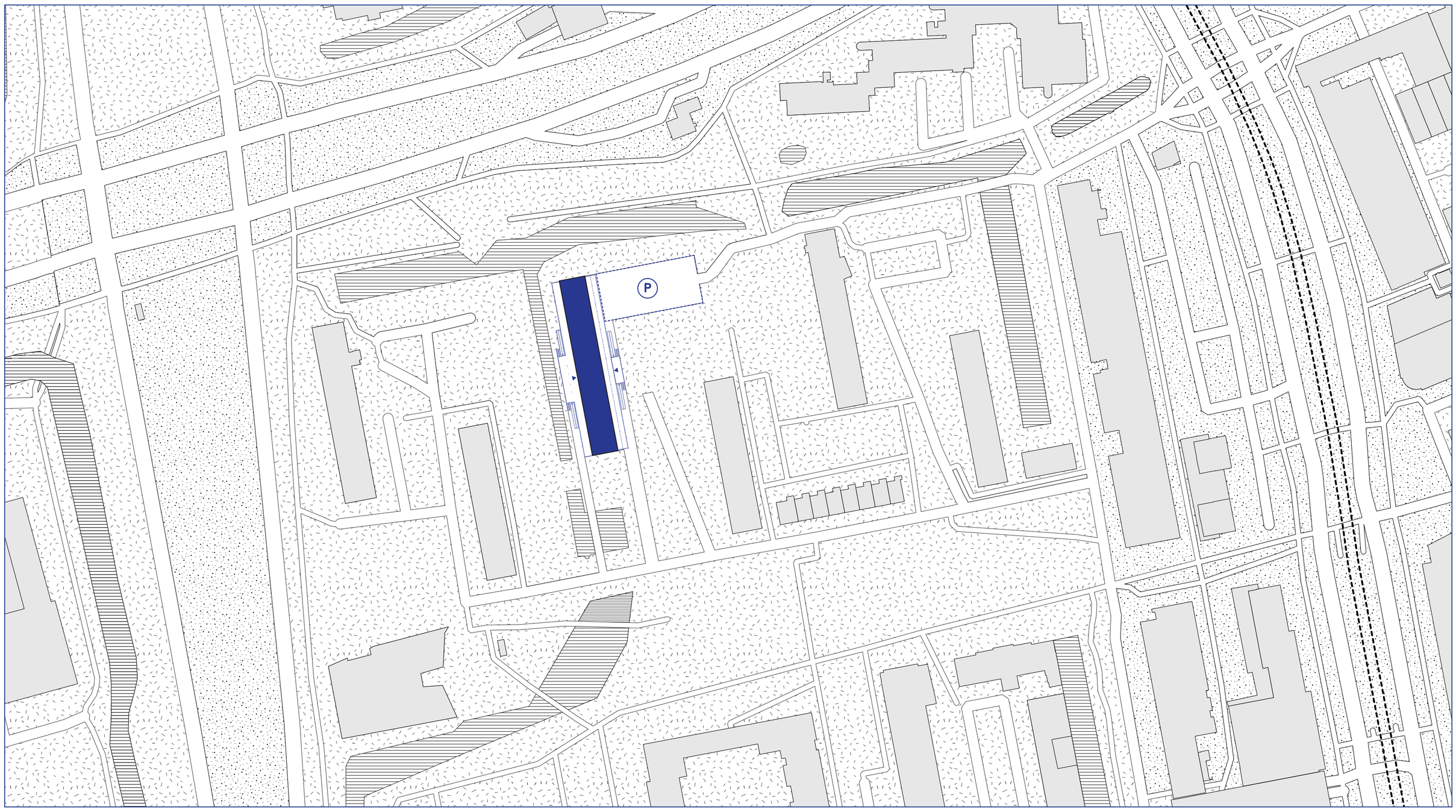
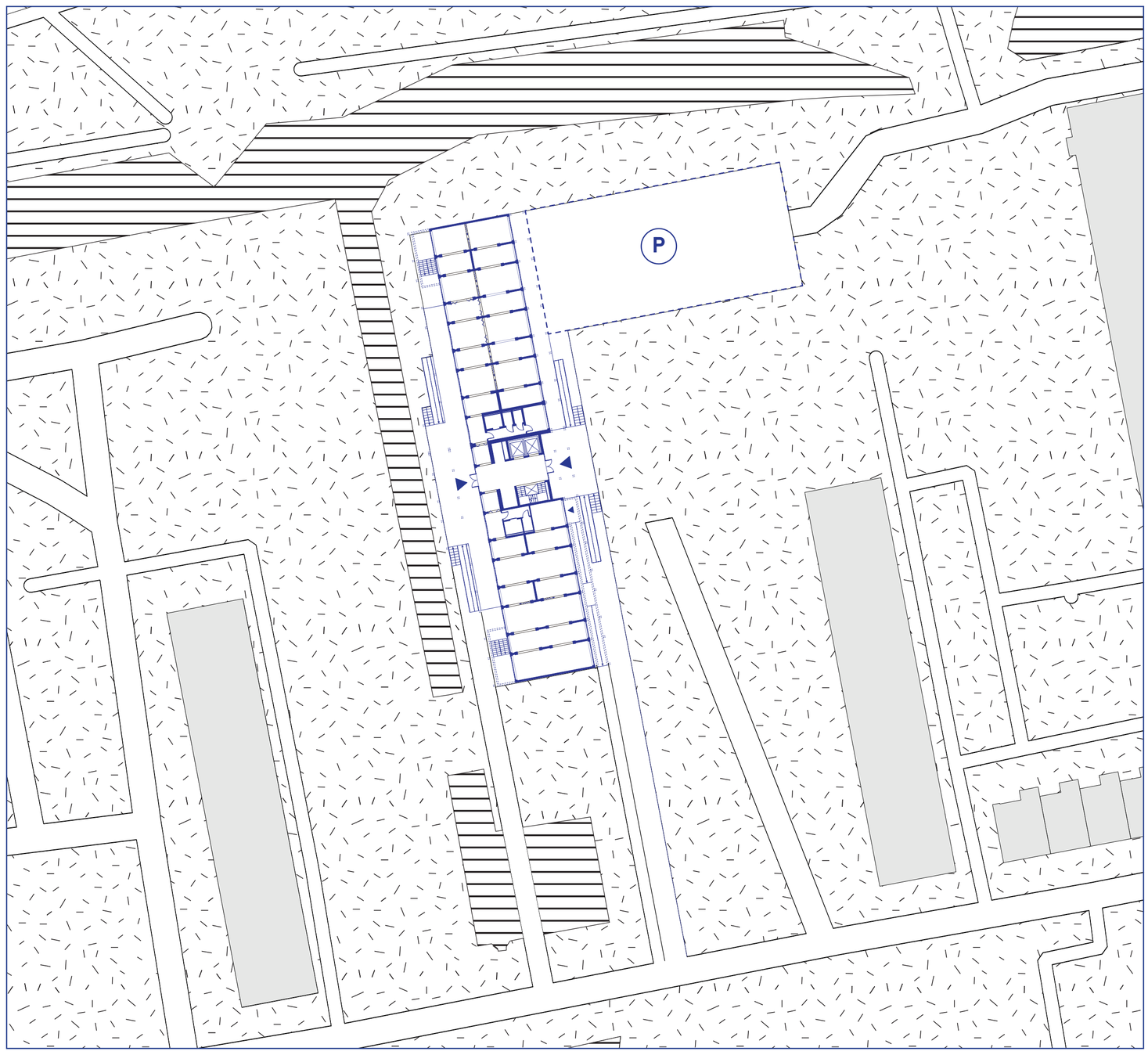
SITE CONCEPT AND SITUATION

For this project, the neighbourhood of Poptahof Noord is chosen. This neighbourhood has the second most amount of disabled individuals in Delft, it is in close proximity to daily facilities (such as restaurants, supermarkets, city center, etc.) and it is currently under redevelopment which makes it a suitable location for this design project.



Site plan above shows how the project fits into its surroundings. The neighbourhood has 6 post-war residential buildings: 3 of them located on the south and have 5 storeys while the three on the northern part are 11-storeys high. This project further elaborated on the middle one. MUWI system was commonly applied during the post-war period and there are currently still 30.000 dwellings and 3000 buildings of this system. This masterplan and renovation method opens the door for the MUWI buildings to be transformed in an accessible and inclusive way. The masterplan above shows the minimal impact the building has on its surroundings, making this strategy highly scalable and applicable all around the country as a transformation strategy.

SITE PLAN (1:1000)

