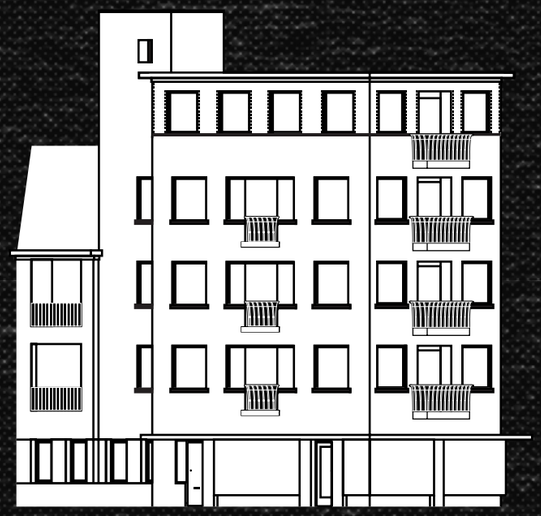
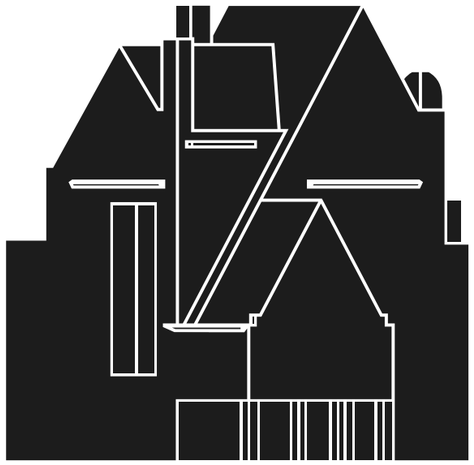
THE REIMAGINED PALACE



Revival and integration of a lost architectural approach with modern challenges and construction.

INHOUDSOPGAVE



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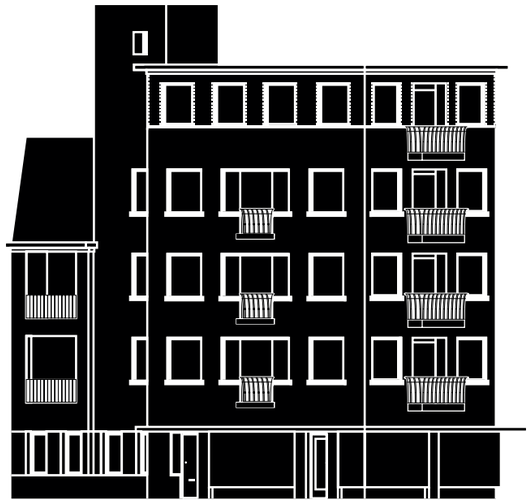

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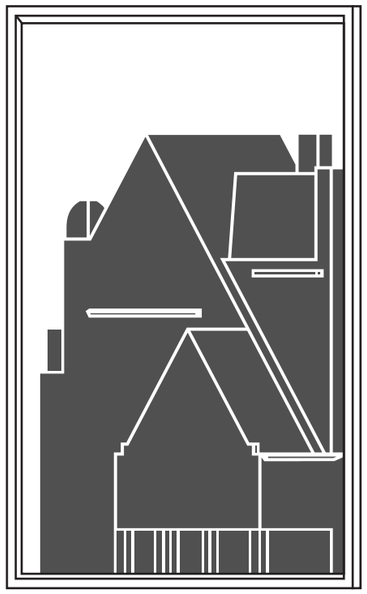

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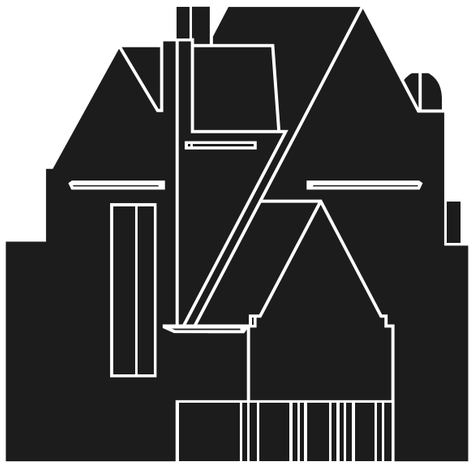

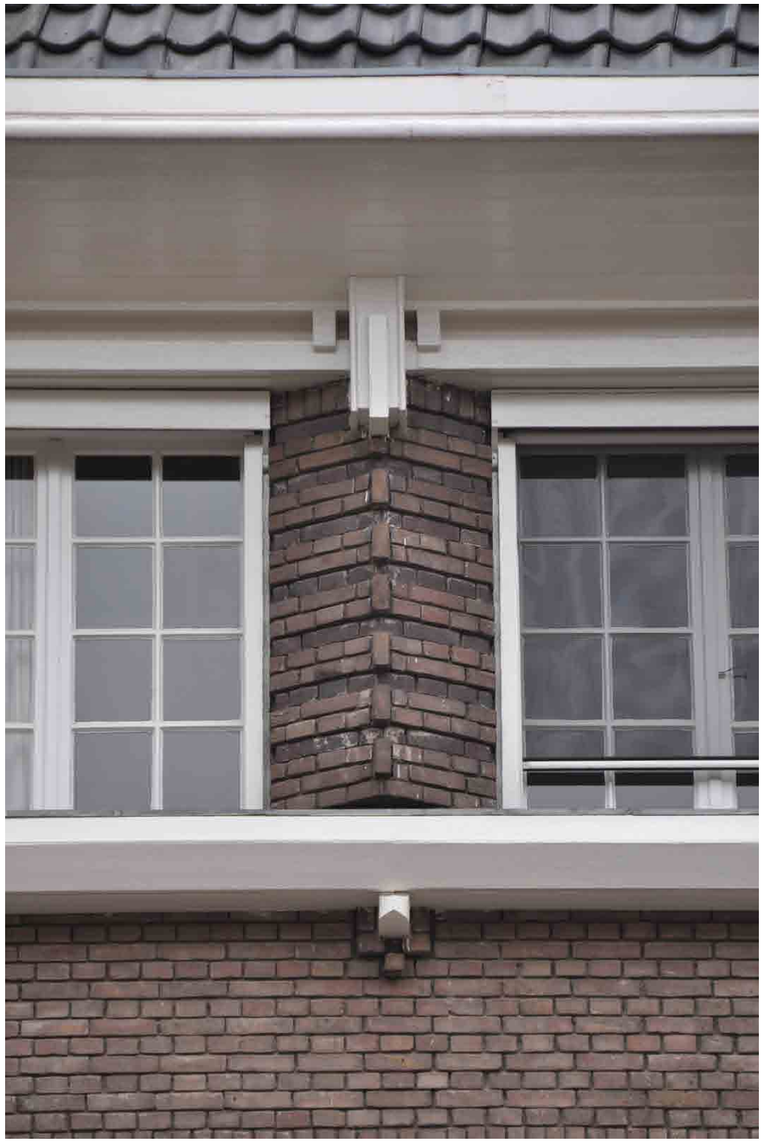

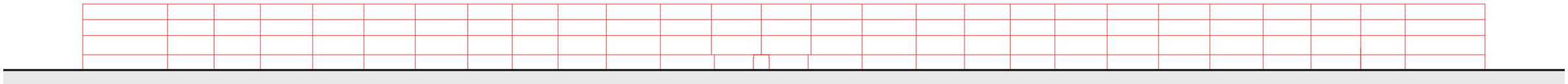

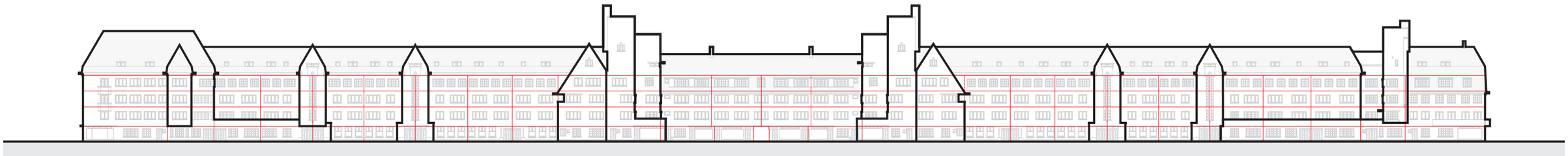

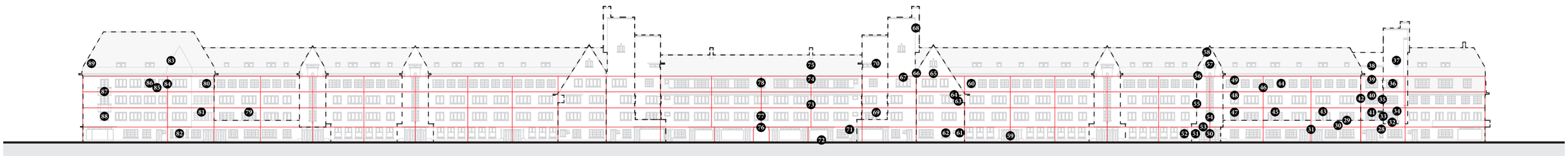
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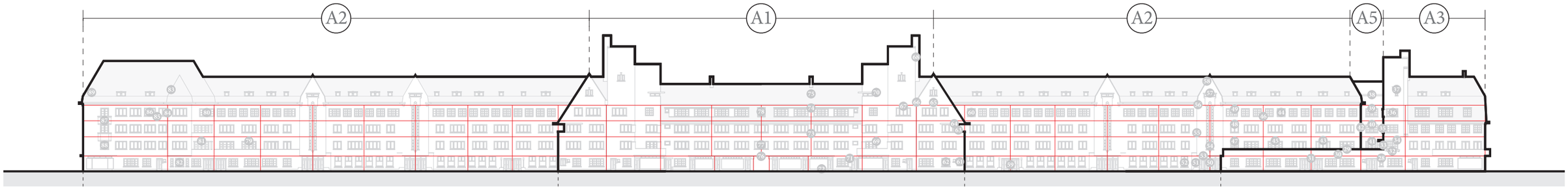

A2
A1
A2
A5
A3

How does the Amsterdam School
use ornaments and other facade elements
to partition dwelling blocks in Plan Zuid?

Figure 49: Location of the described elements on the west corner of the Churchill-laan 1:5000 (Kroes, 2024)

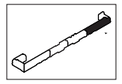
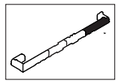
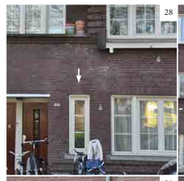


Figure 50: The grid of de dwellings behind the facade on the west corner of the Churchill-laan 1:5000 (Kroes, 2024)

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Sections and element number	Description Element	Subject	Analysis
28	Distinctive window	Urban	None or t.b.d.
		Facade appearance	Distinctive for size and placement. The window next to this window is not in line with the windows above so the tower has its own rhythm set apart from the ground level. To also ensure more daylight in the livingroom of the appartement a smaller window is needed in between the carrying wall and the entrance resulting in this smaller window.
		Method	Use of a certain order in which different elements and rhythms are applied.
29	Distinctive edge	Urban	None or t.b.d.
		Facade appearance	The edge of the terrace is enriched with a concrete like material, protruded bricks and different bond. Part of the balustrade is increased in height this is to put emphasis on the tower of the A3 section, the height different is announced by a concrete stone, the same stone as the end of the terrace.
		Method	Use of other material, protrusion and other brick bond on the edge
30	Distinctive Terrace	Urban	None or t.b.d.
		Facade appearance	Terrace emerges from the A2 section by elongating the right side of the base of the protruded mansard end and using it as a terrace . The terrace acts as a **connector** between the A3 and A2 section because of the resemblance of the base.
		Method	Addaptian of familiar shapes to reconstruct new ones
31	Distinctive entrance	Urban	None or t.b.d.
		Facade appearance	The two regular entrances are combined and enriched with the resemblance of 3 distinctive columns. Their resemblance are because of the specific protrusion of bricks on the end of the walls and a concrete base and concrete capital.
		Method	Use of visual resemblance by the position of different materials and protrusions.
32	Distinctive window box	Urban	None or t.b.d.
		Facade appearance	The base of the tower is accentuated by element 34, 29 and this window box. Putting more emphasis on the tower.
		Method	Use of window boxes for emphasis
33	Distinctive brick bond	Urban	None or t.b.d.
		Facade appearance	Emphasis on the edge of the tower, connects the windows transversal together with element 34. With the emphasis on this edge on the positioning of the window the tower looks inwards to A2 in comparison of the other tower located at the maasstraat of the A3 section where the tower is more a singular identity announcing the end of the block. This is a more bold statement than element 35 where a minimal approach sufficed.
		Method	Use of protrusions with the facade material

34	Distinctive Overhang	Urban	None or t.b.d.
		Facade appearance	Puts emphasis on the window which marks the start of the tower identity it also connects the window located perpendicular and creates shadows for the dwelling.
		Method	Use of overhangs for emphasis
35	Distinctive protrusion/recess of brick	Urban	None or t.b.d.
		Facade appearance	In between the perpendicular positioned windows a resemblance of a floating column is constructed. This just like element 33 connects them. At the height of the window sill the bricks are recessed one course above the bricks protrude at the top of the column a thin concrete capital is placed.
		Method	Use of protrusions, recessions of the facade material
36	Distinctive window	Urban	None or t.b.d.
		Facade appearance	The window is distinctive because of the earlier mention position in comparison to the tower. It is located more to the edge therefore it is 'looking' at the other sections making it relate more to the plasticity of the building block instead of the individual statement of the tower.
		Method	None or t.b.d.
37	Distinctive window	Urban	None or t.b.d.
		Facade appearance	The window is distinctive because of the position on the tower. This window is located in the middle therefore enhancing the feel of the other windows a like element 36 being on the edge.
		Method	None or t.b.d.
A5 (Churchill-laan)	Distinctive section	Urban	This section is more accommodating than the neighbouring. It serves as an in between section, in this case in between the A2 and the A3 section. It is highlighting their height difference, being the lowest. In the same way it is highlighting their difference in depth being most far away of the building line.
		Facade appearance	It is seen as a individual part and identity of the facade because of its effect and positioning of the elements. At the windows are placed in the middle making a more presence appearance than the A4 section on the Maasstraat. It also relates more to the tower than the regular A2/A3 section because of the use of the same edge with brick protrusion and roof tiles. It also doesn't have the distinctive brick course (18) which again makes it relate more to the tower.
		Method	Use of different wall depths recession/protrusion.
38	Distinctive edge	Urban	None or t.b.d.
		Facade appearance	Edge is the same like the tower (element 24) however distinctive because of its height, it is placed much lower Than the tower. See Urban A5 churchill-laan.
		Method	None or t.b.d.
39	Distinctive window	Urban	None or t.b.d.
		Facade appearance	Window is distinctive in comparison to A2 on the same floor with that emphasising their difference.
		Method	None or t.b.d.
40	Distinctive window	Urban	None or t.b.d.
		Facade appearance	Window is distinctive in comparison to the A2 section on the same floor, emphasising their difference. Where as the A2 section has a difference in window paning with/without muntins. This window is the same as the window above (39) emphasising **verticality** in this section rather than horizontality.
		Method	None or t.b.d.
41	Distinctive terrace door	Urban	None or t.b.d.
		Facade appearance	The terrace door is distinctive because of its size, the terrace door with its windows is made to match the width of located windows aboven enhancing the verticality of this section.
		Method	None or t.b.d.
42	Distinctive recess	Urban	None or t.b.d.
		Facade appearance	The whole A4 section is recessed in comparison to the A2 and A3 section. Making it more accomodating and highlighting their difference.
		Method	None or t.b.d.
A2 Westside Churchill-laan	Distinctive section	Urban	In between the protrusion of the staircases and their complementary bases a space is created, for some this is a place for their bike for other an opportunity to create a little garden closely against the facade. This is not visible on drawings and therefore it seems unintentional by the architect.
		Facade appearance	This section is distinctive because the lower slope of the mansard roof is much shorter making the building look much higher than the A3 section. This section is the largest part of the building block and is where duplication takes place most of the times. The facade is separated in subsections by a vertical protrusion of an end wall with the same mansard proportions functioning as a staircase. The bottom and top windows are different the middle ones separating the facade in horizontal lines. The rhythm of the windows also differs. Because of this the block doesn't seem as substantial as it is.
		Method	Use of different windows, protrusions and rhythms that divide the facade horizontally and vertically.
43	Distinctive terrace door	Urban	None or t.b.d.
		Facade appearance	The terrace door is distinctive because the frame including side windows matches the window above. This resembles the windows in the A2 section that is duplicated many times in the facades creating a continuous facade in the middle.
		Method	Use of a certain order in which different elements and rhythms are applied.

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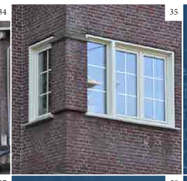
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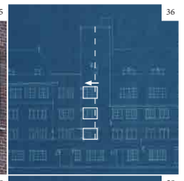
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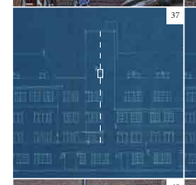
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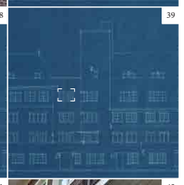
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44	Distinctive window	Urban	None or t.b.d.
		Facade appearance	Distinctive because the window has a negative window reveal, meaning the window frame protrudes from the facade. The window is much smaller and is placed twice as much. In result the penant is much smaller accentuating the horizontality much more.
		Method	Use of different windows and rhythms to accentuate horizontality and/or partitioning facade.
45	Distinctive terrace door	Urban	None or t.b.d.
		Facade appearance	Distinctive because of the use only horizontal muntins. The balcony doors which do not have horizontal muntins are above the entrance, a subtle way to emphasise the entrance.
		Method	None or t.b.d.
46	Distinctive brick protrusion and course	Urban	None or t.b.d.
		Facade appearance	Brick course separates the facade horizontally, above the line we have the smaller protruding window frames with muntins and beneath the line we have the larger windows with windowsill and without muntins. The brick bond enhances the horizontality of the upper part of the building block. The course exist of two parts a vertical three-quarter brick which protrudes a tiny bit with two courses in between with two headers and one stretcher following the regular brick wall. Above a whole course of vertical three-quarter bricks is placed, following the protrusion. The wall in between windows (element 44) called the penant also protrudes a tiny bit from the already protruded vertical three-quarter bricks. At the top of the frieze board is place and underneath the first part (with the vertical three-quarters brick and the stretcher/headers in between) of the course is placed.
		Method	Use of protrusion, different courses to partition the facade.
47	Distinctive window	Urban	None or t.b.d.
		Facade appearance	Distinctive window since width of the window is different than the windows in the same row, breaking the pattern just before the vertical end wall protrudes the wall. Making the transition between the identities of the section less abrupt, so the window acts as an announcer that something is happening. However the change in the use of muntins seems unsystematic.
		Method	Use of different window sizes to break patterns making transitions less harsh and gives more of a monumental look to the change.
48	Distinctive window	Urban	None or t.b.d.
		Facade appearance	Same as element 47, without the change of muntins
		Method	Same as element 47
49	Distinctive window	Urban	None or t.b.d.
		Facade appearance	Same as element 47, without the change of muntins
		Method	Same as element 47
50	Distinctive entrance	Urban	None or t.b.d.
		Facade appearance	Distinctive for the composition of doors and surrounding elements that protrude from regular building line. One wonders where at the doors lead to.
		Method	Combining entrances together to hide the borders of the dwellings and creating an accent in the facade.
51	Distinctive protrusion	Urban	None or t.b.d.
		Facade appearance	Distinctive because of the protrusion on the side of the end wall, the protrusion is accomodating the composition of doors and the more monumental look of the end wall overall. The edge of the roof of this protrusion is also enriched by a protrusion of bricks in the same way element 29 is. The continues grey (stone/concrete) plinth, element 6, is heightened to announce the change and enhances the monumental look.
		Method	None or t.b.d.
52	Distinctive window	Urban	None or t.b.d.
		Facade appearance	Distinctive because the window framing is a sash window which is not present in the other sections. Also the windows have two vertical muntins more in the middle. The window sill and soldier course above the windows are continues as in the other sections.
		Method	Use of different windows to separate sections and different identities within the section
53	Distinctive concrete slab	Urban	None or t.b.d.
		Facade appearance	Distinctive white concrete slabs that matches with the other common white elements; window frames, eaves, hoisting beams and overhangs.
		Method	Use of different materials and colours in the facade.
54	Distinctive window/protrusion	Urban	None or t.b.d.
		Facade appearance	Distinctive because of size, composition and surrounding elements. The composition of the 22 small windows are divided in 2 columns and vertically stacked with 4 or 3 upon each other on each floor. The space inbetween the vertically stacked windows is filled with the same colour making it look like one large vertical window. The bricks in between the columns protrude and have ornamentation on the upper and lower end. The outer side of the window framing up until the length of the windowsill is recessed in the brickwall, on the edge of the recessed brick and the regular brick a protruding brick is located to emphasis the difference in depth and the vertical columns as a whole. The window emphasises the verticality of the end wall and as a distinctive identity within the section.
		Method	Use of different compositions of windows to emphasis verticality/horizontality, use of different windows to enhance the end wall.

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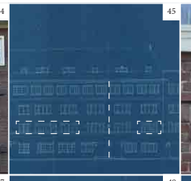
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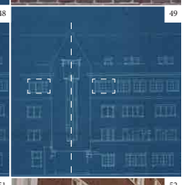
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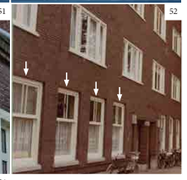
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URBAN SPACE

Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Sections CS1: A1, A2, A3, A4, 46, 47, etc.
Sections CS2: A1, A2, A3, A4, A5.

Create coherence in the street, building block and urban district

By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc.

Elements CS1: 6, 17, 30, 32, 34, 54, 83, etc.
Elements CS2: 5, 6, 7, 20, 24, 75, 89, 98, etc.

Position and combine entrances at street level

Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc.

Elements CS1: 1, 11, 42, 45, 65, 85, 87.
Elements CS2: 5, 8, 31, 50, 59, 61, 71.

Create an intermediate space at entrances

The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc.

Elements CS1: 1, 11, 42, 45, 65, 85, 87.
Elements CS2: 5, 8, 31, 50, 59, 61, 71.

FACADE APPEARANCE

Create different (sub)sections and emphasise contrast

Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section.

Elements CS1: 2, 3, 6, 14, 18, 24, 26, 28, etc.
Elements CS2: 1, 4, 6, 14, 16, 18, 19, 22, etc.

Connect the (sub)sections

By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc.

Elements CS1: A1*, 15, 16, 17, 18, 20, etc.
Elements CS2: 4, 6, 7, 19, 24, 30, 33, 35, etc.

Use elements around a corner and in different planes

Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc.

Elements CS1: 7, 13, 15, 16, 17, 26, 28, etc.
Elements CS2: 4, 5, 6, 9, 10, 18, 19, 33, etc.

Create an order of elements per (sub)section

The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition.

Elements CS1: 2, 3, 4, 8, 9, 18, 19, 21, etc.
Elements CS2: 7, 11, 12, 13, 17, 43, 80 etc.

Break order of elements for emphasis and variation

The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section.

Elements CS1: 6, 7, 10, 22, 29, 56, 58, etc.
Elements CS2: 13, 14, 22, 47, 48, 49, etc.

Emphasise entrances

The entrances are emphasised by different materials and use, ornaments, distinctive windows, distinctive positioning of windows, orientation and composition of the doors, protrusions that create gable ends and terraces, etc.

Elements CS1: 1, 11, 42, 45, 65, 66, 85, etc.
Elements CS2: 5, 8, 13, 14, 22, 31, 51, etc.

Conceal the repetitive grid of the dwellings

With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings.

Elements CS1: 1, 7, 11, A1, A1*, A1**, etc.
Elements CS2: 5, A3*, A3**, A5, 31, etc.

Divide appearance between commercial and residential use

By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments.

Elements CS1: 43, 44, 45, 62, 63, 69, 85.
Elements CS2: 8, 9, 72.

URBAN SPACE

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The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc.

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Elements CS2: 1, 4, 6, 14, 16, 18, 19, 22, etc.

Connect the (sub)sections

By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc.

Elements CS1: A1*, 15, 16, 17, 18, 20, etc.
Elements CS2: 4, 6, 7, 19, 24, 30, 33, 35, etc.

Use elements around a corner and in different planes

Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc.

Elements CS1: 7, 13, 15, 16, 17, 26, 28, etc.
Elements CS2: 4, 5, 6, 9, 10, 18, 19, 33, etc.

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The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition.

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The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section.

Elements CS1: 6, 7, 10, 22, 29, 56, 58, etc.
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Emphasise entrances

The entrances are emphasised by different materials and use, ornaments, distinctive windows, distinctive positioning of windows, orientation and composition of the doors, protrusions that create gable ends and terraces, etc.

Elements CS1: 1, 11, 42, 45, 65, 66, 85, etc.
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Conceal the repetitive grid of the dwellings

With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings.

Elements CS1: 1, 7, 11, A1, A1*, A1**, etc.
Elements CS2: 5, A3*, A3**, A5, 31, etc.

Divide appearance between commercial and residential use

By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments.

Elements CS1: 43, 44, 45, 62, 63, 69, 85.
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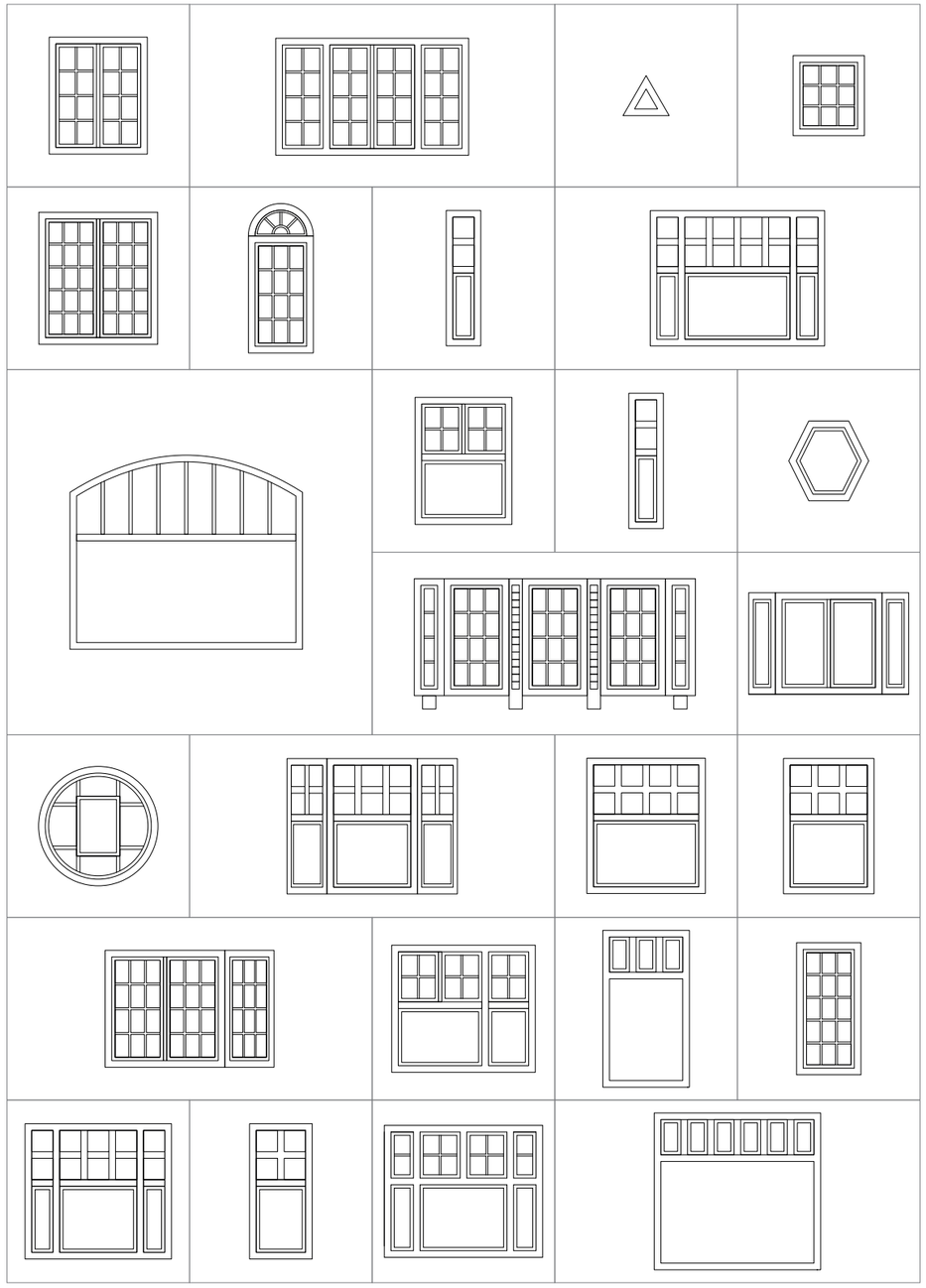
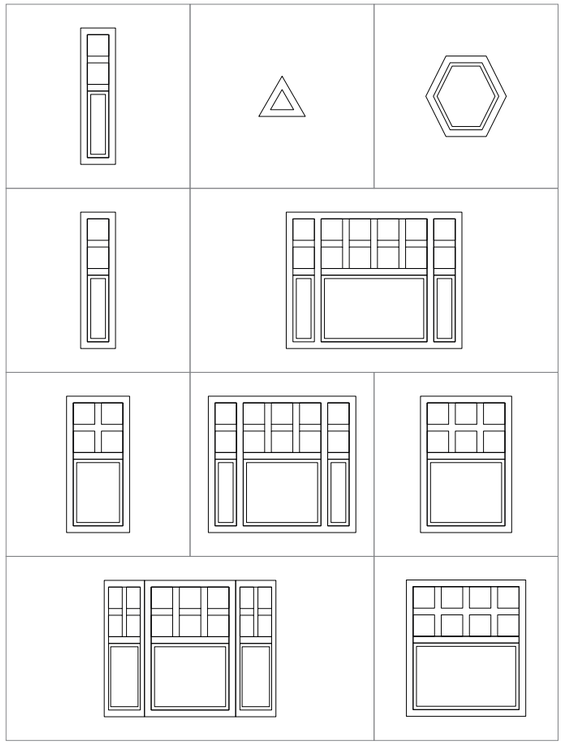
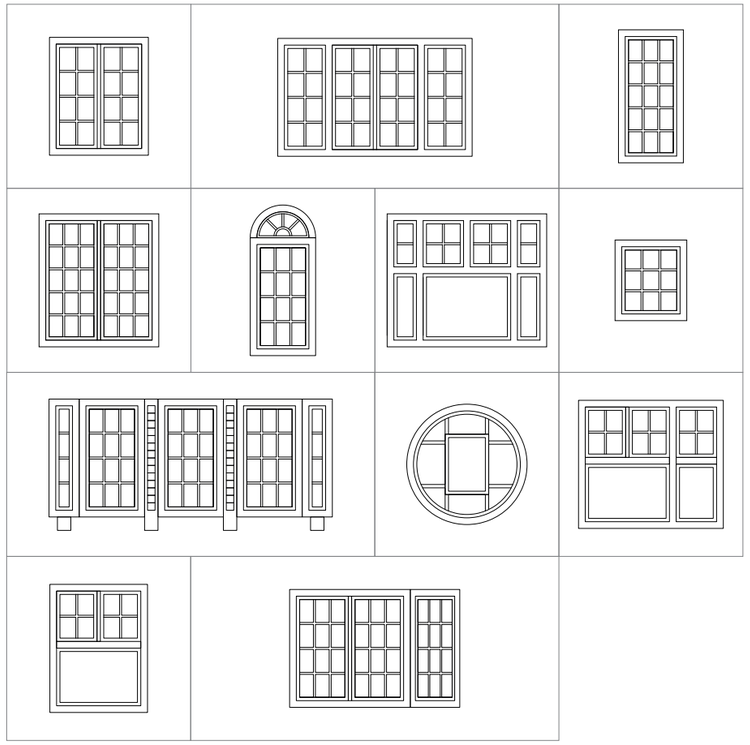
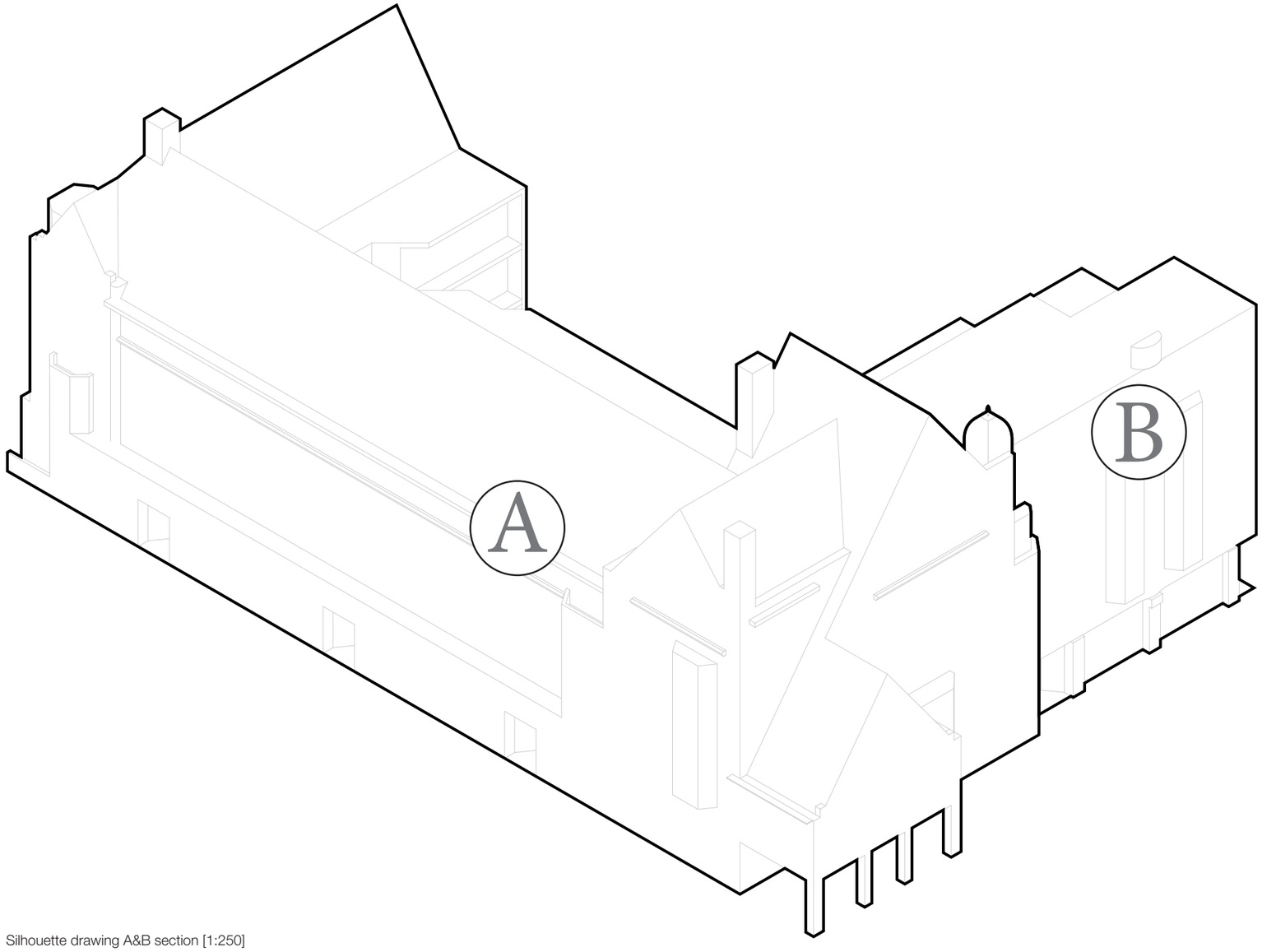


Different window types of The first Case study [scale 1:65]





Different window types section B (left) & A (right) [scale 1:65]



Silhouette drawing A&B section [1:250]

URBAN SPACE

Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Sections CS1: A1, A2, A3, A4, 46, 47, etc.
Sections CS2: A1, A2, A3, A4, A5.

Create coherence in the street, building block and urban district

By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc.

Elements CS1: 6, 17, 30, 32, 34, 54, 83, etc.
Elements CS2: 5, 6, 7, 20, 24, 75, 89, 98, etc.

Position and combine entrances at street level

Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc.

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The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc.

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Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section.

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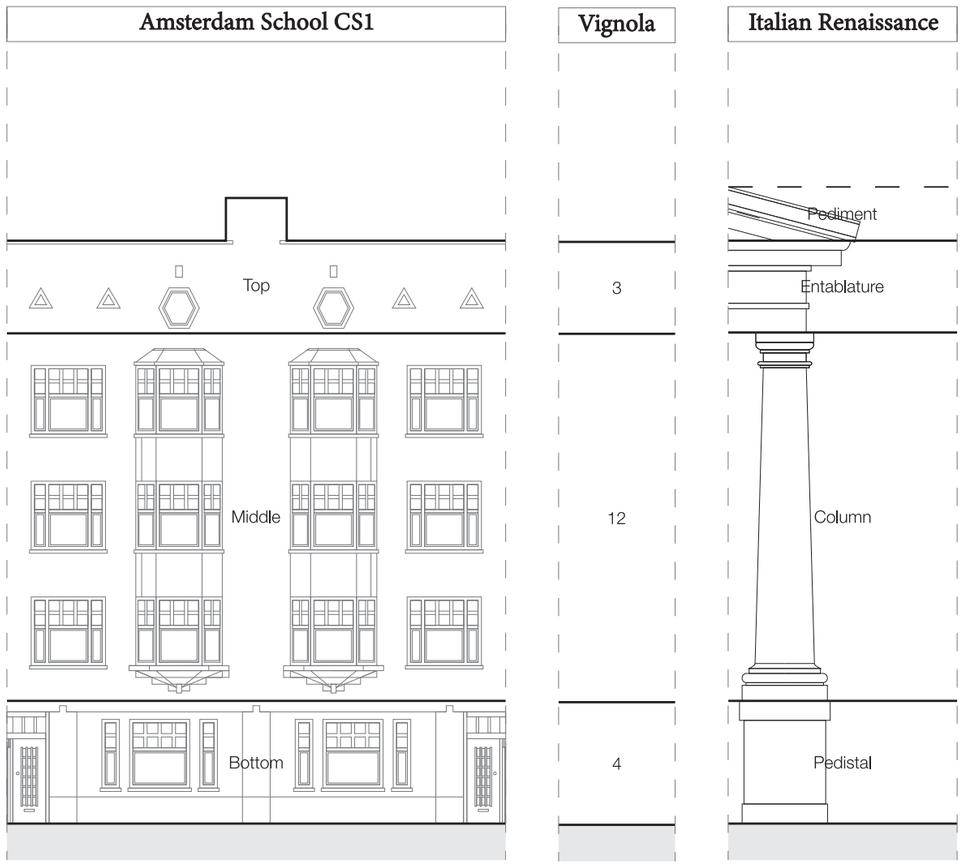
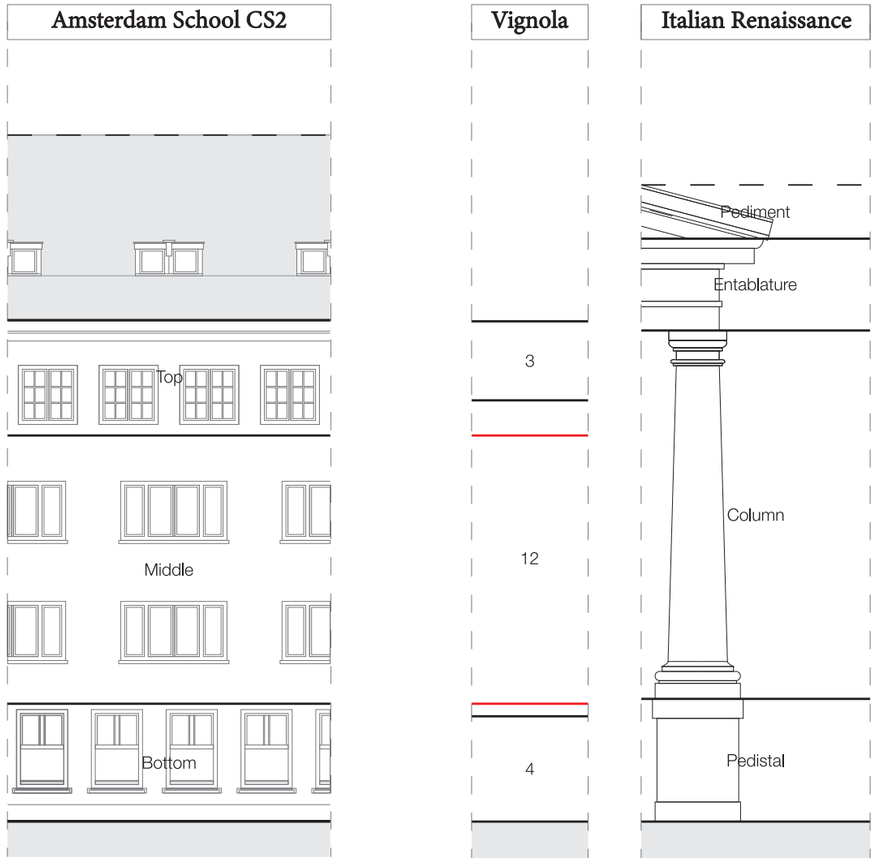

Amsterdam School CS1
Vignola
Italian Renaissance
Top
Middle
Bottom
3
12
4
Pediment
Entablature
Column
Pedistal


Amsterdam School CS2
Top
Middle
Bottom
Vignola
3
12
4
Italian Renaissance
Pediment
Entablature
Column
Pedistal

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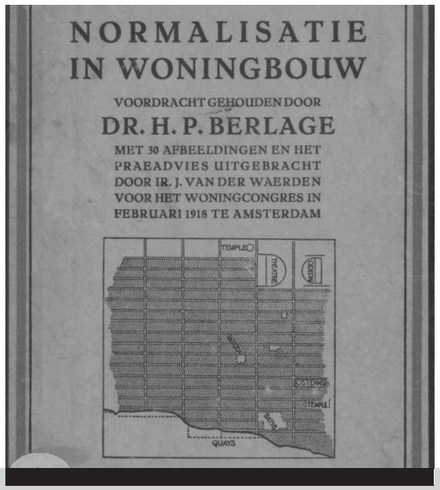
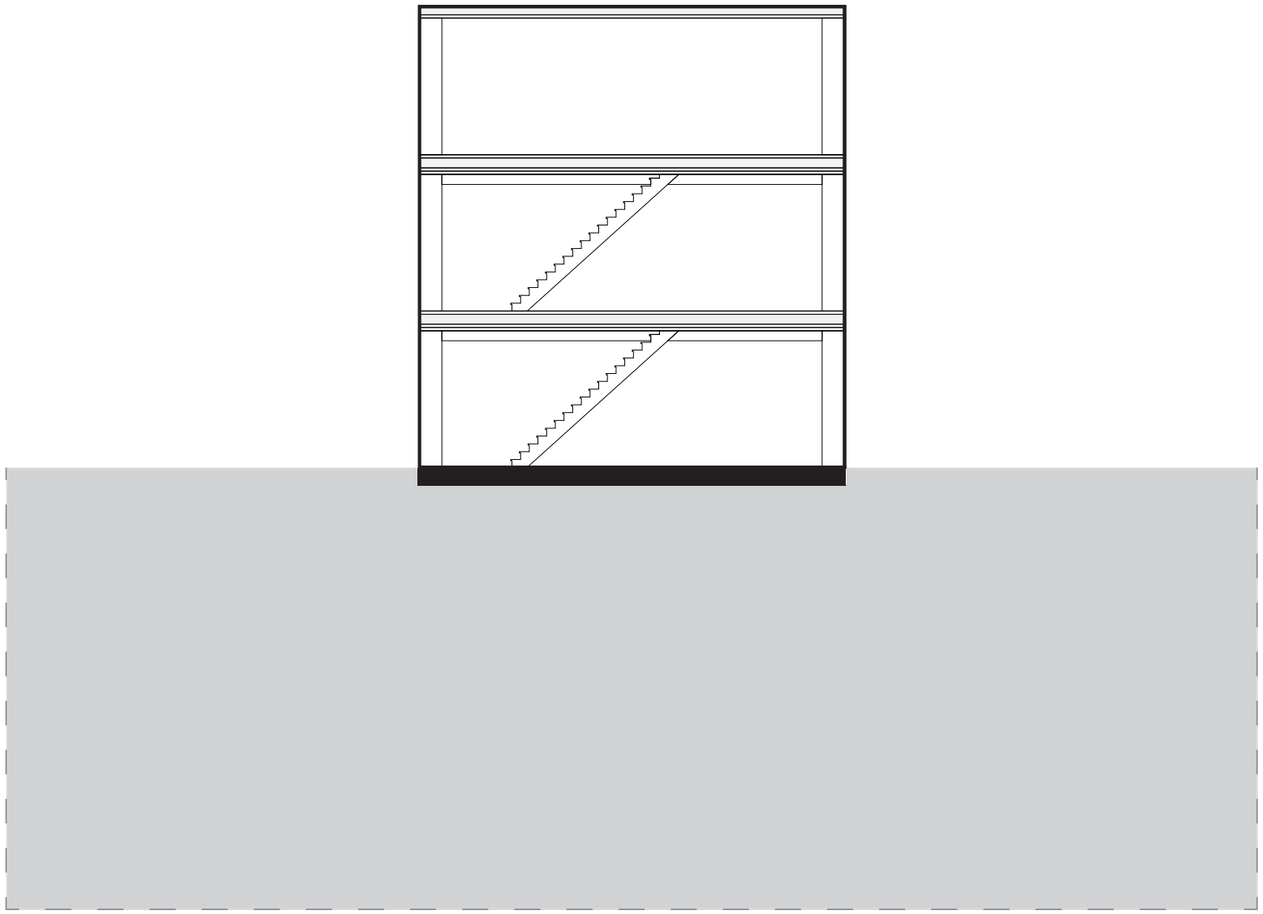
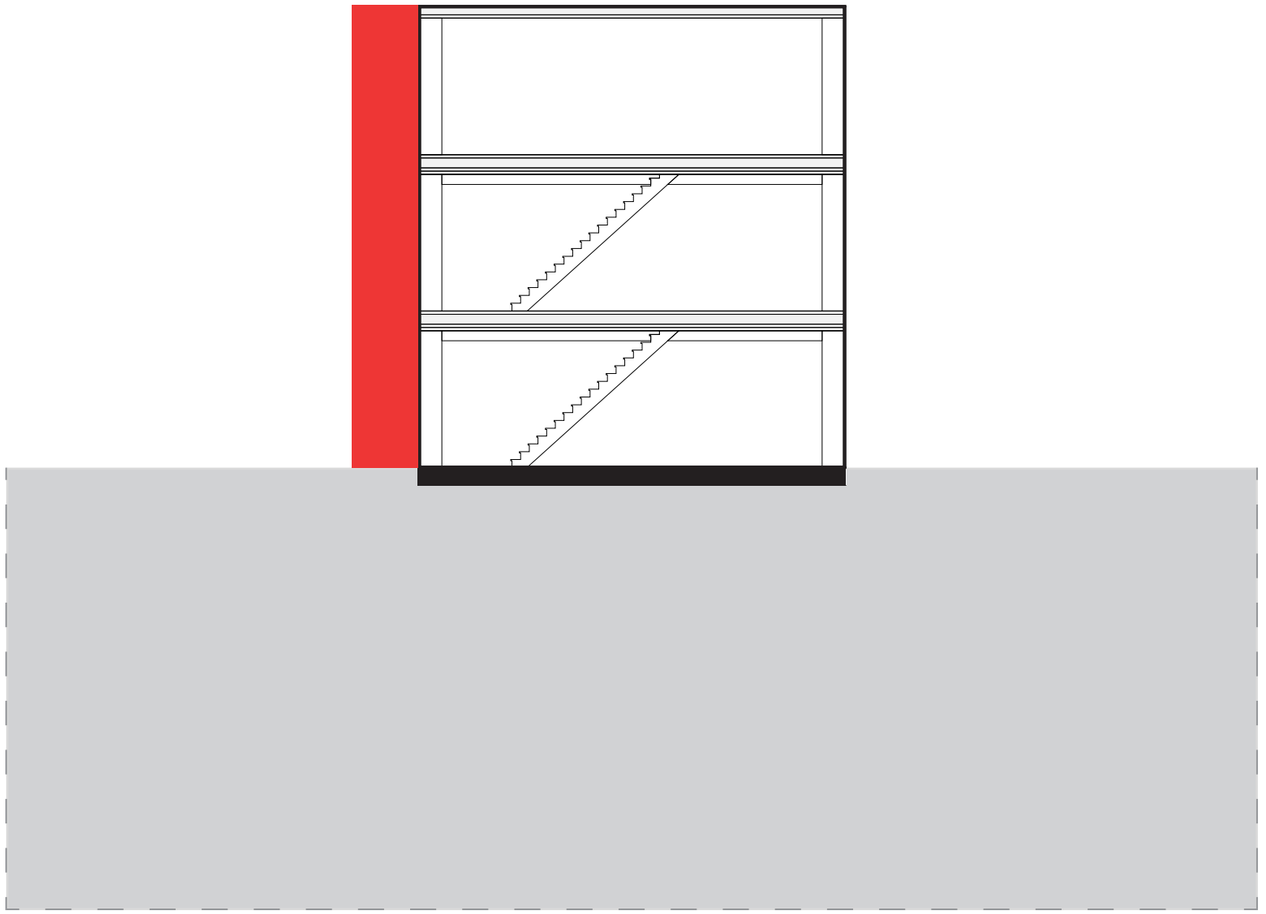
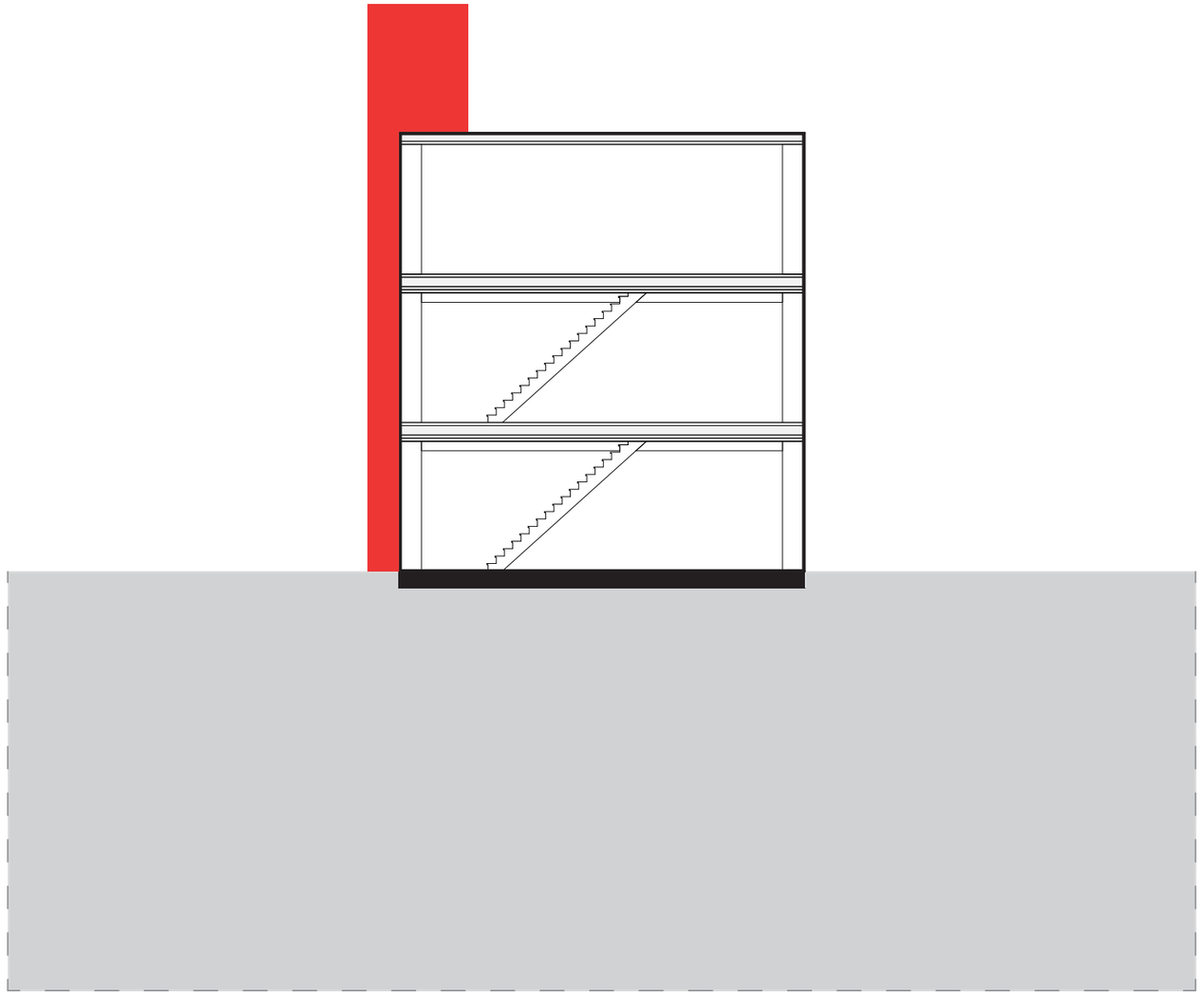
How can the principles outlined in the toolbox be integrated with modern challenges, such as sustainability, environmental impact and current construction methods?

