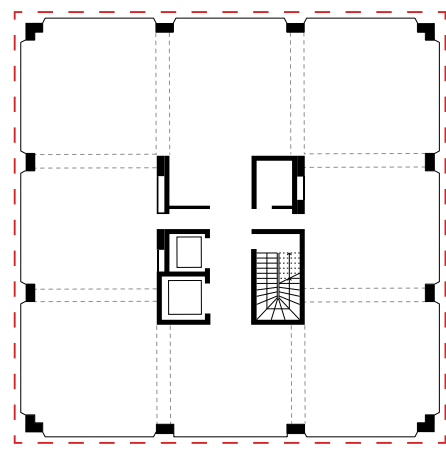
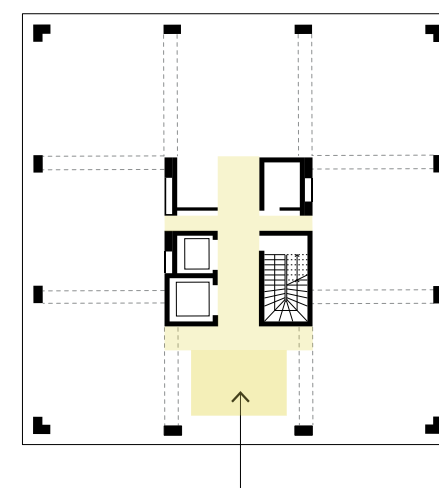


The strategy



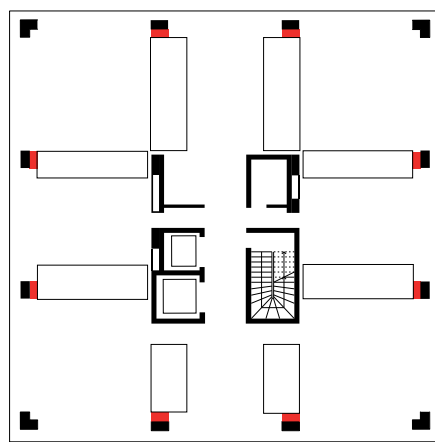
**new internal distribution
+ new perimeter**

The first point is the restoration of a **new internal distribution layout** by modifying the existing arrangement, only two lifts are needed and so the third one is converted in shaft. A **new definition** is given to **the perimeter**, this action rectifies the external lines of the existing towers and helps for the external insulation strategy of the facade.



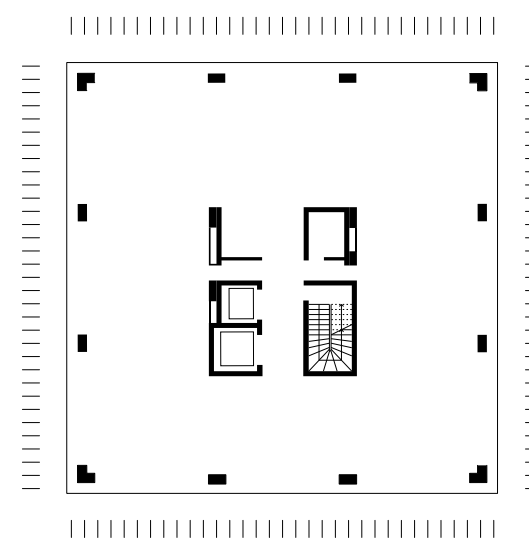
**distribution system with
direct lightening**

The second point concerns the **direct lighting system**. On each floor a part of the plan is used as a **common space**, this strategy helps also to bring direct light to the internal distribution layout without having a closed and narrow space. This space is also used as a common room with different functions on each floor.



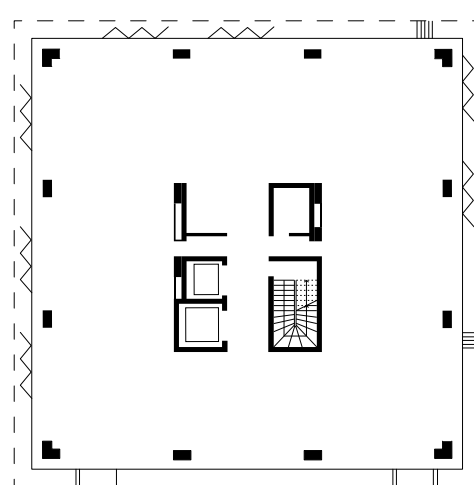
**installation strategy +
service pods**

The third point concerns the definition of the new allocation for the **installation system**. These points are located behind the central **pillars** of the towers. These points are also the allocation of the **prefabricated service pods** (kitchen, bathroom, wardrobes ...). These lines will also be the separation limits of the different units.



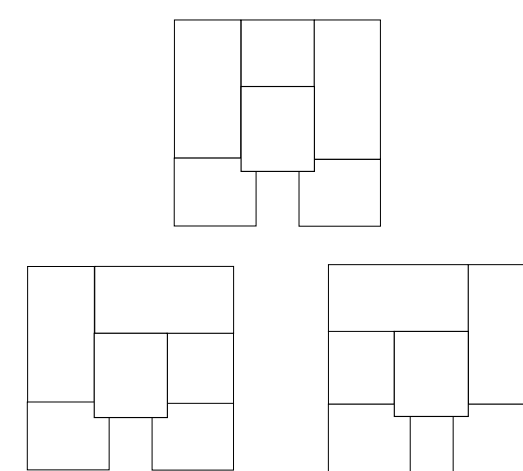
**plan and elevation based
on a modular system**

The fourth point concerns the **modular system** that is used for the composition of the plan and of the facade. The whole system is based on a unique **module of 77 cm**. The façade is therefore characterized by prefabricated modules of a well-defined size: windows, shading panels, opaque panels, and also the size of the loggias.



**modular envelope: protection against
sun, wind and noise pollution**

Based on the modular strategy the fifth point is the envelope that is characterized by **perforated metal panels**. These **modular elements** can be folded and act like a protection system that helps for the summer days as a **shading element** and for the **noise pollution** given by the really close highways.

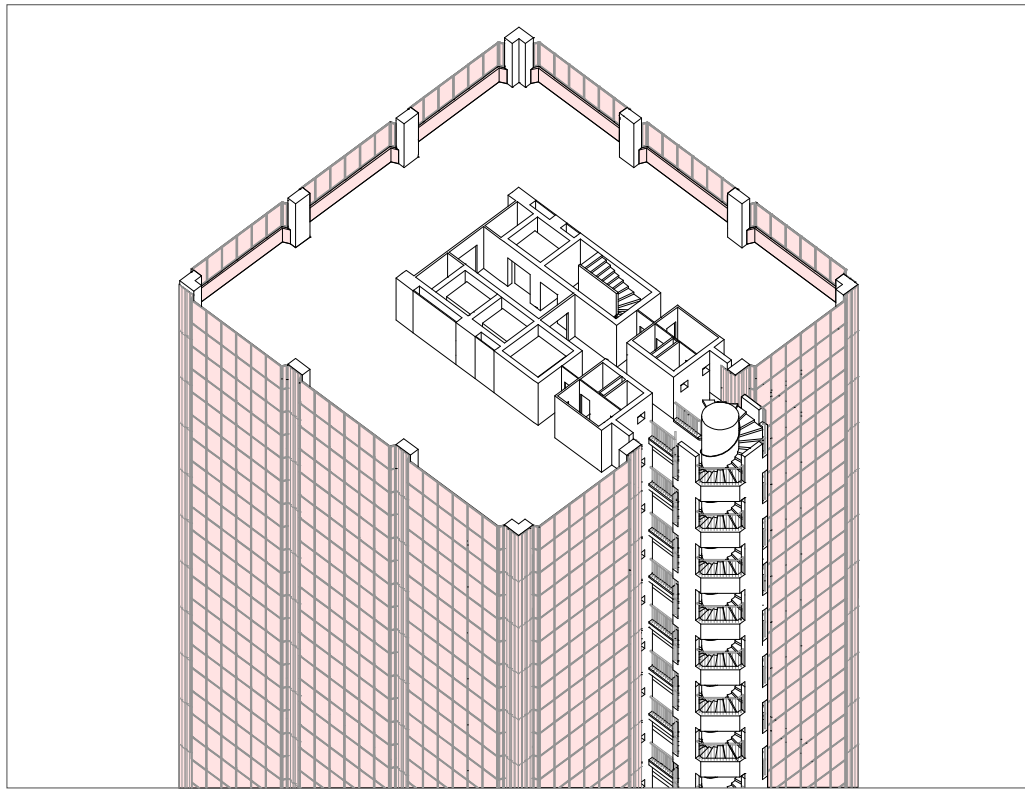


different units and layout

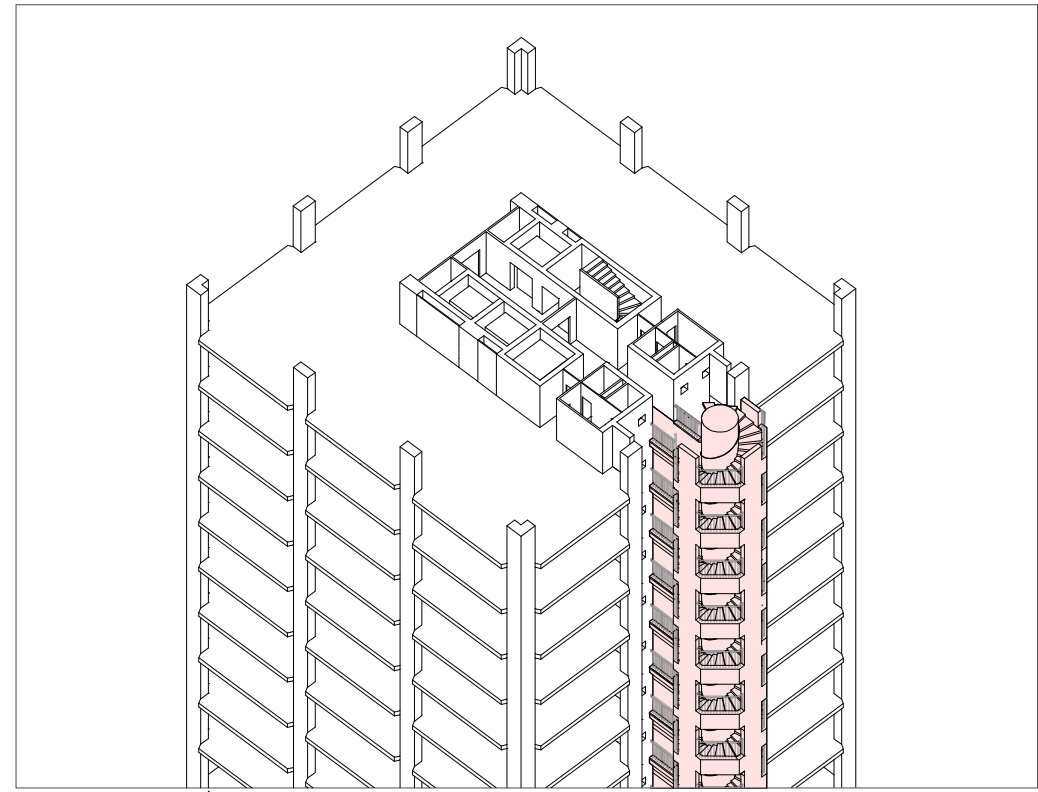
The last point concerns the division of the single apartment units. The purpose is to create **different unit types** that can therefore satisfy the request of different types of users. Furthermore, this interchangeability of the units produces a **dynamism** that is recognizable also on the outside, on the façade system.

Meta-Morphosis

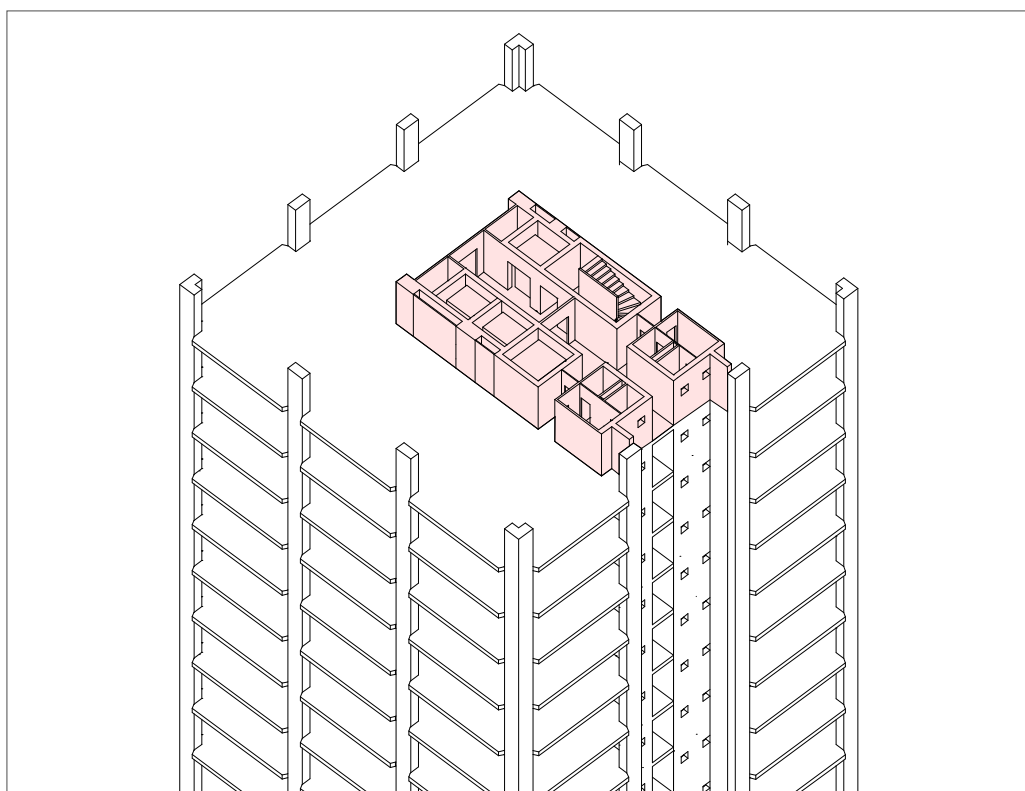
Storytelling
The narrative construction process - part 1



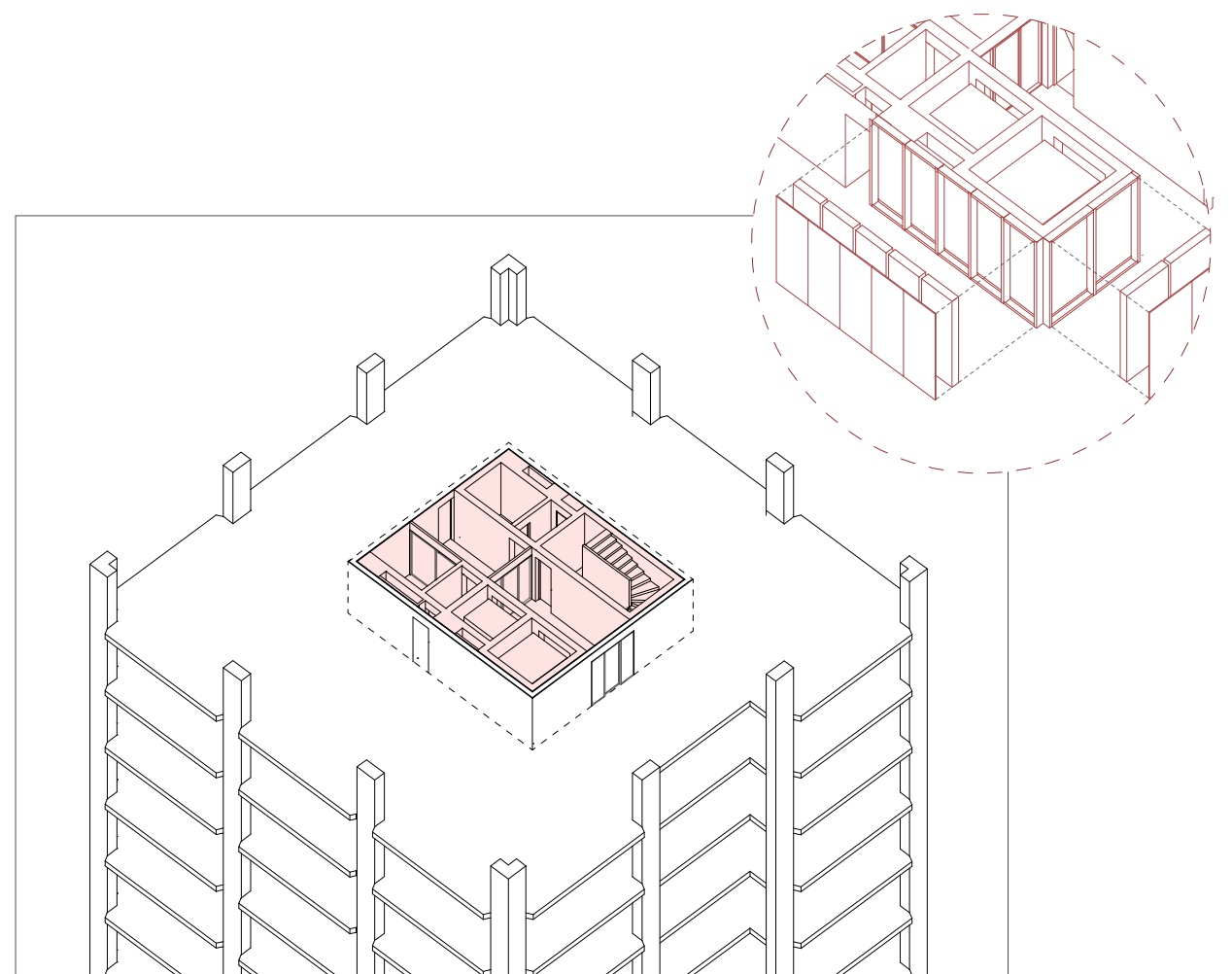
1. The first step is the **removal of the continuous existing curtain wall** that covers all the facades.



