BRIKKENGEBOUW

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GRADUATION STUDIO HERITAGE AND ARCHITECTURE

PREFACE

This research report will be used as a support tool for the "Heritage & Architecture" Graduation Studio Belvédère supervised by Lidy Meijers, Wessel de Jonge, Bert van Bommel en Frank Koopman. The graduation studio deals with the actual relevant question of a new phase of development of a large industrial area of the city Maastricht, through intervention in the urban structure in the northern part of the centre of former industrial buildings and historical green fortification zones. This report investigates the transformation of the 'Brikkengebouw' in the context of industrial building complexes from the Sphinx factory.

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Introduction

Problem statement
The Sphinx factory with more than 170 years of industrial activities has moved out from the city center in 2006 leaving an abandoned site behind. The buildings have now become a place of memories and symbols for Maastricht's industrial activities. The mass demolition of the factory buildings at Sphinx industrial site has caused the Brikkenbouw to become an isolated object within the city center. After all, the building provide space for new developments and play an important role in the future characteristics of the city.

Relation to the graduation assignment
The assignment for the Architecture & Heritage studio is asked for a redevelopment of the industrial heritage building. To get a better grasp and understanding of the assignment research had to be done. This research can be separated into three categories, cultural assessment, situational research and thematic research. Together these form the starting point for the program and design research.

Relevance
The aim of this report is to look for the keys of transforming the Brikkengebouw without destroying its cultural qualities and to redevelop the building to a lively entity in order to measure up to the future needs of the city.
Parallel to the research, a redesign will be provided for the Brikkengebouw. In addition to the usual application of theory to provide a basis on which design decision can be based, the design will be used as a case study and consequently as a method to reflect upon the research. This will verify the relevance of both design and theory as tools for directing research within the field of architecture.

Cultural assessment
The first chapter investigates the cultural value of the Brikkengebouw and its historical surrounding. The research on the cultural assessment of the building ensures that the reconstruction and recovery plans to be drawn on account of the existing historical and cultural values.

Situational Research
In order to get a broad and in-depth analysis of the Brikkengebouw in its context, the second chapter researches the current situation of the buildind which is divided in three parts: context, architecture and building technology.

Thematic Research
Through literature and using the building as a case study the theme ordering in architecture will be investigated. My fascination about choosing the theme 'ordering' lies behind the strong communicative image of the building. The building stands alone on the Sphinx terrain but the layers of history from different building styles are recognizable in one image whereby the proportions of the building have created a harmonious architectural language, which communicates to the observer.

Research question
"To what extent does the ordering of the Brikkengebouw adds value in its the current situation?"

Sub-questions
- Which ordering system is used in the building and how does this communicate to the observer?
- What are the communicative elements of the building?
- How to reveal the communicative elements in Brikkengebouw as a value of the content?

Method
This report will use the Brikkengebouw as a case study. The starting point of the research method is the research question. The case study will be used as research in order to answer it. The research is divided into three perspectives: the cultural assessment, the situation research and the thematic research. The conclusions of these chapters will provide information specifically about the Brikkengebouw. This will result in several conclusions about the Brikkengebouw which leads to starting points for new developments of the building.

CULTURAL VALUE

This chapter investigates the cultural value of the Brikkengebouw and its surroundings. The research is about curiosity and determines confidently the strength of the Brikkengebouw and ensures that the reconstruction and recovery plans to be drawn on account of the existing historical and cultural values. Thereby is the following question formulated:

"To what extent does the cultural history add value on the contextual, spatial and technical characteristics of the Brikkengebouw, which needs to be maintained in the transformation process of the building?"

In order to answer this question, the chapter digs into the layers of history of different sources of literature and photos to find out which contextual, architectural and technical values have strengthened the qualities of the building the most and thereby needs to be maintained in the transformation design.

CONTEXTUAL VALUE

The understanding of the Brikkengebouw and its value starts from the relation that it had/has with the city and the building as an ensemble. The means of the location will be described through findings from literature, archives and images. Location and spatial conformation in relation to the usage are the main factors to be defined in order to understand the historical values which characterize the Sphinx and its surroundings.

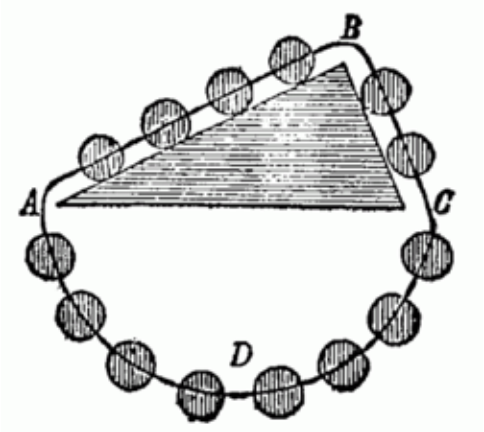
The historical development of the Sphinx area contributes to the Maastricht as an industrial city. The development of the area we now refer as the property of Koninklijke Sphinx Gustavsberg can be best explained by dividing history into eight periods. These eight periods are grouped by two time frames: the city before industrialization and the city after industrialization. These periods determine the social, political and economic, but above all the organizational requirements of the construction and demolition of several buildings on the Sphinx terrain. The time-line of the Sphinx provides social, political or technical developments that had an impact on the development of the Sphinx terrain and play a significant role in the contextual characteristics of the factory within the city and thereby the meaning of the Brikkengebouw's context.


Sphinx

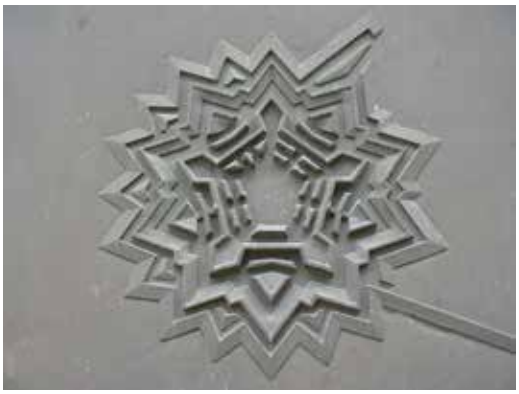
Fortified city

The Sphinx factory is built after Maastricht as a fortified city. A brief information about the city before industrialization will be given in order to understand how Maastricht is developed into an industrial city.

Maastricht was shaped and inhabited at a ford from the river Maas. It had a rural environment and the choice of location for habitation was largely determined by natural factors before 1350. The construction of temporary earthen walls with a palisade, wooden gate buildings and a canal at the field side in 1204 was a starting point of Maastricht as a fortified city. A quarter century later, Henderik I of Brabant granted the Maastricht people the right to form a stone city wall. This wall was built on top of the old earthen walling. Between 1350- 1632, Maastricht obtained a military character. In the late middle ages several monasteries settled in the former Sphinx district including Sint Andries and the Nieuwe Biesen. There were a number of houses and farms for vineyards and vegetable. In 1579, Hertog van Parma occupied Maastricht and a lot of military activities took place, especially in the Northwest of the city. In 1630, the infantry barracks Sint-Andries near the Linden Kruispoort was built as the first soldier barracks. The military character of the Northwest quarter has increased after the capture of Maastricht by Prince Frederick Henderik in 1632. Between 1632 and 1645, after the intake of Maastricht by Frederick Henderik, a new fortress belt was built according to the model of Simon Stevin whereby the Mass has divided the city in two parts. The Northwestern walls were reinforced with horn work and strongholds. The modernization of the fortress took place during the intake of Maastricht by Lodewijk XIV (1673-1678). After that, Sébastien Le Prestre de Vauban has built the expansion of the fortress including the hoge and lage fronten, The city is therefore developed in radial axises. Modernization of the fortress continued after the departure of the French. Between 1772 and 1777, a new modernization project was completed according to the model of Menno van Eoehoorn. There was a gunpowder magazine built around 1748 on the field behind the buildings on the west side of the Boschstraat (where P. Regout house was built later on). Furthermore, the number of barracks at the Linden Kruispoort was increased between 1675 and 1678, which raised the military character of the city. In the nineteenth century, the fortification system of the Netherlands was dramatically changed. From the year 1867 Maastricht was no longer considered to be a fortified city after the mainly demolishment of the defensive city wall. The vacant land was purchased by the city and a few wealthy manufacturers including Petrus Regout. Next image illustrate Sphinx terrain around 1632 showing the situation of the terrain inside the fortification.

