

C-Port

from office to green living for everyone



research

analyses

masterplan

design



problemstatement



problemstatement

what is needed is more housing with low climate impact

what is needed is more housing with low climate impact

how?

what is needed is more housing with low climate impact

how?

**create a residential building where a large run of homes can
be built that has a low impact on the environment**

thematic research question

“How can a climate system, for the benefit of vacant office buildings, be designed to provide optimal thermal comfort, be user-friendly and energyefficient, thereby minimizing costs to the residential building?”

sub questions:

- 1. What are hybrid climate systems, how do they function, and what can a installation-poor design look like?*
- 2. In what ways can different sustainable materials be used in climate systems to improve overall sustainability?*
- 3. What design features of climate systems have the greatest impact on reducing installation, maintenance, and operational costs in transformed office buildings?*



location



location

literature review

books

- *Achieving the desired indoor climate.: energy Efficiency Aspects of System Design*
- *What you need to know about climate systems: The how and why of climate systems in a nutshell*
- *Indoor Climate and Adaptive Thermal Comfort*
- *How buildings learn: What Happens After They're Built*

reports and articles

theses

webpages

ethnography

Interviews

- **renovation architect**
mr. van Graeven
- **property manager**
mr. de Heer and mr. van der Linde
- **building physics consultant**
mr. Valk
mr. Bosch
- **contractor**
mr. Brussé
(cancelled)

case studies

De Willem | Weert _
JCAU
Patch22 |
Amsterdam - Tom
Frantzen

Prins Hendrikkade |
Rotterdam - Rutten
Van der Weijden

Meelfabriek | Leiden
Studio Akkerhuis
Little C | Rotterdam -
CULD and INBO
Rembrandt park one
| Amsterdam -
Frederik Willem de
Vlaming
Elements | Haarlem -
Koschuch Architects,
Global Architects and
VDNDP

conclusion

integrated
approach of
passive and active

central system
good insulation

decentralised
system

bio-based
materials

district heating
heat pump
underfloor heating

reuse of materials

modular
components

design criteria

- climate
requirement per
room (light, noise,
thermal comfort
and air quality
- outdoor spaces
- BENG
- gas gone
- shading
- insulation

design principles

- energie efficient
- flexible
- adaptable
- aubergine colour
- central core
- curtain wall principle
retained

research by design

which systems active and
which passive?

which systems centralized?
which material best rc value
and durable?

which decentralised?
heating or ventilation?

which biobased materials
can be included in the
design?

is district heating possible?
which source to connect
to? water, air or soil?

which façade materials can
be reused and how?

which parts can be made
modular?

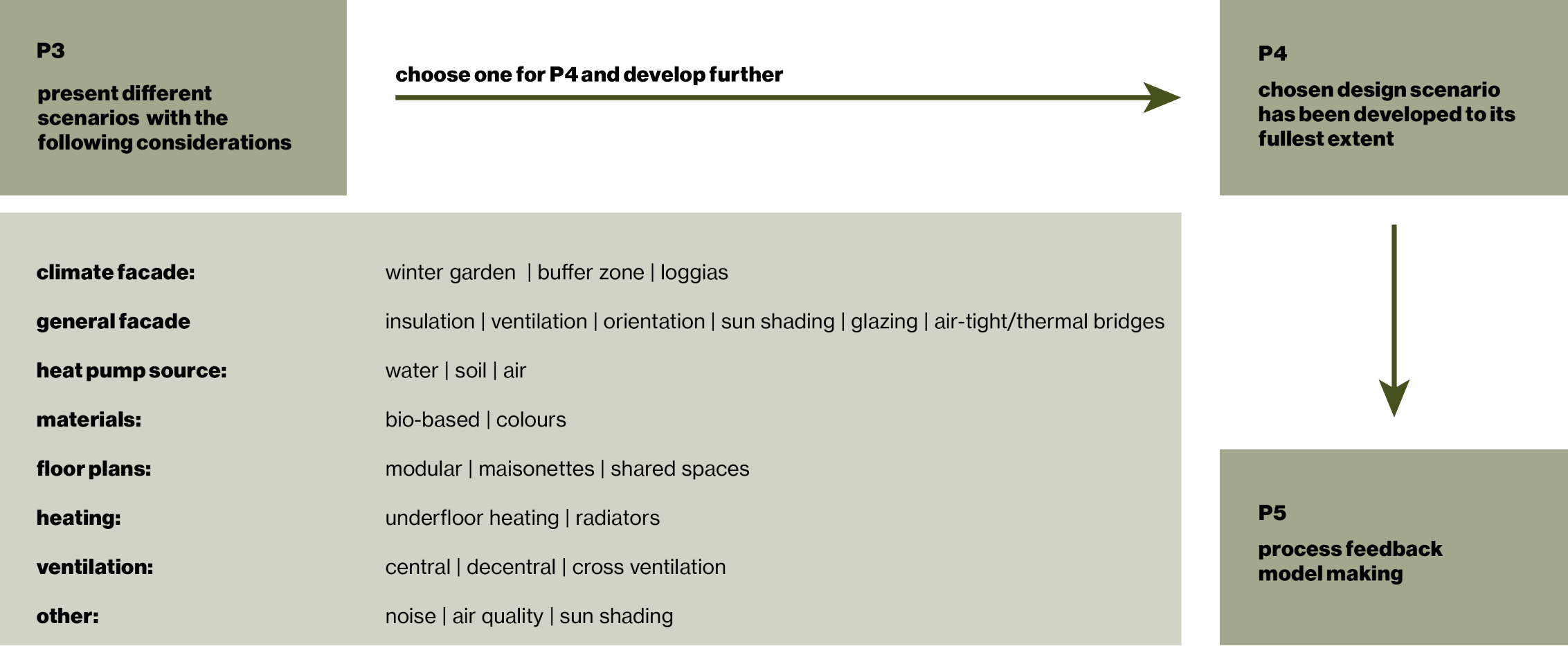
conclusions

passive + active = hybrid

central system like the district heating network

flexible = target groups and demountable

conclusions



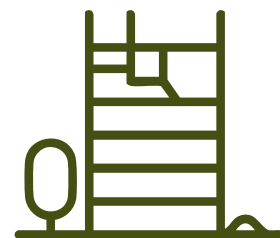
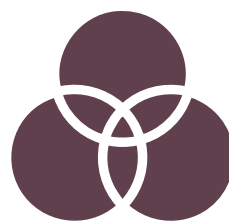
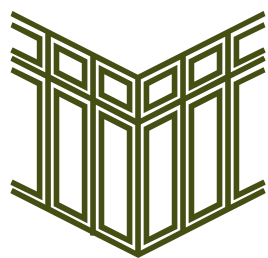
conclusions



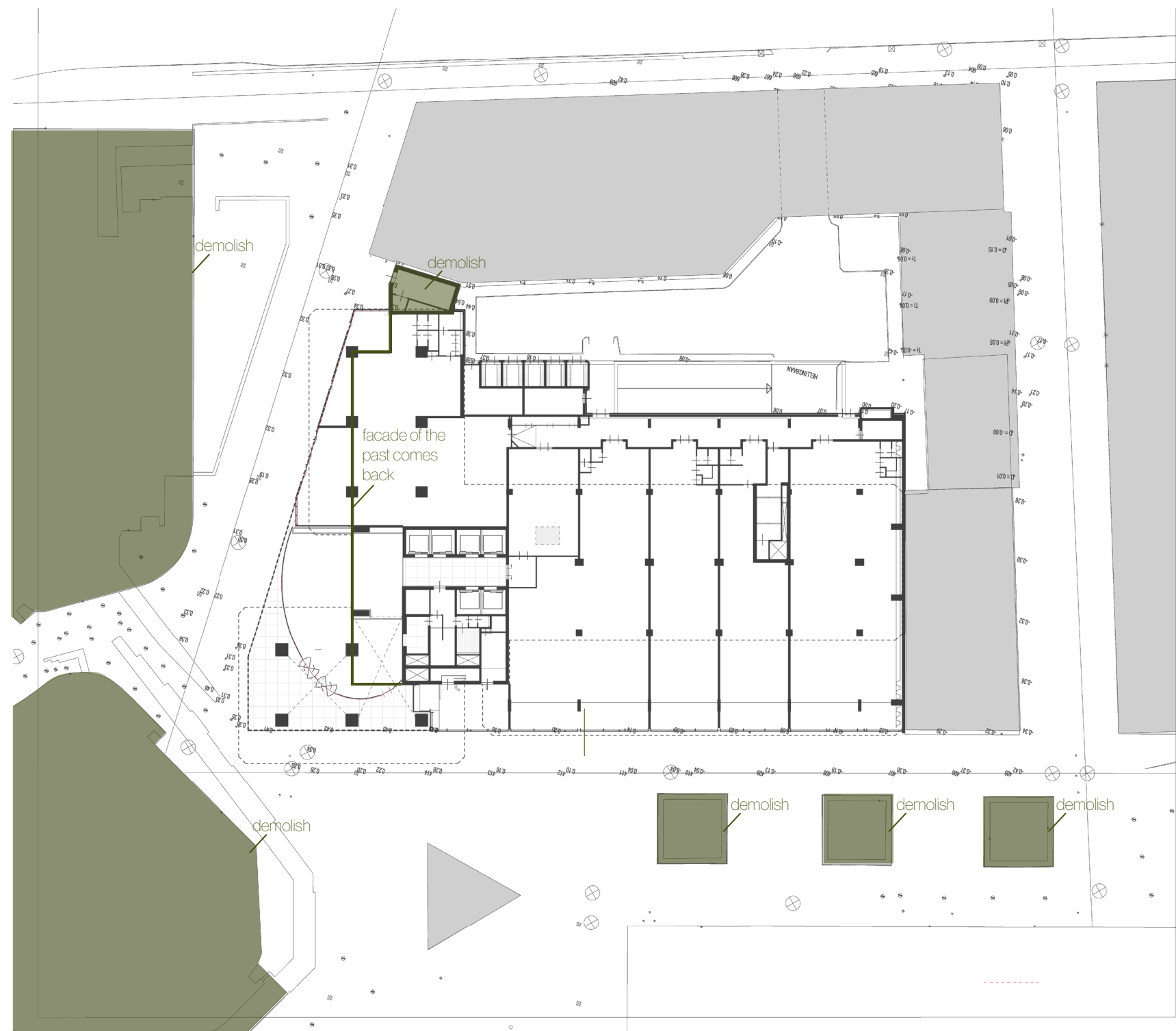
analyses



analyses



heritage



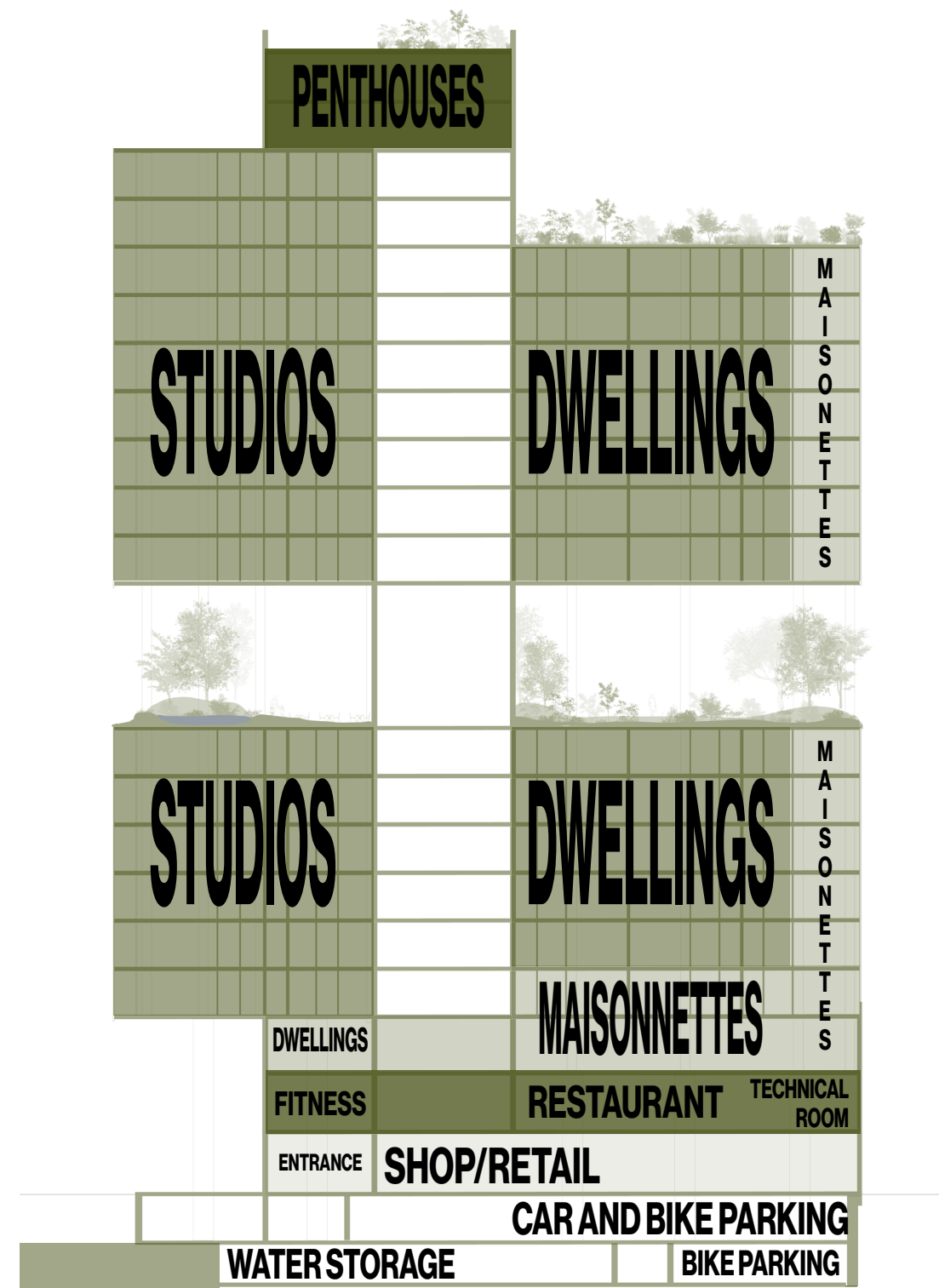
demolish



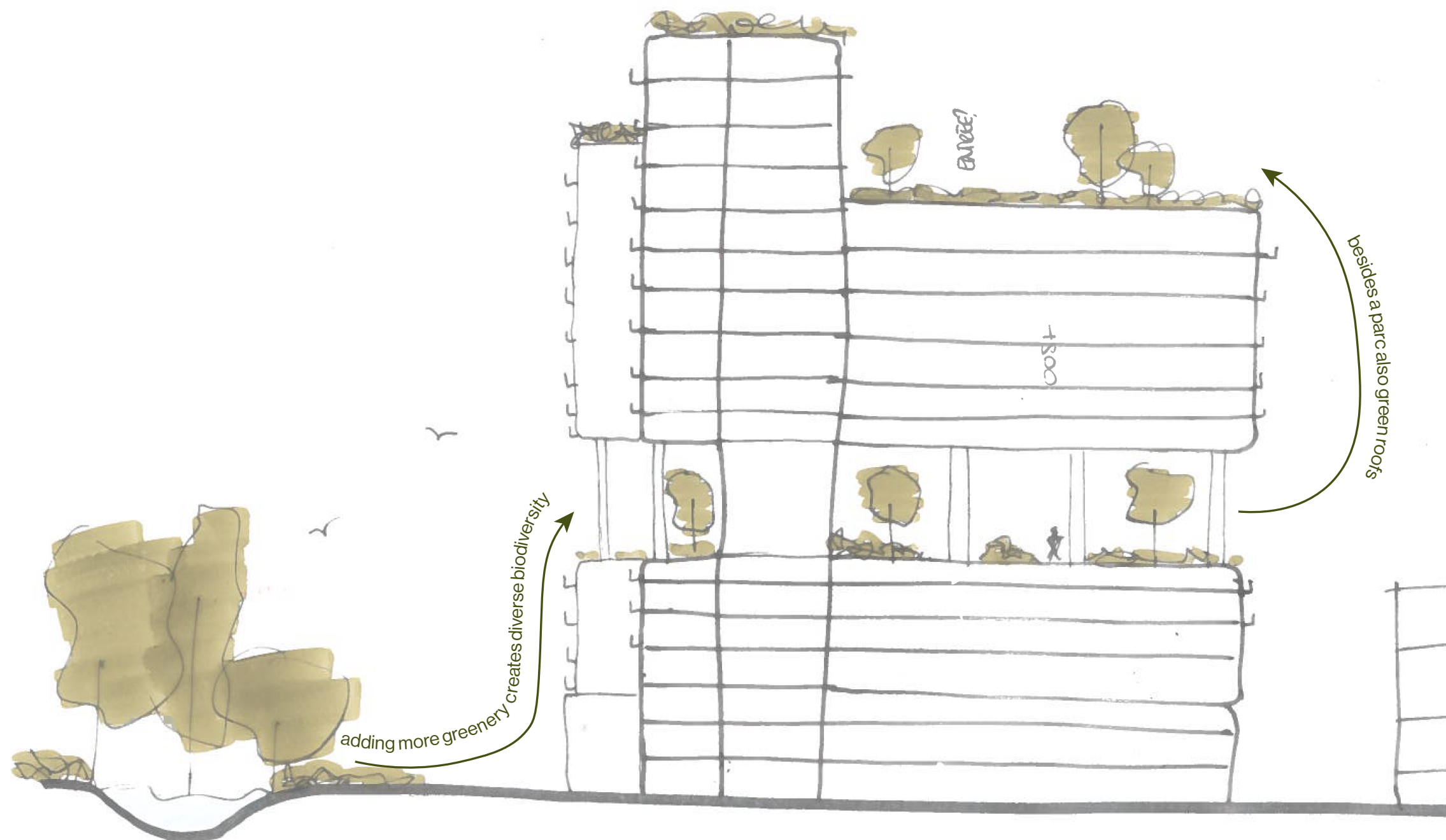
urban context 1:1000 (rescaled)



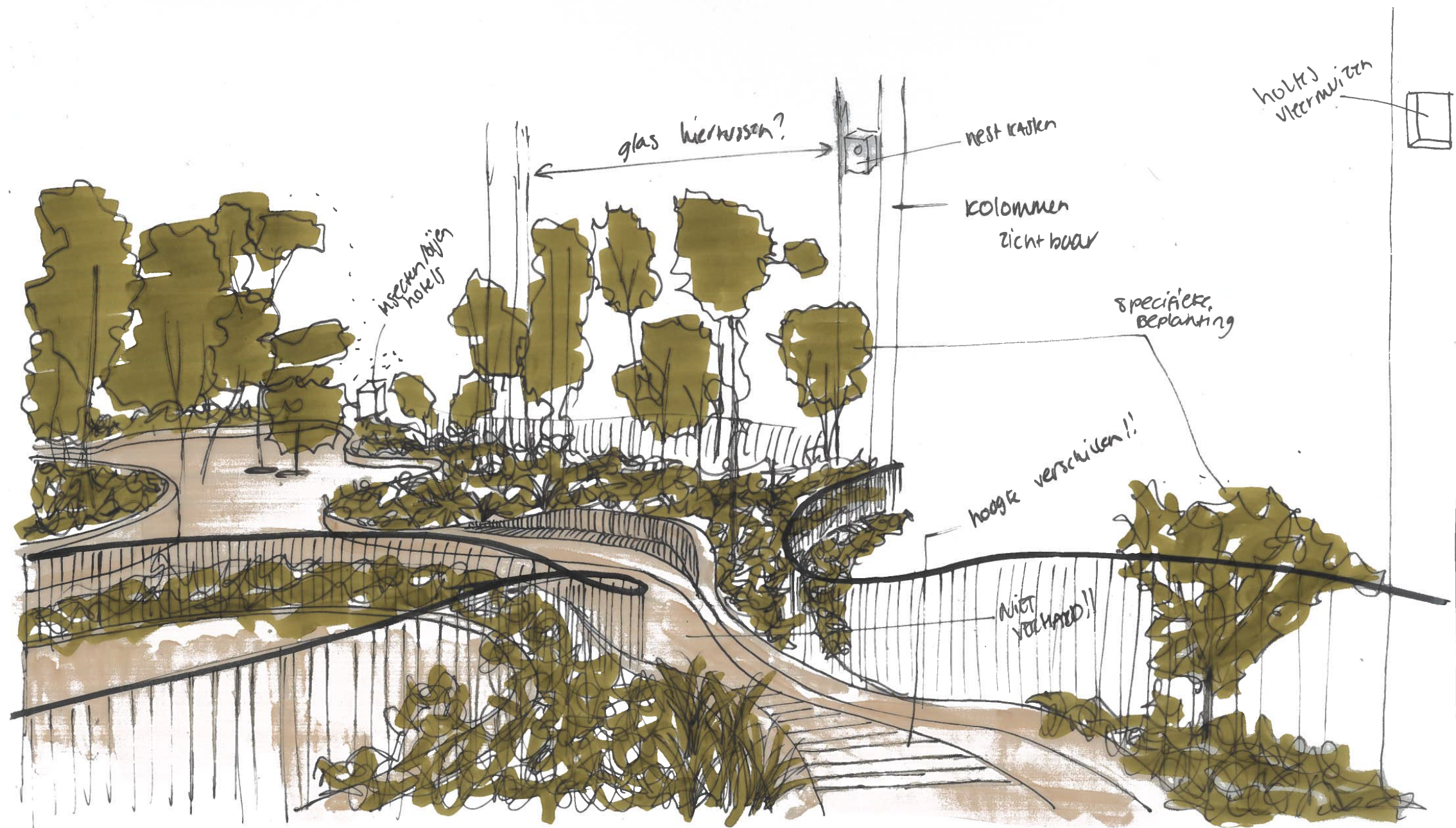
urban section 1:200 (rescaled)



