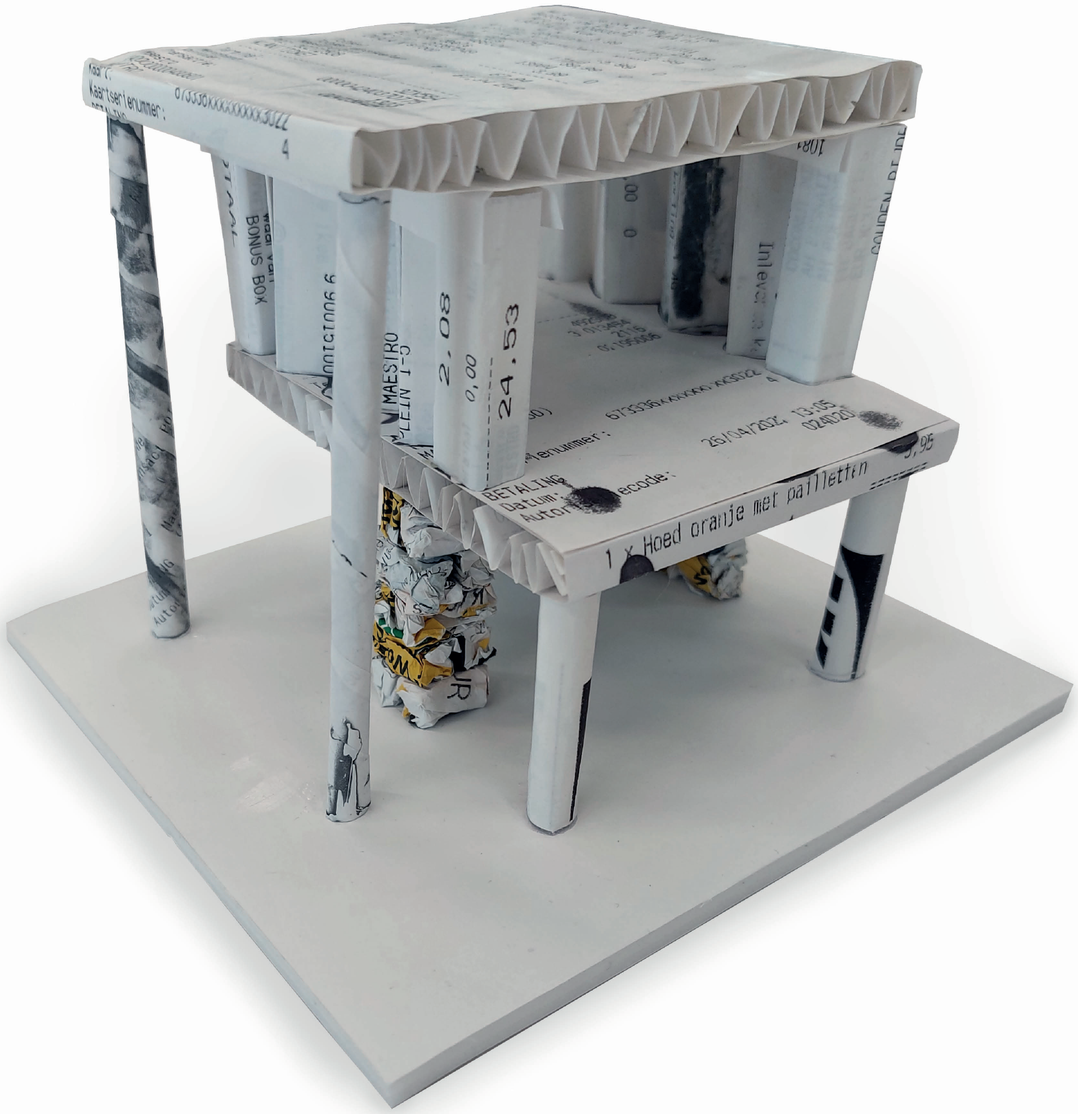
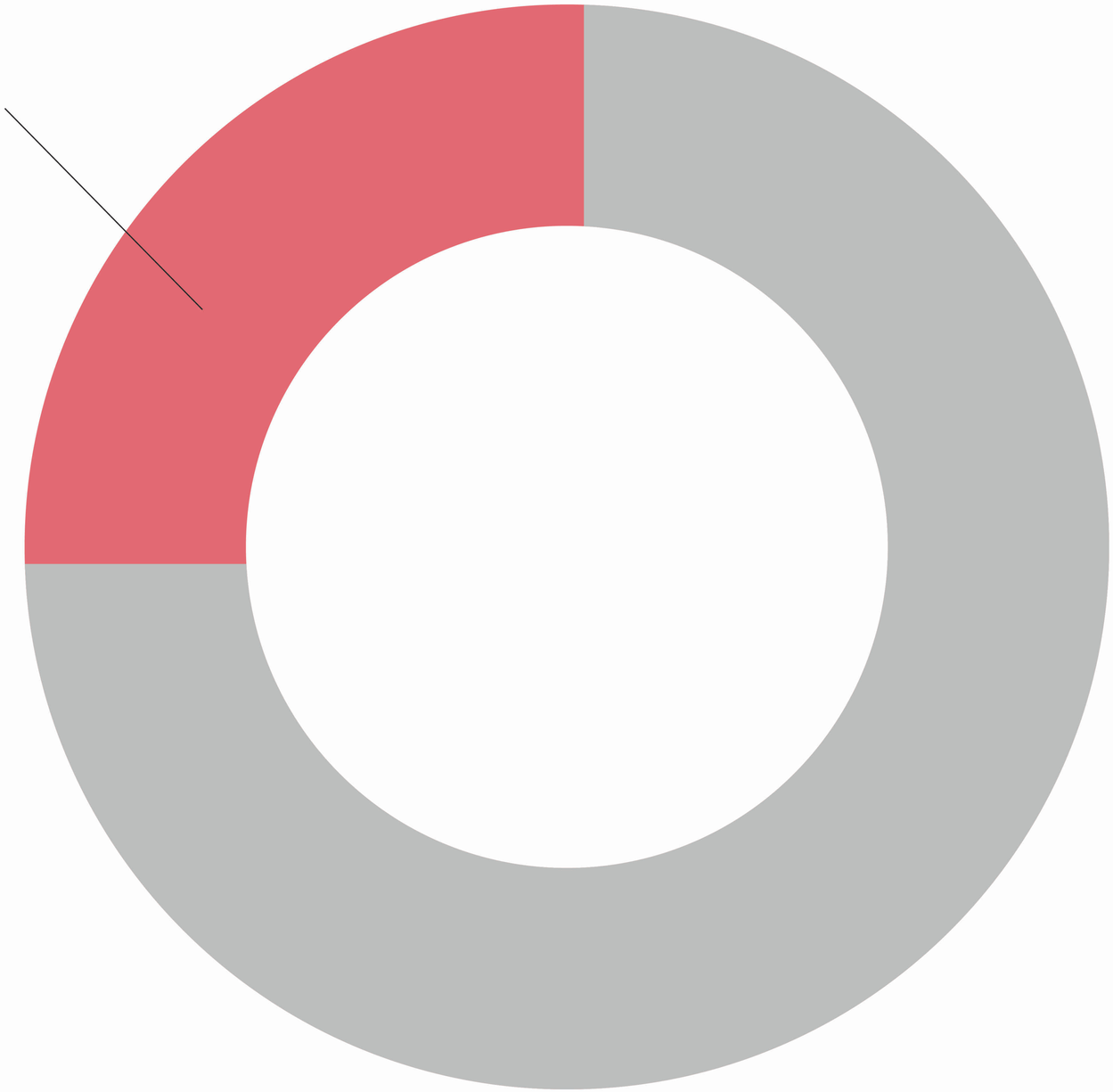
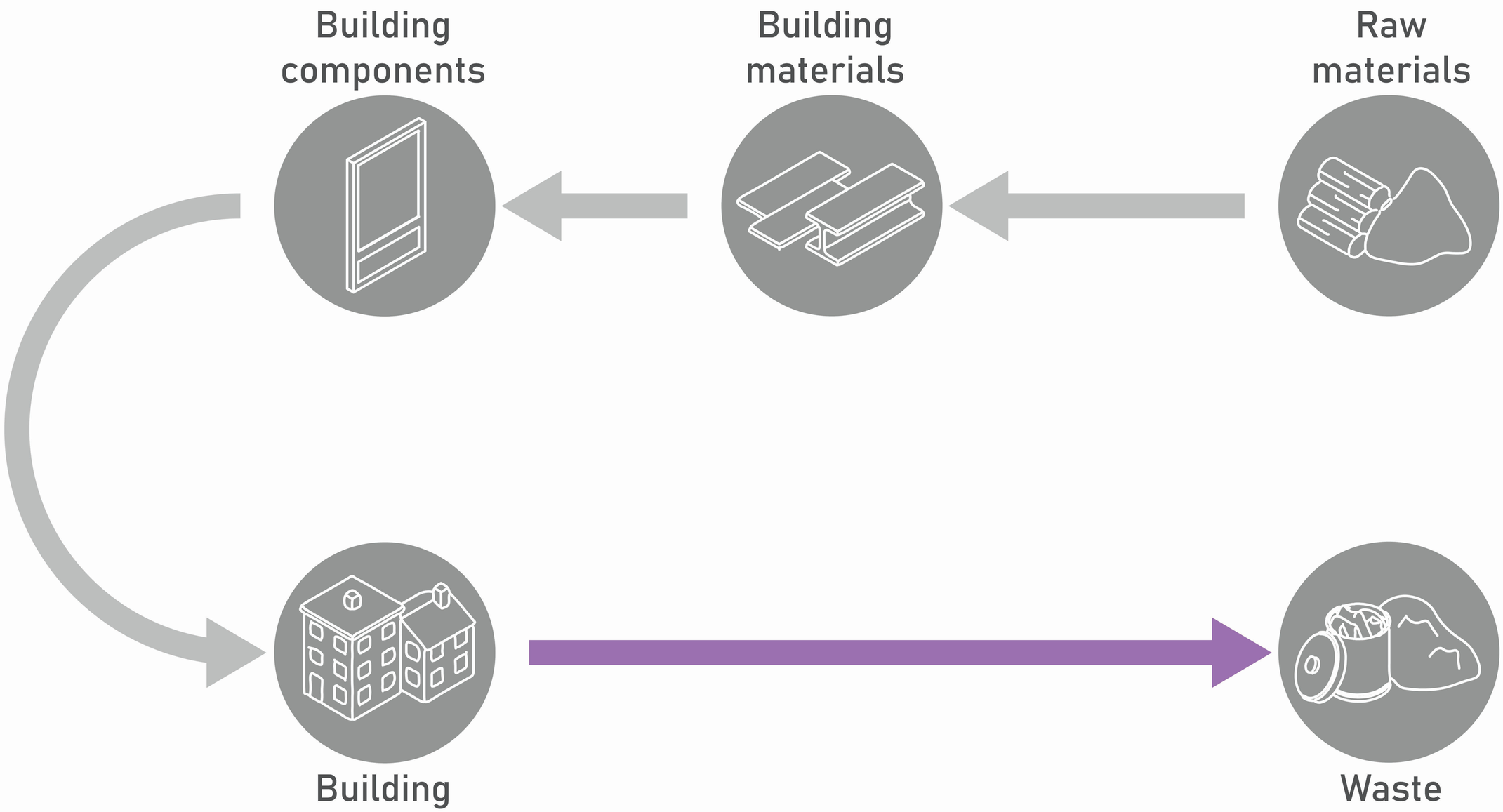
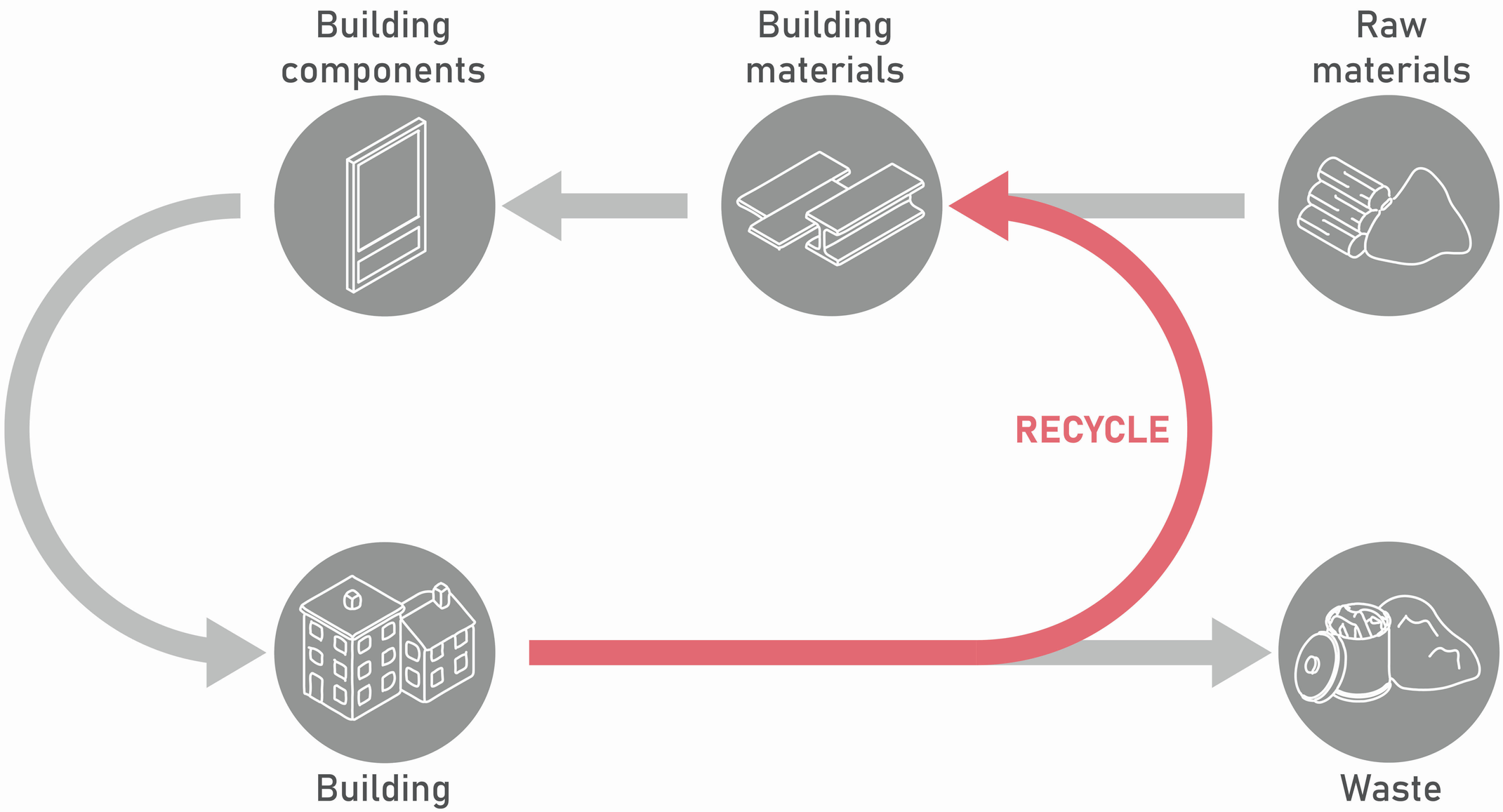
RE
APPLIED PHYSICS

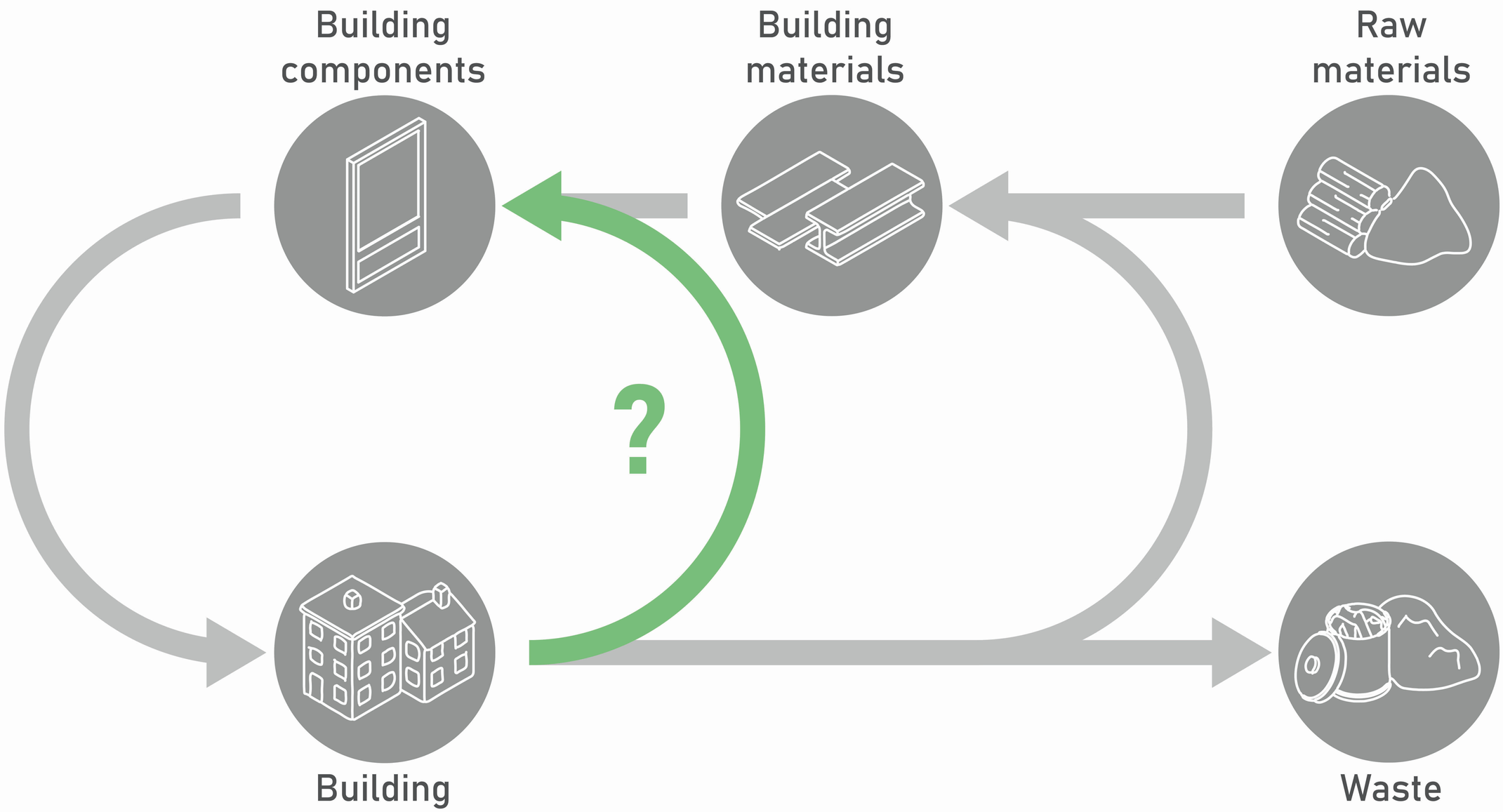

BONUS BOX
MAESTRO
2,08
0,00
24,53
1 x Hoed oranje met pallettn

Waste from construction
c.a. 25%




Building components
Building materials
Raw materials
Building
Waste


Building components
Building materials
Raw materials
RECYCLE
Building
Waste


Building components
Building materials
Raw materials
?
Building
Waste

Strategies			
Smarter creation and use of products	R0	Refuse	Turning a product redundant by cancelling its function, or by substituting it with a radically different product.
	R1	Rethink	Intensifying product use (e.g. via product sharing or multifunctional products).
	R2	Reduce	More efficient use and/or manufacture of products through the use of fewer natural resources and materials.
Extending the lifespan of products and parts	R3	Reuse	Reuse of discarded yet still usable product, for the same purpose, by a different user.
	R4	Repair	Repair and maintenance of broken or malfunctioning product, to enable continuation of its original function.
	R5	Refurbish	Refurbishing and/or modernising an older product, so that the improved version can be used in the product's original function.
	R6	Remanu-facture	Using parts of a discarded product in a new product of the same function.
	R7	Repurpose	Using discarded products or their parts in new products with a different function.
Usefull application of materials	R8	Recycle	Processing of materials to achieve the original high-quality or reduce to low-quality.
	R9	Recover	Incineration of materials, recovering their energy.

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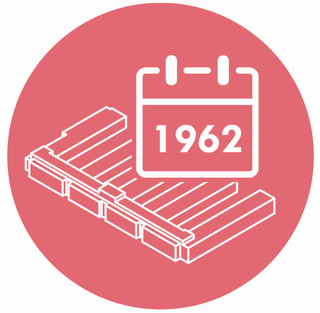
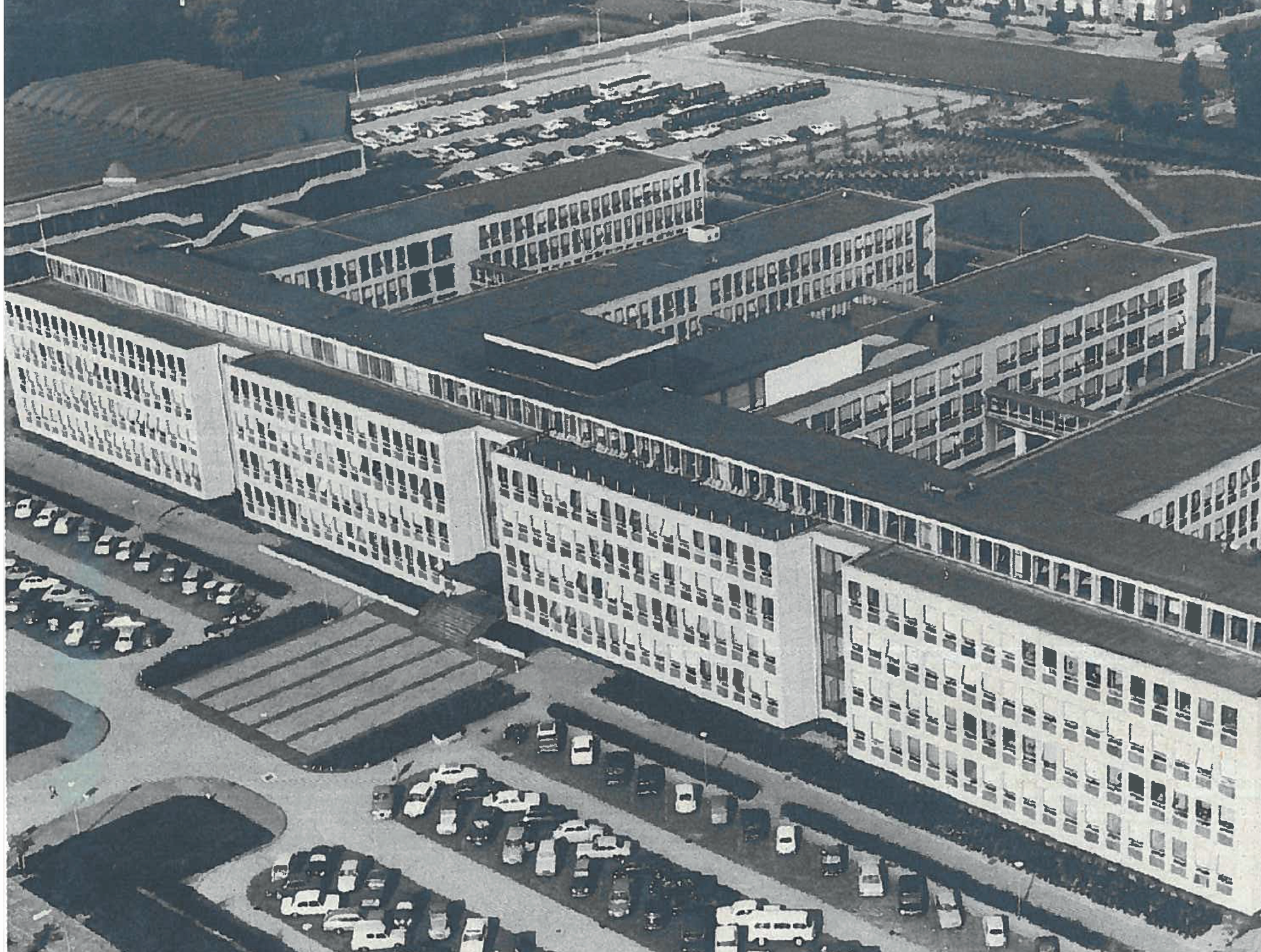
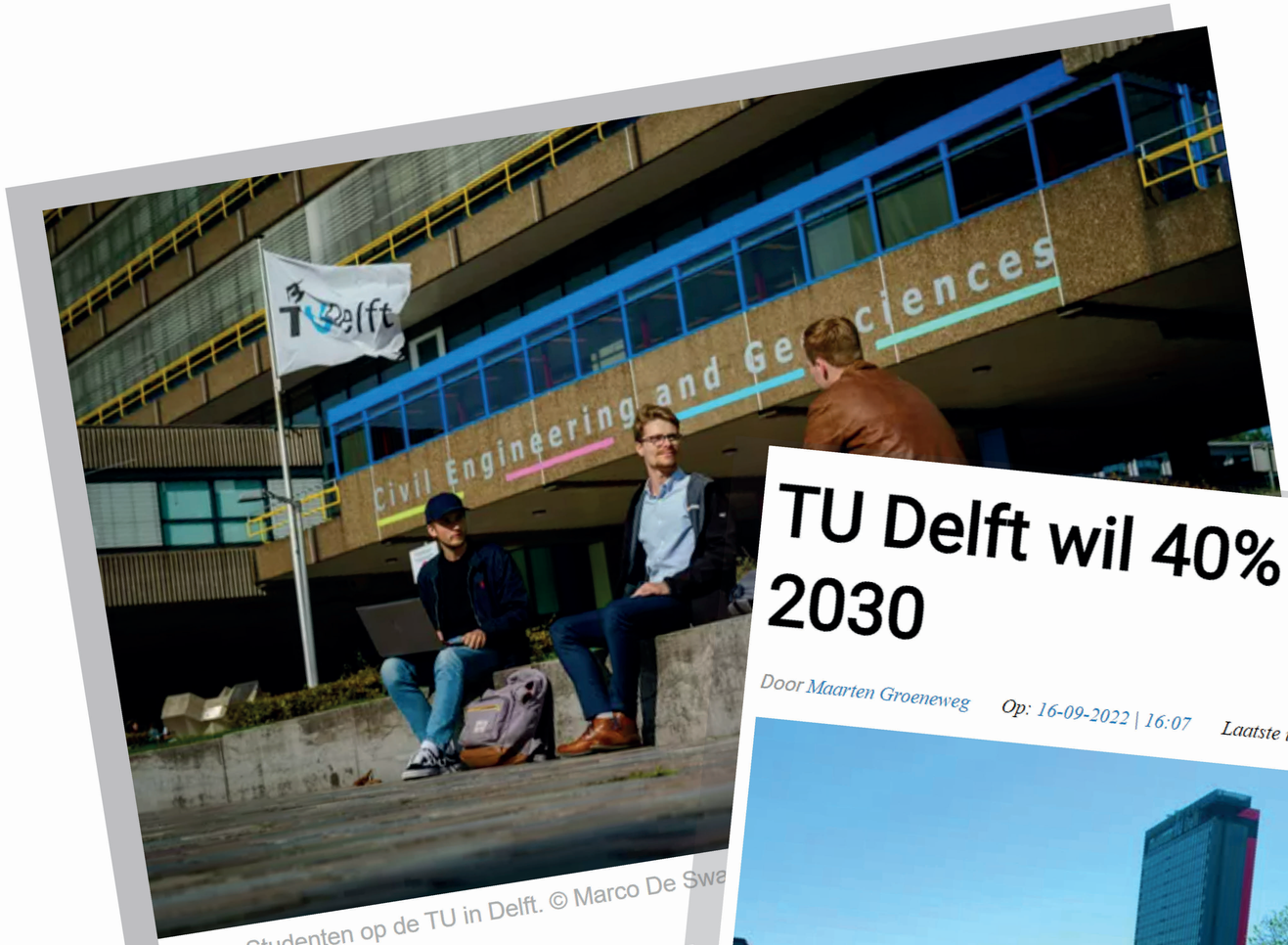

1962





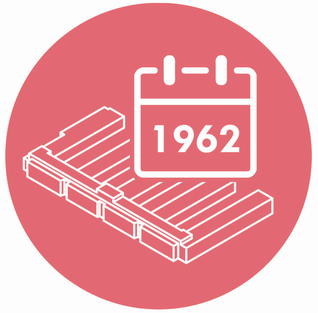
Studenten op de TU in Delft. © Marco De Swa

TU Delft wil flink steden: '40 proc voor 2030'

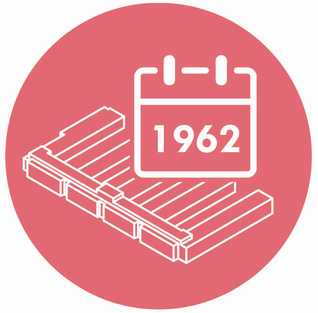
De TU Delft wil de komst van maar juist fors laten groeien. 000 maar 40.

