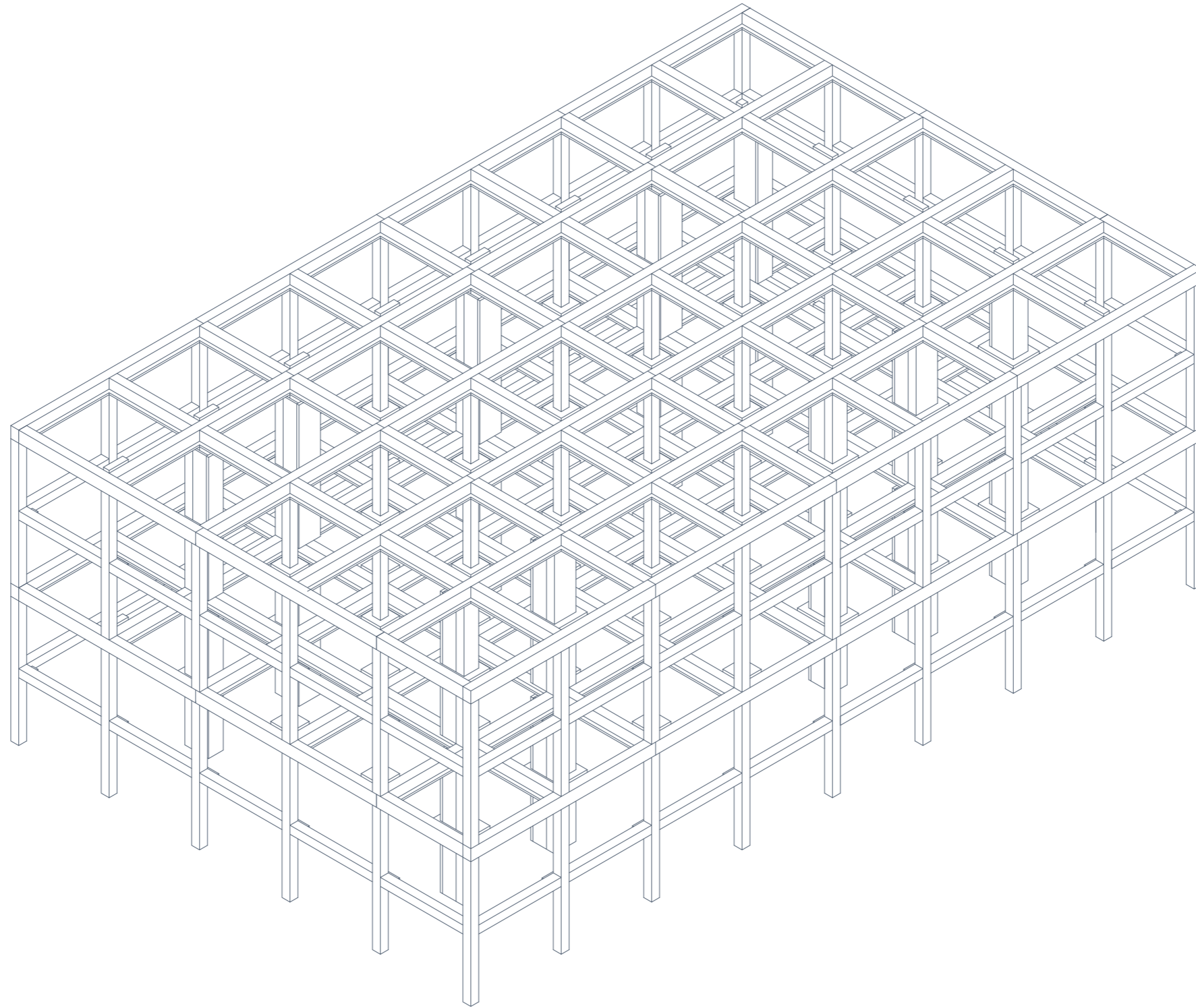


rigid freedom

structures for making



problem statement
site
concept
design
framework
conclusion

problem statement

housing crisis and social inclusion

247.000

houses must be built in
Zuid-Holland before 2030

(Ministerie van Algemene Zaken, 2023)

1

The municipalities of Rotterdam and The Hague are placed in the lowest welfare cluster. This level is characterised by low average income and wealth and a high number of people receiving social assistance.

(RIGO Research en Advies et al., 2018)

474

houses have to be built in
Midden-Delfland before
2030

(Gemeente Midden-Delfland, 2024)

5

Midden-Delfland is placed in welfare cluster 5. It is characterised by a high average income and wealth and few people receiving social assistance.

(RIGO Research en Advies et al., 2018)

problem statement

changing family compositions and way of living

**Outdated demographic and architectural
homogeneity**

social inclusion

designing for the 'exception' = designing for everyone



(single) Starters
(small) Families

Elderly

(intellectually)
Disabled

Migrants

Creative makers

site

ZUS

the plan for Midden-Delfland

- Boezembuffer; mainly waterstorage and reeds
- Boezem
- Peetlands: new forms of natural farming, wet fields
- Peet+clay lands: natural reserves, wetlands for birds
- Claylands: woodproduction, fruitpicking forests
- Dike around lower parts of the existing urban areas
- Urban area's
- Public transport nodes
- Designated areas for urban densification and waterbuffer within the city
- Boezem as a green blue infrastructure in the city

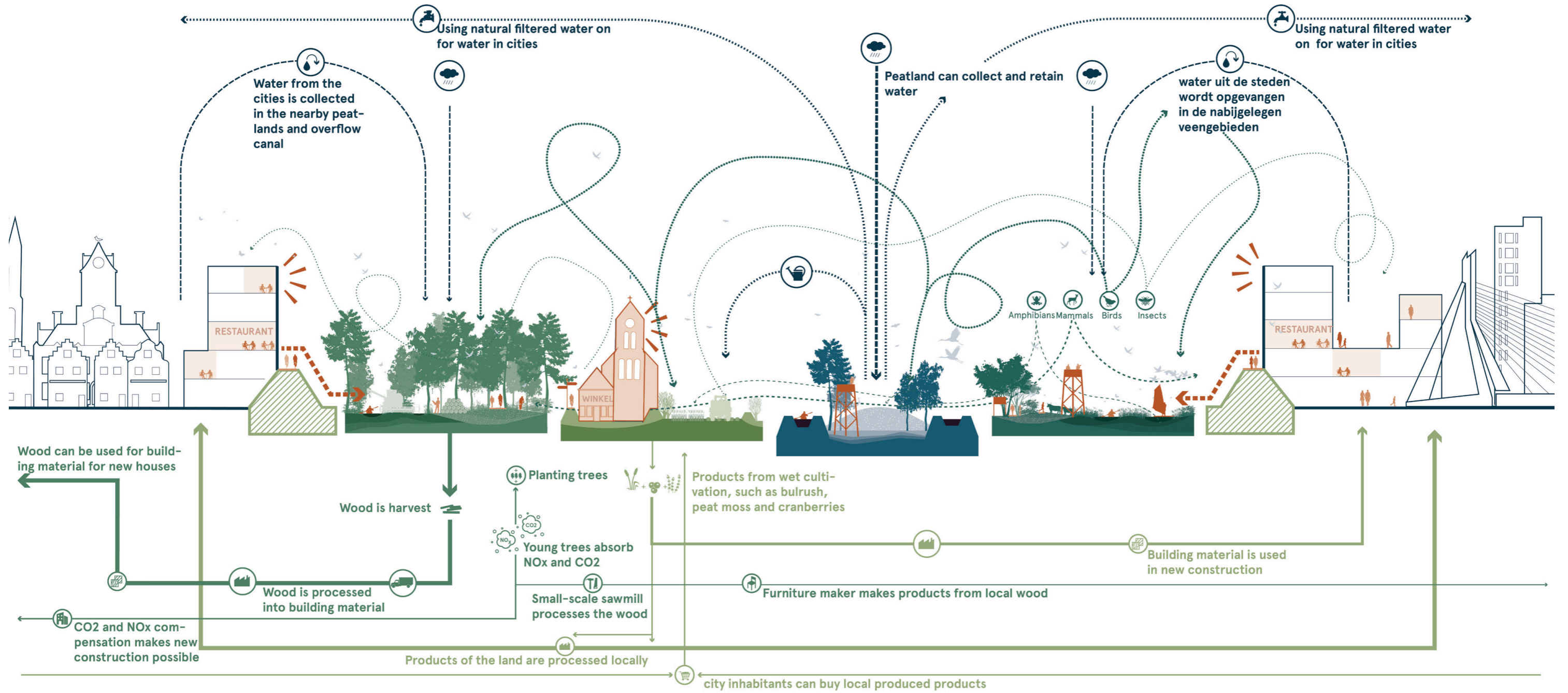
Vision National Productive
Park Delfland



Vision National Productive Park Delfland
(ZUS [Zones Urbaines Sensibles] et al., n.d.)

ZUS

the plan for Midden-Delfland



Vision section National Productive Park Delfland
(ZUS [Zones Urbaines Sensibles] et al., n.d.)

fading the boundaries

the expansion of Midden-Delfland



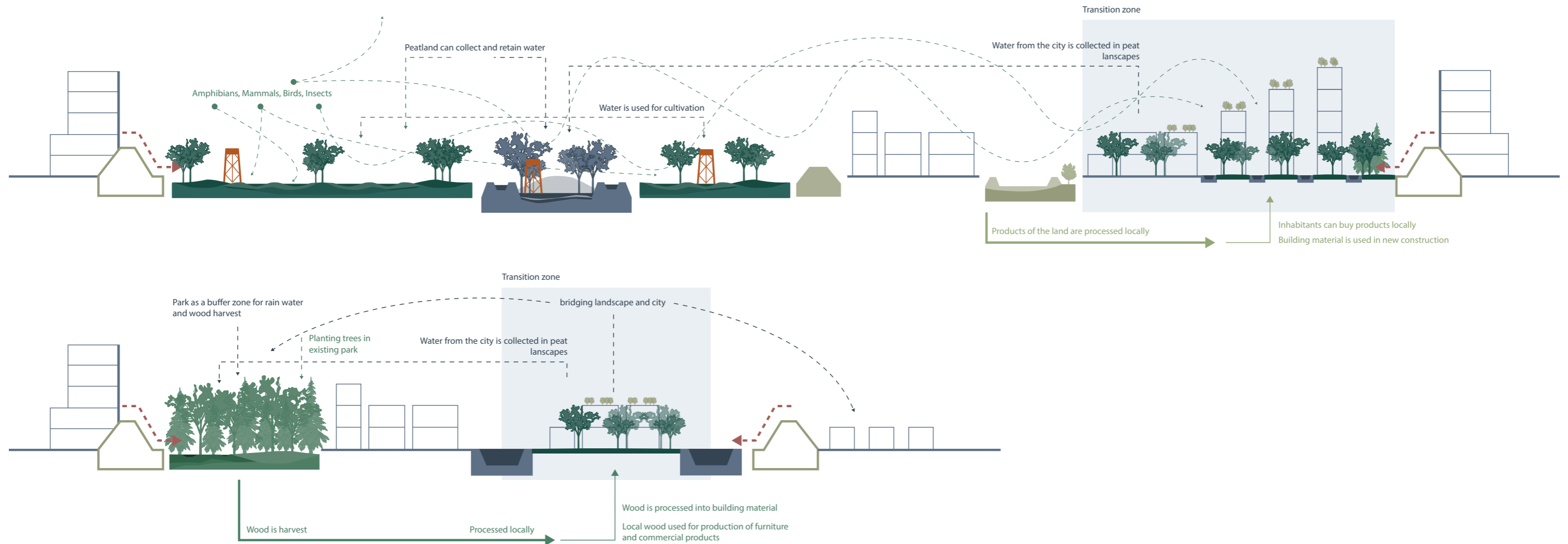
Legend

- Boezem buffer
- Boezem
- New form of farming
- Production forrest
- Wetlands for birds and biodiversity
- Urbanisation