building objectives



concept

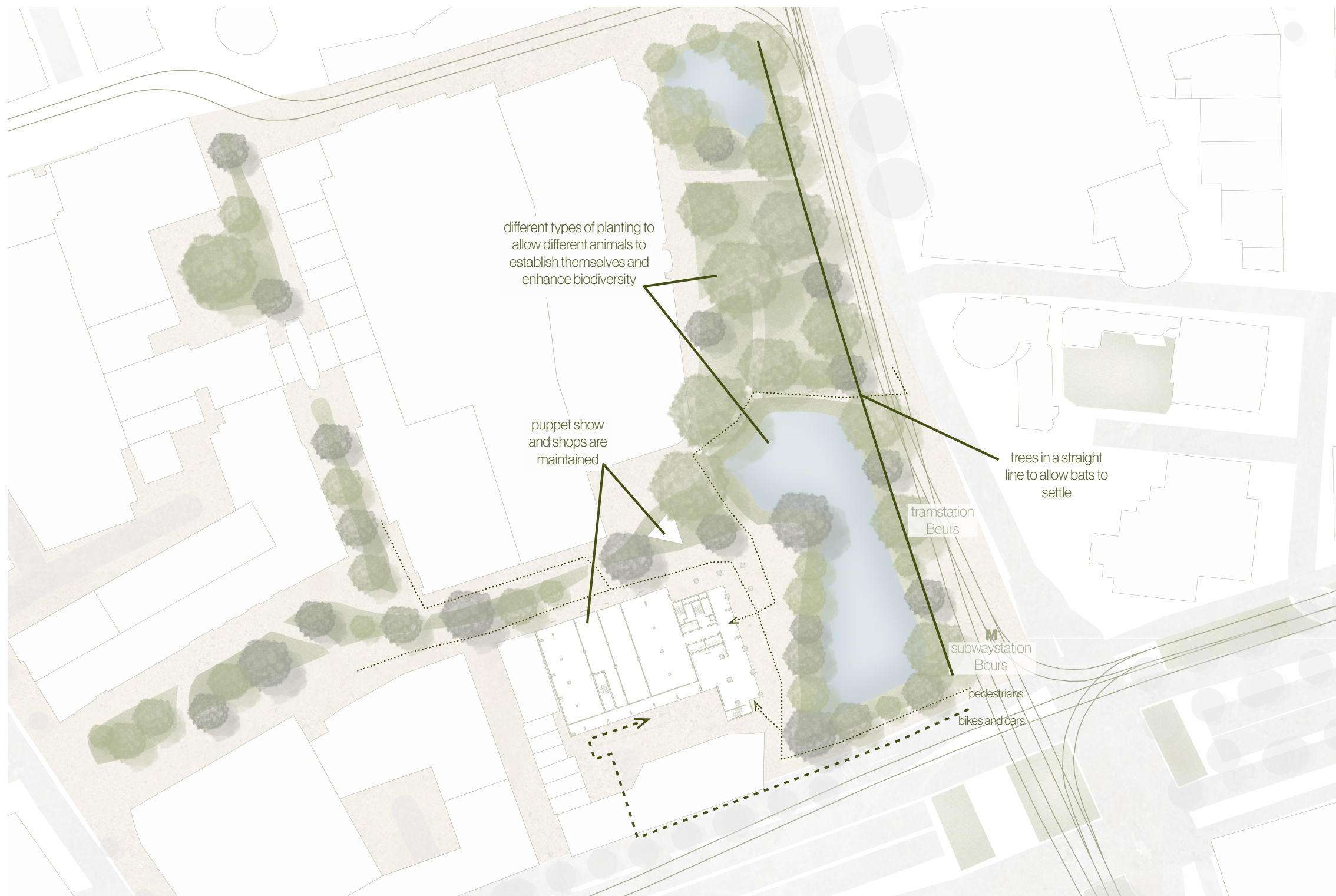


00/04

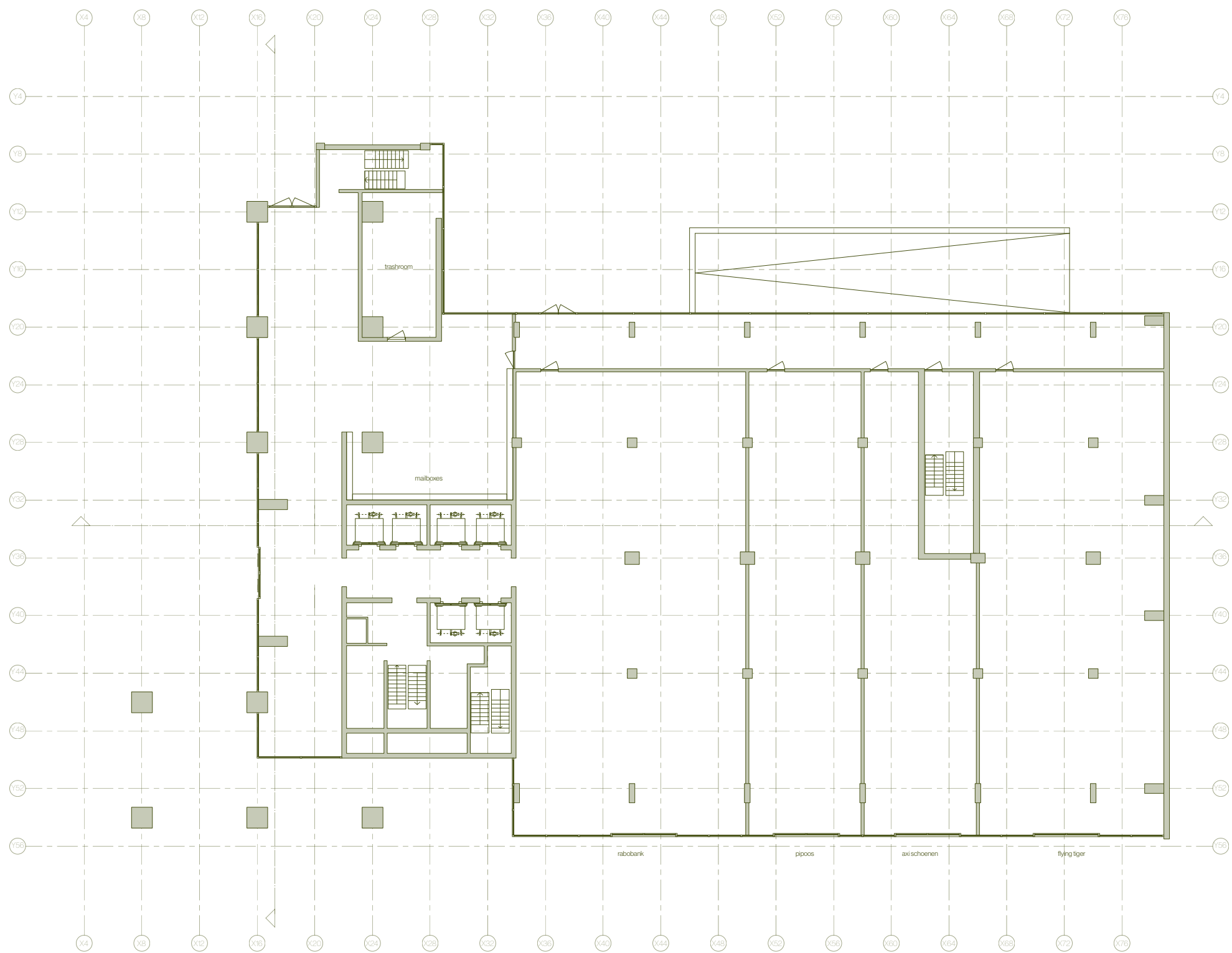
concept



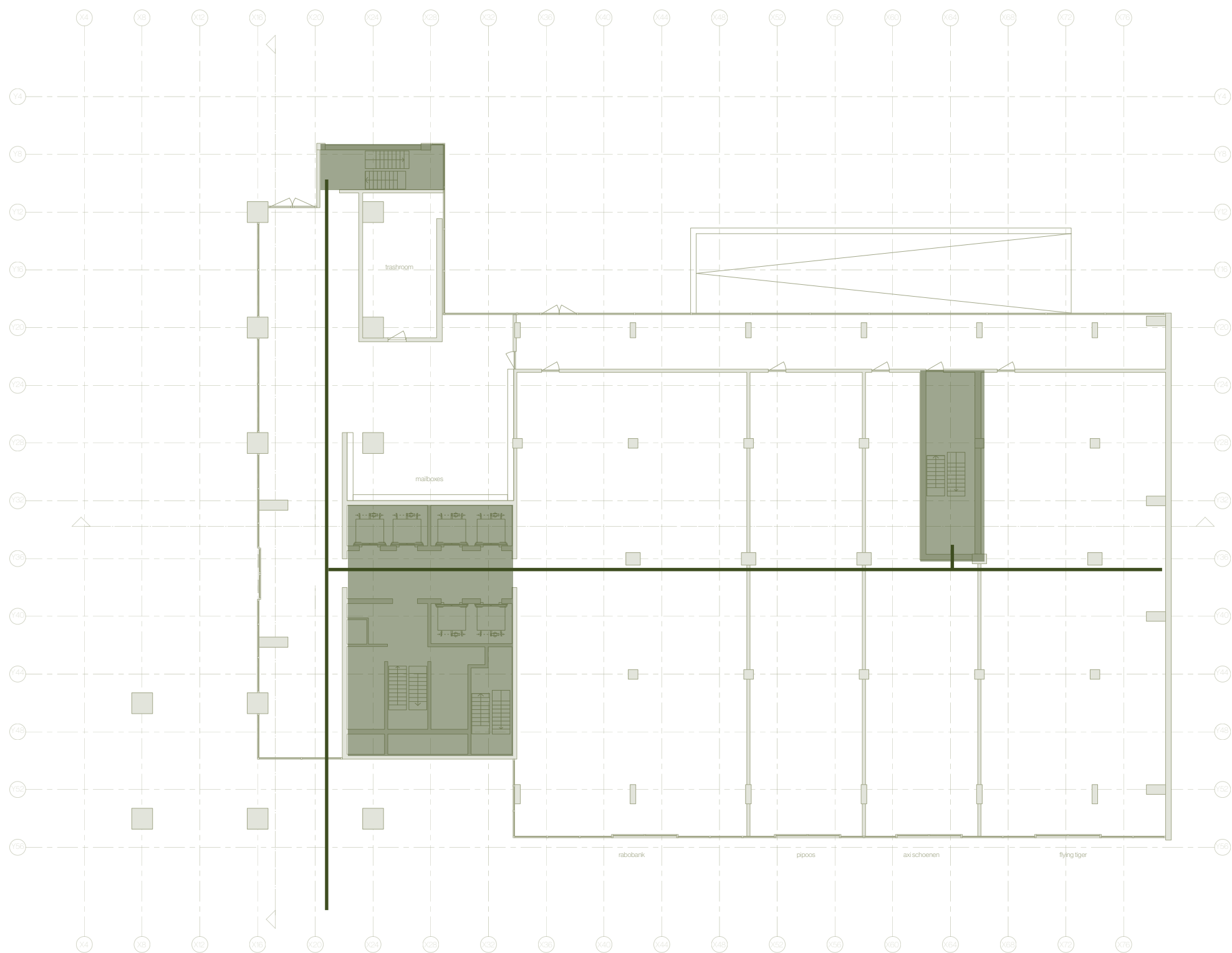
building in situation



site 1:500 (rescaled)



ground floor 1:200 (rescaled)

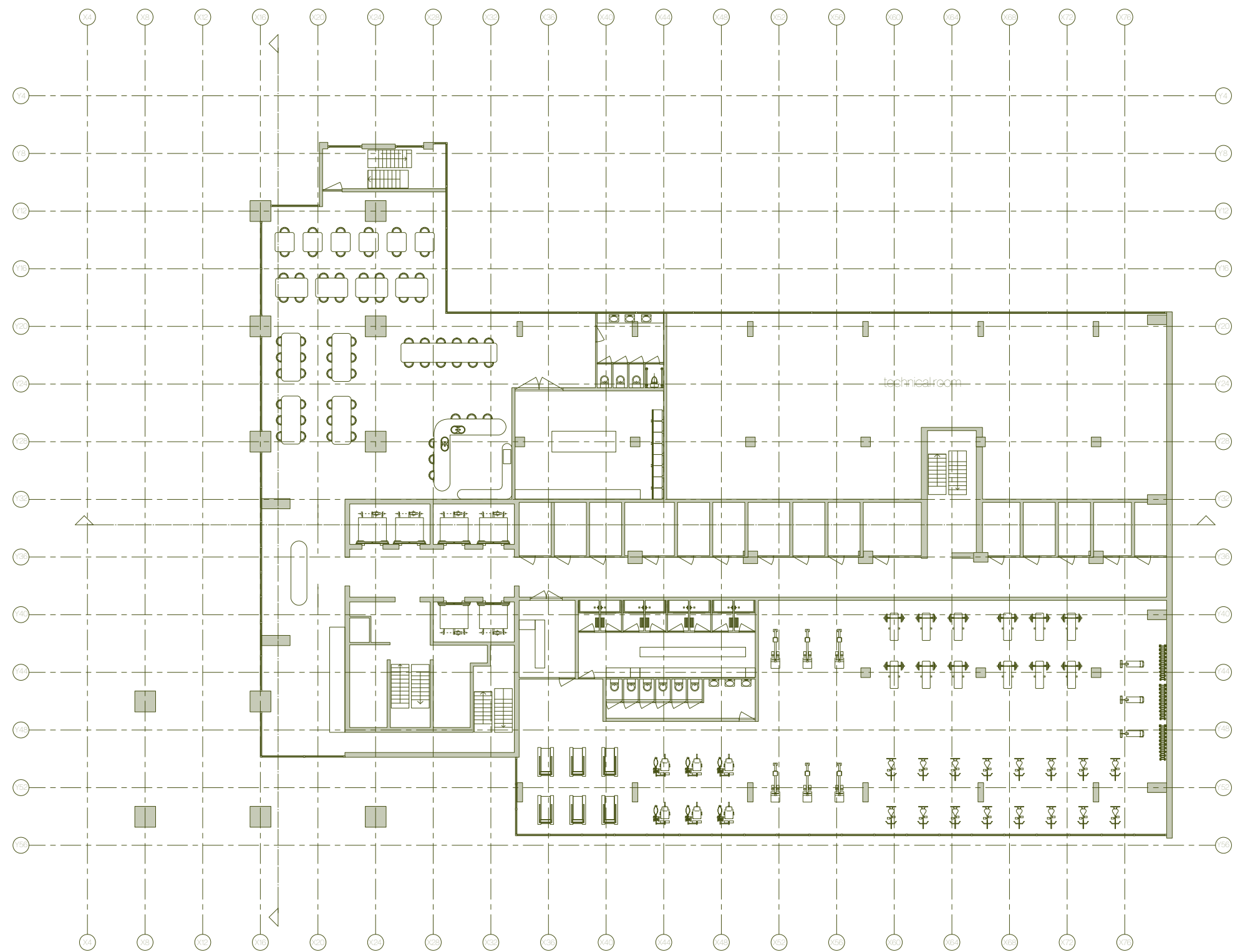


circulation spaces 1:200 (rescaled)

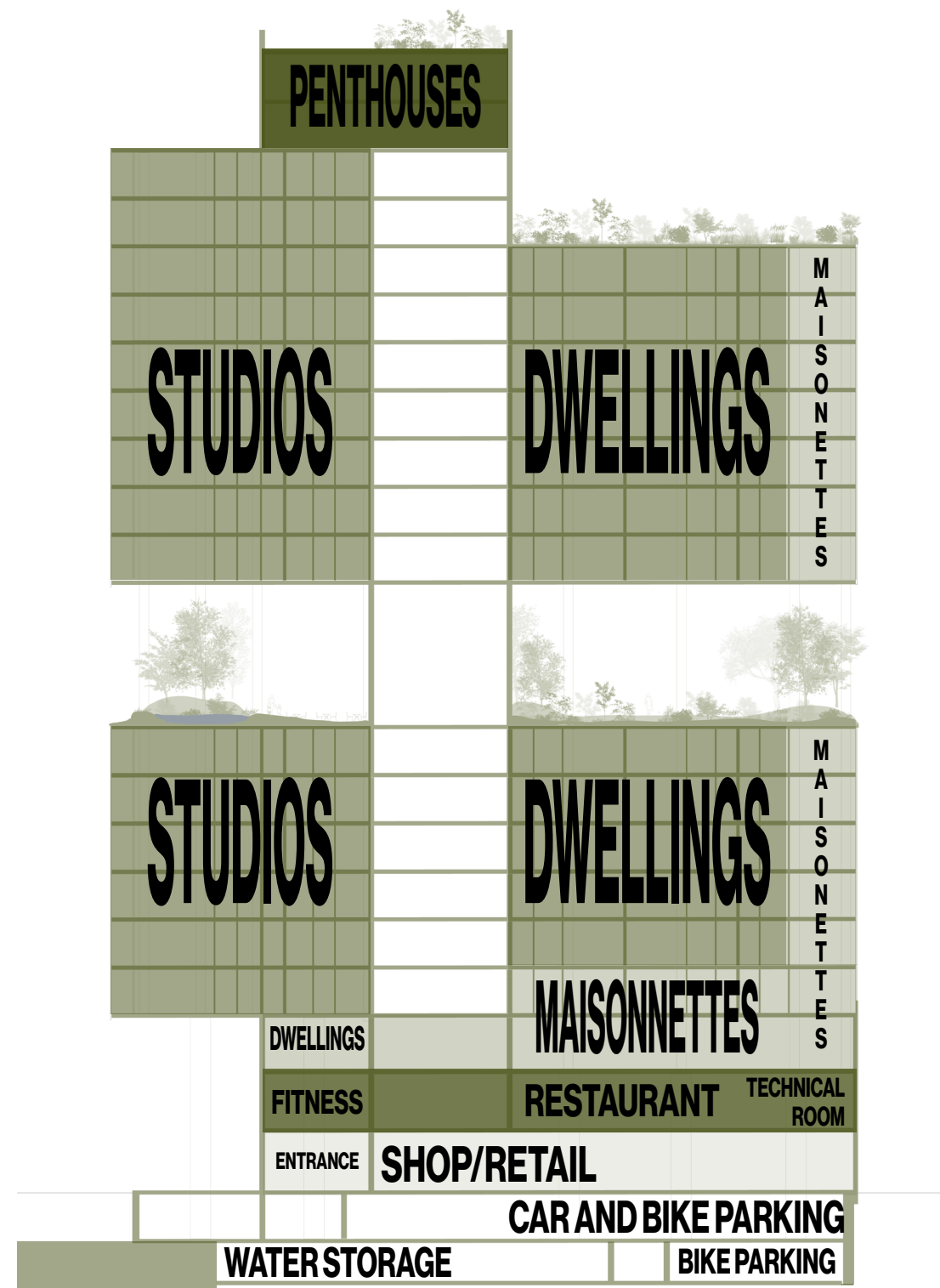


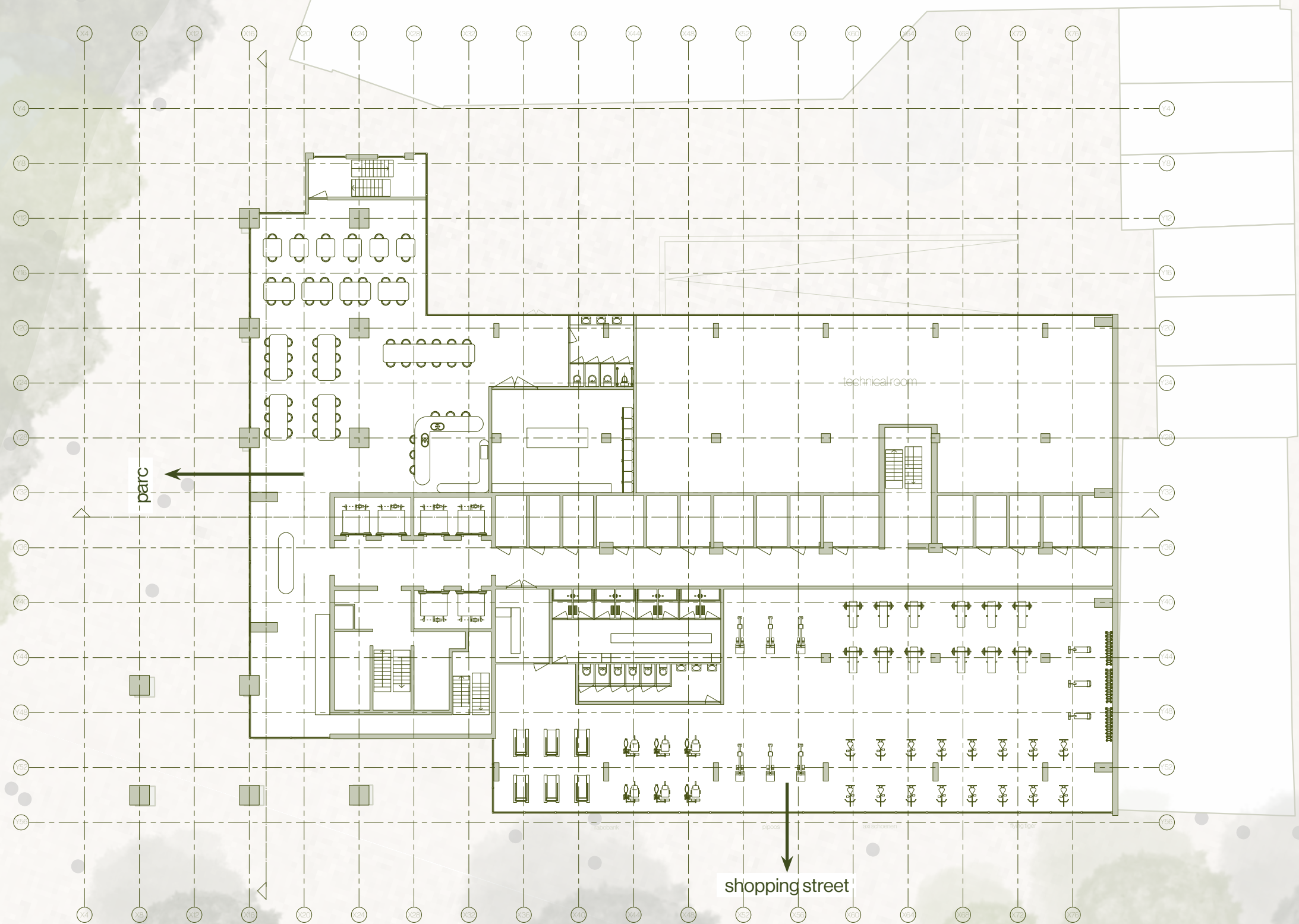
entrance





1st floor 1:200 (rescaled)