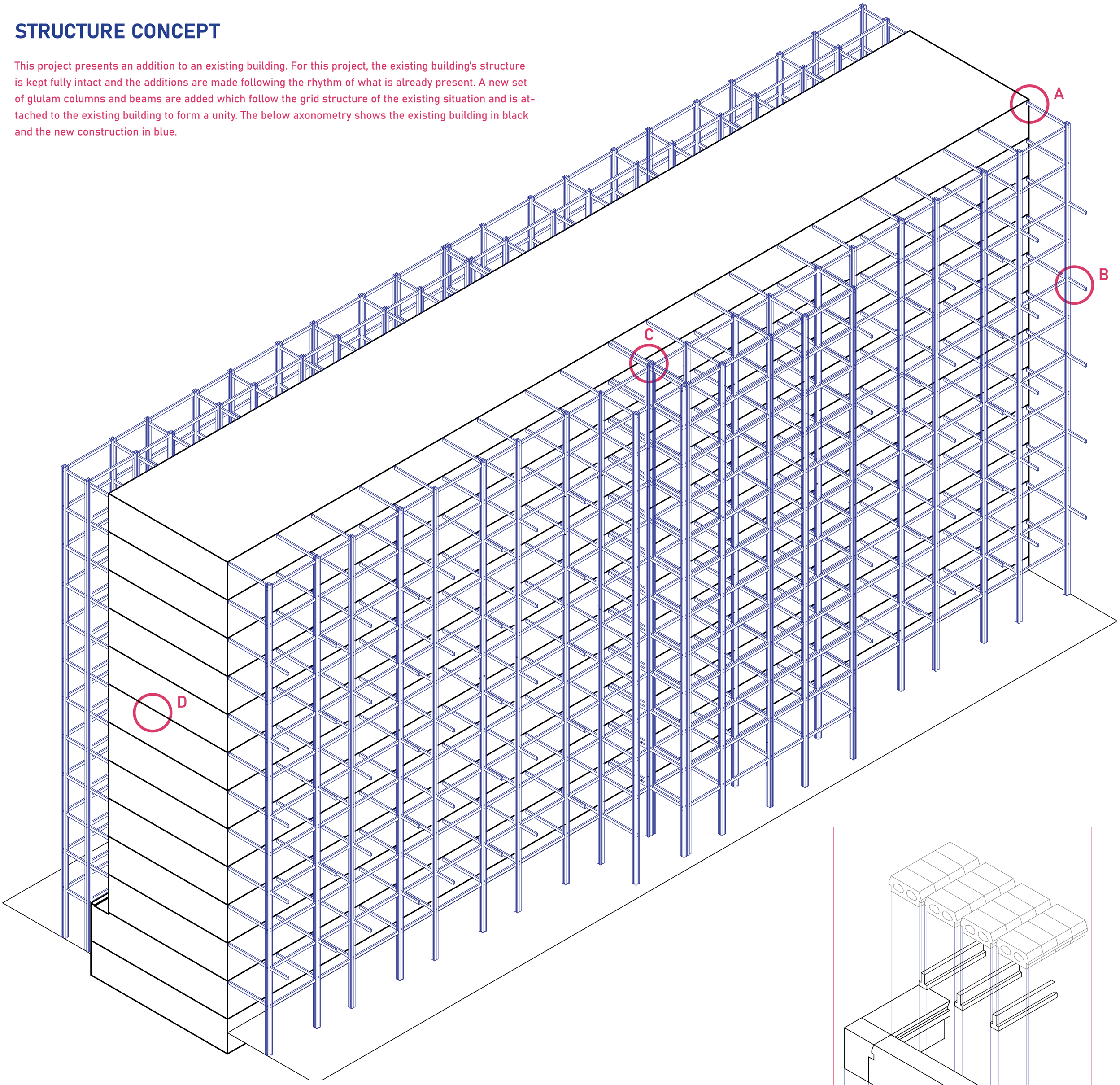


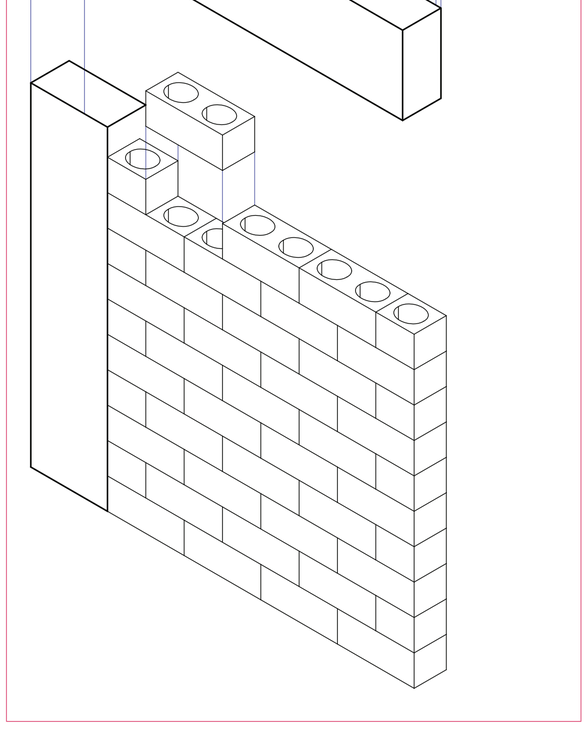
Map on the left shows the ground floor plan and its direct surroundings. Ground floor is split into two parts: northern part is proposed to become an "Inclusive Activity Center" with various spaces to host a variety of activities for people of all ages and abilities. The southern part which is facing the Poptapark and is close to the public road receives a more public function by becoming a co-working area with a cafe and library. Centrallylocated is the residential core which runs all through the building from the basement to the top floor. The building is characterized with a more public west side and a more private east side: this is also visible on the ground floor plan. Current open-air parking is half-sunken to the basement level to allow a safe open space in front of the building. The car-traffic is now taking place on the northern road, allowing the south side of the building to become a free and safe space. The connection with Poptapark is therefore also strengthened.

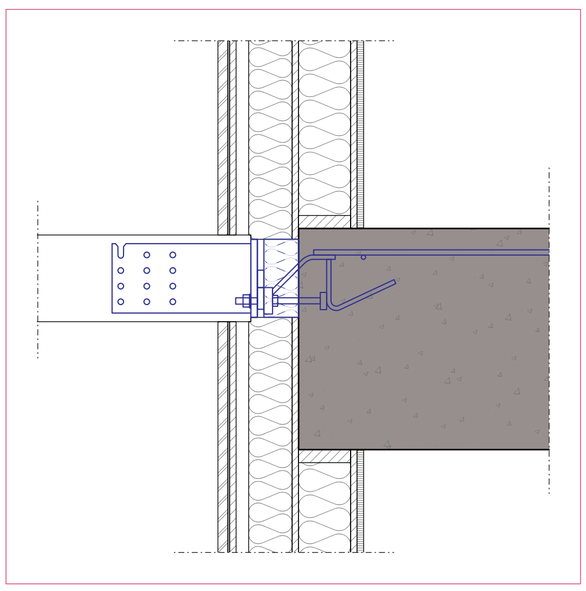
SITUATION (1:500)

STRUCTURE CONCEPT

This project presents an addition to an existing building. For this project, the existing building's structure is kept fully intact and the additions are made following the rhythm of what is already present. A new set of glulam columns and beams are added which follow the grid structure of the existing situation and is attached to the existing building to form a unity. The below axonometry shows the existing building in black and the new construction in blue.

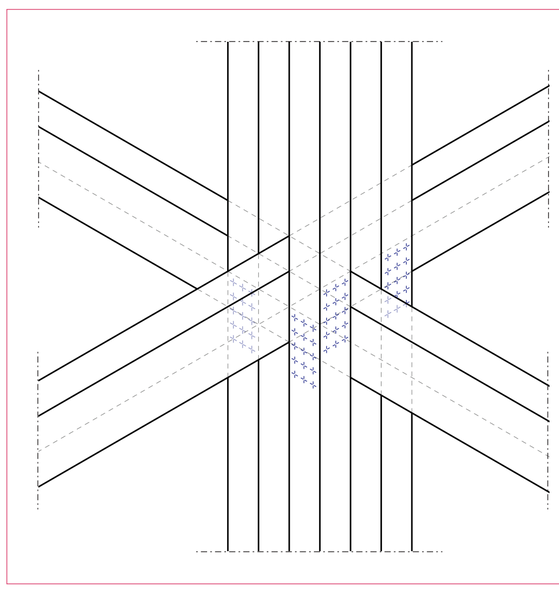






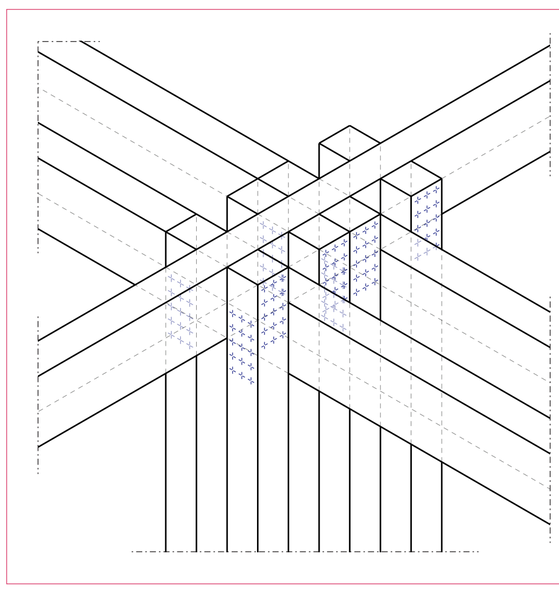
A

Detail A shows how the new glulam beams are connected to the existing construction. To create a connection where lateral and horizontal forces are transmitted, IsoPRO HBQ system is used. This system transmits oth positive shearing forces and horizontalforces and includes a (minimum of) 80 mm of insulation between the beams which are getting connected to solve the issue of thermal bridging.



B

Detail B shows how the beams and columns are connected with one another. Beams pass perpendicular to each other in between the four columns. Both beams are attached to all four of the columns using stud connectors which form rigid connections between the elements to ensure stability.

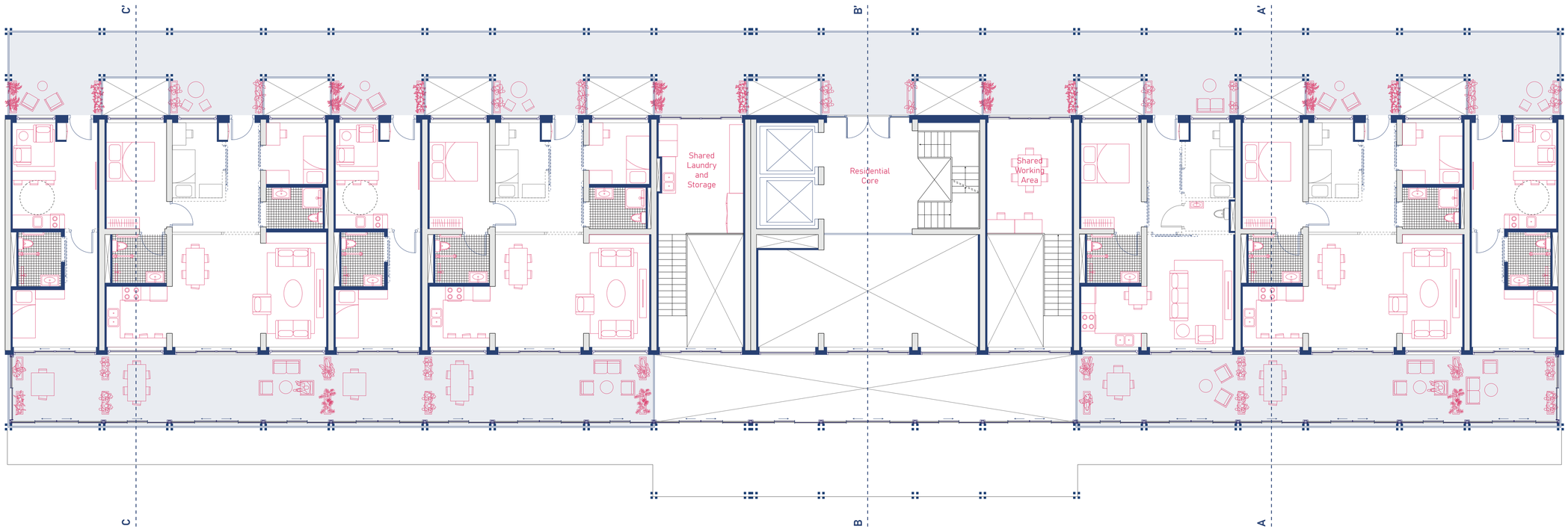


C

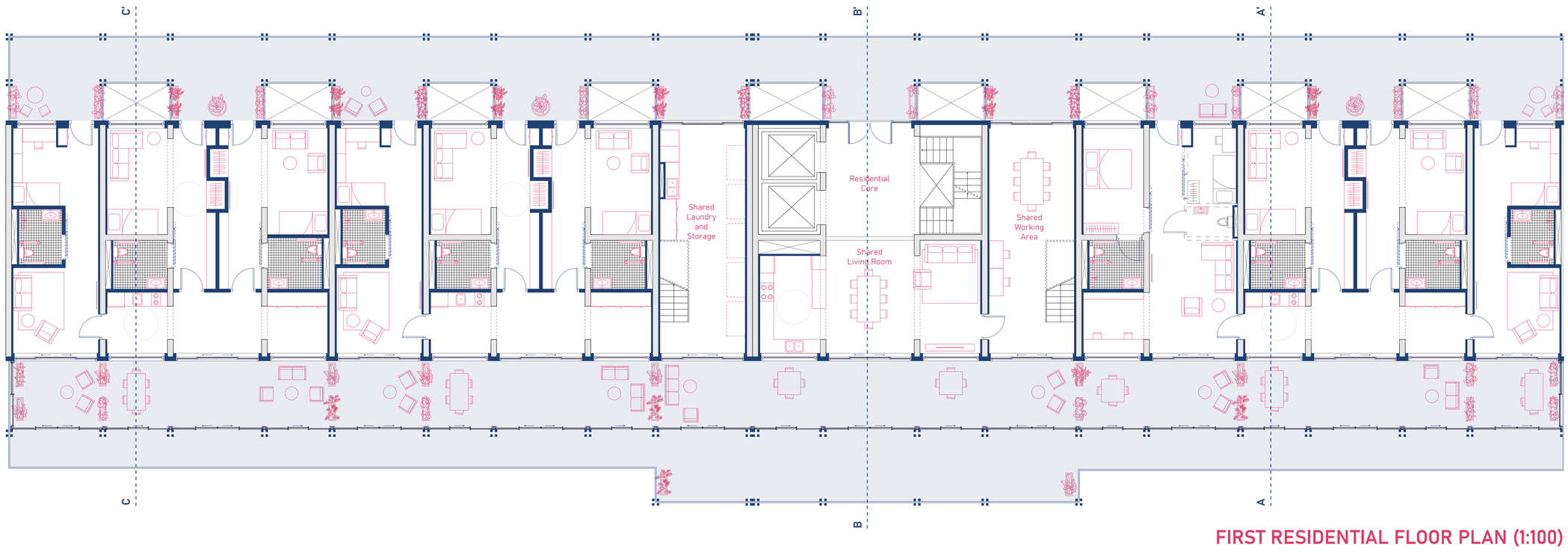
Existing structure of the building includes a movement joint located in the middle of the building to ensure movement is possible for when the building is exposed to heat or other factors. This existing movement joint is mirrored with the new structure for the same technical reasons, but also to expose the existing construction using the new elements.

