

BLOCK H

Adapted Spaces: A Typological Evolution Between Schools and Housing

Heritage & Architecture

P5 - Delft University of Technology

Mikeely Obersi

18-06-2024



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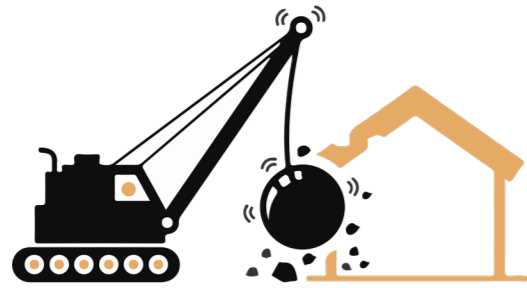
ADAPTIVE REUSE



'Adaptive reuse' as a sub-concept of 'adaptation,' which has been defined as: “**Adaptation of a place for a new use...** (is called) 'adaptive reuse'”, (Australia ICOMOS Burra Charter, 2013).

In the book 'Building Adaptation' by Douglas (2006), 'adaptive reuse' is further expounded as the **conversion of buildings into more effective and efficient uses.**

PROBLEM



DEMOLITION SCHOOL BUILDINGS



NUMBER OF STUDENTS DECLINING



HOUSING SHORTAGE

Rapid disappearance of schools in the Netherlands

post-war schools in Netherlands also in danger

Stadsdeel	2020/'21	2021/'22	prognose 2022/'23	telling 2022/'23	verschil
Centrum	3.765	3.650	3.682	3.550	-132
Nieuw-West	12.463	12.275	12.214	12.193	-21
Noord	8.687	8.880	8.800	8.918	118
Oost	10.303	9.767	9.685	9.540	-145
Weesp	1.738	1.822		1.953	
West	8.513	8.390	8.149	8.180	31
Zuid	10.534	10.220	9.989	10.045	56
Zuidoost	6.867	6.665	6.567	6.566	-1
Amsterdam	62.870	61.669	59.086	60.945	-94

number of students in primary schools in Amsterdam (Gemeente Amsterdam, 2023)

The Netherlands almost **400.000** dwellings short.

'The Programma Woningbouw' approach to aim to realize **900.000** homes by 2030

The preservation of (post-war) school buildings + the housing crisis problem -> new adaptive reuse typology

RESEARCH QUESTION

‘What architectural interventions can be used to adapt schools into housing while preserving their cultural value, and how does the typology evolve between these two functions?’

- How have previous adaptive reuse projects tackled the transformation of a school building into housing and what architectural interventions can be concluded?
- What design protocols should be followed in creating a new housing typology?
- Which cultural values are important for Rendorpschool?
- Which adaptive reuse strategy is more suitable for Rendorpschool?

10 CASES FILTERED



1

2

3

4

5

6

7

8/9

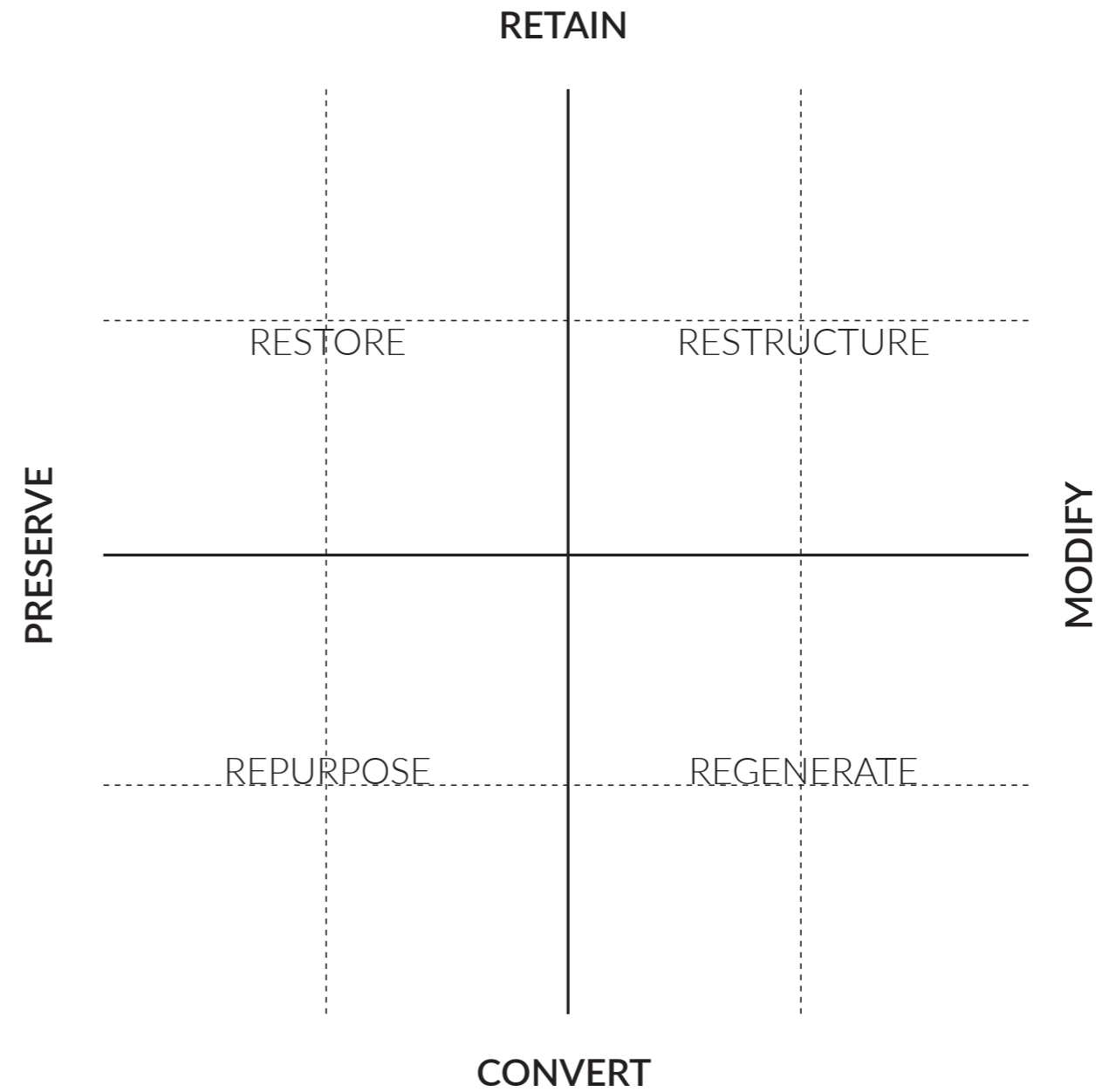
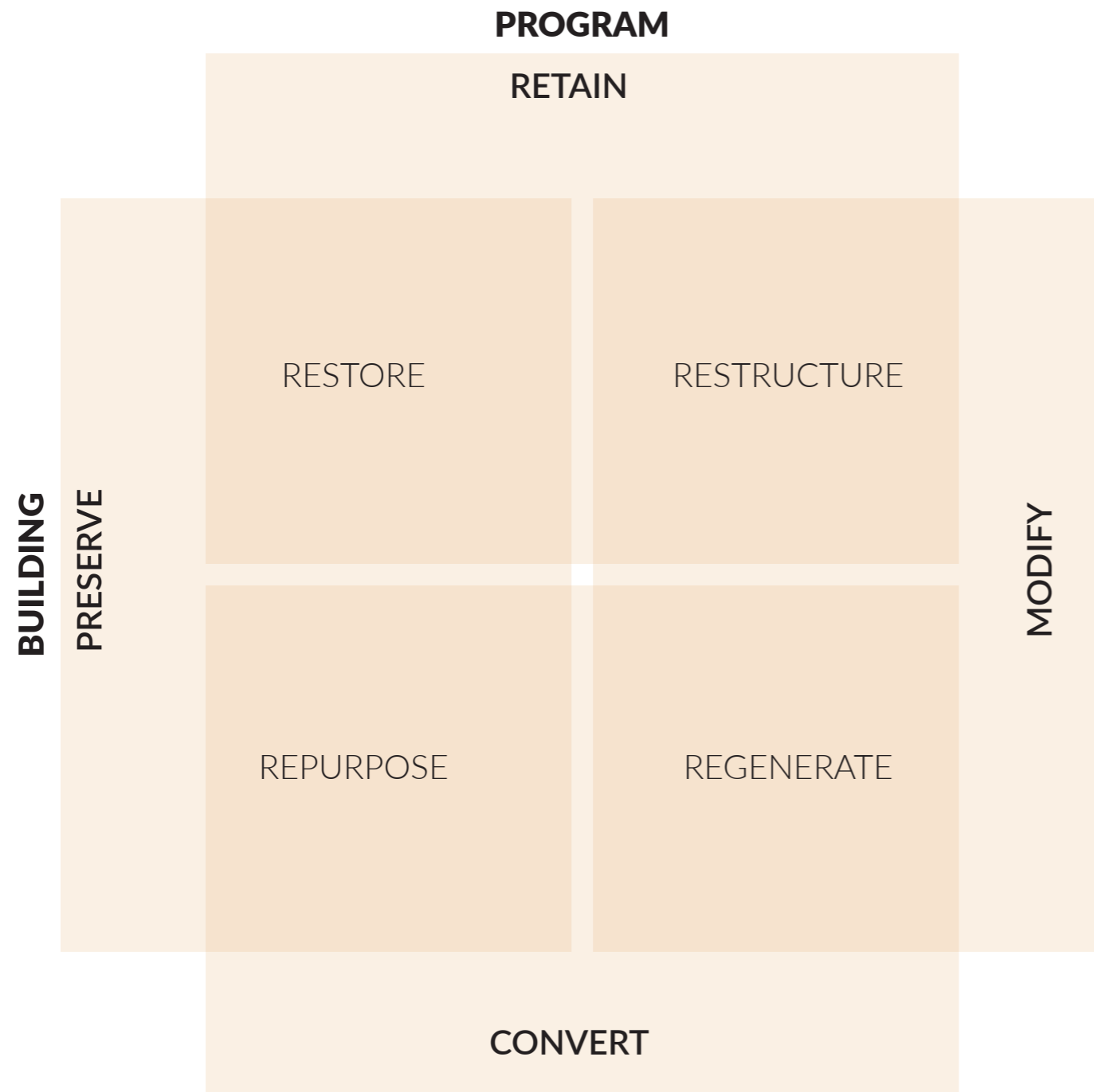
10

Research Cases Amsterdam



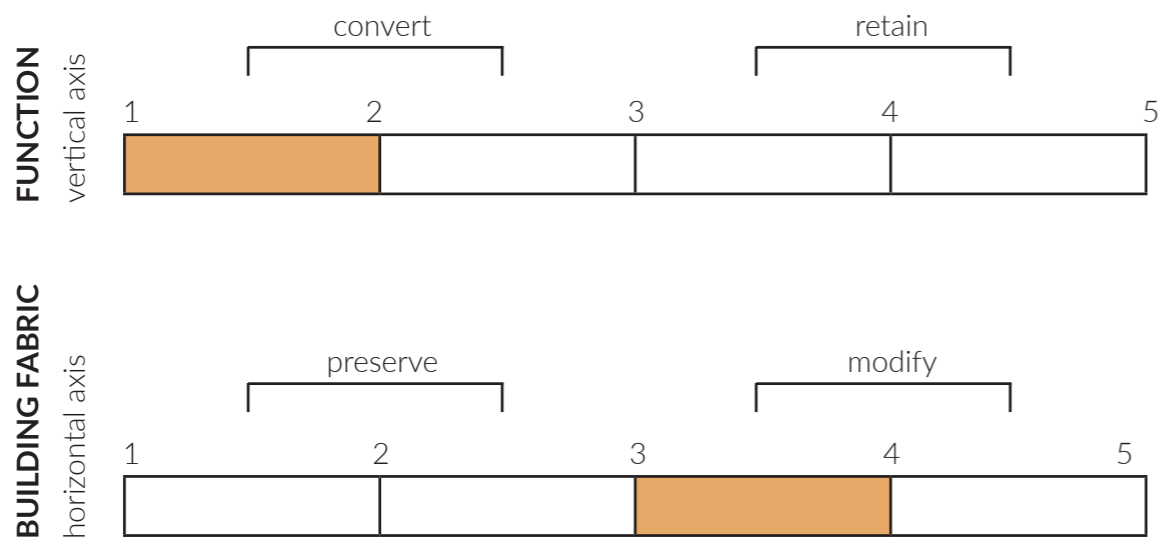
FRAMEWORK

IBELINGS & DIEDERENDIRRIX



*Four approaches to transform a building from book "Make it anew" (Ibelings & Diederendirrix, 2018)
Re-visualized: own work*

CLASSIFICATION



Main grid position from the 10 cases. Source: own work

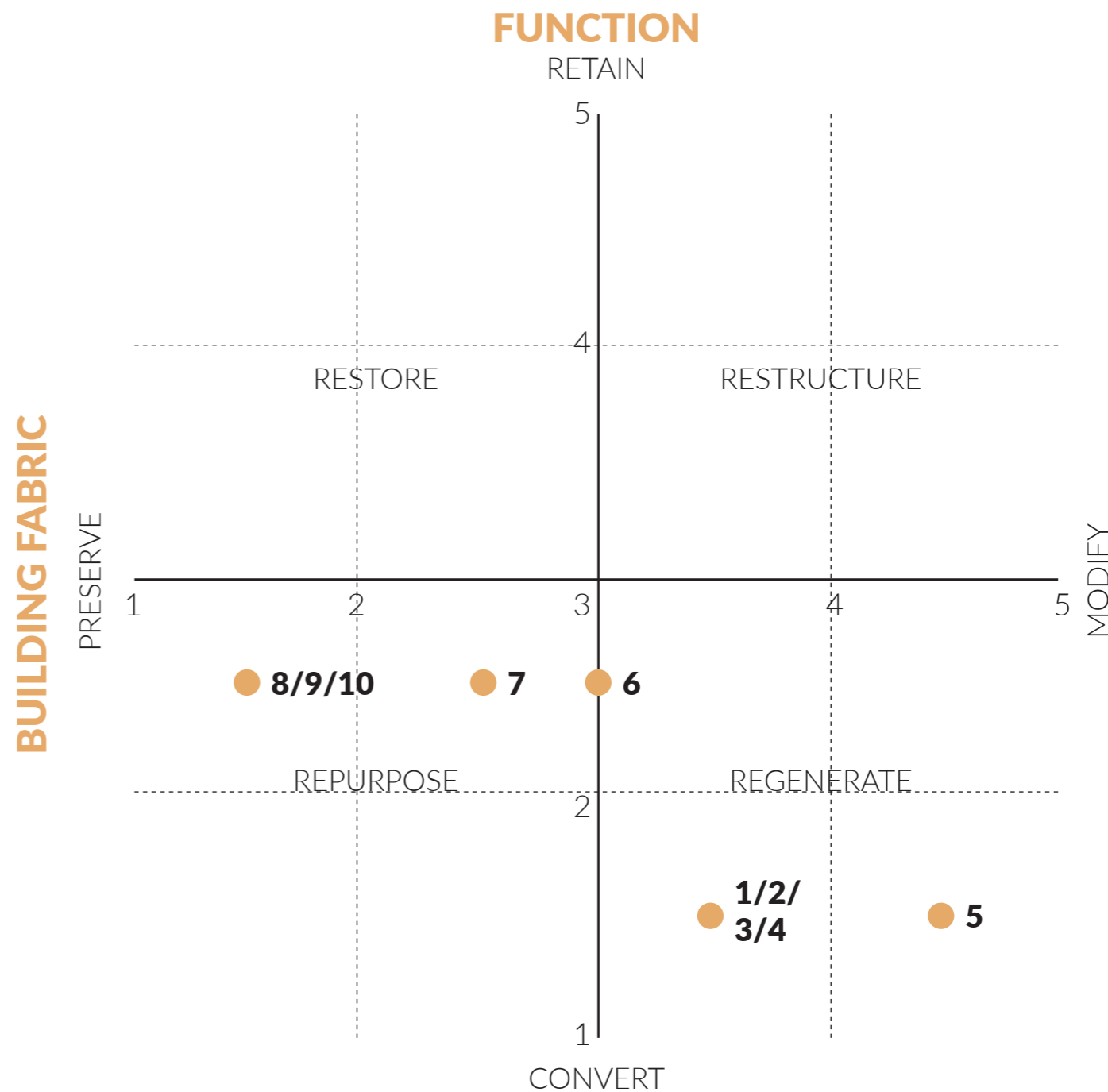
Legend

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The definitions are further defined as:

Guidelines given by belings, and Diederendirrix	Category: Regenerate	Restore	Repurpose	Regenerate	Restructure
function	-	=	-	-	=
interior building fabric	+/-	=	+/-	+/-	+/-!
exterior building fabric	+	=	=	+/-	+/-!

Main category from the 10 cases. Source: own work

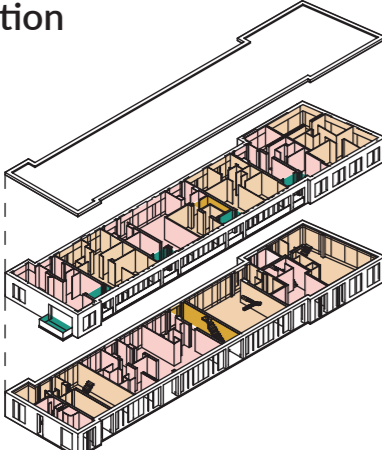
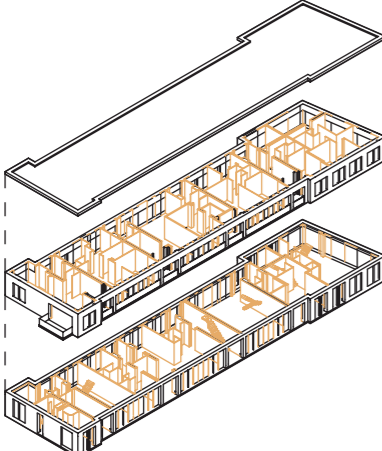
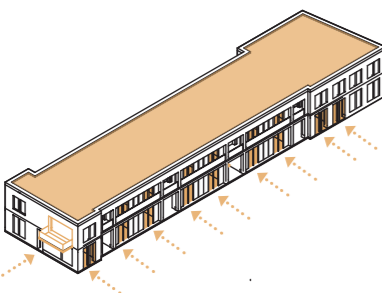


Results classification of 10 cases. Adapted from (Ibelings & Diederendirrix, 2018)

Design Interventions repurpose & regenerate

Legend

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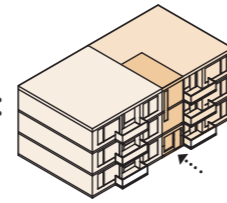
	Repurpose total 5/10 cases	Regenerate total 6/10 cases																																												
Function 	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: right;">total cases</th> </tr> </thead> <tbody> <tr><td>+ apartments</td><td style="text-align: right;">4</td></tr> <tr><td>+ maisonettes</td><td style="text-align: right;">1</td></tr> <tr><td>+ studios</td><td style="text-align: right;">1</td></tr> <tr><td>+ collective space dwelling</td><td style="text-align: right;">4</td></tr> <tr><td>+ public functions</td><td style="text-align: right;">1</td></tr> <tr><td>- educational spaces</td><td style="text-align: right;">5</td></tr> <tr><td>- sanitary spaces old school</td><td style="text-align: right;">5</td></tr> <tr><td>= circulation space (keeping old staircase)</td><td style="text-align: right;">5</td></tr> </tbody> </table>		total cases	+ apartments	4	+ maisonettes	1	+ studios	1	+ collective space dwelling	4	+ public functions	1	- educational spaces	5	- sanitary spaces old school	5	= circulation space (keeping old staircase)	5	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: right;">total cases</th> </tr> </thead> <tbody> <tr><td>+ maisonettes</td><td style="text-align: right;">6</td></tr> <tr><td>+ apartments</td><td style="text-align: right;">6</td></tr> <tr><td>+ collective space dwelling</td><td style="text-align: right;">2</td></tr> <tr><td>- educational spaces</td><td style="text-align: right;">6</td></tr> <tr><td>- sanitary spaces old school</td><td style="text-align: right;">6</td></tr> <tr><td>- circulation space (remove original staircases)</td><td style="text-align: right;">1</td></tr> <tr><td>= circulation space (keeping old staircase)</td><td style="text-align: right;">5</td></tr> </tbody> </table>		total cases	+ maisonettes	6	+ apartments	6	+ collective space dwelling	2	- educational spaces	6	- sanitary spaces old school	6	- circulation space (remove original staircases)	1	= circulation space (keeping old staircase)	5										
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Design Interventions Overview all 10 cases

Legend

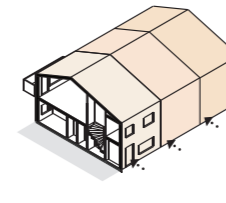
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very common typology added:



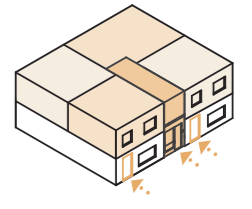
Apartments

common typology added:



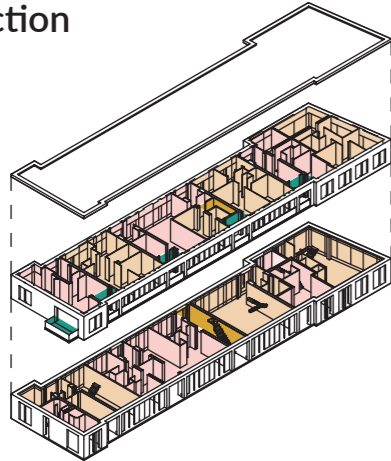
Maisonettes

unique typology added:



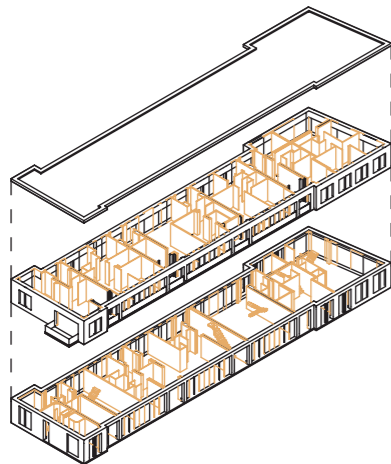
Studio's

Function



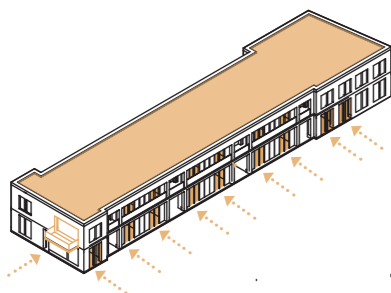
	total cases		total cases		total cases
+ apartments	9	+ maisonettes	6	+ studios	1
+ collective space dwelling	4	- educational spaces	6	+ public functions	1
- educational spaces	9	- sanitary spaces old school	6	- educational spaces	1
- sanitary spaces old school	9	- circulation space (remove original staircases 1)	1	- sanitary spaces old school	1
= circulation space (keeping old staircase)	8			= circulation space (keeping old staircase)	1

Interior building fabric



+ interior walls for creating rooms in dwellings	9	+ interior walls for creating rooms in dwellings	6	+ interior walls for creating rooms in dwellings	1
+ elevator	3	+ new staircases for maisonettes	5	- remove some interior walls to create bigger spaces	1
+ entresols height old classrooms ≈ 5m	3	+ entresols height classrooms ≈ 5m	1	- remove interior walls old toilets and wardrobes	1
- remove some interior walls to create bigger spaces	9	- remove some interior walls to create bigger spaces	6		
- remove interior walls old toilets and wardrobes	9	- remove interior walls old toilets and wardrobes	6		
= interior detailing	3				

Exterior building fabric



+ gallery	1	+ exterior entrances for maisonettes	4	+ exterior entrance co-housing and public functions	1
+ additional building	2	+ sedum vegetation on roof	2	= restoring facade to the original look by restoring	
+ exterior entrances for apartments	2	+ balconies (for maisonette on top of another dwelling)	1	concrete construction, prefab-elements and paint	1
+ extension of existing building	1	+ roof patio (maisonette on top of apartment)	1		
+ balconies	4	= facade material	6		
+ roof patio	4				
+ dormer windows	2				
+ sedum vegetation on roof	2				
= loggia's	1				
= windows	2				
= doors	2				
= facade material	9				



DESIGN CASE

Burgemeester Rendorpschool
now Kentalis Signis-school,
Herman de Manstraat 1, Amsterdam
Nieuw West

Status: municipal monument

Built: 1955

Architect: Jan Leupen



SITE



Neighbourhood:
Slotermeer-Zuidoost,
Louis Couperusbuurt



CULTURAL VALUE FRAMEWORK



Values framework (Pereira Roders, 2007)

CULTURAL VALUE

VALUES					
Historic values				Aesthetical values	
Historic-artistic		Historic-conceptual		Evidential and conceptual	
H-school Architecture style with "licht and lucht concept"	mentions: 13	Urban planning	mentions: 7	Aesthetic exterior qualities	mentions: 9

	VALUES					
	Historic values				Aesthetical values	
	Historic-artistic		Historic-conceptual		Evidential and conceptual	
ATTRIBUTES	H-shape of two solid volumes connected by two glass corridors.	mentions: 3	an early post-war enclave of unusual buildings in the surrounding residential building	mentions: 5	structure	mentions: 2
	North volume is one layer and South volume is two layers.	1	simple building blocks	1	color choice. such as color of the low parapets that consist of blue painted wood panels	4
	low parapets (consist of blue painted wood panels)	2	greenery of trees, front gardens, courtyards and parks	1	three large wooden frames (in bad shape)	1
	red brick facades	4				
	saddle roof	2				
	windows (original ones had deviant color) for max lighting	4				
	The stout chimney, also red brick, is a vertical accent in the composition.	1				

CULTURAL VALUE

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RESEARCH TO DESIGN

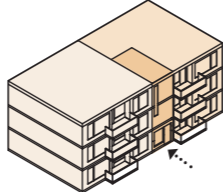
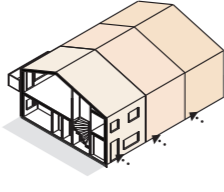
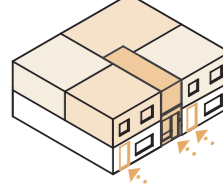
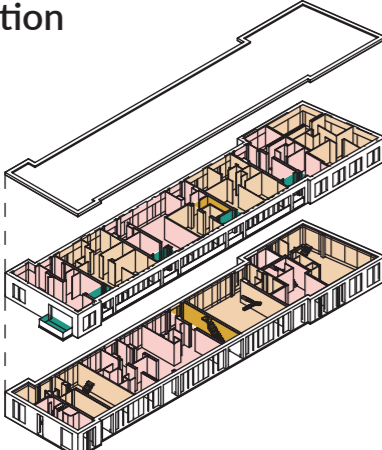
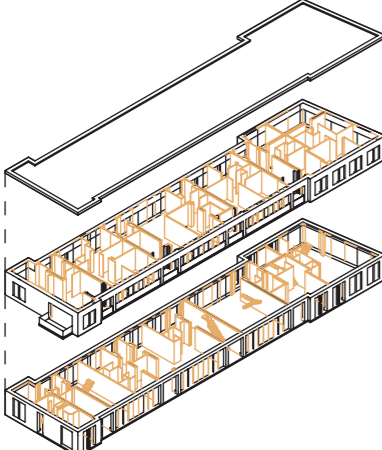
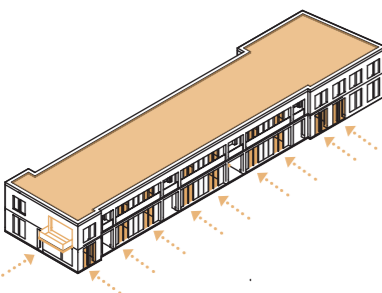
The design assignment therefore will be to focus on Rendorpschool as a “repurpose” project and the three housing typologies and the intervention shown to be used for these typologies in the research done prior, these housing typologies will be seen as **three separate scenarios**. The goal of the design assignment is to research which scenario would be the best option on three aspects: **living quality, cultural value and resourcefulness**. With resourcefulness less material and sustainability will be linked.

