

P5
Yu anna Buijinck
03 07 2023

COMPLEX PROJECTS

NATIONAL LIBRARY OF GERMANY

FROM BOOKS TO BYTES: ACQUIRING KNOWLEDGE IN A DIGITAL AGE

NATIONAL LIBRARY



National library
Madrid, 1712



Trinity College library
Dublin, 1712



Library of Alexandria (213 BC)


DIGITALIZATION



British Museum Library (1753)

SPACE



Public library
Seattle, 2005

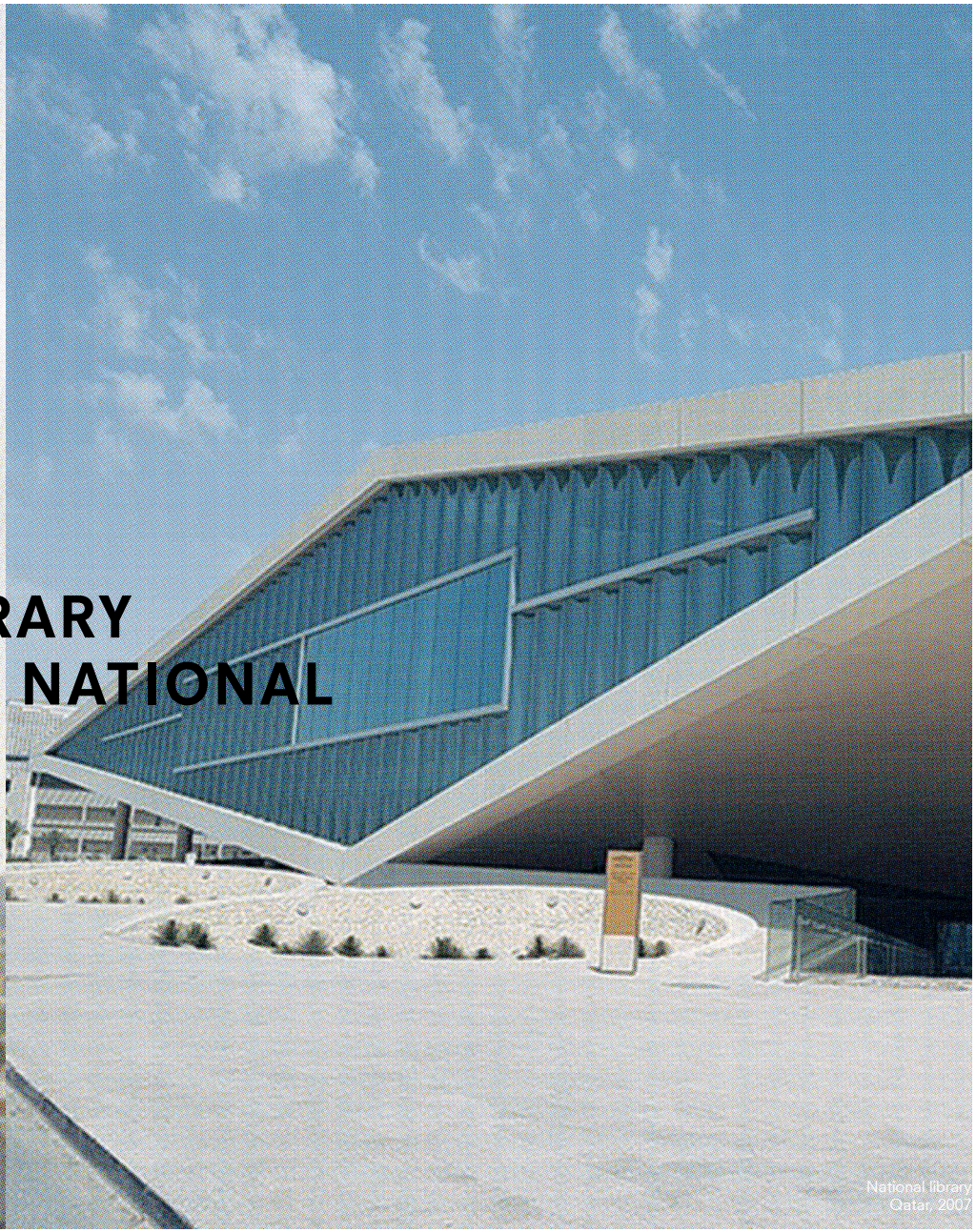


Lochal library
Tilburg, 2019

LIBRARY
PUBLIC VS NATIONAL



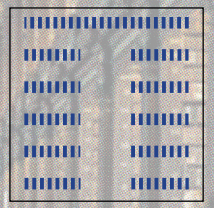
Forum
Groningen, 2019



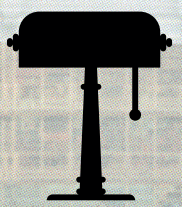
National library
Qatar, 2007

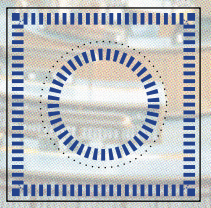
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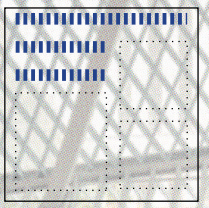
READING ROOM

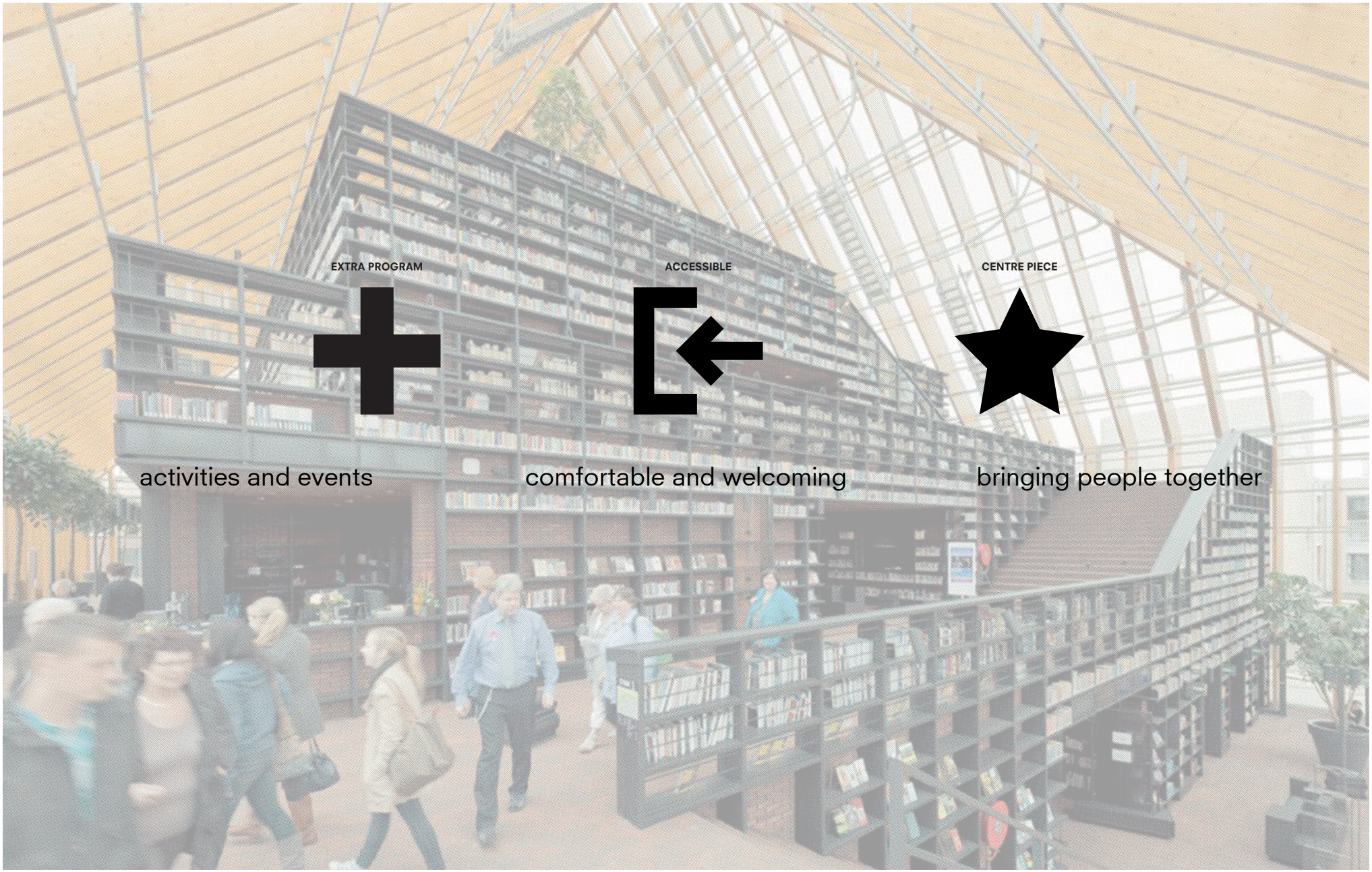




LIVING ROOM






EXTRA PROGRAM
activities and events
ACCESSIBLE
comfortable and welcoming
CENTRE PIECE
bringing people together

NATIONAL LIBRARY



National library
Madrid, 1712

NATIONAL LIBRARY



National library
Paris, 1996

INTRO

RESEARCH

CONCEPT

DESIGN

CONCLUSION

RESEARCH QUESTION

How can the national library accommodate the collection and curation of knowledge to encourage learning in an age of digitalization?

CURRENT SITUATION



National library
Frankfurt, 1997



National library
Leipzig, 2005

CURRENT SITUATION



Interior National library
Leipzig, 2005


CENTRALISE


BERLIN

BENCHMARKING

benchmarking

NATIONAL LIBARIES



Paris, FR



Copenhagen, DK



The Hague, NL



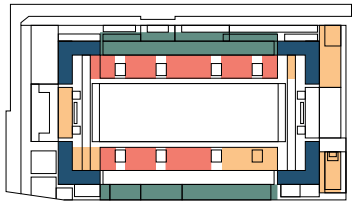
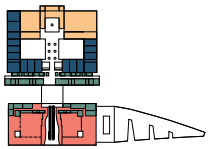
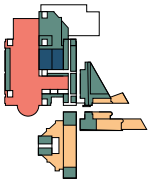
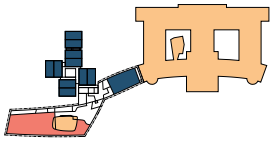
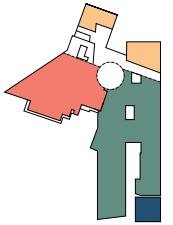
Leipzig, DE



Frankfurt, DE

benchmarking

NATIONAL LIBARIES



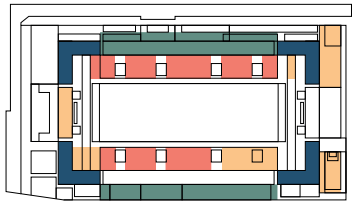
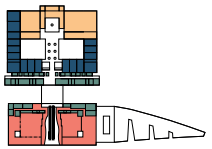
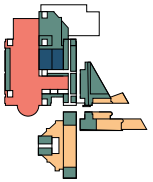
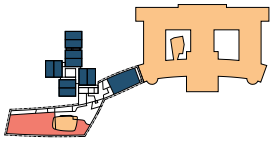
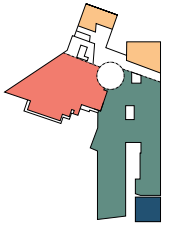





Stacks Reading rooms Cafe/meeting/exhibit Offices Other

benchmarking

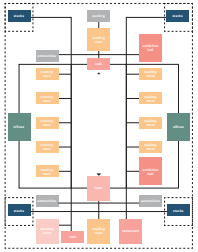
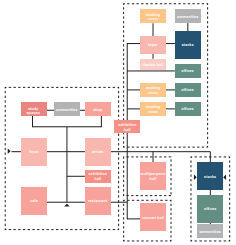
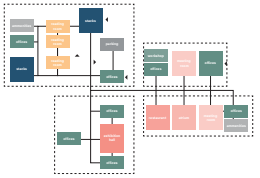
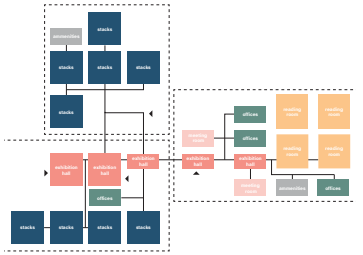
NATIONAL LIBARIES





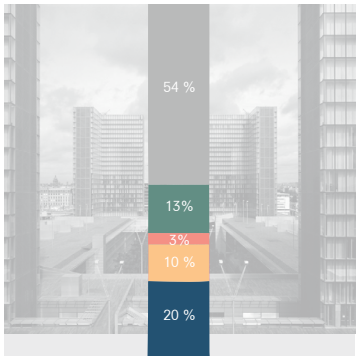


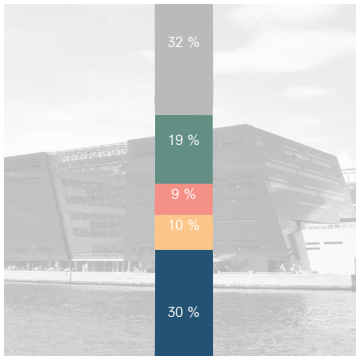





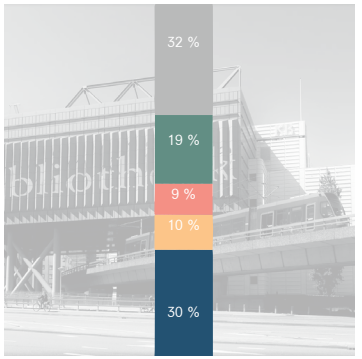

Stacks Reading rooms Cafe/meeting/exhibit Offices Other

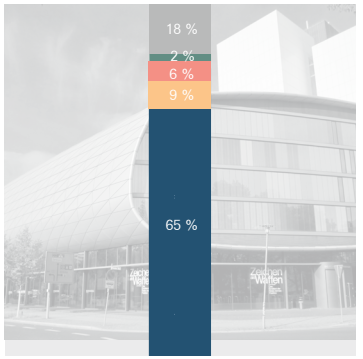
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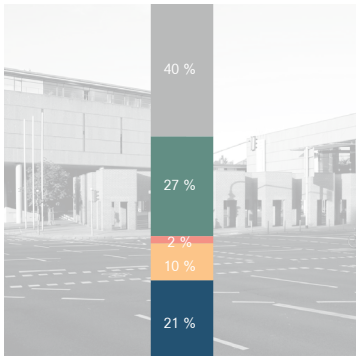
NATIONAL LIBARIES







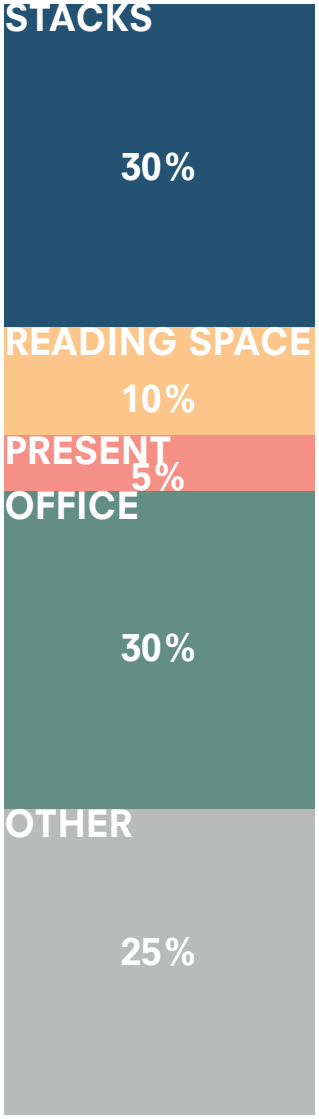




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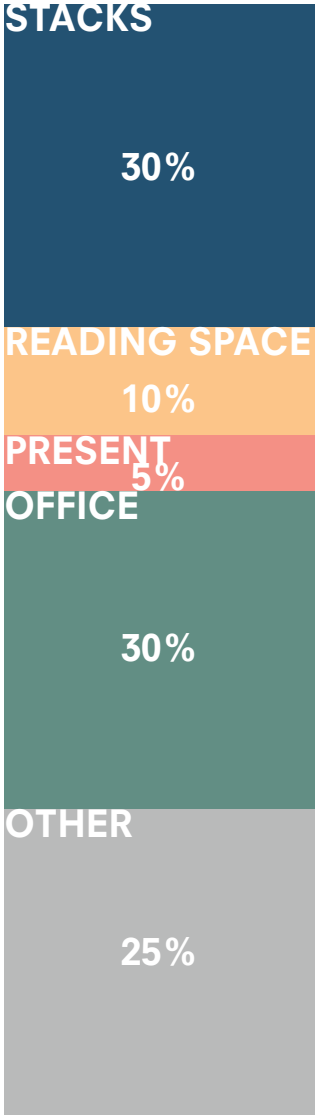
PROGRAM

benchmark

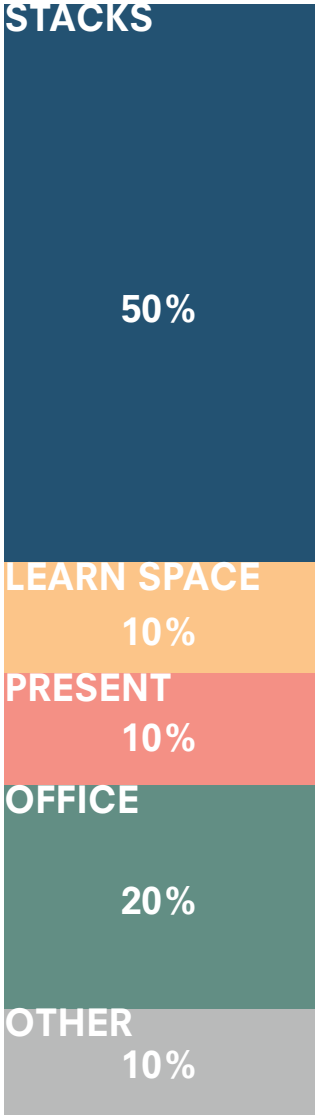


PROGRAM

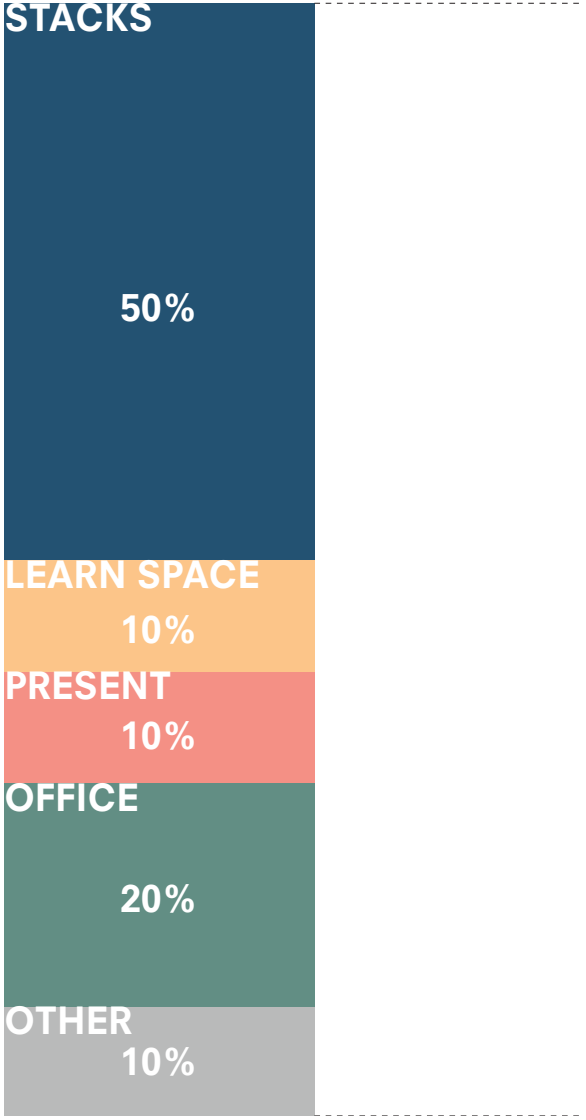
benchmark



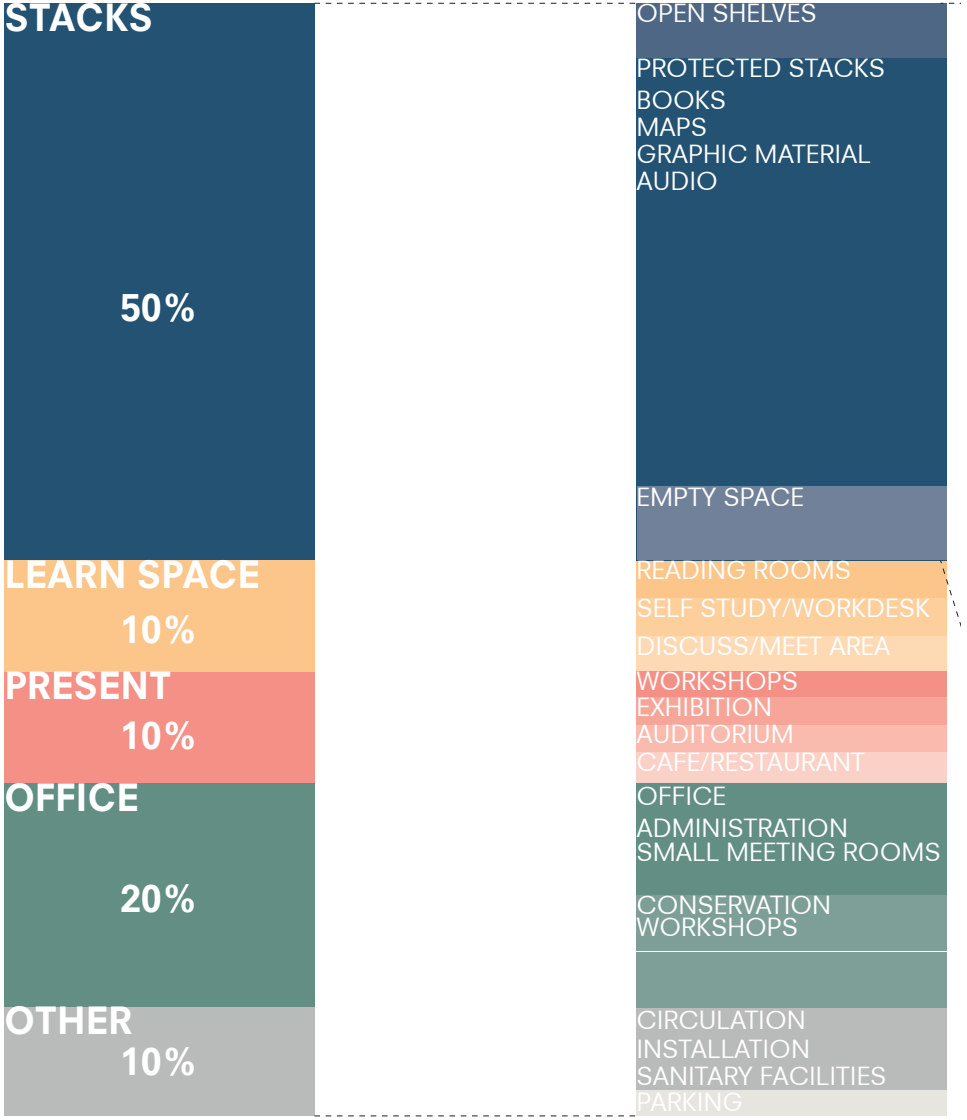
berlin library



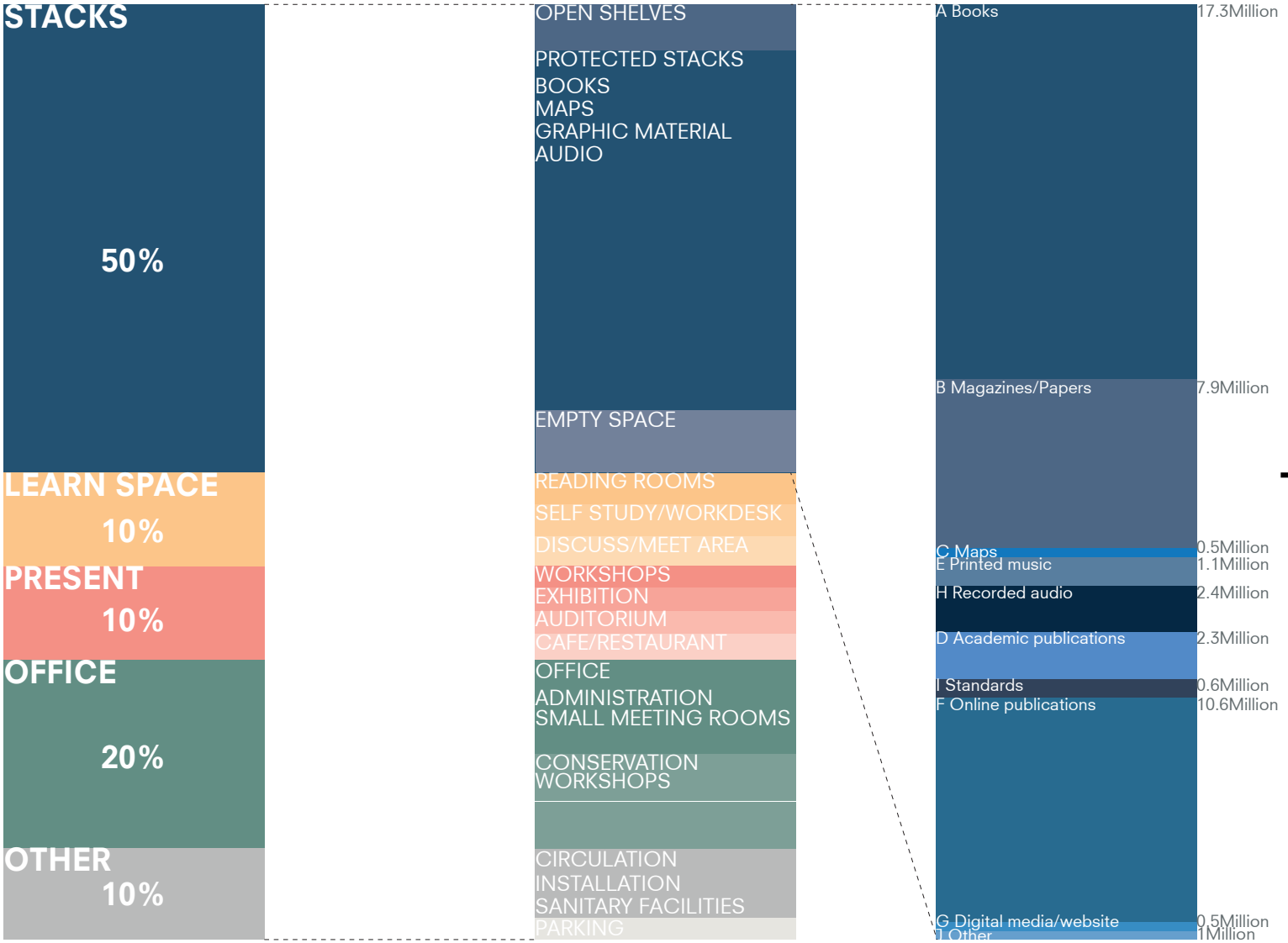
PROGRAM



PROGRAM


STACKS
50%
LEARN SPACE
10%
PRESENT
10%
OFFICE
20%
OTHER
10%
OPEN SHELVES
PROTECTED STACKS
BOOKS
MAPS
GRAPHIC MATERIAL
AUDIO
EMPTY SPACE
READING ROOMS
SELF STUDY/WORKDESK
DISCUSS/MEET AREA
WORKSHOPS
EXHIBITION
AUDITORIUM
CAFE/RESTAURANT
OFFICE
ADMINISTRATION
SMALL MEETING ROOMS
CONSERVATION
WORKSHOPS
CIRCULATION
INSTALLATION
SANITARY FACILITIES
PARKING

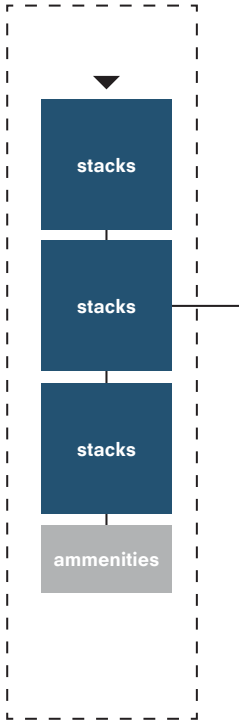
PROGRAM


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ADMINISTRATION
SMALL MEETING ROOMS
CONSERVATION
WORKSHOPS
CIRCULATION
INSTALLATION
SANITARY FACILITIES
PARKING
A Books 17.3Million
B Magazines/Papers 7.9Million
C Maps 0.5Million
E Printed music 1.1Million
H Recorded audio 2.4Million
D Academic publications 2.3Million
I Standards 0.6Million
F Online publications 10.6Million
G Digital media/website 0.5Million
J Other 1Million
+ 7 KM

FUNCTIONAL SCHEME

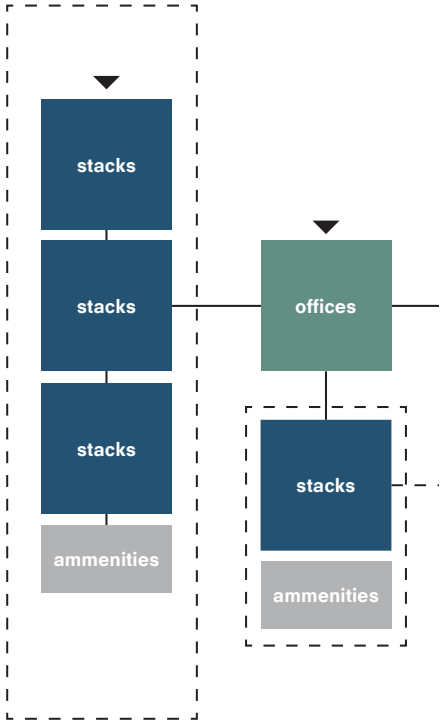


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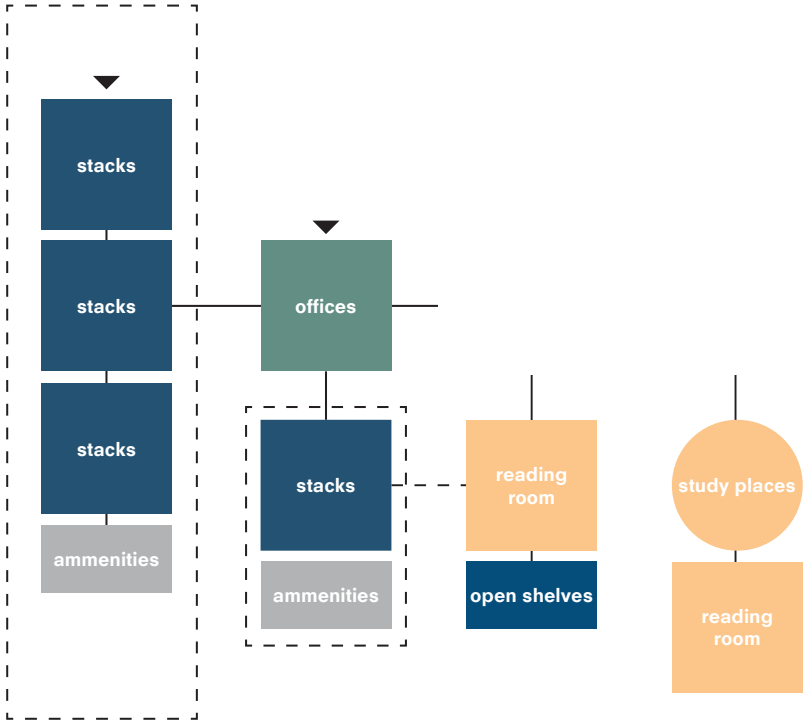
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Patrions and/or staff
functions seperatly
Circulation
Stacks
Learn / study rooms
Meet / create
Offices
Other

FUNCTIONAL SCHEME



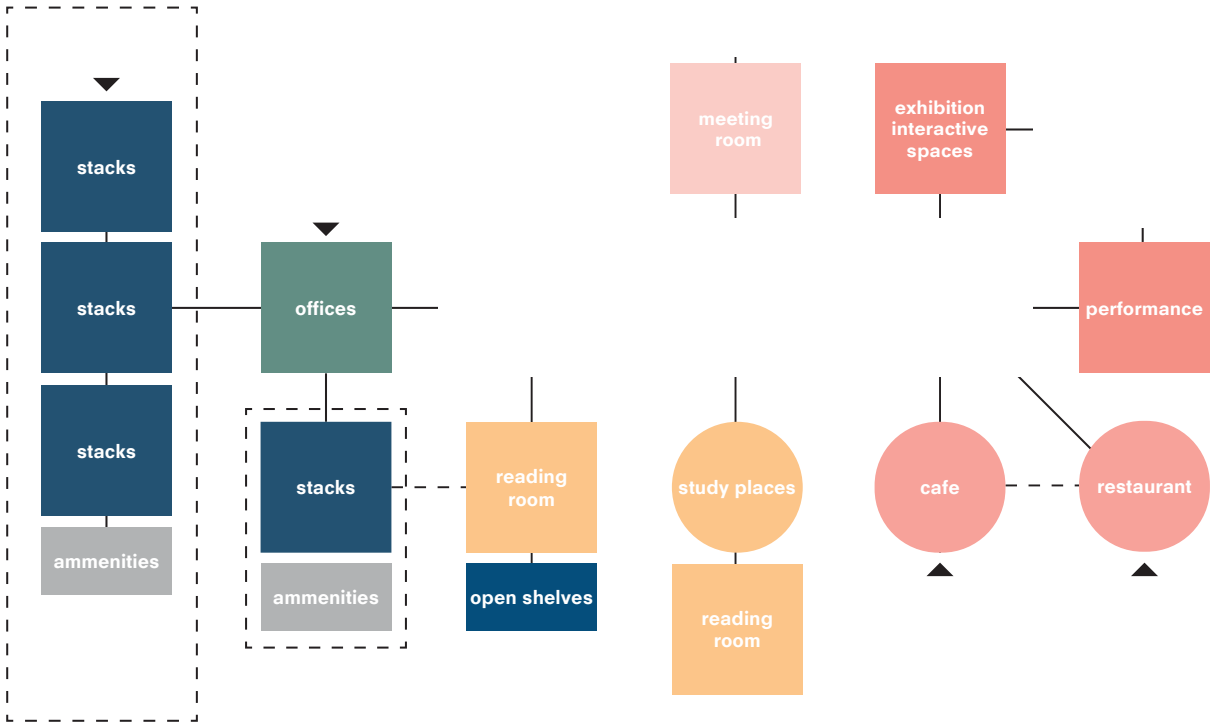
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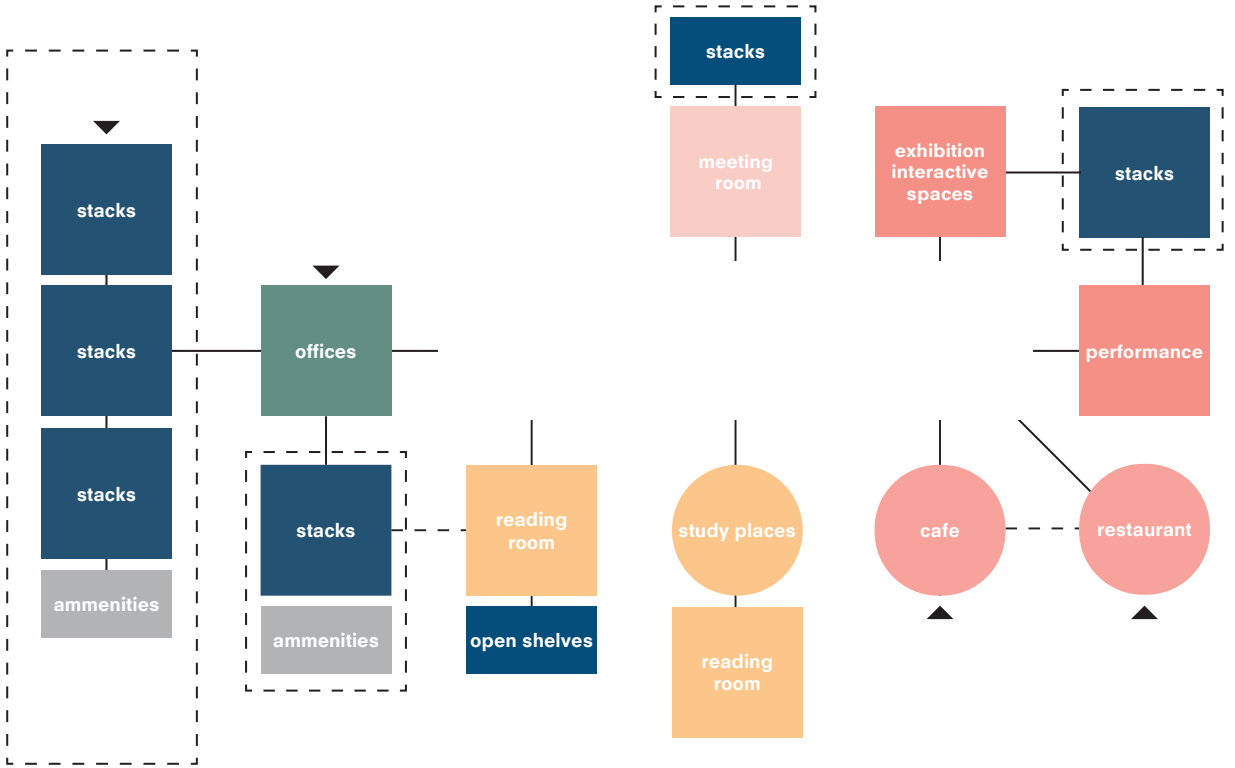


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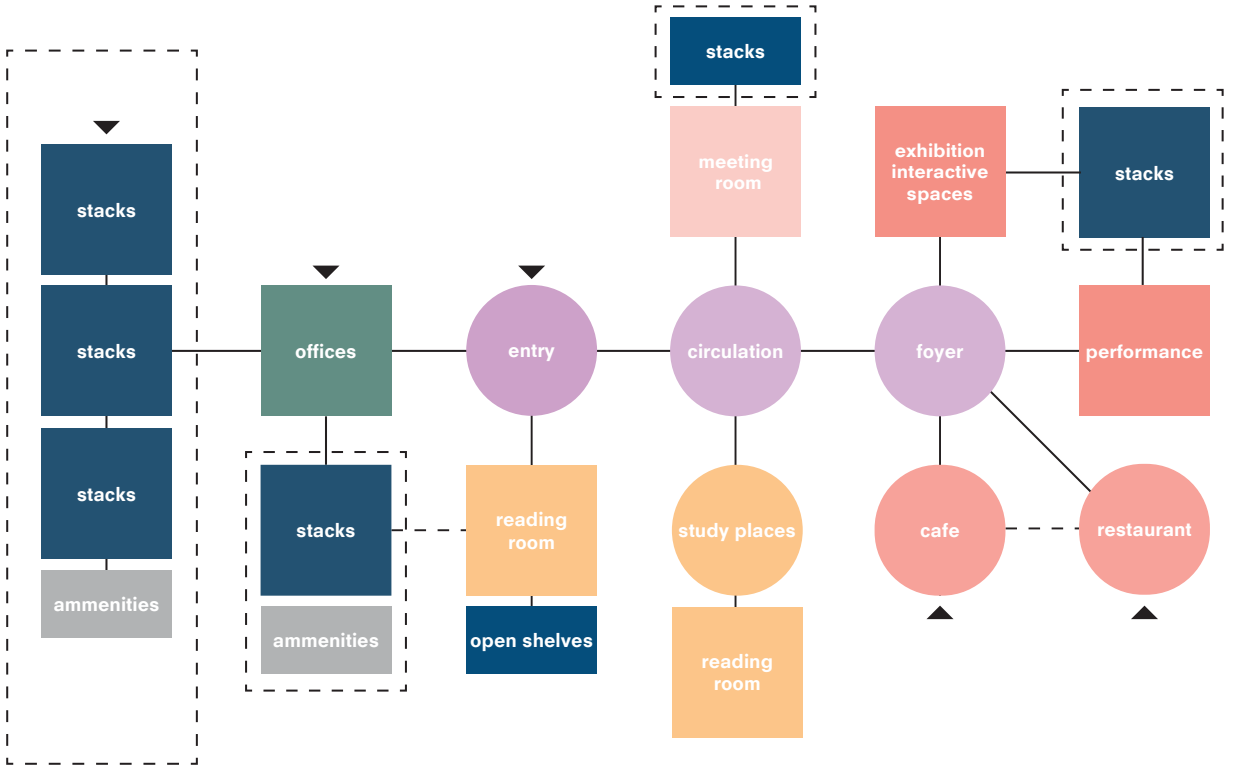
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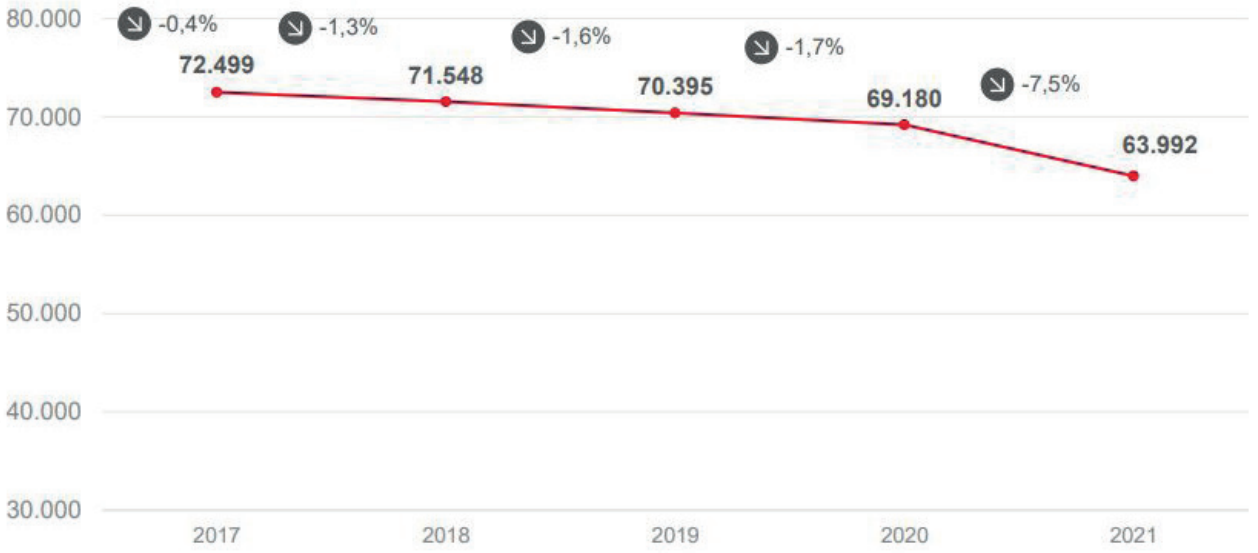
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FUNCTIONAL SCHEME



DECREASE OF PUBLISHED WORKS



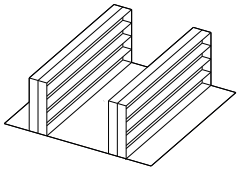
dnb.de

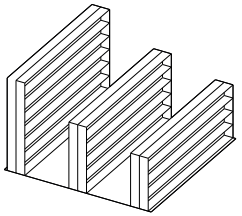
UNUSED SPACE



HOW TO STACK

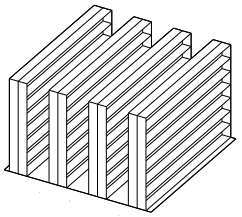
OPEN

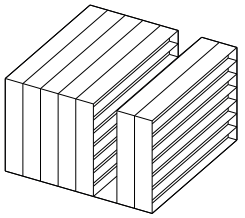






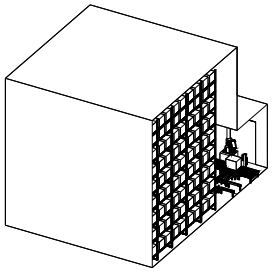
COMPACT





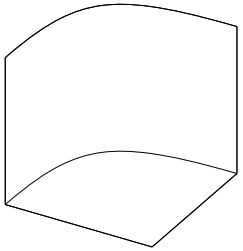


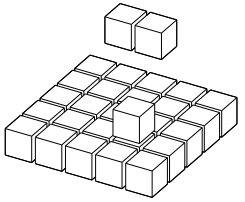
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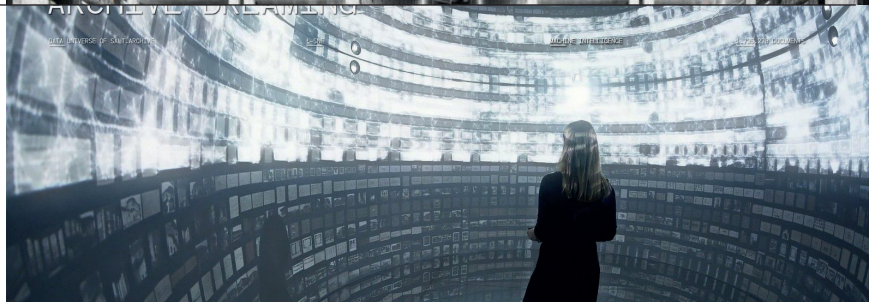




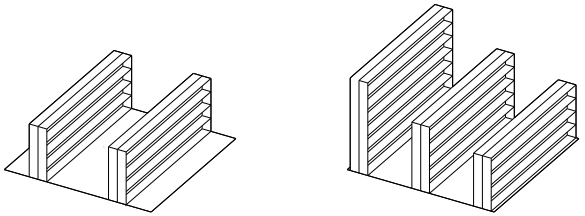
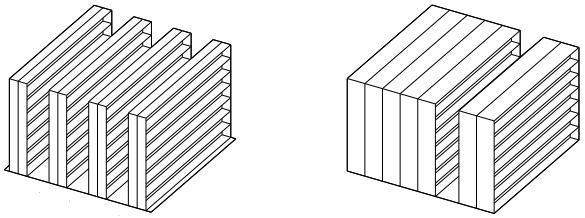
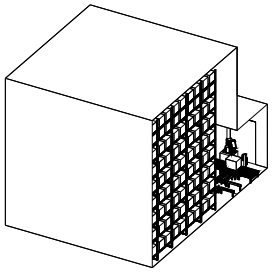
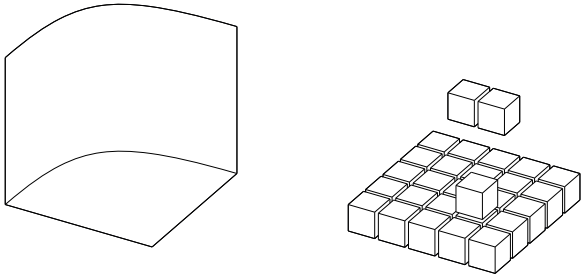
INTERACTIVE

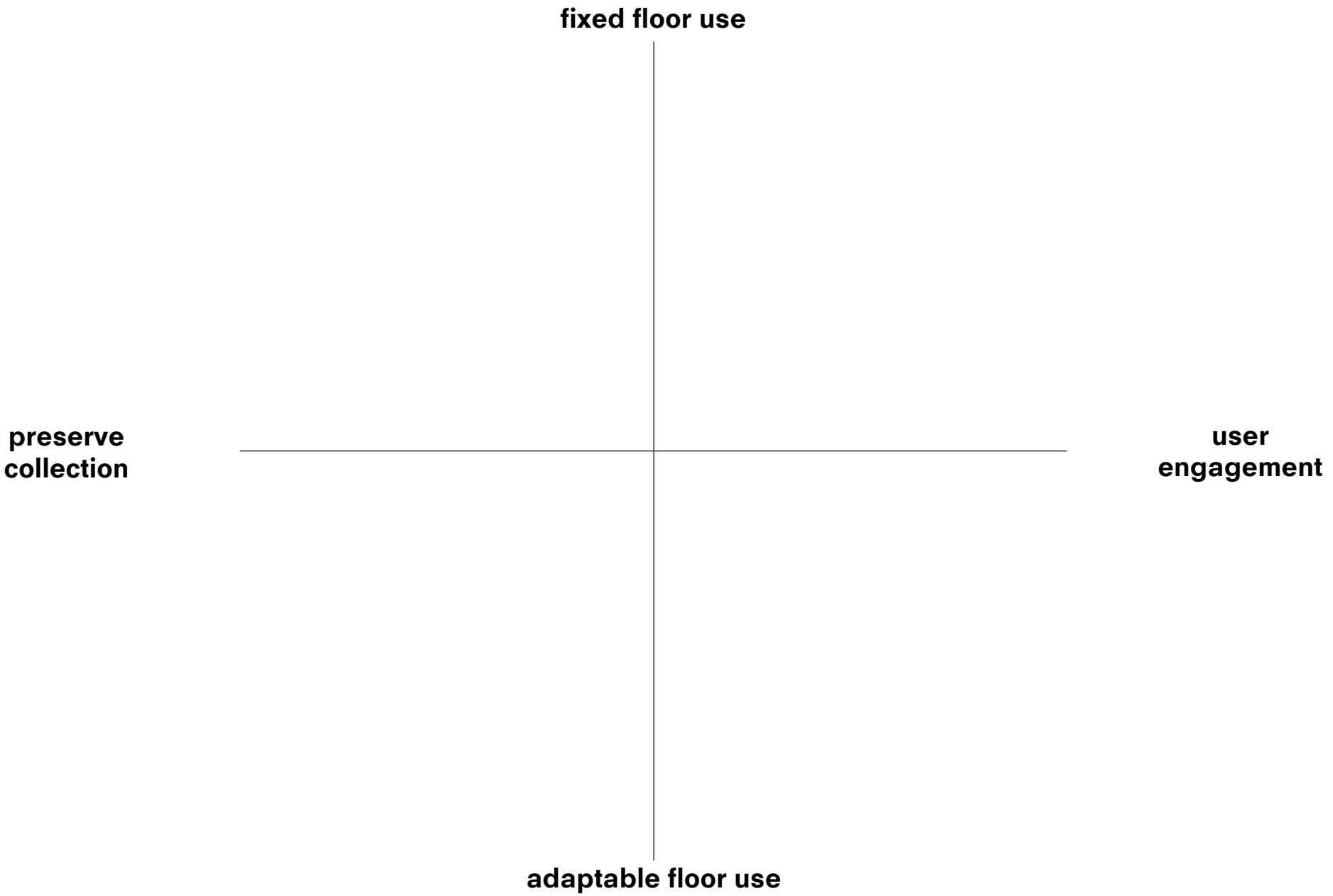




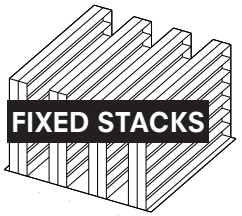


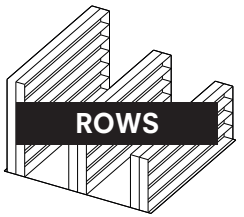
HOW TO STACK

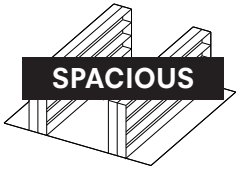
		BOOK DENSITY	ADVANTAGE	DISADVANTAGE
OPEN		80 - 170 books/m²	compact storage	needs staff takes time to collect
COMPACT		580 - 1200 books/m²	compact storage	needs staff takes time to collect
AUTOMATED		2300 books/m²	optimal preservation	expensive
INTERACTIVE		∞ books/m²	engages user	no original copy