2. Now that there is a **concrete framed structure** without the existing curtain wall system. The second point is the demolition of the emergency staircase located on the south side of the building.

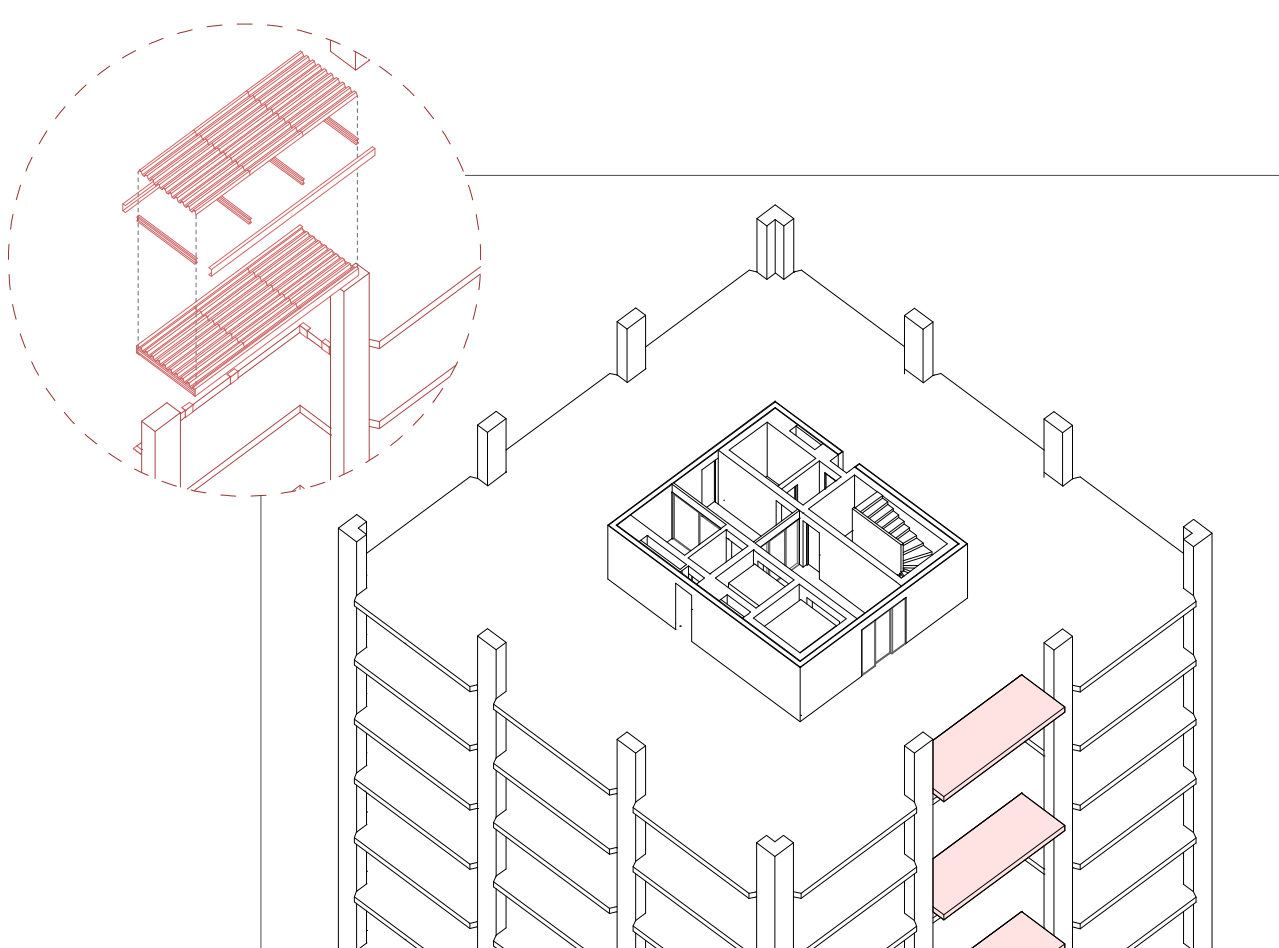


3. The third step is the **change of the internal layout of the core**. The bathrooms are eliminated, 2 of the 3 existing elevators are reused and the third is used as a technical space and to transform the internal staircase into a smoke-proof staircase.



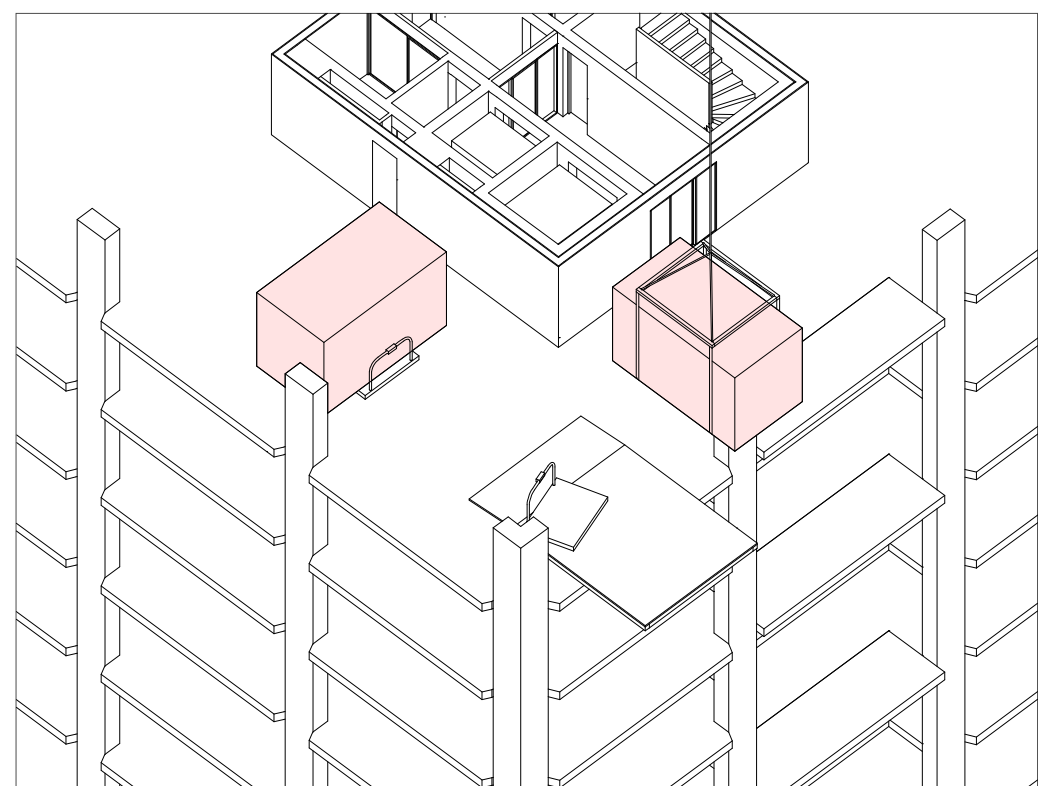
4. When the internal layout is fixed, there is the need to add a **new isolation layer** against the existing core structure.

Stratigraphy of the insulation layer _25 cm:
double sheet of plasterboard 2.5 cm, load-bearing frame in larch filled with rock wool insulation 20 cm and plaster fiber plate with white plaster finish 2.5 cm.



5. At this point we have the addition of a **new portion of missing slab** on the fire staircase side. A new steel structure is added to the existing concrete slab.

Layer of the slab:
steel beams + corrugated metal sheet

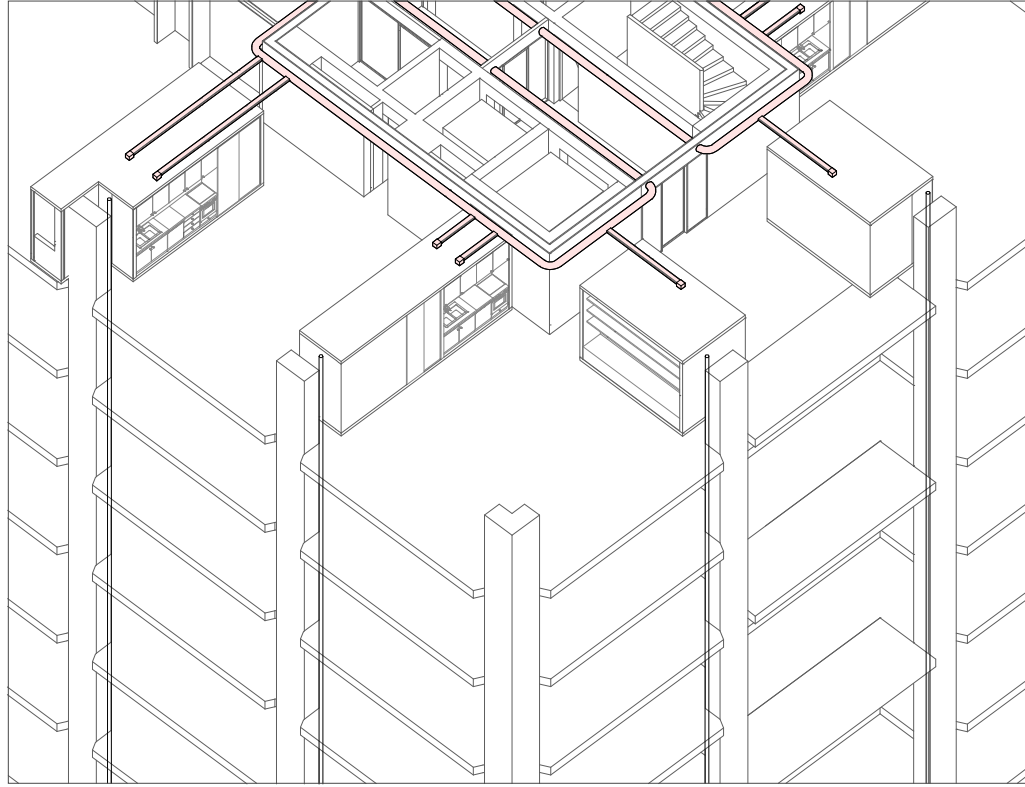


6. Now the floor is ready for the **insertion of prefabricated service pods** through the use of a **crane loading platform** installed into the concrete framed structure. The pod then is positioned onto special rollers in order to be rolled into its final position. When the pod is in its final position, the rollers are released using of standard hydraulic jacks.

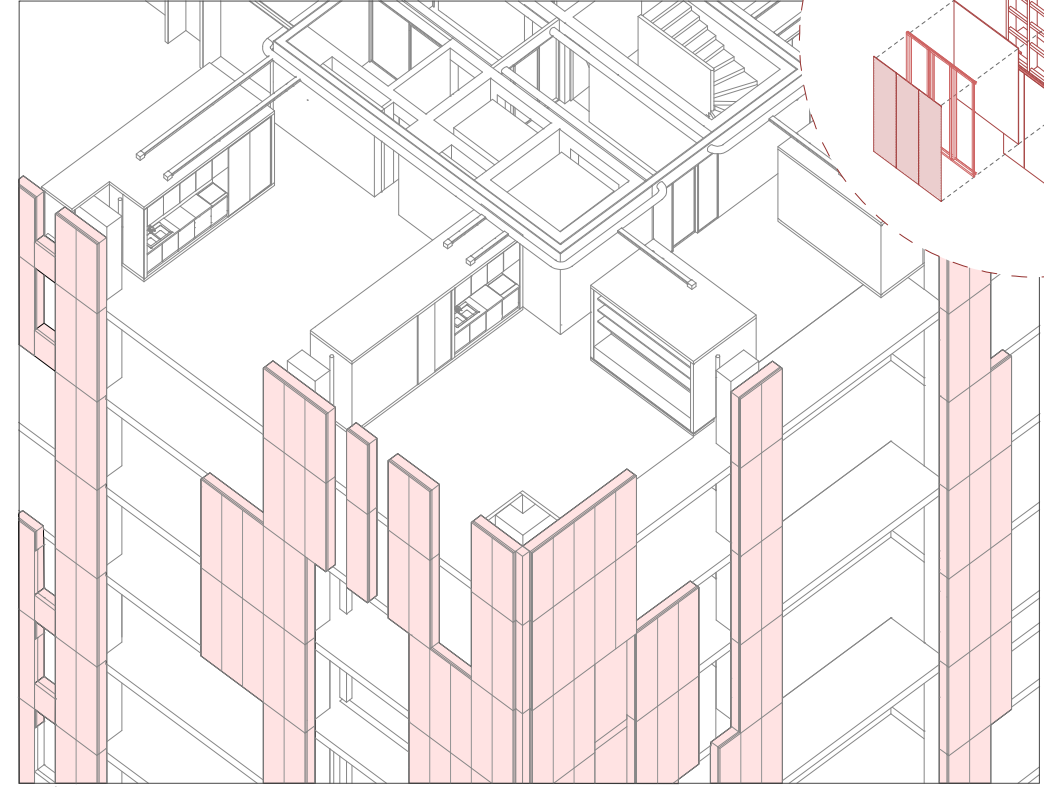
Meta-Morphosis

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Storytelling
The narrative construction process - part 2



