

P5 Booklet

Hembrug Peninsula – Revitalising Heritage

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Heritage & Architecture

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Location

The project site is called Hembrug and is located in between Zaandam and Amsterdam. It is a unique green enclave surrounded by industry along the North Sea Canal and Side Canal G.



History

Hembrug used to be a military industrial area of the Artillery Establishments (Artillerie Inrichtingen in Dutch) since 1895. This site was used for the production of weapons and ammunition for the Dutch army and used to be the heart of the Dutch military industry for a long time.

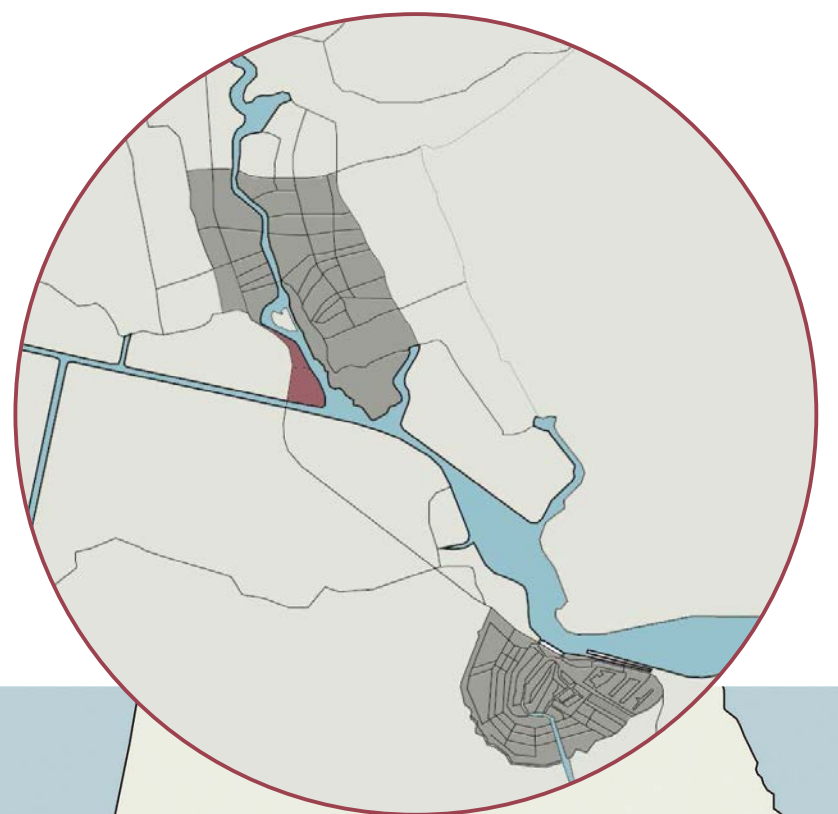


Water

Until the end of the 19th century a large part of the Hembrug site did not exist yet, since the lake 't IJ used to be much wider. Back then, a smaller part of the current Hembrug site did exist and was called “De Hem”. From 1865 until 1876 the North Sea canal was dug by hand to create a better sailing route from the North sea to Amsterdam. At the same time several polders, like a large part of the Hembrug site, were created and sold to finance the canal.



ca. 1850



ca. 1900

Strategic location

Due to a lack of space at the ammunition factory in Delft, the Artillery Establishments started the construction of a military factory on the Hembrug site in 1895. They decided to move to Hembrug since this formed a strategic location with an railway connection to Amsterdam and Zaandam and a sailing connection with the North Sea.



Stelling van Amsterdam

Besides this, the Hembrug site was also located within the Defense Line of Amsterdam, which is called the Stelling of Amsterdam. This defense line consisted out of multiple fortresses and inundation zones that could be flooded with water to protect the main western cities from enemy attack. By creating an military factory on Hembrug these cities and fortresses could be provided with weapons and ammunition from within this protected area.

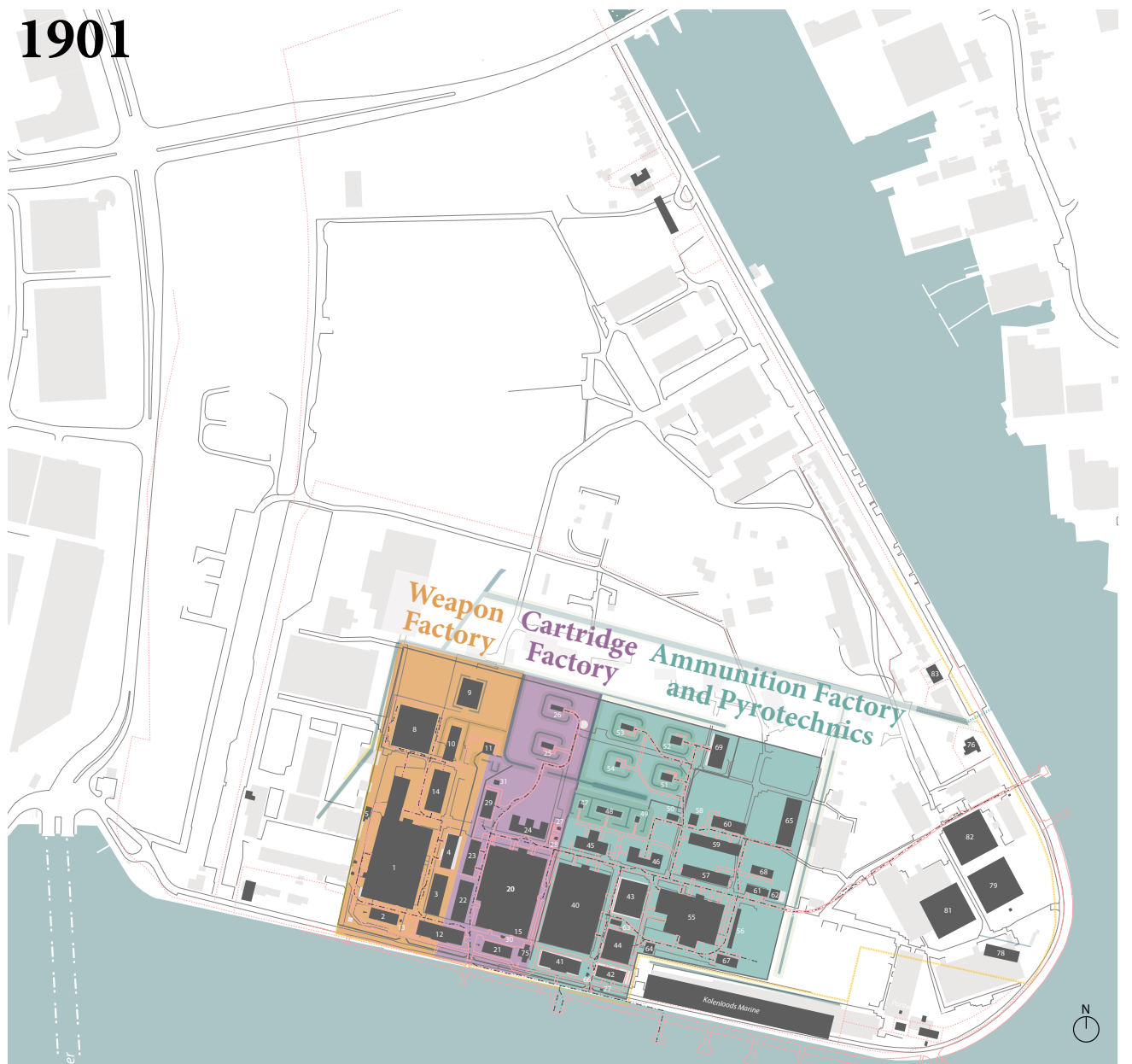


Setup of the site

This military factory had a clear setup that was divided into three individual factories: a weapon factory, a cartridge factory and an ammunition factory. In this way, the Artillery Establishments were able to produce all parts at Hembrug that were needed to fire a gun.



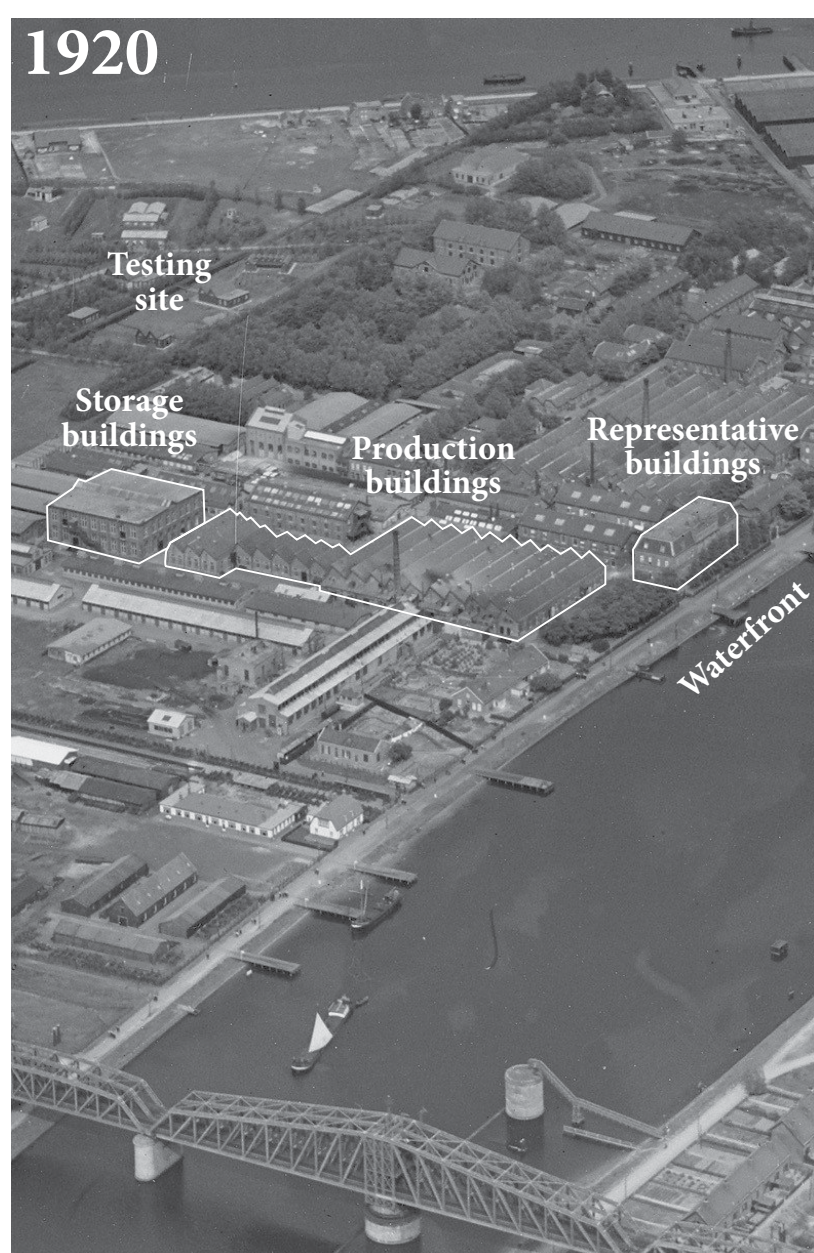
Source: <https://nimh-beeldbank.defensie.nl/>



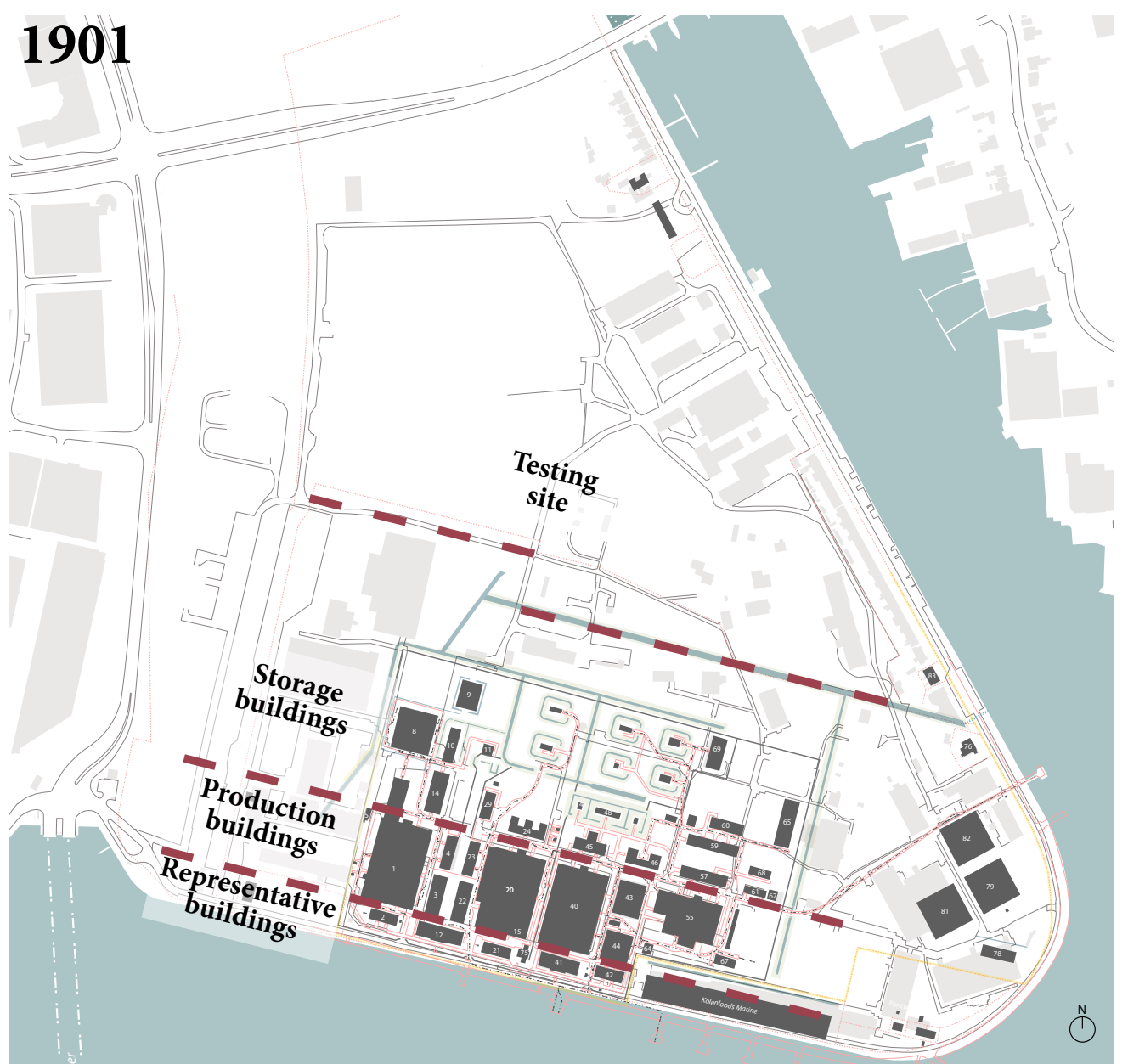
Source: Na Hn

Setup of the site

There was also a clear division in building types. At the waterfront along the North Sea canal they placed the representative direction and office buildings together with the canteens for the staff. Behind this line of buildings were the three big production halls followed by the storage buildings and from 1925 on the site behind the storage buildings was used as a testing site.



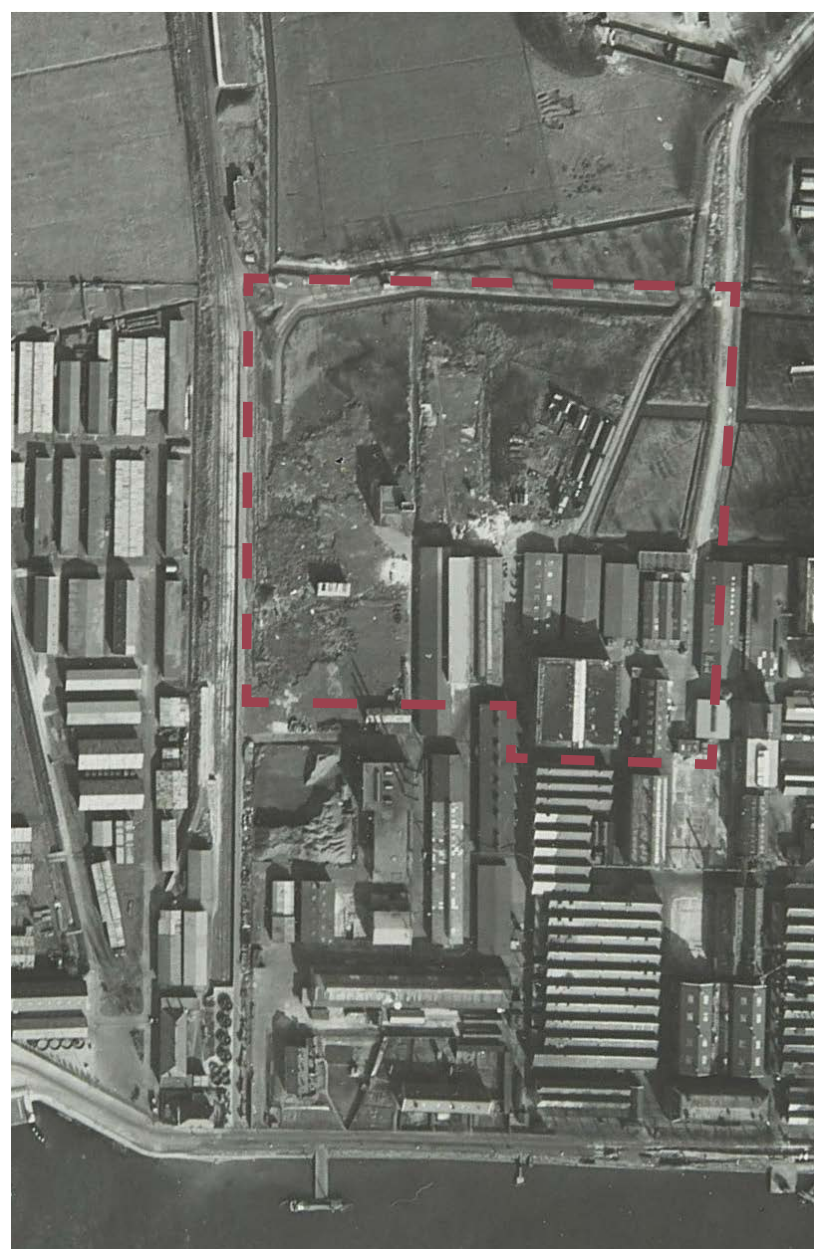
Source: <https://nimb-beeldbank.defensie.nl/>



Source: Na Hn

Campus North

I focussed on a specific part of the Hembrug site which is called Campus North and created a redevelopment design for this ensemble. This ensemble used to be part of the weapon factory and could be seen as the back of the factory complex.



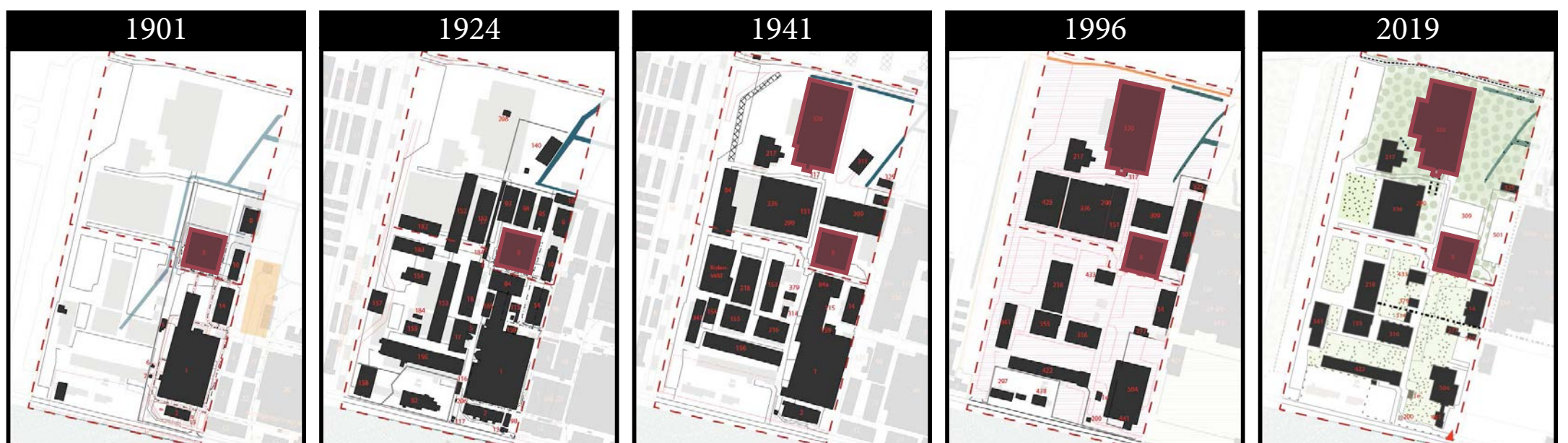
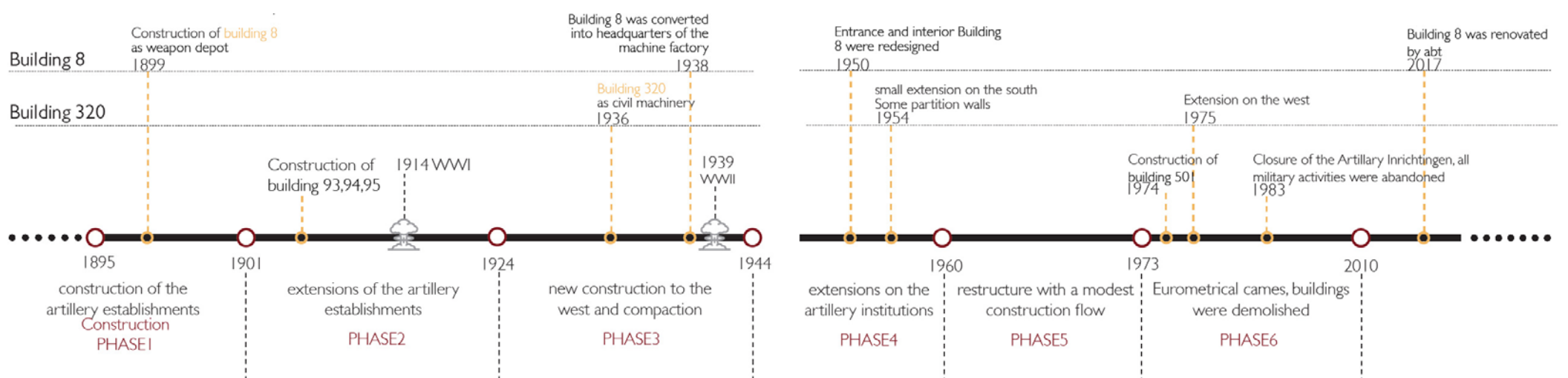
Source: Nederlands Instituut voor Militaire Historie



Source: Na Hn

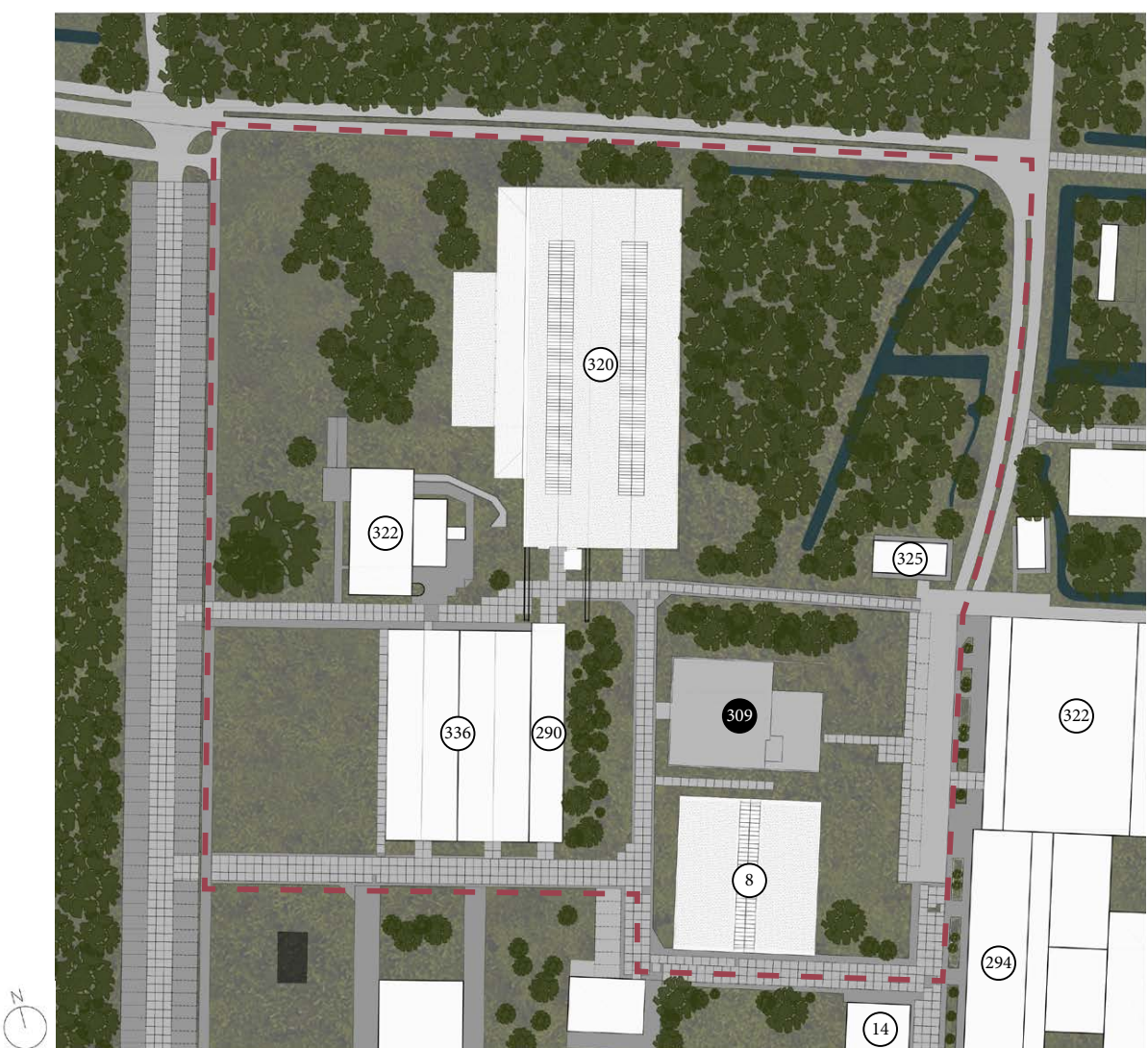
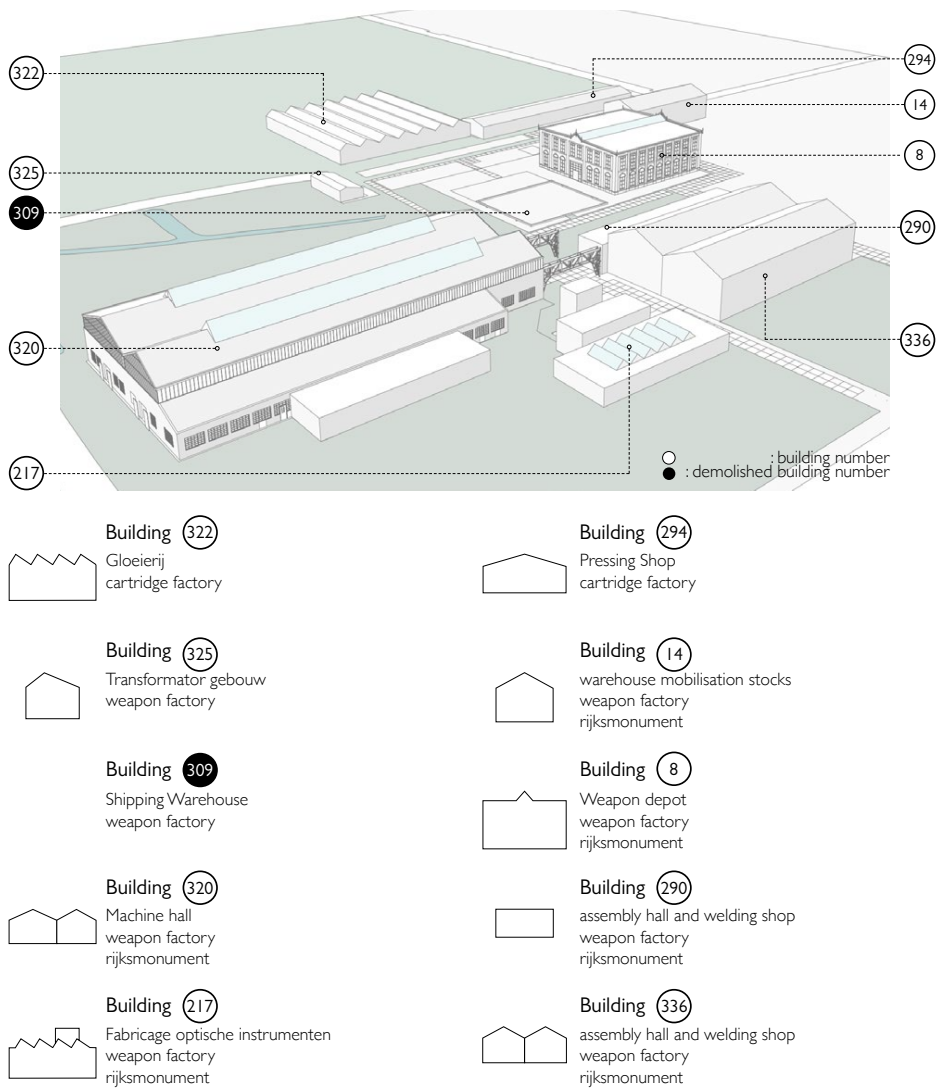
Historical development

Initially only a weapon depot and some smaller storage buildings were placed in this part of the weapon factory. After the outbreak of the First World War in 1914, the production increased and the factory complex expanded. Just before the Second World War started the military production increased again and some larger industrial halls were added to produce large machines for their own production process. With this change in production the weapon depot lost its function and was converted into the headquarters of the machine factory in 1938. After the Second World War the military industry still continued until 2003. Because the military industry was no longer needed the buildings lost their function and therefore some have been demolished.



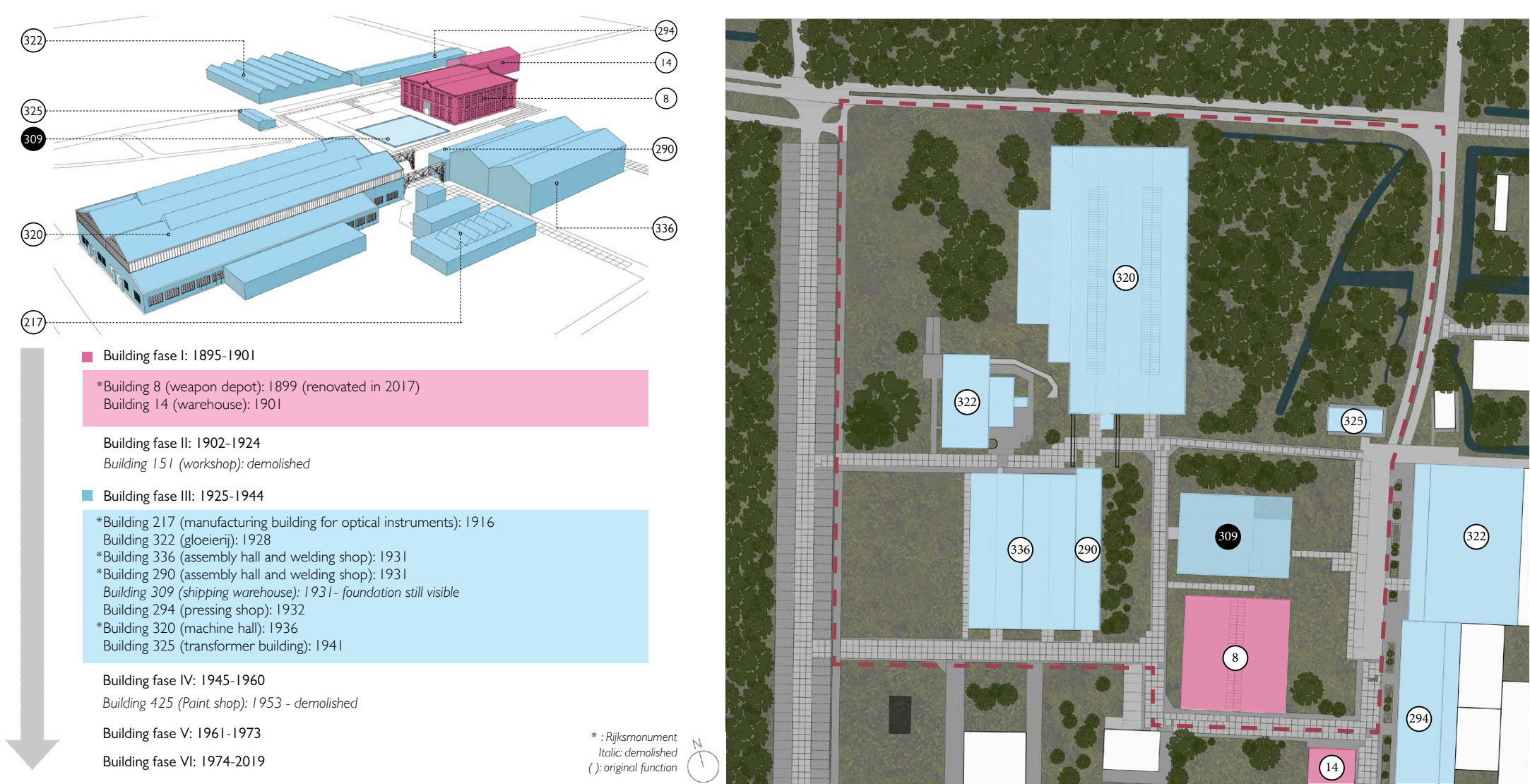
Current situation

Nowadays, the Campus North ensemble consists of mainly larger industrial buildings that remained like the machine hall and the former weapon depot. In between these buildings there is also a foundation left of a former storage building.



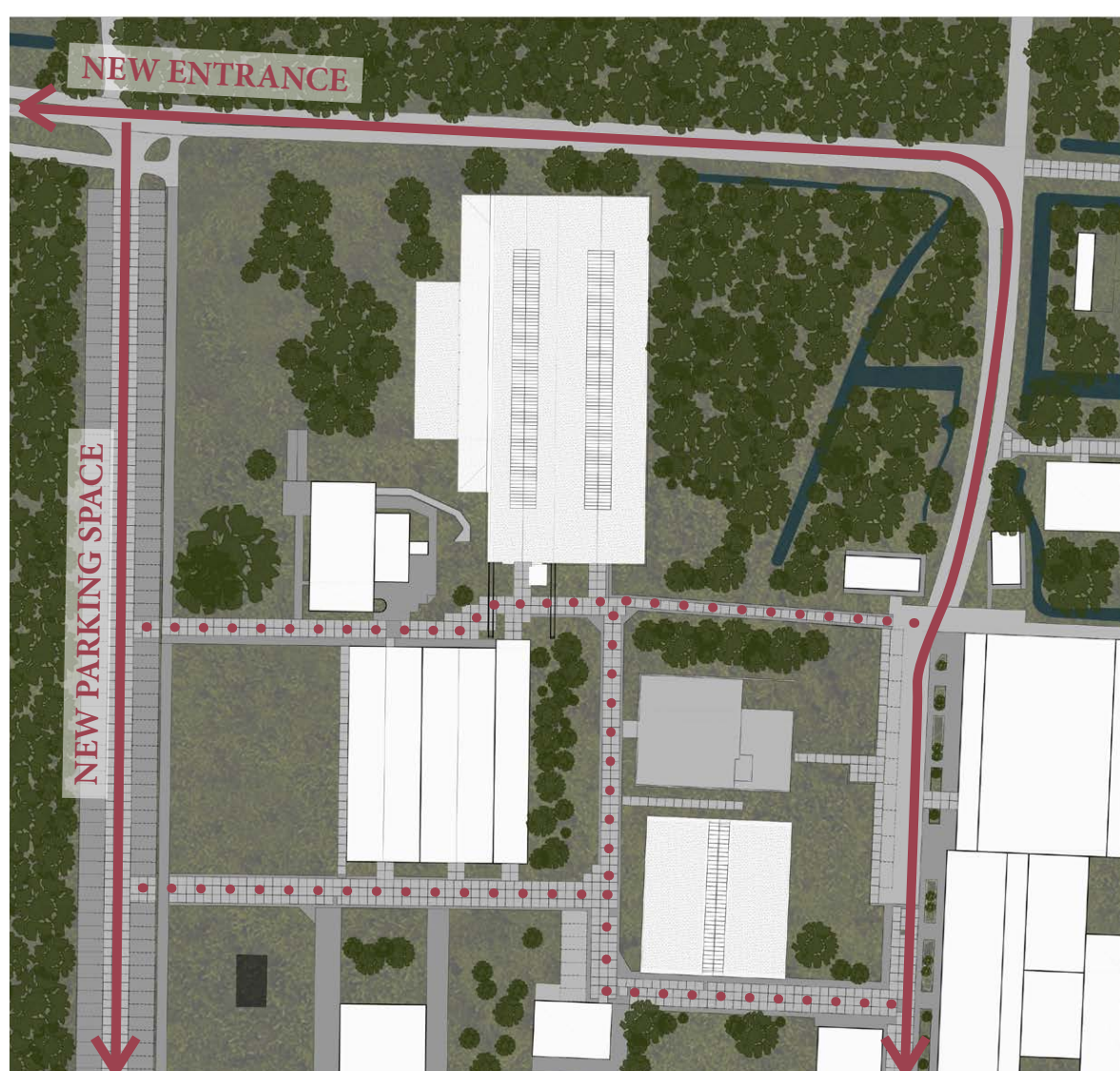
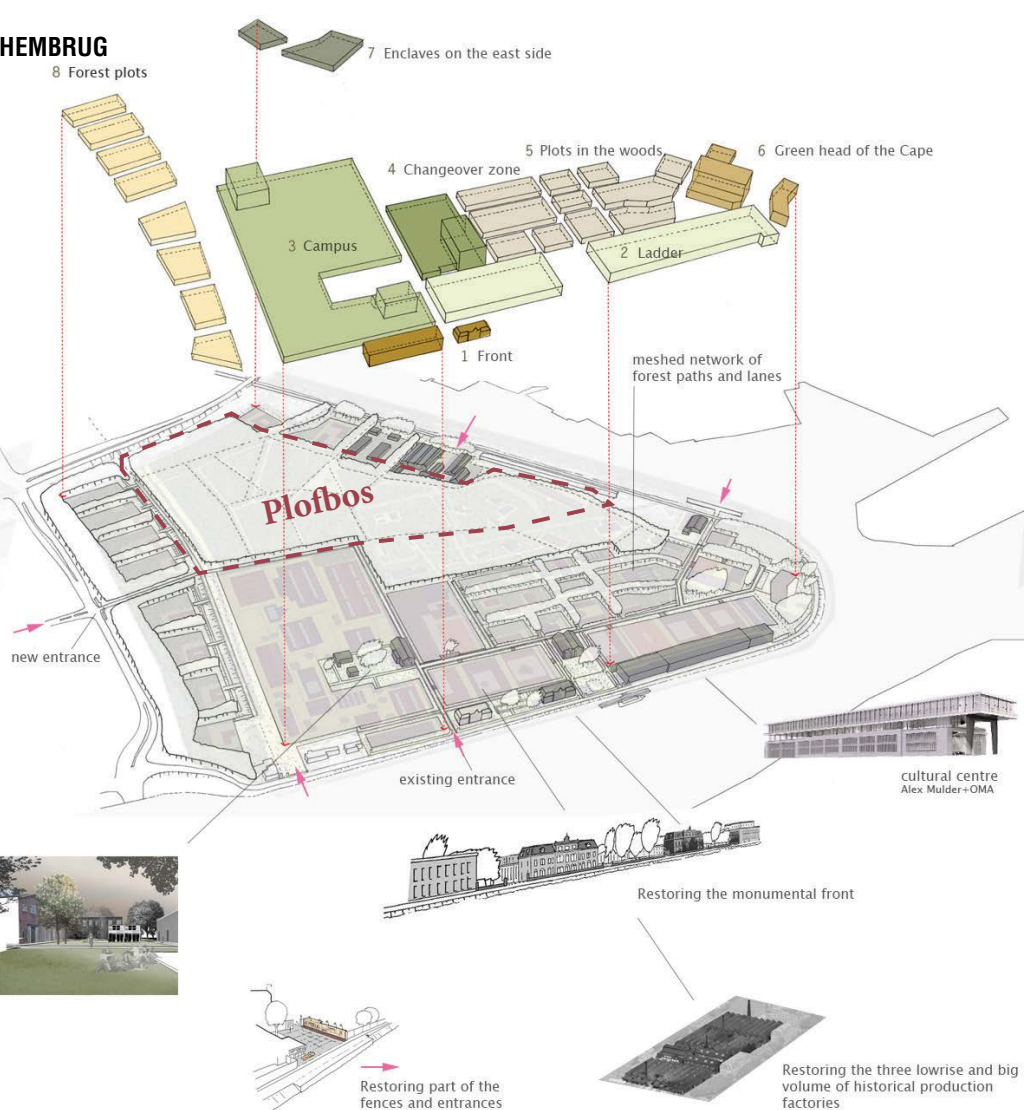
Buildings

All the buildings that remained in this ensemble are built during the third building phase that were needed for the production of the large machines except for the former weapon depot that was built during the first building phase.



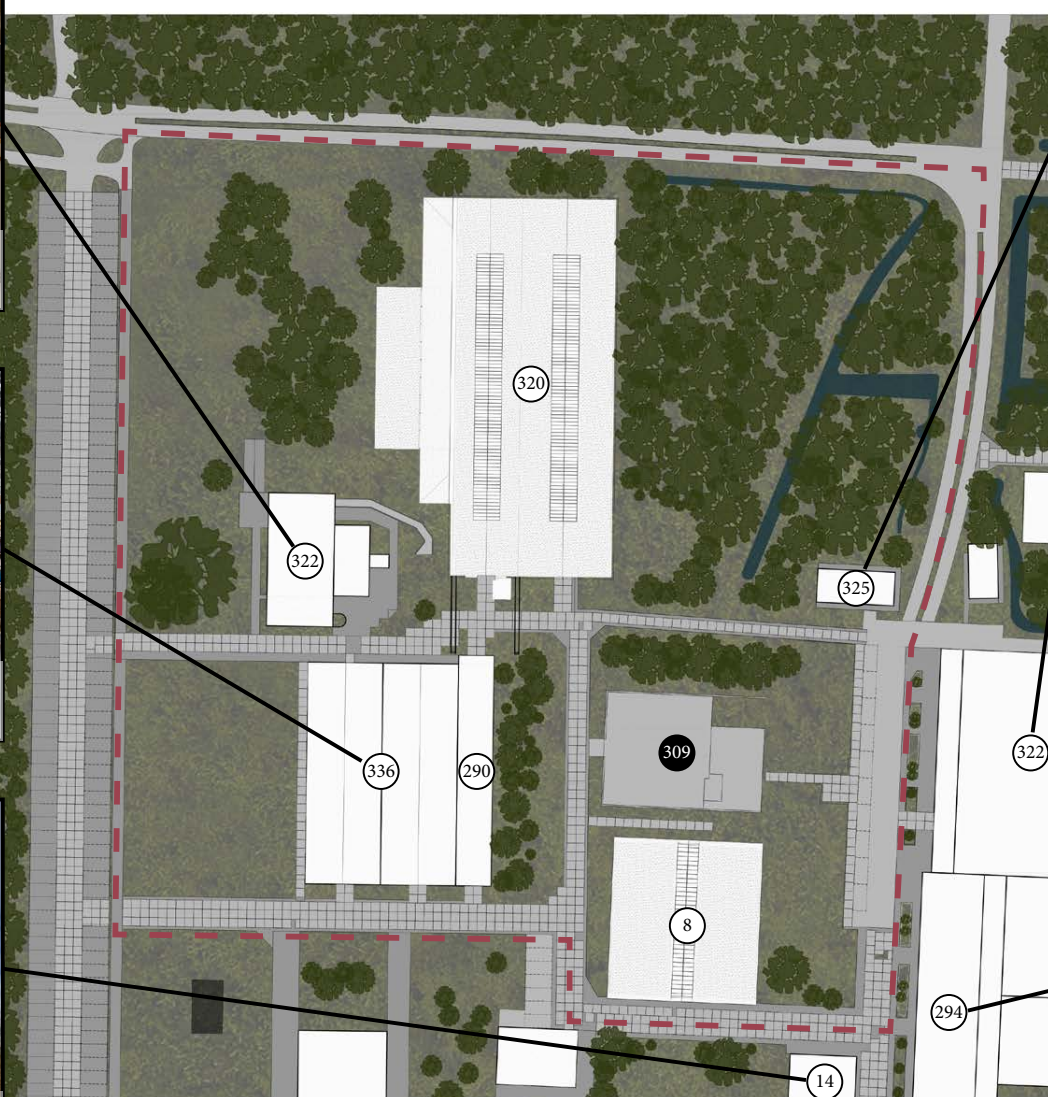
Spatial development strategy

After the military industry left, a spatial vision and redevelopment strategy has been created. In 2014 the Hembrug site has been opened for the public by removing the fences and adding a new main entrance and parking space to improve the accessibility of the site. Because of this new main entrance the Campus North ensemble has become the entrance area of the whole Hembrug site.



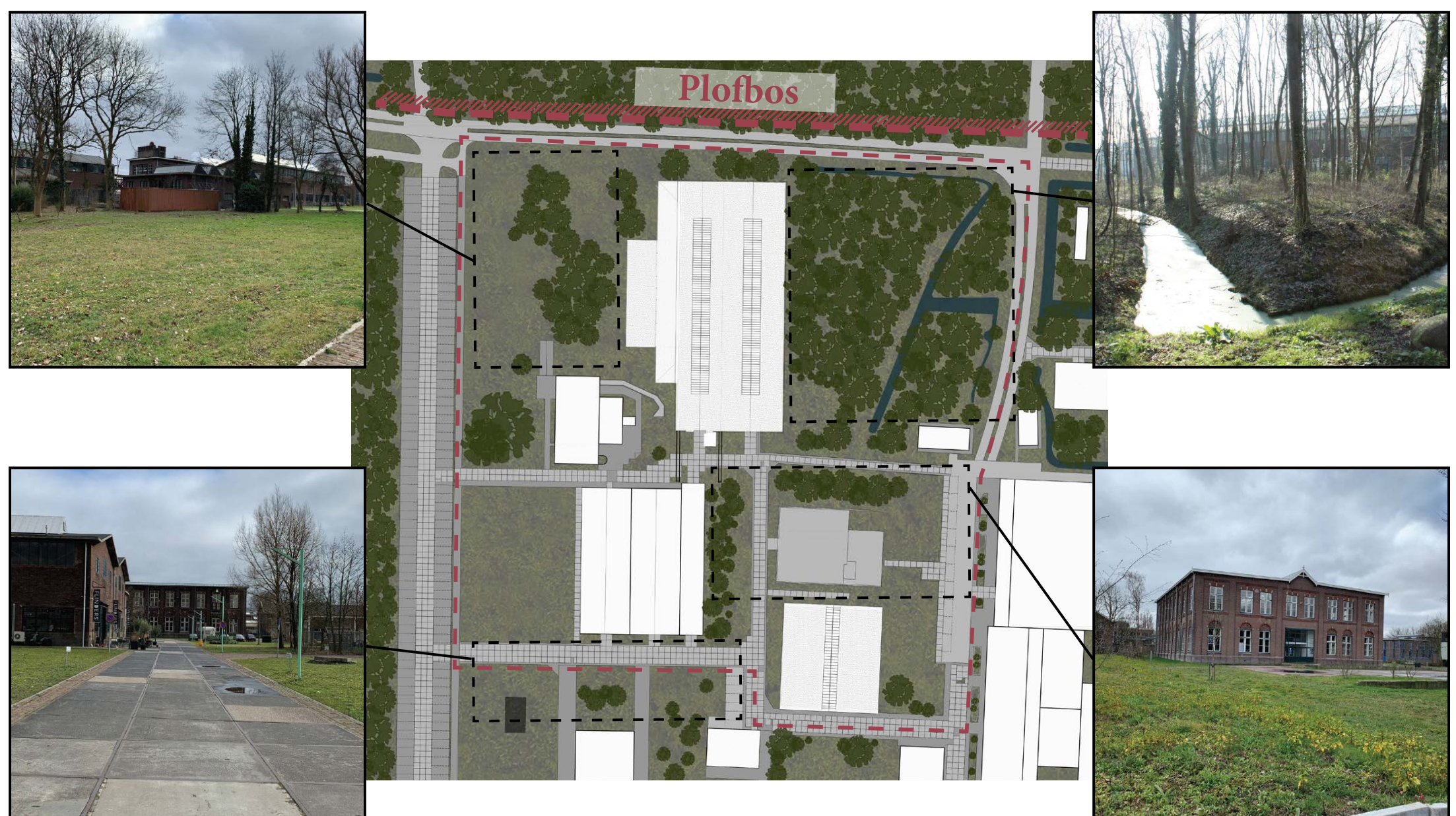
Current program

Opening up the site gave the redevelopment of this former military production area a real boost. At this moment, several buildings in the Campus North ensemble have got a new function already. These new functions in this current program belong to the creative and cultural sector with a focus on art, design and culture. Dirk Vander Kooij, for example, is an artist that settled in one of the buildings, Flinders is a store that sells designer furniture and home accessories and ARTZaanstad is a company that sells and rents art.



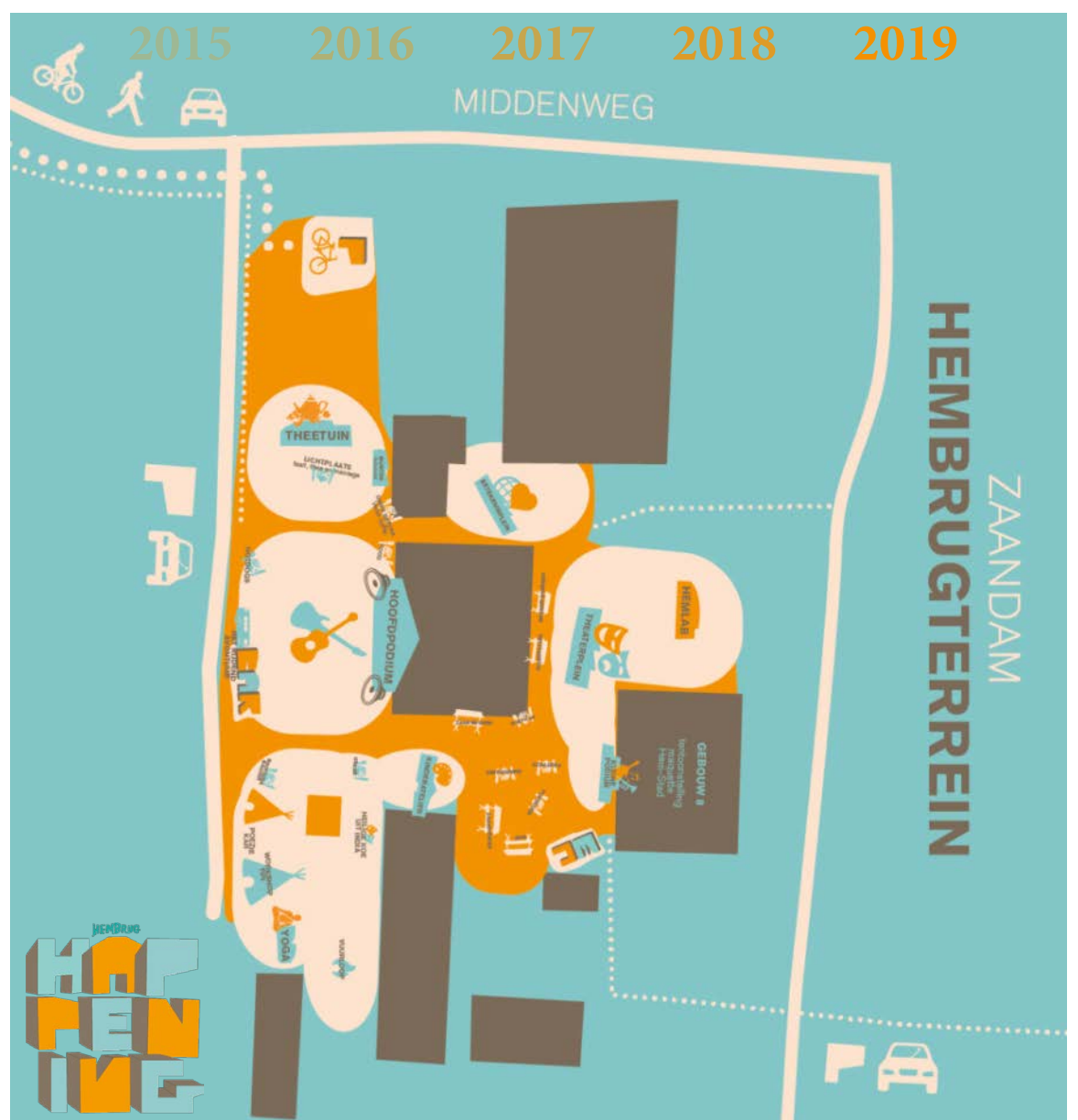
Green open spaces

The public space in between the buildings consist of green open fields and besides the machine hall there is a small forest with a ditch filled with water, which used to be the border between land and water before the north sea canal was dug.