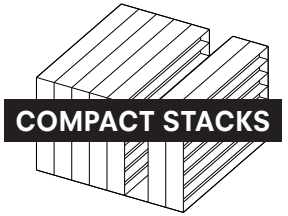

fixed floor use
preserve collection
user engagement
adaptable floor use

fixed floor use



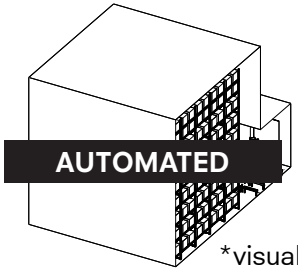




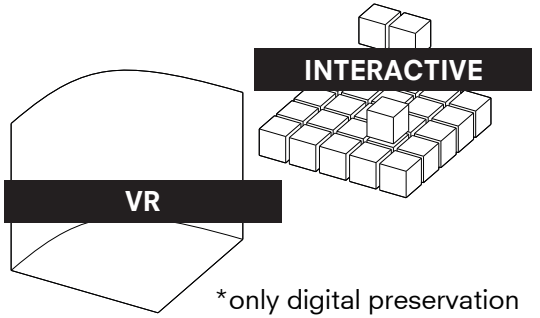


preserve collection

user engagement



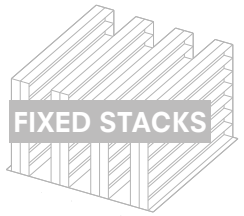
*visual connection

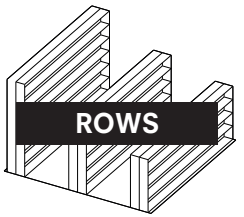


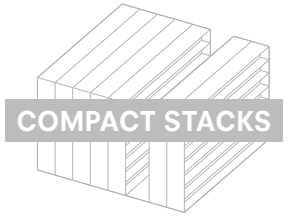
*only digital preservation

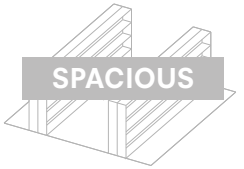
adaptable floor use

fixed floor use



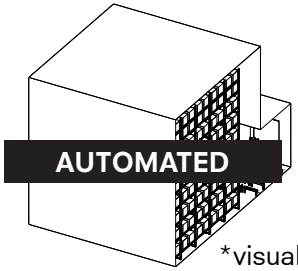




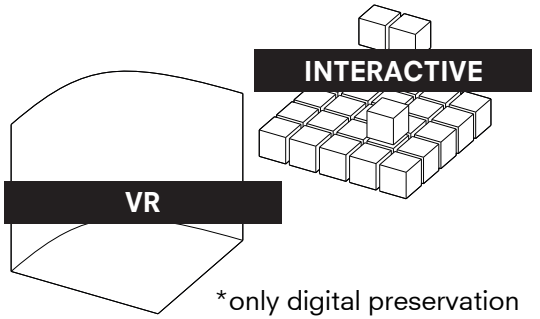


preserve collection

user engagement



*visual connection

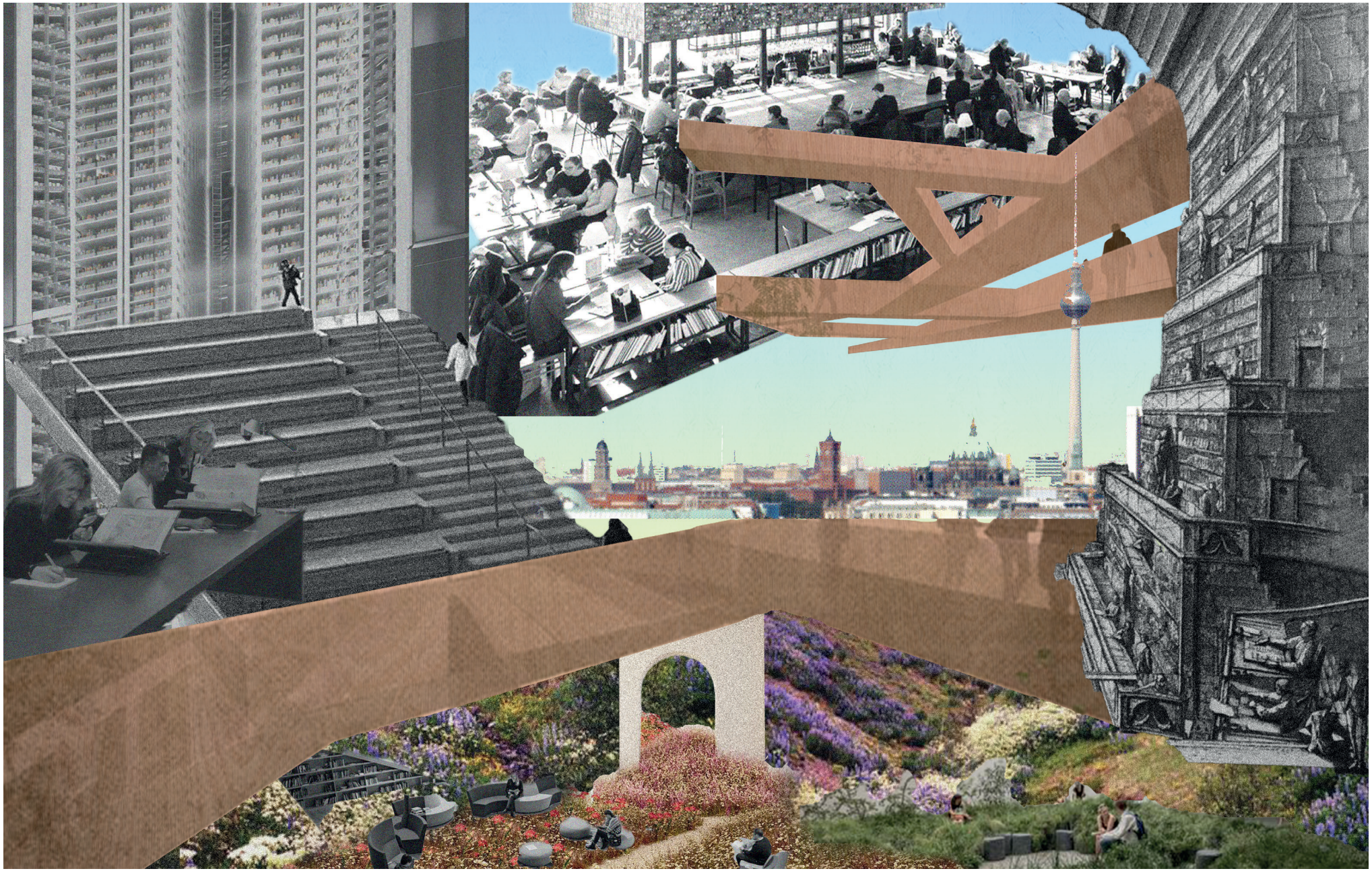


*only digital preservation

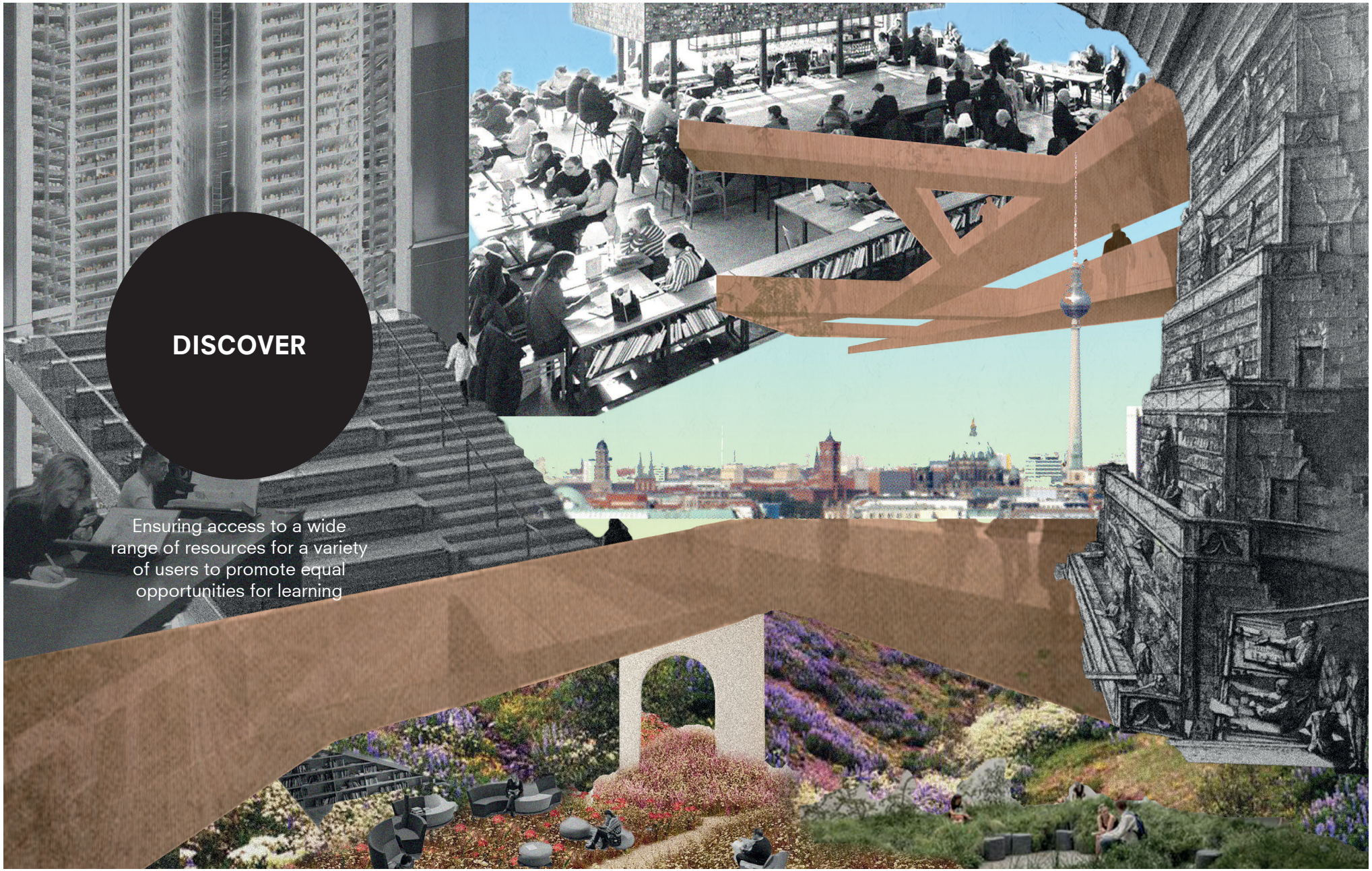
adaptable floor use

AMBITIONS

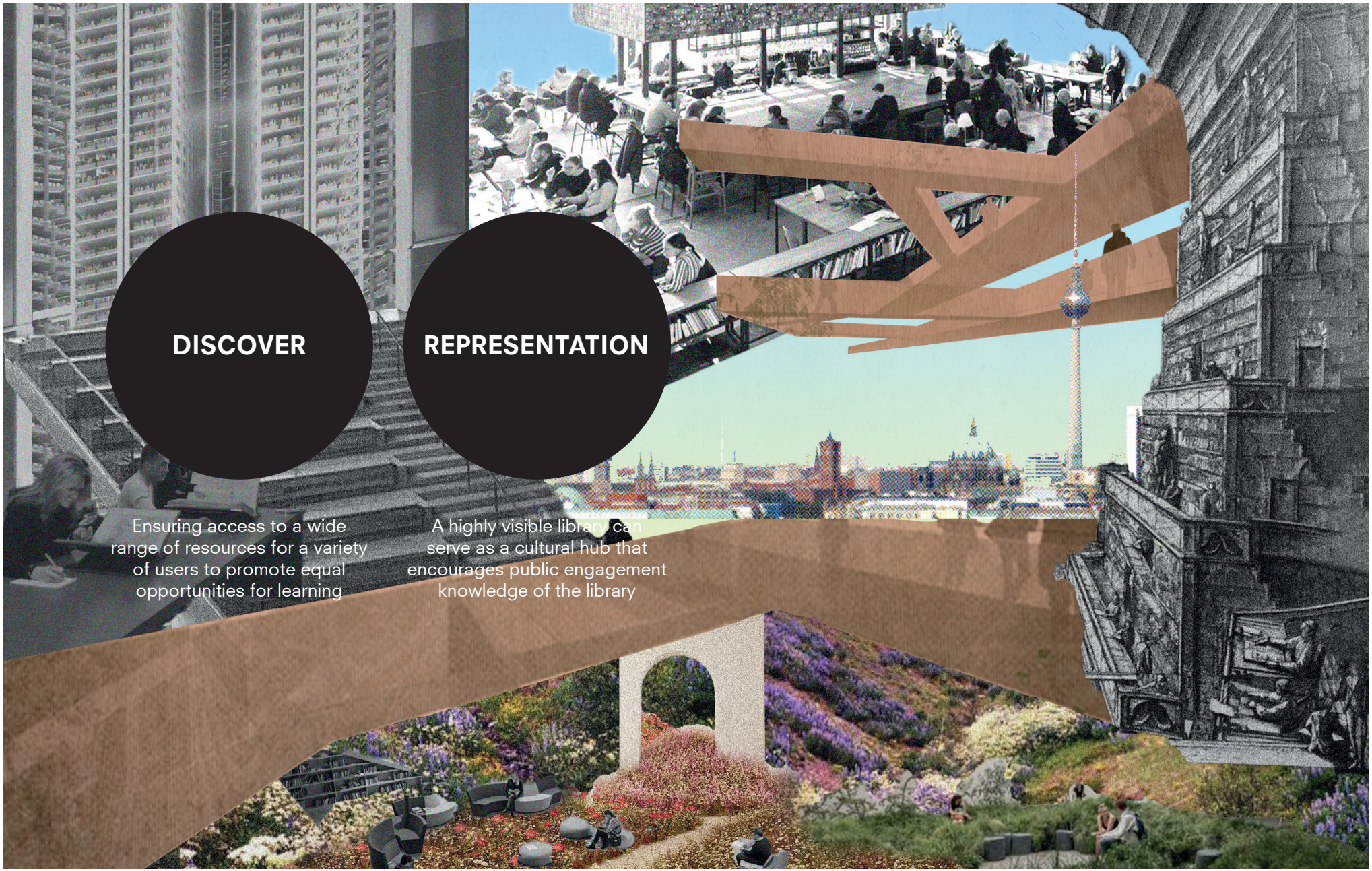
DESIGN AMBITIONS



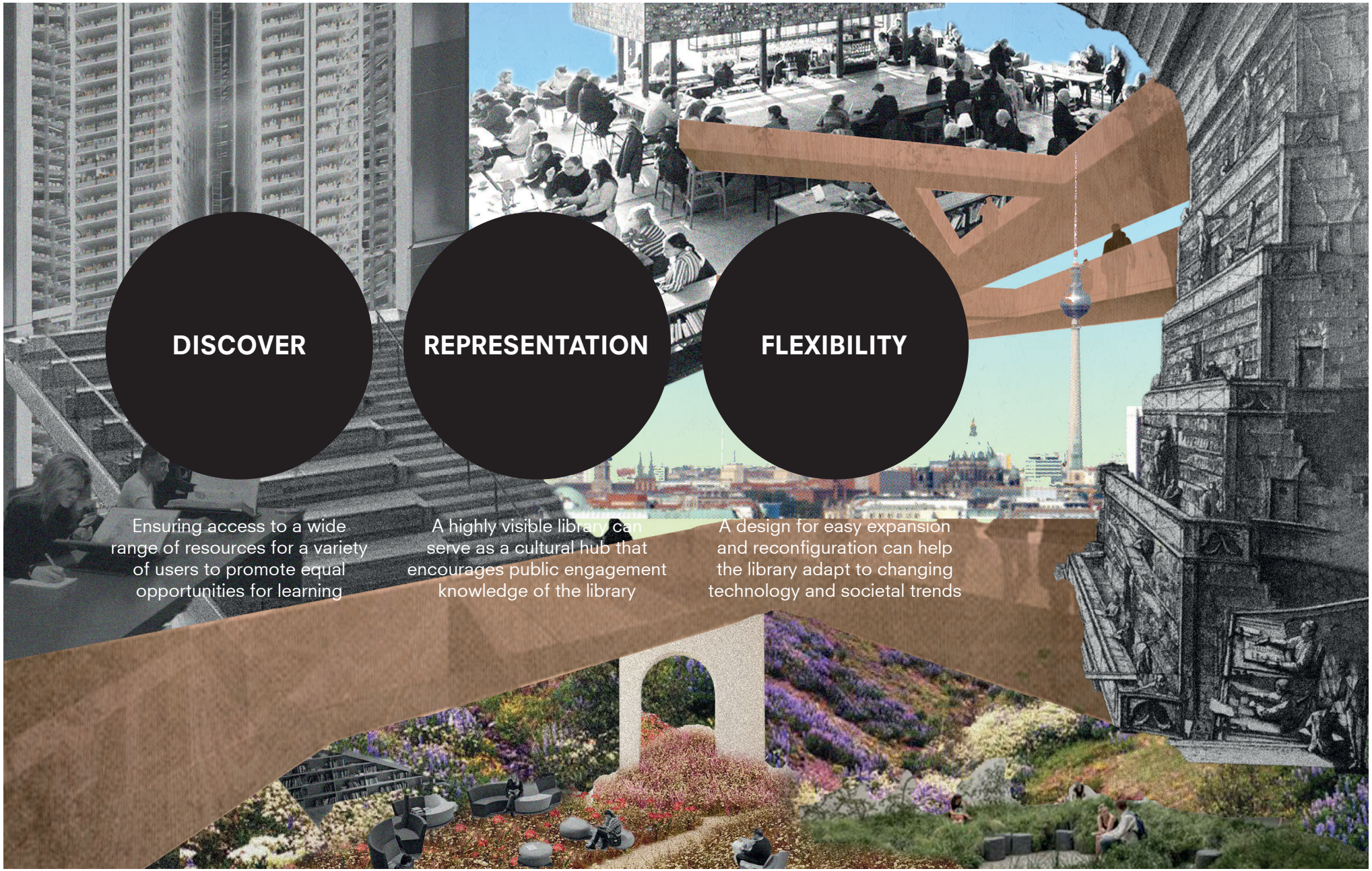
DESIGN AMBITIONS



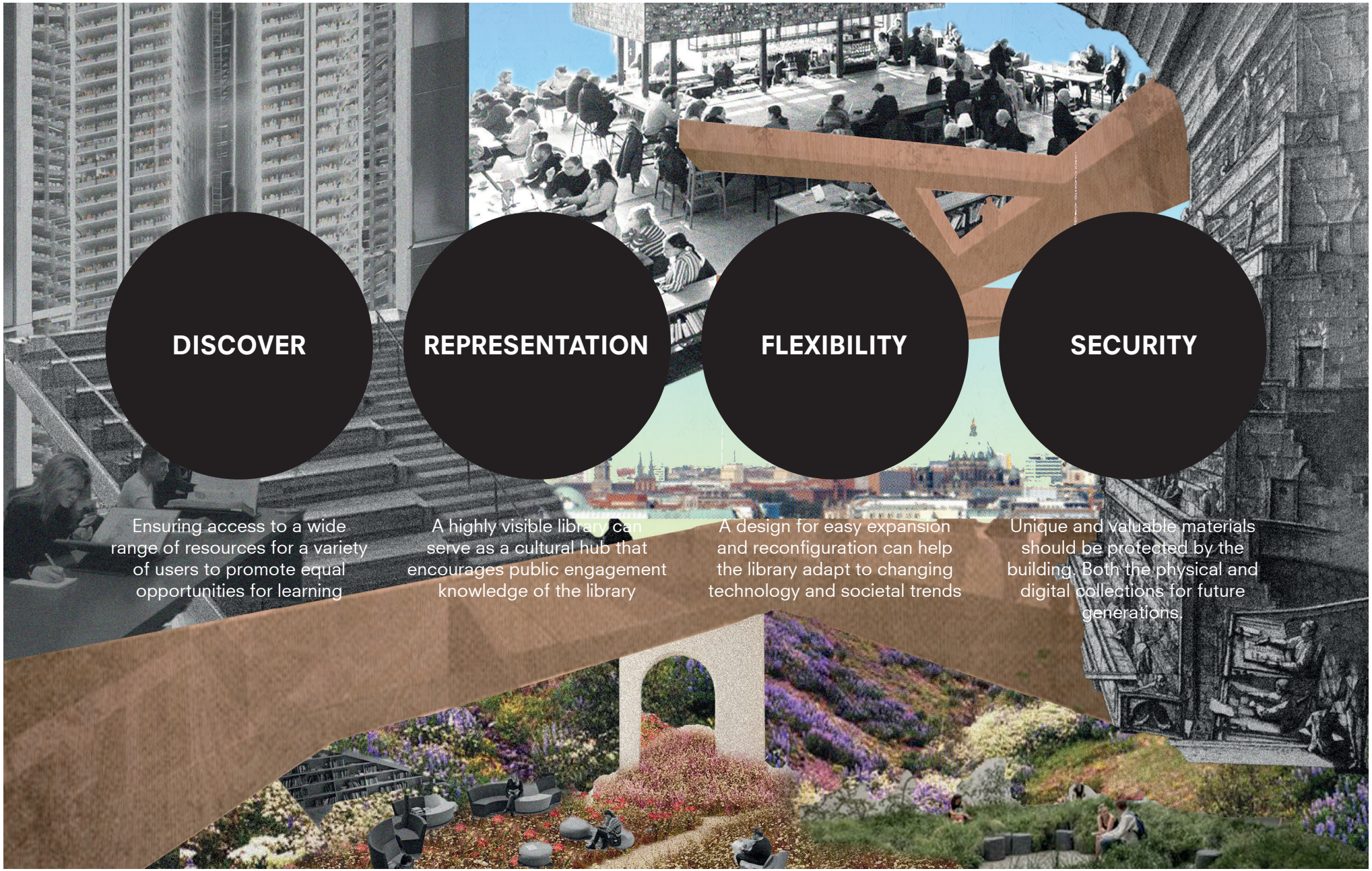
DESIGN AMBITIONS



DESIGN AMBITIONS



DESIGN AMBITIONS



FINDING A LOCATION

research

STAKEHOLDERS

STAKEHOLDERS



STAKEHOLDERS





STAKEHOLDERS







STAKEHOLDERS





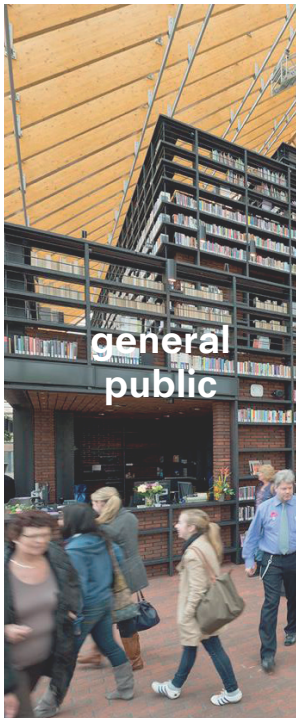




research

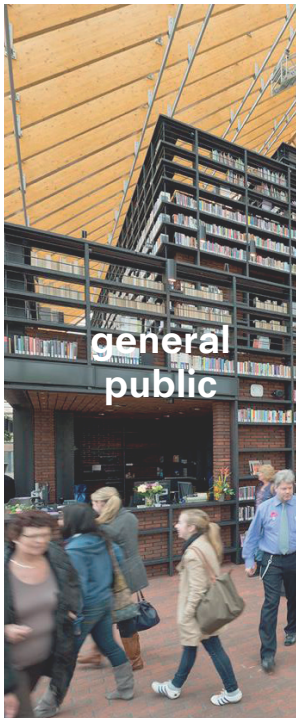
USERS

USERS



research

USERS

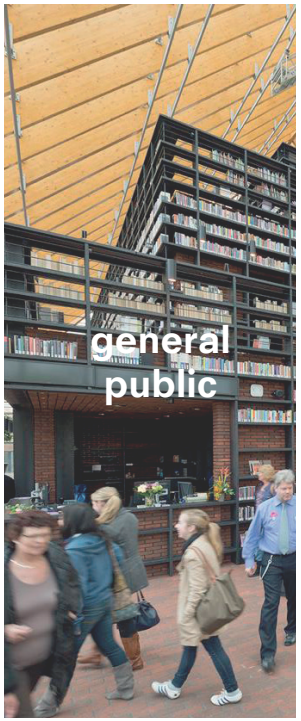






research

USERS



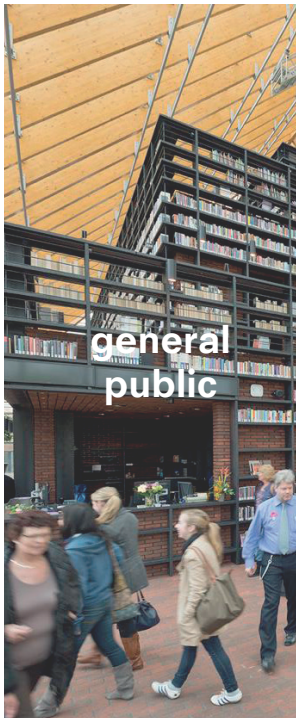






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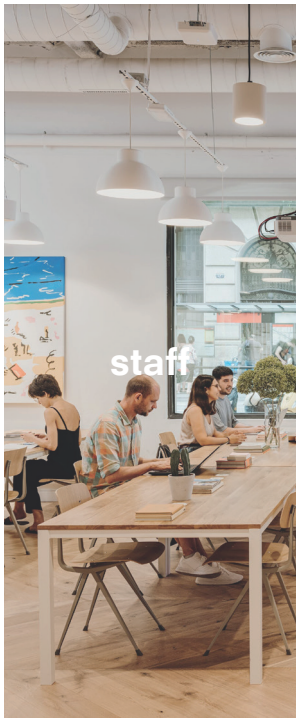
USERS











SITE



SITE REQUIREMENTS

FUTURE



URBAN DEVELOPMENT



BUILDING AGE



POPULATION/BUILDING DENSITY

SITE REQUIREMENTS

FUTURE



URBAN DEVELOPMENT



BUILDING AGE

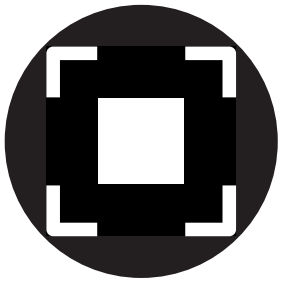


POPULATION/BUILDING DENSITY

TYPOLOGY



LOGISTICS



PLOT



SAFETY

SITE REQUIREMENTS

FUTURE



URBAN DEVELOPMENT



BUILDING AGE

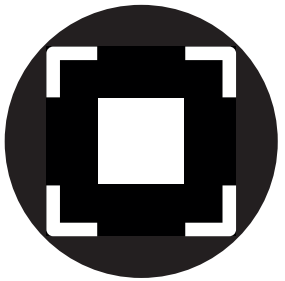


POPULATION/BUILDING DENSITY

TYPOLOGY



LOGISTICS



PLOT

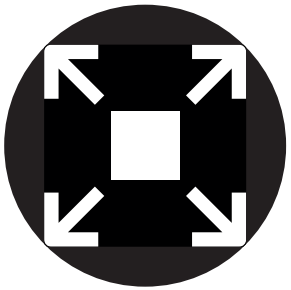


SAFETY

PROJECT



ACCESSIBILITY



SPACE

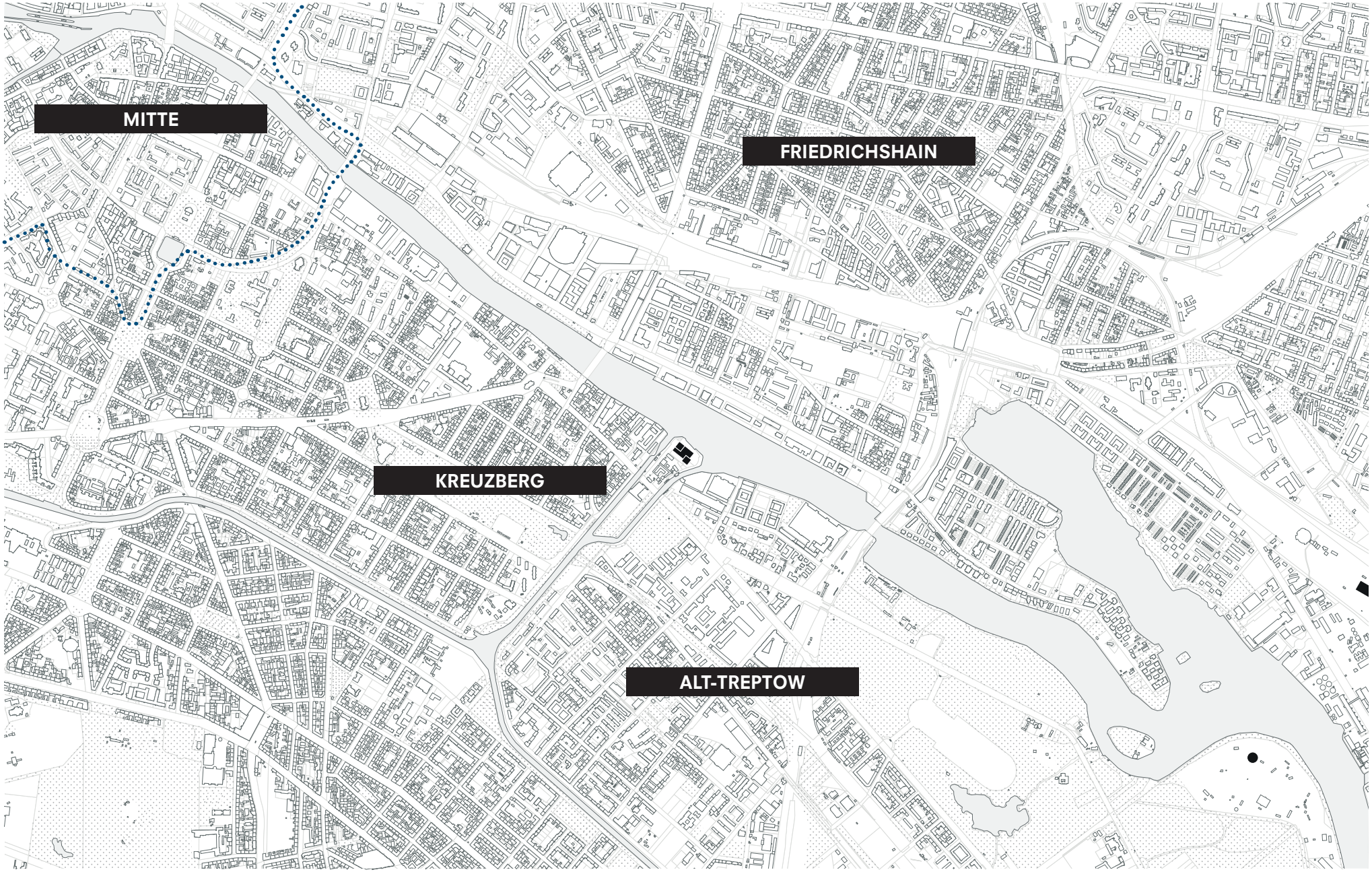


VISIBILITY

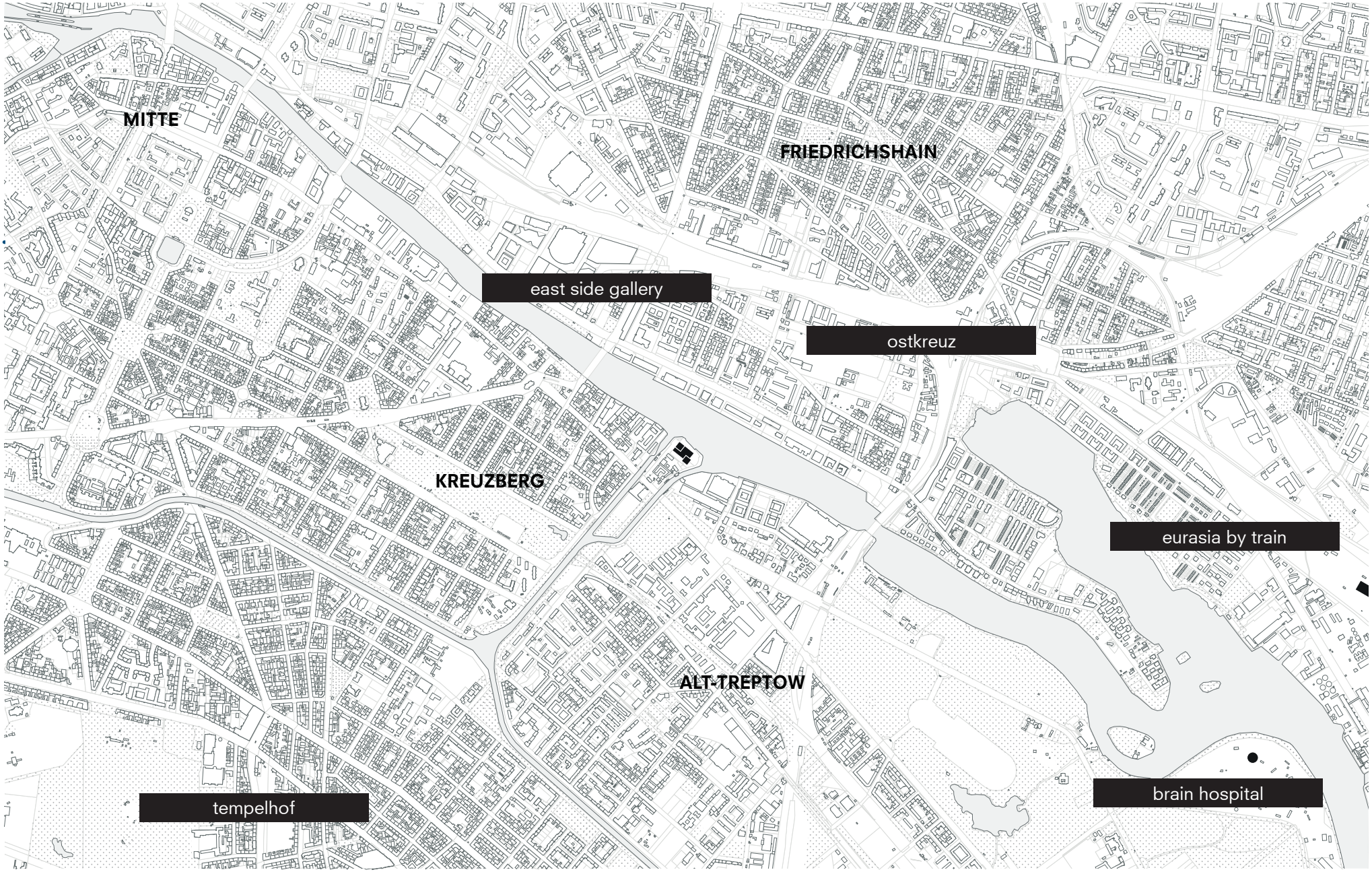
SITE



SITE

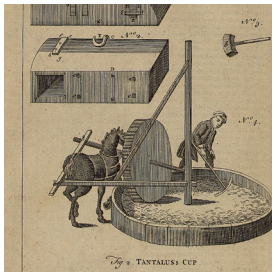

MITTE
FRIEDRICHSHAIN
KREUZBERG
ALT-TREPTOW
0 100 200 500 1000m

SITE


MITTE
FRIEDRICHSHAIN
east side gallery
ostkreuz
KREUZBERG
eurasia by train
ALT-TREPTOW
tempelhof
brain hospital
0 100 200 500 1000m

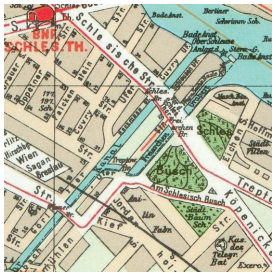
HISTORY

Bark mill (Lohmühle)



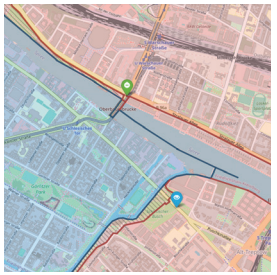
1845

Görlitz train station



1900

Boarder east/west



1989

MediaSpree versenken!
MediaSpree für alle!



Revitalize vacant fallow lands on the river



2007 2013

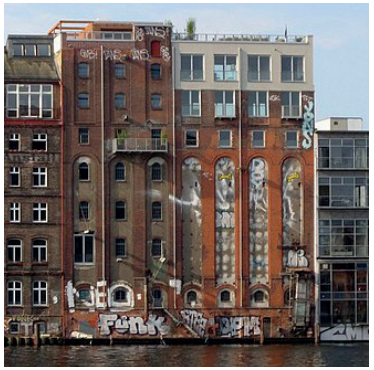
research

HISTORY



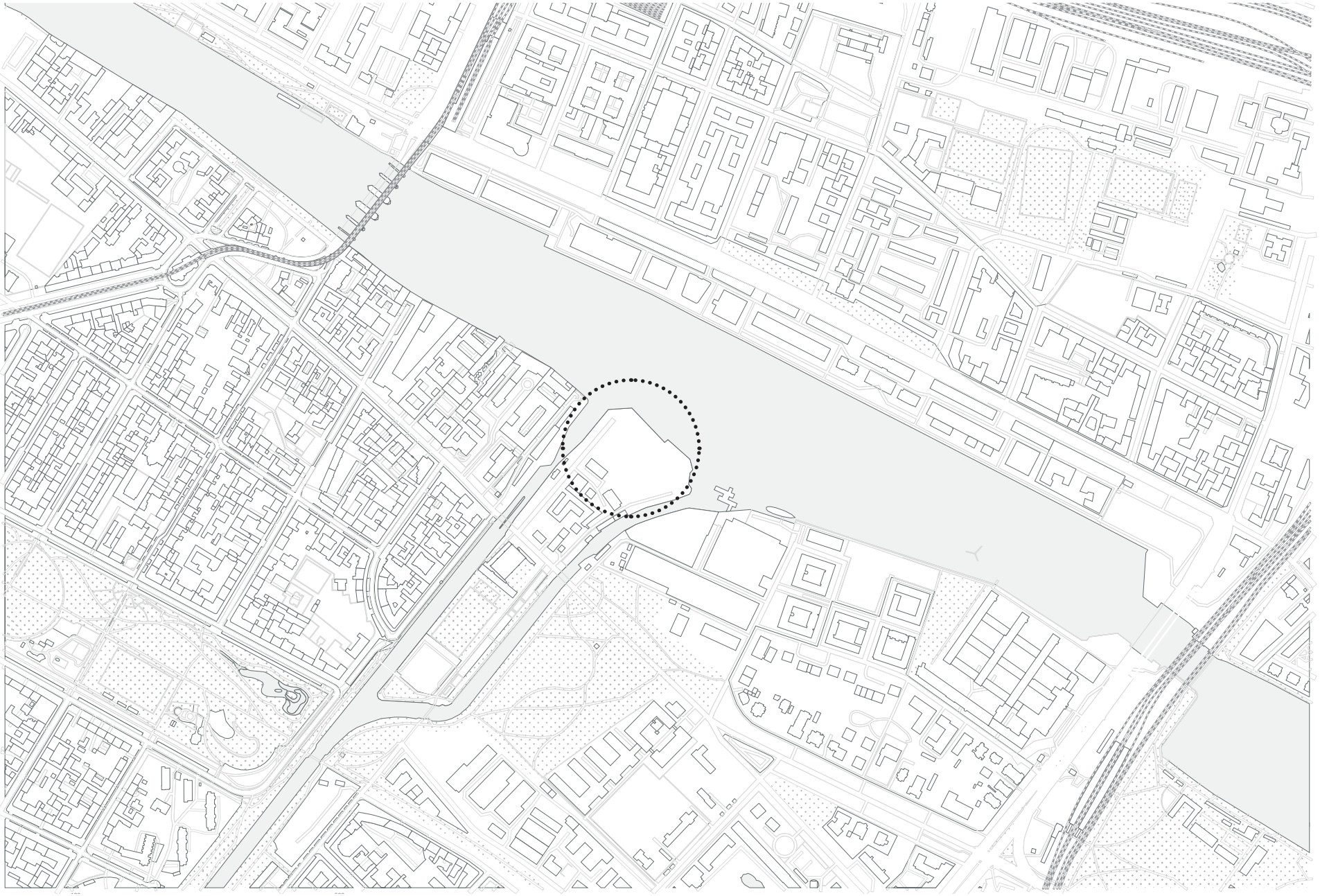




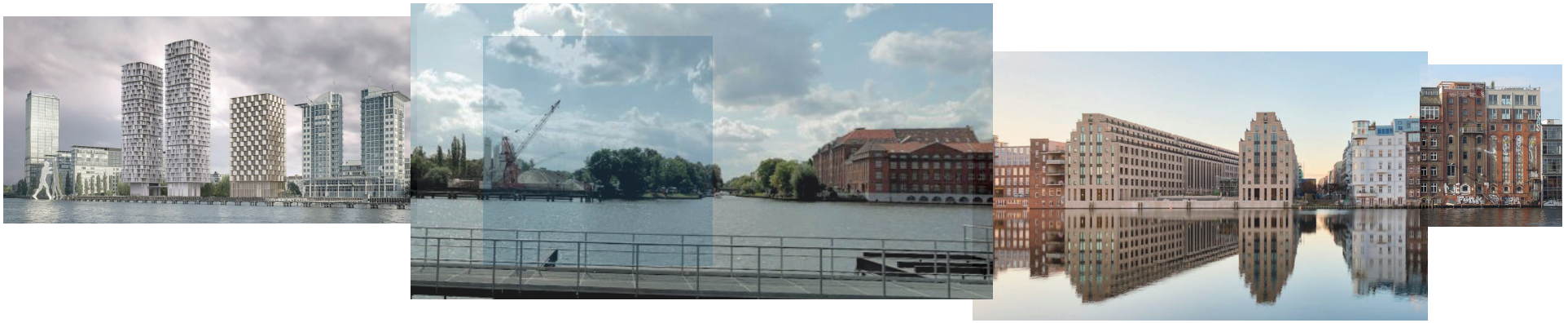




SITE



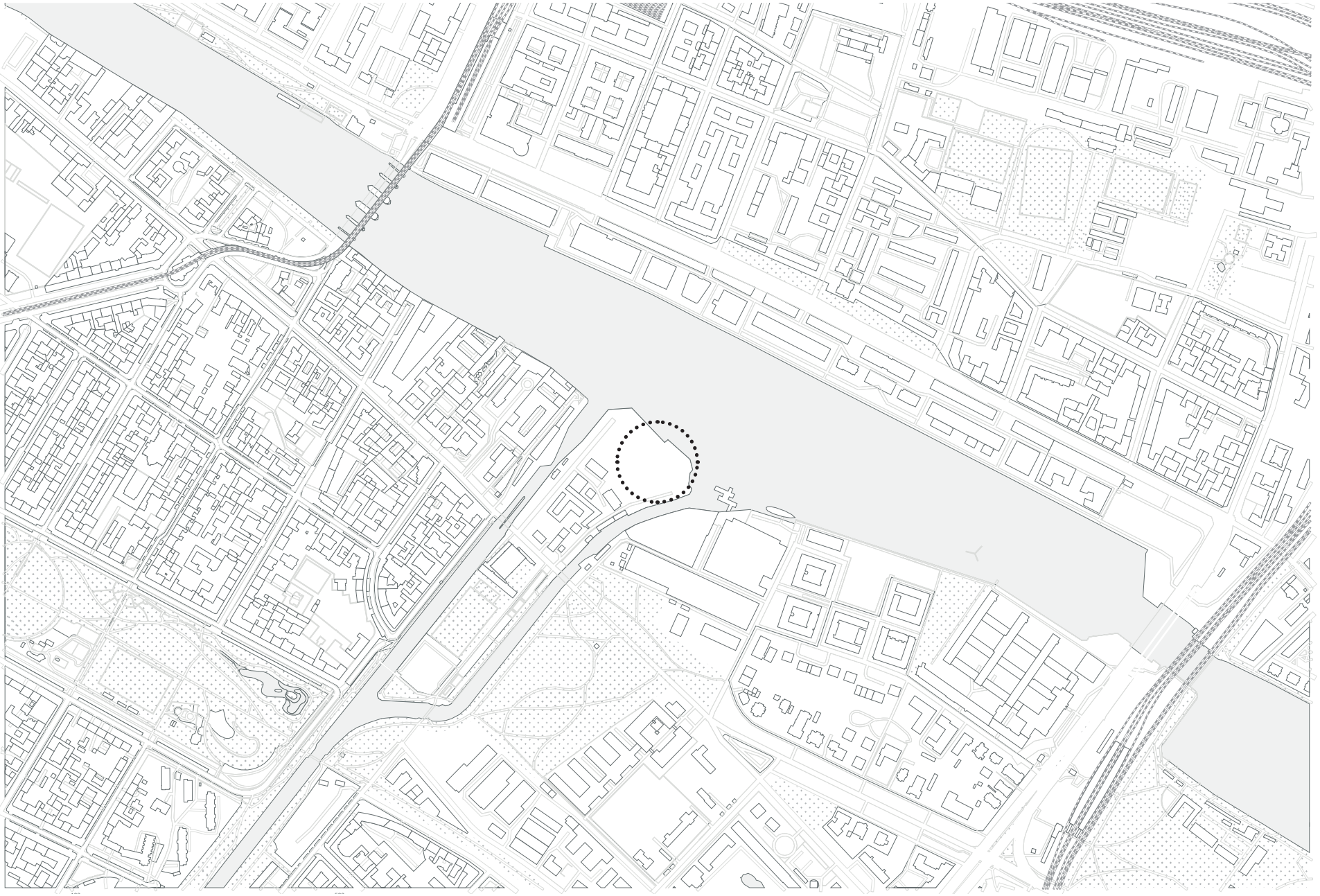
LOHMÜHLENINSEL







SITE



SITE



A

A

0 100 200 500

CP

SITE

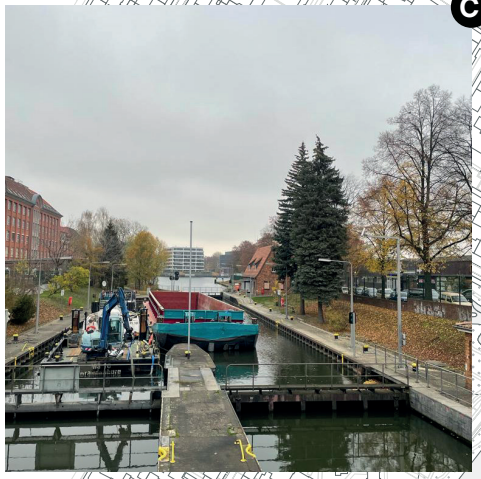




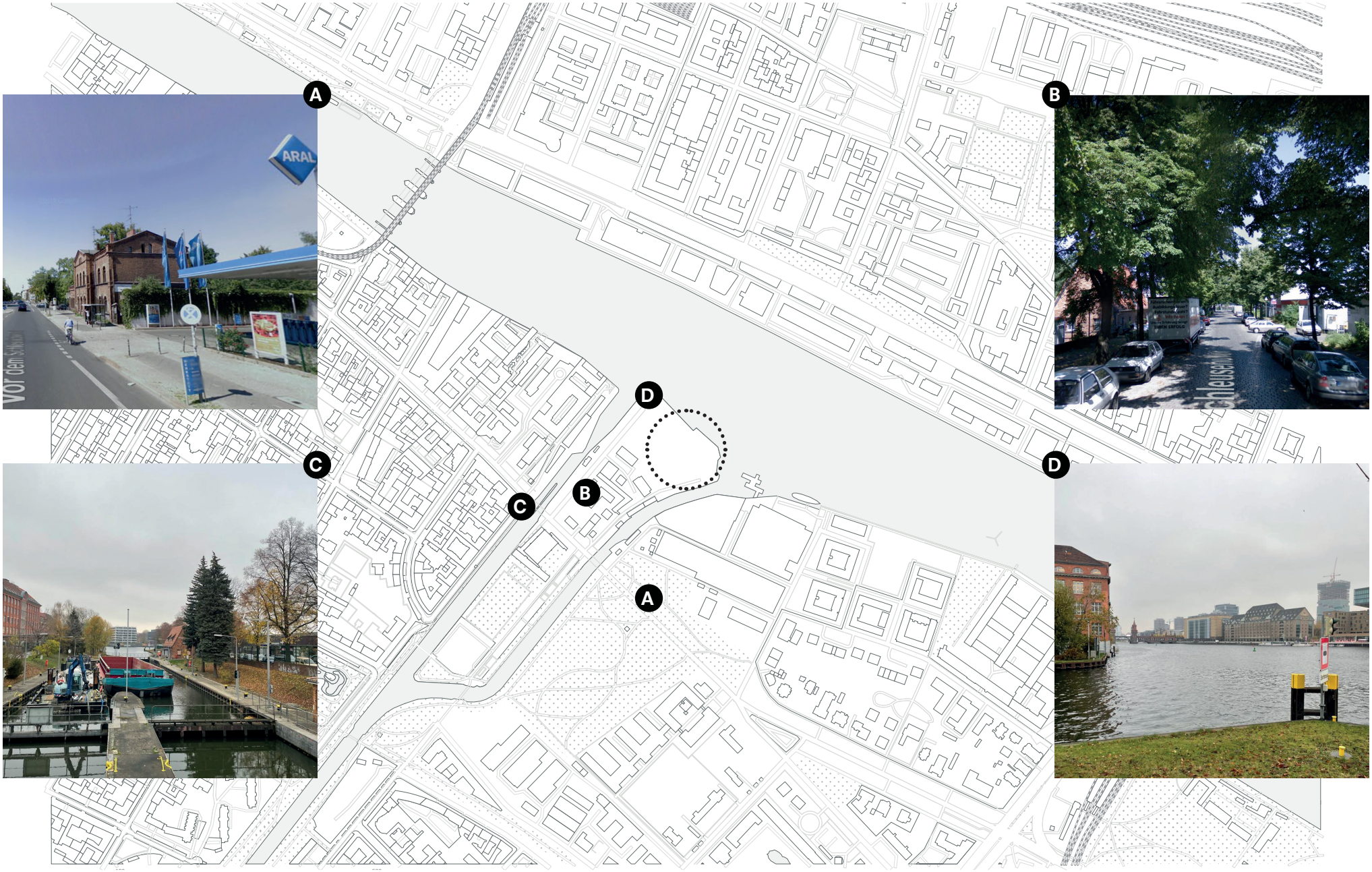
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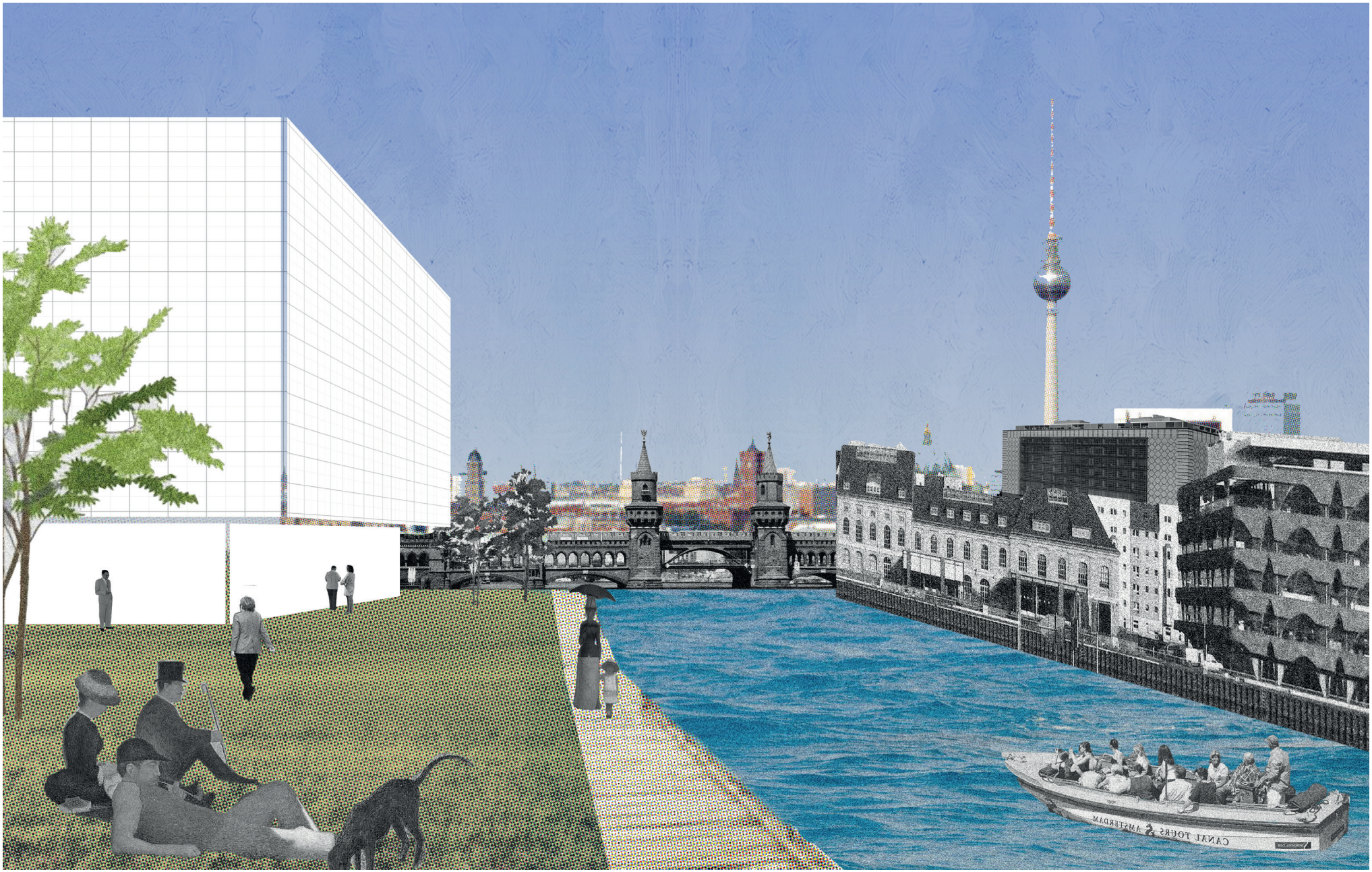
SITE



