



THE GRADUATION PROJECT

MARJAN SADEGHI

ARCHITECTURE, URBANISM AND
BUILDING SCIENCES

| HERITAGE & ARCHITECTURE

Tutors: Annette Marks, Frank Koopman

27-08-2020



FEED YOUR CITY

LOCAL FARMING

HEMBRUG

PLOTS IN THE WOOD

PROBLEM DEFINITION

MASTERPLAN & CONCEPT

GREENHOUSE RESTAURANT

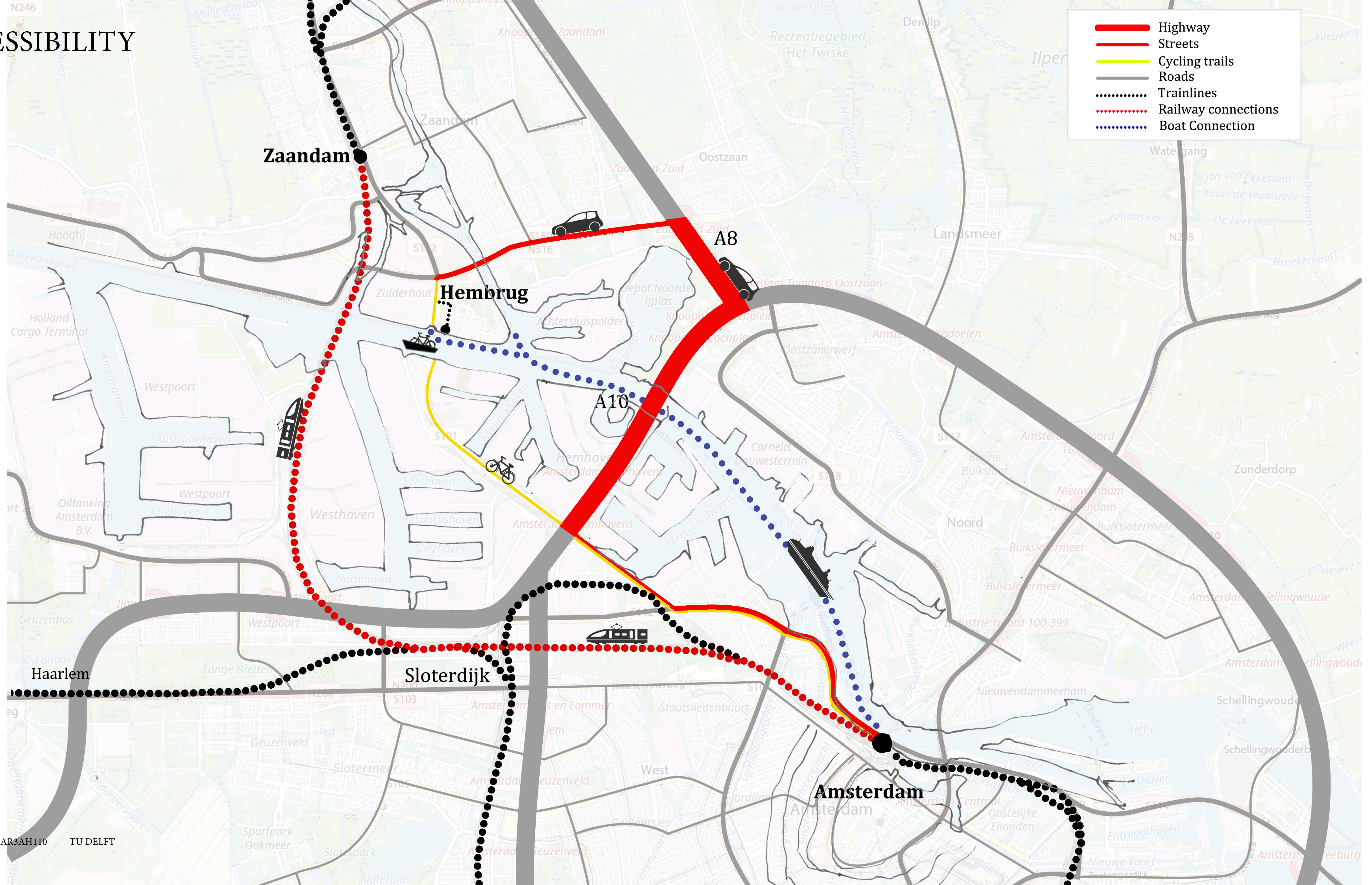
THE TECHNICAL ASPECTS

RESIDENTIAL BUILDINGS, A PRIMARY SCHOOL

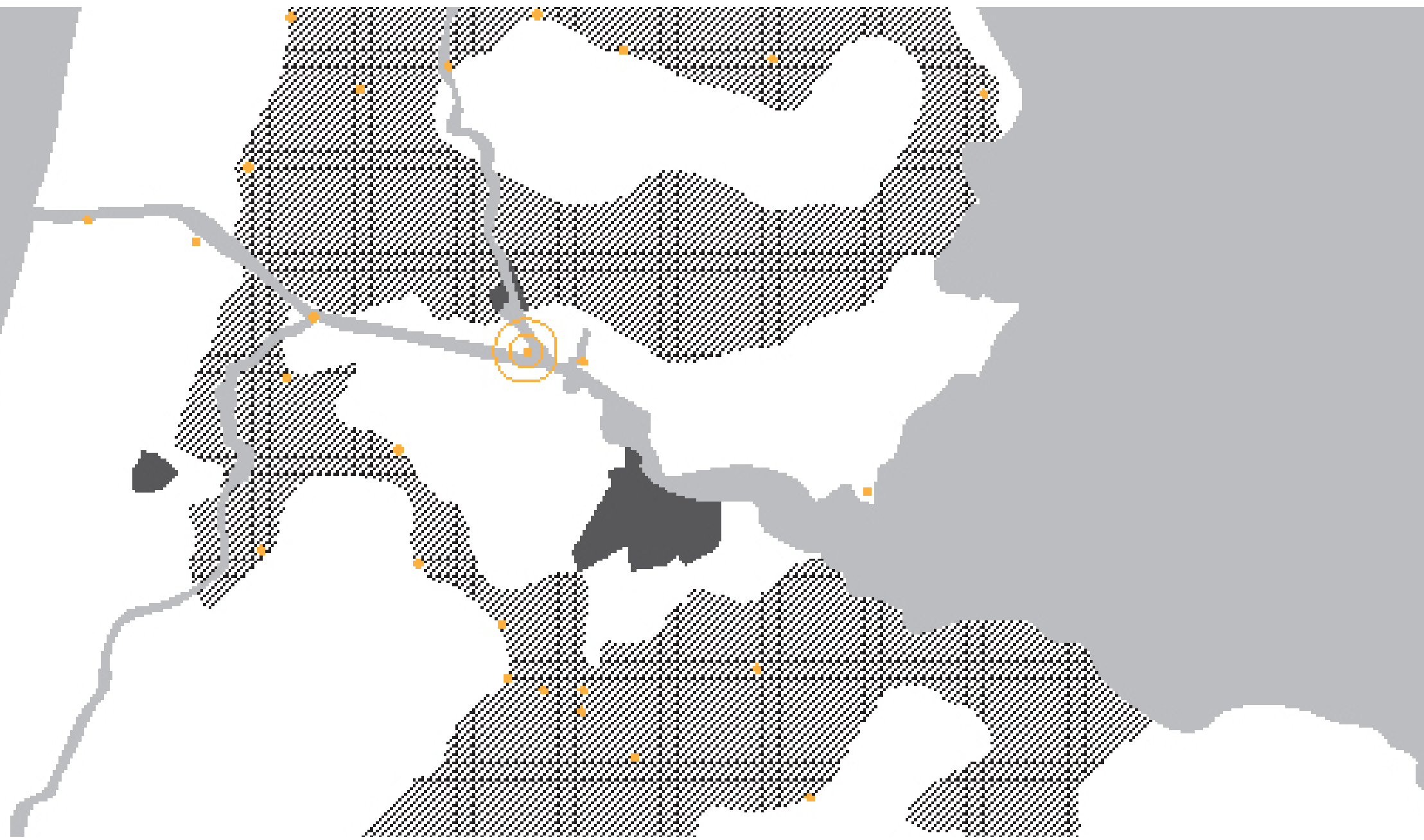


HEMBRUG

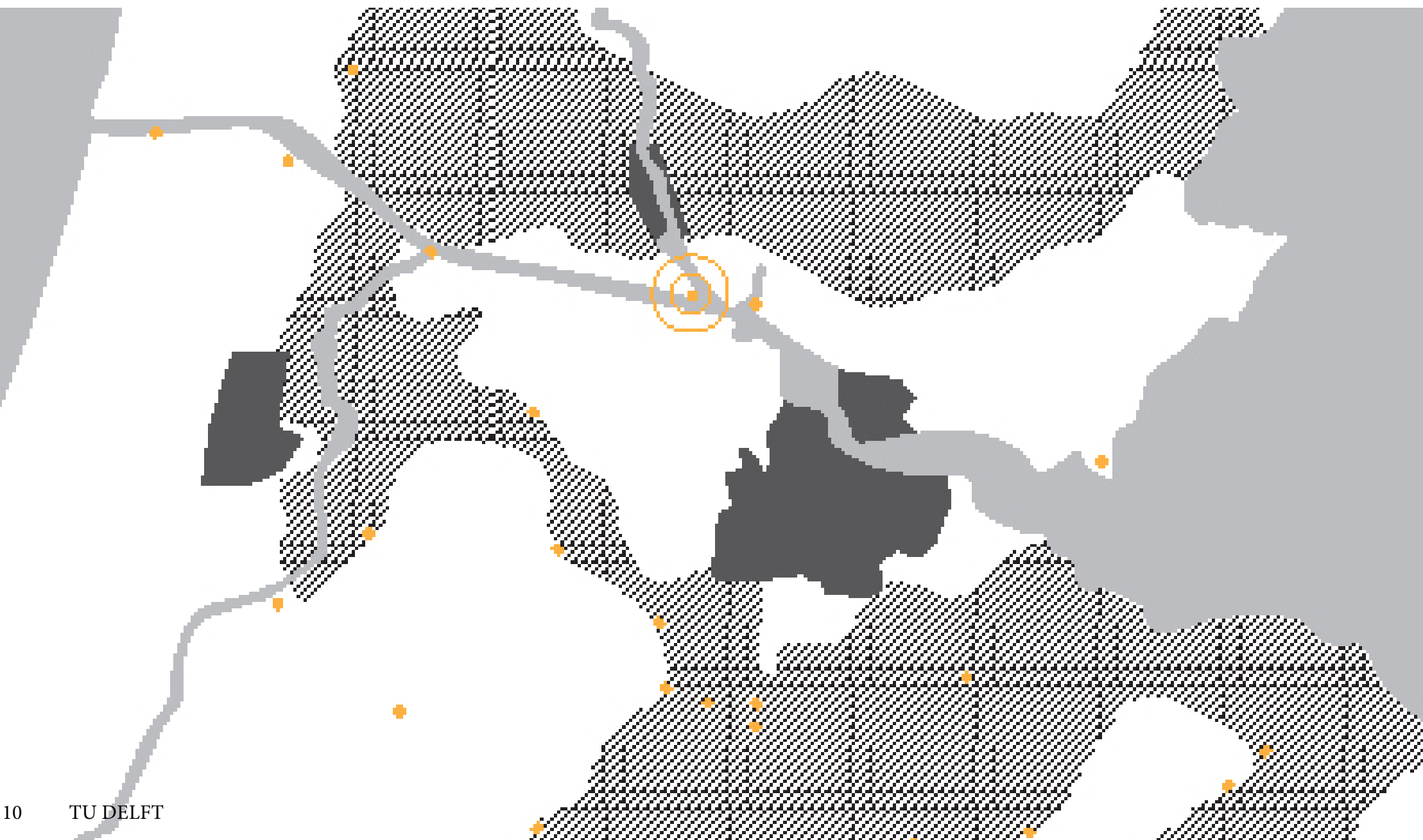
ACCESSIBILITY



1900



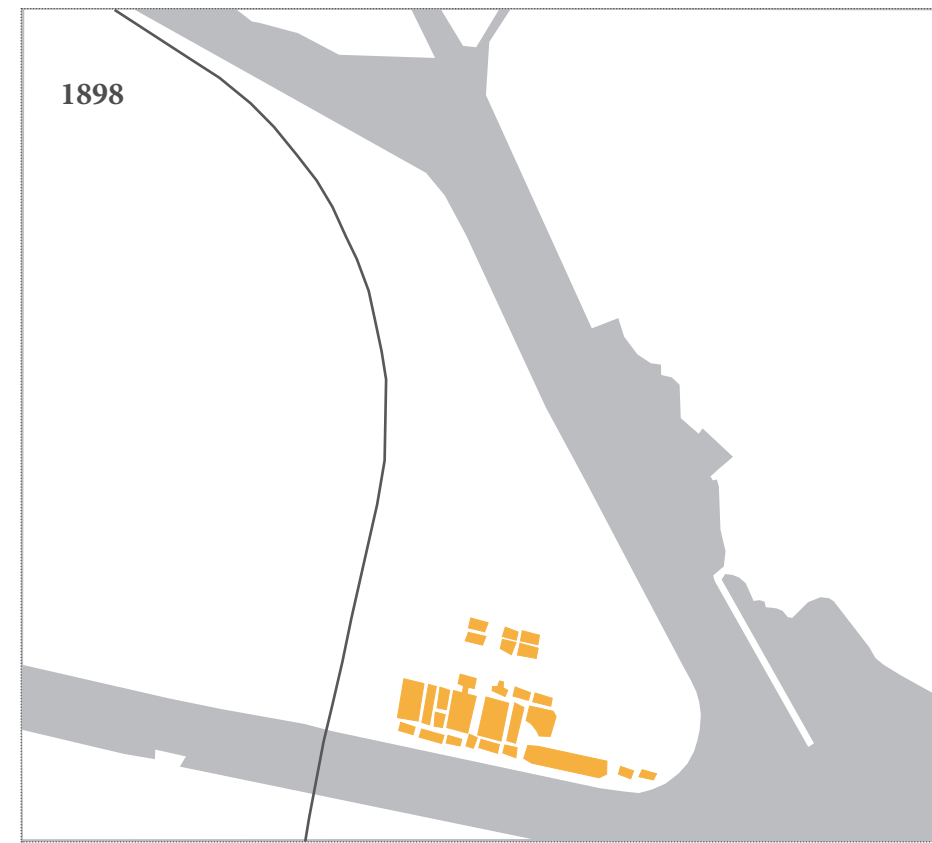
1950



1897



1898



1909



1913



1961



1993

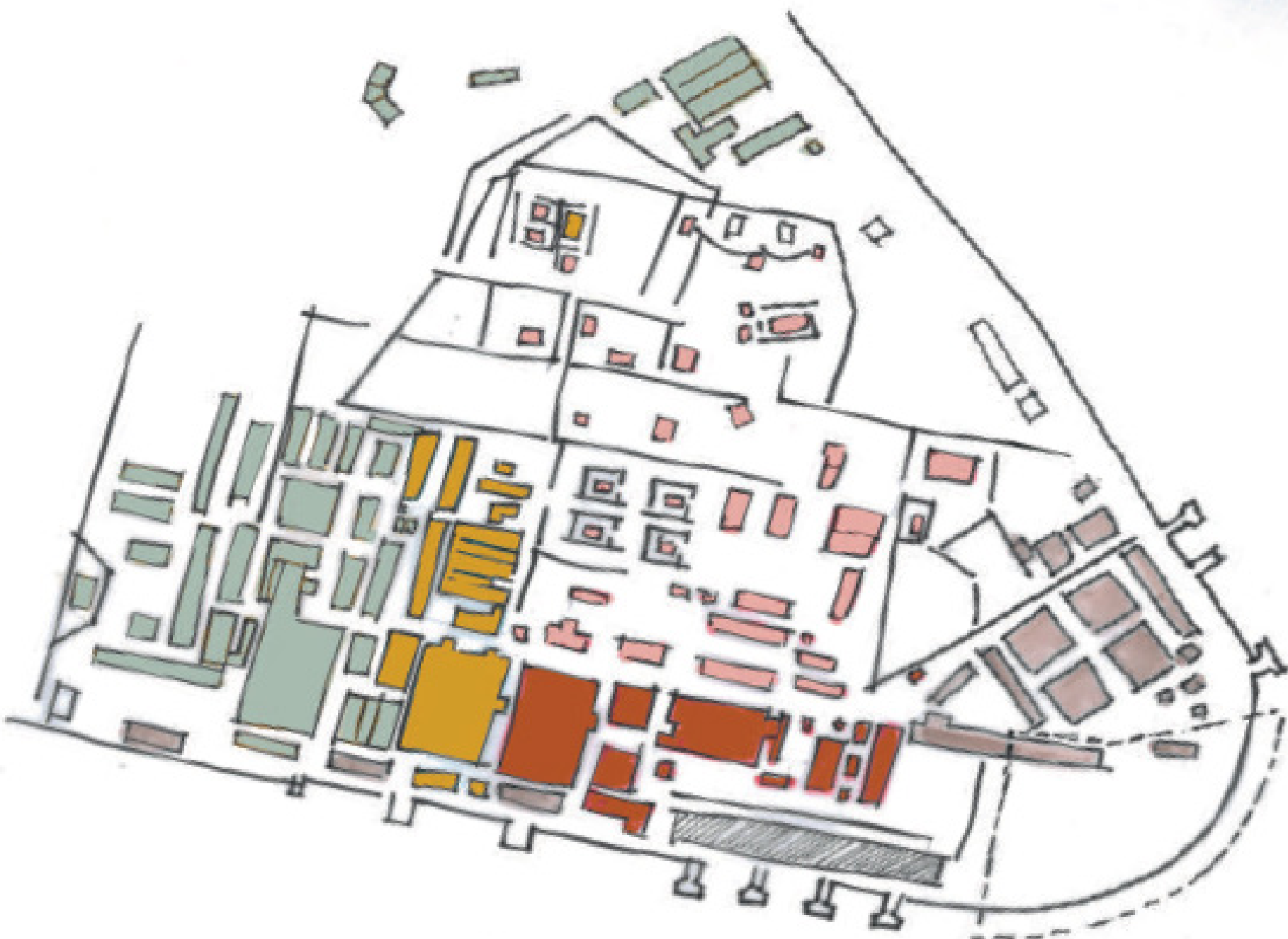


CHARACTER OF THE AREA, BASED ON FUNCTION

OPBOUW TERREIN AI:



- WAPENFABRIEK
- PATRONENFABRIEK
- PROJECTIELENFABRIEK
- VUURWERKERIJ (ONDERDEEL VAN DE MUNITIEFABRIEK)



WEAPON FACTORY

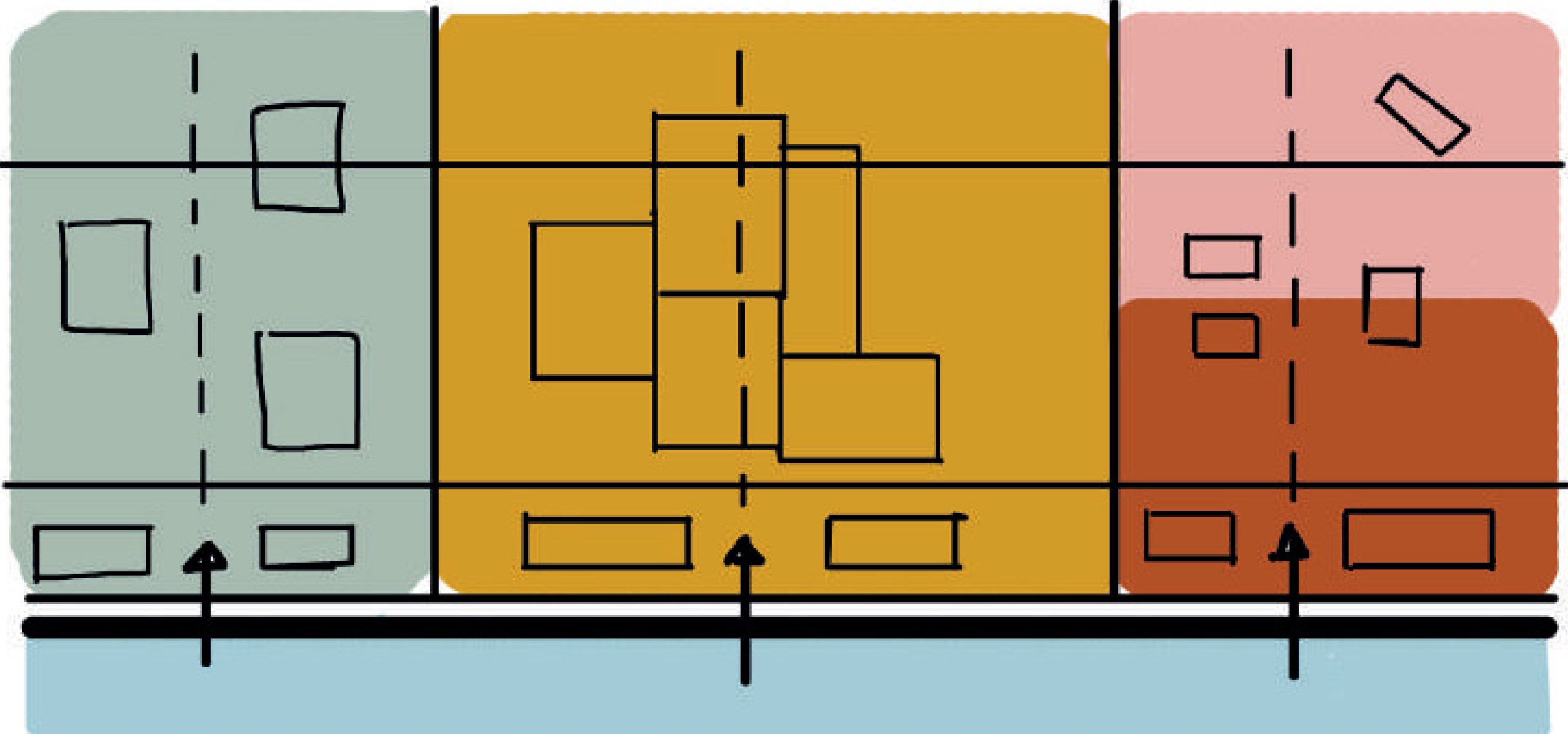
CARTRIDGE FACTORY

MUNITION FACTORY AND PYROTECHNICS

STORAGE BUILDINGS

PRODUCTION BUILDINGS

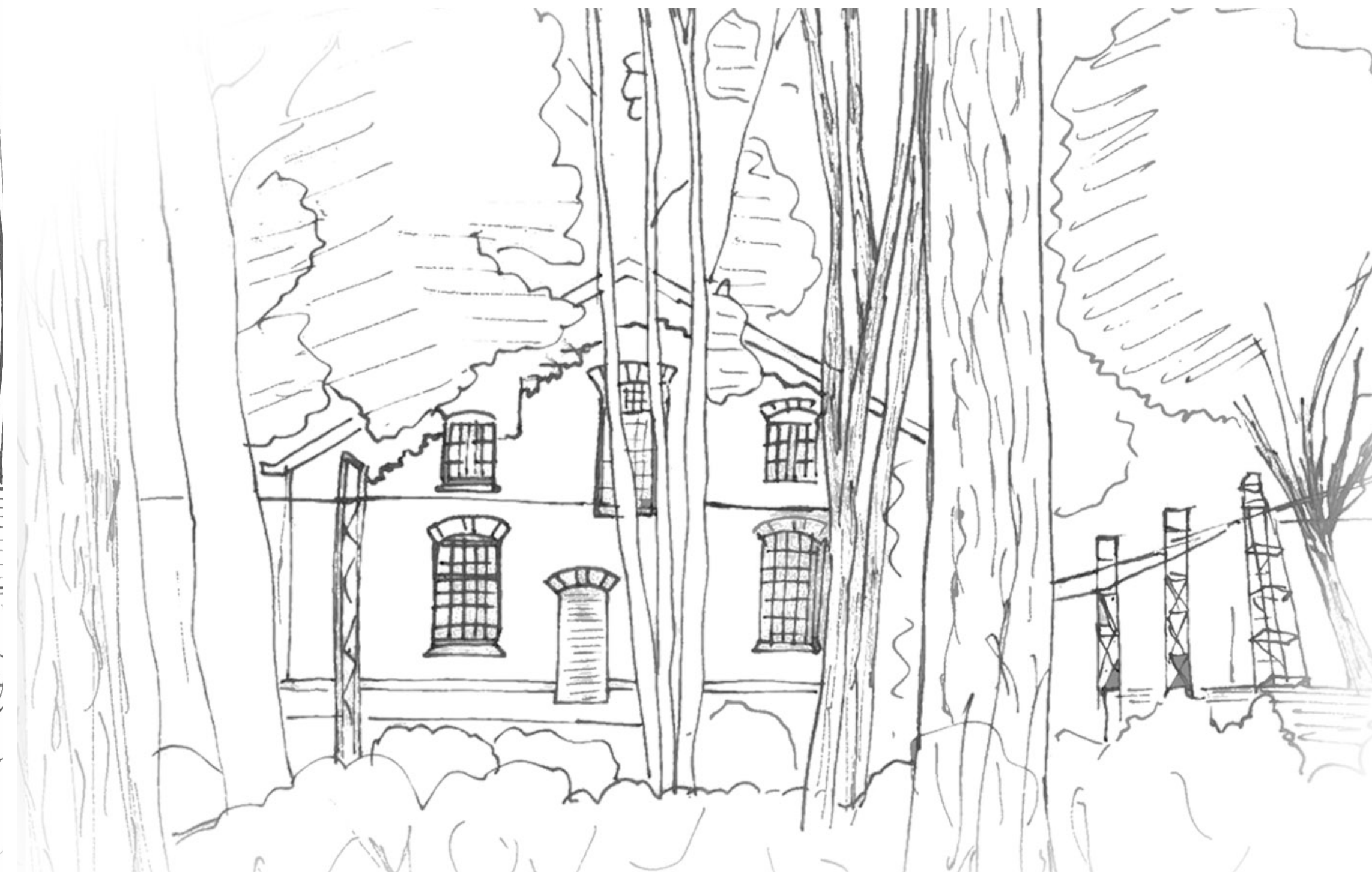
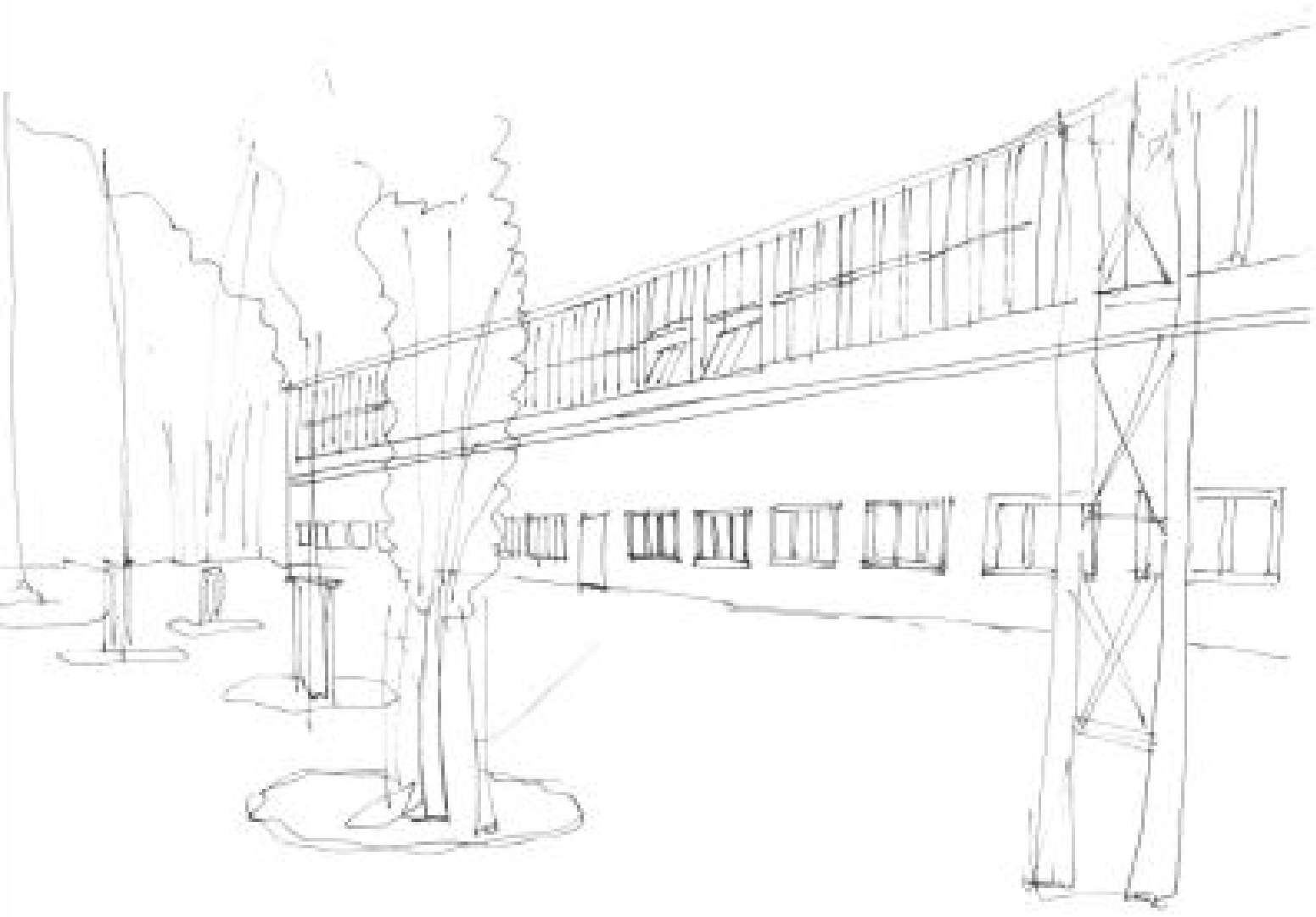
REPRESENTATIVE BUILDINGS

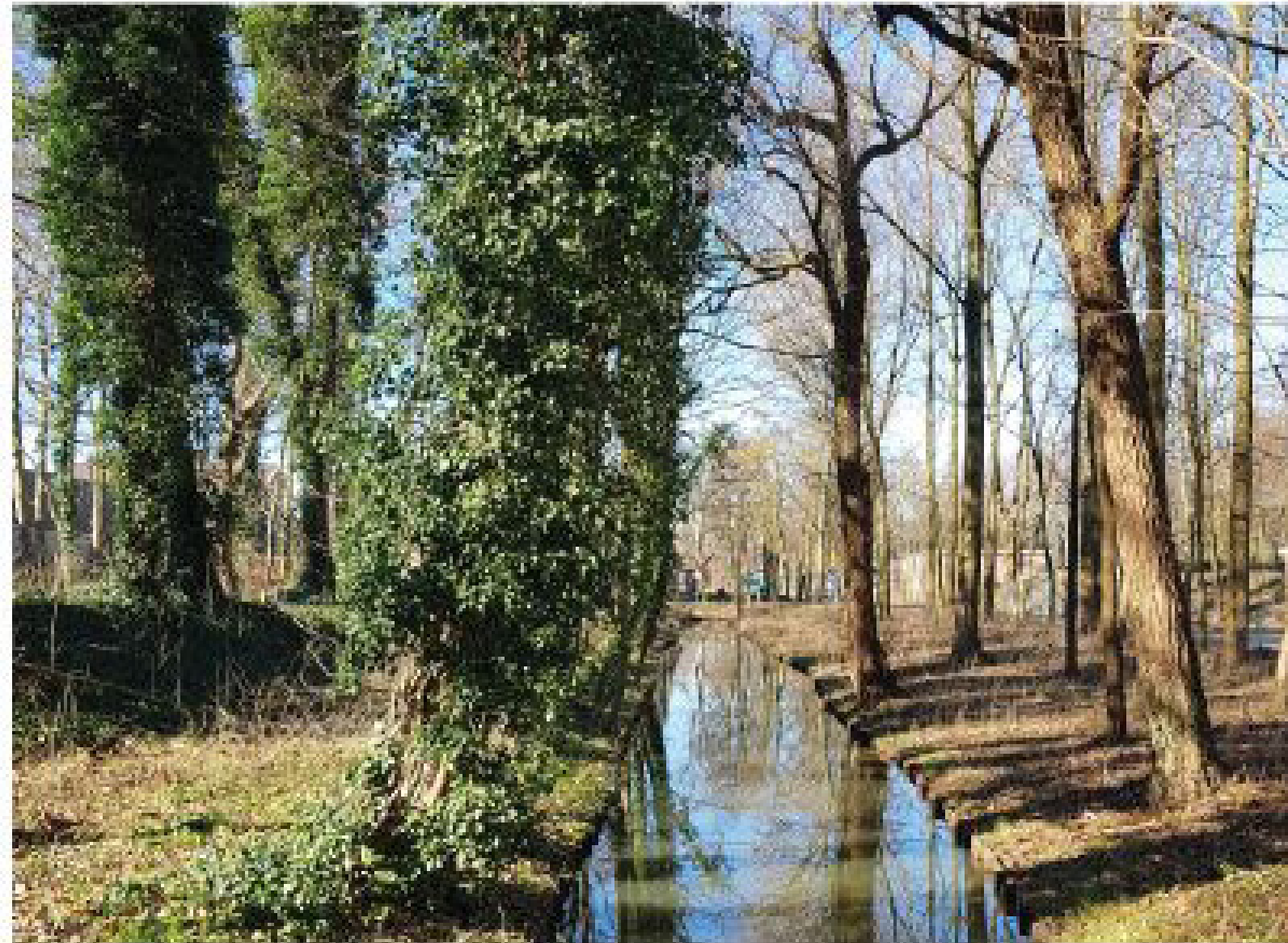


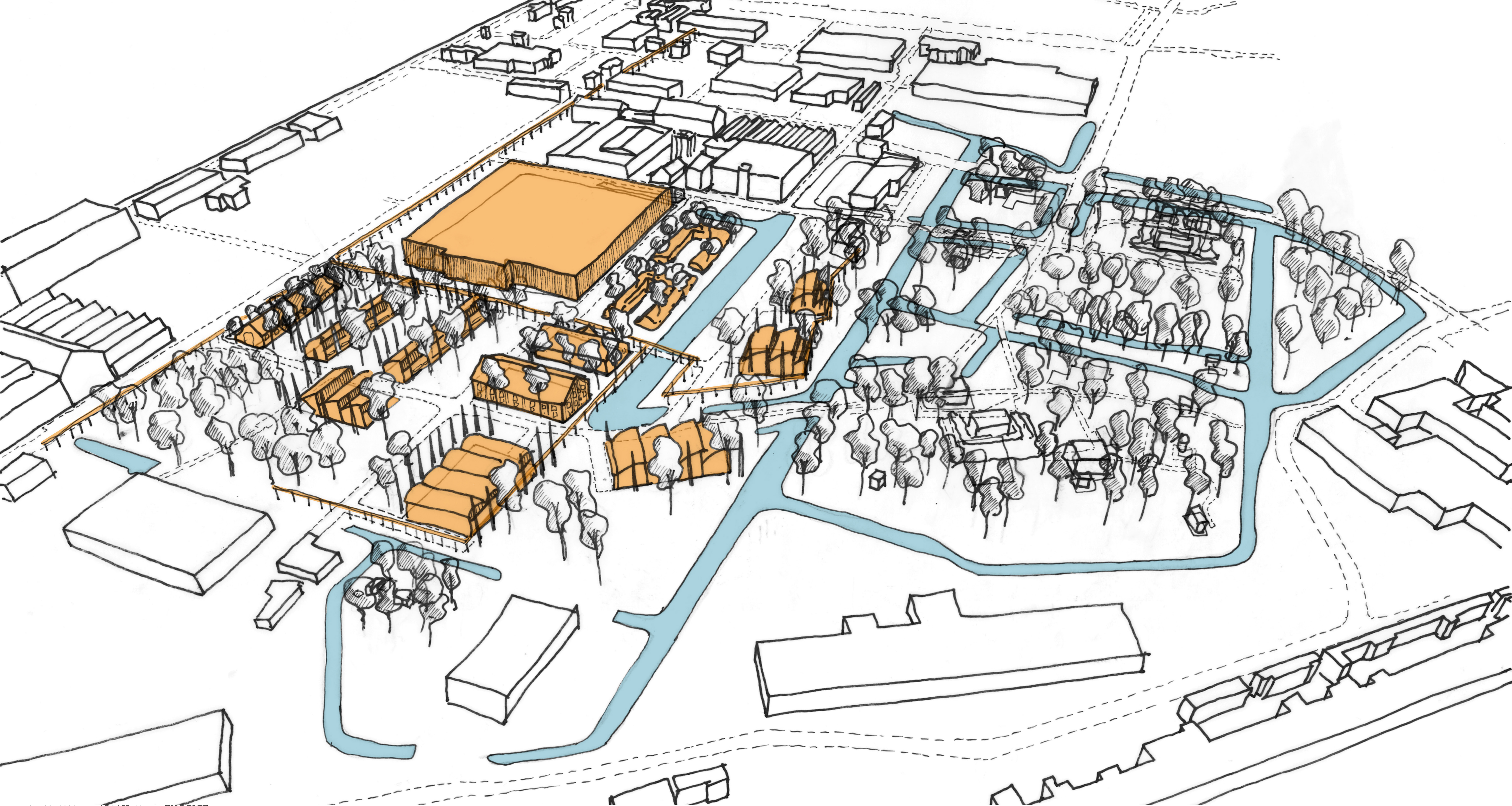
EXPERIENCE



PLOTS IN THE WOOD







Existing

Reason

Small scale

Limit concentration of explosives

Open space

Safety radius

Roofshape

Direct potential explosives

Canals

Fire compartment

Trees

Absorb shockwaves, camouflage

Earth walls

Absorb direct impact

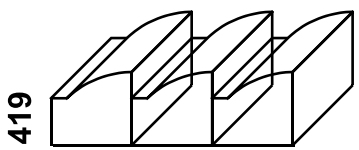
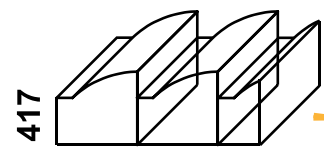
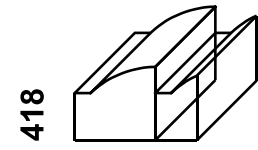
Piping system