Learning points/challenges:

(Living quality) -> inside outside connection, lighting and privacy

Design Interventions per scenario to be tested

based on the strategies that have less adaptation on the exterior building fabric

	Scenario 1: Apartments 	Scenario 2: Maisonettes 	Scenario 3: Studios 
Function 	<ul style="list-style-type: none"> + apartments + collective space dwelling - educational spaces - sanitary spaces old school = circulation space (keeping old staircase) 	<ul style="list-style-type: none"> + maisonettes - educational spaces - sanitary spaces old school 	<ul style="list-style-type: none"> + studios for students + public functions - educational spaces - sanitary spaces old school = circulation space (keeping old staircase)
Interior building fabric 	<ul style="list-style-type: none"> + interior walls for creating rooms in dwellings + entresols height old classrooms ≈ 5m - remove some interior walls to create bigger spaces - remove interior walls old toilets and wardrobes = keeping old staircase 	<ul style="list-style-type: none"> + new staircases for maisonettes + interior walls for creating rooms in dwellings + entresols height classrooms ≈ 5m - remove some interior walls to create bigger spaces - remove interior walls old toilets and wardrobes 	<ul style="list-style-type: none"> + interior walls for creating rooms in dwellings - remove some interior walls to create bigger spaces - remove interior walls old toilets and wardrobes
Exterior building fabric 	<ul style="list-style-type: none"> + balconies = loggia's = windows = facade material 	<ul style="list-style-type: none"> + exterior entrances for maisonettes = facade material 	<ul style="list-style-type: none"> + exterior entrance co-housing and public functions = restoring facade to the original look by restoring concrete construction, prefab-elements and paint



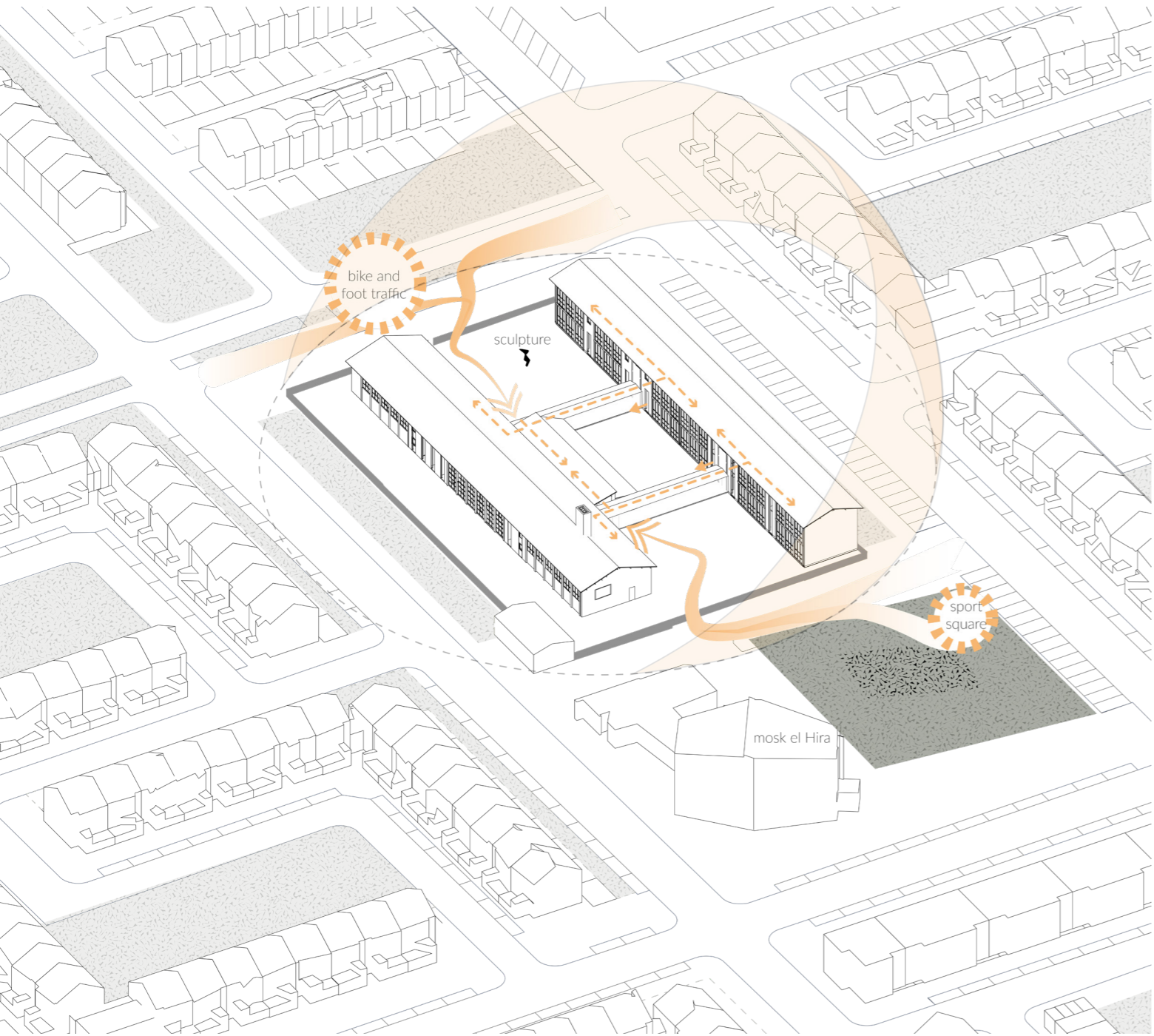
SITUATION - FUNCTION 1:4000

Legend

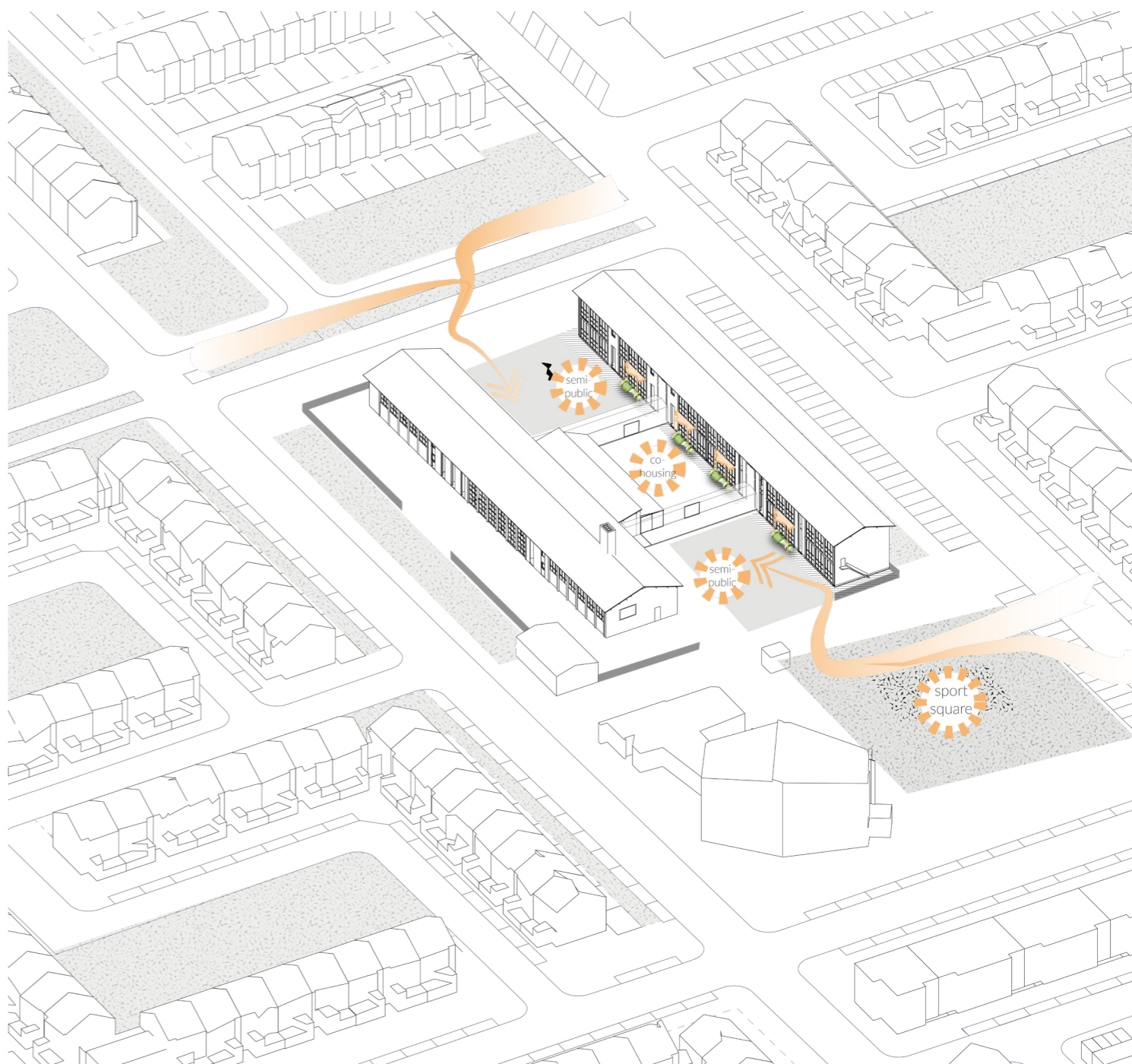
- education
- religion
- healthcare/dentist
- public function
- retail
- workspace
- horeca
- dwellings
- water
- parking
- green



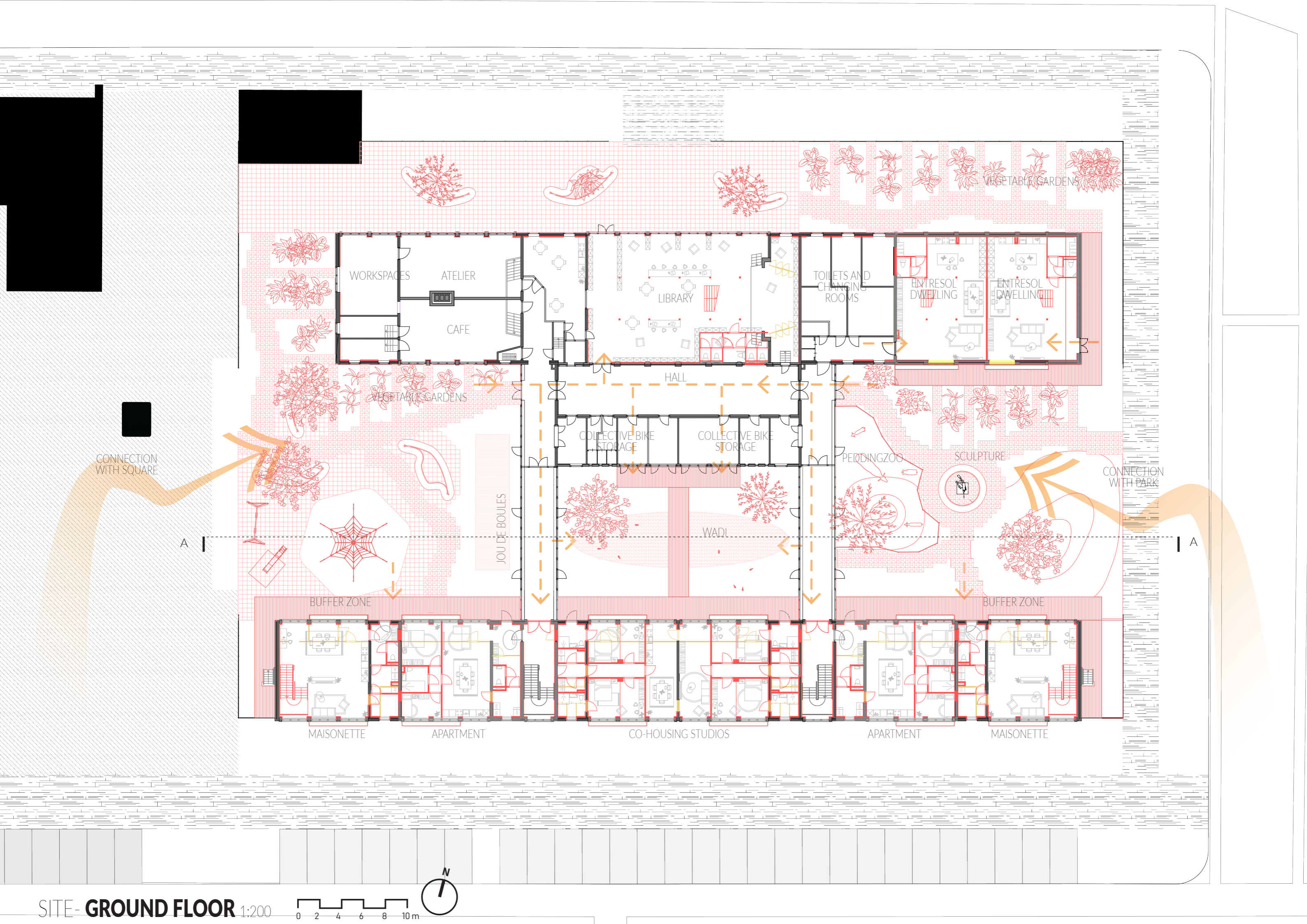
SITE CONCEPT



SITE ANALYSES CURRENT



SITE ZONING NEW

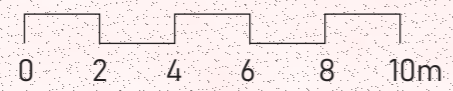


SITE- GROUND FLOOR 1:200



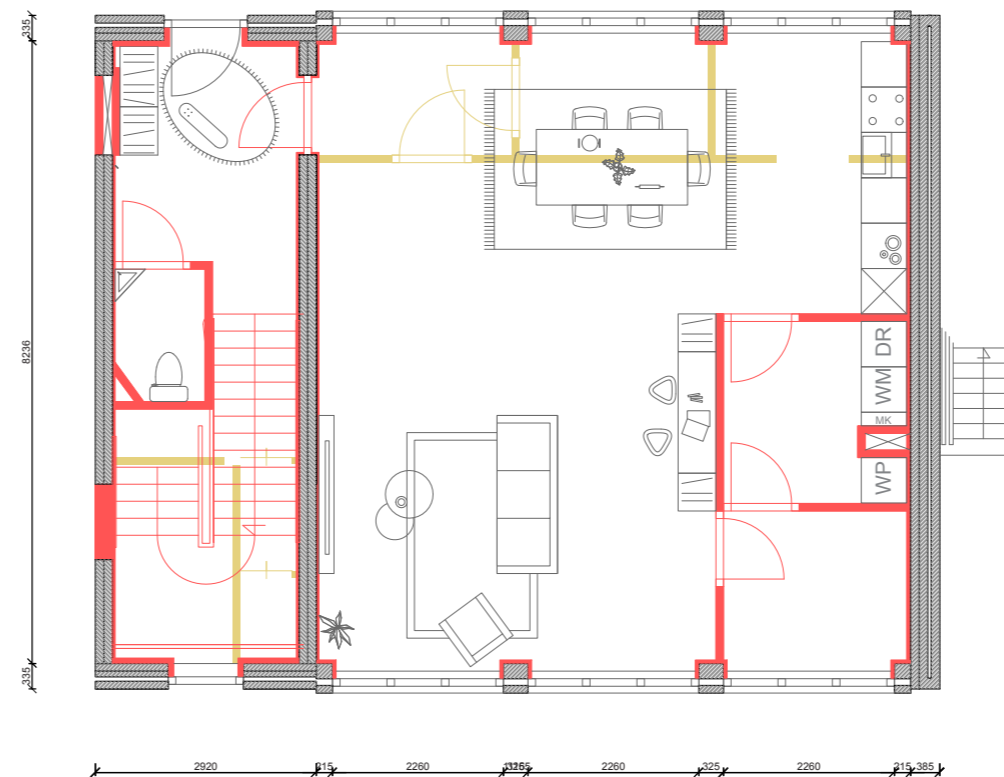
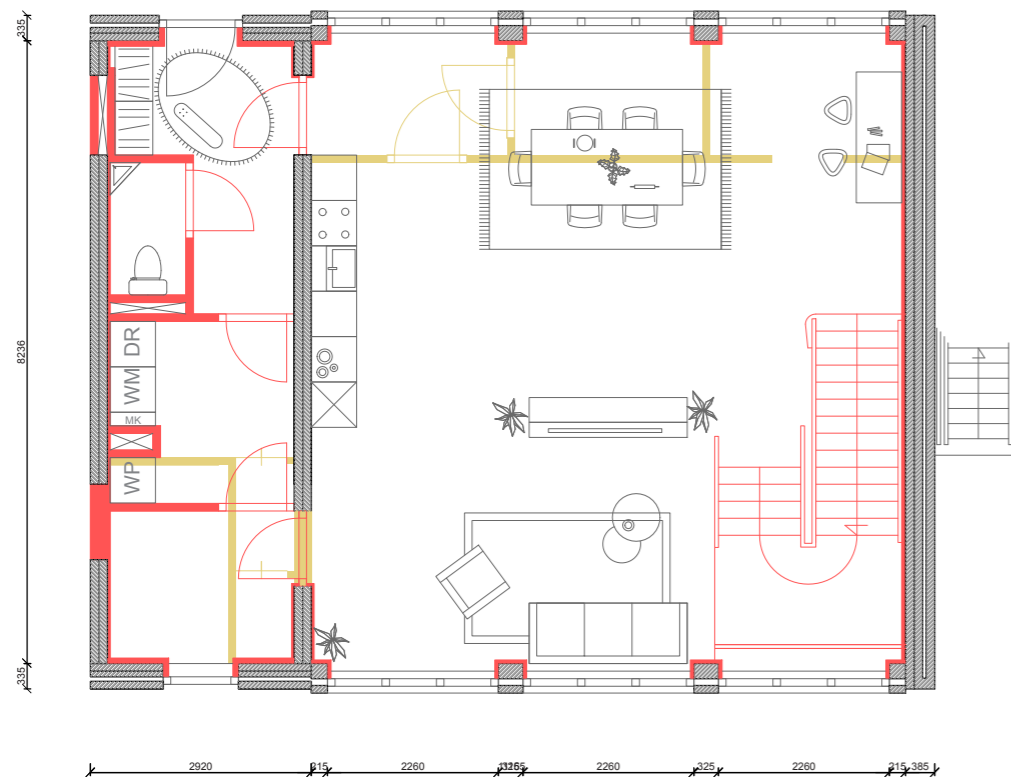
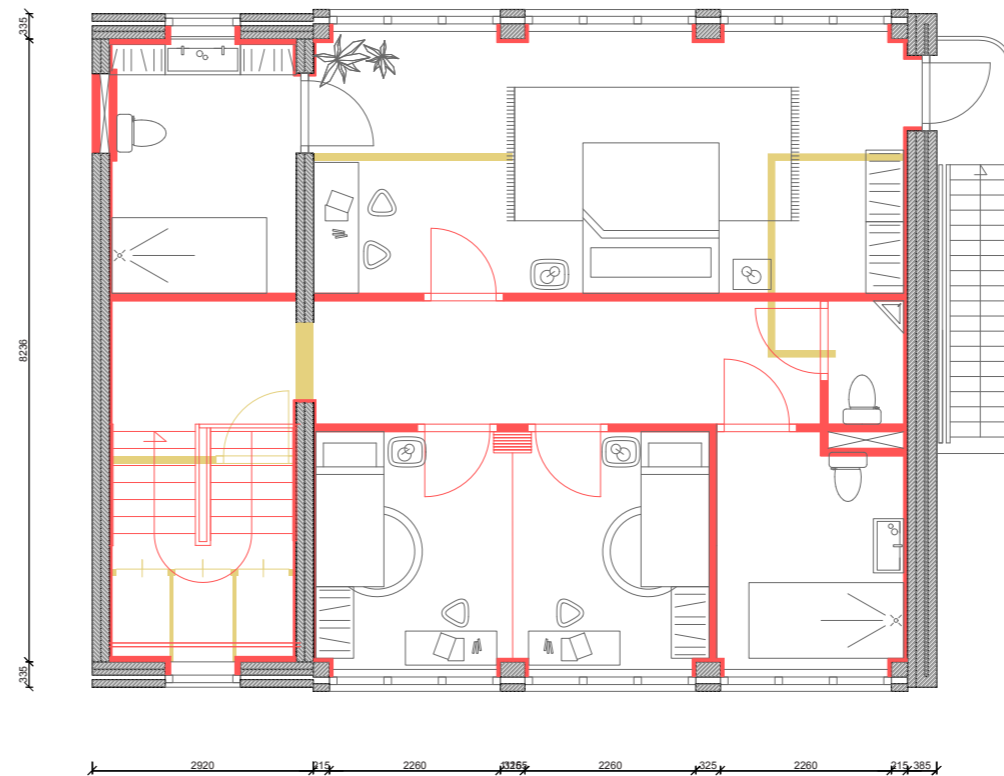
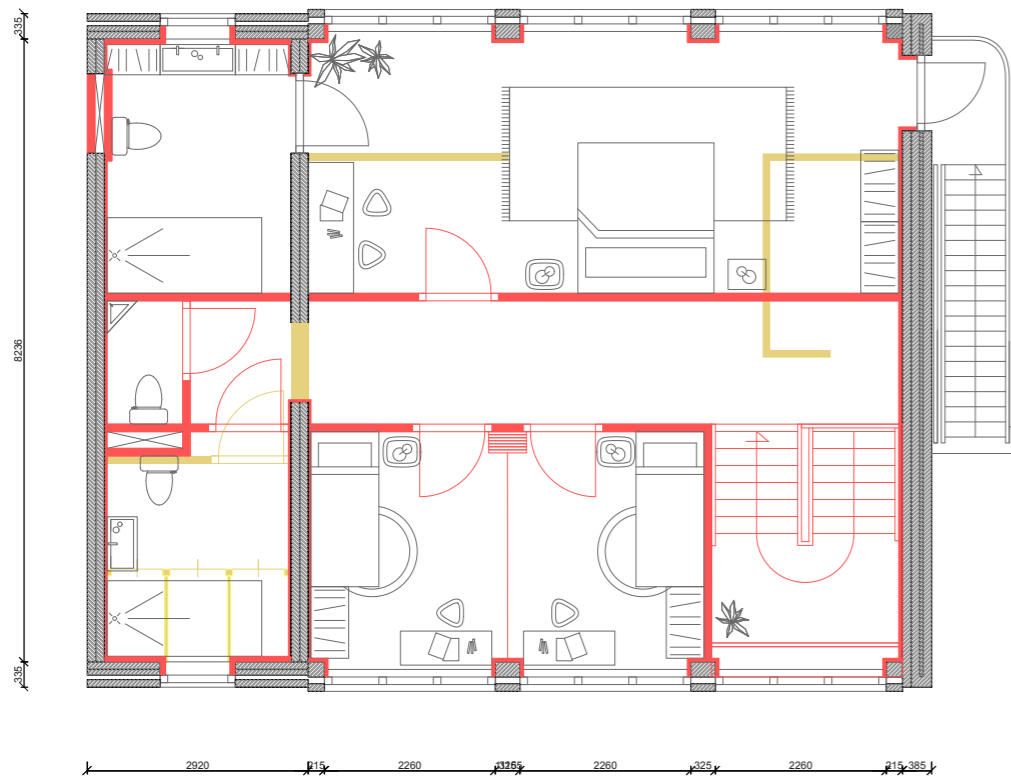
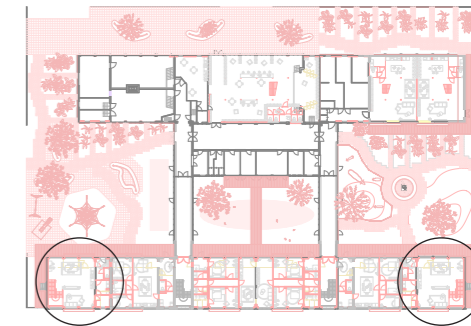
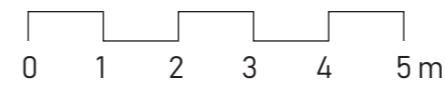


SITE - SECTION AA 1:200



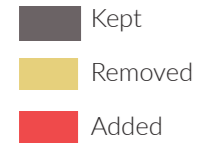
MAISONNETTES FAMILY

Type 1 and 2

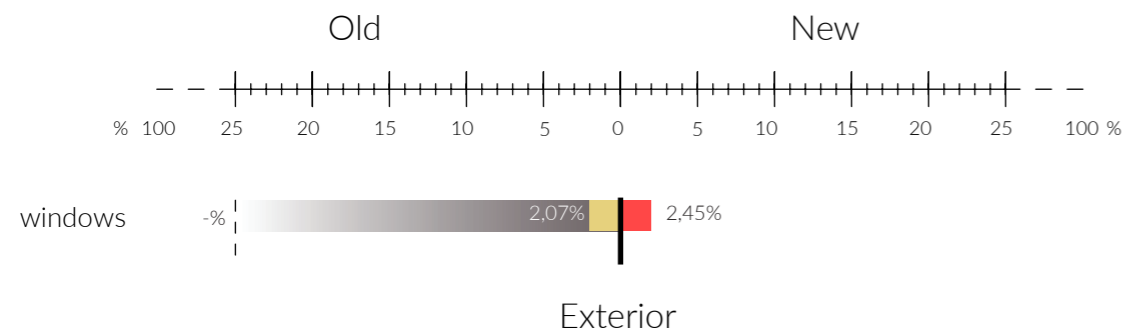
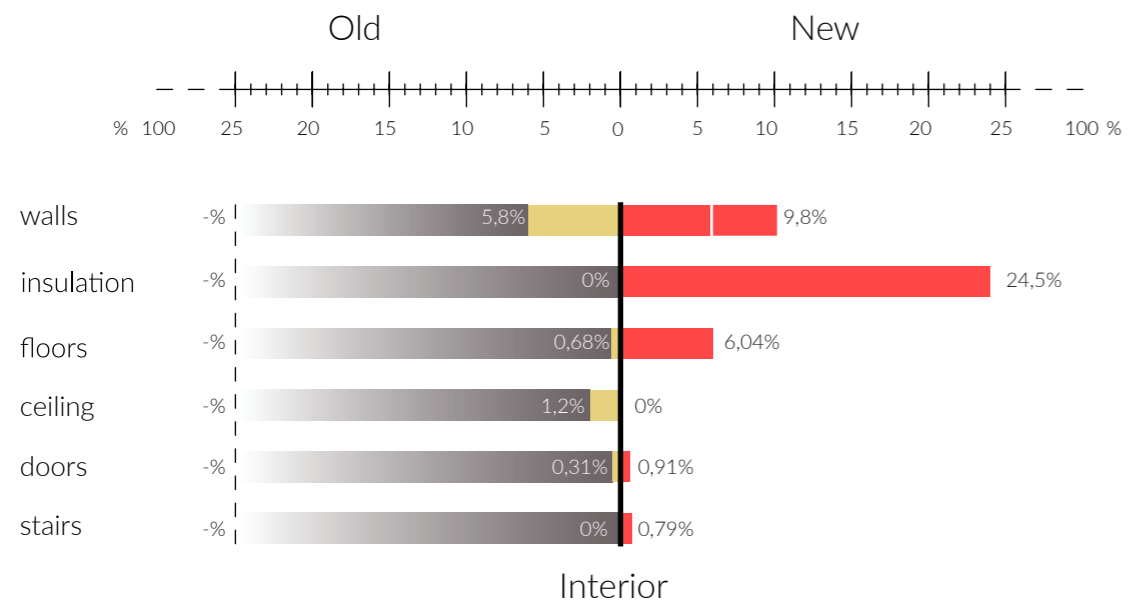


MAISONNETTES

Type 1

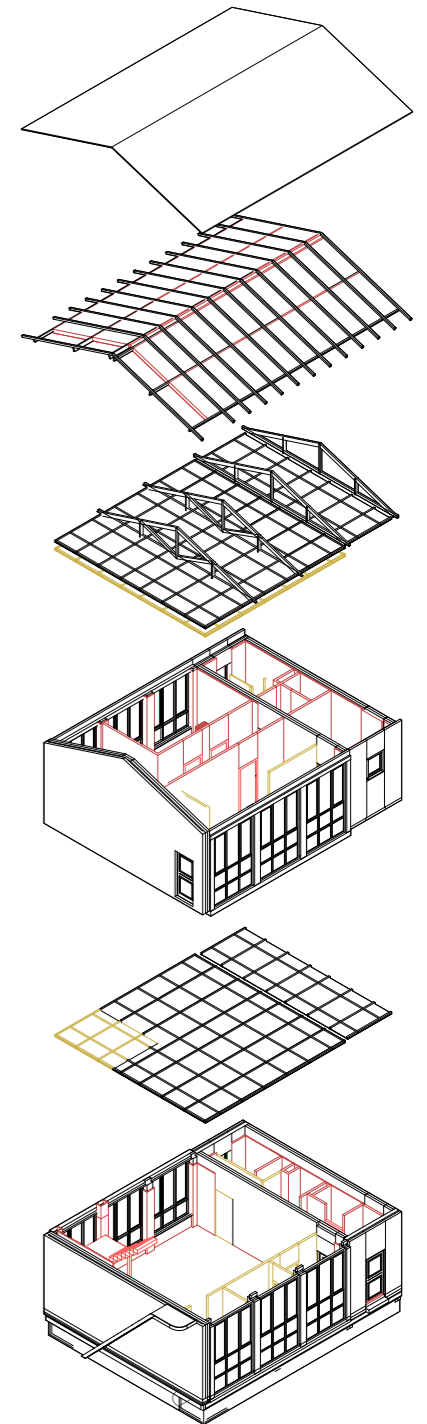


Material volume percentages



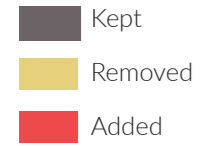
Livability

	livability	notes
size outdoor space	★★★★★	courtyard, outside buffer
added daylight		n/a
connection with garden	★★★★★	garden access, orientation
south facade	★★★★★	living room/stairs facing south
semi private/ bufferzones	★★★★★	hallways and outside path
connection with residents	★★★	no shared corridor, shared garden
accessibility	★★★★	from garden

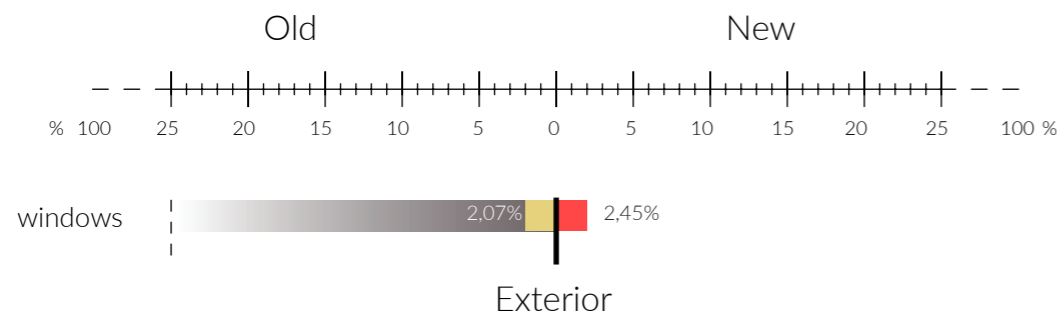
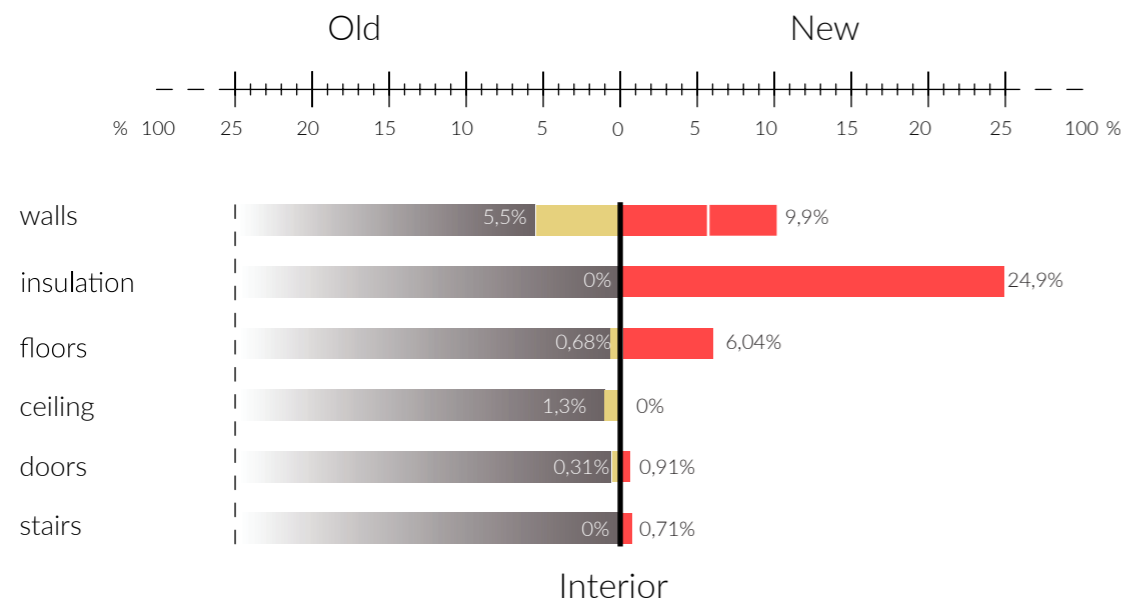