Public events

In recent years, these green open fields have been used to organize public events like Hembrug Happening which returns every year. This is a festival where music theatre and art is presented and which provides a place for inspiration and creativity flows.



Source: <http://hembrughappening.nl/>

Project buildings

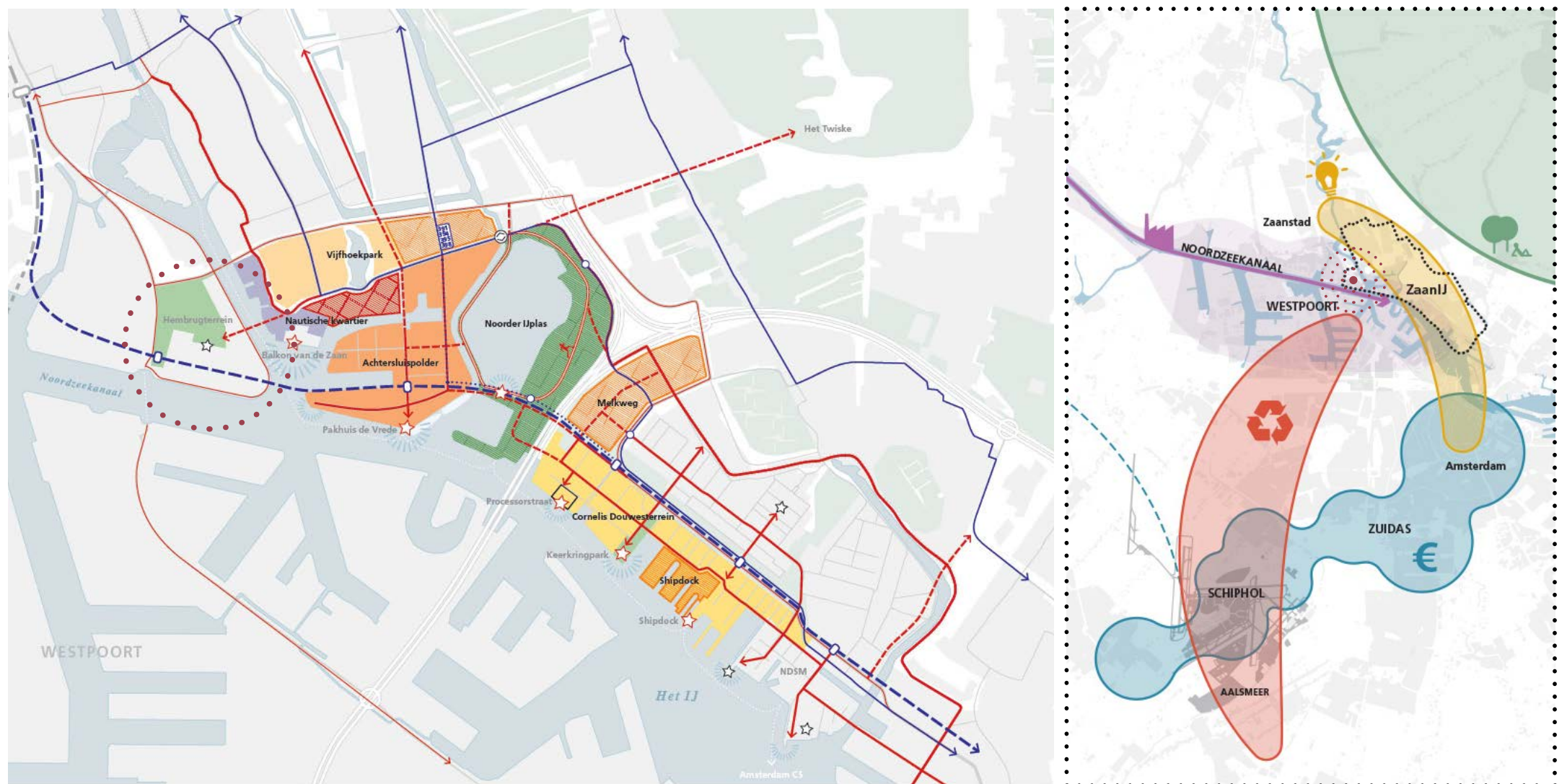
At this moment there are still two buildings left vacant on the Campus North ensemble. These are the former weapon depot and the machine hall which are the project buildings.



Source: <http://hembrughappening.nl/>

Future vision

So creating a better accessibility of the area already stimulated new developments within the Hembrug area. For the future, the municipalities of Amsterdam and Zaandam created a vision in which they want to improve the accessibility of Hembrug site and integrate the Hembrug area even more within the metropolitan region of Amsterdam.

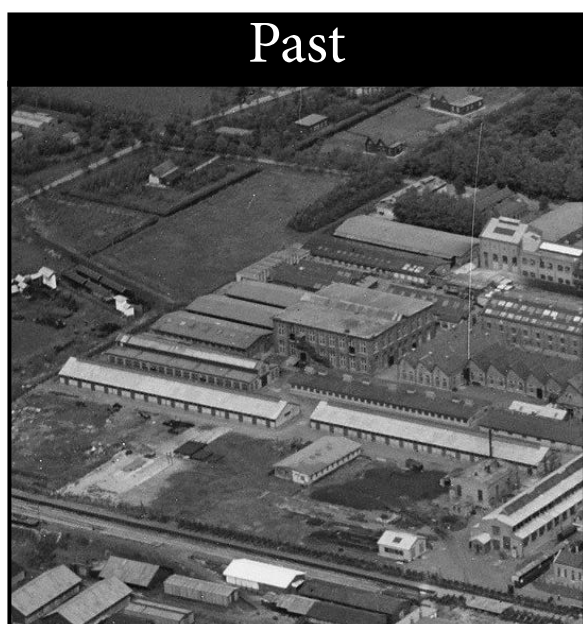


Future vision ZaanIJ 2040

0 500m Transformation strategy Haven-Stad 2017

Conclusion

In conclusion, through time there have been notable developments. In the past, the Hembrug site served as a military factory in a secluded area, whereas now developments are being made to turn the Hembrug site into a public area for artists and creative entrepreneurs. Creating a new main entrance to the site and thus changing the orientation contributed to the improved accessibility of the site. As for the future, the vision is to integrate the Hembrug site in the metropolitan region of Amsterdam, giving it the potential to become the arts, crafts and design centre of Amsterdam and the Zaan region.

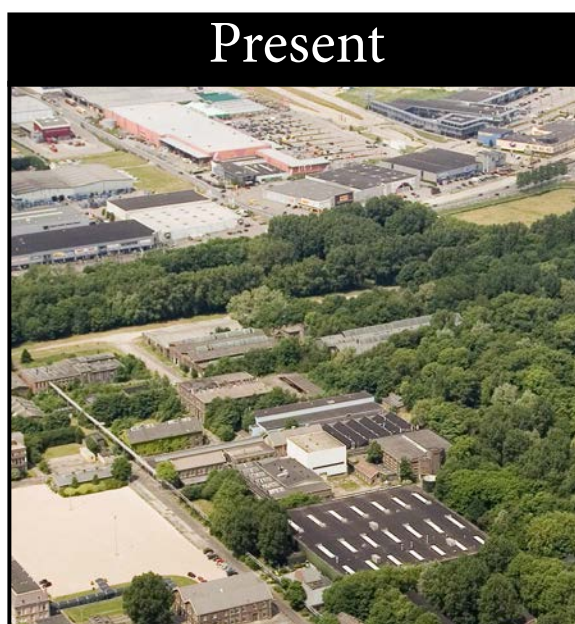


Past

Military factory

Secluded area

Orientated to the water

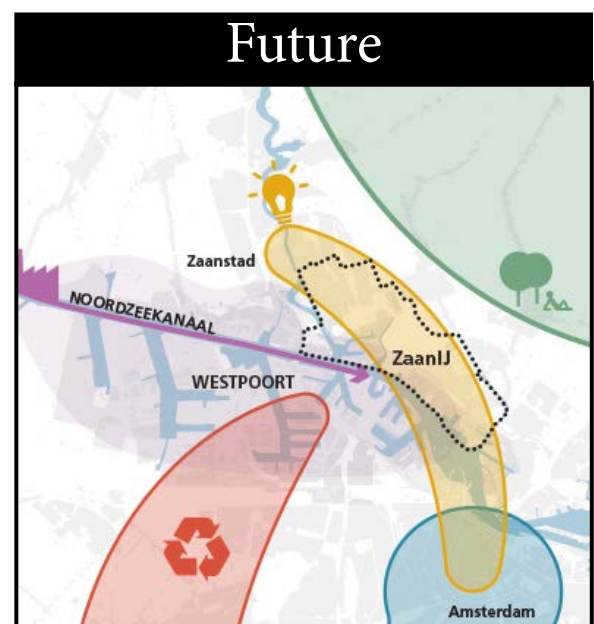


Present

Redevelopment program partly focussed on arts, crafts and design

Partly opened area

Changing orientation



Future

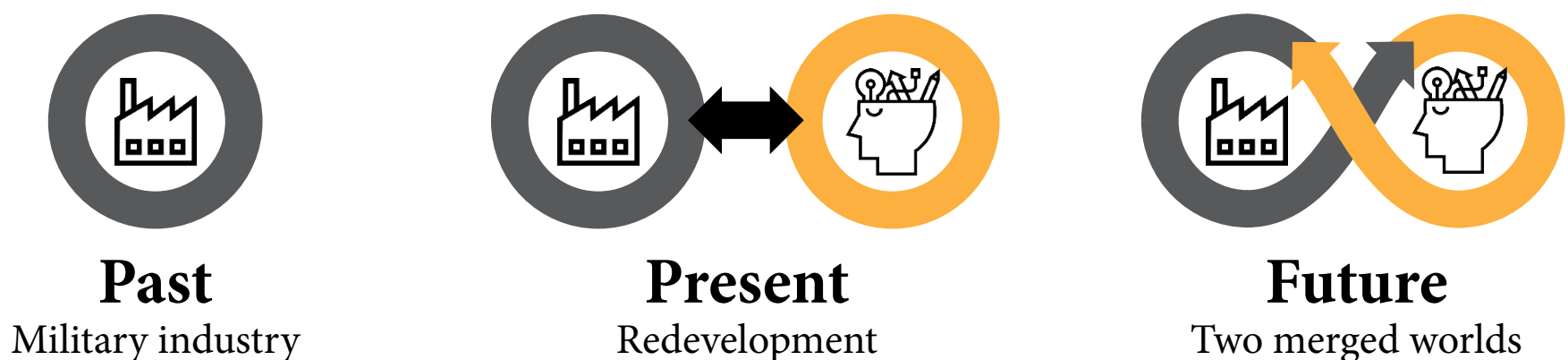
Arts, Crafts and Design Centre of Amsterdam and Zaan region

Public area

Campus North as entrance

Research question

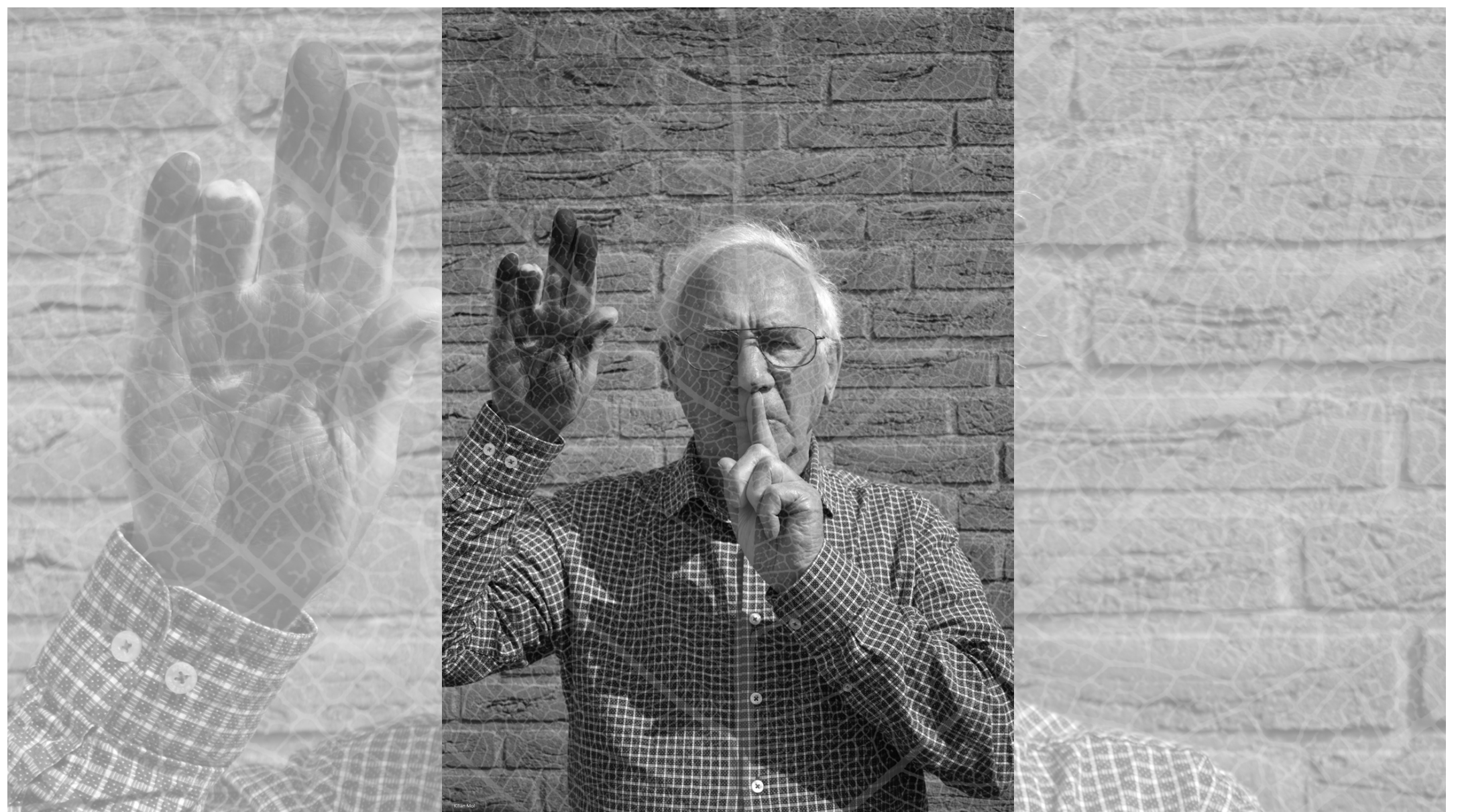
The question I asked myself during this project is therefore: How could my design interventions stimulate, the transformation of the former military industrial site into the art, craft and design center of Amsterdam and the Zaan region, without losing the valuable historical character of Hembrug?



“How could my design interventions stimulate the transformation of the former military industrial site into the art, craft and design center of Amsterdam and the Zaan region without losing the valuable historical character of Hembrug?”

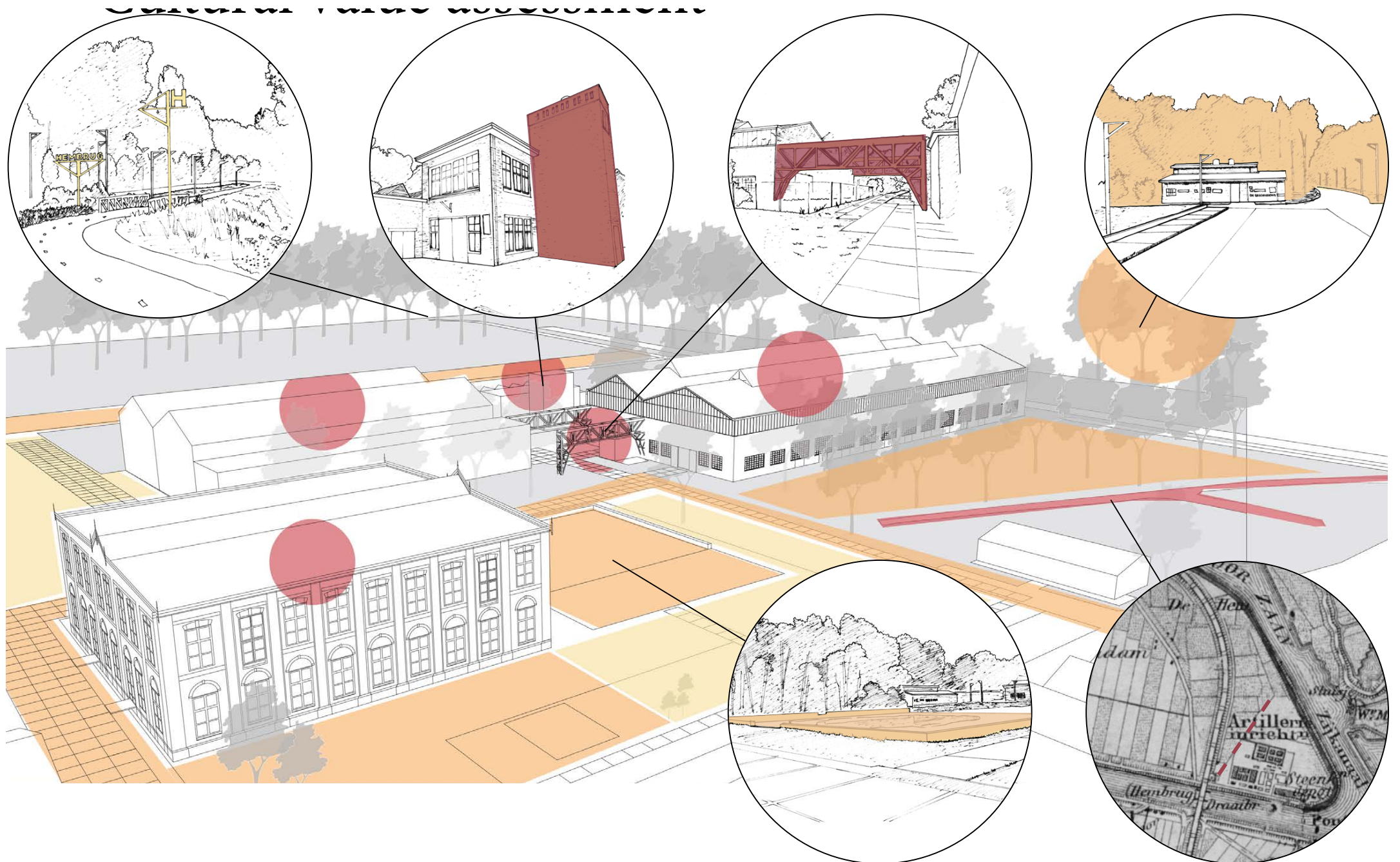
Design etude

This is the design etude I made during this project. It is a photo of my grandfather and portrays the character of the Hembrug site. My grandfather who has worked in the shipbuilding industry himself represents a worker of the artillery establishments who weren't allowed to talk about their military duties. The veins of a leaf have been placed over this photo as a filter. The remnants of heavy industry and the green character of the Hembrug site are the most valuable characteristics of this site for me.



Cultural value assessment

This is a cultural value assessment of Campus Noord, in which red indicates the most valuable aspects of the ensemble that must be preserved. These are the buildings and elements that were necessary for the production of weapons and heavy machinery.



Masterplan Campus North

The campus north ensemble has to become an inspiring place of art, crafts and design. Where traditional crafts are combined with the state of the art. “A place where the past meets the future.” The Machine Hall will be a place of art and craft where artists will host events and workshops with space for art exhibitions. The Weapon Depot will provide flexible and fixed workplaces for designers and creative entrepreneurs who will host and want to be involved in these artistic events. The open space in between will be a place for social interaction and public open air events where art and design will be presented.

“Creating an inspiring place of art, crafts and design. Combining traditional crafts with the state of the art. A place where the past meets the future.”

Machine Hall will be a place of art and craft where artists will host events and workshops with space for art exhibitions.

Open space in between will be a place for social interaction and public open air events where art and design will be presented.

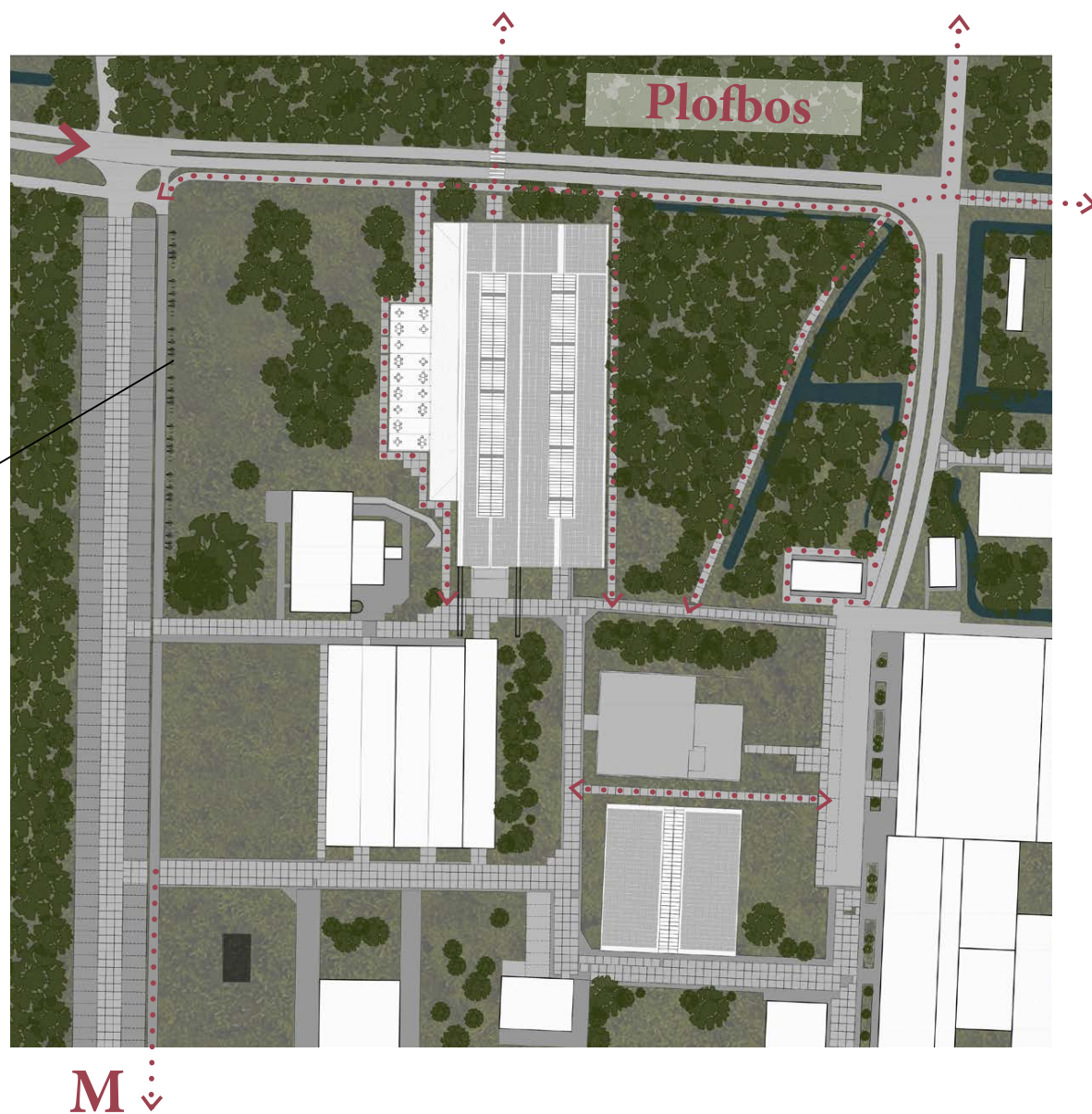
Weapon Depot will provide flexible and fixed workplaces for designers and creative entrepreneurs who will host and want to be involved in these artistic events.



Accessibility

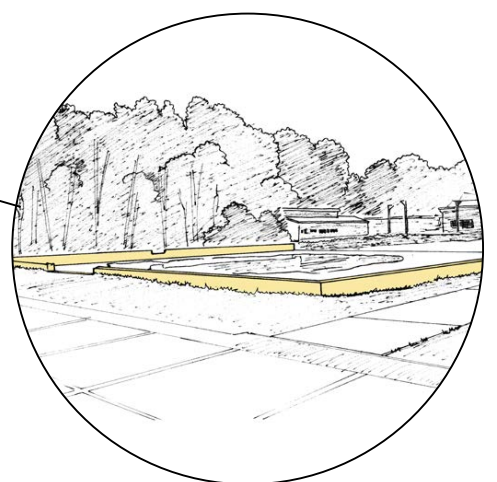
Since the location of the site entrance has changed, I decided to add pedestrian routes to this entrance. There will be an entrance to the Plofbos which will become a recreational parc. Next to the parking lots, bicycle stands will be added. In the south of the parking lots there will be a metro station.

Site
entrance



Public space

The green open fields around the buildings should be preserved in order to continue the art and culture events and to present art. The foundation will be preserved as a monumental remnant of the military industry.

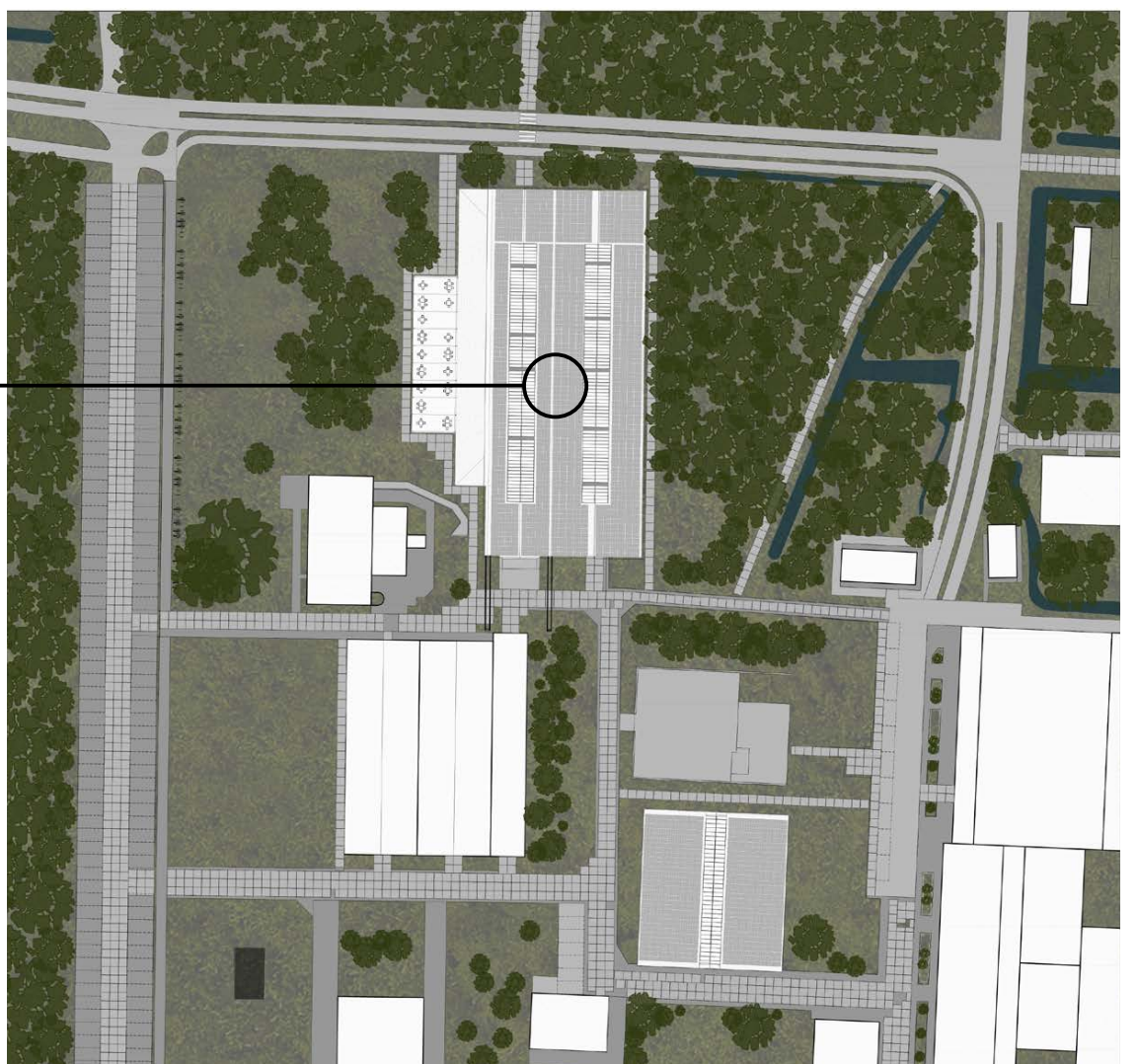


Entrance Hembrug

This will be the image when entering the Hembrug site, with the greenery, art and the machine hall in the foreground.



Machine Hall



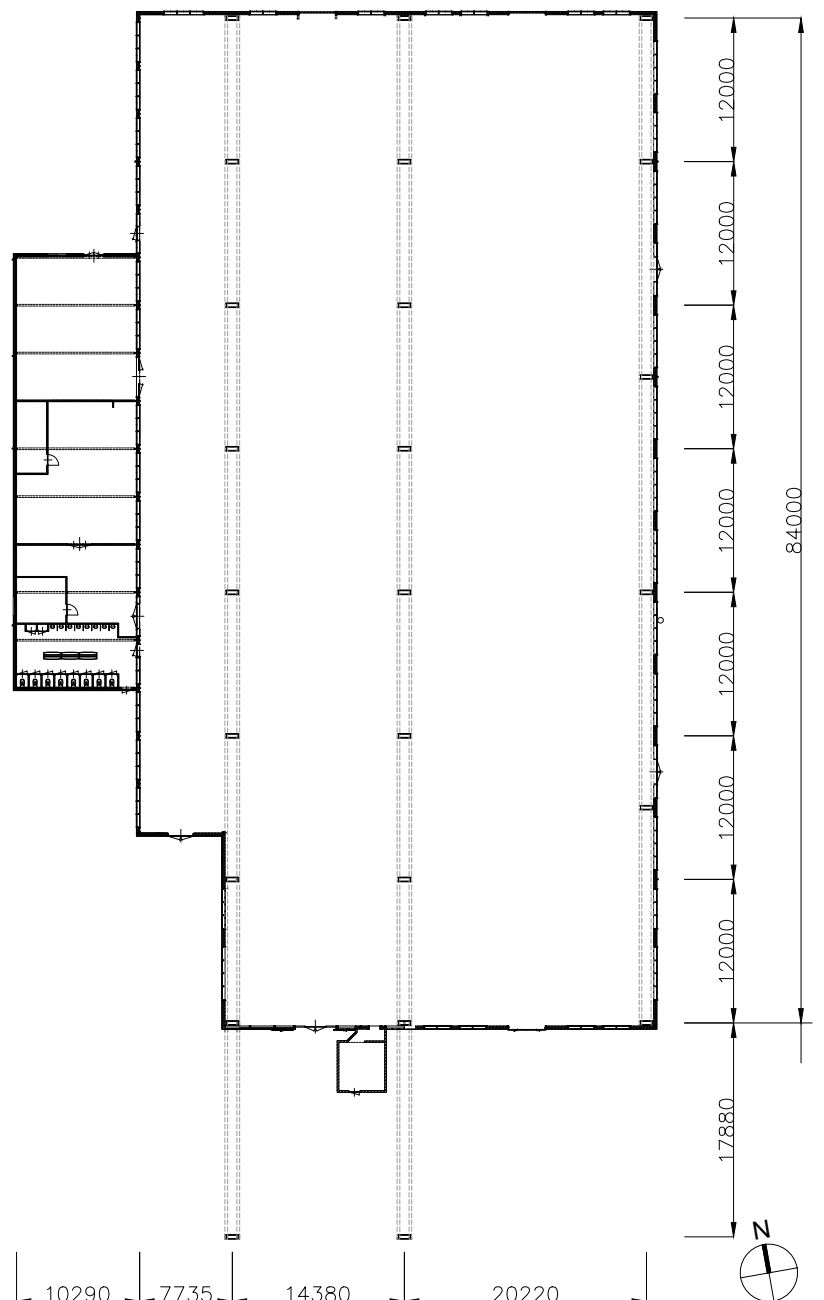
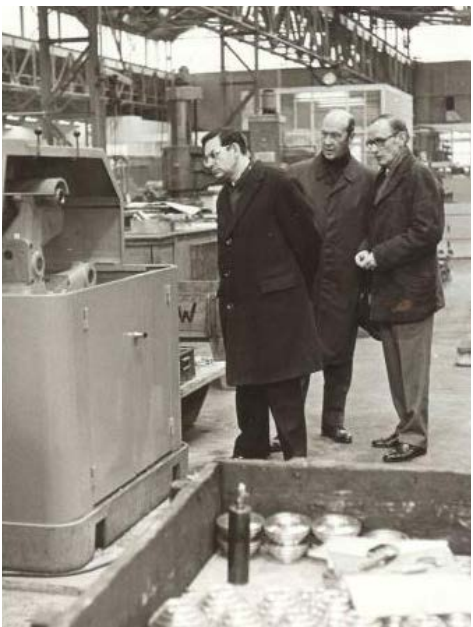
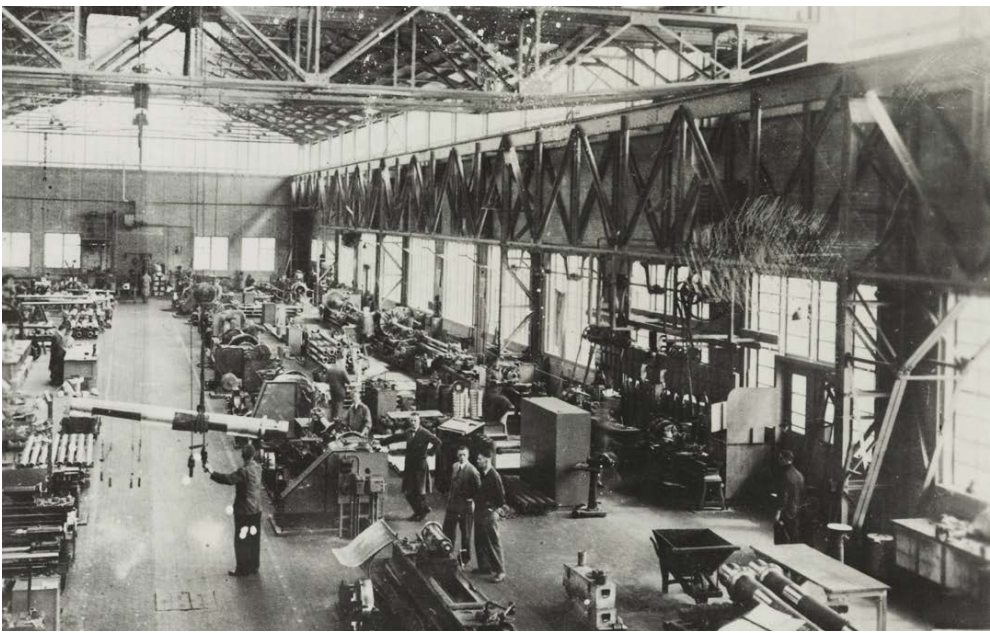
Current condition

This is what the machine hall looks like nowadays. The building is in a very bad condition and is surrounded by fences, because there is asbestos in the roof.



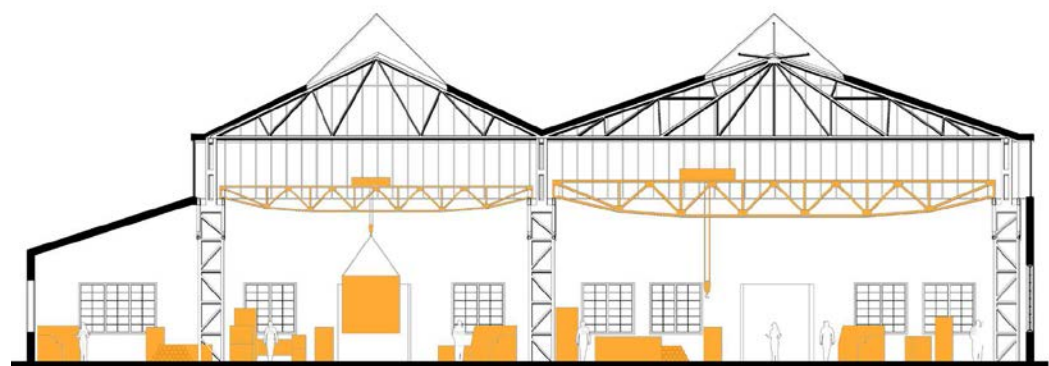
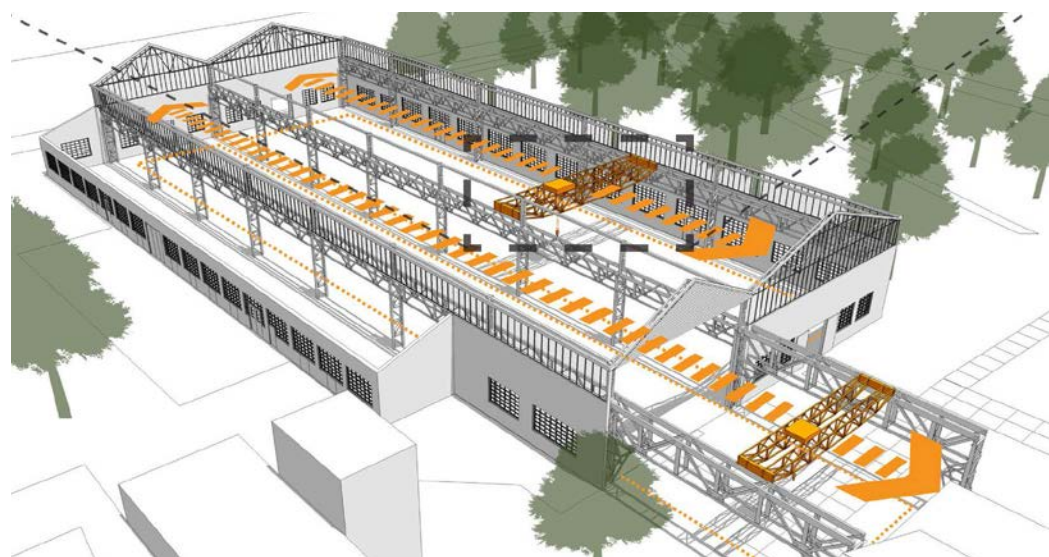
Original function

The machine hall was built in 1936 during the third construction phase for the production of large machines that were used for own production. It consists of two large halls and a lower part on the west facade. Internally, both halls and the lower part are connected to each other, forming one large open space. In 1954, a small extension was placed against the south facade and in 1975 a larger extension against the west facade.



Crane tracks

The building functioned as a machine, with two cranes moving through the entire building. One of these crane tracks protrudes from the south facade, so we suspect that the machines could be moved out here.



Interior



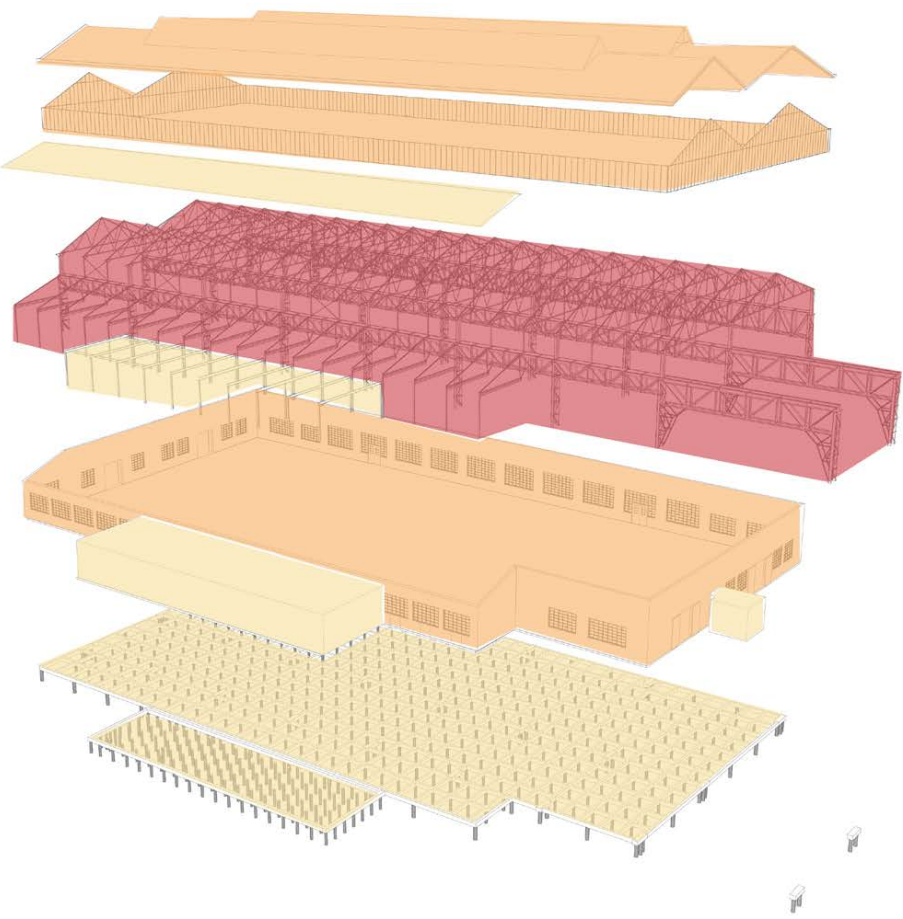
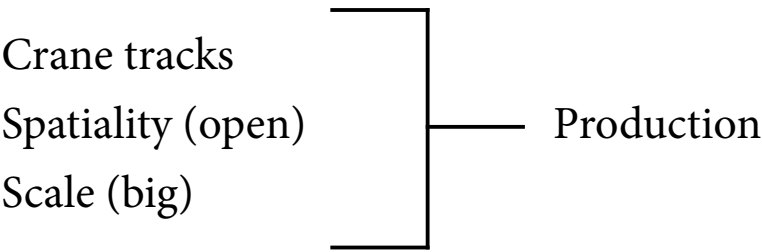
Interior



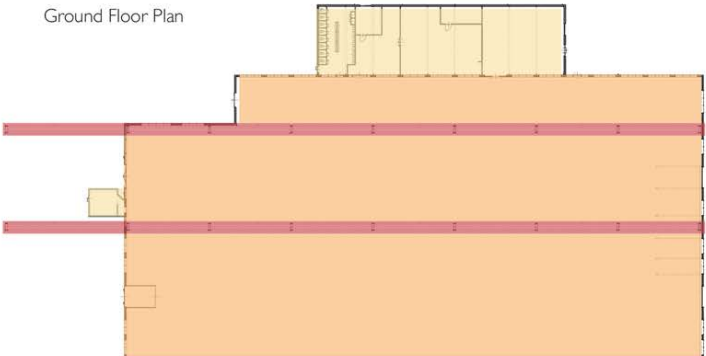
Cultural value assessment

The most valuable aspects of this building are the crane tracks that give the building length and a clear direction, the spaciousness: with the existing construction one large open space has been created and the large scale of the building. These aspects must be preserved and I want to emphasize with my design, because these aspects tell a lot about the production of the heavy machines that took place here at the time.

Most valuable aspects



Ground Floor Plan



References

To make the Machine Hall a breeding ground for arts and crafts, I looked at two successful projects in Amsterdam: Loods 6 and the NDSM loods. These are two buildings where artists and creative entrepreneurs can rent studios and space has been created that can be rented out for organizing events. I have visited both buildings and one of the main differences I noticed was that you can only enter

Loods 6 as a visitor by appointment, while the NDSM loods is publicly accessible and this is in my opinion a missed opportunity for Loods 6, as the social interaction and thus the creative thought exchanges between artists and visitors takes place less quickly. People can't look into the studios from the hallway, so you can't tell what's going on inside. These are points that I wanted to avoid in my design for the machine hall.

Loods 6

Stichting Kunstwerk Loods6

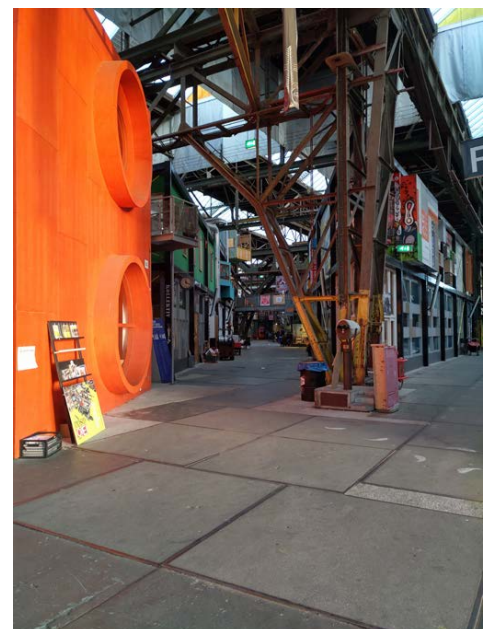


KNSM laan 143, Amsterdam



NDSM Loods

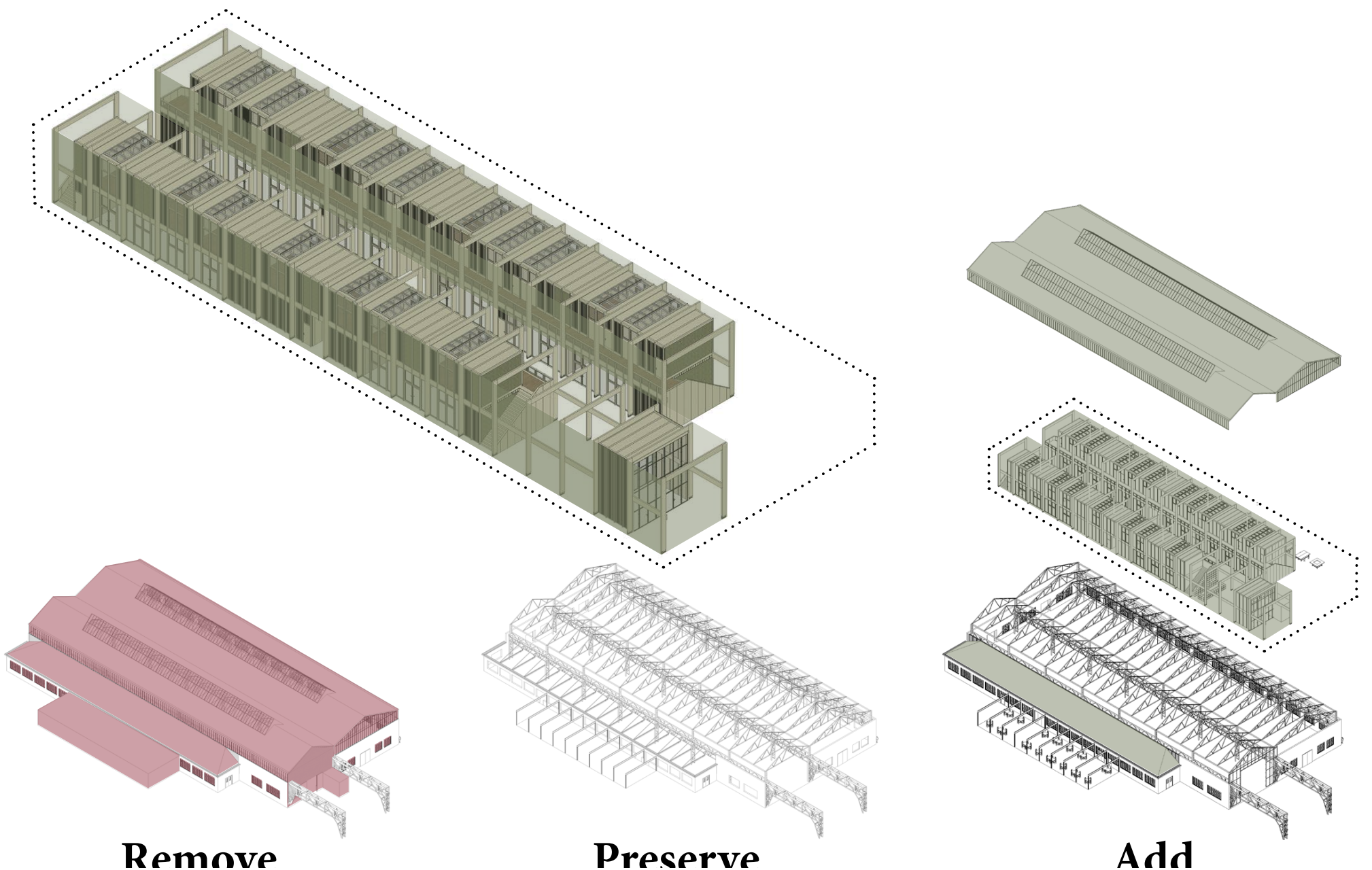
Stichting Kinetisch Noord



NDSM-Plein 85, Amsterdam

Interventions

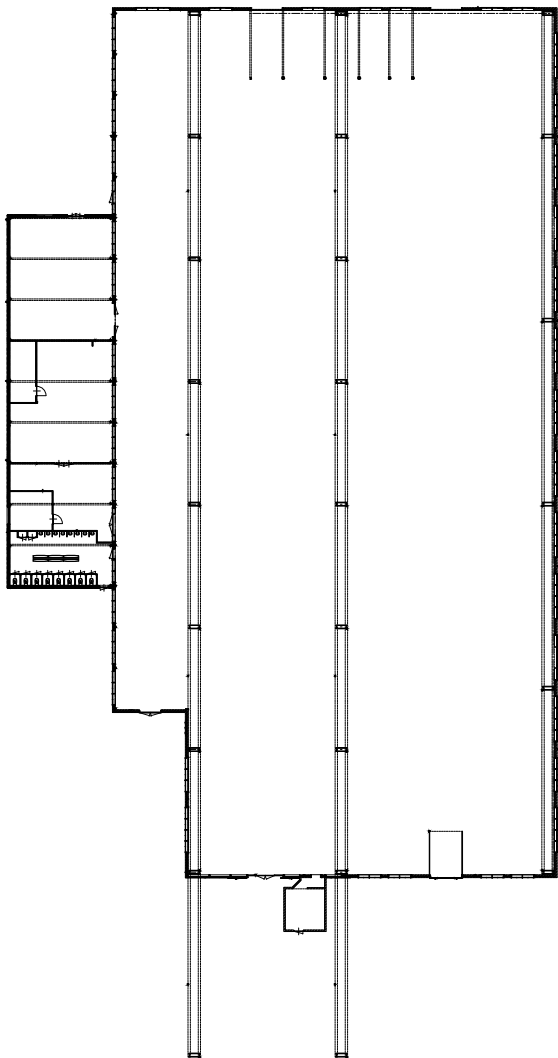
As the machine hall is currently in a very poor condition, a lot will have to be done to make the building usable again. The asbestos roof will be removed, as will the steel frames and the two extensions that have no historical value. What is preserved is the brick facade and the steel construction with the crane tracks. There will be a new roof and two long wooden volumes that will shape the new program.



