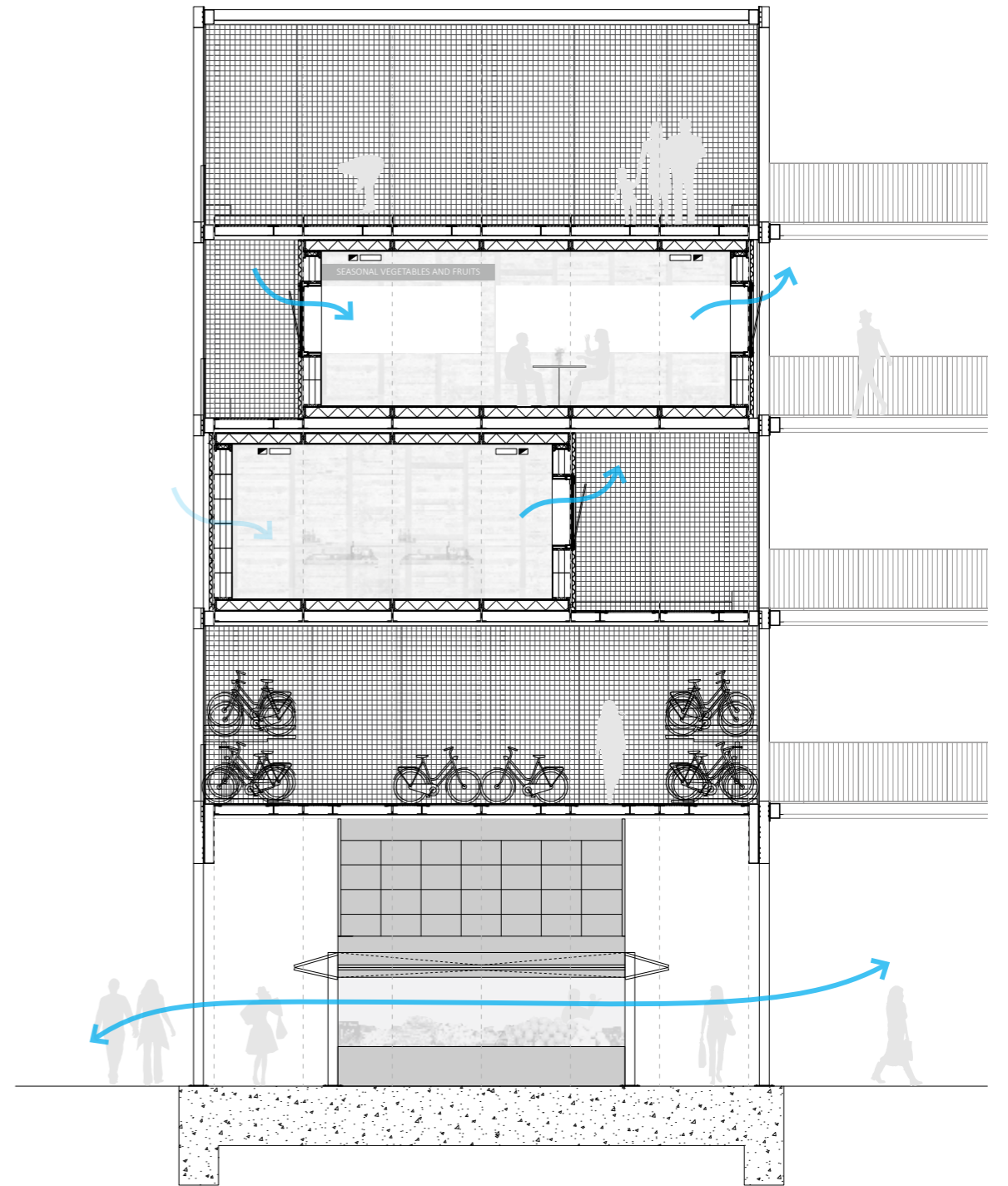
HEATING IN WINTERTIME

CLIMATE

HEATING AND COOLING



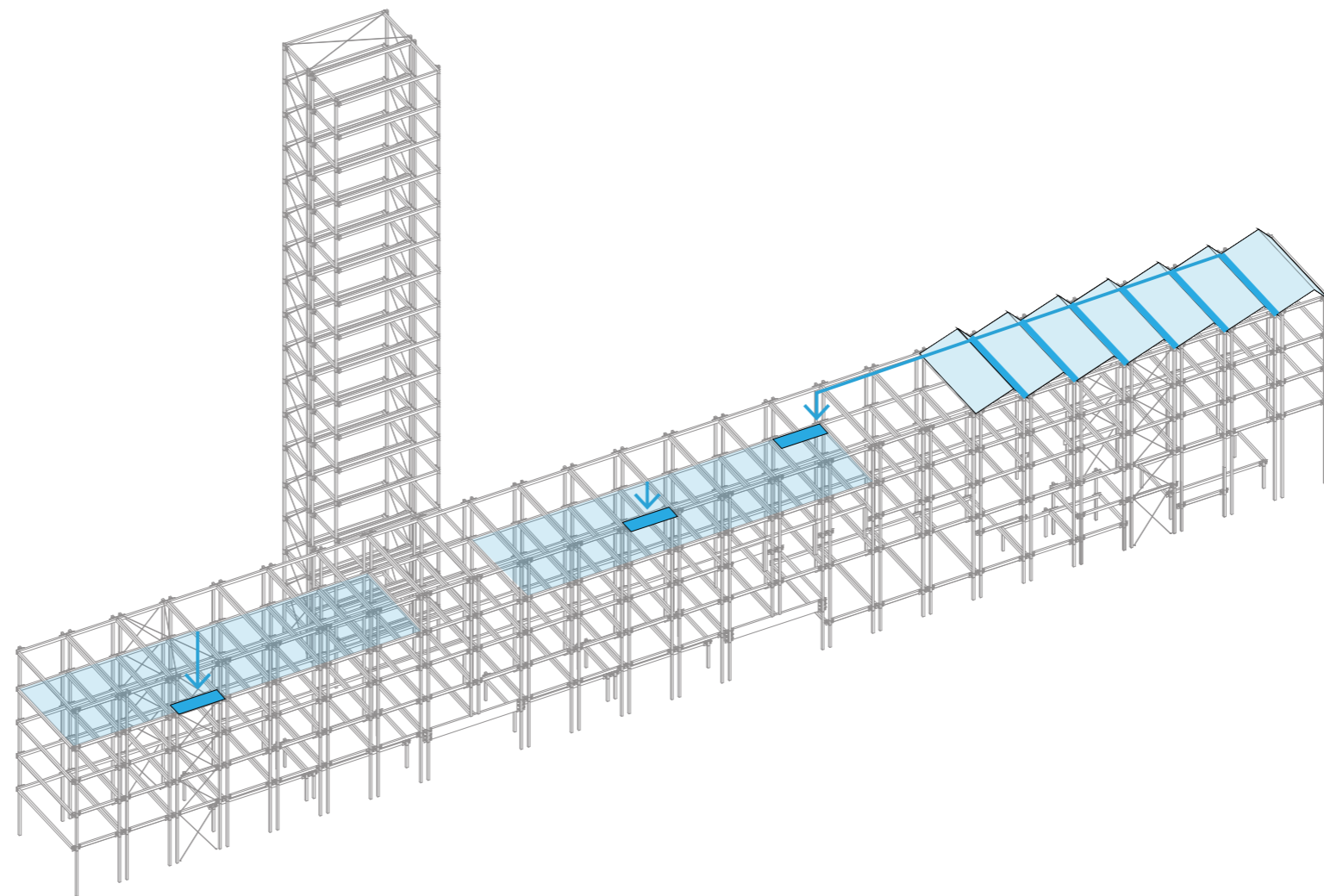
HEATING IN WINTERTIME



COOLING IN SUMMERTIME

CLIMATE

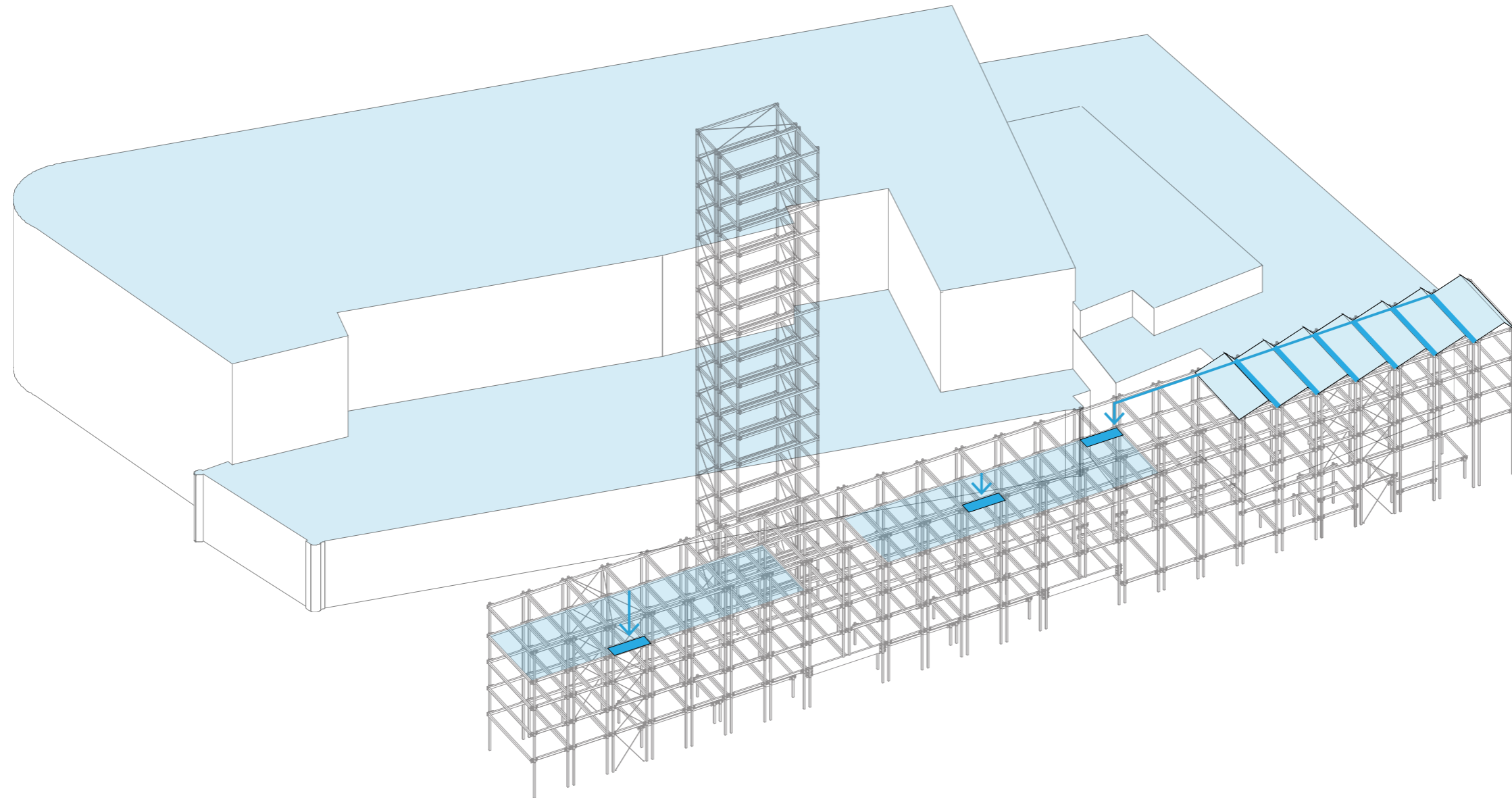
RAINWATER COLLECTION



2,5 MILLION LITER

CLIMATE

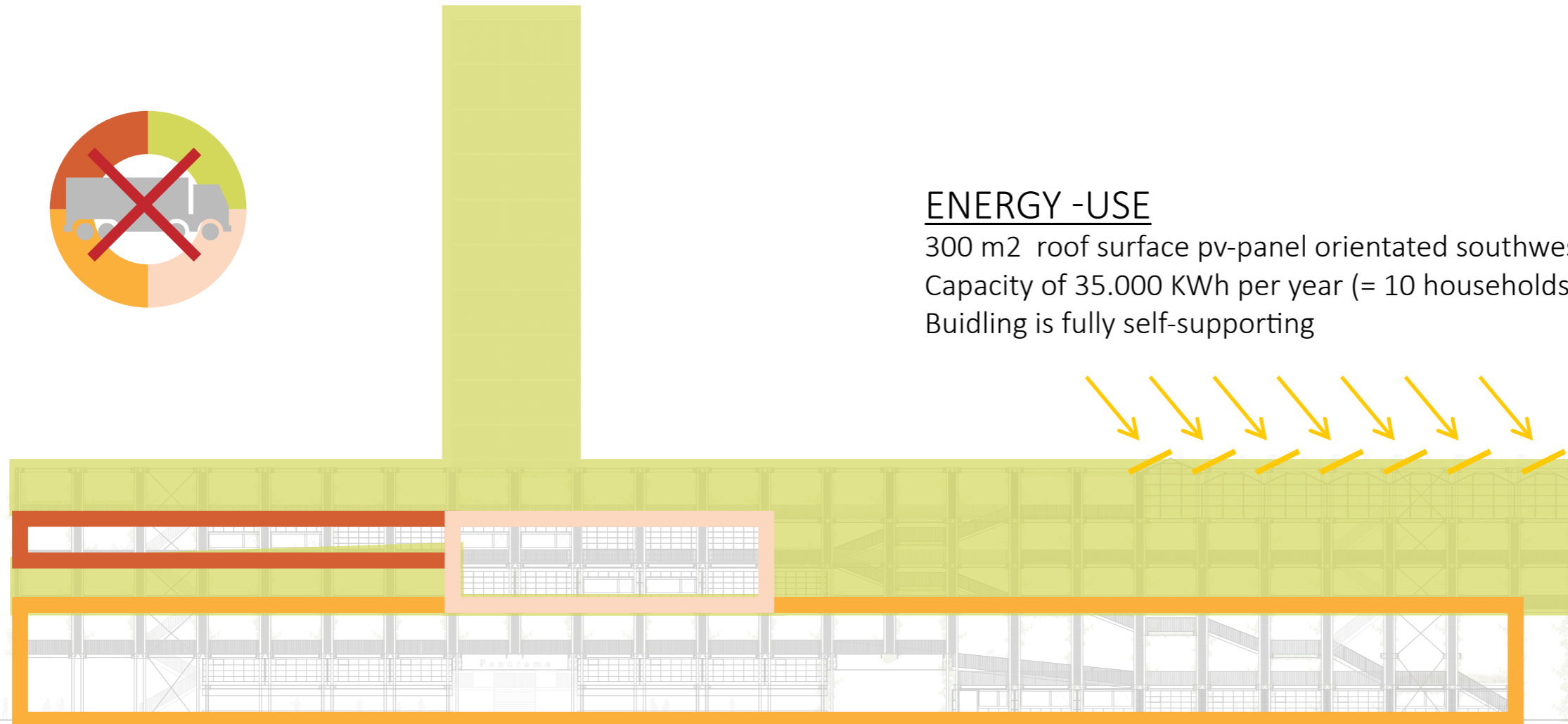
RAINWATER COLLECTION



9 MILLION LITER

REFLECTION

SUSTAINABILITY



ENERGY -USE

300 m² roof surface pv-panel orientated southwest
Capacity of 35.000 KWh per year (= 10 households)
Building is fully self-supporting

GREENERY

2.500 m² cultivation (6300 lettuce)
(fruits, vegetables, spices and flowers, insects)
Biodiversity
Water retention