1:10000

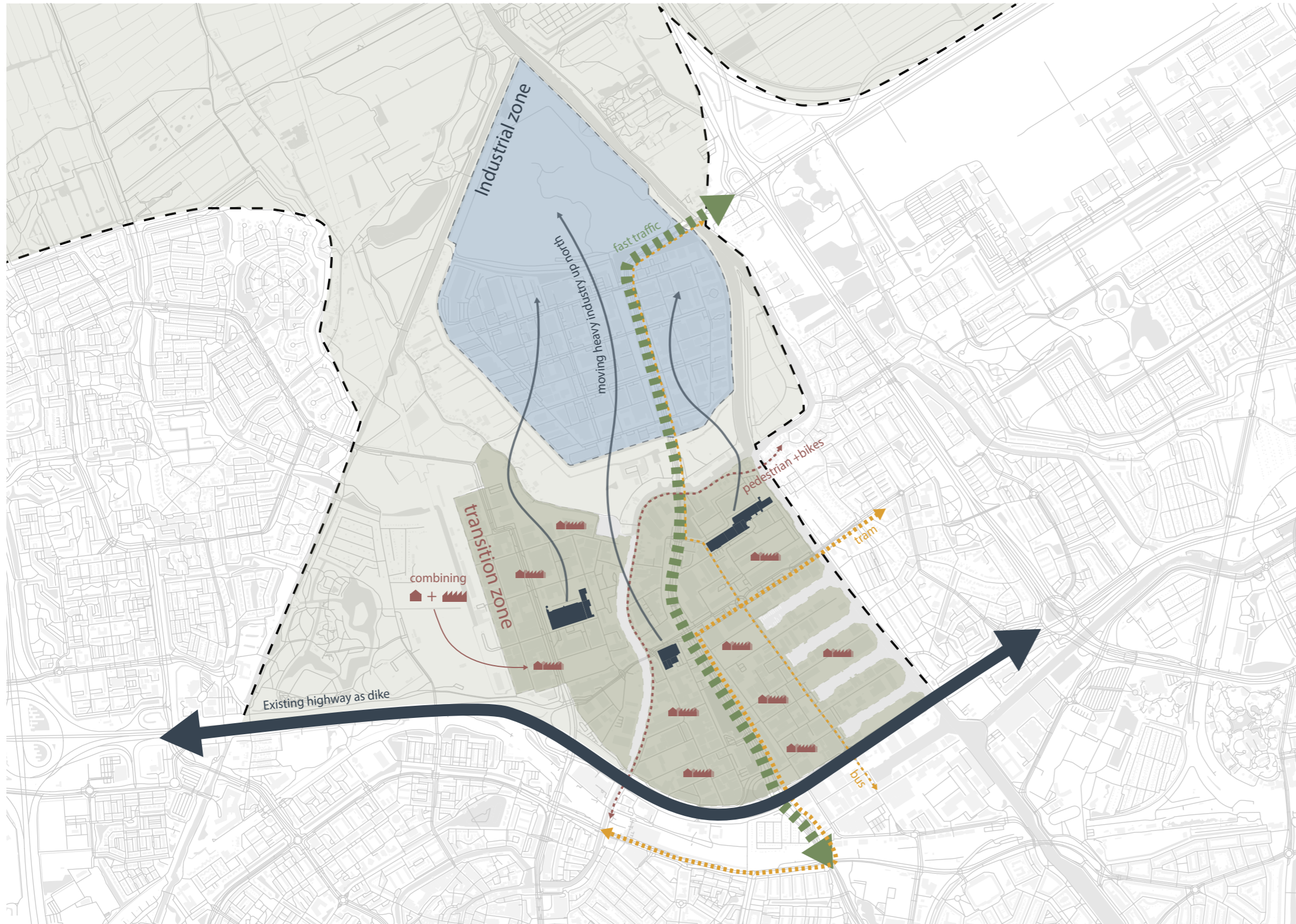
fading the boundaries

the expansion of Midden-Delfland



Spaanse Polder

addition to Midden-Delfland



1:10000

Spaanse Polder

urban design



Legend

- Existing buildings
- New buildings
- Water
- Green areas
- Possible infrastructure
- Squares
- Infrastructure combined with green

1:10000

Spaanse Polder

urban design - cluster



Legend

- Existing buildings
- New buildings
- Water
- Green areas
- Possible infrastructure
- Squares
- Infrastructure combined with green

1:10000

Spaanse Polder

masterplan






1:2000

Spaanse Polder

dwelling - productive



Legend

-  Small-scale industries
-  Primary dwellings
-  Workhome (atelier)

Spaanse Polder

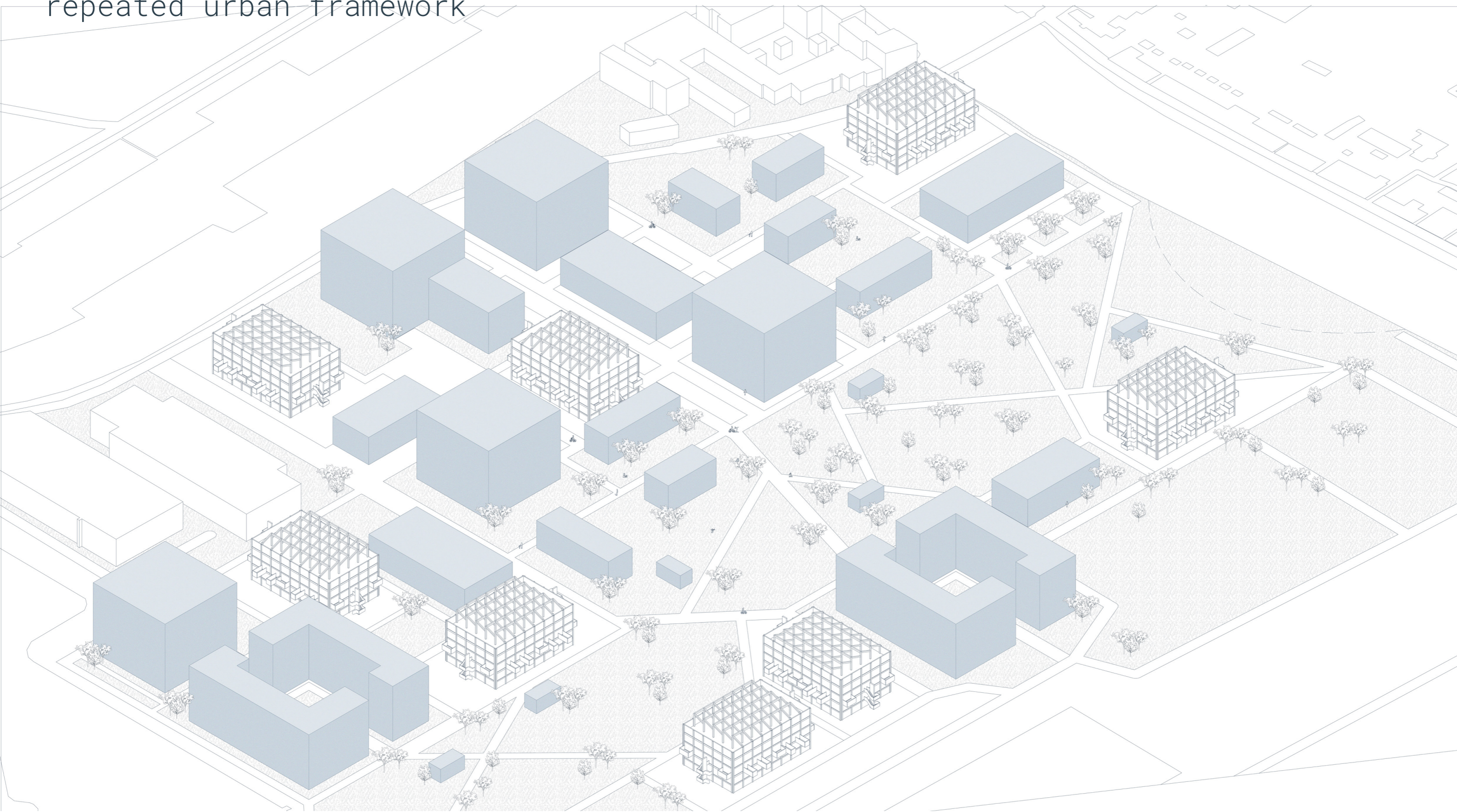
the inbetween



concept

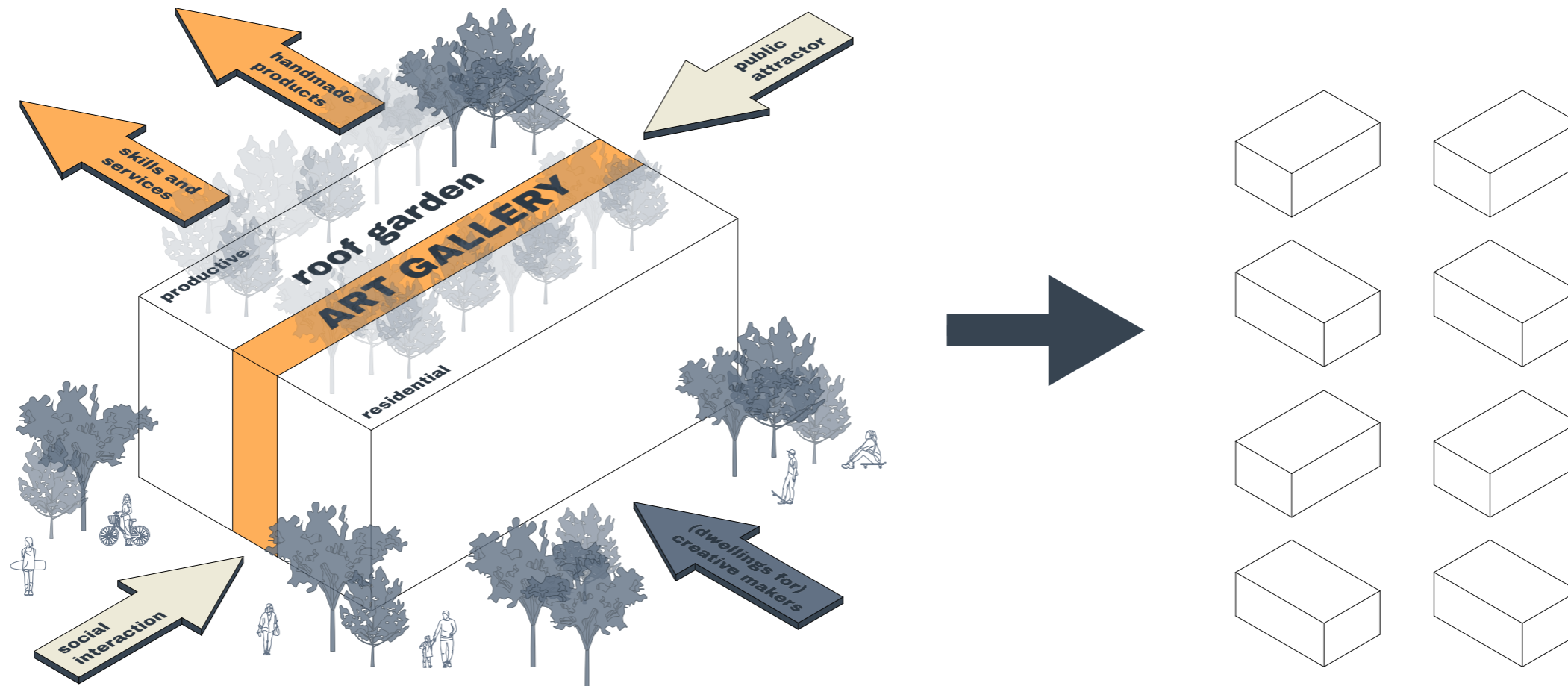
concept

repeated urban framework



concept

repeated urban framework



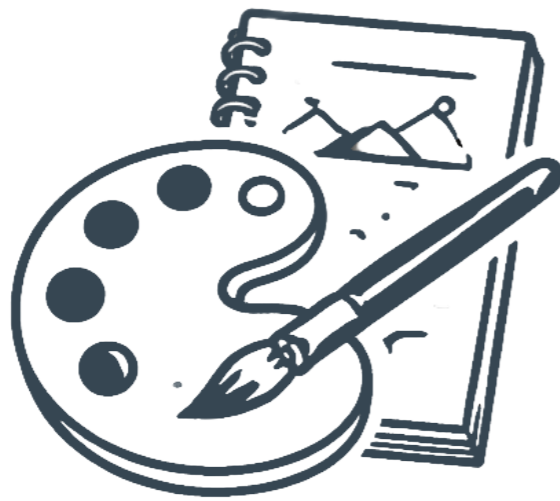
research question

creative makers & concrete

How can concrete function as a sustainable structural framework for affordable live-work typologies aimed at supporting small-scale production for creative makers in the Spaanse Polder?

Creative makers

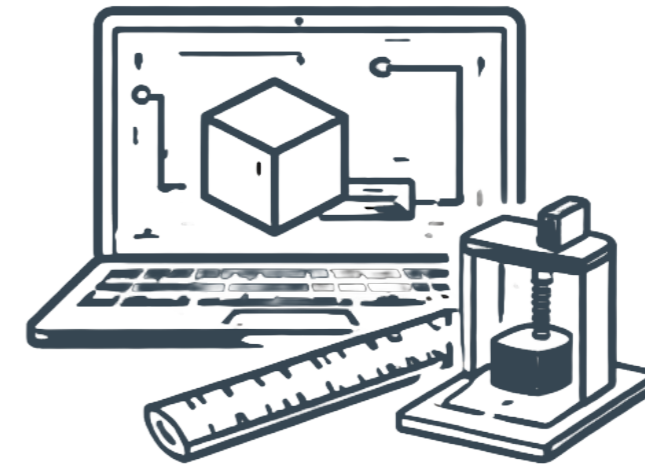
Who are they?



Artists



Craftsmen



(Digital) designers

Creative makers

Why do they matter?