TU Delft wil 40% meer studen 2030

Door Maarten Groeneweg *Op: 16-09-2022 | 16:07* *Laatste update: 16-09-2022 | 16:12*


1962

1,5 km
1 km
0,5 km
Delft Centre
Emerald
De Hoven


1962

1,5 km
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0,5 km
Delft Centre
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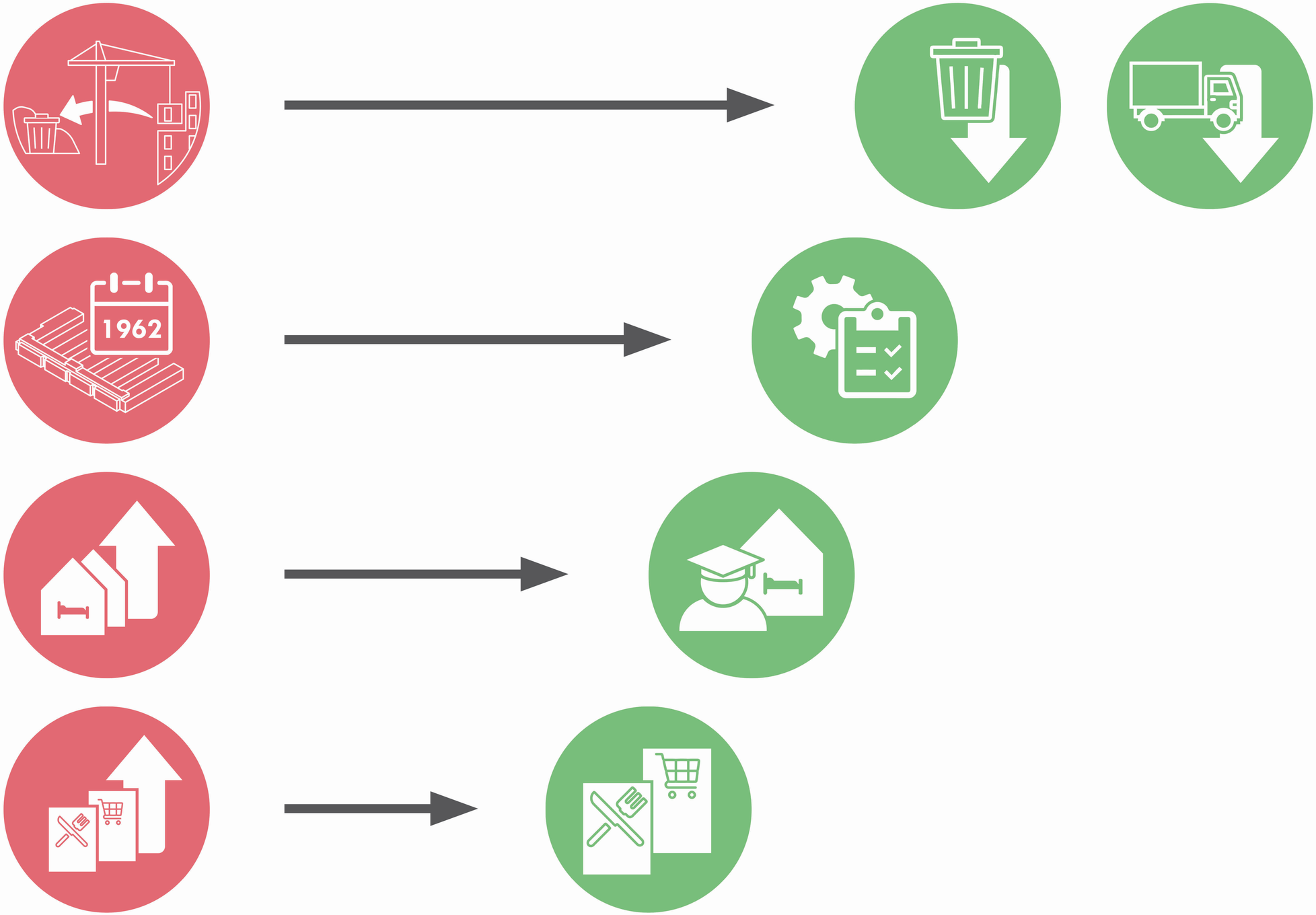
1962

Strategies			
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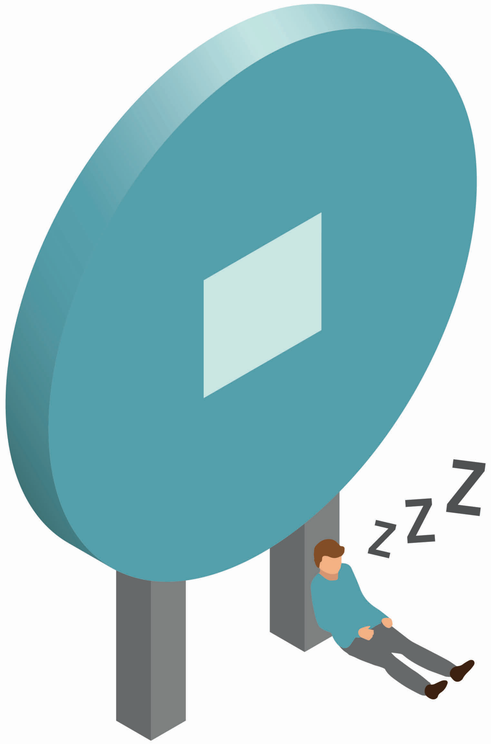
REFUSE
REUSE
REPAIR
REPURPOSE
RECYCLE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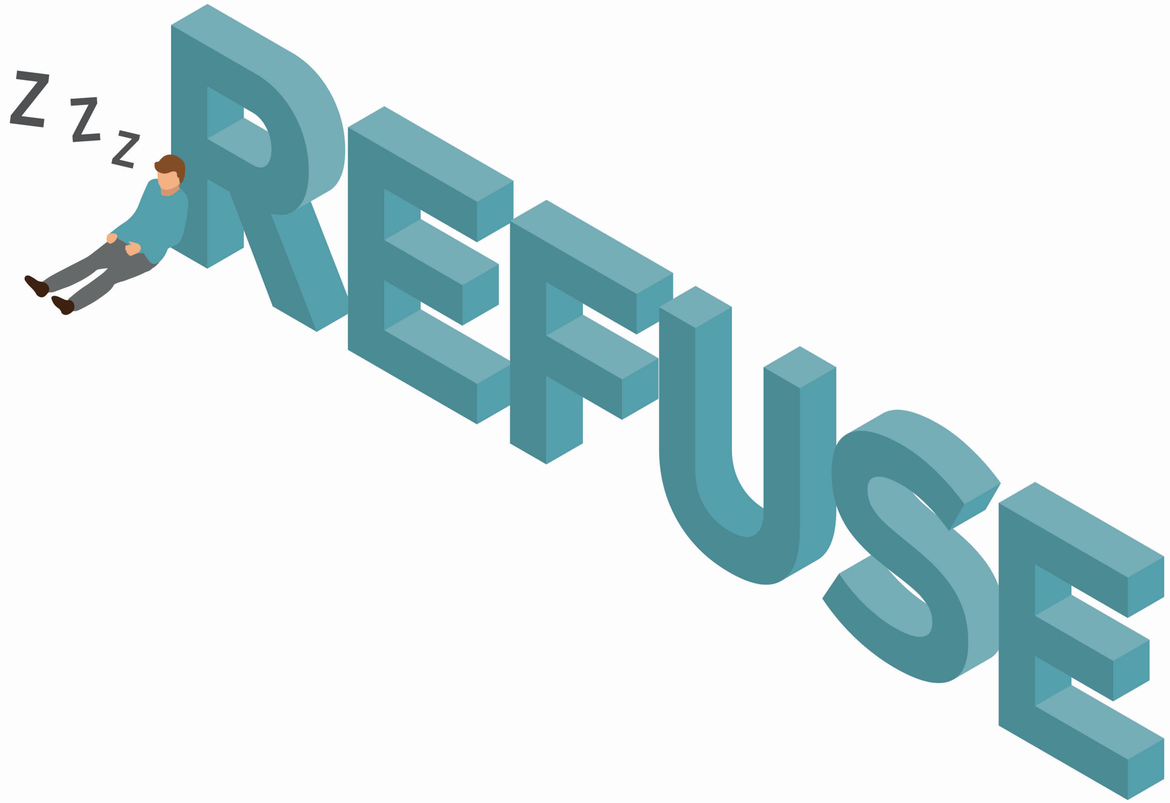
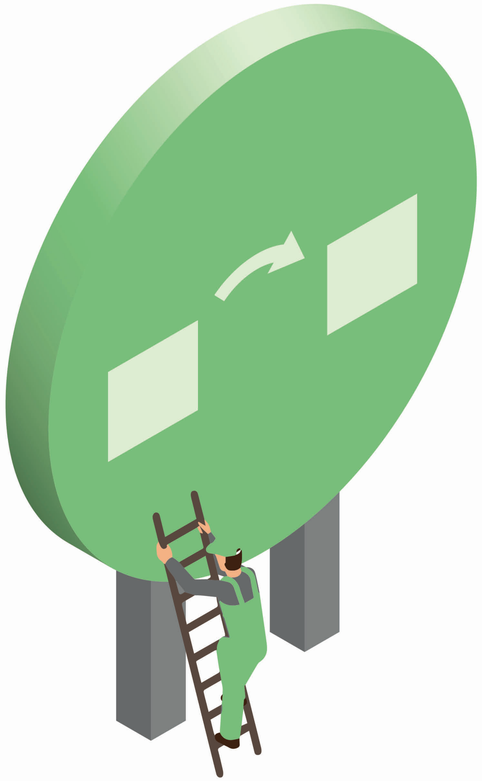
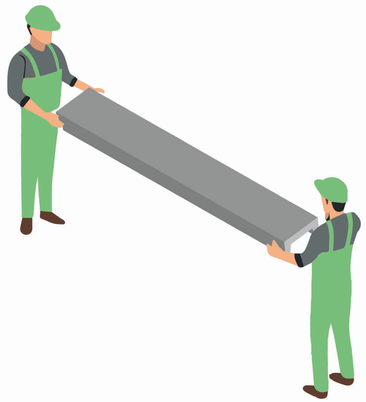
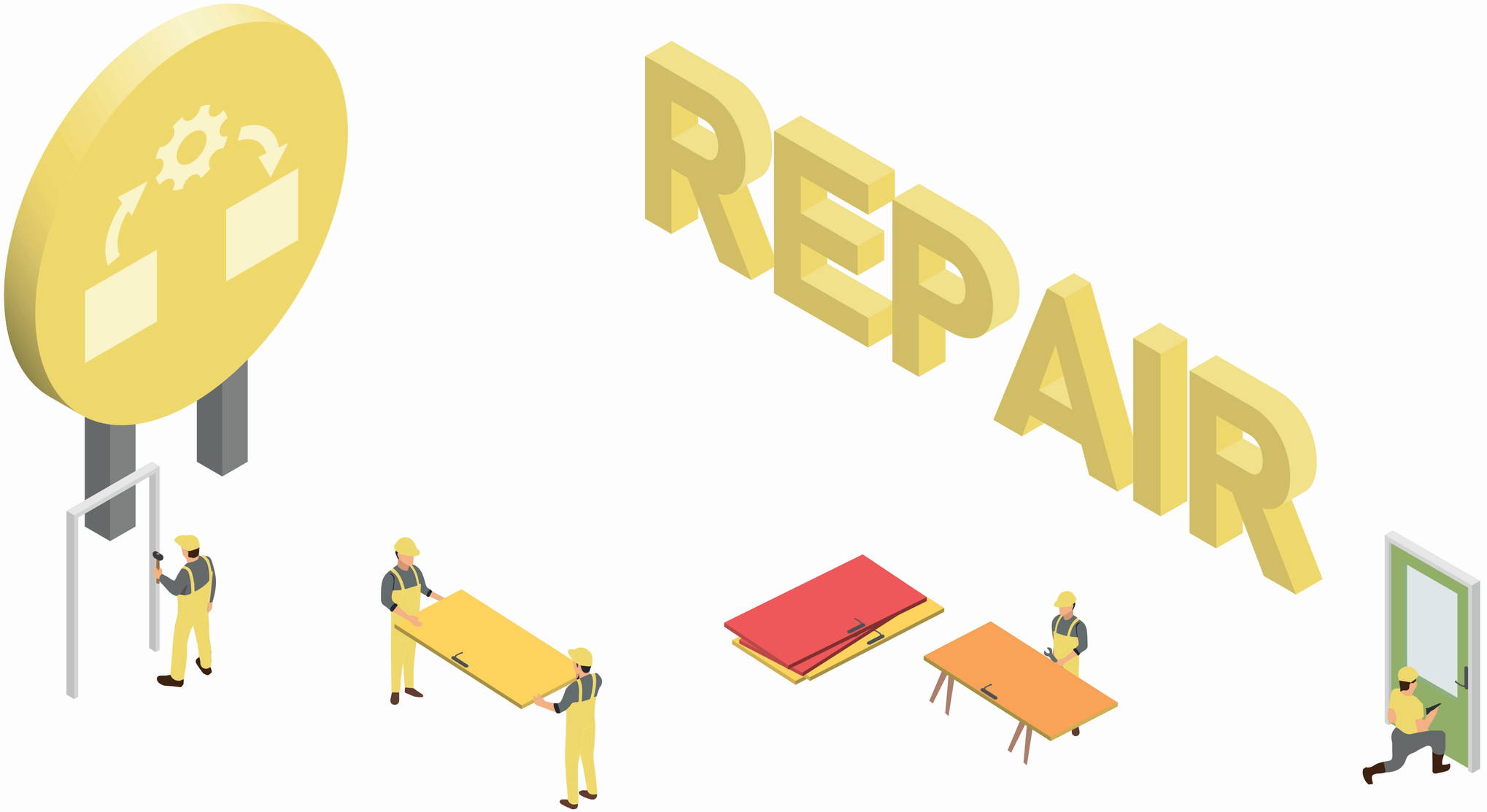
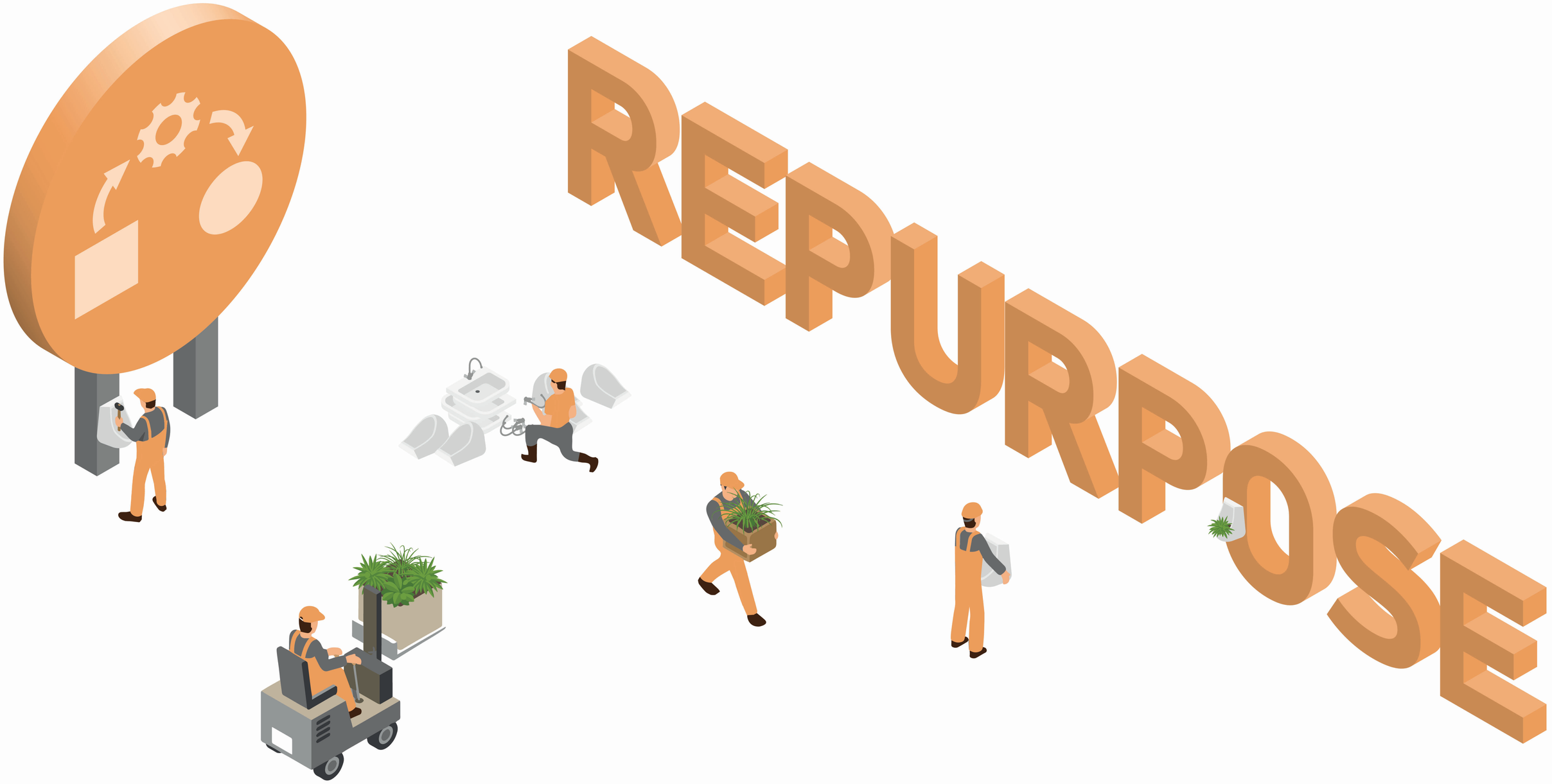

zzz
REFUSE

REUSE

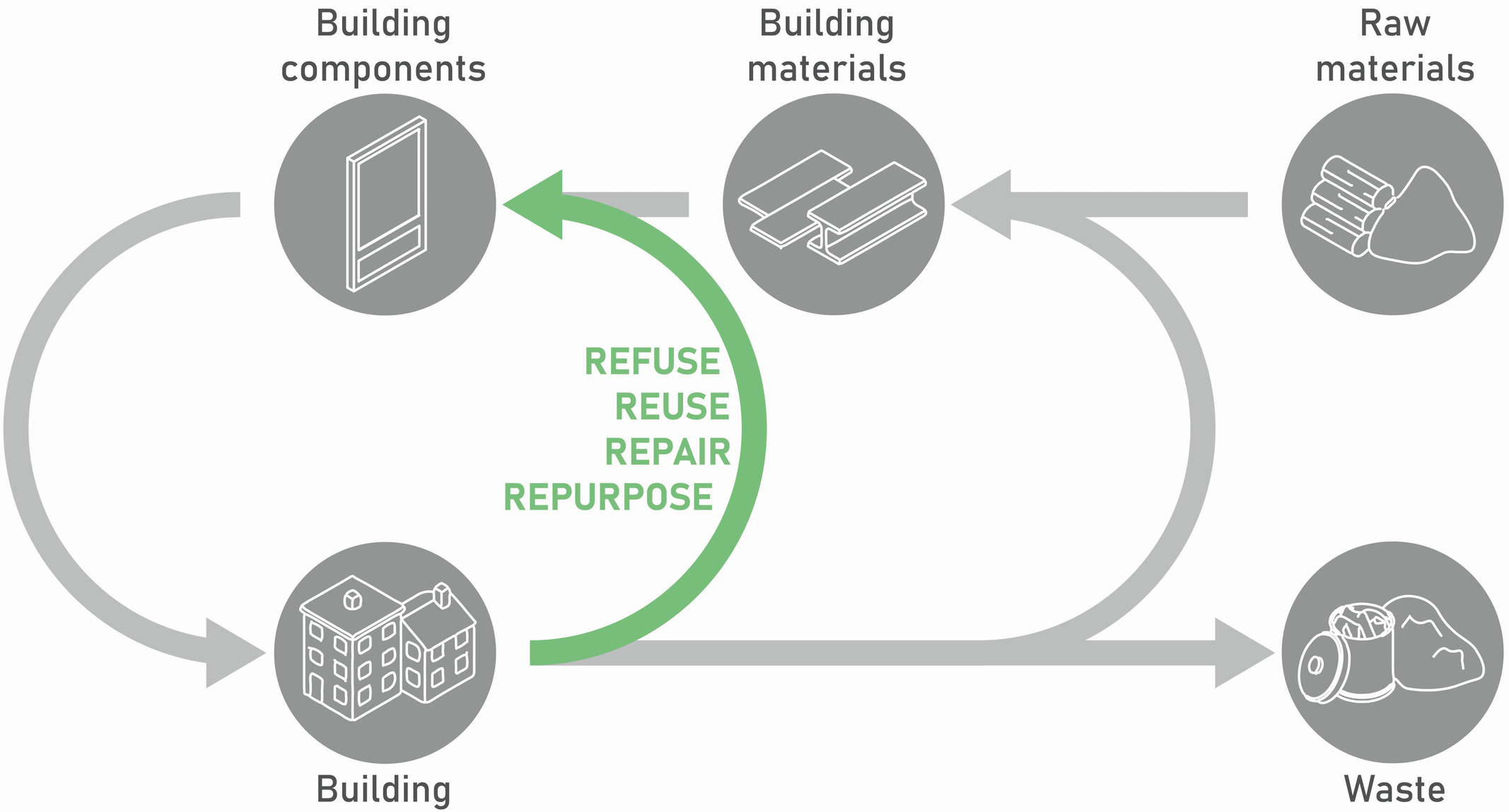





REPAIR


REPURPOSE

RECYCLE


Building components
Building materials
Raw materials
REFUSE
REUSE
REPAIR
REPURPOSE
Building
Waste

FLOOR

Added Value

Comparison

WINDOWSILLS

Added Value

Comparison

SANITARY

Added Value

Comparison

DOORS

There is a variety of doors. Most of these doors are made of wood. These doors, seperating the offices from the corridors, can be repaired to work as doors for the bedrooms for instance. Other strategies are used for different other kinds of doors. Some doors are not suitable for any of the functions and have to be recycled, due to safety requirements and privacy requirements.

Added Value

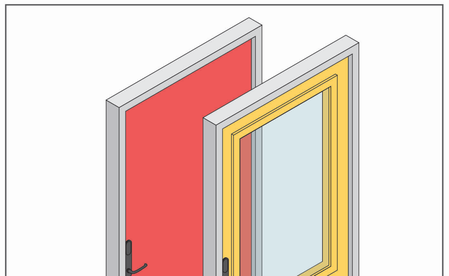
Comparison

Quantity

1,300

u

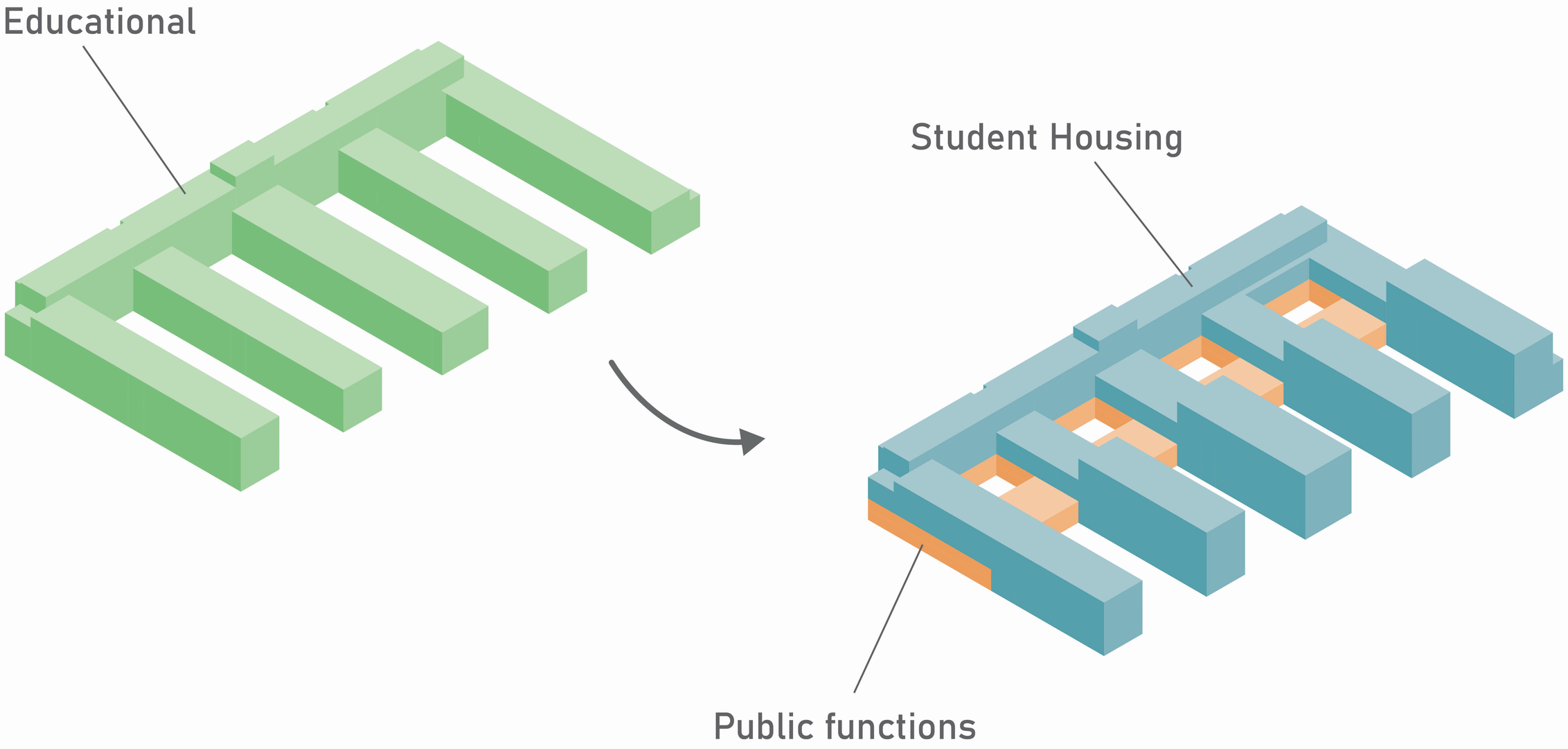
15%



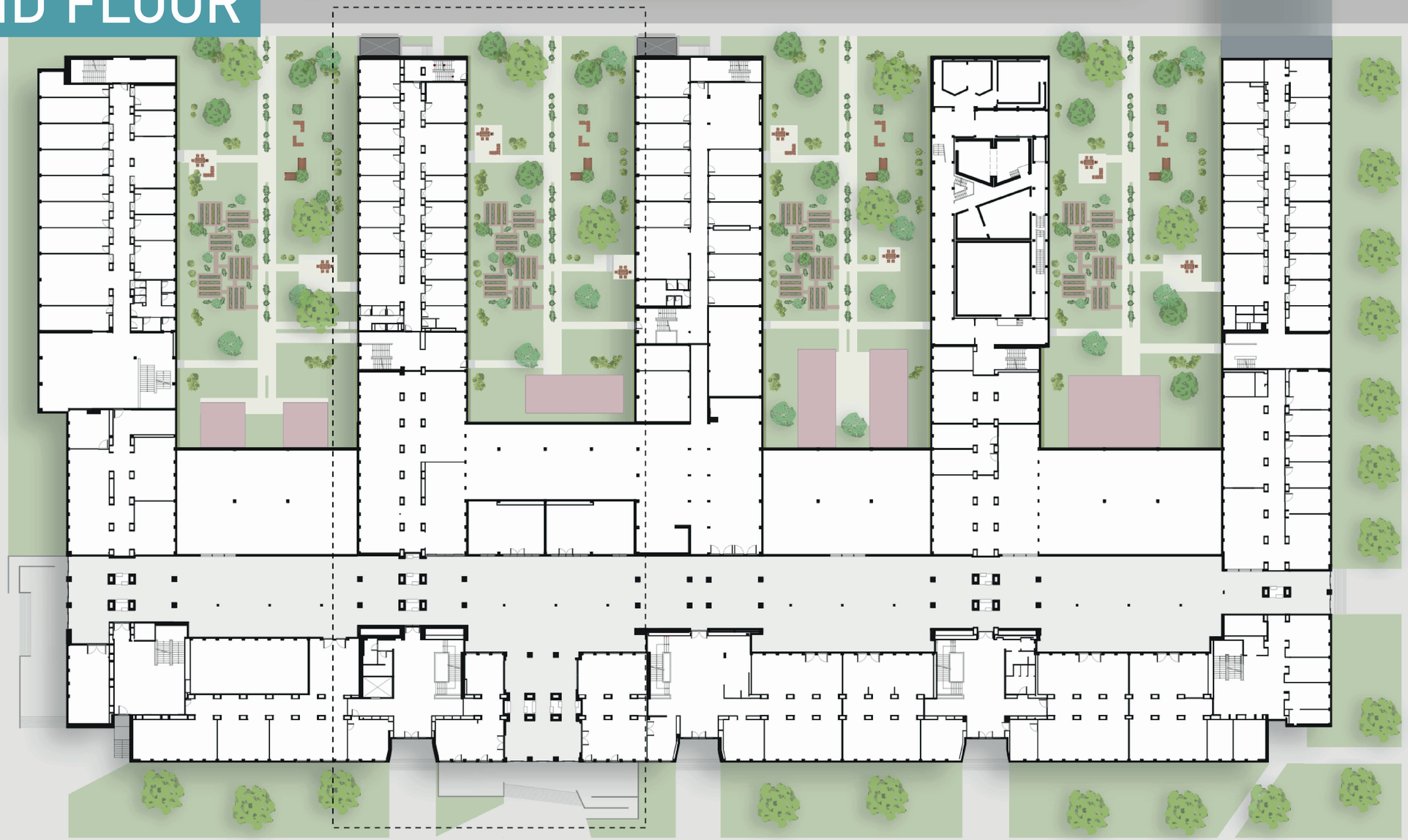
10%

20%

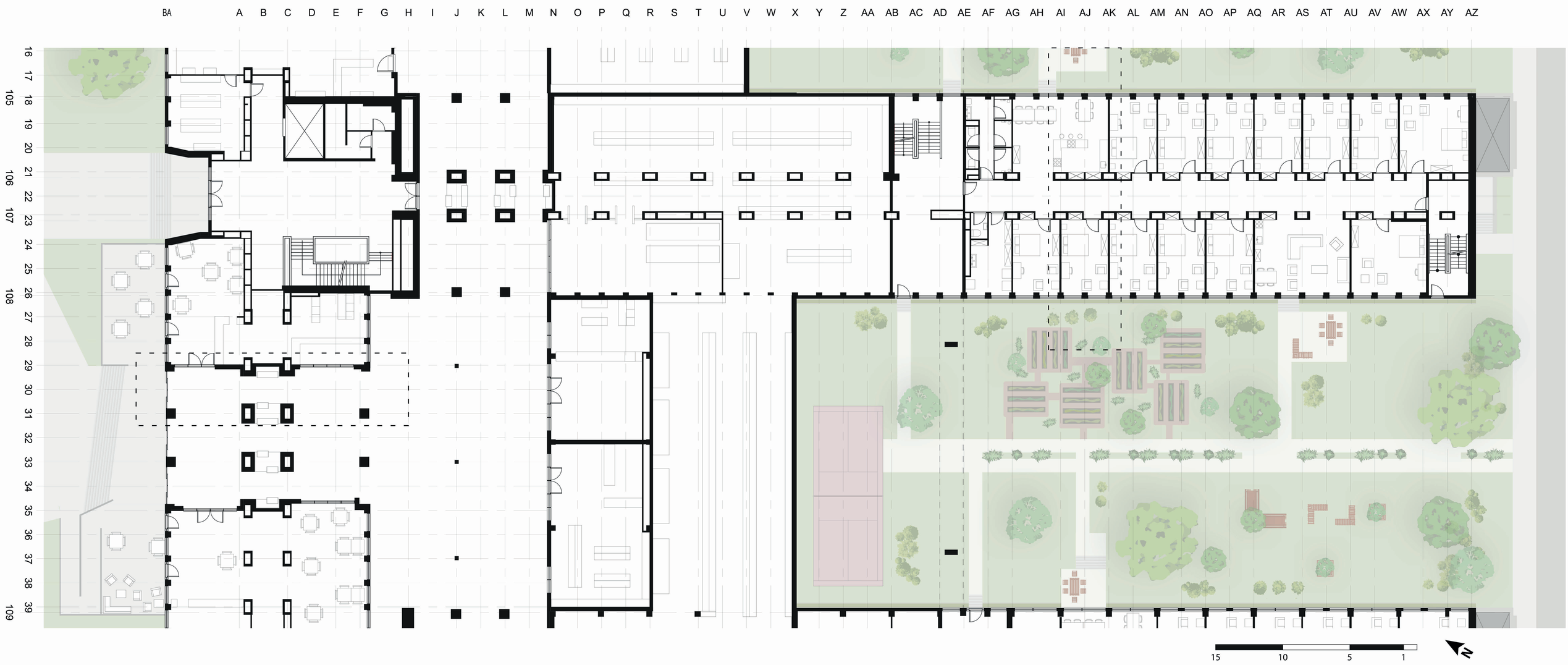
50%


Educational
Student Housing
Public functions

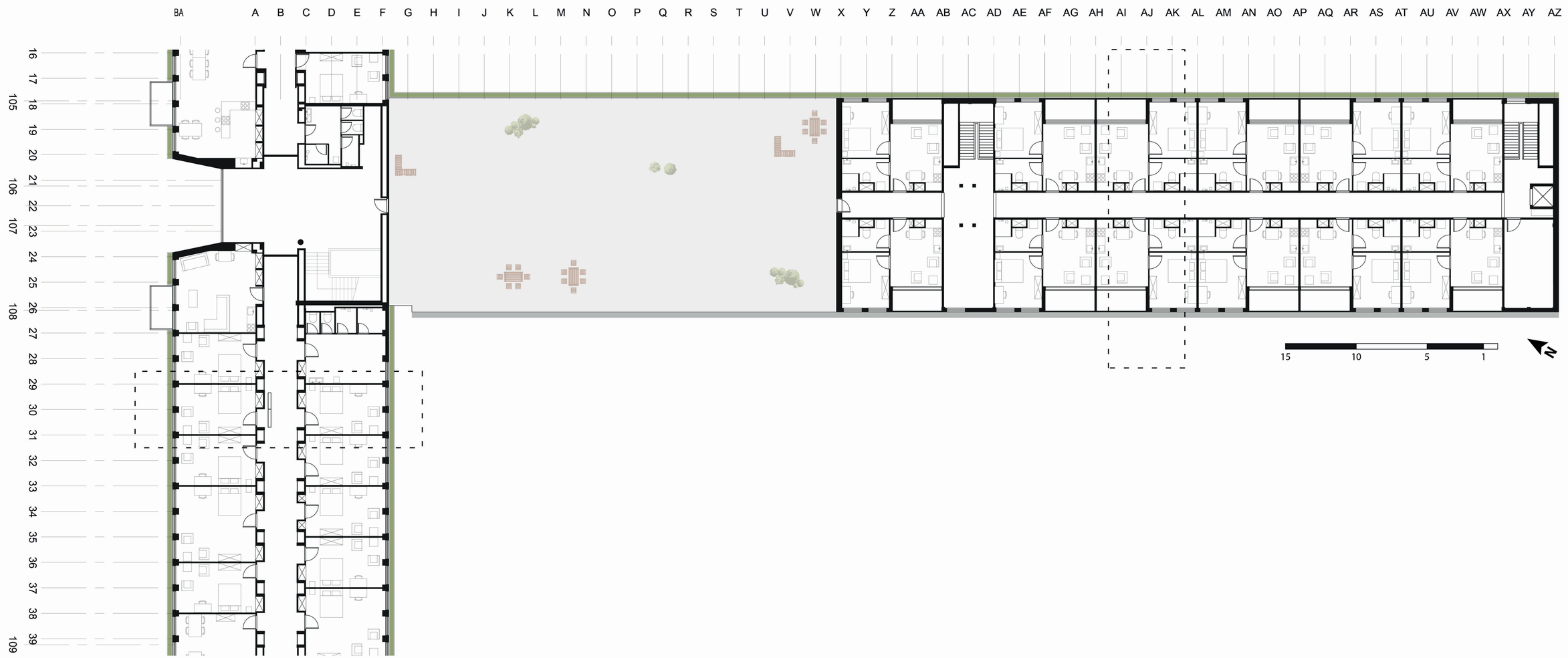
GROUND FLOOR



GROUND FLOOR



THIRD FLOOR


BA A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AI AJ AK AL AM AN AO AP AQ AR AS AT AU AV AW AX AY AZ
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39
105 106 107 108 109
15 10 5 1
N