MAISONNETTES

Type 2

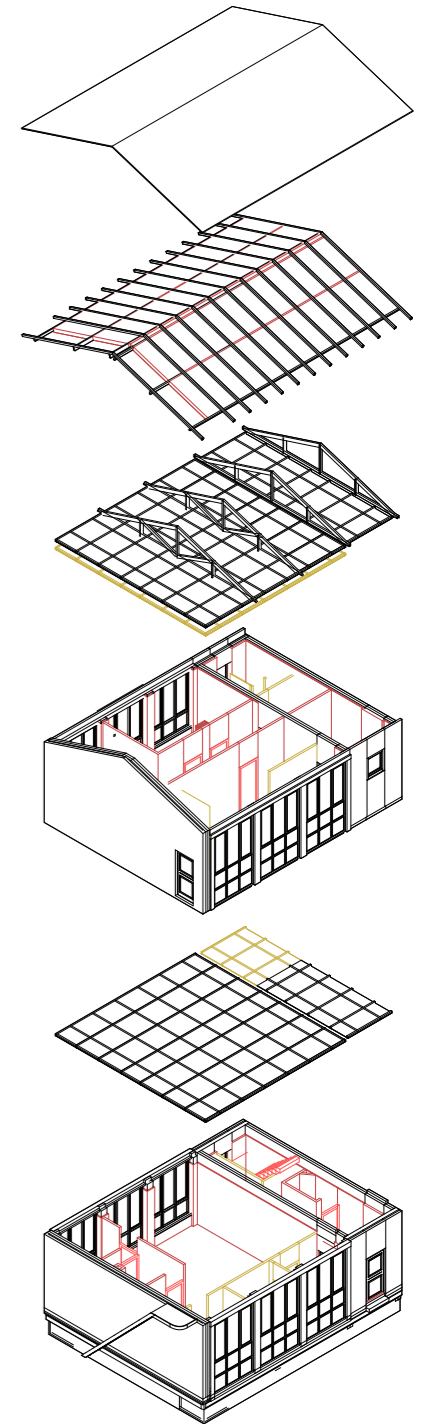


Material volume percentages



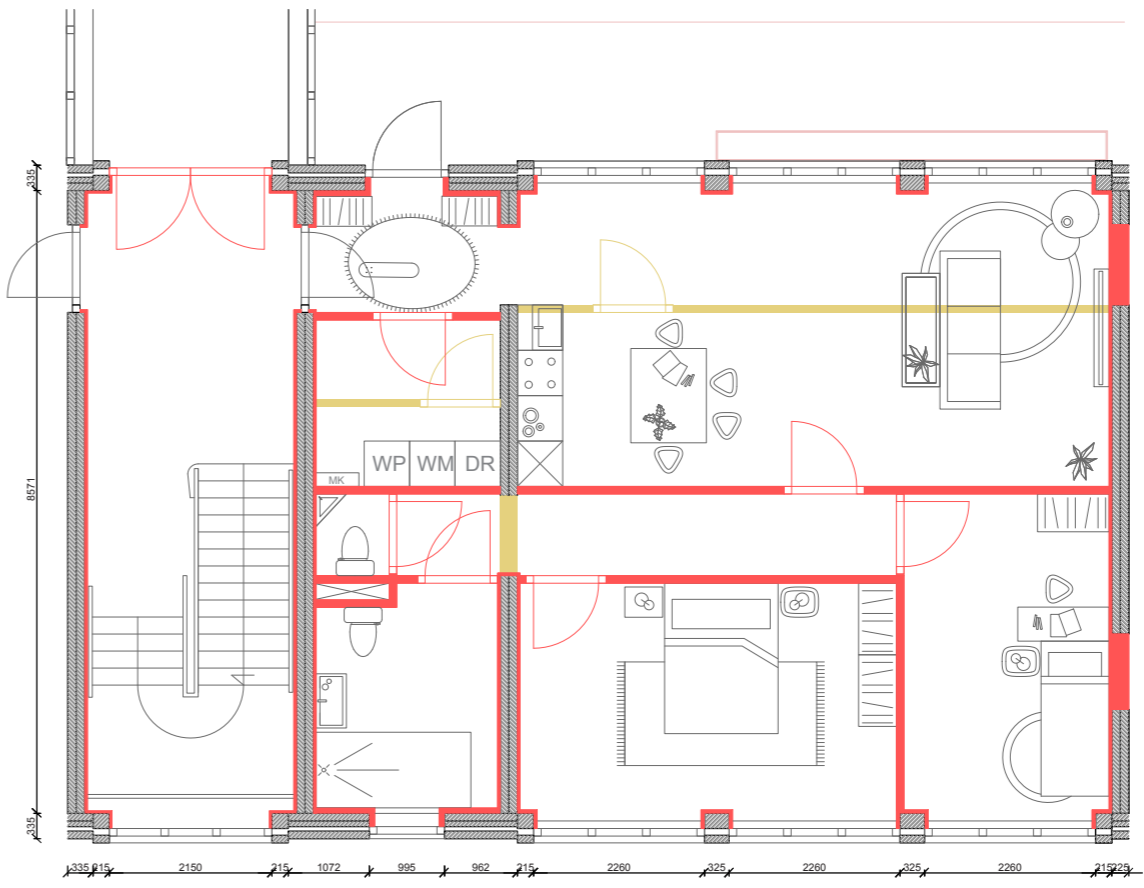
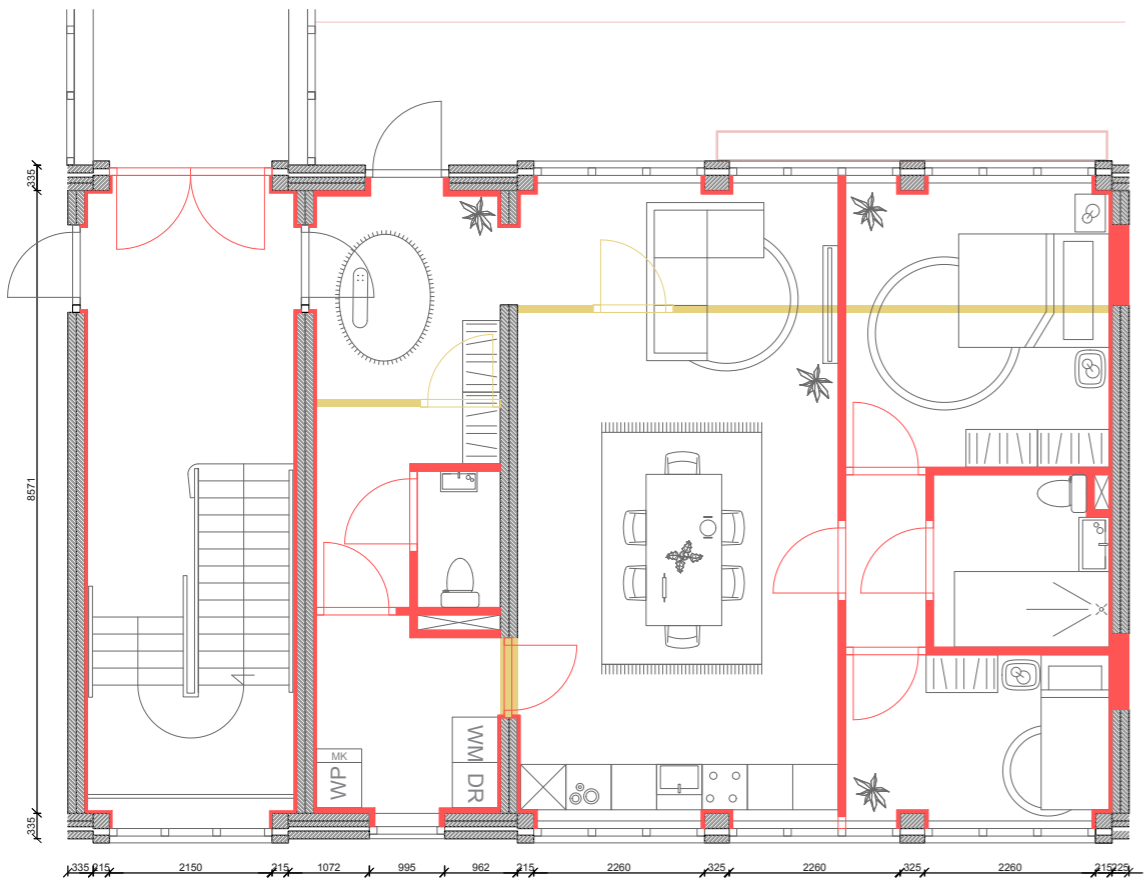
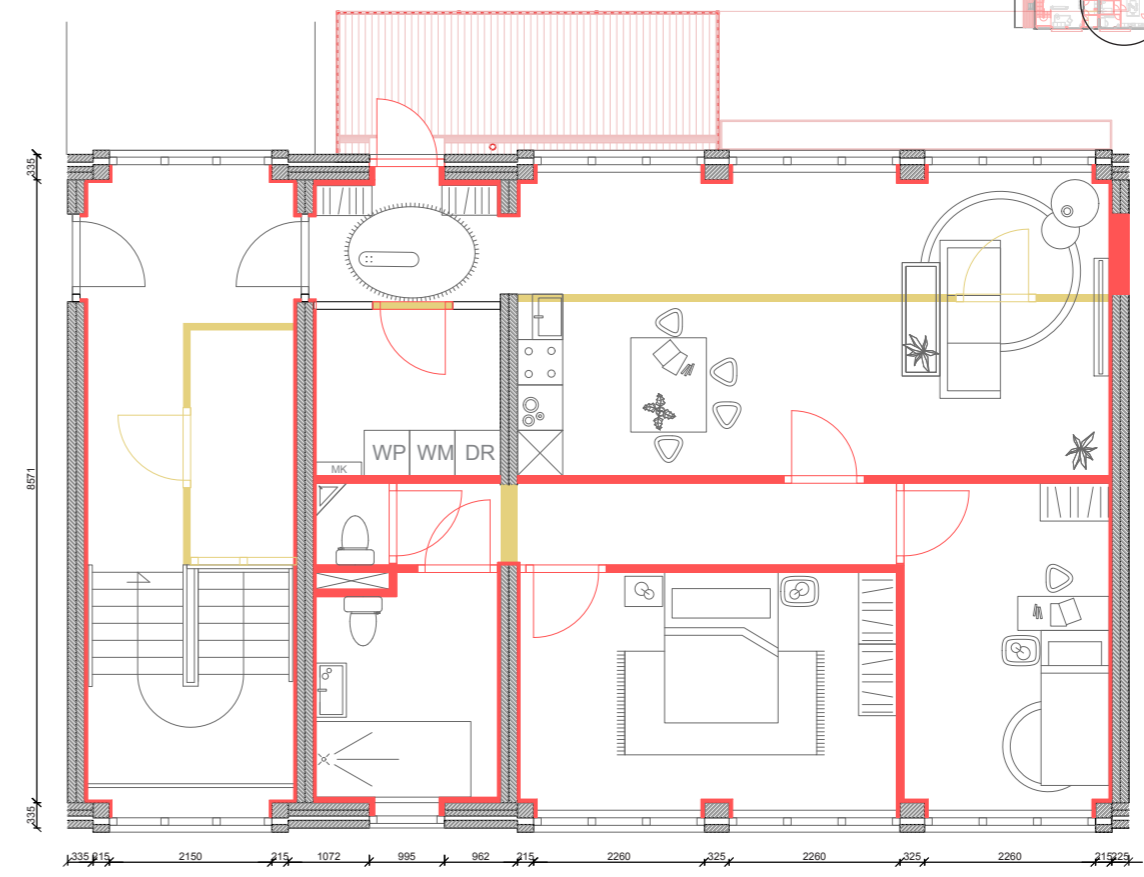
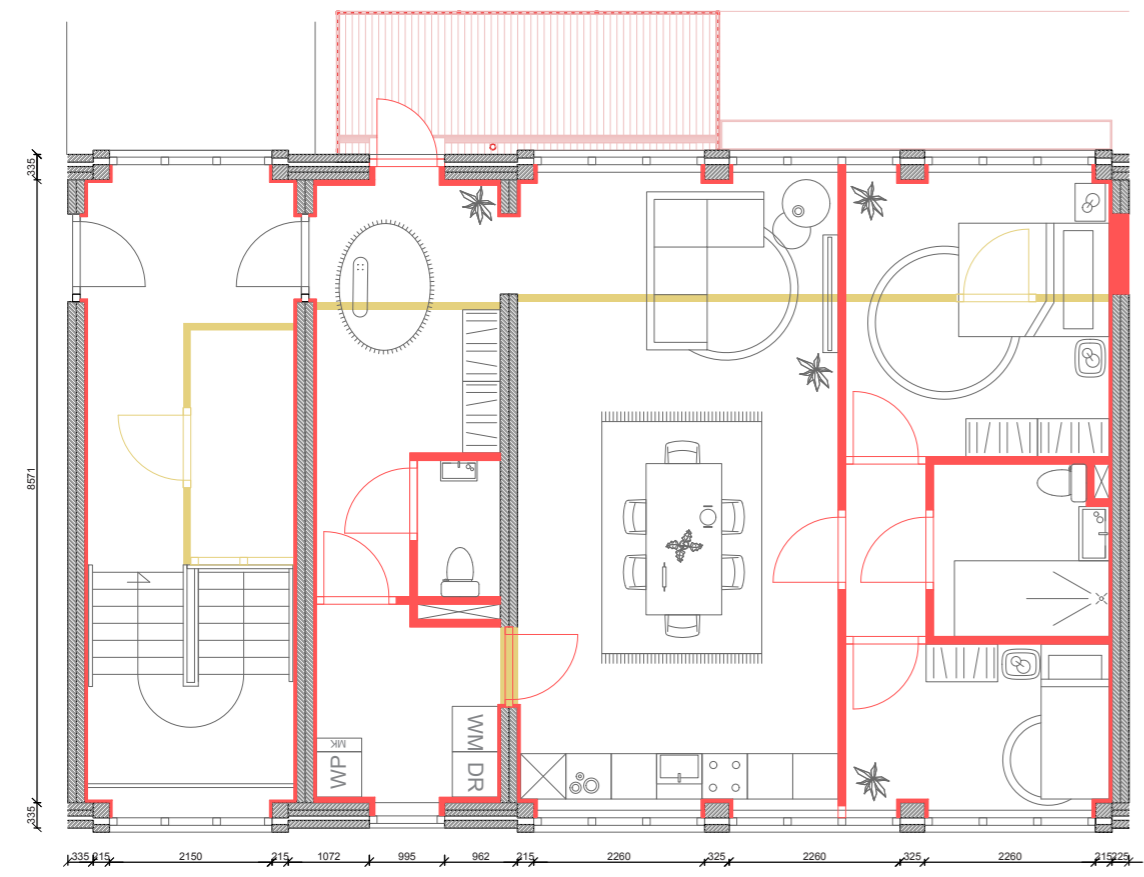
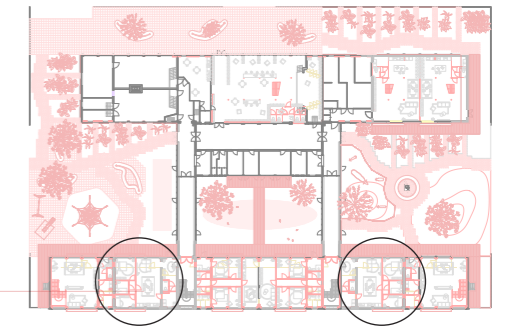
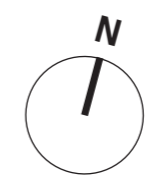
Livability

	livability	notes
size outdoor space	★★★★★	courtyard, outside buffer
added daylight	★★	extra walls, no light from both sides
connection with garden	★★★★★	garden access, orientation
south facade	★★★★	living room smaller
semi private/ bufferzones	★★★	stairs dark, outside path
connection with residents	★★★	no shared corridor, shared garden
accessibility	★★★★	from garden



APARTMENTS FAMILY

Type 1 and 2

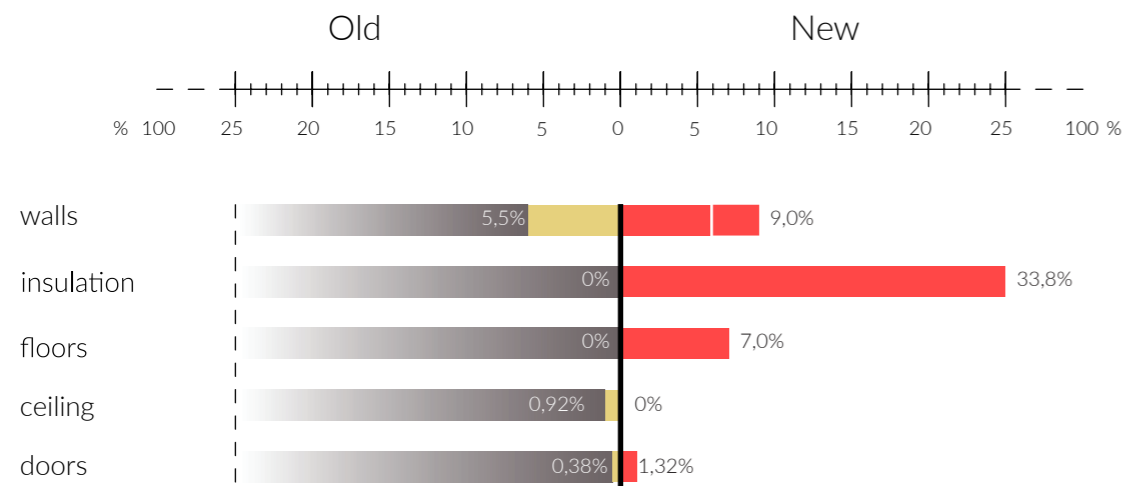


APARTMENTS

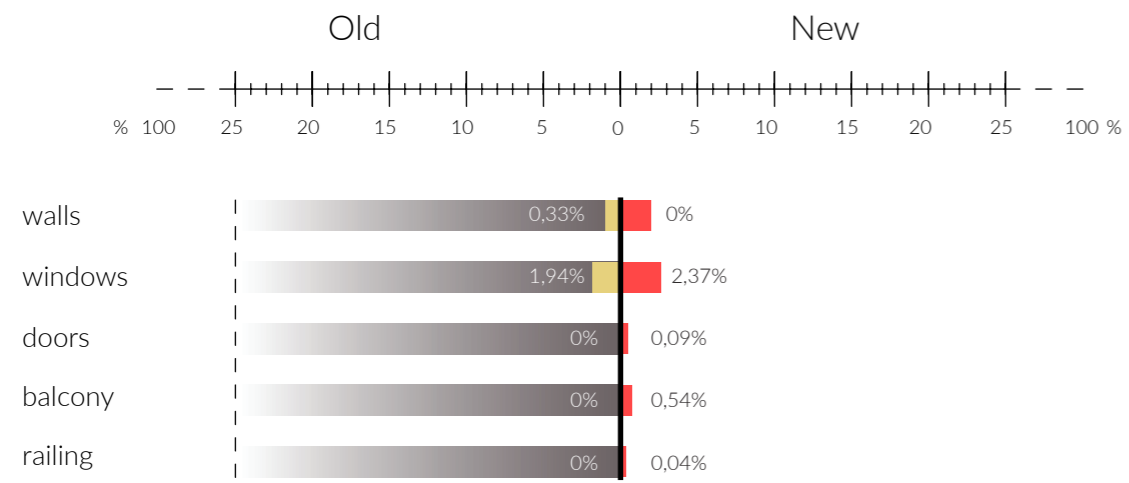
Type 1



Material volume percentages



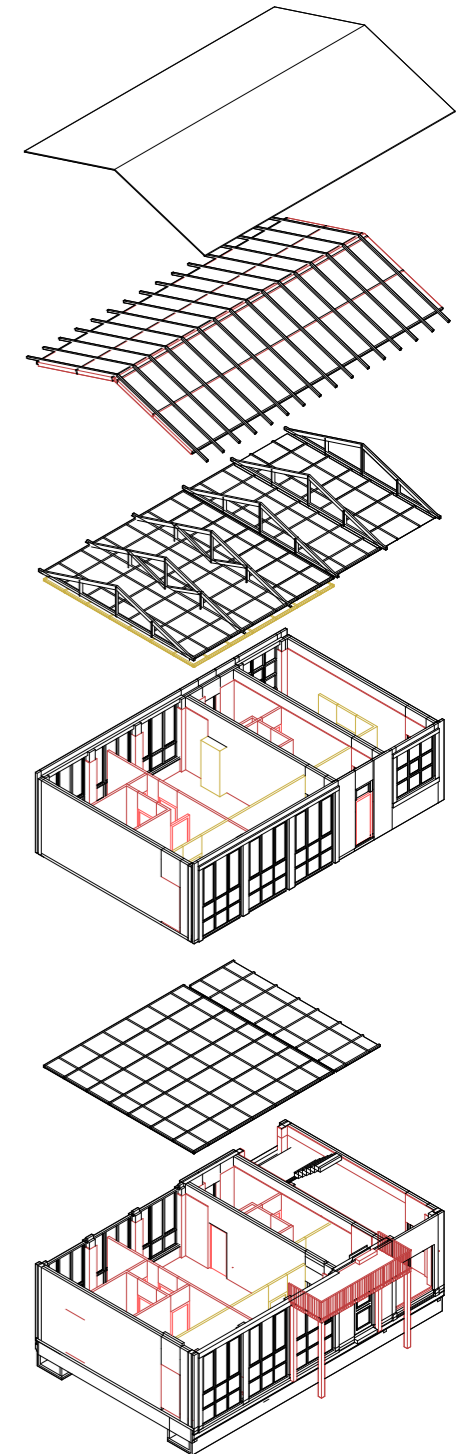
Interior



Exterior

Livability

	livability	notes
size outdoor space	★★★★	courtyard, outside buffer, or balcony
added daylight		n/a
connection with garden	★★★★★	garden access, orientation
south facade	★★★★★	living room facing south
semi private/ bufferzones	★★★★★	hallways between living spaces
connection with residents	★★★★	shared corridor/garden
accessibility	★★★★★	from corridor and/or garden

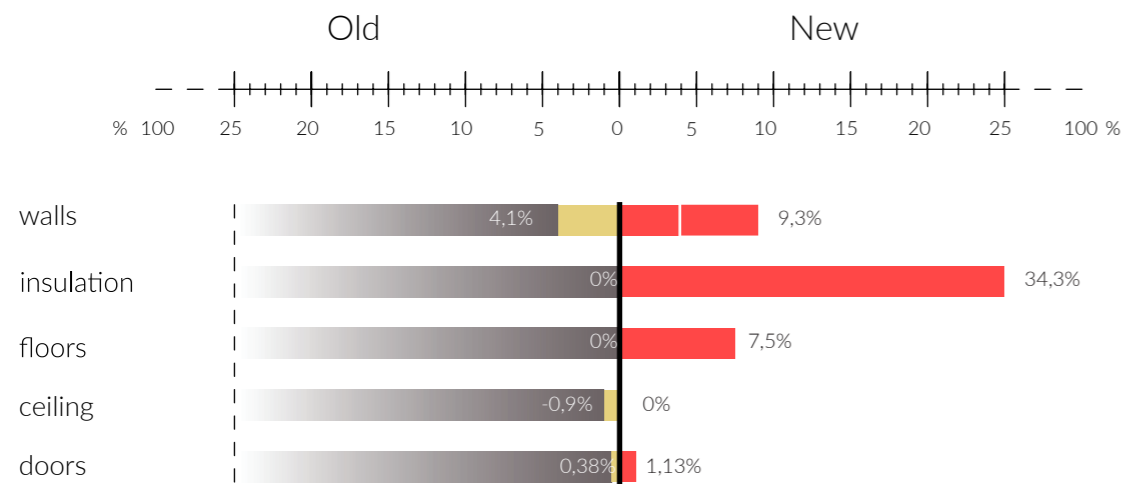


APARTMENTS

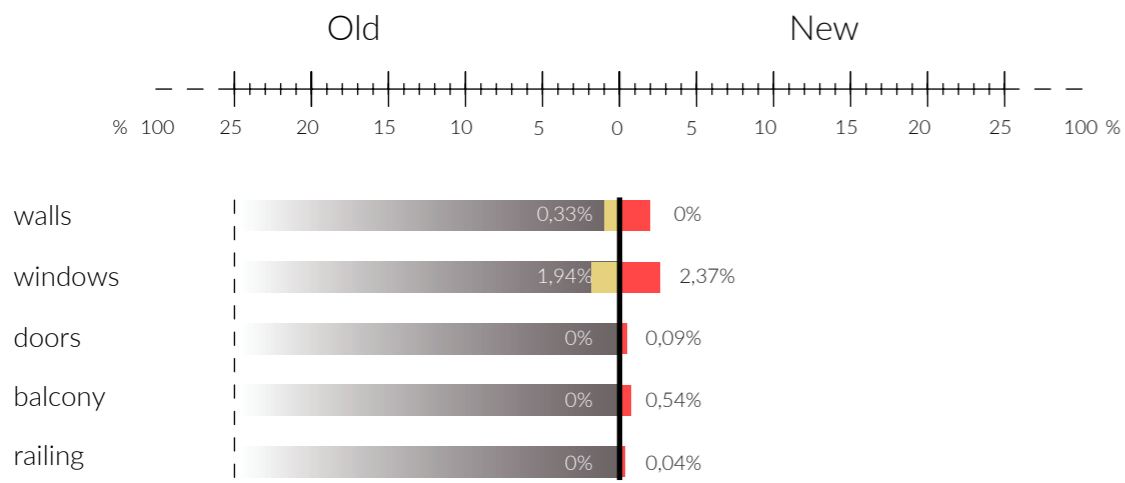
Type 2



Material volume percentages



Interior

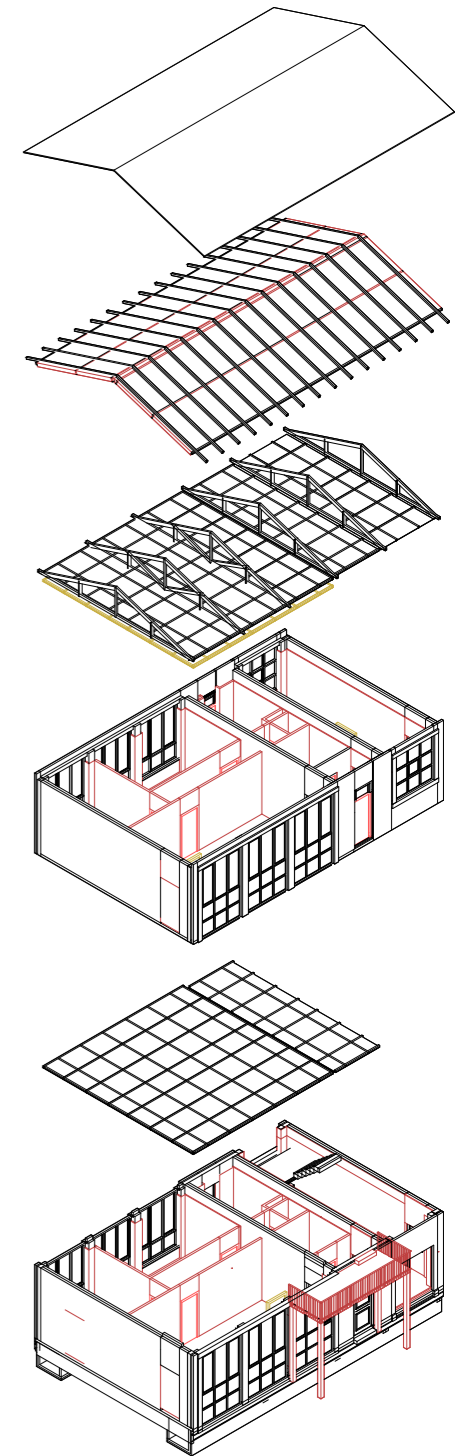


Exterior

Source: own work

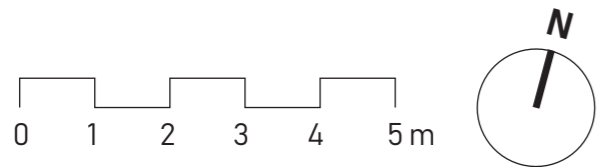
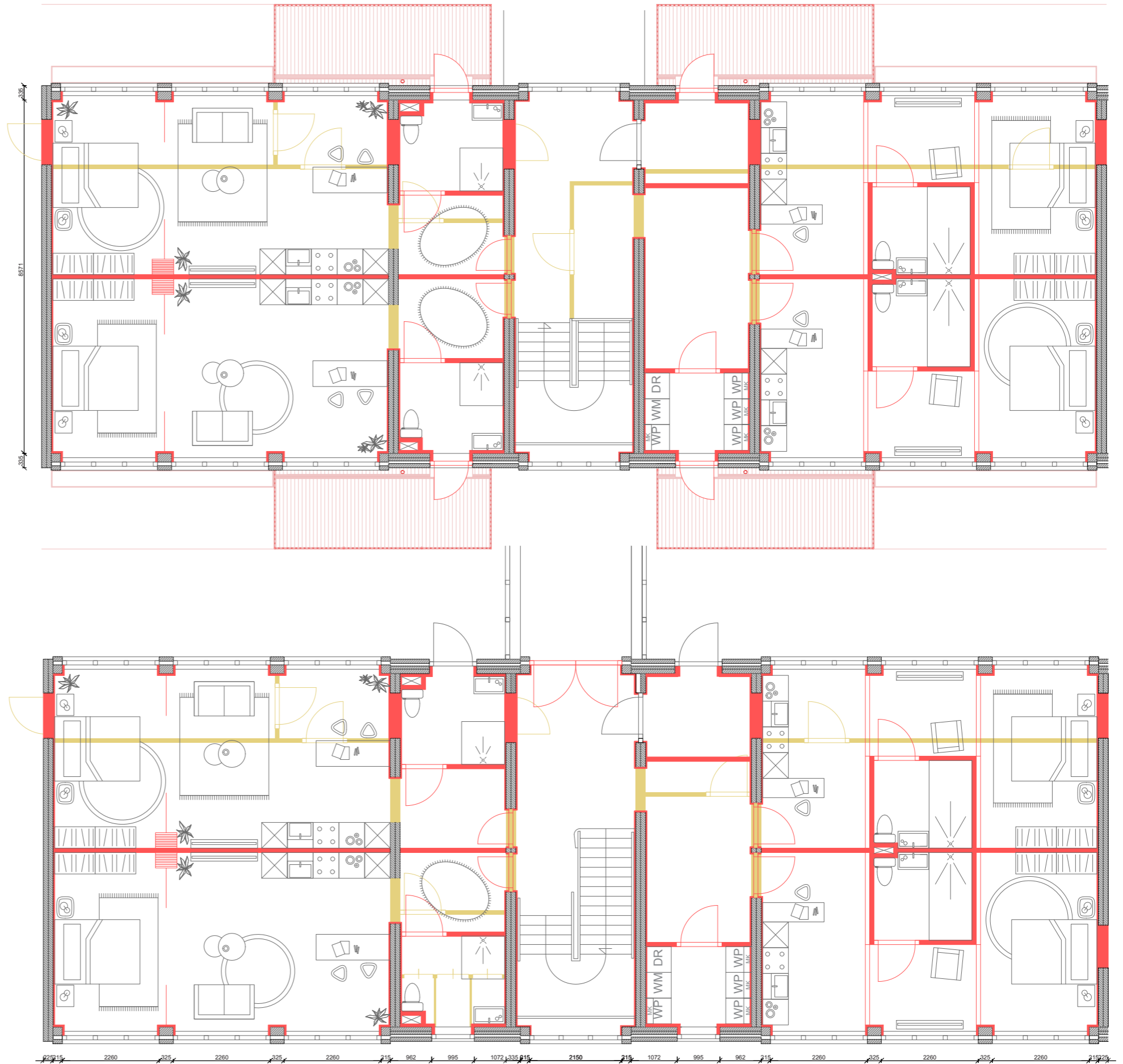
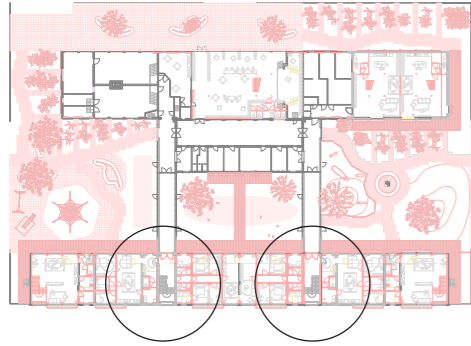
Livability

	livability	notes
size outdoor space	★★★★	courtyard, outside buffer, or balcony
added daylight	★★	extra walls, no light from both sides
connection with garden	★★★★★	garden access, orientation
south facade	★★	living room not facing south
semi private/ bufferzones	★★★	hallways between living spaces
connection with residents	★★★★	shared corridor/ garden
accessibility	★★★★★	from corridor and/or garden