BICYCLE PARKING

Parking for 800 bicycles
First floor is good accessible trough ramp



WATER SUPPLY

Total needed for cultivation is 2.5 Million liter per year
Average rainfall in the Hague is 990 liter / m²
Roof surface is 1.500 m², this results in 1.5 Million liter rain water
Additional 1.0 M liter tap water is needed (= 23 persons p jaar)

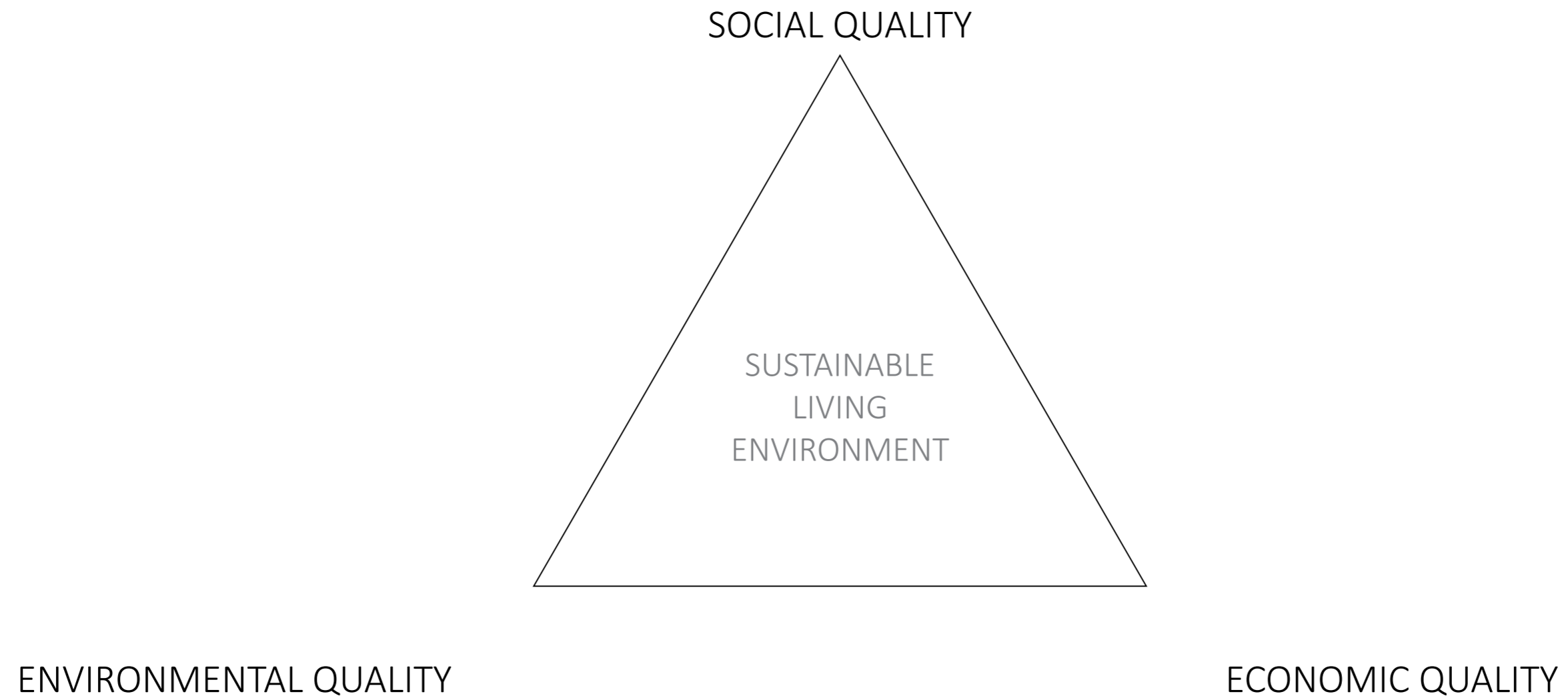


MATERIALISATION

Recycable materials
Demountable construction
'Hard' outside, 'soft' inside

REFLECTION

SUSTAINABILITY



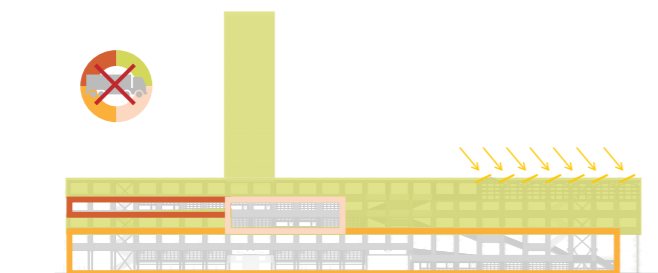
REFLECTION

SUSTAINABILITY