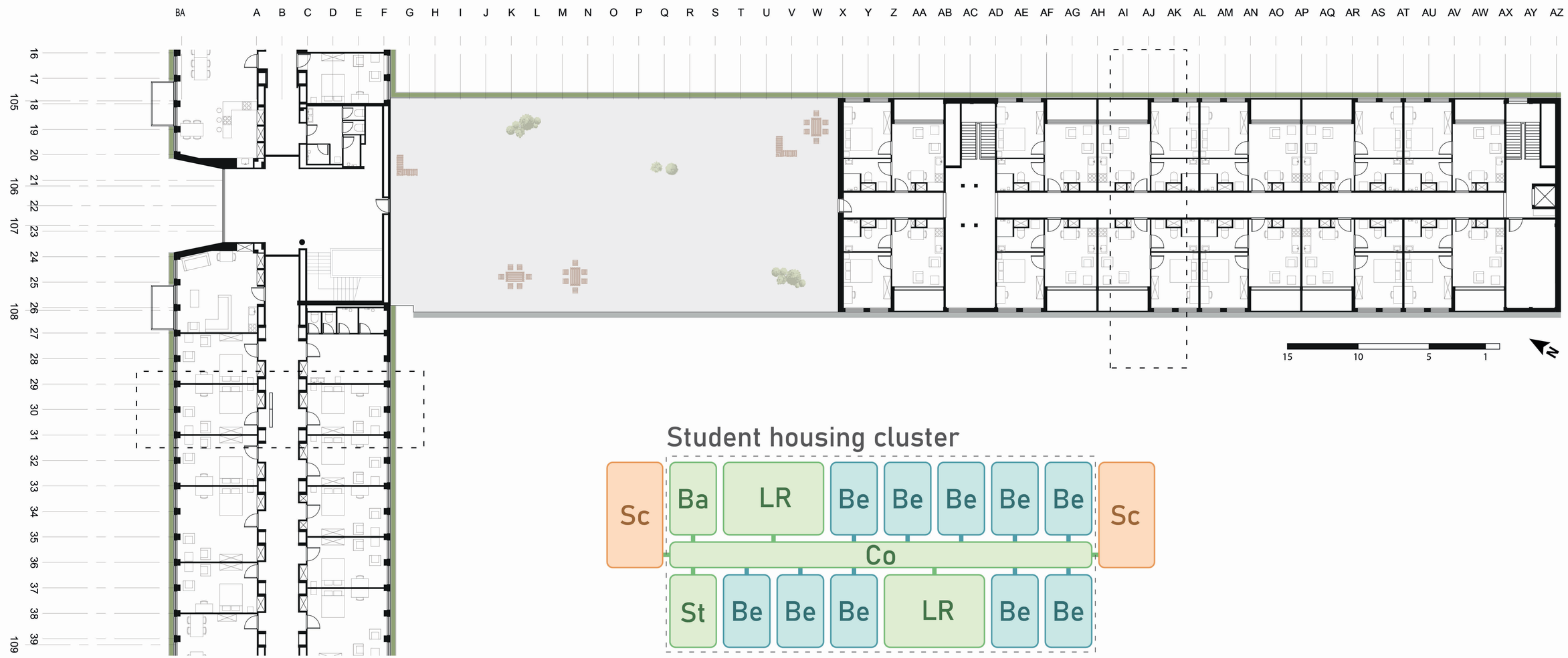
STUDIOS

Bathroom
Bedroom
Storage

Living Room
Corridor
Staircase

Private
Shared
Public

SHARED CLUSTERS



Student housing cluster

Bathroom
Bedroom
Storage

Living Room
Corridor
Staircase

Private
Shared
Public

STRUCTURE

The structure of the building consists of floors and columns, both made from reinforced concrete cast in situ. The recurring grid of the columns througout the building has a repetition of 1.8 meters. In order to create space in the inner street of the building, some columns are replaced by a structural steel frame. The residu of the concrete can be used for grit in the foundation of the new part of the building.

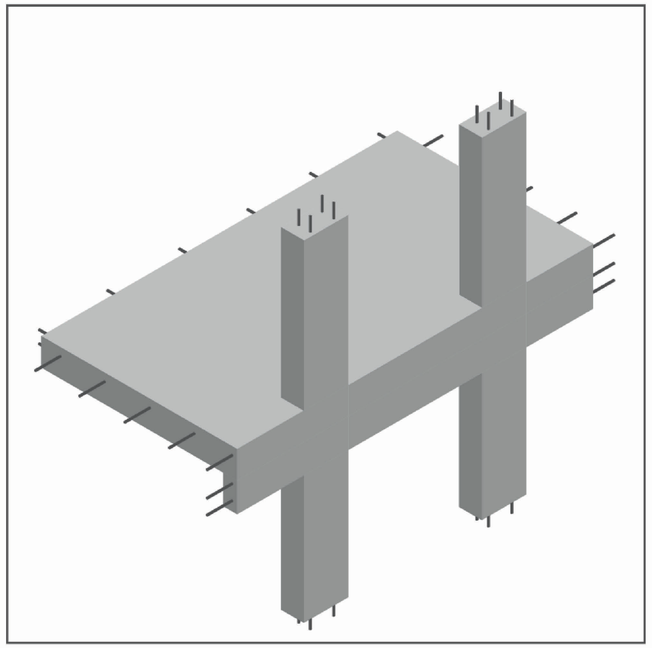
Added Value

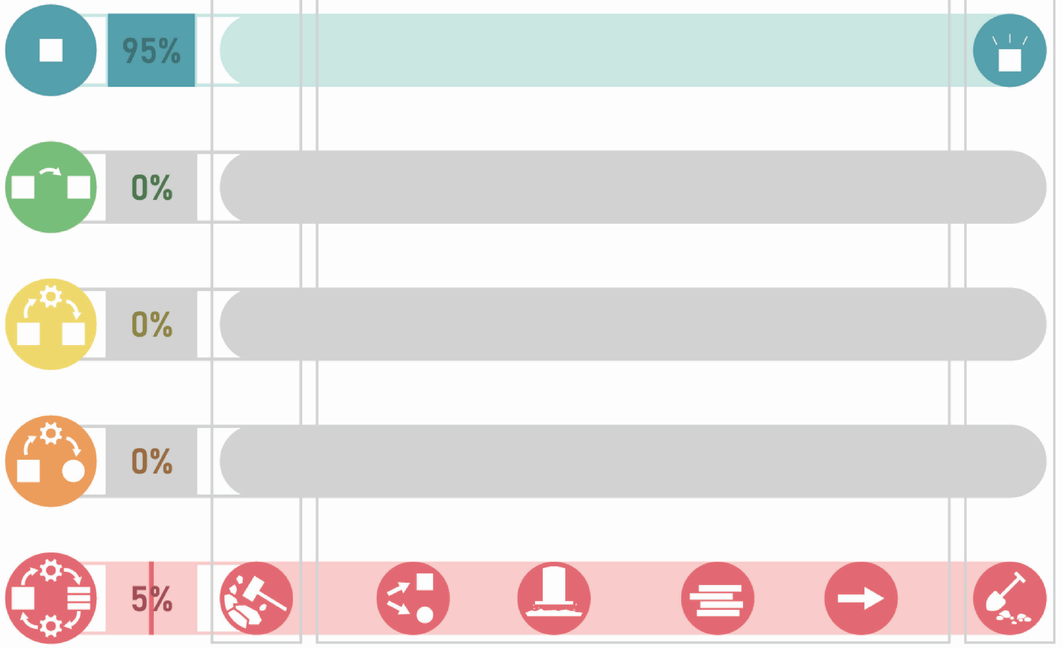
Quantity

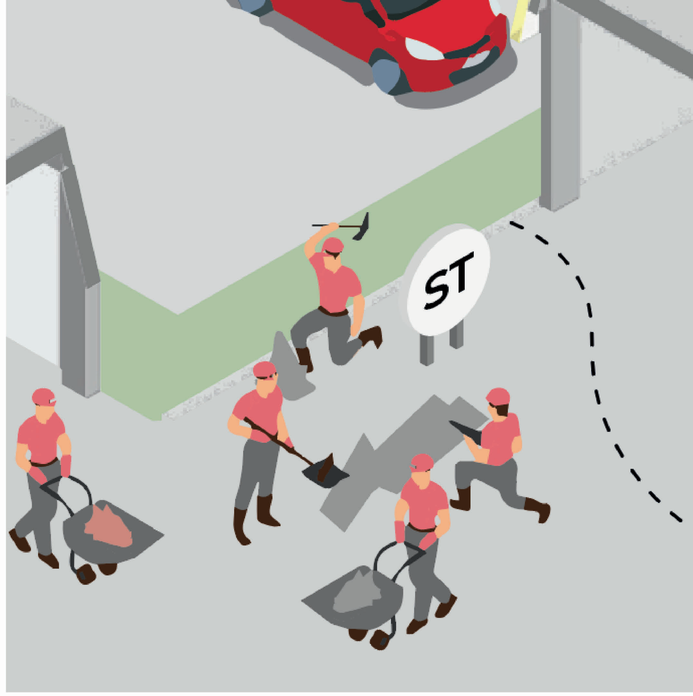
12,000 m³

100%

Comparison

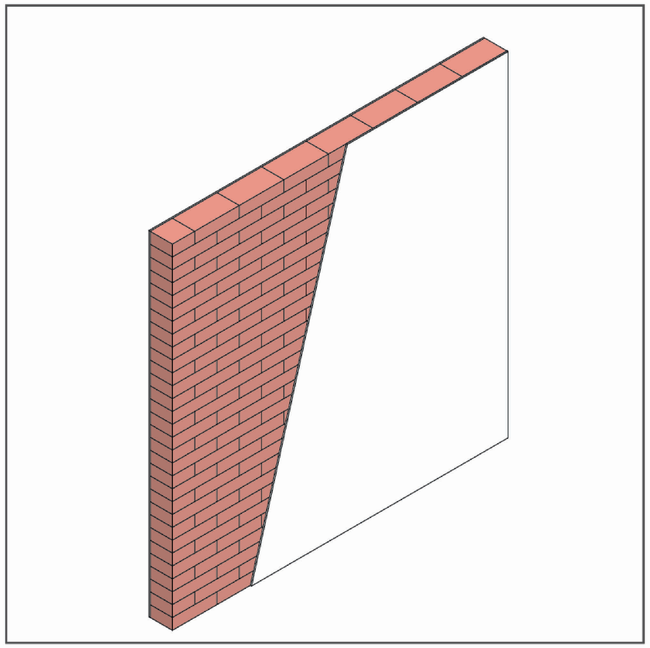






INTERIOR WALLS

The interior walls of the building are not load-bearing. These walls are made of brick and plaster as finish. The walls appear through the entire building in the grid, creating the office-like layout of the building. This layout is suitable for the student housing clusters. Only part of the walls need to be disassembled. By carefully cutting the walls, the blocks can partly be used to make a new interior partition wall.



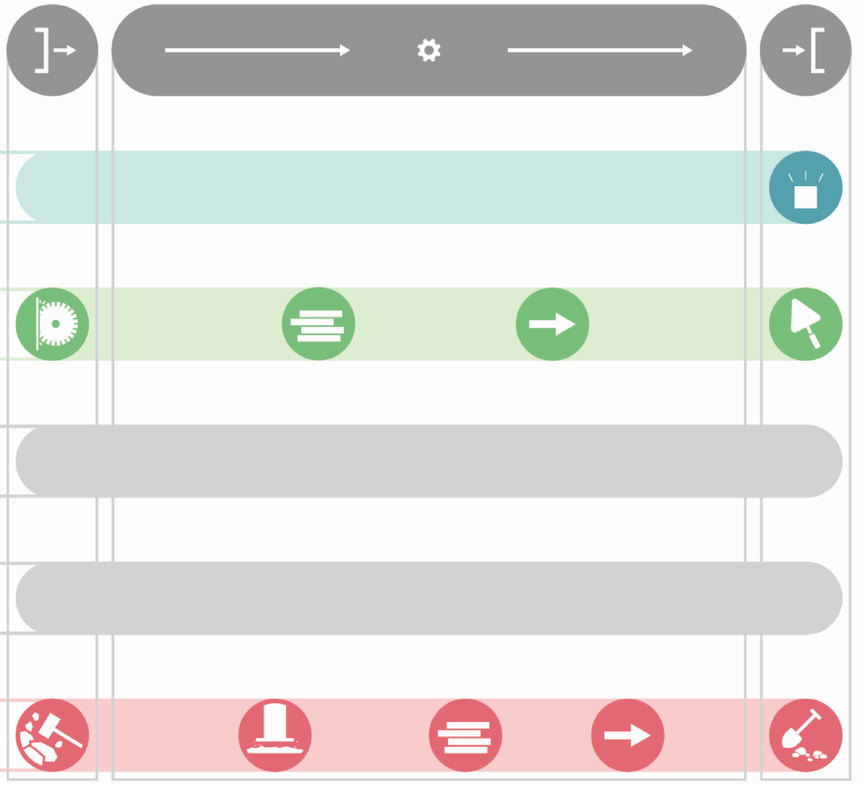
Added Value

Quantity

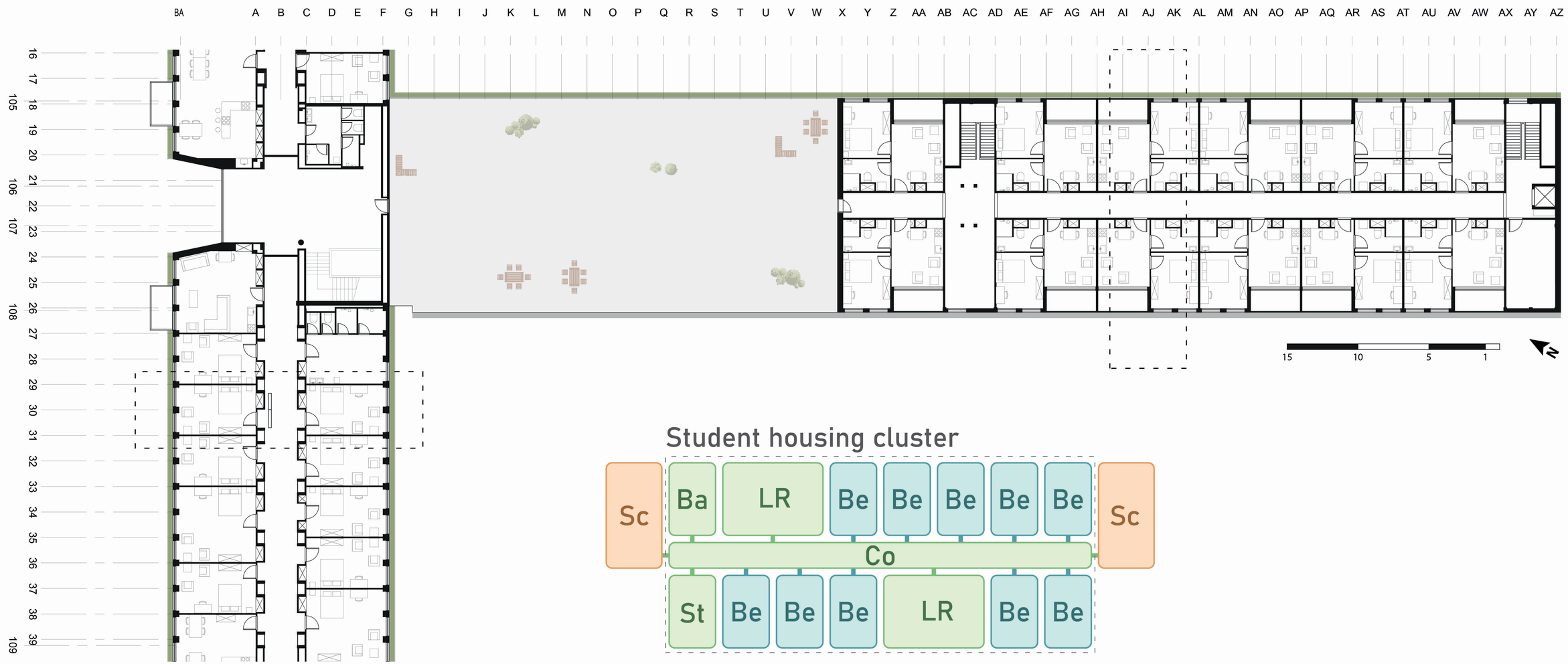
9,000 m²

40%

Comparison



SHARED CLUSTERS



Bathroom
Bedroom
Storage

Living Room
Corridor
Staircase

Private
Shared
Public

DOORS

There is a variety of doors. Most of these doors are made of wood. These doors, seperating the offices from the corridors, can be repaired to work as doors for the bedrooms for instance. Other strategies are used for different other kinds of doors. Some doors are not suitable for any of the functions and have to be recycled, due to safety requirements and privacy requirements.

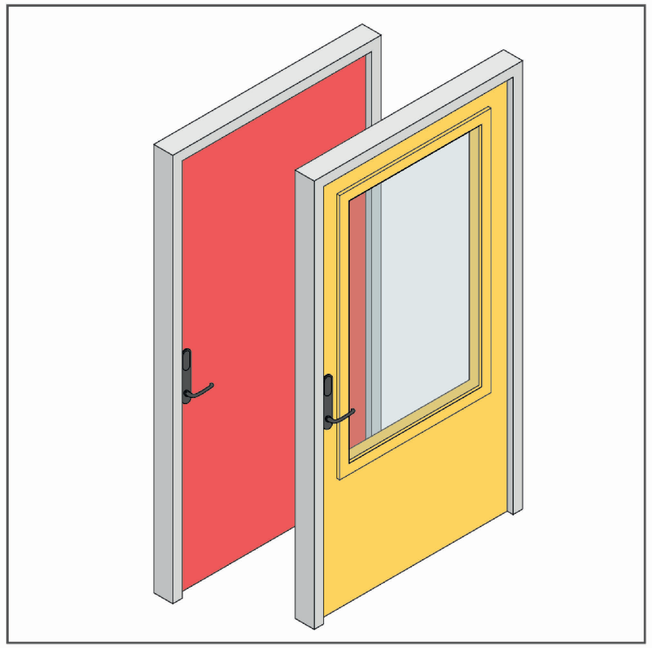
Added Value

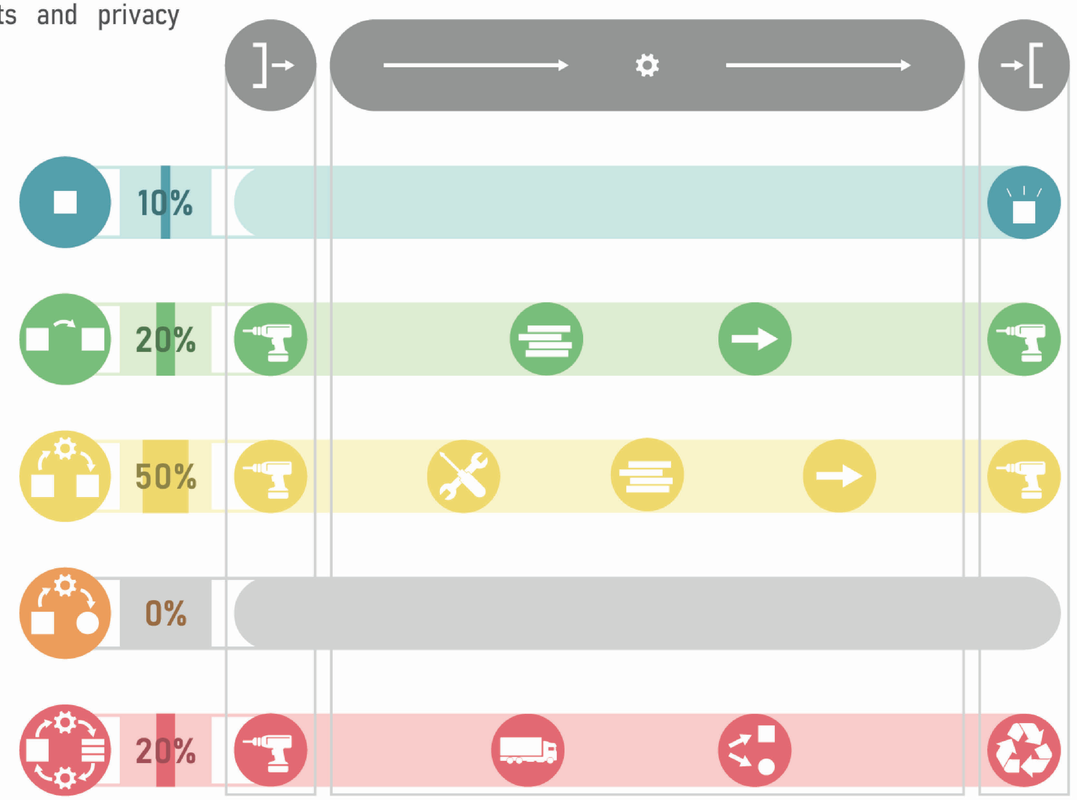
Quantity

1,300 u

15%

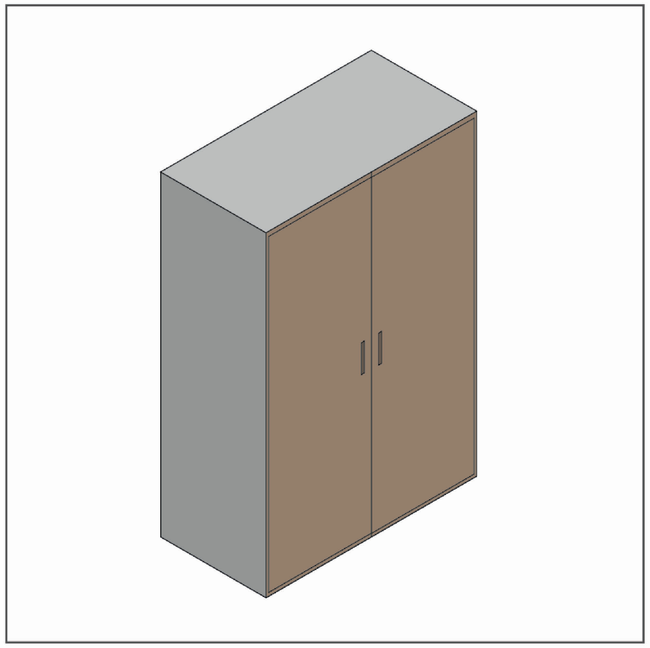
Comparison





CORRIDOR CLOSETS

Between the wide columns in the corridors, beside doors leading to the offices and laboratories, there are closets. These built-in closets appear between the columns and brick walls. As they now serve as storage space in the laboratories, they can serve as personal storage in bedrooms or kitchens.



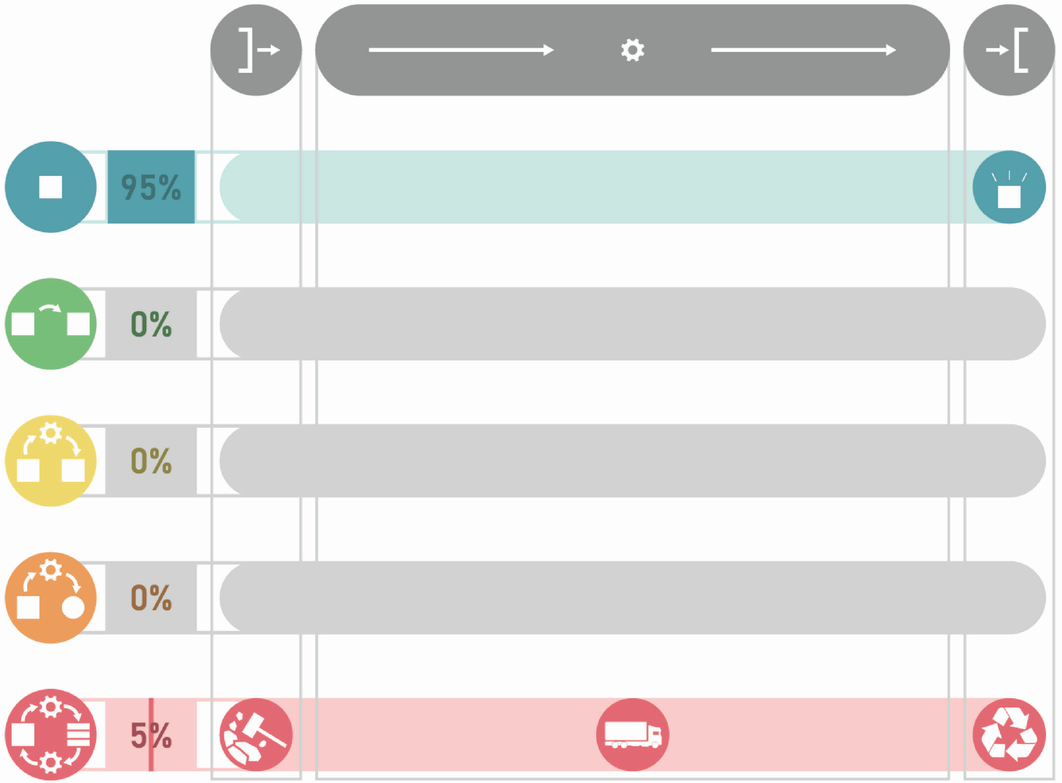
Added Value

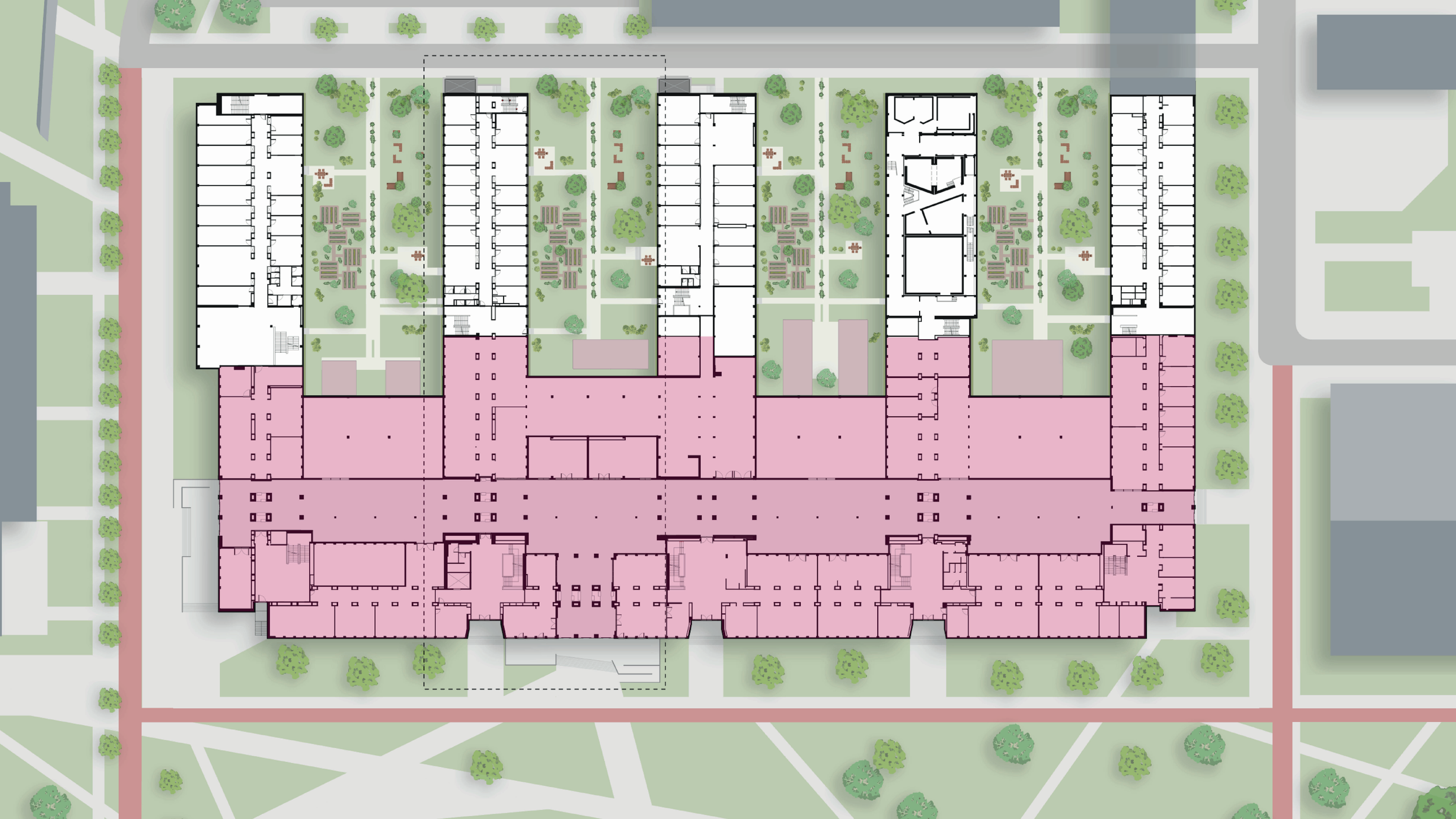
Quantity

1,500 u

5%

Comparison





STRUCTURE

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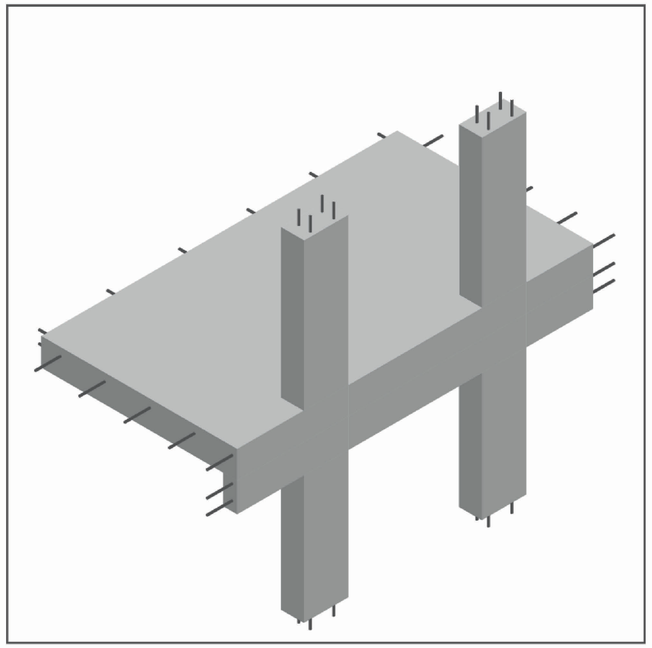
Added Value