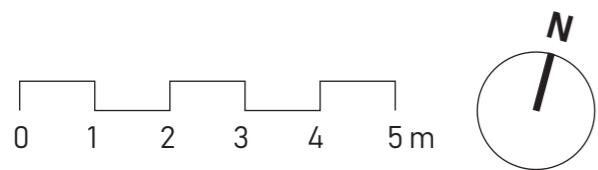
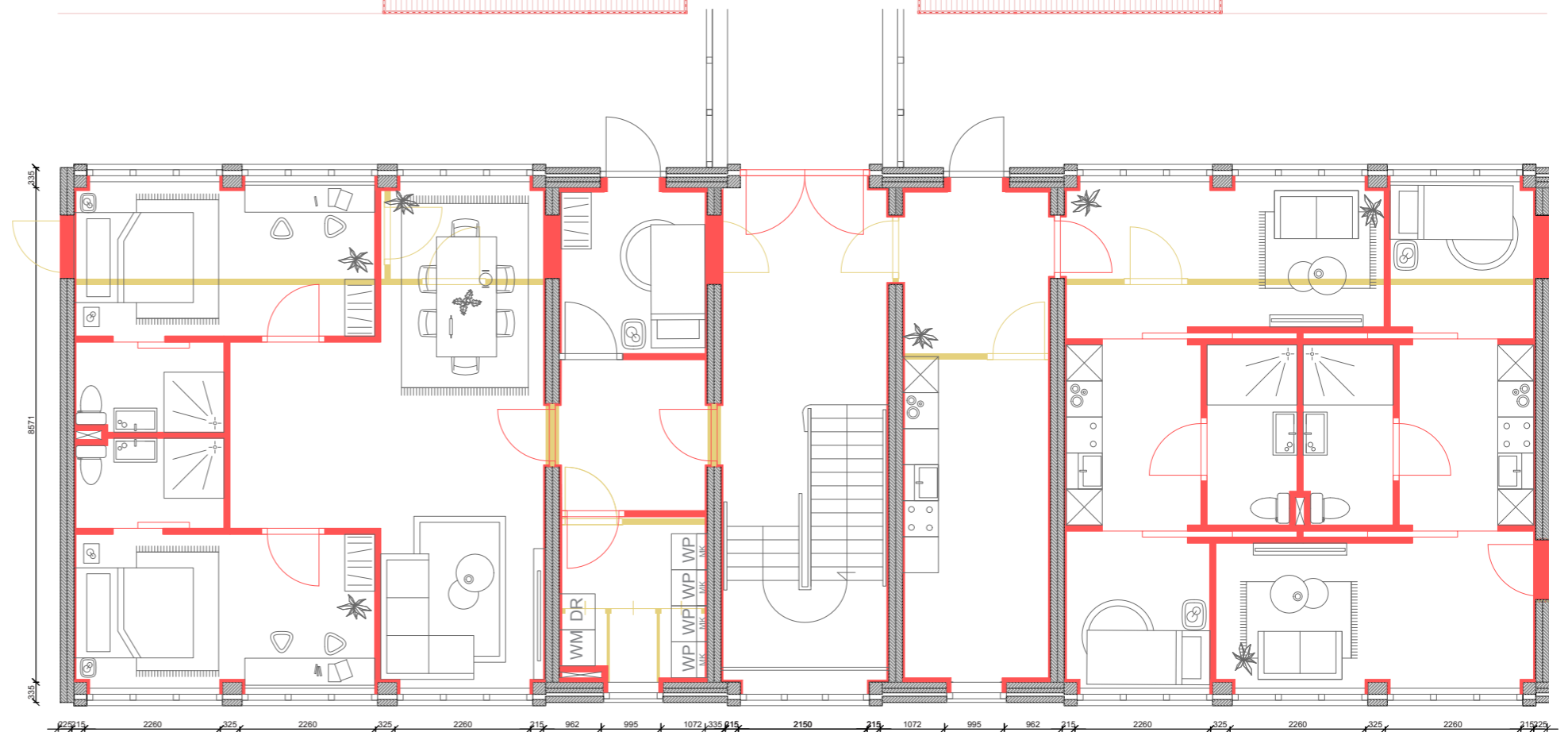
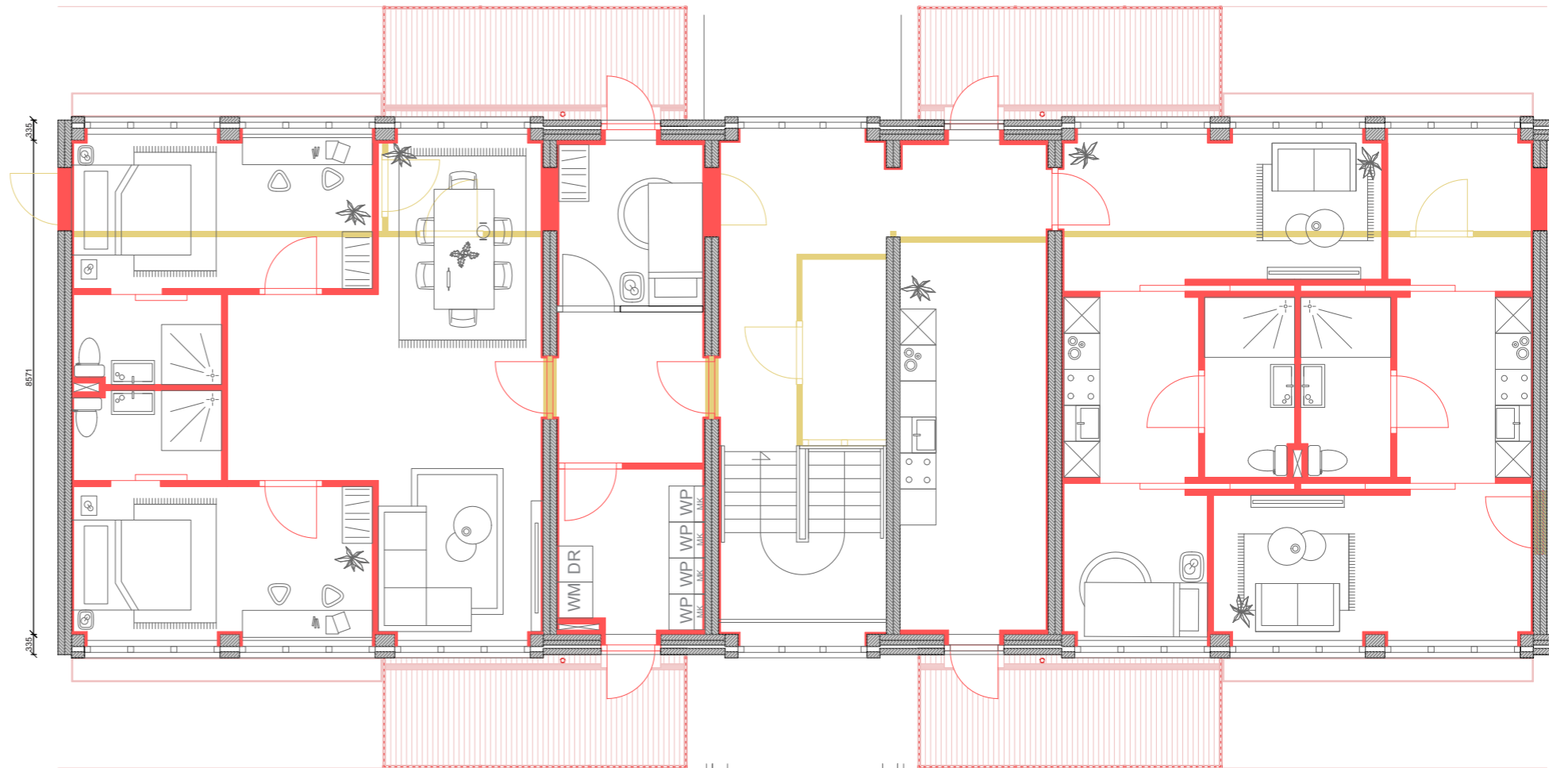
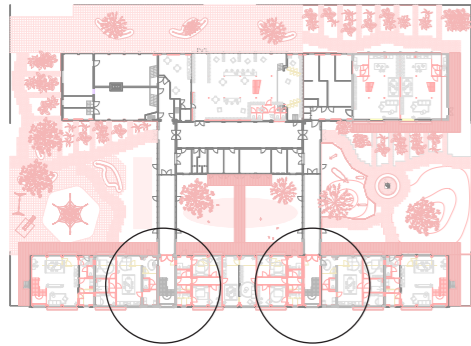
STUDIO STUDENTS/ELDERLY

Type 1



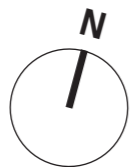
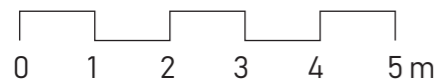
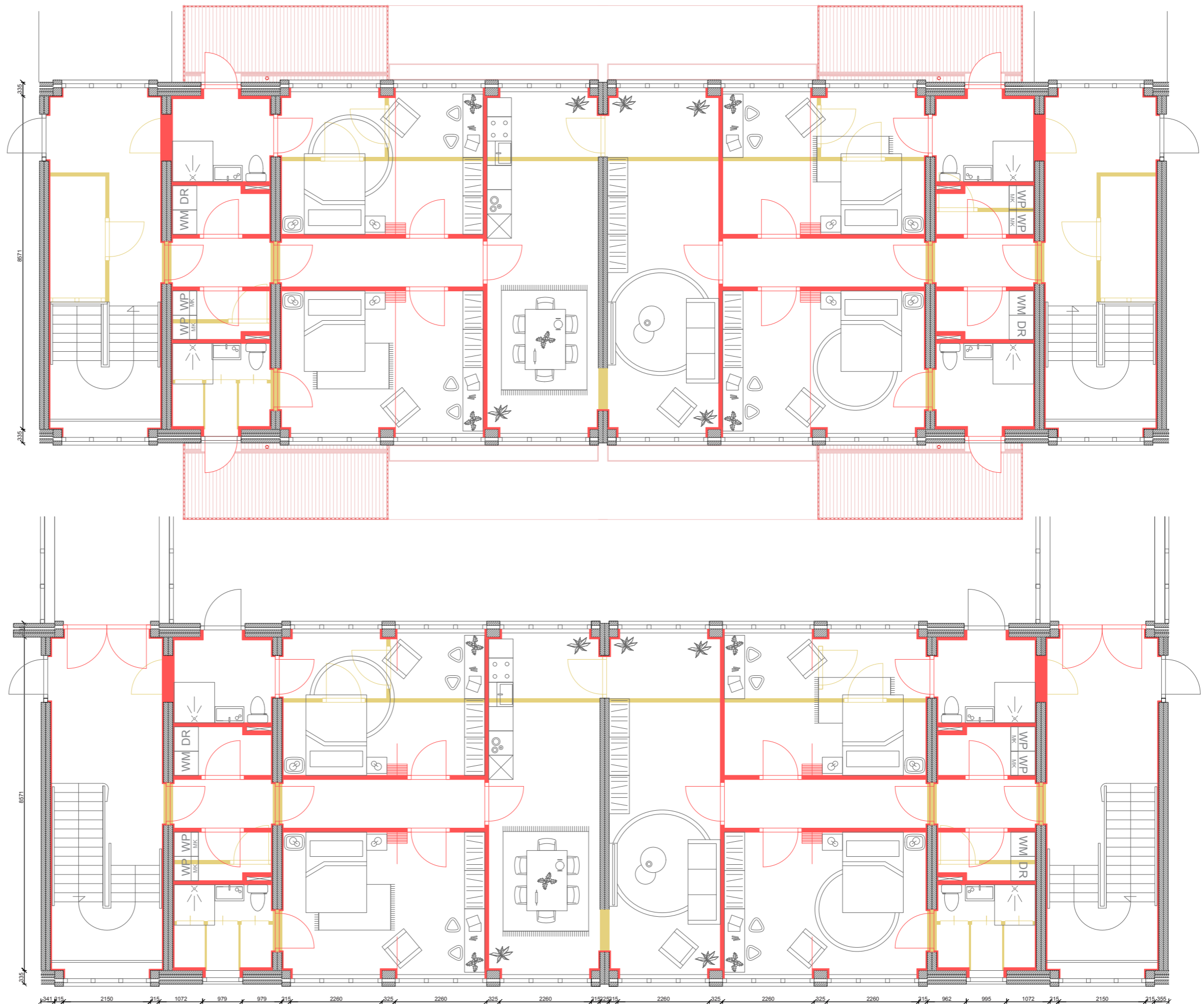
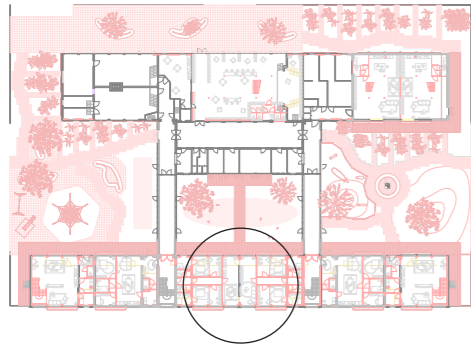
STUDIO STUDENTS/ELDERLY

Type 2



STUDIO STUDENTS/ELDERLY

Type 3

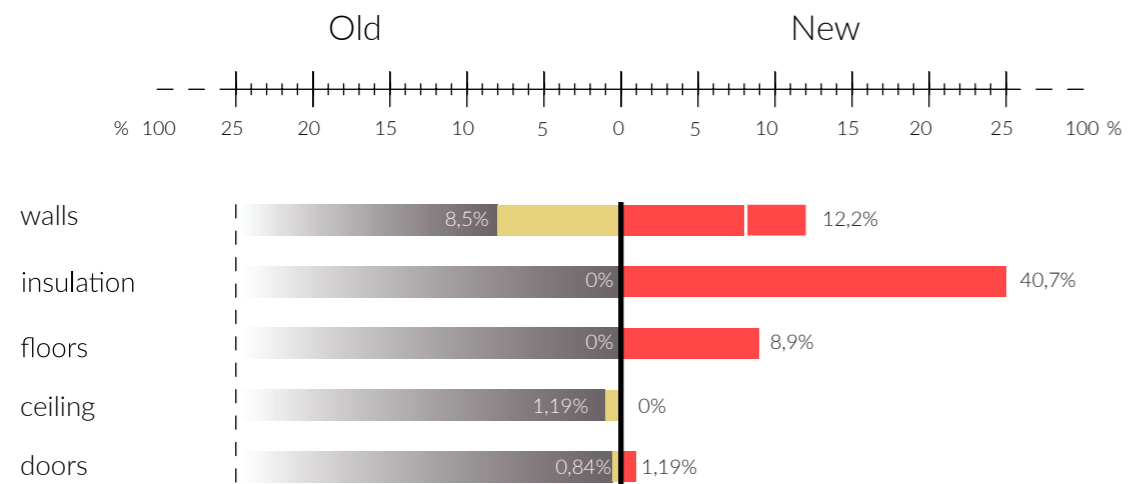


STUDIO

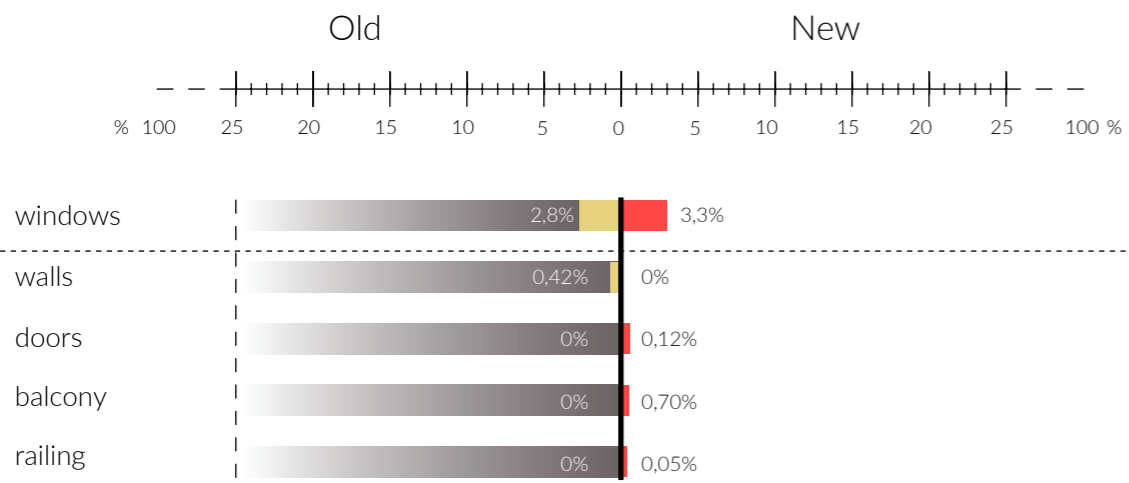
Type 1

- Kept
- Removed
- Added

Material volume percentages



Interior

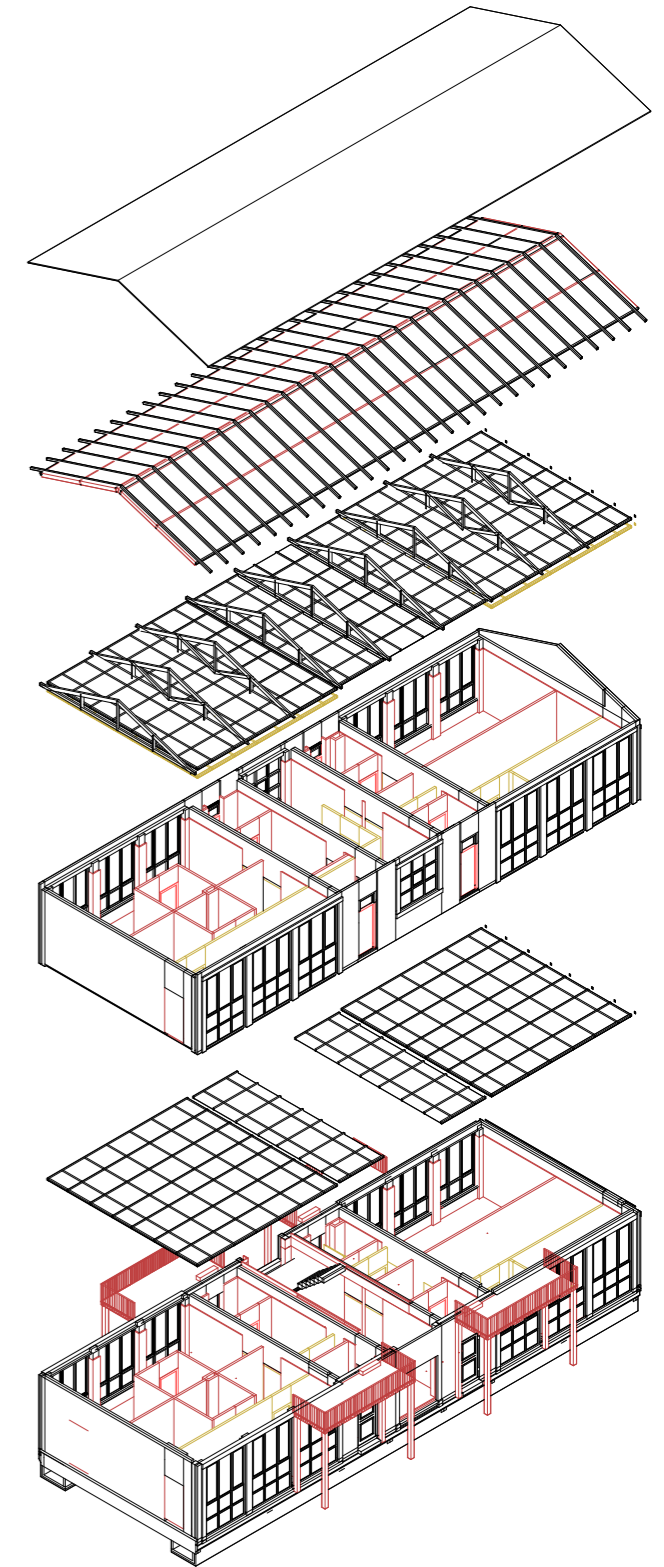


Exterior

balcony option

Livability

	livability	notes
size outdoor space	★ ★ ★	courtyard, outside buffer, or balcony
added daylight	★ ★ ★	extra walls, less light from both sides
connection with garden	★ ★	two studio's facing south
south facade	★ ★	two studio's only facing north
semi private/ bufferzones	★ ★ ★ ★ ★	flexible walls
connection with residents	★ ★ ★ ★	little buffer between living shared corridor/ garden
accessibility	★ ★ ★ ★	from corridor and/or garden

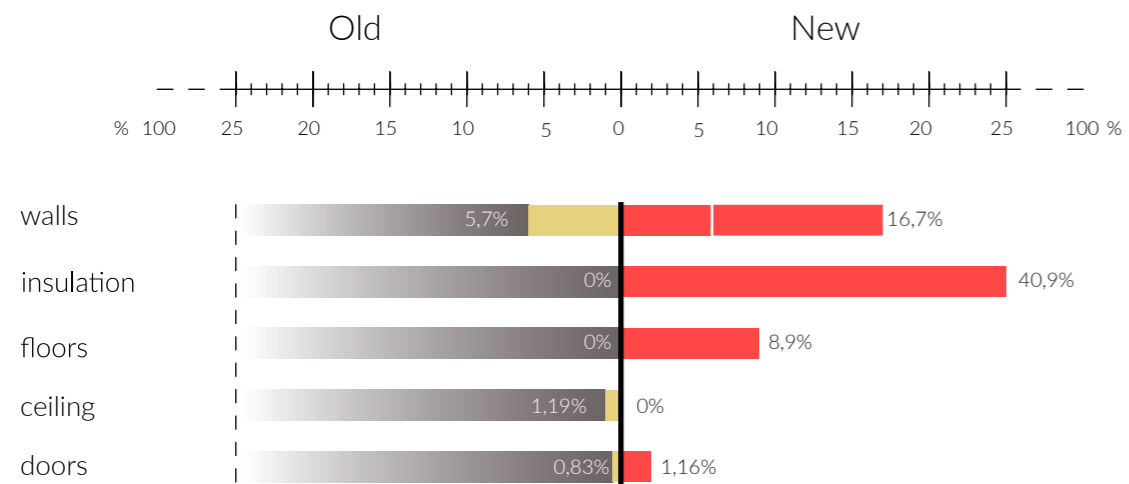


STUDIO

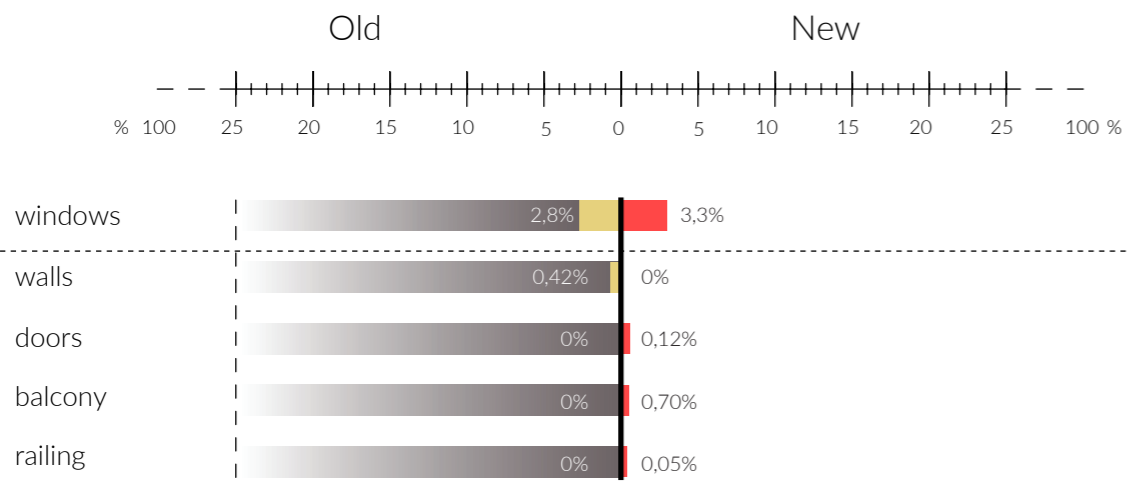
Type 2



Material volume percentages



Interior

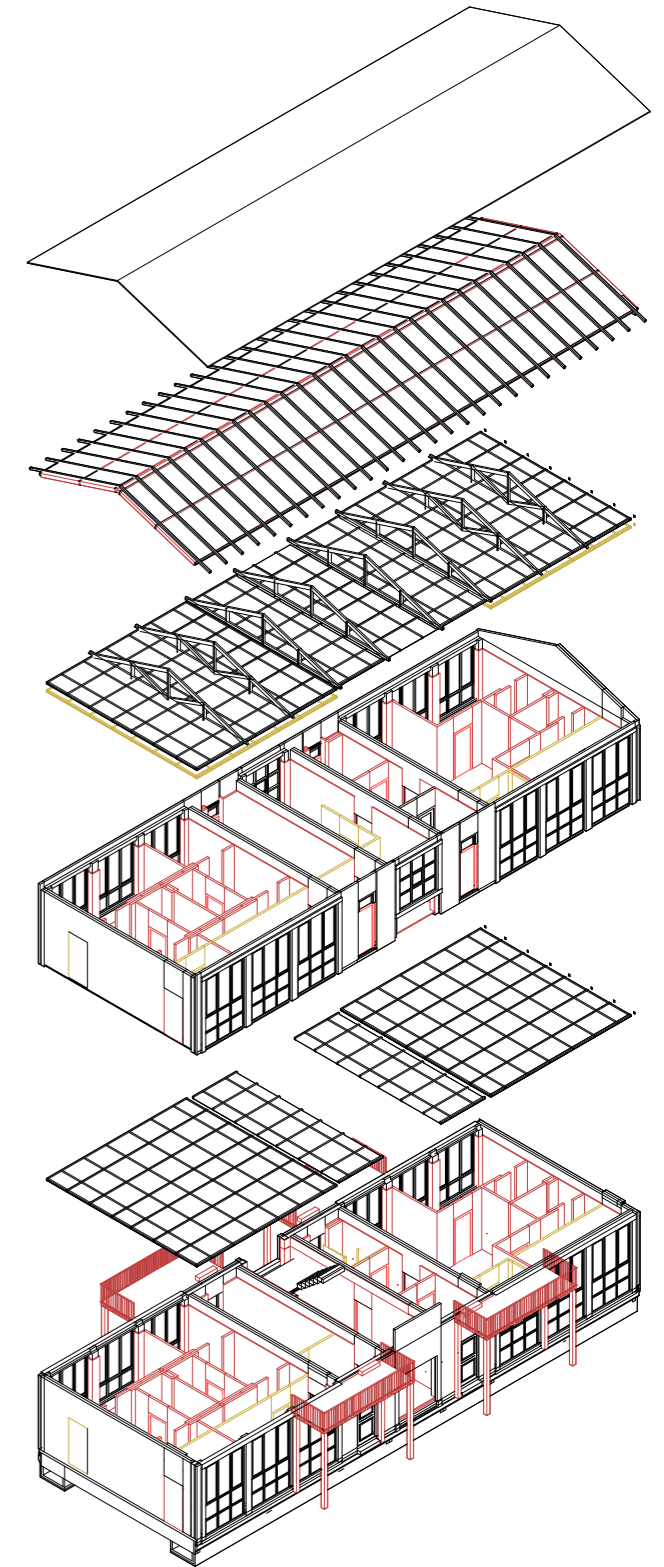


Exterior

balcony option

Livability

	livability	notes
size outdoor space	★★★★	courtyard, outside buffer, or balcony
added daylight	★	extra walls, no light from both sides
connection with garden	★★★★★	shared space facing garden
south facade	★★★★★	shared space facing south
semi private/ bufferzones	★★★	flexible walls
connection with residents	★★★★	shared corridor/ garden
accessibility	★★★★	from corridor and/or garden