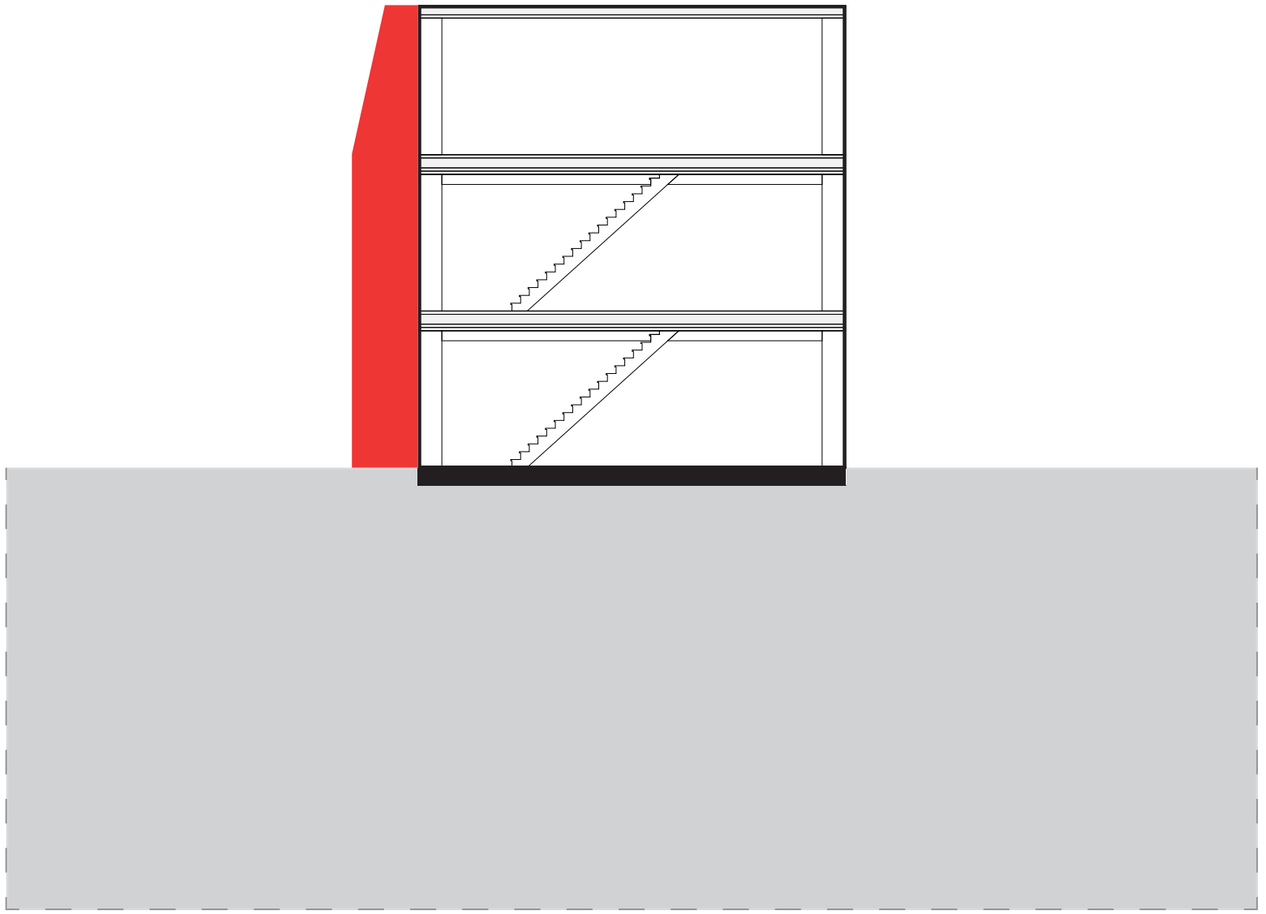
DESIGN

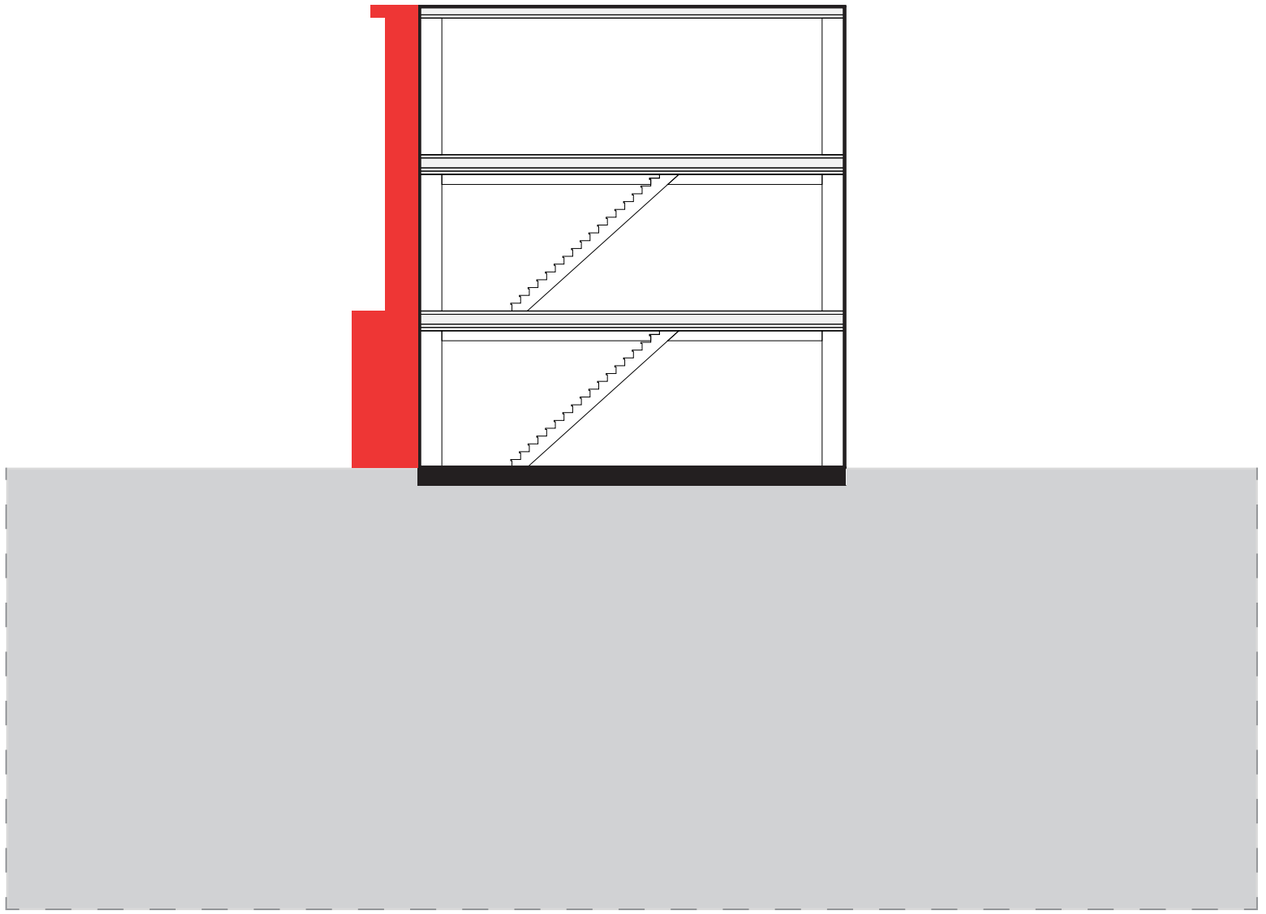

NORMALISATIE
IN WONINGBOUW
VOORDRACHT GEHOUDEN DOOR
DR. H. P. BERLAGE
MET 30 AFBEELDINGEN EN HET
PRAEADVIES UITGEBRACHT
DOOR IR. J. VAN DER WAERDEN
VOOR HET WONINGCONGRES IN
FEBRUARI 1918 TE AMSTERDAM
TEMPLEO
QUAYS











R0 Refuse	Refuse the use of raw materials	Construction method is used and made with circularity in mind.
R1 Rethink	(Re)design a product with circularity as a starting point	
R2 Reduce	Reduce the use of raw materials	
R3 Reuse	Reuse the product	Extending the lifespan of the method and components
R4 Repair	Extend lifespan through maintenance and repair	
R5 Refurbish	Extend lifespan through maintenance and repair	
R6 Remanufacture	Create new product from secondary materials	
R7 Repurpose	Reuse the product, but for a different purpose	
R8 Recycle	Process the product into raw materials for reuse	Capture and retain resource and value after end of life
R9 Recover	Recover energy from materials	
Landfill or Incineration	Not utilising end-of-life materials in any way	Pollution and loss of resource

Main Construction Method Case Studies Research: Clay bricks with cement mortar

R0 Refuse

R1 Rethink

R2 Reduce

R3 Reuse → Difficulty in seperating bricks with cement mortar, labour and cost intensiveness (removing, selecting, cleaning), quality and structural integrity and damage during demolition.

R4 Repair

R5 Refurbish

R6 Remanufacture

R7 Repurpose

R8 Recycle → Grinded into granulate for roads, foundations, aggregate

R9 Recover

Landfill or Incineration

Main Construction Method Case Studies Research: Clay bricks with cement mortar

CIRCLEWOOD

Oosterhoff
consultants & engineers

NOORDERENG | GROEP

TNO innovation for life

HEDGEHOG COMPANY

lomans
totaalinstallateur

DWA

FERROSS
staalbouw

CIRCLEWOOD

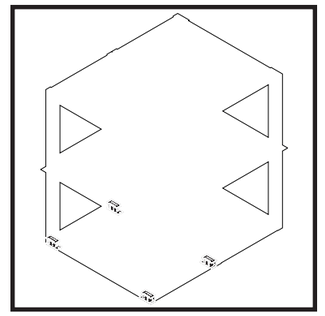
Quake
Groundbreaking innovations

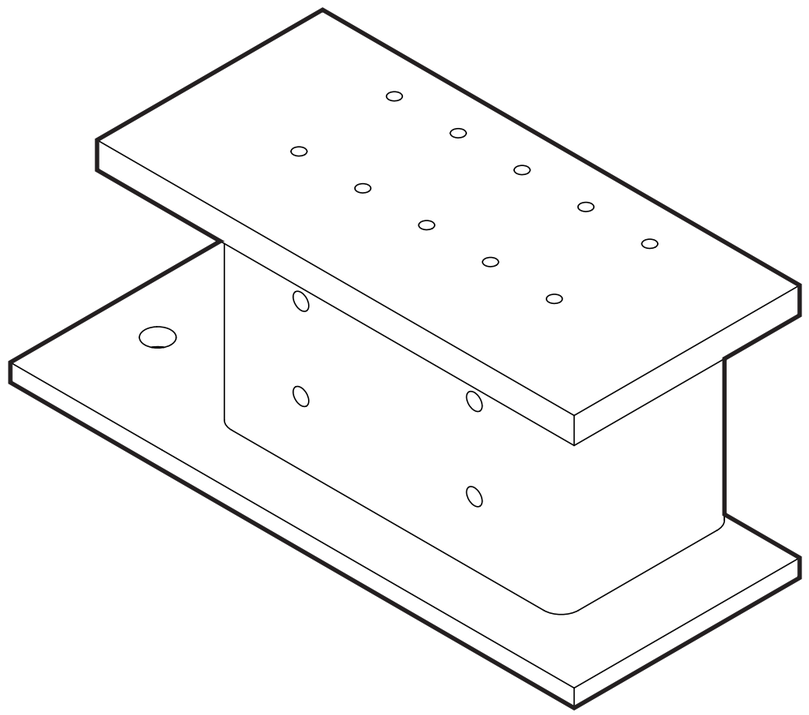
LŪNING
Ingenieurs in houtconstructies

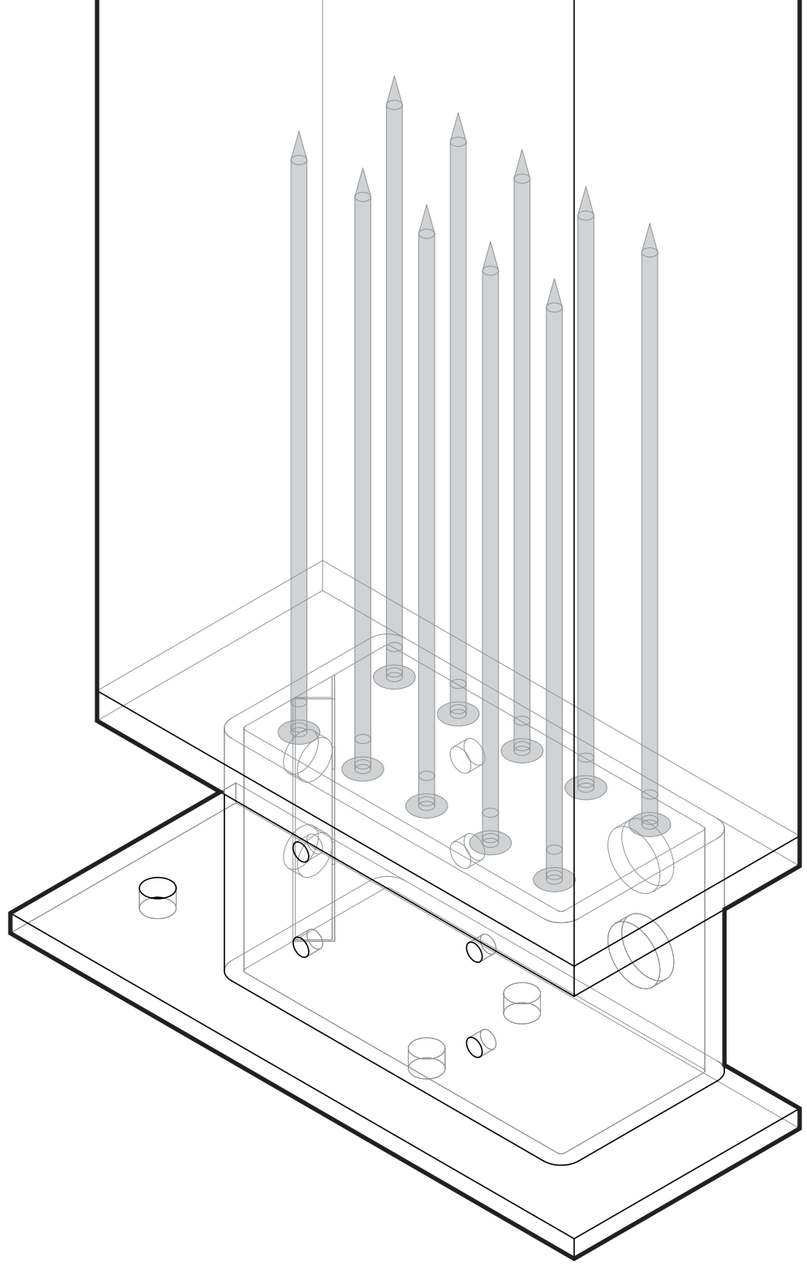
Heko Spanten B.V.
GELIJMDE HOUTCONSTRUCTIES

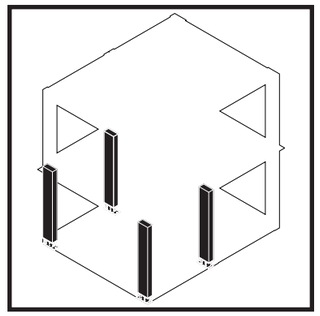
bbn

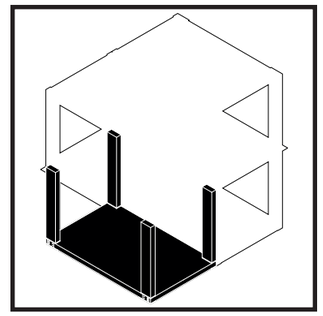
abt

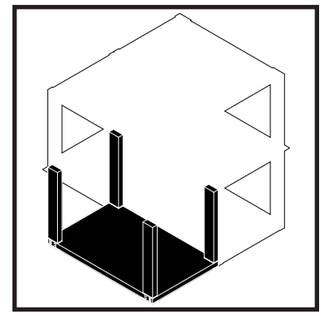


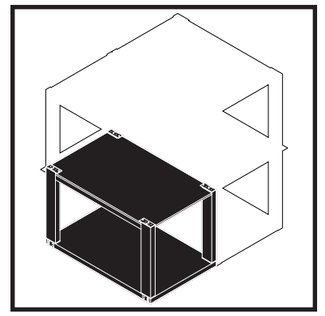


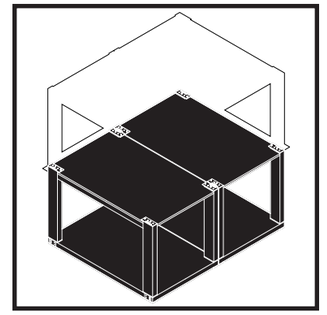


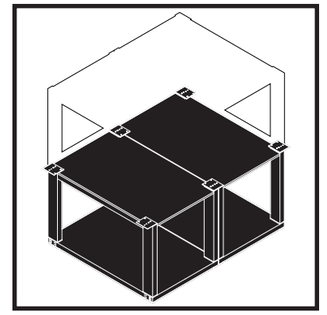


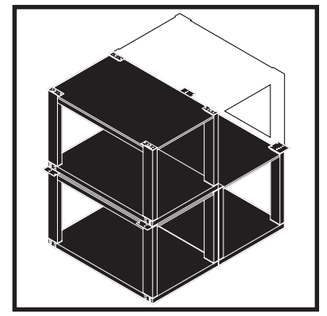


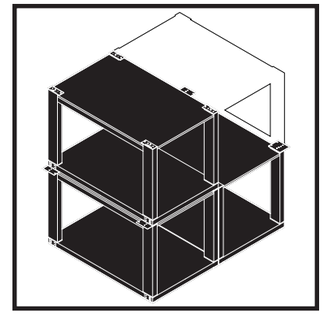


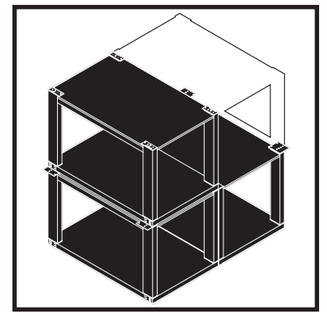


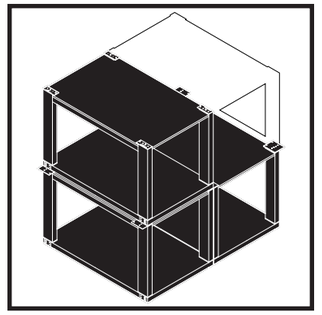


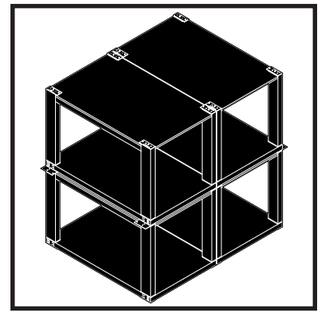


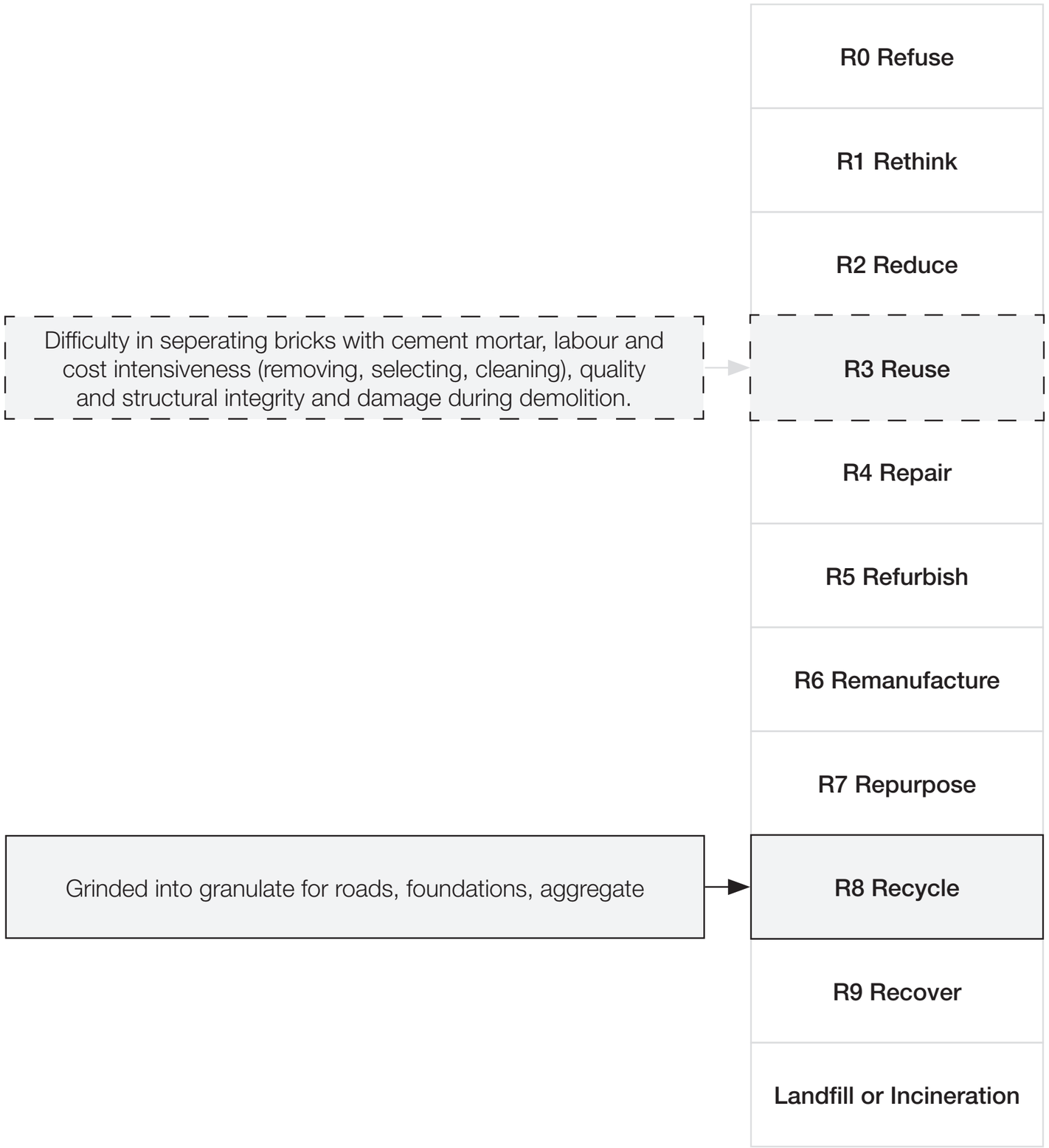




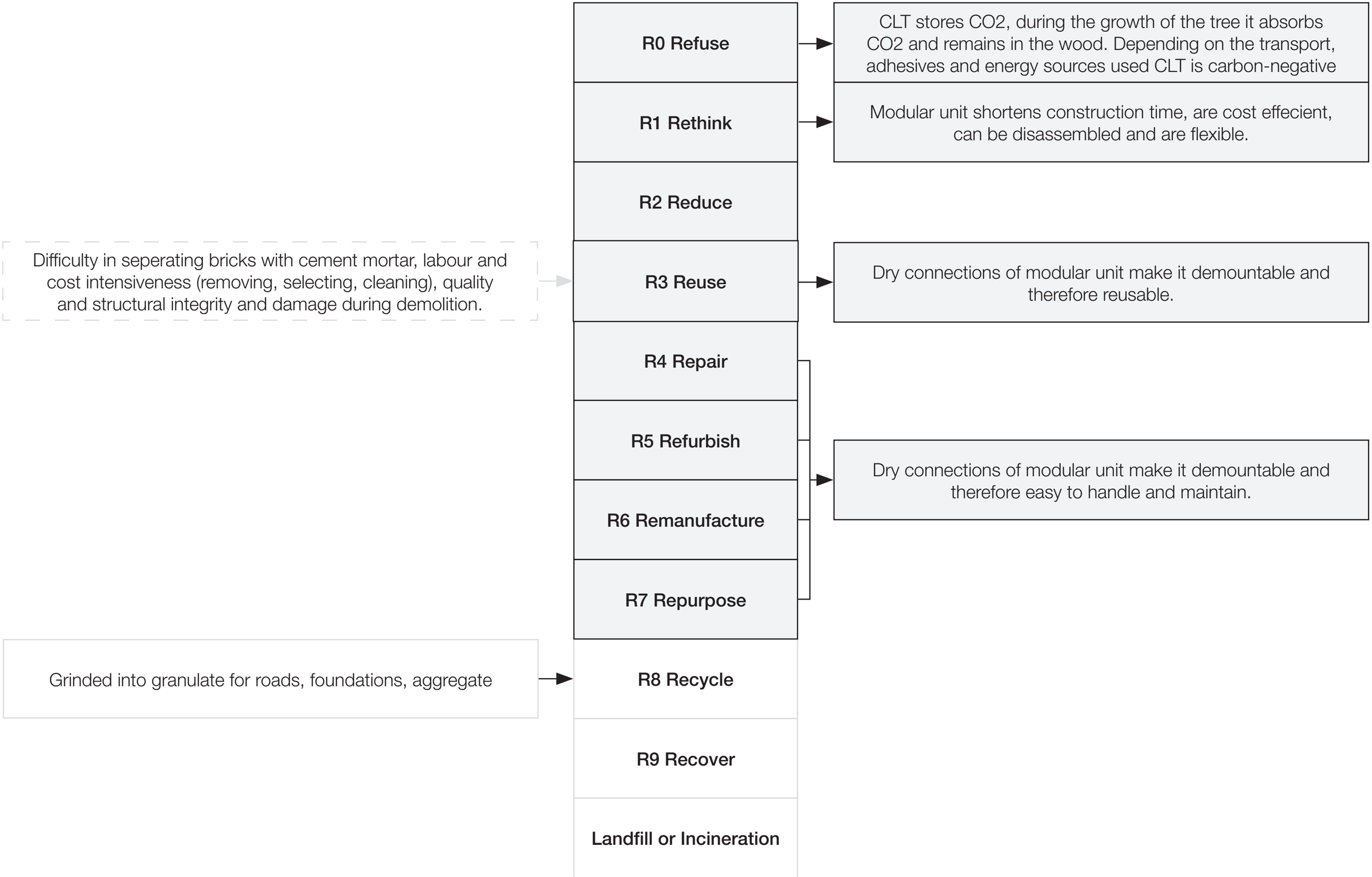








Circular strategy of the Case Studies in the Research: Clay bricks with cement mortar



Circular strategy of the Case Studies in the Research: Clay bricks with cement mortar

Circular strategy of Circle Wood: Modular unit with CLT components and Steel Joint

SLOTERDIJK
WESTERPARK
Eilandsgracht
BOS EN LOMMER
Brantasgracht
Dijksgracht
LAAN VAN SPARTAAN
AMSTERDAM-WEST
JORDAAN
DE WALLEN
Amsterdam
OUD-WEST
Amsterdamse grachten
OVERTOOMSE VELD
Rembrandtpark
ZEEBURG
Spiegelgracht
DAPPERBUURT
AMSTERDAM
SLOTERVAART
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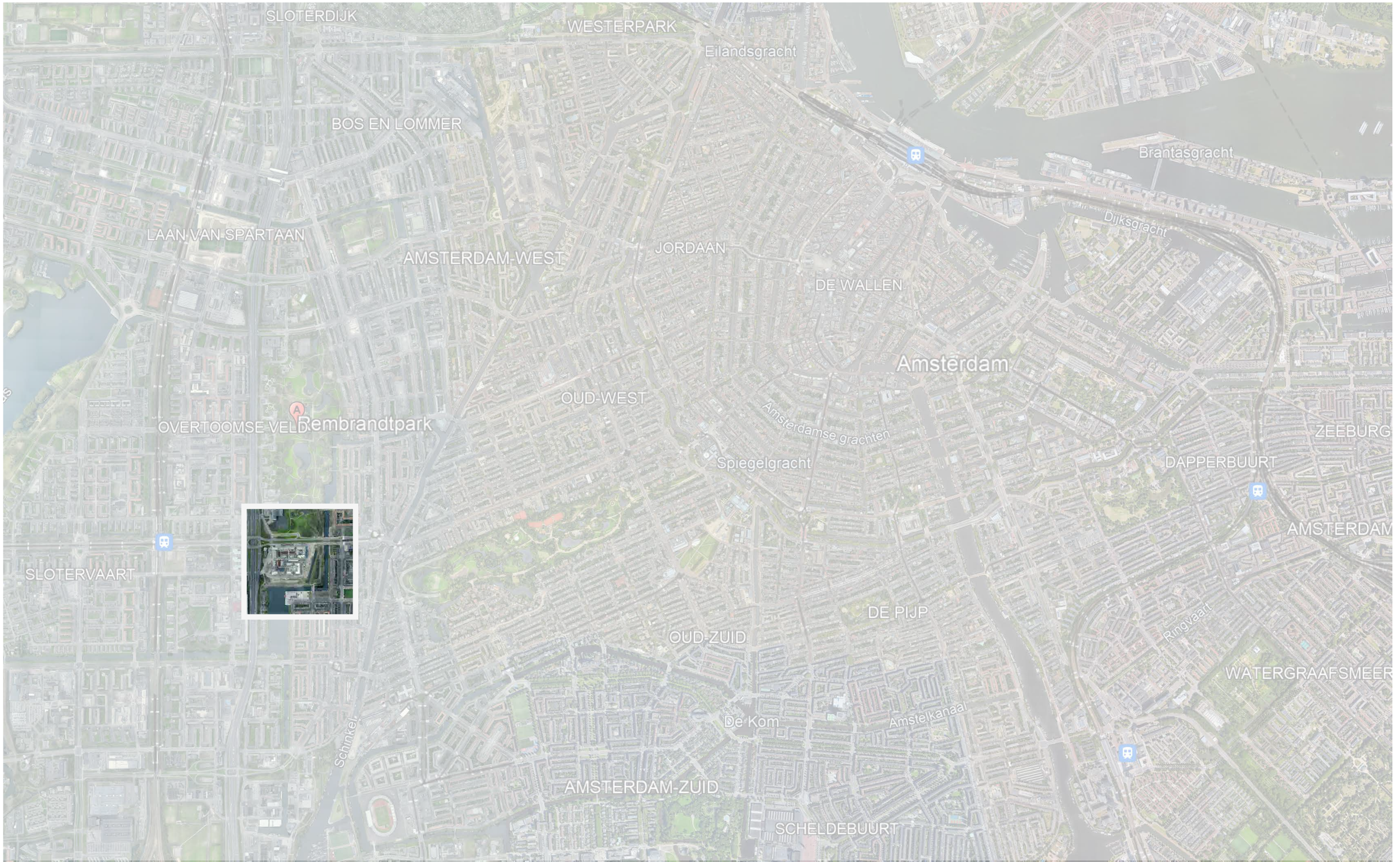
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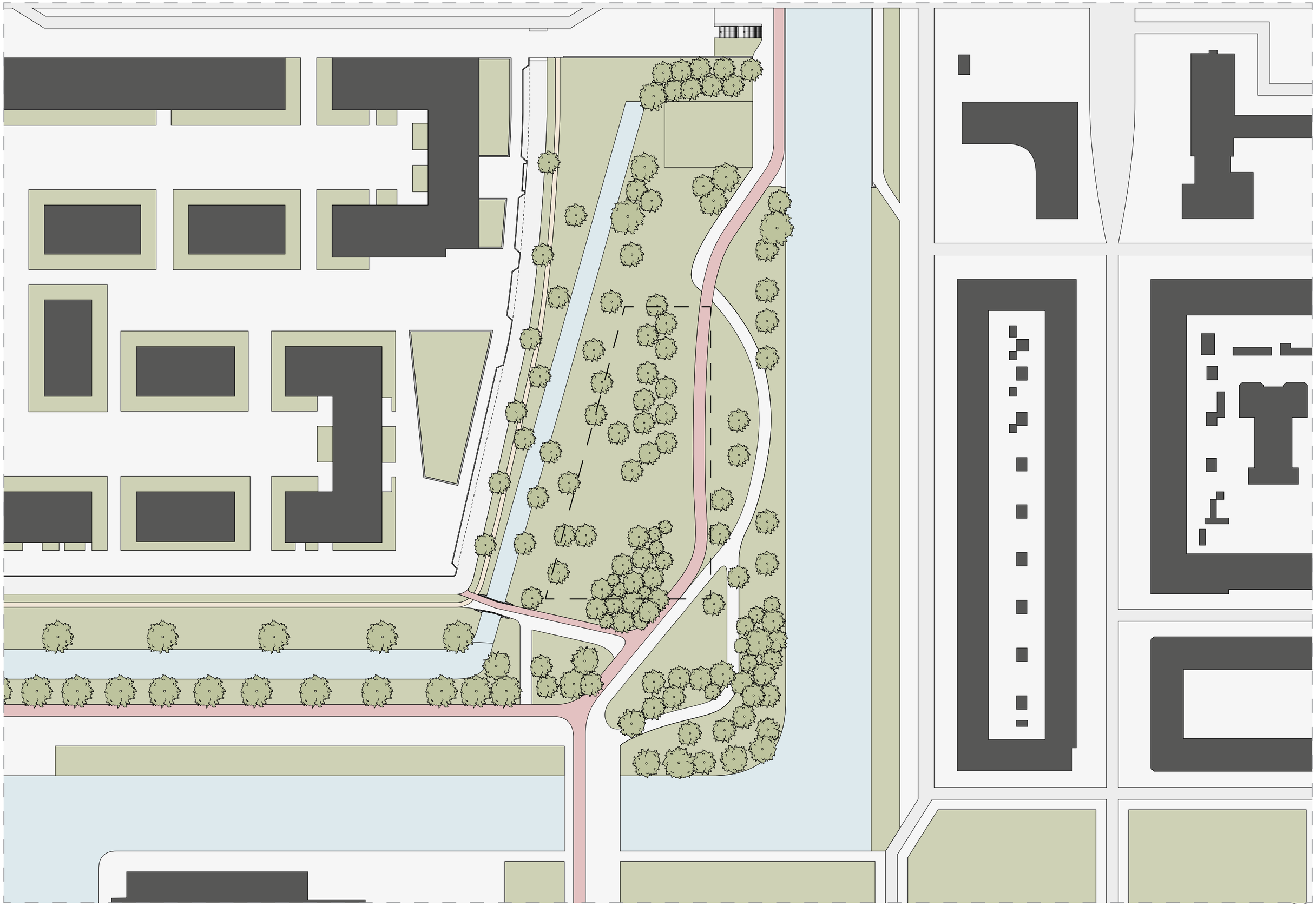
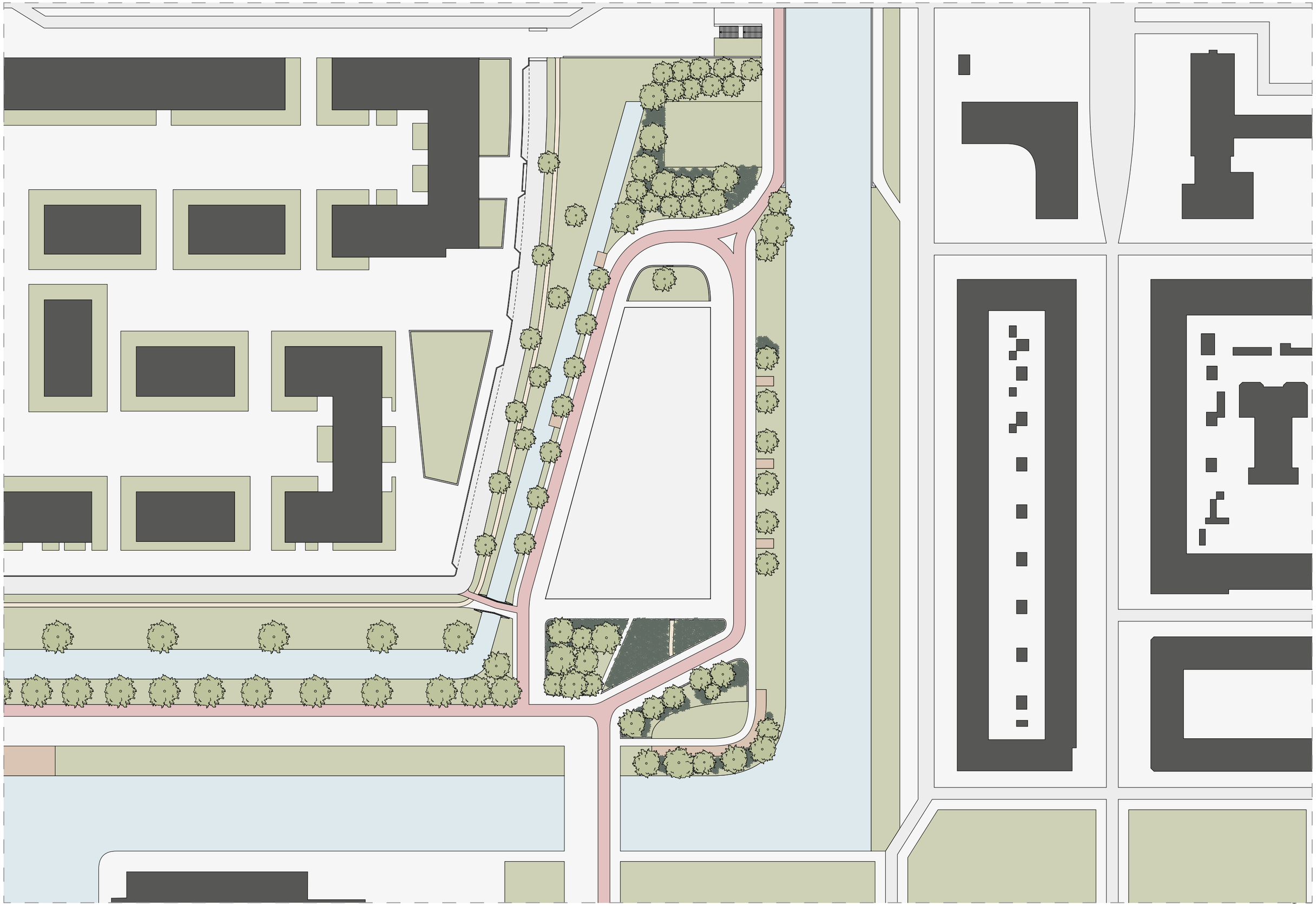
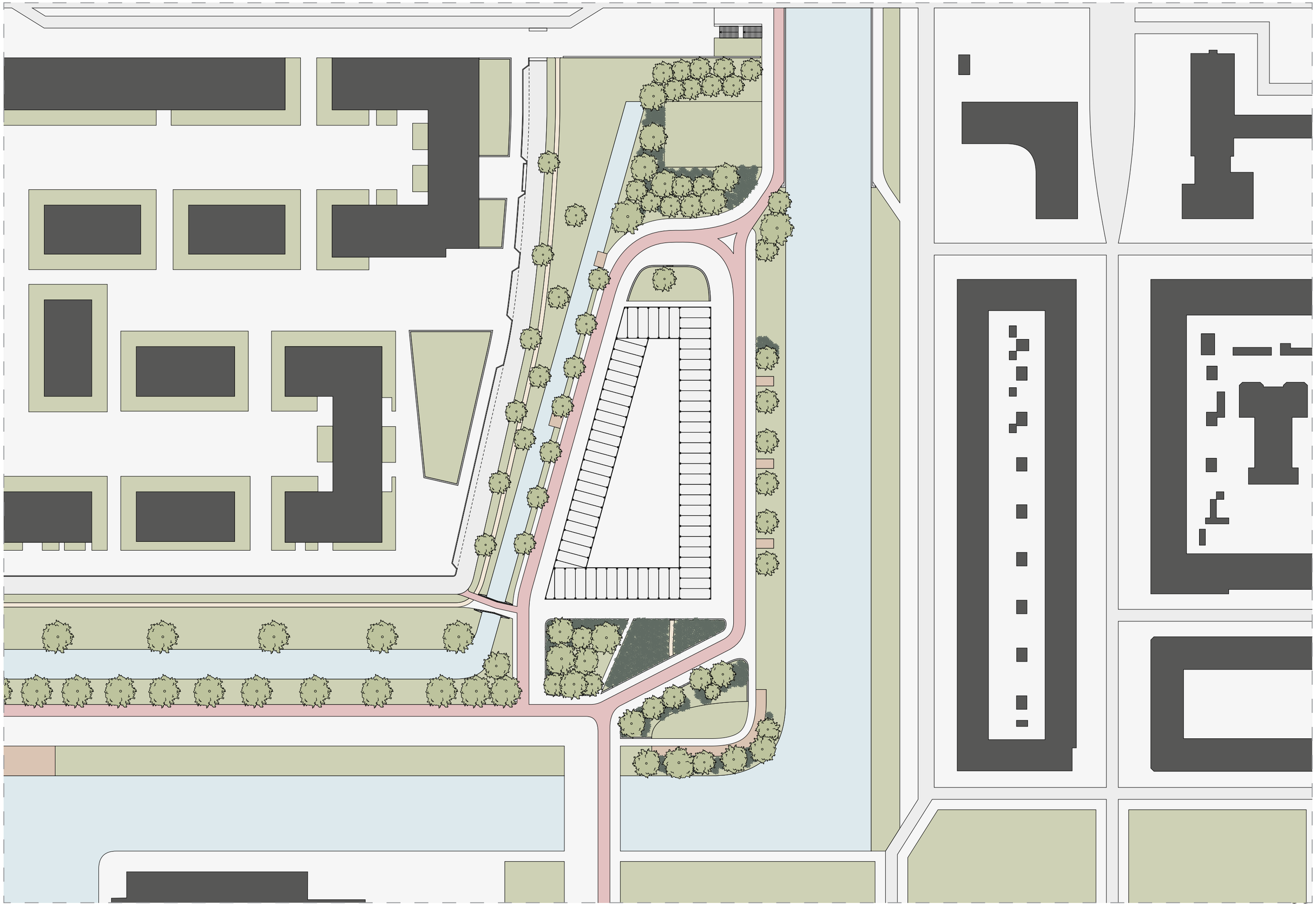
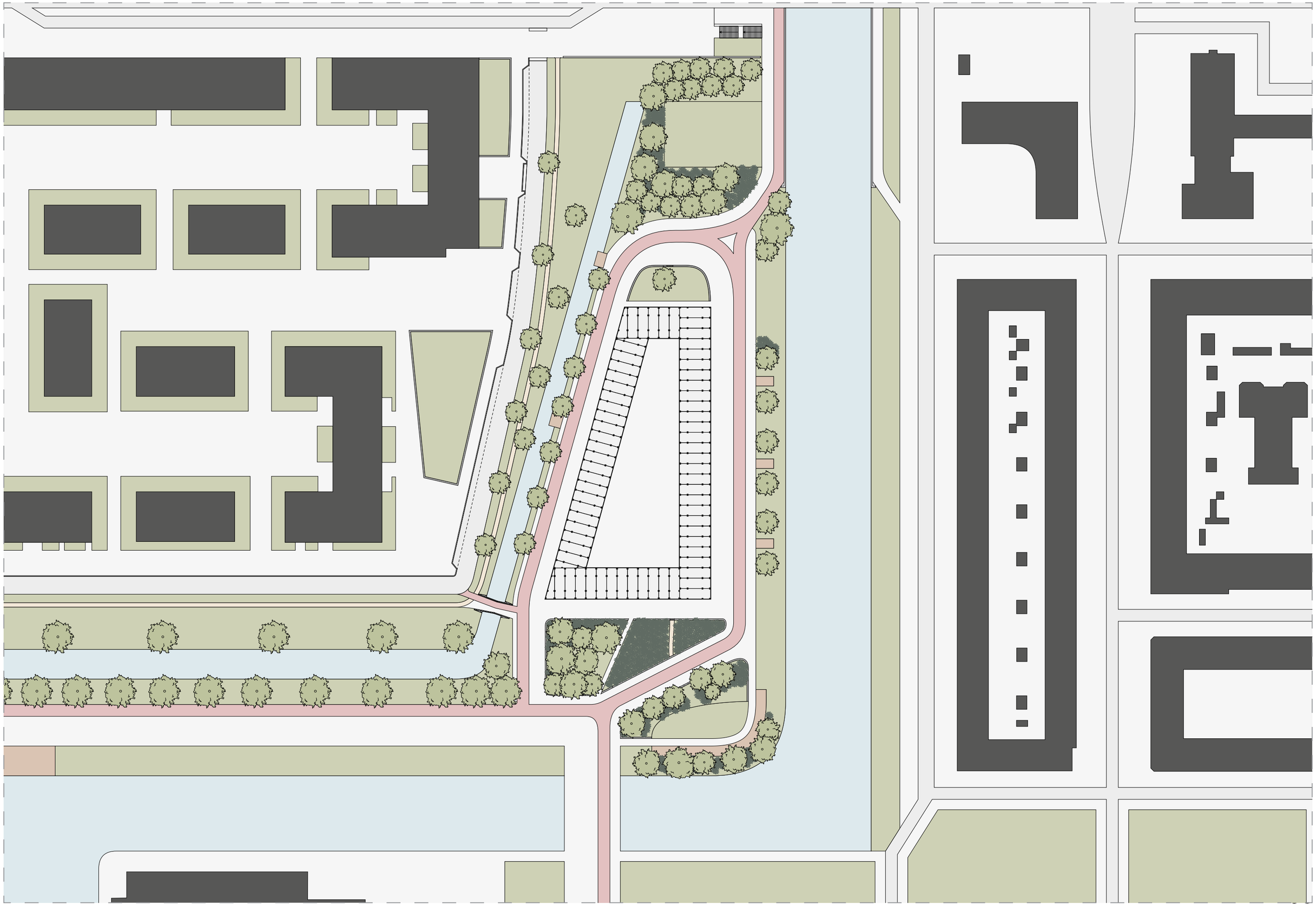
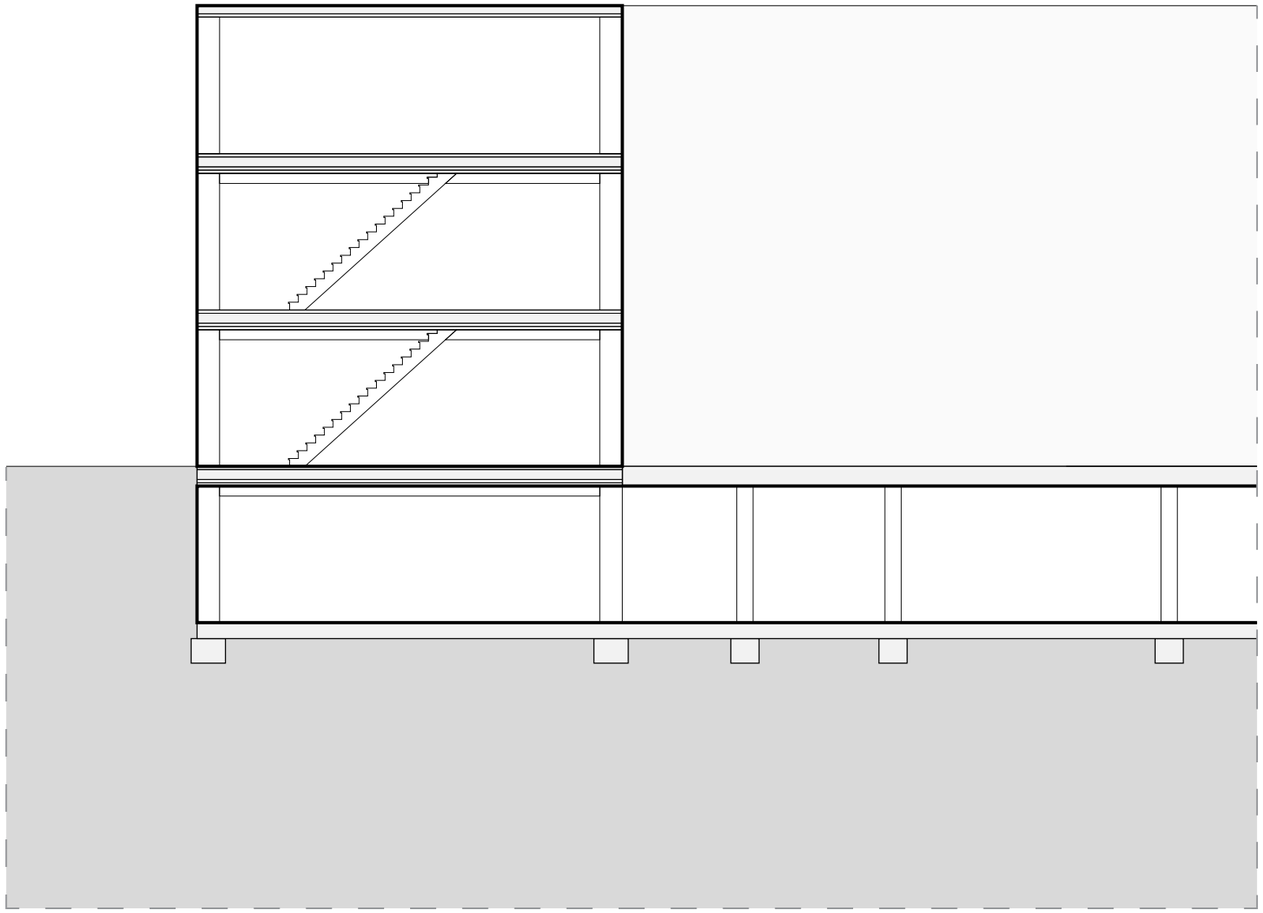