Maintenance and safety

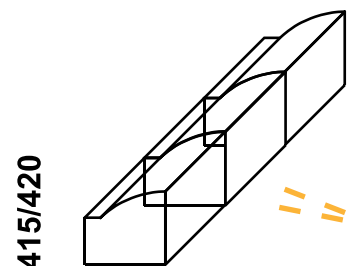
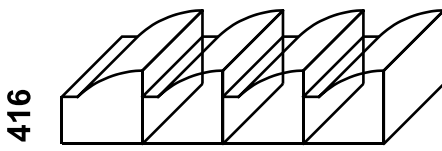
Lightning decoy

Prevent fire from lightning strikes

TIPOLOGIE
'SHELL ROOF'



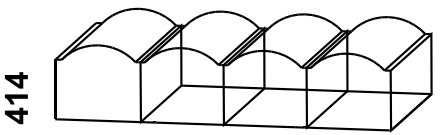
Waslokaal



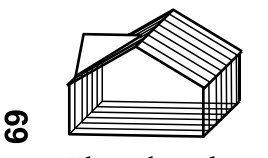
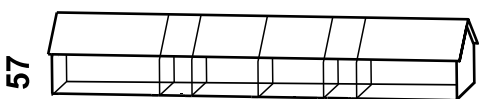
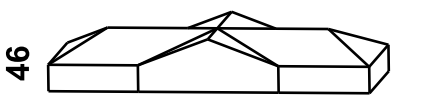
TIPOLOGIE
'FLAT ROOF'



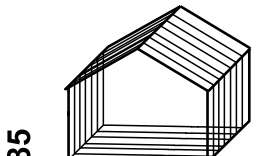
TIPOLOGIE
'CIRCULAR ROOF'



TIPOLOGIE
'GABLE ROOF'



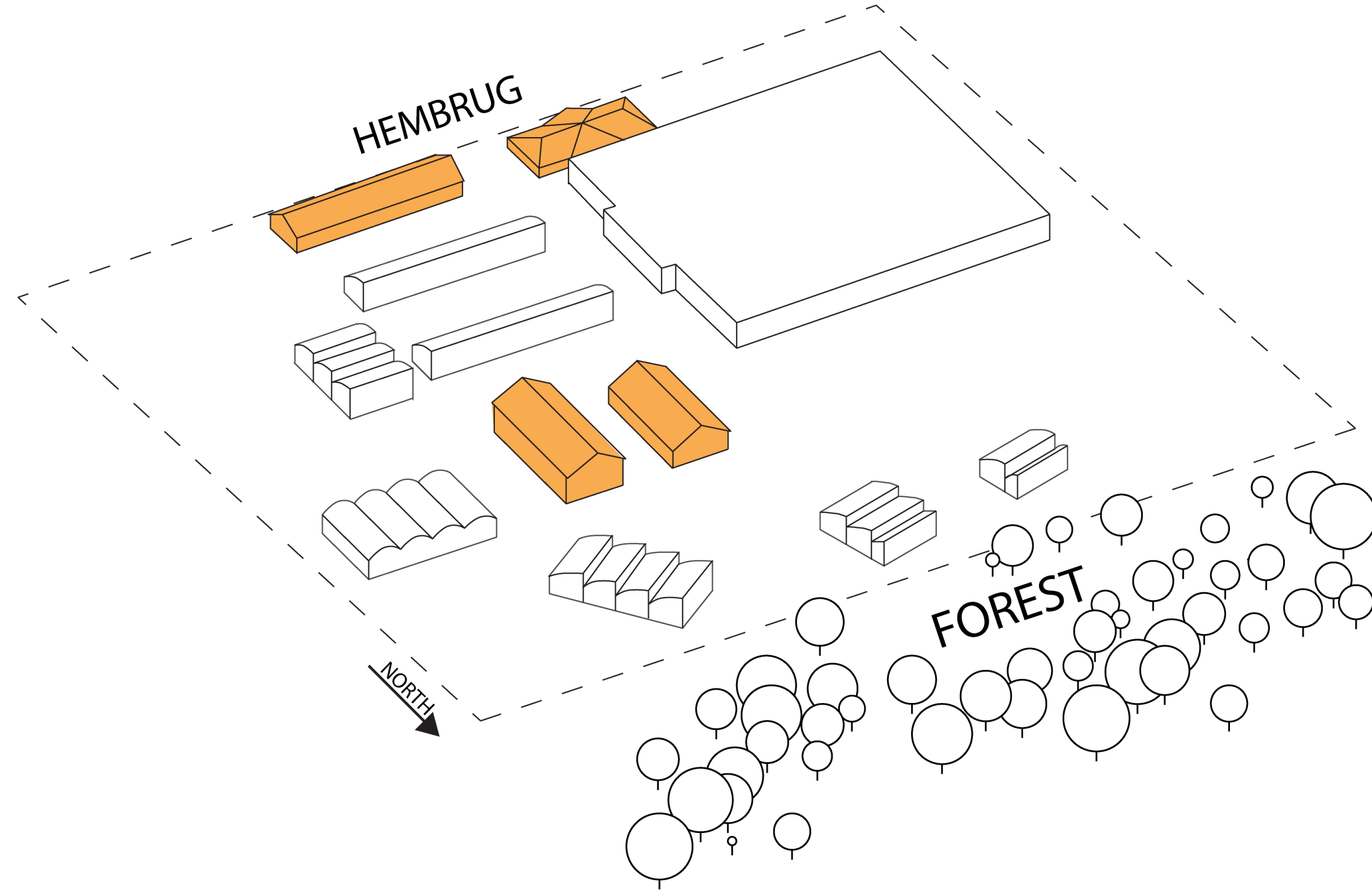
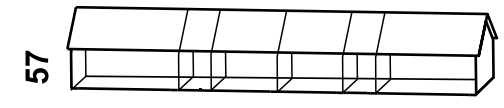
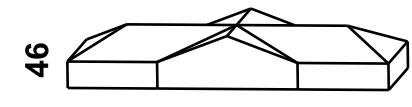
Kleine boerderij

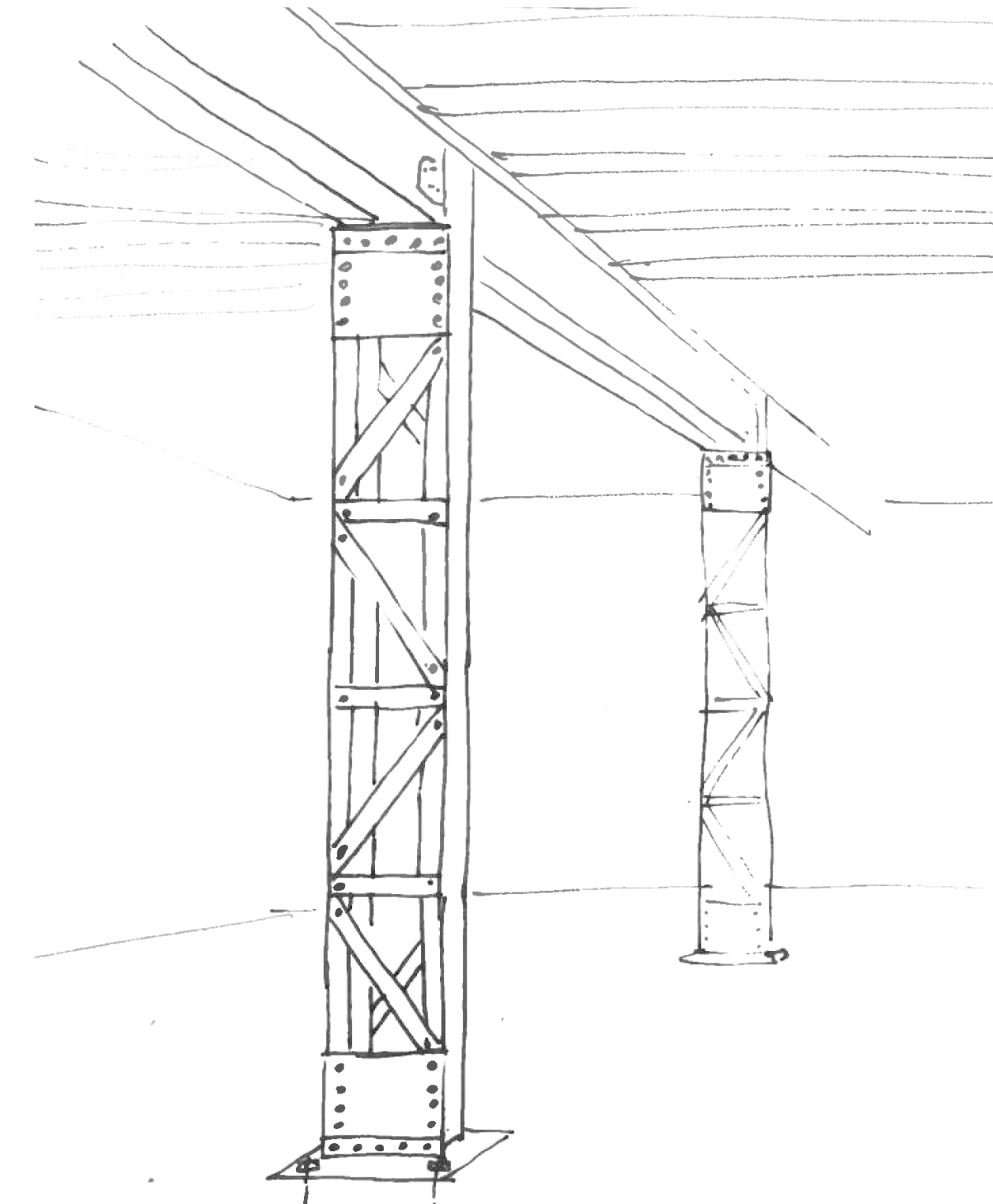
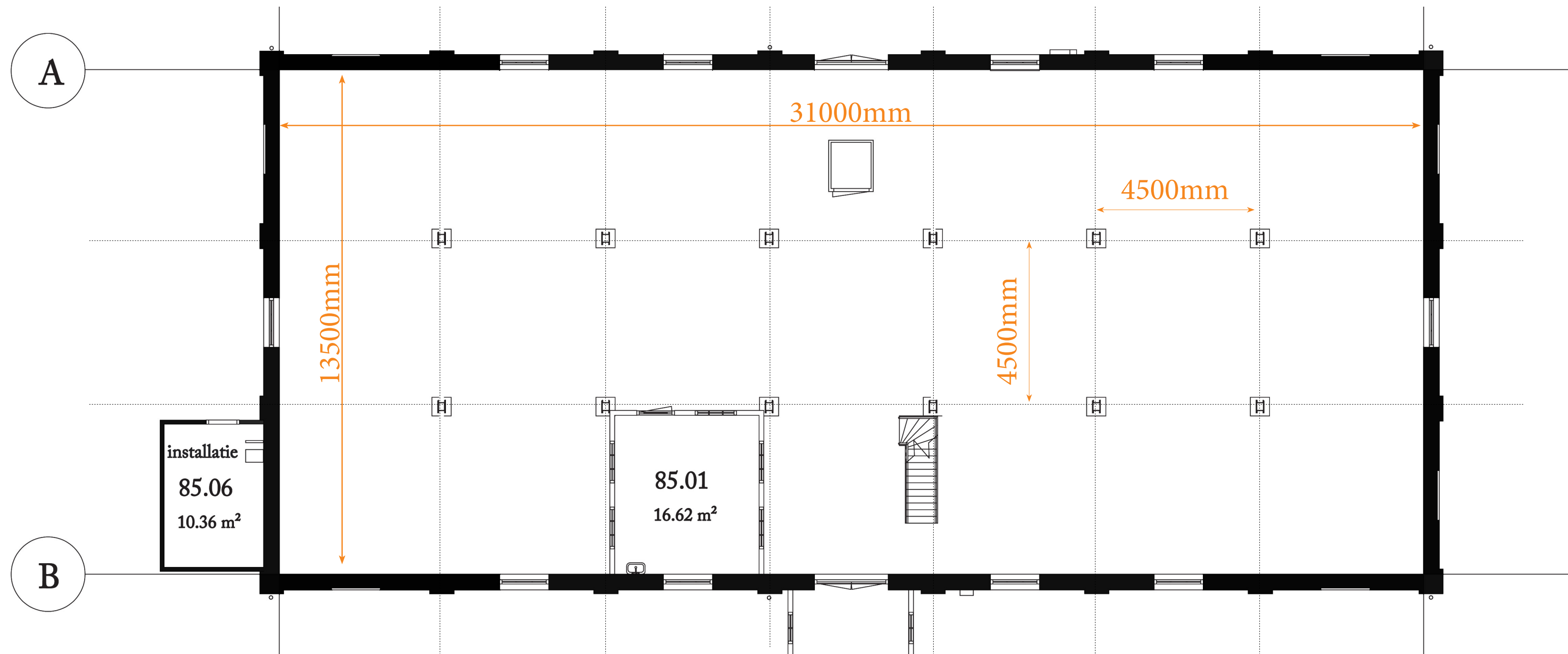
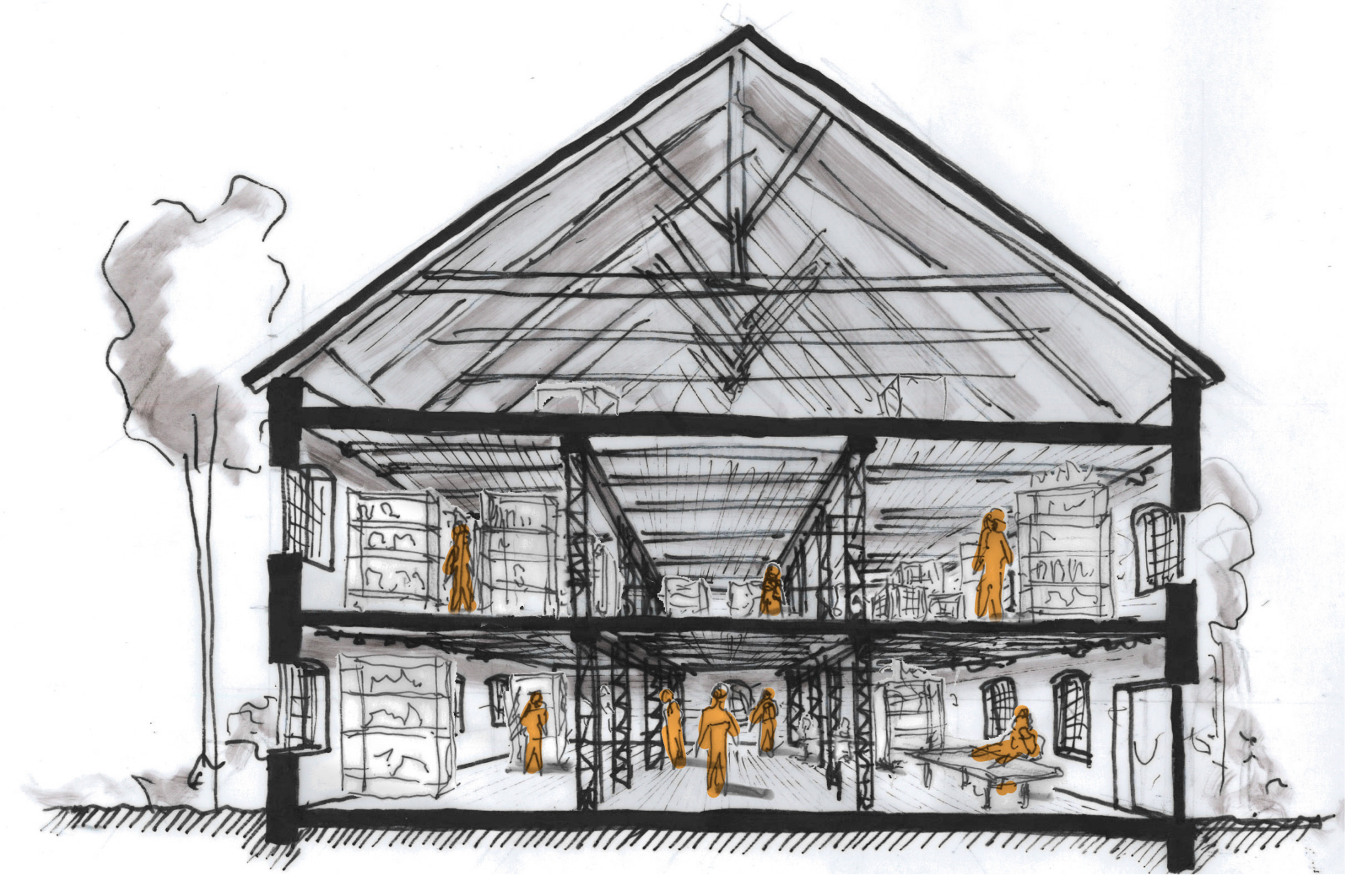


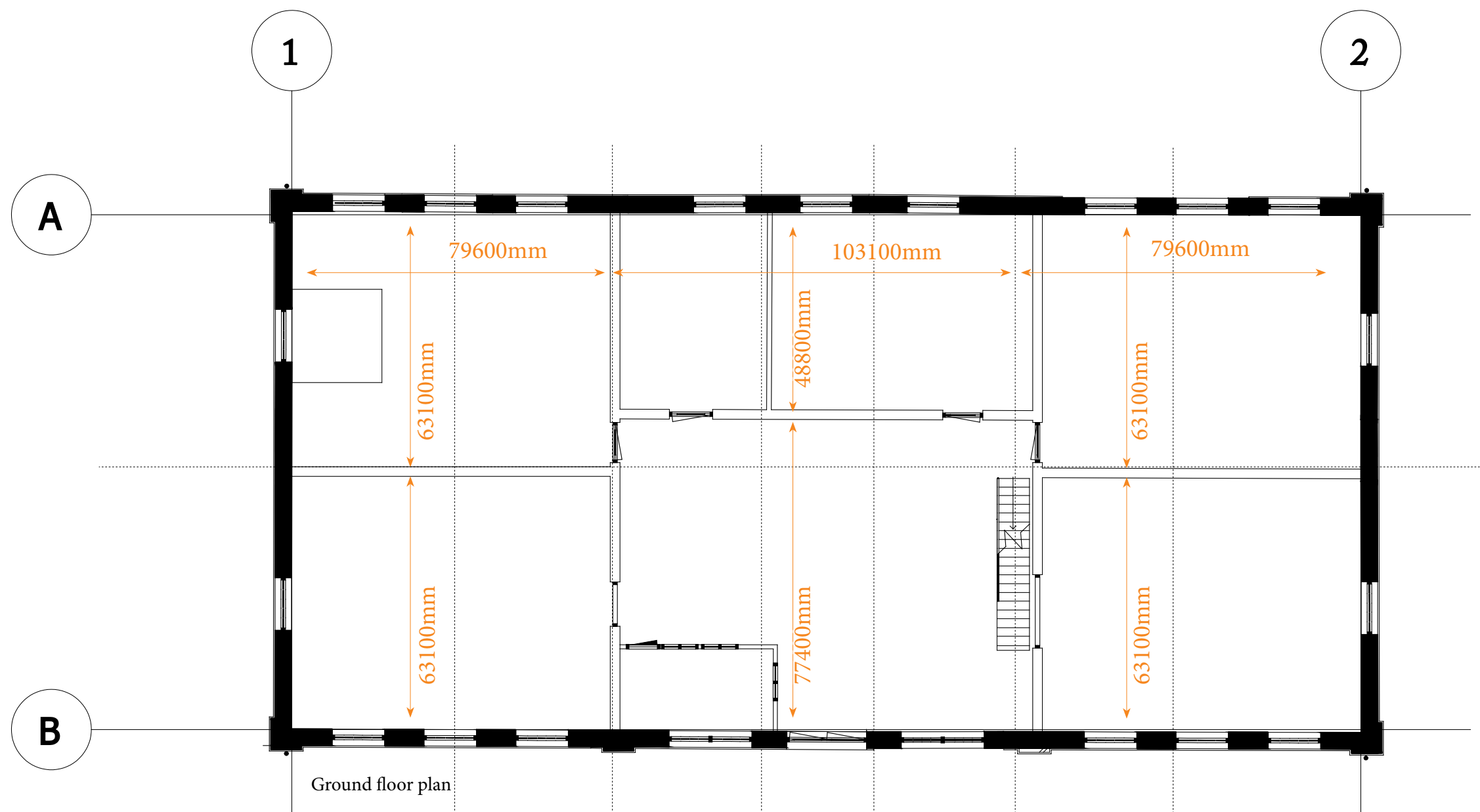
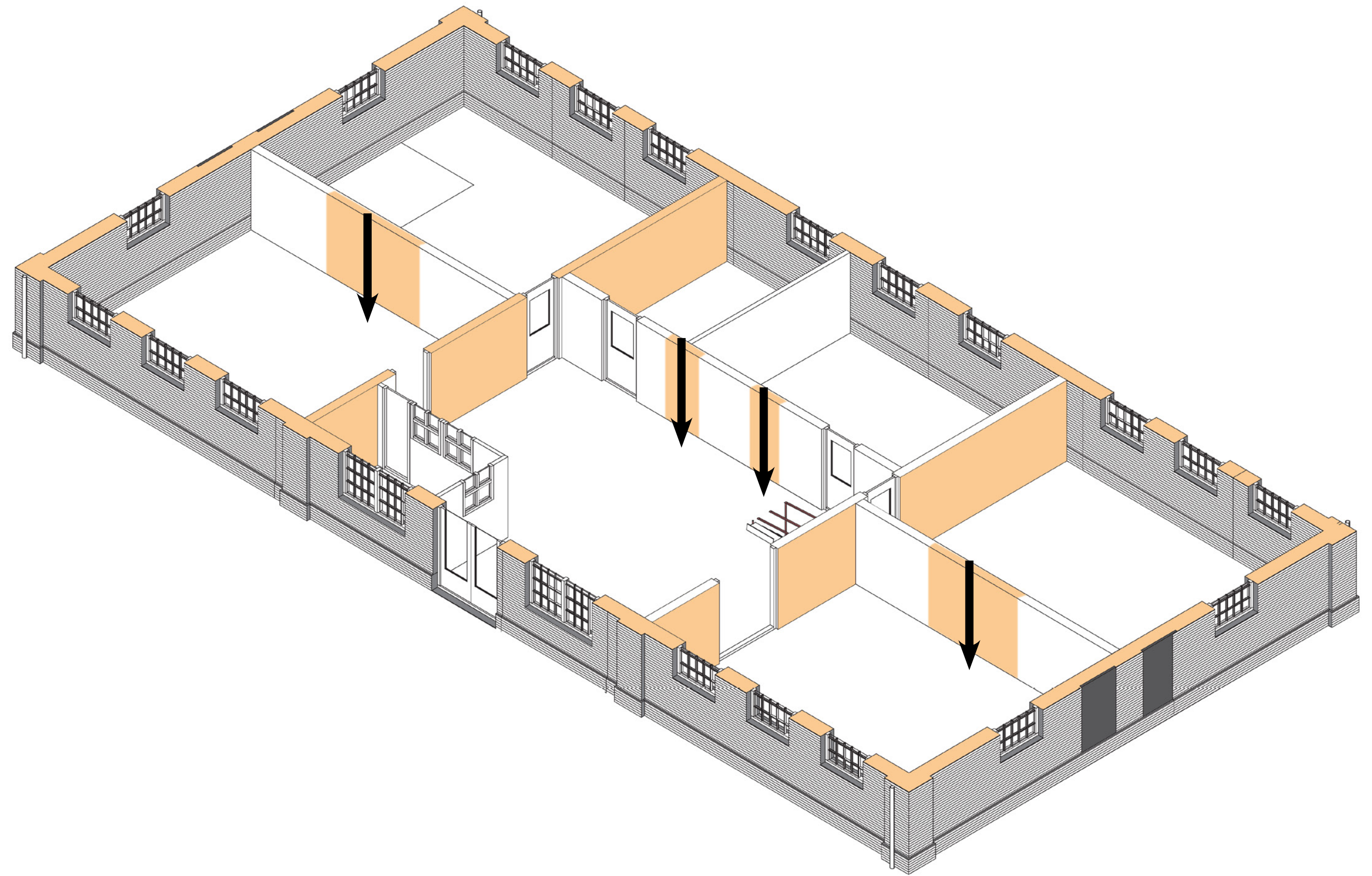
Grote boerderij

- New b
- Existin
- buildir
- Buildir
- in ense
- Border

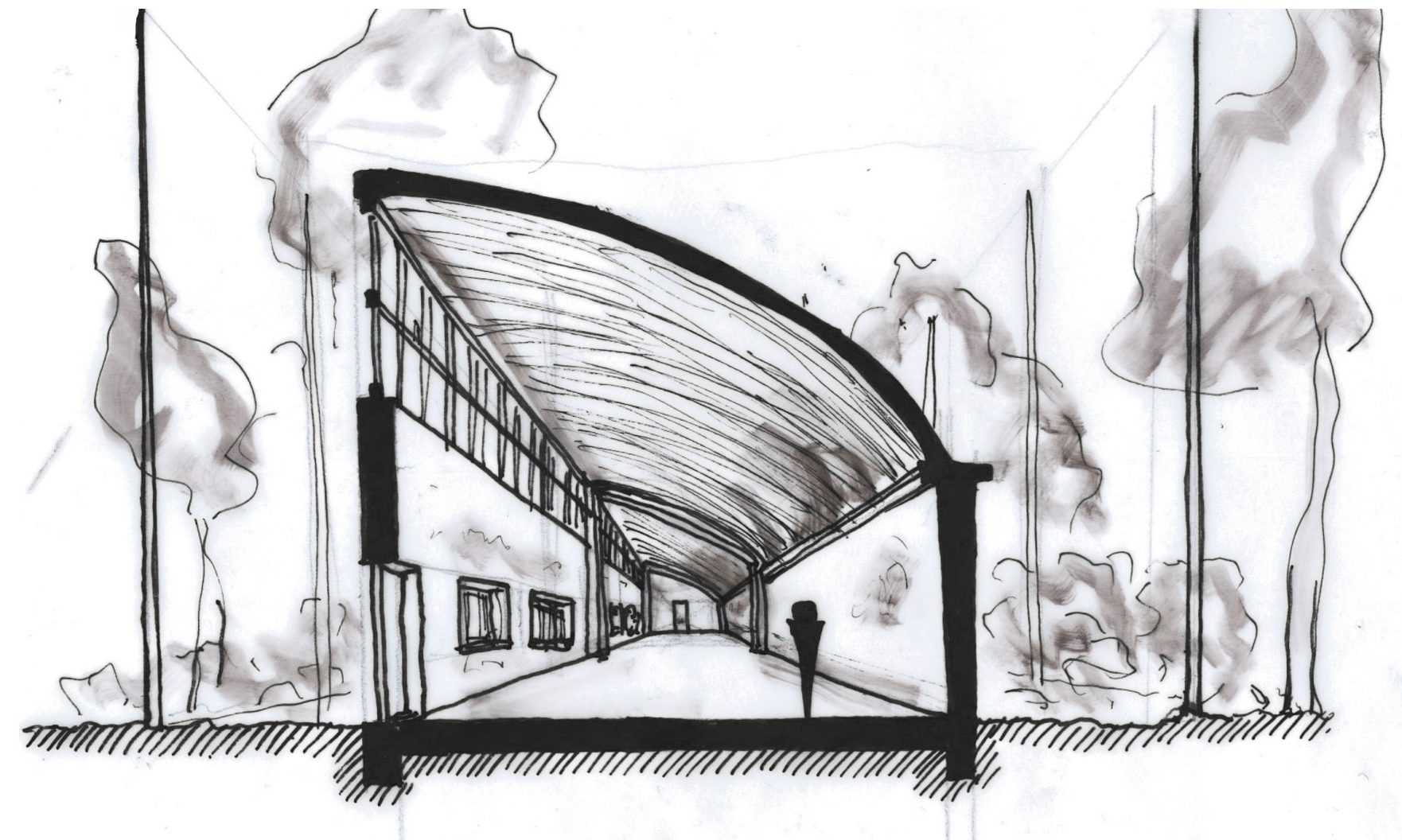
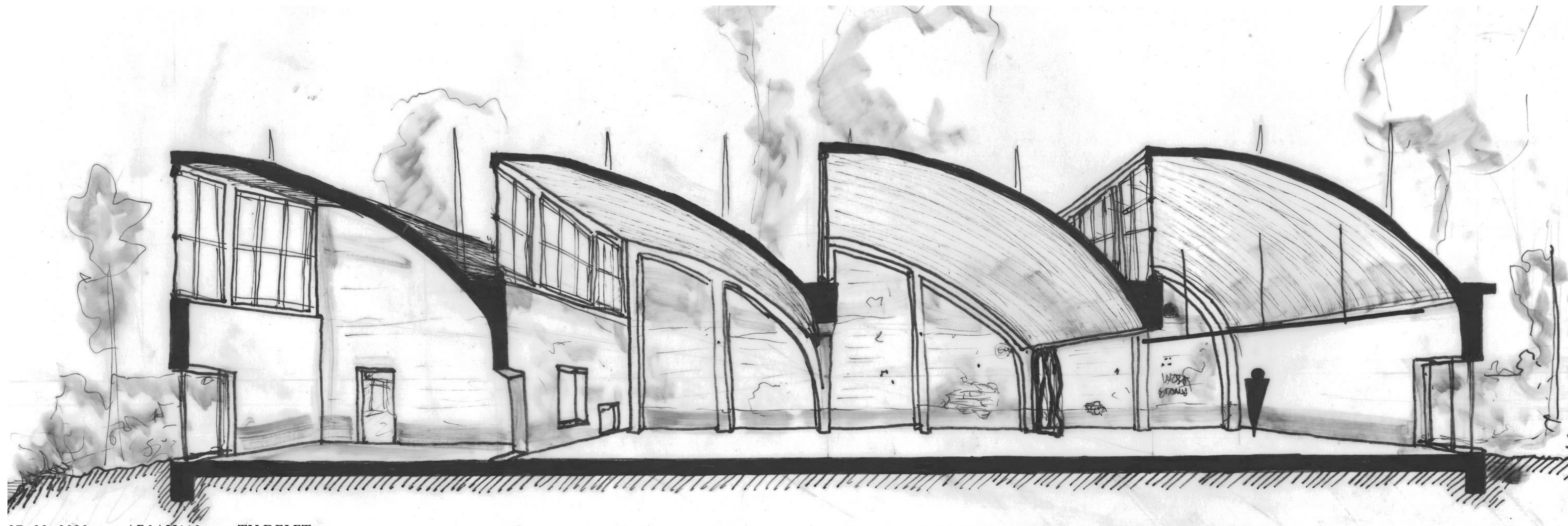
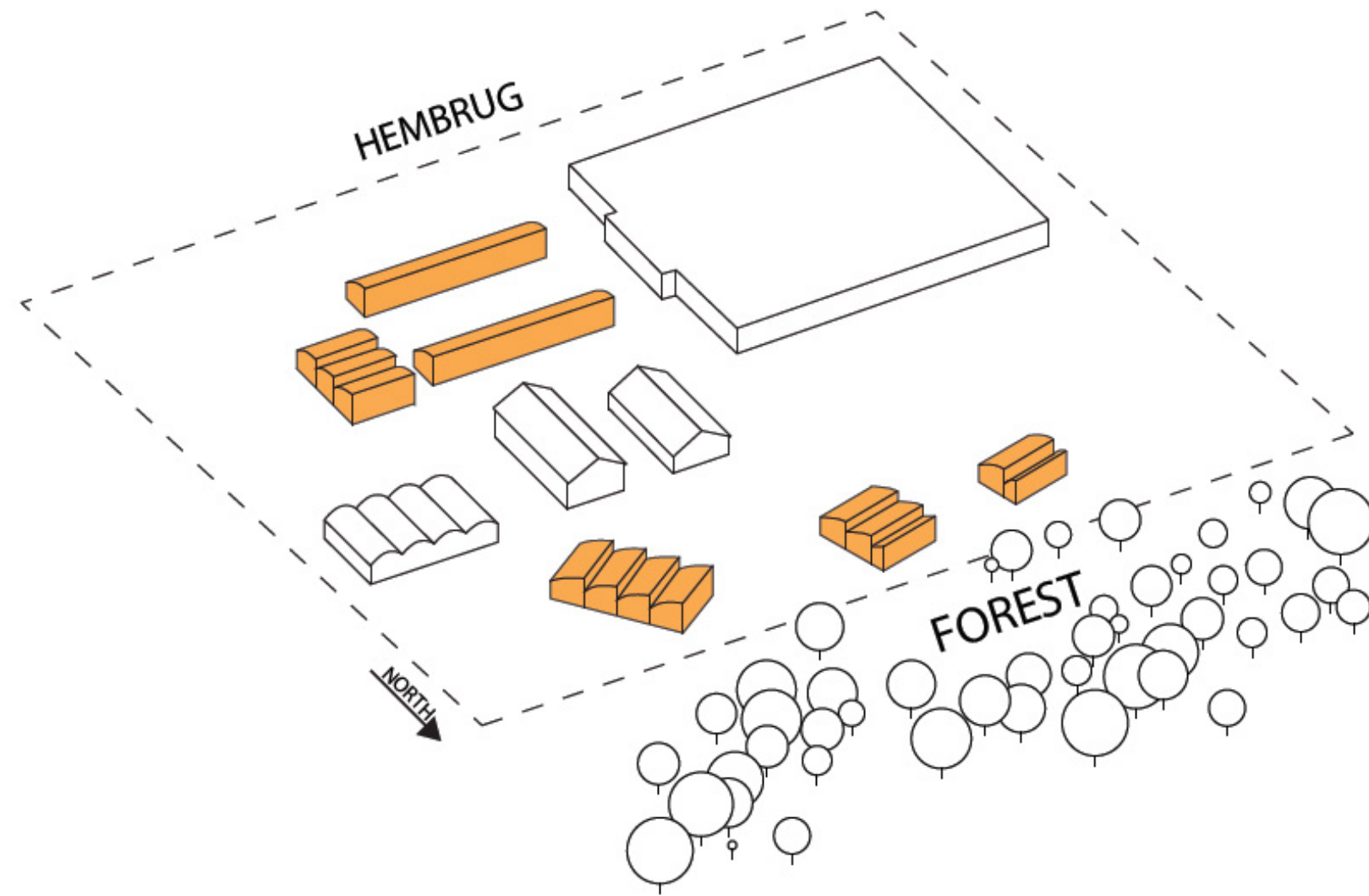
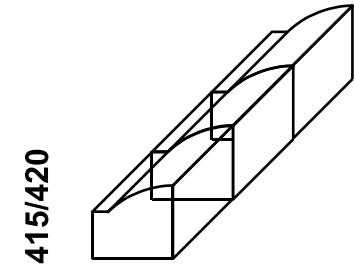
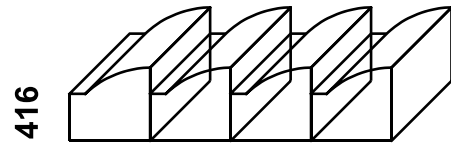
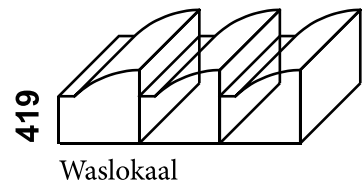
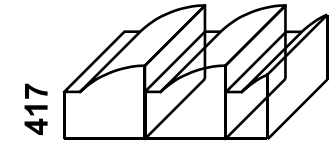
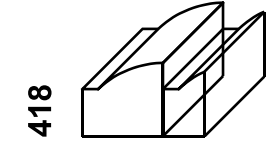
TYOLOGIE
'GABLE ROOF'