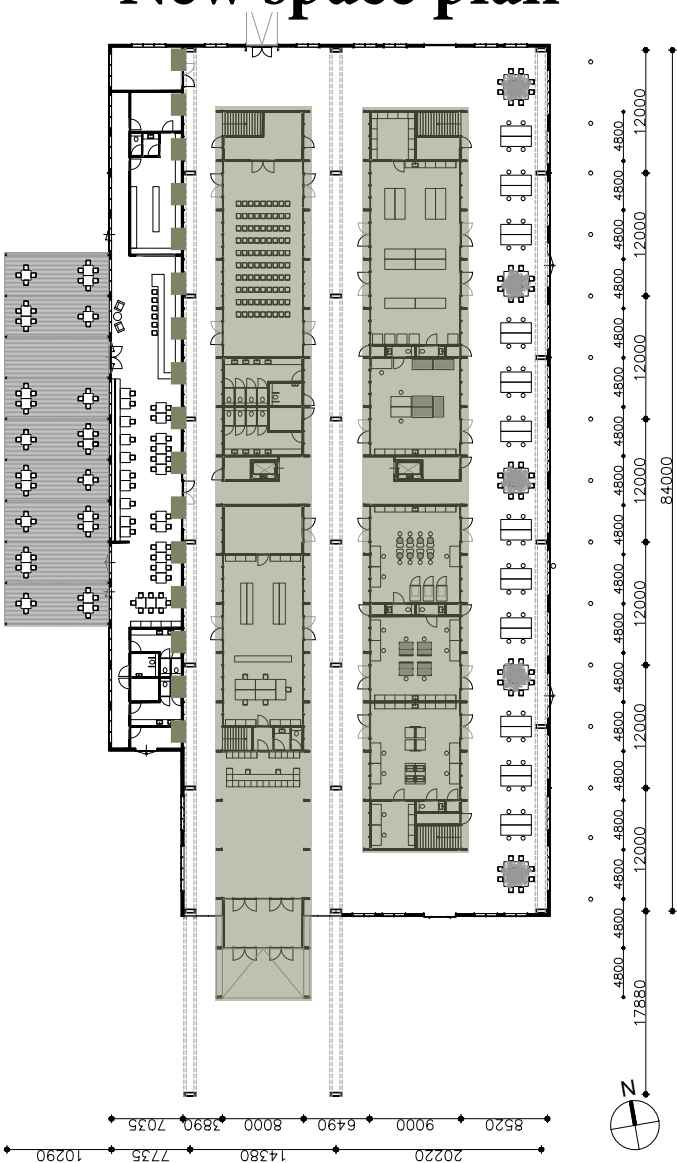
Redefining space

These volumes are placed freestanding between the crane tracks with a distance to the existing facade in order to avoid interrupting the contours of the existing building.

Original space plan



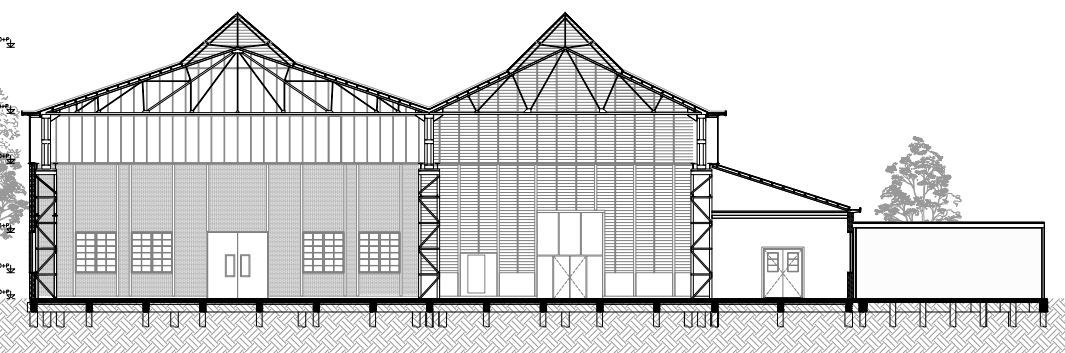
New space plan



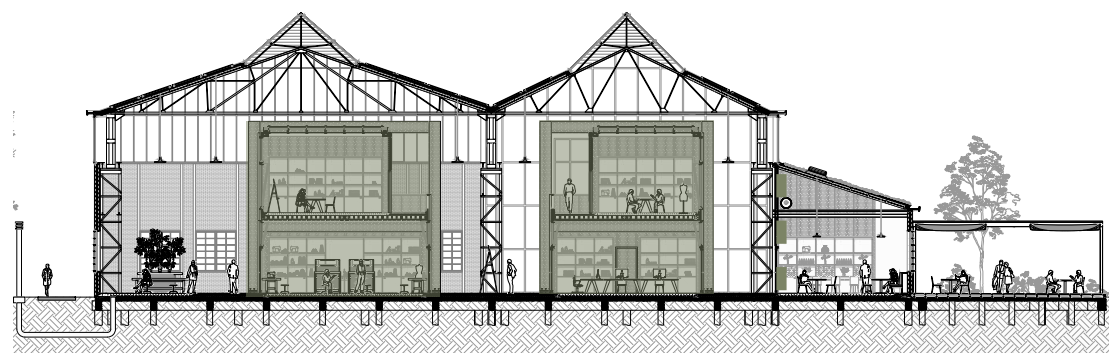
Redefining space

These volumes reach nine meters in height and have a clear rectangular shape, so that they can be seen as large long new objects inside this historic building. By adding these volumes, the original space is redefined and redistributed in the spaces within these wooden volumes and the space between these new volumes and the existing building, while the original spaciousness of the historic building will still be clearly recognizable.

Original section

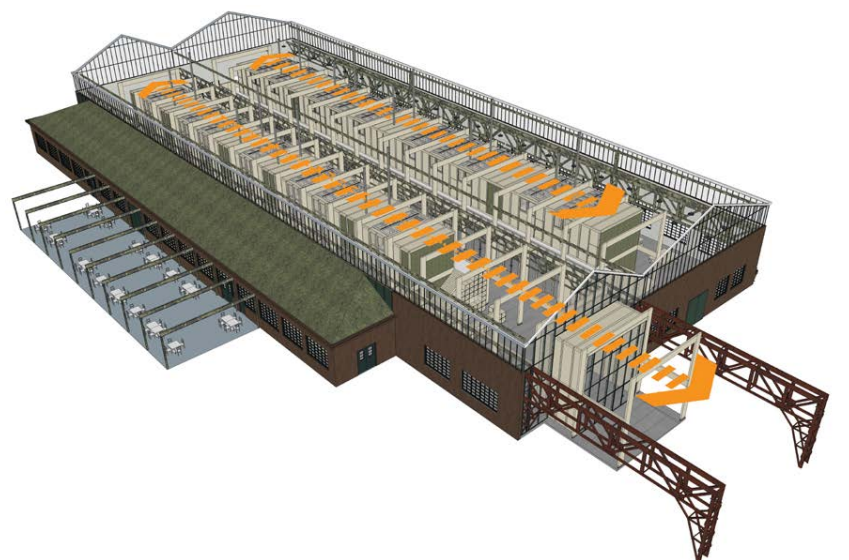
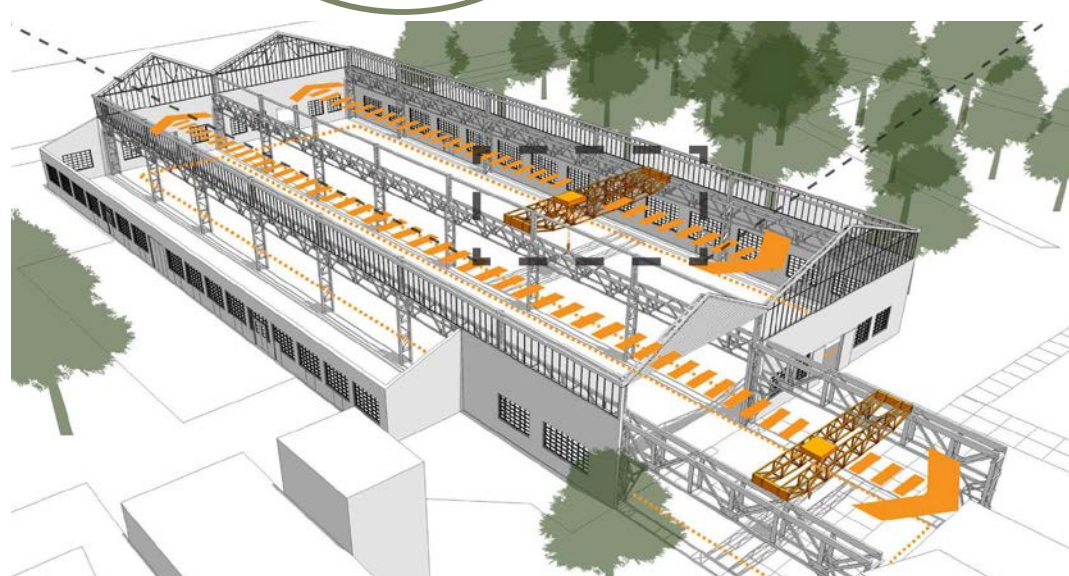
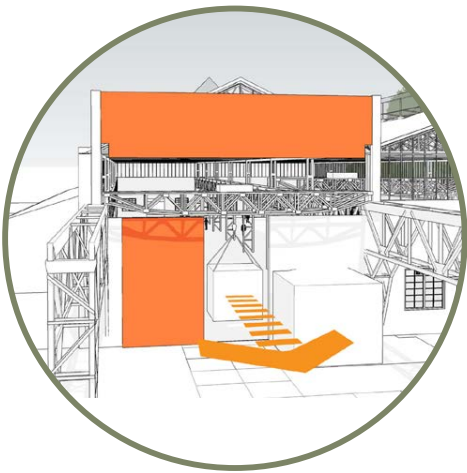


New section



Referring to crane tracks

These new volumes will emphasize the direction in which the cranes could move and the length of the building.



Existing South facade

Here we see the existing south facade and the external part of the crane track.



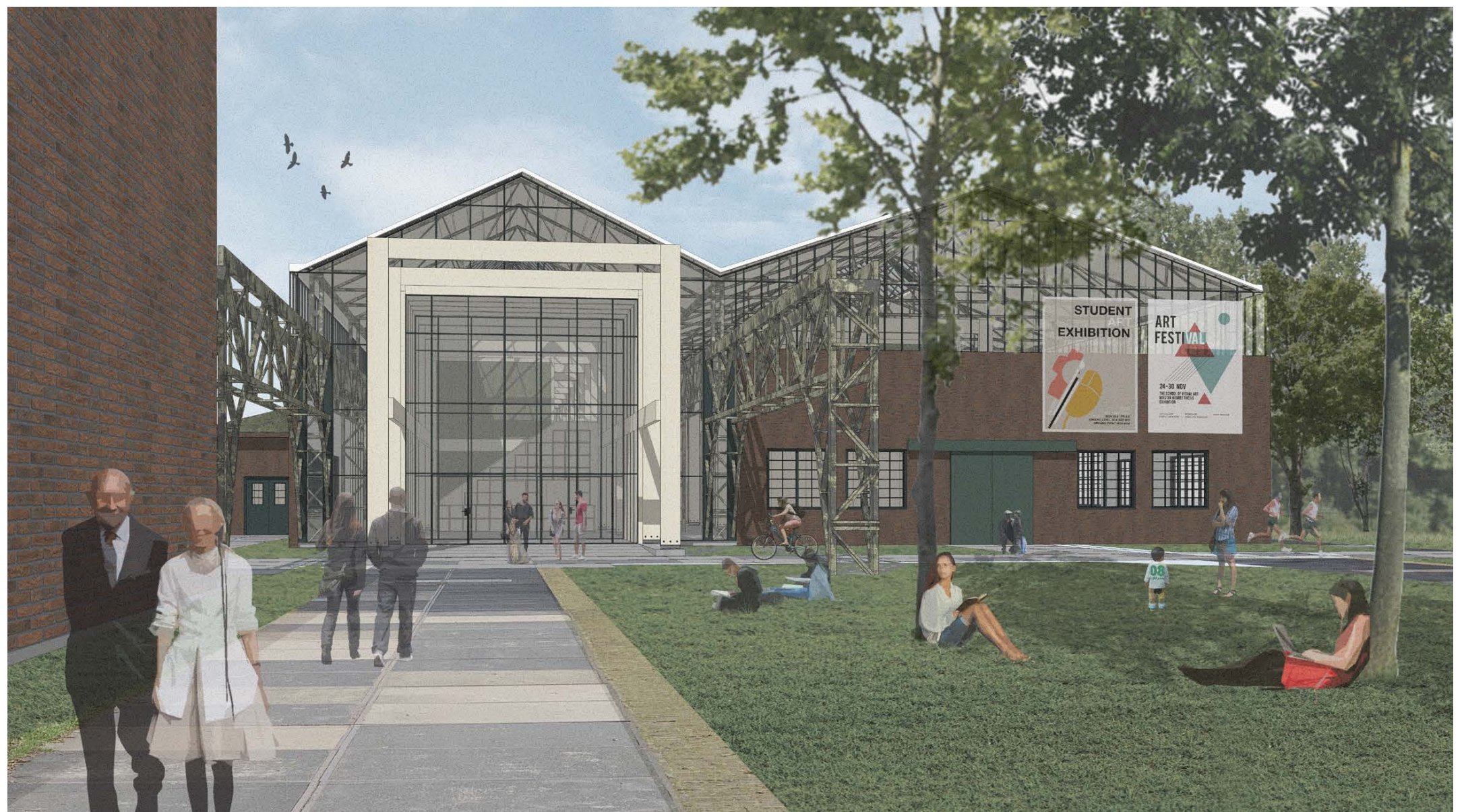
New main entrance

One of the wooden volumes will protrude through the facade, just like the crane track, which will be the new main entrance of the building, because historically there has always been a connection between inside and outside.



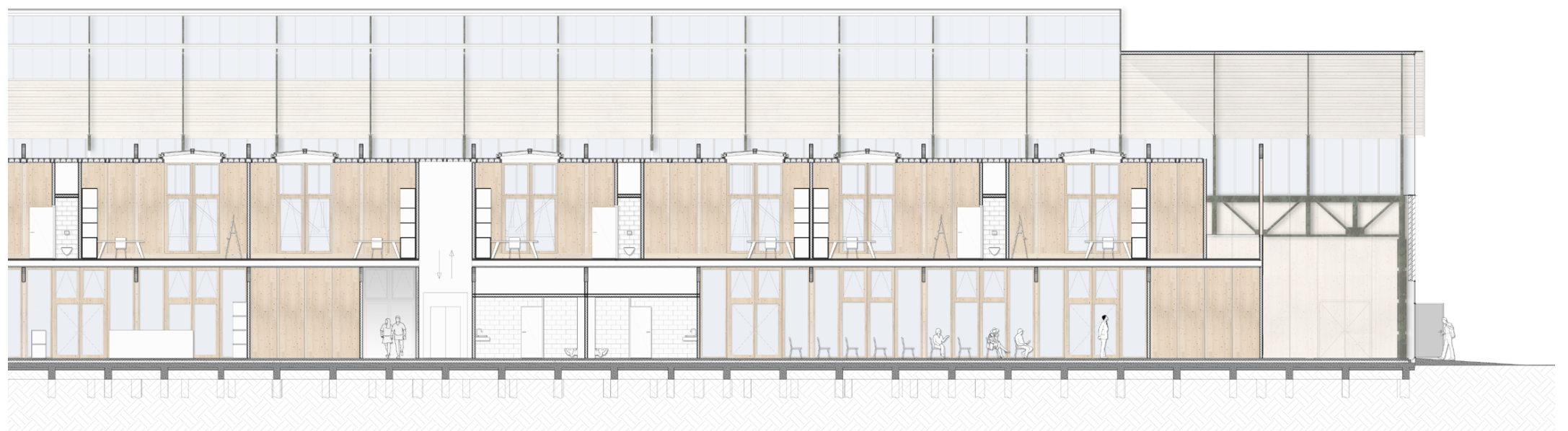
New main entrance

Currently, this facade is closed with wooden planks, but to strengthen this inside and outside connection, this wooden facade is replaced by a transparent glass facade with a thin steel frame that looks like the original steel window frames, but will have a different rhythm to make a distinction between the new intervention and the original glass facade next to it.



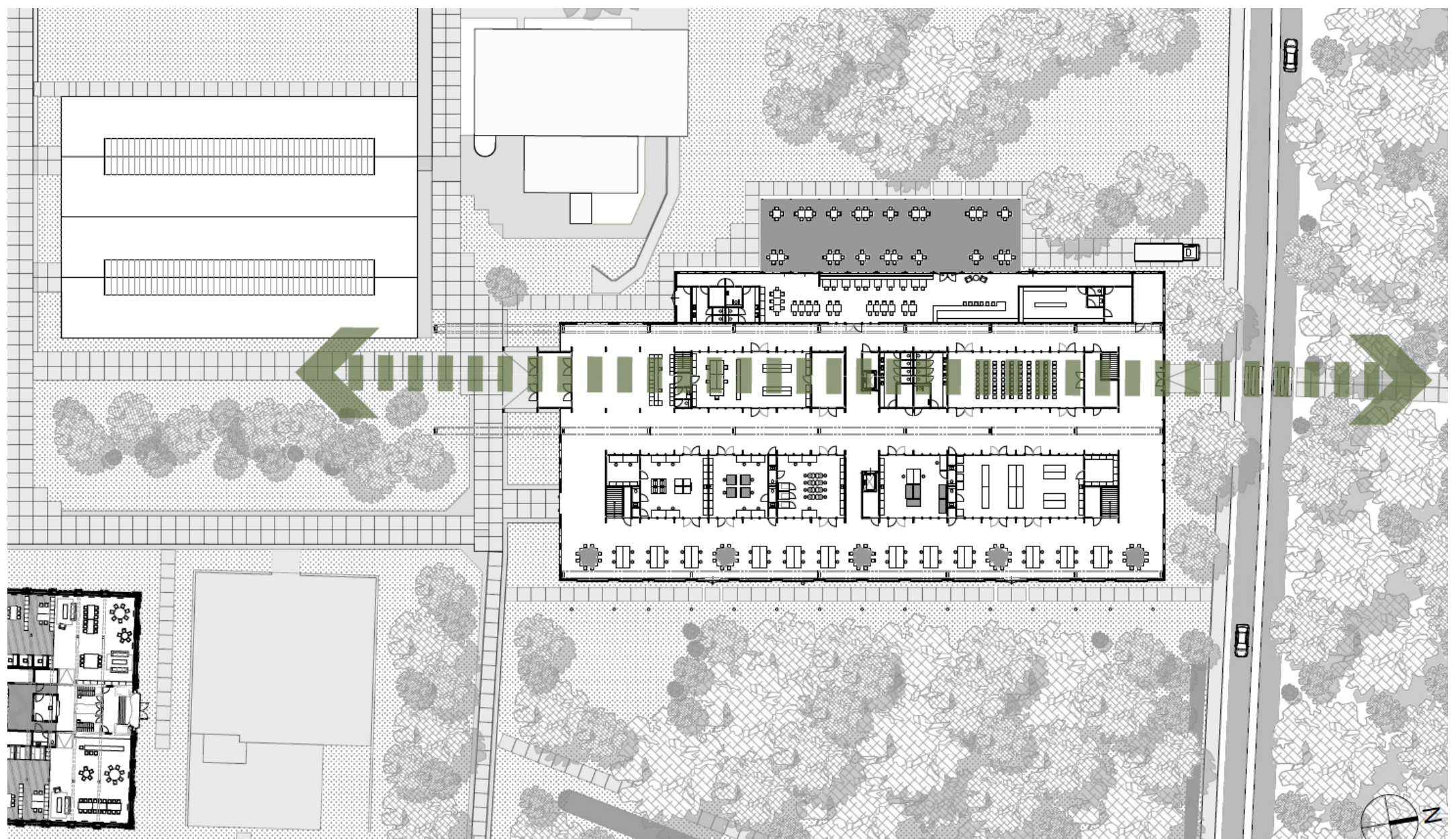
New entrance North facade

In the North facade, two original entrances have been closed with brick. One of these will be opened again to create an entrance on the North side towards the Plofbos.



New connection

In this way, a connection will be created between the Plofbos and Campus Noord through the machine hall, which will invite visitors to enter the machine hall.



Entrance hall

When entering the building through the main entrance, one comes across the information point with a management office behind it.



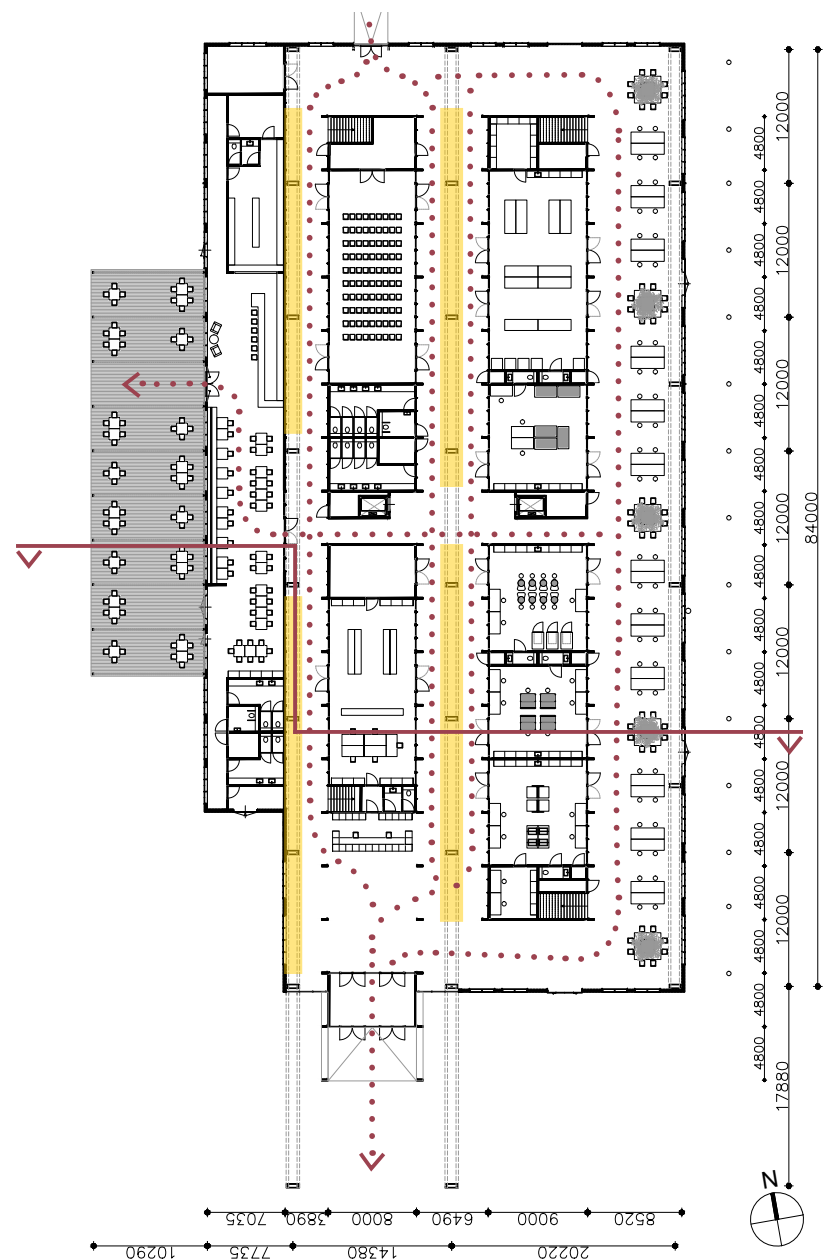
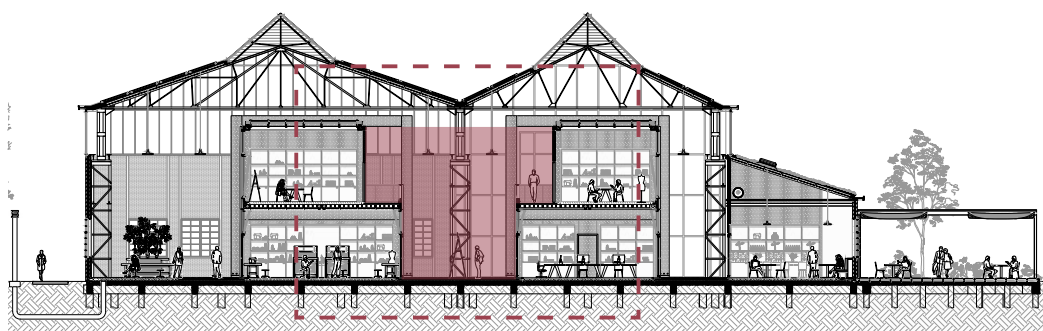
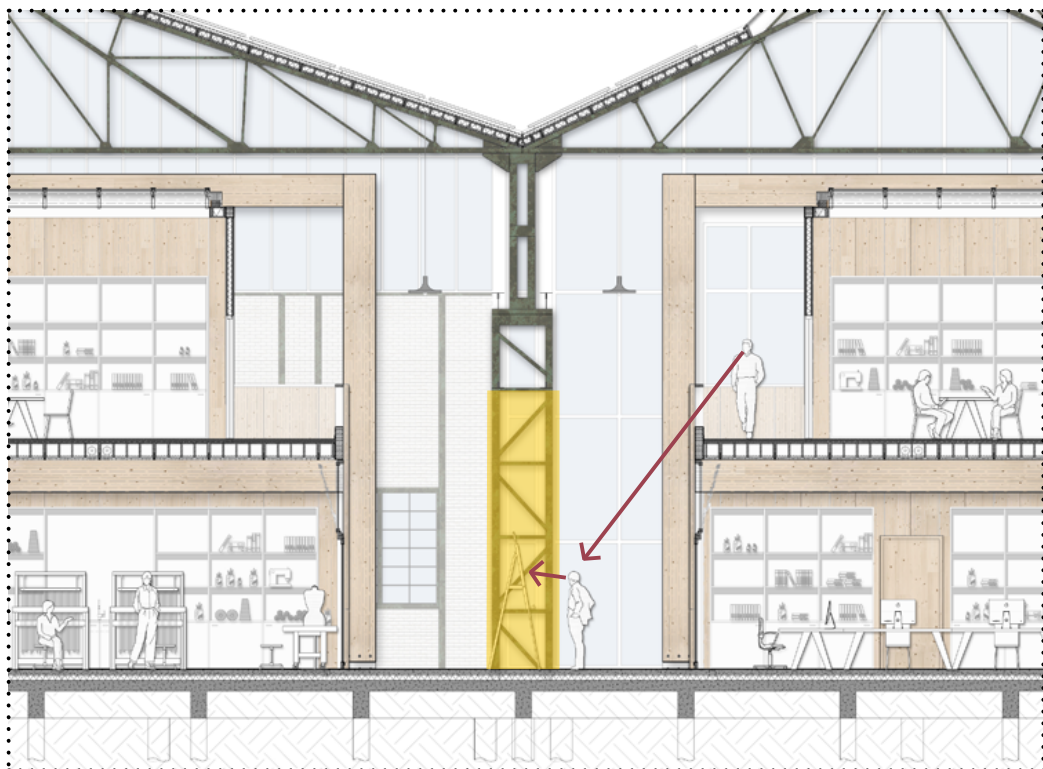
Route along crane track

Once inside, visitors will be guided around the new volumes along the crane tracks in order to draw the visitor’s attention to the crane track.



Art street

In between the new volumes, the crane track will be the point of attention, with space underneath to present art to the passing visitor. This space forms an art street, with the galleries from the first floors directed towards this art street in order to stimulate social interaction between artists and visitors.



Art street



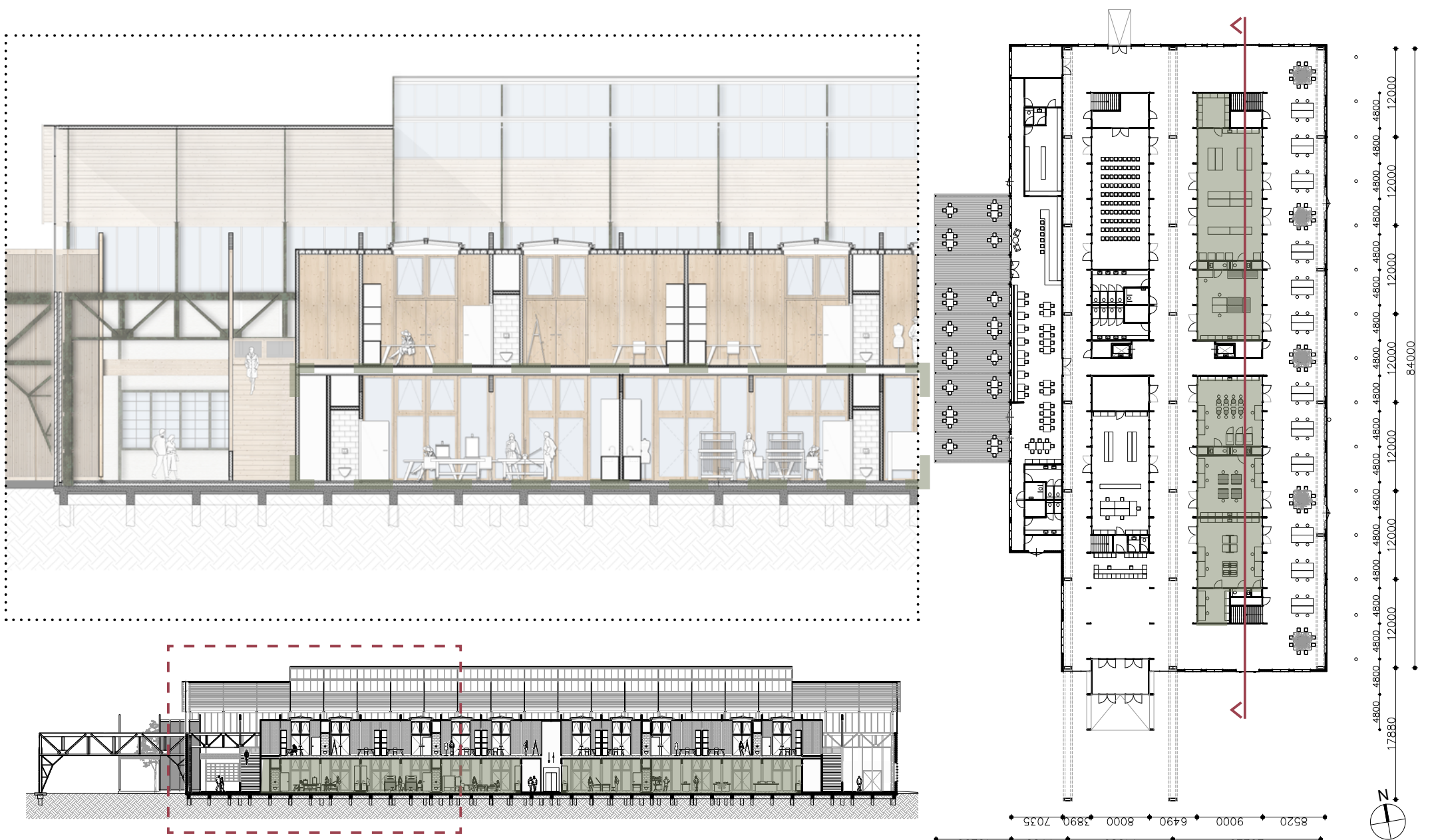
Exhibition space

One of the volumes will have an exhibition space on the ground floor that can be rented out for presentations and art galleries.



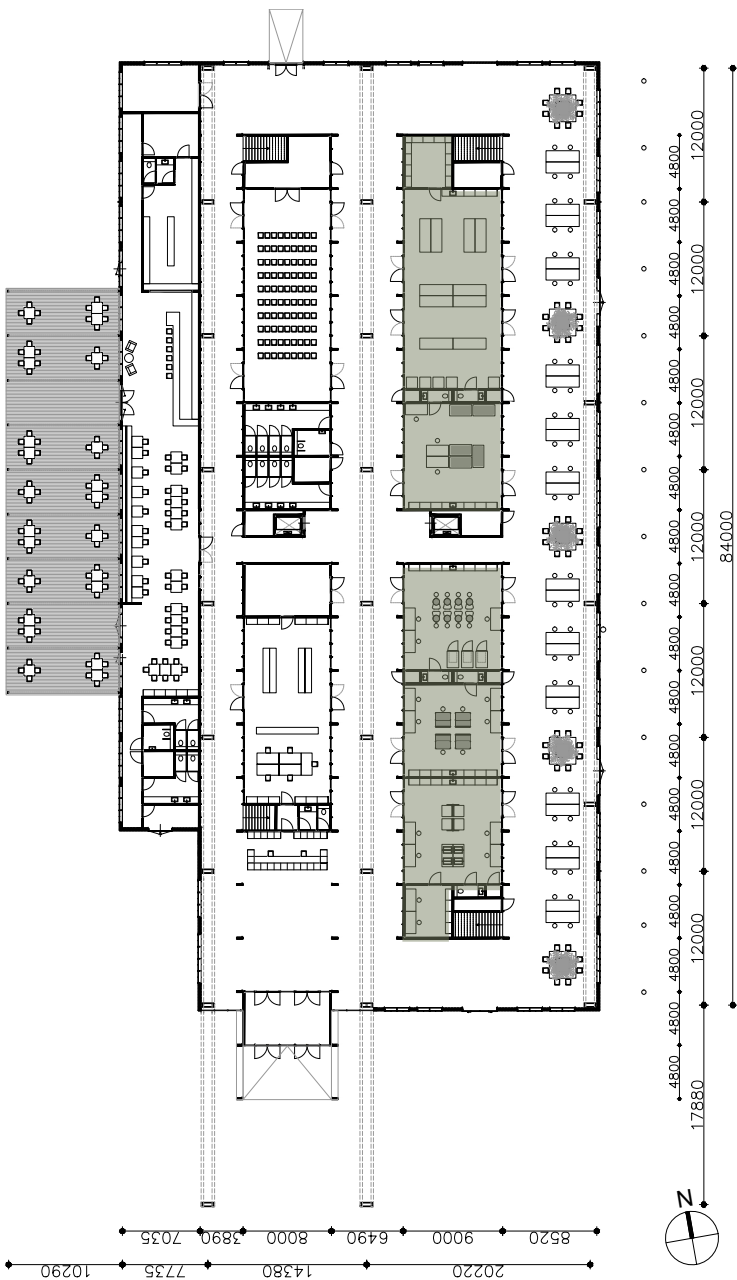
Collective craft workshops

In the other volume there will be several craft workshops that will have their own owners, but that can be used by the artists who rent a studio in the building.



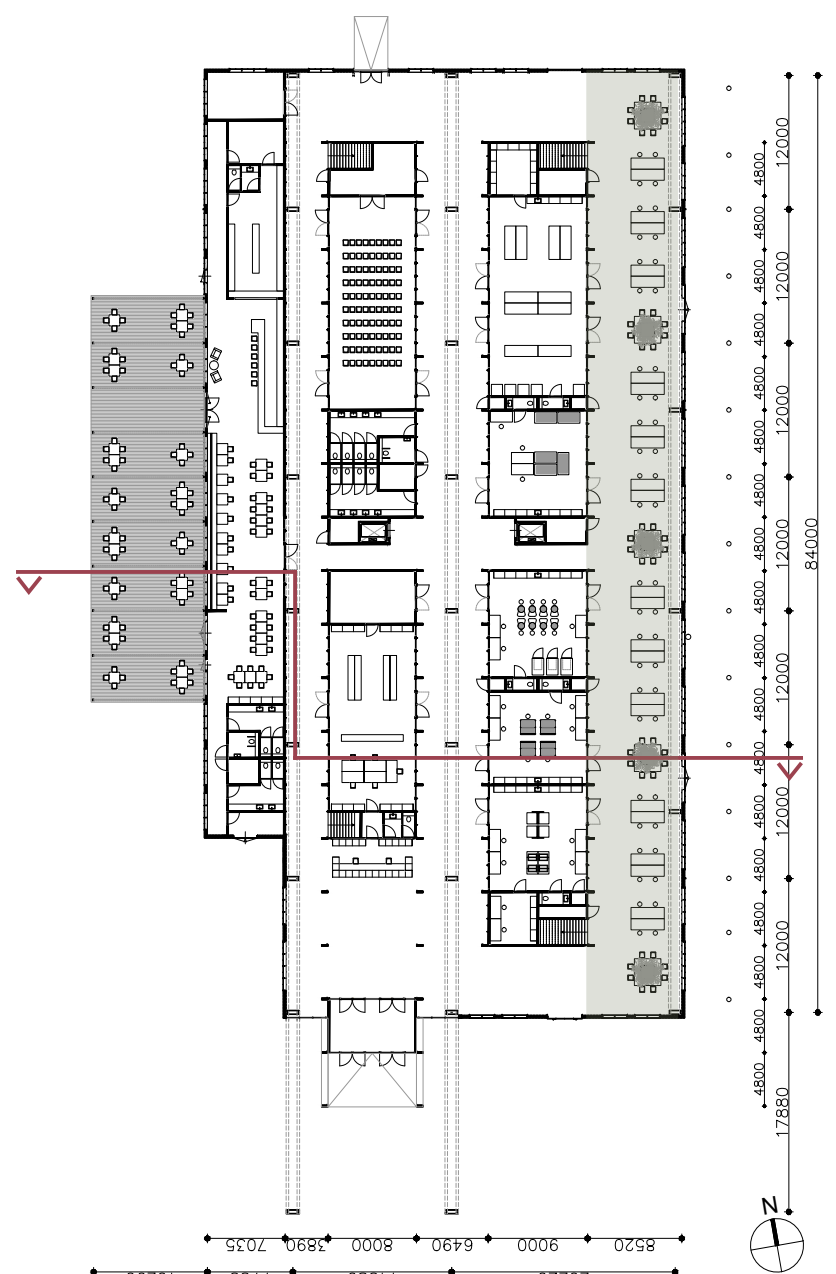
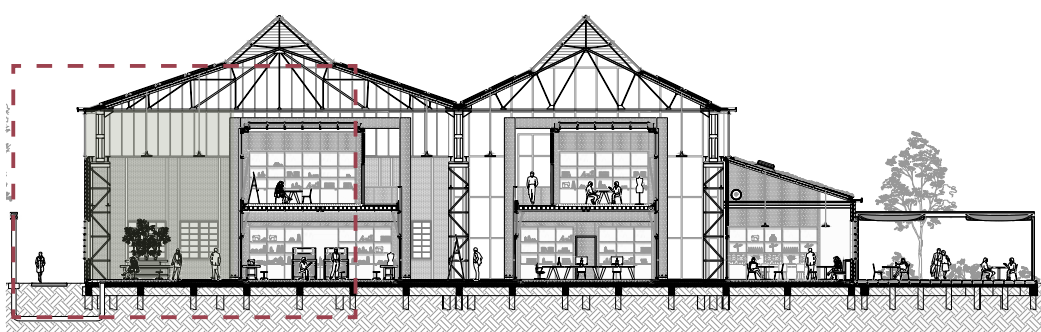
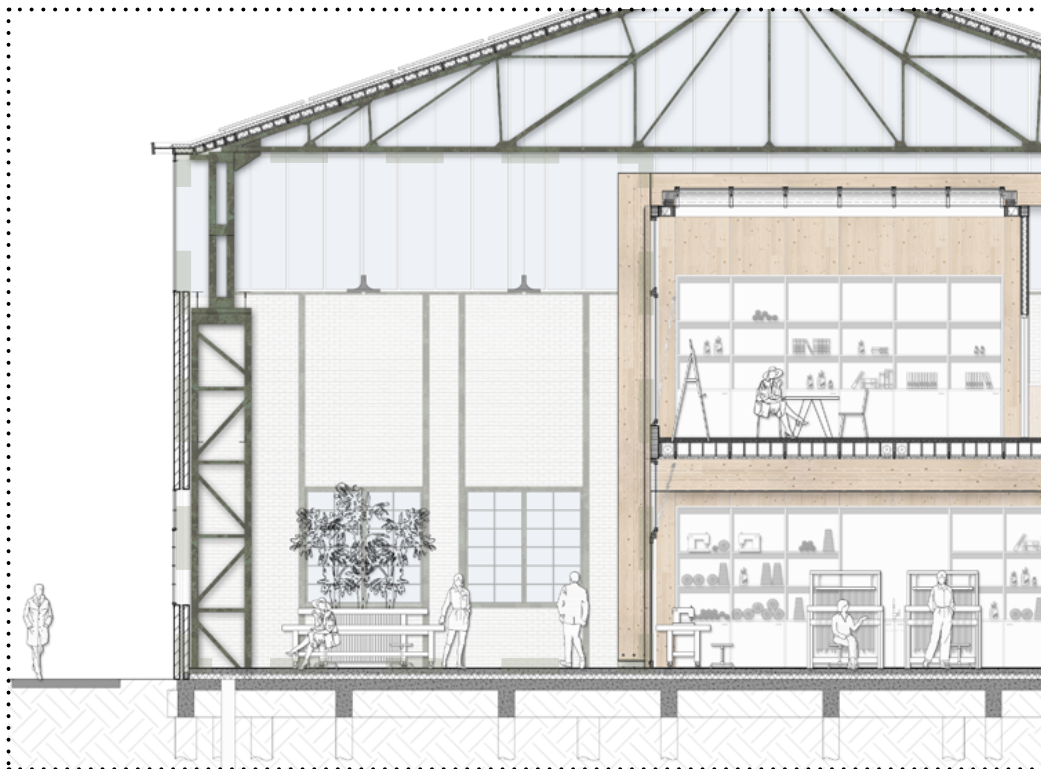
Collective craft workshops

Here workshops for practicing traditional crafts such as ceramics, printing and weaving are combined with modern technologies such as laser cutting machines and 3d printers.



Collective event hall

The space next door will serve as an extension of these collective workshops.
This is a flexible space for artists to work or host workshops.



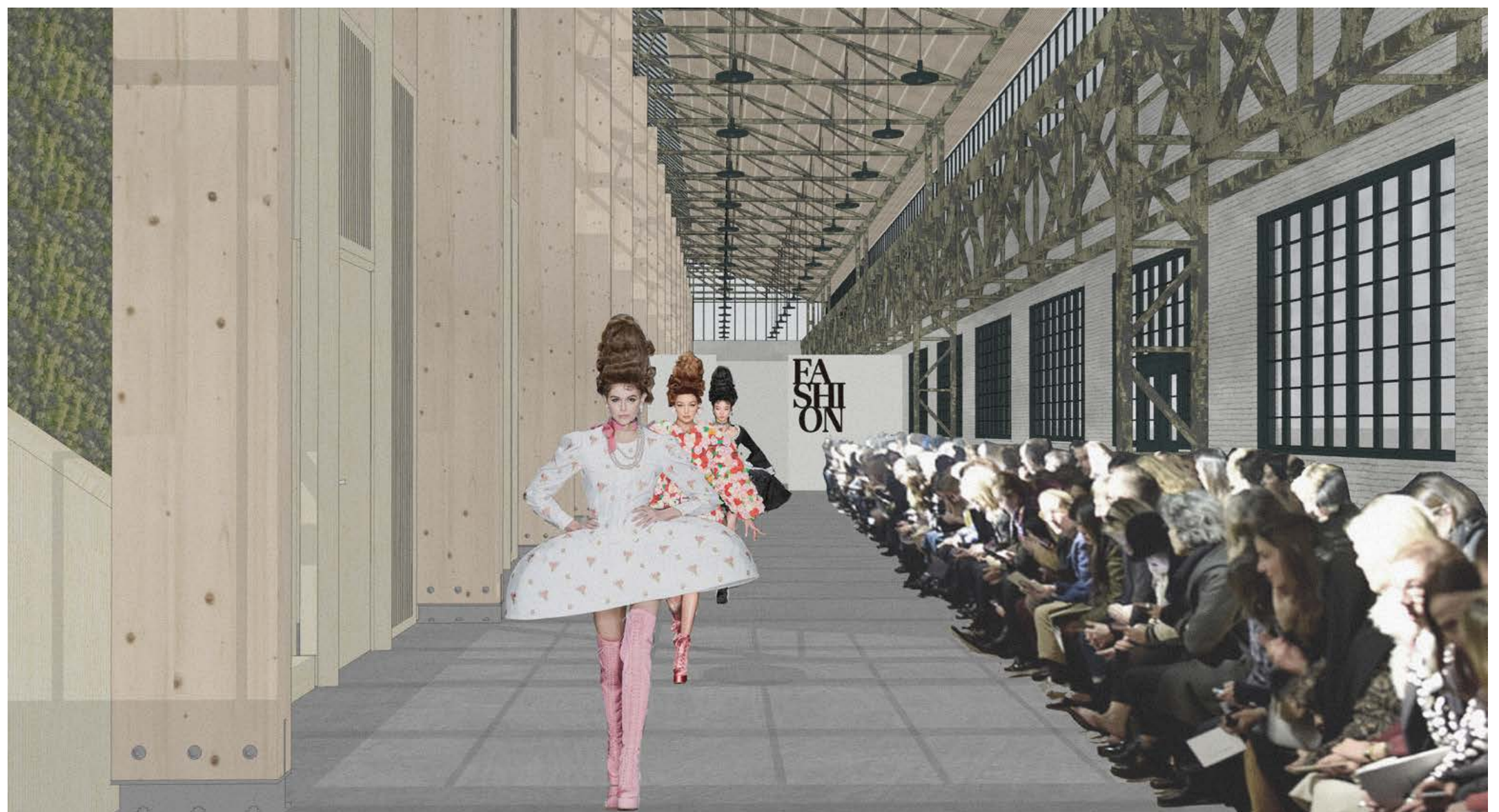
Collective event hall

There are tables and plants that can be moved. Both the crane tracks and the new volumes emphasize the length and scale of the building.



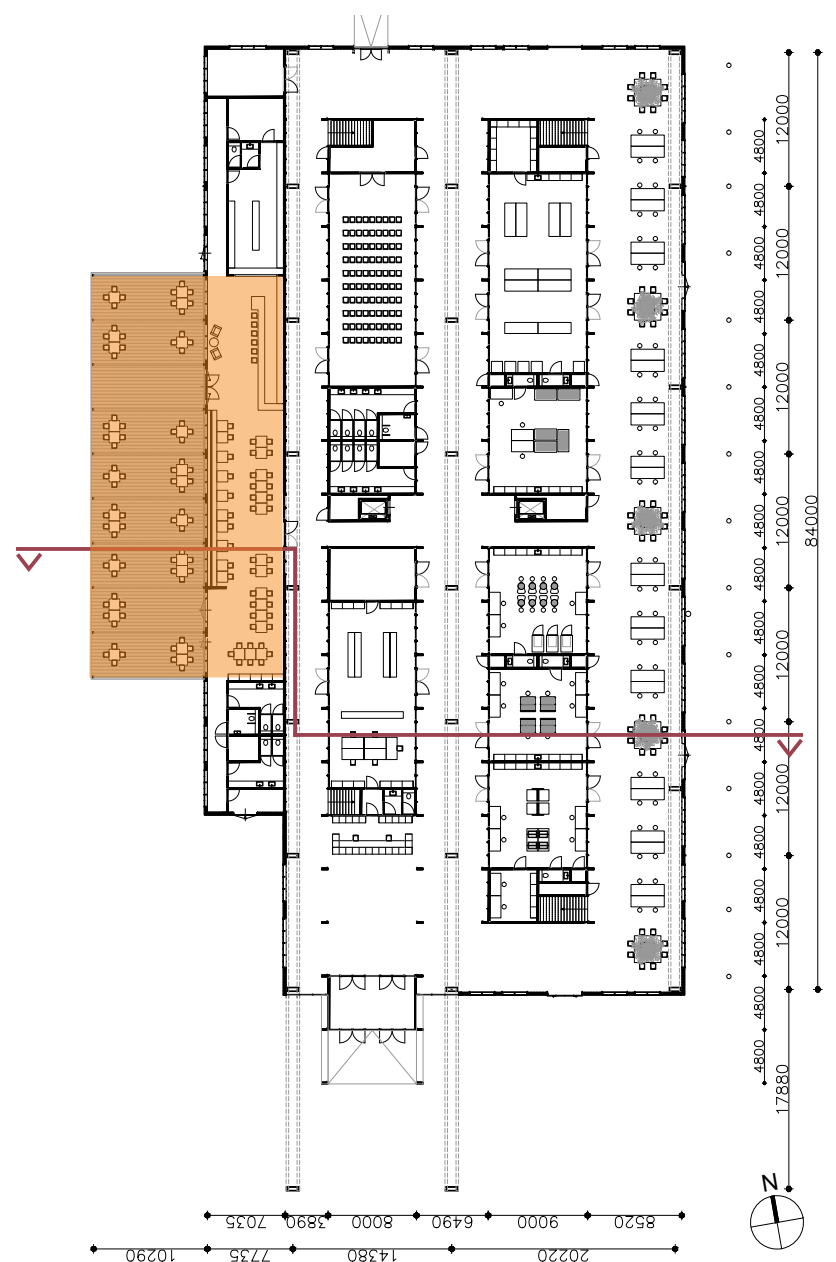
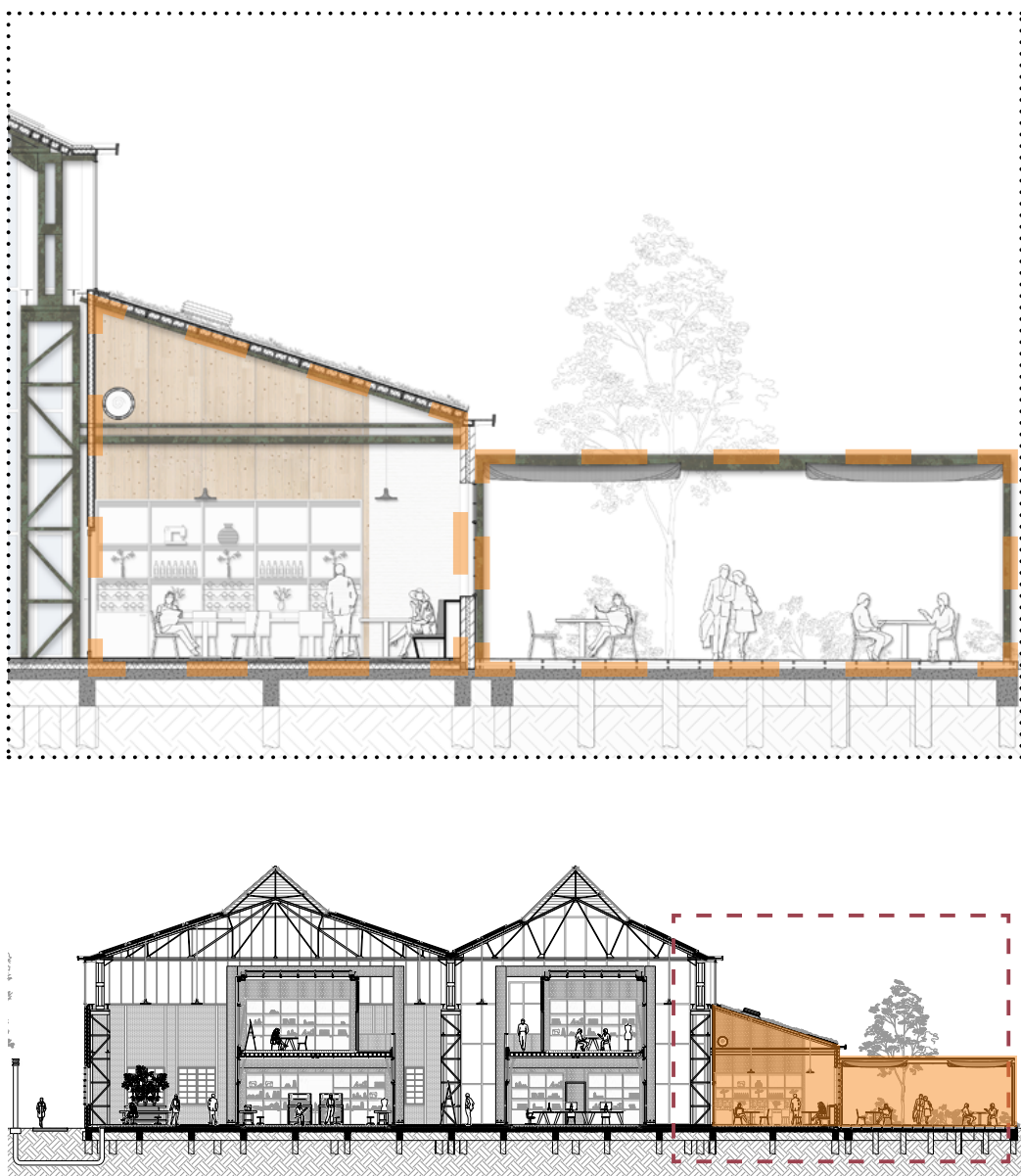
Collective event hall

When the tables and plants are moved to the side, this space forms a long open hall that can be used for events such as a fashion show that can inspire the artists and visitors.