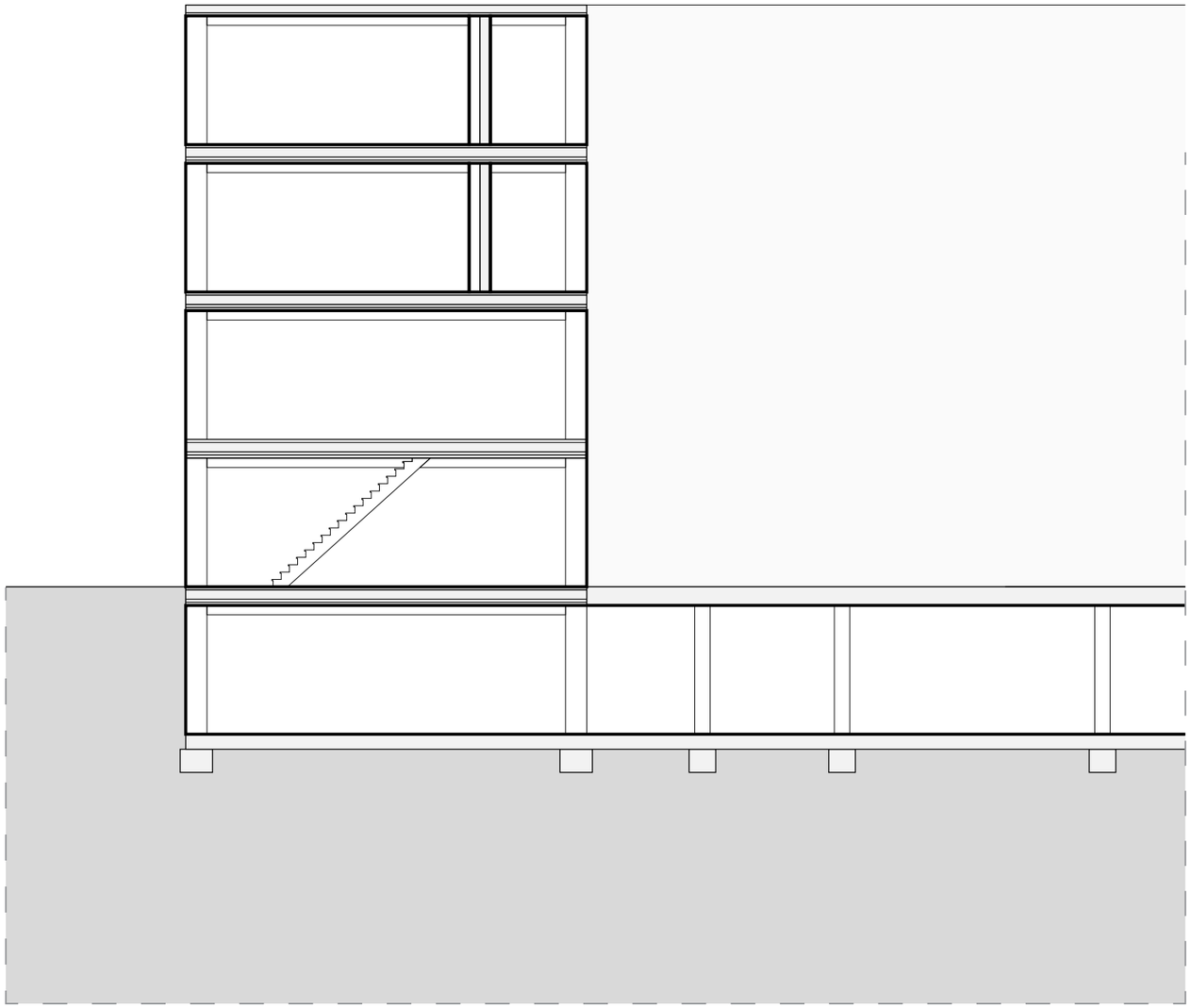




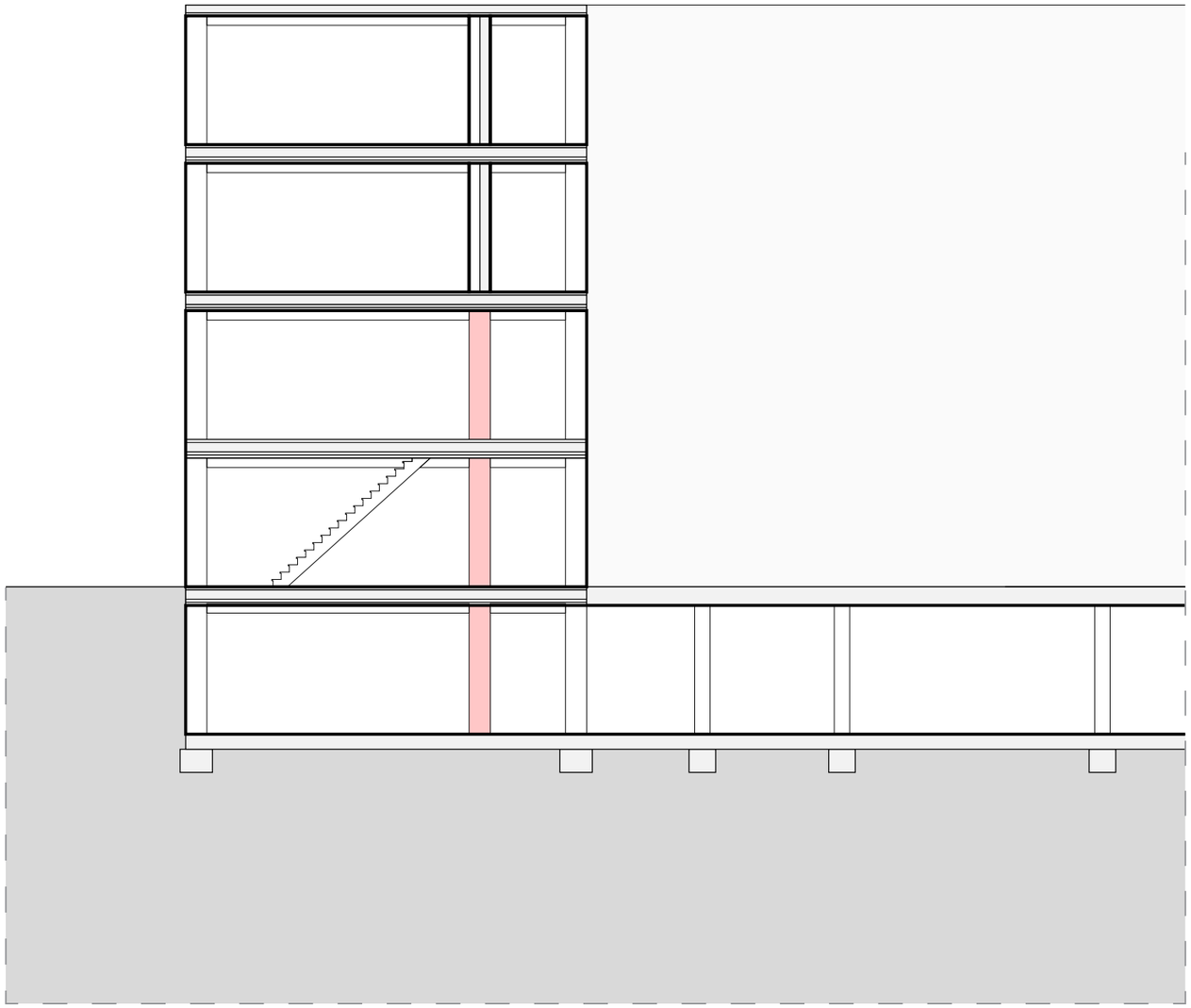




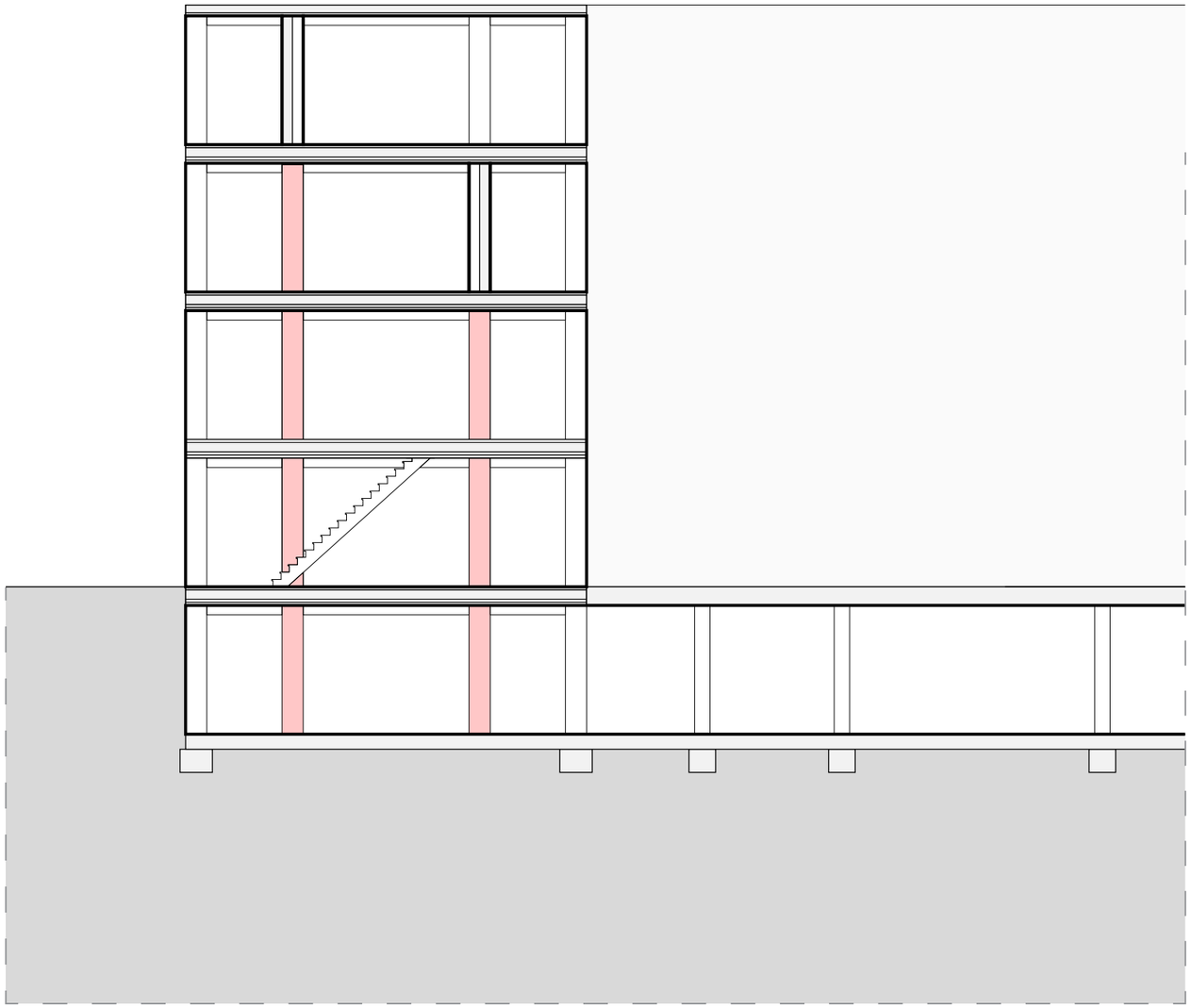
Column Placement rowhouse



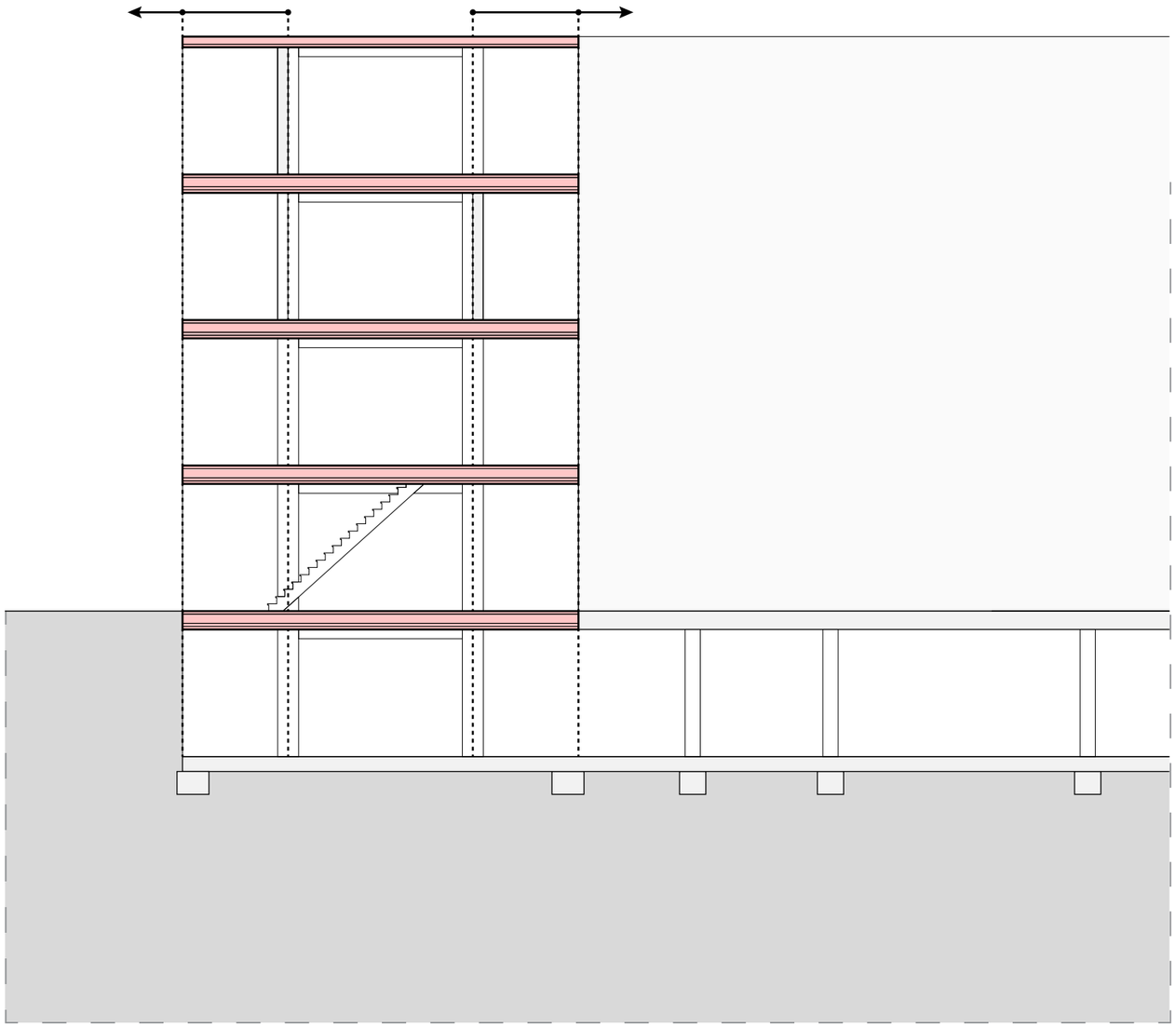
Extra Columns with apartments



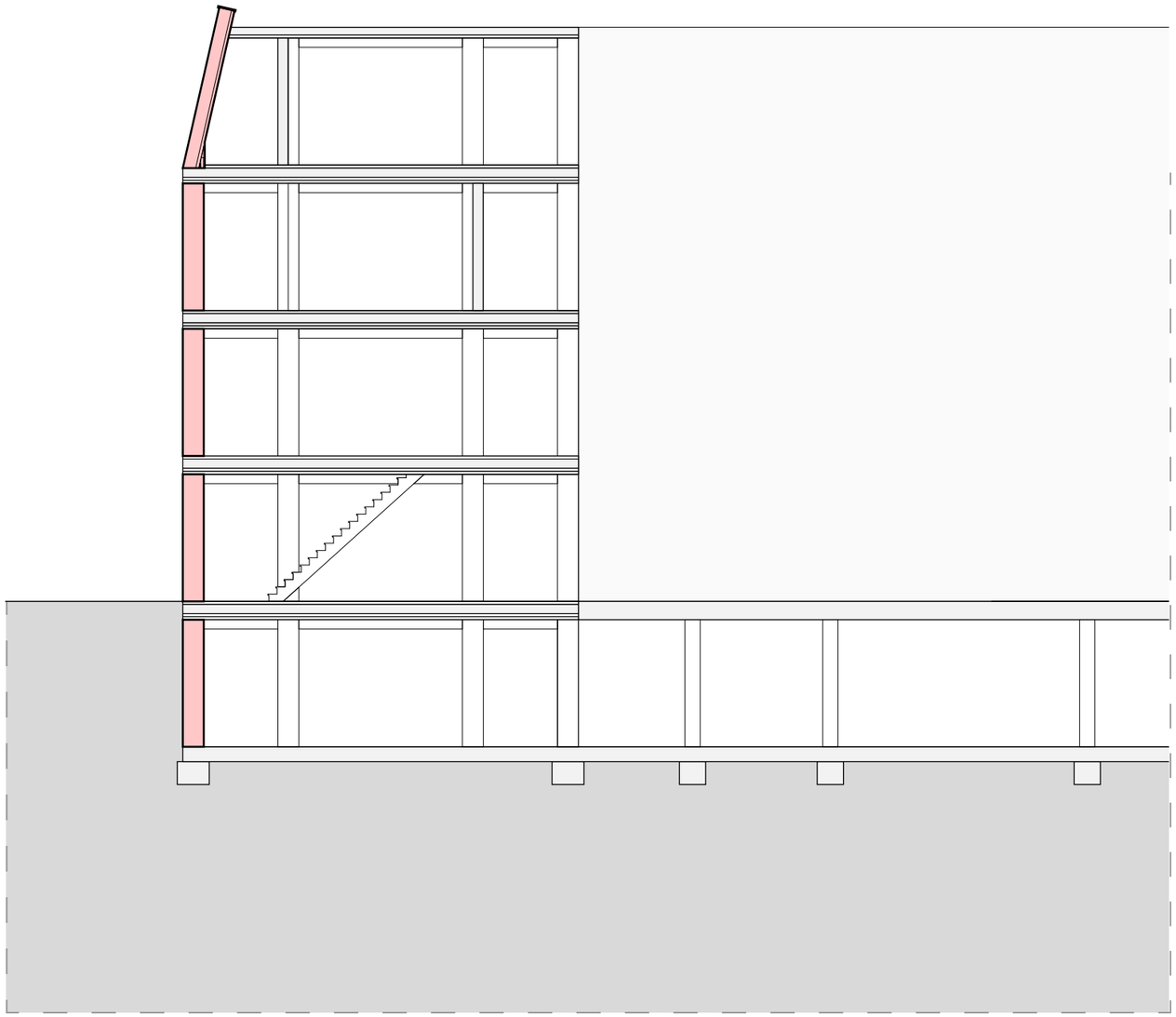
Extra Columns building with apartments stacked on maisonettes



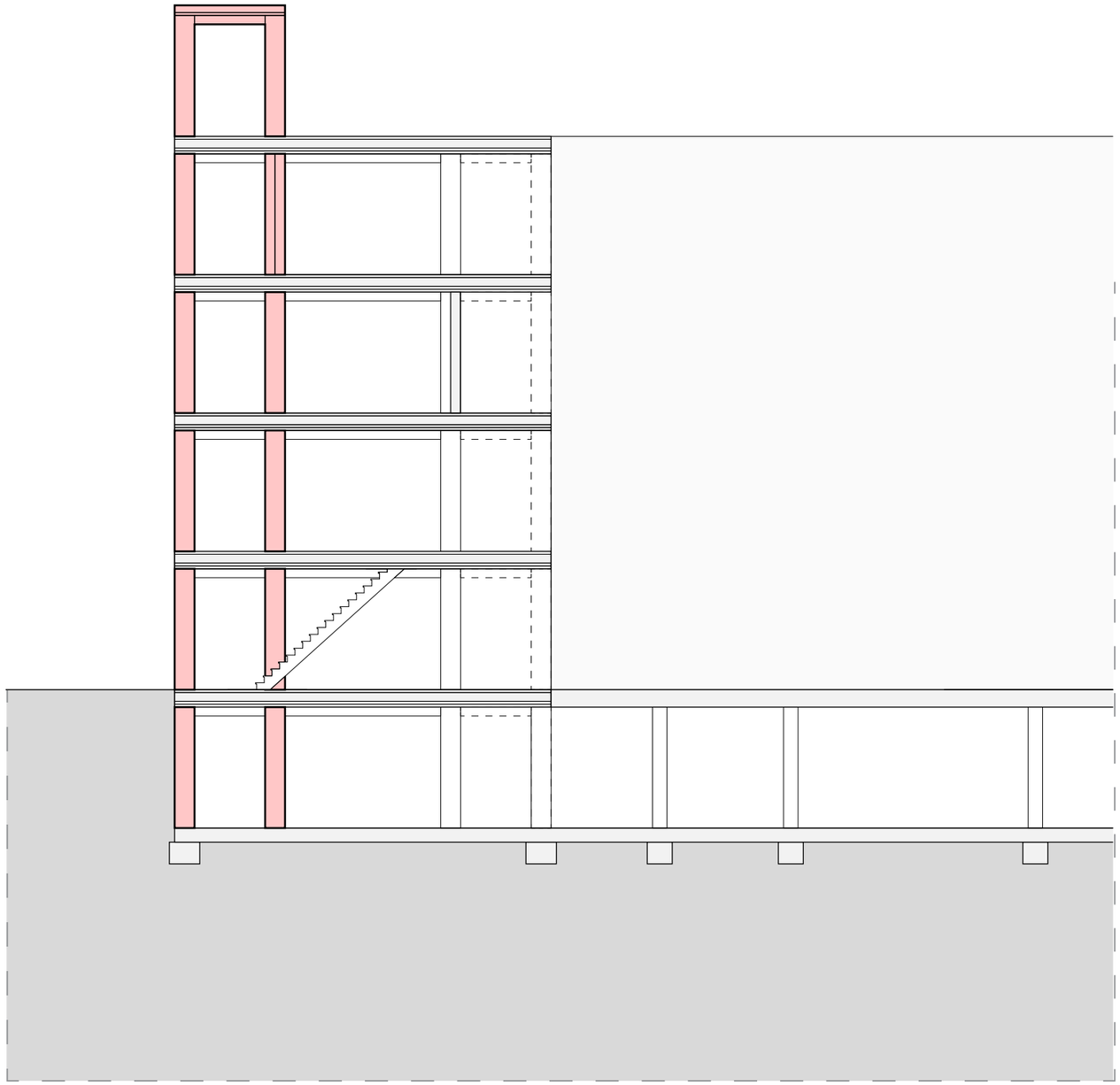
Extra Columns for design freedom



The middle section could be enlarged



Addition of heavier loads to support the use of the design principles



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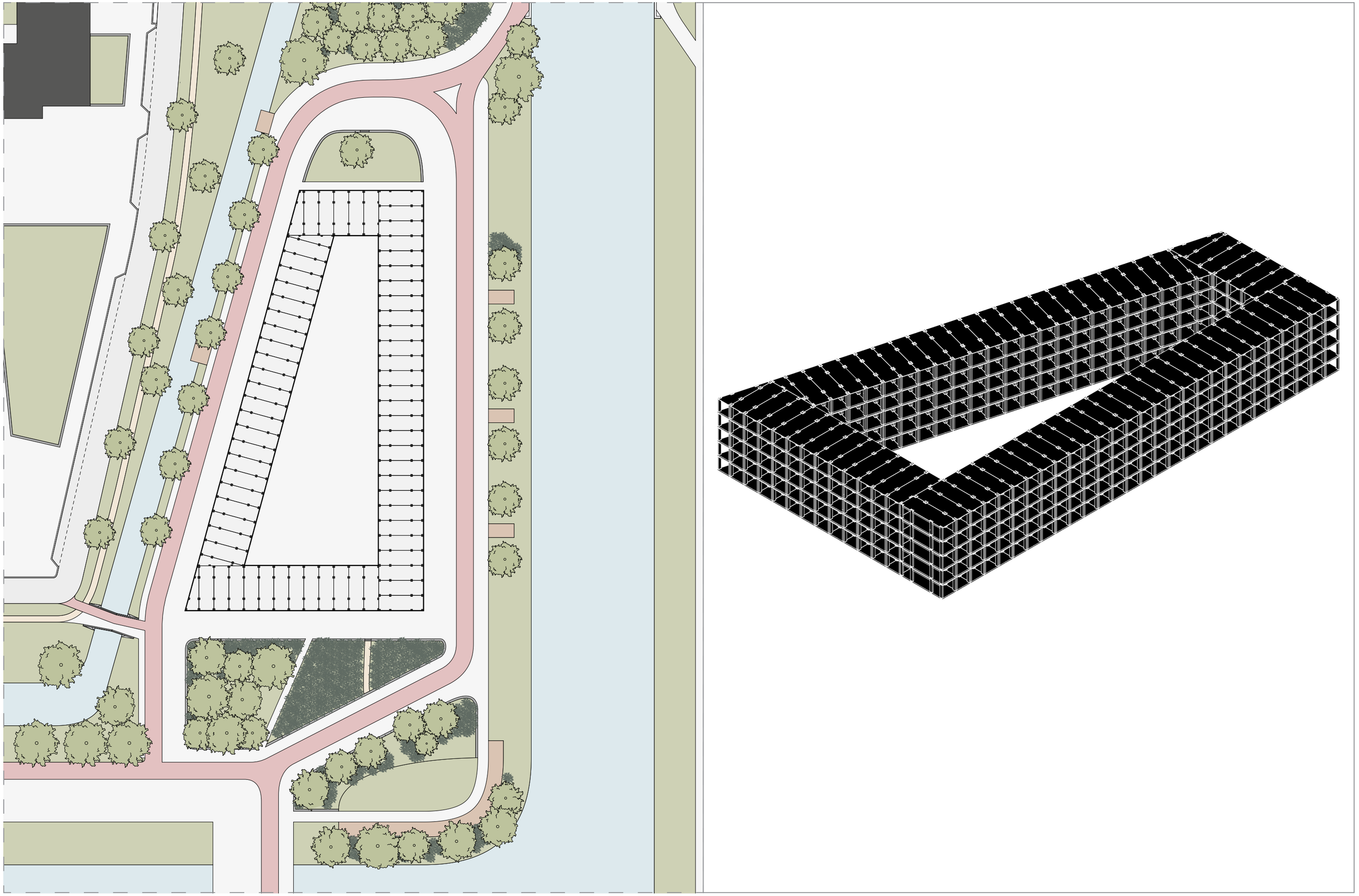
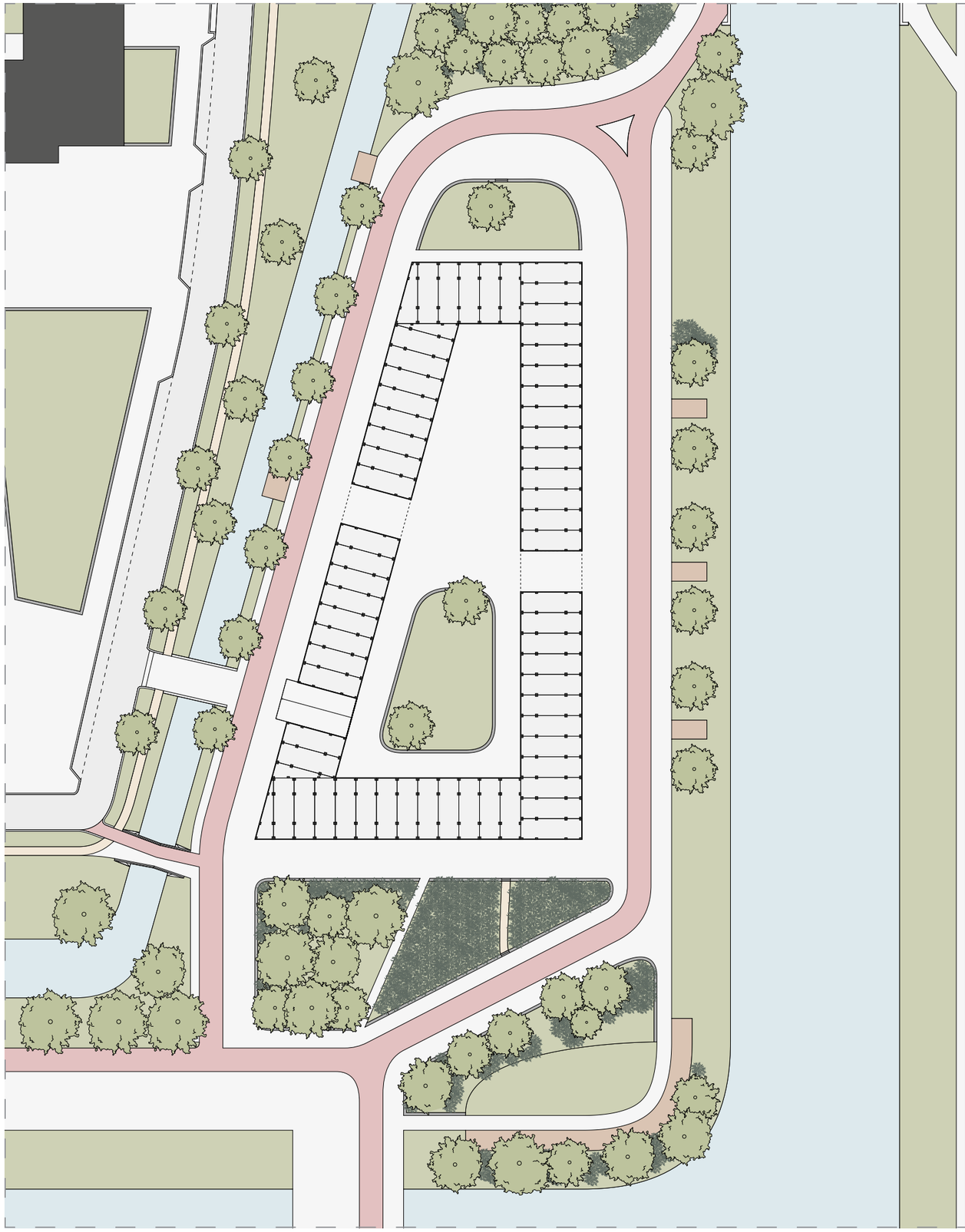
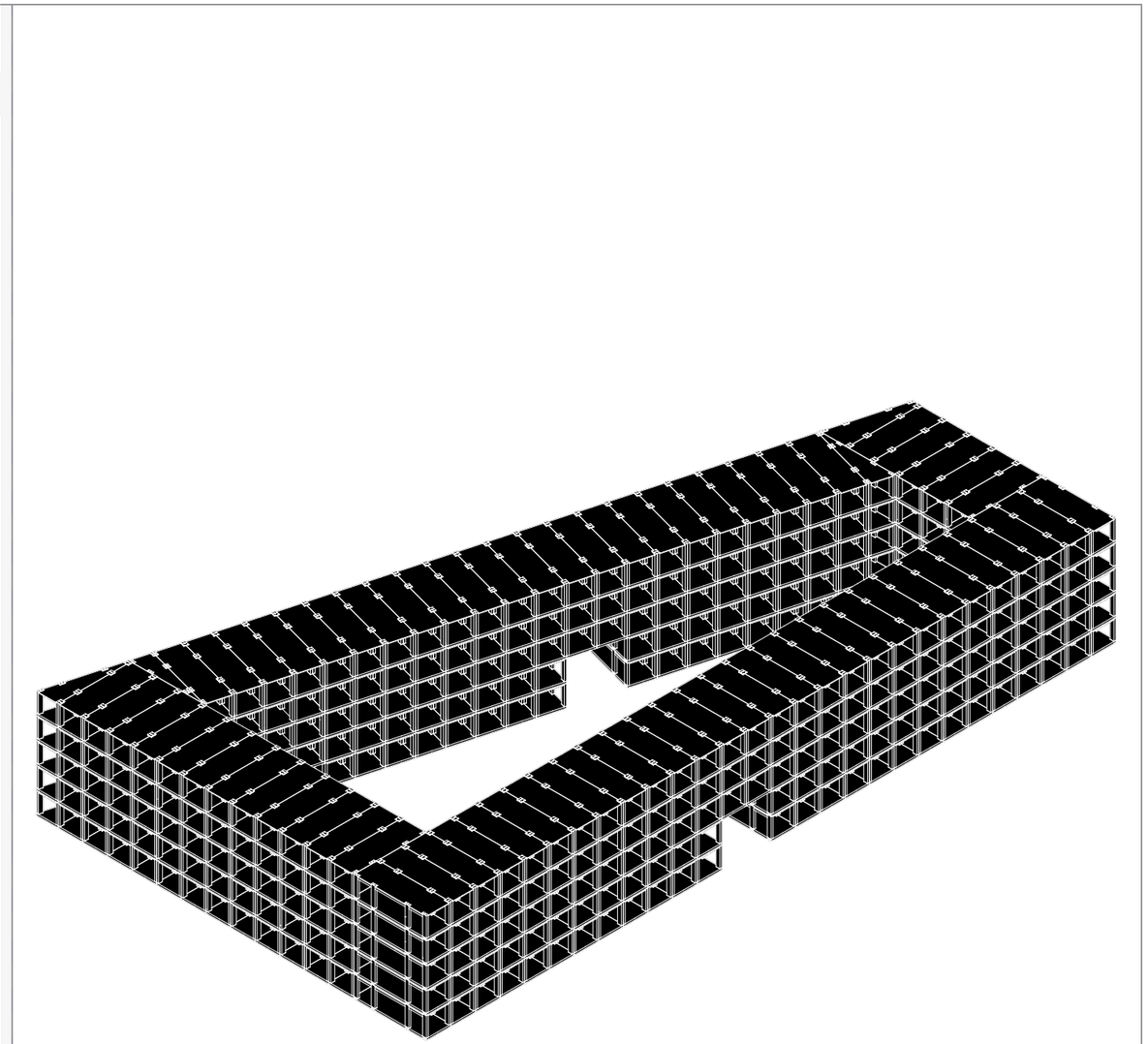
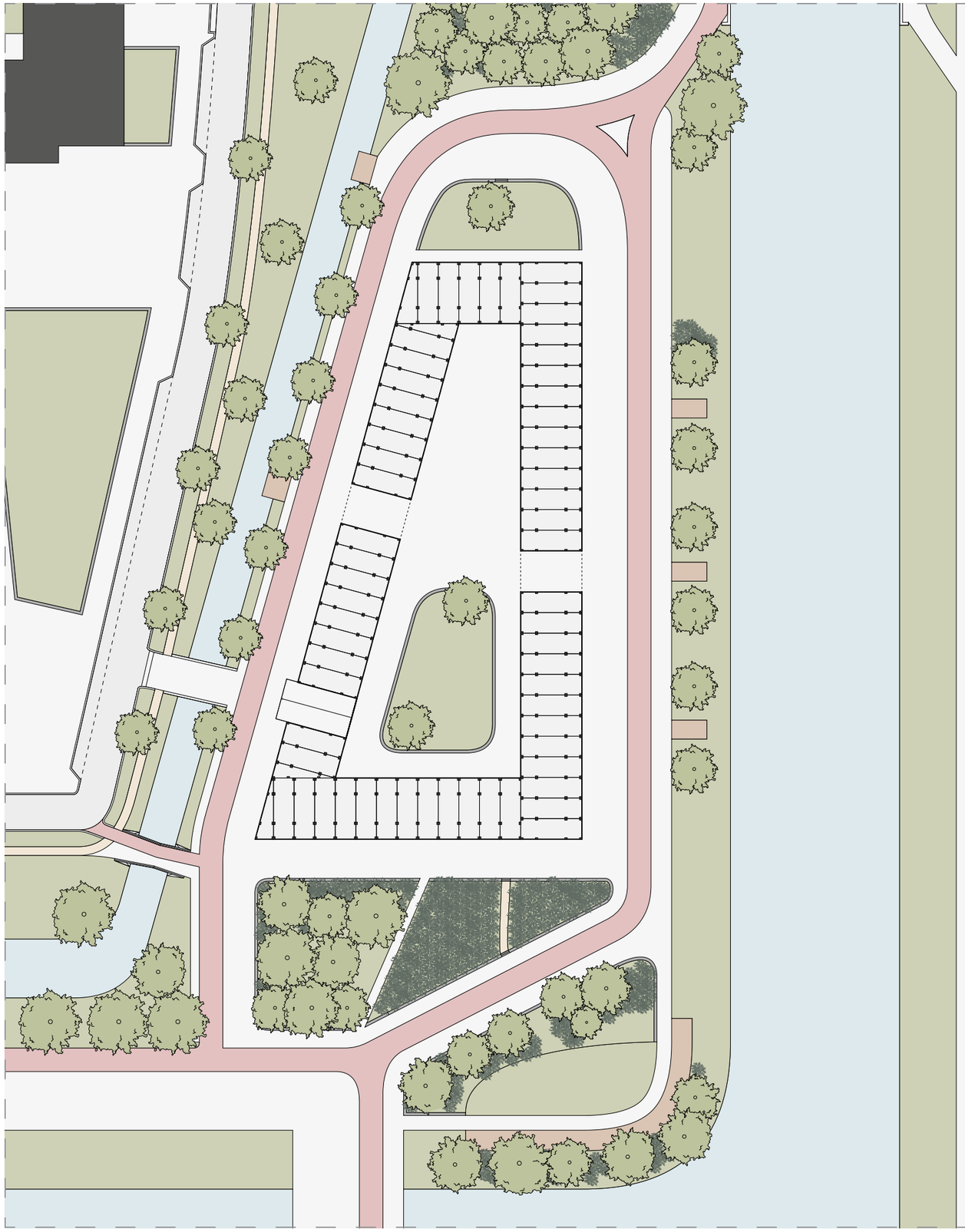


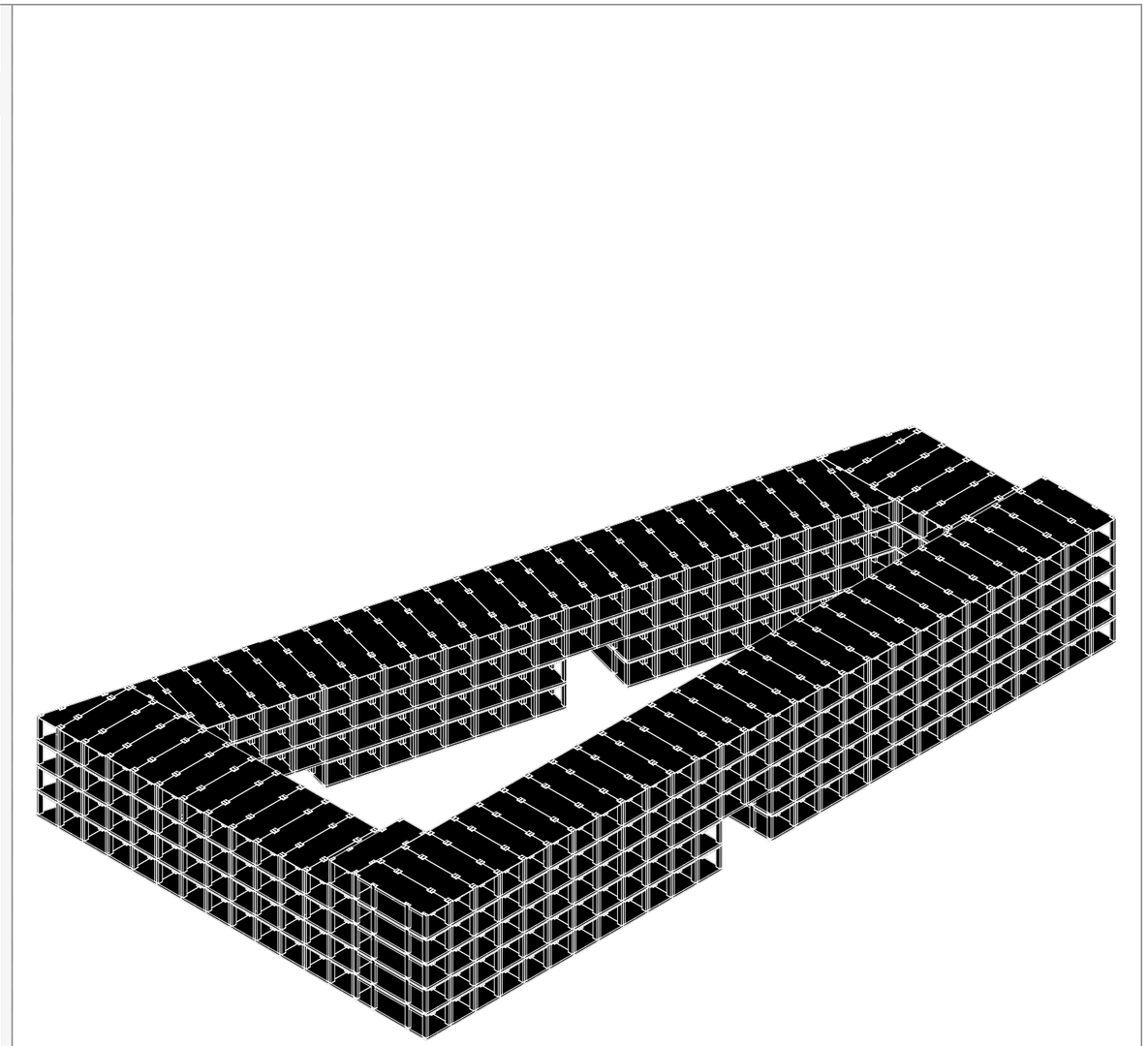
Concept Plan and 3D



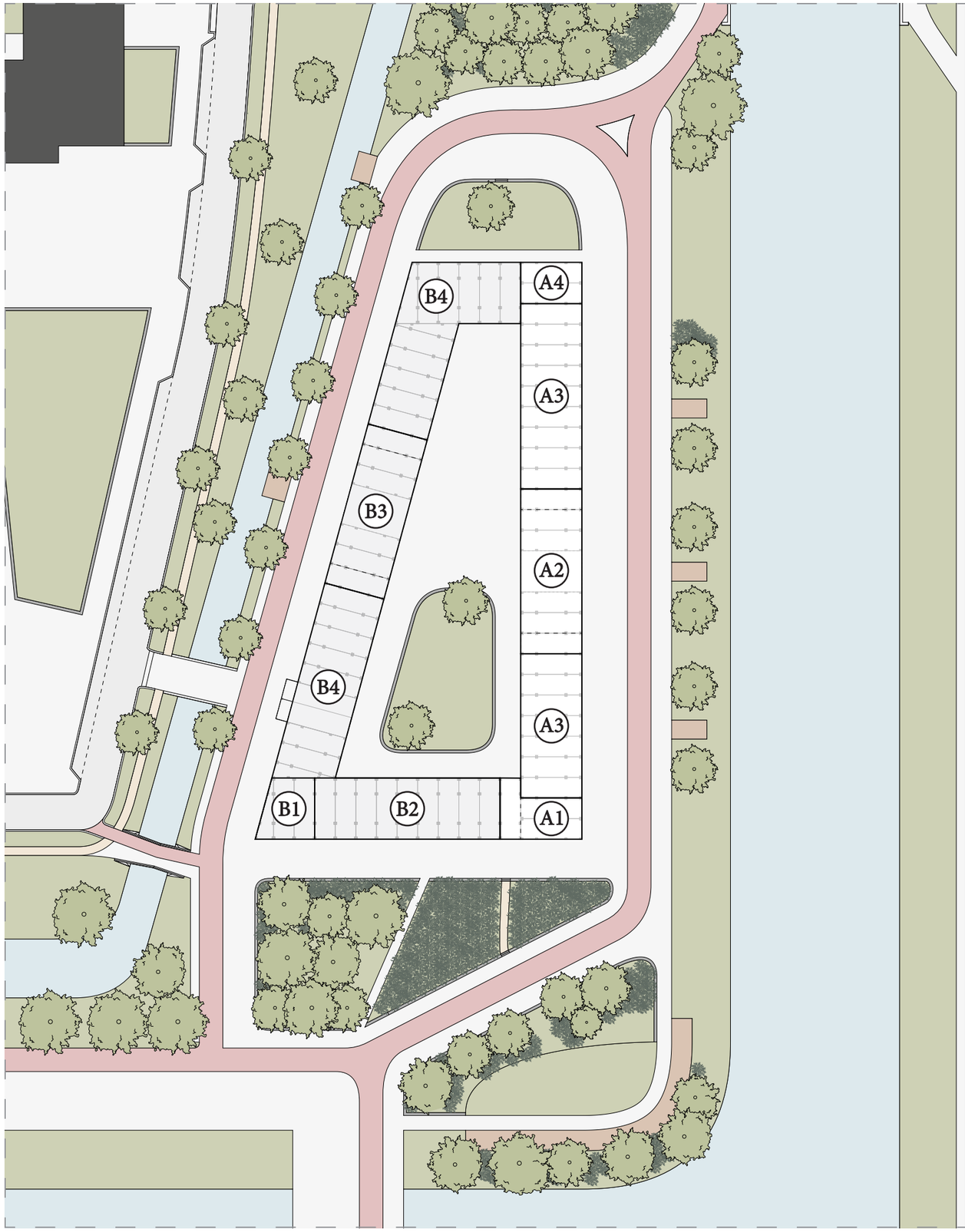


Open closed block



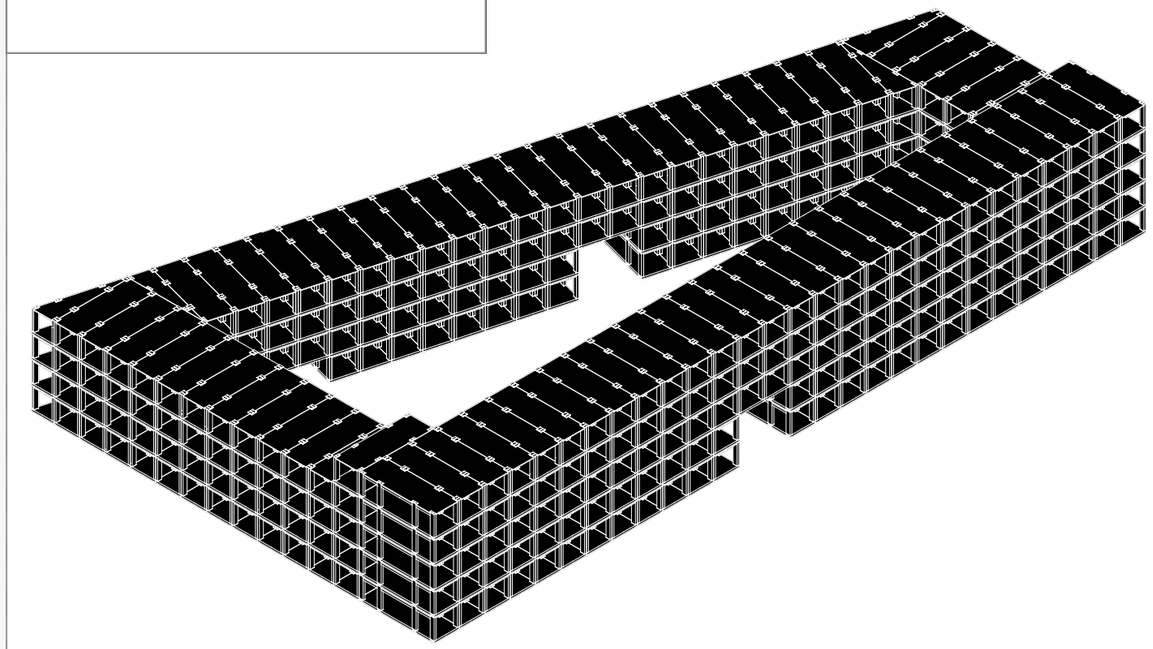


Lower sides for more sun

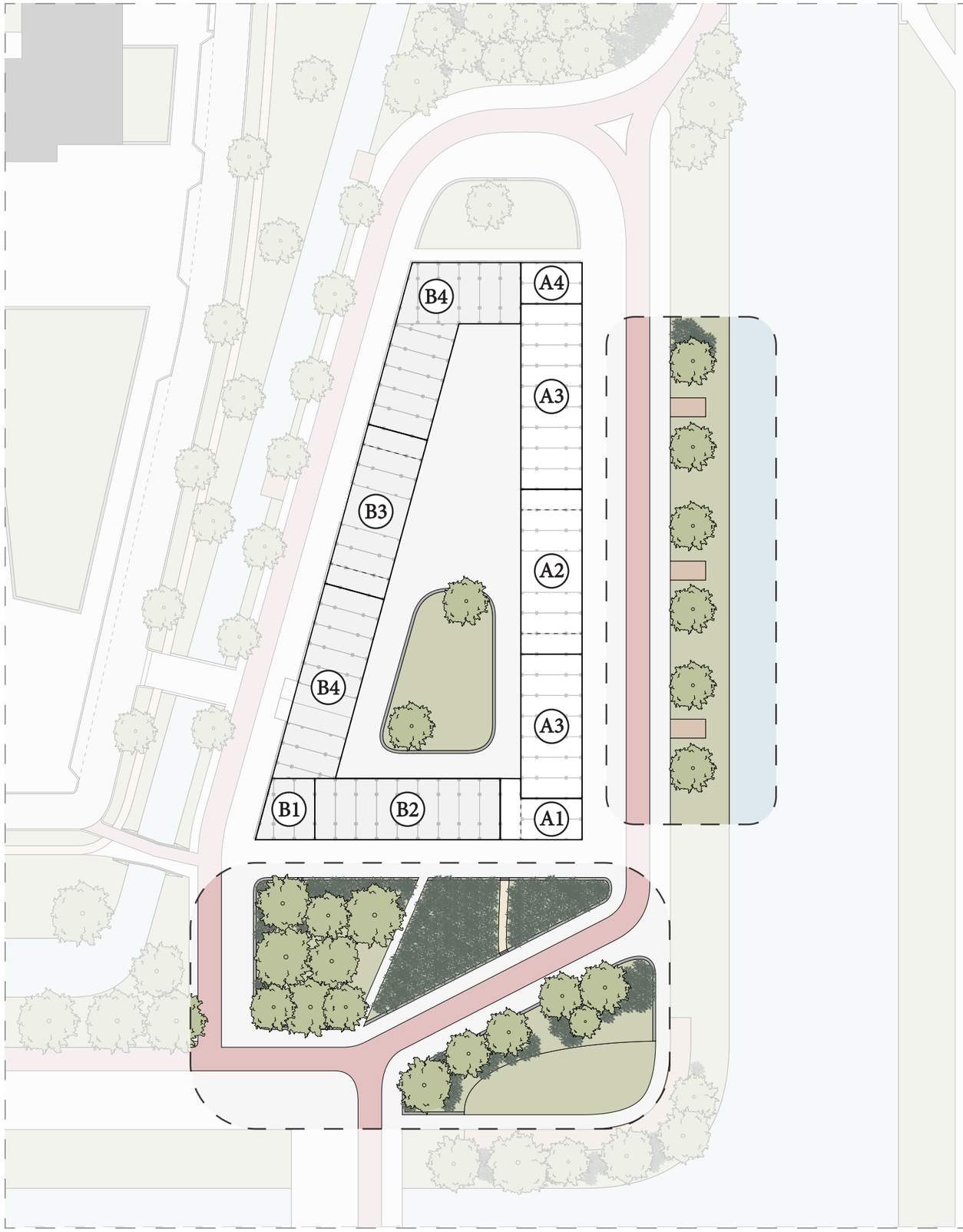


Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.