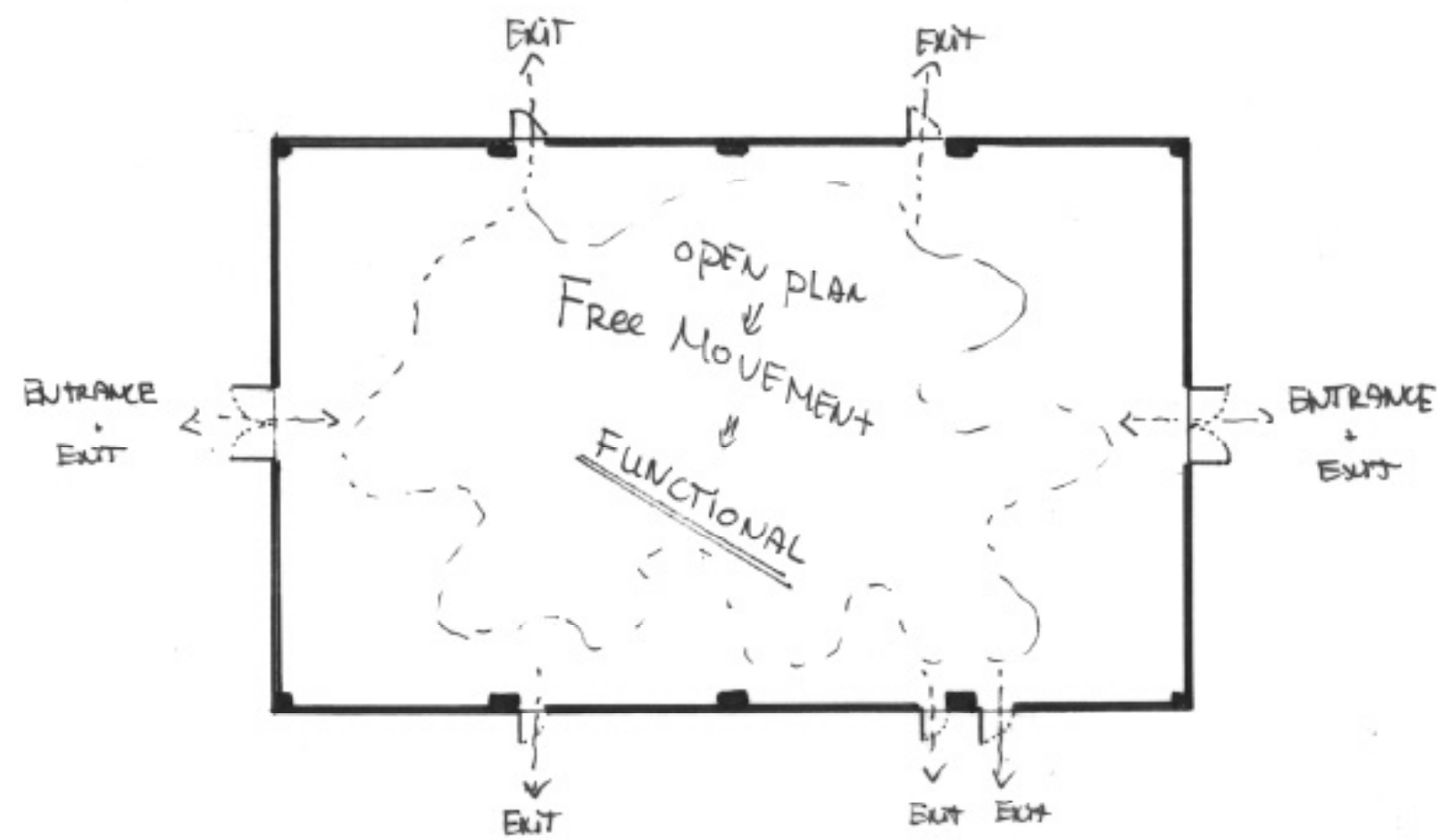
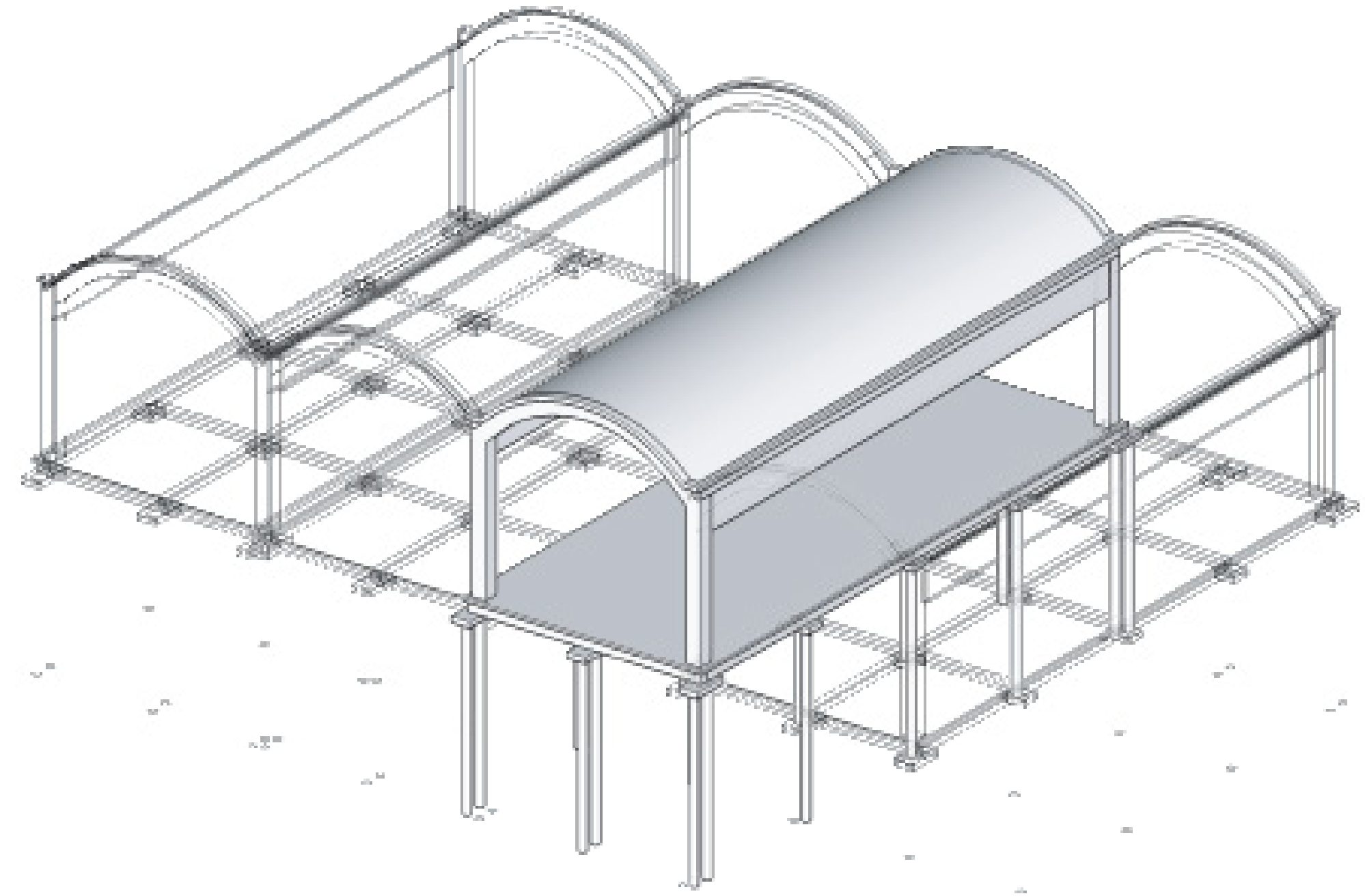
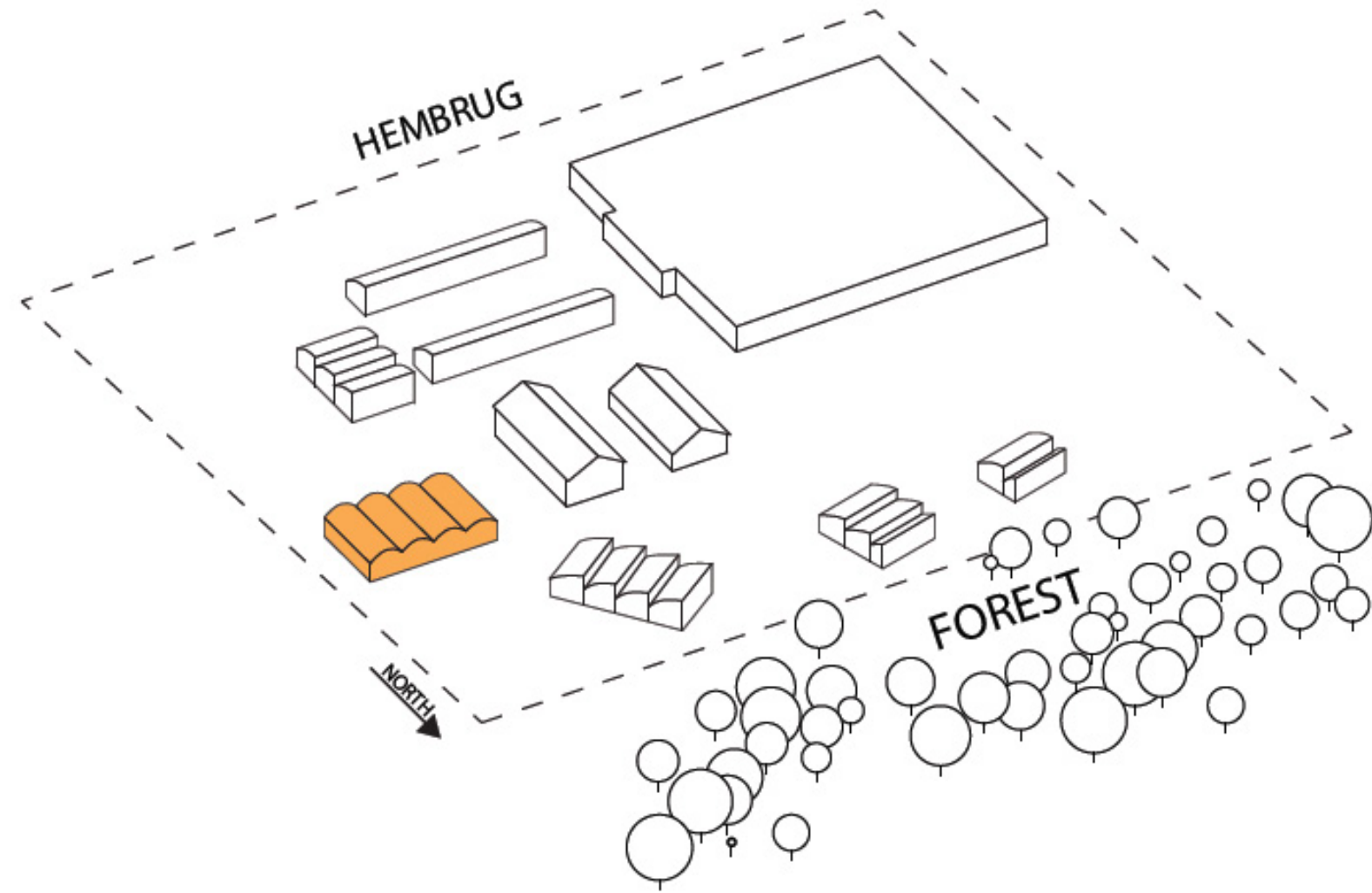
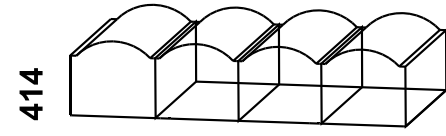




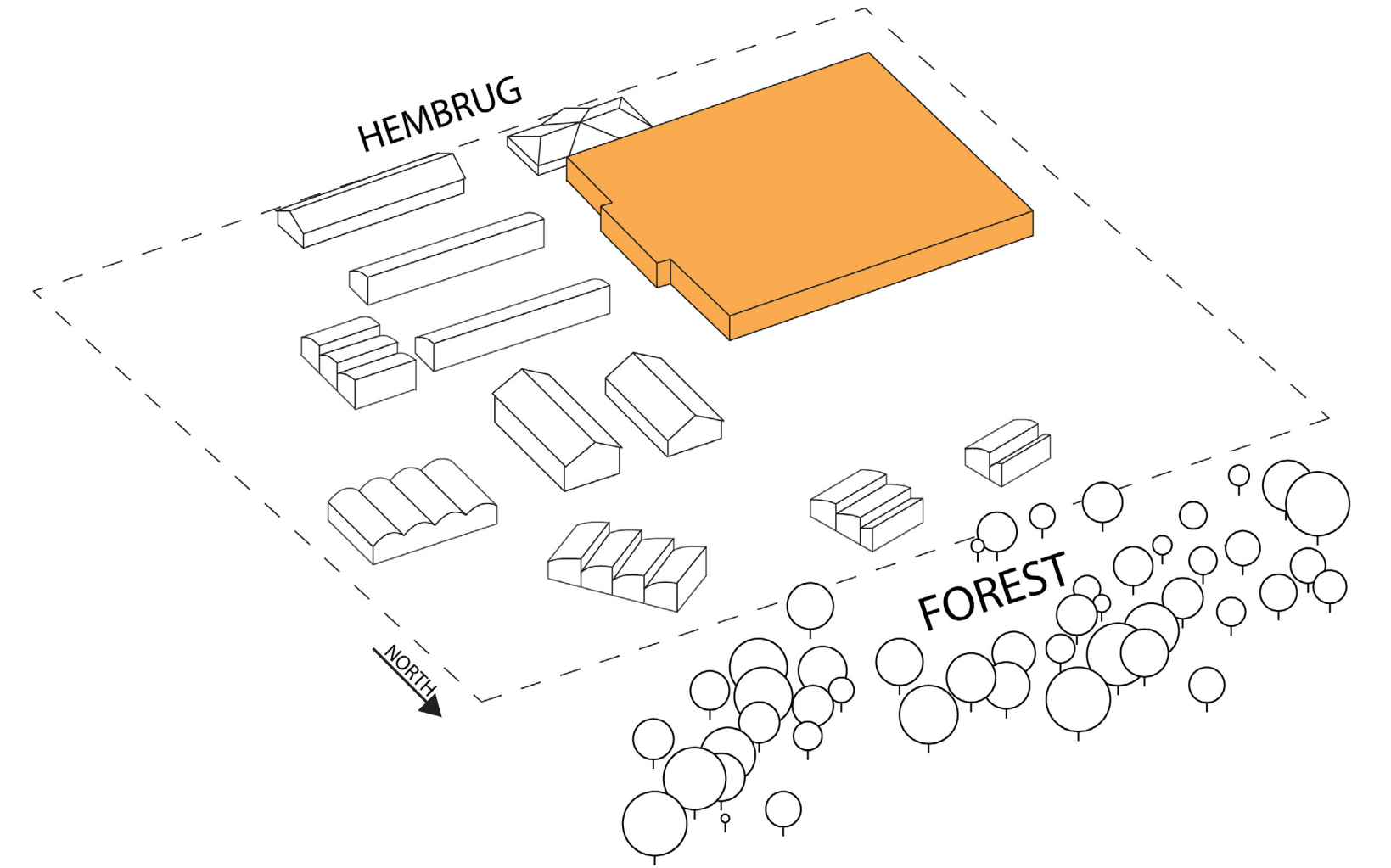
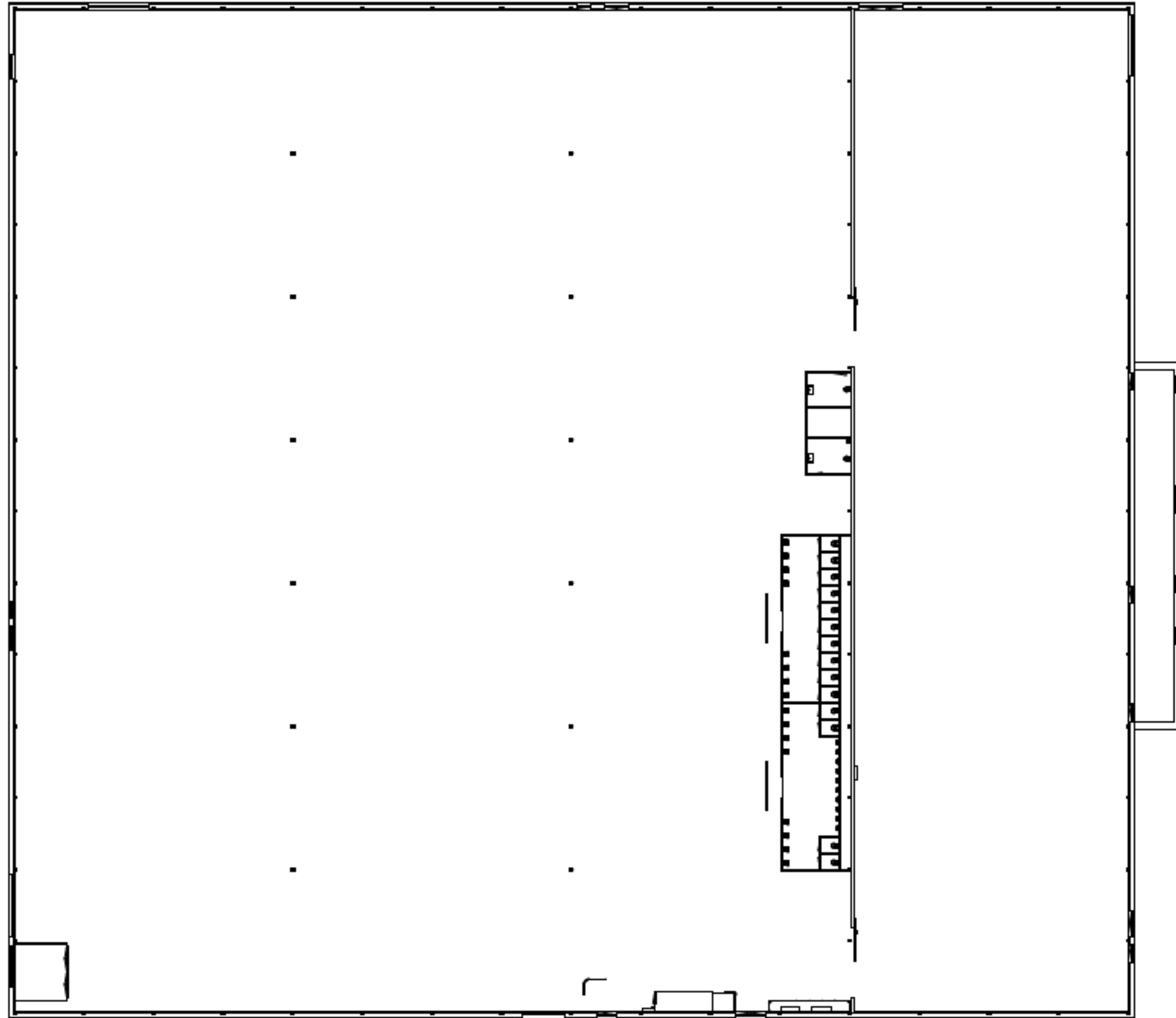
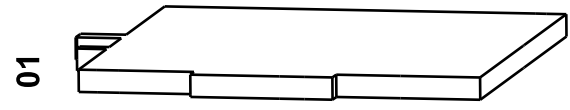
TYOLOGIE
'SHELL ROOF'



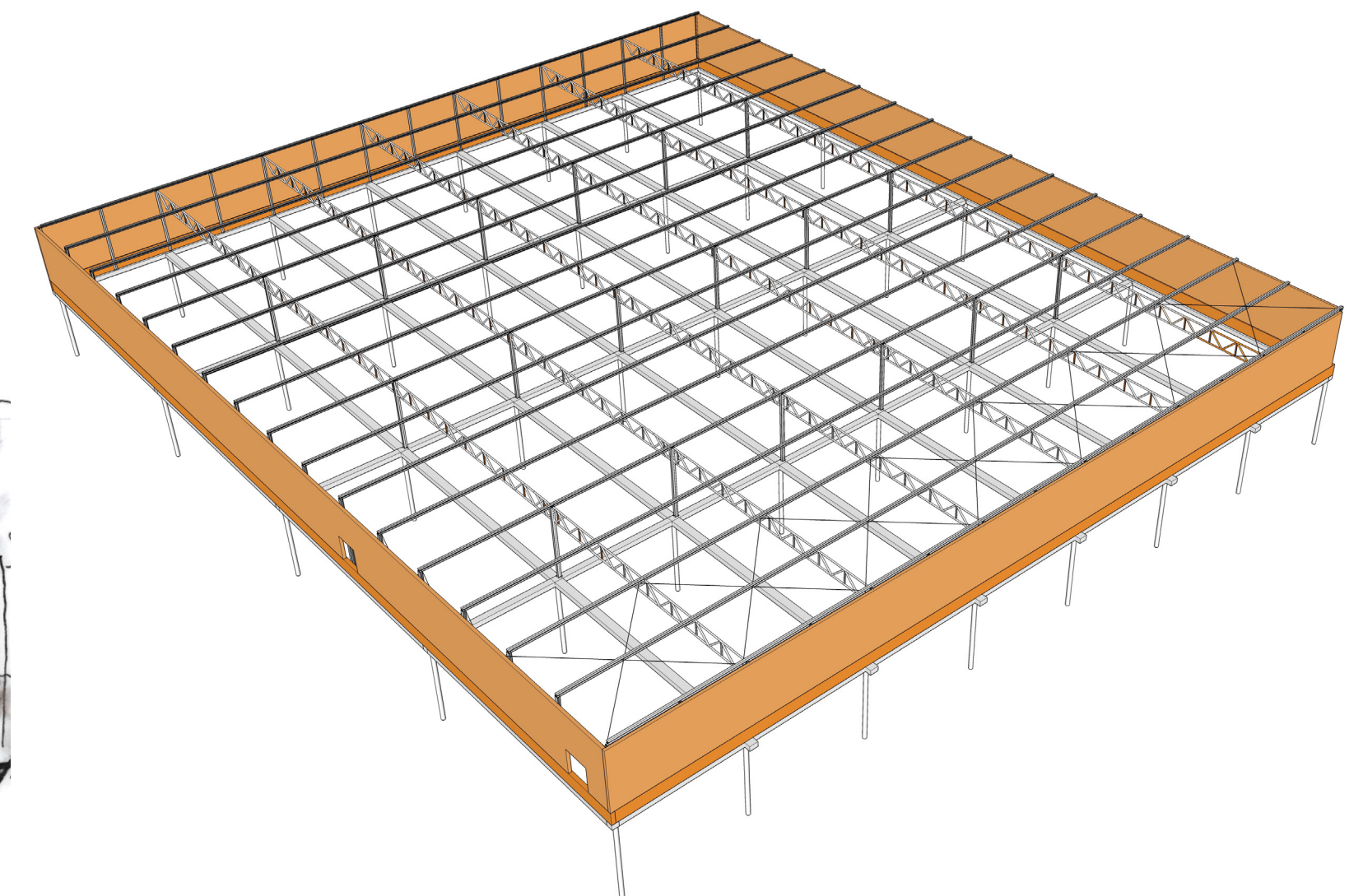
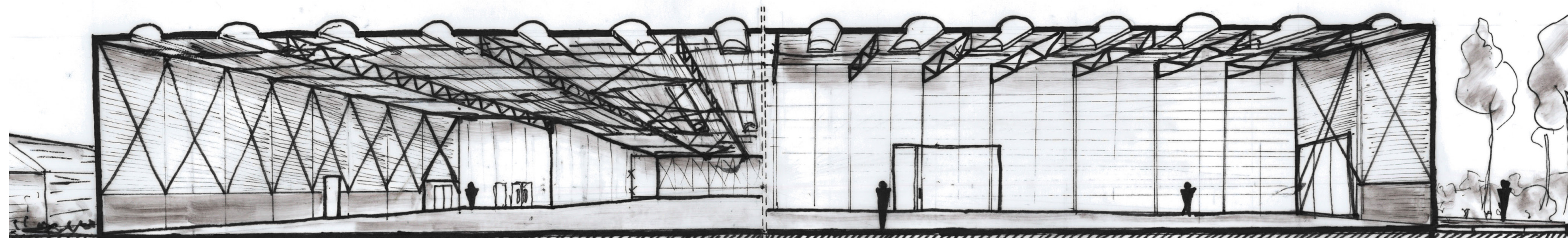
TYOLOGIE
'CIRCULAR ROOF'



TIPOLOGIE
'FLAT ROOF'



Ground floor: 80600 x 72700 mm



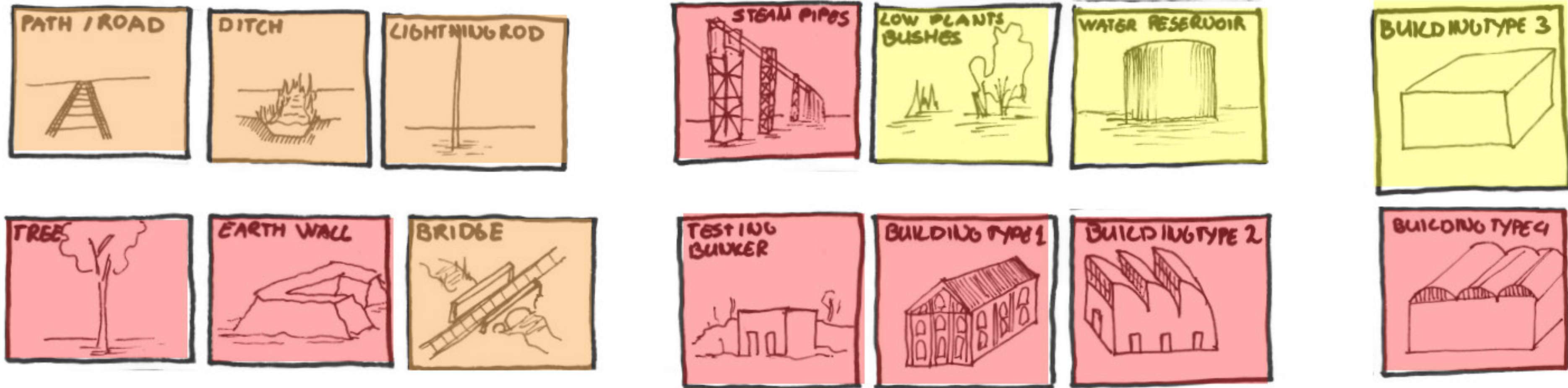


前方直進
自転車

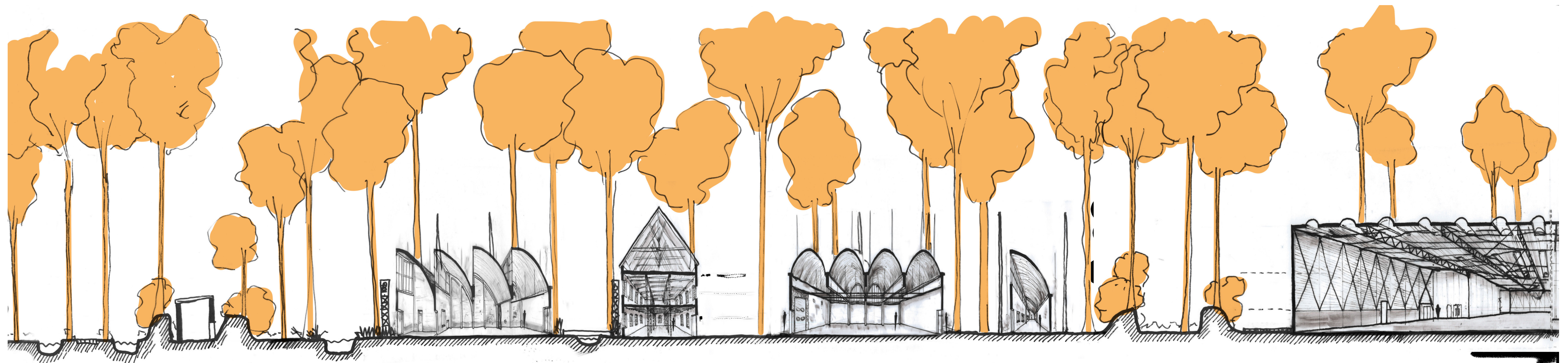
apawi

GW.20.12049





CULTURAL VALUE



How to deal with the existing?

PROBLEM DEFINITION

HUMAN ACTIVITY DRAWBACKS ON ENVIRONMENT
THIS IS AN URGET ISUUE!

The sollution towards solving this problem, is using the cocept of circularity in different human activities.
One of the elements of circularity is localization



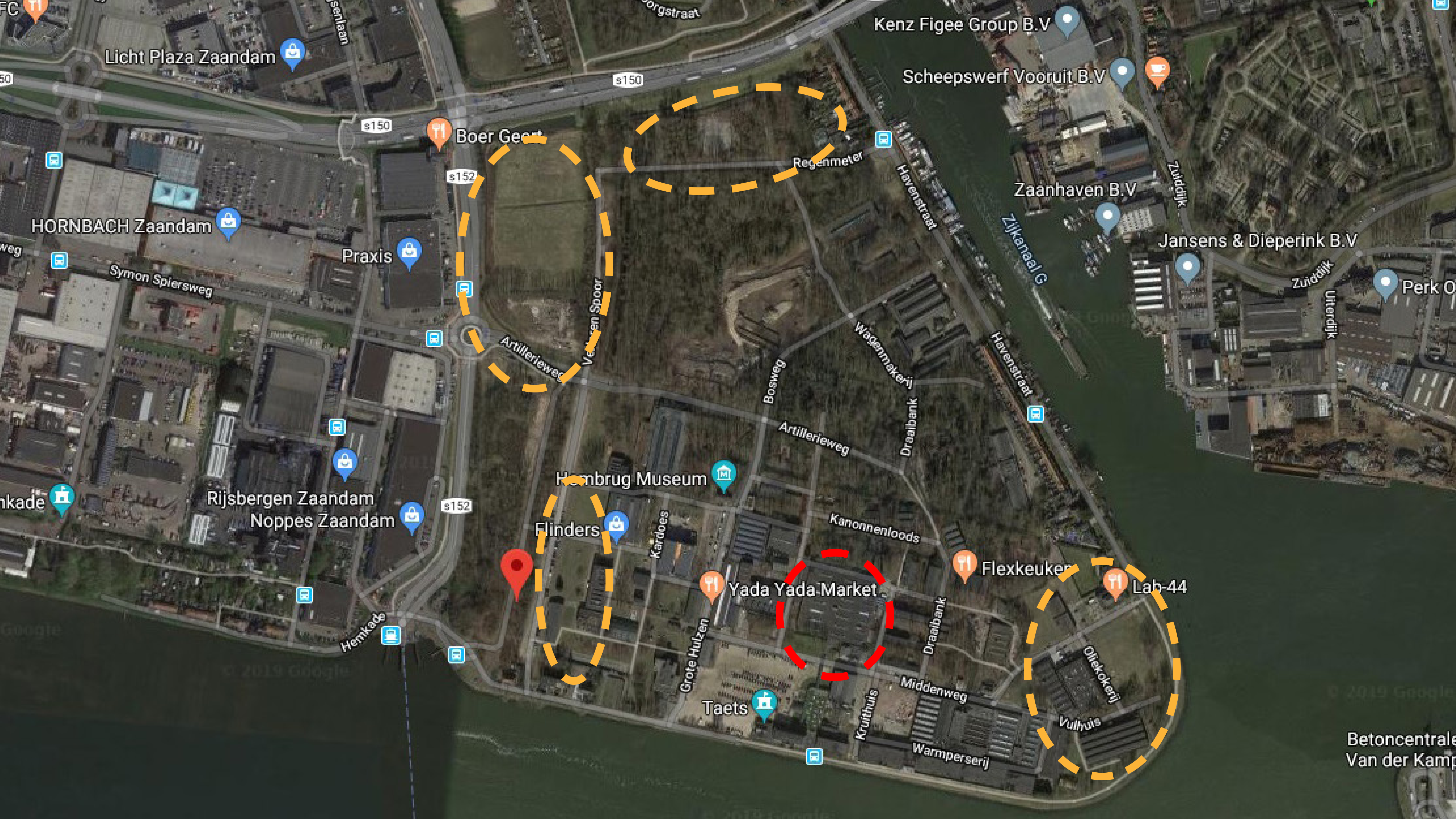
local farming

Shop your local farmers market
use less of plastic
Local food benefits the environment



Other benefits:
Conserves fuel
Public health
Locally grown food is full of flavor
Local food supports the local economy
Job creations
Community building





Licht Plaza Zaandam

Kenz Figeer Group B.V.

Scheepswerf Vooruit B.V.

Boer Geert

Zaanhaven B.V.

HORNBACH Zaandam

Jansens & Dieperink B.V.

Praxis

Hembrug Museum

Rijsbergen Zaandam
Noppes Zaandam

Flinders

Yada Yada Market

Flexkeuken

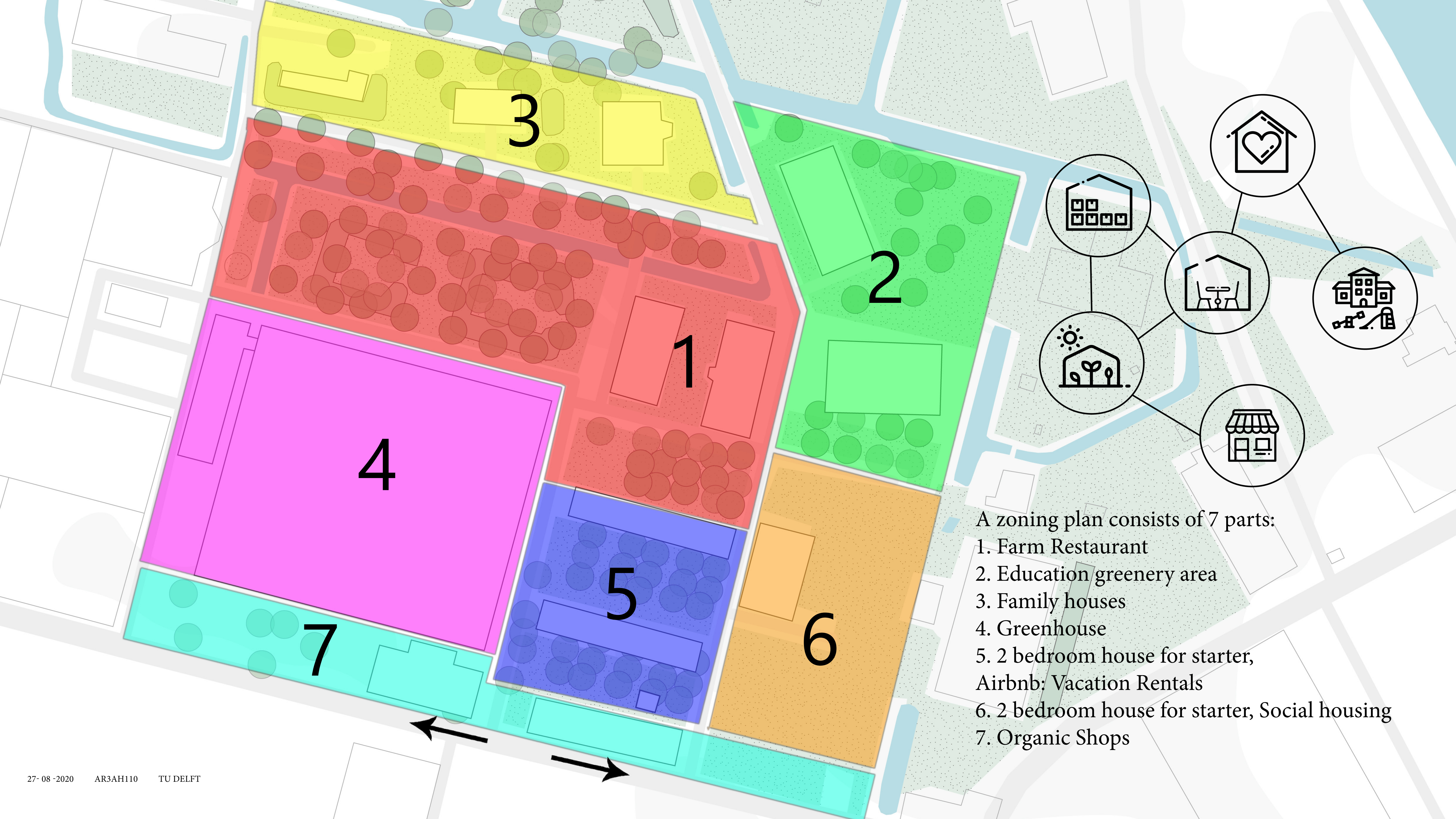
Lab-44

Taets

Betoncentrale
Van der Kamp

VISION

The design leads to transform the "plots in wood" to the residential and commercial areas which is combined with local farming.