Café with terrace

The lower side building on the west facade will be a café where the foundation and construction of the stripped extension will be preserved, which will form a terrace.



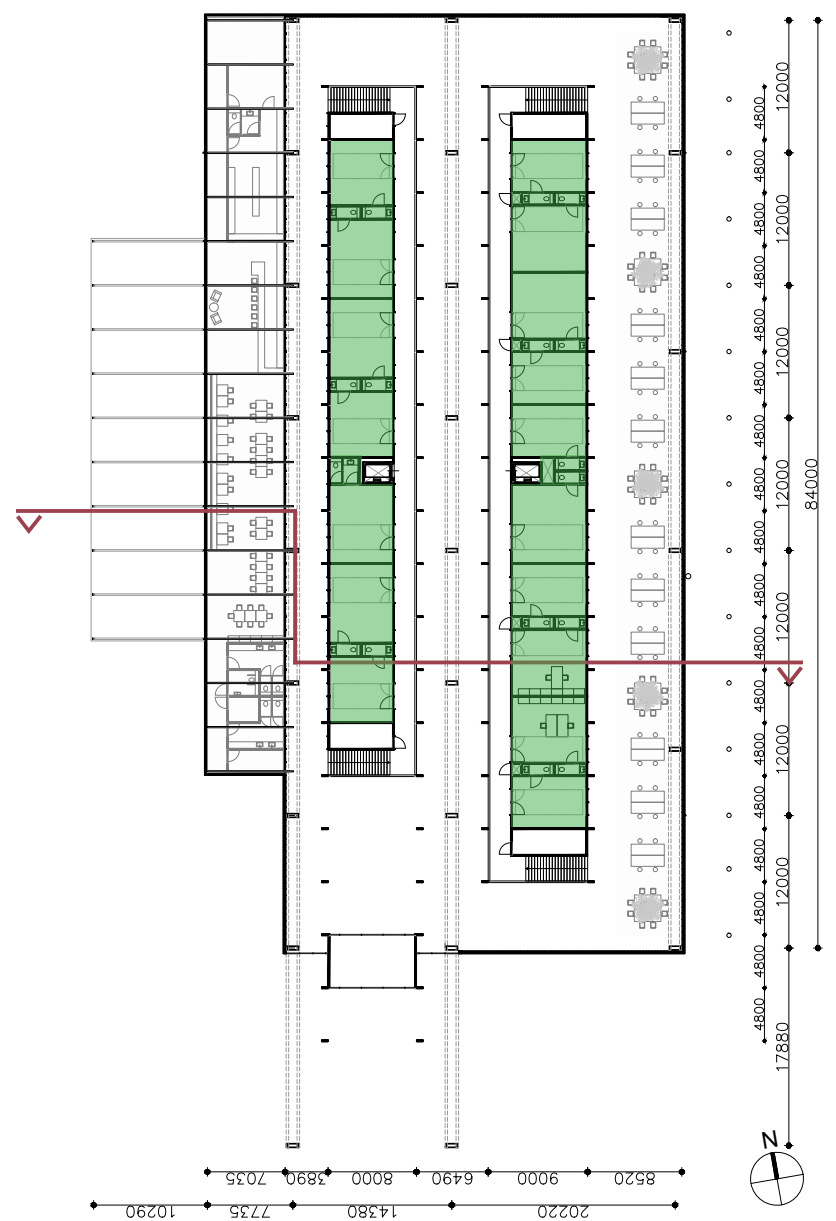
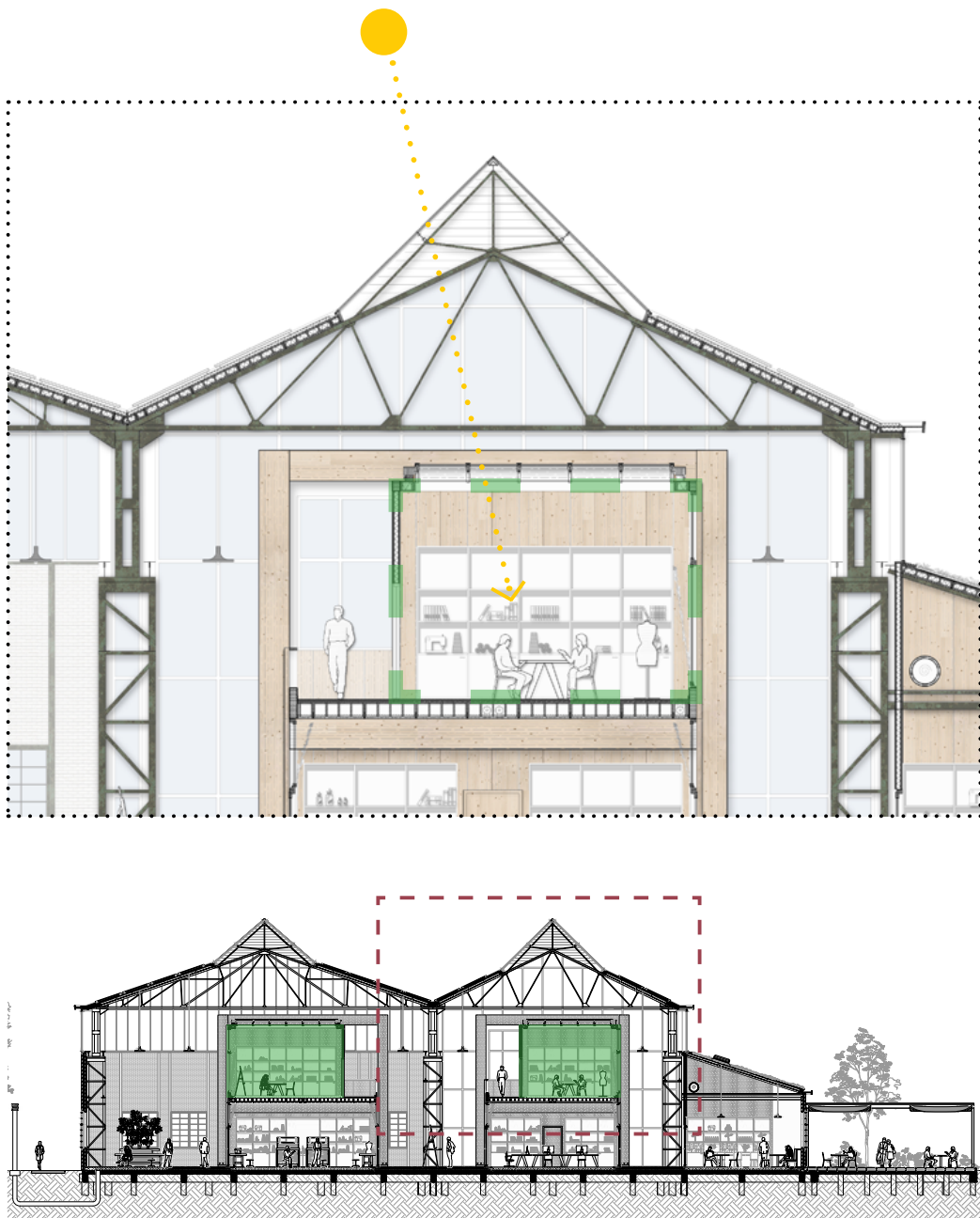
Café with terrace

This terrace is oriented to the new entrance of the Hembrug site and invites you to visit the machine hall.



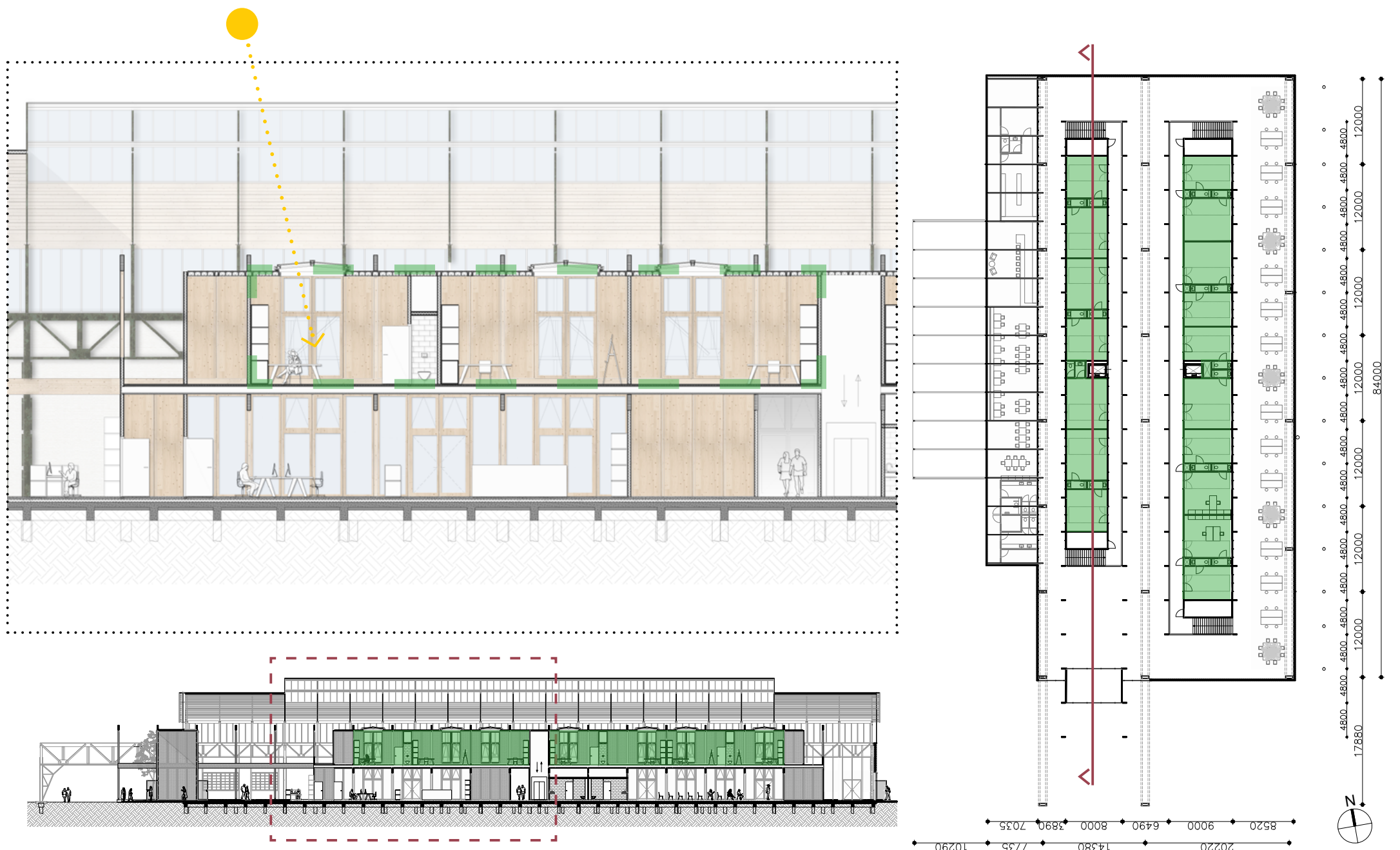
Artist studios

The artists' studios will be located on the first floor in both new volumes. These are placed under the existing skylights. In the ceiling of these studios are windows to get a sufficient amount of daylight into the studios. In all the studios, these windows can also be darkened if necessary.



Artist studios

There will be eleven artists' studios that differ size.



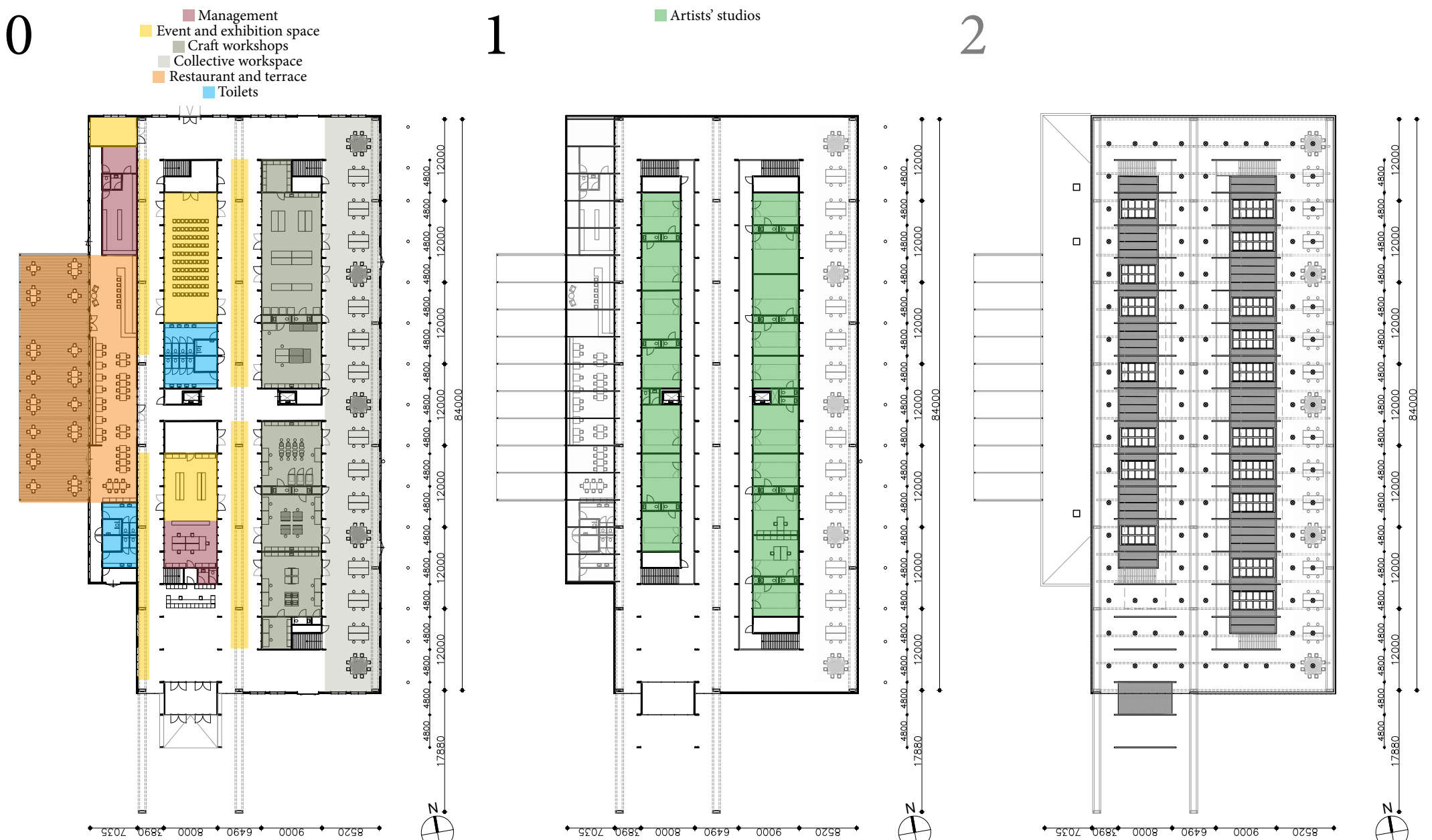
Artist studios

All studios have a view on the crane tracks and a view to the outside. Social interaction will be stimulated through these windows.



New program

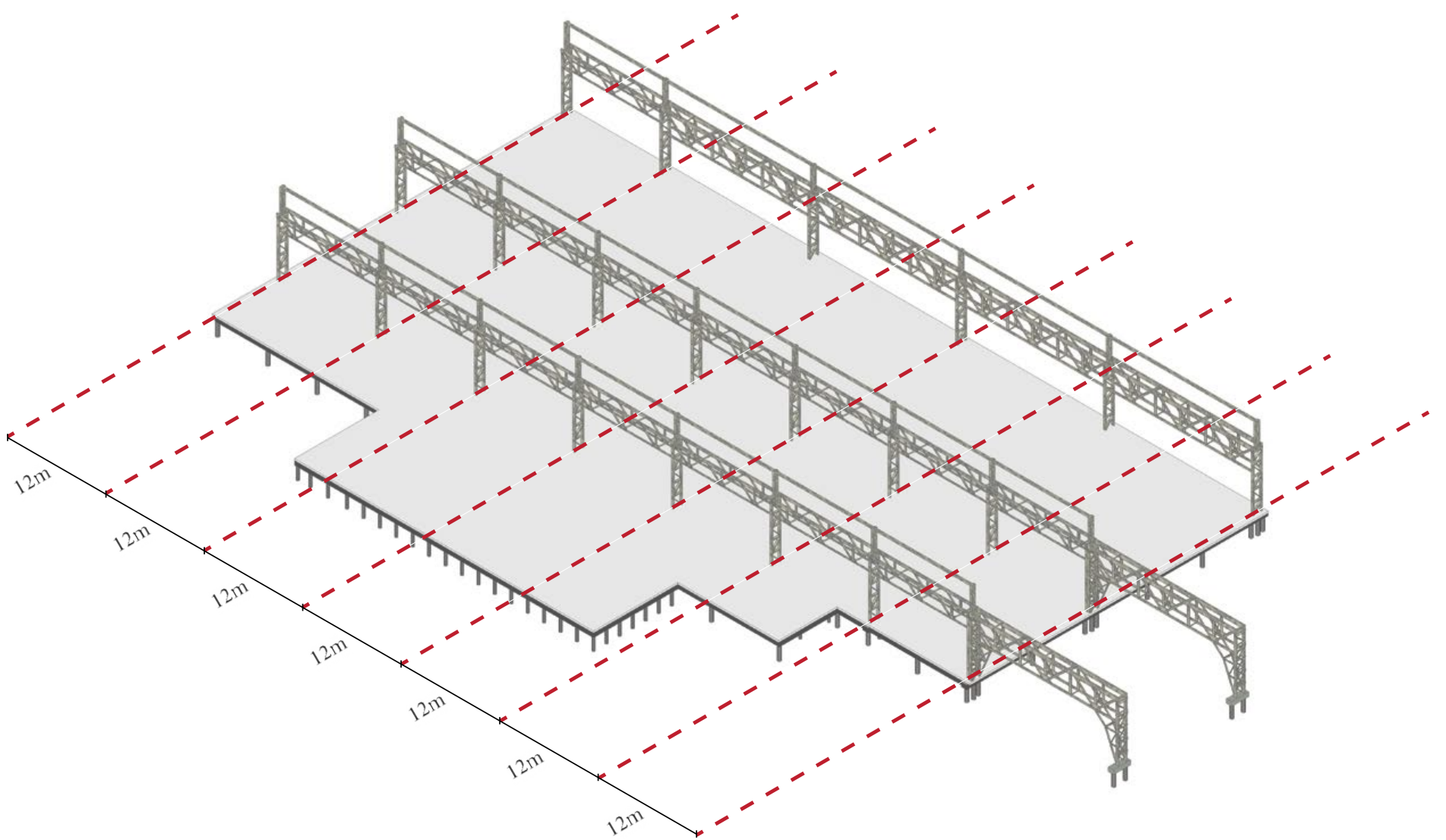
This is an overview of the floor plans and the program we have discussed.
Now I would like to elaborate on the construction.



Existing construction crane

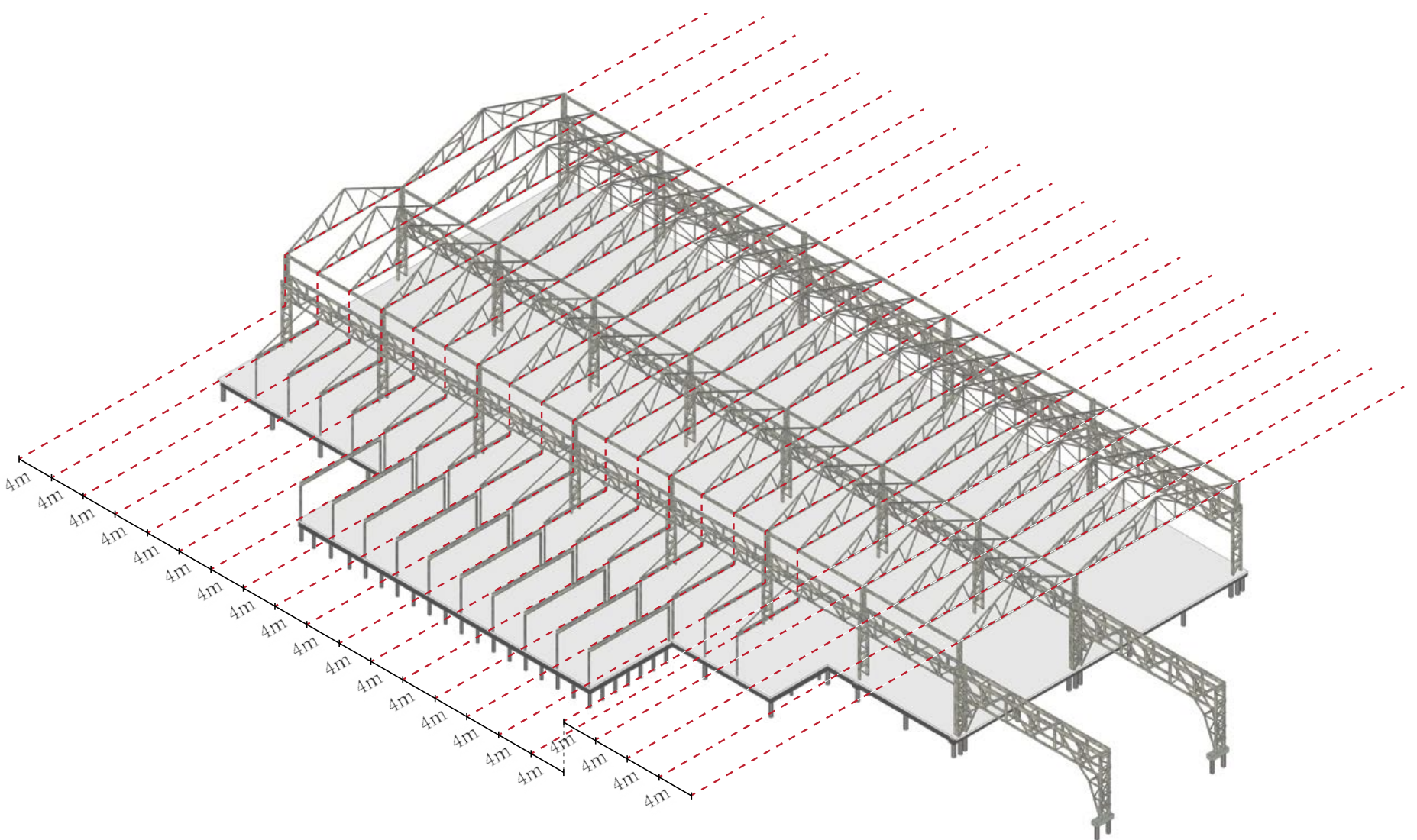
The existing construction of the crane track has a clear rhythm, which is formed by the composition of the steel columns that are placed 12 meters apart.

Only two columns on the east facade deviate from this.



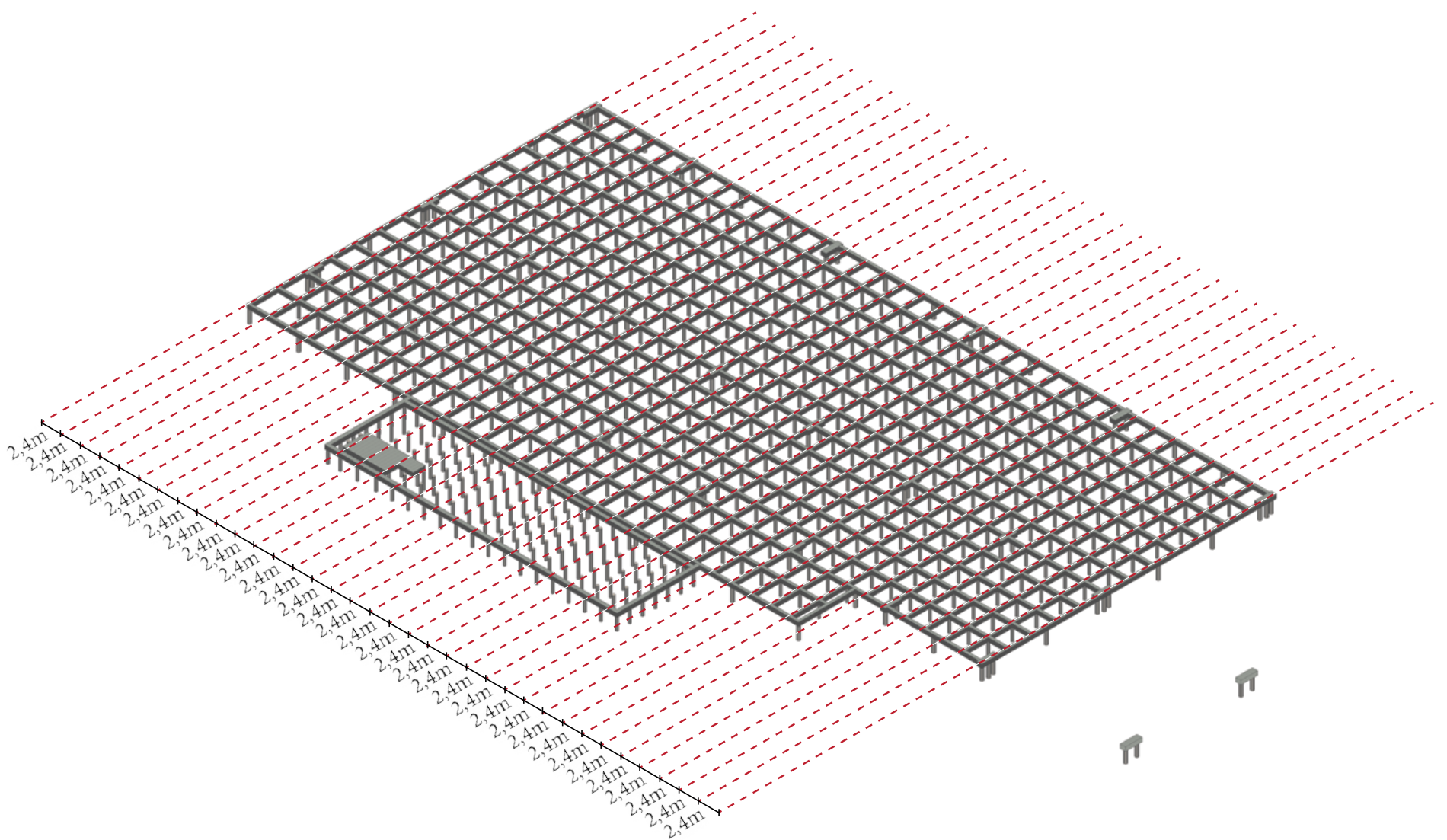
Existing construction roof

The roof is supported by the existing rafters, which are 4 meters apart. The rafters and columns of the lower side part and the stripped extension are also attuned to this more subtle rhythm.



Existing foundation

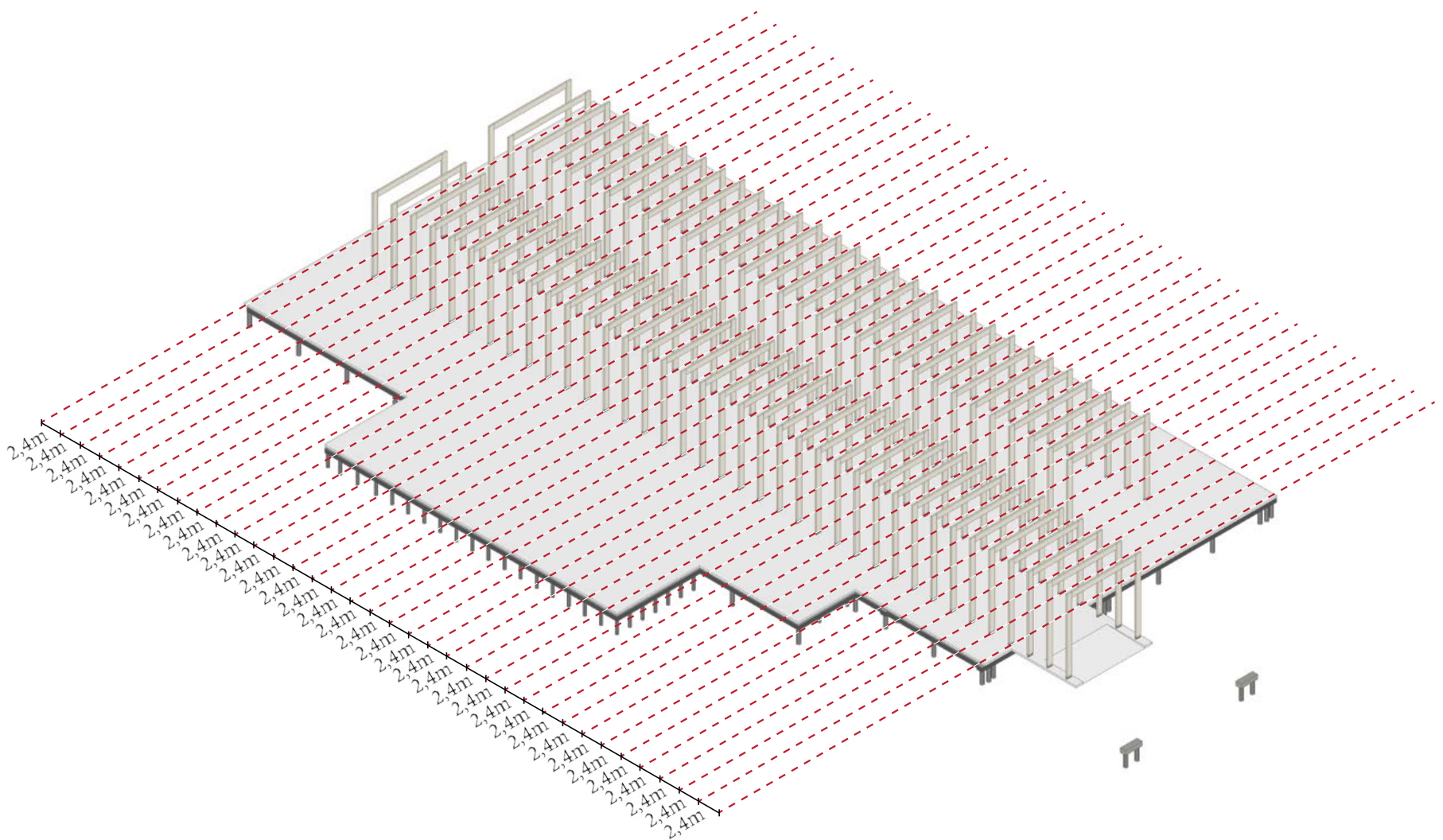
Due to the production of heavy machinery, the existing building has a very solid foundation from which a rhythm of 2.4 meters can be traced.



New structure

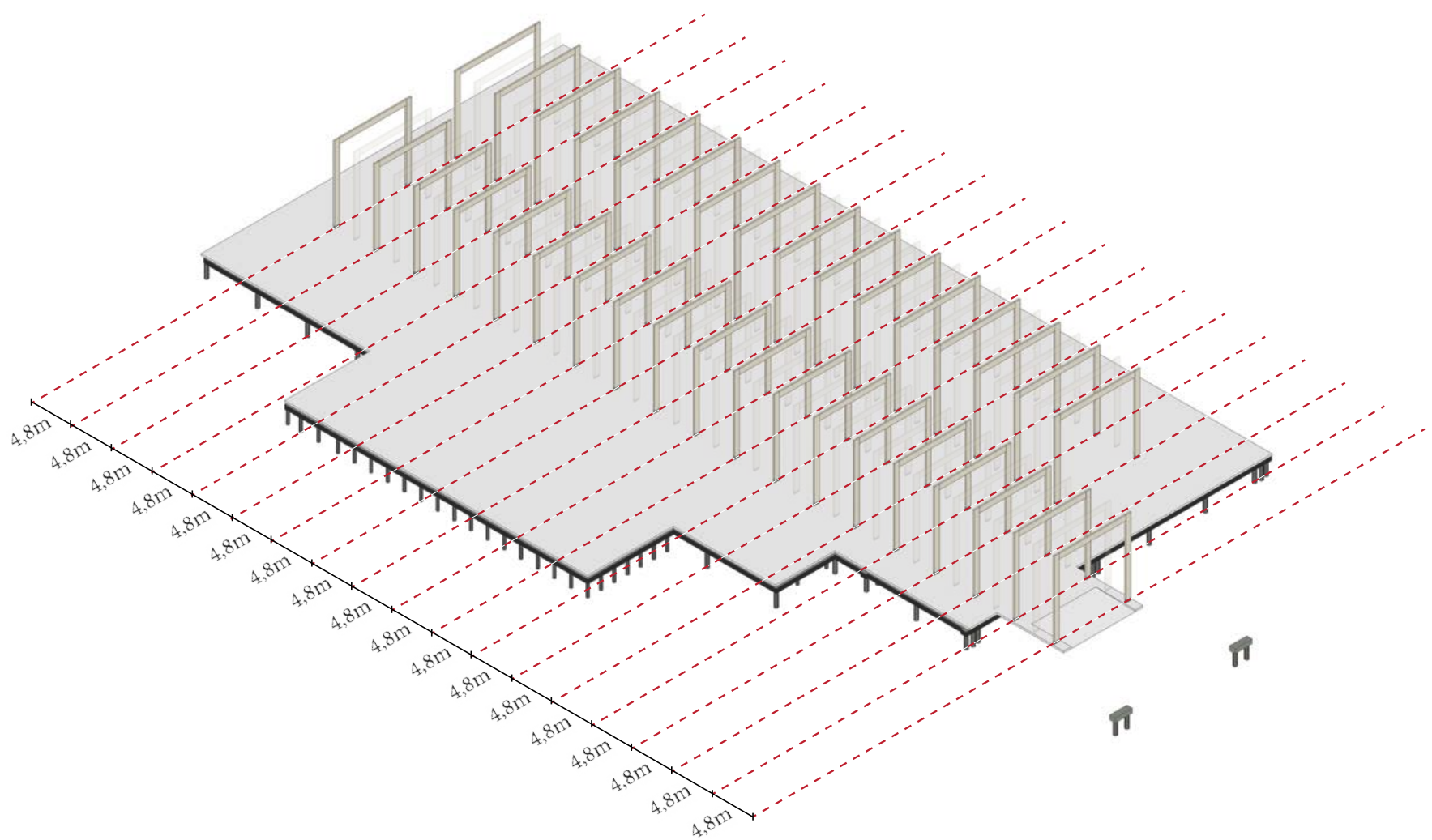
The rhythm of the construction of the new volumes I designed is derived from the three previous rhythms of the existing building. This new construction is formed by wooden portals, in which I initially kept the same rhythm of 2.4m as the existing foundation.

NEW STRUCTURE



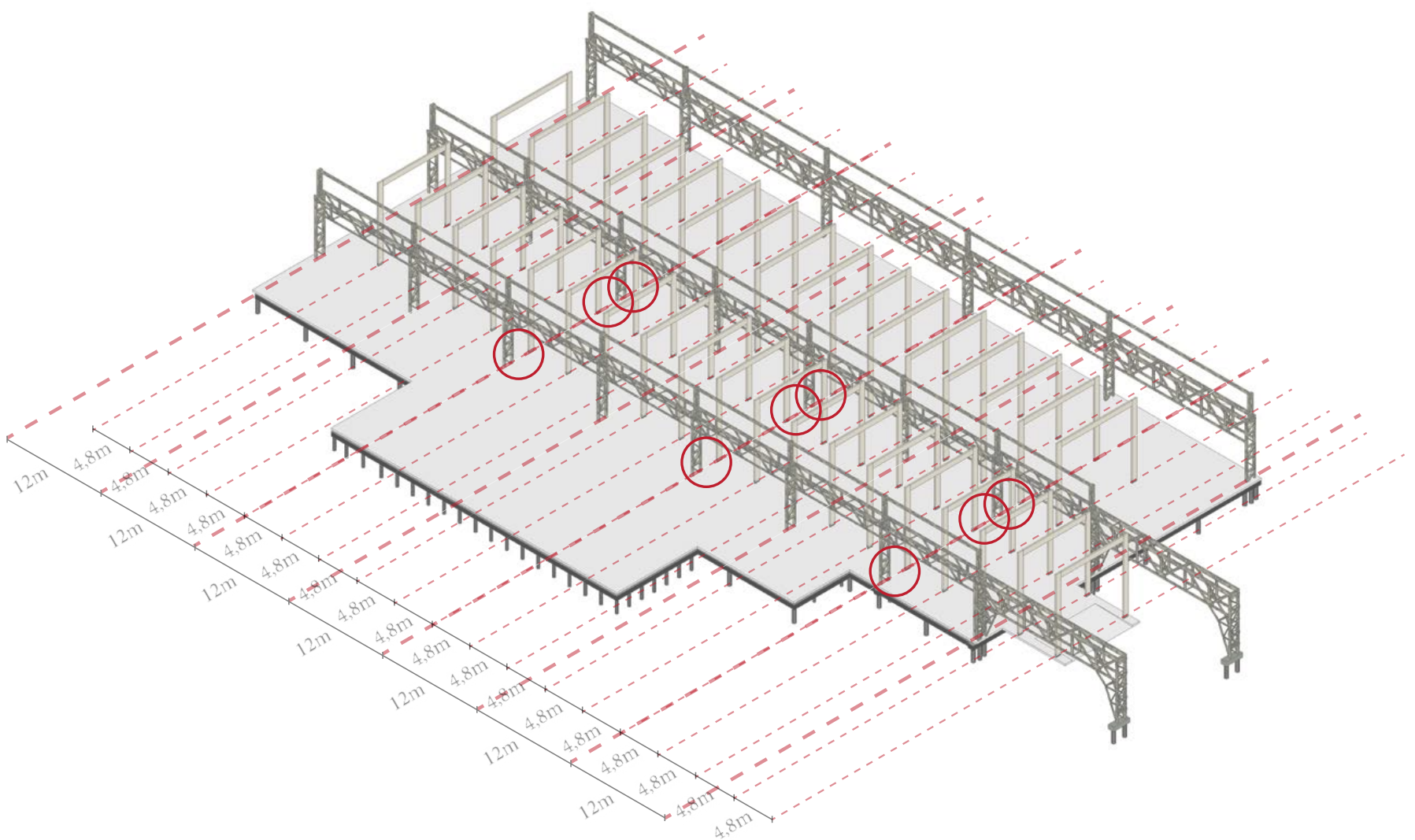
New structure

I then halved the number of portals, making them 4.8m apart.



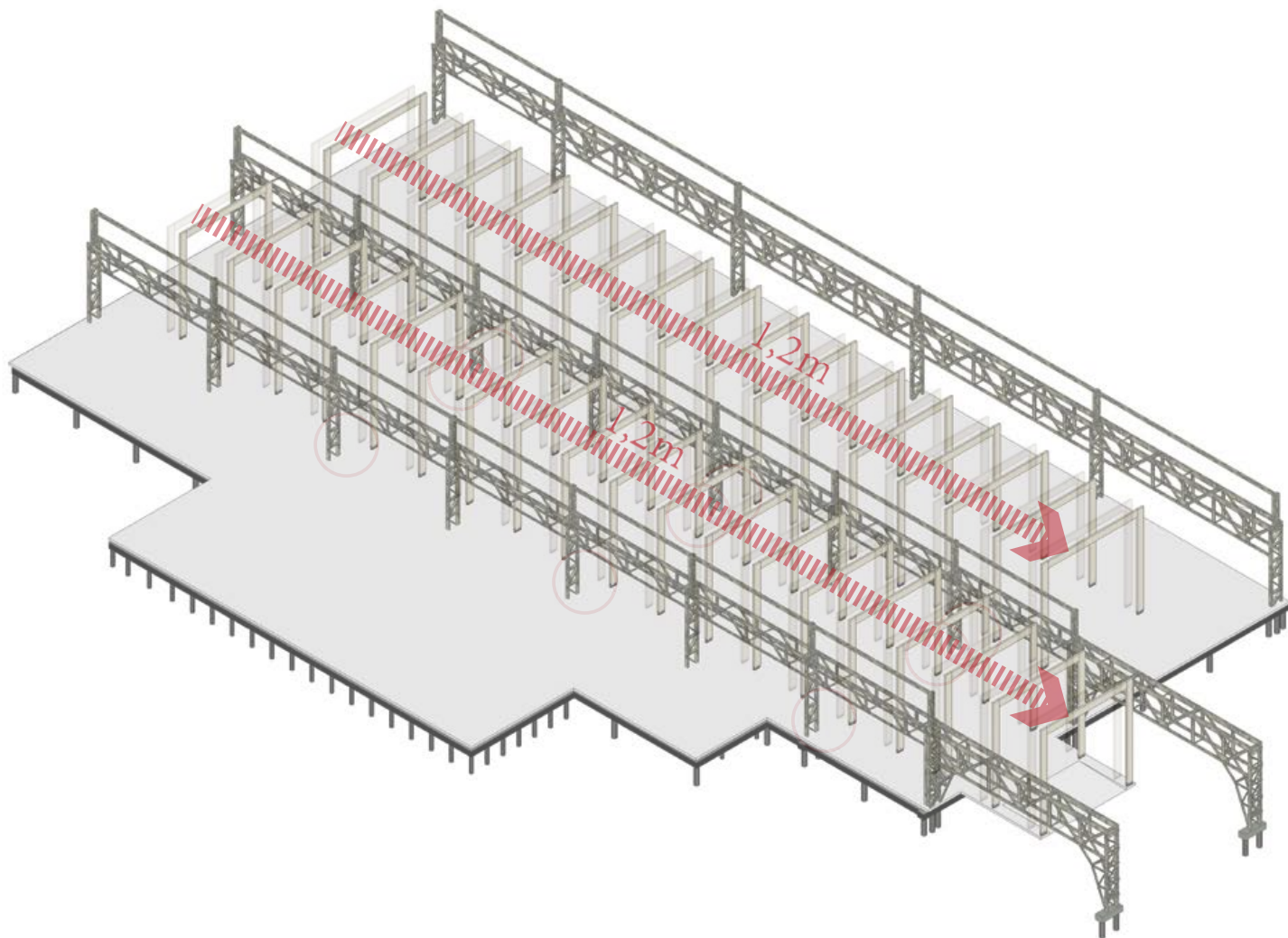
New structure

This new 4.8m rhythm conflicted with the existing rhythm of the steel columns of the crane runway, so that in some places the columns of the new wooden portals aligned with the columns of the crane runway.



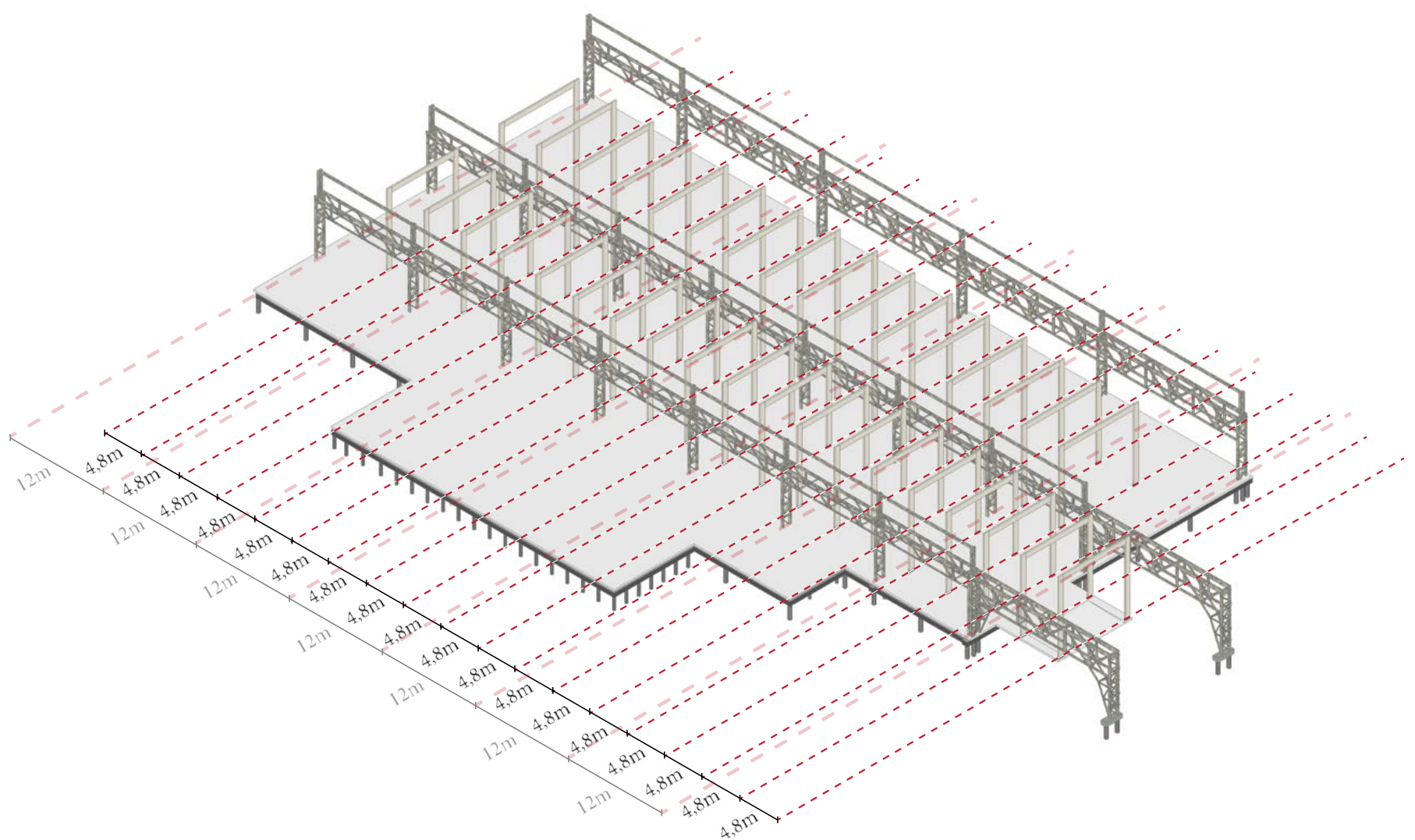
New structure

Since I wanted to make a distinction between the existing building and my new additions, I moved the new construction 1.2m towards the south facade.



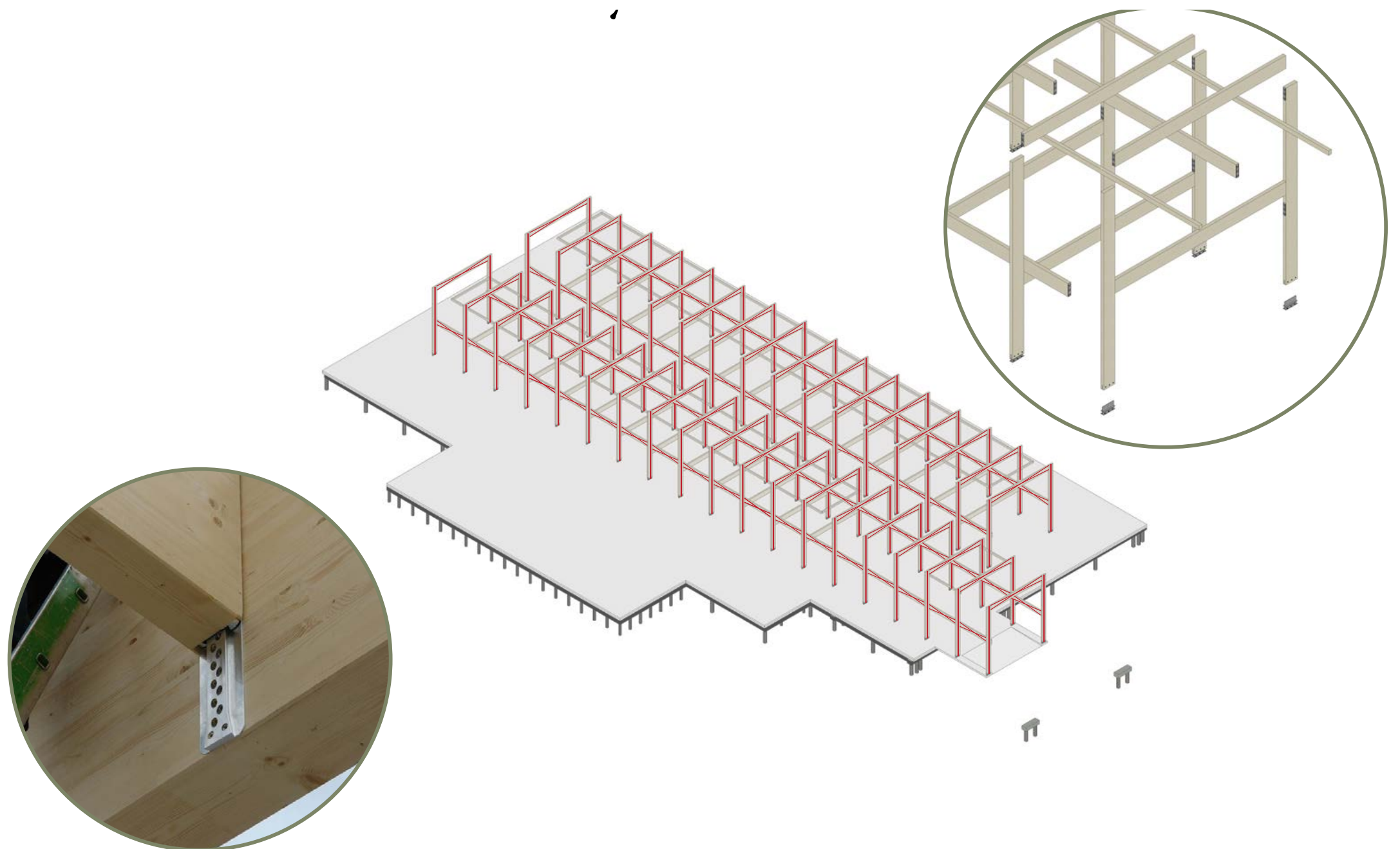
New structure

In this way, this new rhythm no longer coincides with the rhythms of the existing building.