D

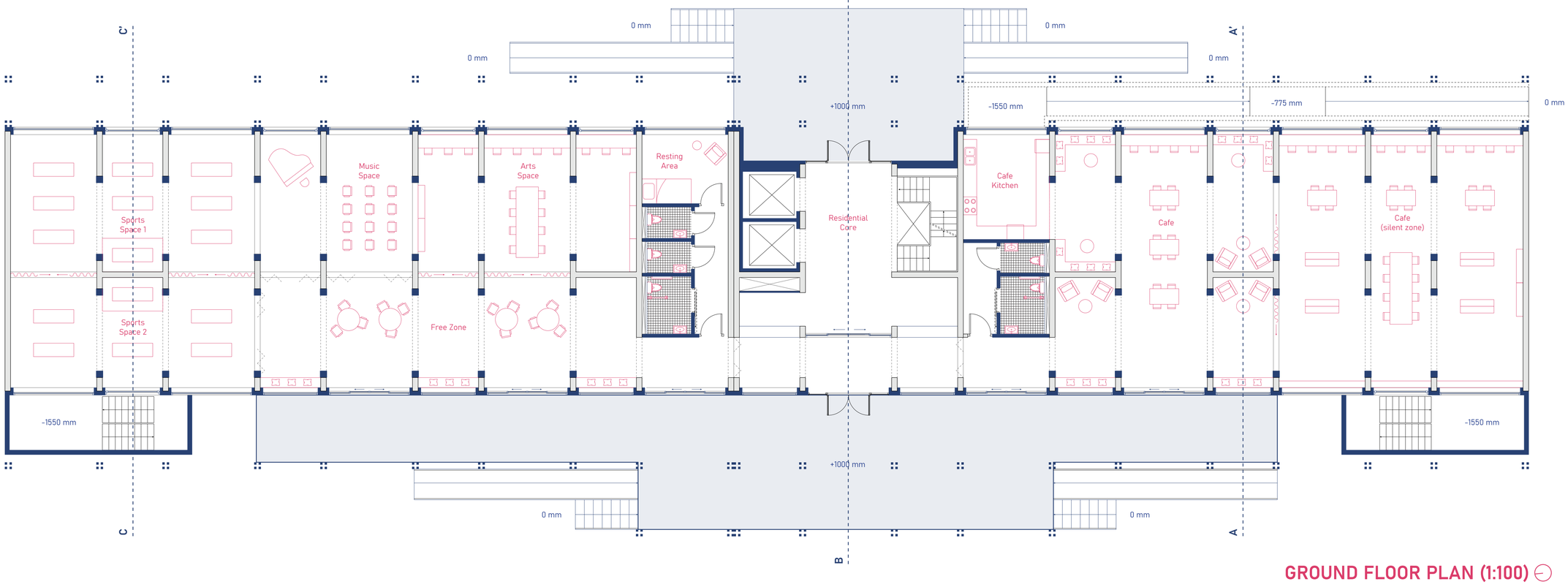
Existing building has been built using the MUWI construction system. In this specific building, walls (excluding basement and ground floor) are built using MUWI wall blocks with two columns on either side. On the walls, concrete is poured on site to effectively secure the connection of the beams which run perpendicular to the wall. Between these beams, MUWI floor blocks are placed.



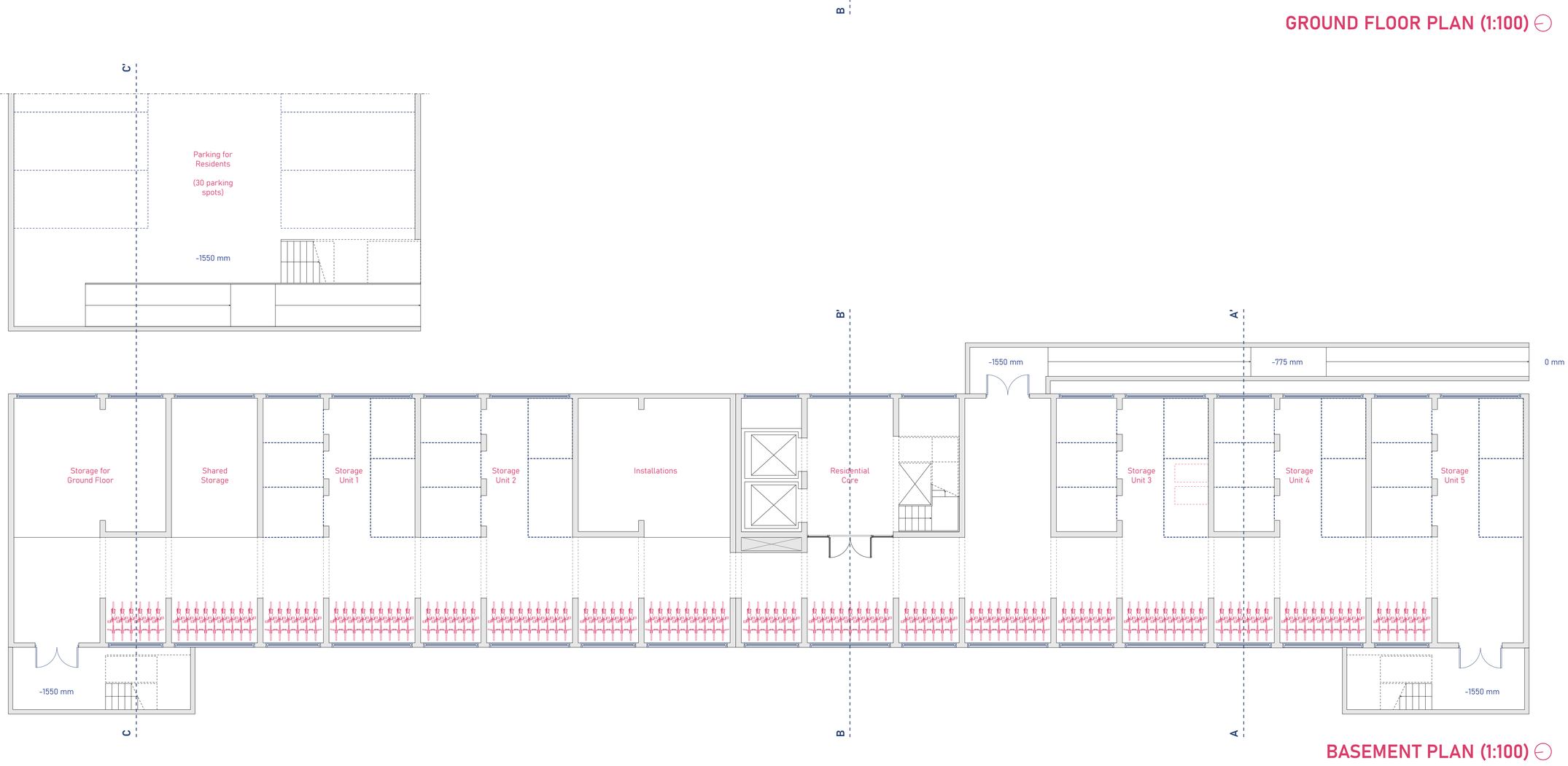
SECOND RESIDENTIAL FLOOR PLAN (1:100)



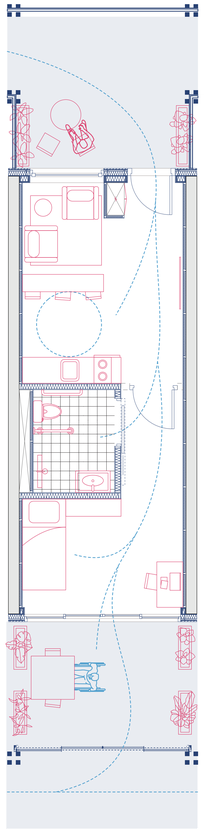
FIRST RESIDENTIAL FLOOR PLAN (1:100)



GROUND FLOOR PLAN (1:100)

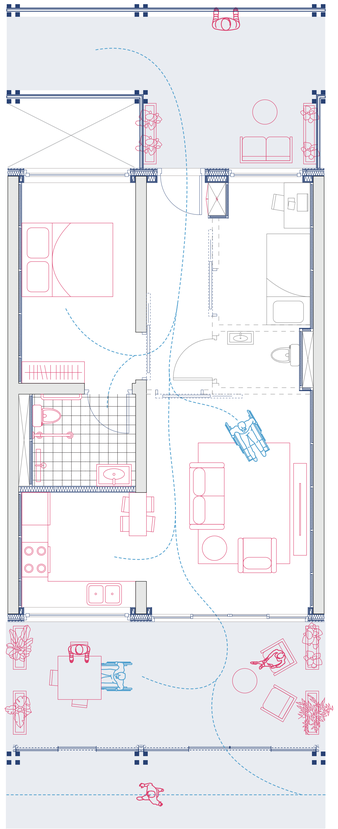


BASEMENT PLAN (1:100)



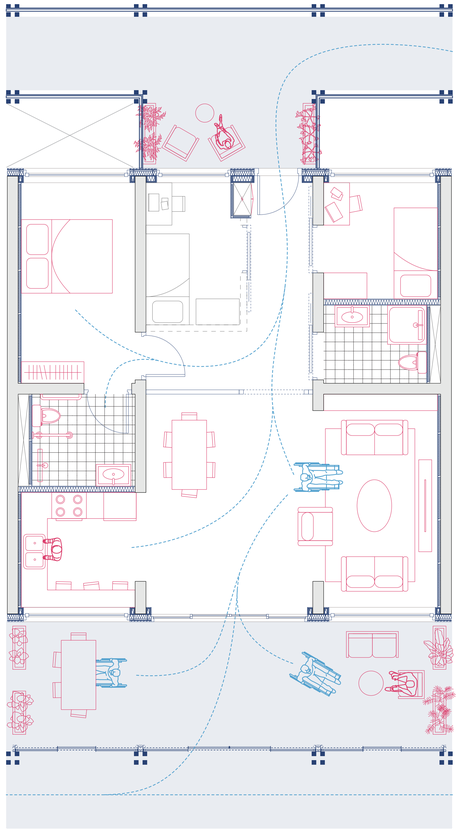
STUDIO UNIT (1:50)
(38 m²)

Studio unit is split into two parts, a living area facing east and sleeping area facing west. This configuration allows the user to step into their living area from their front door. The house has a private kitchen area suitable for one person or a couple, the toilet/bathroom space is large enough to be used with wheelchair or other supporting equipment and the house has two outside spaces: one on the east side for embracing the morning sun and one on the west side - covered with glazing to trap the heat so that the space can also be used during sunny winter days.