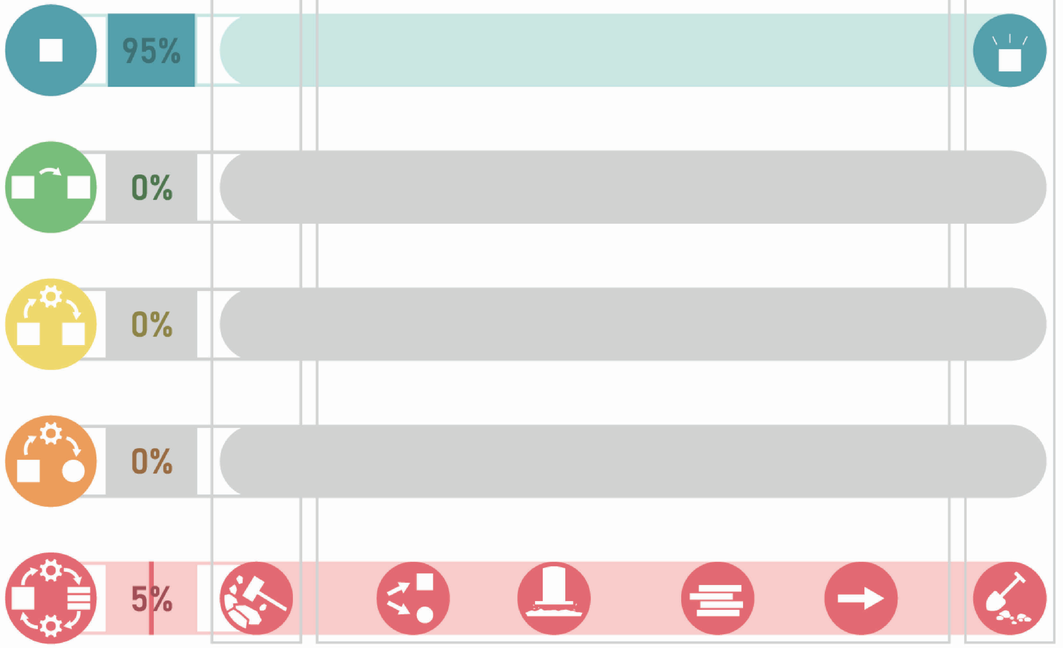
Quantity

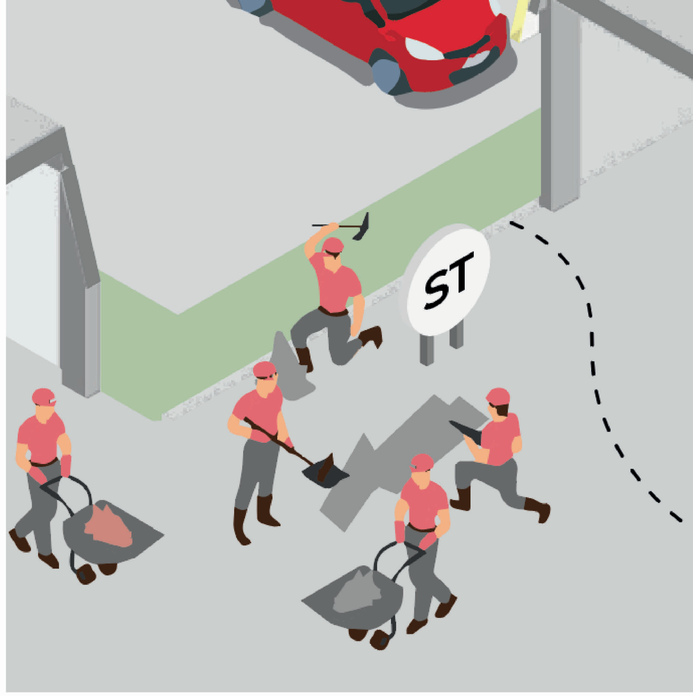
12,000 m³

100%

Comparison







SANITARY

Sanitary, such as toilets, urinals and sinks, made of ceramics and steel plumbing can be demounted and reused in mainly the housing part of the building. Due to the high amount of laboratories in the existing building, there are a lot of sinks. The remainder of sinks can be repurposed into planters in the shopping street or restaurants.

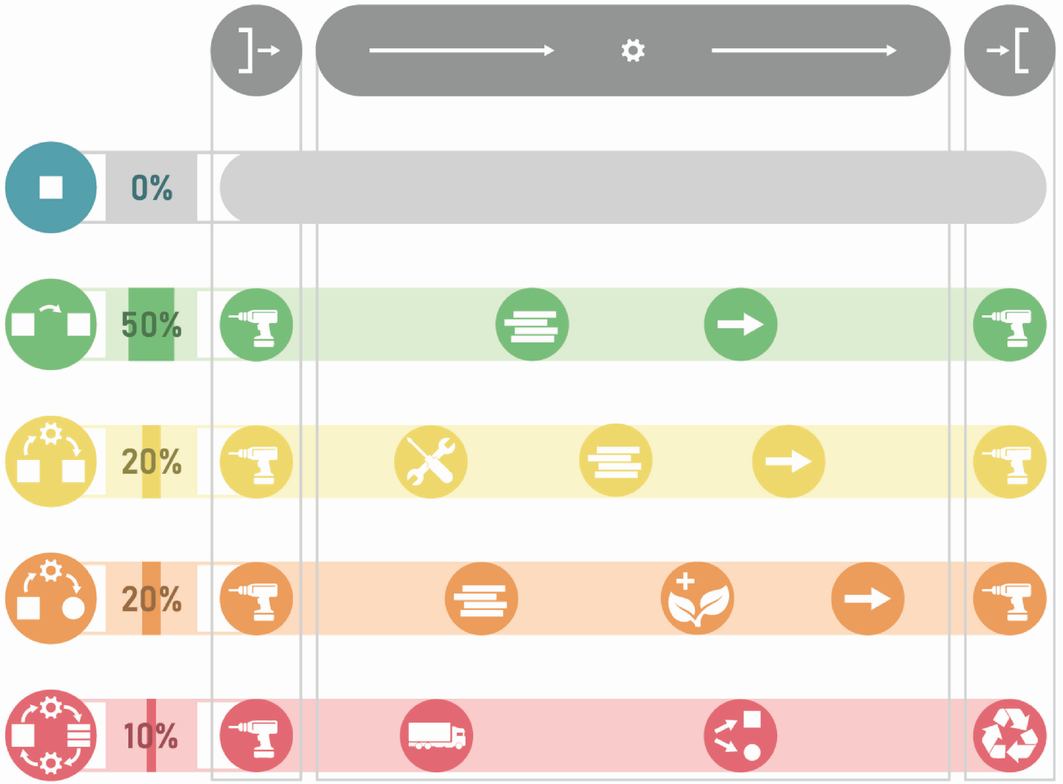
Added Value

Quantity

400
u

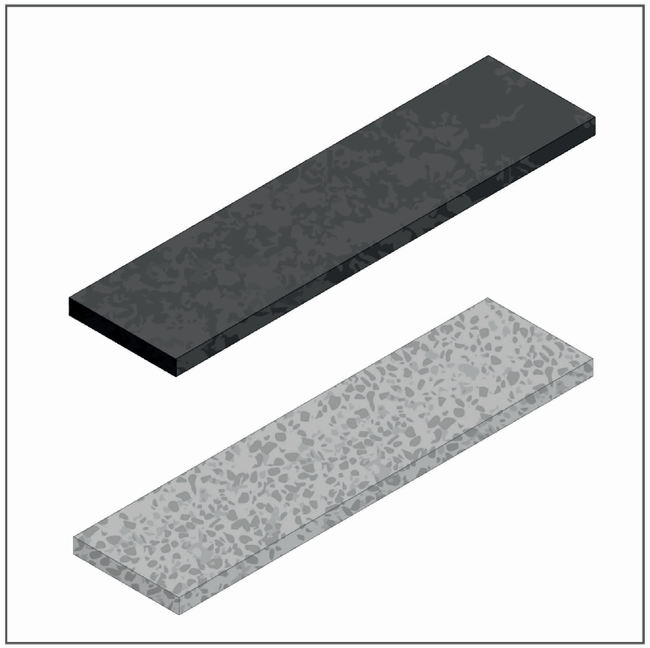
10%

Comparison



WINDOWSILLS

Almost the entire building has sleek windowsills made of natural stone. On the top floor there are windowsills made of concrete, looking al lot like the concrete used in the facade. With precision and care demounted, these windowsills can serve as a neat shiny cladding in the shopping street.



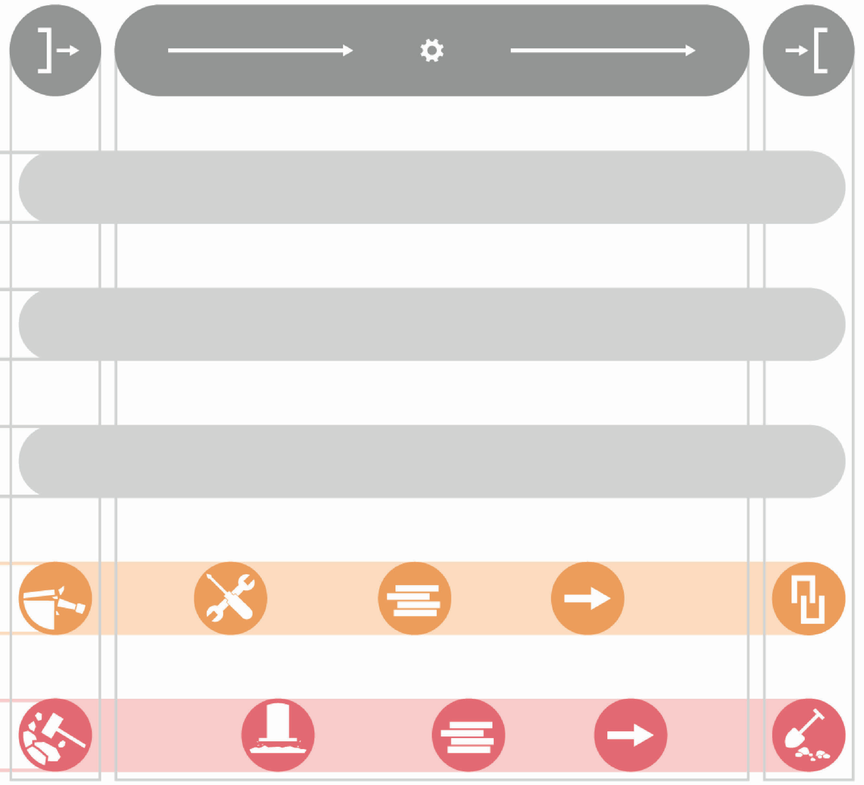
Added Value

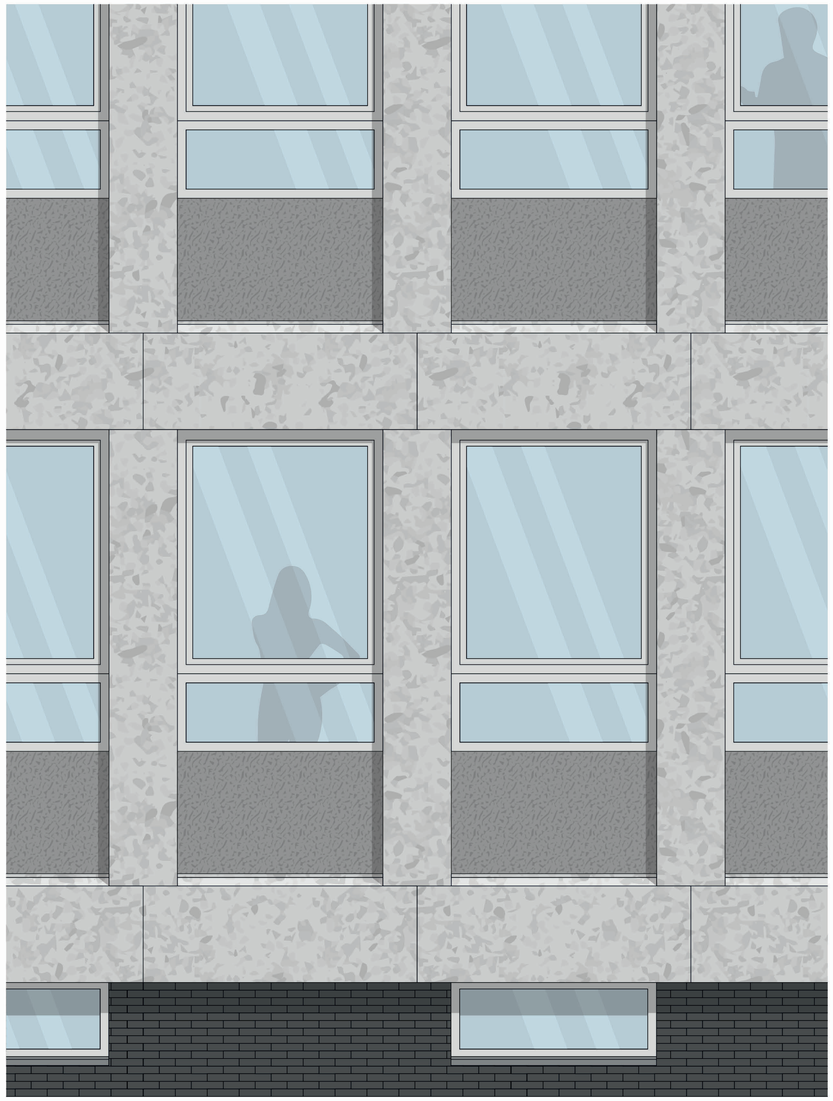
Quantity

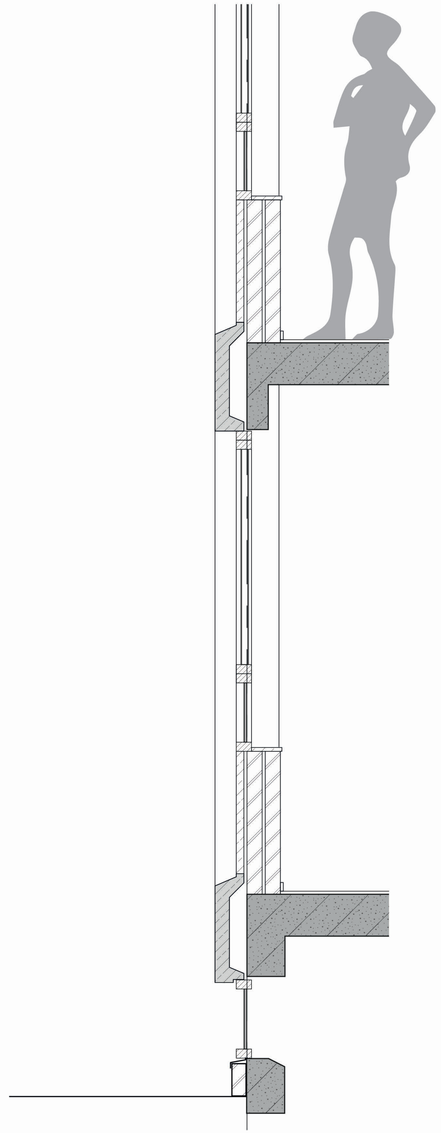
2,500 m

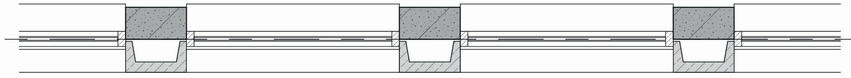
30%

Comparison









TECHNISCHE NATUURKUNDE

WINDOWS

The repetitive windows have wooden window frames. These windows do not have the right technical properties for the new building, Therefore the windowframe and glass will be seperated. The glass can be used to create windows with better insulation properties, to be used as for instance the glass roof above the street. The window frames can, with some modifications, be repurposed into facade panels.

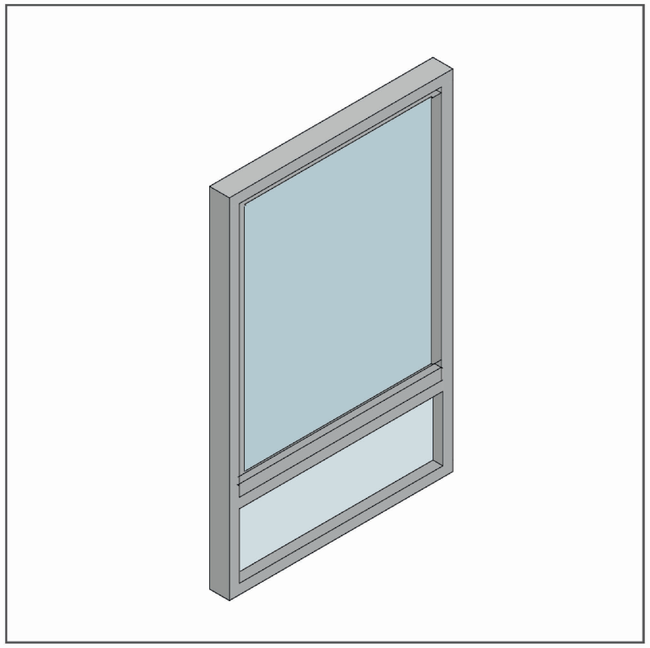
Added Value

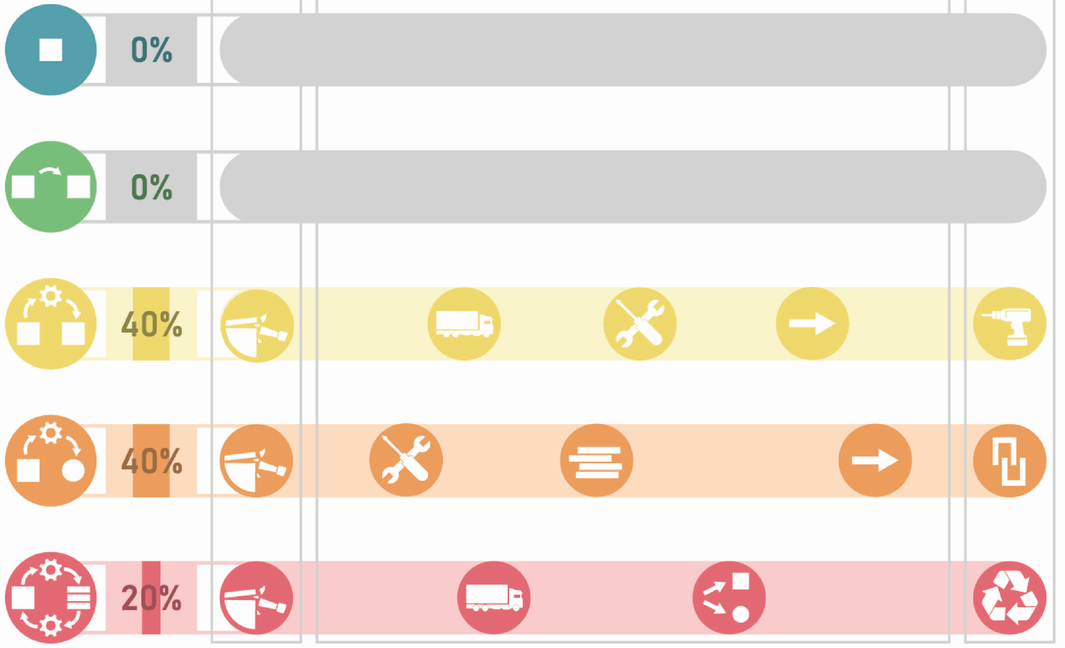
Quantity

1,600
u

20%

Comparison





BRICK EXTERIOR WALL

Under the concrete facade, up to the ground floor, there is a wall, made of black bricks. In order to add insulation to the building, all facade materials need to be disassembled, including this brick wall. The wall can be cut into blocks and reassembled as blocks in the new building.

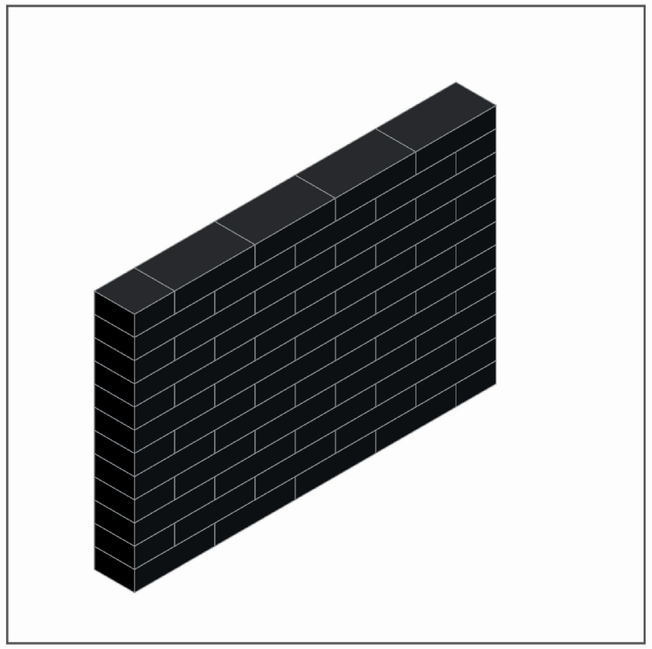
Added Value

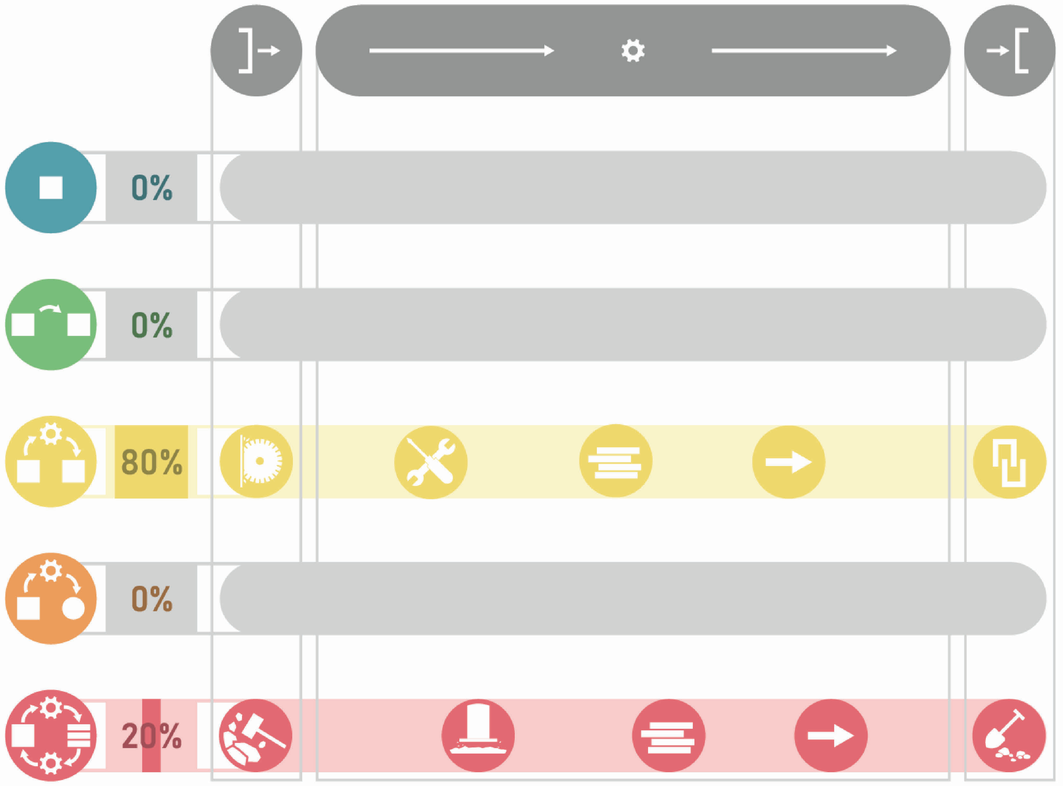
Quantity

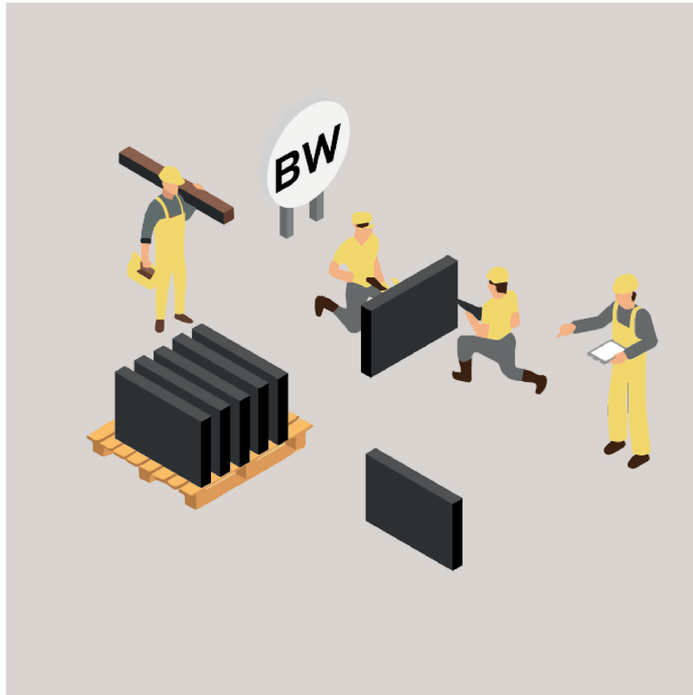
1,200 m²

20%

Comparison







NATURAL STONE PANELS

Under the windows in the facade, panels of dark grey natural stone are placed. In the new facade with the larger windows, the size of these panels is unconvenient. Therefore these panels will be used on the backside of the new added parts of the building, by disassembling them and modifying the panel anchoring. It can serve as a strong closed facade towards the sports area of the gardens between the housing wings.

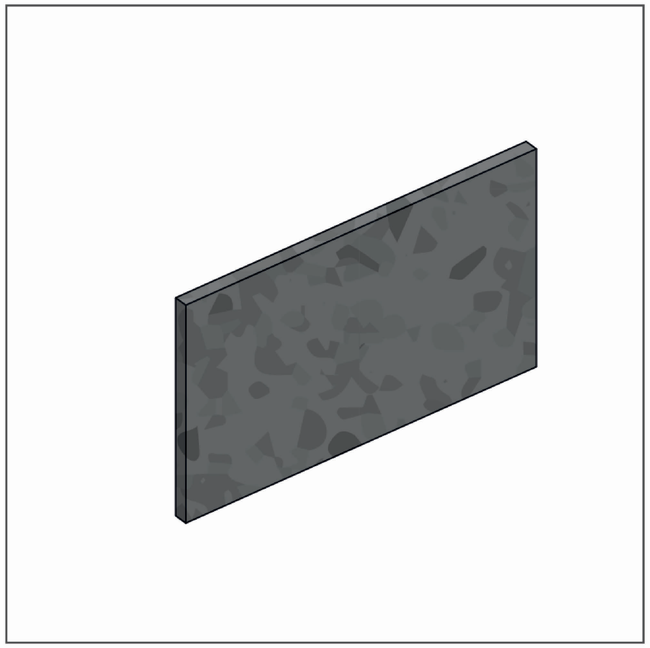
Added Value

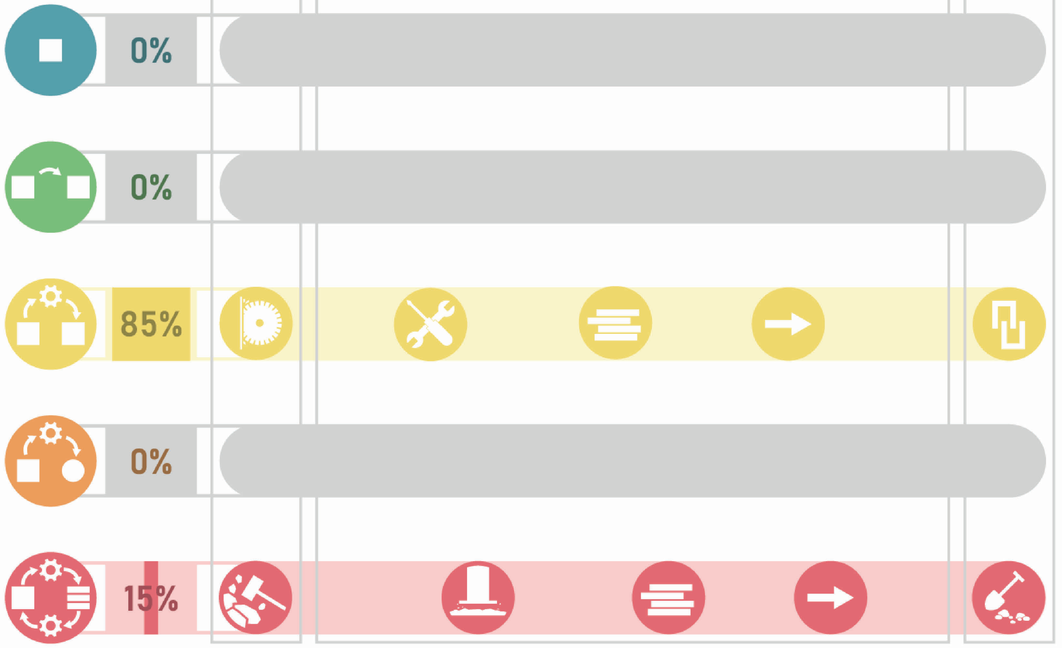
Quantity

1,900 m²

15%

Comparison





BRICK AND PORISO WALL

Between the columns and under the windows, there are two small walls, one poriso stone, one brick. In orrder to renew the facade and get more light into the rooms, these walls need to be removed. By degrading this to grit, it can be used as a primary foundation layer under the new part of the building.