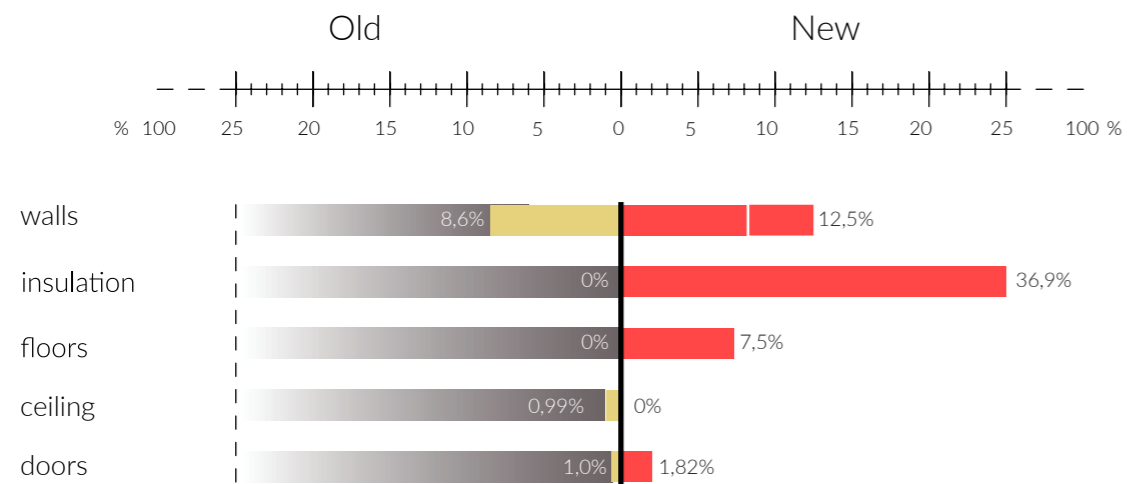


STUDIO

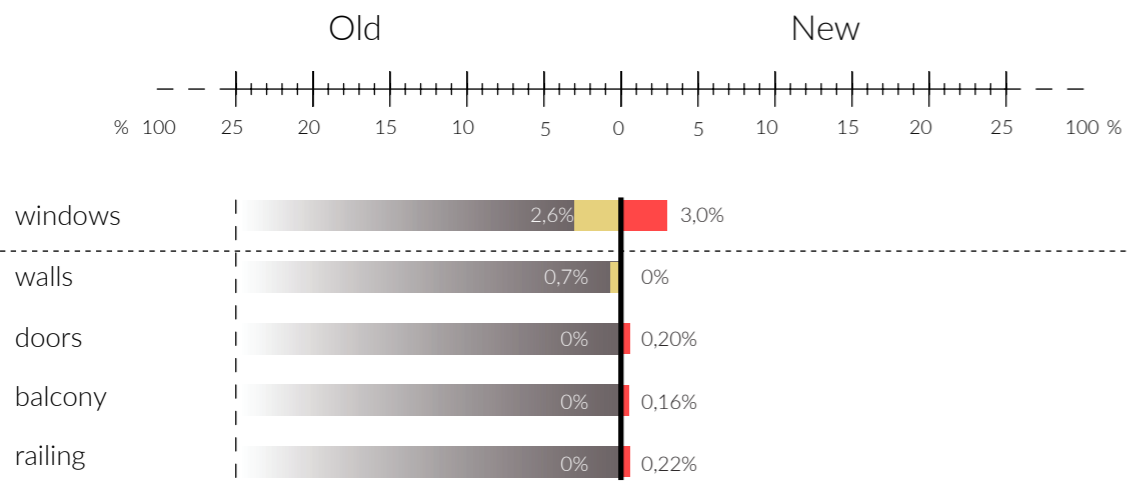
Type 3



Material volume percentages



Interior

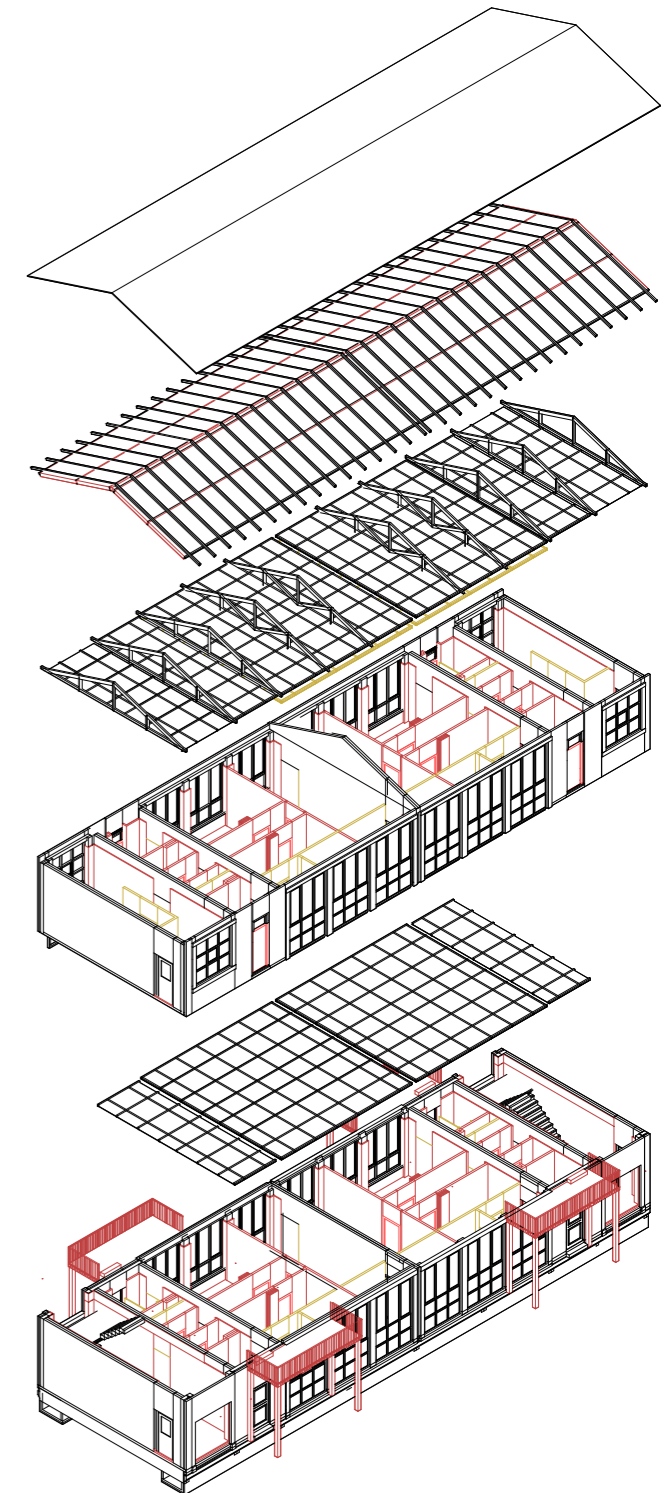


Exterior

balcony option

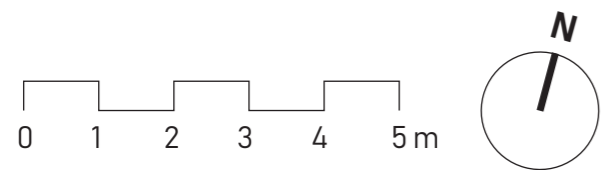
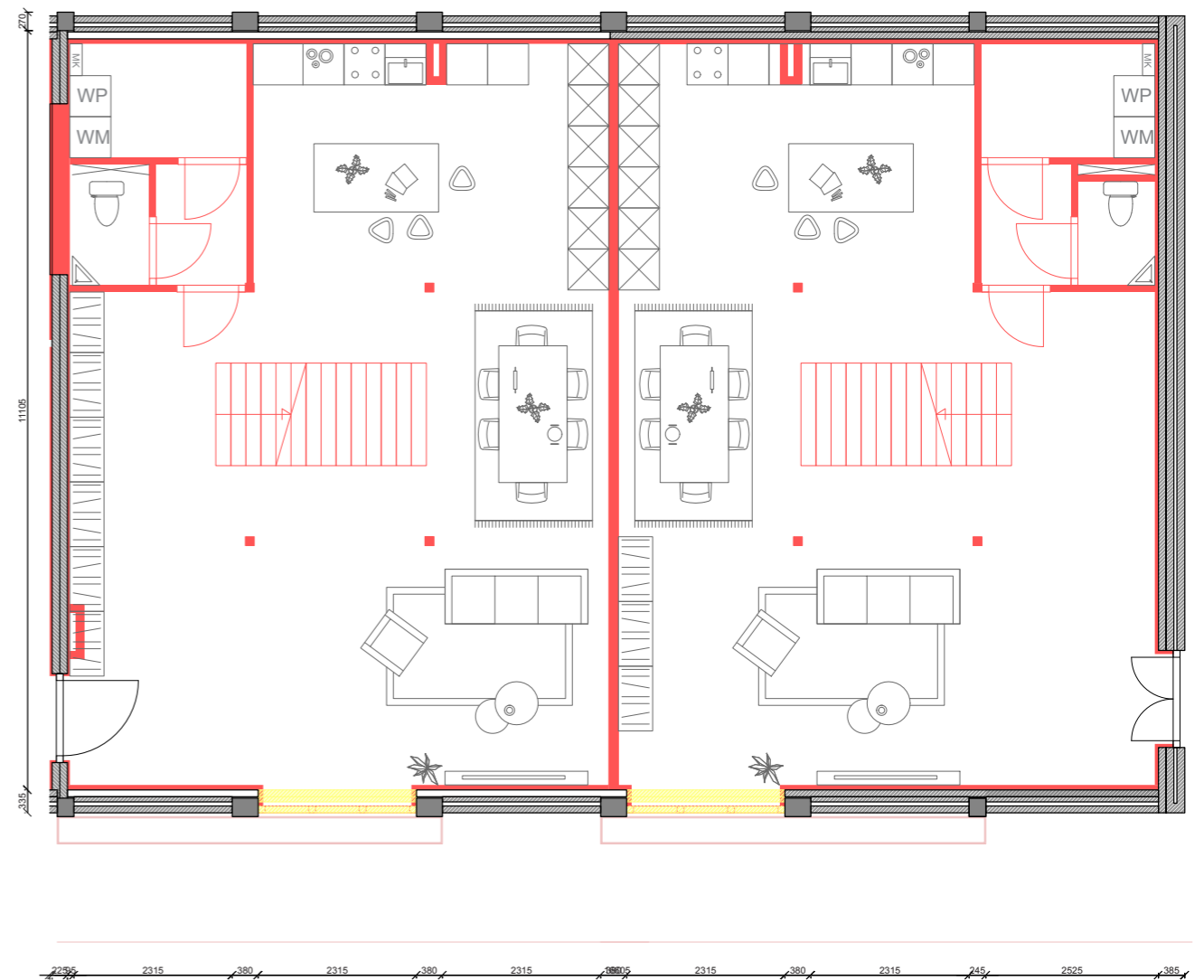
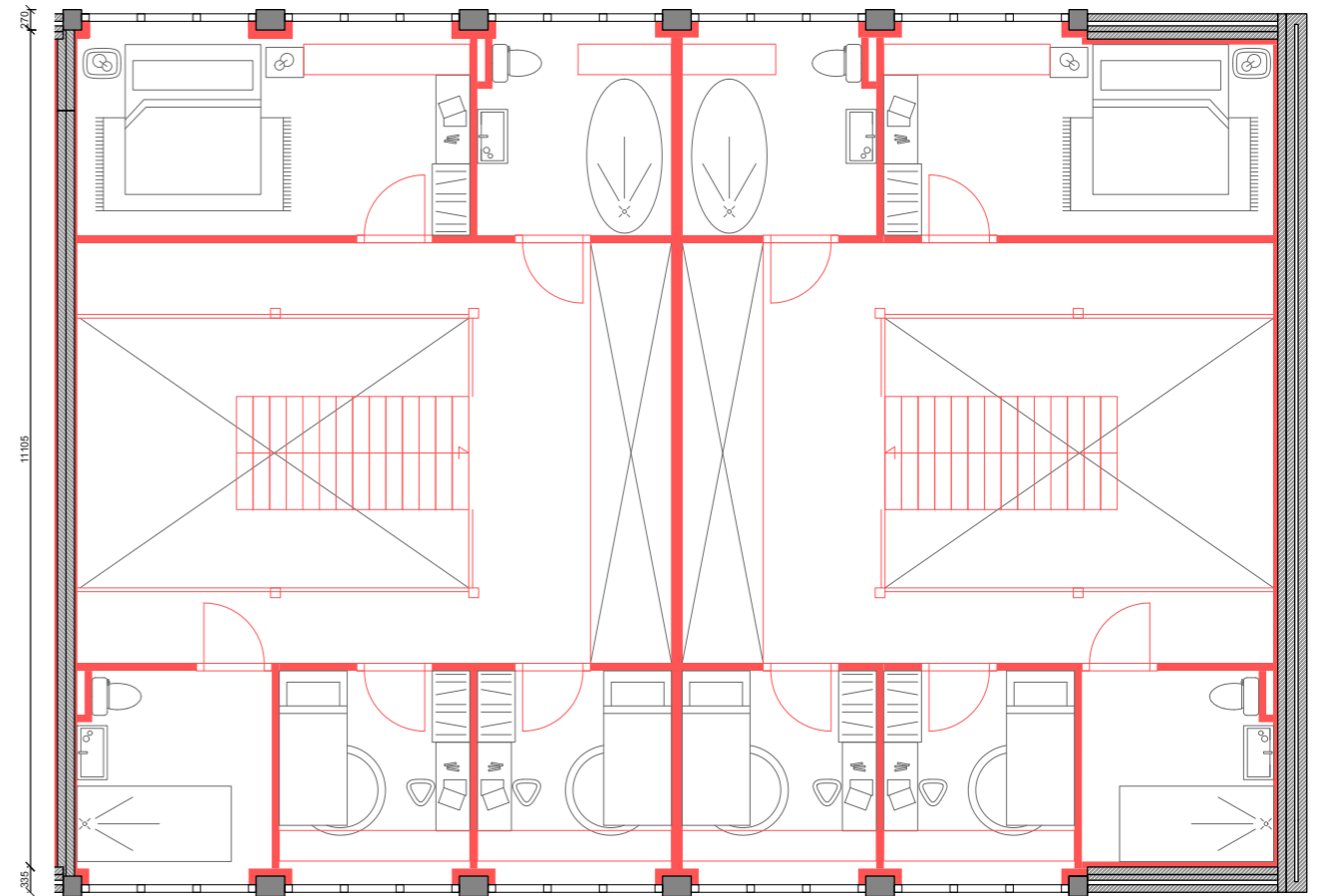
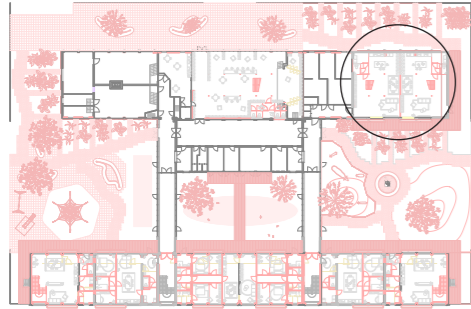
Livability

	livability	notes
size outdoor space	★★★★	courtyard, outside buffer, or balconies
added daylight		n/a
connection with garden	★★★★	shared spaces facing garden
south facade	★★★★	shared space facing south
semi private/ bufferzones	★★★★	flexible walls, buffer between studio's
connection with residents	★★★★★	shared corridor/ garden / living spaces
accessibility	★★★★★	from corridor and/or garden



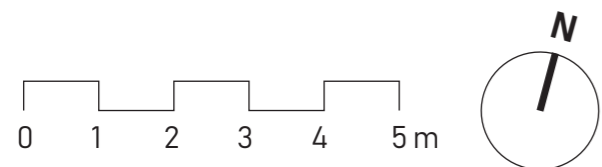
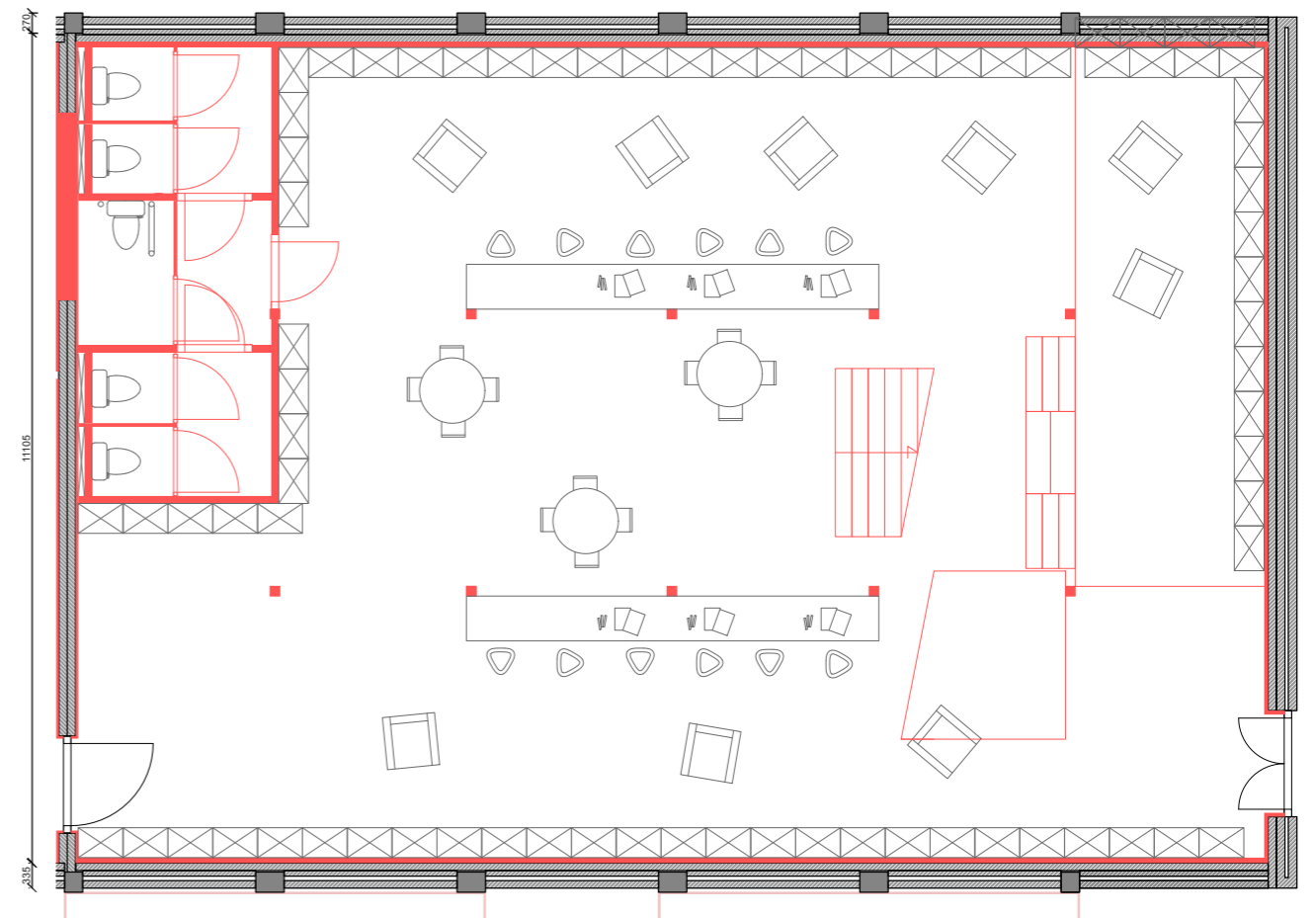
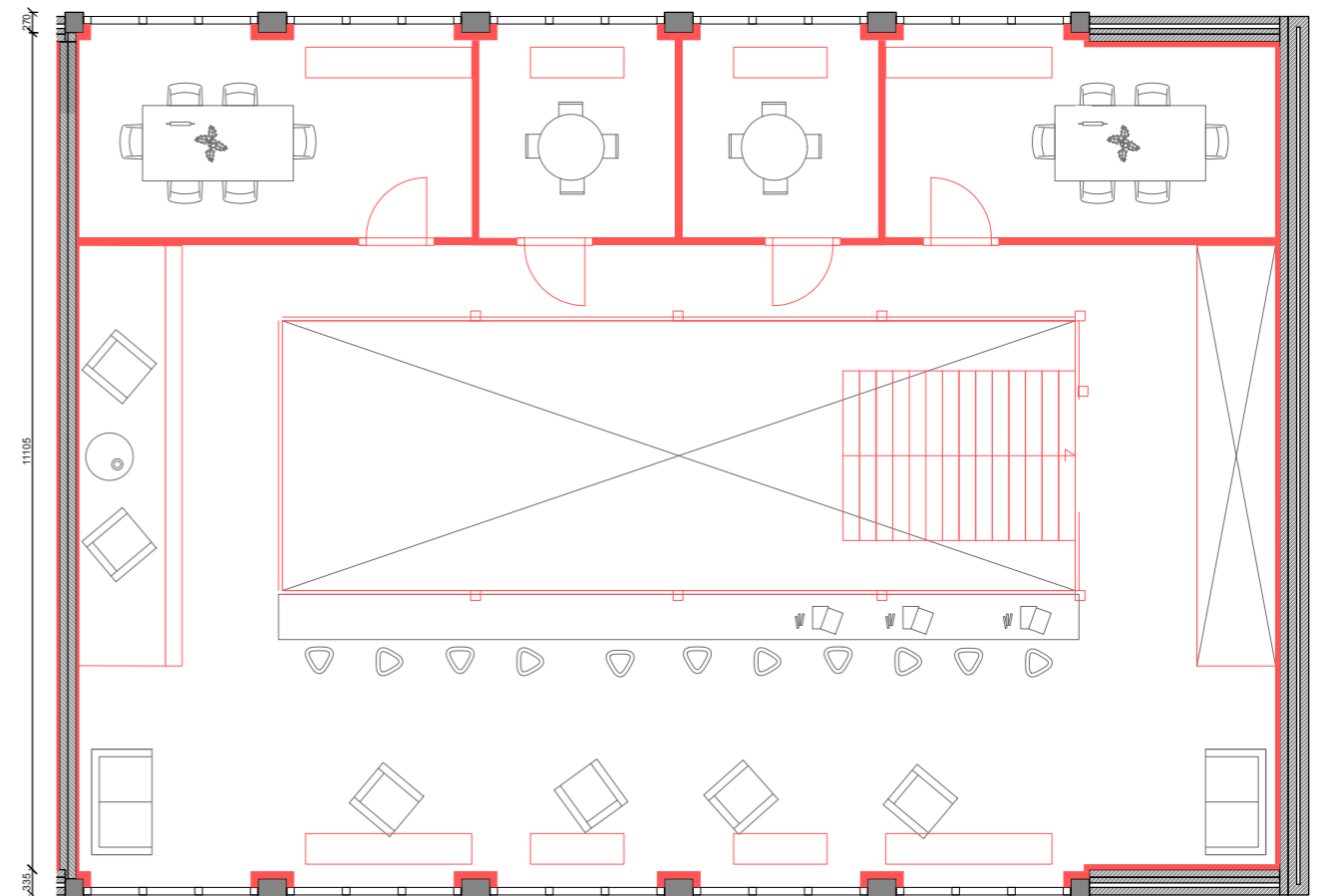
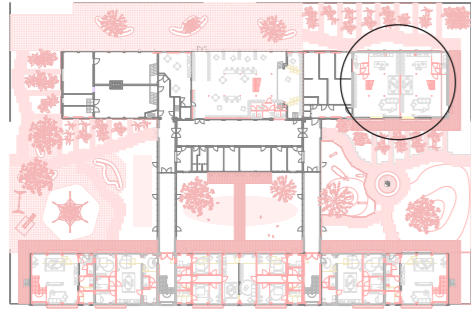
ENTRESOL FAMILY

Type 1



ENTRESOL LIBRARY

Type 2



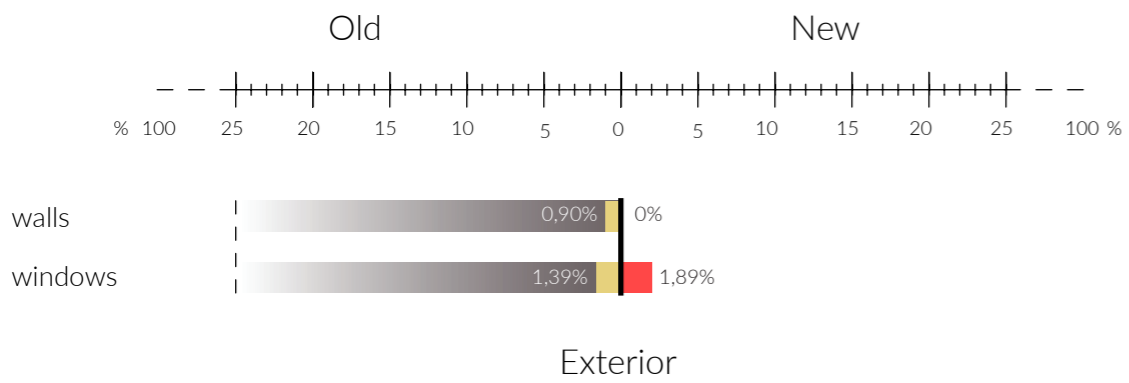
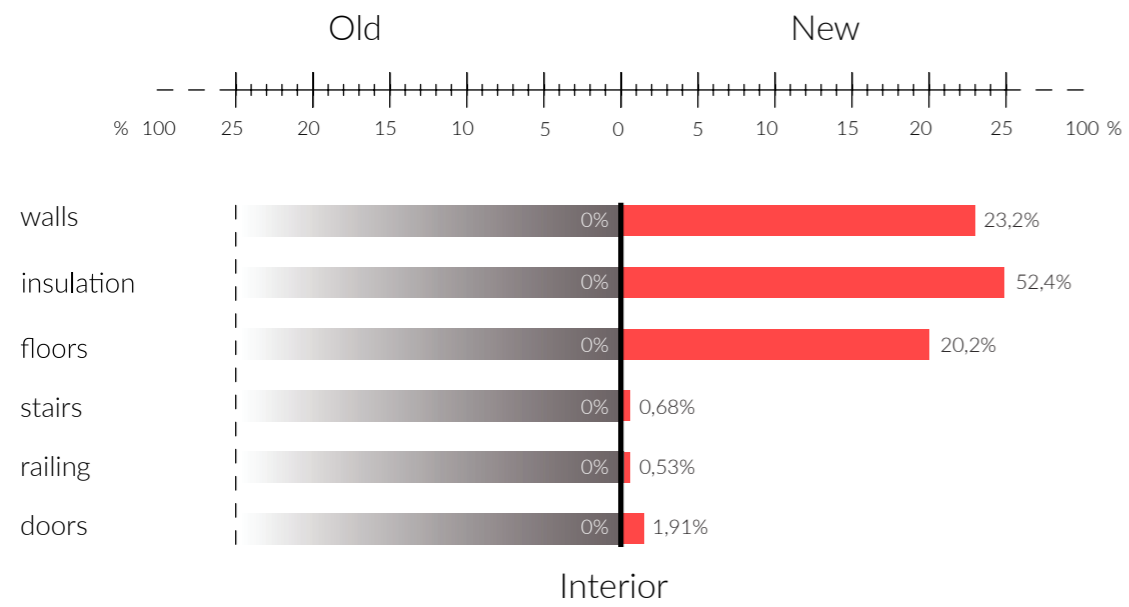
2295 2315 380 2315 380 2315 380 2315 380 2315 245 2525 385

ENTRESOL

Type 1

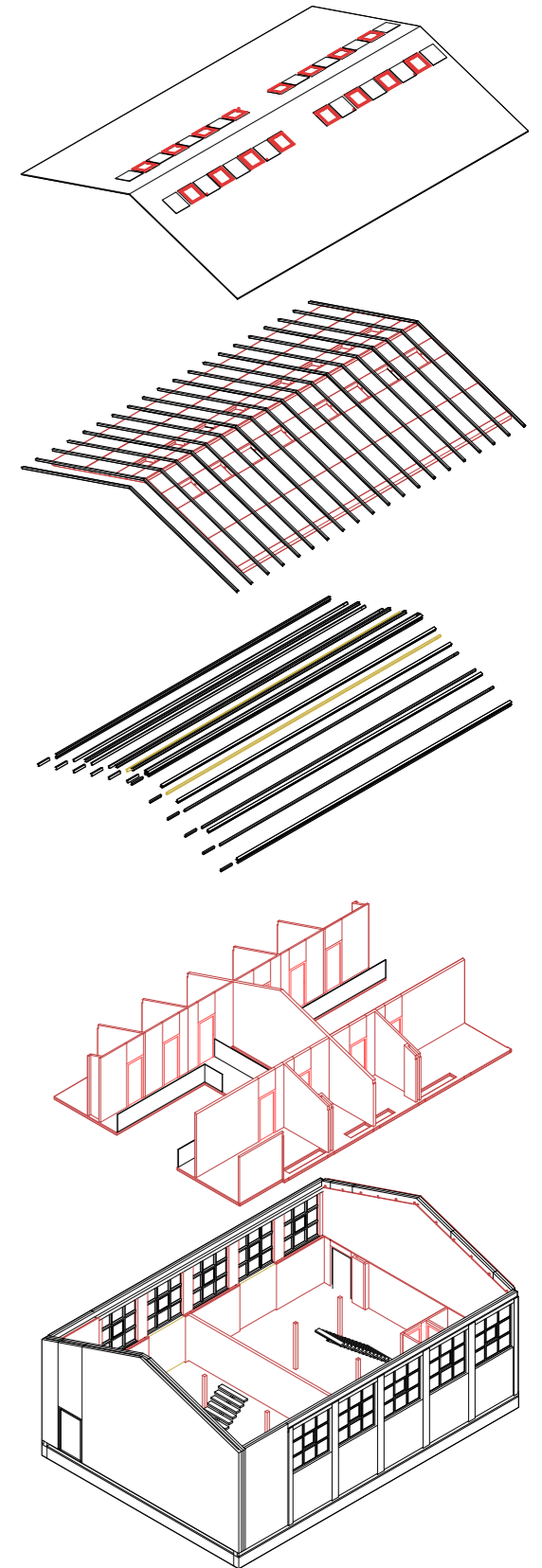
- Kept
- Removed
- Added

Material volume percentages



Livability

	livability	notes
size outdoor space	★ ★ ★	courtyard, outside buffer
added daylight	★ ★ ★ ★ ★	sky lights, extra window
connection with garden	★ ★ ★	extra window facing garden
south facade	★ ★ ★	extra window facing south
semi private/ bufferzones	★ ★ ★ ★ ★	buffer between living, sleep, wet rooms
connection with residents	★ ★	shared garden, no shared corridor
accessibility	★ ★ ★ ★	from garden/corridor

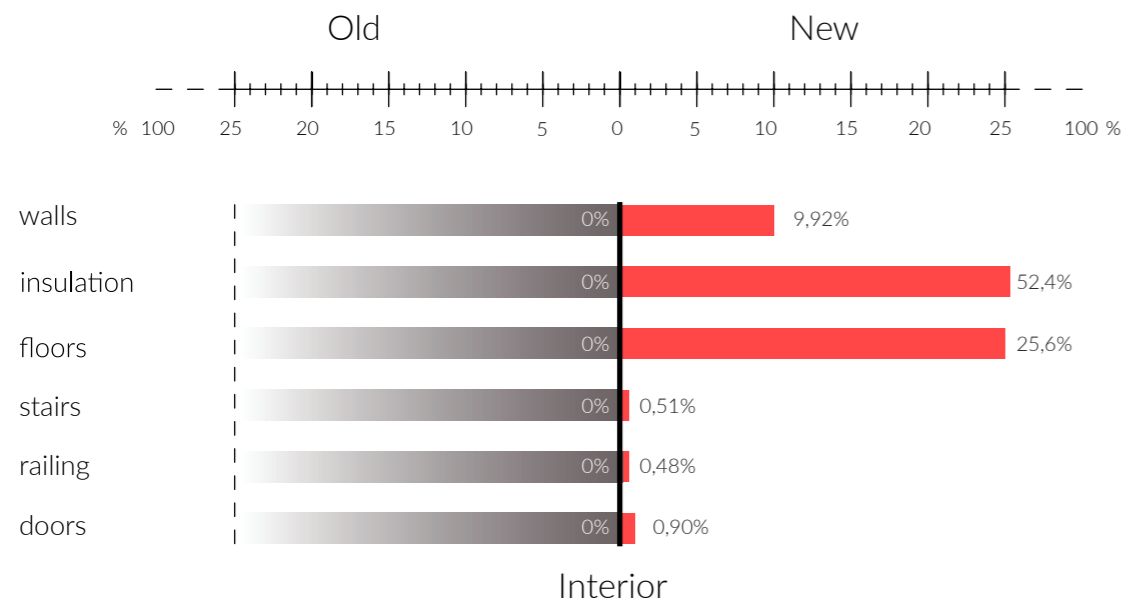


ENTRESOL

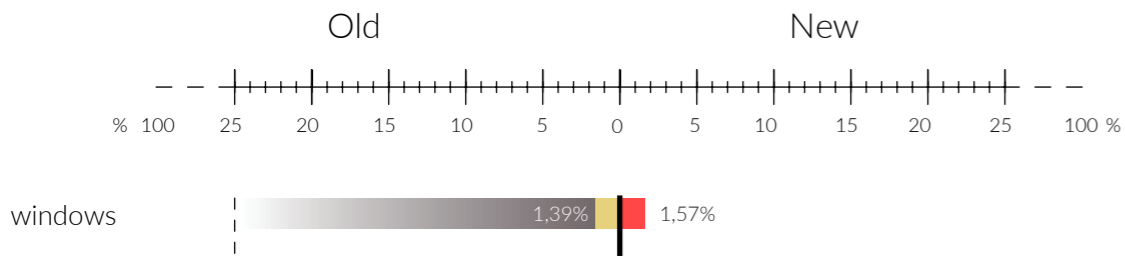
Type 2

- Kept
- Removed
- Added

Material volume percentages



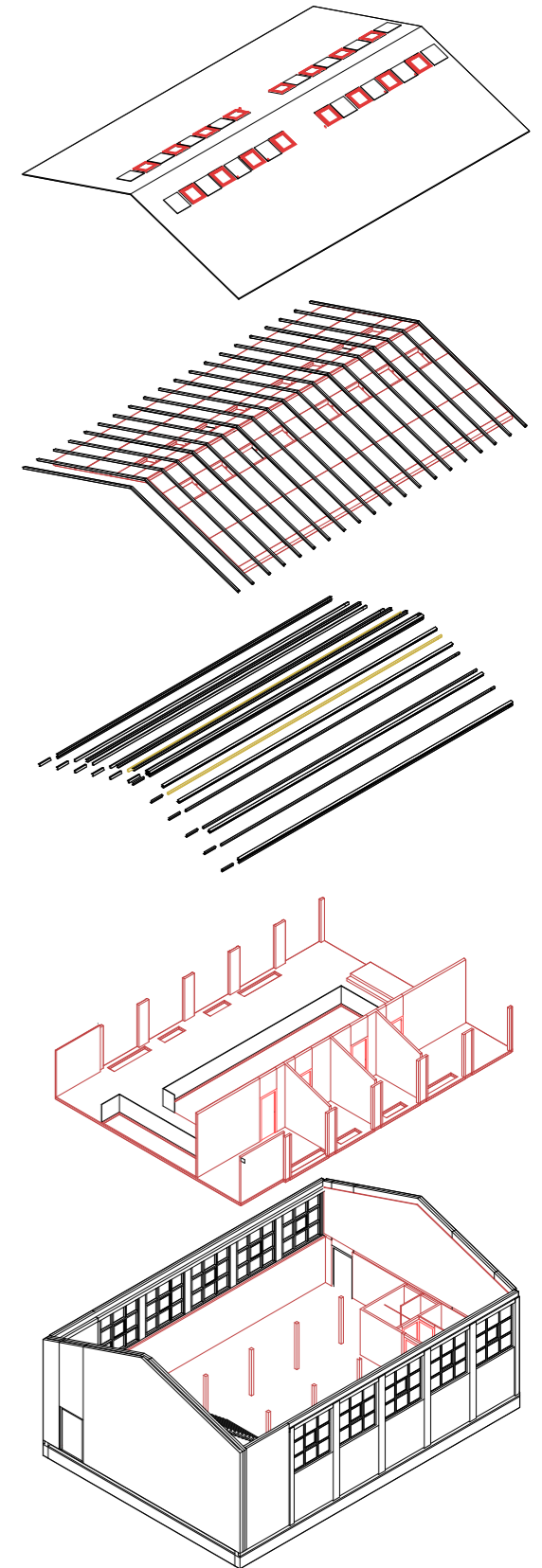
Interior



Exterior

Livability

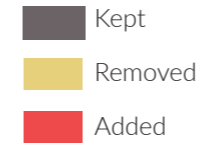
	livability	notes
size outdoor space	★ ★ ★	courtyard, outside buffer
added daylight	★ ★ ★ ★	sky lights
connection with garden	★ ★	only first floor
south facade	★ ★	only 1st floor
semi private/ bufferzones	★ ★ ★ ★	buffer between ground and 1st floor
connection with residents	★ ★ ★ ★ ★	public function
accessibility	★ ★ ★ ★ ★	from garden/corridor