CURRENT SITUATION



ACTIVATE RIVER FRONT



INTRO

RESEARCH

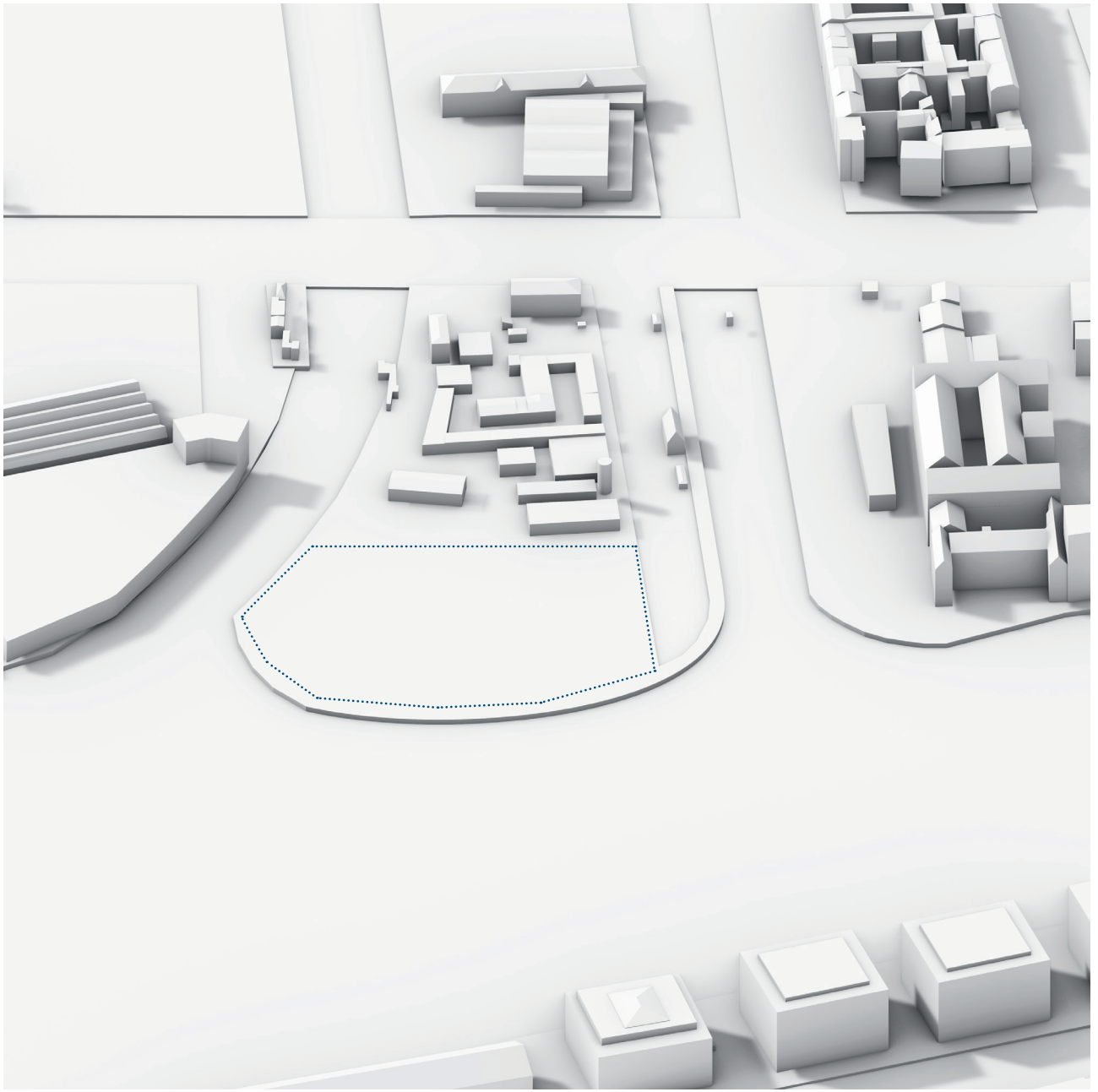
CONCEPT

DESIGN

CONCLUSION

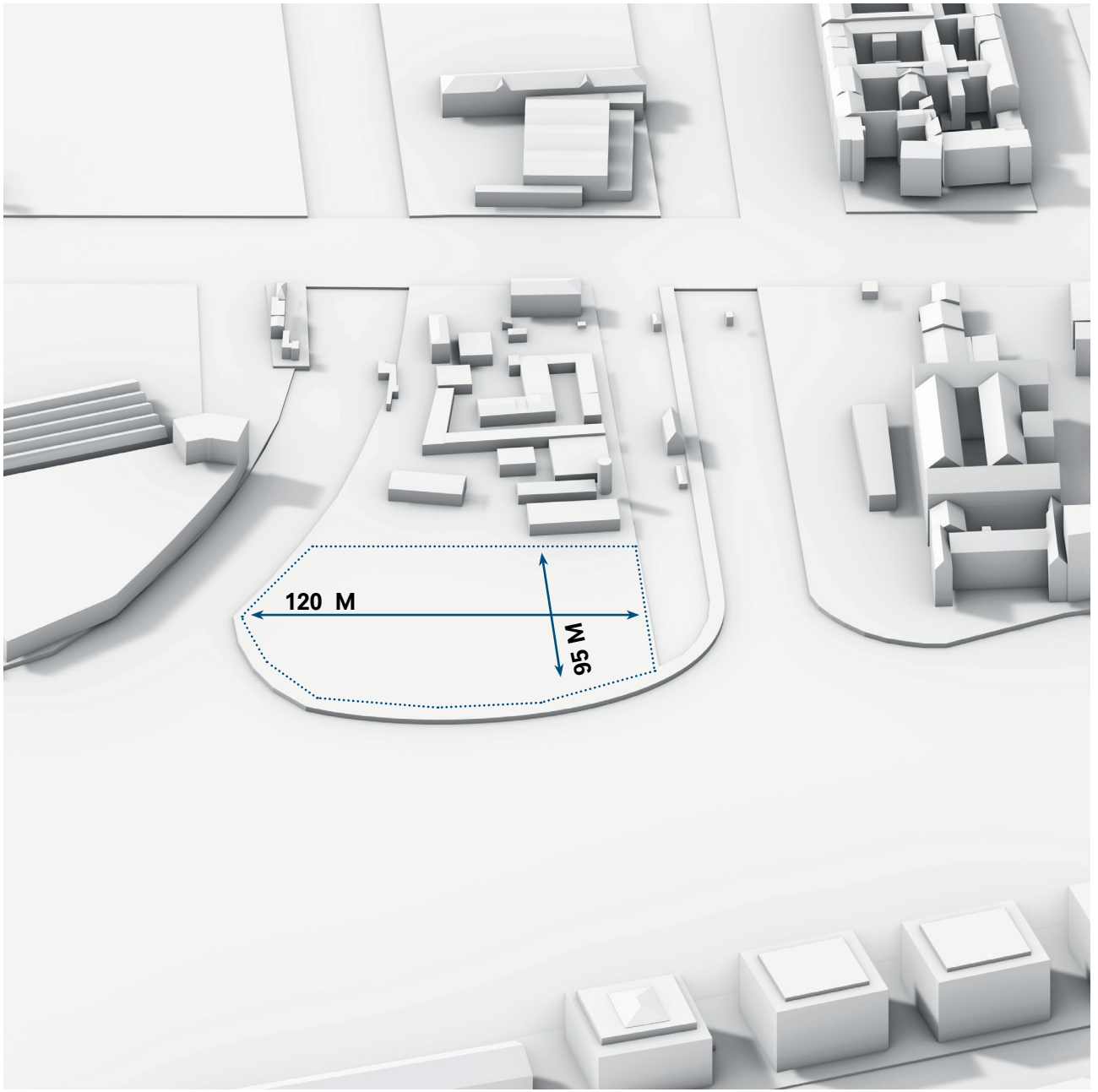
concept

SITE



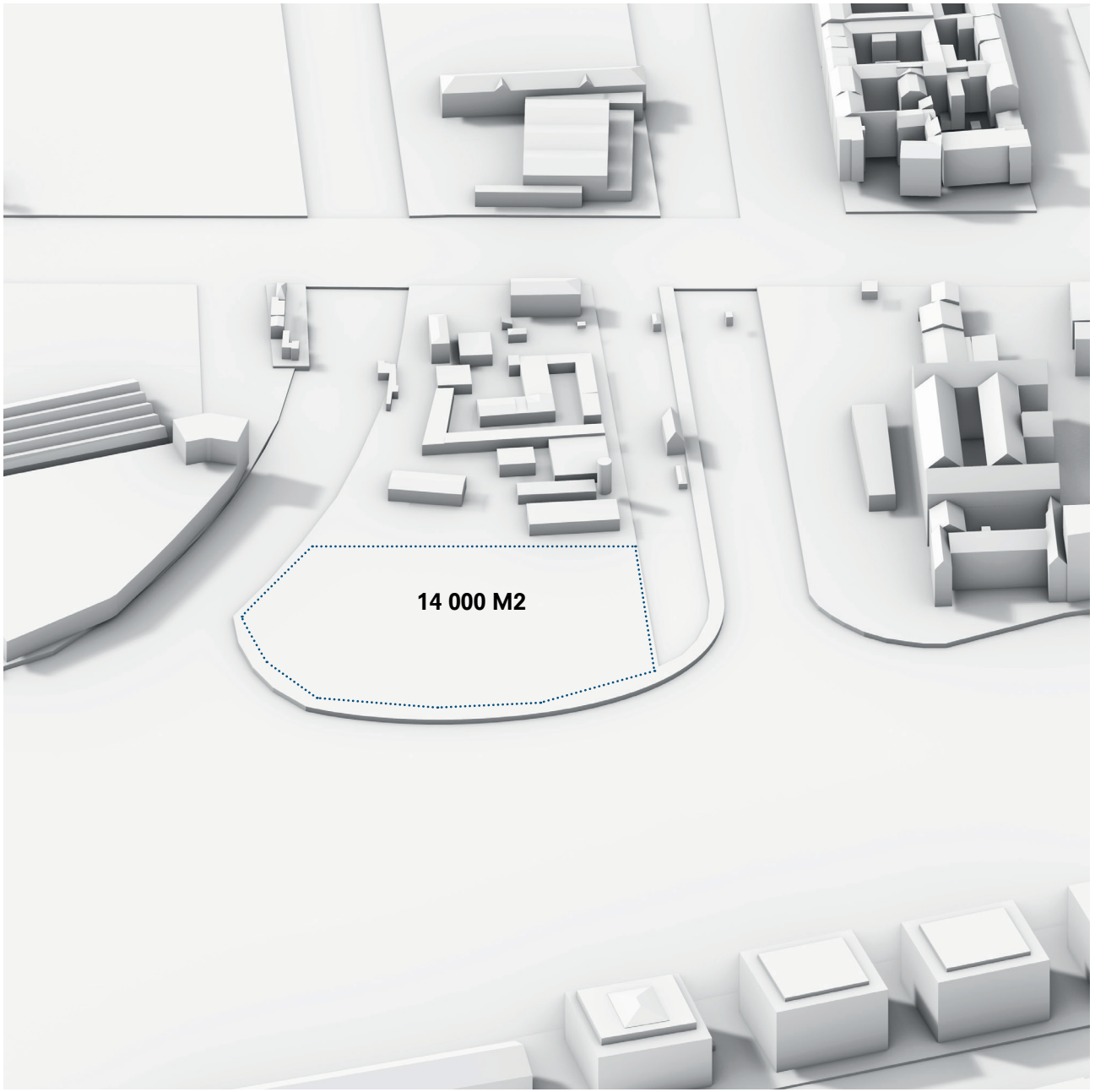
concept

SITE



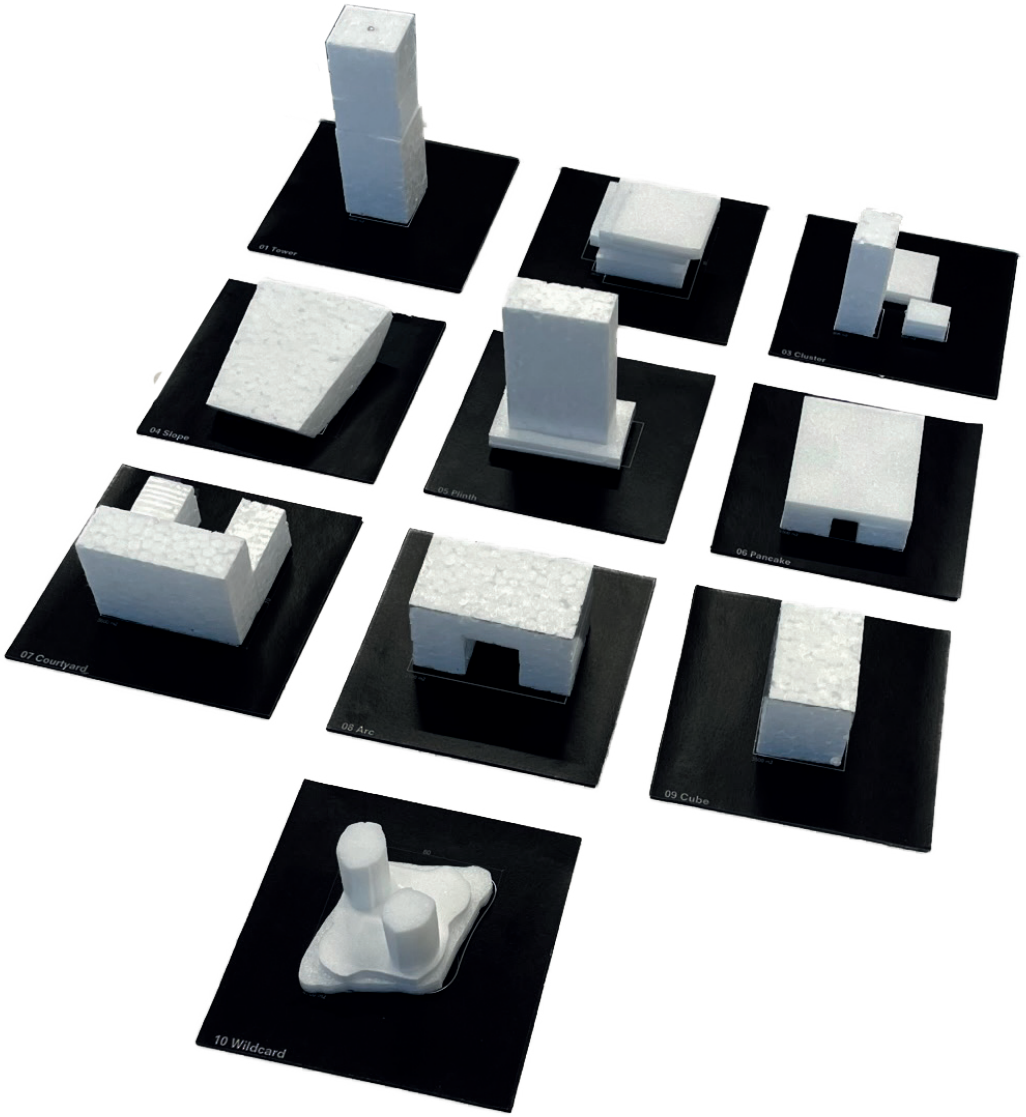
concept

SITE



concept

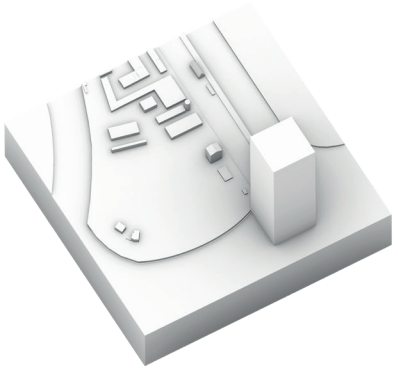
MASSING OPTIONS

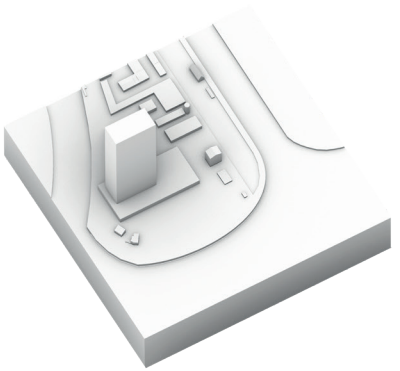


concept

VARIATIONS

TOWER







CLUSTER



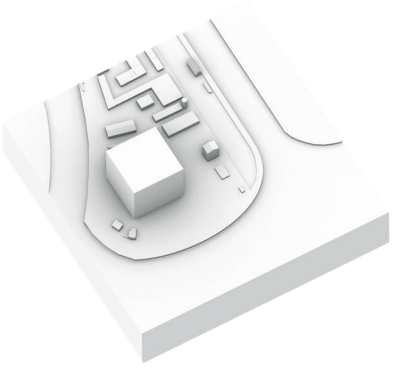




VOLUME







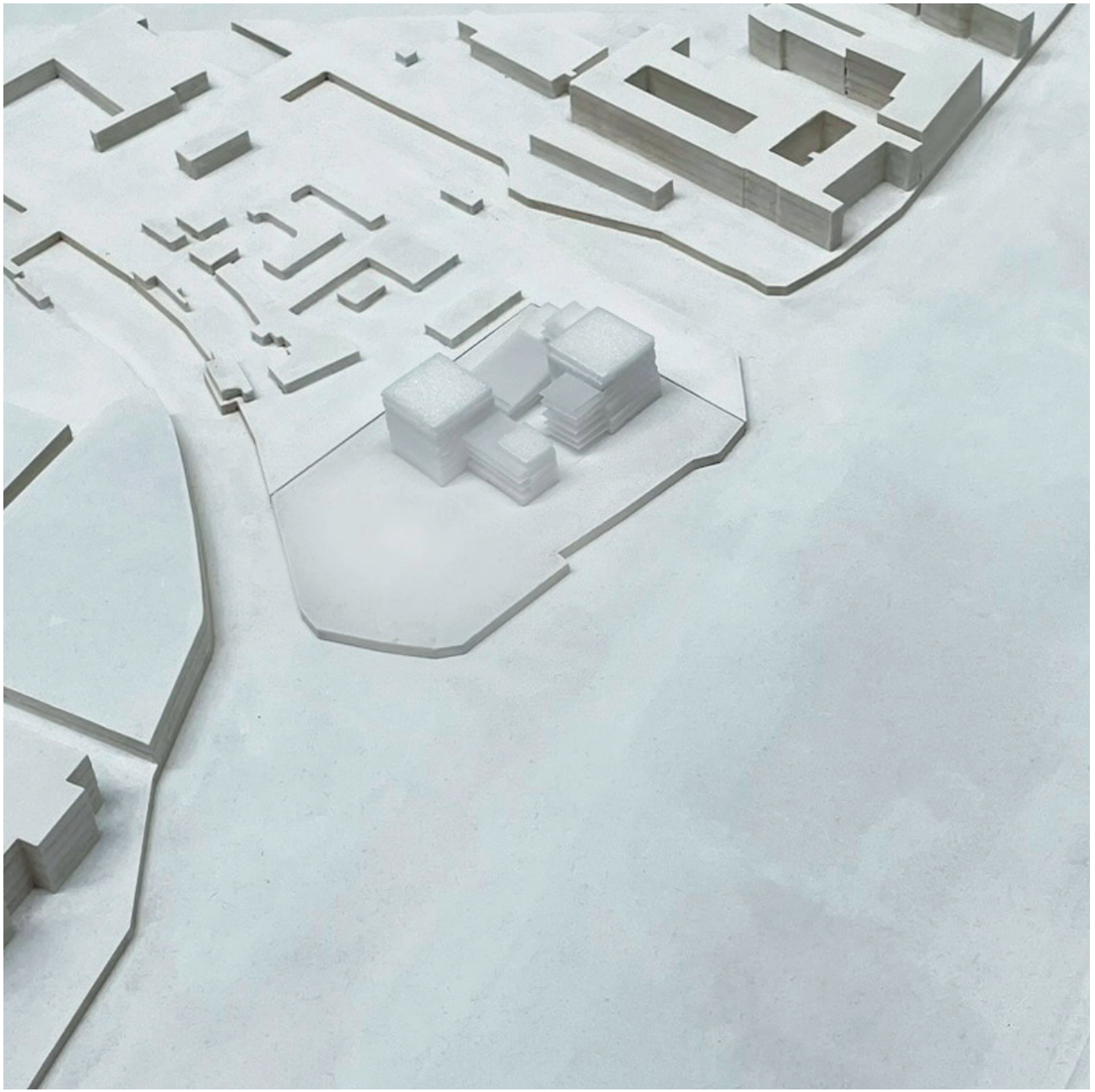
concept

VARIATIONS

CLUSTER



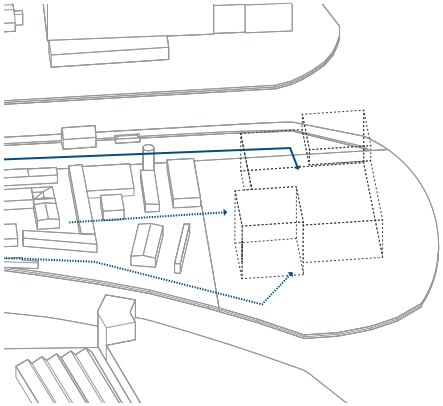
CONCEPT



concept

PRINCIPLES

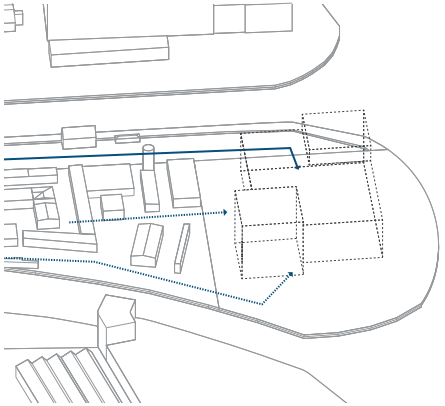
PRINCIPLES



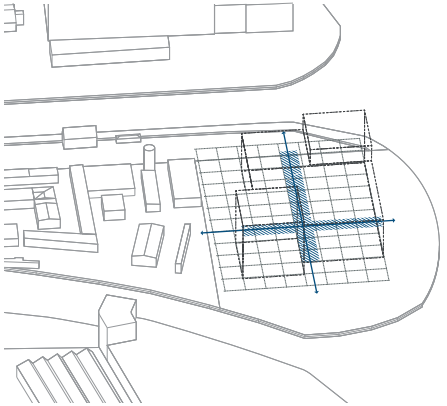
ACCESS

concept

PRINCIPLES



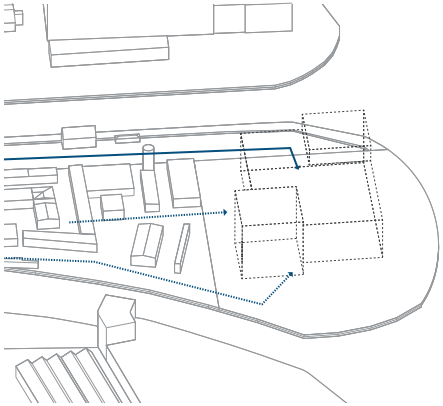
ACCESS



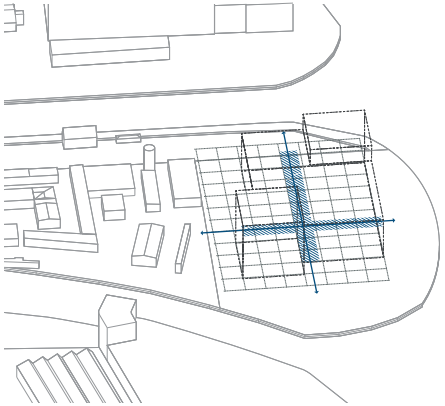
INNER STREET

concept

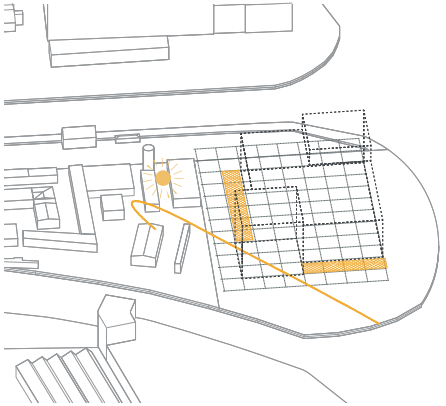
PRINCIPLES



ACCESS



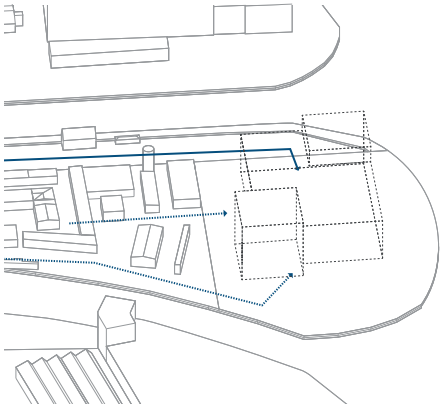
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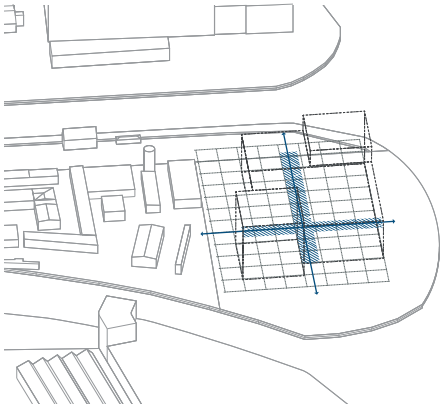
ORIENTATION

concept

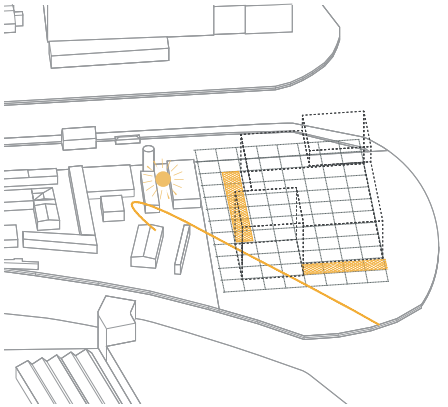
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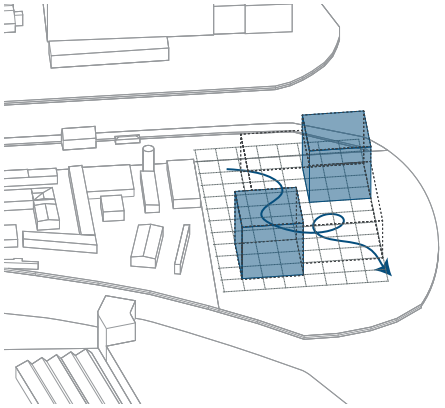
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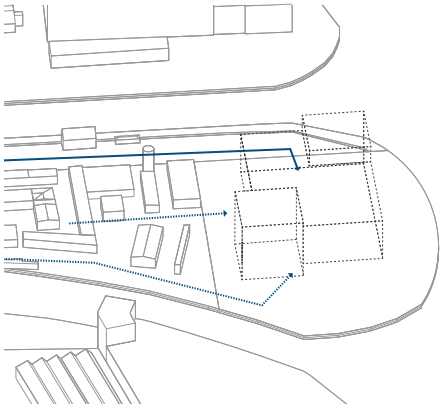
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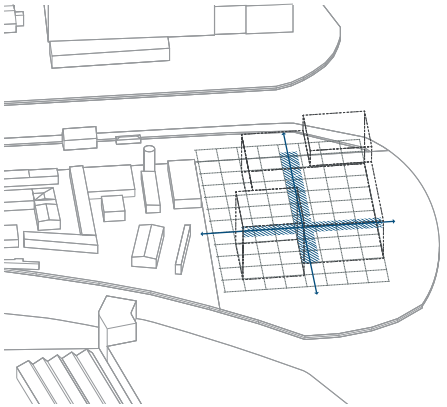
PROMINENT ARCHIVE

concept

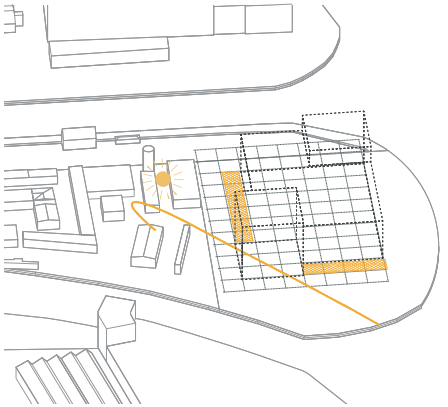
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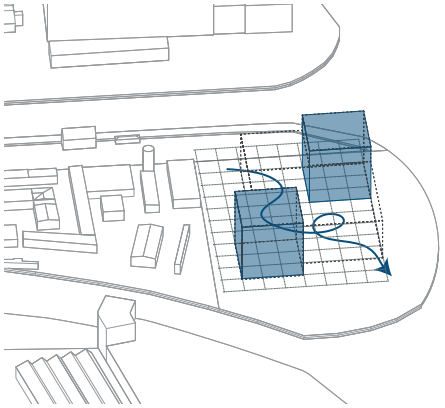
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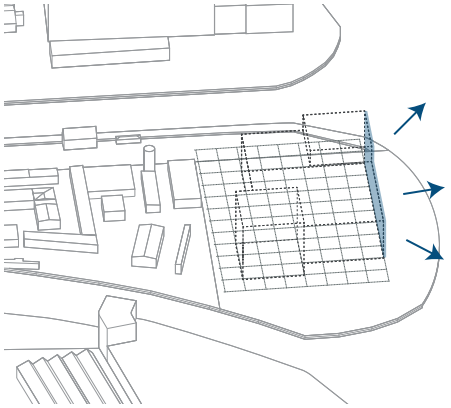
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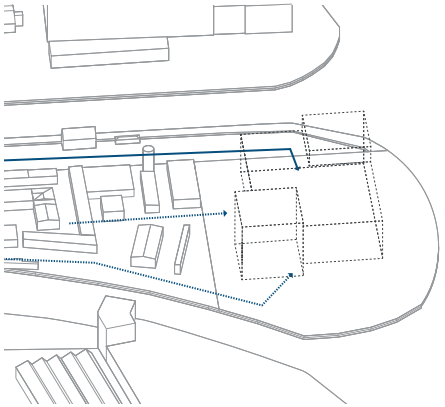
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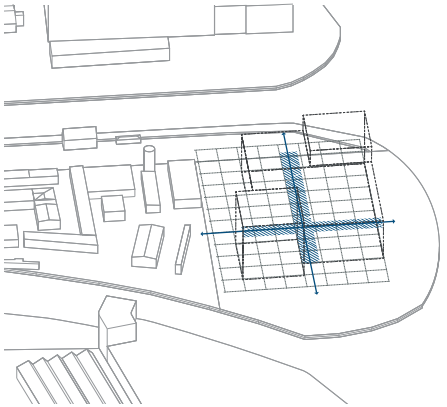
ACTIVE RIVER SIDE

concept

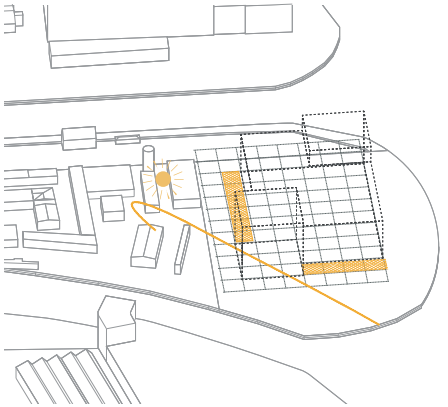
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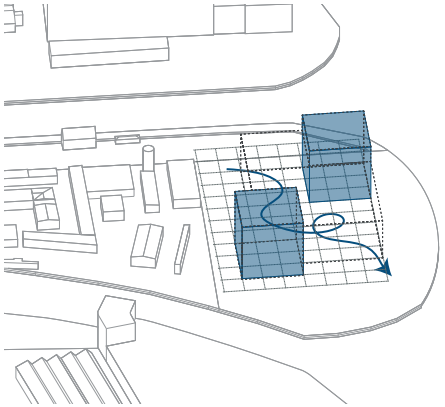
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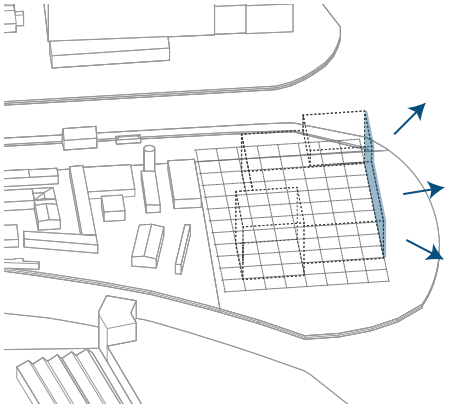
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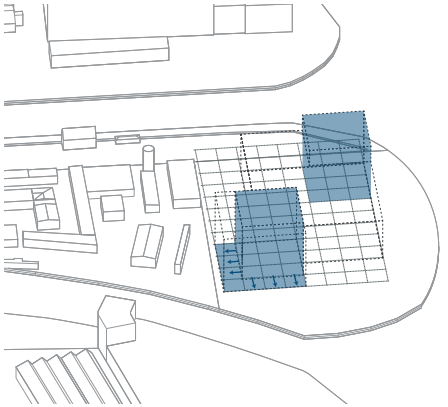
ORIENTATION



PROMINENT ARCHIVE

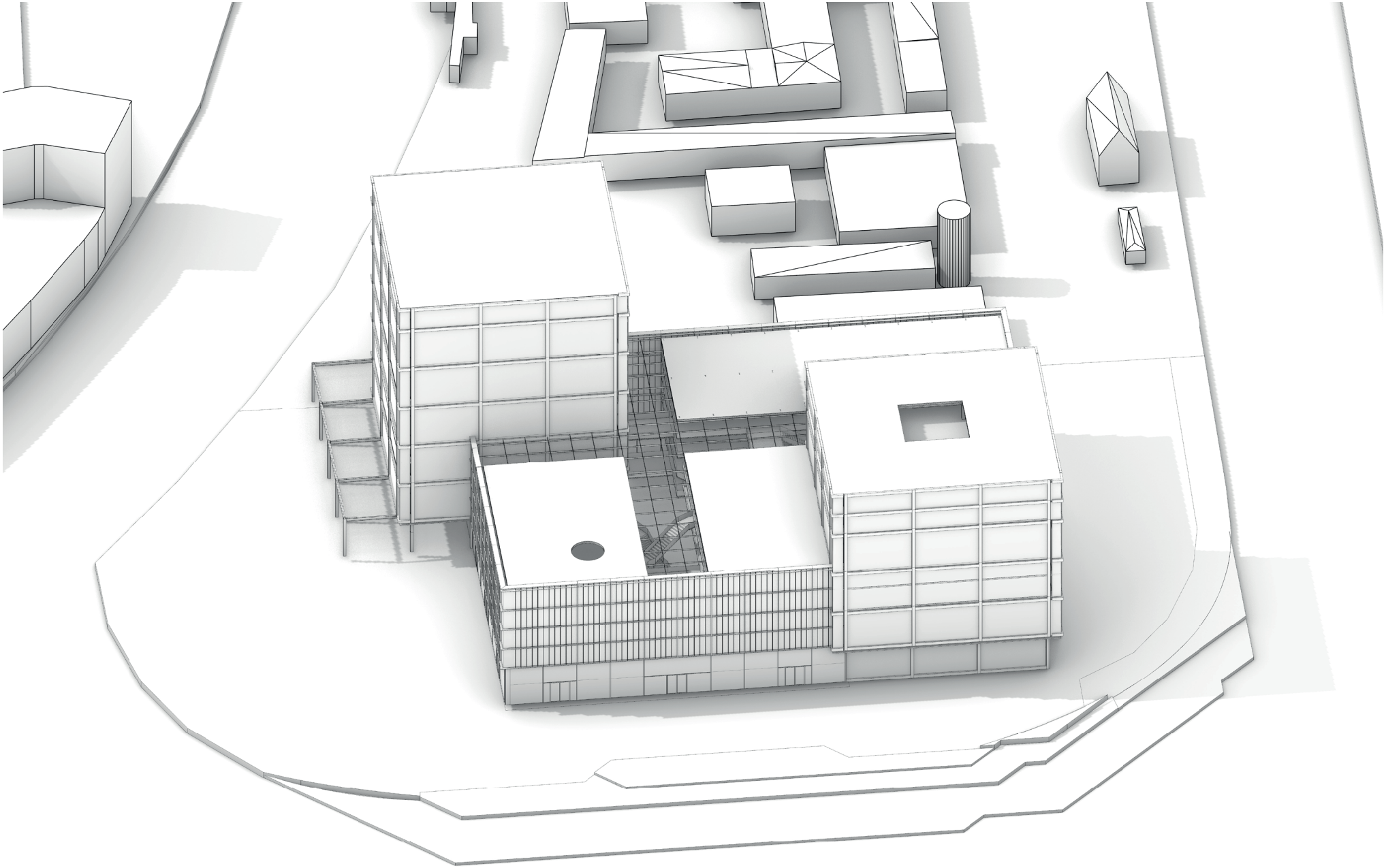


ACTIVE RIVER SIDE



FLEXIBILITY / EXPAND

DESIGN



INTRO

CONCEPT

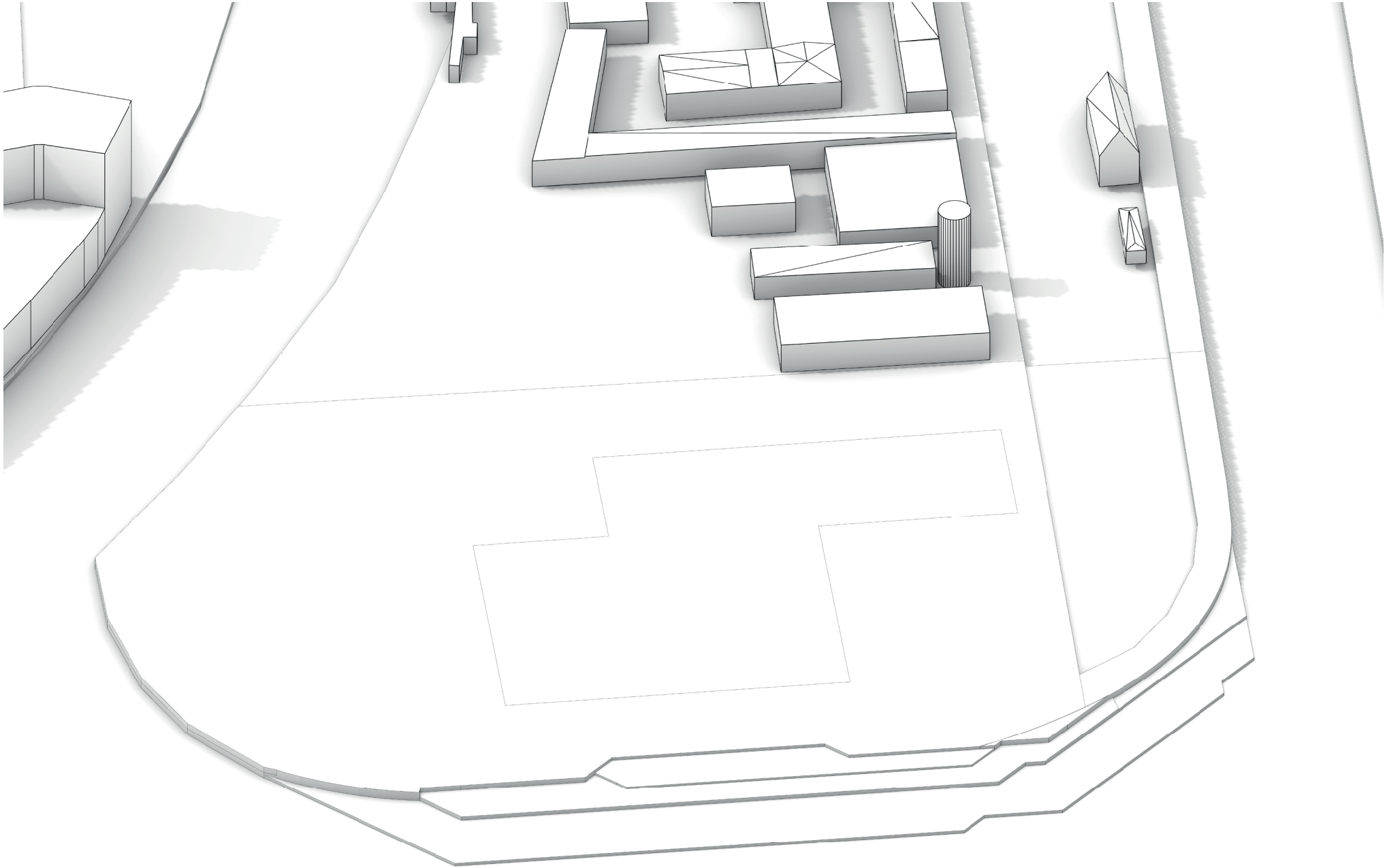
DESIGN

CONCLUSION

SITE

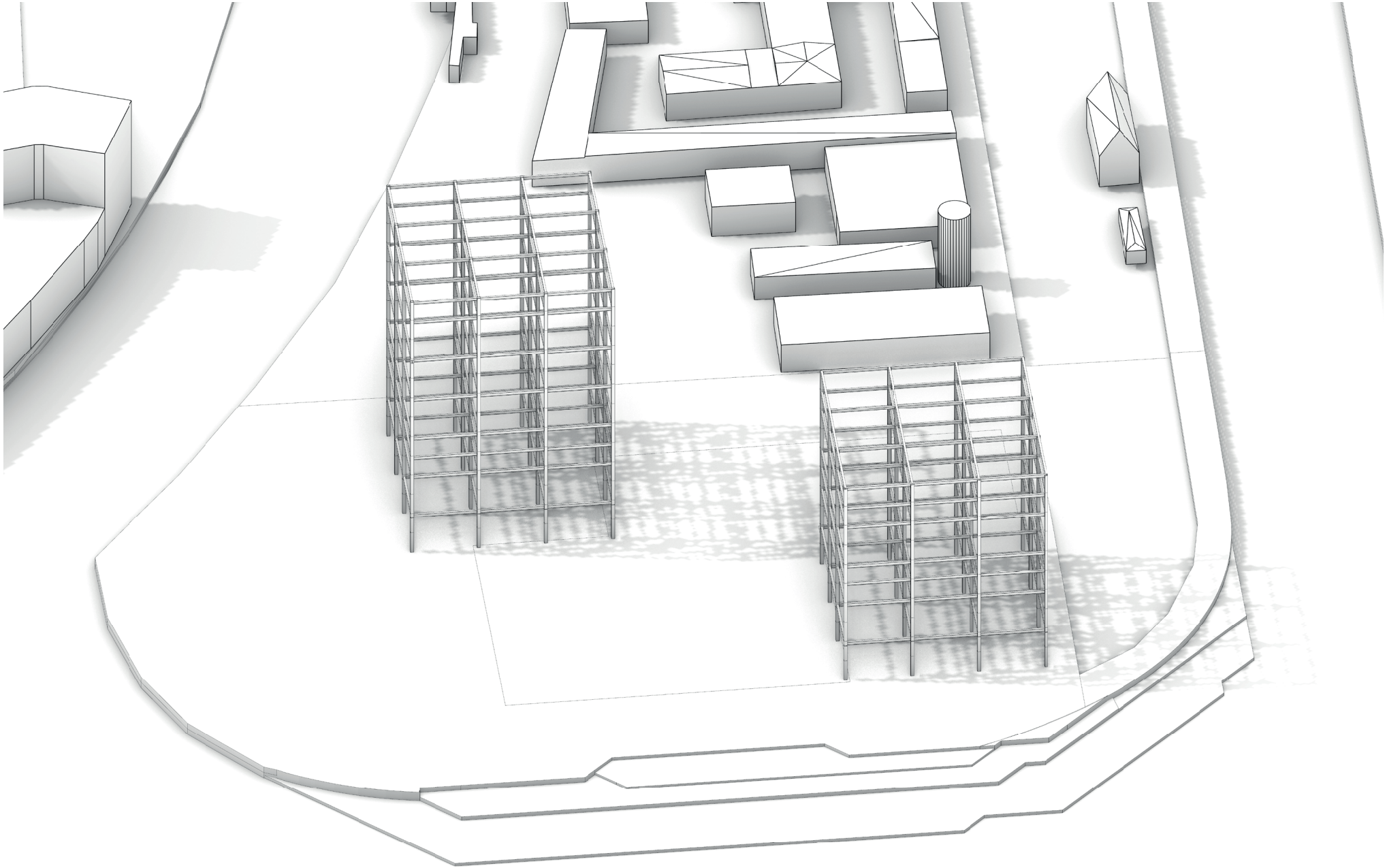


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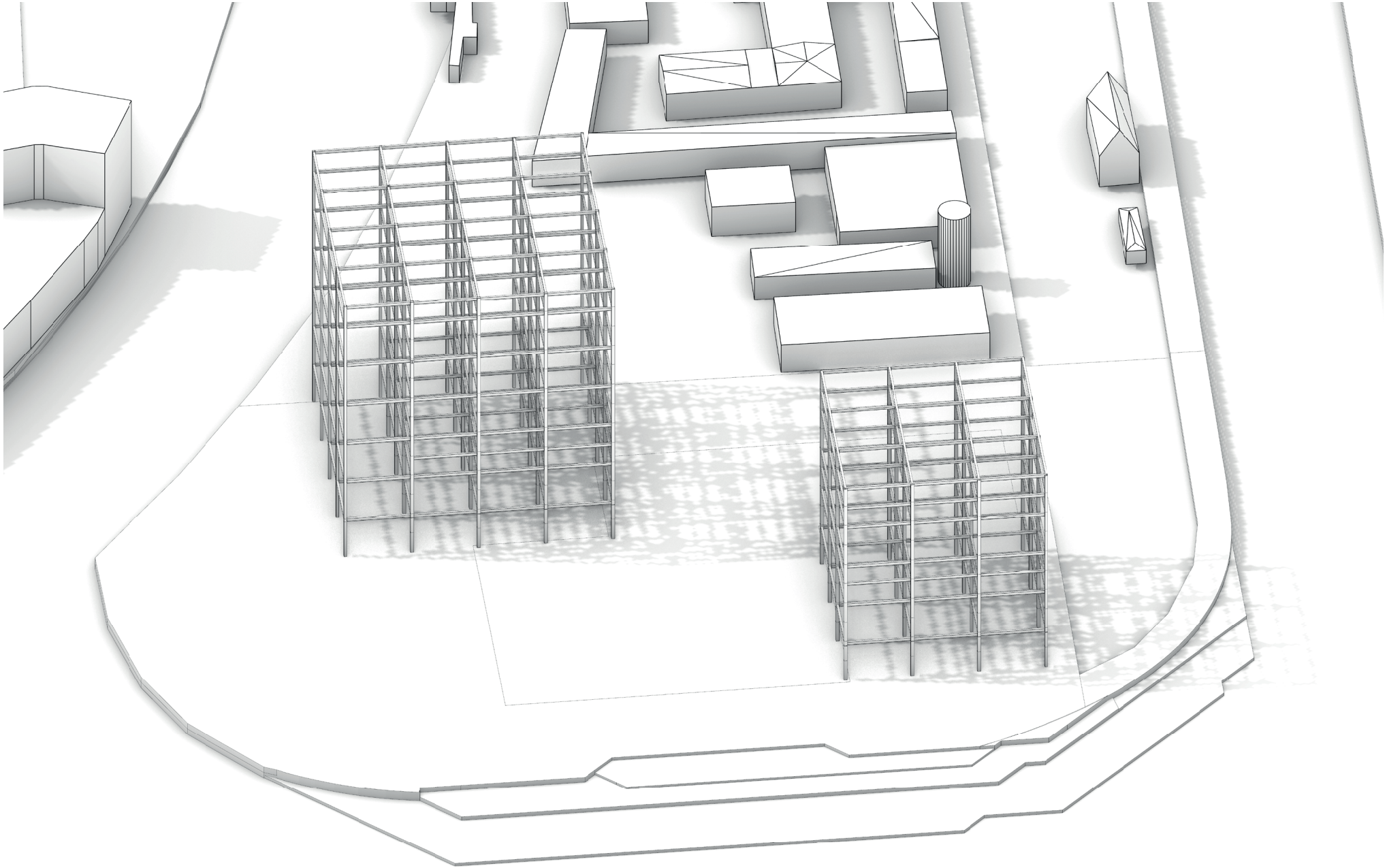


design

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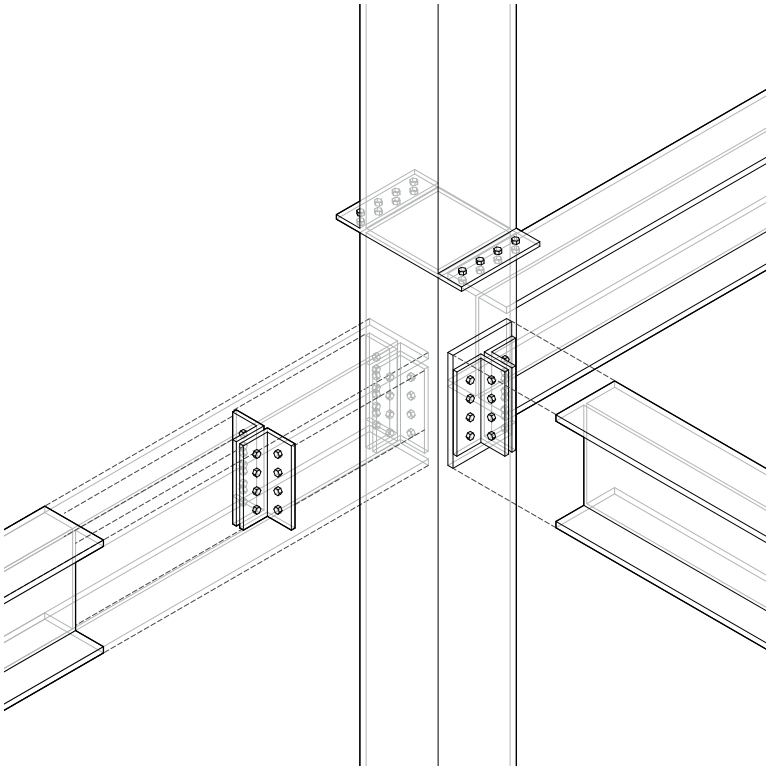


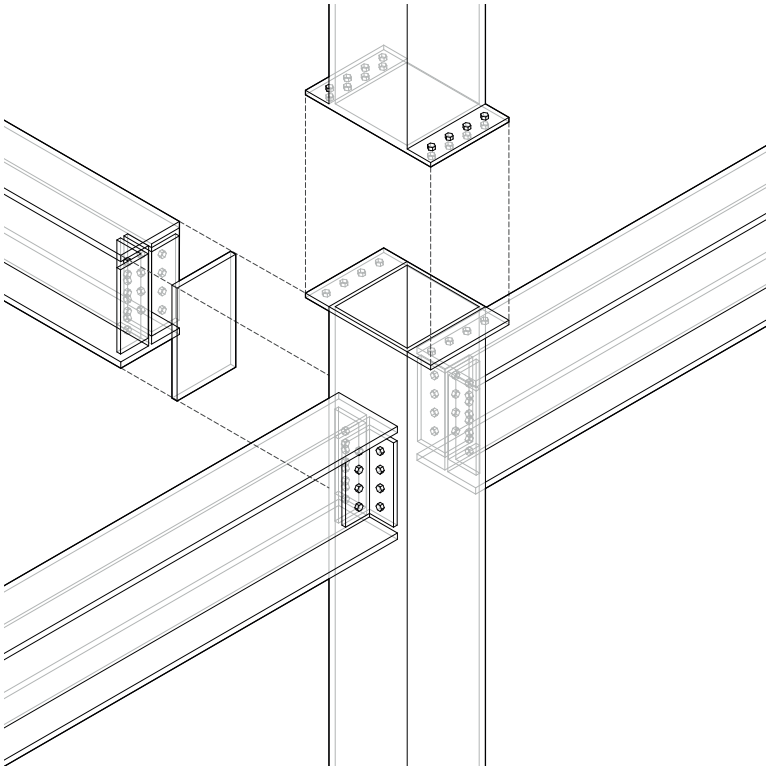
EXTEND IN THE FUTURE



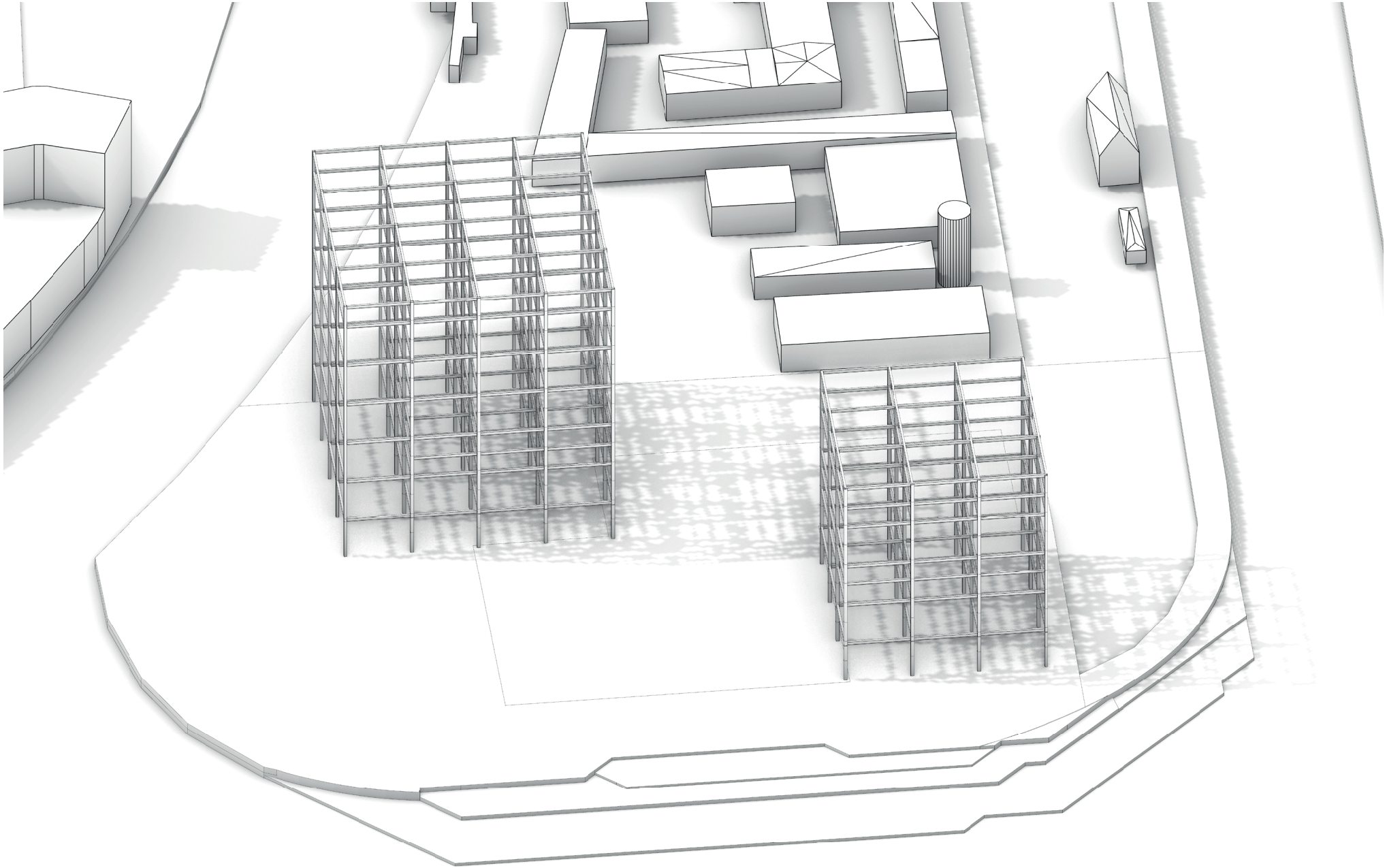
design

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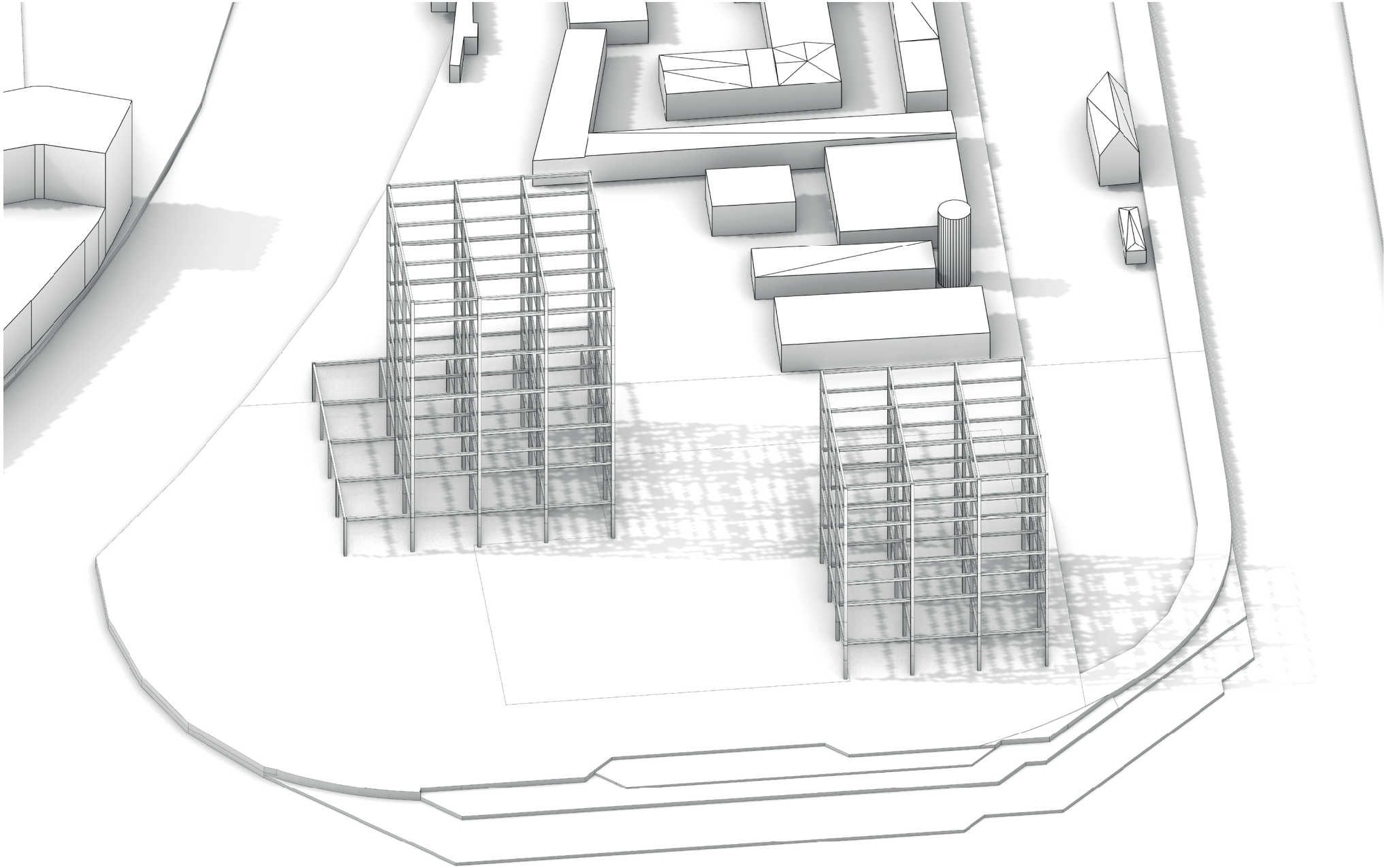


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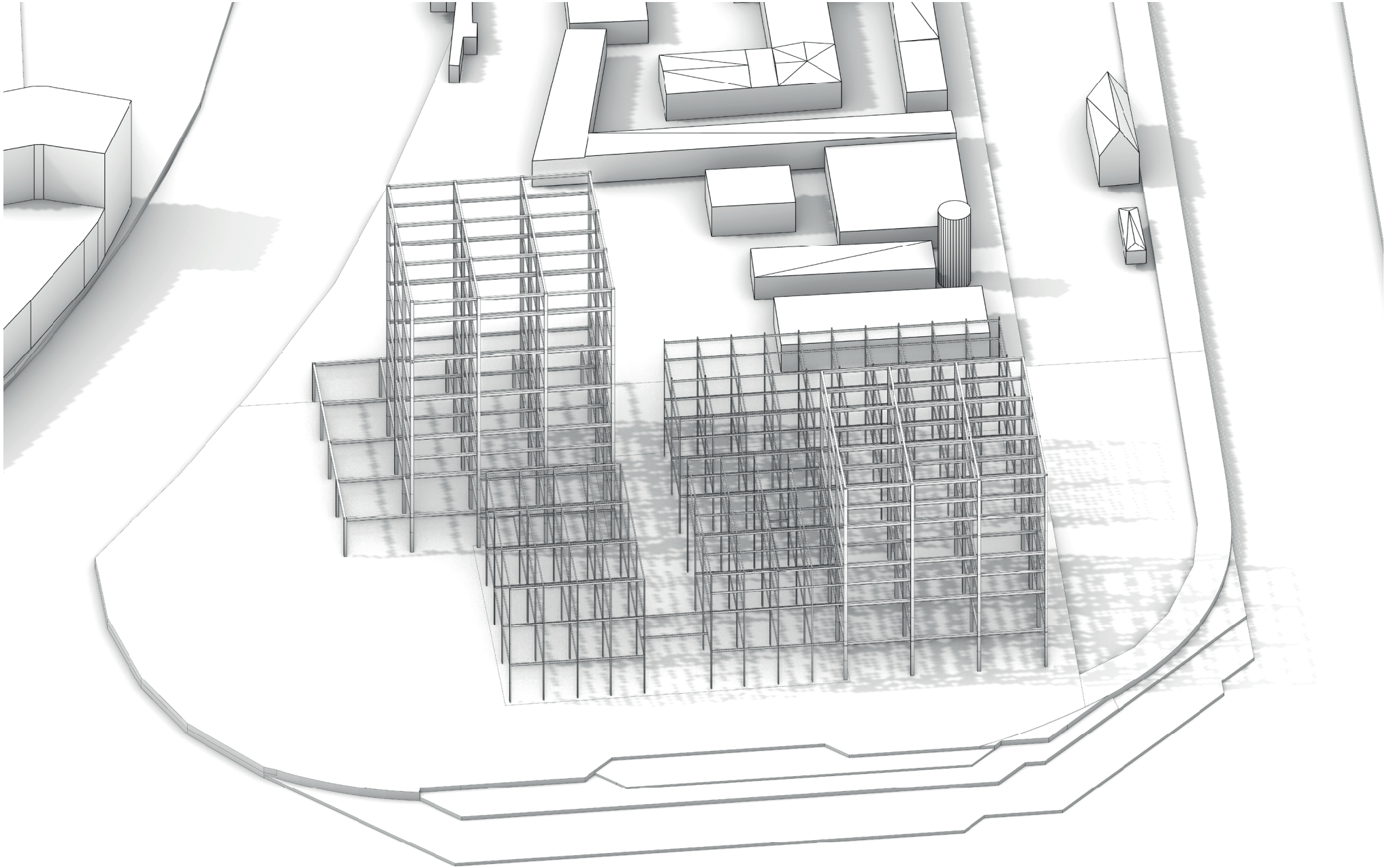
design

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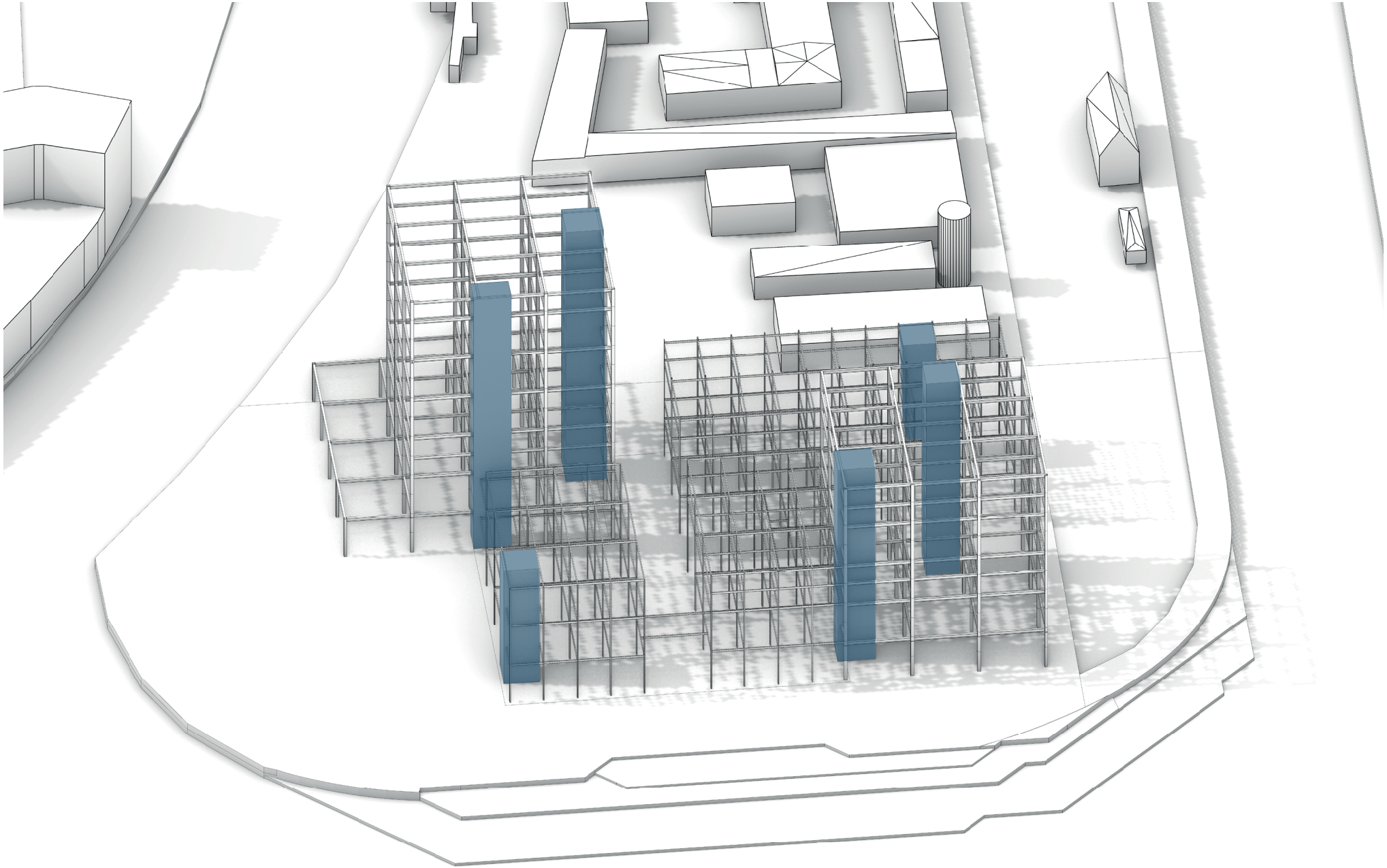


design

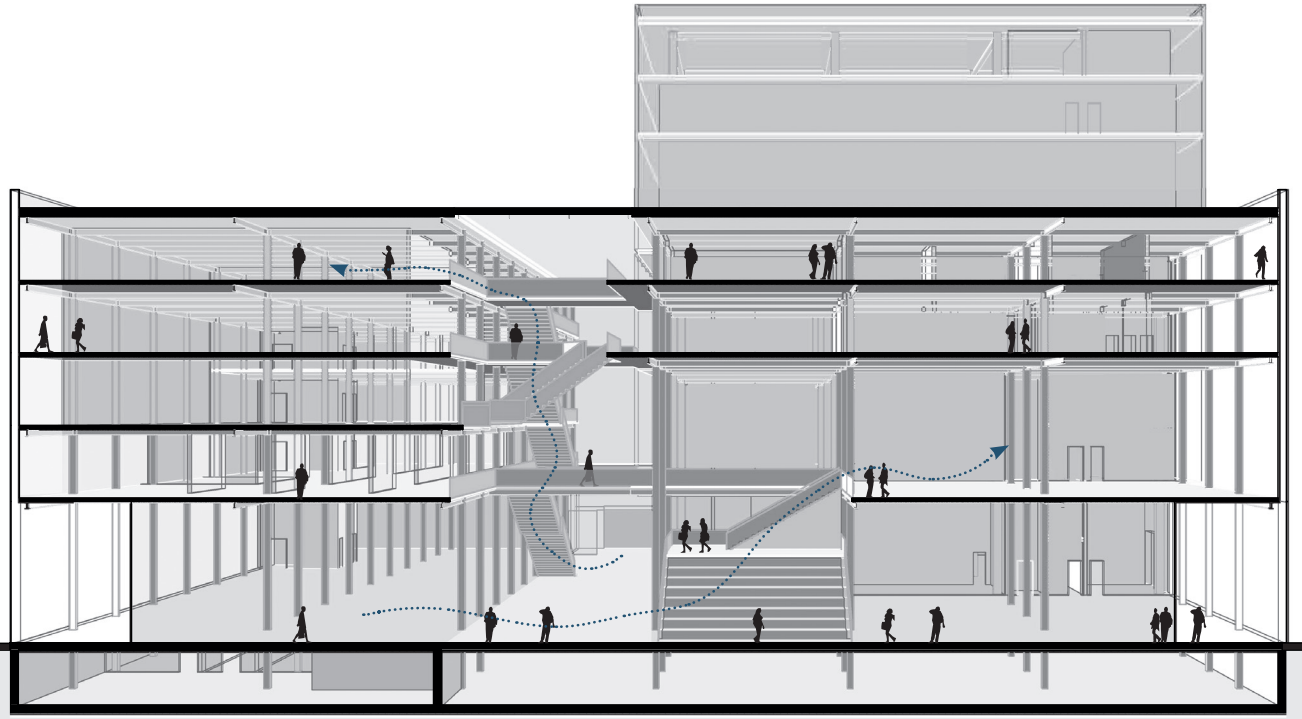
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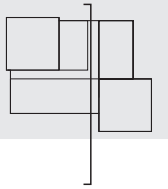