Lower sides for more sun and hierarchy



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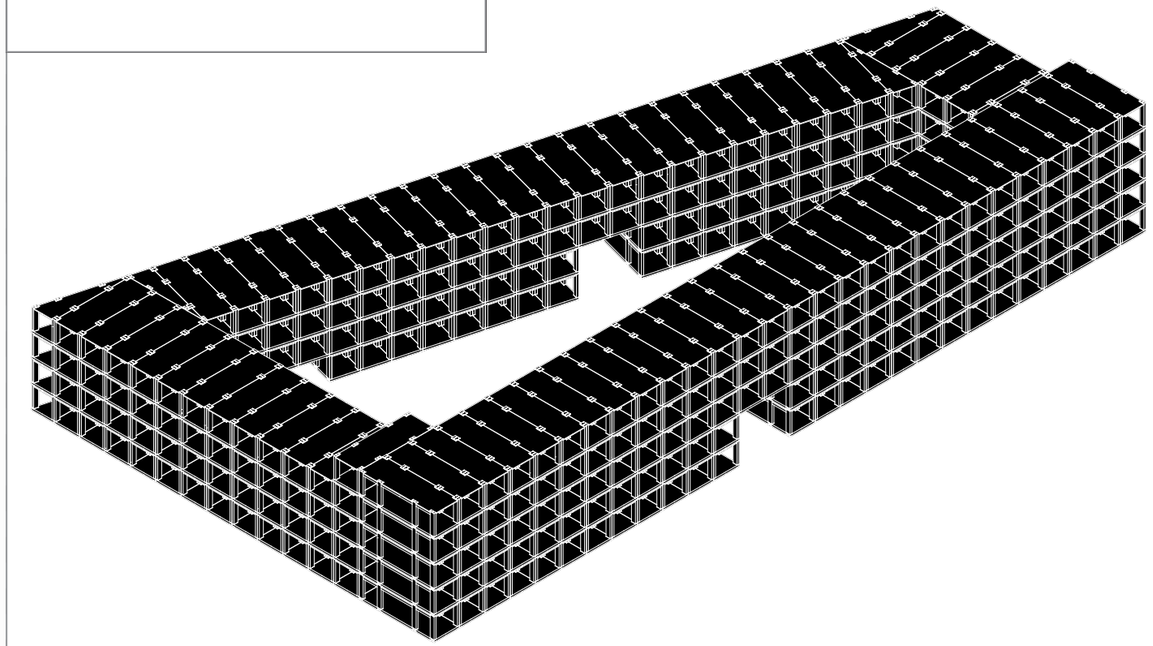
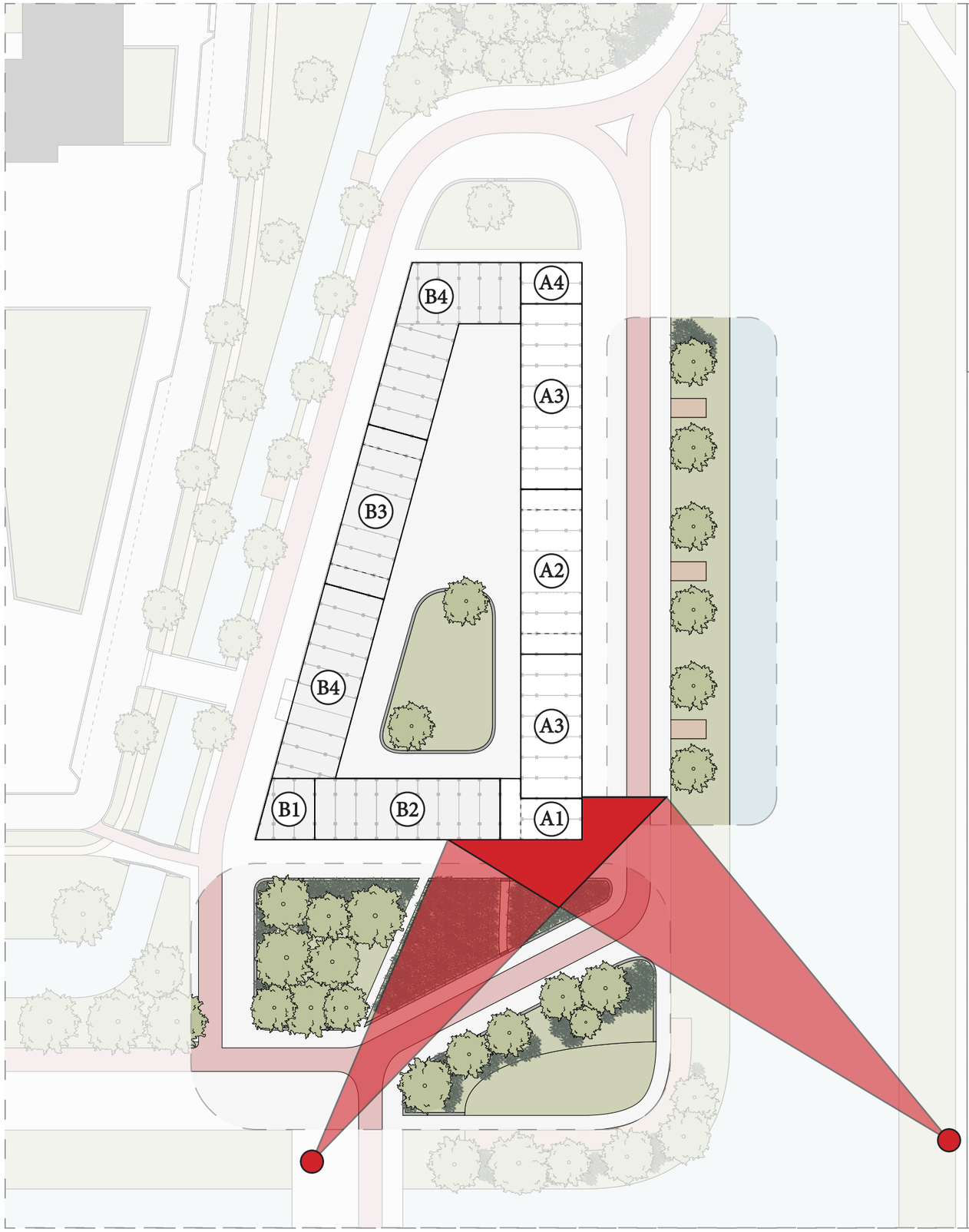


Lower sides for more sun and hierarchy



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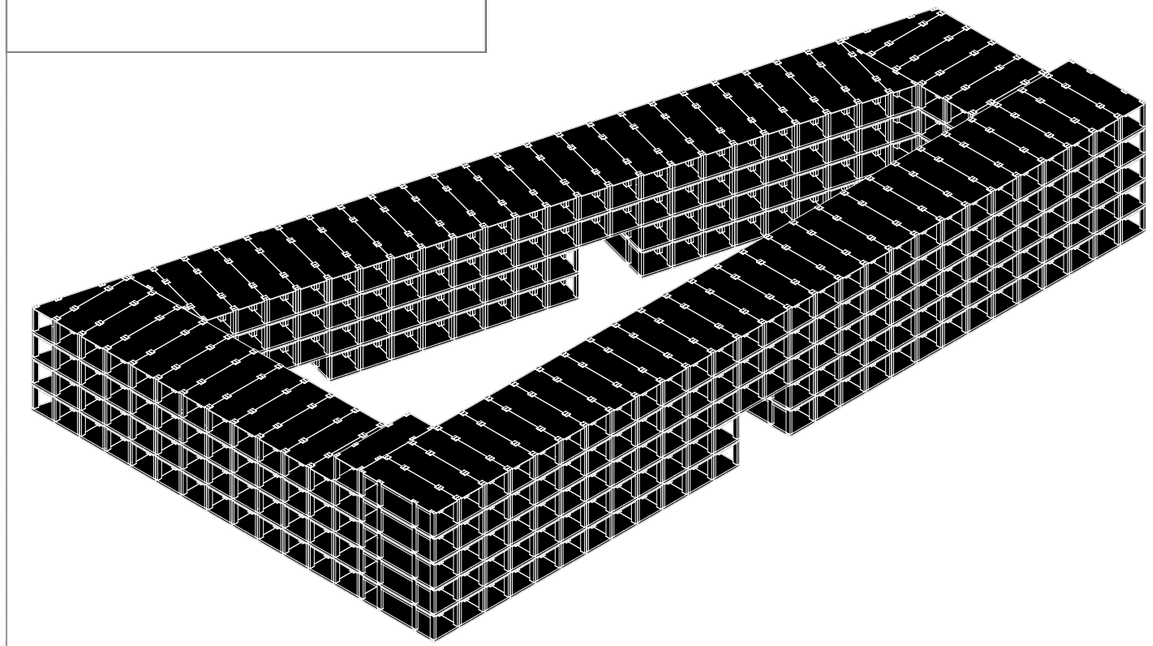
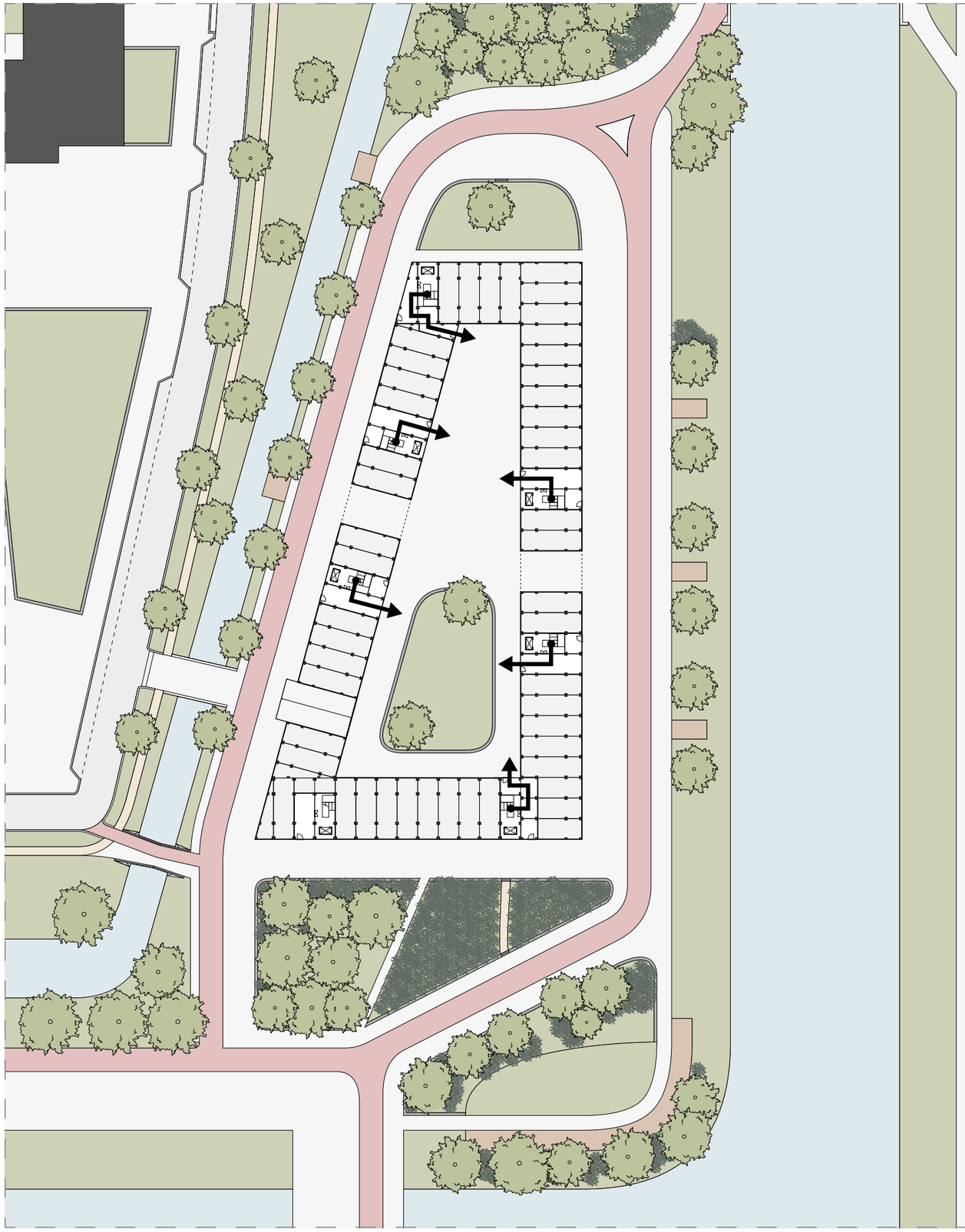
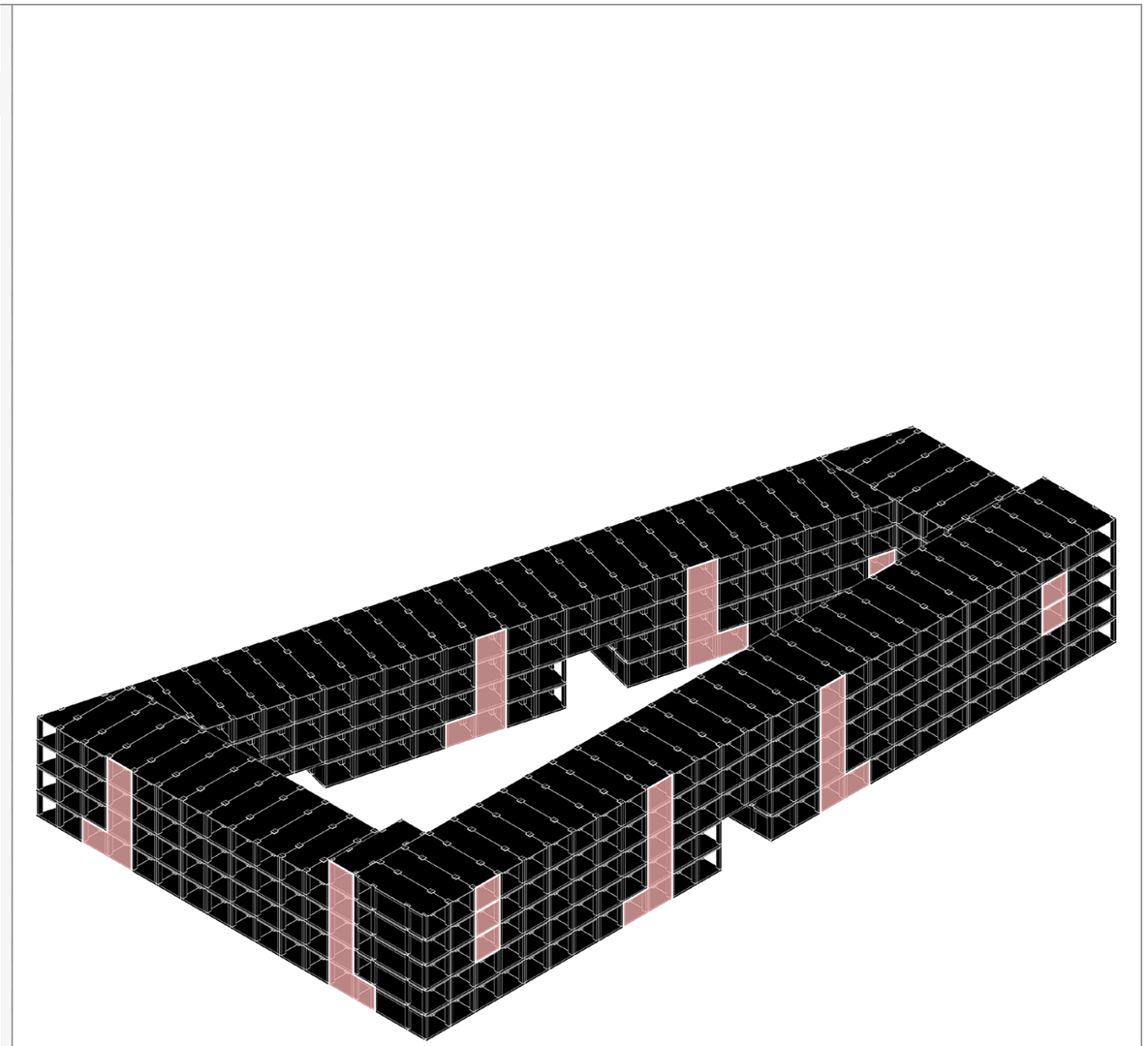
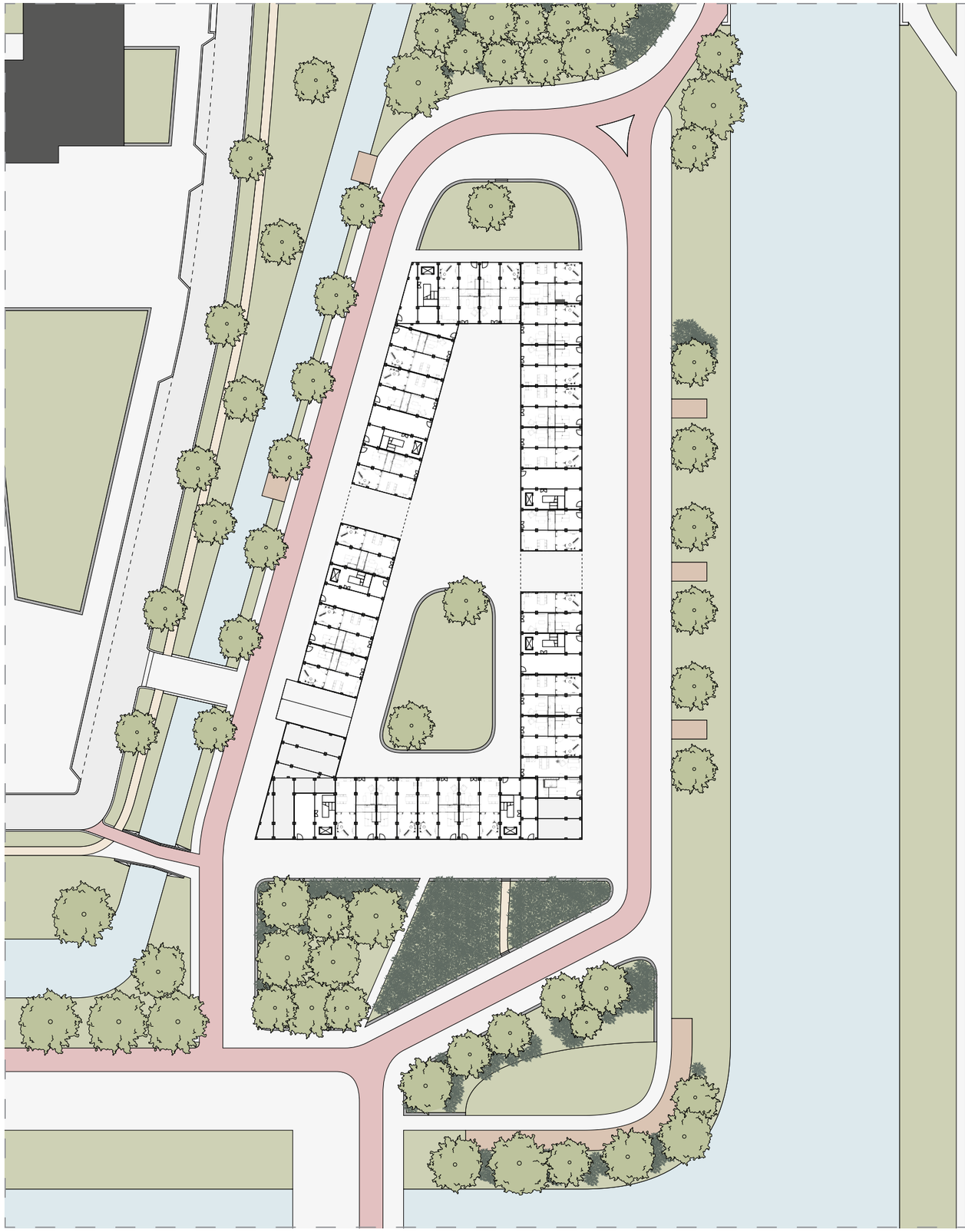


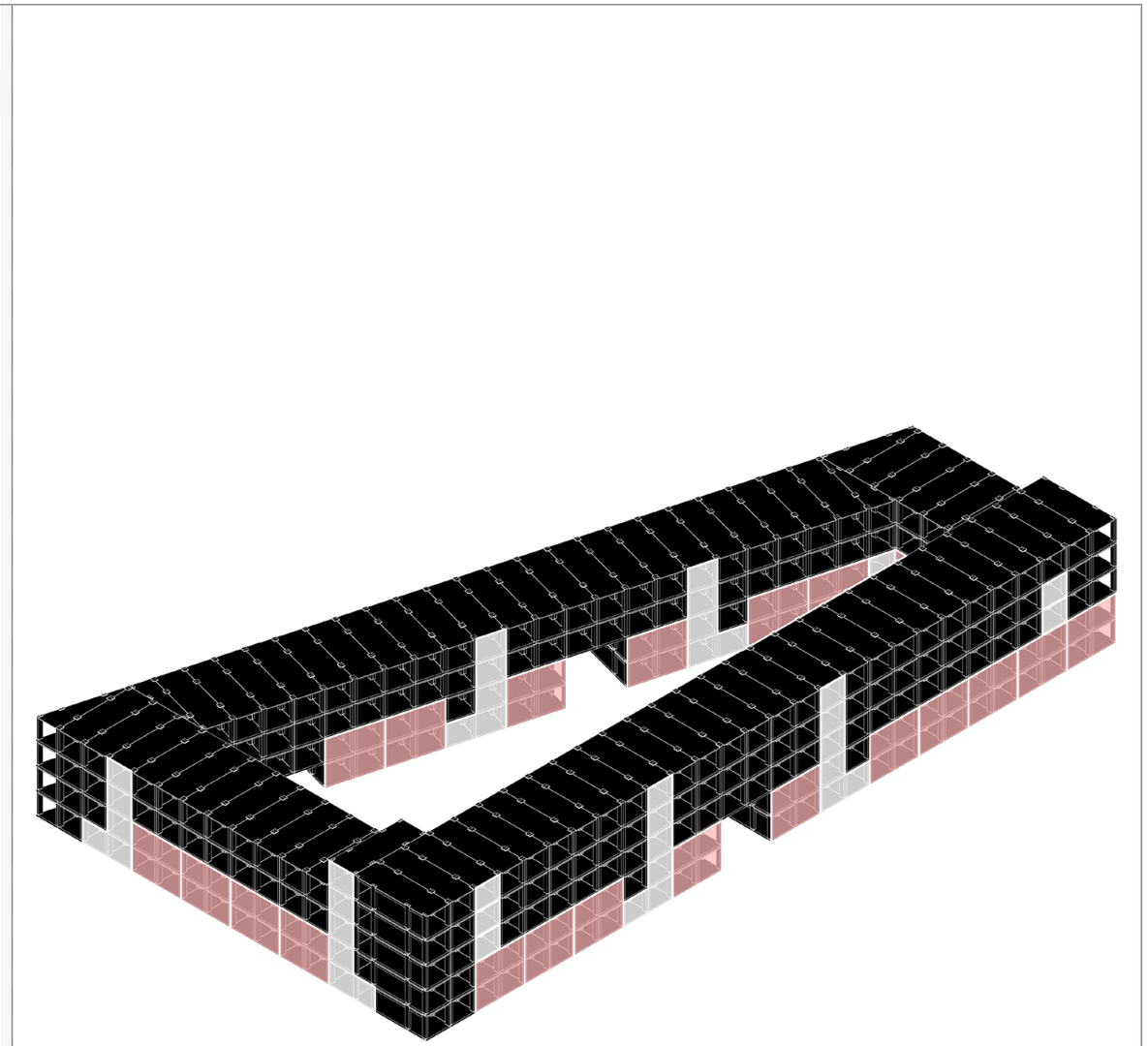
Lower sides for more sun and hierarchy



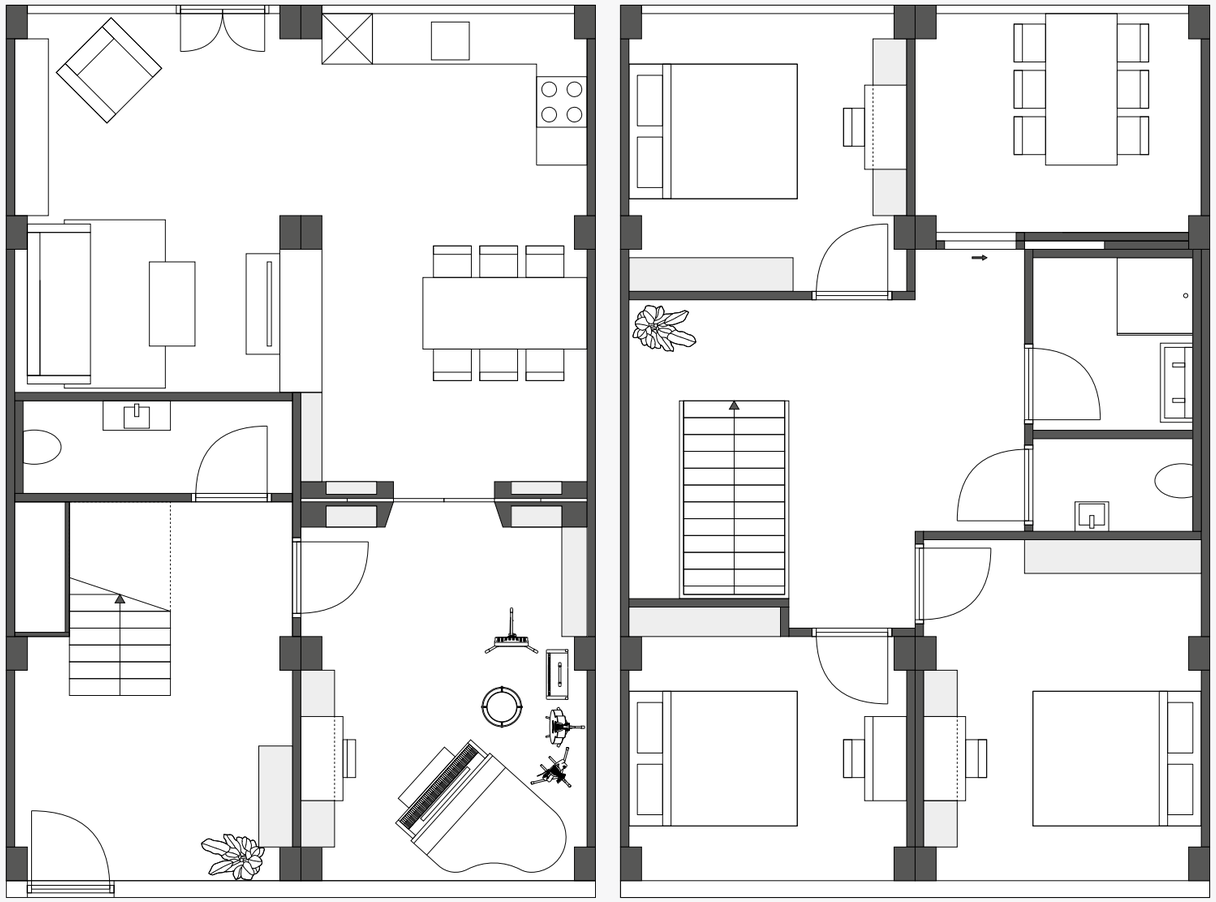


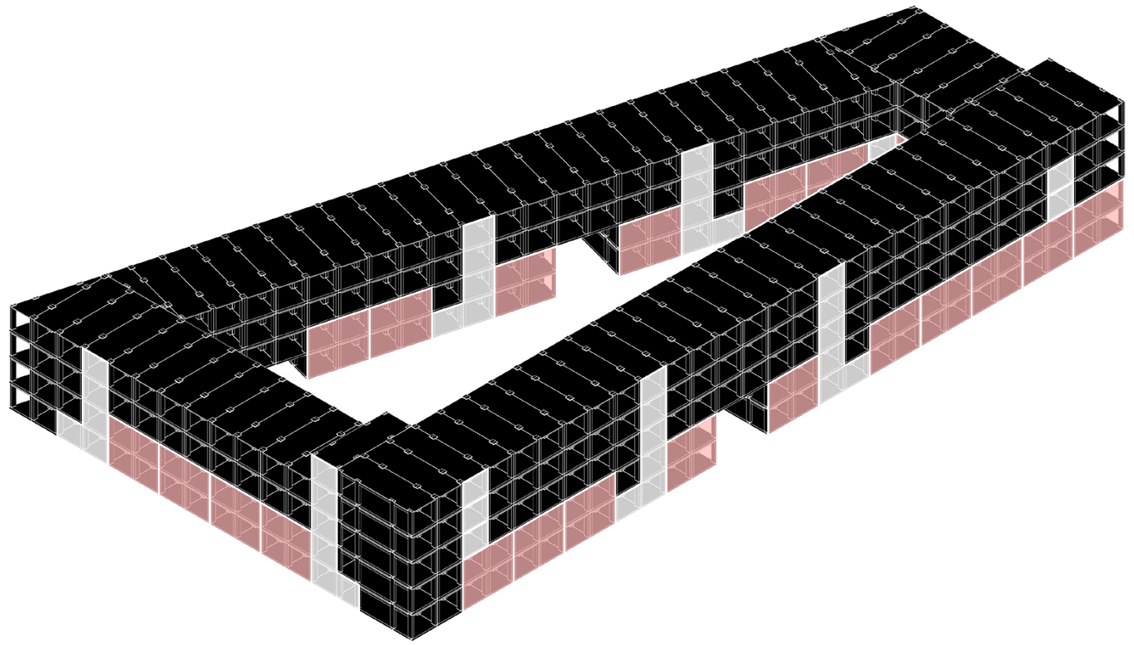
Accessability courtyard





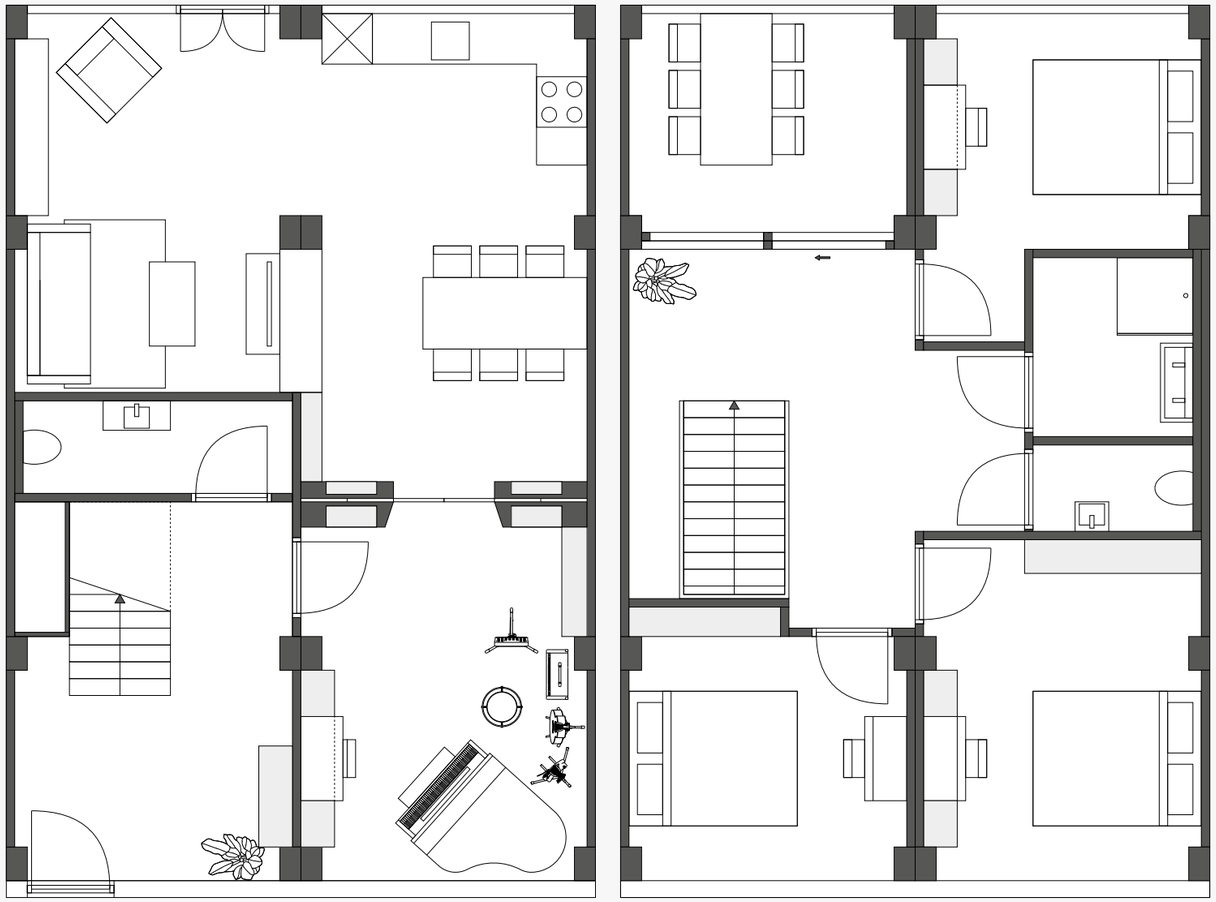
Standardised maisonettes

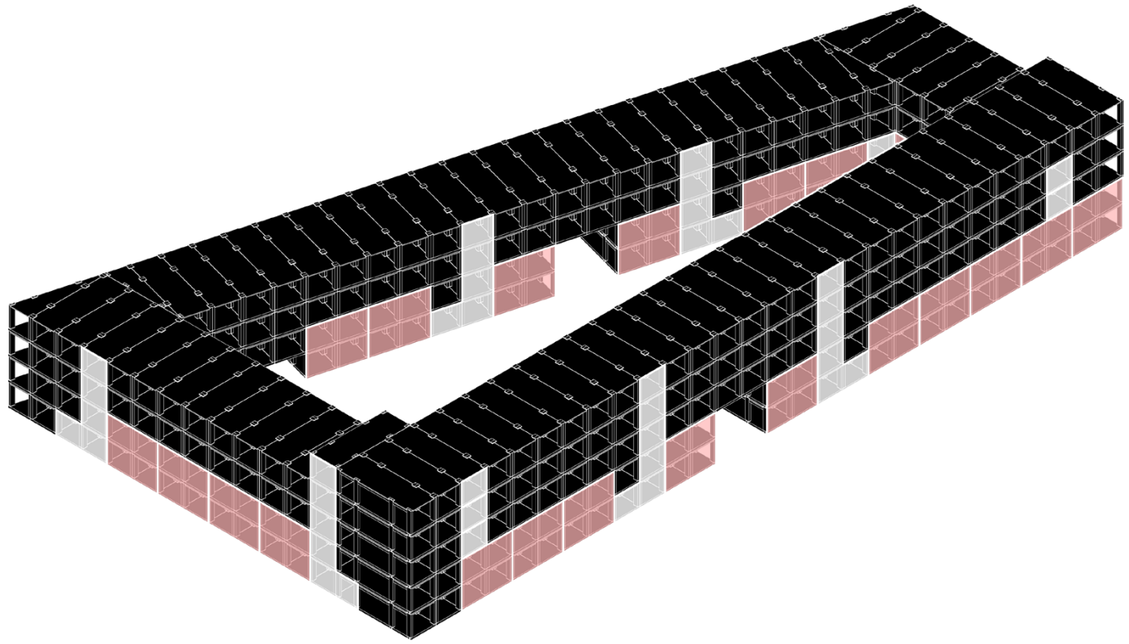




Dwelling type:	Maisonette
Surface m2 [GFA/BVO]:	140
Amount in complex:	22

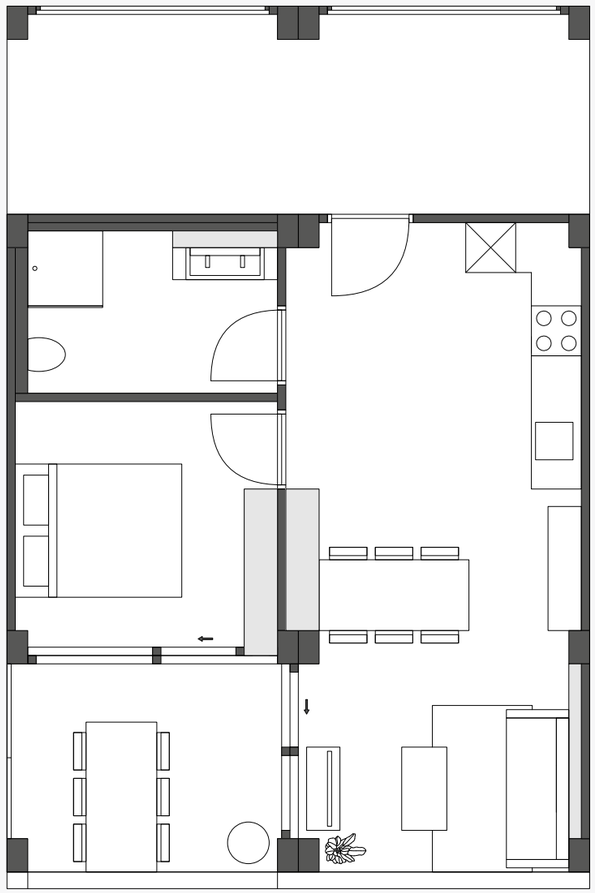
Plans and location maisonette 1:70 (95%)

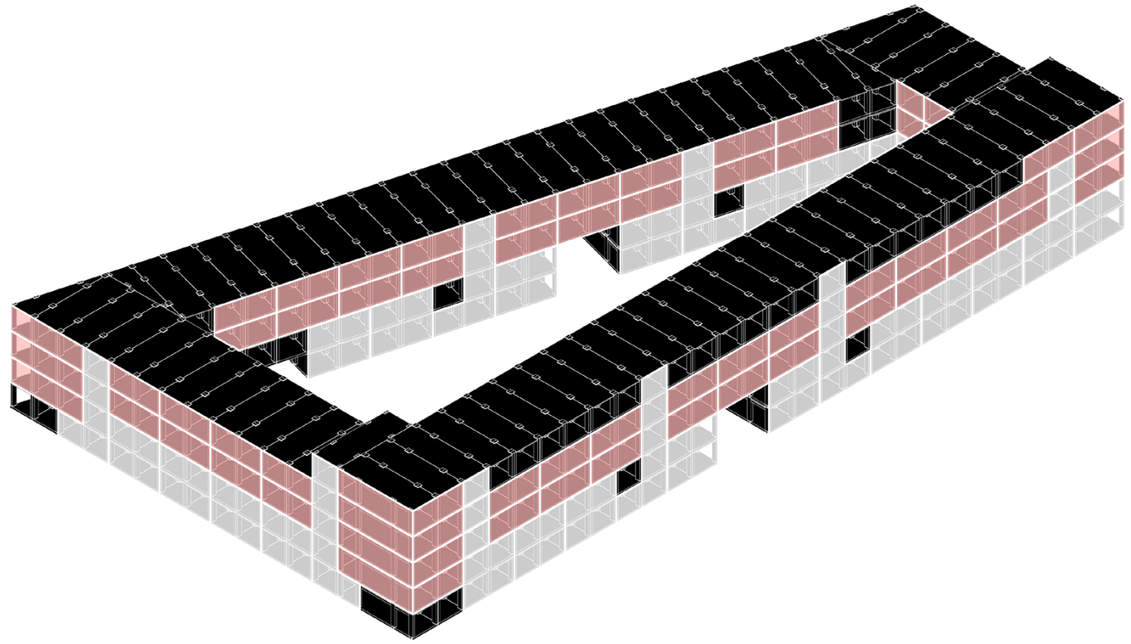




Dwelling type:	Maisonette
Surface m2 [GFA/BVO]:	140
Amount in complex:	22

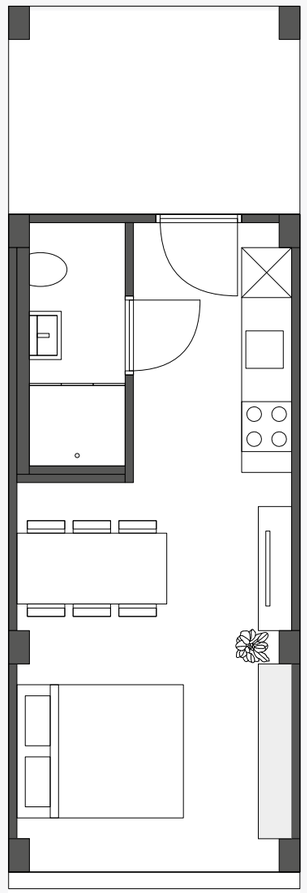
Variation Plans maisonette 1:70 (95%)

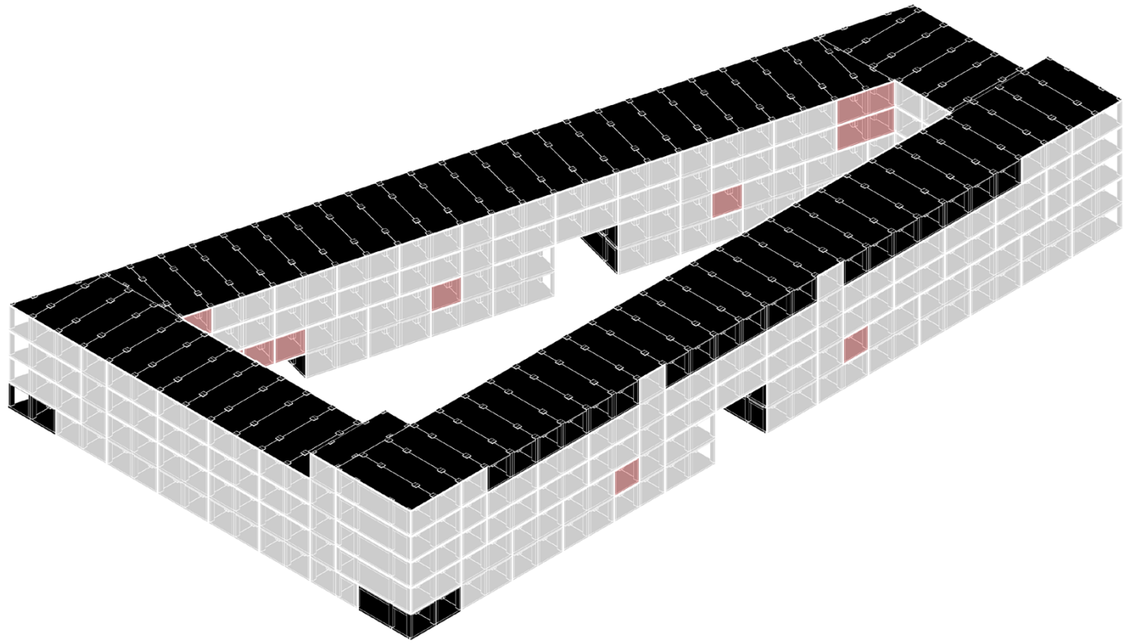




Dwelling type:	Apartment
Surface m2 [GFA/BVO]:	48
Amount in complex:	61

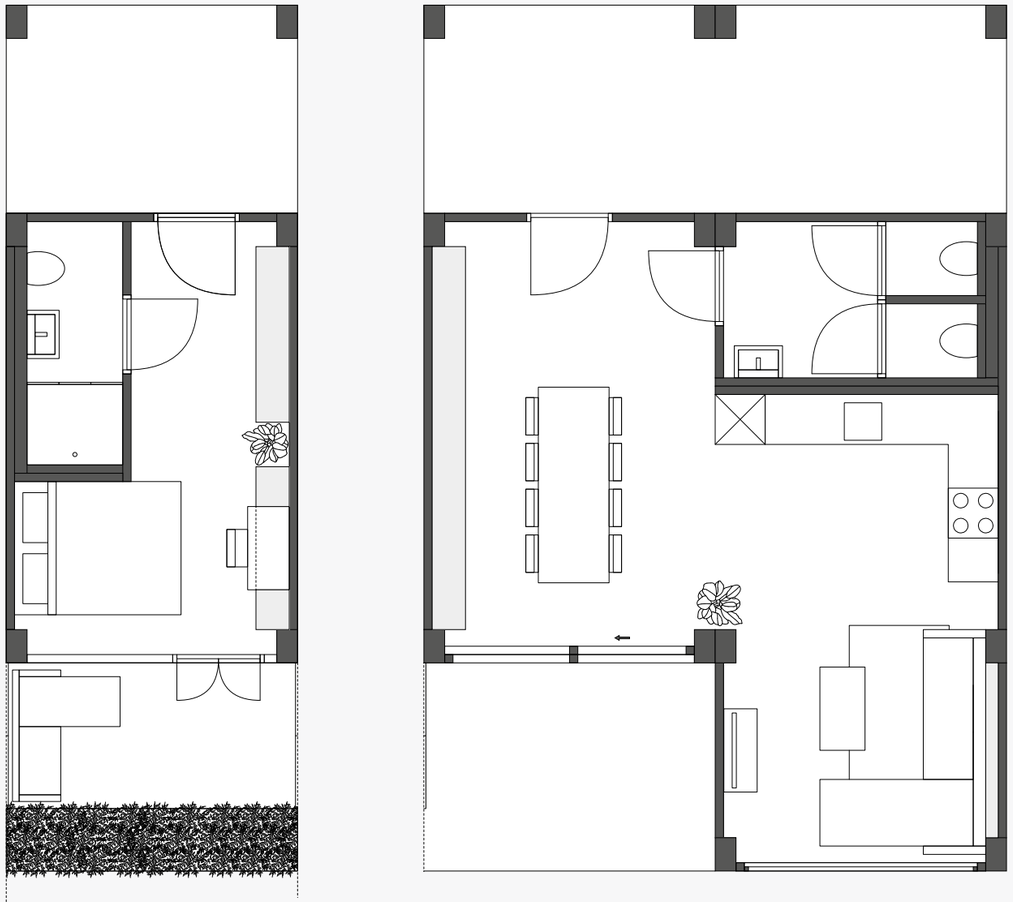
Plans and location Apartment 1:70 (95%)

