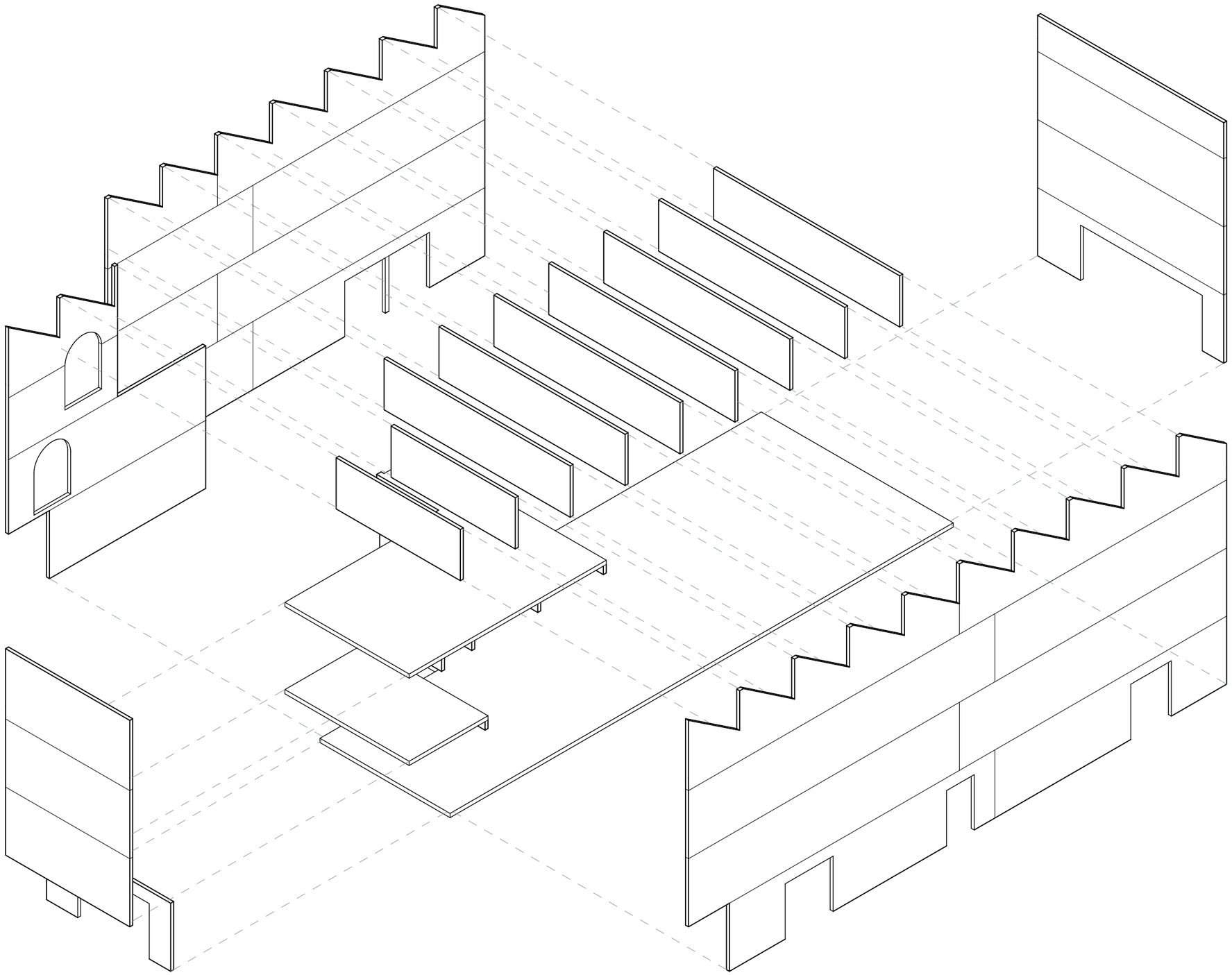
PJOTR VAN NOESEL

CULTURAL CENTER IN A PAPER MILL

BUILDING TECHNOLOGY HANDOUT

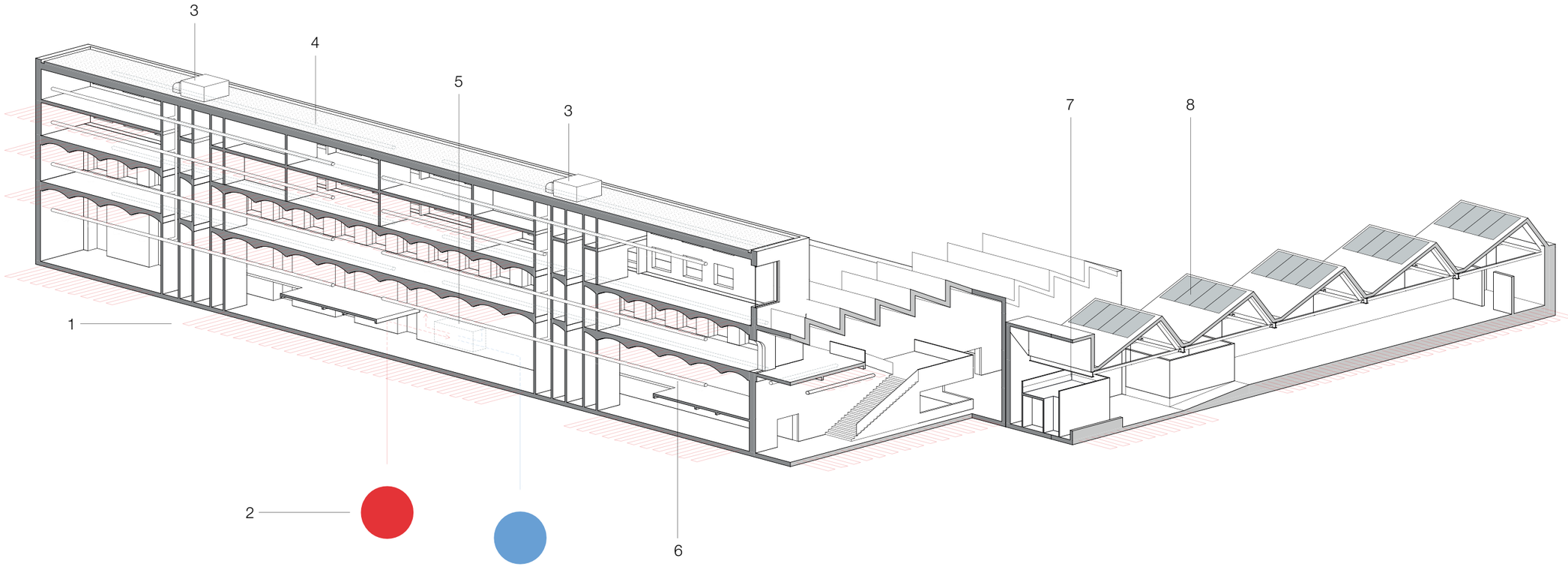
TU Delft
Architecture and the Built Environment
Graduation studio Urban Architecture
Year 2021/2022
P5 presentation



CROSS LAMINATED TIMBER FOYER

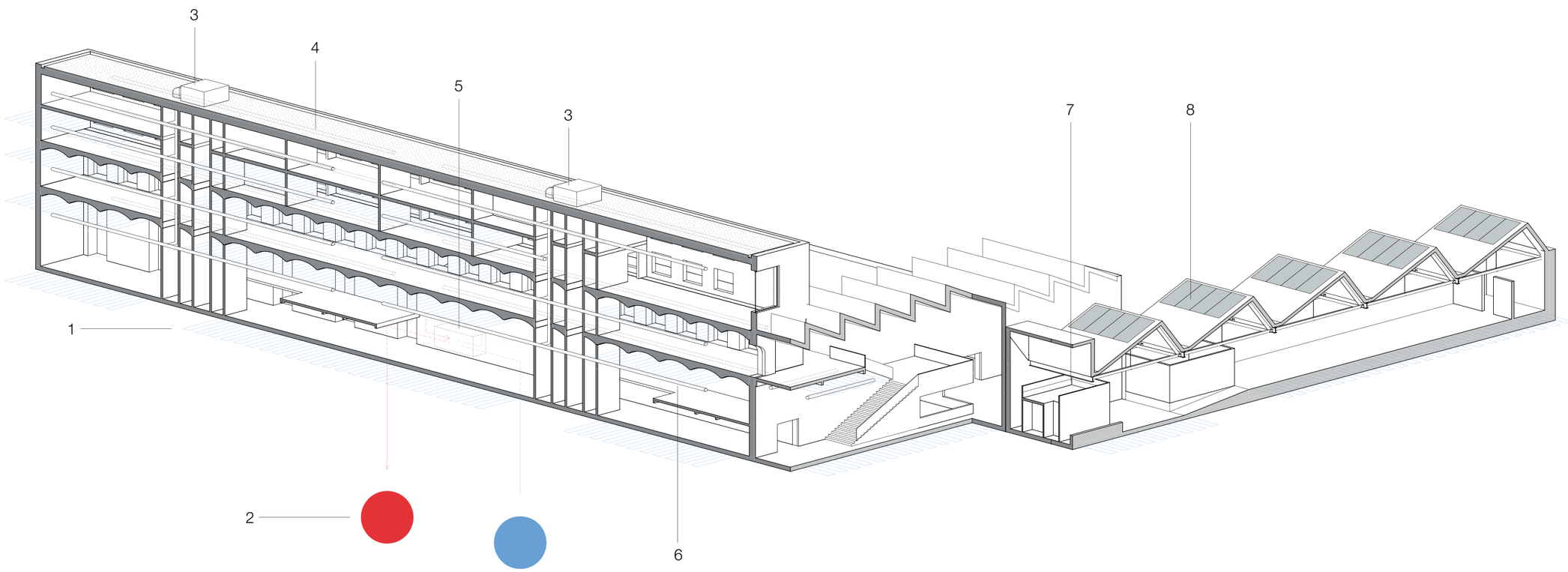
Climatization scheme - winter situation:

1 Floor heating network
2 Heat/Cold reservoir:
Hot water is pumped up
Cold water is stored
3 Air handling unit with heat exchange
4 Green roof
5 Heat/cold pump
6 Air ventilation system
7 Greywater collection
8 Solar energy through PV panels