Activate shared space
and social interaction



Contribute to economic
inclusion - local scale



Strengthen everyday
mutual support

**How to build suitably for creative makers and small-
scale production?**

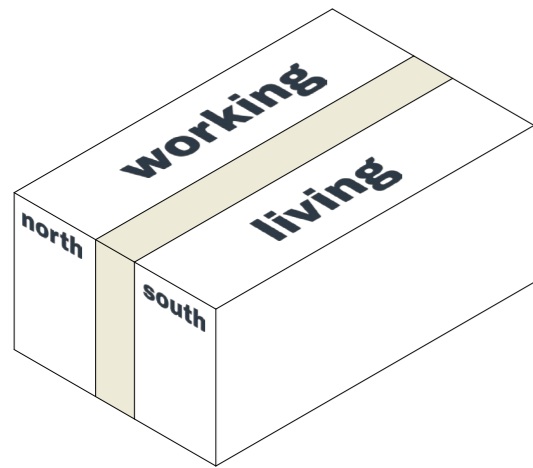
=

flexibility + affordability + collectivity

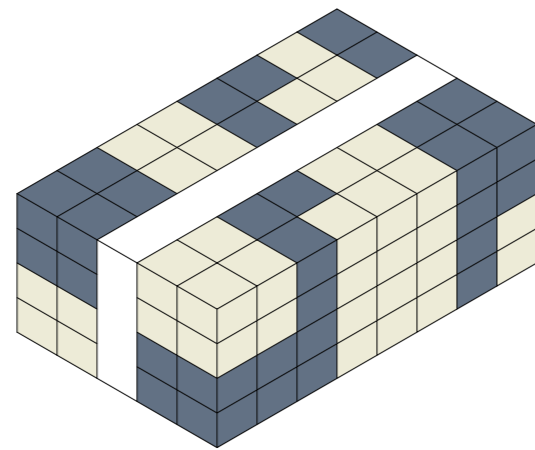
design

concept

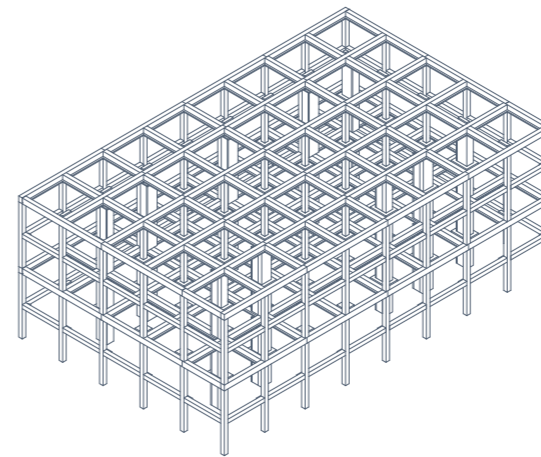
building principles



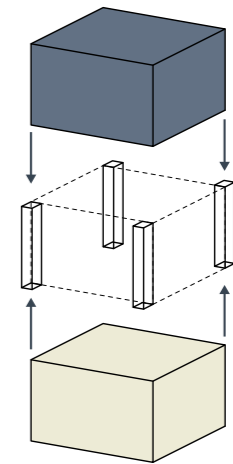
strict spatial
orientation



indeterminacy



rigid -concrete- system

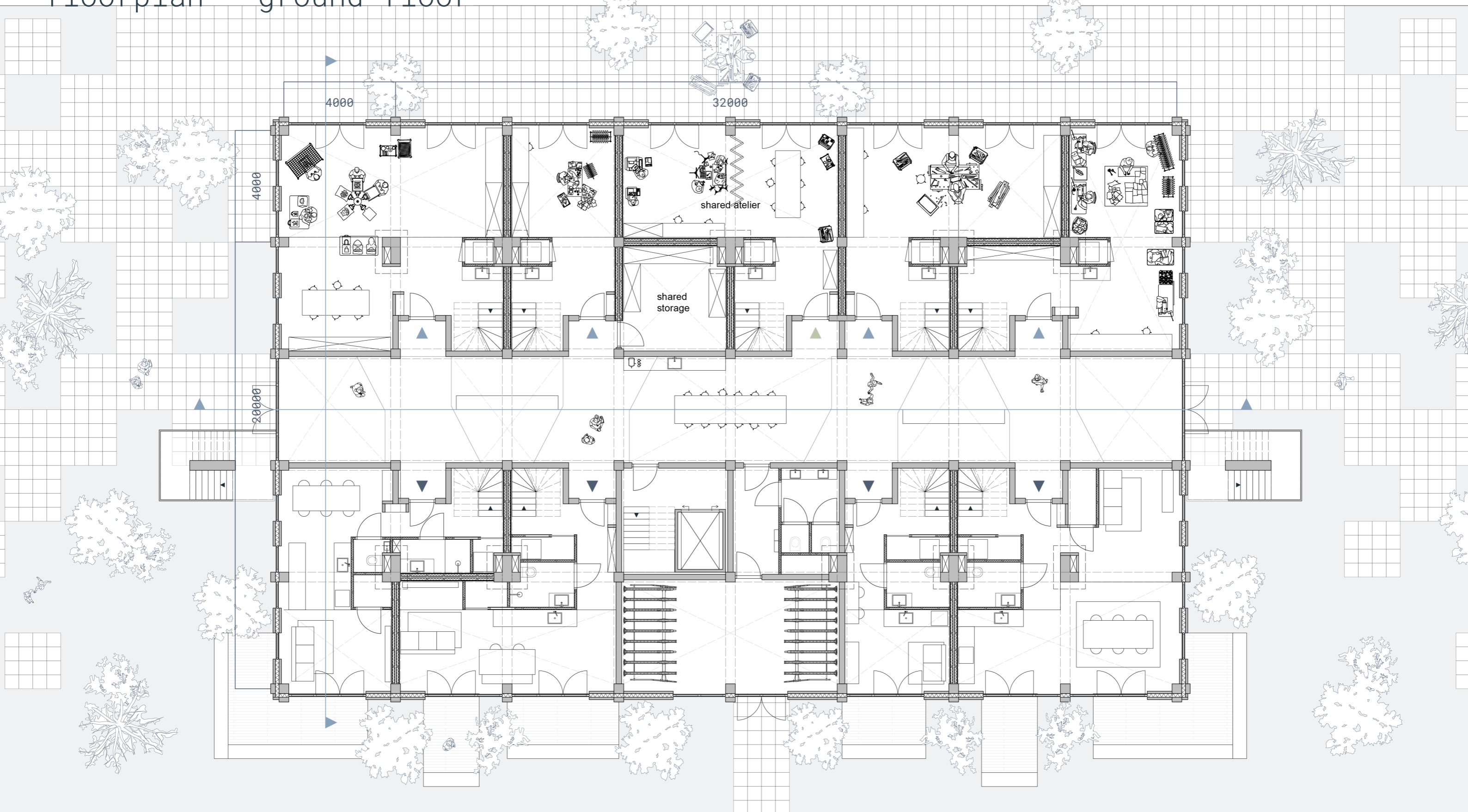


support - infill



plan

floorplan - ground floor

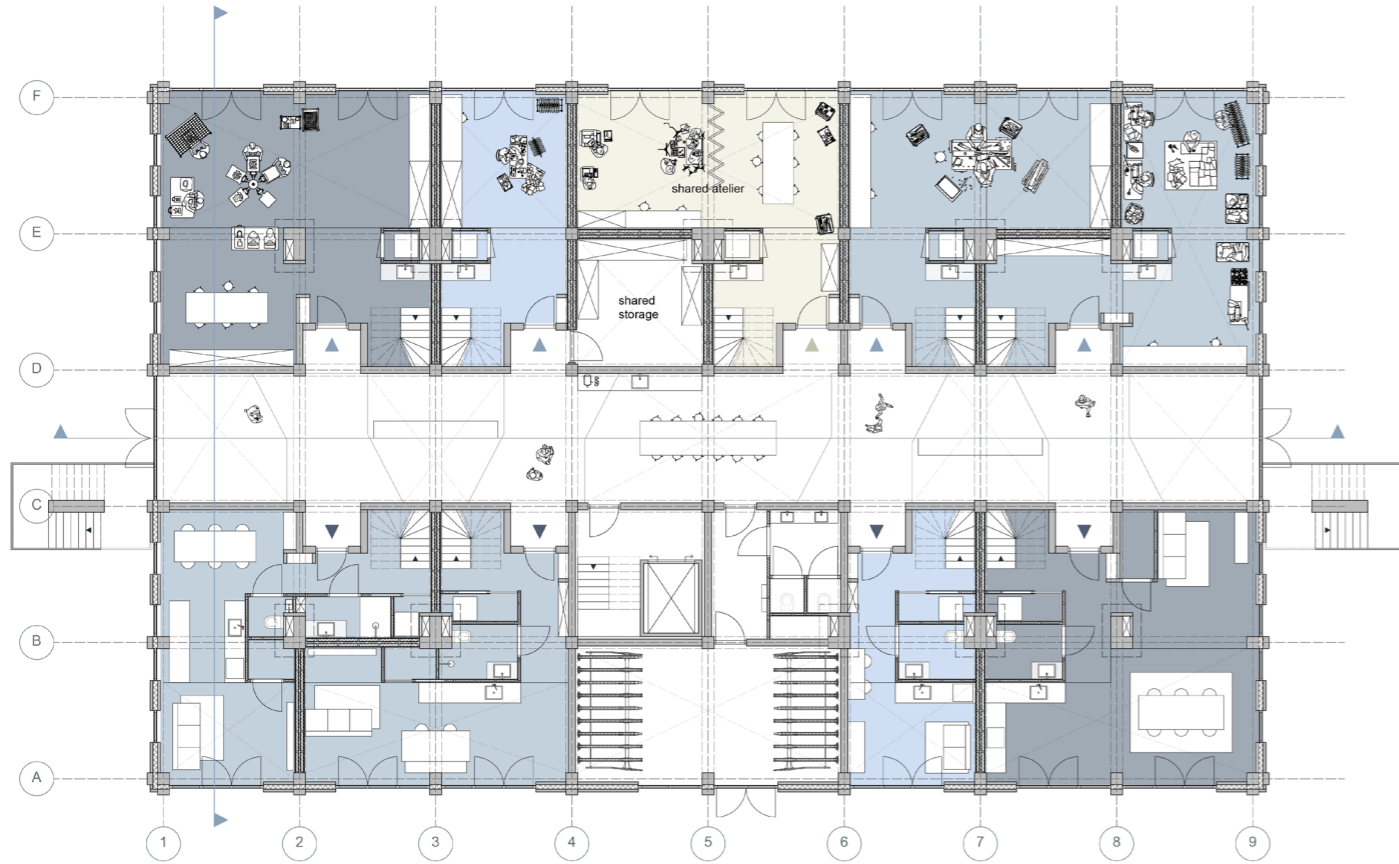




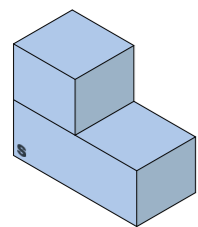
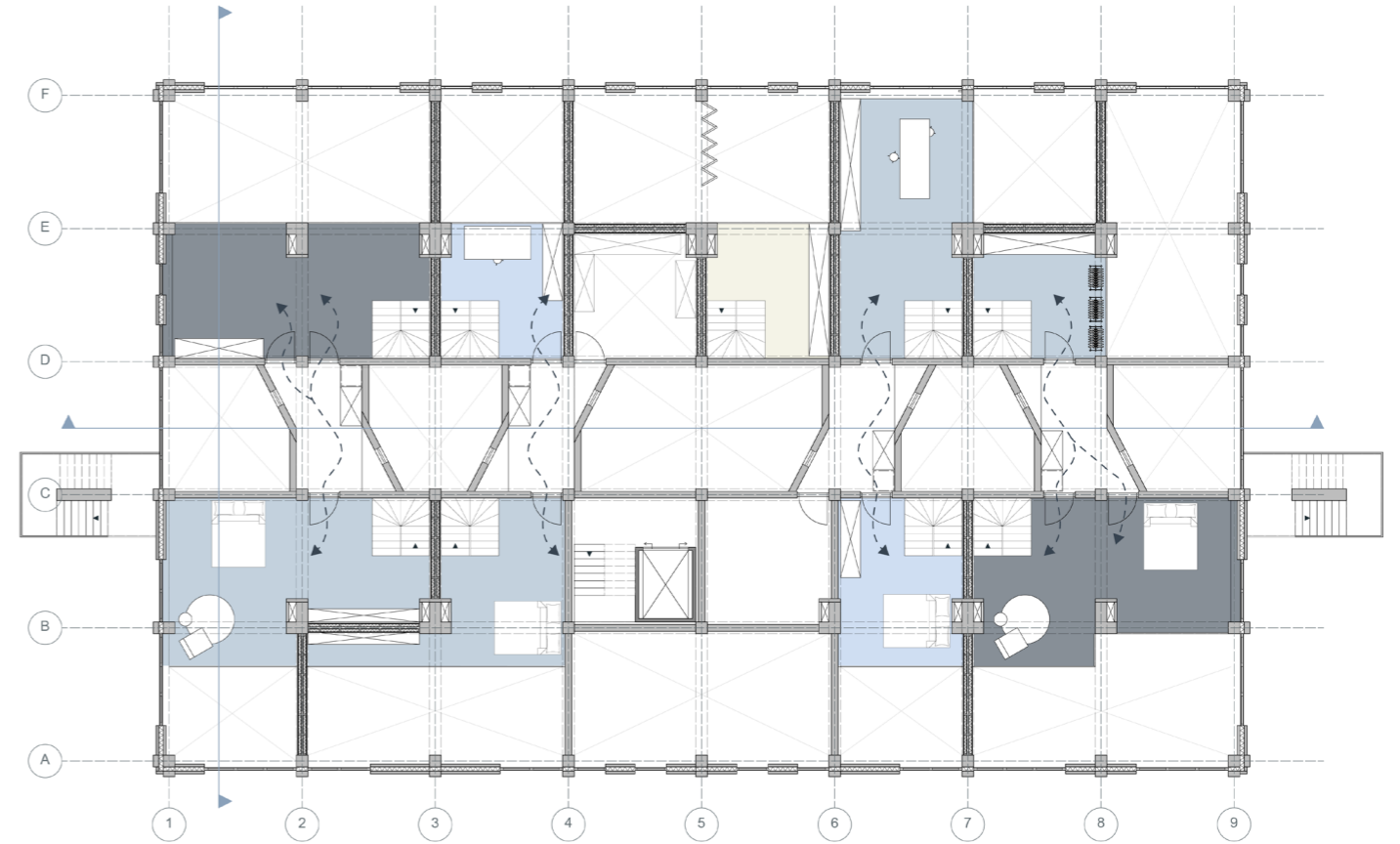
plan

