

HEMBRUG

Campus North



Colofon

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I. Introduction

I.1 Introduction

The Hembrug area origins derives from the peninsula area called Den Hem and lies between 2 canals, the North Sea Canal and a canal that leads to the Zaan. The North Sea Canal was dug by hand in 1865 - 1876 to provide a main sailing route from the IJ in Amsterdam to the North Sea. Polders around Den Hem were created in order to finance the North Sea Canal. This is how most of the land where Hembrug is located came to existence.

Hembrug was part of the Stelling van Amsterdam, the defense line of Amsterdam. The Stelling van Amsterdam is a defense line of 15 to 20 km around Amsterdam where the enemy was kept at a distance by putting the parts of the land underwater. The Netherlands needed to produce its own weaponry. The Hembrug area was the only location, from several possible locations, that was located within the Stelling van Amsterdam. This was the incentive to situate the Artillerie Inrichtingen.

In 1895, the Artillerie Inrichtingen started production on the M95 rifle. The Hembrug site manufactured all parts of the rifle on the site. The site was therefore divided into three sections; the the weapon factory, the cartridge factory, and the ammunition factory. The Three sections were sectioned off from each other with iron gates. The functional set up from the North Sea Canal towards the north was in the following order: representative buildings, production halls and storage spaces. There was a small train track that was used to transport goods between the buildings and to bring materials into the area. In the beginning the Hembrug area was only accessible by the entrances on the south side at the North Sea Canal but after the introduction of the railroad from Amsterdam to Zaandam the infrastructure extended towards the west of the area. The Hembrug area has changed over the years and developed into a factory city. There were two big expansions just before WO I and WO II due to higher demand of the product. During the occupation of the Netherlands during WO II, the site started to produce civil products instead of weapons to prevent the enemy from using the weapons that were produced on the area.

To camouflage the area from the sky, during the second world war, the Germans planted trees in abundance to make the site and its experiments a secret.

In 1950 the western part of the area became a mobilization complex. For this mobilization plan new warehouses were built and a few older buildings were demolished. In 1973 the Artillerie Inrichtingen (AI) was separated in 2 independent companies: Eurometaal and NV Hembrug Gereedschapswerktuigenindustrie. This separation led to influence the layout of the former AI terrain. With these changes the functional logic of the terrain disappeared. After the area had become vacant and neglected it has had uncontrolled growth of greenery. This neglect let the area to become a potential for biodiversity. When the area was opened to the public, a new entrance was created on the west side and a new infrastructure was designed with the use of stelconplates.

The old main entrances on the south can still be used but now only serves slow traffic. Current day, the Hembrug site has ambitions to make its mark on the creative industry. Wanting to unfold towards a community that it hid itself from.

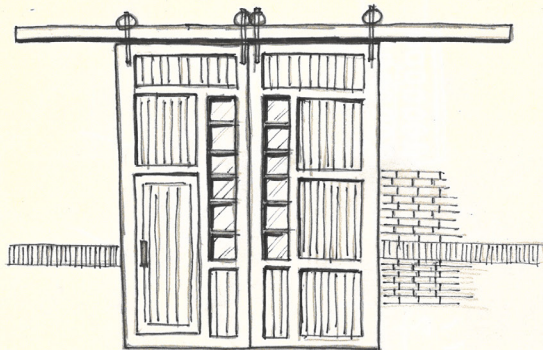
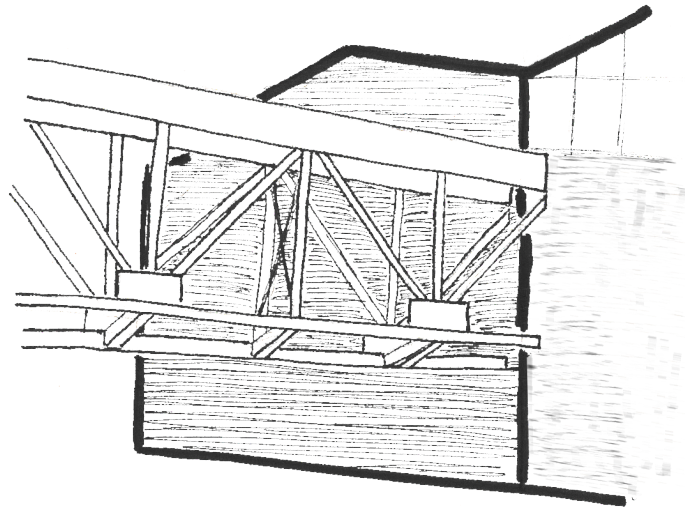
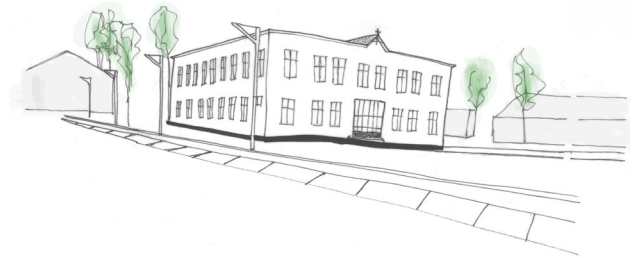
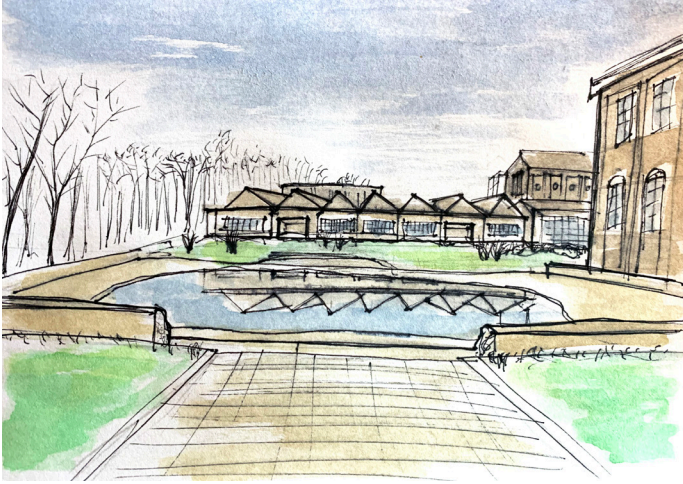
The TU Delft faculty of Architecture has requested to transform several campuses on the site of Hembrug. This booklet will conduct the research of Campus North. Following a main question, the chapters will guide the reader from the large scale of Campus North to the tasked buildings of the weapon depot and the machine hall.

The main question is as followed:

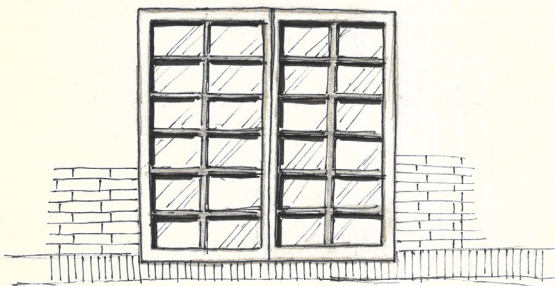
“How did the functional logic of the ‘Artillerie Inrichtingen’ influenced the character Campus North has today?”

To answer this question as well as possible this analysis will follow the three disciplines within the chair of Heritage and Architecture. Meaning it will analyse Architecture, Technology and Cultural characteristics. Lastly, we will conclude the entire booklet into a conclusion answering the main question.

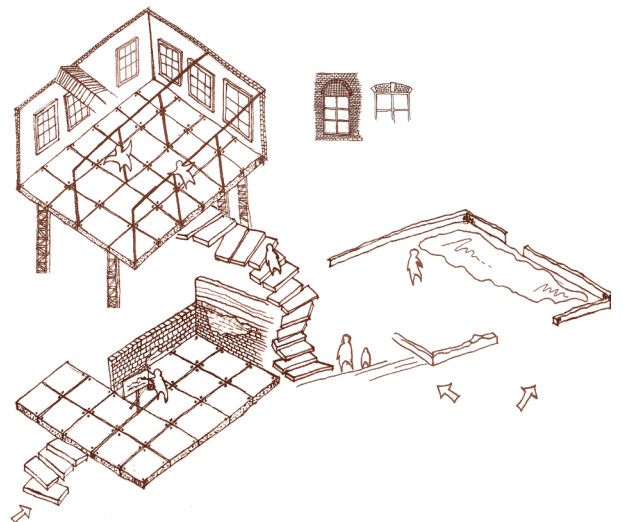
1.2 First impressions

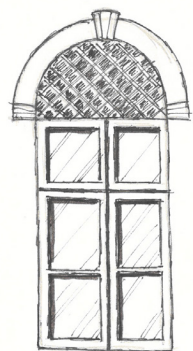
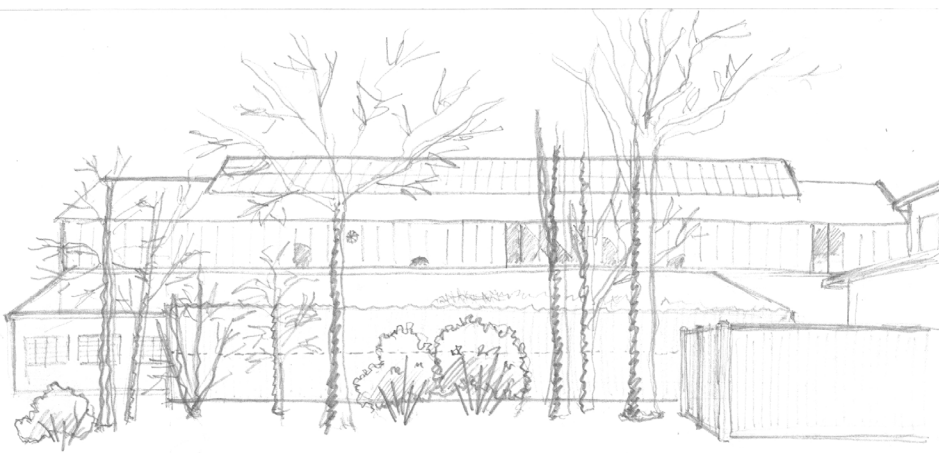
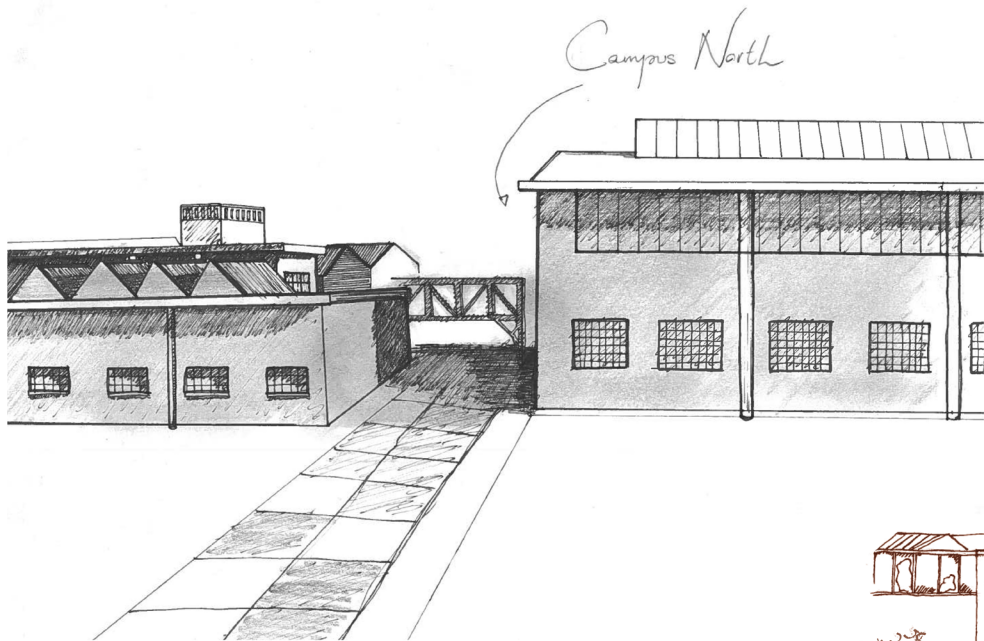


schuifdeuren gebouw 336



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2. Campus North

This first chapter will focus on Campus North as a whole. Firstly the topographic structure will be addressed. This is important because the site is located on the border of the original peninsula of the Hem and with the reclamation of the IJ the area turned in to a polder. This process influenced the structure of the site and can still be noticed. Secondly the setup of the site will be explained, how it changed over time and how it positioned itself in Hembrug. This is because the area is set up as a functional and efficient area where forms follows function. Thirdly the layers of the site will be pulled apart. Specific for the Campus structure are the free standing buildings in an open space. Because of this, the relation between the open space and the buildings will be investigated. The character of Campus North is not only defined by its building but also by its shared public space. Finally the atmosphere will be grasped in the characteristic elements of Campus North.

These elements of Campus north will be researched and analysed in order to understand the historical use and is transformation to its current situation. The functional logic and organization of the site will be explained and how these structures are still noticeable in tangible and intangible elements.



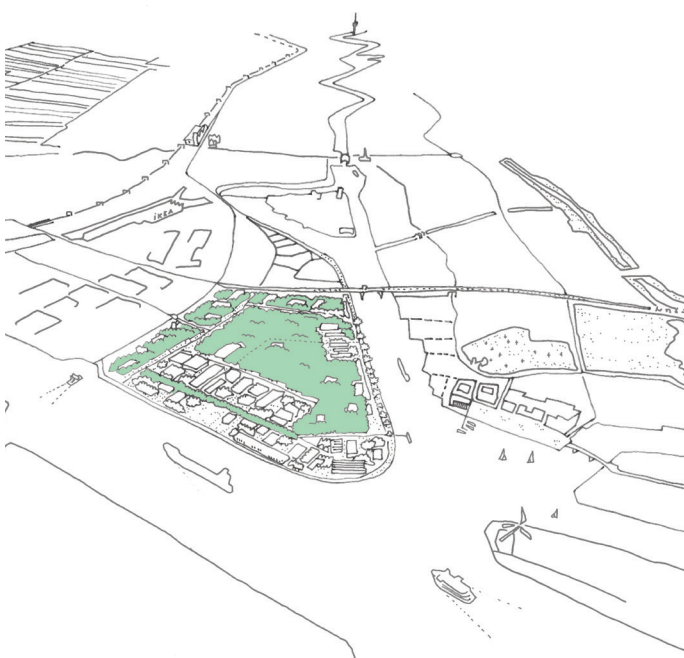
2.1 Topography

2.1.1 Hembrug

Topography : the physical appearance of the natural features of an area of land, especially the shape of its surface



Source: Presentation F. Palmboom 19 march 2019

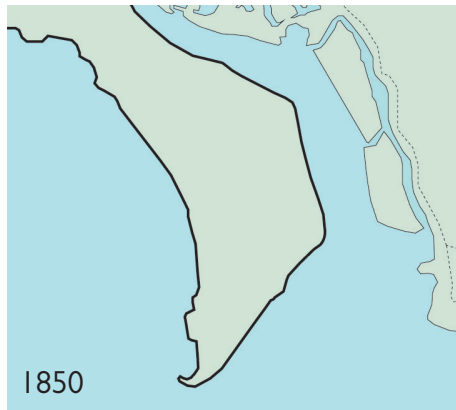


Hembrug is a plot that was formed in the 19th century by reclamation of land in the coastal area between Amsterdam and Zaandam. It is a very green space with a unique identity within a more industrial environment. Having been the main site of weapon production for many years it is densely built with many constructions that are now largely not in use.

Our site is the Campus North, it is a plot in the north-west area that borders the woods and is situated near the new main entry. There is a lot of contrast between nature and constructions but also between open plots and the bigger volumes, giving it its unique character.

The site has developed by following the functional necessities of the weapon production but also the many axes that were already present. The open spaces are the result of development through time of the built environment.

2.1.2 Development



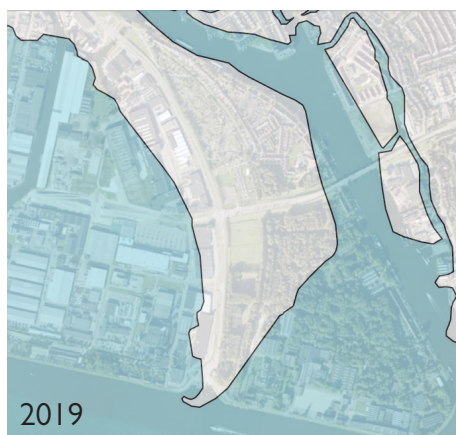
1850



1874



1905



2019

Foreland 'de Hem'

The origins of Hembrug derive from the peninsula area called Den Hem, which was surrounded by the Zaandammerpolder and the Voorzaan canal, an extension of the IJ-River. This type of land in this area was namely consisting of a peat soil.

Reclaiming of Land

Digging of the Noordzeekanaal has been completed between 1862-1874. Huge amounts of land were claimed from the water by dredging. This transformation of land formed the start of the polder that we now know as the Hembrug terrain. A small canal is dug to flow along the original coastal line on the site.

Formation of the Artillerie Inrichtingen

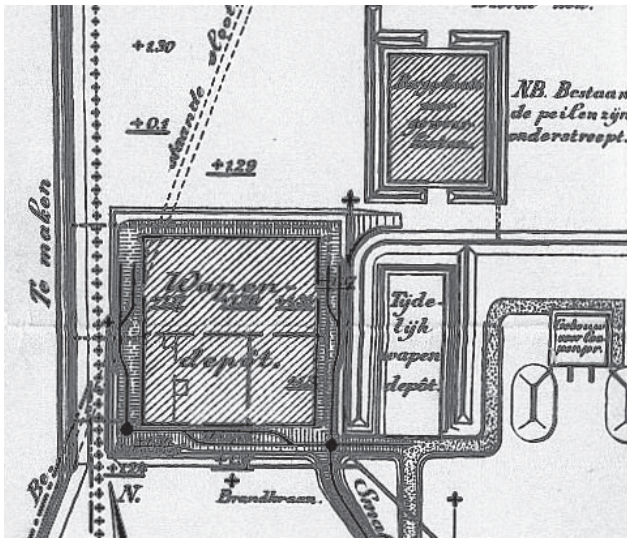
Construction of the Artillery Inrichtingen started on the site of the Hembrug terrain. Military production expanded due to the necessities of the First World War; it was concentrated along the Noordzeekanaal due to sea transport being the main form of logistic transport at that time.

Current Situation

The Hembrug terrain as it is today does not show many signs of the former land structure. Nonetheless, there are some traces that can be found and specifically in the Campus North area. Since the plot is positioned on both land parts it has a unique historical character that is tracable through the remaining water structure between the trees which originated at the beginning of the formation of the Hembrug area.

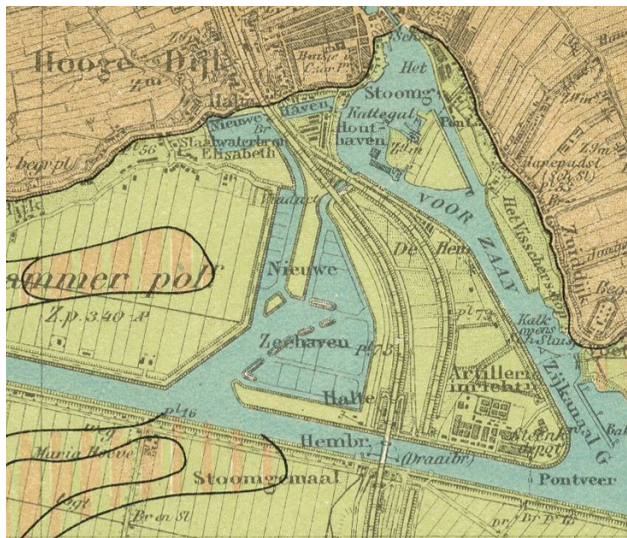
2.1.3 Soil analysis

Campus North has an interesting position within the setup of the land of the Hembrug Terrein. Together with Campus South, they are the only sites with buildings constructed on the original foreland and the later added polder. By analysing the soil composition, we aim to get an understanding of how this division influenced the site in the 19th century and will in the future.



Division of land

The former division between original and man made land goes directly through the Campus North. Even though it did not leave physical traces within the buildings it went through such as the weapon depot, it left traces of the separation line in the small water stream between the trees. On a building and layout level there is no evidence of the border.



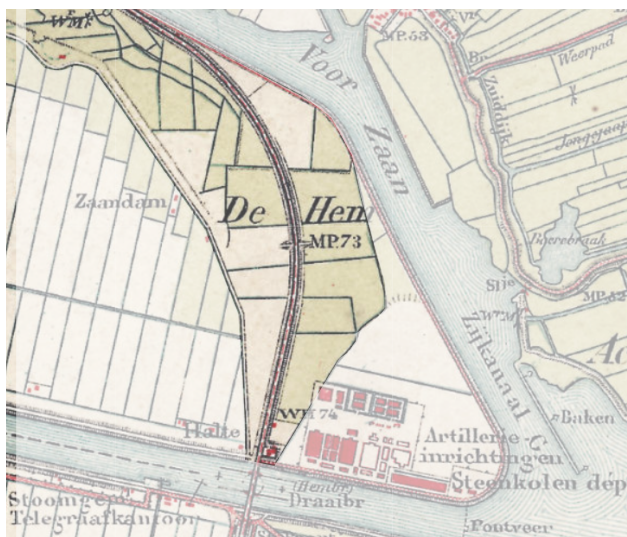
Density of soil

Understanding the composition of the soil and its level is of value for the designer in order to create a water plan for the urban plan.

Dry sandy soils are porous and water will pass through it easily, making it suitable for infiltration in contrast to compact wet soils that are dense and where water flow is more difficult.

Both sides of the site are located on originally wet soils since its base was considered as you sea clay that was removed from the former Zuiderzee.

source: Rijks Geologische Dienst, 1927



Foundations

Peat (a.) is a very poor subsoil and not ideal for support, as it is very compressible when it holds a lot of water but otherwise it can be very dry. This shifting make peat a unreliable base as foundations are most stable on soil that does not change structure.

Clay (b.) actually has a similar problem since the particles it is made of can shrink significantly when dry and is easily moved when moist.

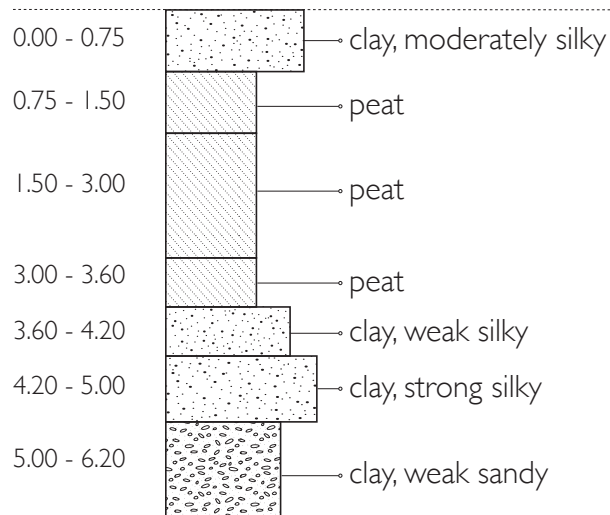
Luckily these type of soils are quite common in the area and the 'Amsterdamse Paal Fundering' was designed to endure these alterations.

A Foreland - de 'Hem'

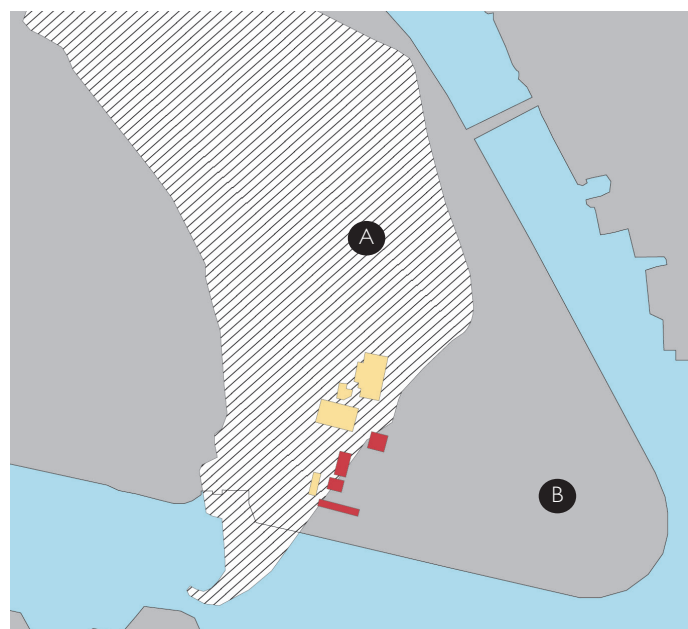
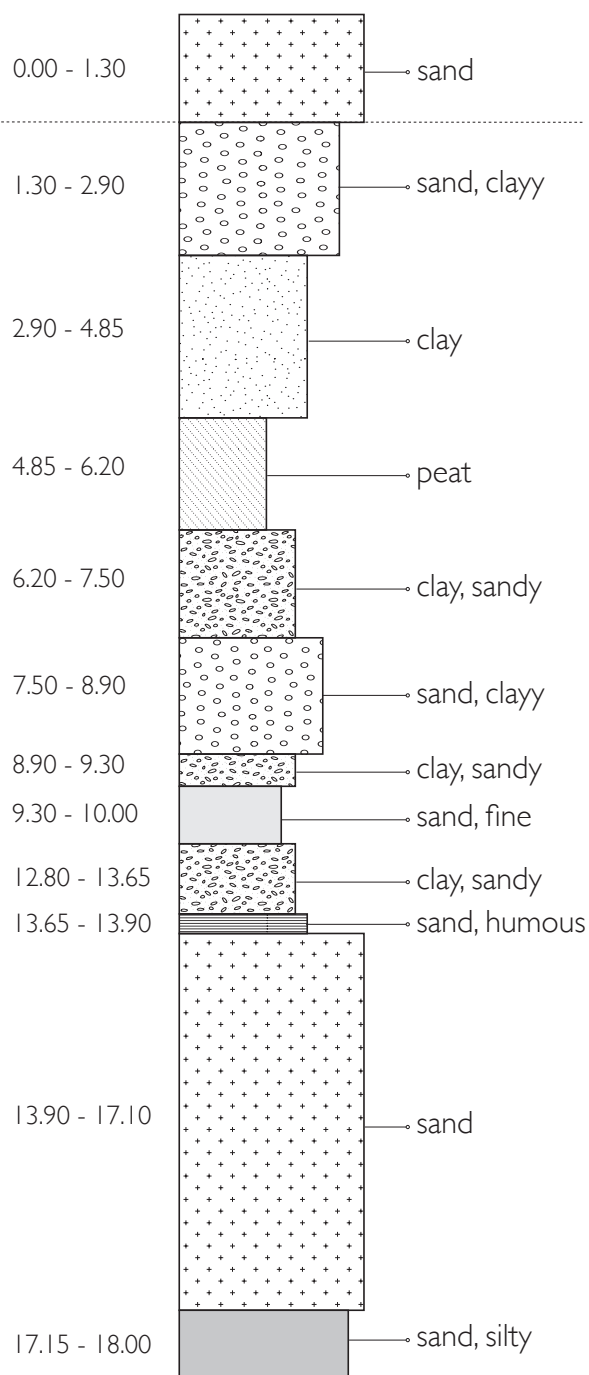
Drilling Sample from ground level to -6.20m
ground level -0.80 m compared to N.A.P.

N.A.P.

Nieuw Amsterdams Peil

**B** Polder 'Hembrug terrein'

Drilling Sample from ground level to -18.00m
ground level +1.30 m compared to N.A.P.



Source: DinoLoket.nl

Data en informatie van de Nederlandse Ondergrond

Campus North is a site where buildings are both present on the original foreland made mostly out of peat and the later added terrain (polder) made mostly of sand and clay. These different compositions of soil affect the use of land in terms of water structures and choice of foundation. Furthermore, it was observed that there is also a height difference between the two soil structures, making campus North one of the lowest parts of the area.

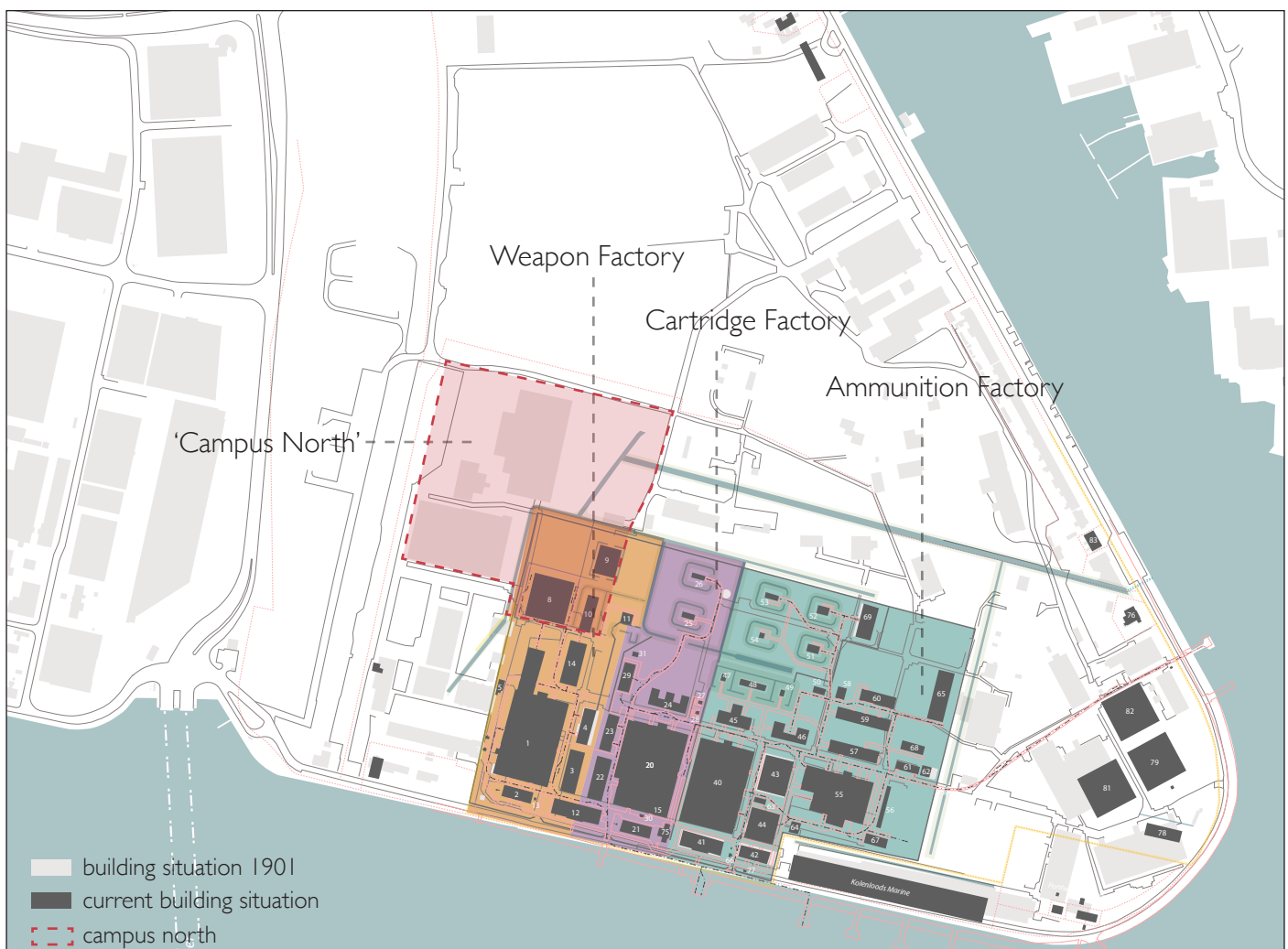
2.2 Setup of the site

2.2.1 Artillerie Inrichtingen

The factory complex in Hembrug was built in phases in 1895 on behalf of the Department of War and carried out under the direction of the First Engineer Engineer of the Genie. It was known as Artillerie Inrichtingen (AI) that starts production in 1901. The main production axis lines west to east, composing three central workshops, namely weapon factory, the cartridge factory and ammunition factory. Each of them function in separated zone with low iron fences. Independent entrance at the side of North Sea Canal and affiliated services such as administration, workshop, storage, assembly. The small railway network bind this area, supplying transportation service among factories, workshop, storage, and ships. The weapon factory incorporate 14 buildings more buildings, bordering the (former) railway line. M95 rifle were made, assembled

and stored here. The Campus North area located at the north of weapon factory, buildings and functions are changing during time. Four periods can be distinguished in the construction.

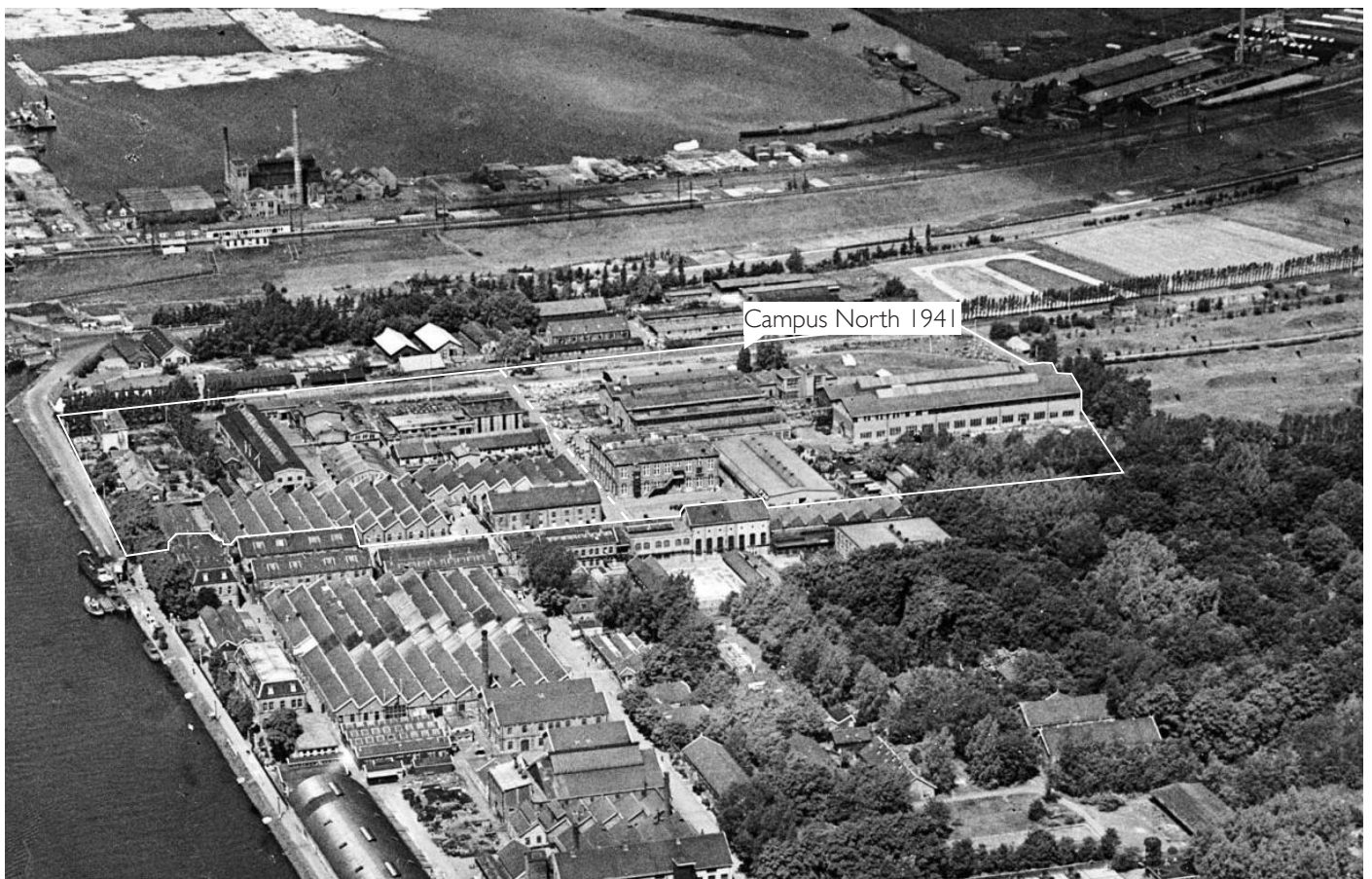
To get a better understanding of how Campus North developed over time and what its functional logic was the weapon factory zone was studied through a timeline.



Source: Steenhuis Meurs, 2010, *Cultuurhistorische Analyse Hembrug terrein*

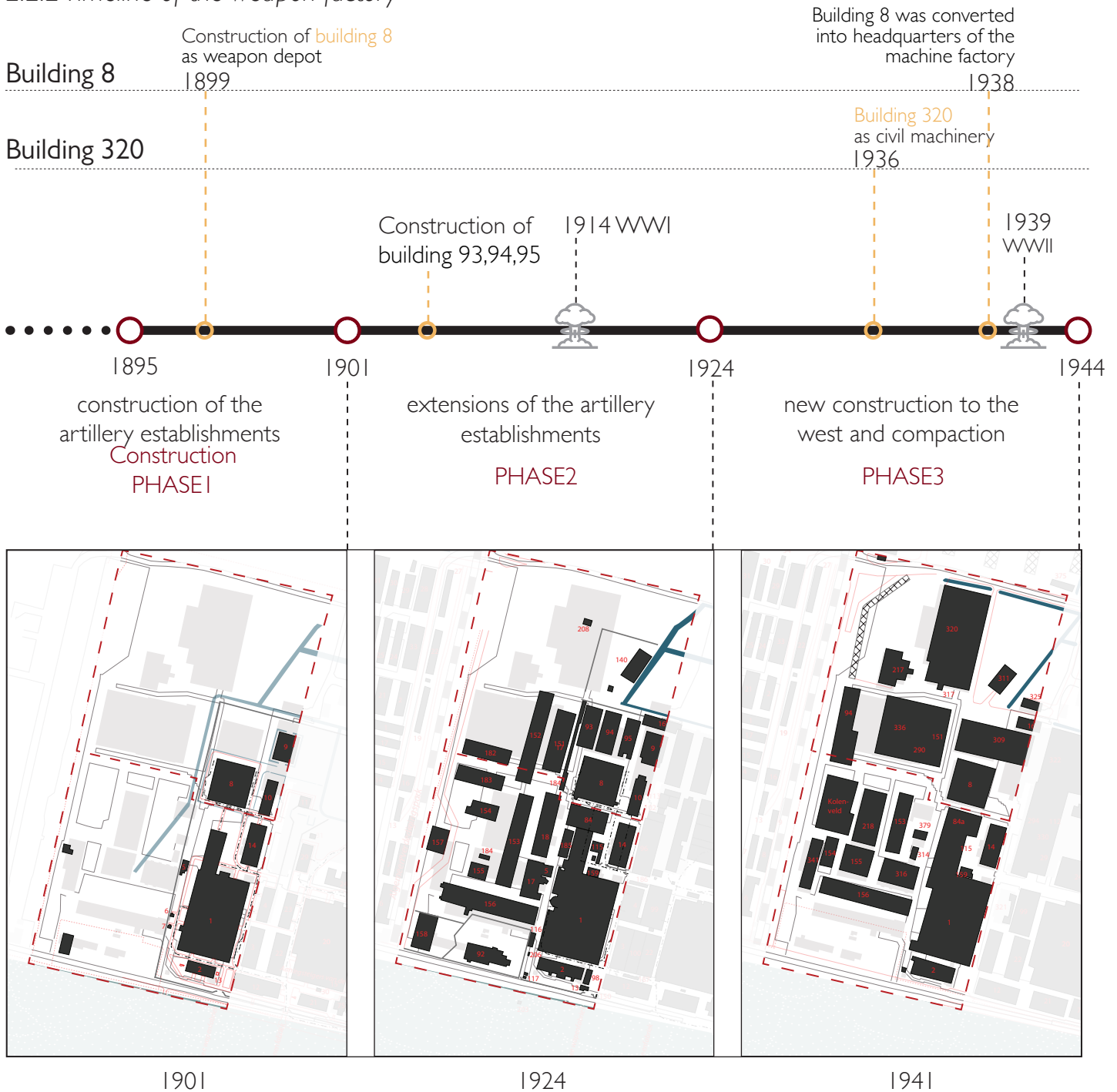


Aerial photo of the Hembrug site seen from the west, around 1924. [NIMH]



The Hembrug site, seen from the south-east, 1941. [NIMH]

2.2.2 Timeline of the weapon factory

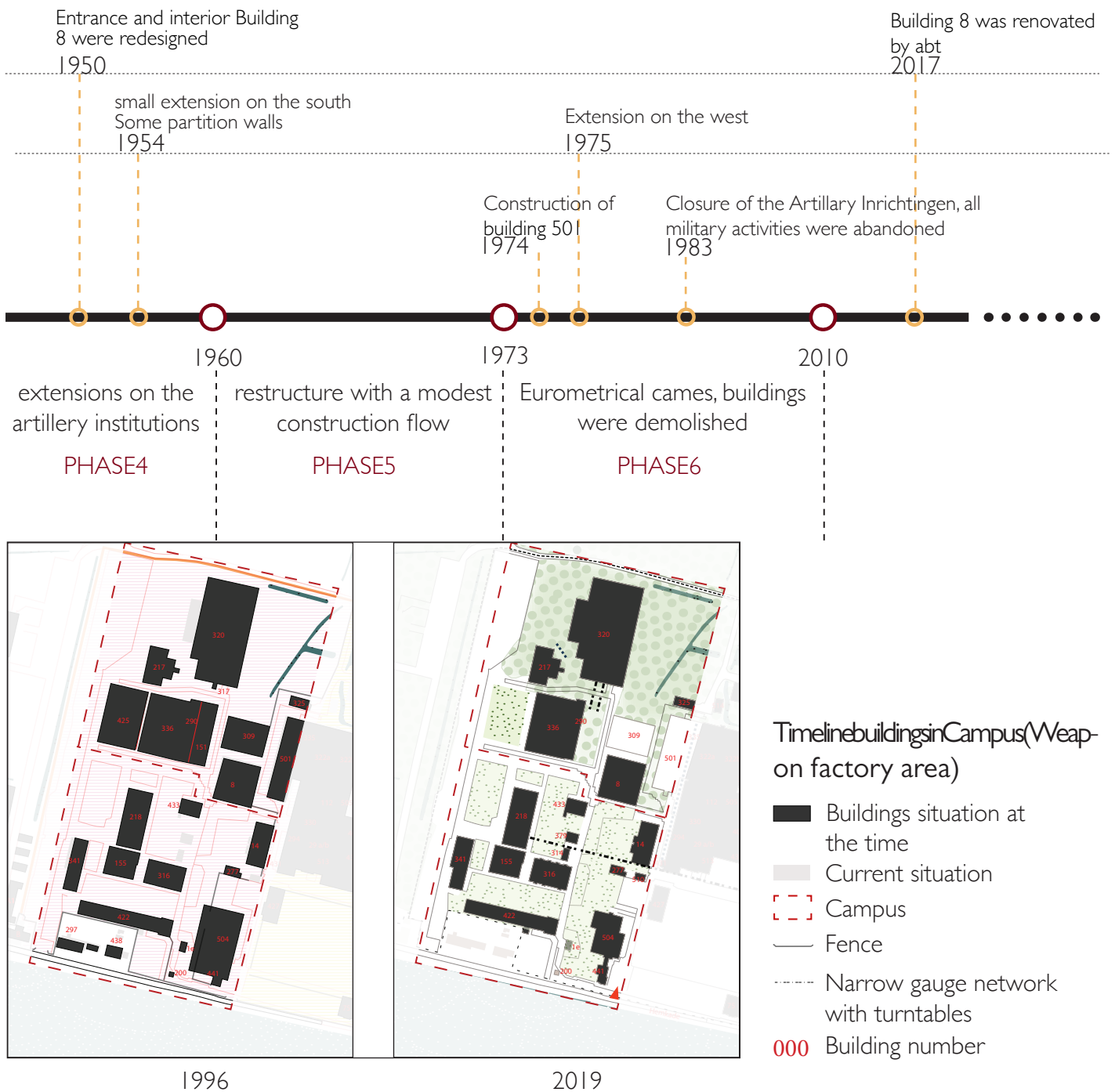


Building List:

- 1 WF workshop
- 2 Shaft building W.F
- 3 Workplace W.F
- 4 Administration W.F
- 5 Shed
- 6 Water meter
- 7 Porter's cottage
- 8 Weapon depotA
- 9 Storage place for gun boxes (sawmill)
- 16

10 Machine gun repair site

- 11 loop machine test building
- 12 Office building W.F. and P.F
- 13 Porter's house W.F
- 14 Warehouse / workshop W.F
- 84 Repair place for guns W.F.
- 93 Shed G, carpentry shop W.F
- 94 Shed F, warehouse for guns
- 95 Shed E, warehouse for guns
- 140 Oil storage
- 151 Workplace W.F.



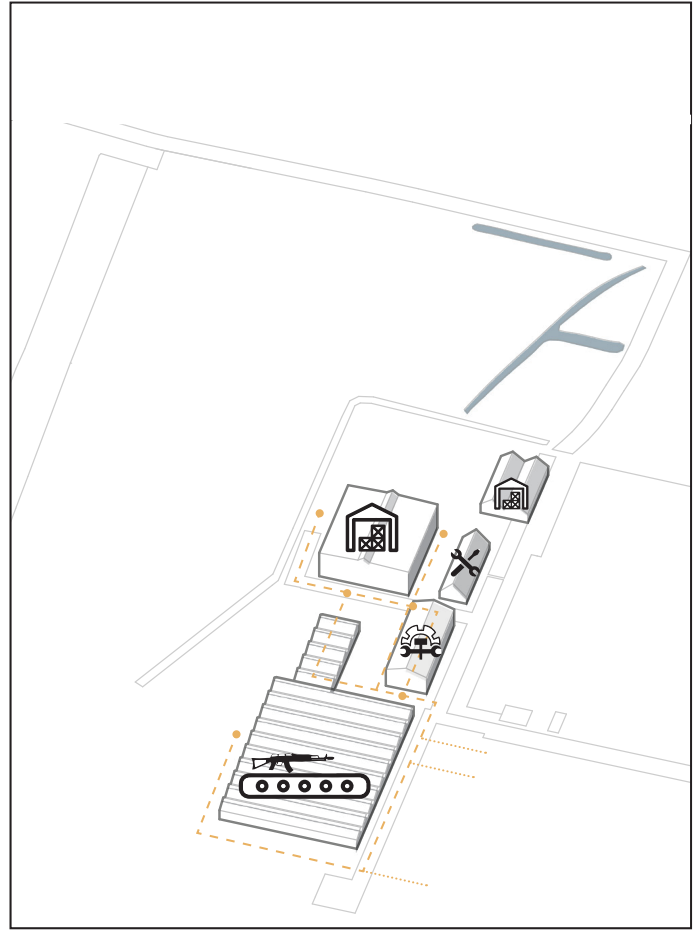
152 Laundry and changing room W.F.
 153 Wash and changing room W.F.
 154 Wooden shed, workshop W.F.
 155 Incinerator W.F.
 156 Smederij W.F.
 157 House H.I.J.S.M.
 158 House H.I.J.S.M.
 182 Grinding shop
 208 Oil cookery
 217 Manufacture of optical instruments
 290 Assembly hall and welding shop

309 Receiving and shipping warehouse/ canteen
 320 Machine hall
 325 Transformer building
 336 Assembly hall and welding shop
 425 Paint shop
 501 Production hall for medium caliber ammunition

WF: weapon factory
 PF: Cartridge factory
 MF: ammunition factory

Source: Steenhuis Meurs, 2010, *Cultuurhistorische Analyse Hembrug terrein*, p. 35-49

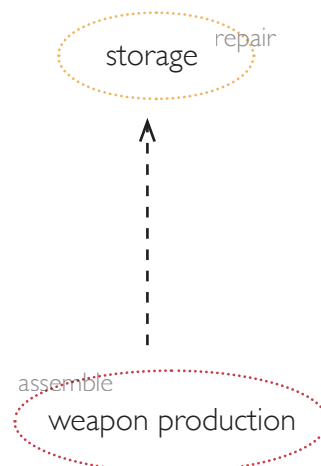
2.2.3 Historical production process

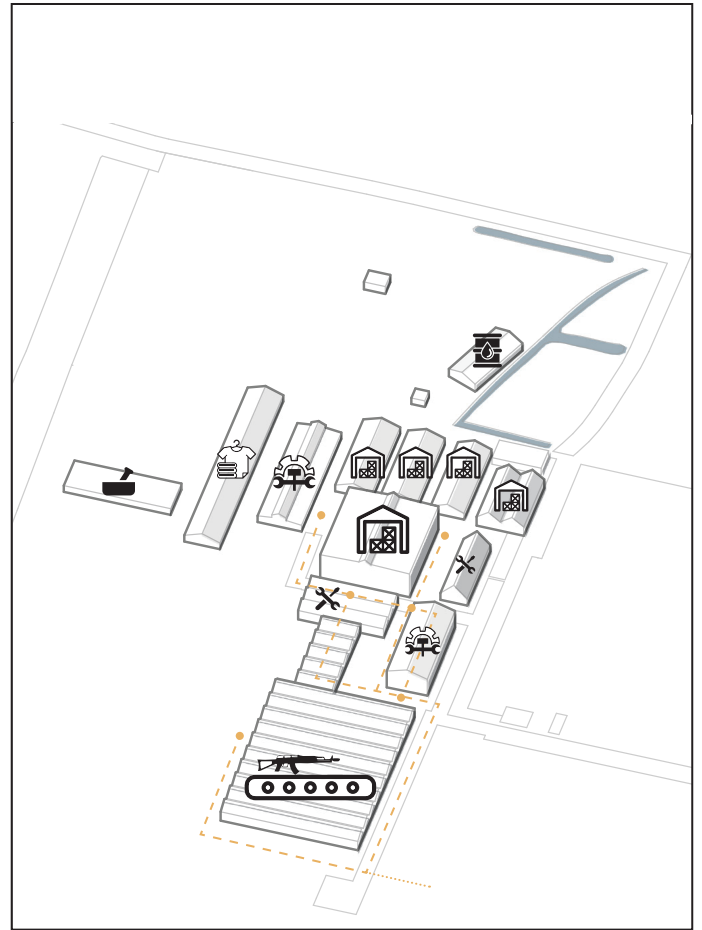


1901

Weapon factory Zone Establishments

During the construction of artillery establishments from 1895-1901, production was divided into three zones. The production of weapons took place in the western part. It was placed symmetrically with cartridge factory due to the collaborative production process. Besides, the weapon factory was set detached with the other factories from west to east because of a shooting range in between. Products produced in weapon and cartridge factory were tested there. The yellow highlight the shooting area. The Campus North area located at the north as storage serving of former weapon factory.

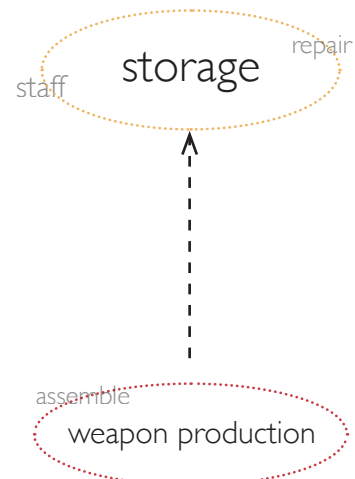


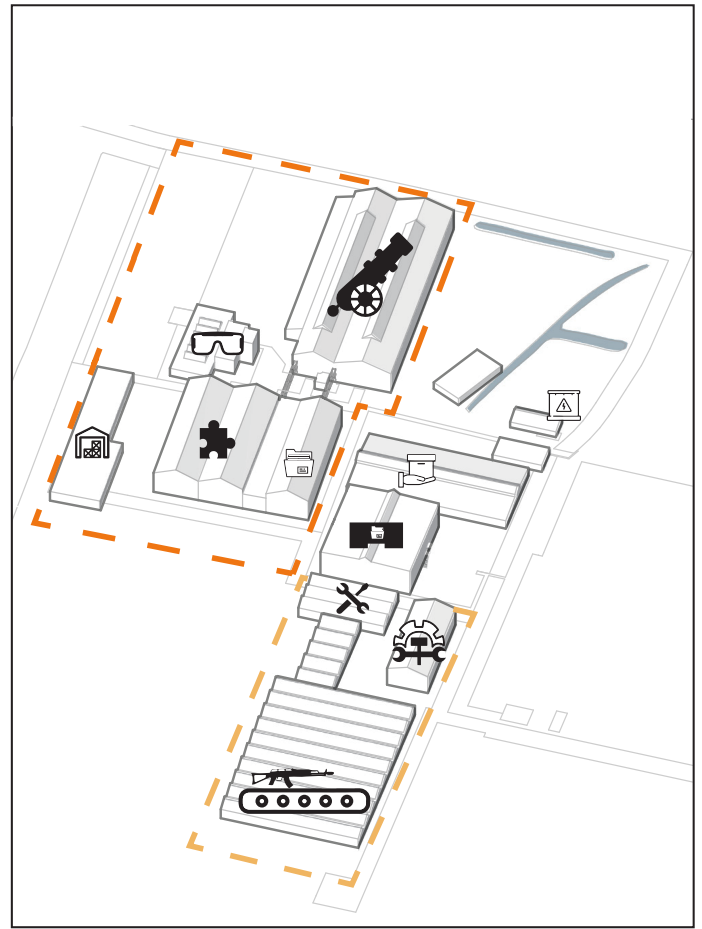


1924

Extension of Weapon factory

During 1901-1924, There was a great growth in Hembrug area due to the First World War in 1914. The compact military complex gradually developed into a complete factory city. Extension took place especially in the west. The AI started to make cannon, grenades, heavy mortars and explosives. The introduction of new weapons or ammunition was often a reason for the construction of a shed or factory. More warehouses and services were built for various raw material and new products.

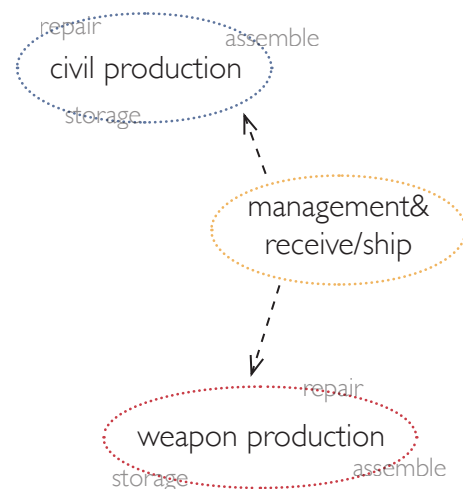




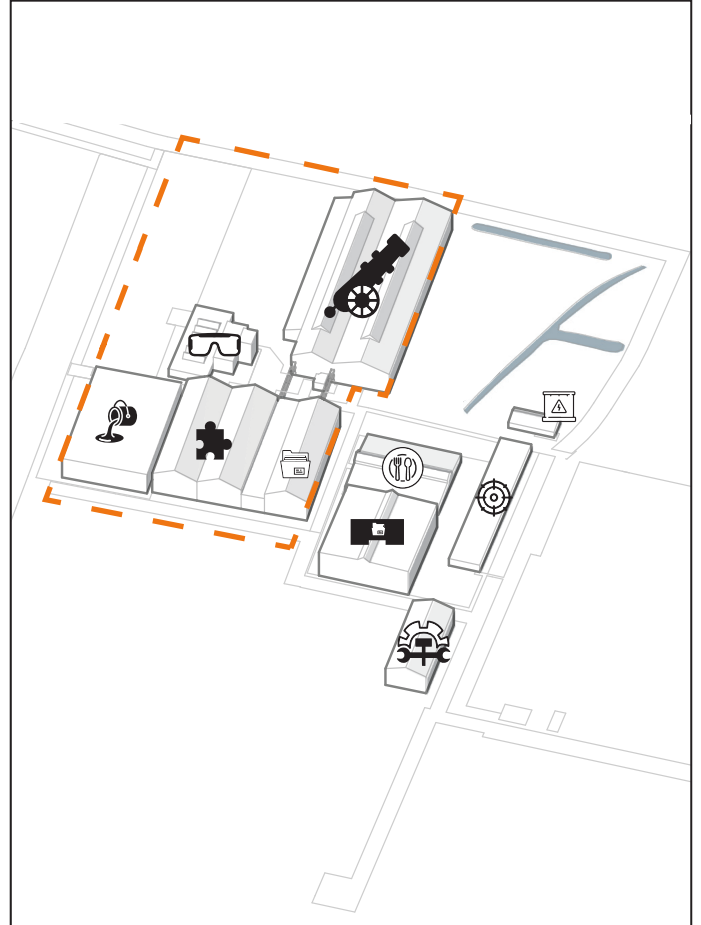
1941

Civilian Production Start

The plan to expand the factories were left in peace age and economic crisis after WWI. Meanwhile, the artillery establishments concentrated on civil production such as agricultural, machine tools, flashing, ironing and optical instruments. Some neutral warehouses in Campus North were demolished and replaced by larger new construction for new products. Civilian architecture entered the factory. The increase in scale was particularly visible in the western part. Machine hall 320 with a special steel frame became the largest factory building. It was a machinery factory that intended for civilian production. A separate production and processing line was set for each product.



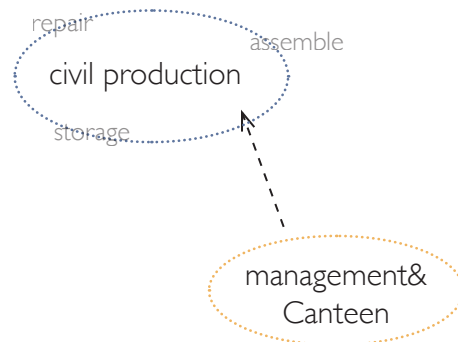
Source: Steenhuis Meurs, 2010, *Cultuurhistorische Analyse Hembrug terrein*, p. 43&44

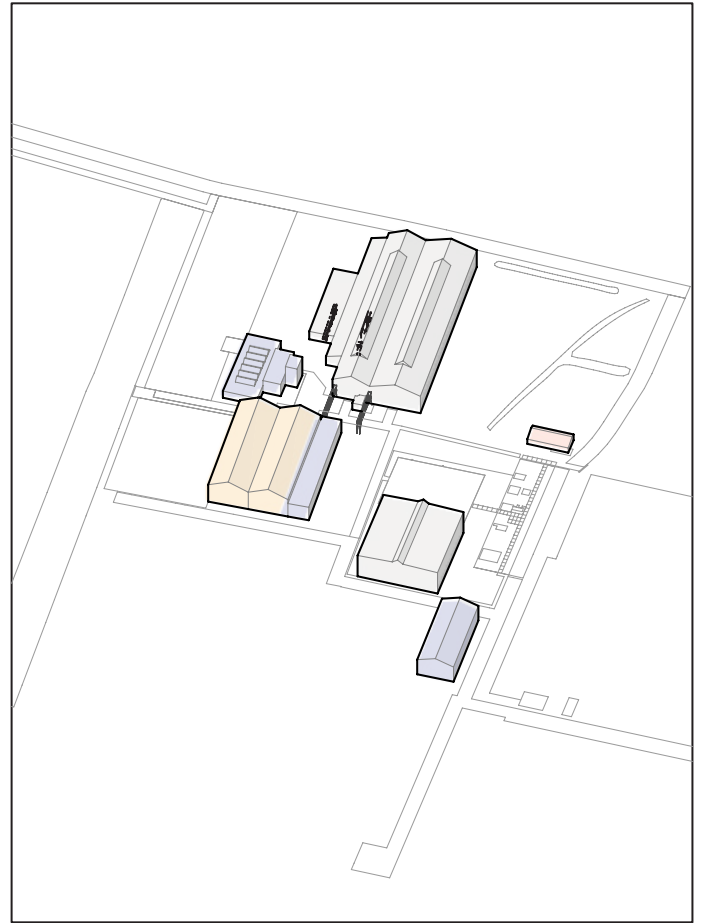


1996 NV Machine tools Industry

After WWII, military production demand reduced, mainly supply for colonial regions. The AI focus on civil and agricultural machinery 1930-1945. In 1950, the western area became mobilization complex where military vehicles, weapons and ammunition were stored. when an attack occurred there could be a quick response to mobilize the army. The greenery was used as camouflage.

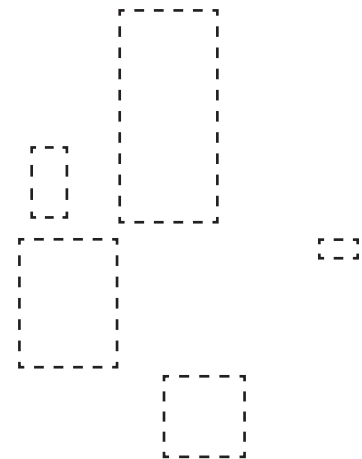
The civil production of the AI was separated in 2 independent companies of Eurometaal (established in the east) and NV Gereedschapswerktuigenindustrie (in the west). the old building I was demolished. After the relocation of NV in 1983, the place remained unoccupied.

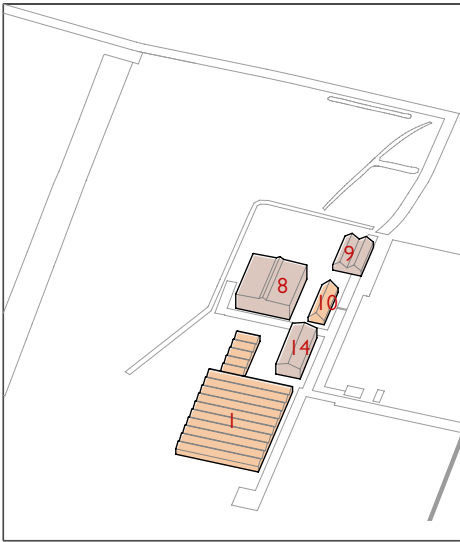




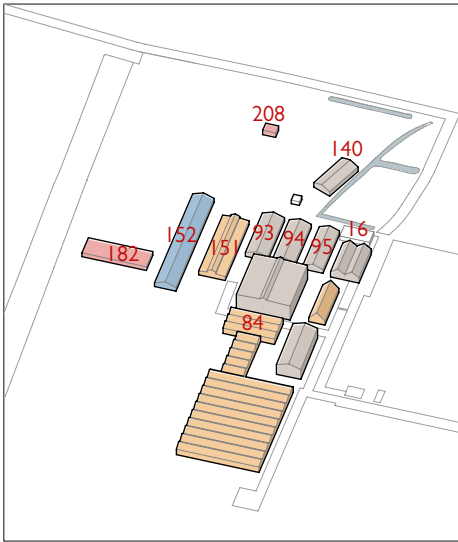
2019 Campus North

The Hembrug site nowadays, was divided into the three zones, waterfront, production area and forest area. Many buildings from the earlier construction phases have been demolished, leaving an open plan of mainly free-standing buildings in 'Campus North'. It is one of the area units on the basis of spatial and functional characteristics with its own identity.

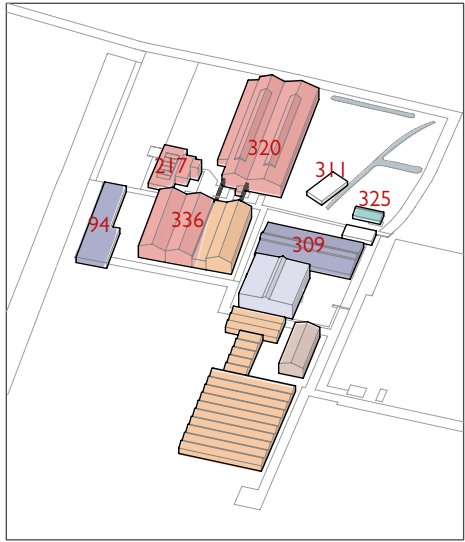




1901



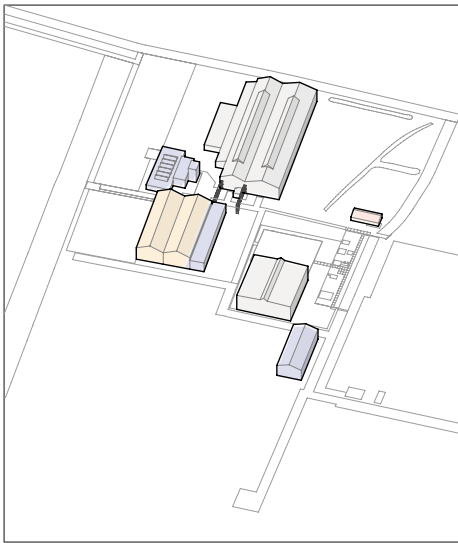
1924



1941



1996



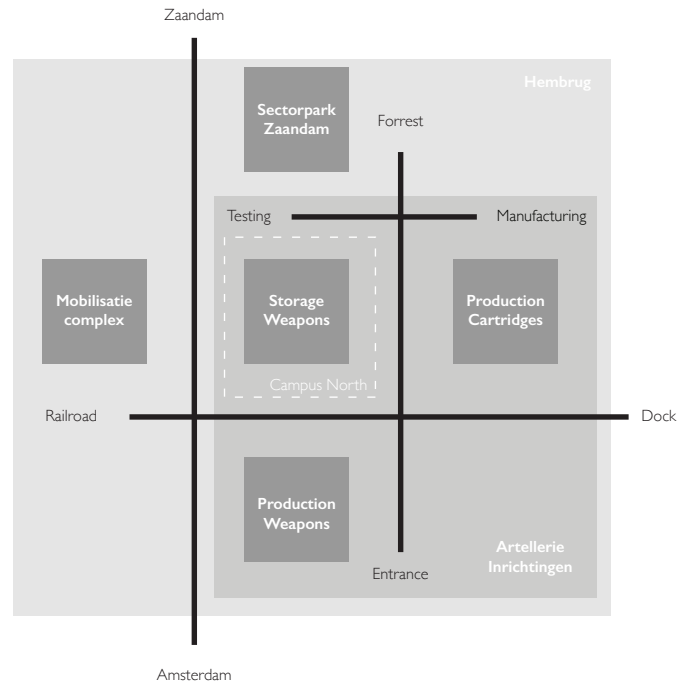
2019

Function overview

- Production buildings
- Workshop buildings
- Retail
- General services
- Office
- Storage buildings
- Utility building
- Unoccupied

2.2.4 Connection to Hembrug

Campus North is located on the original northwest corner of the Artillerie Inrichtingen. On the north side of campus north was originally Sectorpark Zaandam and was fenced off but now the main entrance road to the inner area of Hamburg divides the border. On the west side of the campus the original Railroad from Amsterdam to Zaandam was located which later became in use of the Artillerie Inrichtingen. Later, after the track was removed the area was fenced off and used as a parking lot for the companies with its entrance on the south side near the water. Related to the past, the current parking lot area had always worked as an own independent area so it does not belong to the actual Campus North area. On the south side of the area the border is defined by the original road structure along building 8. In the past this road was directly related to building 8 with the small track and the entrances that were located on the road. Because of this, the road itself belongs to the public space of building 8 and so also to the area of Campus North. On the east side was the original border between the production of weapons and cartridges and later between NV Gereedschapswerktuigen and Eurometaal. Originally on the location of the current road was a building connected to the Changeover zone, this is why the road itself is not directly related to Campus North. Also in the northern part the area, the east side of the water structure does not belong to the area of Campus North. The eastern part has from historic perspective much more relation with the plots in the woods because this was a closed off area and also the density of the plots and buildings have more resemblance with the plots in the woods. This all defines the border of Campus North. On the north side by the beginning of the road, on the west side by the small wall next to the parking lot, on the south side by the buildings and the end of the road which is included and on the east side by left side of the water; the line of Stelcon plates which are included in the public space and the start of the road in the lower part.



Position in Hembrug



Border of Campus North

To sum up, The layout of Campus North changes in every period along with the expansion, decline and transition of Hembrug military industrial. Generally speaking, military production boom took place during world war age. As the decline of weapon production in postwar period, the Machinery Industry was established in campus north. The neutral warehouses in Campus North were replaced with secondary functions, serving the newly built Machine Hall. The civilian industry dominated the production since the full suspension of the military industry. After the relocation of NV in 1983, the place remained unoccupied. Some parts such as building 309 and 501 finally being demolished by new developers afterwards. The role of Campus North changed from the back of the weapon factory as the storage area to civil industrial production core, further being transformed to one of the main the entrance in current situation.

2.3 Site layers

The name of Campus North refers to the Latin word campus which means open field. So important for Campus North are the present layers in the area beside the buildings, namely: the green, water, infrastructure, axes and public space.

2.3.1 Green / water

Site I-1000

Campus North is on the border of the former industrial area and the forest in the north. Because of this the area can be divided in two parts; the upper part, where building 320 belongs to, is much more densified with trees and the lower part, where building 8 belongs to, has a much more open structure.

The green dominates in this area because more than half of the area is planted with trees and grass. Most important element in the green is the big tree in front of building 217 that is over 80 years.

In the northeastern part a small water structure can be found. The diagonal of this structure is located where the original border of the Hem was. The left side of this structure belongs the public space of building 320 while the other side has much more relation with the sheds in the woods on the other side of the road because of the continuous water structure and the smaller grain size of the buildings.

The road structure, which is made of stelcon plates, divides the area in three parts. There is a division made in the road weight with the use of different numbers of plates. Three plates for the original main structure, two plates for the secondary structure and one plate for slow traffic. A vowel path is placed next to the stelcon plates to give the pedestrians their own place.

The old foundation of building 309 works as an public square in front of building 8. Small walls around this foundation are working as a border so it feels like the area is semi-public because it belongs to building 8.



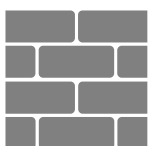
59 %



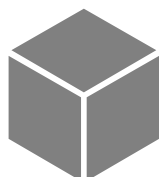
24 %



7 %



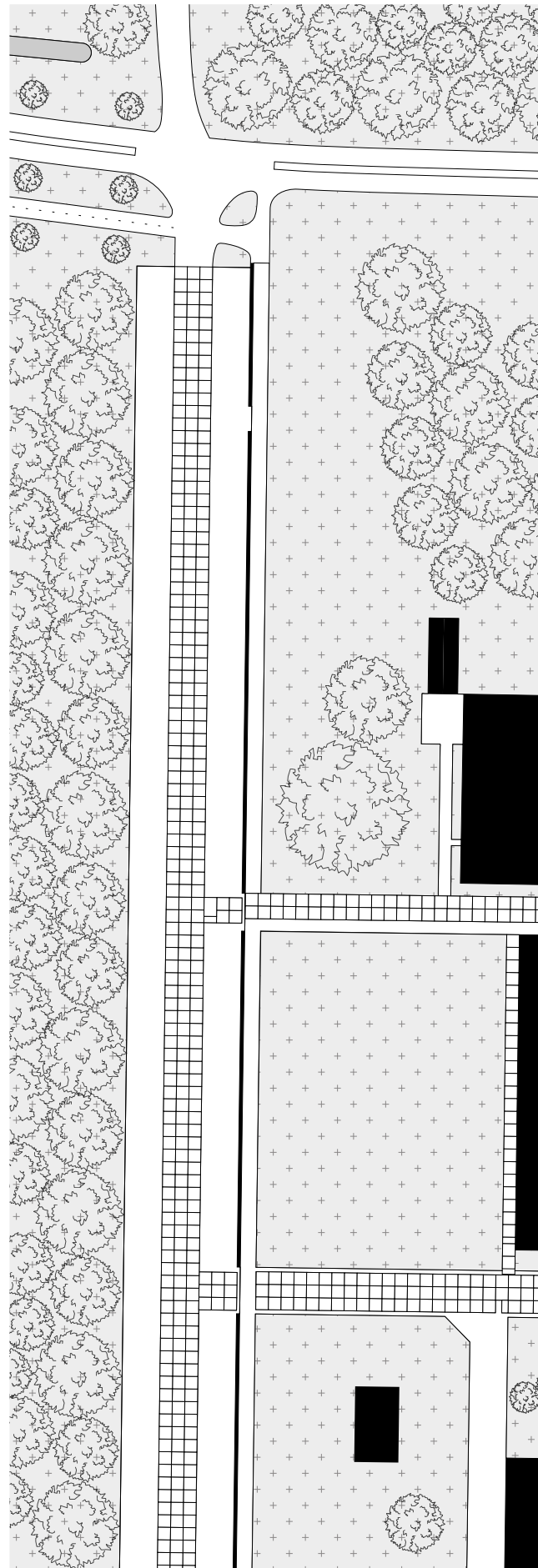
6 %



3 %



2 %





Campus north 1:1000



2.3.2 Infrastructure

In the original setup of the site in 1901 Campus North could be entered from the south. Building 8 was the main building in that time and the roads were going around the building because there were entrances on all sides. From this rectangular shaped road smaller roads were going to other buildings which were also located in Campus North in that time. (fig 1)

After the railroad became in use of the area the horizontal structure expanded towards the railroad. Also the northern area where now the forest is located was started to develop. A road was going alongside the railroad and small roads were added following the original polder structure which was following the border of the original peninsula. (fig 2)

Around the second world war almost the whole lower part was built with roads going around all the buildings. By the demolishing of some buildings near the railroad, the main horizontal road could be extended and became more prominent. The connection with Campus South was improved and the main road from the entrance extended towards the north and became the main road to the forest. Also the roads extend more in direction of the forest. Bunkers were placed in the forest and the diagonal road in the western part was going also alongside a bunker. (fig 3)

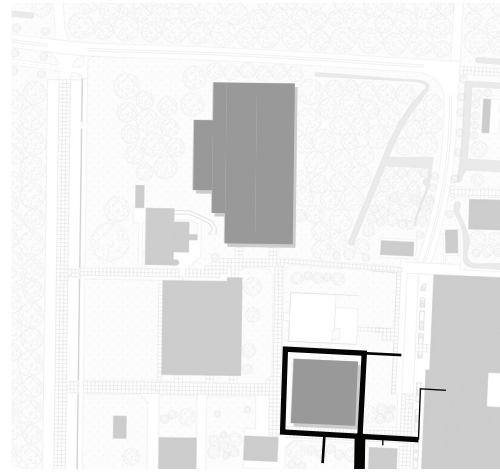


fig 1: Infrastructure 1901



fig 2: Infrastructure 1924

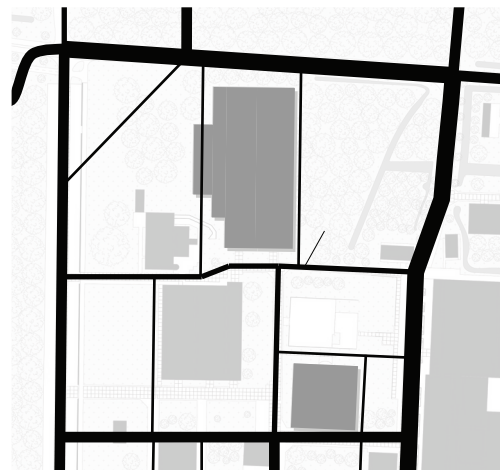
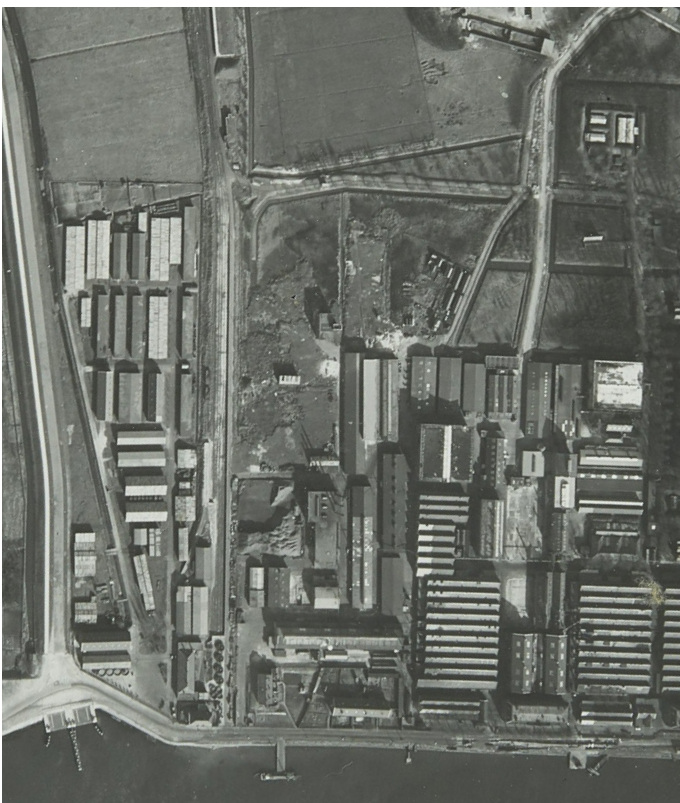


fig 3: Infrastructure 1941



Campus area around 1920-1950

source: Nederlands instituut voor Militaire Historie, 1920-1940



After the Artillerie Inrichtingen split up in different companies, the infrastructure was also much more split up. The old railroad was transformed in a parking lot and was detached from the other roads and had his own entrance near the water. Also the east west road alongside building 8 was partly shifted towards the buildings in the western part. A building was placed on the former main road and a smaller road was going around this building. The road, which was going through the former mobilization complex, became the main entrance road to the forest. (fig 4)

After all the companies left the area the first alterations were made. The building that was blocking the former main road was demolished and the east west road was again attached to the parking lot. Also the parking lot got his entrance at the north part back and the small forest road became more overgrown. (fig 5)

At the current situation a new main entrance is created. From the roundabout this road goes alongside the northern part of Campus North and is connected with the former main entrance road. This road is now part of the main infrastructure to access the whole Hembrug area. Also the old forest road that was going to the bunkers has totally disappeared and because of all the fences and gates the area is detached from the forest (fig 6)



fig 4: Infrastructure 1996



fig 5: Infrastructure 2010

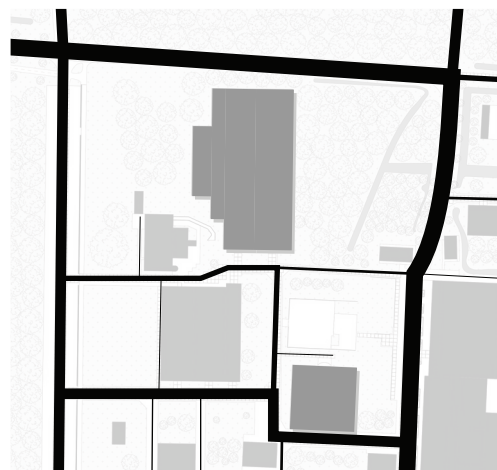
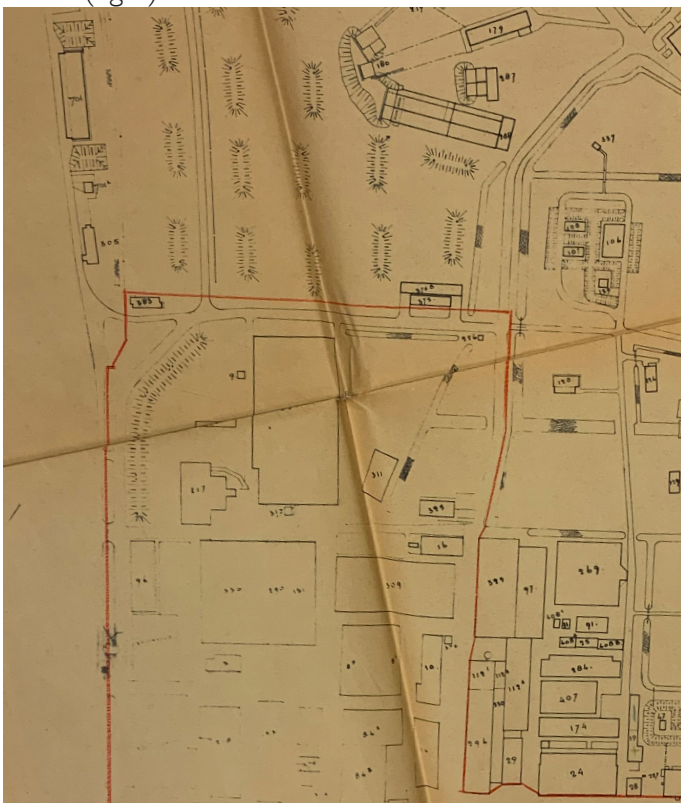


fig 6: Infrastructure 2019



Situation of campus north in 1940
source: Nationaal Archief, 1940



2.3.3 Axes

The clear rational grid, based on the water structure, which can be found all over the site is also visible in Campus North. All buildings and streets are based on this grid of horizontal and vertical lines. Only axis 1 (fig 1) is not based on this grid and crosses the area diagonally. The axes are all based on historical structures and can be divided in three groups.

The first generation axes are based on structures which were already there before the deployment of the area by the Artillerie Inrichtingen. Axis 1 was the original border of the peninsula of De Hem. (fig 2) Axis 2 was the original railroad between Amsterdam and Zaandam, which landed on the point of the original peninsula. (fig 3). Axis 3 was part of the original polder structure to drain the created polder. (fig 4)

The second regeneration axes descend from the original setup of the site. The axes marked with 4 are the original west border of the terrain and the main entrance road of the weapon factory (fig 5). Axis 4 was the original back of the terrain. It was bounded by water structure, which was created for the safety plots in the woods (fig 6). Both axes 6 can be related to the original main cross structure in the original northern part of the weapon factory (fig 7).

The third generation axes can be traced back to the later expansions and redevelopings of the area. The cross structure of the axes 7 was the main structure of the forest to connect all separated parts of Hembrug in the center (fig 8). Axis 8 was the connection with the forest in the north where all the bunkers were located (fig 9). Axis 9 was made when buildings were replaced and a new street was created which faces the middle of building 8 (fig 10).