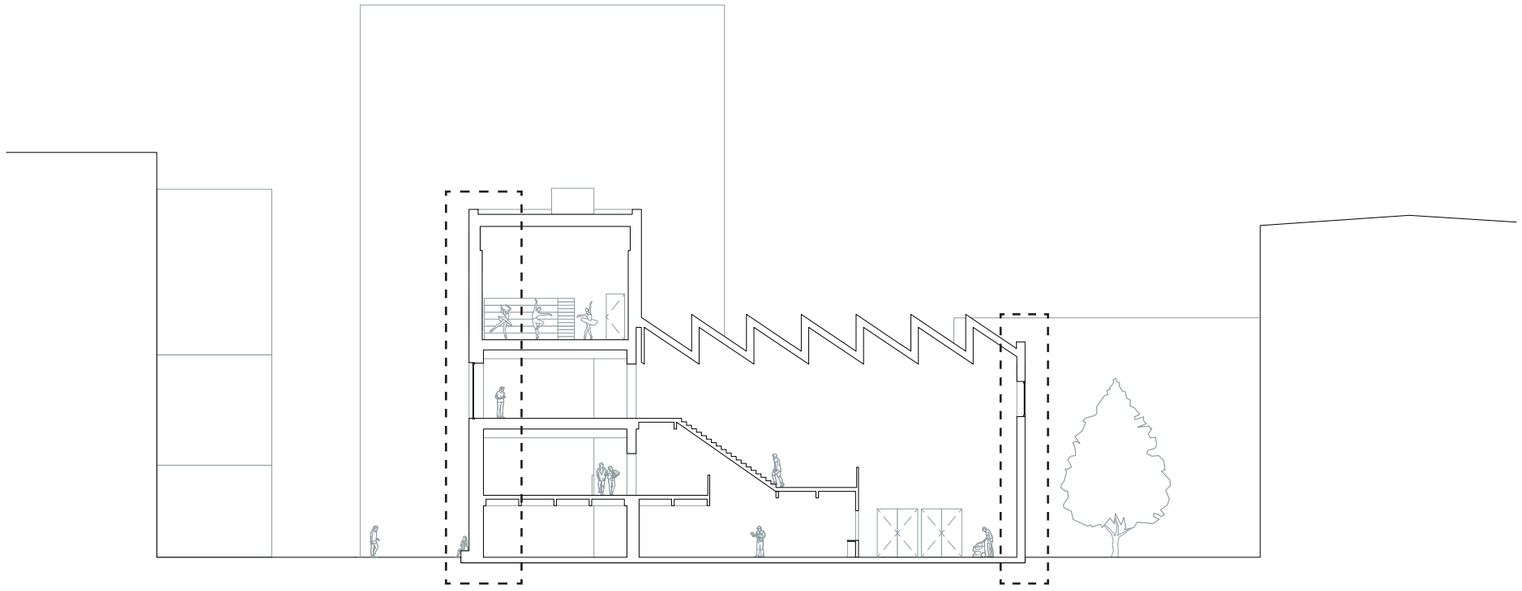


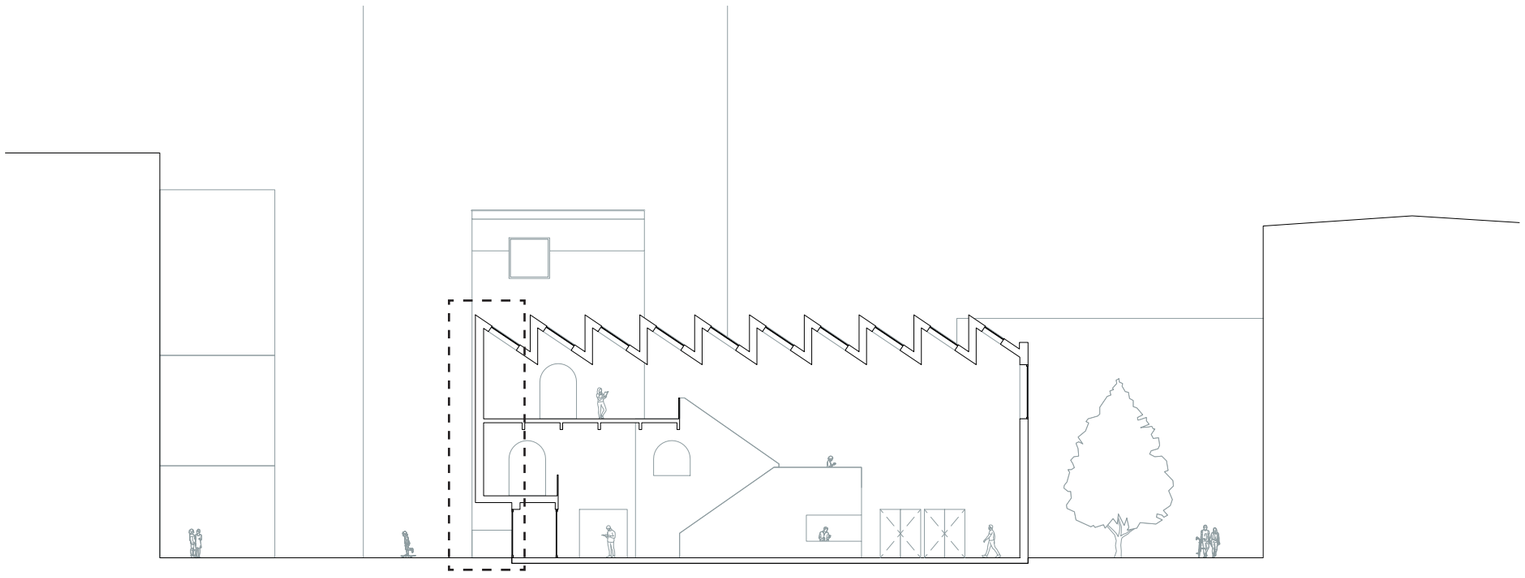
Climatization scheme - summer situation:

1 Floor cooling network
2 Heat/Cold reservoir:
Cold water is pumped up
Hot water is stored
3 Air handling unit with heat exchange
4 Green roof
5 Heat/cold pump
6 Air ventilation system
7 Greywater collection
8 Solar energy through PV panels

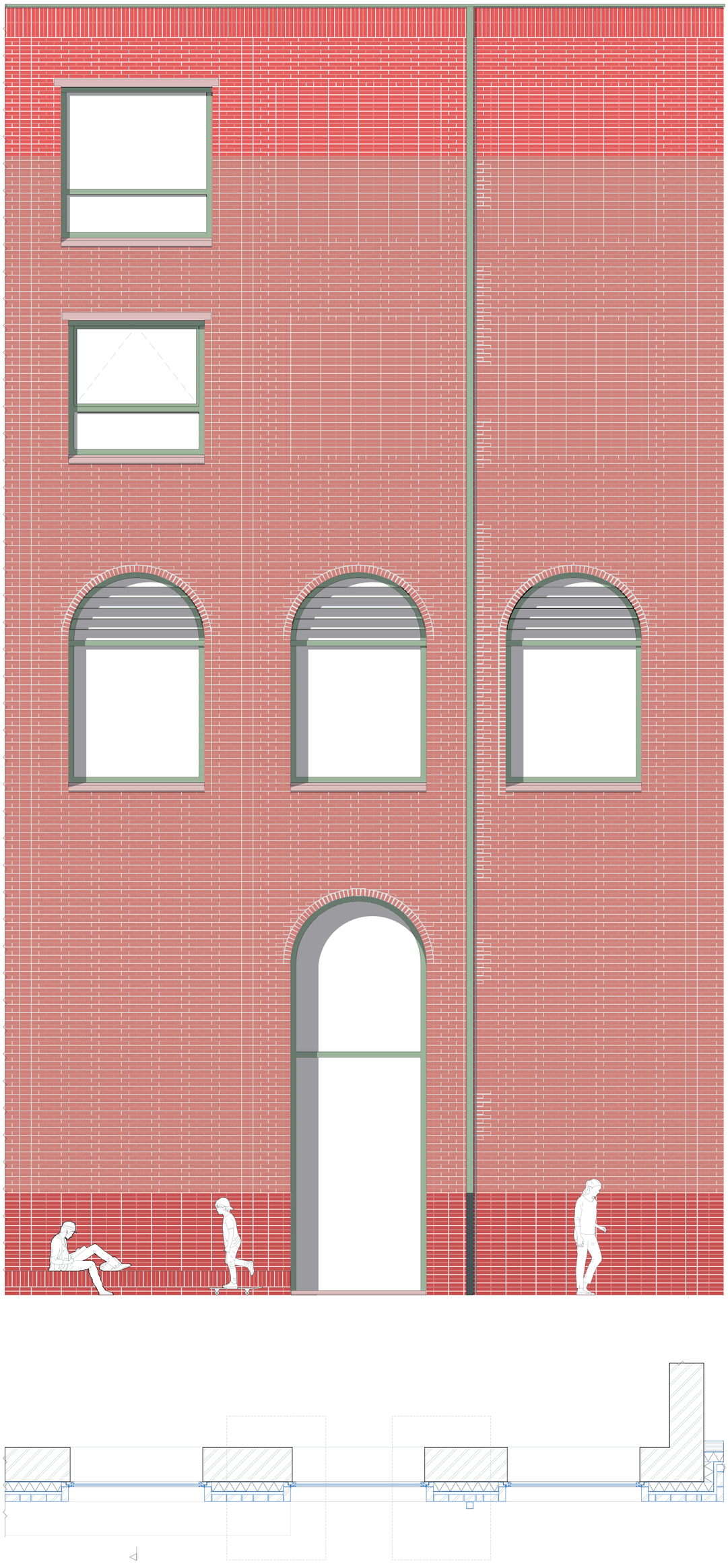


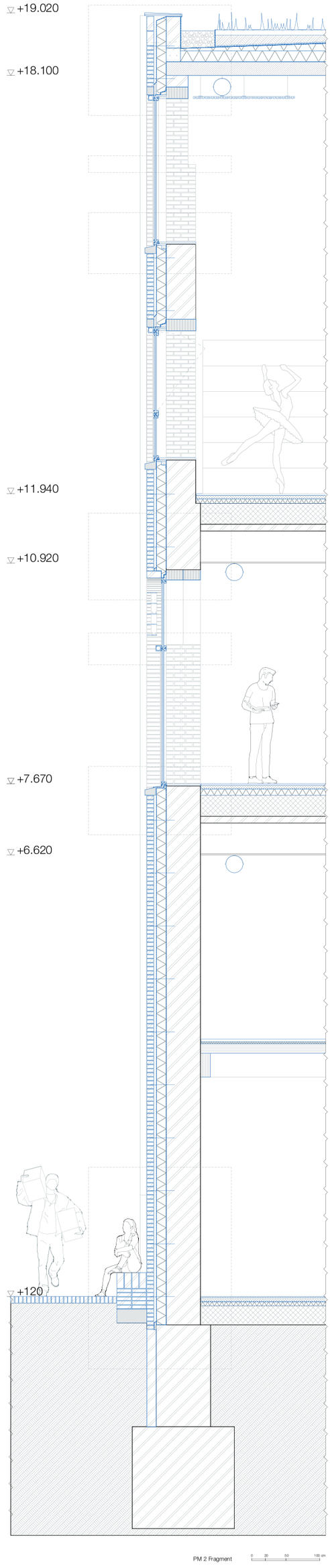
CLIMATE SCHEMES





LOCATION FRAGMENTS





PM2 FRAGMENT

Vertical detail - Foundation PM2

1 Wall construction PM2 (U = 0.20 W/m K):
5 mm Stucco
500 mm Brick existing
Vapour barrier
140 mm Pavatherm woodfiber insulation
Waterproof layer
40 mm Ventilated air cavity
100 mm Reused brick

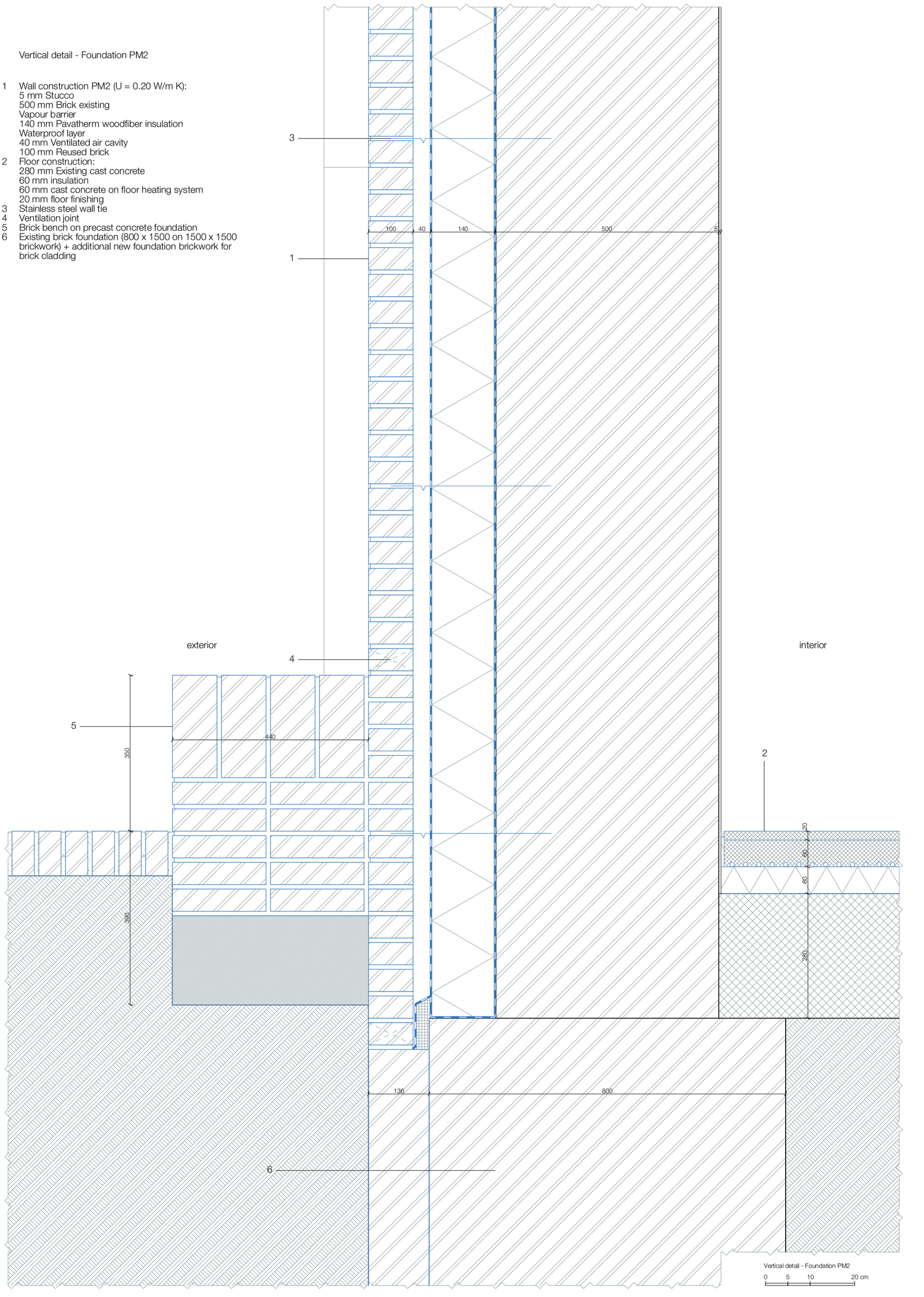
2 Floor construction:
280 mm Existing cast concrete
60 mm insulation
60 mm cast concrete on floor heating system
20 mm floor finishing