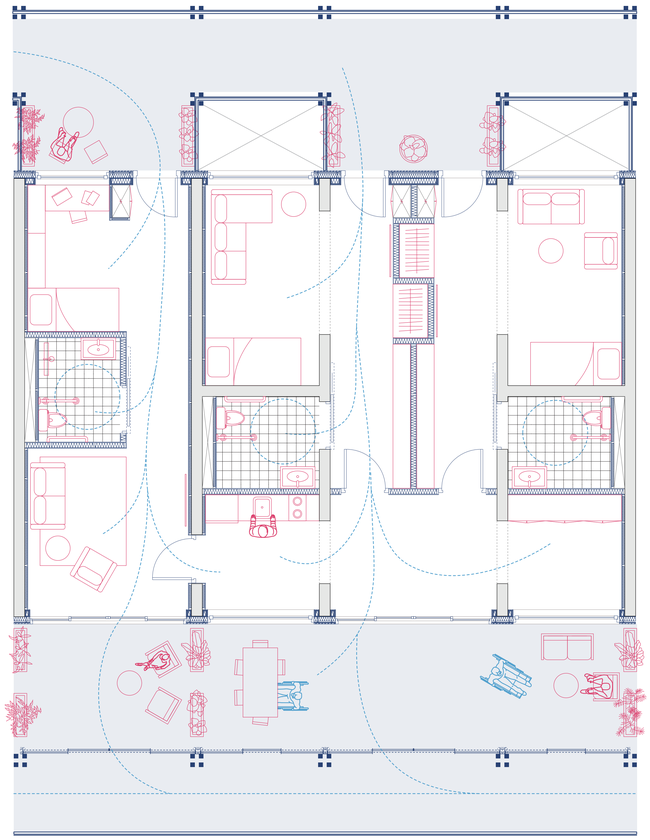
STANDARD UNIT (1:50)
(65 m²)

Standard unit has the exact same size as the existing units present in the building. This unit has a master bedroom with its own accessible bathroom. There is space available for an extra bedroom/workspace and an additional wc, if desired. The unit is split into two parts: the east side where the bedrooms are facing, letting the morning sun in and the west side where the living room and kitchen are oriented towards, allowing the afternoon sun to light up the room. From the living room, it is possible to step out to the balcony - covered with glazing to act as a winter garden- facing the west.



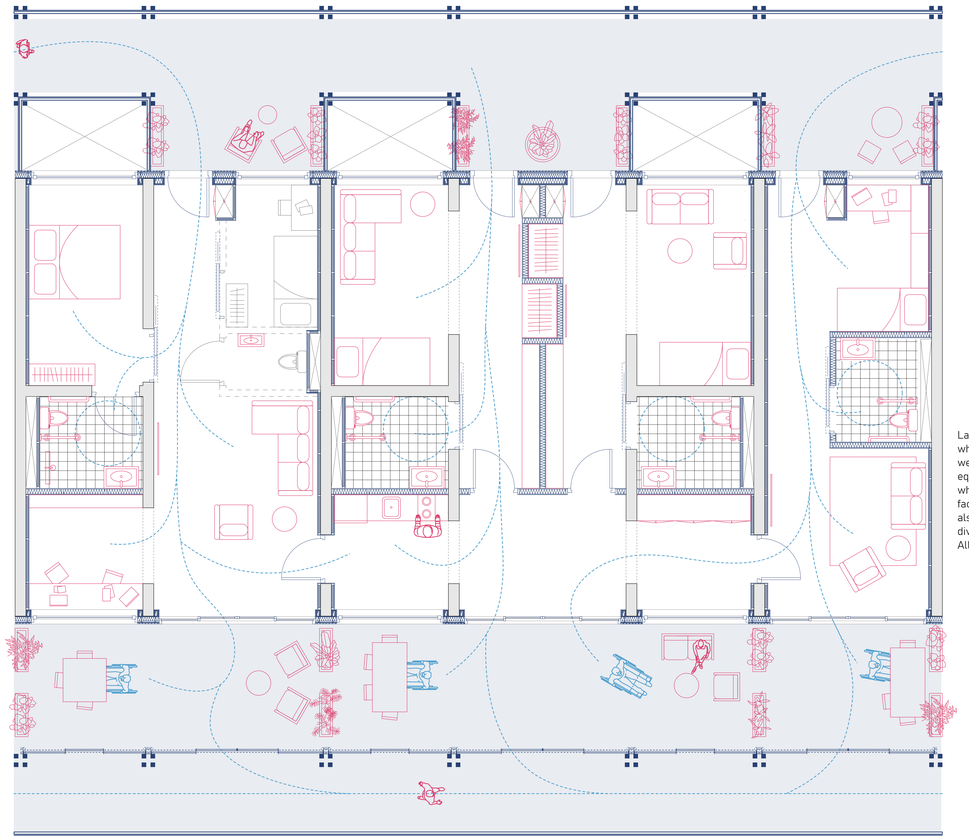
FAMILY UNIT (1:50)
(95 m²)

Family unit is the largest among all the idendepent units. In addition to the master bedroom and bathroom - which is easily accessible with a wheelchair or other supporting equipment-, there is one (or if desired two) extra bedrooms/workspaces. To cater for the needs of the families, the house has an additional smaller bathroom. The unit is split into two parts: the east side where the bedrooms are facing, letting the morning sun in and the west side where the living room and kitchen are oriented towards, allowing the afternoon sun to light up the room. From the living room, it is possible to step out to the balcony - covered with glazing to act as a winter garden- facing the west.



SMALL GROUP (1:50)
(1 STUDIO + 2 ROOMS)

Small group includes one studio and two smaller rooms, all of which share the kitchen, storage space, living area and the winter garden facing the west. All units are designed to be easily used with a wheelchair or other supporting equipment, equipped with accessible bathrooms and large open spaces to allow wheelchair maneouvres. The studio unit has an additional living space of its own, facing west towards the winter garden. All bedrooms are facing the east balcony, creating a more private atmosphere for the east balcony compared to the west.

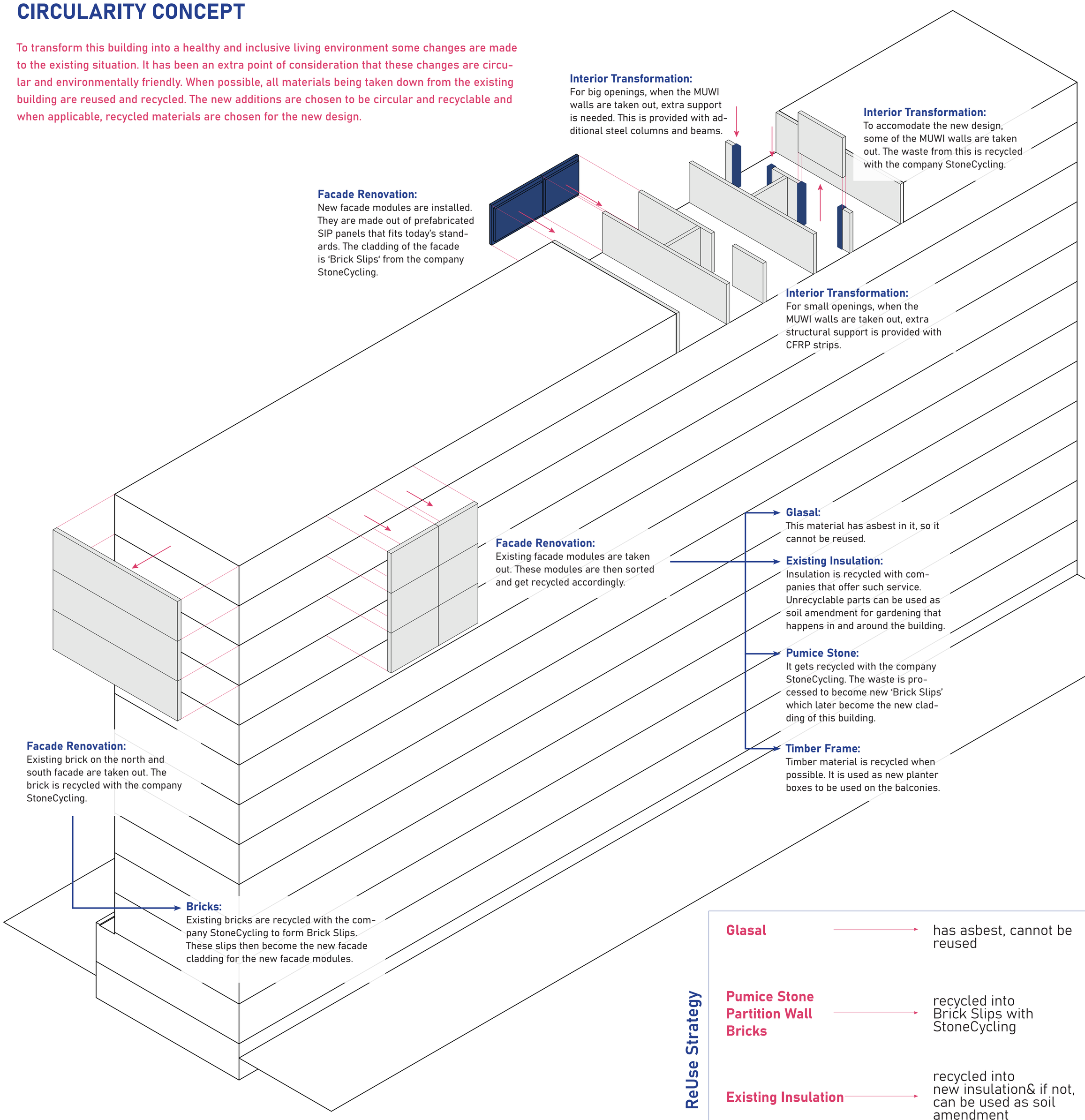


LARGE GROUP (1:50)
(1 STUDIO + 2 ROOMS + 1 STANDARD UNIT)

Large group includes one studio, two smaller rooms and one standard unit, all of which share the kitchen, storage space, living area and the winter garden facing the west. All units are designed to be easily used with a wheelchair or other supporting equipment, equipped with accessible bathrooms and large open spaces to allow wheelchair maneouvres. The studio unit has an additional living space of its own, facing west towards the winter garden. Same goes for the standard unit, which can also have an additional bedroom and bathroom if desired. Large group introduces diversity to the group - by allowing enough space to host a family or a single parent. All bedrooms are facing the east balcony, creating a more private atmosphere for the east balcony compared to the west.

CIRCULARITY CONCEPT

To transform this building into a healthy and inclusive living environment some changes are made to the existing situation. It has been an extra point of consideration that these changes are circular and environmentally friendly. When possible, all materials being taken down from the existing building are reused and recycled. The new additions are chosen to be circular and recyclable and when applicable, recycled materials are chosen for the new design.



Interior Transformation:
For big openings, when the MUWI walls are taken out, extra support is needed. This is provided with additional steel columns and beams.

Interior Transformation:
To accomodate the new design, some of the MUWI walls are taken out. The waste from this is recycled with the company StoneCycling.

Facade Renovation:
New facade modules are installed. They are made out of prefabricated SIP panels that fits today's standards. The cladding of the facade is 'Brick Slips' from the company StoneCycling.

Interior Transformation:
For small openings, when the MUWI walls are taken out, extra structural support is provided with CFRP strips.

Facade Renovation:
Existing facade modules are taken out. These modules are then sorted and get recycled accordingly.

Glasal:
This material has asbest in it, so it cannot be reused.

Existing Insulation:
Insulation is recycled with companies that offer such service. Unrecyclable parts can be used as soil amendment for gardening that happens in and around the building.

Pumice Stone:
It gets recycled with the company StoneCycling. The waste is processed to become new 'Brick Slips' which later become the new cladding of this building.

Timber Frame:
Timber material is recycled when possible. It is used as new planter boxes to be used on the balconies.

Facade Renovation:
Existing brick on the north and south facade are taken out. The brick is recycled with the company StoneCycling.

Bricks:
Existing bricks are recycled with the company StoneCycling to form Brick Slips. These slips then become the new facade cladding for the new facade modules.