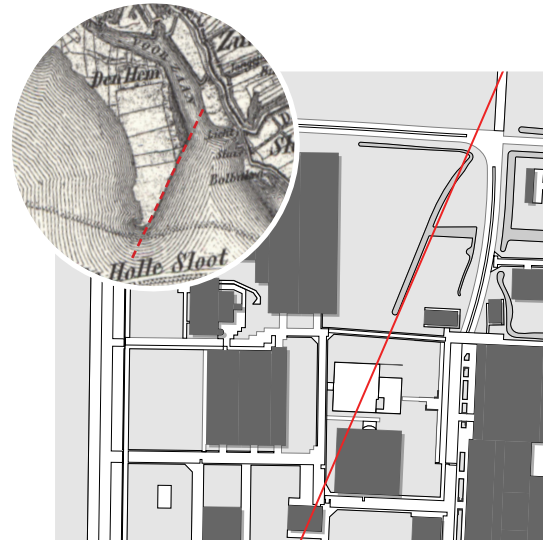


fig 2: Original border
source: Het Kadaster, 1851

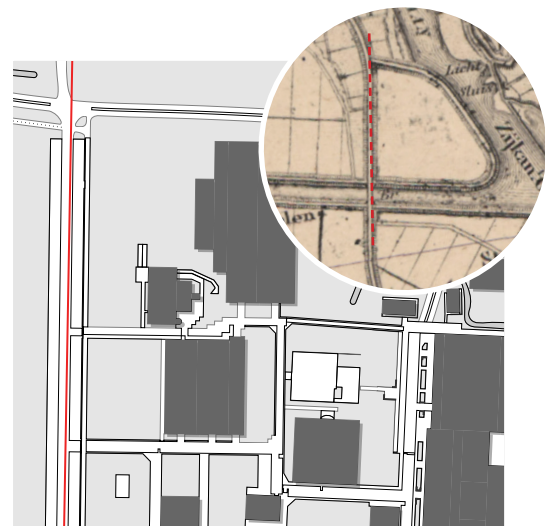


fig 3: Old railroad
source: Het Kadaster, 1882

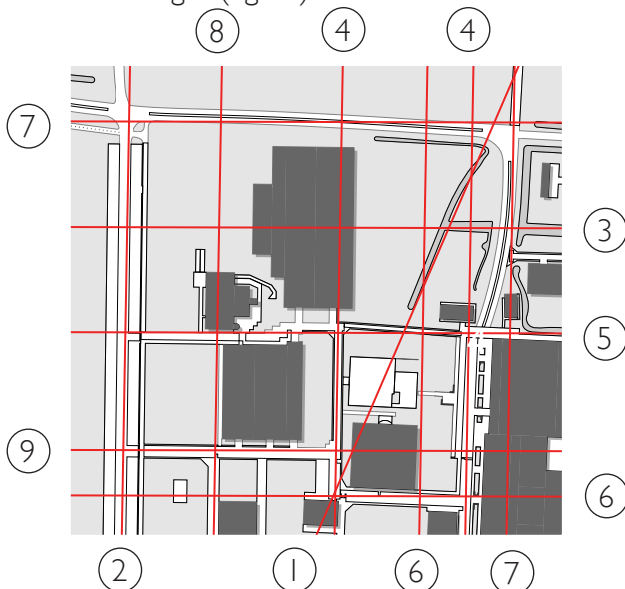


fig 1: Structure of Campus North

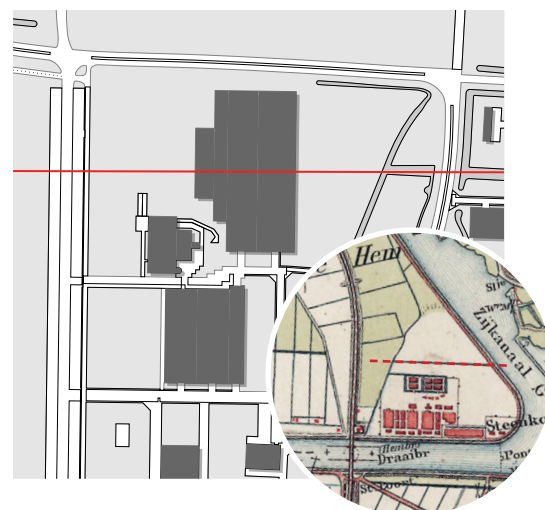


fig 4: Polder structure
source: Het Kadaster, 1898



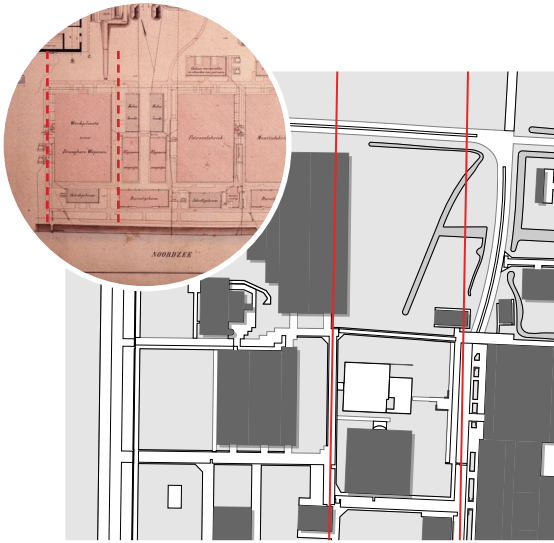


fig 5: Original west border and main axis
source: Stellingvanamsterdam, 1898

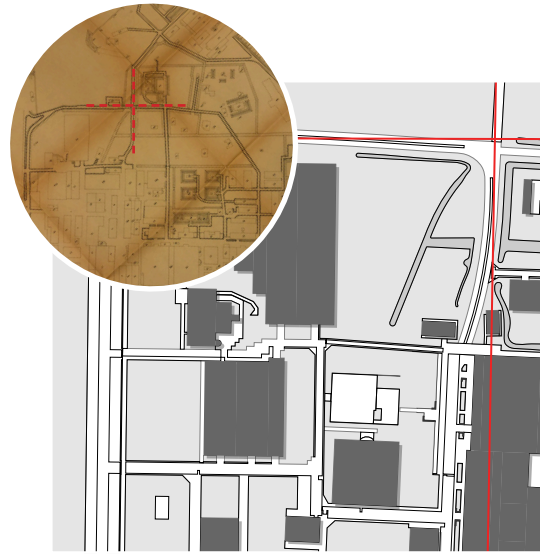


fig 8: Main structure forest
source: Nationaal Archief, 1937

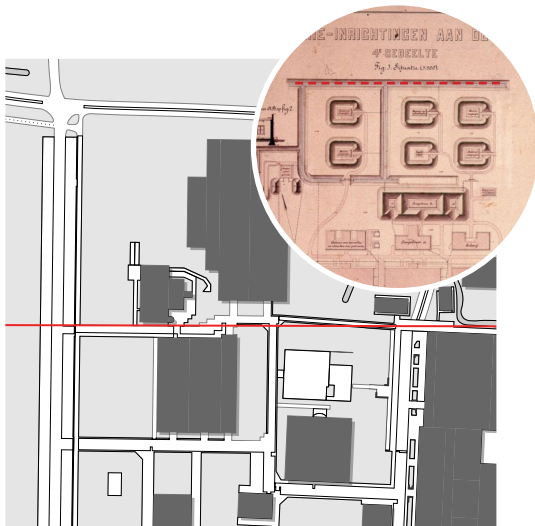


fig 6: Water structure
source: Stellingvanamsterdam, 1898

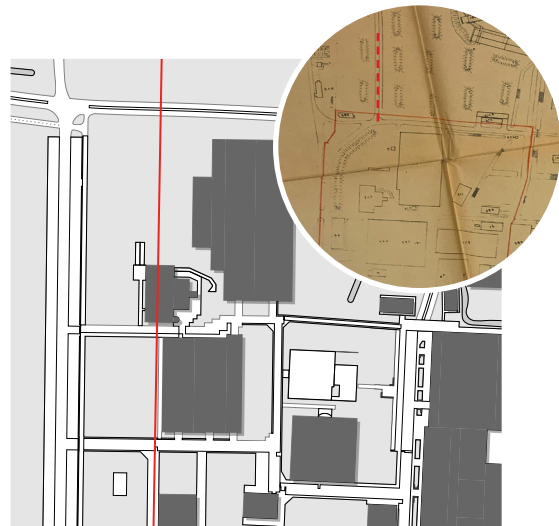


fig 9: North connection
source: Nationaal Archief, 1940

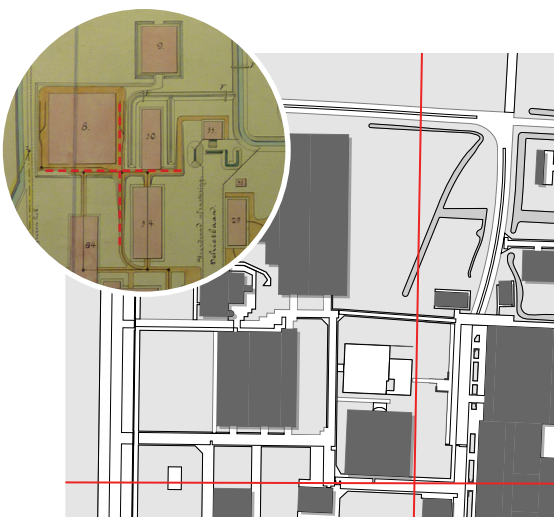


fig 7: Main structure campus north
source: Noord-Hollands archief, 1903

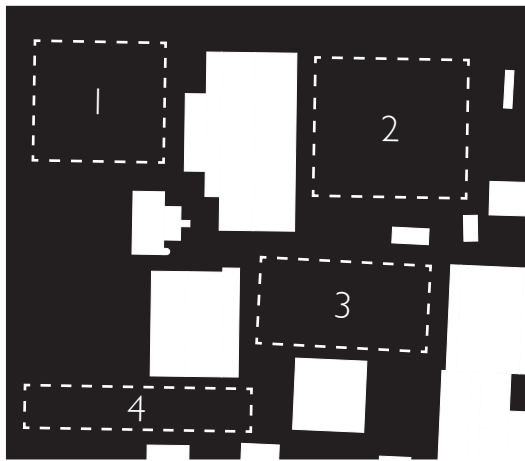


fig 10: New monumental axis
source: Nationaal Archief, 1963



2.3.4 Public space

Both building 8 and 320 have 2 public spaces related to the building. When entering Hembrug you can see the first public spaces, a big open space with some trees next to building 320. Building 320 and the big monumental tree in the south define its borders. On the other side of the building there is a forest area with the original water structure hidden between the trees. The borders are defined by the main road and building 320. The big open space defined by the old foundation in front of building 8 is the third open space. On the border with the forest area there are also some trees located and green alternating with concrete. The last public space was the original square between building 8 and the old railroad. It is now mainly a road but the green plots on the south side are also part of this original square.



Open space



1. Open space between building 320 and the big tree



2. Open space between building 320 and the water structure



3. Square in front of building 8



4. Open space west of building 8

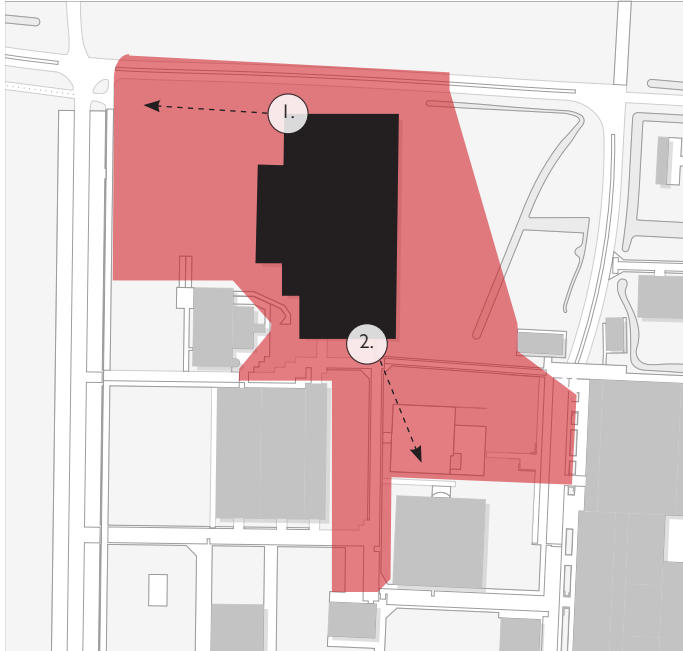
In conclusion we can trace back with use of the layers the development of the area. The structures, which are still visible in the layers, are telling the story of this development. The original and man made landscape where essential and gave the first direction and later the rational organized structure became the main factor for defining the area.

2.4 Atmosphere

Characteristic for Campus North is the contrasting atmosphere. On the South side the open campus structure and on the north side the dense forest area. The experience of the site distinguishes itself by long view lines, clear defined borders, design of the street profiles and characteristic spatial elements.

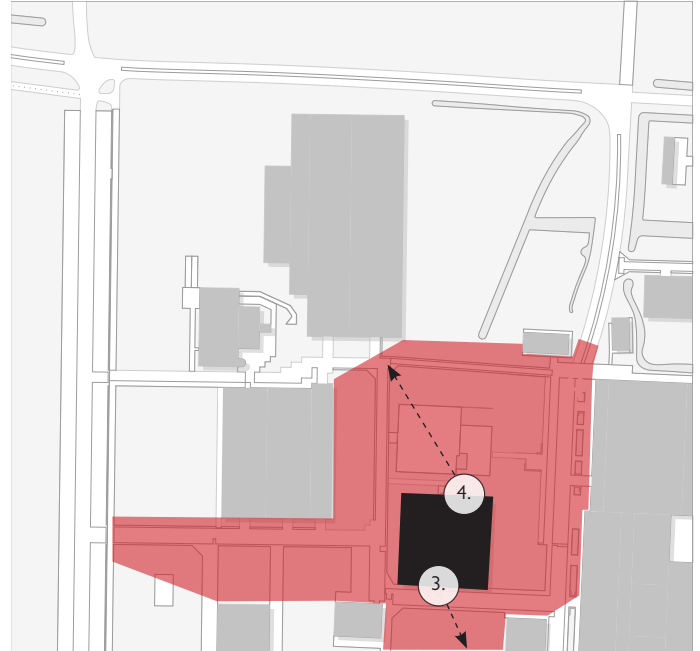
2.4.1 Sightlines

Machine Hall



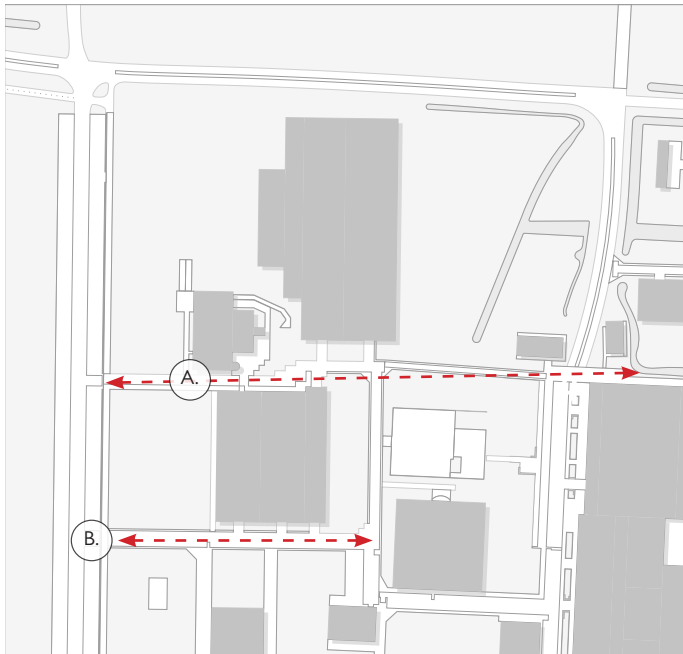
The sightlines of the machine hall have different characteristics on each side. From the west it has the main entrance of the Hembrug terrain, as seen in picture 1. The forest here serves as the border to the campus and the start of the Plofbus. In picture 2 it is noticeable that the south side has the campus feel and

Weapon depot

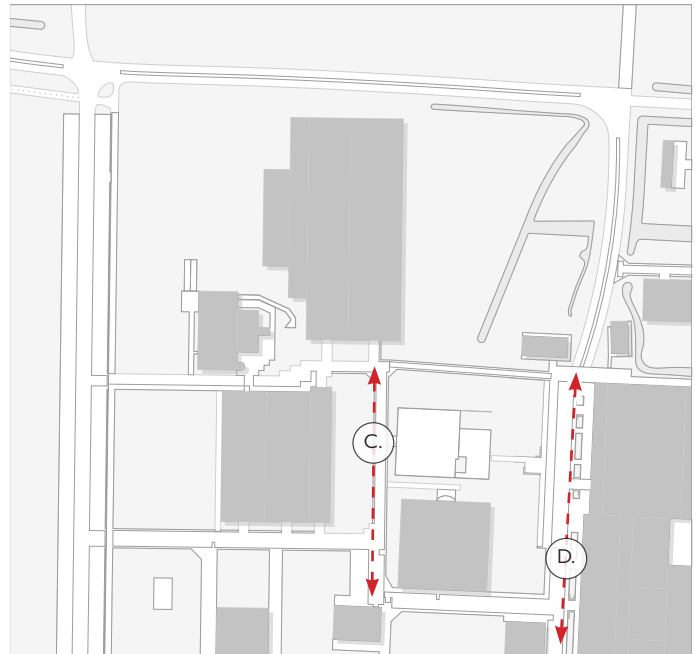


a full view of the weapon hall. Linking the two buildings by sight. Picture 3 illustrates the calm and green back of the weapons depot. Where it has the feel of a backyard. Pictures 4 reconnects the machine hall to the weapons depot by side. Only dividing them by open space.

West - East sightlines



North - South sightlines



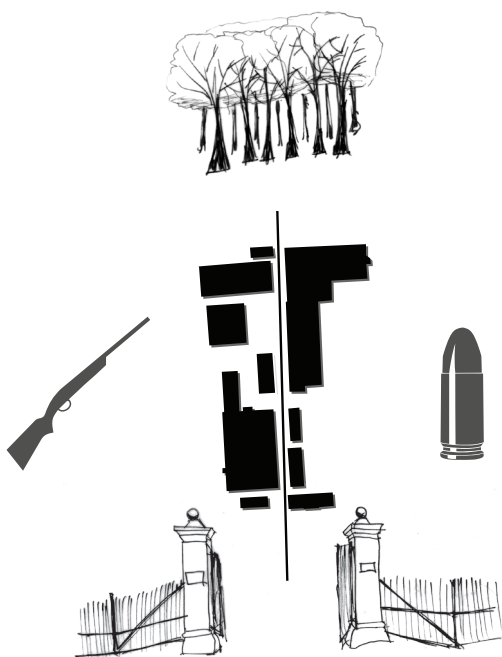
Both A and B are secondary routes from the entrance of the Hembrug site. Line A goes through the entire Campus North and B has the importance of highlighting the weapons depot. Sightline C contains itself in the campus North going from the machine hall to a building that indicates the end of the campus. D has a

longer sightline and goes in the other direction of the C, having the mark of the end of the campus on the north side.

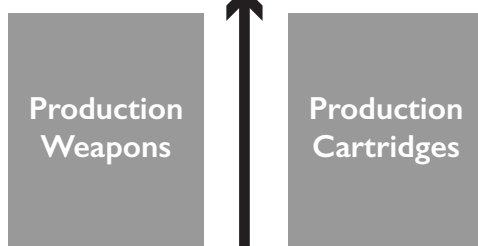
2.4.2 Borders

East border

The east border of Campus North is the extension of the main axis where the original main gate was of the weapon factory. It was the route from the original entrance to the forest in the back. Originally this was a continuous line but later a building that was placed next to the cathedral complex halfway blocked it. This building was later demolished to emphasize this original main road and to improve accessibility of Hembrug. A trace of this can be found in the middle part, where asphalt is placed on the original foundations so the borders of this building can still be seen. During the Artillerie Inrichtingen, this border divided the complex in a production zone for weapons and a production zone for cartridges and later it was also the border between Eurometaal and N.V. Gereedschapswerktuigenindustrie Hembrug. Nowadays this road is the main access road of the area so a lot of traffic is passing by.



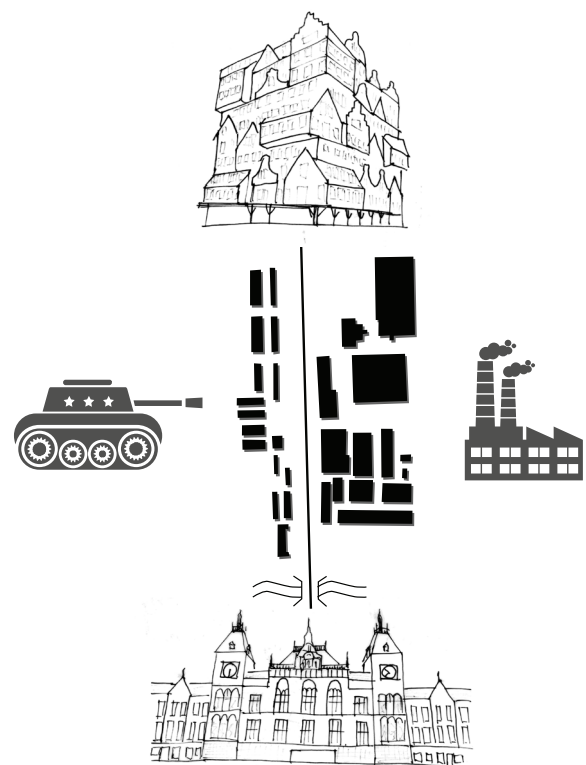
Forrest



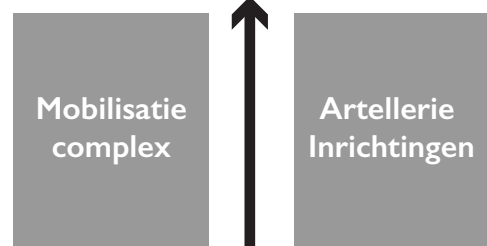
Entrance

West border

The west border of Campus North is located where originally was the railroad between Amsterdam and Zaandam. After the first Hembrug was replaced the railroad became vacant and was taken into use of the Artillerie Inrichtingen and became a private railroad for the transportation of materials and goods. On the other side of the railroad had the Mobilization Complex their terrain with a lot of sheds. At the moment this railroad is not there anymore but the area is used as a parking lot for visitor of Hembrug.



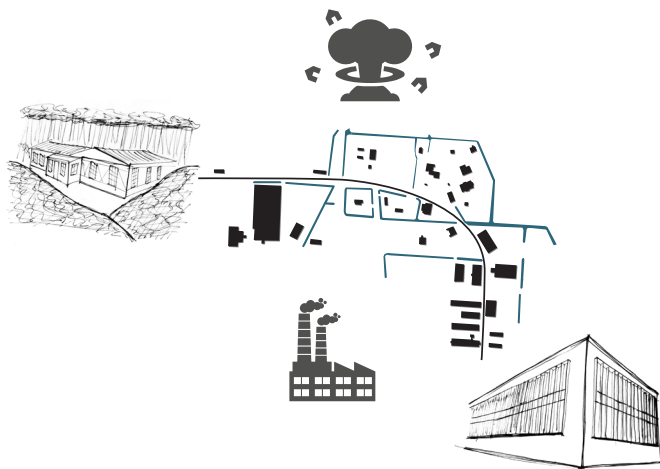
Zaandam



Amsterdam

North border

The north border of Campus North is the main access road to the area, it is really the entrance of the terrain. In the past this was not a very important road. It was just an extension of the road that was going into the woods for more explosive products. Later when the area extended northward the road became more important for the accessibility of the forest. Before the roundabout was created the road was going through the former Mobilisation Complex and this was the main entrance road for the northern part.



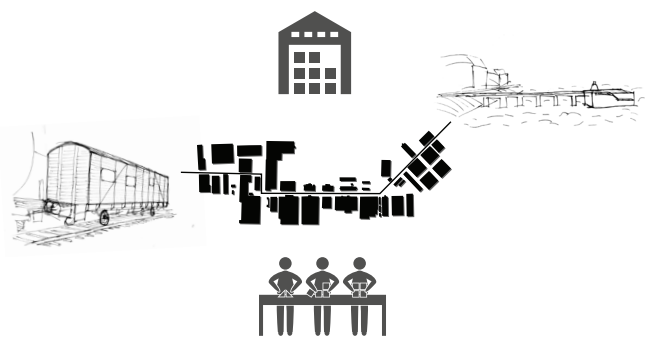
Testing



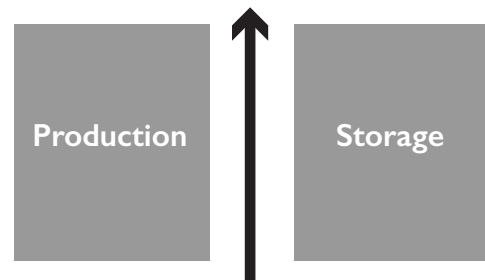
Manufacturing

South border

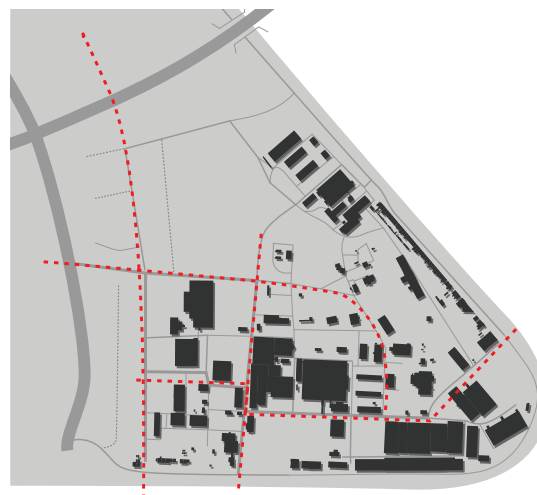
The south border of Campus North was originally the connection between the railroad and the rest of the terrain. This axis is not a straight line because it naturally grew along the buildings. In the part around building 9 the small track was also located and connected with the dock. Later when the railroad became in use the road extended along building 8 in the direction of the track. Originally this axis to the railroad was straight but it changed to the center of building 8 and emphasized the monumentality of building 8.



Railroad



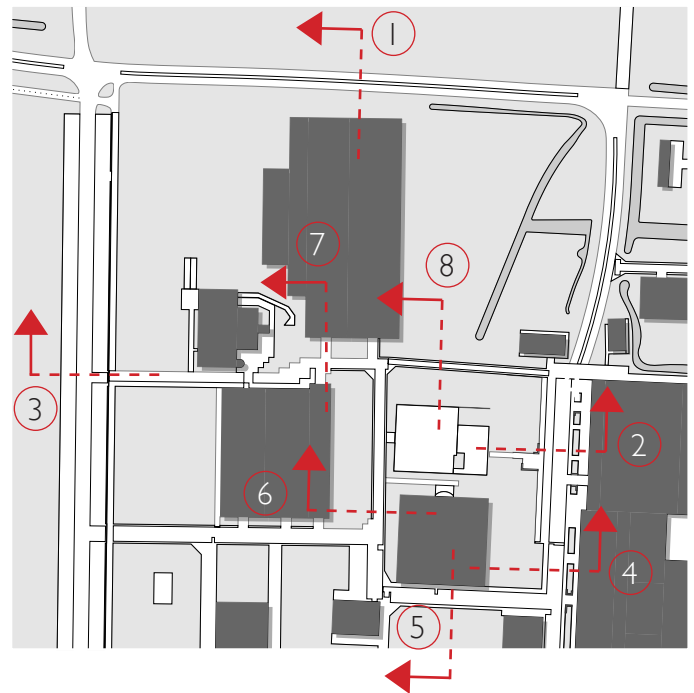
Dock



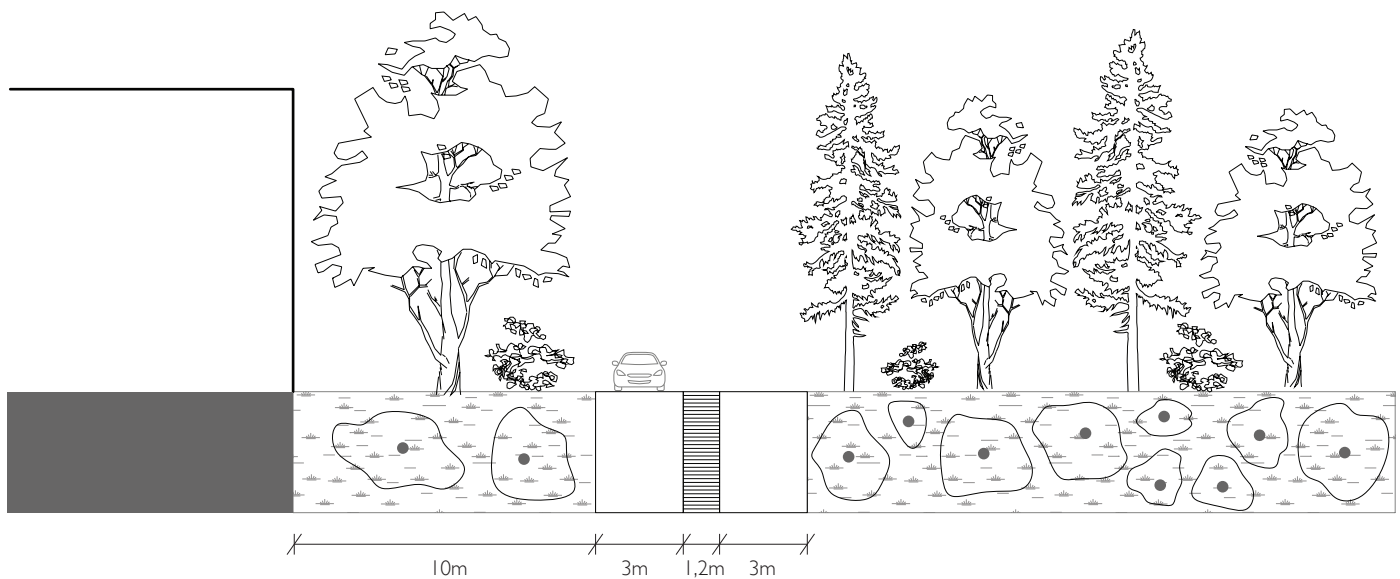
Axes through Hembrug

2.4.3 Street profile

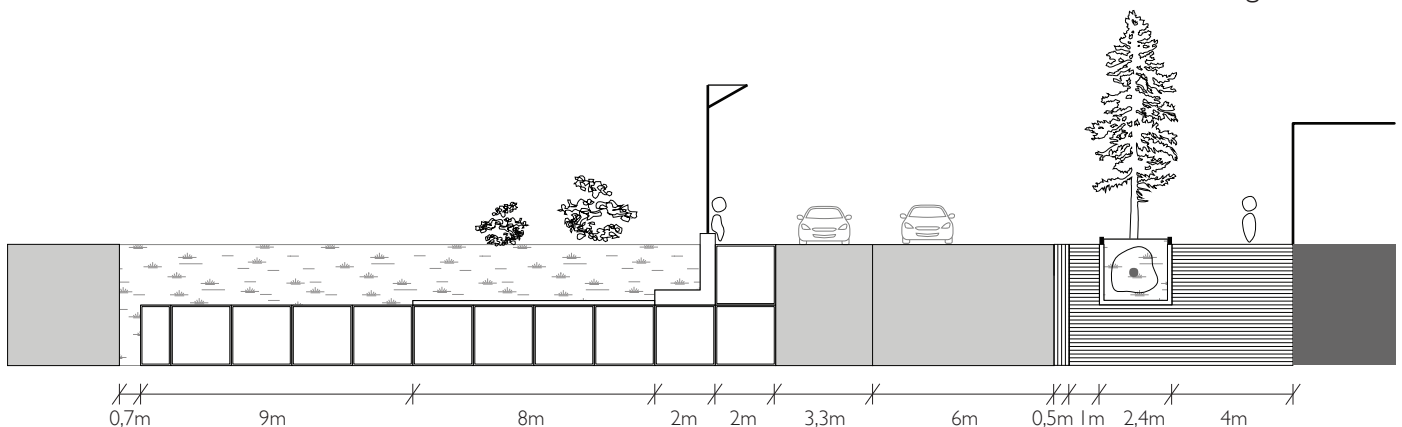
The hierarchy in roads by the use of a different amount of Stelcon plates can also be seen in Campus North. The prefab plates which are 2 by 2 meters and give respectively a road with of 2, 4 or 6 meters. In Campus North 4 types of roads can be found: asphalt and 1, 2 or 3 Stelcon plates. On the north and the east side of Campus North the only two asphalt roads of Hamburg can be found. The North one (section 1) is made as an extension of the new entrance and the east one (section 2) is made using of the old foundation. Characteristic is the streetlight is shape of a construction piece. The main entrance road to enter the inner area of Hembrug is separated from the slow traffic and the public space of Campus North with the use of slightly raised borders and benches.



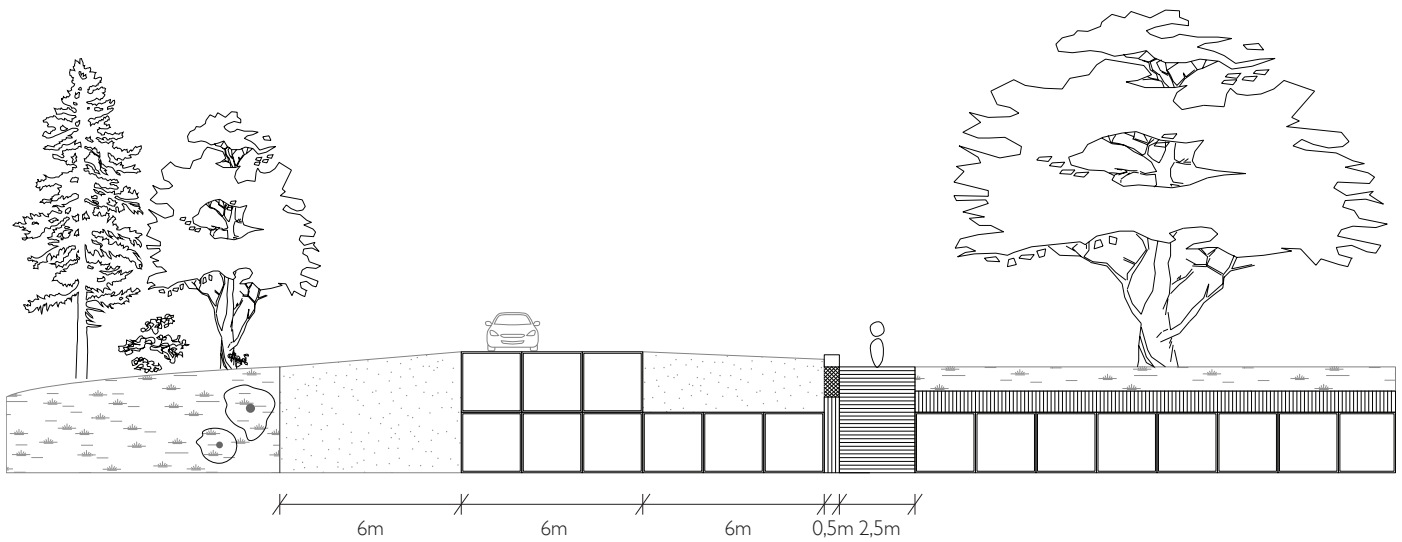
Location and direction of the sections



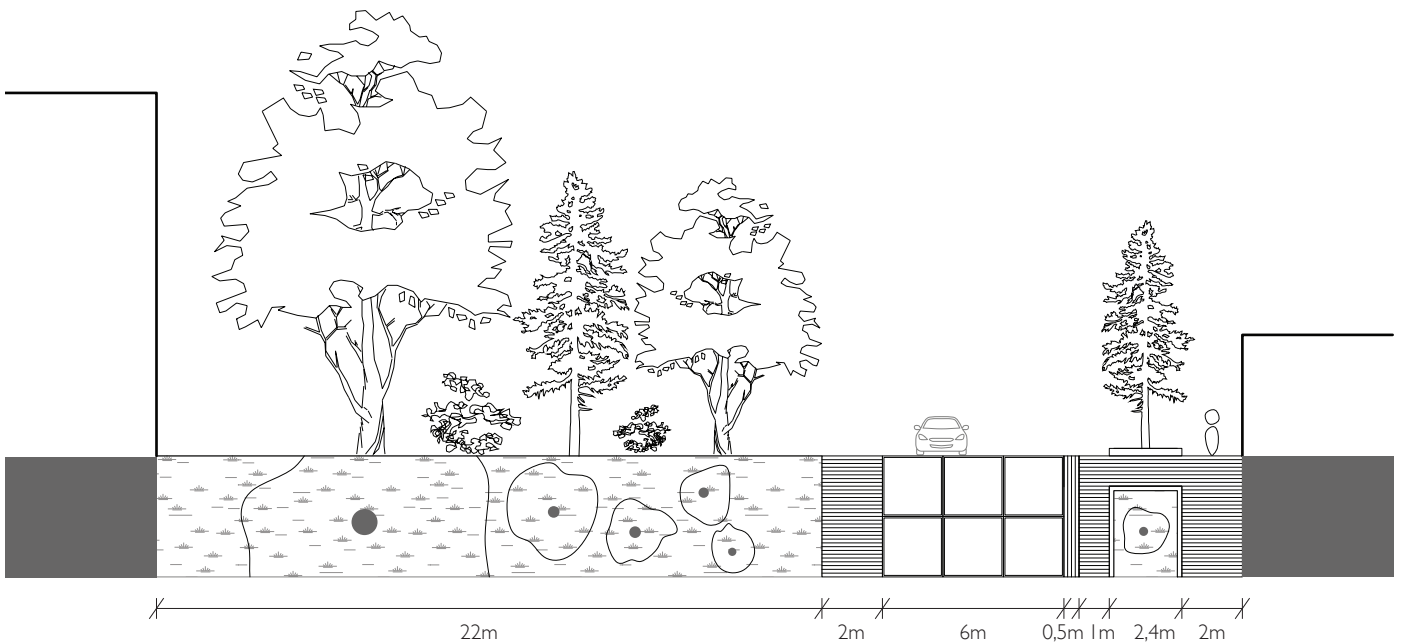
Section 1: North border near building 320 1:250



Section 2: East border near foundation 1:250

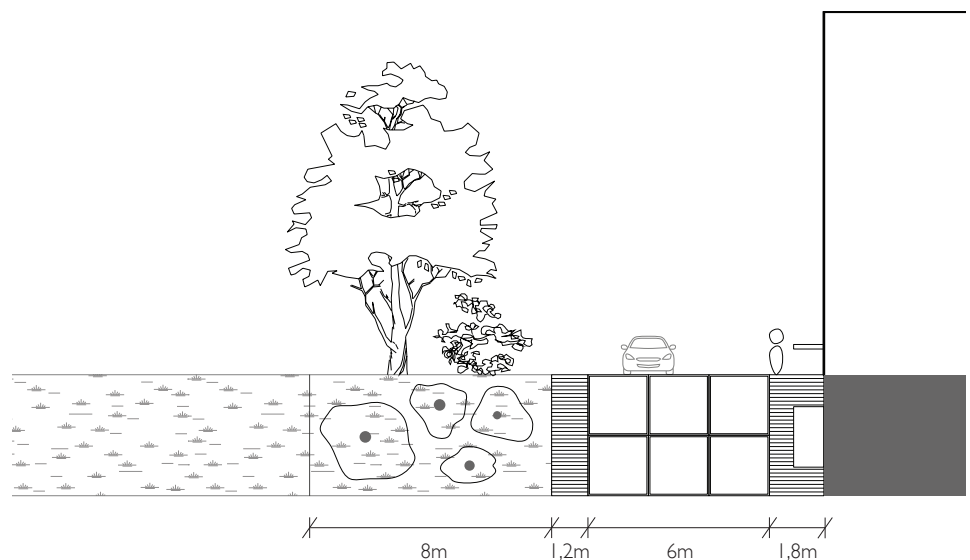


Section 3: West border near the big tree 1:250



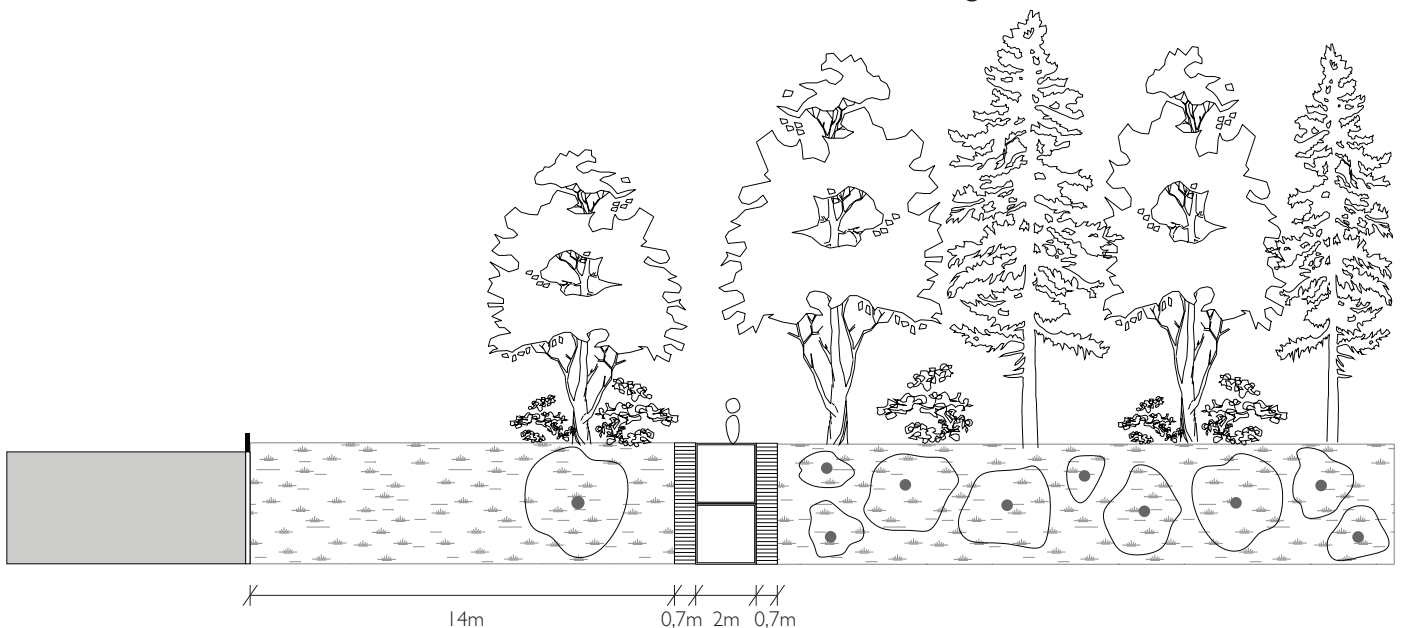
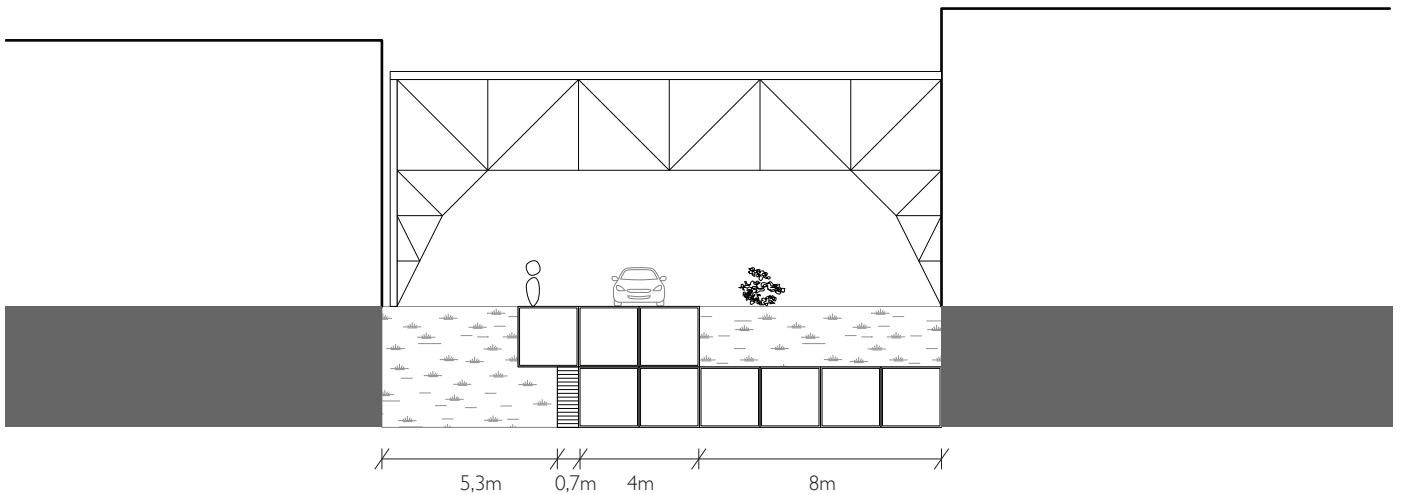
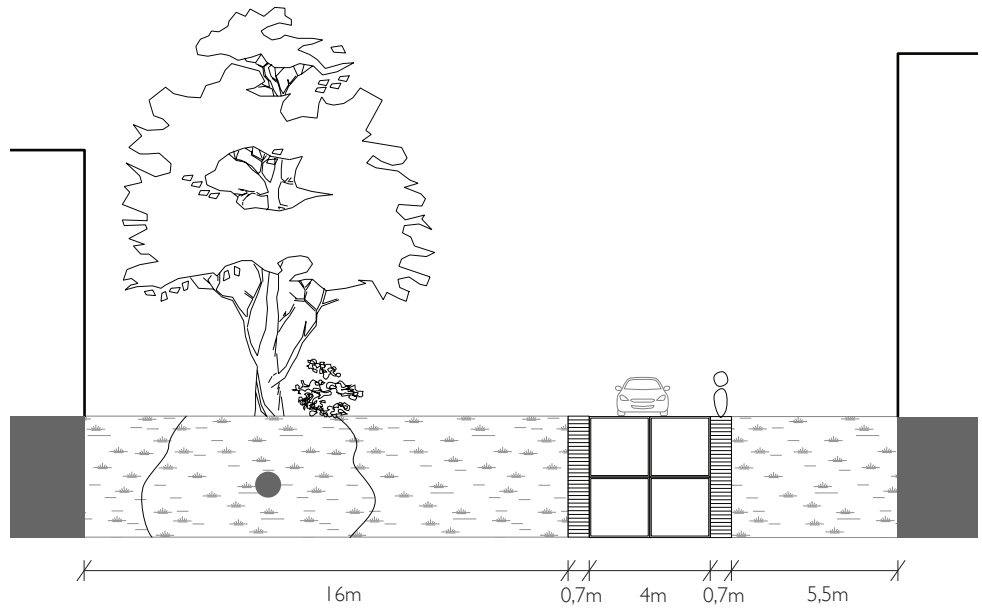
Section 4: East border near building 8 1:250

On the place of the old railroad (section 3) a parking lot of rubble is made, which can be entered by a 3 plates road. Also at this place the fast traffic is separated with the use of a small raised border. The 3 plates road can also be found on the east (section 4) and south of building 9 (section 5). A small footpath is made next to the plates with clinker bricks. The concrete plates, located at the old entrances of building 8 stick out towards the street.

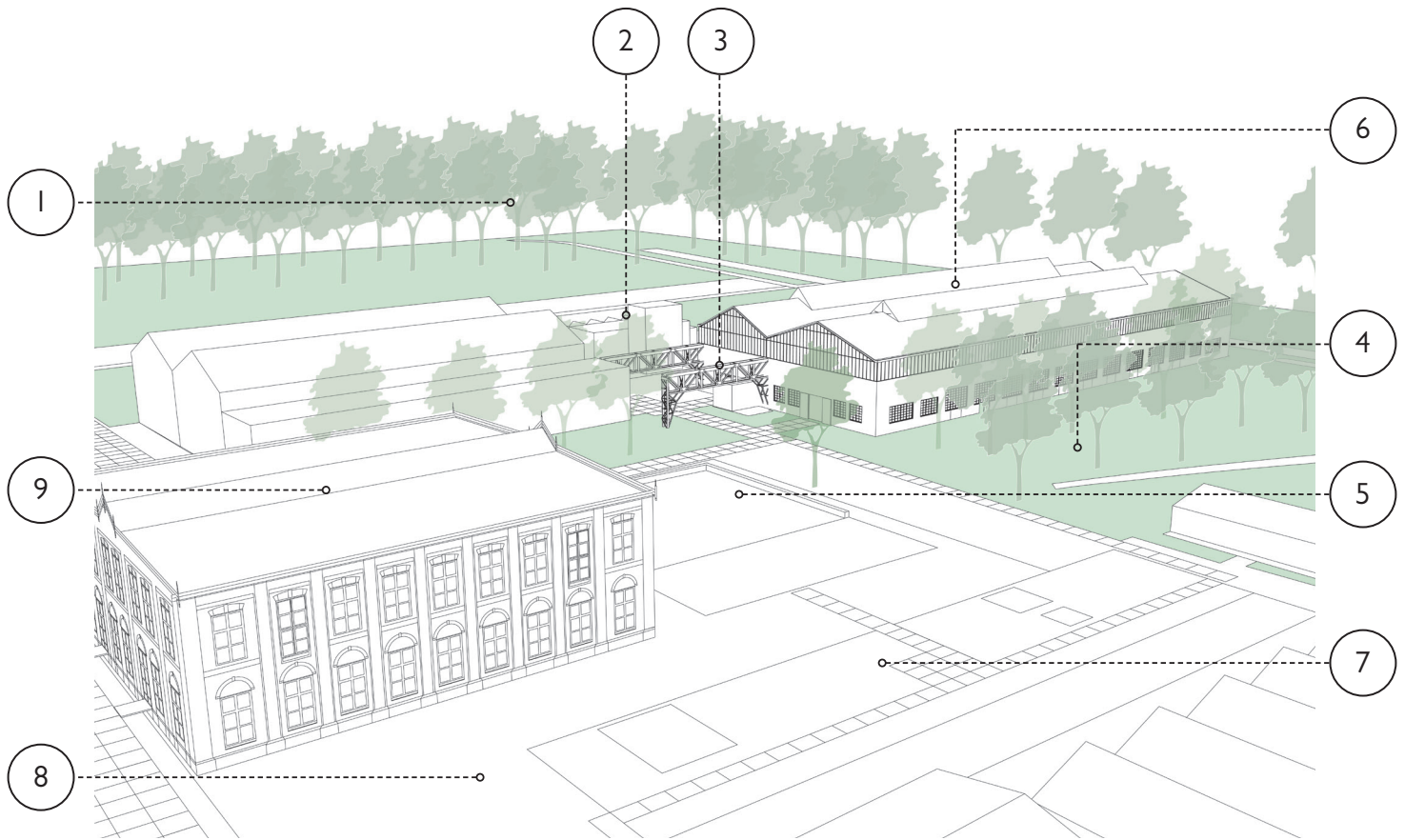


Section 5: South border near building 8 1:250

The second-degree roads can be found around building 320. West of building 8 (section 6) and in front of building 8 (section 7) two plates are used. For the smaller roads you can see that on both sides the plates are finished with a small stroke of clinker bricks of 70 cm. This separates the plates at most parts from the green that is on the same level. Only one plate road can be found in Campus North. It is the small road between the trees north of the foundation (section 8).



2.4.4 Spatial elements



Campus North is located on a plot that has different visual elements present in the urban layers that shape the spatial character of the site.

The different elements can be categorized into buildings, landscapes views and constructions. All these aspects of the site work in order to close off, bring together or separate spaces but also to guide and give a direction to the one exploring the site.

Most of the buildings are not in use and the constructions have lost their primary function, but all of them contribute to the user's sense of place.

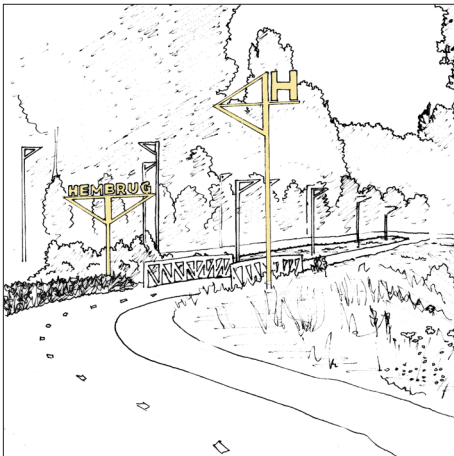
This site is different spatially from other plots in the area due to the very low density of buildings, this makes it a pleasant space to look around. In almost all directions you have a clear view of what is around you. Some elements catch the attention of the user due to their unique character and have a visual function rather than their original function.

The crane tracks define the user's routing by posing as a gateway to the site while the plates on the ground direct the user's path through the site while the remains of demolished buildings break up the open spaces by creating physical borders within.

Additionally, the plofbos and the buildings are volumes that define the entire plot and present the visual borders of Campus North.

Finally, the watchtower functions as a landmark which is recognizable from the entire area due to its height and unique structure.

All together these elements define the character of the Campus North from a spatial point of view. Even if the buildings and constructions do not have a specific function anymore they have a visual value that contribute to the atmosphere of the area.



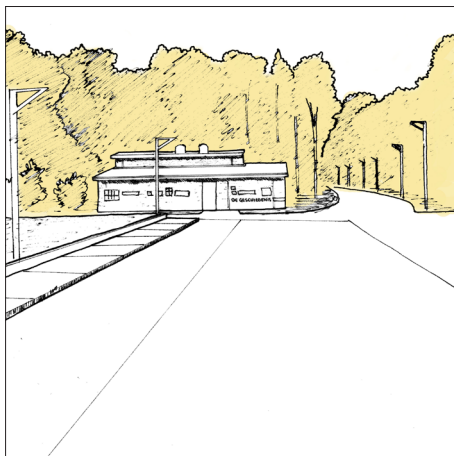
1. the entrance of the site



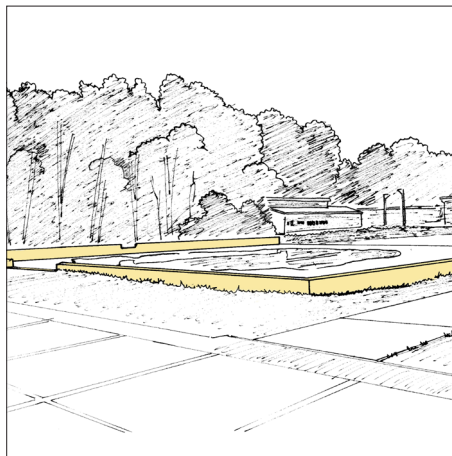
2. the watchtower



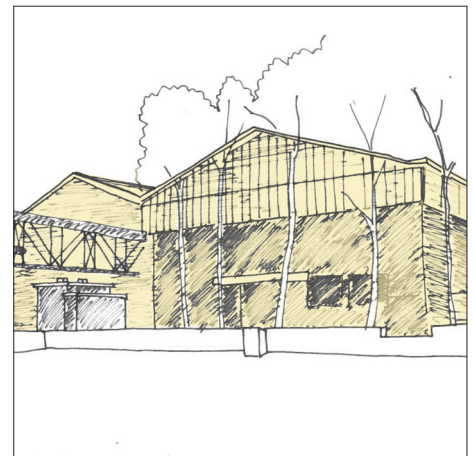
3. the crane tracks



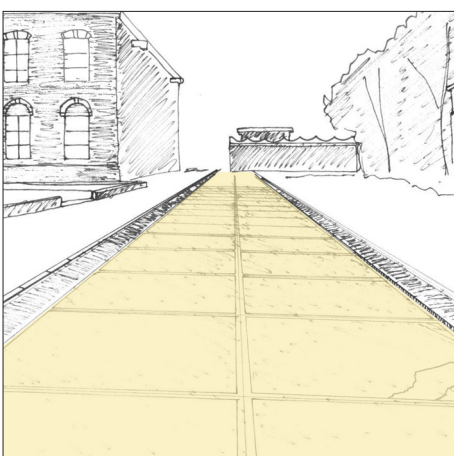
4. the border with the forest



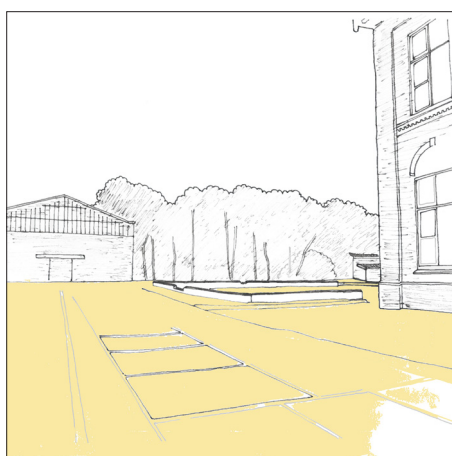
5. Foundation of building 309



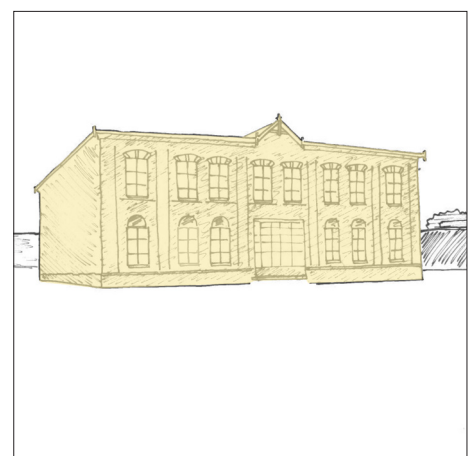
6. Building type II



7. Street plates



8.. the open spaces



9. Building type I

In conclusion we can see that the atmosphere of Campus North is mostly defined by three elements. First, the contrast between openness and density in the open space, green and buildings, which can be seen in the profiles. Second, the isolated feeling defined by the clear borders, which originate from the former fenced off production area. And last, by the industrial element, which are currently out of use but are giving the area its sense of place.

Conclusion

In conclusion, by having analysed the Campus North as a whole different aspects of the site were discovered. The topografie and the development of the area had not only visible traces like the the waterstructrue to drain land but also in the subsurface where different soil composition can be found which resulted in different foundations of the buildings. The functional structure, related to the rational grid the area is developed on, are still present in the current situation. The relation between the building was based on the functional relationship in the production process. Not only in the organization of the buildings but also in the organization of the public space. The infrastructure and public space can be traced back to different type periods. Because Campus North is placed on the former edge of the terrain, the different expansion of the terrain can still be seen. The connecting factor is the open field and the green structure that can be seen as the floor and roof in between which Campus North is located. Beside this the industrial elements, which are currently out of use but are giving the area its sense of place, are the connection factor of Campus North

By analysing all this information and relating it to the main question of this research "How did the functional logic of the Artillerie Inrichtingen influenced the character Campus North has today?" we can conclude that the structure that is still visible is directly related to the functional logic of the site. Characteristic objects, like the tower, Stelcon plates and the crane structure are design as functional objects but are now part of the character of campus north. The openness and density of Campus North can be related to respectively the funcional freedom of the campus and the protective function of the trees.

3. Buildings

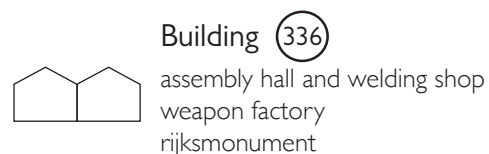
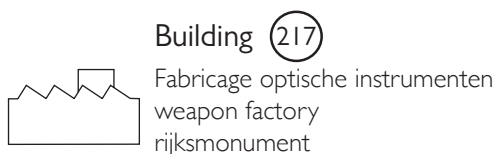
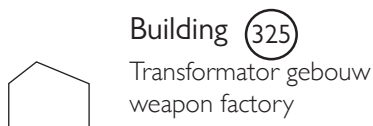
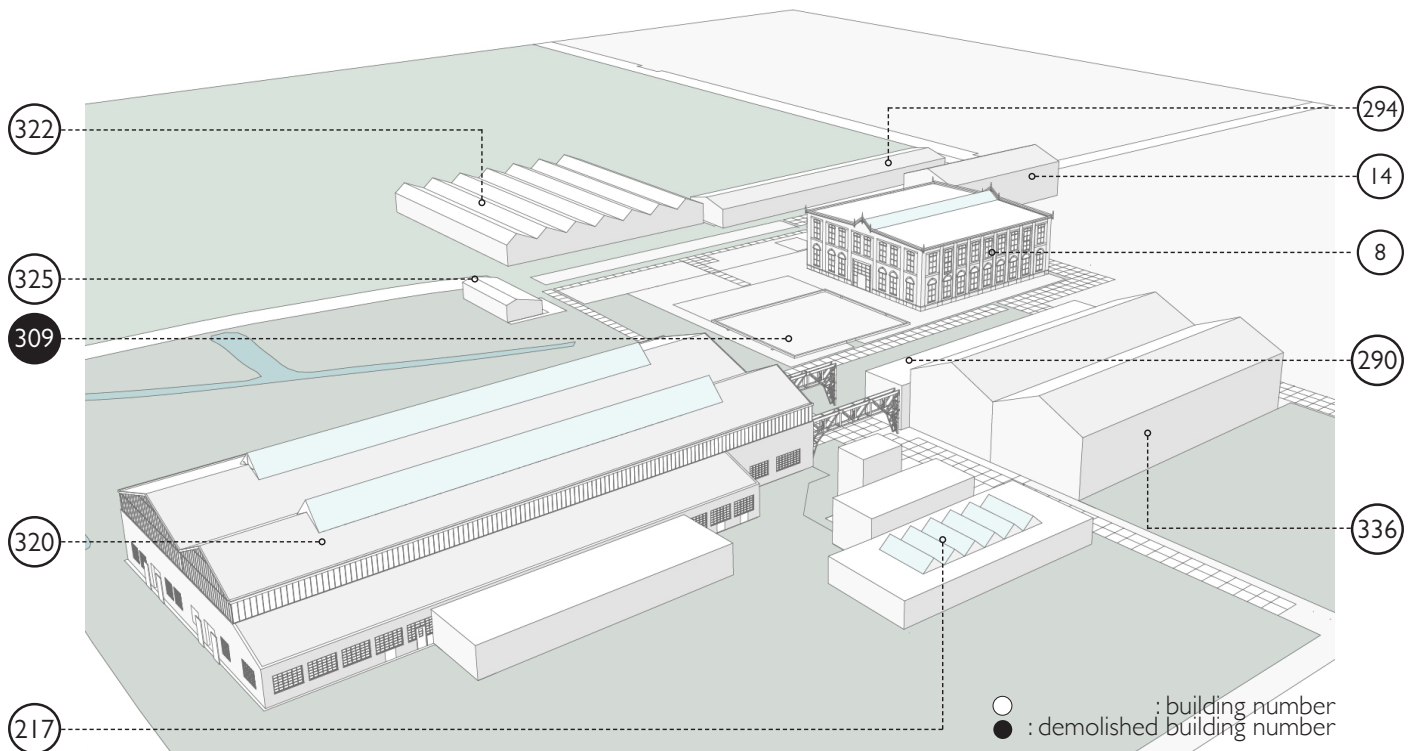
After having analysed Campus North as a whole, this chapter will have its focus on the different buildings the site consists of. Firstly an overview of all buildings on and neighbouring the site will be given in order to have a clear overview of the present constructions. Secondly we will address the development of the site through the different building phases of the Hembrug in order to understand how the site transformed into its current layout. Finally all the different buildings will be set side by side based on different categories such as their typology so that the relations between them can be visualised.

These different elements will be researched and analysed in order to grasp a greater understanding of the site and its elements as a whole but also to provide information in such a way that the functional logic the 'Artillerie Inrichtingen' had can be explained through the buildings that characterize Campus North and are still present today.



3.1 Overview

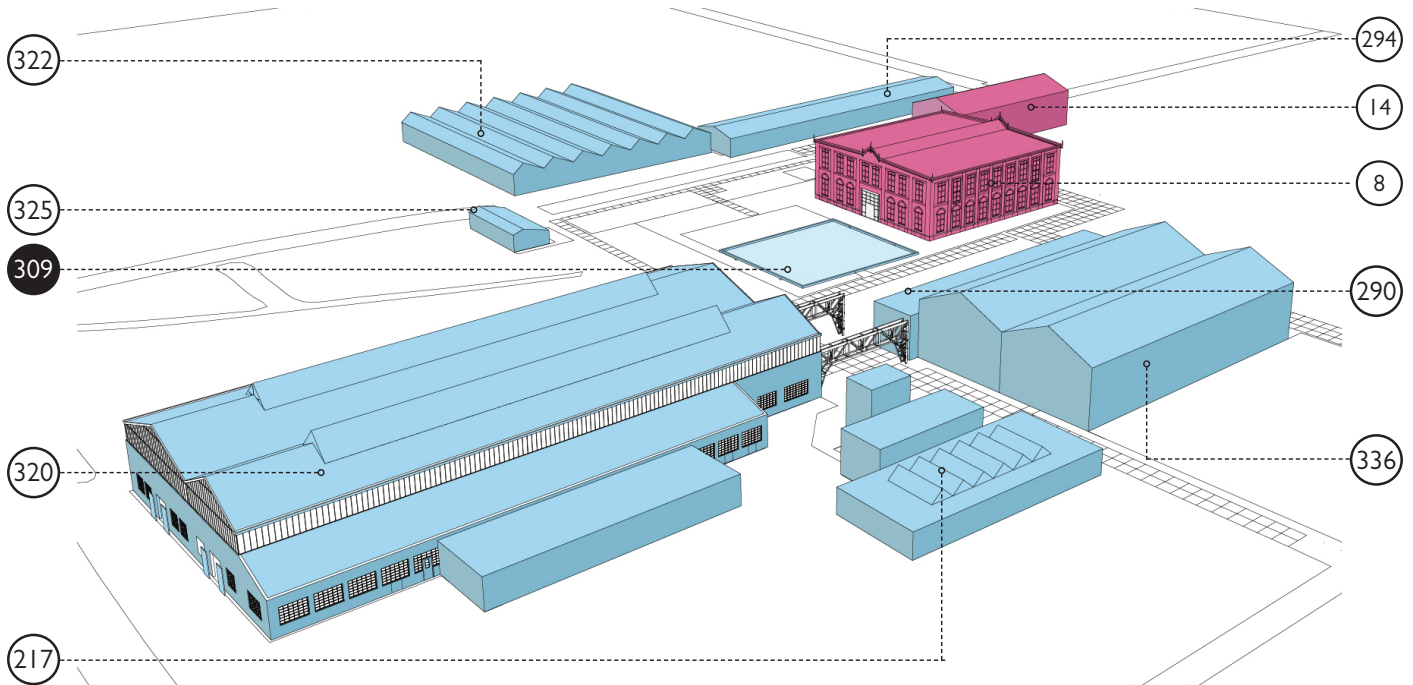
The overview of all the buildings that are present today on the campus north provide an insight in their position nowadays as well as a brief resume of their previous functions and their monumental status.



In conclusion, we can determine that even though the density of the Campus North is low, there is a large variety in buildings that used to belong to the cartridge and weapon factory among which many now have a protected monumental status.

3.2 Transformation

To grasp a better understanding on what the influence of the Artillerie Inrichtingen has nowadays it is important to review the development of the buildings on site and the time period they were built in.



■ Building fase I: 1895-1901

*Building 8 (weapon depot): 1899 (renovated in 2017)
Building 14 (warehouse): 1901

■ Building fase II: 1902-1924

Building 151 (workshop): demolished

■ Building fase III: 1925-1944

*Building 217 (manufacturing building for optical instruments): 1916
Building 322 (gloeierij): 1928
*Building 336 (assembly hall and welding shop): 1931
*Building 290 (assembly hall and welding shop): 1931
Building 309 (shipping warehouse): 1931 - foundation still visible
Building 294 (pressing shop): 1932
*Building 320 (machine hall): 1936
Building 325 (transformer building): 1941

■ Building fase IV: 1945-1960

Building 425 (Paint shop): 1953 - demolished

■ Building fase V: 1961-1973

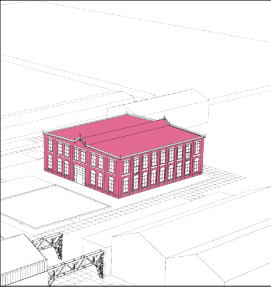
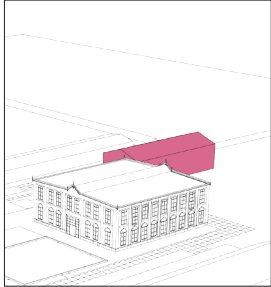
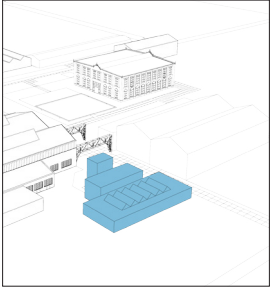
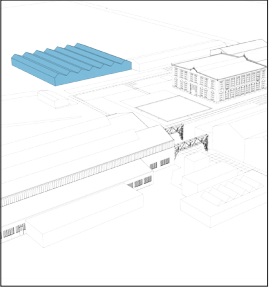
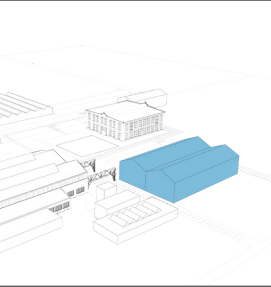




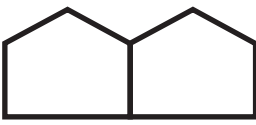
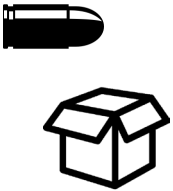




■ Building fase VI: 1974-2019

* : Rijksmonument
Italic: demolished
(): original function

In conclusion, we can read from this timeline that the buildings that are still intact today originated in the first and third building fase as the ones that were built in other time periods were demolished resulting in the open spaces that characterise our site.

3.3 Typological relations

An overview of the different buildings set side by side provides an insight in the relations they might have on different aspects. By analysing their affiliation with each other we aim to understand the cohesion of the campus North on the built scale.

				
Building 8 weapon depot	Building 14 warehouse	Building 217 manufacturing building	Building 322 Gloeierij	Building 336 Assembly Hall
Building fase I (1895-1901)				
1899	1901	1916	1928	
				
				
Typology A	Typology A	-	Typology D	Typology B

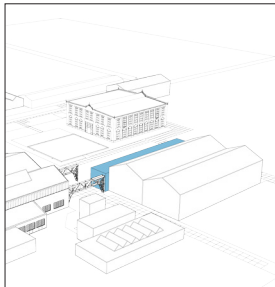
building phase(s):
 roof type:
 roof material:
 roof construction material:
 primary construction:
 secondary construction:
 facade material:
 facade color(s):
 previous function(s):

Typology A

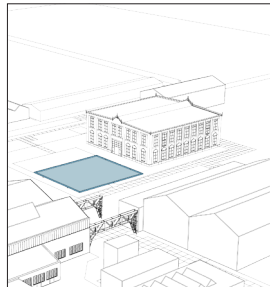
1st and 2nd
 slated
 wood
 wood
 loadbearing facade
 steel truss columns
 brick
 brown, yellow, red
 storage facilities, offices

Typology B

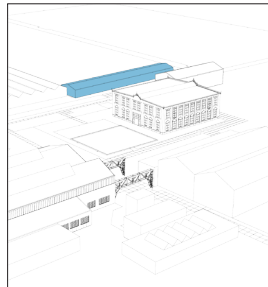
2nd and 3rd
 slated
 concrete
 steel
 loadbearing facade
 steel columns
 brick
 brown
 storage facilities, factories



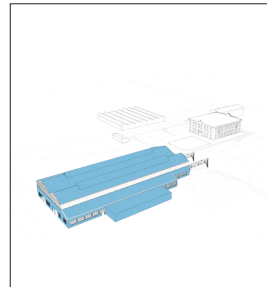
Building 290
Assembly Hall



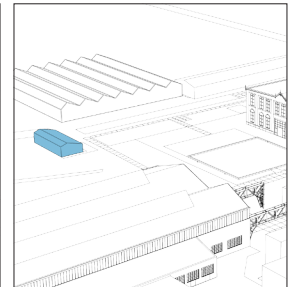
Building 309
Shipping Warehouse



Building 294
Pressing Shop



Building 320
Machine Hall



Building 325
Transformer Building

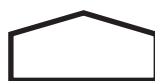
building fase III (1925-1944)

1931



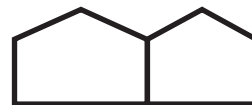
Typology B

1932



Typology E

1936



Typology B

1941



Typology C

Typology C

3rd and 4th
flat
concrete
wood
loadbearing facade
-
brick
brown
workshops, transformer buildings

Typology D

3rd and 4th
flat
concrete
steel
steel frame
loadbearing interior walls
brick
brown, red
factories, steam plant

Typology E

3rd and 4th
slated
concrete
steel
steel frame
-
brick
brown
storage facilities, workshops

In conclusion, we can determine that there is a large variety of different typologies on site that derive from the different functions that the buildings had in the Campus North. This once again provides confirmation that the function of the different constructions of the Hembrug area determined their form.

Conclusion

In conclusion, by having analysed the buildings of Campus North as an ensemble different aspects of the site were discovered. All buildings still present originated in the first and third building phase and provided functions related to either the weapon or the cartridge factory. Different buildings that were built in other phases were demolished resulting in the large amount of open space present. In addition, Campus North and its surroundings comprise a variety of different building typologies with its own characteristics in terms of former function, material of construction and forms.

By analysing all this information and relating it to the main question of this research “How did the functional logic of the Artillerie Inrichtingen influenced the character Campus North has today?”, we can conclude that the site in question had a very pragmatic property. Neutral functional buildings were keeping replaced for new function or being demolished, resulting in the low density of current ensemble. Furthermore, it can be understood that the different typologies of the buildings were attribute to the different functions of the site, which result in the diversity of constructions present today.

After having analysed the cluster of buildings on Campus North, this chapter will have its focus on the weapon depot (building 8). The weapon depot is one of the two buildings which are located on our assigned design ensemble, therefore we have analysed this building more carefully. Firstly, the historical function of the building is analysed and an overview of the most important events through time was made. Secondly, we observed the overall experience and tend to get a grasp on the spatial qualities and the distinctive characteristics of the weapon depot. Thirdly, we thoroughly analysed the construction of the building to get a better understanding of how the building is structured.

These points of interest will be analysed and explained with text and images to provide a detailed overview of the historical character and current qualities of the building.

4.1 Historical analysis

For the historical analysis of the weapon depot, we mainly focussed on how the use of the building itself has changed over time, such as changes in floor plan, entrances and openings, circulation, layout and so on. The surrounding area is studied and a timeline was made that shows the most important events through time.

4.1.1 History

In 1899 the weapon depot was one of the first buildings built on Hembrug as part of the weapon factory. The weapon factory of Hembrug was initially built to produce one weapon: the M95. In 1901 the weapon factory consisted of 14 buildings that contributed to the production of this weapon. The weapon depot functioned as the final stop within the production process as it stored the M95 guns after they were tested.

The weapon depot was part of the first building phase of the factory complex. Buildings on the Hembrug site that have been built between 1895-1913, like the weapon depot, were designed by the "Korps der Genie" (corps of engineers). The design of buildings from this period had characteristics of neo-classical, neo-renaissance and eclectic architecture. The weapon depot is a clear example of this prestigious architectural style applied by the Korps der Genie. Weapons were easily transported to and from the building via the small rail network on the site. This rail network created a connection between the weapon depot and the Noordzee kanaal.

Around 1938 the depot was converted into an office and in the 1950s the interior and the main entrance were redesigned in order to use the building as

headquarters of the weapon industry. Originally the weapon depot was entered from the south, but after the redesign the main entrance was located in the north of the building.

Source:

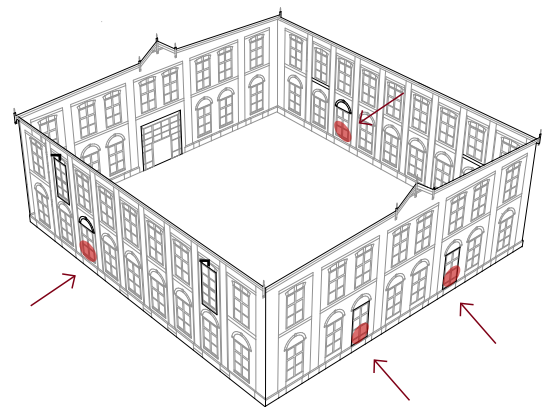
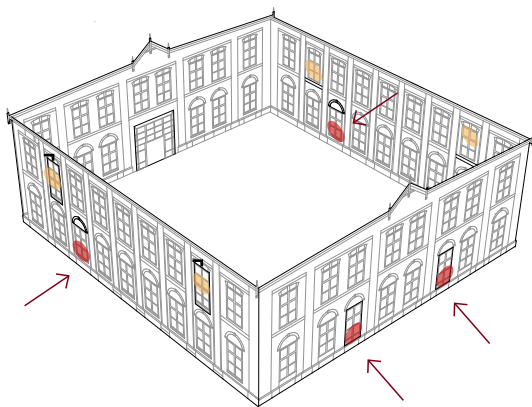
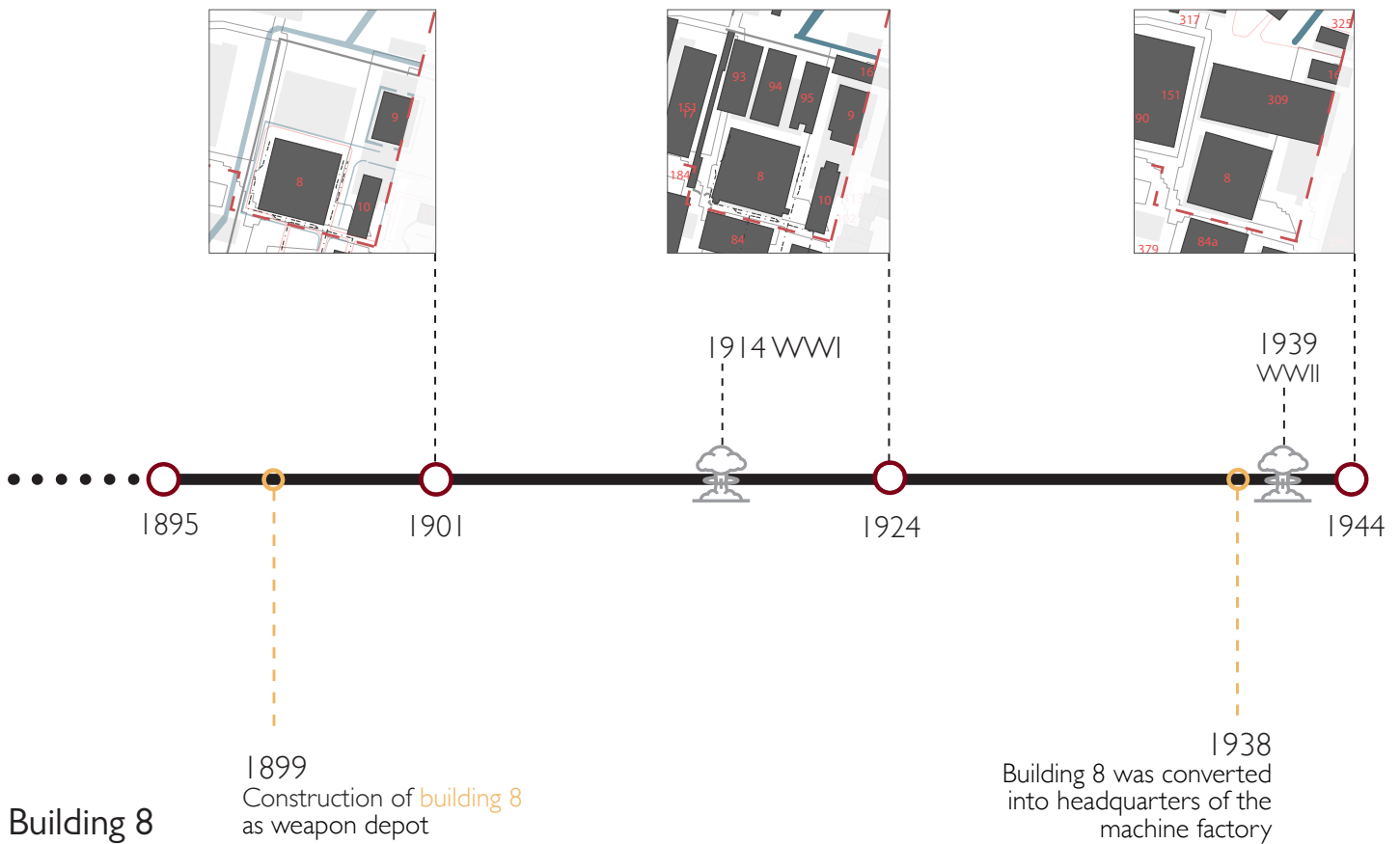
- *Monumenten en Archeologie Noord-Holland. (1996) Hembrugterrein te Zaandam. Cultuurhistorische inventarisatie en beschrijving van de monumentale waarden in hoofdlijnen.*

- *SteenhuisMeurs. (2010) Hembrugterrein - Zaanstad CULTUURHISTORISCHE ANALYSE.*



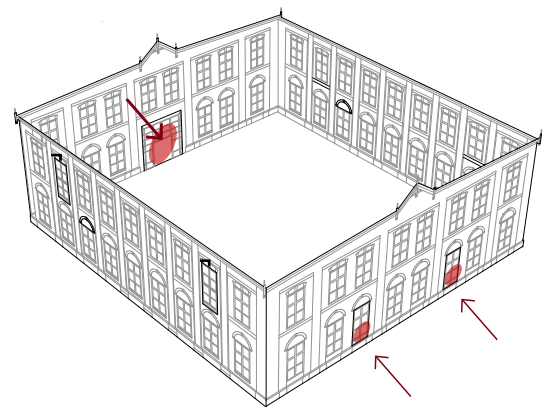
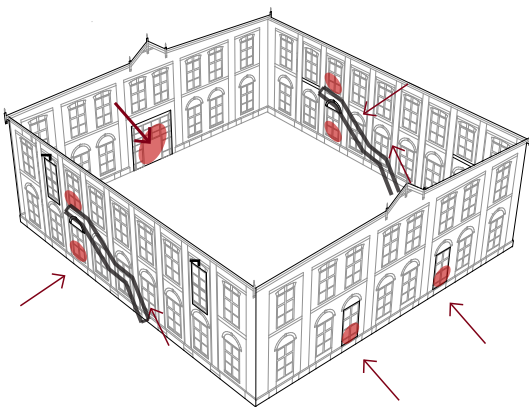
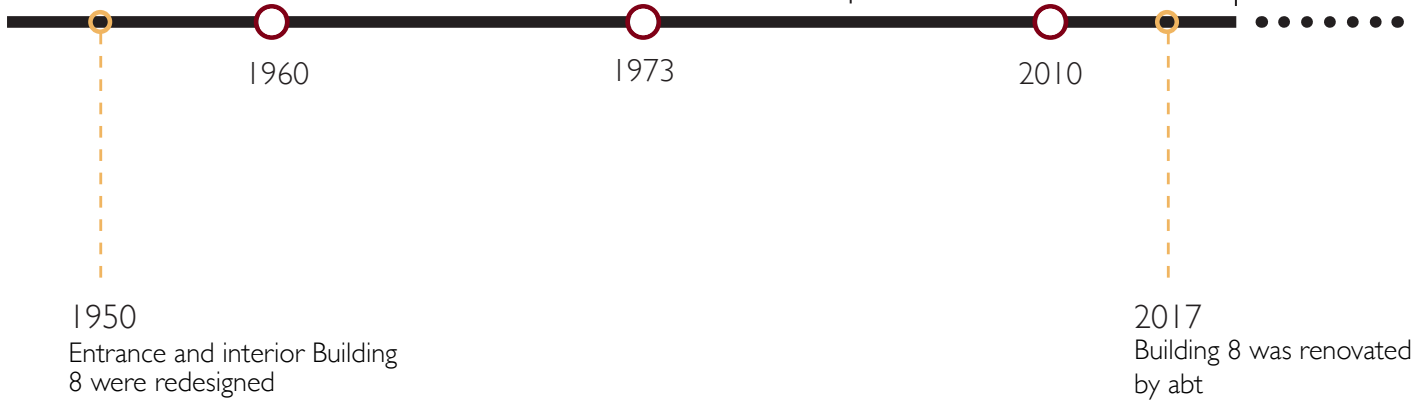
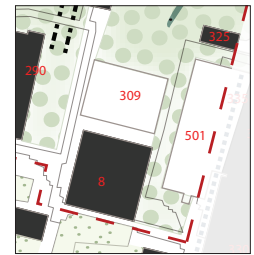
© Ge Dubbelman 2018

Source: Ge Dubbelman/Hollandse Hoogte (2007) "gebouw 8 interieur 1"



The former wapen depot (Building 8) dates from 1899 and built in neo-Renaissance style. It was built in the first phase of the factory. Officially, it was intended for 'imposing weapons' and converted into the headquarters of the machine factory Hembrug in 1938. To better fit in the office program, the interior and the main entrance were redesigned in 1950 that is reminiscent of the work of architect S. van Ravensteijn.

Originally weapon depot, built on an almost square floor plan, consists of two floors under a largely faintly sloping roof with a narrow iron light cover in the north-south axis. It was accessible from the three sides of the ground floor except the north. These entrance were directly connected to railway tracks for goods transportation system. Four 'hijbsbalk' which are lifting beams, worked in the west-east of the first floor.



The lifting beams and openings were out of use after it was converted to office in 1938. Extra stair took place on both sides of west and east facade, intending for better accessibility to the first floor. In the redesign of the weapon depot around 1950, a main entrance was located in the north. The positions of the building were redefined from the south to the north. Partition walls were built for new circulation and program.

After the relocation of NV in 1983, Building 8 remained unoccupied. It was in poor condition before abt renovate the building in 2017. Entrances are kept only on west and east sides. Traces of changes are still visible from the facade and interior.

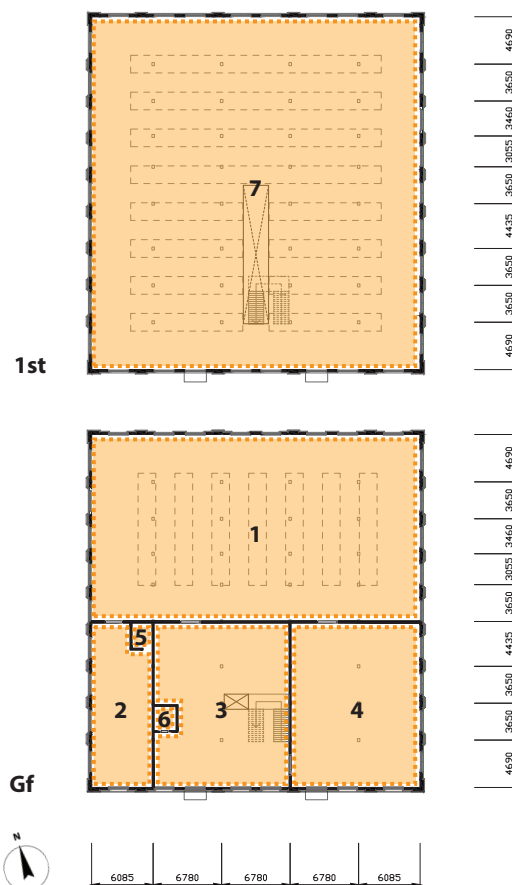
4.1.2 Function

1899

The weapon depot (building 8) is built in 1899 and was originally used to store weapons. We found original drawings from 1899 (source: https://beeldbank.amsterdam.nl/beeldbank/indeling/detail/start/116?q_search-field=hembrug), but it didn't describe the functional program of the building. Therefore we came up with some assumptions that are based on the original drawings of the building. The drawing on the right shows our assumption of the original functional layout of the building. We assume that spaces 1 and 7 were used as storage space and that the other spaces were used for lighter work.