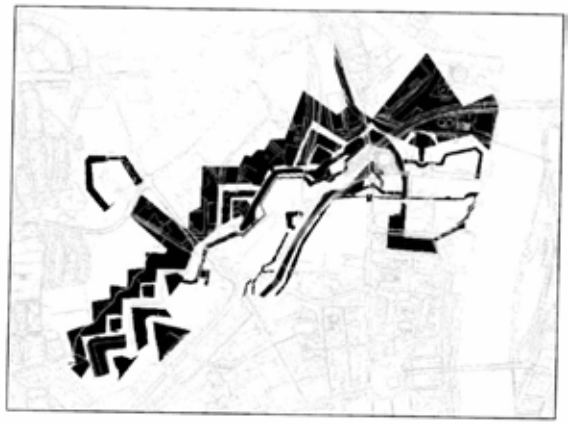


Model of Simon Stevin
http://www.lhup.edu/dsimanek/museum/unwork.htm

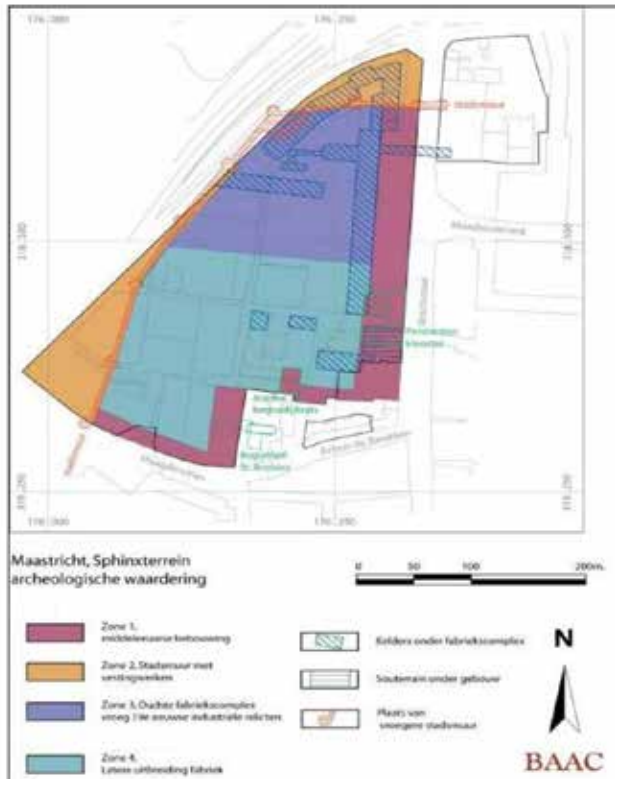


Model of Vauban
Duffy, Christopher (1985). The Fortress in the Age of Vauban and Frederick the Great, 1660-1789. Siege Warfare, Volume II. London: Routledge & Kegan Paul. p. 318.

Gardens, Sint-Andries Kapel and paths 1823, WIAM p. 17



Fortification map



Archaeological value of the Sphinx terrain from the BAAC research, 2005

The Sint-andrie Kapel, fortifications, gardens and horizontal paths are shown in the map from 1823 which defined the mapping of context of the terrain the most.

The zone of fortification on the north-west side of the city is illustrated in the next page. The terrain was inside the radial division of the city. The archaeological value of its ground is showed by zooming on the Sphinx terrain. The traces of the fortification is inside the terrain which adds high value to its ground and it is possible that parts of the fortifications will be found inside of the terrain. The ground on the west side of the Brikkengebouw has therefore a high value.

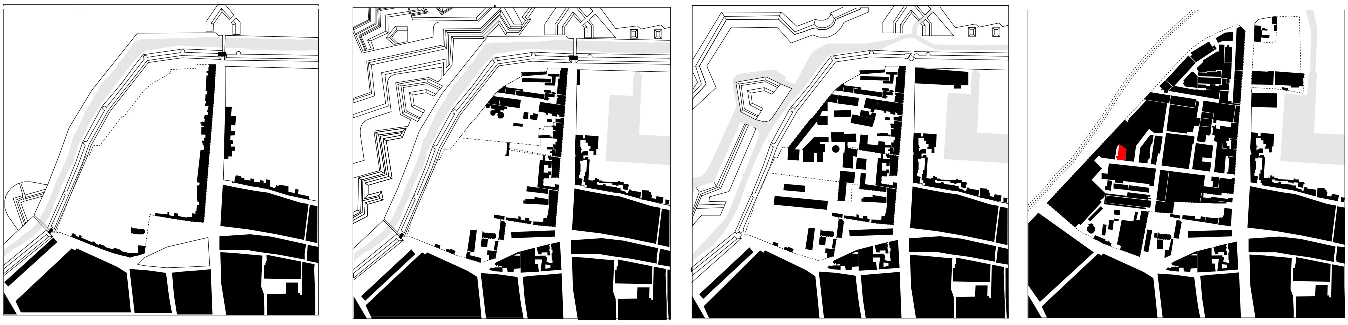
Situation Sphinx terrain around 1632, WIAM VII.
Sphinx terrain is always a part of the fortified Maastricht

Between 1814 and 1845, the city of Maastricht changed in character and slowly turned into a center of industry and trade, being situated usefully close to Germany and Belgium. Maastricht was under reign of King William I assigned as a key turning point in the trade between the Northern and Southern Netherlands between 1814 and 1830. The improvement in infrastructure was achieved by the construction of new waterways. A main cause for industrial development was the construction of the Zuid-Willemsvaart - a canal between Maastricht and 's-Hertogenbosch (1817-1826). At that time, transportation by ship was the only sufficient method, due to the absence of railways in this particular area and the poor condition of roads.

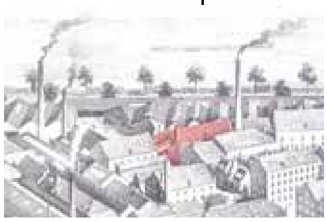
The Boschstraat was as an important connecting route between Maastricht and Nijmegen from the Roman times. This also was a good reason for foundation of the Sphinx next to this street because of its locational connectivity in regional and international scale.

Source: Oranjewoud, 2003. Maastricht, cultuurhistorischen archeologisch bureauonderzoek Sphinxterrein

Development of the terrain and its organazational paths show that two axis (one from Boschport to the Frontensingle and one from south of the terrain behind the sint Andries to the north of the terrainwere the most used common routes in several time frames.