SOCIAL QUALITY

SUSTAINABLE
LIVING
ENVIRONMENT

ENVIRONMENTAL QUALITY



ECONOMIC QUALITY

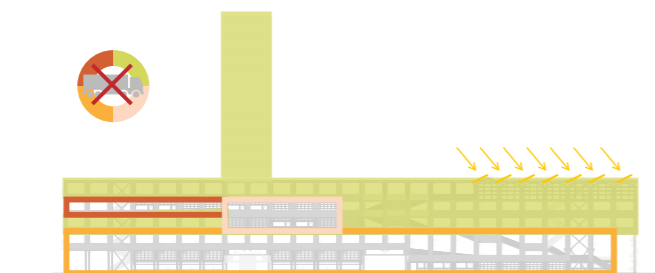
REFLECTION

SUSTAINABILITY

SOCIAL QUALITY

SUSTAINABLE
LIVING
ENVIRONMENT

ENVIRONMENTAL QUALITY



ECONOMIC QUALITY

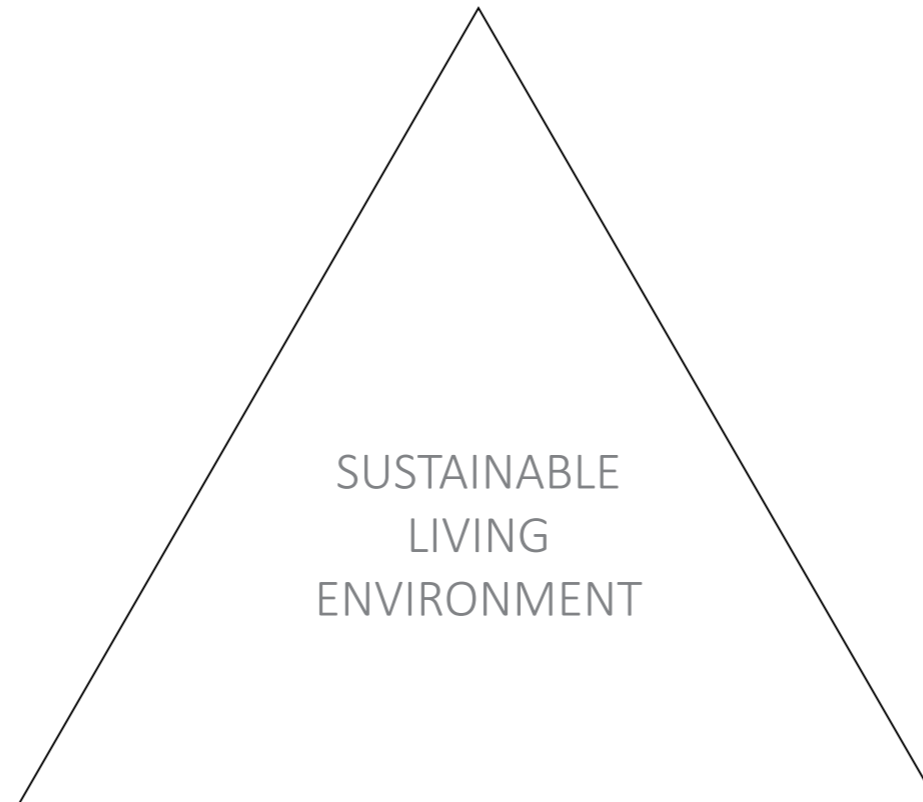


REFLECTION

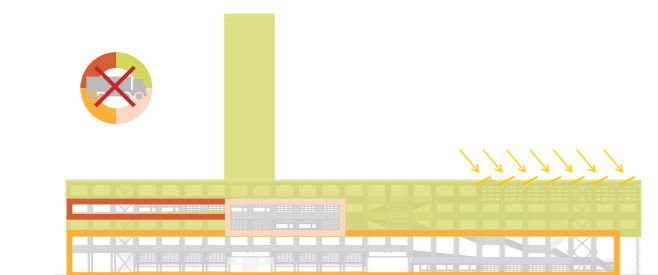
SUSTAINABILITY



SOCIAL QUALITY



ENVIRONMENTAL QUALITY



ECONOMIC QUALITY



CONCLUSION

SUSTAINABLE LIVING ENVIRONMENT

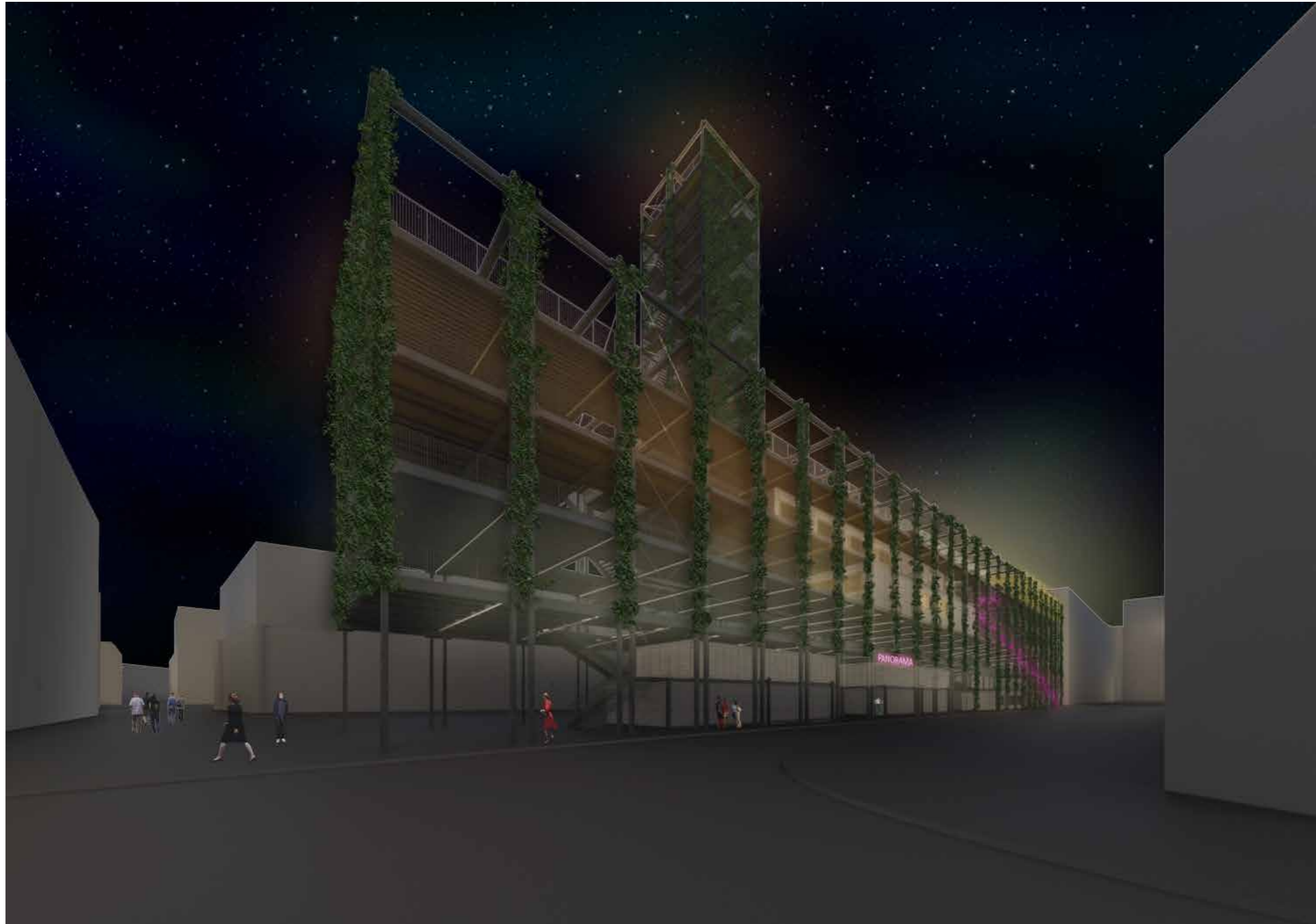
SOCIAL QUALITY



ENVIRONMENTAL QUALITY

ECONOMIC QUALITY

THANK YOU!