Legend:

1. Storage space weapons
2. Office space (assumption)
3. Entrance hall
4. Preparation room for transport (assumption)
5. Service room (assumption)
6. Toilet (assumption)
7. Storage space weapons 1st floor



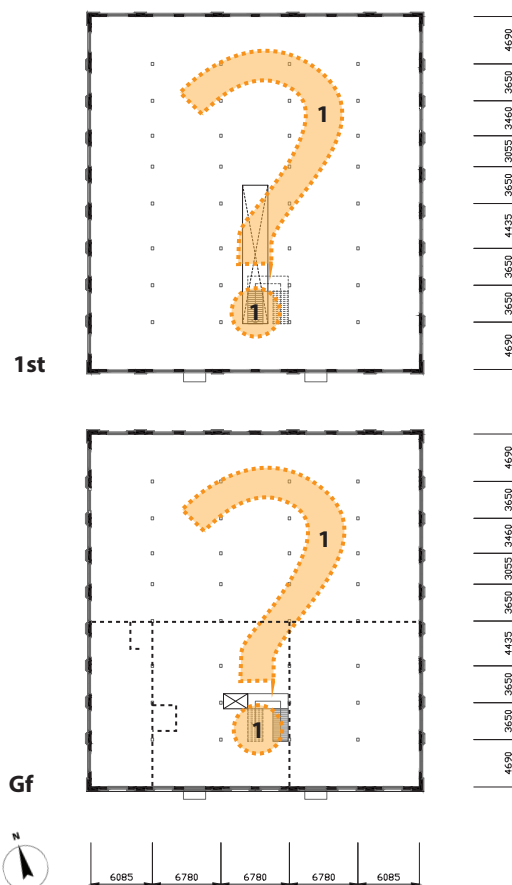
1938

In between the first and the second world war, both the factories and the military site expanded considerably, due to an increase in the range of products and the threat of second world war in the 1930s. This led in particular to new construction to the west of the weapon factory. Therefore the weapon depot was converted into an office and functioned as the headquarters of the weapon industry around 1938.

We didn't find drawings of this change of functional layout. Therefore the drawing on the right shows the floor plan of the weapon depot with the original layout of spaces and a big question mark on it, since we don't know how the building has been adapted to this new function.

Legend:

1. Headquarters of the weapon industry

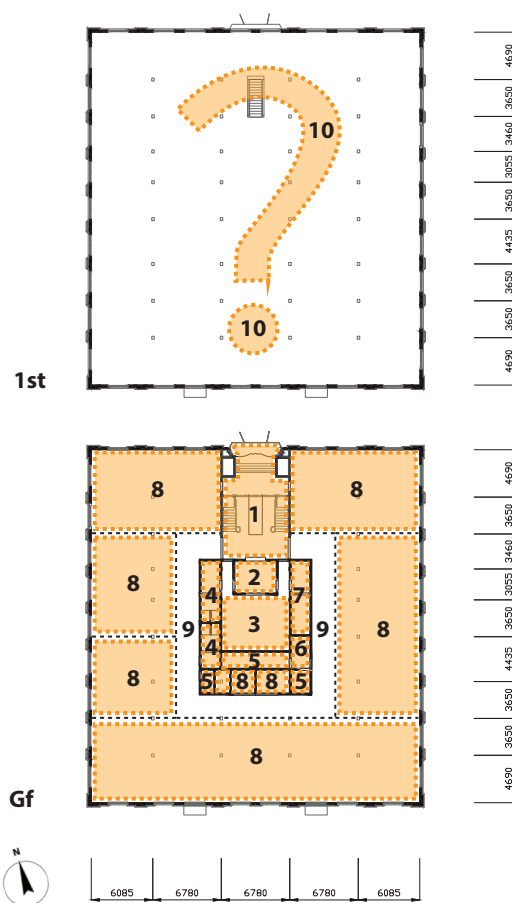


1950

The interior and the main entrance were redesigned in the fifties to fit in better with the new function of the building. We didn't find drawings of the redesigned interior of the building, so therefore we made the drawing on the right that shows the new layout of the building as we suspect it has looked like during this period. This assumption of the new layout is based on the remainings of the building that are currently still present. We assume that the open space has been divided in smaller spaces to function as office space.

Legend:

1. Entrance hall
2. Service point (assumption)
3. Changing room (assumption)
4. Showers
5. Storage space (assumption)
6. Staircase
7. Toilet (assumption)
8. Office space (assumption)
9. Corridor (assumption)
10. Office and/or storage space (assumption)

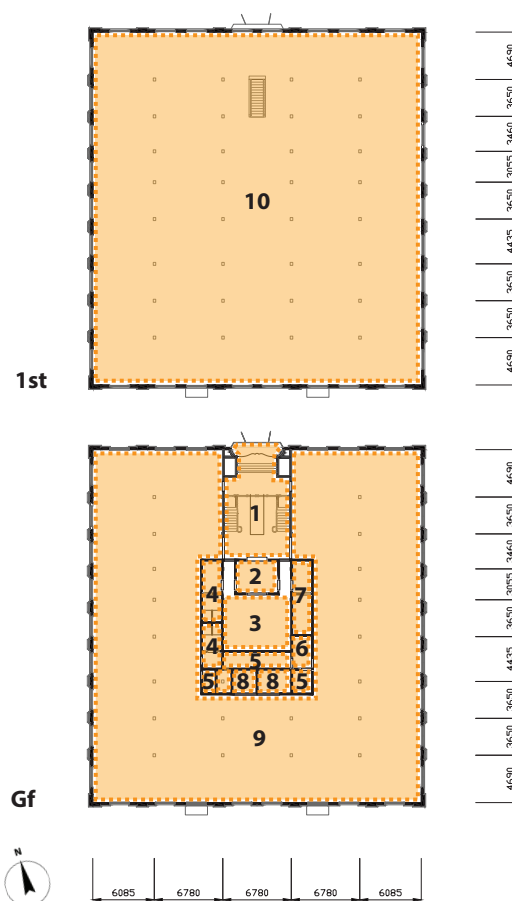


PRESENT

The building has recently been renovated by engineering company ABT. Before this renovation, the building was in a very poor condition. A large part of the roof and the floor of the first floor had collapsed and have been replaced like a few of the columns. Nowadays the core of the building that was part of the redesign of the 1950s is still present. The space around this core forms an open space that recently has been used as exhibition space.

Legend:

1. Entrance hall
2. Former service point (assumption)
3. Former changing room (assumption)
4. Former showers
5. Former storage space (assumption)
6. Former staircase
7. Former toilet (assumption)
8. Former office space (assumption)
9. Open space now used as exhibition space
10. Former storage space 1st floor

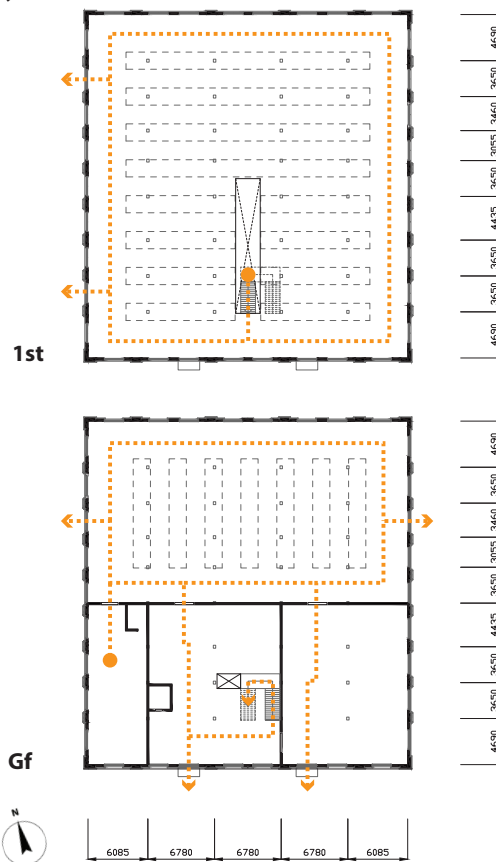


Circulation

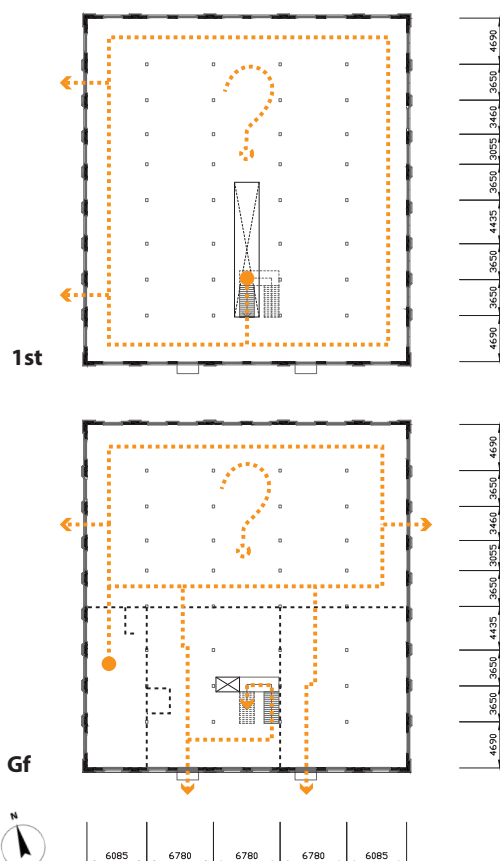
Originally the weapon depot was probably entered from the south, since original floor plans from 1899 show that there were two entrances in the south facade and there was a staircase located behind these entrances in the south. Besides these entrances in the south, the building could also be entered from the east and the west. Along the east, west, and south facade of this building there were railway tracks to transport weapons and other material towards the weapon depot and the rest of the site.

When the interior and the main entrance were re-designed in the fifties to adapt the building to its new function, the main entrance of the building moved from the south to the north. Due to the redesign, the other entrances have probably lost their function.

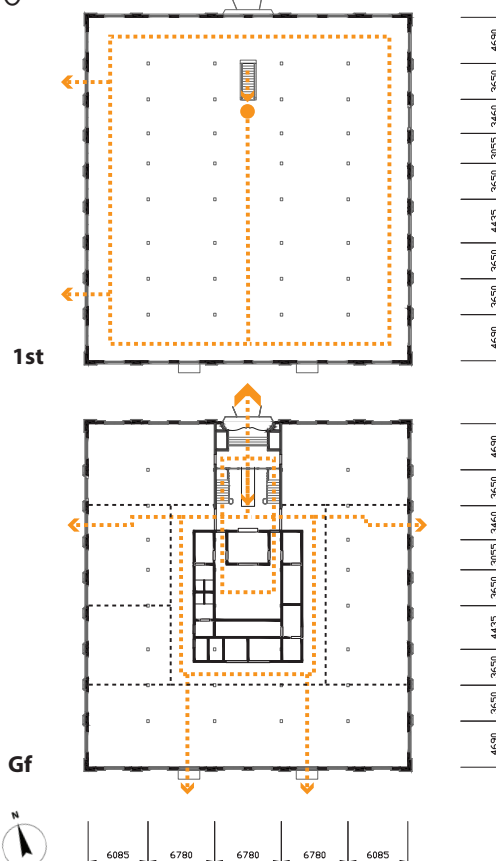
1899



1938



1950

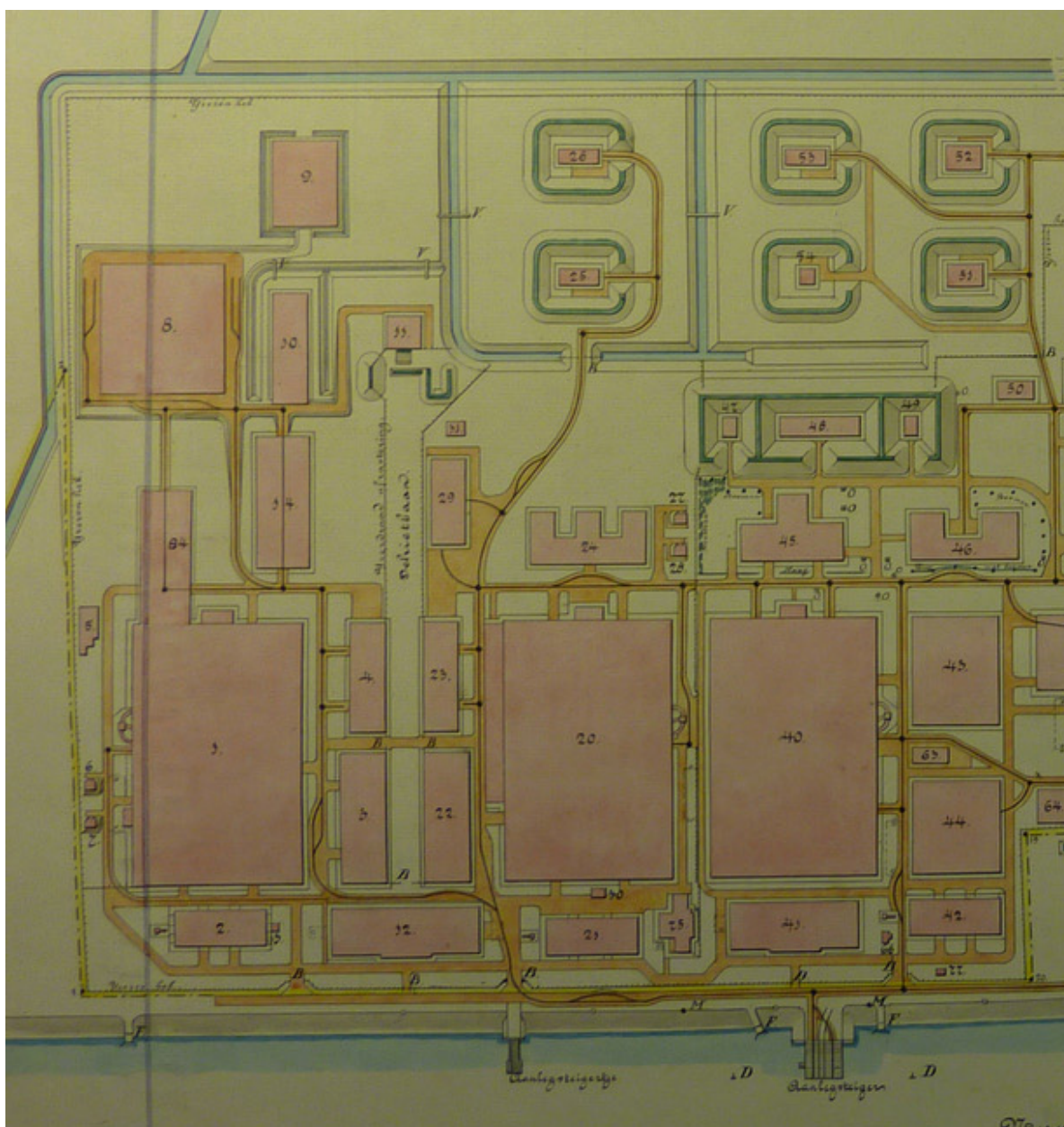


For a safe and stable transport of heavy ammunition and products, there used to be a densely branched narrow rail network on the Hembrug site with connections to the jetties in the North Sea Canal and Side Channel G. The narrow rail network consisted of pivot points to make it possible to move the wagons in between and through the buildings. The narrow rail network was expanded in 1900 and 1903. Already in the early 1920s, the system was modernized with the introduction of electric wagons with batteries, to reduce the risk of an explosion even more.

The image underneath shows a part of the map that gives an overview of the Artillerie Inrichtingen from 1903. The narrow rail network is drawn with black lines. From this map we can tell that the narrow rail network connected the weapon depot (building 8) with the surrounding buildings on the weapon factory site and the North Sea Canal.

Source:

- SteenhuisMeurs. (2010) *Hembrugterrein - Zaanstad CULTUURHISTORISCHE ANALYSE*.



Source: SteenhuisMeurs. (2010) *Hembrugterrein - Zaanstad CULTUURHISTORISCHE ANALYSE*. "Overzicht Artillerie Inrichtingen, 1903" p.25

From the map that gives an overview of the Artillerie Inrichtingen from 1903 we can tell that there have been railway tracks along the west, south and east facade of the weapon depot. Those tracks connected the weapon depot with building I in which the weapons were produced, and the jetties in the North Sea Canal and Side Channel G to ship the weapons to other places outside Hembrug.

ground floor there used to be two openings on the south facade and one opening on the west and east facade. On the first floor there were two openings in the west façade to move weapons in and out of the building via two cantilevers.

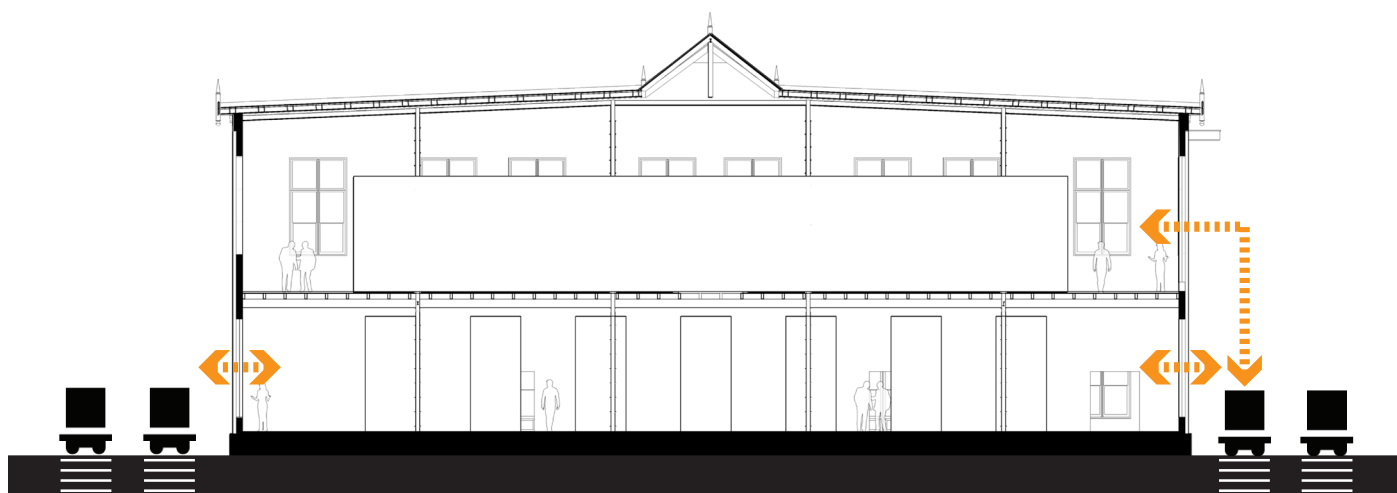
Source:

- SteenhuisMeurs. (2010) Hembrugterrein - Zaanstad
CULTUURHISTORISCHE ANALYSE.

The section and floorplans underneath show how the weapons were moved in and out the building. On the

EAST

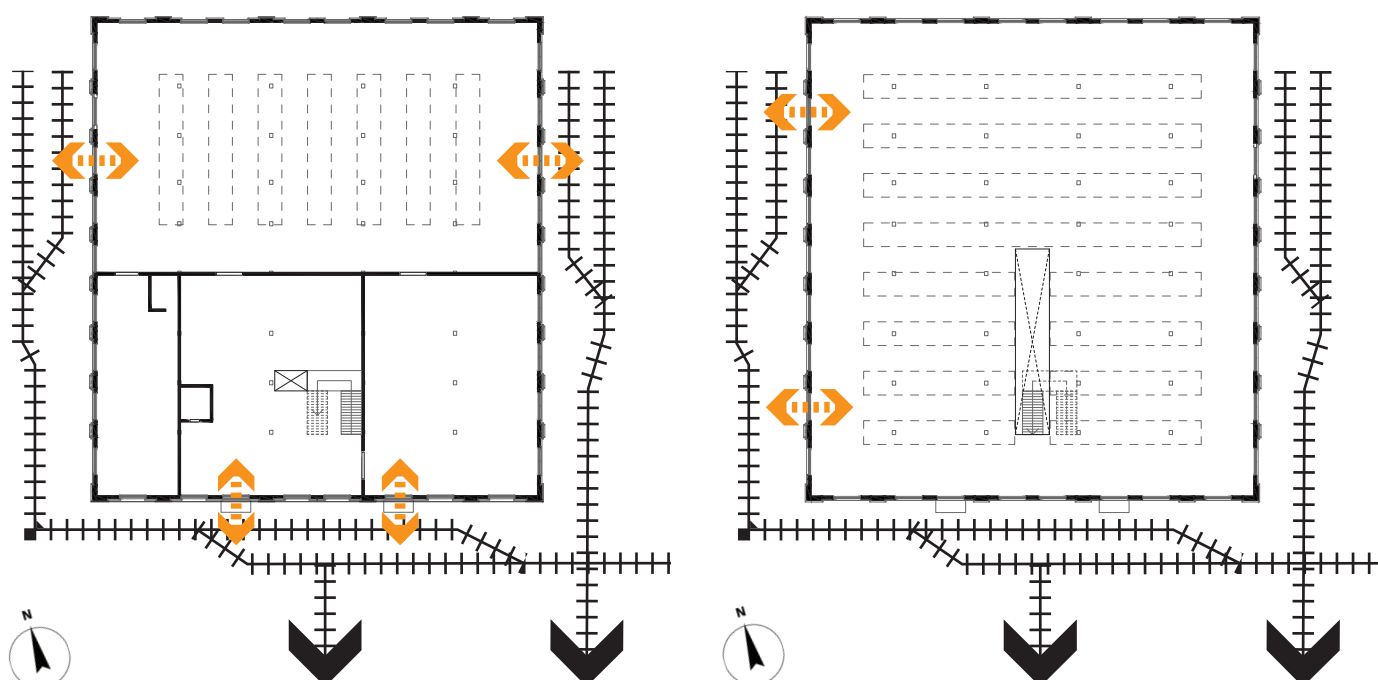
WEST



SECTION EAST-WEST

GROUND FLOOR

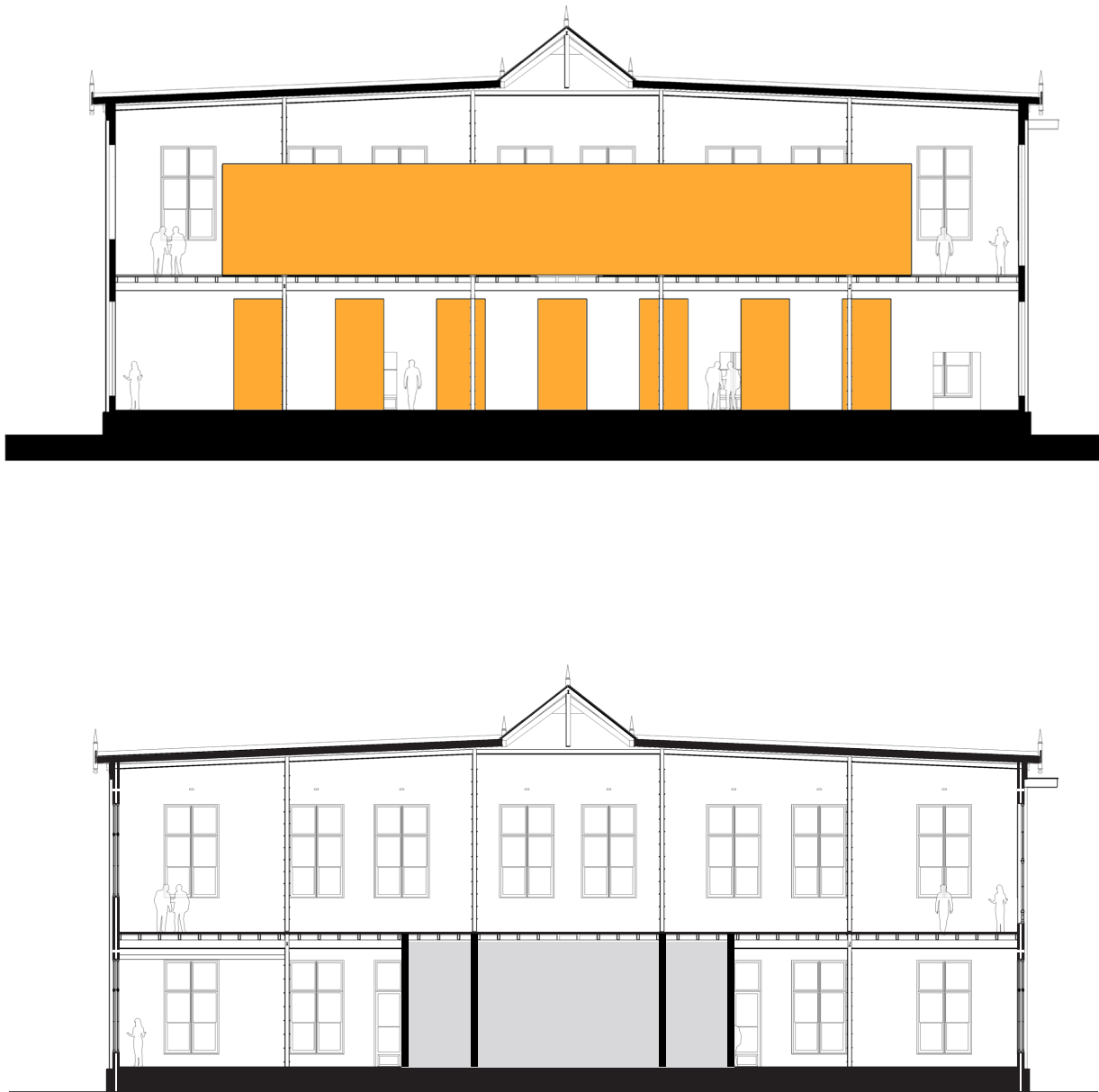
FIRST FLOOR



Conclusion

Although the design and function of the weapon depot has changed over time from weapon depot to office, there are still clear traces left of the original function of the building. The strong but narrow construction and the big open floor plan that contribute to the initial function of the weapon depot are still present in the current situation. The concrete core on the ground floor and the main entrance with the double staircase in the north of the building are the remnants of the redesign of the 1950s. We assume that the open space around this core was divided in smaller spaces to use as office spaces, but we didn't find evidence to confirm this assumption. Due to the changes in function there

have been some minor changes in the facades over time. The doors on the east and west facade have been replaced by windows and the windows on the north facade have been replaced by the main entrance as part of the redesign of the 1950s. However, the prestigious neo-classical appearance of the building remained the same although this dramatic change in function. Because of the amount of windows and the open structure the building is suitable for multiple (future) functions.



4.2 Architectural analysis

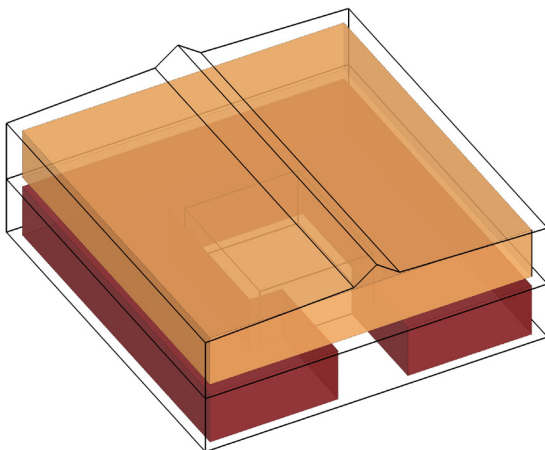
The main focus of the 'Architectural Analysis' is to observe the overall experience of the weapon depot. With this part of the analysis we tend to get a grasp on the spatial qualities and the distinctive characteristics of the building. To be frank, what does the weapon depot has to offer?

4.2.1 Space plan

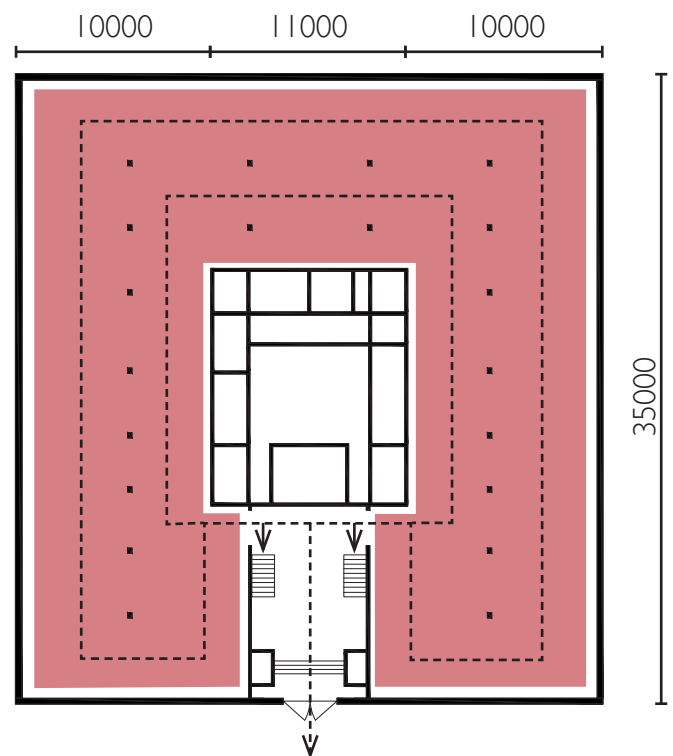
The weapon depot has had different functions as a building through time. The building was originally, as the name says, a depot building. This means a construction which would provide as much open space as possible to easily arrange the weapons which would be stored in the building. After its conversion into an office building, the main construction of the weapon depot stayed the same while non-constructive inner walls were added. Today, most of the inner walls are stripped down and once again the building features large open halls in both floors.

The main volume in the first floor is U-shaped because of a middle core which embraces the steel construction and splits the centre of the floor into small rooms. The main space is accessible through two doors inside the entrance hall. Entering and leaving the main space can be primarily through these access points or through the old entrance in the south.

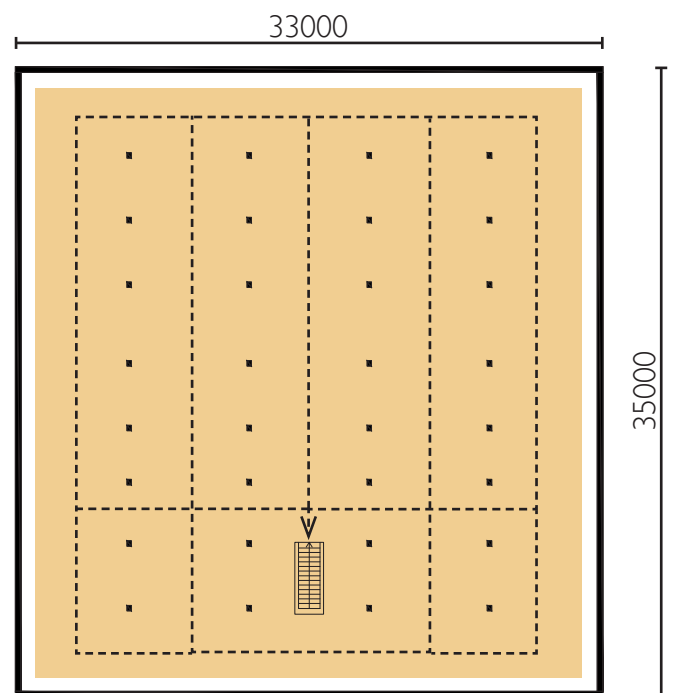
There are no partitions on the second floor. The storey is one big open space of approximately 1.155m². The steel construction of the building which supports the roof is placed in a square grid. While the columns do not take much space on their own, because of their frequent placement throughout the floorplan, they do create an obstacle between the current situation and the idea of a complete open space.



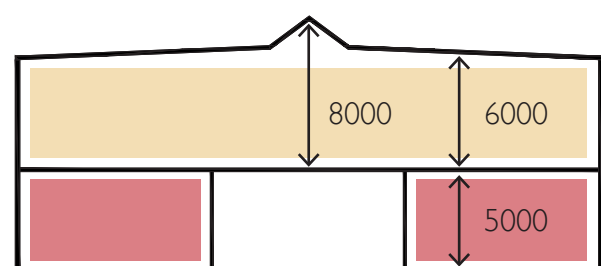
Overview Free Spaces Building 8



1st Floor Overview Spaces Building 8



2nd Floor Overview Spaces Building 8

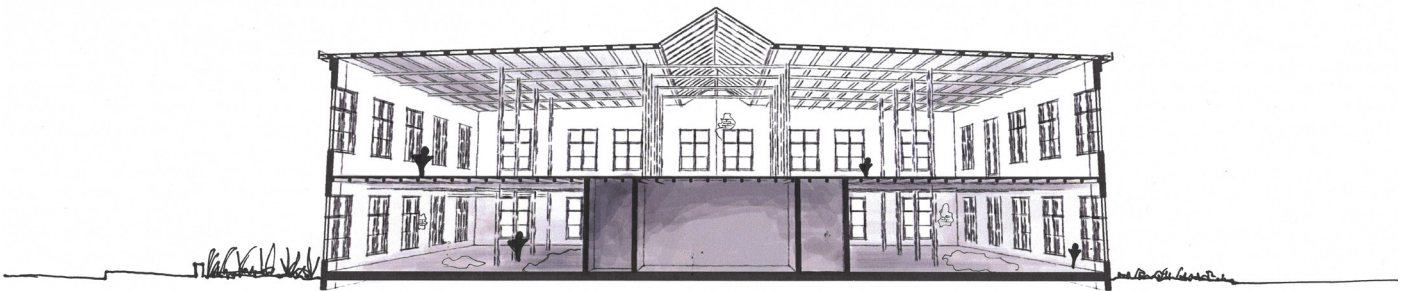


Section Spaces and Heights Building 320

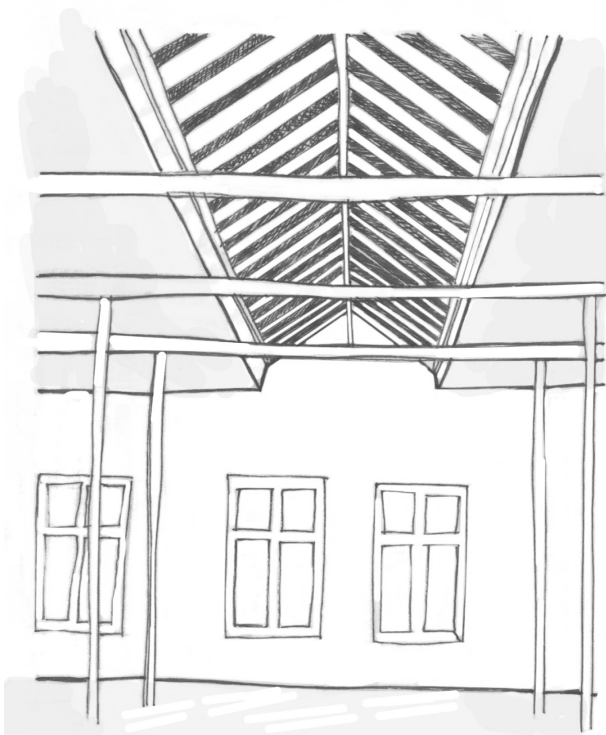
4.2.2 Materiality

In this chapter the materiality of the weapon depot is analyzed through sketching and finding rhythm and scale. The weapon depot is surrounded by a patch of grass on the east and west and concrete material on the north and south. In the section we can see that the ceiling height of the first floor is higher than the ground floor. This is also due to the steel construction.

In the interior we can see that there is a play in light that occurs. This is due to the several windows and now larger open space on the ground floor. On the first floor there is the skylight that plays a very important part in the light play. Because the skylight goes through the entire length of the building. The first floor is also experienced as a more open, light and breathable space.



Perspective section of weapon depot



Atmospheric images of the interior

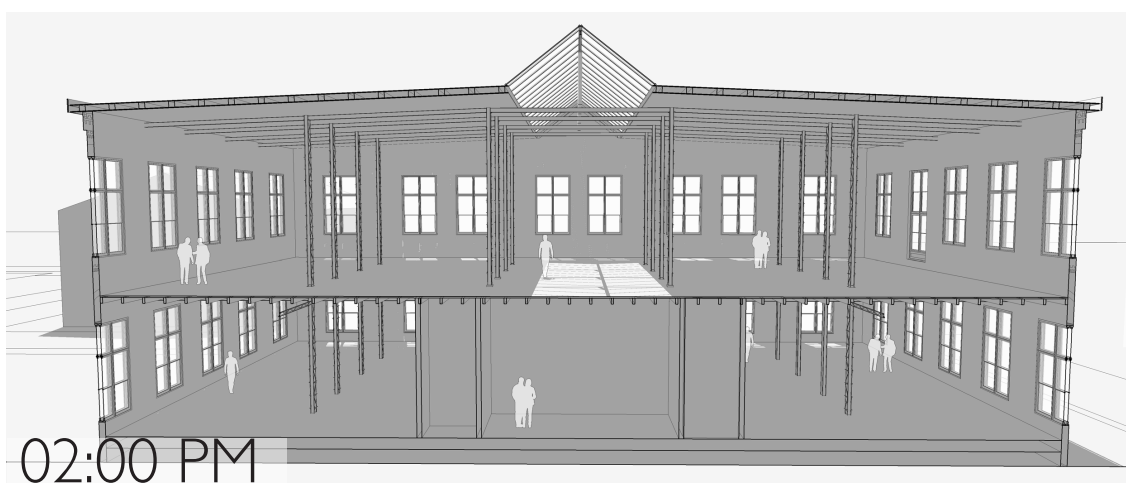
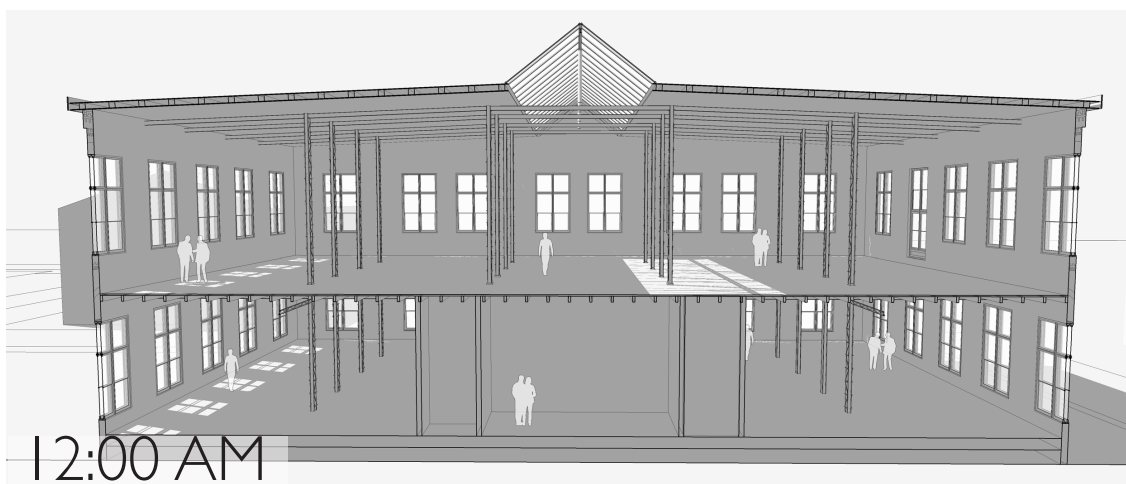
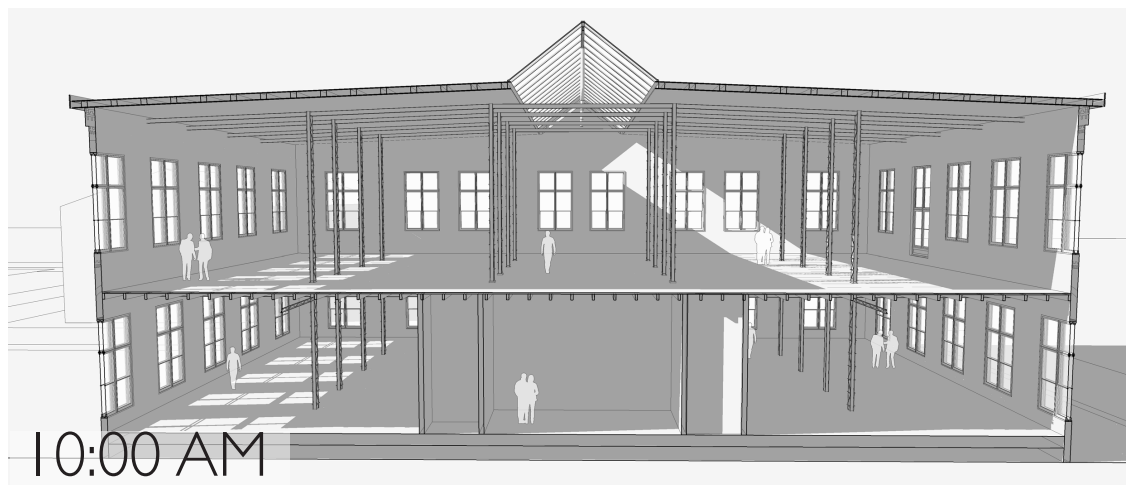


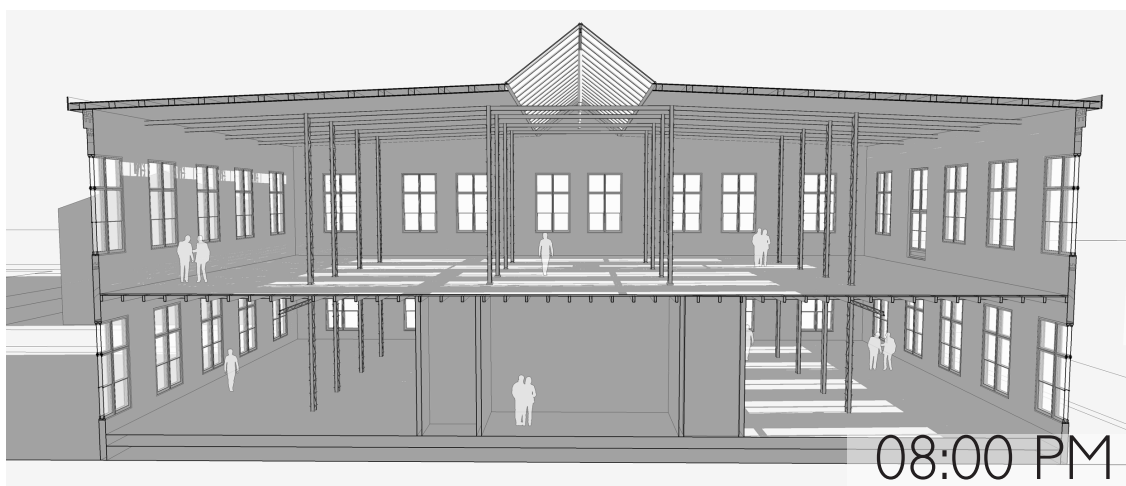
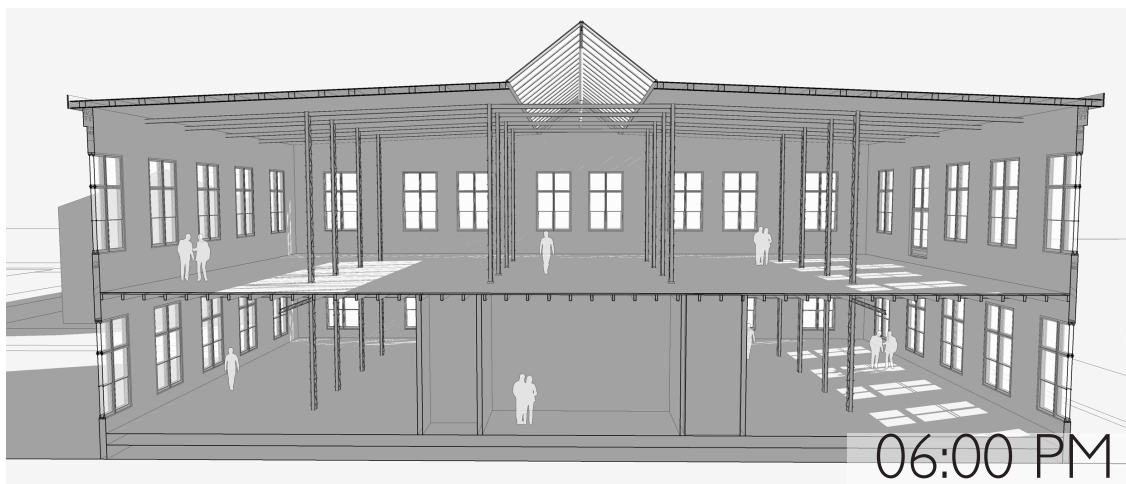
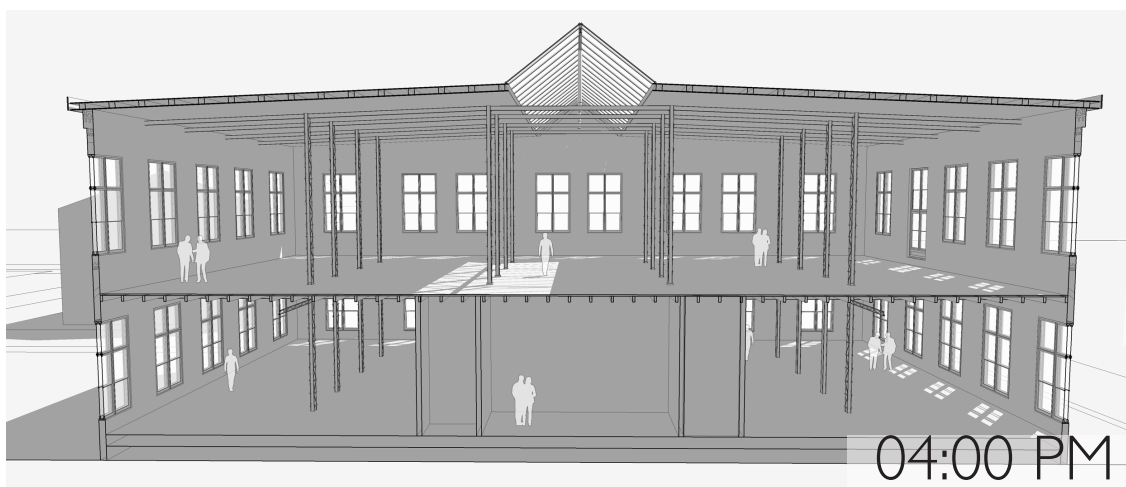
Rythem of the facades

In the pictures above a rhythm in the façade is found. Because the building is often seen as a symmetric or square type. But this in fact is not true. By drawing the building in 3D, we concluded that the building is longer than it is wide. By finding a rhythm in the facades we can also see that they differ on each orientation.

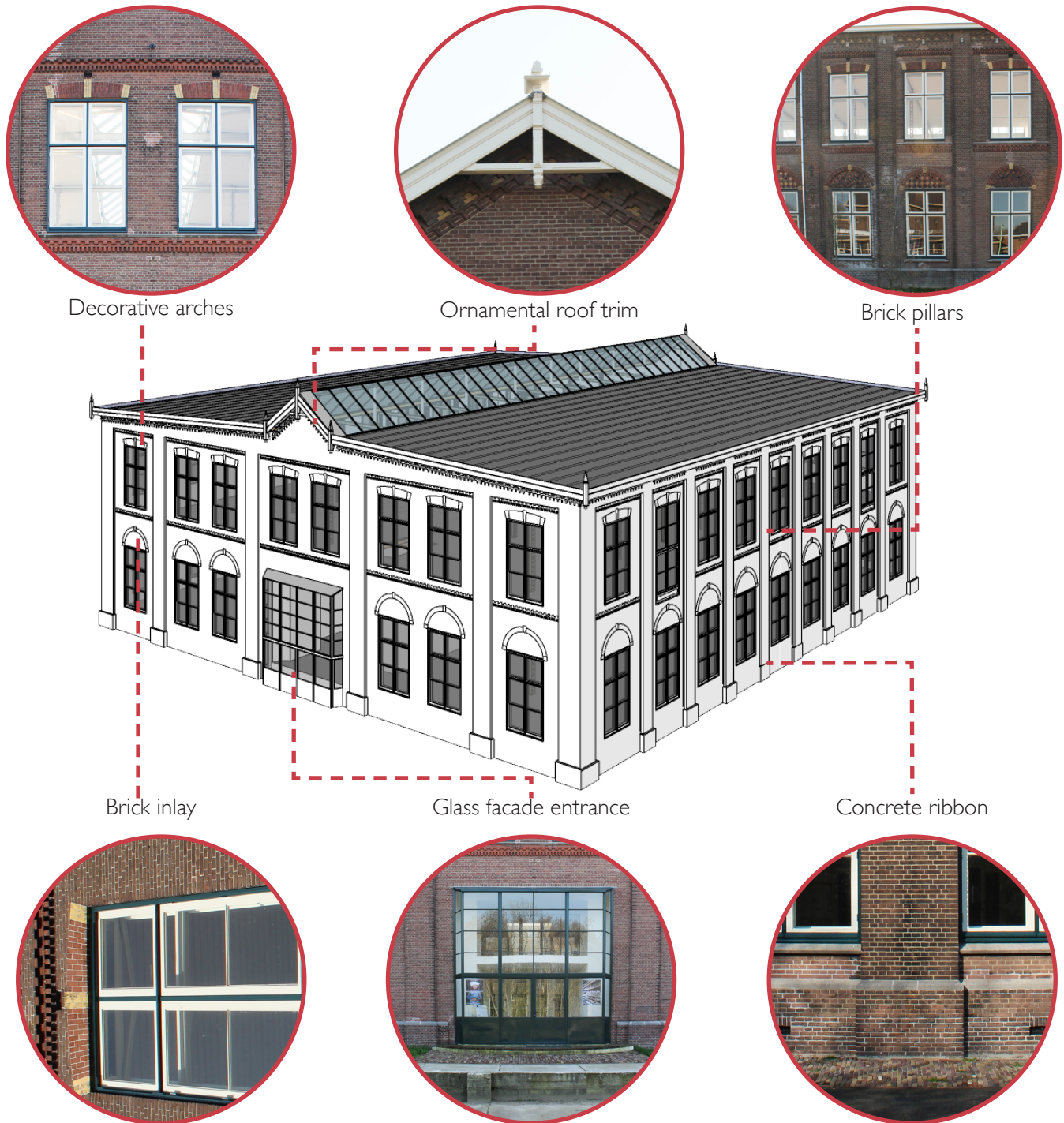
The daylight analysis shows how direct sunlight enters the building during the day. The building has lots of windows through which sunlight can enter the building. Since the building has windows on all facades and no blinds, sunlight can enter the building throughout the whole day. This means that in the current situation the building will heat up considerably during the summer, which can lead to an unpleasant climate inside the building. However, sunlight can also be seen as an

architectural quality. The purpose of this daylight analysis is to give a better understanding of how the daylight behaves within the building in the current situation.





4.2.3 Materials

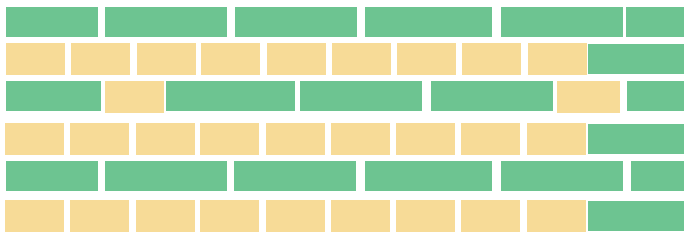


The weapon depot is characteristically built in the style of Neo-Renaissances. This was a very popular type of style at the end of the 19th century and inspired by the style of the Flemish and North-Dutch Renaissance of the late 16th century. This style has a few distinctive features. Which includes the decorative arches above the windows, the decorative brick inlay seen on the under the brick arches on the ground floor windows, the brick pillars on each façade and the decorative roof trim and pattern brick work.

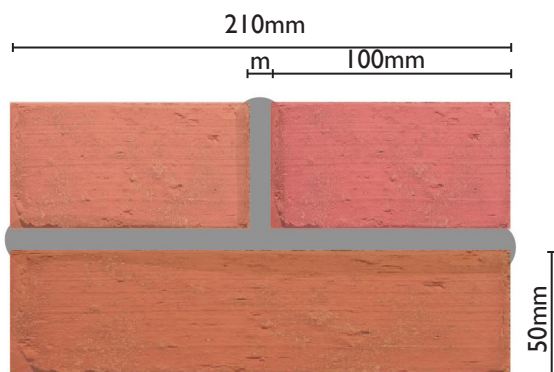
Bricks

One of the striking elements of the weapon depot is that the exterior exists of brick. The brick process at the end of the 19th century changed in a rapid pace due to the industrial revolution. New ways of brick baking and shaping came along. The most important region of brick baking at that time was the one of "De Lek en Waal". Here they produced what is most commonly known as the "Waalformaat". This brick has the dimensions of 210 x 100 x 50 mm. The

brick has a width of 100mm, two bricks in width with mortar is the same size as a brick in length. This brick is also used in the build of the weapons depot. What we can analyse from the brick pattern is that it has a rather unique design. Most resembling a mix



between a "cross bond" and "wall bond". But the irregularity at the corners makes it its own unique pattern. Thus, it can not be categorized into one named brick pattern.



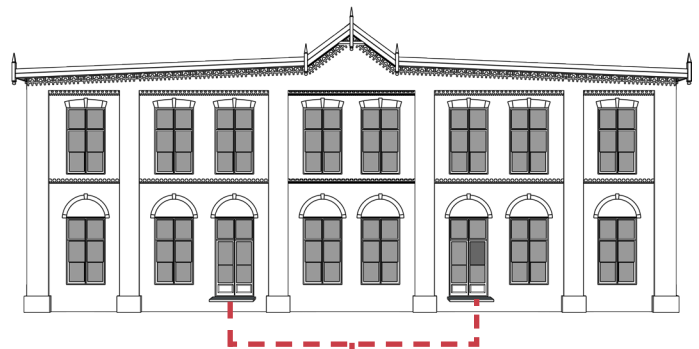
The color of bricks is the cause of the chemical and mineral composition of the raw material, the temperature and the atmosphere in the kiln. Most bricks have a reddish hue. This is the most common in mixtures. The varying hues in red is due to the increasing of the baking temperature. It will first move through dark red, purple and then to brown or grey at a temperature around 1300 °C. The weapon depot has three colors in its façade. Two hues of red and a yellow brick. The yellow color occurs when there is a higher lime content in the mixture.

Concrete ribbon

Concrete ribbons were added to a façade for two reasons. One being of esthetics and the other having the purpose of breaking the path of rainwater down the façade. These ribbons usually are more ornate and placed on the level of an upper floor. The concrete ribbon that is seen along the entire façade of the weapon depot has an esthetic purpose.

Glass façade entrance

The glass façade entrance is made of thin steel framing with single pane glass. This entrance was not the original main entrance of the weapon depot. The main entrance used to be located on the south façade. The entrance on the North façade was not always there. It was added in 1950 due to the transformation to office building. This is why it looks somewhat out of place. Steel frames started to be produced at the end of the 19th century when steel became a more convenient material to work due to the industrial revolution. The first manufactured hot rolled steel profiles had a thickness of 5 mm and were mainly used in wooden frames. Not until the 1950s were the frames made entirely from steel.

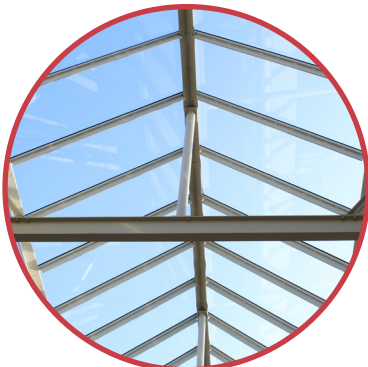


Entrances South

As mentioned, when the building was originally built in 1899 it had the main entrances on the south façade. These were used to load the products into the building from the train tracks. The doors are double doors made in a wooden frame and single pane glass. Above the doors are two window frames made of wood and containing a single glass pane.



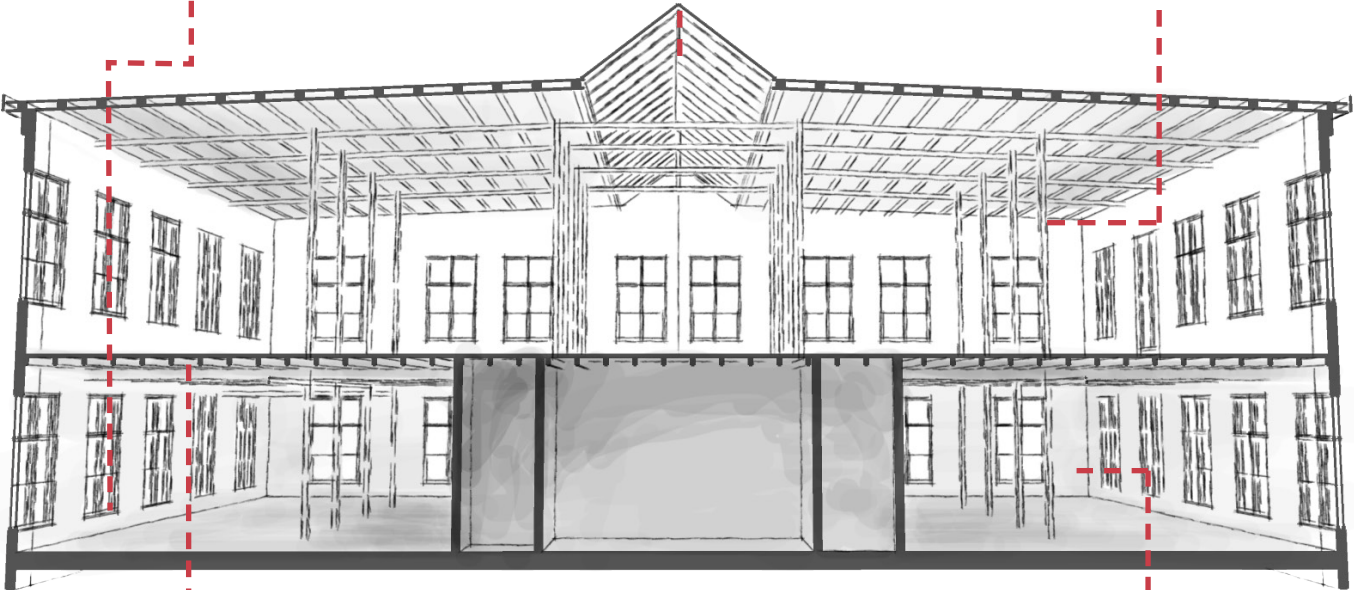
Window frame



Skylight



Steel truss



Floor construction



Staircase



Large windows



Brick pattern



Stucco



Tiles, stucco and wall panels, ground floor



Tiles and stucco, first floor

Renovation

The renovation of the weapon depot is done by the company ABT in 2015. Comparing the current state to the pictures taken before the renovation. It is seen that ABT "cleaned" up the state it was in, repaired the elements like; windows, stairs and glass and maximized the usage of space. Meaning removing inner walls that were not needed and creating an open space plan with characteristic structural elements.

Ground floor

When entering the weapon depot, the first thing we come across is a newly renovated wall with white stucco and steel frame windows with single glass pane. The hallway is the most completed area in the building. Here you will also find the only staircase in the building. This staircase is placed here when the building was transformed into an office building in 1950. In terms of style it matches the steel frame on the North entrance. The staircase railing is repaired the steps whoever, had to be rebuild. The rebuild stairs steps are made in wood.



Source: Jos van Rijn

Windows

The windows in building 8 are large windows made from a wooden frame. All the windows in the weapon depot were replaced during the renovation in 2015. In the chapter 4.4.3 Details. Were an attempt is made to established how the wall is build and how the window frame is placed.

Walls

As previously mentioned, the walls were "cleaned" up during the transformation. Most walls were left in the state that they were in. As a result of that the walls throughout the building and levels have various materials in varied states of ruin. The inner masonry wall of the cavity wall can be seen. This appears to be a yellow brick with the same dimensions of the Waalformaat (210x100x50 mm). The pattern of the brick bonds is that of a stretcher brick bond. Of top of that is a white stucco. It is not sure if the cavity walls are insulated by ABT.

Tiles

In some places two types of ceramic tiles can be found. One is an off-white color and the other in a jade color with gloss finish. What we can deduce is that the jade tiles are in the hallway and used for decorative purposes. The off-white tiles used on the first floor could perhaps be used for a more functional purpose, as in a backsplash. The off-white tiles got up to about 1,60m and seem to be placed along a curved element along the window. This element is missing but we can only assume that this must have been a type of divider element with a height of about 1,60m

Floors

The floors in the hallway have a large tiled surface in a beige coloring and on estimation have the size of 30x30 cm. These tiles are newly added after the most recent transformation. Continuing on the ground floor

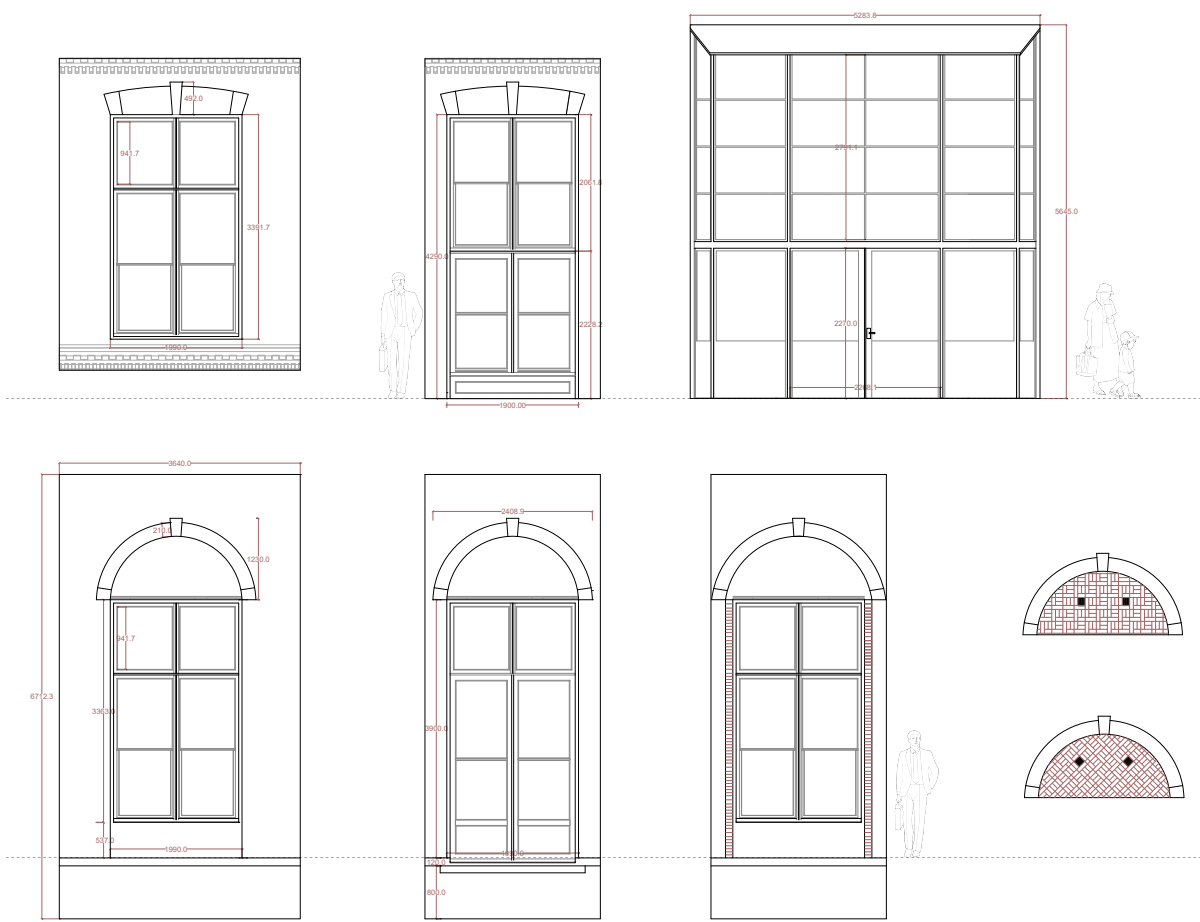
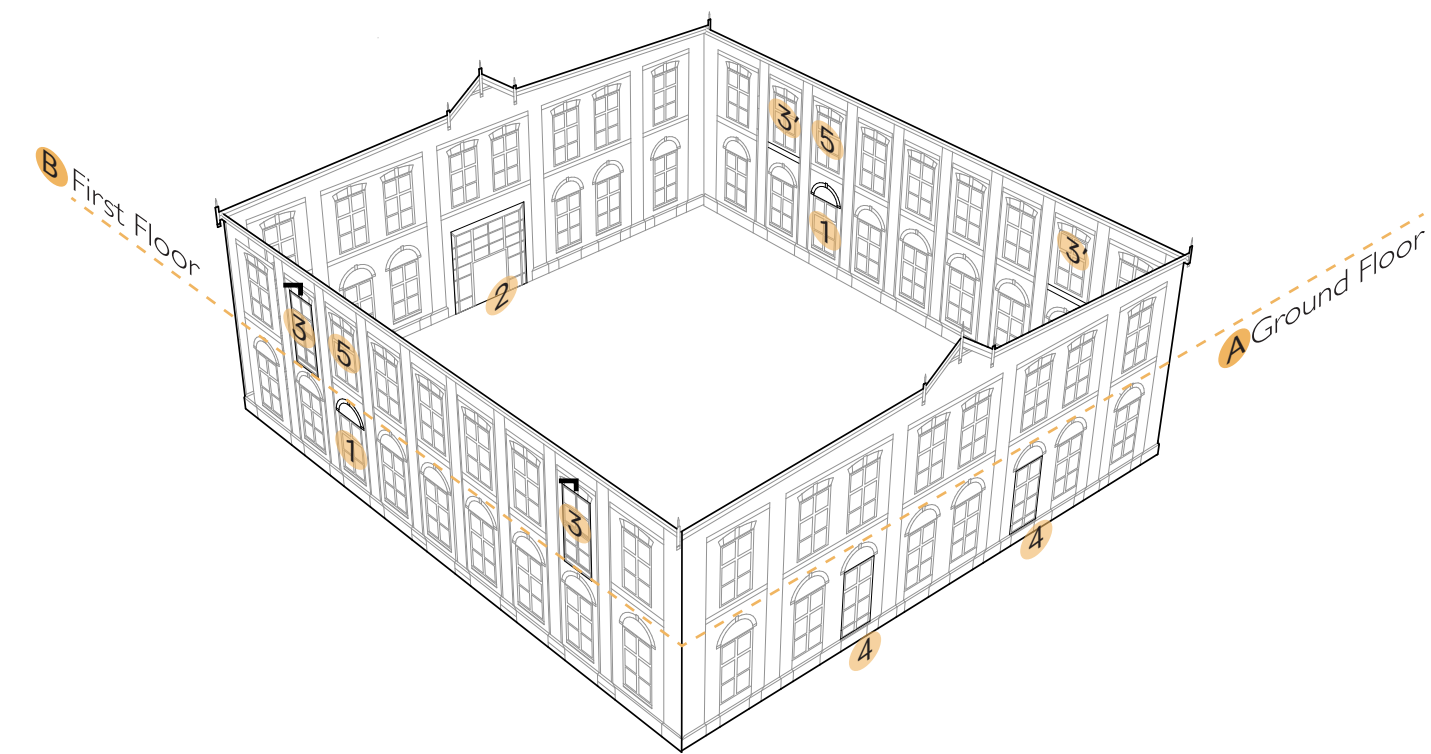


we can see the bare concrete of the ground floor and an original floor tiling. These are placed around the core. The state of the floor on the first floor before the reconstruction was so poor that the entire floor had to be reconstructed. No new upper flooring was added. What we see now is the underlayment sheets. From the ground floor looking up one can also notice that the floor is newly constructed.

Ceiling

From an interview with Jos van Rijn of the Hembrug site, it was stated that building 8 in the past was used for governmental training purposes. During that training a helicopter landed on the roof of the building. Which caused the roof to collapse. What followed was that the open structure caused damages to the interior due to natural weather circumstances. This is the reason why the first floor and the roof were reconstructed. The first floor seems to be build of wooden beams that go in the length from the core to the exterior wall. Then the wooden sheets of underlayment are placed on top.

4.2.4 Openings



The weapon depot and machine hall are typologically different from each other. Since the building 8 experienced two times renovation, the entrance and windows has changed and mutually converted. The trace of the change is studied. To inclusively analyze and understand the windows and doors, both buildings are scanned and concluded as main types and exceptions. Since the weapon depot was renovated twice, the entrance and windows had some transformations. These traces of the changes are studied here.

The weapon depot is built with cavity walls masonry with brown bricks in a cross bond with the application of yellow brick and natural stone blocks around the windows and in the moldings. The north and south façades has eight windows per floor while the east and west façade have nine windows. These windows are in slightly deepened fields and are made out of wood. On the inside, each window has an additional wooden window. The windows have a six-rod division with a round arch on the ground floor and a rooster comb on the first floor. The entrance (north) has been placed in the middle of the façade after the transformation to an office building. It consists out of a curved sidewalk and inwardly curved portal that is made of steel and glass and that opens onto a porter's lodge and a spacious stairwell. Detail analysis about the window could be found in appendix.



B



A



3



3'



3''



1



4



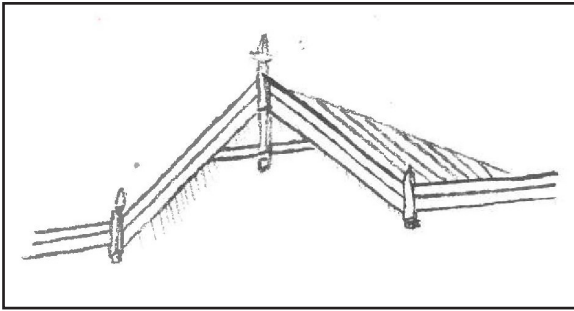
5



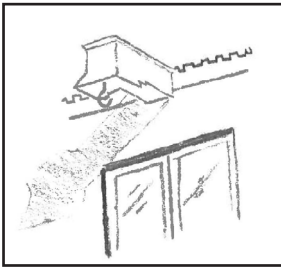
2

4.2.5 Characteristic elements

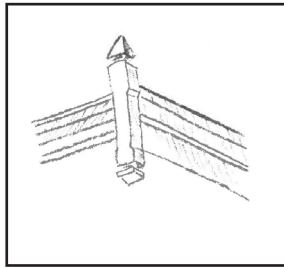
The once industrial area has now made place for a quite terrain with empty buildings. While not having any of the activities from the past anymore, there are still traces left of the industrial past of the site. These traces are not only visible on the interior of the buildings but also in little details on the façades and the construction.



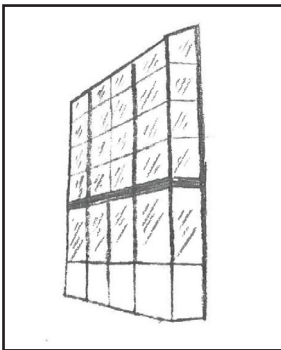
Ornamental roof ridge



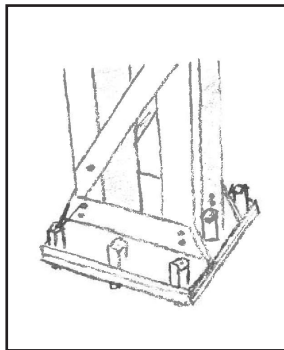
Cantilever



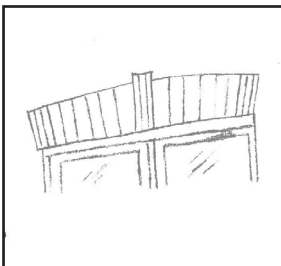
Ornaments roof



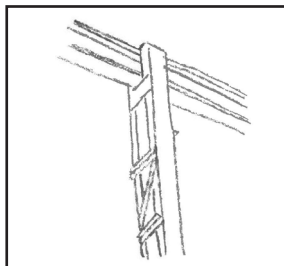
Glass Entrance



Foot columns



Brick lintel



Connection construction



Façade Building 8



Interior Building 8



Interior Building 8



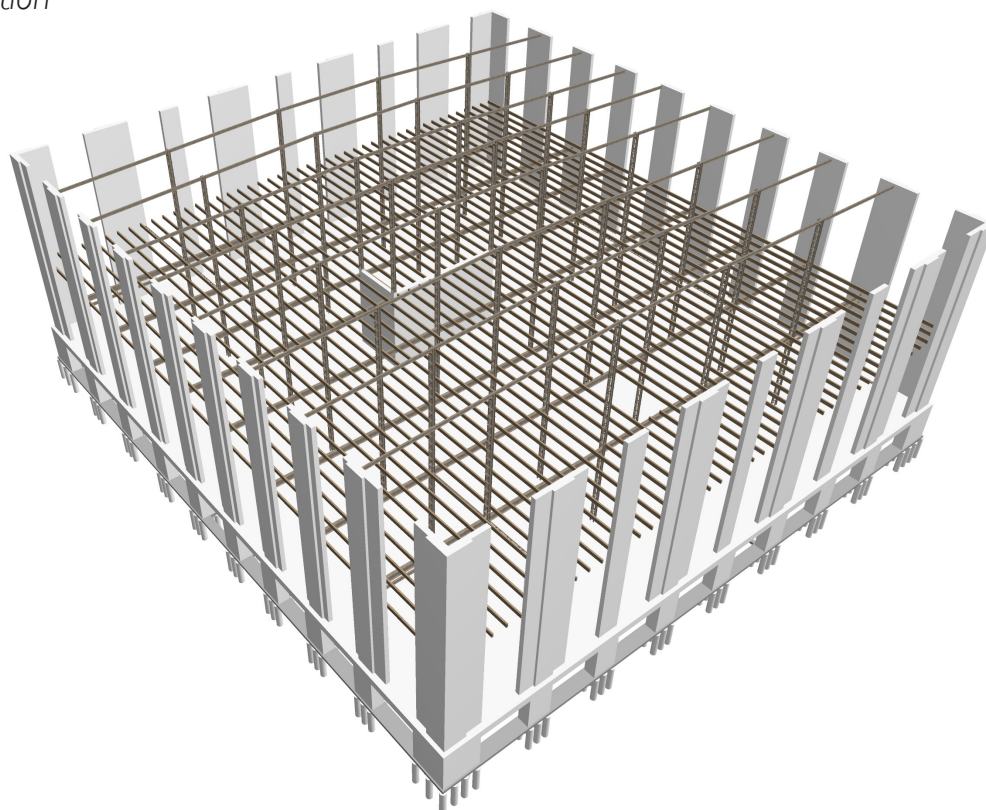
Second Floor Building 8

To conclude this part of the analysis; The Weapon Depot is a former storage building turned into an office building. And while this may not be noticeable at first sight, but when looking further into details, a connection between the building and its past can be seen. There are no major signs left of the buildings past as a office space, merely small details. But the spatial qualities of a depot building are still present. These qualities stretch out from the well lighted spaces to the buildings minimalistic industrial design.

4.3 Technological analysis

The weapon depot is renovated in 2015 to its original state of 1950 when it was transformed into a office building. For the technological analysis we looked into the construction, stability, the details and the services in order to understand the weapon depot better. This way we disassemble the building in hope to discover what the functional logic of the construction is, its constructive purpose and what this meant in historical context.

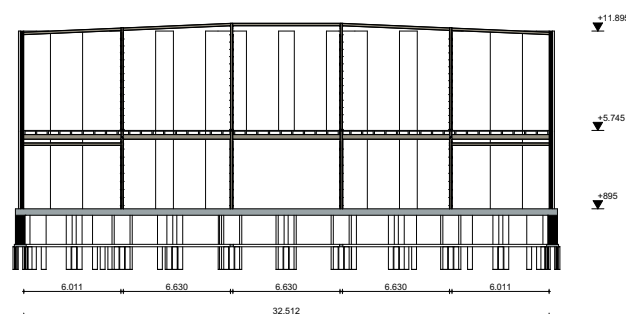
4.3.1 Construction



3D view

The construction of the weapon depot exists out of 2 construction types; slabs and columns. One of these slabs is the wooden storey floor. The outer walls function as load bearing walls and these are the slabs that enclose the columns on the inside of the building.

The columns are 2 truss columns placed on top of each other so that they reach from the ground floor up to the roof. They go through the storey floor which is also the point where the 2 columns are connected [see picture]. The columns are connected to each other through steel beams. On top of these steel beams the wooden floor is situated. This wooden floor exists out of wooden plates that are placed on top of wooden beams that lie across the steel beams.

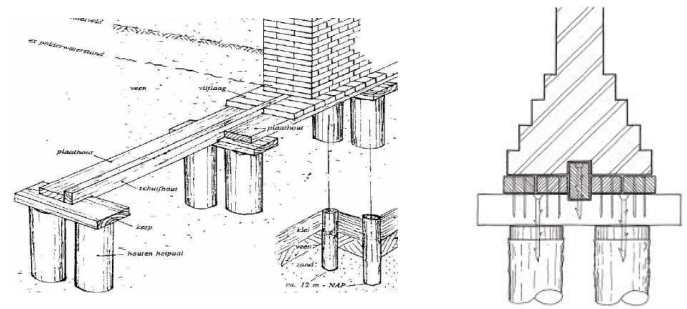


Cross section



Picture: column through floor

The foundation of the weapon depot is an Amsterdam pile foundation. This is a foundation method on wooden piles. With the Amsterdam method, the load of the building is carried by two poles which are connected by wooden beams. On top of these wooden beams the brickwork begins, this means that a part of the brickwork functions as foundation walls.

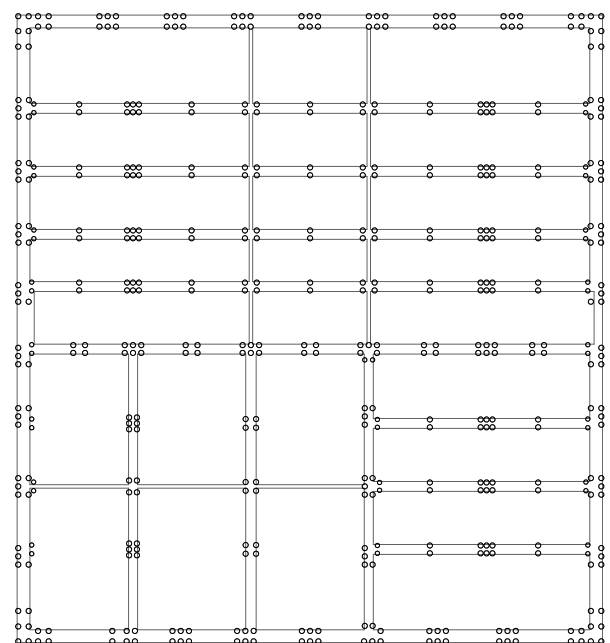


In the pileplan is shown how the piles are organized for the weapon depot. The position of the loadbearing walls and columns can be traced back in this pileplan because of the multiple piles that are placed together.

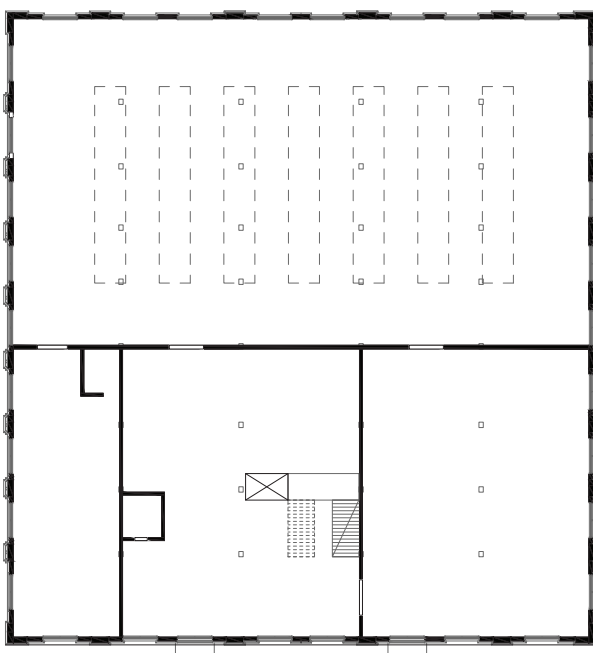
Amsterdam pile foundation
sources: joostdevree.nl & monumentenhandboek.nl

What is notable in the foundation plans is that on the south west side the foundation the grid is different. The grid has a wider spacing than in the rest of the building. This is due the original function of the building. In the floorplan of the ground floor of 1899 it is visible that on the south-west side the entrance and office was placed. The rest of the building was used as storage space, therefore the foundation had to carry heavier loads on that side of the building.

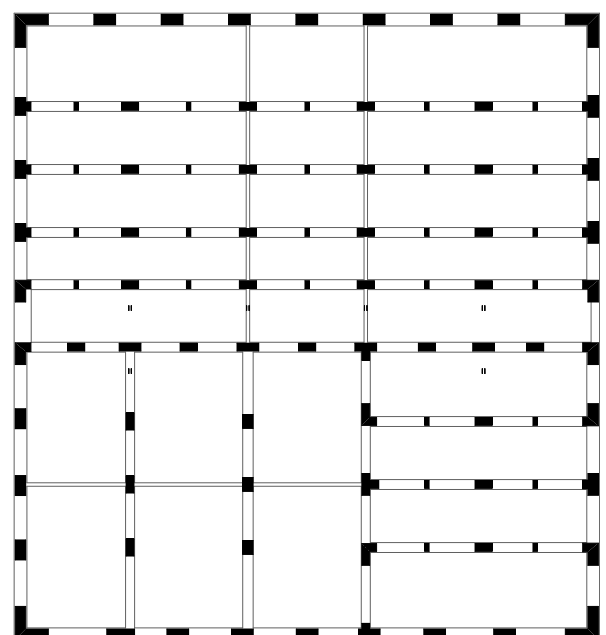
The foundation walls continues above ground level. Therefore the ground floor of the building is slightly raised (895mm) from the ground level.