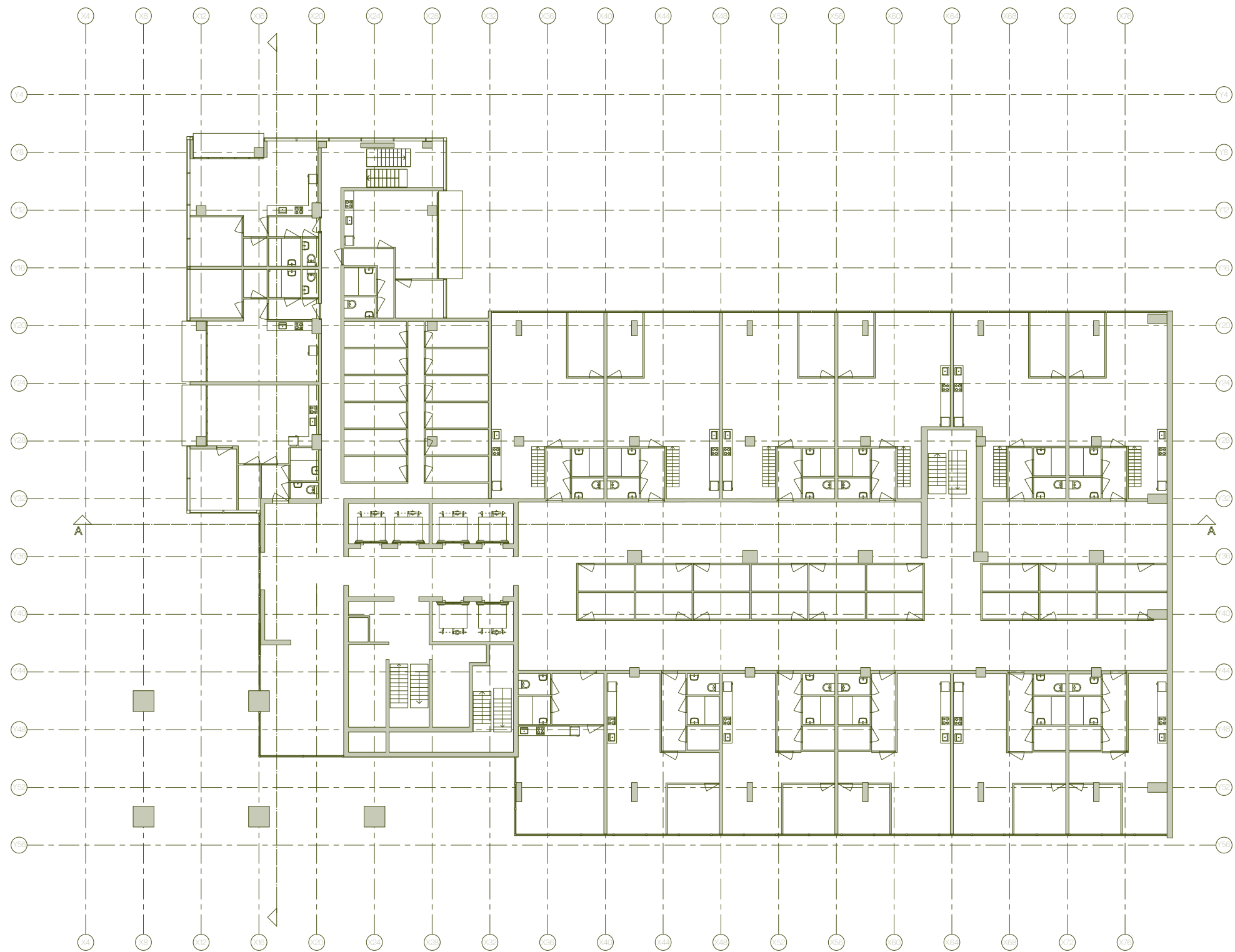
1st floor with surroudings



restaurant



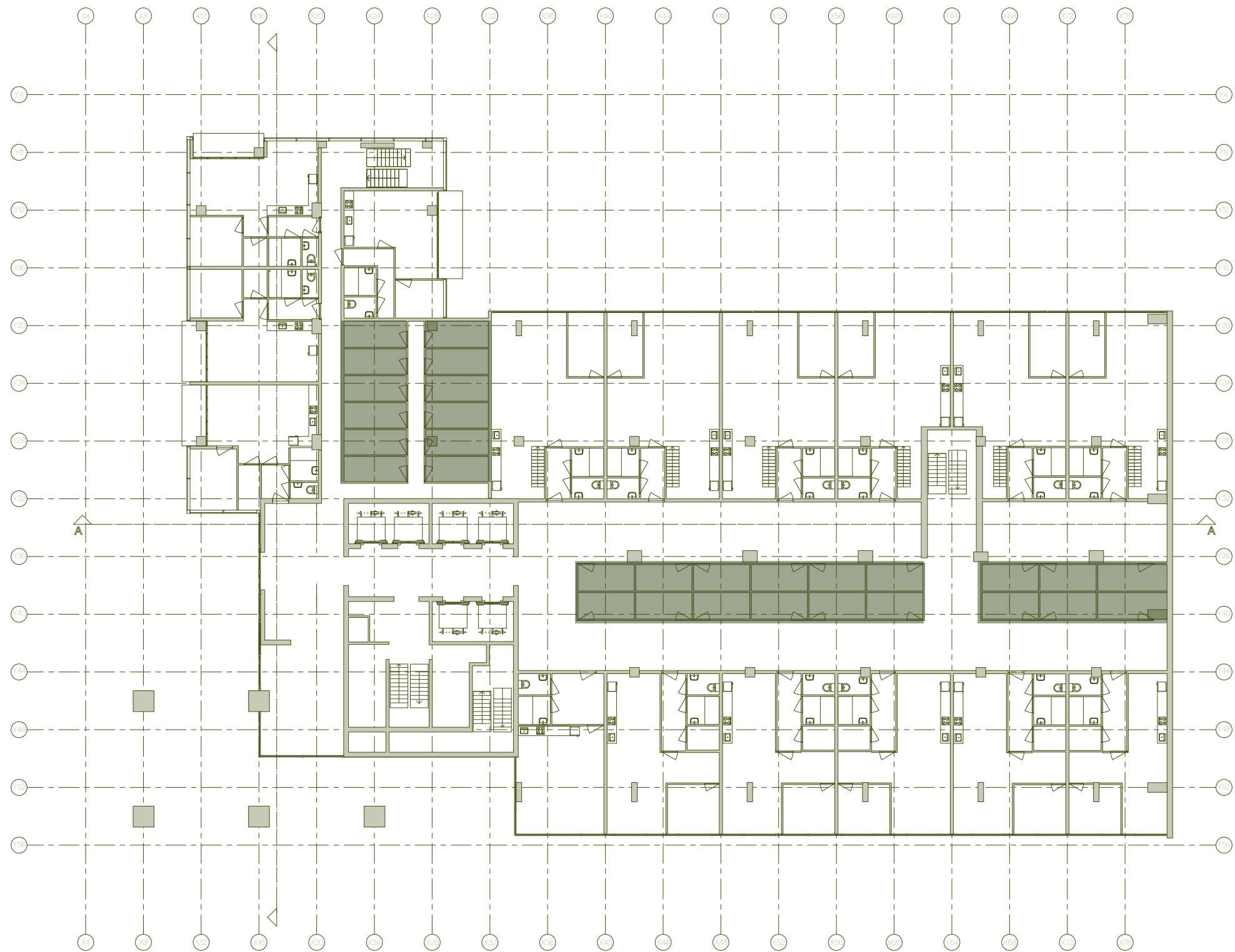
fitness



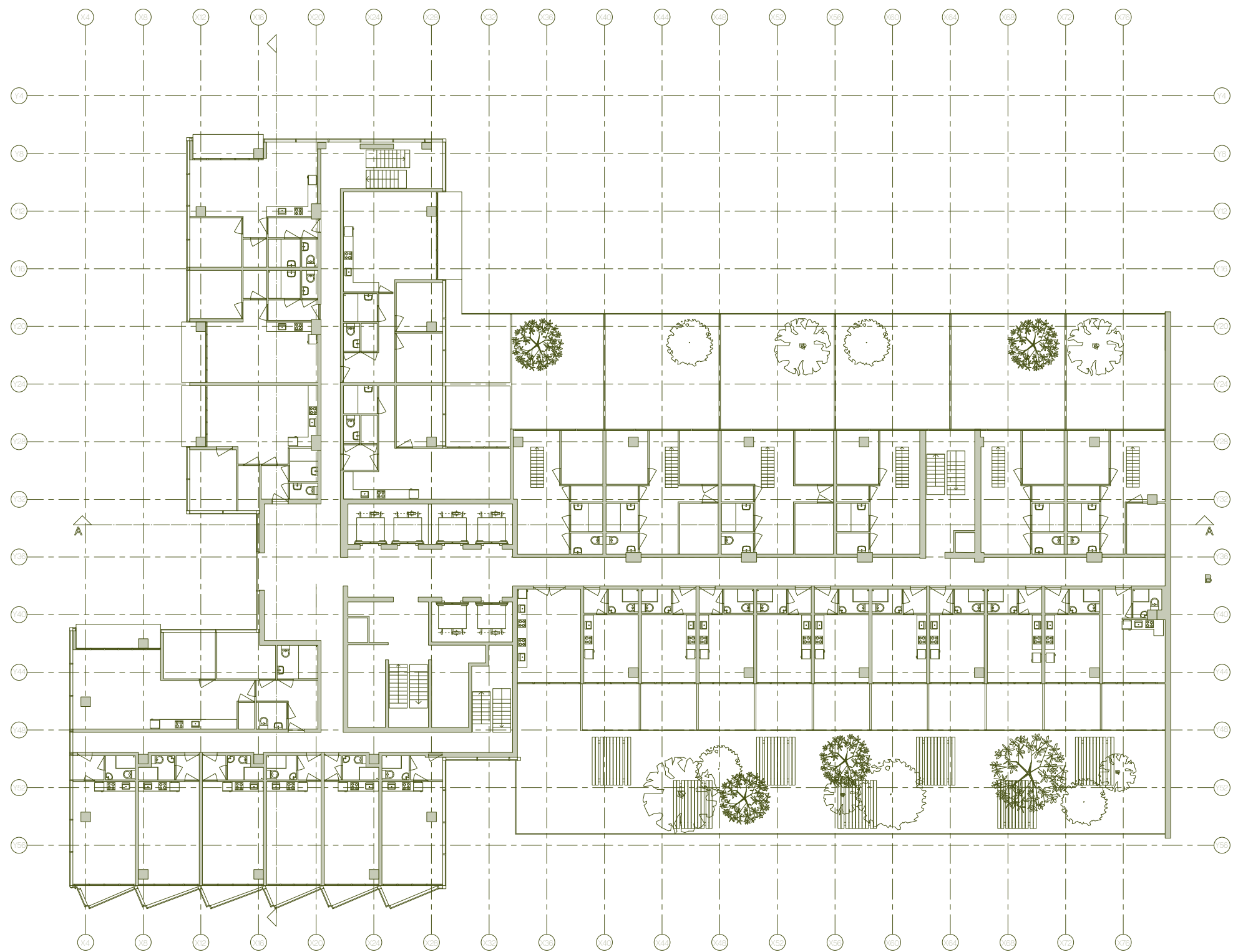
2nd floor 1:200 (rescaled)



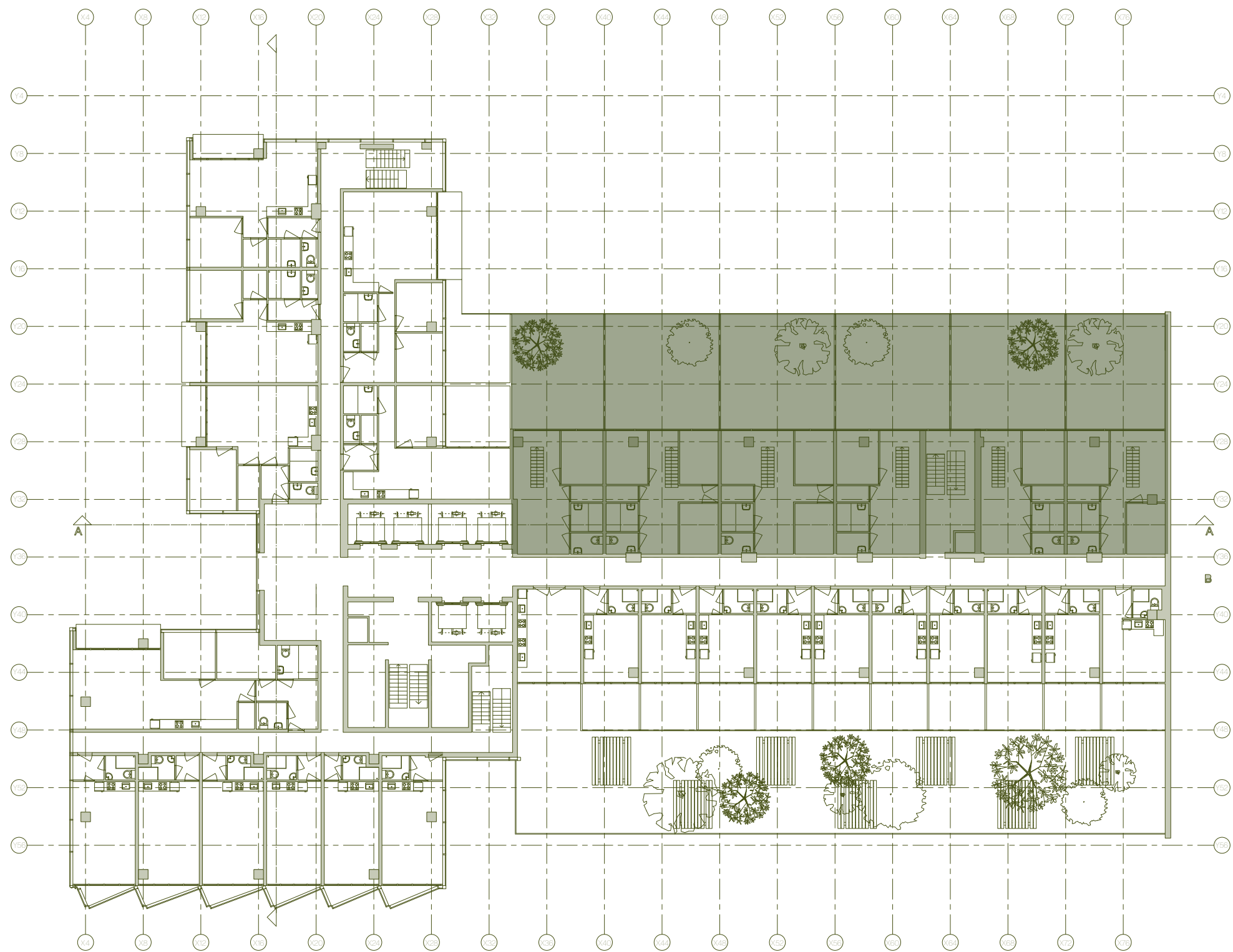
maisonnettes

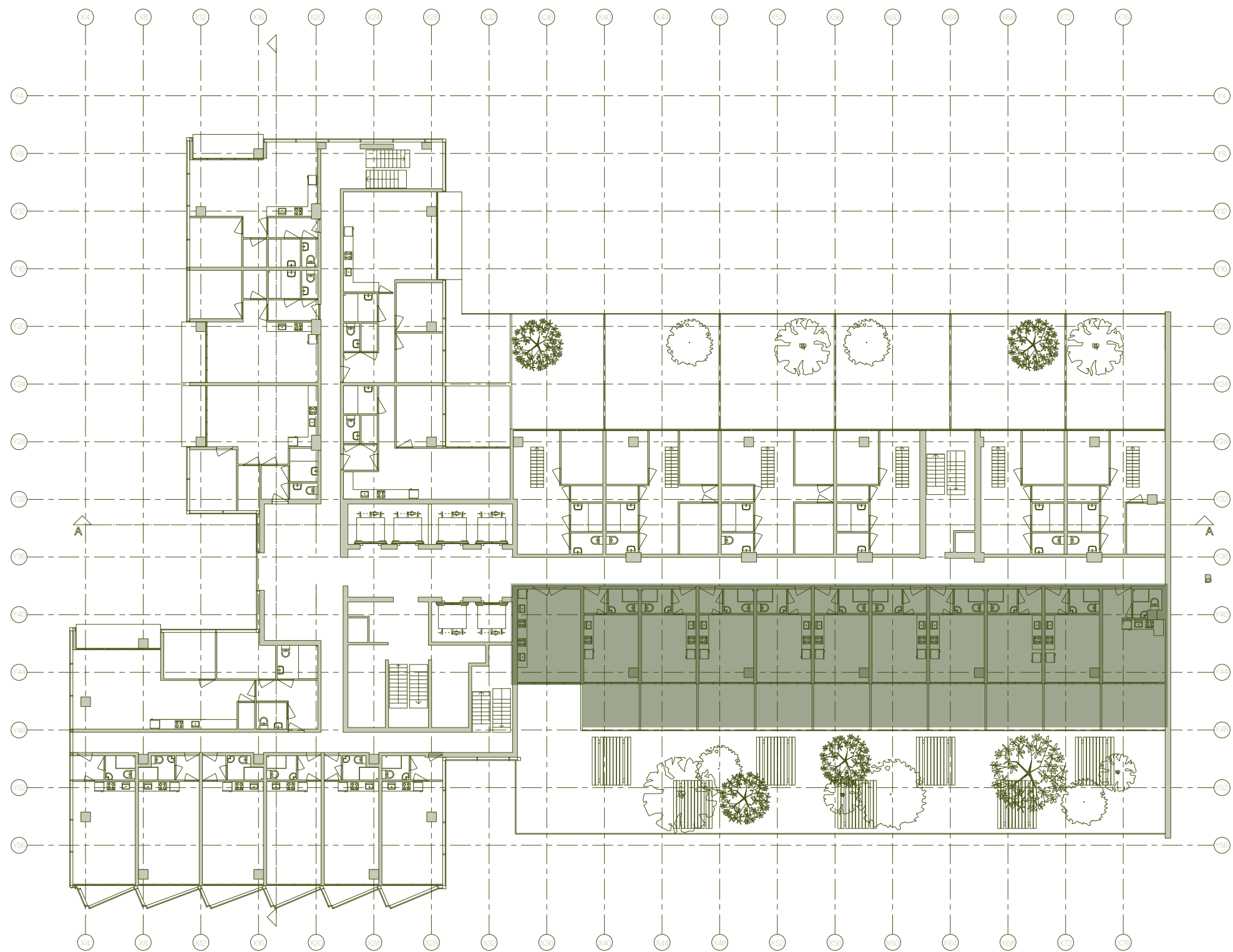


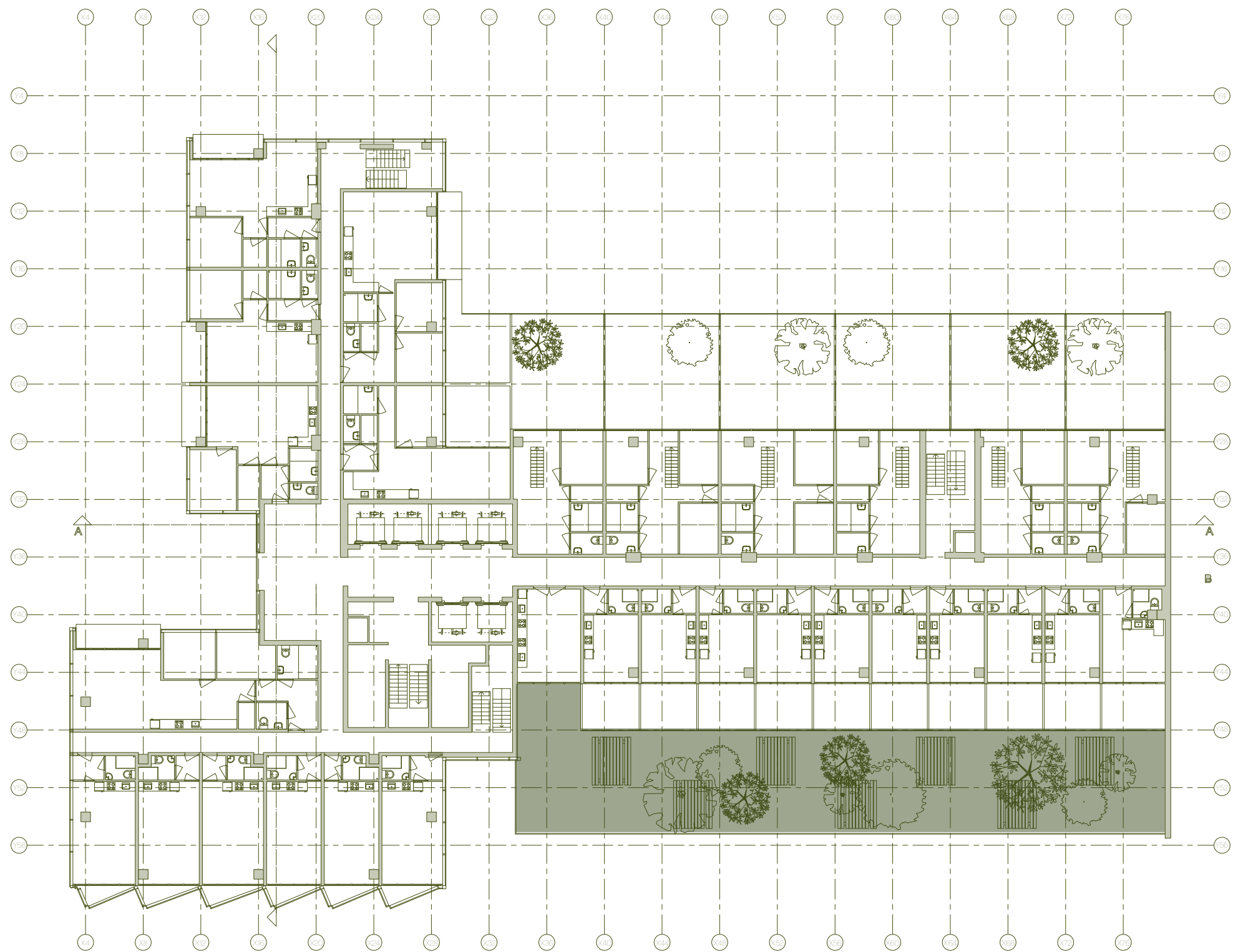
storage



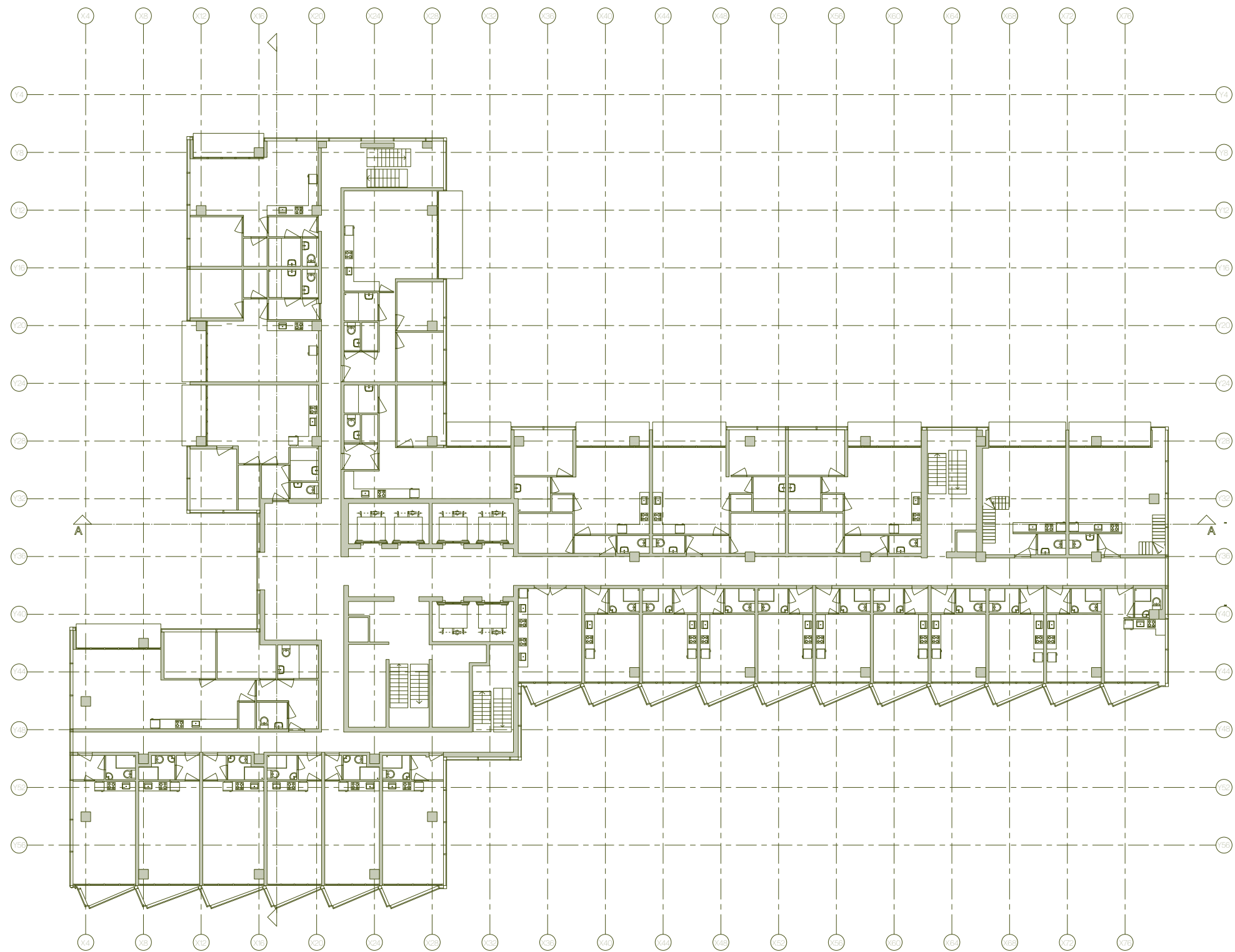
3rd floor 1:200 (rescaled)