A zoning plan consists of 7 parts:

- 1. Farm Restaurant
- 2. Education greenery area
- 3. Family houses
- 4. Greenhouse
- 5. 2 bedroom house for starter, Airbnb: Vacation Rentals
- 6. 2 bedroom house for starter, Social housing
- 7. Organic Shops

Farm Restaurant

700 m² DR

700 m² VF

Education

1000m²

Greenhouse

4000m²

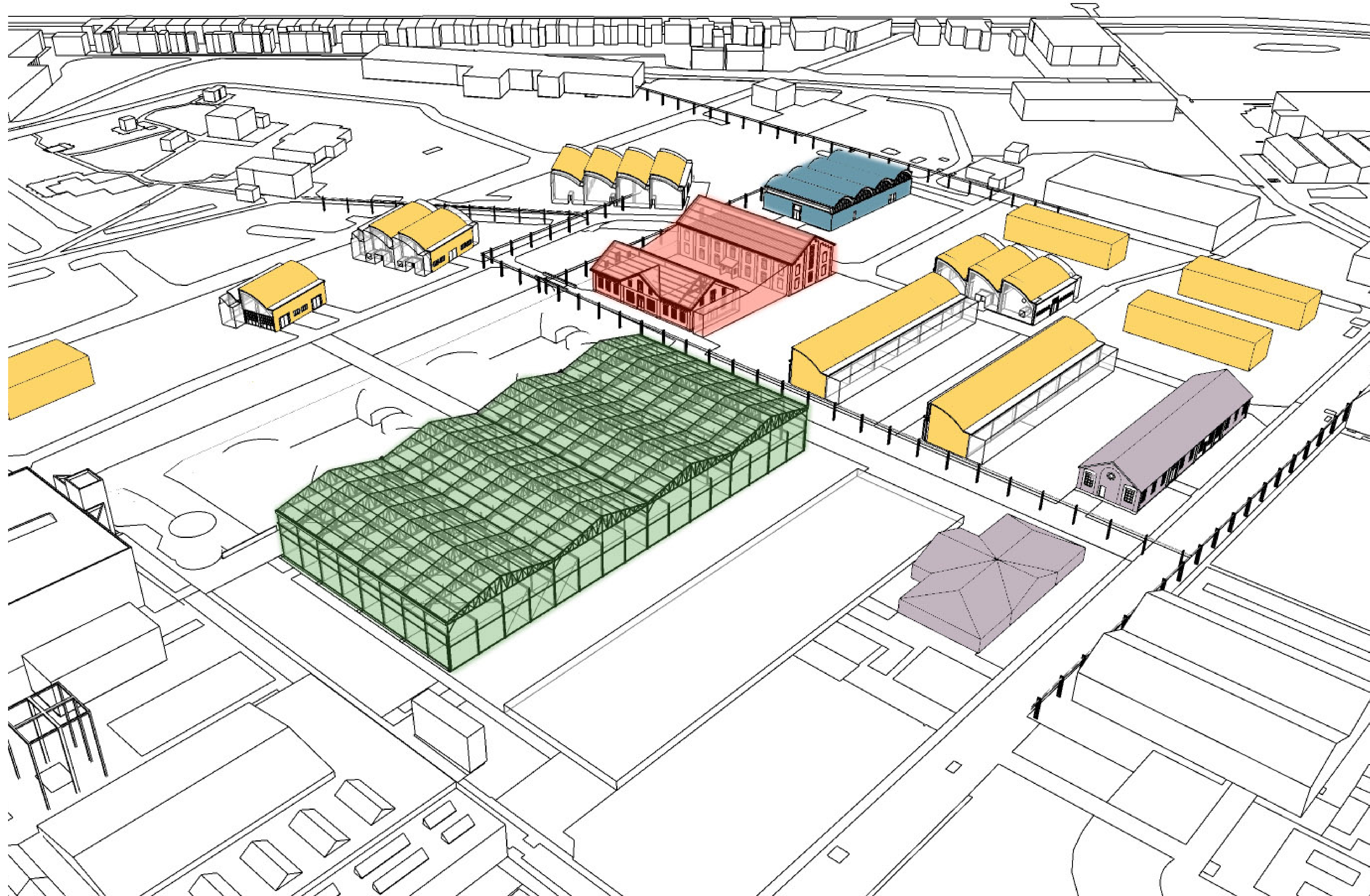
Residential

30 houses

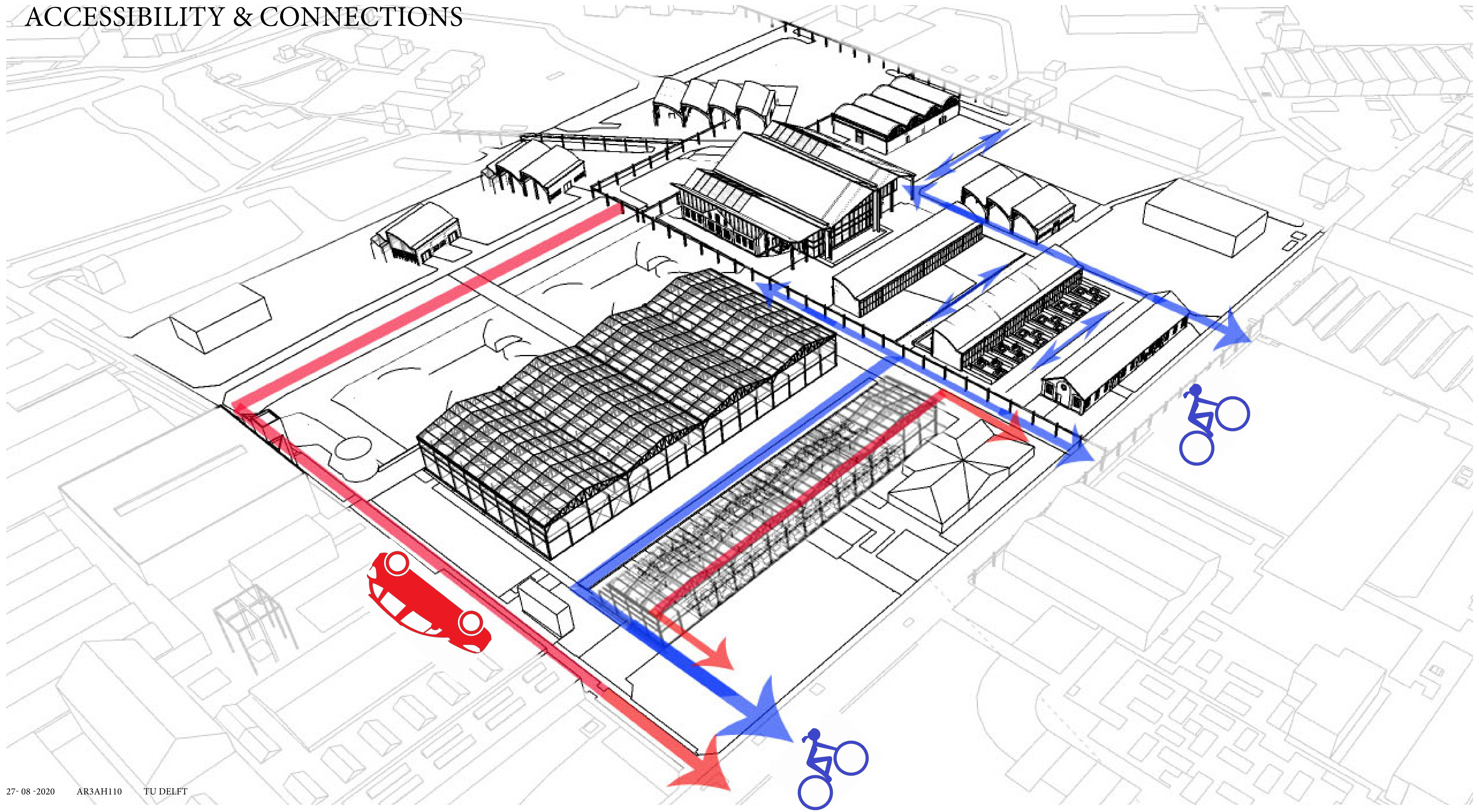
Commercial

-420 m²

w-780 m²



ACCESSIBILITY & CONNECTIONS



TRANSFORMATION OF FUNCTIONS

GREENHOUSE, RESTURANT

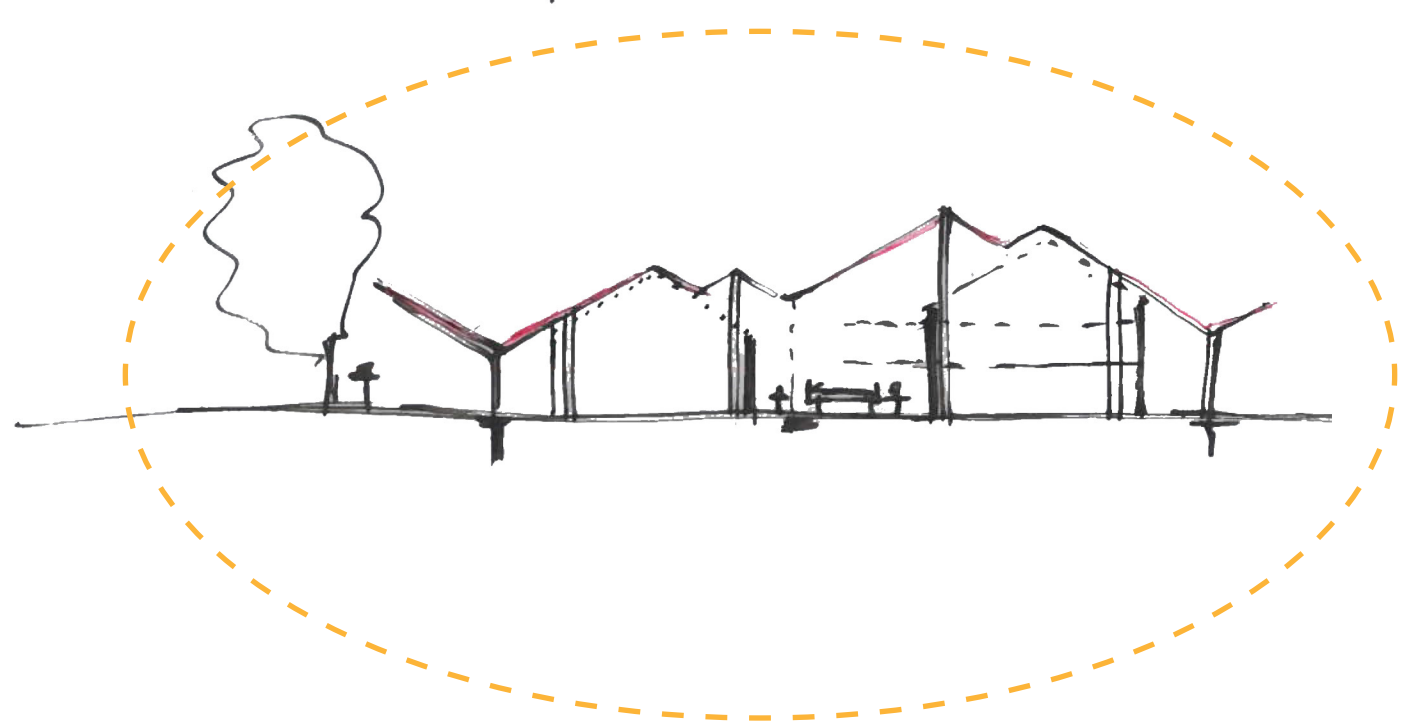
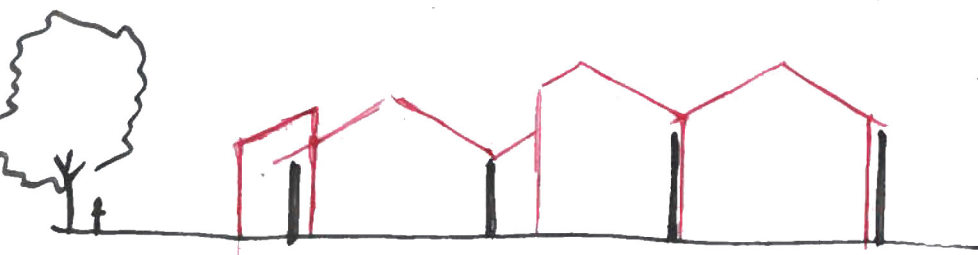
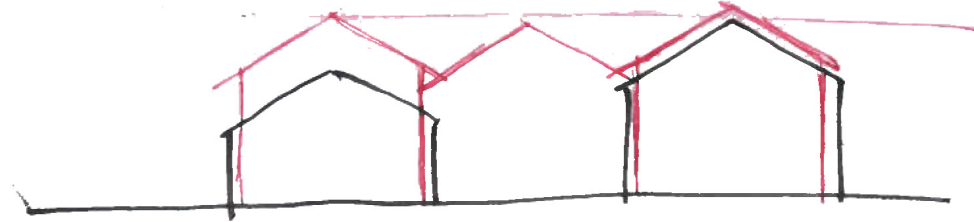
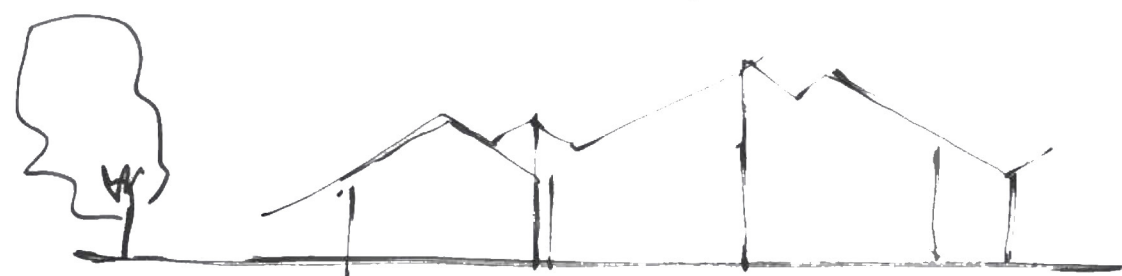
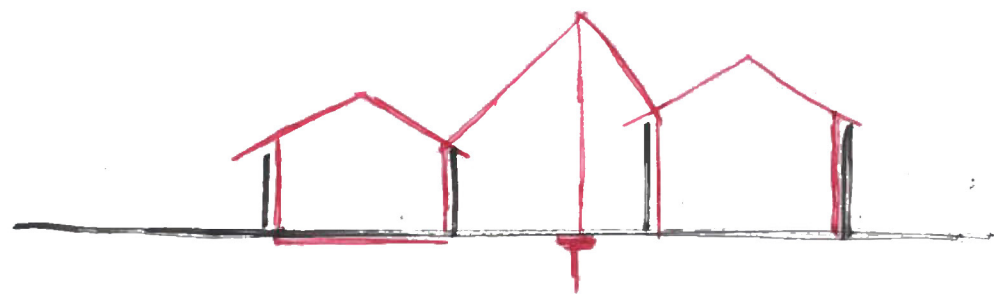
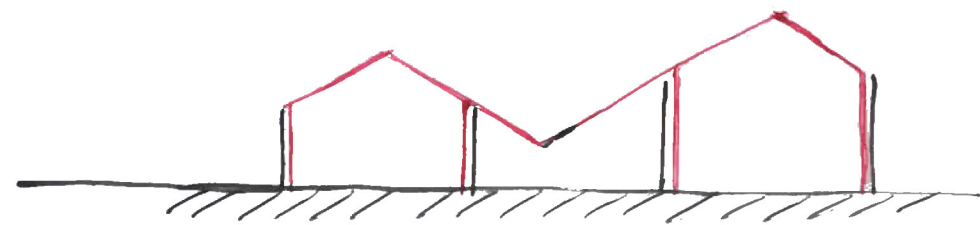
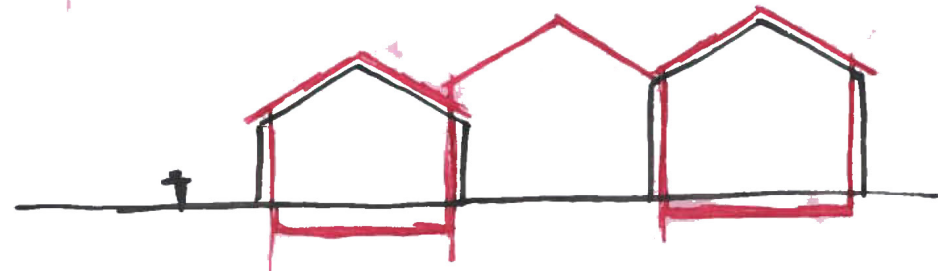
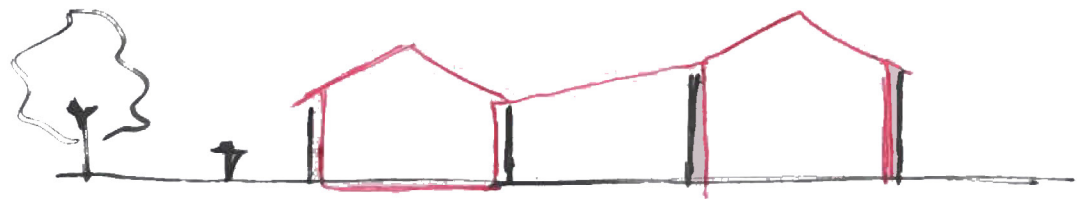
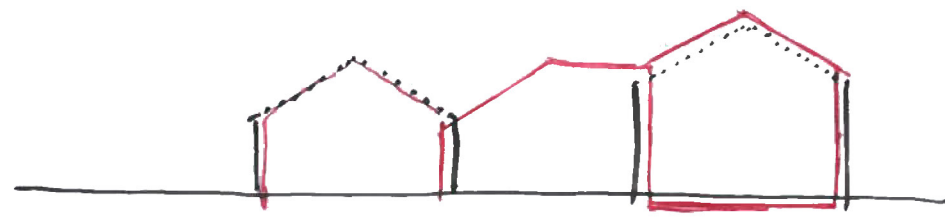
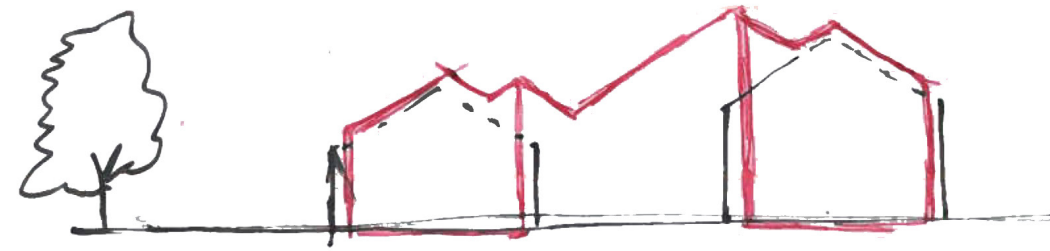
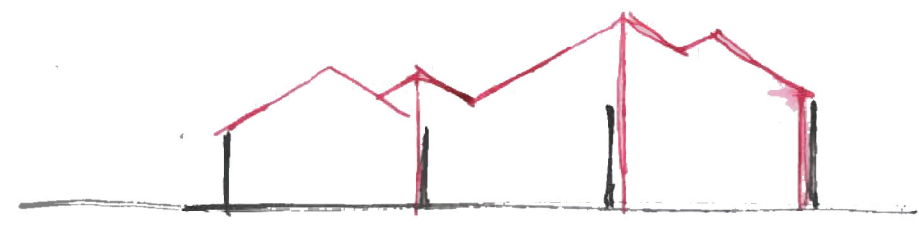
How do I design a circular building?

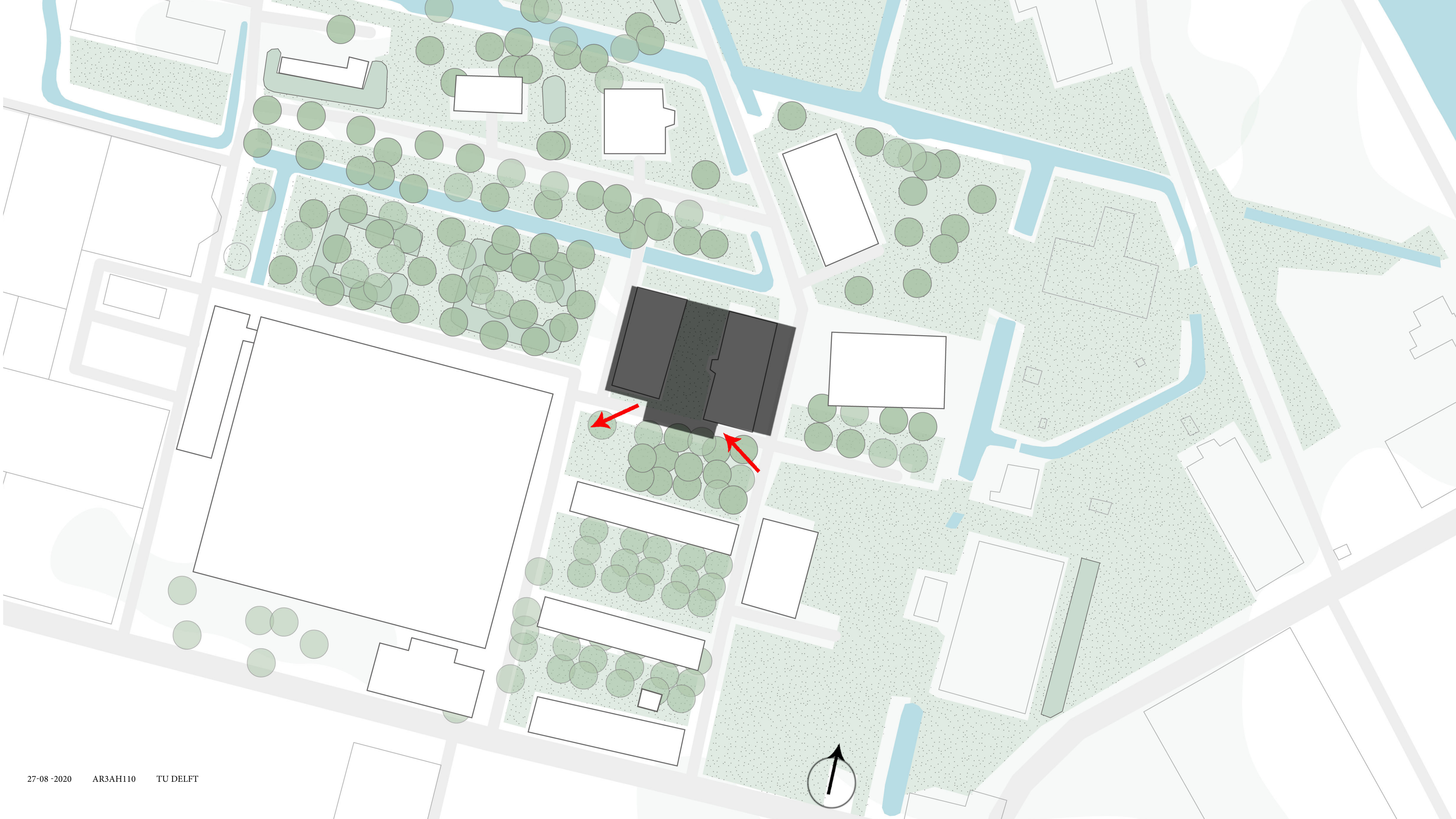
RESTAURANT AND ENVIRONMENT SPACES

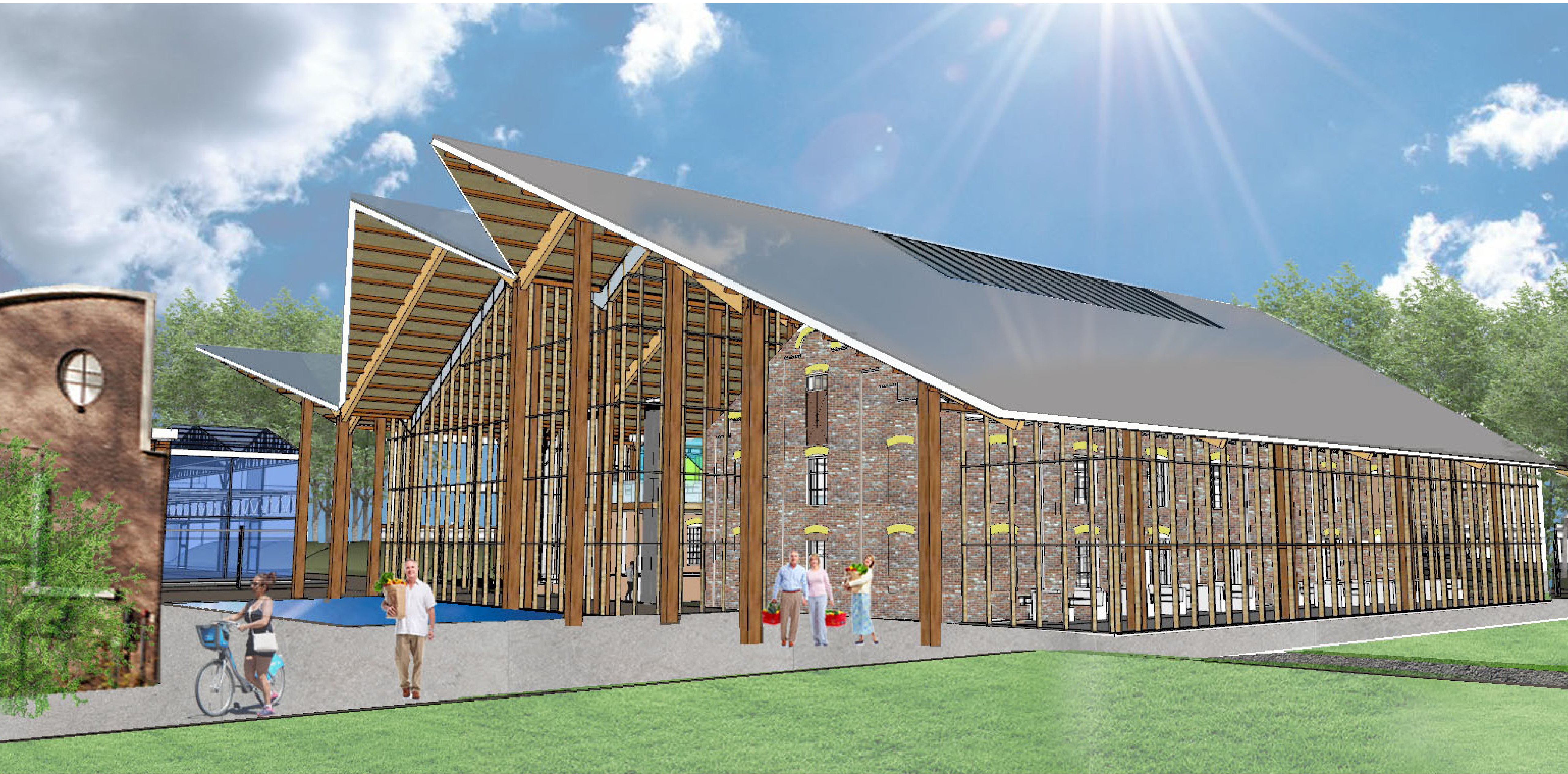




CONCEPT “two buildings are combined as one”









REFERENCES

Columbia Firehouse
Physical Experience



Greenhouse utrecht

The circular pavilion in circularity and space
experience

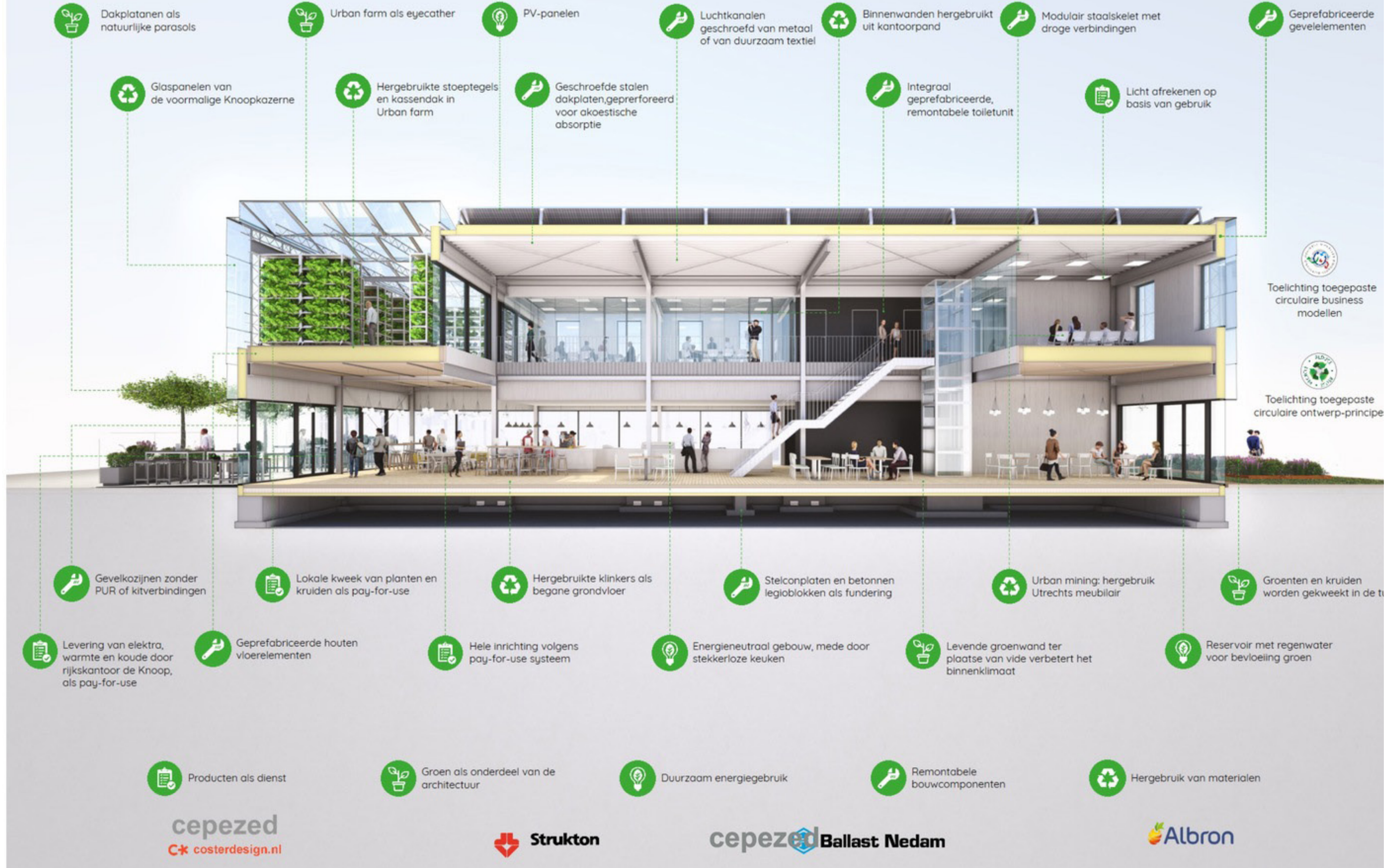


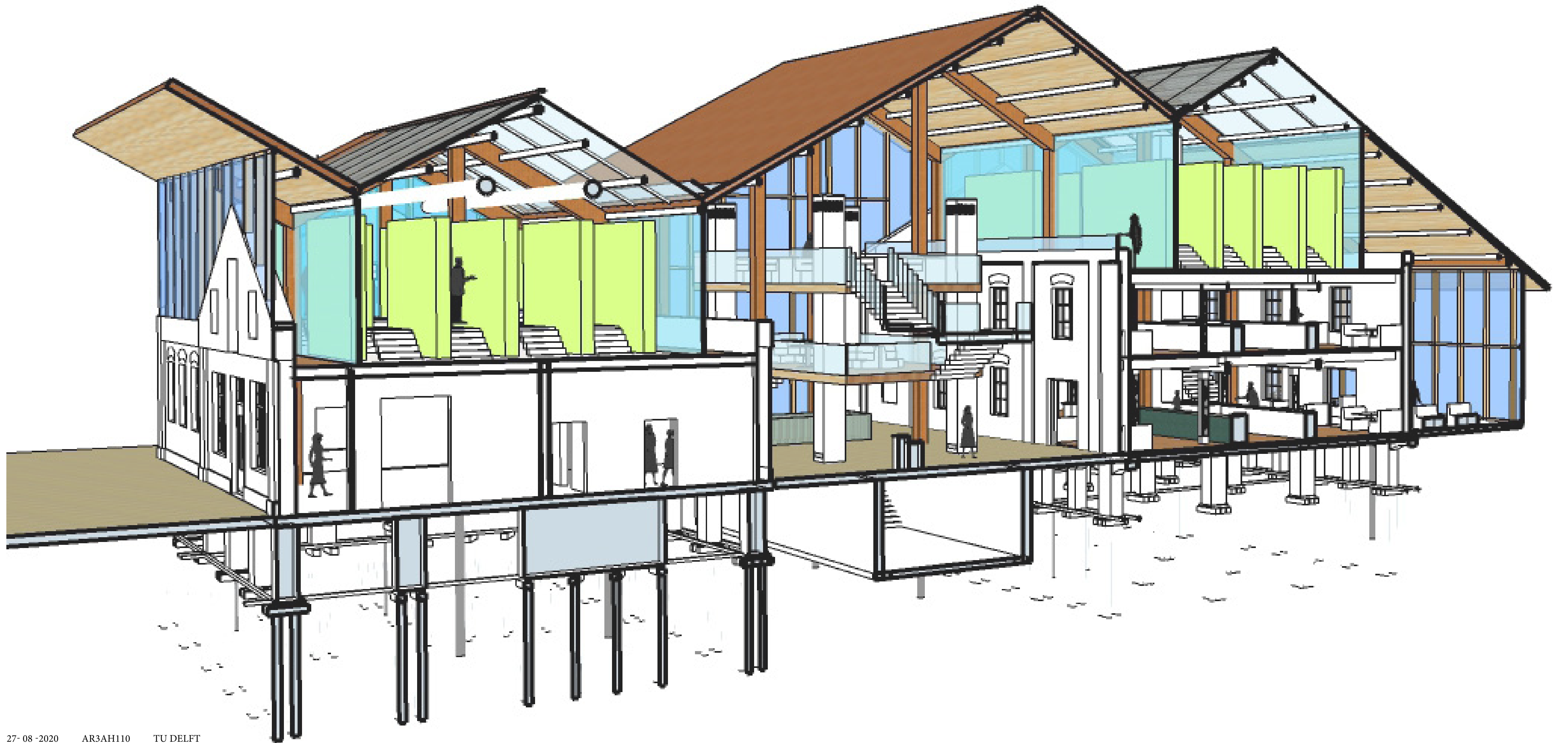


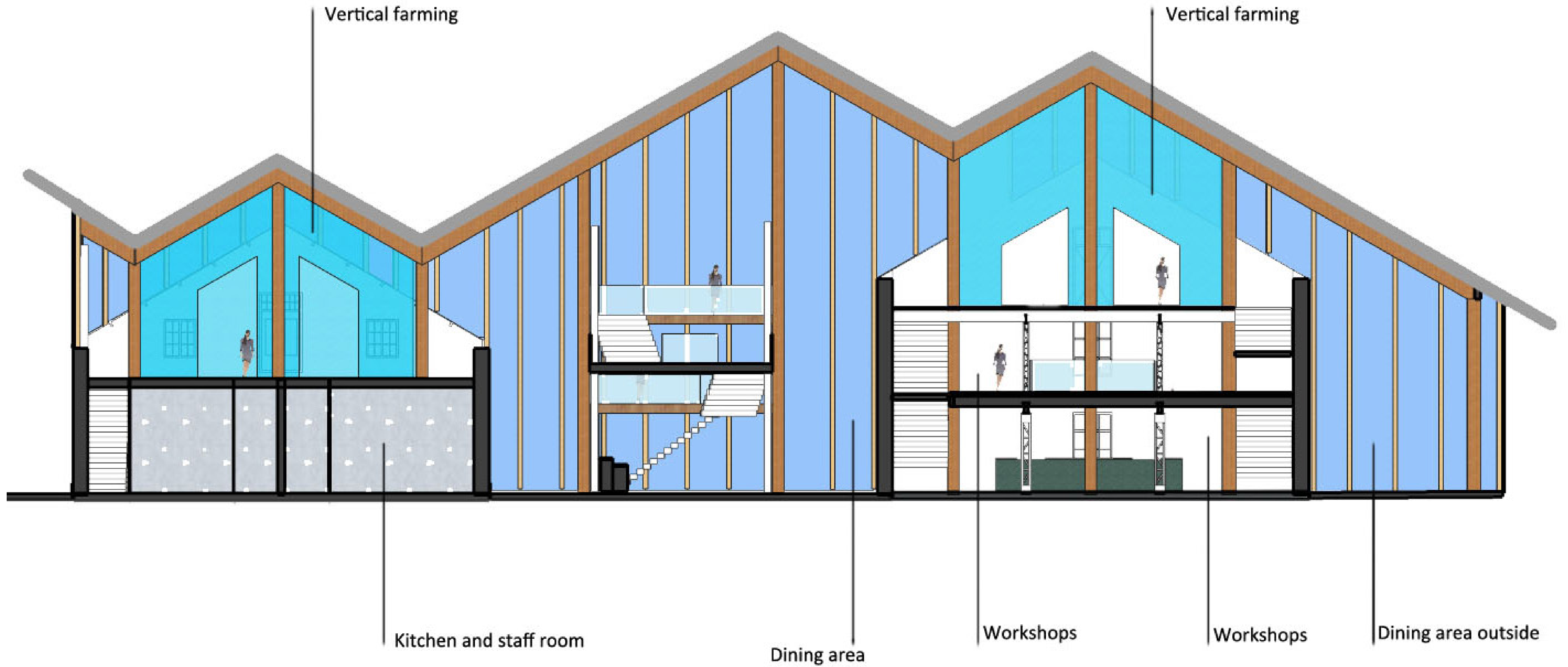


THE GREEN HOUSE

eat · meet · relax · enjoy



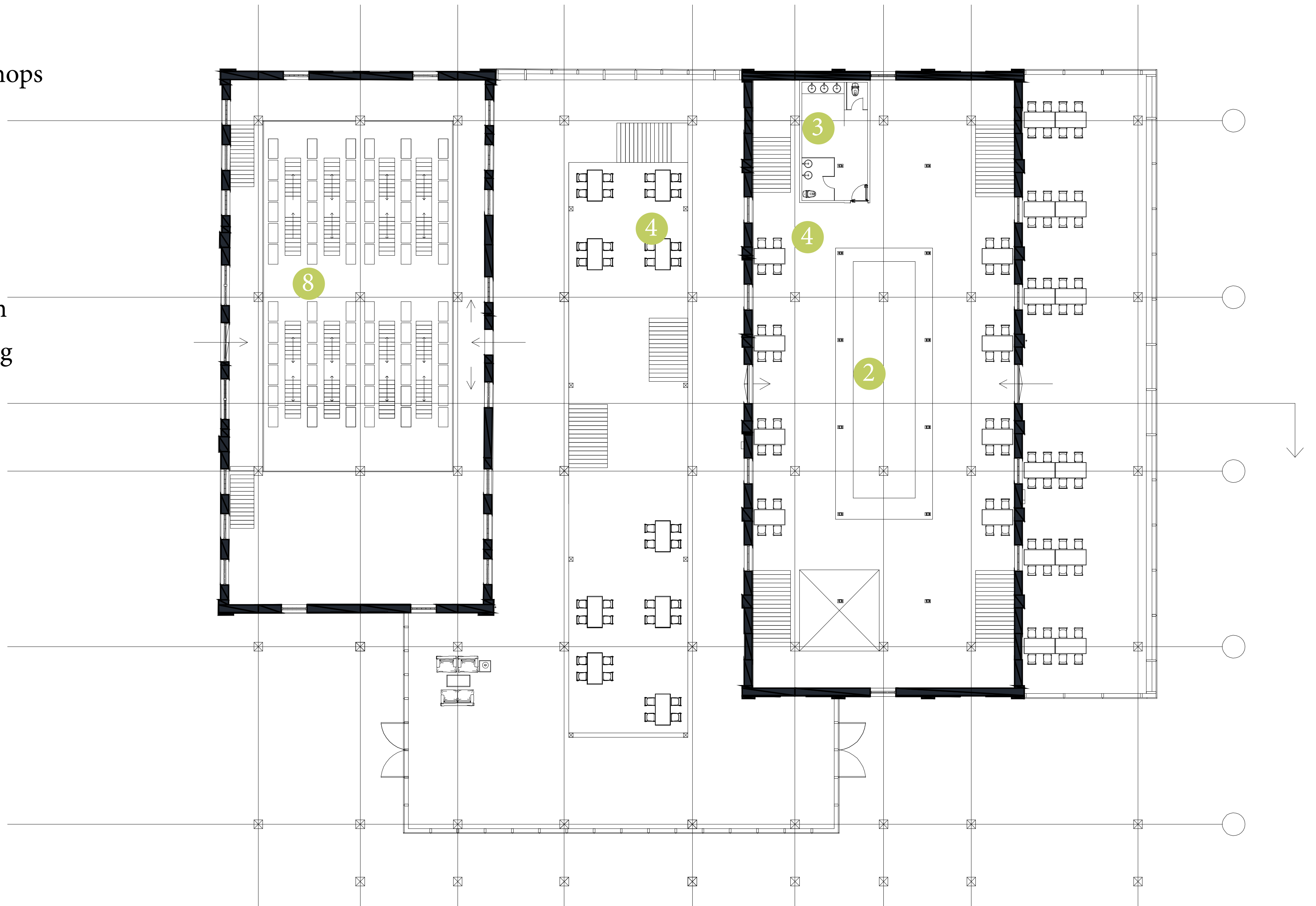




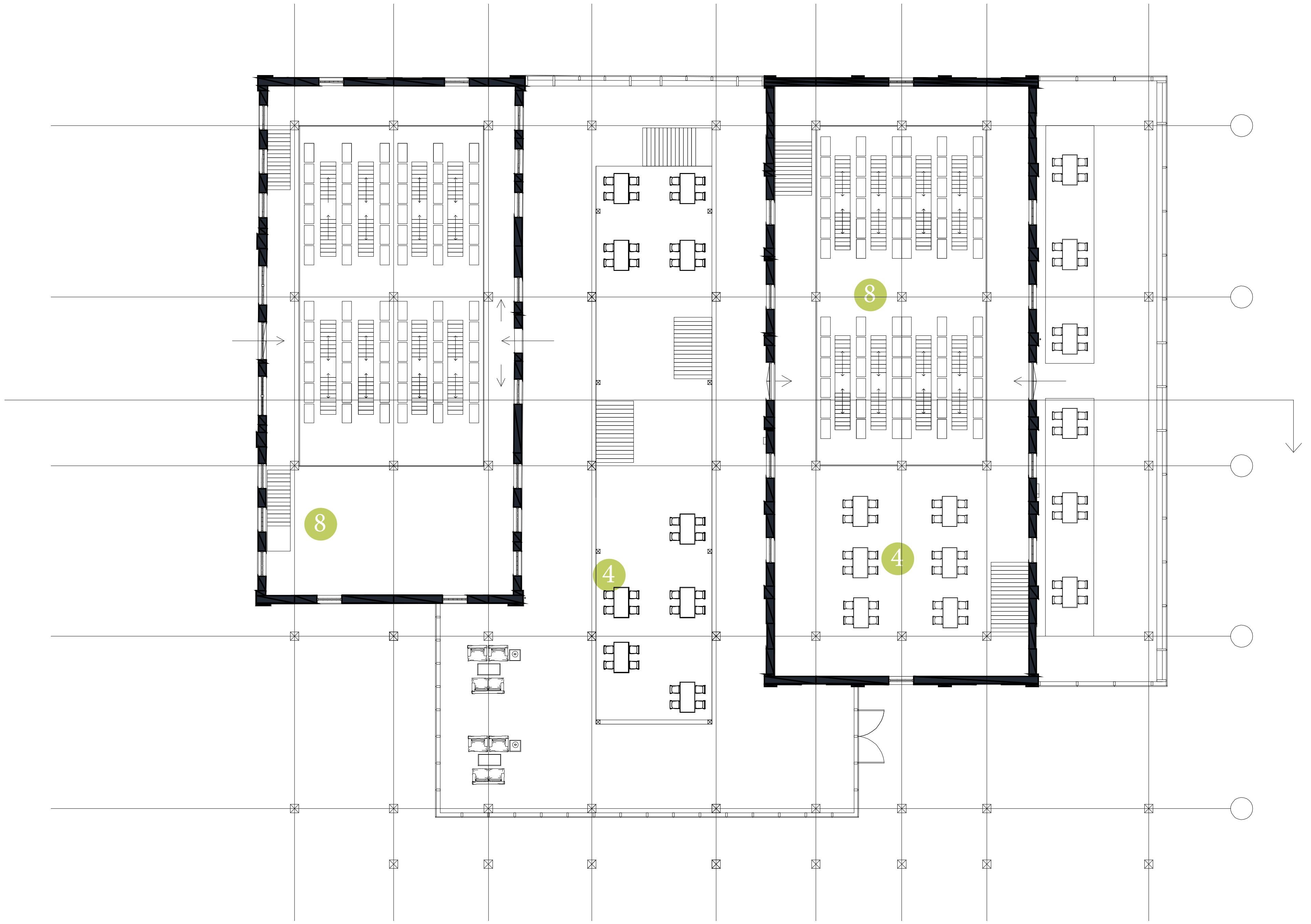
- ① Reception
- ② Bar and workshops
- ③ Washroom
- ④ Dining area
- ⑤ Kitchen
- ⑥ Storage
- ⑦ Changing room
- ⑧ Vertical farming
- ⑨ Staff
- ⑩ Freezing room