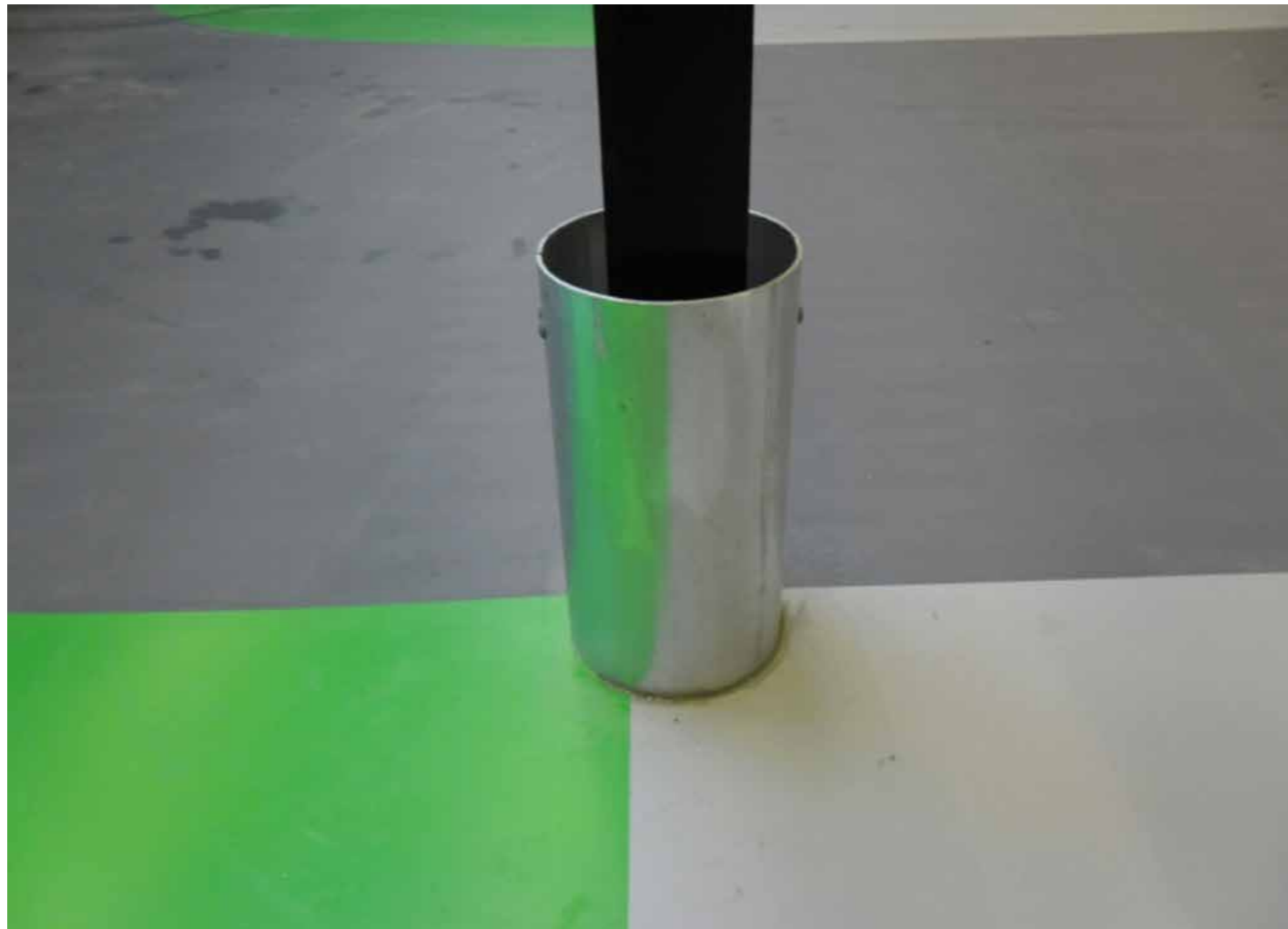




HIGH RISE THE HAGUE

XXXXXXX

XXXXX



CASE STUDY

SPATIAL CONSIDERATIONS WITH RELATIVE INDICATION

	CASE STUDIES				
	HOEVE BIESLAND	MOE'STUIN	DAK AKKER	MARCONISTRIP	VILLA AUGUSTUS
<i>Build on surface</i>	3.200	3	130	1.600	2.100
<i>Floor surface</i>	3.500	3	130	1.600	3.800
<i>Cultivation ground</i>	1.300.000	210	480	8.180	5.000
<i>Composting place</i>	1.300	1	2	140	Unknown
<i>Waterbasin</i>	0	0	0	20	0
<i>Chicken</i>	100	0	0	1.140	0
<i>Mushroom</i>	0	0	0	20-30	0
<i>Aquaponic</i>	0	0	0	150	0
<i>Cow stable</i>	1.400 - 2.900	0	0	0	0
<i>Paths</i>	-	120	370	2.910	4.130
<i>Courtyard</i>	3.800	0	0	1.450	500
<i>Terrace</i>	0	90	40	820	320
<i>Recreational greenery</i>	200.000	0	0	0	4.200
<i>Shop/ market</i>	0	0	0	20	140
<i>Restaurant</i>	0	0	0	100	480
<i>Kitchen</i>	0	0	10	60	300
<i>Multifunctional room</i>	0	0	60	210	330
<i>Hotel</i>	0	0	0	0	1.680
<i>Kantoor</i>	0	0	0	160	Unknown
<i>House</i>	100 - 200	0	0	0	0
<i>Backery</i>	0	0	0	0	50
<i>Butcher</i>	70	0	0	0	0
<i>Storage</i>	400 - 1.900	3	10	160	200
<i>Other</i>	700	0	1	520	284
<i>Bicycle parking</i>	10	0	-	0	90
<i>Parking</i>	0	0	60	950	1.820

FARMING FACILITIES

ADDITIONAL FACILITIES

CASE STUDY

SPATIAL DESIGN CONSIDERATIONS

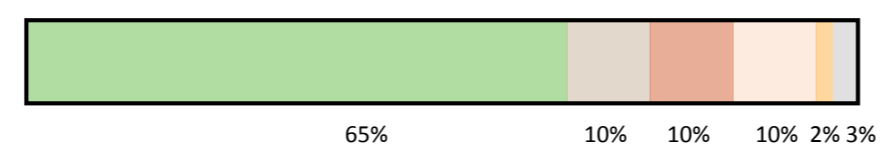
	CASE STUDIES				
	HOEVE BIESLAND	MOE'STUIN	DAKAKKER	MARCONISTRIP	VILLA AUGUSTUS
<i>Size</i>	+++	+	+	++	++
<i>Accessibility</i>	+	++	+	+	++
<i>Experience</i>	+++	+	-	+	++
<i>Close to market</i>	-	+++	++	+	++
<i>Activities</i>	+	+	+	+	++
<i>Visibility of the location</i>	+++	+	-	++	+
<i>Visibility into the garden</i>	+	+++	++	+	+
<i>Replace paved surfaces</i>	N/A	-	+++	++	++
<i>Meeting place (through seasons)</i>	-	+	+++	+++	+++
<i>Use unutilized space</i>	N/A	+	+++	+++	+++
<i>Design garden</i>	-	+	++	++	+++
<i>Additional facilities</i>	N/A	-	+	++	+++
<i>Flexible</i>	+	+++	++	++	+
<i>Feeling of safety</i>	-	-	+++	++	++
<i>Attracts visitors</i>	++	-	+++	+++	+++
<i>Vacant land or buildings</i>	N/A	-	++	+++	+++
<i>Diverse methods</i>	-	-	+	+++	+
<i>Characteristic building</i>	-	-	-	+	+++
<i>Landmark</i>	-	-	-	-	++
<i>Integration</i>	-	+++	+++	+	+

SPATIAL DESIGN CONSIDERATIONS

CASE STUDY

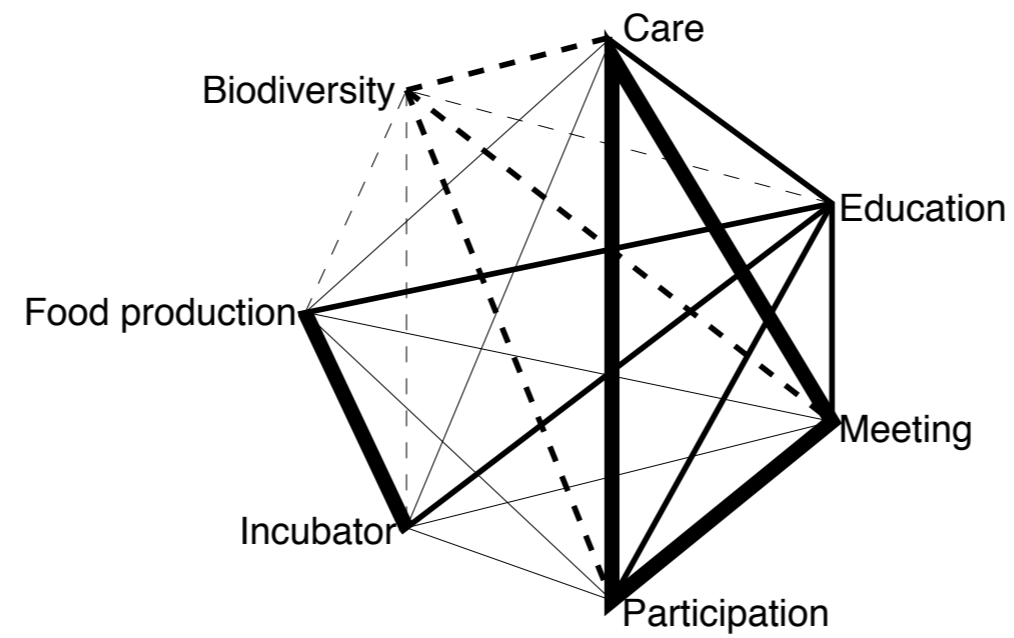
DESIRED RATIO'S FOR SPATIAL ORGANIZATION URBAN FARM

- = Cultivation ground
- = Recreational greenery
- = Path
- = Floor surface
- = Terrace
- = Courtyard
- = Parking
- = Other



CASE STUDY

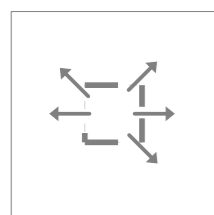
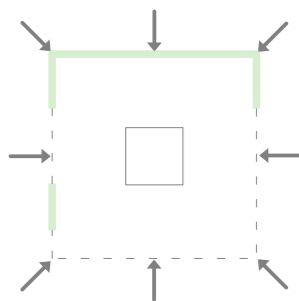
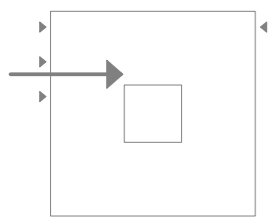
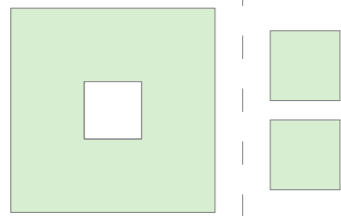
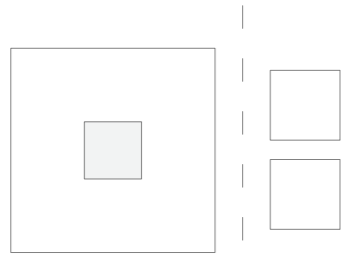
IDEAL TYPICAL MODEL OF GOALS