ReUse Strategy

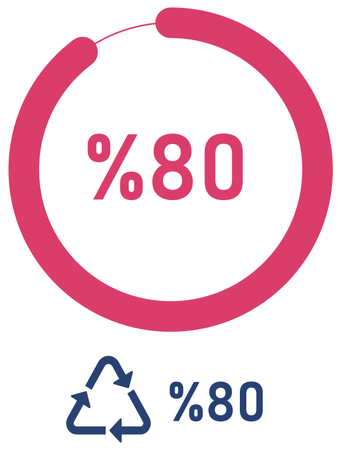
Glasal	→	has asbest, cannot be reused
Pumice Stone **Partition Wall** **Bricks**	→	recycled into Brick Slips with StoneCycling
Existing Insulation	→	recycled into new insulation& if not, can be used as soil amendment
Timber Frame	→	recycled into planter boxes and furniture

Structure

Structure of the building is maintained fully. All the load-bearing beams and columns are kept intact and where necessary, extra support is created using steel column and beams and CFRP strips.

Services

Services are renewed completely. Existing building uses gas for heating and shafts (possibly) have asbest. For this reason. All shafts and services are renewed with more durable and circular solutions.

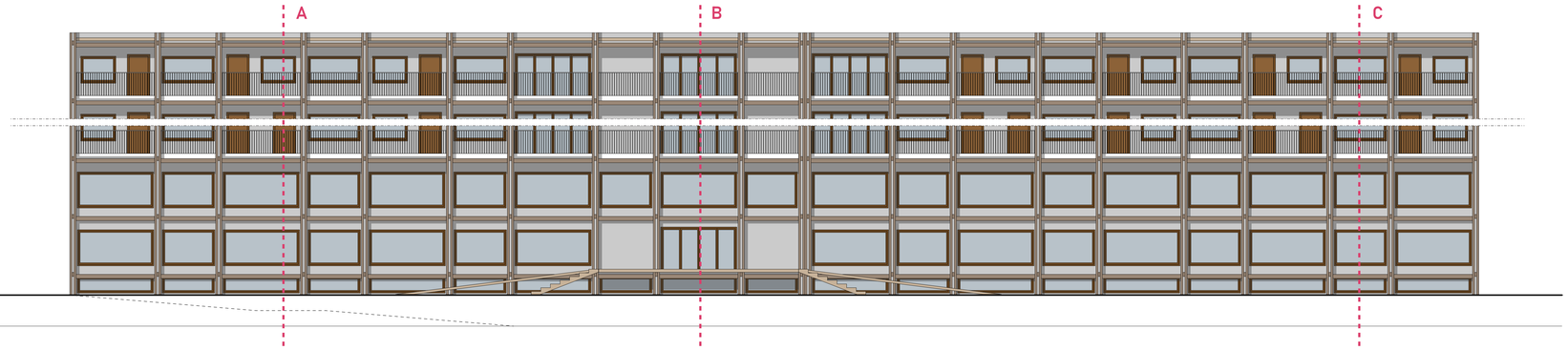


Partition Walls

To follow the design concept, the transformation requires some of the partition walls to be taken down. However, since the MUWI walls are also a part of the structure, it has been a key point in the design to have as little partition walls taken down as possible.

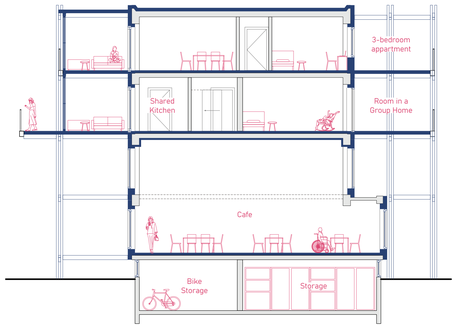
Facade

Existing building's insulation and performance does not meet today's requirements. To fulfill a healthy living environment for the new residents, entirety of the facade is taken down and recycled to be used for other purposes.



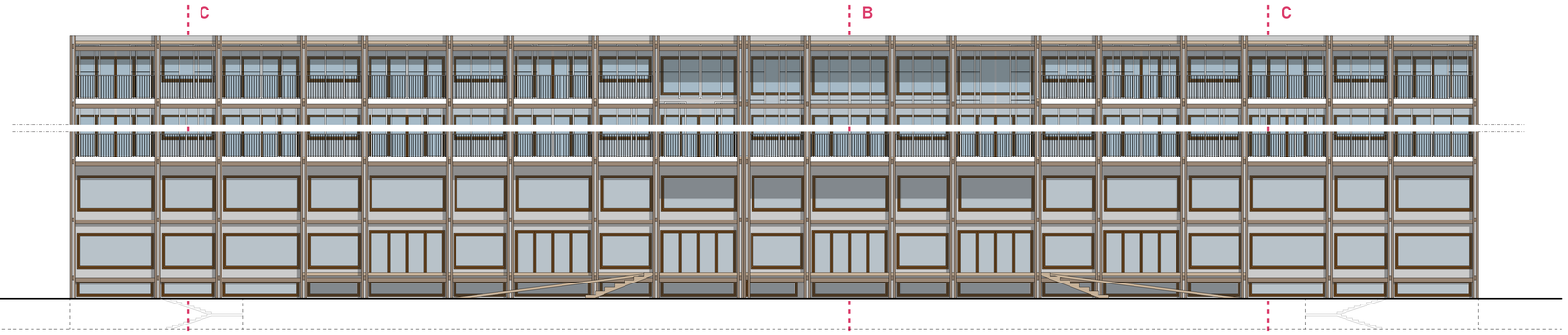
EAST FACADE (1:100)

East side is the "pragmatic side" of the building. This is the side where all the entrances are located, where all the sleeping areas are facing and where the residents can feel more comfortable. This allows the residents to have a side where they can retrieve from social interaction and be on their own. What caharacterizes the east facade is the presence of small porches at the entrances of each unit. Residents can soak the morning sun by stepping outside, taking a fresh breath before starting their day. East facade is fully open and has balcony depth of 2m + 2m, to allow easy movement using a wheelchair or other supporting equipment. Windows are all 60 cm above the floor level, allowing people on wheelchairs to also have a clear sight towards outside. The railing of the balcony, made out of timber slats, are also 90 cm tall, allowing wheelchair users to feel safe while still having a outlook towards the view. On the ground floor, the private entrance to the appartment is located on the east side as well, further supporting the pragmatic and private character of the east facade. The entrance on ground floor is set back by 2 meters, following the residential facade line.



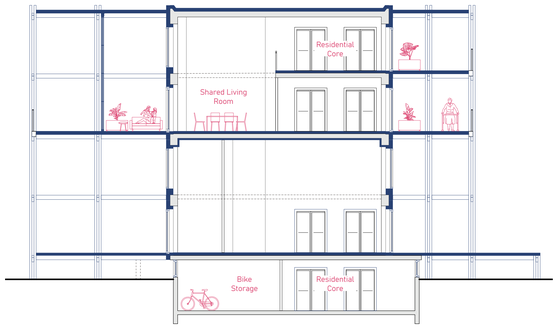
SECTION A (1:100)

Section A shows the different floors and the difference in use. Basement has bike storage space on the west and group storage areas on the east. Ground floor has double height and has floor to ceiling windows to create more interaction with outside. On the east side, there is a ramp leading to the basement where the residents can access easily with their bikes. On the upper floors, it is clear to see that the living side and sleeping side are divided for both units.



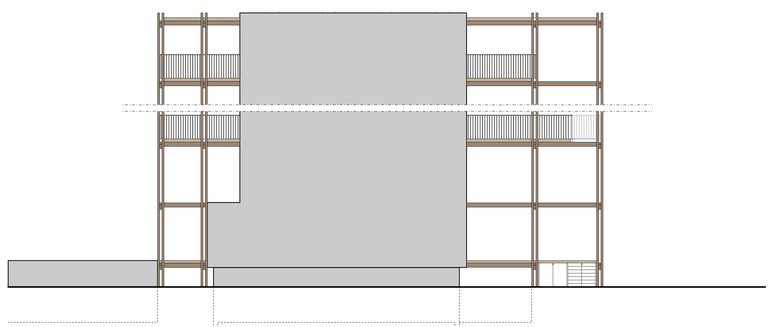
WEST FACADE (1:100)

West side is the "social side" of the building. This is the side where all the balconies/wintergardens are located, where all the living areas are facing and where the residents can feel more social. This allows the residents to have a side where they can go to when they feel lonely or if they wish to have social interactions. What caharacterizes the west facade is the presence of shared balconies accessible from the living area of each unit. Residents can soak the afternoon sun by stepping outside, taking a fresh breath after a long day. West facade is partially covered, allowing the residents to make the choice of using it covered or open, depending on the season and/or preference. Balconies have a depth of 3m. On the first residential floor, the communal space has an additional 3 meters of outside space and this outside is accessible via the 1.5 meter passage from the balconies. Windows on this side are all from floor to ceiling, allowing for a clear sight towards outside. The railing of the balcony, made out of timber slats, are also 90 cm tall, allowing wheelchair users to feel safe while still having a outlook towards the view. On the ground floor, the public entrance to the facilities is located on the west side as well, further supporting the social and open character of the west facade. The entrance on ground floor is aligned with the balconies on the upper floors.



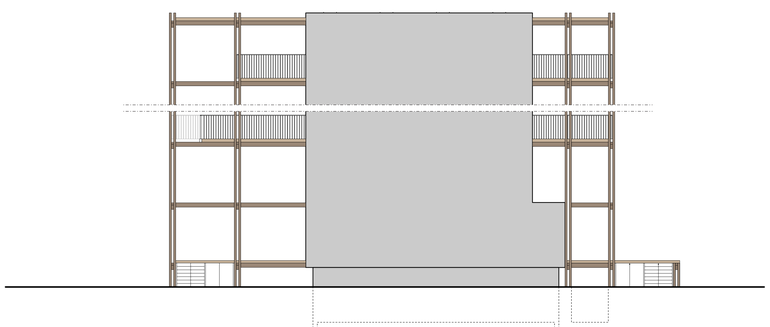
SECTION B (1:100)

Section B shows the relationship between the floors. It is clear to see the residential elevators running centrally in the building. From the elevators, there is direct access to double-height ground floor where semi-public facilities are located and also to the shared communal space on the residential floors. On east side, the ground floor includes the residential entrance and the west side includes the public entrance with a slightly larger porch space to allow for interaction.



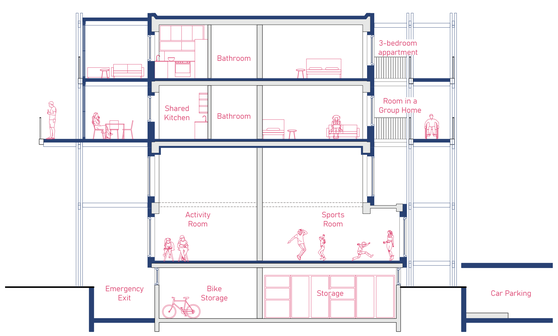
NORTH FACADE (1:100)

Existing north facade has no openings, since the MUWI wall system does not allow for many openings. An interview with an architect who is experienced with buildings with MUWI syteme revealed that these "kopgevels", and especially the exposed concrete slabs are very important to maintain during the renovation to ensure stability. For this reason, north facade it cladded using the new gray-coloured brick slips while exposing the look of the concrete slabs. From the north facade, it is possible to see the half-sunken parking garage.