ground & 1st floor

0

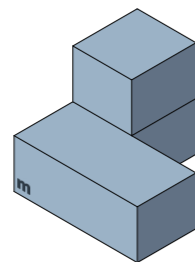


+1

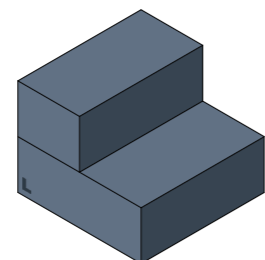


30m² base
15m² mezzanine
= 45m²

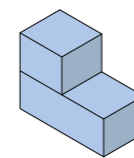
live-adjacent typology



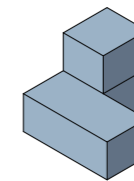
45m² base
15m² mezzanine
= 60m²



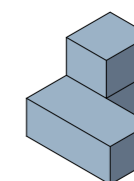
60m² base
30m² mezzanine
= 90m²



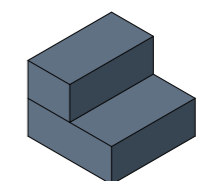
+



S+M= 105m²



+



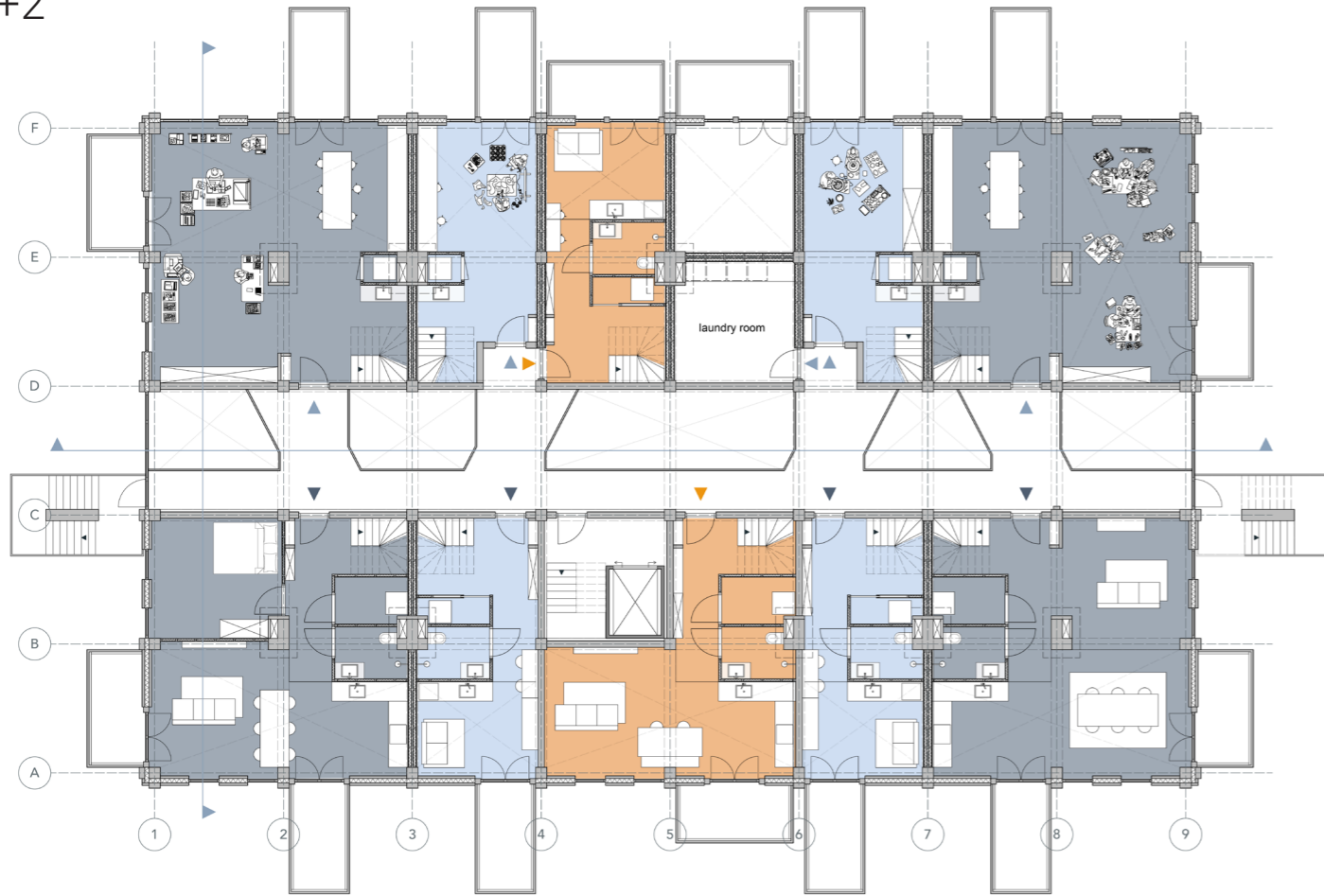
M+L= 150m²



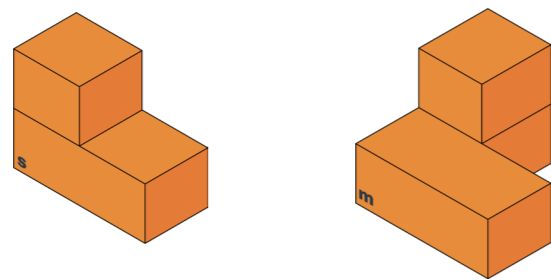
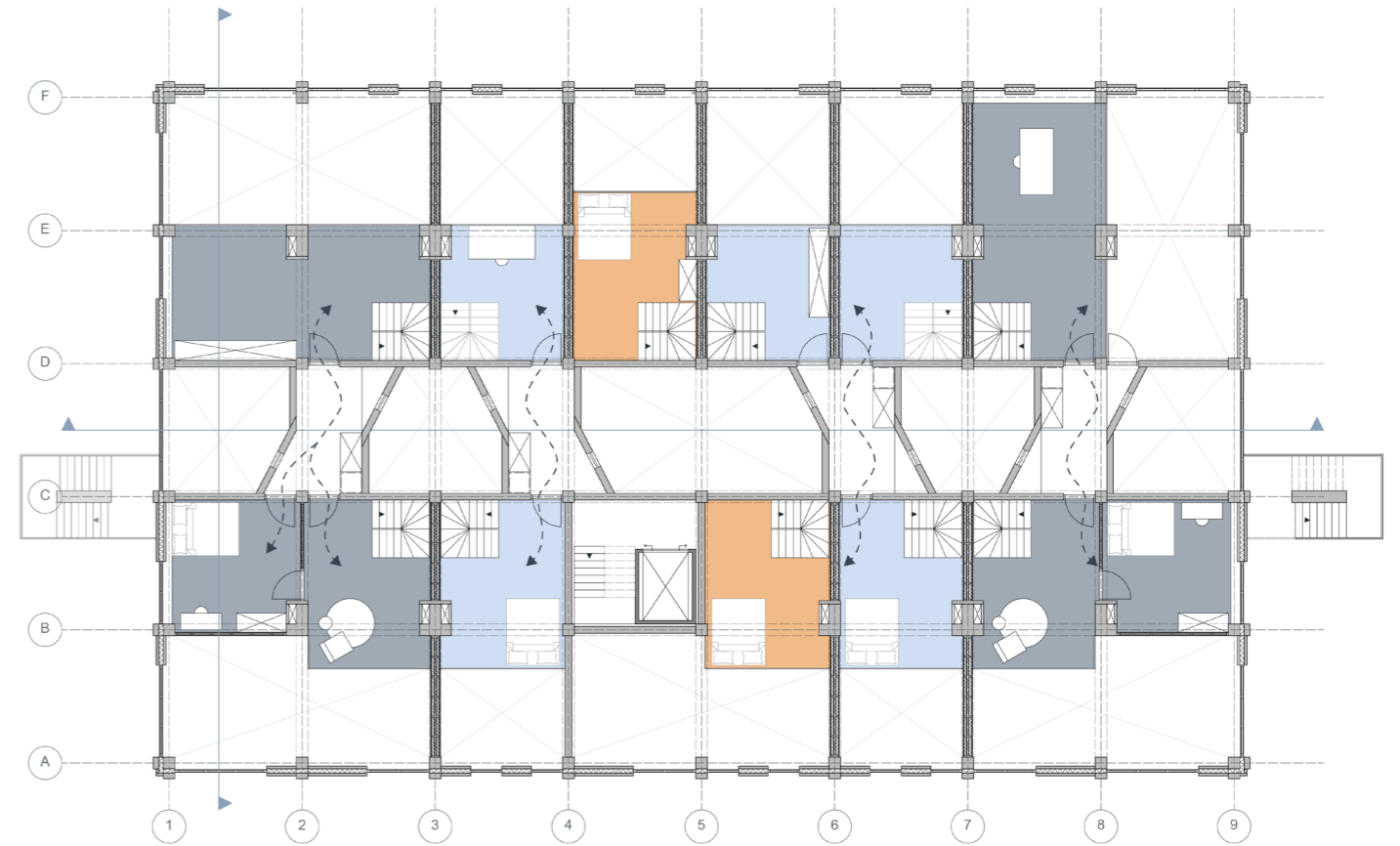
plan

2nd & 3rd floor

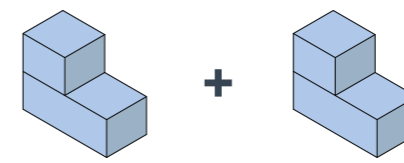
+2



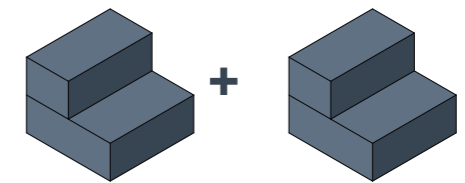
+3



live-with typology



S+S= 90m2



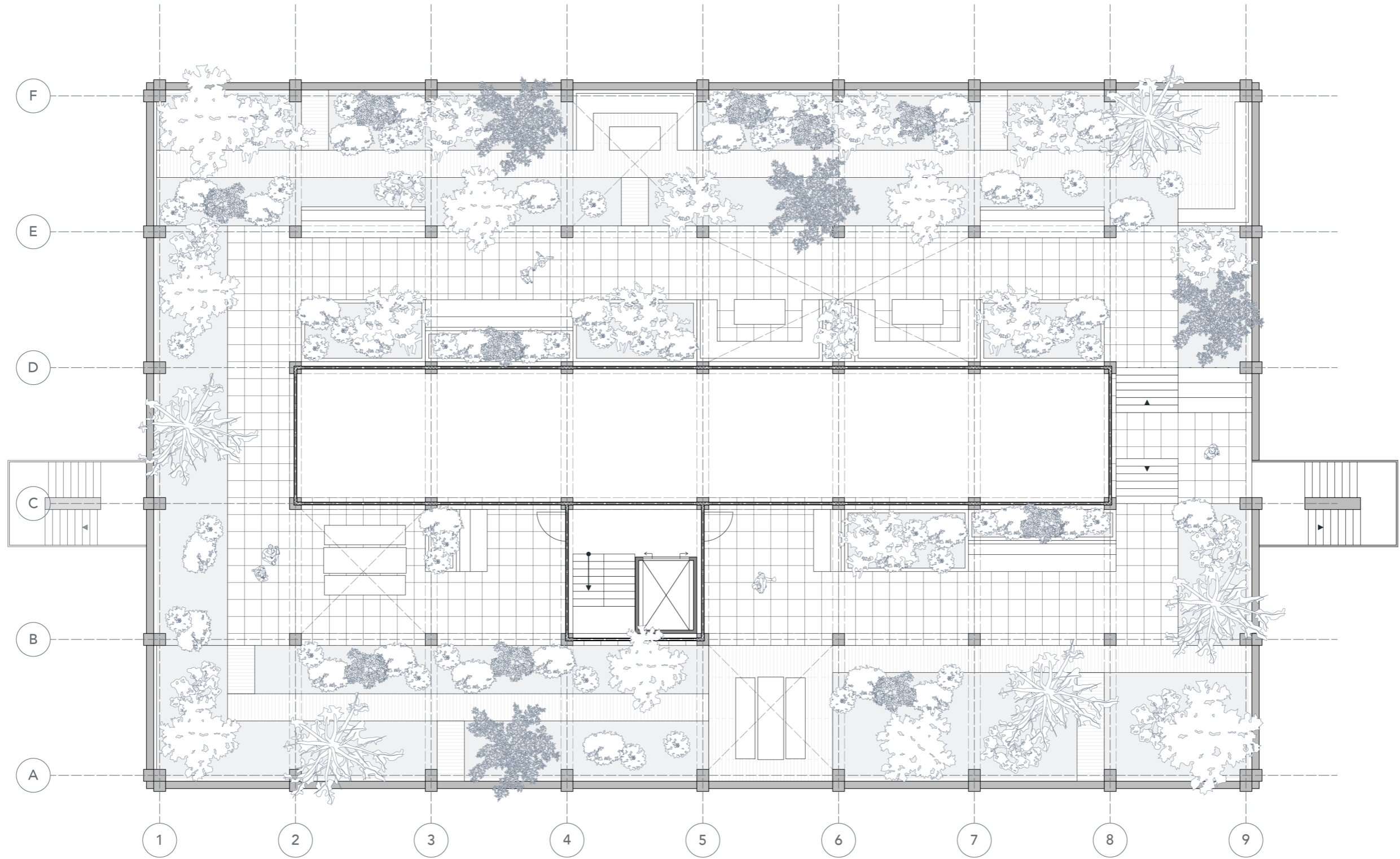
L+L= 180m2





plan

roof terrace





fascination
rethinking concrete

Concrete for inclusion

Concrete can support work-living environments

fascination
rethinking concrete

Concrete as an opportunity
Concrete can enable adaptability, affordability,
and longevity

fascination
rethinking concrete

Concrete as local heritage

characterized by industrial buildings

“The production of cement is responsible for approximately 8% of global CO2 emissions. That is enormous.”
(Waarom We Beton en Cement Beter Vermijden + Alternatieven | Ecobouwers, z.d.)