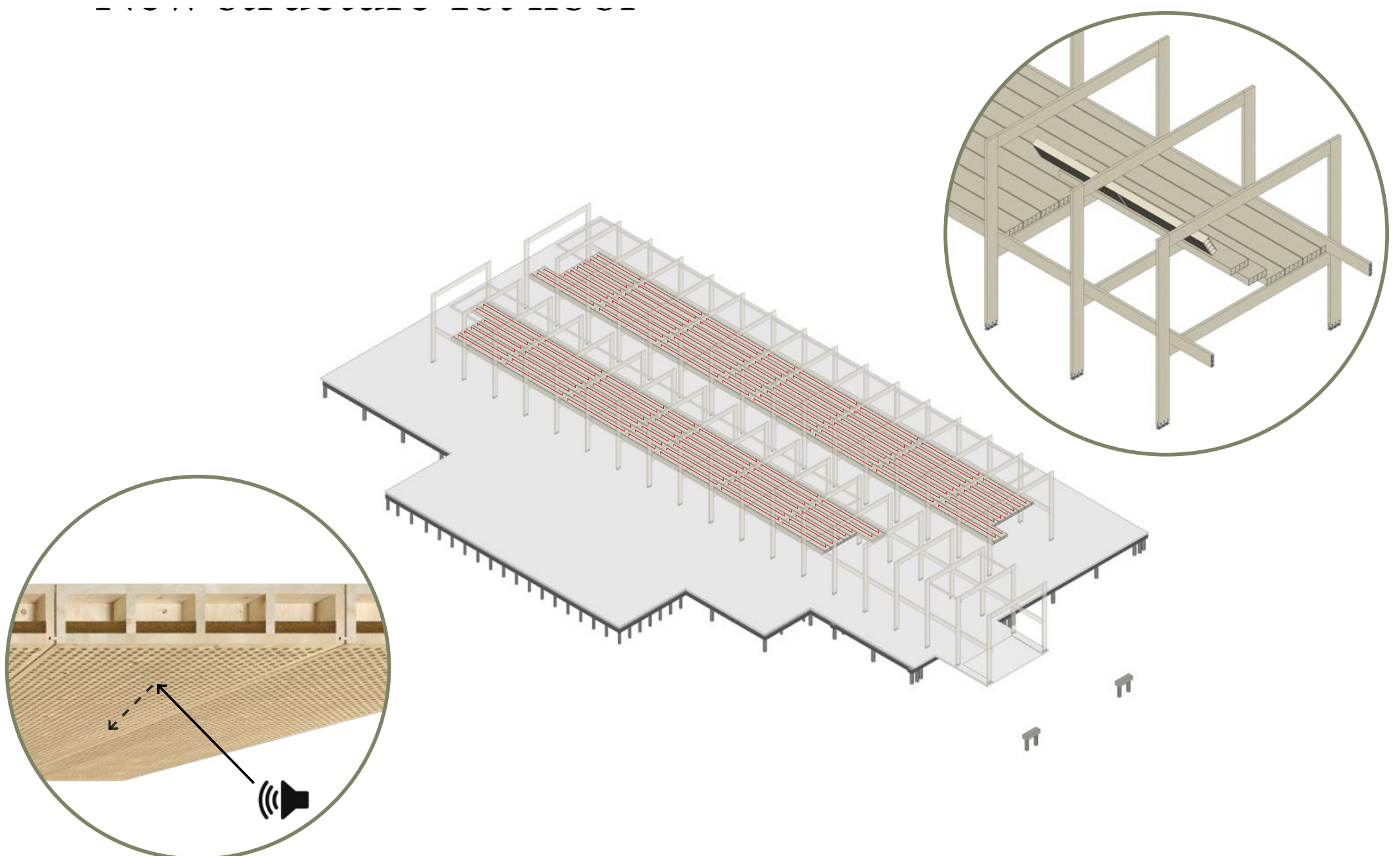
Stability

These structural portals are built from 60cm high laminated wooden beams which are connected to each other by metal plates that slide over each other and in this way create a moment-fixed connection. In this way, the portals are joined together by laminated wooden beams of the same height. The moment-fixed connections and the height of the beams give the construction sufficient stability to stand on its own.



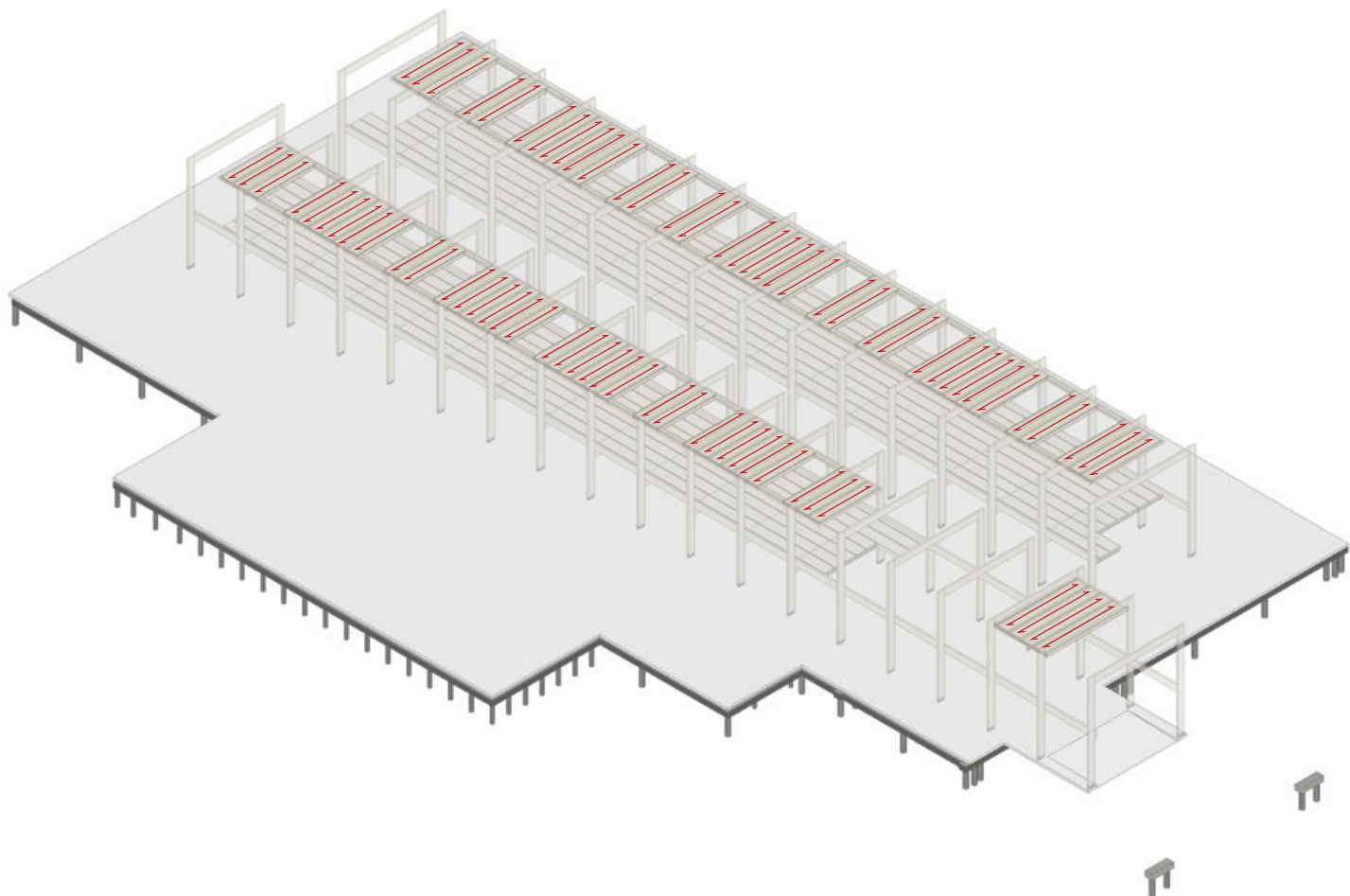
1st floor

Lignatur floor and ceiling elements are placed in the length direction of this wooden frame work, which are perforated at the bottom and have a sound-absorbing function.



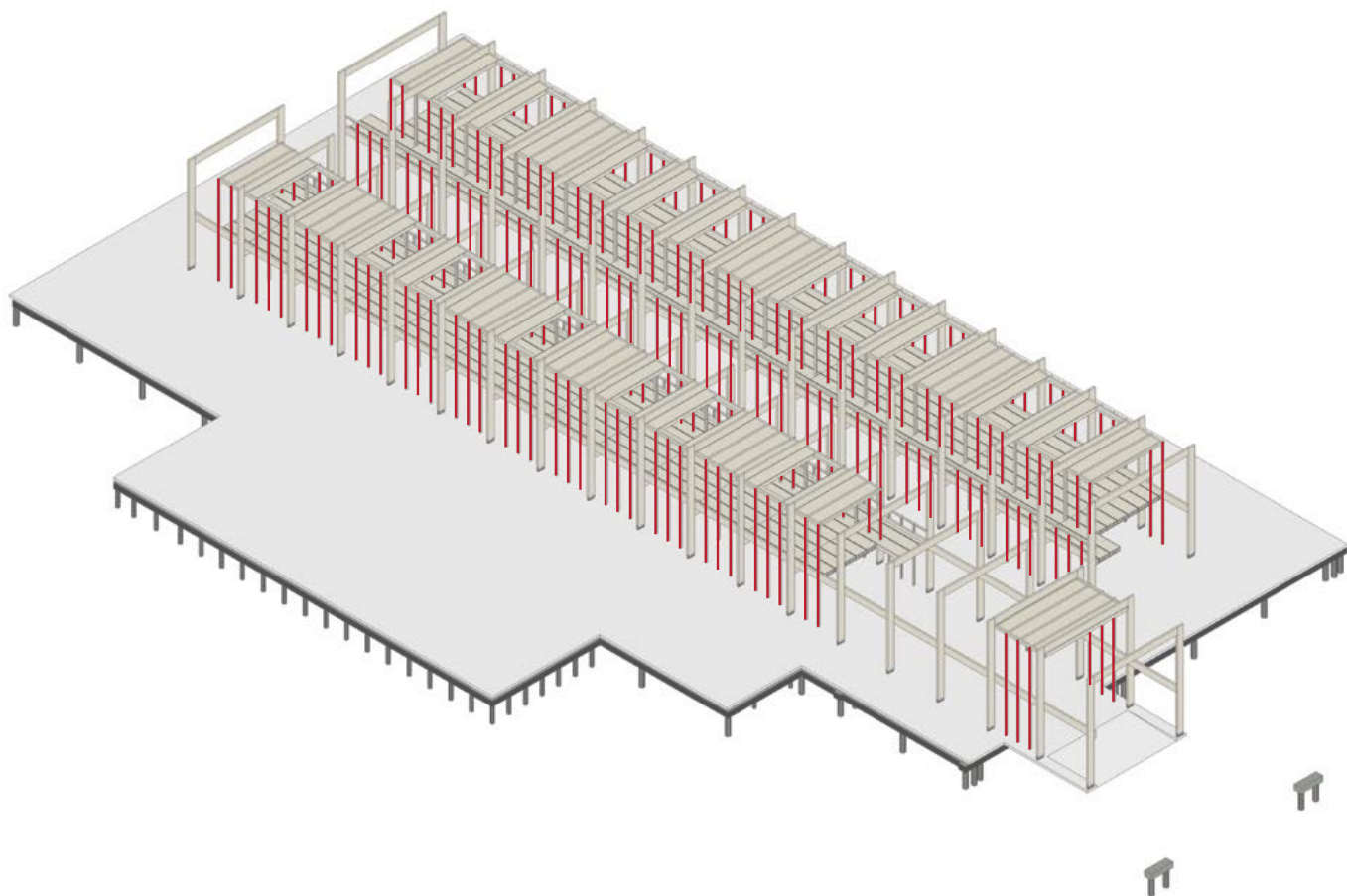
Ceiling

The ceiling of the artist studios on the 1st floor is also created by these Lignatur elements which will be placed in such a way that it is possible to create skylights over the entire width of the studios.



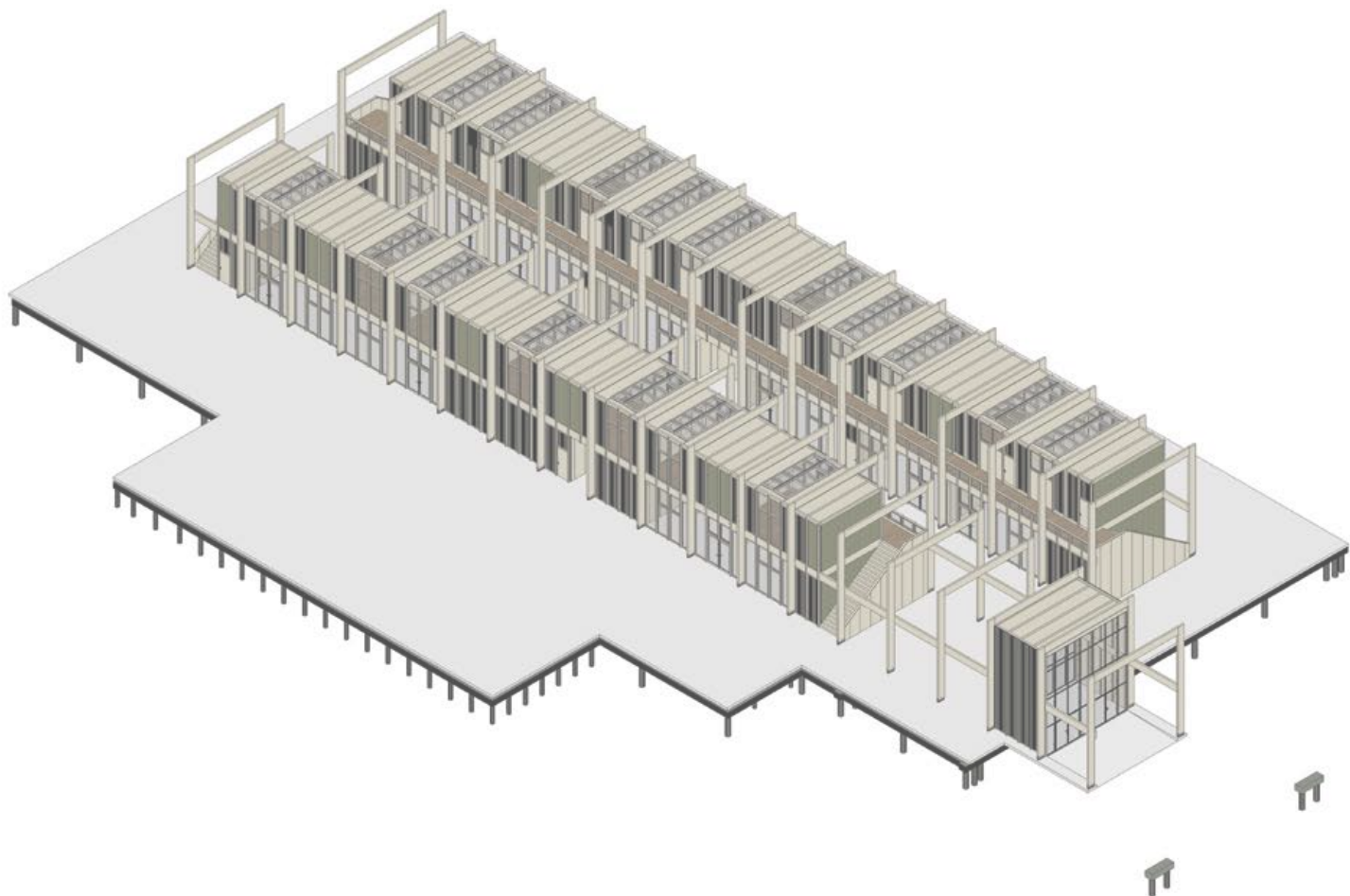
Framework

Vertical wooden posts are placed between the portals and are spaced approximately 1.2 m apart.



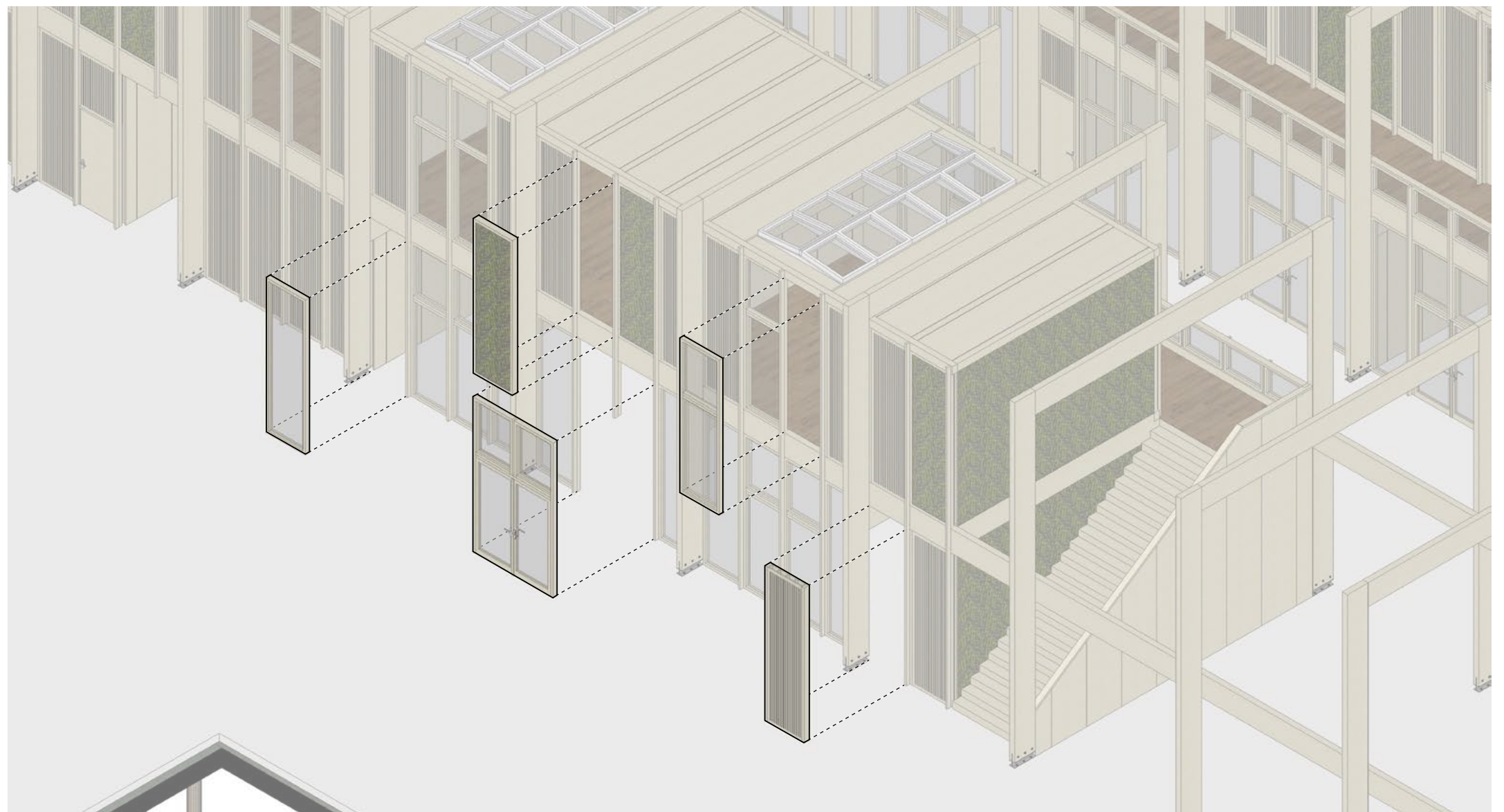
New modular skin

This creates a frame work in which prefabricated facade panels can be placed, which will form the facade finish of the new volumes.



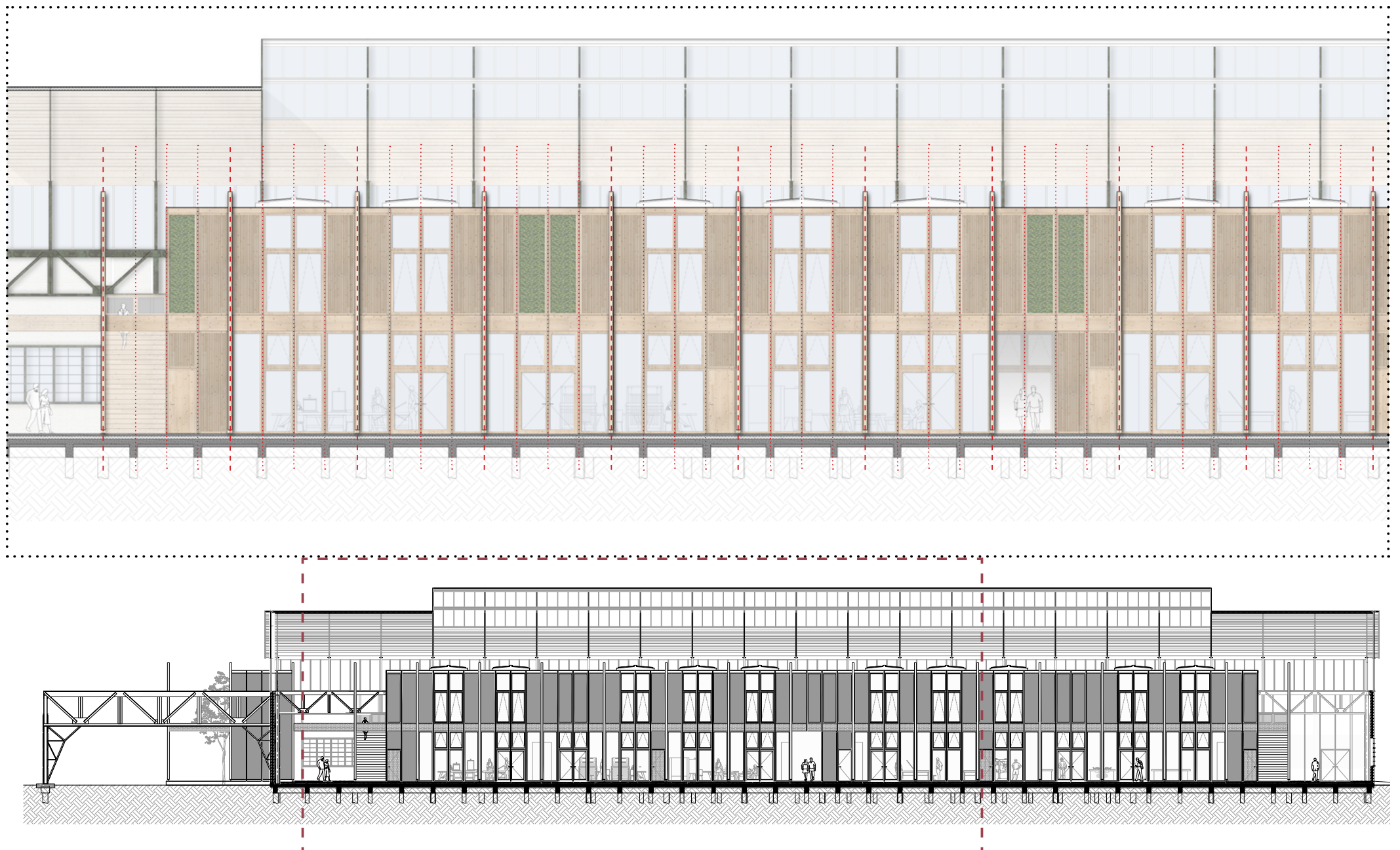
New modular skin

By repeating the same frame work multiple times and because these different facade panels have the same dimensions, the panels can often be repeated and exchanged with each other. This allowed me to limit the number of types of panels, which makes production easier and the construction more flexible.



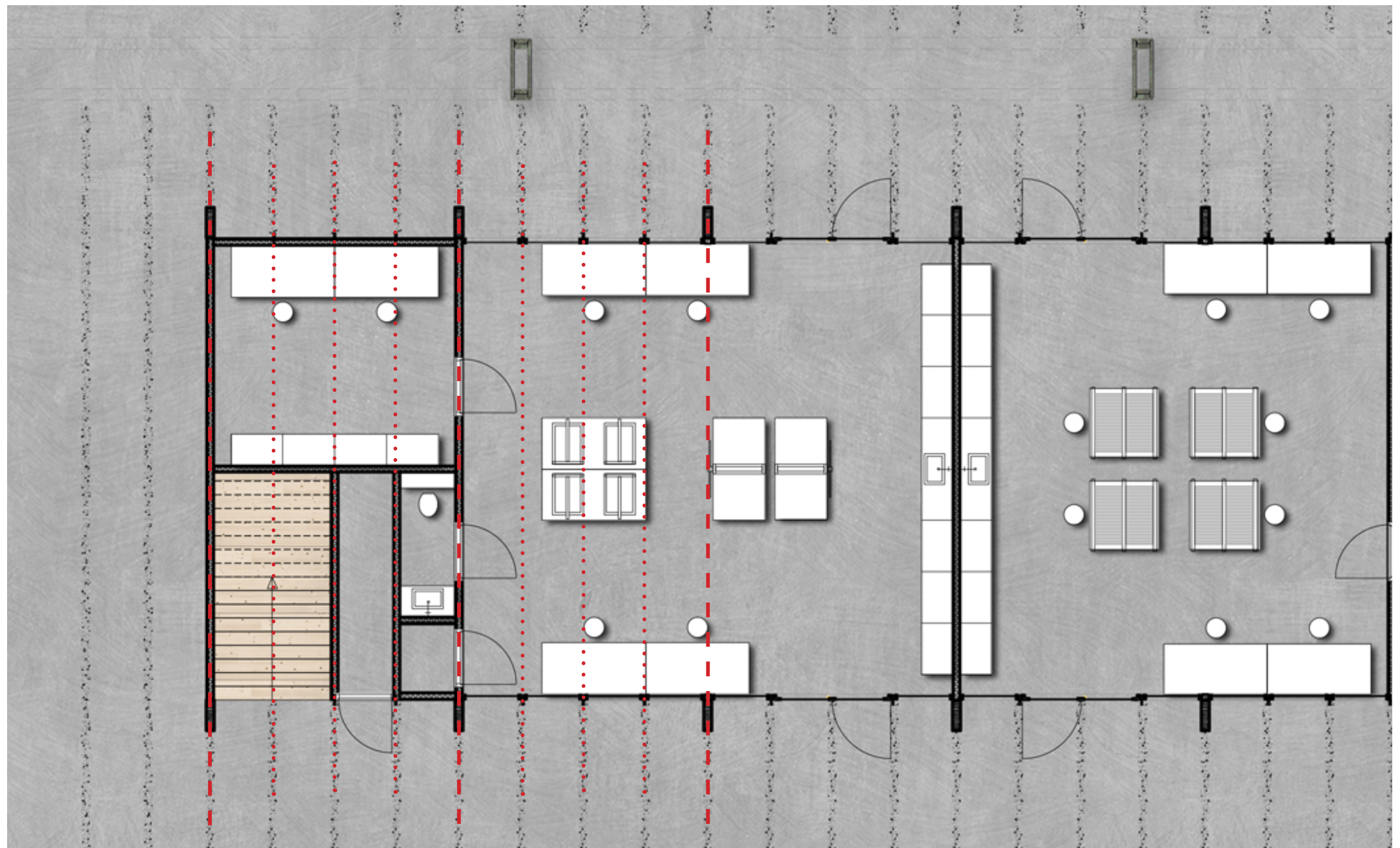
Clear rythm

This repetition creates a clear sub-rhythm in the facade of 1.2 m. The height of these panels and the vertical posts, which protrude slightly from the panels, emphasize the height of the existing building.



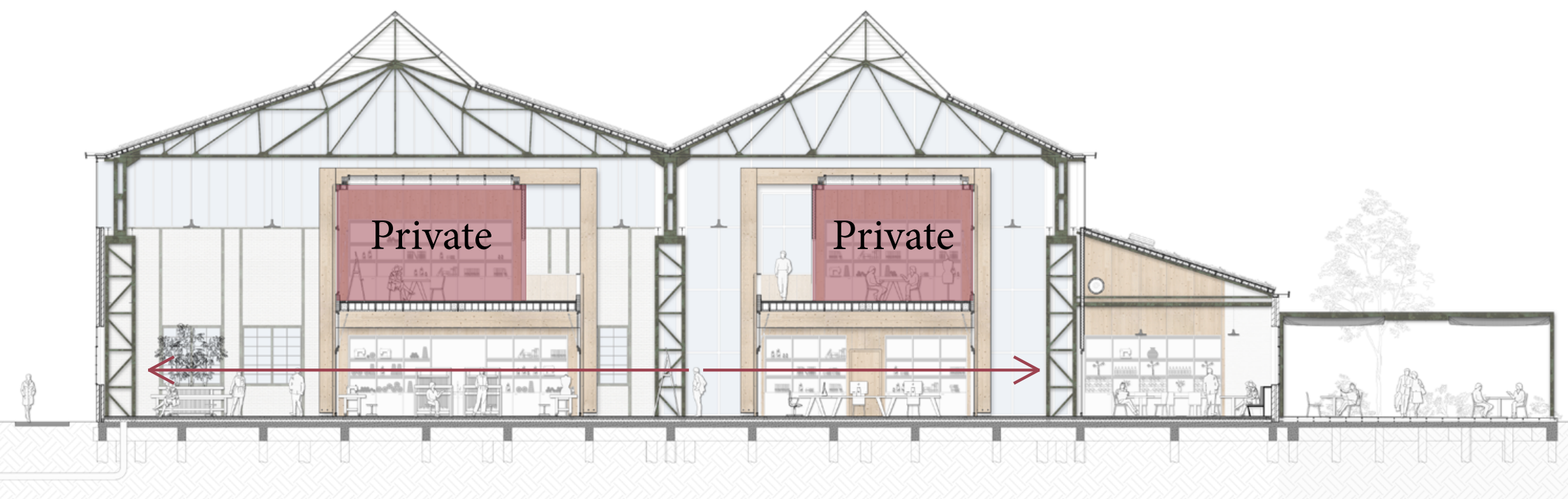
Clear rythm

This subtle rhythm of the styles is continued in the finish of the new concrete floor. These lines form a kind of pedestrian crossing around the new volumes, which must be kept free as a traffic route.



Transparency

I wanted to stimulate the interaction between artists and visitors by placing the collective spaces on the ground floor and the artists' studios which are private on the first floor.



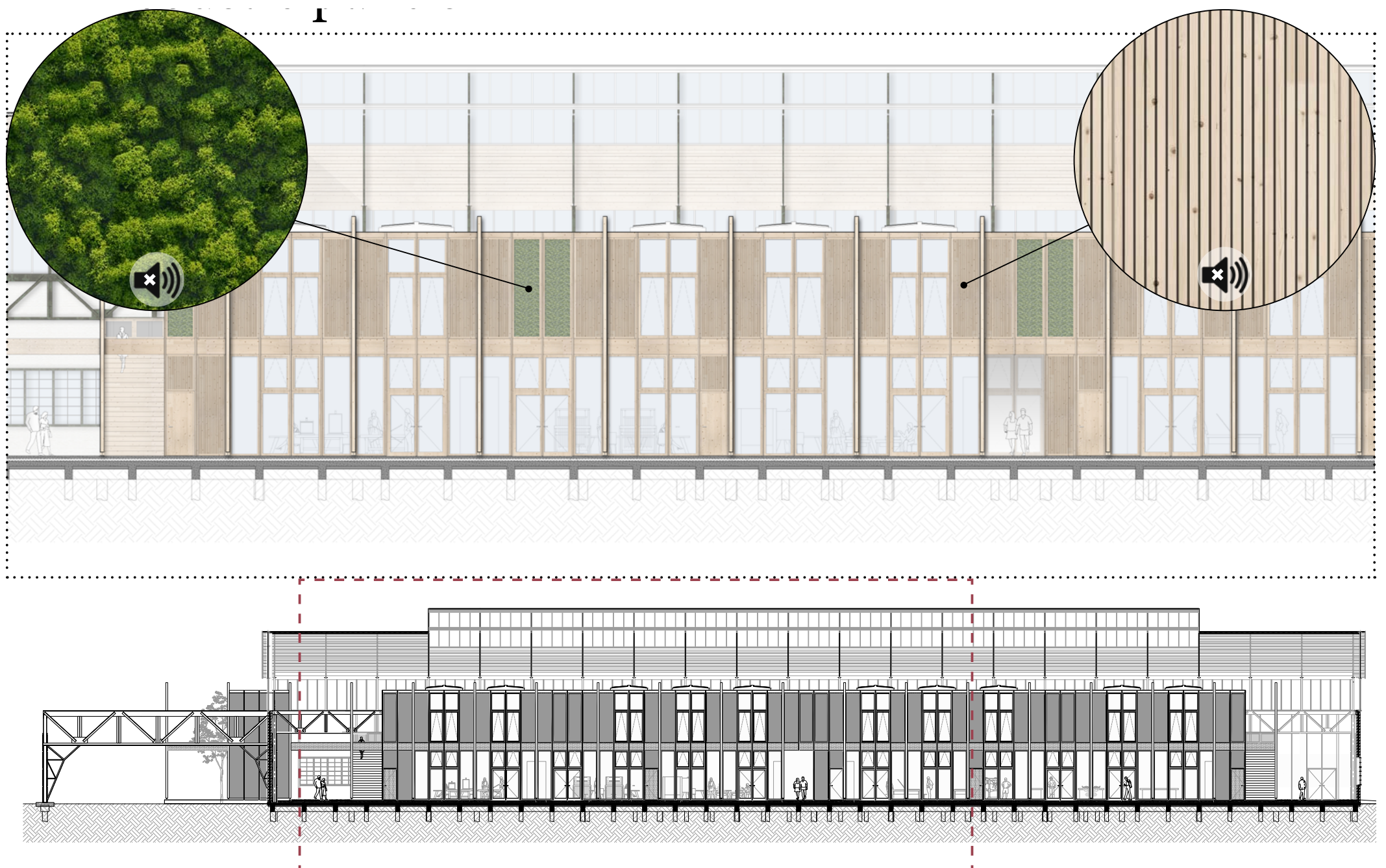
Transparency

The spaciousness of the existing building is a valuable aspect. That is why the facade of the new volumes on the ground floor mainly consists of window panels, so the visitor can still experience the spaciousness of the existing building between the new volumes.



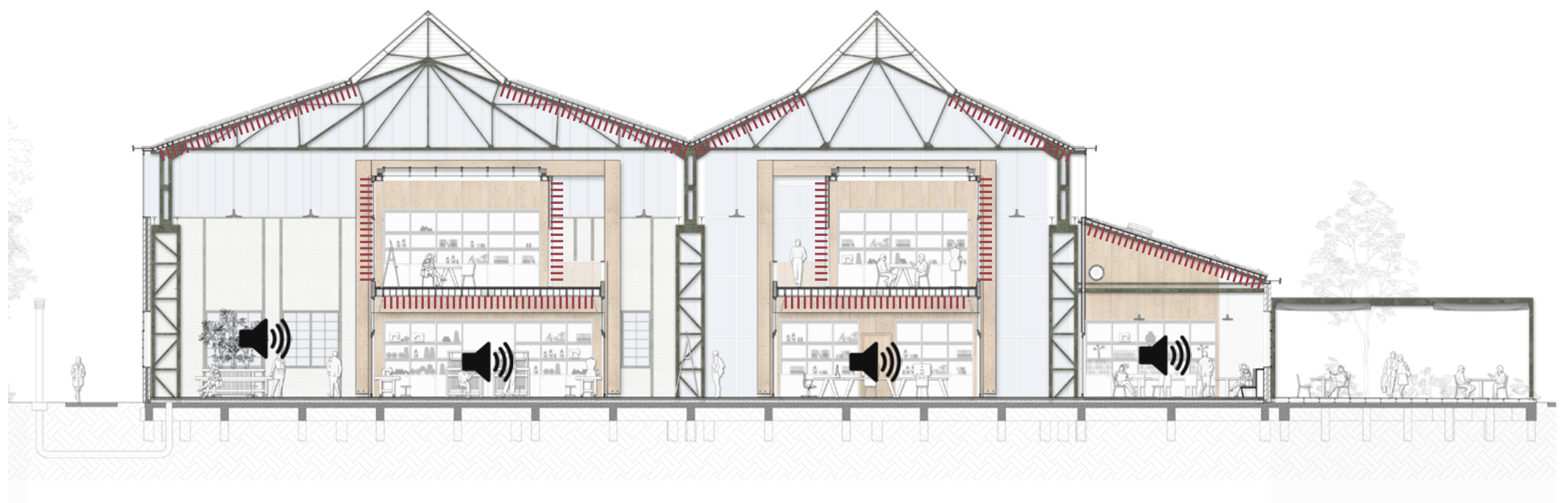
Acoustic panels

The artist studios are partly closed with closed panels with a sound-absorbing effect. Two species alternate. These are wooden panels with a finish of reindeer moss and wooden panels with vertical slots with a sound-absorbing insulation material.



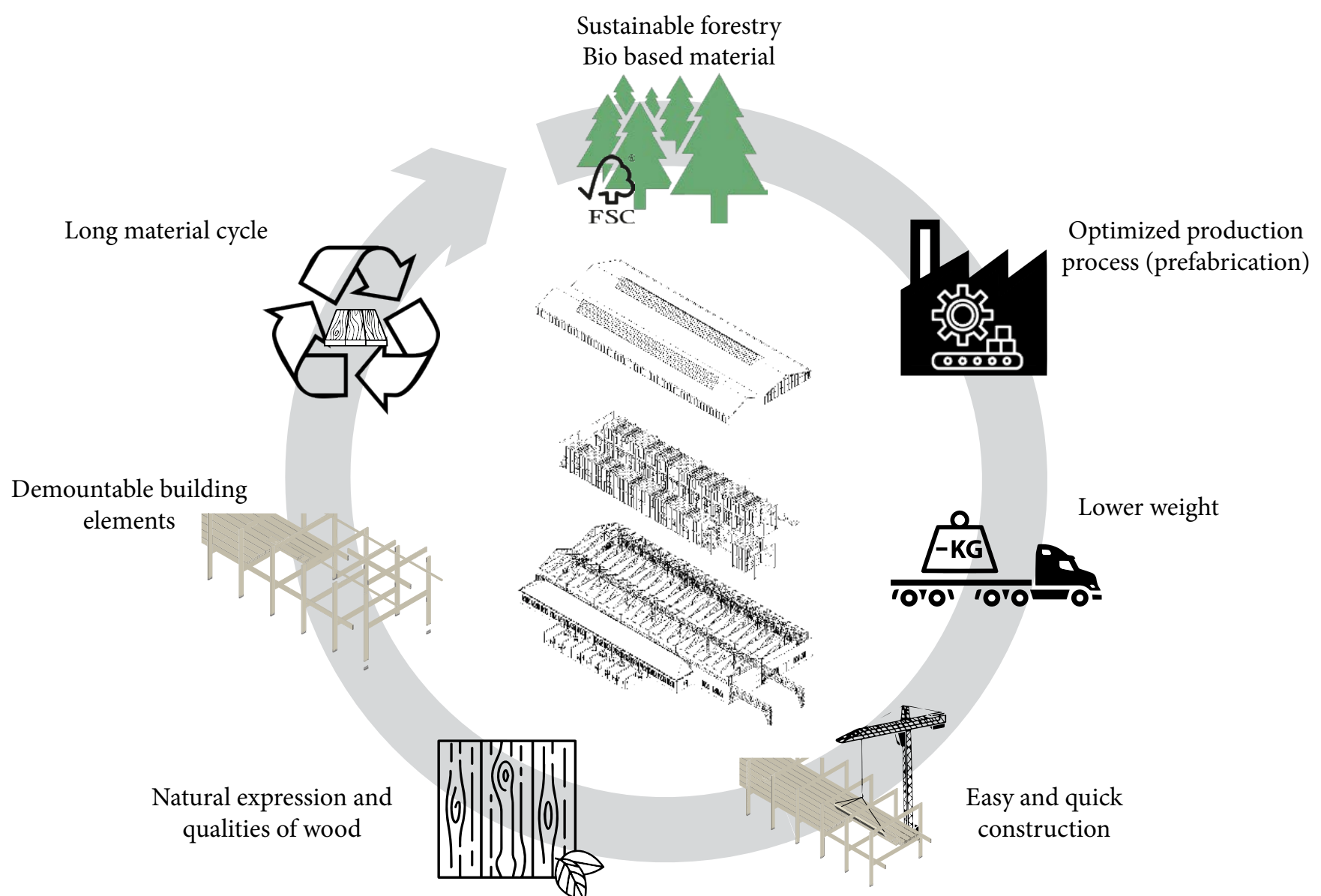
Acoustic panels

These types of sound-absorbing panels are used in several places in the building to improve the acoustics of the building.



Material concept

The material I mainly used in this design is softwood which is obtained in a sustainable way. Wood is a renewable building material that can replace other building materials, such as concrete, steel and brick, that require a lot of energy for their production and that involve higher carbon dioxide emissions. The use of wood as the main material lowers the building's CO₂ footprint and creates a natural look that matches the green character of the Hembrug site. That is why the new volumes will consist of glued laminated timber structures and modular wooden floor and facade components that will be wrapped around the outside of these new volumes like a skin. These modular wood components are prefabricated using optimized production and CNC machines that guarantee high precision and minimal material loss. This will optimize the construction process as the construction of these modular components will be quick and easy. In addition, these components are also easy to disassemble so that they can be separated rather than demolished as soon as the building loses its function in the future. These building components can then be used in new construction or converted into other by-products, preventing material waste and construction waste.

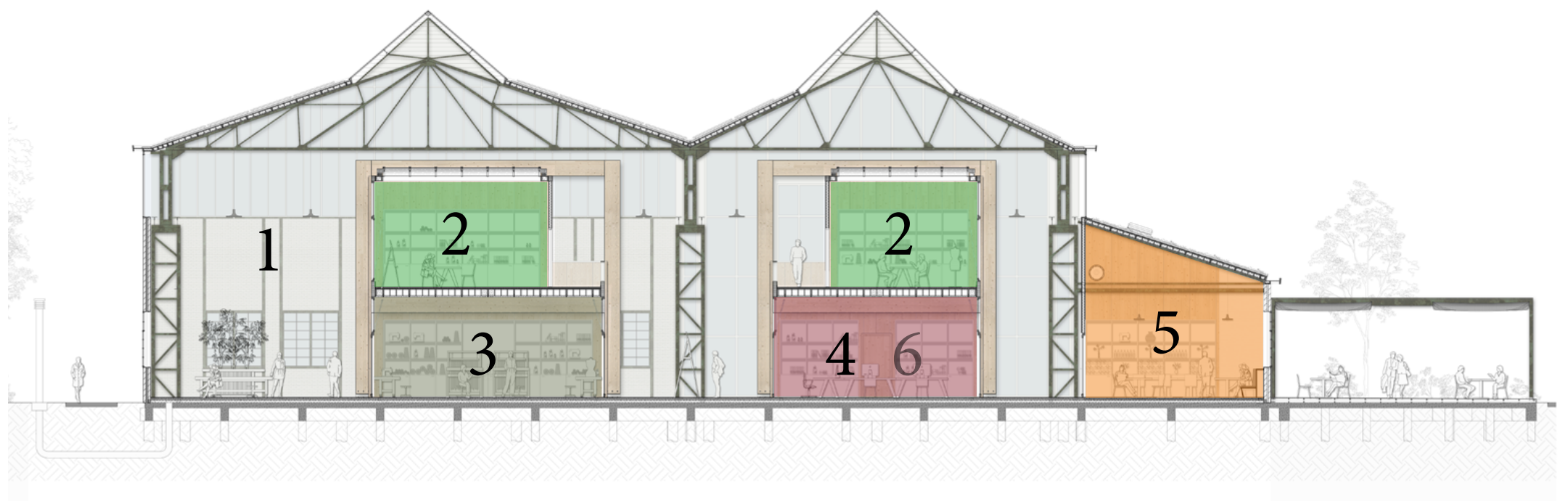


Climate zones

In order to save energy, the building is purposefully climatized. The machine hall has a very large volume. If you wanted to climatize this in its entirety, it would take a lot of energy. That is why I have divided this building into different climate zones, which are individually climatized. You could speak of a box in box concept, in which the new wooden volumes and the restaurant are actively air-conditioned, and the space in between (zone 1) hardly, which serves as a buffer zone between the outside climate and the climate inside these wooden volumes.

Climate zones

1. In-between space
2. Artist studios
3. Craft workshops
4. Management office
5. Restaurant
6. Event space

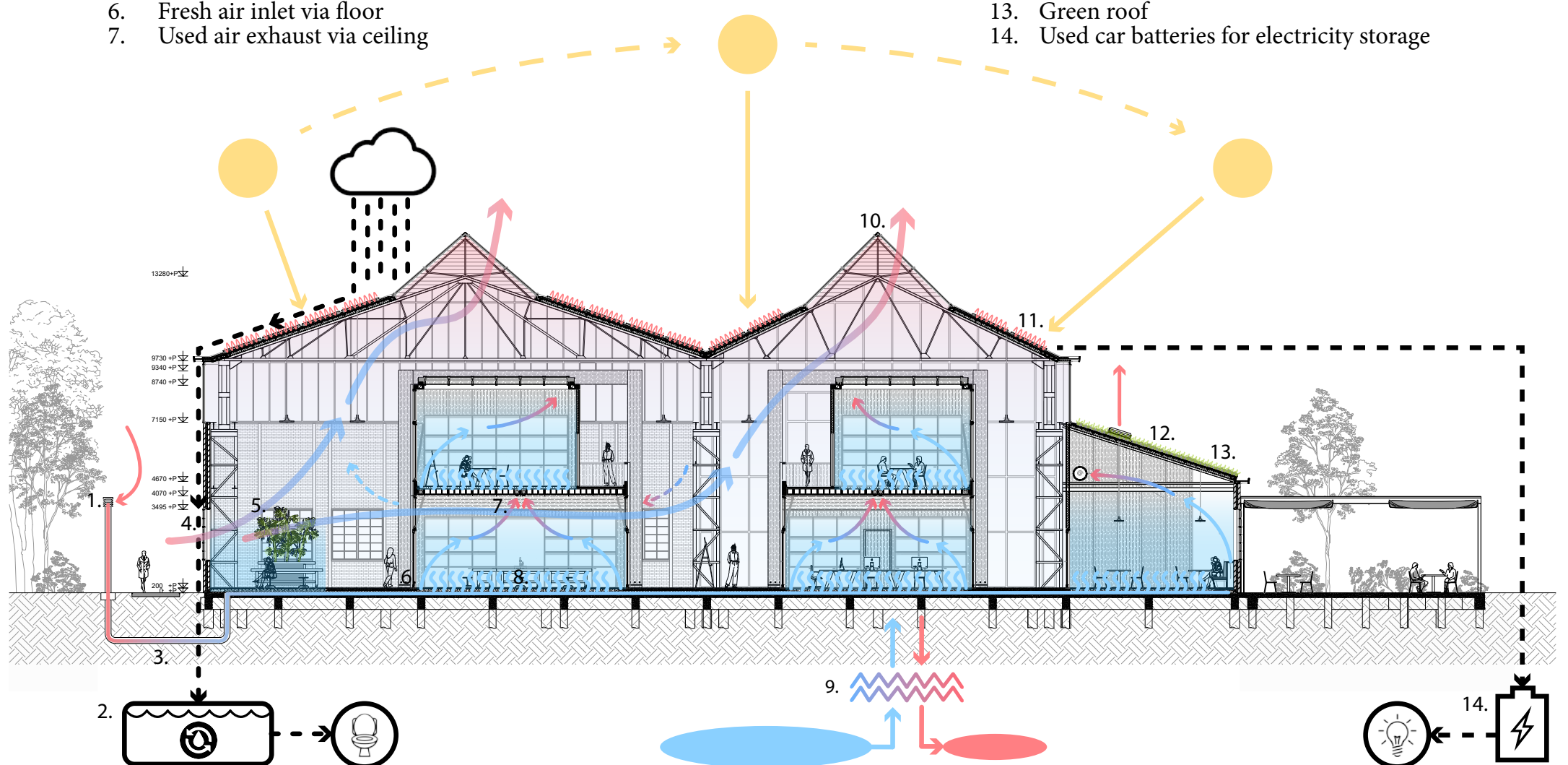


Climate scheme summer

In the summer, the wooden volumes and the restaurant will be cooled by means of a hybrid floor heating and cooling system connected to a heat-cold storage installation. Cold stored in the ground during the winter can be used during the summer to cool down the building. PVT panels will be installed on the roof, which can convert solar energy into heat and electricity. This heat is stored in the summer with the heat-cold storage installation and the surplus electricity will be stored in old car batteries. The rainwater will be collected through the roof and filtered in a rainwater system, so that this water can be used as flushing water. The roof of the lower side section is replaced by a green moss sedum roof to lower the temperature of the kitchen and cafe. The wooden volumes will be mechanically ventilated, with fresh air being drawn in through chimneys outside the building and through ventilation ducts through the ground and the raised concrete floor to these spaces. Because the temperature of the soil is fairly constant, the warm air in the summer will be pre-cooled by the soil, so that less energy is needed to bring the fresh air to the desired temperature. The gap can be ventilated in a natural way by opening windows and grids in the skylight.