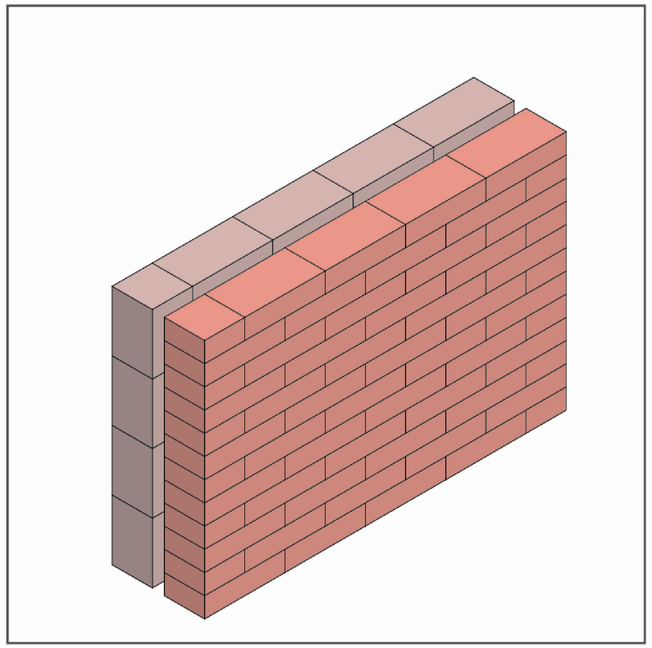
Added Value

Quantity

1,500 m²

100%

Comparison



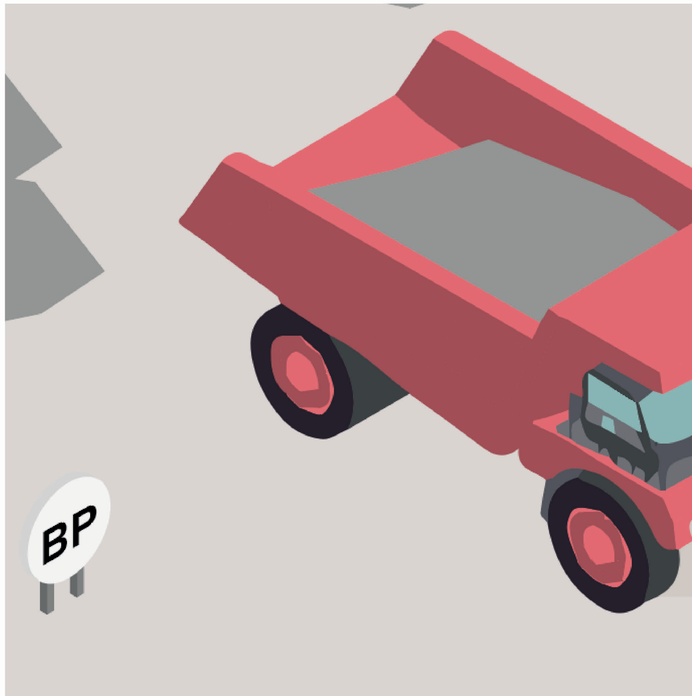
0%

0%

0%

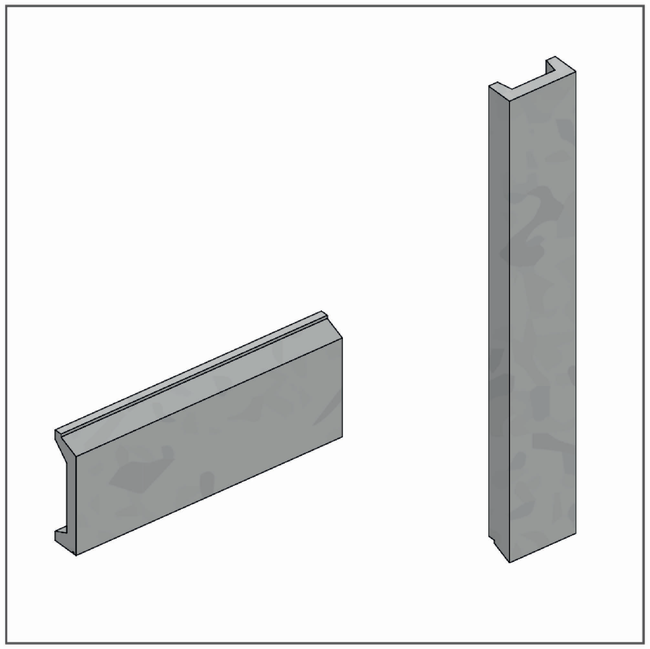
0%

100%



CONCRETE PANELS

The facade is almost entirely covered in concrete panels. The concrete panels contain some natural stone that give the panels a little more texture. These anchored panels can be disassembled and put back in a different way, creating space for green and shading and ventilation systems. Furthermore, the orientation of the panels differing on the direction of the facade, create shade. To be able to create this system that adds more value to the building, extra alumnium profiles are introduced.