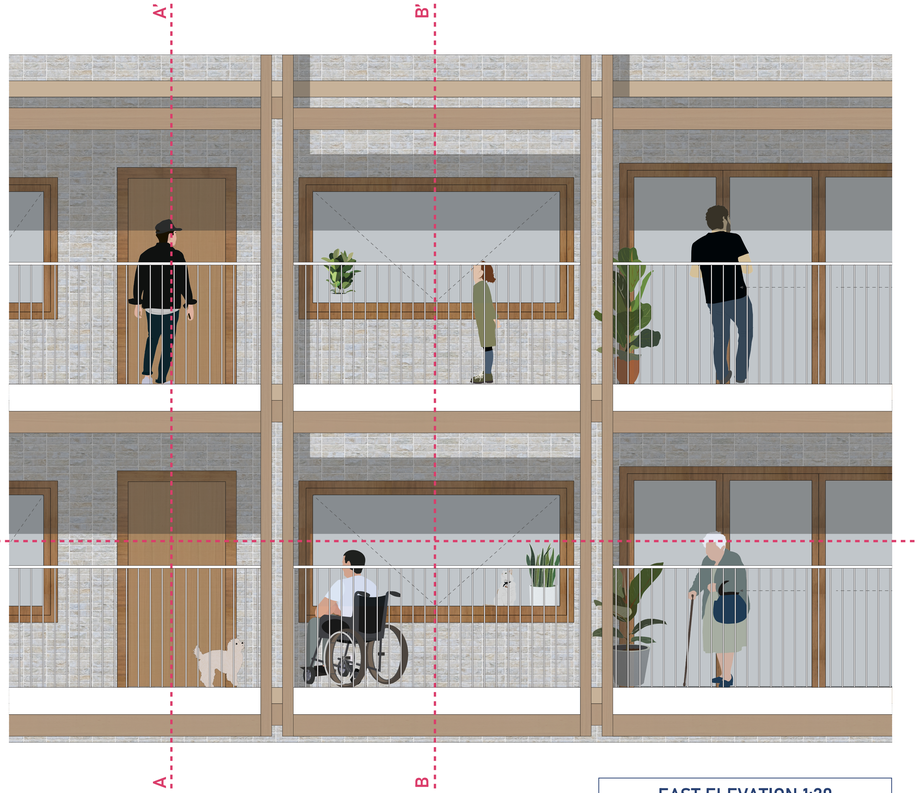
SOUTH FACADE (1:100)

Existing south facade has no openings, since the MUWI wall system does not allow for many openings. An interview with an architect who is experienced with buildings with MUWI syteme revealed that these "kopgevels", and especially the exposed concrete slabs are very important to maintain during the renovation to ensure stability. For this reason, south facade it cladded using the new gray-coloured brick slips while exposing the look of the concrete slabs.

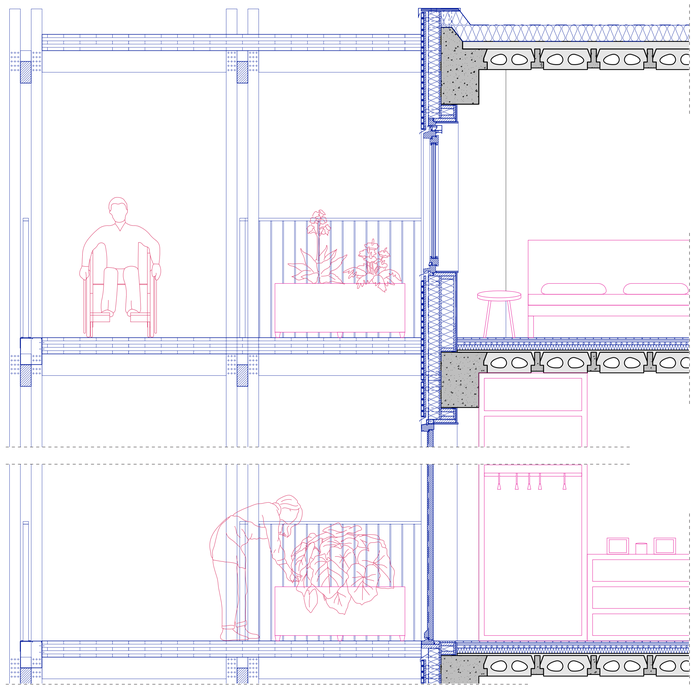


SECTION C (1:100)

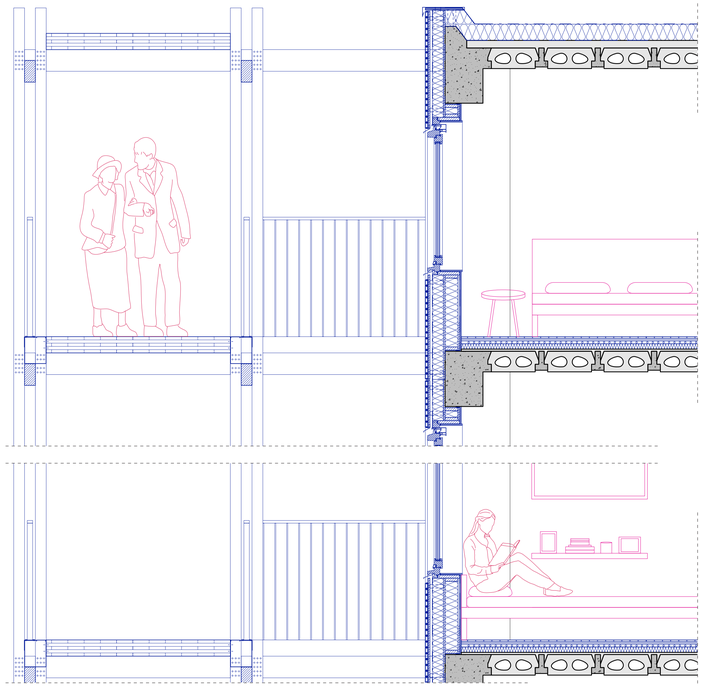
Section C shows the alignment of the room between the residential floors. On both floors, the toilets, kitchen spaces and sleeping areas are neatly aligned to allow for technical intallations to be placed as efficiently as possible On the west side it is possible to see the slightly overhanging balcony on the first residential floor which allows residents to easily move on the west side, allowing for interaction and socializing. This overhang also creates moments of eye-contact with the upper floor, ensuring extra interaction. On the east side, balcony has void to create interaction between the two floors by creating moments of eye-contact. On the basement, there is also the half-sunken parking garage for the residents. This garage is not connected with the main building due to safety reasons.