3 Stainless steel wall tie

4 Ventilation joint

5 Brick bench on precast concrete foundation

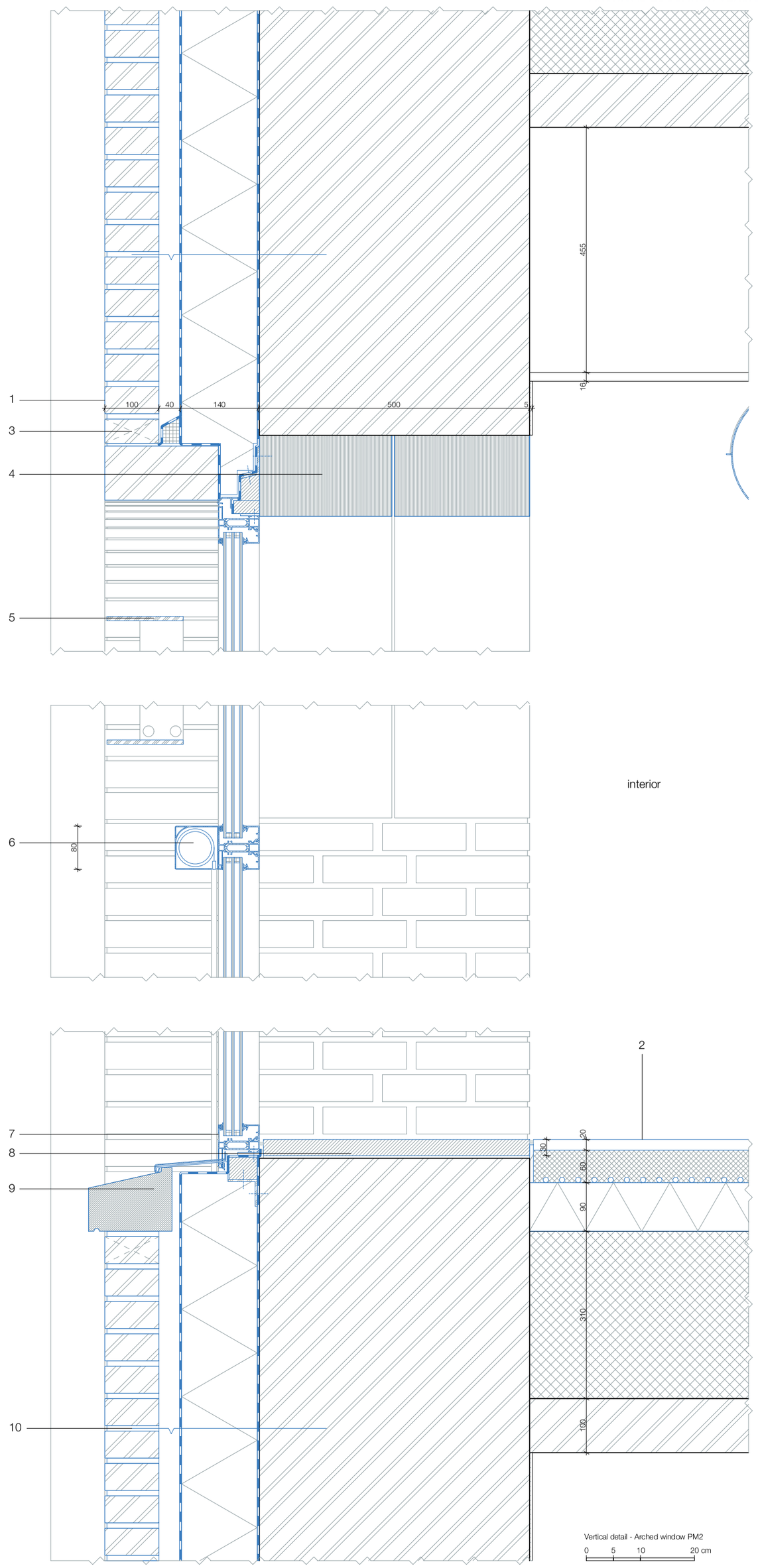
6 Existing brick foundation (800 x 1500 on 1500 x 1500 brickwork) + additional new foundation brickwork for brick cladding



PM2 FOUNDATION

Vertical detail - Arched window PM2

1 Wall construction PM2 (U = 0.20 W/m K):
5 mm Stucco
500 mm Brick existing
Vapour barrier
140 mm Pavatherm woodfiber insulation
Waterproof layer
40 mm Ventilated air cavity
100 mm Reused brick
2 Floor construction:
100 mm Existing vaulted brick structure
on I-beams (200 x 580)
310 mm Existing cast concrete
90 mm insulation
60 mm cast concrete on floor heating system
20 mm floor finishing
3 Ventilation joint
4 2 x Precast concrete lintel 150 x 250 mm
5 Powder coated steel slat sunscreen on prefabricated
steel element RAL 6011
6 Sunscreen in powder coated aluminium casing RAL 6011
7 Powdercoated aluminium windowframe RAL 6011
Tripple glazed window (U = 0,6 W/m K)
8 Windowsill pinewood 30 mm
9 Precast coloured concrete sill
10 Stainless steel wall tie



PM2 ARCHED WINDOW

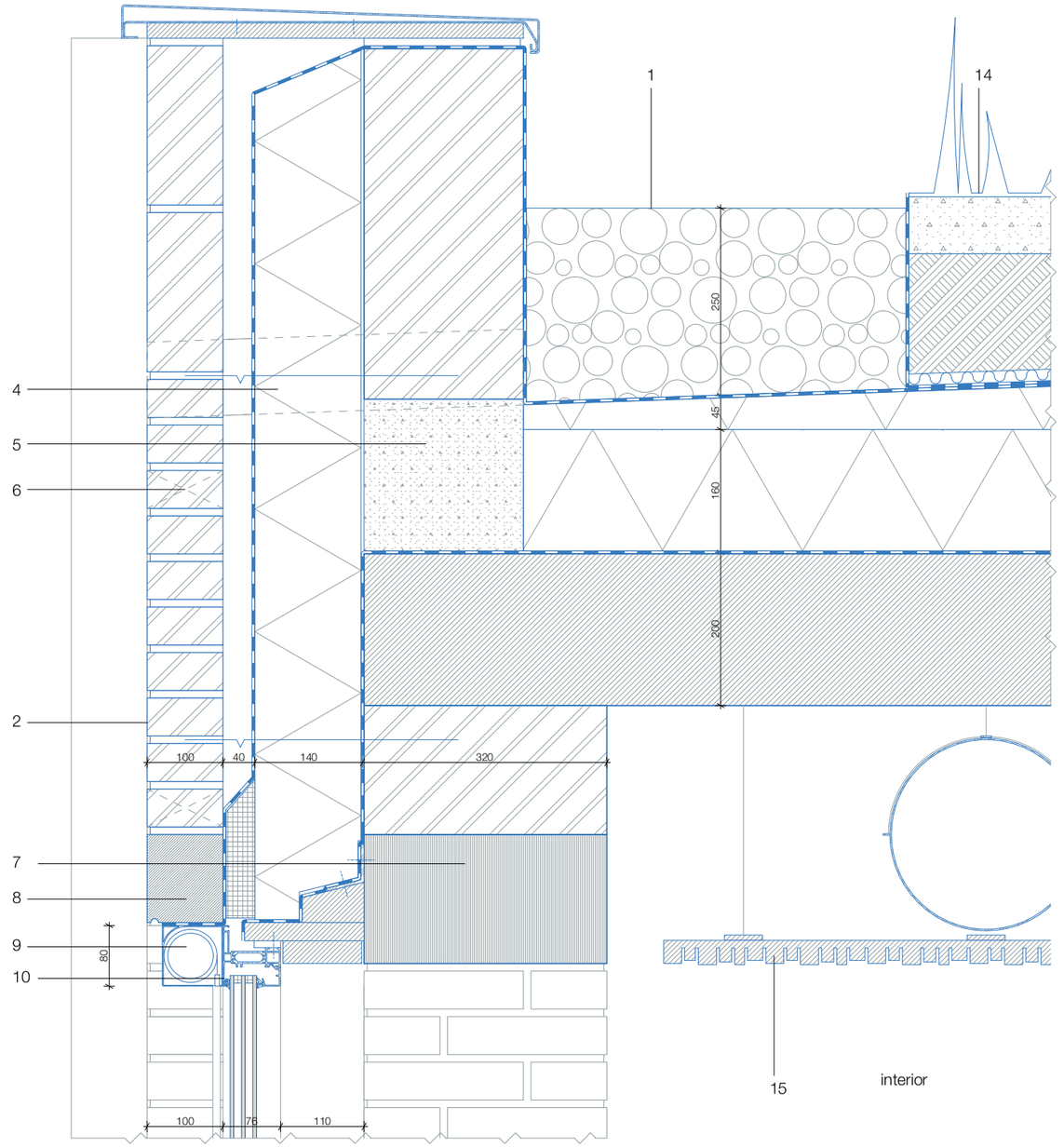
Vertical detail - Roof and window PM2

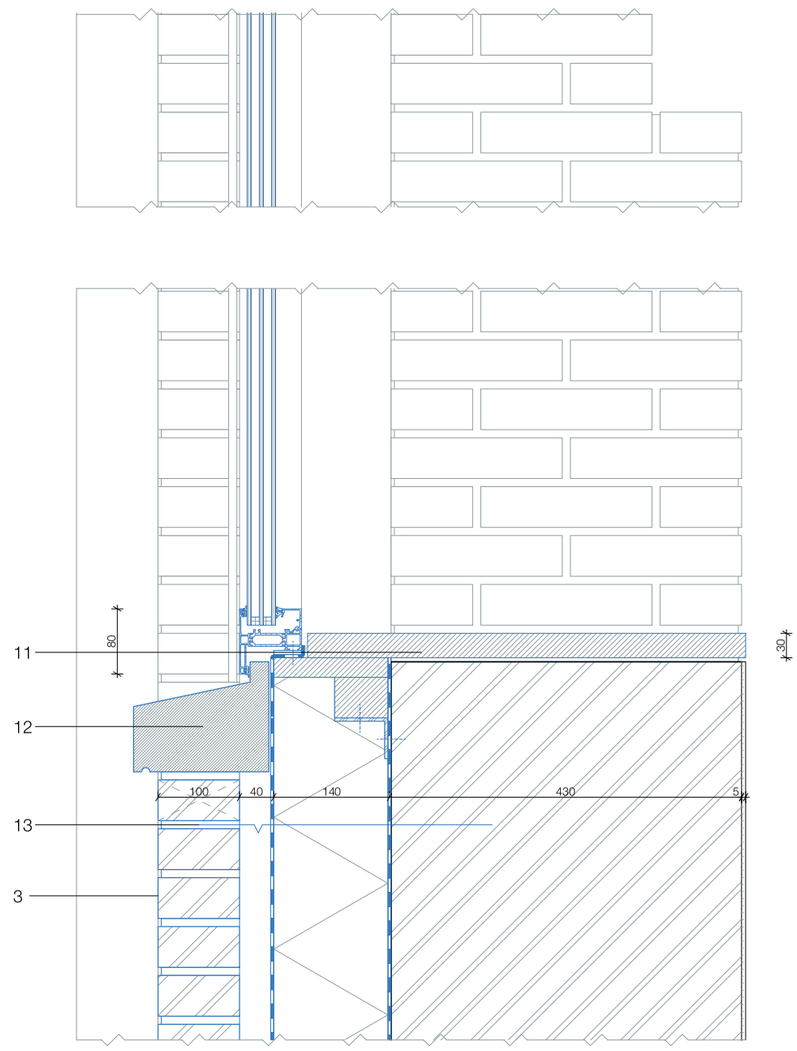
1 Roof construction PM2 (U = 0.21 W/m K):
200 mm Precast concrete floor slabs
Vapour barrier
160 mm Isoroof woodfiber insulation
45 mm Foamboard insulation layer for drainage
Waterproof layer
250 mm Gravel

2 Wall construction PM2 (U = 0.22 W/m K):
320 mm Brick dark red
Vapour barrier
140 mm Pavatherm woodfiber insulation
Waterproof layer
40 mm Ventilated air cavity
100 mm Brick dark red