CORE



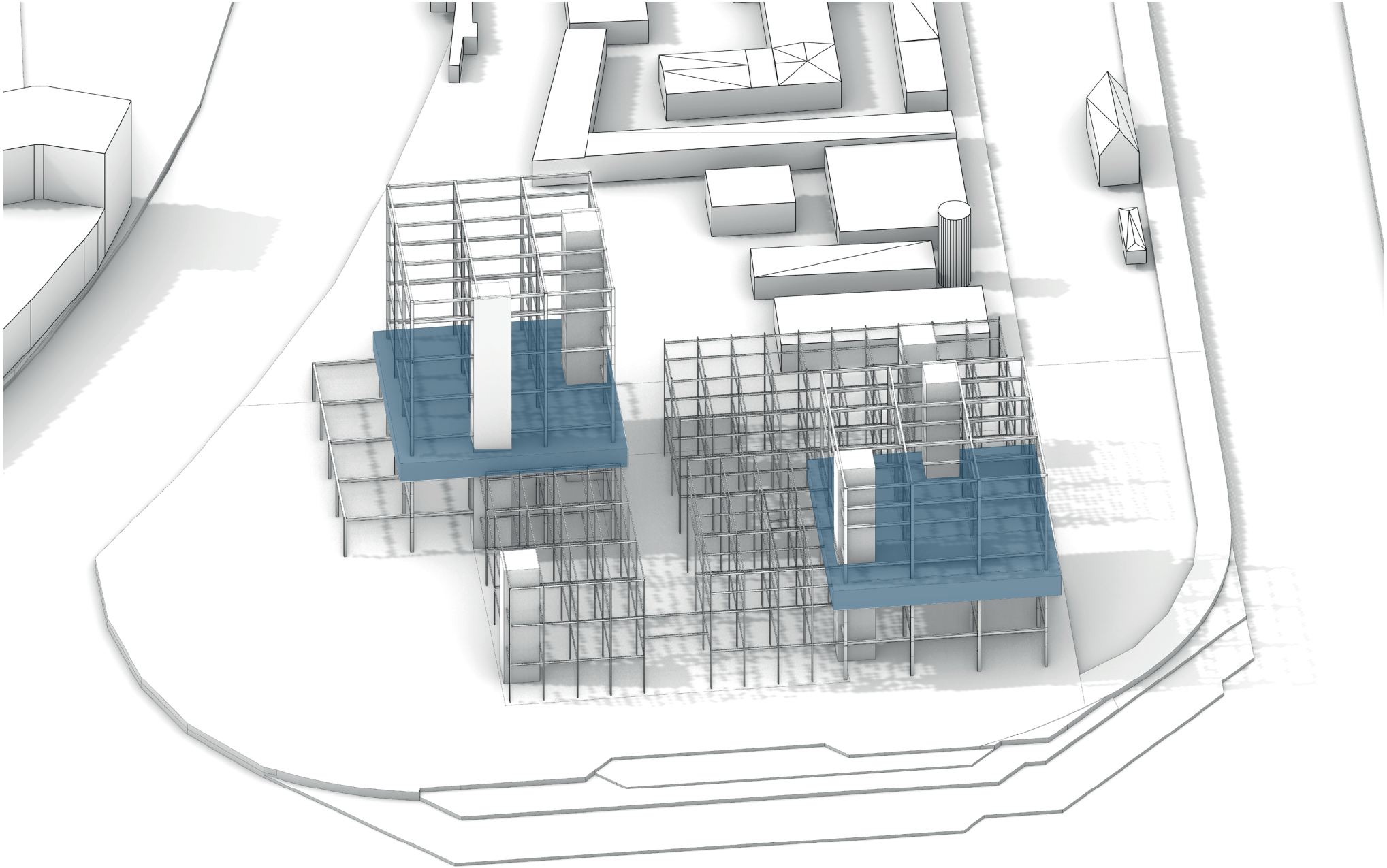
ADDITIONAL STAIRS



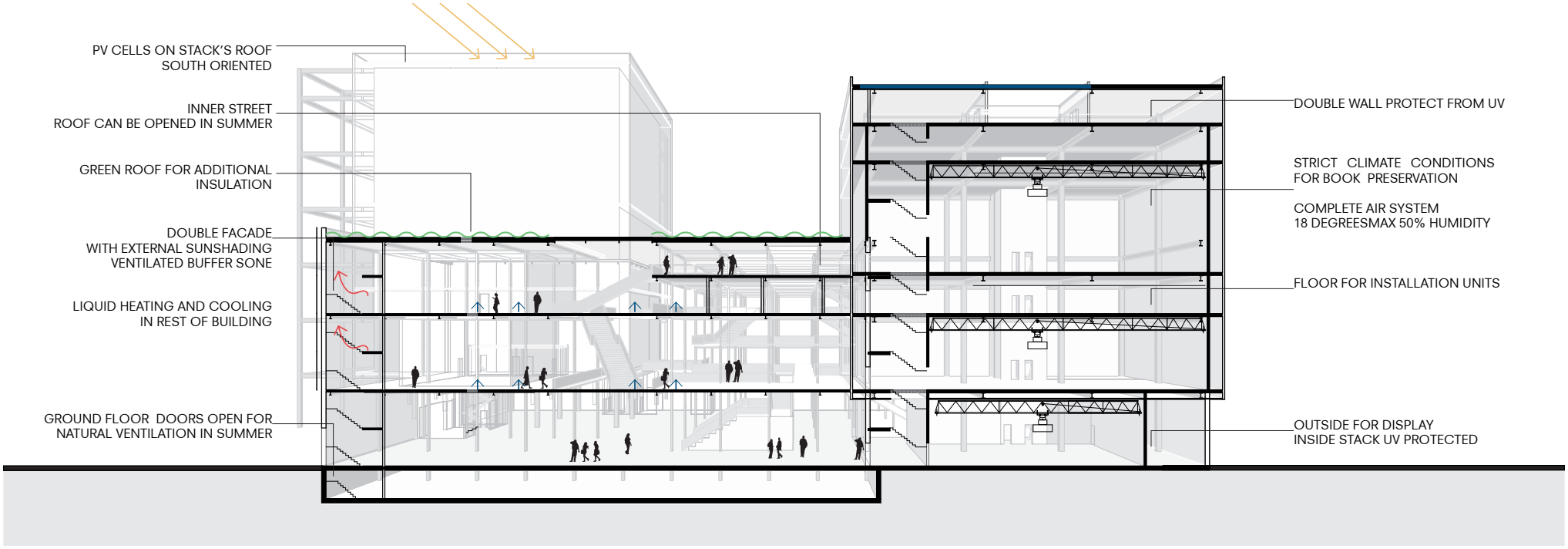




INSTALLATIONS



CLIMATE DESIGN



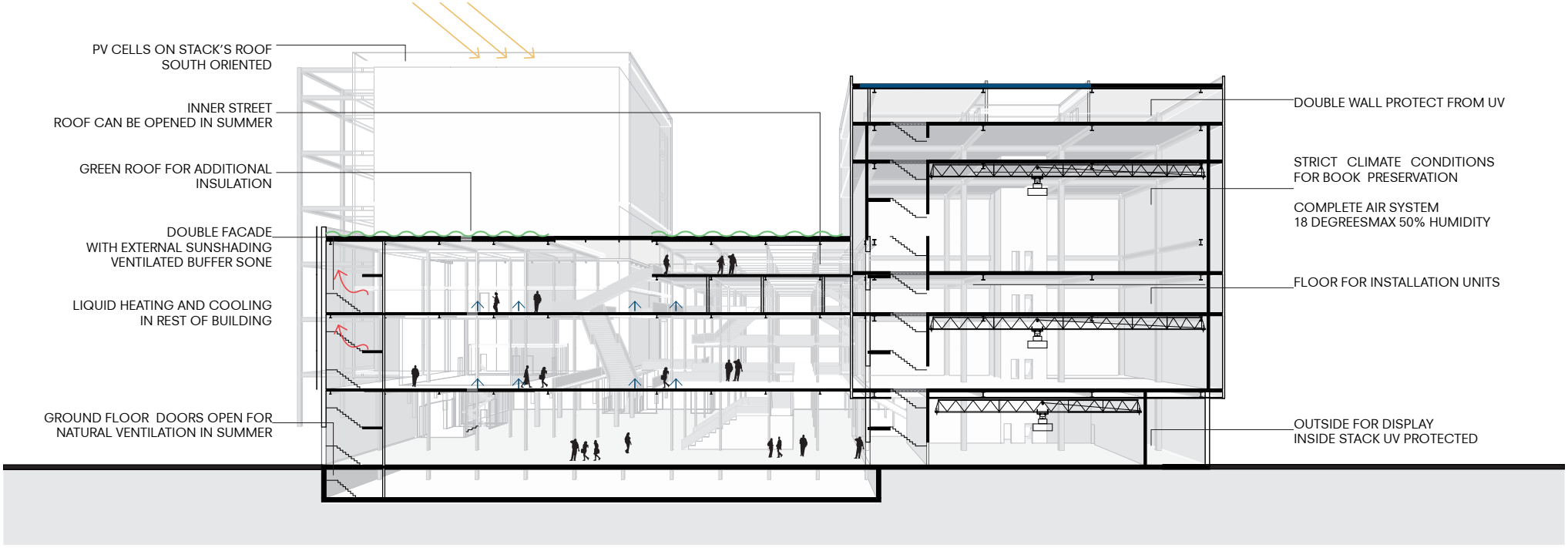


CLIMATE DESIGN



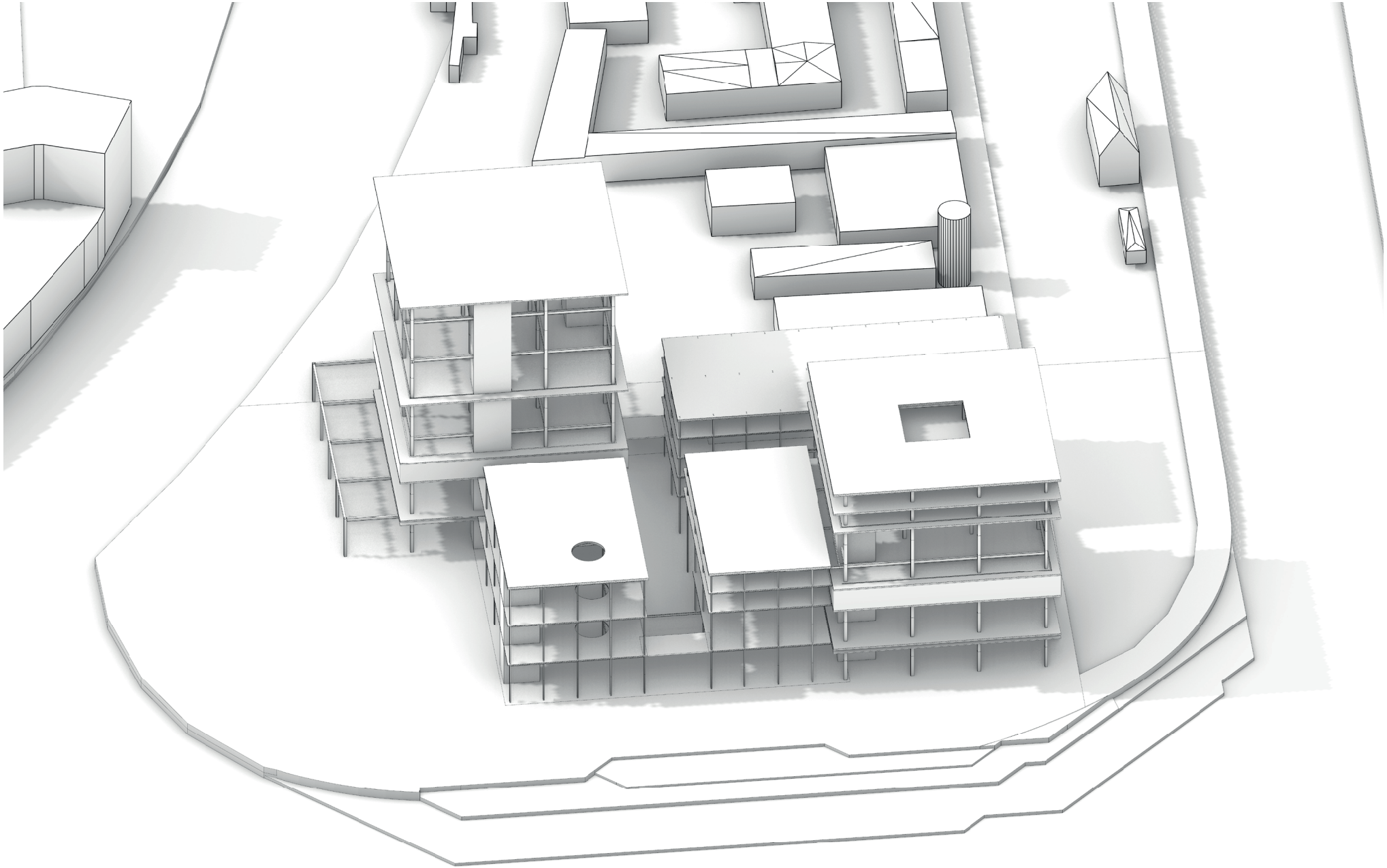




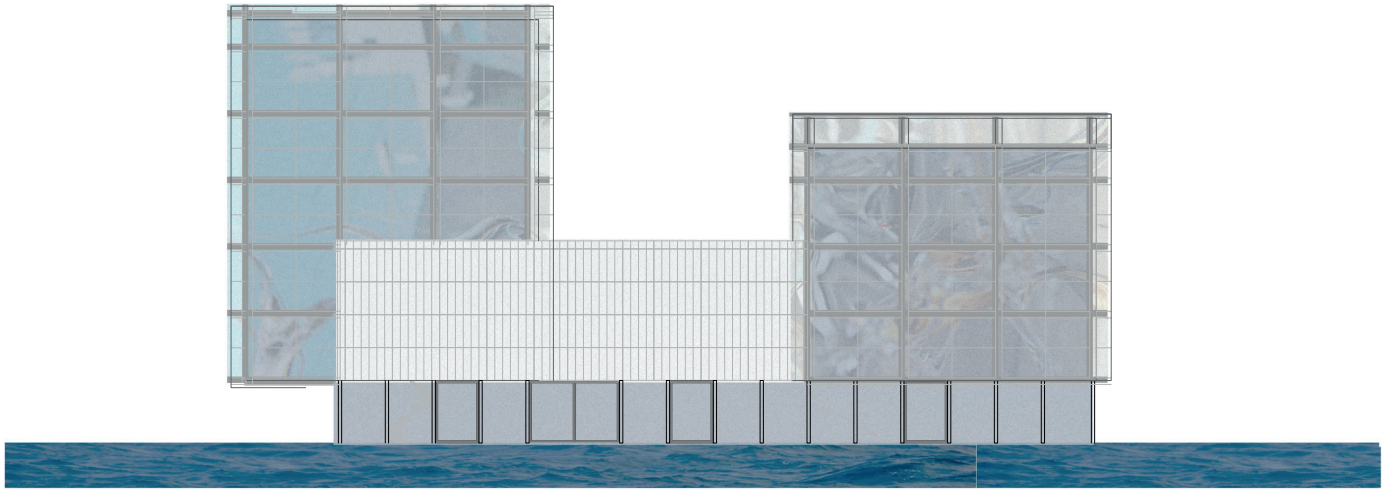




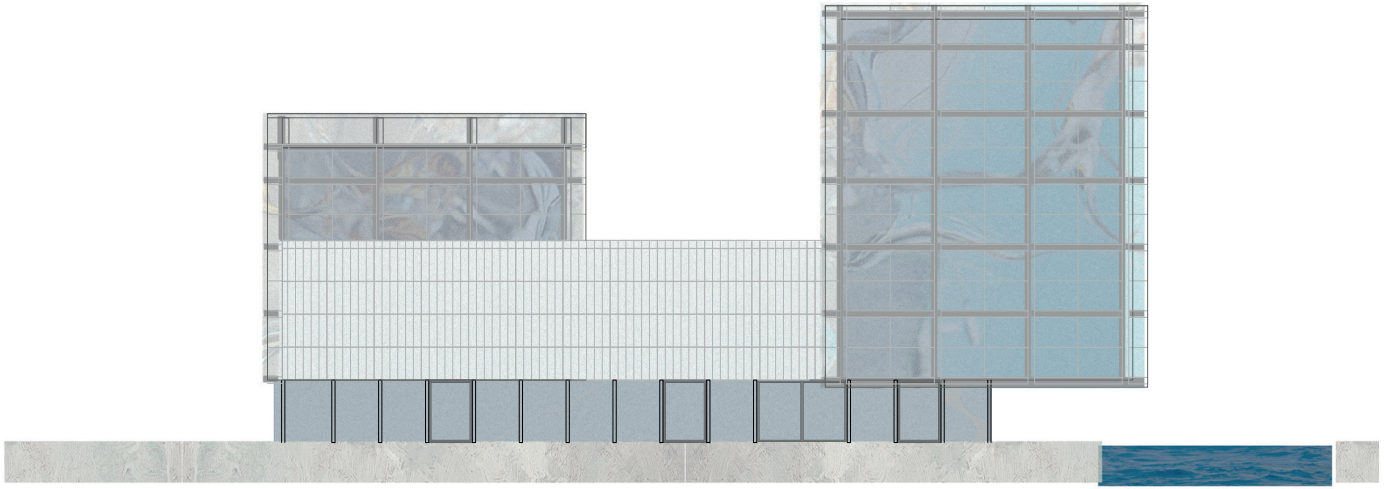
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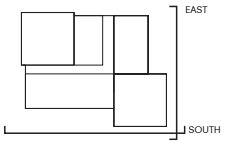
ELEVATIONS



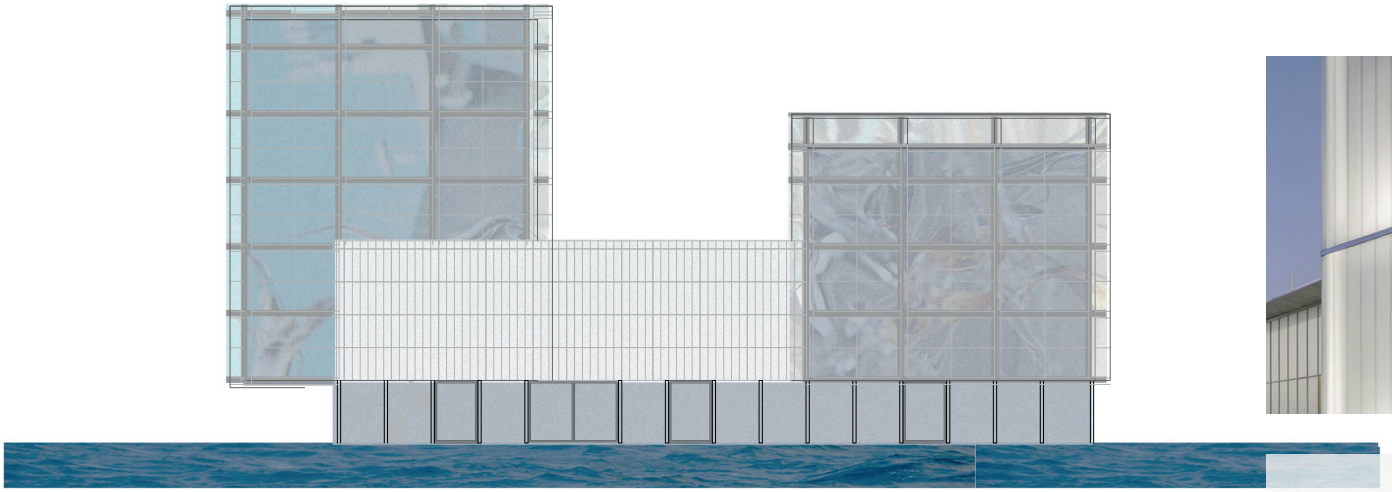
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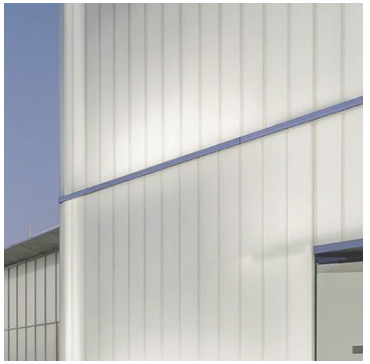


SOUTH



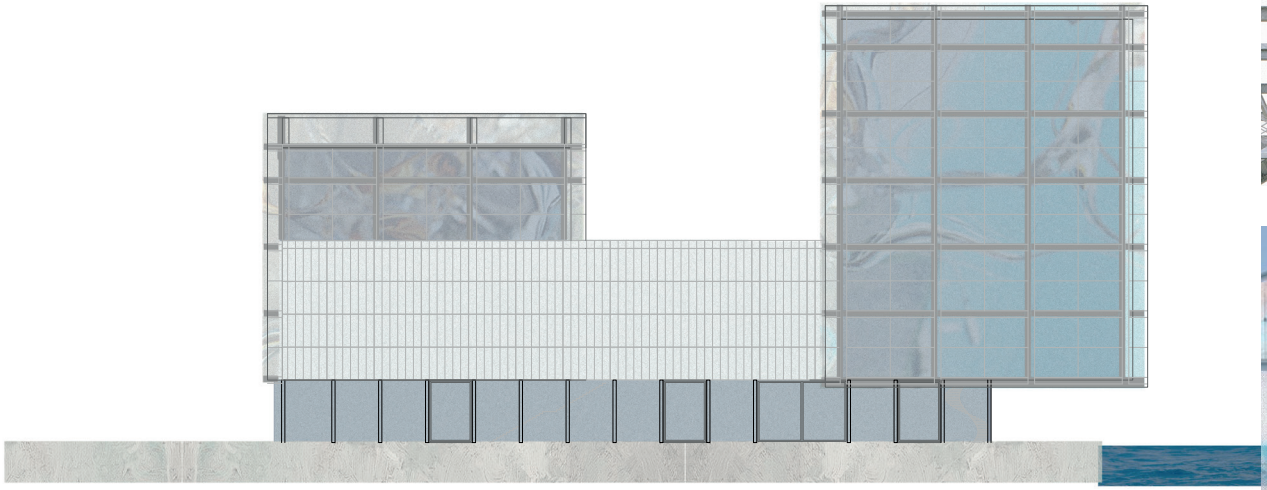
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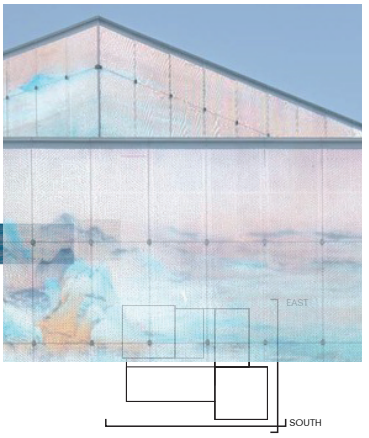




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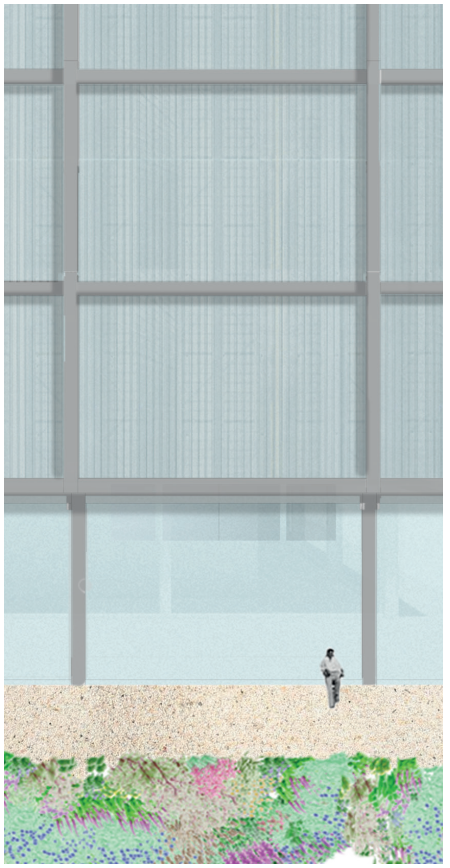
SOUTH

design

FACADE



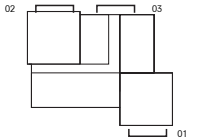
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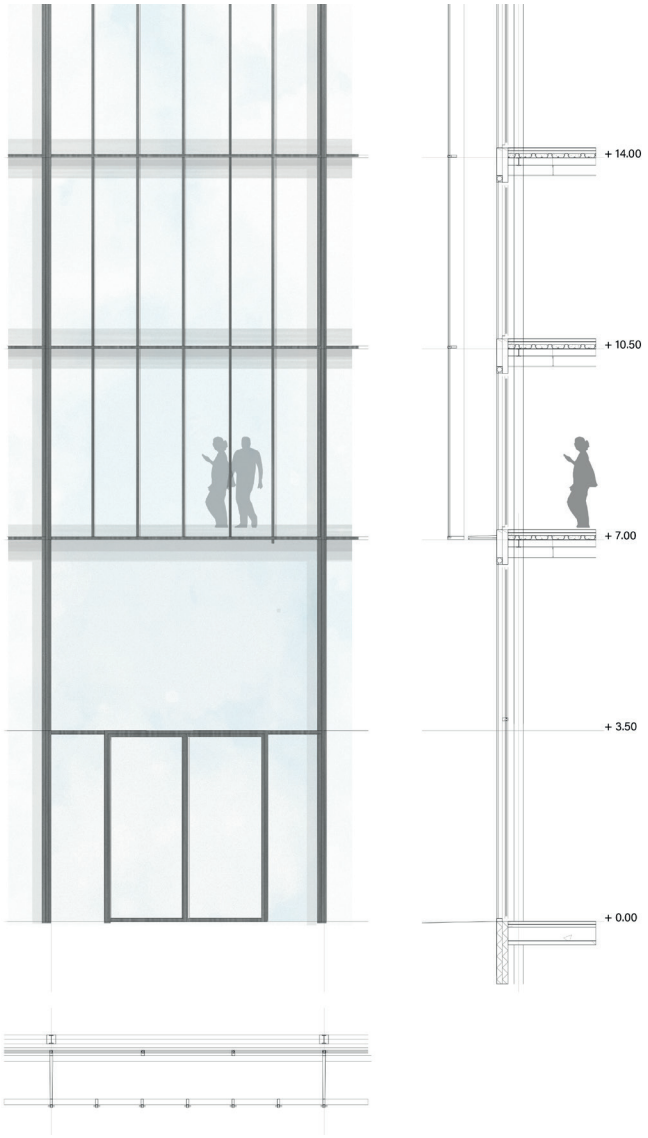
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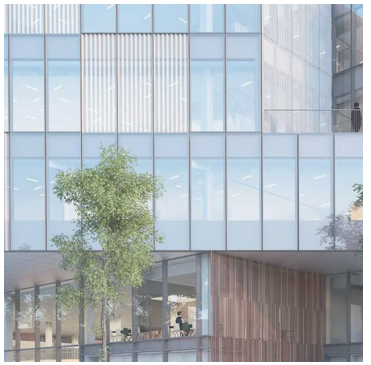


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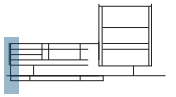
DETAIL 1.50







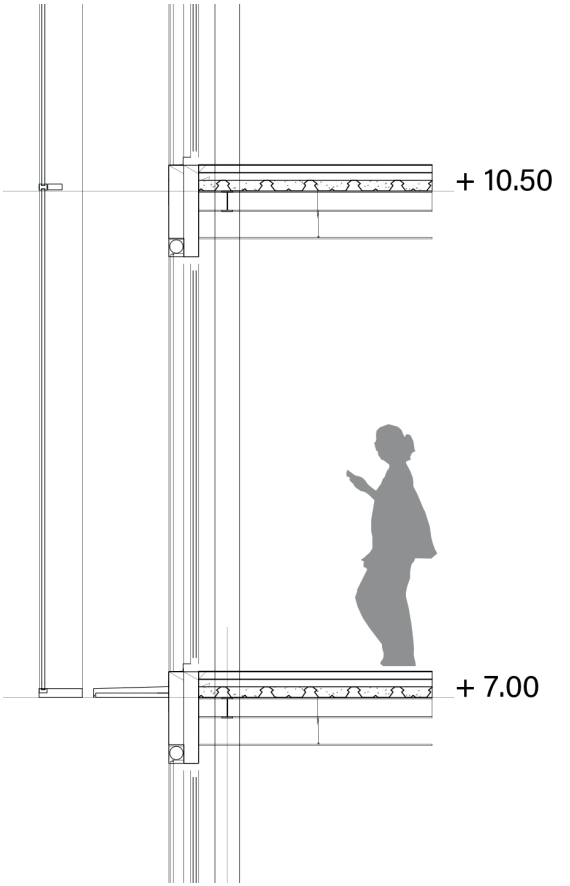


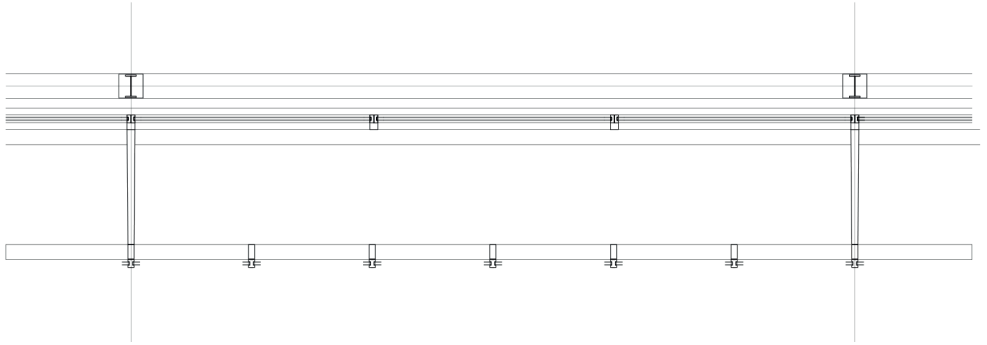


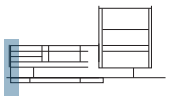
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DETAIL 1.50





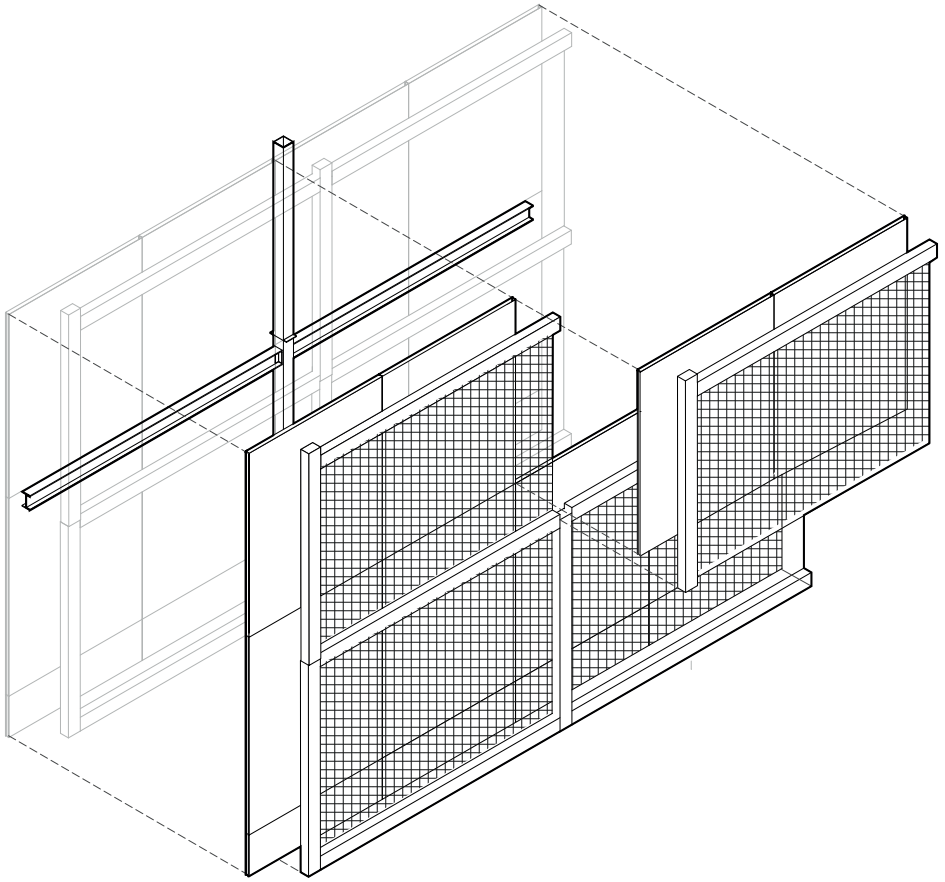




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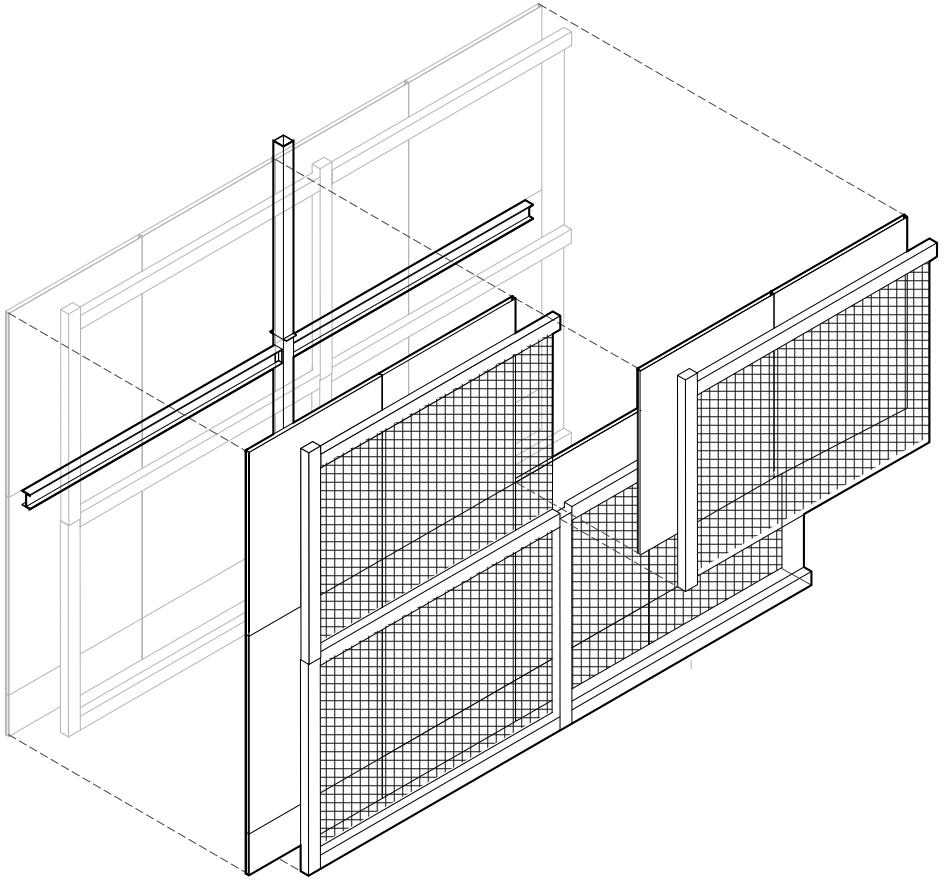
design

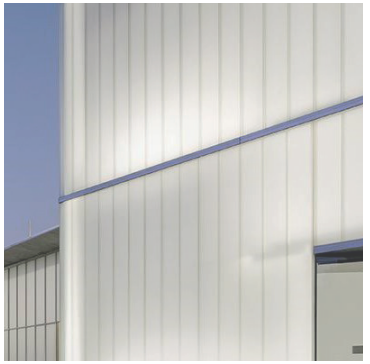
FACADE STACKS



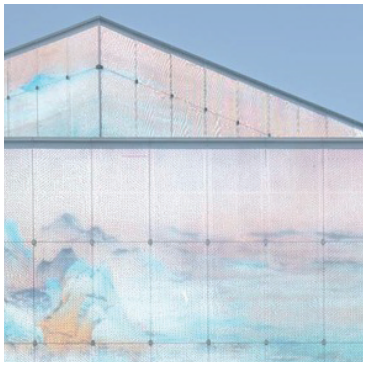
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FACADE STACKS

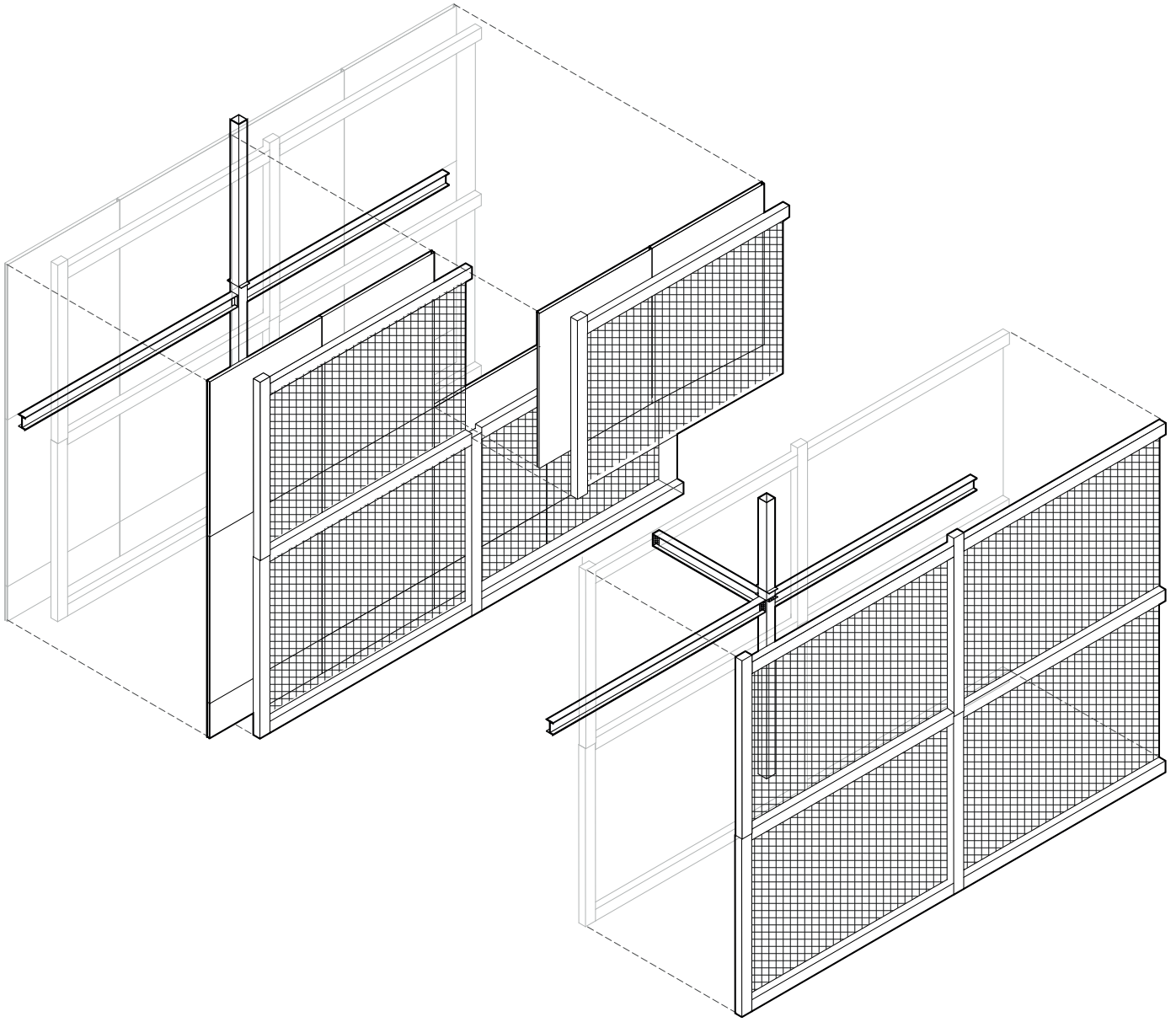




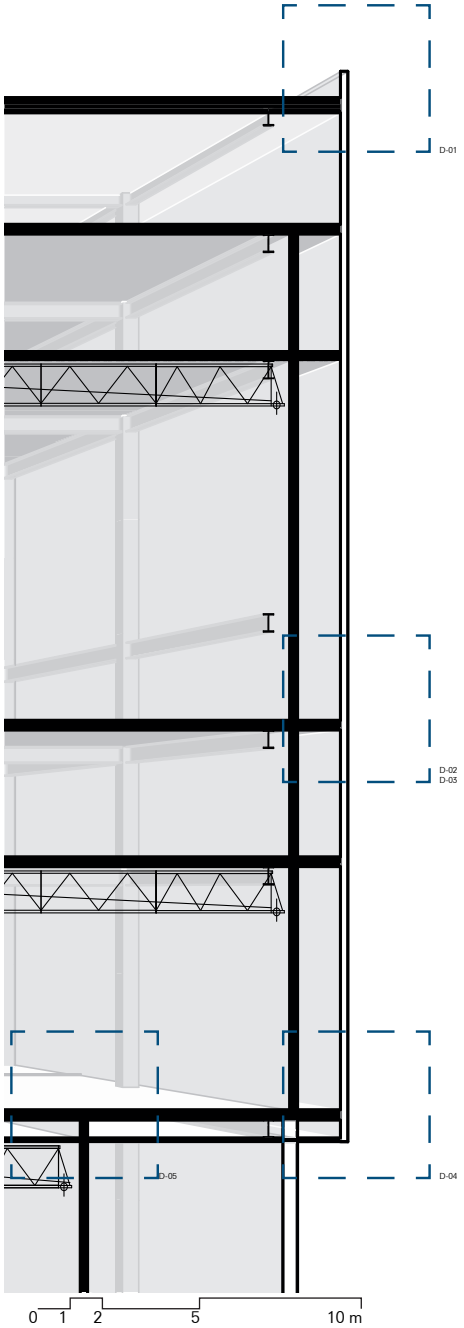


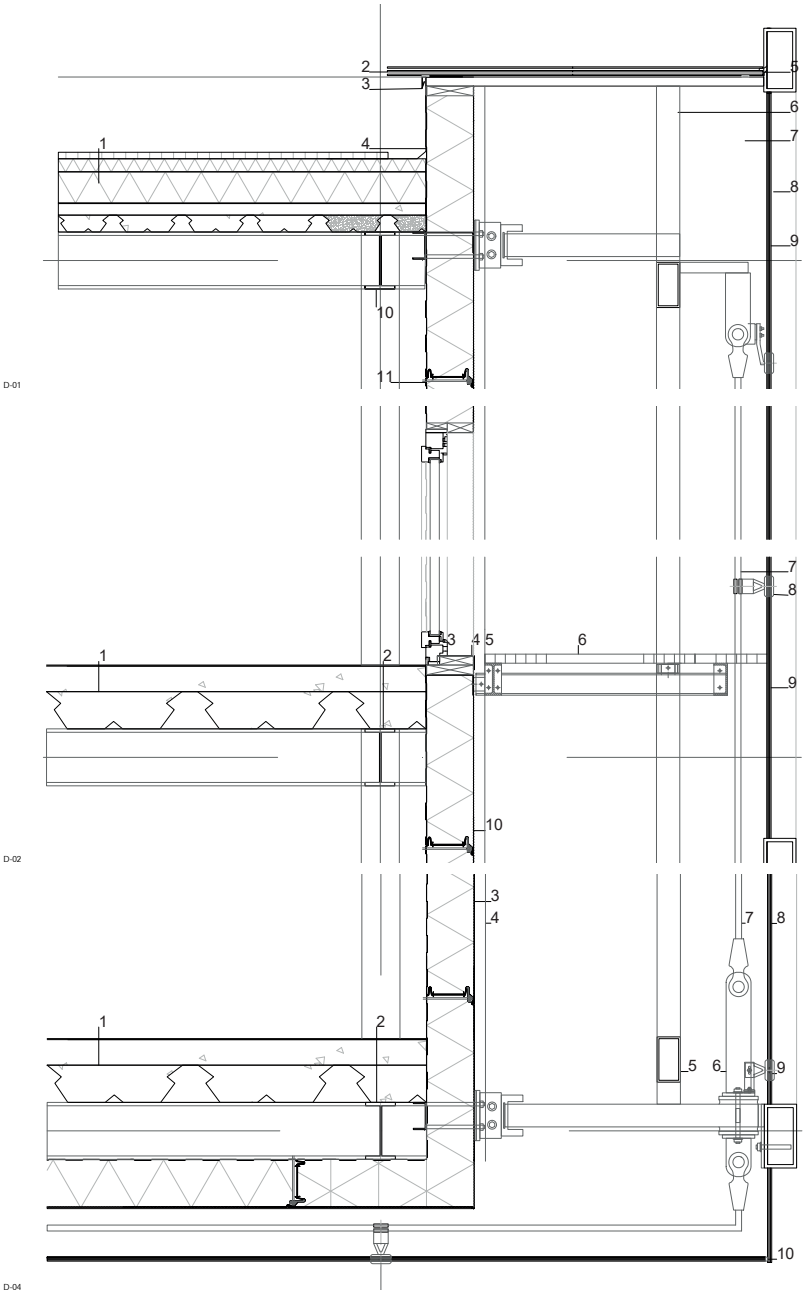


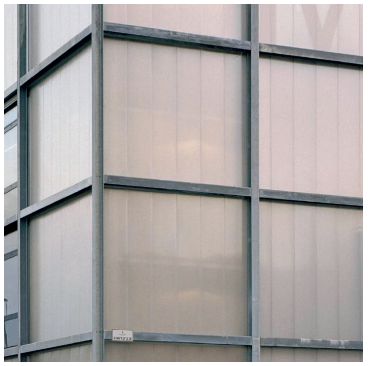
FACADE FLEXIBILITY



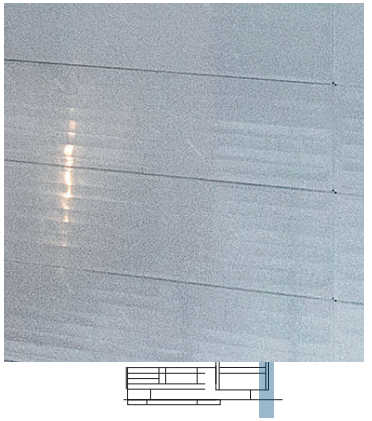
DETAIL 1.5



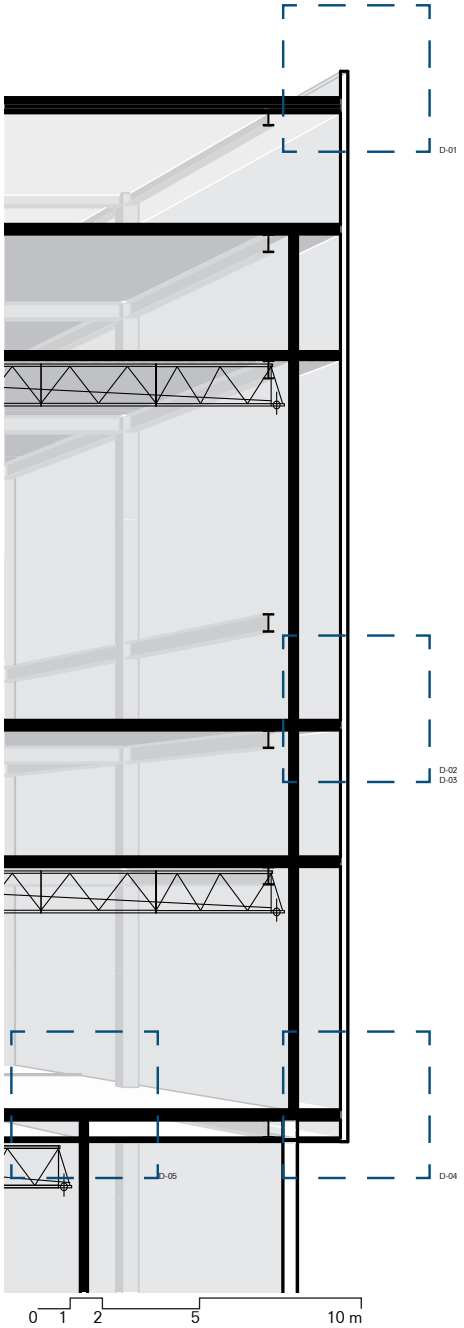


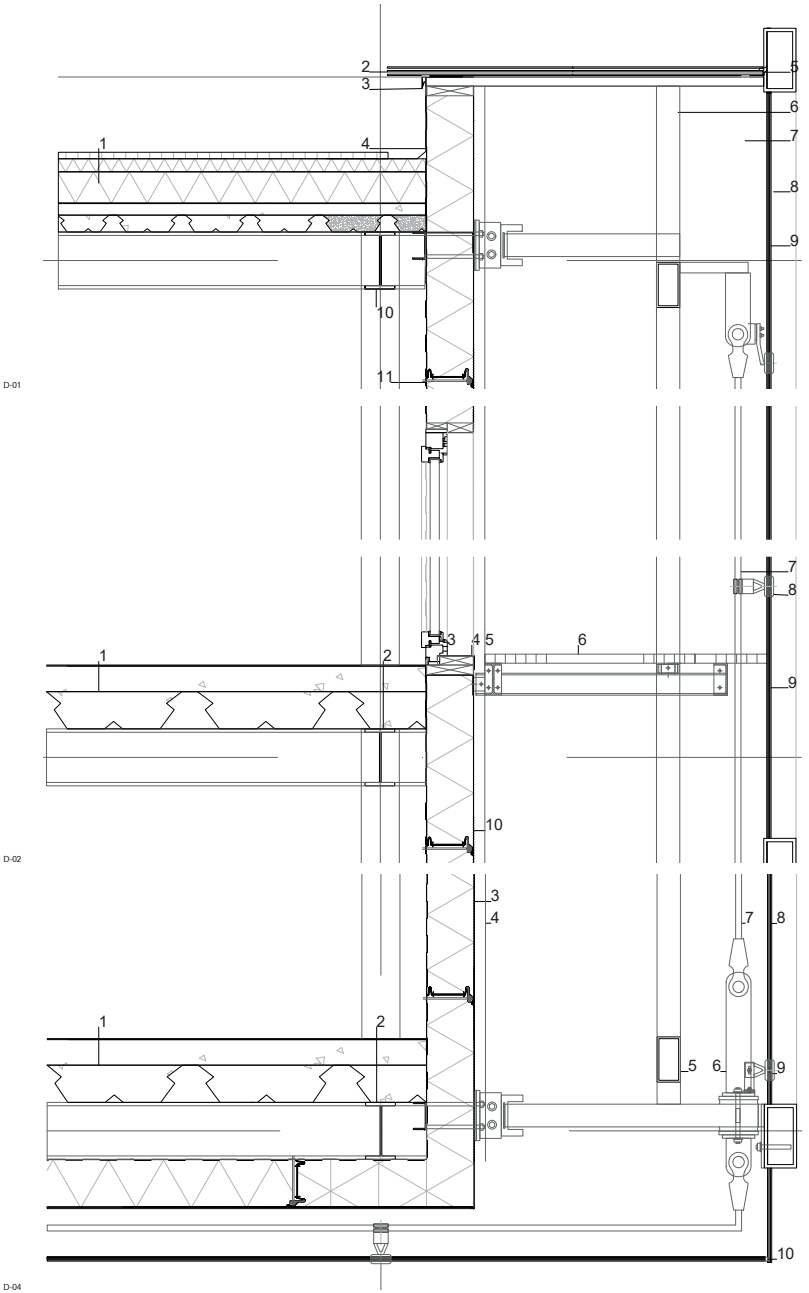






DETAIL 1.5

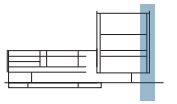




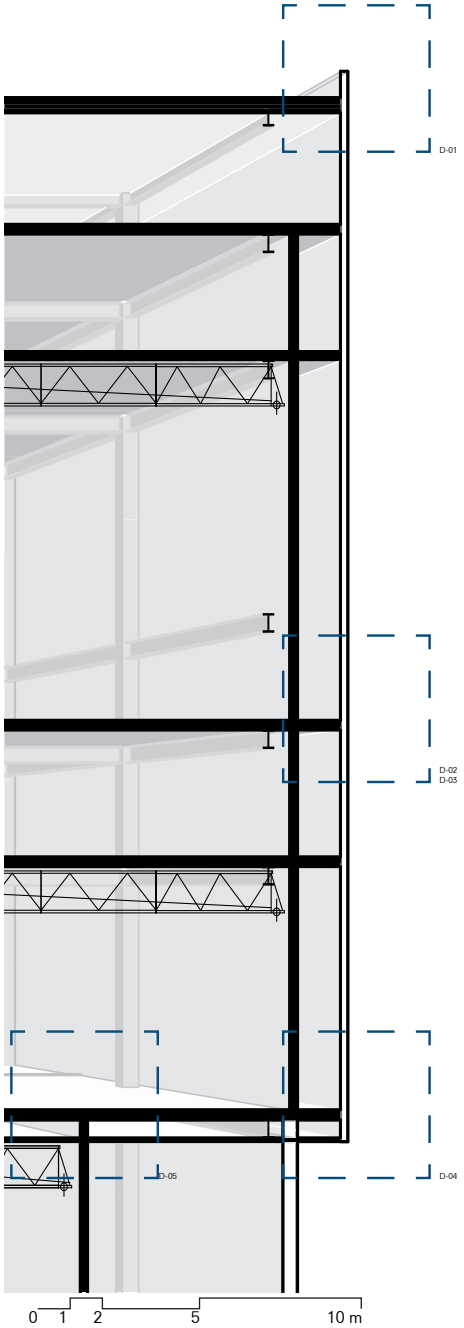
D-01
1 25 mm substrate with pv panels
5 mm waterproofing
60 mm rigid insulation
130 mm rigid insulation
5 mm vapour barier
130 mm composite deckfloor, conform calc.
2 gutter
3 al. sheet, bend to shape
4 al. cover strip, lam. safety glass:
5 6/2/8 mm toughened glass
6 silicone gasket
7 HSS beam, comform calc.
8 steel plate
9 100/40 mm cast-steel clamping plate
10 6-6-6 mm toughened glass upstand panel, intergrated LED-screen
11 IPE steel profile, conform calc.
210 mm sandwichpanel with insulation

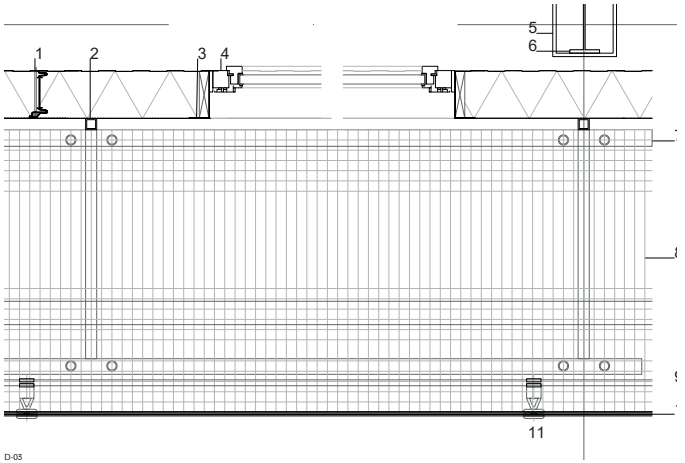
D-02
1 280 mm composite deckfloor
5 mm floor finish
2 IPE steel profile, conform calc.
3 aluminum frame with insulated door
4 aluminum window sill
5 galvanized steel I-column 50 mm deep
6 aluminum grating, walkable
7 26 mm sheathed steel cable
8 100/40 mm cast-steel clamping plate
9 6-6-6 mm toughened glass upstand panel, intergrated LED screen
10 210 mm sandwichpanel with insulation

D-04
1 280 mm composite deckfloor
5 mm floor finish
2 IPE steel profile, conform calc.
3 210 mm sandwichpanel with insulation
4 galvanized steel I-column 50 mm deep
5 HSS steel beam, comform calc.
6 steel plate
7 26 mm sheathed steel cable
8 6-6-6 mm toughened glass upstand panel, intergrated LED screen
9 100/40 mm cast-steel clamping plate
10 silicone gasket

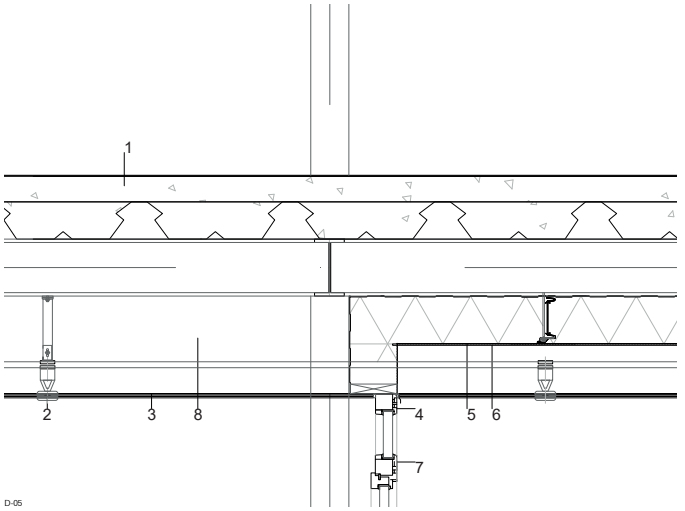


DETAILS

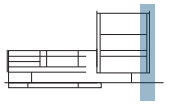




D-03
1 210 mm sandwichpanel with insulation
2 50 mm galvanized steel column
3 steel profile to attach window
4 aluminum frame with insulated door
5 20 mm steel cover with insulation
6 IPE steel profile, conform calc.
7 HSS steel beam
8 aluminum grating, walkable
9 26 mm sheathed steel cable
6-6-6 mm toughened glass upstand panel,
10 intergrated LED screen
11 100/40 mm cast-steel clamping plate