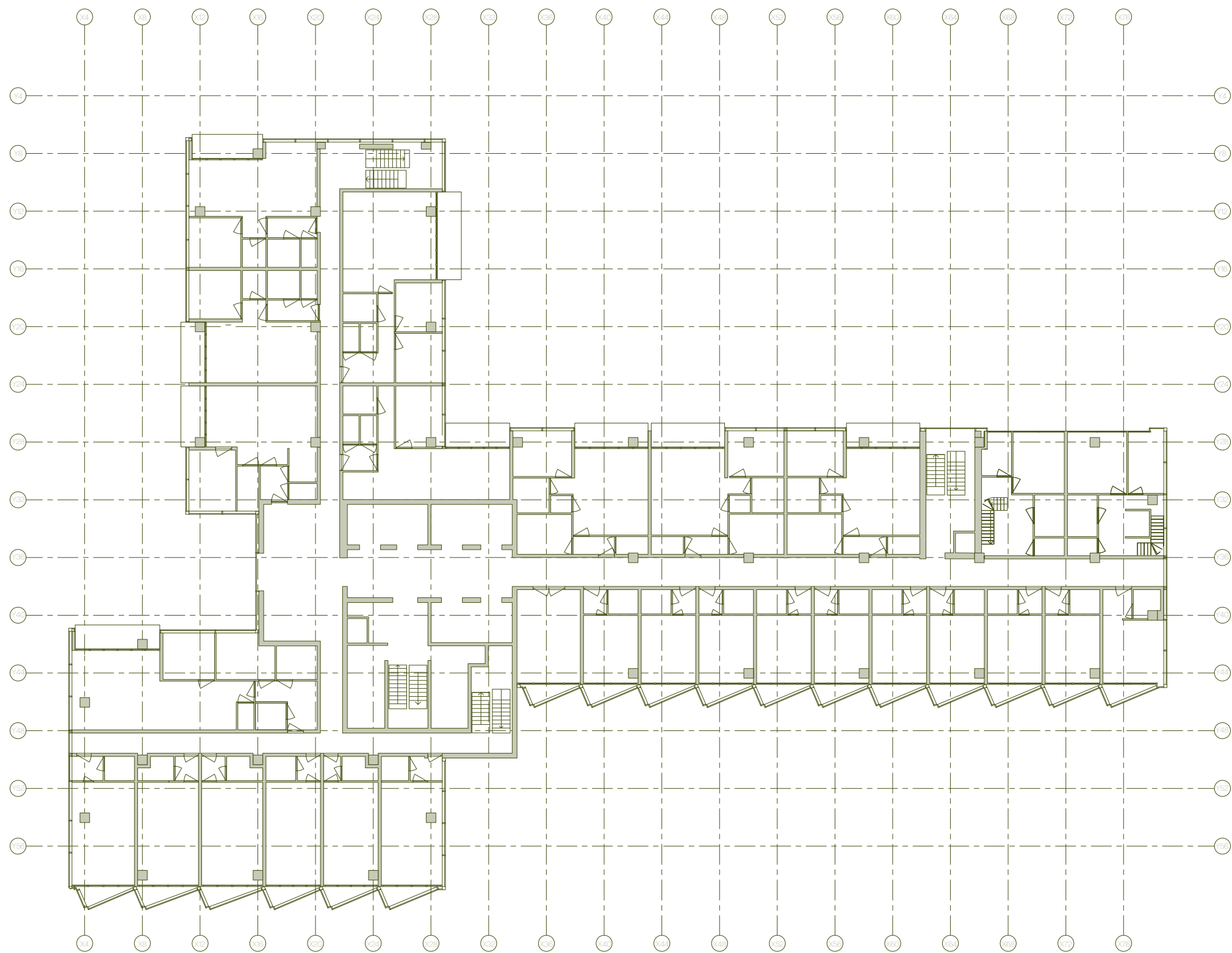




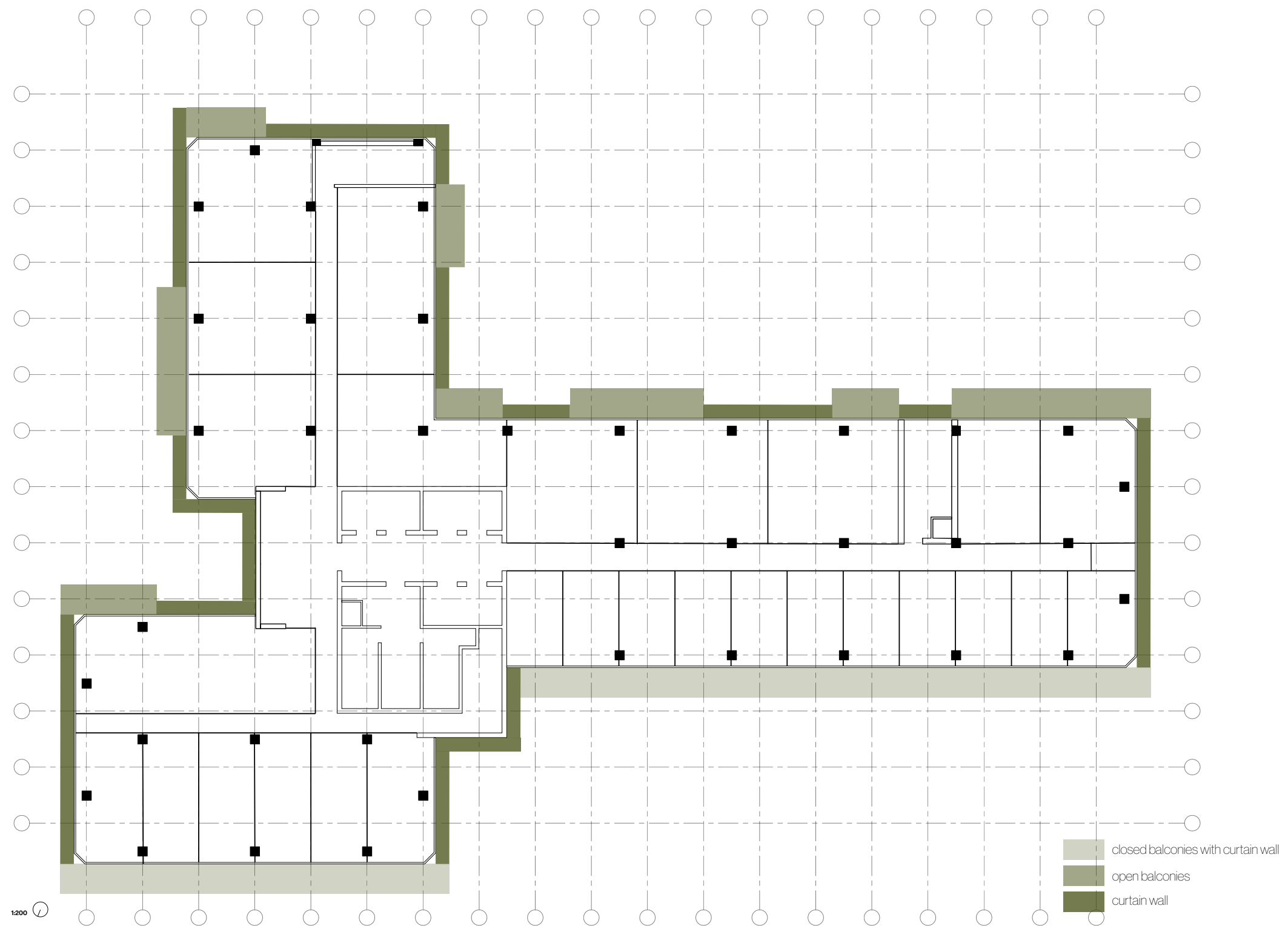




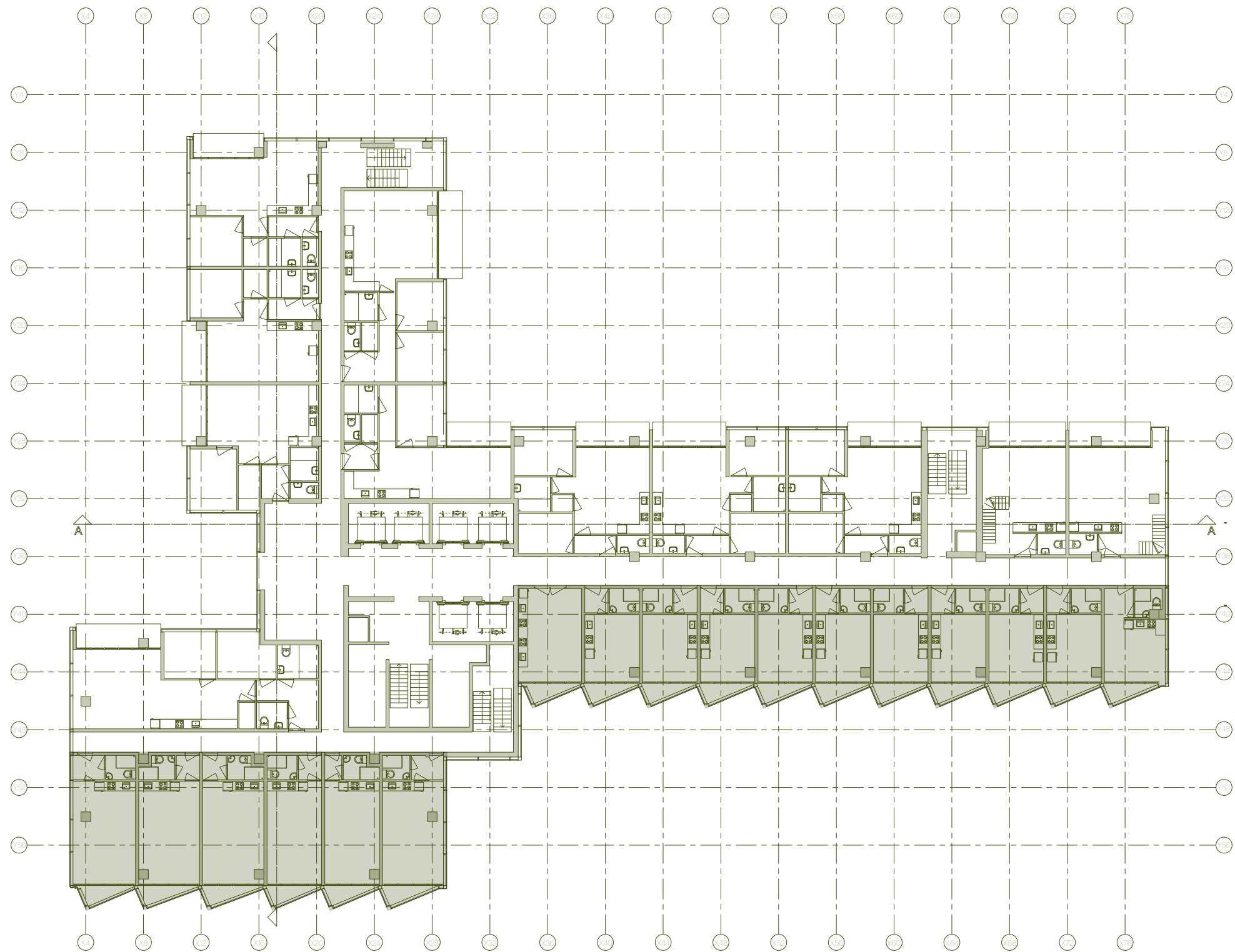
even floors 1:200 (rescaled)



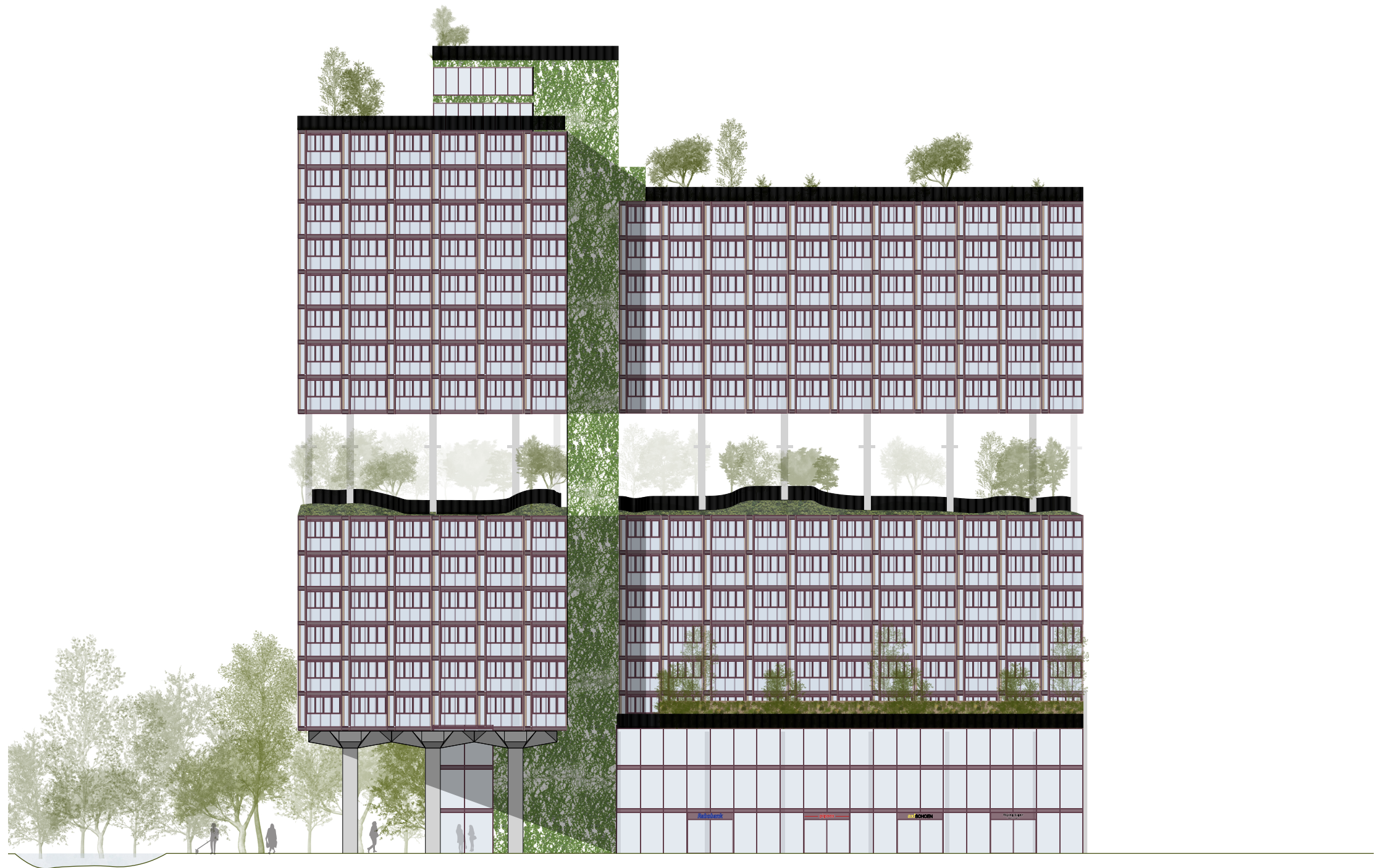
odd floors 1:200 (rescaled)



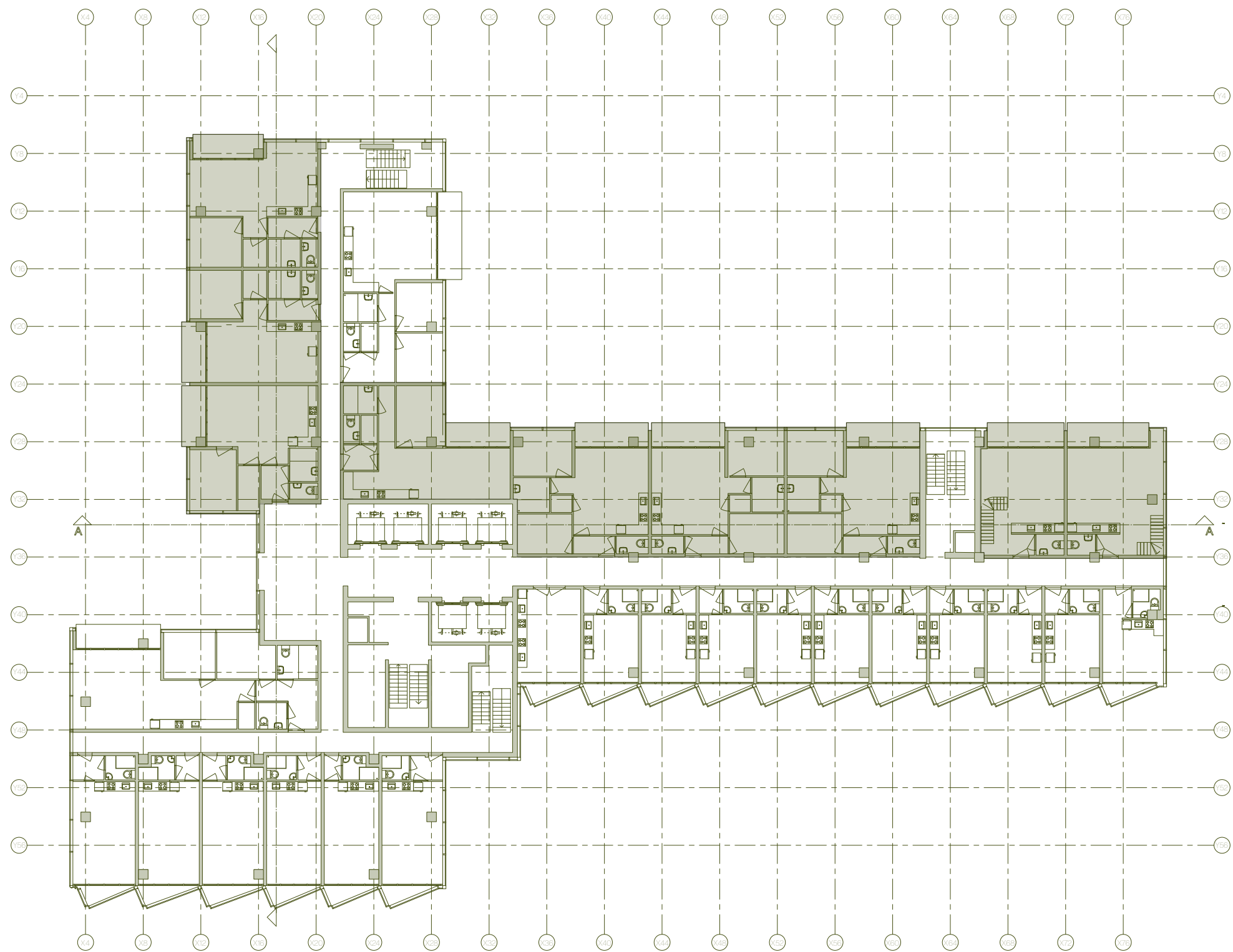
determination of outdoor spaces



low income



north facade 1:200 (rescaled)



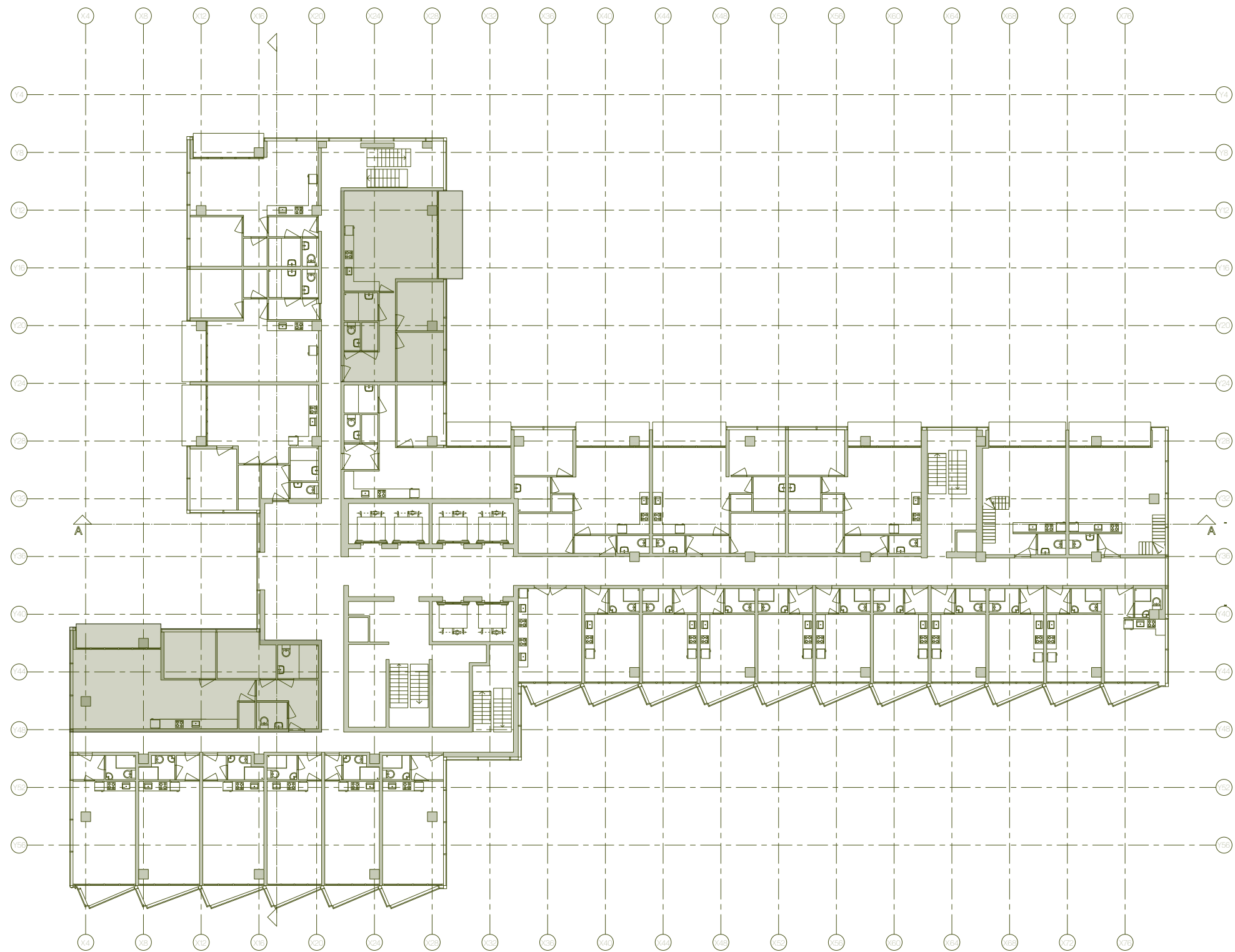
mid income



south facade 1:200 (rescaled)