**Vervuilende betonindustrie kan
bouwstop veroorzaken, waar blijft
het duurzame alternatief?**

(Peterse, 2022)

“Global concrete production, at 4.5 billion tonnes, accounts for around 5% of worldwide CO2 emissions.” (Lanjouw, 2018)

Concrete is the problem

**'Werken met beton geeft altijd
narigheid'**

(“Werken met Beton Geeft Altijd Narigheid”, 2020)

“For the production of concrete, large quantities of sand, gravel, and water are also required. The extraction of these raw materials leads to **deforestation, disruption of ecosystems, and water shortages**. River sand in particular has become a scarce resource, leading to environmental and social problems in various parts of the world.”

fascination
rethinking concrete

But we still build with it
Housing - infrastructure - industrial buildings

fascination

rethinking concrete

“It is often claimed that building with concrete is bad for the environment, but is that really true?”

(Beton Of Hout: Wat Is Duurzamer en Milieuvriendelijker? | Betonhuis, 2025)

The misunderstanding

The problem is not the material, it's how we design with it

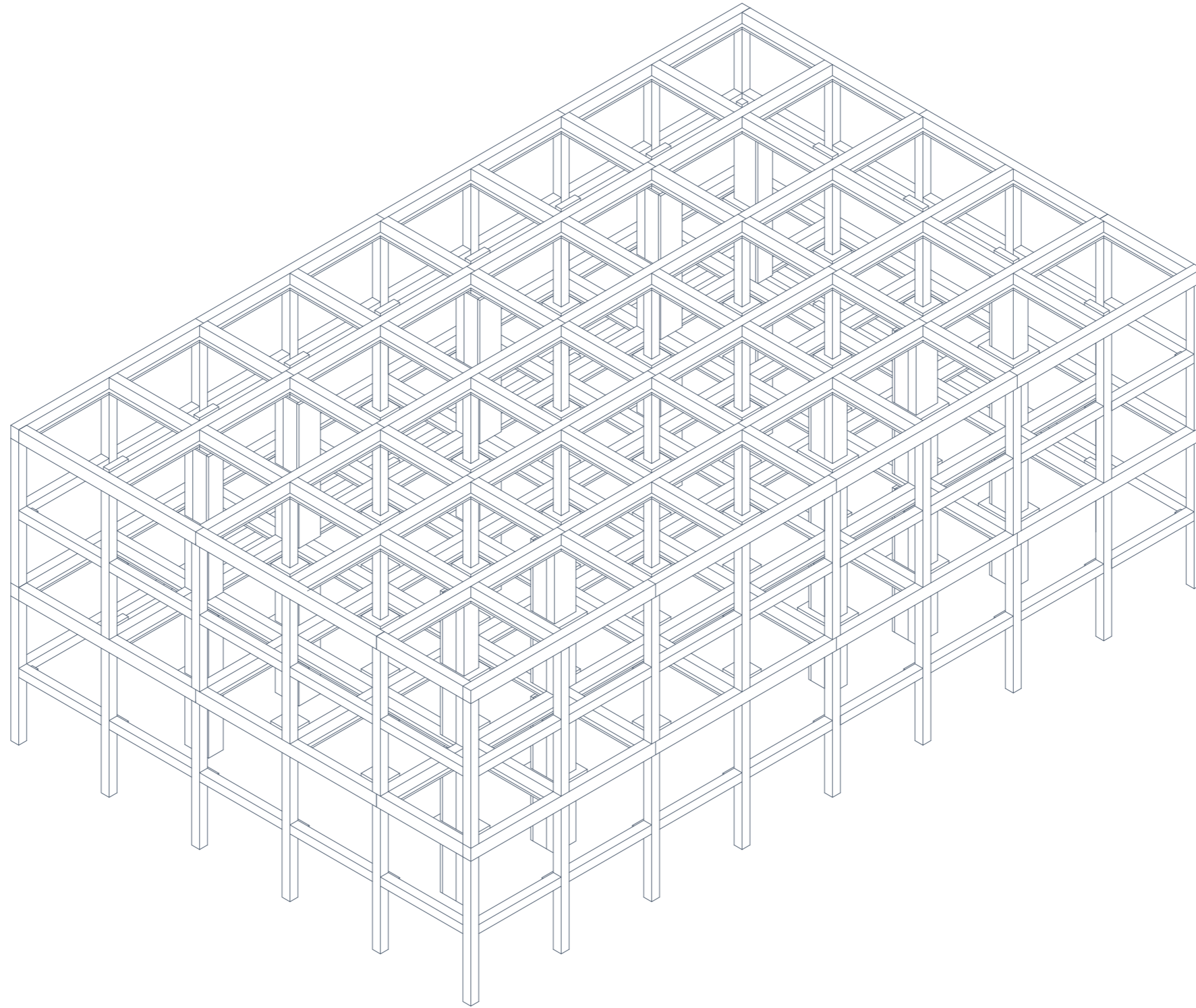
“Did you know that nearly 80 percent of the built environment in the Netherlands consists of concrete? It is therefore logical that there is some CO2 burden, but in the Netherlands this accounts for only 1.5% of total CO2 emissions.”

(Duurzaamheid Beton: Feiten en Fabels | Betonhuis, 2025)

framework

framework

structural skeleton



830m3 concrete how is this viable?