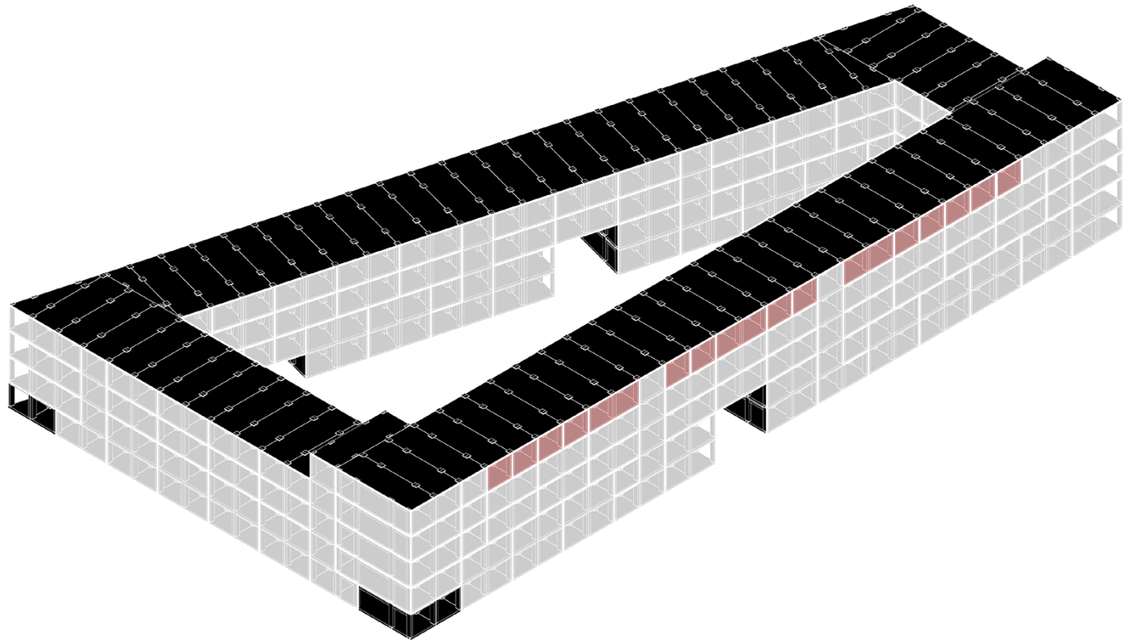




Dwelling type:	Studio
Surface m2 [GFA/BVO]:	28
Amount in complex:	10

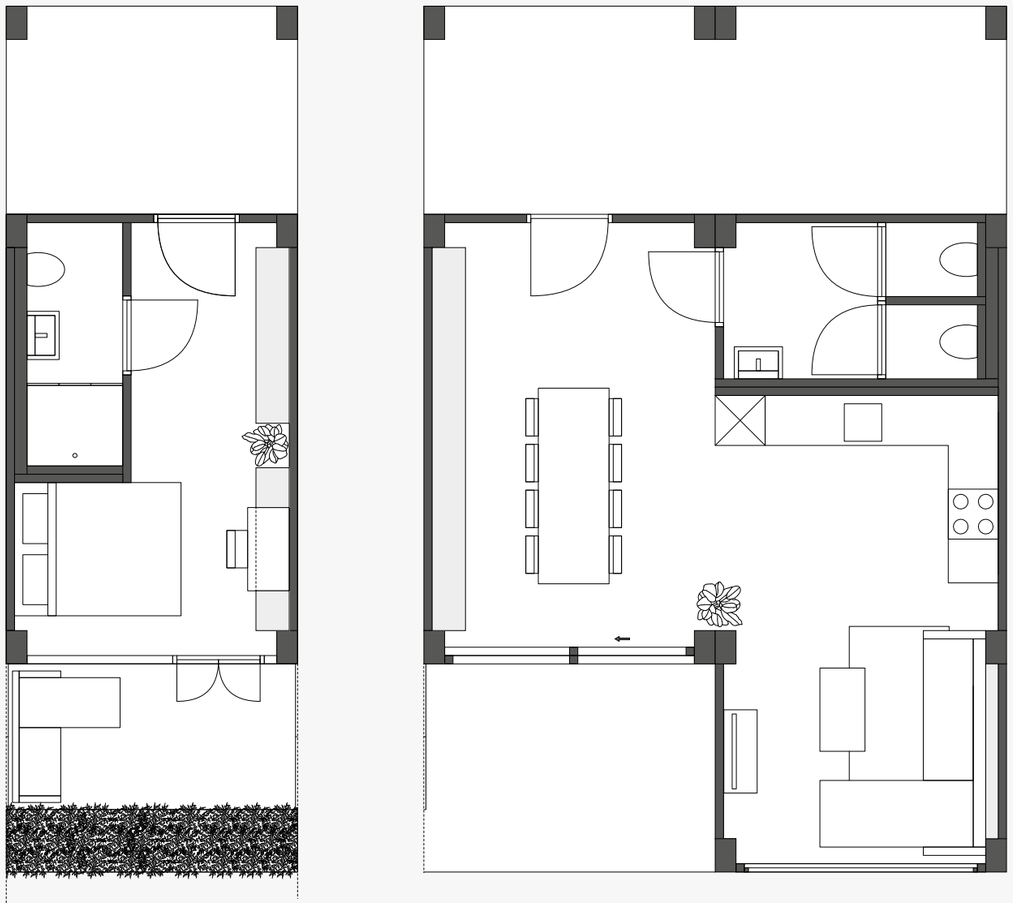
Plans and location Studio 1:70 (95%)

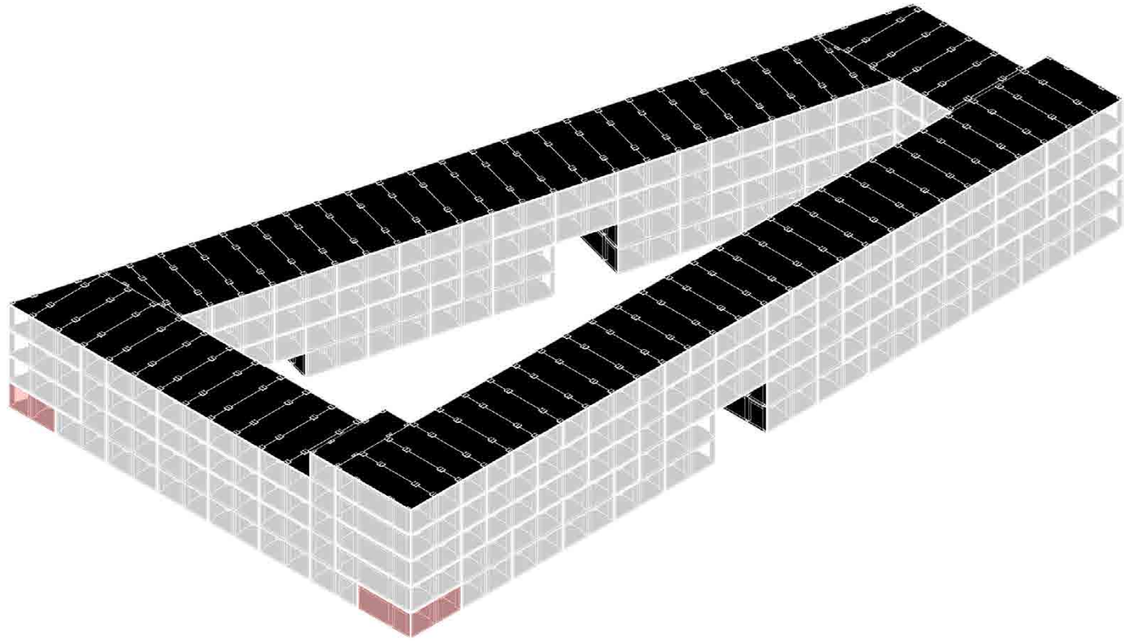




Dwelling type:	Shared Living
Personal Sur. m2 [GFA/BVO]:	19
Shared Sur. m2 [GFA/BVO]:	47 (with 6 or 7)
Amount in complex:	13

Plans and location Shared Living 1:70 (95%)





Dwelling type:	Shared Living
Personal Sur. m2 [GFA/BVO]:	19
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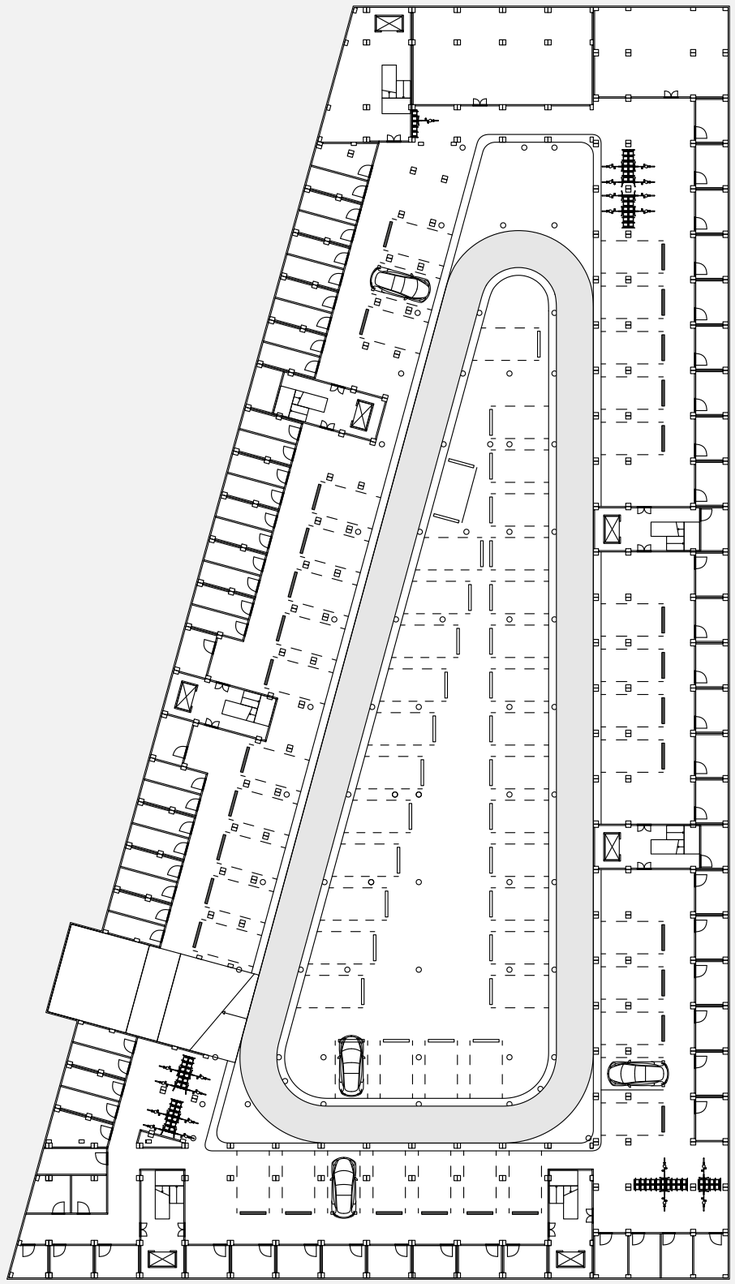
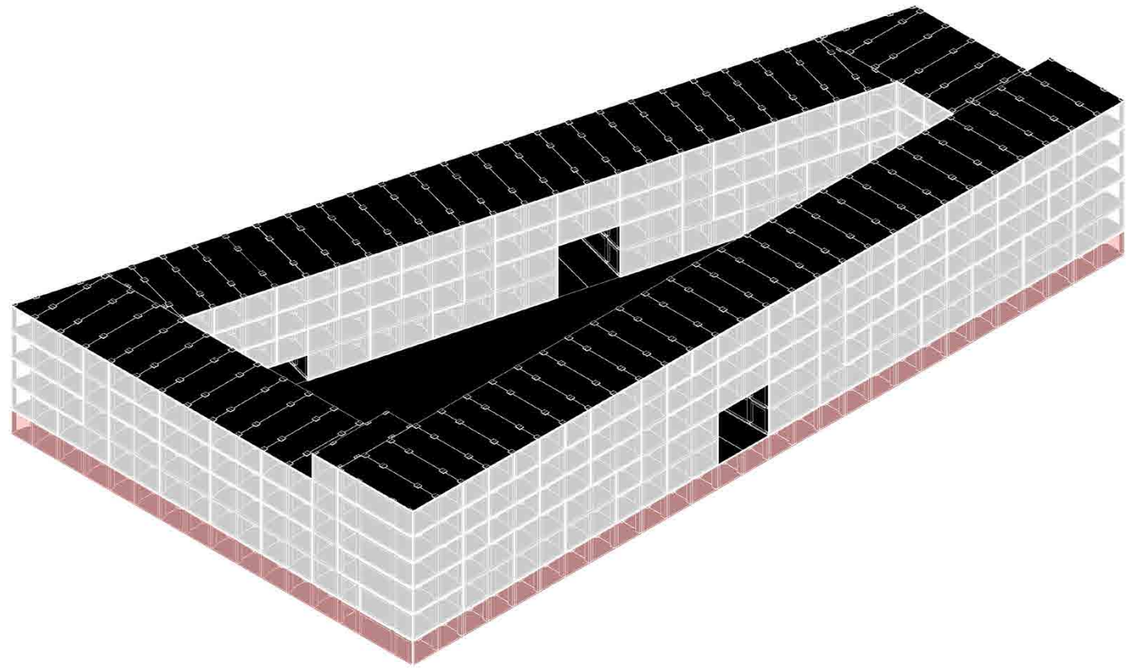
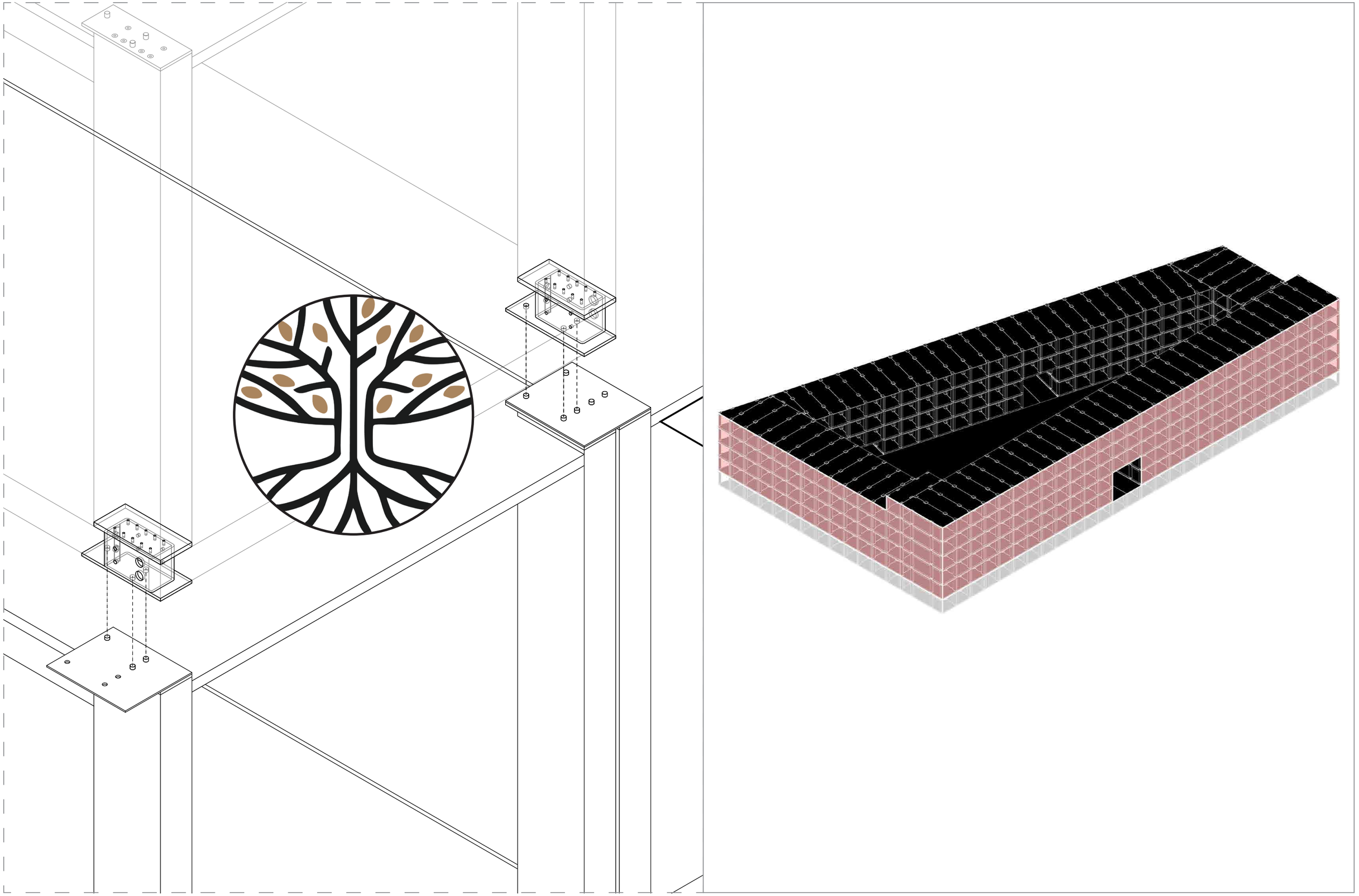
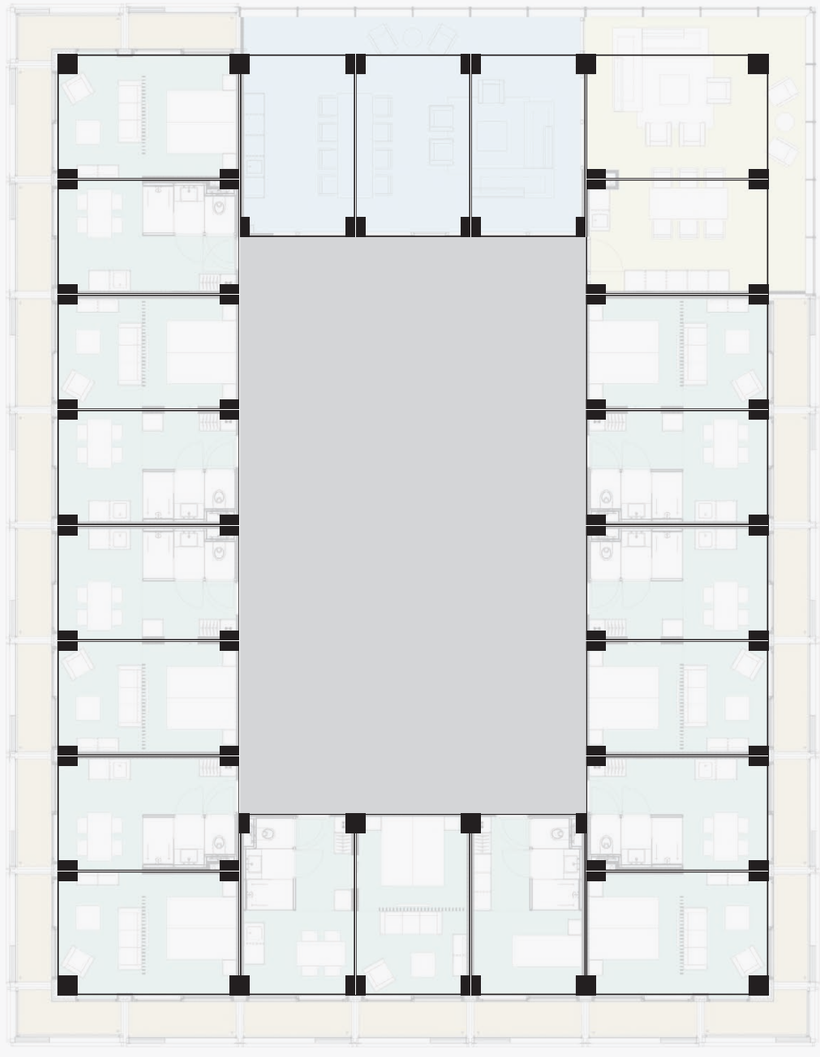
Plans and location Shared Living 1:70 (95%)







Effect construction system facade



Facade and Module Energie Hotel Ede (start project 2018)

Facade from a Concept

Facade from another Concept

URBAN SPACE

Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Sections CS1: A1, A2, A3, A4, 46, 47, etc.
Sections CS2: A1, A2, A3, A4, A5.

Create coherence in the street, building block and urban district

By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc.

Elements CS1: 6, 17, 30, 32, 34, 54, 83, etc.
Elements CS2: 5, 6, 7, 20, 24, 75, 89, 98, etc.

Position and combine entrances at street level

Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc.

Elements CS1: 1, 11, 42, 45, 65, 85, 87.
Elements CS2: 5, 8, 31, 50, 59, 61, 71.

Create an intermediate space at entrances

The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc.

Elements CS1: 1, 11, 42, 45, 65, 85, 87.
Elements CS2: 5, 8, 31, 50, 59, 61, 71.

FACADE APPEARANCE

Create different (sub)sections and emphasise contrast

Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section.

Elements CS1: 2, 3, 6, 14, 18, 24, 26, 28, etc.
Elements CS2: 1, 4, 6, 14, 16, 18, 19, 22, etc.

Connect the (sub)sections

By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc.

Elements CS1: A1*, 15, 16, 17, 18, 20, etc.
Elements CS2: 4, 6, 7, 19, 24, 30, 33, 35, etc.

Use elements around a corner and in different planes

Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc.

Elements CS1: 7, 13, 15, 16, 17, 26, 28, etc.
Elements CS2: 4, 5, 6, 9, 10, 18, 19, 33, etc.

Create an order of elements per (sub)section

The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition.

Elements CS1: 2, 3, 4, 8, 9, 18, 19, 21, etc.
Elements CS2: 7, 11, 12, 13, 17, 43, 80 etc.

Break order of elements for emphasis and variation

The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section.

Elements CS1: 6, 7, 10, 22, 29, 56, 58, etc.
Elements CS2: 13, 14, 22, 47, 48, 49, etc.

Emphasise entrances

The entrances are emphasised by different materials and use, ornaments, distinctive windows, distinctive positioning of windows, orientation and composition of the doors, protrusions that create gable ends and terraces, etc.

Elements CS1: 1, 11, 42, 45, 65, 66, 85, etc.
Elements CS2: 5, 8, 13, 14, 22, 31, 51, etc.

Conceal the repetitive grid of the dwellings

With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings.

Elements CS1: 1, 7, 11, A1, A1*, A1**, etc.
Elements CS2: 5, A3*, A3**, A5, 31, etc.

Divide appearance between commercial and residential use

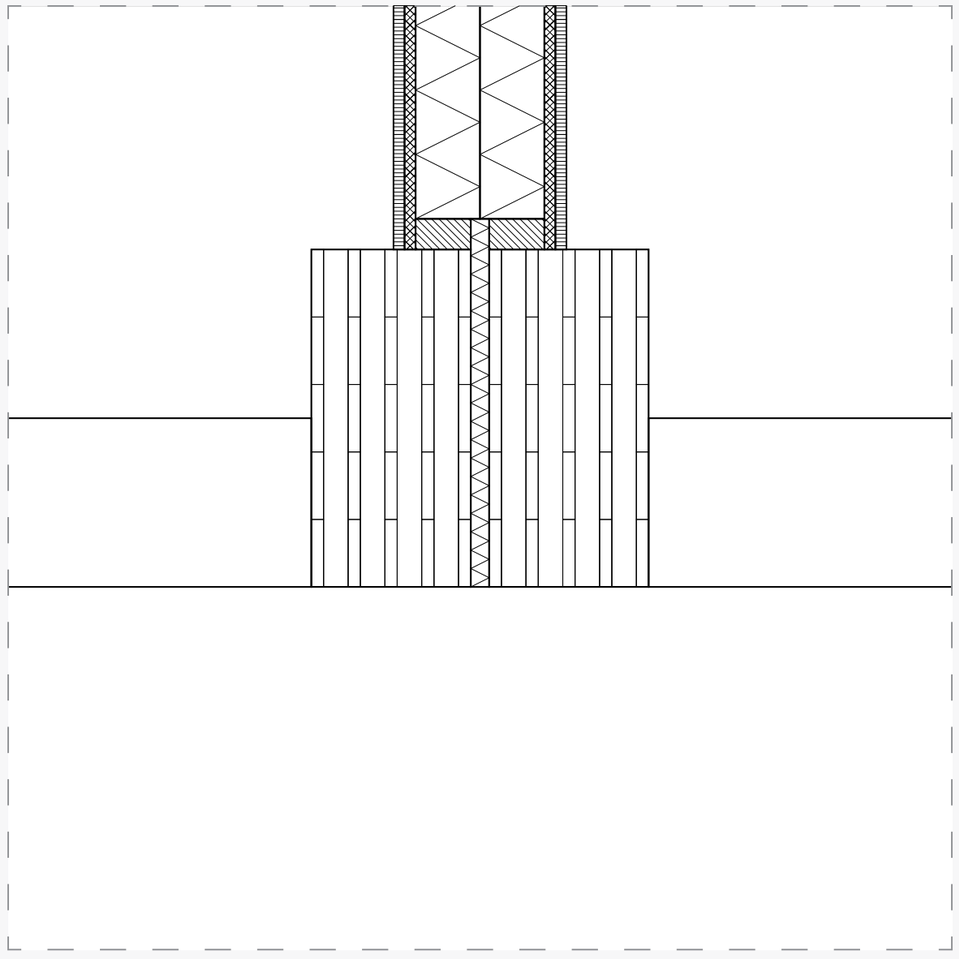
By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments.

Elements CS1: 43, 44, 45, 62, 63, 69, 85.
Elements CS2: 8, 9, 72.

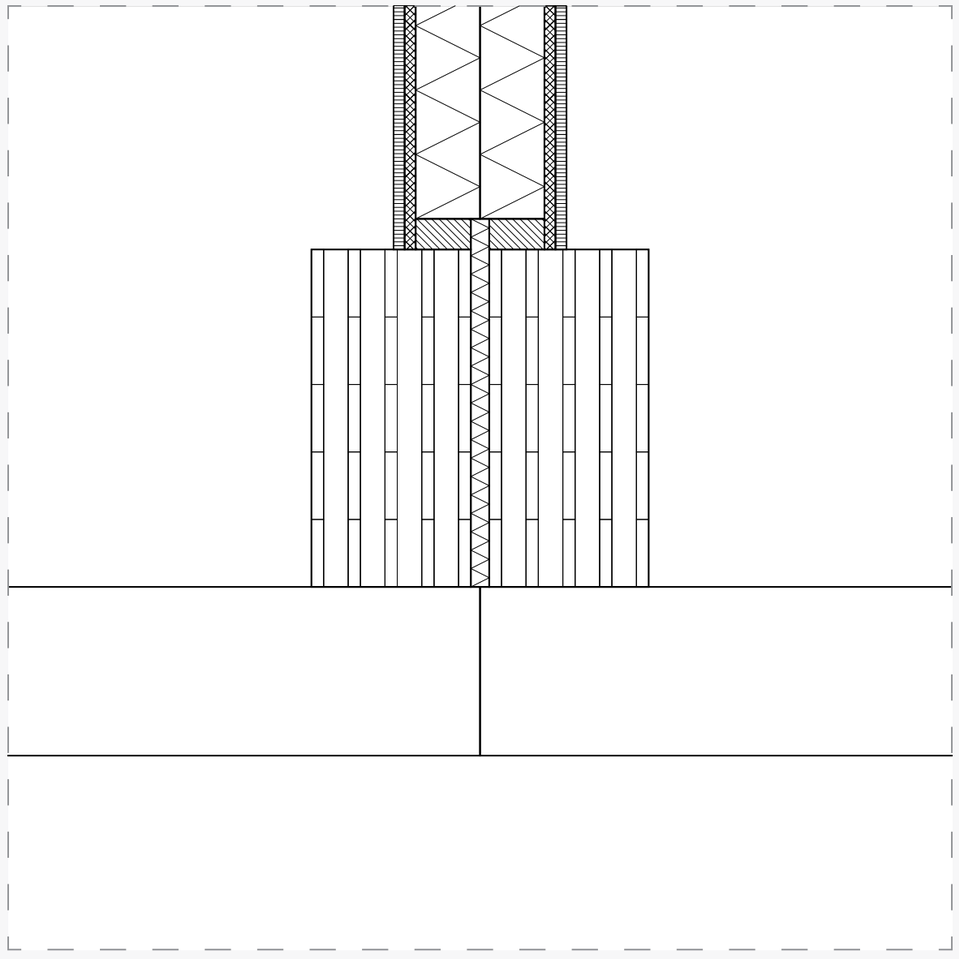
Create different sections and an hierarchy in the building block In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc. Sections CS1: A1, A2, A3, A4, 46, 47, etc. Sections CS2: A1, A2, A3, A4, A5.	**Create coherence in the street, building block and urban district** By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc. Elements CS1: 6, 17, 30, 32, 34, 54, 83, etc. Elements CS2: 5, 6, 7, 20, 24, 75, 89, 98, etc.	**Position and combine entrances at street level** Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc. Elements CS1: 1, 11, 42, 45, 65, 85, 87. Elements CS2: 5, 8, 31, 50, 59, 61, 71.	**Create an intermediate space at entrances** The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc. Elements CS1: 1, 11, 42, 45, 65, 85, 87. Elements CS2: 5, 8, 31, 50, 59, 61, 71.
Create different (sub)sections and emphasise contrast Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section. Elements CS1: 2, 3, 6, 14, 18, 24, 26, 28, etc. Elements CS2: 1, 4, 6, 14, 16, 18, 19, 22, etc.	**Connect the (sub)sections** By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc. Elements CS1: A1*, 15, 16, 17, 18, 20, etc. Elements CS2: 4, 6, 7, 19, 24, 30, 33, 35, etc.	**Use elements around a corner and in different planes** Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc. Elements CS1: 7, 13, 15, 16, 17, 26, 28, etc. Elements CS2: 4, 5, 6, 9, 10, 18, 19, 33, etc.	**Create an order of elements per (sub)section** The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition. Elements CS1: 2, 3, 4, 8, 9, 18, 19, 21, etc. Elements CS2: 7, 11, 12, 13, 17, 43, 80 etc.
Break order of elements for emphasis and variation The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section. Elements CS1: 6, 7, 10, 22, 29, 56, 58, etc. Elements CS2: 13, 14, 22, 47, 48, 49, etc.	**Emphasise entrances** The entrances are emphasised by different materials and use, ornaments, distinctive windows, distinctive positioning of windows, orientation and composition of the doors, protrusions that create gable ends and terraces, etc. Elements CS1: 1, 11, 42, 45, 65, 66, 85, etc. Elements CS2: 5, 8, 13, 14, 22, 31, 51, etc.	**Conceal the repetitive grid of the dwellings** With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings. Elements CS1: 1, 7, 11, A1, A1*, A1**, etc. Elements CS2: 5, A3*, A3**, A5, 31, etc.	**Divide appearance between commercial and residential use** By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments. Elements CS1: 43, 44, 45, 62, 63, 69, 85. Elements CS2: 8, 9, 72.

URBAN SPACE

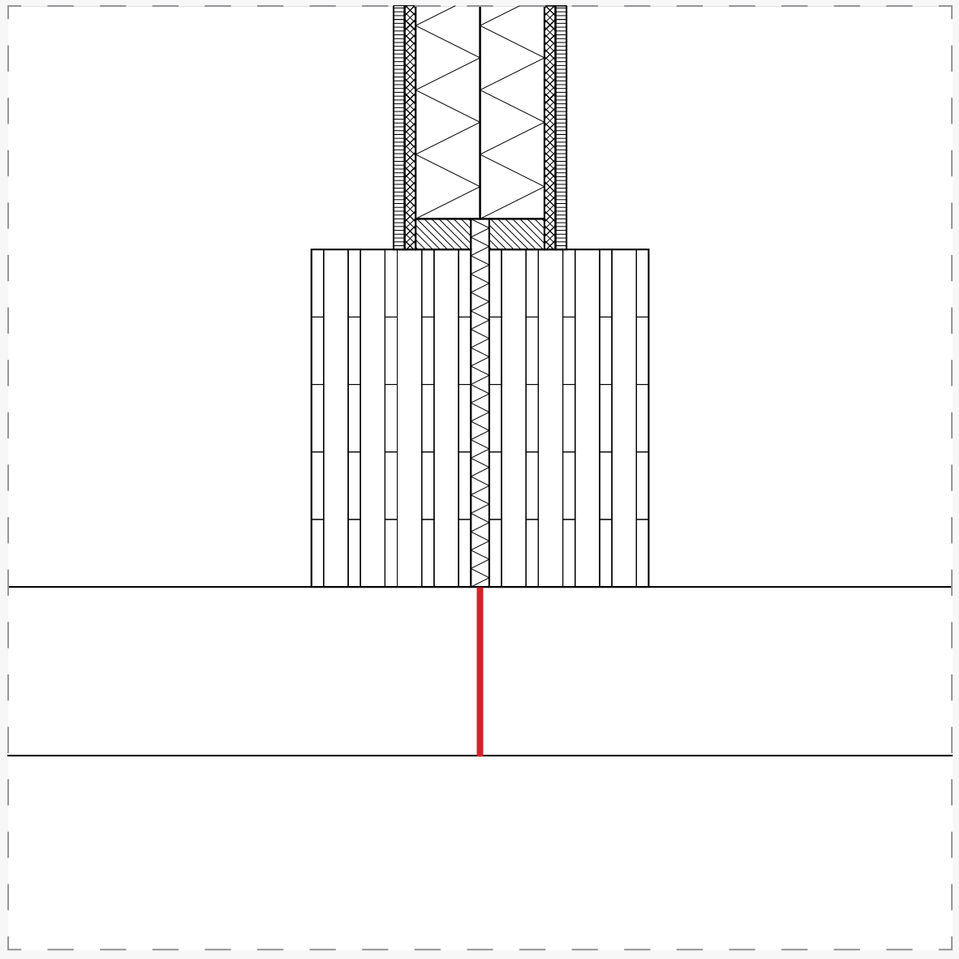
FACADE APPEARANCE



Facade is part of the module

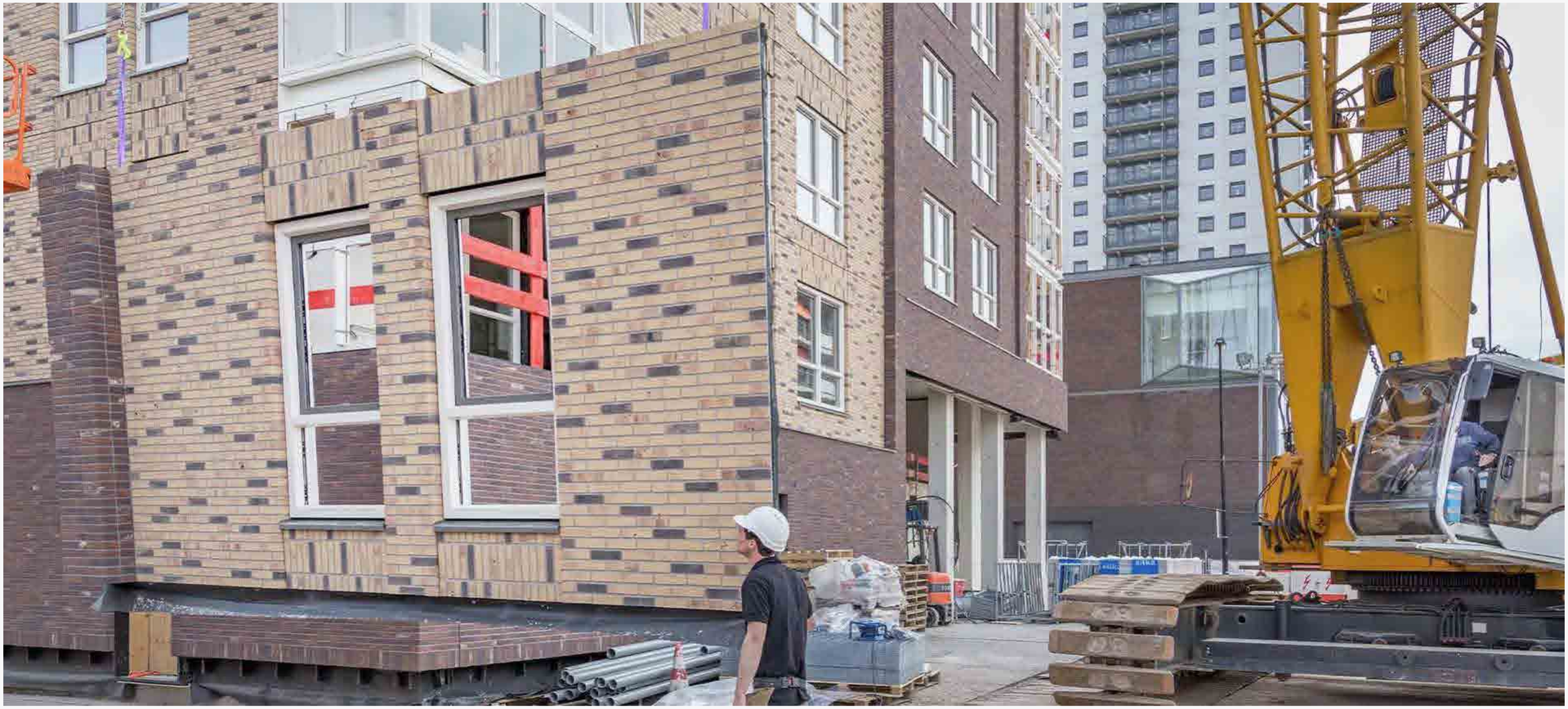


Facade is placed after the module



Seam Prefab facade elements are often problematic

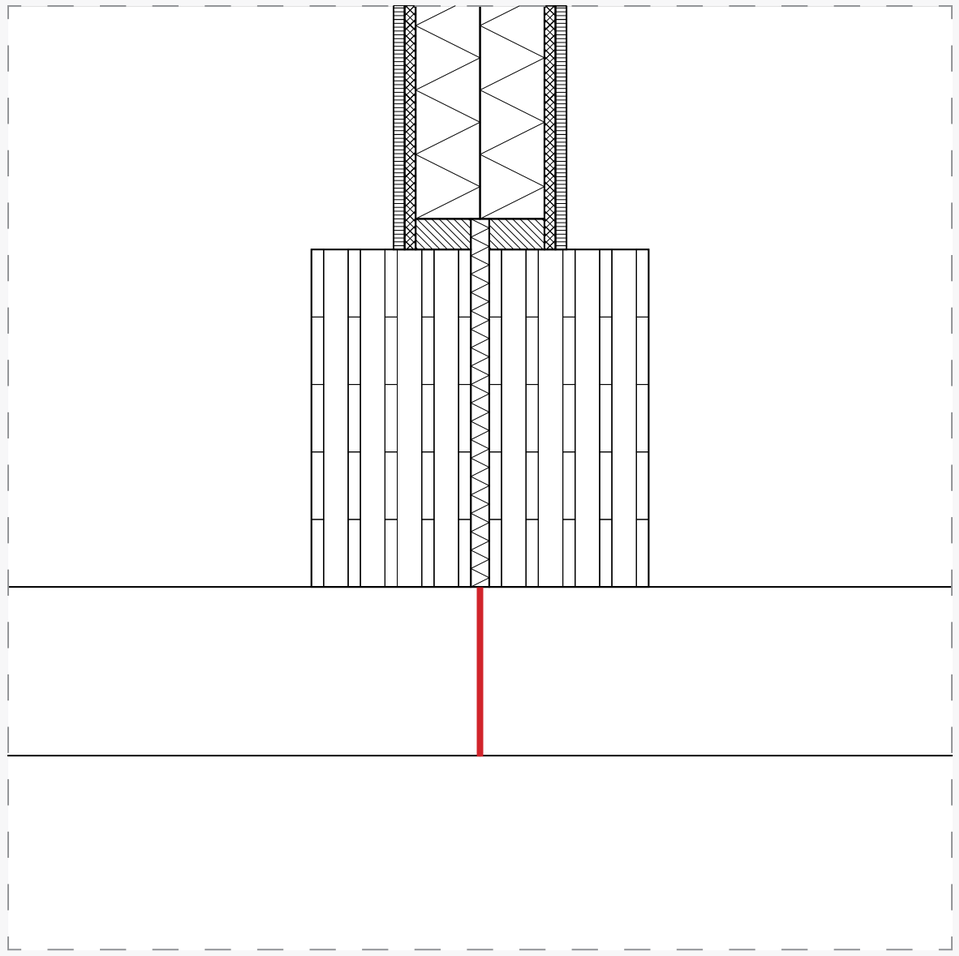
Steel Prefab facade elements of ‘Brock Commons’ by Acton Ostry Architects



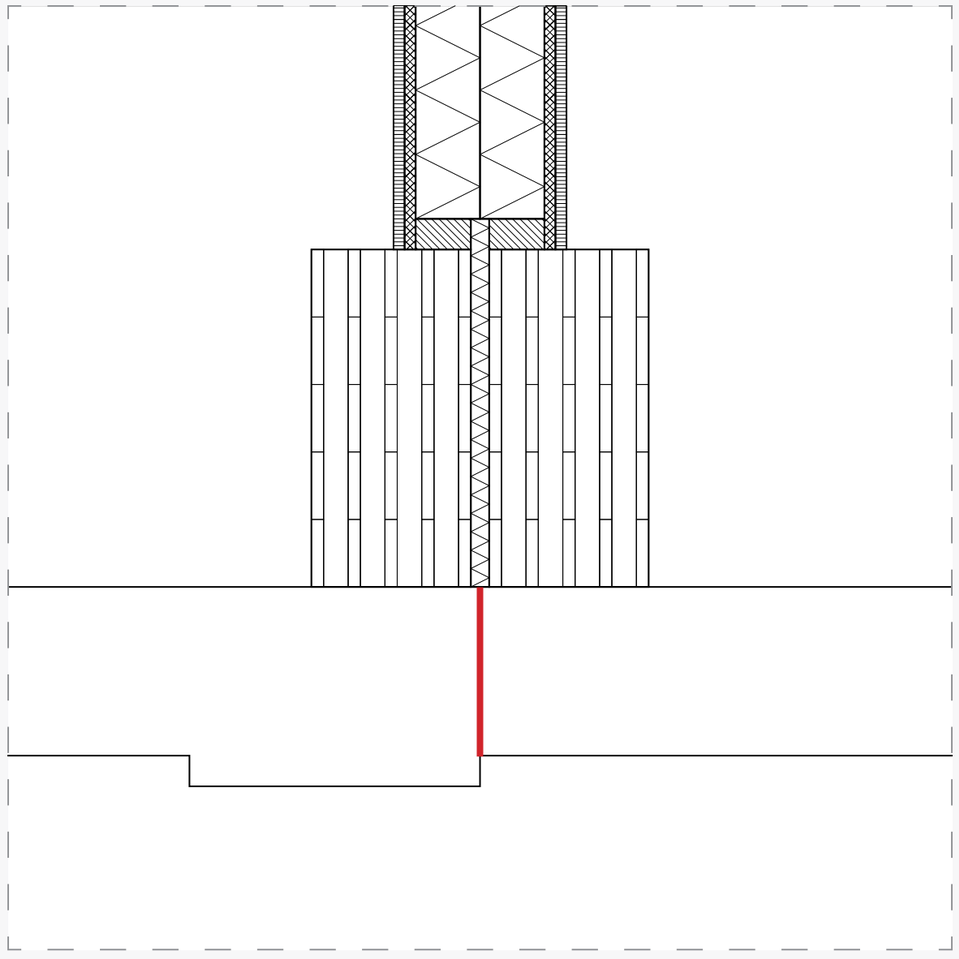
Prefab facade elements [WEBO] of ‘Mariskwartier’ by OPL Architecten

Prefab facade elements of ‘Mariskwartier’ by OPL Architecten

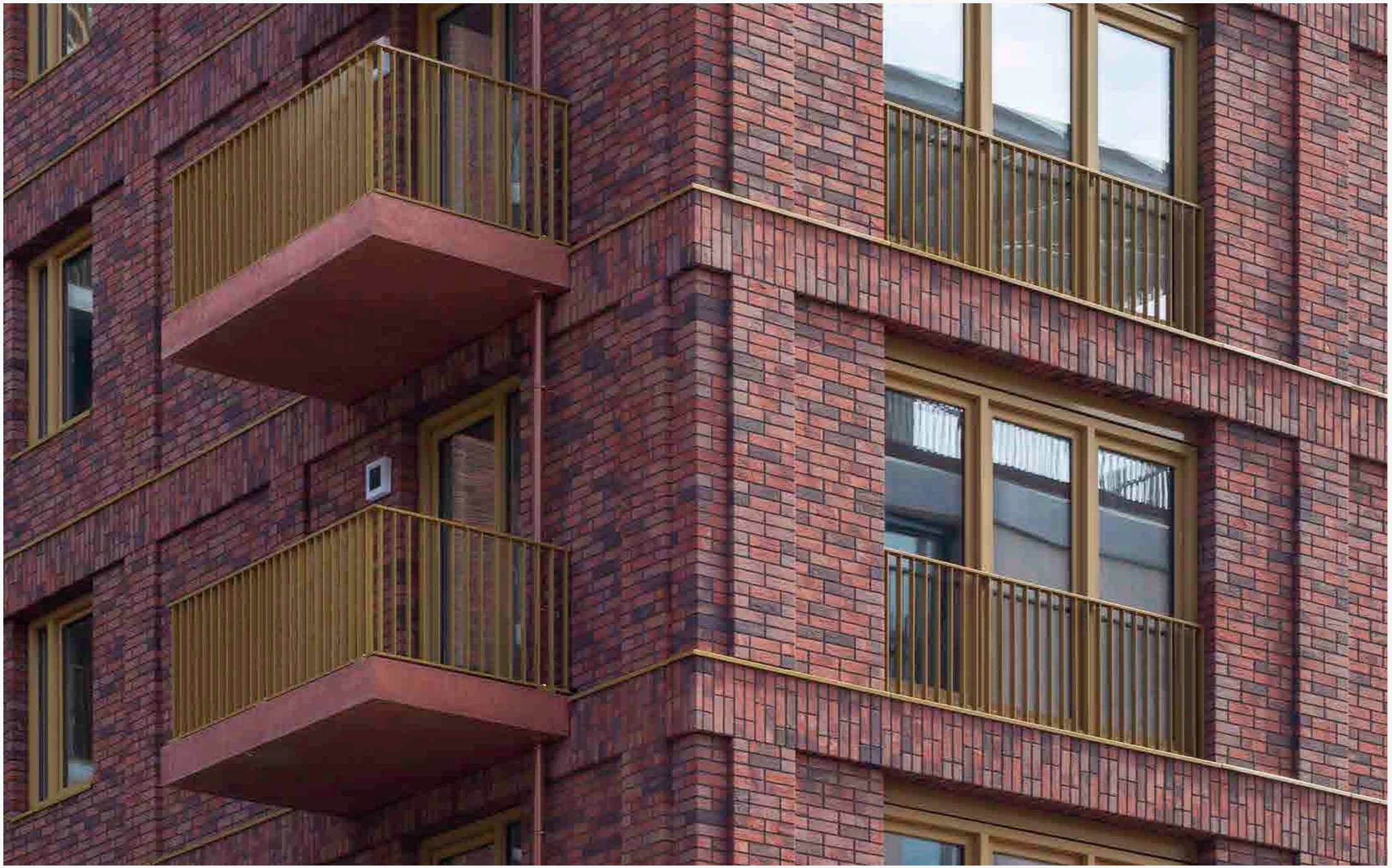
Prefab facade elements of ‘Sinfonia’ by Dok Architecten & Marlies Rohmer Architecture & Urbanism