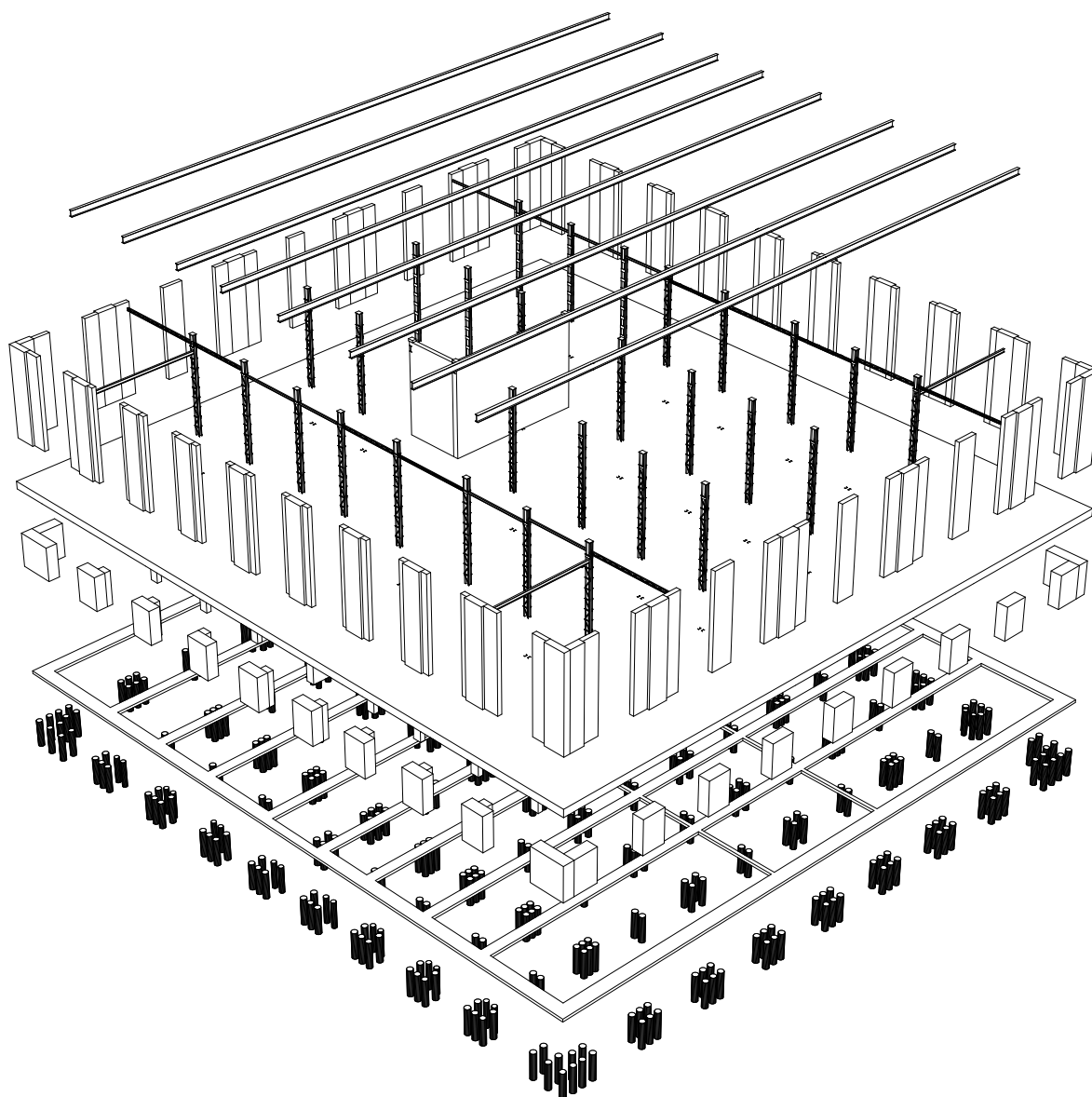
Pile plan



Ground floor 1899



Foundation wall plan



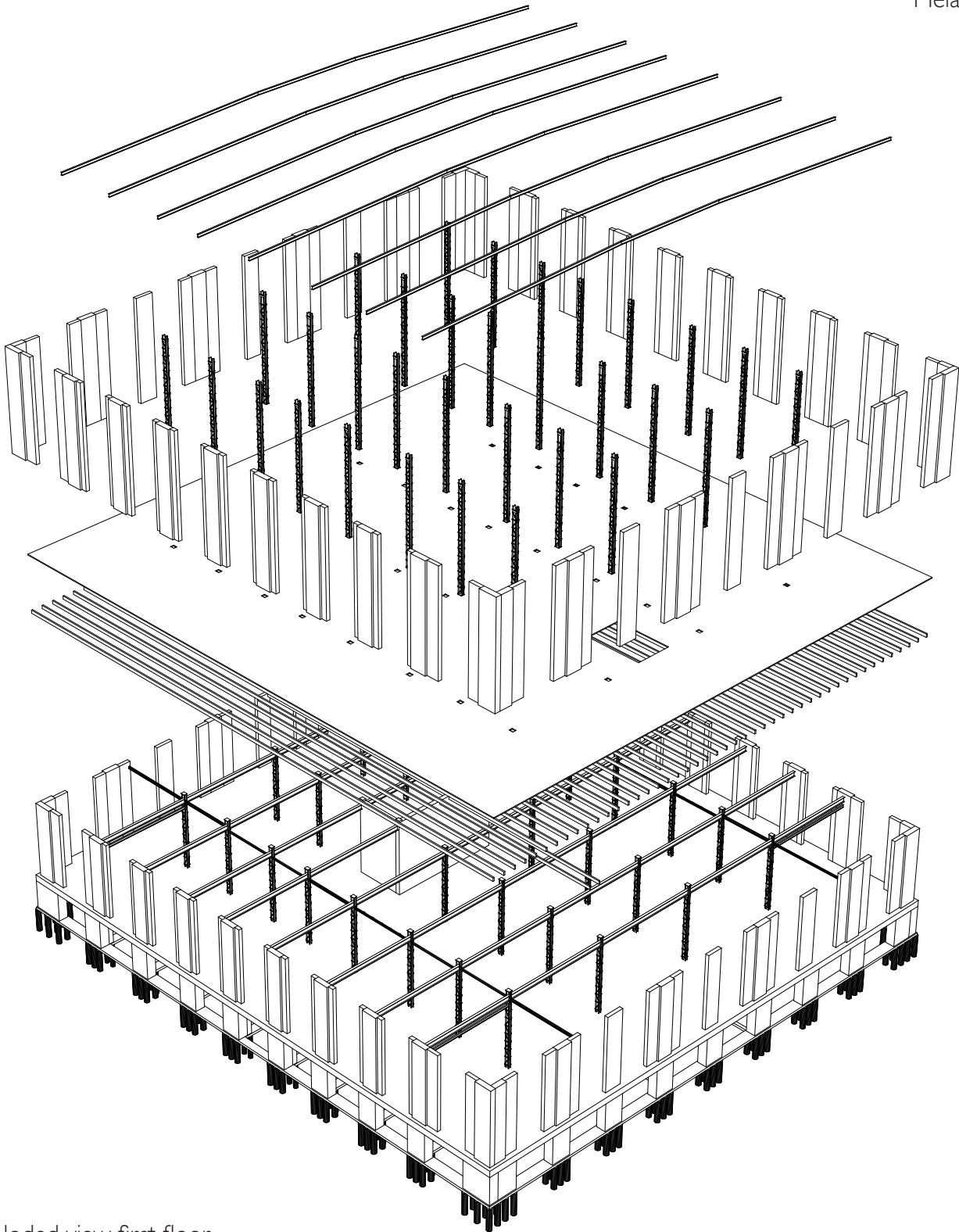
Exploded view ground floor

In this exploded view of the ground floor is the Amsterdam pile foundation visible. First there are the wooden piles, above those piles are the wooden beams where the foundation walls are placed upon. These foundation walls are visible in the facade [see photo]. On top of the foundation lies a concrete floor and the load bearing outer walls. The steel columns stand in a grid. The 2 outer rows of columns are connected through beams to these outer walls, we think this is to maintain stability in the grid but we can not say for certain. Over this grid of columns lies a row of steel beams which carry the story floor and are also connected on either side of the beam onto the load bearing outer walls.



Photo: foundation wall

Foundation wall



Exploded view first floor

On top of the steel beams of the ground floor lies the wooden story floor. This floor consists out of wooden beams where wooden plates are placed upon. The same steel columns that were on the ground floor are placed in the same grid on the first floor. On top of these columns the steel beams are placed that support the roof. These beams are curved to help with the rainwater drainage of the roof.

To get a better understanding of a building, especially one with the possibility of being reconstructed, it is essential to analyse every area of its structure. In this part of the analysis the roof of the Weapon Depot is taken under the loop.

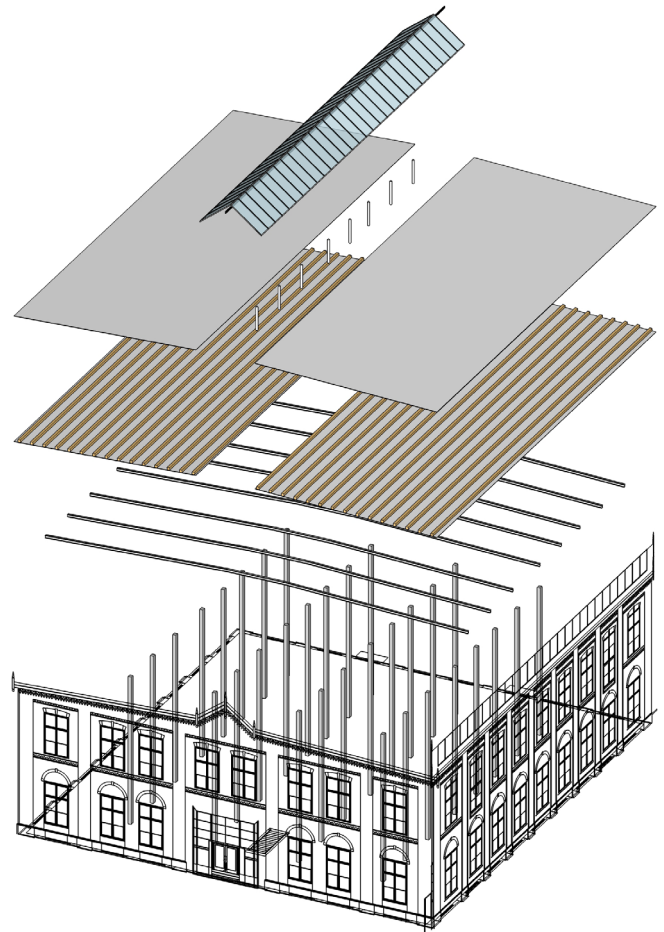
The roof of the Weapon Depot is completely renewed in the recent restoration. While it seems like a flat roof at first sight it is actually a roof in an arched shape for sufficient water guidance. It is slightly visible in the pictures and in its presence, but the fact is more clear in the technical drawings.



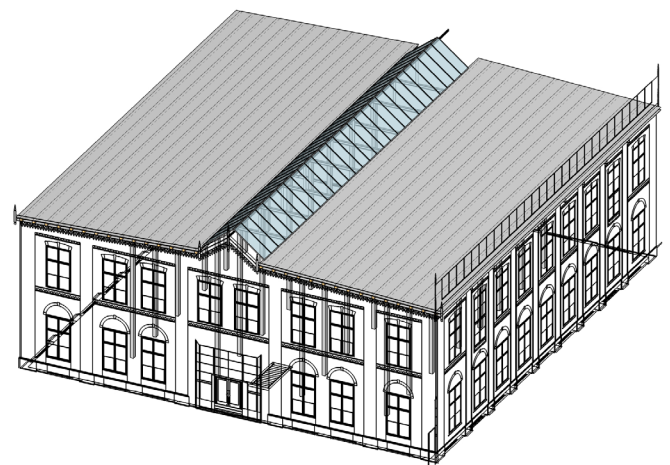
Second floor, roof of Building 8

The new roof is placed upon the original structural columns, on top of a series of beams which have an arched shaped, stretched from the east to the west façade. The package of the roof consists of wooden beams which are diagonally placed on top of the steel beams.

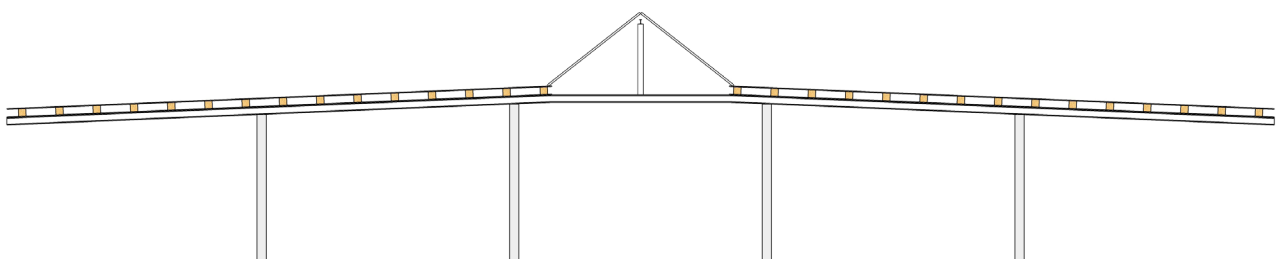
The roof is split from the middle making place for a skylight. With the help of additional constructions, the skylight is supported in the middle with steel columns which rest on the arched beams.



Exploded view roof Weapon Depot



Axxo Weapon Depot



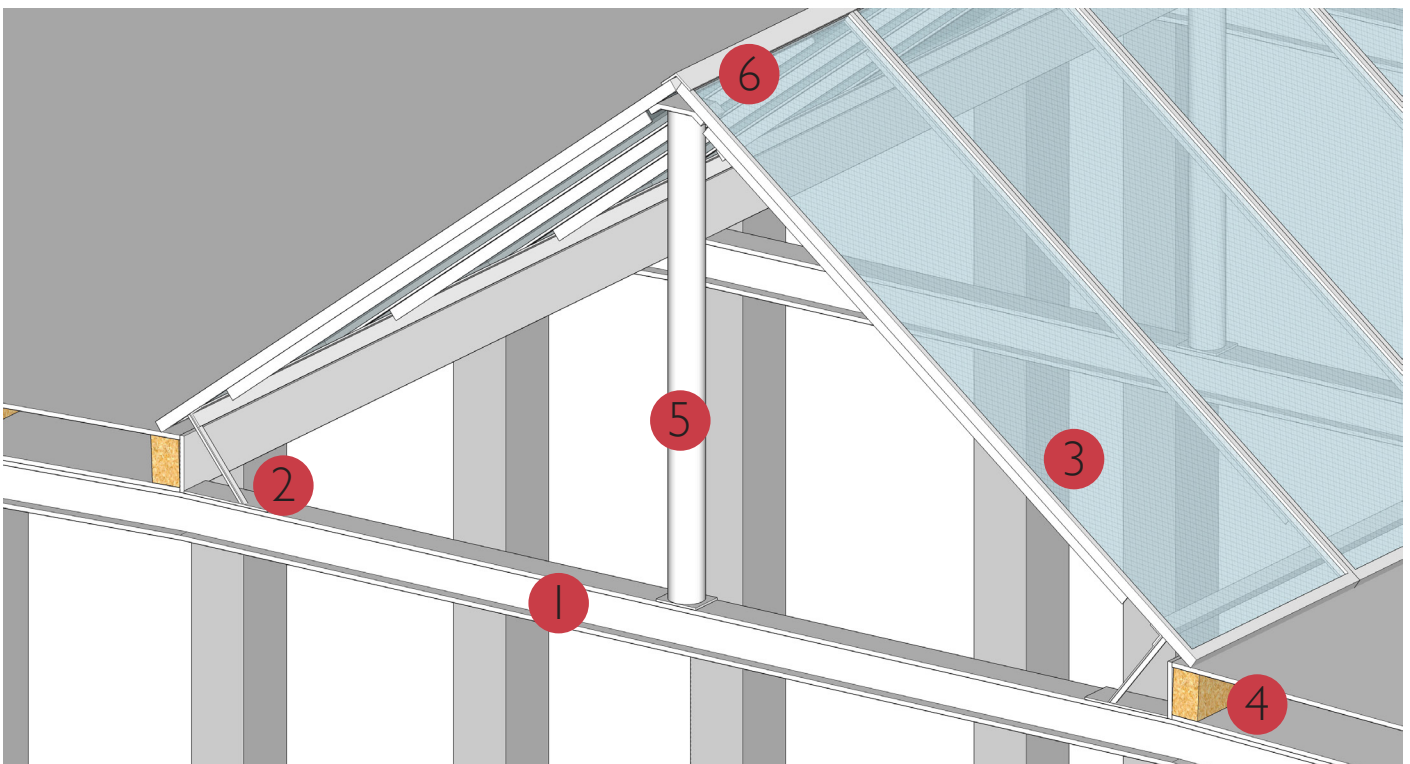
Section roof Weapon Depot with arch



Skylight Weapon Depot



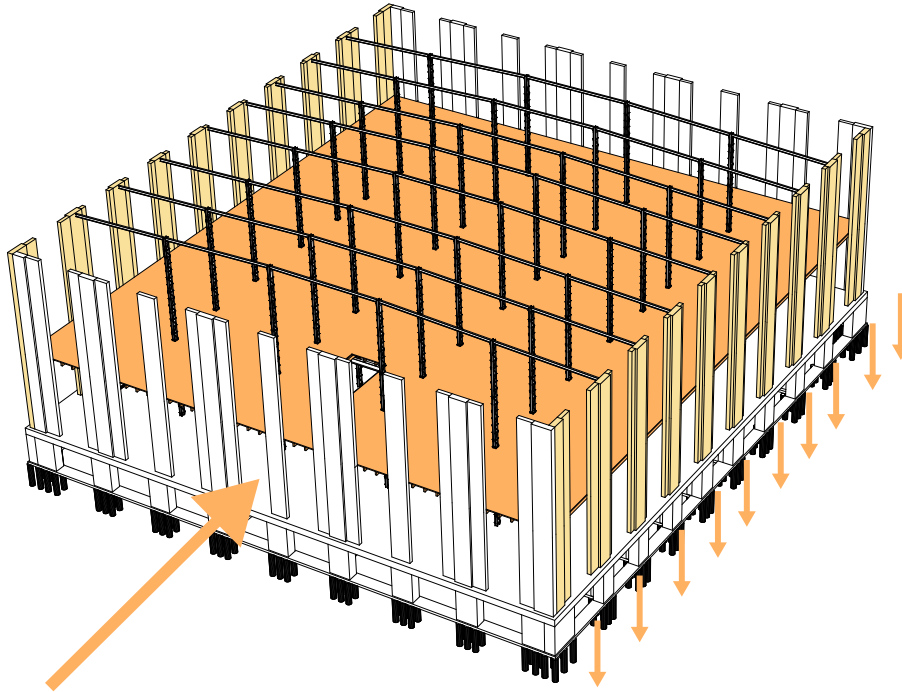
Airphoto Weapon Depot



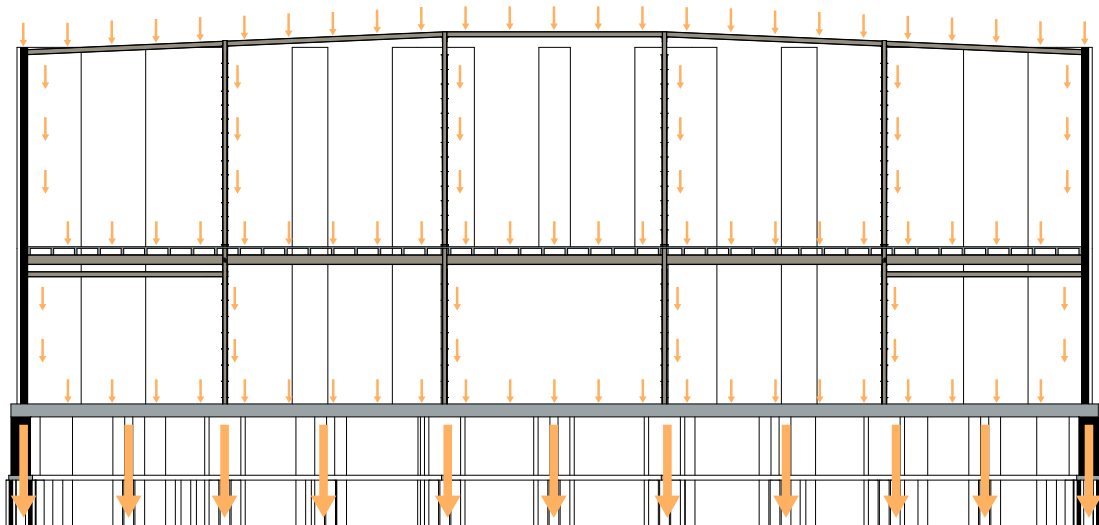
Principal structure roof Weapon Depot

1. Arched beams
2. Supportive construction
3. Skylight frames with safety glass
4. Roof
5. Supporting columns skylight
6. Ridge

4.3.2 Stability



Stability - horizontal forces



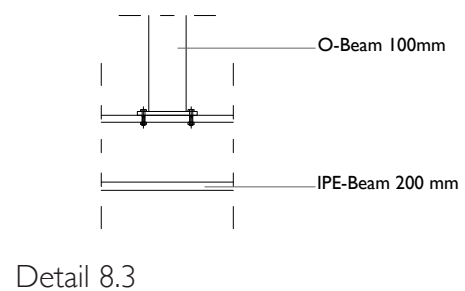
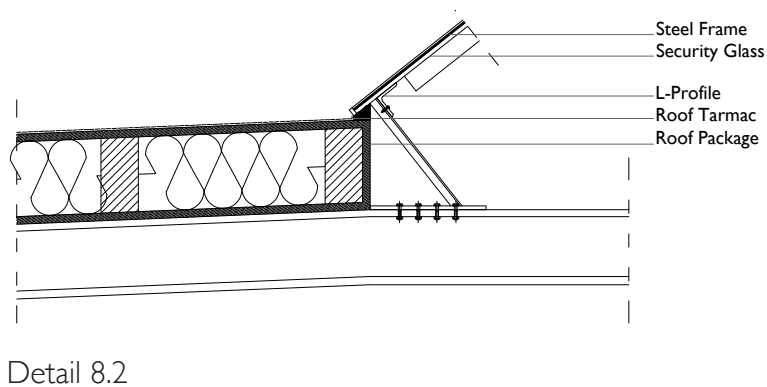
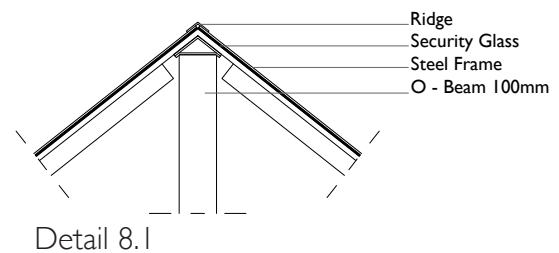
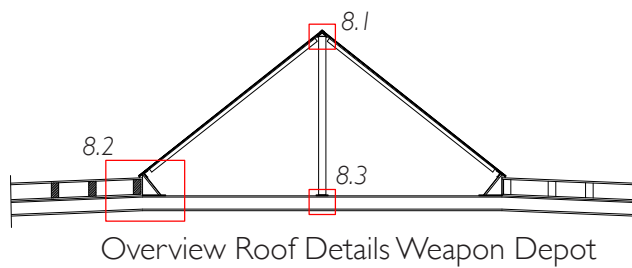
Stability - vertical forces

The weapon depot lends its stability from the horizontal forces through the story floor. The story floor causes slab action which carry the horizontal forces towards the load bearing outer walls. These outer walls guide the forces towards the foundation of the building.

The vertical forces get guided through the columns and outer load bearing walls. From there it continues towards the foundation where these columns are standing on.

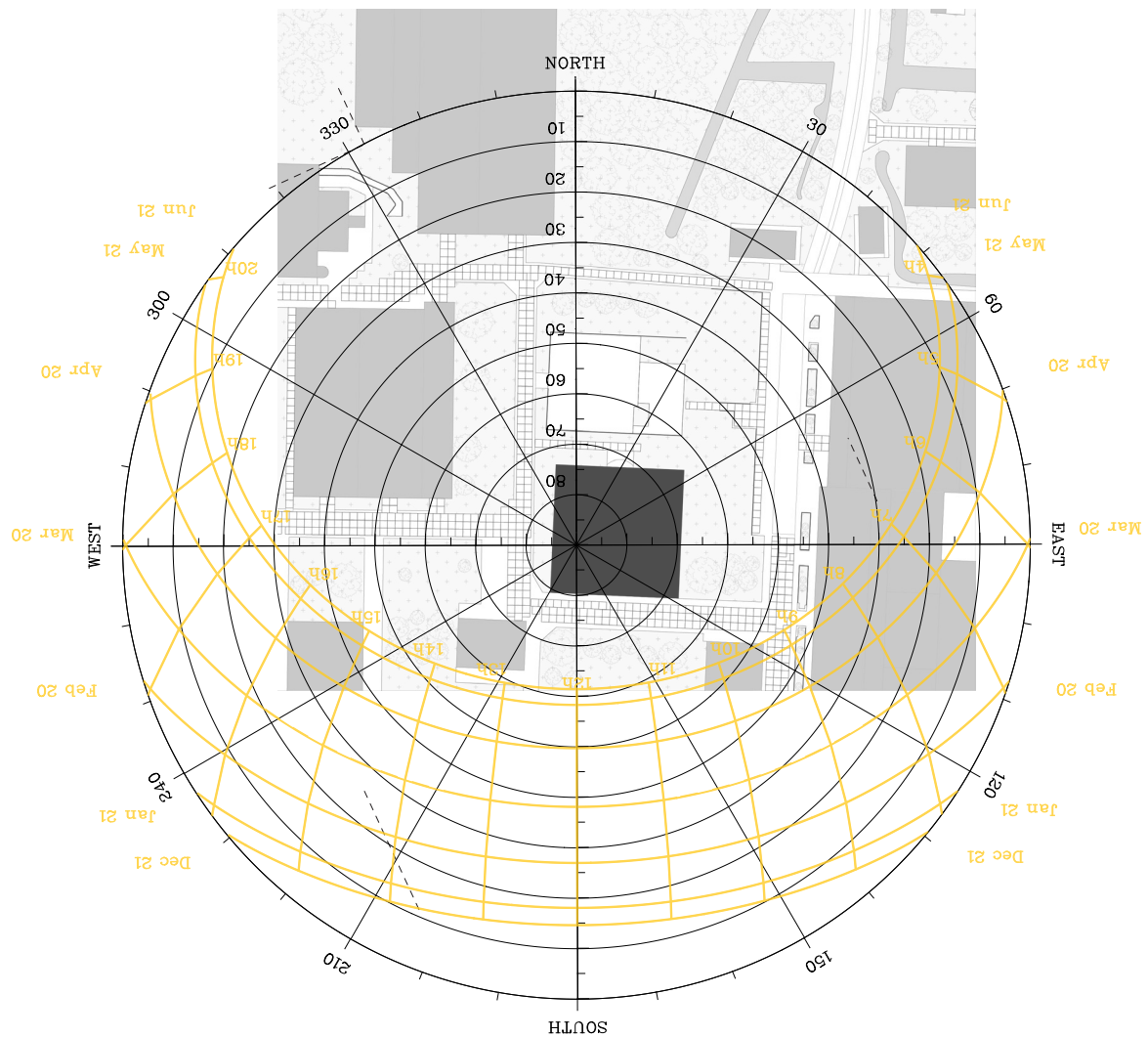
4.3.3 Details

The following details have been drawn to give a better overview of the construction of the roofs. The chosen details are mainly focused on the connection between the roof and the main construction and the materials used in the construction.

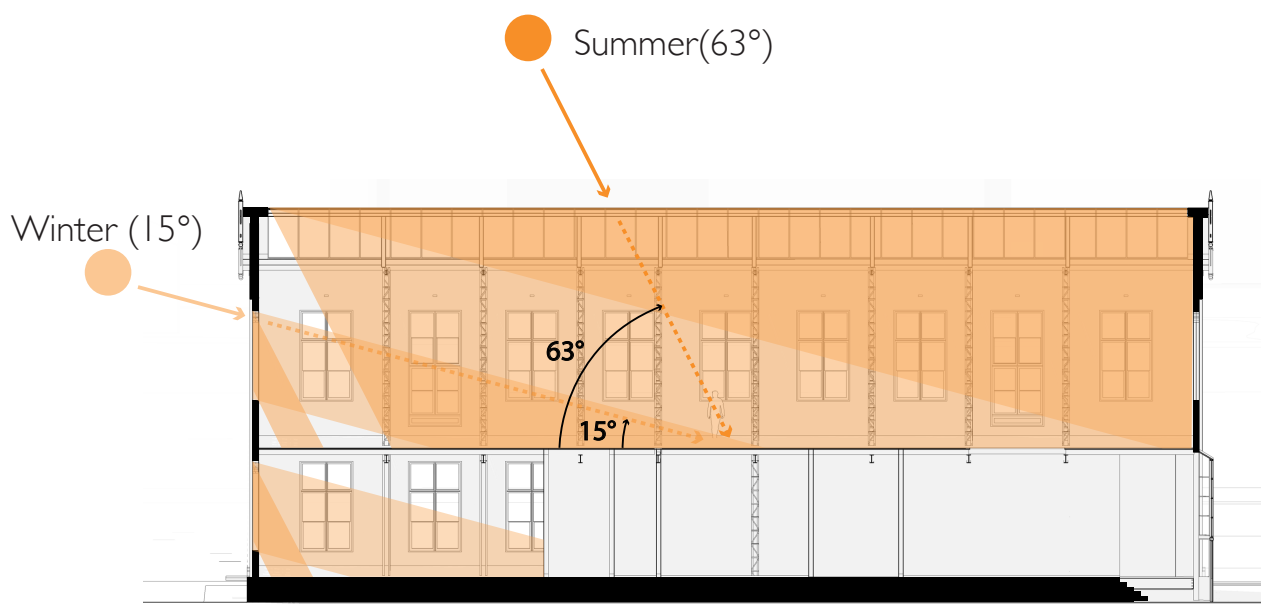


4.3.4 Climate & Services

Orientation in relation to sun

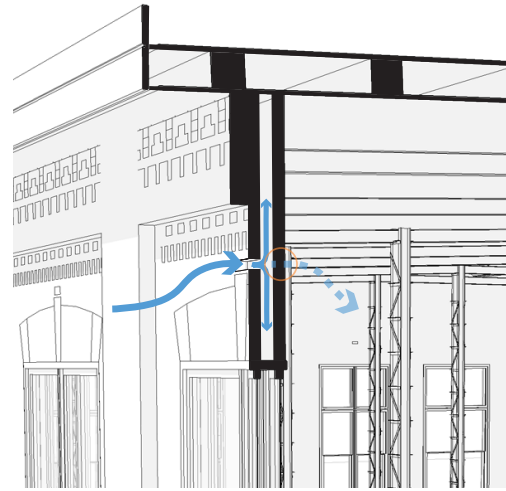


Daylight



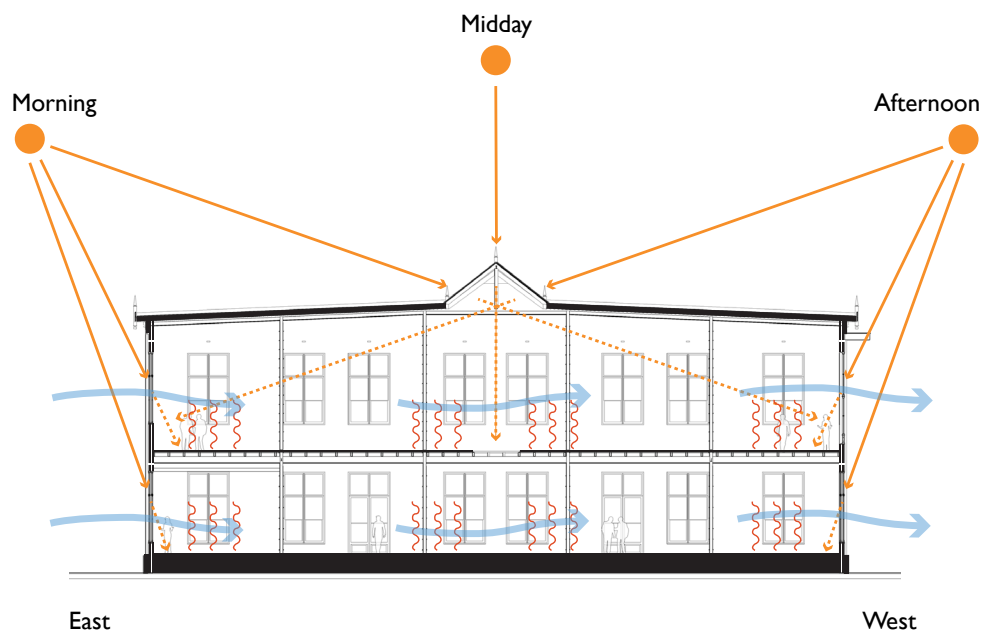
Climate

Ventilation of the weapon depot only took place through natural cross ventilation. The natural cross ventilation was created by openable windows and small cavity holes in the outer walls above each window. Originally there used to be small holes in the inner walls as well to ensure continuous natural ventilation, but after the building was redesigned, these holes have been closed. Nowadays ventilation of the building takes only place by opening windows. The small cavity holes only ventilate the cavity between the inner and outer walls in the current situation.



Openable windows

Cavity ventilation holes



The main construction of the Weapon Depot consists out of a combination of a steel skeleton and the brick façades, built upon a Amsterdam pile foundation. The minimalistic construction is still fully intact, keeping the building stable and in adequate condition. The ventilation used in the building was a resourceful solution for its time, it is still intact today, but ventilating the inner space through the cavity walls is not of this time anymore. The roof is completely reconstructed, modeled after the original roof with a new skylight.

Conclusion

To conclude, by having analysed the different points of interest, we could say that we gained a better understanding of the weapon depot. Although the design and function of the weapon depot has changed over time from a storage building to an office, there are still clear traces left of the original function of the building. The concrete core in the centre of the building and the changed orientation of the building are remnants of this change in function. The preserved construction, including the foundation, of the building is a clear reflection of its original function to carry the heavy weight of stacked weapons.

By analysing all this information and relating it to the main question of this research “How did the functional logic of the Artillerie Inrichtingen influenced the character Campus North has today? we can conclude that the uniform and prestigious appearance of the building is a result of the architectural style that was common for military buildings of that time. The exterior and interior of the building do still contain traces of the change in function

After having analysed the cluster of buildings on Campus North, this chapter will have its focus on the machine hall (building 320). The machine hall is one of the two buildings which are located on our assigned design ensemble, therefore we have analysed this building more carefully. Firstly, the historical function of the building is analysed and an overview of the most important events through time was made. Secondly, we observed the overall experience and tend to get a grasp on the spatial qualities and the distinctive characteristics of the weapon depot. Thirdly, we thoroughly analysed the construction of the building to get a better understanding of how the building is structured.

5.1 Historical analysis

For the historical analysis of the machine hall we mainly focussed on how the use of the building itself has changed over time, such as changes in floor plan, entrances and openings, circulation, layout and so on. The surrounding area is studied and a timeline was made that shows the most important events through time.

5.1.1 History

The machine hall was built in 1936 until 1941 and was originally intended for the production of civilian machine tools. During the crisis years (around 1930), the amount of employees of the Dutch army had been reduced to a minimum. During those years prior to the Second World War old buildings on the Hembrug site were demolished and replaced by mainly larger new buildings for new products. In contrast to the neo-classical architecture style of the old buildings from the first phase, the design of those new buildings of this third building phase had characteristics of civil architecture.

The machine hall became one of the largest factory buildings on the Hembrug site and consisted of two big manufacturing halls and a lower extension along the west façade. A special steel frame construction carried two big cranes that could move in line with the length of the building and the two gable roofs.

This change in architecture is understandable as the Artillerie Inrichtingen shifted their focus on casting, forging, milling and turning work for private enterprises and used a large part of the old weapon factory for civilian production. Buildings on the former weapon factory site, including the machine hall, were used to produce farming machine tools, and later numerous other products such as bicycles, irons and optical instruments.

The office building 317 was built in the same period as the machine hall itself as a small extension on the north façade of the machine hall. There have been some minor changes in the interior of the machine hall over time. In 1975 they made another extension along the west façade of the building without altering the original façade.

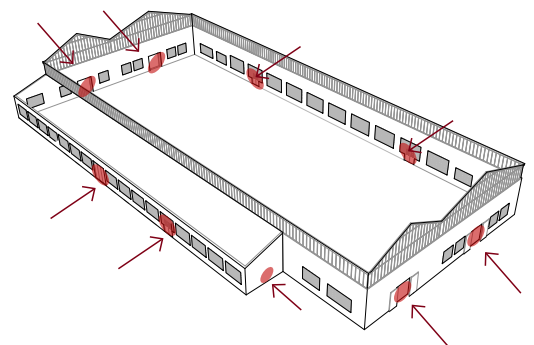
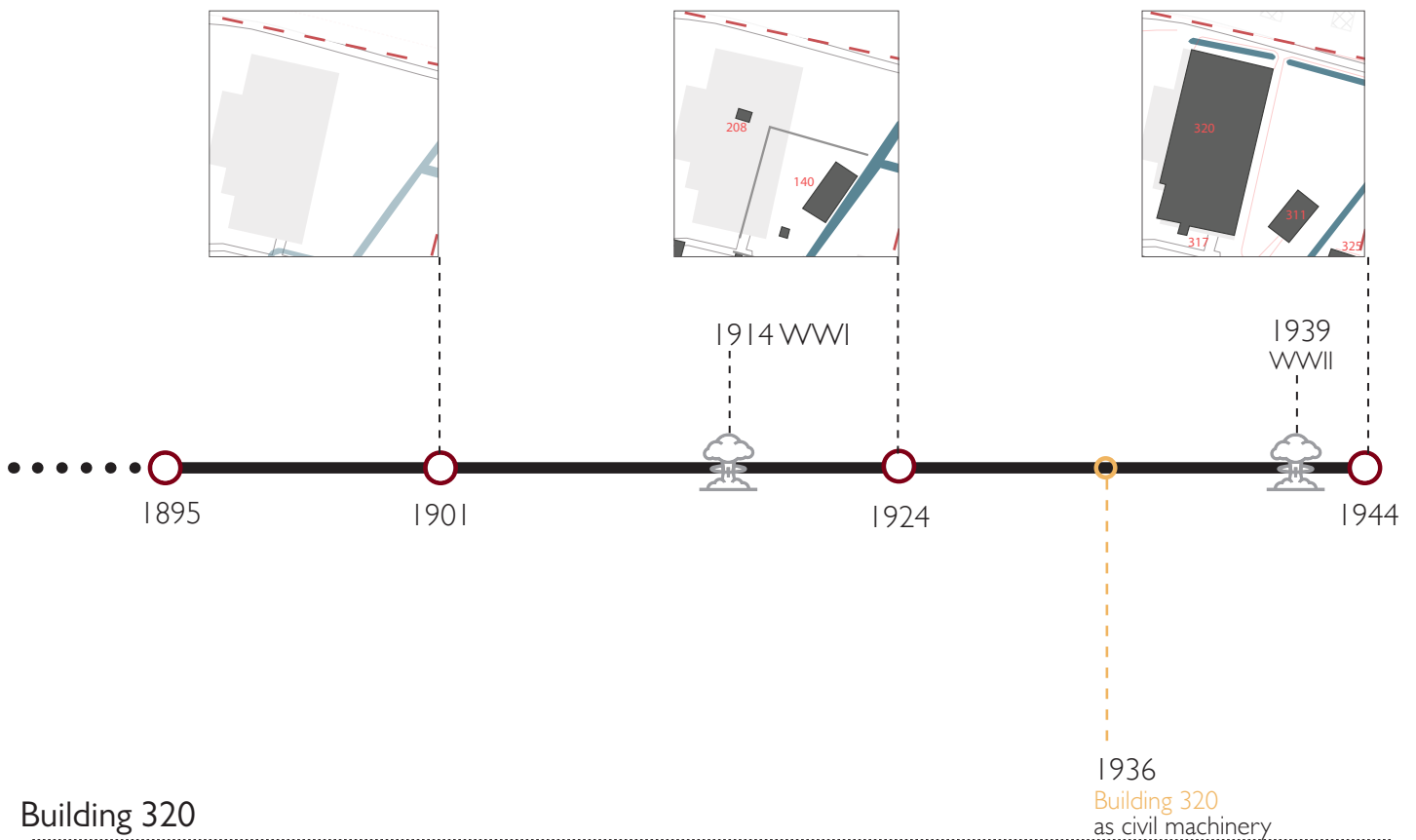
Source:

- *Monumenten en Archeologie Noord-Holland. (1996) Hembrugterrein te Zaandam. Cultuurhistorische inventarisatie en beschrijving van de monumentale waarden in hoofdlijnen.*
- *SteenhuisMeurs. (2010) Hembrugterrein - Zaanstad CULTUURHISTORISCHE ANALYSE.*



© Ge Dubbelman 2018

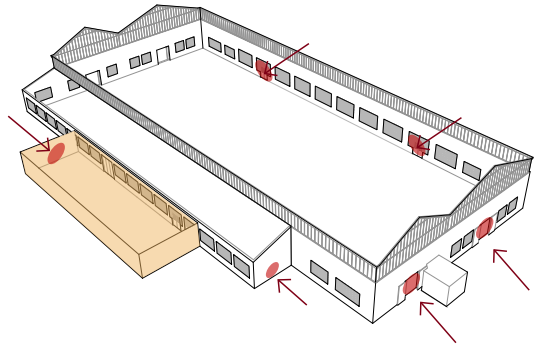
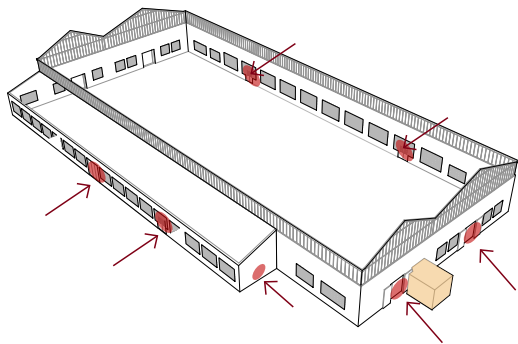
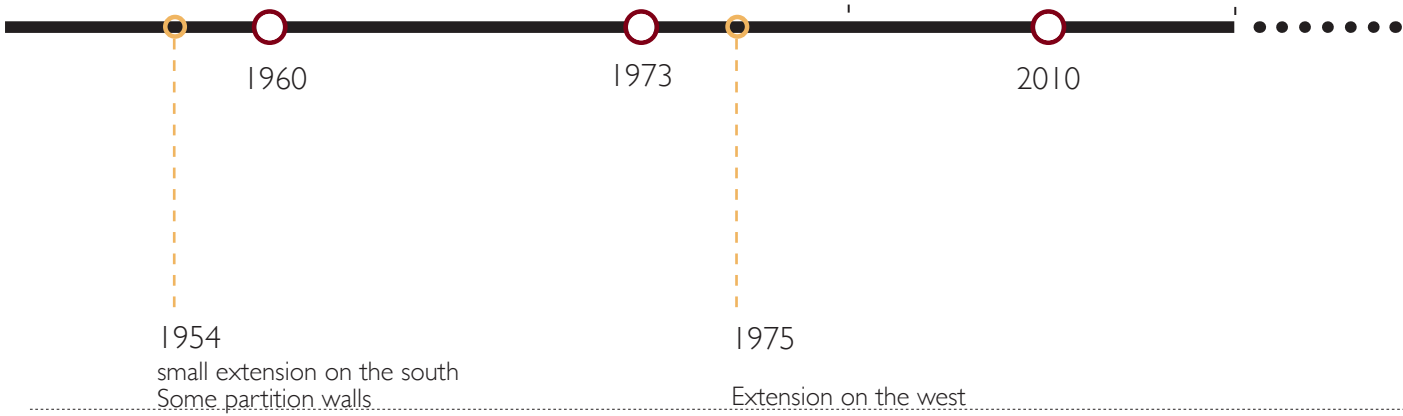
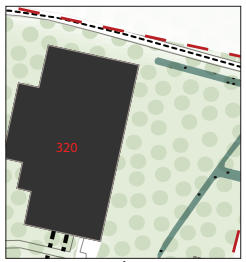
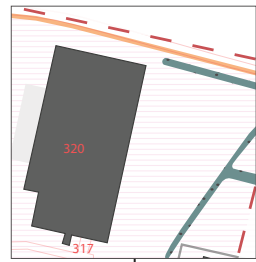
Source: Ge Dubbelman/Hollandse Hoogte (2003) "gebouw 320"



The former machine hall (building 320) dates from 1936 in the third phase of the factory. It was intended for machine factory that manufactured civil service machinery. Built in business style, the double machine hall has a rectangular floor plan under two slightly sloping roofs. The western hall is slightly narrower than the eastern one. The machine hall did not experience much physical changes over time. In 1954, a small office room was added in the southern entrance while two more entrances

happened in the north facade. In 1975, the northern entrances were closed and a longitudinal extension was placed in the west. The west extension worked as serving space including office, measuring space and toilets.

source: National Cultural Heritage Agency



5.1.2 Function

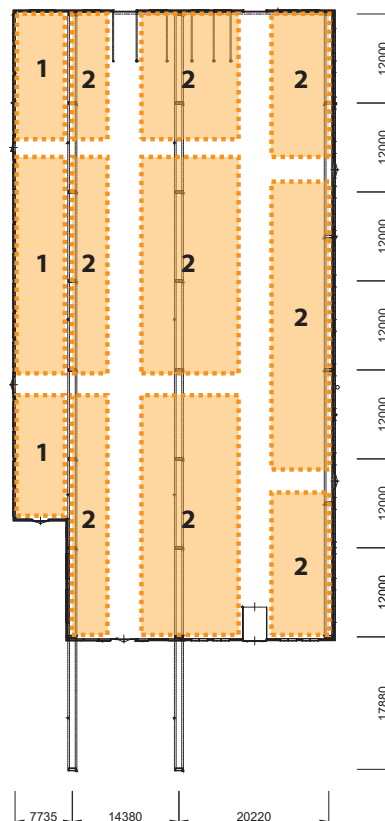
1936-1941

Once the former Machine Hall (building 320) was built in the period 1936-1941 the building was used to produce civilian machinery. The building consists of two long machine halls which are oriented in north south direction with a lower extension on the west side.

We didn't find an original floor plan that showed the functional layout of this period. Therefore we made this drawing on the right that shows our assumption of the most likely functional layout of the building. We assume that the two big machine halls were used for manufacturing the machines and the lower extension on the west for administrative work. We based these assumptions on floor plans Jos van Rijn showed us. Jos van Rijn is project employee of the land company Hembrug Zaandam B.V..

Legend:

1. Office space / Storage space (assumption)
2. Manufacturing space (assumption)

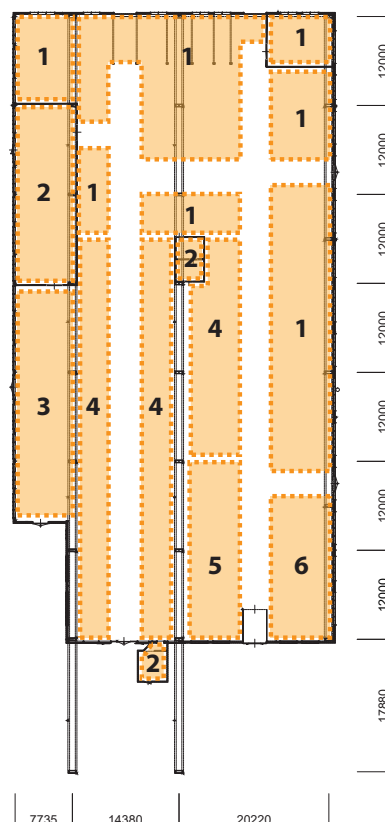


1954

The floor plan on the right shows the functional layout of the machine hall that is based on a floorplan from 1954 that shows the layout for manufacturing heavy parts for the production of machine tools of that time. Compared to the original floor plan some small additions have been made. In this period there used to be an enclosed space in the lower extension on the west, one in the centre of the two machine halls and one in the north east corner. Besides this they made a small office building on the front facade of the building in the south.

Legend:

1. Manufacturing space (several machines)
2. Office space (assumption)
3. Welding space
4. Storage space (assumption)
5. Lathes
6. Drilling machines

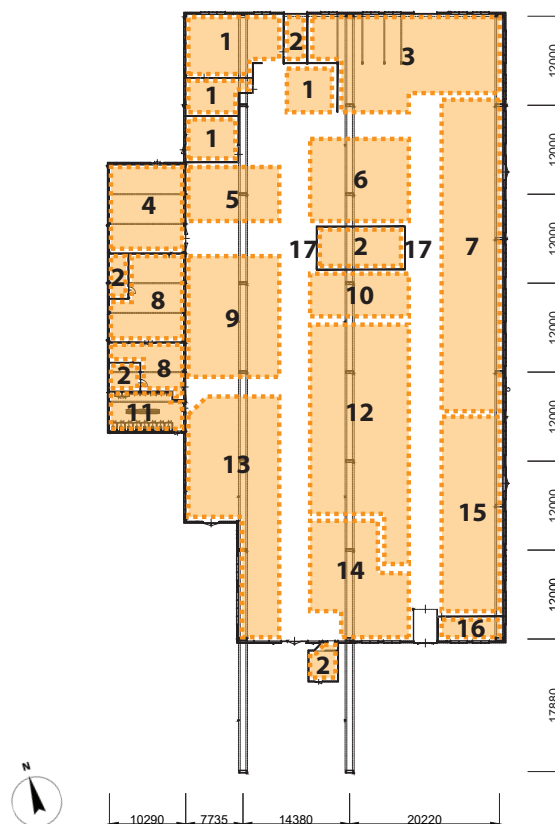


1975

The drawing on the right is based on a floor plan drawn in 1975 that showed the positioning of all the machines and spaces inside the building.

Legend:

1. Manufacturing space (assumption)
2. Office space
3. Grinding machines
4. Circular grinding machines
5. Sharp grinding machines
6. Planing mill machines
7. Milling machines
8. Measuring space
9. Tool magazine and counter
10. Control post
11. Toilet and bathroom
12. Lathes
13. Heavy rod material and progression storage
14. Storage space
15. Drilling machines
16. Changing room
17. Coffee machine

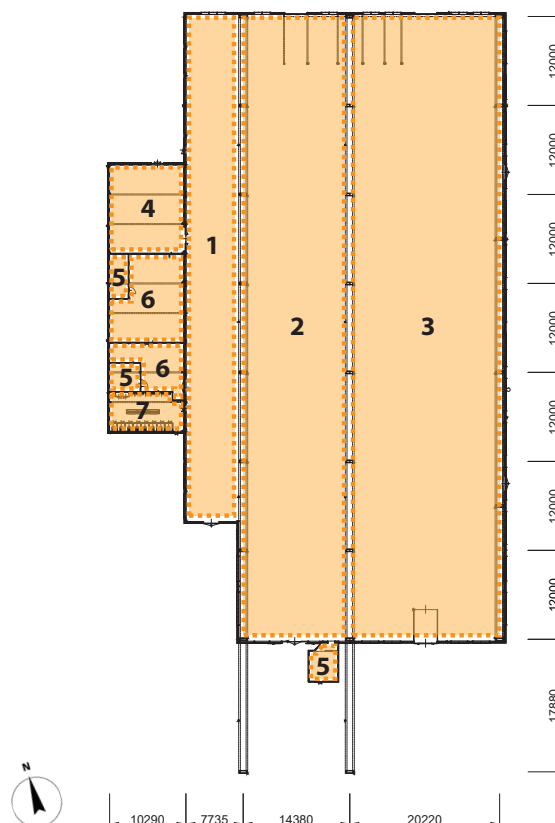


PRESENT

Nowadays the building still consist of the two big manufacturing halls and the lower extension on the west side of the building that together form one big open space. Besides this the in 1975 added extension on the west side of the building is also still preserved. The interior walls that created smaller spaces inside the big manufacturing halls are gone.

Legend:

1. Former storage space
2. Narrow manufacturing hall
3. Wide manufacturing hall
4. Former grinding space
5. Former office space
6. Former measuring space
7. Toilet and bathroom

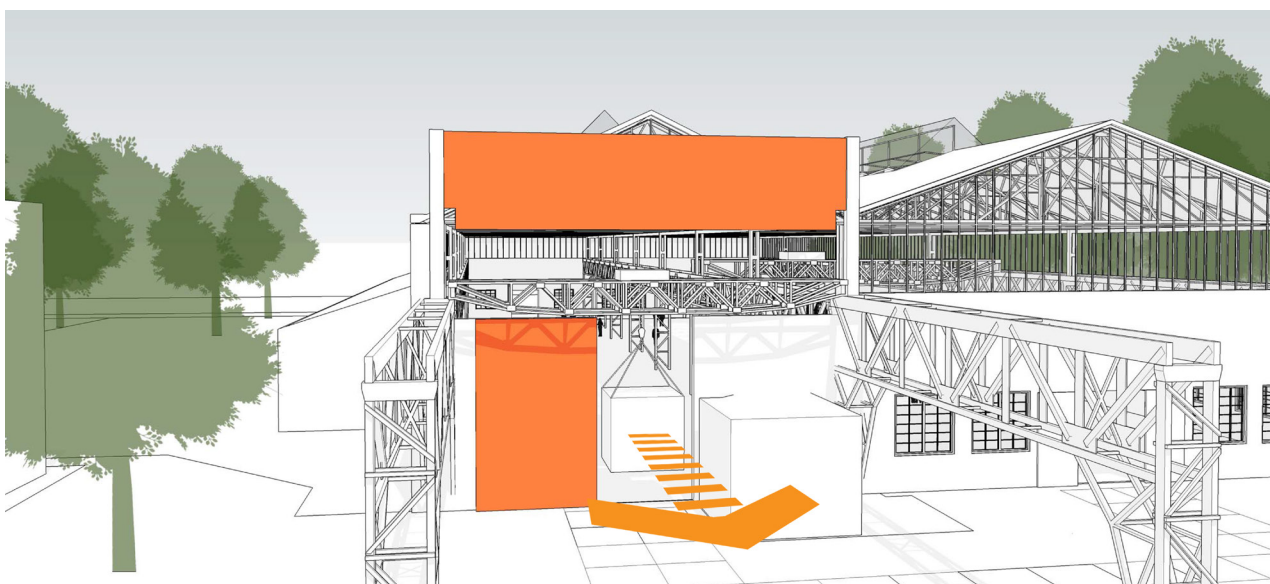
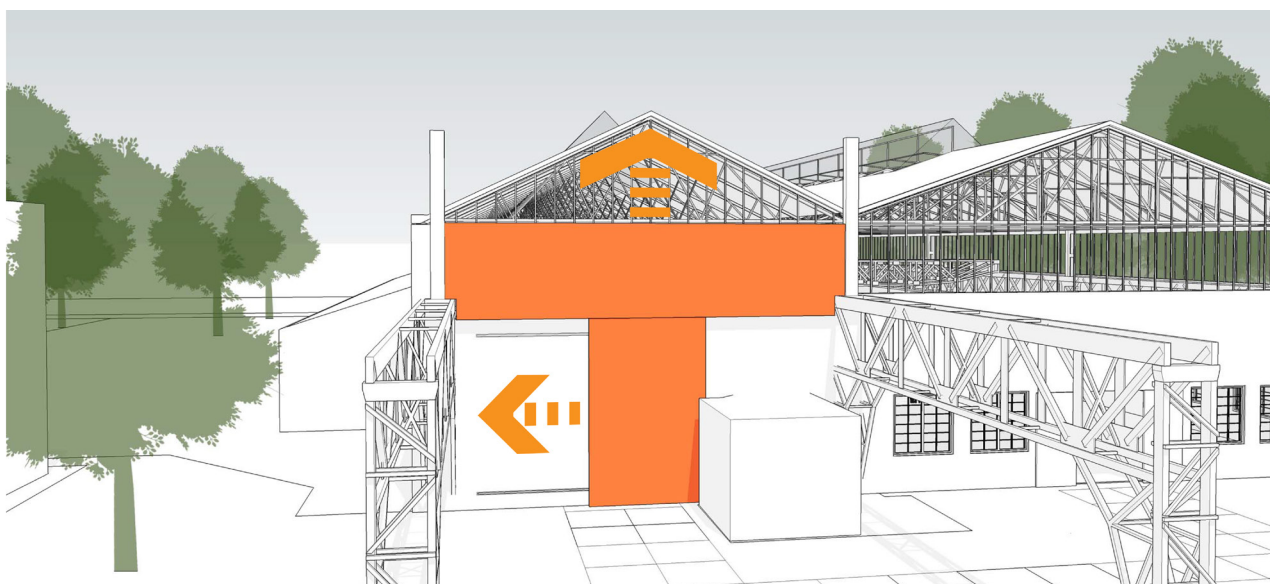


The crane tracks

The machine hall is a very practical designed building. It is clearly visible that the building owes its shape to its original function. The placement of the windows, the dimensions of the construction and the big open volume of the building are all designed for the production of machines for the civil service. One of the most important elements of the building are the two crane tracks that are still preserved. A large part of the crane track is still visible on the outside of the building, that forms an extension of the crane track in

the western part of the machine hall. This extension of the crane track goes through the wooden facade that is there in the current situation.

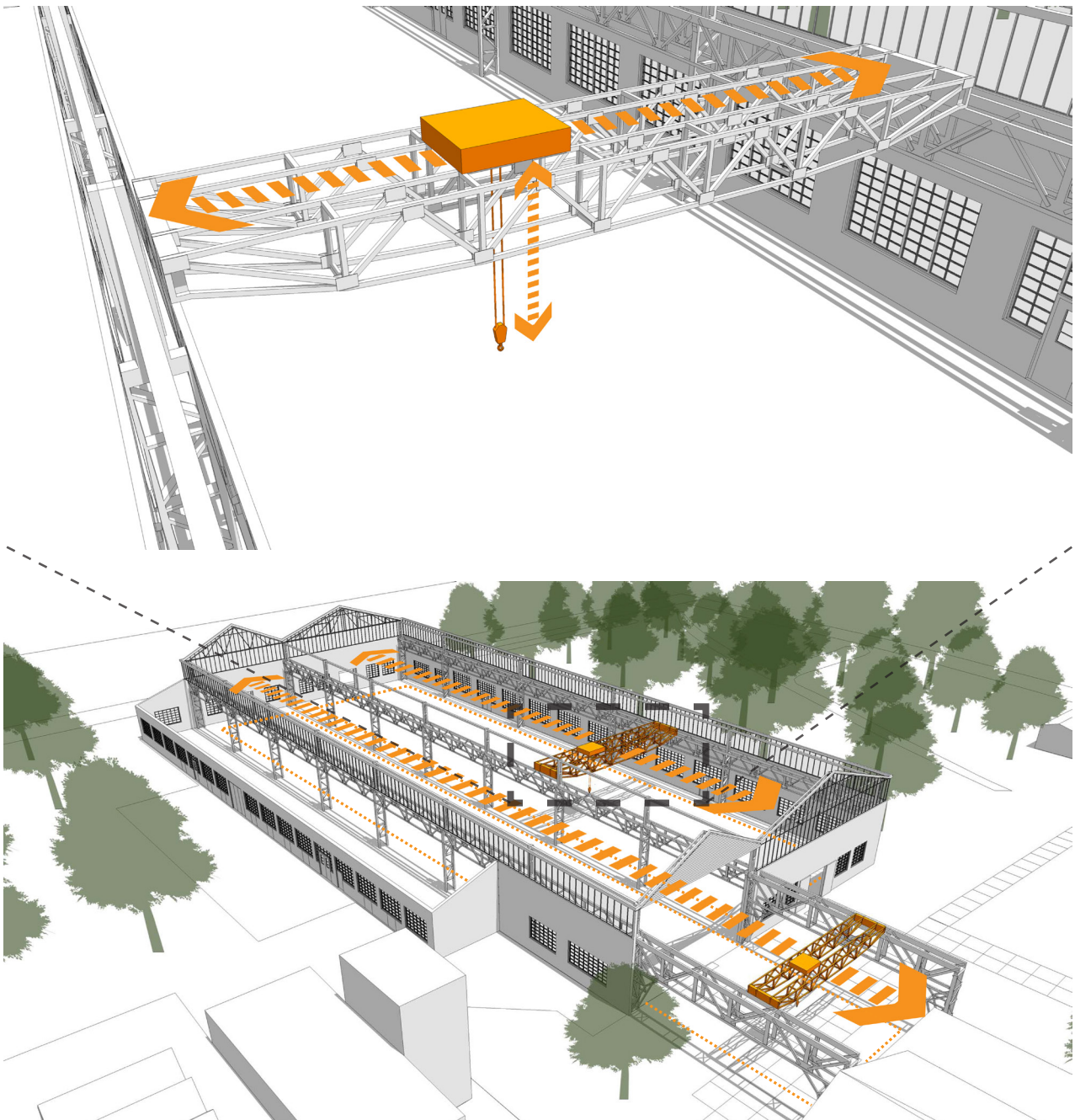
Since we assume that the crane on this track used to be able to go from the inside of the building to the outside transporting the machines that were produced in this hall. We think that it is very likely that the wooden front facade wasn't there at the period that the crane was still functioning. Therefore we assume that the original western part of the north facade used to be open or



at least it had the option of being partially opened. The image on the right shows the interior of the machine hall during 1950-1960. From this image we could tell how the crane looked like and based on this image we made the drawing underneath that explains how this cranes used to work. Those cranes were able to pick up goods from almost every spot within the building.



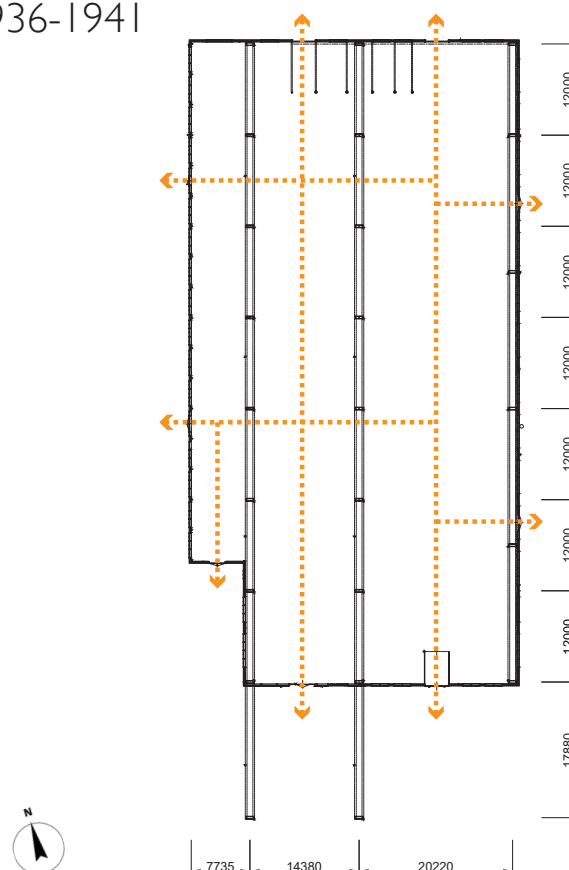
Source: beeldbank defensie (1950-1960)



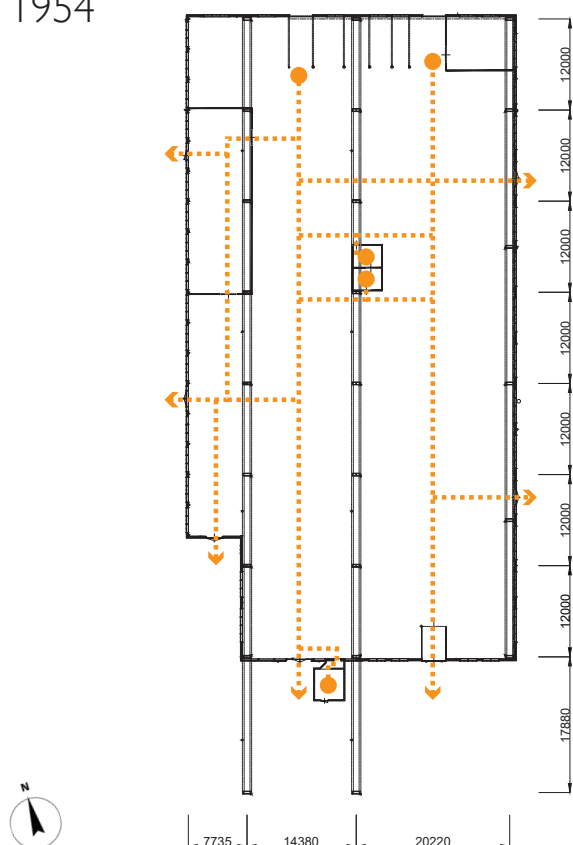
Circulation

The floor plan of 1954 and 1975 showed that there have been entrances on all facades except for the north facade. By visiting the building we saw that there have been entrances on this north facade as well, but they are closed off by bricks in the current situation. Presumably these two entrances in the north façade of the building were comparable to the entrances in the south façade. We based this assumption on the remained shapes of openings in the north facade that are closed with bricks. Above these former openings there are also remains of the door rails. So we assume that the building could originally be entered from all directions. From later drawn floor plans we can tell that these former entrances in the north facade were not used anymore since 1954. The extension added in 1975 could be entered through the existing opening in the original facade and two new openings.

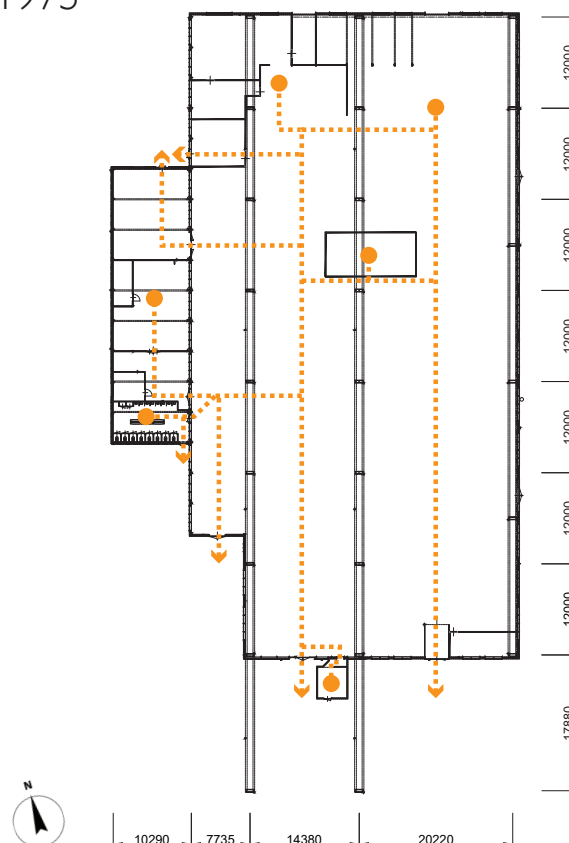
1936-1941



1954



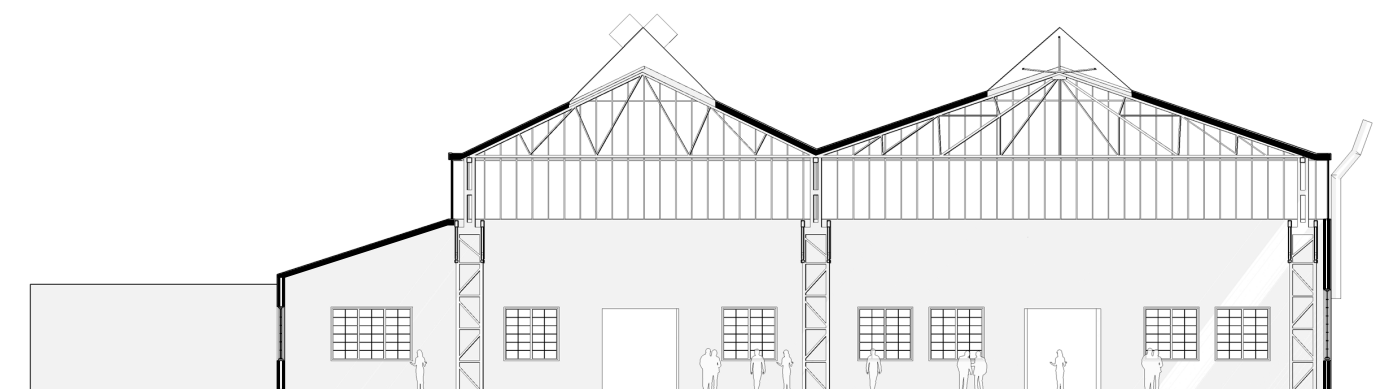
1975



Conclusion

In contrast to the neo-classical architecture style of the old buildings from the first phase, the design of new buildings of the third building phase, like the machine hall, had characteristics of civil architecture. Therefore the appearance of the machine hall is a clear reflection of its original function. The function of the machine hall hasn't changed a lot over time compared to the weapon depot. The machine hall has always been used as manufacturing hall to produce civilian machine tools. Initially the building could be entered from all sides, but around 1954 they closed the entrances in the north. In 1975 an extension on the west was added to the building. It's nowadays still clearly visible that this ex-

tension on the west has been an addition, because it has a completely different look. Moreover, it looks like this addition had only a temporary function, because of the small interventions they made in the original facade and the materials used. An important change in the original facade is the closure of the southern facade with wooden planks. Due to the closed facade it was no longer possible to move the crane from the inside to the outside. In the current situation the cranes are removed, but the crane tracks are still there. Besides this the construction and shape of the building clearly indicates their absence.



5.2 Architectural analysis

The main focus of the 'Architectural Analysis' is to observe the overall experience of the Weapon Depot. With this part of the analysis we tend to get a grasp on the spatial qualities and the distinctive characteristics of the building. To be frank, what does the Weapon Depot has to offer?

5.2.1 Space plan

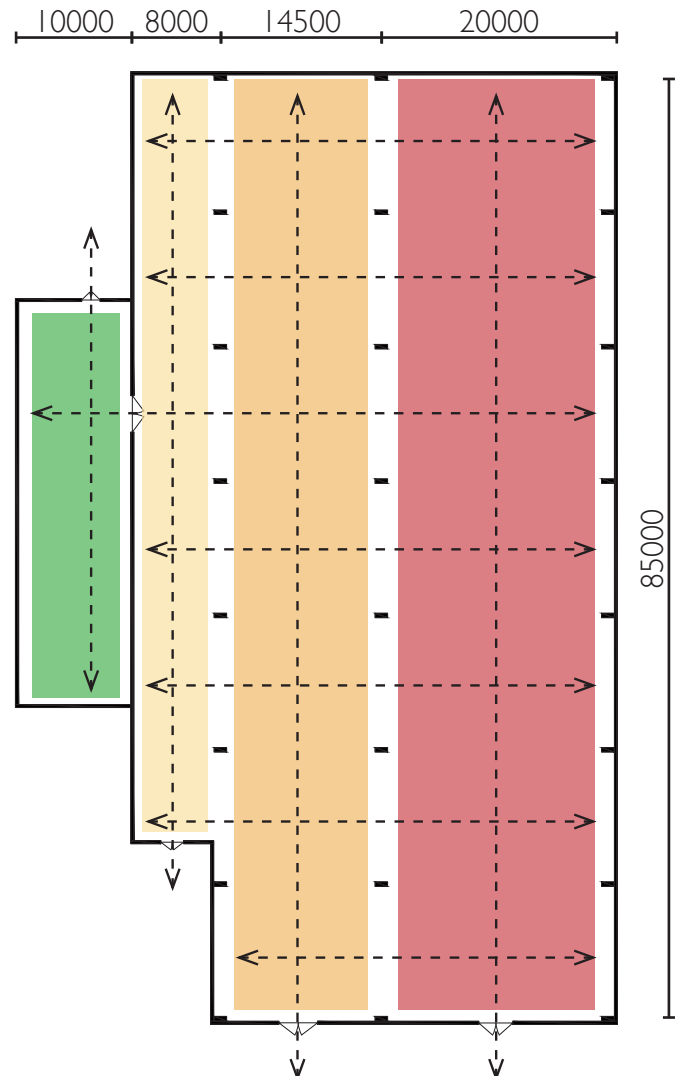
When looked past the Machinehall as a building, one can say that it was once a heavy production crane with a building as a skin. The main form of the building follows the function as a machine: it is the construction of the crane which determines the space within.

The overall complex consists of two main halls, a secondary building and an additional wing. The main halls were used as production lines where the crane had a leading role in moving heavy elements through the assembly line and (one of them) finally outside, hence the convenient proportion of the length of the building compared to its width.

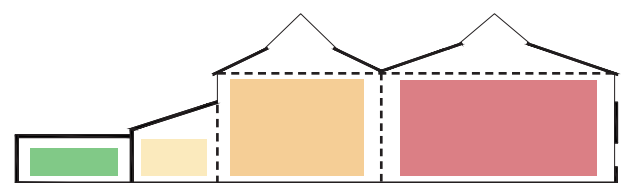
However, the heavy construction to keep the crane intact also came with frequently placed trusses to maintain the stability. This means that regardless the size of the triangular empty space in the upper part of the halls, it is split into pieces and is not free space.

The secondary hall is originally built as an office space, hence the lower free height. While there is no actual wall between the secondary hall and main halls, the height difference separates these spaces from each other.

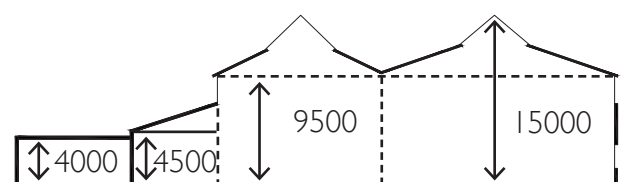
The additional wing, built half a decade later, is actually a standalone construction built adjacent to the secondary hall. The spaces are connected by just one door, which closes the additional space completely off from the rest of the building.



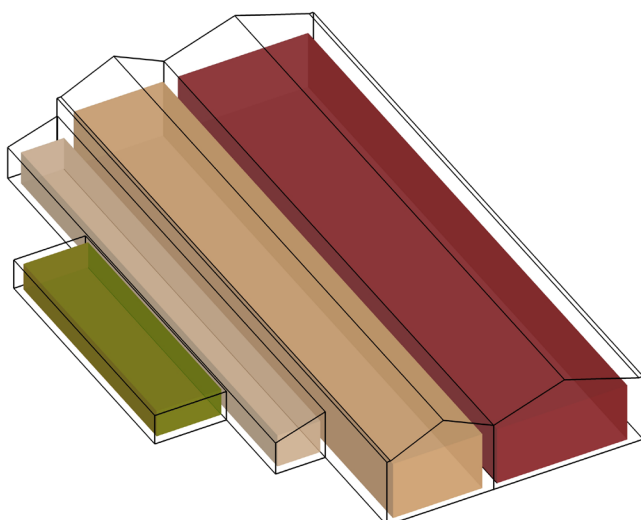
Floorplan Overview Spaces Building 320



Section Overview Spaces Building 320

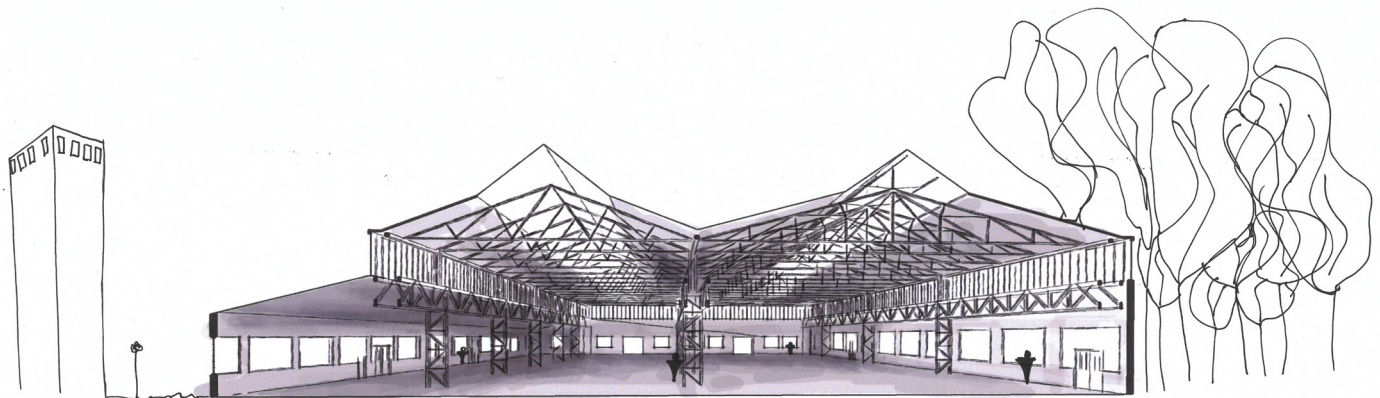


Section Heights Building 320

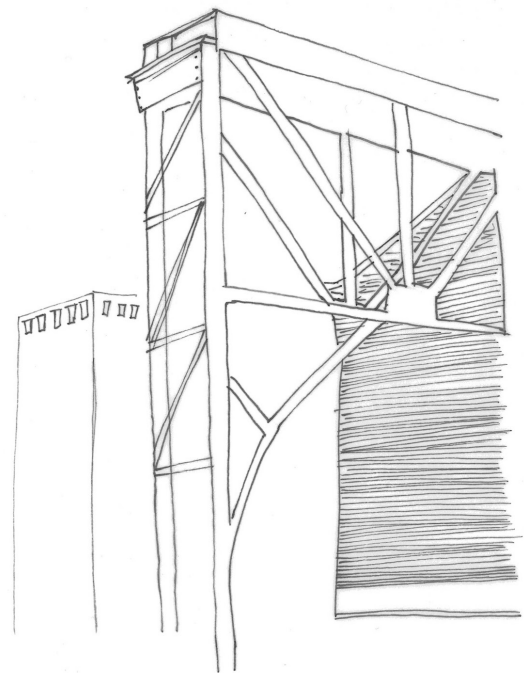
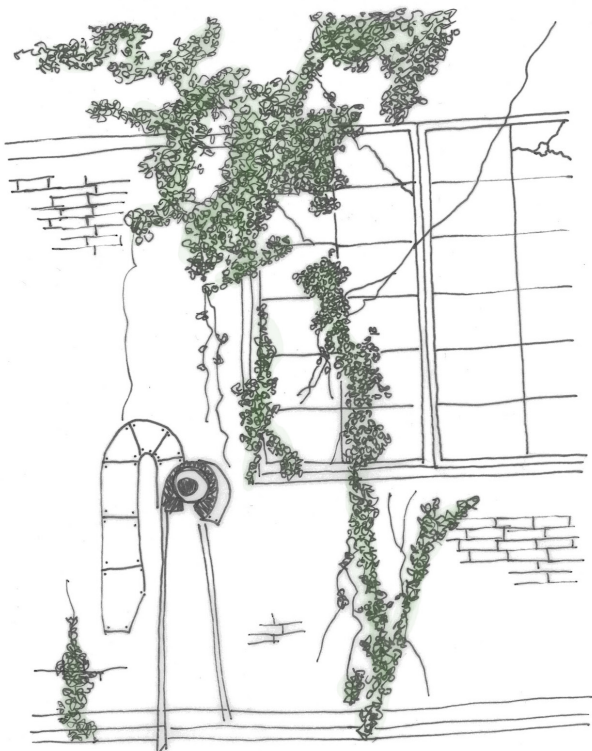


Overview Free Spaces Building 320

5.2.2 Materiality



Perspective section of machine hall



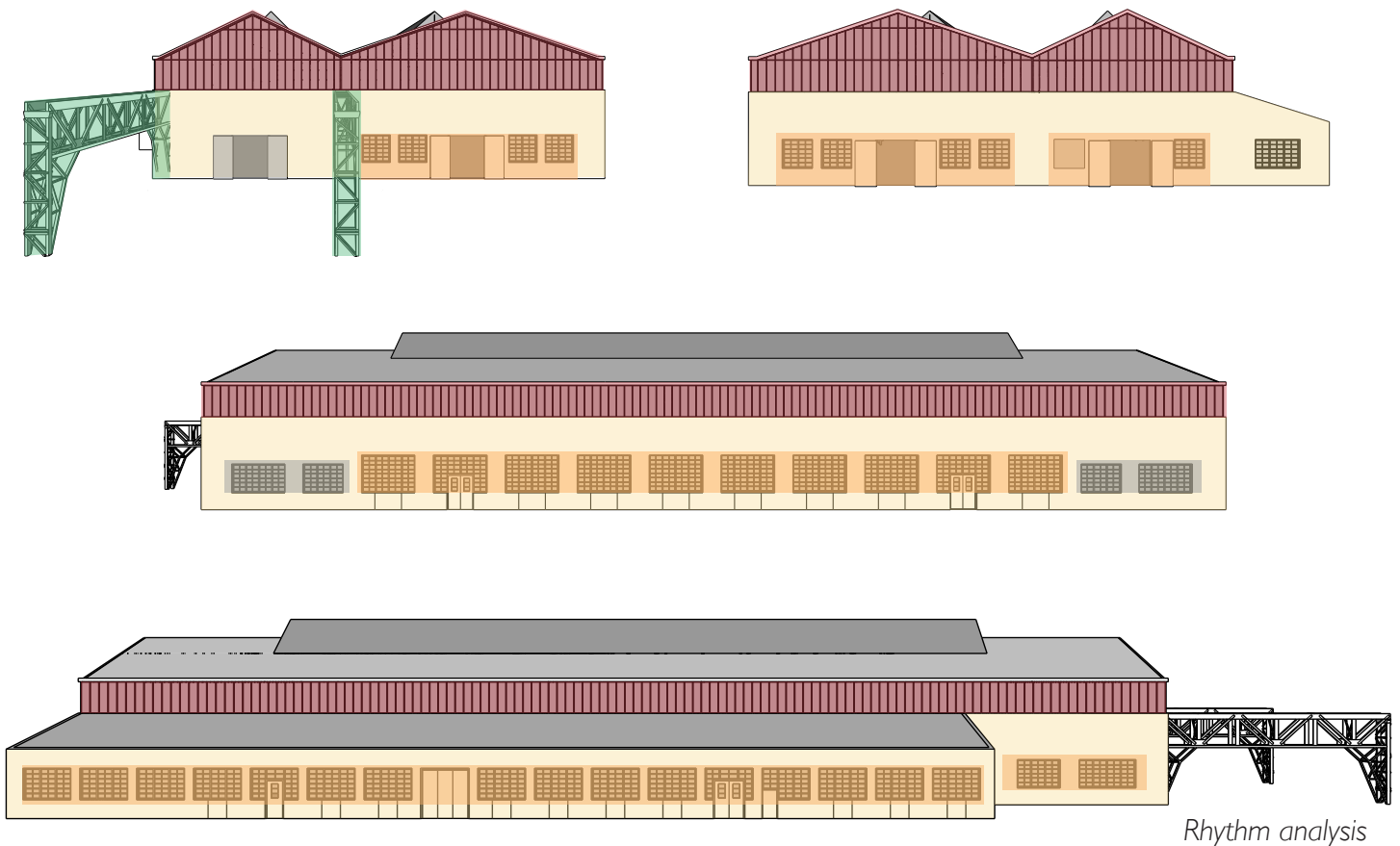
Atmospheric sketches of machine hall exterior elements

This chapter will look at the materiality in the machine hall. But because we could not enter the machine hall it is harder to make assumptions about the interior atmosphere and scale. What is done is we compared it to the construction height that we know and

the height of the ground floor windows. Then the sketches are made for the atmosphere of the building. The atmosphere drawn here is the overgrown green on the building causing it to embrace the nature around it. Or returning to nature. It is

like half of the building has been eaten up by the nature around it. The other a very dominant landmark sets a mood. One of industrial greatness.

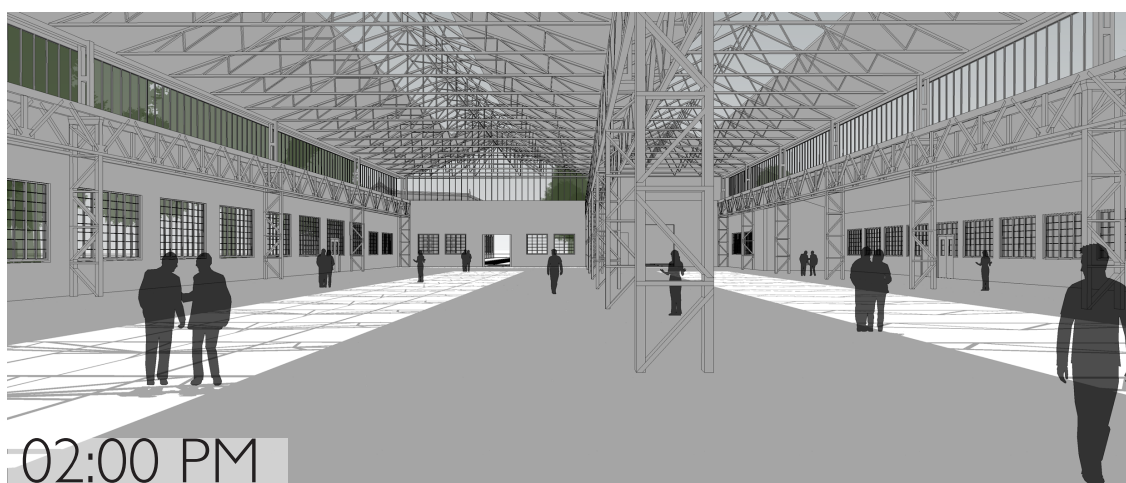
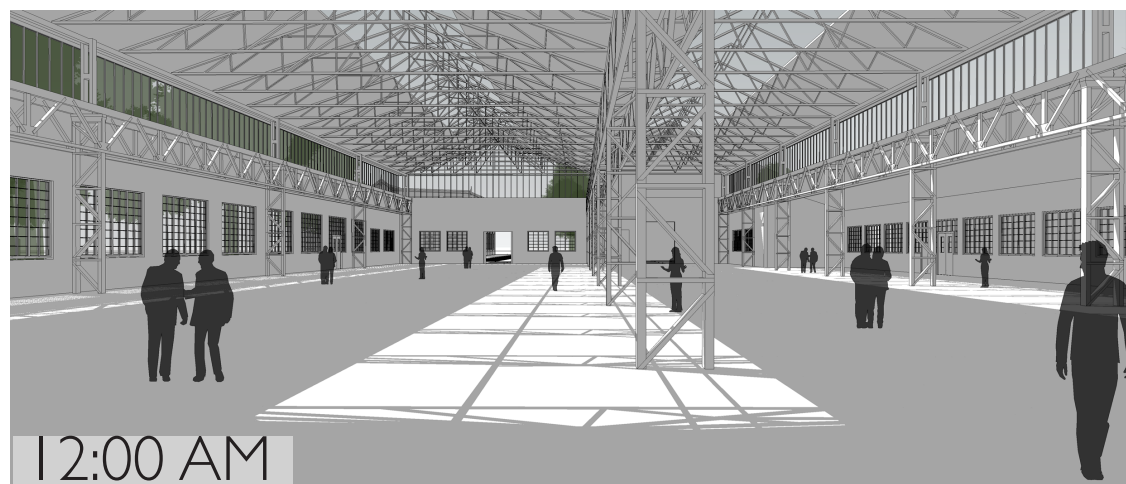
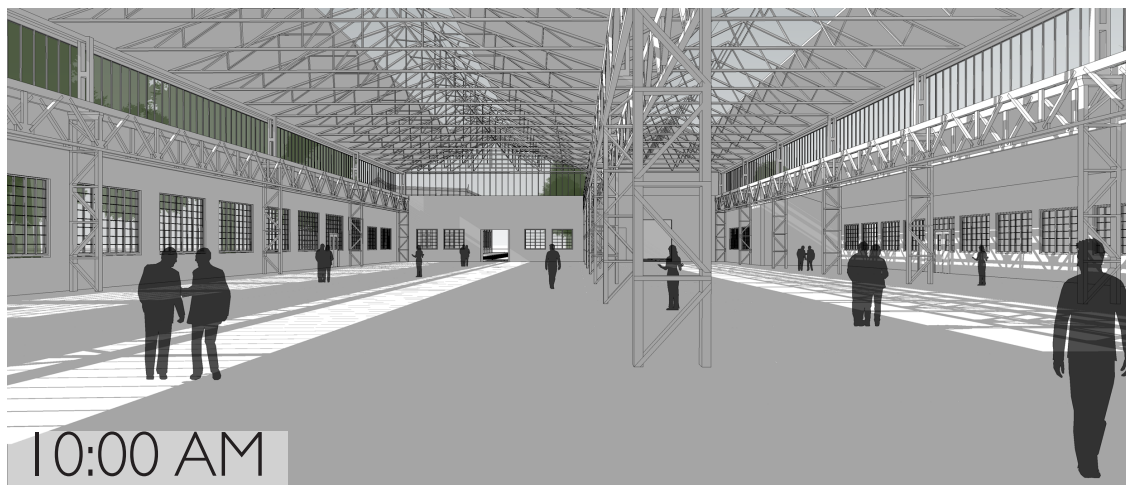
The rhythm analysis was done as the one for building 8 but we can tell from the overall coloring that all the facades are different. Each have other rhythms. What they do have are the same elements. Each façade here is split into upper windows, a brick wall and the openings on the ground floor. Looking closer we also see that the windows have rhythm because of the thin steel framing.