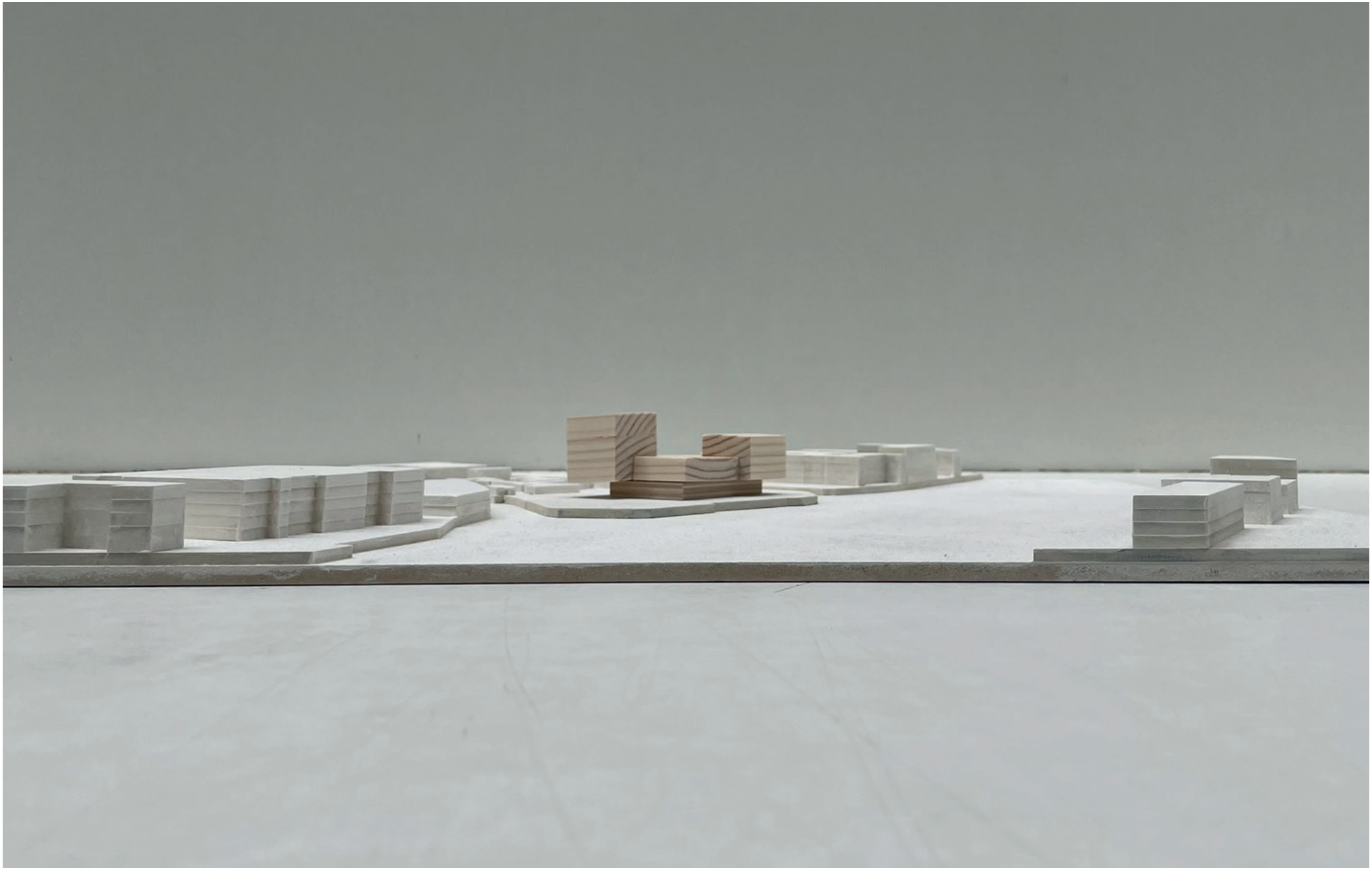
D-05
1 280 mm composite deckfloor
5 mm floor finish
2 100/40 mm cast-steel clamping plate
3 18 mm toughened glass upstand panel
4 aluminum window with insulating double glazing
5 210 mm sandwichpanel with insulation
6 glass coverpanel
7 aluminum sliding window with insulating double
8 cavity for installations



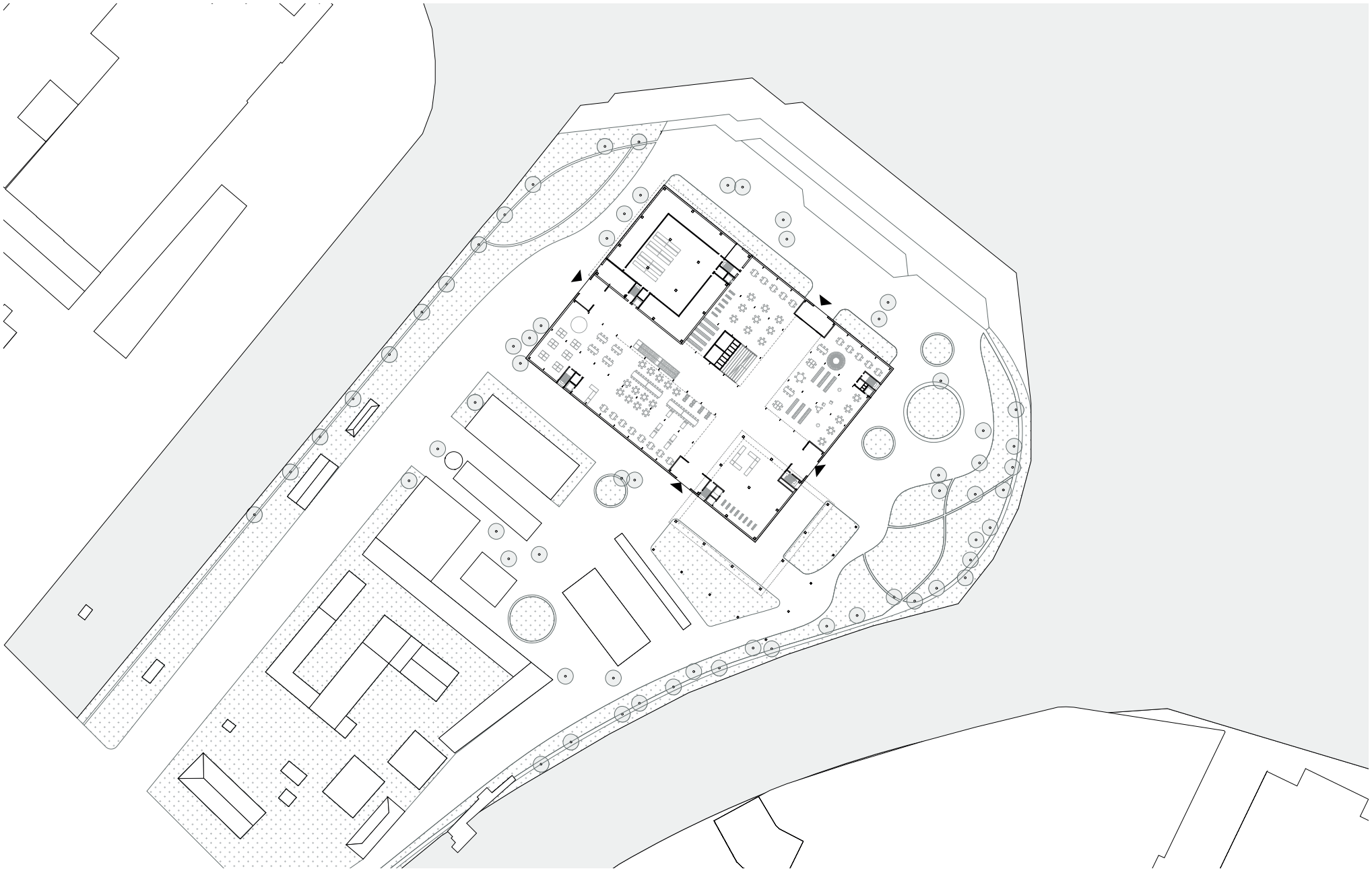
IMPLEMENTATION TO SITE



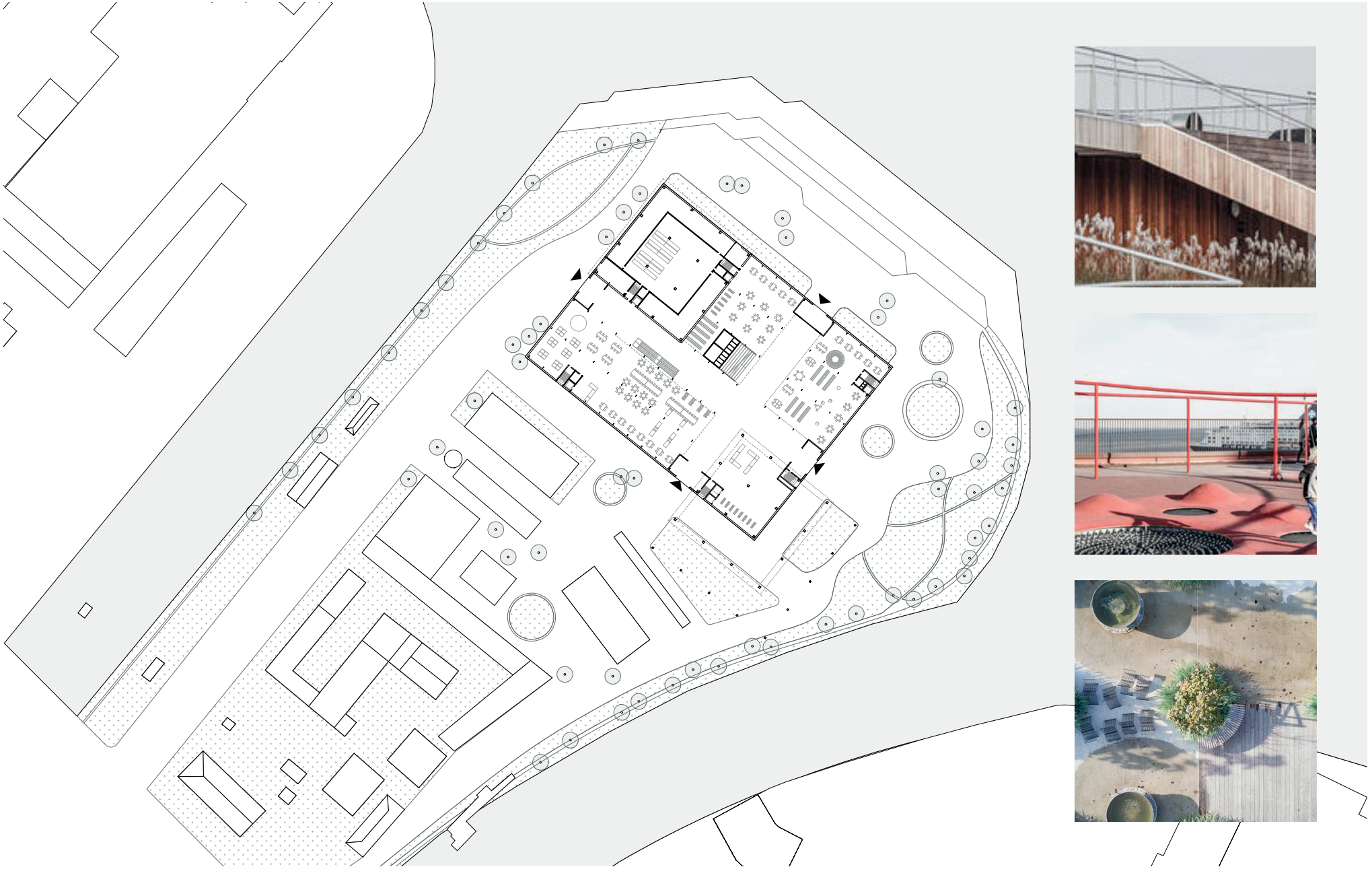
IMPLEMENTATION TO SITE



IMPLEMENTATION TO SITE



IMPLEMENTATION TO SITE



PROGRAM

OPEN SHELVES

PROTECTED STACKS
BOOKS
MAPS
GRAPHIC MATERIAL
AUDIO

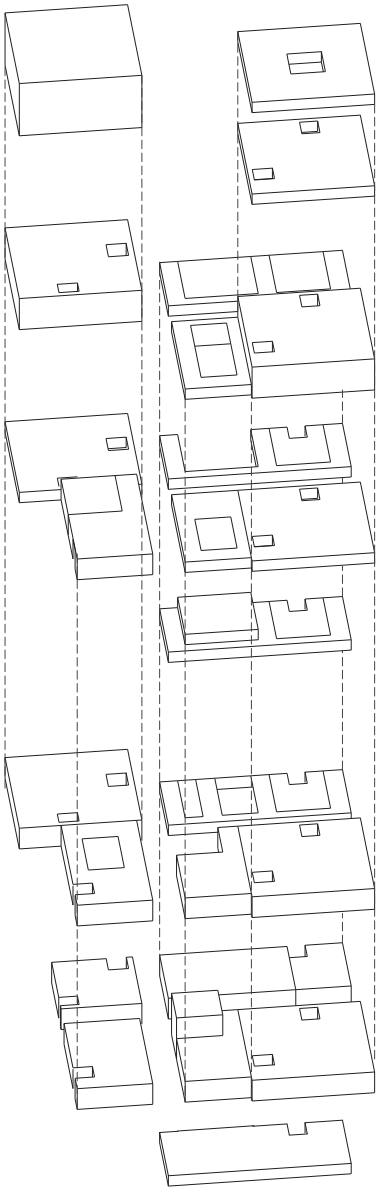
READING ROOMS
SELF STUDY/WORKDESK
DISCUSS/MEET AREA

WORKSHOPS
EXHIBITION
AUDITORIUM
CAFE/RESTAURANT

OFFICE
ADMINISTRATION
SMALL MEETING ROOMS

CONSERVATION
WORKSHOPS

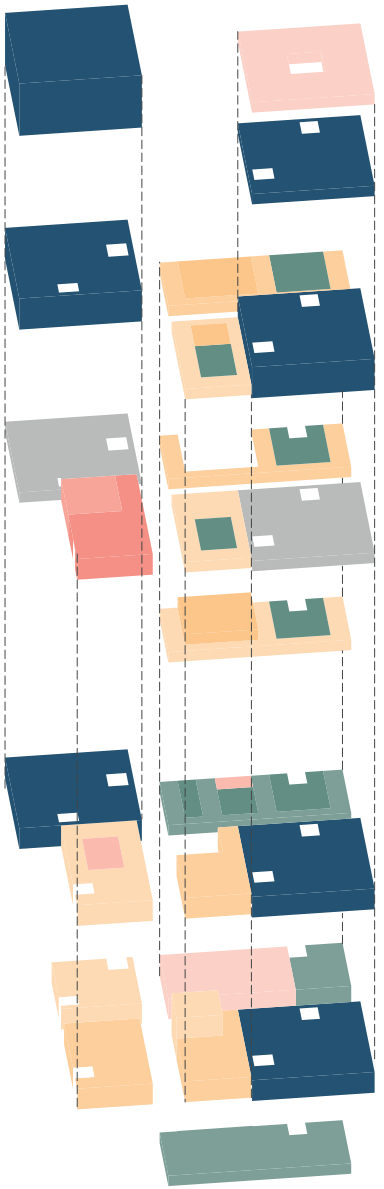
CIRCULATION
INSTALLATION
SANITARY FACILITIES



Stacks
Learn / study rooms
Meet / create
Offices
Other

design

PROGRAM



Stacks

Learn / study rooms

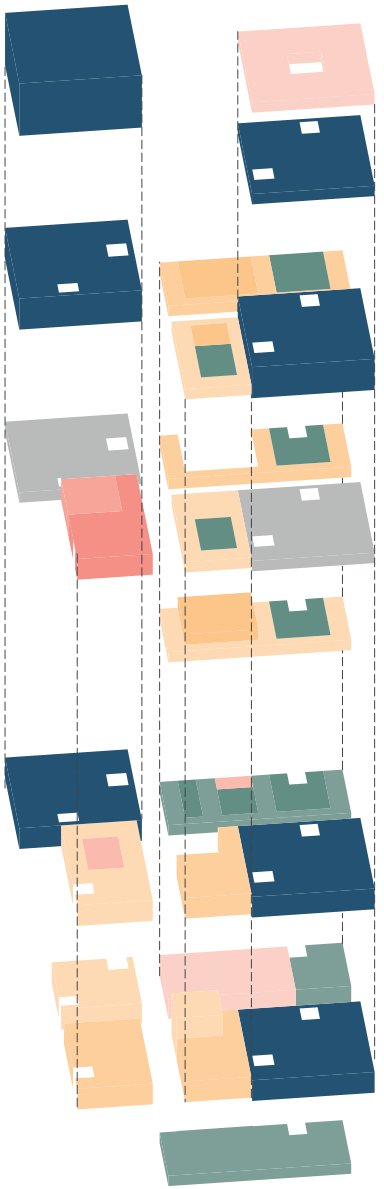
Meet / create

Offices

Other

design

PROGRAM





Stacks

Learn / study rooms

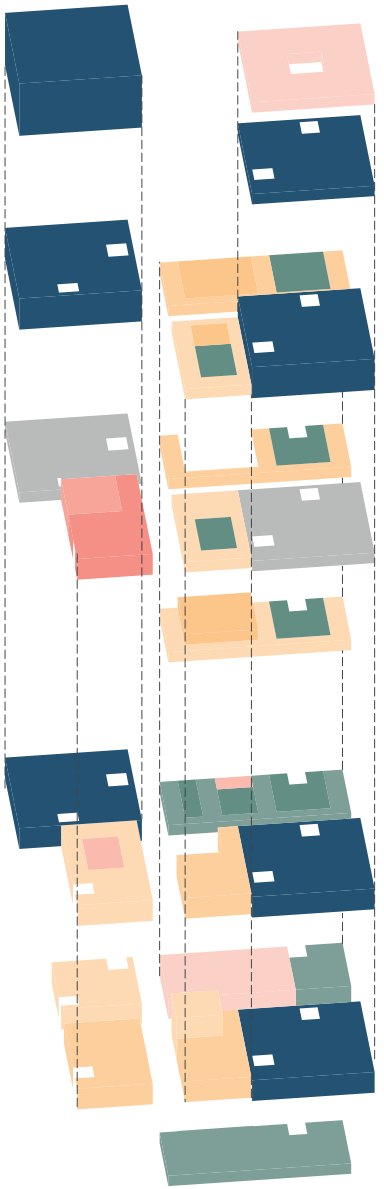
Meet / create

Offices

Other

design

PROGRAM



1000 m2	lounge/meeting
600 m2	meeting/selfstudy
730 m2	cafe/restaurant
300 m2	workshop/vr
1200 m2	books magazines/papers
1000 m2	lab
22 360 m2	total

Stacks

Learn / study rooms

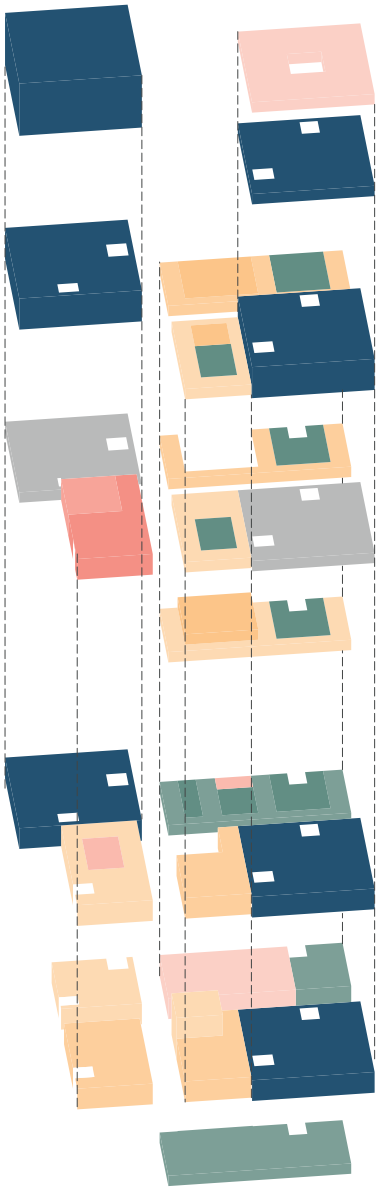
Meet / create

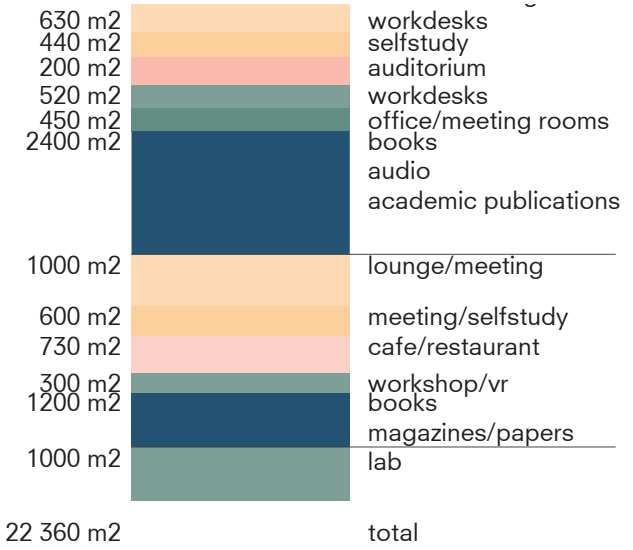
Offices

Other

design

PROGRAM

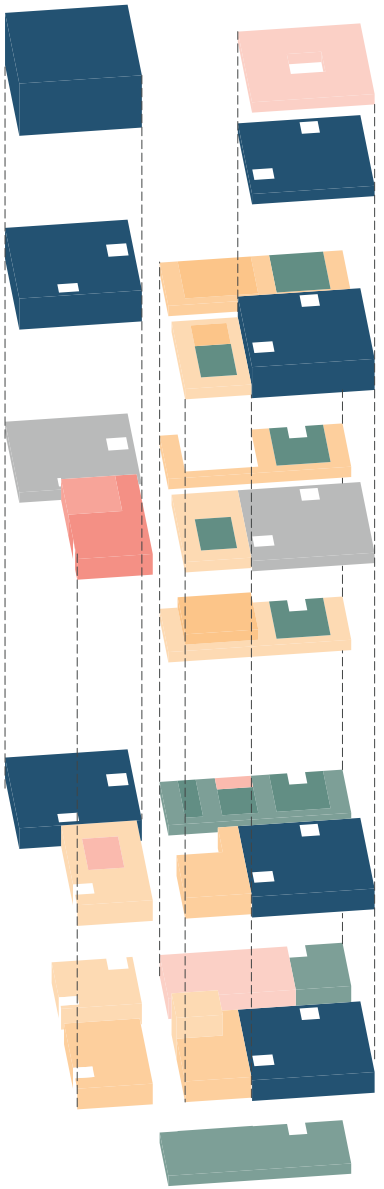




Stacks | Learn / study rooms | Meet / create | Offices | Other

design

PROGRAM

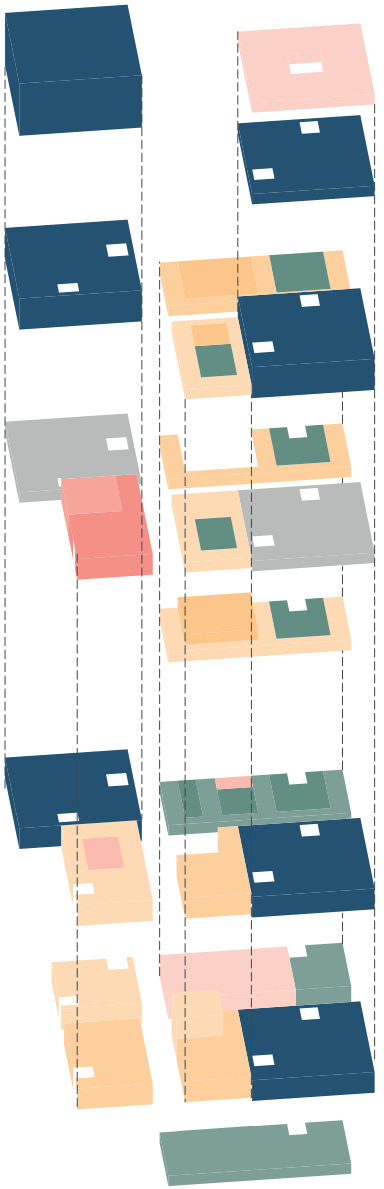


360 m2	reading room
420 m2	selfstudy
240 m2	office/ meeting rooms
630 m2	workdesks
440 m2	selfstudy
200 m2	auditorium
520 m2	workdesks
450 m2	office/meeting rooms
2400 m2	books
	audio
	academic publications
1000 m2	lounge/meeting
600 m2	meeting/selfstudy
730 m2	cafe/restaurant
300 m2	workshop/vr
1200 m2	books
	magazines/papers
1000 m2	lab
22 360 m2	total

Stacks | Learn / study rooms | Meet / create | Offices | Other

design

PROGRAM

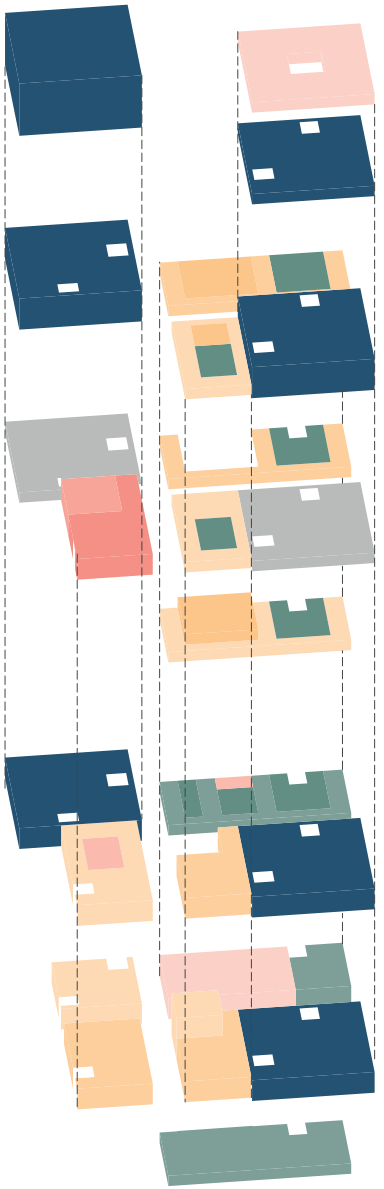


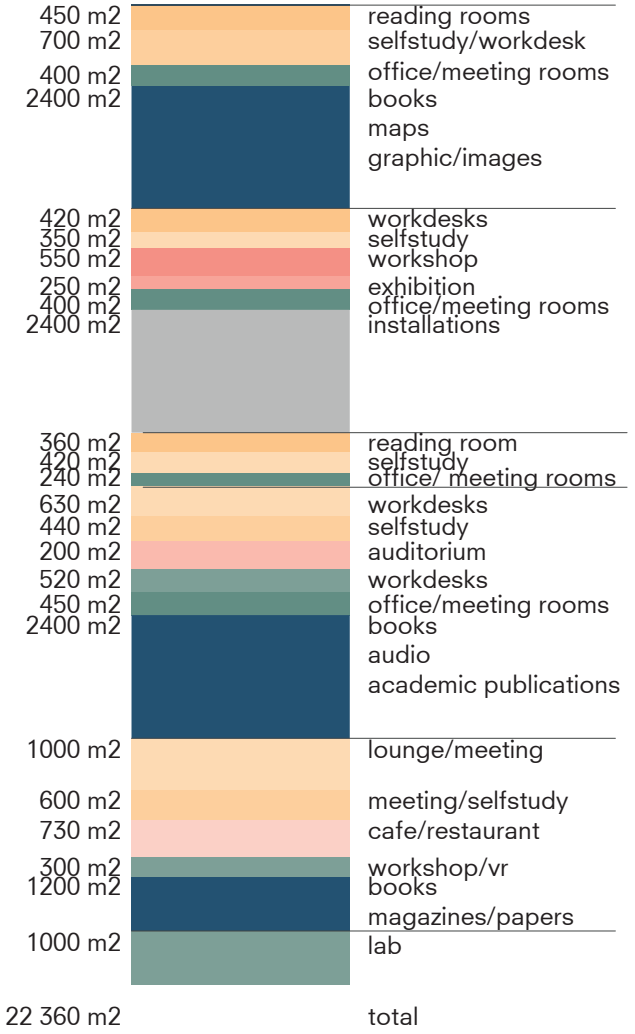
420 m2	workdesks
350 m2	selfstudy
550 m2	workshop
250 m2	exhibition
400 m2	office/meeting rooms
2400 m2	installations
360 m2	reading room
420 m2	selfstudy
240 m2	office/ meeting rooms
630 m2	workdesks
440 m2	selfstudy
200 m2	auditorium
520 m2	workdesks
450 m2	office/meeting rooms
2400 m2	books
	audio
	academic publications
1000 m2	lounge/meeting
600 m2	meeting/selfstudy
730 m2	cafe/restaurant
300 m2	workshop/vr
1200 m2	books
	magazines/papers
1000 m2	lab
22 360 m2	total

Stacks | Learn / study rooms | Meet / create | Offices | Other

design

PROGRAM

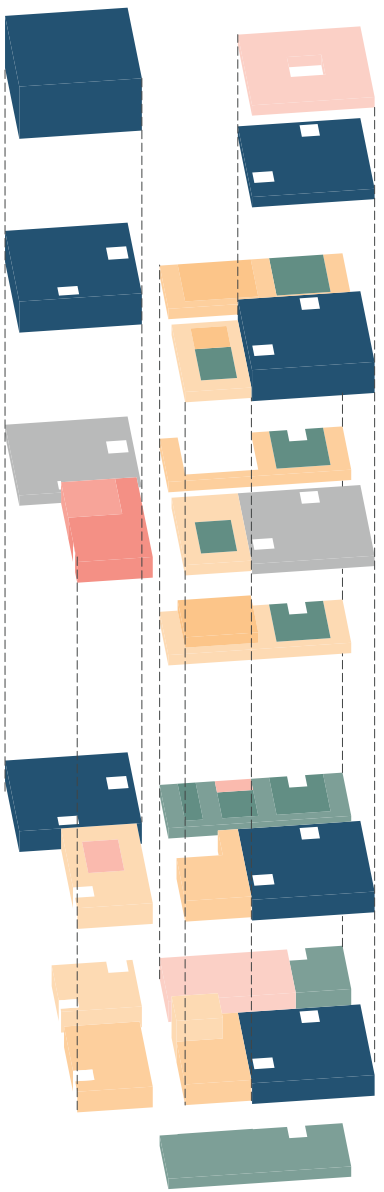




Stacks | Learn / study rooms | Meet / create | Offices | Other

design

PROGRAM

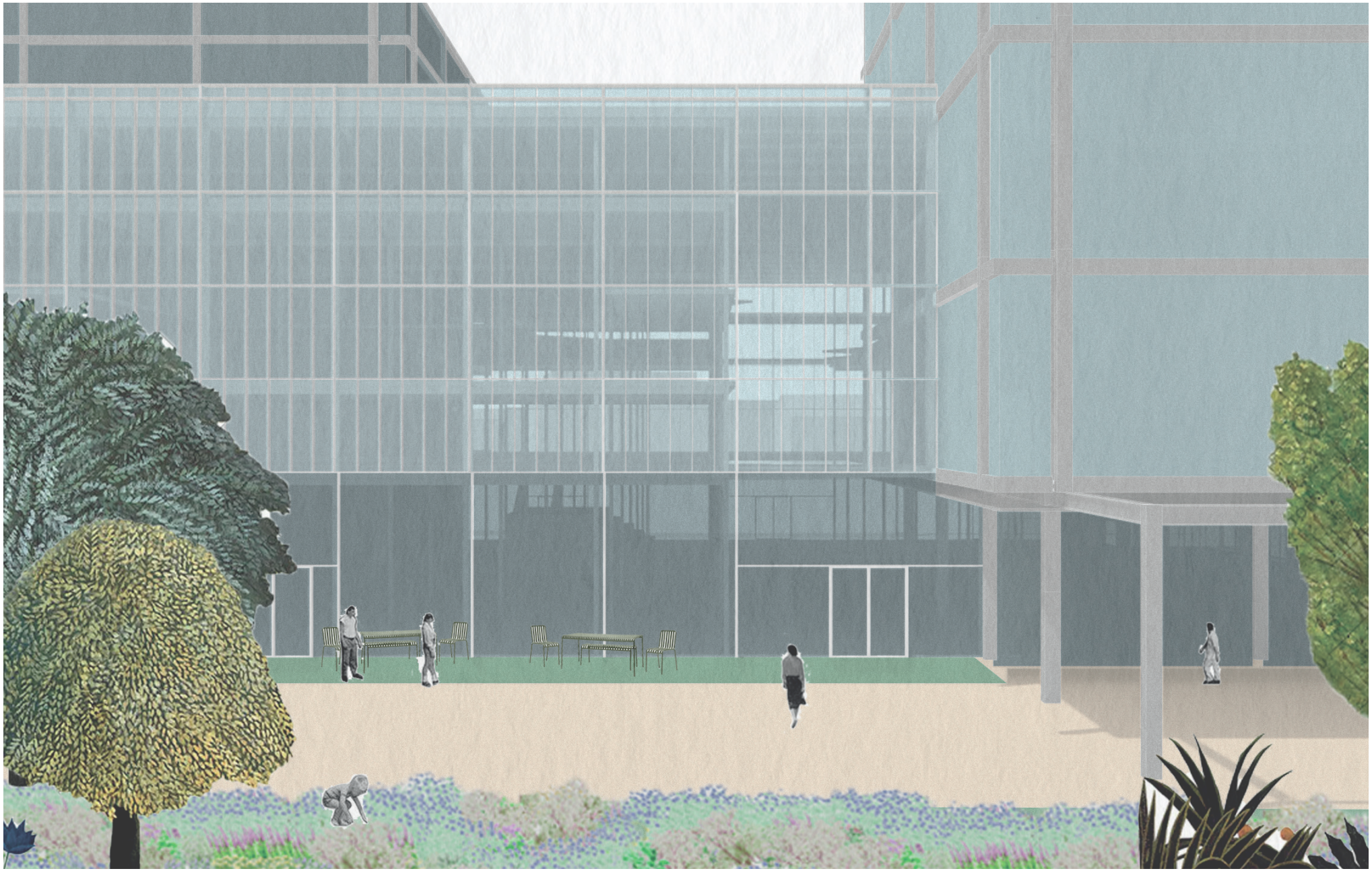


1200 m2	books standards
1000 m2	bar
1200 m2	books special collection
450 m2	reading rooms
700 m2	selfstudy/workdesk
400 m2	office/meeting rooms
2400 m2	books maps graphic/images
420 m2	workdesks
350 m2	selfstudy
550 m2	workshop
250 m2	exhibition
400 m2	office/meeting rooms
2400 m2	installations
360 m2	reading room
420 m2	selfstudy
240 m2	office/ meeting rooms
630 m2	workdesks
440 m2	selfstudy
200 m2	auditorium
520 m2	workdesks
450 m2	office/meeting rooms
2400 m2	books audio academic publications
1000 m2	lounge/meeting
600 m2	meeting/selfstudy
730 m2	cafe/restaurant
300 m2	workshop/vr
1200 m2	books magazines/papers
1000 m2	lab
22 360 m2	total

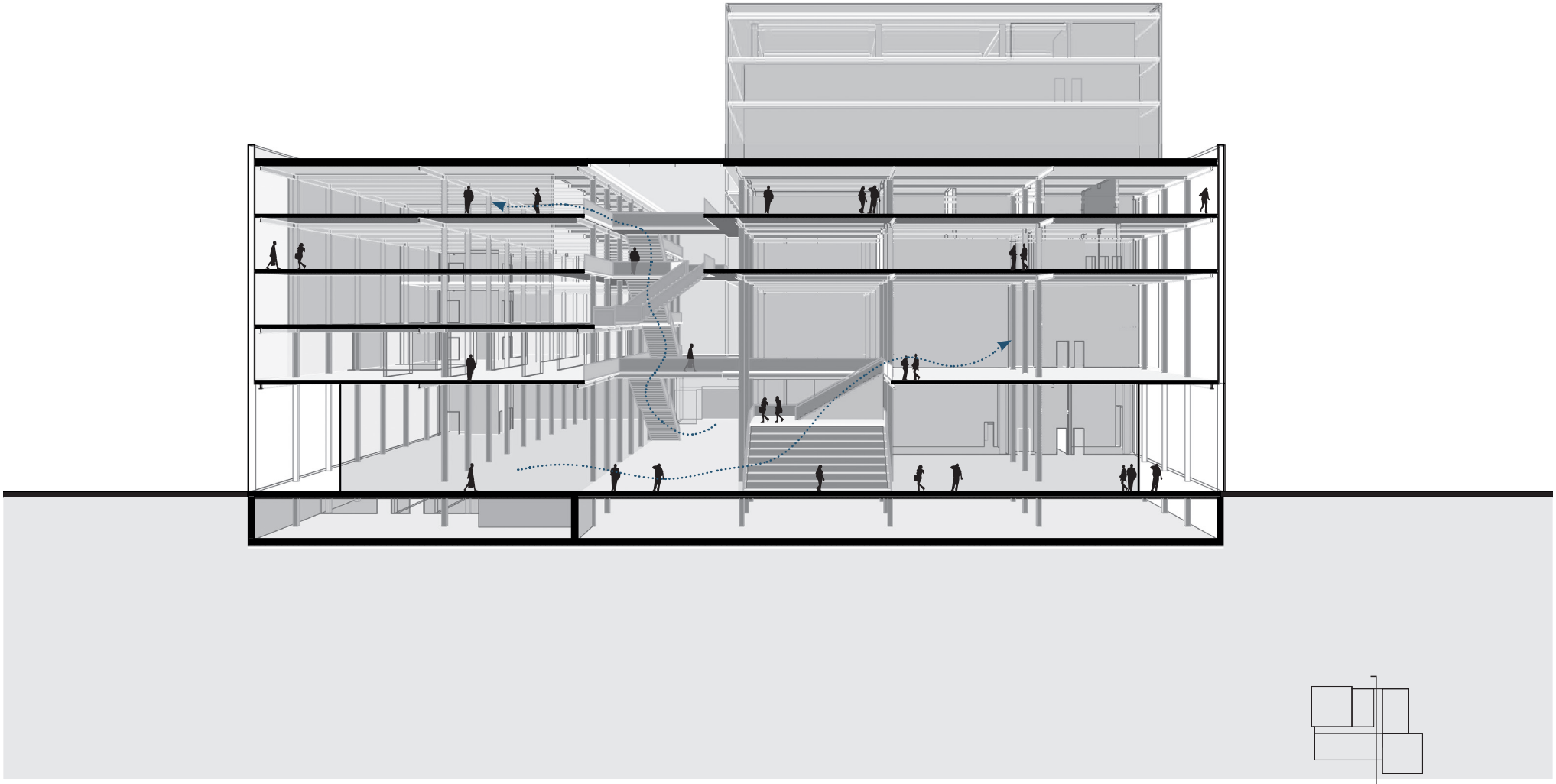
Stacks | Learn / study rooms | Meet / create | Offices | Other

design

ENTRANCE



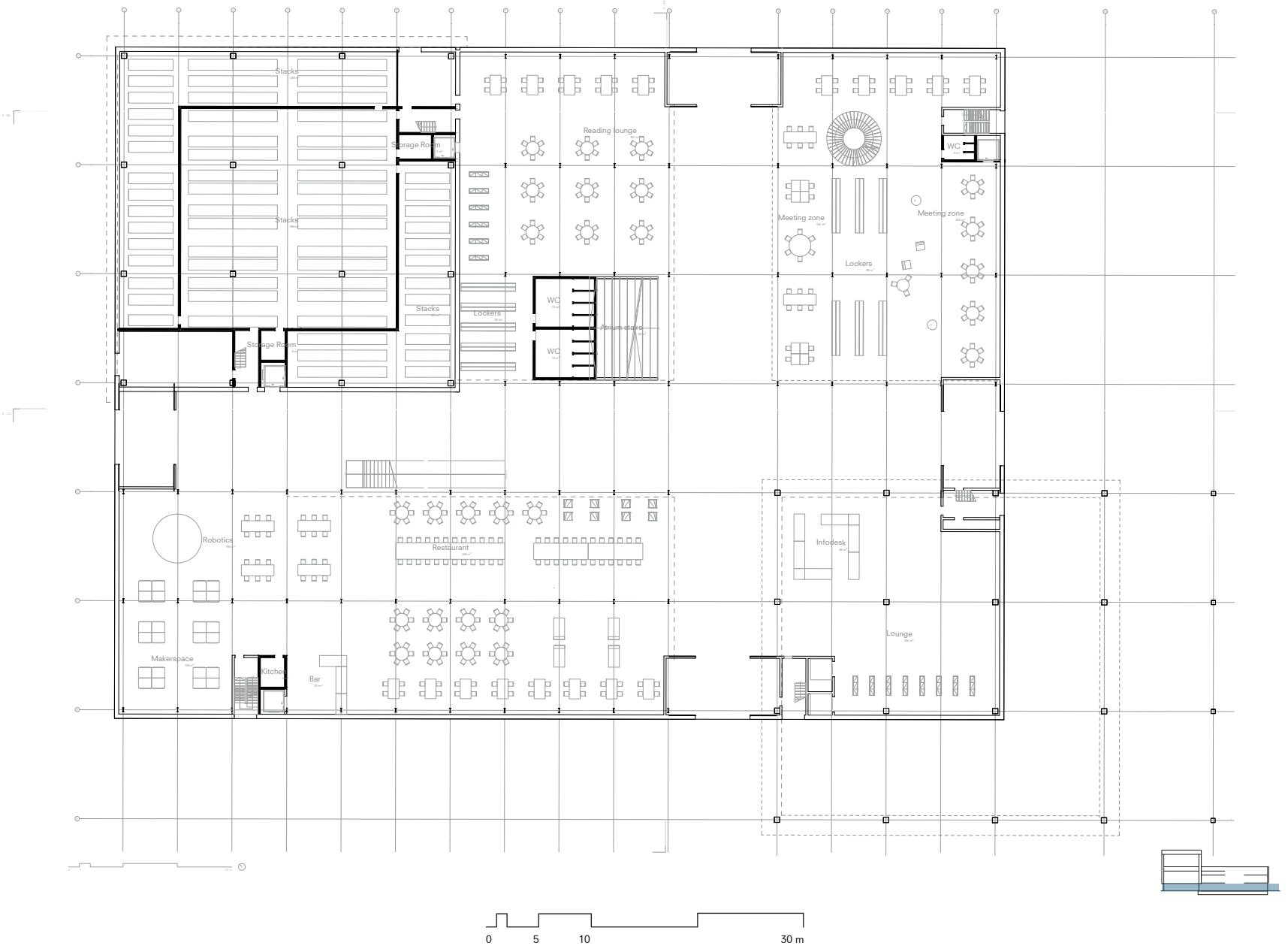
SECTION A - A





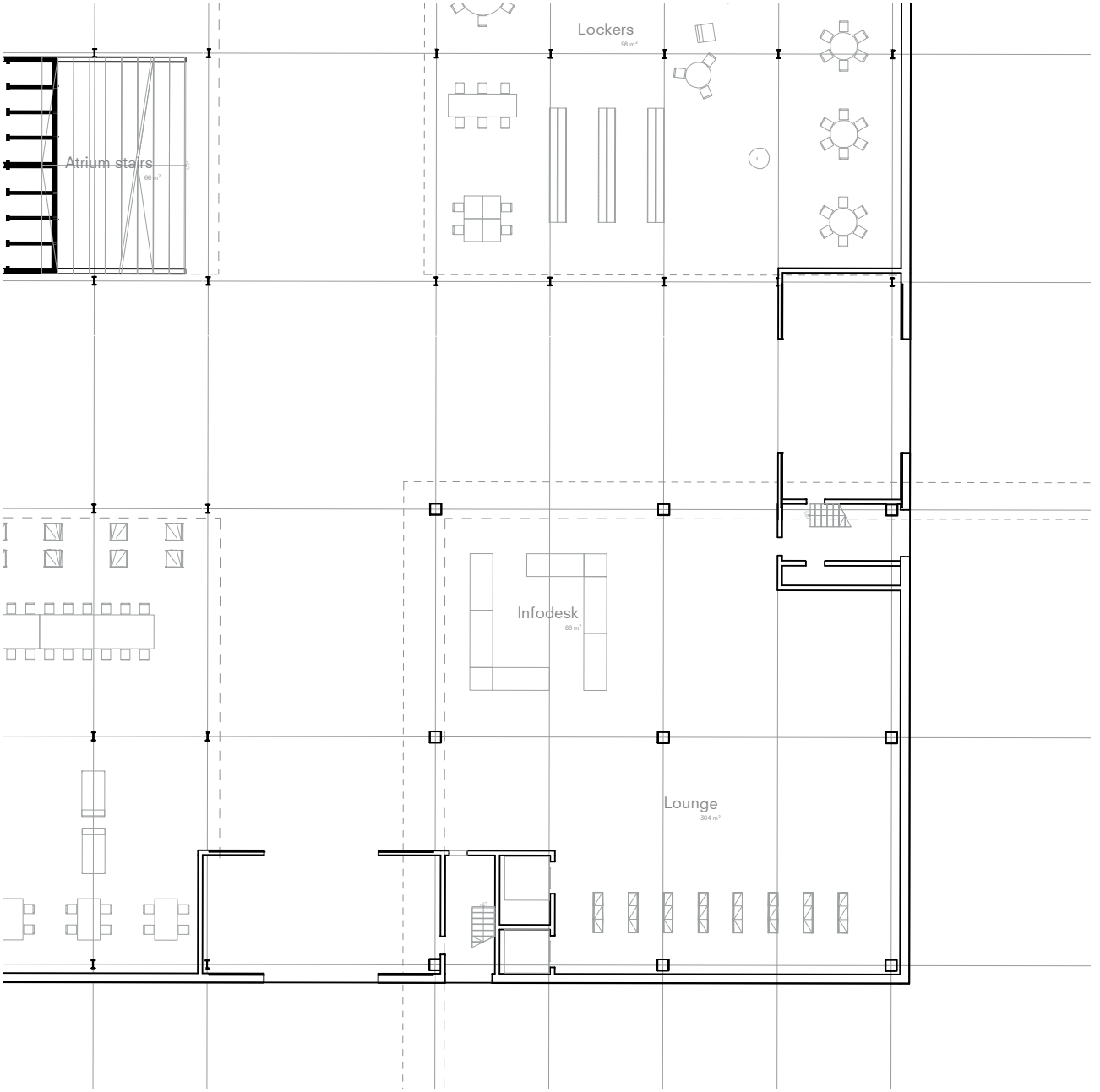
design

GROUND FLOOR



design

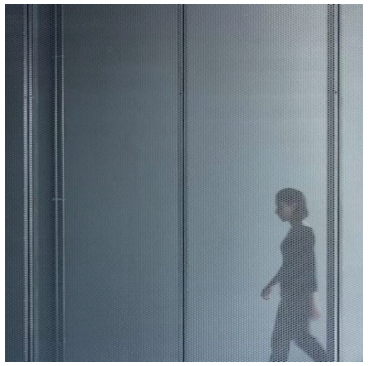
MAIN ENTRANCE



INFO DESK

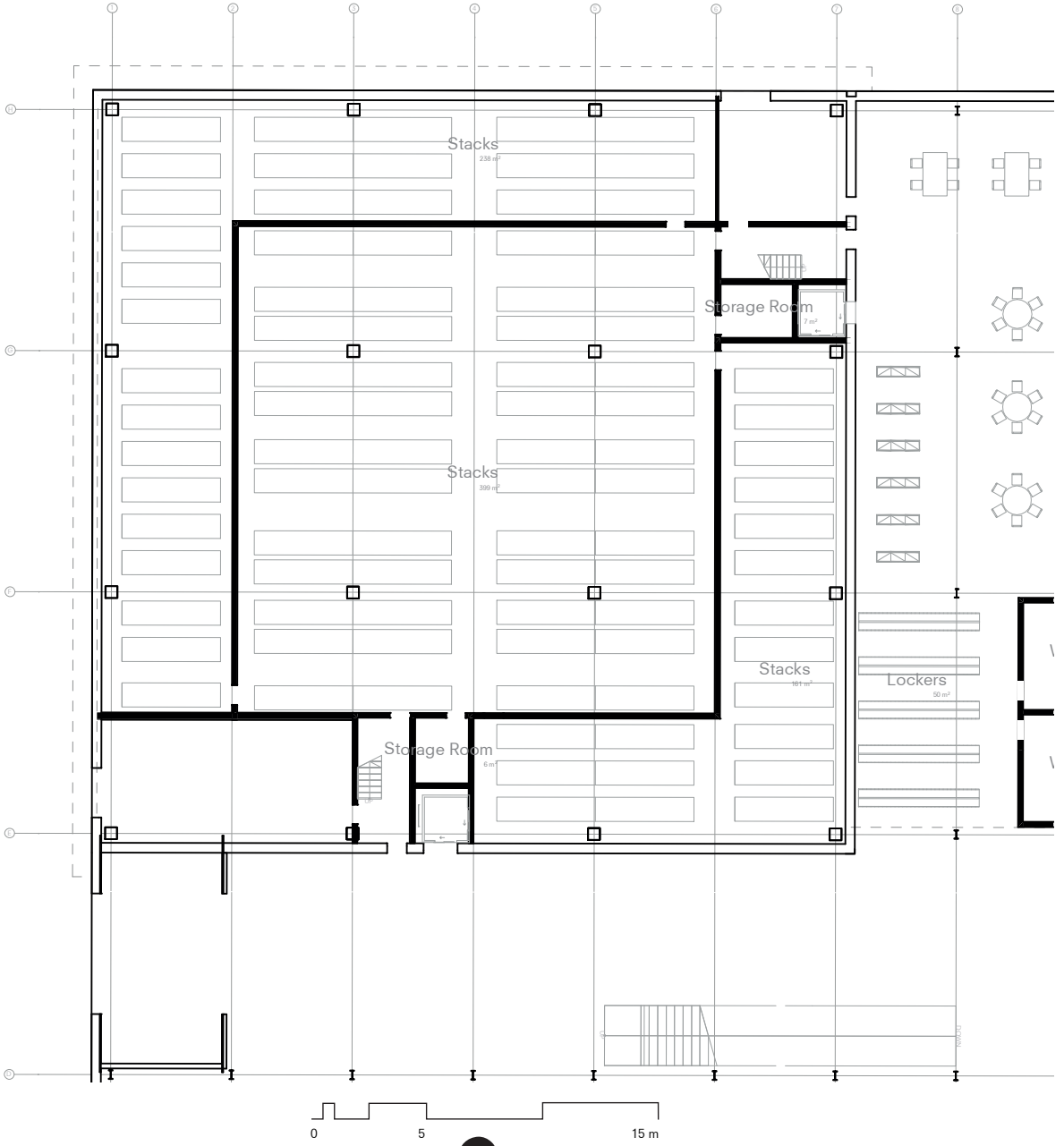


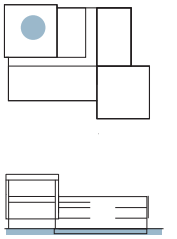
STACKS



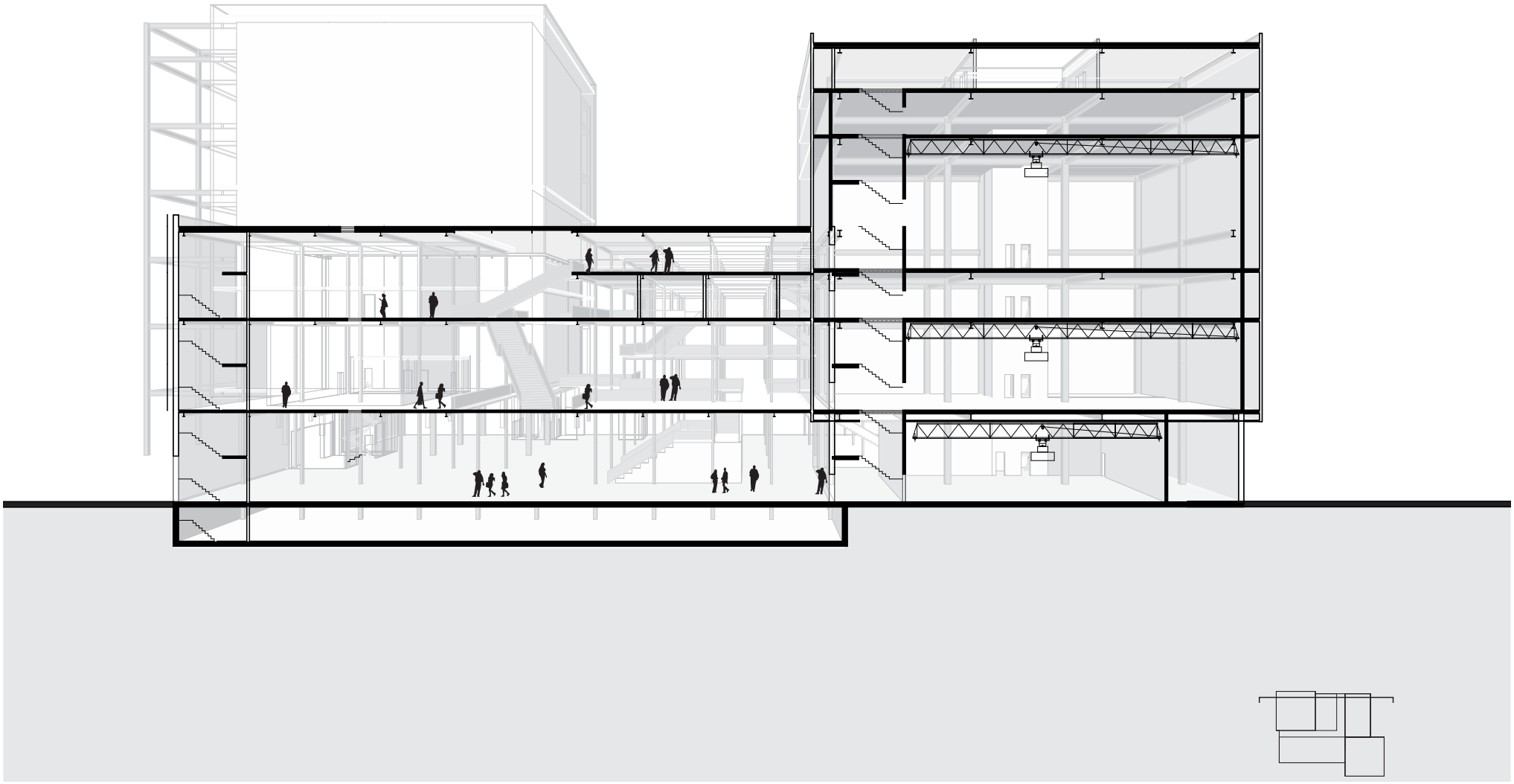





Stacks
238 m²
Storage Room
7 m²
Stacks
399 m²
Stacks
161 m²
Lockers
50 m²
Storage Room
6 m²
0
5
15 m