- 1 Reception
- 2 Bar and workshops
- 3 Washroom
- 4 Dining area
- 5 Kitchen
- 6 Storage
- 7 Changing room
- 8 Vertical farming
- 9 Staff
- 10 Freezing room



- 1 Reception
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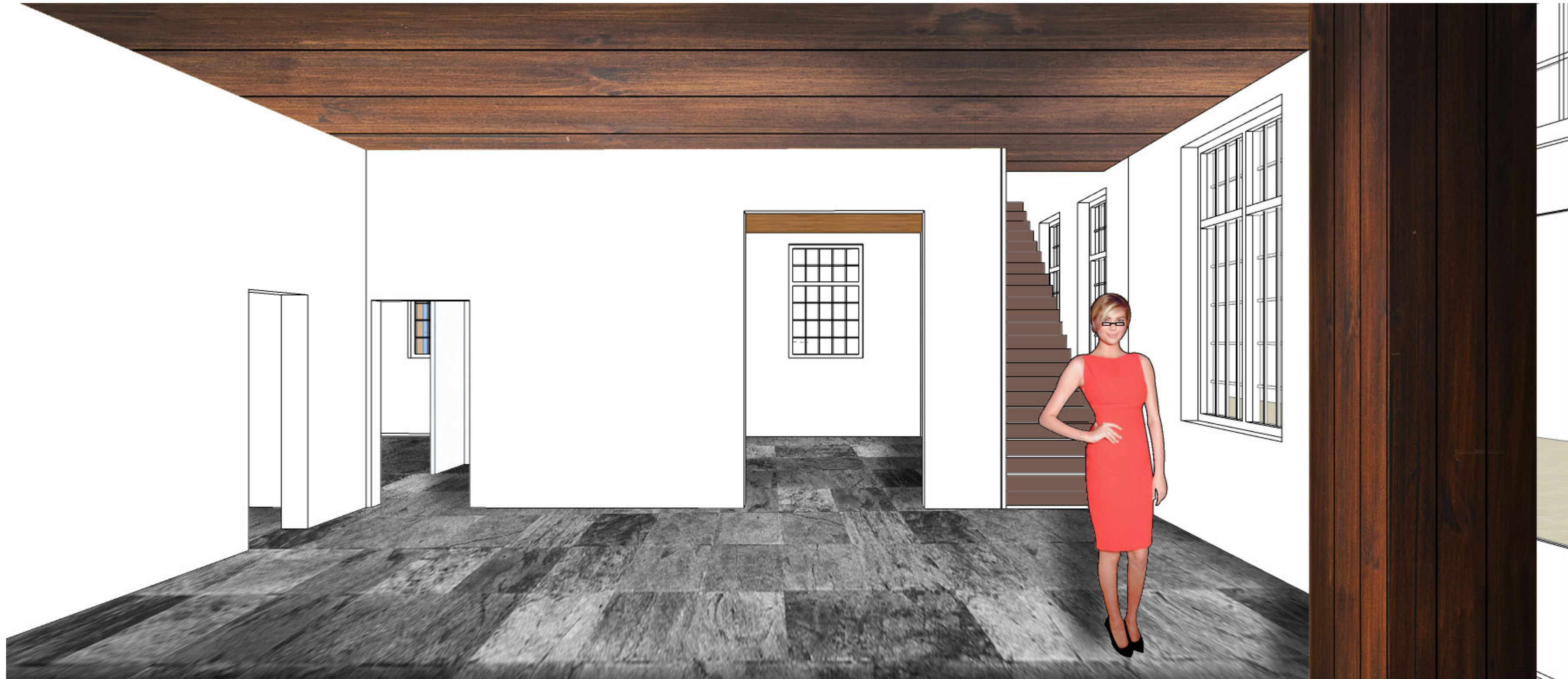


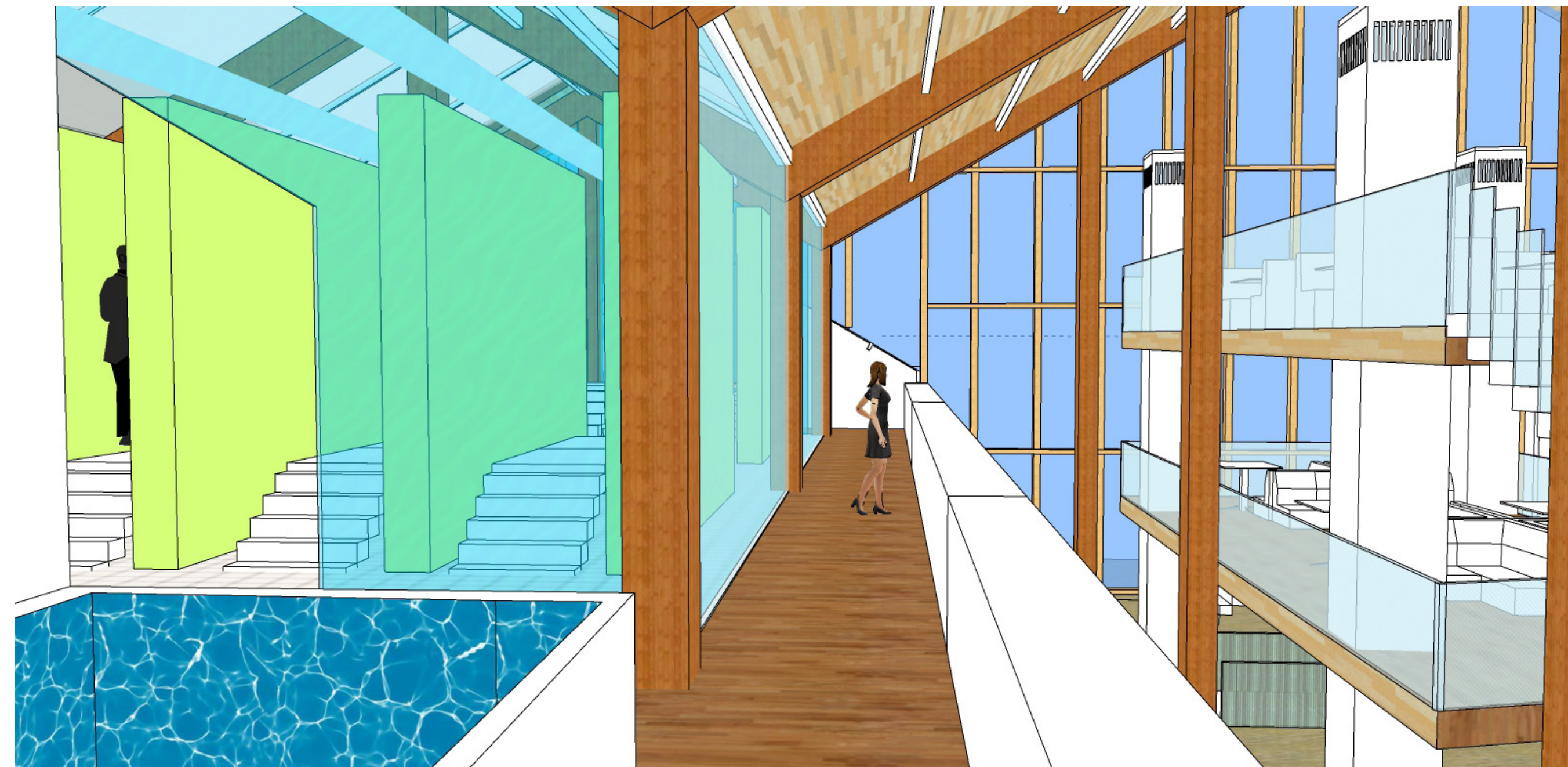




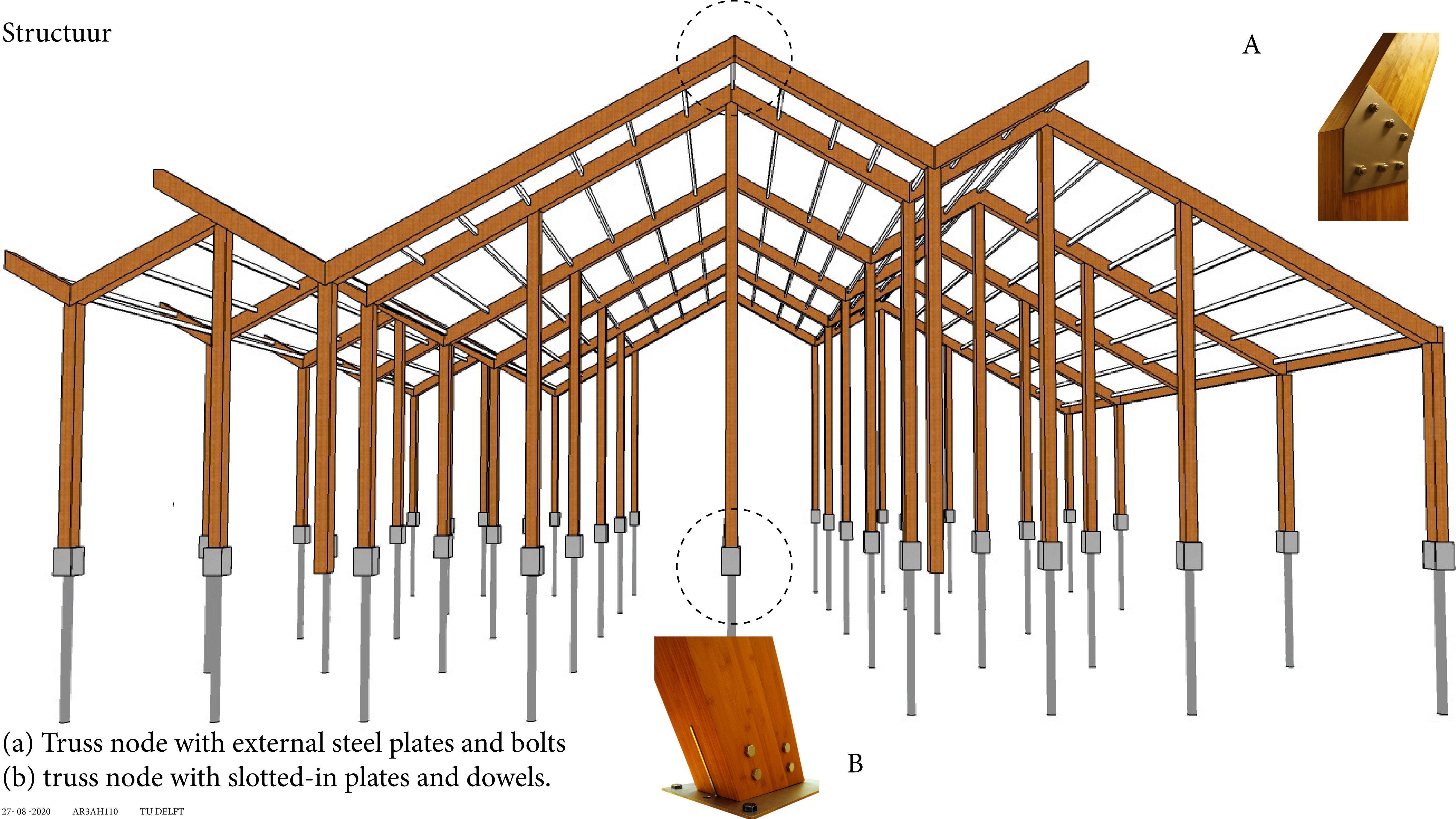




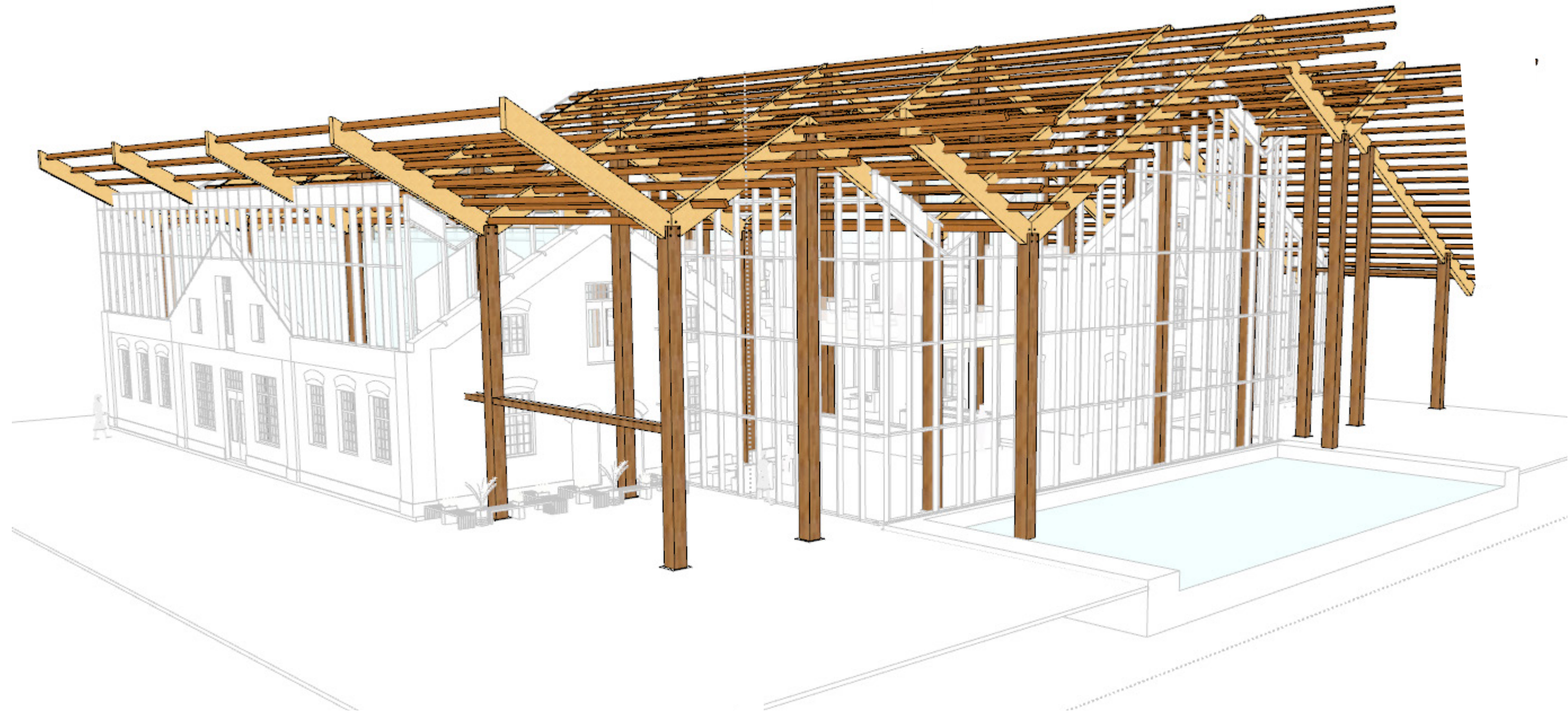




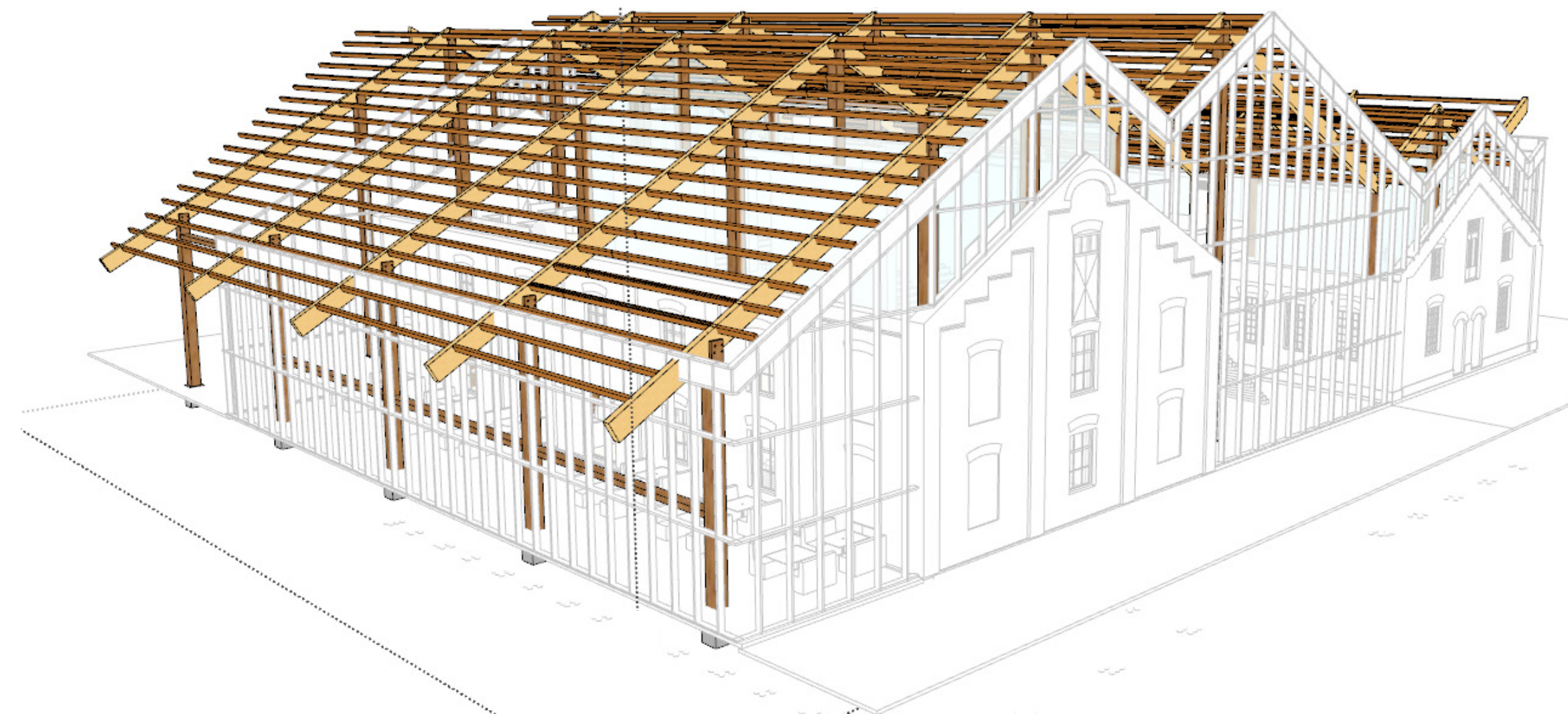




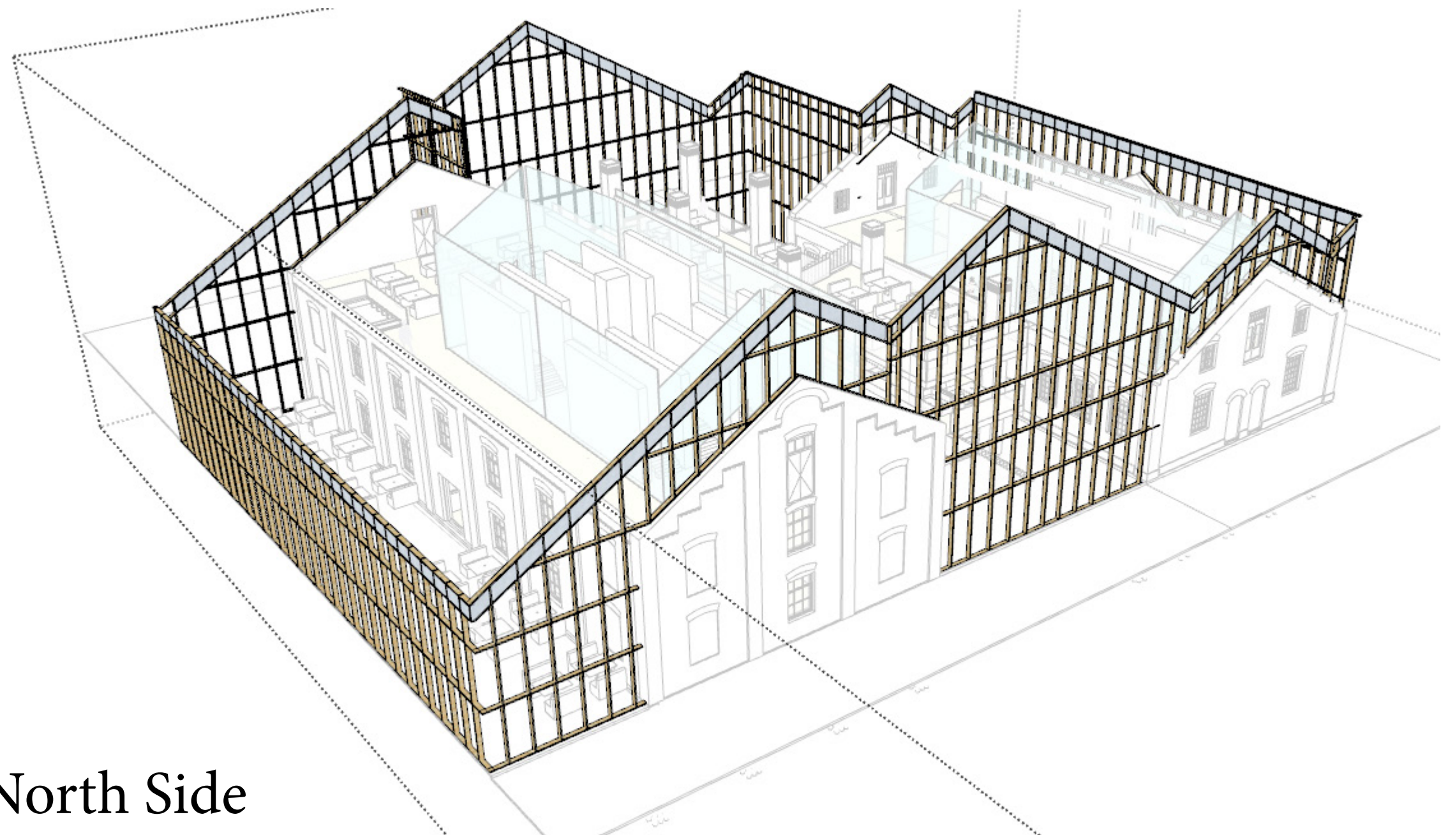
(a) Truss node with external steel plates and bolts
(b) truss node with slotted-in plates and dowels.