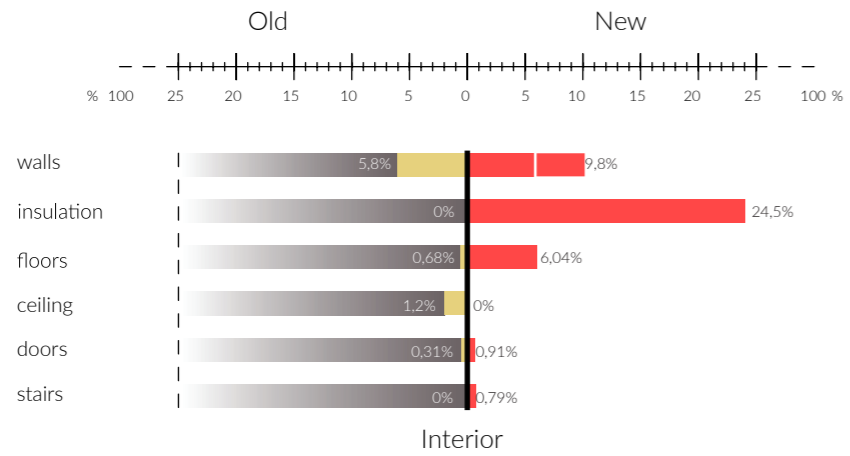
CHOSEN VARIANTS

Volume percentages

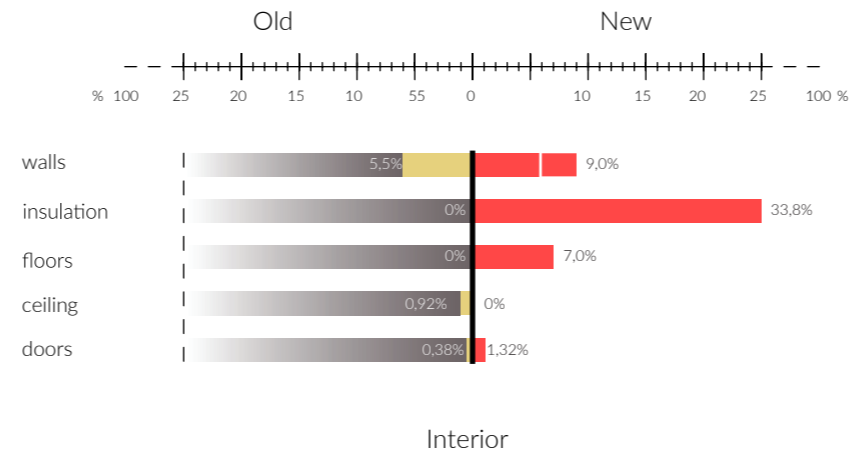
Old and new



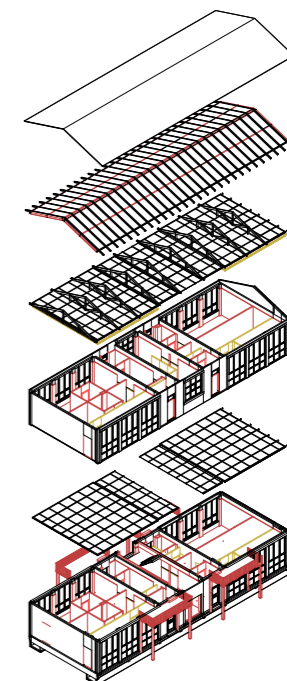
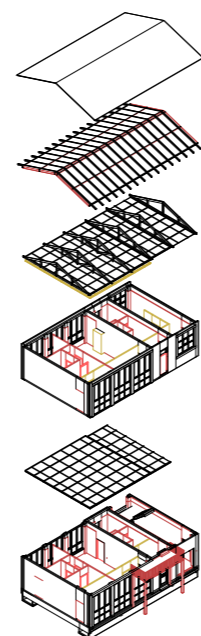
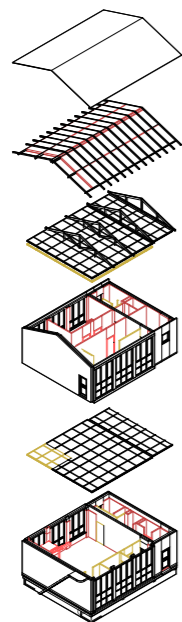
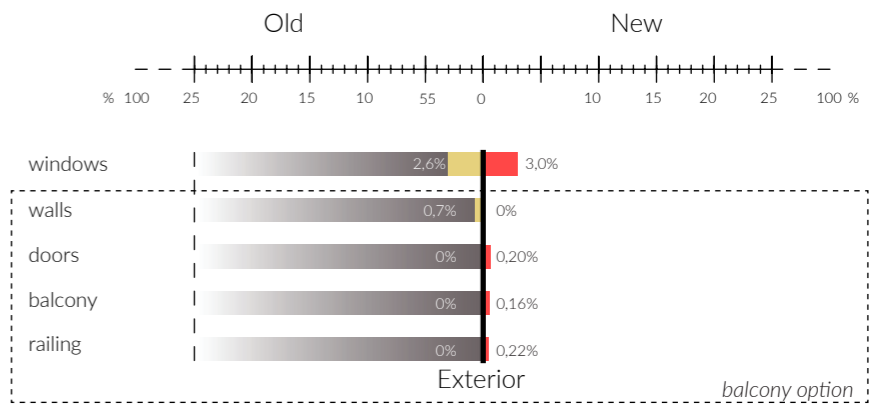
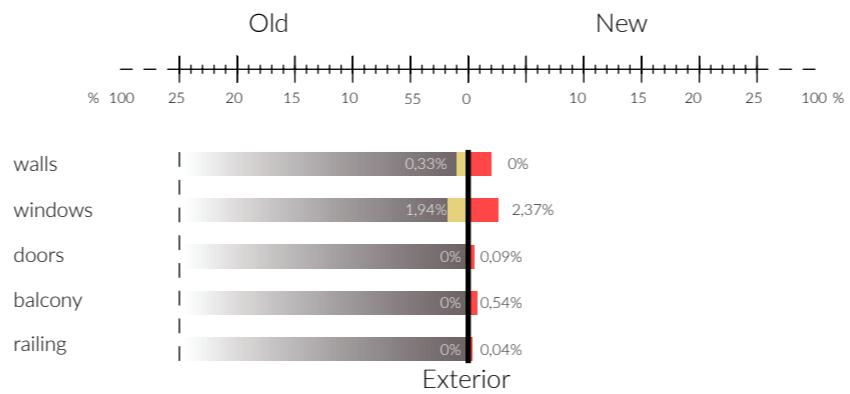
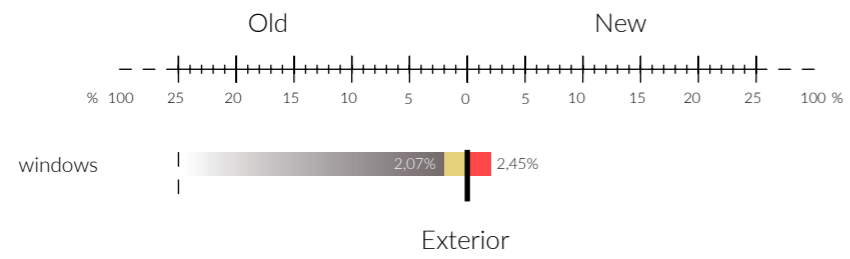
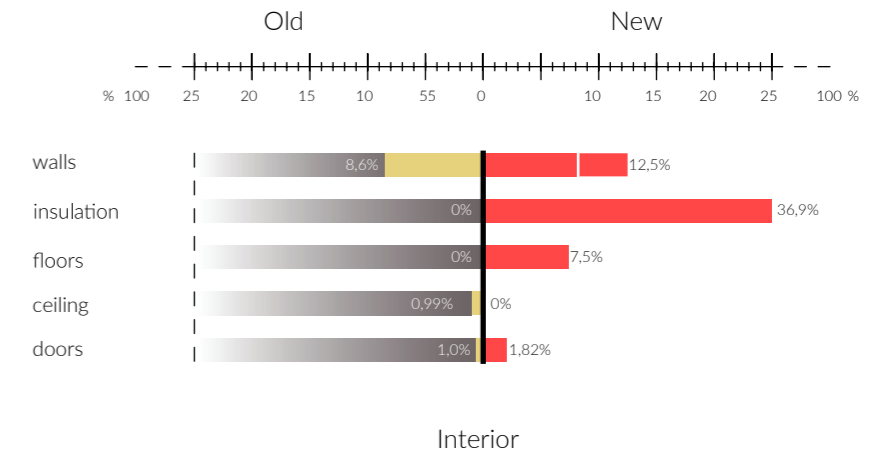
Maisonette type 1



Apartment type 1

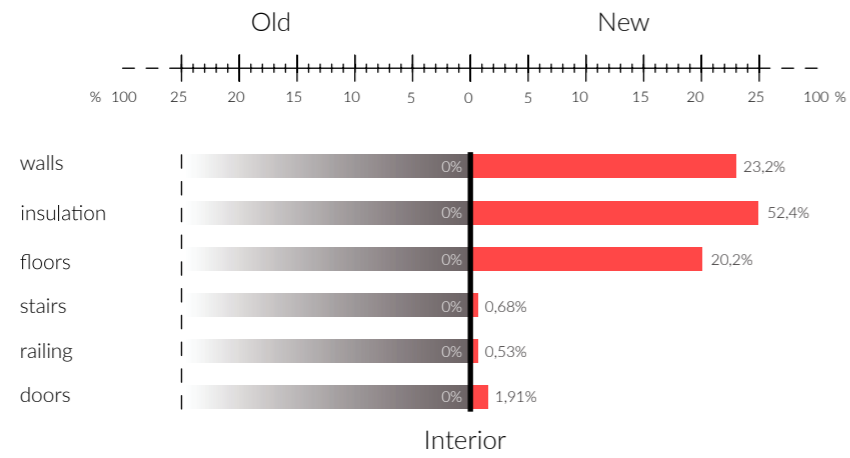


Studio type 3

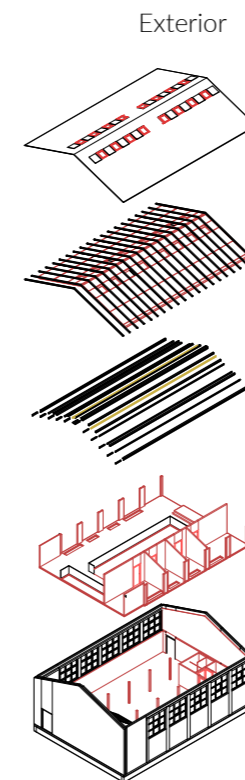
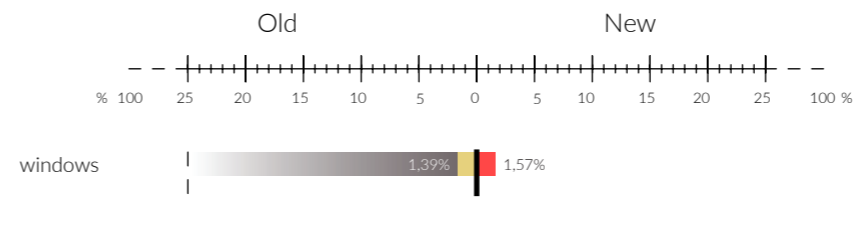
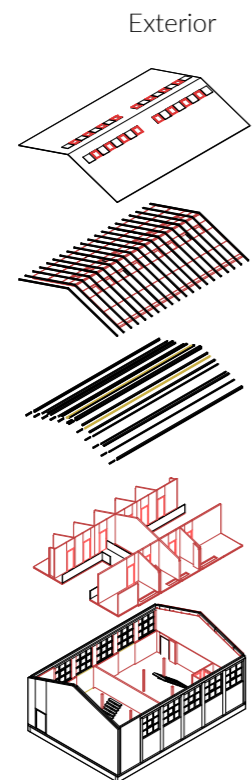
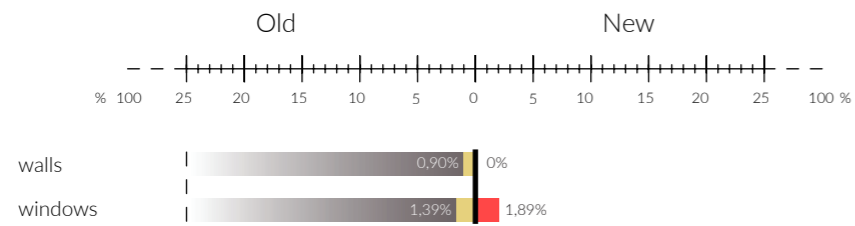
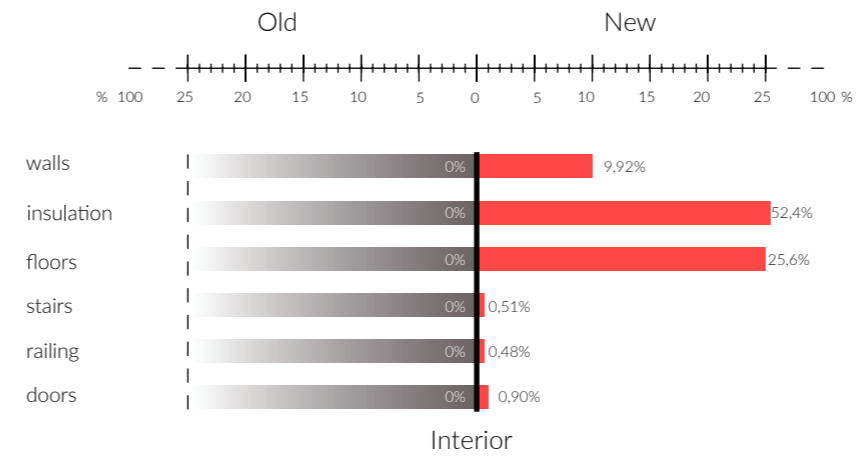


CHOSEN VARIANTS

Entresol type 1



Entresol type 2



CO₂ FOOTPRINT

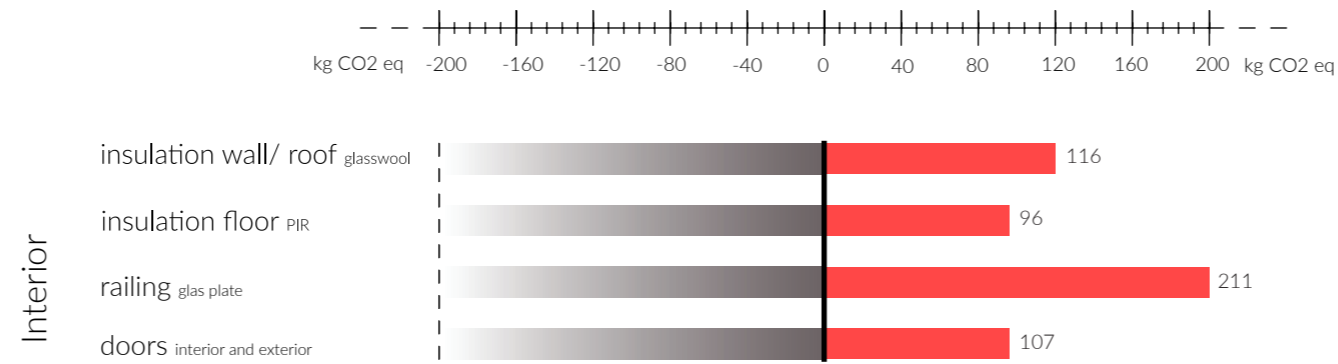
in kg CO₂ eq

Add total building h= m	New or second hand materials				kg CO ₂ eq	
	material = Maisonette + Apartment + Studio + Entresol + Dwelling [m3] =	total [m3]	2nd hand materials	New materials	2nd hand materials	New materials
Walls	solid wall : 11 + 10,86 + 9,3 + 27,2 + 12,1 m3 = 70, 46 m3 timber frame is 34% = 24,0 m3	24 m3		24 m3		-15,936.0 kg CO ₂ eq
Insulation	walls/ acoustic glaswool = 21,38 + 43,42+ 45,6 + 14,58 + 14,18 m3 = floor PIR = 14,4 + 14,56+ 17,9 + 14,1 + 14,1 m3 = Roof glaswool = 32,4 + 42,2 + 41,8 + 35,3 + 35,3 m3 =	139 m3 75 m3 187 m3	139 m3 50 m3 187 m3	25 m3	116 kg CO ₂ eq 96 kg CO ₂ eq ... (same transport as other glasswool)	2,332.5 kg CO ₂ eq
Floors	magnisite (wood fiber) flooring = 16,8 +13,54 + 21,5 + 14,9 + 20,8 m3 = glulam structure = 9,79 + 10,4 m3=	87,54 20,19		87,54 m3 20,19 m3		-14,824.8 kg CO ₂ eq -13,406.2 kg CO ₂ eq
Stairs	construction timber = 2,2 + 0,83 + 0,62 m3 =	3,65 m3		3,65 m3		-2,482.0 kg CO ₂ eq
Railing	railing glas = 0,65 + 0,59 m3 =	1,24 m3	0,43 m3	0,81 m3	211 kg CO ₂ eq	3,709.8 kg CO ₂ eq
Doors	wood = 1,68 + 2,88 + 2,35 + 2,33 + 1,1 m3=	10,34 m3	10,34 m3		107 kg CO ₂ eq	
Exterior						
Windows	tripple glazing = 1,06 + 1,32 + 1,32 + 0,6 + 0,22 m3	4,52 m3		4,52 m3		21,522.9 kg CO ₂ eq
Doors	wood = 0,28 + 0,56 m3 = 0,84 m3	0,84 m3	0,84 m3		... (same transport as other doors)	
Balcony	glulam structure = 1,65 + 3,30 m3 =	4,95 m3		4,95 m3		-3,286.8 kg CO ₂ eq
Total		605 m3				

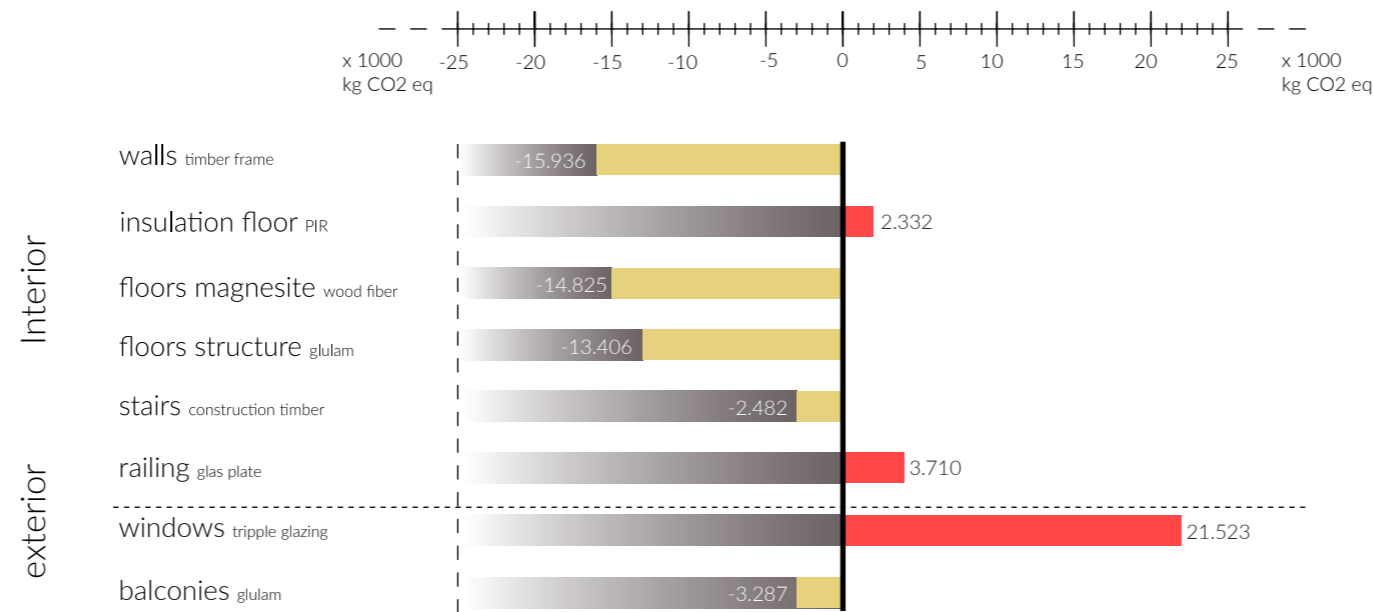
CO₂ FOOTPRINT

in kg CO₂ eq

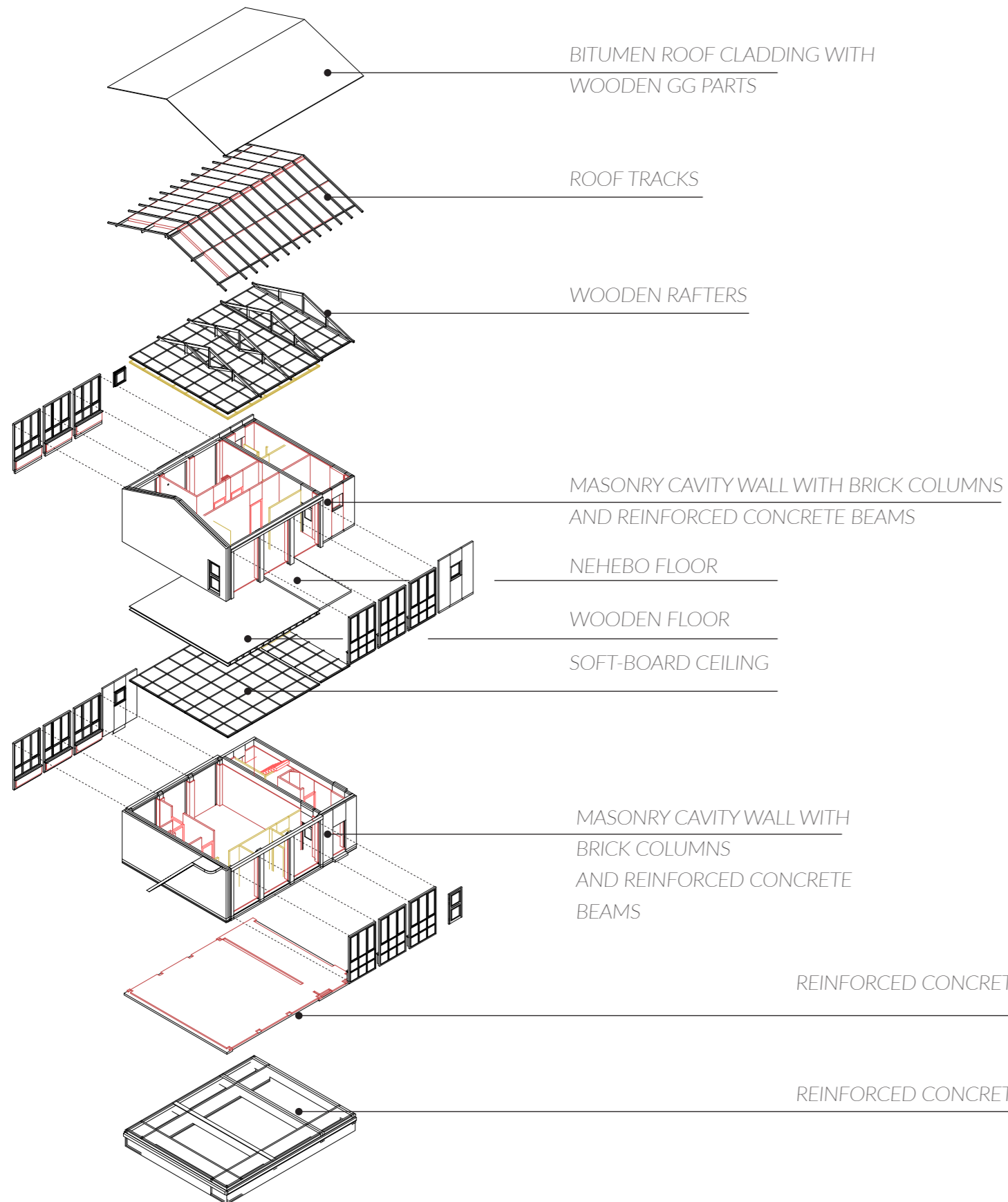
second hand materials



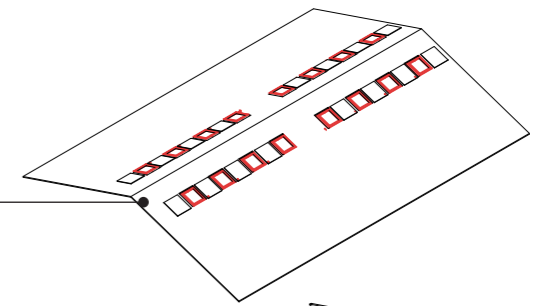
new materials



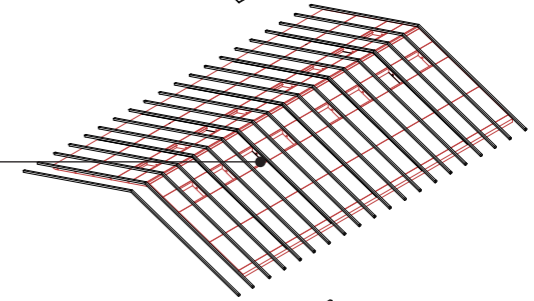
STRUCTURE SOUTH AND NORTH



BITUMEN ROOF CLADDING WITH WOODEN GG PARTS



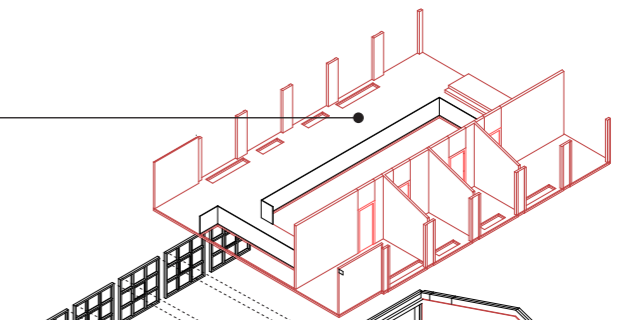
WOODEN ROOF TRACKS



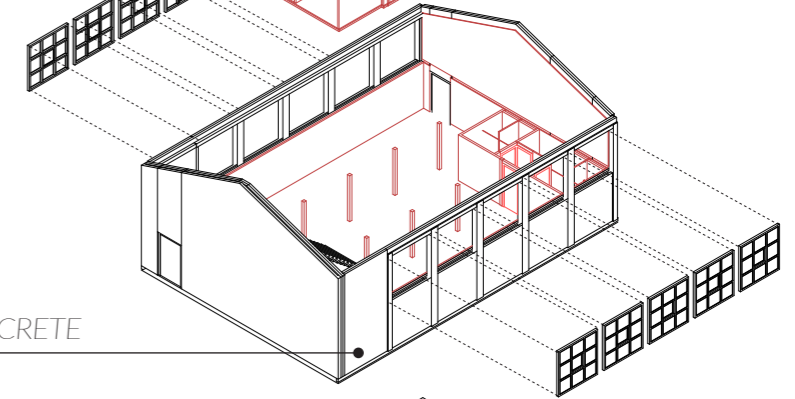
WOOD AND STEEL BEAMS



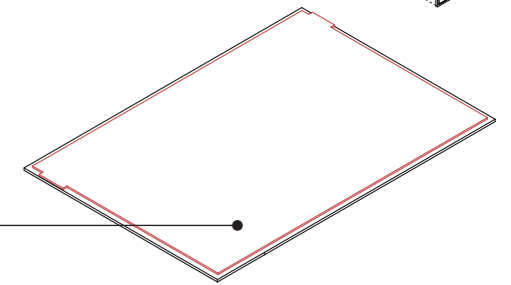
NEW WOODEN FIRST FLOOR



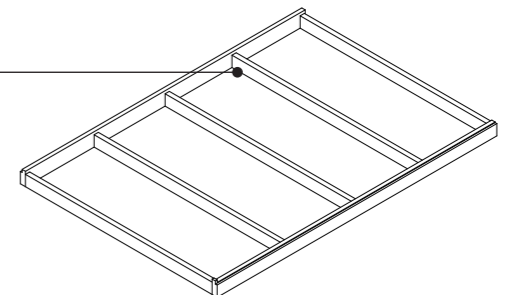
MASONRY CAVITY WALL WITH CONCRETE COLUMNS AND REINFORCED CONCRETE BEAMS



REINFORCED CONCRETE GROUND FLOOR

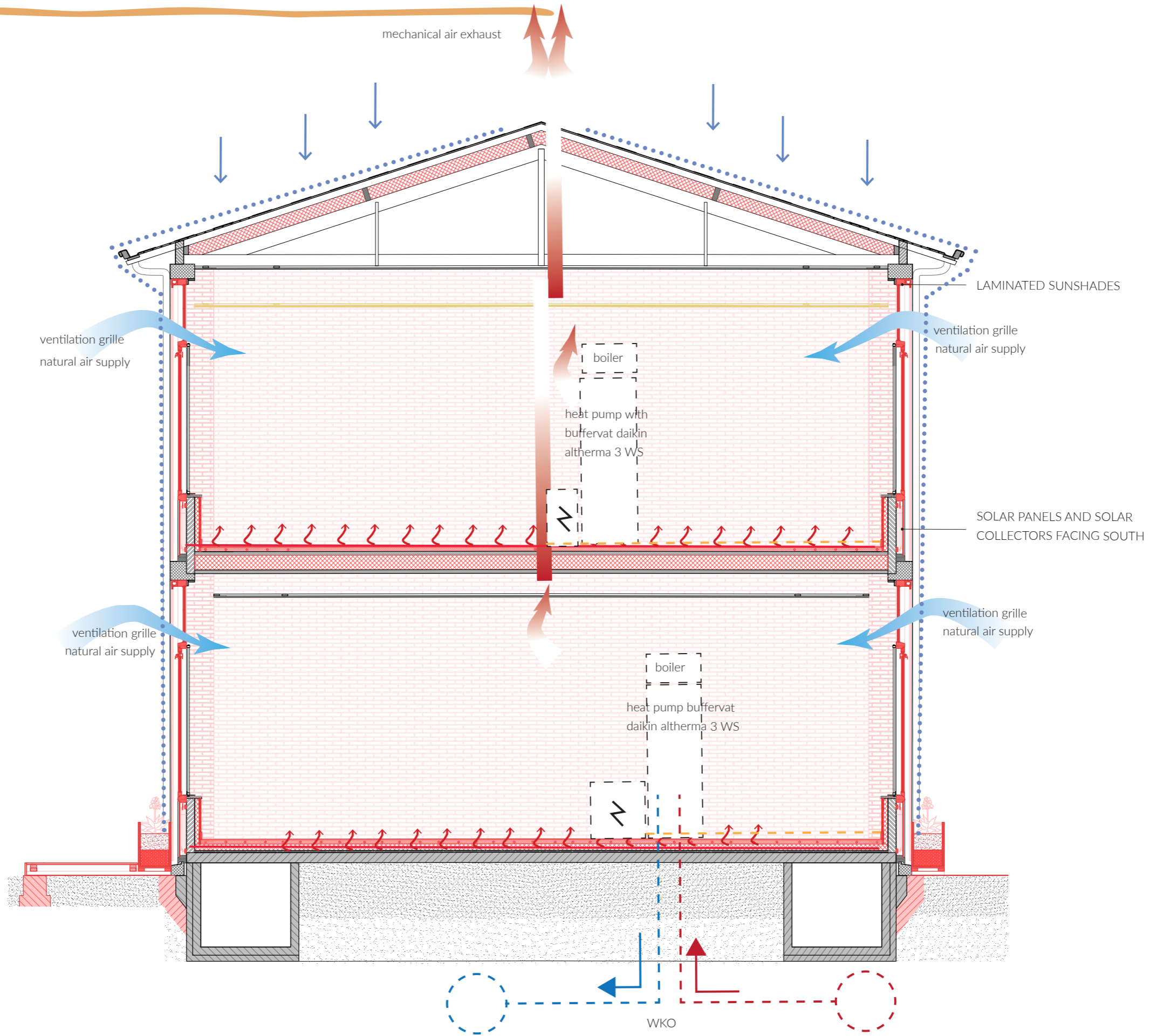


REINFORCED CONCRETE FOUNDATION



CLIMATE SECTION

1:50



MATERIALS BUILDING



railing staircases |
red steel and wood handles



reuse : red color for balcony railing
and wood texture for interior
detailing and balcony structure



interior walls |
wood panels



reuse : current classroom walls for interior walls
dwellings



interior walls |
panel joint



reuse : current classroom walls for interior walls
dwellings



interior walls |
movable wall panels



reuse : current classroom walls for interior walls
dwellings



interior original walls |
white painted brick work



reuse : brick look with stone strips



plot fencing |
steel painted green



reuse : fencing that is removed on
site for railing balconies -> change
color to red to match with facade
and indoor railing



outdoor pavement |
gray/green with vegetation growing



keep outdoor pavement at parts
reuse: change pavement pattern for
paths in courtyard



exterior walls |
red brick work



keep: exterior wall look by insulating
inside



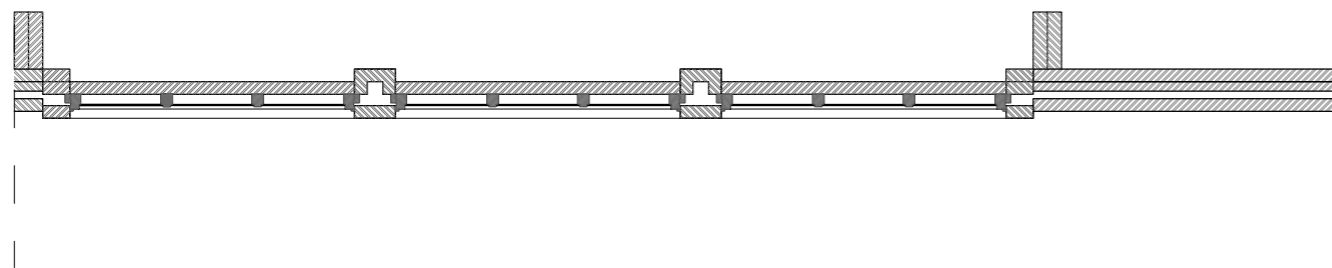
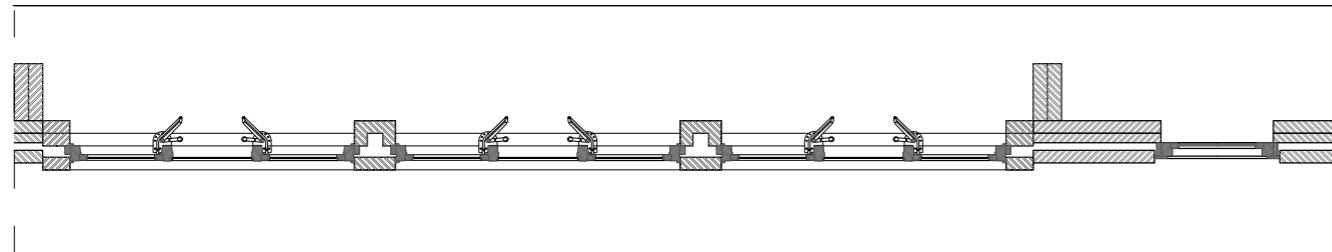
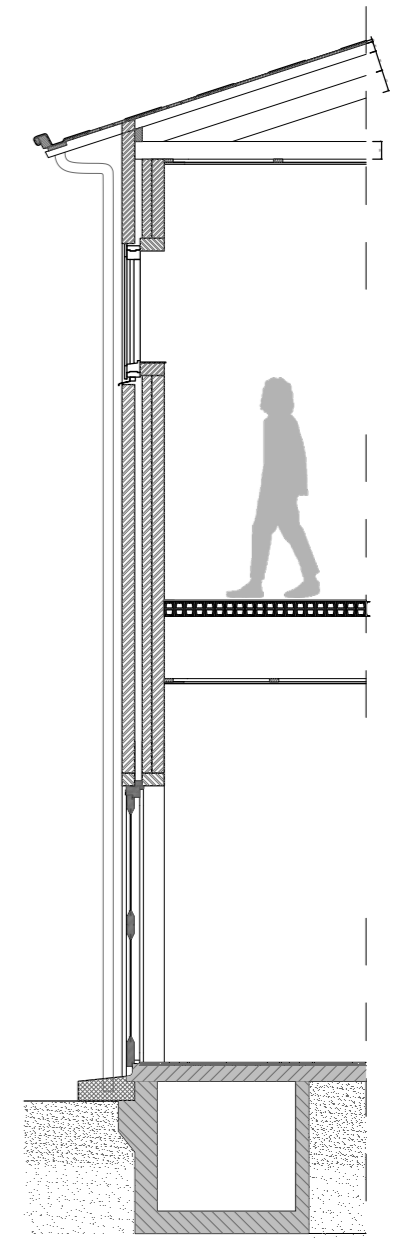
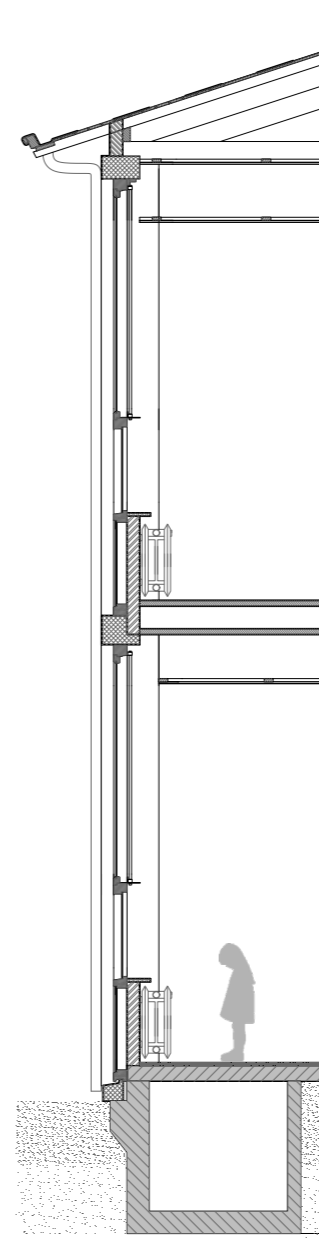
exterior multiplex facade panels |
blue color



change panels with solar panels (blue
color)
reuse the blue color to keep the
original look