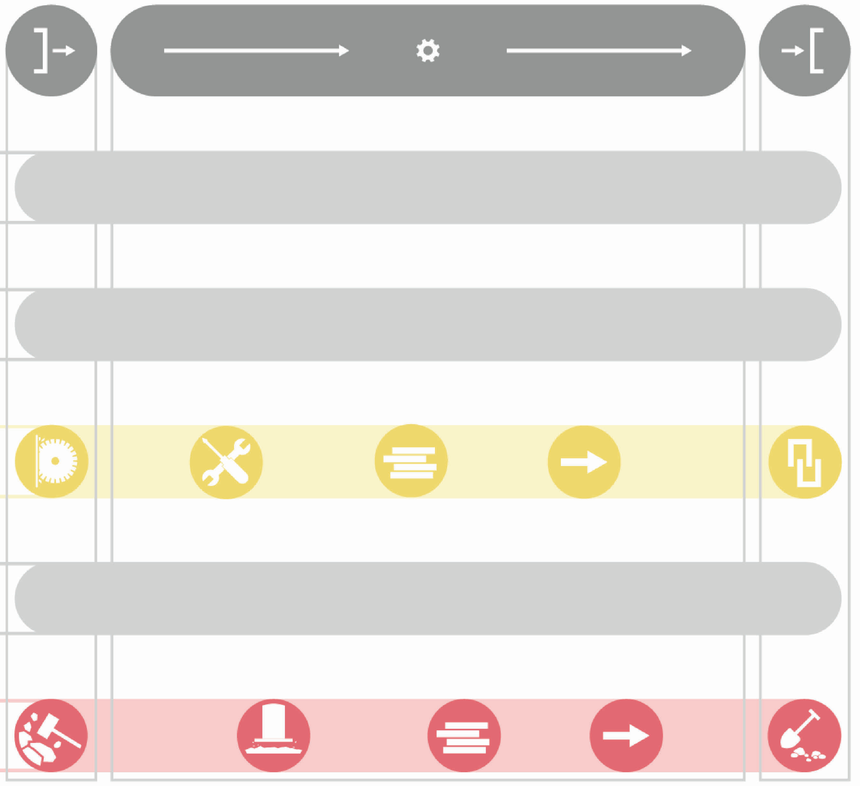
Added Value

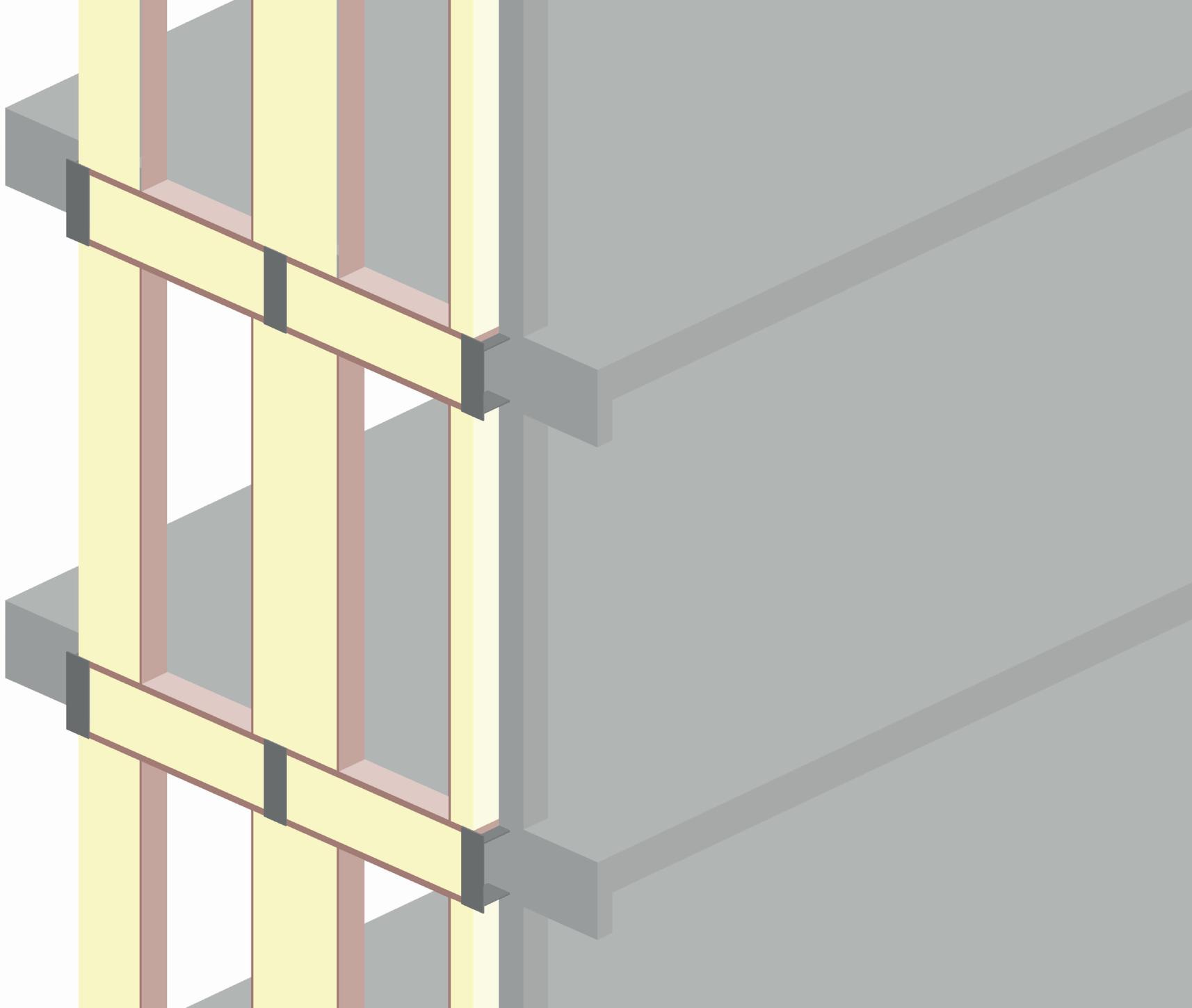
Quantity

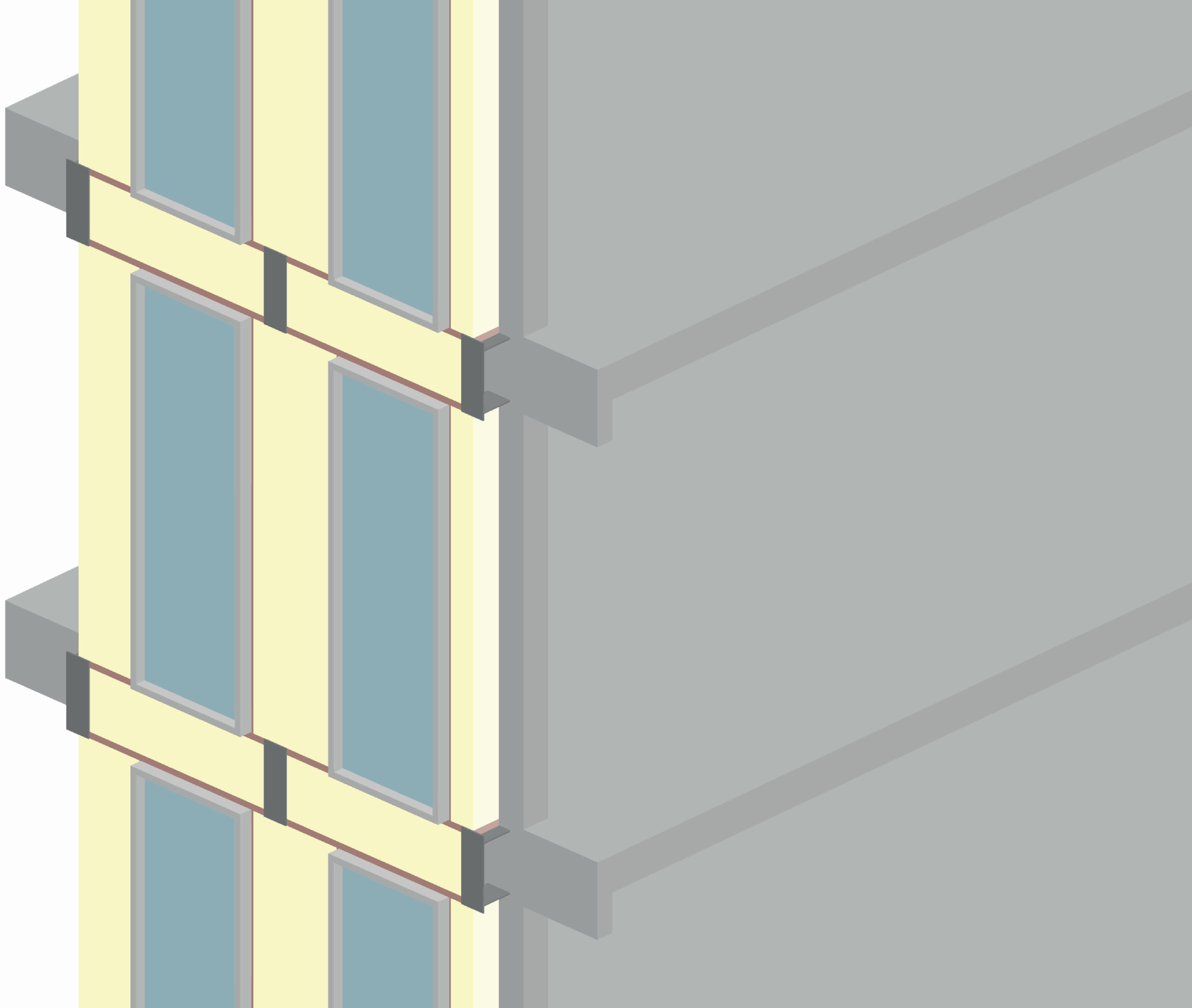
5,700 m²

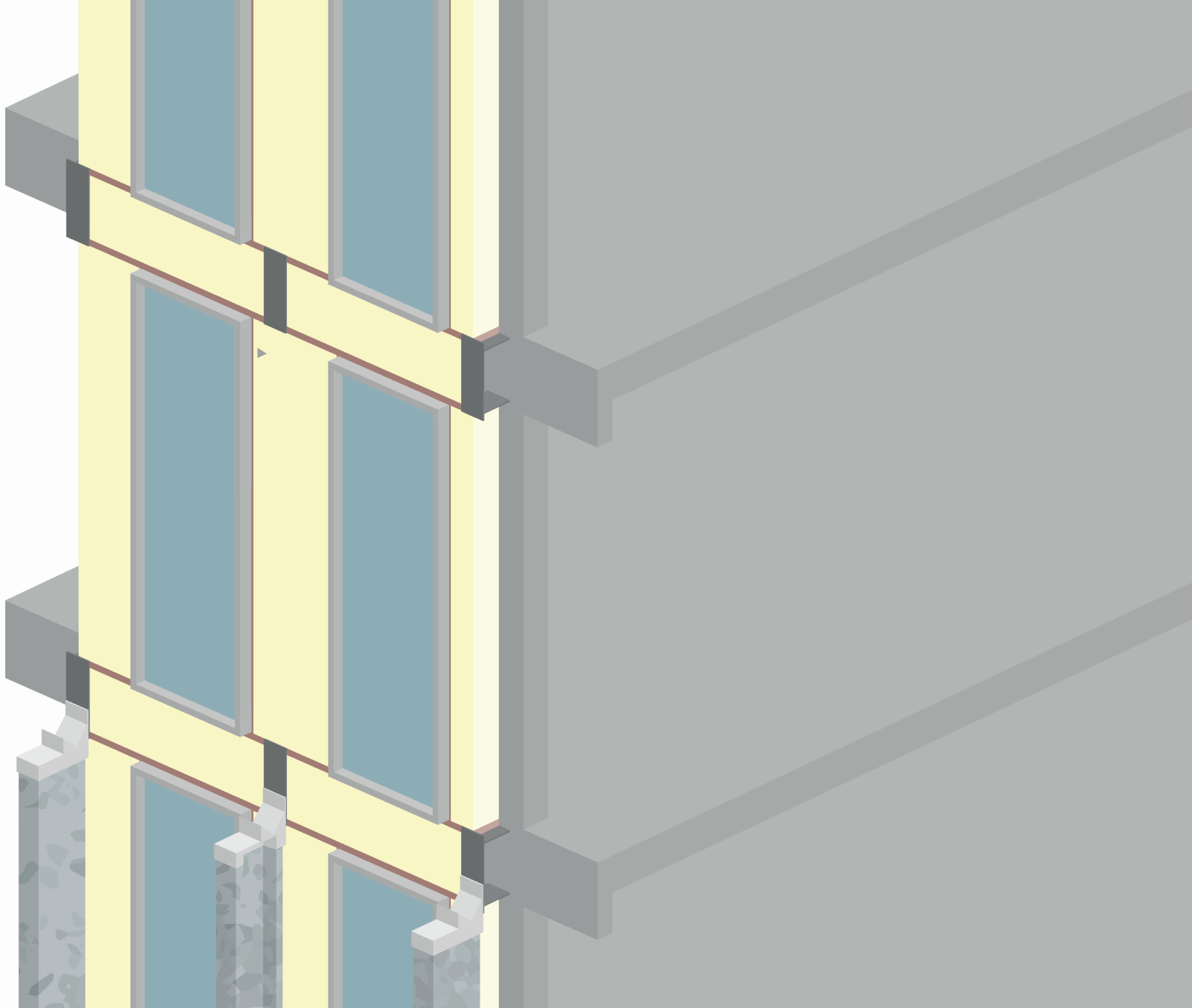
15%

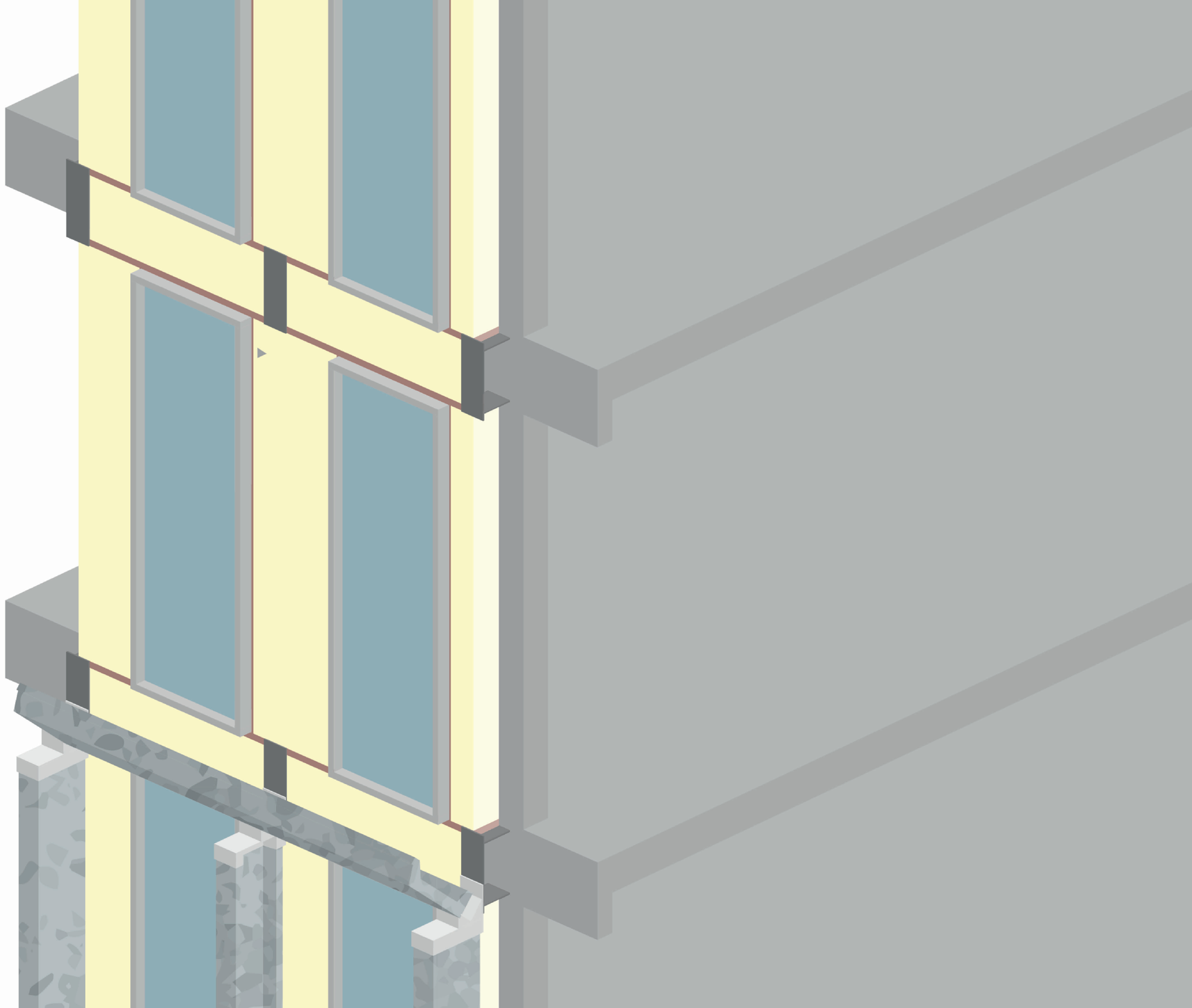
Comparison

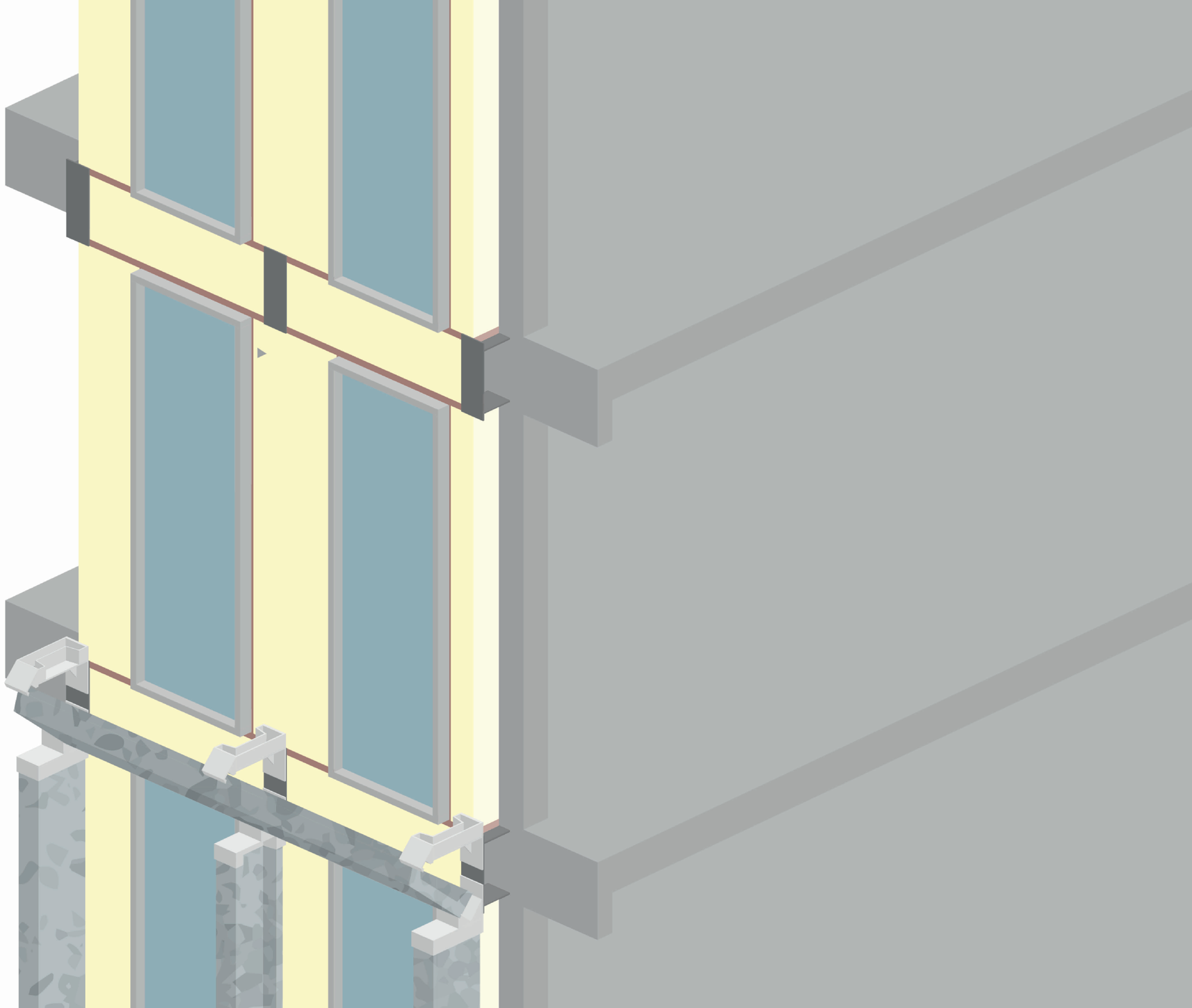


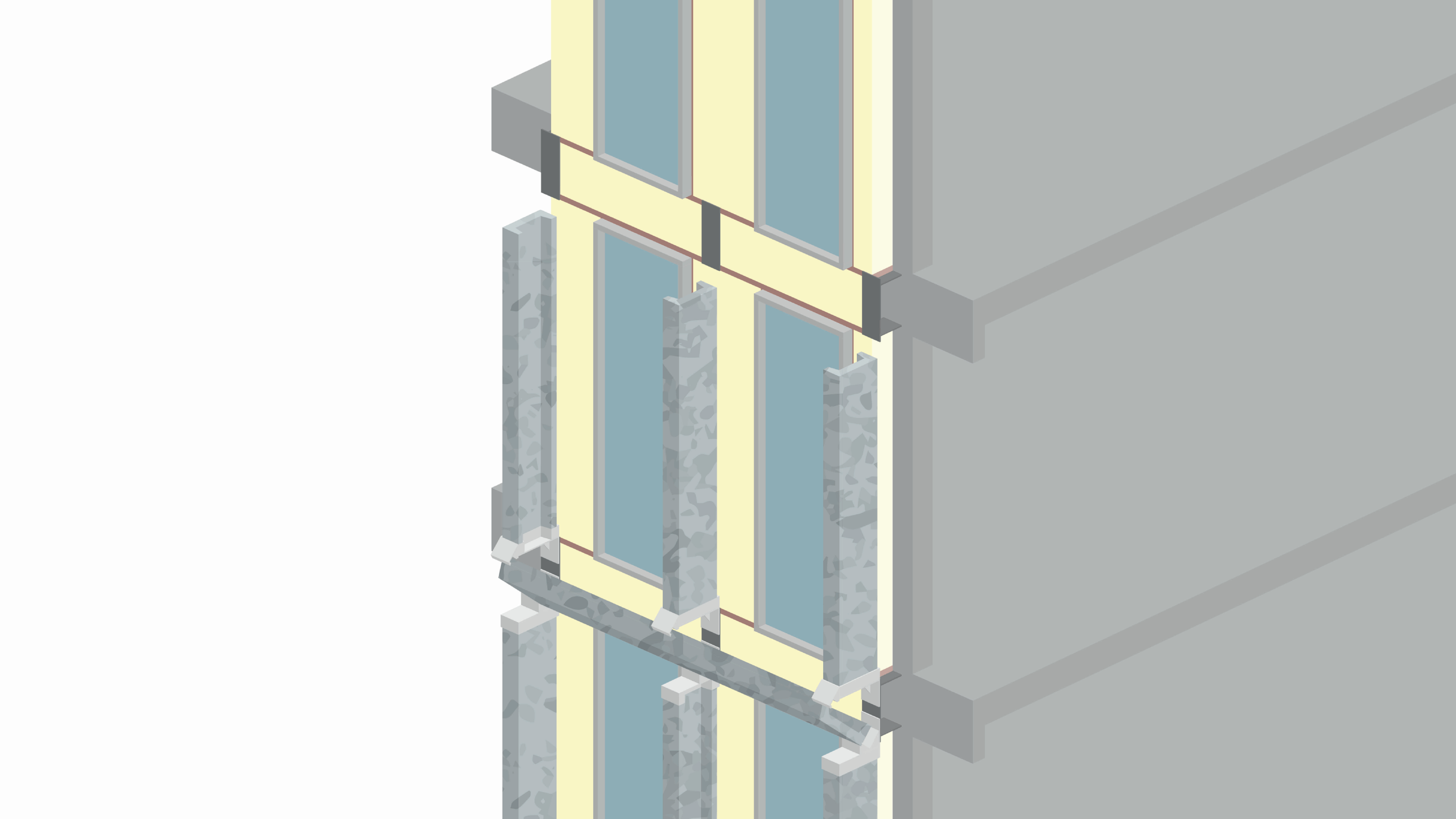


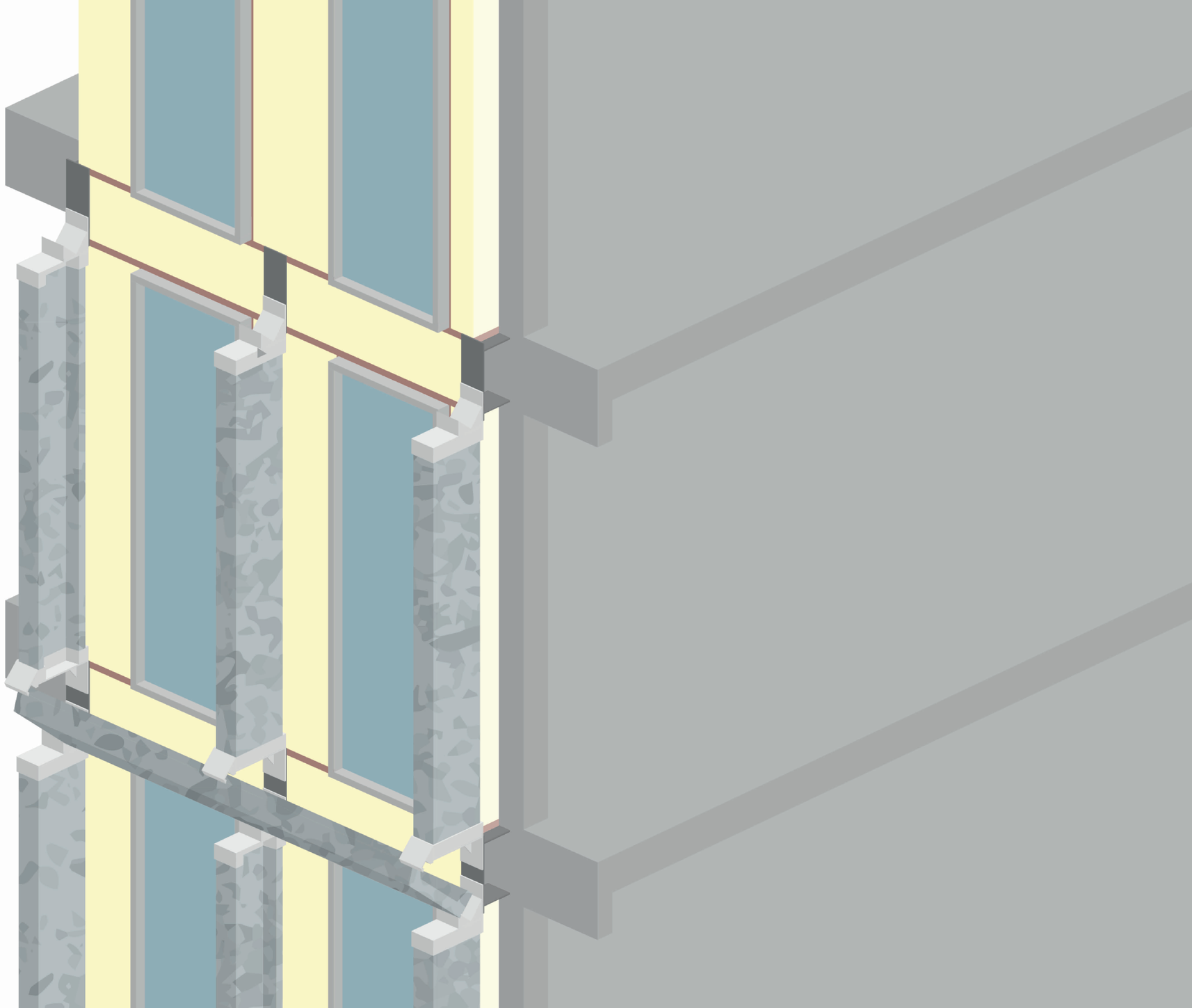


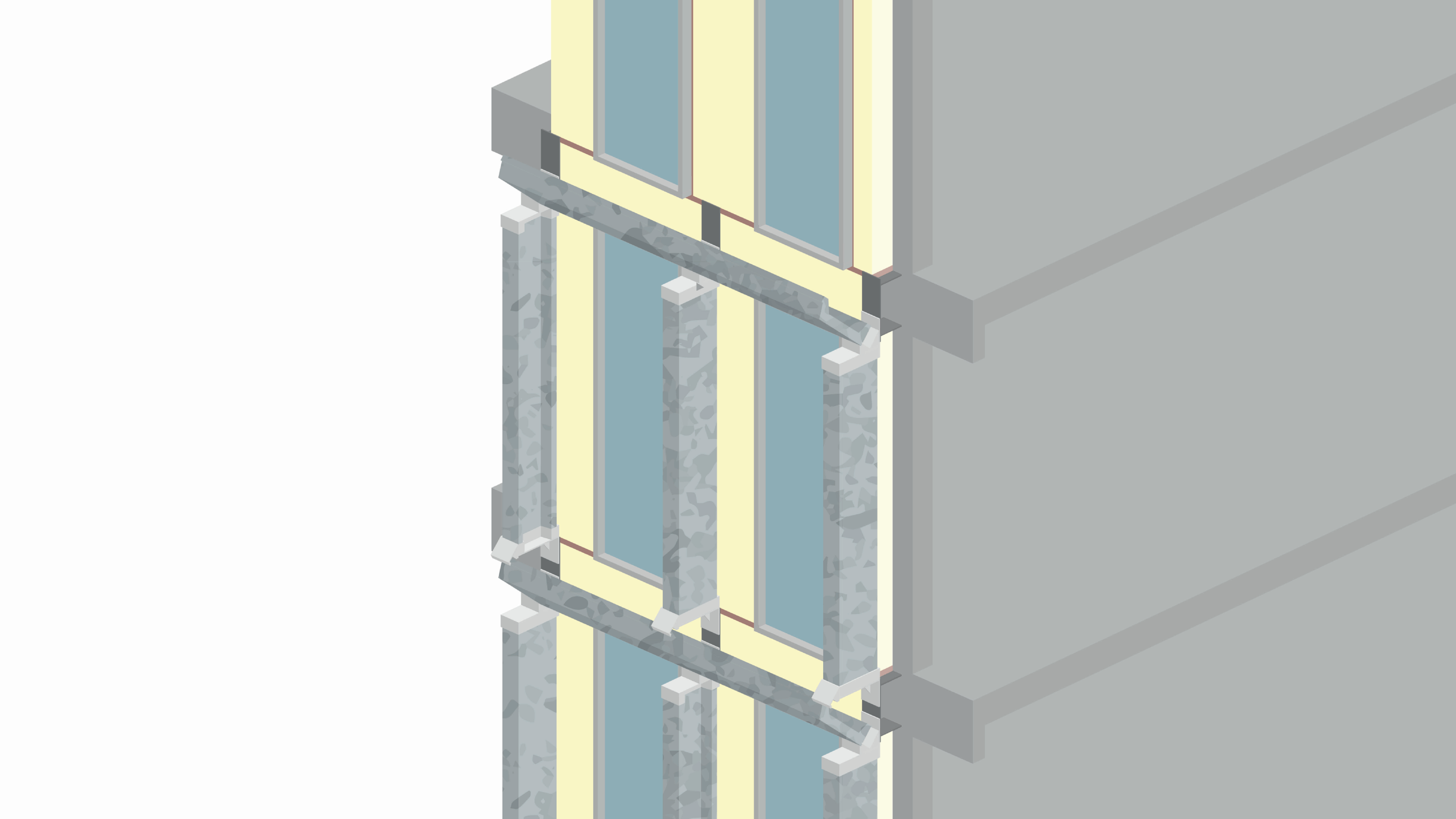


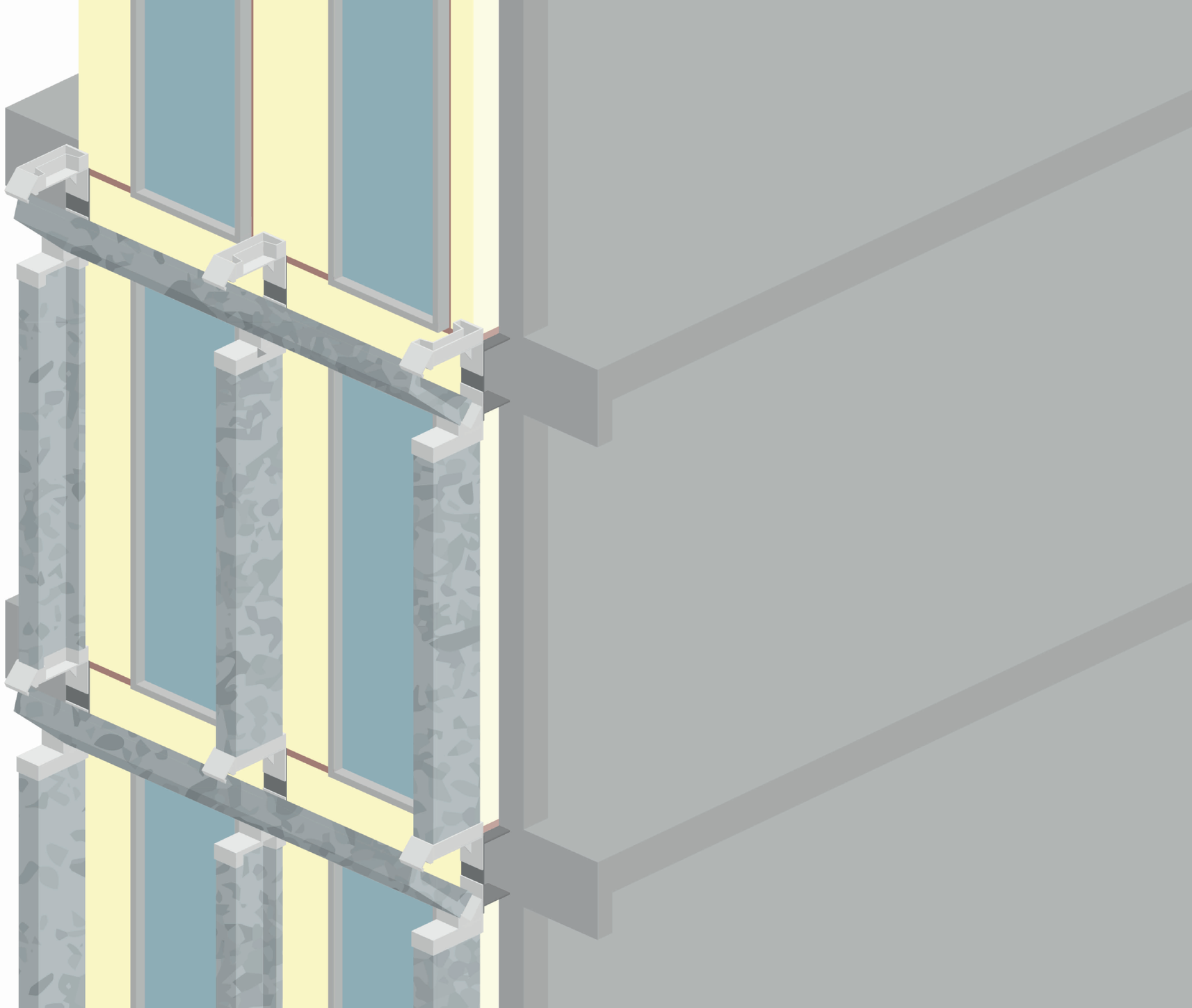


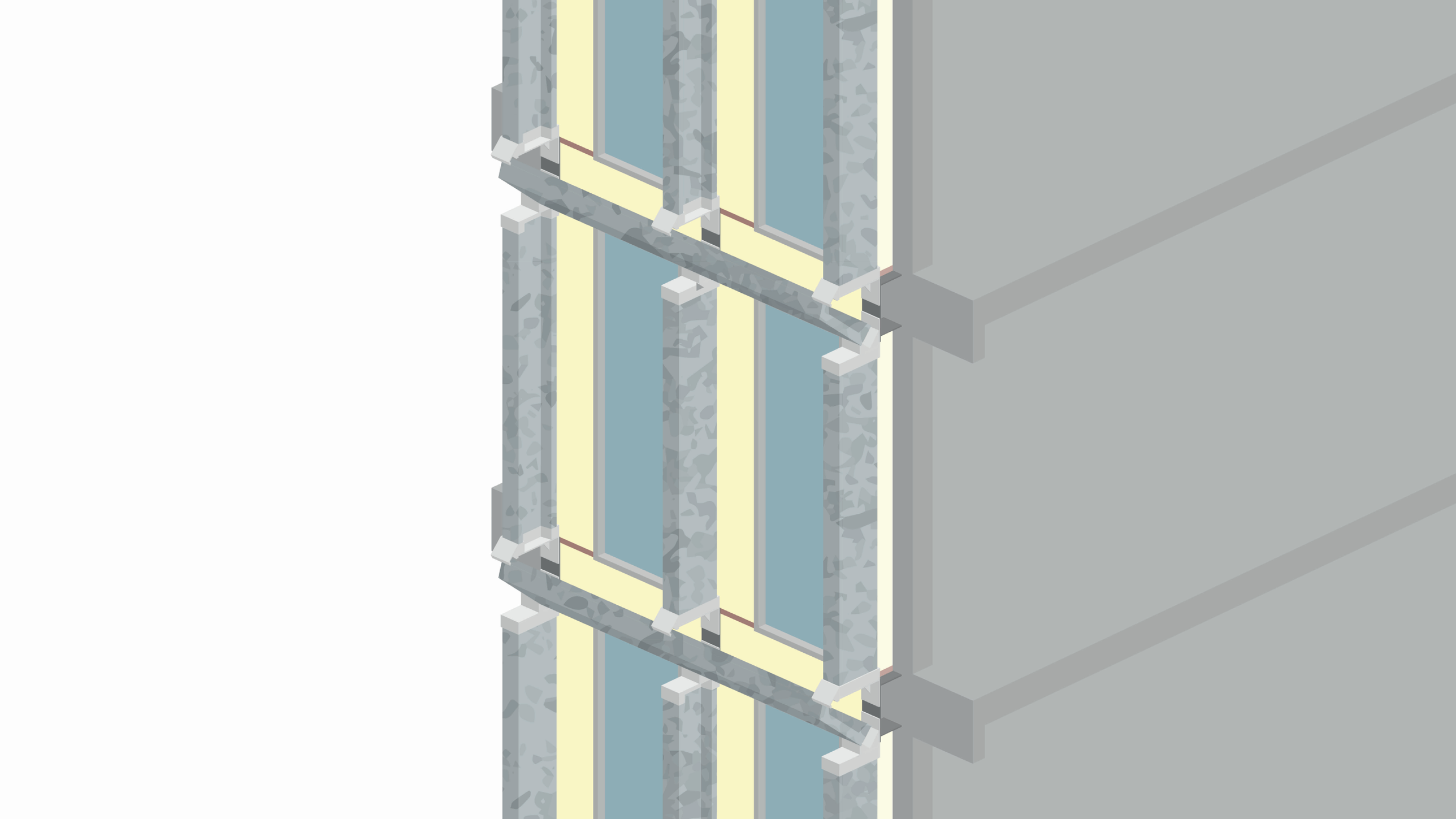


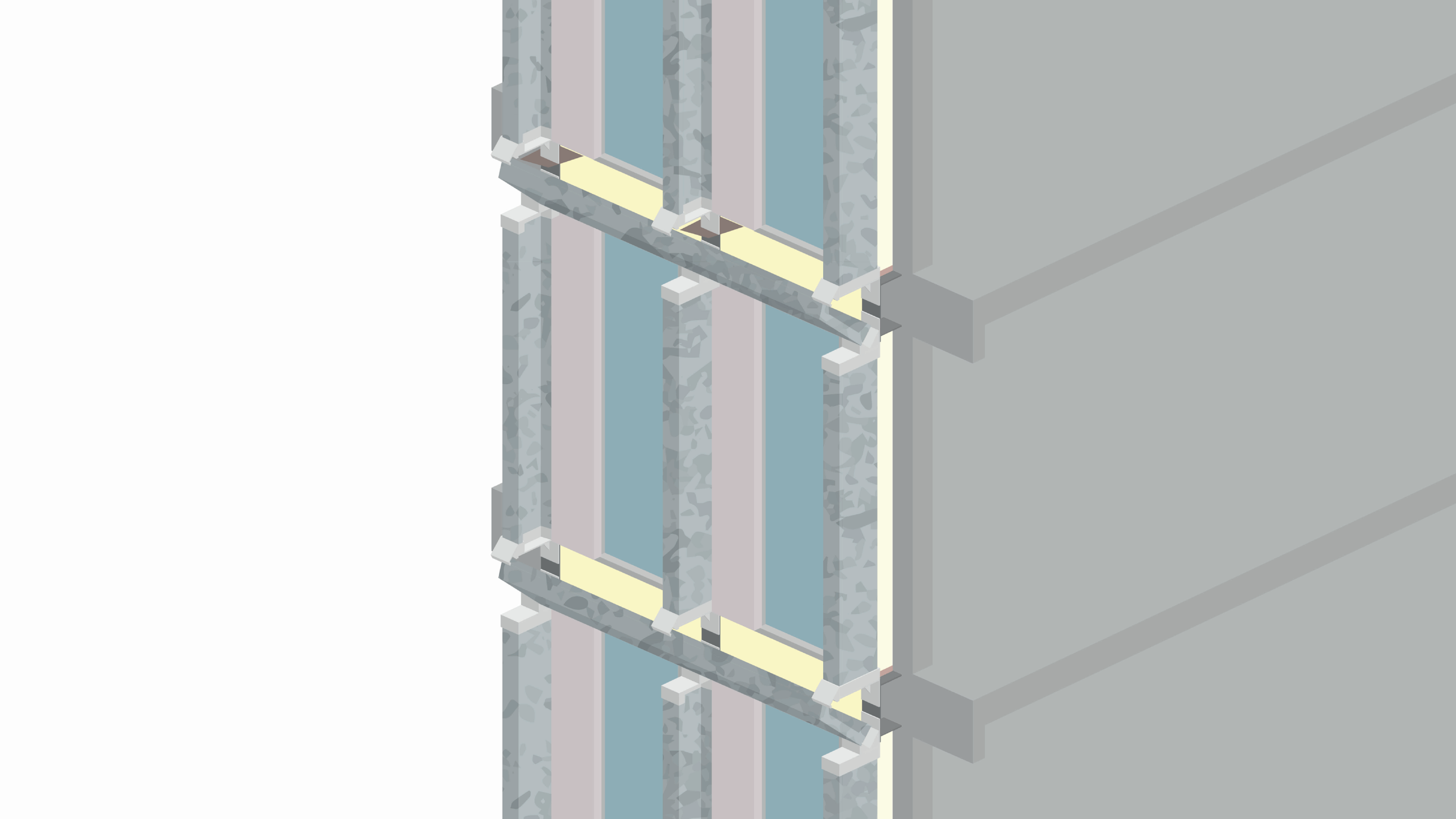


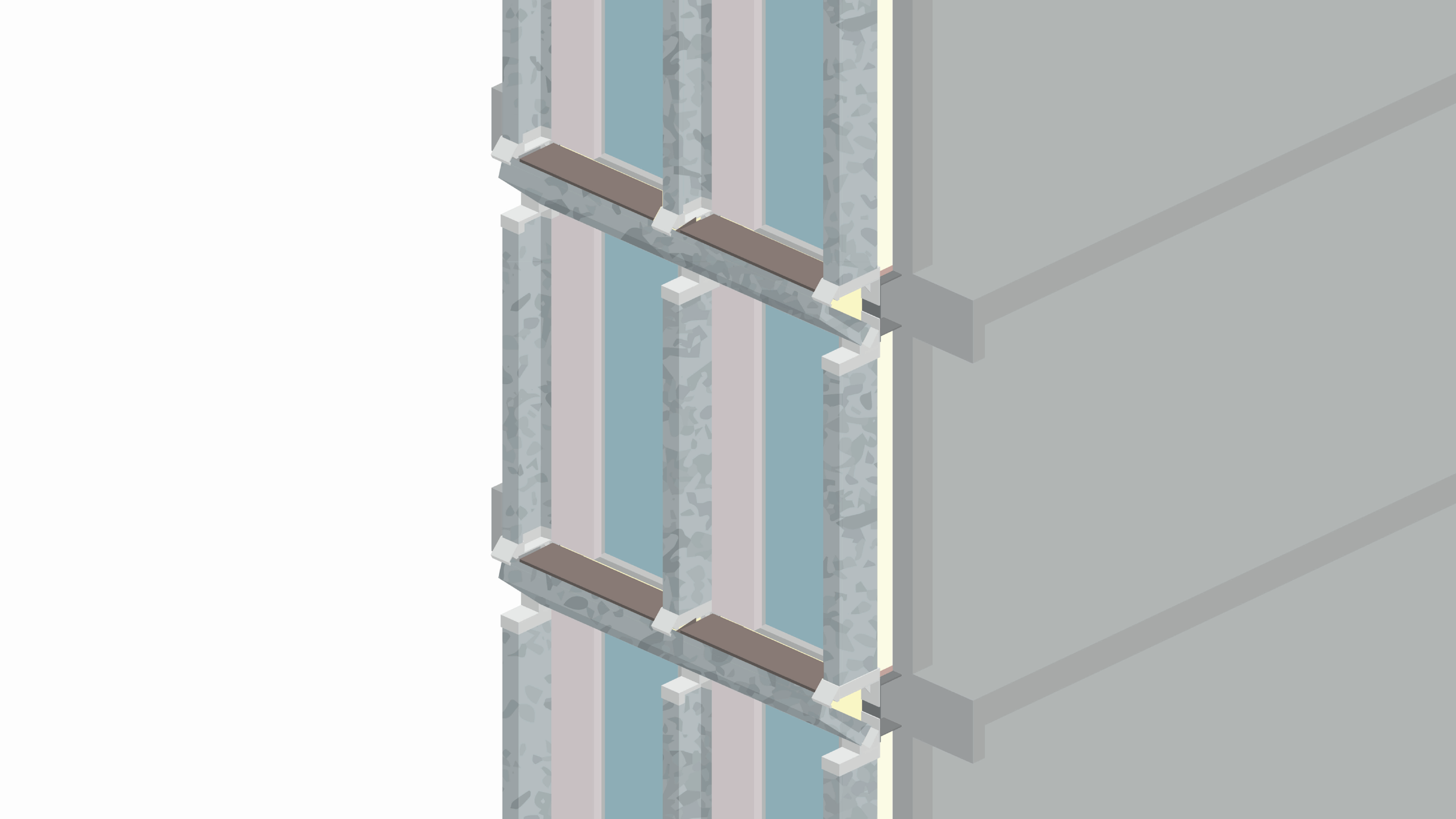


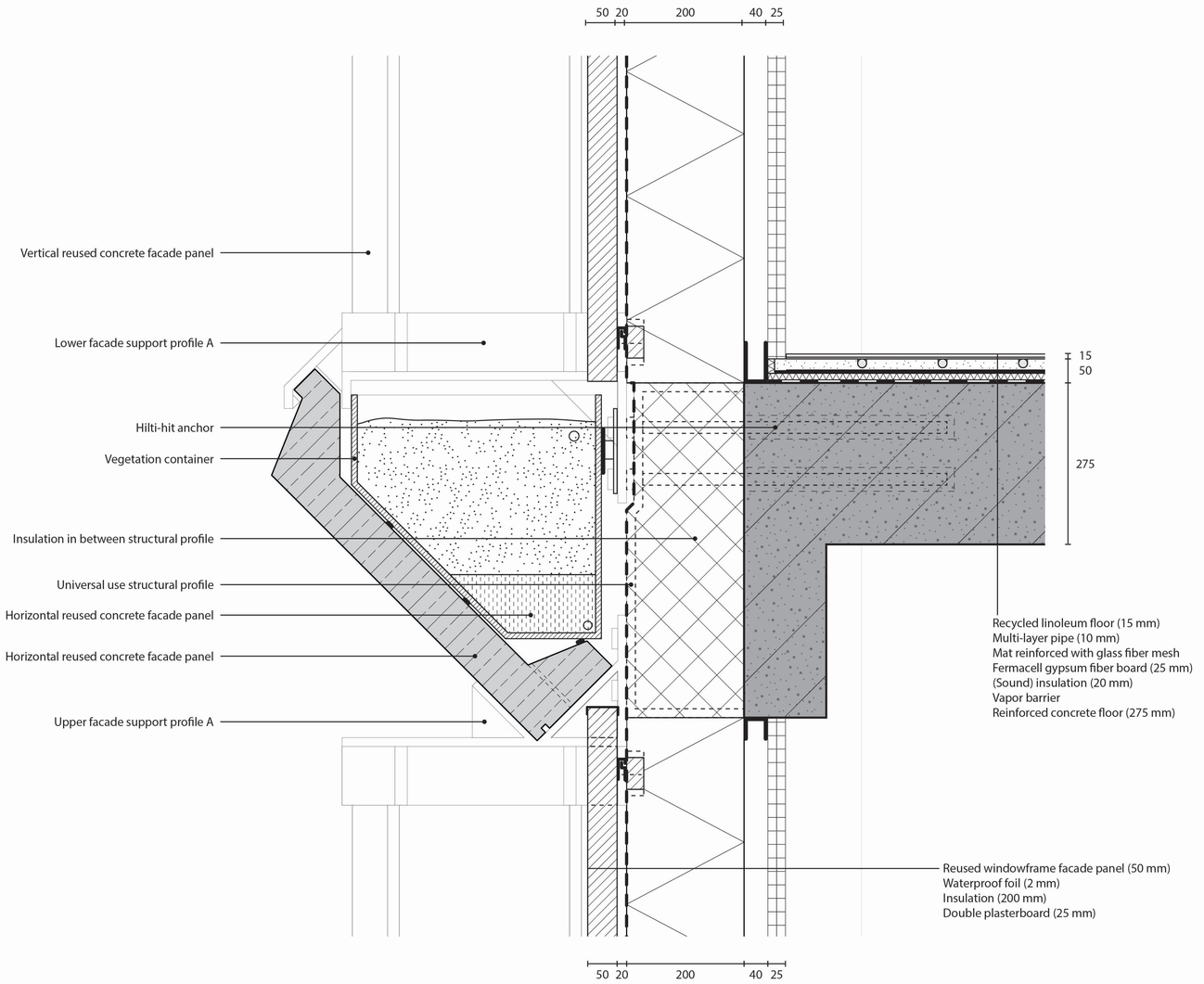


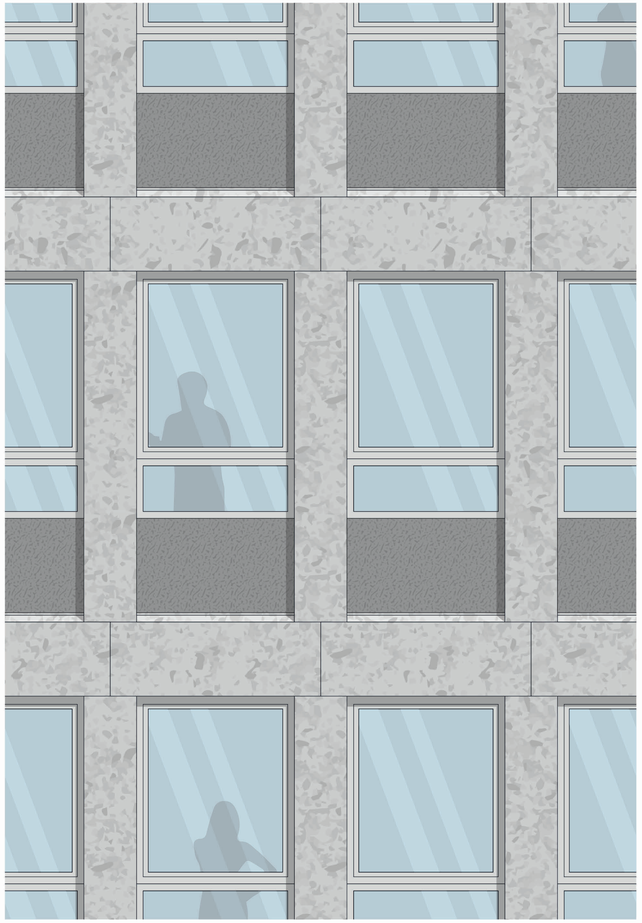


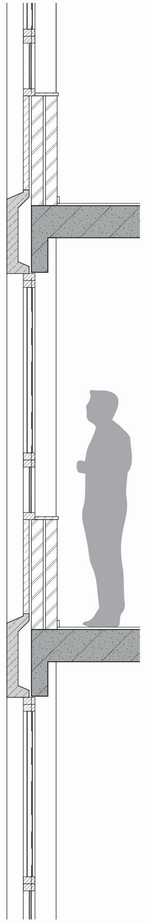


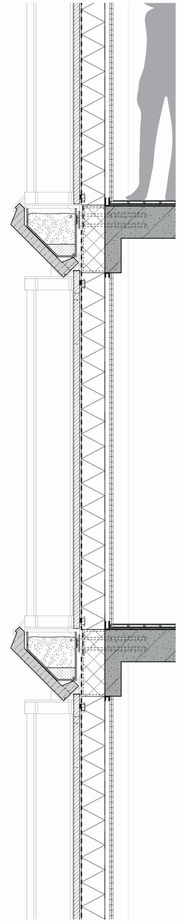