South Side



North side

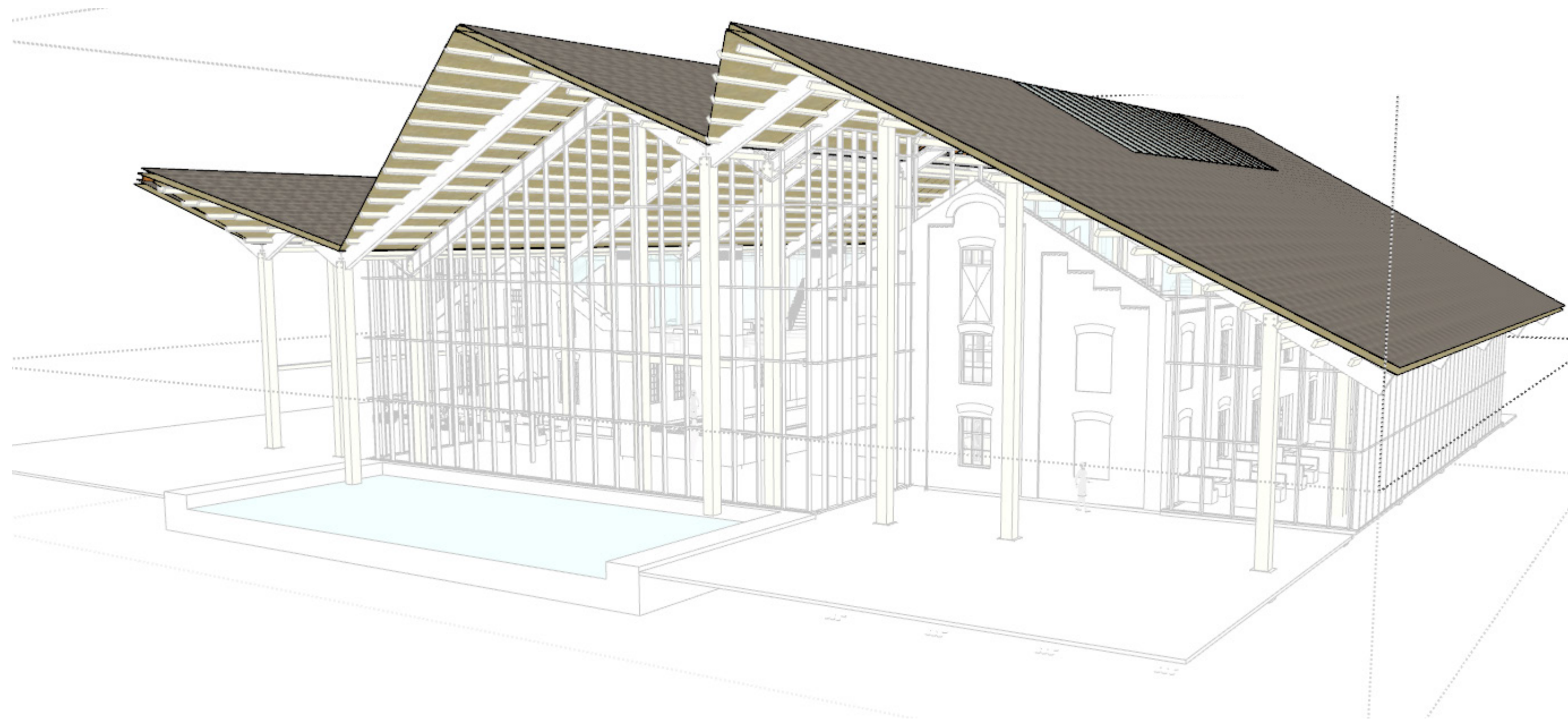


North Side

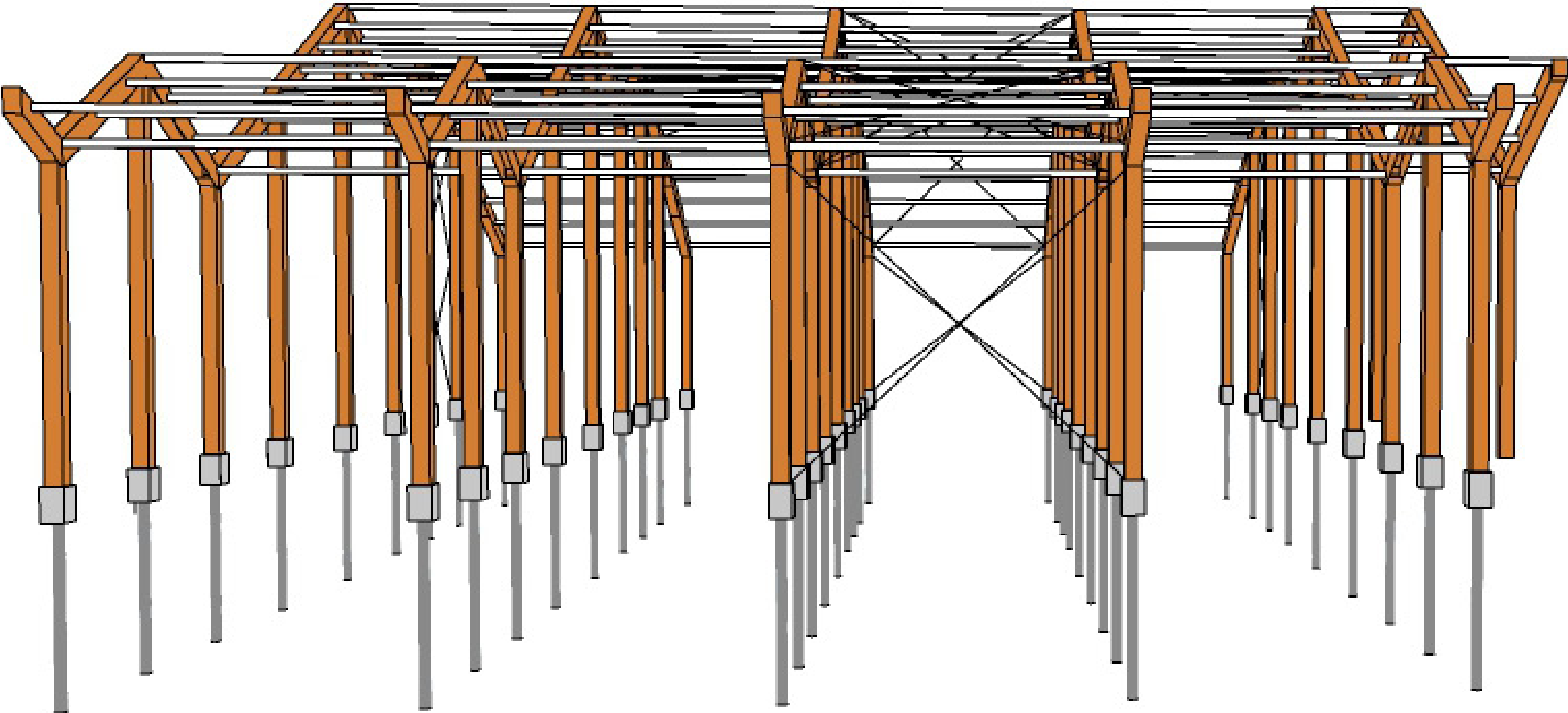


South Side

Roofing slate tiles

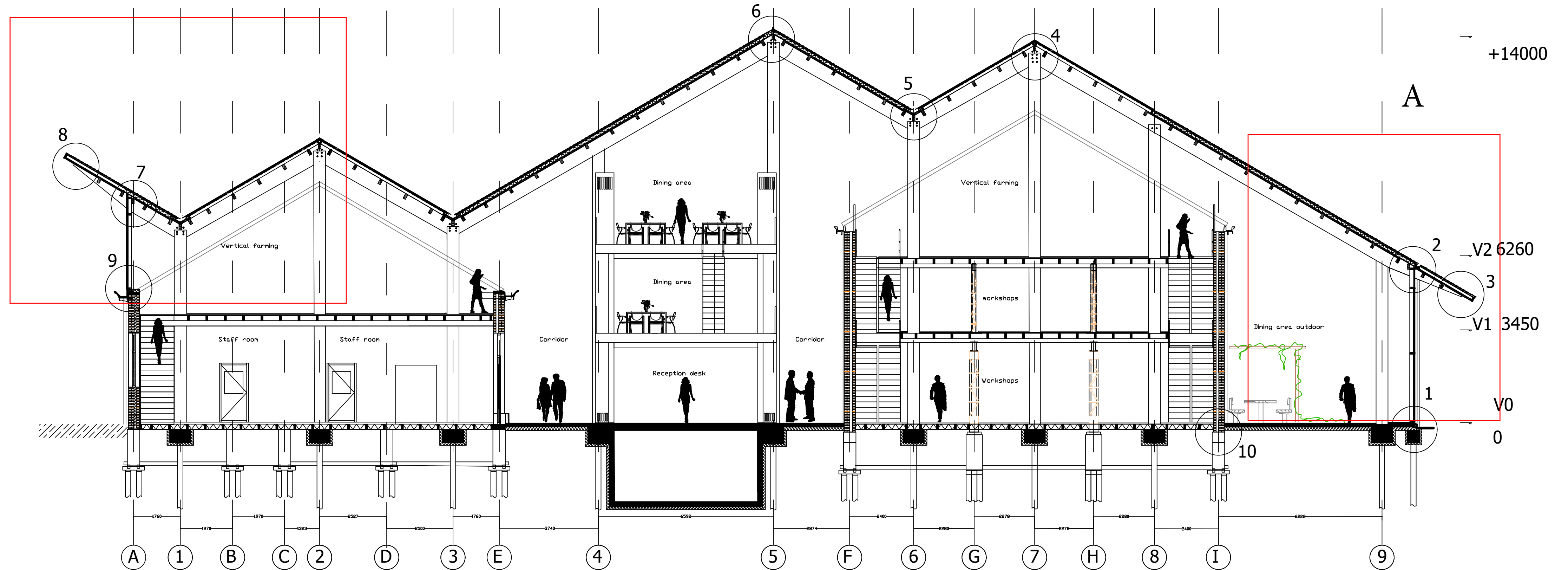


Wood structure with wood wind bracing under the purlins



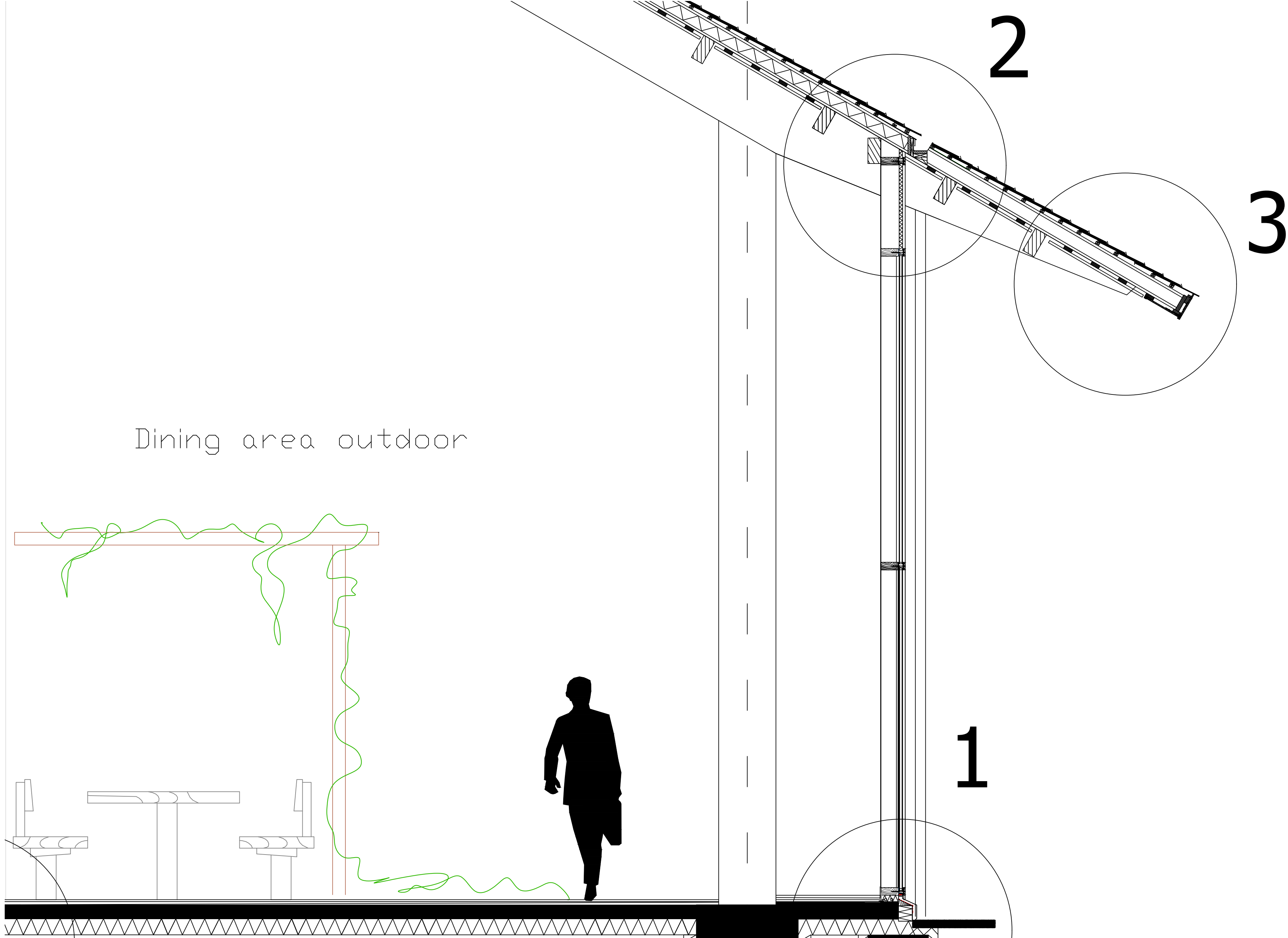
Section
1:100

B

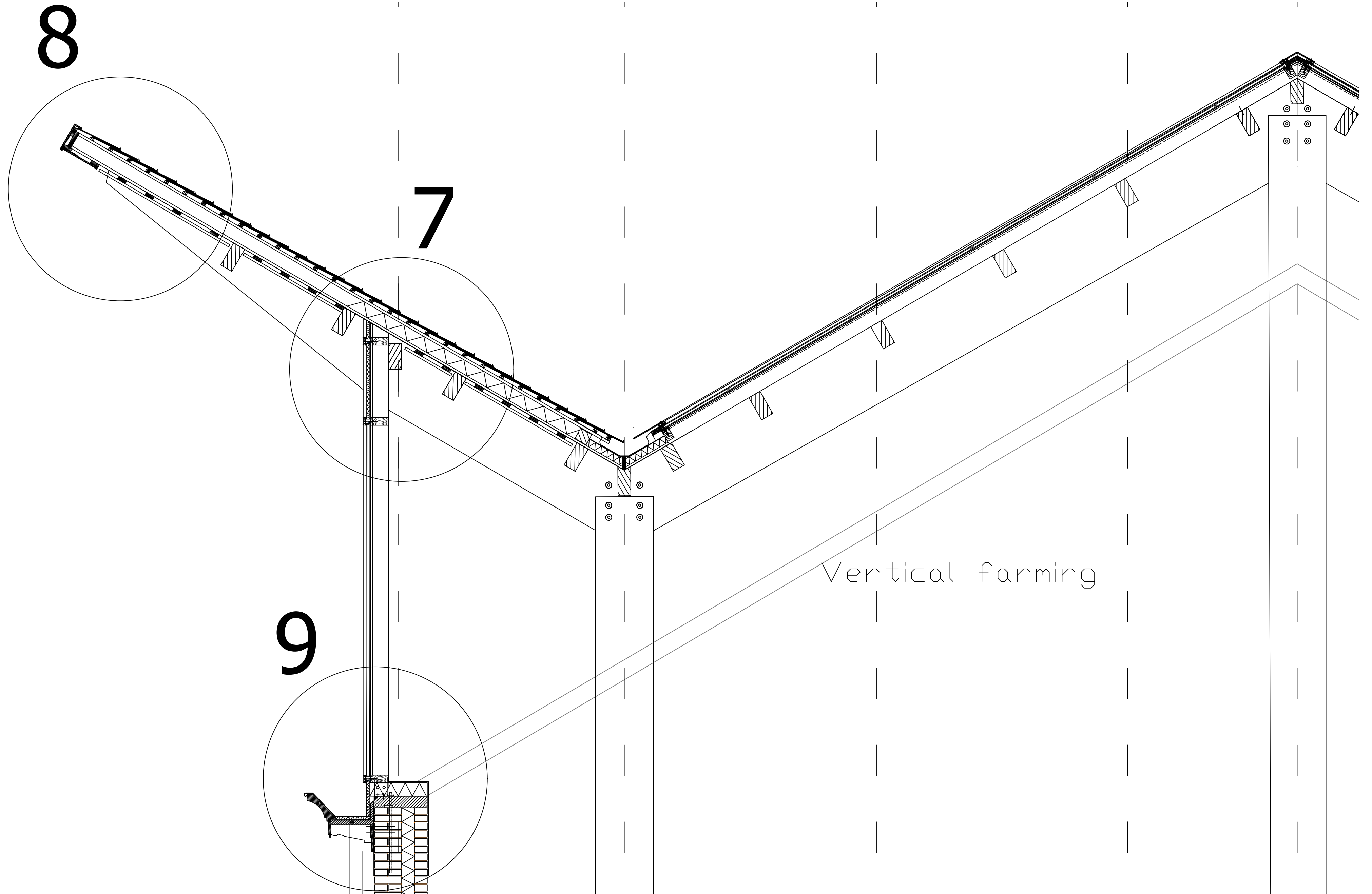


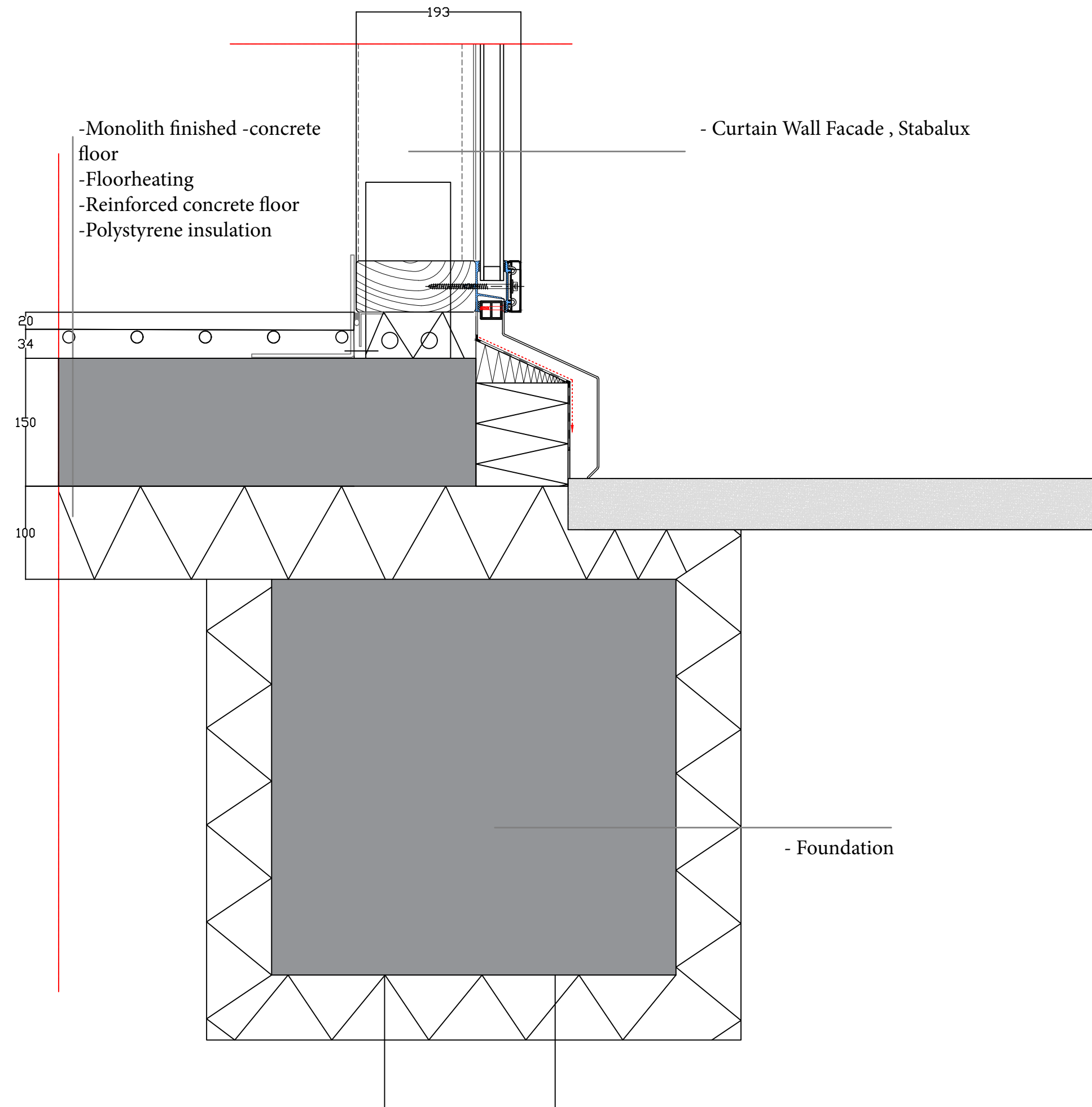
Section A

1:20



Section B
1:20





Detail 1

1:5

- Slate roof
- Roofing batten
- ice and water shield underlayment
- Battens
- Roof insulation
- Boards
- Plywood with coating
- Rafter

- Purlins

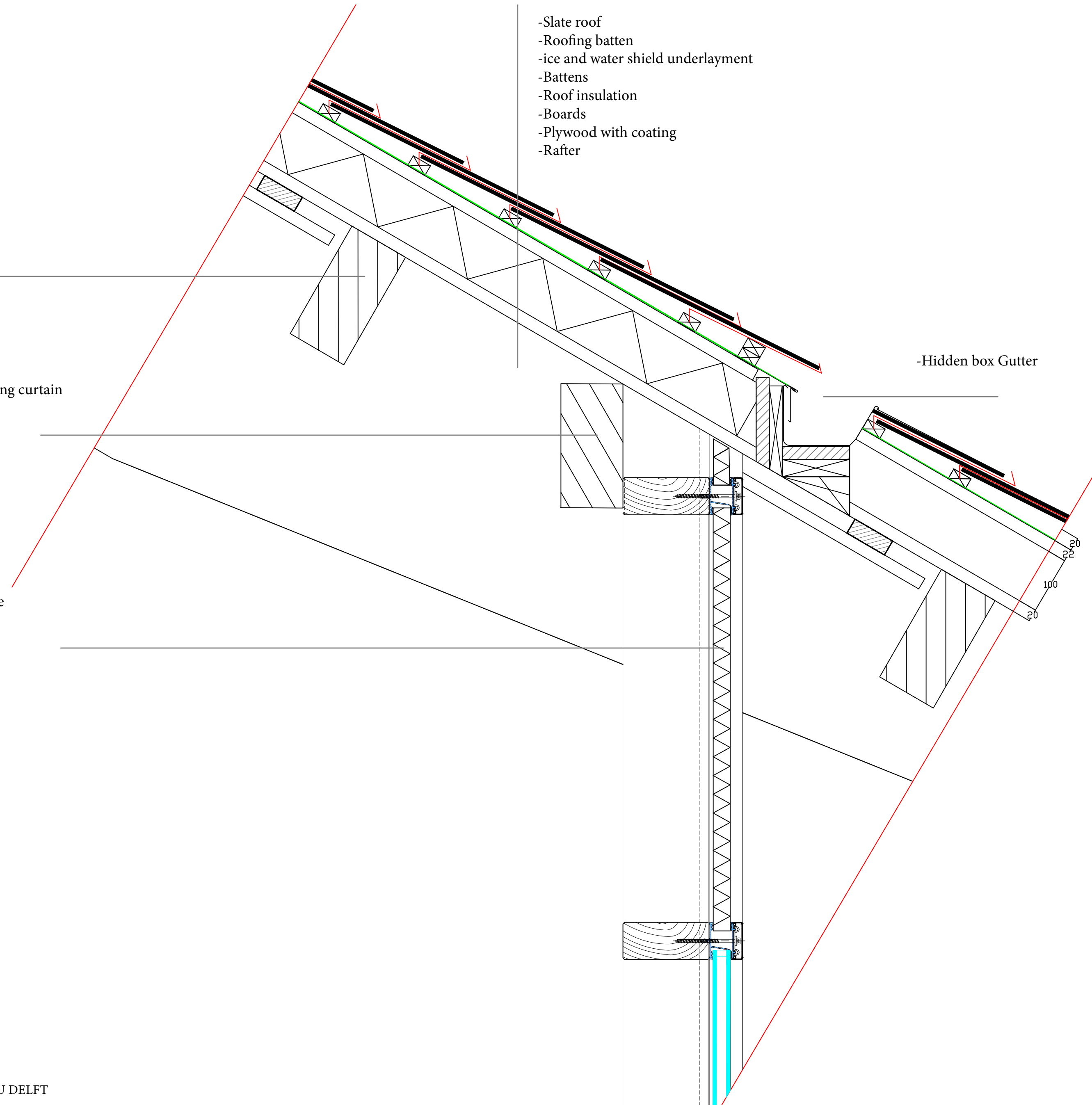
- Adding beam for supporting curtain wall

- Aluminum Sandwich Plate

-Hidden box Gutter

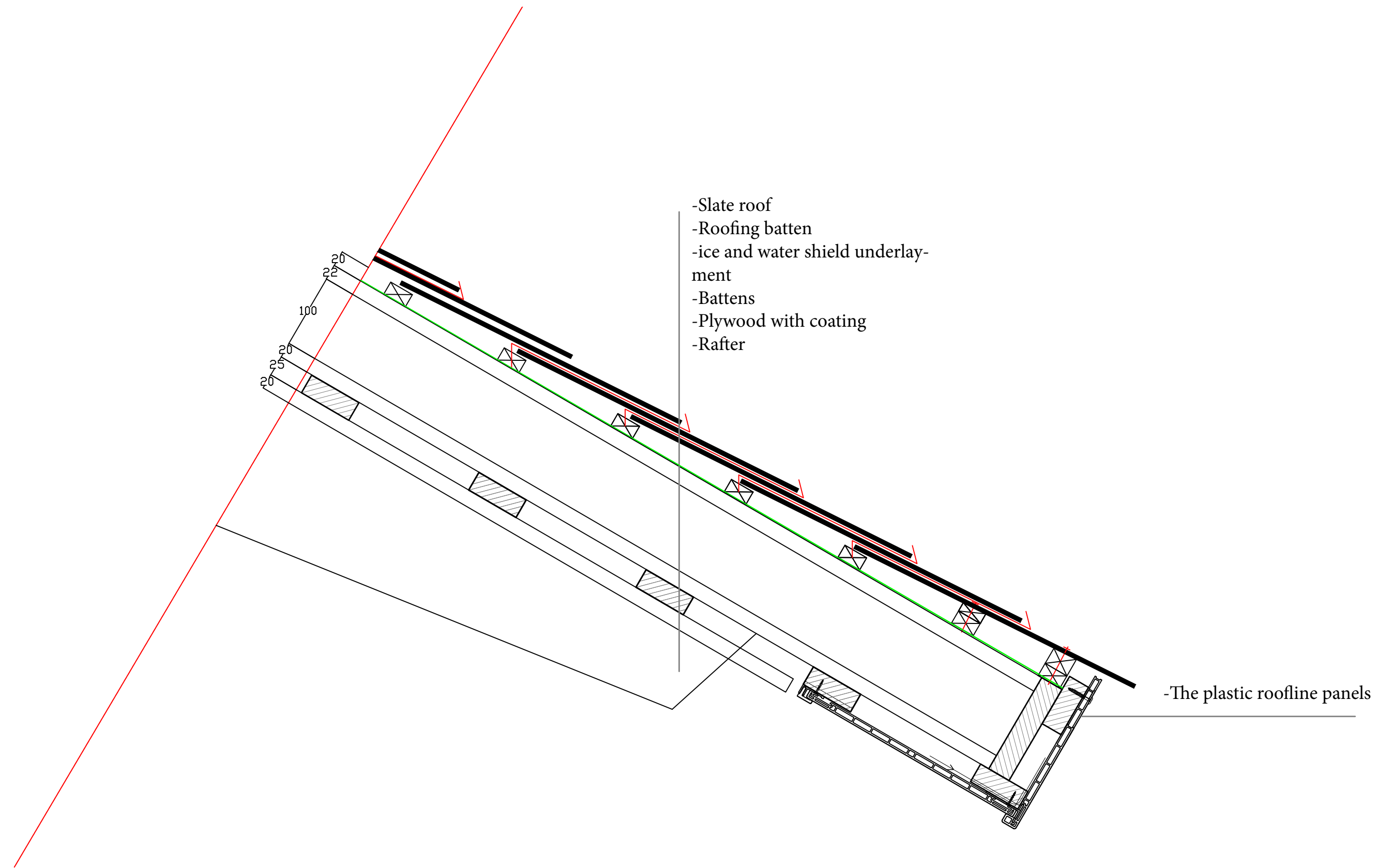
Detail 2

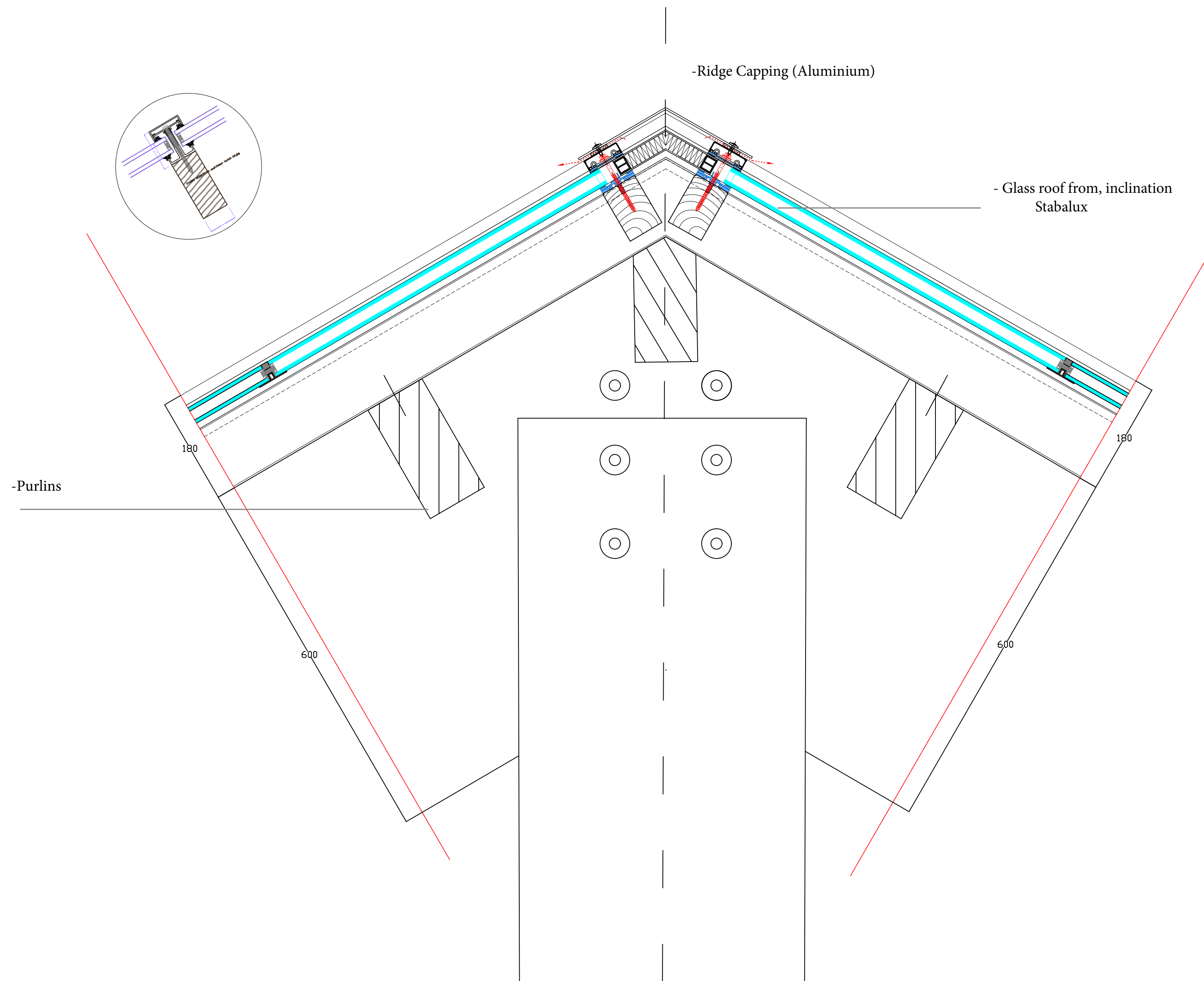
1:5



Detail 3

1:5

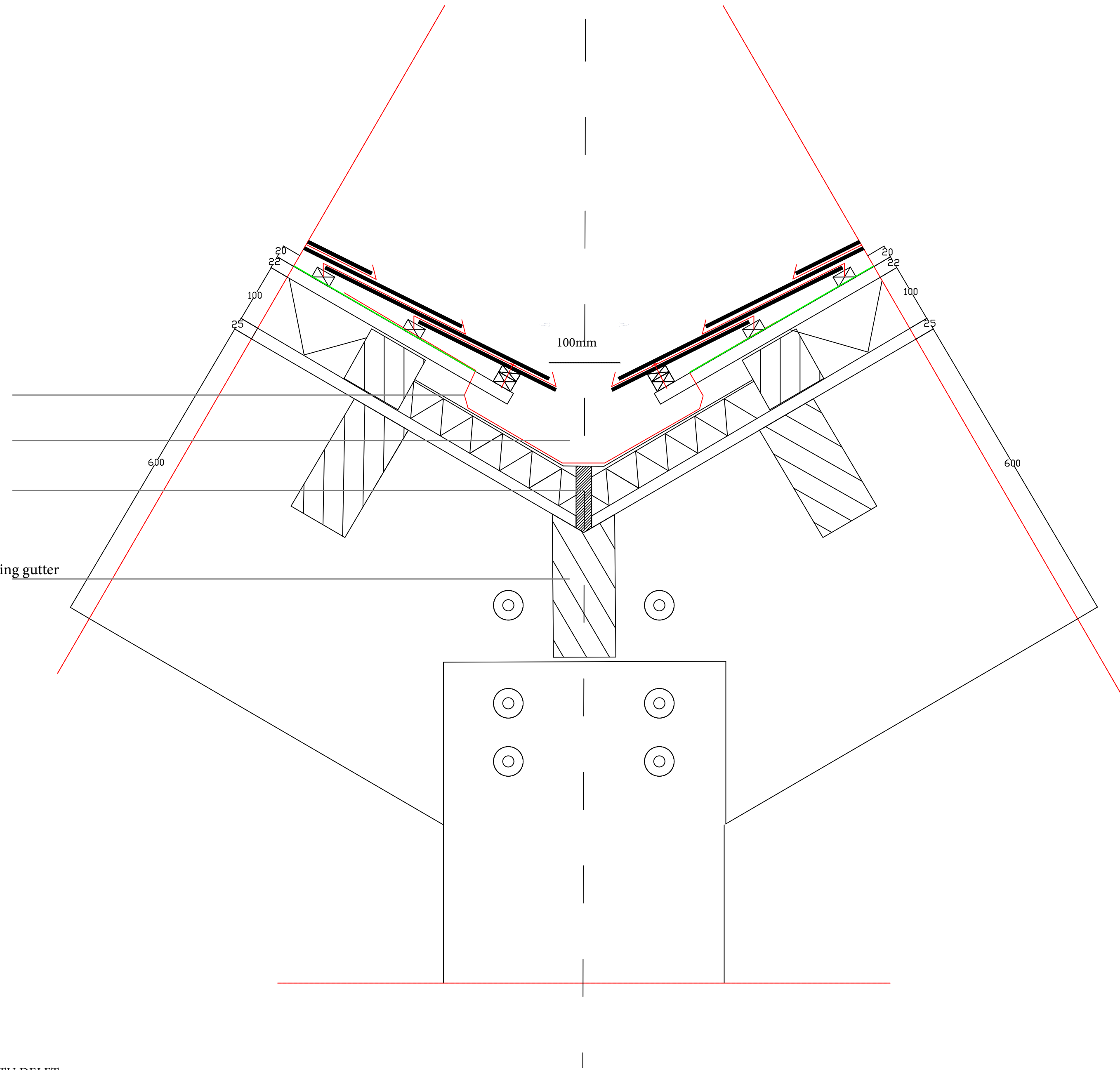




Detail 4

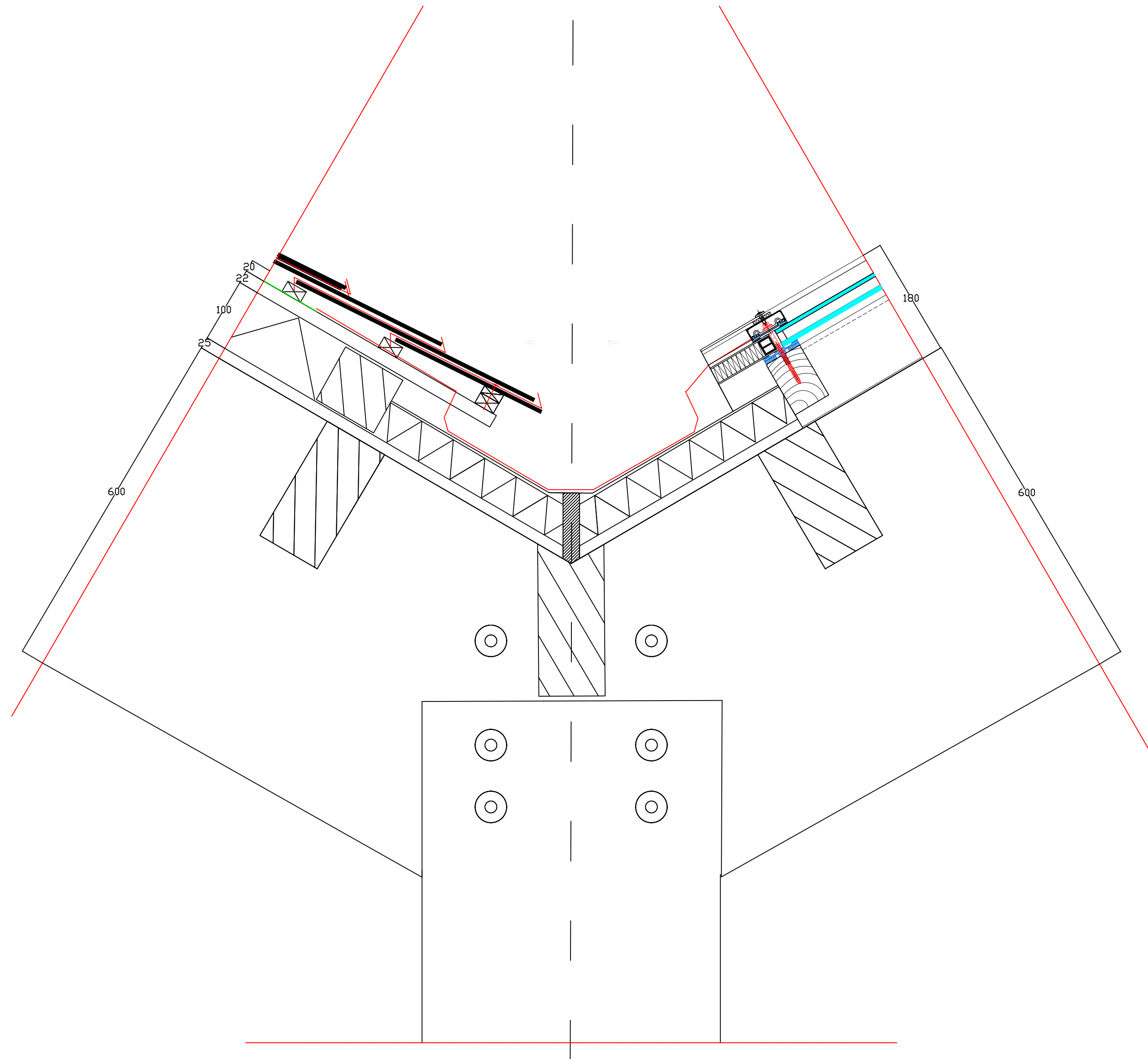
1:5

- Purlins
- Valley gutter
- Valley rafter
- Adding beam for supporting gutter



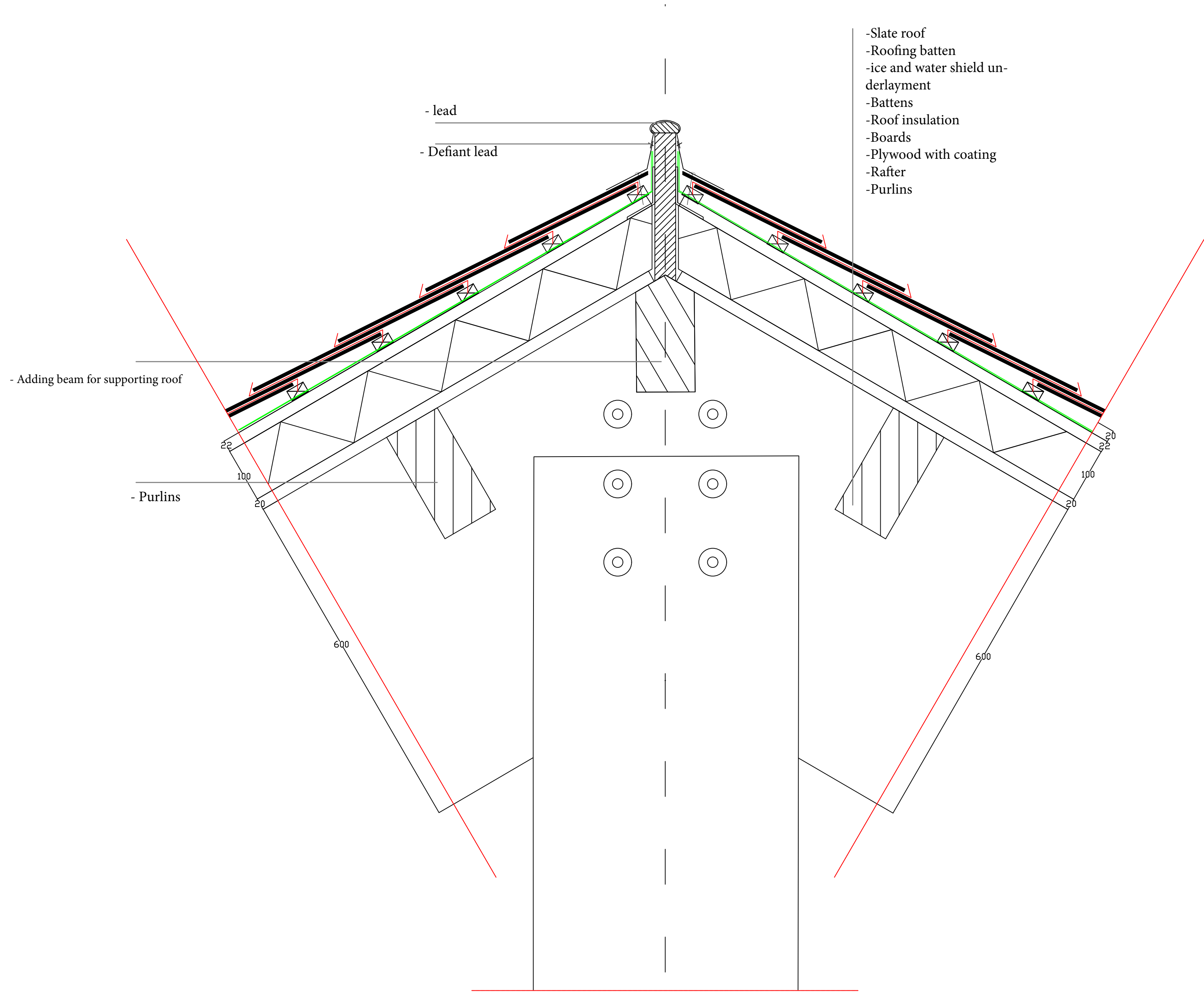
Detail 5

1:5



Detail 5

1:5



- Slate roof
- Roofing batten
- ice and water shield un-derlayment
- Battens
- Roof insulation
- Boards
- Plywood with coating
- Rafter
- Purlins