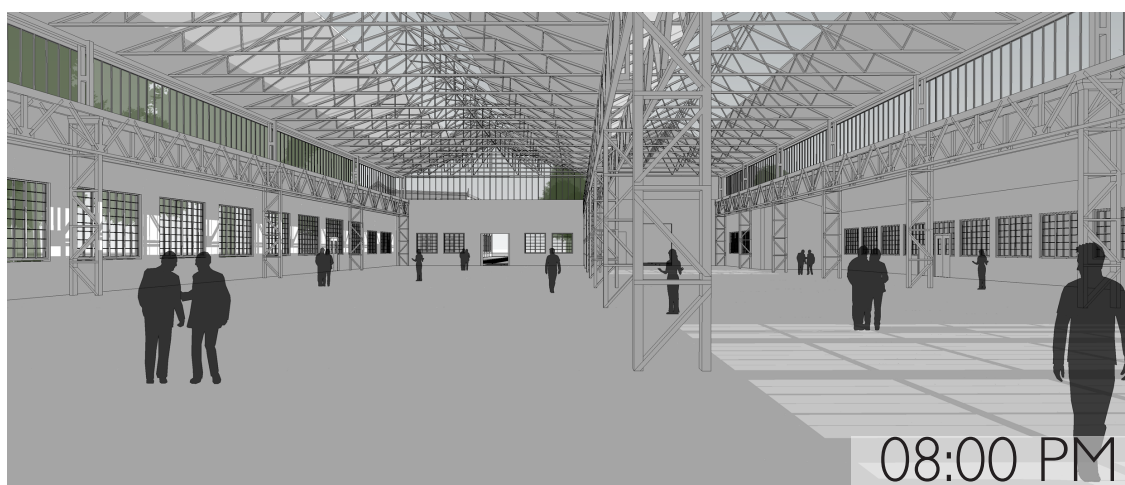
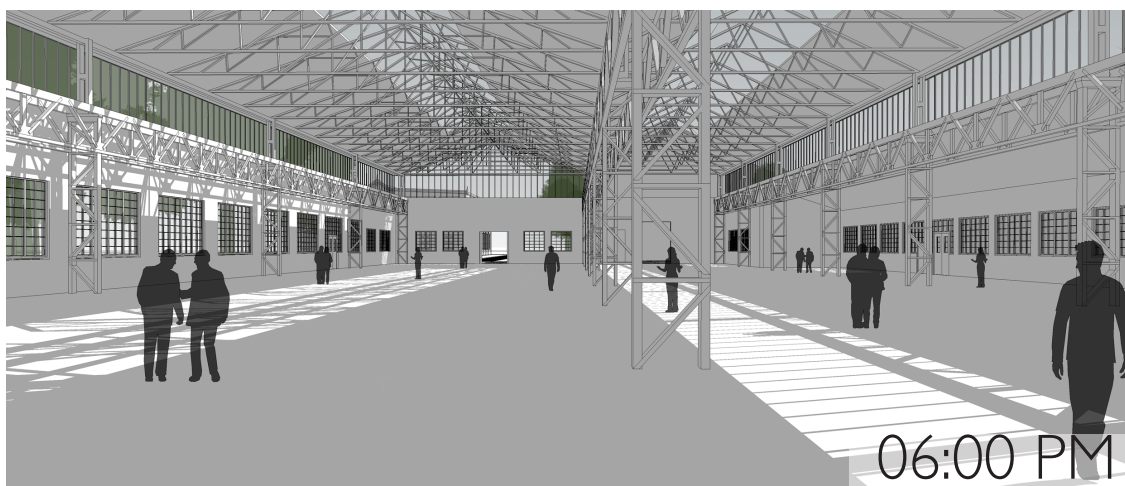
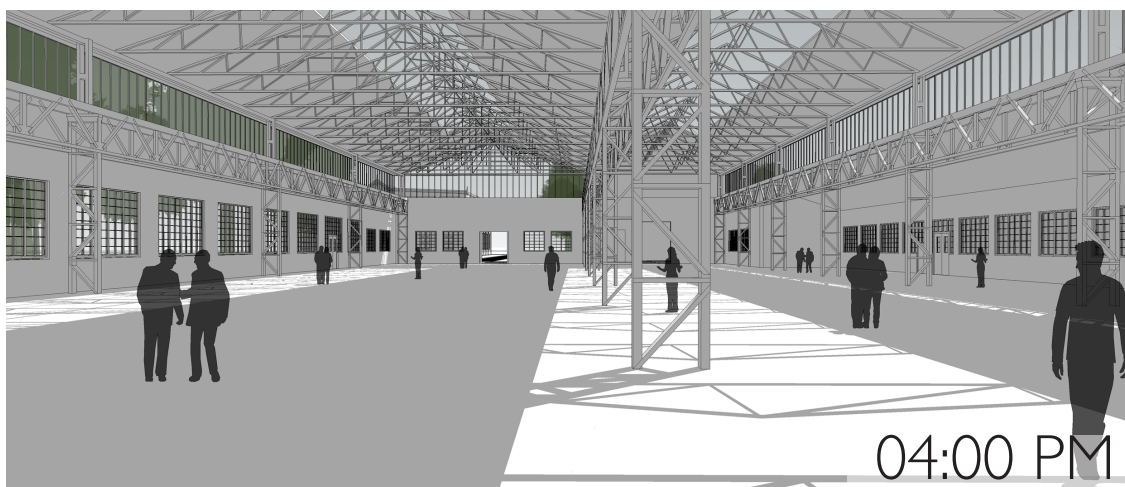


Rhythm analysis

The daylight analysis shows how direct sunlight enters the building during the day. The building has lots of windows through which sunlight can enter the building. Since the building has windows on all facades and no blinds, sunlight can enter the building throughout the whole day. This means that in the current situation the building will heat up considerably during the summer, which can lead to an unpleasant climate inside the building. However, sunlight can also be seen as an

architectural quality. The purpose of this daylight analysis is to give a better understanding of how the daylight behaves within the building in the current situation.





5.2.3 Materials



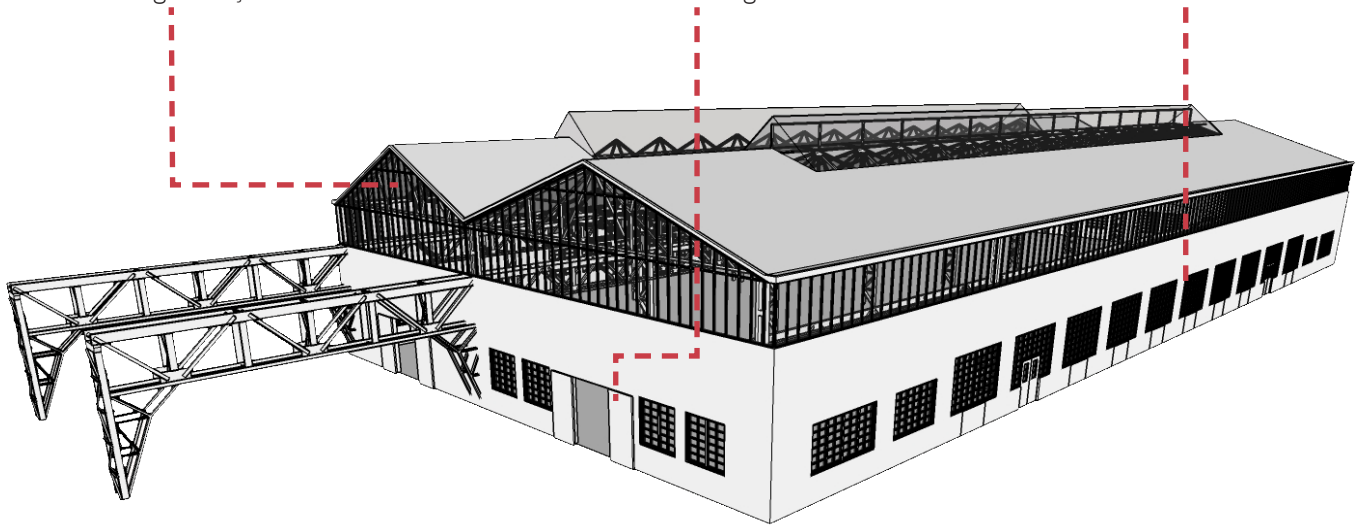
Wired glass façade



Industrial sliding doors



Windows



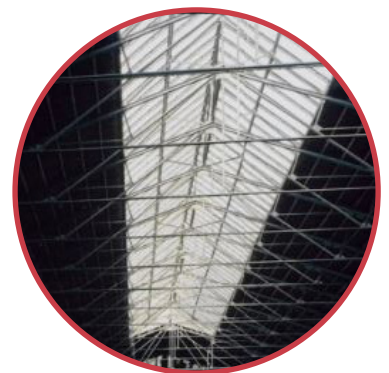
Construction element



Two material façade



Skylight



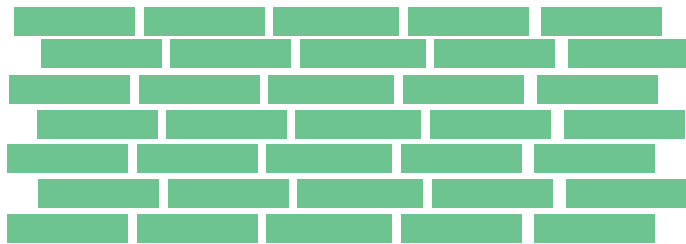
The machine hall was built during the third phase of the site. Due to a higher production demand more buildings were added. This building type is industrial and element in this building was chosen more so due to functionality. The building has a rectangle shape. And the entrances are through sliding doors at the southern façade.

In this chapter the exterior elements will be categorized and described.

Brick

Like most of the buildings on the Hembrug site, this building exists mainly out of brick. As described in chapter 4.3.3 the brick type used is the Waalformaat and has the

measurement of 210x100x50mm. the coloring of these bricks are of a brown hue meaning that these bricks were baked at a very high temperature. Around 1300 °C. The pattern in which the bricks were stacked are a Dutch pattern and it is called a "staand klezorenverband". Underneath the windows there is a continuous lintel of brick.



Wood paneling

On one of the facades, the southern façade to be exact, the façade material is unlike the others. This façade is a wood paneling that starts at the bottom and goes to the top of the façade. From archive pictures and the analysis of the production line in chapter 5.2.2 we can say that this façade was not always closed or in wood. We can not say for sure when this change in material occurred but we can make the assumption that this "bordering" of the façade happened when the terrain was not in use any longer. The paneling seems to be around 2 meters in length, 10cm in width and has the thickness 1cm. The panels have a weathered blue paint on them..

Large windows

There are windows spread along all of the façades. These ground floor windows are openable and reportedly are able to be taken out. Speculating why this was written down, could be to let more air in on hot days where the heat from the machines is unbearable. These windows are designed with a thin steel frame. Not unlike the main entrance of the weapon depot on the North façade. After the end of the 19th century the thin steel frame became a very popular element in the industrial architecture.

Windows placed under the roof have a different rhythm. They are much longer and have a different type of glass. They appear to have wired glass. Wired glass has a grid or some type of mesh embedded in the glass. Many think that wired glass is much stronger than non-wired glass because of its metallic component. But this is not the case. In fact, the non-wired glass or "normal" glass is stronger. The wired glass is weak due

to the infiltration of the wire into the structure of the glass. Wired glass also causes more injuries seeing as how the wire intensifies any fractures in the glass.

Skylight

The machine hall, like the weapon depot, has the element of a skylight. These two skylights go through the length of the building. This is also an industrial element being that more light would enter the building without having to compromise more walls

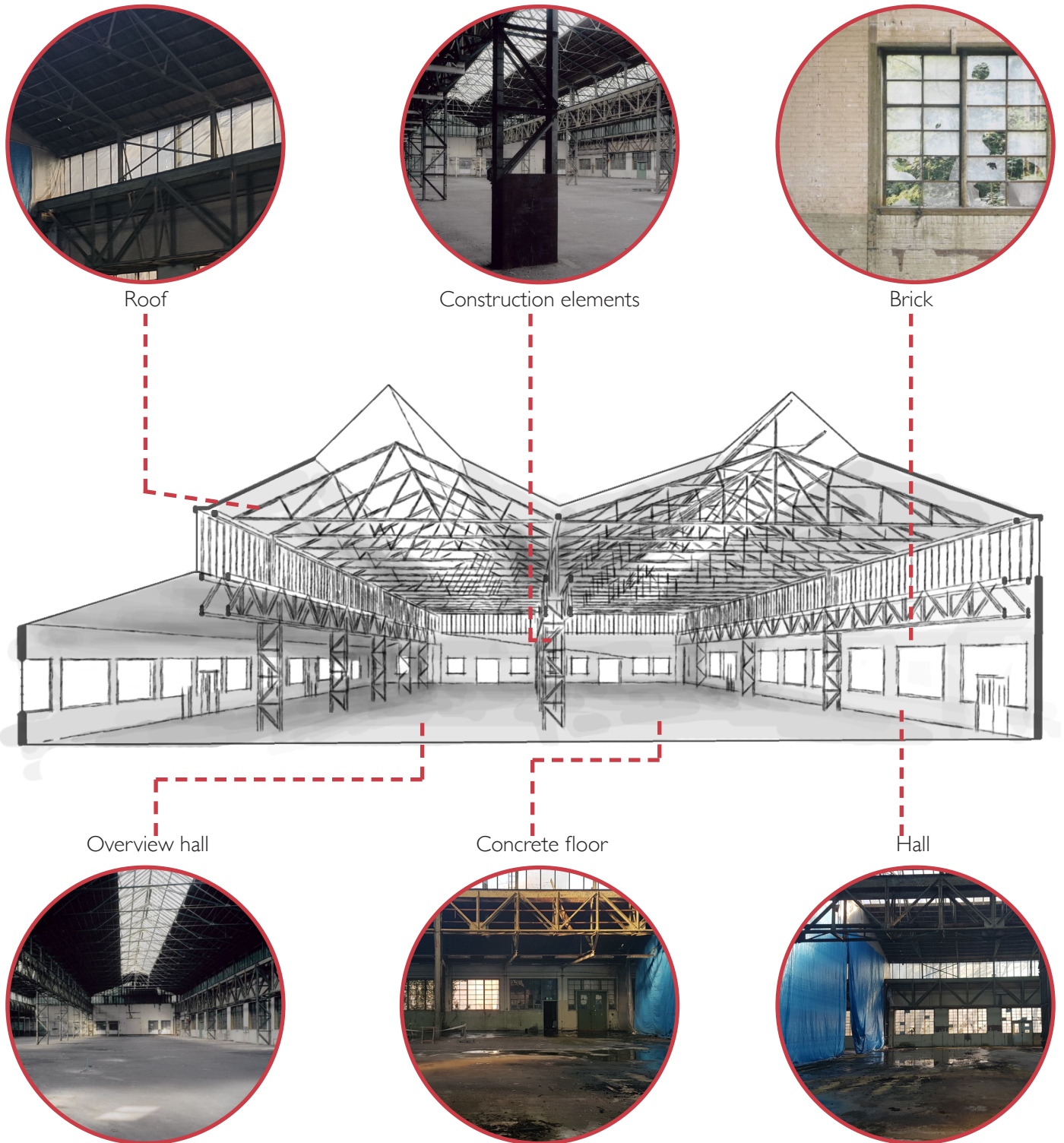
Industrial doors

The entrance of the machine hall is located at the south façade. The doors are sliding doors due to the industrial function. Sliding doors take up less space from the interior and exterior space, making it easier to bring in big production objects. Seen at the North façade are thin steel frames filled in with brickwork. Indicating that sliding doors used to be there..



Extruding construction

A prominent feature of the exterior of this building is the extruding construction coming from the southern façade. The function is explained in chapter 5.2.2. The construction is made from steel beams varying in size. For the types and sizes see chapter 5.4.1.



The machine hall is currently not accessible because of the asbestos in the insulation material in the roof. The material description for the interior will therefore be based on photos found from the archive. In pictures only a few elements can be seen and estimated.

Floor

The flooring in the machine hall currently seems to be left bare. This means that the "raw" material is exposed. This is the concrete flooring

Wall

The inner brick layer of the cavity wall is exposed in the interior of the machine hall building. We can see in pictures that the bond is a stretcher bond with a lintel of brick underneath the windows. We can also see some gaps above the window. In Dutch there are called open stootvoegen, in English weep-brick. This is added in the cavity wall to ventilate it and it prevents moisture build-up. The brickwork seems to be painted in white..



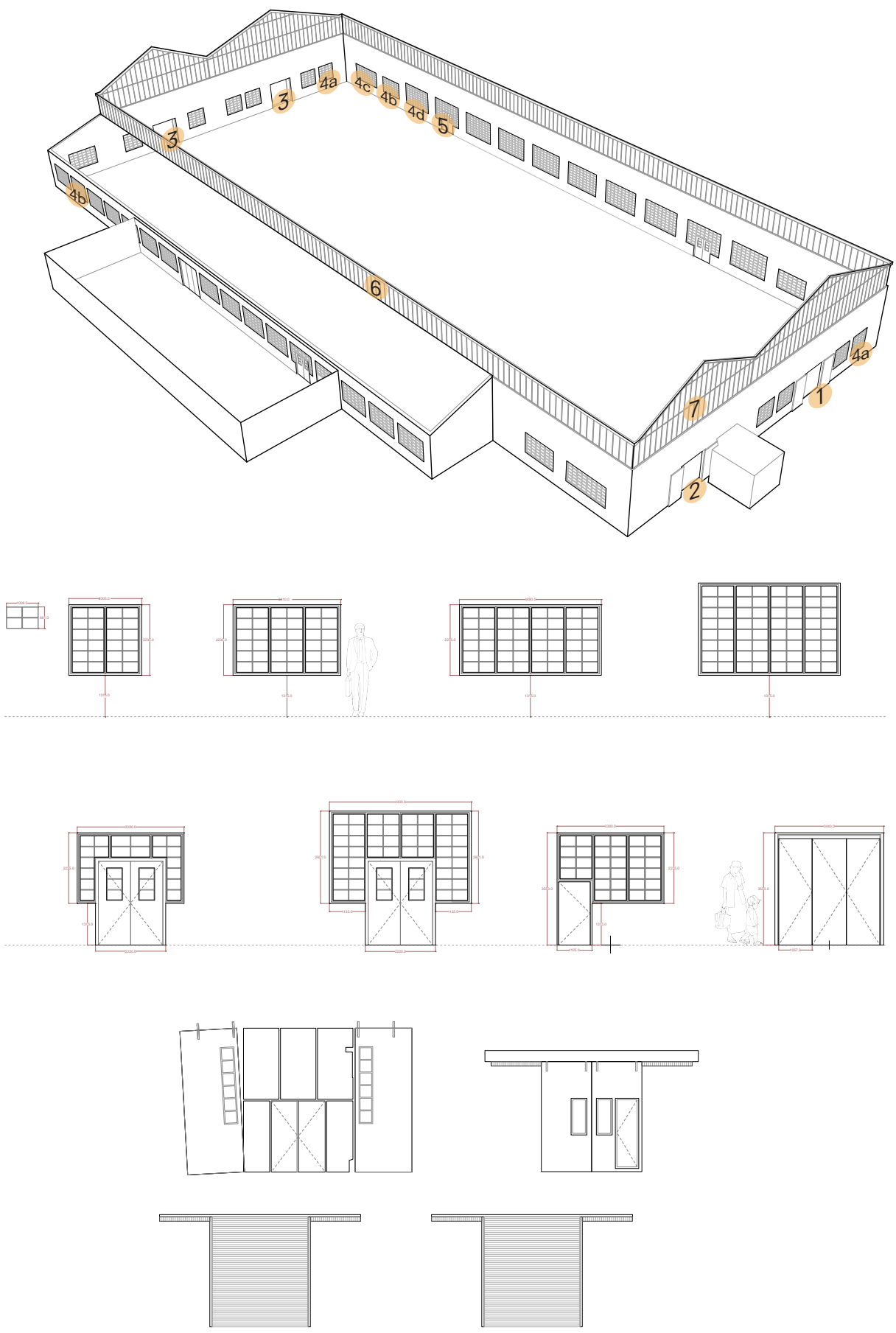
Roof

The roof as a construction component will be described in the chapter 5.4.1. From the inside it is seen that the roof material is wood. The roof package is placed on the steel truss construction. From the pictures it is unclear in what state the roof currently is.

Construction elements

The steel construction trusses can be found in against the eastern wall, in the centre of the hall and where the machine halls height lowers. The construction does not fully obstruct the open space but as we cannot enter the building, it is not clear how the inner space feels. Further details on the construction elements can be found in the chapter 5.4.1.

5.2.4 Openings

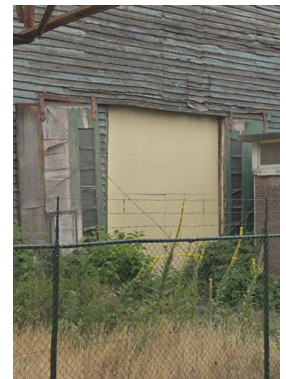


The weapon depot and machine hall are typologically different from each other. Since the machine hall experienced an addition of the annexe and the closing off of the north facade openings. The trace of the change is studied. To inclusively analyze and understand the windows and doors, both buildings are scanned and concluded as main types and exceptions.

The facades of the machine hall are erected in brick masonry in a half-brick connection with a continuous roll layer under the windows. The front wall of the western hall has a wooden boarding. The double hall is accessible via double sliding doors in the front walls. The sliding doors aimed for more space for transpotating manieri produced the machine hal. Nearly square steel windows with a small rod division have been installed in the four facades. The four-grid steel frame window can been seen as a unit and all windows are composed of multiple unites, such as 2x3, 3x3, 4x3, 4x4. The windows are removable. The gable tops and the upper edge of the longitudinal facades are completely covered with glass. There is an iron ridge lantern with sloping glass surfaces on both cams over the entire length.



1



2



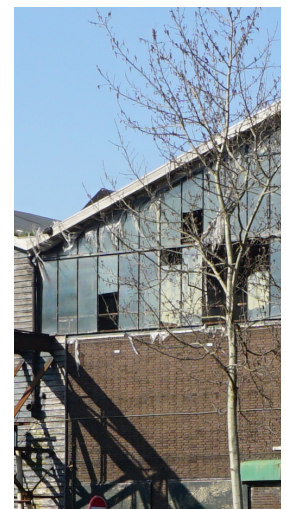
3



5



6



7



4a



4b



4c



4d

2x3

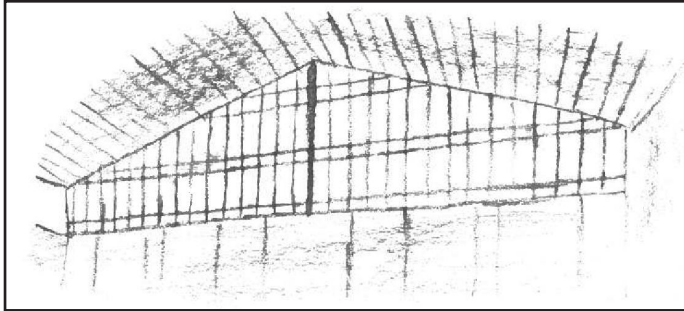
3x3

4x3

4x4

5.2.5 Characteristic elements

The once industrial area has now made place for a quite terrain with empty buildings. While not having any of the activities from the past anymore, there are still traces left of the industrial past of the site. These traces are not only visible on the interior of the buildings but also in little details on the façades and the construction.



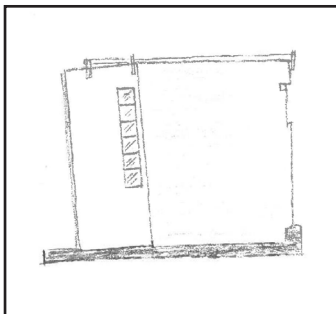
Glass façade front



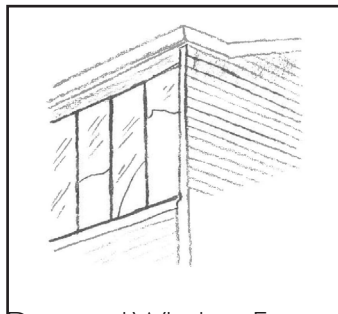
Side Façade Building 320



Front Façade Building 320



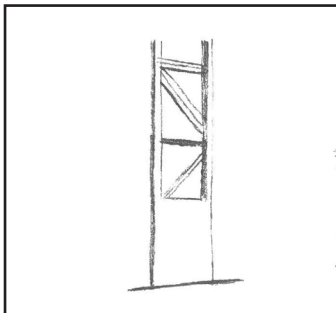
Broken Sliding Door



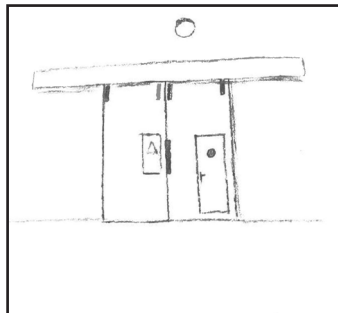
Damaged Window Frame



Construction Building 320



Construction Element



Main Entrance



Main Hall Building 320

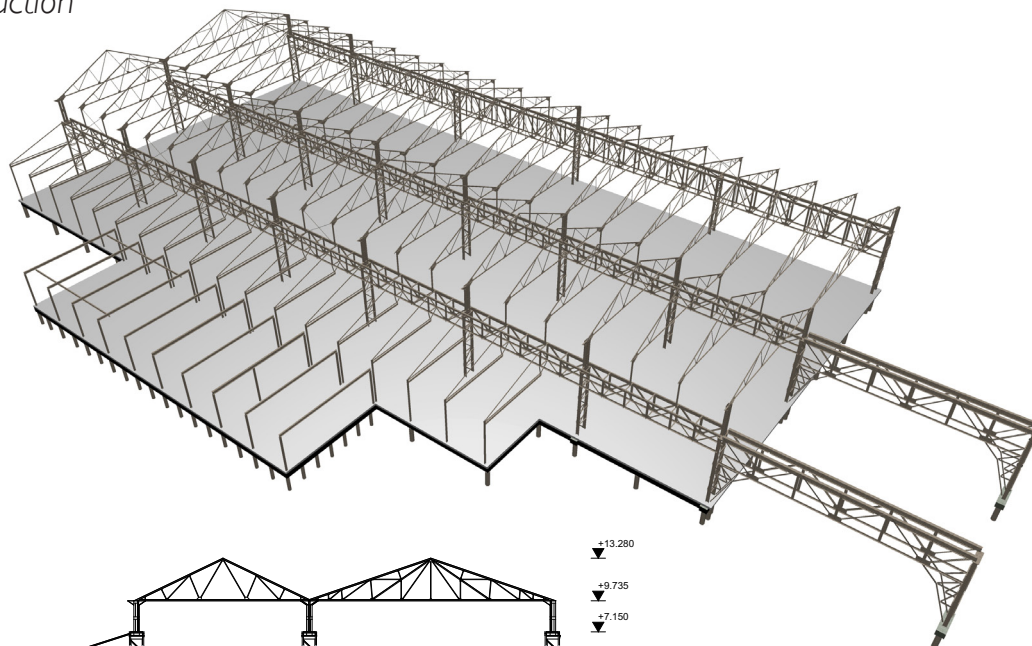
To conclude this part of the analysis; The Machine Hall is a former factory building designed to be a production line. Its size and shape is based on the factory crane which was built directly on the construction which also held the building up. Not just the form of the building, but the materials and the services in the building are all based upon the Machine Hall's function. The materials are minimalistic to the core and there is no place for ornaments.

5.3 Technological analysis

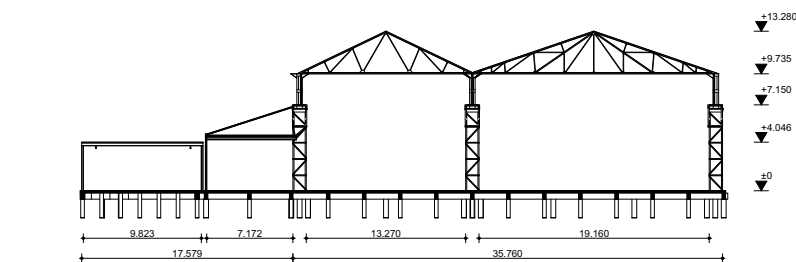
The machine hall was built in 1936 and today it stands vacant. We can't enter this building because of the presence of asbestos. For this reason it is very important to look into its technological aspects in order to understand the building better. The technological analysis consists out of the construction, stability, the details and the services. This way we disassemble the building in hope to discover what the functional logic of the construction is, its constructive purpose and what this meant in historical context.

5.3.1 Construction

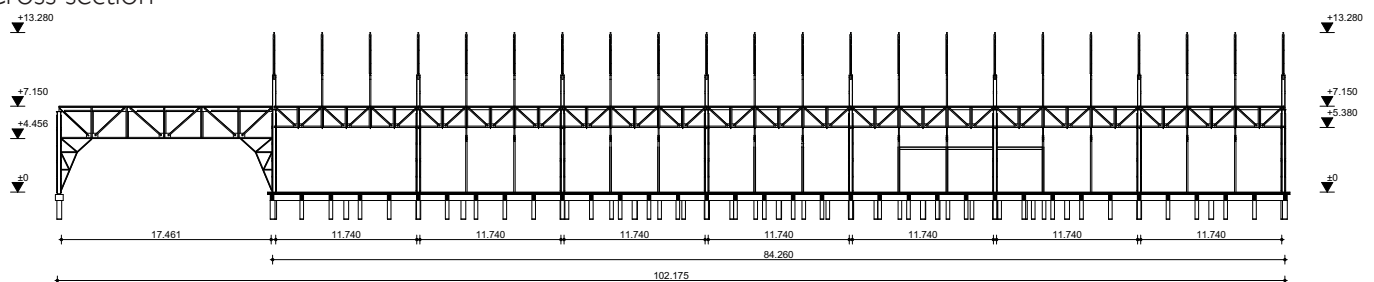
3D view



Cross section



Longitudinal section

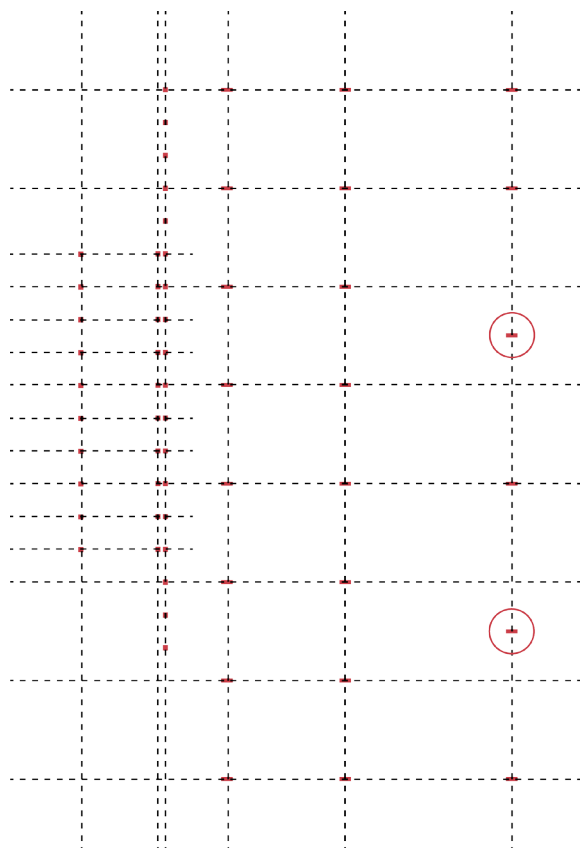


The construction of building 320 exists out of a steel structure. By observing the steel structure, the building can be split up in 3 parts; the main hall with the pitched roofs, the lower part with the slanted roof and the extension with the flat roof [see image: cross section].

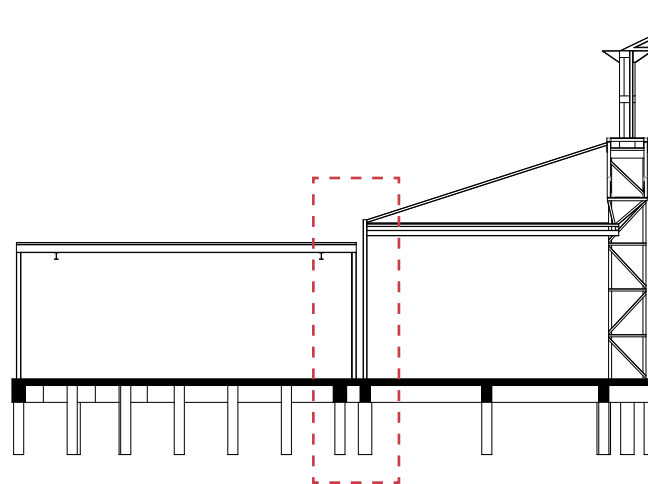
The construction of the main hall exists out of truss columns and beams. This is due to its former function where a crane would move back and forth on the truss beams as it used to function as a crane track. The truss columns are standing on a grid, this grid deviates on one side of the building [see image: grid main hall]. On

this side the truss beam is also bigger in size because there are less columns where the beam can rest on. The reason why this side deviates from the rest of the construction remains unknown.

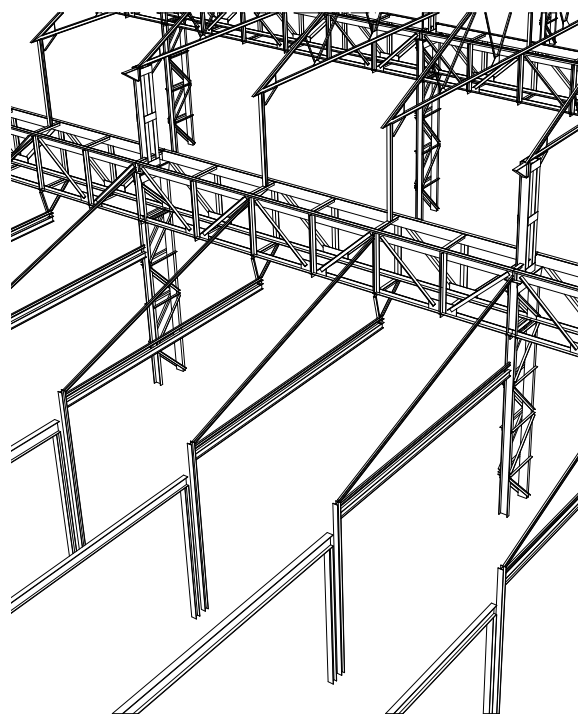
On the left side of the main hall the crane tracks continues towards outside of the building [see images: 3D view & longitudinal section]. This is again a trace of the former use where machines could be lifted out of the building from where it could be transported. This outside crane track is not part of the building construction but it is connected to it through a column that both structures share.



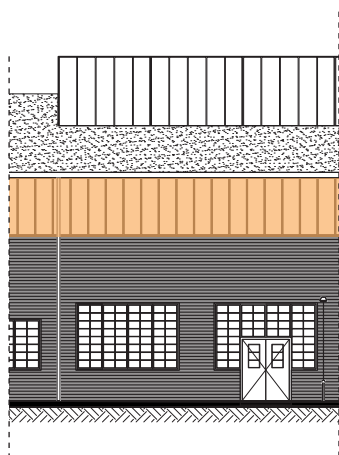
Grid



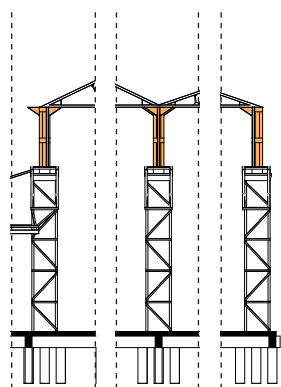
Construction extension



Slanted roof connection



Construction - Glass strip

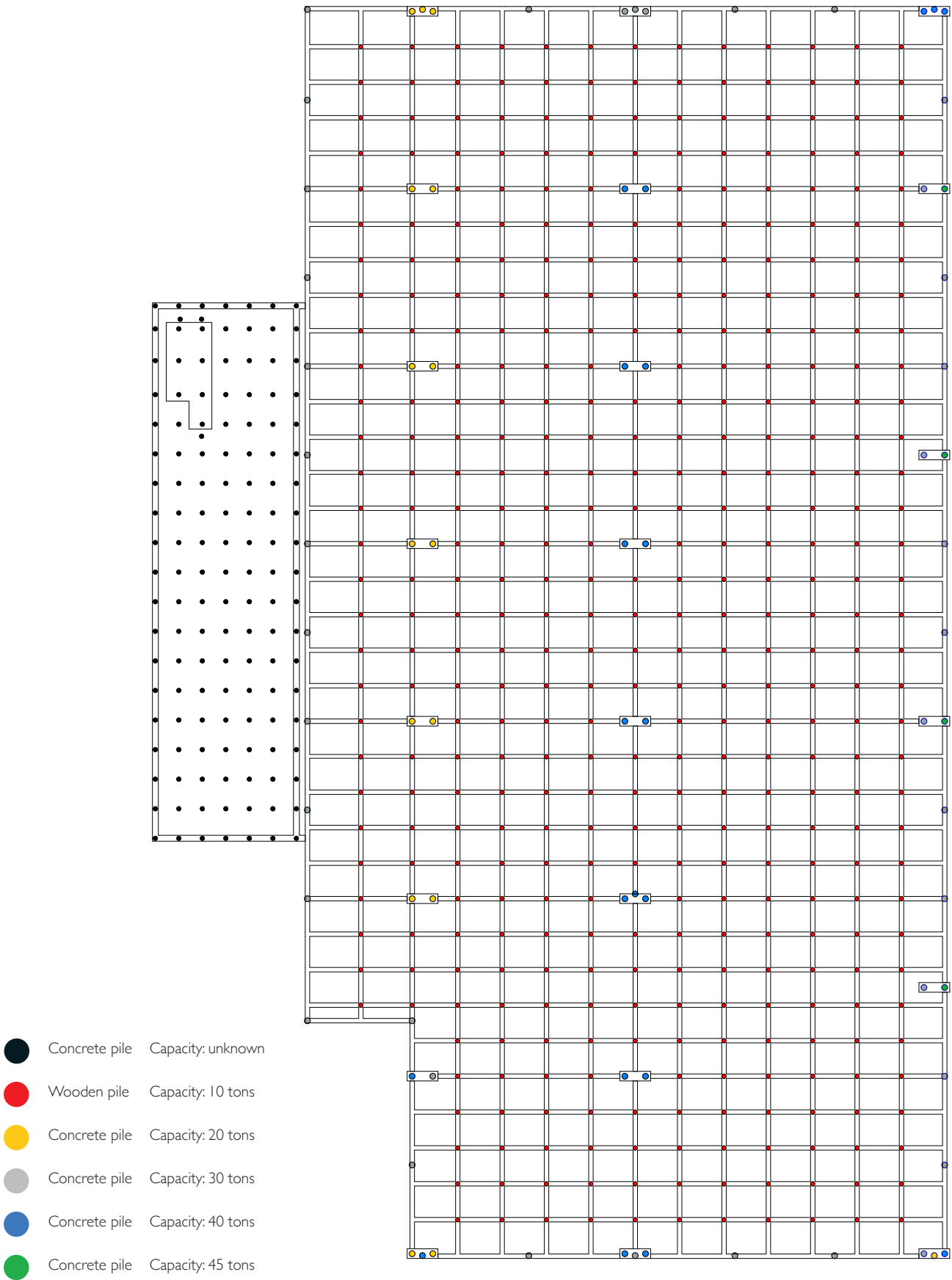


What is further notable about the construction of the main hall is that above the truss beams of the crane track the steel construction is built lighter; smaller steel elements have been used. This is because the columns and the truss roof only have to carry the roof structure. In addition to that, this is the part where the glass strip of the building is placed. [see image: construction - glass strip].

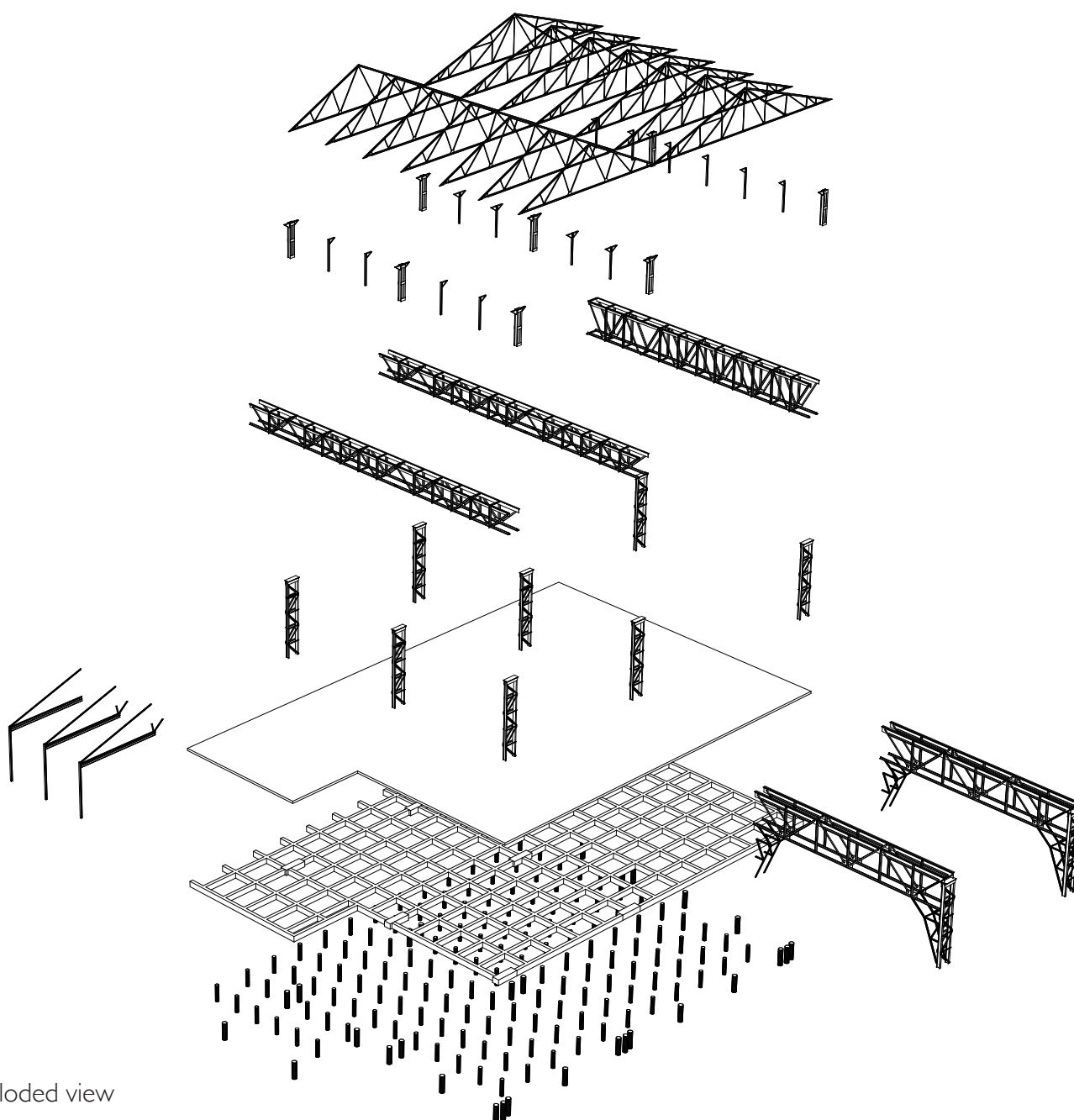
The lower part with the slanted roof is connected to the main hall and follows the grid of the truss roofs. Where this construction doesn't connect to a column,

the beams are connected to the truss beams of the main hall. This way the slanted roof construction hangs onto these truss beams [see image: slanted roof connection].

The extension with the flat roof was an addition built after the main hall and the lower part with the slanted roof. This can be traced back towards the construction because this construction stands on its own. It is a box construction which is placed against the lower part with the slanted roof [see image: construction extension]



Foundation plan



Exploded view

The foundation can be divided in 2 parts, the first is the main hall with the lower part, and the other is the flat roofed extension that was built later:

The foundation of the main hall with the lower part exists out of concrete and wooden piles. The wooden piles carry mainly the concrete floor; the concrete piles carry the steel truss columns. On top of all these piles a layer of concrete is poured in a grid to transfer the forces of the floor evenly into the piles. On places where the truss columns are situated, the grid becomes a little wider. In this wider part, 2 or 3 concrete columns are placed that carry the steel truss columns. In the foundation plan the division between these piles and the capacity that the piles can carry are displayed.

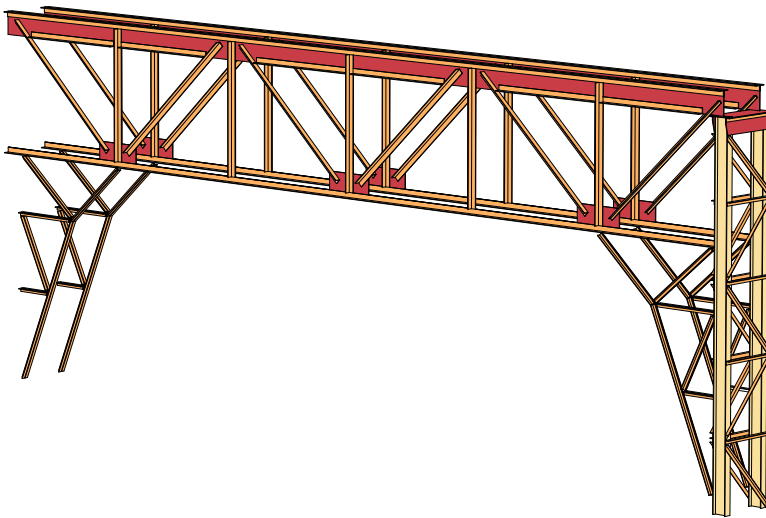
In the exploded view it is visible how the construction is built up. From bottom to top there is the pile foundation, above that the concrete grid where the concrete floor is placed upon. Here it is shown that the steel truss columns have more piles in the foundation. On top of the truss piles the big lattice beams are placed. These truss beams are the platforms on which the smaller columns that carry the roof are situated. Notable is that the smaller columns directly above the truss columns are built up out of 2 columns instead of 1 column like the columns in between. On top of these smaller columns the truss roofs are placed. The lower part with the slanted roof connects to the truss beams of the main hall.

The steel construction of the machine hall consists out of several elements. These elements are composed out of different steel profiles. Photos and existing drawings were used in order to decipher how these elements are composed. This way the elements and its composition are close to reality.

The truss beams, columns and roof elements get their stability from the triangles, because triangles are dimensionally stable.

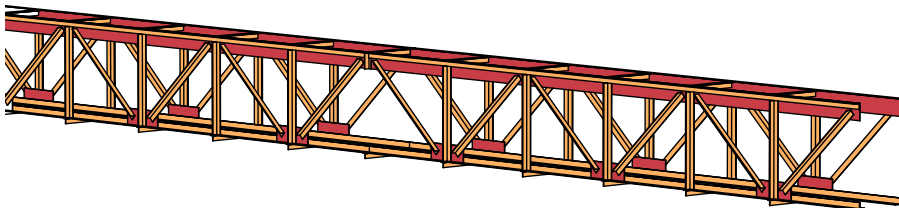
All the steel profiles are bolted together; this means that the whole construction could be taken apart.

Construction of the crane track outside



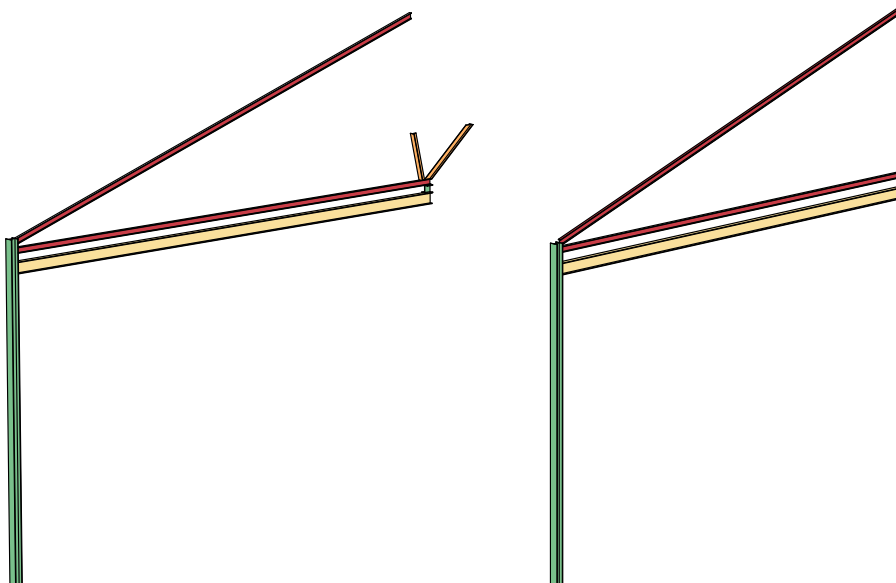
- IPE 270
- L-profile: L65x7
- Steel plates

Truss beam



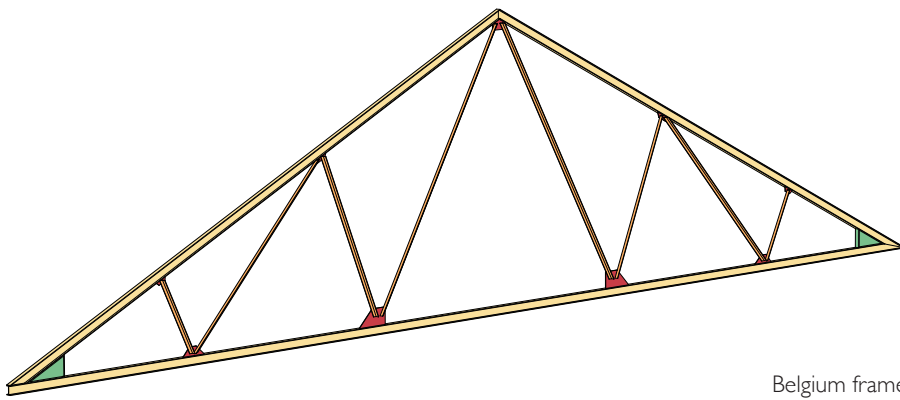
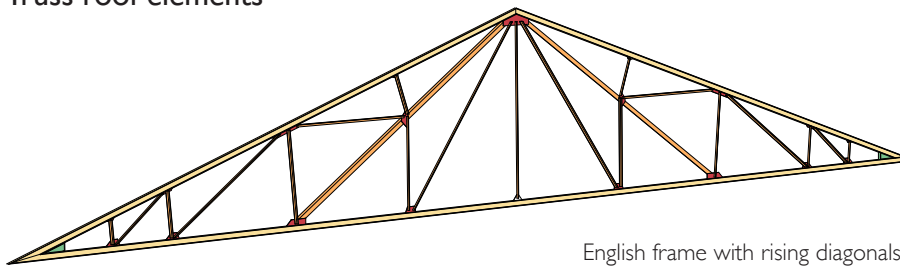
- L-profile: L100x8
- Steel plates

Construction of the lower part with slanted roof.



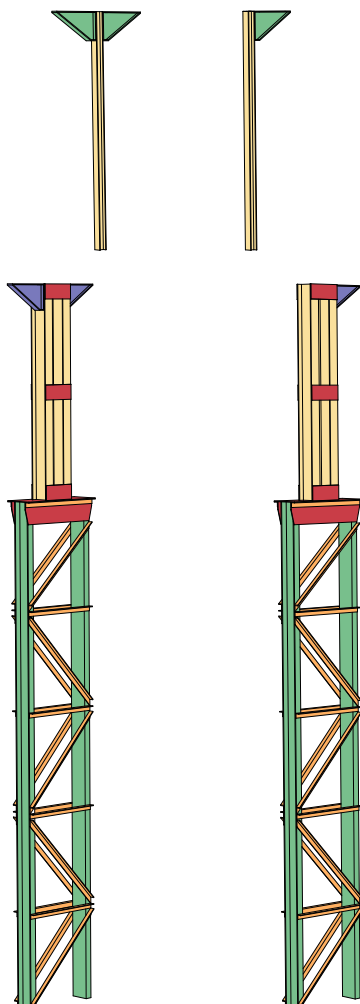
- IPE 160
- L-profile: L65x7
- INP80
- HEA120

Truss roof elements



- IPE 00
- L-profile: L40x5
- Steel plates
- Heel of roof truss

Truss columns & the smaller columns



- IPE 270
- L-profile: L65x7
- Steel plates
- UNP 260
- Bearing support

The machine hall consists out of two large halls, and because of that it has two roofs. Because the halls differ in size, the roofs do too.

The roofs of the Machine Hall are placed upon steel trusses. The biggest trusses have a span of more than 20 meters. On these trusses wooden beams are placed diagonally, on which the roof is built. The roof itself does not have a fully insulated package, it exists merely out of wooden boards, closed off from the outside with EPDM covering.

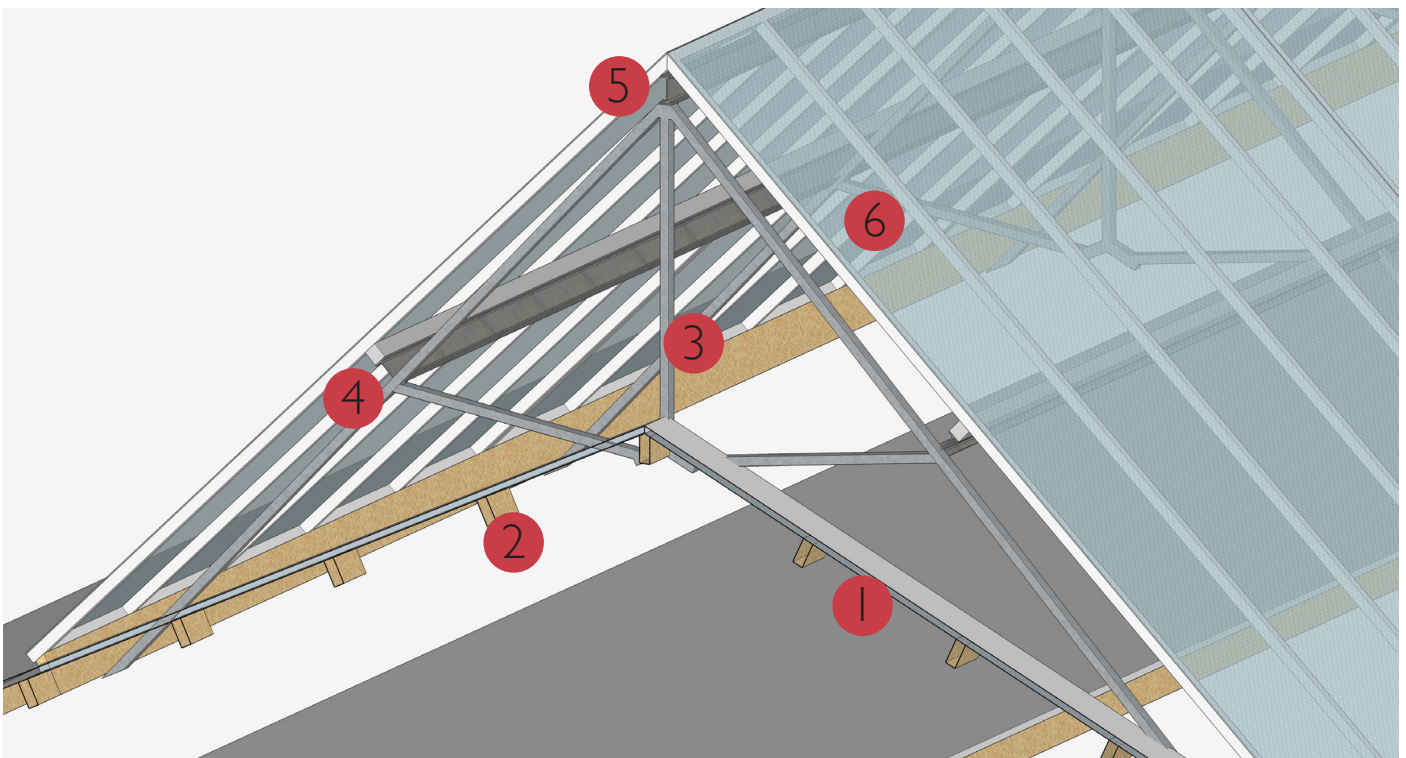
Like the Weapon Depot, the Machine Hall also has skylights. However, there is a big difference between the skylights of the two buildings: while the newly built skylight of the Weapon Depot is held in place thanks to small supporting constructions, the skylights of the Machine Hall have their own supporting trusses, built upon the main trusses. This is of course because of the size difference between the roofs of the two buildings.



Skylight Machine Hall

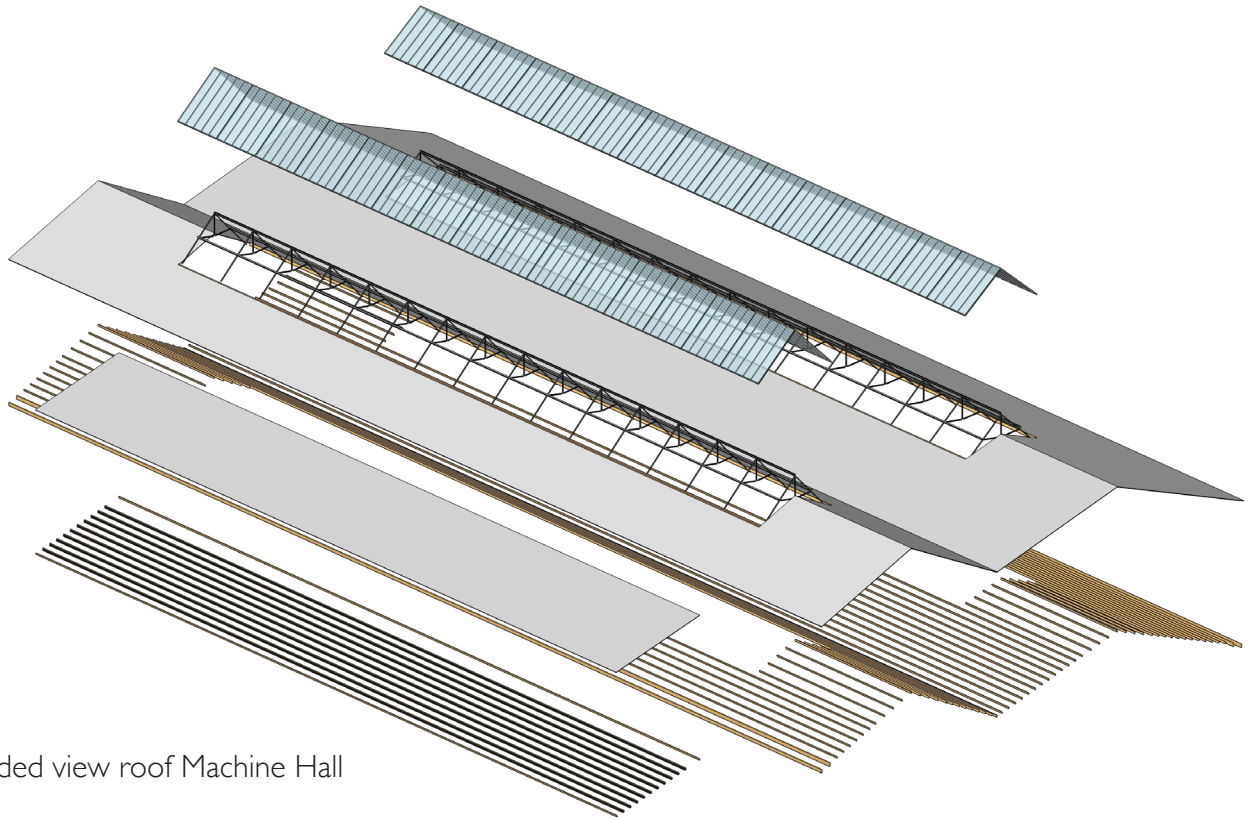


Roof Machine Hall

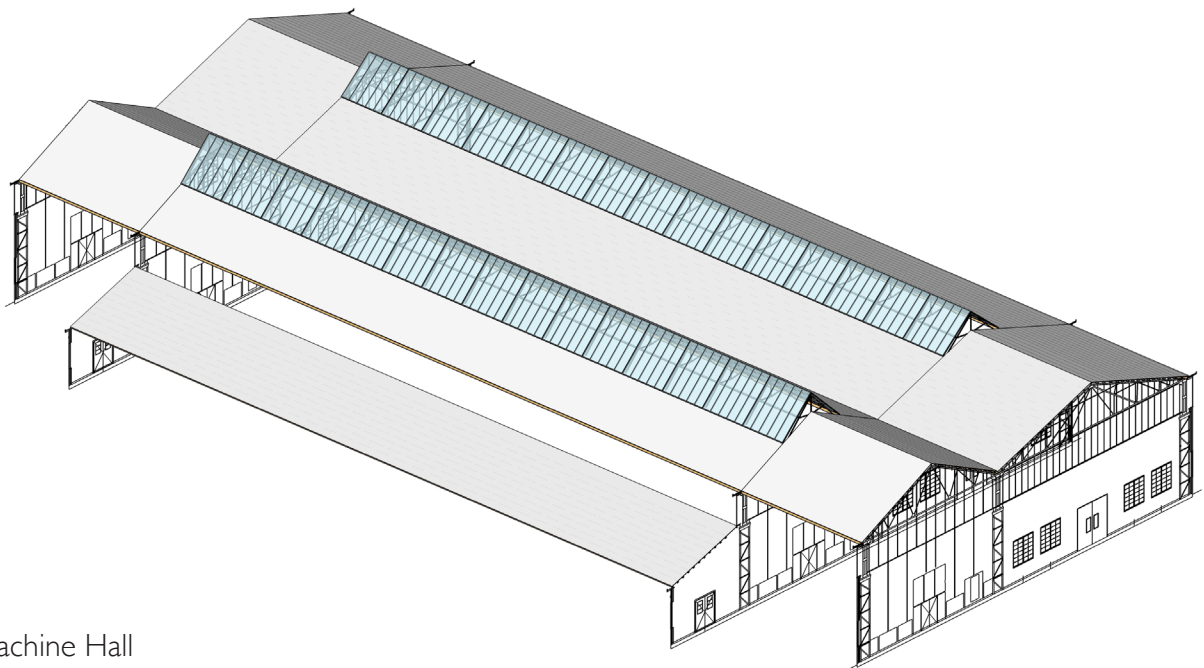


Principal structure roof Machine Hall

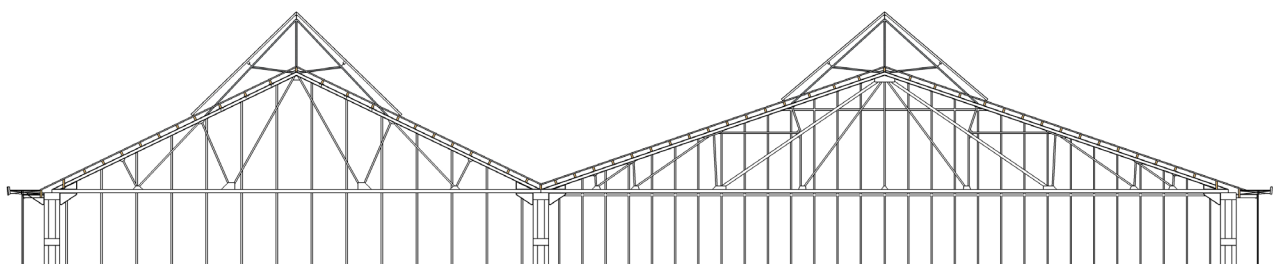
1. Roof
2. Wooden beams
3. Supportign rafter
4. Supporting beam for skylight
5. Ridge beam
6. Skylight frame



Exploded view roof Machine Hall

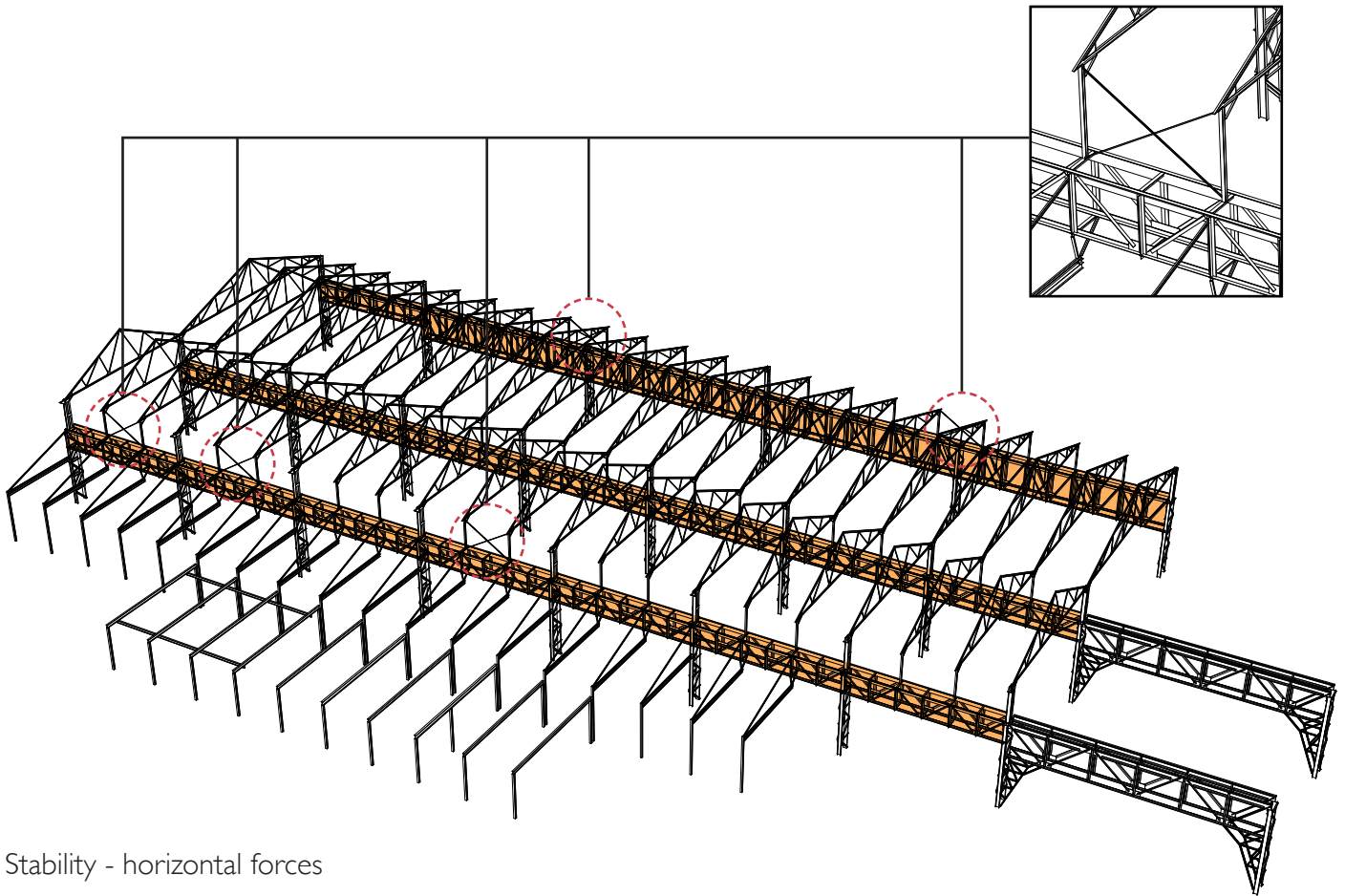


Axxo Machine Hall

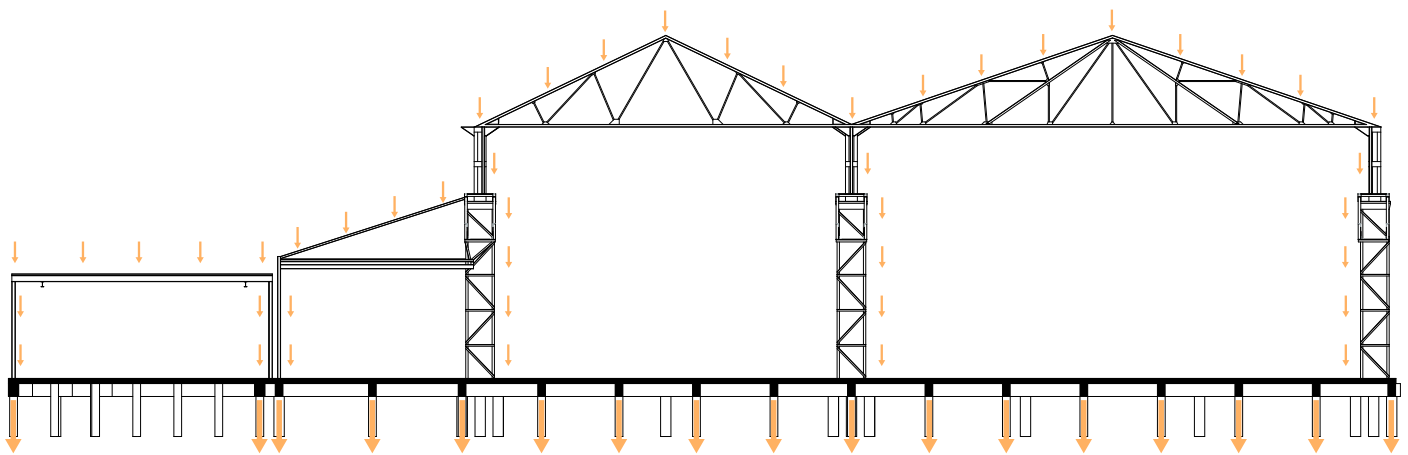


Section roofs Machine Hall

5.3.2 Stability



Stability - horizontal forces



Stability - vertical forces

To maintain stability in the machine hall, the truss beams help with the stability against horizontal forces. These beams are dimensionally stable due to the triangles of the truss beam. These horizontal forces are then guided via the columns down to the foundation.

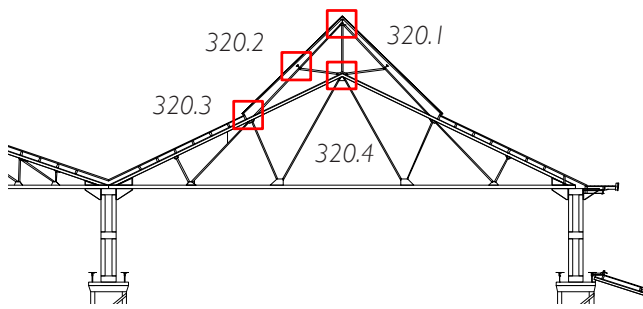
An other element that provides support against horizontal forces are the wind bracings above the truss

beams near the roof structure. On photos we could only locate a few of these wind bracings, we don't know for sure if these are the only ones or that there are more.

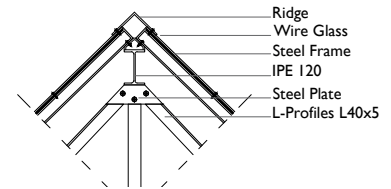
The vertical forces are guided through the columns and continues towards the foundation where these columns are standing on.

5.3.3 Details

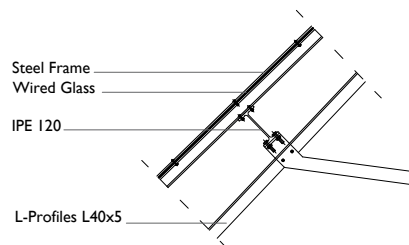
The following details have been drawn to give a better overview of the construction of the roofs. The chosen details are mainly focused on the connection between the roof and the main construction and the materials used in the construction.



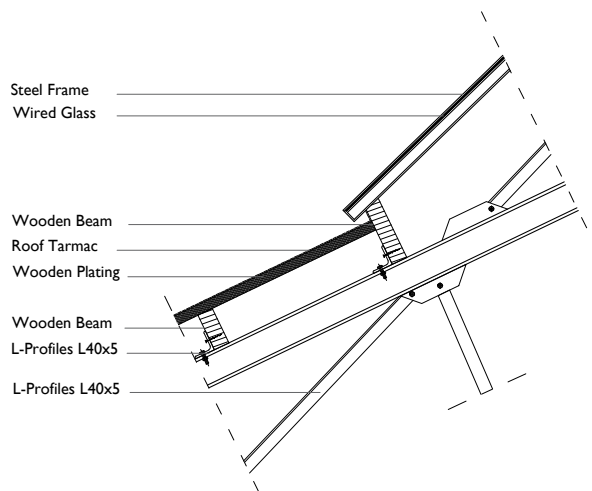
Overview Roof Details Machine Hall



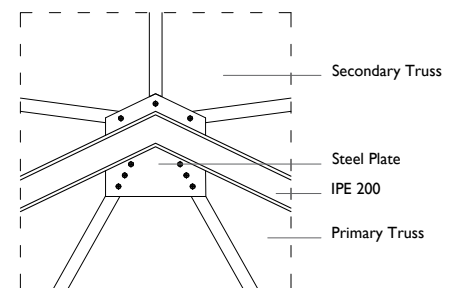
Detail 320.1



Detail 320.2



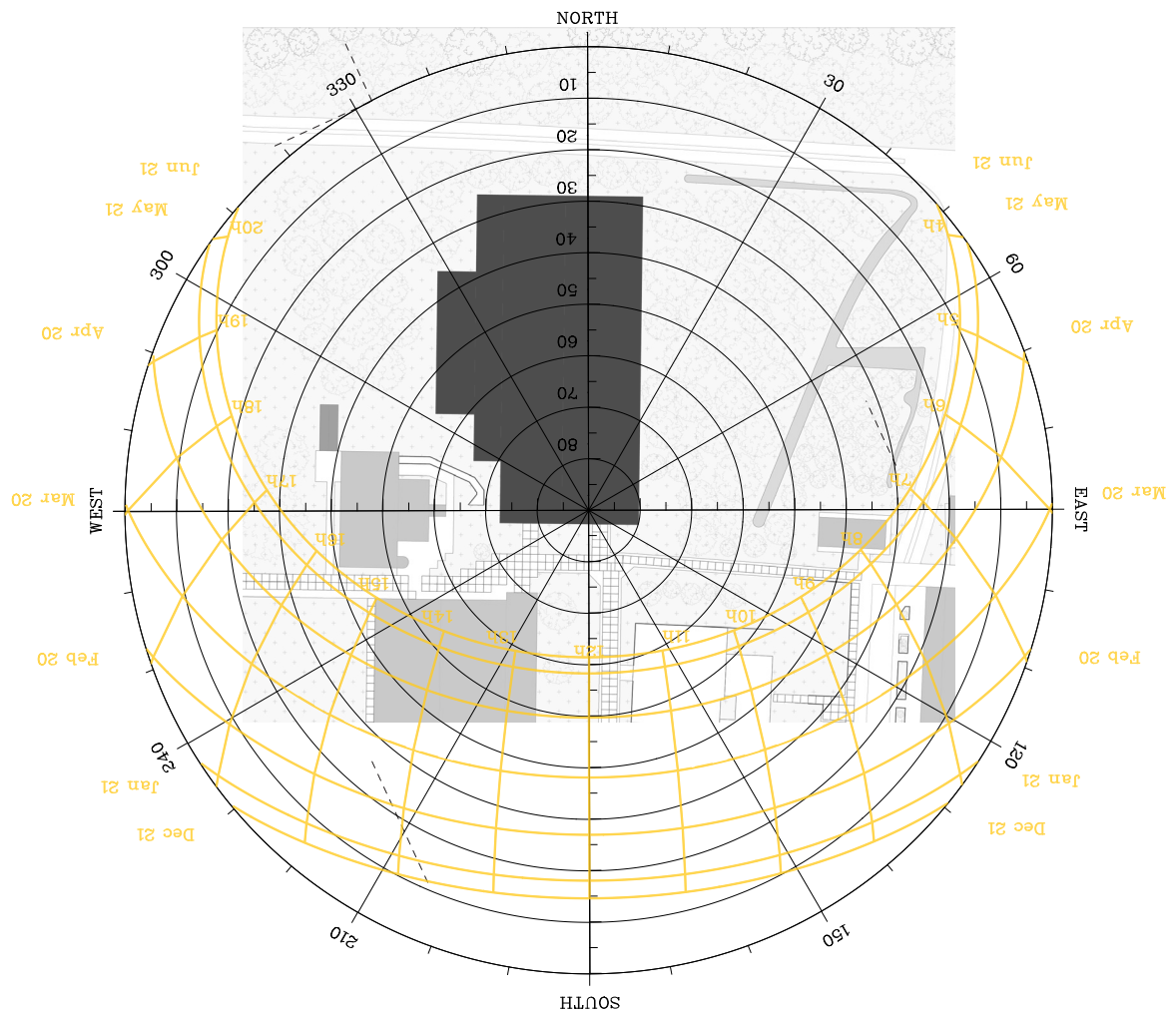
Detail 320.3



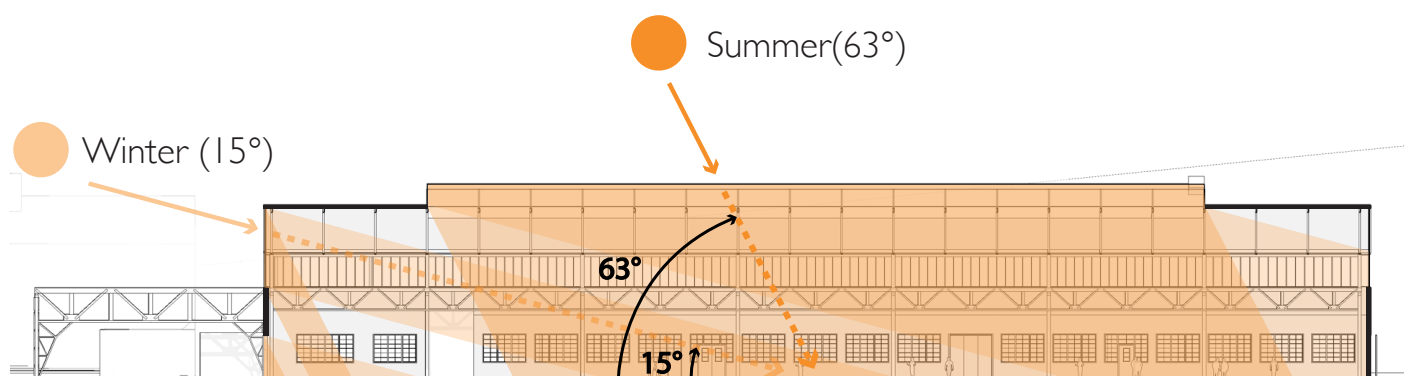
Detail 320.4

5.3.4 Climate & Services

Orientation in relation to sun



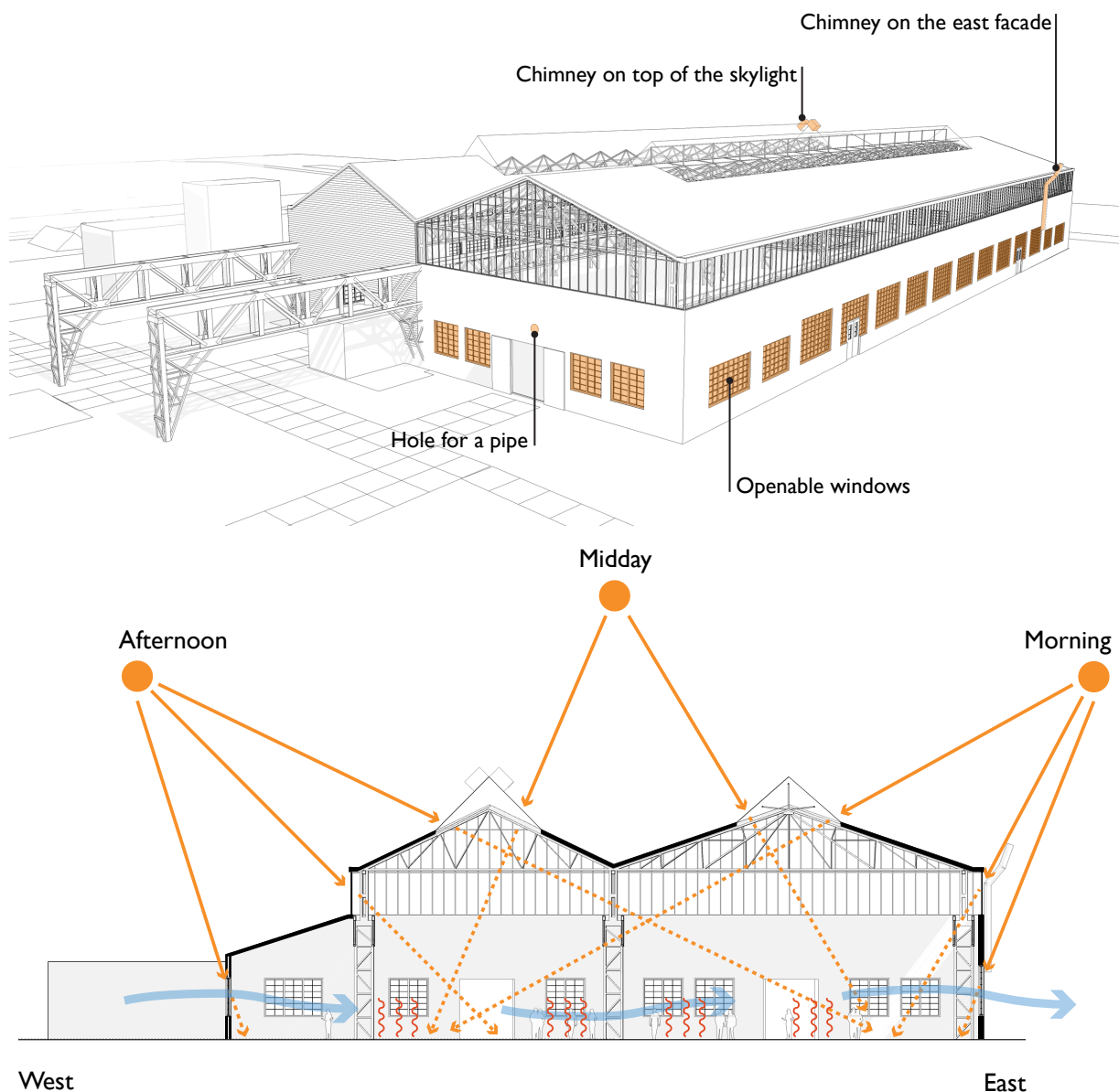
Daylight



Climate

Ventilation of the machine hall only took place through natural cross ventilation. The natural cross ventilation was created by openable windows on all facades. There used to be two fans and thirteen air heaters to heat the space during the winter. Nowadays there are some service elements left on the building. There are two chimneys on top of the skylight of the western hall that was probably used for the heating system or used as mechanical ventilation. There is also a chimney on the east facade that goes through one of the windows.

Besides this there are holes above the entrances of the eastern hall on the north and the south facade as remnants of pipelines through the facade.


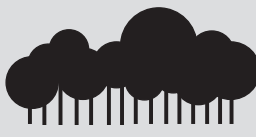


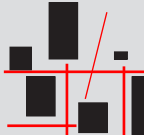


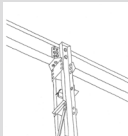

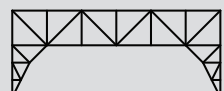




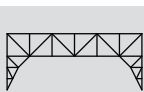





The Machine Hall consists out of a steel structure with composed elements. The former cranes that were used inside and the former function was the leading factor in the design of its construction. The trussed beams are composed out of steel profiles in order to make the size of the columns and beams bigger. This way the construction could carry the weight of the cranes. Because of the truss beams the building is been kept stable. Above the heavy construction of the crane track, a lighter structure is situated where the roof is placed upon. It has skylights to provide sunlight into the machine hall. The ventilation of the machine hall only took place through natural cross ventilation.