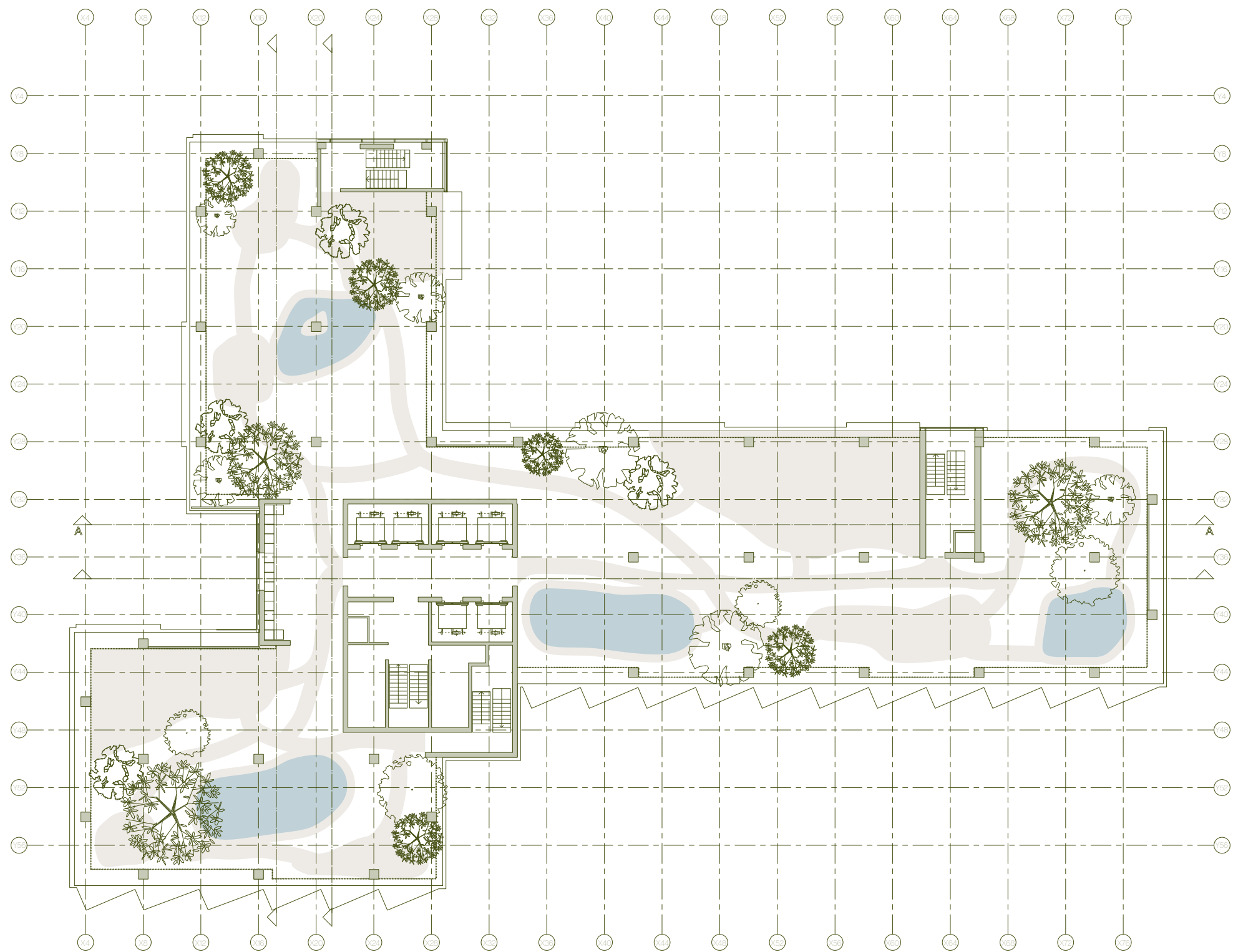
east facade 1:200 (rescaled)



high income



west facade 1:200 (rescaled)



park 1:200 (rescaled) 9th - 11th floor



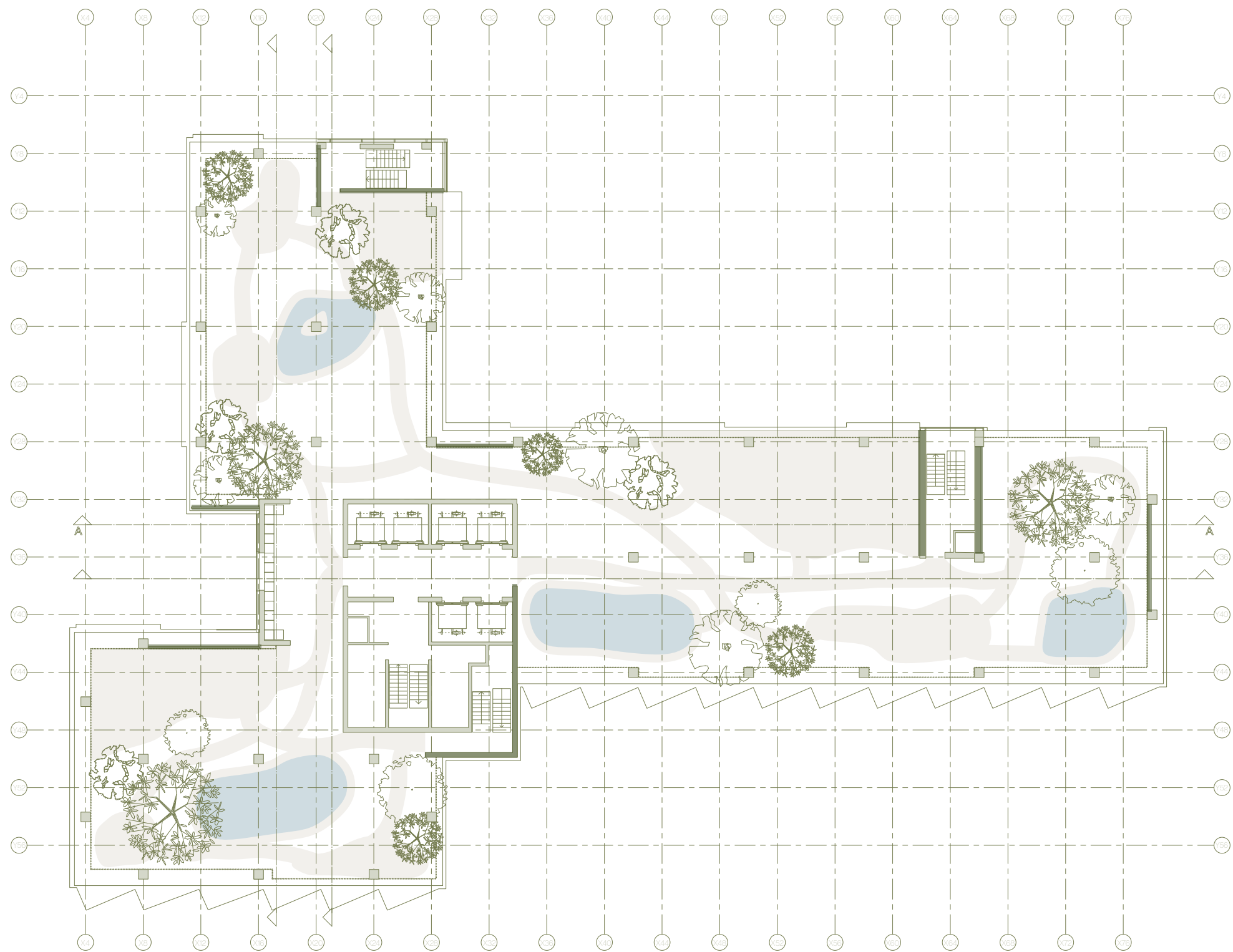
biodiversity



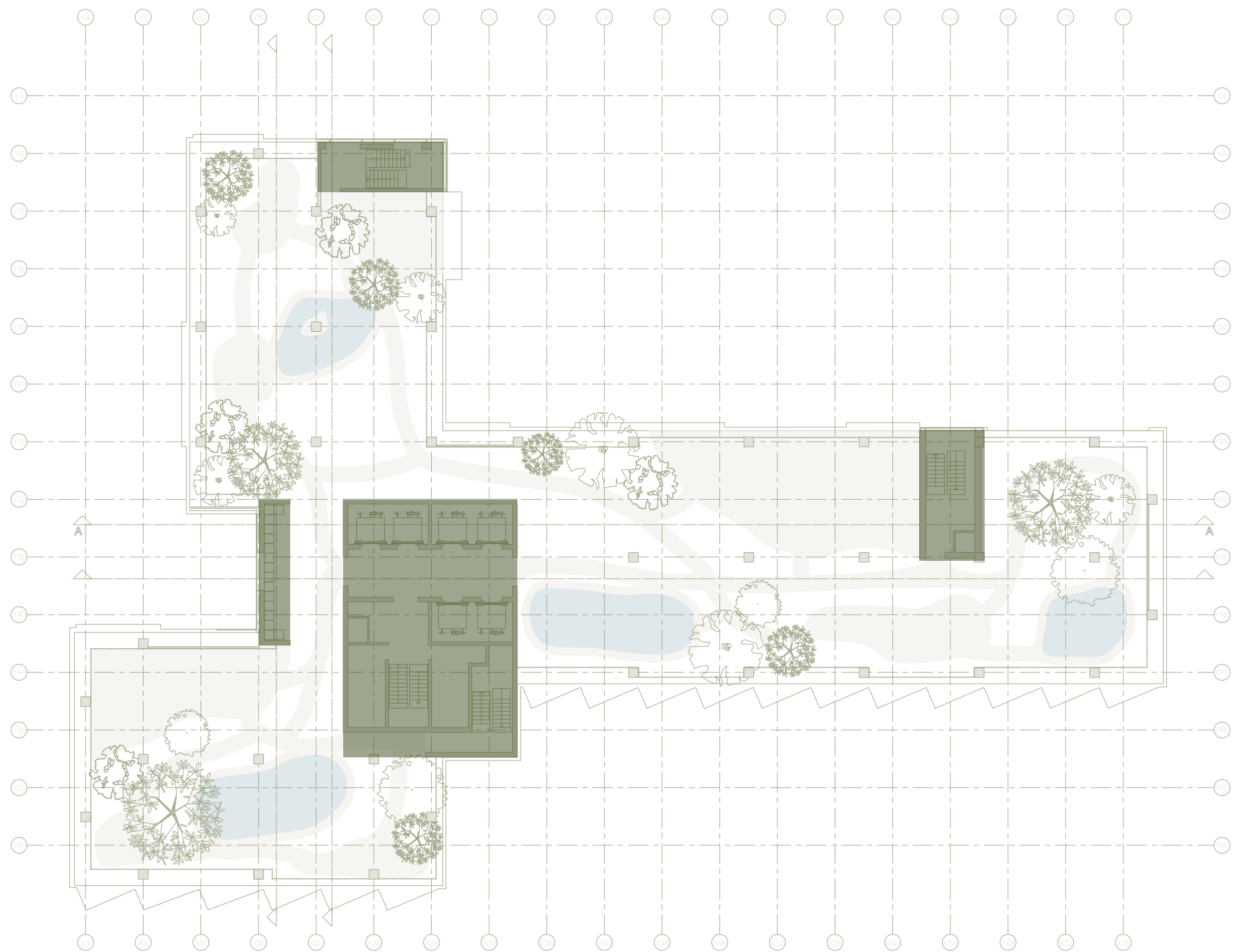
comunal



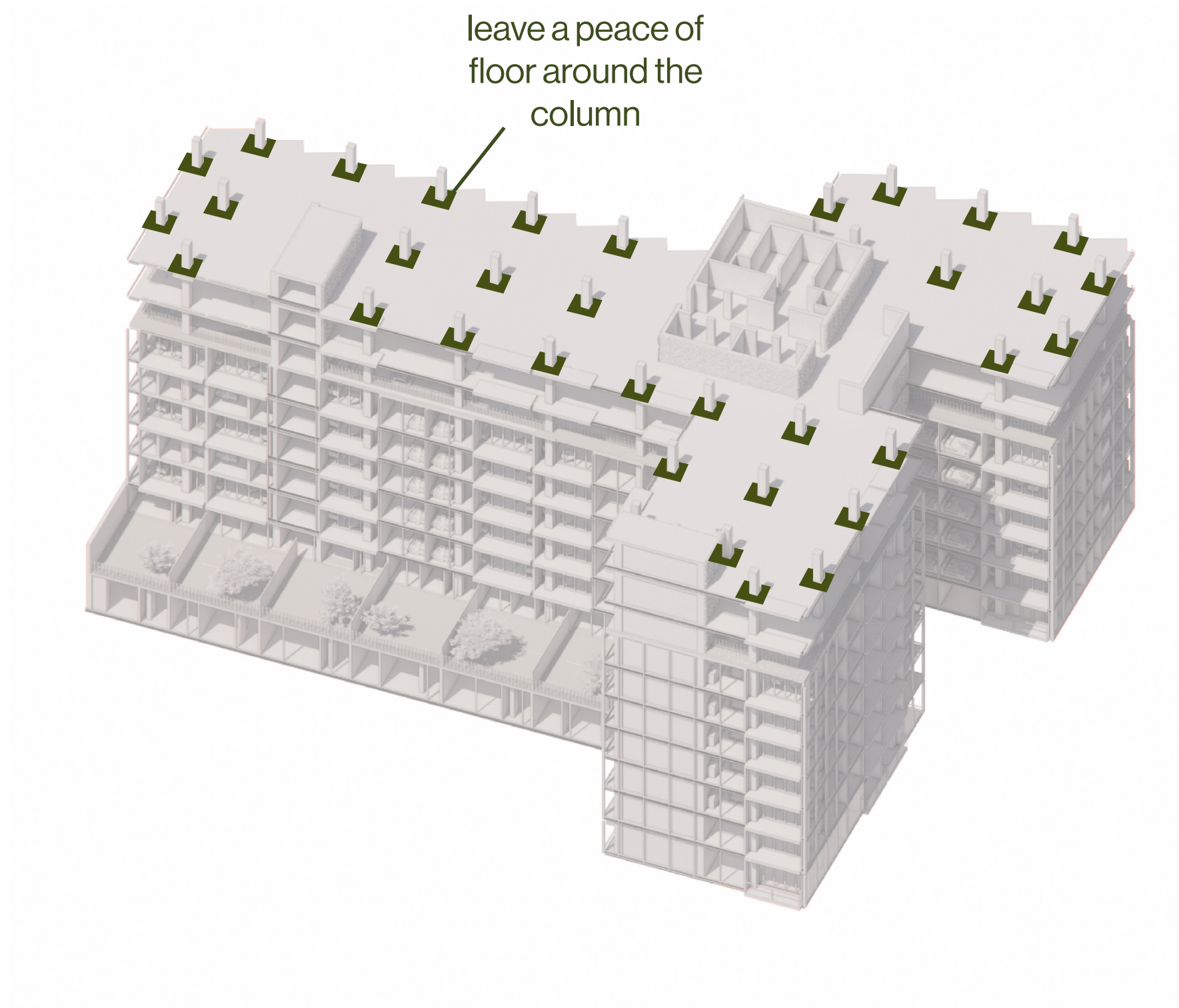
closed in winter



places for storing doors



stability cores

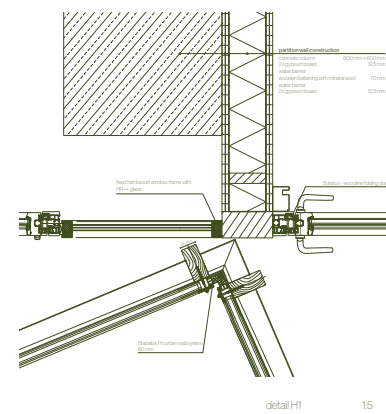
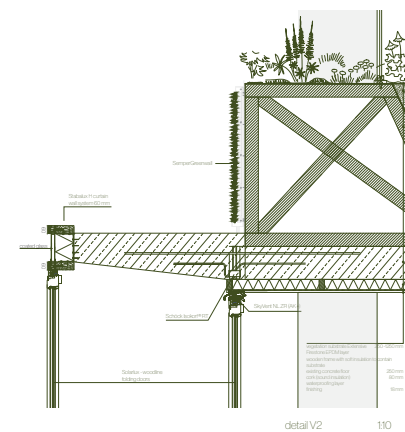
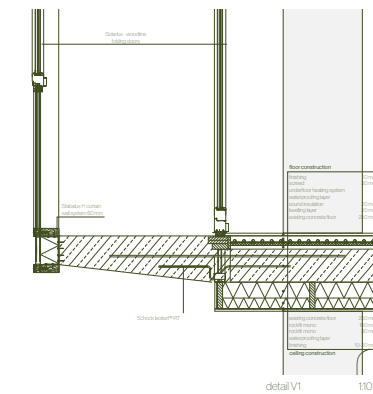
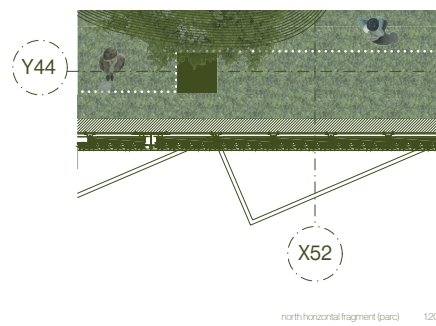
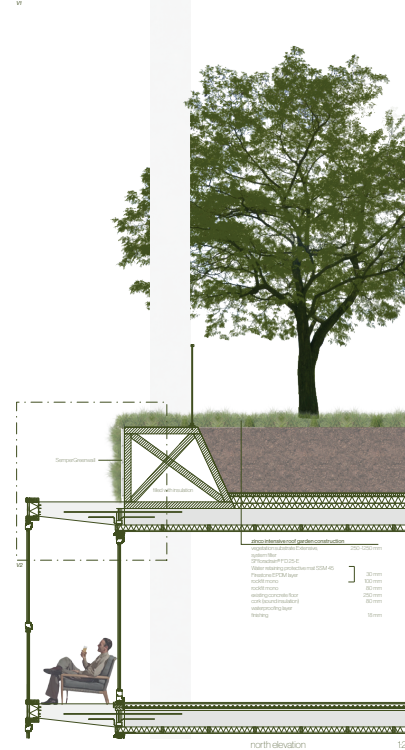
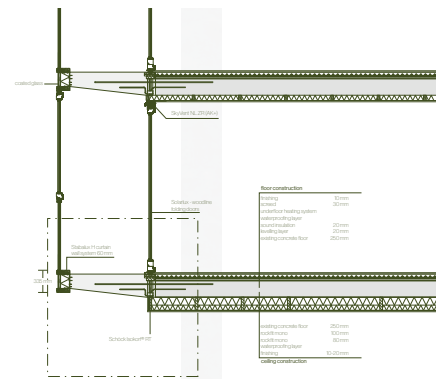
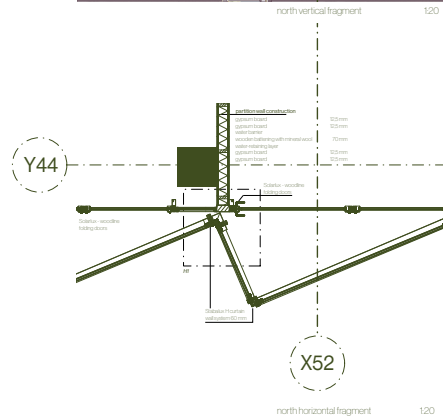
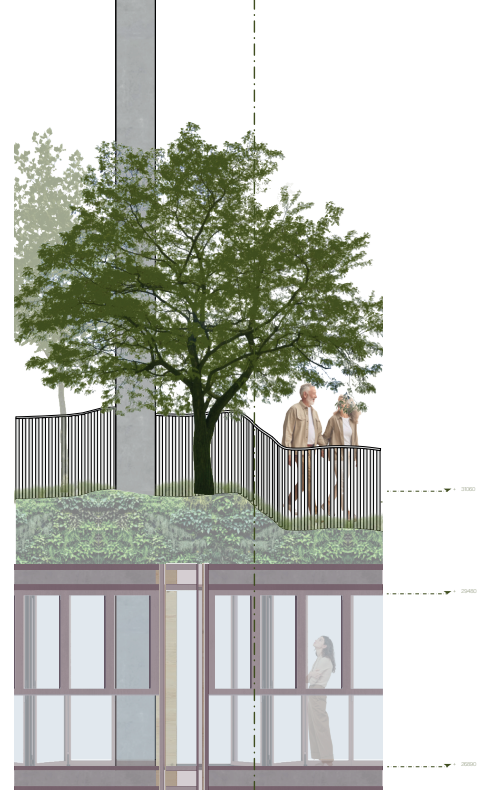
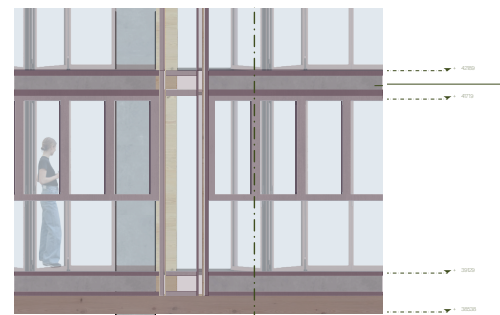