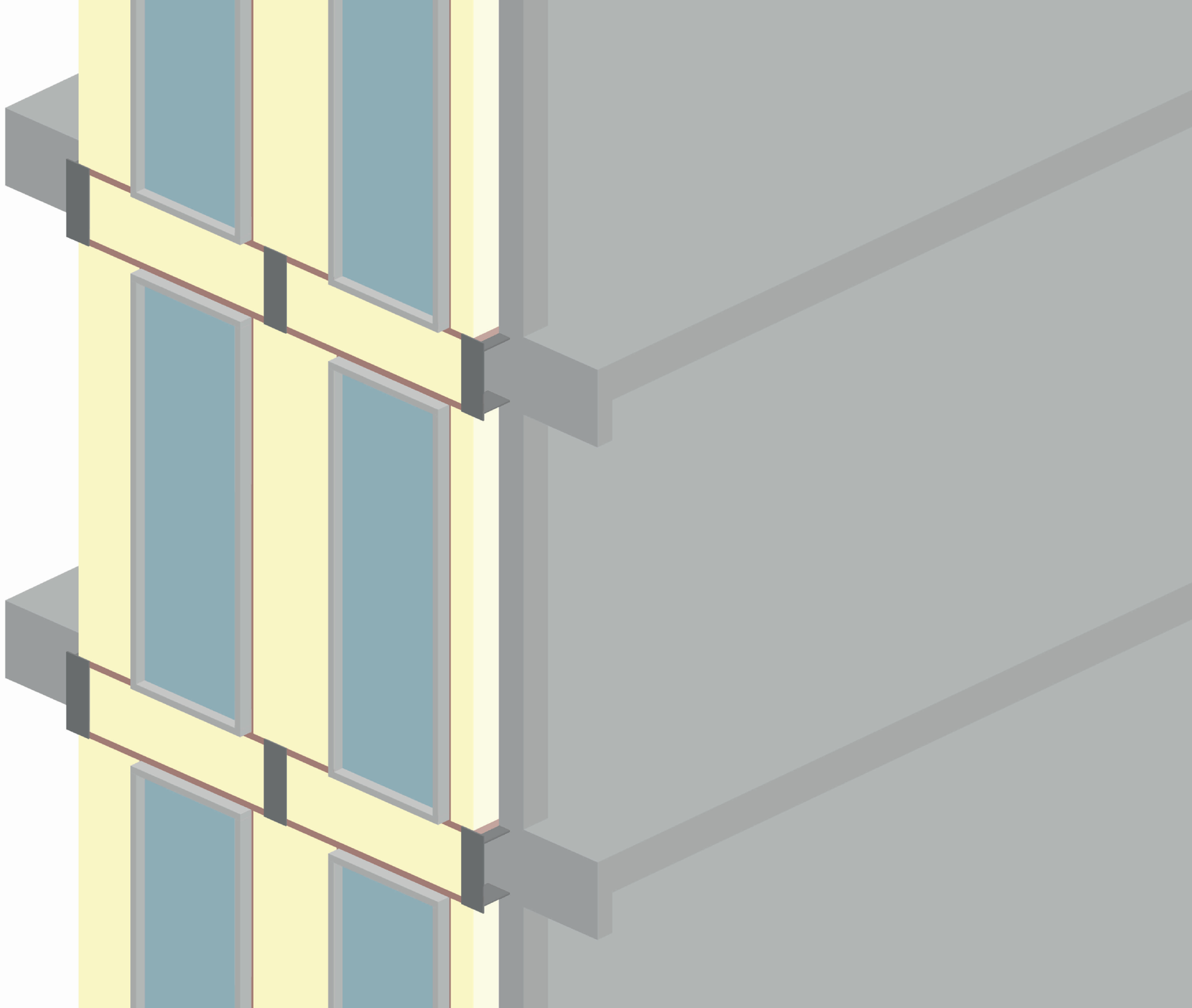


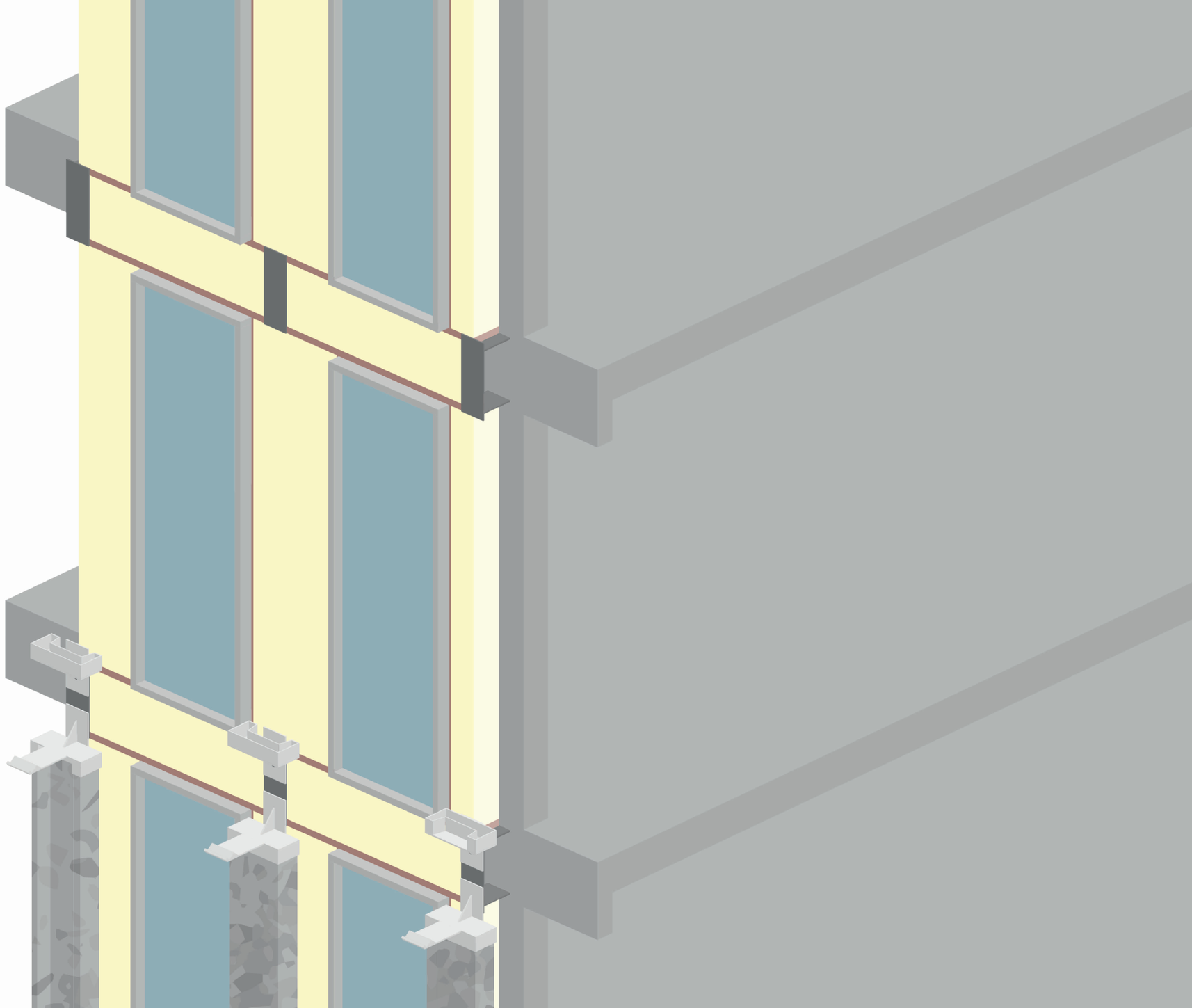

50 20 200 40 25
Vertical reused concrete facade panel
Lower facade support profile A
Hilti-hit anchor
Vegetation container
Insulation in between structural profile
Universal use structural profile
Horizontal reused concrete facade panel
Horizontal reused concrete facade panel
Upper facade support profile A
15
50
275
Recycled linoleum floor (15 mm)
Multi-layer pipe (10 mm)
Mat reinforced with glass fiber mesh
Fermacell gypsum fiber board (25 mm)
(Sound) insulation (20 mm)
Vapor barrier
Reinforced concrete floor (275 mm)
Reused windowframe facade panel (50 mm)
Waterproof foil (2 mm)
Insulation (200 mm)
Double plasterboard (25 mm)
50 20 200 40 25