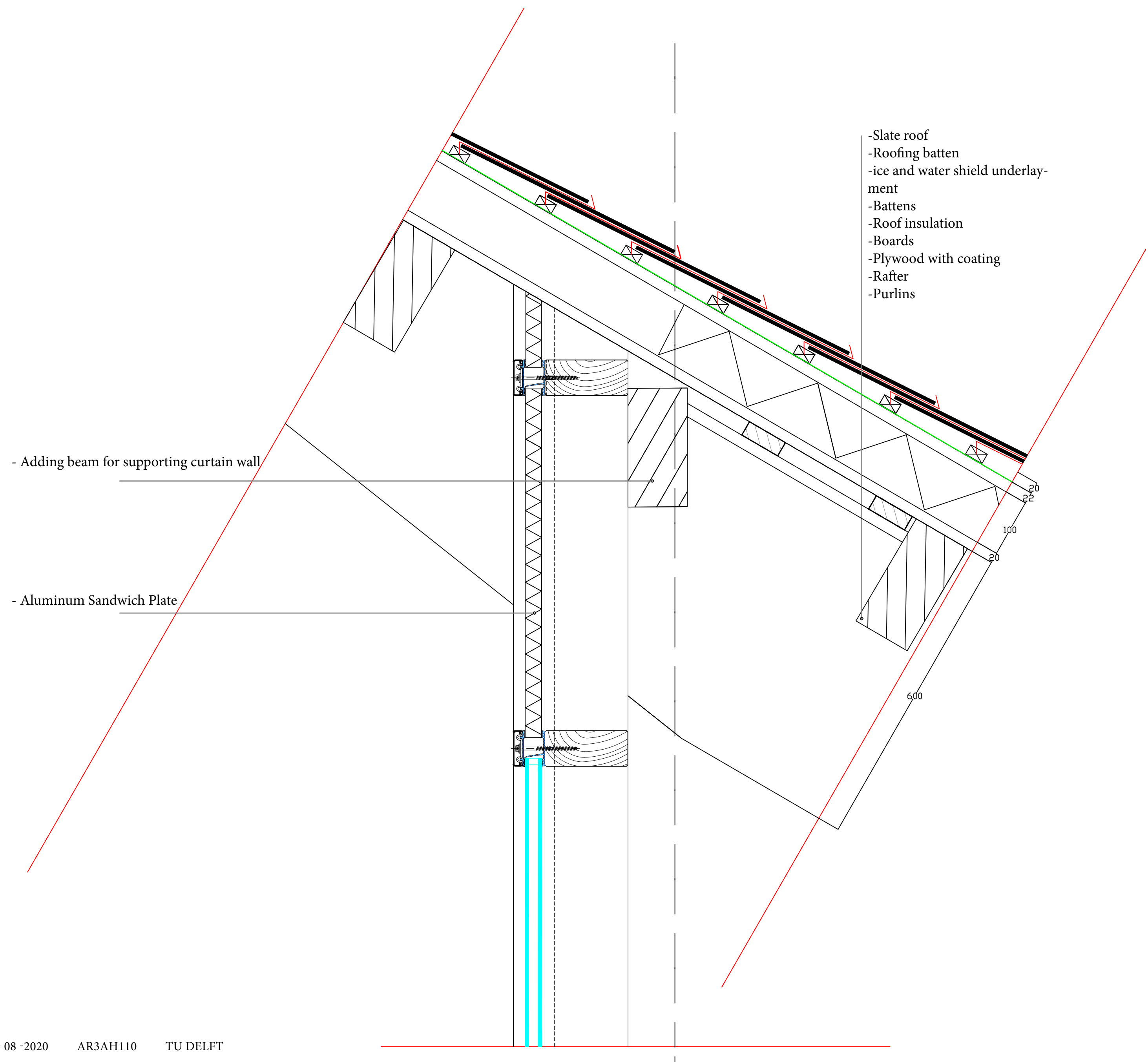
- lead
- Defiant lead

- Adding beam for supporting roof

- Purlins

Detail 6

1:5

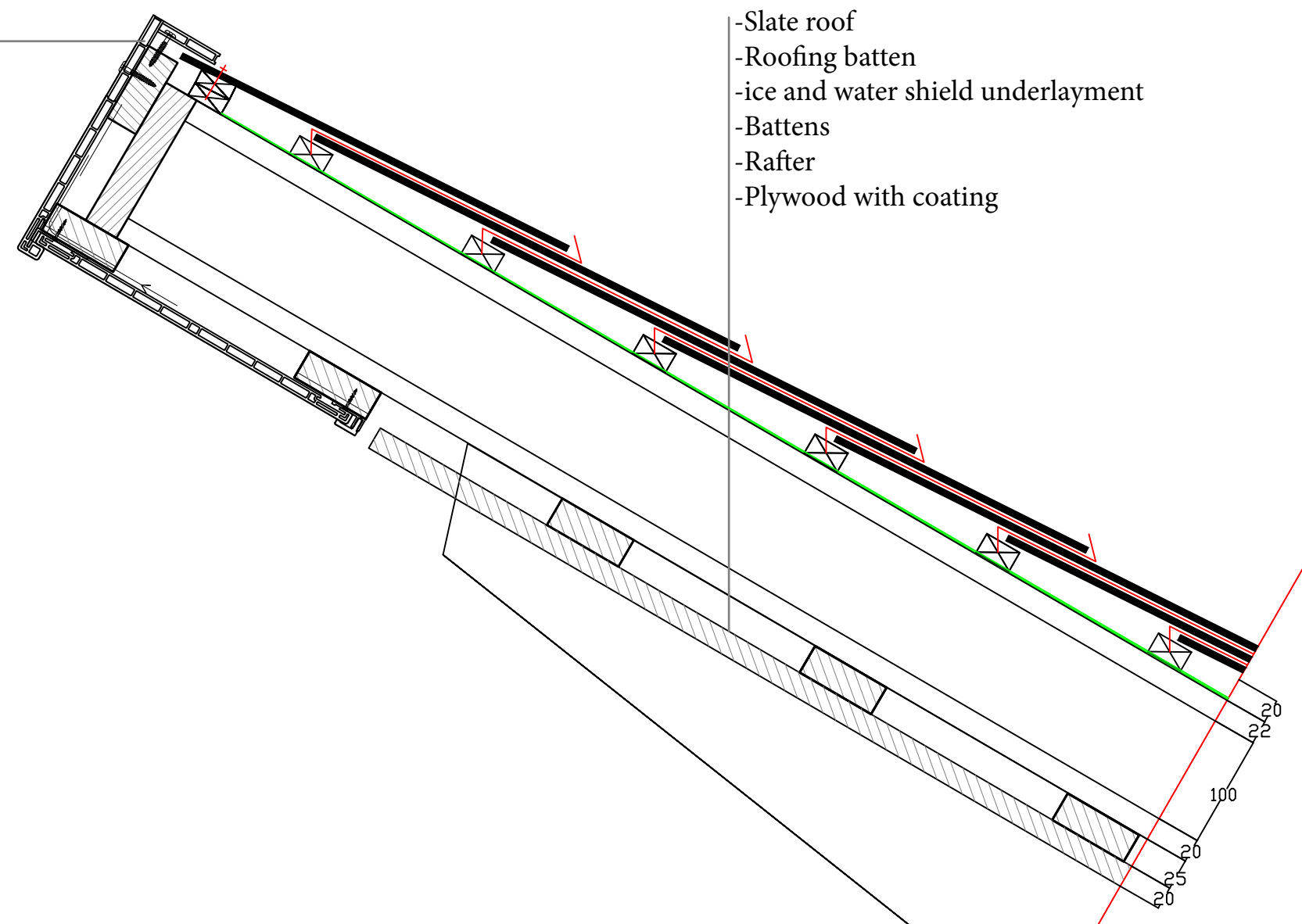


Detail 7

1:5

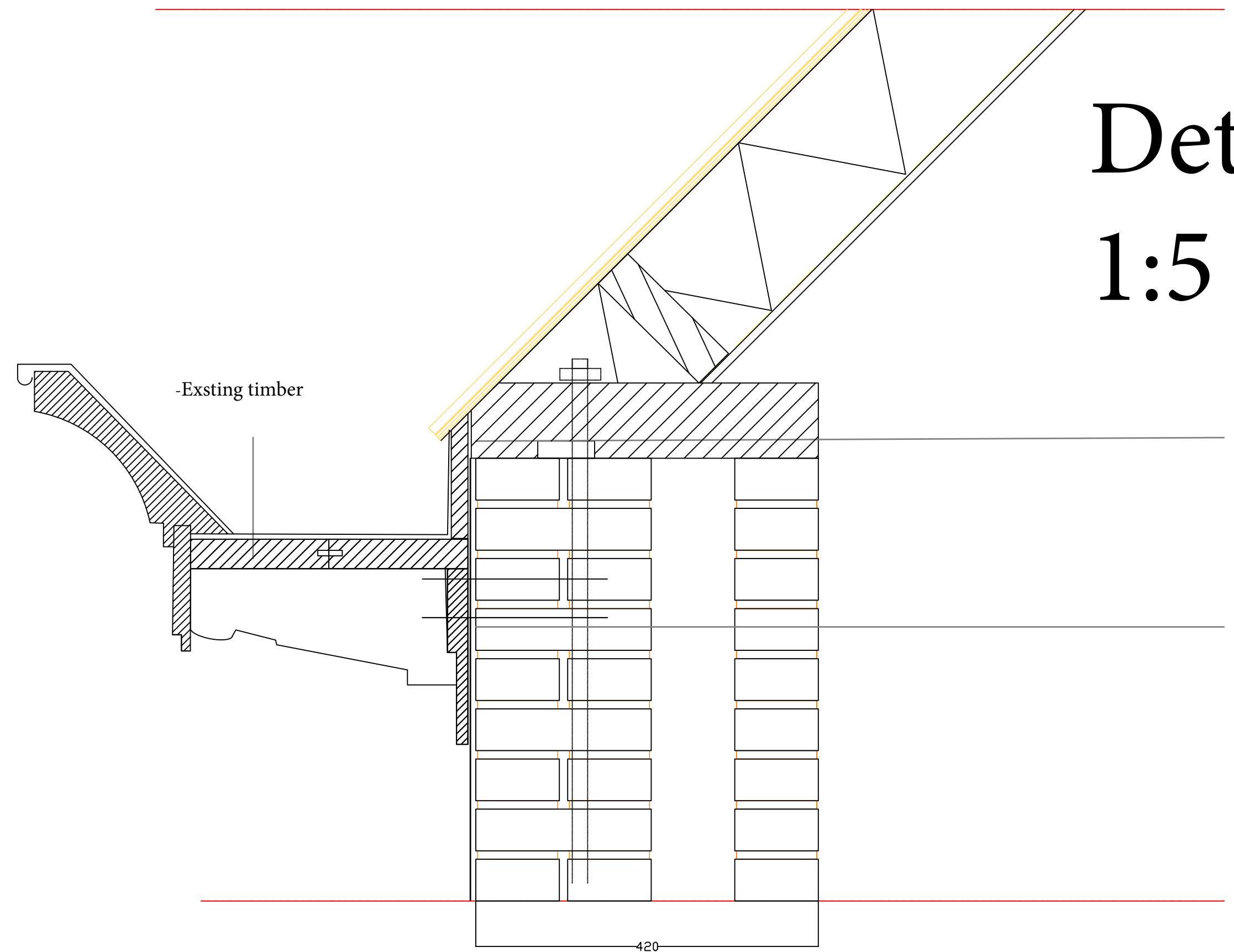
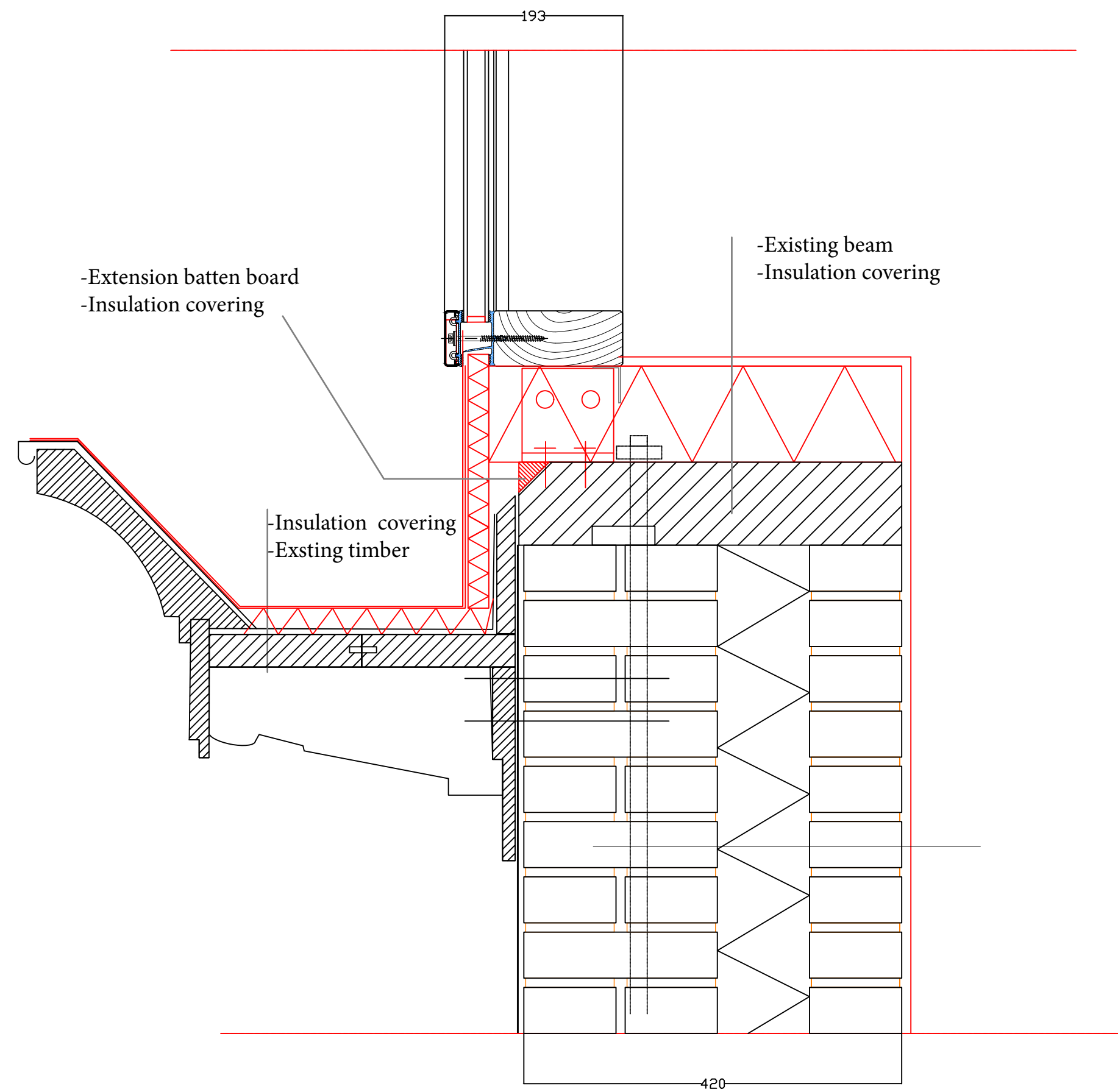
-The plastic roofline panels

- Slate roof
- Roofing batten
- ice and water shield underlayment
- Battens
- Rafter
- Plywood with coating



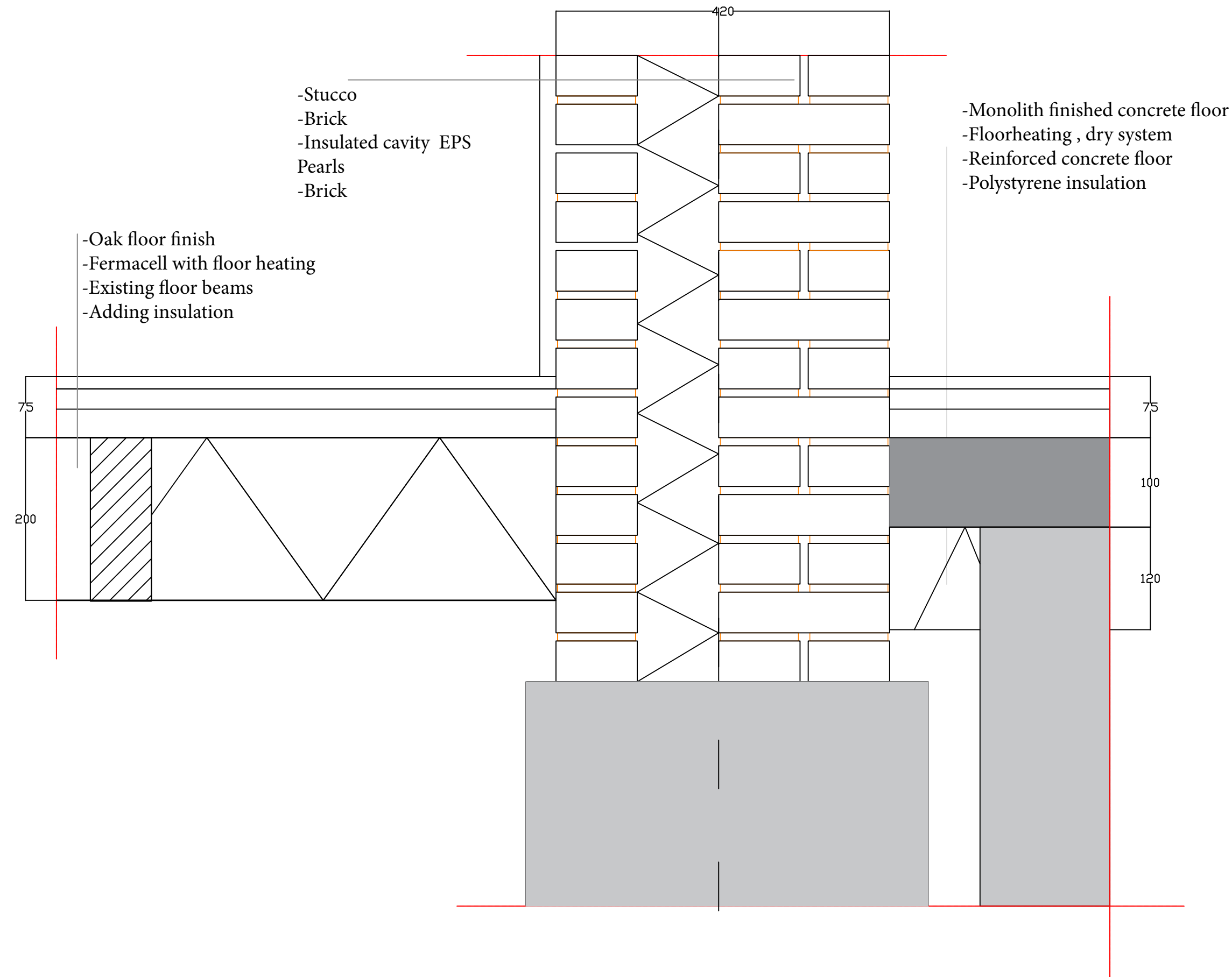
Detail 8

1:5



Detail 9

1:5



- Stucco
- Brick
- Insulated cavity EPS Pearls
- Brick

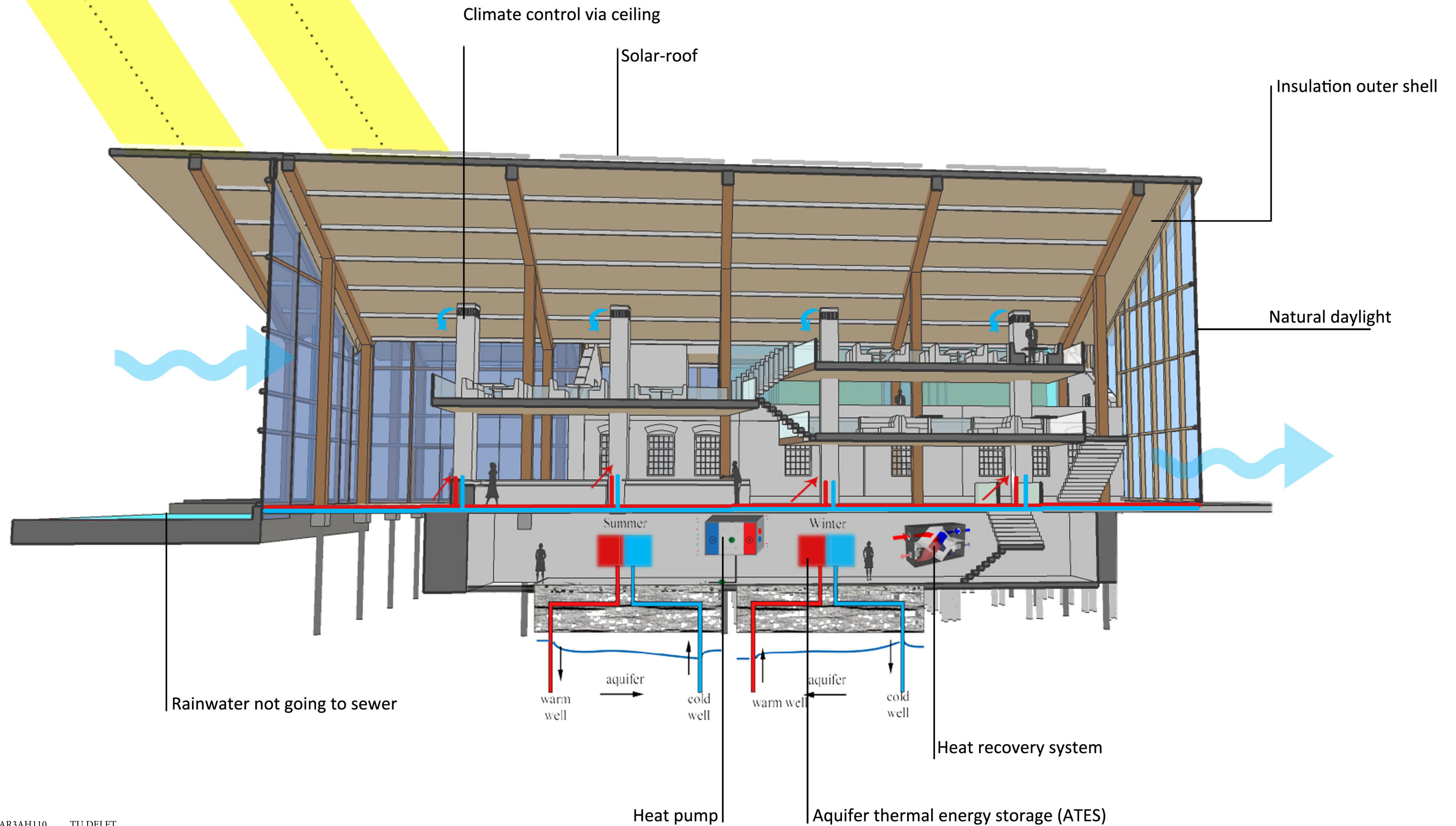
- Oak floor finish
- Fermacell with floor heating
- Existing floor beams
- Adding insulation

- Monolith finished concrete floor
- Floorheating , dry system
- Reinforced concrete floor
- Polystyrene insulation

Detail 10

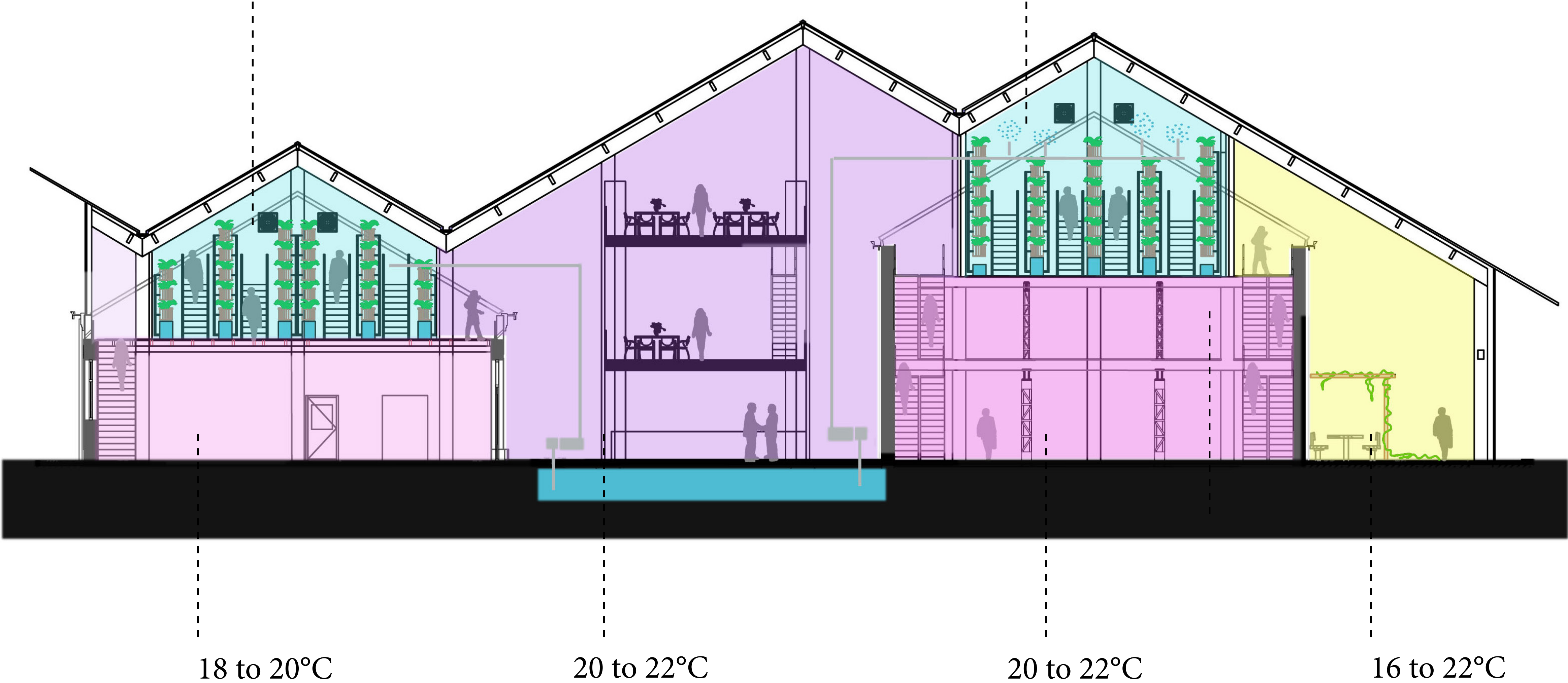
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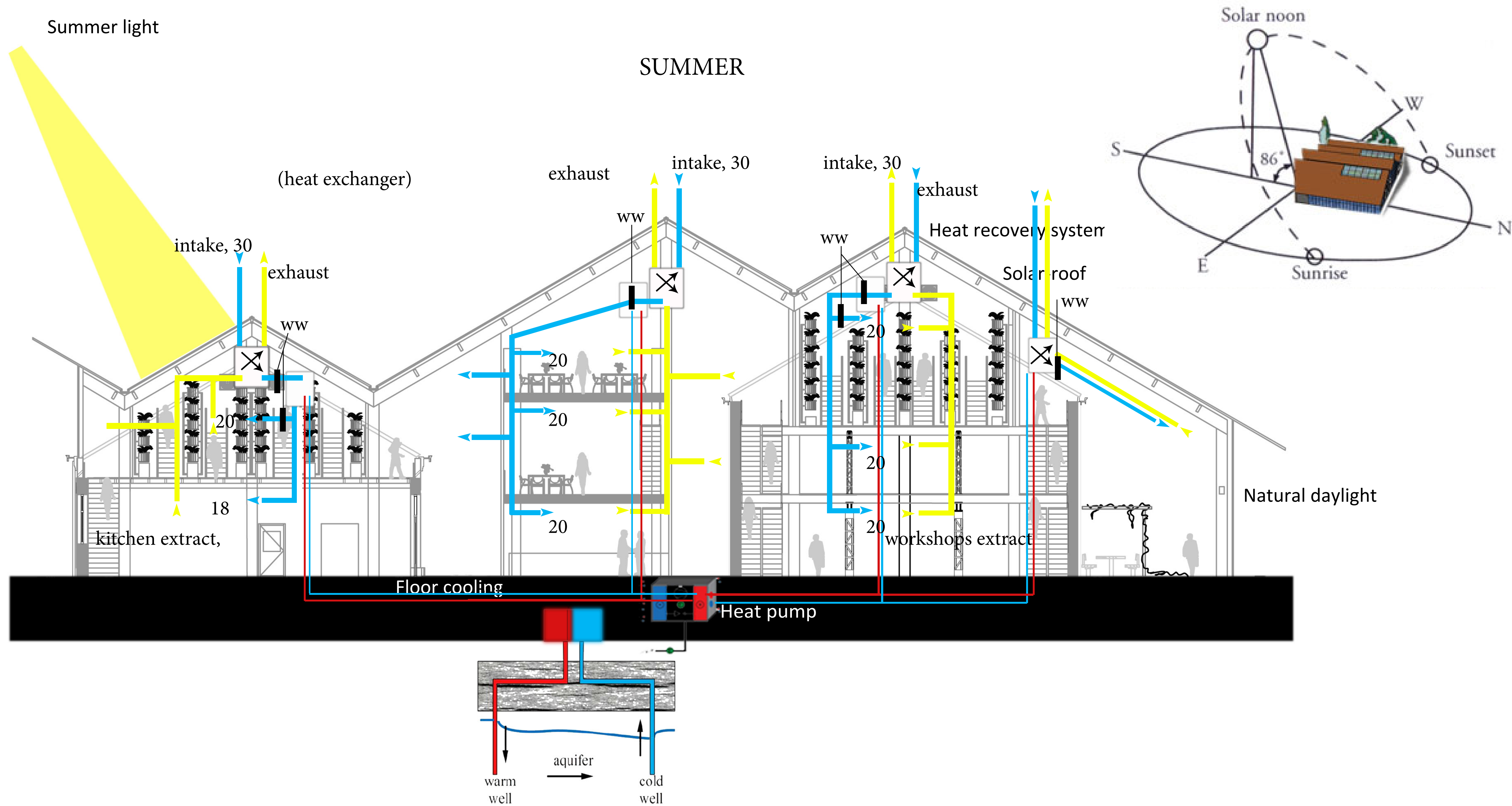
CLIMATE DESIGN

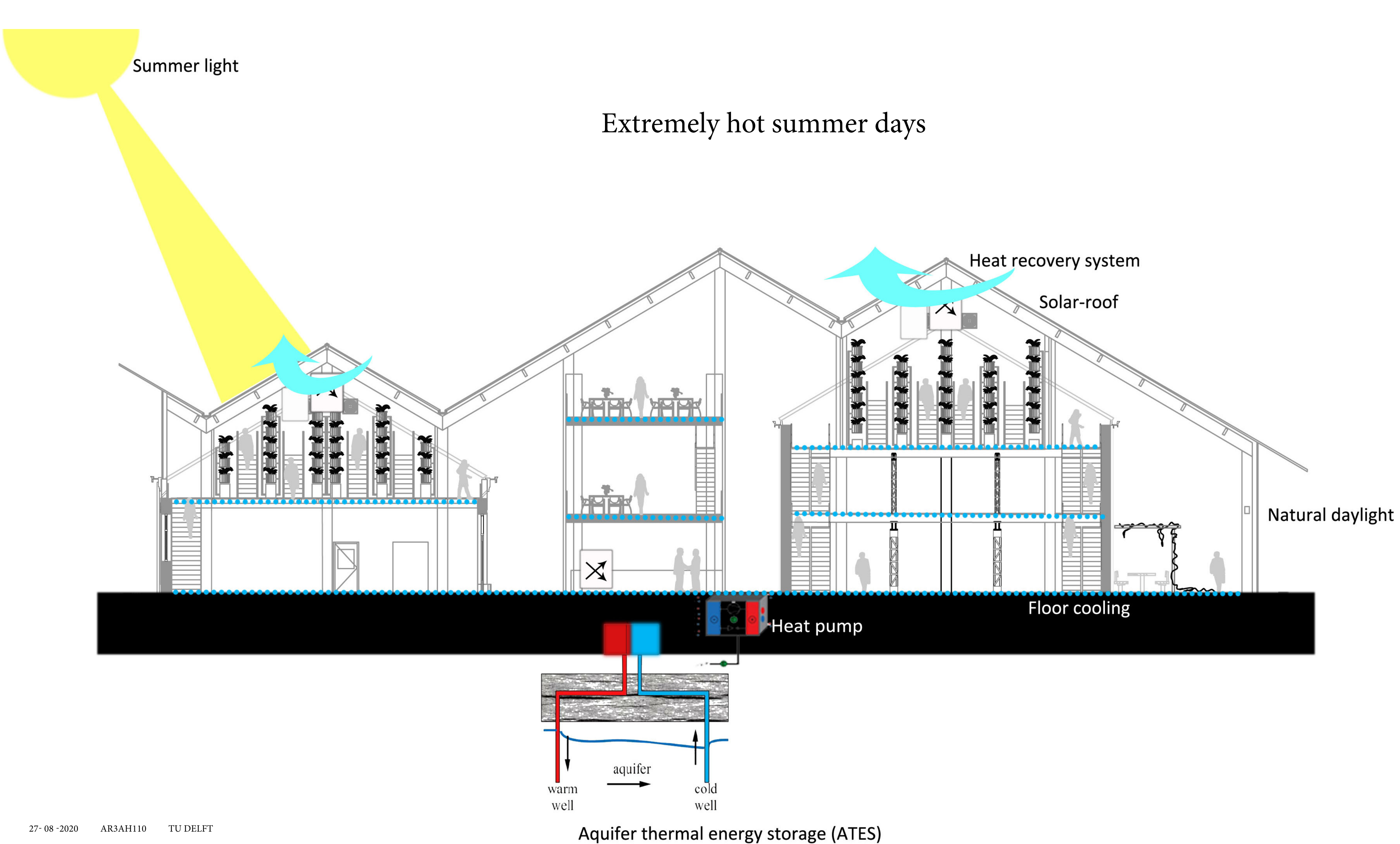


Different Zones, Different climate

Up to 28 degrees Celsius during the day and down to 13-21 degrees Celsius at night.







Summer light

Extremely hot summer days

Heat recovery system

Solar-roof

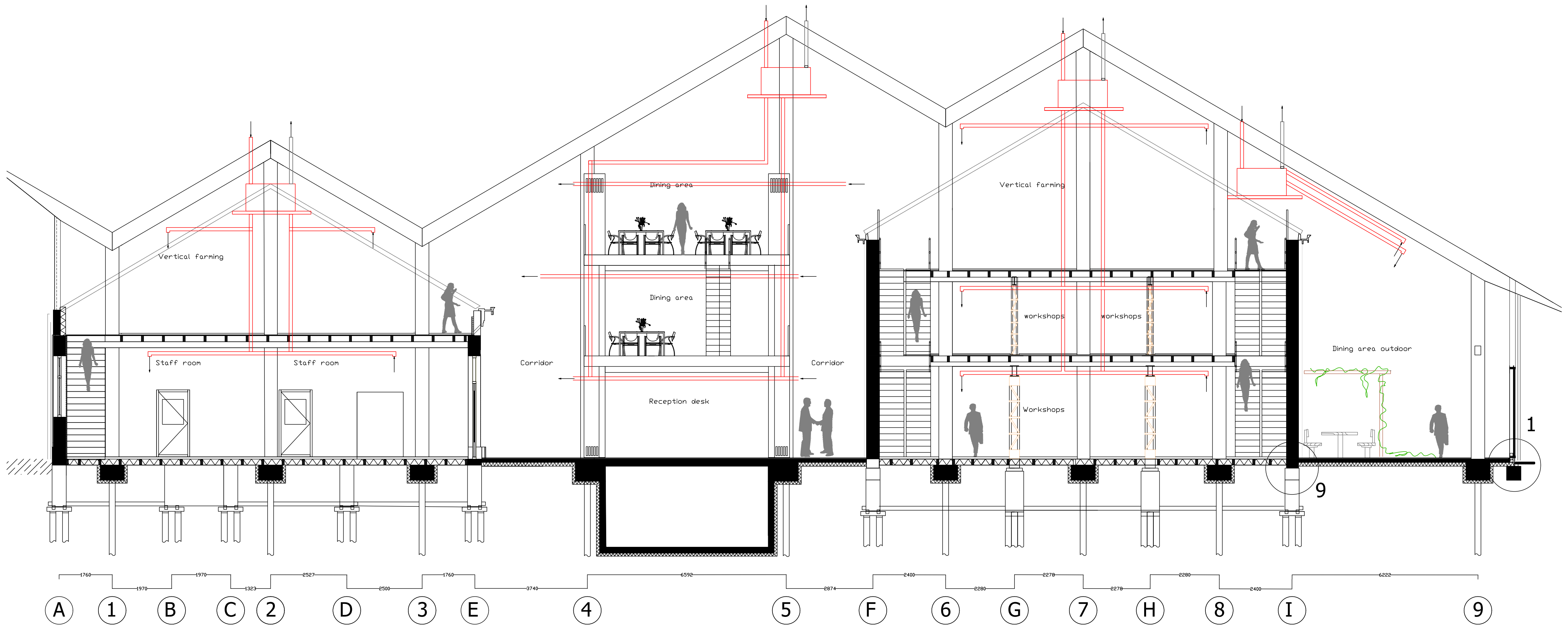
Natural daylight

Floor cooling

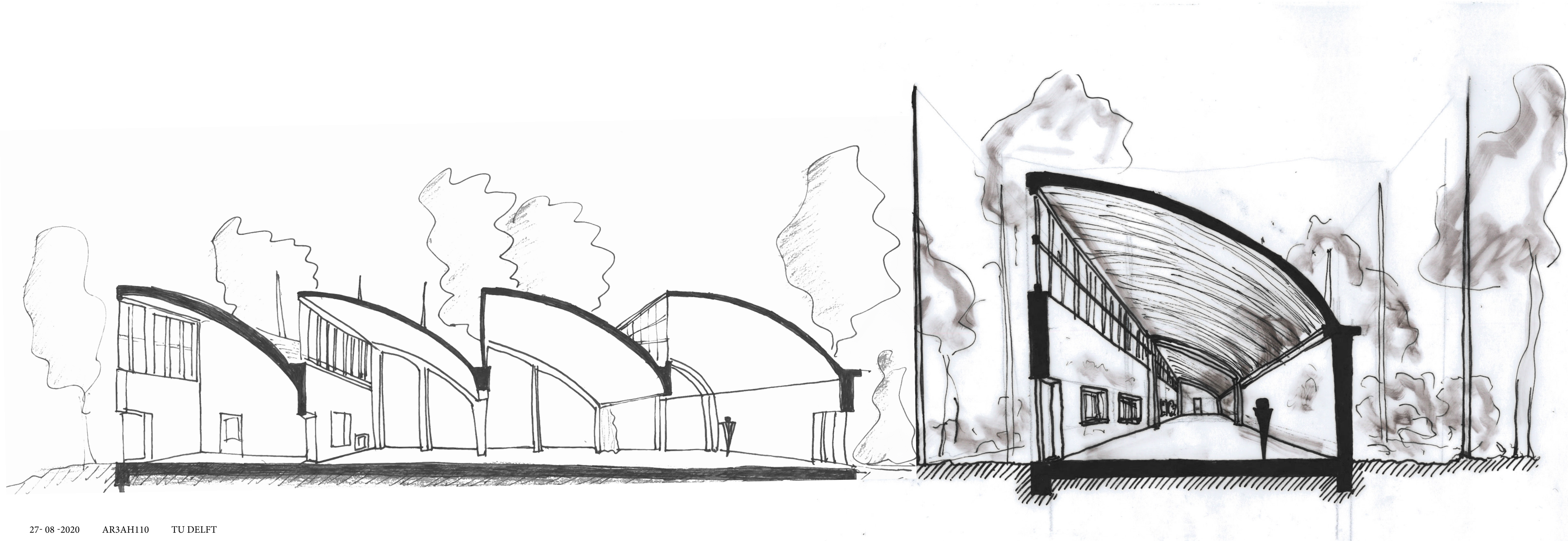
Heat pump

warm well
aquifer
cold well

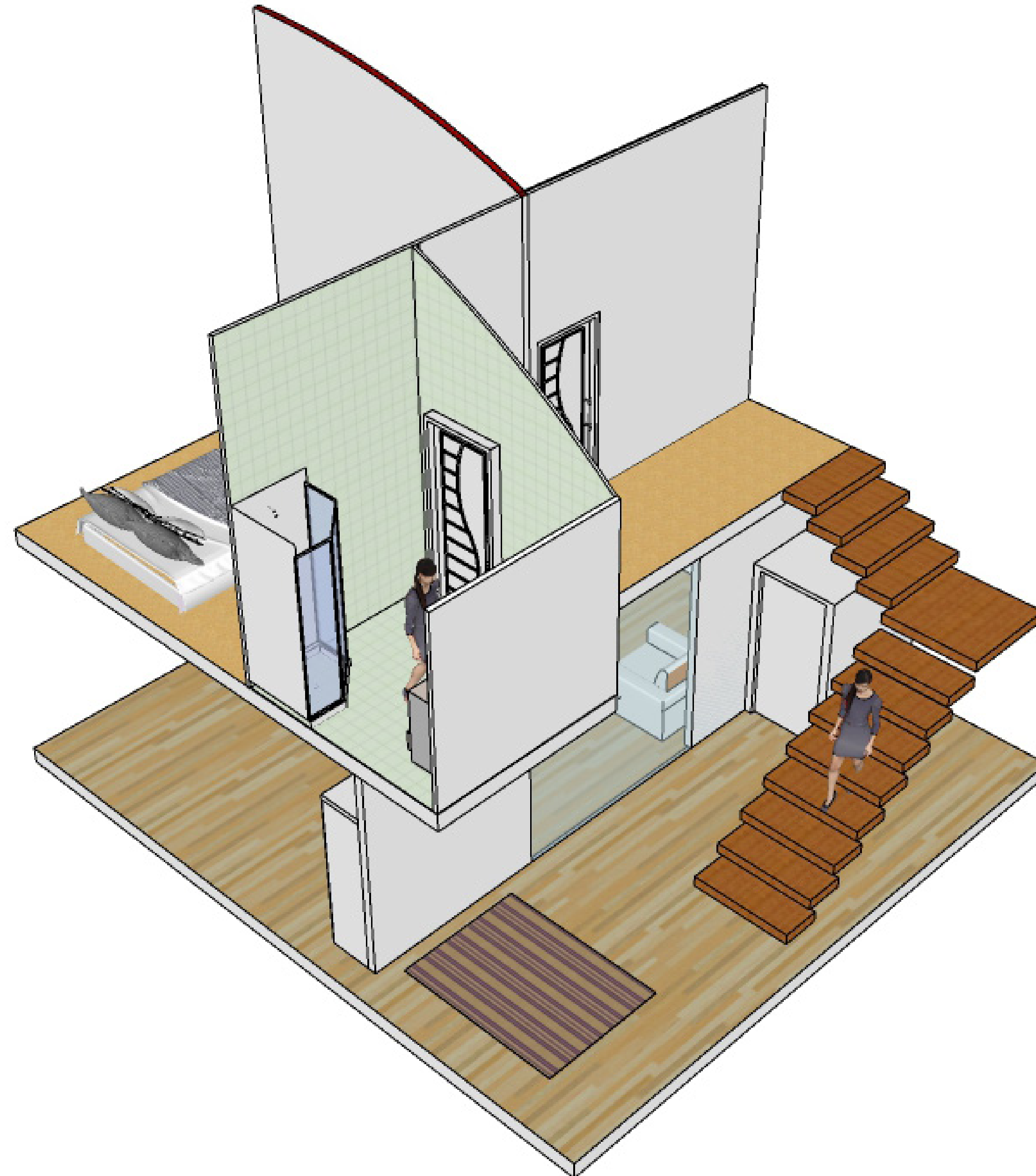
Aquifer thermal energy storage (ATES)