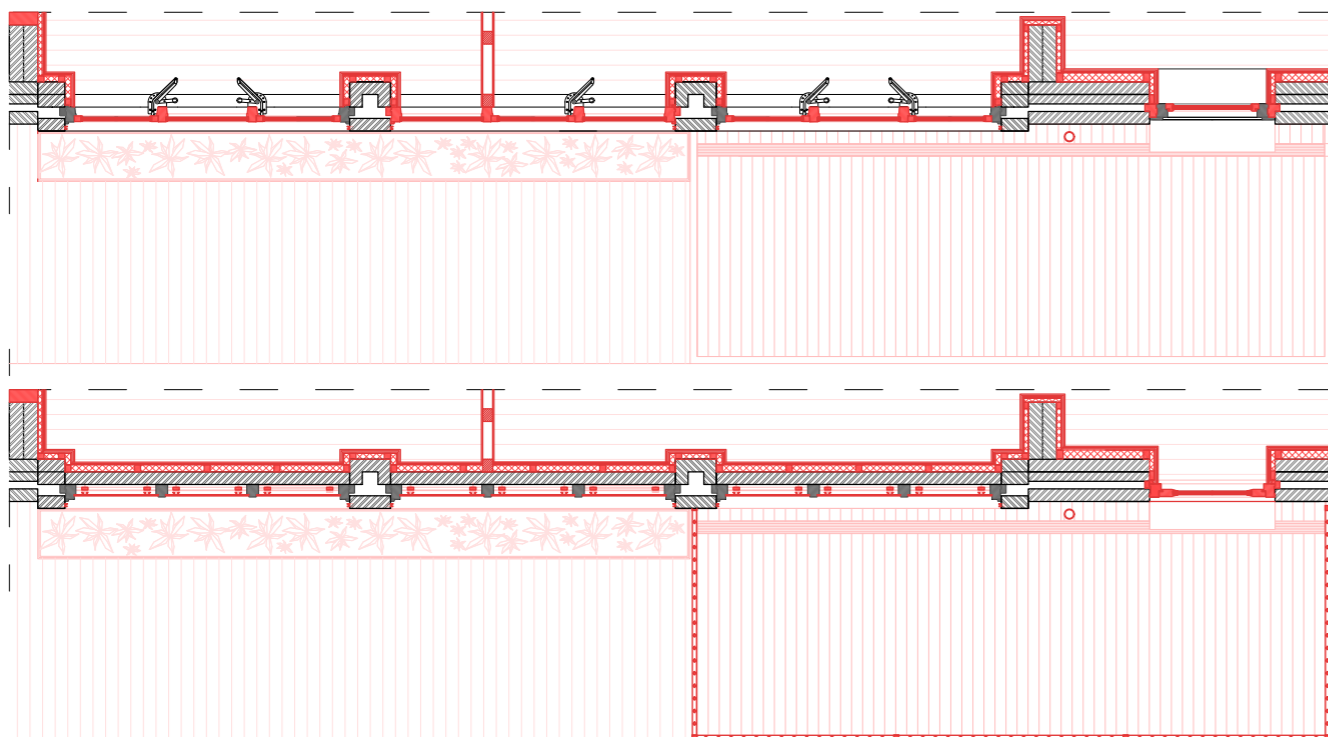
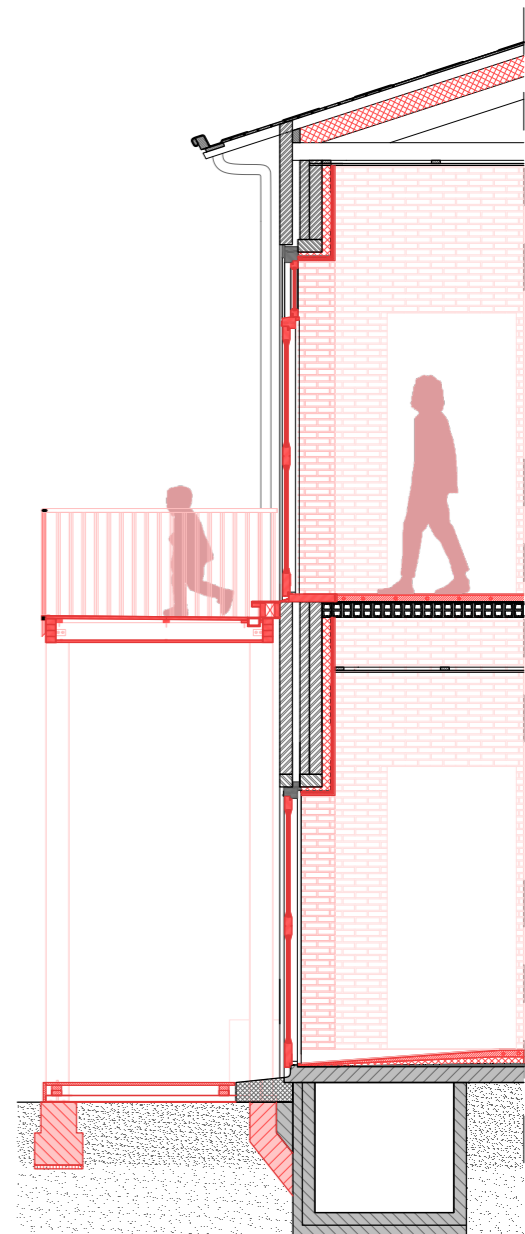
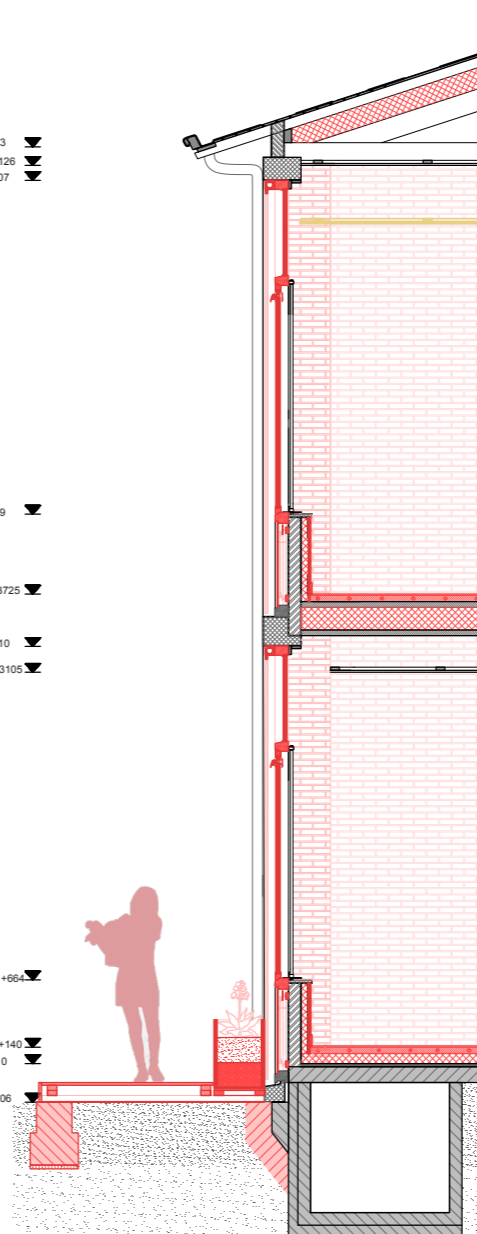
- ridge = +8940 ▼
- gutter = 7273 ▼
- bottom ceiling 1st floor = 7126 ▼
- top window = 7007 ▼
- +4359 ▼
- top first floor = 3690 ▼
- top window = 3310 ▼
- bottom ceiling ground floor = 3005 ▼
- +664 ▼
- Pell = 0 ▼
- ground -306 ▼



SOUTHBLOCK
FACADE 1:20 OLD



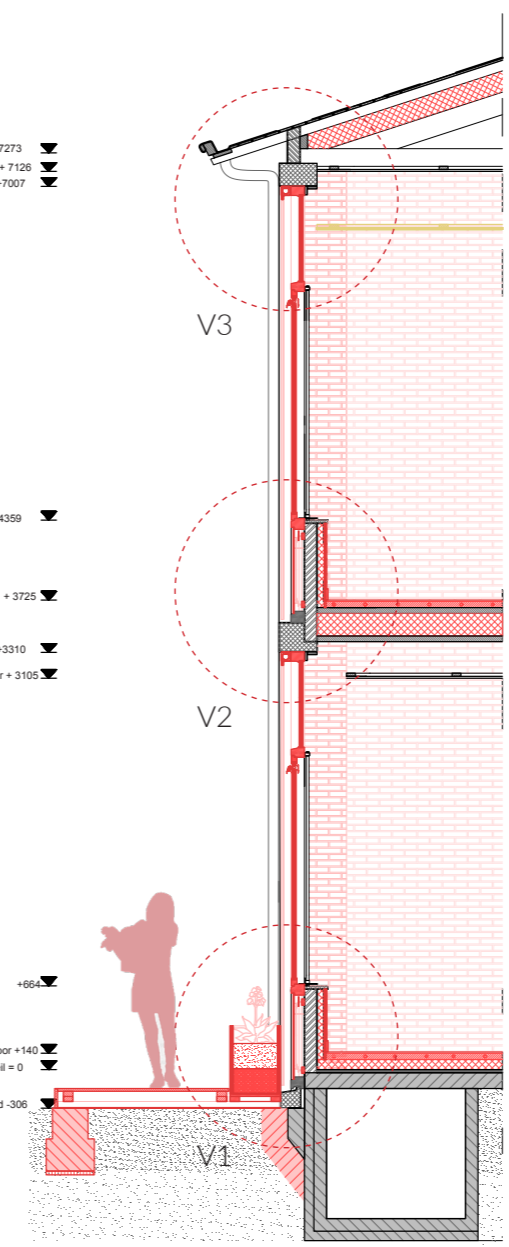
ridge = +8940
 gutter = 7273
 bottom ceiling 1st floor = 7126
 top window = 7007
 +4359
 top first floor = 3725
 top window = 3310
 bottom ceiling ground floor = 3105
 +604
 top ground floor = 140
 Peil = 0
 ground = -306



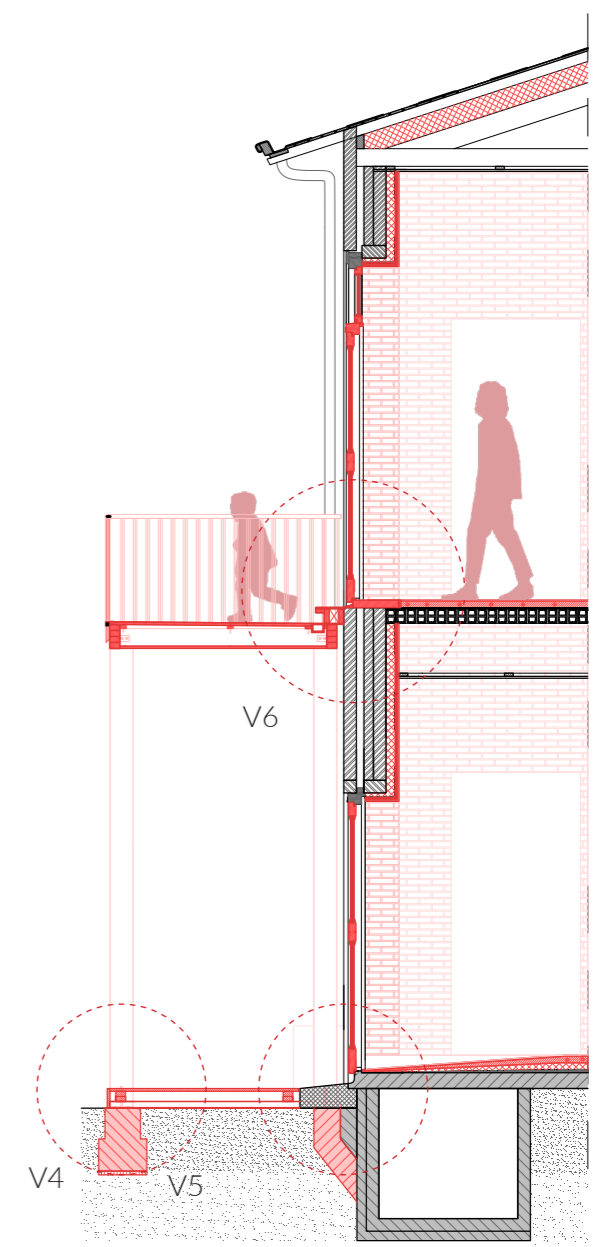
SOUTHBLOCK
 FACADE 1:20 NEW



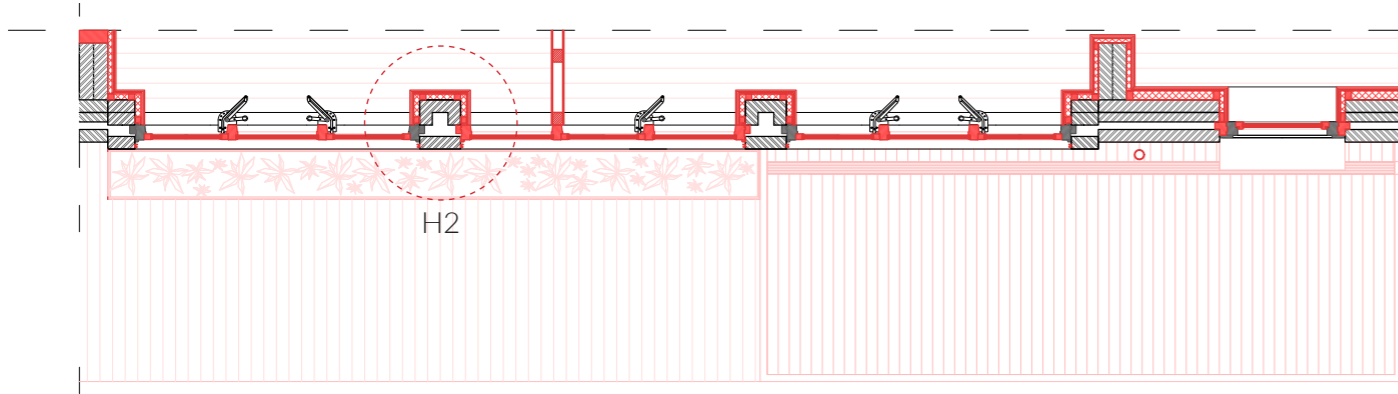
ridge = +8940
 gutter = 7273
 bottom ceiling 1st floor = 7126
 top window = 7007
 +4359
 top first floor = 3725
 top window = 3310
 bottom ceiling ground floor = 3105
 +604
 top ground floor = 140
 Peil = 0
 ground = -306



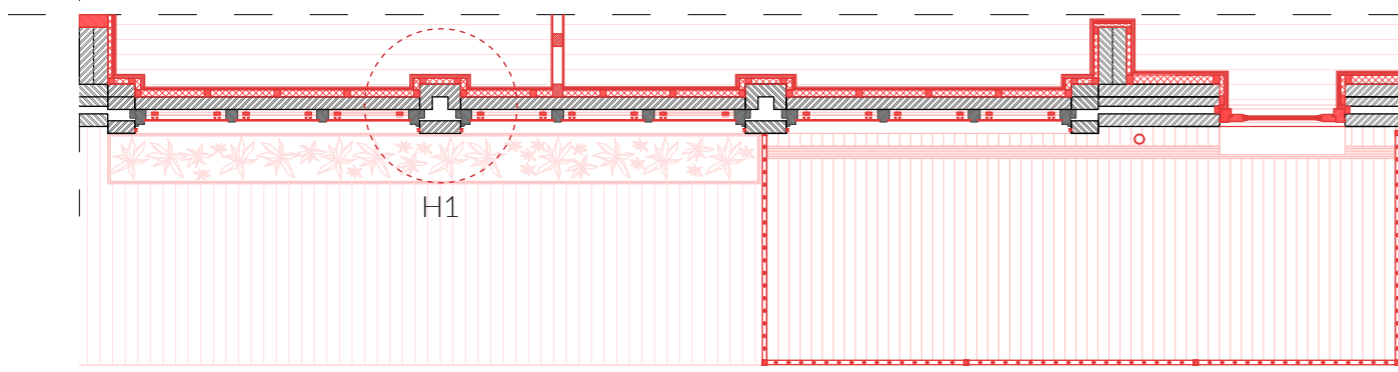
SECTION A



SECTION B



SECTION C



SECTION D



SOUTHBLOCK

FACADE 1:20 NEW



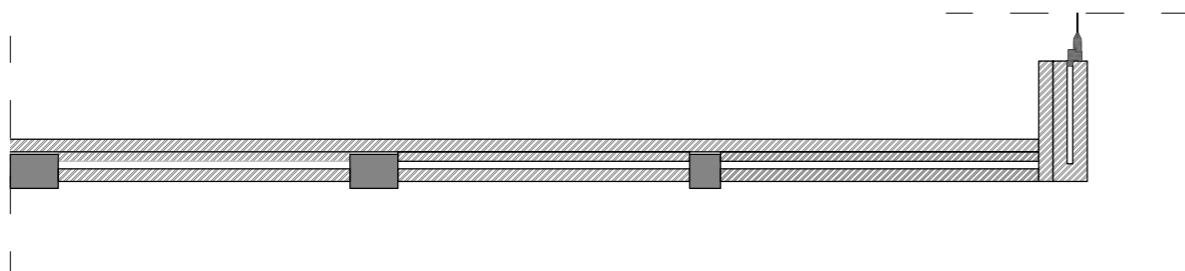
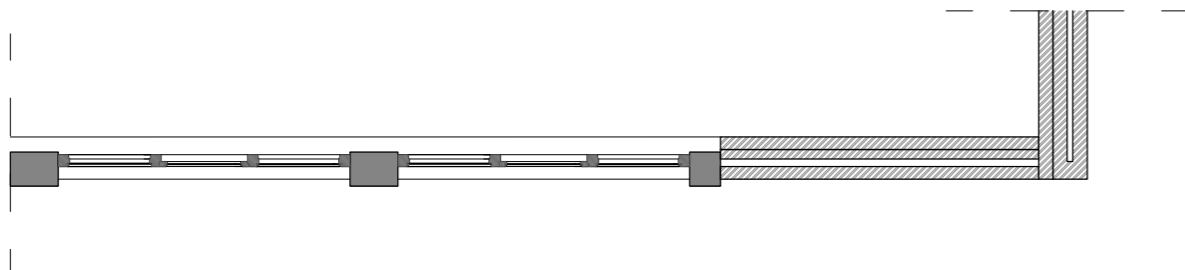
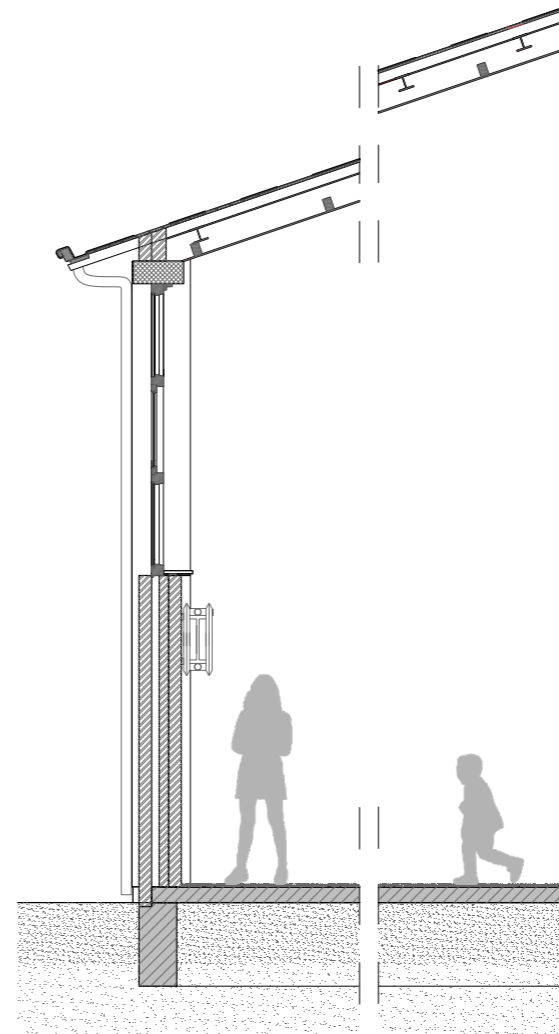
ridge = +7131

gutter + 5046

top window +4760

bottom window + 2430

Peil = 0
ground -150



NORTHBLOCK
FACADE 1:20 OLD



ridge = +7131

gutter = 5046

top window +4760

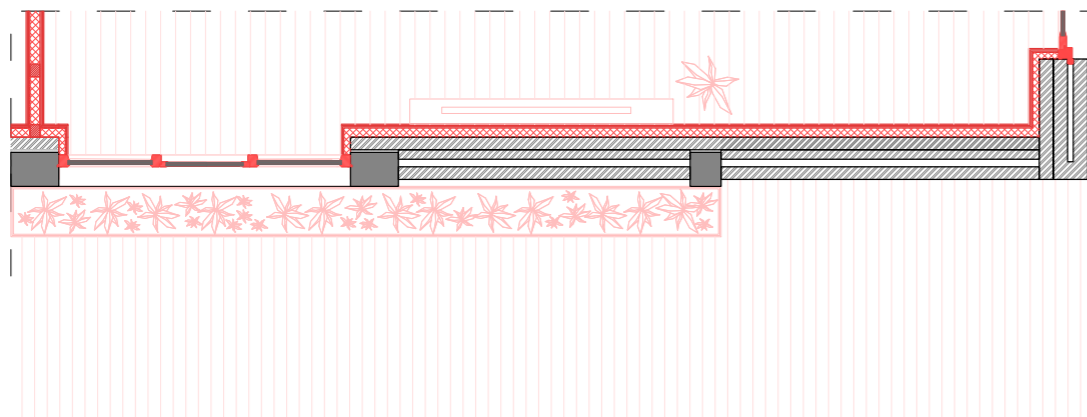
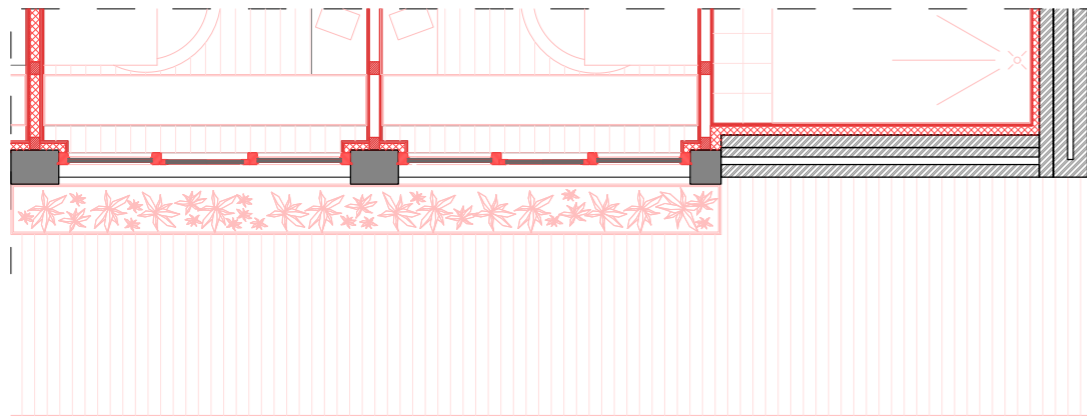
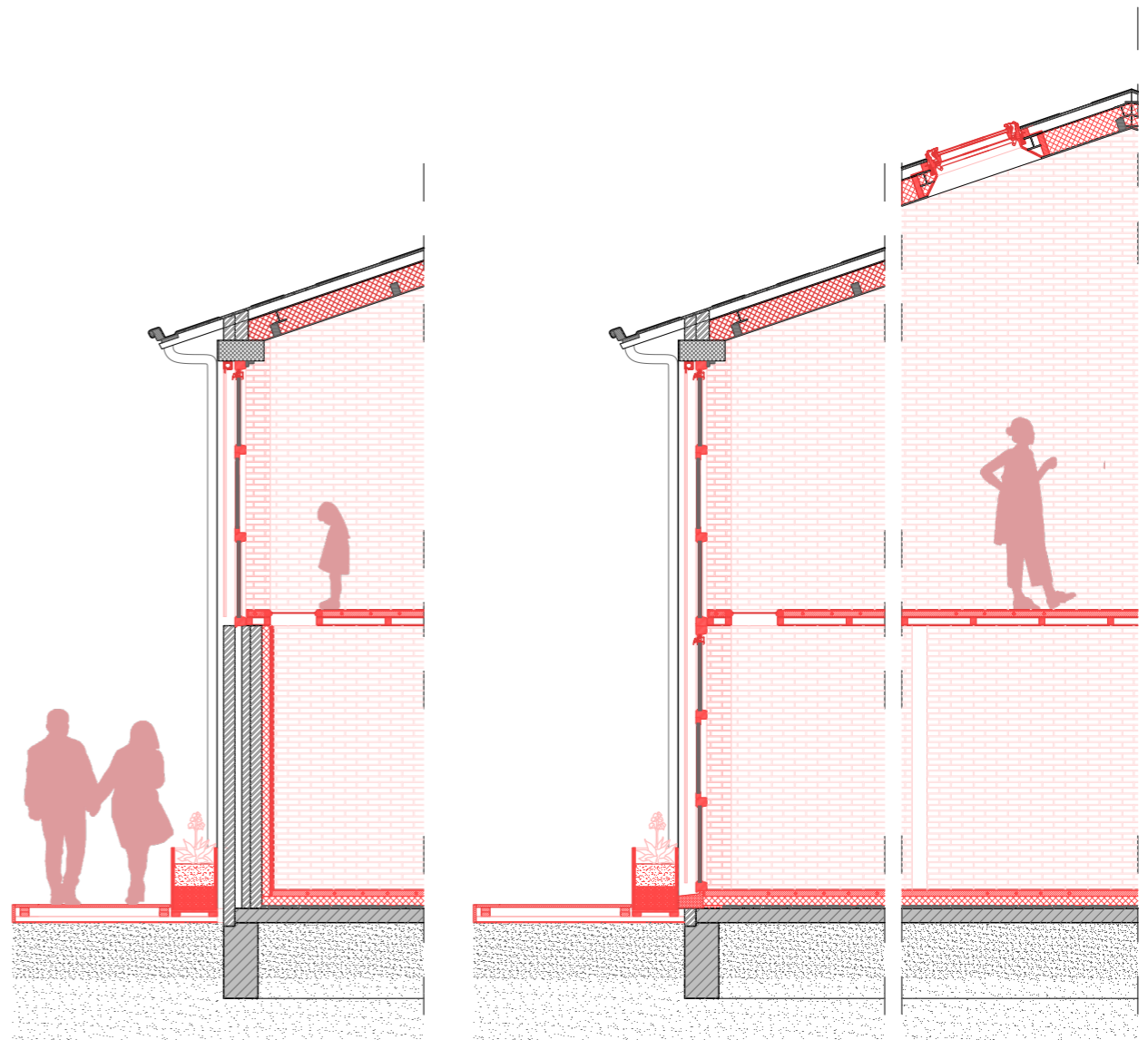
bottom window + 2585