3 Wall construction PM2 (U = 0.20 W/m K):
5 mm Stucco
430 mm Existing brick
Vapour barrier
140 mm Pavatherm woodfiber insulation
Waterproof layer
40 mm Ventilated air cavity
100 mm Reused brick brown-red

4 Canal to drainage pipe
5 Aerated concrete thermal bridge prevention
6 Ventilation joint
7 Concrete lintel 170 x 320 mm
8 Precast coloured concrete lintel
9 Sunscreen in powder coated aluminium casing RAL 6011
10 Powdercoated aluminium windowframe RAL 6011
Tripple glazed window (U = 0,6 W/m K)
11 Windowsill pinewood 30 mm
12 Precast coloured concrete sill
13 Stainless steel wall tie
14 Greenroof structure:
Waterproofing
Drainage layer
100 - 230 mm Green roof substrate
Vegetation
15 Lignotrend accoustic wood panneling





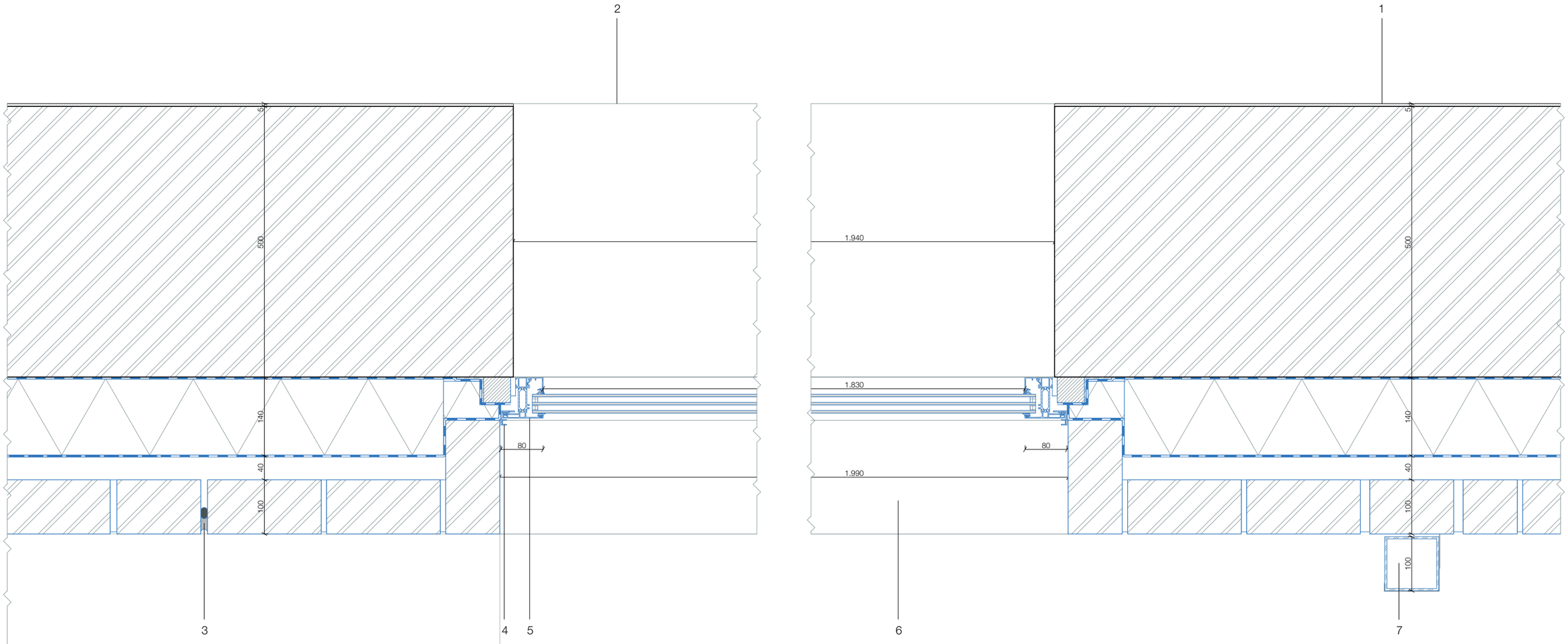
Vertical detail - Roof/window PM2
0 5 10 20 cm

PM2 ROOD-WINDOW

Horizontal detail - Arched window PM2

1 Wall construction PM2 (U = 0.20 W/m K):
5 mm Stucco
500 mm Brick existing
Vapour barrier
140 mm Pavatherm woodfiber insulation
Waterproof layer
40 mm Ventilated air cavity
100 mm Reused brick
2 Windowsill pinewood 30 mm
3 Expansion joint
4 Sunscreen guiding profile
5 Powdercoated aluminium windowframe RAL 6011
Tripple glazed window (U = 0,6 W/m K)
6 Precast coloured concrete lintel
7 Powdercoated stainless steel drainage pipe RAL 6011

interior

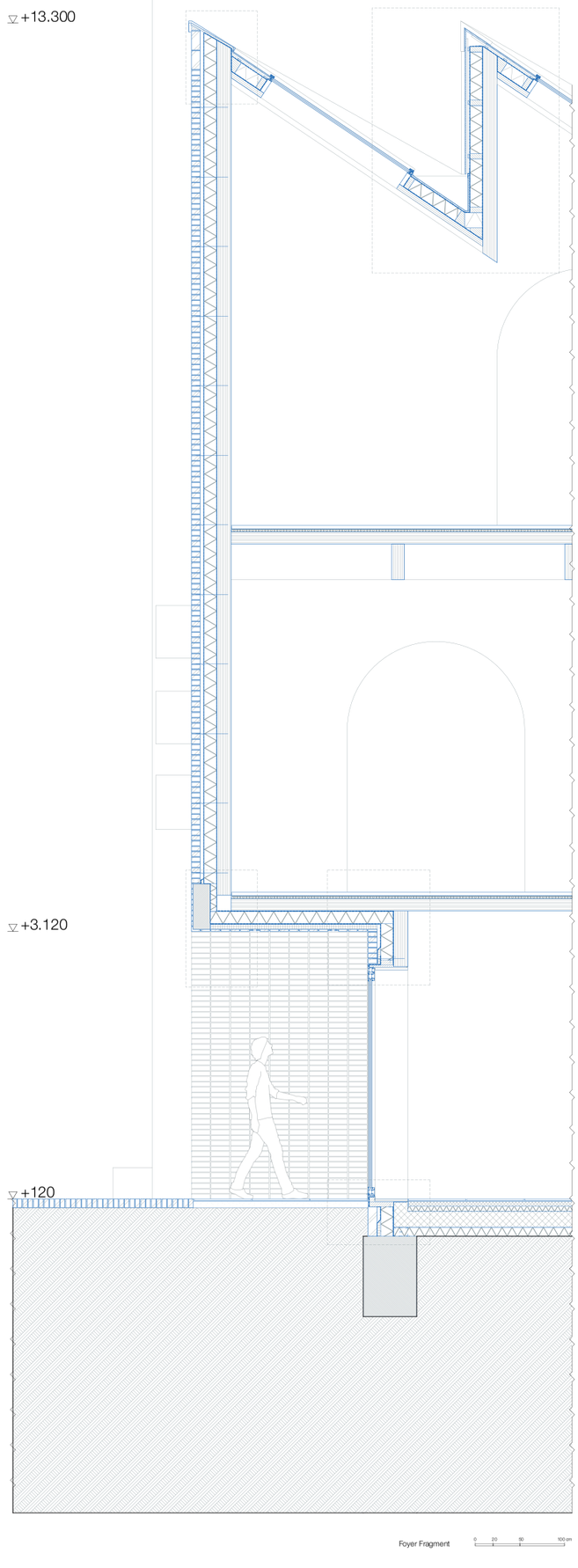


exterior

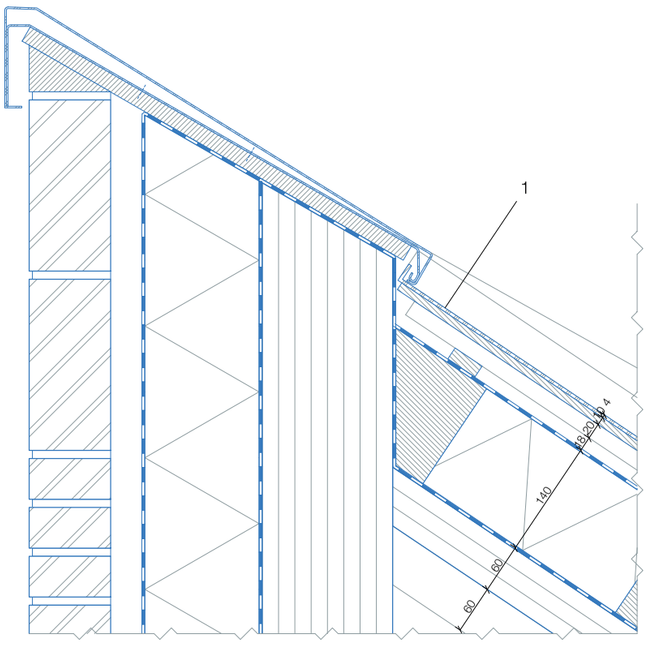
PM2 ARCHED WINDOW

Horizontal detail - Arched window pm2

0 5 10 20 cm



FOYER ENTRANCE FRAGMENT



Vertical detail - Entrance/Foyer front

Vertical detail - Entrance/Foyer front
0 5 10 20 cm

1 Roof construction PM2 (U = 0.24 W/m K):
60 x 80 mm Timber beam
60 mm Cross laminated timber
Vapour barrier
140 mm Isoroof woodfiber insulation
Waterproof layer
20 mm horizontal wooden battens
20 mm vertical wooden battens
10 mm plywood
4 mm zink plating

2 Floor construction:
40 mm floor finishing t.b.d.
30 mm insulation
140 mm Cross laminated timber
Vapour barrier
170 mm Isoroof woodfiber insulation
Waterproof layer
30 mm cement-bound woodfiber panel
Glue layer for brick strips
20 mm Glazed brick strips dark red

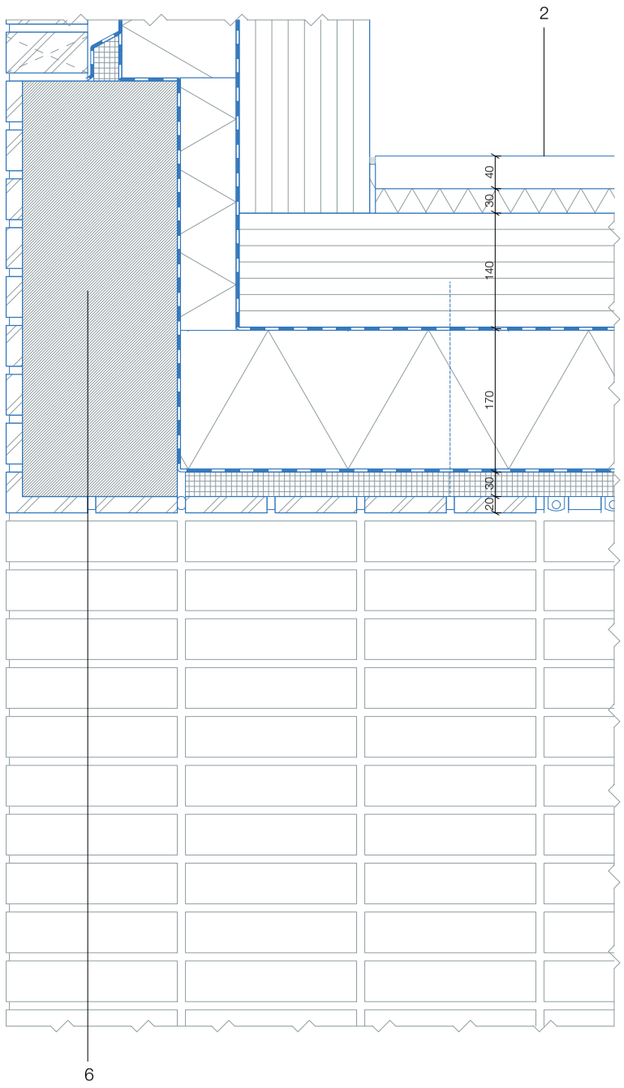
3 Wall construction PM2 (U = 0.21 W/m K):
160 mm Cross laminated timber
Vapour barrier
140 mm Isoroof woodfiber insulation
Waterproof layer
40 mm ventilated air cavity
100 mm Brick dark red

4 Floor construction:
100 mm Rigid insulation
180 mm Cast concrete
60 mm Rigid insulation
50 mm Cast concrete on floor heating system
10 mm Mortar
20 mm Granite tiles