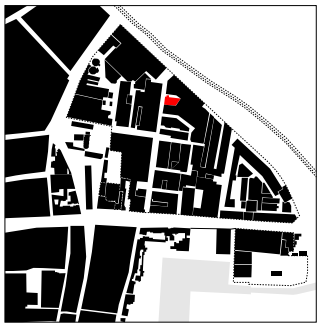
- 250.000 BC — First human settlement
- 50 BC — The Romans build a bridge over the Maas.
- 250 — German tribes destroy the city.
- 1204 — Maastricht gets city rights. The duke of Brabant and Prince Bishop of Liege rule it together.
- 1632 — A fortified city
- 1636 — Fortress according to the model of Simon Stevin
- 1673 — Loius XIV captures Maastricht.
- 1777 — Expansion of fortification according to the model of Menno van Eoehoorn
- 1794 — Maastricht becomes part of the french republic.
- 1801 — Petrus Regout is born, descending from a Maastricht merchant family that is active in glass and earthenware trade
- 1814 — Expantion of fortification
- Maastricht again comes under Dutch rule. General Dibbets succeeds in keeping Maastricht in Dutch hands during the Belgian revolt of 1830.
- 1832 — De construction of Zuid-Willemsvaart
- 1834 — The Koninklijke Sphinx earthenware factory was established by Petrus Regout
- Railways and gas production
- Defensive wall was largely demolished
- 1875 — The initial two-story Brikkenbouw was built
- 1899 — Expansion of Sphinx terrain after demolition of fortifications according to plan of Frits van Gendt



TIME-LINE SPHINX TERRAIN

The company reaches its peak times, employing 7000 people, which makes up ~ 70 % of Maastricht's total industrial employment. 1913

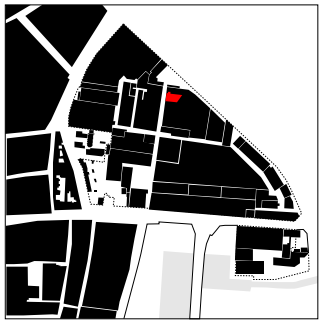
1913



Expansion in height with new reinforced concrete method by adding four floors on top of the existing

1923

1924



Construction of the Eiffel with iron and concrete skeleton

1928

Sphinx factory building nearly completely demolished and renewed,
construction of large factory halls

1970

Cooperative platform is established between the Netherlands,Belgium and Germany.

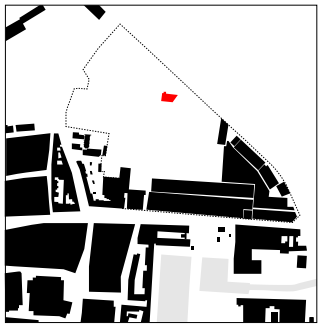
1991

Southern part of industrial terrain re-planed

1999

Sphinx factory moved and factory halls were demolished, leaving an abandoned site behind

2006



Petrus Regout

1801-1878

1815 Nieuwstraat[1]

1825 Jodenstraat

1827 Boschstraat

Expansion of the factory is visible with yellow contours, BAAC, 2005.

Petrus Regout who was one of the largest Dutch entrepreneurs of his time founded the Sphinx factory witch was profitably situated between the Zuid-Willemsvaart and Bassin. Regout began his career at the age of fourteen in the glass and earthenware shop of his mother in the Nieuwstraat. After his marriage in 1825 he established a crystal grinding at his home in Jodenstraat. The business was going well but the house was too small. In 1827, Regout moved in a large building at the Boschstraat nearby the Boschpoort. It became the home base for his business complex. It was a convenient place for the supply of raw materials and transporting the products through the Zuid-willemsvaart. The long garden behind the house offered enough space to expand his business. From 1834 Regout built his little hand grinding into a true industrial empire.
The appearance of city lights and the improvement of infrastructure had caused the extensive growth of Regout's factories. In 1848, a gaswork was founded at Regout's factory terrain to supply its factories with better lighting. This new lighting technology had ultimately affected the architecture. The gaslight certainly made the use of larger, deeper factory buildings and production halls possible. Consequently, a couple of buildings were built in same building style like the Spoorgebouw and the Brikkengebouw. These buildings showed a lot of similarities with other industrial buildings in the area between Liege, Aachen and Maastricht.
In contrast to other industrial sites, which had grown to corporations that were almost cities of their own rights outside the cities, the Sphinx factory was located inside the city center. This is caused by the fortification character of the city. The district was bounded by the medieval city wall on the west and north side, on the south side by a road (later called Maagdendries) and on the east by the Boschstraat. Maastricht was in the beginning of Regout's carrier still a fortified city and Regout needed to achieve his industrial activities inside the ring of fortifications. Therefore, the factory was located inside the city center, which distinguishes the Sphinx terrain from a lot of industrial sites of that time (WIAM, 2000).
The main interventions in the nineteenth century related to the connection of the existing street network of the future expansion of the city , which was starting from 1870 during the dismantling of the fortifications. To do ir . J. Van Gendt had drawn up a decommissioning plan and the cleanup of inaccessible and especially unhygienic districts . Not only a number of projects which had already been initiated , continued or completed the decommissioning decision , but also constantly new alignments were determined . Thus the degradation of gates and ramparts suggested the possibility to involve the future new city at the building line policy (Bestemmingsplan Centrum deelrapport archeologie- Gemeente Maastricht januari 2013).

In this period, the factory of Regout could grow furthure than the fortification countours. Regout built a 3,5 m wall around his industrial ensemble, turning it into an introverted enclave within the city center. The spatial organization of the buildings remained out of picture when being outside of the wall. (WIAM, 2000).

Sphinx port as the access point to the site 1927, Source: www.rhcl.nl/

Fabricscomplex in 1900, WIAM p.1

Fabricscomplex before modernization
1930, WIAM p.72

Fabricscomplex in 2000, WIA, p. 82

Sphix site after moving, 2012, Source: www.belvedere-maastricht.nl/

Industry in Maastricht

At the end of the nineteenth century, the Sphinx factory had become a complex of industrial buildings with merge of fragmented plots for most economic construction formed a spacious complex within the urban setting of Maastricht. The early two-story Brikkenbouw was built in 1875 as one of these functional buildings. The building was used for the production of bricks, 'brikken' in the local language of Maastricht. This first phase is built from steel structure and vaulted brick floors.
At the beginning of the twentieth century, building in height was considered as the only option to expand the full-build factory floor space. A new building method from reinforced concrete as structural material was used for this specific purpose. In 1923, the Brikkenbouw was expanded in height by adding four floors on top of the existing building. This period is characterized by rationalization of the production process. As another important part of this transformation, the construction of the rational urban tube, named Eiffel, strongly resembled the building methods and materials that were used originally at the expansion of the Brikkenbouw. The existence of this building generated an important change within the industrial site by allowing a strong sense of interaction between the factory and Maastricht. As a result, in addition to the functional value of the building as an important link in the production process, the vast Eiffel became a well-known sign of the Sphinx factory.
After the end of the glass-making industry in 1925, a long period was featured by the continuous growth in the sanitary production. The earthenware production was eventually dropped in 1969 completely and much larger tunnel ovens replaced many of the round ovens during this period. Many historical factory buildings were replaced with big scale factory halls. This also caused a large decrease in the amount of chimneys of the factory. The ongoing demolishing of the chimneys changed the skyline of the industrial site. The last chimney went to the ground in 1992.

Eventually, Sphinx factory moved out to Beatrixhaven in 2006. The closing of Sphinx and demolishing several factory buildings have made this place as an external from Maastricht's current structure. Furthermore, The 'Brikkengebouw' has become isolated entity within the centre of Maastricht. Currently, the 'Brikkenbouw' is standing alone as a leftover at a two-hectare empty and abandoned site. The terrain awakes a void or absence and at the same time offers a possibility or presence. The question raises what to do with this extensive vague train and the freedom that it expresses (WIAM, 2000).