SECTION B - B



0 5 10 30 m

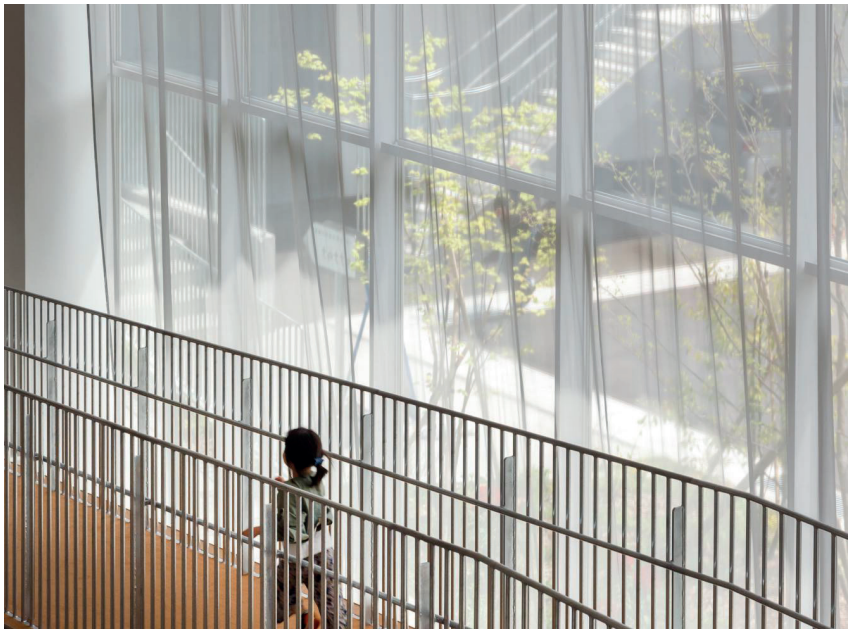
design

INNERSTREET



INNER STREET



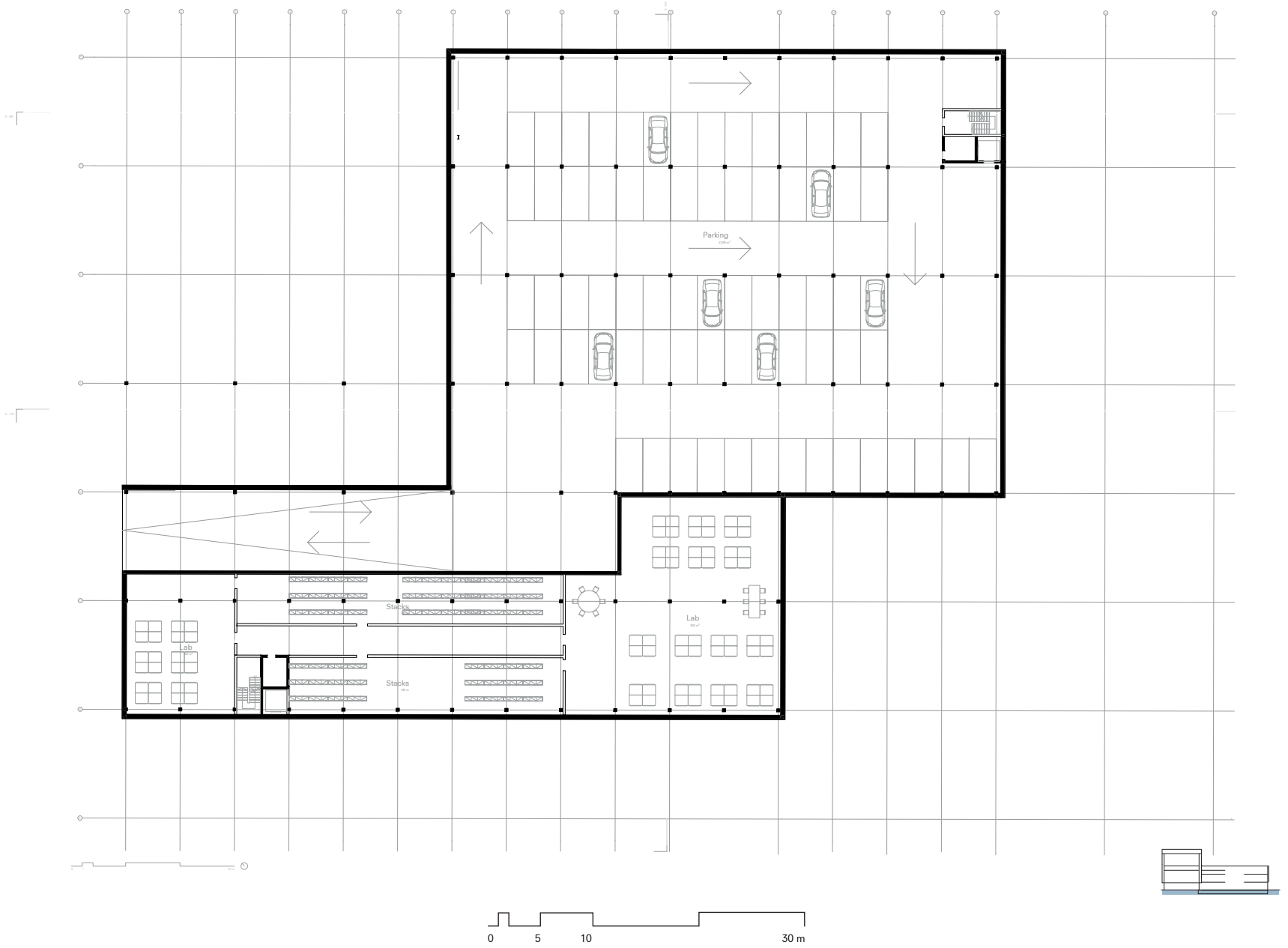






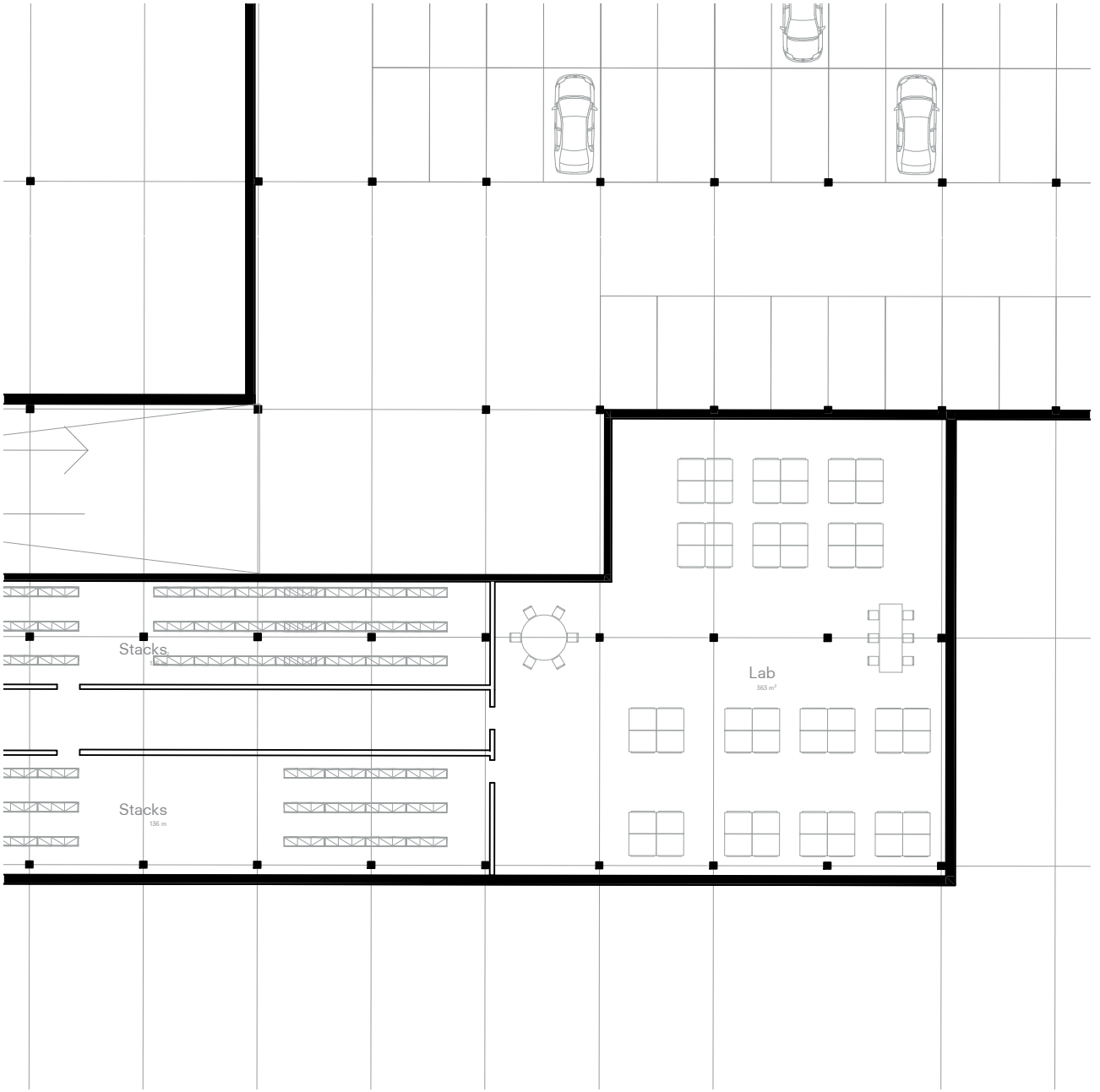
design

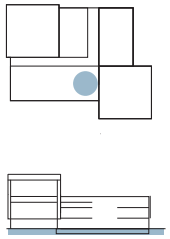
UNDERGROUND



design

LAB

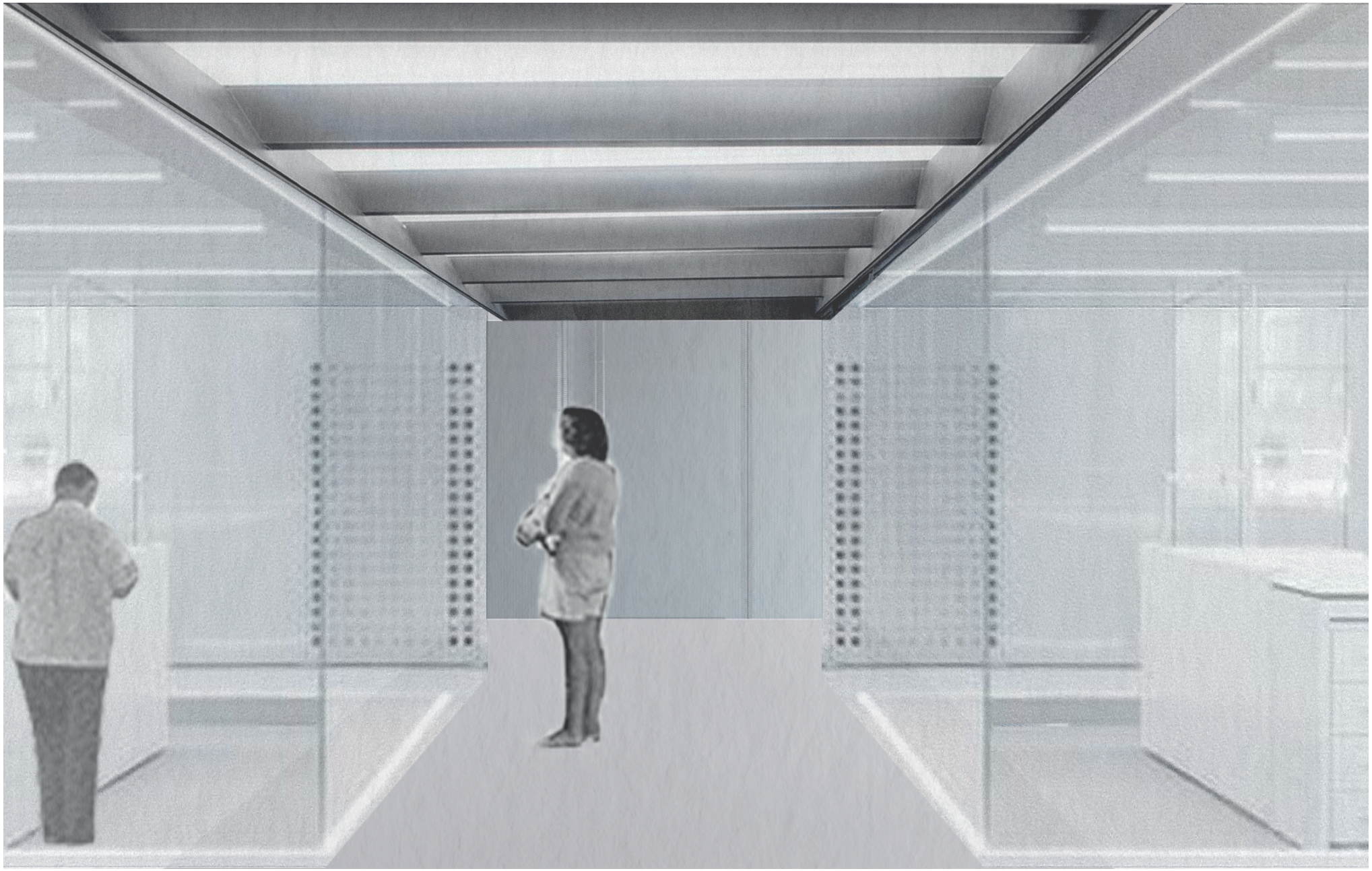




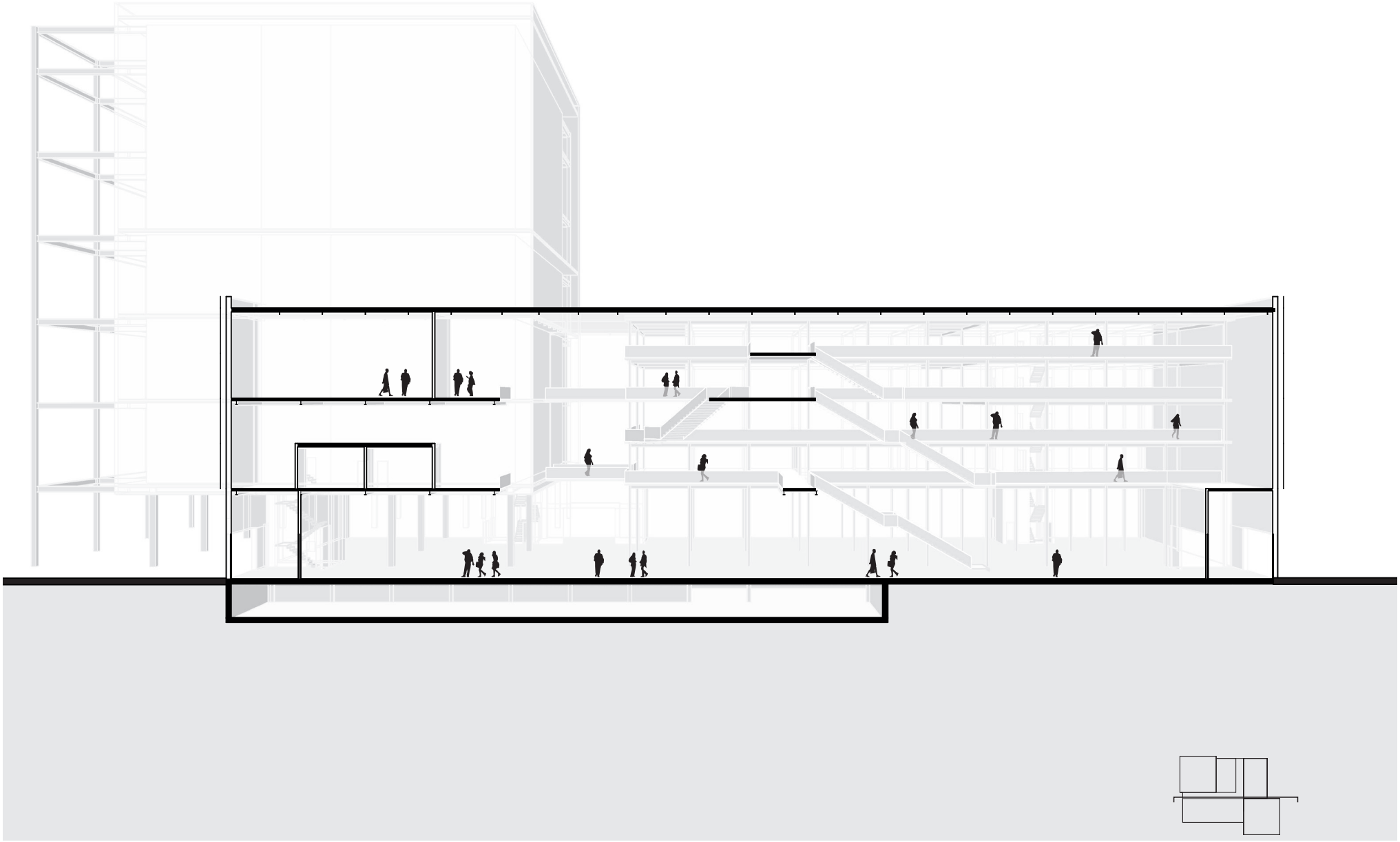
0 5 15 m

design

LAB

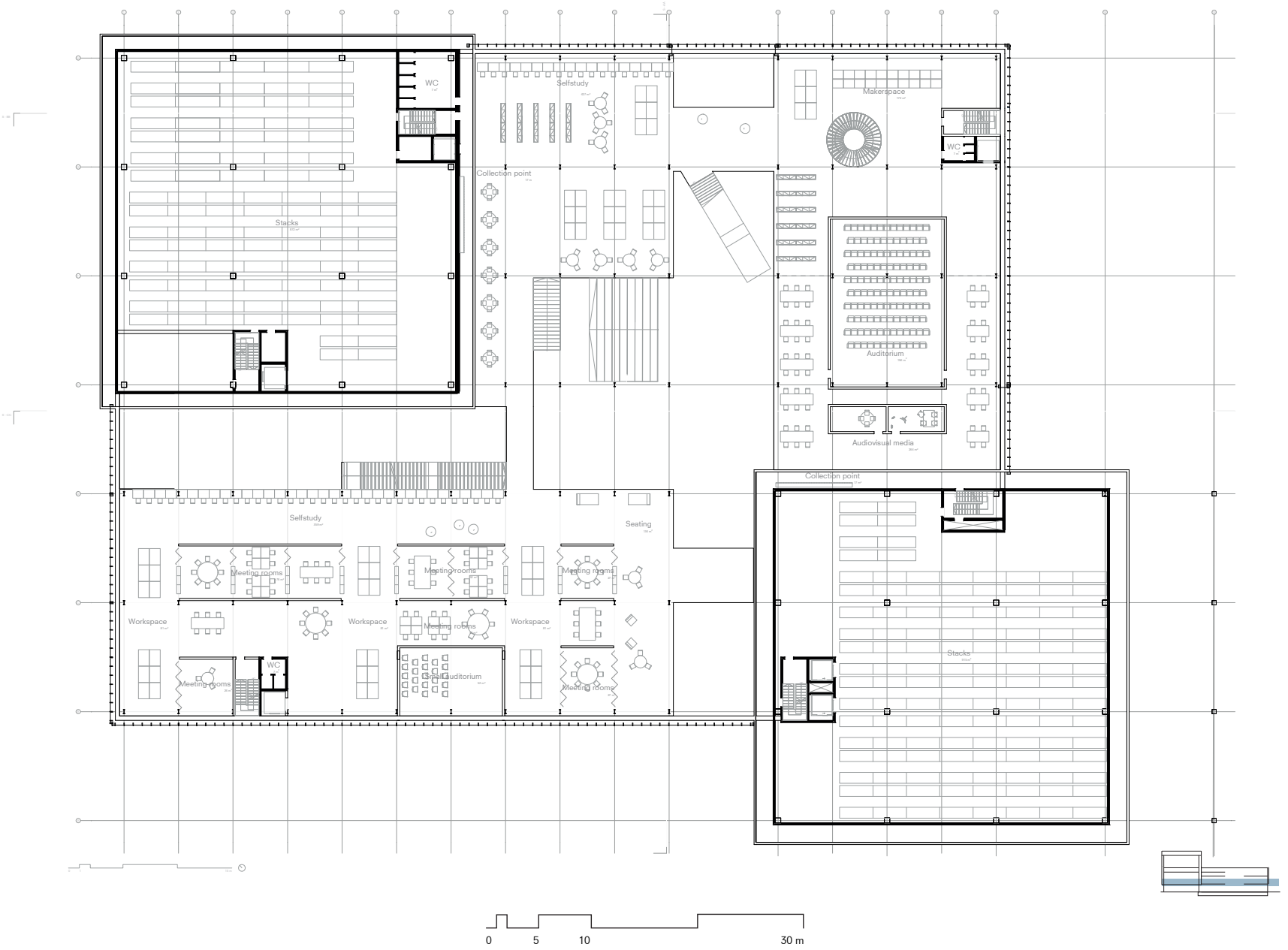


SECTION C - C



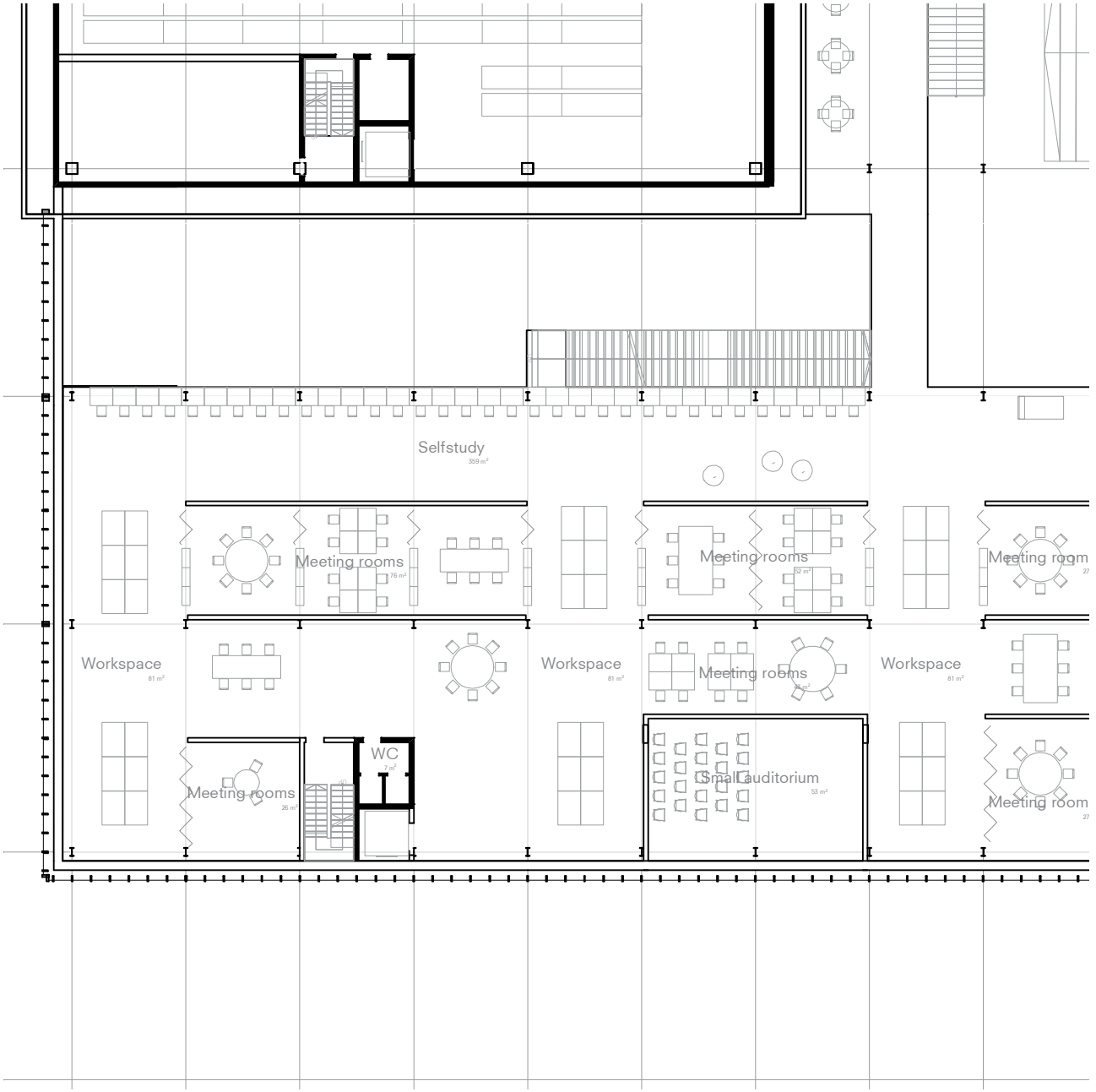
0 5 10 30 m

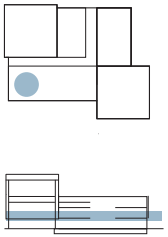
+7 000


WC
Selfstudy
Makerspace
WC
Collection point
Stacks
Auditorium
Audiovisual media
Collection point
Selfstudy
Seating
Meeting rooms
Meeting rooms
Meeting rooms
Workspace
Workspace
Meeting rooms
Workspace
WC
Meeting rooms
Small auditorium
Meeting rooms
Stacks
0
5
10
30 m

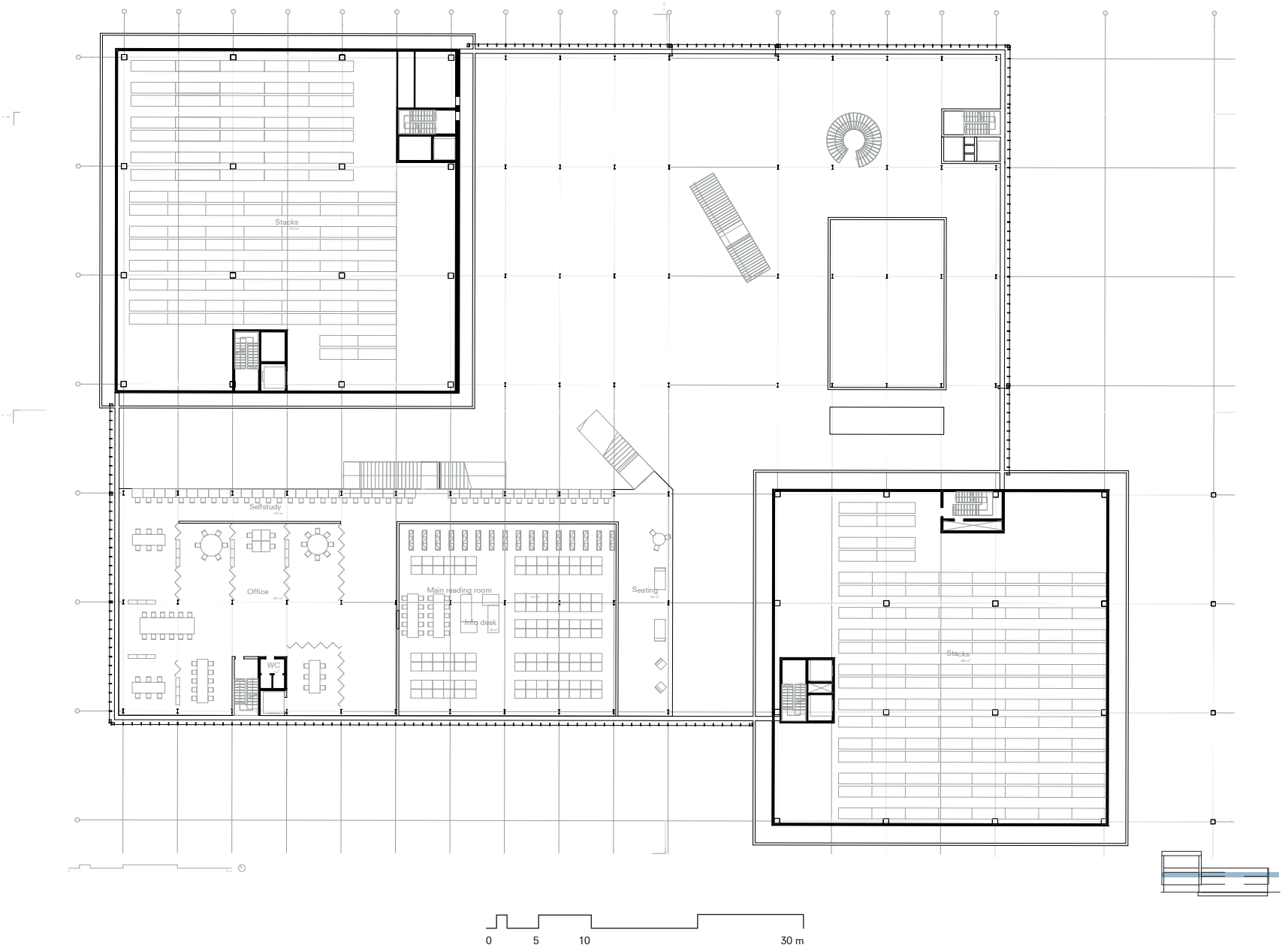
design

FLEXIBLE WORKSPACE



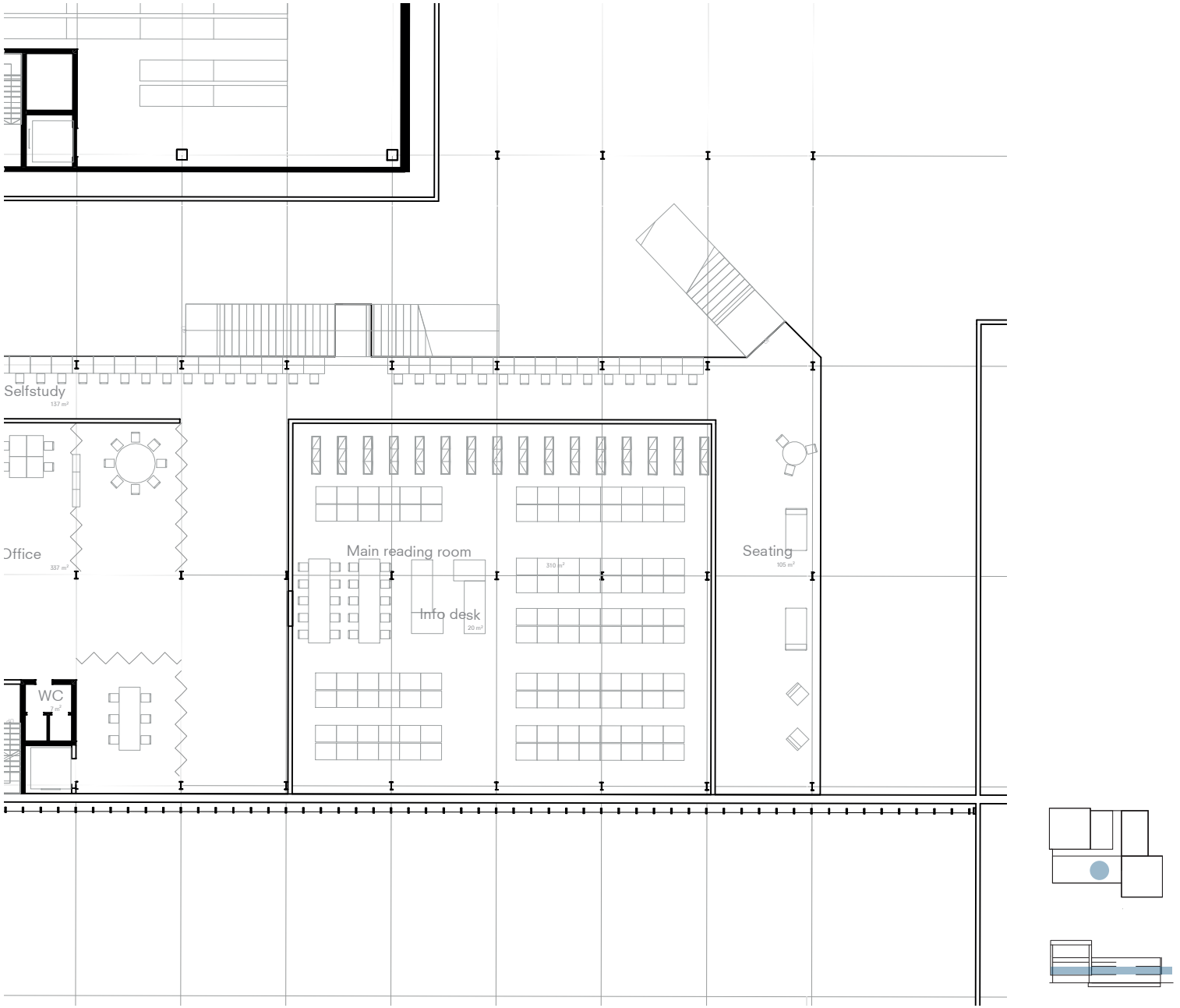


+10 500

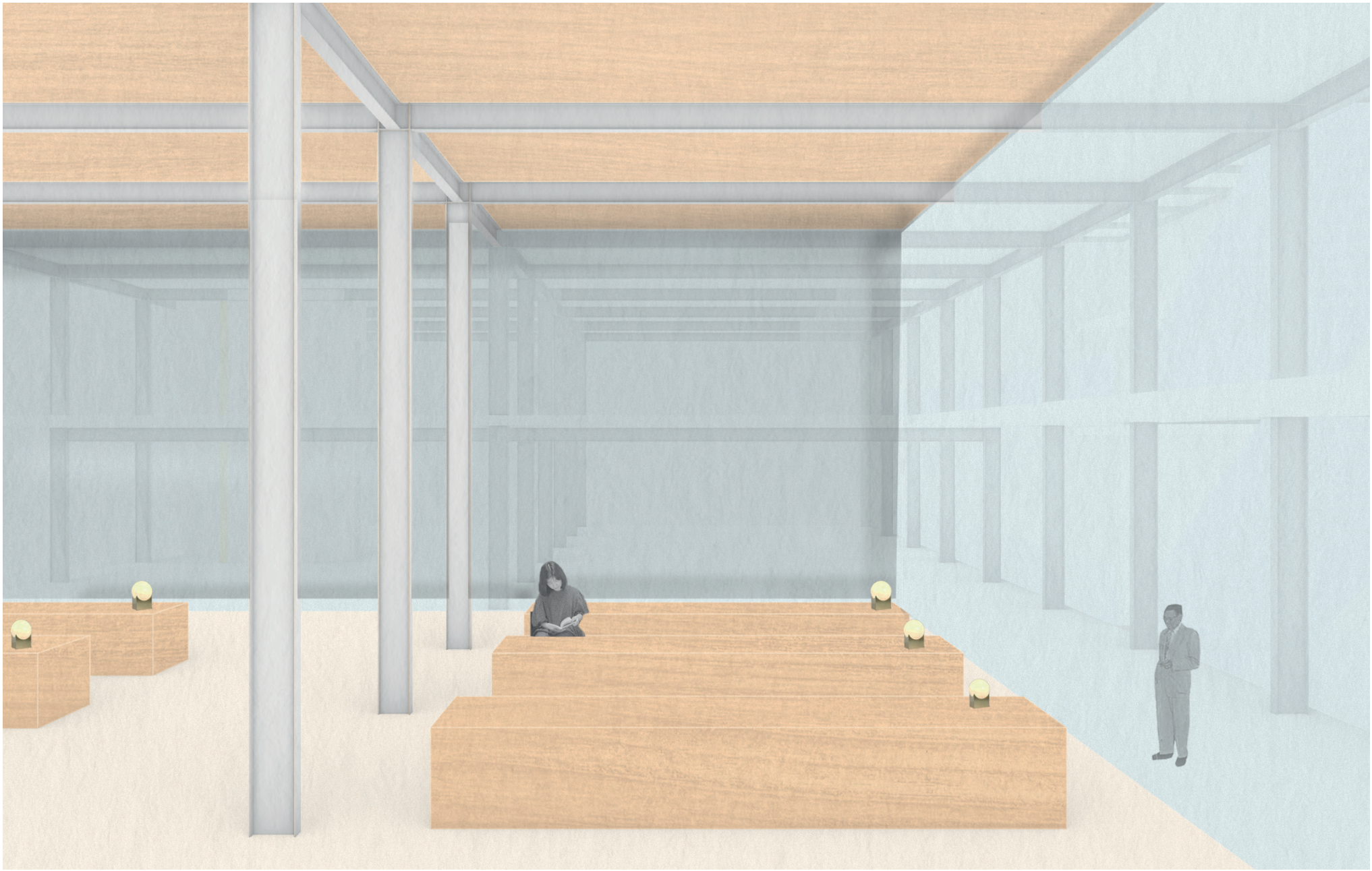

Stacks
Selfstudy
Office
Main reading room
Info desk
Seating
WC
Stacks
0
5
10
30 m

design

READING ROOM

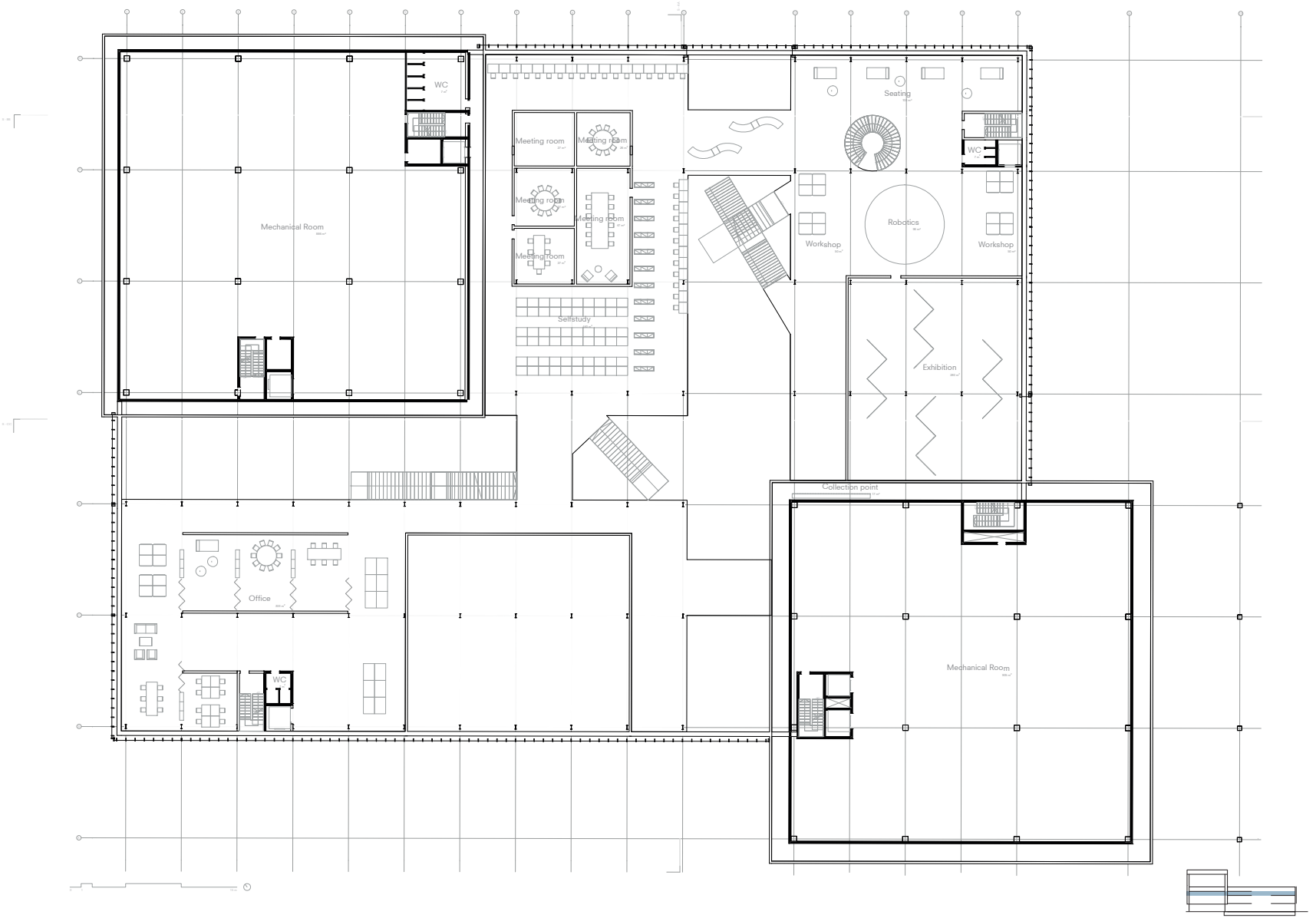


READING ROOM



design

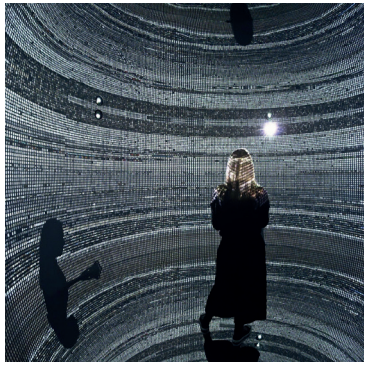
+14 000



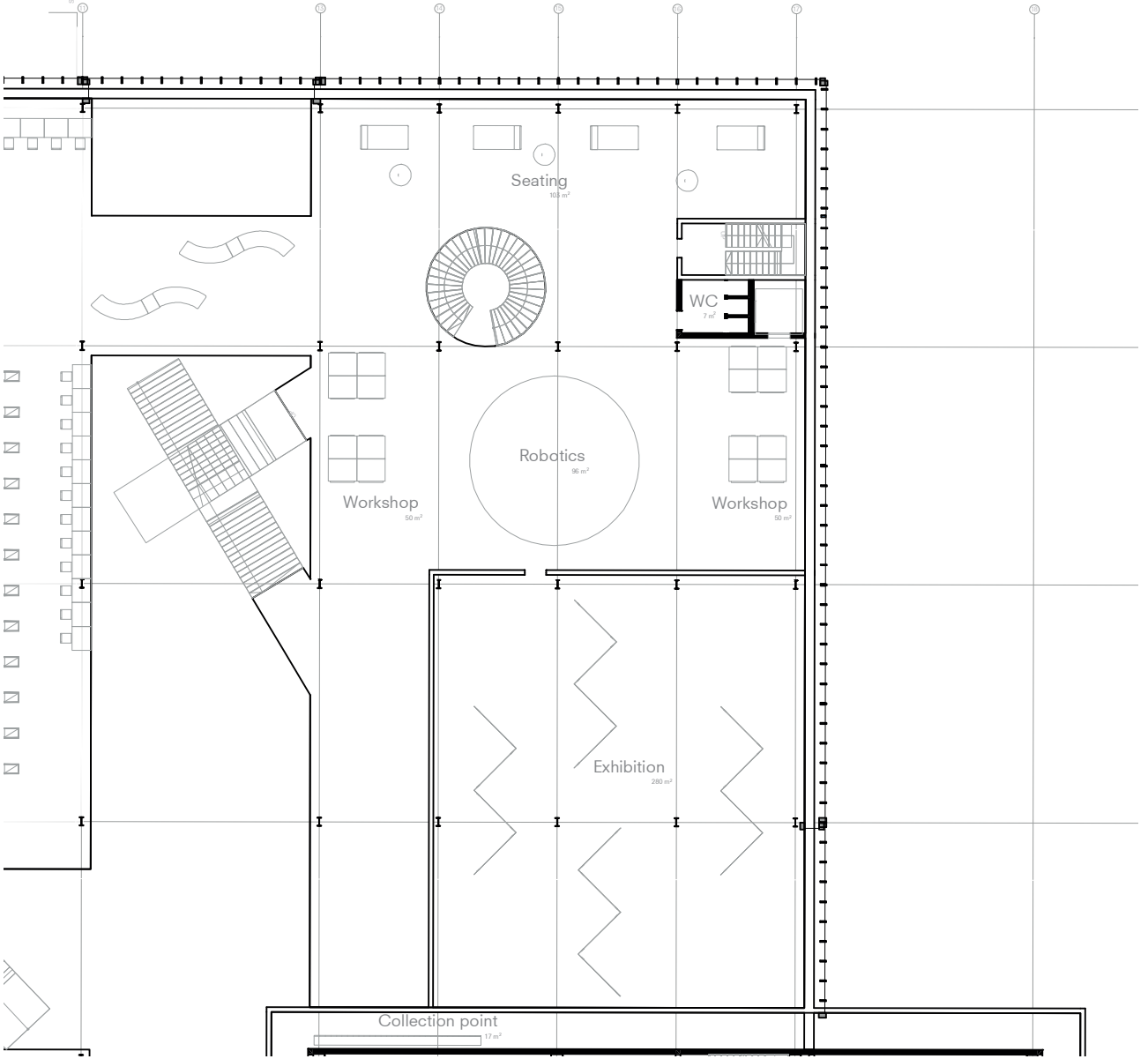
design

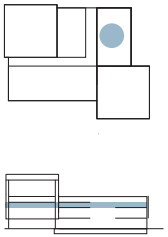
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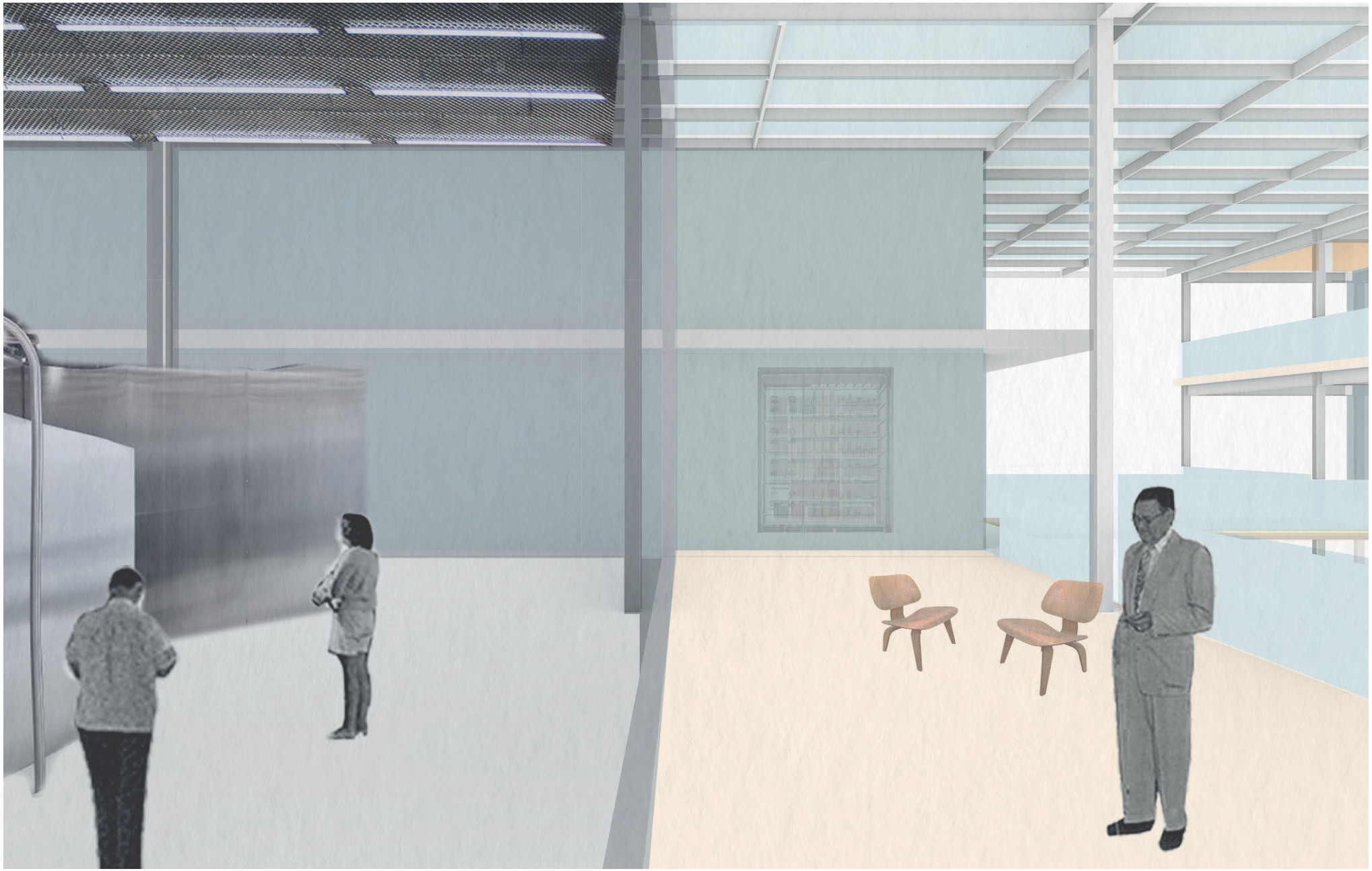




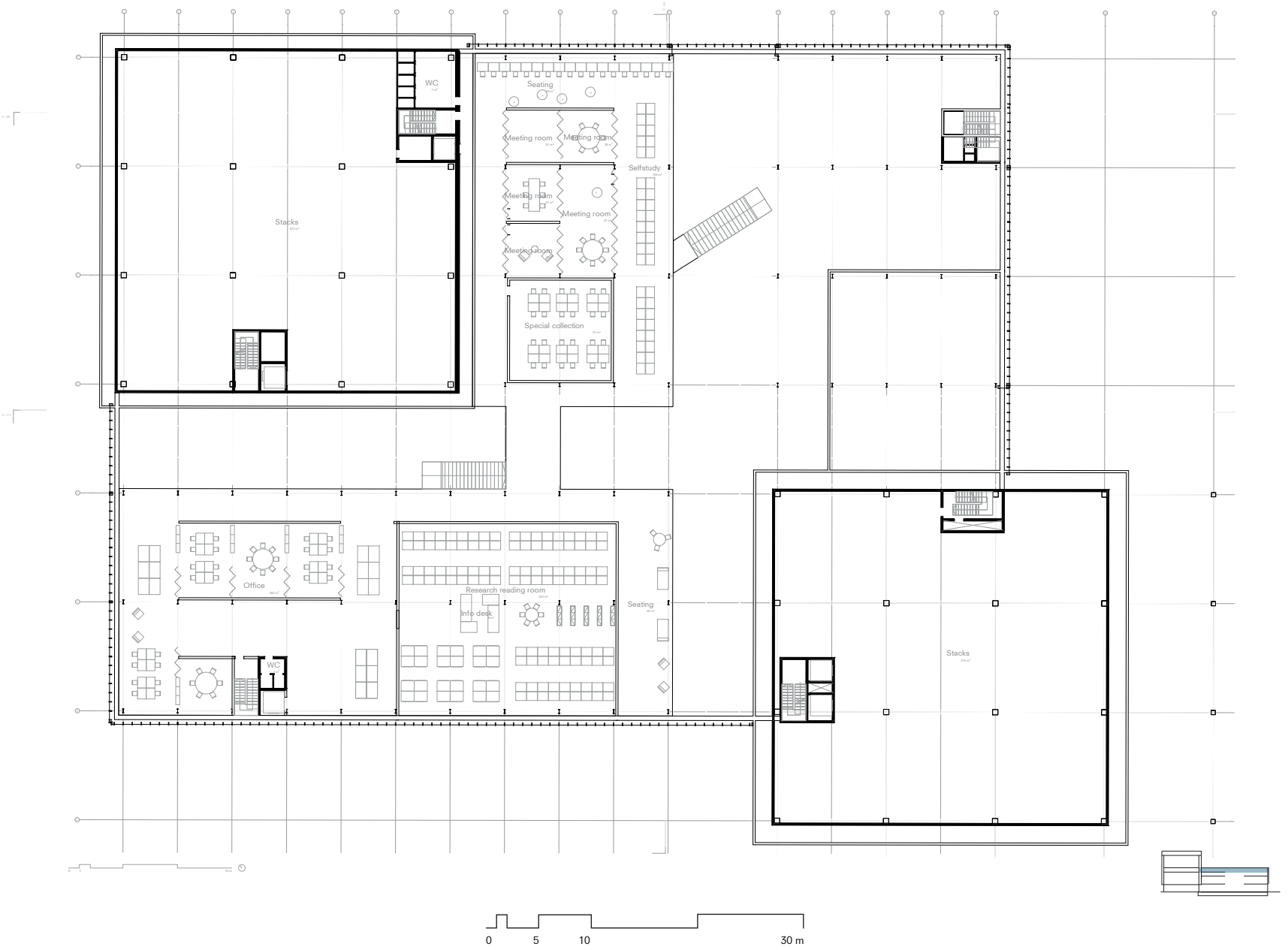




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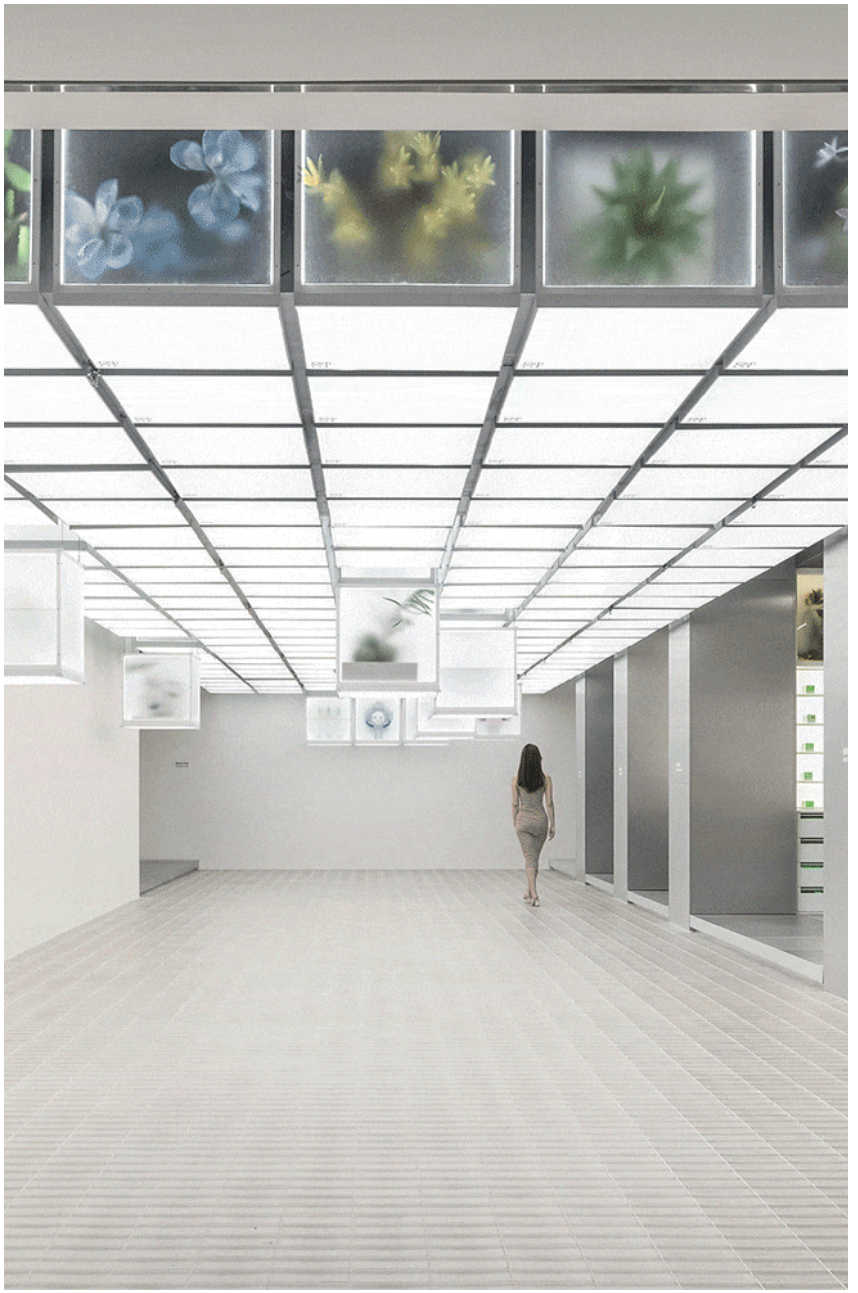


+17 500


WC
Seating
Meeting room
Meeting room
Selfstudy
Meeting room
Meeting room
Meeting room
Special collection
Stacks
Office
Research reading room
Info desk
Seating
WC
Stacks
0
5
10
30 m

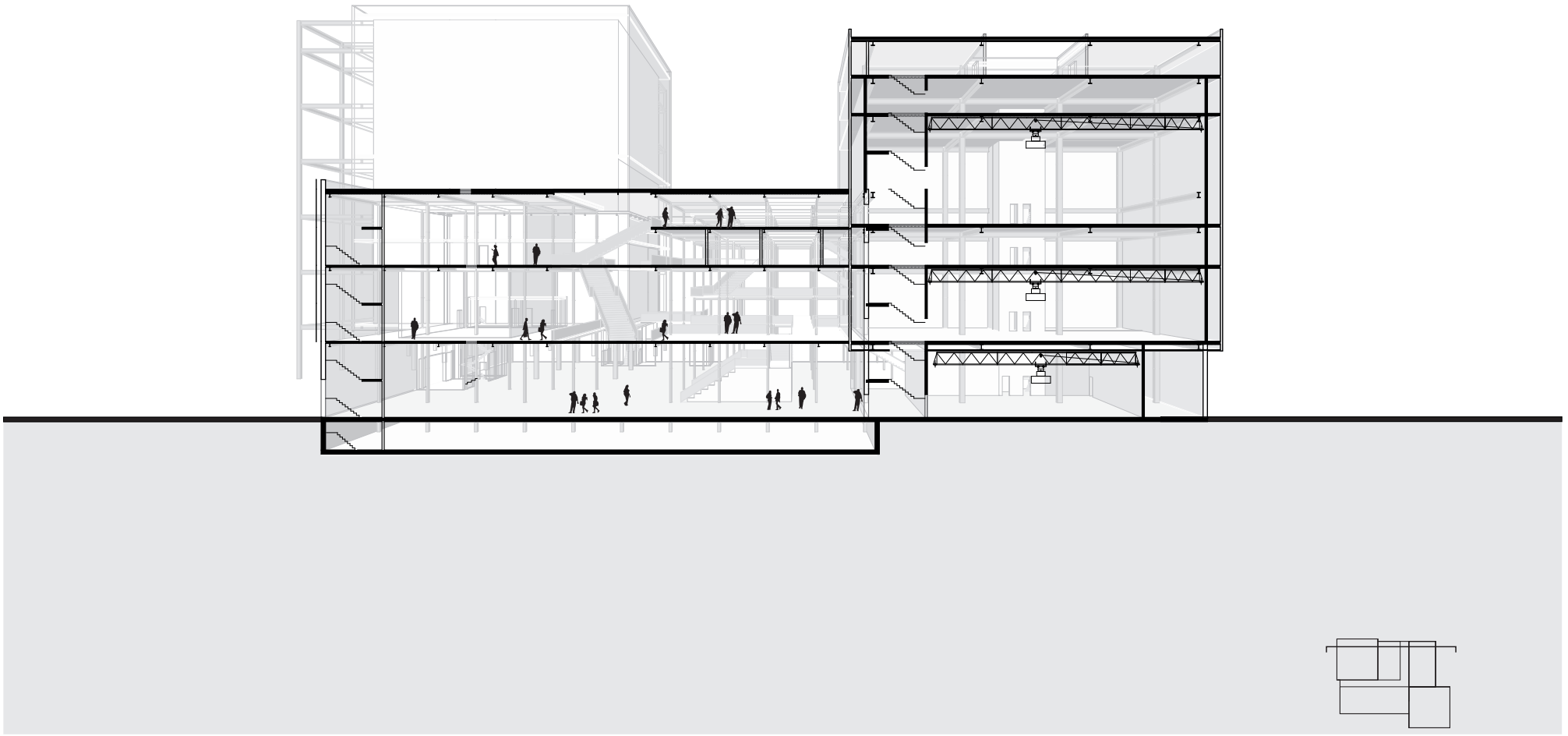
INTERIOR AUTOMATED STACKS





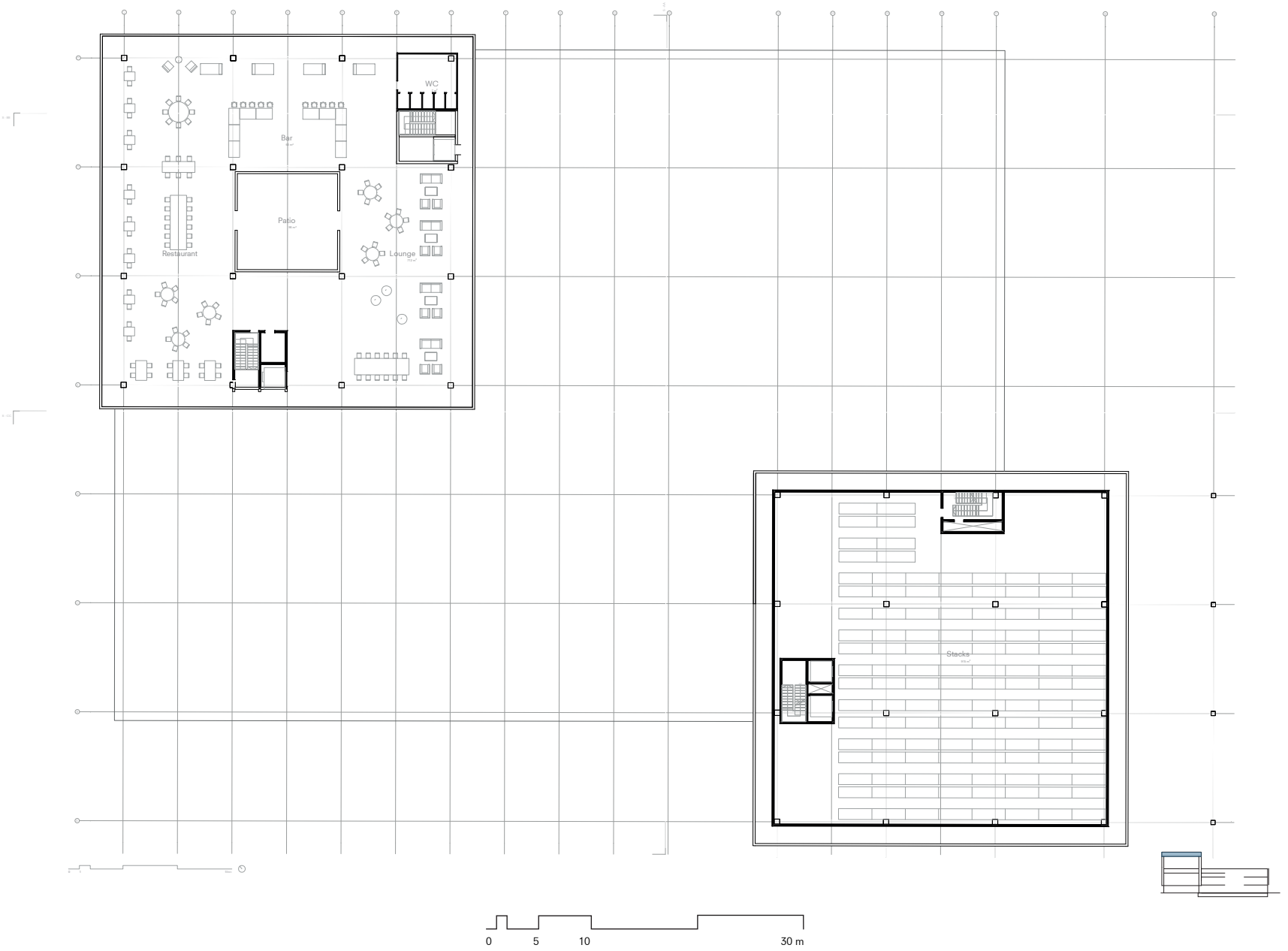


SECTION BB



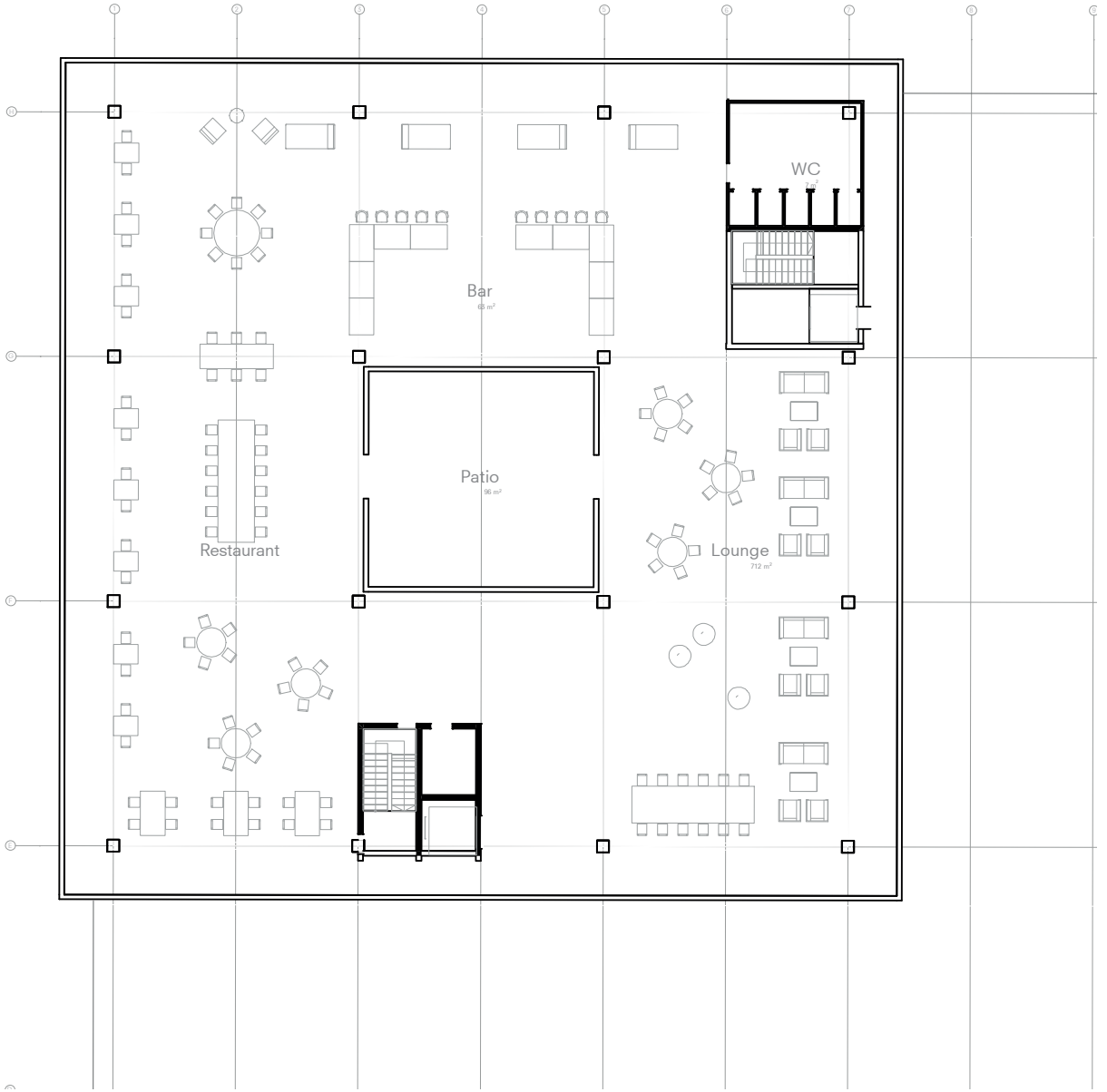


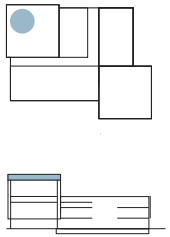
+31 500



design

ROOFTOP FLOOR





0 5 15 m

CP

ROOF BAR



RIVER SIDE



INTRO

CONCEPT

DESIGN

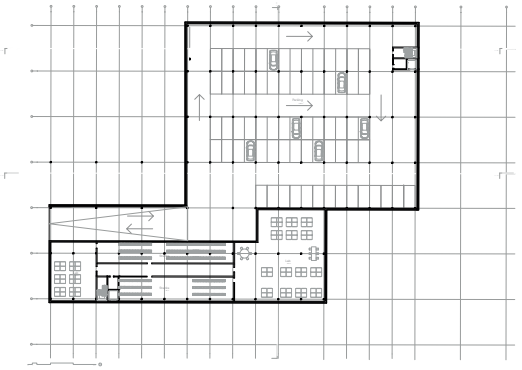
CONCLUSION

RESEARCH QUESTION

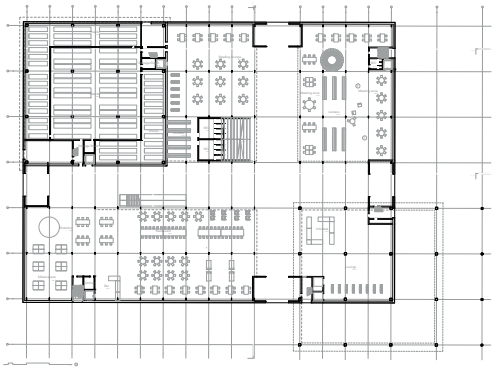
How can the national library accommodate the collection and curation of knowledge to encourage learning in an age of digitalization?