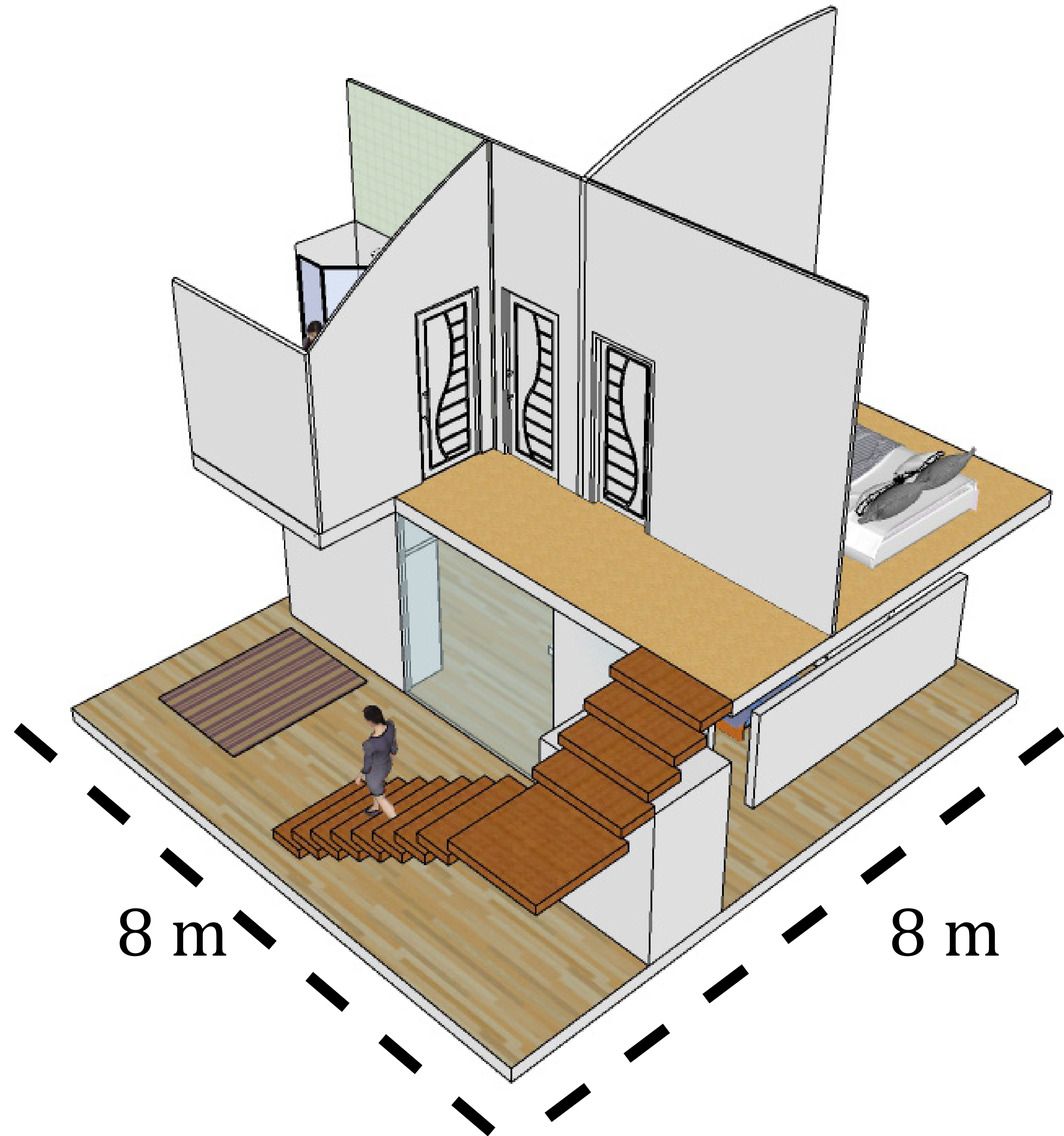


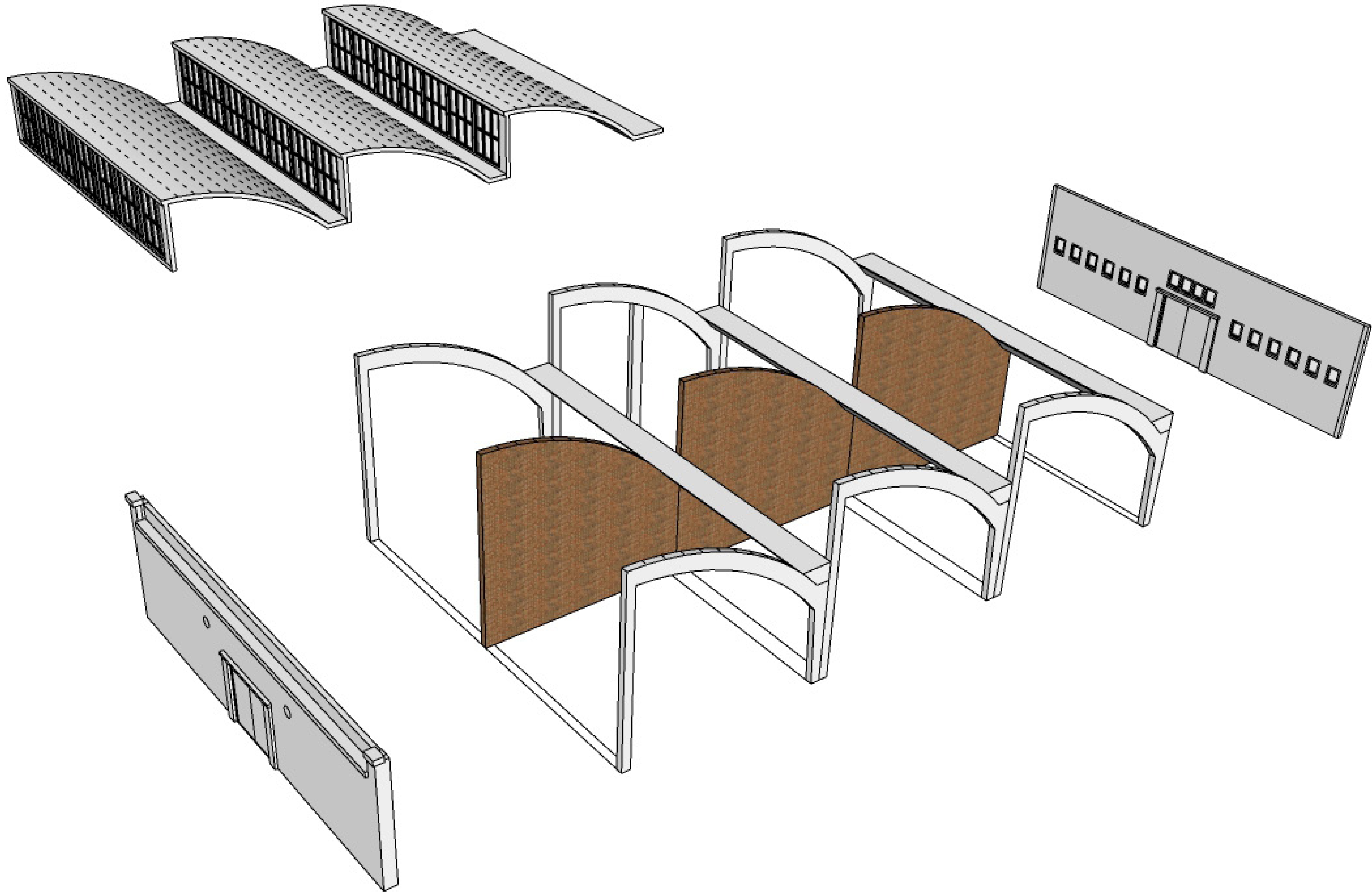
Residential building



Repetition of the units











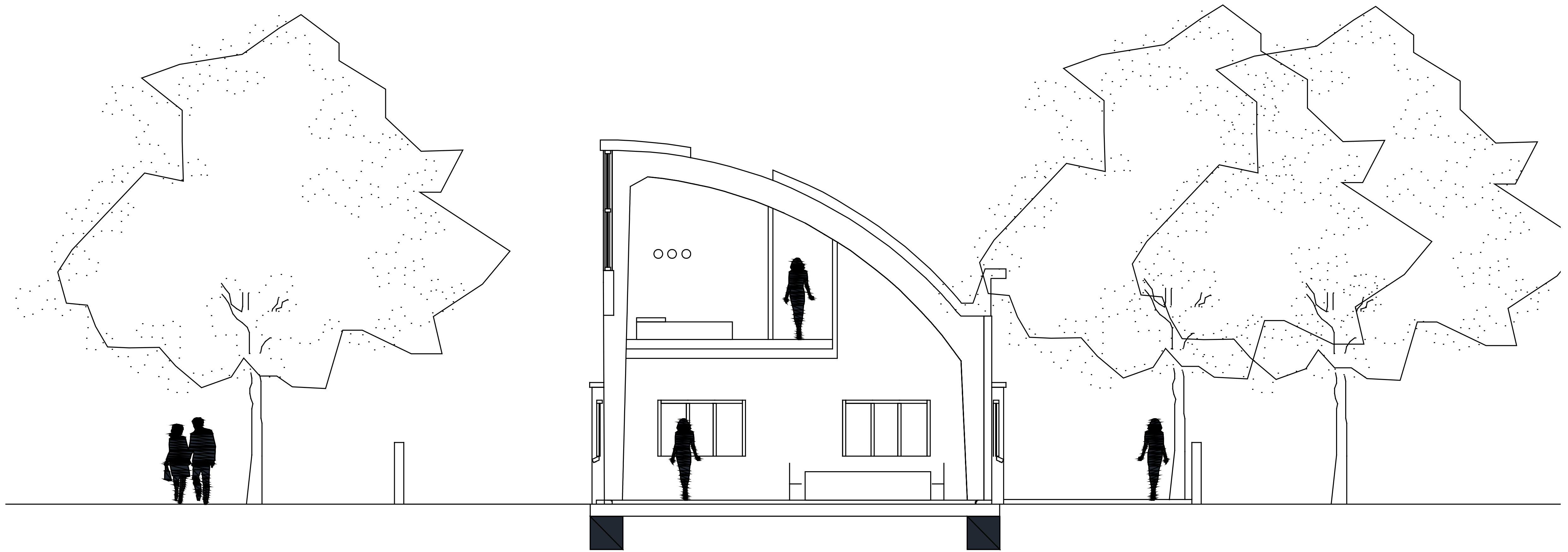
Process models









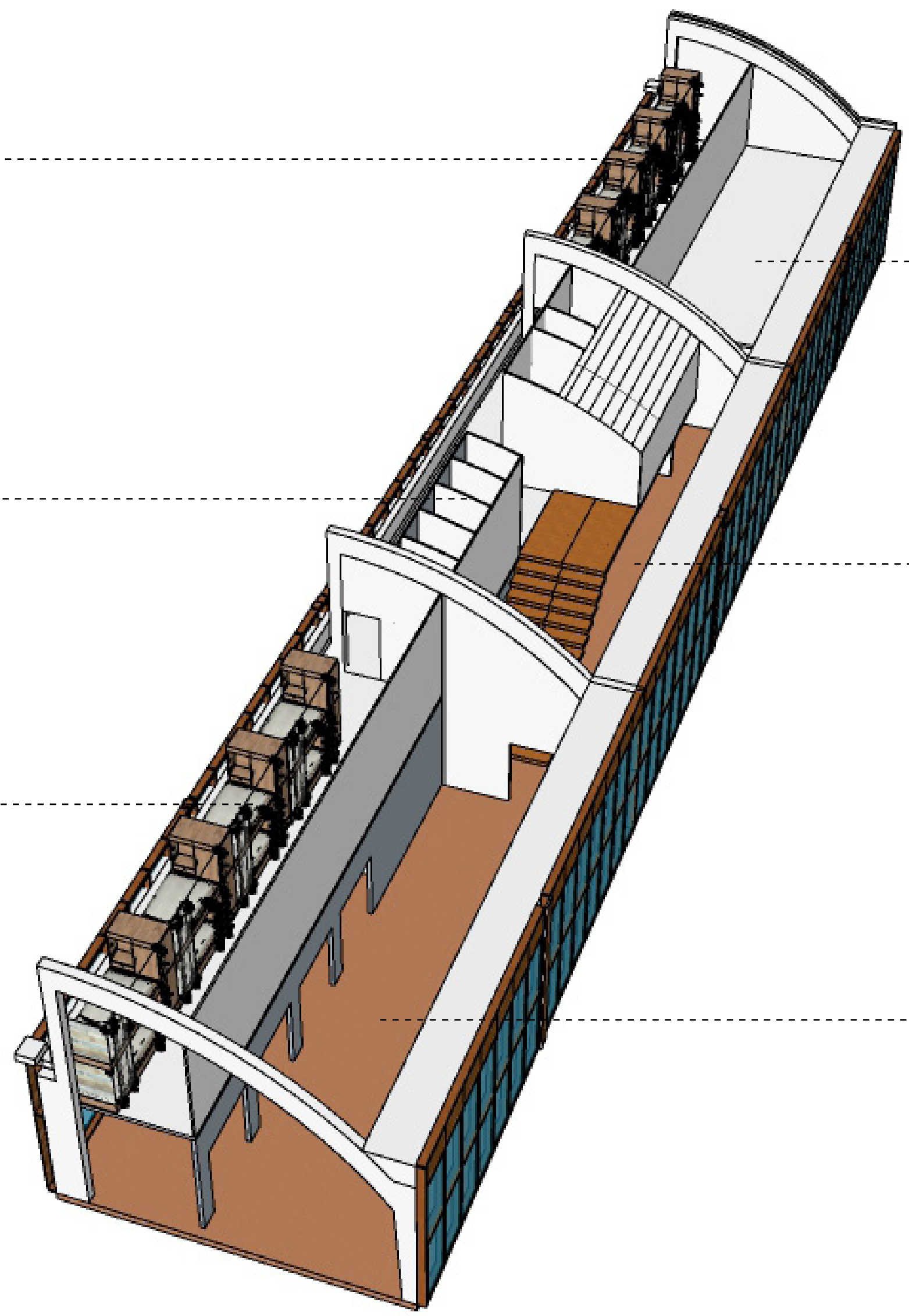


AirBnB, temporary places to stay

collectief , sleep area

washrooms and bathrooms

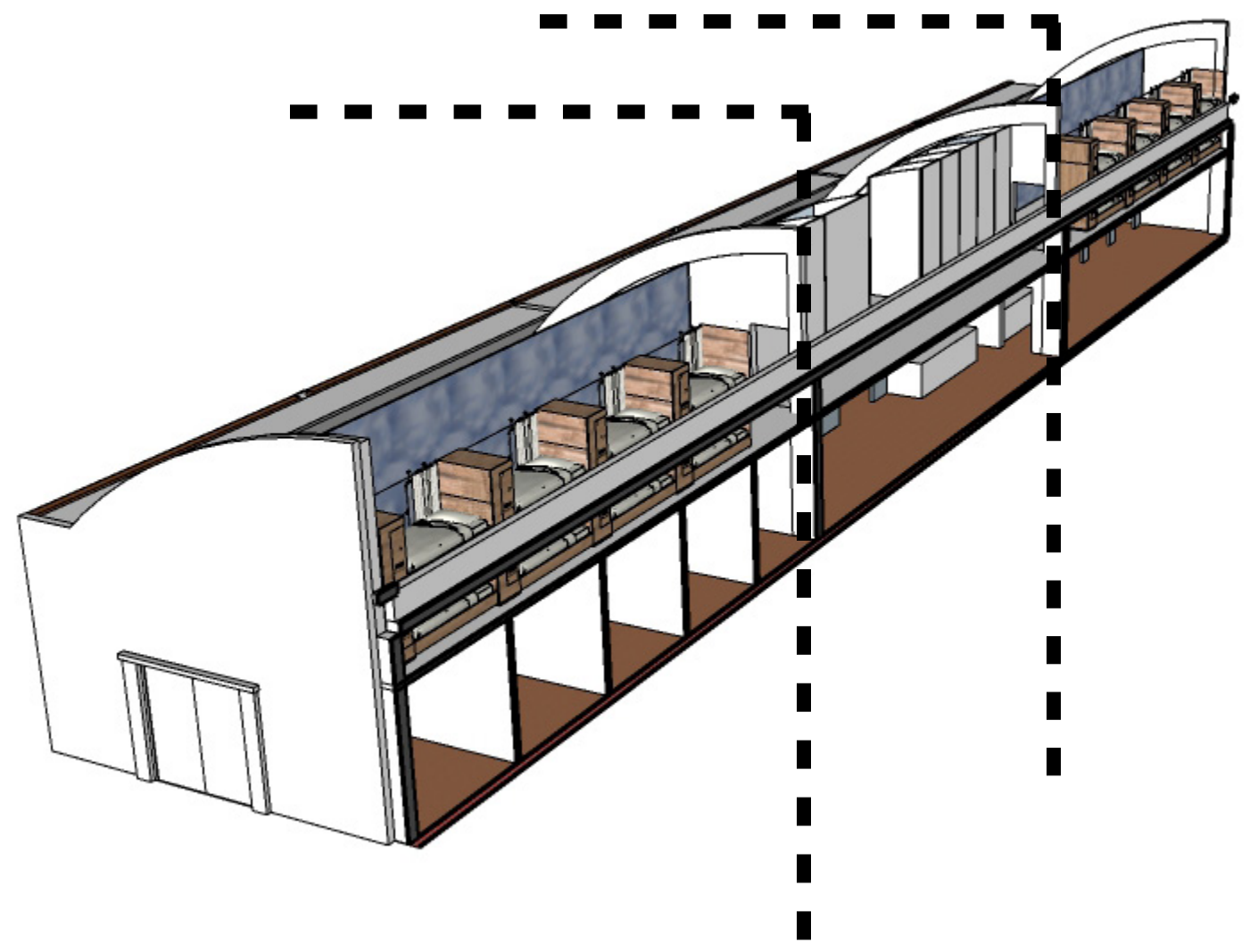
collectief sleep area



private bedroom

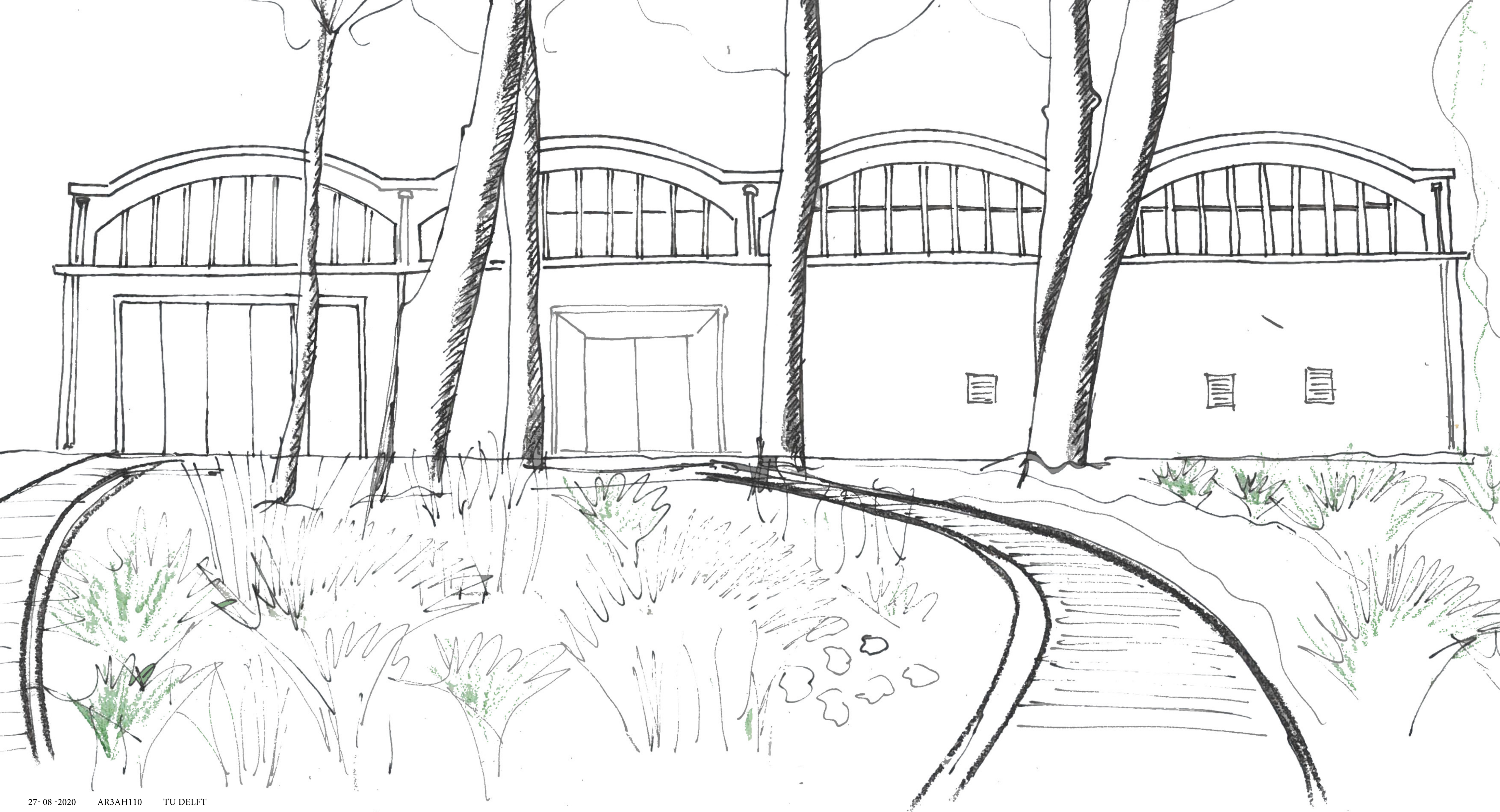
entrance

Restaurant and cafe

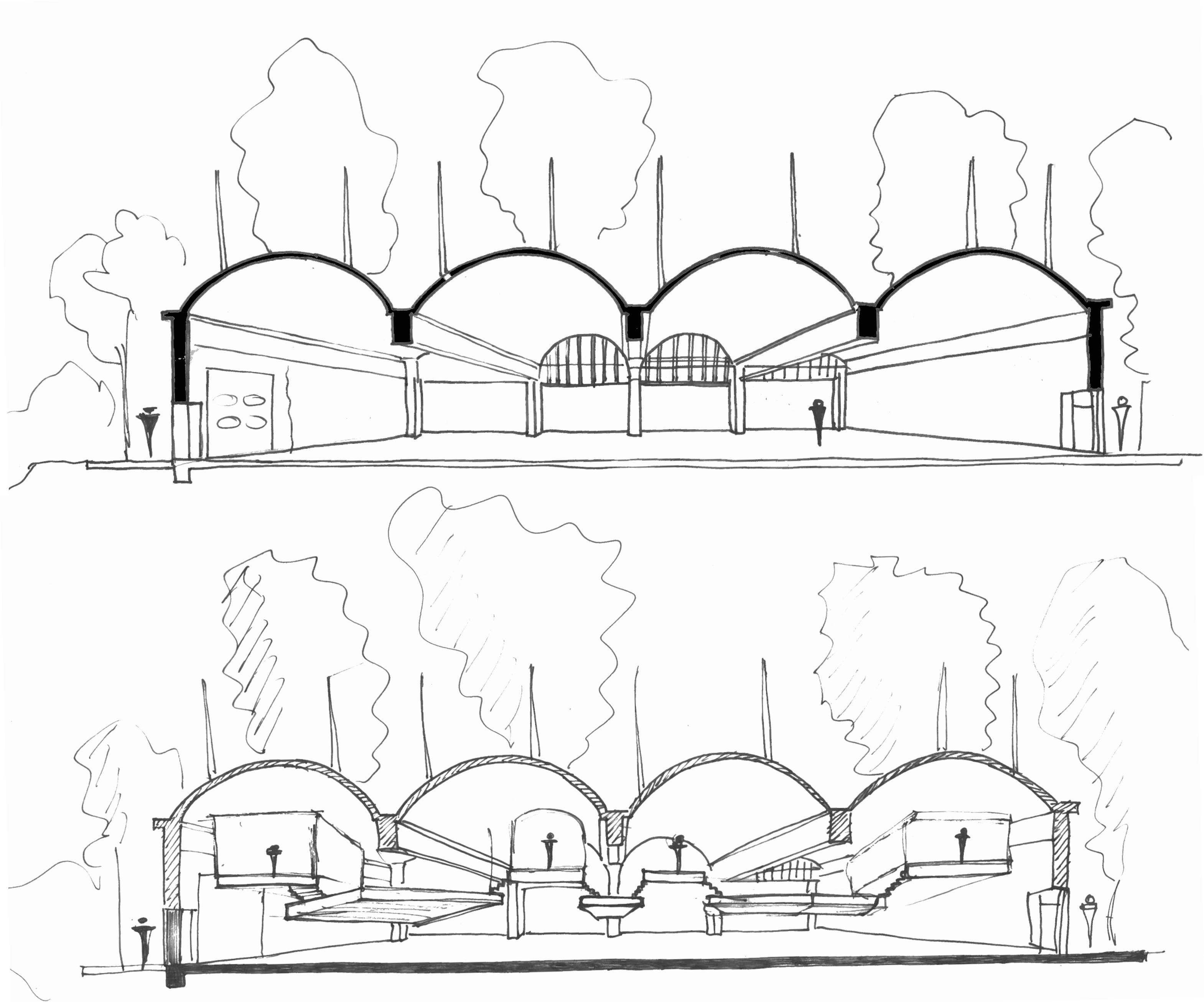


Primary school



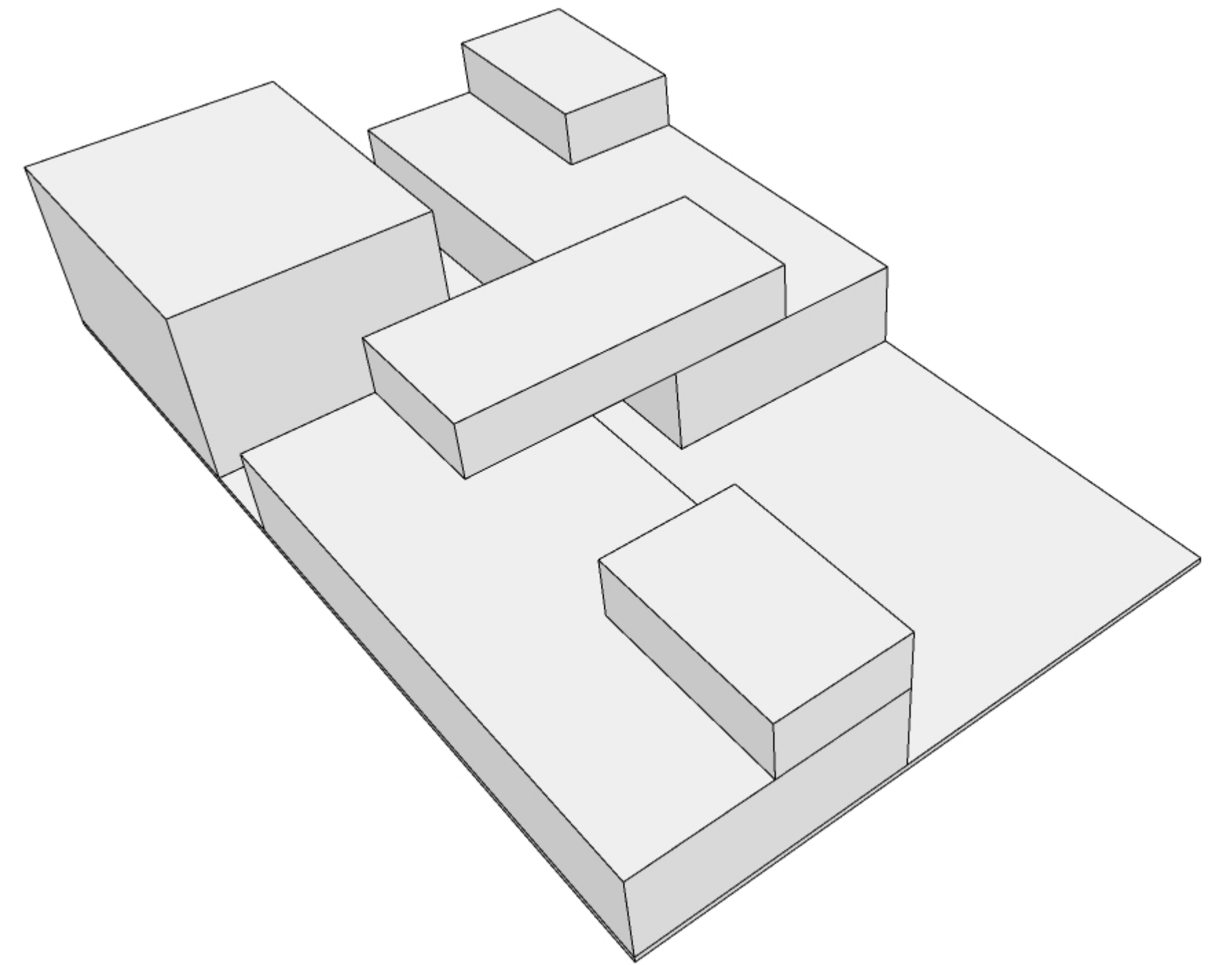
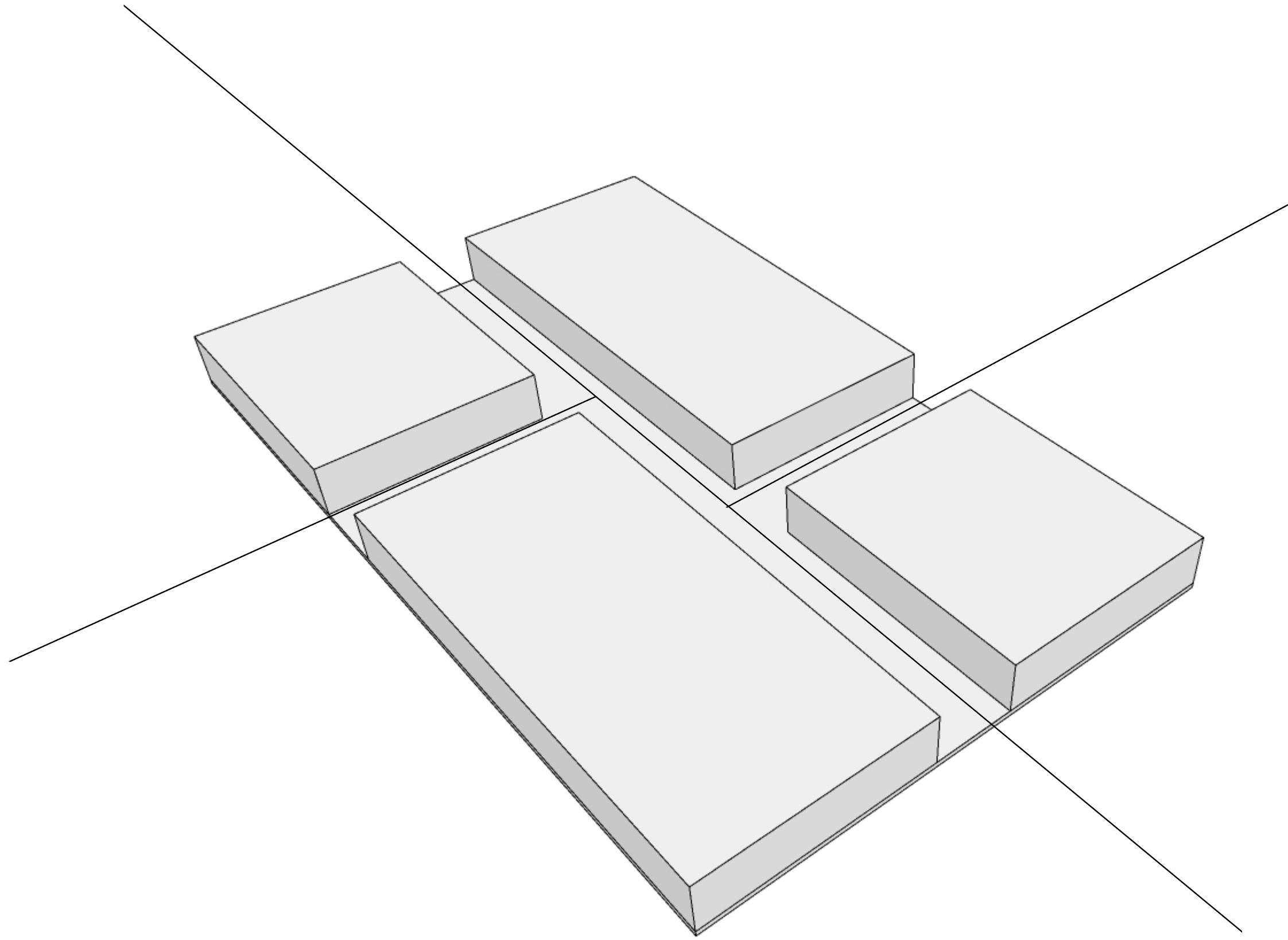


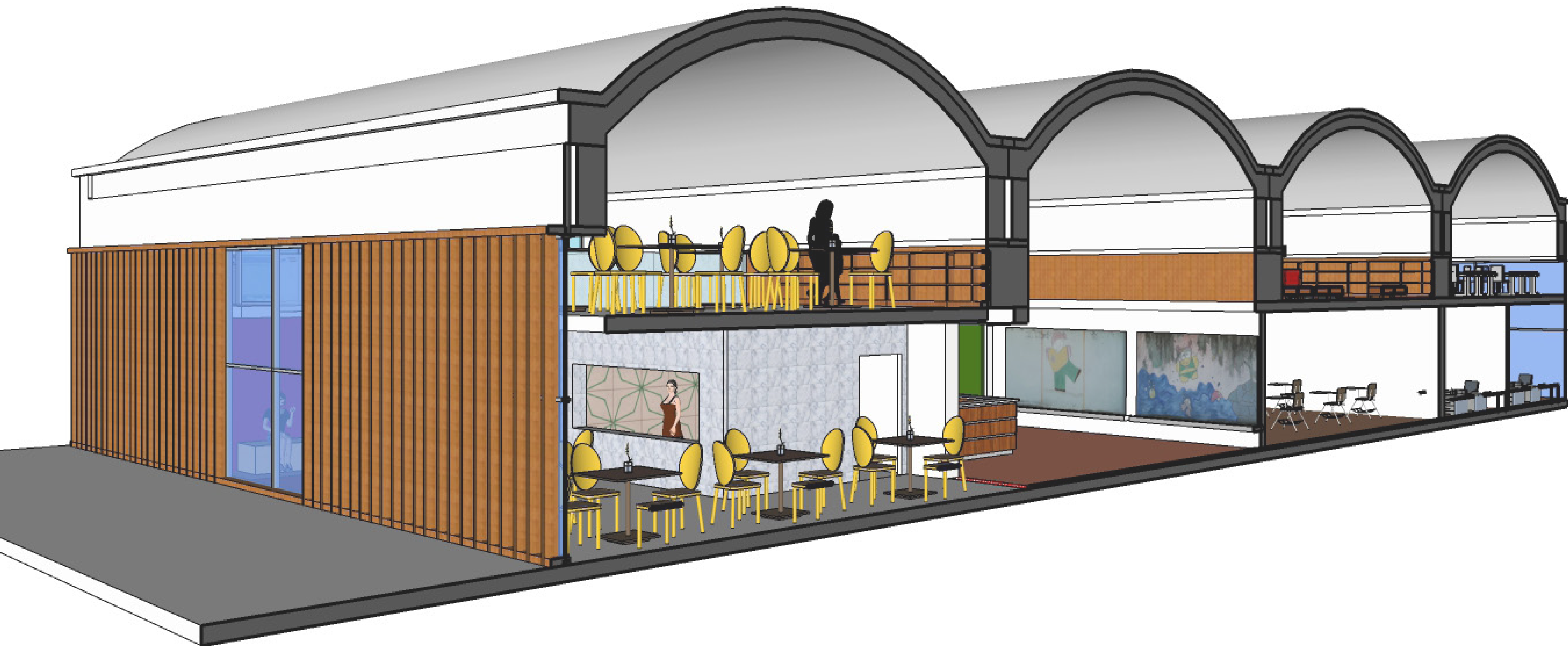
Concept



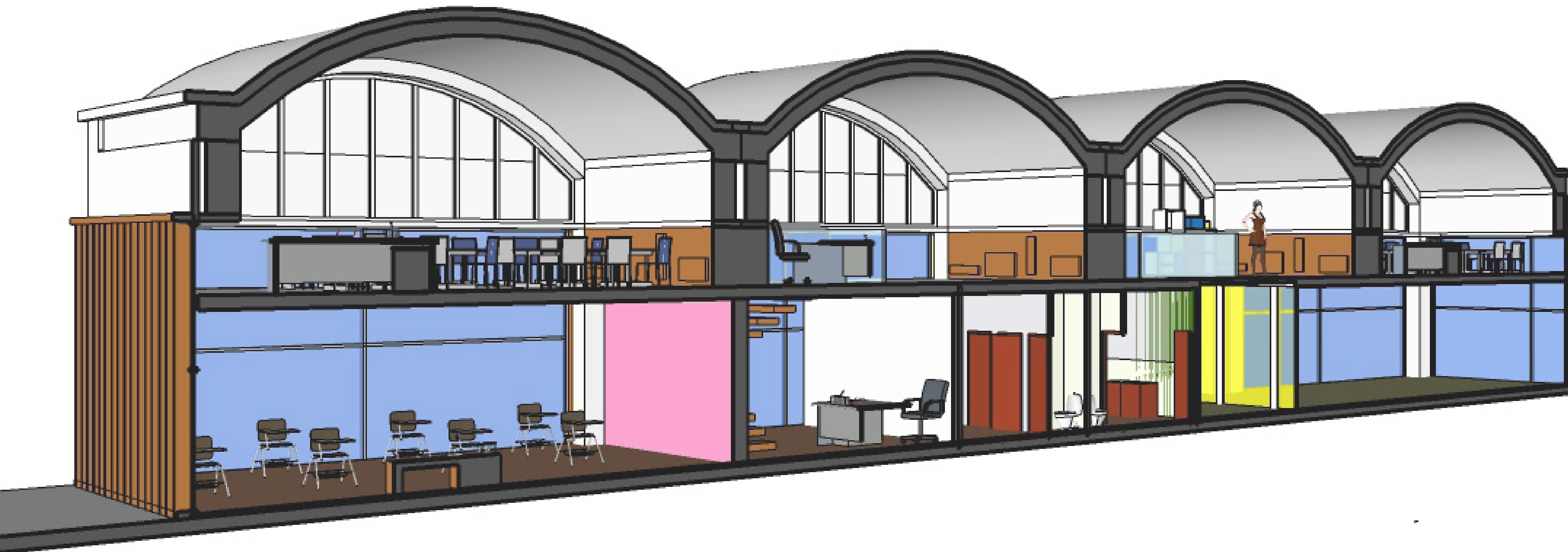


Concept













THANKS