5 Powdercoated aluminium doorframe RAL 6011
Tripple glazed window (U = 0,6 W/m K)

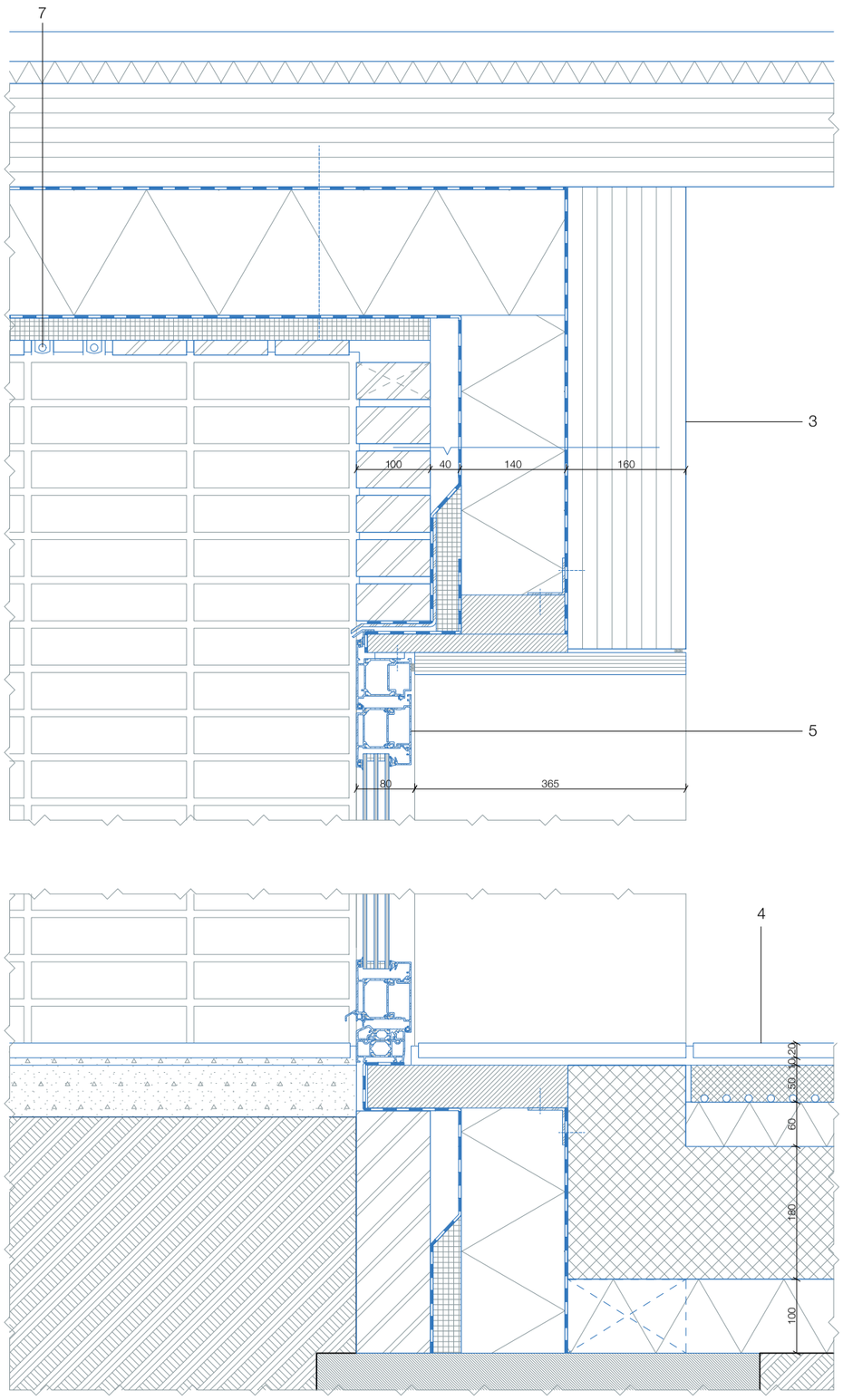
6 Concrete lintel (500 x 190)