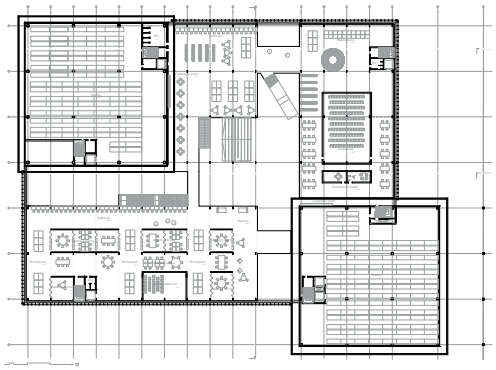
OVERVIEW FLOOR PLANS



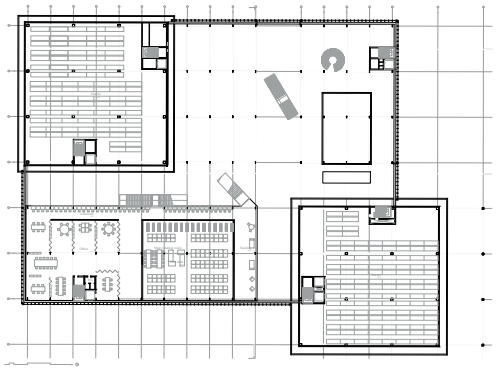
floor - 01
- 3 000



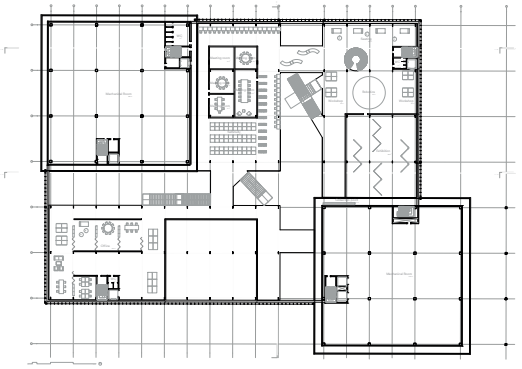
floor 00
+ 0 000



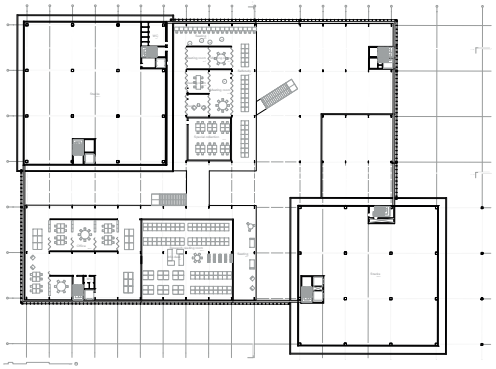
floor 01
+ 7 000



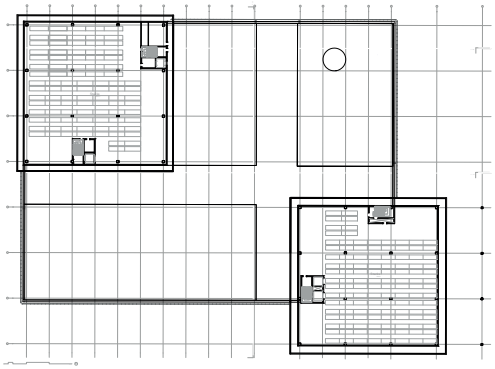
Floor 02
+ 10 500



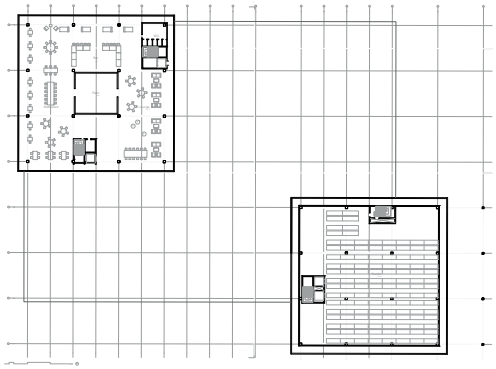
floor 03
+ 14 000



floor 04
+ 17 500

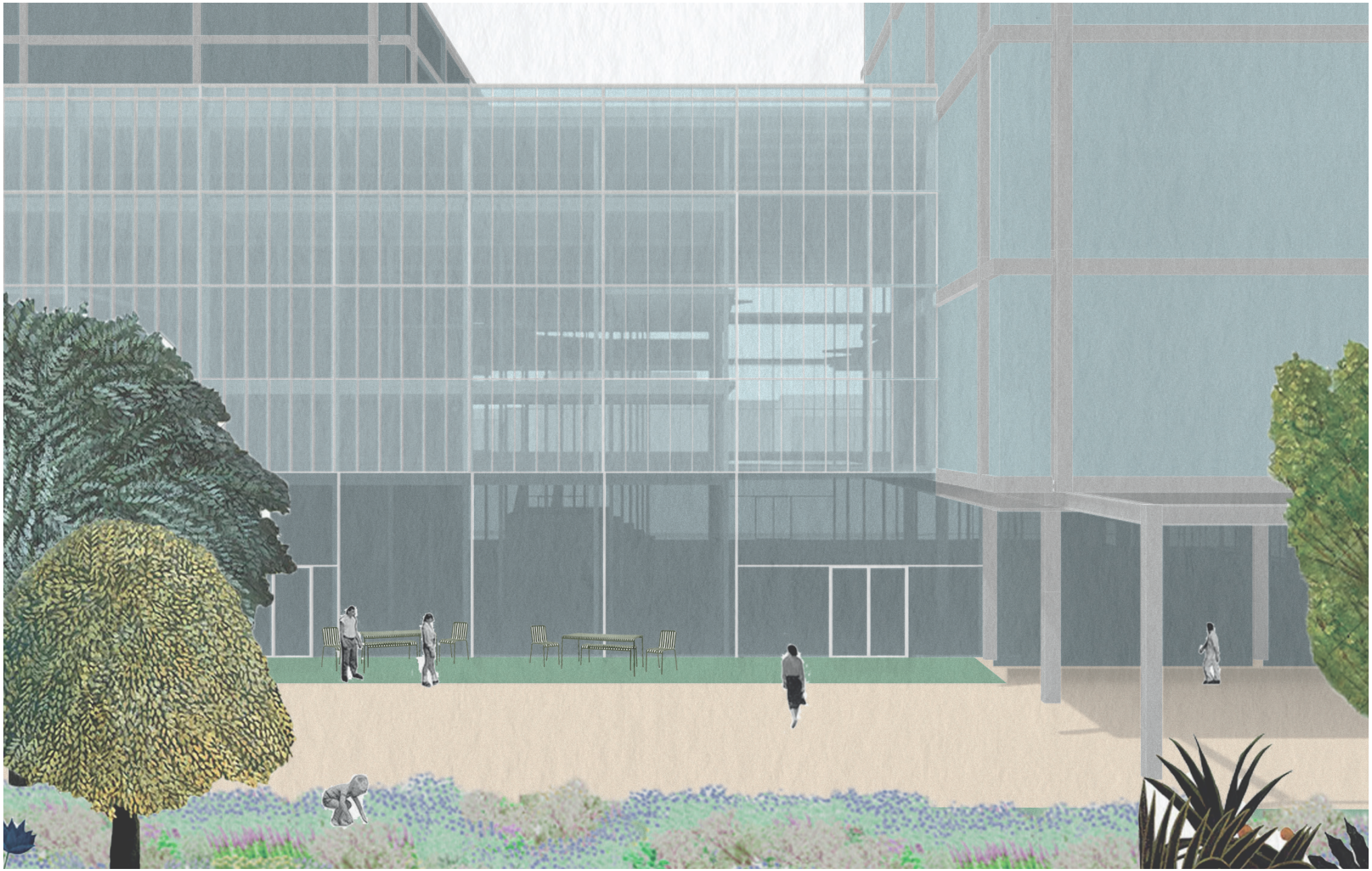


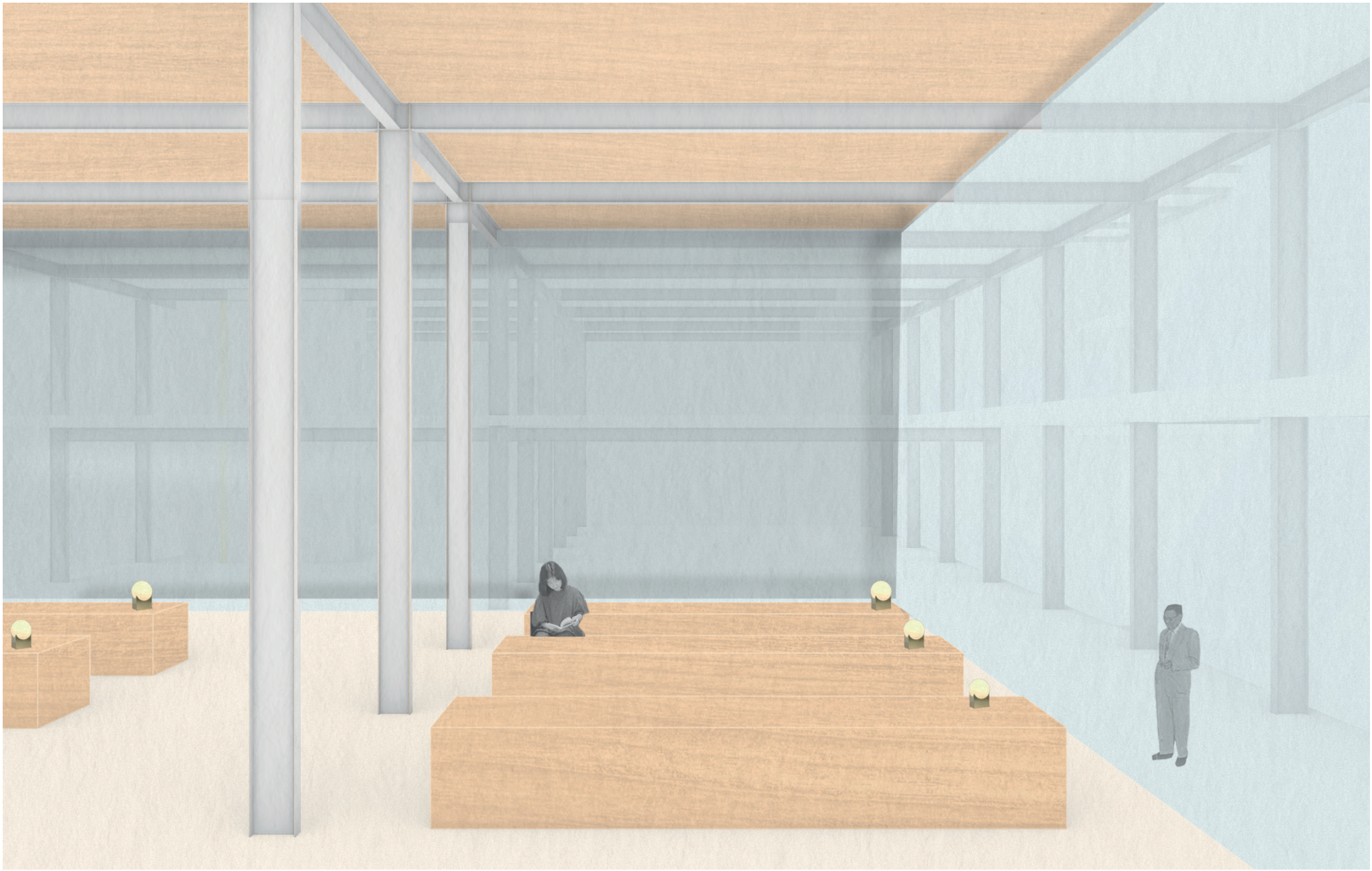
floor 05
+ 21 000



floor 09
+ 31 500

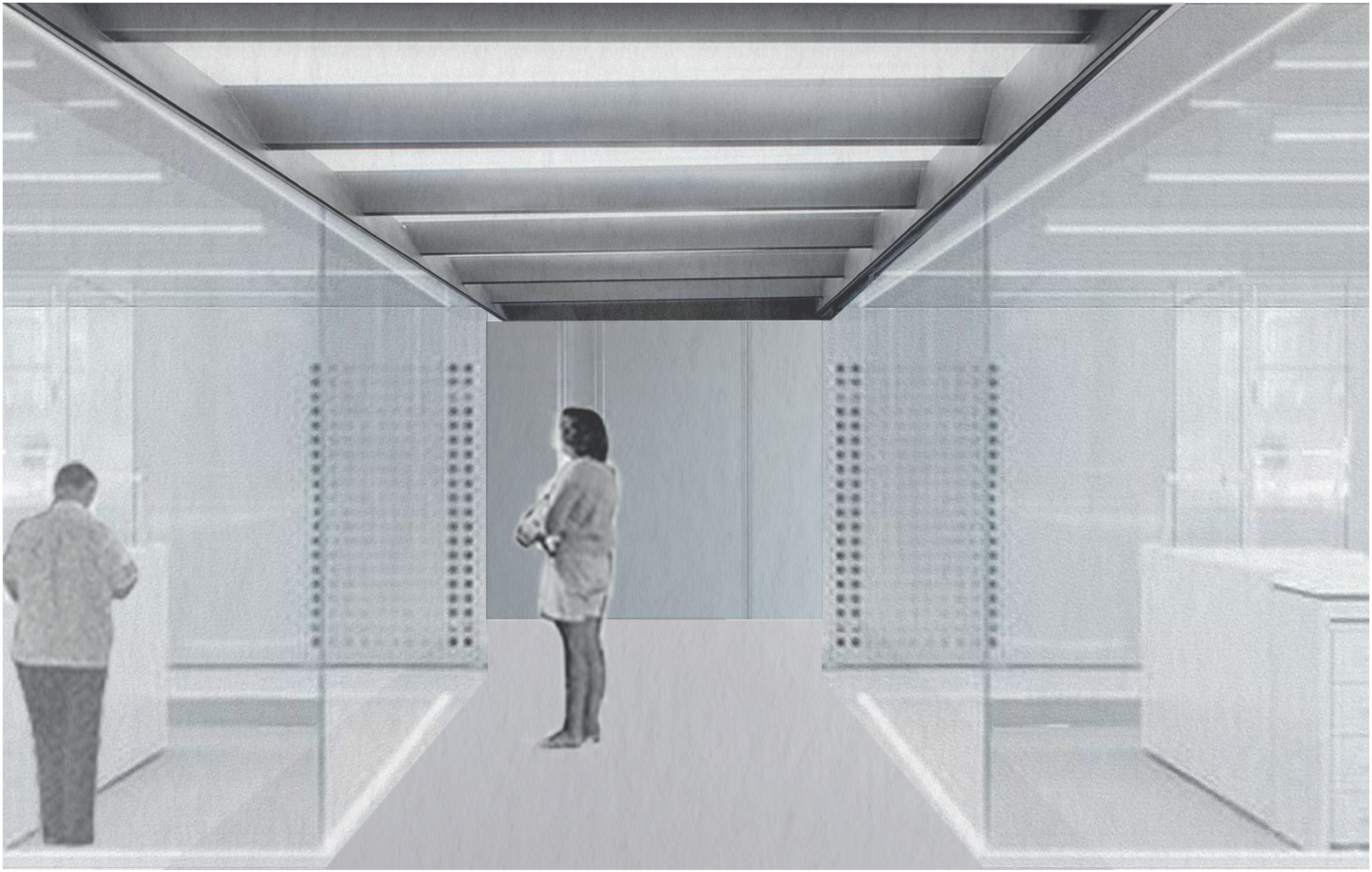
conclusion





conclusion

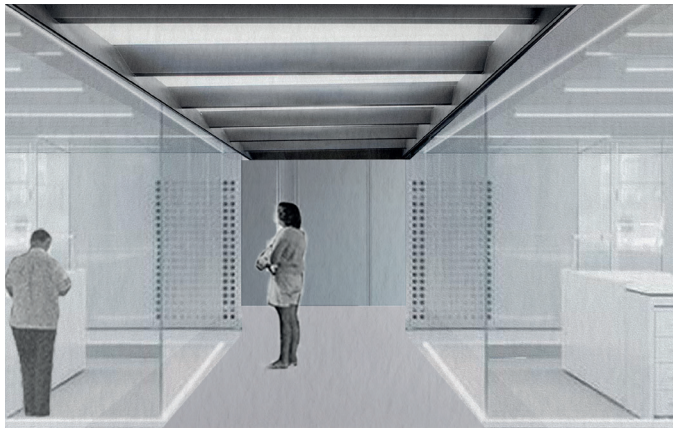


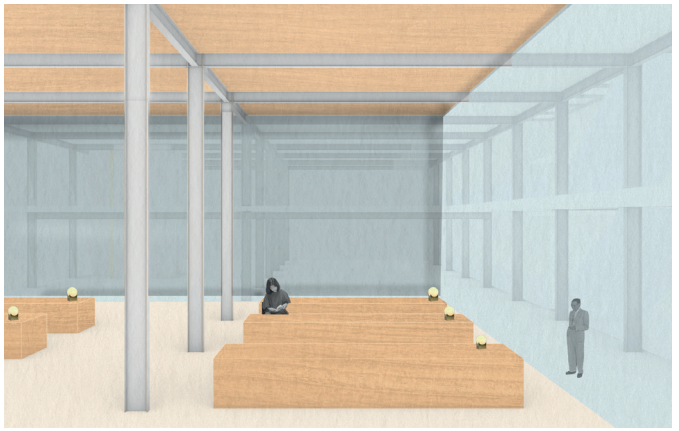
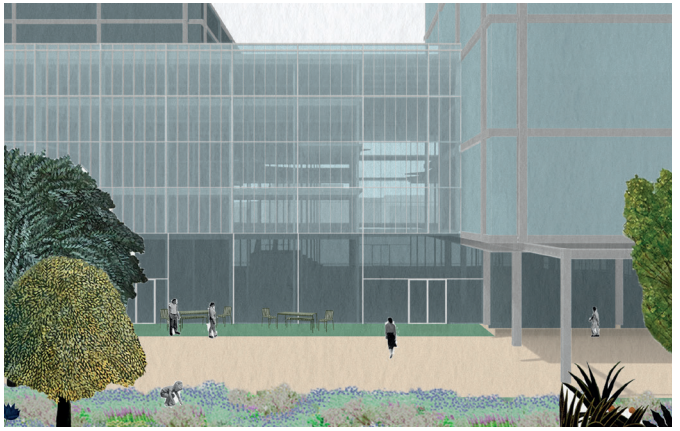


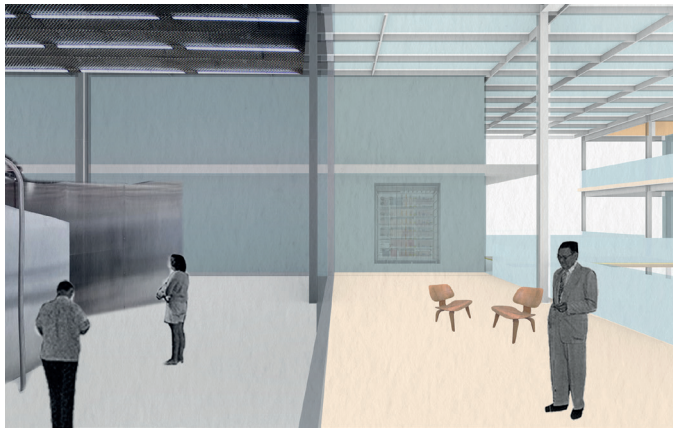


THANK YOU

EXTRA

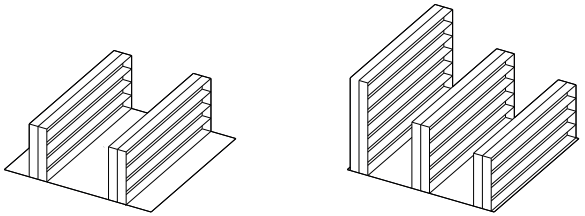
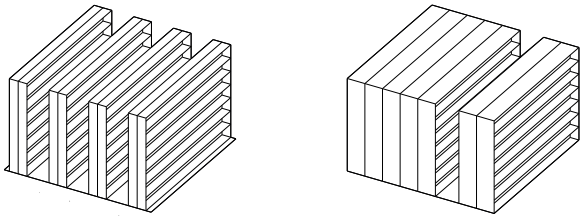
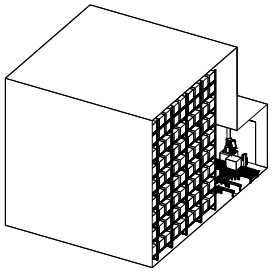
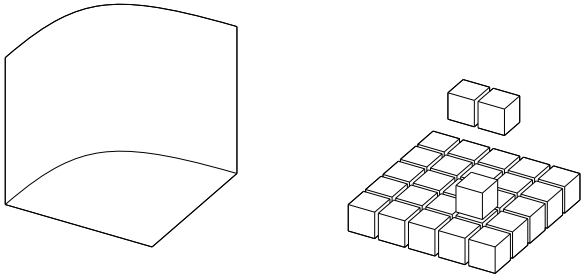


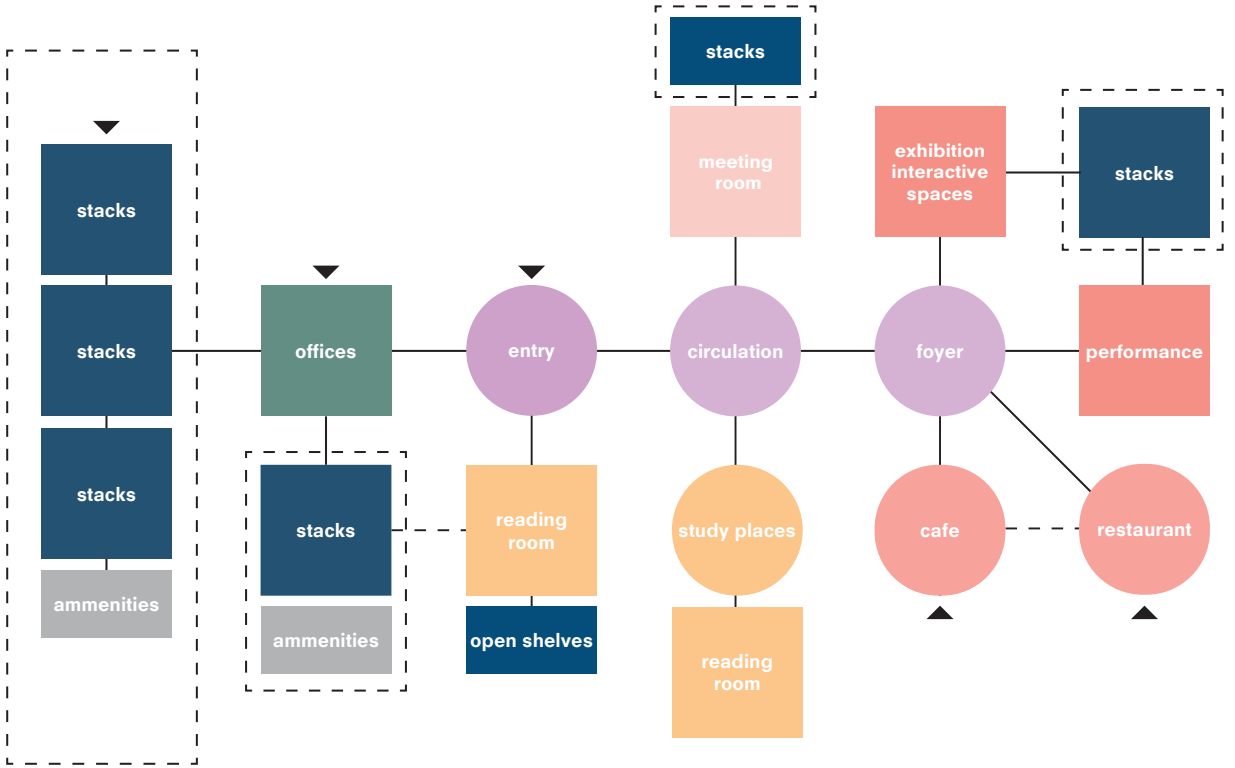




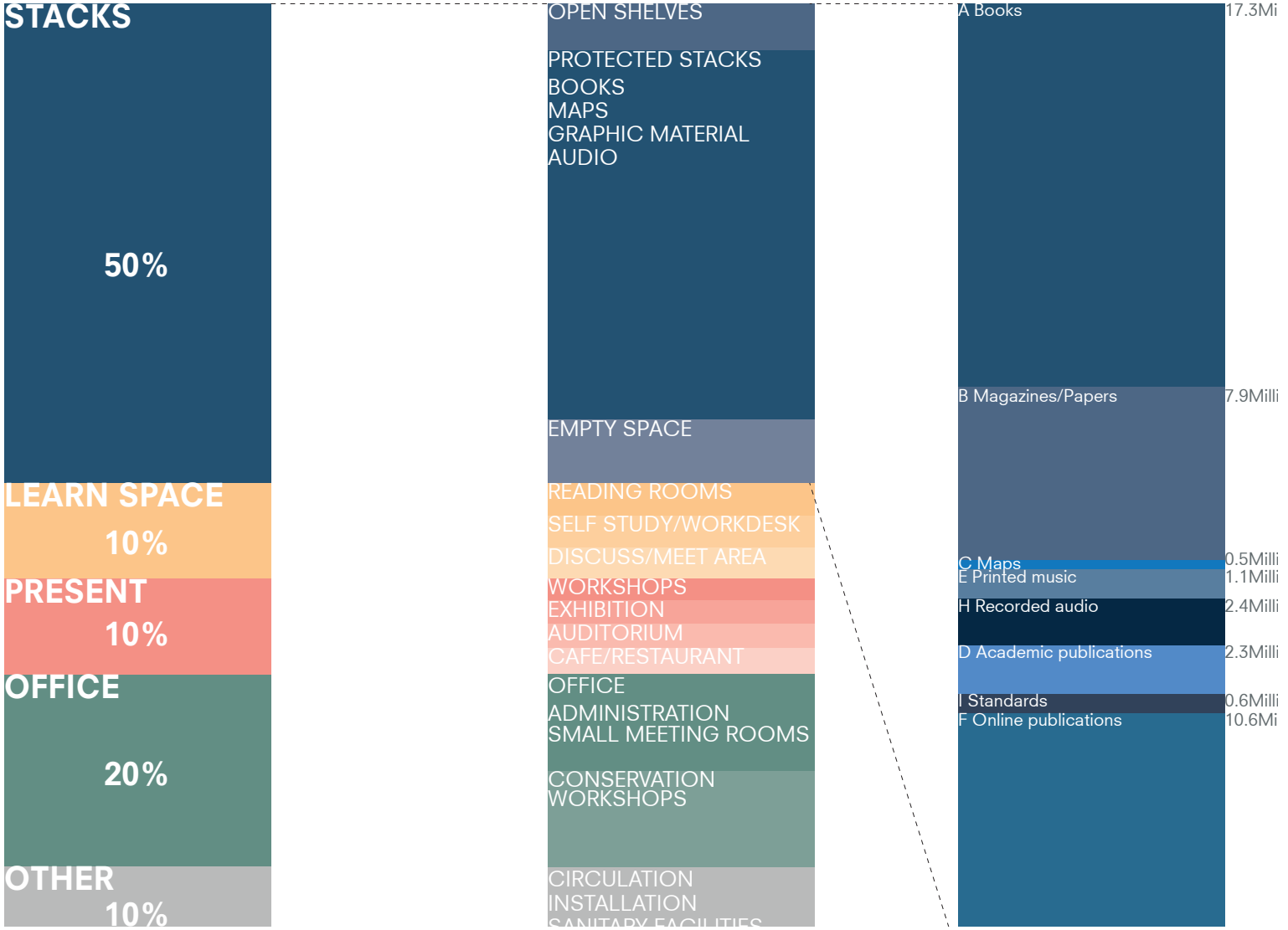
HOW TO STACK

		BOOK DENSITY	ADVANTAGE	DISADVANTAGE
OPEN		80 - 170 books/m²	compact storage	needs staff takes time to collect
COMPACT		580 - 1200 books/m²	compact storage	needs staff takes time to collect
AUTOMATED		2300 books/m²	optimal preservation	expensive
INTERACTIVE		∞ books/m²	engages user	no original copy

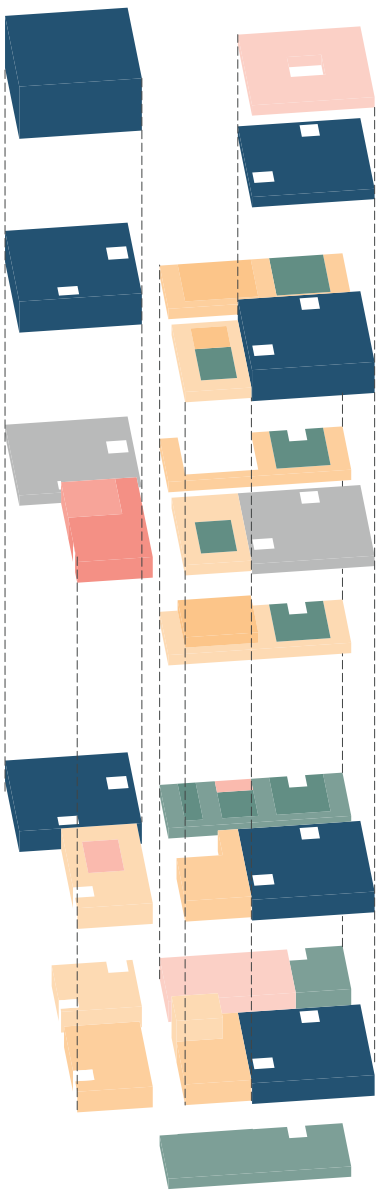
FUNCTIONAL SCHEME

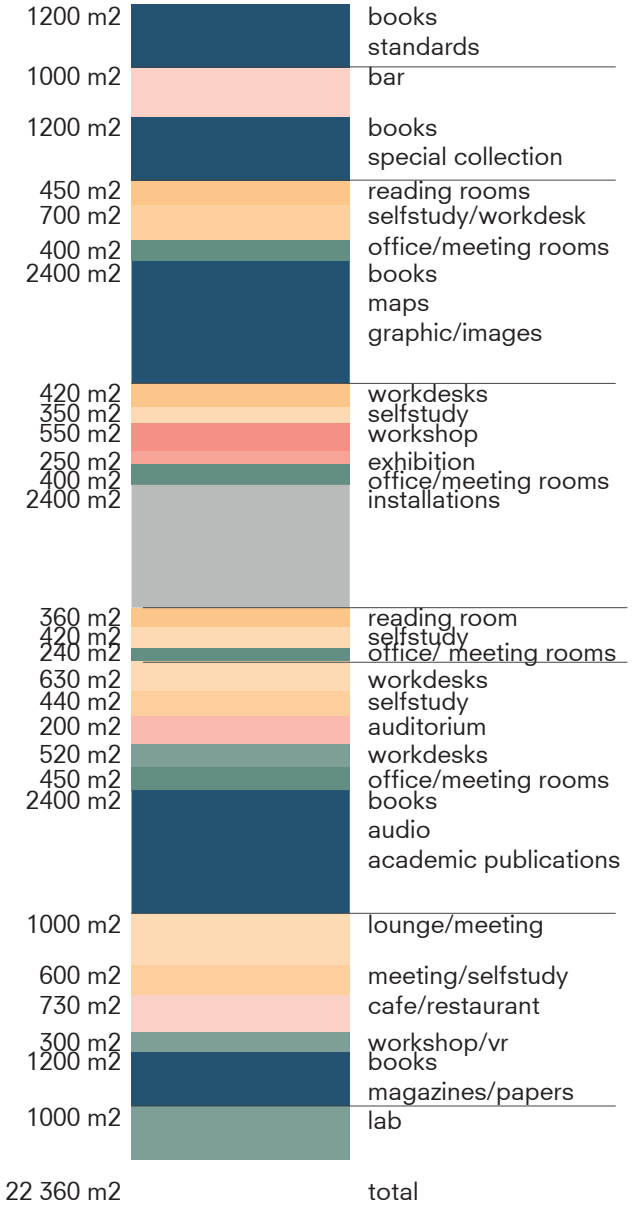


PROGRAM


STACKS
50%
LEARN SPACE
10%
PRESENT
10%
OFFICE
20%
OTHER
10%
OPEN SHELVES
PROTECTED STACKS
BOOKS
MAPS
GRAPHIC MATERIAL
AUDIO
EMPTY SPACE
READING ROOMS
SELF STUDY/WORKDESK
DISCUSS/MEET AREA
WORKSHOPS
EXHIBITION
AUDITORIUM
CAFE/RESTAURANT
OFFICE
ADMINISTRATION
SMALL MEETING ROOMS
CONSERVATION
WORKSHOPS
CIRCULATION
INSTALLATION
A Books 17.3Mi
B Magazines/Papers 7.9Milli
C Maps 0.5Milli
E Printed music 1.1Milli
H Recorded audio 2.4Milli
D Academic publications 2.3Milli
I Standards 0.6Milli
F Online publications 10.6Mi

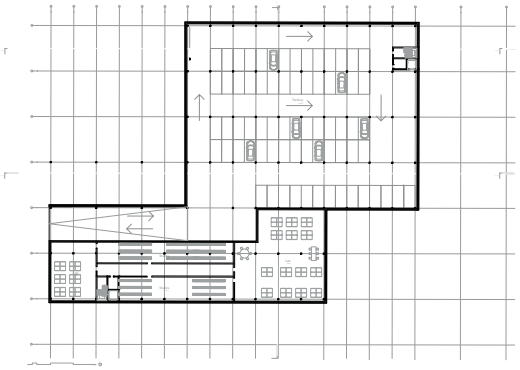
PROGRAM



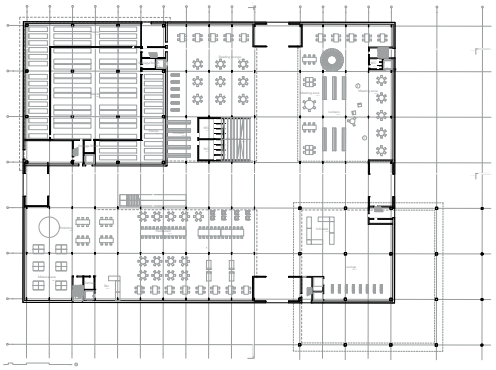


Stacks
Learn / study rooms
Meet / create
Offices
Other

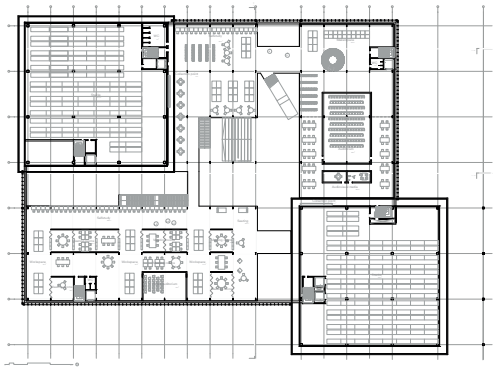
OVERVIEW FLOOR PLANS



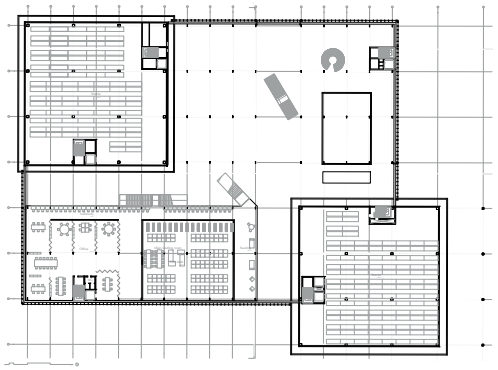
floor - 01
- 3 000



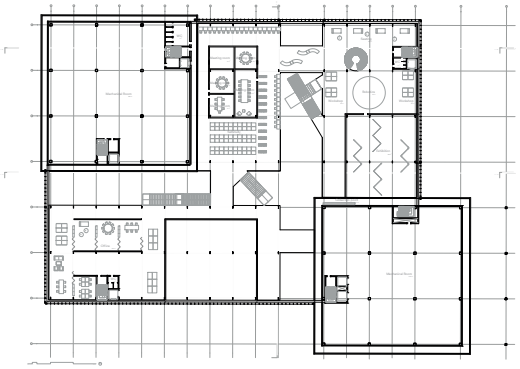
floor 00
+ 0 000



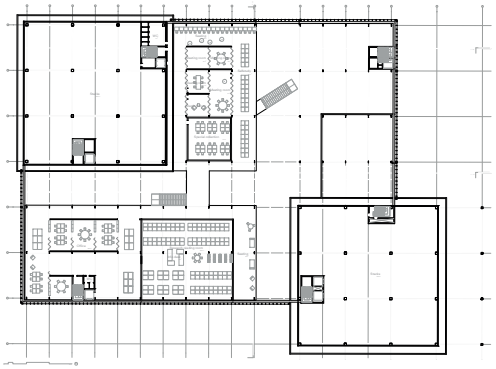
floor 01
+ 7 000



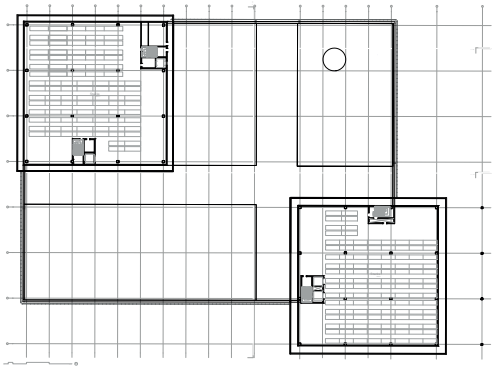
Floor 02
+ 10 500



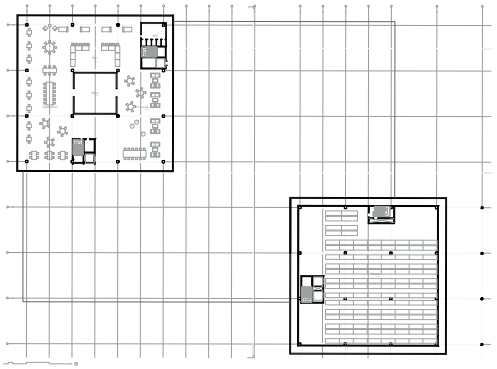
floor 03
+ 14 000



floor 04
+ 17 500

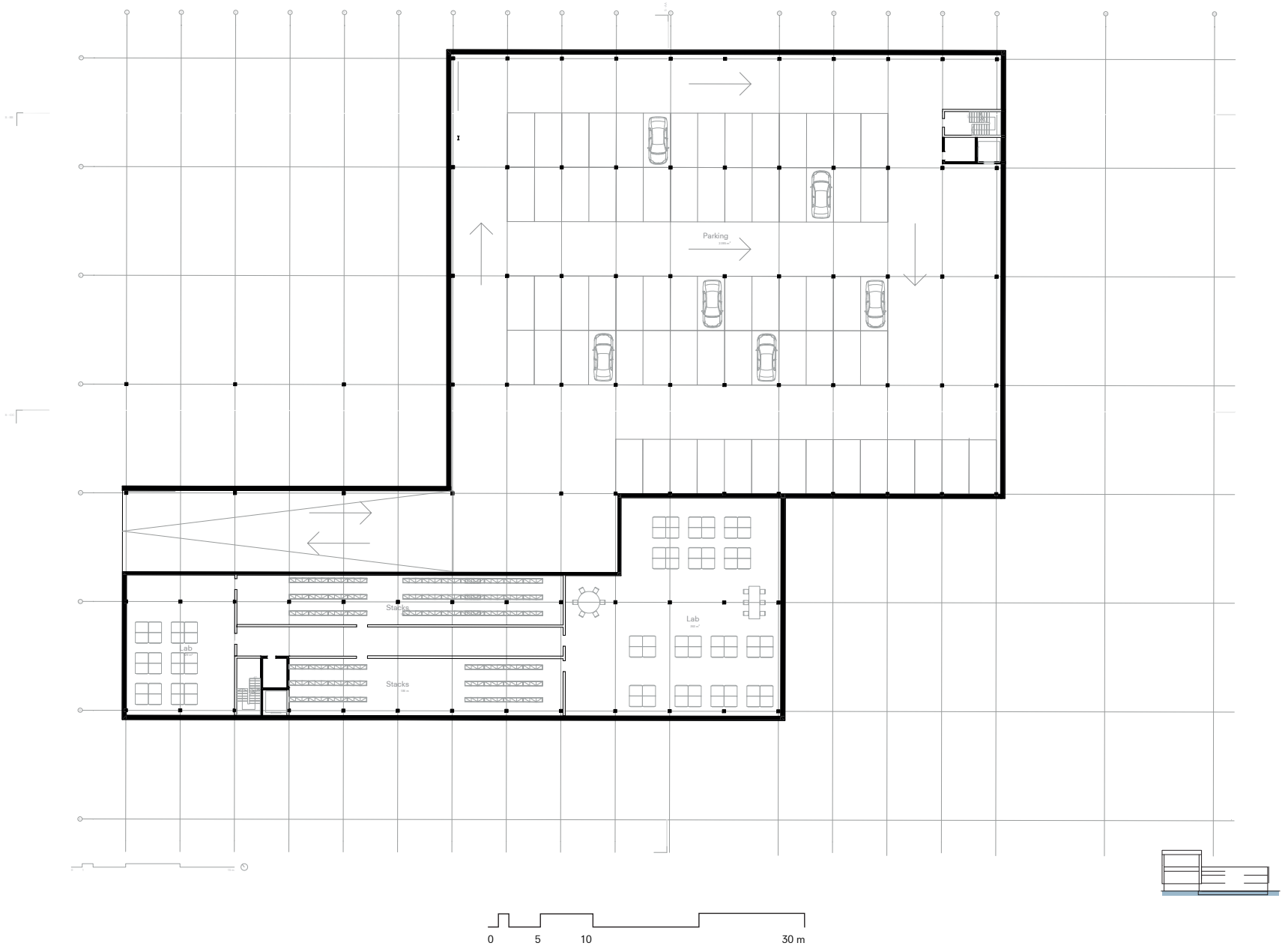


floor 05
+ 21 000

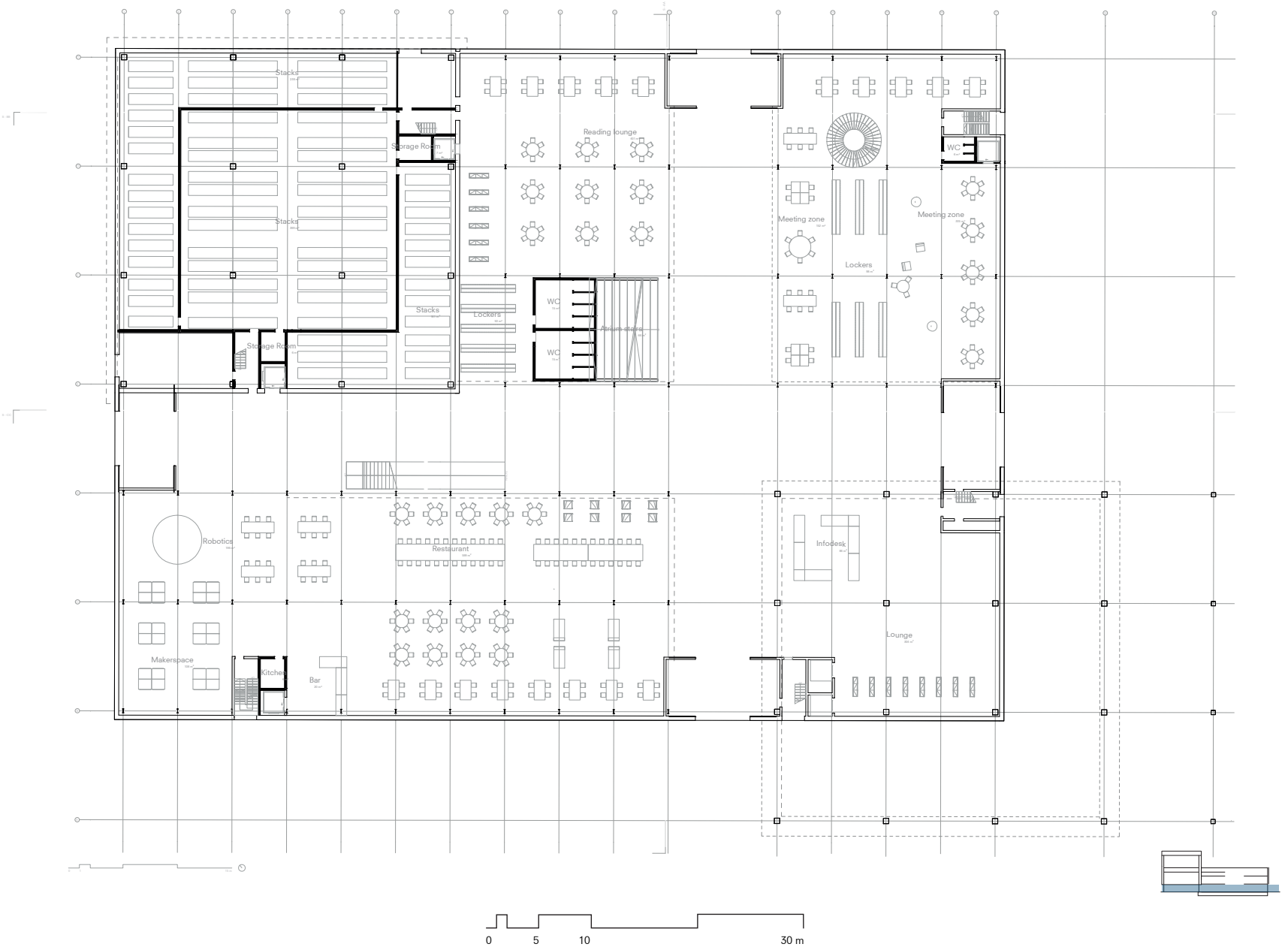


floor 09
+ 31 500

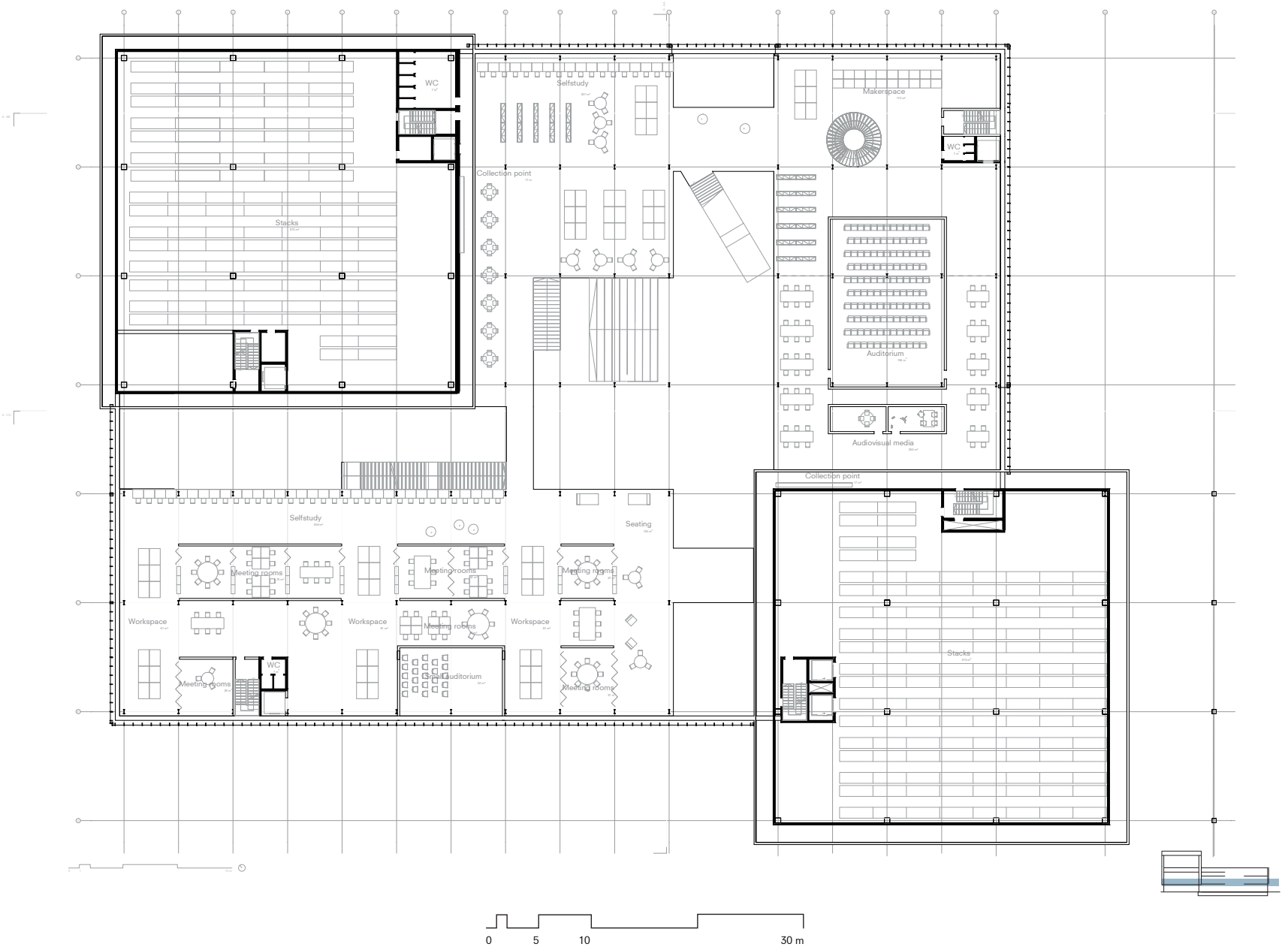
UNDERGROUND



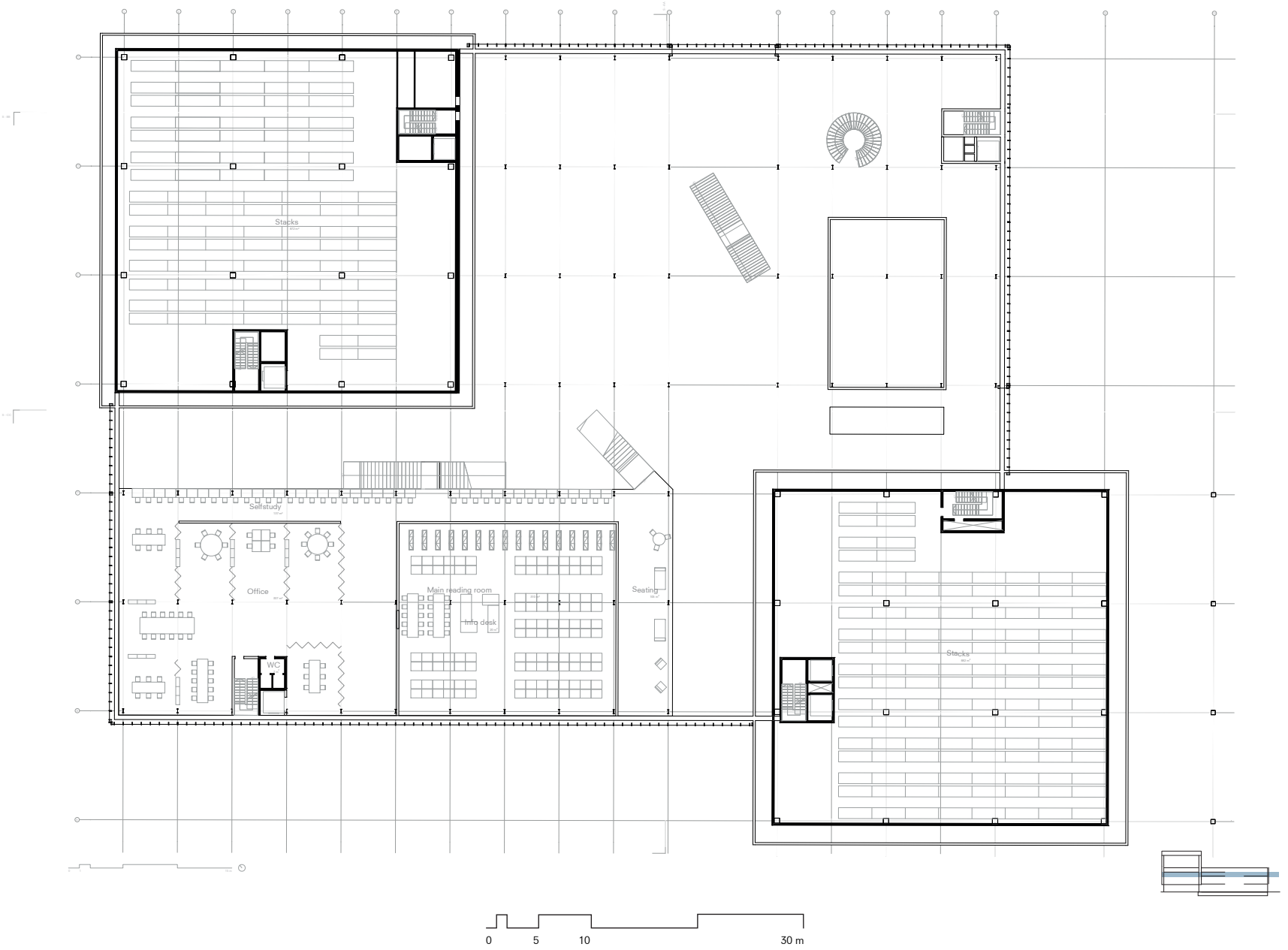
GROUND FLOOR



+7 000

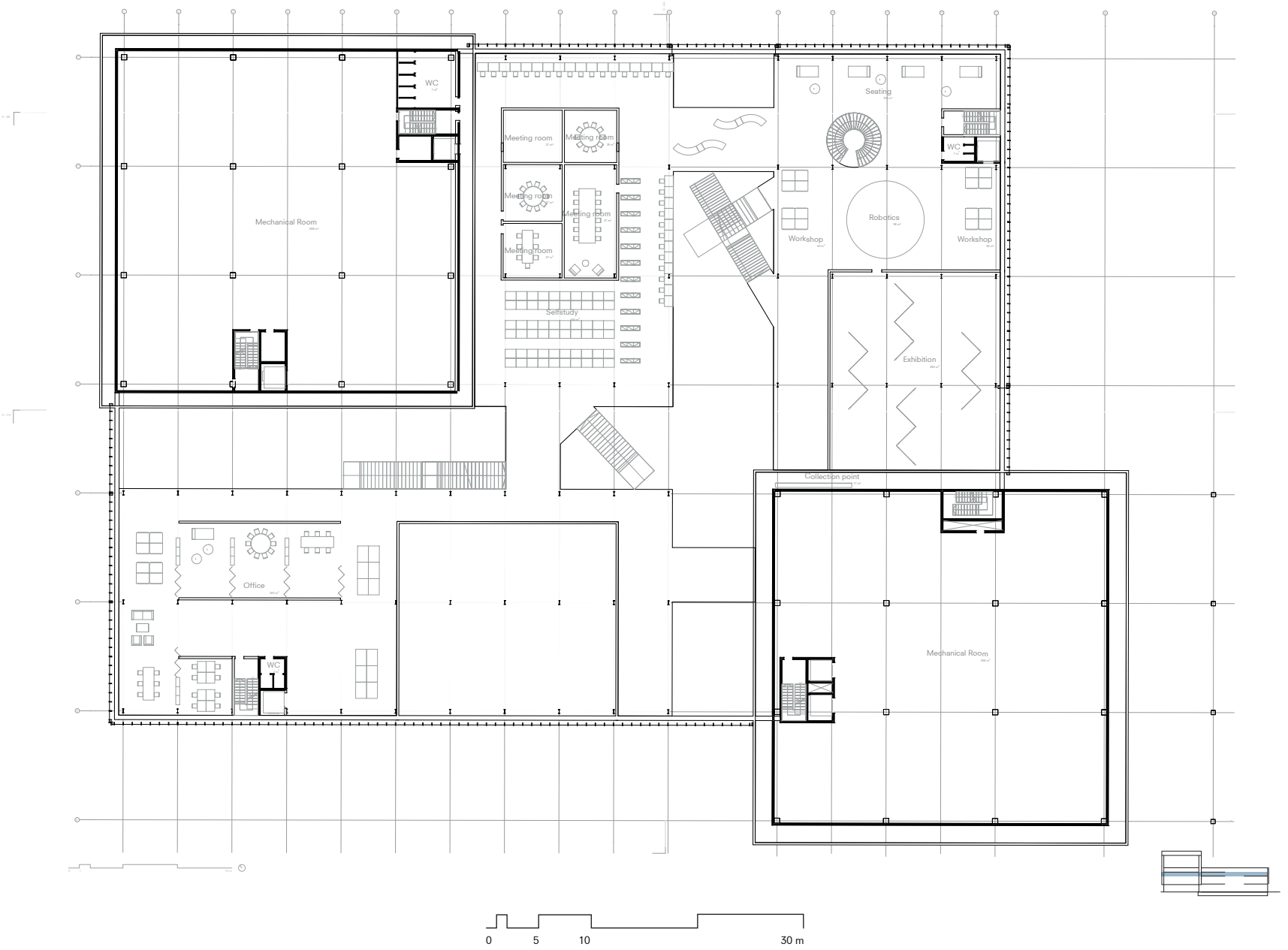

WC
Selfstudy
Makerspace
WC
Collection point
Stacks
Auditorium
Audiovisual media
Collection point
Selfstudy
Seating
Meeting rooms
Meeting rooms
Meeting rooms
Workspace
Workspace
Meeting rooms
Workspace
WC
Meeting rooms
Small auditorium
Meeting rooms
Stacks
0
5
10
30 m