bottom window + 2430

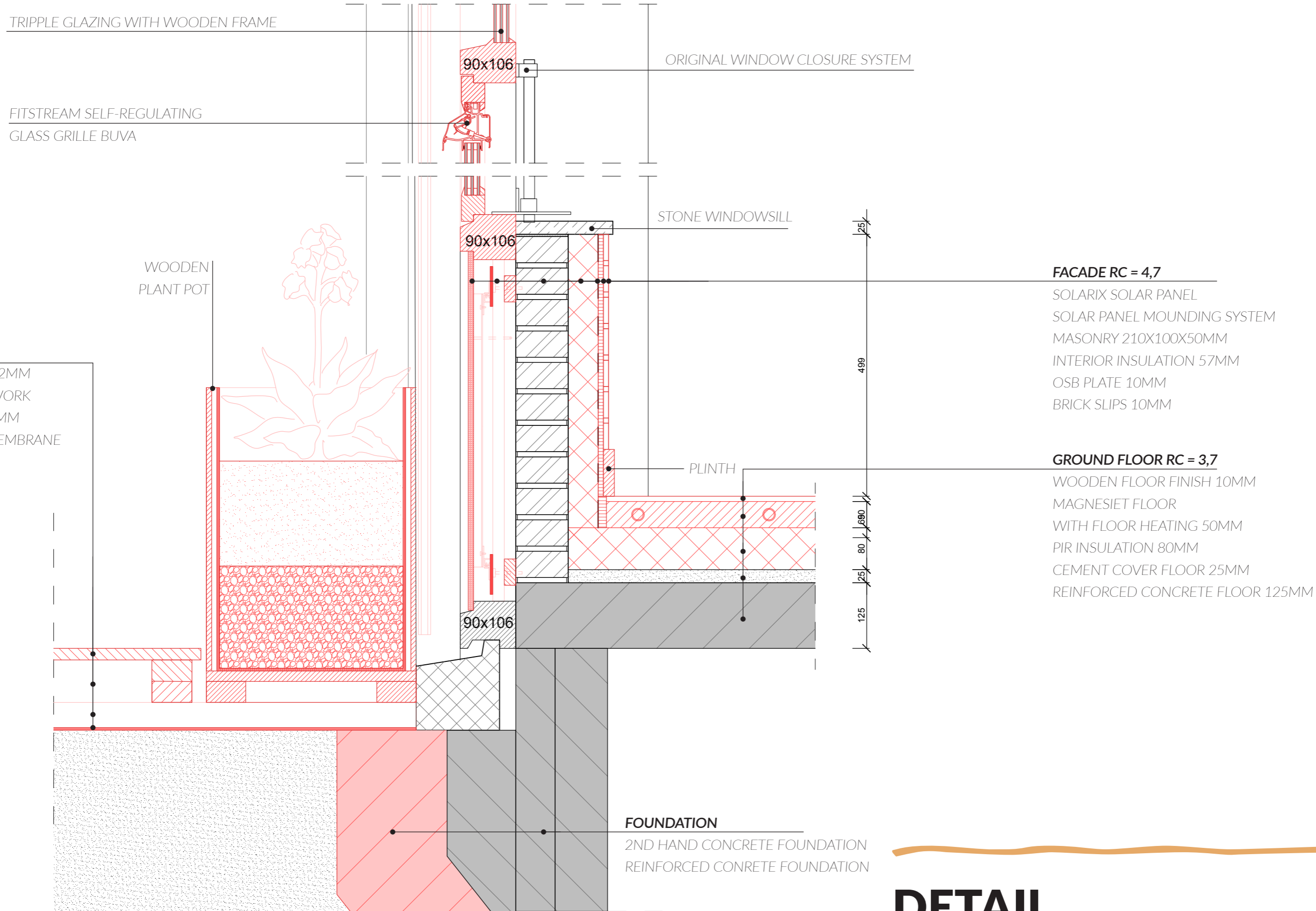
top ground floor +140

Pell = 0

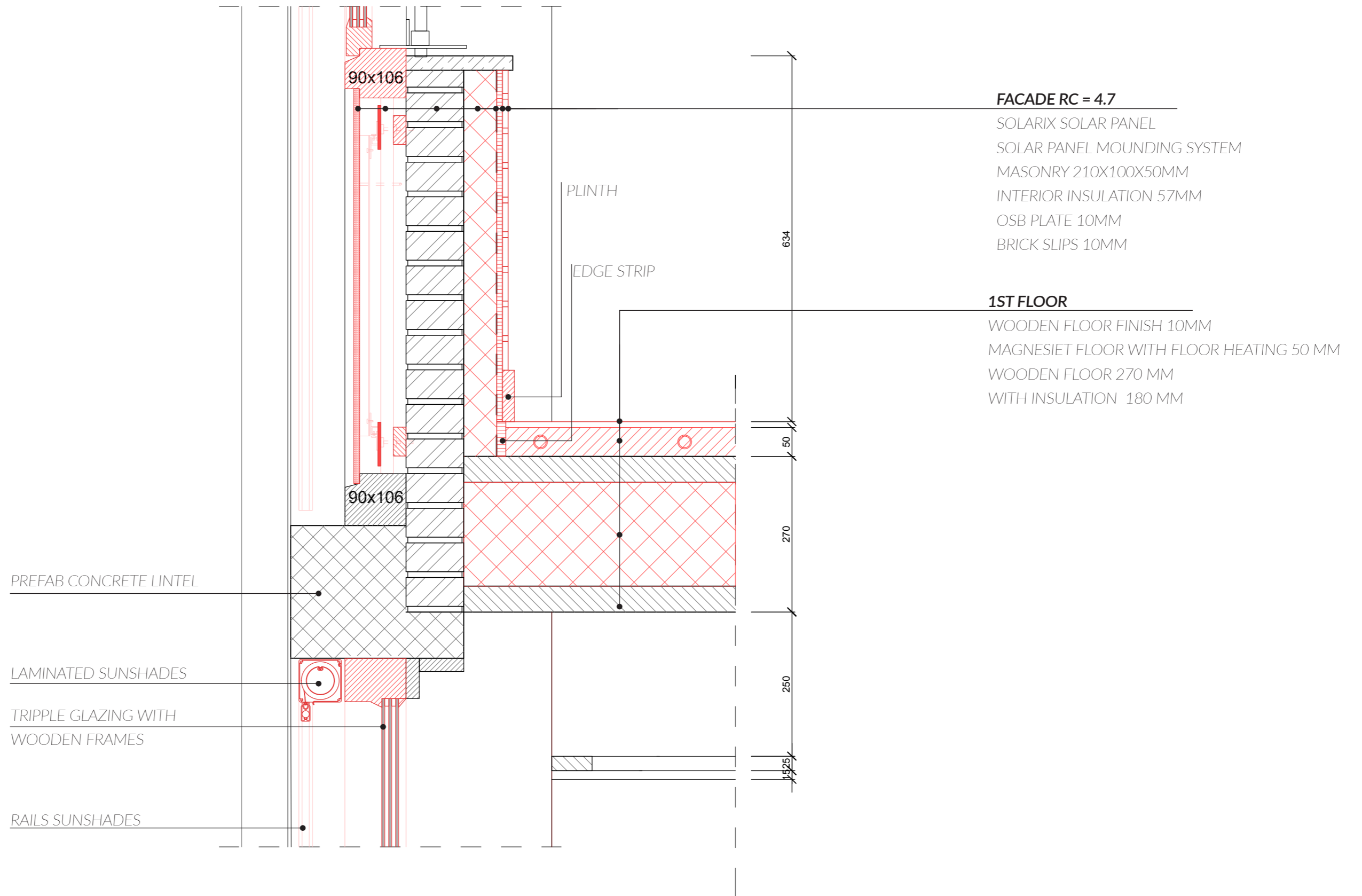
ground -150



NORTHBLOCK
FACADE 1:20 NEW



DETAIL
V1



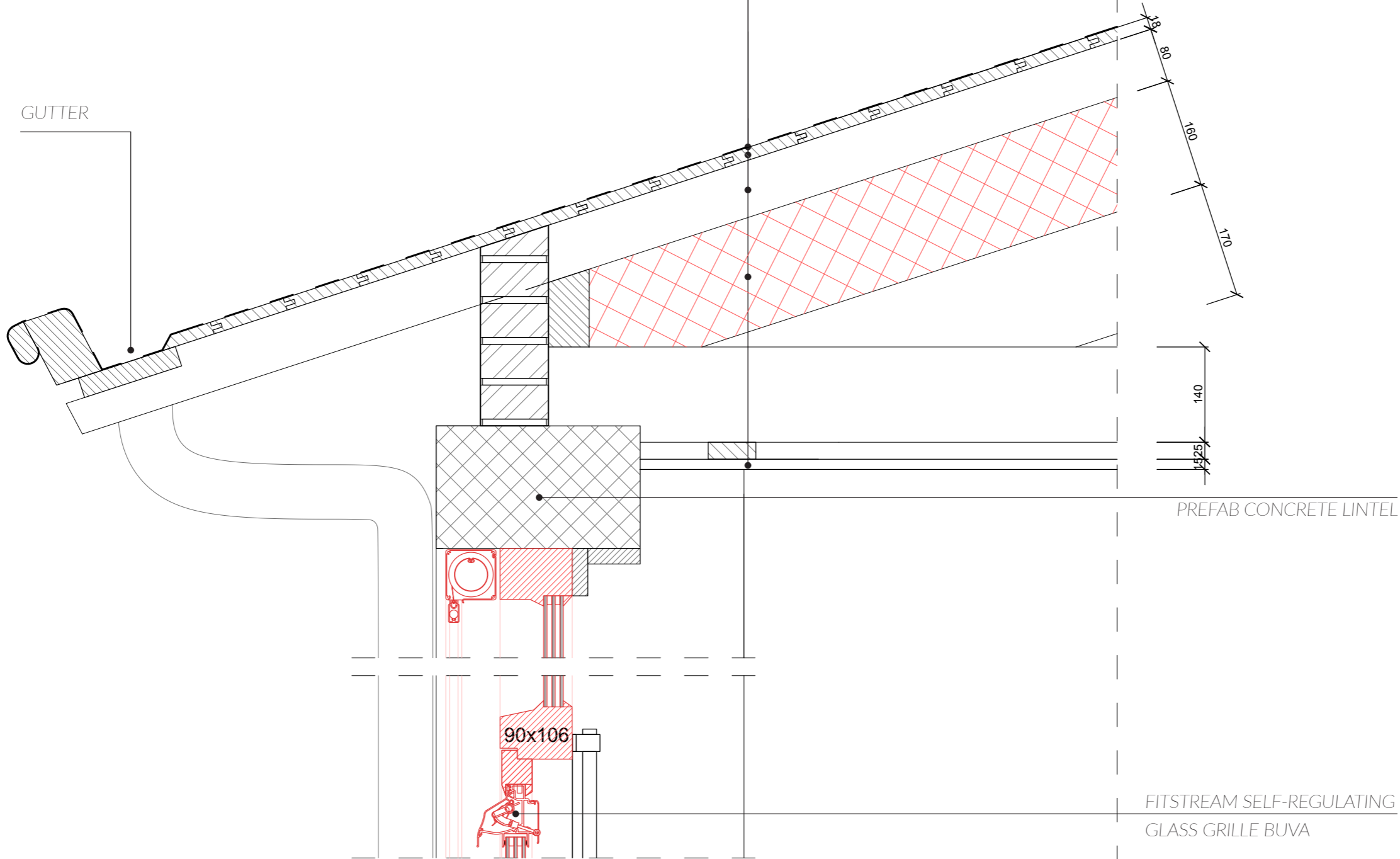
DETAIL

V2

ROOF RC = 6.3 M2 K/W

- BITUMEN ROOF CLADDING
- WOODEN GG PARTS 18MM
- WOODEN ROOF STRUCTURE
- INSULATION 160MM
- SOFT-BOARD CEILING 15MM

GUTTER



PREFAB CONCRETE LINTEL

FITSTREAM SELF-REGULATING
GLASS GRILLE BUVA

90x106

DETAIL

V3

FACADE RC = 4,7

MASONRY 210X100X50 MM
AIR CAVITY 60 MM
MASONRY 210X74X50 MM
MASONRY 210 X100X50 MM
INTERIOR INSULATION 73 MM
VAPOR RESISTANT LAYER
WOODEN FRAMEWORK
10MM
OSB PLATE 10MM
BRICK SLIPS 10

PATH

WOOD FINISH 22MM
WOOD FRAMEWORK
81MM AND 53 MM
ROOT-PROOF MEMBRANE

WOODEN DOOR WITH
TRIPLE GLAZING

90x106

LAMINATED COLOMNN
182X182X 3647MM

22
81
53

GROUND FLOOR RC = 3,7

WOODEN FLOOR FINISH 10MM
Magnesite FLOOR
WITH FLOOR HEATING 50MM
PIR INSULATION 80MM
CEMENT COVER FLOOR 25MM
REINFORCED CONCRETE FLOOR 125MM

FOUNDATION

SHALLOW FOUNDATION
2ND HAND CONCRETE FOUNDATION
REINFORCED CONCRETE FOUNDATION

DETAIL
V4 & V5

DETAIL

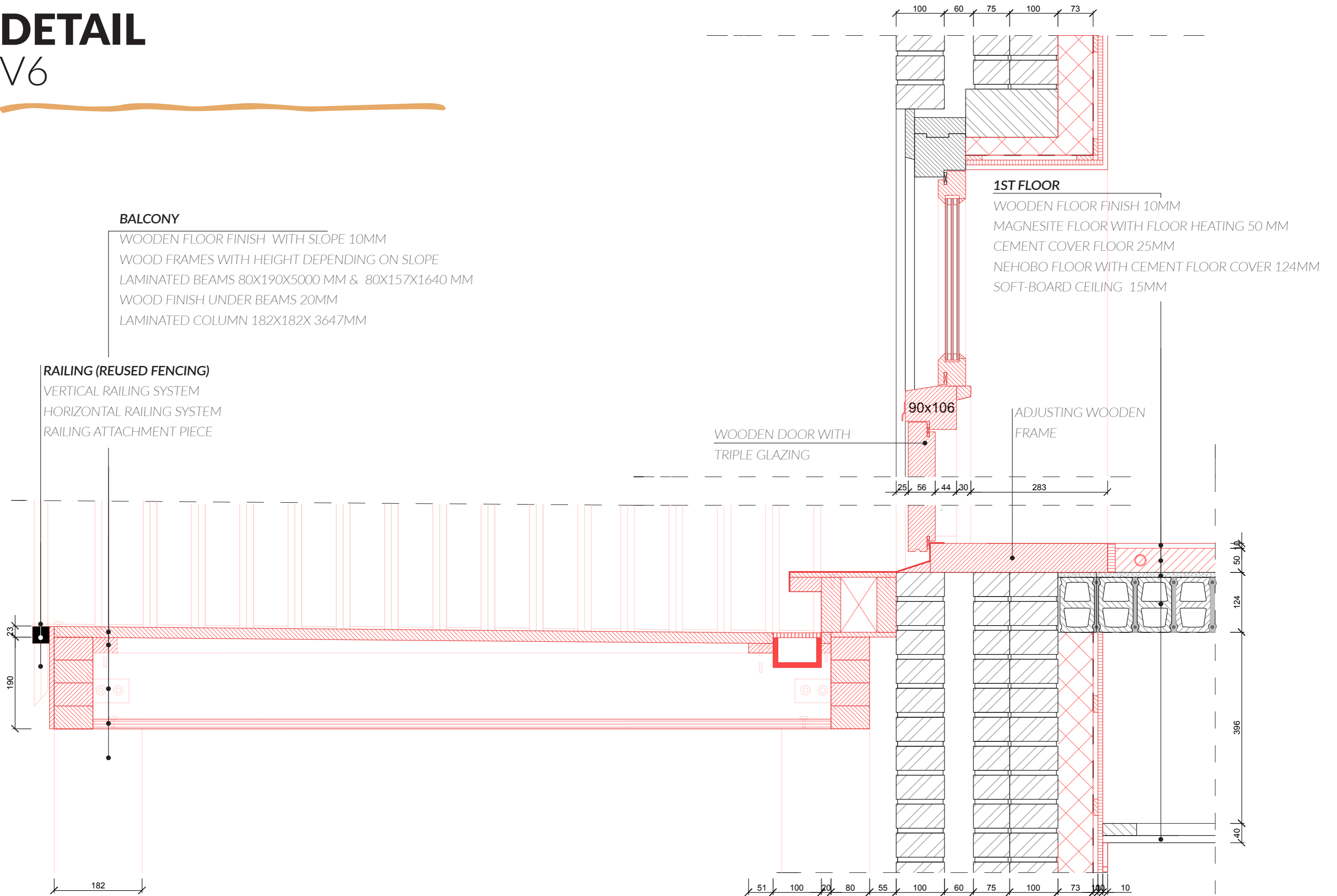
V6

BALCONY

WOODEN FLOOR FINISH WITH SLOPE 10MM
WOOD FRAMES WITH HEIGHT DEPENDING ON SLOPE
LAMINATED BEAMS 80X190X5000 MM & 80X157X1640 MM
WOOD FINISH UNDER BEAMS 20MM
LAMINATED COLUMN 182X182X 3647MM

RAILING (REUSED FENCING)

VERTICAL RAILING SYSTEM
HORIZONTAL RAILING SYSTEM
RAILING ATTACHMENT PIECE



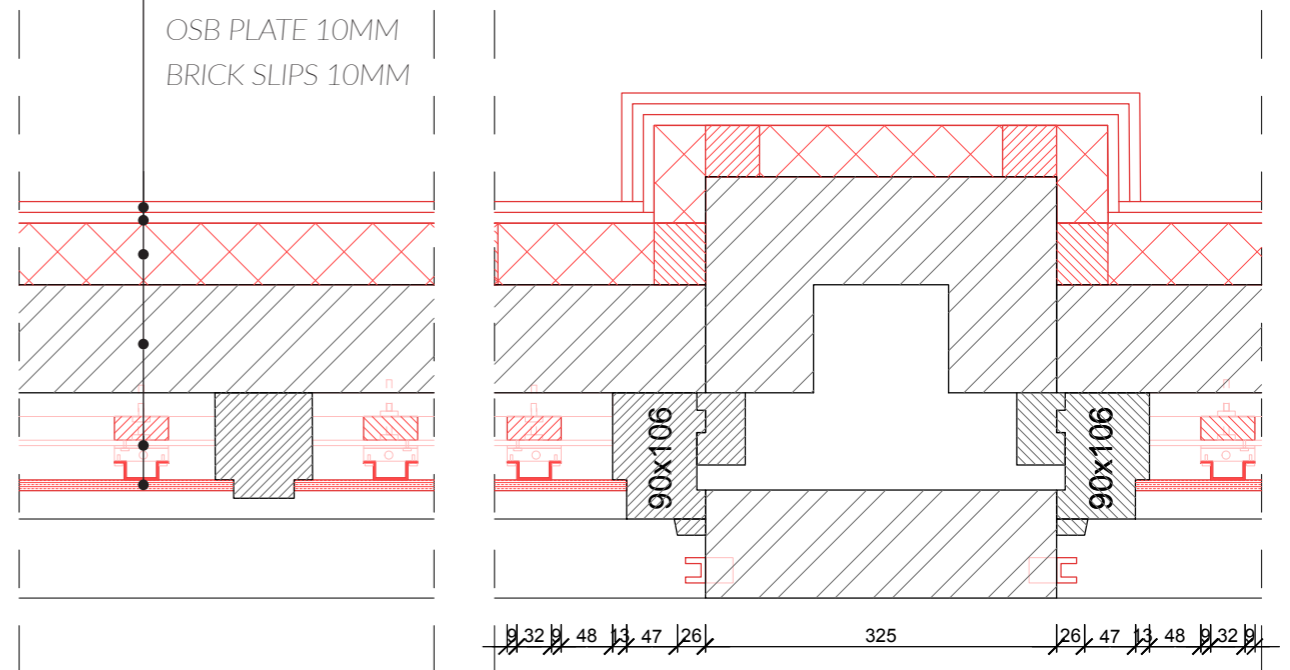
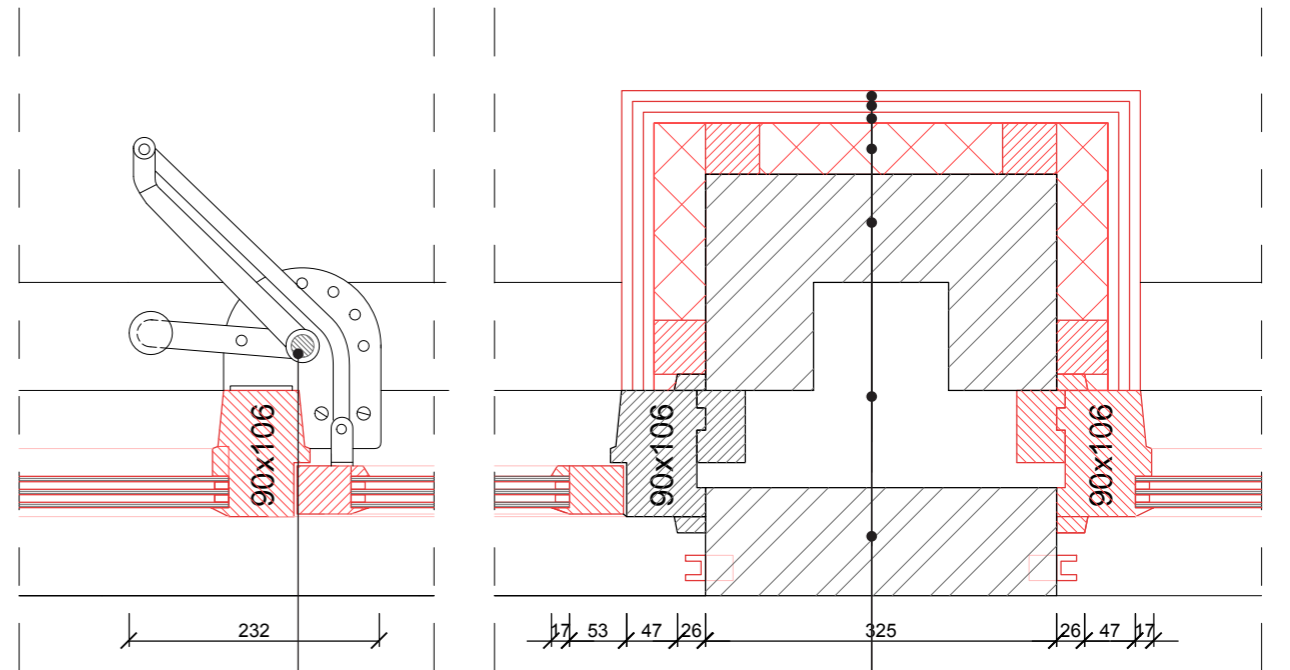
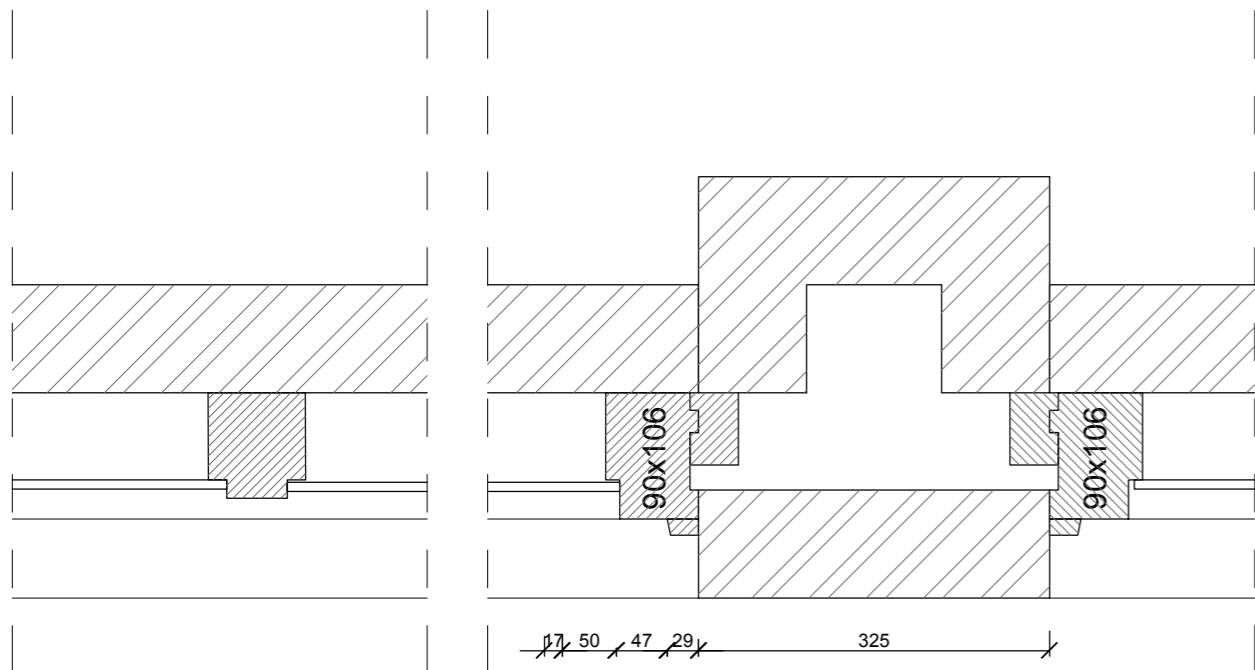
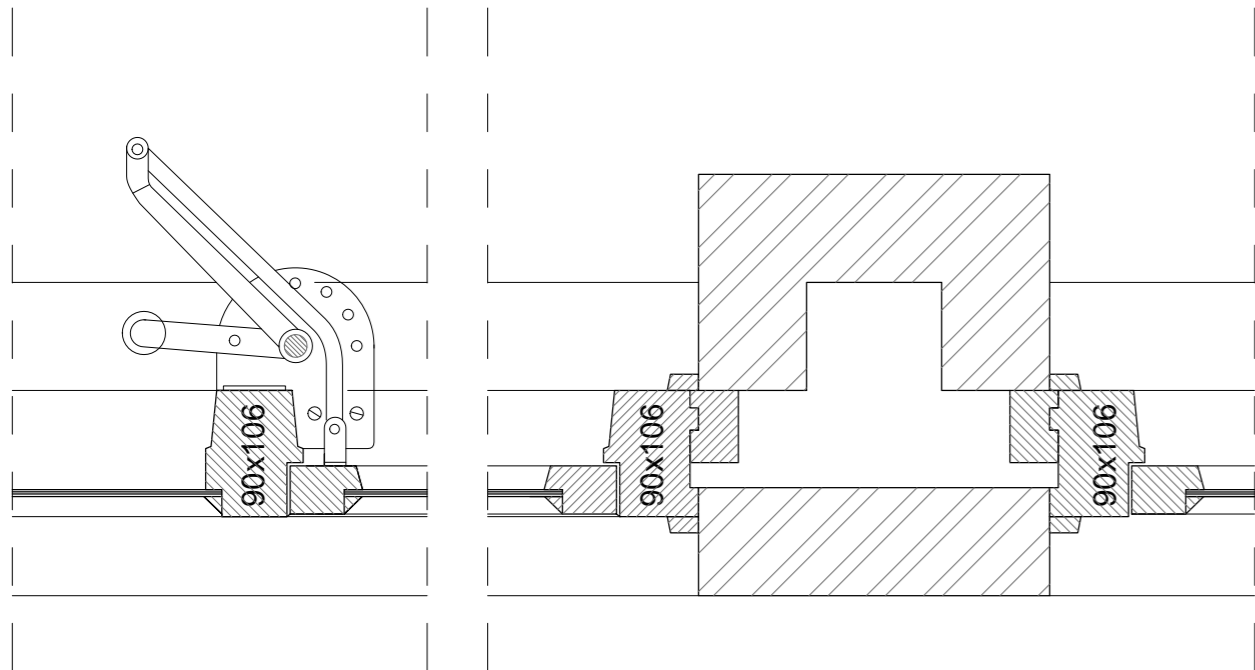
1ST FLOOR

WOODEN FLOOR FINISH 10MM
MAGNESITE FLOOR WITH FLOOR HEATING 50 MM
CEMENT COVER FLOOR 25MM
NEHOBO FLOOR WITH CEMENT FLOOR COVER 124MM
SOFT-BOARD CEILING 15MM

90x106

WOODEN DOOR WITH
TRIPLE GLAZING

ADJUSTING WOODEN
FRAME



ORIGINAL WINDOW
CLOSURE SYSTEM

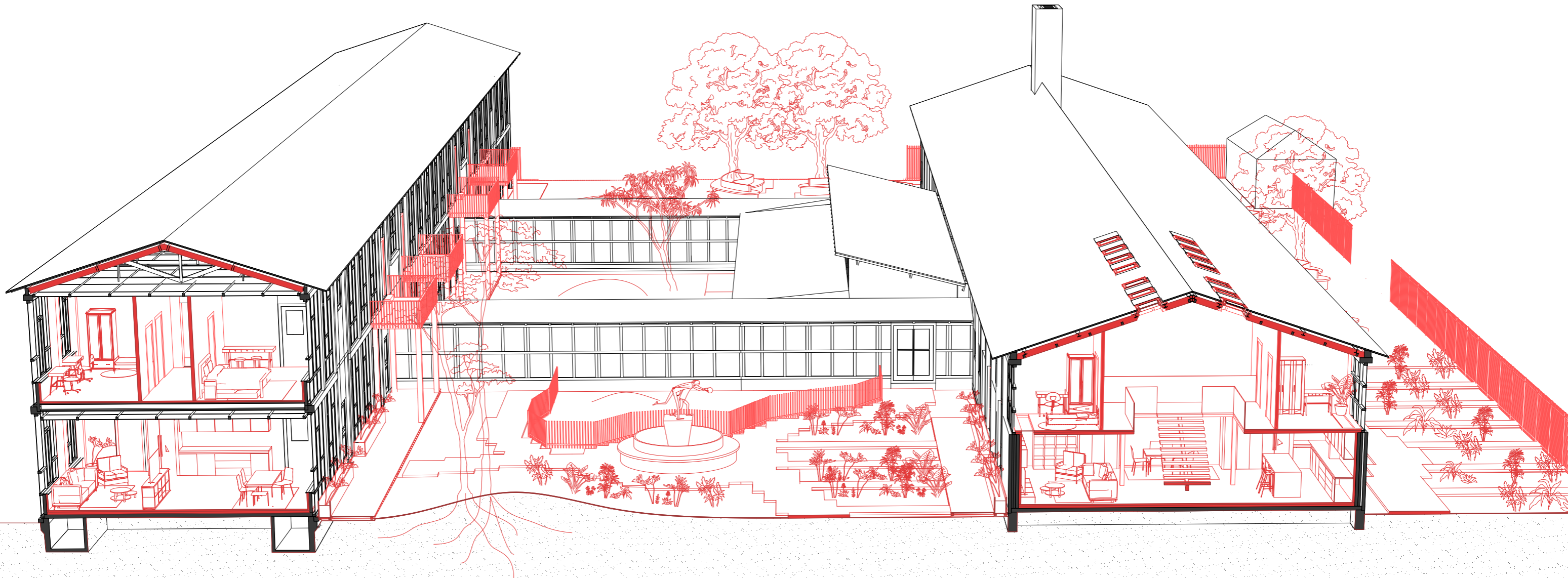
FACADE RC= 4,7
SOLARIX SOLAR PANEL
SOLAR PANEL MOUNDING SYSTEM
MASONRY 210X100X50MM
INTERIOR INSULATION 57MM
OSB PLATE 10MM
BRICK SLIPS 10MM

FACADE RC= 4,7
BRICK SLIPS 10MM
OSB PLATE 10MM
WOODEN FRAMEWORK 10MM
VAPOR RESISTANT LAYER
INTERIOR INSULATION 47,5 MM
MASONRY 210X100X50
AIR CAVITY 80 MM
MASONRY 210 X100X50 MM

DETAIL

H1 & H2

IMPRESSION SECTION



CONCLUSION

Case/ typology	Interior Added	Interior Removed	Exterior Added	Exterior Removed
case 5: Amundsenhof	+50,32%	-17,94%	+14,61%	-0,33%
Design case: Rendorpschool				
Maisonette	+42,04%	-7,99%	+2,45%	-2,07%
Apartments	+51,12 %	-6,8%	+3,04%	-2,27%
Studios	+58,72 %	-10,59 %	+3,58%	-3,3%
Entresols	+98,92 %	-0%	+1,89%	+1,89%
Library	+89,81%	-0%	+1,57 %	-1,39%
Average of the whole of Rendorpschool	+62%	-5,7%	+2,6%	-2,2%

- added % is similar to Amundsenhof
- removed % is lower than Amundsenhof
- cultural values were kept as much as possible, but compromises were done by mimicking

Summary added and removed materials in percentages of research case 5 Amundsenhof and the design case Rendorpschool.

RELEVANCE

- Adds to the gap on school transformations
- Concise, visual overview of all interventions
- Data for the three key features: interior building fabric
exterior building fabric, and function
- Societal impact of strategies to reuse a vacant building
- Apply the results to their own school transformations
- Impact on volume and environment
- Choice of typology



Thank you!