7 Fixture for led light strip



exterior

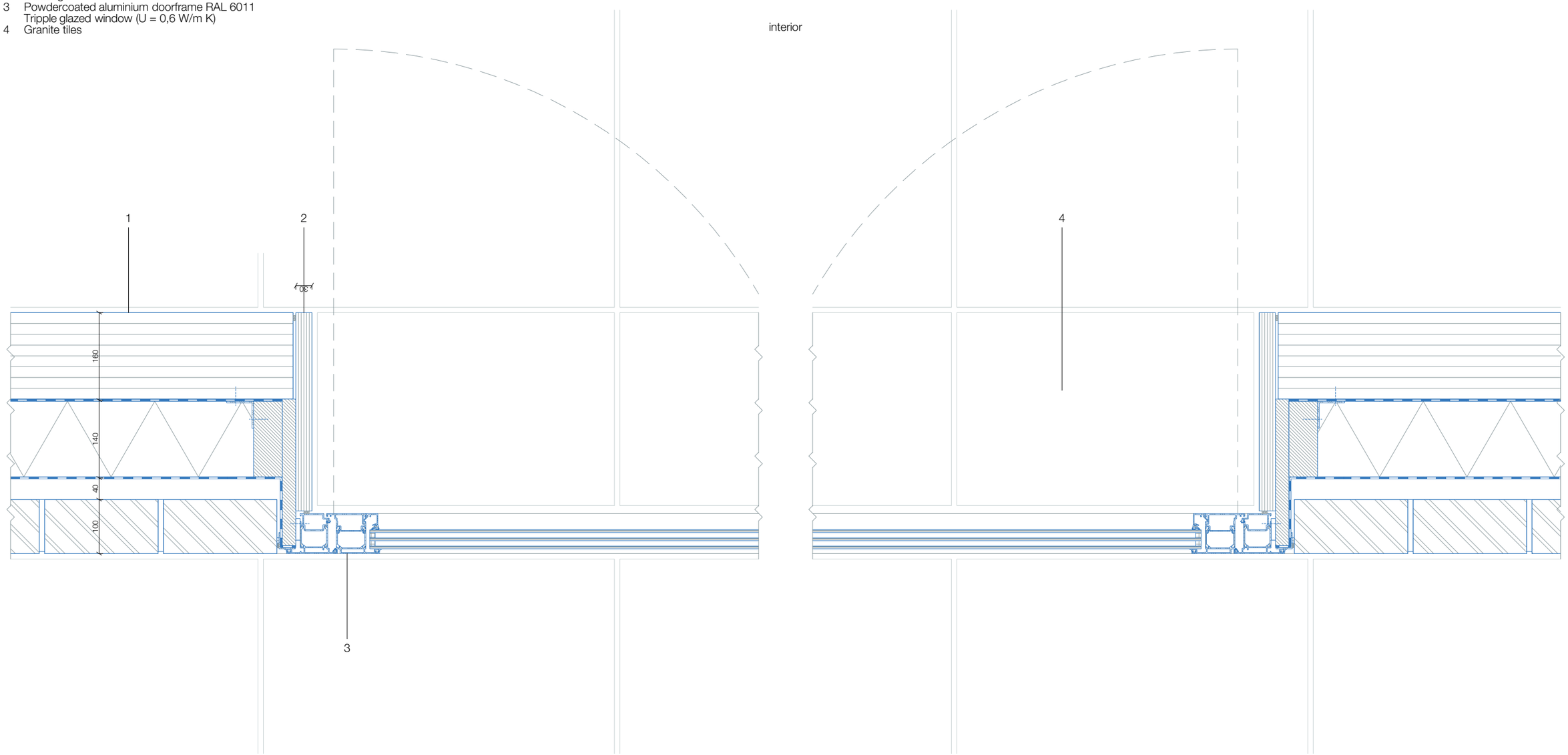
interior



FOYER ENTRANCE

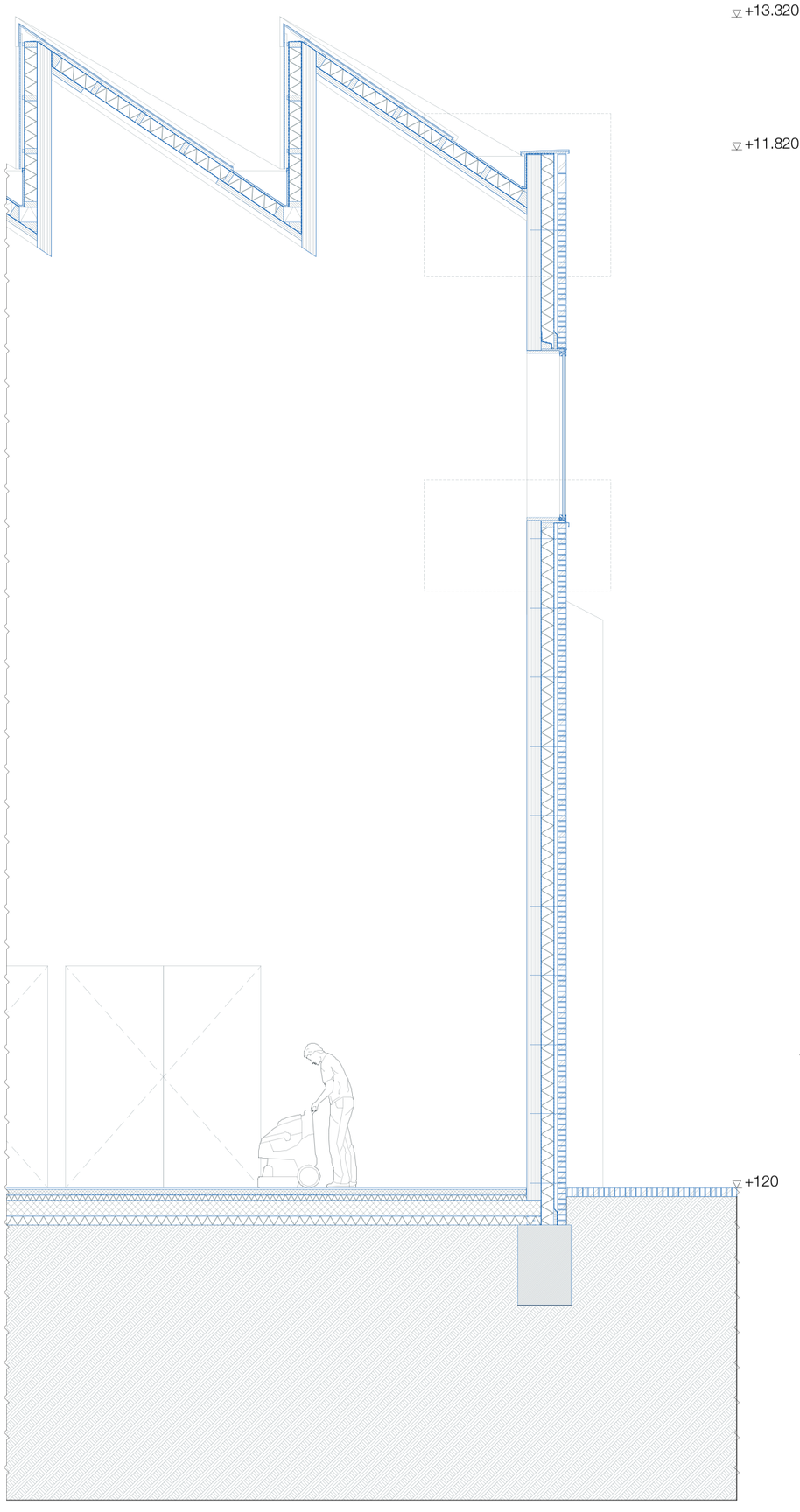
Horizontal detail - Entrance

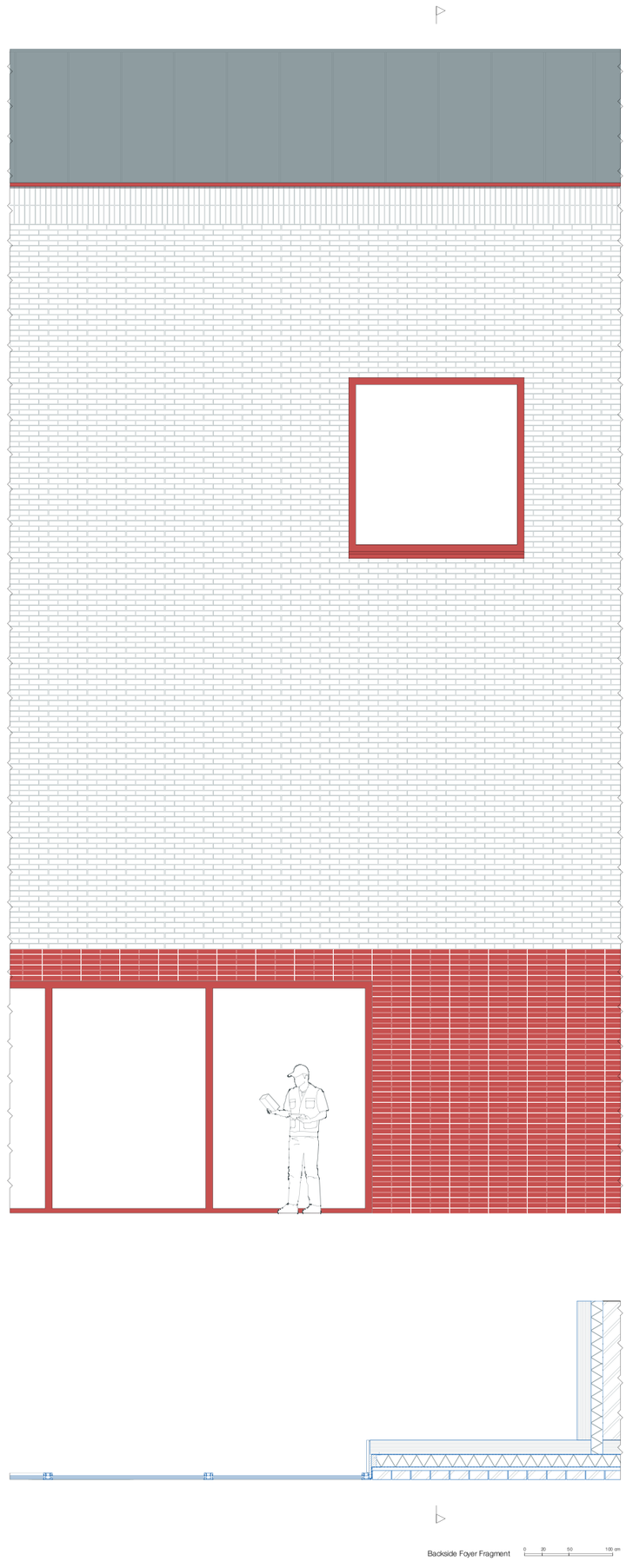
1 Wall construction PM2 (U = 0.21 W/m K):
160 mm Cross laminated timber whitewash finishing
Vapour barrier
140 mm Isoroof woodfiber insulation
Waterproof layer
40 mm ventilated air cavity
100 mm Glazed brick dark red
2 Windowsill cross laminated timber 30 mm whitewash finishing
3 Powdercoated aluminium doorframe RAL 6011
Tripple glazed window (U = 0,6 W/m K)
4 Granite tiles



FOYER ENTRANCE

Horizontal detail - Entrance
0 5 10 20 cm





Backside Foyer Fragment 0 20 50 100 cm

FOYER FRAGMENT

Vertical detail - Foyer roof

1 Roof/wall construction PM2 (U = 0.22 W/m K):
160 mm Cross laminated timber
Vapour barrier
140 mm Isoroof woodfiber insulation
Waterproof layer
20 mm horizontal wooden battens
20 mm vertical wooden battens
10 mm plywood
4 mm zink plating

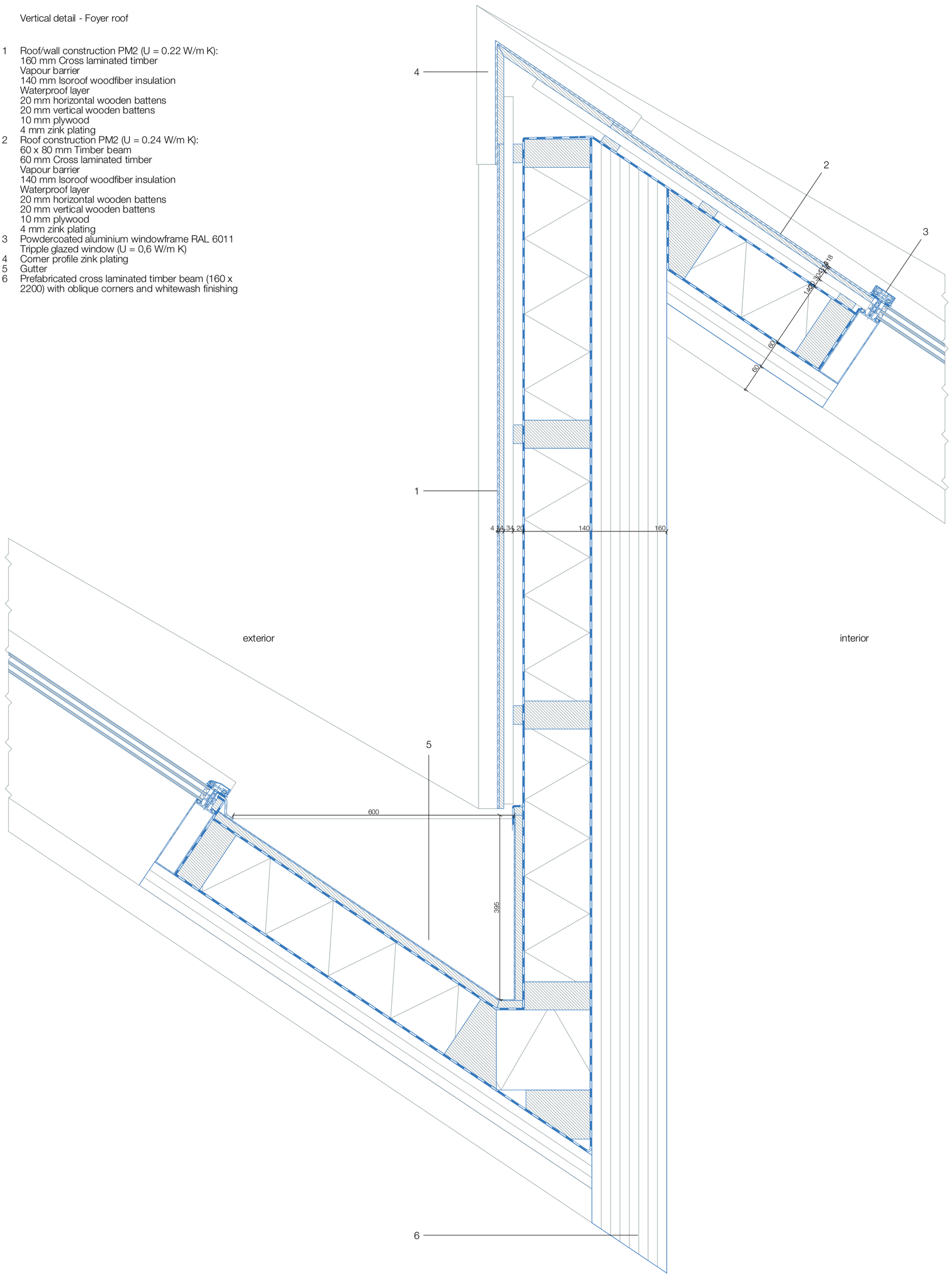
2 Roof construction PM2 (U = 0.24 W/m K):
60 x 80 mm Timber beam
60 mm Cross laminated timber
Vapour barrier
140 mm Isoroof woodfiber insulation
Waterproof layer
20 mm horizontal wooden battens
20 mm vertical wooden battens
10 mm plywood
4 mm zink plating

3 Powdercoated aluminium windowframe RAL 6011
Tripple glazed window (U = 0,6 W/m K)

4 Corner profile zink plating

5 Gutter

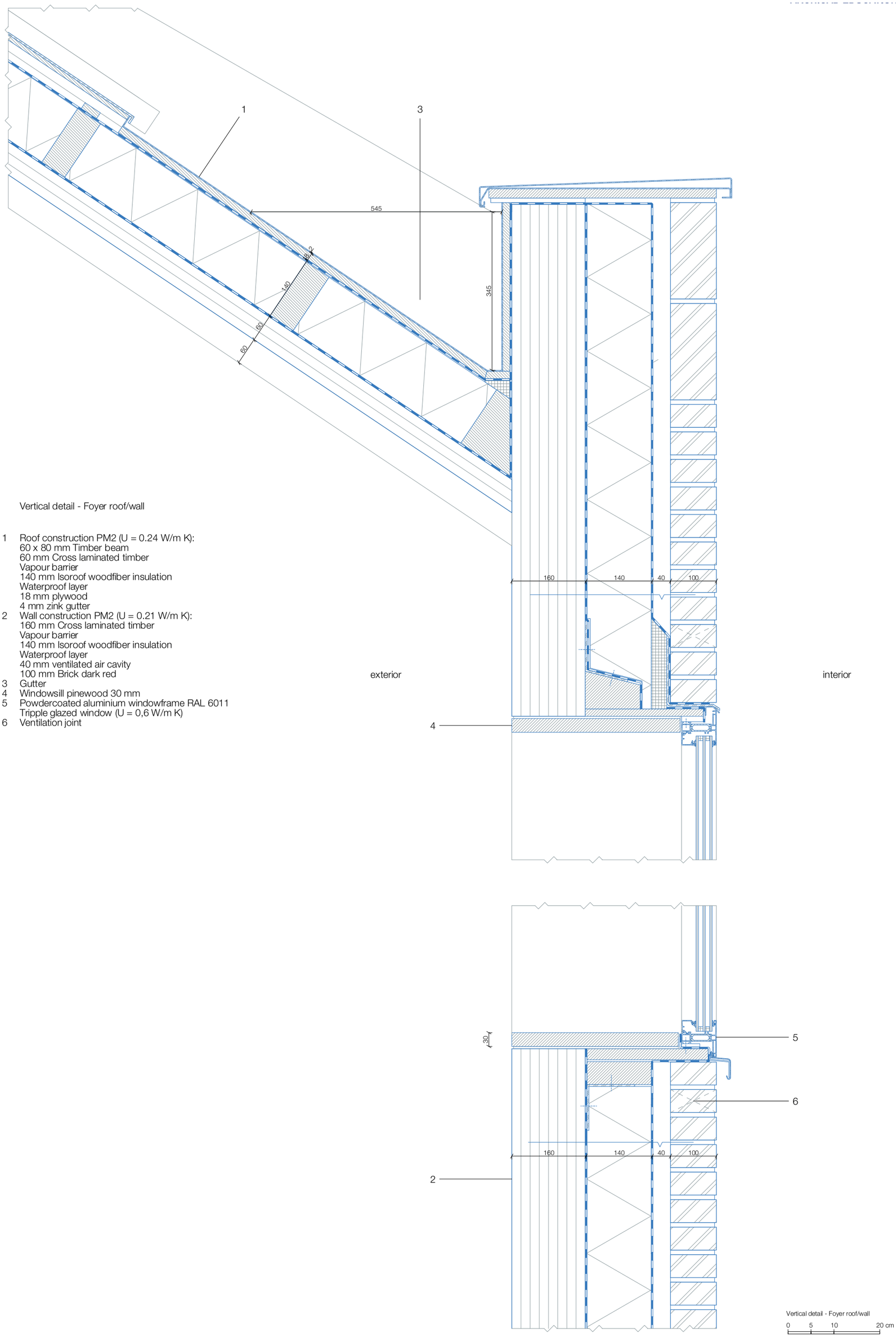
6 Prefabricated cross laminated timber beam (160 x 2200) with oblique corners and whitewash finishing



Vertical detail - Foyer roof

0 5 10 20 cm

FOYER ROOF



Vertical detail - Foyer roof/wall

1 Roof construction PM2 (U = 0.24 W/m K):
60 x 80 mm Timber beam
60 mm Cross laminated timber
Vapour barrier
140 mm Isoroof woodfiber insulation
Waterproof layer
18 mm plywood
4 mm zink gutter

2 Wall construction PM2 (U = 0.21 W/m K):
160 mm Cross laminated timber
Vapour barrier
140 mm Isoroof woodfiber insulation
Waterproof layer
40 mm ventilated air cavity
100 mm Brick dark red

3 Gutter

4 Windowsill pinewood 30 mm

5 Powdercoated aluminium windowframe RAL 6011
Tripple glazed window (U = 0,6 W/m K)

6 Ventilation joint

Vertical detail - Foyer roof/wall
0 5 10 20 cm

FOYER ROOF

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CULTURAL CENTER IN A PAPER MILL