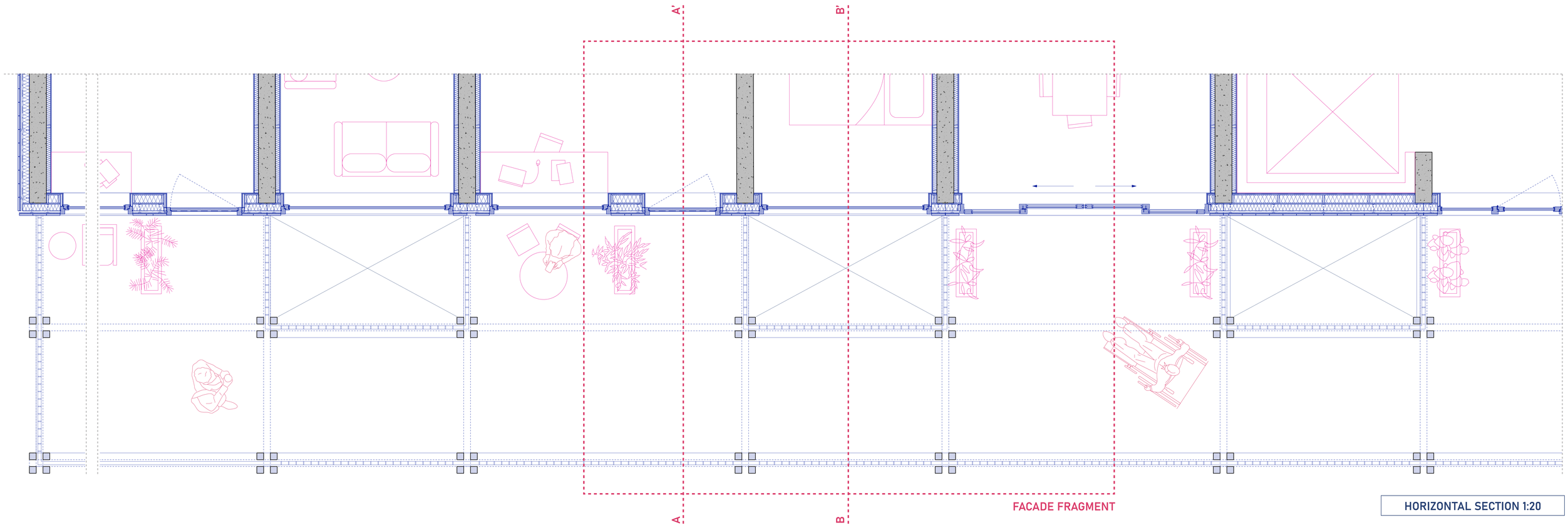
EAST ELEVATION 1:20



SECTION AA' 1:20

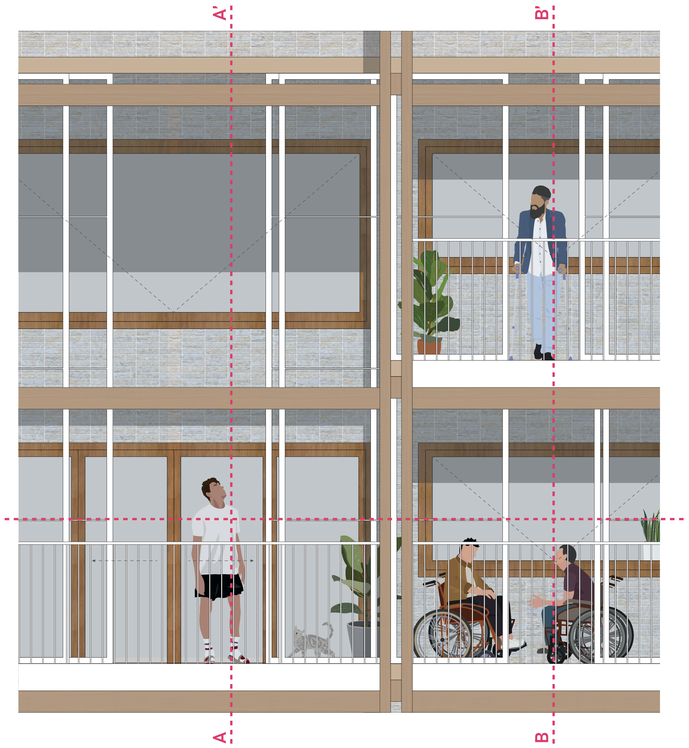


SECTION BB' 1:20

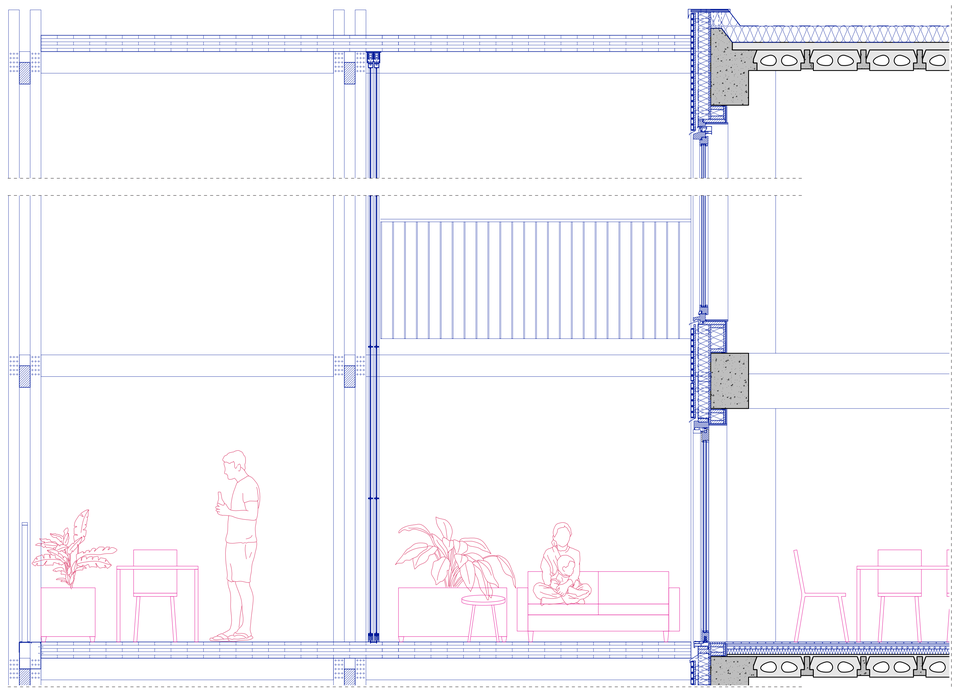


FACADE FRAGMENT

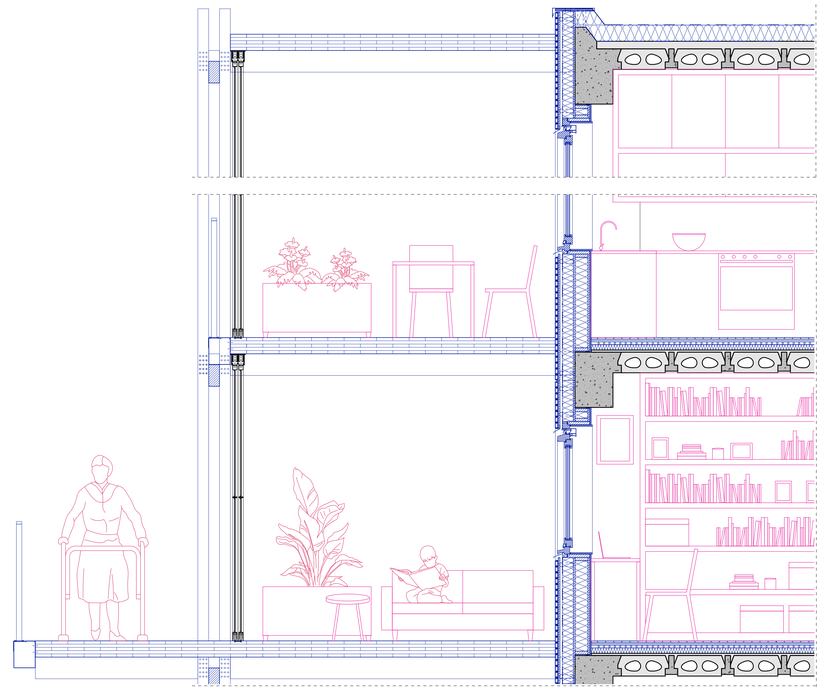
HORIZONTAL SECTION 1:20



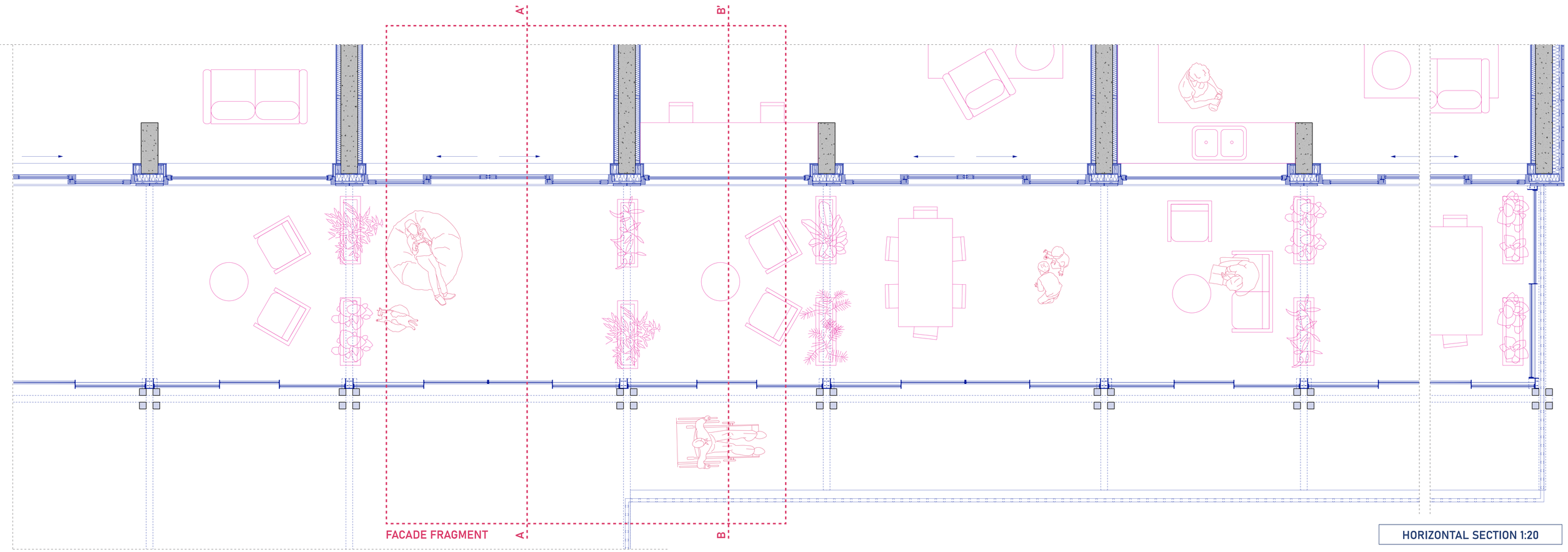
WEST ELEVATION 1:20



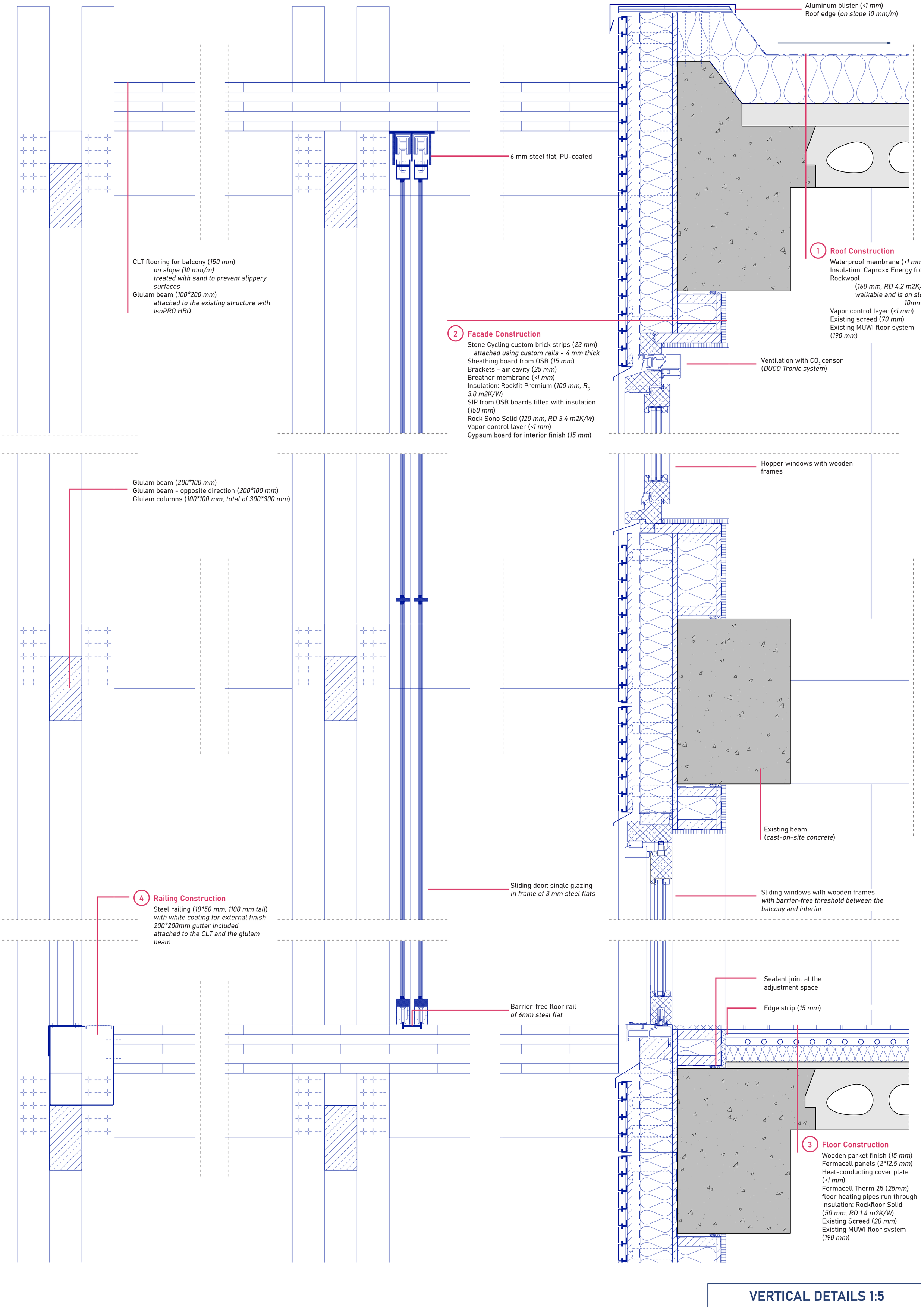
SECTION AA' 1:20



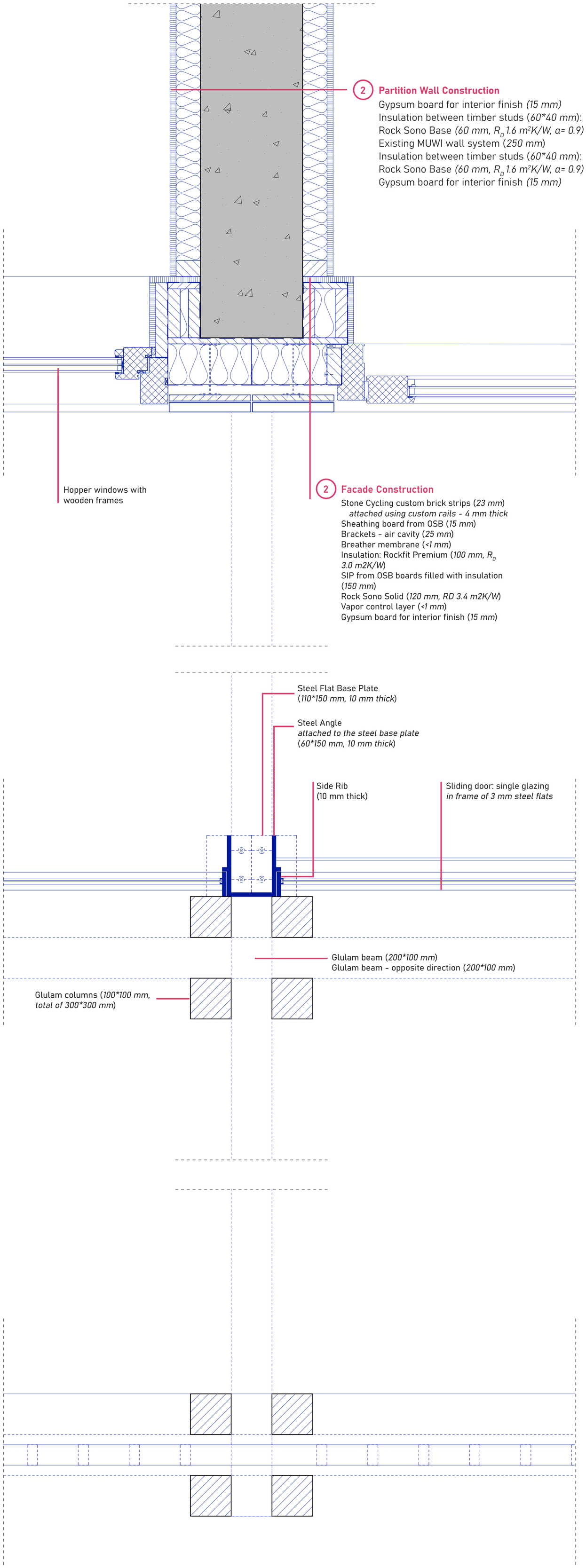
SECTION BB' 1:20



HORIZONTAL SECTION 1:20



VERTICAL DETAILS 1:5



2 **Partition Wall Construction**
Gypsum board for interior finish *(15 mm)*
Insulation between timber studs (*60*40 mm*):
Rock Sono Base *(60 mm, R_D 1.6 m²K/W, α= 0.9)*
Existing MUWI wall system (*250 mm*)
Insulation between timber studs (*60*40 mm*):
Rock Sono Base *(60 mm, R_D 1.6 m²K/W, α= 0.9)*
Gypsum board for interior finish *(15 mm)*