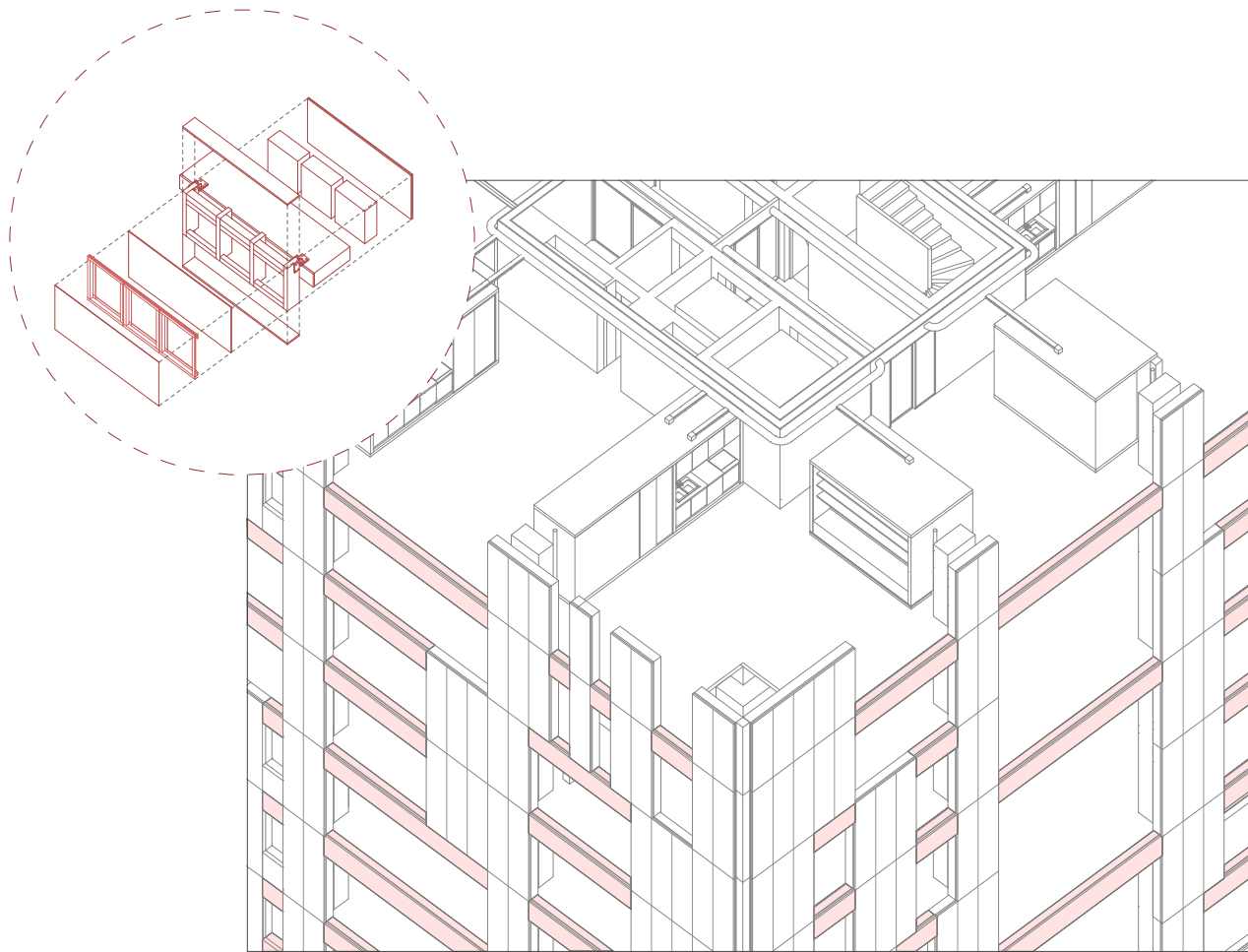
7. When all the pods have been installed they are ready to be **connected to the building services**: to the water disposal, to the electricity systems and to the air circulation system.



8. Then we have the **hooking of prefabricated façades modules** to the concrete frame structure. The first modules that are mounted are the **opaque modules**, thanks to the hanging system.

Stratigraphy of the opaque modules _35 cm:

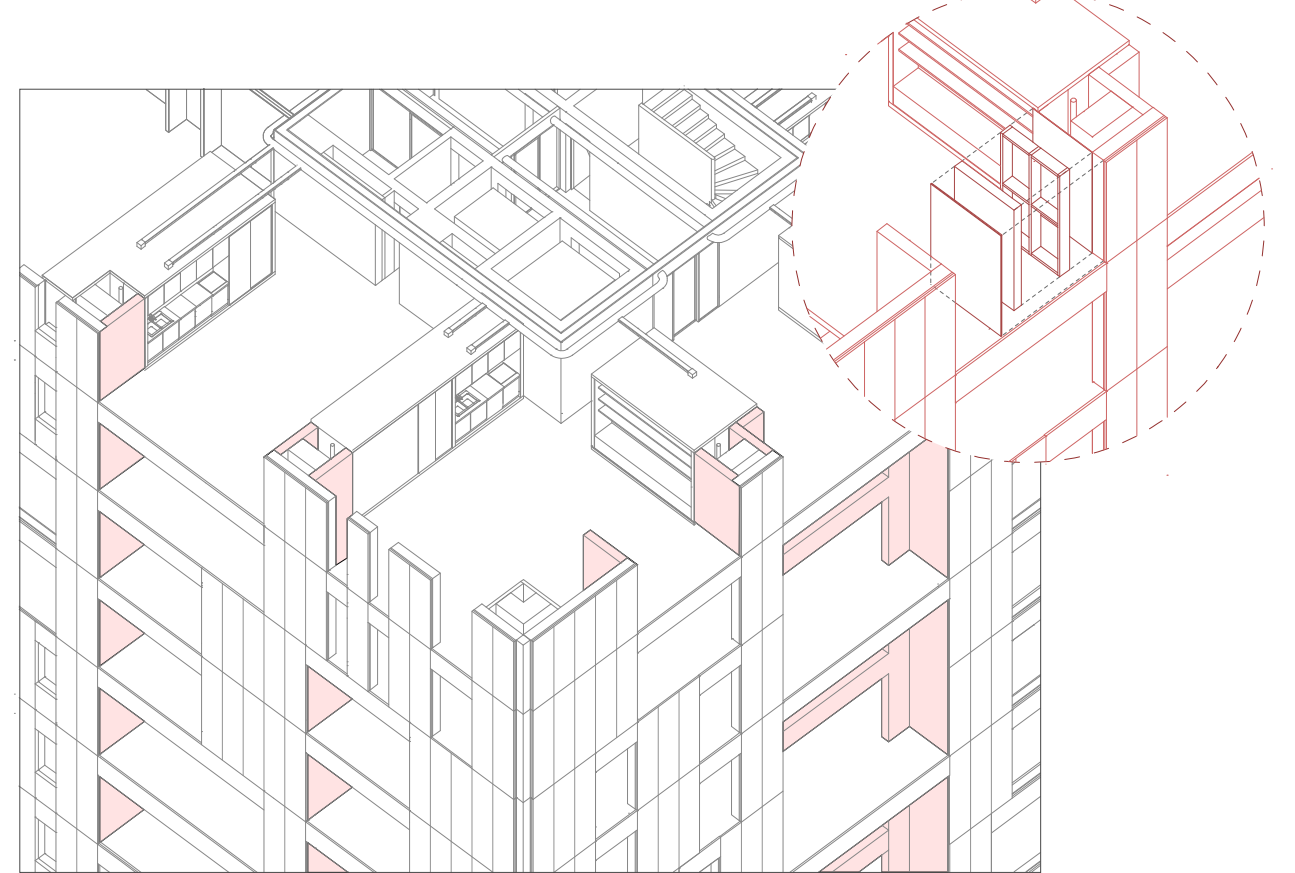
fermacell board 1.5 cm, central layer of 26 cm consisting in load-bearing frame in larch filled with rock wool insulation 26 cm, fermacell board 1.5 cm, vapor sheath, metal cladding system 6 cm with closing perforated metal panel



9. After it's the turn of the **prefabricated band modules**.

Stratigraphy of the band modules _35 cm:

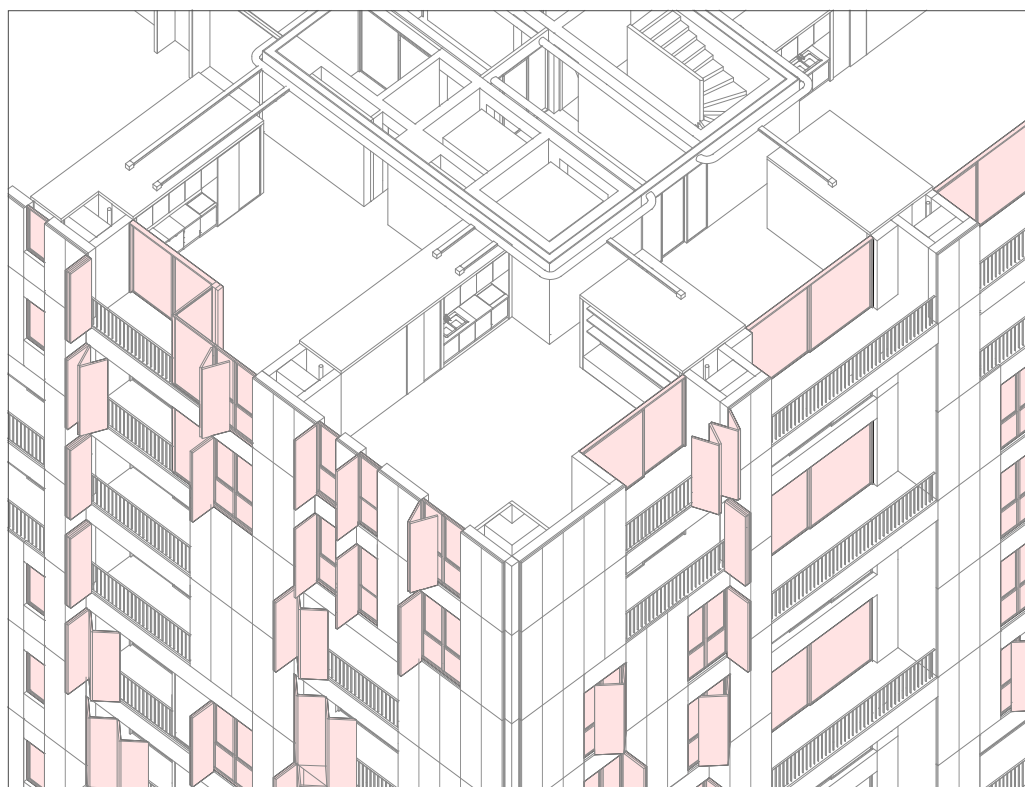
fermacell board 1.5 cm, central layer of 26 cm consisting in load-bearing frame in larch filled with rock wool insulation 26 cm, fermacell board 1.5 cm, vapor sheath, metal cladding system 6 cm with closing metal panel



10. When all the façades modules are assembled, the **internal infill walls** can be mounted.

Stratigraphy of the infill walls _30 cm:

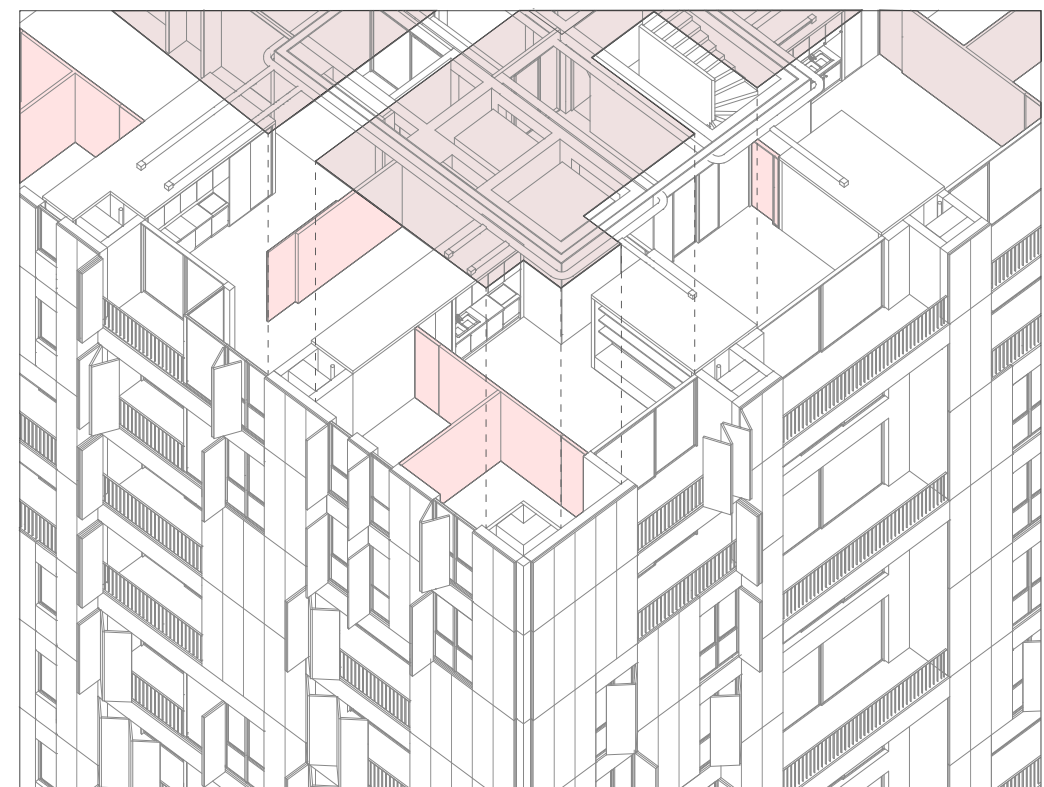
wood pannel 2 cm, load-bearing frame in larch filled with rock wool insulation 16 cm, wood closing panel 2 cm, plaster fiber sheet + plasterboard layer 2.5 cm.



11. At this point we have the assembly of the **windows** and after the **screen system**, consisting in perforated metal sliding panels (b3).

Windows:

- sliding pine wood windows
- pine casement wood windows



12. The final steps are:

- the **floor system**: screed 6.5 cm, waterproof case, soundproofing layer 1 cm, underfloor heating system 6.5 cm and resin floor layer 1.2 cm
- the **internal partition walls** in plasterboard
- the **countertop layer** in plasterboard

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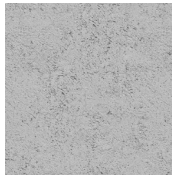
Supervisors: Gennaro Postiglione, Barbara Brollo

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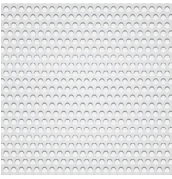
Prefabricated service pod
materials + structure + details

Materials

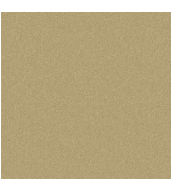
The palette shows the chosen internal and external materials that are applied to the intervention. All the materials used for the pods try to make the intervention chromatically uniform but they can still be customized by the tenants themselves in color. The resin floor is used to guarantee a single surface for both the interior and exterior space of the loggias. The choice of the metal wants to inevitably recall the place where the towers belong, an industrial area, this material is played down by the extensive use of wood which makes the choice more comfortable for a residential building.



Concrete
Used for the facade cladding system of the groudng.



Perforated metal sheet
White metal sheet used for the facade cladding system of the residential part.



SAF-RAL 140-M
Colour finishing for the PVC windows of the groudng floors.



Birch plywood
External finishing layer of the service pods, can be lacquered in any color.



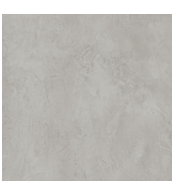
Metal sheet
White metal sheet used for the facade cladding system of the residential part.



Pine wood
Windows of the residences in essence of pine wood.



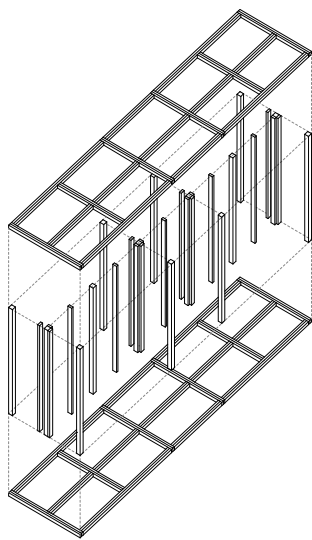
Ceramic tiles
Coverings of the bathroom and anteroom, 20 x 6 cm.