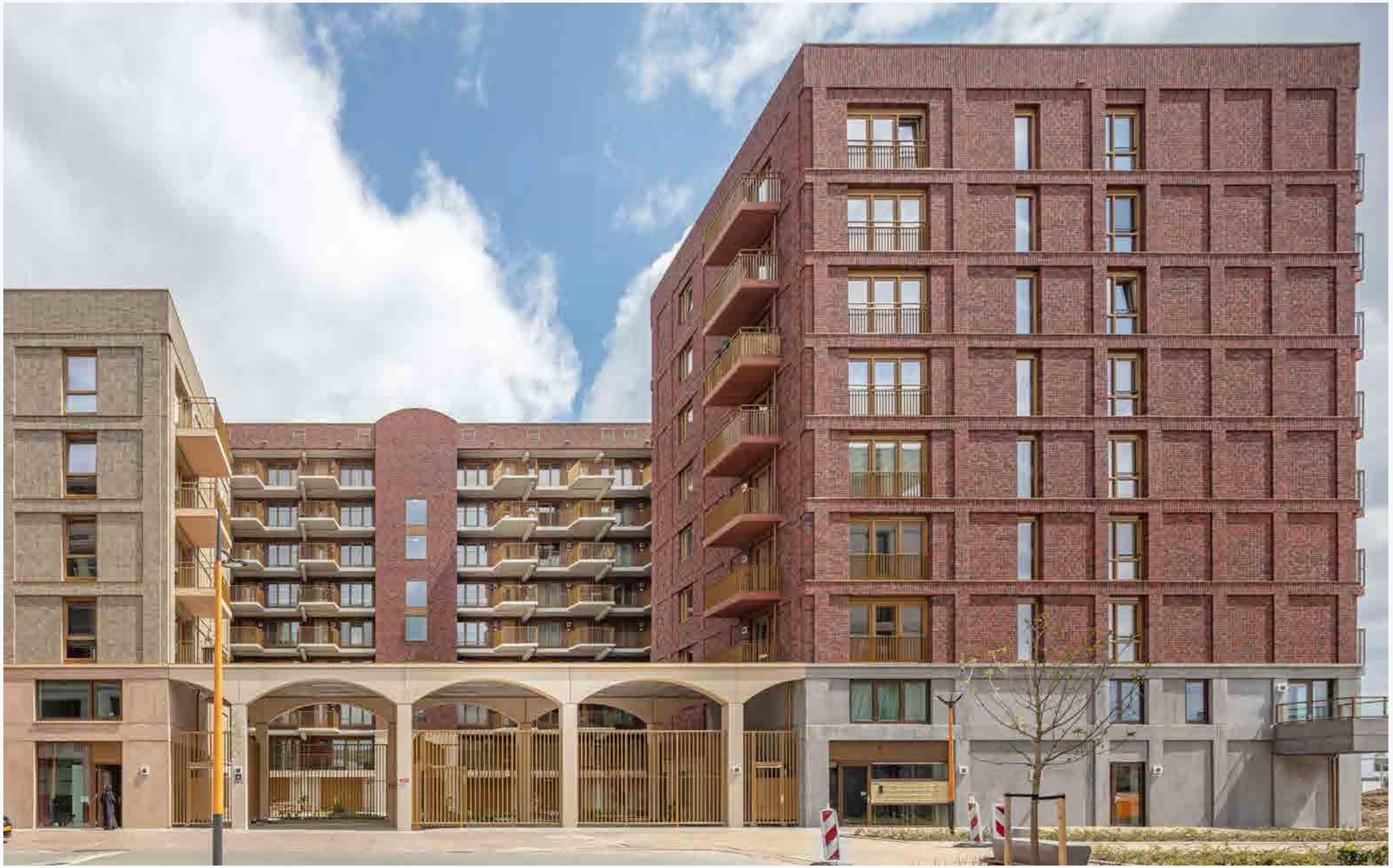
Seam Prefab facade elements are often problematic



Vertical seam carefully detailed in the shadows of lesenes

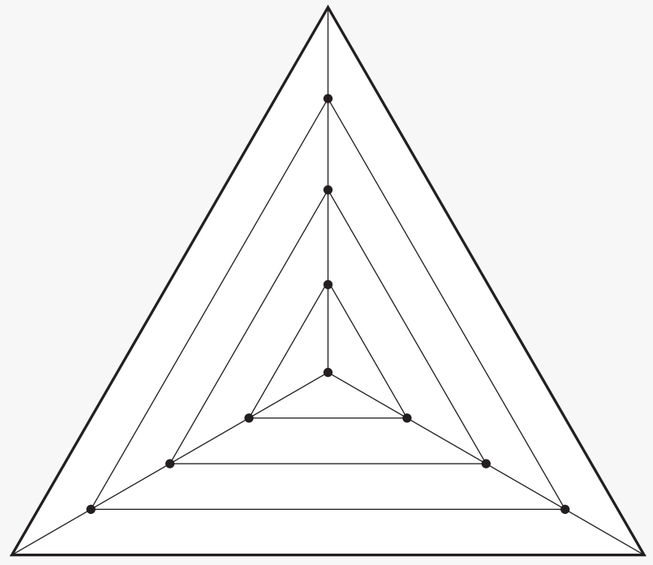


Seam carefully detailed in the shadows of lesenes and continuous window sills in block G8 / Tango by Marjolein van Eig and Zecc architects



Seam carefully detailed in the shadows of lesenes and continuous window sills in block G8 / Tango by Marjolein van Eig and Zecc architecten

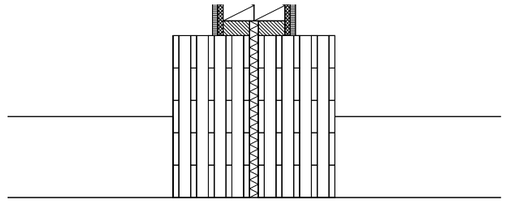
CIRCULARITY
AND
ENVIRONMENTAL IMPACT

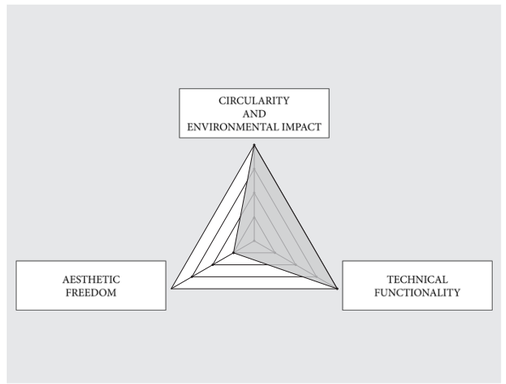


AESTHETIC
FREEDOM

TECHNICAL
FUNCTIONALITY

Triangle of import subjects to gauge decission making




CIRCULARITY
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AESTHETIC
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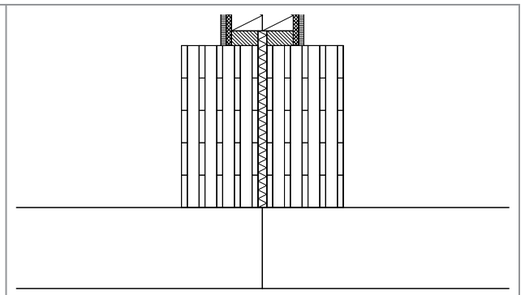

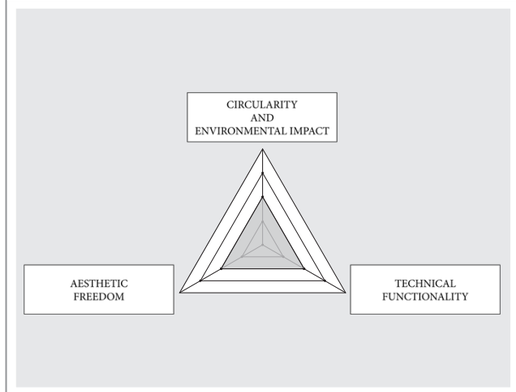
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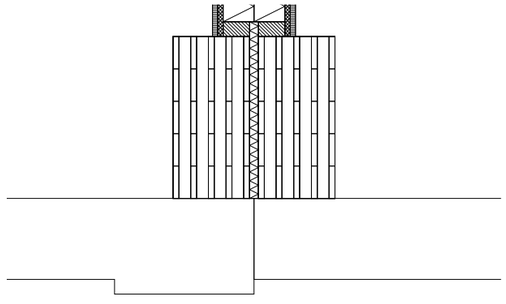

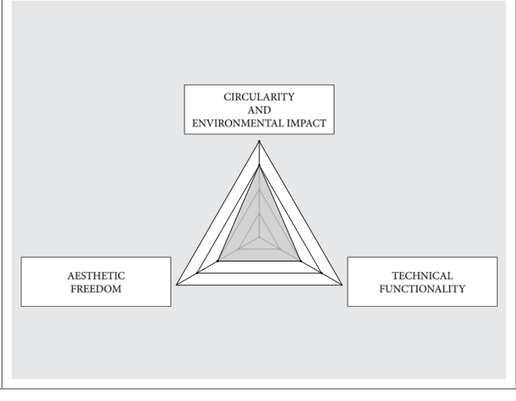
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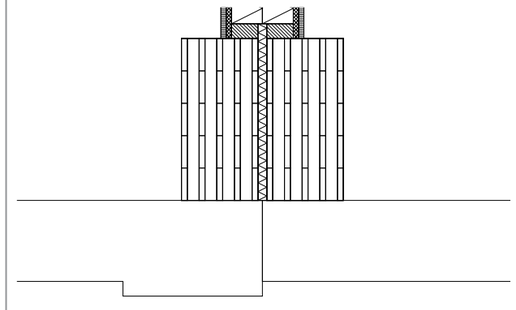

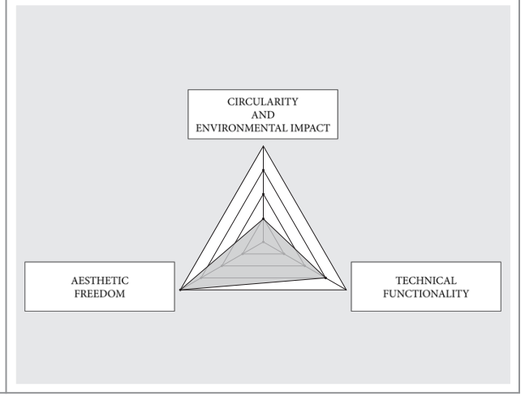
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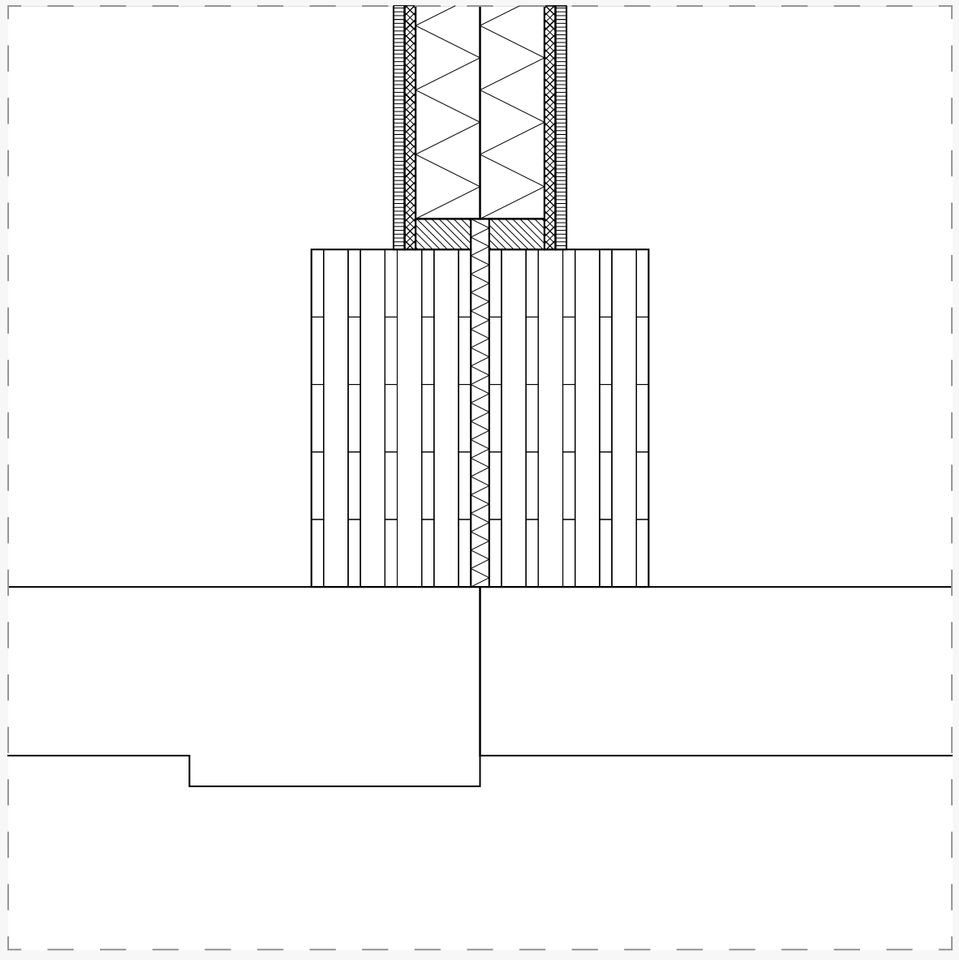

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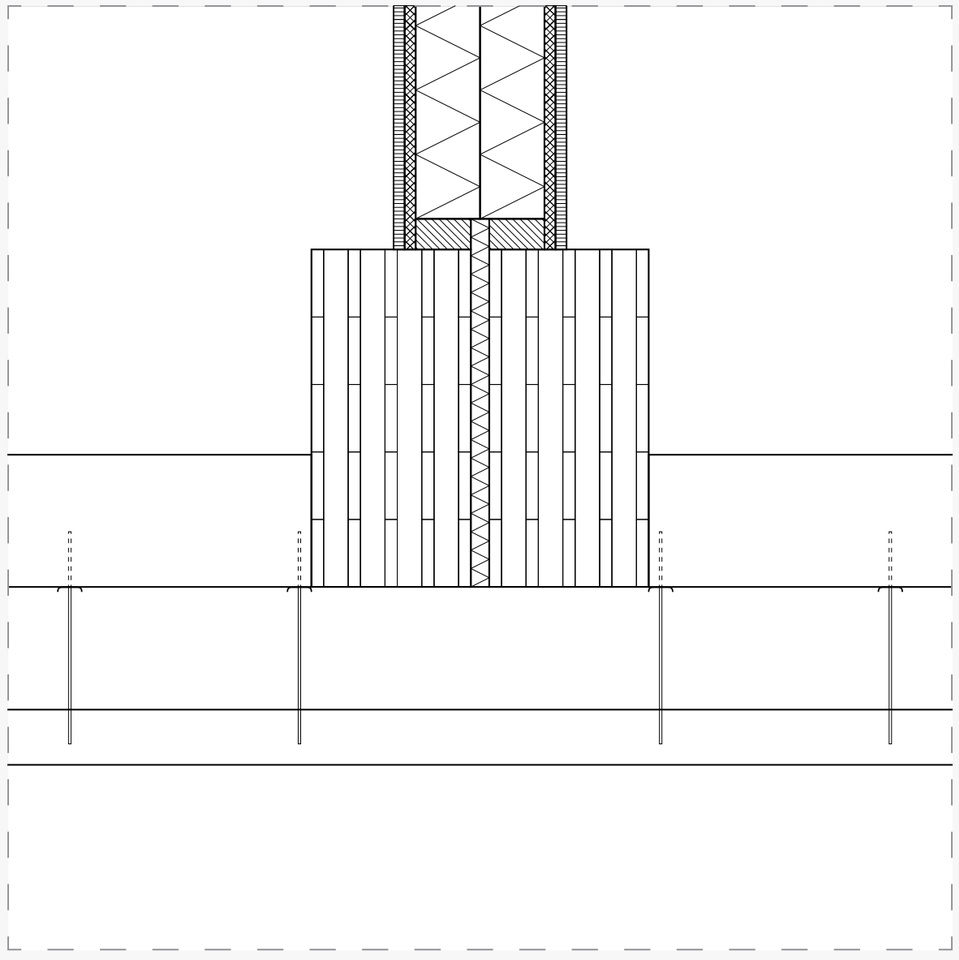
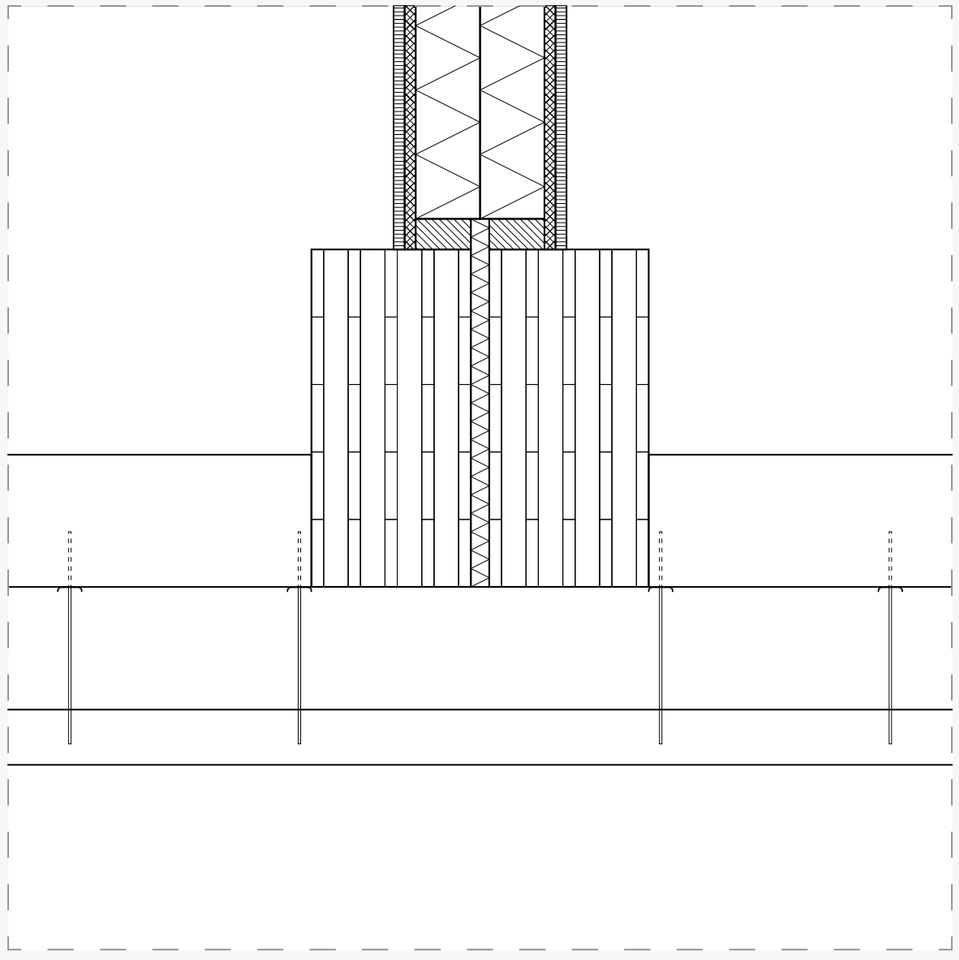


Facade is placed after the module



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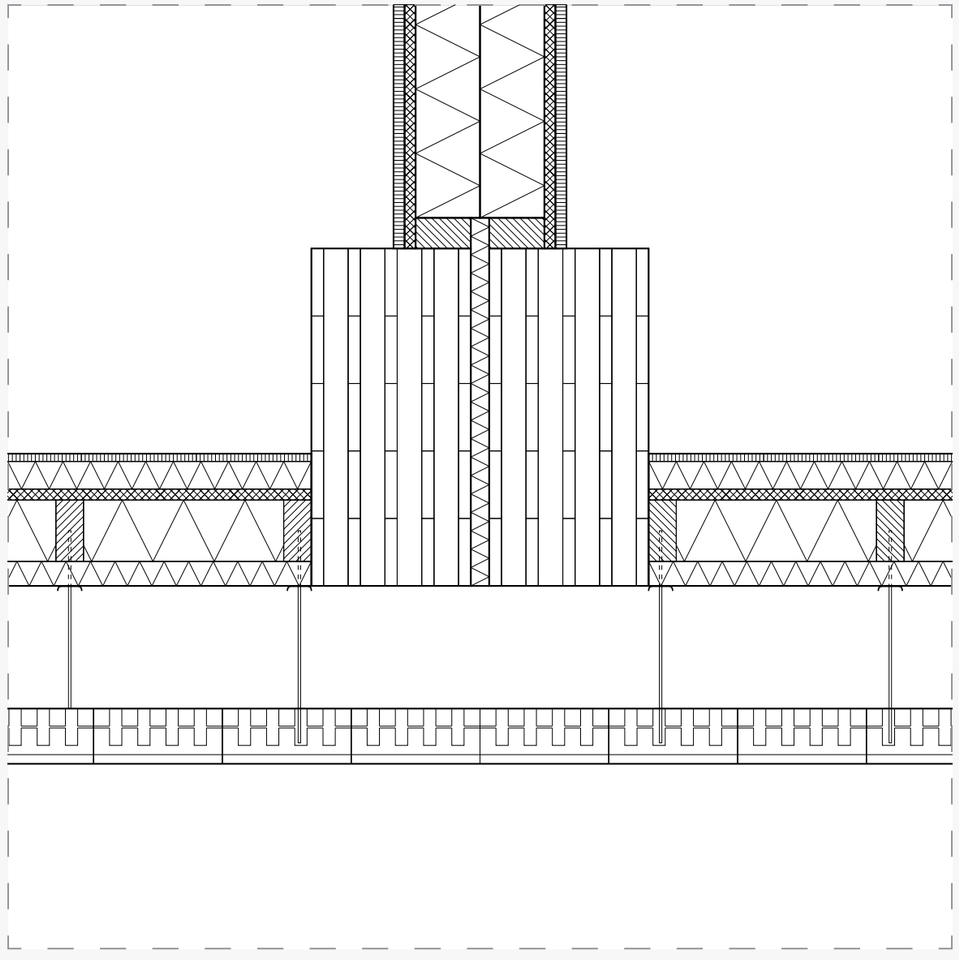

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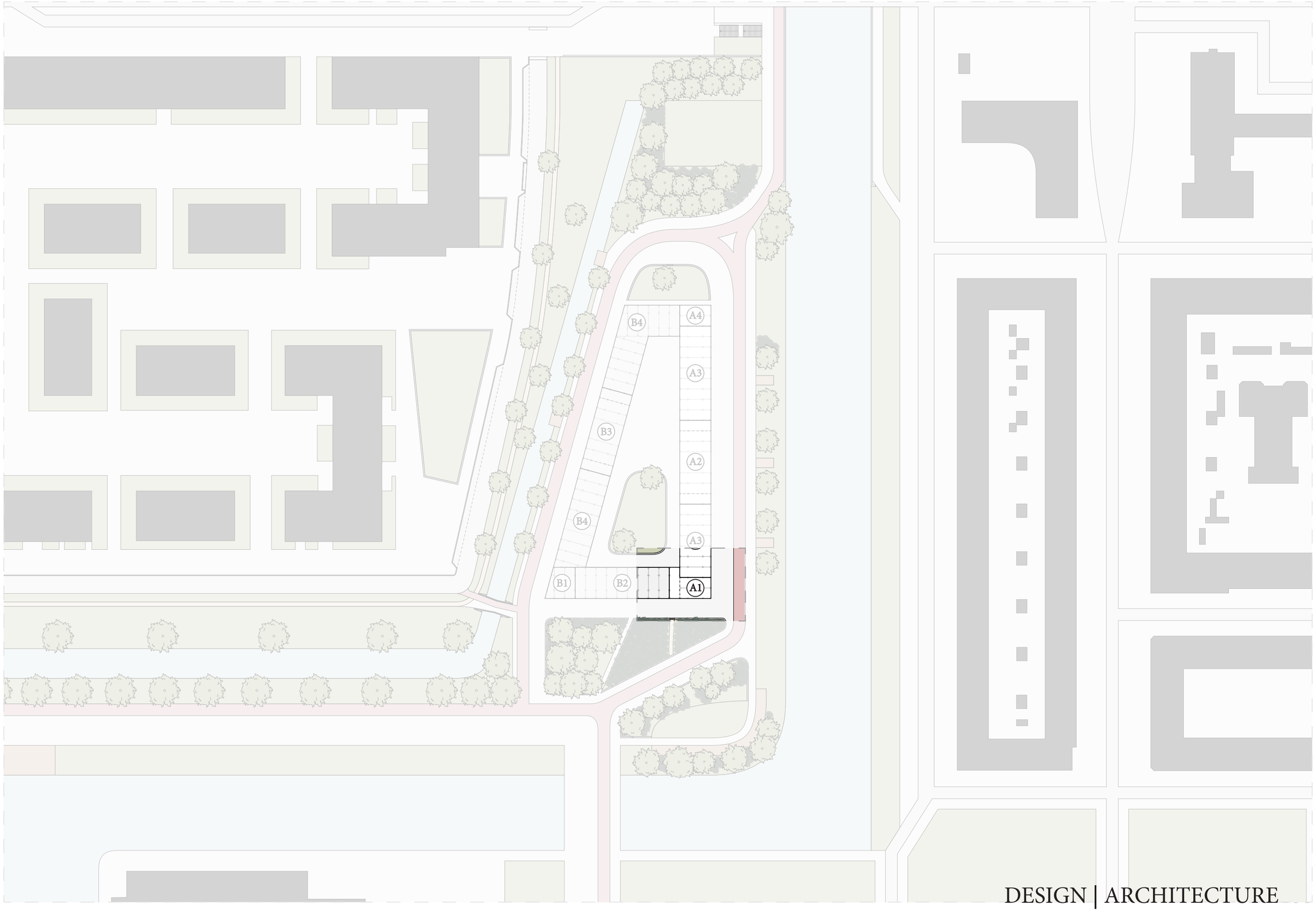
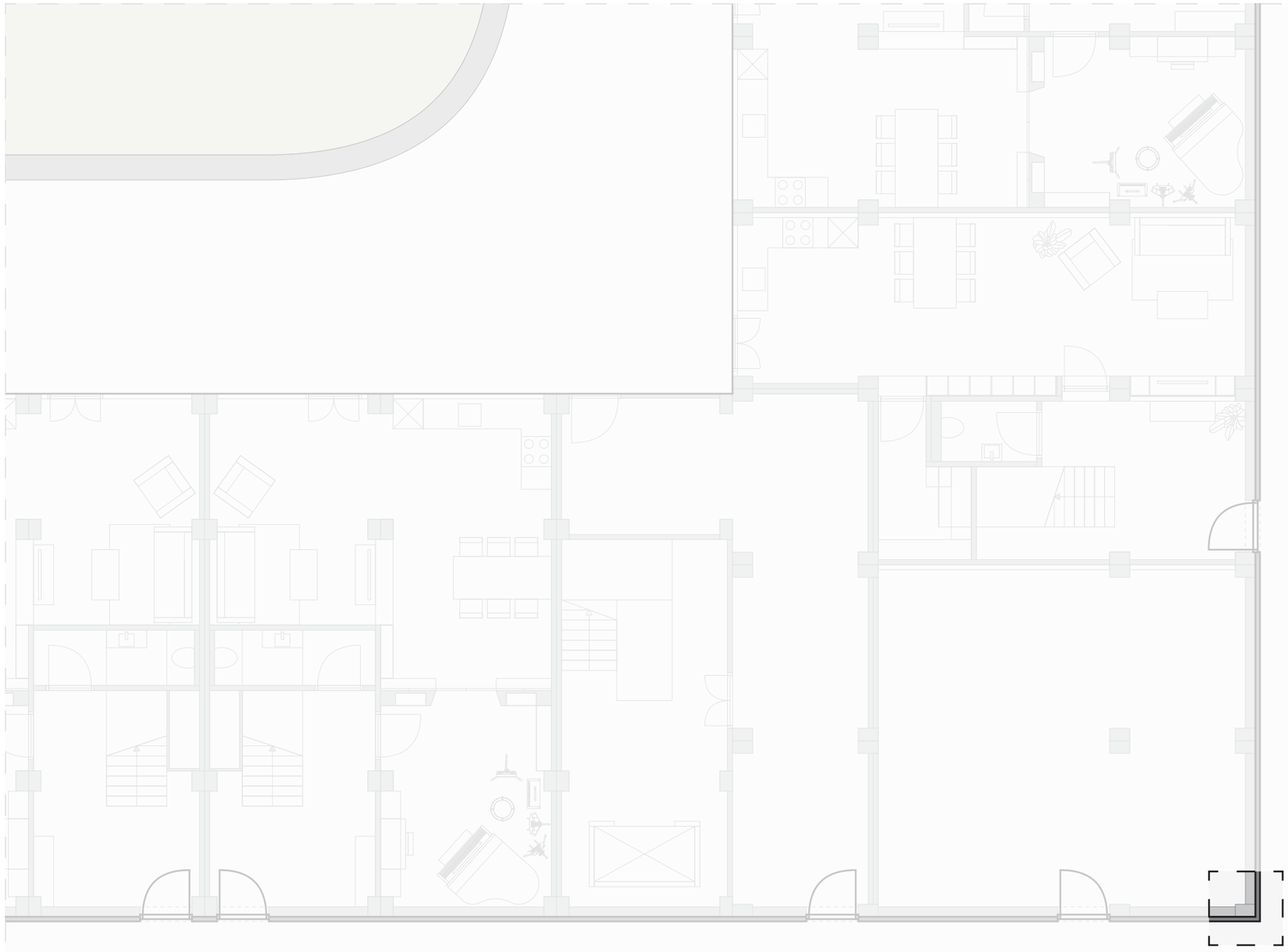
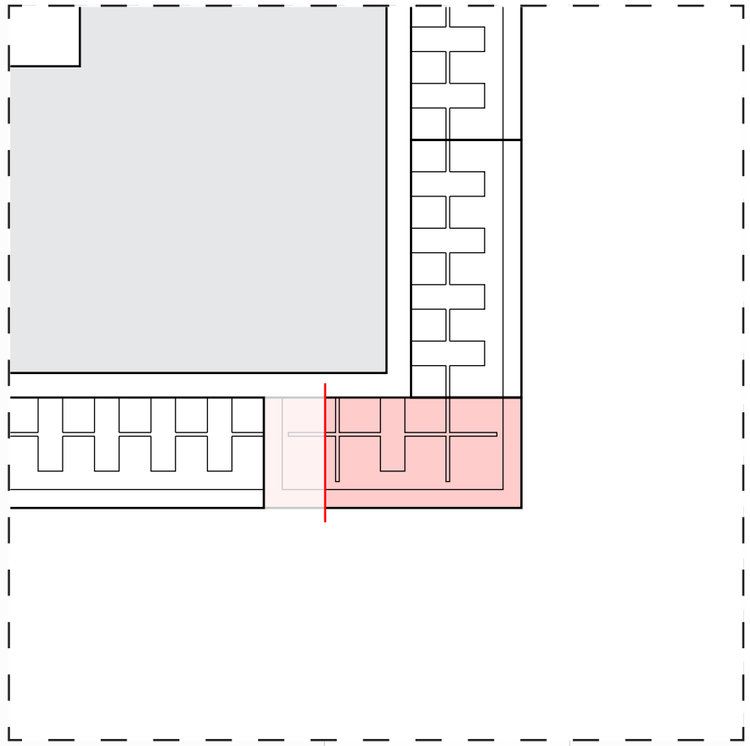
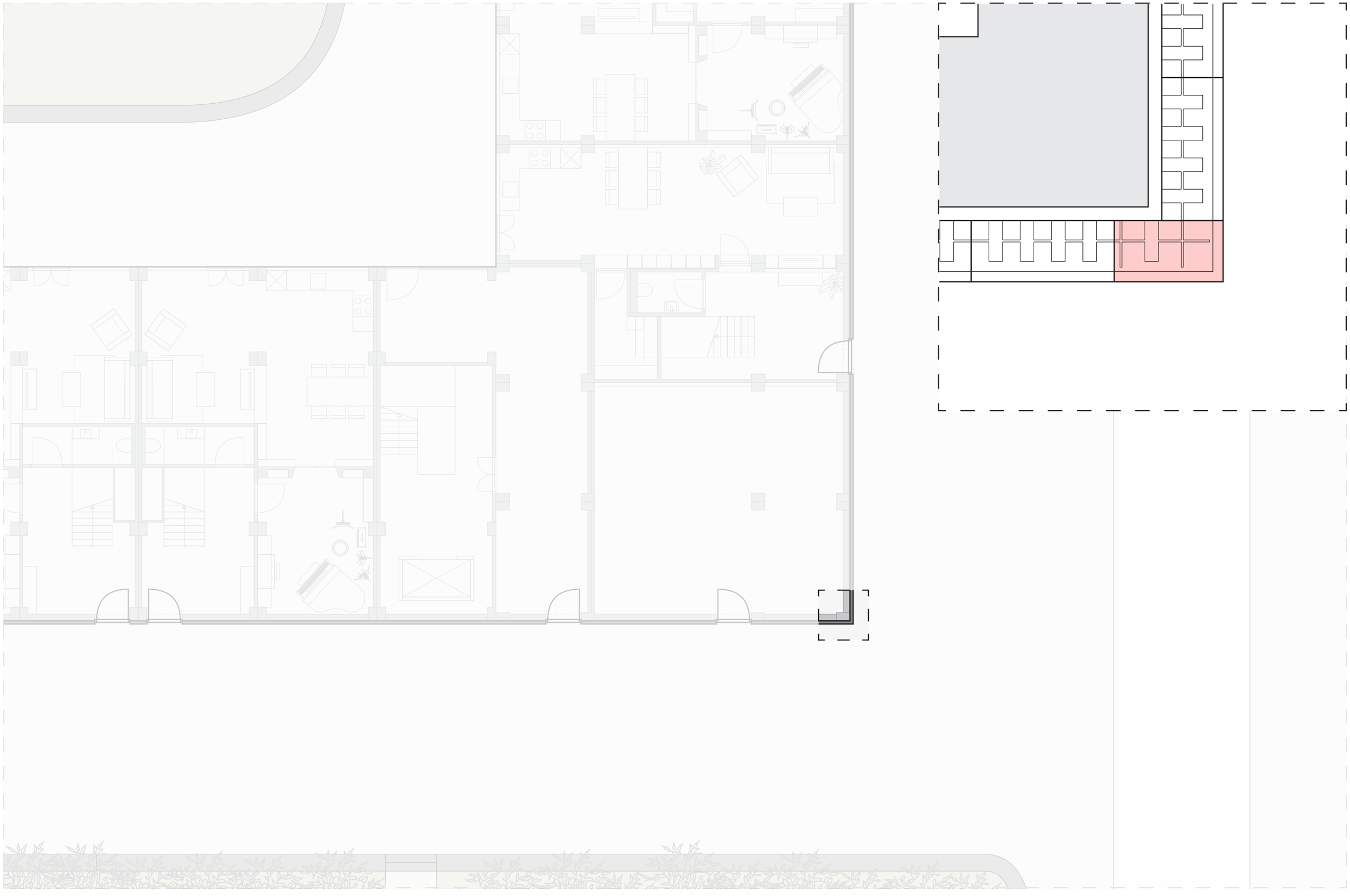
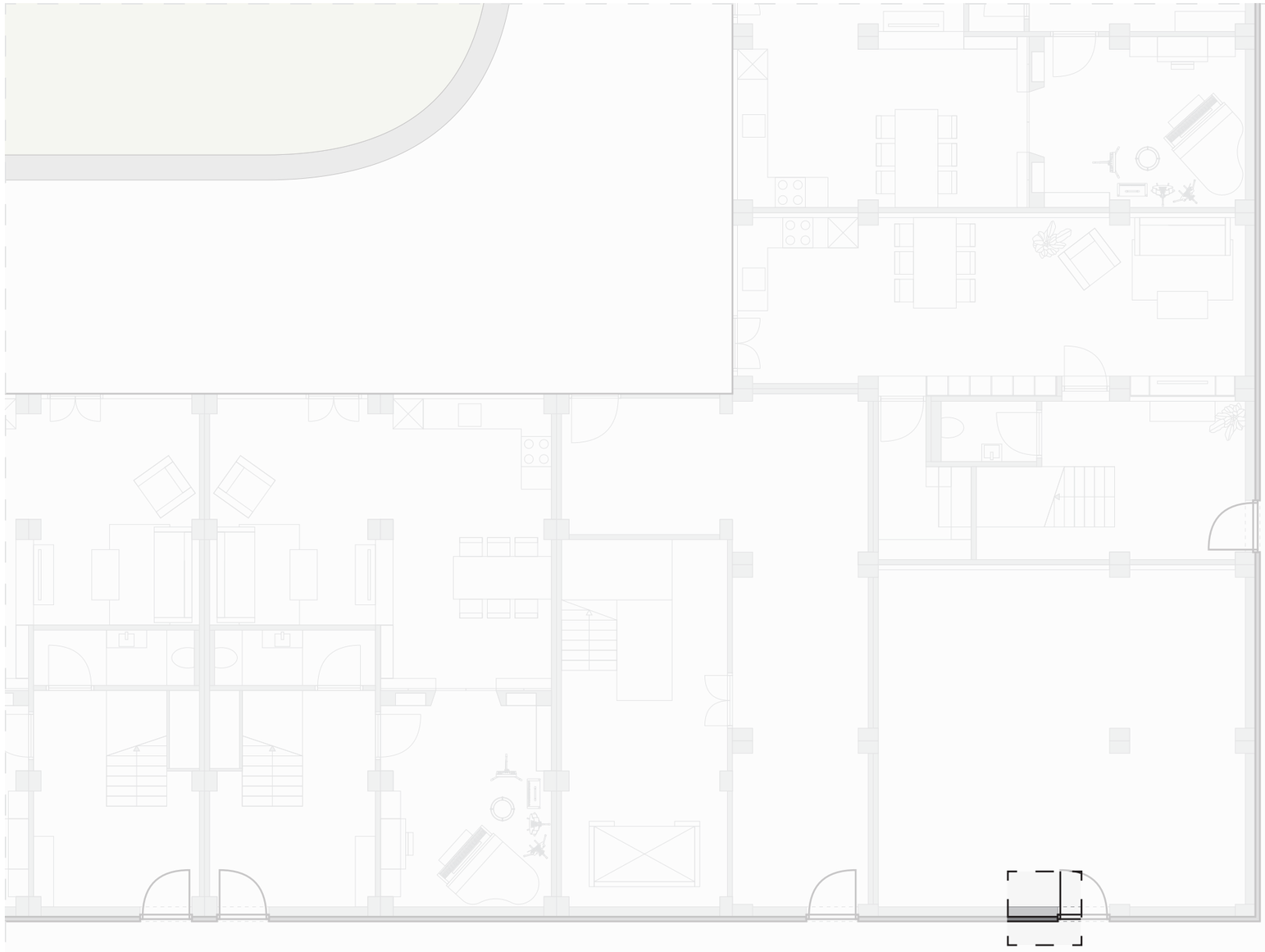
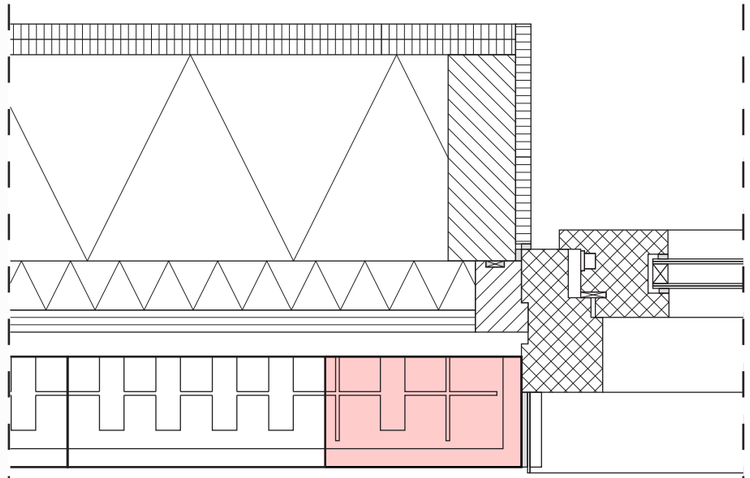

B4
A4
A3
B3
A2
B4
A3
B1
B2
A1

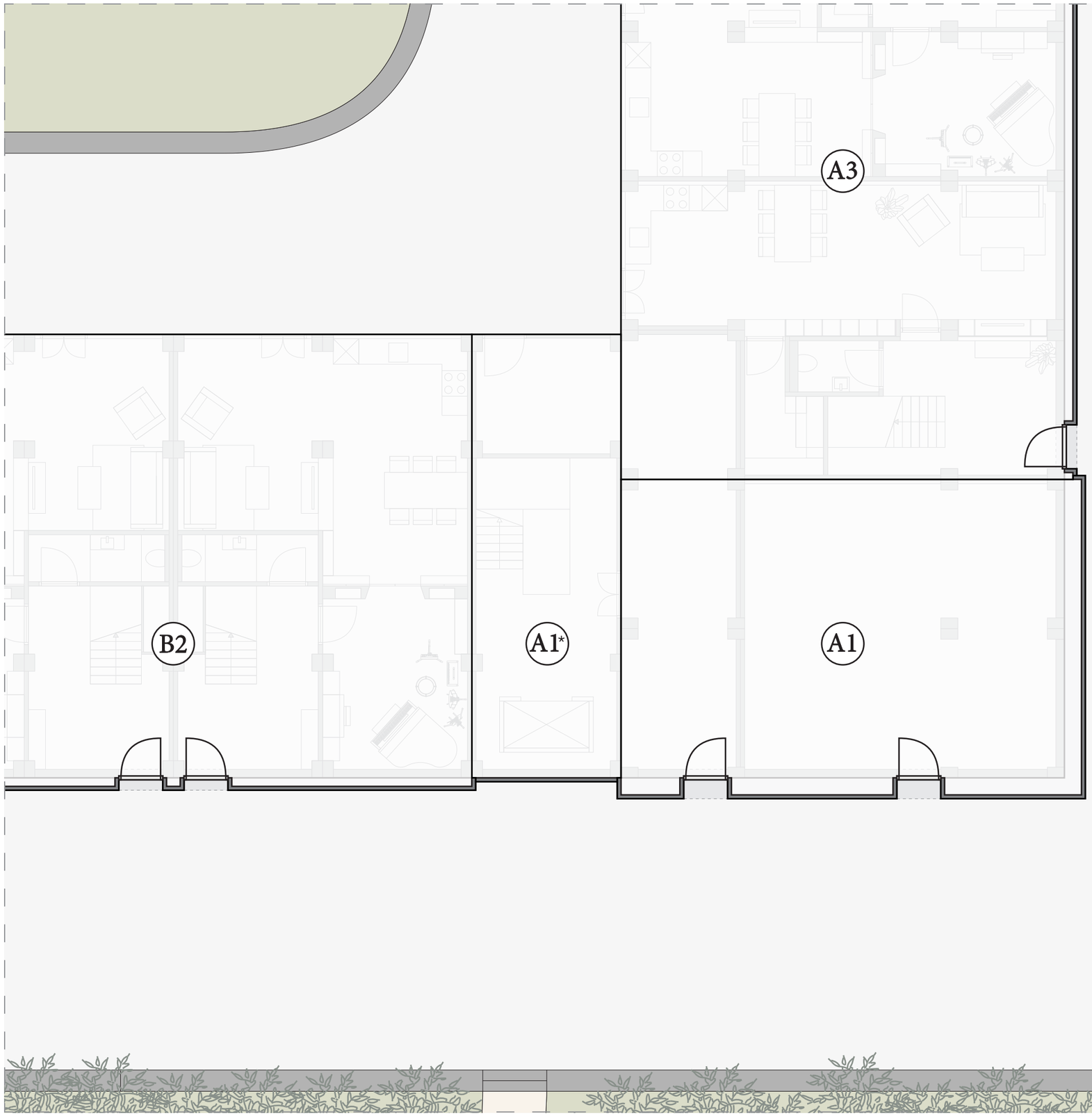












Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Visual representation hierarchy

Characteristics of the B2 section

- Different building height in the whole of the B section in comparison to the A section.
- Emphasised height difference by a sloped roof.
- Less diverse usage and amount of facade elements in the order of elements in comparison to the A section.
- More horizontal emphasis in comparison to the A section.

Continuous elements of the B2 section

- Plinth serves as a unifying element, connecting all sections
- Windows of the bottom order are continuous into the A1* subsection.
- A distinct masonry bond connects the windows of the bottom order in the B2 section and the A1* subsection.
- Entrances are emphasised, combined and have an intermediate space in the same configuaration as the whole block.
- Minimised entablature with a fascia and plain frieze refers to the A1 section.

Elements of section B2

Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Create coherence in the street, building block and urban district

By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc.

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Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section.

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By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc.

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The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section.

Emphasise entrances

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Position and combine entrances at street level

Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc.

Create an intermediate space at entrances

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Use elements around a corner and in different planes

Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc.

Create an order of elements per (sub)section

The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition.

Conceal the repetitive grid of the dwellings

With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings.

Divide appearance between commercial and residential use

By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments.

Characteristics of the B2 section

- Different building height in the whole of the B section in comparison to the A section.
- Emphasised height difference by a sloped roof.
- Less diverse usage and amount of facade elements in the order of elements in comparison to the A section.
- More horizontal emphasis in comparison to the A section.

Continuous elements of the B2 section

- Plinth serves as a unifying element, connecting all sections
- Windows of the bottom order are continuous into the A1* subsection.
- A distinct masonry bond connects the windows of the bottom order in the B2 section and the A1* subsection.
- Entrances are emphasised, combined and have an intermediate space in the same configuaration as the whole block.
- Minimised entablature with a fascia and plain frieze refers to the A1 section.

Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Create coherence in the street, building block and urban district

By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc.

Create different (sub)sections and emphasise contrast

Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section.

Connect the (sub)sections

By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc.

Break order of elements for emphasis and variation

The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section.

Emphasise entrances

The entrances are emphasised by different materials and use, ornaments, distinctive windows, distinctive positioning of windows, orientation and composition of the doors, protrusions that create gable ends and terraces, etc.

Position and combine entrances at street level

Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc.

Create an intermediate space at entrances

The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc.

Use elements around a corner and in different planes

Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc.

Create an order of elements per (sub)section

The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition.

Conceal the repetitive grid of the dwellings

With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings.

Divide appearance between commercial and residential use

By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments.

Characteristics of the A1* subsection

- Highest building height marking its hierarchy and urban importance.
- Difference is emphasised by different elements, placement and building line.
- The subsection has a accommodating role towards the A1 section.
- Emphasises height by ornament at the top.

Continuous elements of the A1* subsection

- Plinth serves as a unifying element, connecting all sections.
- Windows of the bottom order are continuous into the B2 section.
- A distinct masonry bond connects the windows of the bottom order with the windows of the B2 section.

Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Create coherence in the street, building block and urban district

By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc.

Create different (sub)sections and emphasise contrast

Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section.

Connect the (sub)sections

By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc.

Break order of elements for emphasis and variation

The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section.

Emphasise entrances

The entrances are emphasised by different materials and use, ornaments, distinctive windows, distinctive positioning of windows, orientation and composition of the doors, protrusions that create gable ends and terraces, etc.

Position and combine entrances at street level

Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc.

Create an intermediate space at entrances

The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc.

Use elements around a corner and in different planes

Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc.

Create an order of elements per (sub)section

The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition.

Conceal the repetitive grid of the dwellings

With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings.

Divide appearance between commercial and residential use

By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments.

Characteristics of the A1 section

- Different building height in the whole of the A section in comparison to the B section.
- More diverse usage and amount of facade elements.
- Only the A1 section showcases thicker windowsills and lintels.
- The A1 section protrudes the regular building line the most.
- Commercial space on groundfloor that is different in appearance.
- The A1 section showcases both loggias that extend slightly and different French balconies in comparison to the B-section.

Continuous elements of the A1 section

- Plinth serves as a unifying element, connecting all sections.
- Minimised entablature with fascia and plain frieze refers to the B2 and A3 section.
- The fences of the balconies continue in the A3 section.
- Overhang creates intermediate space in the A3 section.

A3

Characteristics of the A3 section

- Sloped roof and recession of the building line hierarchize the A1 and A2 section.
- Diverse usage and amount of facade elements in comparison to the B section.
- Less elements in comparison to the A1 section.
- Different windows in each order in comparison to the other sections.
- Emphasises horizontality over verticality in comparison to the A1 section.

Continuous elements of the A3 section

- Plinth and emphasised entrances serve as a unifying element, connecting all sections.
- A distinct masonry bond connects the windows of the bottom order emphasising horizontality.
- Minimised entablature and fence of french balcony refers to the other sections.
- Overhang that creates intermediate space continues in the A1 section.

Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Create coherence in the street, building block and urban district

By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc.

Create different (sub)sections and emphasise contrast

Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section.

Connect the (sub)sections

By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc.

Break order of elements for emphasis and variation

The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section.

Emphasise entrances

The entrances are emphasised by different materials and use, ornaments, distinctive windows, distinctive positioning of windows, orientation and composition of the doors, protrusions that create gable ends and terraces, etc.

Position and combine entrances at street level

Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc.

Create an intermediate space at entrances

The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc.

Use elements around a corner and in different planes

Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc.

Create an order of elements per (sub)section

The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition.

Conceal the repetitive grid of the dwellings

With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings.

Divide appearance between commercial and residential use

By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments.