Hopper windows with
wooden frames

2 **Facade Construction**
Stone Cycling custom brick strips (*23 mm*)
attached using custom rails - 4 mm thick
Sheathing board from OSB (*15 mm*)
Brackets - air cavity (*25 mm*)
Breather membrane (*<1 mm*)
Insulation: Rockfit Premium (*100 mm, R_D 3.0 m2K/W*)
SIP from OSB boards filled with insulation (*150 mm*)
Rock Sono Solid (*120 mm, RD 3.4 m2K/W*)
Vapor control layer (*<1 mm*)
Gypsum board for interior finish (*15 mm*)

Steel Flat Base Plate
(*110*150 mm, 10 mm thick*)

Steel Angle
attached to the steel base plate
(*60*150 mm, 10 mm thick*)

Side Rib
(10 mm thick)

Sliding door: single glazing
in frame of 3 mm steel flats

Glulam beam (*200*100 mm*)
Glulam beam - opposite direction (*200*100 mm*)

Glulam columns (*100*100 mm,
total of 300*300 mm*)

Sliding windows with wooden frames
with barrier-free threshold between the balcony and interior

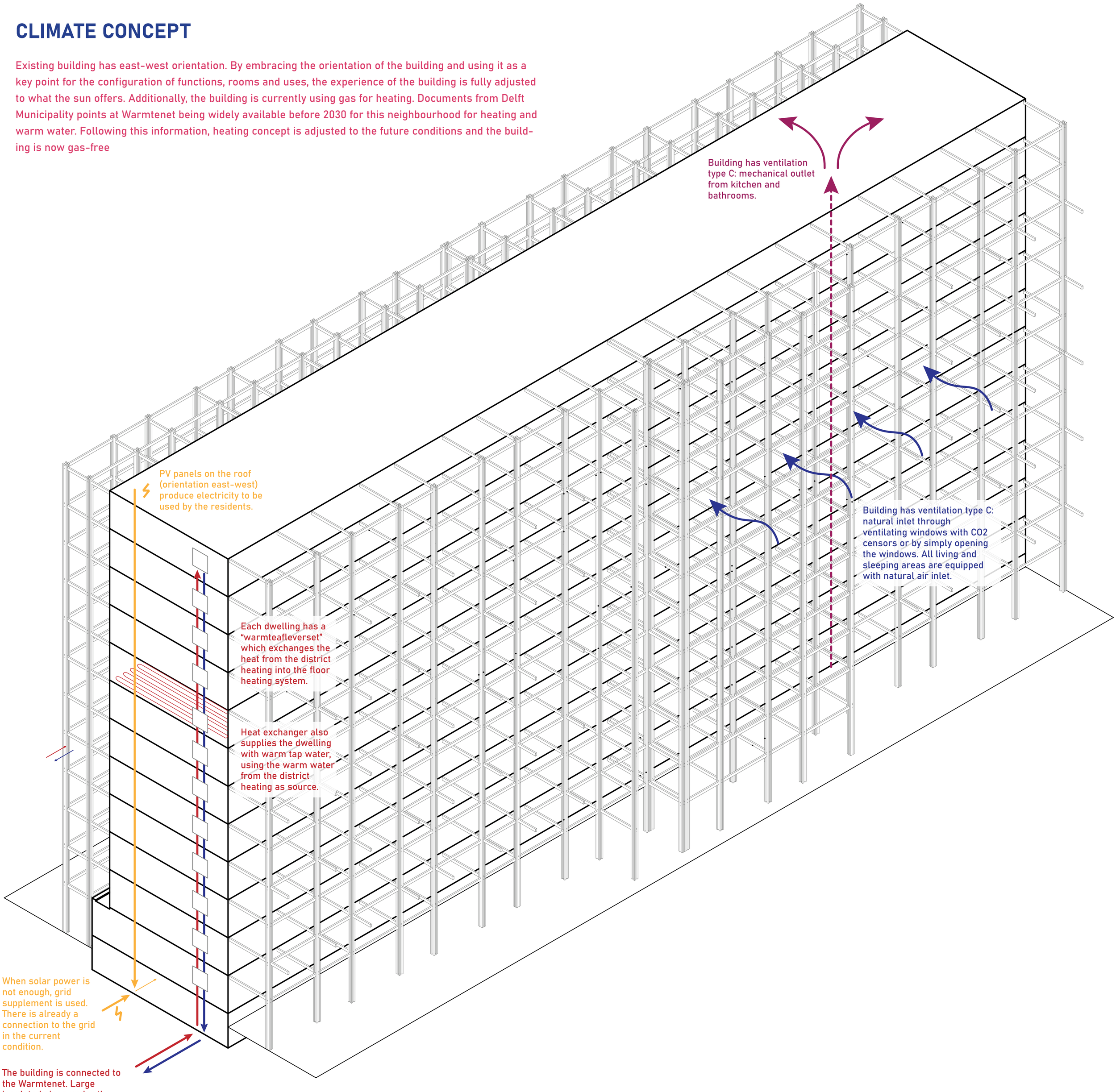
Barrier-free floor rail
of 6mm steel flat

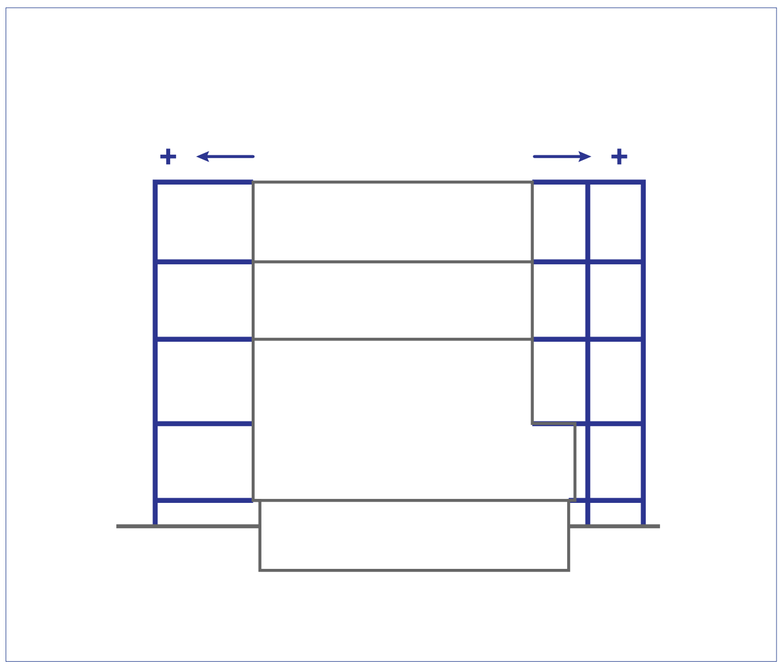
3 **Railing Construction**
Steel railing (*10*50 mm, 1100 mm tall*)
with white coating for external finish
*200*200mm gutter included*
attached to the CLT and the glulam beam

HORIZONTAL DETAILS 1:5

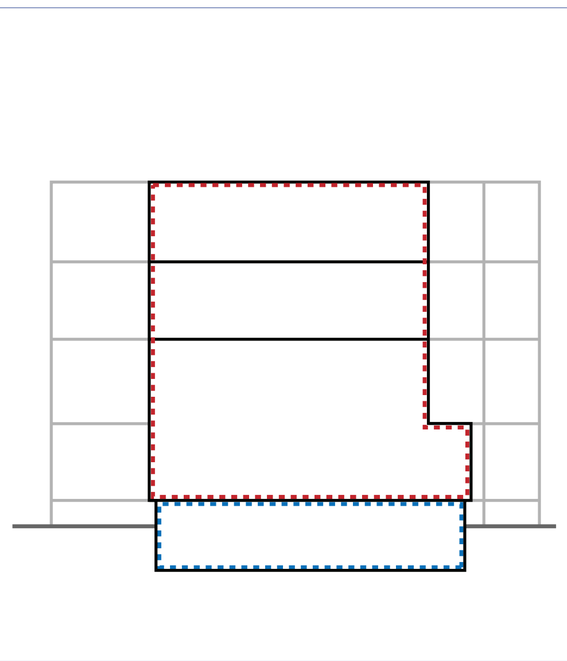
CLIMATE CONCEPT

Existing building has east-west orientation. By embracing the orientation of the building and using it as a key point for the configuration of functions, rooms and uses, the experience of the building is fully adjusted to what the sun offers. Additionally, the building is currently using gas for heating. Documents from Delft Municipality points at Warmtenet being widely available before 2030 for this neighbourhood for heating and warm water. Following this information, heating concept is adjusted to the future conditions and the building is now gas-free

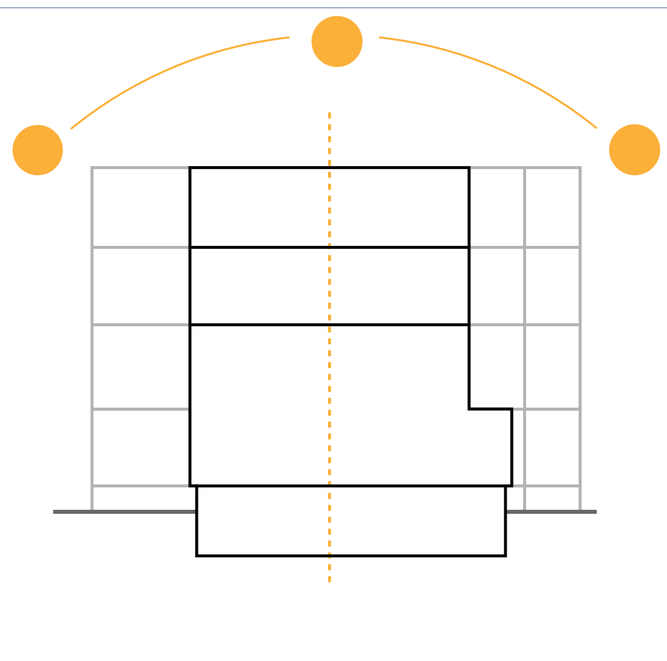




Most important attribute of the building is that it is kept intact as much as possible and only additions are made to the existing structure to ensure a safe and comfortable outdoor space to all residents on all floors. These additions are made using engineered wood products. Using engineered wood allows for as little new material as possible while ensuring minimum impact on environment & on the current condition of the existing building.



The building has a clearly defined thermic line. Upper floors ncluding the semi-public ground floor is insulated well with extra insulation placed on the facade and on the floor & roof. This extra insulation creates the opportunity to make use of floor heating which is a low temperature heating system. Existing basement, which is currently uninsulated, is left uninsulated and is assigned the storage function for the residents and for the facilities on the ground floor.



The building has east-west orientation. While reconfiguring the homes and the additional program, this orientation took a central point. In the new design, west side - or the “afternoon side” - is where all the living functions are oriented: West is where people are meeting, interacting and it is the lively side of the building. And est side - or the “morning side“ - is where all the private spaces and bedrooms are oriented: This way, residents can wake up to the morning sun and be on their own until they wish.