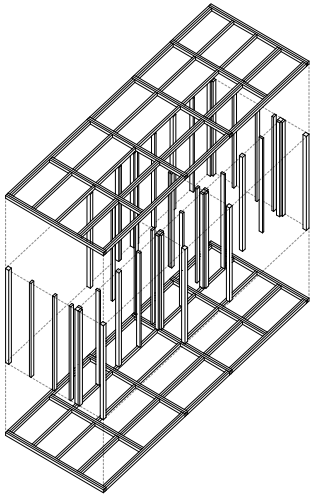
Grey resin floor
Internal and external finish for the floors.

The structure

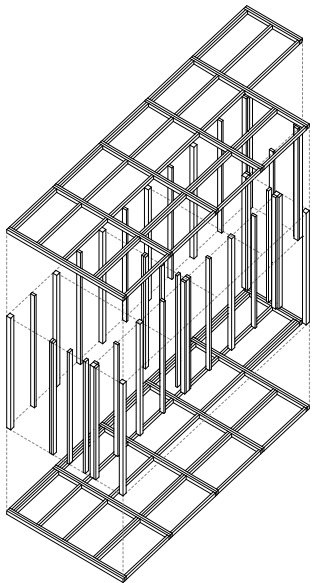
A **wooden frame structure** was chosen for the structure of the prefabricated service pods. The choice fell on wood strcture as it's a sustainable and light material, that could therefore guarantee good insulation performance, without weighing too much. The timber frame structure was also choosen to guarantee the passage of all the systems necessary for the kitchens and bathrooms, characterized by high load-carrying capacity, dimensional stability, and the ability to form the timber components into almost any shape.



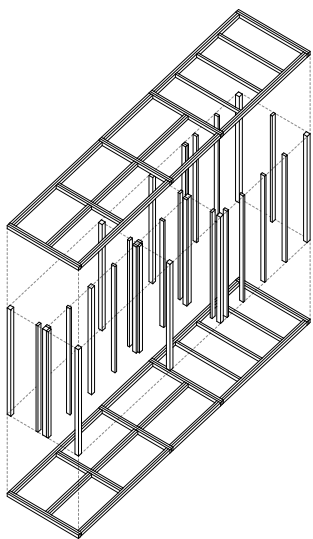
Type A



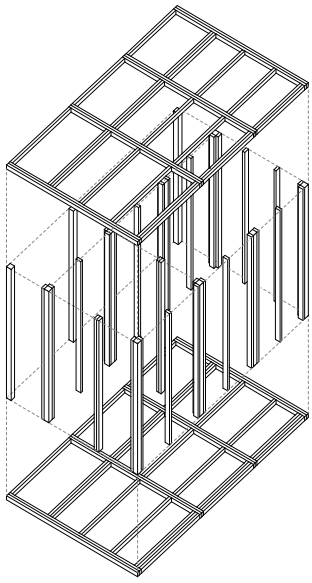
Type B



Type C



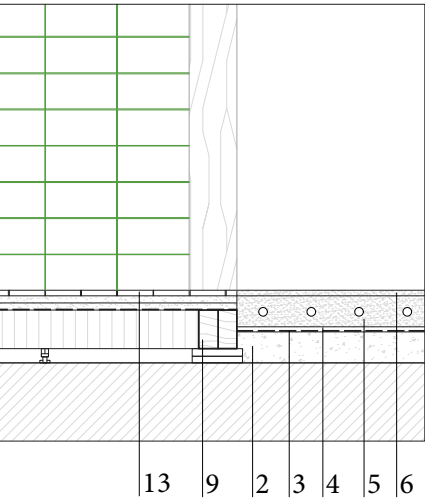
Type D



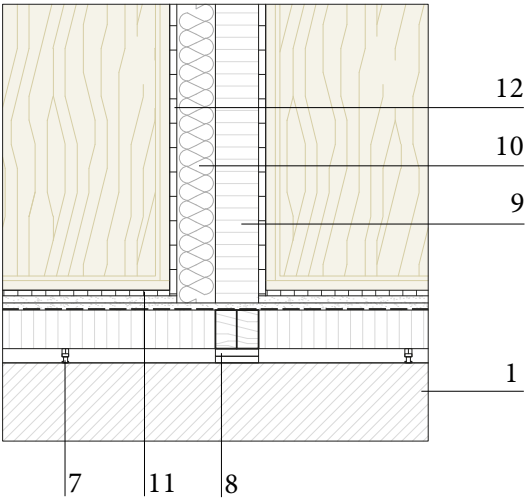
Type E/F

Details_scale 1:25

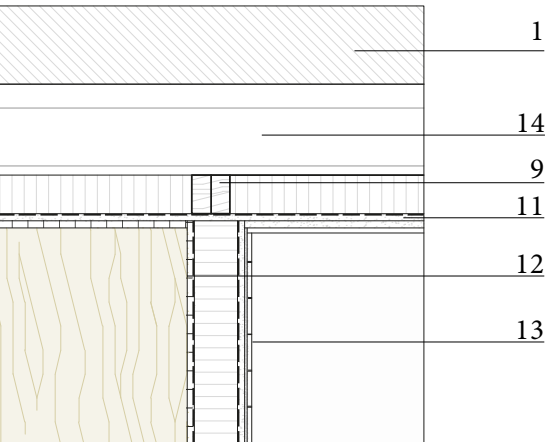
Detail 1A - type c



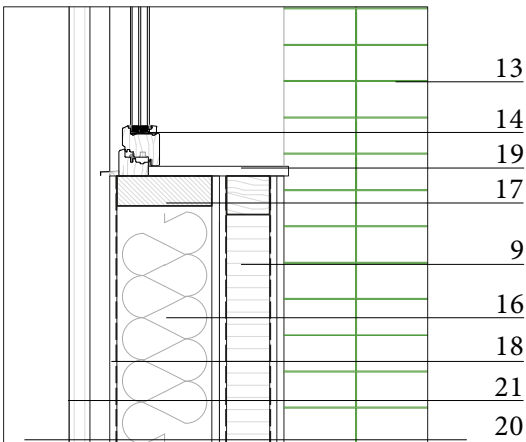
Detail 1B - type a



Detail 1C - type e



Detail 1D - type c



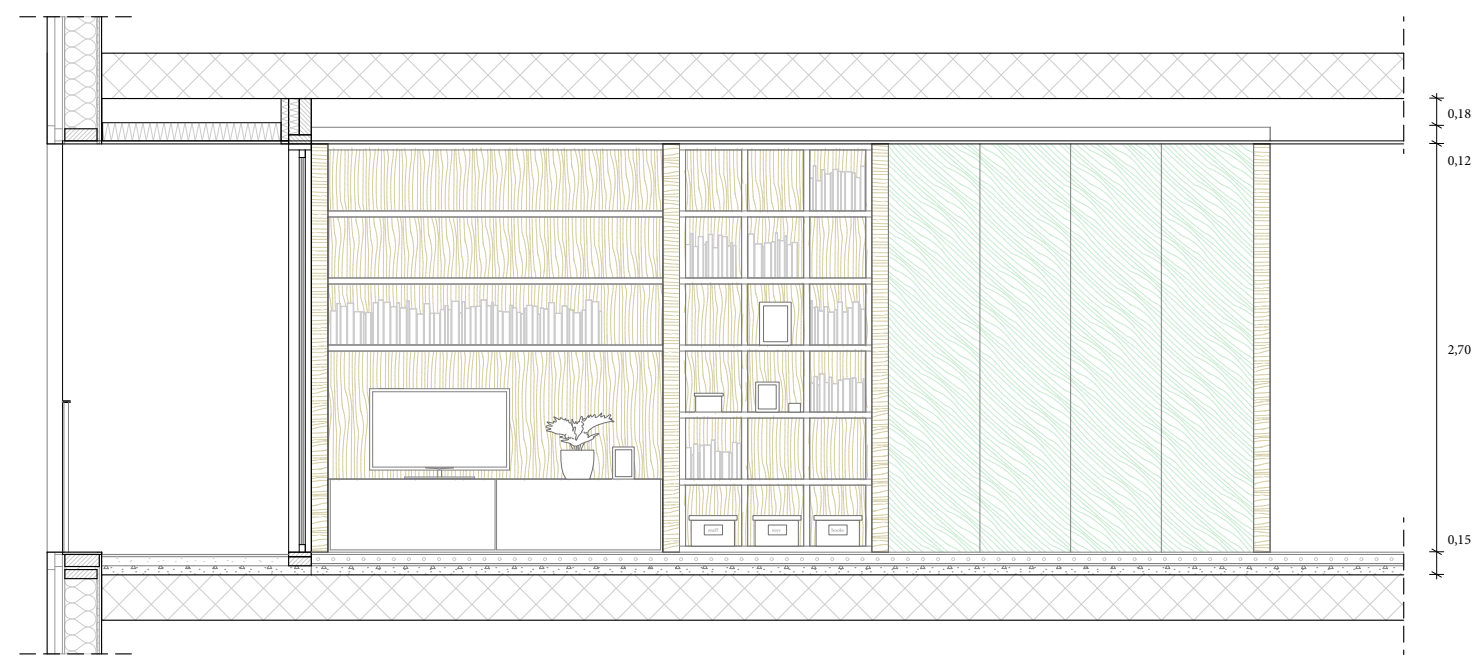
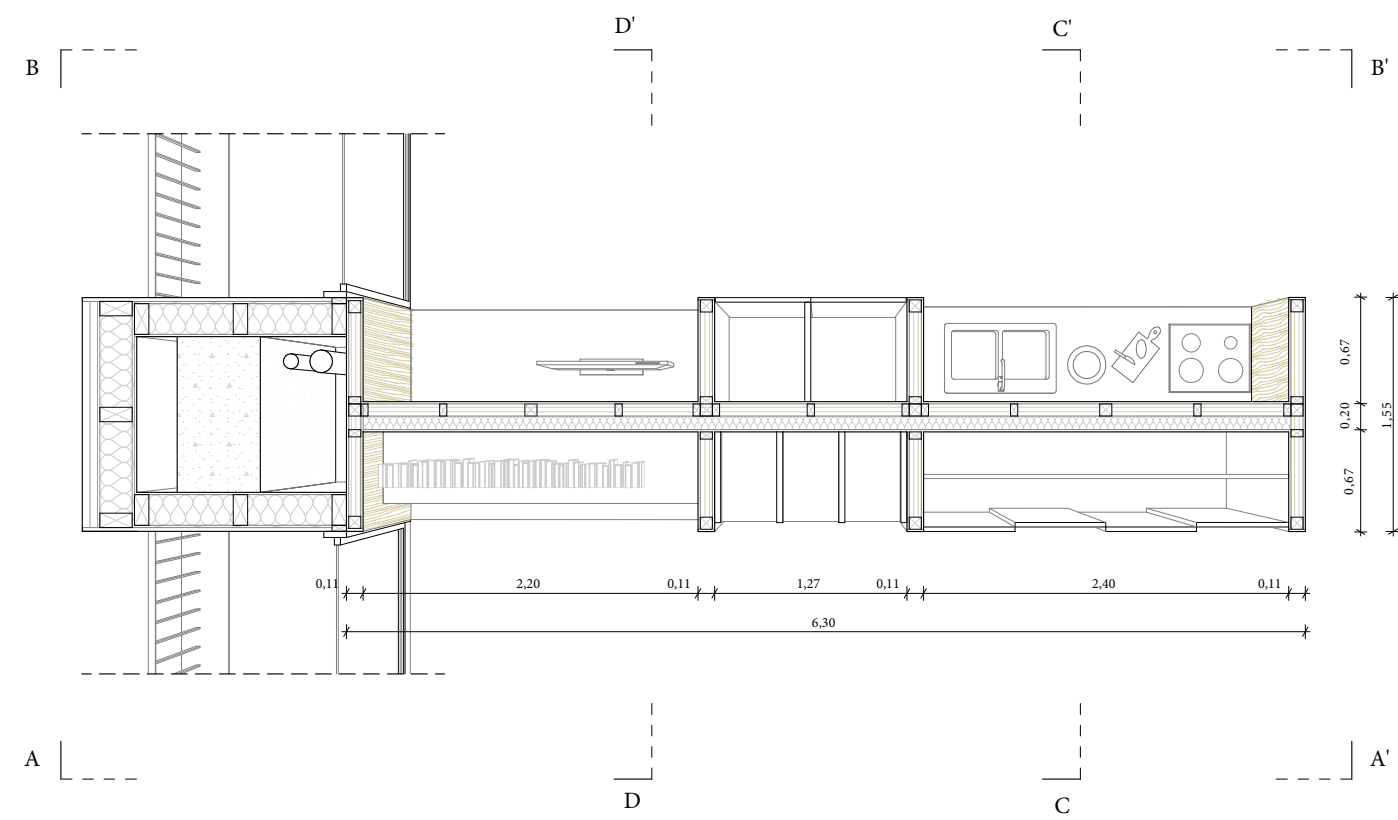
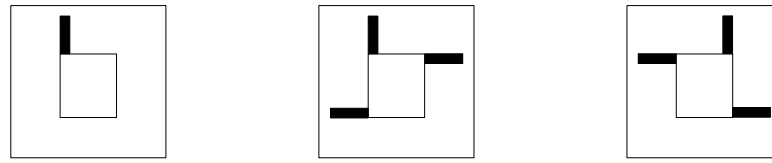
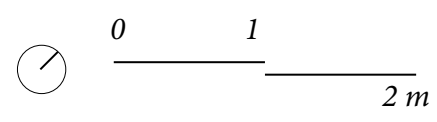
Specifications:

- Existing slab in reinforced concrete | 30 cm
- Floor foundation | 6.5 cm
- Waterproof case | 6.5 cm
- Soundproofing layer| 1 cm
- Insulating panel with underfloor heating| 6.5 cm
- Resin flooring layer | 1.2 cm
- Height adjustable feet
- Support bearings for the pods | 3 cm
- Wooden joists | 4.5 + 4.5 cm
- Insulating wool | 8 cm
- Aquapanel | 1.5 cm
- Wood layer for closing and finishing | 1.5 cm
- Ceramic tiles | 7 x 15 cm
- Duct for installations | 19 cm
- Window wooden frame
- Insulating layer | 20 cm
- Structural joist facade panel | 20 x 6 cm
- Closing plywood panel | 1.5 cm
- Lacquered wood sill
- Facade cladding structure
- Perforated metal cladding sheet