A1*
11
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B2
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A1
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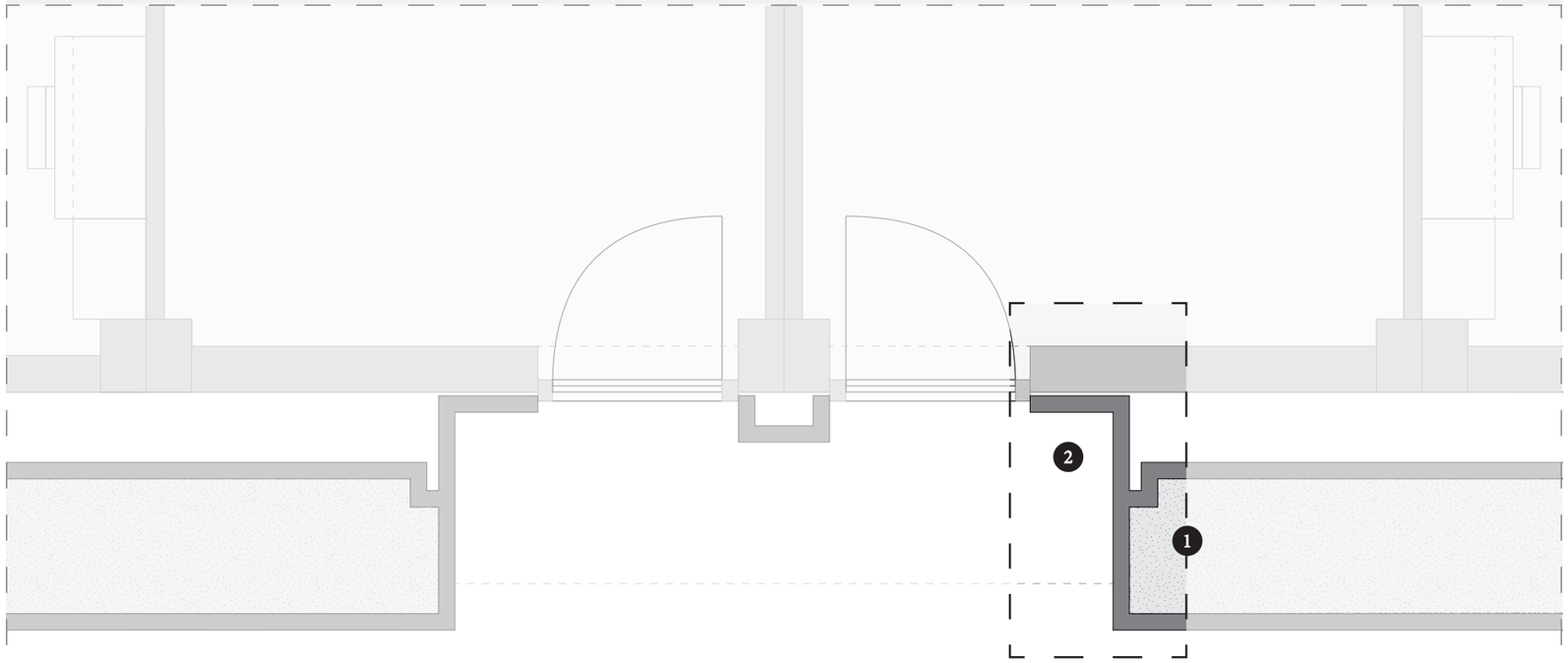
3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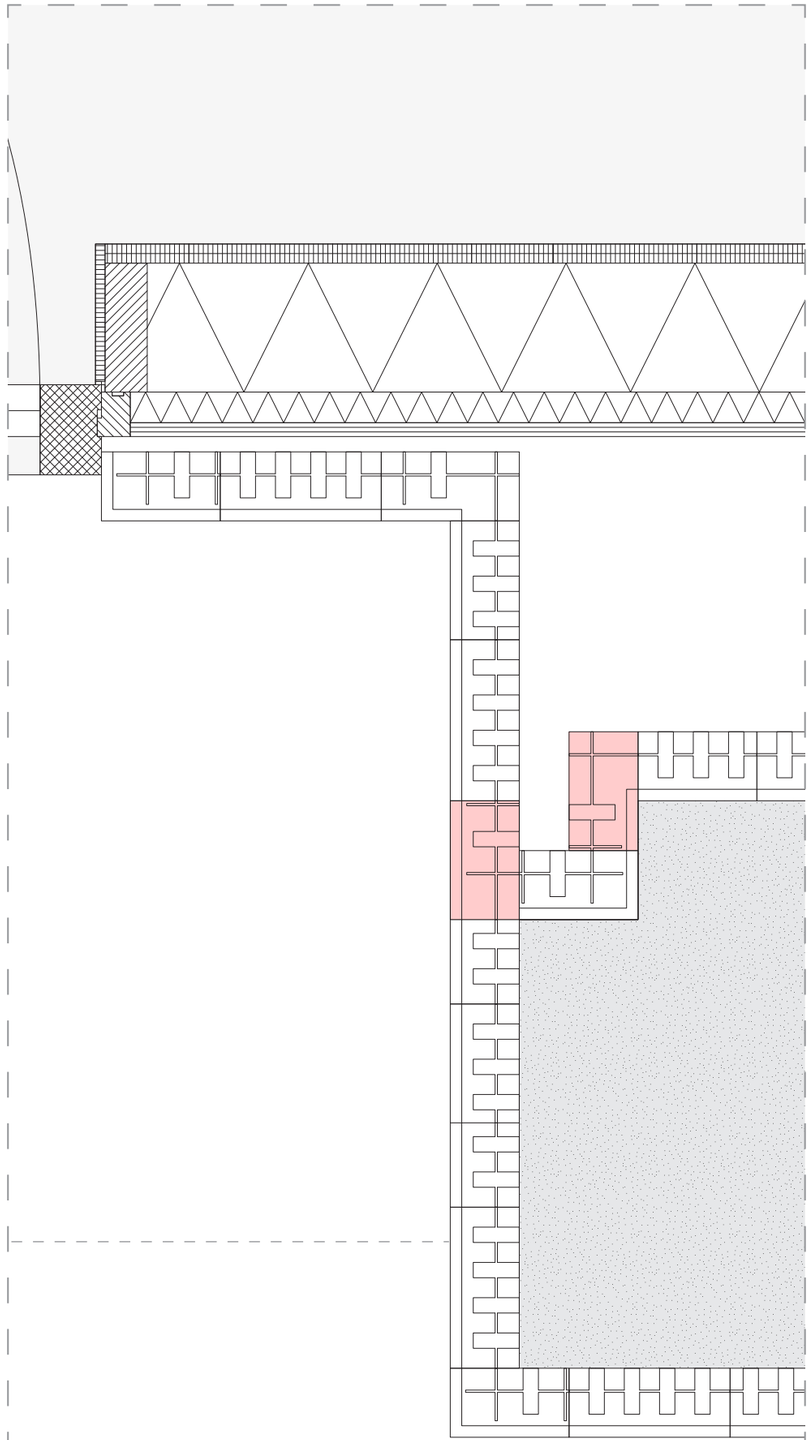

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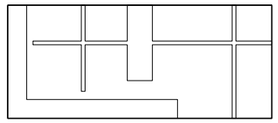
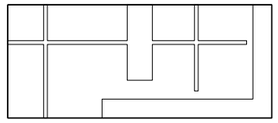
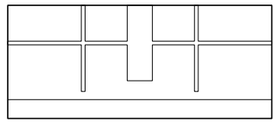
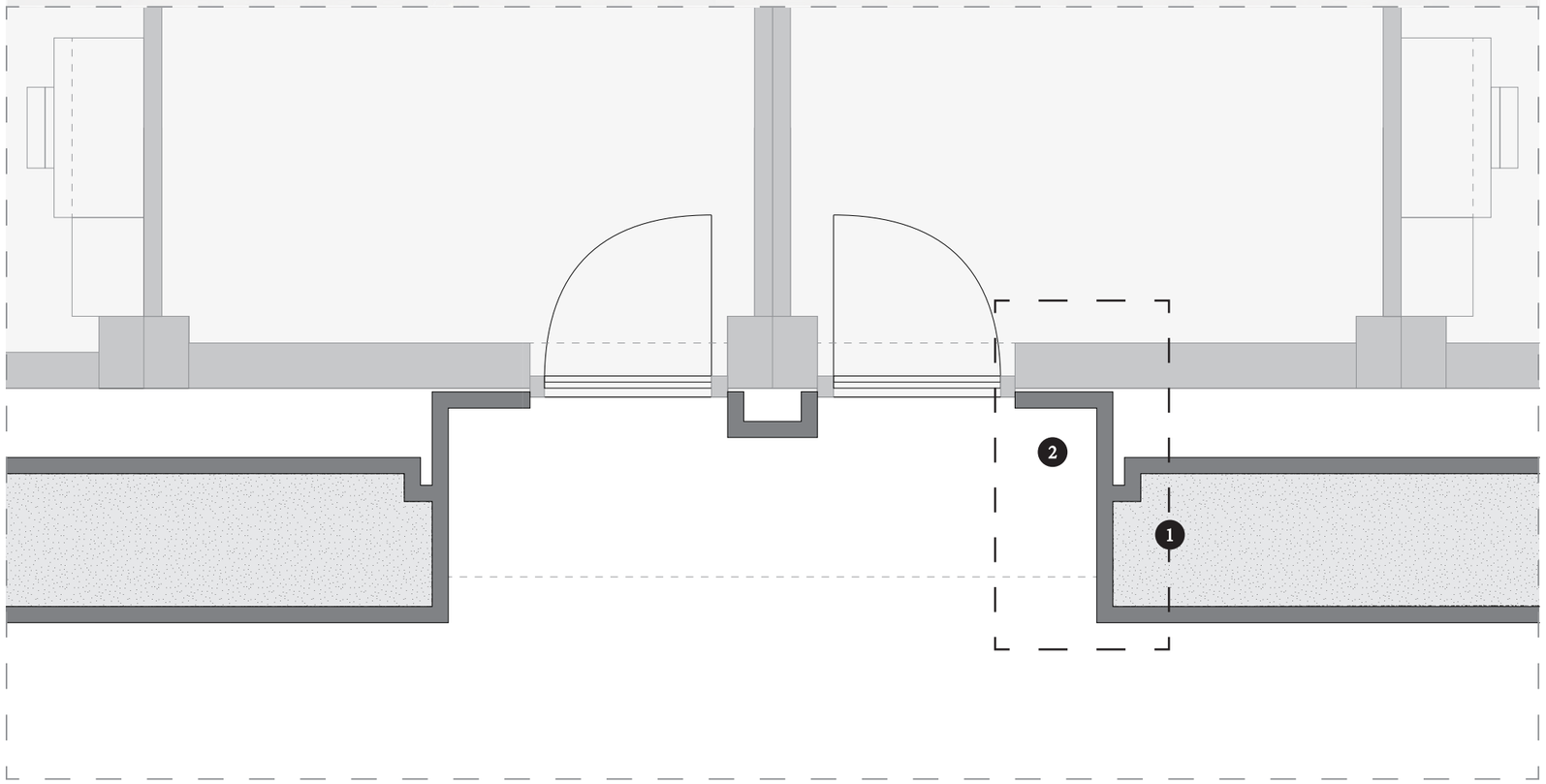


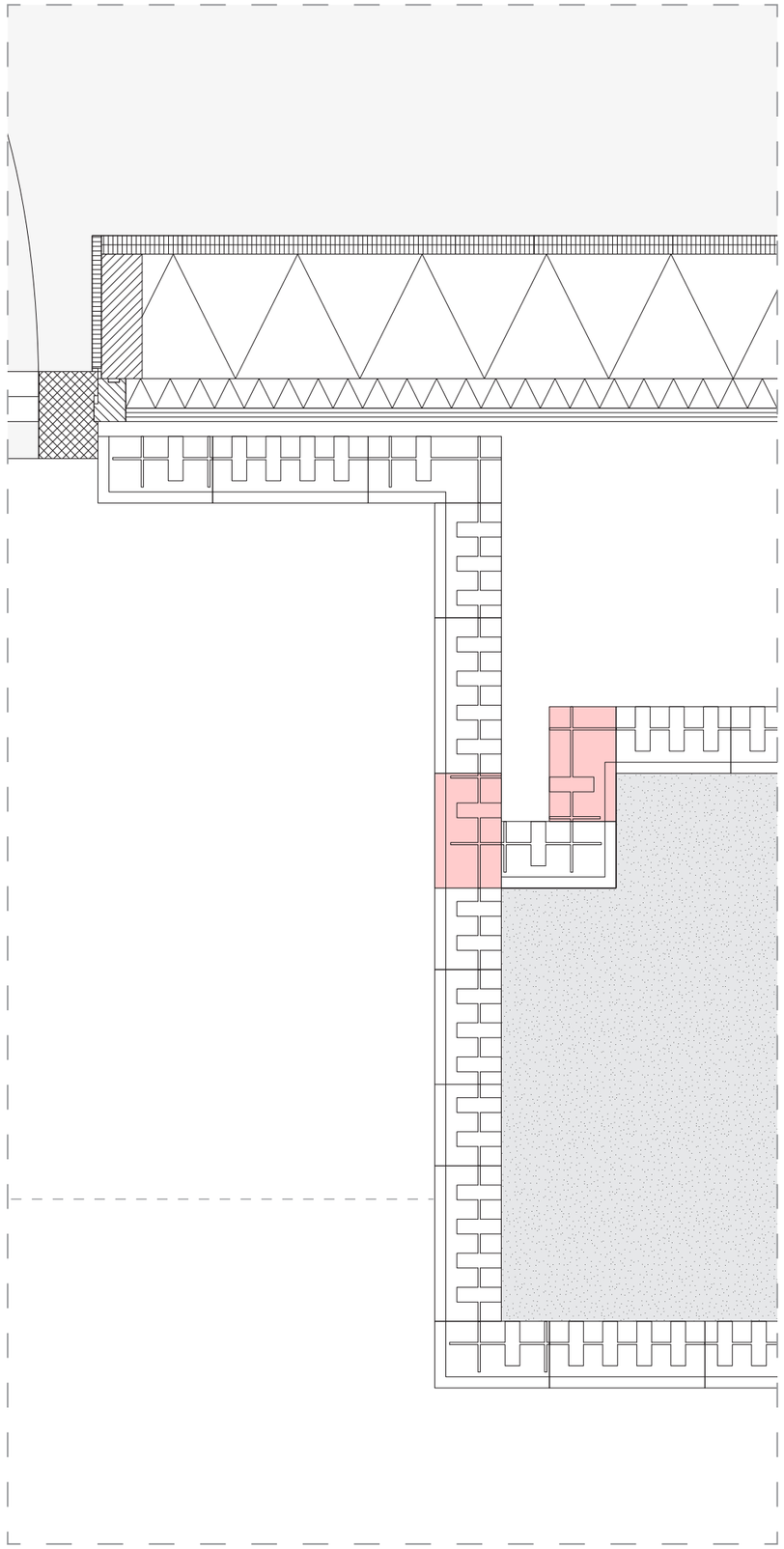
The Z-Stone



The T-Stone



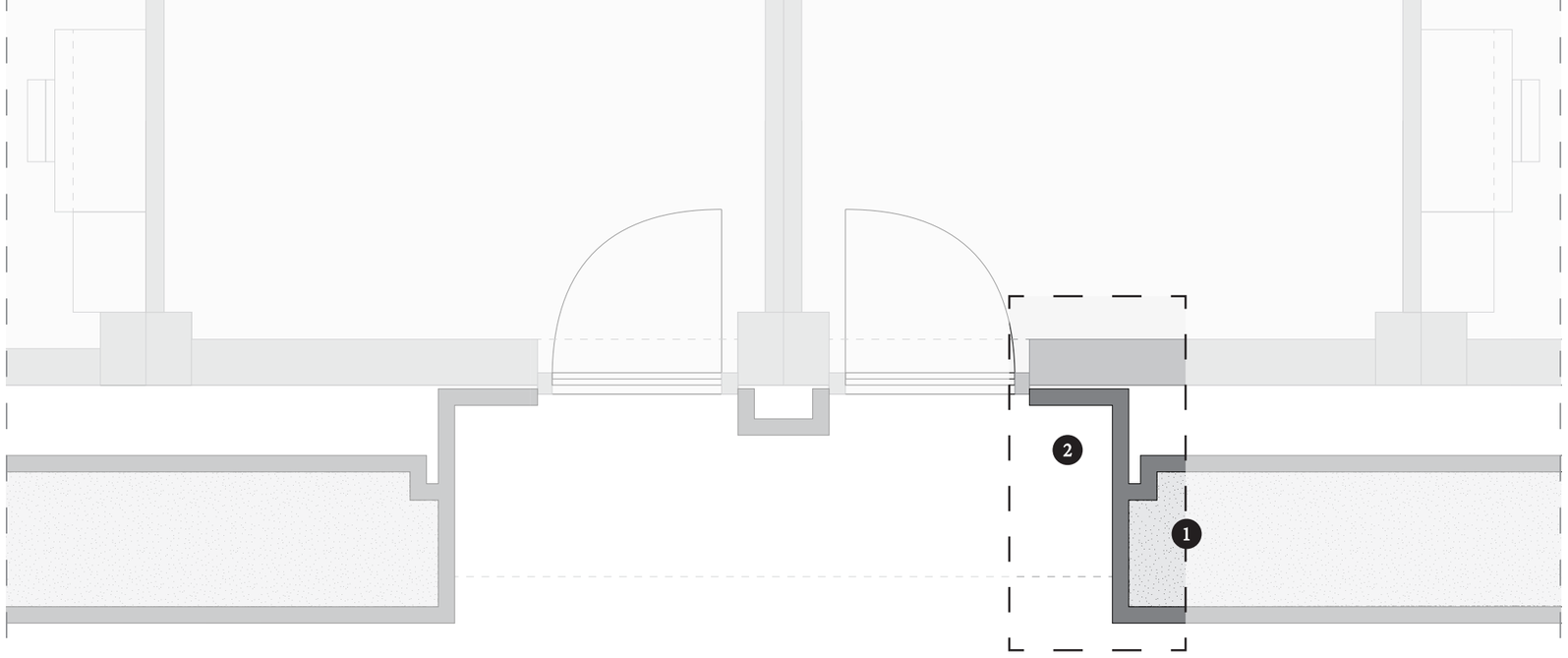


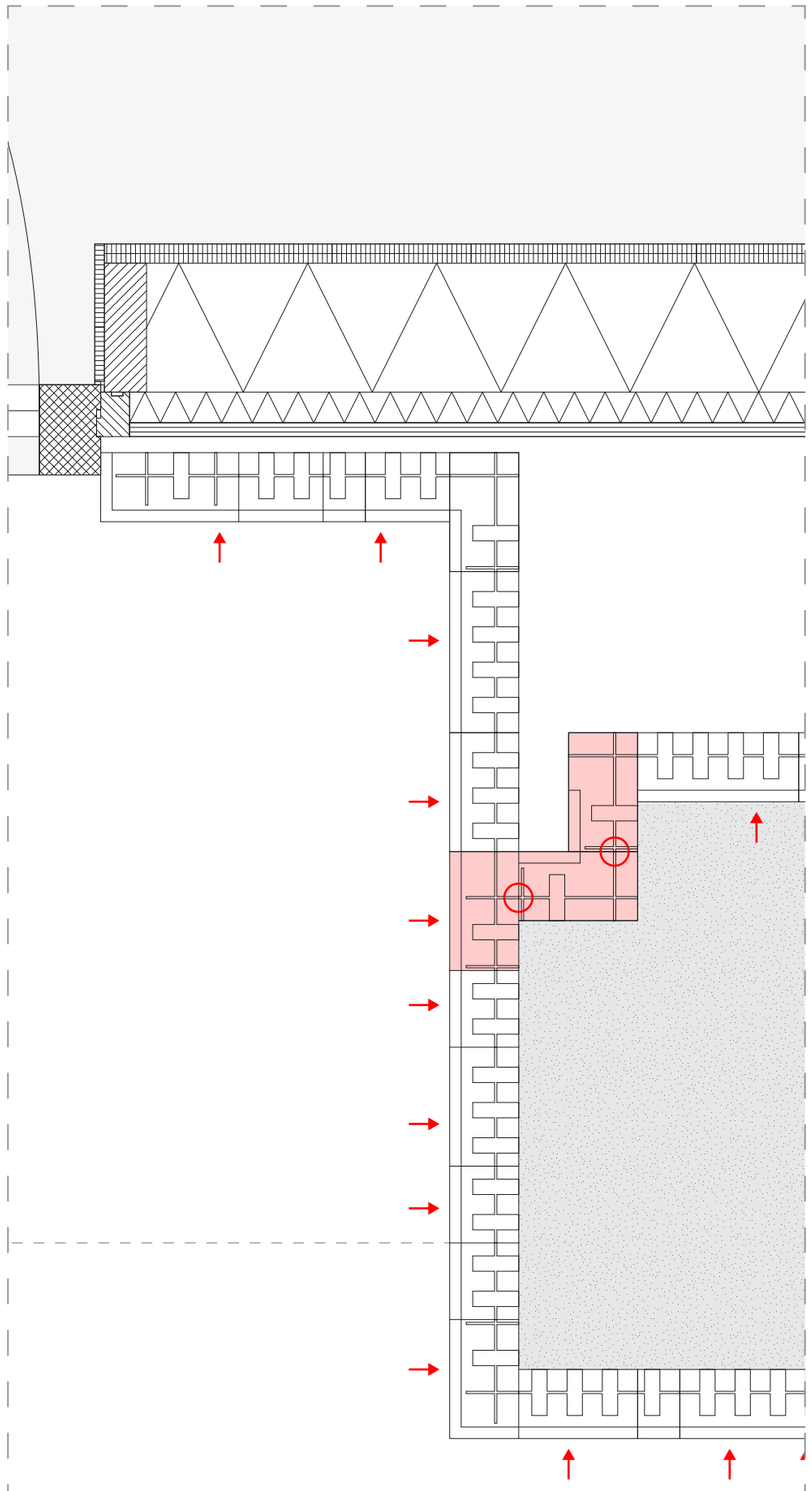


The S-Stone

The Z-Stone

The T-Stone





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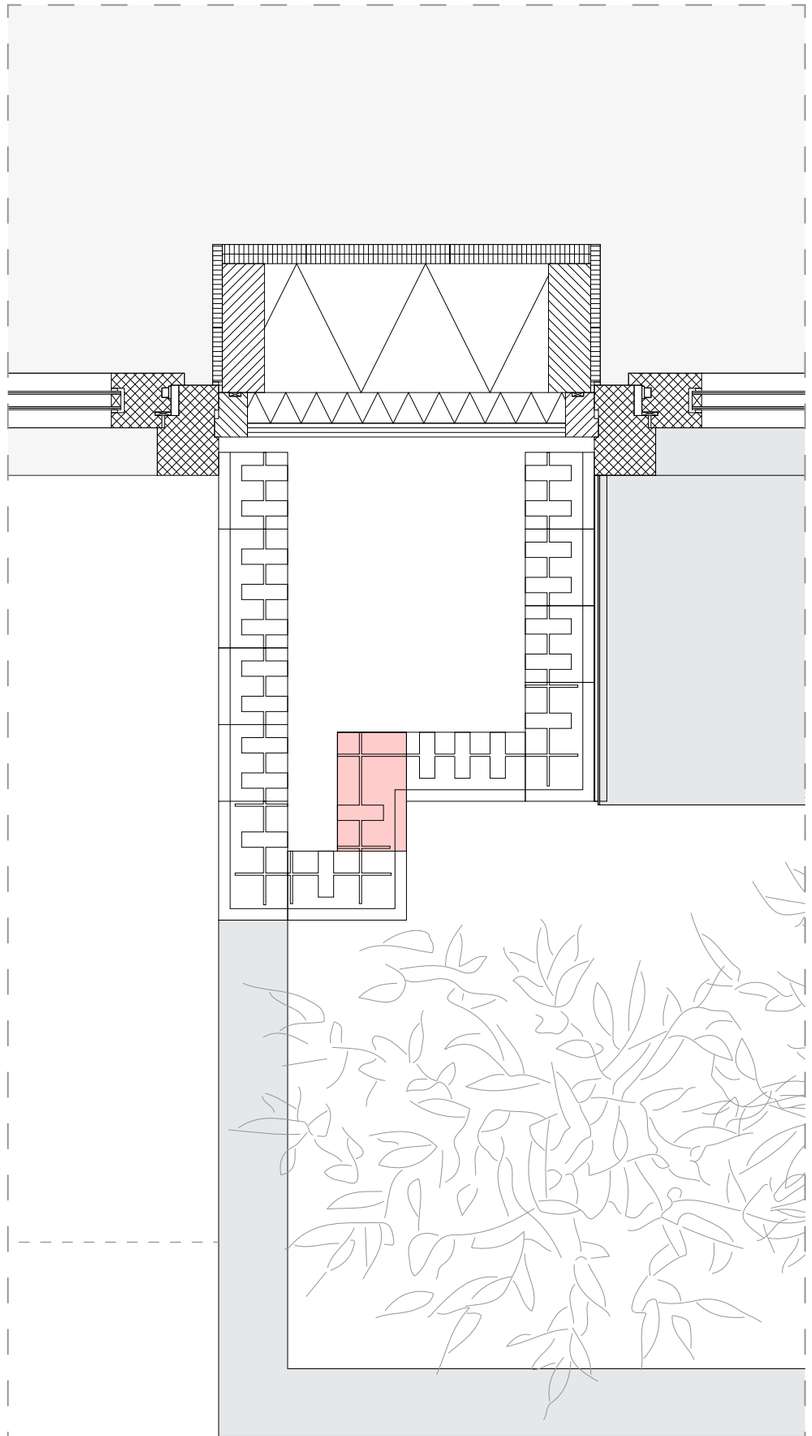

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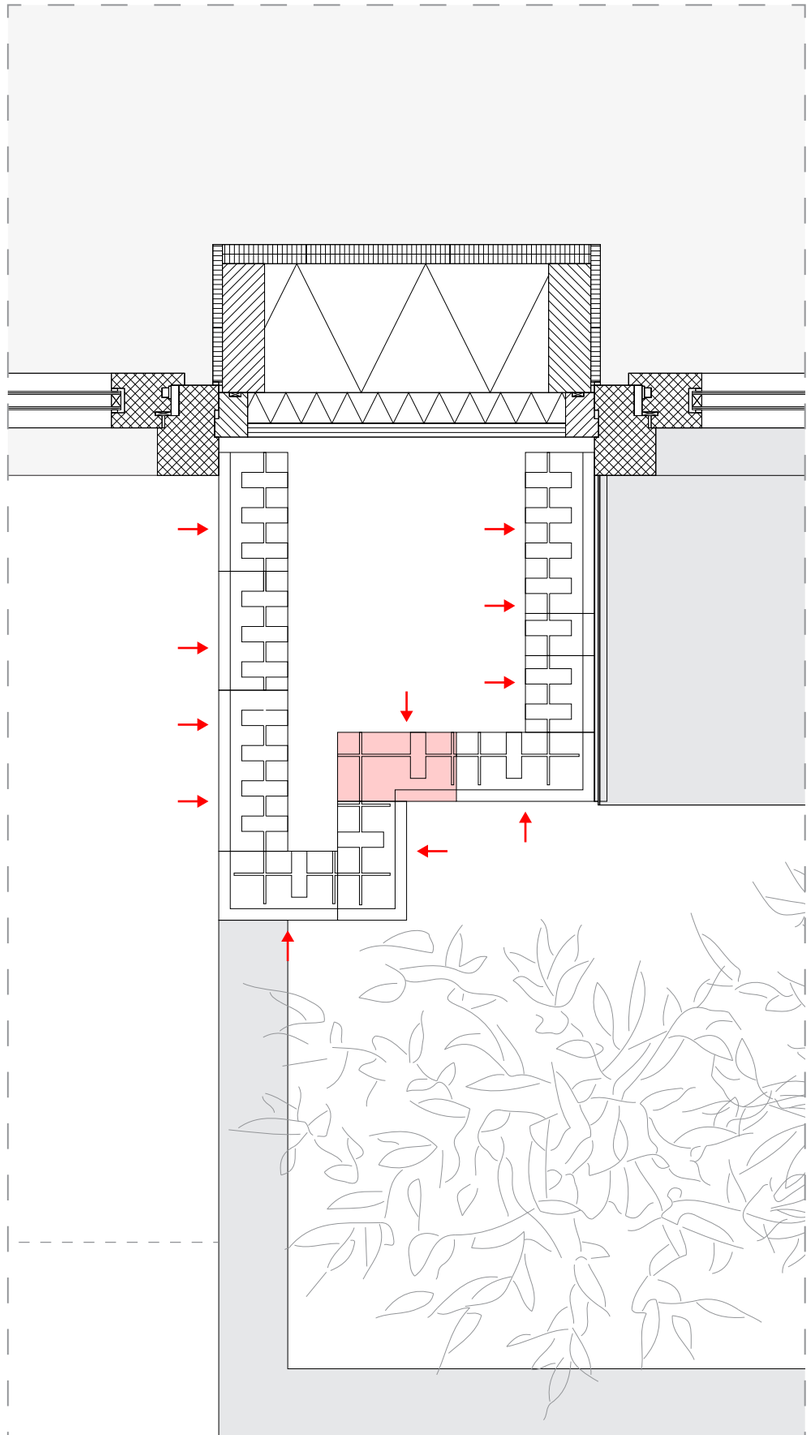

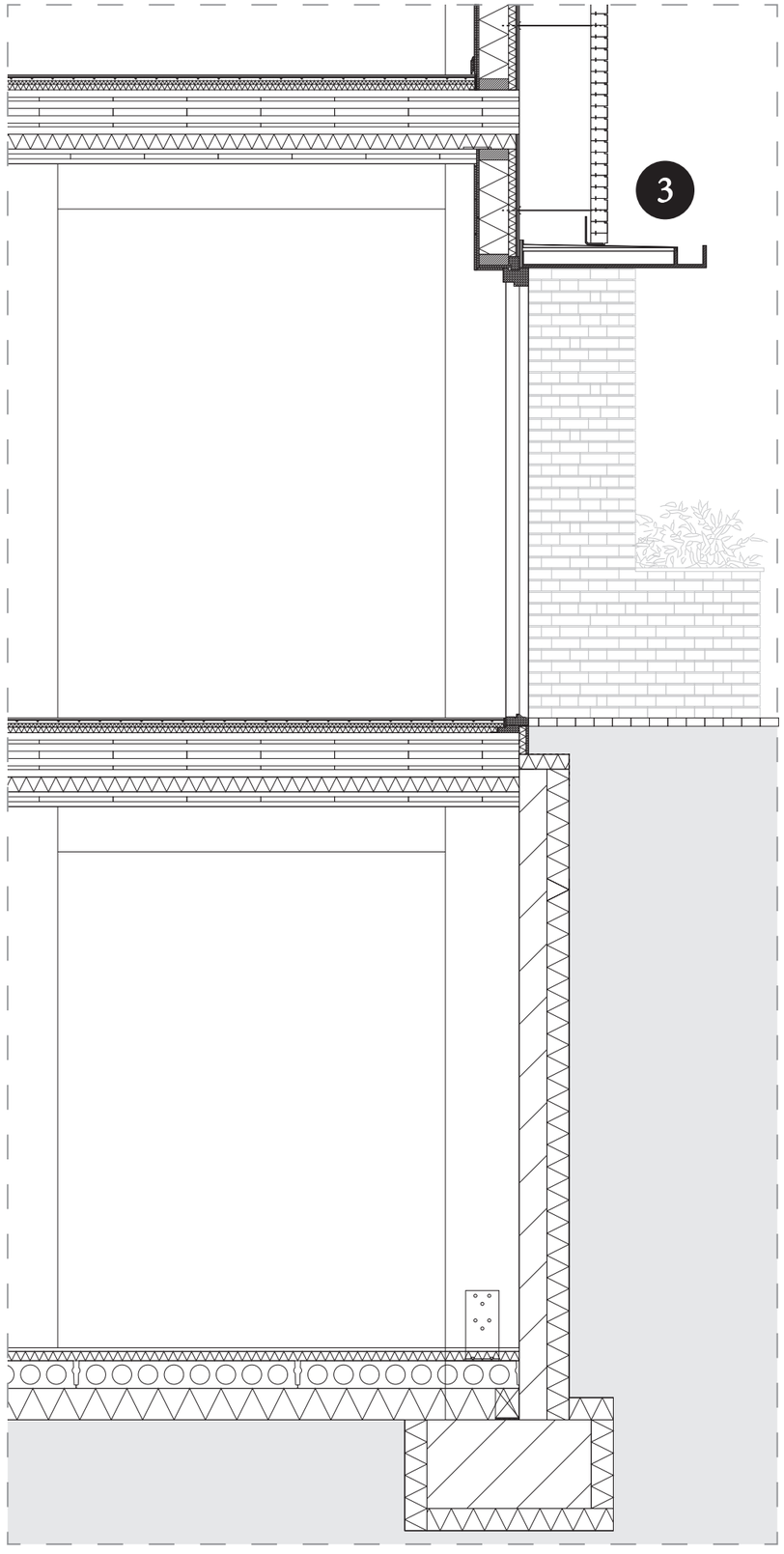
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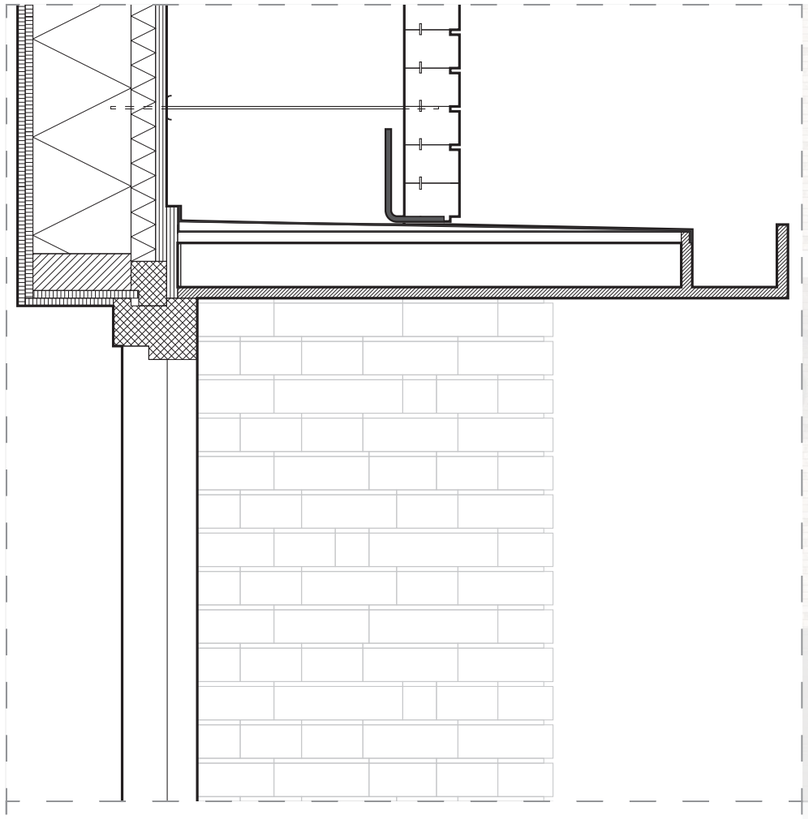
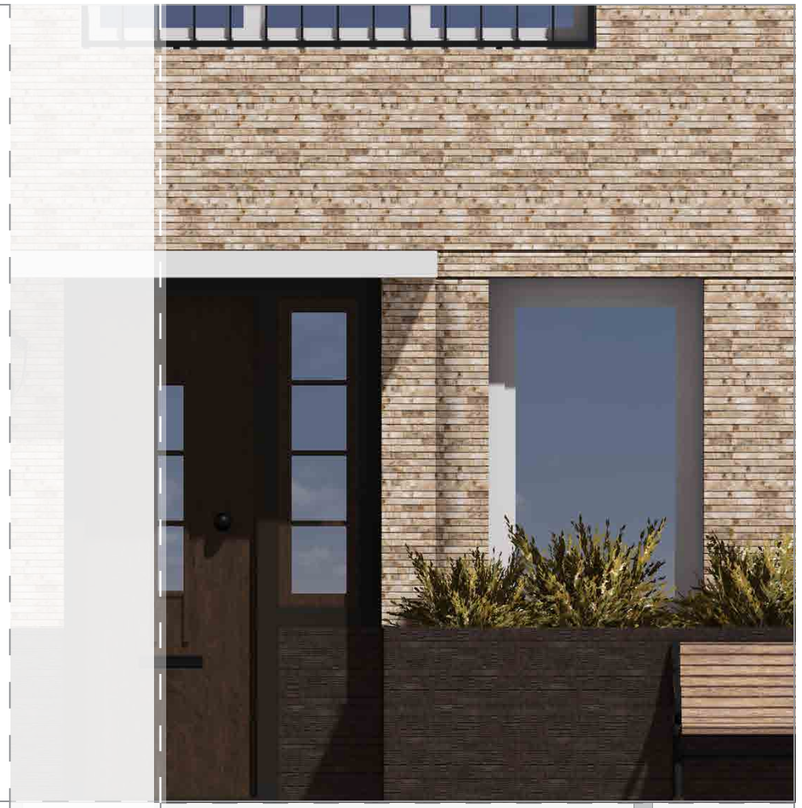
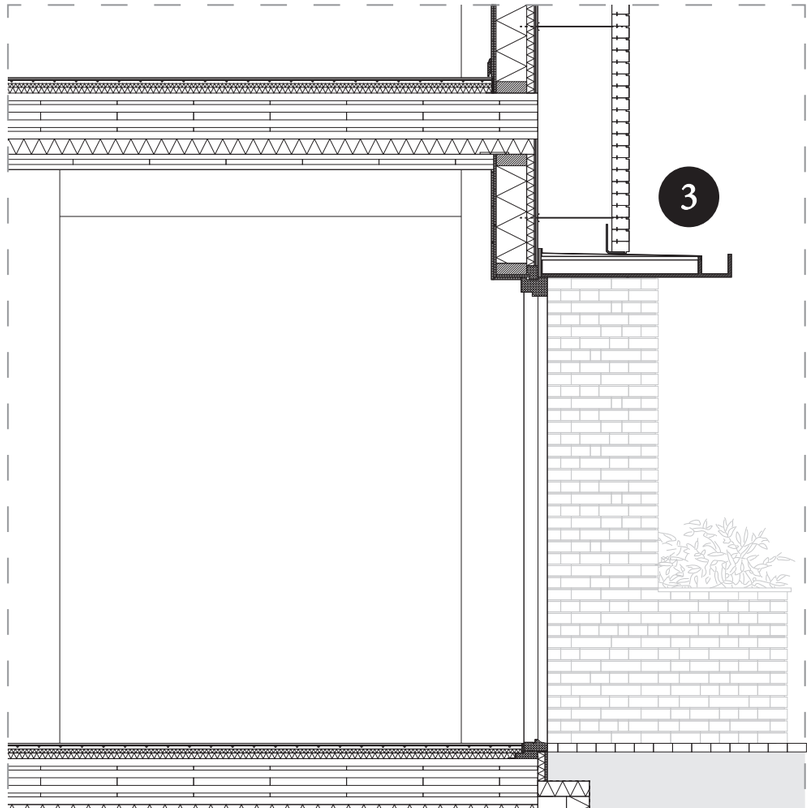
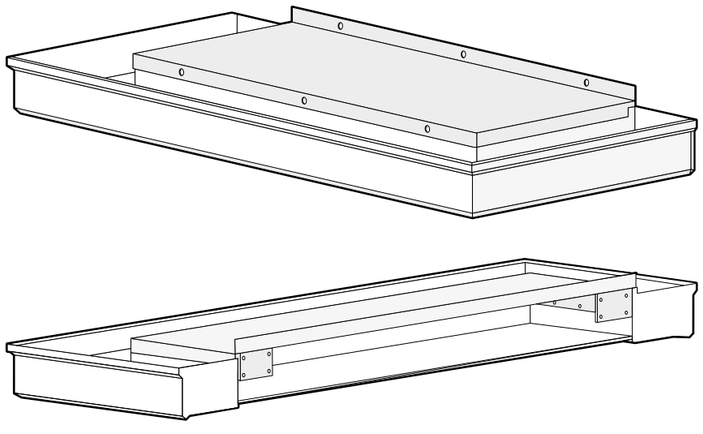
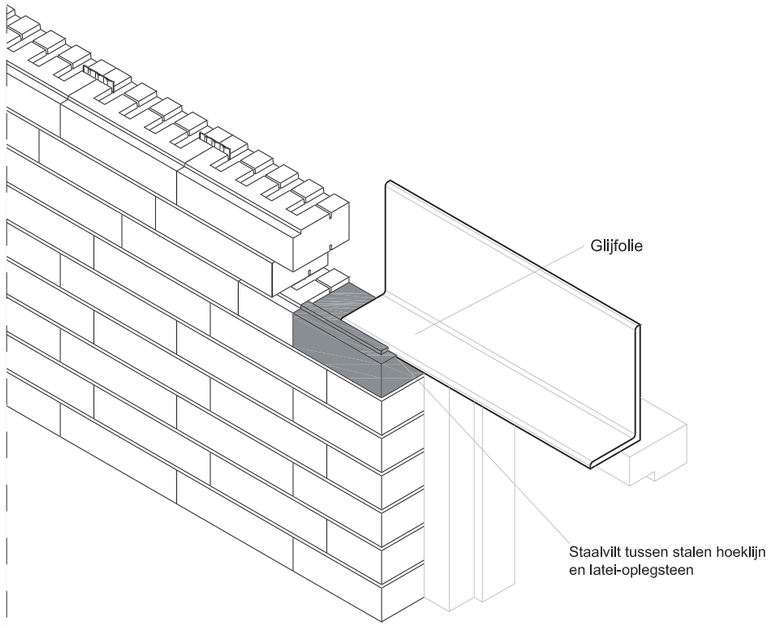








Prefab overhang from Polytech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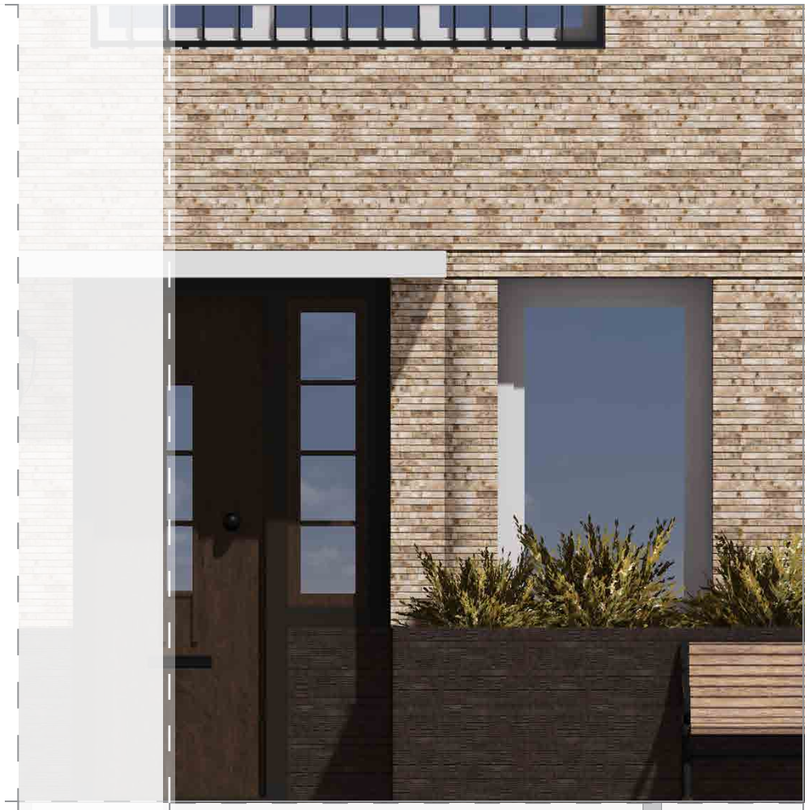

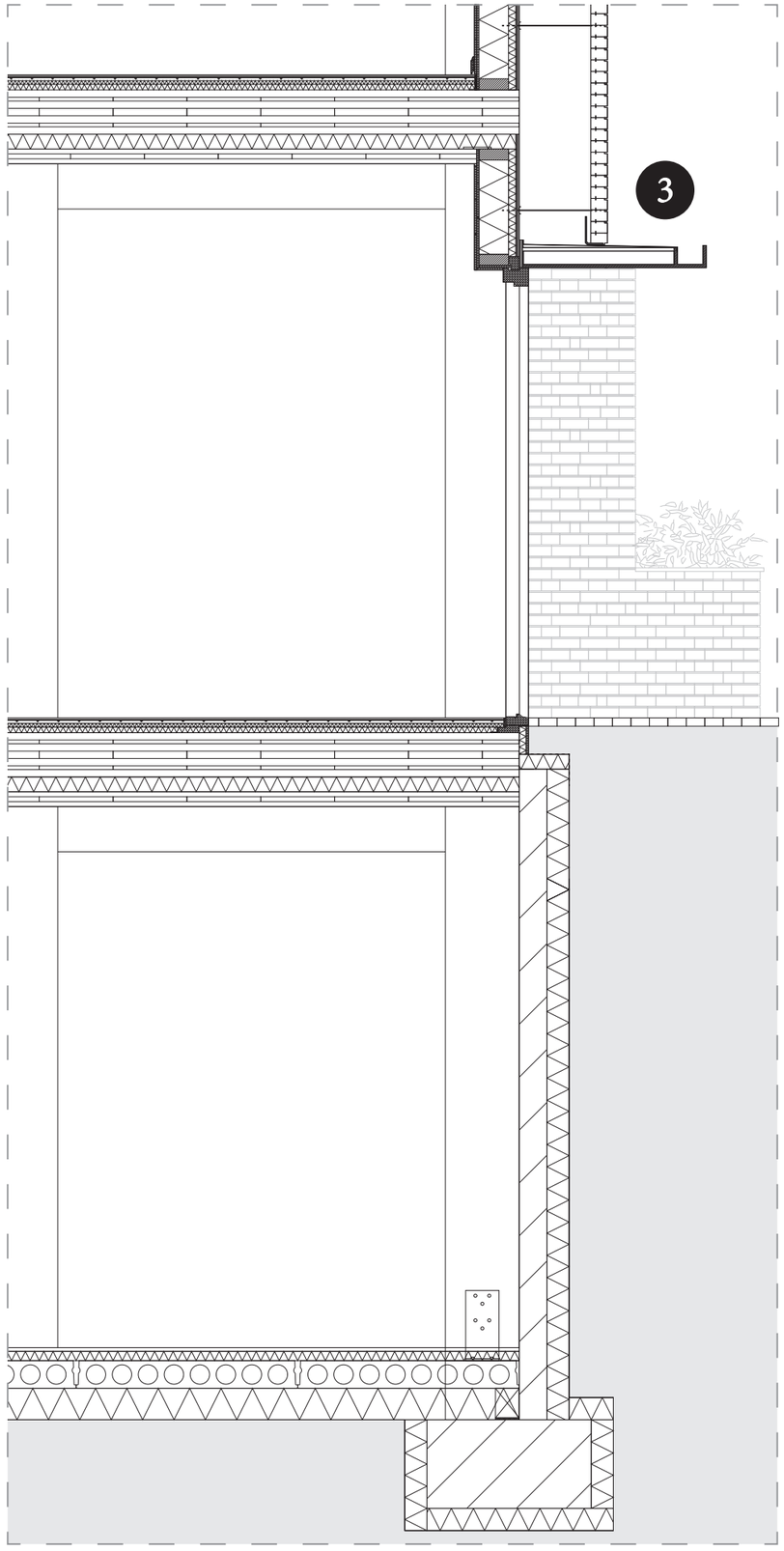
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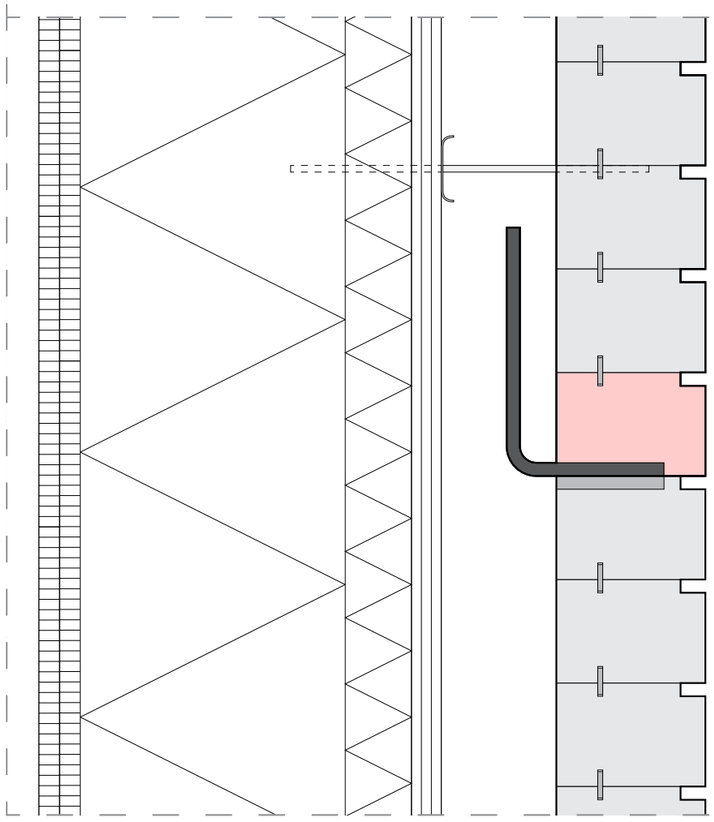