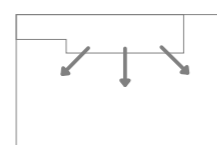
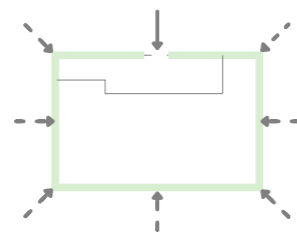
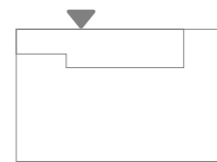
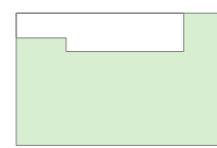
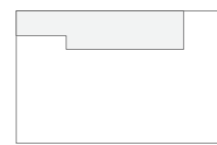
CASE STUDIES

SCHEMATIC VISUALIZATION OF SPATIAL ASPECTS

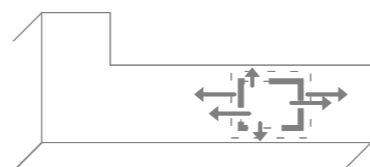
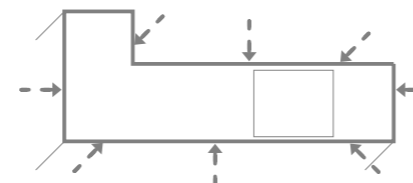
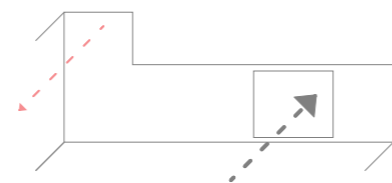
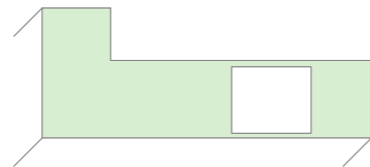
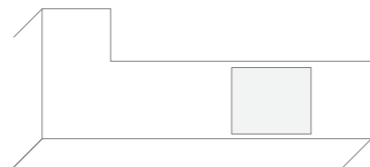
Hoeve Biesland



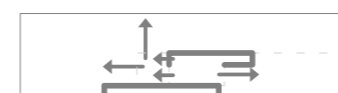
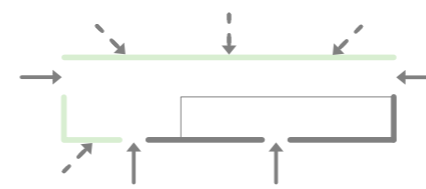
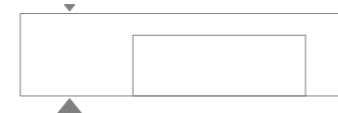
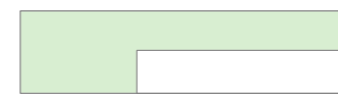
Moe'sTuin



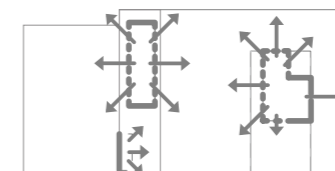
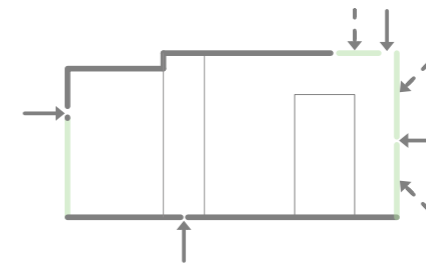
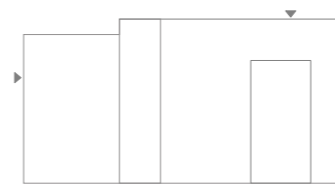
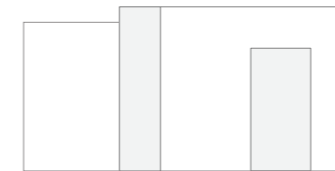
Dakakker