Conclusion

To conclude, by having analysed the different points of interest, we could say that we gained a better understanding of the machine hall. The function of the machine hall hasn't changed a lot over time compared to the weapon depot. The machine hall has always been used as manufacturing hall to produce civilian machine tools. By analysing all the information found and relating it to the main question of this research "How did the functional logic of the Artillerie Inrichtingen influenced the character Campus North has today? we can conclude that the function of the building has been a strong influence for its appearance. The building has fallen into disrepair, but the size, construction and appearance of the building form still a clear reflection of the former function of the building. The major changes in the facade and additions to the building are clearly visible in the current situation. All the different elements in the building are derived from the manufacturing process of the civilian machinery tools.

6. Value assessment

Cultural Value Matrix	Age value	Historical value	Non intended commemorative value
Surrounding/ setting	 Water structure	 Plofbos	 The roads where the train tracks used to be
Site	 Monumental tree	 Axes of Campus North	 Position Weapon Depot by demolition of 309
Skin (exterior)		 Typology of façade Weapon Depot	
Technical Structure	 State of the art engineering	 Cranetrack & columns Machine Hall	 Extruded crane as visual guide landmark
Space plan		 Lengthwise Machine Hall	
Surfaces (interior)			 Floor tiles of Weapon Depot
Services	 Integrated ventilation Weapon Depot	 Hoist beams Weapon Depot	 Extruded crane Machine Hall
Stuff		 Watchtower 217	
Spirit of place		 Trees next to Machine Hall	 Low Density

Use value

Art value

Rarity value

Other value



Parking lot



Typologies



Hembrug as old military terrain



Connection to the main roads



Connectivity of buildings through public space



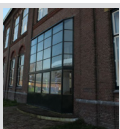
Axes road/ viewline to Weapon Depot



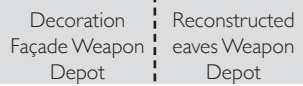
Ensemble on border of Hembrug



Stand-Alone Campus Structure



Changing of entrances Weapon Depot



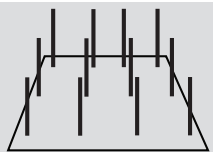
Decoration Façade Weapon Depot
Reconstructed eaves Weapon Depot



Uniform façades Weapon Depot



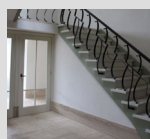
Assembly of the trusses



Spatial freedom



Skylight



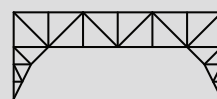
Entrance hall Weapon Depot



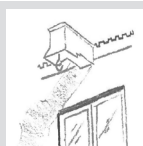
Tiles Weapon Depot



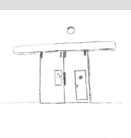
Transport doors Weapon Depot



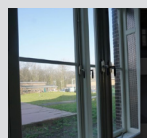
Extruded crane of Machine Hall



Hoist beams Weapon Depot



Sliding doors Machine Hall



Lighting

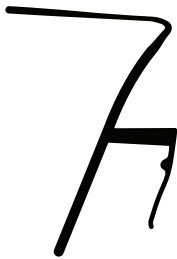


Loading docks of Weapon Depot

Surroundings / Setting

Water Structure

Age Value



The water stream between the trees north of the Ensemble is one of the few water structures in the area. Besides being a part of nature, it also goes back centuries, acting as a natural border to the original land. It is the oldest remaining structure on site.

Plofbos

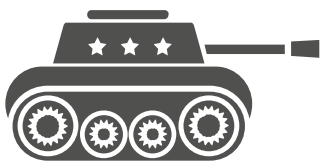
Historical Value



The woods of Hembrug are a major part of the area and is one of the main characters giving identity to the site. It used to be the site of the testing of explosives while hiding the area from scouts in the sky. Today the forest provides the green identity in a very industrial atmosphere while preserving the mystery of its former functions.

Hembrug as a military terrain

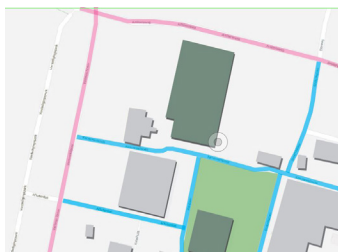
Rarity Value



As a military terrain, Hembrug is quite a rarity because of its location so close to the capital and other urban sites. The reason for this is its critical position inside the Defense Line of Amsterdam and the fact it always had to be in reach since it was the only weapon production site of the country.

Connection to the main roads

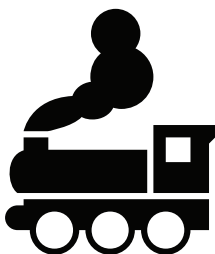
Other Value



After the demolition of the old Hem Bridge the entrance of the site has moved from south to north. This puts Campus North from an area in the back corner, to an area which is connected to the main access roads of Hembrug. Being connected to the entrance roads means that Campus North has an important place in the representation of the Hembrug area.

The roads where the train tracks used to be

Non intended commemorative Value



Train tracks used to be located all over the Hembrug area in order to transfer goods between different production factories. Once the production halted there was no need for this structure anymore but the current streets are based on this particular infrastructure layer from the past.

Parking Lot Use Value



The road where the former railroad was used to be is nowadays the main parking lot of the Hembrug area. The current parking lot may not add much to the area in esthetics but parking will remain an important aspect in the future use of the site as a whole.

Typologies Art Value



The activities on the Hembrug area stretched out from office work to testing of explosions. There was a need for various types of buildings designed for various activities. This resulted in a wide range of building typologies throughout the Hembrug Area. This diversity in forms and types contributes to the aesthetic character of the site.

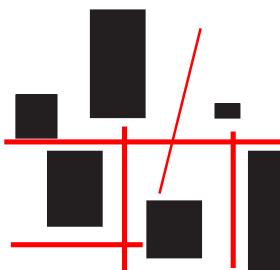
Site

Monumental tree Age Value



The green environment of the site consists of woods which were planted with a purpose and greenery that grew naturally. The showpieces of the green Hembrug are the oldest trees spread over the area, which are now enlisted as monuments. Among these trees is the monumental tree next to the lost railroad, included in Campus North which is more than 80 years of age.

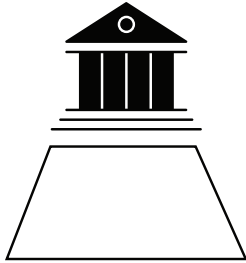
Axes of Campus North Historical Value



The different axes that stretch through Campus North are based on the former production lines of the Artillerie Inrichtingen. On these pathways train tracks used to be located in order to transport goods all over the site also providing a connection with the rest of the site.

Position Weapon Depot by demolition of the shipping warehouse

Non intended commemorative value



The demolition of a former shipping warehouse in the ensemble resulted in the creation of a central square in Campus North. This square points the attention towards the Weapon Depot and puts it in a prominent position in the area.

Ensemble on the border of Hembrug

Rarity Value



Campus North is the only ensemble together with the campus South that is directly positioned on the border between original peat land and man made polder land. A part from the water structures that are reminder of that separation there is no visual testimony of this unusual fact. Nonetheless this duality can be found in the soils of the two parts distinguishing two very different compositions.

Axes road/viewline to Weapon Depot

Art Value



From the lost railroad, one of the two primary roads coming into the Hembrug area, a pathway was created with the usual stelcon plates opening up a guided sightline towards the Weapon Depot. At the moment, this viewline is the only way of spotting the Weapon Depot in its entirety from the primary accesses of the Hembrug Area.

Stand - Alone Campus Structure

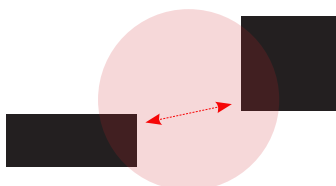
Other Value



All buildings that are located on Campus North and directly adjacent to the site have the distinctive aspect of being all stand alone structures that can be walked around of in every way. Adding to this very free way of placement of the buildings there is also a lot of open space connecting them. These factors contribute together to a certain campus like feeling.

Connectivity of buildings through public space

Use Value



The open space in between the buildings of Campus North is one of the connecting elements between them. It serves as a shared open space through which the circulation of the site passes and from which the user can see both the Weapon Depot and the Machine Hall.

Skin (exterior)

Changing of entrances Weapon Depot

Use Value



The main entrance of the Weapon Depot has been adapted through history. The main facade used to be located on the south of the building since one of the main axes were located on this side with the traintracks used for transport. The northern facade used to be the back of the entire site. Nonetheless, in the current situation the main entrance is in the north, looking towards the later added constructions and what is now a square in the centre of Campus North serving as stage for the building.

Typology of facade Weapon Depot

Historical Value



The facades of the Weapon Depot are designed in a neo renaissance style with a lot of attention that was given to the detailing. Built in 1899, it is one of the oldest designed constructions on site and representative for the style that was common during the beginning of the 20th Century.

Decoration facade and Reconstructed eaves

Art Value



Because of their industrial use, the buildings in Hembrug rarely had ornaments included in their original state. However, effort was put into saving the small amount of what the buildings did have in terms of decorations: Restoring the few elements on the façade of Weapon Depot as well as reconstructing the ornamental eaves while rebuilding the old roof.

Uniform facades Weapon Depot

Rarity Value

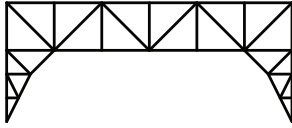


As the weapon depot has a very unique form within the Hembrug site it also has a certain value in the urban scale of the site. The cubic form entails that the four facades have approximately the same dimension that can be discovered while you walk around it since it is a free standing building. In addition, the facades have a very uniform character, in a way that they use the same detailing and window structures all over the skin of the building. The rhythm and proportions are also similar on each facade adding to its value.

Technical Structure

Extruded crane as visual guide landmark

Non intended commemorative Value



The steel construction which guided the crane of the Machine Hall outside is still complete. While it does not have a function anymore, nowadays it functions as a visual landmark and one of the entrance gates into Campus North.

Crane tracks & columns Machine Hall

Historical Value

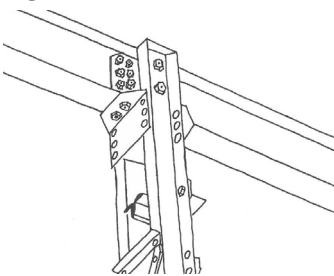


The crane track and columns inside the Machine Hall are not only displaying a way of constructing in the past; from looking at the structure you don't only see the way it was built, but also where it was used for.

The traces of the former machinery crane and production line are clearly visible.

State of the art engineering

Age Value



The constructive elements in the Hembrug area are all part of another time period in which these elements were built using the latest, state of the art engineering techniques.

They are not only functional but also add a esthetic element to the buildings which display an image of its industrial past.

Assembly of the trusses

Art Value



The steel construction of the buildings do not only support the buildings and provide information about technology of the past; they also have an aesthetic value. The complex structure of the constructive elements provide the industrial atmosphere of Hembrug and contributing to its identity.

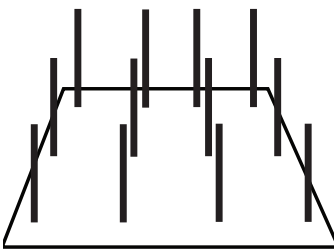
Space Plan

Lengthwise Machine Hall Historical Value



The spacious volume of the Machine Hall are from a period when the Hall was used as a 85 meters long production line. The past functions of the halls could be traced back partly due to their depth since this means that there was some longitudinal activity.

Spatial freedom Use Value



The former industrial buildings are designed with the focus on practicality. The steel construction used in the set-up of the buildings sought to achieve open halls which could be rearranged according to its use. Today these halls are open spaces with a minimum amount of obstacles providing a certain freedom in design possibilities.

Surfaces (interior)

Floor tiles of Weapon Depot Non intended commemorative value



The floor tiles used in the Weapon Depot are a part of the tiles which were specially manufactured to be used in the Hembrug area. Through the restoration the emblem of the Artillerie Inrichtingen was discovered on the back of the tiles providing insight in the function of the site.

Skylight Use Value



The skylights in both buildings add an extra dimension of light entry within the interior volume. This means that there is an optimal amount of daylight passing through the windows which benefits the user's activity within.

Entrance Hall Weapon Depot

Art value



The stairs are composed of thin steel framed railing and wooden steps. It has, in contrast to other interior elements of the buildings, a certain decorative aspect that was given in order to give more importance to the entrance of the building. By adding more attention to the stairs it showed the status that they wanted to generate for the Weapon Depot.

Tiles Weapon Depot

Rarity Value



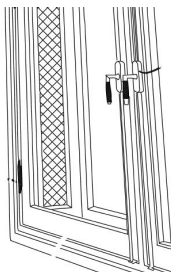
The green tiles of the weapon depot can be found in the hallway of the building. They were placed during the transformation to head office of the site, giving the entrance more allure.

What makes these tiles characteristic is that they are not being fabricated anymore and have thus a very rare value for the Hembrug site.

Services

Integrated ventilation Weapon DEpot

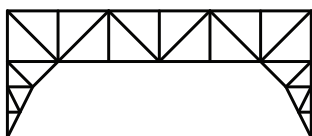
Age Value



The ventilation of the Weapon Depot is managed by the ventilation grilles which open up to the cavity walls. It is a practical system, that was installed early in the 20th century, much ahead of its time and ideal for a building which had to be continuously ventilated. It was kept in place during the renovation of 2015 not for its functionality but because it is an important element of the structure of the building.

Extruded crane of Machine Hall

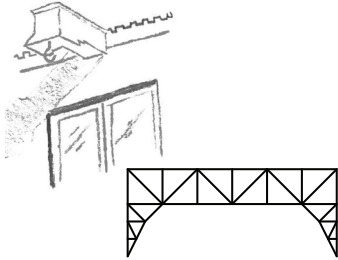
Rarity Value



The crane tracks of the machine hall used to be extruded in order to transport the heavy machinery from this inside to the outside and the other way around. This structure that now only serves as landmark, is unique on the Hembrug site. Nonetheless it was quite typical for other machine halls (such as the werkspoor in Amsterdam) but still a good example of the functionality of the building.

Hoist Beams and Extruded crane

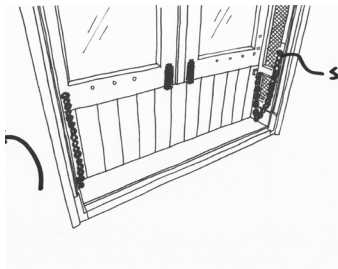
Historical Value



The hoist beams, reconstructed only as ornaments on the Weapon Depot and the extruded part of the crane's construction on the façade of the Machine Hall display the former functionalities of the buildings from the exterior. The crane tracks are still the original structure in contrast to the hoist beams that were placed there during the renovation in order to present the history of the building.

Transport doors Weapon Depot

Art Value

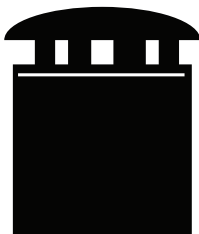


The transport doors on the west façade of the Weapon Depot that were once used to transport goods up to the second floor are also reconstructed together with the rest of the window frames. They may be not used anymore, but they reflect back to the former way of vertical transportation.

Stuff

Watchtower

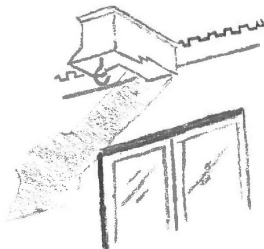
Historical Value



The watchtower on Campus North is a historical landmark and one of the first buildings to be observed when entering the Hembrug area. Today, the building is listed as one of the Rijksmonumenten in Hembrug as it is a unique form within the complex. During the war it served as control tower to alert in times of air raids. The original cabin on top of the tower is still present contributing to its historical value.

Hoist beams Weapon Depot

Art Value



Just like the transport doors, the hoist beams that were used in co-operation with the transport doors are also reconstructed to tell a more complete story. Unlike the transport doors, the hoist beams are merely a model of the originals and can't actually bare weight.

Spirit of the place

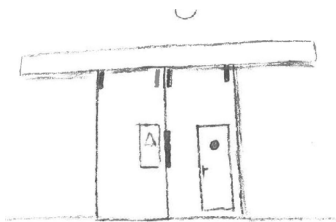
Low Density Historical Value



The Hembrug area is set up to be a large size industrial area with buildings spread all over the site contributing to what once were the Artillerie Inrichtingen.

With time, a number of these buildings were demolished due to their loss of function which resulted in the low density of buildings in the area and the spacious surroundings around the remaining buildings.

Sliding doors Machine Hall Use Value



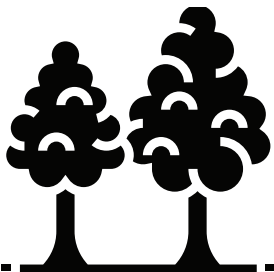
The sliding doors of the Machine Hall can be observed throughout the whole area. They are a recurring element on the entire site since it was the most effective way to close off openings. Their practicality has passed the test of time since they are still in function at the entrance of the large halls of the entire site.

Lighting Art Value



Due to the different light entry angles and points throughout the buildings such as the skylights and the many windows of the facade a very open and light atmosphere is created within the machine hall and the Weapon Depot. The large amount of light entering the building puts a certain spotlight on elements such as materials and cast shadows from the different structures.

Trees next to the Machine Hall Historical Value



The land east of the Machine Hall is covered with densely grown trees. They used to have a protective function against the explosive testing done in the area and now conserve the remaining historical water structures of the site. Since its primary function is nowadays less important there are different possibilities to use this space in our design.

Loading Docks of Weapon Depot Rarity Value



The loading docks on the southside of the weapon depot have been added during the restoration by ABT, this means that they are not the original structures. Nonetheless they are a replica of the docks that were once there and were characteristic for the function of the building. These are the on raised docks that can be found on site. It is to be assumed that there used to be stairs in order to step up the docks that have not been taken into account during the restoration.

7. Conclusion

By analysing all this information and relating it to the main question of this research “How did the functional logic of the Artillerie Inrichtingen influenced the character Campus North has today? we can determine the following:

We can conclude that the structure that is still visible is directly related to the functional logic of the site. Characteristic objects, like the tower, Stelcon plates and the crane structure are designed as functional objects, but are nowadays important elements of the character of Campus North. The typography and the development of the area had not only visible traces like the the water structure to drain land, but also in the subsurface where different soil composition can be found which resulted in different foundations of the buildings. The functional structure, related to the rational grid the area is developed on, are still present in the current situation. Because Campus North is placed on the former edge of the terrain, the different expansion periods of the terrain can still be recognized.

In the current situation Campus North consists mainly of large industrial buildings built in the third building phase. The appearance of those buildings is characterised by the production of weaponry and civilian machinery. The weapon depot in contrast, is built in the first building phase and distinguishes itself by its neo-renaissance military building style. Several buildings of the first and second building phase have been demolished and replaced for the larger manufacturing halls that were needed for the new production of heavy artillery and civilian machinery. Since this third building phase several buildings have been demolished that resulted in the low density of buildings and the large amount of open space the ensemble has nowadays. .

The Weapon Depot has always had an important position in the Hembrug area. Since the change of its function from an depot to an office, it was used as the headquarters of the factory, and as the location of the headquarters, Campus North was also of importance. Especially when the square in the heart of the Ensemble was created after the demolishment of building 309 and the main entrance was changed from the south border to the north, Campus North became a landmark position.

For the Machine Hall we can conclude that the function of the building has been a strong influence for its appearance. The machine hall is a clear example of the change in production that followed after the third building phase as it is one of the largest buildings on the whole Hembrug site. The building has fallen into disrepair, but the size, construction and appearance of the building form still a clear reflection of the production of heavy civilian machinery tools.

All these findings contribute to answering our main question. In the future we would like to analyse what is the tolerance of change. By doing so we would like to see what the tolerance of change for adapting the campus is without losing its characteristic value that we attributed as being of higher value for cultural and historical significance.

7.2 Opportunities & dilemmas

	Opportunities
Site Plan	<ul style="list-style-type: none"> - The pragmatic aspect of the site, all structures without functions are demolished - The demolition of buildings by developer resulted in low density of the urban layer; it gives the site a unique characteristic by its open space. - The variety in building typologies permit a certain flexibility in design styles. - The road structure define certain sight lines for users and provide guidance. - The campus is clearly bordered on the north side by the woods and allow connection with campus south. - The Campus North is located at one of the main entrances of the Hembrug site. - The extruded crane tracks function as a gate/entrance towards the site. - The low density of the urban layer is a unique characteristic. - All buildings are free standing in such way that the user can walk completely around it - Hembrug museum is located in Campus North that bring more visitors.
Weapon Depot	<ul style="list-style-type: none"> - The building was renovated in 2015 (casco renovatie) and thus in good condition. - Both buildings are rijksmonumenten and have thus a protected status. - The daylight quality due to the abundance of windows and skylight. - No trees surrounded the weapon depot offer visual connection in long distance especially through windows in the first floor. - The open space plan of the building allows flexibility. - The transport doors on the first floor allow possible external stairs. - The middle core in the first floor is non-loadbearing. Wooden floor beam is suspended on iron beams that detached from the brick core. It offers more possibilities of intervention for the core. - The Building is composed of two floors enlarging the possibilities within the building - The features of its neo-Renaissance style(especially the facade) typologically distinguish itself and contribute to the potential as a landmark. - It is a free stand building that has prominent position and open space in front of the weapon depot
Machine Hall	<ul style="list-style-type: none"> - Large span and large free floor space on a rectangular floor plan allow flexibility. - It is located at the edge of plotbos (military terrain) and fabric of previous artillery terrain. - Both buildings are rijksmonumenten and have thus a protected status. - The daylight quality due to large amounts of glass surface. - The re-opening of the northern facade doors will provide a double entry to the building. - The Wooden part of the facade is removable.(not really) - The eastern and northern connection with the woods. - Woods in west and east sides provide fancy shadow on the facade and visual connection with green through upper windows. - Steel skeleton is systematically detached from walls that offers potential interventions.

Dilemmas

- How to make the Campus North the new entrance of the entire Hembrug Site
- There is no coherent style in campus north due to the different typologies
- The extruded crane tracks do not serve their original purpose anymore but contribute to the general atmosphere.
- The open spaces of the site characterise the campus north and adding new structures would remove this aspect.
- The different open plots are not well defined and distinguished from each other.
- The water structure, as witness of the border between original and man made land is an ignored element has no functions.

- The core construction on the ground floor has no function and could be removed.
- The hoist beams that were restored by ABT do not have any functional value, only aesthetical.
- Renovation by abt in 2015 lost much historical trace that in a way bury its story.
- Renovation by abt is a neutral restoration without any programmatic consideration, no regret after its renovation limited possibilities in terms of intervention.




- The machine hall cannot be entered due to the asbestos present within the roof of the building.
- The annexe buildings had a certain functional importance but also obstruct many original openings.
- The re-opening of the northern facade doors necessitate a new connection with the Artillerieweg.
- The very poor state of the construction demands a lot of renovation.
- The lower part with slanted roof was intended as the back of the building, showing less welcomed after its location being transformed to an entrance.
- Crane tracks inside double halls lost its intentional function.
- The walls have to be insulated and the entire construction is in very poor state and has to be renovated.
- The asbestos has to be removed which result in accessibility of the machine hall (venomous)

8. Personal statements

Cultural value and historic value is important to assess due to the importance for the heritage

The personal assessment has been done in multiple layers. This is done to have a proper look at all the elements of Campus North. There is an individual Matrix in which elements or aspects are related to a certain value. We have filled in the elements as a group but categorized them as an individual as well. This is to start with a base in which we can relate the rest of the cultural value. The scales in which we worked are that of the site, weapon depot and the machine hall.

Also added to the cultural value is the artistic etude. The etude is an assignment to link the most important aspect of the campus to reconfigure it in an artistic representation. And then in turn it would also show the position statement.

-  Most important value - not to be altered
-  Important value - preferably not altered
-  Less important value - can be altered if needed

Personal Statement

Melanie Kwaks

When I visited Hembrug for the first time I did not expect that it used to be a weapon factory site. I really liked the atmosphere of the area especially the balance between the industrial elements (factory buildings & the pipeline) and nature. It felt apocalyptic and that nature had taken over this site but that people started to reclaim it again. It also felt hidden from the outside world, because it was very quiet, only a few people who worked on the area were there. I wondered how this area was developed and where each building was used for.

After researching the Hembrug area I learned that it was an isolated factory site due to confidentiality reasons from the military but today it is open for the public. I would like to draw more people into the area to bring in more cultural and residential functions with my design. This way I hope the area becomes less isolated and more involved with Zaandam.

There were 3 factory complexes, the weapon factory, cartridge factory and ammunition factory. For the layout of the area they made use of the functional logic of the production process to develop this site. This meant that the representative buildings were on the North Sea Canal side because the entrance of the site used to be there. Behind the representative buildings the production halls were situated where the weapons/cartridges/ammunition were made. On the very back of the area there was the storage buildings located. Campus North is an ensemble that used to be on the back of the area. When the Hembrug area opened up for the public the entrance changed to this side. For my design I would like to think about how Campus North can serve as an entrance for the whole Hembrug area.

Campus North consists out of an open space with a few buildings. If we look at the name; campus means open space or field and north comes from its position in the north of the Hembrug area. I intend to keep the open space in front of the weapon depot as a public square where activities can occur. This I would like to combine with the new function I have in mind.

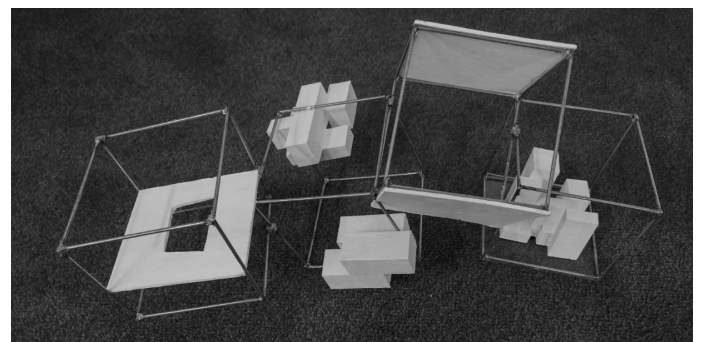
In our research we looked deeper into 2 of these buildings; the weapon depot and the machine hall. The weapon depot transformed over the course of time into an office building and was recently restored. The machine hall was used for the production of

civil machinery and is vacant and was neglected in maintenance. This is why I think the machine hall is still an empty canvas on how to transform this building. In terms of function for both I see a combination of residential functions with cultural functions. With cultural functions I'm thinking about an art gallery and/or museum, artist retreats, artist workspaces, workshop rooms and even yoga studio's.

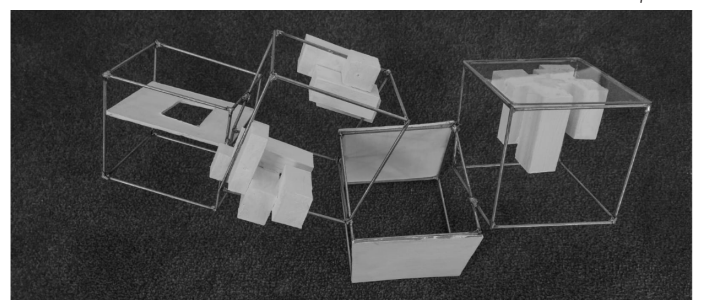
For my etude I made a sculpture where different design ideas were minimalized. The sculpture refers back to the functions I have in mind for the area. Each cubic represents one design idea, because my thoughts about the design are still going back and forth, therefore the cubes are not placed in a straight line. The sculpture can also move in every direction to see the designs from different angles. This represents my design process.







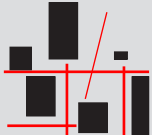


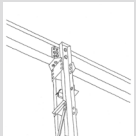

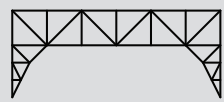





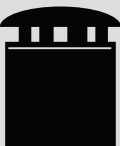


Design idea sketches



Etude sculpture



Etude sculpture

Cultural Value Matrix	Age value	Historical value	Non intended commemorative value
Surrounding/ setting	 Water structure	 Plofbos	 The roads where the train tracks used to be
Site	 Monumental tree	 Axes of Campus North	 Position Weapon Depot by demolition of 309
Skin (exterior)		 Typology of façade Weapon Depot	
Technical Structure	 State of the art engineering	 Cranetrack & columns Machine Hall	 Extruded crane as visual guide landmark
Space plan		 Lengthwise Machine Hall	
Surfaces (interior)			 Floor tiles of Weapon Depot
Services	 Integrated ventilation Weapon Depot	 Hoist beams Weapon Depot	 Extruded crane Machine Hall
Stuff		 Watchtower 217	
Spirit of place		 Trees next to Machine Hall	 Low Density

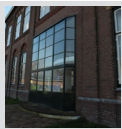
Use value



Parking lot



Connectivity of buildings through public space



Changing of entrances Weapon Depot

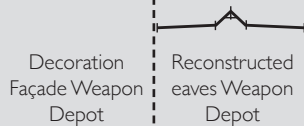
Art value



Typologies



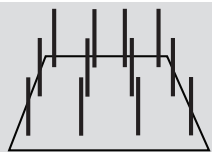
Axes road/ viewline to Weapon Depot



Decoration Façade Weapon Depot
Reconstructed eaves Weapon Depot



Assembly of the trusses



Spatial freedom



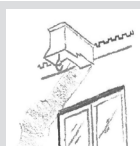
Skylight



Entrance hall Weapon Depot



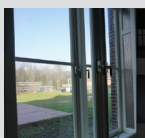
Transport doors Weapon Depot



Hoist beams Weapon Depot



Sliding doors Machine Hall



Lighting

Rarity value



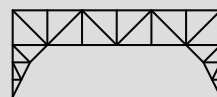
Hembrug as old military terrain



Ensemble on border of Hembrug



Uniform façades Weapon Depot



Extruded crane of Machine Hall



Loading docks of Weapon Depot

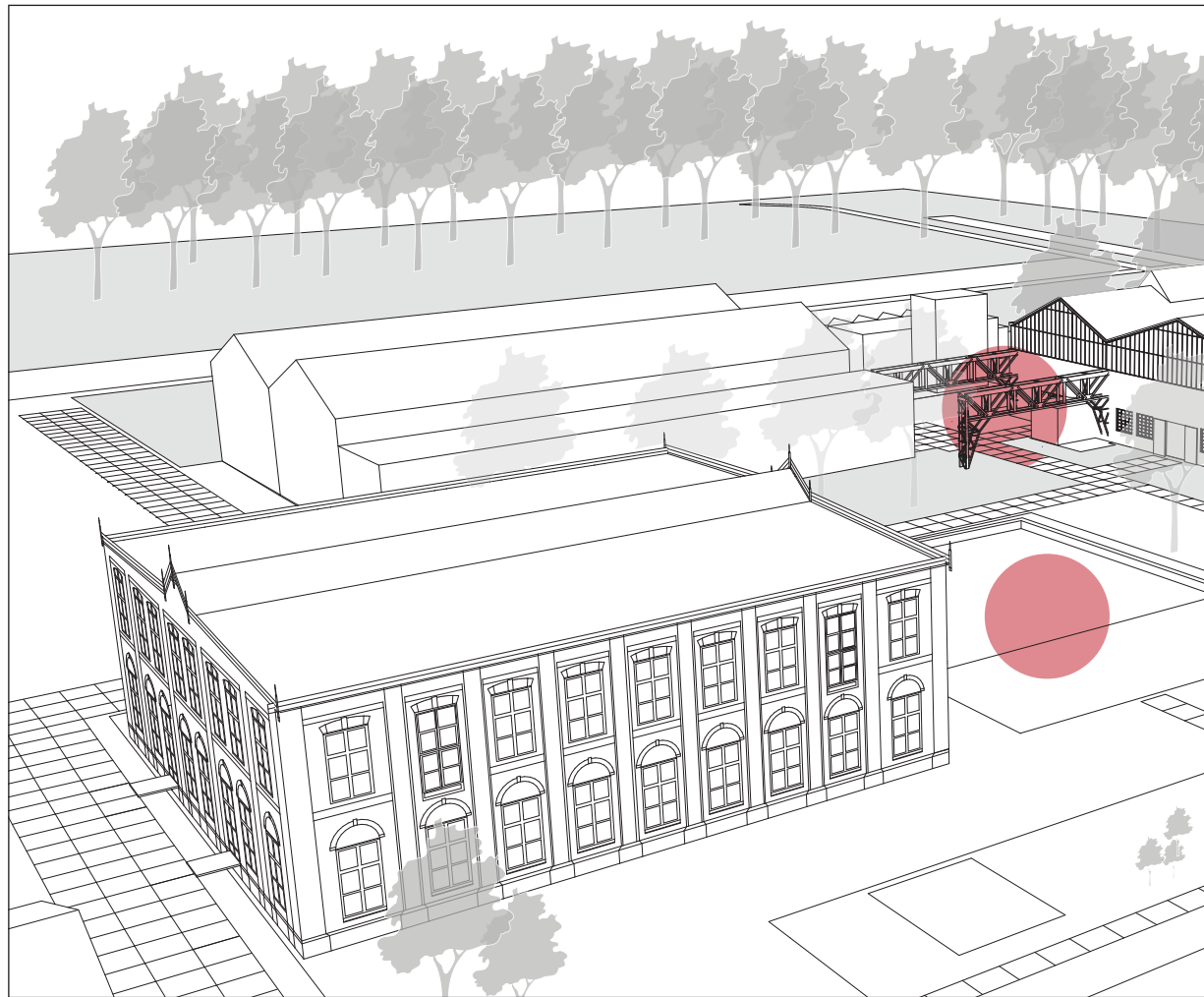
Other value



Connection to the main roads



Stand-Alone Campus Structure



OUTSIDE CRANE TRACKS MACHINE HALL

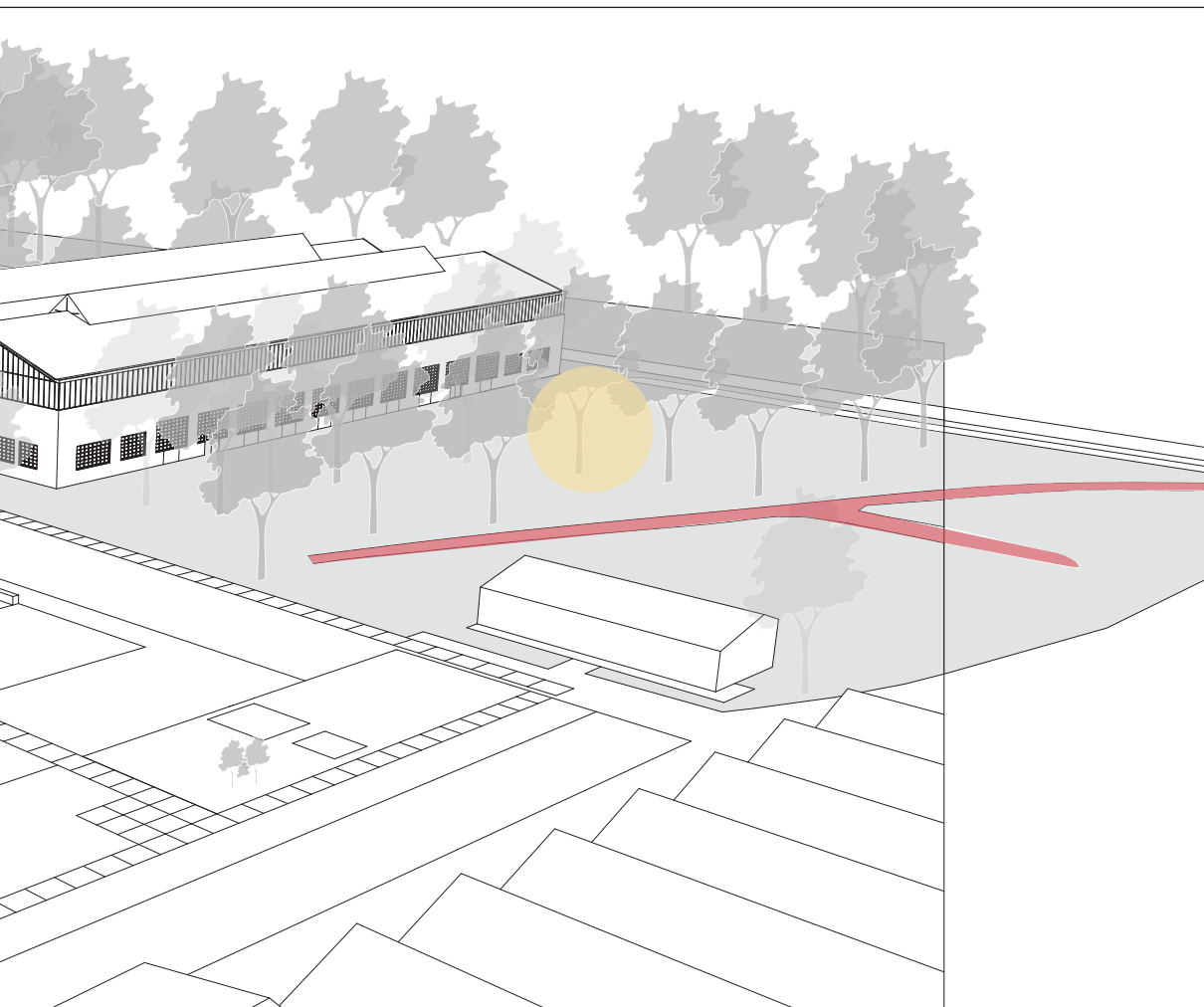
The outside crane tracks of the machine hall have a high value for me because I was impressed by it the first time I saw it. It embodies the Dutch engineering from another time period and it fascinates me to see how they built in former times. It also feels like a gate, an entrance.



WATER

Campus North is one of the 2 ensembles that lies on the border of the former foreland 'the Hem' with the new polder. The waterline symbolizes this border and I like to keep this border visible

Source: Amélie de Guerre & Na Hu



SQUARE

The weapon depot has a monumental character. Therefore I think that the square in front of the weapon depot is a very important aspect to the ensemble because it gives the building a more monumental feeling. It is a spatial quality that gets lost if there would be a building on this square.



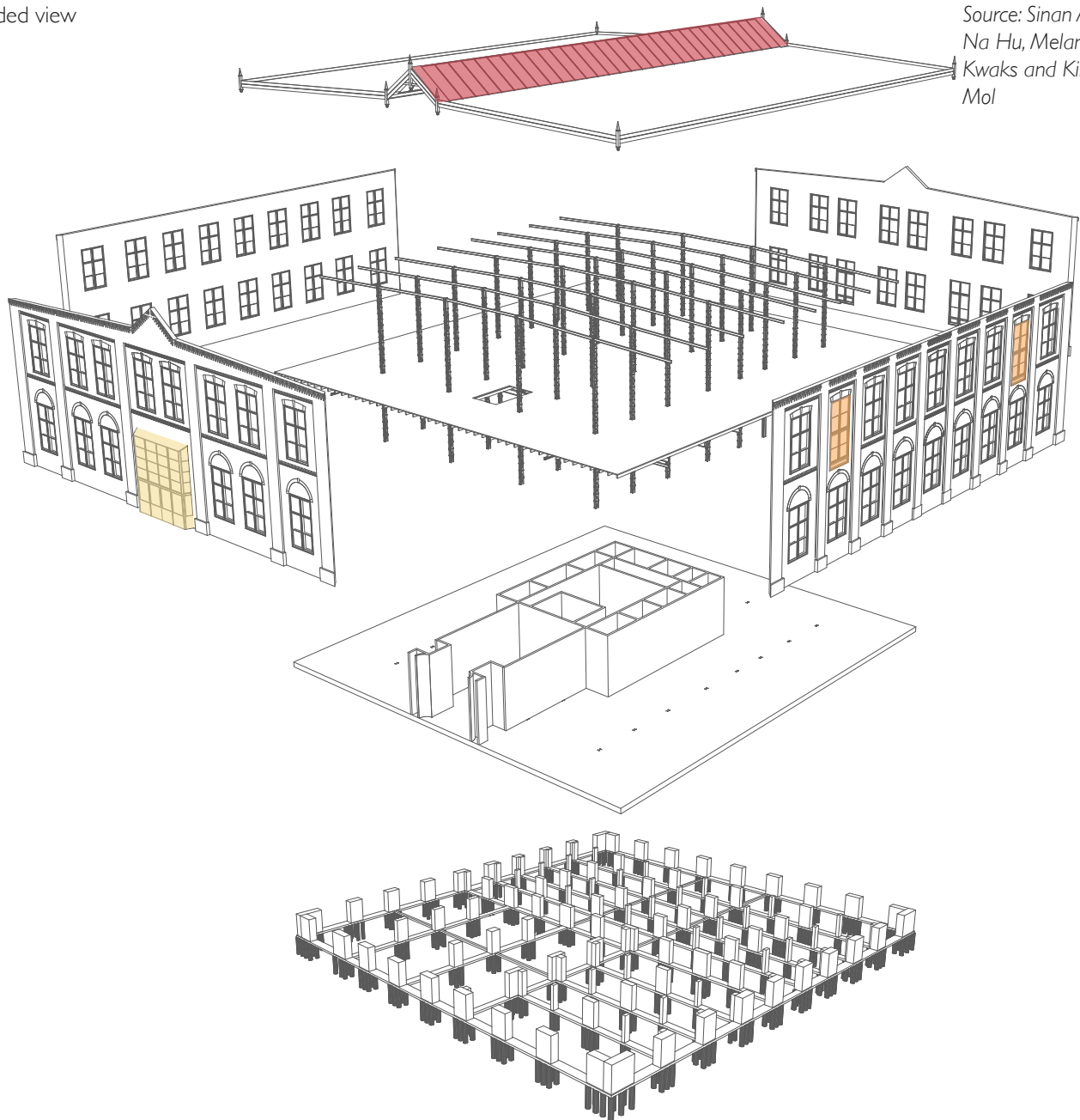
GREEN PLOT

In my eyes, in this world, nature is of great importance. We can't live without nature. On a more spatial level, they provide a connection with the 'pofbos' that is across the street. That's why I think this green plot is important, but I don't mind if changes were made to this green plot.

Value Assessment Weapon depot

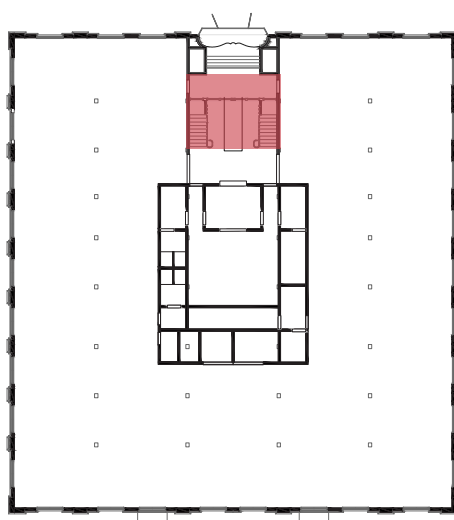
Melanie Kwaks

exploded view

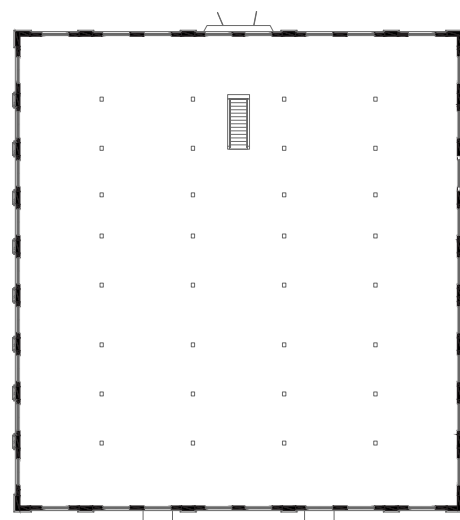


Source: Sinan Aydin,
Na Hu, Melanie
Kwaks and Kilian
Mol

Ground Floor Plan



First Floor Plan



Source: Kilian Mol



STAIRCASE WITH ENTRANCE

This staircase is renovated in its original state and to me it has art value. I like to keep this staircase as it is because of its spatial effect, the history it has and because it is an eyecatcher. Especially in combination with the entrance doors that were made in the same style as the staircase. The balustrades and doorhandles are matching so does the white color of the wooden door and wooden steps.



SKYLIGHT

When going up the stairs I was amazed by this skylight and the light that it brought to the first floor. It was a very light, high and open space which created a nice atmosphere to be in. This is a contrast with the ground floor of the building because it has a relatively dark and cold atmosphere.



TRANSPORT DOORS WITH HOISTING BEAMS

For me these doors represent the history of this building. The hoisting beams and transport doors are from when it was used as a storage space. When it was transformed into an office, steel stairs were going to these transport doors to provide an entrance. It endured the transformations from the past, therefore I want it to last in the next transformation as part of my design.



ENTRANCE

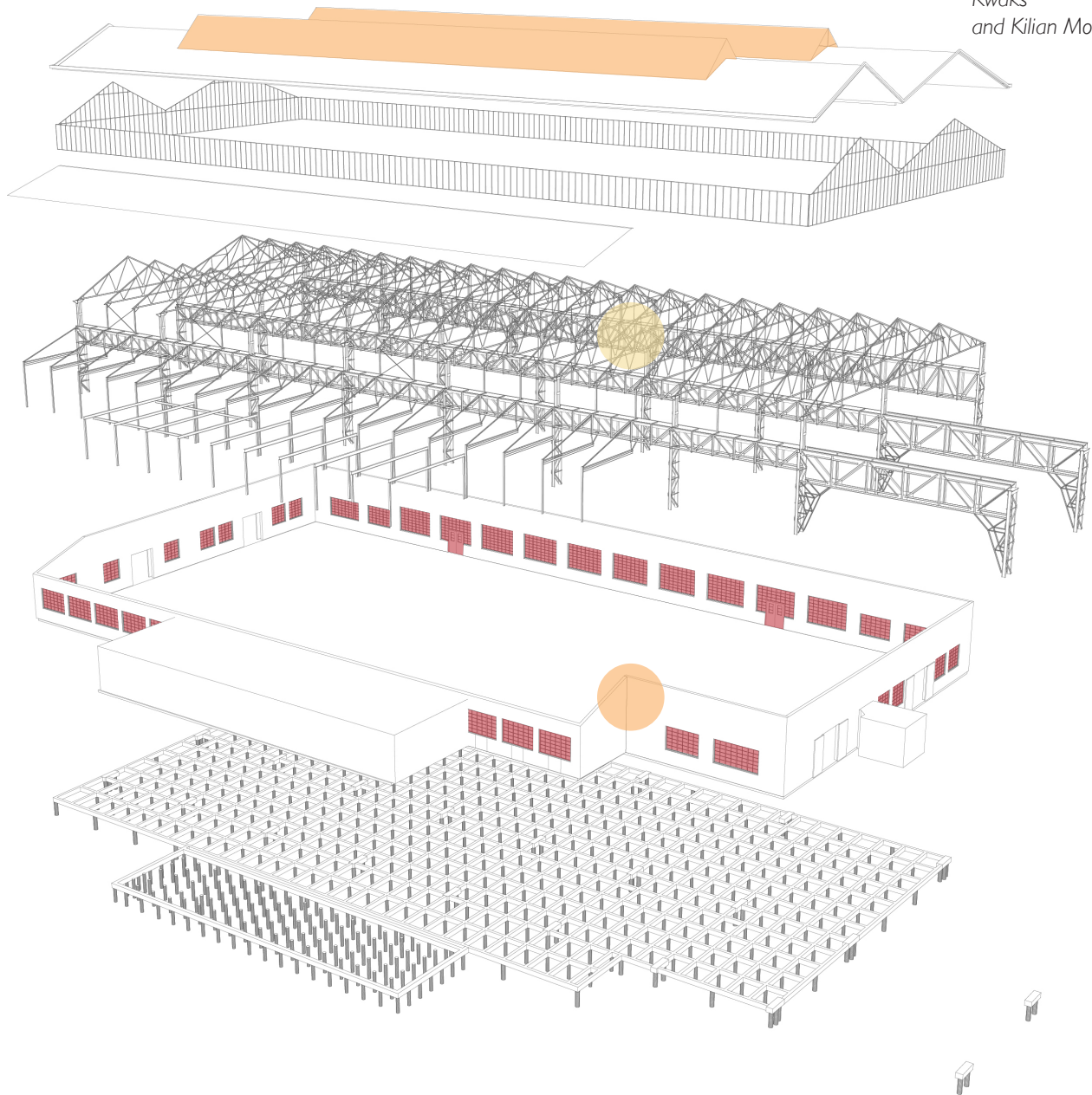
For me it is more about the position and the materials of this entrance. That it is situated on this side and placed in the middle of the facade. I would like to make some changes to this entrance but the material use and the position is important to me.

Value Assessment Machine hall

Melanie Kwaks

Source: Amélie de
Guerre, Melanie
Kwaks
and Kilian Mol

exploded view



Ground Floor Plan



Source: Kilian Mol



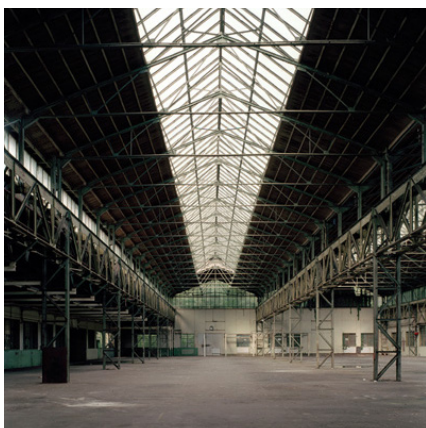
STEEL FRAMED WINDOWS

The steel framed windows are an indicator of the architecture style of industry buildings from that period in time and give the building an industrial atmosphere. I think they are important because of the history of the terrain and that the windows help with maintaining the industrial atmosphere in the new design.



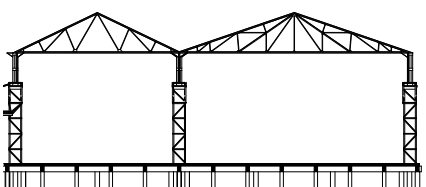
LOGITUDAL AXES

The longitudinal axes I marked as high value because of the crane that was riding on these axes. This crane was very important for the former function of this building, because it moved the machines that were built here. It refers back to the history of this building and keeps this part of the history alive.



SKYLIGHTS

The machine hall got this skylight in common with the weapon depot because both buildings have the same type of skylight. I think that is a valueable aspect because of the light that it brings into the building which changes the atmosphere within.



CONSTRUCTION MAIN HALL

The construction has value for me because of the history it contains as an example of Dutch engineering. The truss beams, columns and roof elements have a certain beauty and an industrial value that makes me want to (re)use it.



BRICK OUTER WALLS

The use of brick was very dominant in the timeperiod that this building was built. The color, size and pattern of the brick walls have therefore a certain value that has to be kept in mind.





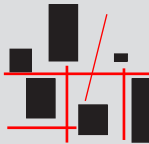


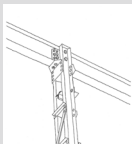

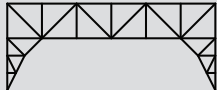







Personal Statement

Job van den Berg

As a conclusion of analysis we were asked to make a syntheses and an etude in the form of a creative expression to show the essence of the location.

For me it's about the two faces of the site, on one hand the open campus structure: the freestanding buildings in the public space, orientated towards all directions, the repetitive patterns alongside all faces and the mix of typologies, which together form an uniform unity. On the other hand the forest, with his history and roots deep inside the past, gives the area its curious atmosphere. A roof of leafs penetrates the area and is meeting the open shared space in its core. It's about the connection of those two worlds and how we as users are part in this. The forest was always a save haven, a place to shelter and to protect yourself when the sky was falling, but nowadays it can watch over you when you are escaping for modern society and find yourself peace and happiness. To see all of this your eyes are going troughs the buildings, light is falling on you, when you eyes are reaching trough the twigs. Sight lines are racing past you and disappear between the trees in the horizon. All of this is lying in different time layers on the area and now a new layer is painted over the area but we can still see his original soul trough his eyes, because they are the only things that never change.



Cultural Value Matrix	Age value	Historical value	Non intended commemorative value
Surrounding/ setting	 Water structure	 Plofbos	 The roads where the train tracks used to be
Site	 Monumental tree	 Axes of Campus North	 Position Weapon Depot by demolishment of 309
Skin (exterior)		 Typology of façade Weapon Depot	
Technical Structure	 State of the art engineering	 Cranetrack & columns Machine Hall	 Extruded crane as visual guide landmark
Space plan		 Lengthwise Machine Hall	
Surfaces (interior)			 Floor tiles of Weapon Depot
Services	 Integrated ventilation Weapon Depot	 Hoist beams Weapon Depot Extruded crane Machine Hall	
Stuff		 Watchtower 217	
Spirit of place		 Trees next to Machine Hall	 Low Density

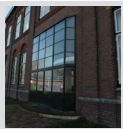
Use value



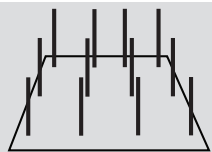
Parking lot



Connectivity of buildings through public space



Changing of entrances Weapon Depot



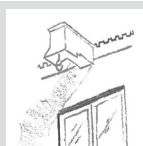
Spatial freedom



Skylight



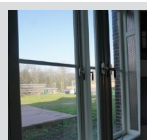
Transport doors Weapon Depot



Hoist beams Weapon Depot



Sliding doors Machine Hall

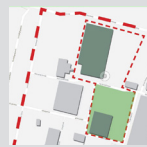


Lighting

Rarity value



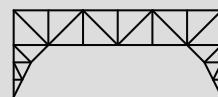
Hembrug as old military terrain



Ensemble on border of Hembrug



Uniform façades Weapon Depot



Extruded crane of Machine Hall



Loading docks of Weapon Depot

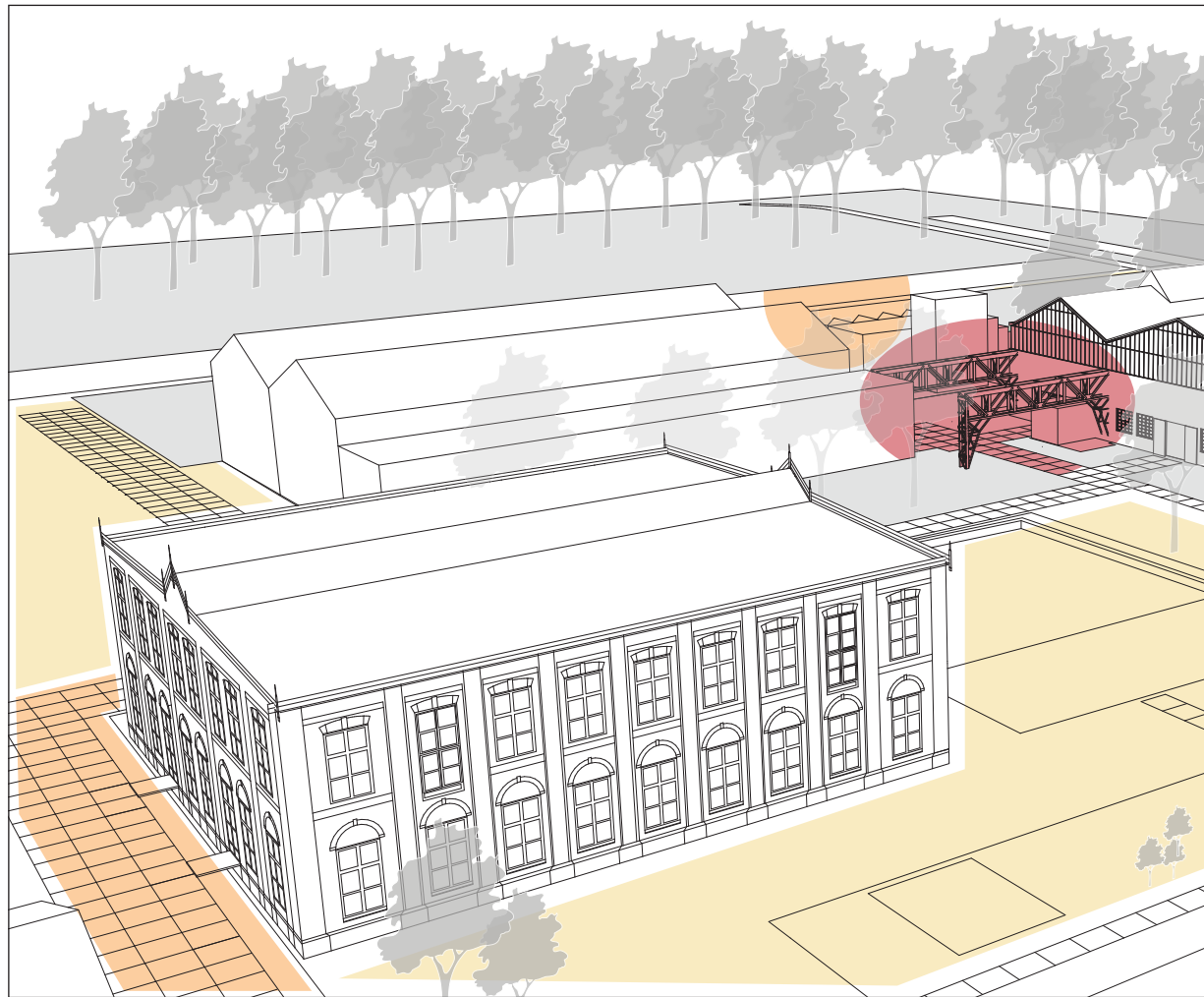
Other value



Connection to the main roads

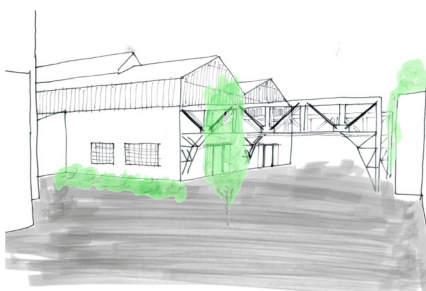


Stand-Alone Campus Structure



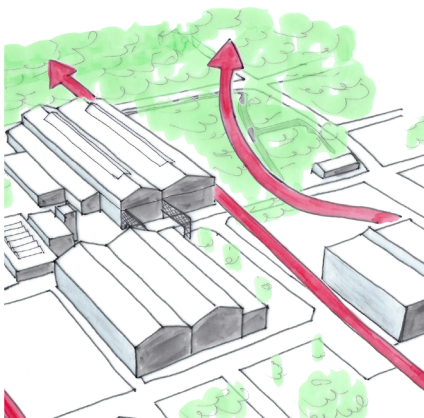
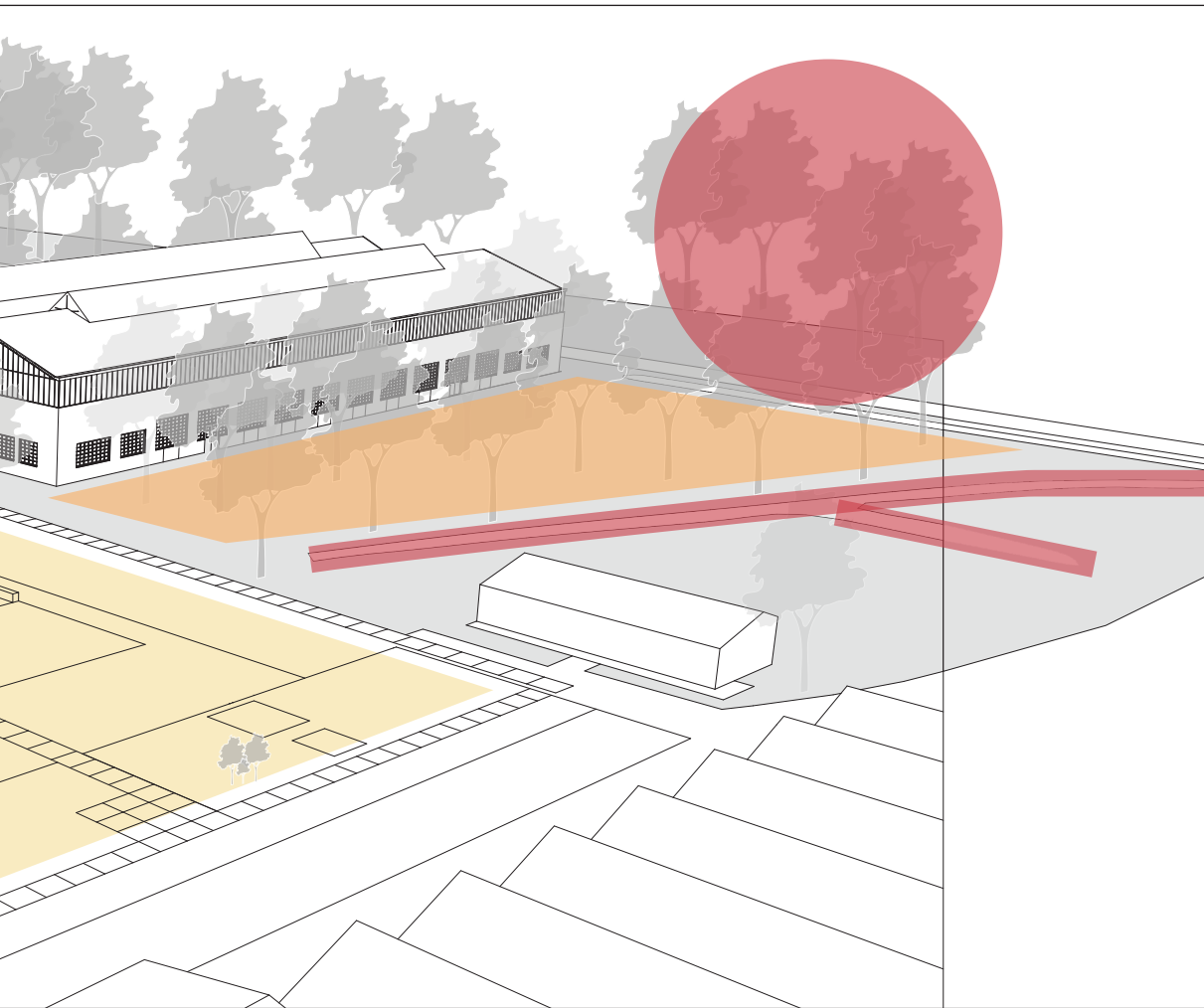
WATER STRUCTURE

The water structure is the oldest still visible structure in Hembrug. It refers to the time before the polders where made and the landscape became men made. Because of this its age value is very high and it also has historic value because it tells us the story how Hembrug is made. In addition, it does still have a use value because it is part of the drainage of the area. It should not be changed or removed but it stead it has to be made part of the overall structure.



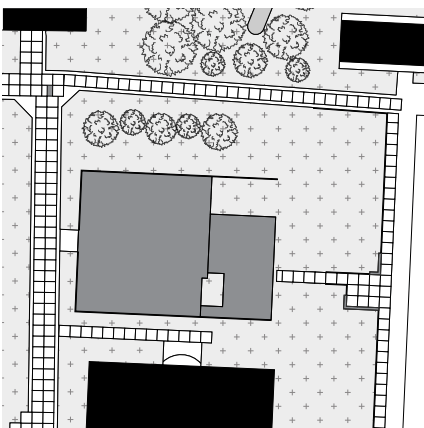
SHARED OPEN SPACES AND CONSTRUCTION

A characteristic element in the campus is the shared public space the buildings have. Because of this use by different buildings and people is has great use value. This can be use on other open spaces which are currently out of use. The extruded crane structure in the public space is part of the characteristic feeling of the area has and tells us the story how the area and the buildings where used in the past. This gives the construction its historic value.



GREEN STRUCTURE

The green structure and the forest in the north are part of the original plofbos. It was part of the setup of Hemburg and was used as a safe spot and to hide. The plofbos and its story give it historic value and still now the forest can be used to hide from contemporary life. As a park it has use value for the people of Hemburg and its surrounding neighborhoods. The green structure towards the forest has historic value but there are possibilities to make changes if it benefits the relation with the plofbos on the other side of the road, which has the more value.



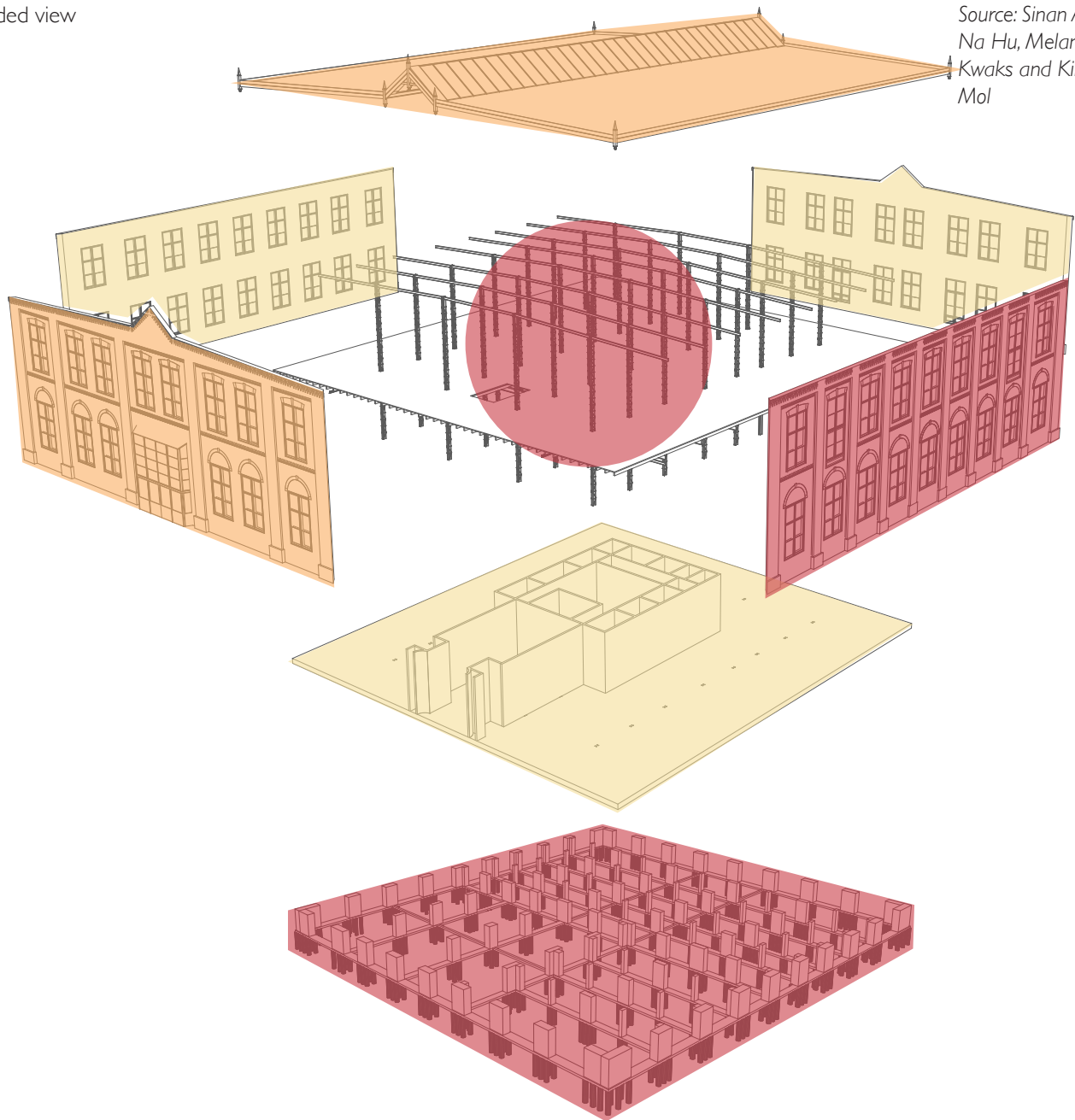
OLD FOUNDATION

The old foundation in front of building 8 is an outstanding element in the area. It dominates the square in front of building 8. It shows the original structure of the site and the former density. It has historic value and with the demolishing of building 309 the architectural value and the monumentality of building 8 increases. At the moment the square is quite useless and another infill of the square could benefit the area. Maybe there are even possibilities to add additional volumes while the square still holds its architectural value.

Value Assessment Weapon depot

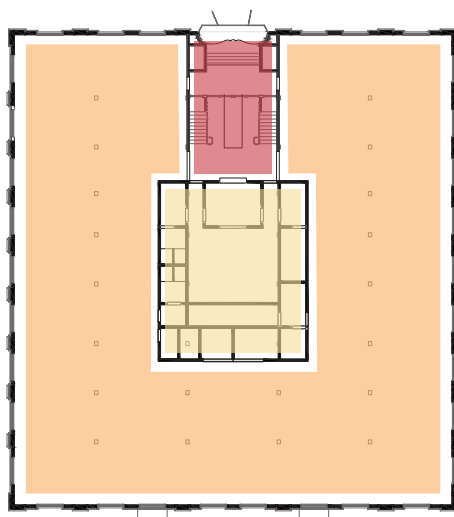
Job van den Berg

exploded view

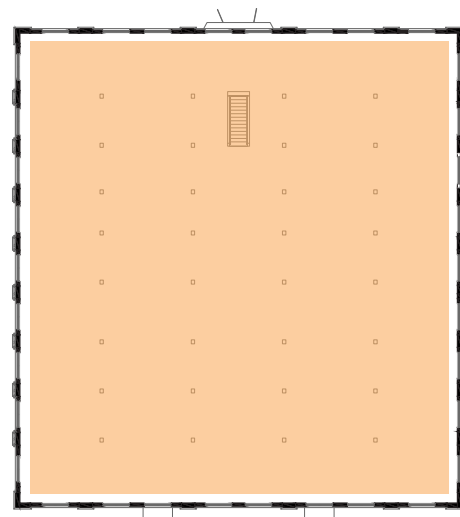


Source: Sinan Aydin,
Na Hu, Melanie
Kwaks and Kilian
Mol

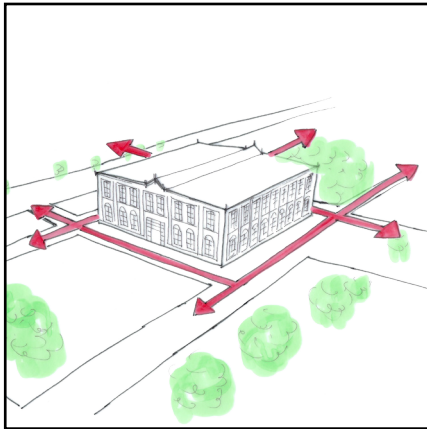
Ground Floor Plan



First Floor Plan

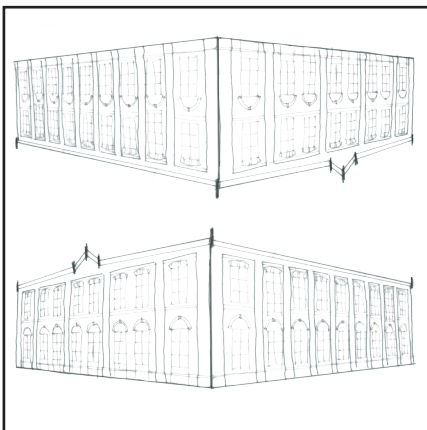


Source: Kilian Mol



DIMENSIONS AND ORIENTATION

The most characteristic element of building 8 is its shape and dimension. It is the only almost square shape building in Hembrug and with the open space shrouding the building it is outstanding and a unique element in Hembrug. This gives the building its Rarity value in Hembrug. In addition, the building is orientated towards all the direction, which enables interaction with all the surroundings. This is a great architectural value of building 8 and other buildings on the Campus.



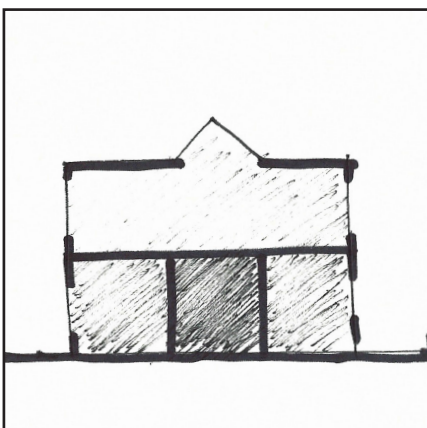
EXTERIOR FACADES AND TYPOLOGY

The pattern and the design of the exterior facades have an architectural and historical value for the buildings. It shows the typology and way of designing specific for the period of time in which the building is built. The repetition on all the facades is specific for a lot of building in the campus, which are orientated towards all the direction. The exterior facades should not be changed but there are possibilities on the north façade because its entrance is not original and is detached from the style of the building.



SPACEPLAN

The open structure in building 8 gives a lot of possibilities. The use value is very high and also architecturally the open space plan gives a lot of value in the experience of the space. However the open space is still just an open space which can be found all over the site. The height of the space and the historical value of the construction give more value to the space than the openness itself so splitting the plan in smaller rooms belongs to the possibilities. Originally the plan was full of storages, which separated the space without losing the spatial experience, so this can be returned.



CONCRETE CORE

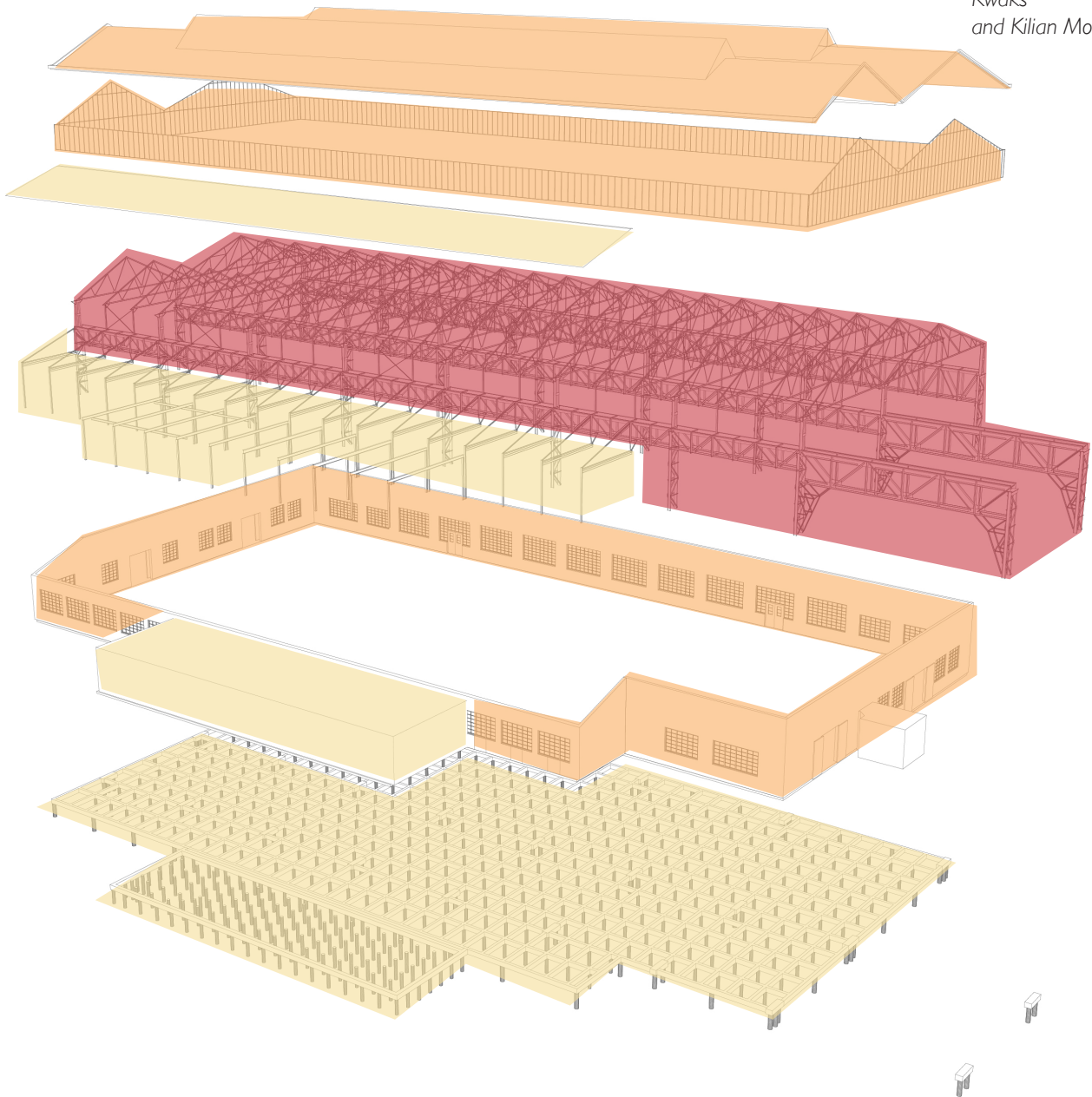
The concrete core in the middle is placed during the transformation from storage to office building. It shows how the building is used in the past and has also a constructive function, which gives it a historic and use value. But the original construction and the opens of the original plan have more value and those are clashing at this point. This makes it subordinate, so there are opportunities to change it and reopen it to the rest of the building. Only a small piece of the construction is load-bearing but this can be changed with the use of a new column instead of a concrete wall.

Value Assessment Machine hall

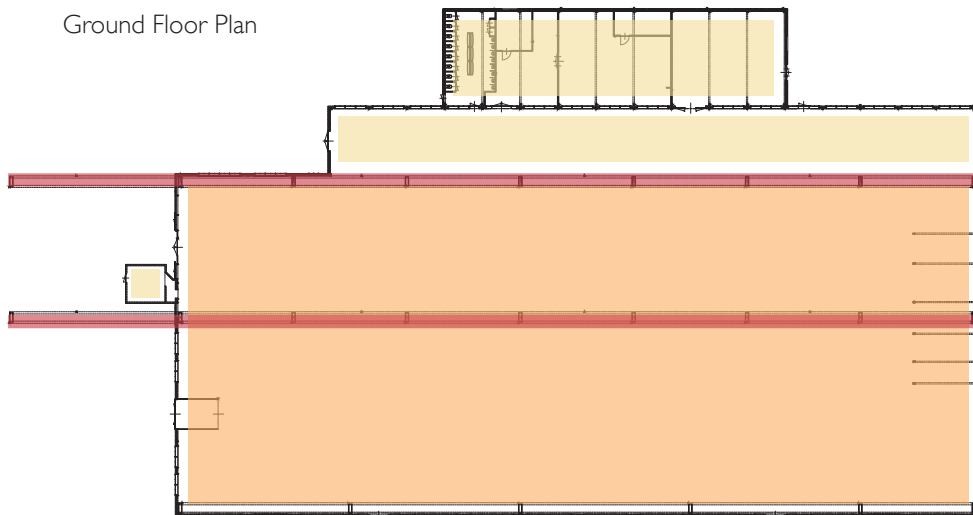
Job van den Berg

Source: Amélie de
Guerre, Melanie
Kwaks
and Kilian Mol

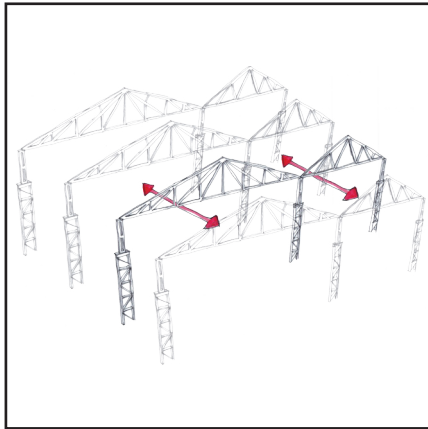
exploded view



Ground Floor Plan

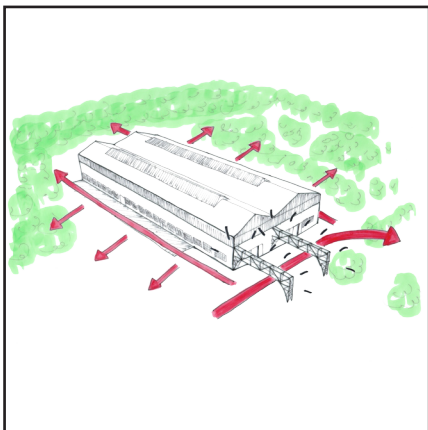


Source: Kilian Mol



CONSTRUCTION

The construction of building 8 is the most characteristic element of building 8. It has historical value because it refers to the former use of the building and the crane, it has architectural value, in the design, rhythm and materiality of the construction and it has technological value because it is part of the load-bearing structure and is constructed in an intended way. Because the construction is the element that defines the space and the value the most this should not be changed. The construction of the annexes has less value so an adaptation in those constructions are possible.



WINDOWS AND ORIENTATION

Originally the building was designed and built towards all the directions. The building had entrances on all the sides but this changed over time. The window frames and the glass strip are parts of the repetitive pattern that goes all around the building, which is specific for the campus buildings. Those should be retained as much as possible, but creating new openings to return orientation an interaction towards all the direction, belongs to the possibilities.



SPACEPLAN

The open structure in building 320 gives a lot of possibilities. The use value is very high and also architecturally the open space plan gives a lot of value in the experience of the space. However the open space is still just an open space, which can be found all over the site. The height of the space and the historical value of the construction give more value to the space than the openness itself so splitting the plan in smaller rooms belongs to the possibilities but is not preferred. Seen from the past, the functional freedom was very important and this use value is still there.



ANNEXE

The annexe next to building 320 is part of the additions made for building 320 during the changes over time. It tells how the function and use of the building changed over time, so this gives the annexe a historical value. Because also the orientation of building 320 changed over time it was possible to build this piece directly towards the building. Now this annexe blocks the original road towards the forest and the bunkers. Those two historical values are clashing at this point, because the annexe blocks the connection between Campus north and the Plofboos but by destroying it, it will lose its own historical value.

Personal Statement

Amélie de Guerre

In order to grasp the effect of the analysis of our chosen site, we were asked to individually develop a net that would reflect our ideas and the essence of Campus North.





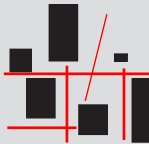


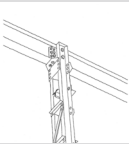

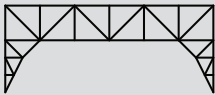



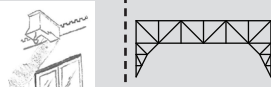

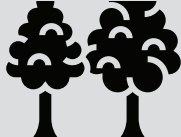

After having presented our personal views on the important aspects of the ensemble on different scales, I came to a conclusion about the essence of the site and the position I wanted to take in the face of clashing values.

To present my views on the essence of the site, I chose to create a product that would provide insight on the importance of the connection of the woods and the buildings present, that only together they form a unity and that they are interdependent of each other. In addition, I decided to show the cracks of the vase clearly and did not want to hide the fact that it was not in its original state anymore.

This reflected for me my purpose to renovate in a honest way, showing how time has affected the construction and not wanted to conceal its broken parts while adding elements as a contrast, strengthening both elements.

This view on renovation was brought to me by the Japanese technique of wabi-sabi that is based on the acceptance of transition and imperfection.