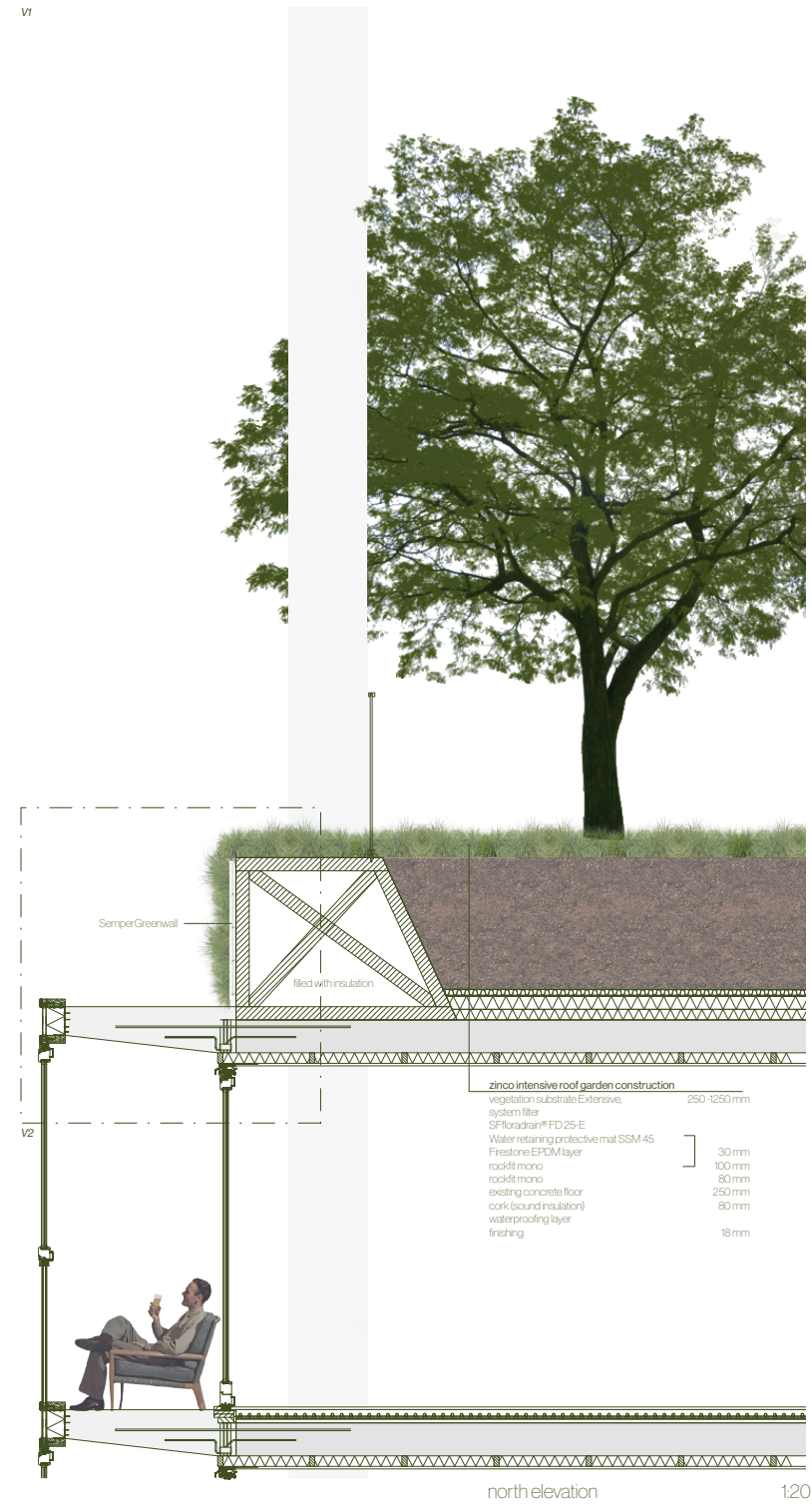
removing floor 9 and 10



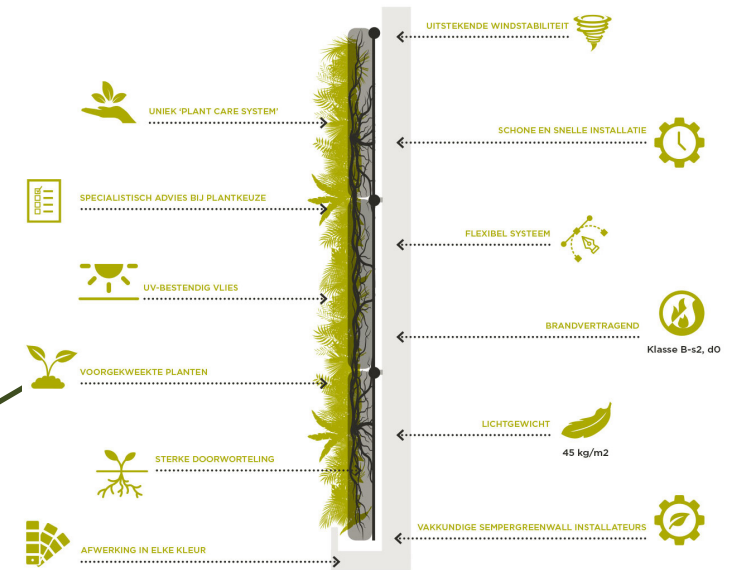
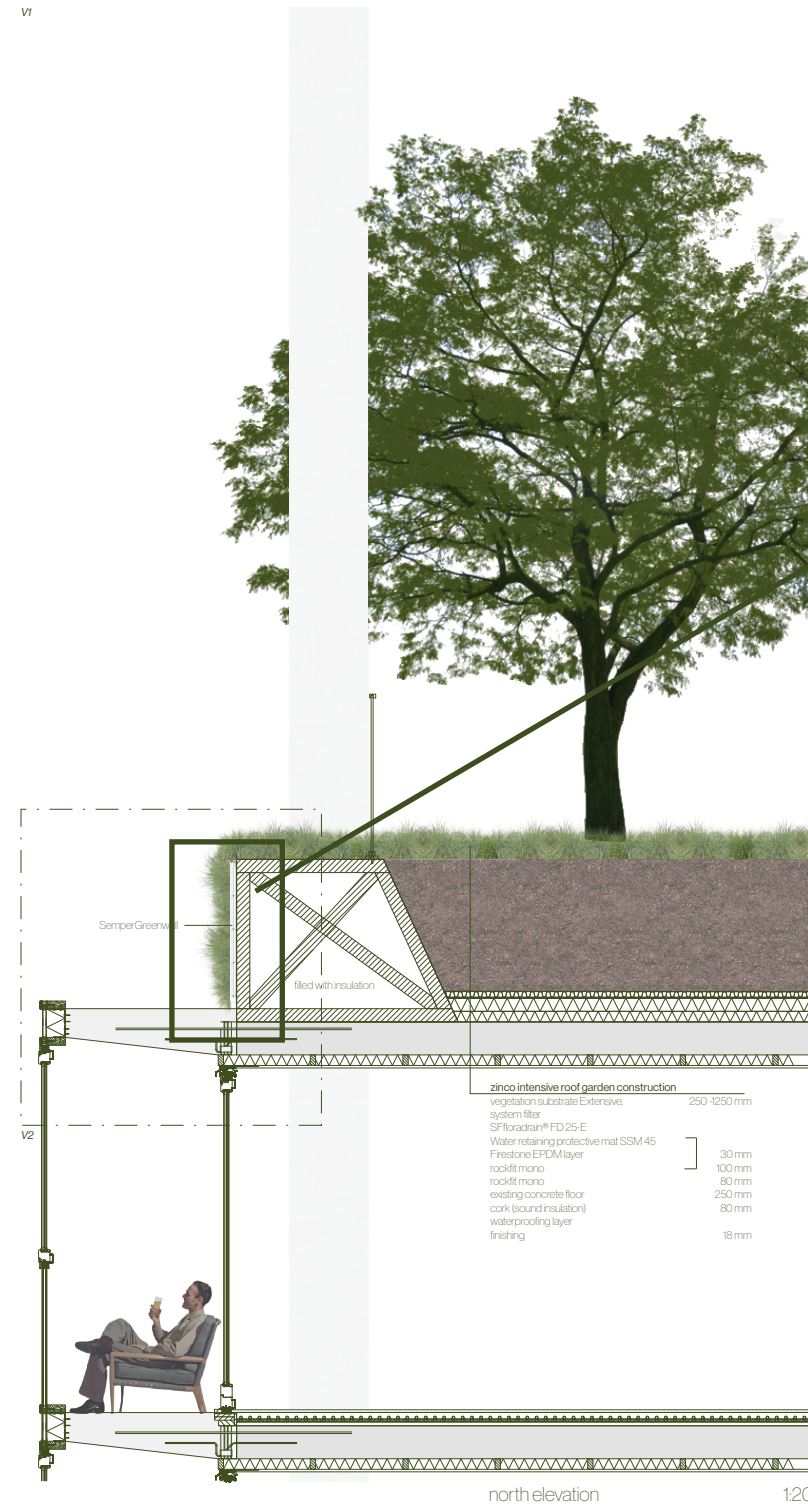
place for birds to nest

NORTH FACADE

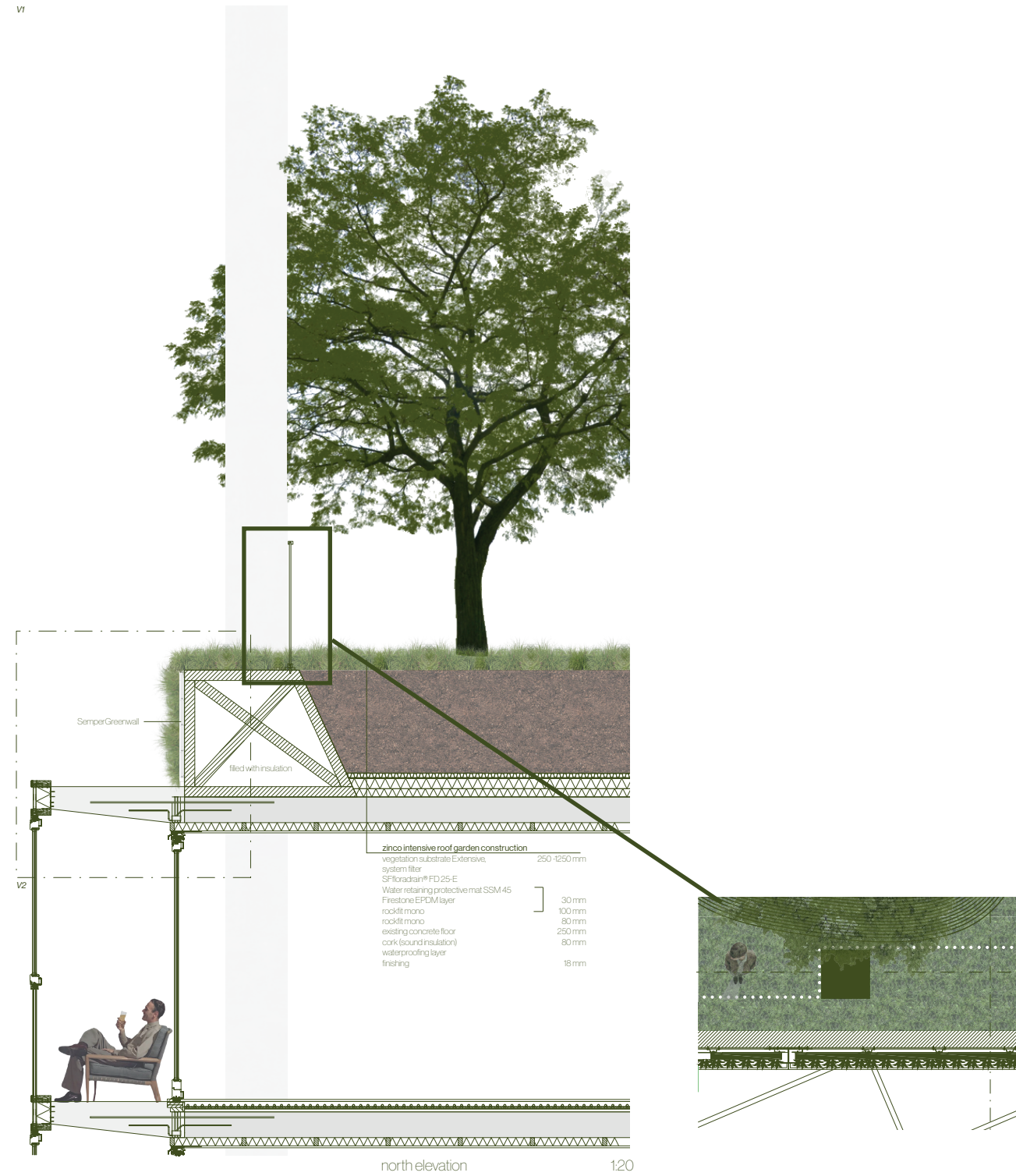




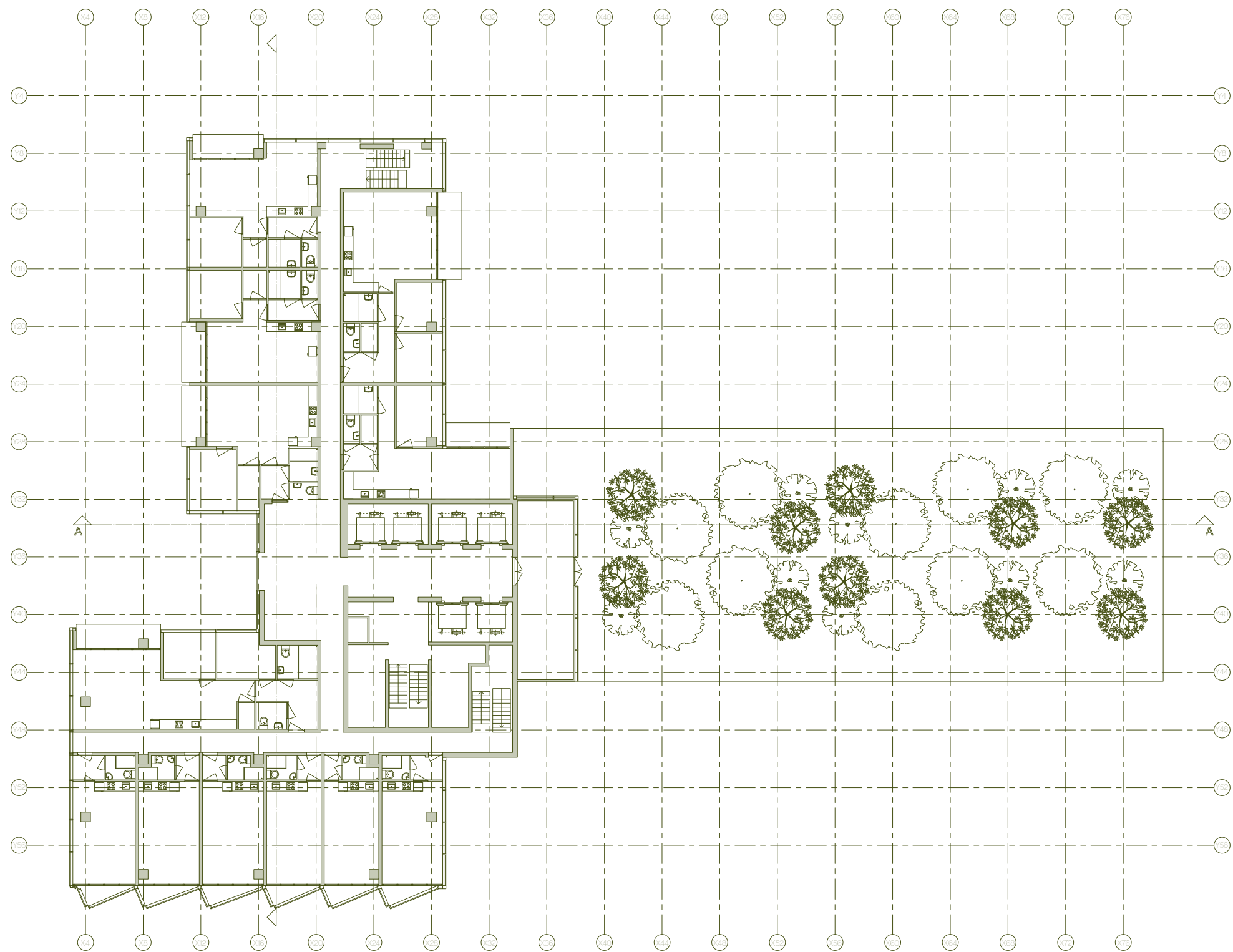
parc elevation 1:20 (rescaled)



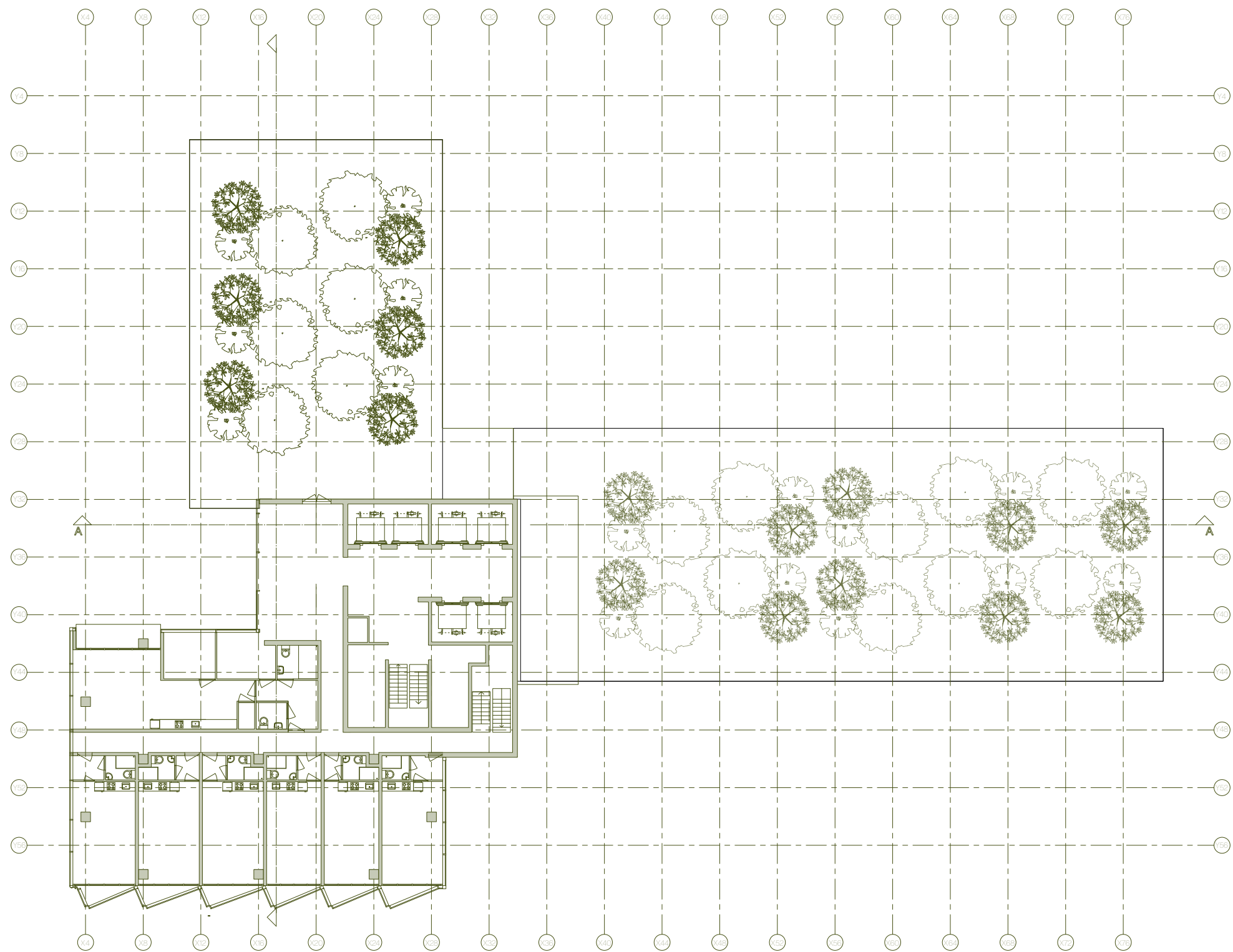
green facade



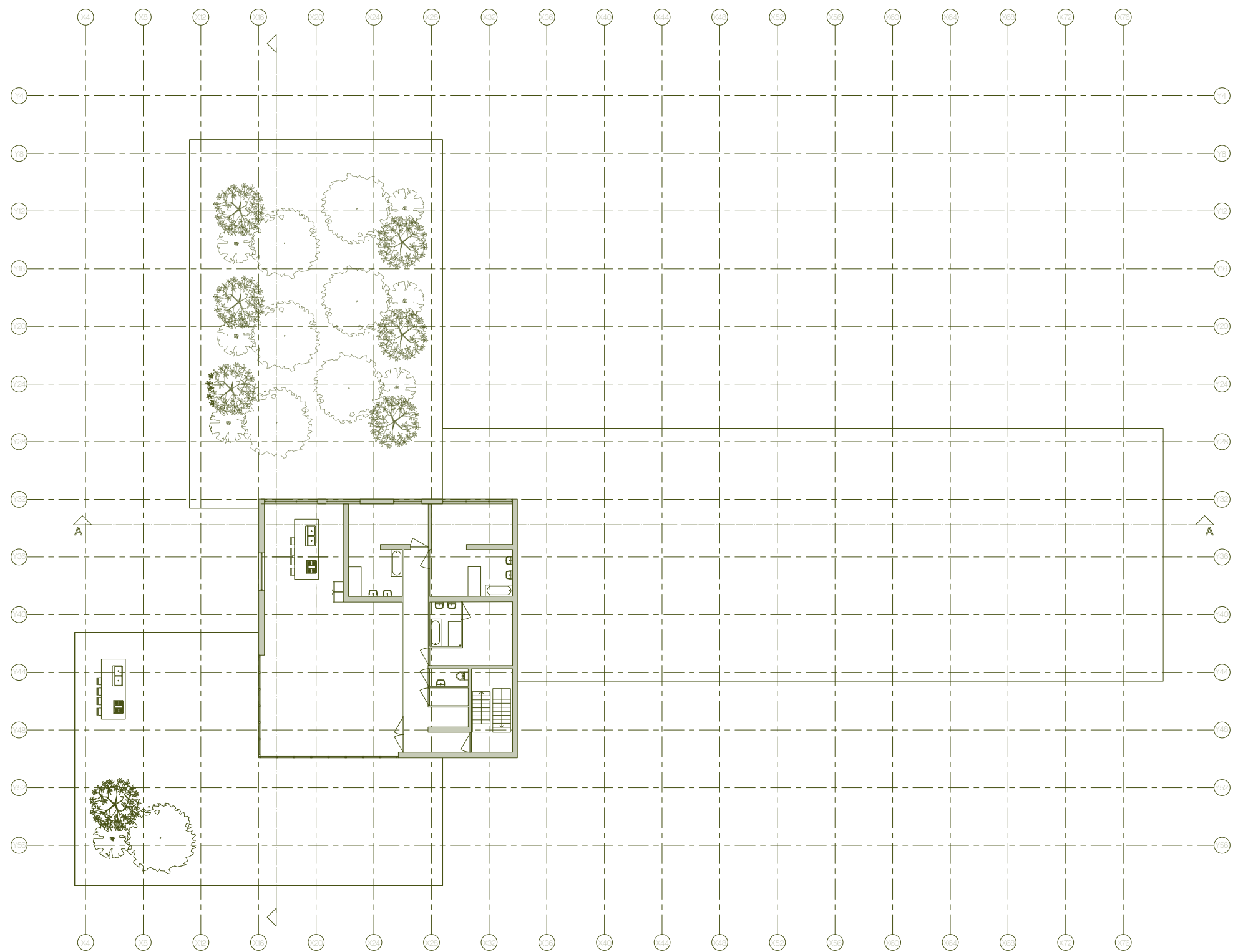
railing



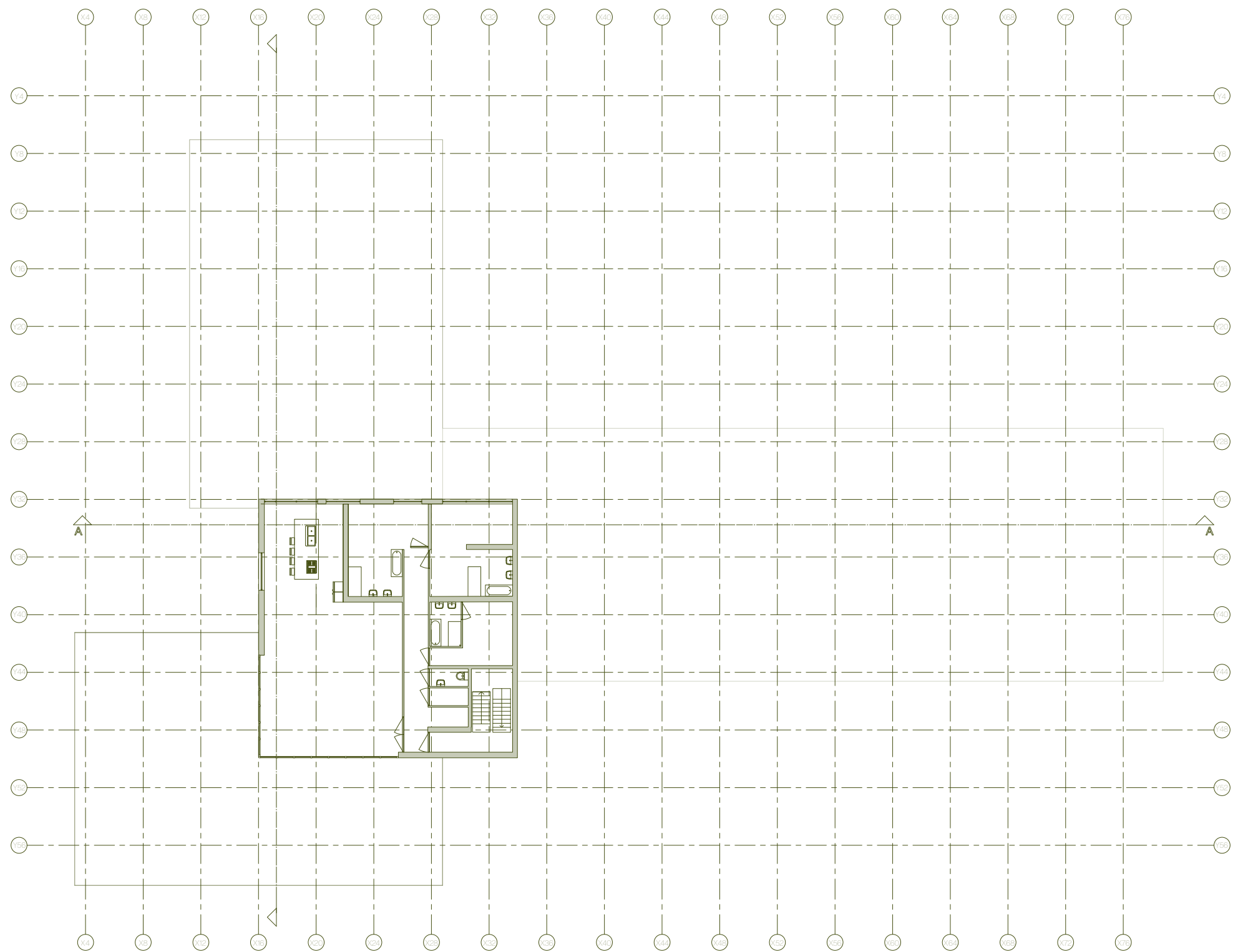
18th floor 1:200 (rescaled)



19th floor 1:200 (rescaled)