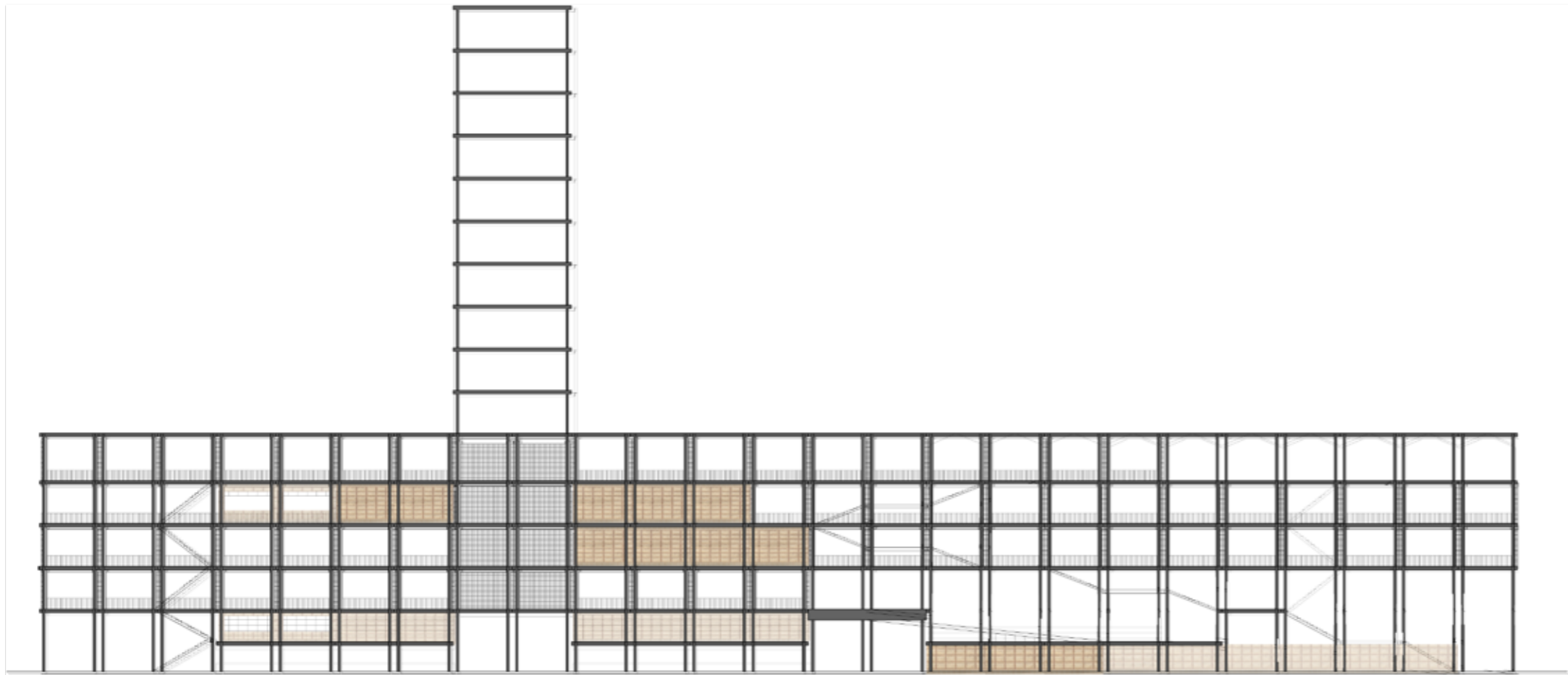
Marconistrip

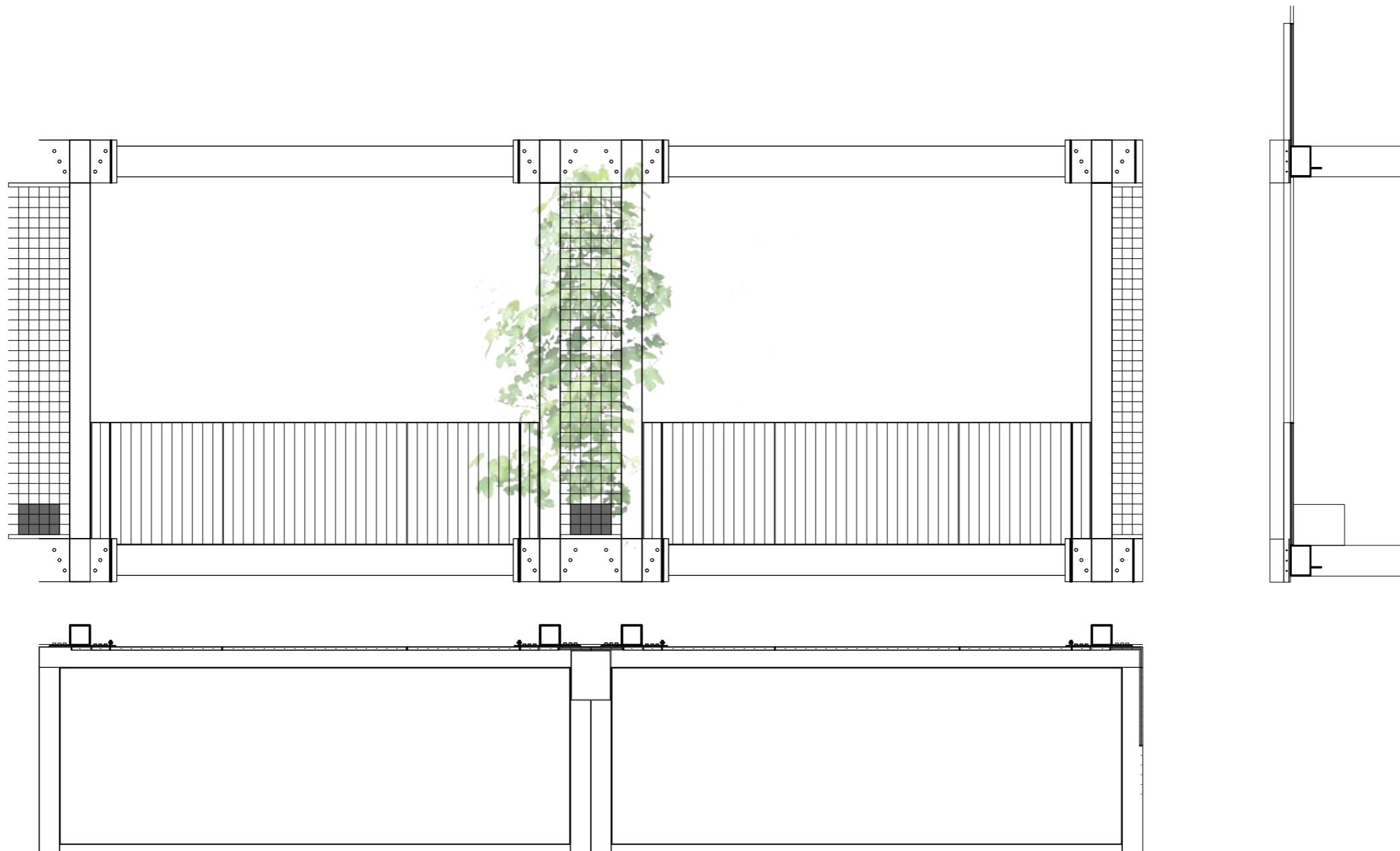


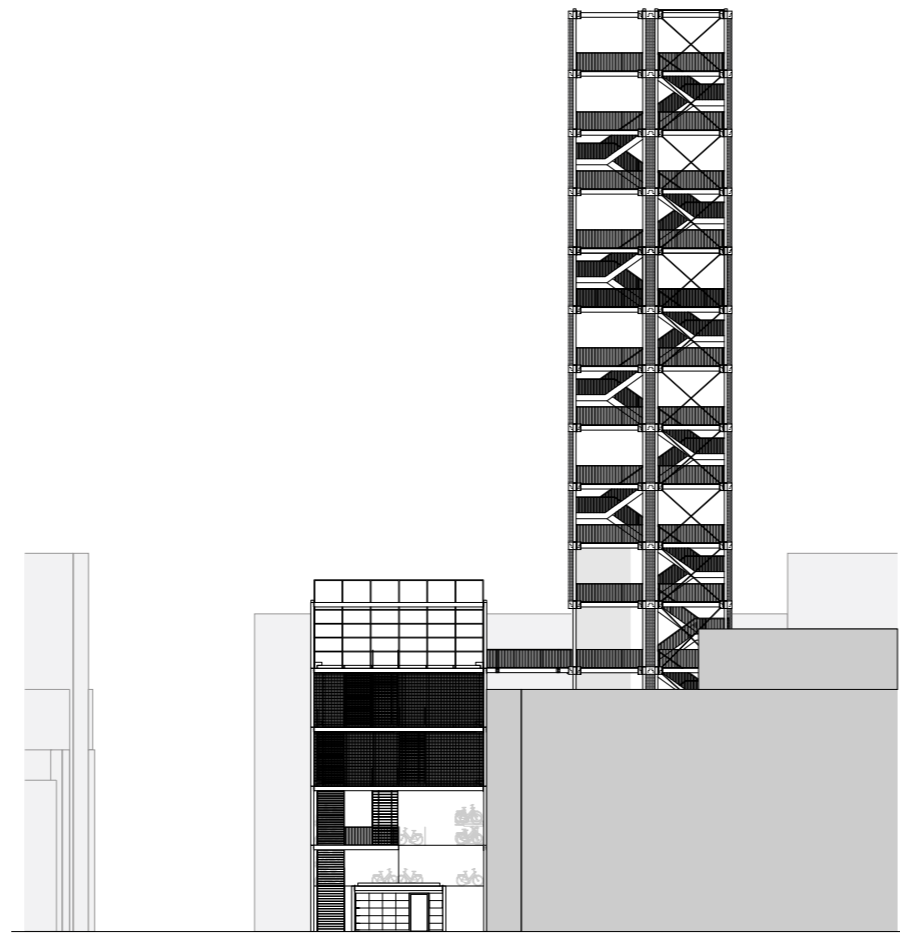
Villa Augustus