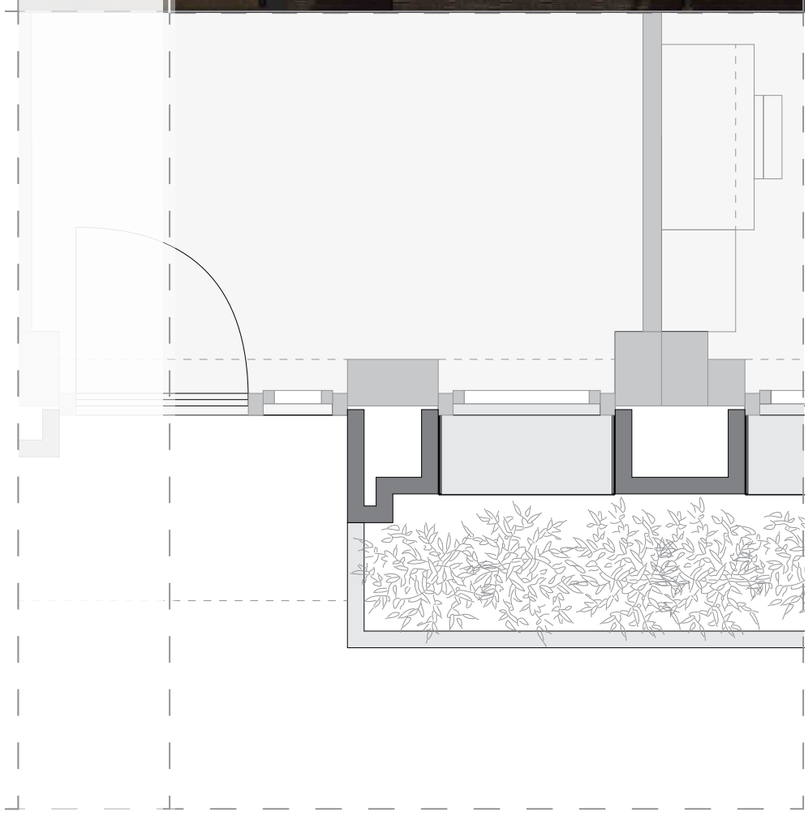

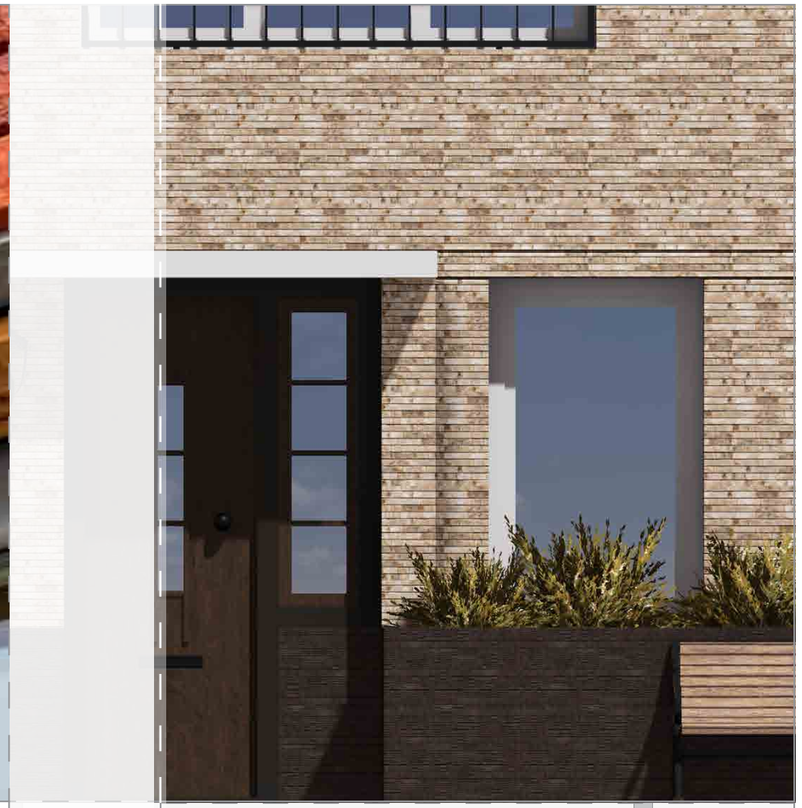

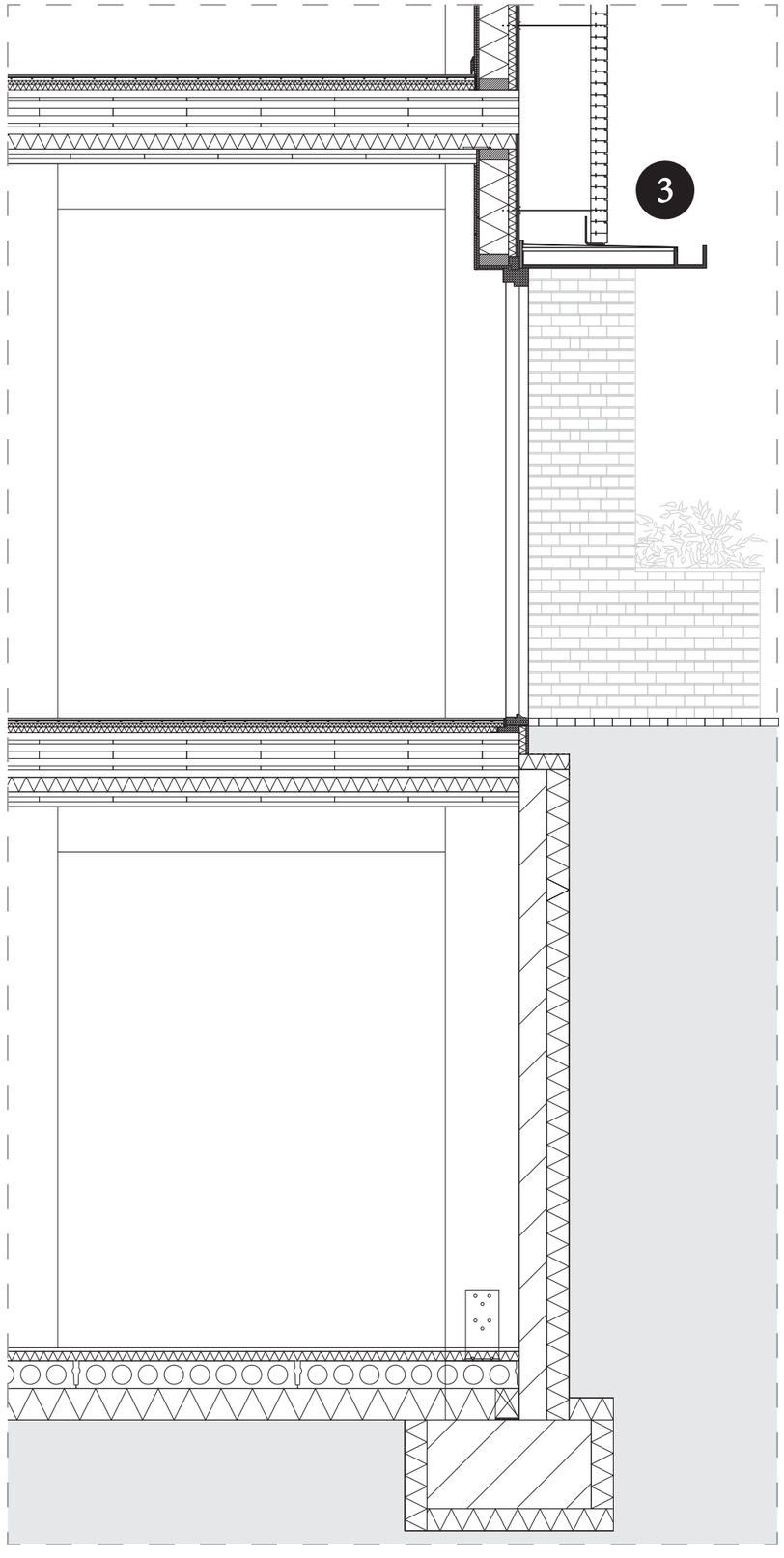
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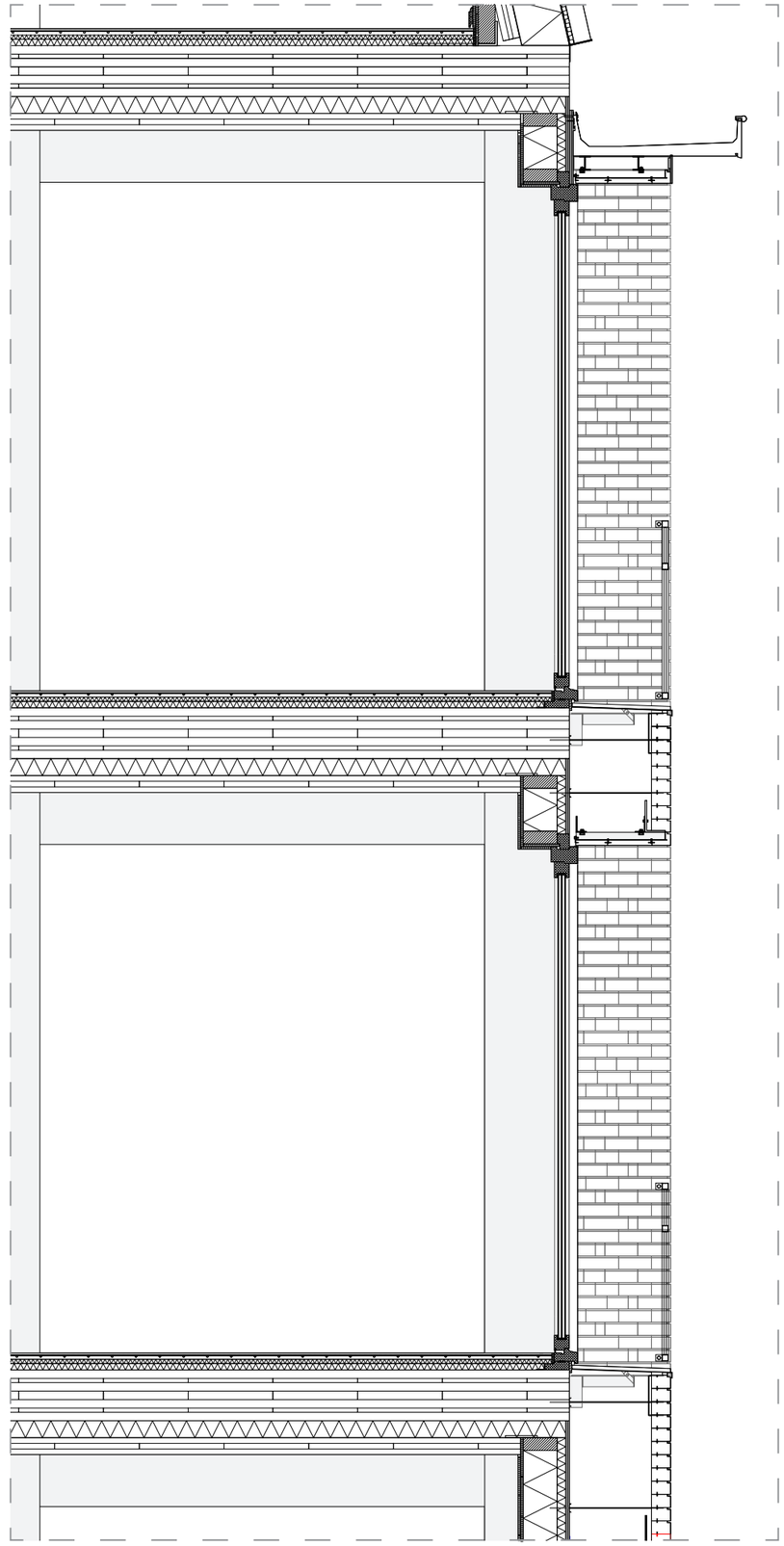
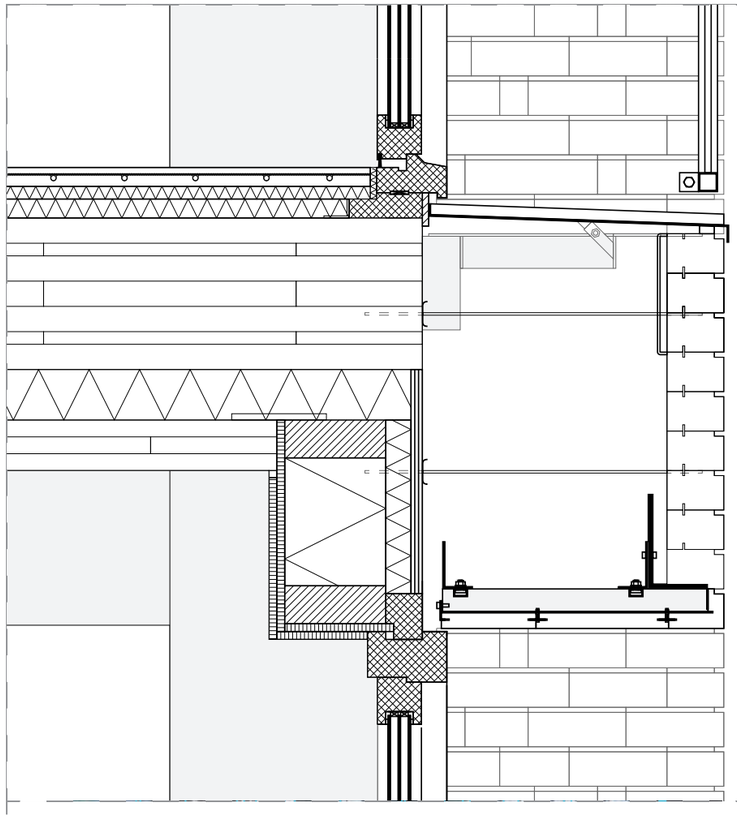
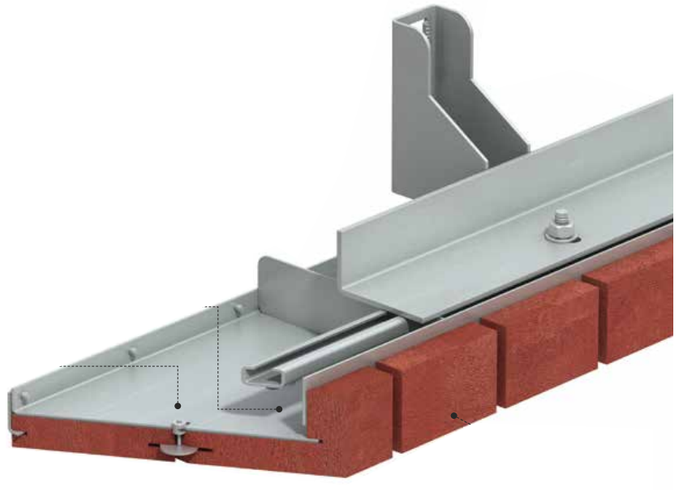
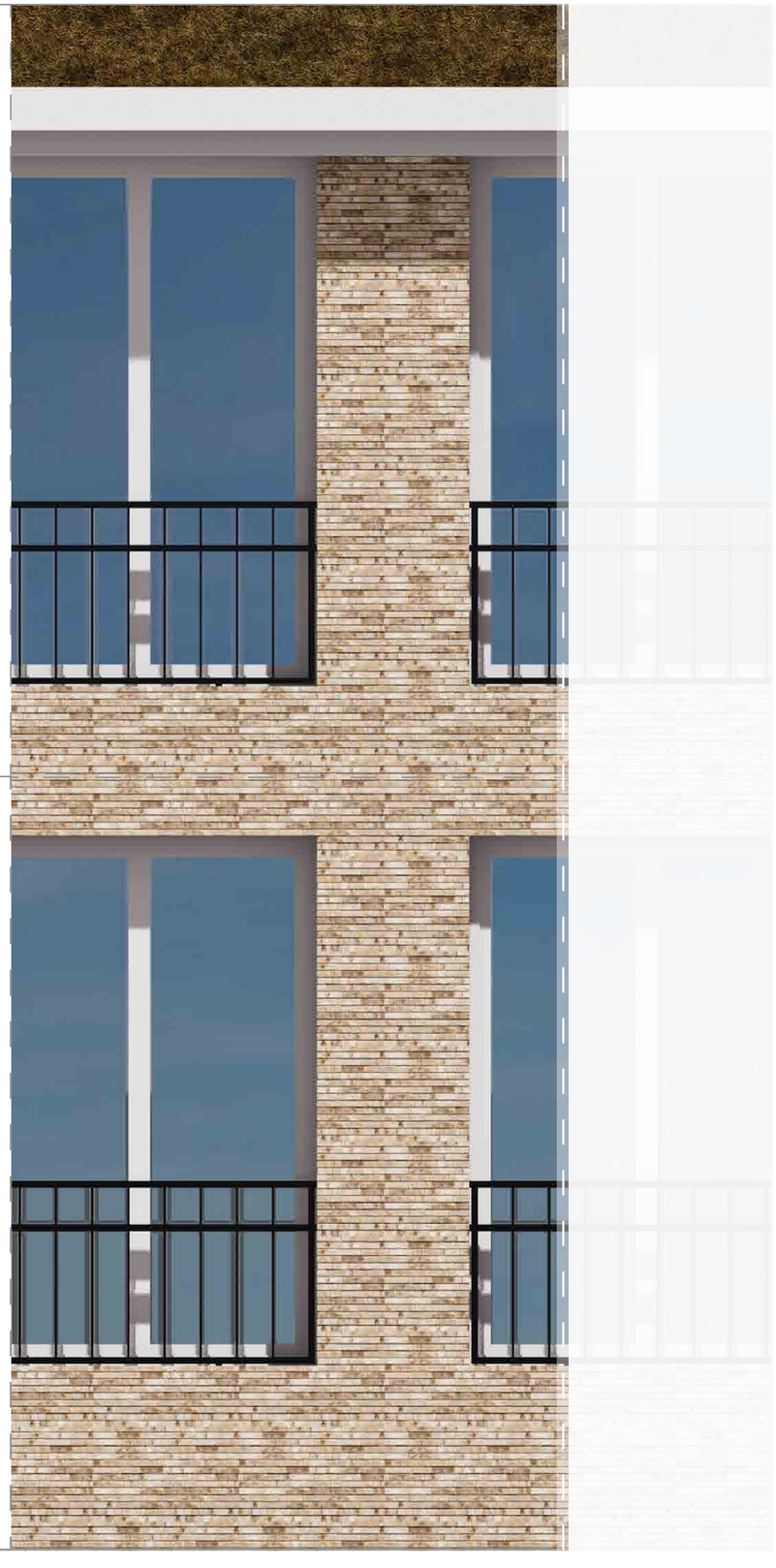
BLABLA

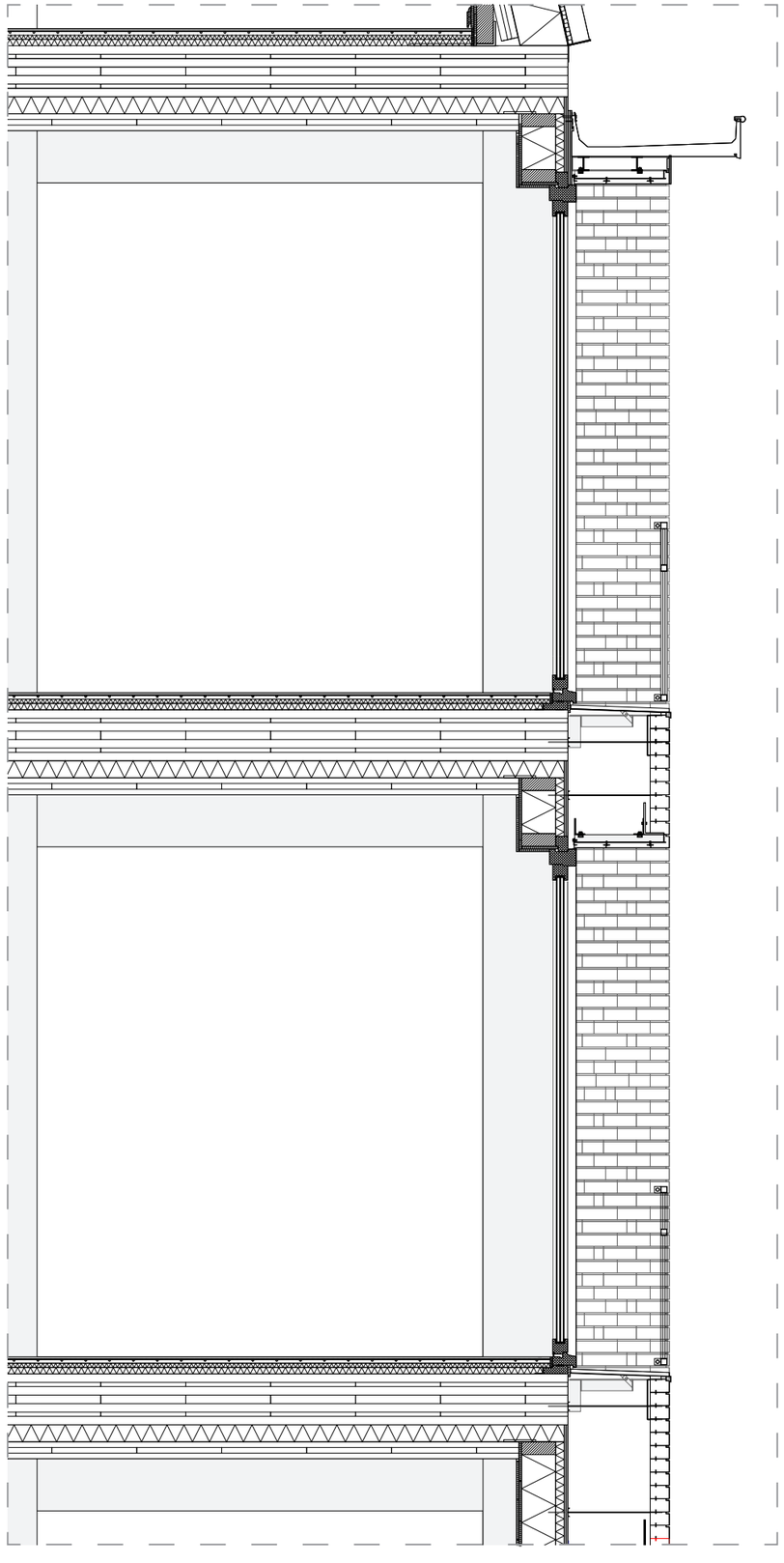
BLABLA

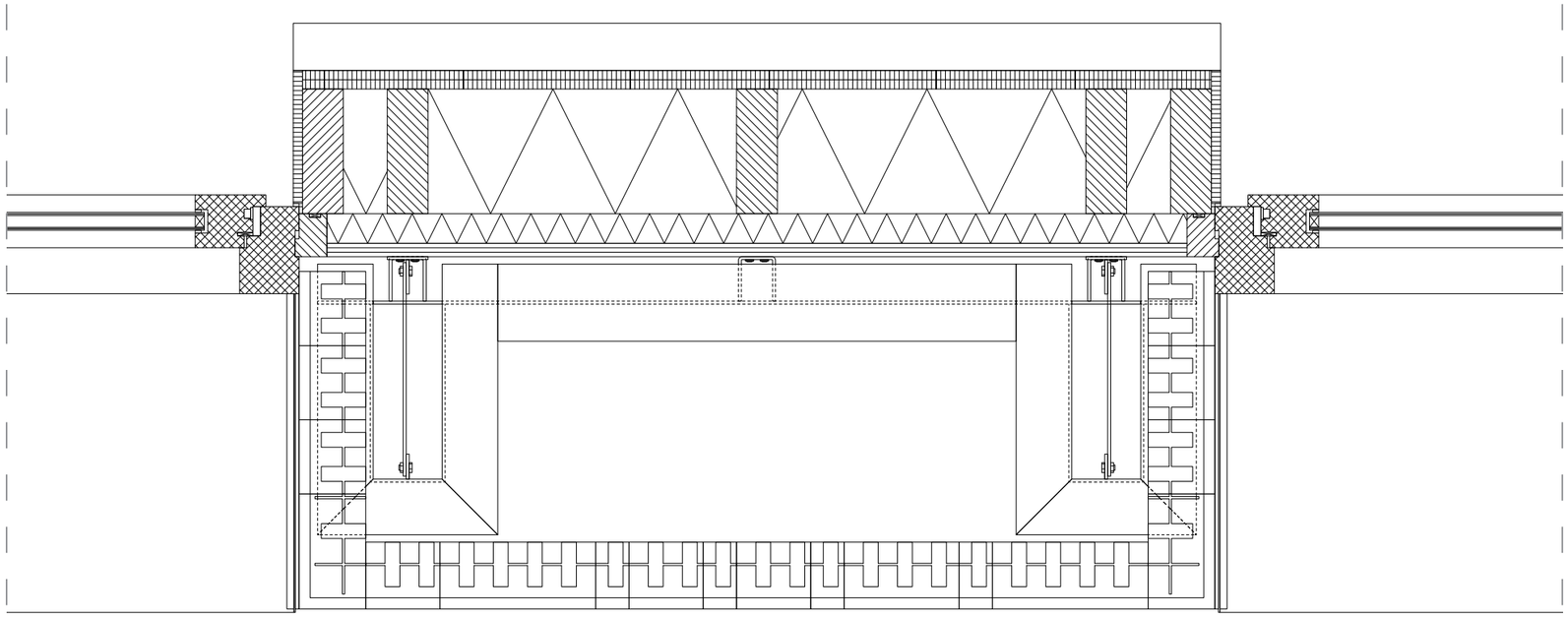


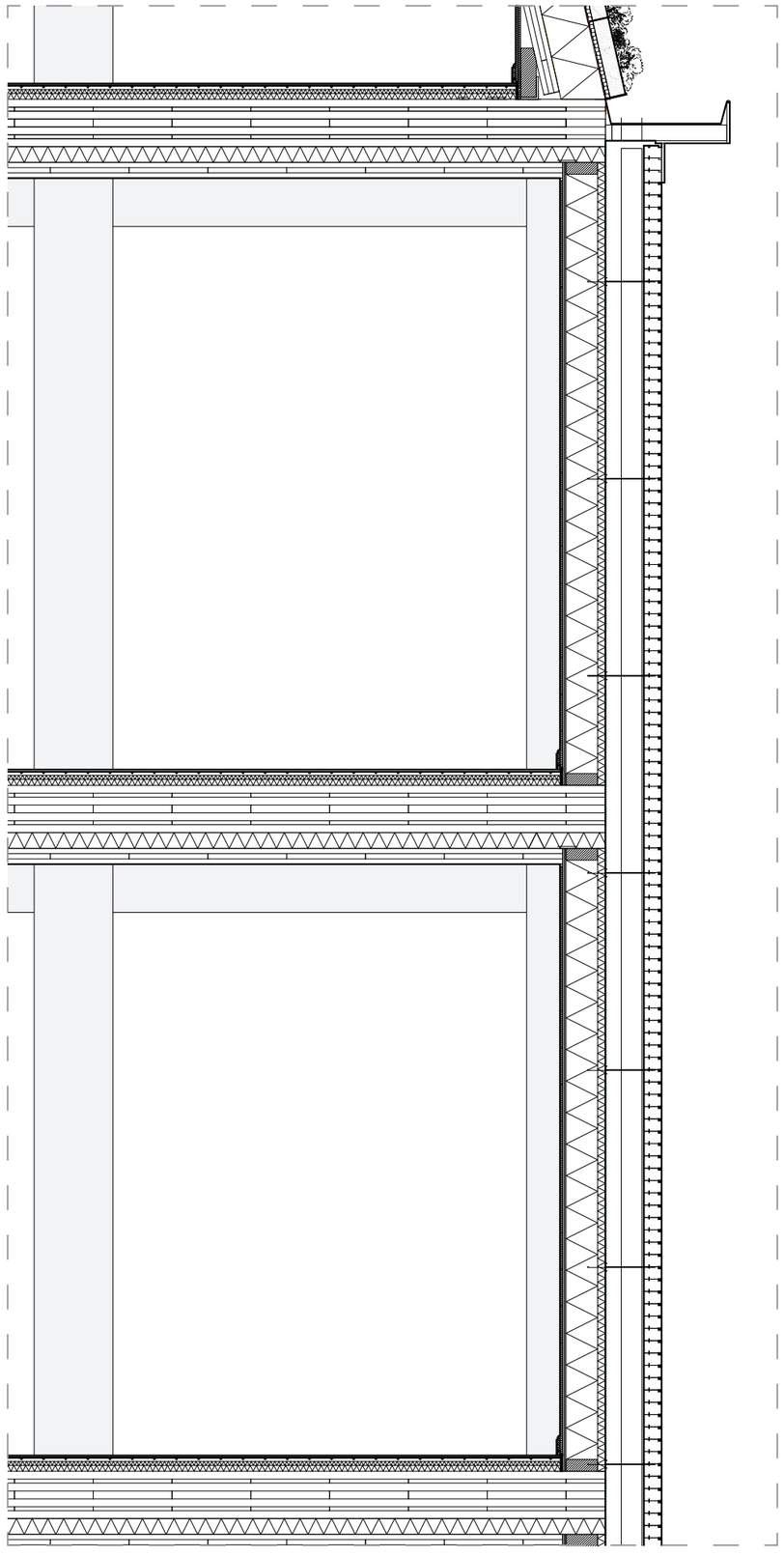












A1*
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B2
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A1
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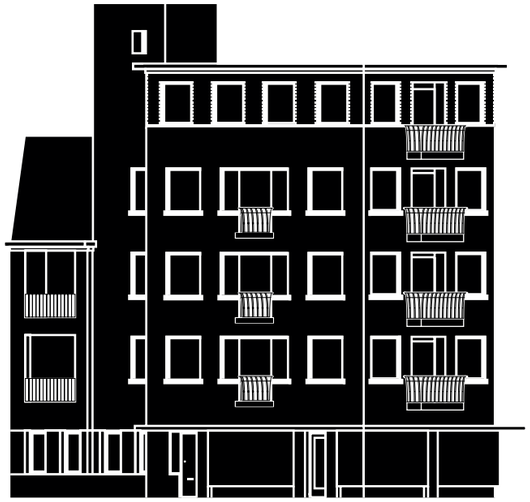
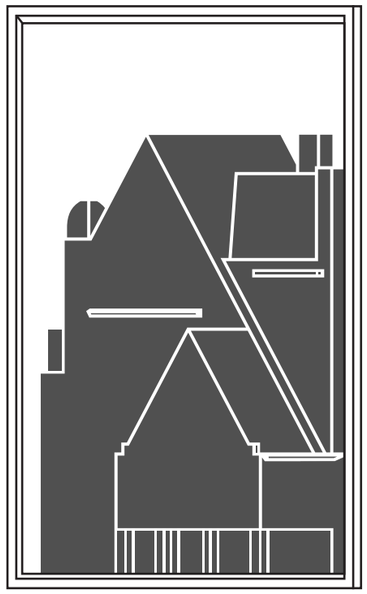
REFLECTION





Create different sections and an hierarchy in the building block

In this hierarchy the corners in the building block and important planes of volumes are emphasised. Methods are; height difference, protrusion or recessions, different roof constructions, overhangs, ornaments, etc.

Sections CS1: A1, A2, A3, A4, 46, 47, etc.
Sections CS2: A1, A2, A3, A4, A5.

Create coherence in the street, building block and urban district

By using recurring elements, continuous elements or specific configurations of element. For example, using identical entrance configurations, varied configurations of the same roof shape, continuous eaves, etc.

Elements CS1: 6, 17, 30, 32, 34, 54, 83, etc.
Elements CS2: 5, 6, 7, 20, 24, 75, 89, 98, etc.

Position and combine entrances at street level

Entrances at street level improves the interaction between the resident and the urban space, sense of safety, vibrancy in the street, accessibility, contribution to the identity of a neighbourhood or district, social connection, etc.

Elements CS1: 1, 11, 42, 45, 65, 85, 87.
Elements CS2: 5, 8, 31, 50, 59, 61, 71.

Create an intermediate space at entrances

The intermediate space ensures a less harsh border between privat and public. Created by a composition of doors intruded in the building line, different ground material than the public space, overhangs, etc.

Elements CS1: 1, 11, 42, 45, 65, 85, 87.
Elements CS2: 5, 8, 31, 50, 59, 61, 71.

URBAN SPACE

Create different (sub)sections and emphasise contrast

Contrast can be made by emphasising the edge of (sub)sections or by emphasising verticality or horizontality in a (sub) section.

Elements CS1: 2, 3, 6, 14, 18, 24, 26, 28, etc.
Elements CS2: 1, 4, 6, 14, 16, 18, 19, 22, etc.

Connect the (sub)sections

By using elements that refer to, orient to or continues in the other section such as the position of windows, window sills, certain protrusions, material use, large eaves, continuous plinths, ornamentations, string courses, etc.

Elements CS1: A1*, 15, 16, 17, 18, 20, etc.
Elements CS2: 4, 6, 7, 19, 24, 30, 33, 35, etc.

Use elements around a corner and in different planes

Improve plasticity by using elements around a corner and in a different planes, making the facade a 3D component of the building block. Elements could be bay windows, distinctive brick bonds, ornamentations, finishings, etc.

Elements CS1: 7, 13, 15, 16, 17, 26, 28, etc.
Elements CS2: 4, 5, 6, 9, 10, 18, 19, 33, etc.

Create an order of elements per (sub)section

The sections are organised vertically in a bottom, middle and top order. In each order facade elements like windows, window sills, muntins, string courses and others are made differently in shape, position or composition.

Elements CS1: 2, 3, 4, 8, 9, 18, 19, 21, etc.
Elements CS2: 7, 11, 12, 13, 17, 43, 80 etc.

FACADE APPEARANCE

Break order of elements for emphasis and variation

The order is broken by the use of a different element or rhythm to put emphasis on certain characteristics of the (sub)section, to announce another (sub) section or to create variation within the section, without creating a new section.

Elements CS1: 6, 7, 10, 22, 29, 56, 58, etc.
Elements CS2: 13, 14, 22, 47, 48, 49, etc.

Emphasise entrances

The entrances are emphasised by different materials and use, ornaments, distinctive windows, distinctive positioning of windows, orientation and composition of the doors, protrusions that create gable ends and terraces, etc.

Elements CS1: 1, 11, 42, 45, 65, 66, 85, etc.
Elements CS2: 5, 8, 13, 14, 22, 31, 51, etc.

Conceal the repetitive grid of the dwellings

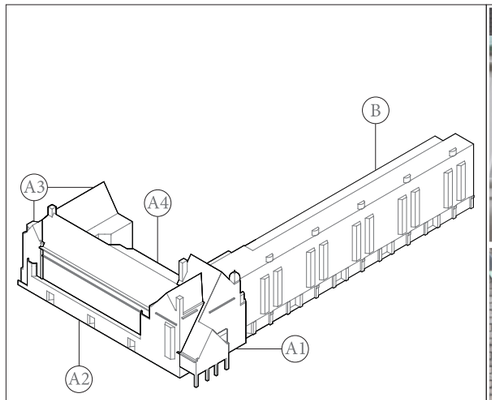
With the use of elements spanning multiple floors, by combining entrances at street level and by creating (sub)sections that are not created solely on the grid of the dwellings.

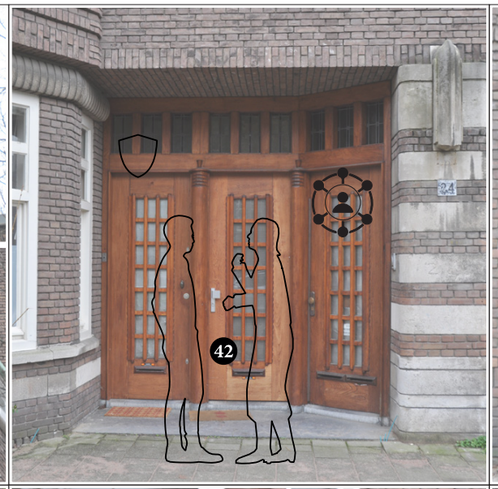
Elements CS1: 1, 7, 11, A1, A1*, A1**, etc.
Elements CS2: 5, A3*, A3**, A5, 31, etc.

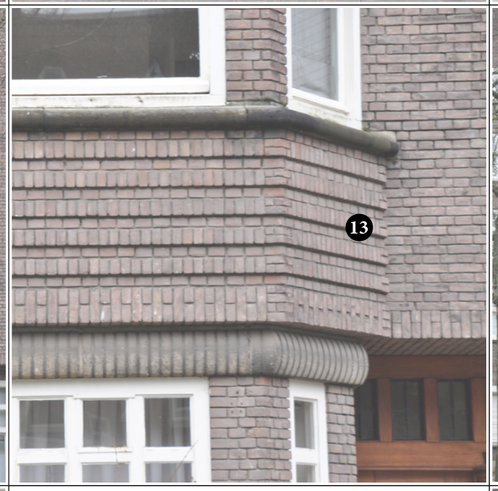
Divide appearance between commercial and residential use

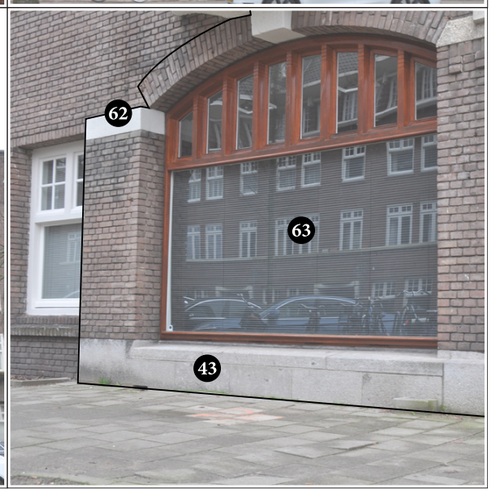
By using different window frames in colour, shape, size and composition. By using a different or an alteration on the facade plinth, by using different doors which allows more transparancy and by using specific positioning of ornaments.

Elements CS1: 43, 44, 45, 62, 63, 69, 85.
Elements CS2: 8, 9, 72.



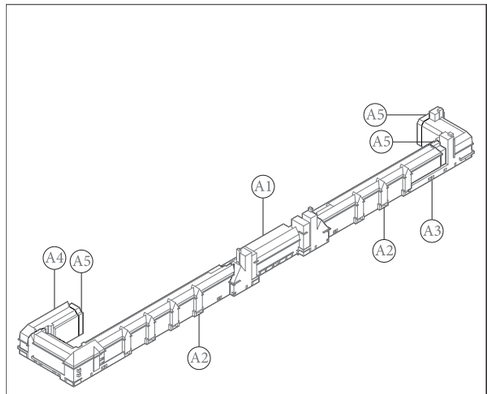


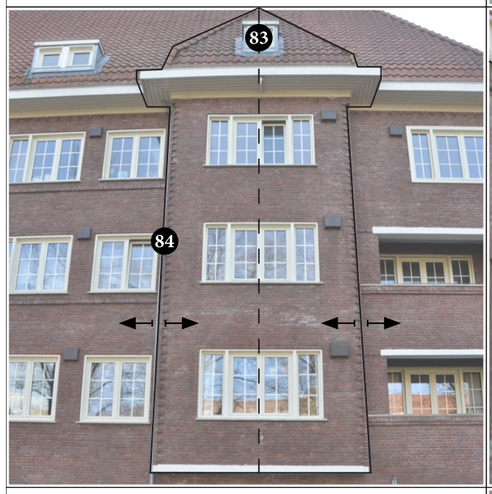


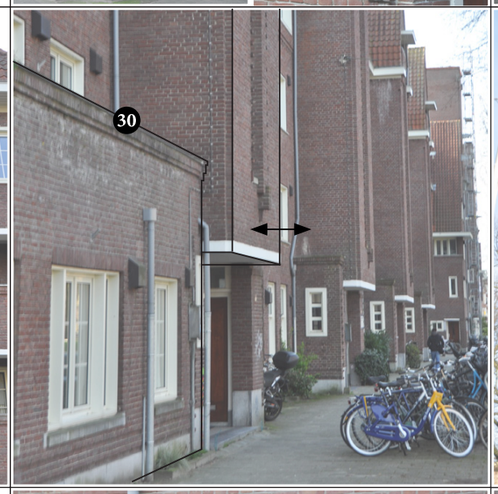


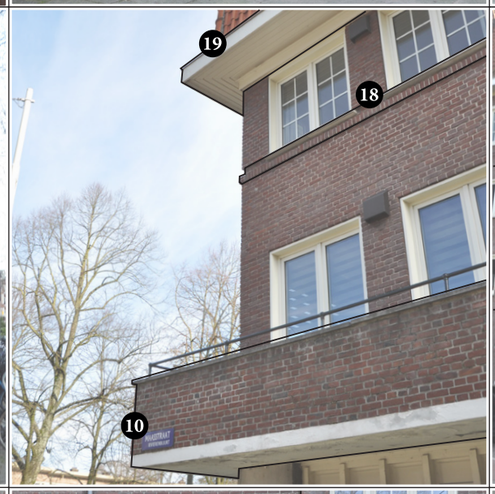
URBAN
SPACE

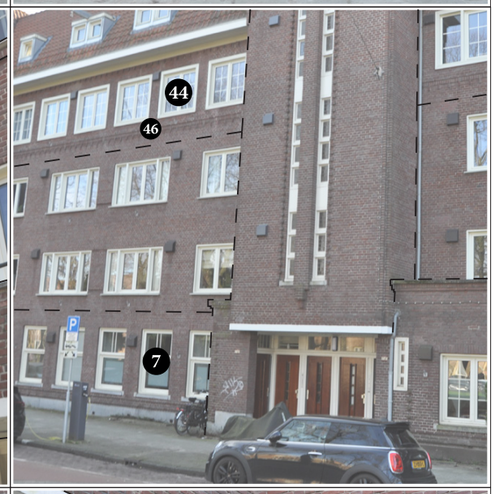
FACADE
APPEARANCE





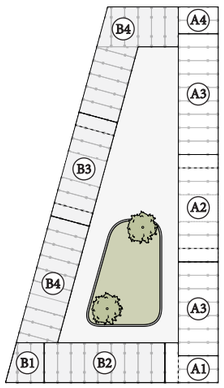


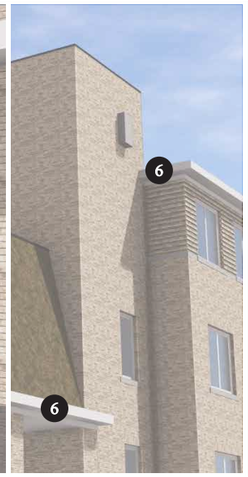


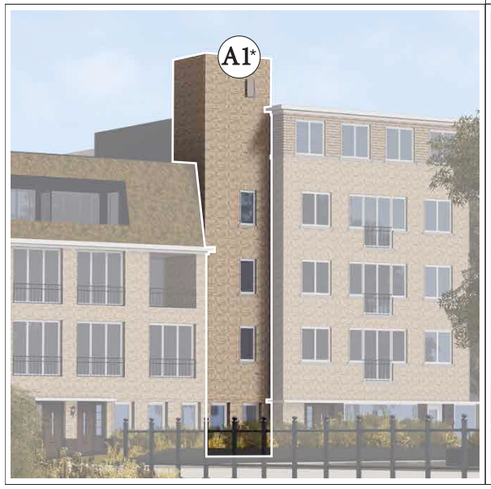


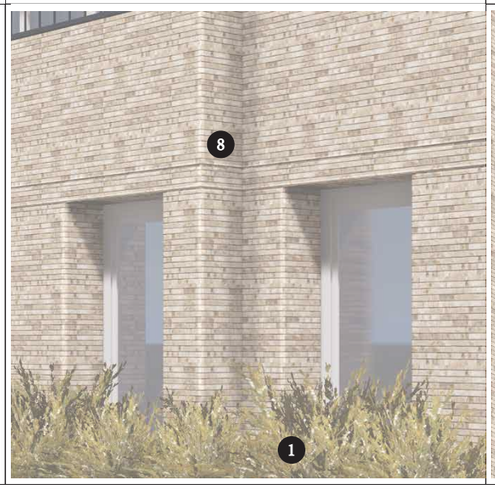
URBAN
SPACE

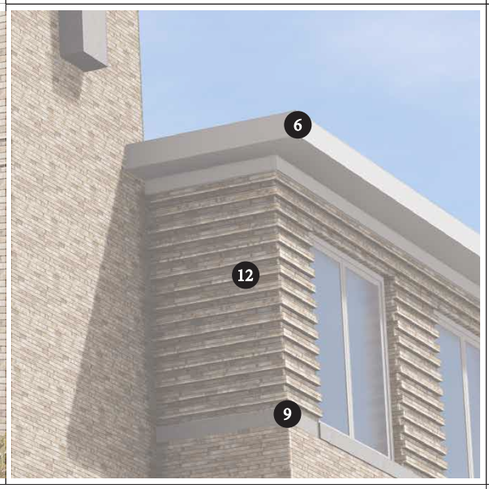
FACADE
APPEARANCE









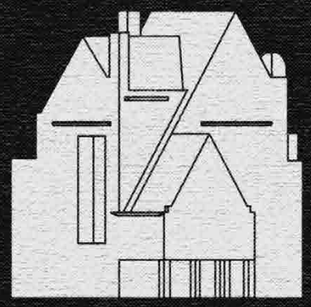


URBAN
SPACE

FACADE
APPEARANCE

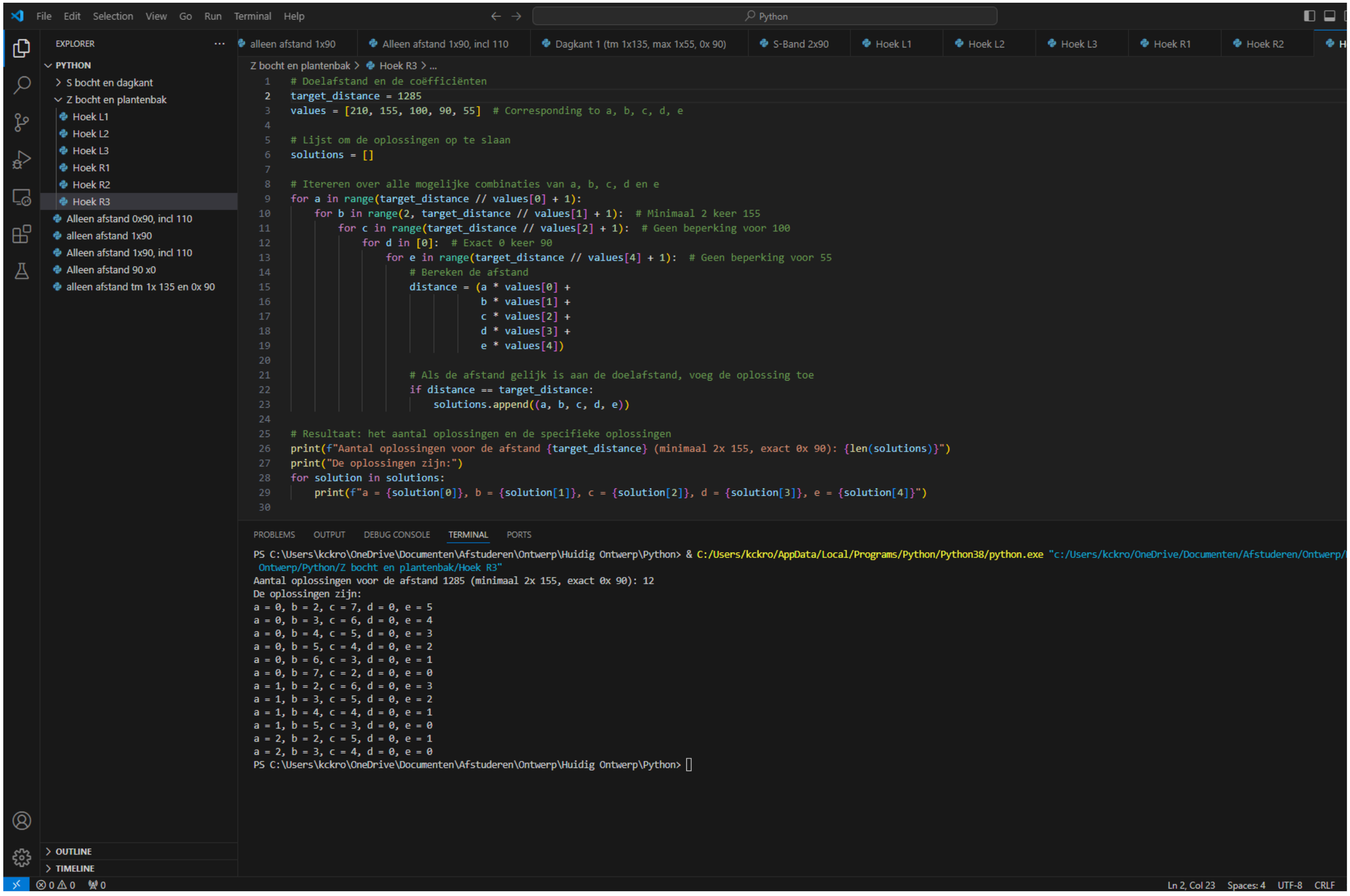
LOST PALACES

Research on the usage of ornaments and other facade elements by the Amsterdam School in Plan Zuid



Koen Kroes

A1*
11
10
B2
12
13
A1
7
14
6
5
4
9
3
8
15
2
1


File Edit Selection View Go Run Terminal Help
Python
EXPLORER
PYTHON
S bocht en dagkant
Z bocht en plantenbak
Hoek L1
Hoek L2
Hoek L3
Hoek R1
Hoek R2
Hoek R3
Alleen afstand 0x90, incl 110
alleen afstand 1x90
Alleen afstand 1x90, incl 110
Alleen afstand 90 x0
alleen afstand tm 1x 135 en 0x 90
alleen afstand 1x90
Alleen afstand 1x90, incl 110
Dagkant 1 (tm 1x135, max 1x55, 0x 90)
S-Band 2x90
Hoek L1
Hoek L2
Hoek L3
Hoek R1
Hoek R2
Z bocht en plantenbak > Hoek R3 > ...
# Doelafstand en de coëfficiënten
target_distance = 1285
values = [210, 155, 100, 90, 55] # Corresponding to a, b, c, d, e
# Lijst om de oplossingen op te slaan
solutions = []
# Itereren over alle mogelijke combinaties van a, b, c, d en e
for a in range(target_distance // values[0] + 1):
for b in range(2, target_distance // values[1] + 1): # Minimaal 2 keer 155
for c in range(target_distance // values[2] + 1): # Geen beperking voor 100
for d in [0]: # Exact 0 keer 90
for e in range(target_distance // values[4] + 1): # Geen beperking voor 55
# Bereken de afstand
distance = (a * values[0] +
b * values[1] +
c * values[2] +
d * values[3] +
e * values[4])
# Als de afstand gelijk is aan de doelafstand, voeg de oplossing toe
if distance == target_distance:
solutions.append((a, b, c, d, e))
# Resultaat: het aantal oplossingen en de specifieke oplossingen
print(f"Aantal oplossingen voor de afstand {target_distance} (minimaal 2x 155, exact 0x 90): {len(solutions)}")
print("De oplossingen zijn:")
for solution in solutions:
print(f"a = {solution[0]}, b = {solution[1]}, c = {solution[2]}, d = {solution[3]}, e = {solution[4]}")
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\kckro\OneDrive\Documenten\Afstuderen\Ontwerp\Huidig Ontwerp\Python> & C:/Users/kckro/AppData/Local/Programs/Python/Python38/python.exe "c:/Users/kckro/OneDrive/Documenten/Afstuderen/Ontwerp/Huidig Ontwerp/Python/Z bocht en plantenbak/Hoek R3"
Aantal oplossingen voor de afstand 1285 (minimaal 2x 155, exact 0x 90): 12
De oplossingen zijn:
a = 0, b = 2, c = 7, d = 0, e = 5
a = 0, b = 3, c = 6, d = 0, e = 4
a = 0, b = 4, c = 5, d = 0, e = 3
a = 0, b = 5, c = 4, d = 0, e = 2
a = 0, b = 6, c = 3, d = 0, e = 1
a = 0, b = 7, c = 2, d = 0, e = 0
a = 1, b = 2, c = 6, d = 0, e = 3
a = 1, b = 3, c = 5, d = 0, e = 2
a = 1, b = 4, c = 4, d = 0, e = 1
a = 1, b = 5, c = 3, d = 0, e = 0
a = 2, b = 2, c = 5, d = 0, e = 1
a = 2, b = 3, c = 4, d = 0, e = 0
PS C:\Users\kckro\OneDrive\Documenten\Afstuderen\Ontwerp\Huidig Ontwerp\Python>
OUTLINE
TIMELINE
Ln 2, Col 23 Spaces: 4 UTF-8 CRLF

THE END