framework

environmental impact

1250m³

massive structure



830m³

column structure



- 34%

structural concrete

238 tons

contemporary concrete



138 tons

recycled + pozzolanic concrete

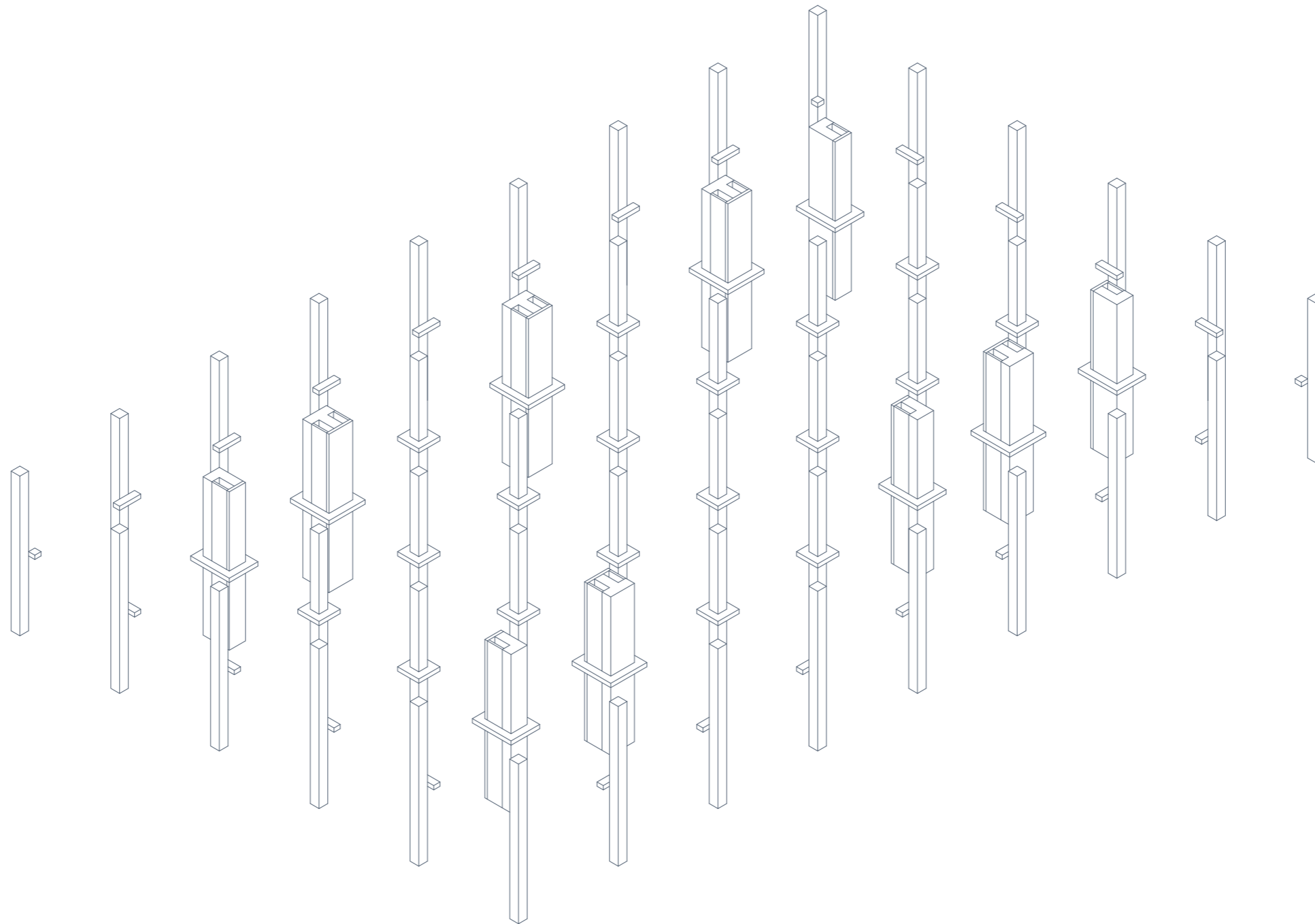


- 42%

C02 emissions

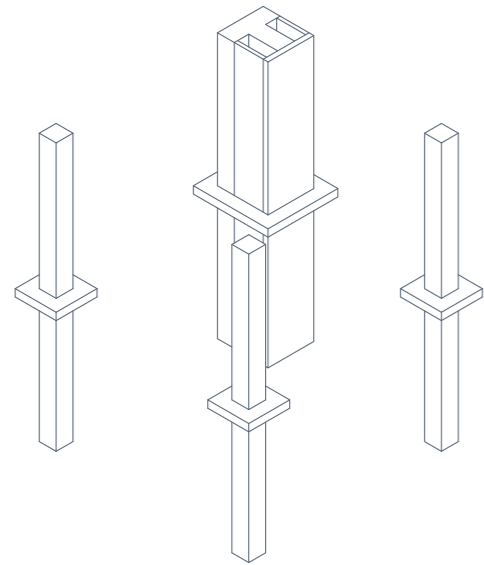
framework

support-infill

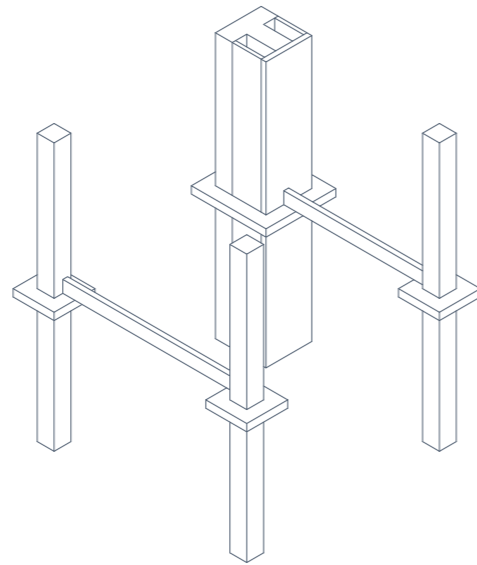


framework

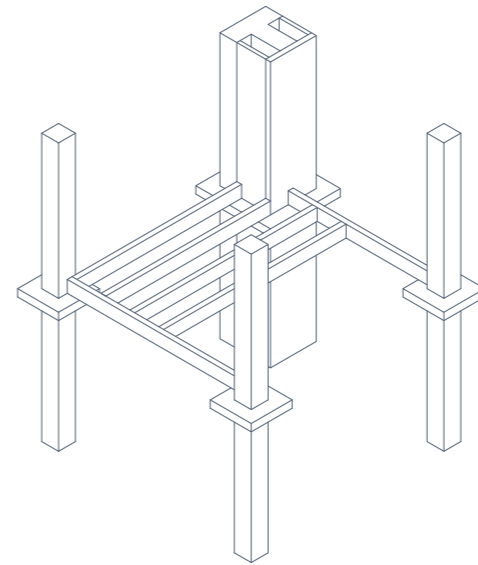
support-infill



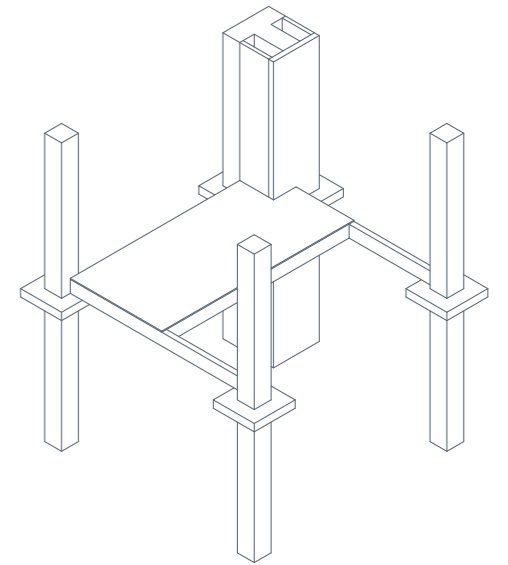
1. concrete construction



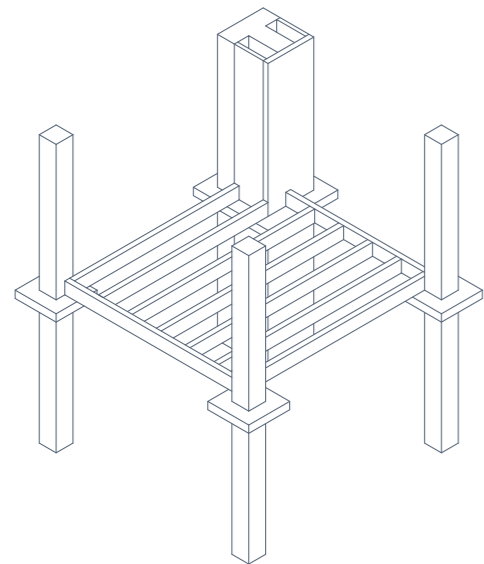
2. timber beams



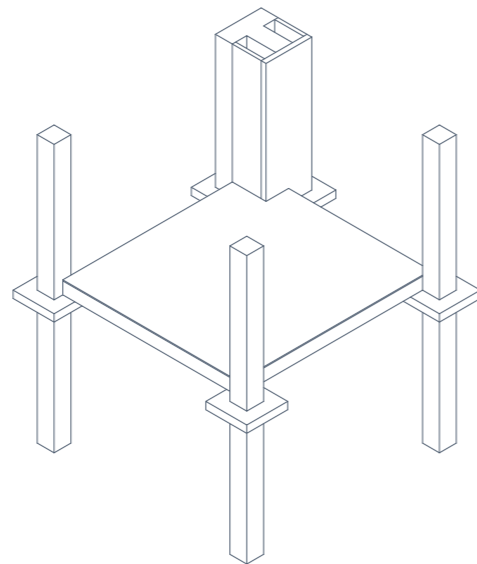
3. timber frame



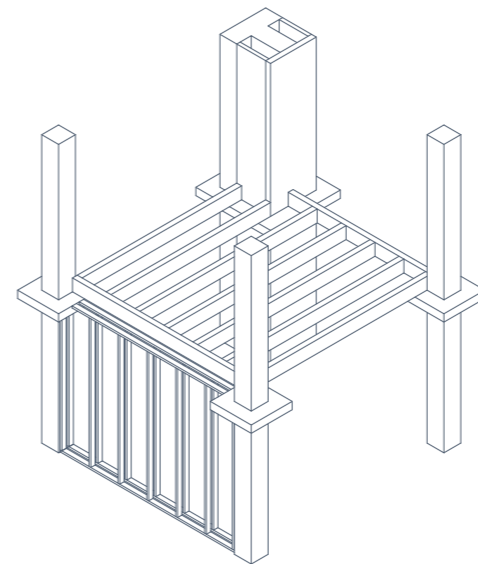
4. OSB



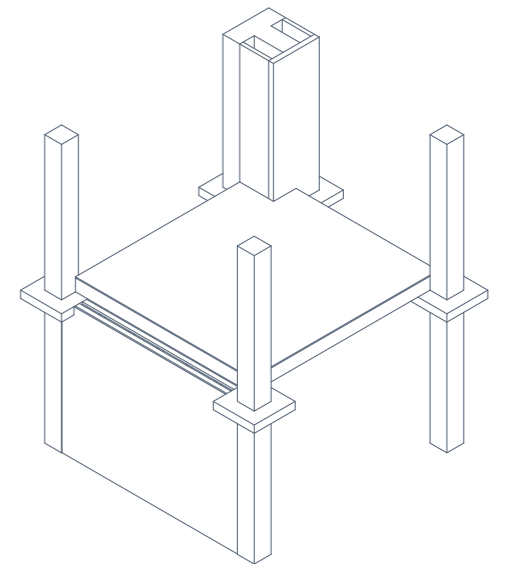
5. (expansion)



6. (expansion)