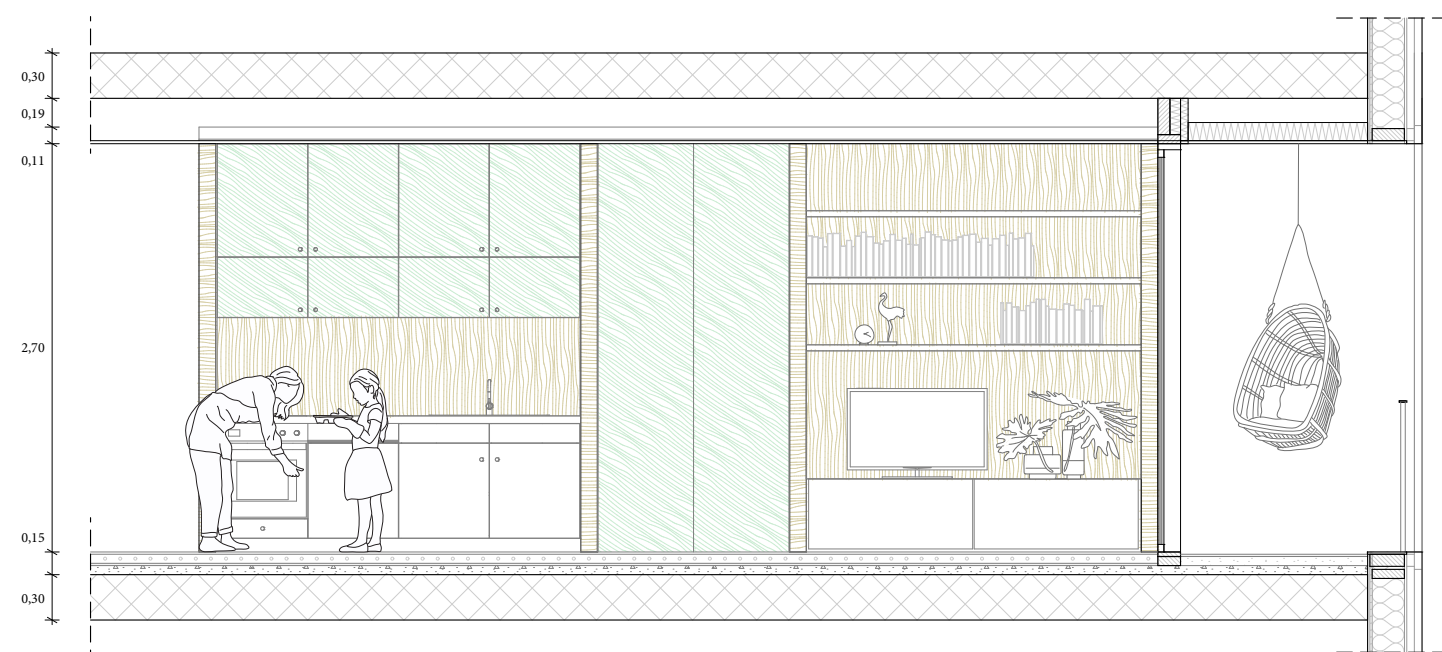
Meta-Morphosis

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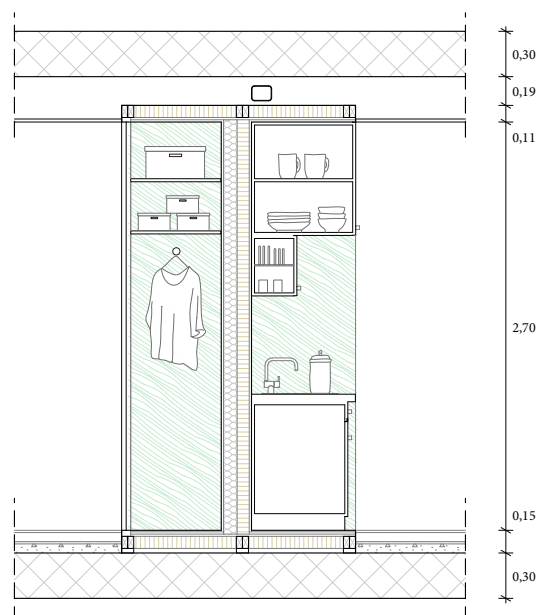
Prefabricated service pod
type A



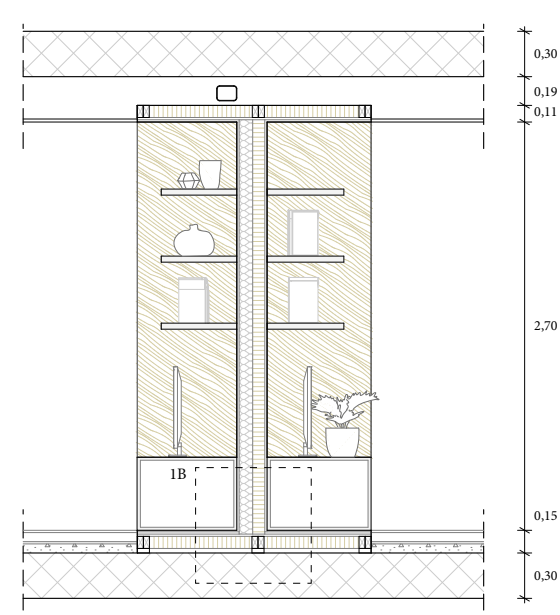
Section A-A' | 1:50



Section B-B' | 1:50



Section C-C' | 1:50



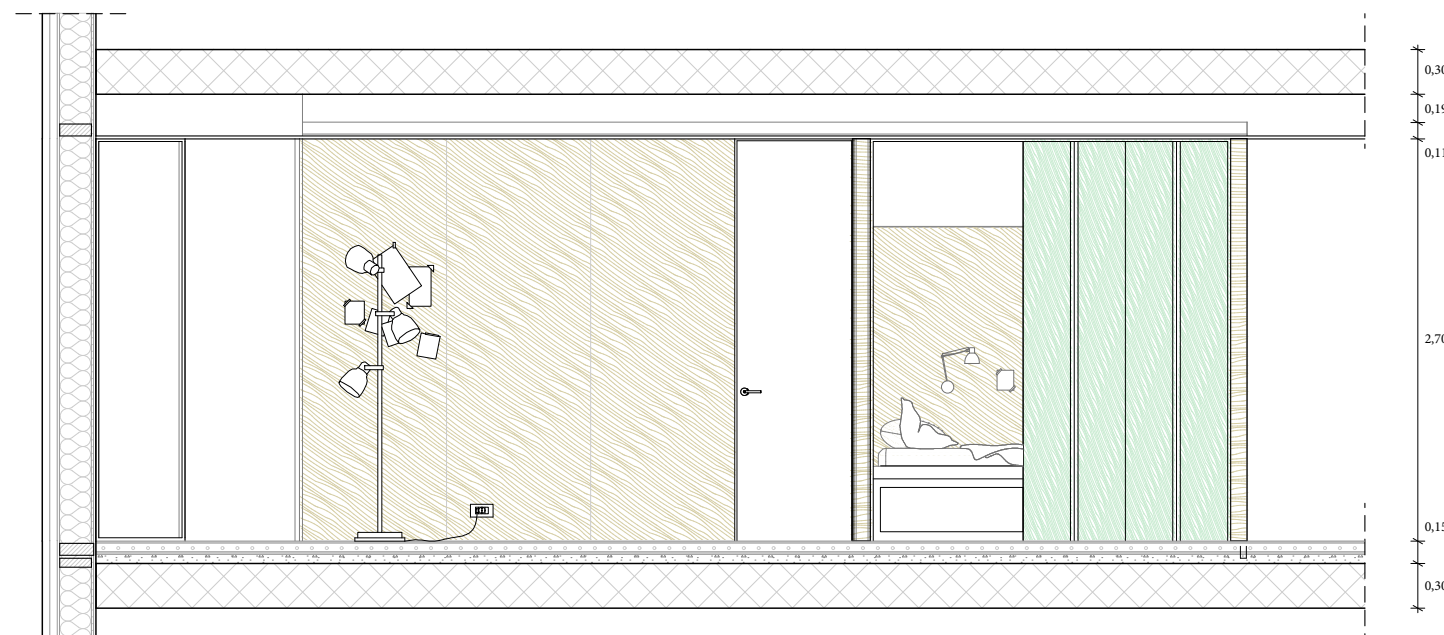
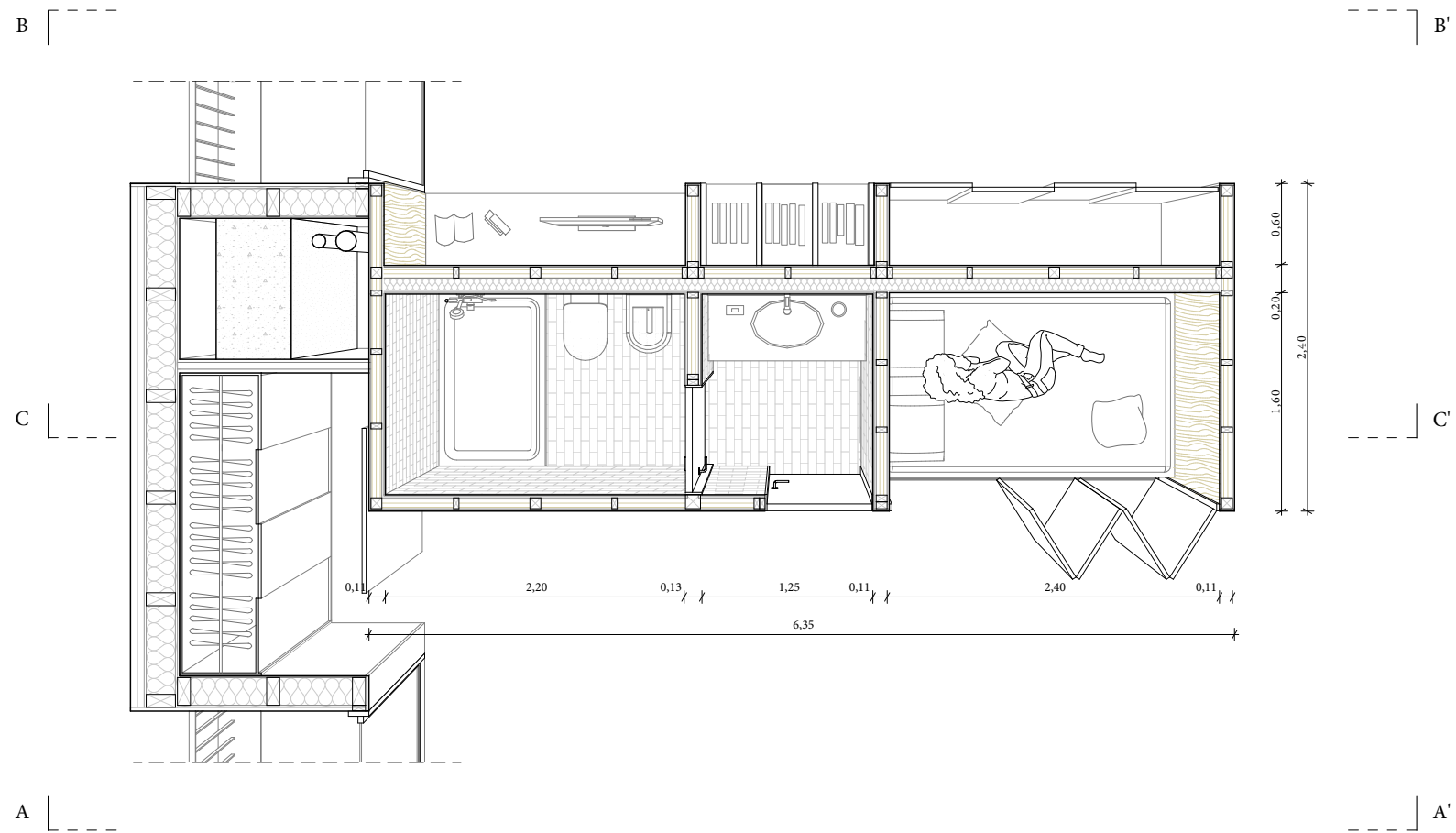
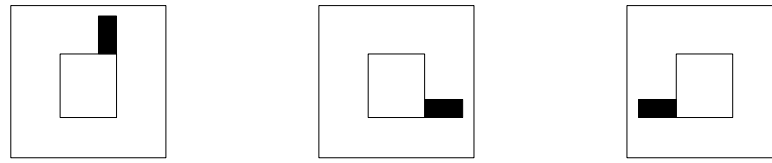
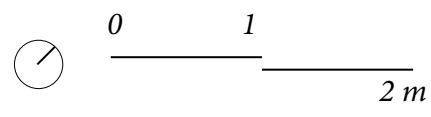
Section D-D' | 1:50

Meta-Morphosis

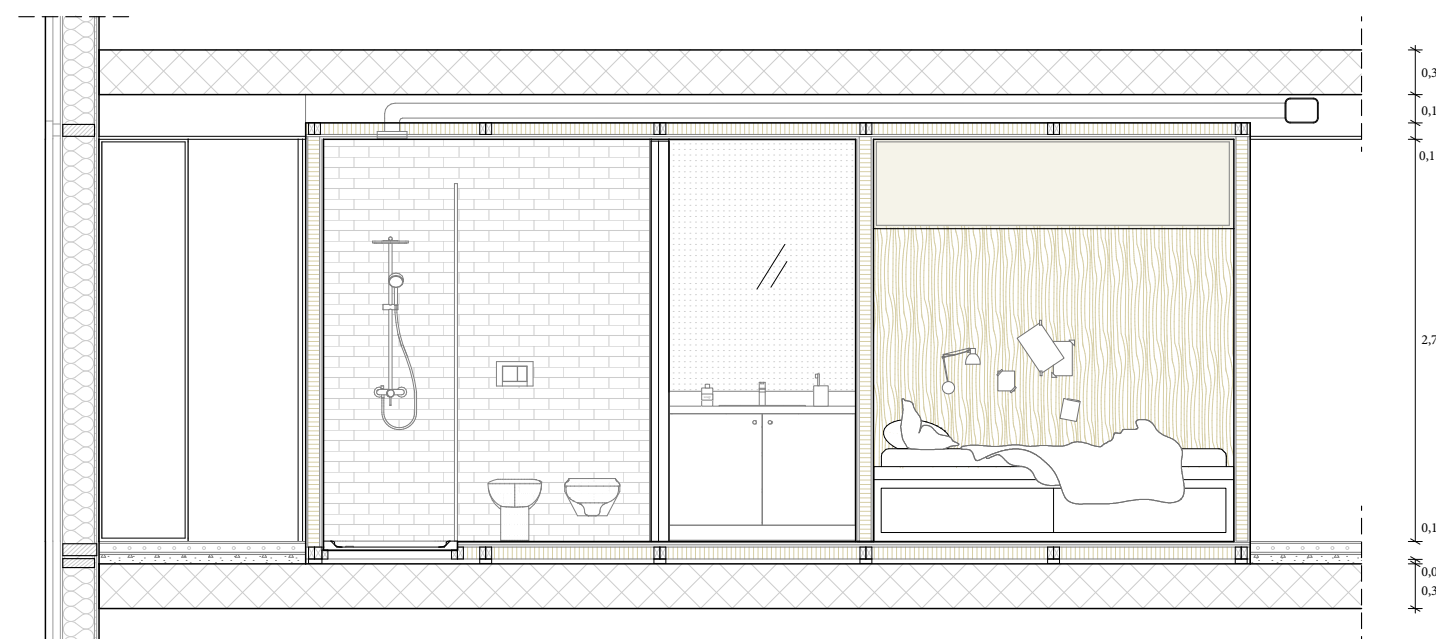
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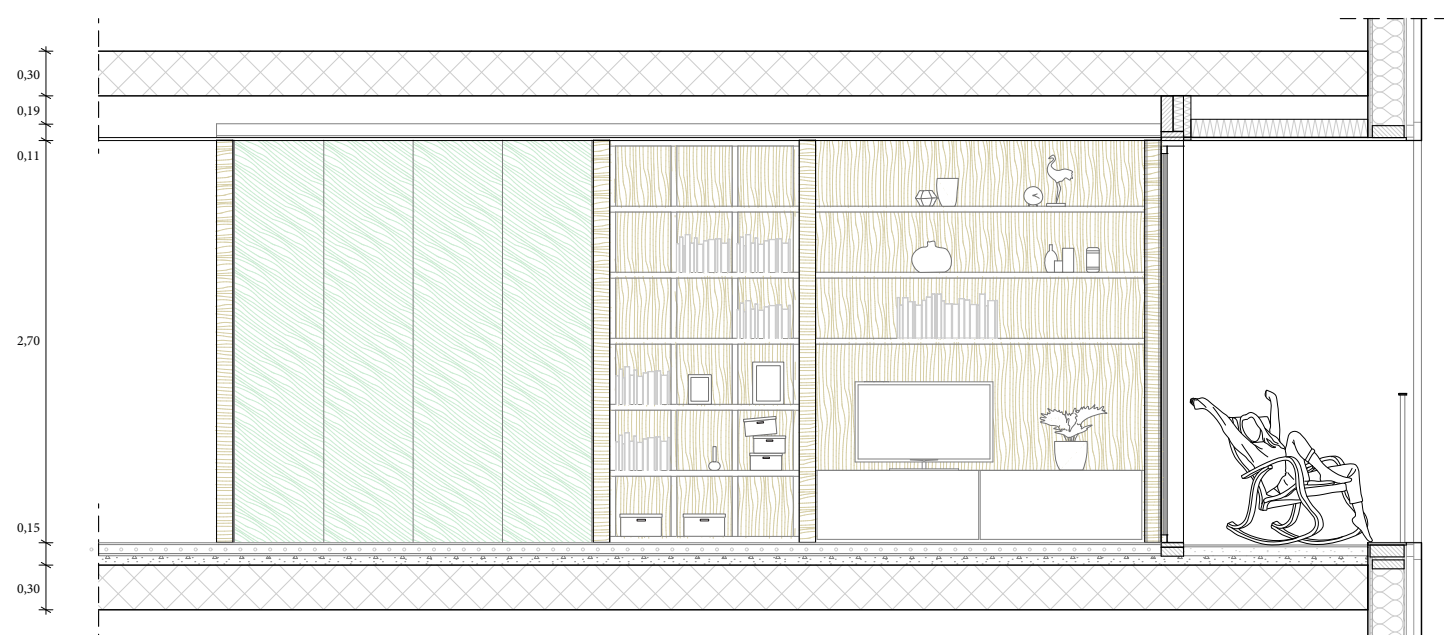
Prefabricated service pod
type B