1. Fresh air intake mechanical ventilation/street light
2. Rainwater treatment used for gray water circuit
3. Underground ventilation duct
4. Openable steel window frames
5. Indoor greenery
6. Fresh air inlet via floor
7. Used air exhaust via ceiling

8. Hybrid floor heating/cooling system
9. Seasonal thermal energy storage (or STES)
10. Natural air exhaust
11. Solar Photovoltaic & Thermal energy system (PVT)
12. Used air exhaust
13. Green roof
14. Used car batteries for electricity storage

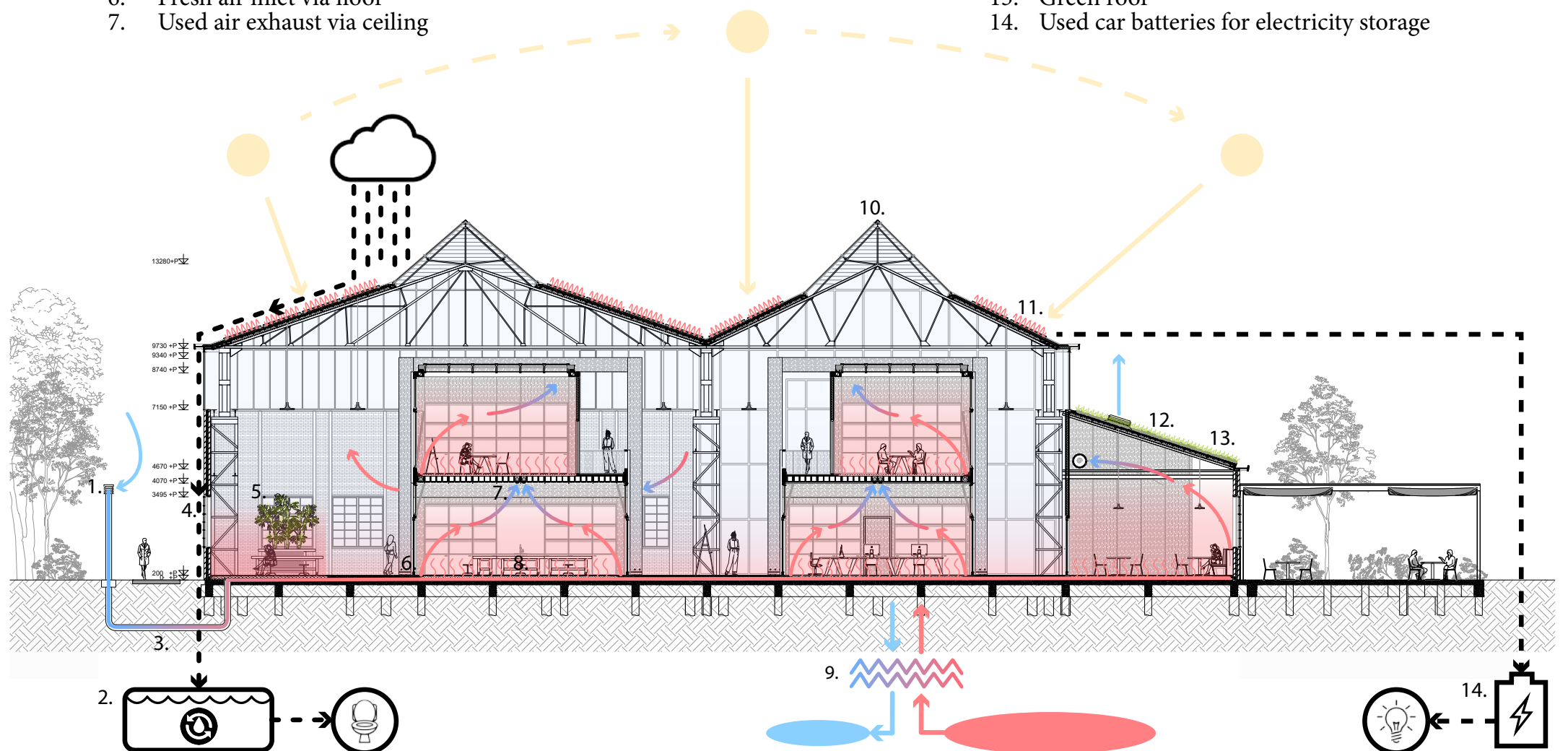


Climate scheme winter

In winter, the wooden volumes and the restaurant will be properly heated, making use of the heat stored during the summer. The cold outside air is then preheated by the ground. In winter, the windows will remain closed and the gap will also be mechanically ventilated.

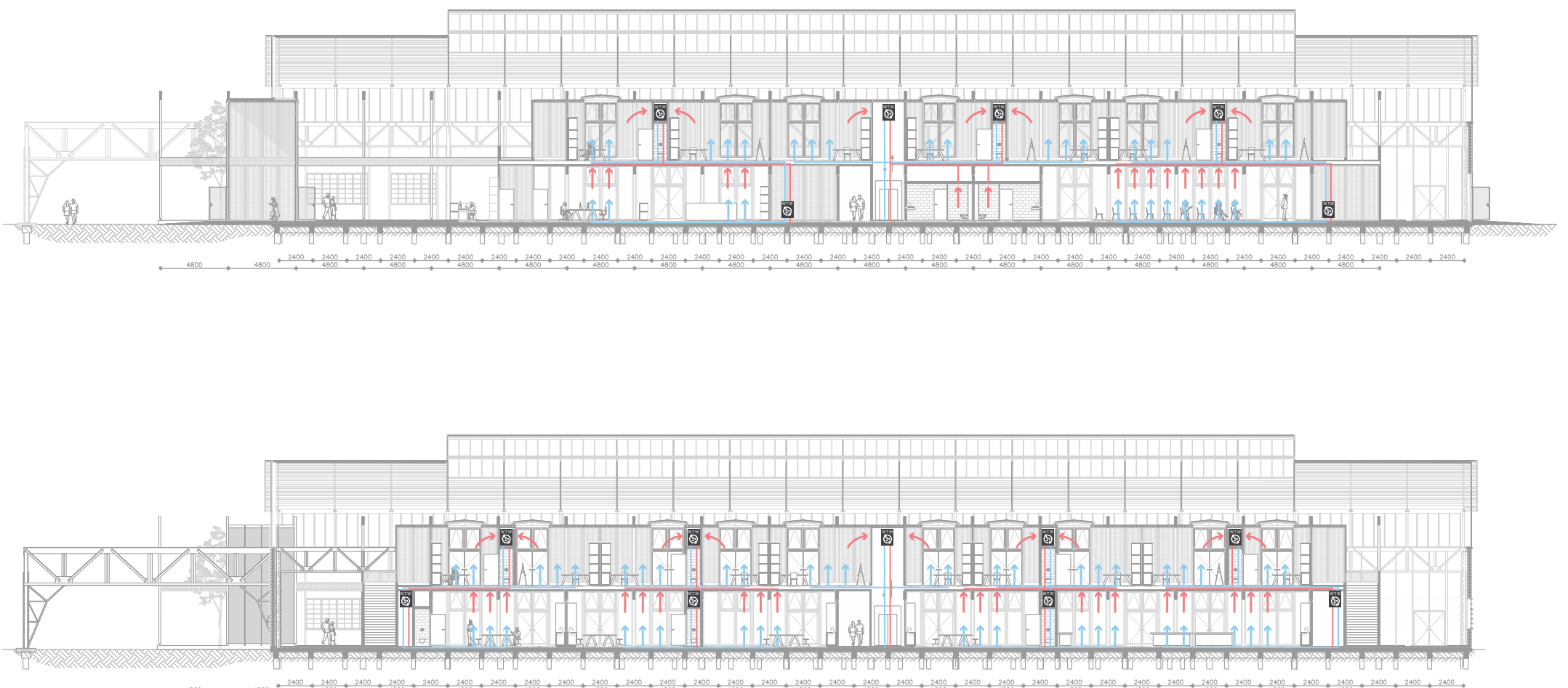
1. Fresh air intake mechanical ventilation/street light
2. Rainwater treatment used for gray water circuit
3. Underground ventilation duct
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5. Indoor greenery
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7. Used air exhaust via ceiling

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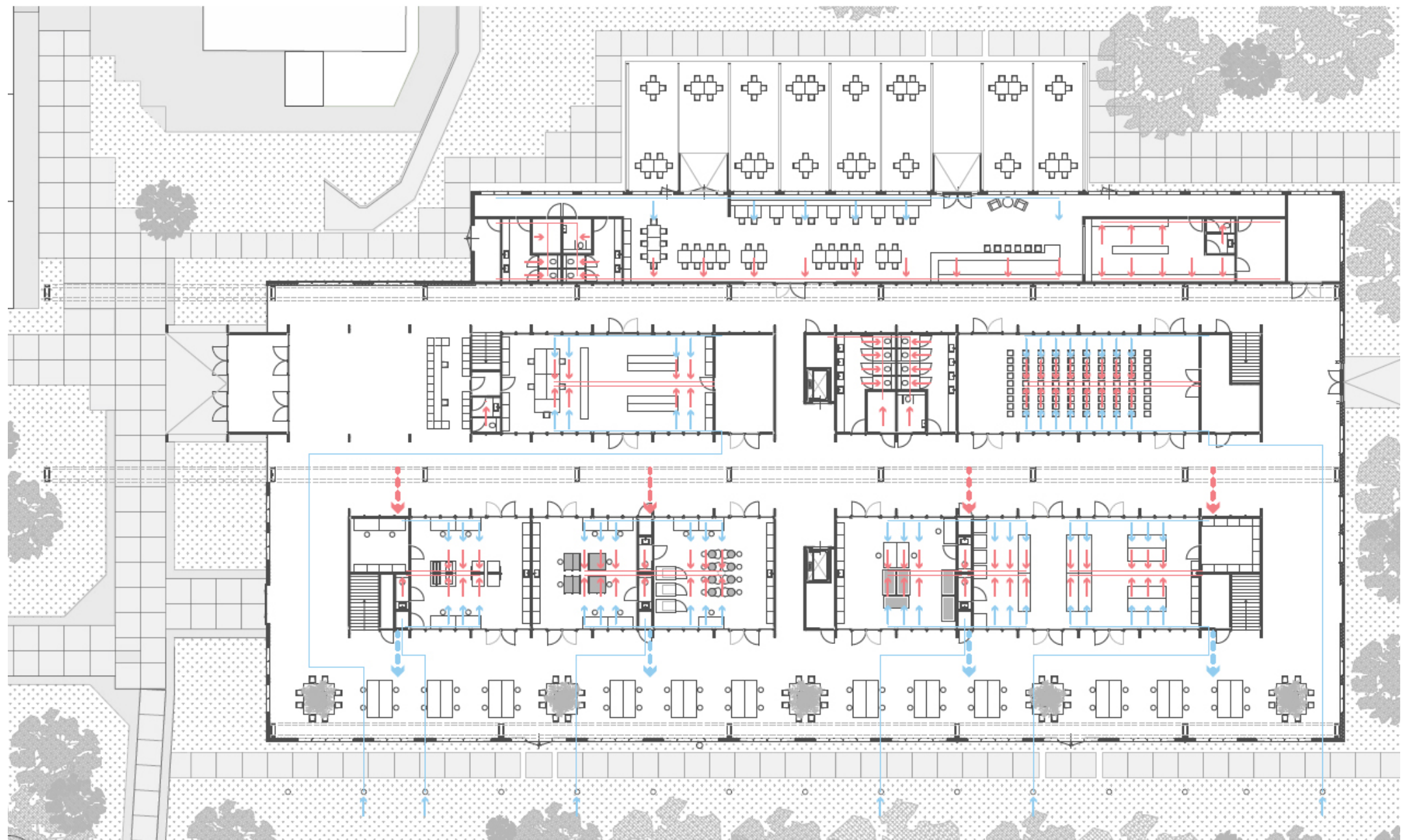
Ventilation scheme

The fresh air will be blown in through the floors and out through the ceiling and walls. All ventilation channels in the floors and walls are concealed, so that they are not in sight. This is a decentralized ventilation system, whereby several ventilation units can ventilate the different climate zones individually and purposefully.



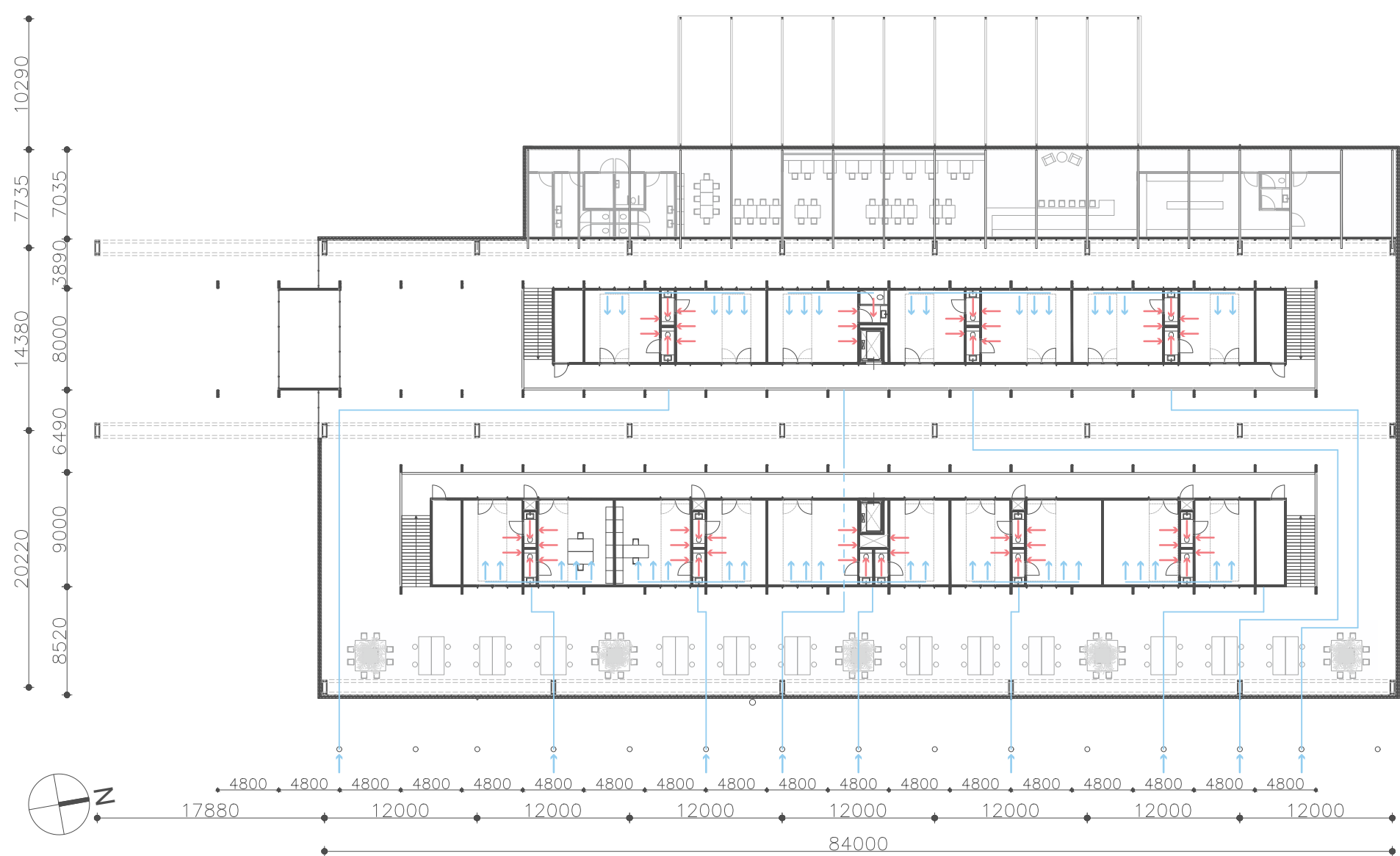
Ventilation scheme

Here on the ground floor plan we see how the fresh air is drawn in through the chimneys outside the building. These are 15 chimneys along the footpath along the East facade which will also lighten this footpath in the evening. The fresh air is blown in through the window panels of the wooden volumes and exhausted in the center of the ceiling. In this way an optimal airflow has been created.



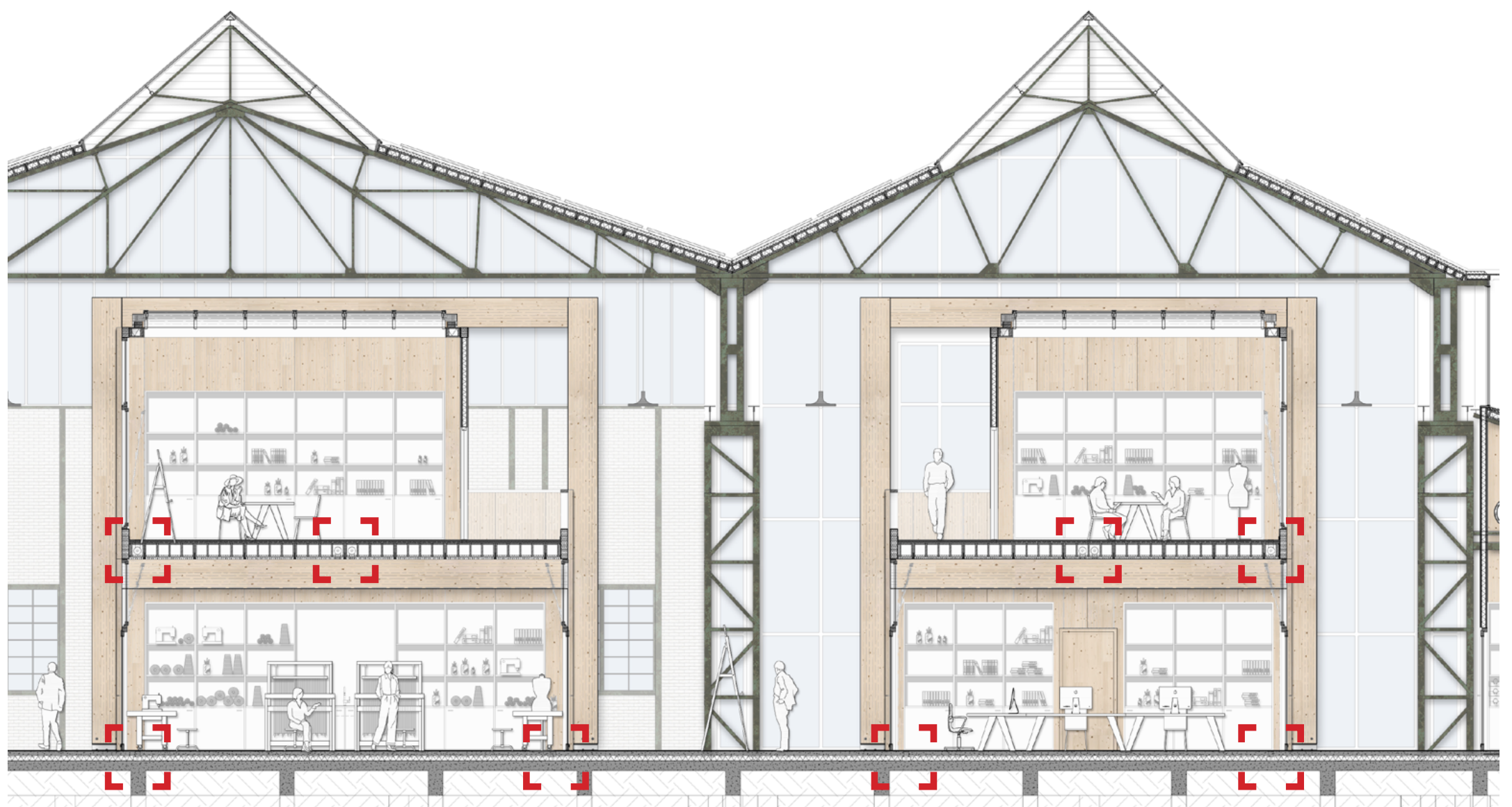
Ventilation scheme

On the 1st floor, fresh air is blown into the facade and exhausted through the walls.



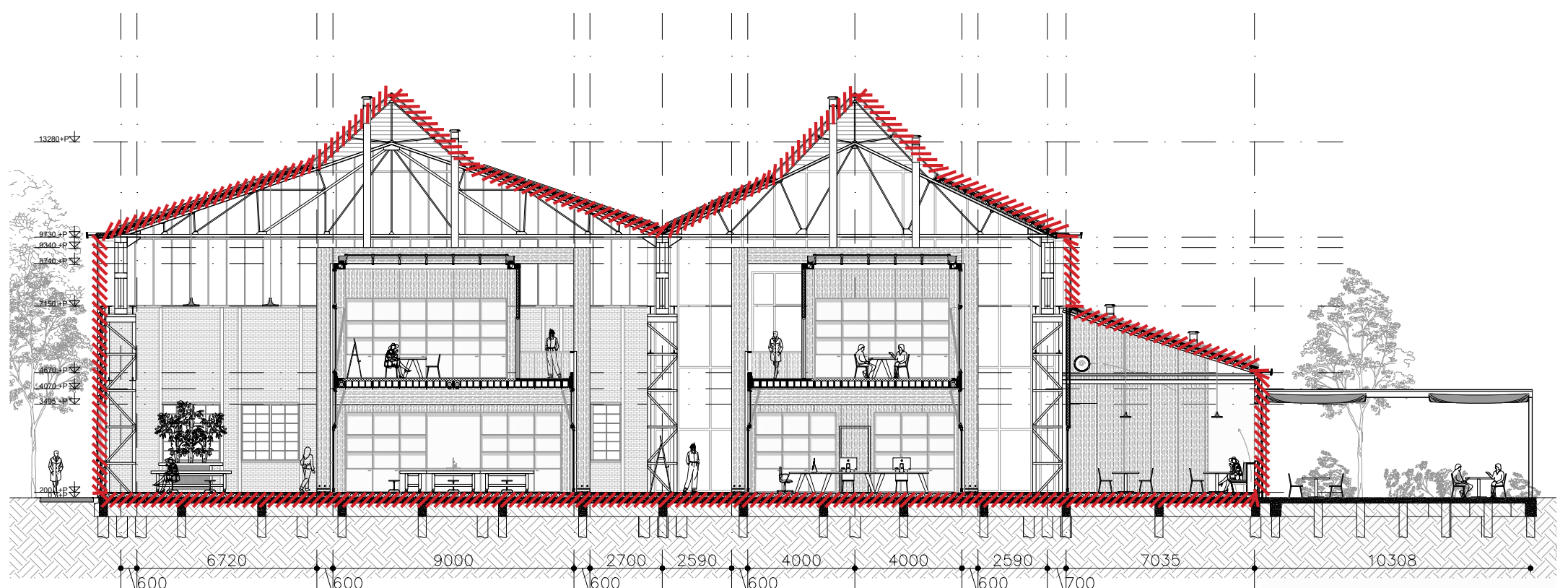
Ventilation ducts

Here we see how the ventilation channels are hidden in the Lignatur floor and ceiling elements and the new concrete floor.



Insulating existing skin

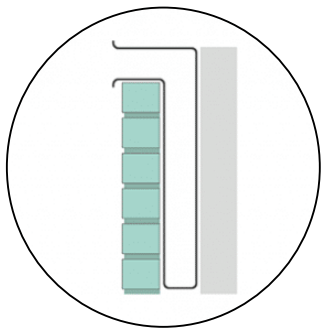
To make the climate of the existing building less susceptible to temperature fluctuations from the outside air, the existing shell will have to be better insulated.



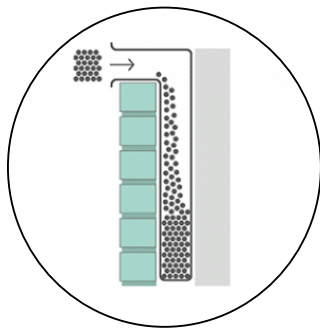
Machine Hall—Section 1:100

Insulating cavity

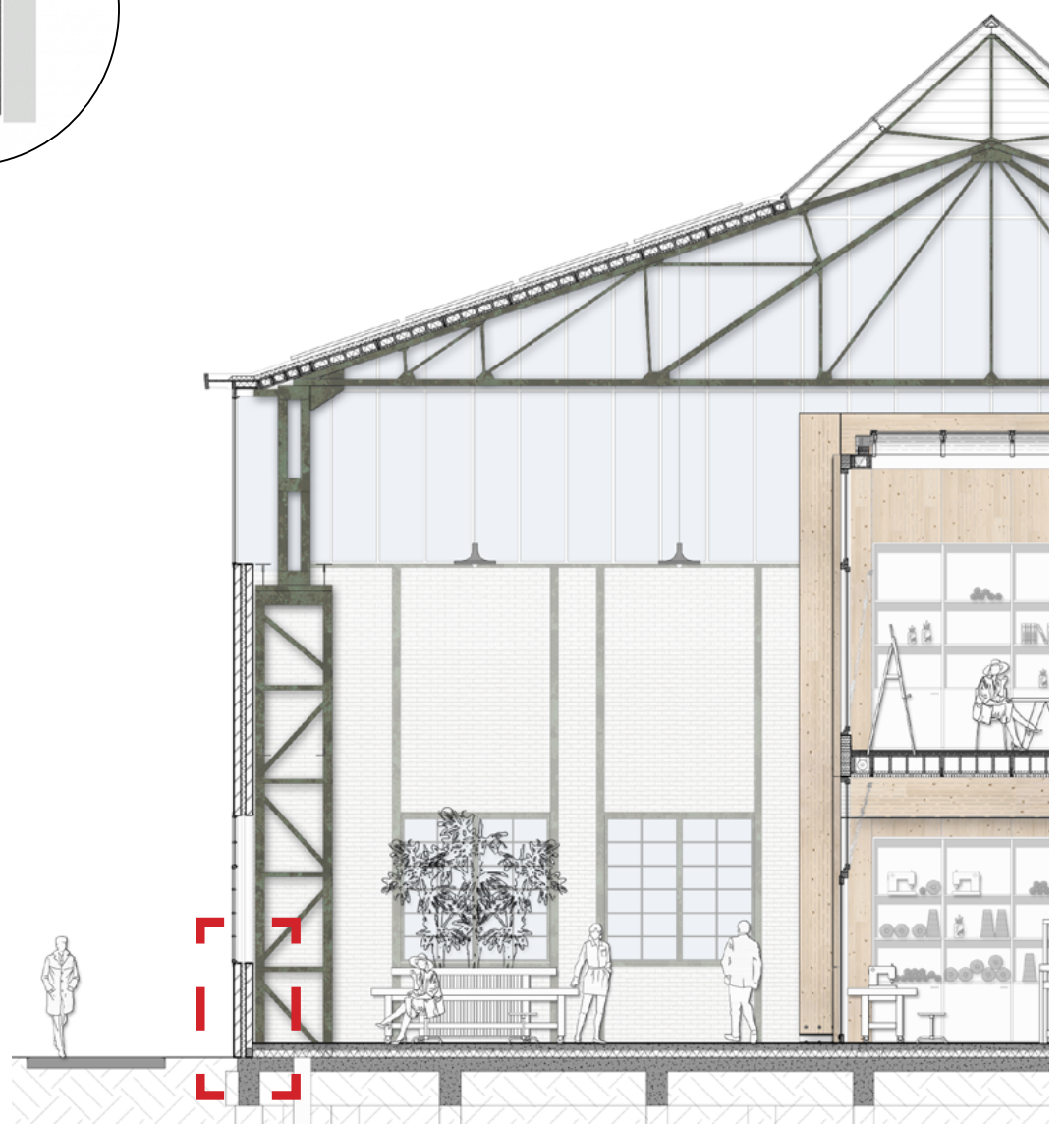
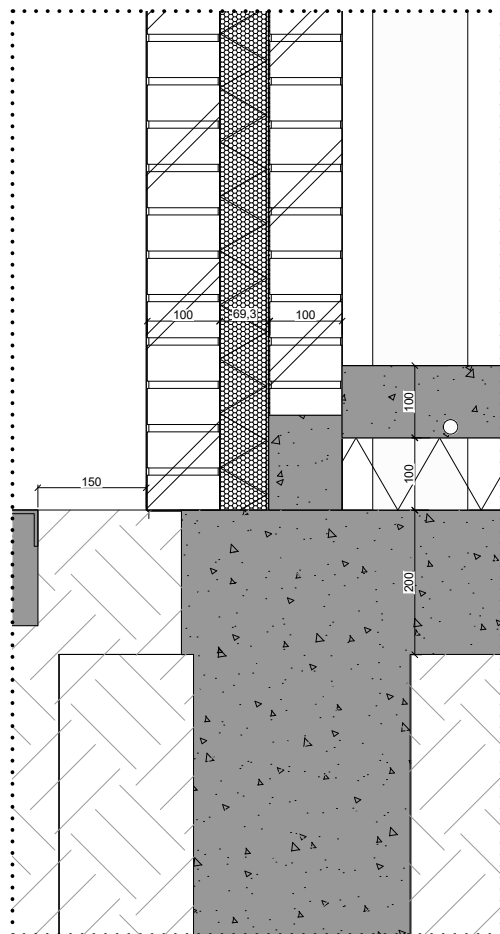
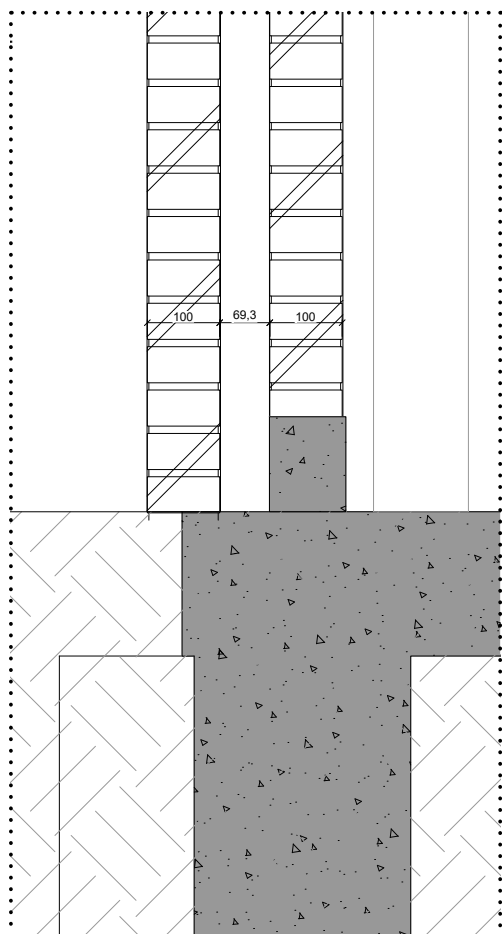
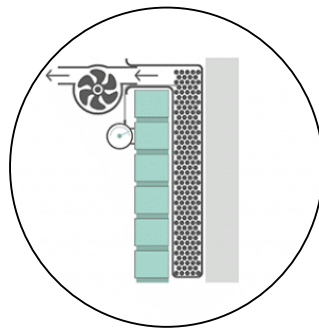
The existing facade will be internally insulated, so that the facade image will not change on the outside as well as the inside. Bags are placed in the cavity between the masonry, after which they are filled with EPS pearls and then vacuumed. This is a new technique of post-insulation which results in a better insulating facade.



Existing

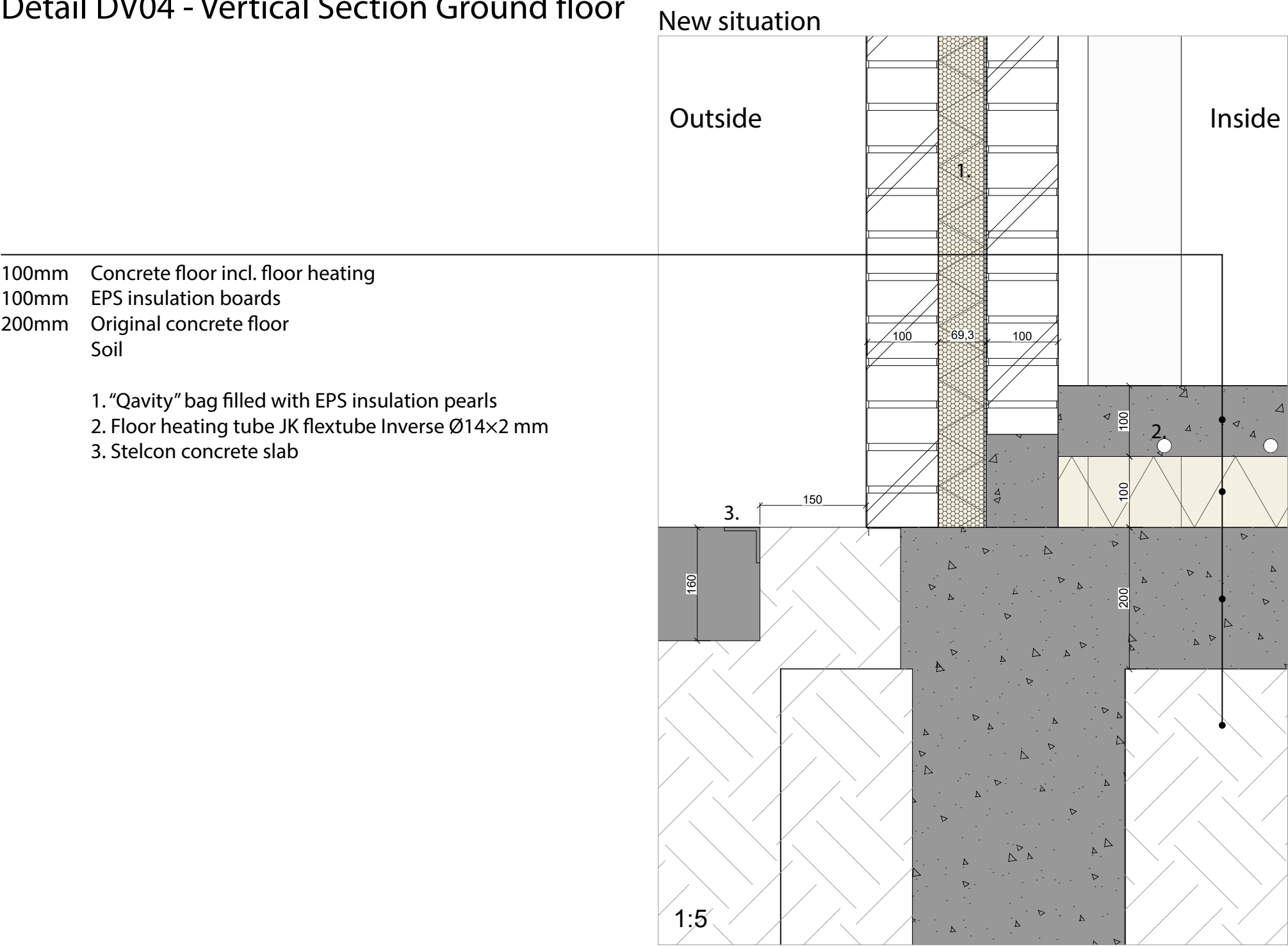


New



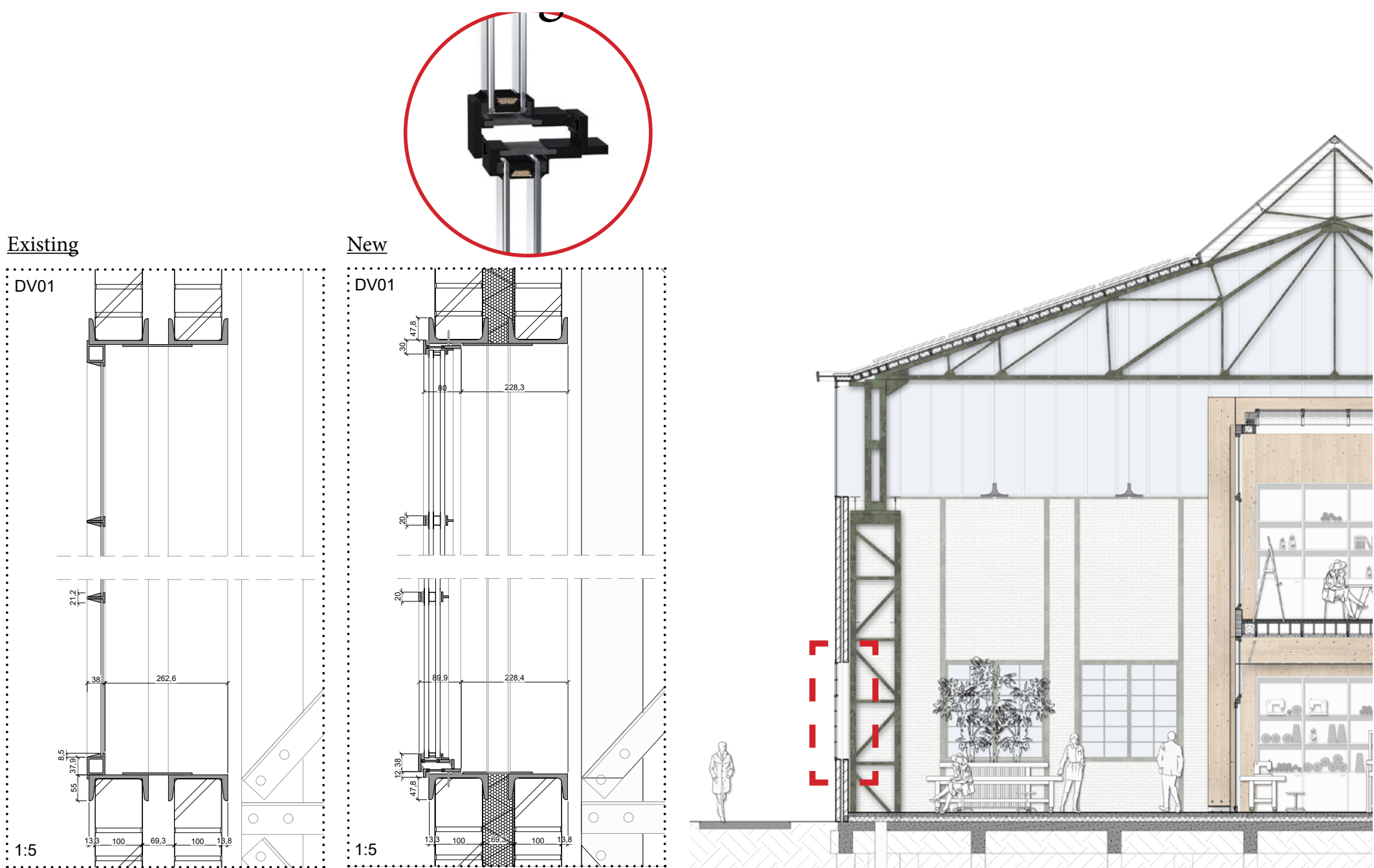
Insulating cavity

Detail DV04 - Vertical Section Ground floor



New steel windows

In addition, the existing steel frames with single glazing will be replaced by new insulated steel frames with double glazing and openable parts to allow natural ventilation and to increase the insulation value of the facade.



New steel windows

Detail DV01 - Vertical Section Window

- 100mm

Existing masonry
- 69mm

"Qavity" bag filled with EPS insulation pearls
- 100mm

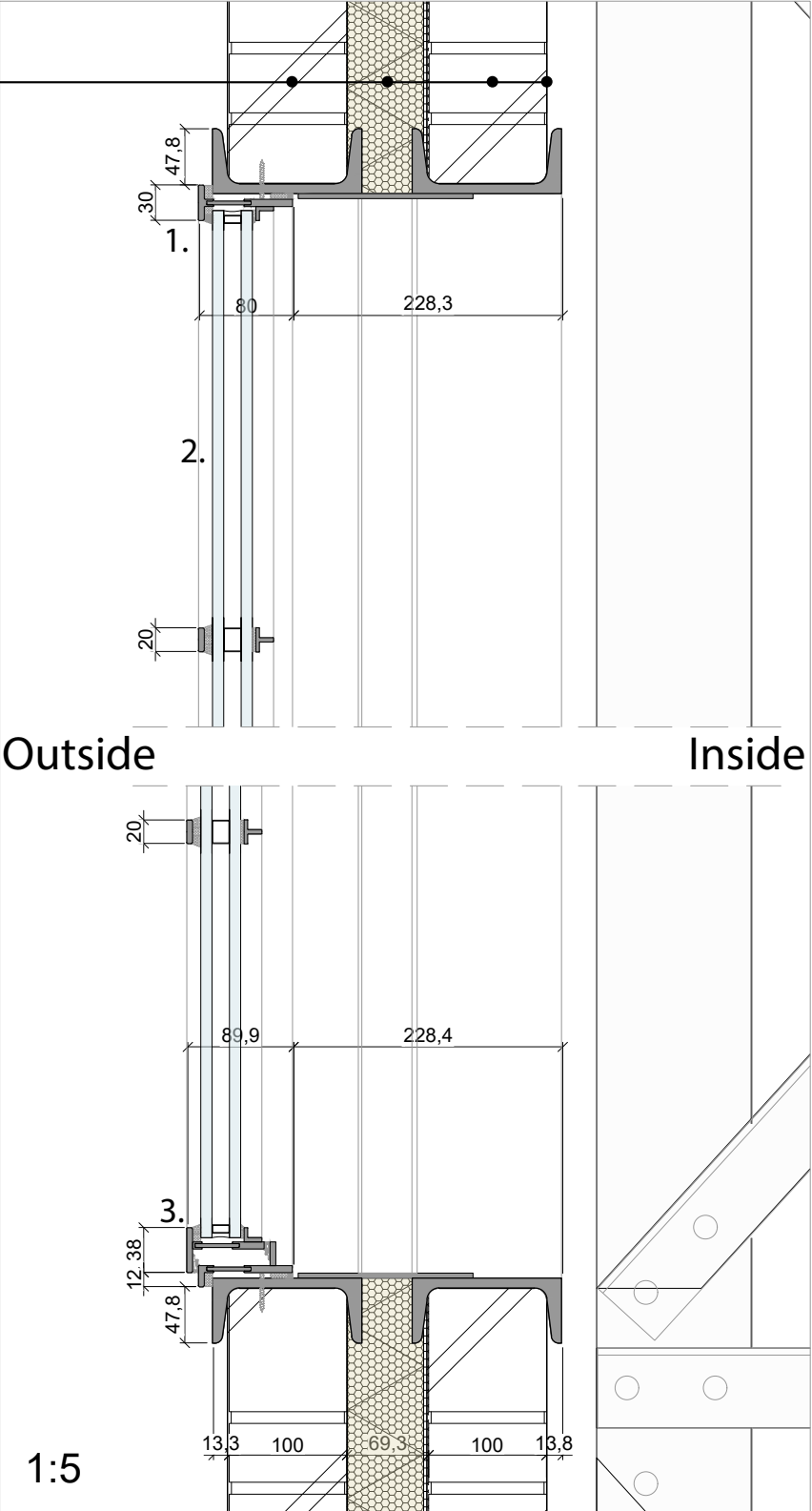
Existing masonry

White paint finish
1. MHB Classic-ISO-PLUS - SL30-ISO steel window frame

2. HR++ Double glazing

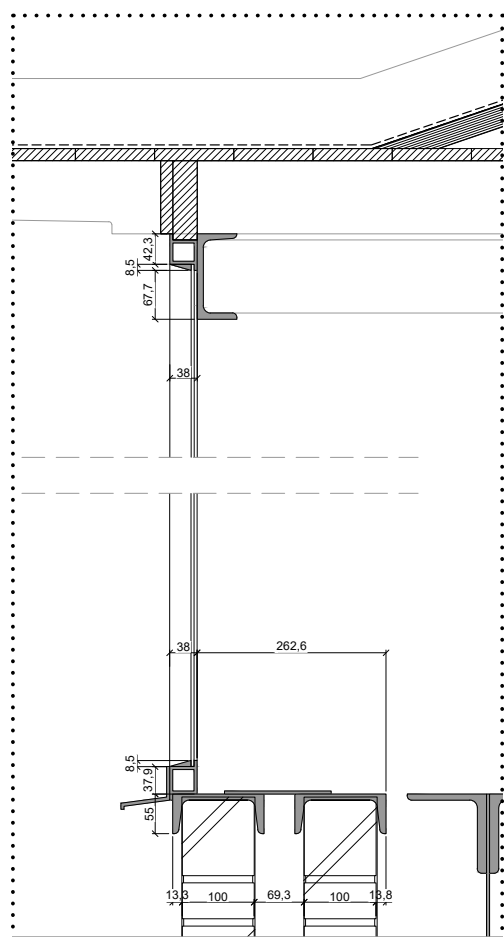
3. MHB Classic-ISO-PLUS - SL30-ISO (openable window)

New situation

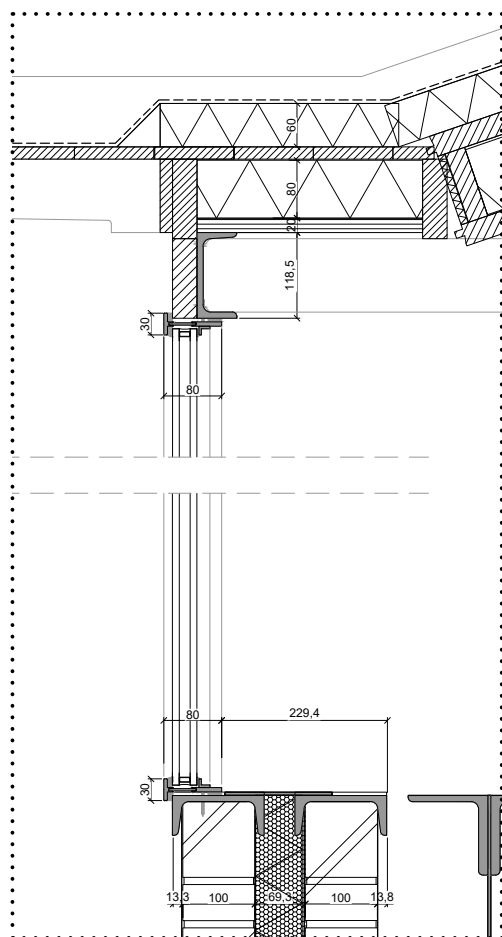


New steel windows

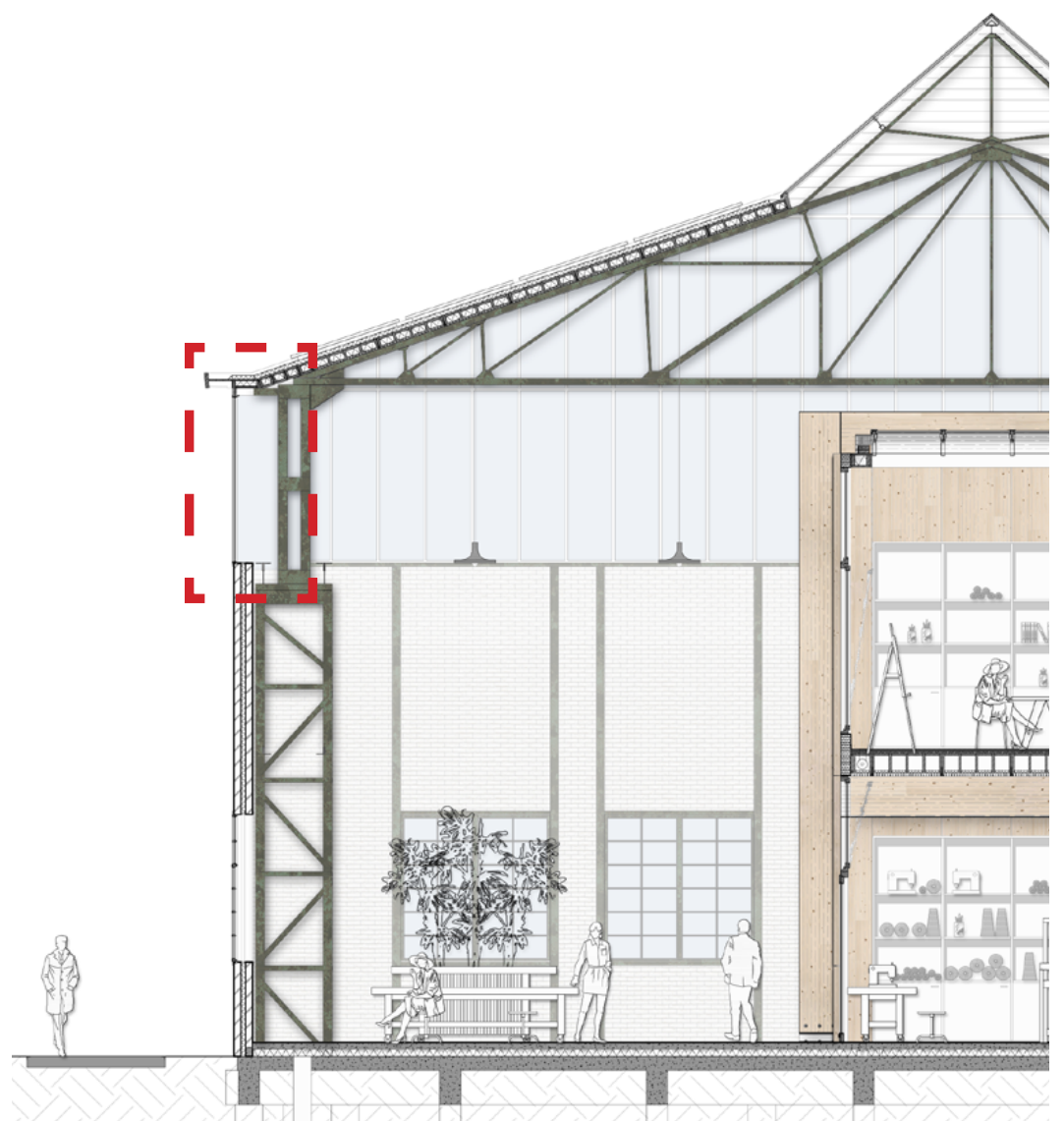
The steel window frames under the roof are also being replaced by these insulated steel windows with double glazing. After all, these new steel frames have the same dimensions and appearance as the existing windows, so that the facade image will hardly change.