Characteristics
- Hierarchy of roads: Roads for transportation like the Boschstraat and de Maagendries, industrial roads within the Sphinx: two roads in the terrain remain as the most used circulation system between the buildings inside
- Sphinx: Enclosed terrain with introverted structure accentuated by the wall.
- Sphinx port as the access point to the site

ARCHITECTURAL & TECHNICAL VALUE

The special architectural characteristics of the Brikkegebouw lies in the traces of history, which are visible in one image. Understanding the typology of this unique entity will help to classify the object by identifying its mutualities, differences and structure to other industrial types. This sub-chapter investigates the type of the building in which its purpose and construction are expressed. Furthermore, it focuses on the architectural and materialization values of the building to get an overview about different elements of the building.

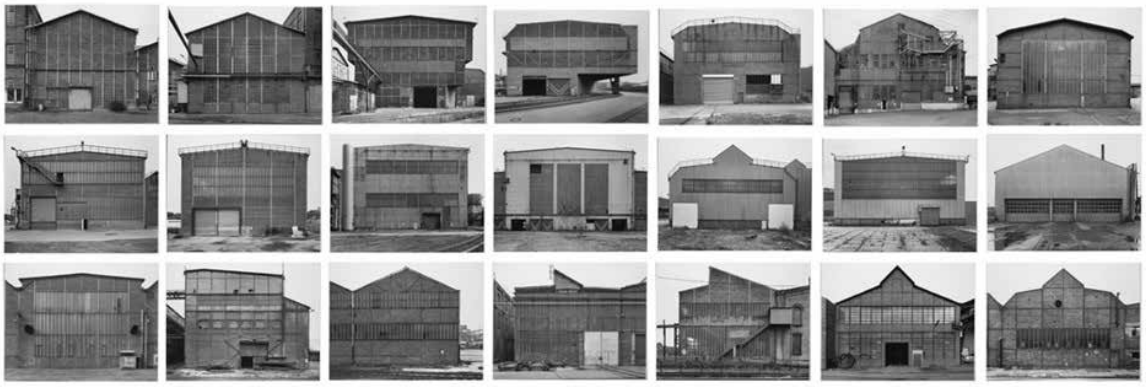
Typology: Industrial hall

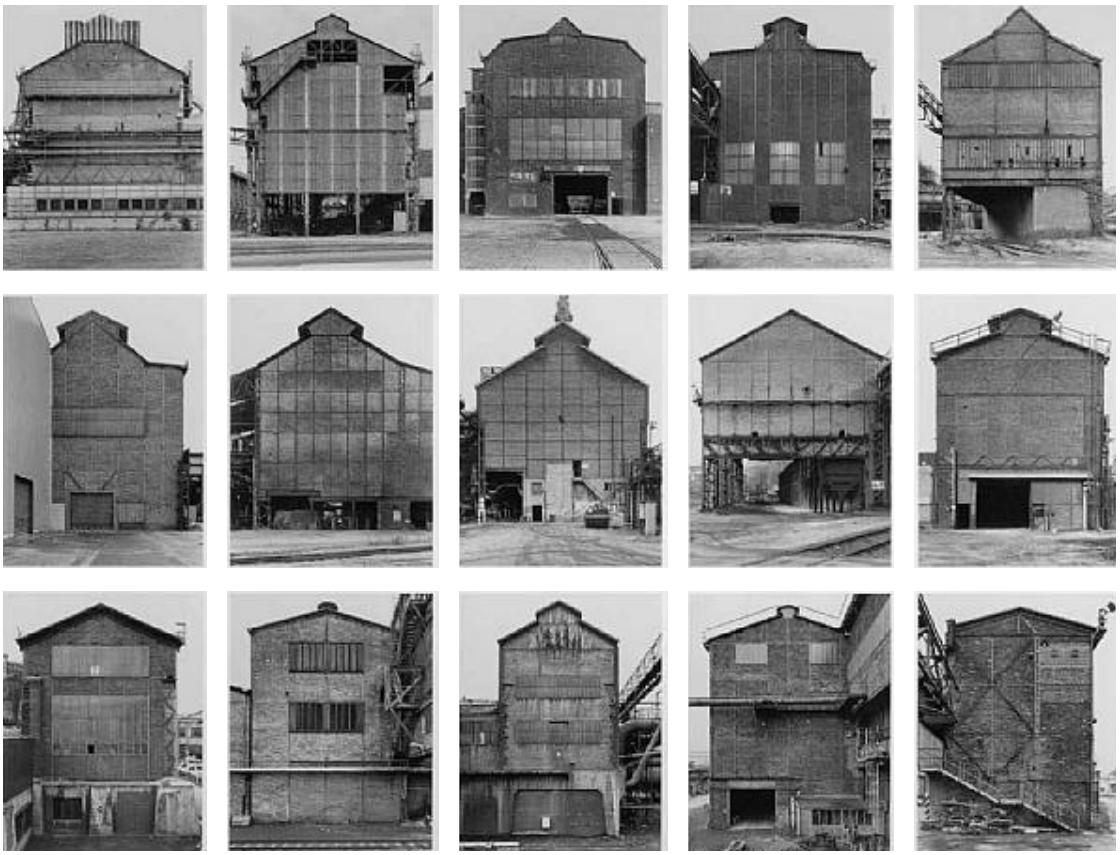
When referring to industrial typologies, and more specifically the typological characteristics of the Brikkenbouw, the extensive documentational series of photographed industrial buildings by artist couple Bernd and Hilla Becher instantly come to mind. Their work can be considered as an invaluable source, since it was this duo that acknowledged the valuable characteristics of industrial buildings and ensured that these generally un-enduring structures were documented extensively. They approached industrial buildings through photographical comparison in order to discover the essence of such structures. "The Bechers insist that the buildings in their photographs communicate their history, while fading out the narrative and only indicating topography (1994, Steinhauser, p.14)". Their typological series are characterized by a precise decision of frontal viewpoint and presentation techniques, with which they isolate the individual objects from their specific context and pursue a most objective representation, with other words "their typology". It is the series that allows the observer to: "Firstly, recognize an optical equivalence of the different photographs, showing in their function comparable types, secondly, perceive differences between these 'anonymous sculptures (1994, Steinhauser, p.82)'.

The pictures that were taken during an initial visit to the Sphinx site clearly show a resemblance with their work, representing a comparable isolation of the Brikkenbouw as an industrial hall[1]. The building has the mostly comparable objective view with an industrial facade typology from the Bechers photographical series. Industrial façades and factory halls - the types that are considered as part of this research - do not directly reveal the function through the represented form opposed to their other photographical series like the tower conveyors, blast furnaces, gasometers, water towers, cooling towers, gas coolers, grain silos, and gravel plants. In other words, "the outer appearance of the halls is barely determined by the inner processes of work (1994, Bußmann, p.5) since they are buildings that are characterized by multiple ways of use.