Section A-A' | 1:50



Section C-C' | 1:50



Section B-B' | 1:50

Meta-Morphosis

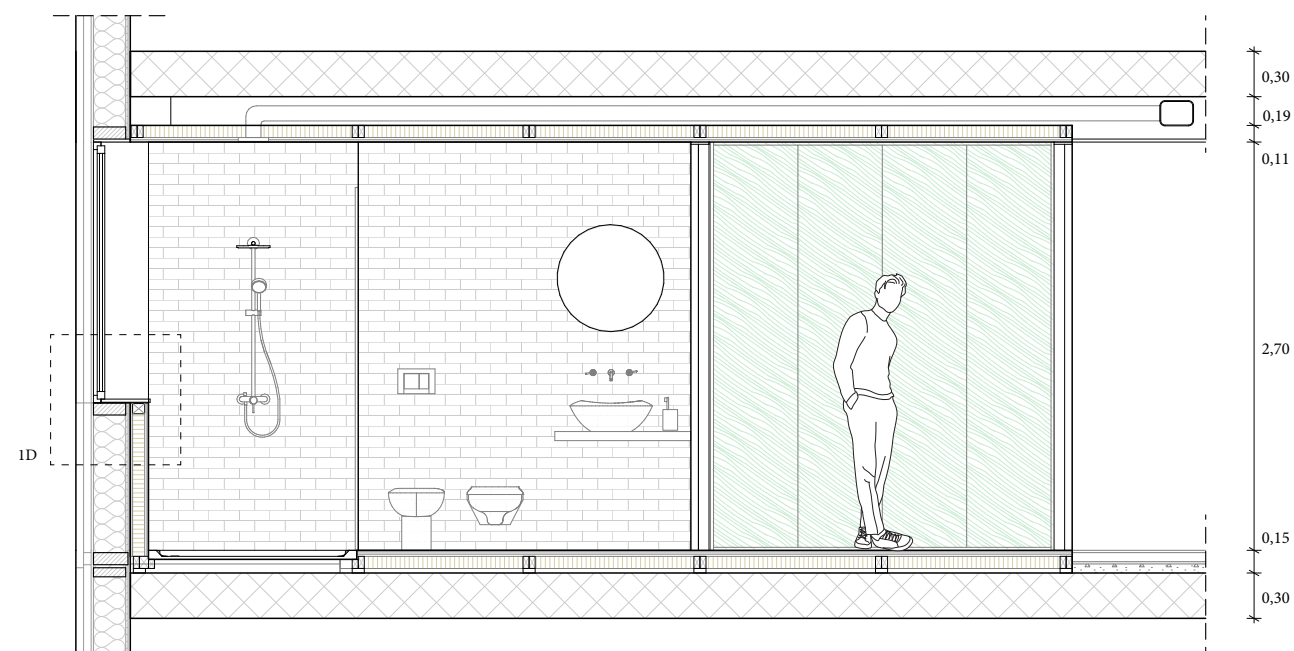
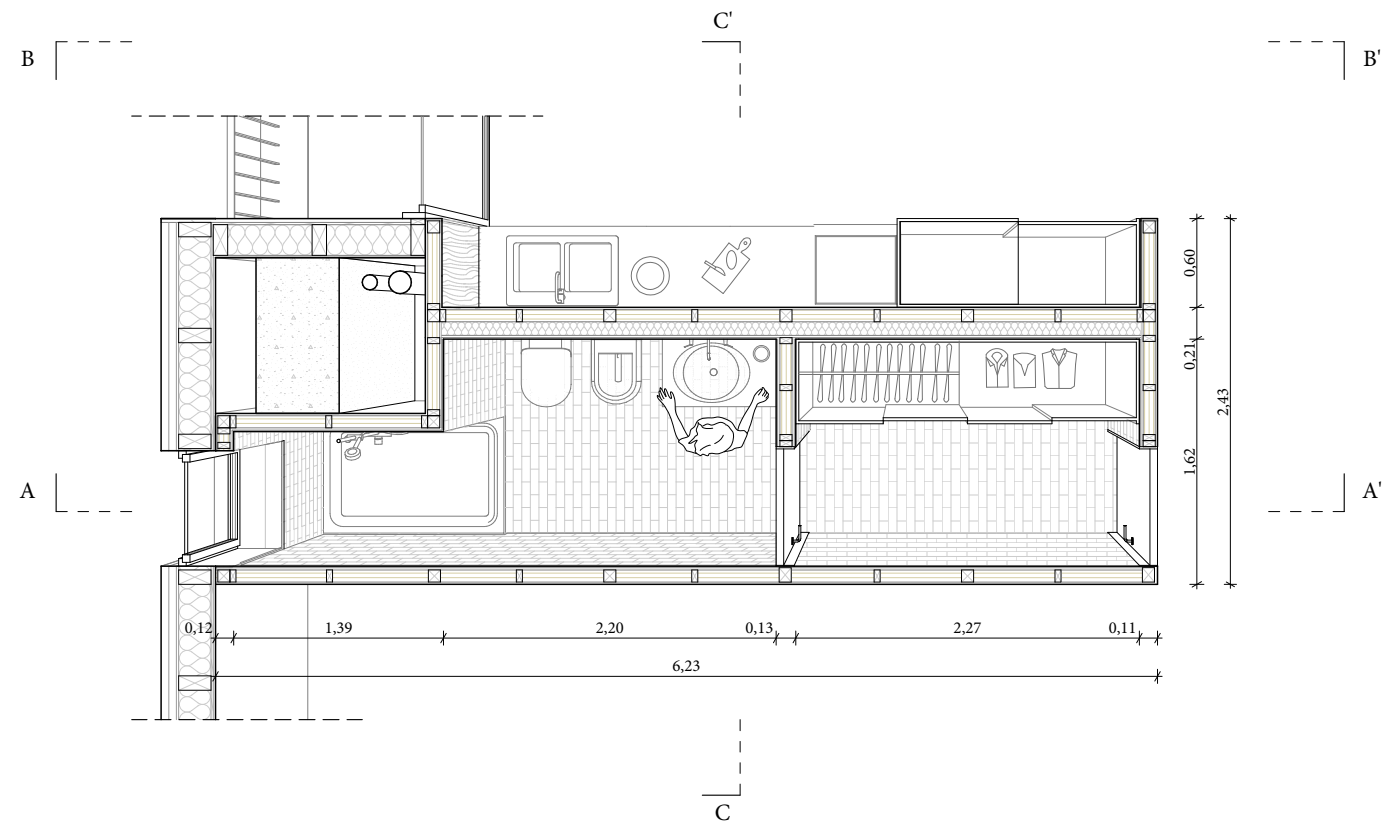
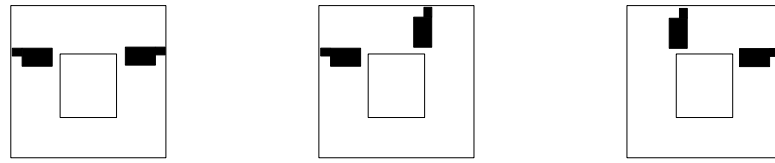
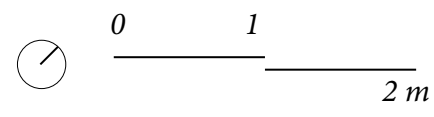
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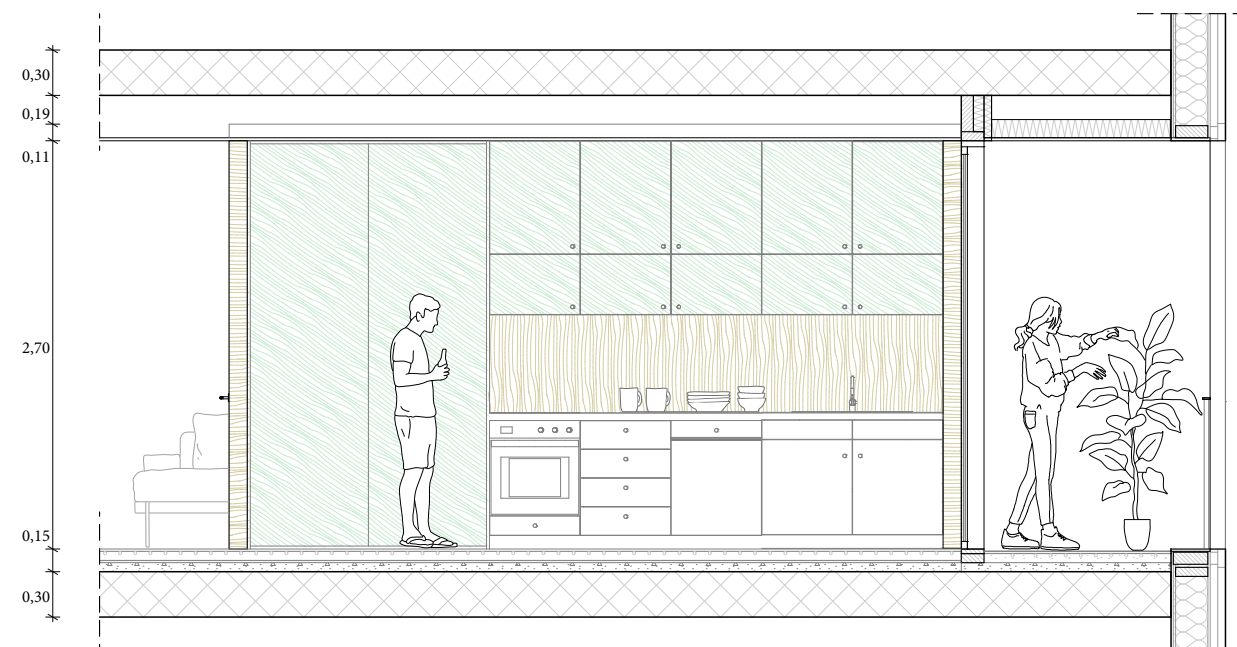
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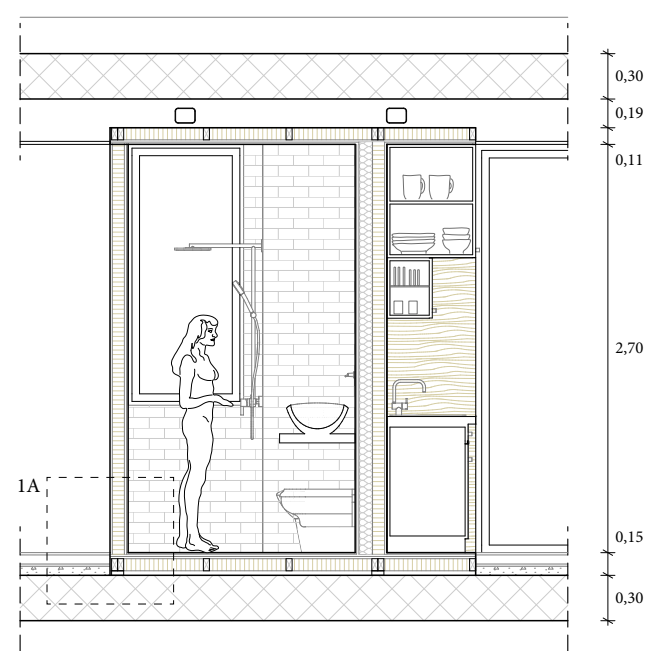
Prefabricated service pod
type C