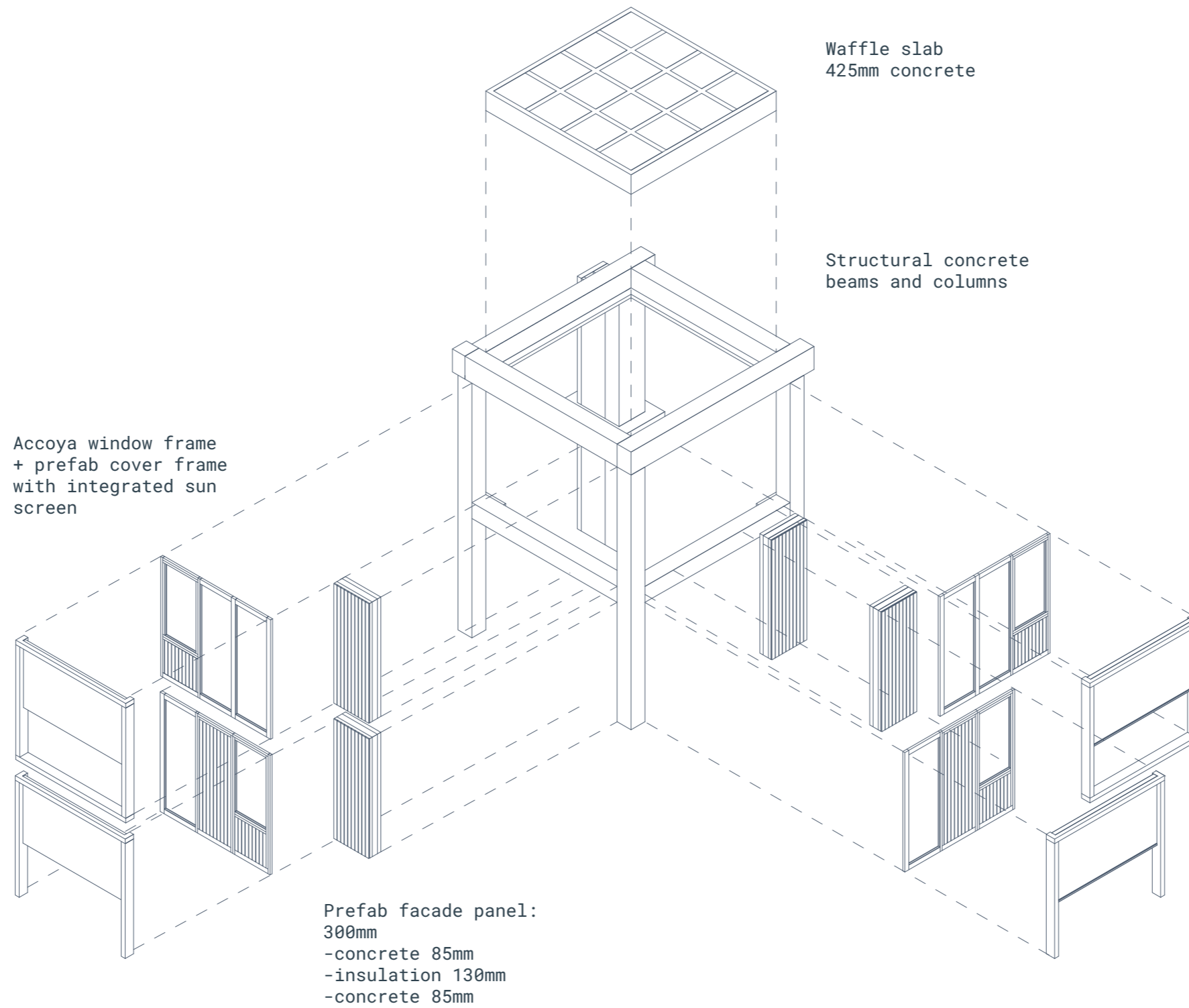
7. timber wall frame



8. drywall

framework

prefabrication



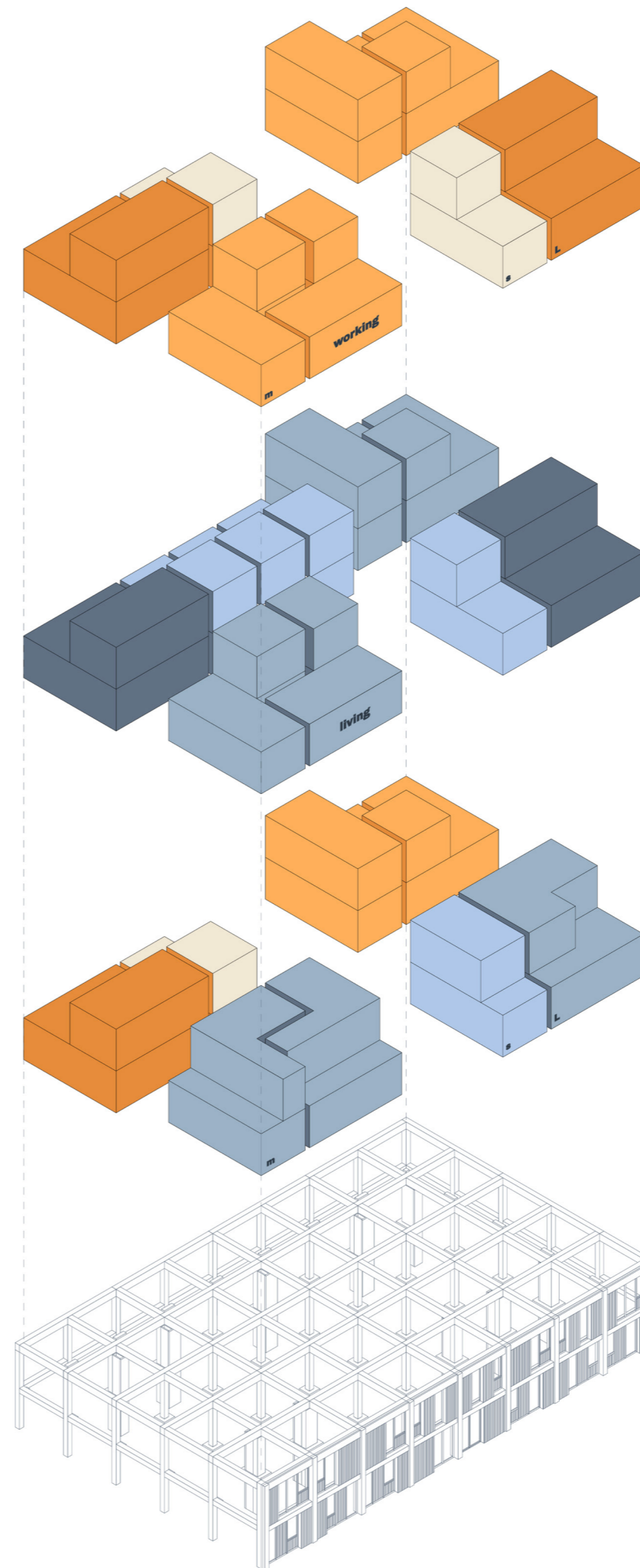
elevation

east



framework

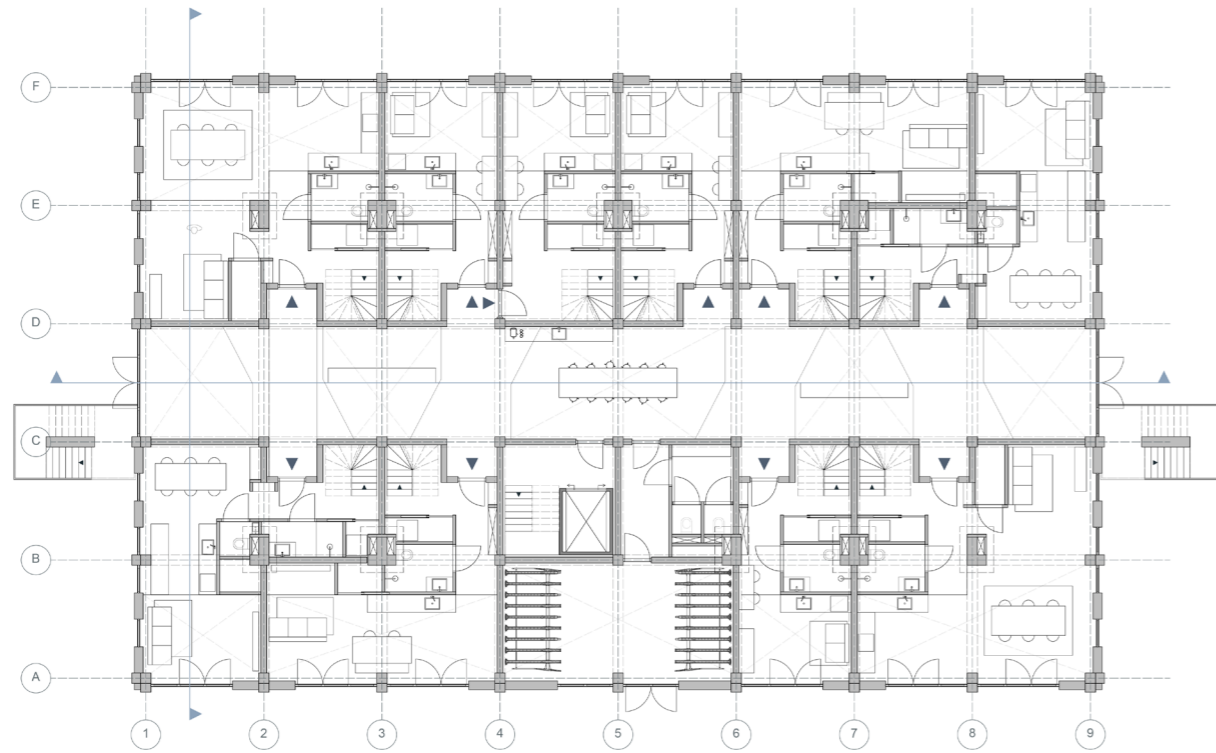
change through time



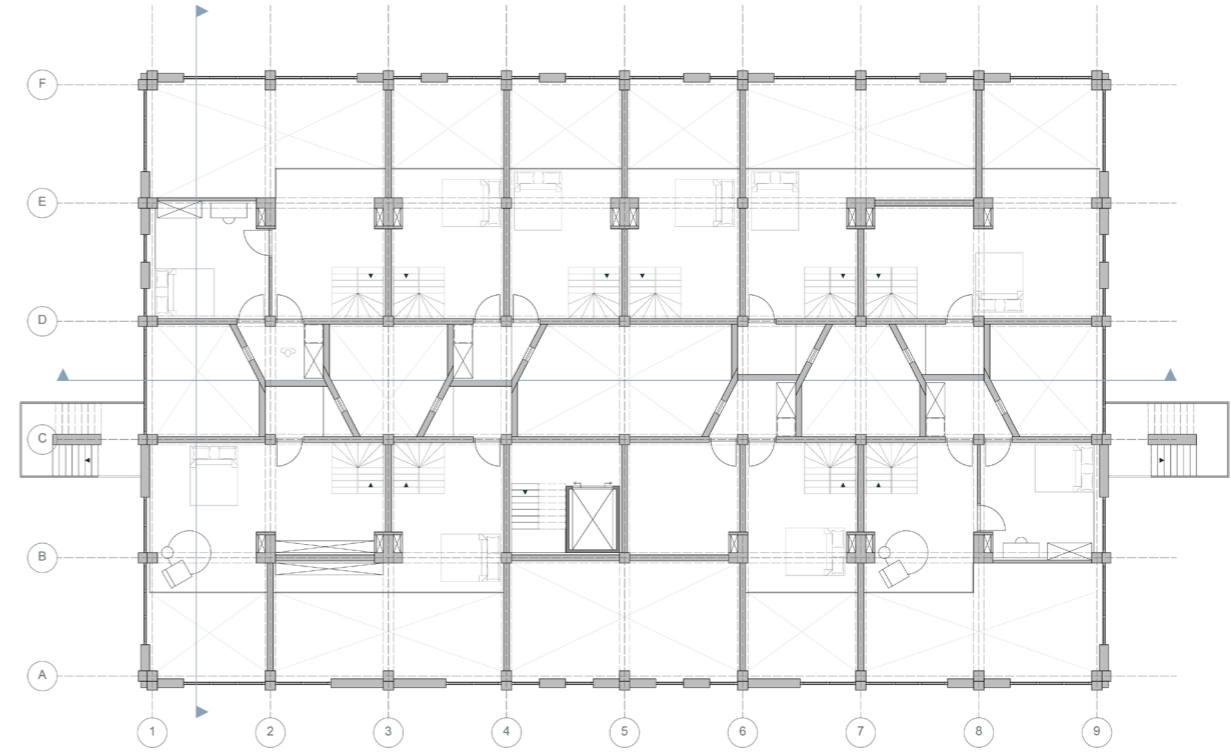
change through time

living - 21 dwellings

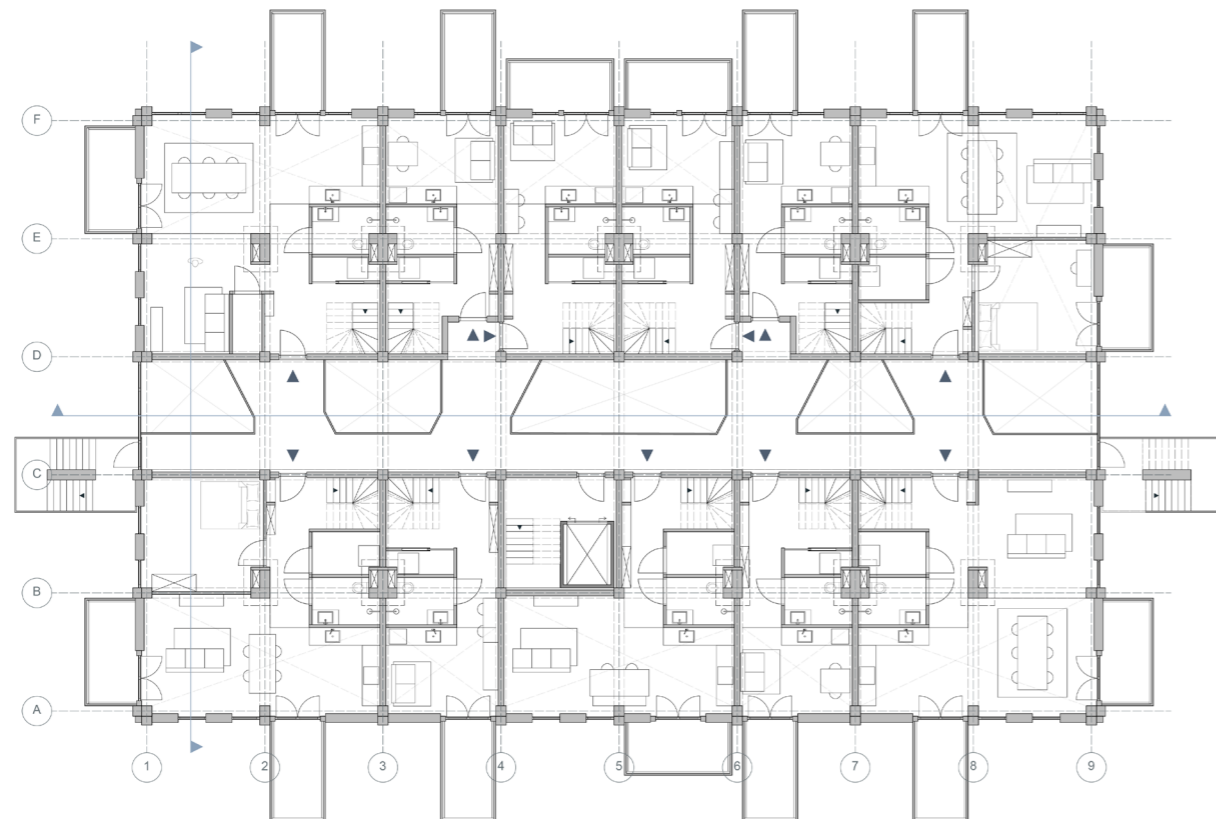
0