PLANS/SECTIONS/ELEVATIONS

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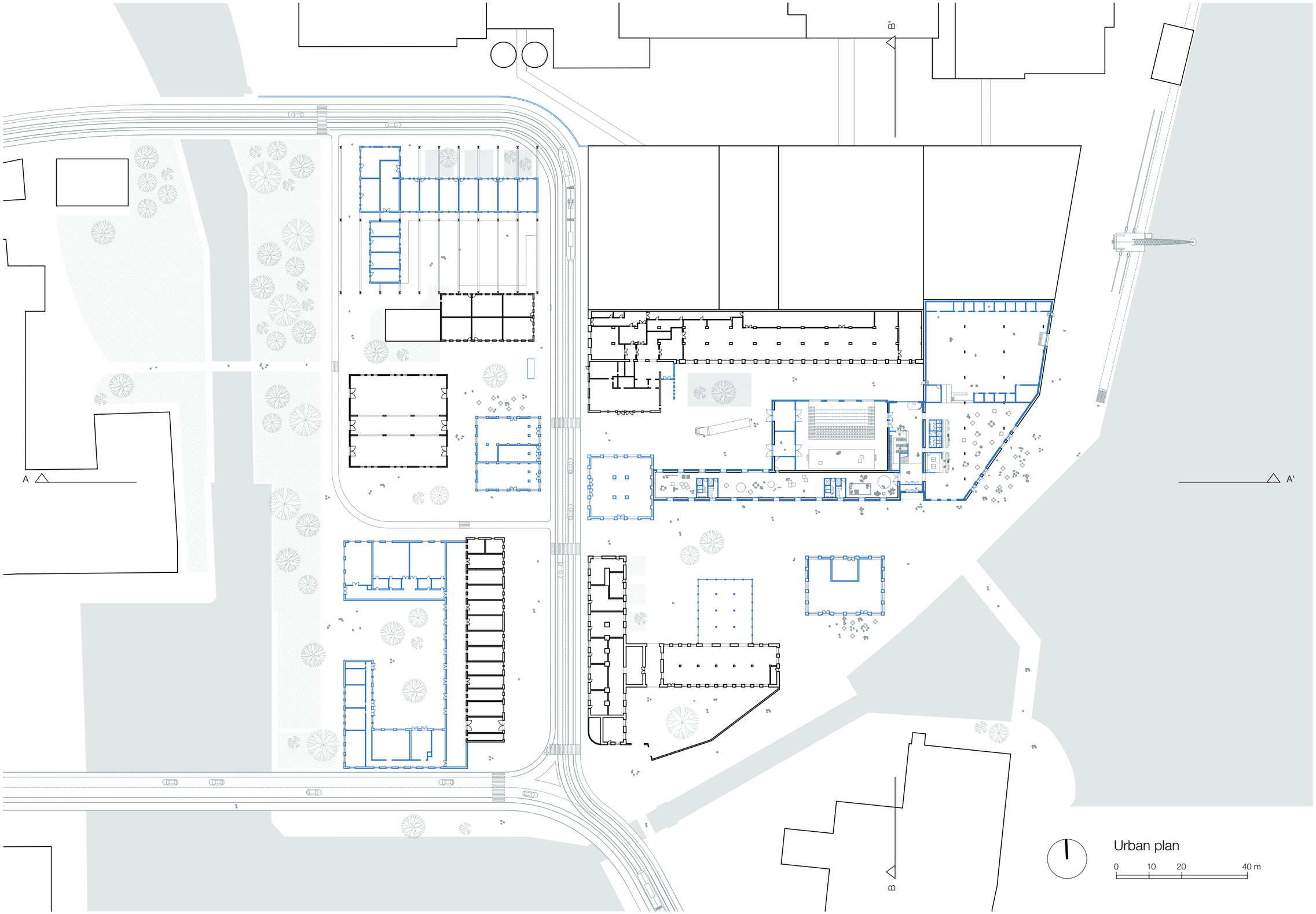
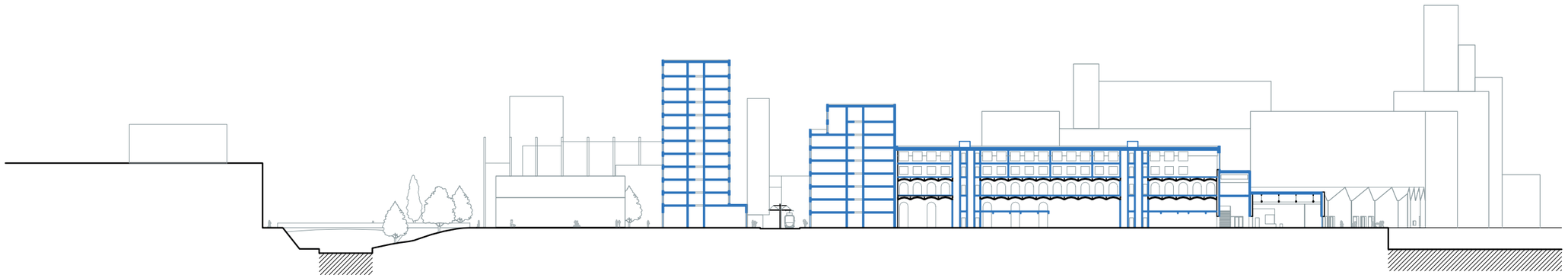
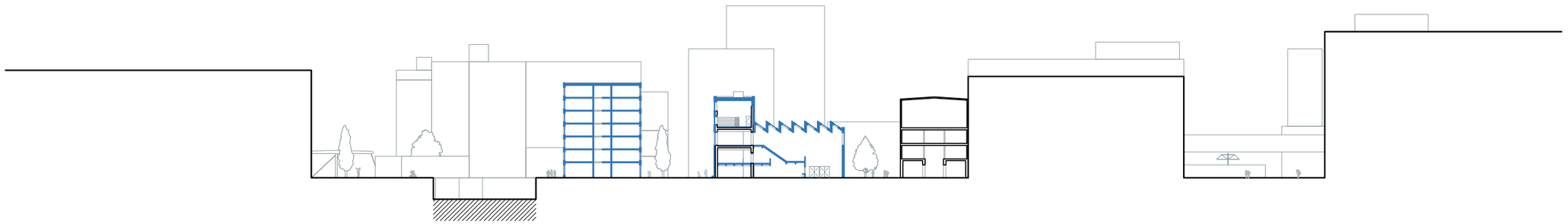
P4 presentation