There are three different layers of different times readable on the skin of the Brikkegebouw which refer to its typology. Important is that all these layers refer to one type and that is the industrial hall typology in which that the function remains anonymous. The traces of history (from 1875, 1923 and 1970) that is visible on the skin of the building, layer on the top of another showing this particular industrial typology will be discussed in the following pages:

1. Industrial halls are covered spaces that are structurally single or multiple assembled. The length of the halls is clearly larger than the width. These buildings can usually be entered on the ground floor. One of the characteristics of the halls is the construction that makes the spaces. The roofstructure has a big impact on the appearance of the shape and the load-bearing structure. Each form has a specific structure. The structure of a flat roof will therefore be completely different from the structure of a gabled roof. Industrial halls are used for production, repair, maintenance and storage (Oosterhoff, 1988, p. 63).





ndustrial facades, Bernd and Hilla Becher, 2015 p.112

Brikkengebouw representing a comparable isolation with Becher's work as an industrial object

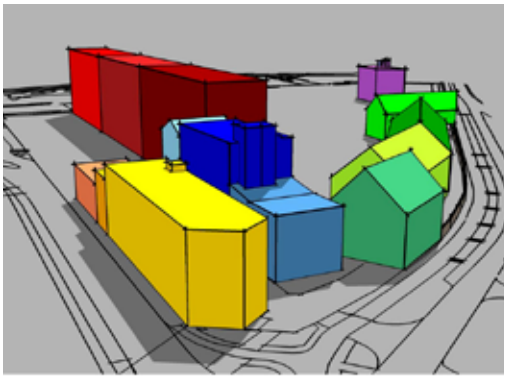
Industrial hall in three phases

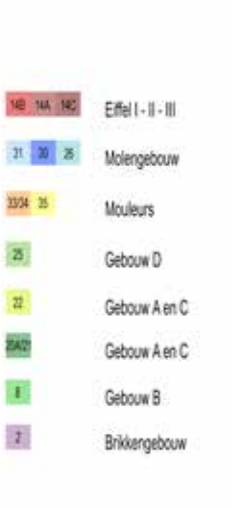
1875

The Brikkengebouw from the first phase was an industrial hall with large covered area with a gabled roof in two floors. The inner-space and the outer-space of the building are quiet similar and there is a relation between the roofstructure and the load-bearing structure. However, the shape (typology) of the building from the first phase is not visible anymore. It can only be guessed from drawings or referring to other buildings built in the same time, like the Spoorgebouw.

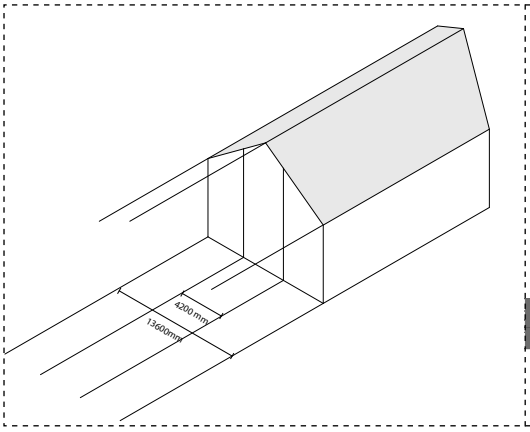
1923

In 1923, the gabled roof was removed and four floors were added to the building. These structure is driven from rationalization of industrial buildings driven from new methods in building with iron and concrete. Eiffel is a good example from the rationalization of the site. The Brikkengebouw has a skeleton of reinforced concrete filled with masonry infill. The columns of the first phase were strengthened. The columns start with a size of 400x400 mm, but they become smaller in each floor as one moves higher is in the building. On the upper floor, the dimensions of the columns are only 250x250. The decrease in dimensions changes the roofstructure of the building aswell. Other stroy's have a skeleton structure but the roof structure spans only in one direction. Therefore, the up-topping does not have any change on the typology of the building. The roofstructure with less weight than other floors needs smaller columns and that has a relation with the load-bearing structure of the building. With other words, the building structure is defined by the roofstructure which is the characteristics of an industrial hall typology.

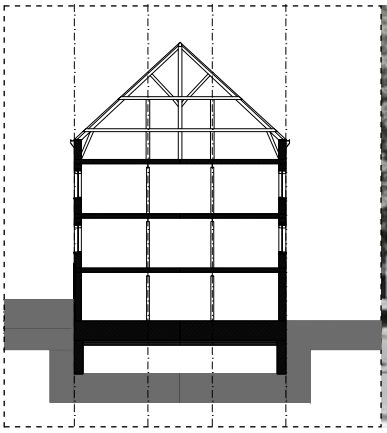




Existing situation Sphinx terrain and buildings

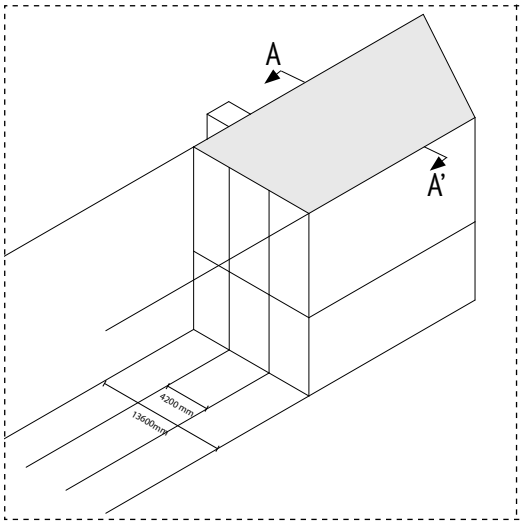


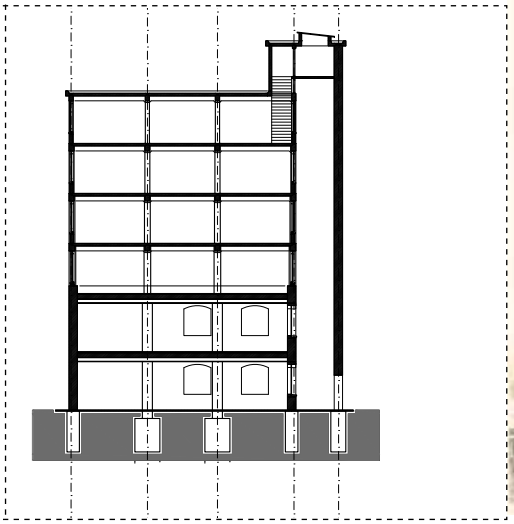
Industrial hall with Gabled roof from 1875



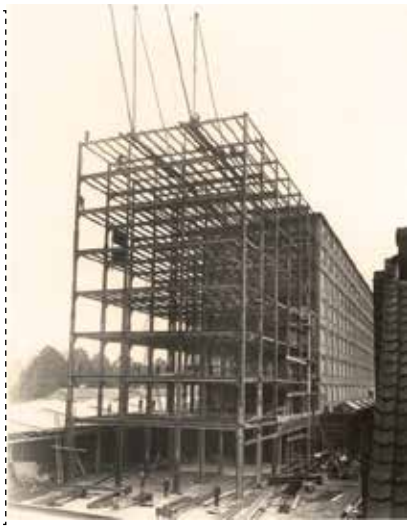
Section Spoorgebouw (Gebouw B) showing the structure of the the building with three naves. The Brikkengebouw from the first phase could have the similar structure, which has defined its shape.

Building B which is built in 1875 as well
Source: maps.google.nl





Four story's added to the building in 1923 which have changed its appearance from a gabled roof to a flat rood within the same typology



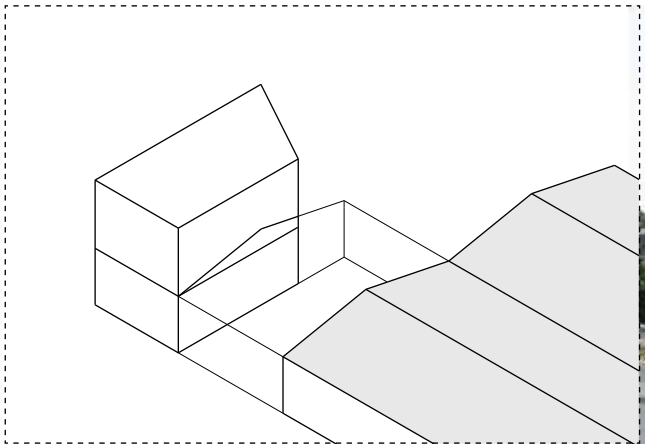
The Eiffel from 1928 with monotonous iron skeleton

1970

Another interesting fact about the industrial facade typology is the layer of white paint on the building. It has no impact on the structure of building itself because it was the interior of another building next to the Brikkengebouw. Moreover, it introduce the image of the industrial halls built in 1970 which could span even larger distances. This appearance on the skin of the building makes the building unique in its appearance by showing the layers of history of developing industrial hall typology.