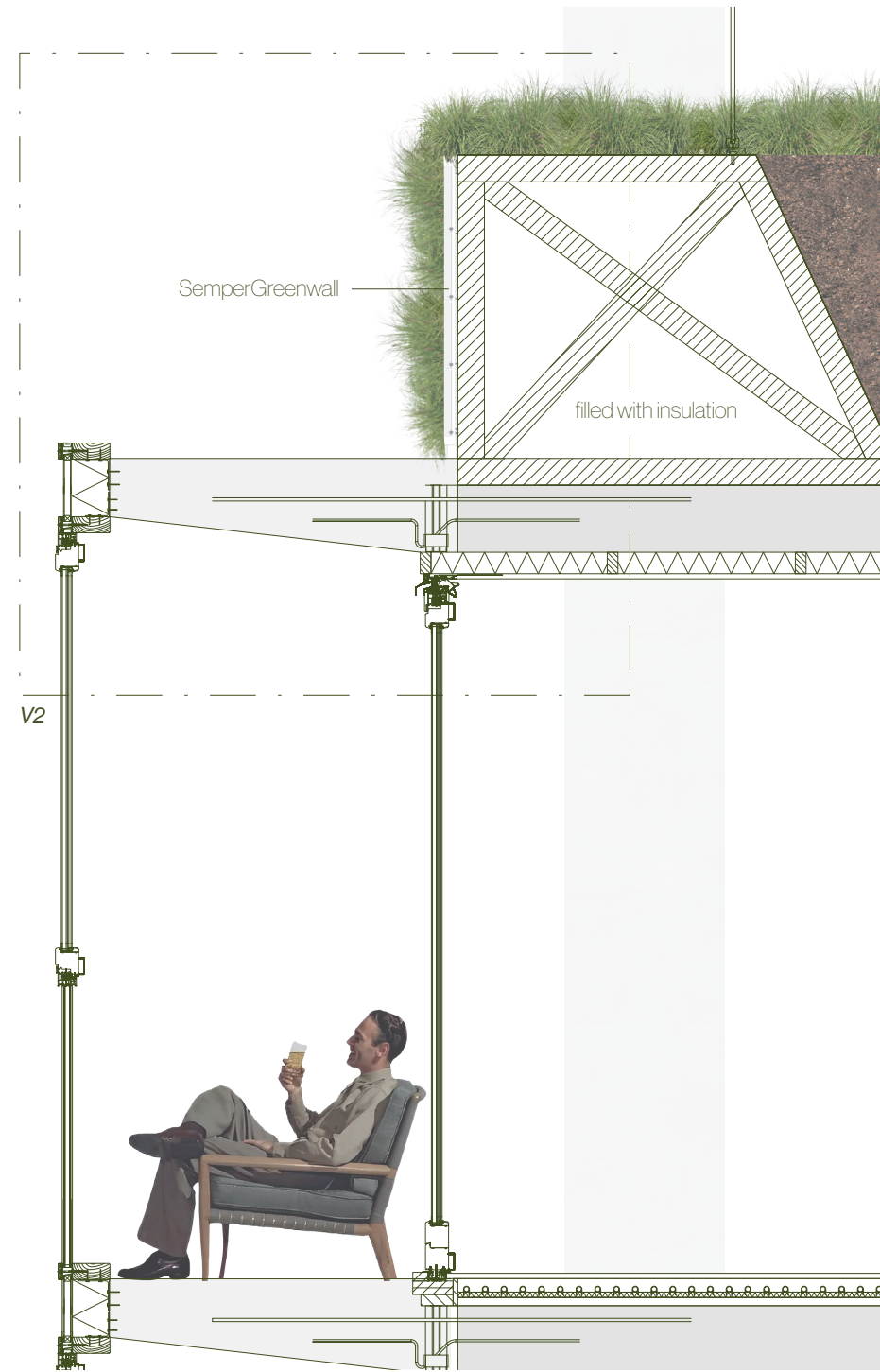
20th floor 1:200 (rescaled)



21th floor 1:200 (rescaled)



studio

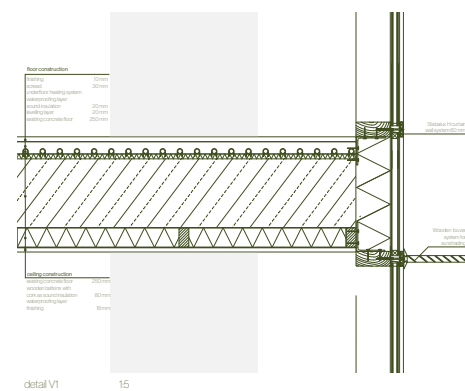


facade fragment 1:20 (rescaled)

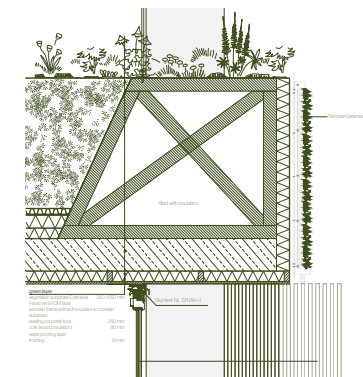




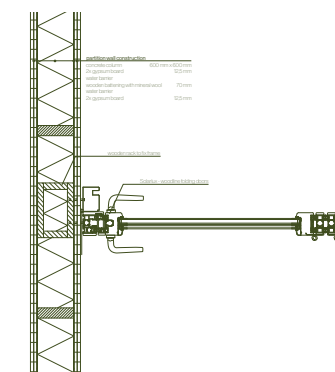
starter unit



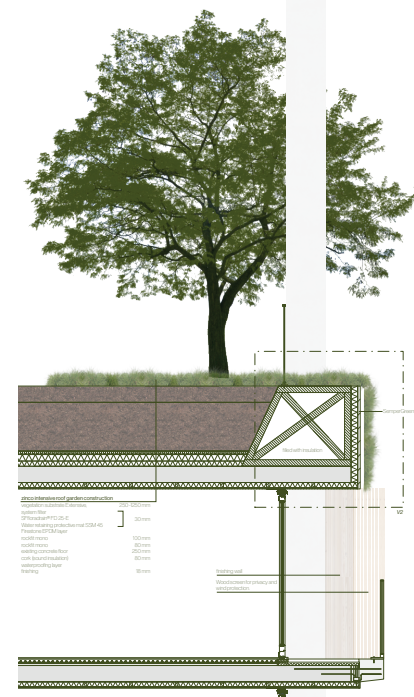
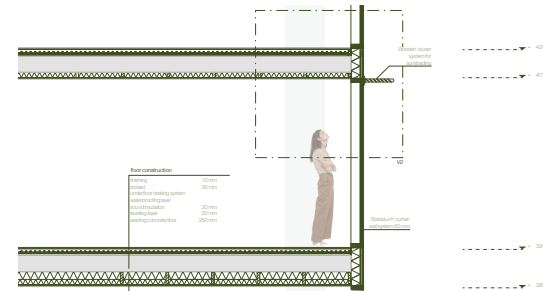
detail V1 15



detail V2 110



detail H1 15



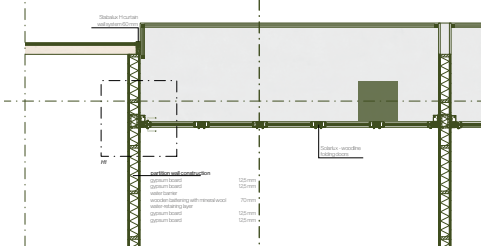
south vertical fragment 120



south horizontal fragment (part) 120



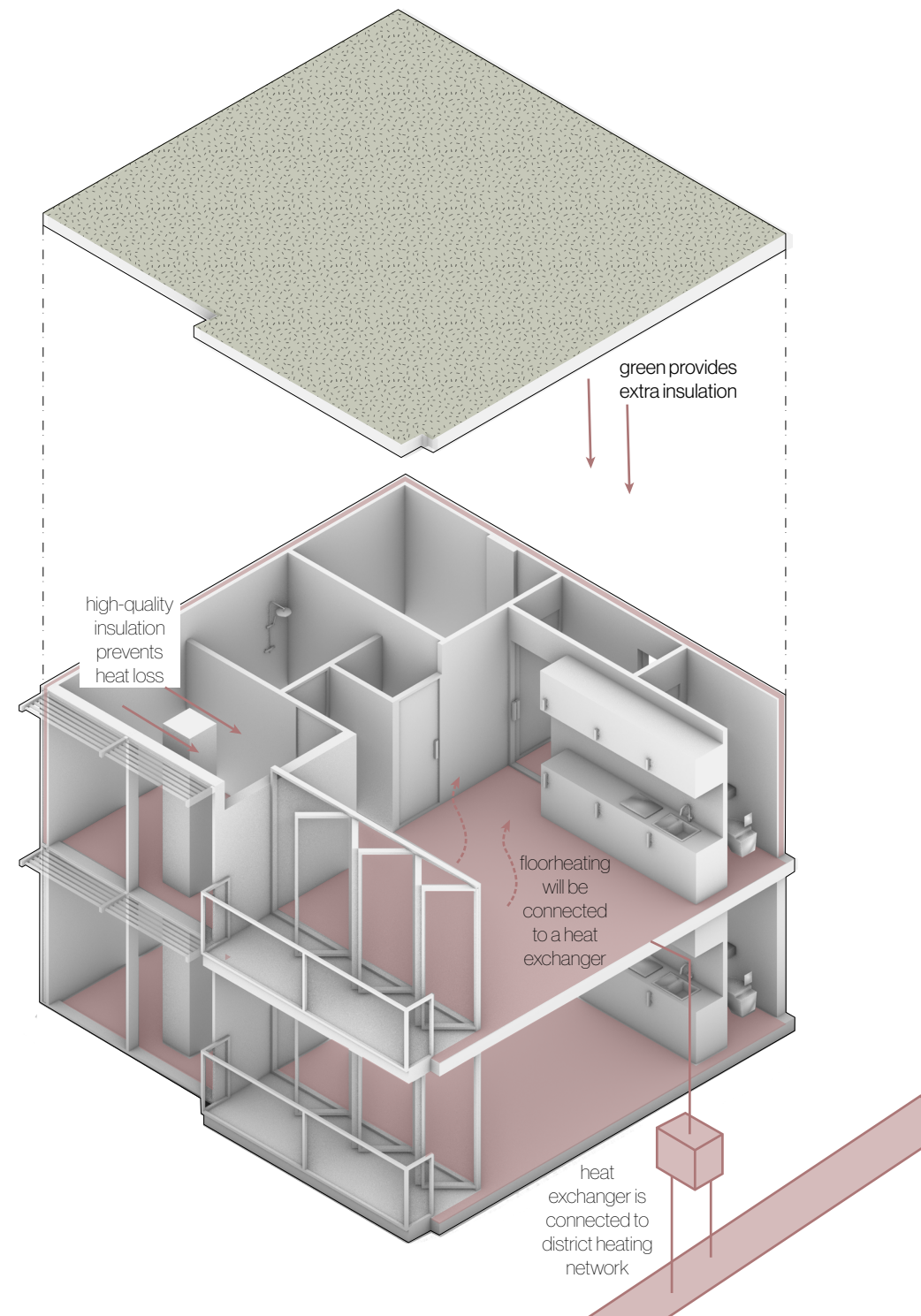
south elevation 120



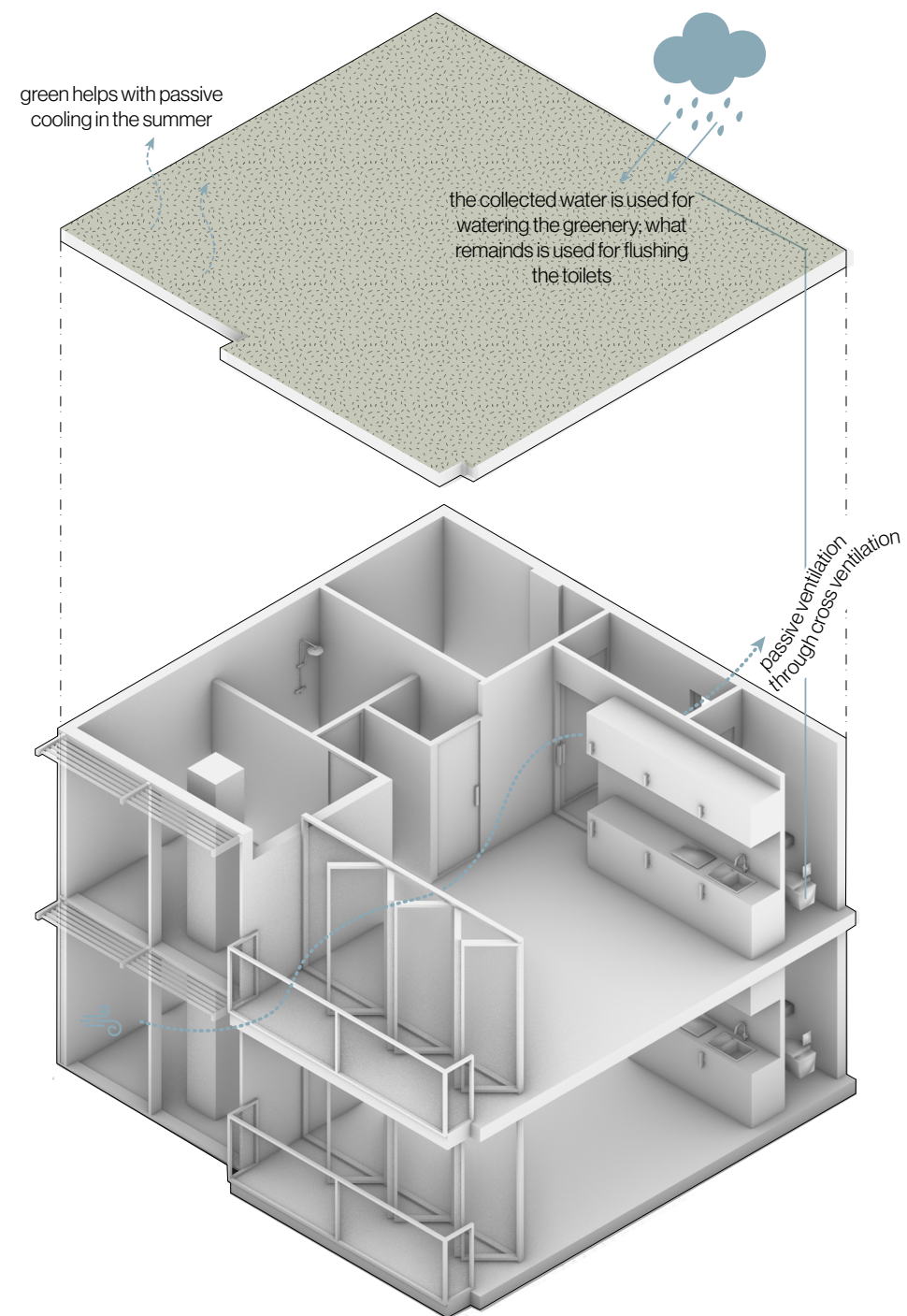
south horizontal fragment 120

SOUTH FACADE

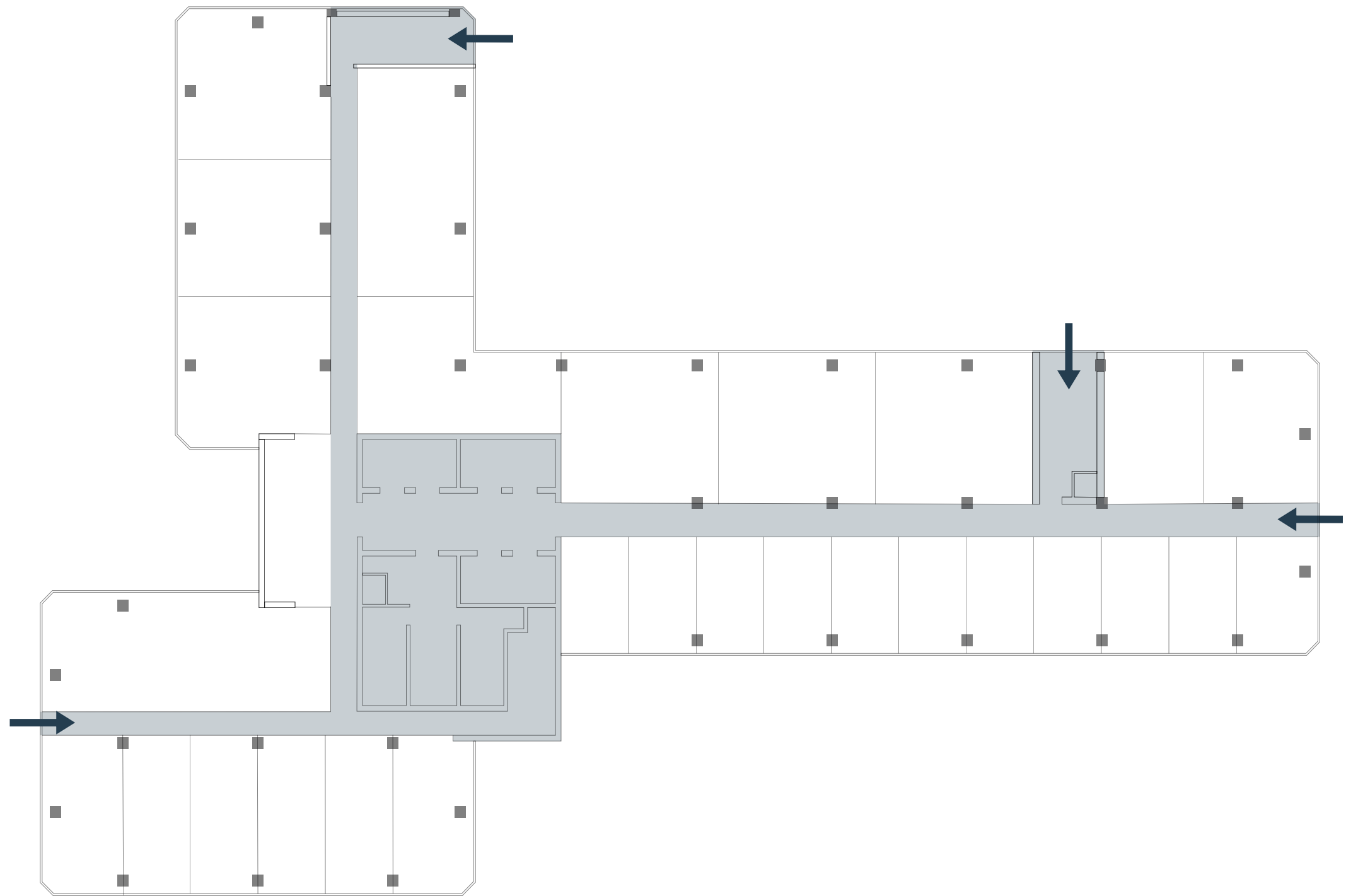
facade fragment 1:20 (rescaled)