Cultural Value Matrix	Age value	Historical value	Non intended commemorative value
Surrounding/ setting	 Water structure	 Plofbos	 The roads where the train tracks used to be
Site	 Monumental tree	 Axes of Campus North	 Position Weapon Depot by demolition of 309
Skin (exterior)		 Typology of façade Weapon Depot	
Technical Structure	 State of the art engineering	 Cranetrack & columns Machine Hall	 Extruded crane as visual guide landmark
Space plan		 Lengthwise Machine Hall	
Surfaces (interior)			 Floor tiles of Weapon Depot
Services	 Integrated ventilation Weapon Depot	 Hoist beams Weapon Depot Extruded crane Machine Hall	
Stuff		 Watchtower 217	
Spirit of place		 Trees next to Machine Hall	 Low Density

Use value

Art value

Rarity value

Other value



Parking lot



Typologies



Hembrug as old military terrain



Connection to the main roads



Connectivity of buildings through public space



Axes road/ viewline to Weapon Depot



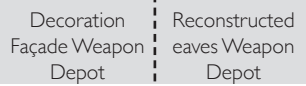
Ensemble on border of Hembrug



Stand-Alone Campus Structure



Changing of entrances Weapon Depot



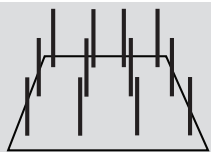
Decoration Façade Weapon Depot
Reconstructed eaves Weapon Depot



Uniform façades Weapon Depot



Assembly of the trusses



Spatial freedom



Skylight



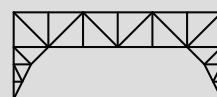
Entrance hall Weapon Depot



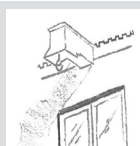
Tiles Weapon Depot



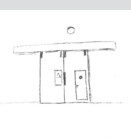
Transport doors Weapon Depot



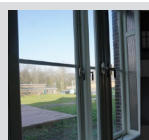
Extruded crane of Machine Hall



Hoist beams Weapon Depot



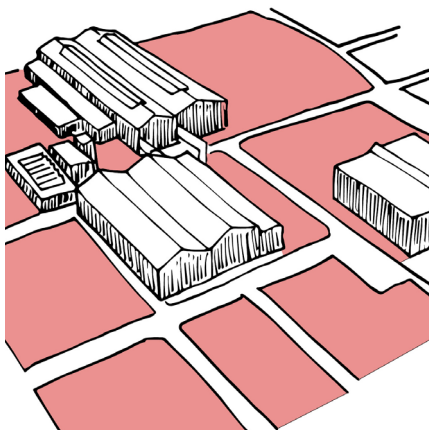
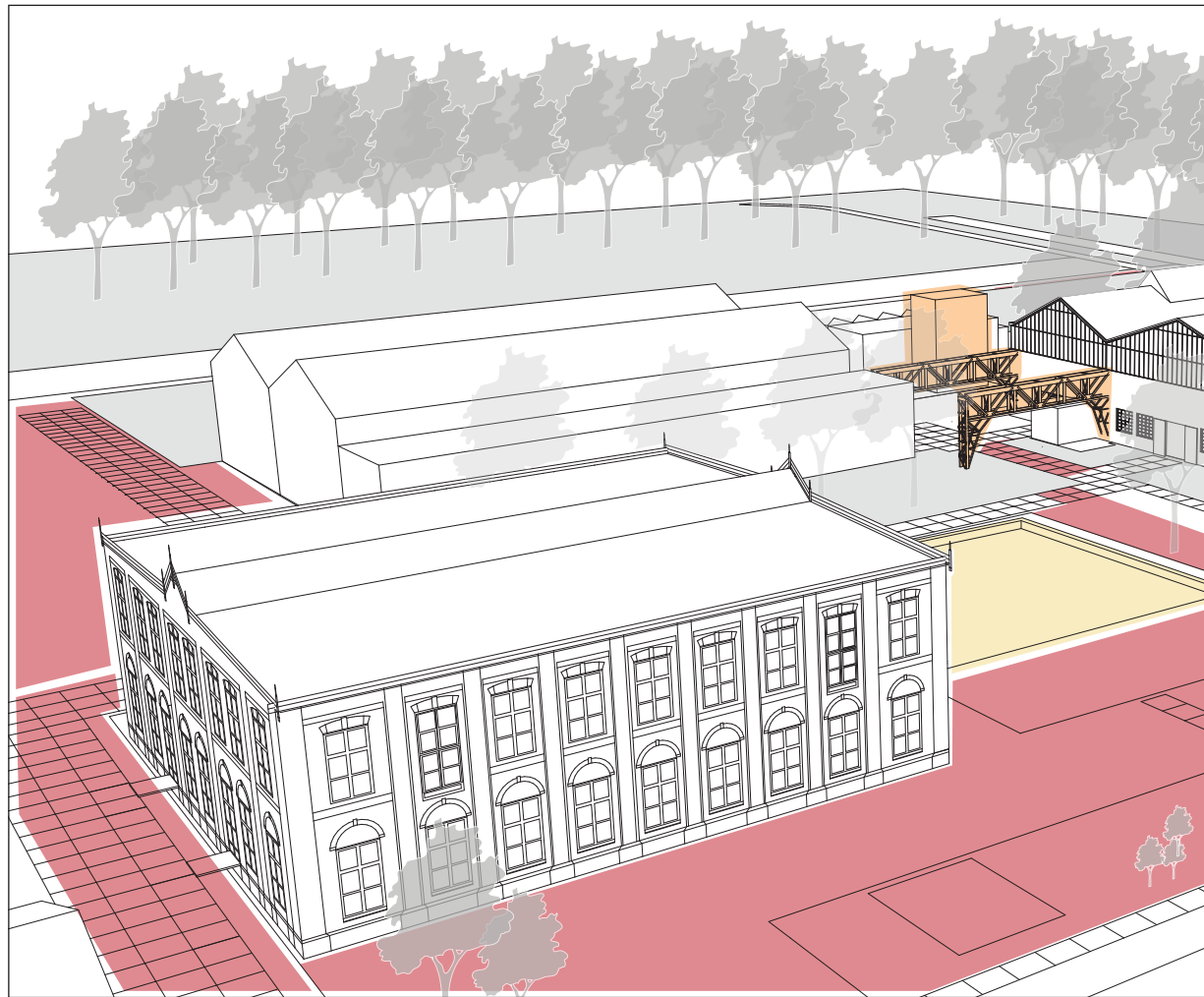
Sliding doors Machine Hall



Lighting



Loading docks of Weapon Depot

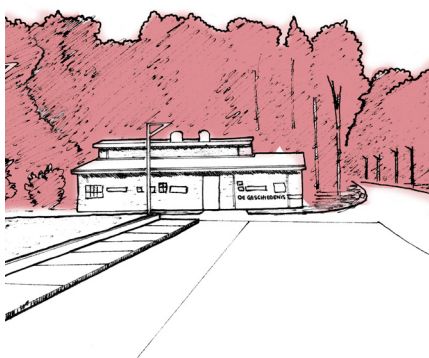


SHARED OPEN SPACES

The open spaces of the site contribute highly to the unique character of Campus North. They are the result of many demolishments of buildings over the years.

Since the density of the area is quite low, these open spaces define many sightlines.

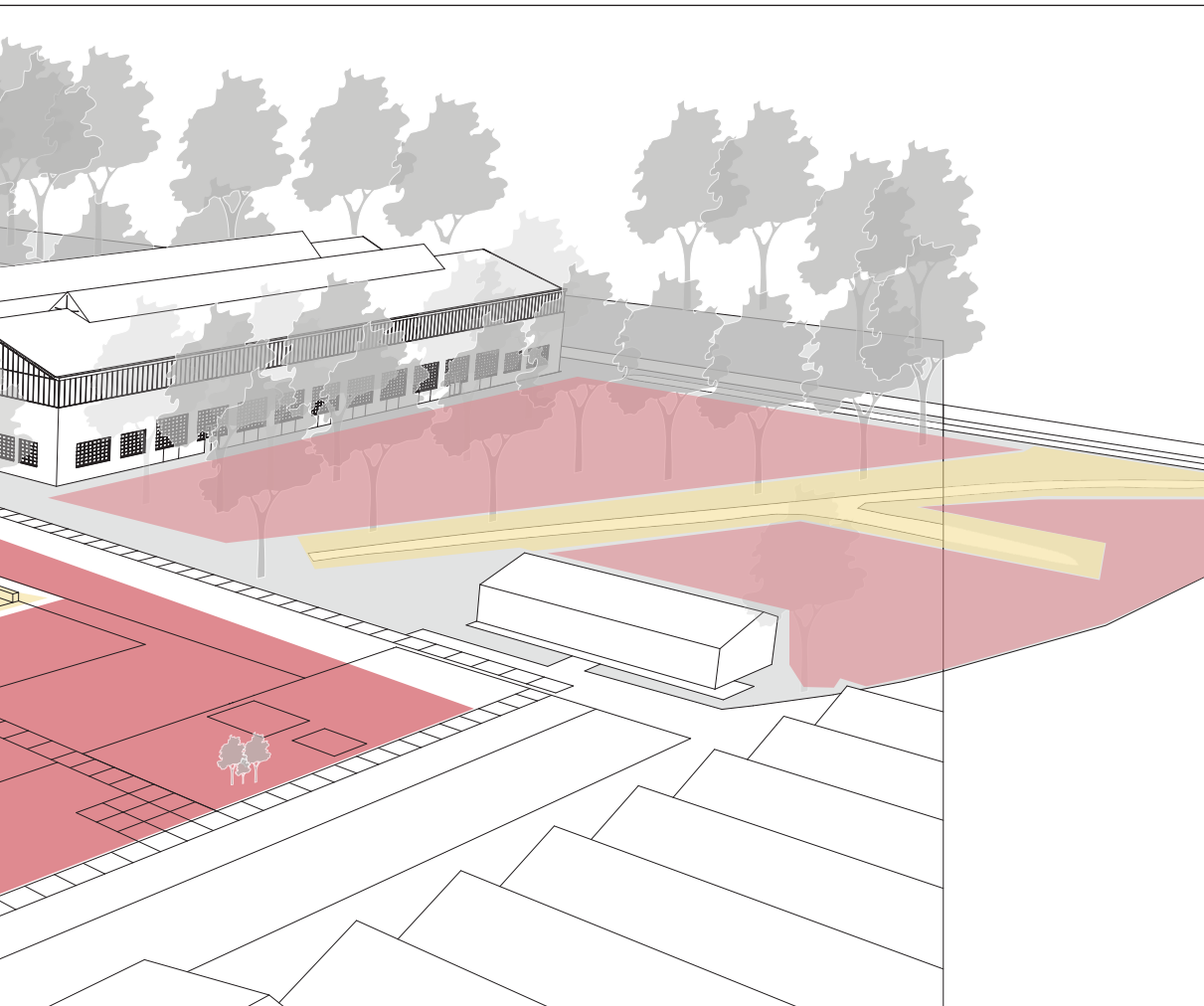
They define the open space between buildings adding to their shared use value on top of the historical value they have. This open aspect of Campus North is essential to the identity of the site and should not be altered in order to built new constructions.



GREEN STRUCTURE

Campus North borders an extensive amount of trees along its north side. These forests used to have a functional value but nowadays they serve as a contrast with the built environment.

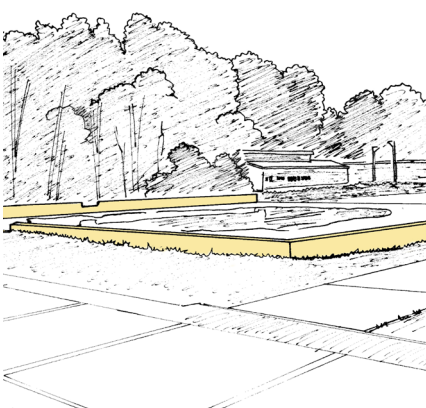
As an important part of the history of the Hembrug they should be protected and provide a possibility for its users to escape from the city and appreciate the mystery of the woods.



UNIQUE CONSTRUCTIONS

The extruded crane tracks and old watchtower are unique elements within the entire Hembrug area. During the production periods of the site they had functional and protective use. Nowadays they serve as visual landmarks guiding us through Campus North.

As they have historical and rarity value, they are both of importance as characteristic elements but mostly as a spatial and visual recognition points.



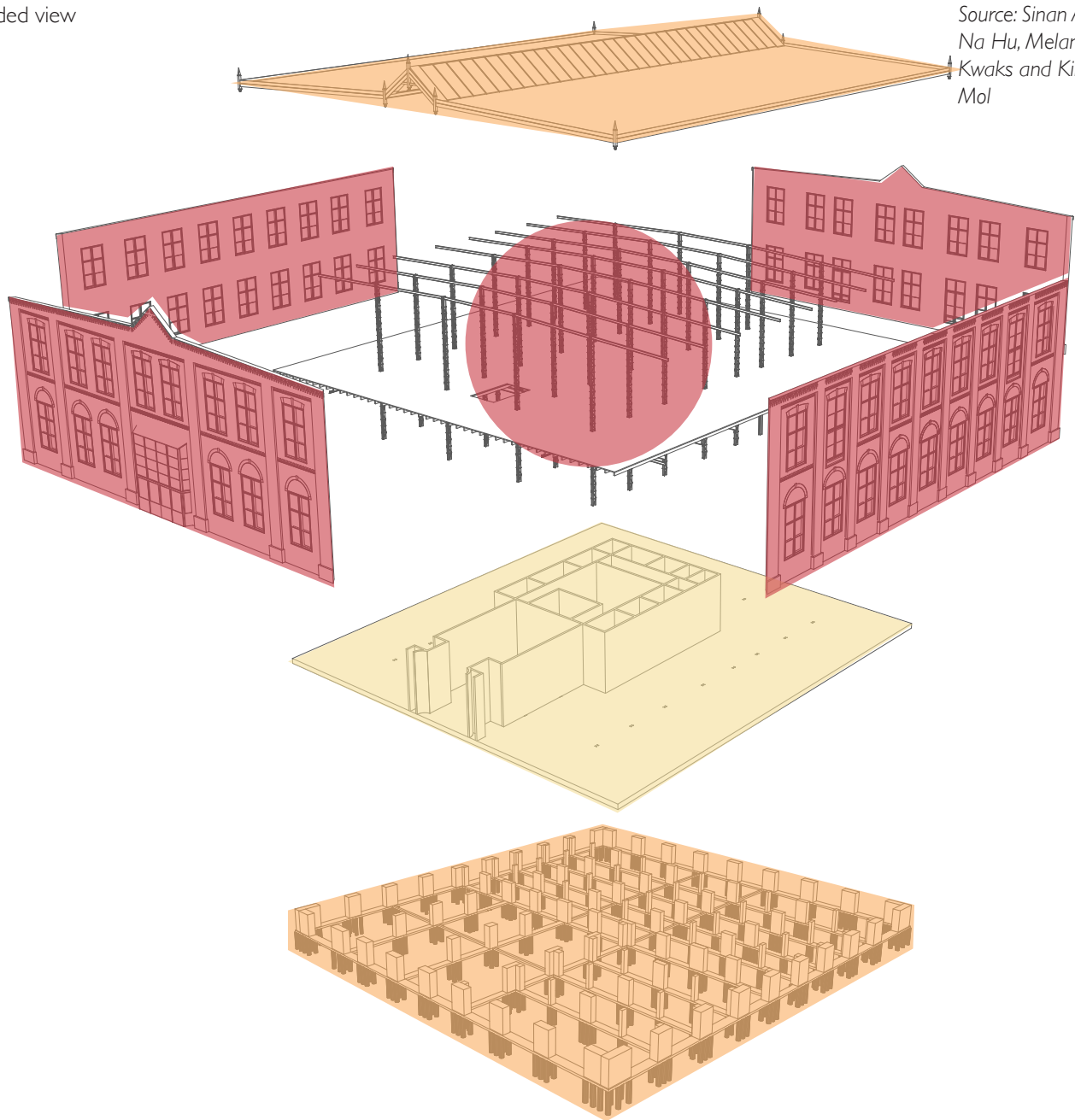
REMAINS OF PAST STRUCTURES

The old foundation of the shipping warehouse in front of the old weapon depot as well as the remaining water structure of the original land border are both outstanding elements in their direct environment. They have a high historical value but also define a physical border within an open space. Nonetheless they have no further use at the moment which could be altered in a positive way with a new infill or addition while preserving its historical value.

Value Assessment Weapon depot

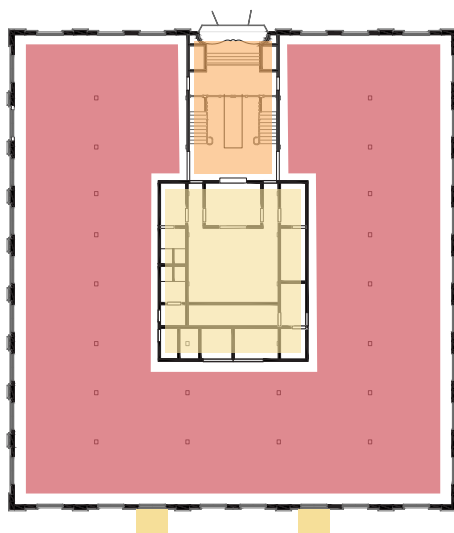
Amélie de Guerre

exploded view

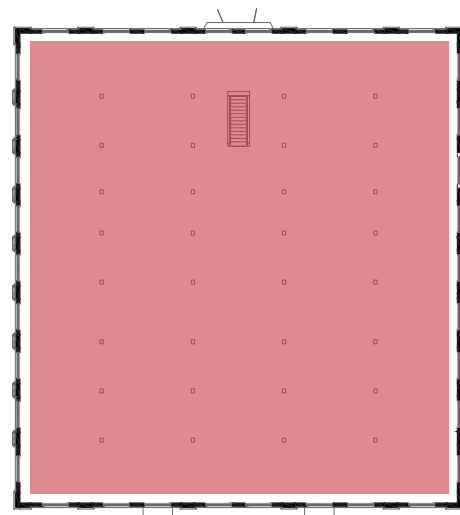


Source: Sinan Aydin,
Na Hu, Melanie
Kwaks and Kilian
Mol

Ground Floor Plan



First Floor Plan



Source: Kilian Mol



FACADES and TYPOLOGY

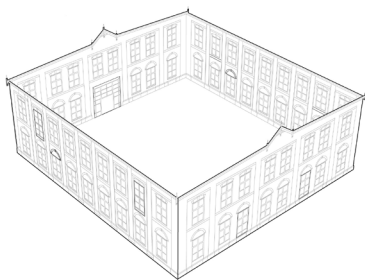
The facades of the weapon depot stand out on the site due to the uniform character each side possesses. It is a cubic volume which can be walked all around of with each facade proposing the same characteristic elements. The Neo-Renaissance style the windows and decorations have, contribute to the status the Weapon Depot owns within the campus. The typology of the building stems from the end of the 19th Century and is very decorative.



SPACE PLAN and LIGHT

The space plan of the weapon depot is defined by an outstanding open space of approximately 30 by 30 meters. This aspect presents a very high use value since it provides a lot of possibilities for the designer.

In addition, the only elements obstructing our view are the columns that serve an architectural purpose as well as supporting the roof. The combination of this open space and the light entering the spaces present a certain experience to its user that should be preserved.



SCALE and ORIENTATION

The Weapon depot is a building standing on its own in a characteristic open space. As it has a cubic form it presents a certain importance of volume and people are able to admire it from every side. Nonetheless it has a more important side with the entrance that is positioned towards the woods and the foundation of the shipping warehouse. The remaining foundation propose a certain stage for the Weapon Depot adding to its non intended commemorative value as well as its use value since its entry is now connected to a large open space.

Loading Docks

The Loading Docks positioned against the southern facade were added during the renovation by ABT in 2015. Nonetheless, even though these present today are reconstructions, these elements used to be there when the building had the function of weapon depot. They are at higher level than the ground that leads the imagination of the user to wonder what used to happen at that place. They have no age value but instead have a historical value, accentuating the past activities of this location.

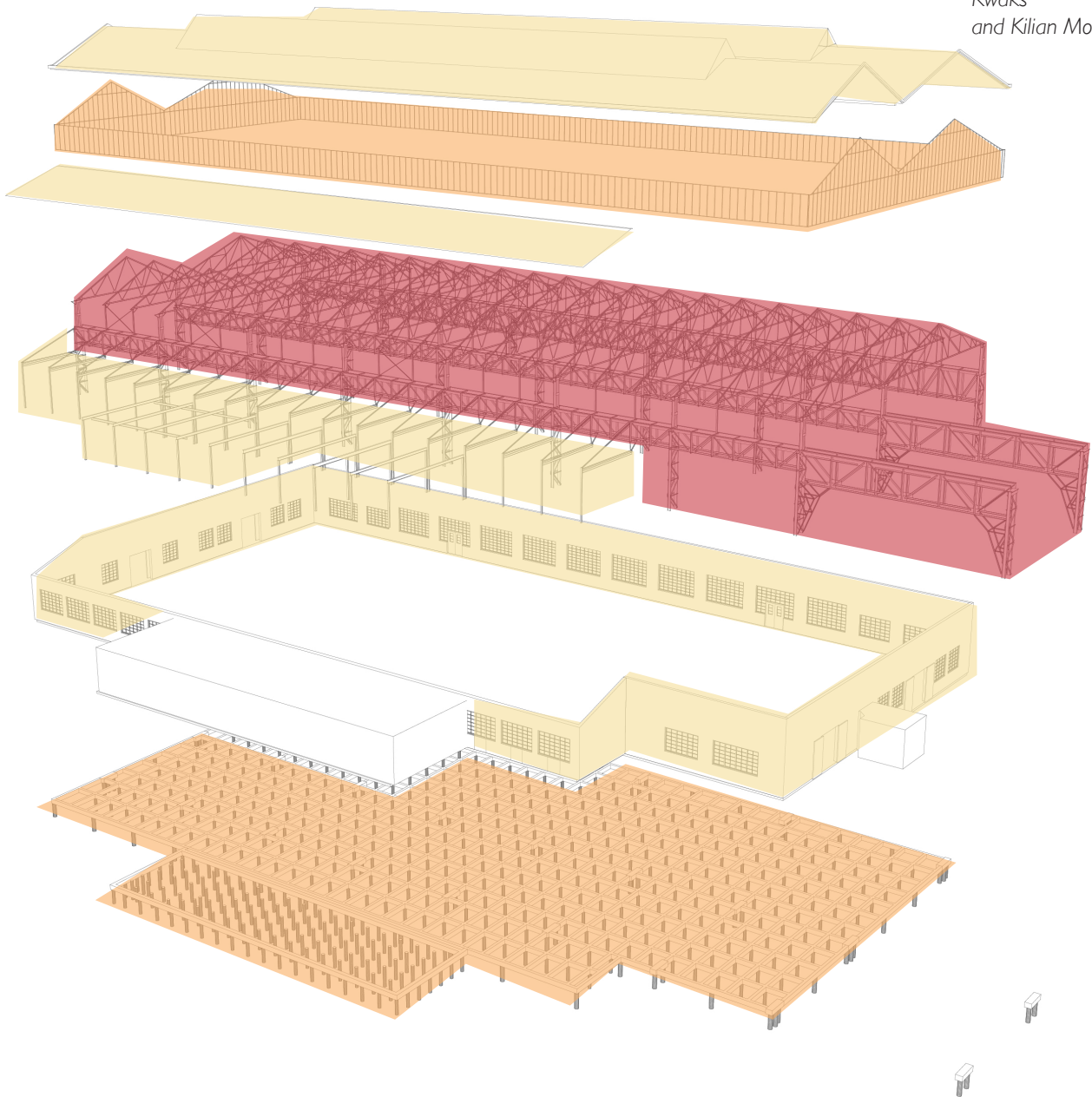


Value Assessment Machine hall

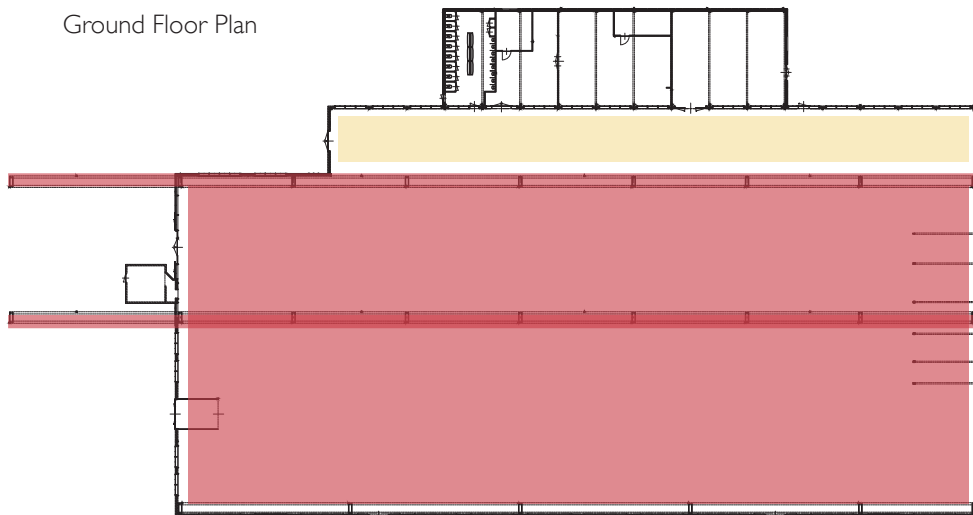
Amélie de Guerre

Source: Amélie de
Guerre, Melanie
Kwaks
and Kilian Mol

exploded view



Ground Floor Plan



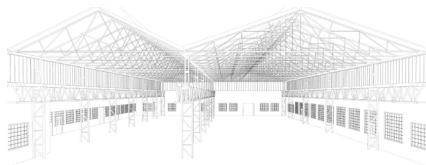
Source: Kilian Mol



CONSTRUCTION

The construction of the machine hall is the most outstanding element within and outside the building since it was extruded for functional reasons. It has a strong historical value due to the fact it reflects on the past activities and functions of the building.

In addition, it adds to the architectural values of the interior; the construction determines the rhythm and the materiality of the volume as well as the proportionality. Technically, the construction stands out as well, as an example of the functional way they developed the load bearing structure.



SPACE PLAN and SCALE

The use value of the space plan of the machine hall is very high benefitting of the open structure and high volume, this characteristic offers a lot of possibilities. In addition, the length of the building stretches out to around 85 meters which makes it one of the largest constructions of the Hembrug. This contributes to its rarity but from a historical and users point of view it was actually even more important that there was a certain functional freedom since there was a lot of activity within. This is a characteristic that is not directly visible but should be remembered.



LIGHT ENTRY

Sunlight is very prominent within the atmosphere of the Machine hall. Coming from all directions and from three different angles, it is an important aspect of the experience you have as a user; In combination with the open space plan it serves the entire volume. Nonetheless, on the east side of the building it is obstructed by the trees.

The light entry has a art value for the machine hall, creating an inviting experience while highlighting the many details and patterns inside.



FACADES

The facades of the Machine Hall are very characteristic for this typology, as they are nearly symmetrical in form. They present a very open front with the triangular shaped curtain walls on top and the wooden (formerly openable) and brick facades. The side facades are very rhythmic and have a lot of openings. Sadly they are obstructed on the west side by an annexe that was added for functional reasons but blocks a large part of the side windows. On the northside the openings were bricked up which resulted in a one sided entrance, decreasing its use value.

Personal Statement

Kilian Mol

Hembrug is a really unique area with an extensive history. Since 1899, the area has been the heart of the weapon industry known as the ArtillerieInrichtingen (A.I.) to serve the Dutch Army. Initially the western part of Hembrug, including Campus North, was used for the production of the M95 gun. Later on, the ArtillerieInrichtingen shifted their focus partly and used Campus North for the production of heavy artillery and mainly big civilian machine tools.

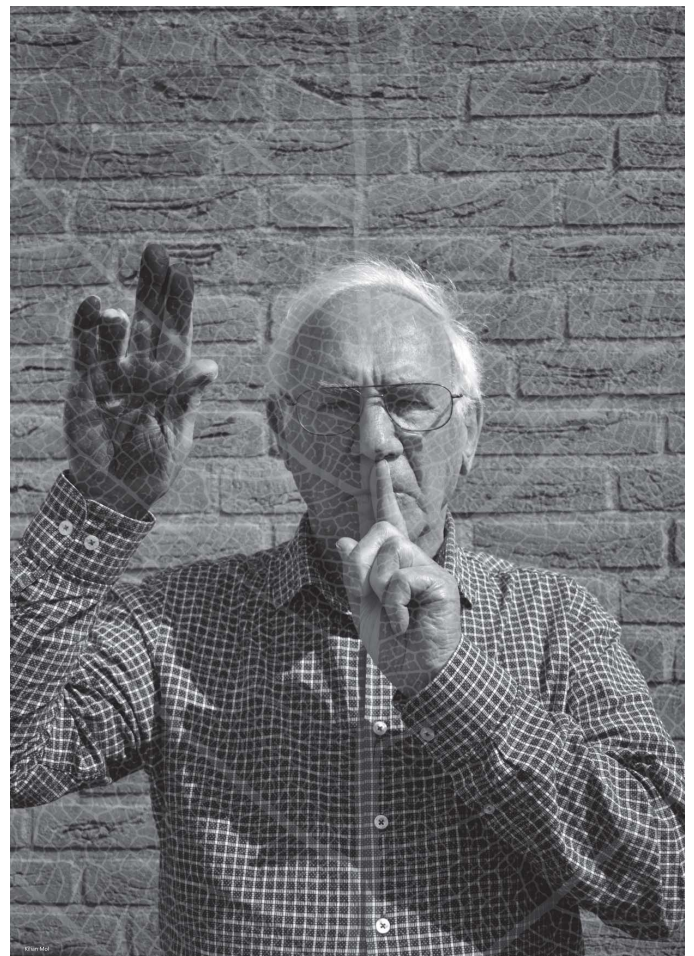
For a long time since the ArtillerieInrichtingen had settled in Hembrug, Campus North was seen as the rear part of the weapon factory. The Hembrug site used to be a private site with fences around it. The site used to be secret, placed closed off to the public and employees of the ArtillerieInrichtingen were not allowed to talk about their activities. The area behind Campus North in the north of Hembrug was used as a testing site to test weapons and explosives. The road that runs in between the machine hall and this testing site formed the border between both areas for a long time. Meanwhile, this road is nowadays used as the main entrance to the whole Hembrug site since they recently built a bridge in line with this road on the western edge of the site. This new entrance to the site is in contrast with the historical use of the site. In the past, the site was entered from the Noordzeekanaal in the south. The challenge for the future uses is to use this new bridge as the main entrance of the whole site without ruining the historic character of the site.





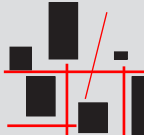


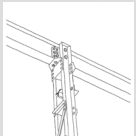

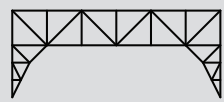



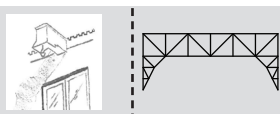



For me, Campus North distinguishes itself by its mainly big detached buildings built in the third building phase. Smaller buildings that were located in this western area of Hembrug have been demolished or replaced by bigger manufacturing halls to produce bigger and heavier products like agricultural machinery. After the industrial production had left Hembrug, several buildings have been demolished or fell into disrepair. However, there are still clear traces left of the industrial production of the heavy artillery and civilian machinery in the western part of Hembrug. Therefore Campus North still has a strong appearance of heavy industrial work in the current situation. Personally I value this appearance as an important character of Campus North. In my opinion, this appearance in combination with the mysterious background of the introverted site that Hembrug used to be and still partly is should be preserved in the future use.

Besides this, the forest of the testing site and the Plof bosh has expanded a lot and as a result of neglect a part of Campus North around the machine hall and the building itself is overgrown by green. So the green that has grown in the open spaces of Campus North is a result of decay, but for me the green gives quality to the public space and especially the green on the machine hall could be seen as a sign of aging.

The three most important characteristics of the Campus North site for me: mysterious, heavy industrial work and green are illustrated with the

etude I made that is shown underneath.



Cultural Value Matrix	Age value	Historical value	Non intended commemorative value
Surrounding/ setting	 Water structure	 Plombos	 The roads where the train tracks used to be
Site	 Monumental tree	 Axes of Campus North	 Position Weapon Depot by demolition of 309
Skin (exterior)		 Typology of façade Weapon Depot	
Technical Structure	 State of the art engineering	 Cranetrack & columns Machine Hall	 Extruded crane as visual guide landmark
Space plan		 Lengthwise Machine Hall	
Surfaces (interior)			 Floor tiles of Weapon Depot
Services	 Integrated ventilation Weapon Depot	 Hoist beams Weapon Depot Extruded crane Machine Hall	
Stuff		 Watchtower 217	
Spirit of place		 Trees next to Machine Hall	 Low Density

Use value

Art value

Rarity value

Other value



Parking lot



Typologies



Hembrug as old military terrain



Connection to the main roads



Connectivity of buildings through public space



Axes road/ viewline to Weapon Depot



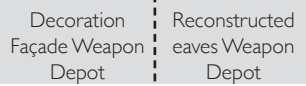
Ensemble on border of Hembrug



Stand-Alone Campus Structure



Changing of entrances Weapon Depot



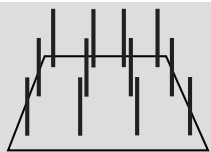
Decoration Façade Weapon Depot
Reconstructed eaves Weapon Depot



Uniform façades Weapon Depot



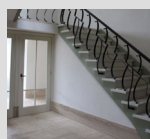
Assembly of the trusses



Spatial freedom



Skylight



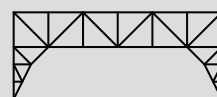
Entrance hall Weapon Depot



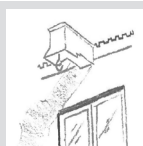
Tiles Weapon Depot



Transport doors Weapon Depot



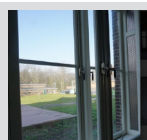
Extruded crane of Machine Hall



Hoist beams Weapon Depot



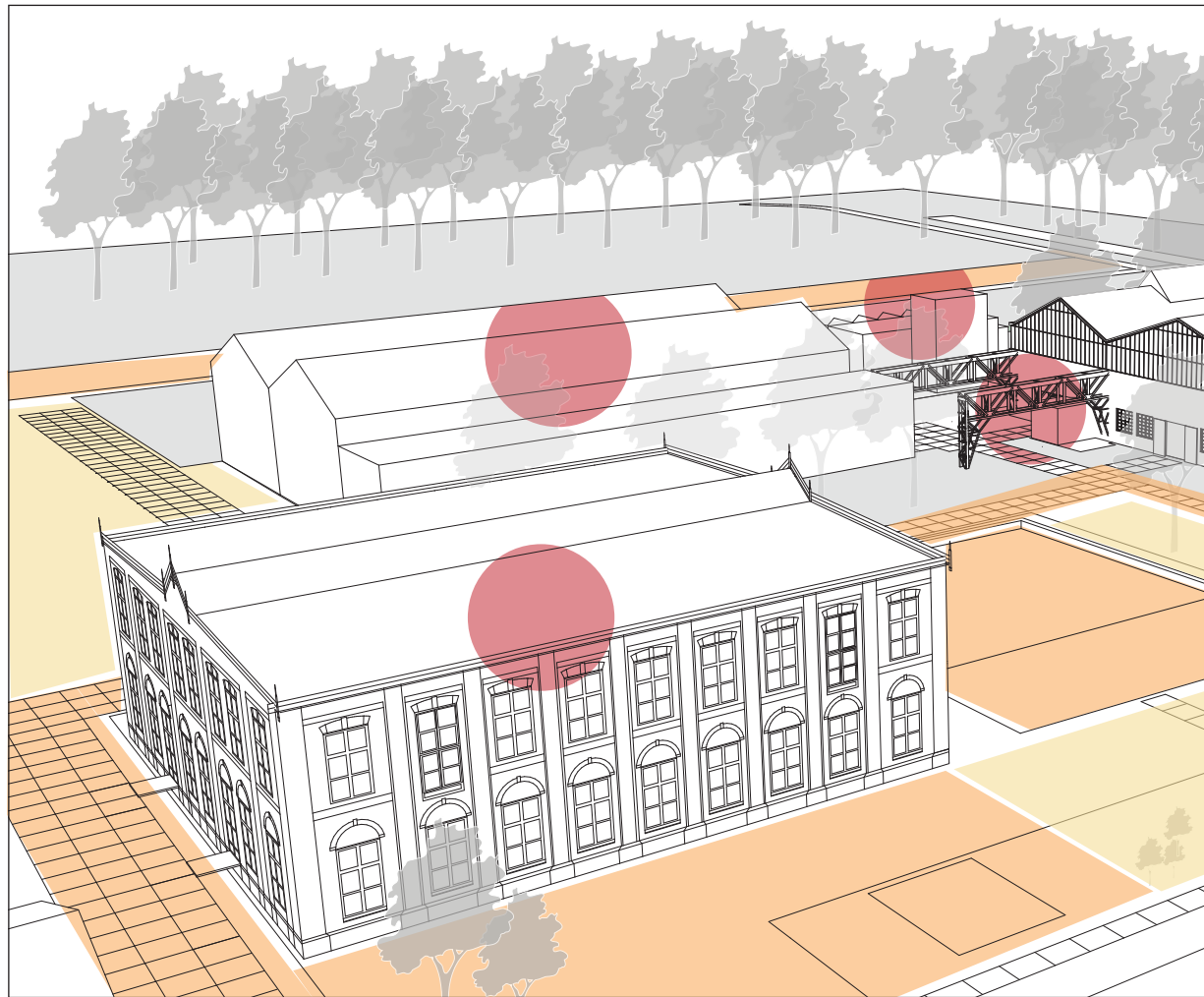
Sliding doors Machine Hall



Lighting



Loading docks of Weapon Depot



BUILDINGS

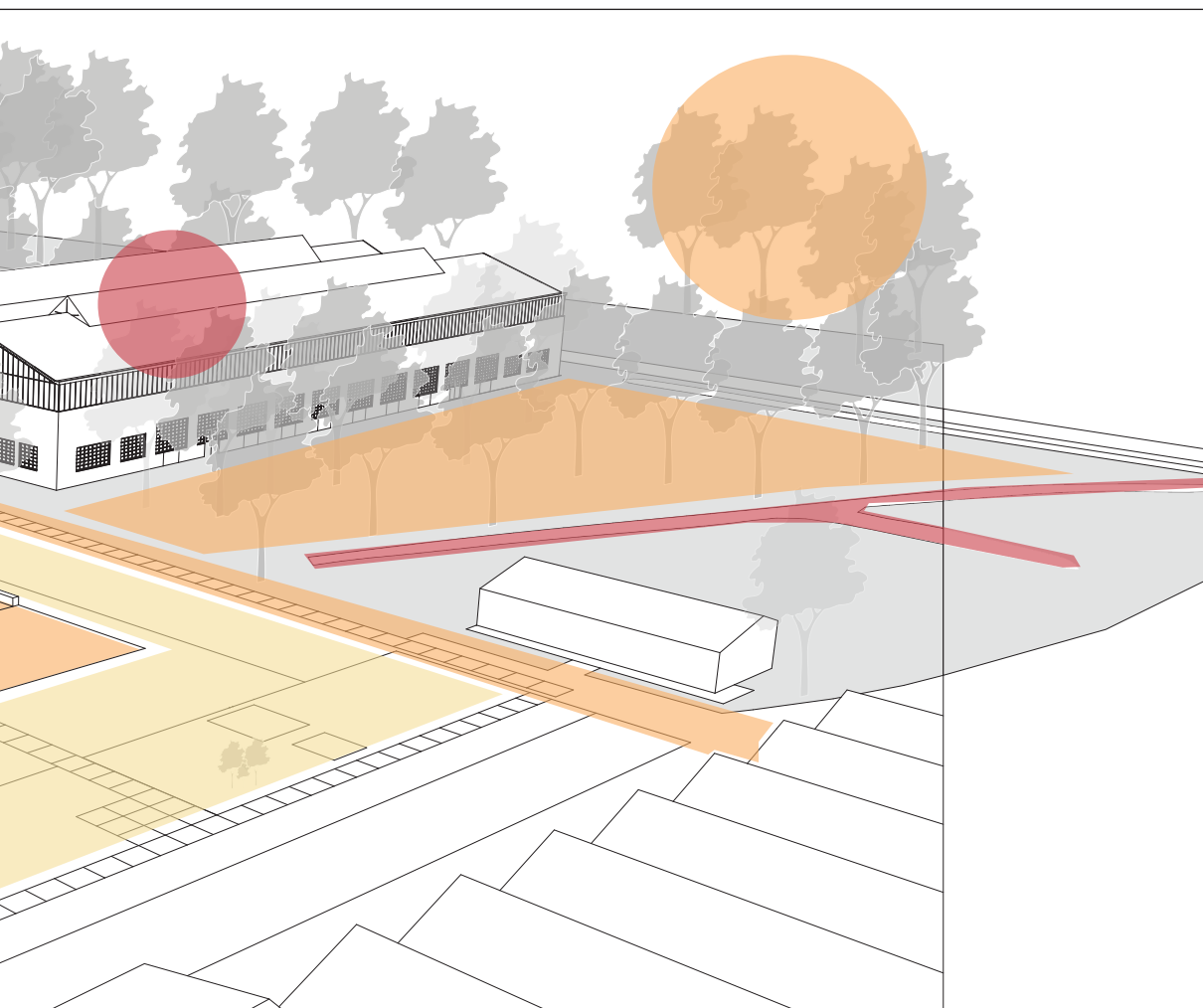
All buildings on the Campus North site (except the Hembrug museum) have been designated as national monuments. The weapon depot is one of the first buildings built on the Hembrug site as part of the first building phase of the factory complex in 1899. The other buildings on Campus North are built during the third building phase (1925-1945). Those buildings built in the third building phase are much larger than the older buildings, especially those on the Campus North site. All buildings on Campus North were part of the weapon factory and are tangible remnants of the unique history this site holds.



WATER STRUCTURE

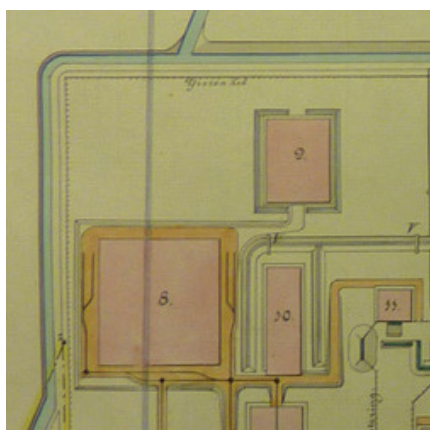
The largest part of the military weapon industry on Hembrug has been built on artificially created land. This artificially created land has been created in 1882 as an extension of the peninsula called "De Hem". The water structure on the Campus North site on the east of the machine hall is the only visible remnant of the border between the artificially created land and the peninsula that used to be there. Therefore it is a valuable element of the site that should be kept.

Source: Amélie de Guerre & Na Hu



THE PLOF BOS & THE FORMER RAILWAY TO ZAANDAM

The Plof bos used to be a small forest to test ammunition and explosives. There hasn't been a strong connection between Campus North and the forest in the past, except for the railway that ran through the forest to connect Hembrug with Zaandam and Amsterdam. The forest and the railway used to be the borders of the weapon factory. Over time the forest has expanded a lot and as a result of decay a large part around the machine hall and the building itself is overrun by green.



ORIGINAL BORDERS FIRST BUILDING PHASE

In 1903 there used to be a narrow railway network on the site that connected the weapon depot with the other buildings on the site and the jetties in the Noordzee Kanaal in the south. Along the west, south and east facade of the weapon depot used to be tracks that formed the end of one of the branches of this narrow railway network. Originally the weapon depot formed the final stop within the production process as it stored the m95 guns after they were tested. The current path along the Hembrug museum, the machine hall and the weapon depot used to be the border of the site in 1901.



OLD FOUNDATION BUILDING 309

In front of the weapon depot used to be three freestanding sheds built during the second building phase (1902-1924). Two of these sheds were used as storage and one shed used to be a carpenter shop. During the third building phase (1924-1944) these three sheds have been replaced by one big shed (building 309) that was used as a storage building and canteen. This building is quite recently demolished, but the old foundation of building 309 is still preserved. The foundation itself is not very valuable, but it's nowadays an indication of a more densely populated area.



AXES ROAD/ VIEW LINE TO BUILDING 8

The current axes road that is created between the former railway and the weapon depot is aligned to the centre of the west facade of the weapon depot. This road is quite recently moved to the north to create a more prestigious entrance towards the weapon depot. This road used to be in line with the road along the south facade of the weapon depot. In the past this was one of the most important roads and therefore one of the main routes over the whole site. The part that is moved to align it with the east facade is not that valuable, since it's a quite recent intervention.



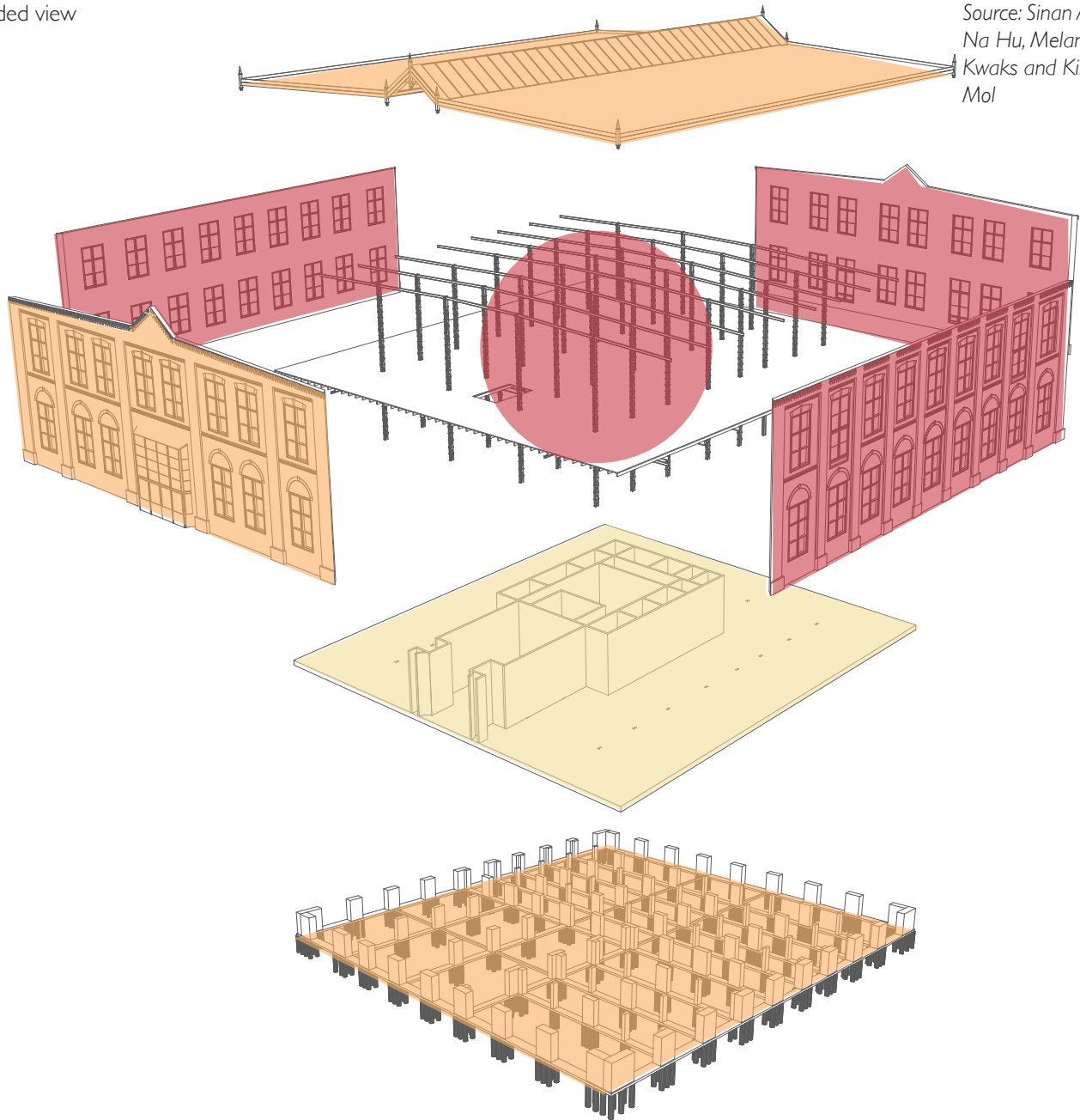
OPEN CHARACTER & CAMPUS STRUCTURE

Nowadays a lot of buildings of the former weapon factory (Campus North and South) are demolished which resulted in an open area with detached buildings. This gives the area an open and campus-like character. The openness and the green can be seen as a quality for the public space, but it does not add quality to the historical character of the site. The weapon factory used to be more densified with buildings, so therefore it's possible to add new buildings to this area.

Value Assessment Weapon depot

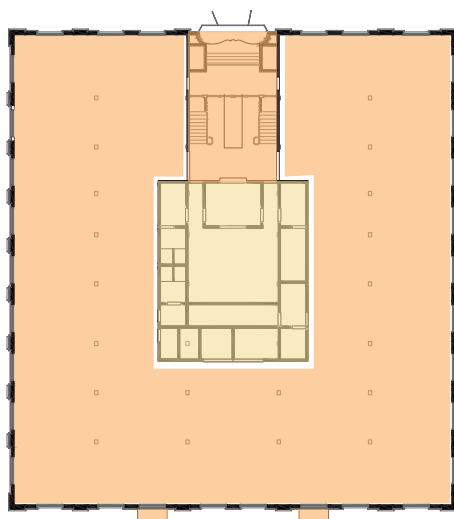
Kilian Mol

exploded view

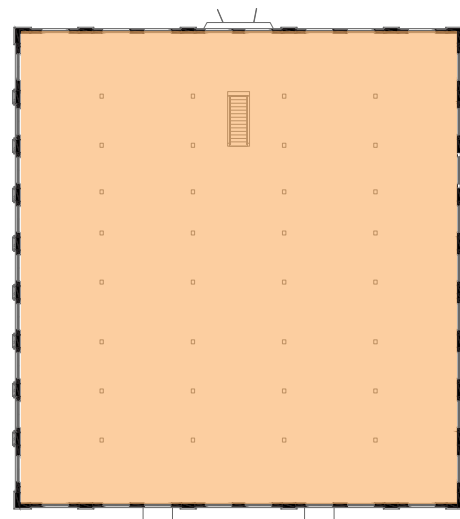


Source: Sinan Aydin,
Na Hu, Melanie
Kwaks and Kilian
Mol

Ground Floor Plan



First Floor Plan

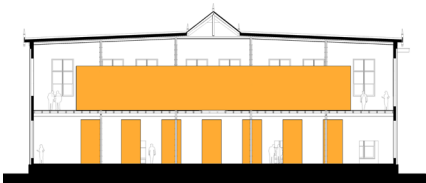


Source: Kilian Mol



EXTERIOR

The weapon depot was part of the first building phase of the factory complex. Buildings on the Hembrug site that have been built between 1895-1913, like the weapon depot, were designed by the "Korps der Genie" (corps of engineers). The design of buildings from this period had characteristics of neo-classical, neo-renaissance and eclectic architecture. The weapon depot is a clear example of this prestigious architectural style applied by the Korps der Genie. Therefore the facades of the weapon depot do have a high historical value. The openings in the facade are traces of the way weapons were moved in and out the building.



SPACE PLAN

The weapon depot was used to store guns. Therefore the construction of the building had to be open to create a big space to move goods easily through the building. Inside the open space on the ground and the first floor there used to be racks to stack the guns. In the current situation the building still contains these open spaces. From a historical point of view these open spaces have a high value since they are important for the character of the building.



DIMENSION & ORIENTATION

The weapon depot is an almost square high volume that initially stood out above the other buildings. Originally the weapon depot used to be more orientated to the south, since the original entrance was located in the south. After the redesign in the 1950s this orientation changed. They moved the main entrance from the south to the north. Due to the uniform facades and the enormous amount of windows on all facades the building orientates itself in all directions. This gives the building a welcoming public character.



CONCRETE CORE

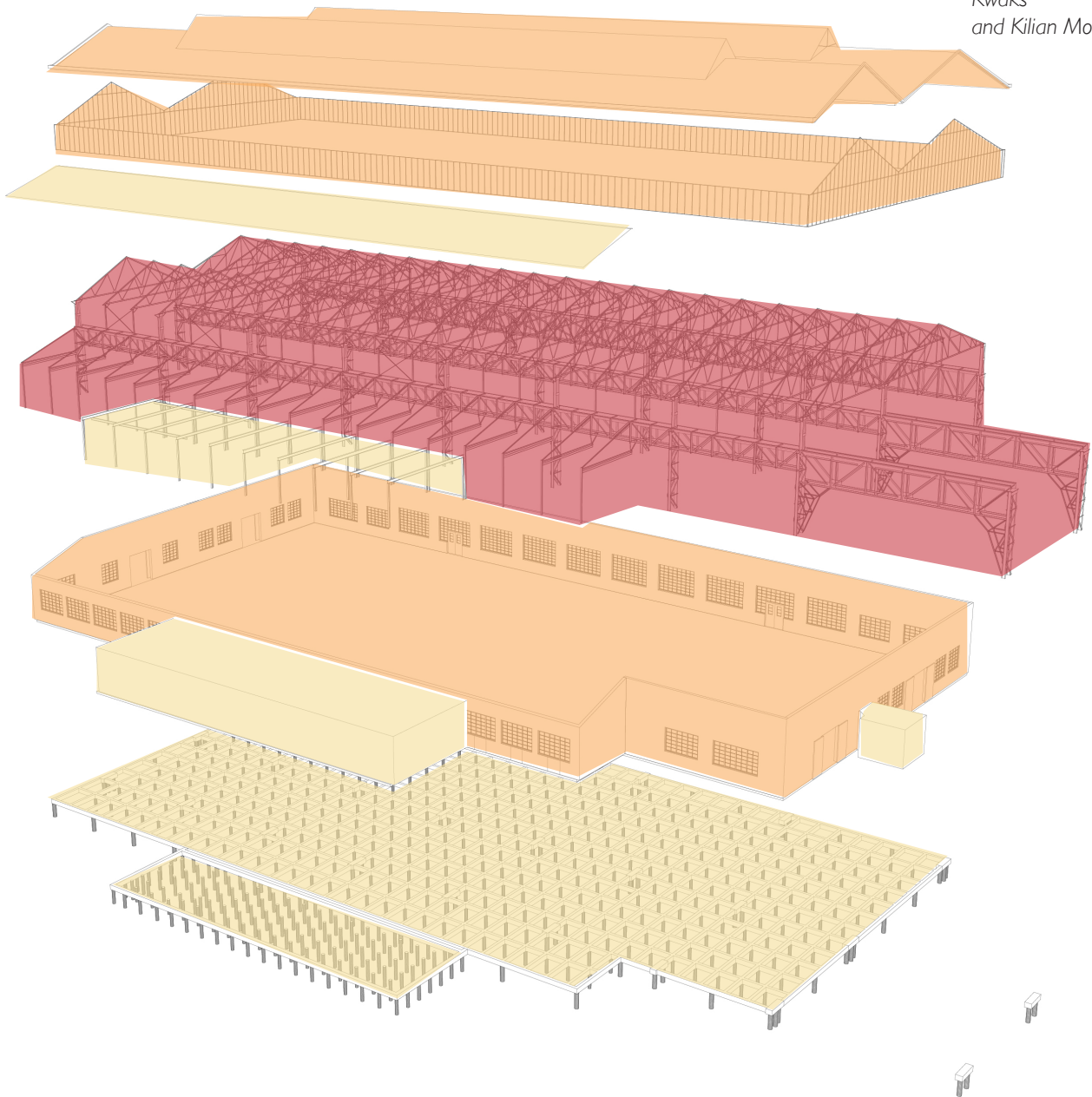
In the current situation there is a concrete core in the middle of the building on the ground floor. This core is divided in all kinds of smaller spaces that were probably used as dressing rooms. The core is a remnant of the redesign of the 1950s as the weapon depot changed from warehouse into an office. The core consists of concrete walls that are in a bad condition and therefore they are not that valuable anymore. Besides this the concrete core is in conflict with the initial open floor plan design of the building. This open floor plan has a higher historical value than the concrete core.

Value Assessment Machine hall

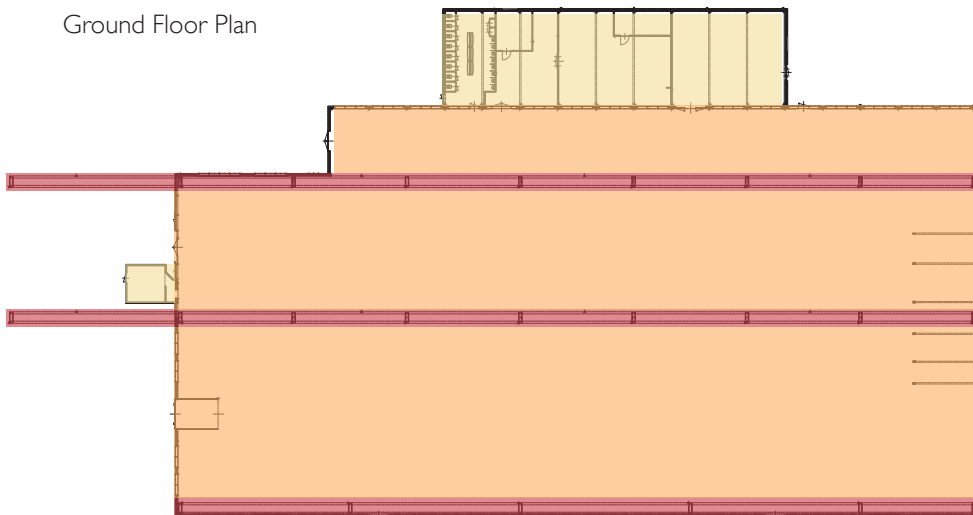
Kilian Mol

exploded view

Source: Amélie de
Guerre, Melanie
Kwaks
and Kilian Mol



Ground Floor Plan



Source: Kilian Mol



CONSTRUCTION & CRANE TRACKS

The machine hall has a special steel frame construction that carries the weight of the gable roofs and had to carry two big cranes that could move in line with the length of the building. This massive construction spans long distances to create spatial freedom. The construction has a high historical value as it explains how the building was used. Besides this it also has use value since the construction can carry a lot of weight, because it doesn't have to carry the cranes anymore.



SPATIAL FREEDOM

The massive steel frame construction has high frame beams to span long distances to create spatial freedom. The spatial freedom was needed for the cranes to carry machines and other heavy goods through the whole building. Therefore the spatial freedom has a high historical value as it is an important element of the former function of the building. For future designs the openness of the building should be preserved.



FACADES

The machine hall was built in 1936 until 1941 and was originally intended for the production of civilian machine tools. In contrast to the neo-classical architecture style of the old buildings from the first phase, the design of new buildings of the third building phase had characteristics of civil architecture. The machine hall has a clear functional appearance and therefore historical value as it represents its industrial use.



EXTENSION 1975

In 1975 an extension on the west was added to the building. It's nowadays still clearly visible that this extension on the west has been an addition, because it has a completely different look. Moreover, it looks like this addition had only a temporary function, because of the small interventions they made in the original facade and the materials used. Because of the likely temporary function this addition has a low historical value.

Personal Statement

Na Hu

In Campus North, there are two things impressed me the most in my first visit. One is the extroverted atmosphere that attribute to the open space in between free-standing buildings. While approaching to Hembrug, the entrance is hidden in thick woods. The site seemingly mysterious and introverted, but once step inside Campus north, it gives completely different impression that makes me feel embraced and welcome. The remained foundation in front the weapon depot trace back to the past. So I raised the question about how does the open space in Campus North were developed over time, what is the role of Campus North in previous production process?





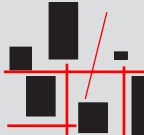


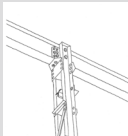

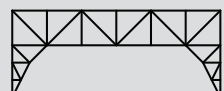



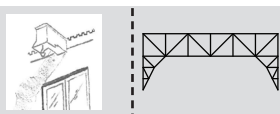




After research, I found the layout of Campus North changes in every period along with the historical development of Hembrug. Generally speaking, Campus north was an extension area the former weapon factory. It was full occupied at the time. As the decrease of weapon production and gradually increased demands of civil tools, the Machinery Industry was established. Neutral warehouses were replaced with secondary functions serving the newly built Machine Hall. After the relocation of NV in 1983, the place remained unoccupied. Some parts finally being demolished by new developers afterwards. So the open space is an added new value in campus north as a strategy of being a 'Campus'. It emphasize the predominance of the weapon depot and machine hall. Now, the open plots in campus north are not well defined. I assume the open space as an adding layer to buildings and It is where I want to start my design.

Besides, the role of Campus North changed from the back of the weapon factory as the storage to core civil industrial production area to one of the main the entrance in current situation. However, the campus north still introverted and not attractive as an entrance. So I want to try effort to transform it to be a good entrance.

The second aspect that impress me is the typology and rhythm of buildings. Buildings in campus North does not has a coherent architectural style, but each of them has fancy rhythm both in exterior and interior; such as facade, structure, window and so on. They all built in larger scale comparing to many buildings that rise my question about what is the architectural quality of both buildings. After research, I found building 8 and 320 were built in different construction phase. Both of the assigned buildings has strong historical-cultural value. In the future design, I want to emphasis the rhythm of buildings and interaction between buildings. Intervention such as reflection effect by water, mirror, glass will be considered in ensemble scale and building scale.

In conclusion, the development of Campus North reflect the boom, decline and transformation of Hembrug military industry. It is assigned to be a nice 'campus' to visit, work and live. Open space tend to be an added layer for buildings that should be well defined. To transform the ensemble be a good entrance for Hembrug, further study should be about what is a 'Campus' and how to make a good 'Entrance'.



Cultural Value Matrix	Age value	Historical value	Non intended commemorative value
Surrounding/ setting	 Water structure	 Plofbos	 The roads where the train tracks used to be
Site	 Monumental tree	 Axes of Campus North	 Position Weapon Depot by demolition of 309
Skin (exterior)		 Typology of façade Weapon Depot	
Technical Structure	 State of the art engineering	 Cranetrack & columns Machine Hall	 Extruded crane as visual guide landmark
Space plan		 Lengthwise Machine Hall	
Surfaces (interior)			 Floor tiles of Weapon Depot
Services	 Integrated ventilation Weapon Depot	 Hoist beams Weapon Depot Extruded crane Machine Hall	
Stuff		 Watchtower 217	
Spirit of place	 Headquarter of machine factory	 Trees next to Machine Hall	 Low Density

Use value



Parking lot



Connectivity of buildings through public space



Changing of entrances Weapon Depot

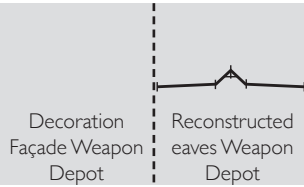
Art value



Typologies



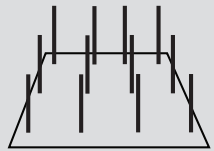
Axes road/ viewline to Weapon Depot



Decoration
Façade Weapon Depot Reconstructed eaves Weapon Depot



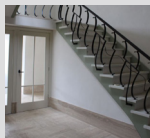
Assembly of the trusses



Spatial freedom



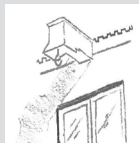
Skylight



Entrance hall Weapon Depot



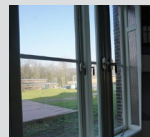
Transport doors Weapon Depot



Hoist beams Weapon Depot



Sliding doors Machine Hall

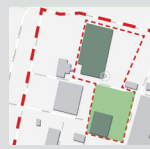


Lighting

Rarity value



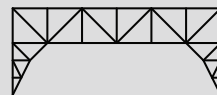
Hembrug as old military terrain



Ensemble on border of Hembrug



Uniform façades Weapon Depot



Extruded crane of Machine Hall



Loading docks of Weapon Depot

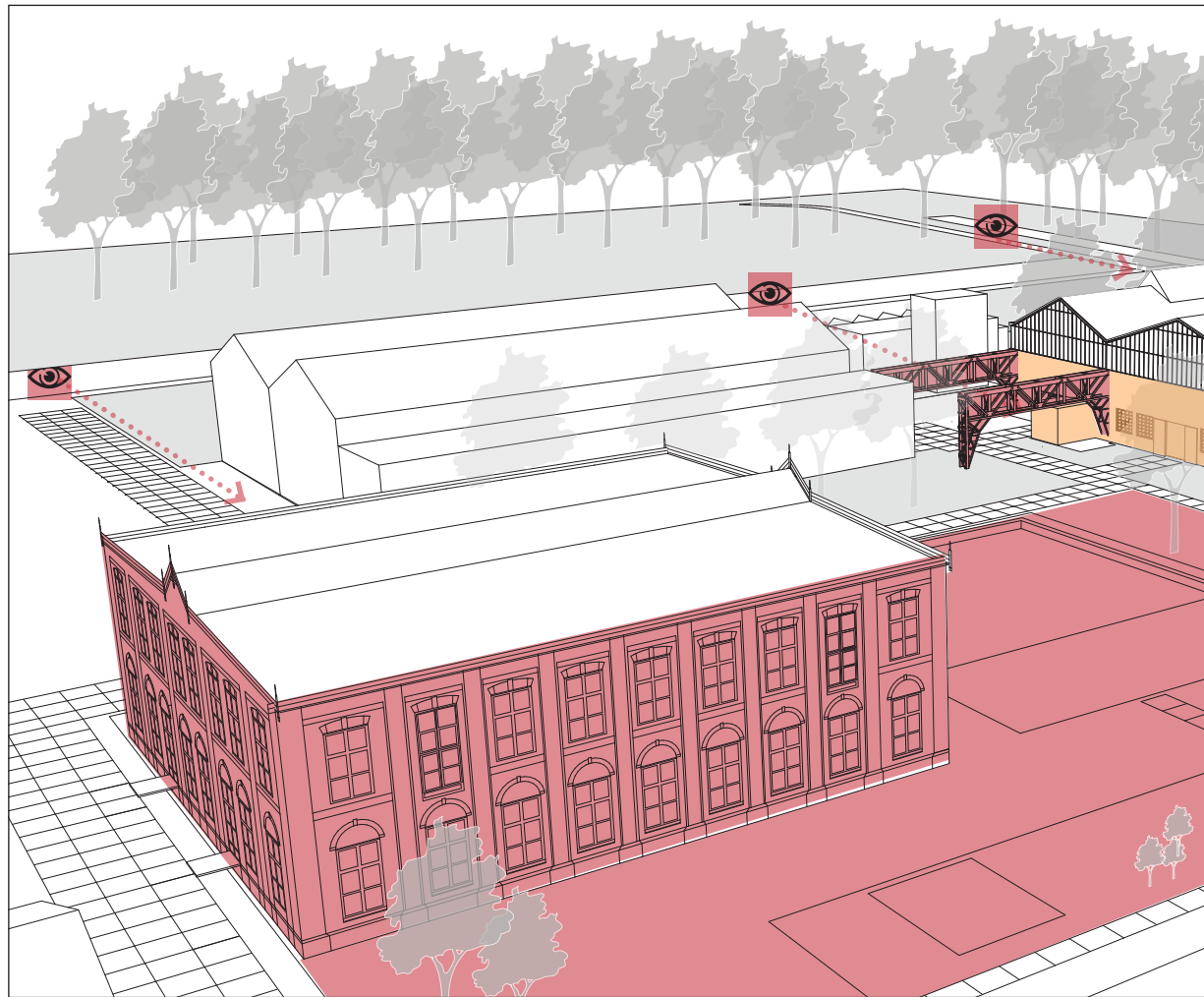
Other value



Connection to the main roads

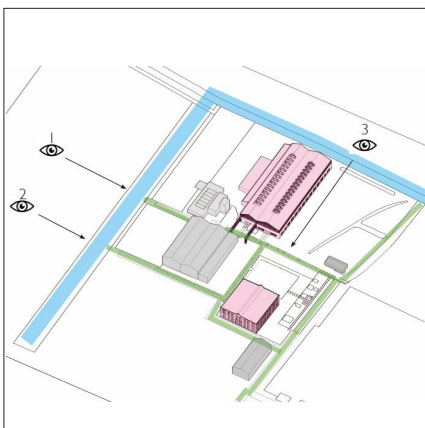


Stand-Alone Campus Structure



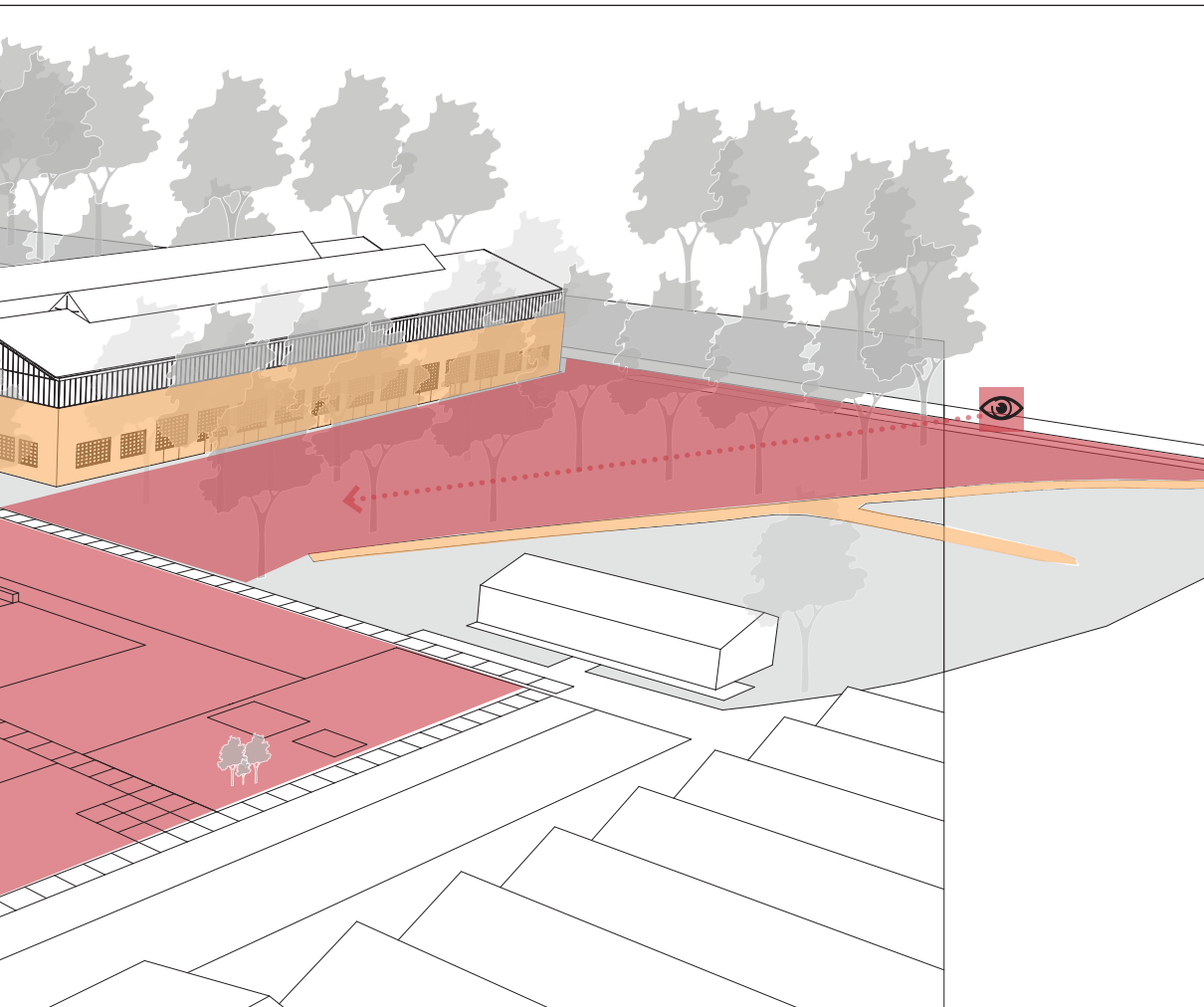
Open spaces

The layout of Campus North changes in every period following the functional logic of the Hembrug area. So the open space has historical and age value. The demolition of buildings by developer resulted in low density of the urban layer; it gives the site a unique characteristic by its open space. Newness value of extroverted atmosphere are added that display an open and welcome quality to campus north.



Road Structure

The roads has historical value and use value. In the original set-up of the site in 1901, Campus North could be entered from the south. The road system were developed with the introduce of railway in the west. It was extended to the north to support the the expansion of military factory. After the Artillerie Inrichtingen split up in different companies, the infrastructure was much more split up. Finally, roads in Campus North has great permeability and accessibility. The road structure also defines certain sight lines and provide visual connection for users.

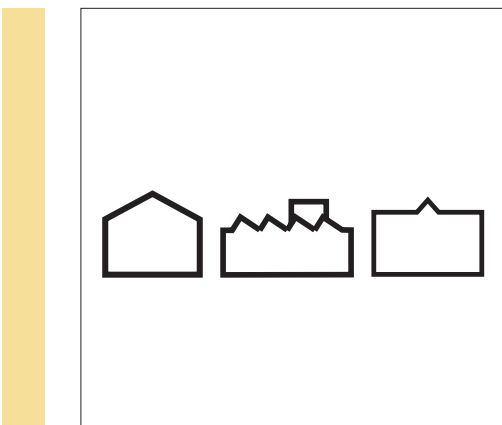


Source: Amélie de Guerre & Na Hu



Water structure

The ditches in the ensemble has strong historical value. It dates back to the set up of Hembrug Terrein. Campus North and South are the only sites with buildings constructed on the original foreland and the later added polder. It acts as a natural border that indicate the original land.



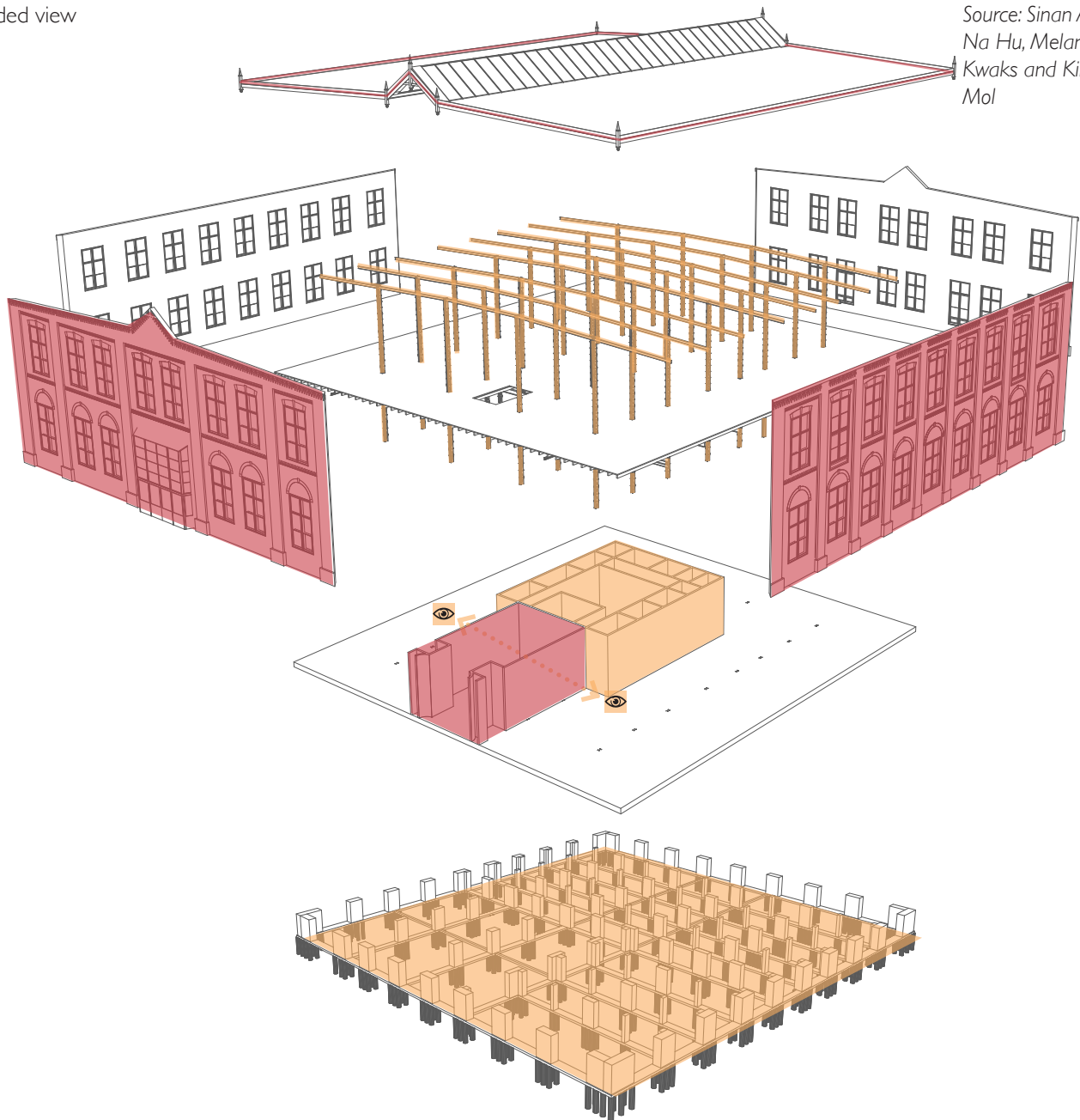
typologies

Typologies in campus north have historical value and art value. Buildings in campus North does not has a coherent architectural style. Each building has a different typology, which attributes to different construction phase. The weapon depot was built in the first phase in neo-Renaissance style, while the machine hal was built in the third phase in civil industrial style. They represent constructively characteristic examples from the forementioned periods.

Value Assessment Weapon depot

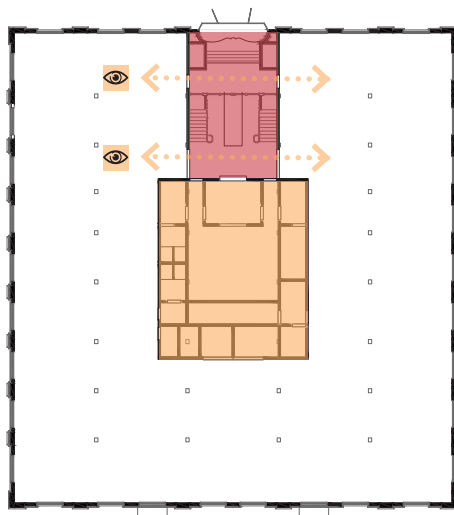
Na Hu

exploded view

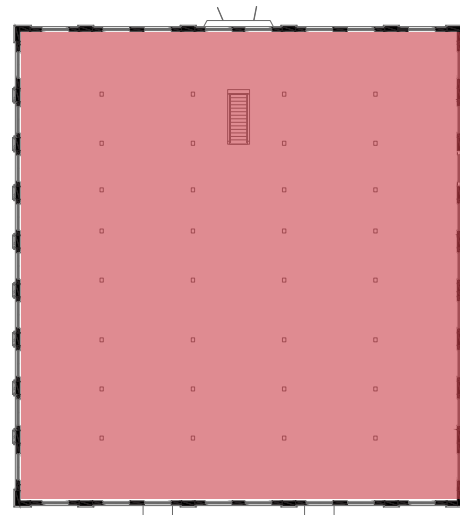


Source: Sinan Aydin,
Na Hu, Melanie
Kwaks and Kilian
Mol

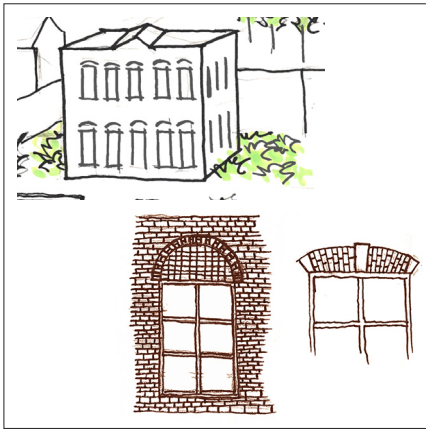
Ground Floor Plan



First Floor Plan



Source: Kilian Mol



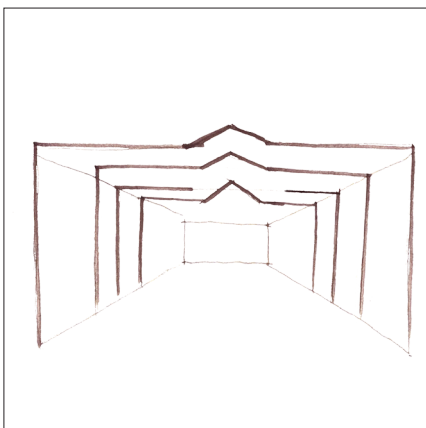
Skin (facade and openings)

The former wapendepot dates from 1899 and built in neo-Renaissance style. The building scale, style of the brick facade and decorative arches above window distinguish itself from the other industrial building in Hembrug area. The entrance and openings in this building changed and mutually converted in two times renovation. The trace of the change is visible and has high historical value that tell the story of the building.



Spirit of place

The former wapendepot was built in neo-renaissance as an example of a commercial building. It is a functionally designed building for storing the most important weapon, rifle M95 at the time. Afterward, It was transformed to the quarter of machine factory Hembrug from the end of the 19th century. Thus, wapendepot represent not only constructively characteristic but also a functional landmark in Hembrug area.



Steel skeleton

The steel skeleton has historical value, use value, art value terms of rhythm. The internal construction consists of 32 iron columns that rise to the roof. The steel skeleton was functionally designed with the steel shelves for store weapons. The shelves was removed while the steel columns were enclosed by mesh and plaster after the building was converted to office. After the renovation by abt, the enclosure were removed. All columns in the first are exposed without any partition walls. The rhythm of columns, skylight and clear view through windows contribute to a stage like atmosphere.



Interior Surfaces

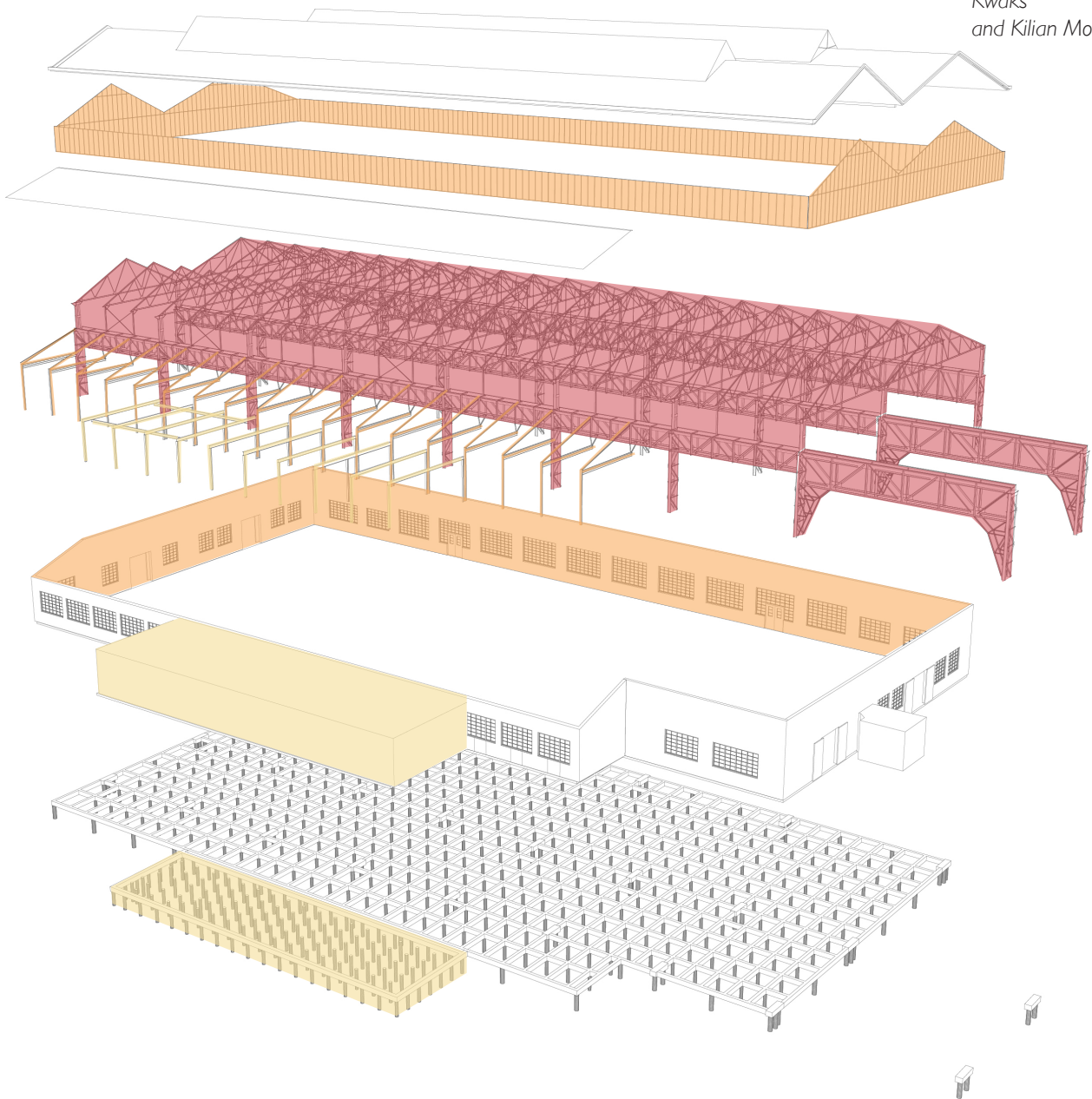
surface in weapon depot has historical and art value. Tiles on the wall near the entrance have art value since its colour and pattern. The floor tiles used in the Weapon Depot are a part of the tiles which were specially manufactured to be used in the Hembrug area. What makes these tiles unique is that are not being fabricated anymore and thus they are not possible to come by today. The surface also indicate the age and historical texture in the past.