A
A'
B
B'
Urban plan
0
10
20
40 m





0 10 20 40 m

Ground floor

0 2 5 10 m

Mezzanine floor

0 2 5 10 m

First floor

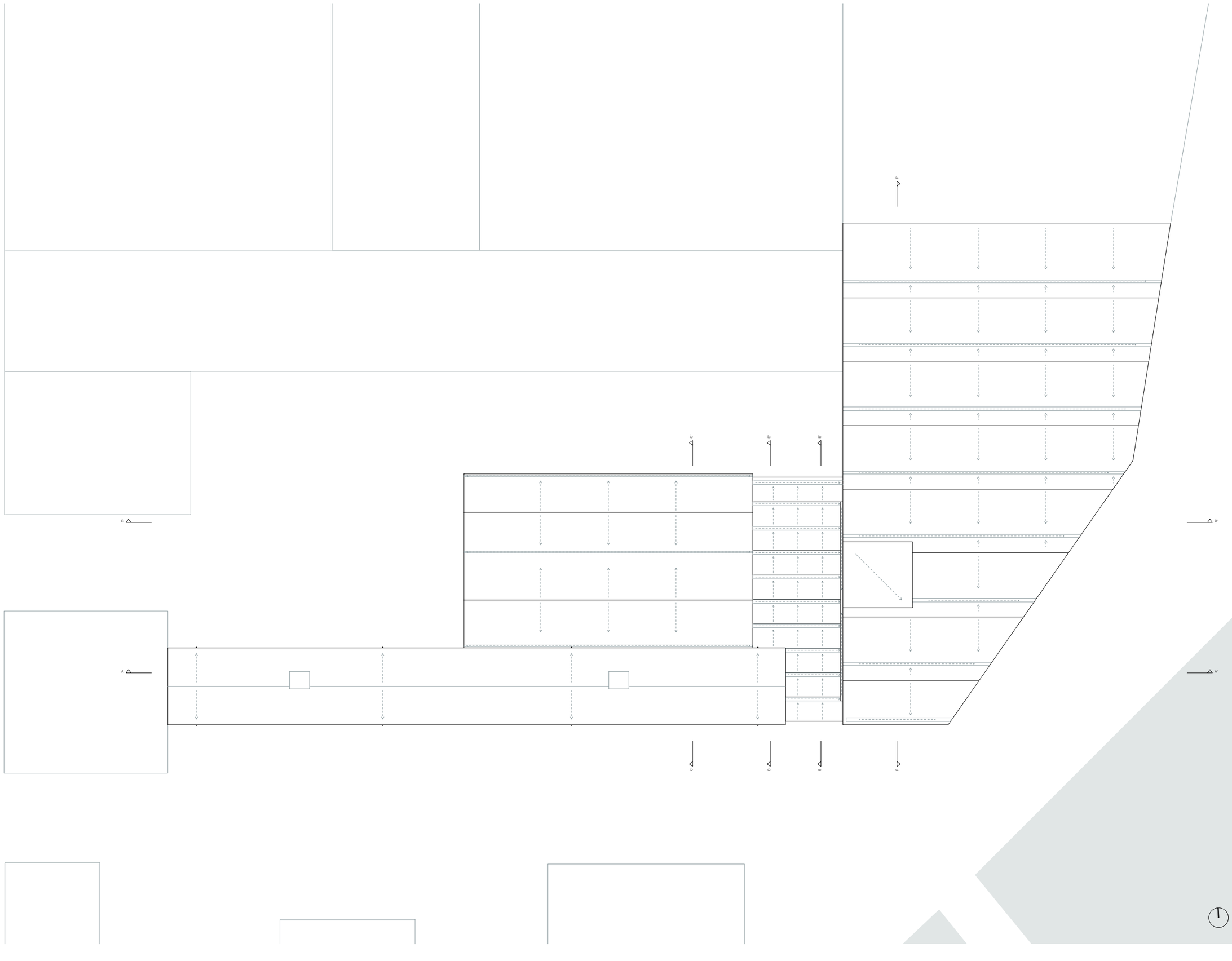
0 2 5 10 m

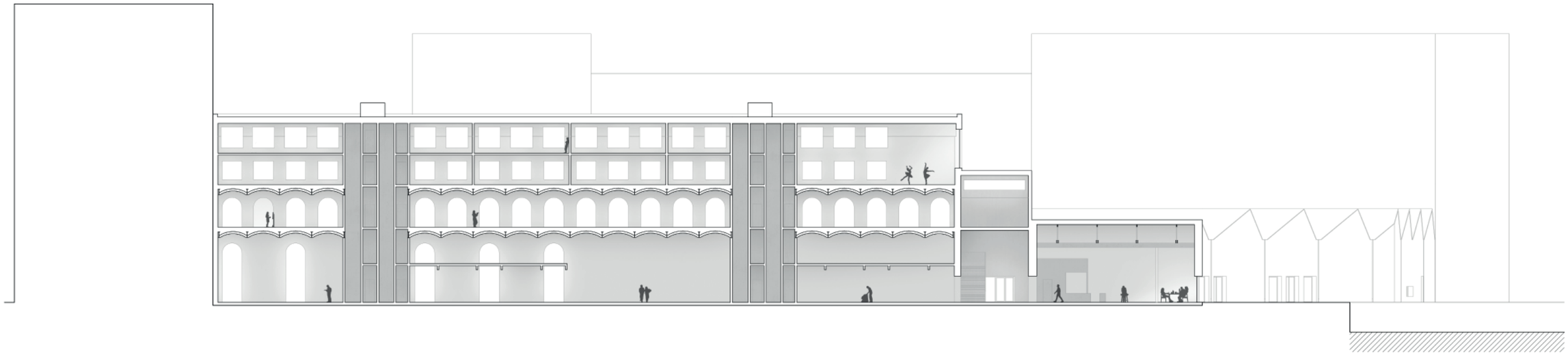
Second floor

0 2 5 10 m

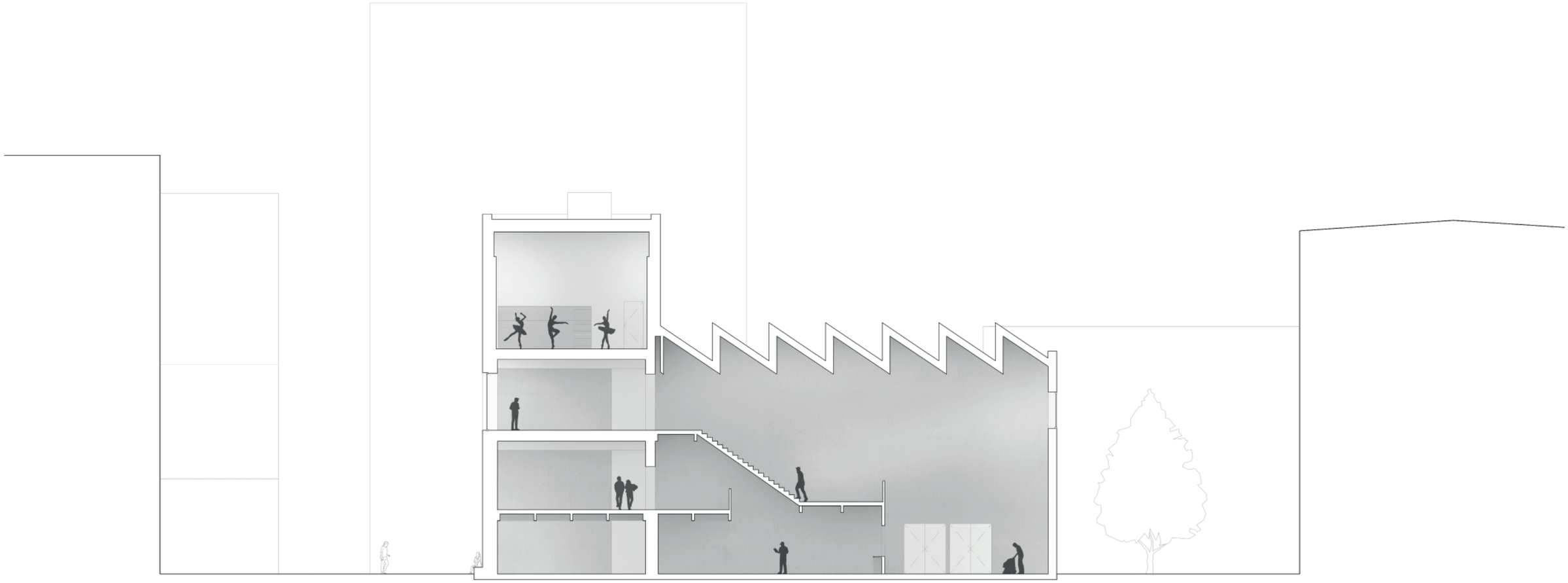
Third floor

0 2 5 10 m


A
A'
B
B'
C
C'
D
D'
E
E'
Roof
0
2
5
10 m

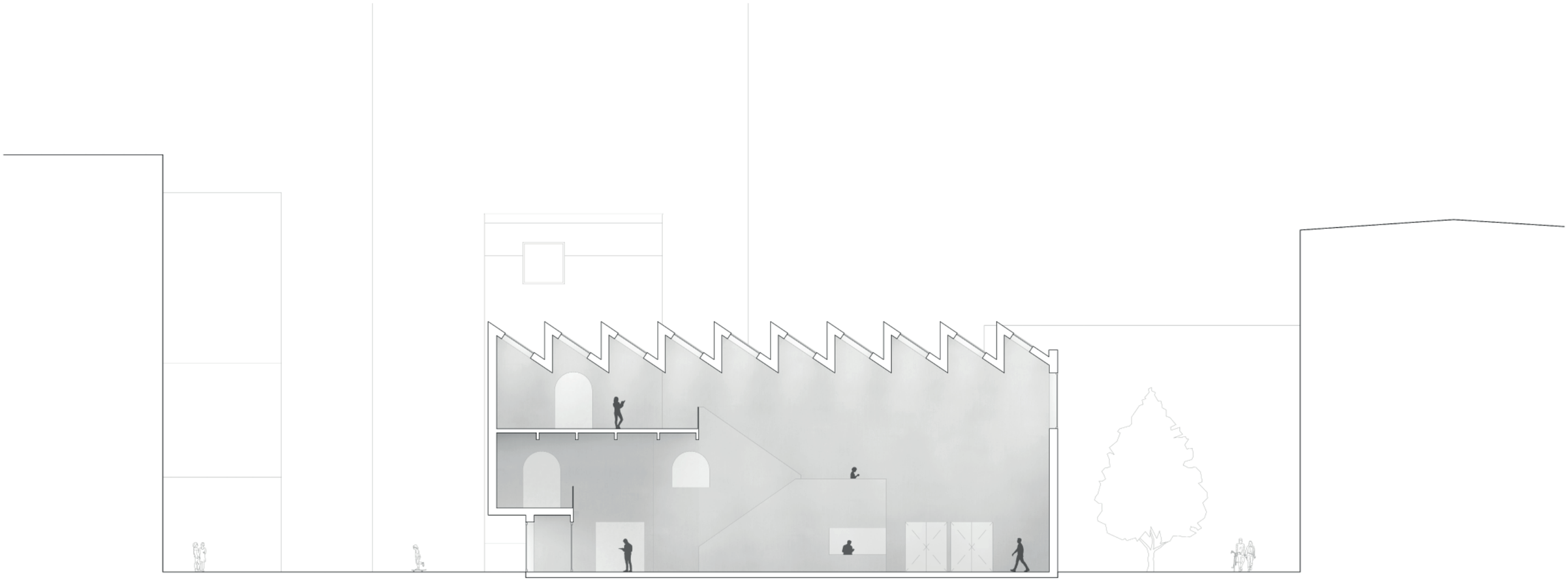



Section A-A'
0 1 2 5 10 m



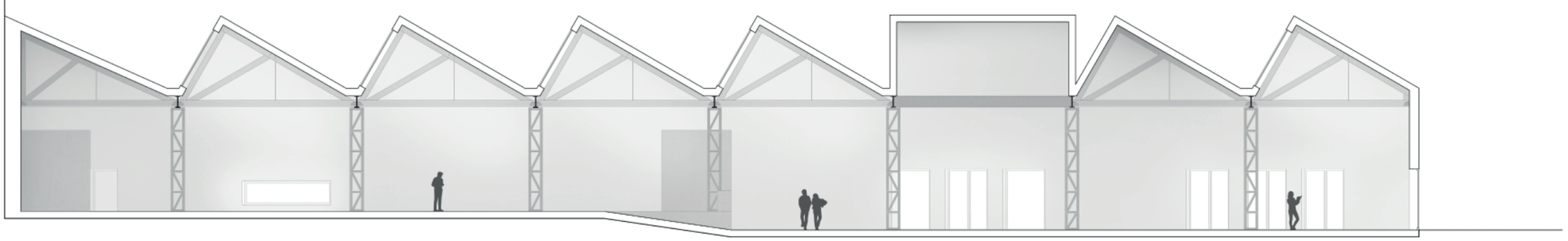
Section D-D'

0 1 2 5 m

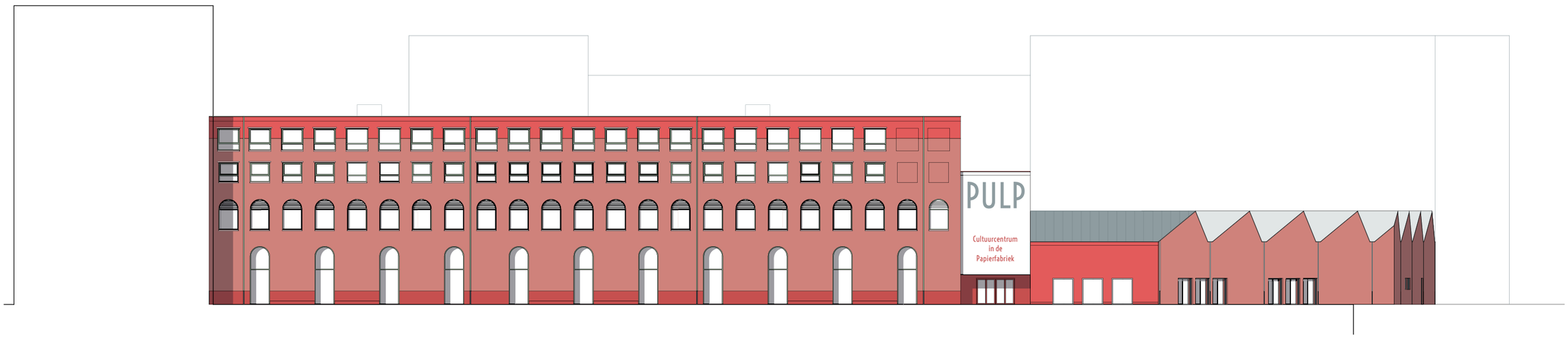


Section E-E'

0 1 2 5 m

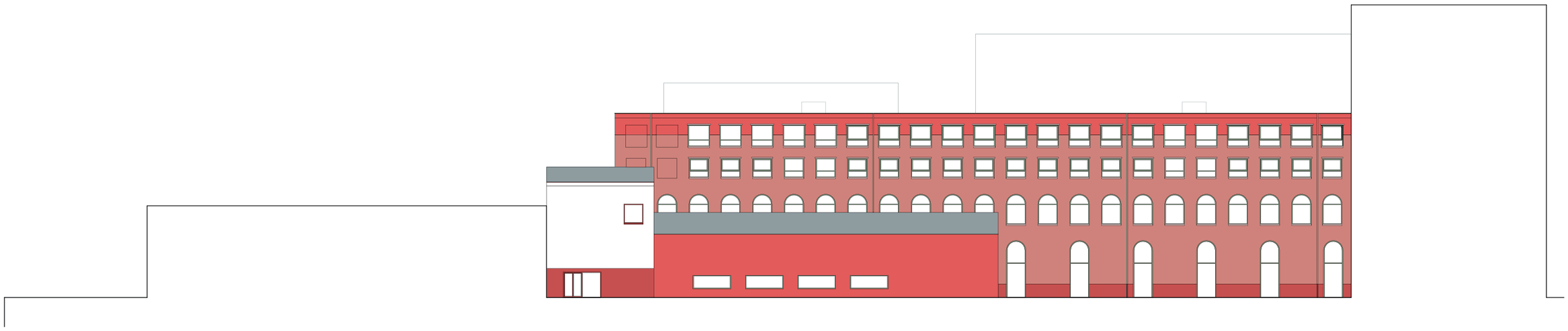



Section F-F'
0 1 2 5 m



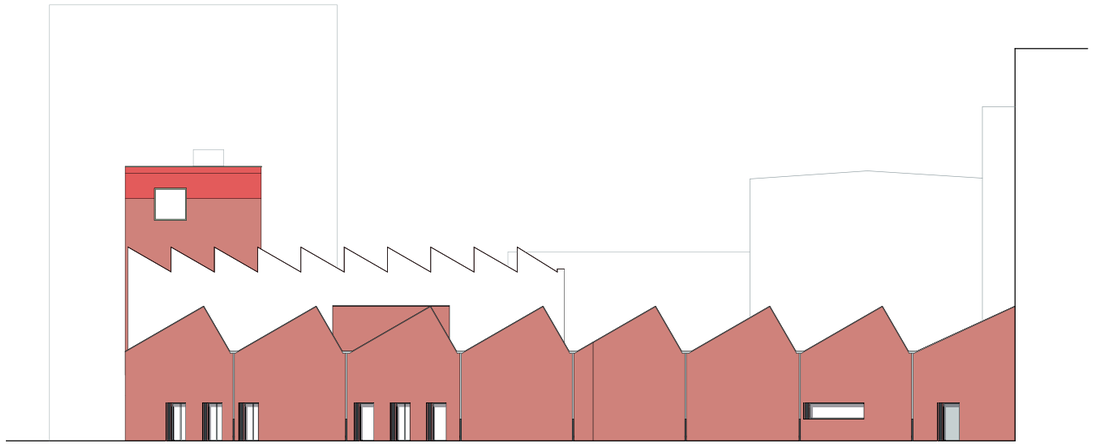
South Elevation

0 2 5 10 m



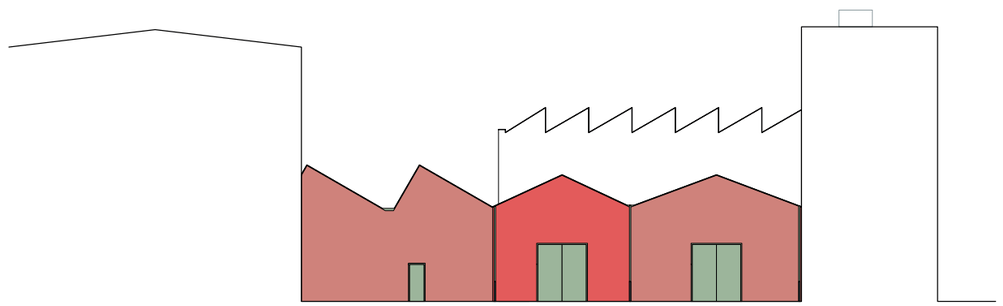
North Elevation

0 2 5 10 m



East Elevation

0 2 5 10 m



West Elevation

0 2 5 10 m