Existing



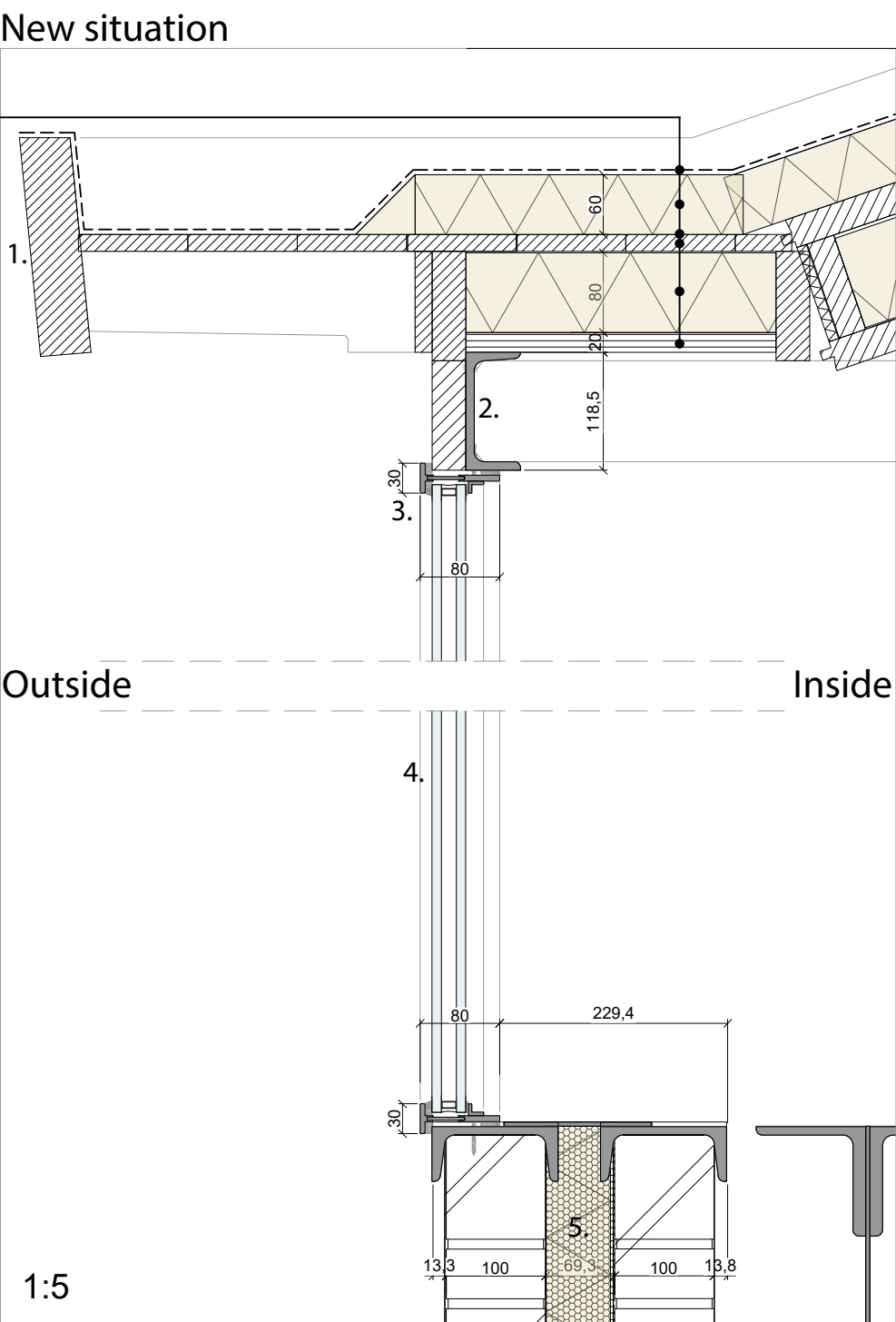
New



New steel windows

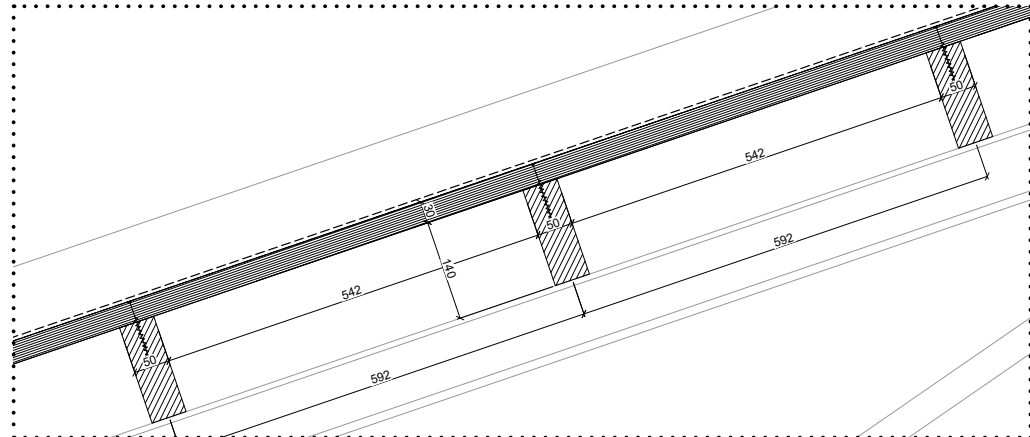
Detail DV02 - Vertical Section Roof gutter

- | | |
|------|---|
| 1mm | EPDM foil water-repellent / vapor-permeable layer |
| 60mm | EPS insulation boards |
| 1mm | Vapor-inhibiting layer |
| 20mm | Wooden planks FSC Spruce |
| 80mm | Mineral insulation wool |
| 20mm | Wooden board FSC Spruce |
-
- 1. Roof gutter conform existing detail
 - 2. Existing Steel profile
 - 3. MHB Classic-ISO-PLUS - SL30-ISO steel window frame
 - 4. HR++ Double glazing
 - 5. "Qavity" bag filled with EPS insulation pearls

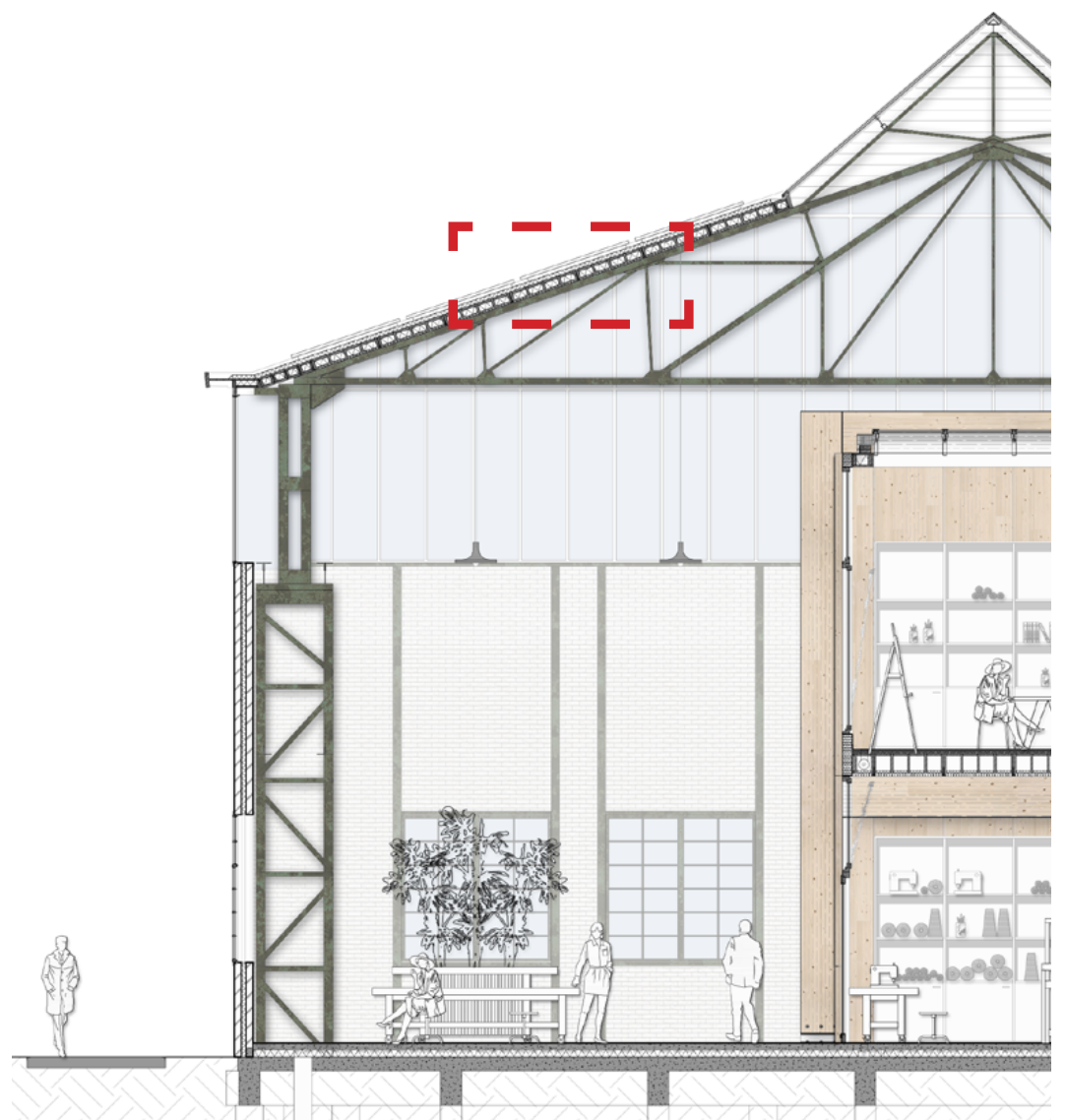
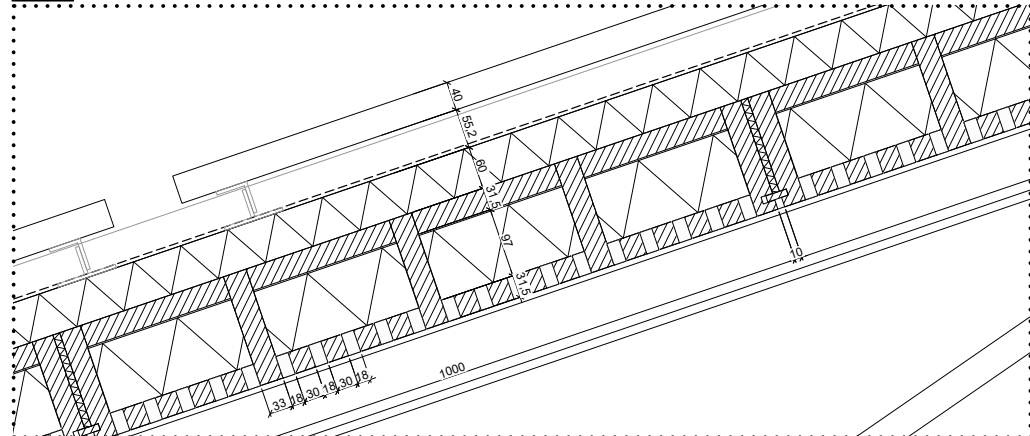


New roof

The existing roof contains asbestos, which means that this roof will have to be removed and replaced with a new roof, which is built from Lignatur elements that have both an acoustic and insulating effect. On top of that, an extra insulating layer of EPS will be placed with an EPDM roof covering on which the PVT panels will be placed.



New

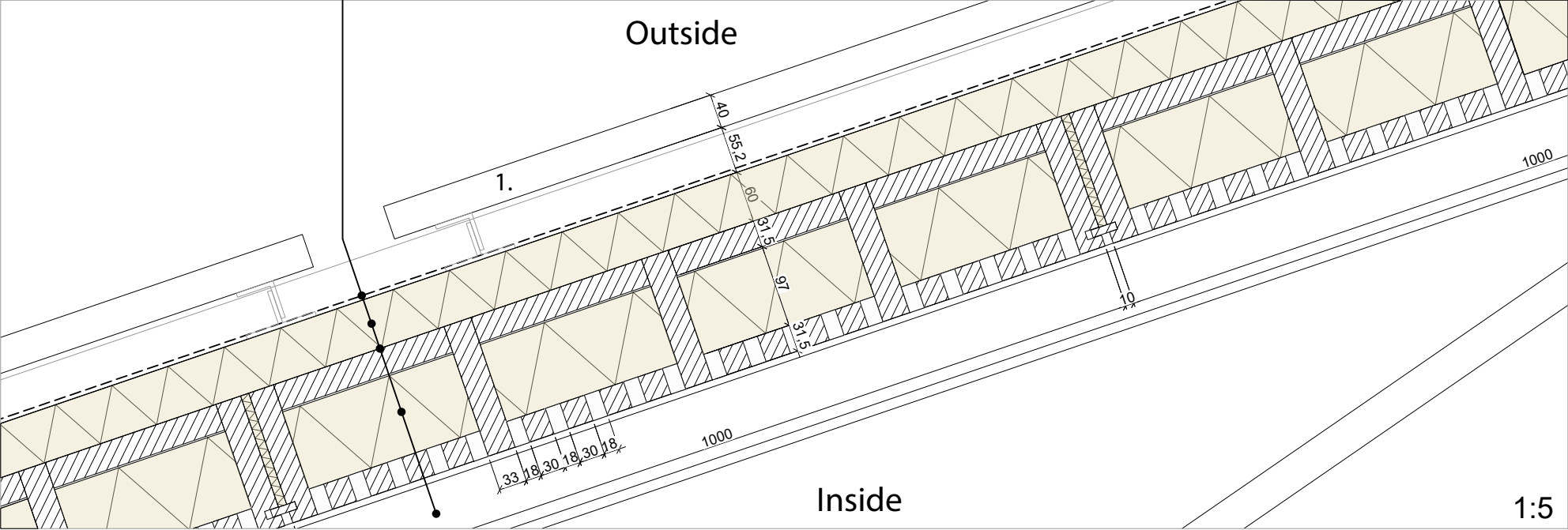


New roof

Detail DV05 - Vertical Section Roof

- 1mm EPDM foil water-repellent / vapor-permeable layer
 - 60mm EPS insulation boards
 - 1mm Vapor-inhibiting layer
 - 160mm LIGNATUR acoustic surface element type 8 (filled with mineral wool)
 - Existing steel roof structure
1. Photovoltaic Thermal Hybrid Solar Collectors (PVT)

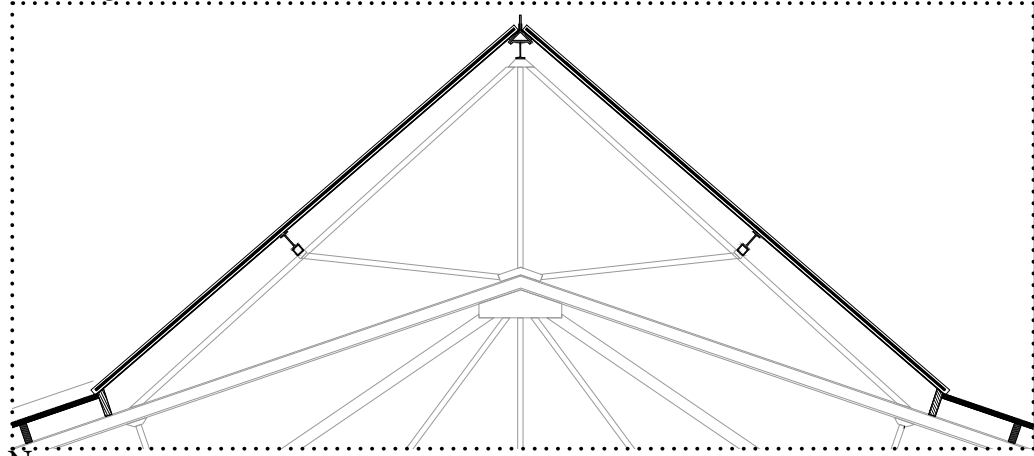
New situation



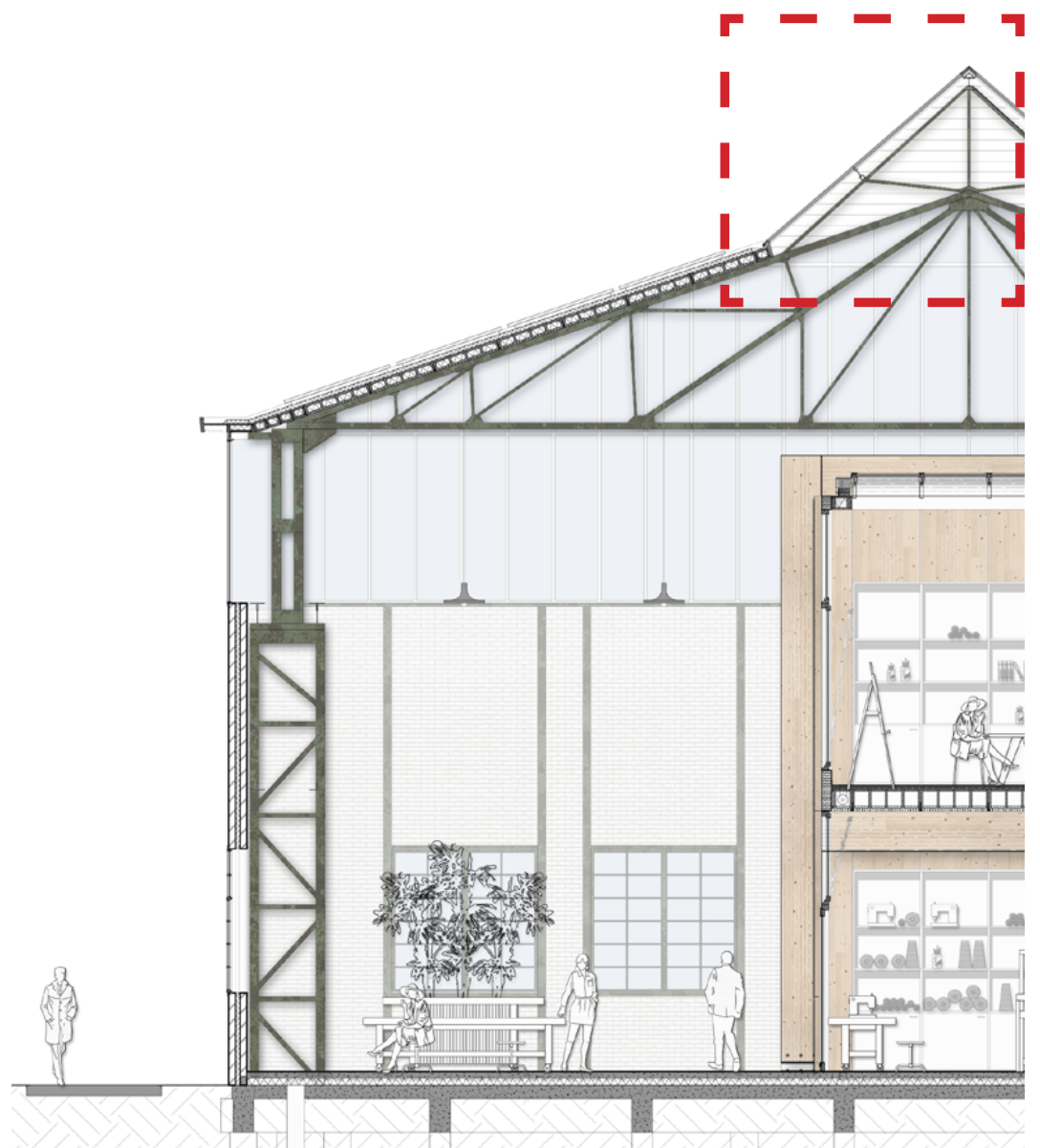
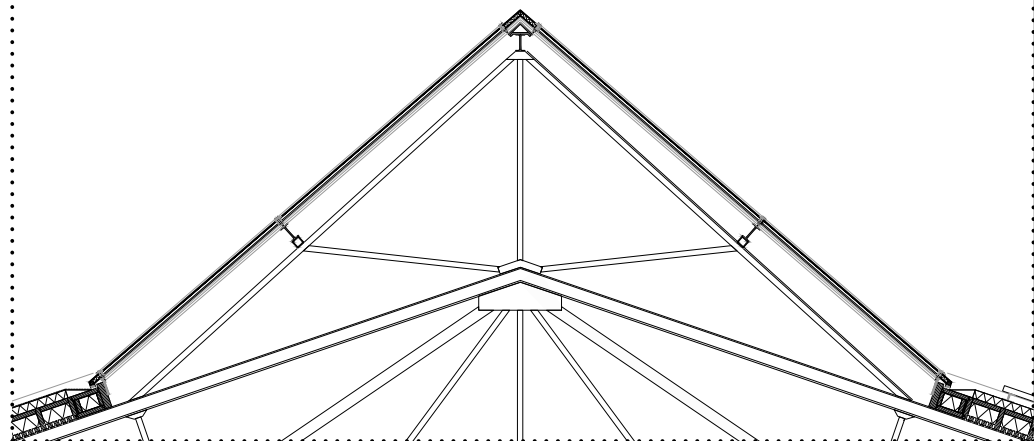
New skylight

Finally, the existing roof light will be replaced by a new roof light with insulating steel frames and double glazing, which differs little in appearance compared to the existing roof light.

Existing

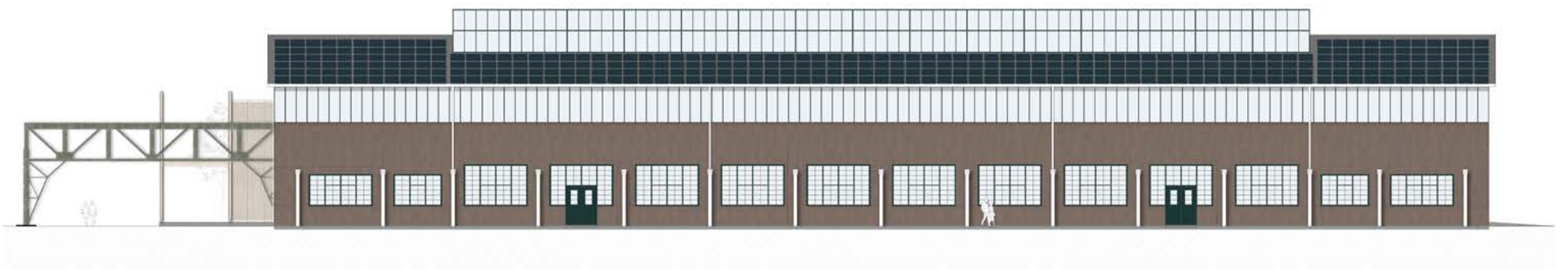


New

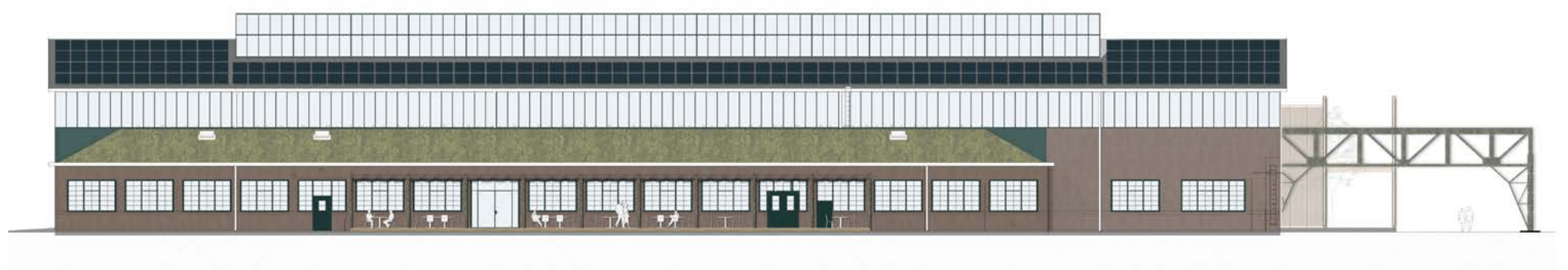


Facades

In this way, the insulating effect of the existing shell has been improved without the facade image of both the inside and outside being changed.



e Hall-East facade 1:100



e Hall-West facade 1:100

Weapon depot



Current condition

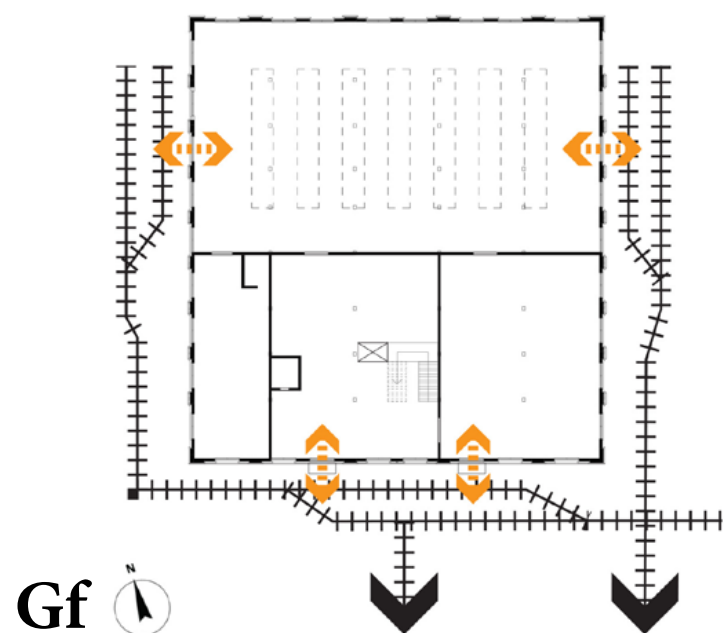
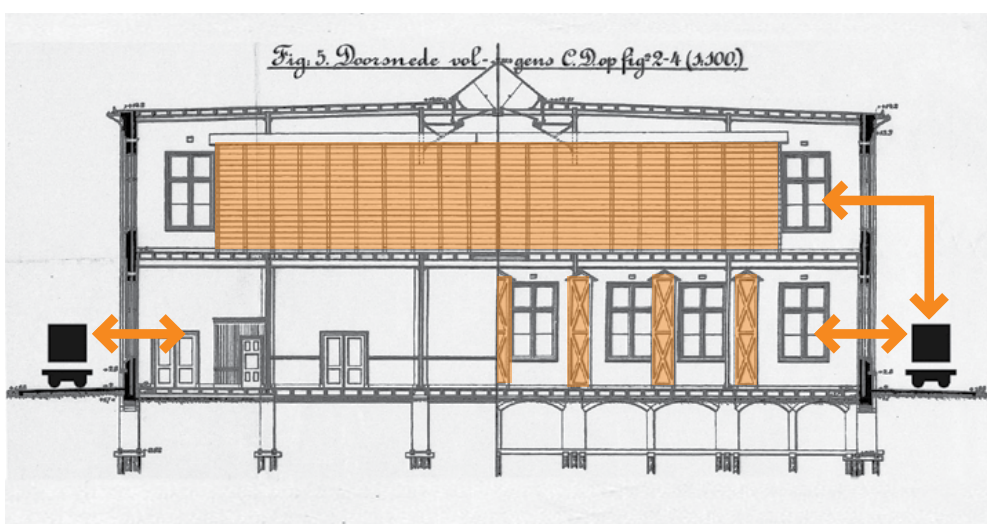
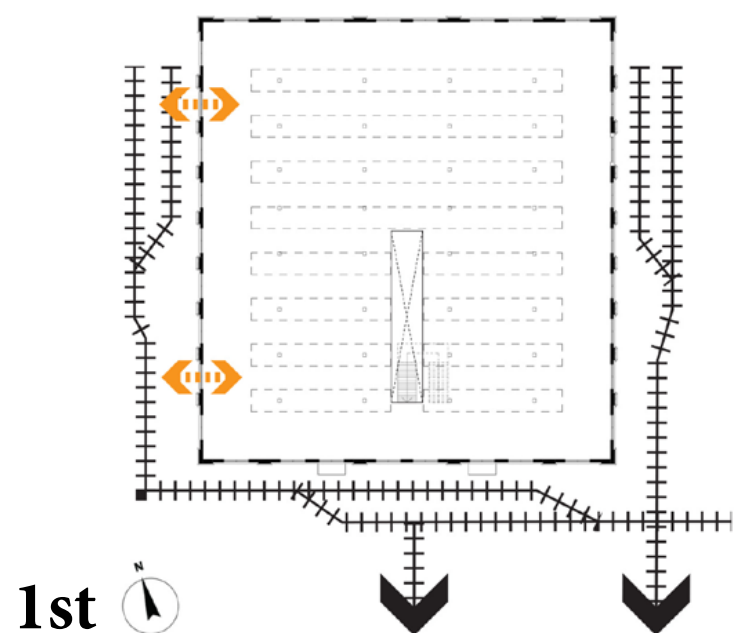
This is what the weapon depot looks like today.



Original function

The former weapons depot was built in 1899 during the first construction phase.

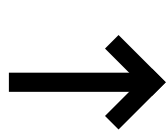
It is built in a neo-renaissance style that is characterized by many ornaments and strong symmetry. As the name suggests, this building was used to store the weapons produced. Both on the ground floor and the first floor large open spaces were created where the large racks with weapons were located. The weapons could be easily transported from the weapons factory to the weapons depot by means of a small railway.



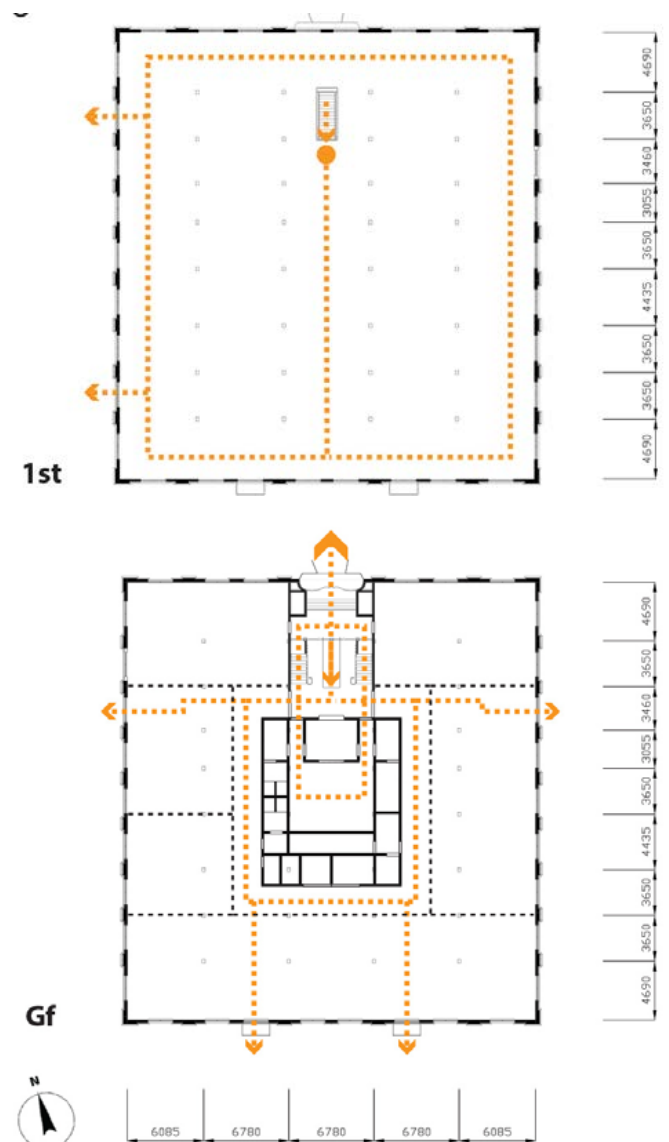
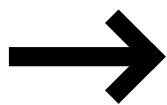
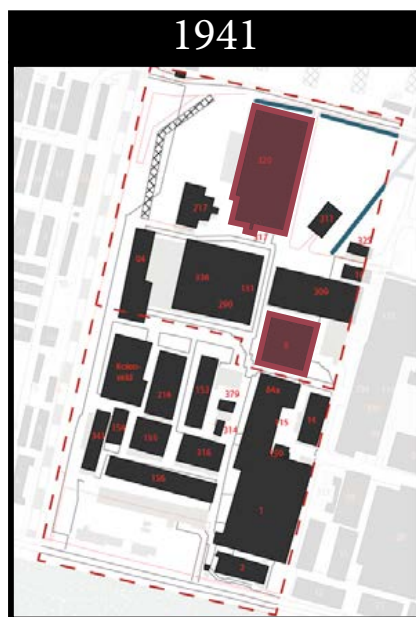
Transformation

When production changed during the second world war, the building was converted to use as the headquarters of the machine factory. A new main entrance has been installed in the north facade and a closed core has been created on the ground floor.

**Weapon
depot**

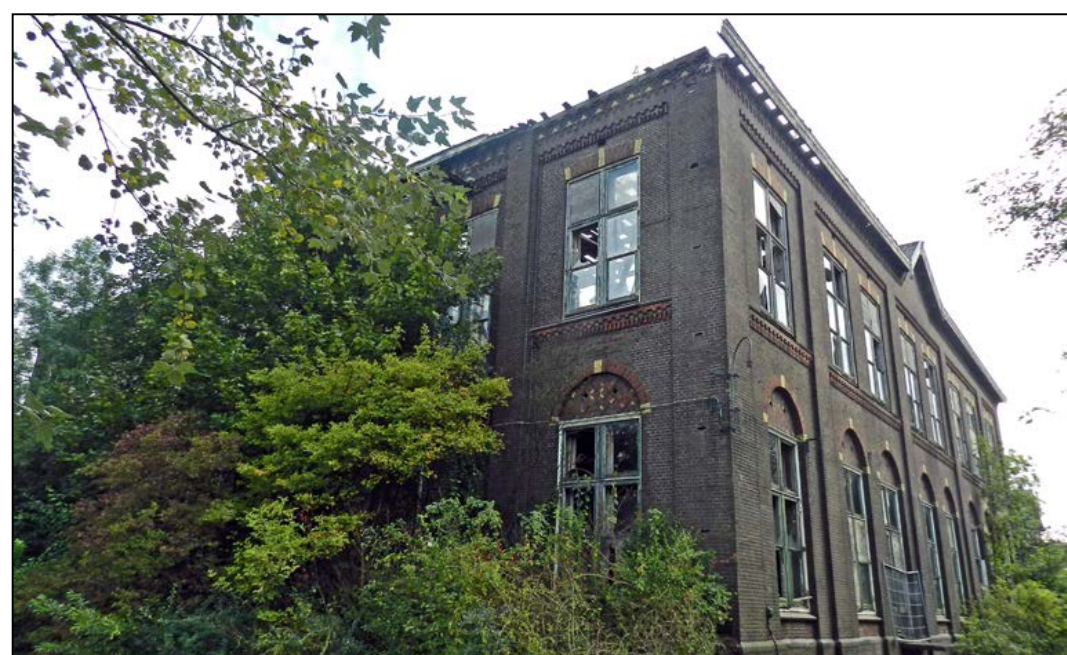


**Headquarters
machine factory**



Poor condition

After the military industry left the Hembrug site, this building fell into disrepair, with a large part of the roof and the first floor has collapsed.



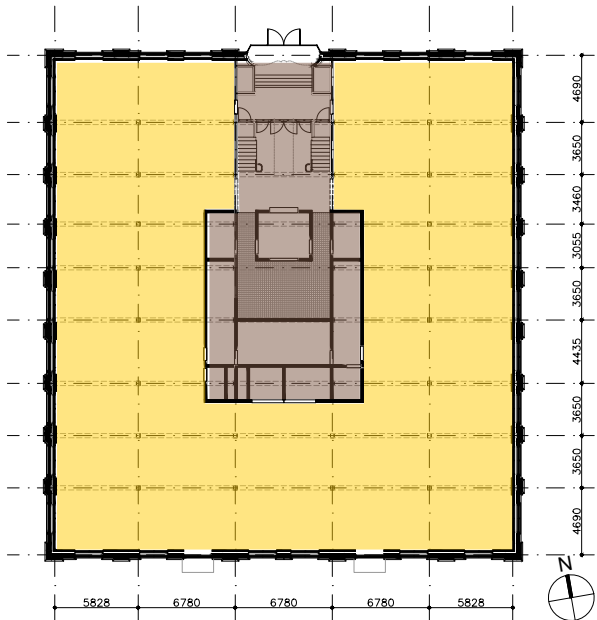
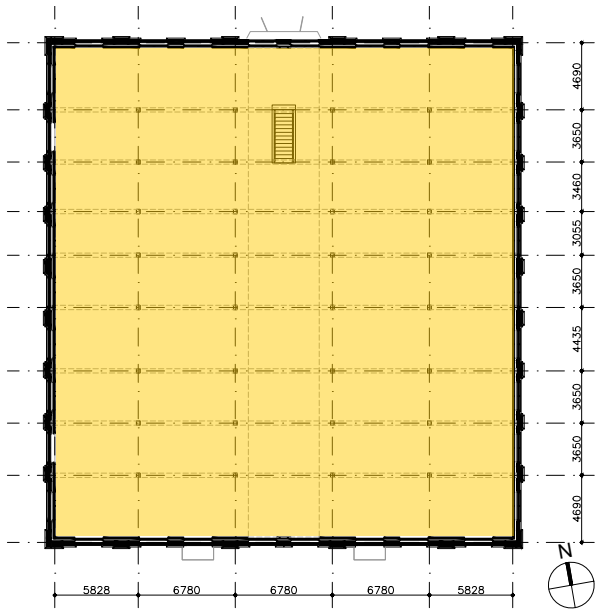
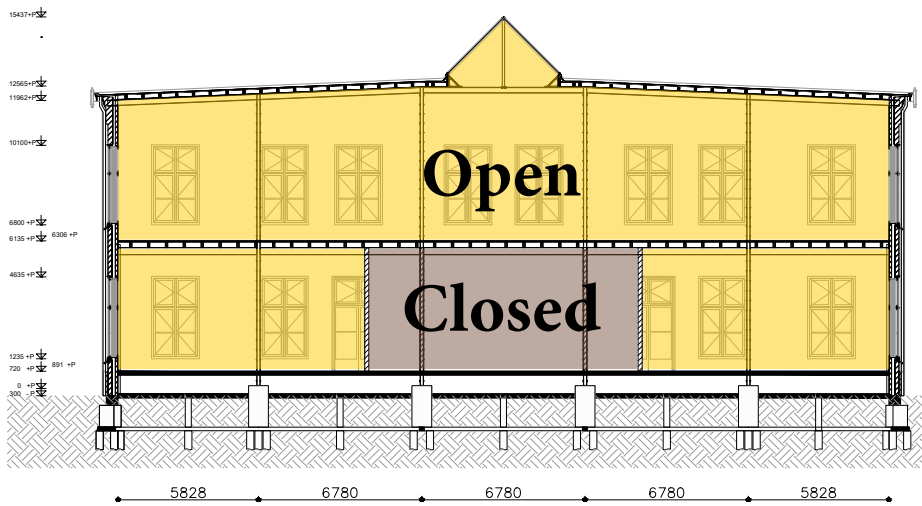
Recently renovated

In 2017, the building was renovated by ABT and restored to its former glory. The main entrance and stairs have been restored and the first floor, the roof with the skylight and the facades have been restored. ABT has made a number of sustainable interventions to prepare the building for future use.



Spatiality

Currently, the ground and first floors are two large open spaces with a closed core on the ground floor.



Cultural value assessment

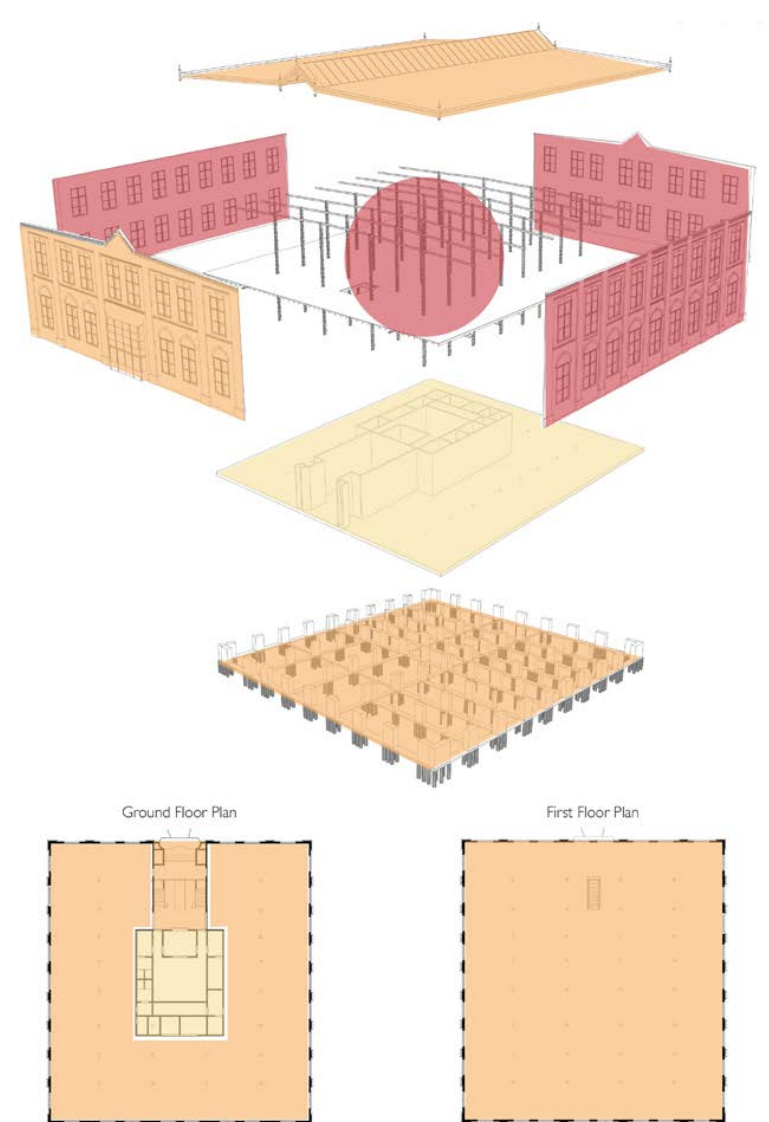
The most valuable aspects of this building are the representative facades which are designed in a Neo-Renaissance style, which was common for military buildings at the time. In addition, the spaciousness and the narrow steel construction also have a high cultural value, as this made it possible to store as many weapons as possible in the building, which therefore tells something about the original use of this building.

Most valuable aspects

Representative Facade (Neo-Renaissance style)

Spatiality (open)

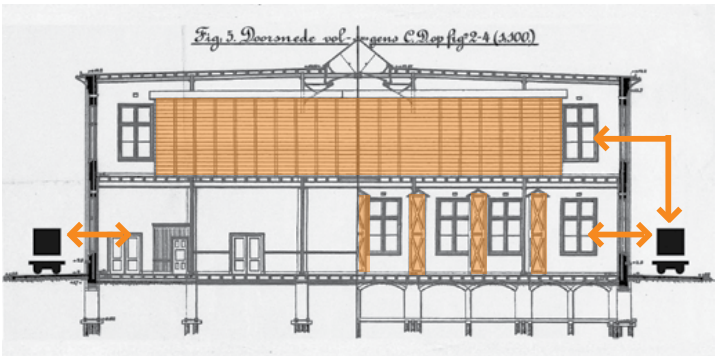
Thin steel structure



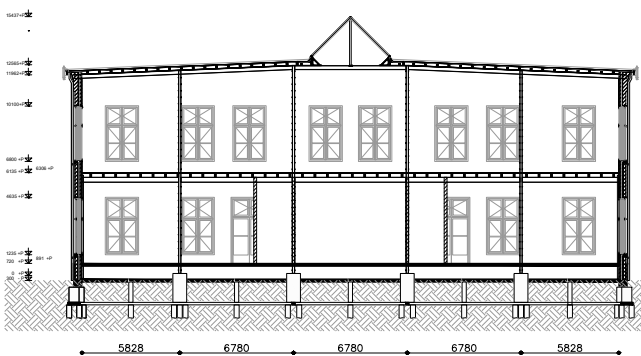
Concept

With the design of the future use, I want to refer to the historical interpretation of the space, in which the large open spaces are preserved and filled with the new program.

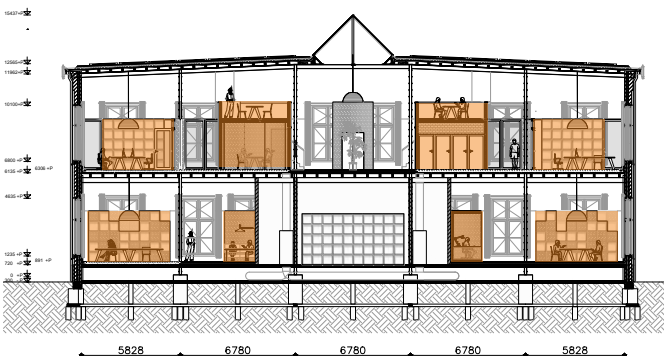
Past



Present



Future

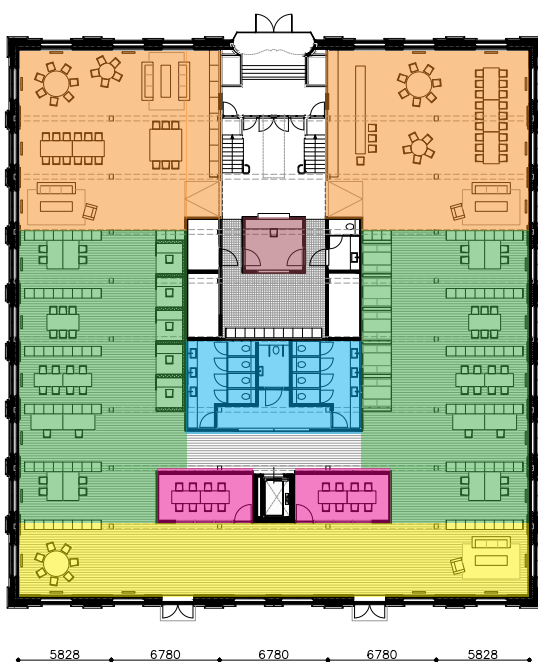


New program

The Wapen Depot will be a building that offers flexible and permanent workplaces for designers and creative entrepreneurs who want to be involved in the artistic events that will take place on the Hembrug site. On the ground floor there will be an information point directly at the entrance with social space on both sides in the form of a canteen and a club room. The flexible workplaces are indicated in green. Creative entrepreneurs with a membership can make use of this. Two meeting rooms have been created and on the south facade there is room for small events. The toilets and climate installations will be placed in the closed core. The permanent workplaces for creative companies and entrepreneurs will be located on the first floor. Two new volumes will also be placed in the open space where the toilets and meeting rooms will be located. The spaces on top of these new volumes can be used as collective workplaces.

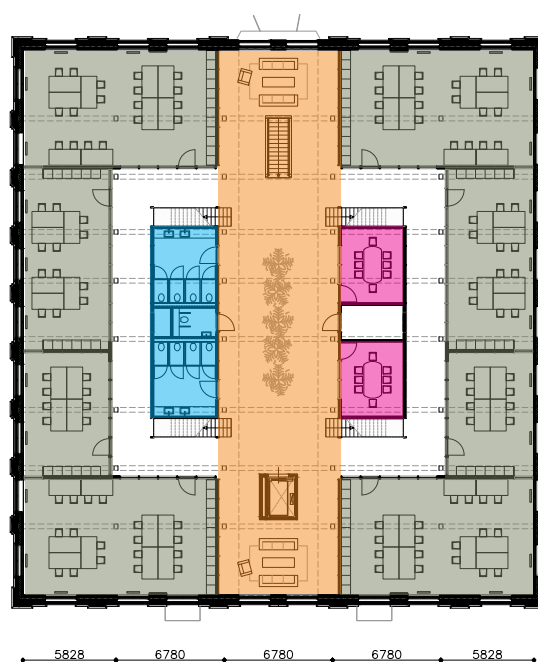
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- Service desk
- Social space
- Flexible workplaces
- Meeting rooms
- Event space
- Toilets



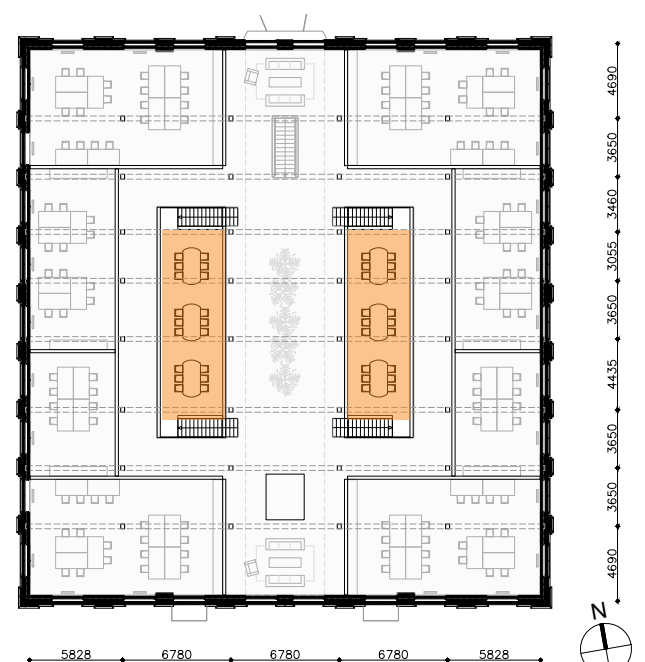
1

- Social space
- Fixed offices
- Meeting rooms
- Toilets



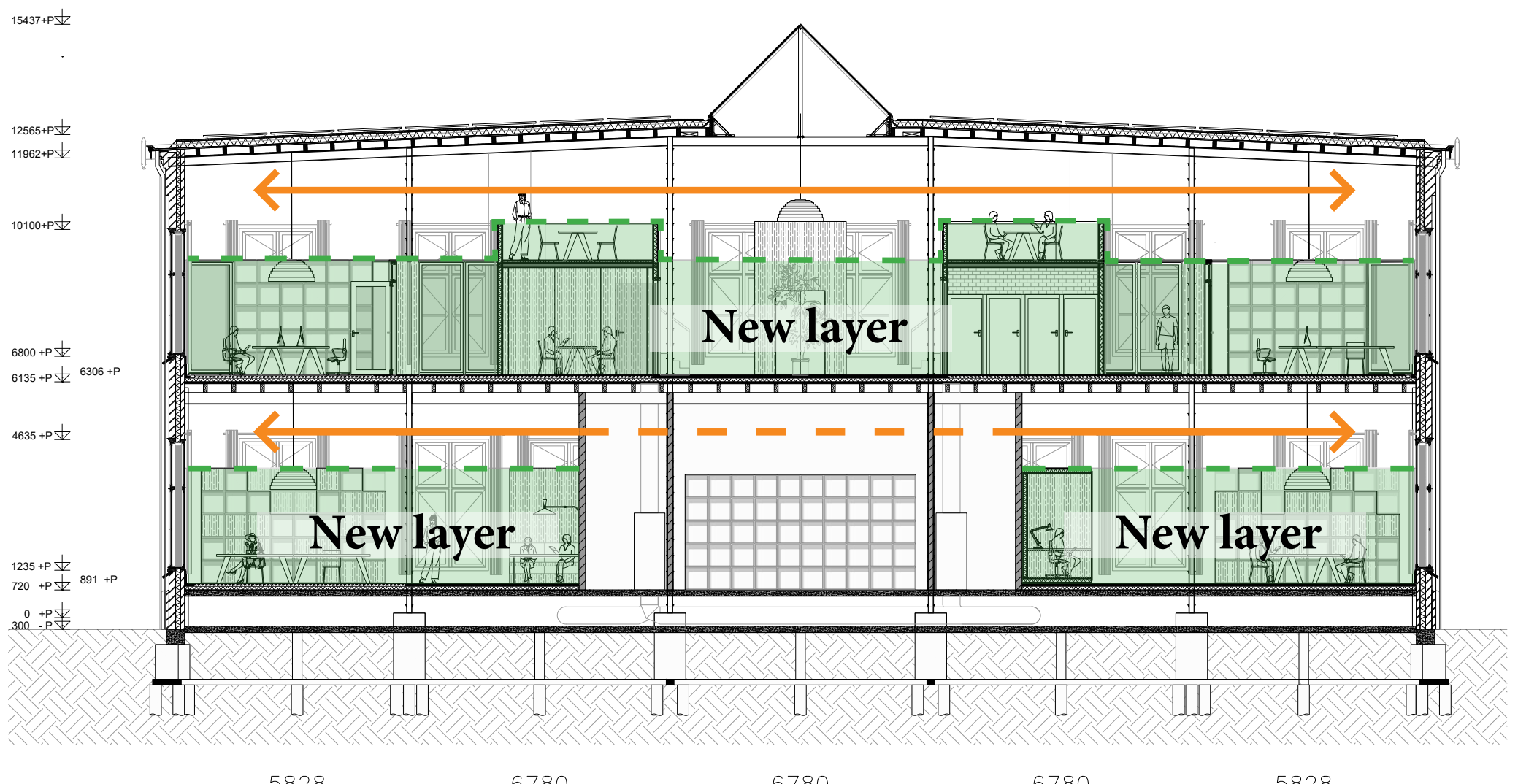
2

- Collective workspaces/social space



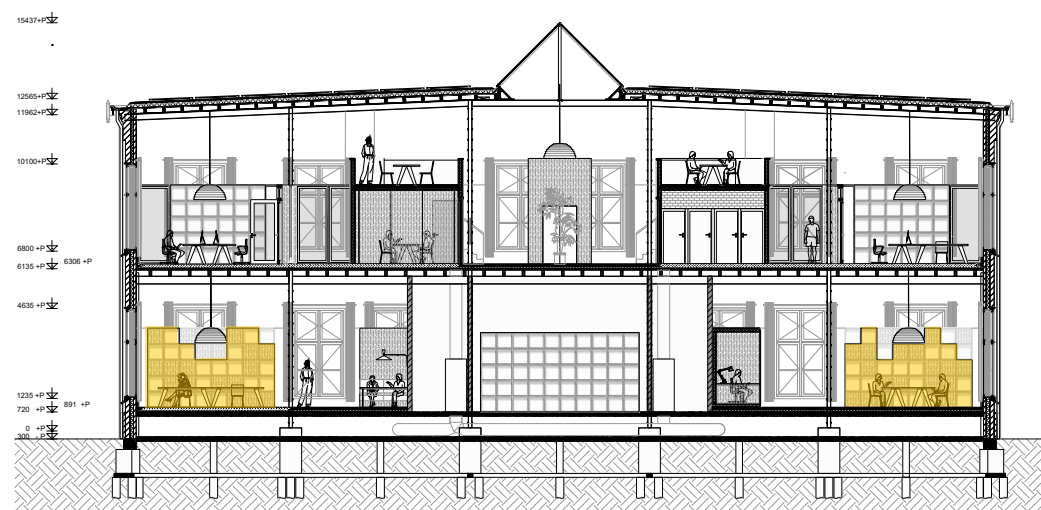
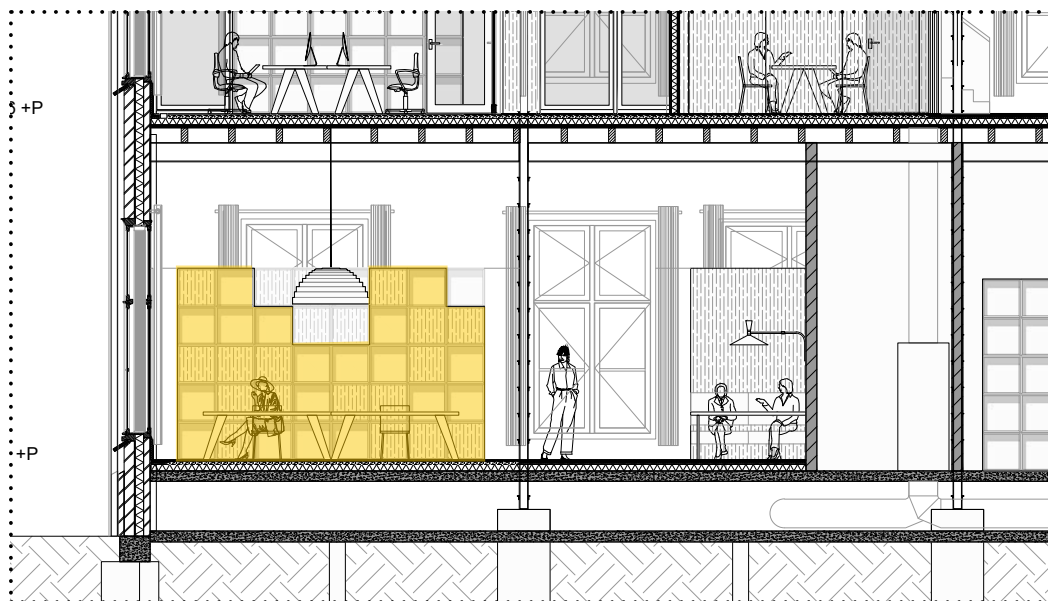
New layer

The program has been designed as a new layer over the existing, with a clear dividing line between the existing and this new layer. On both the ground and first floors, a height of 3 meters has been introduced for the design of the new interior, so that the original spaciousness of the open spaces is preserved.