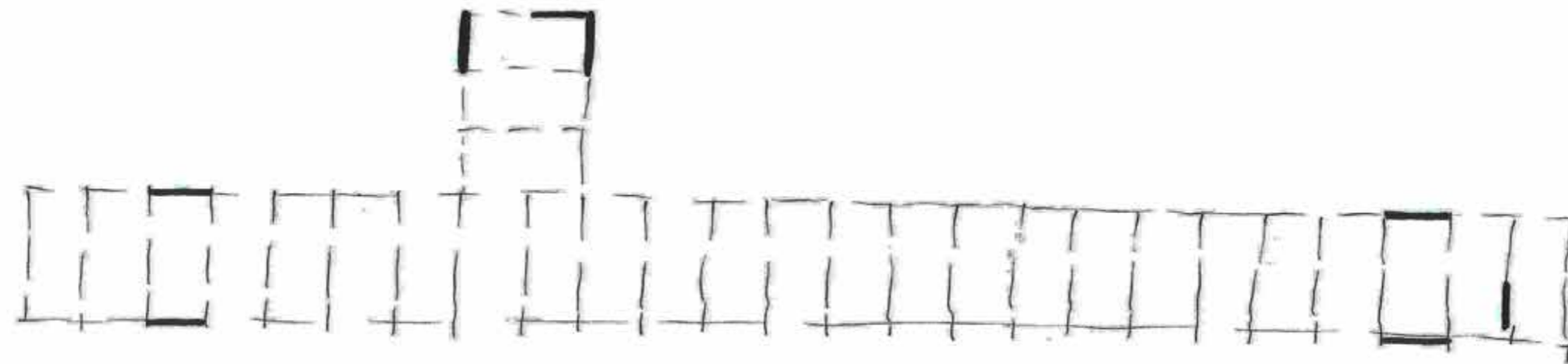


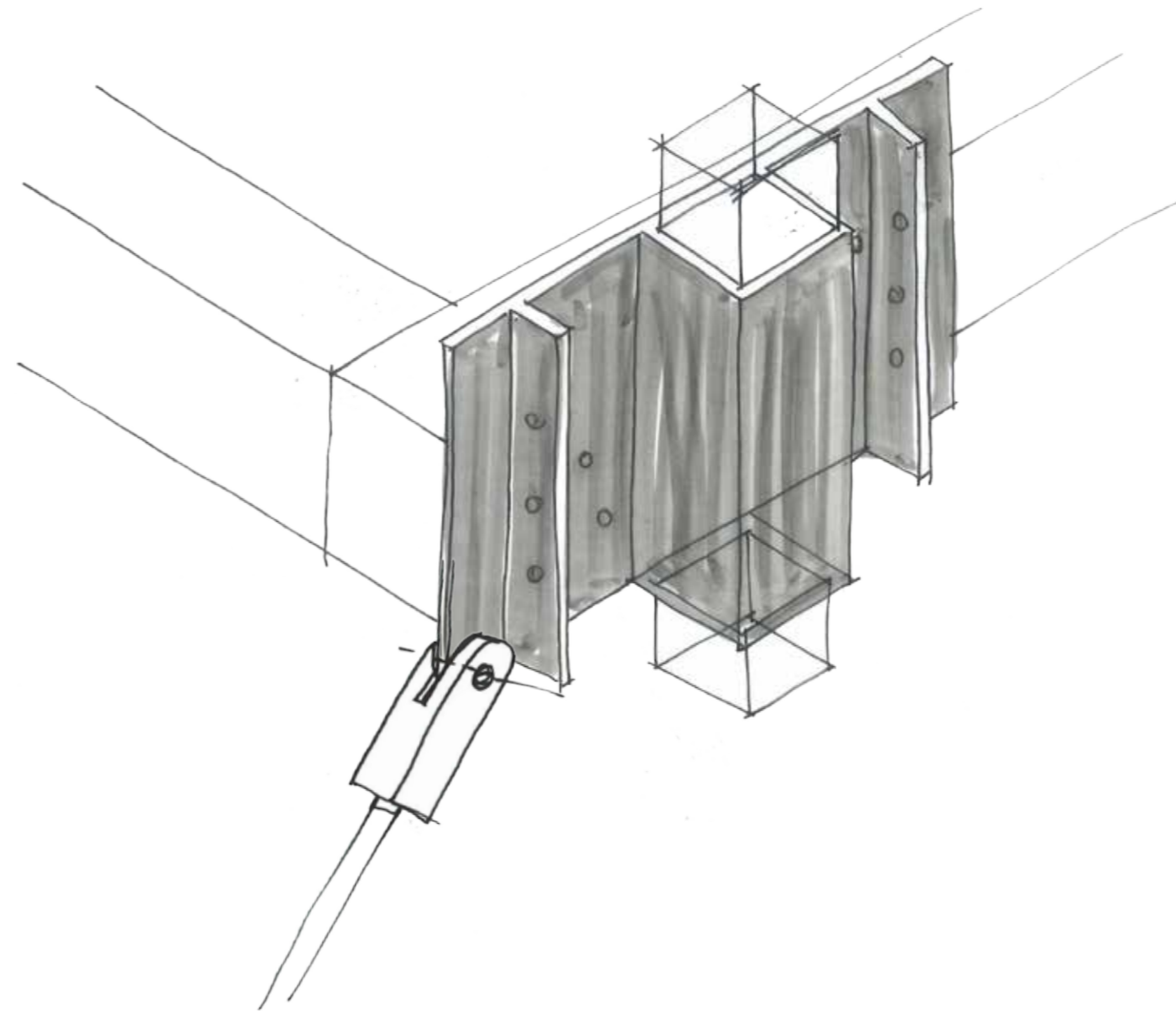
OWN DESIGN





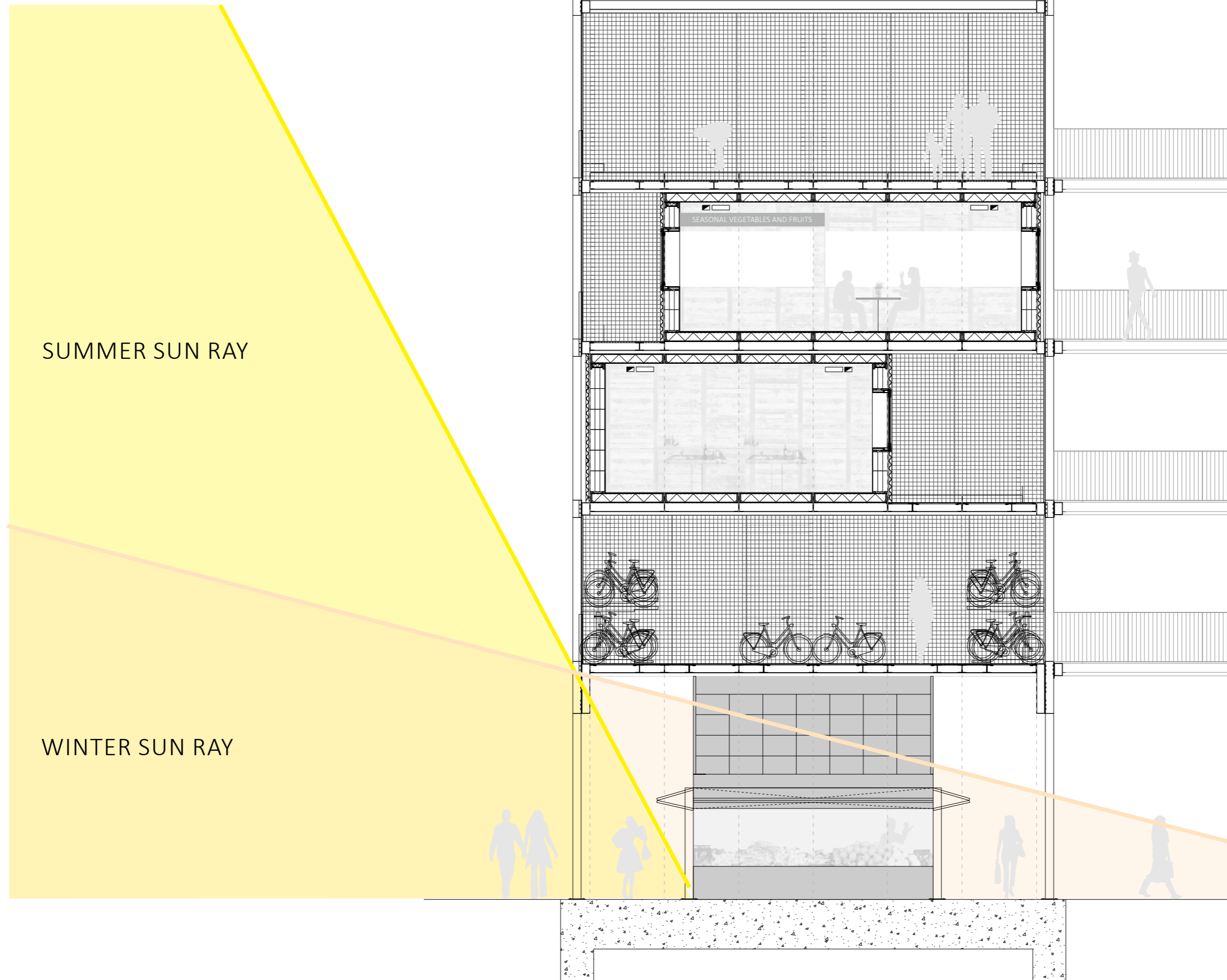






CLIMATE

SUN



CLIMATE

IRRIGATION