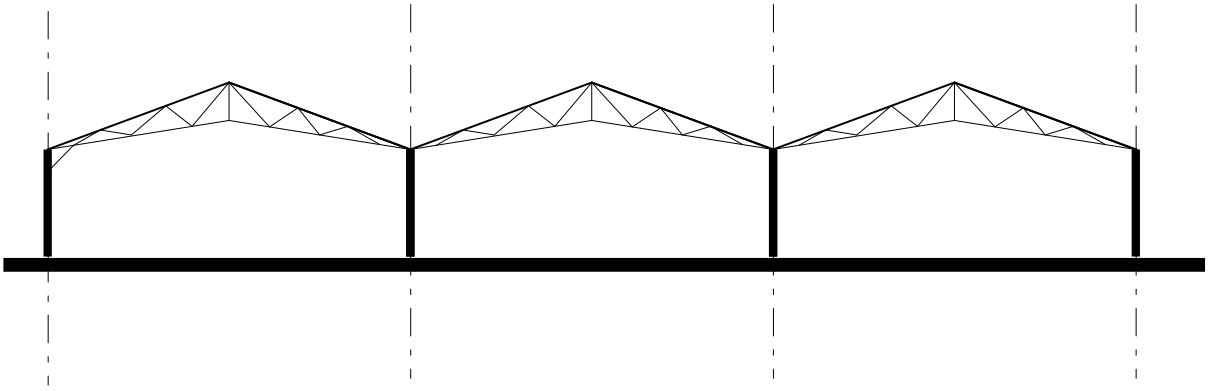
The current situation of the building showing the development of industrial facade typology.

Therefore, the building has had different appearances but it remains within the same typology, which is an industrial hall. The architectural design of the Brikkengebouw pronounces the standard features and characteristic lines of its structure. The first phase was built in bricks and steel columns and the second phase in concrete frames with masonry infill. Both aforementioned types were juxtaposed in the Brikkenbouw, using each other's structural characteristics to form a unified building. Even the white paint refers to the building method of the 70's where the industrial facades could even span larger spaces using new building methods. All this have resulted in a structurally expressive skin without feeling a need for decoration and cosmetic beautification.



The roofline of another type of industrial hall typology from 1970 is visible on the skin of the Brikkengebouw

Factory halls that were against the building
Publiced by Hekn Houbon, http://www.henkhouben.nl/



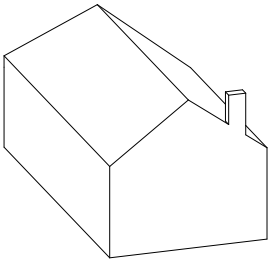
Sketch of the possible structure of industrial halls from 1970 that were built next to the Brikkegebouw showing the larger spaces of these buildings driven from their roof structure.

Volume

Little is known about the building volume from the building in the first period, the raw industrialization. Seen from the other buildings on the terrain from the same period (1875) may Brikkengebouw once probably had a gable roof structure such as the Spoorgebouw which is located on the northern side of the Building. A second argument is that the façade from the first period is increased to one meter above floor level of the second floor. This suggests that there might have been a wall plate lain on the façade, where the roof construction have rested. A third argument is the location of the stairs of the first period. The voids of the stairs from the first period are covered with concrete. These stairs were located in the middle of the building and it was obviously favorable related to the shape of the roof. Furthermore, the angled wall in the Brikkengebouw is probably caused by a former adjacent building which was located perpendicular to the boundary of the Sphinx terrain.

The addition of the upper storey's driven from the rational industrialization has changed the building volume drastically. The former gable roof structure is most likely gone and there were four levels added finished by a flat roof. The up-topping took the same contours of the earlier building and the angled wall was taken along. In addition, there was an elevator shaft added against the outside of the building. This elevator was probably necessitated by the extension in height and the many and heavy vertical transportation. The position of the elevator shaft is selected from pure functional considerations. Something that was common in that rational period. The elevator shaft is positioned close to the usual entrances and staircases. As a result, both the horizontal and the vertical transport were placed close to each other so that the floor areas could be used more efficiently.

Schematic diagram of the volume from the two different periods.



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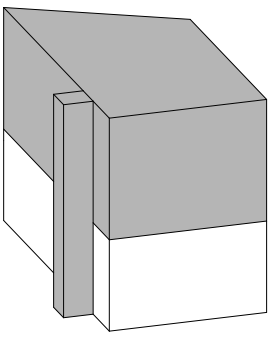

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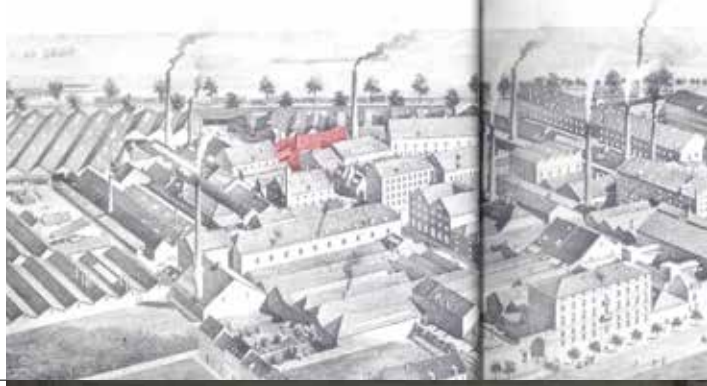


Brikkengebouw in the drawing of the fabric around 1900, WIAM p. 52

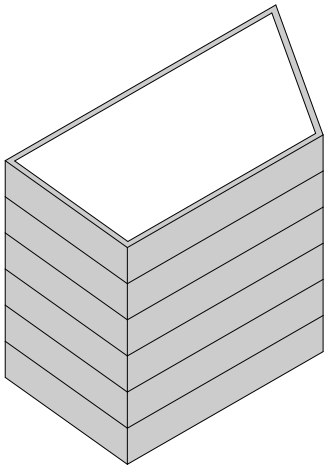
Interior photo of the building showing the stairs void which are filled with concrete floors

Interior space of the second floor of the Brikkengebouw showing the increased facade above the floor from the first phase where might have been a wall plate

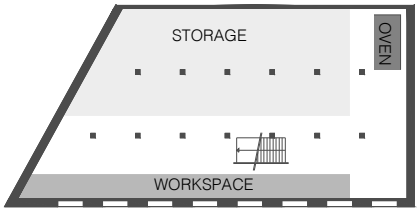
The angled wall in the Brikkengebouw is probably caused by a former adjacent building which was located perpendicular to the boundary of the Sphinx terrain.
Source: Planning of the terrain in 1893, WIAM, p.50

Position of the lift next to the horizontal circulation system

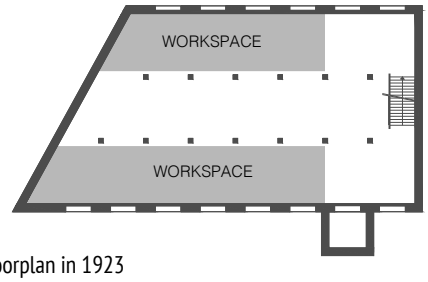
Program



A vertically flexible repeated room
wrapped by the facades.
6 stories



Floorplan in 1875



Floorplan in 1923

The initial approach of the Brikkengebow was meant to be a building for Brick production. However, the building seems not to be specified by Brick-production only. The third image on the next page, which is taken from the visit of the building, shows an anchor hanging from the ceiling. The forth image is the glass production with grinding machines hanging from the ceiling using the same anchor. This shows that the building was not only used for the production of the bricks but also for glass production. Besides, image 7 and 8 show the rounded ovens stored in the building which also is a can possibly refer to earthenware production. Therefore, I think that the functional appearance of the Brikkengebouw as an industrial facade type made different activities inside the building possible.