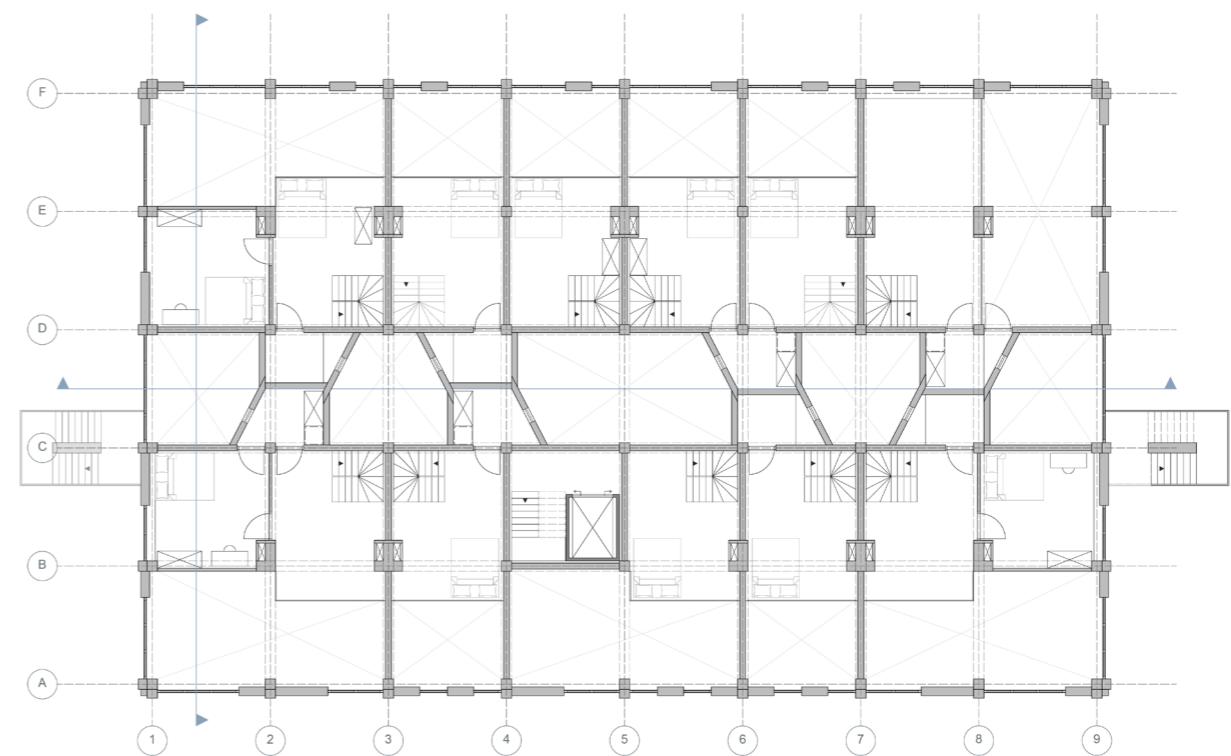
+1



+2



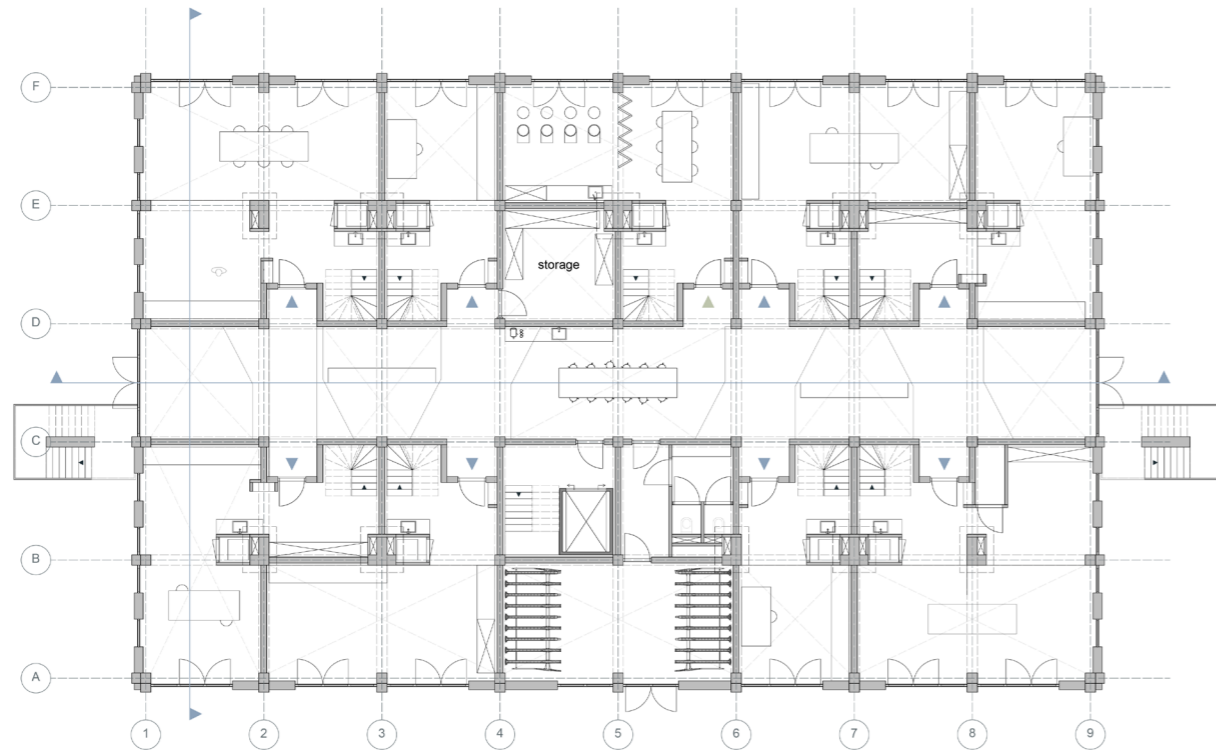
+3



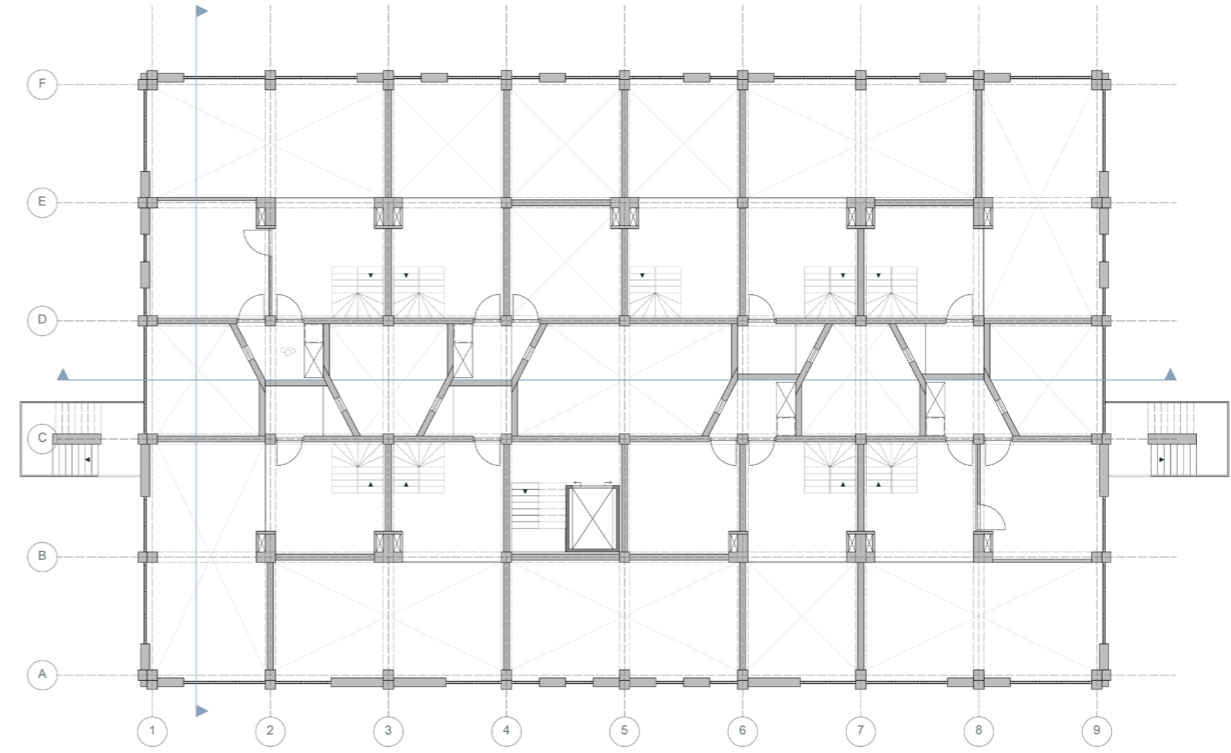
change through time

working - 18 workspaces - 1 shared space

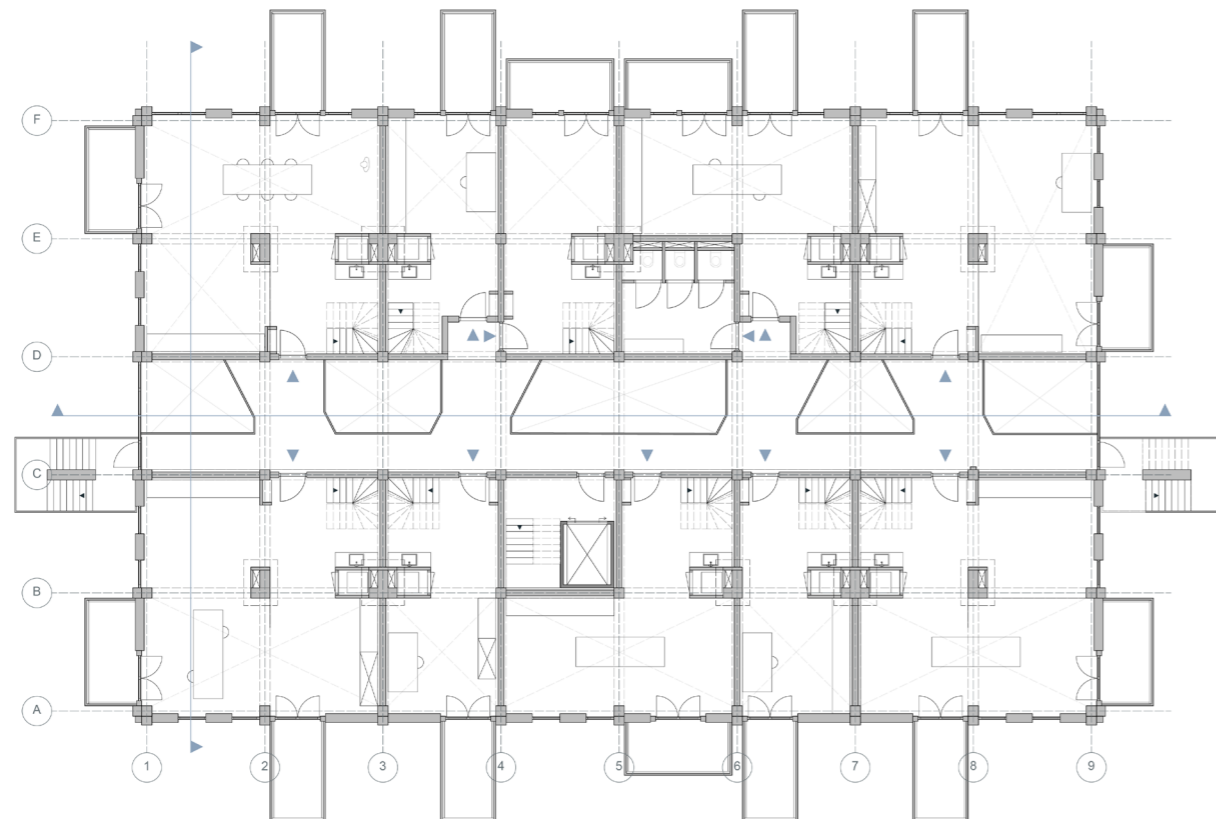
0



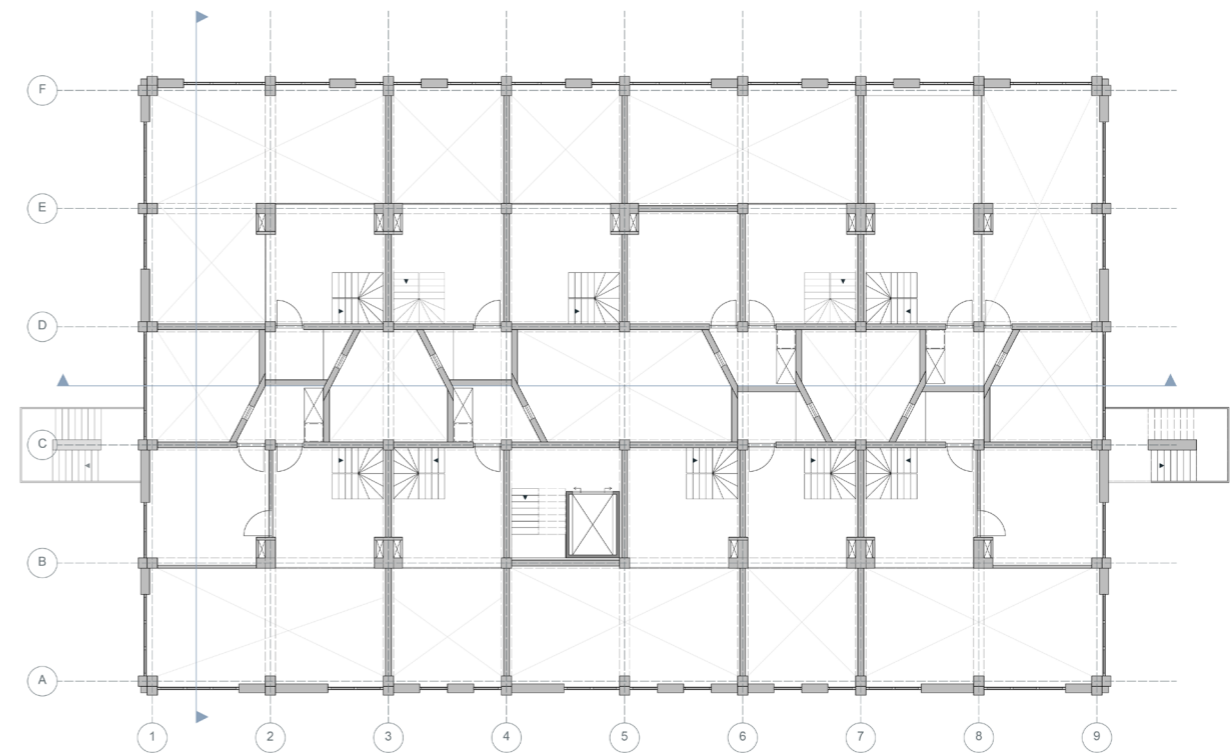
+1

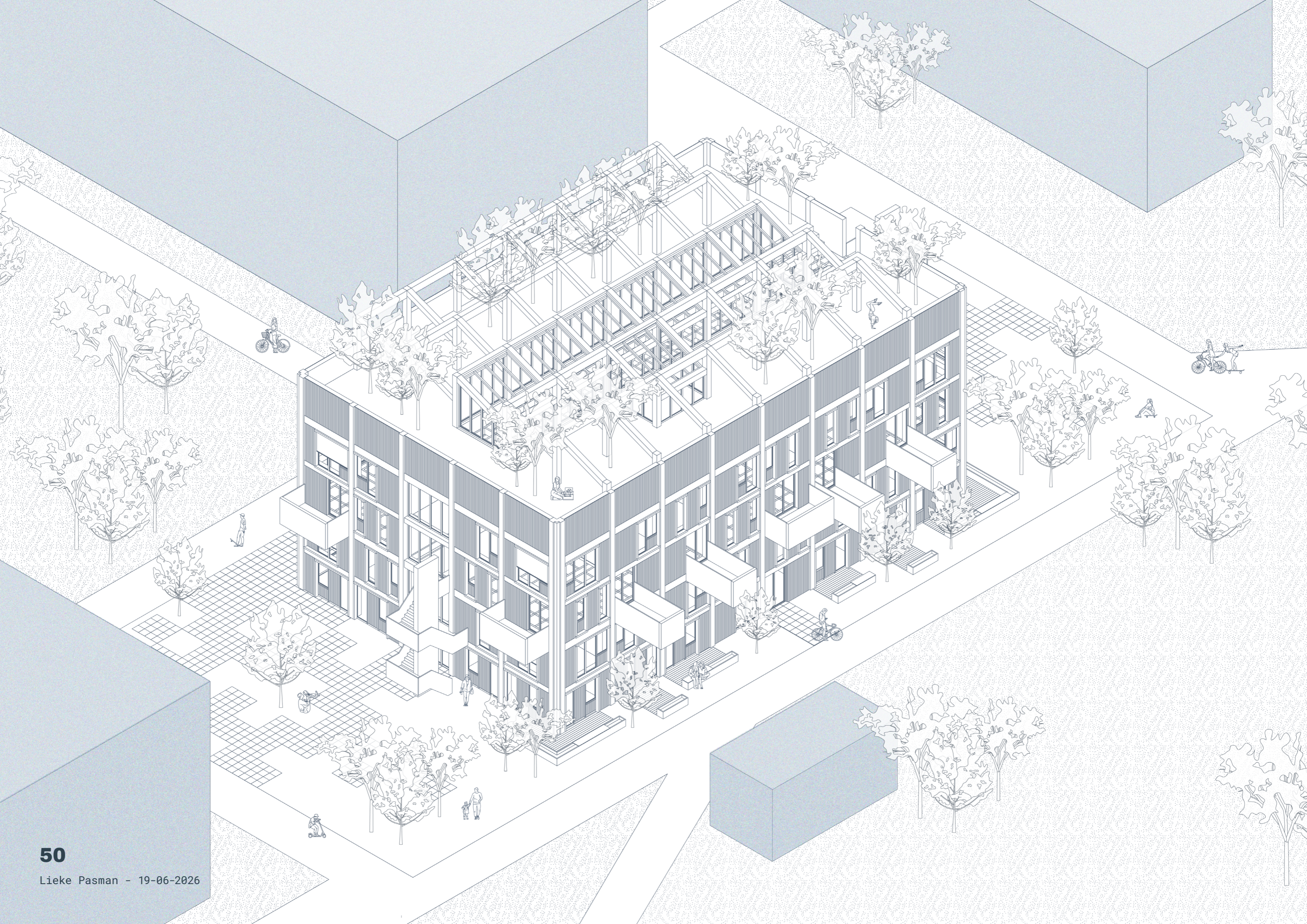


+2



+3





rigid freedom

structures for making