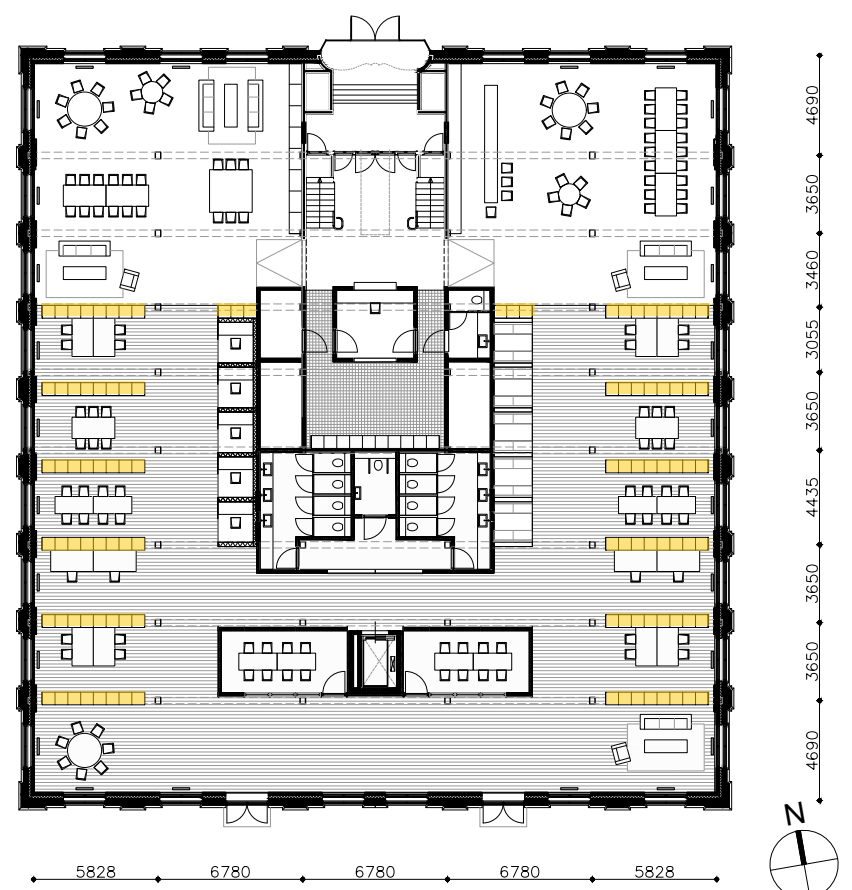


New storage racks

Cupboards have been placed on the ground floor, creating more intimate spaces in the large open space, which form the flexible workplaces. These cupboard walls are built from separate elements, which makes them flexible and allows different types of spaces to be created.



Ground floor



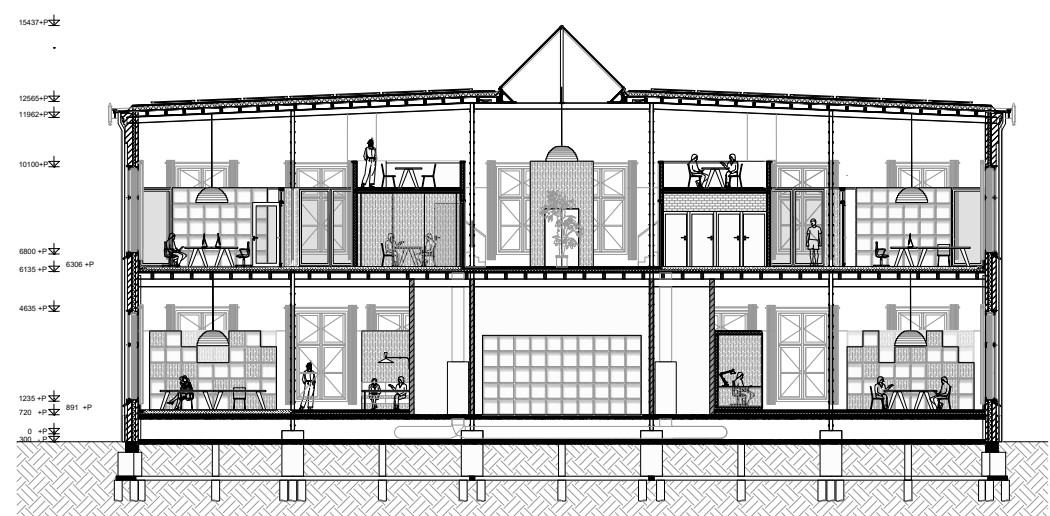
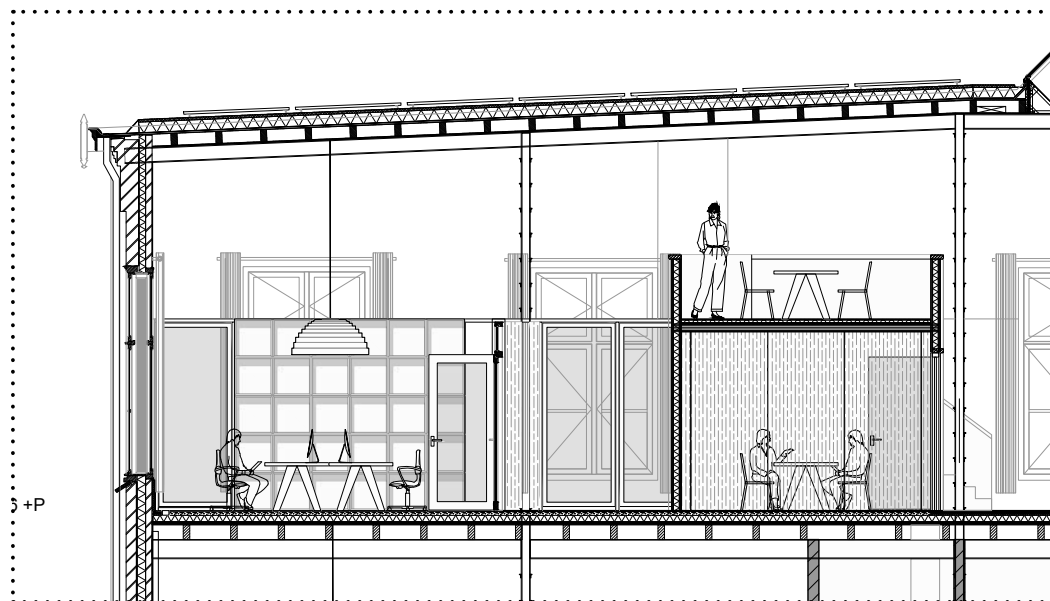
Flexible workspace

This is an impression of such a flexible workplace. These cupboard walls are 3 meters high. The existing facade will have an acoustic plaster layer on the inside, which will also reach this height of 3 meters. Above that, the obsolete facade will remain visible, creating a contrast between the existing facade and the new sleek plaster layer.

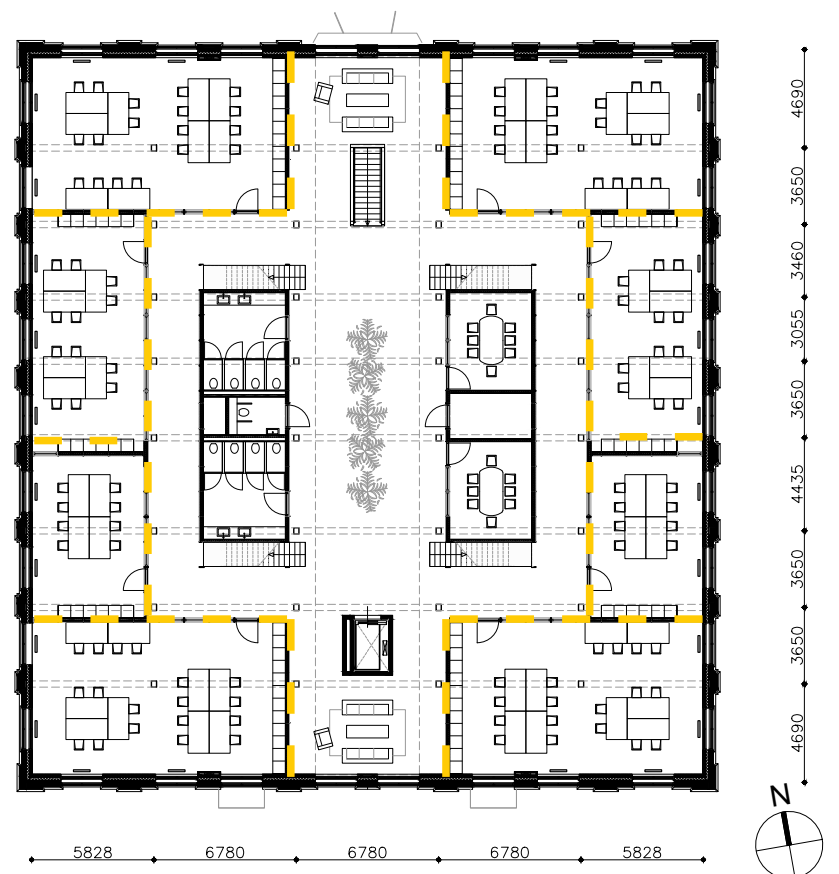


Flexible partitioning walls

The fixed workplaces on the first floor are designed by flexible partitions. These walls have the same height as the 3 meter high cabinets, so that the spaces remain connected to each other.



First floor



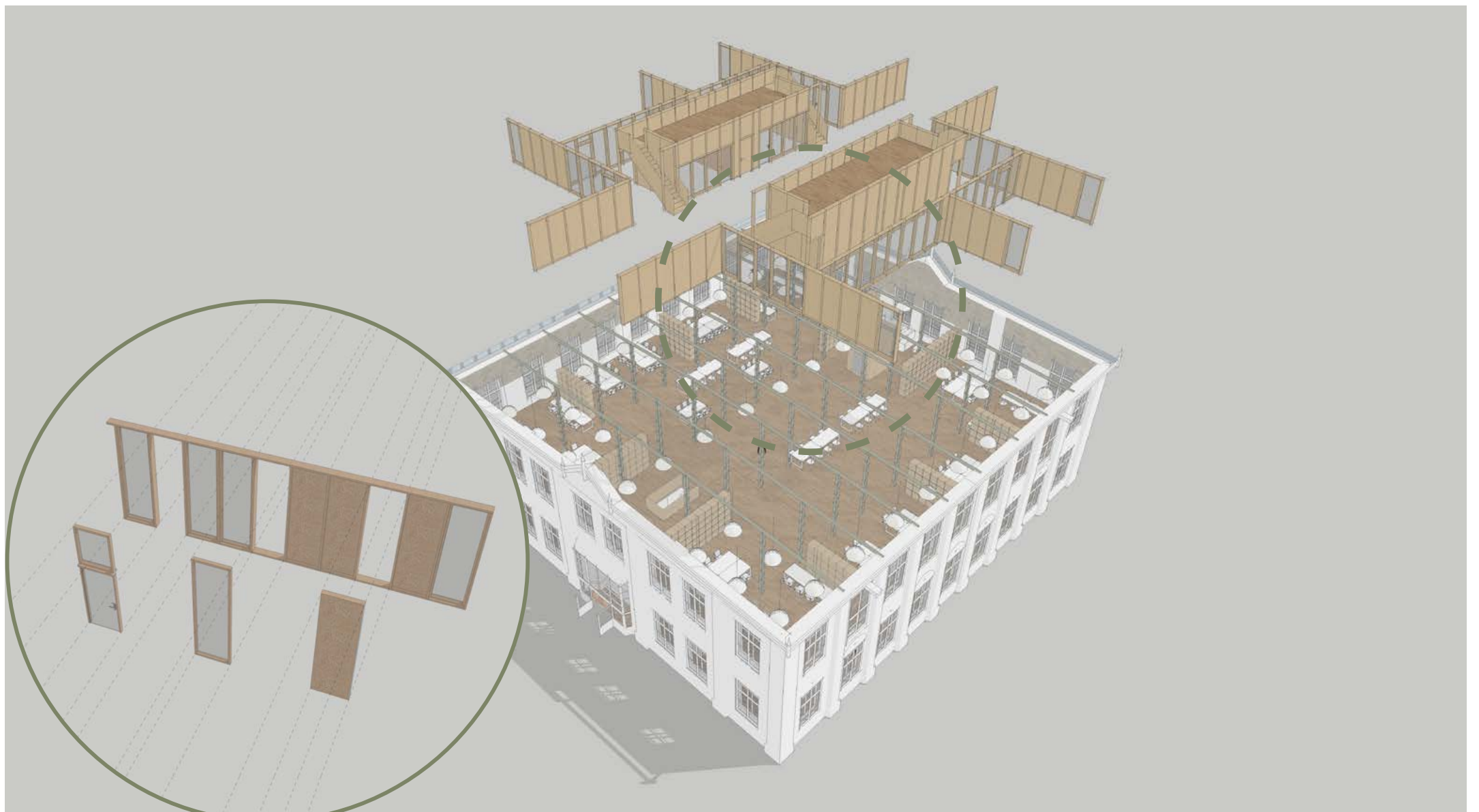
Fixed workspaces

Here, an acoustic plaster layer is applied up to this 3 meter height as well. The partitioning walls are largely transparent. Transparent panels will also be placed where the partitioning walls touch the existing facade, so the original spaciousness is preserved.



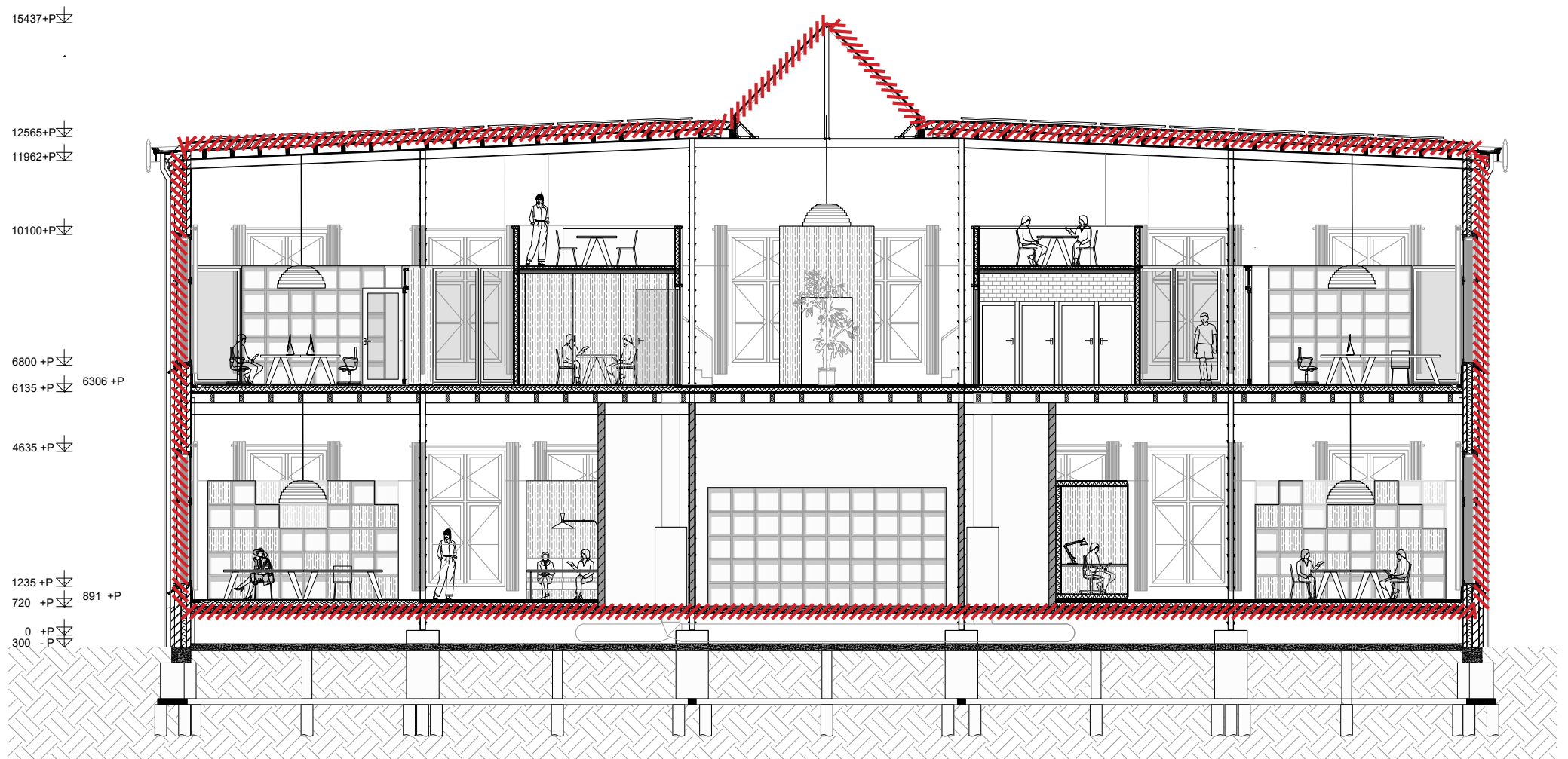
Flexible partitioning walls

These partitioning walls consist of a wooden framework which is mounted on the floor, in which various panels can be placed, such as a door, a transparent or a closed panel. These panels are all the same size, allowing for different layouts, making these partitions and room layouts flexible.



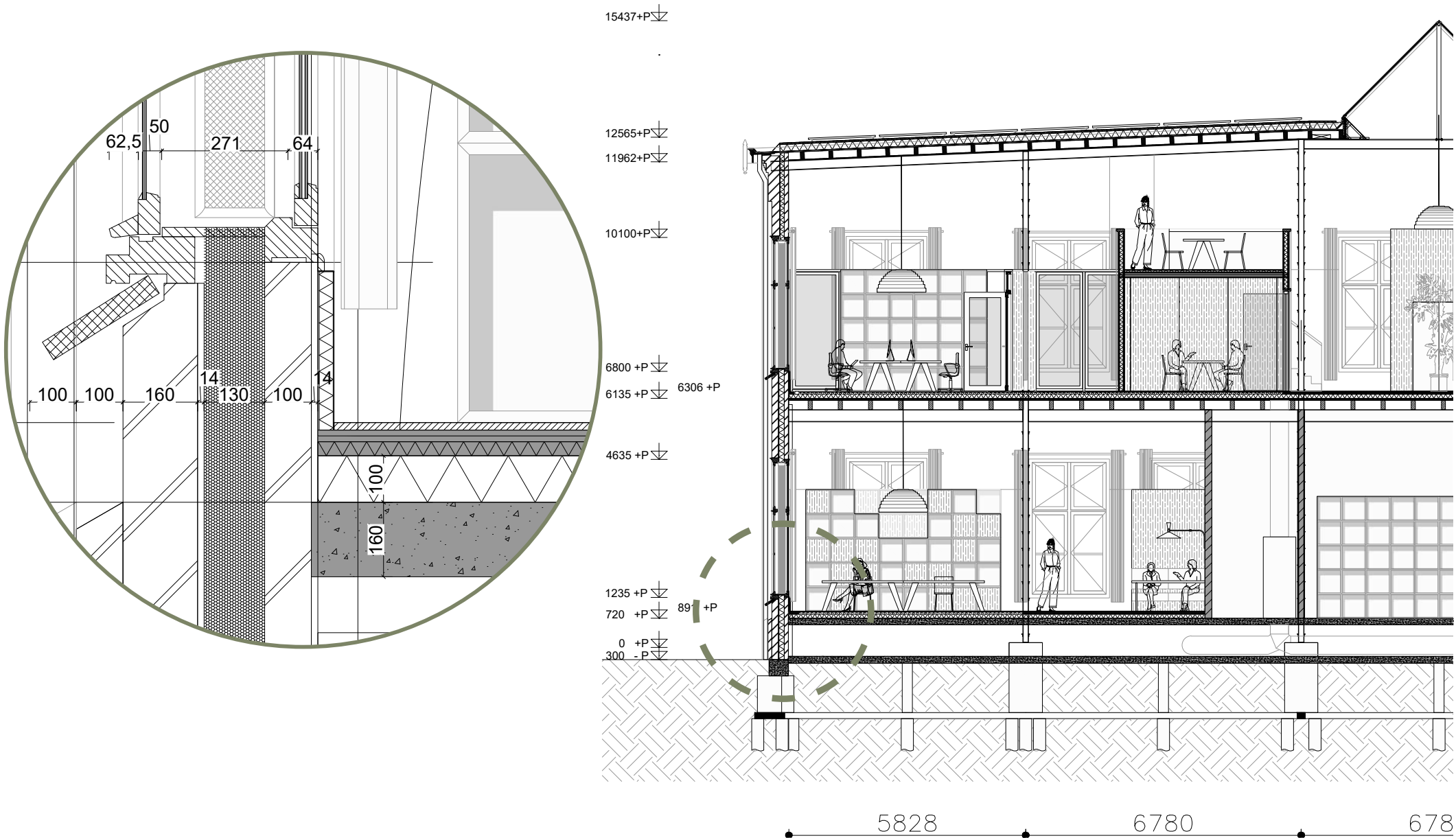
Insulating existing skin

To save energy consumption, the existing shell of this building will also be better insulated.



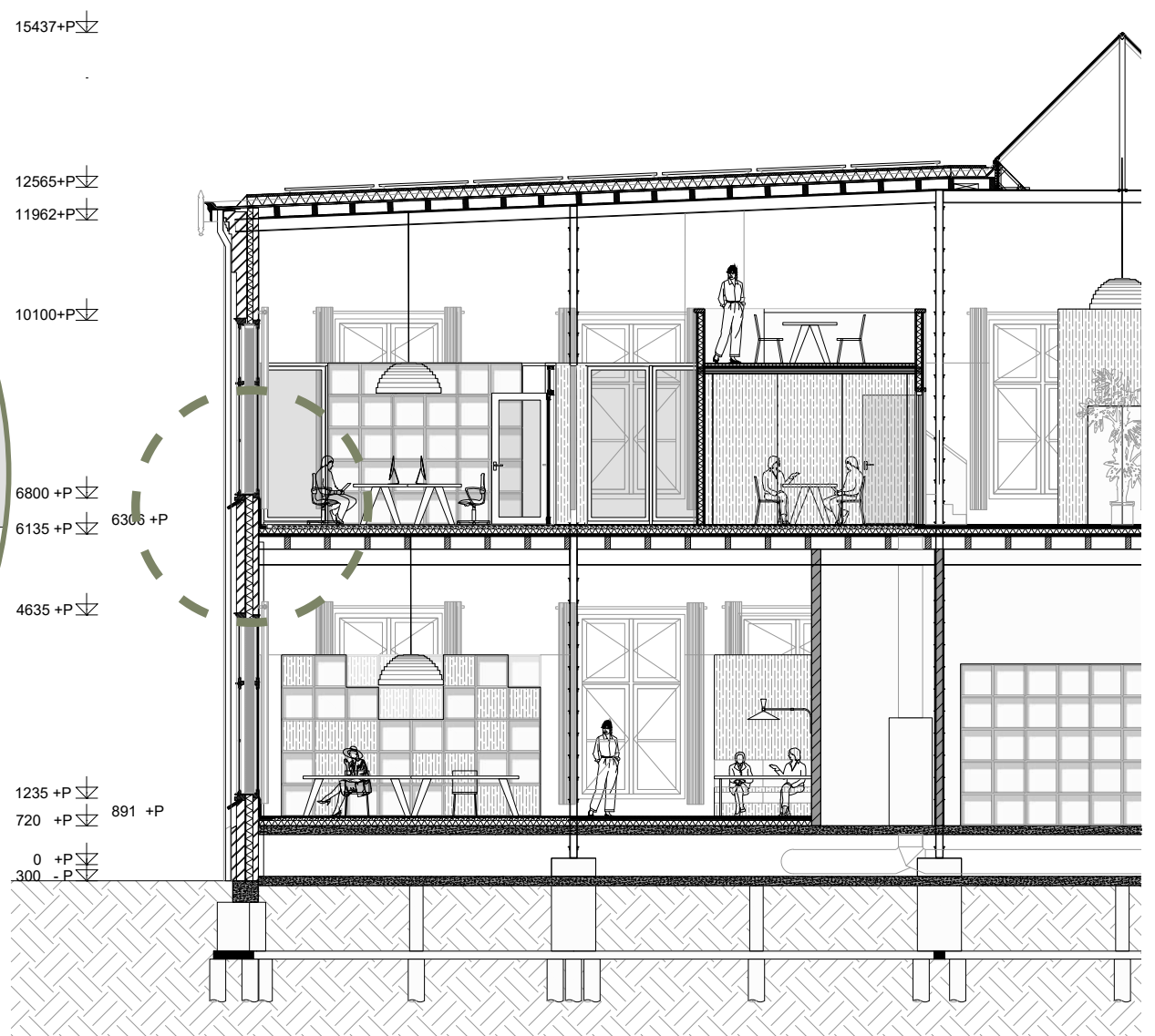
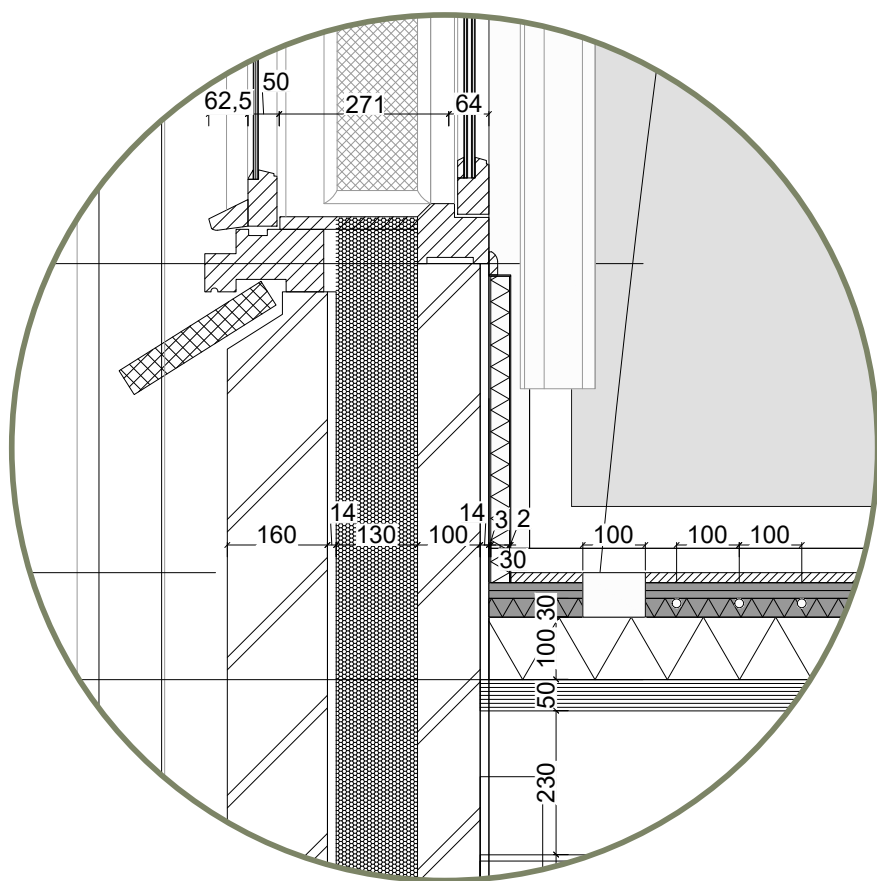
Insulating cavity

The existing cavity will be filled with EPS pearls in the same way as the machine hall. On top of the existing concrete floor is an insulation layer with a hybrid floor heating and cooling system and a wooden floor finish.



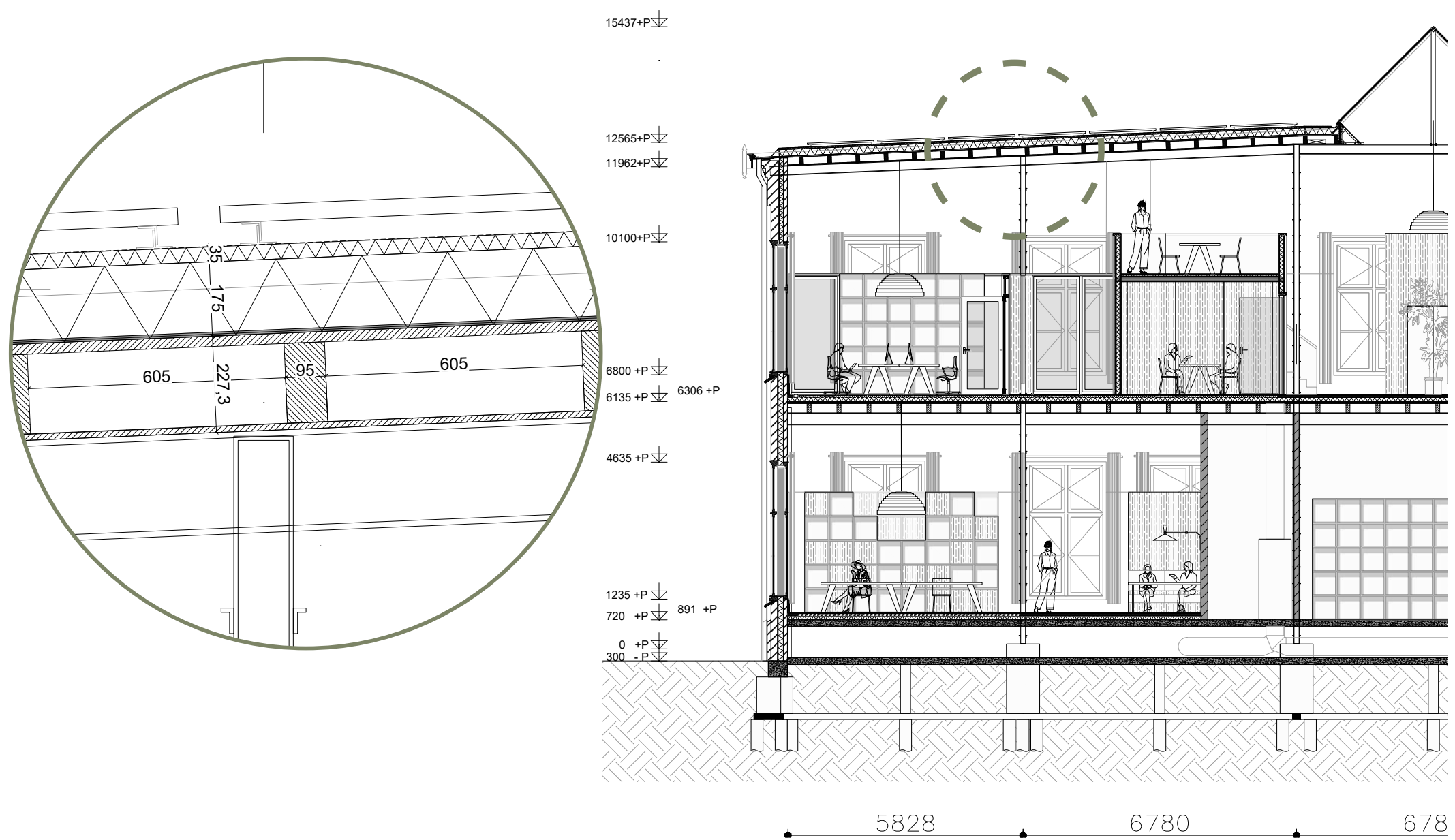
1st floor

On the first floor there will also be an insulation layer in which the ventilation channels and pipes are processed. In addition, double glazing will be installed in the existing window frames.



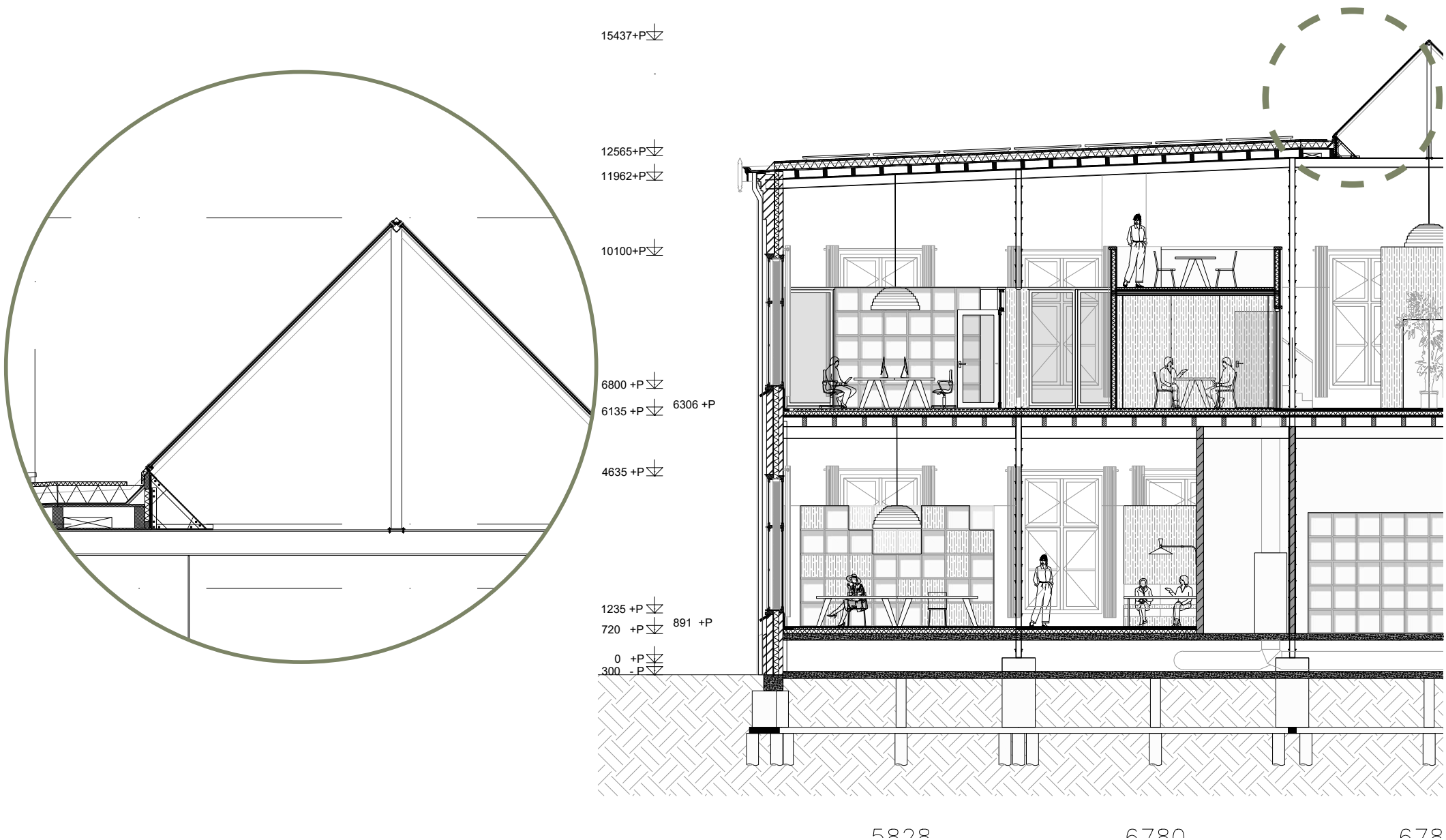
Insulating existing roof

The renovated roof will be post-insulated on the outside, on which PVT panels will be placed.



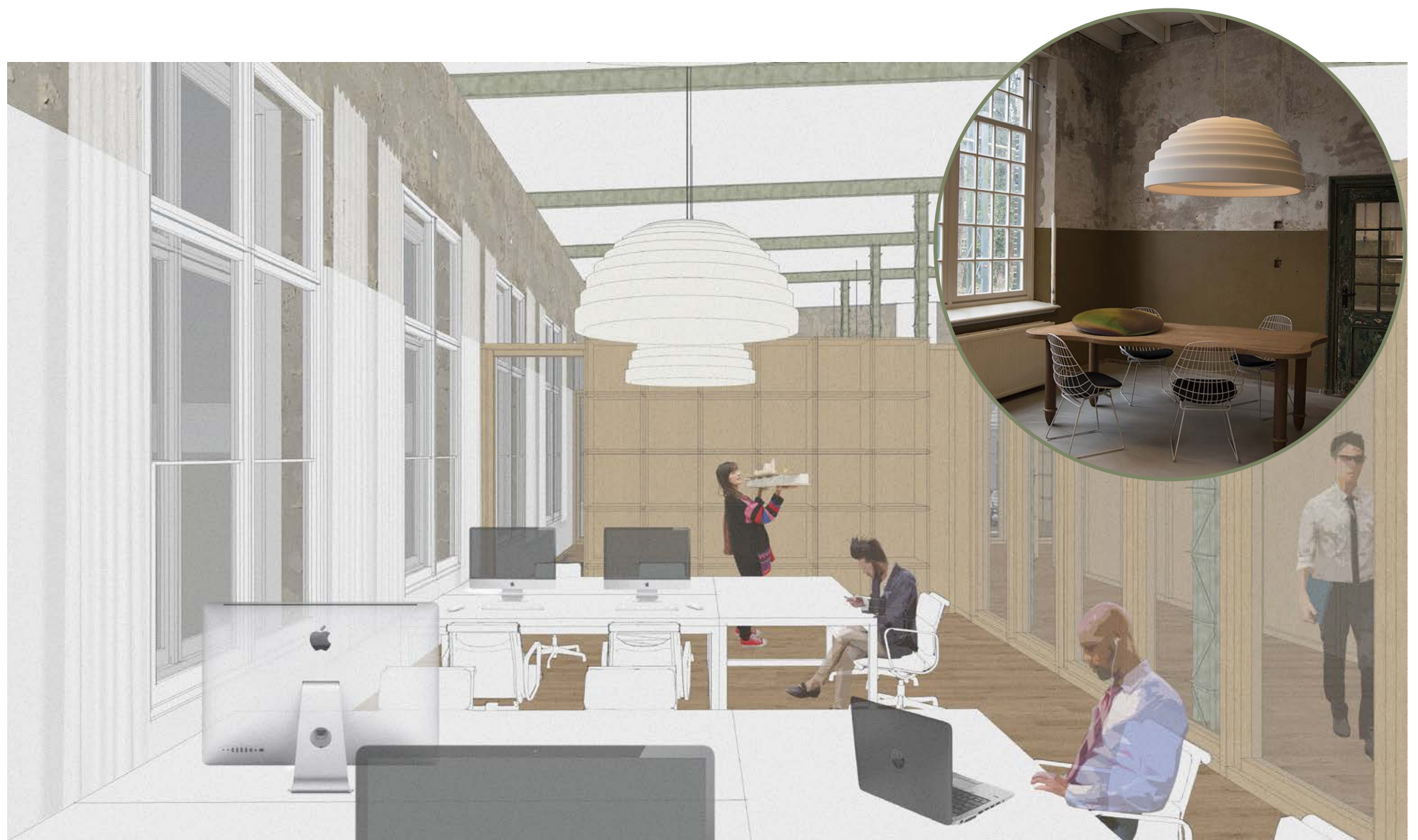
Insulating existing skylight

And in the existing skylight there is currently only safety glass which will be replaced by double glass.



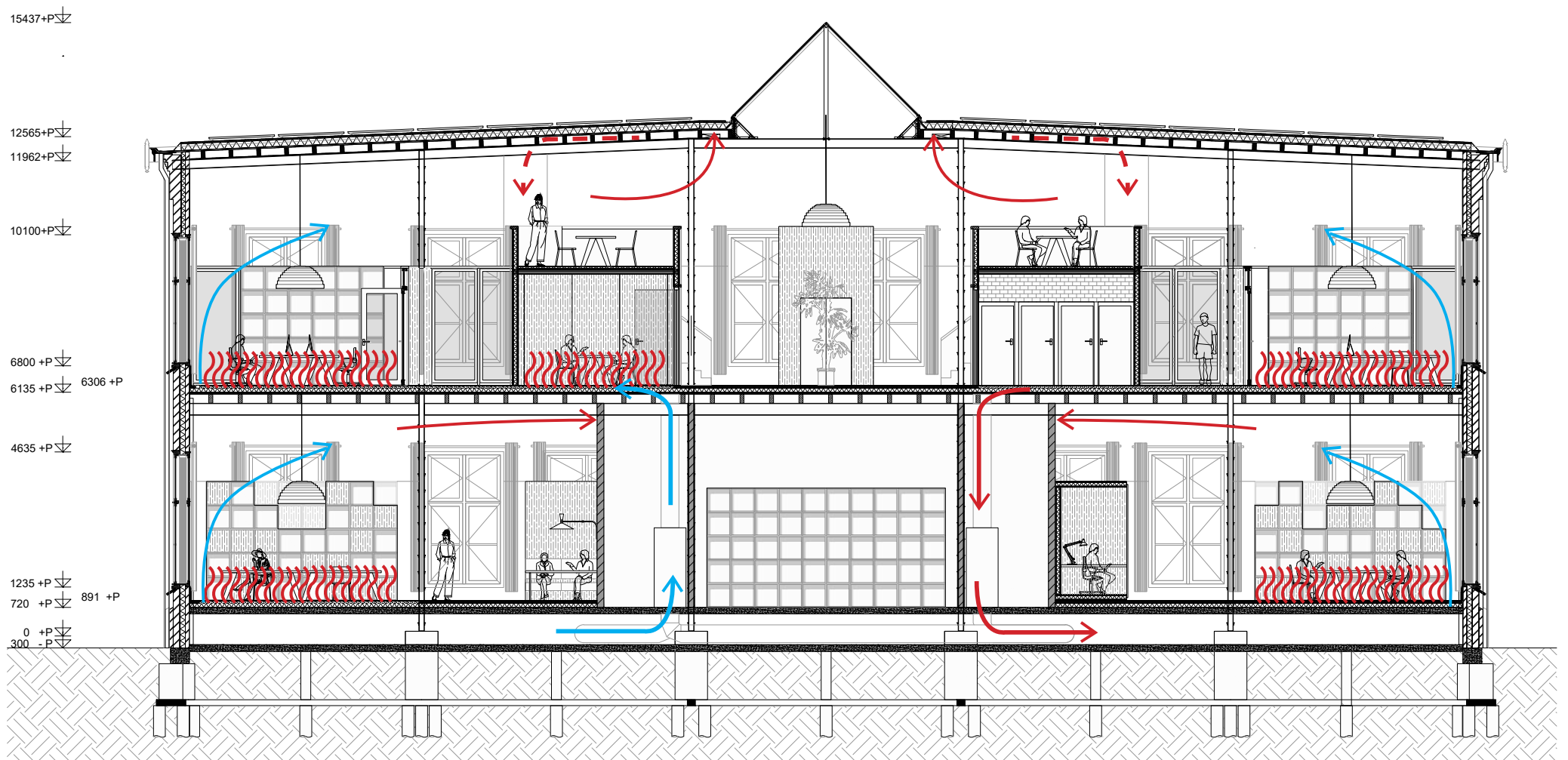
Acoustics

In order to improve the acoustics of the permanent workplaces, sound-absorbing lights will also be used in addition to the acoustic plaster layer, which have been designed by a company that has already settled on the Hembrug site.



Climate scheme

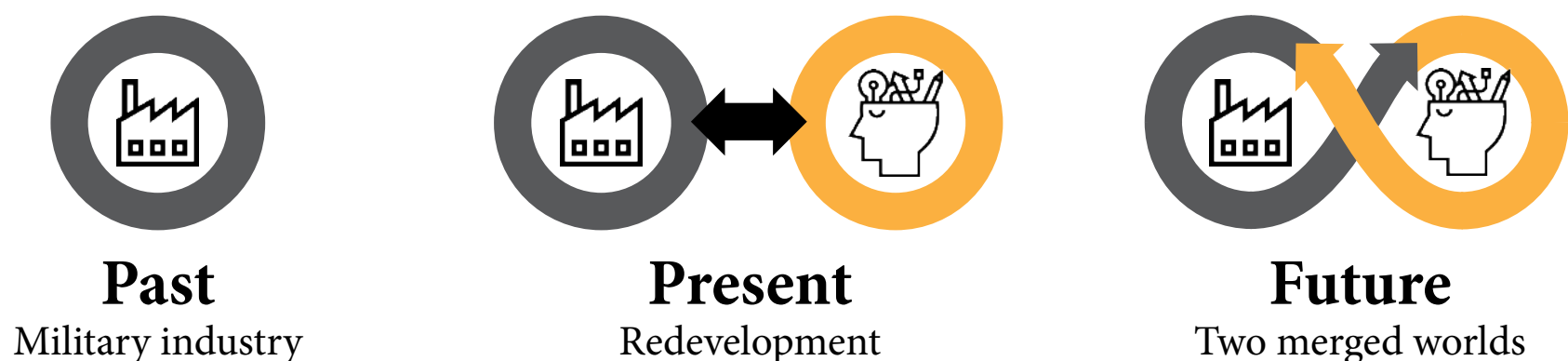
Because the open spaces are connected to each other, the entire building forms one climate zone which will be climatized by means of the hybrid floor heating and cooling system and a central mechanical ventilation system. The ventilation units are placed in the closed core. Fresh air will be drawn in through vents in the south facade and ventilation channels through the existing space underneath the ground floor and blown in through the floors. This air is extracted again via the closed core and the roof, which ensures optimum air flow.



Research question

Through my research into the Hembrug site, I have discovered that this site has a very special past and has undergone various developments over the years.

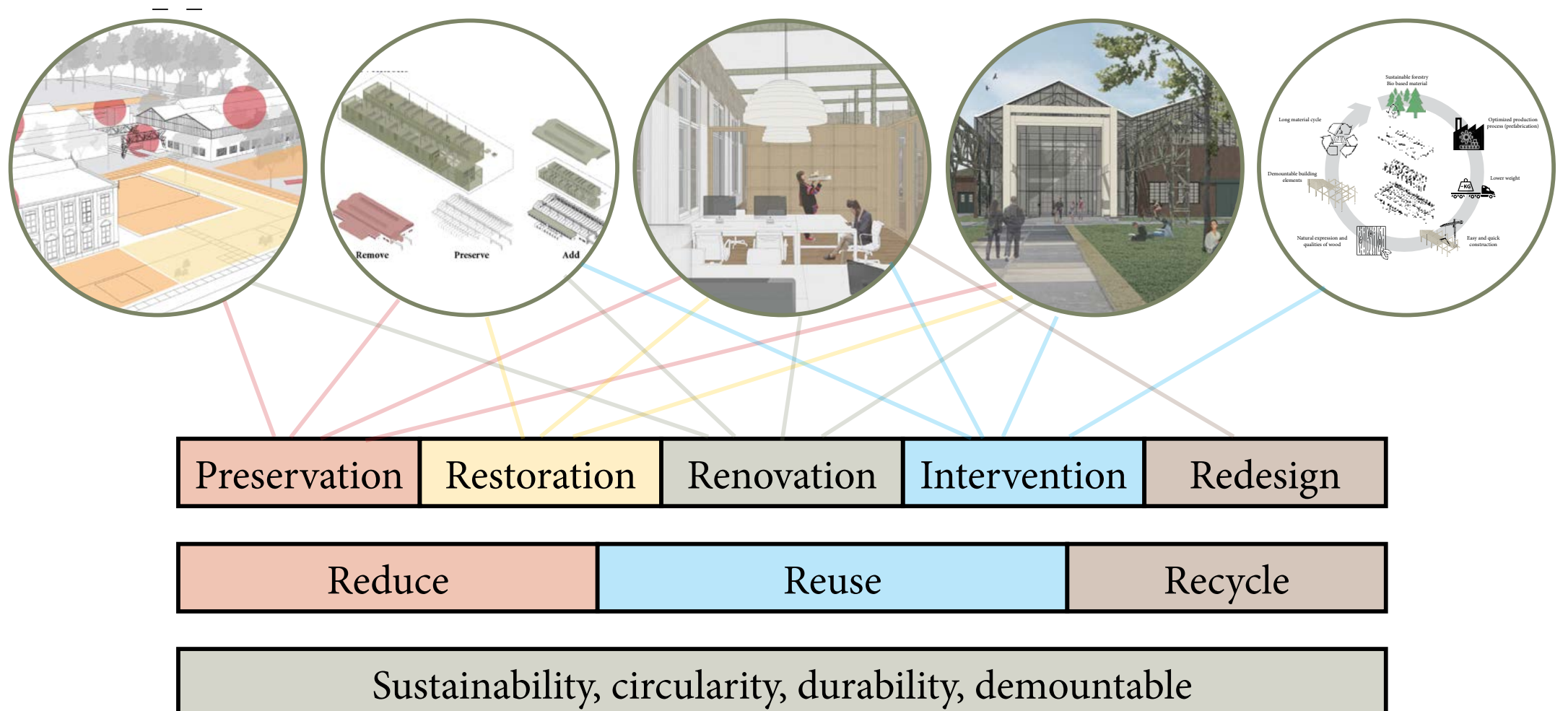
With the departure of the military industry, a new development has recently started, whereby this historic military industry area must be redeveloped to make it suitable for new users. The challenge for me was therefore to redesign a small part of this site, in which I wanted to stimulate the transformation of this former military industrial site into the center for art, craft and design without the valuable historical character of the Hembrug lose ground.



“How could my design interventions stimulate the transformation of the former military industrial site into the art, craft and design center of Amsterdam and the Zaan region without losing the valuable historical character of Hembrug?”

Approach

That is why this project needed a thoughtful approach, in which I made a cultural value assessment, in which I explained the different aspects of this area and determines how valuable each aspect is for the historical character of the site. For each aspect I looked at what kind of intervention was necessary to comply with future use. In that way I determined for each aspect whether it should be preserved, whether it can be restored, whether it should be renovated, whether a new intervention should be added or whether an existing aspect can be used in a new way. In my design I have preserved as many valuable aspects as possible and where necessary restored and renovated these. In addition, I have added new interventions to shape the new use, with which I wanted to emphasize these valuable aspects. I wanted to design this redesign in a sustainable way by thinking about how materials and energy use could be reduced, reused and recycled. And by making these design interventions flexible and demountable, I want to prevent materials and energy being lost once the use of these buildings changes in the future. In this way I have redeveloped both buildings in a responsible manner to meet the uncertain needs of the future.



Preservation: preserve as much as possible - historic valuable elements- demolish only when necessary

Restoration: appreciation of the existing – cleaning and repair

Renovation: making existing elements more future proof

Intervention: the new added intervention will derive from the existing and should be removable

Redesign: using existing elements in another way