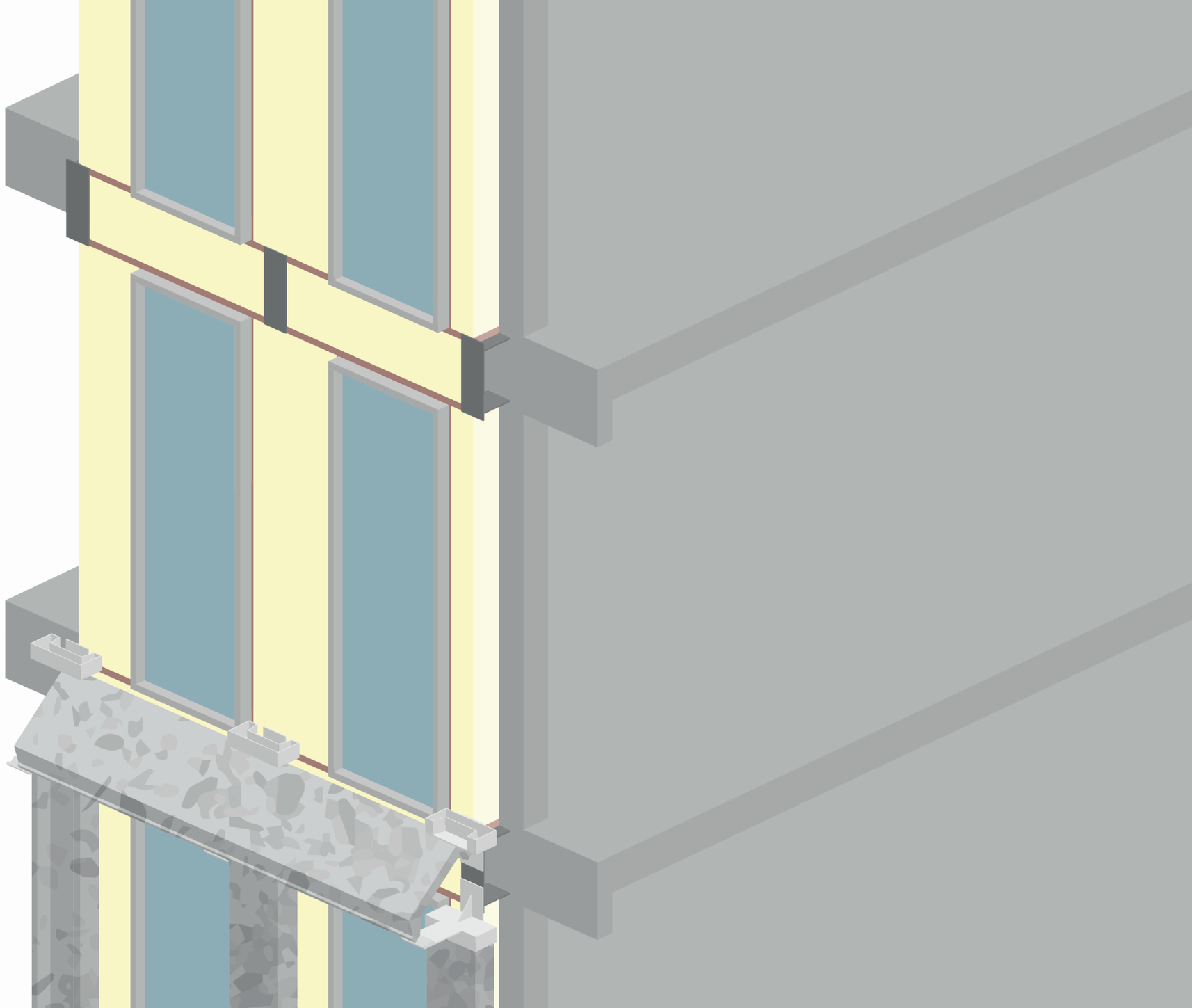


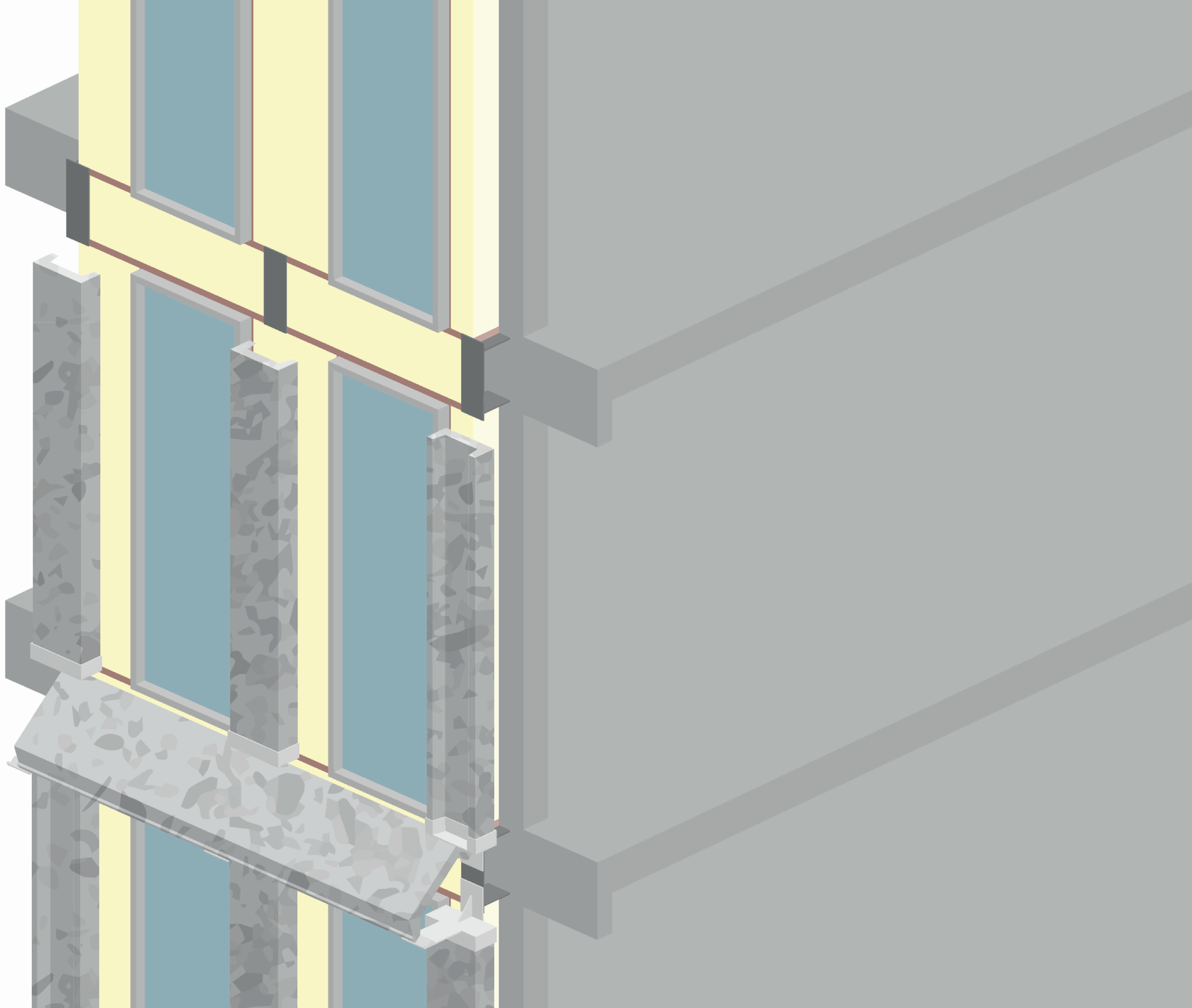


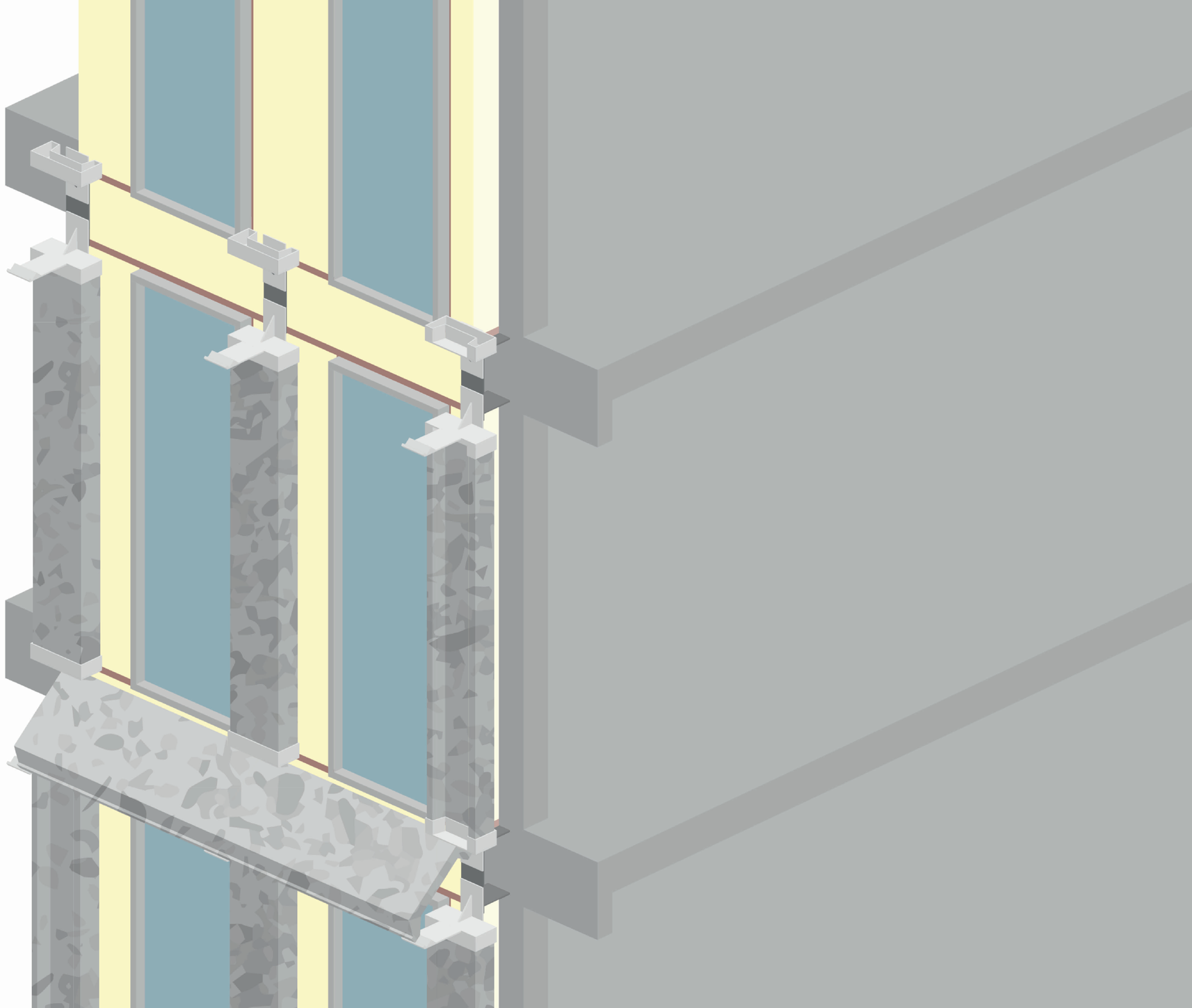


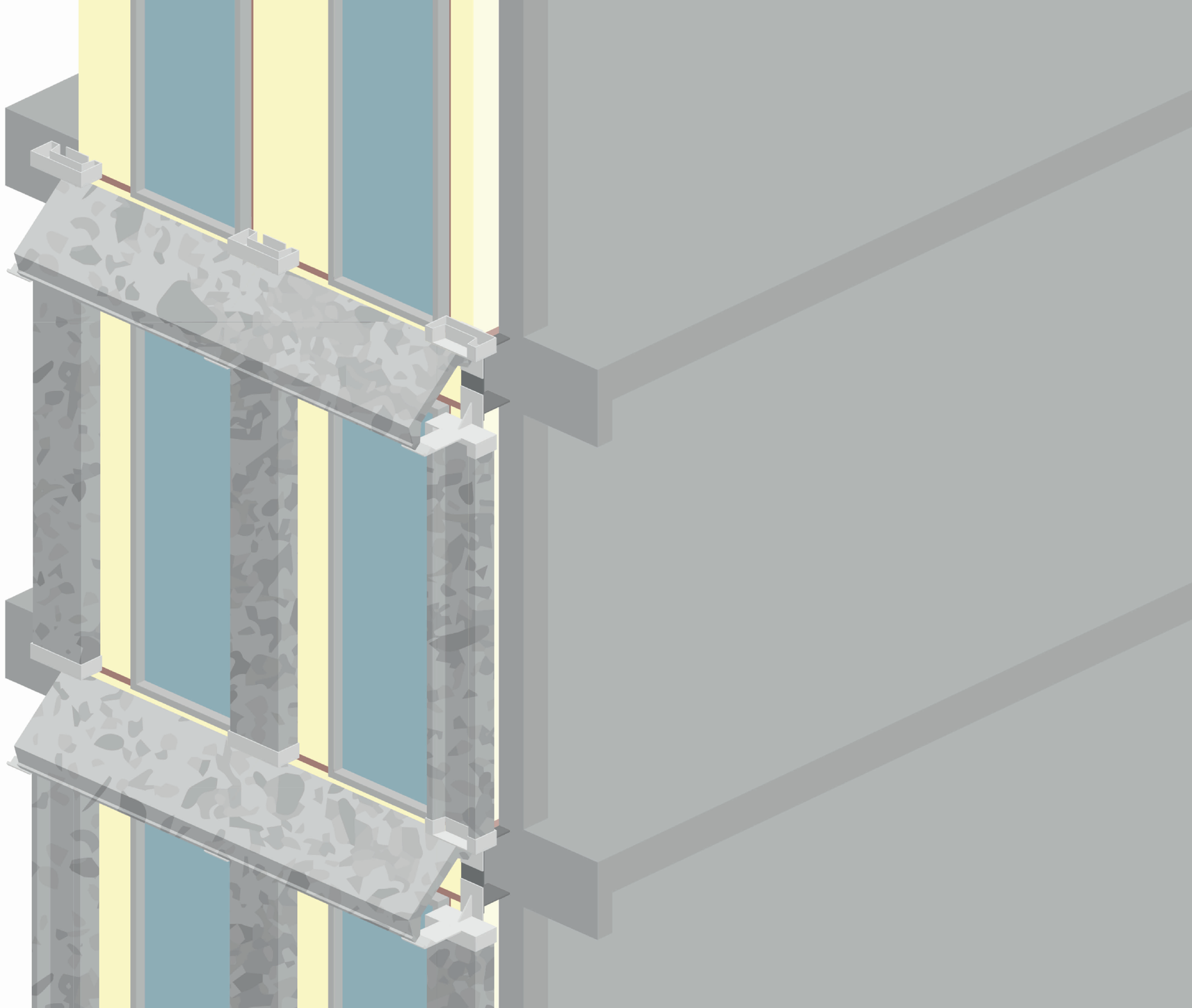


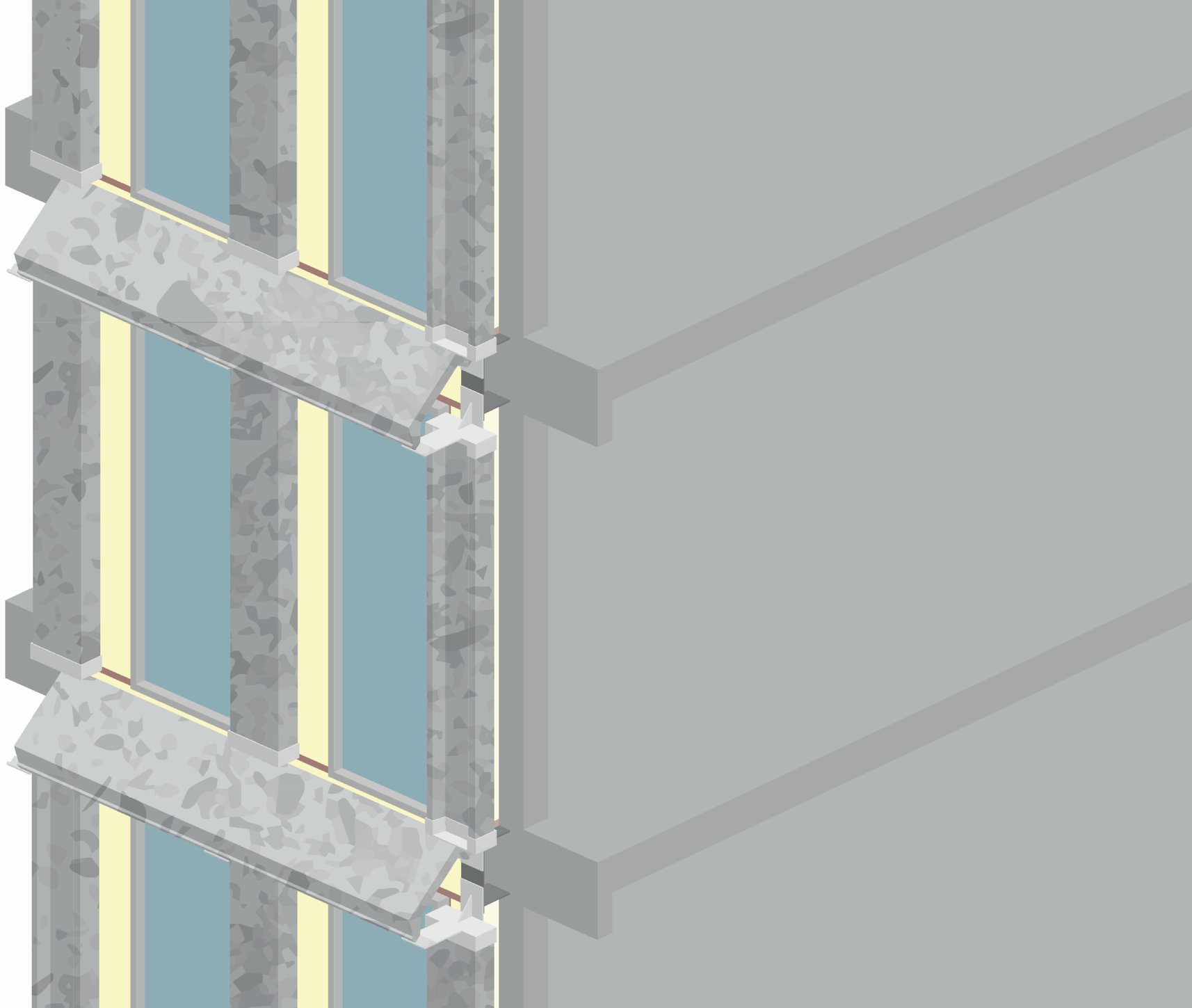


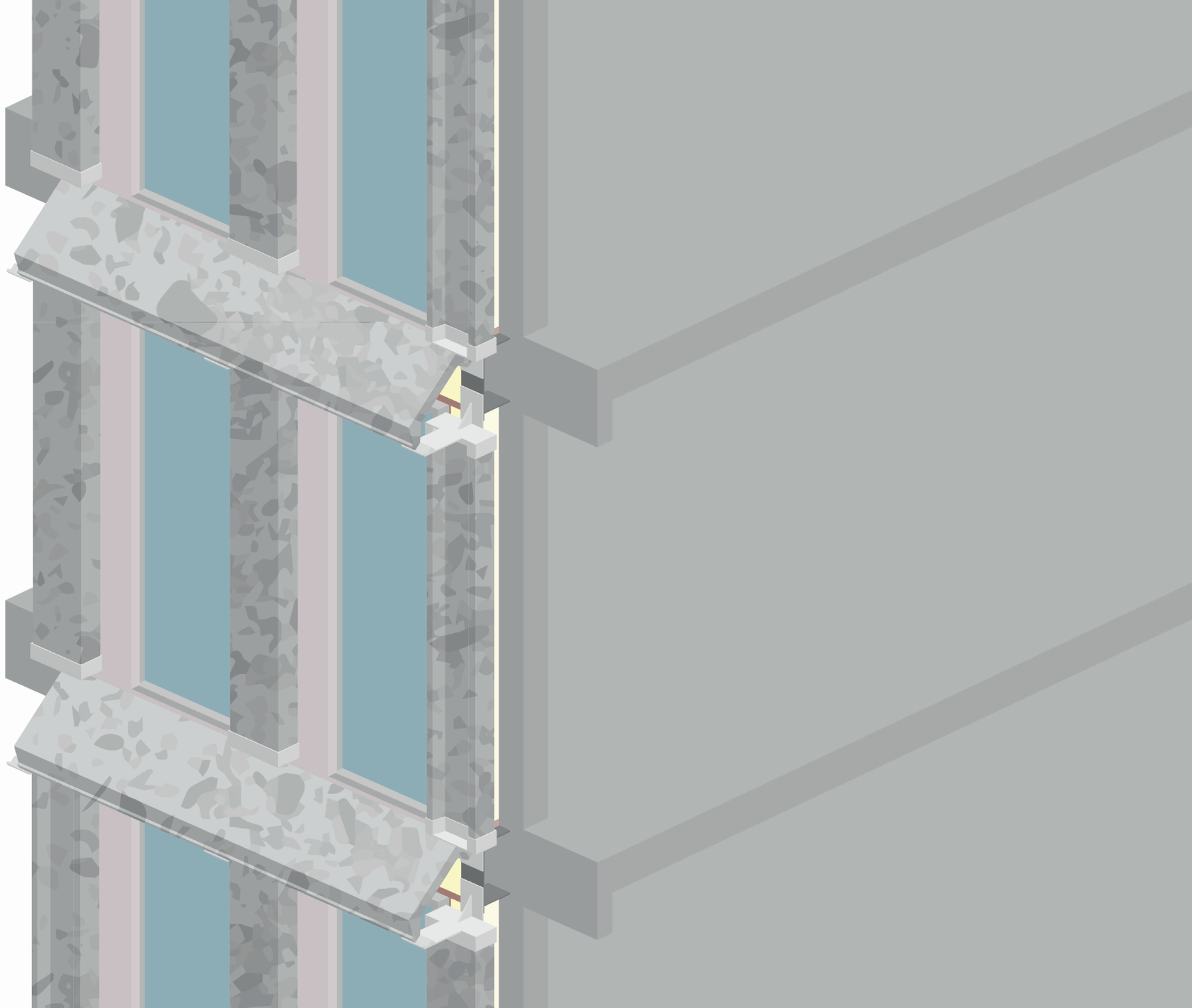


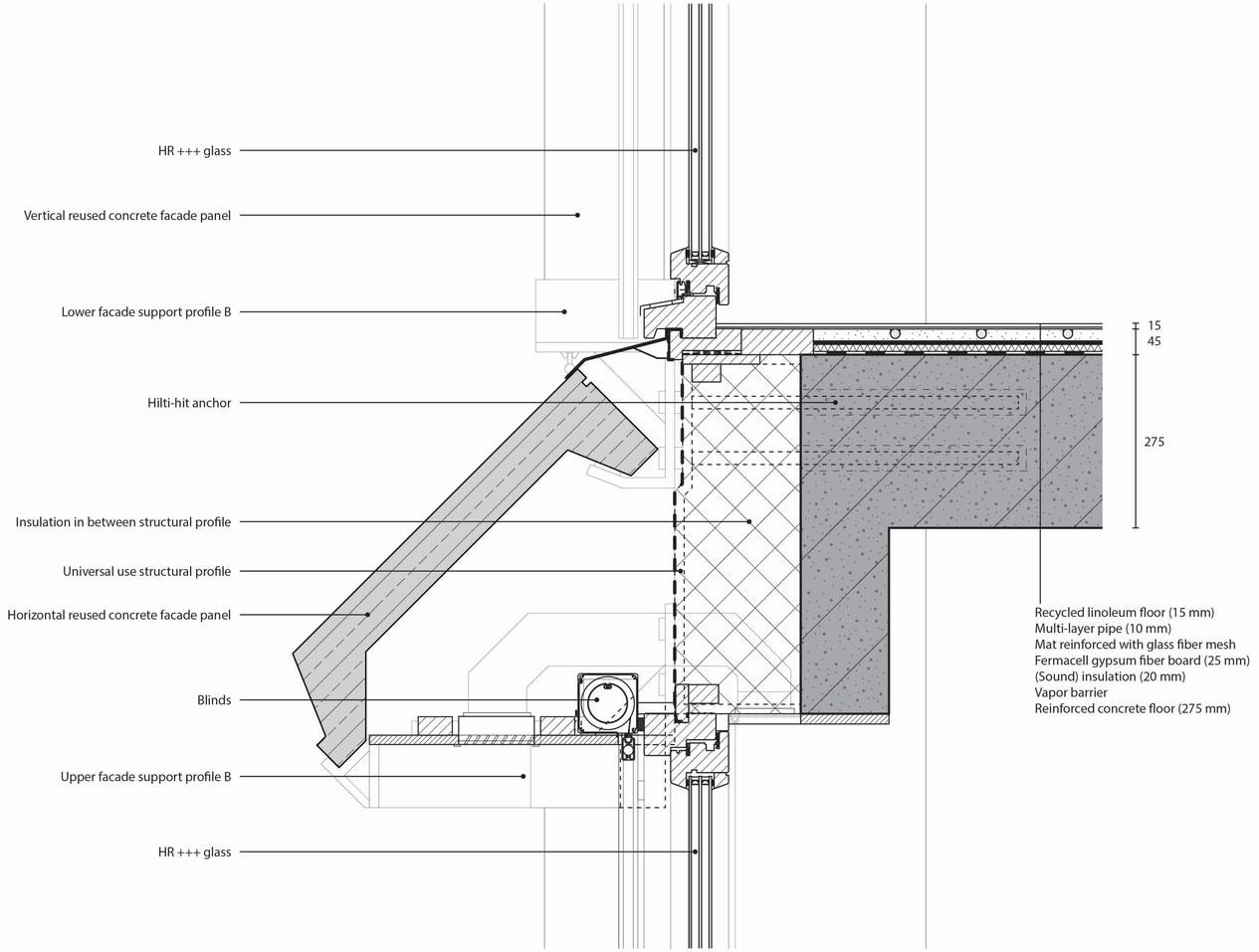


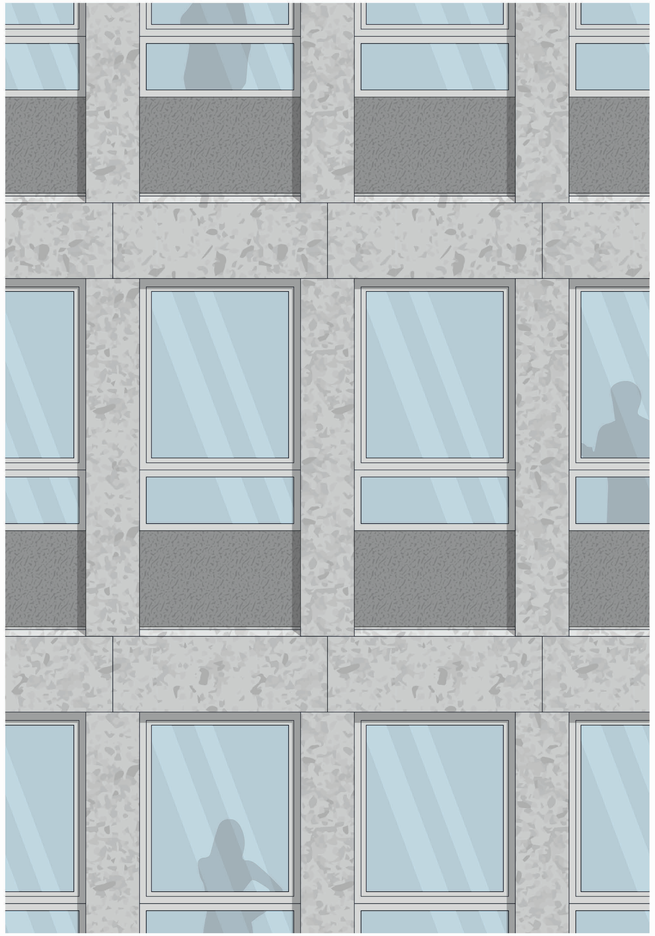


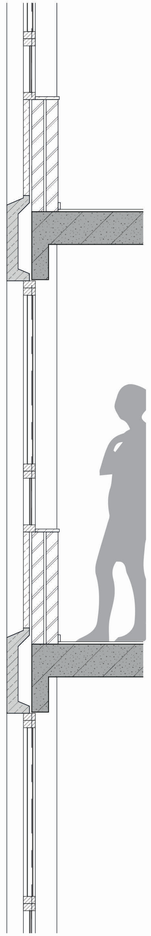


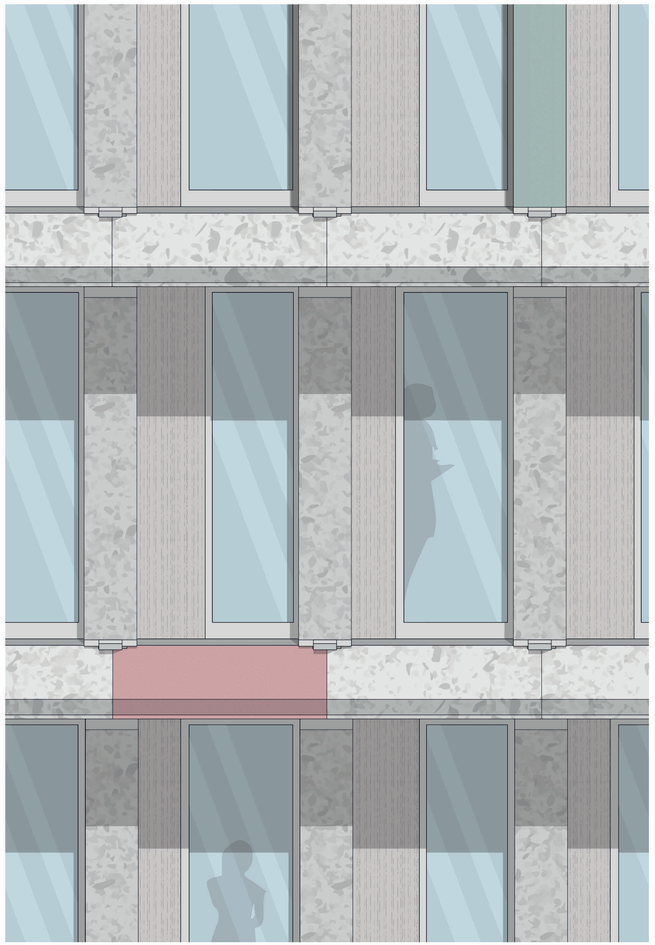


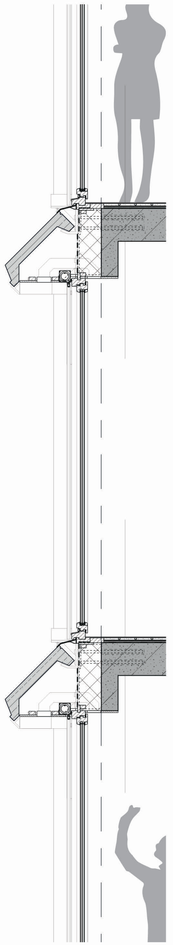


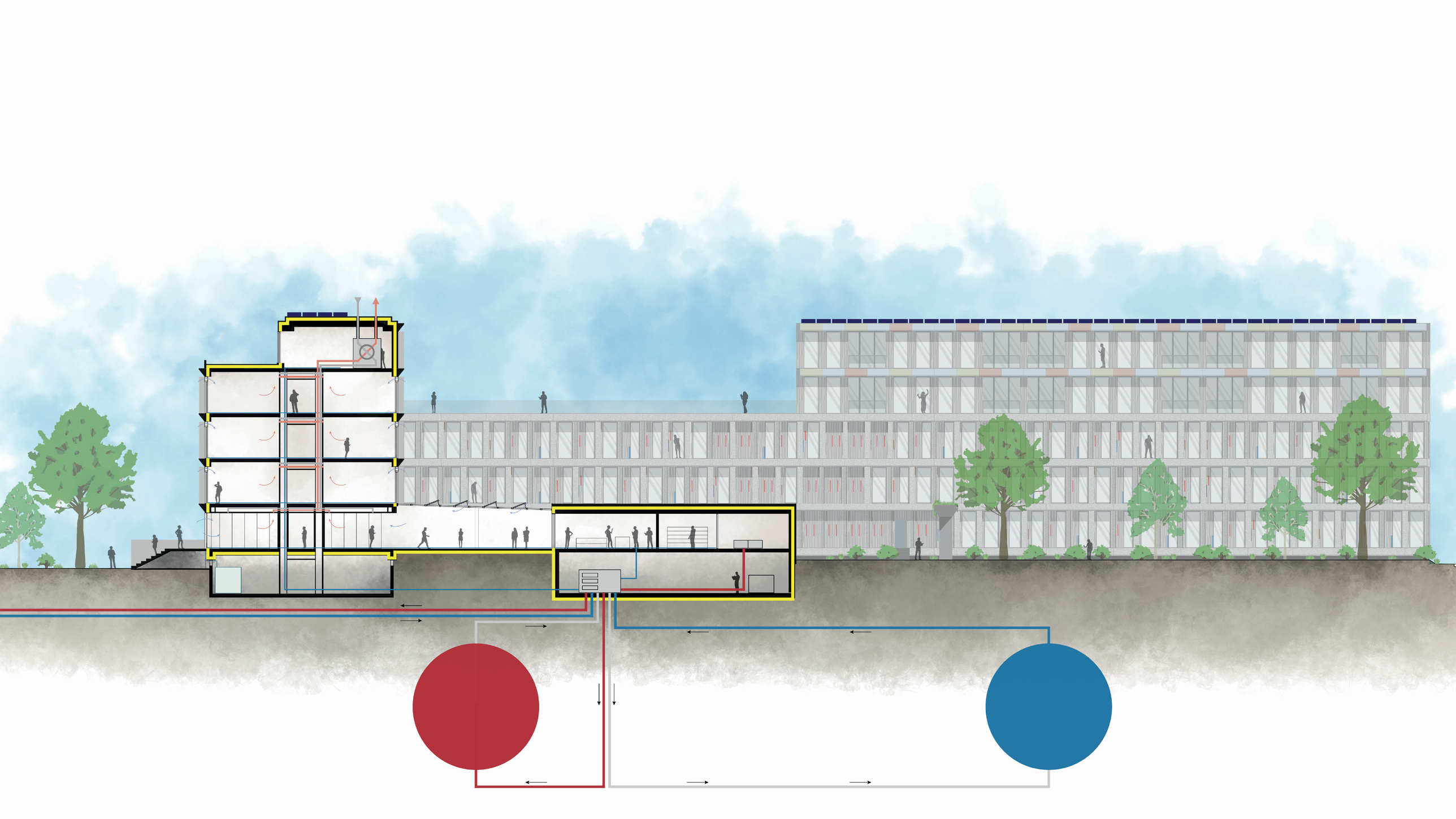

HR +++ glass
Vertical reused concrete facade panel
Lower facade support profile B
Hilti-hit anchor
Insulation in between structural profile
Universal use structural profile
Horizontal reused concrete facade panel
Blinds
Upper facade support profile B
HR +++ glass
15
45
275
Recycled linoleum floor (15 mm)
Multi-layer pipe (10 mm)
Mat reinforced with glass fiber mesh
Fermacell gypsum fiber board (25 mm)
(Sound) insulation (20 mm)
Vapor barrier
Reinforced concrete floor (275 mm)

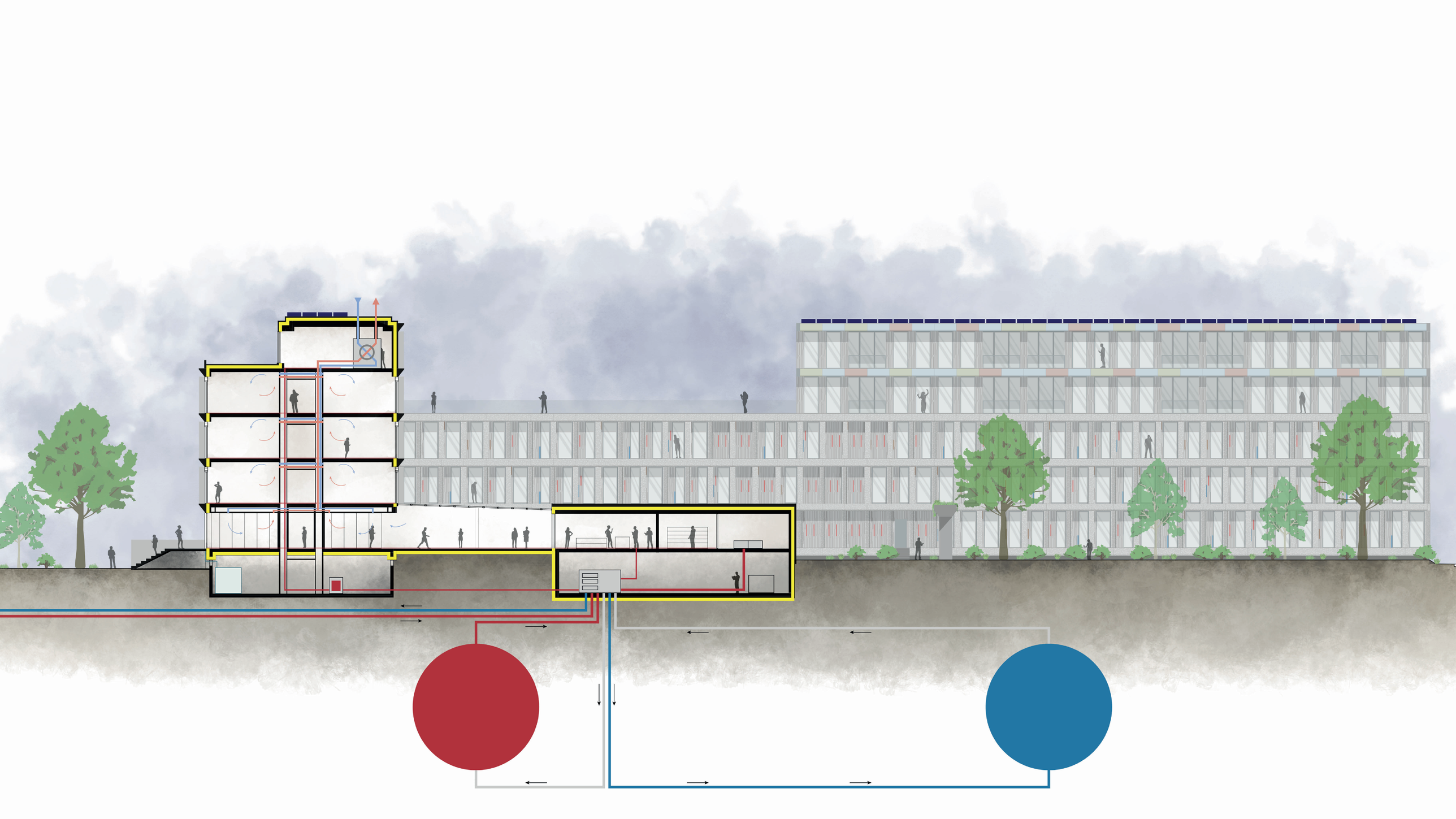












FLOOR

Linoleum, carpet tiles and natural stone are the main floor types of the building. The natural stone, found in the central places of the building can stay. Carpet tiles can be reused. The linoleum floor is however not so easy to remove. This process of scraping it off the floor leaves the material unreusable. The material can be recycled into new linoleum, a colorful and easy to clean flooring for both student housing and public functions.

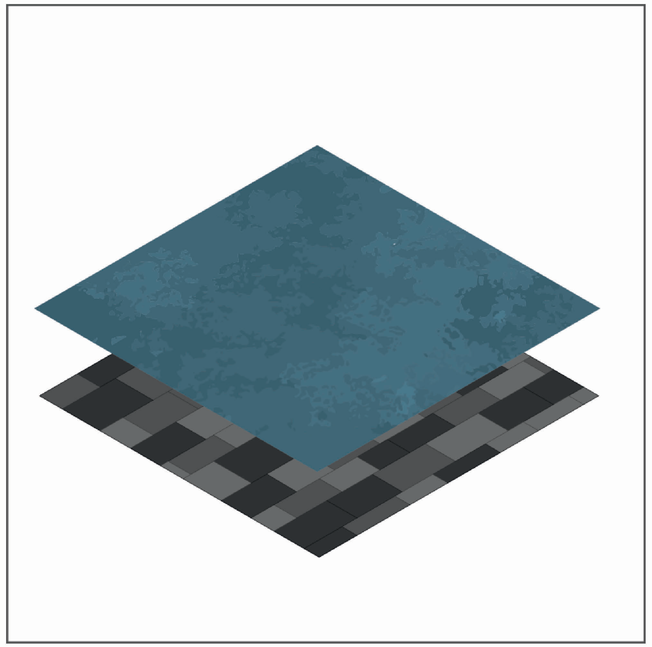
Added Value

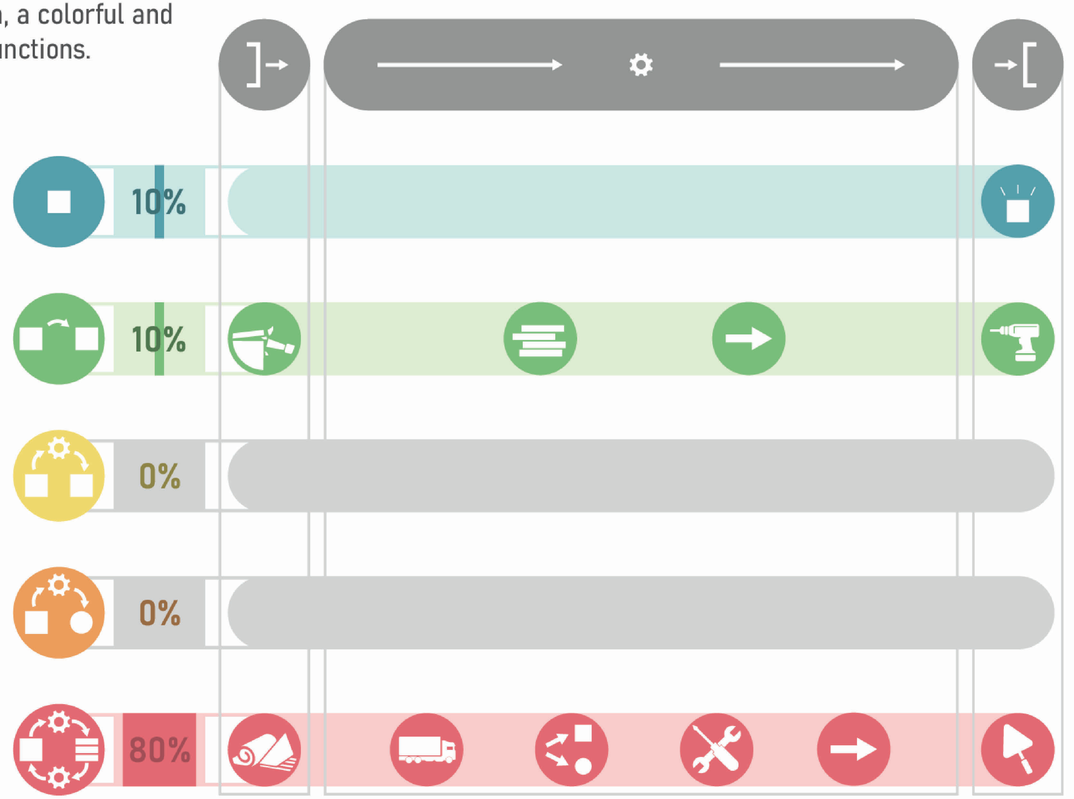
Quantity

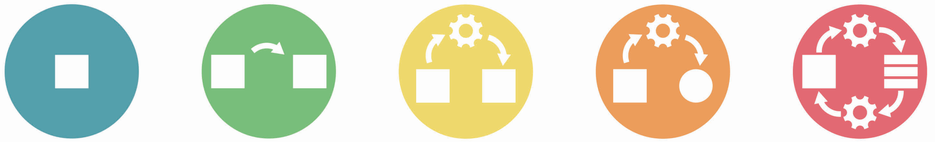
26,000 m²

15%

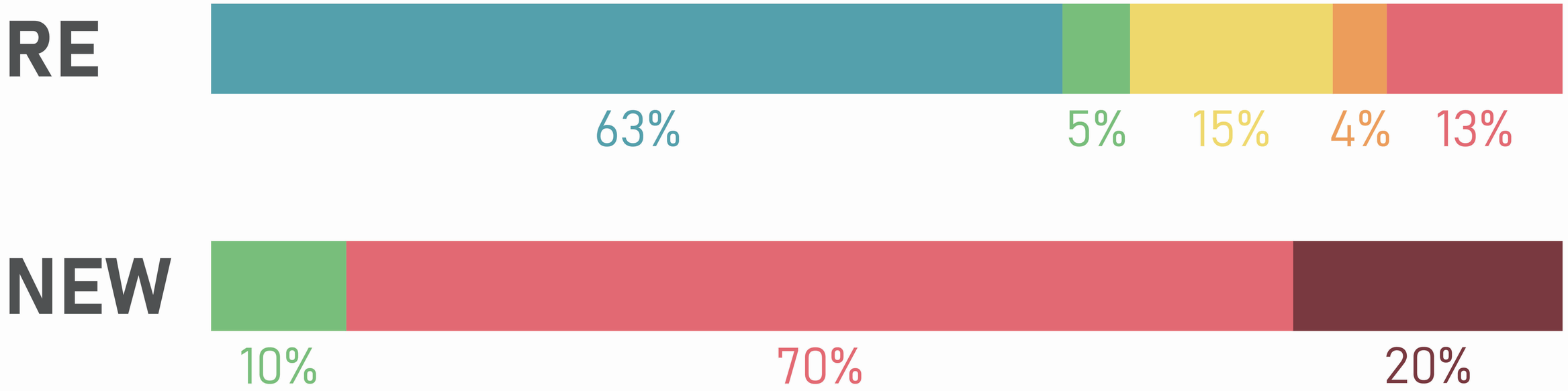
Comparison

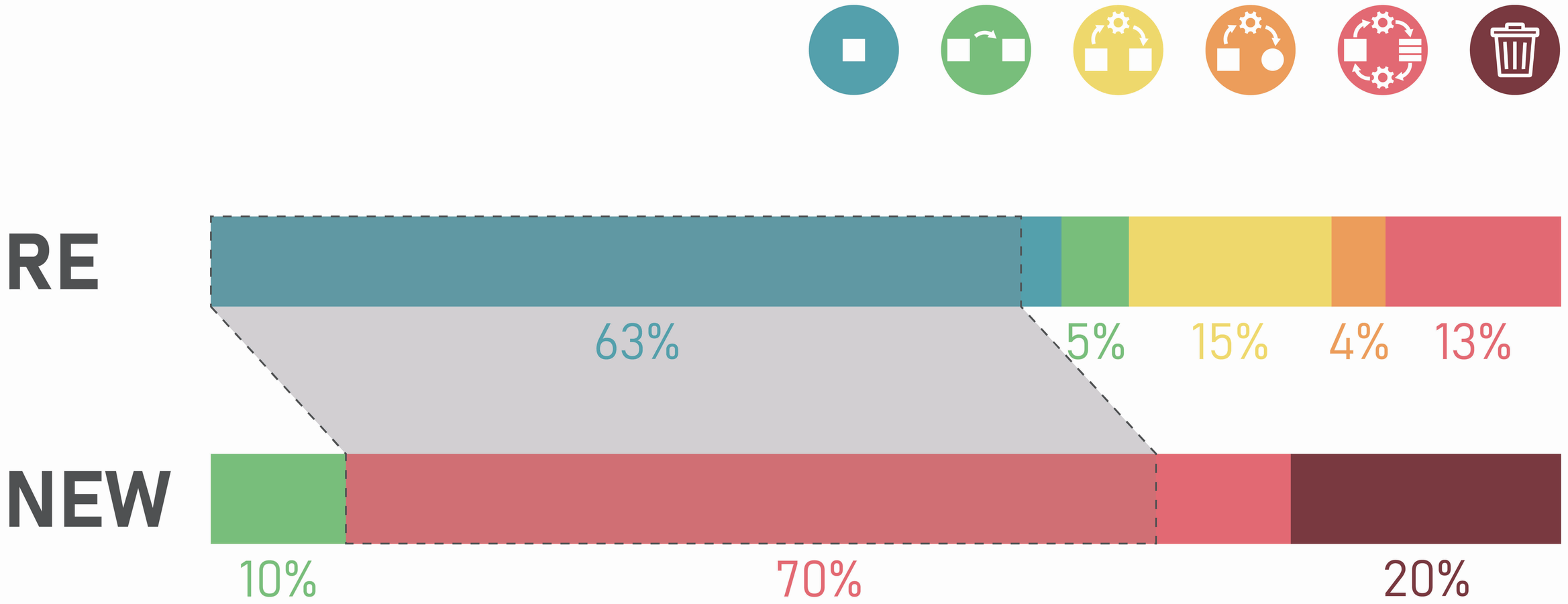


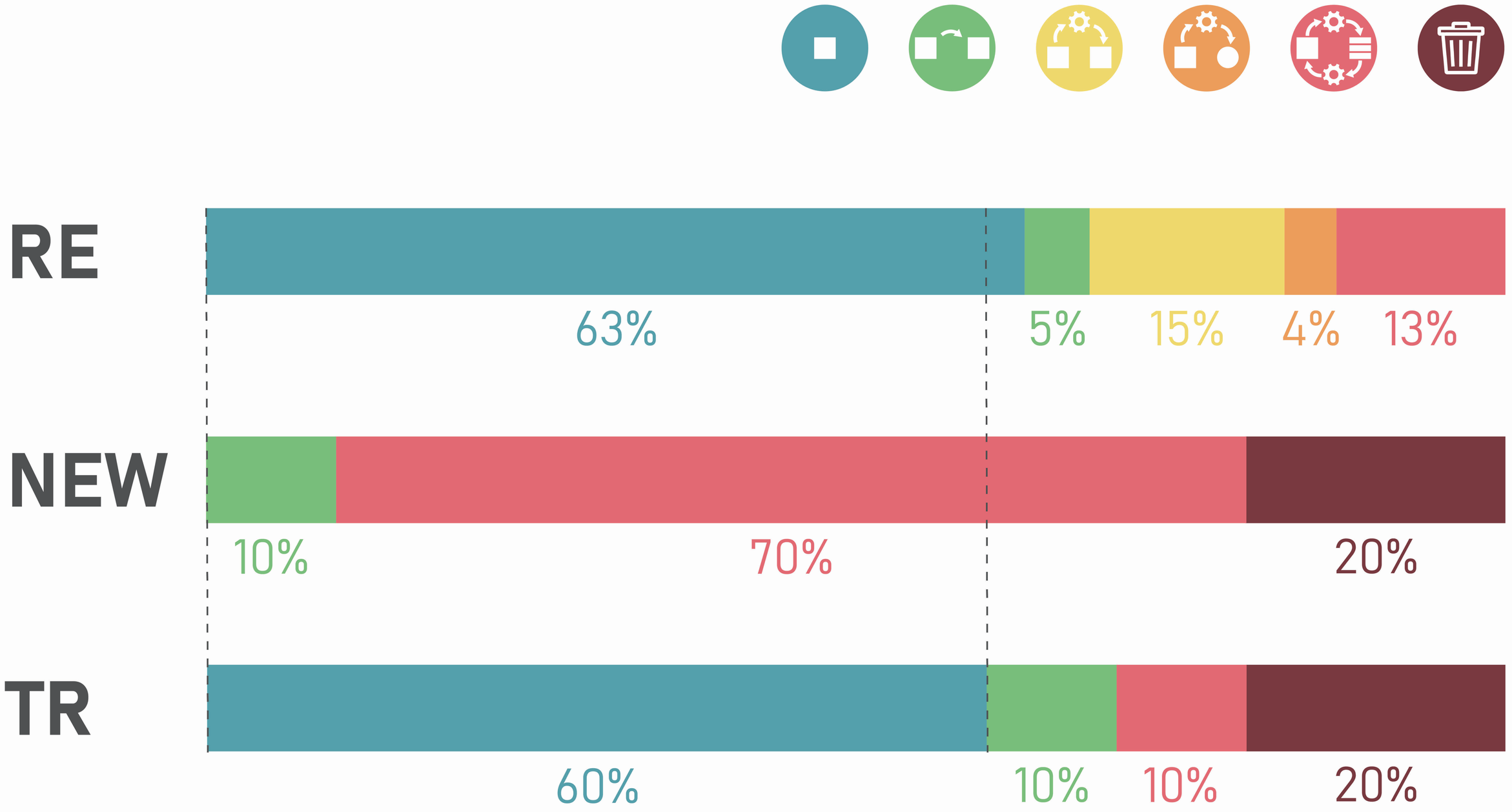




RE


RE
63%
5%
15%
4%
13%
NEW
10%
70%
20%


RE
63%
5%
15%
4%
13%
NEW
10%
70%
20%


RE
63%
5%
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NEW
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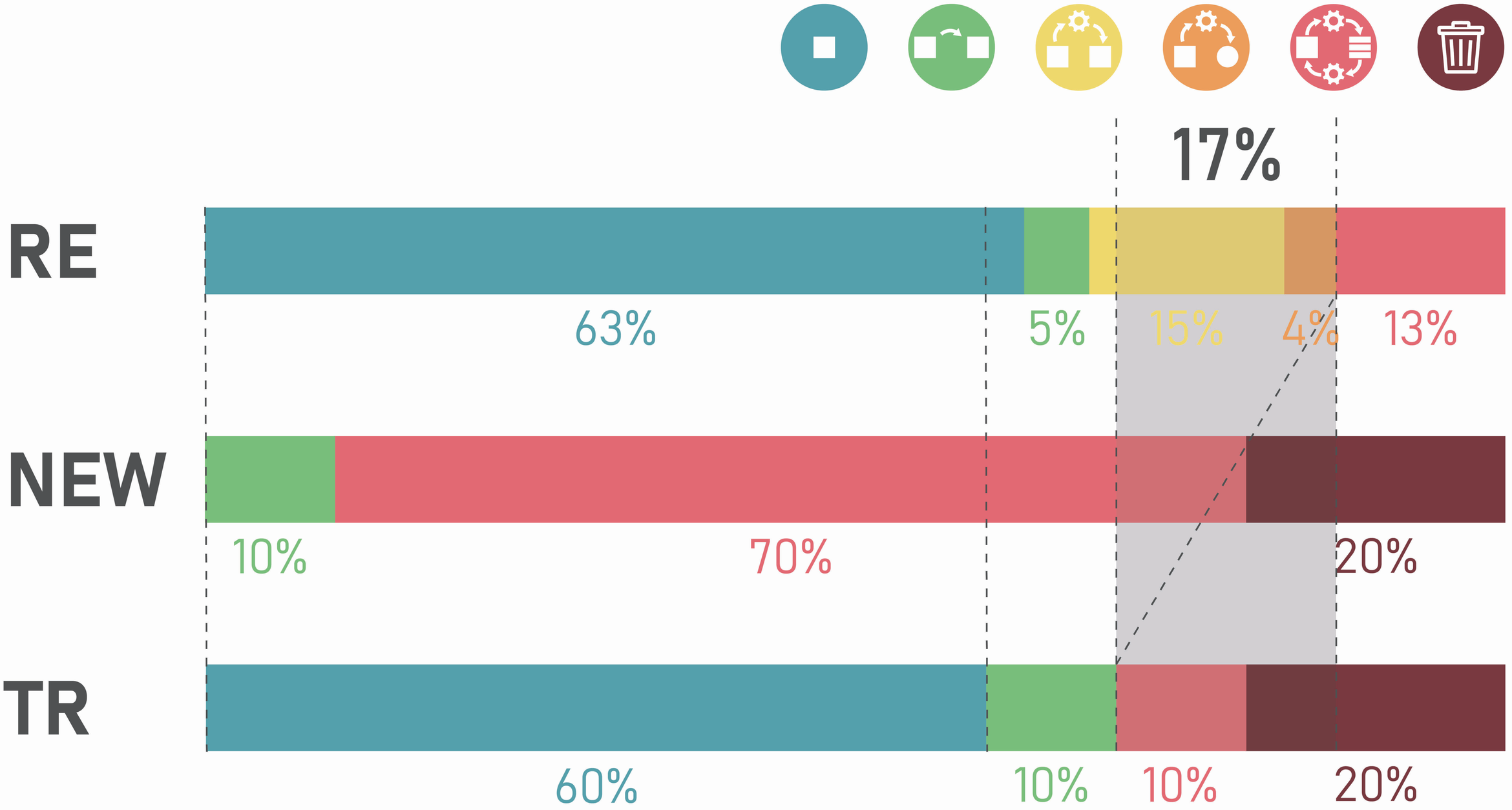
17%
RE
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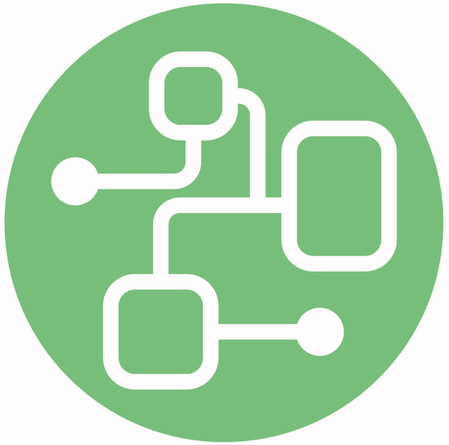
Added Value



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Comparison

Comparison

RE
APPLIED PHYSICS