To conclude, within the industrial architecture at the Sphinx site, of which were built in the late nineteenth and early twentieth century, divergent types can be found that were, in general, fully based on functionality and cost efficiency, with subordinate interest in representation. It is the typological condition of the Brikkenbouw as a building for industrial purposes pursuing a strong functionality and inexpensiveness of factory buildings, since they were subjected to constantly changing conditions and requirements. This constantly changing use of buildings also forms a strong character of the exterior expression of the Brikkenbouw as an "industrial hall" type.

Characteristics

- Industrial hall: no dominating signature in comparison with other industrial buildings
- Flexible floor for multiple use

1 Making earthenware with round ovens

2 Designing earthenware

3. Qwn illustration: roof anchor

4 Glass production

5 Designing earthenware

6 Designing earthenware

7 Storage use

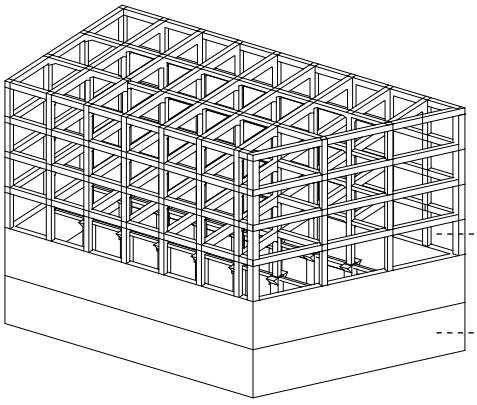
8 Storage use

Possible other functions in the Brikkengebouw besides making of Bricks,
Publiced by Hekn Houbon, http://www.henkhouben.nl/

Structure

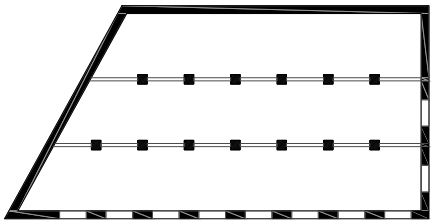
The first part of the existing building comprises a three-aisled linear structure built in 1875. The building was constructed of masonry bearing façades, which stood between two rows of steel columns. (These columns were strengthened with concrete in order to be able to built on the top of the building and they are no longer visible). The steel columns were connected by steel beams. The trough arched brick floors were spanned among these steel beams and bearing walls.

The second part has been built on the earlier structure in 1923. At the end of the nineteenth century, rationalism arises as a new architectural language in which abstraction would act as a central theme. This was mainly caused by the engineer's tradition, implying new ways in which natures lessons could be incorporated into architecture. As a result, an architectural language was developed which was based on truth to the program and truth to the language of construction. The actual invention of reinforced concrete - adding steel rods to the concrete to increase its strength – belonged to the French engineer François Hennebique, who patented his system in 1892. The method that Hennebique developed was one of the first appearances of the modern reinforced concrete construction method, uniting joining elements in-situ into a single monolithic element. At the end of the nineteenth century, architects attempted to find a style based on the material (1996, Curtis, p. 73).
The second part consists of a three-aisled concrete skeleton and reinforced concrete floors. The façades are in-filled with bricks. The angled wall of the building has occurred unique qualities to the reinforced concrete structure. The columns start with a size of 400x400 mm, but they become smaller per floor as one moves higher is in the building. On the upper floor, the dimensions of the columns are only 250x250.



1923- Concrete skeleton & masonry infill

1875- Vaulted floors and brick walls



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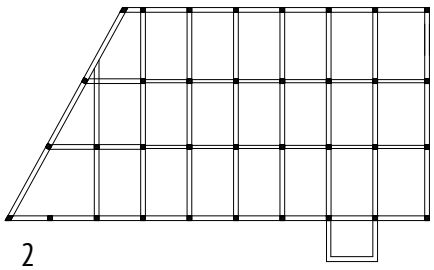
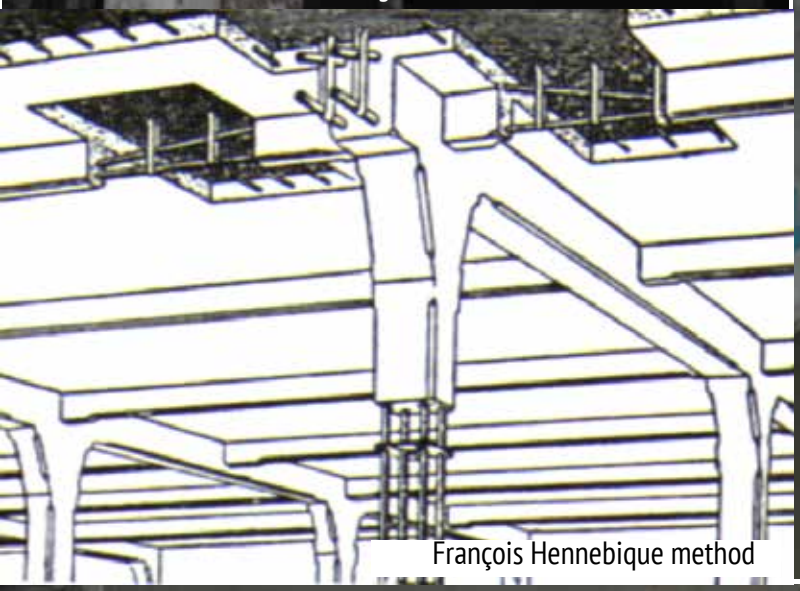


2

Vaulted floors and concrete columns which have strengthened the steel skeleton



François Hennebique method

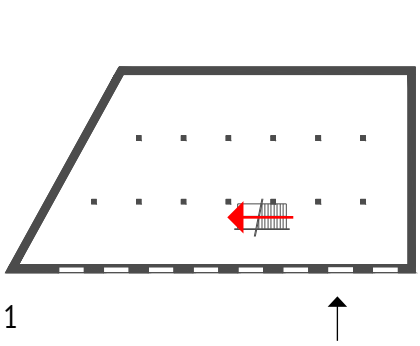
The angled wall of the building has occurred unique qualities to the reinforced concrete structure.

Monotonous reinforced concrete skeleton according to Hennebique model

Routing

The voids of the stairs of the earlier Brikkengebouw are covered with reinforced concrete. This indicates that the circulation system was different from the current situation. The stairs were in the middle of the building and were situated next to each other instead of above each other forming a spiral movement.

The current routing of the building is quite simple. The Brikkengebouw could be entered from the factory halls through three entrances on the ground floor. There is now only one entrance door in the east façade right in opposite side of the elevator shaft. The current stairs are located against the south façade. The stairs are vertically aligned in the same direction and connect different floors with each other by a spiral movement with a bit of walking through the floor space.