winter

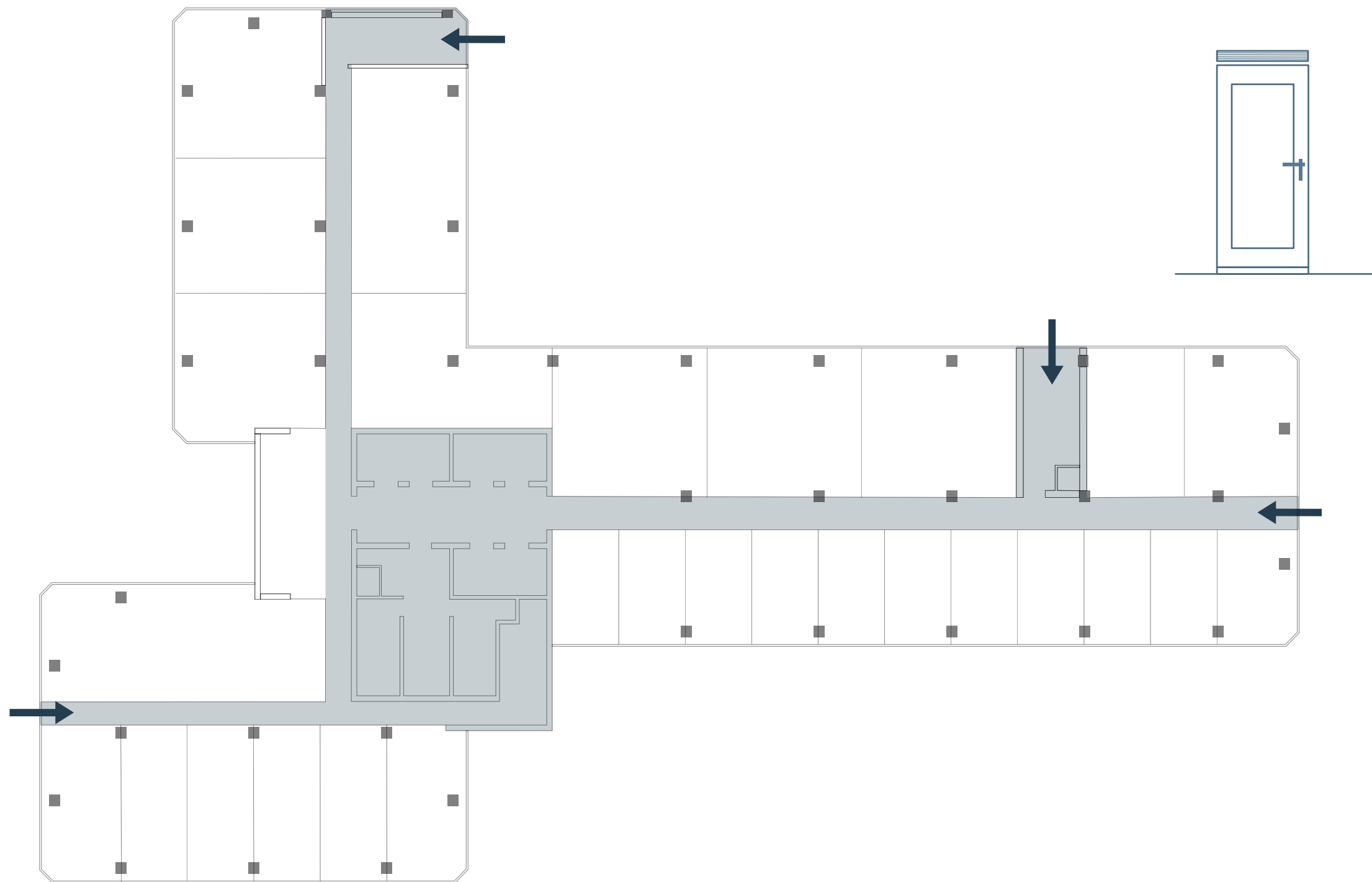


summer



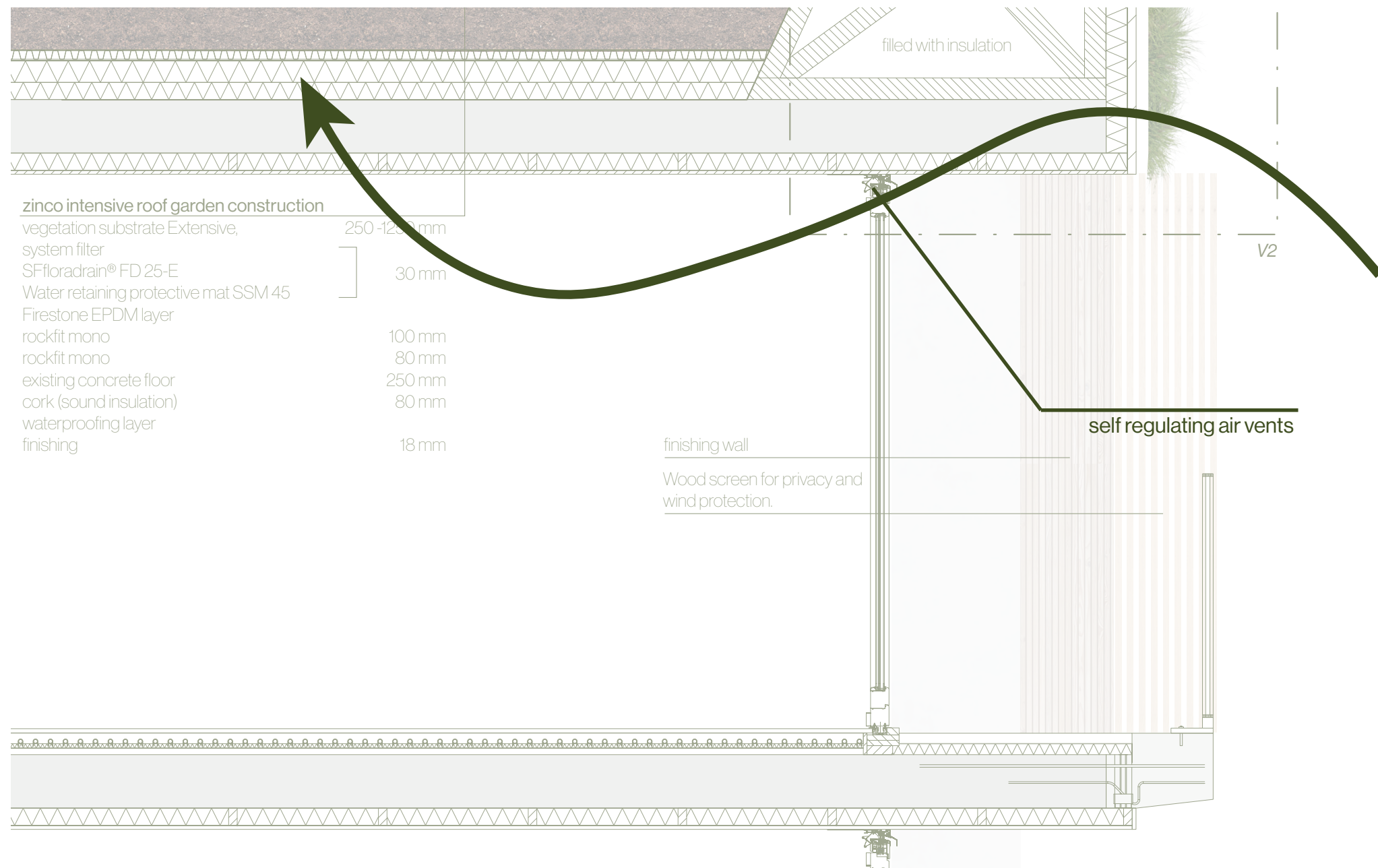
1

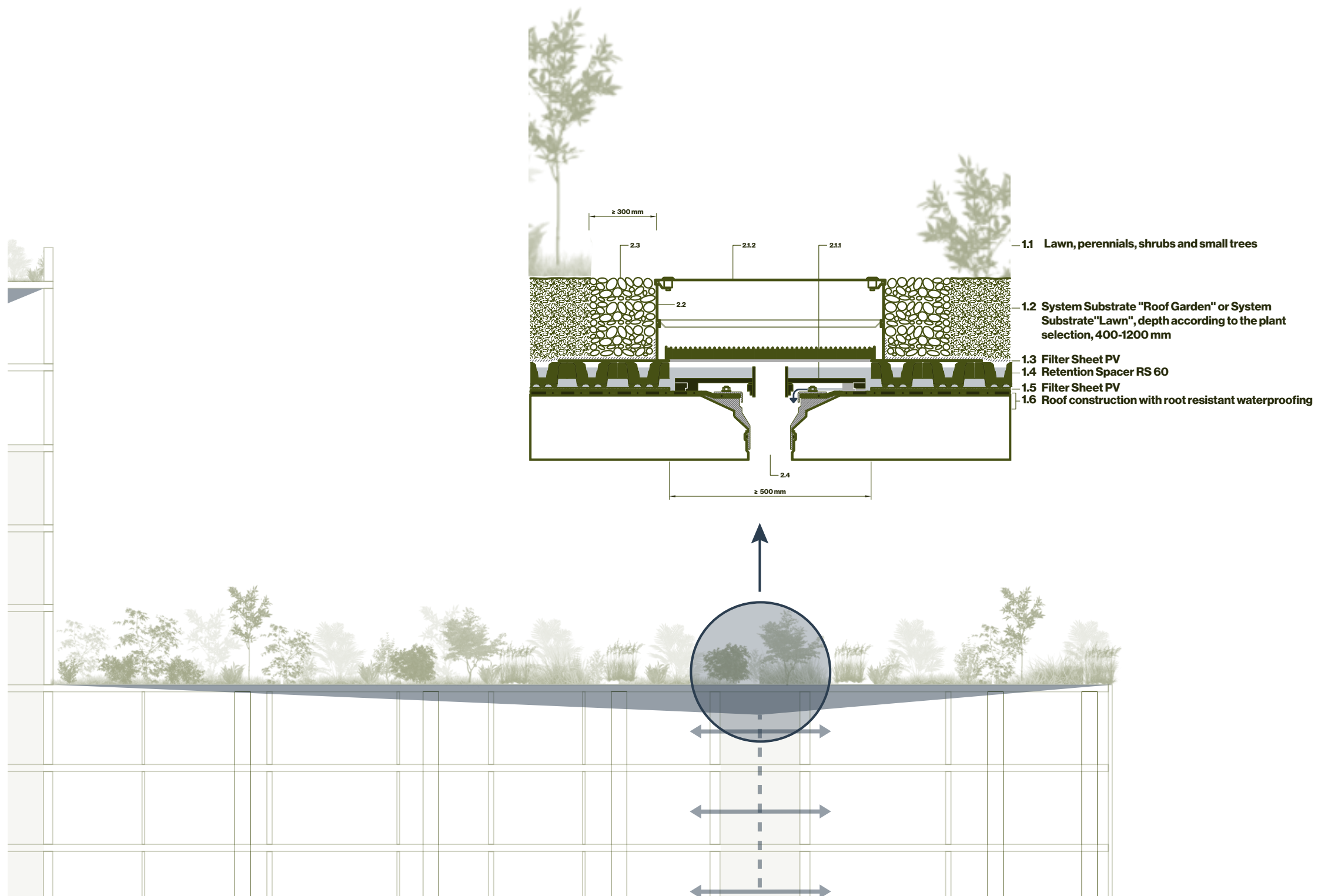
cross ventilation



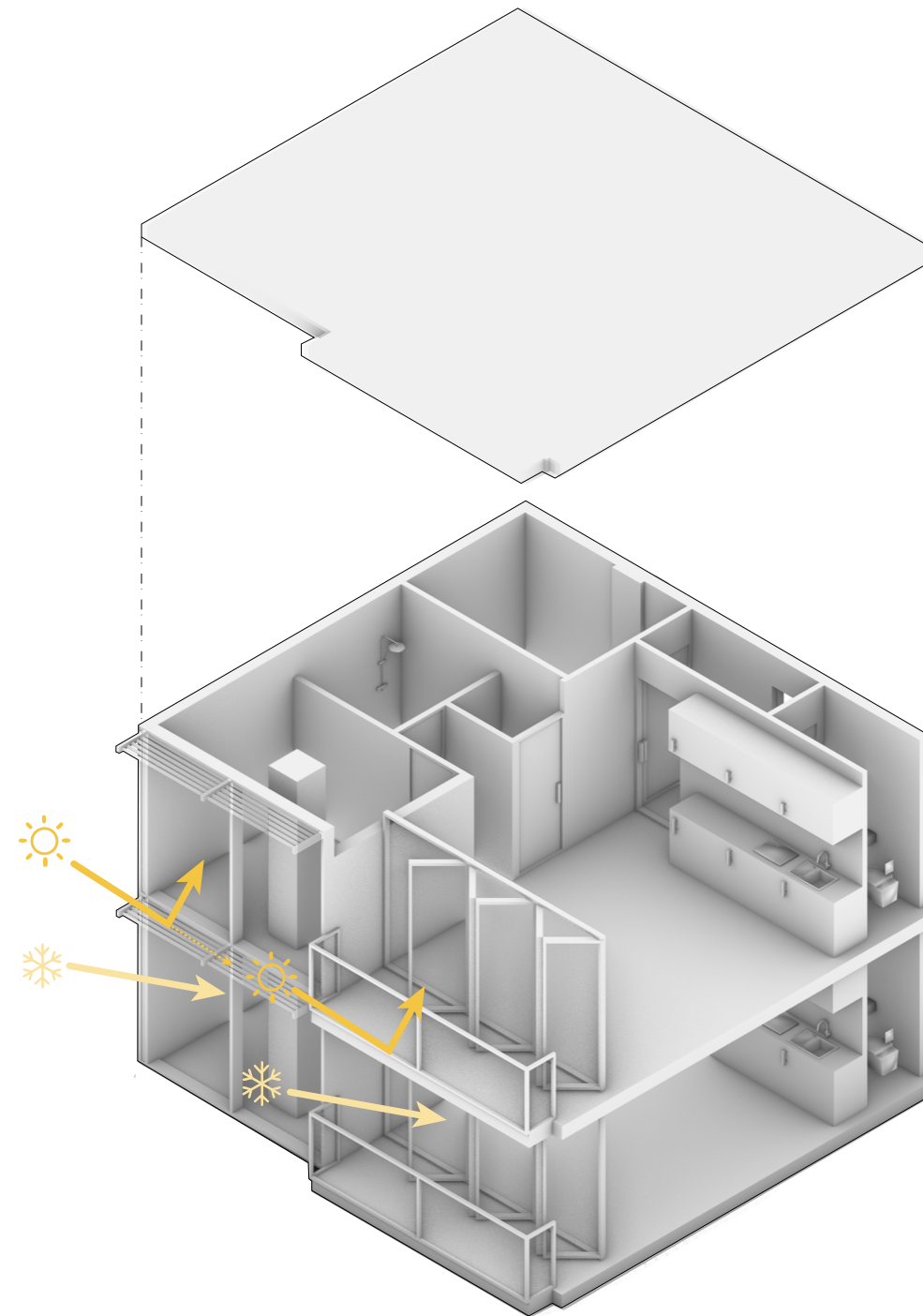
1

cross ventilation

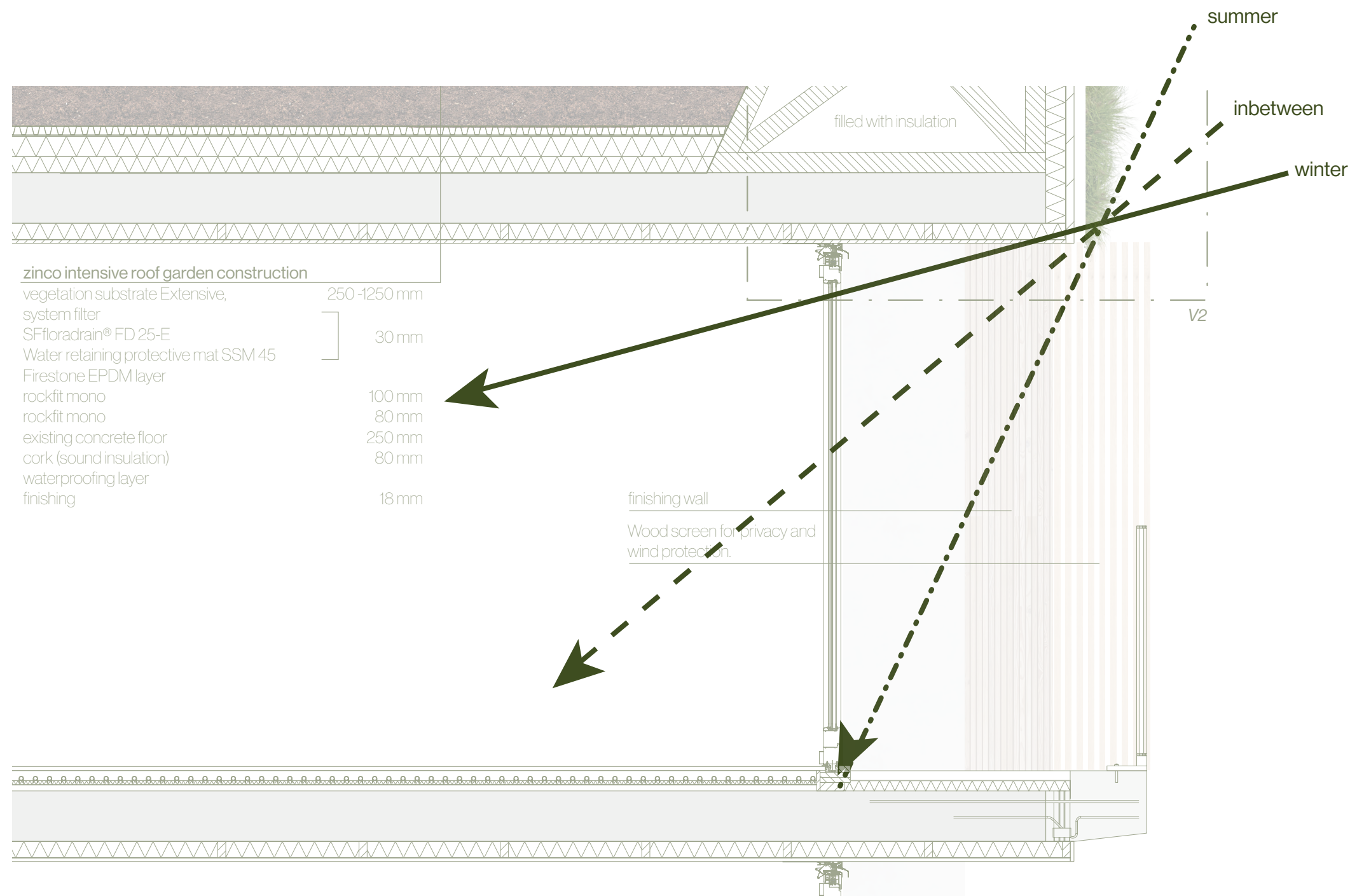




water collection



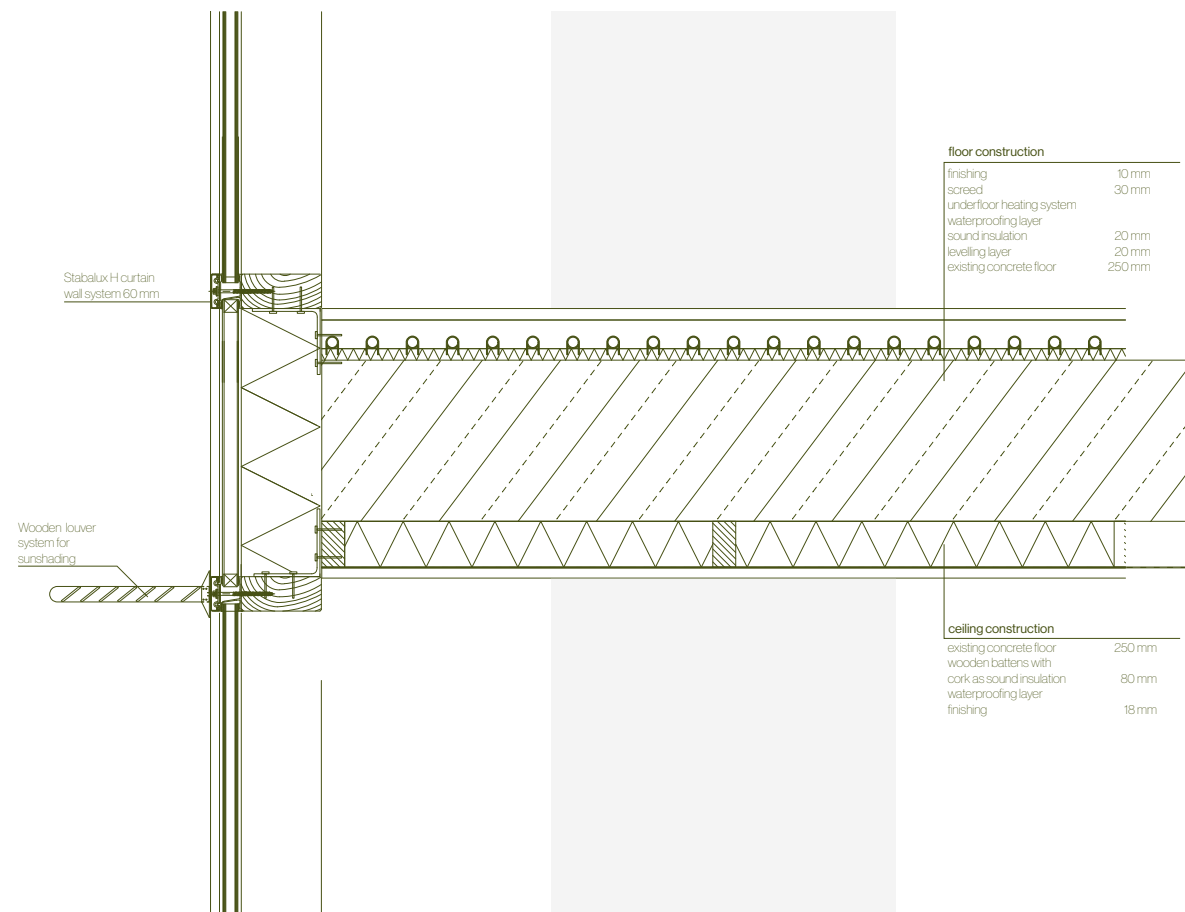
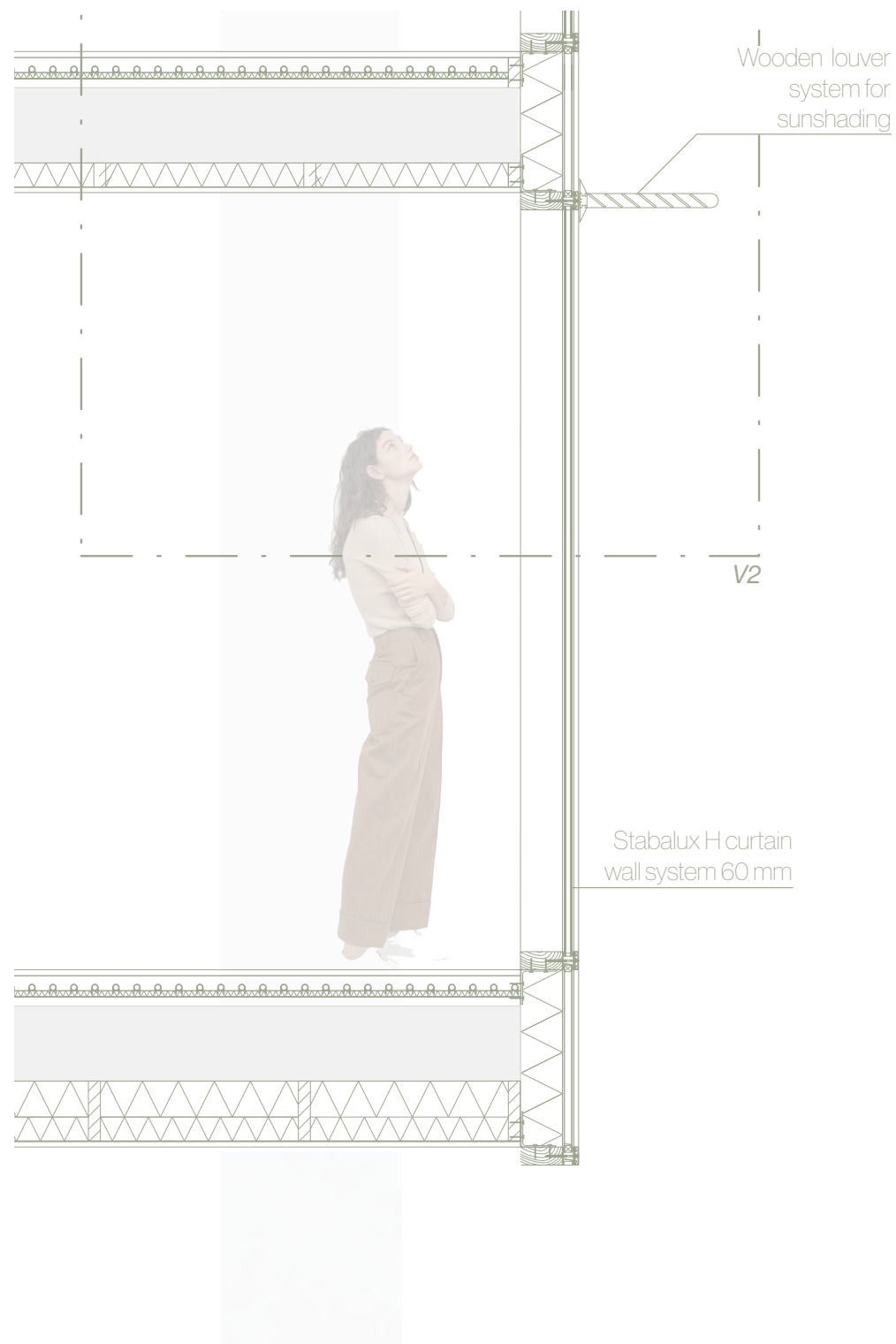
sunshading



south vertical fragment

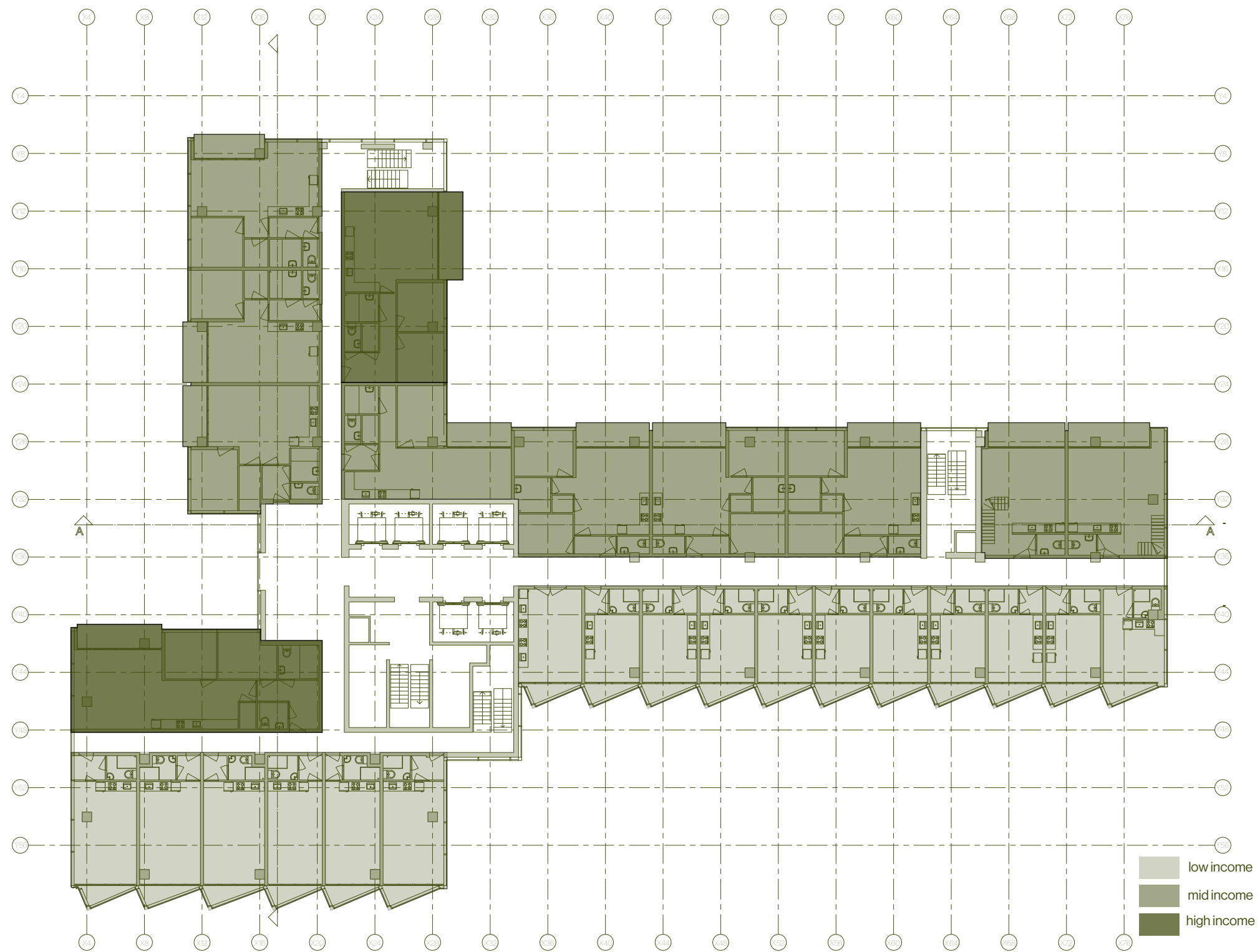
1:20

cantilever1:20 (rescaled)



louver system detail V1 1:5 (rescaled)







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