Section A-A' | 1:50



Section B-B' | 1:50



Section C-C' | 1:50

Meta-Morphosis

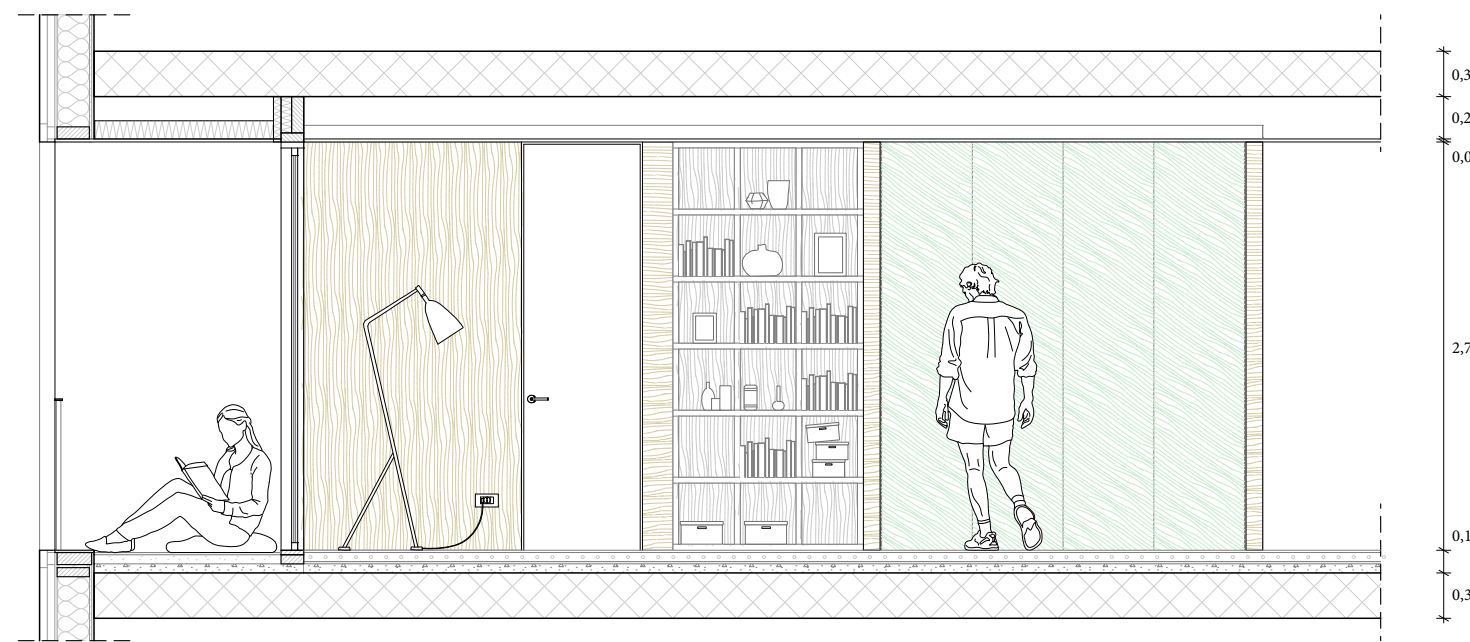
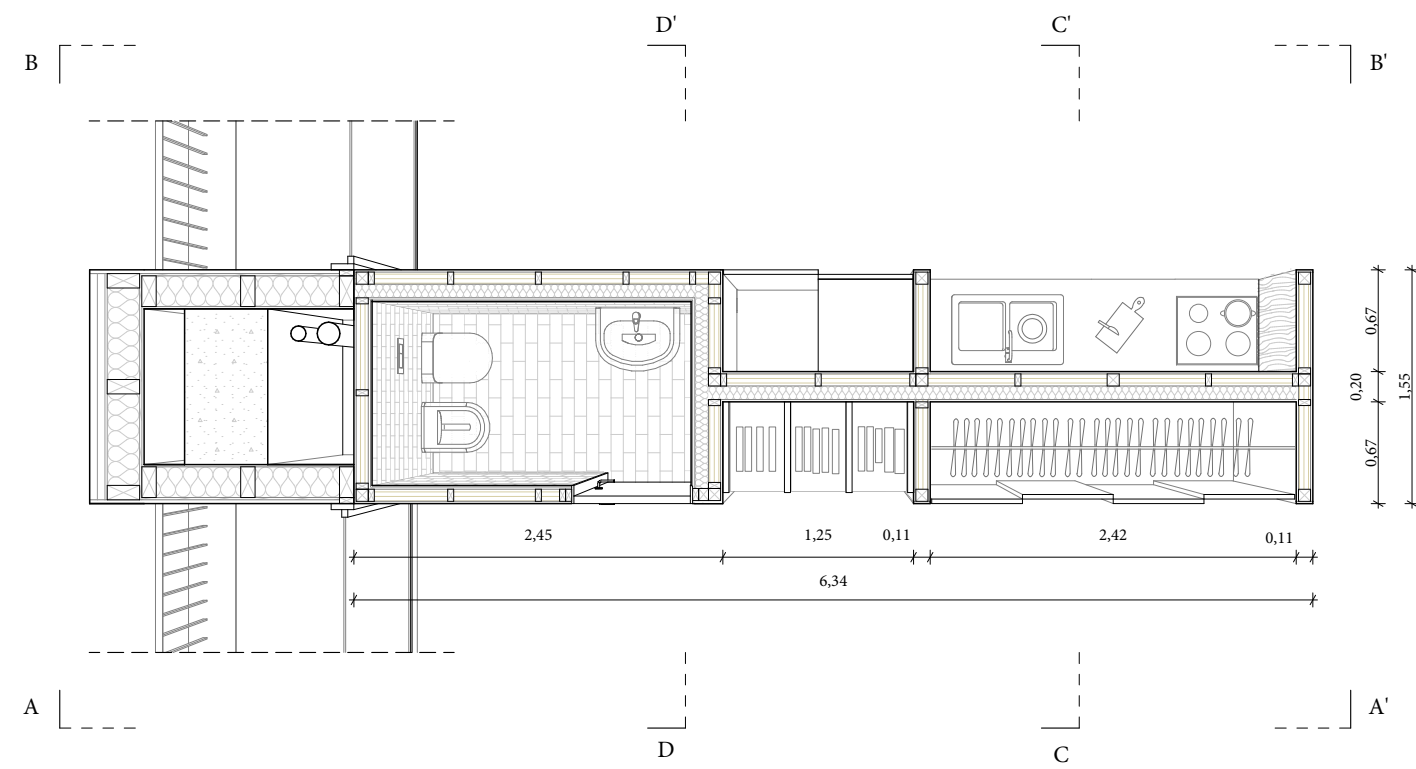
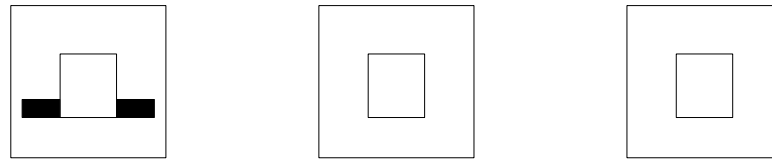
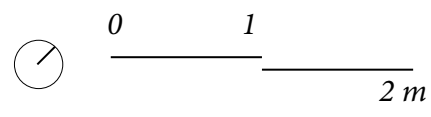
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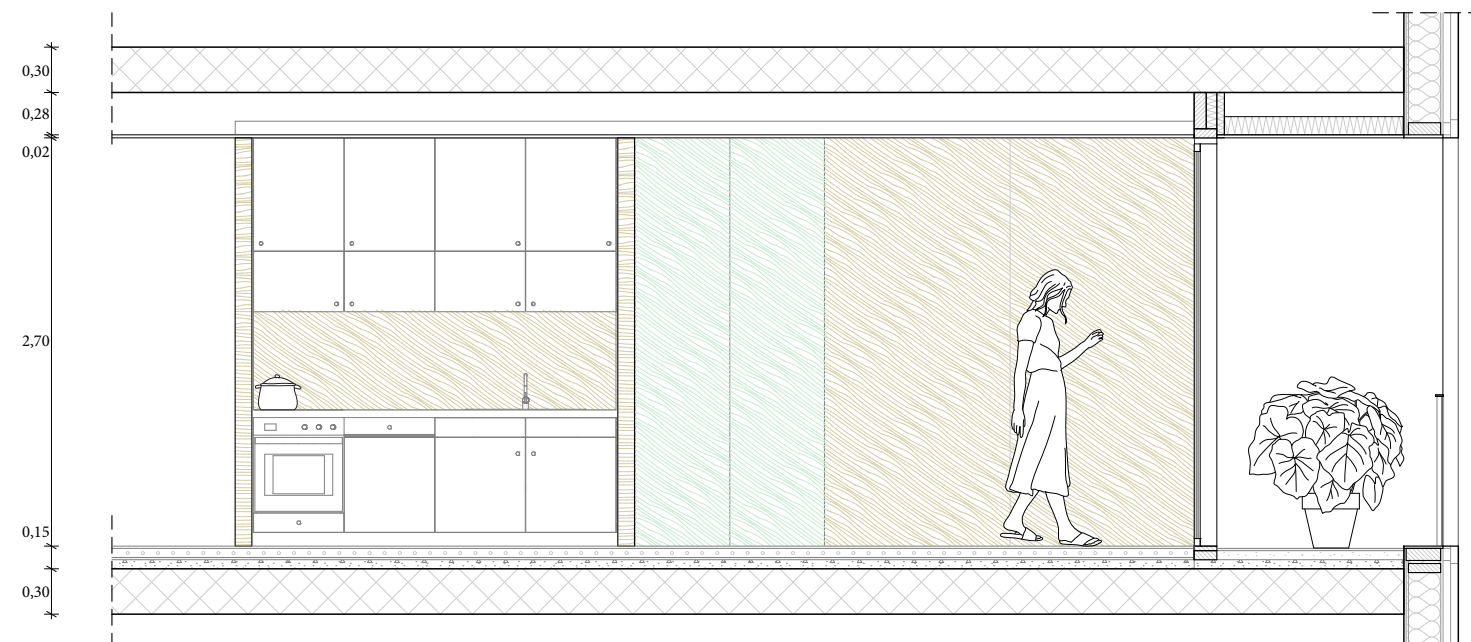
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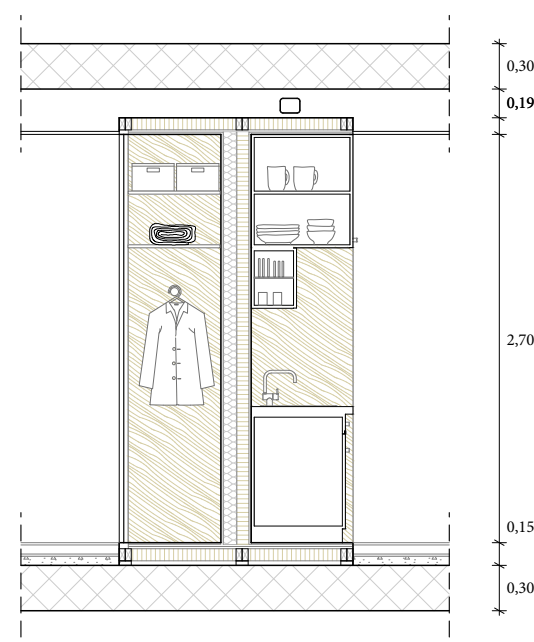
Prefabricated service pod
type D



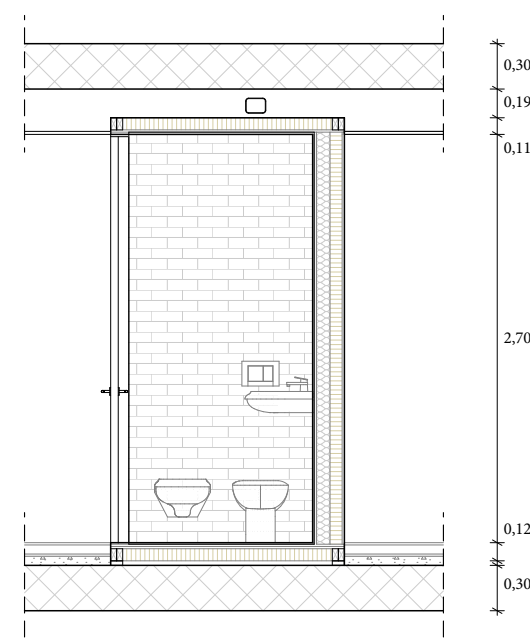
Section A-A' | 1:50



Section B-B' | 1:50



Section C-C' | 1:50



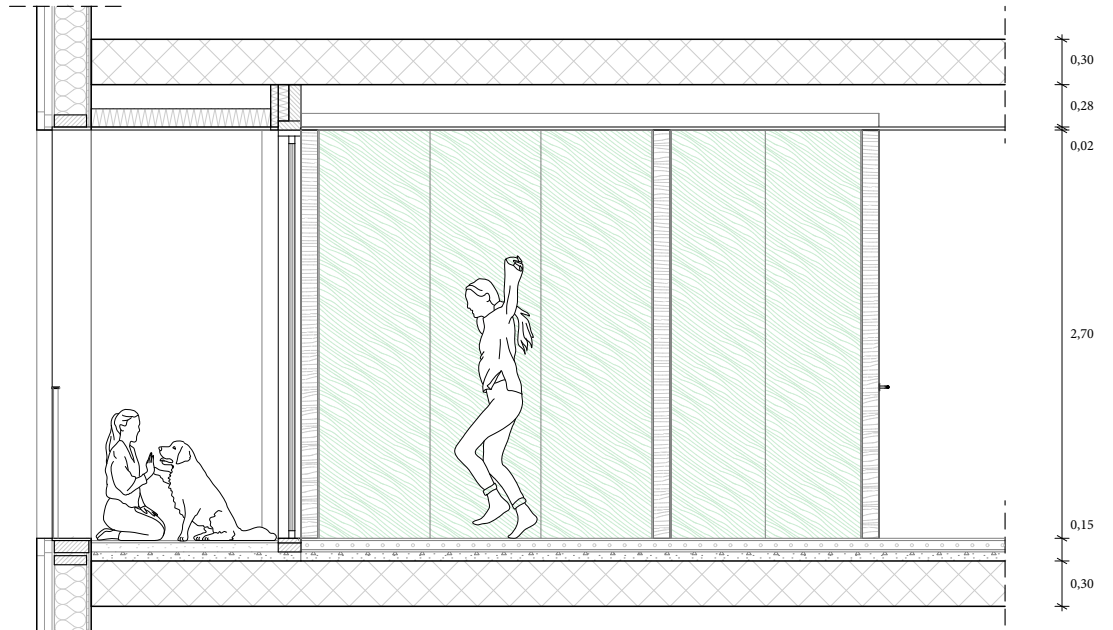
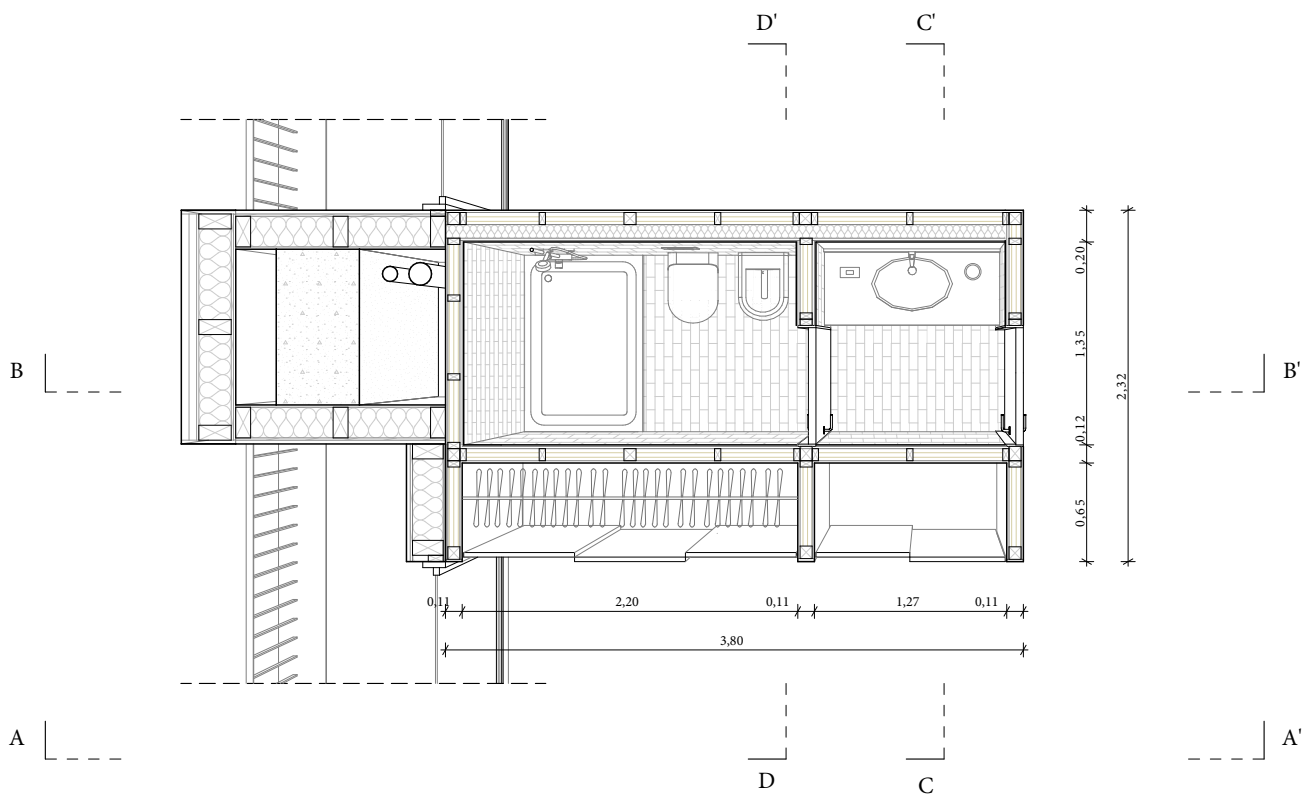
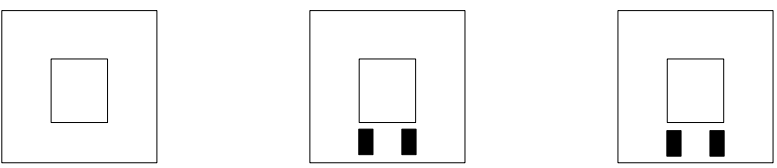
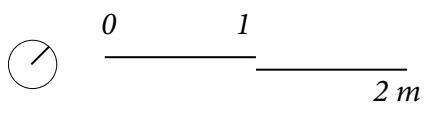
Section D-D' | 1:50