Value Assessment Machine hall

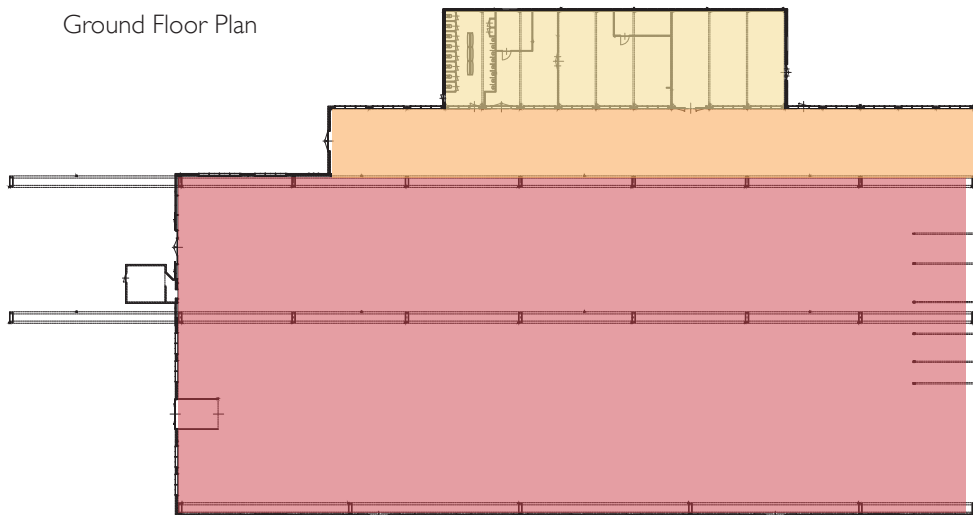
Na Hu

Source: Amélie de
Guerre, Melanie
Kwaks
and Kilian Mol

exploded view



Ground Floor Plan

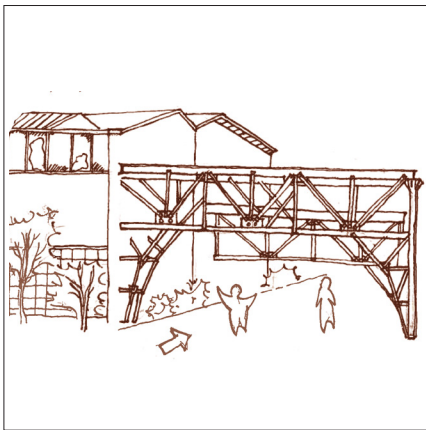


Source: Kilian Mol



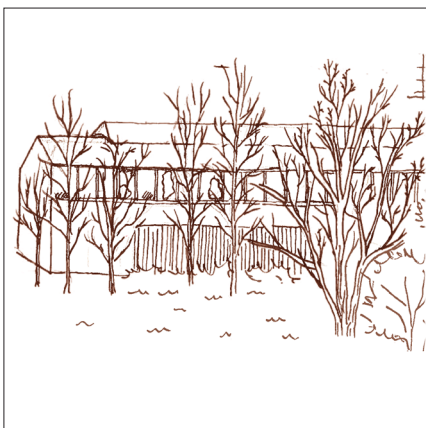
Cranetrack & Steel skeleton

The Former machine hall was functionally designed for manufacturing civil service machinery. The crane track and columns inside have historical value because they were the most functional elements that indicate its former use. It also displays a way of constructing in the past. Tracing the former machinery crane, production line are clearly visible. The crane track and columns have use value that offer flexibility for the floor plan, while it also has art value because of the rhythm.



Extruded crane

The steel construction which guided the crane of the Machine Hall outside is still intact. It has historical value that indicates the former use of delivering machine from inside to outside. It also has newness value because nowadays it functions as a visual landmark and one of the entrances into Campus North. It also has newness value because nowadays it functions as a visual landmark and one of the entrances into Campus North.



Trees

The pieces of land in the west and east of the Machine Hall are covered with densely grown trees. They have age value dating back to the construction phase of the machine hall. Comparing to the open space next to the weapon depot, trees define the space next to the machine hall differently. Woods provide fancy shadow on the facade and visual connection with green from interior through upper windows. However, the trees are in chaotic condition and lack further function. It even blocks sight lines from the main roads towards Campus North.



Sliding door

The sliding doors on the Machine Hall are reflected throughout the whole area. Specifically, the sliding door works with the extruded crane for more space to deliver machine from outside to inside in the entrance. They indicate a part of the industrial experience inside Hembrug; they are still in function at the entrance of the large halls. To sum up, it has historical value and use value.

Personal Statement





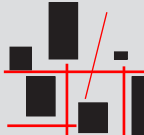


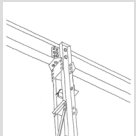

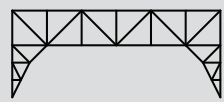








Sinan Aydin

When visiting the Hembrug for the first time, Campus North immediately stood out to me. The moment I found myself in Campus North, I got the idea that this is the center square and the Weapon Depot must be the main building of Hembrug. The following visits Campus North functioned as my orientation tool to navigate myself from. Its location, by being visible when entering the area, and open surroundings helped me to find my way around. So you could say that Campus North made quite an impression on me early on the project.

The size of the buildings and the area, especially the Machine Hall, gives me the feeling that they will allow me to design on a bigger scale. In this project it is my goal to design public areas, being both buildings and open spaces, which will act as the base for the missing element in Hembrug: the human factor.

When putting the characteristics of the Hembrug Area in a lay-out and trying to find a harmony, I only see the absence of people. After all, we design for the people and to me a concept is only successful if it's being used.



Cultural Value Matrix	Age value	Historical value	Non intended commemorative value
Surrounding/ setting	 Water structure	 Plofbos	 The roads where the train tracks used to be
Site	 Monumental tree	 Axes of Campus North	 Position Weapon Depot by demolition of 309
Skin (exterior)		 Typology of façade Weapon Depot	
Technical Structure	 State of the art engineering	 Cranetrack & columns Machine Hall	 Extruded crane as visual guide landmark
Space plan		 Lengthwise Machine Hall	
Surfaces (interior)			 Floor tiles of Weapon Depot
Services	 Integrated ventilation Weapon Depot	 Hoist beams Weapon Depot	 Extruded crane Machine Hall
Stuff		 Watchtower 217	
Spirit of place		 Trees next to Machine Hall	 Low Density

Use value

Art value

Rarity value

Other value



Parking lot



Typologies



Hembrug as old military terrain



Connection to the main roads



Connectivity of buildings through public space



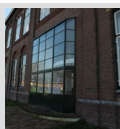
Axes road/ viewline to Weapon Depot



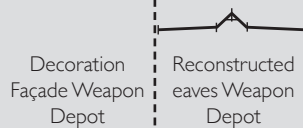
Ensemble on border of Hembrug



Stand-Alone Campus Structure



Changing of entrances Weapon Depot



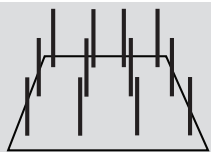
Decoration Façade Weapon Depot
Reconstructed eaves Weapon Depot



Uniform façades Weapon Depot



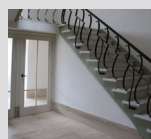
Assembly of the trusses



Spatial freedom



Skylight



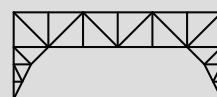
Entrance hall Weapon Depot



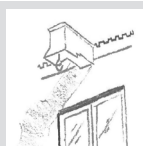
Tiles Weapon Depot



Transport doors Weapon Depot



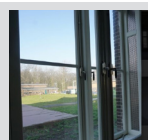
Extruded crane of Machine Hall



Hoist beams Weapon Depot



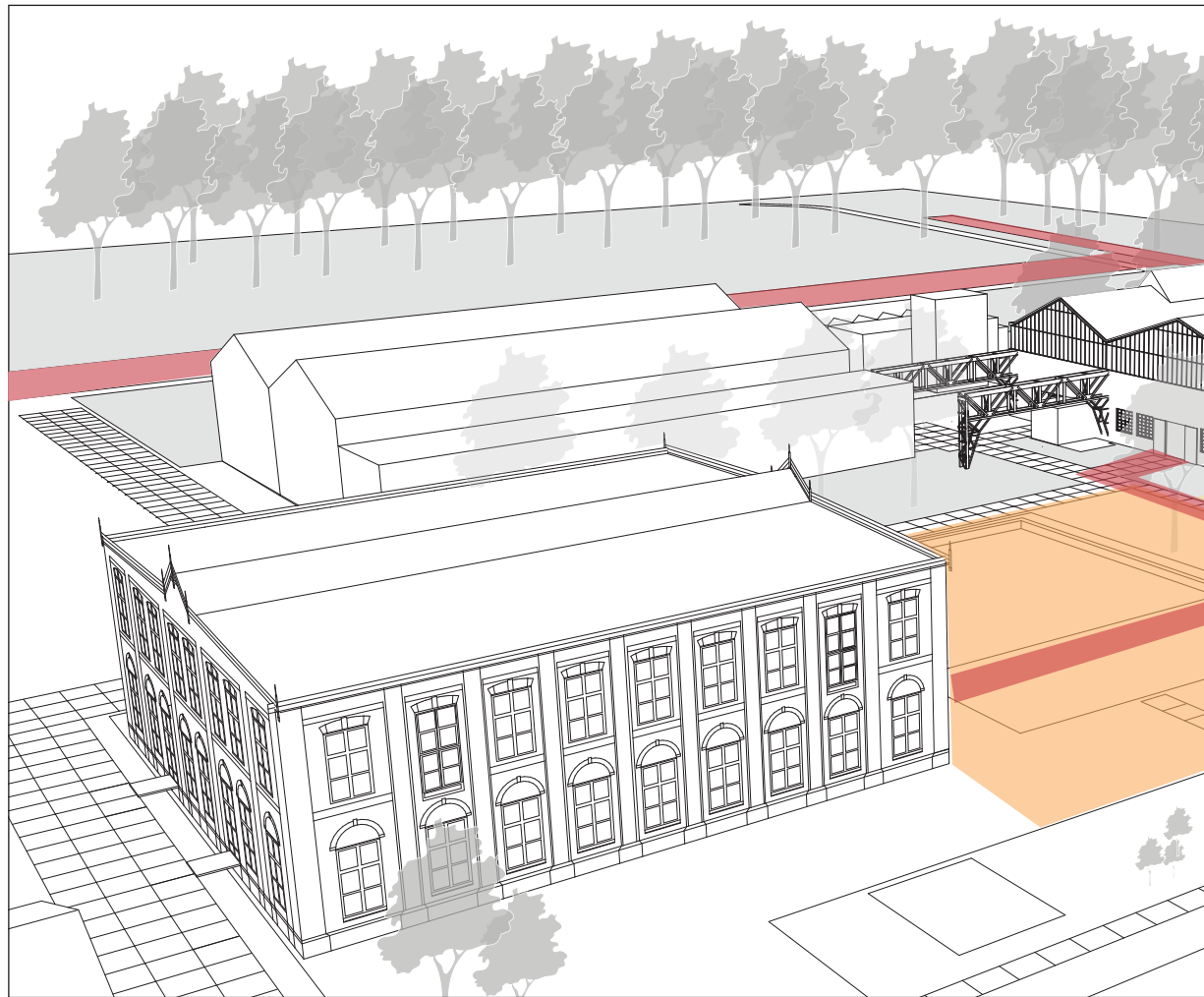
Sliding doors Machine Hall



Lighting



Loading docks of Weapon Depot



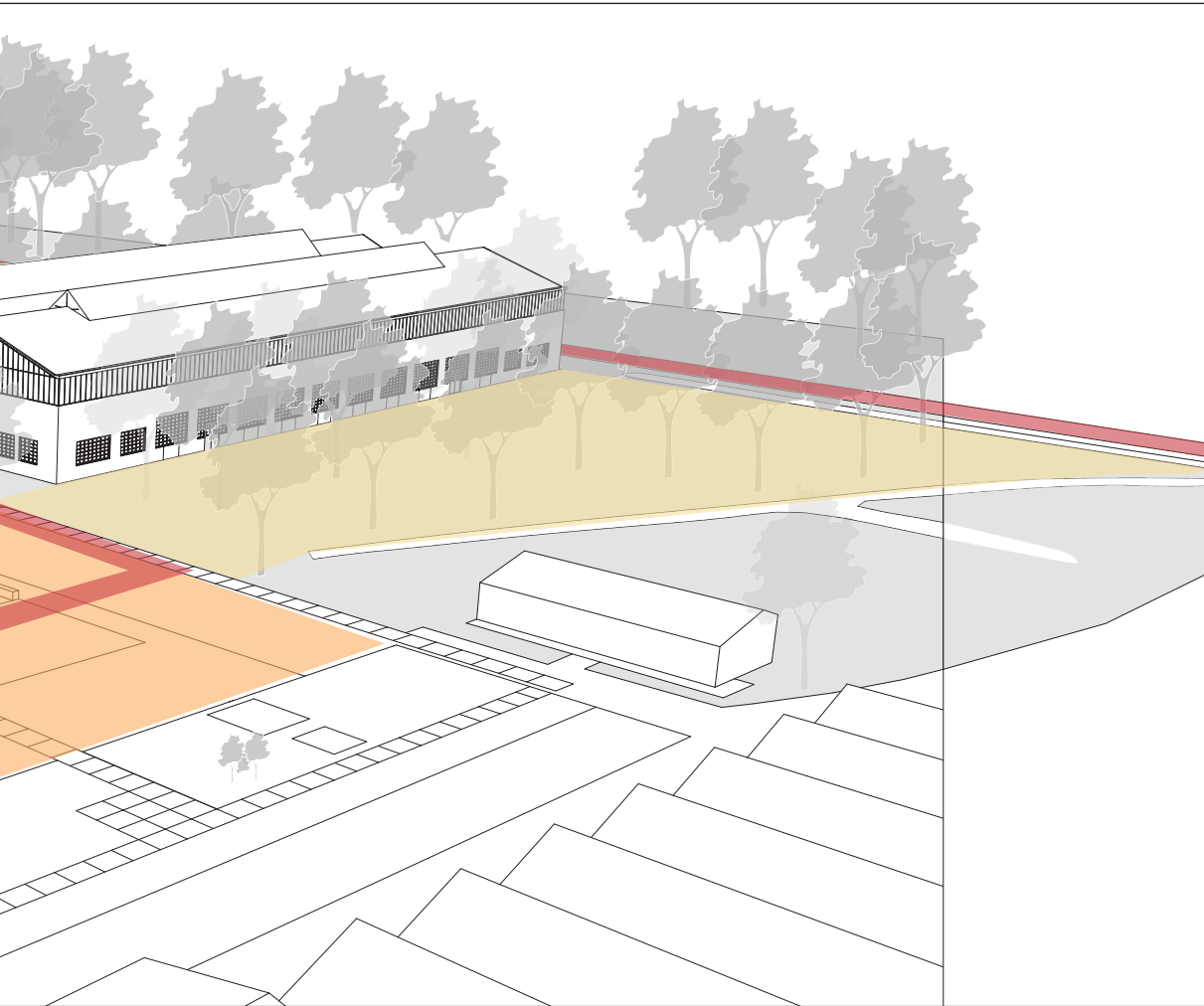
Location at Entrance

The location of Campus North being so nearby the entrance of the Hembrug area was a decisive factor for me to choose for the ensemble. By no means should this be altered, moreover the link between the main roads and the ensemble should be amplified. Campus North is going to be the new main entrance of Hembrug.



Open Connection between building 320 & 8

In my vision I see the two buildings having two major roles in the site. I see both buildings as large complexes with multiple functions where in Building 320 is a big working space with (maybe) commercial spaces and Building 8 having public functions. To me, it is important to have a direct connection between the two buildings to create a connection between these two worlds. However, the current connection path between the buildings can (even should) be altered.



Square in front of Building 8

It was the open square in the ensemble, (which actually turns out to be the remains of the foundation of a former building), that gave me the feeling that Campus North is a central space in the Hembrug Area. The open square contributes to the representation of Campus North and does an incredible job on putting Building 8 in a spotlight. It should be preserved but it definitely needs to be put more thought into to turn into an actual square.



Green landscape next to Building 320

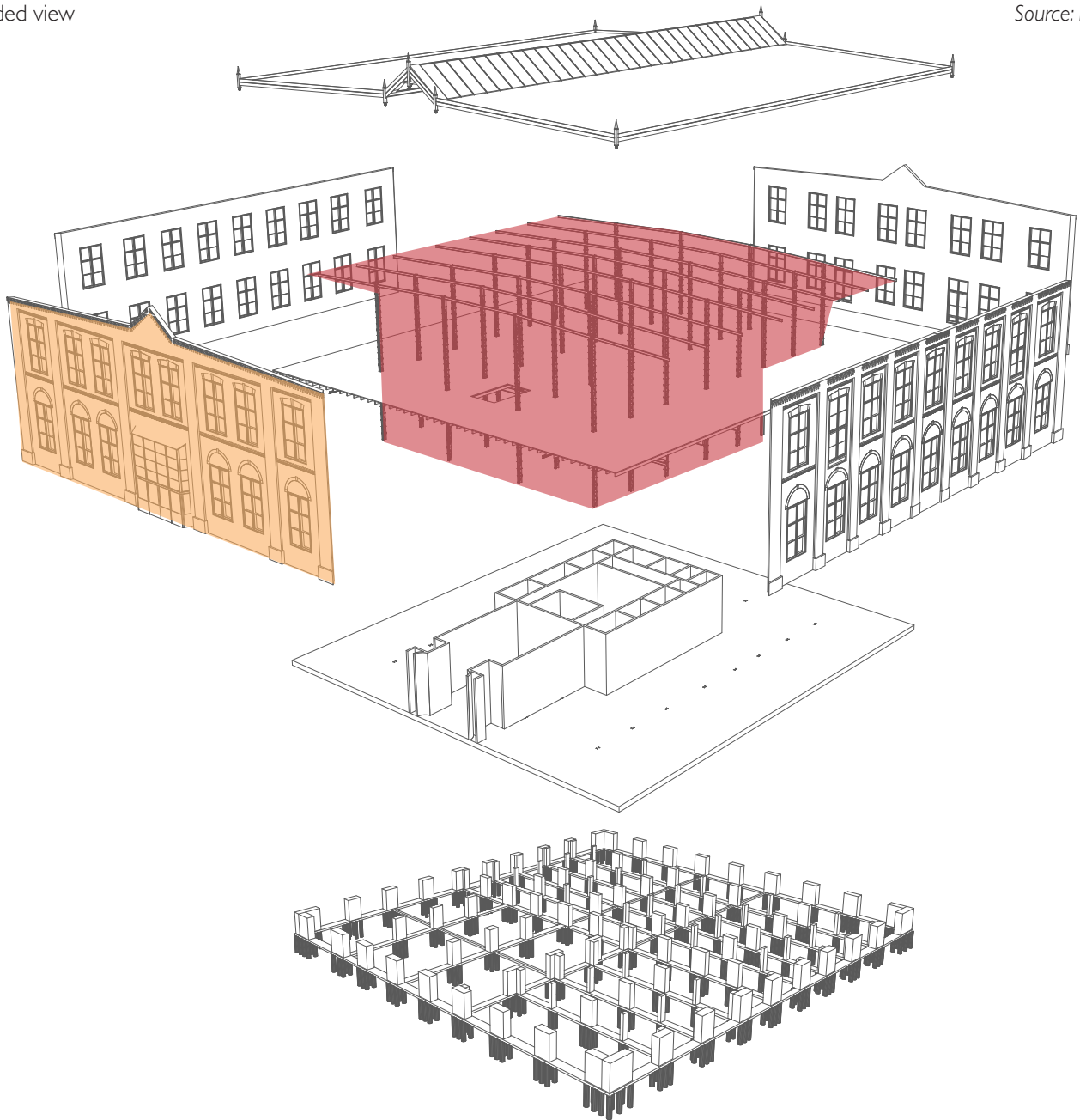
Green is definitely one of the major themes in the Hembrug area; The former industrial area is being taken over by nature. While this has a beautiful effect on the area, the green mentioned here has no further function and even blocks sightlines to the centre of Campus North. I think this can be altered into a new path to the ensemble and still be preserved with a green theme.

Value Assessment Weapon depot

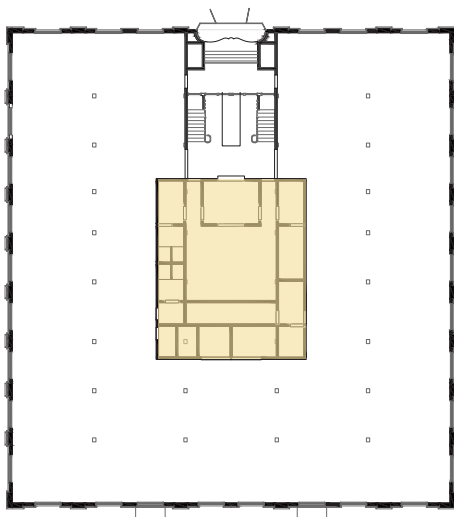
Sinan Aydin

exploded view

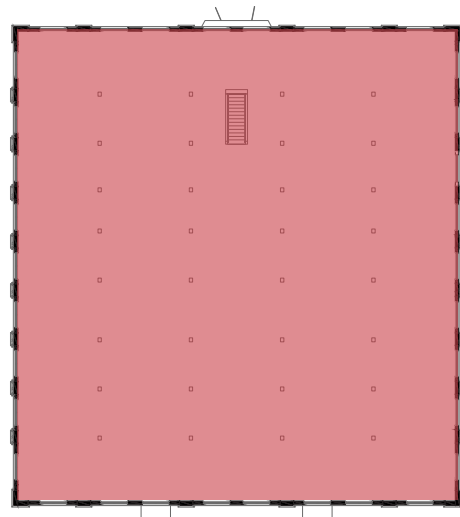
Source: Na Hu



Ground Floor Plan



First Floor Plan



Source: Kilian Mol



Open Space on 2nd Floor

The second floor of building 8 is an open floorplan with plus sized windows and an enormous skylight. The combination of these elements with the light colours present resulted in a spacious and light floor. It is my main aim to, when rearranging this floor, preserving this spacious feeling by keeping the floor as one big space.



Naked Construction

The constructional elements of the building which are in sight all over the space are a big characteristic of Hembrug which hints back to the industrial history of the area. These beams and columns have a much more complex structure compared to what is used for the same purpose today, and therefore make a strong impression. To me it's important to keep these constructional elements in the open as a quality and theme of the Hembrug area.



Façade

Building 8 has four façades which all have similar aspects. Through time, the entrance of the building has changed a couple of times where in it was either the north façade or the south façade. The big entrance on the north façade is currently the main entrance. While it is clear which façade is the main entrance I would like to try and make changes to one main façade to see if it can be altered in a way that would benefit the experience of looking at the building.



Compartments on 1st Floor

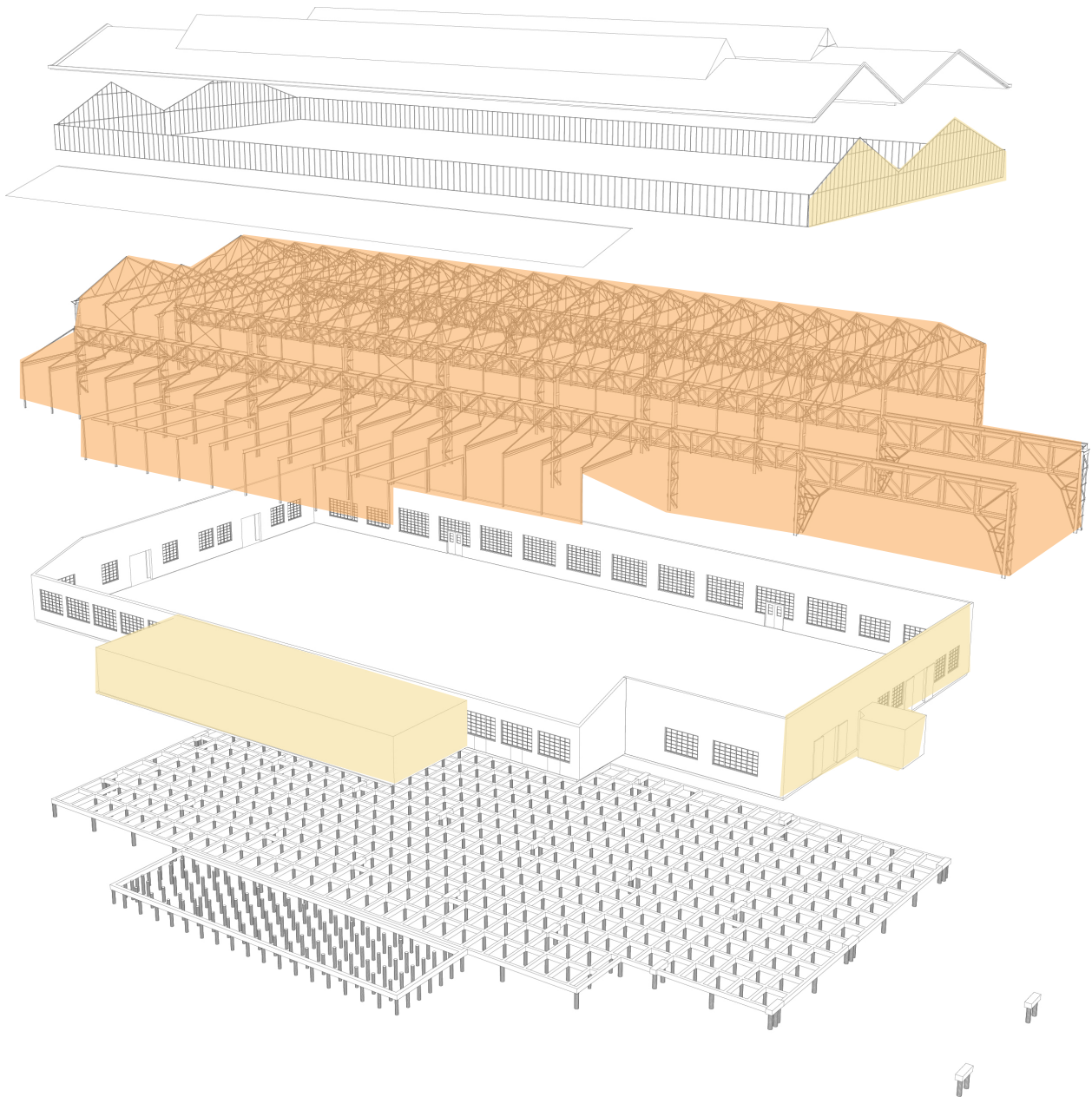
There is no other compartmentalization other than the cluster of small rooms placed in the centre of the first floor. These rooms do not have a constructional function and were built somewhere in the 50s. While they do not have a current use, either functional or constructional, they are the only remaining interior compartments left from the industrial area. This adds some characteristics, but I'm not sure if they will be of use in the future design or be in the way.

Value Assessment Machine hall

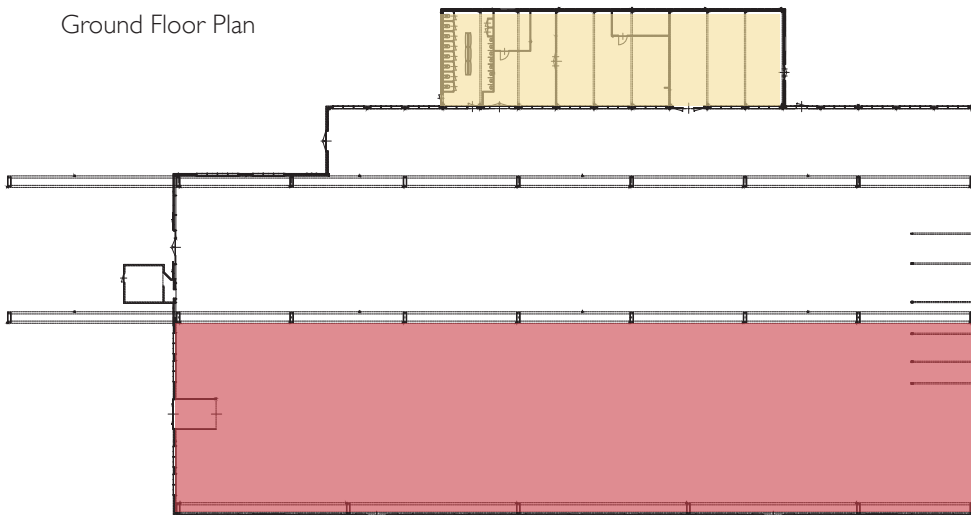
Sinan Aydın

exploded view

Source: Amélie de Guerre



Ground Floor Plan



Source: Kilian Mol



Lengthwise Deep Halls

To me the Machine Hall is especially interesting because of its sheer size. The big open spaces inside are one of the qualities of the building. When rearranging this space I would like to keep the halls as still one big open space.



Construction

As with Building 8, the massive complex construction of Building 320 is a thematic characteristic of the Hembrug area. As stated in our analysis, the construction of building 320 is designed to be able to carry as well the building itself as the massive crane inside. Because of that the construction is so frequent that it can be in the way of a design. However, now that the crane is gone the construction has less to carry and that could mean that possible adjustment can be made to open up more space.



Façades

North Campus should be the new welcoming face of the Hembrug area. To achieve this I am aiming to do more changes on the façade of building 320 compared to Building 8. The industrial design aspects of the façades need to be kept where possible, but rearrangement of these elements is to me a must.



Add-on Constructions

There are two secondary constructions around building 320, the add-on west wing and the cabin placed in front of the south façade. The west wing is to me blocking the main façade of the building while the cabin in the south is not equal to the size of the main building. It is to me essential to bring changes to these in a way that they will contribute to the overall design.

Personal Statement

Mays Al-Korany

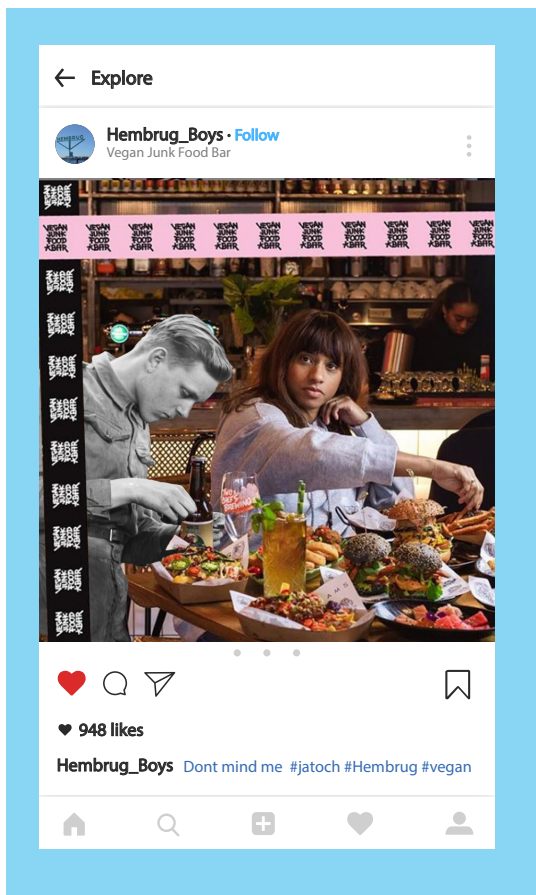
To understand what the analysis we made for the Campus North group we were asked to make a design that reflects our own thoughts regarding the site. This had to be done in a non-architectural way, in an etude.





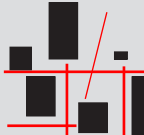


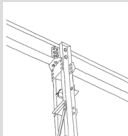

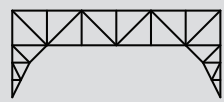



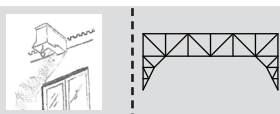



What attracted me were the stories of the people working at the site. They were not allowed to speak about their daily routines let alone tell people where they worked. They were an anonymous force conducting in the traits of war.

After the analysis and several cultural analyses, I have come to the conclusion that I want to connect the two buildings in some way. This is due to the fact that I believe the two buildings are opposite in many ways, like their function and typology. Maybe connecting this by the open space that unfolds itself in front of the two entrances of the buildings. And in turn, this made me think about the ways in getting people to come to that open space. What will attract people and how do commercialize the Hembrug area to a broad public again.

In terms of city development, the city of Amsterdam is expanding. Broadening its center outwards. Also, in the direction of Hembrug. For Hembrug this is an opportunity to receive the public of the hip millennials filled city.

This is why I wanted to combine these three fascinations; the workers of Hembrug, commercializing the site and drawing the cool youths of Amsterdam. This is how the Hembrug_boys Instagram was created. Taking workers of Hembrug found in archive photos and placing them into hip millennials context.



Cultural Value Matrix	Age value	Historical value	Non intended commemorative value
Surrounding/ setting	 Water structure	 Plofbos	 The roads where the train tracks used to be
Site	 Monumental tree	 Axes of Campus North	 Position Weapon Depot by demolition of 309
Skin (exterior)		 Typology of façade Weapon Depot	
Technical Structure	 State of the art engineering	 Cranetrack & columns Machine Hall	 Extruded crane as visual guide landmark
Space plan		 Lengthwise Machine Hall	
Surfaces (interior)			 Floor tiles of Weapon Depot
Services	 Integrated ventilation Weapon Depot	 Hoist beams Weapon Depot Extruded crane Machine Hall	
Stuff		 Watchtower 217	
Spirit of place		 Trees next to Machine Hall	 Low Density

Use value



Parking lot

Art value



Typologies

Rarity value



Hembrug as old military terrain

Other value



Connection to the main roads

Connectivity of buildings through public space

Axes road/ viewline to Weapon Depot

Ensemble on border of Hembrug

Stand-Alone Campus Structure

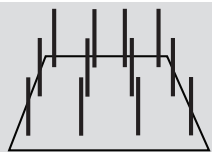
Changing of entrances Weapon Depot

Decoration Façade Weapon Depot
Reconstructed eaves Weapon Depot

Uniform façades Weapon Depot



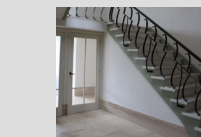
Assembly of the trusses



Spatial freedom



Skylight



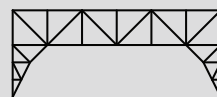
Entrance hall Weapon Depot



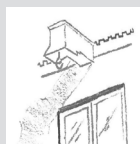
Tiles Weapon Depot



Transport doors Weapon Depot



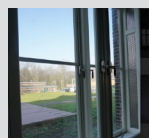
Extruded crane of Machine Hall



Hoist beams Weapon Depot



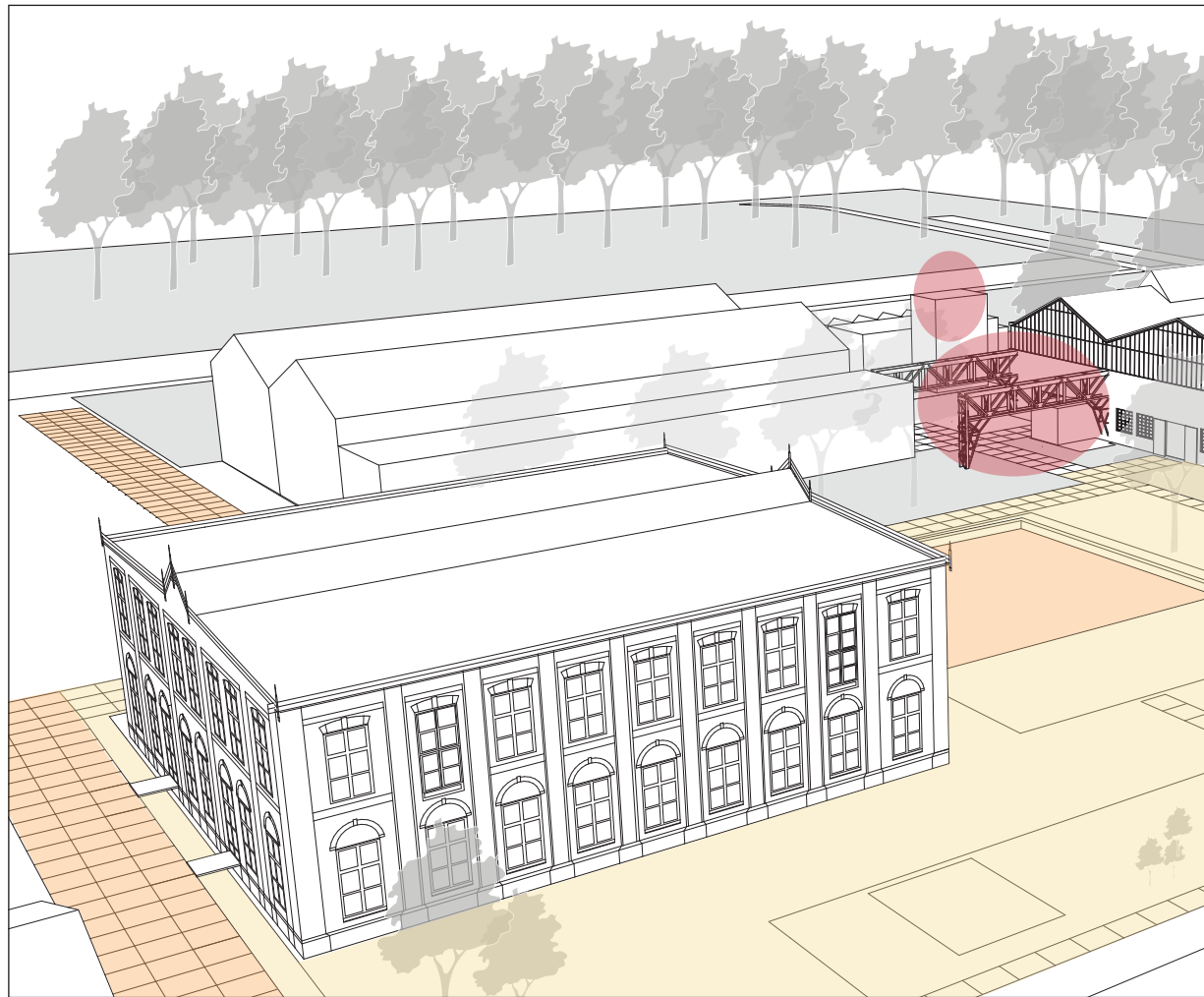
Sliding doors Machine Hall



Lighting

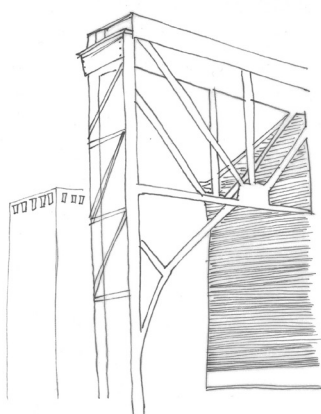


Loading docks of Weapon Depot



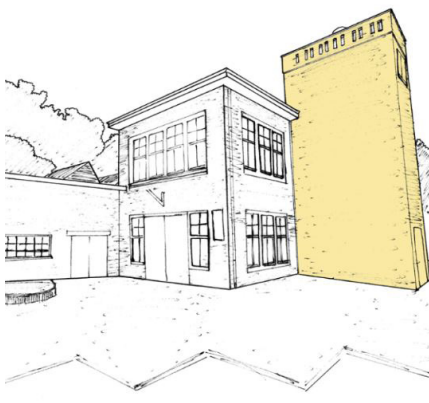
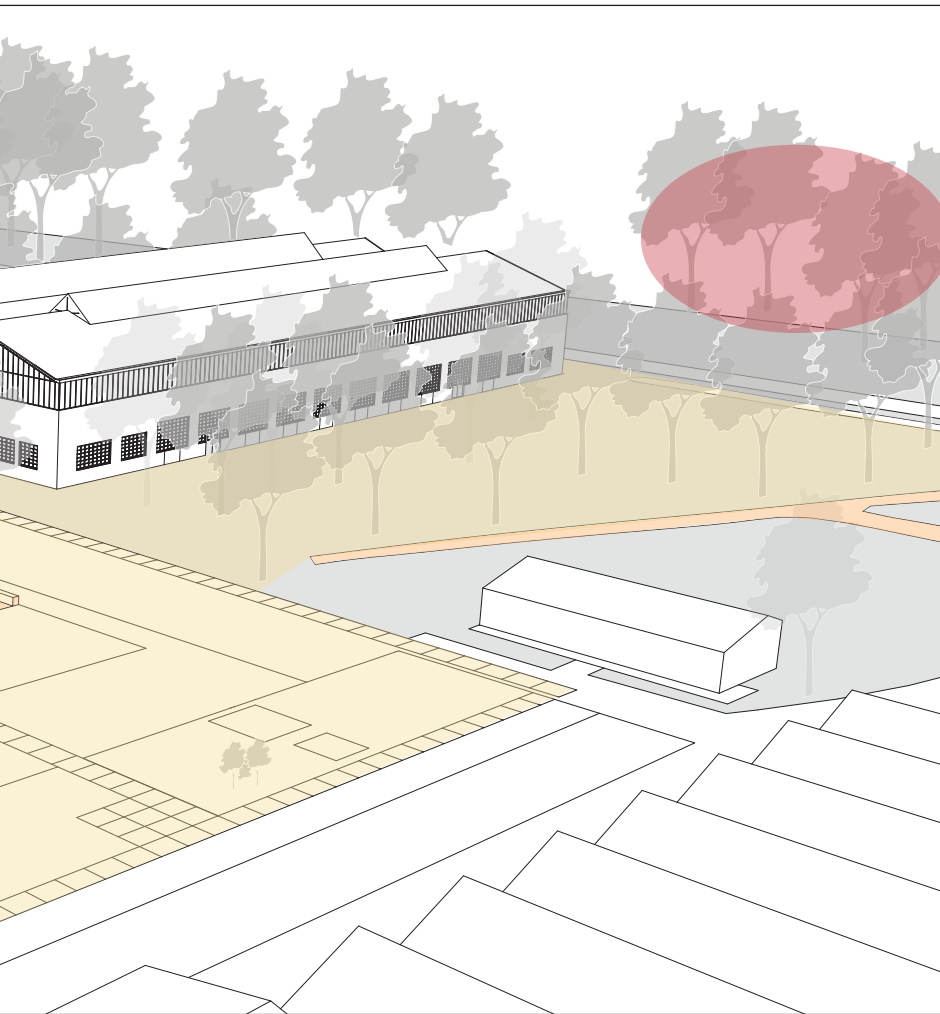
Plofbos

The plofbos has a very high value due to its historical significance. It not only tells a part of the Hembrug story but also adds to the green special quality. Historically it was also meant to hide what was going on inside the site. Serving as a sort of stage smoke. Camouflaging the main act. Due to those facts it has a higher value. Also it marks the border of Hembrug.



Extruded crane structure

The extruded crane is one of a kind on the Hembrug site. It describes, for that time, a state of the art, production process. Its significance is crucial to the story of the machine hall and the production of Hembrug. Now it serves an iconic element in space.



Watchtower

The watchtower is the only one on the site and was specifically placed in that location to serve its purpose. It was meant to keep surveillance over the site. For that reason, it has a high significance. Its mass and typology on the campus makes one aware of its presence.



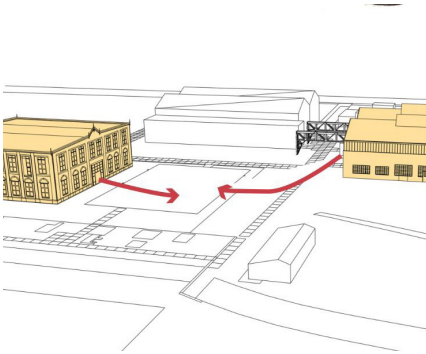
Axis to weapon depot West façade

The axis to the weapons depot is meant to make the building stand out more and make aware the significance of its hierarchy. This road was created when buildings were replaced and a new street towards the weapons depot was created.



Axis at South façade

The axis at the south façade of the weapon depot was an important axis to the process of Hembrug. Here the products were loaded in through the loading doors. This space should remain open.



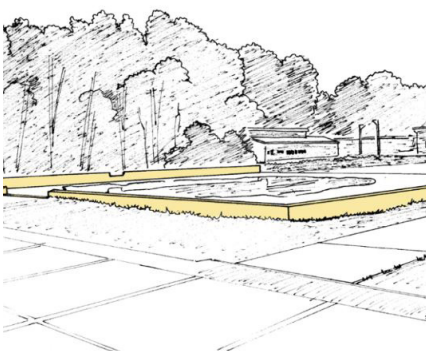
Open space due to demolishing of 309

The open space that is created due to the demolishing of building 309 is significant due to a few reasons. The space now can connect the two buildings to each other. Making to different types of typology and process connect through a space. It makes also puts building 8, the weapon depot on a sort of pedestal. Again, giving it more significance.



Water structure

The water structure has historical significance due to the fact that the structure marks the border of the area in the past.



Foundation of 309

The foundation of building 309 stands there because it was decided that the building was too unsightly to keep. It was not a monument and could be taken away. Now the foundation is the only remnant of this story. Kept only for the purpose of being a visual element.



Open space around weapon depot

The open space around the weapon depot has some significance for it makes the space more attractive and historically adds to the fact that most buildings on the site were stand alone buildings.



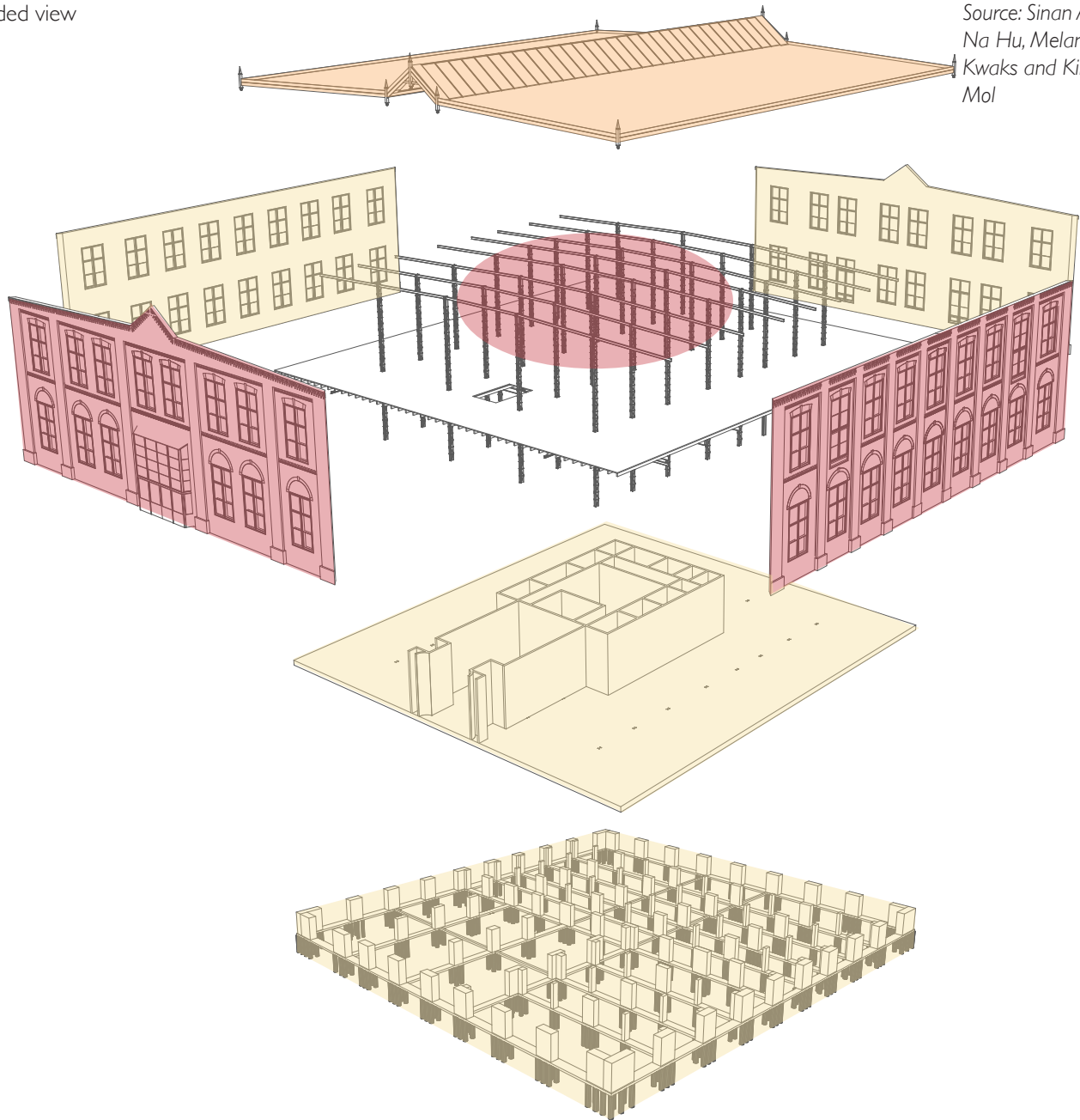
Green space attached to machine hall

The green space next to the machine hall is a space that created a barrier on the site to the building. It gives the campus another dimension of green.

Value Assessment Weapon depot

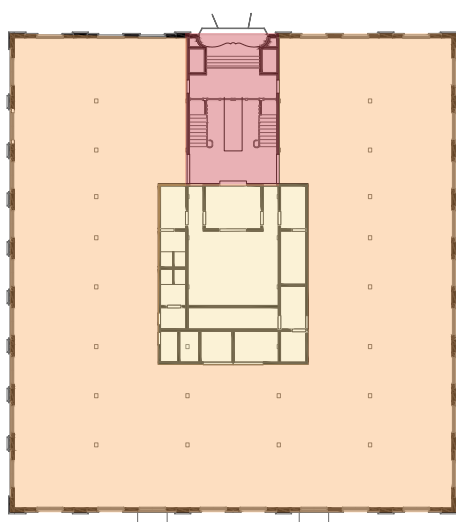
Mays Al-Korany

exploded view

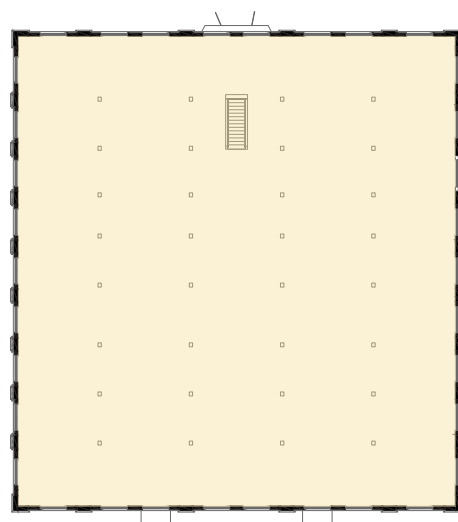


Source: Sinan Aydin,
Na Hu, Melanie
Kwaks and Kilian
Mol

Ground Floor Plan



First Floor Plan



Source: Kilian Mol



Steel structure

The steel construction for the weapon depot building is of high importance. It adds to the historical value of the production process and is the main base to the building's stability. Without it cannot stand.



Façades

The facades of building 8, the weapons depot is of neo-renaissance style and it is of high value because it is one of a kind on this campus. It is built in the first phase and looking at the ornamentation one can clearly tell that it is ornate.



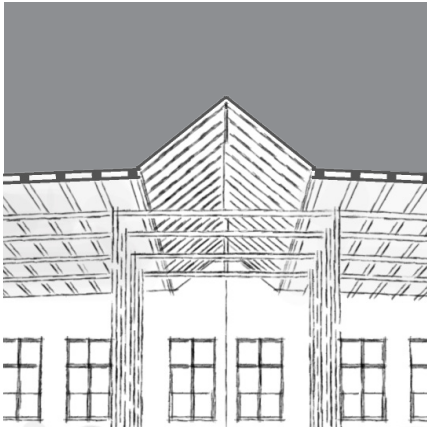
Entrance, North façades

The main entrance, North façade, is of high value because by the addition of the thin steel frame of can tell that it actually does not fit in with the rest of the exterior style. It was added in 1950 when the building was transformed into offices. This thin steel framing was very popular at the time.



Entrance hallway

Like the main entrance the hallway of the entrance was added when the transformation of the offices occurred in 1950. This is also noticeable in the style of the staircase.



Roof with skylight

The Roof with skylight is an addition that was there in the original state of the building. Due to damage over time, it was reconstructed by ABT in 2015. Therefore it has medium value. It was not the original but reconstructed and it should remain in the design.



Ground floor

The ground floor has a medium value because it has certain elements that need to be saved. Like the original tiles that are found scattered throughout the ground floor.



Core

The core was not in the original design and added to help facilitate the offices. It is unsure if this was placed in the building there during the function transformation. The core merely has a functional aspect.



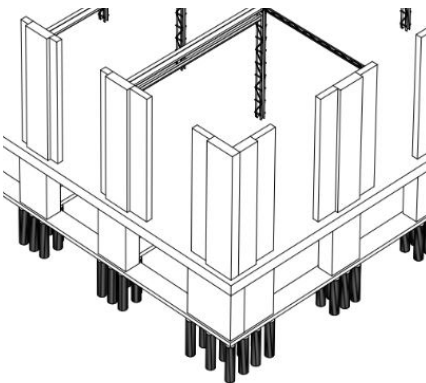
Interior walls

The interior walls were left as is during the transformation by ABT in 2015. They only "cleaned up" the walls in order to save money and deliver something that can be used.



First floor

The first floor is a reconstruction because the floor before the transformation of 2015 was not overly damaged and could not be saved. Now it is a wooden beam structure on top of the steel structure. On those wooden beams, underlayment sheets are added.



Foundation

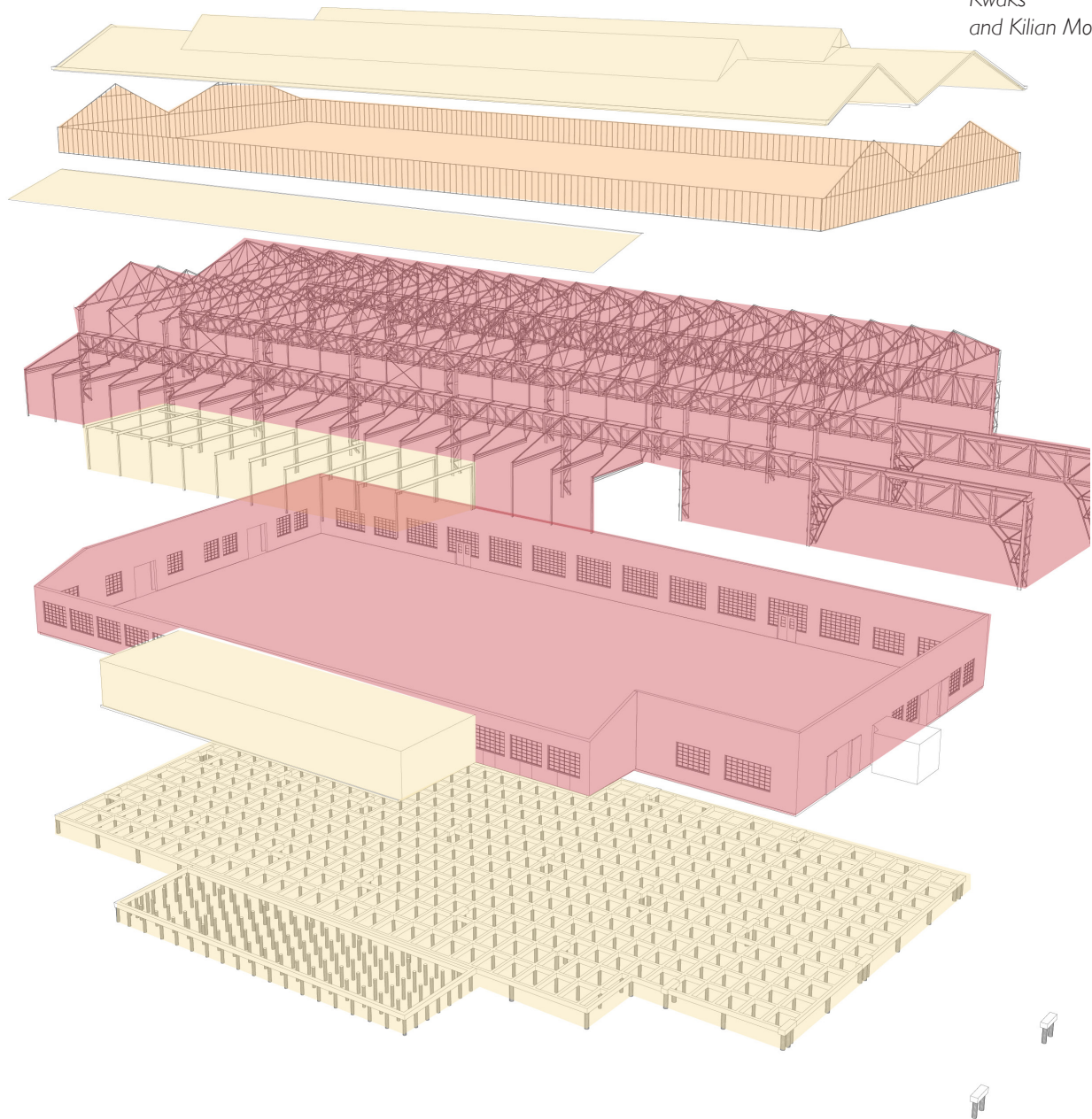
The foundation of the building for me has a lower value because it can not be seen and if it has to be changed into something better then that has a higher value to me.

Value Assessment Machine hall

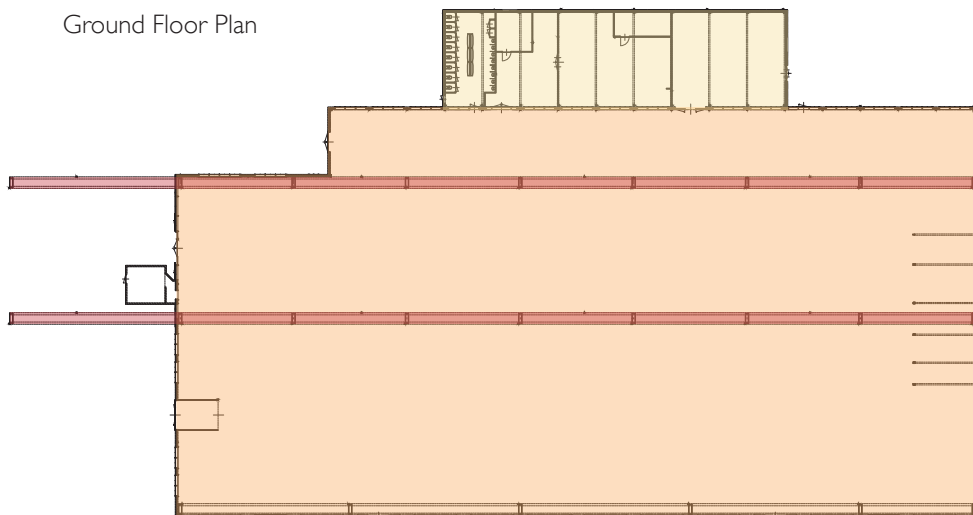
Mays Al-Korany

Source: Amélie de
Guerre, Melanie
Kwaks
and Kilian Mol

exploded view



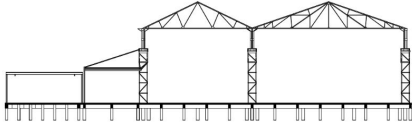
Ground Floor Plan



Source: Kilian Mol

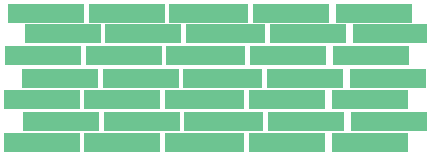
Steel Structure

The steel structure is highly valued in this building. Due to the typology of the machine hall, made to be functional, the structure is regarded as highly valuable.



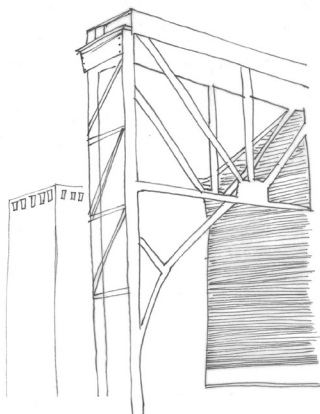
Brick facade

The brick façade is very important due to its typology and the fact it belongs in the industrial feel. The exterior façade must not be changed.



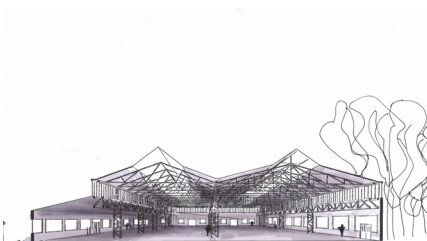
Extruded crane

The extruded crane here not only serves as a characteristic of the building and its typology but it the only one of its kind on the site. Its importance in the process of the production gives it its high value.



Interior space

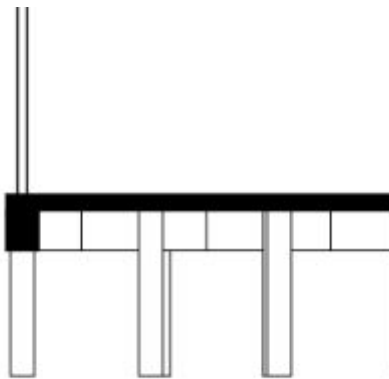
The interior space plan tells the story of the production process. The shape of the space is due to the production line that occurred inside the space. A big space with high ceilings was needed in order to perform the production correct.





Side building

The side building contains the facilities that were needed as a secondary basic. For me it qualifies as a lower value because it was not directly linked to the production line but as a second need that was required.



Foundation

The foundation of the building for me has a lower value because it can not be seen and if it has to be changed into something better then that has a higher value to me.

9. Appendices

Melanie Kwaks

9.1 Weapon depot basic info

National Monument

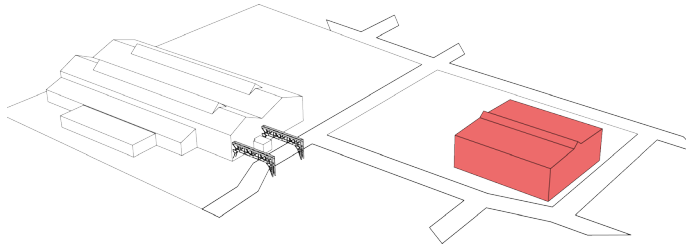
Constructed: 1899

Rebuilt: 1938 & 2015

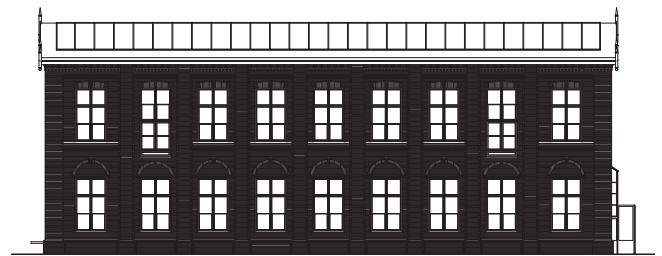
Area: 2.336m²

Former use: Weapondepot / Office building

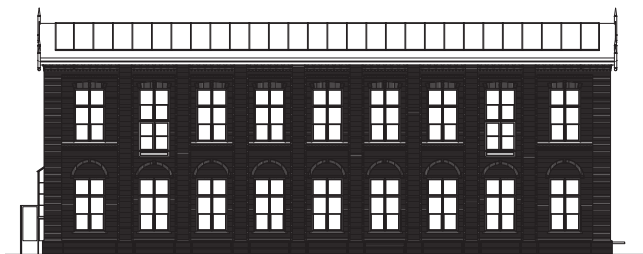
Source: FACT SHEETS



North Facade
source: Hooyschuur architecten



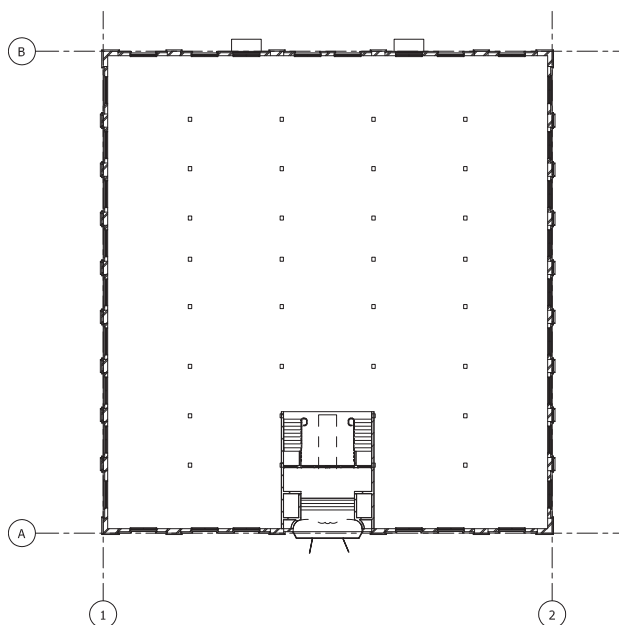
West Facade
source: Hooyschuur architecten



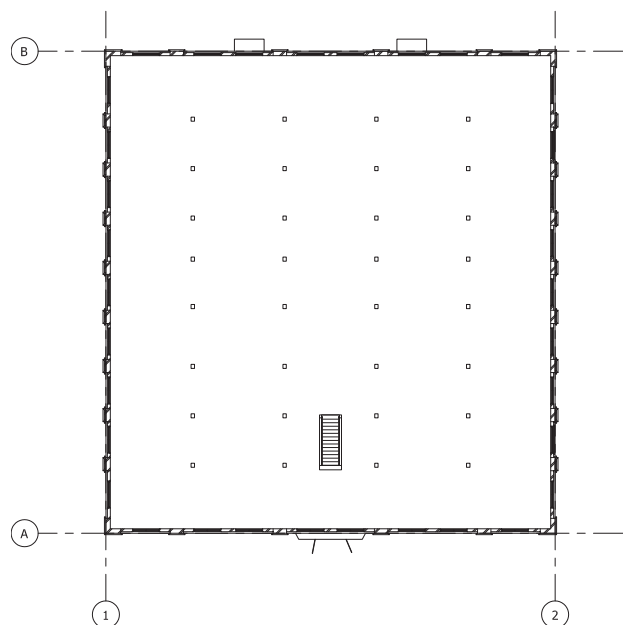
South Facade
source: Hooyschuur architecten



East Facade
source: Hooyschuur architecten



Ground Floor
source: Hooyschuur architecten



First Floor
source: Hooyschuur architecten

9.2 Machine hall basic info

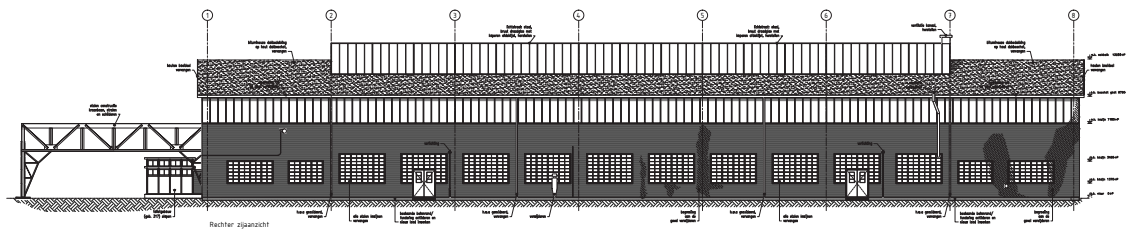
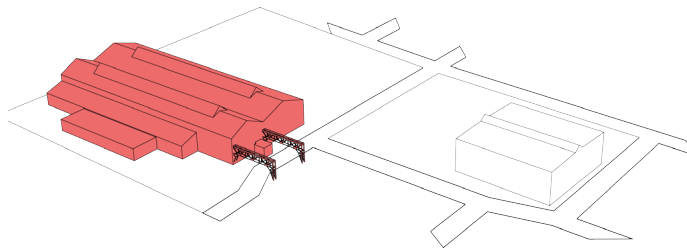
National Monument

Constructed: 1936-1941

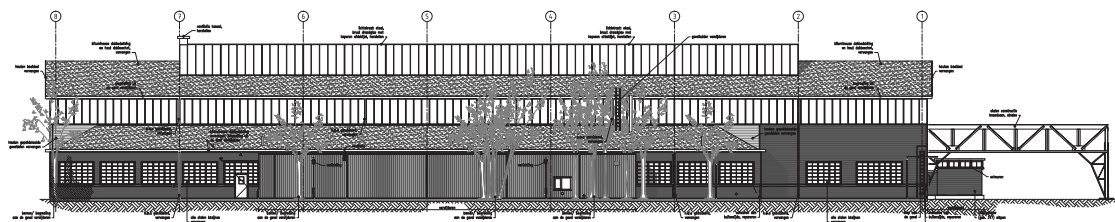
Area: 3.978m²

Former use: Machine Hall

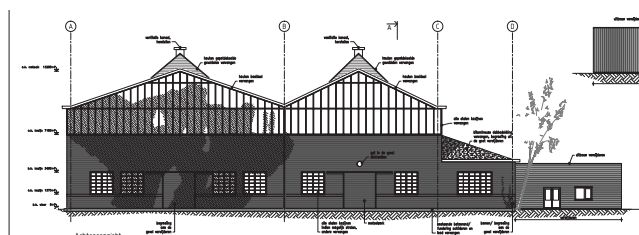
Source: FACT SHEETS



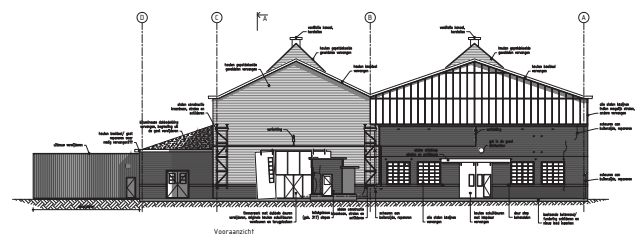
East facade
source: Jos van Rijn



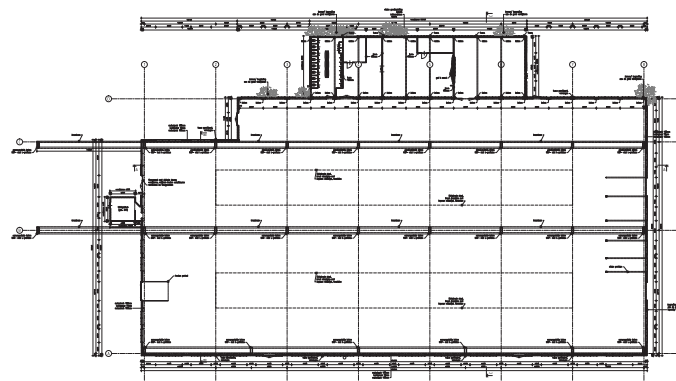
West Facade
source: Jos van Rijn



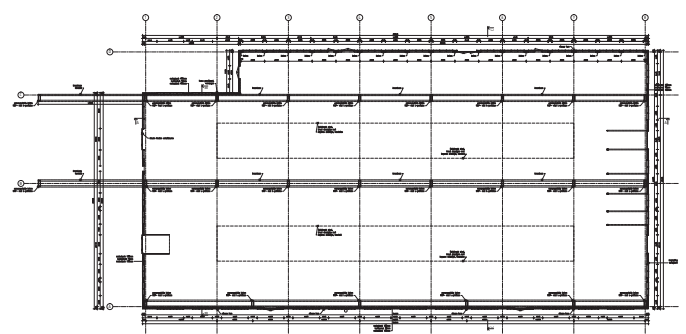
North Facade
source: Jos van Rijn



South Facade
source: Jos van Rijn



Ground Floor
source: Jos van Rijn



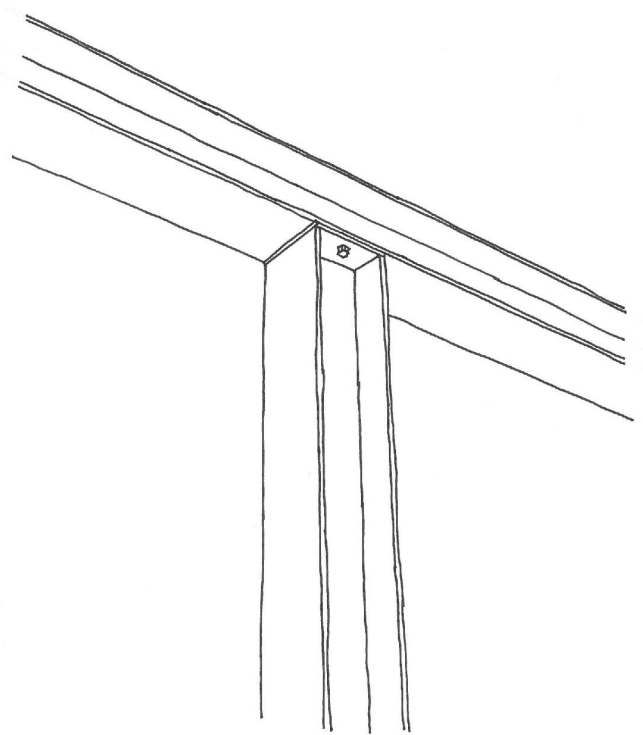
First Floor
source: Jos van Rijn

9.2 Machine hall basic info

This part of the analysis goes in to the 'values' inside Campus North, 'Technological Values' to be exact. The meaning agreed upon to summarize this term is "Elements which represent technology from an different time period".

CONSTRUCTION

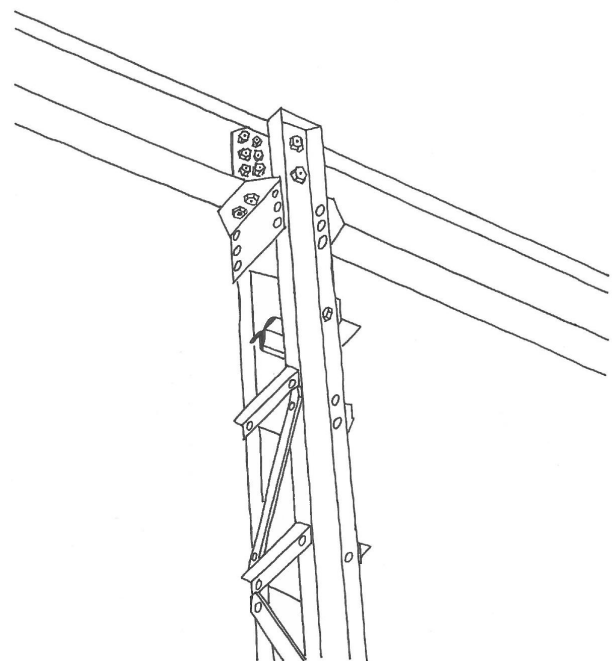
The constructions of the both the buildings fit inside the term of Technological Values because they are built in a way it wouldn't be consulted today. The complex built-up of constructional elements have today been replaced with much simpler alternatives. This complexity goes on and counts for the roofs. What makes the construction further special is that from looking at the structure you don't only see the way it was built in the past, but also where it was used for. It displays the function of the buildings. The sheer size of the beams in building 320 display clearly that there was something on top of these, in this case the transportation crane.



Typical Modern Construction
source: own drawing



Construction Building 320
source: pictures archive Hembrug



Construction Building 8
source: own drawing



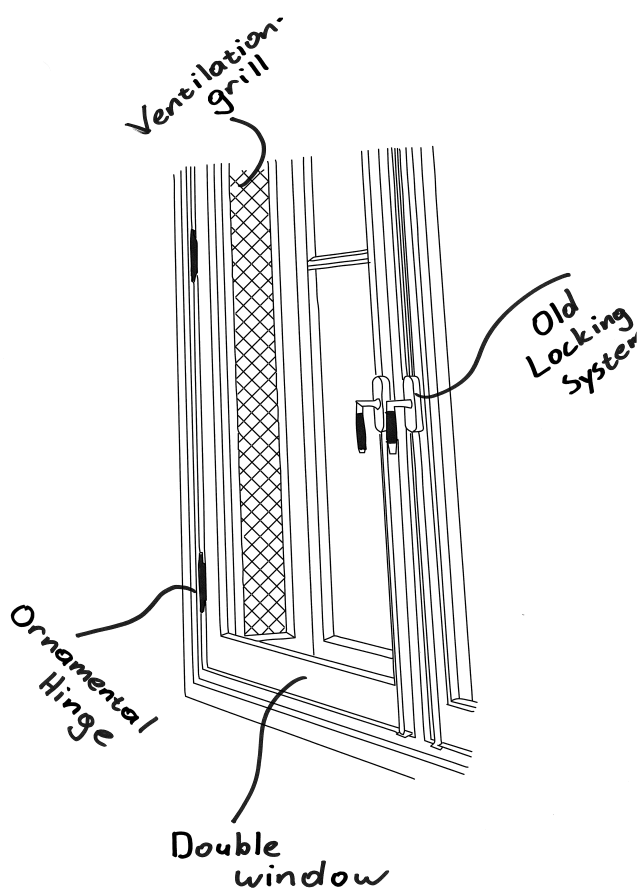
Construction Building 8
source: own image

WINDOW FRAMES BUILDING 8

During the restoration of the building 8 the windows were reconstructed to their original state. Which are these double windowed frames. Double windows are pretty common for this time period. What isn't that common are the ventilation grilles mounted in between the windows which open to the cavity wall. These were probably used to ventilate the building when it was still a storage space. After the building became an office, second windows were placed to get better insulation and these grilles became obsolete.



Window Frame Building 8
source: own image



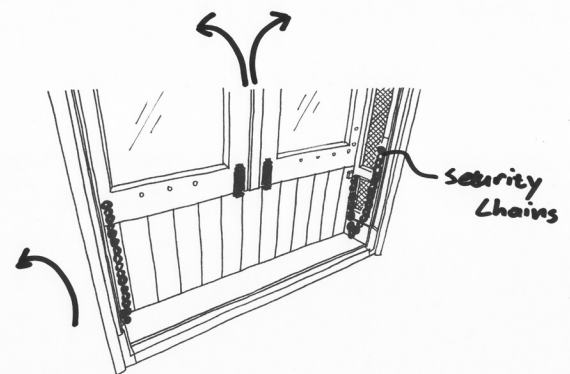
Concept Window Frame
source: own drawing

WINDOW FRAMES BUILDING 8

The transportation doors which are on the west façade of the building. These doors were used to import goods into the second floor of the building. These also have the ventilation grilles but to have keep these doors didn't get a second window so the ventilation grilles here are still intact.



Transport Doors Building 8
source: own image



Concept Transport Door
source: own drawing

SLIDING DOORS BUILDING 8

The sliding entrance doors which are located not only in our ensemble but all over Hembrug, which have turn into a iconic symbol of the whole area.



Sliding Doors Building 8
source: own drawing

9.2 Entrances

Sub-title

While being an area which would be described as border at the back of Hembrug, Campus North has now become the entrance of the terrain. After the demolition of the Hembrug bridge, closing of Hembrug as factory and rebuilding the entry gate, the first ensemble which is in sight while entering Hembrug is Campus North.

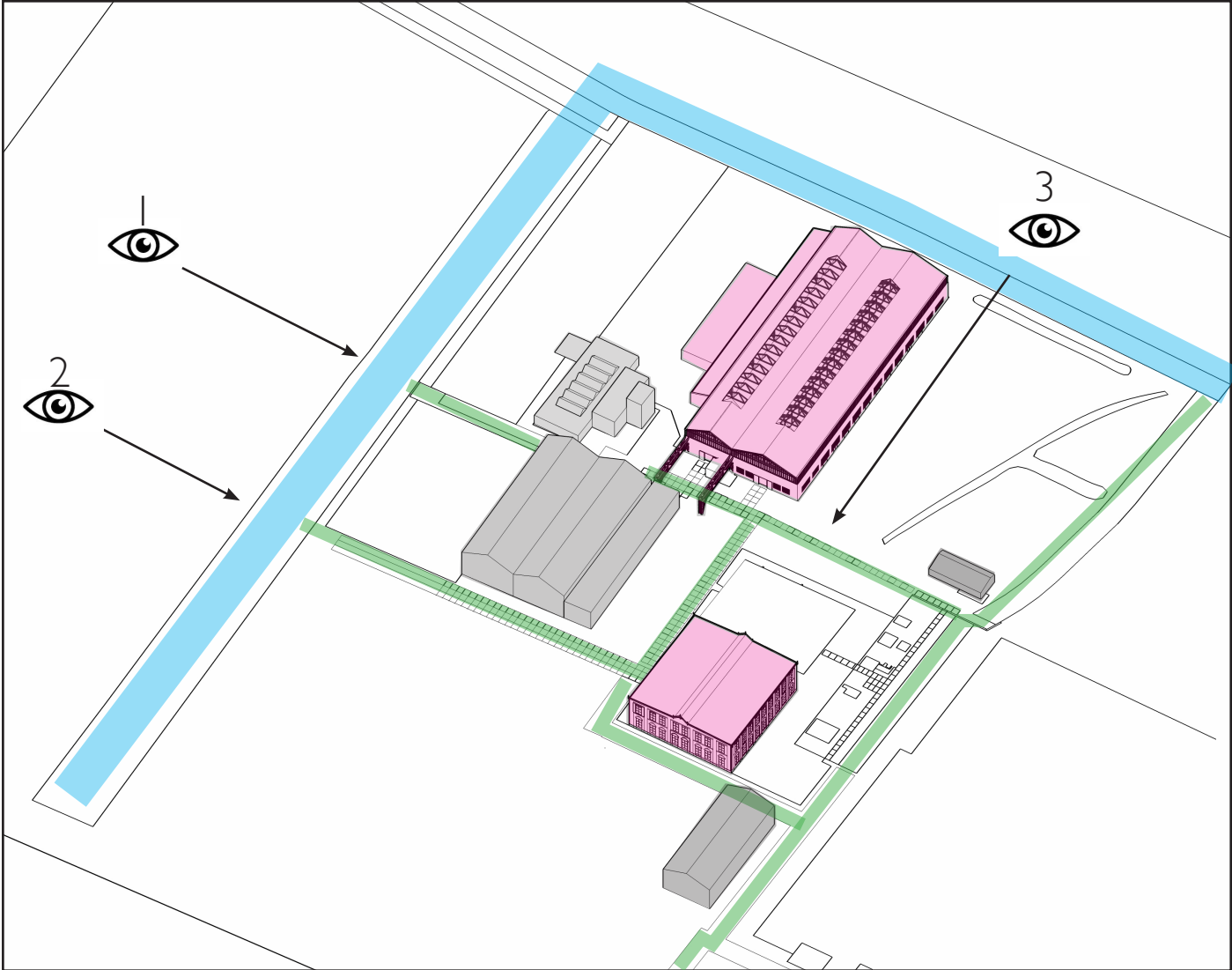
The main area is disclosed through the primary access roads 'Verloren Spoor' and 'Artillerieweg'. Besides being visible from both these primary roads, the first secondary roads into the Hembrug area lead directly to Campus North. This puts the ensemble which is already under the spotlight into a welcoming position.



- 1 Current Entrance Hembrug 2 Campus North 3 Former Entrance Hembrug



Sub-title



- Main buildings Campus North
- Primary Roads
- Secondary Roads
- Not analyzed buildings

10. List of sources

Sources:

Het Kadaster, 1851, 1882, 1898,
Nationaal Archief, 1940, 1937
National Cultural Heritage Agency
Nederlands Instituut voor Militaire Historie, 1920-1940
Nederlands Instituut voor Militaire Historie, 1924, 1941
Monumenten en Archeologie Noord-Holland. (1996) Hembrugterrein te Zaandam. Cultuurhistorische inventarisatie en beschrijving van de monumentale waarden in hoofdlijnen.
Rijks Geologische Dienst, 1927
SteenhuisMeurs. (2010) Hembrugterrein - Zaanstad CULTUURHISTORISCHE ANALYSE.

Websites:

Dubbelman, G. (n.d.). gebouw 8 interieur I [Photo on Flickr]. Retrieved April 15, 2019, from <https://www.flickr.com/photos/103108773@N07/42096665804/>
Dubbelman, G. (n.d.-b). gebouw 320 interieur I [Photo on Flickr]. Retrieved April 15, 2019, from <https://www.flickr.com/photos/103108773@N07/28941092068/>
Gemeentearchief Zaanstad. (n.d.). Beeldbank (Gemeentearchief Zaanstad) Archief Zaanstad. Retrieved April 15, 2019, from <https://archief.zaanstad.nl/mediabank/zoek-in-de-beeldbank/?mode=gallery>
Ministerie van Defensie. (n.d.-b). NIMH Beeldbank Defensie. Retrieved April 15, 2019, from <https://nimh-beeldbank.defensie.nl/beeldbank>
Palmbout Urban landscapes. (n.d.). Hembrug terrein Zaanstad Palmbout PDF document [College-slides]. Retrieved April 15, 2019, from <https://brightspace.tudelft.nl/>
Rijksdienst voor het Cultureel Erfgoed. (n.d.). Collecties Rijksdienst voor het Cultureel Erfgoed. Retrieved April 15, 2019, from <http://www.gahetna.nl/collectie/afbeeldingen/fotocollectie/zoeken/q/zoekterm/hembrug+http://cultureelerfgoed.adlibsoft.com/brief.aspx>
Stadsarchief Amsterdam. (n.d.). Beeldbank Stadsarchief Amsterdam - Home. Retrieved April 15, 2019, from <https://beeldbank.amsterdam.nl/>