+10 500

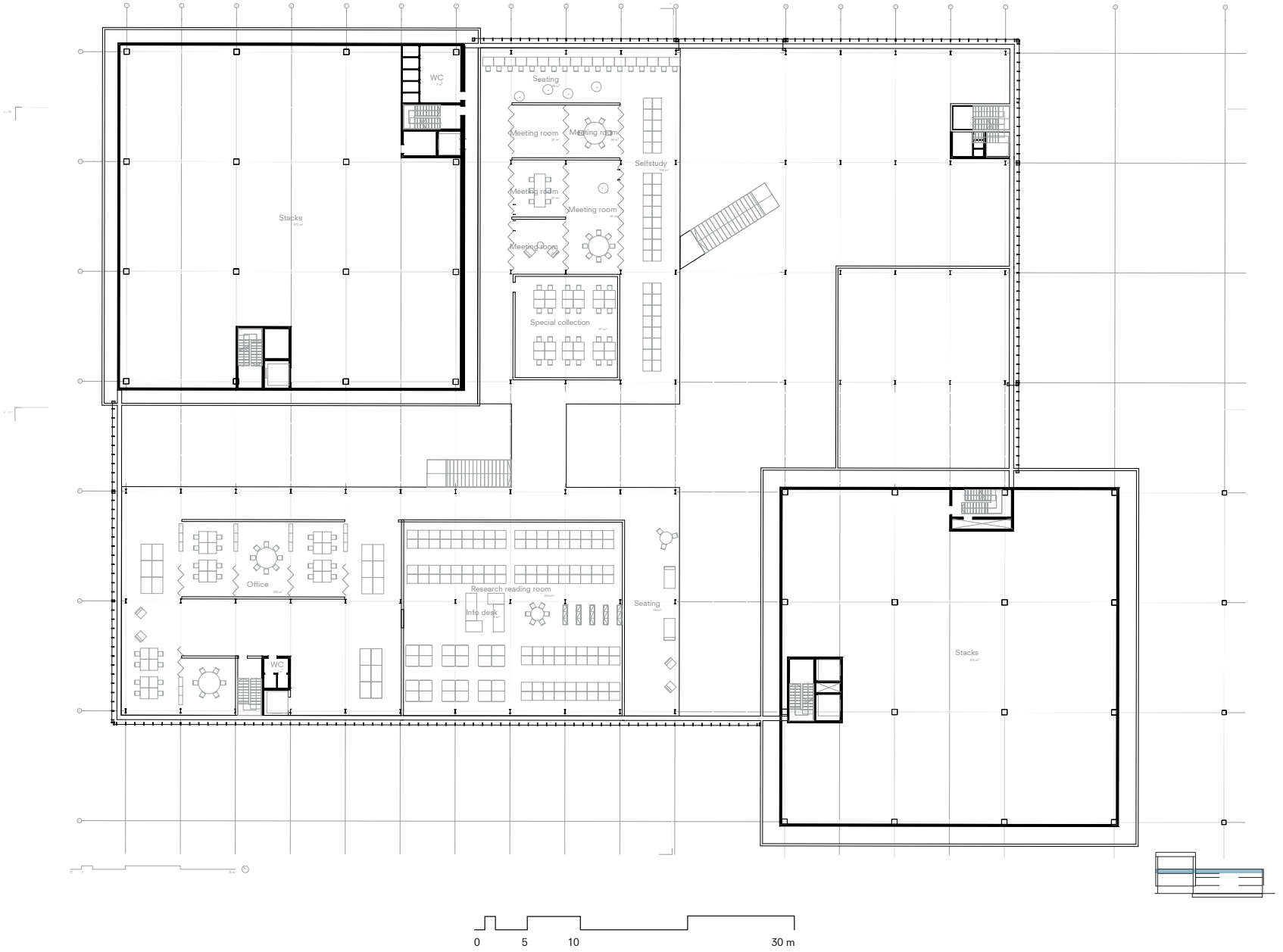

Stacks
Selfstudy
Office
Main reading room
Info desk
Seating
WC
Stacks
0
5
10
30 m

design

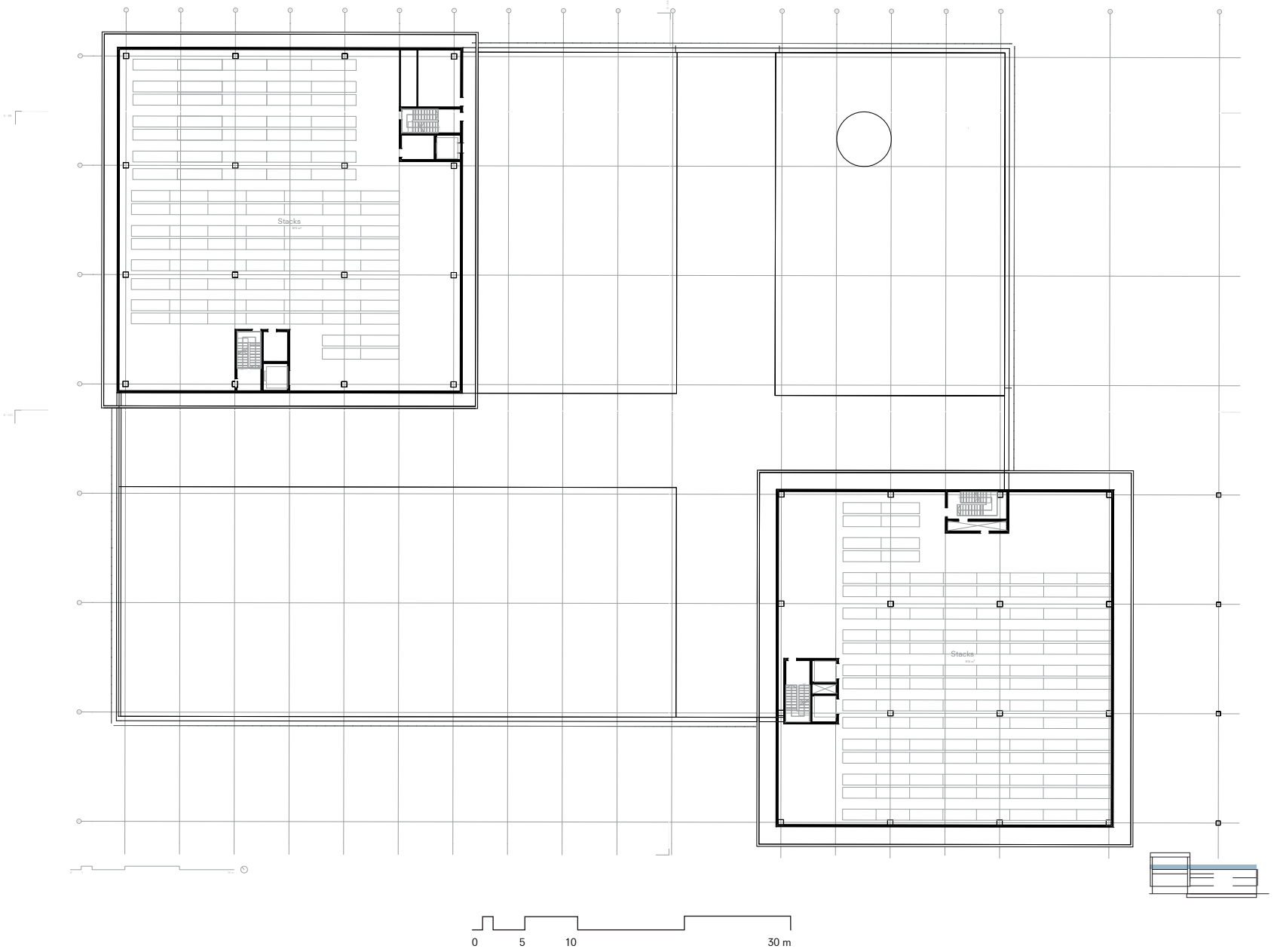
+14 000



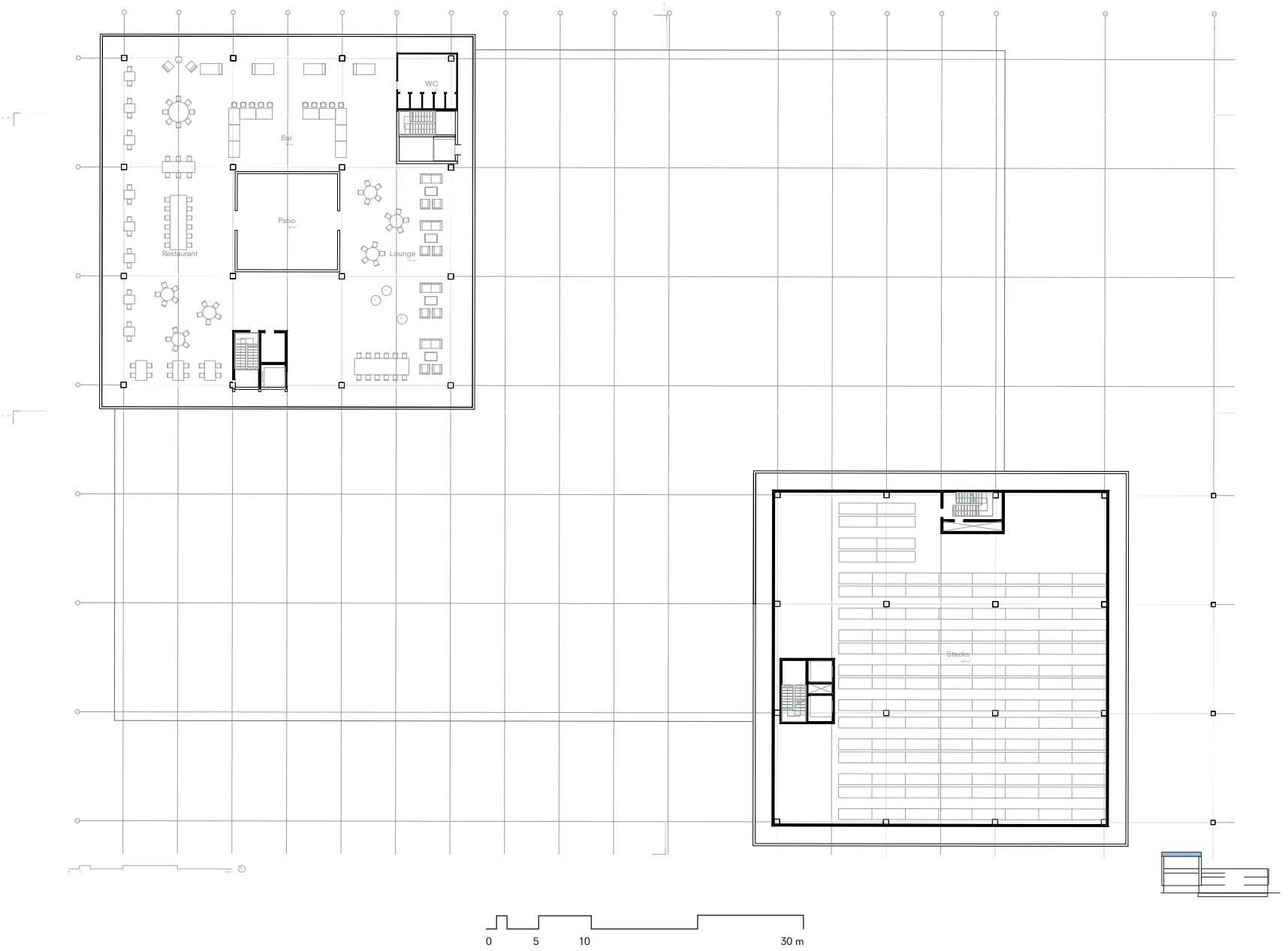
+17 500


WC
Seating
Meeting room
Meeting room
Selfstudy
Meeting room
Meeting room
Meeting room
Stacks
Special collection
Office
Research reading room
Info desk
Seating
WC
Stacks
0
5
10
30 m

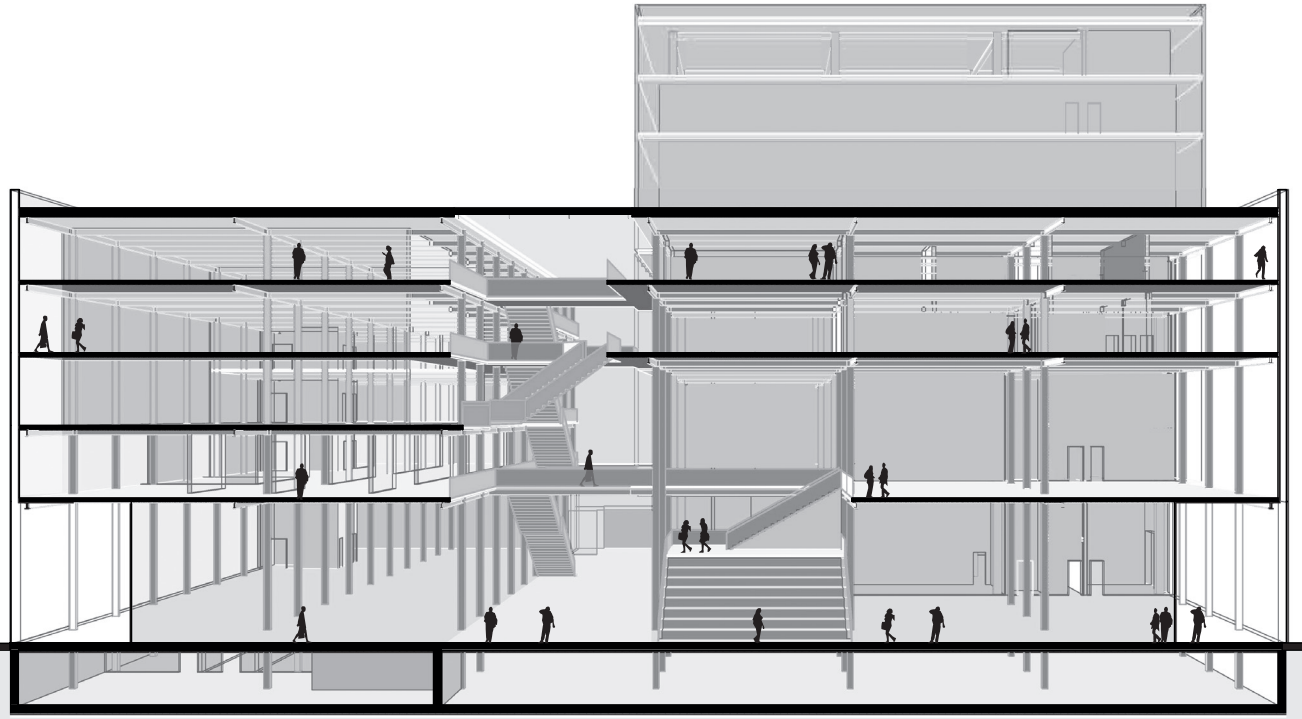
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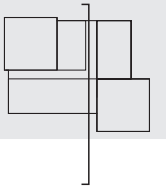


+31 500



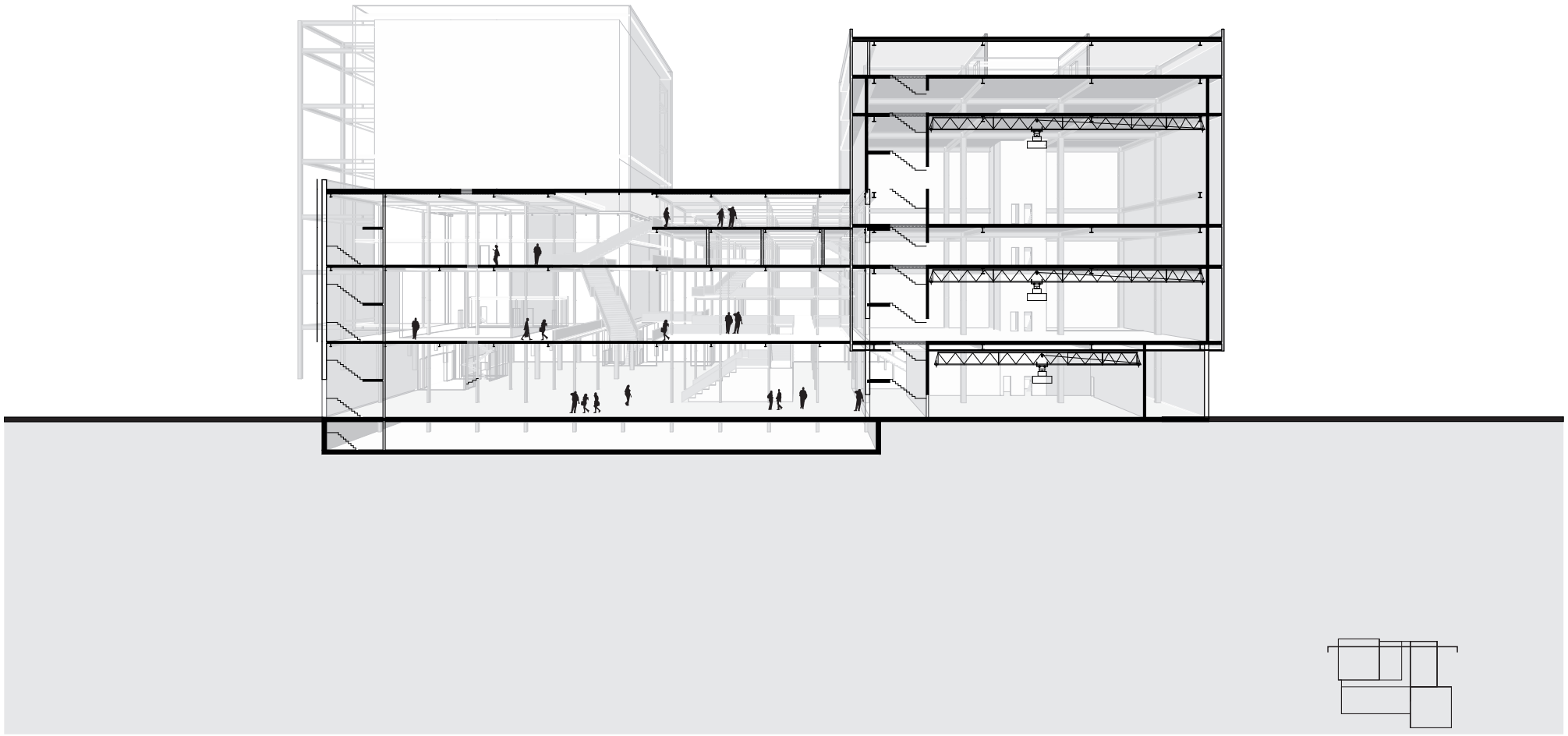
SECTION A - A





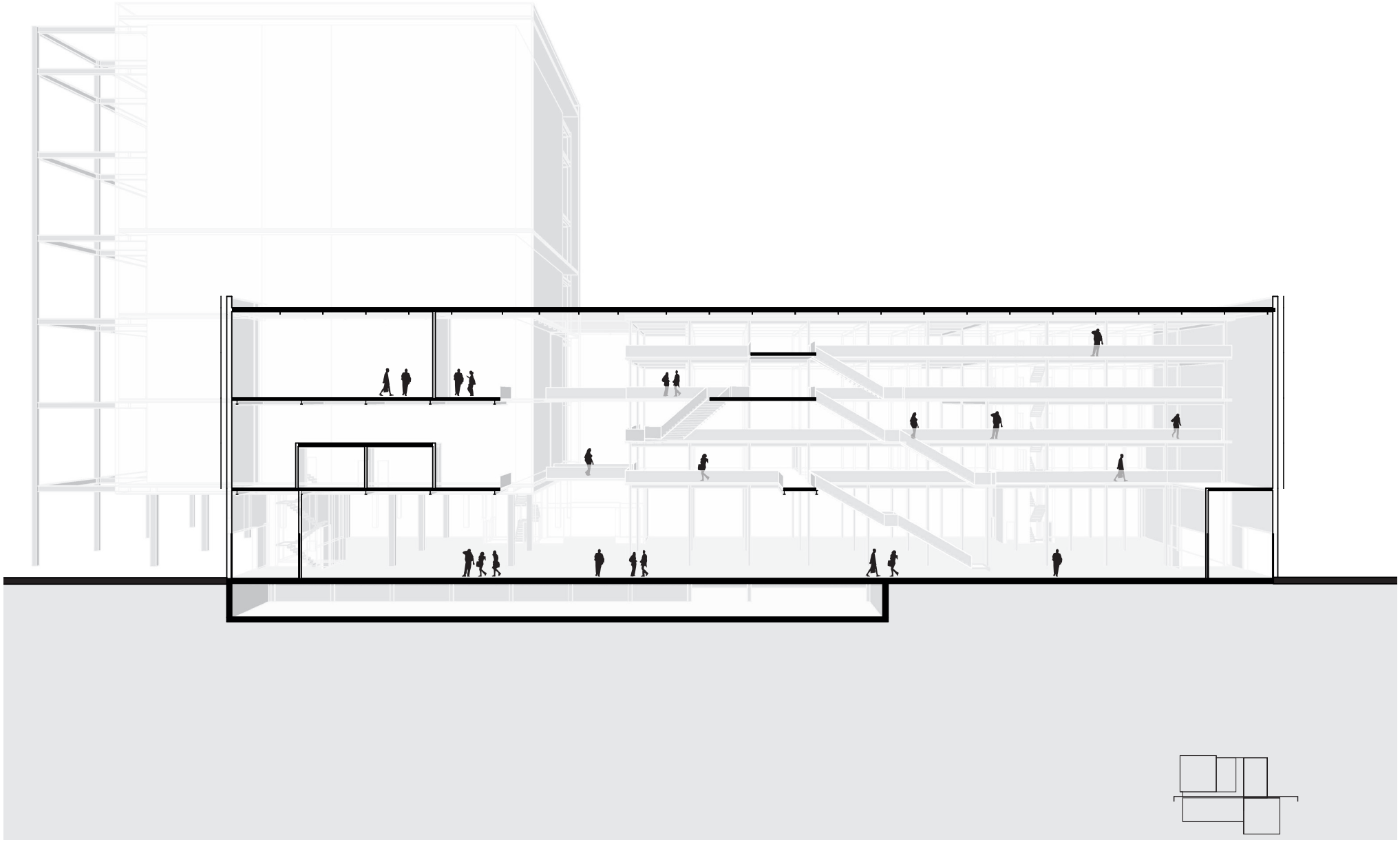


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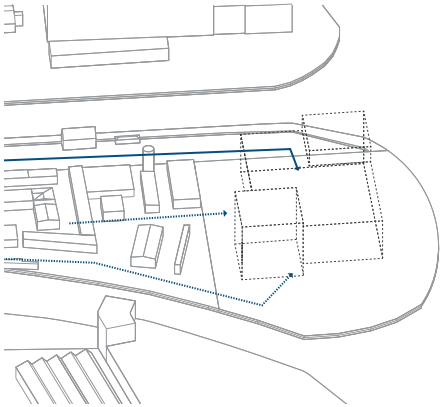




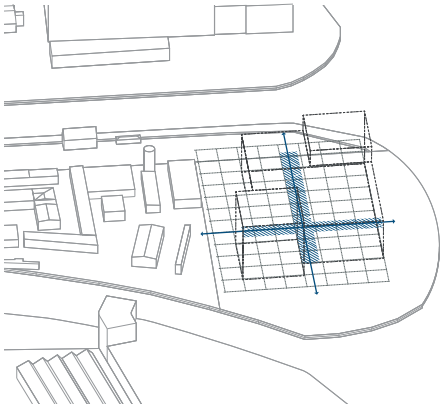
SECTION C - C



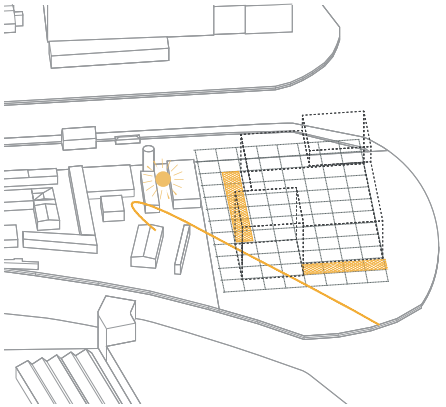
PRINCIPLES



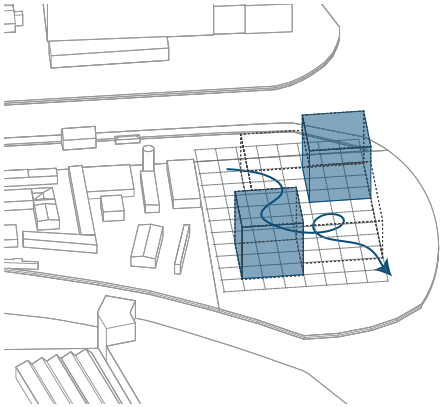
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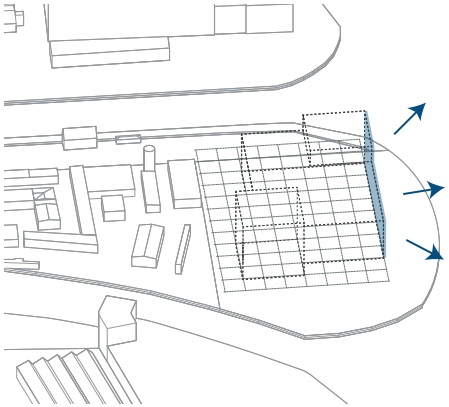
INNER STREET



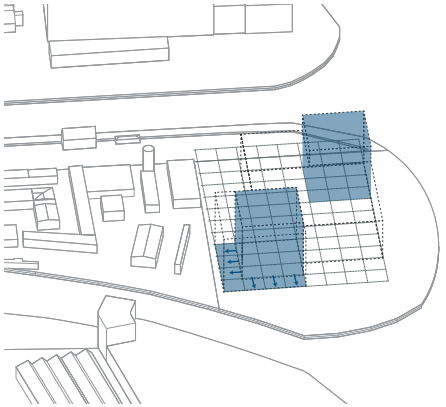
ORIENTATION



PROMINENT ARCHIVE

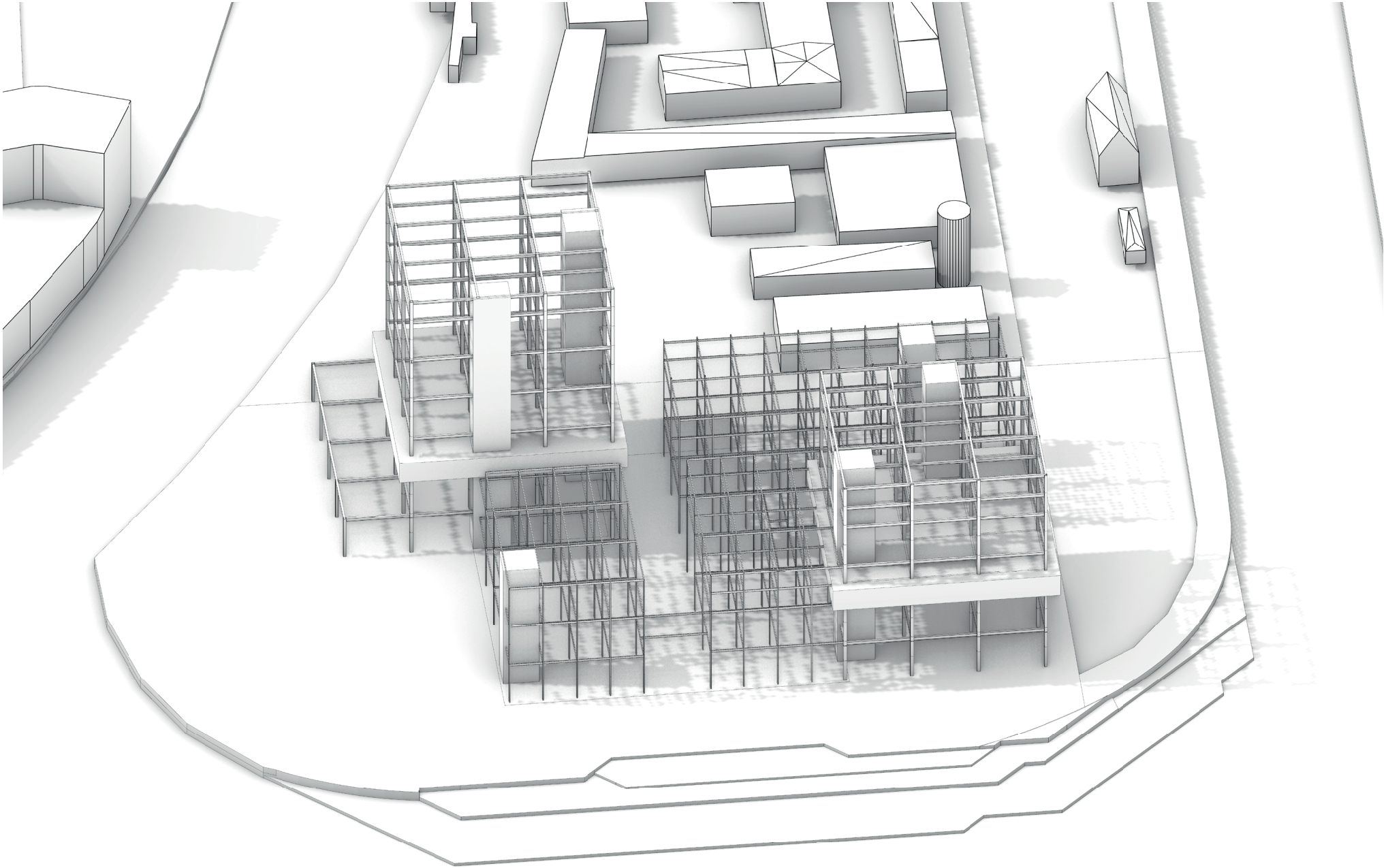


ACTIVE RIVER SIDE

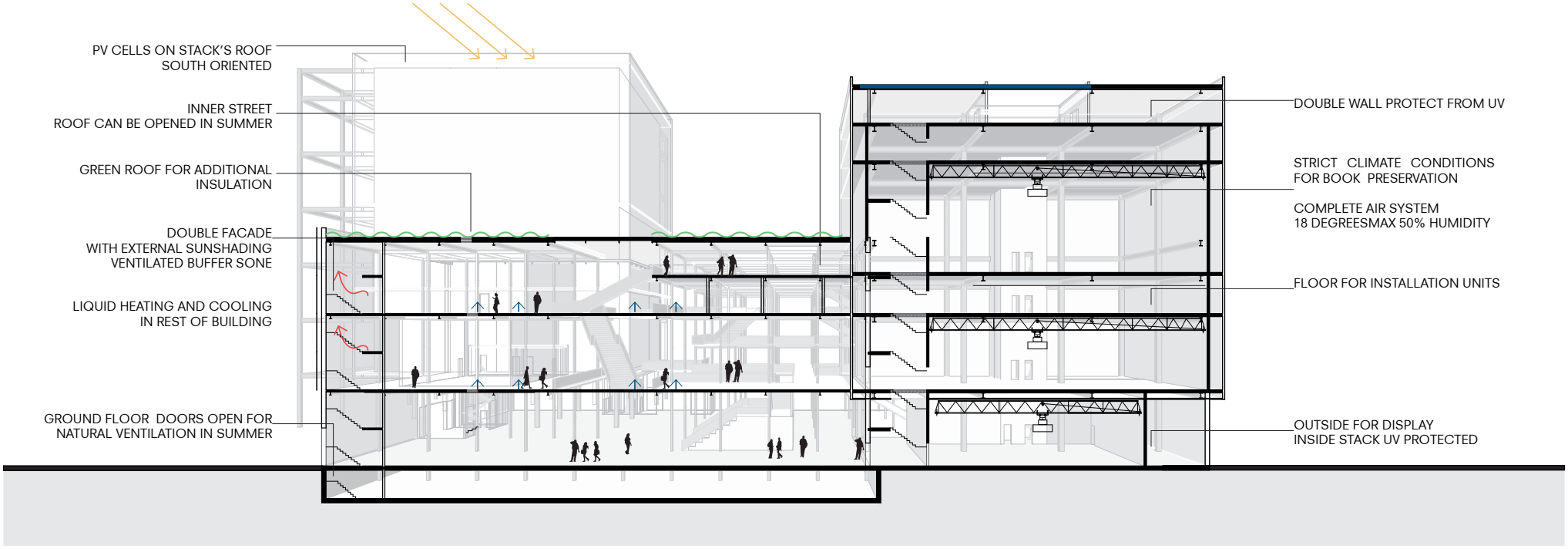


FLEXIBILITY / EXPAND

INSTALLATIONS

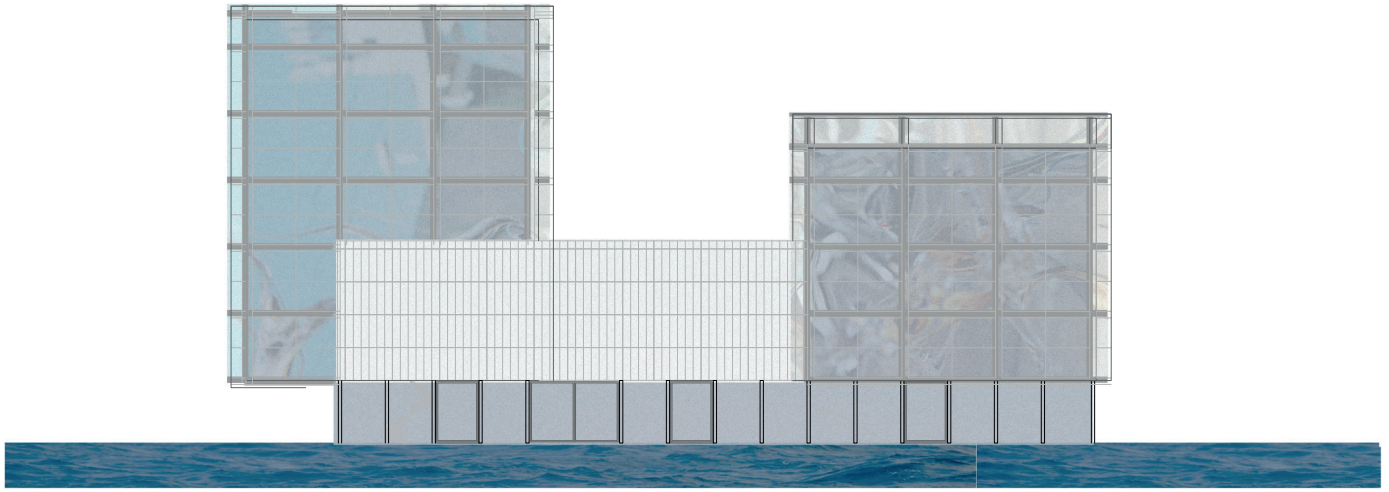


CLIMATE DESIGN

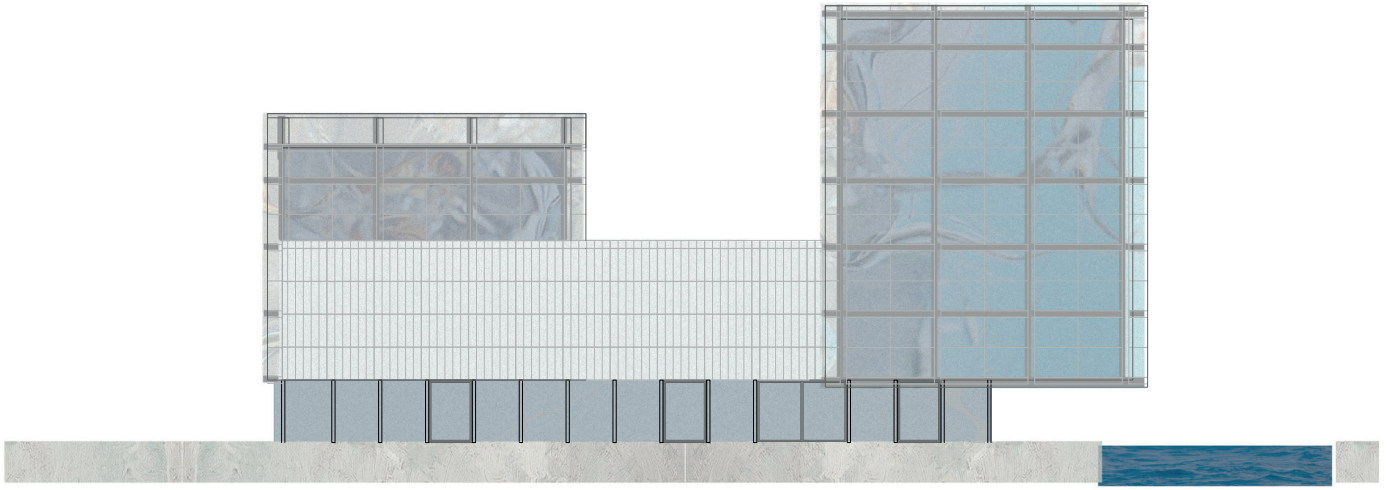


0 5 10 30 m

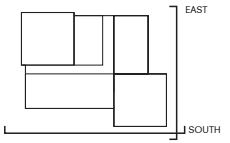
ELEVATIONS



EAST



SOUTH

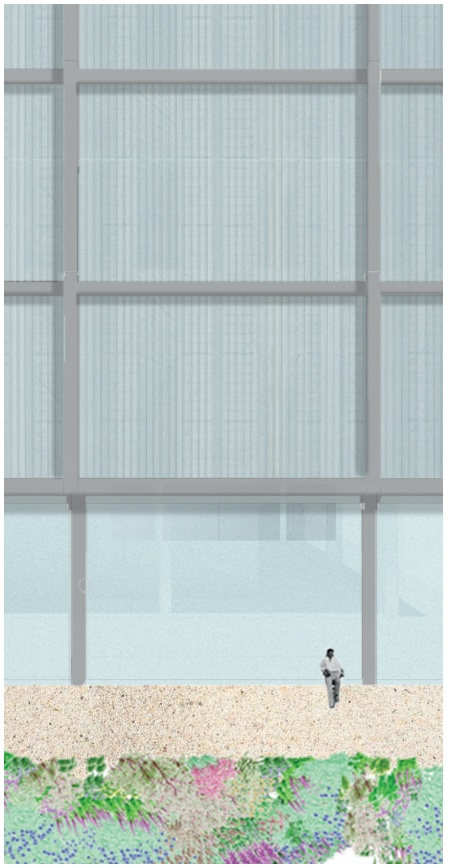




FACADE



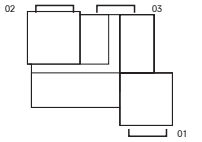
01



02

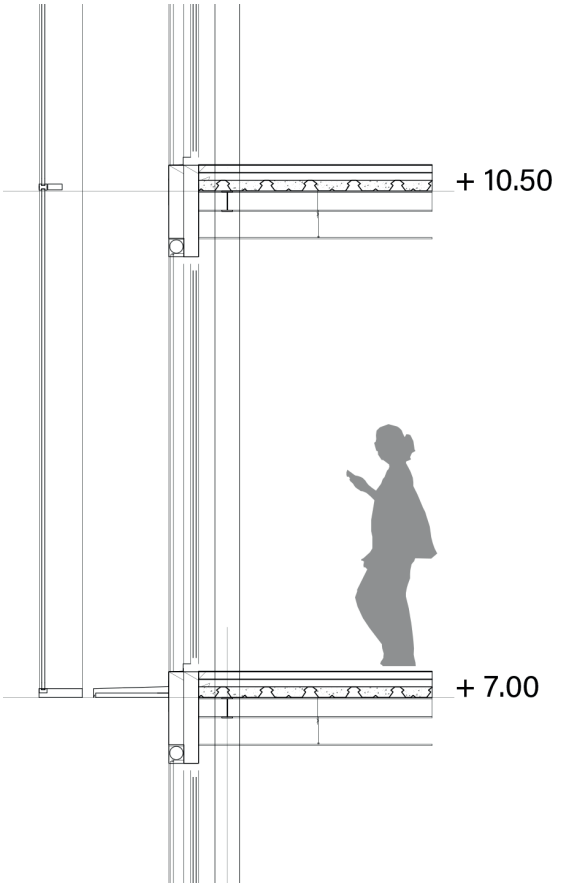


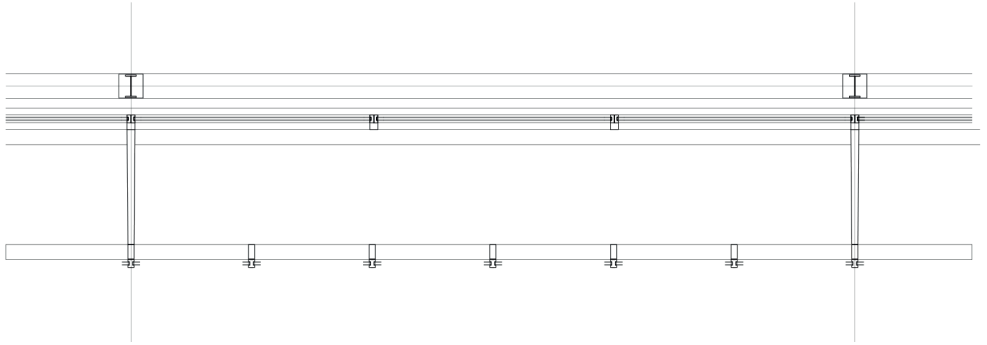
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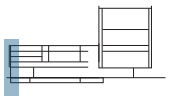


DETAIL 1.50



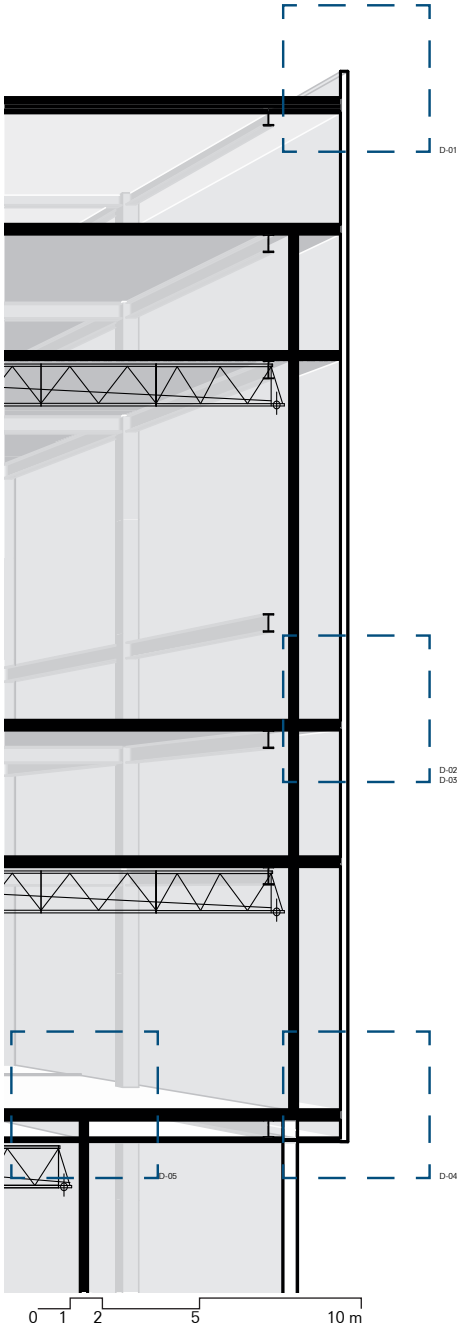


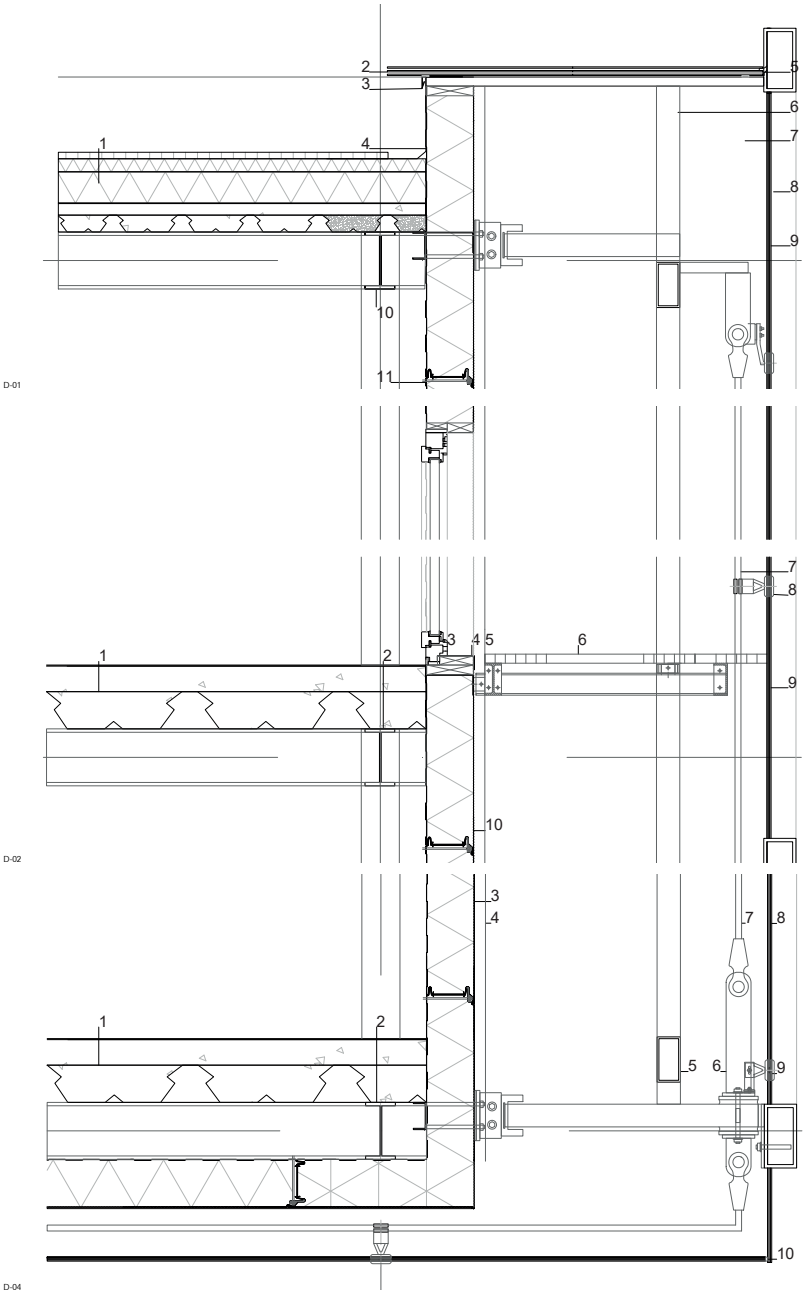




0 1 2 5 m

DETAIL 1.5

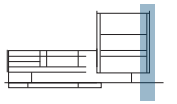




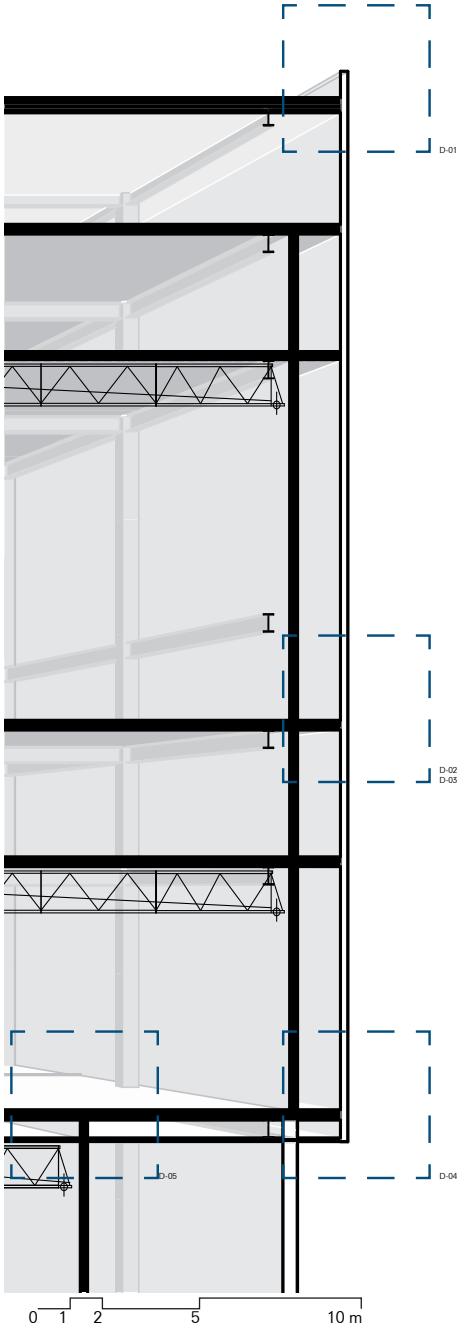
D-01
1 25 mm substrate with pv panels
5 mm waterproofing
60 mm rigid insulation
130 mm rigid insulation
5 mm vapour barier
130 mm composite deckfloor, conform calc.
2 gutter
3 al. sheet, bend to shape
4 al. cover strip, lam. safety glass:
5 6/2/8 mm toughened glass
6 silicone gasket
7 HSS beam, comform calc.
8 steel plate
9 100/40 mm cast-steel clamping plate
10 6-6-6 mm toughened glass upstand panel, intergrated LED-screen
11 IPE steel profile, conform calc.
210 mm sandwichpanel with insulation

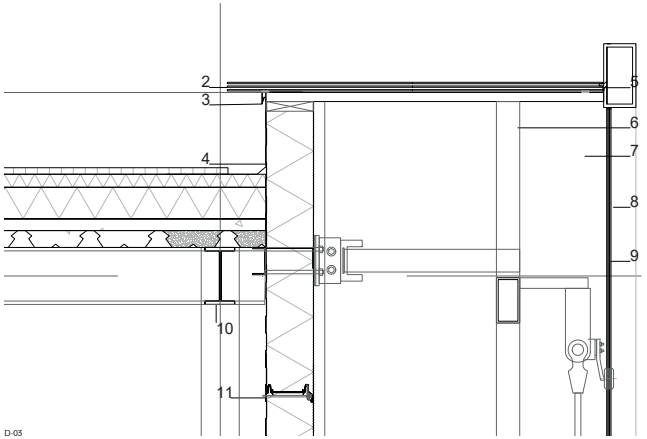
D-02
1 280 mm composite deckfloor
5 mm floor finish
2 IPE steel profile, conform calc.
3 aluminum frame with insulated door
4 aluminum window sill
5 galvanized steel I-column 50 mm deep
6 aluminum grating, walkable
7 26 mm sheathed steel cable
8 100/40 mm cast-steel clamping plate
9 6-6-6 mm toughened glass upstand panel, intergrated LED screen
10 210 mm sandwichpanel with insulation

D-04
1 280 mm composite deckfloor
5 mm floor finish
2 IPE steel profile, conform calc.
3 210 mm sandwichpanel with insulation
4 galvanized steel I-column 50 mm deep
5 HSS steel beam, comform calc.
6 steel plate
7 26 mm sheathed steel cable
8 6-6-6 mm toughened glass upstand panel, intergrated LED screen
9 100/40 mm cast-steel clamping plate
10 silicone gasket

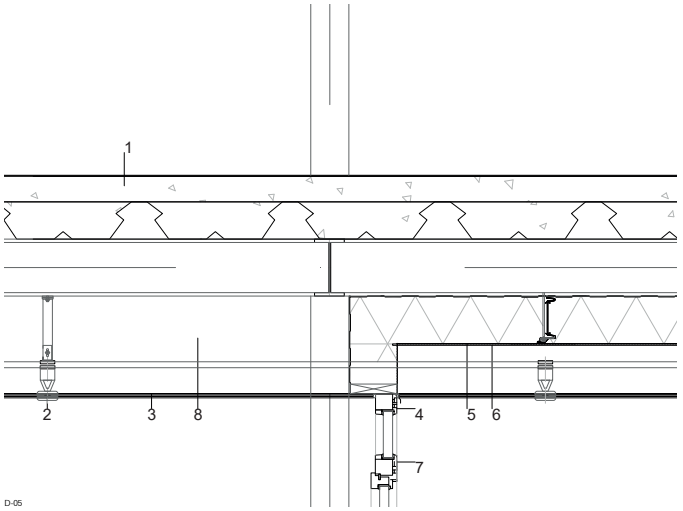


DETAILS





D-03
1 210 mm sandwichpanel with insulation
2 50 mm galvanized steel column
3 steel profile to attach window
4 aluminum frame with insulated door
5 20 mm steel cover with insulation
6 IPE steel profile, conform calc.
7 HSS steel beam
8 aluminum grating, walkable
9 26 mm sheathed steel cable
6-6-6 mm toughened glass upstand panel,
10 intergrated LED screen
11 100/40 mm cast-steel clamping plate



D-05
1 280 mm composite deckfloor
5 mm floor finish
2 100/40 mm cast-steel clamping plate
3 18 mm toughened glass upstand panel
4 aluminum window with insulating double glazing
5 210 mm sandwichpanel with insulation
6 glass coverpanel
7 aluminum sliding window with insulating double
8 cavity for installations