Meta-Morphosis

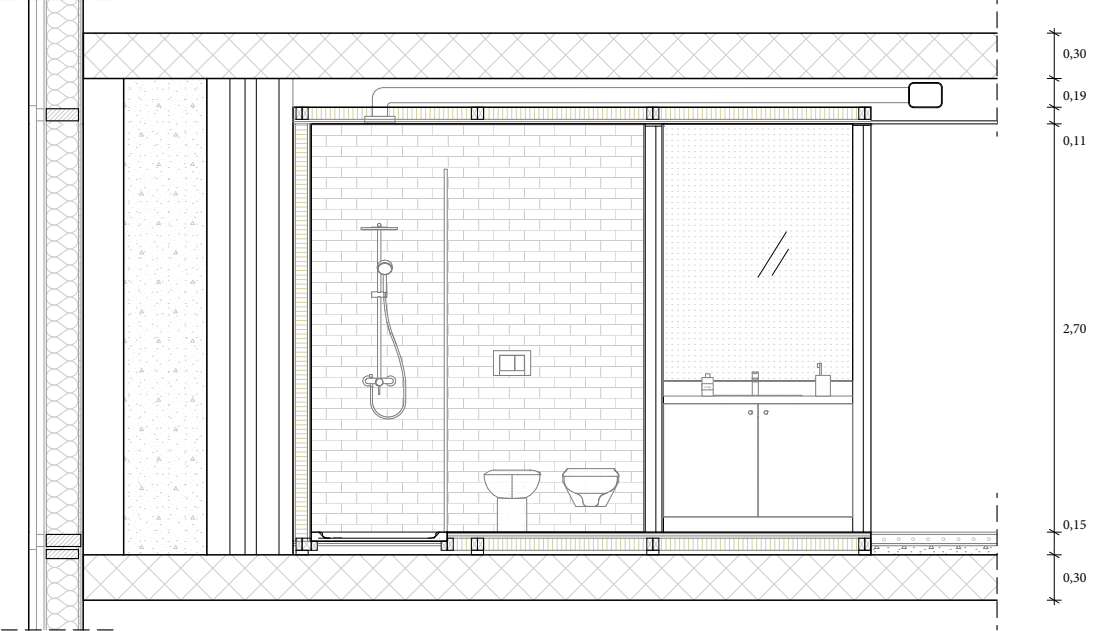
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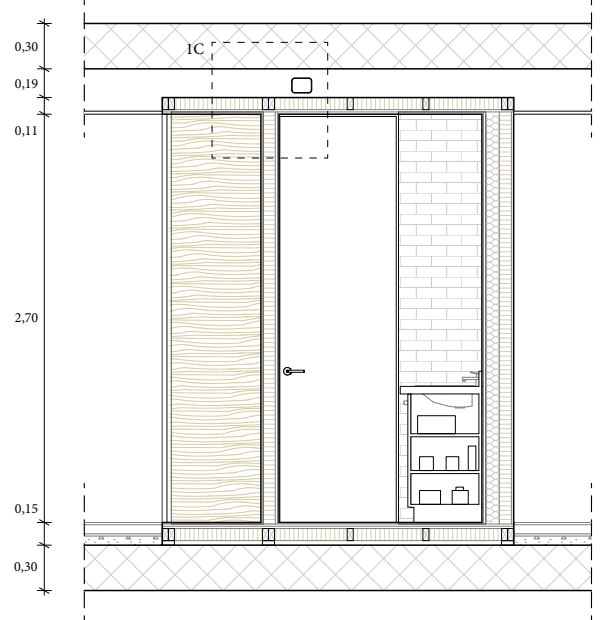
Prefabricated service pod
type E



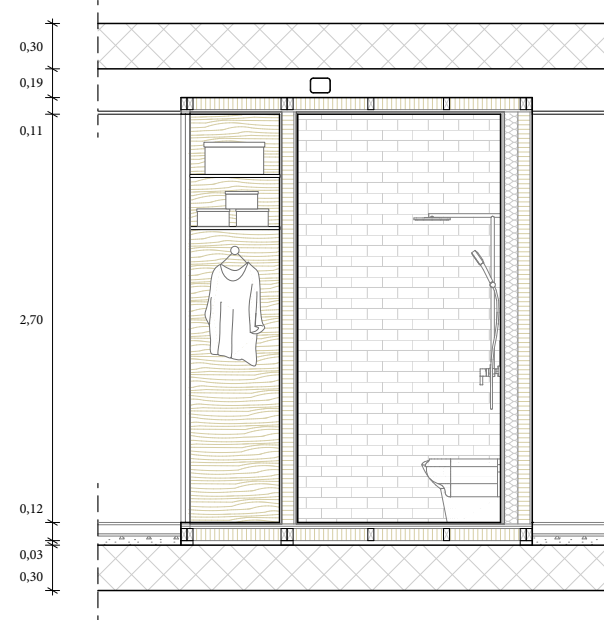
Section A-A' | 1:50



Section B-B' | 1:50



Section C-C' | 1:50

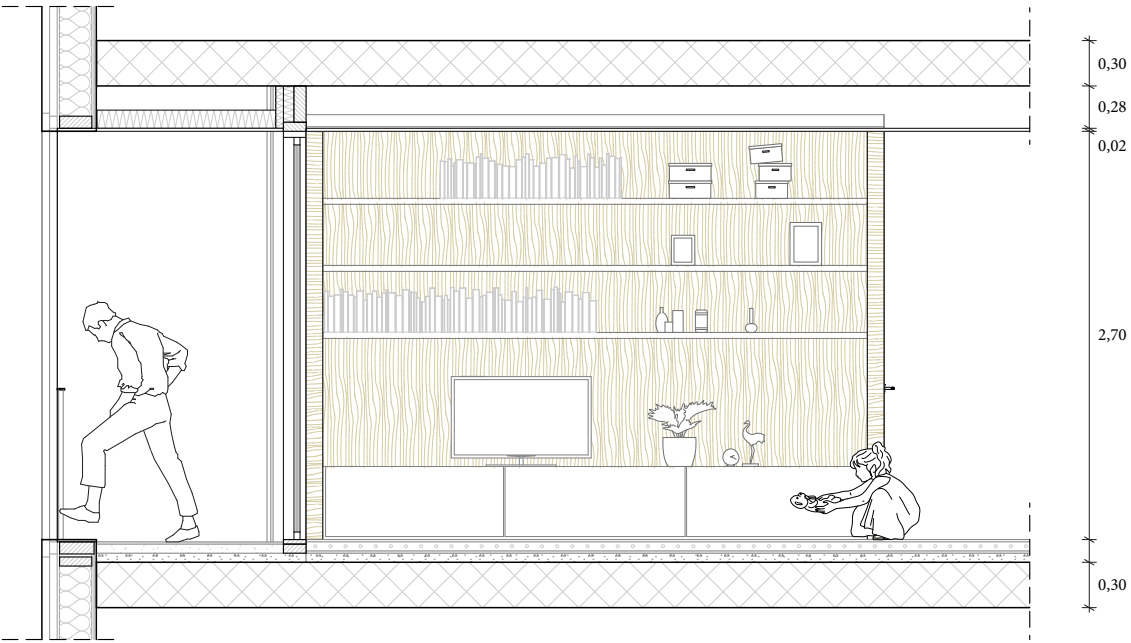
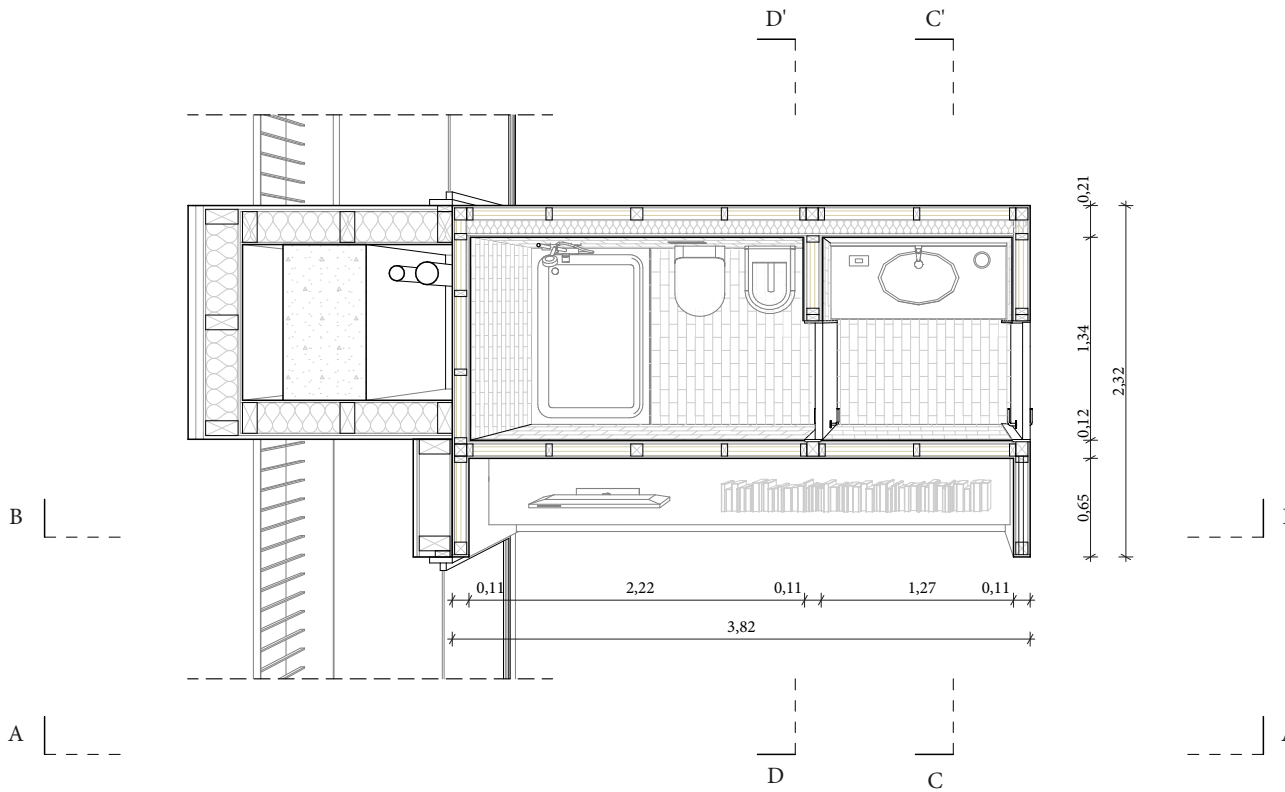
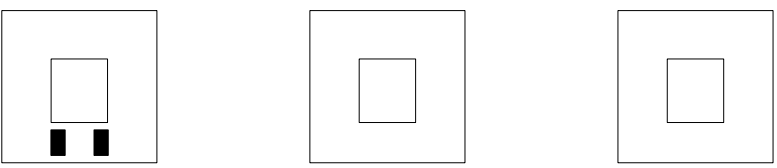
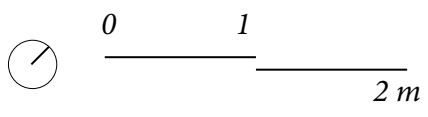


Section D-D' | 1:50

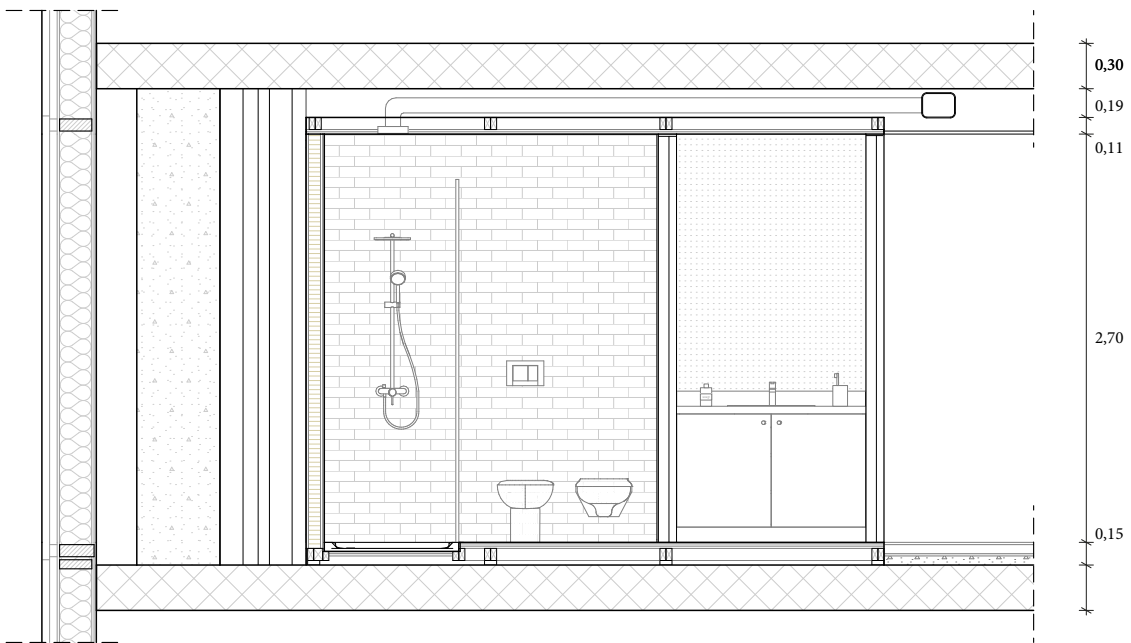
Meta-Morphosis

An open building strategy for the conversion of the Ligresti's towers in Milan
Thesis in Architecture - Built Environment - Interiors Politecnico di Milano a.y. 2019 | 2021
Supervisors: Gennaro Postiglione, Barbara Brollo
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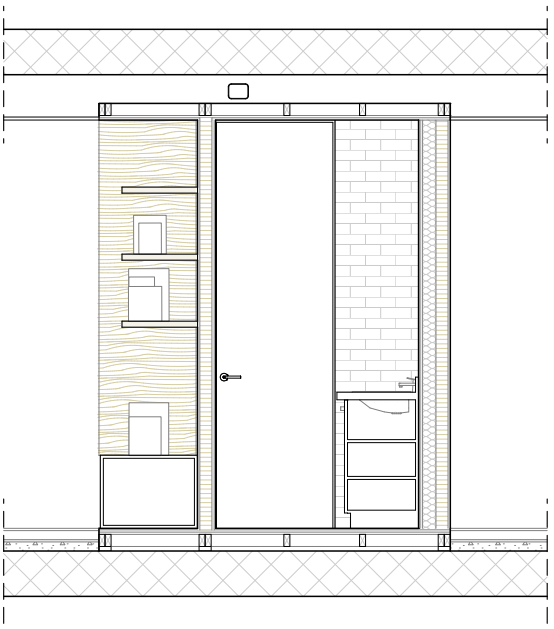
Prefabricated service pod
type F



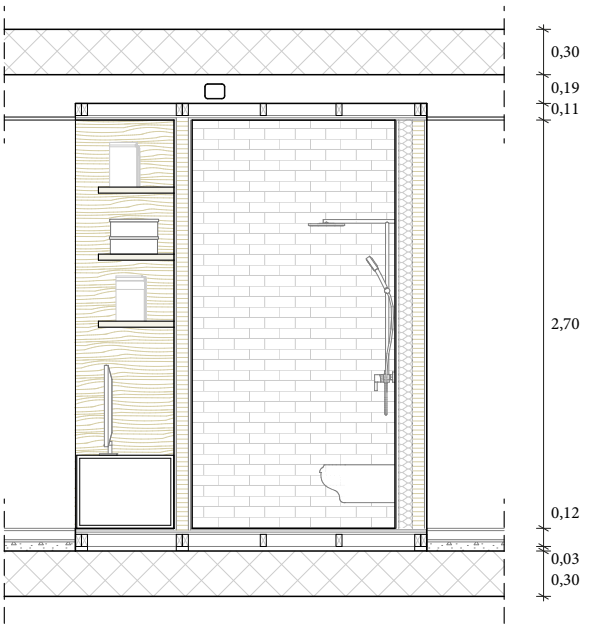
Section A-A' | 1:50



Section B-B' | 1:50



Section C-C' | 1:50



Section D-D' | 1:50

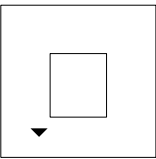
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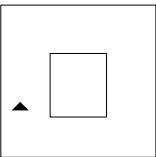
Internal views
the apartments



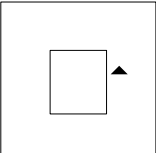
living room
three -room apartment



kitchen + loggia
four -room apartment



kitchen and living room
four -room apartment



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