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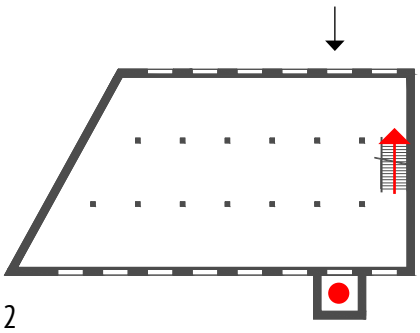


2

Interior photo of the building showing the stairs from the first phase void which are filled with concrete

The position of the stairs next to the outer facade introducing large space for use

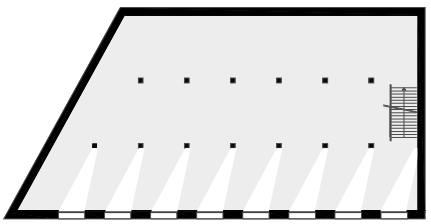
Orientation

The building has a clear linear direction by the structure which goes from the south to the north and angled on the north side of the building. The different building styles have created an interesting development in the field of the building's orientation. The first part of the raw industrialization has a rough massive character and it is only orientated to the west. Not much daylight enters the room during the day.

The part of the rational period has much lighter character with the two-sided orientation to the west and to the east. The windows are also bigger than the first part of the building, which captures more natural light.

One side oriented, rough character

Two sided oriented, open character



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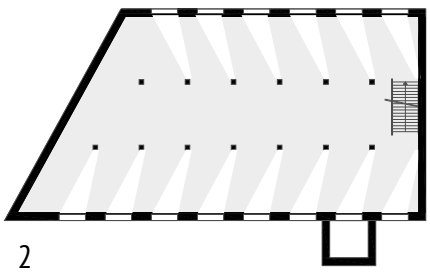


2

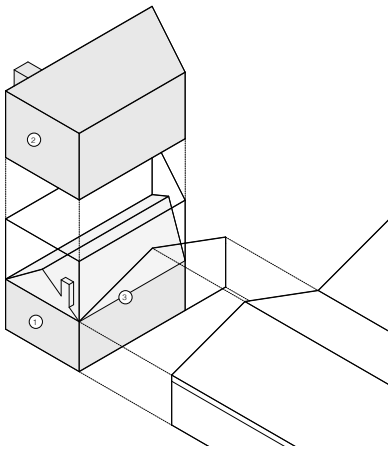
The openings of the second phase showing the openings from the other side of the building as well

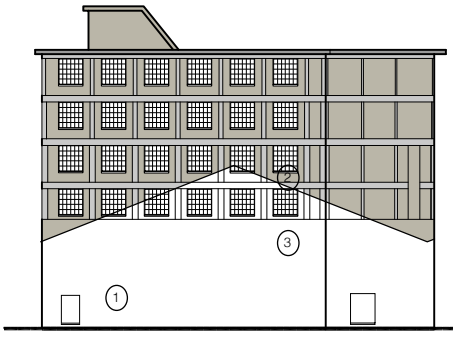
Facade

The different developments of the building are readable in the façade. The first part of the Brikkengebouw from raw industrialization has fairly closed masonry façades. There were other buildings next to the east façade and the angled facade of the Brikkengebouw. There are a few very small openings in the east façade and no openings in the angled façade. Furthermore, The amount of windows was limited in the west and south façades. The openings have still the original steel windows topped by brick arch segments.
The walls are cross-bond bricked. There is also ornamented cast iron wall anchors processed in the façade. These wall anchors differs from scale. The bearing structural anchors are bigger than the anchors that hold a floor and wall together. Furthermore, the traces of the chimneys are visible in the south and the angled façade, which refers to the industrial character of the building.

In the second part from the rational period, the façade consists of a reinforced concrete skeleton interspersed with bricks as filling. The same Cross-bond brickwork is applied in the infill of the masonry walls of the second phase which makes the building as a whole. Larger window openings could be used because of the concrete skeleton. There is a structure in the façade, which consists of partially supporting elements with masonry infill.

The numerous scars are reminders of the layers of the history. The largest visible scar is from the connection of the former adjacent factory halls. Under this connection, the façade of the Brikkengebouw is white painted. The windows of the ground floor are bricked completely and some big openings due functional reasoning were made. This gives a rough crafted appearance to the building.

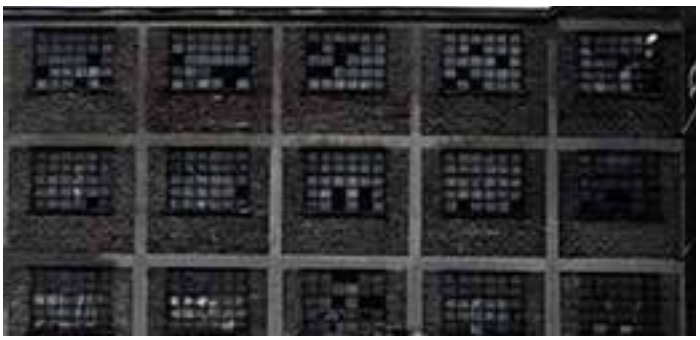




1. 1875- masonry walls
2. 1923- Structural frame of reinforced concrete Brick walls in-between
3. 1970- White painted layer of the interior of factory halls

STRUCTURE

Cross-bond Masonry walls



Concrete skeleton & cross-bond masonry infill

OPENINGS

Cast-iron rectangular windows with a rounded top and have a windowsill of Namur stone fro the first phase

Modern steel windows from the second phase

COVERED

Rough crafted appearance: The windows of the ground floor are bricked completely and some big openings due functional reasoning is made

Masonry wall of the first phase with cross-bond brick construction and some small openings for ventilation

DECORATION

Leaf wall anchors from 1875 as an structural ornamented decor

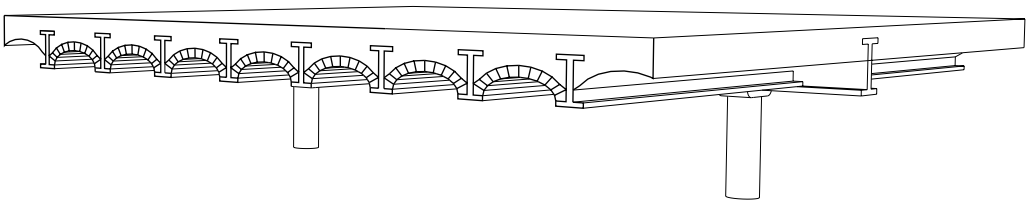
White paint scar that does not have any function but refers to a rough industrialized appearance

Details

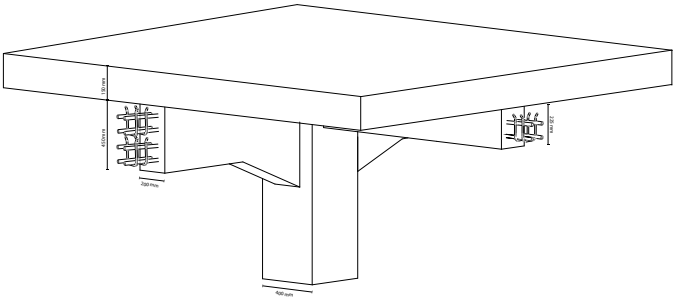
Different details from different times have been applied to the building according to building style of that specific time. From the first phase, the vaulted floors, steal beams, cross-bond masonry walls, window frames, are the technical details of the building. Furthermore, The up-topping has made some details from the first phase not visible anymore: like the detail between the floor and the steel structure which is only visible in the original drawing of the uptopping and the connection of the wall with gabled roof structure which is removed.

The second phase has a monotonous concrete frame with masonry brick infill and rectangular windows which are quite similar in the detailing of the windows from the first phase. The cross-bond infill is driven from the first phase as well. These little detailing unifies the building as one entity.

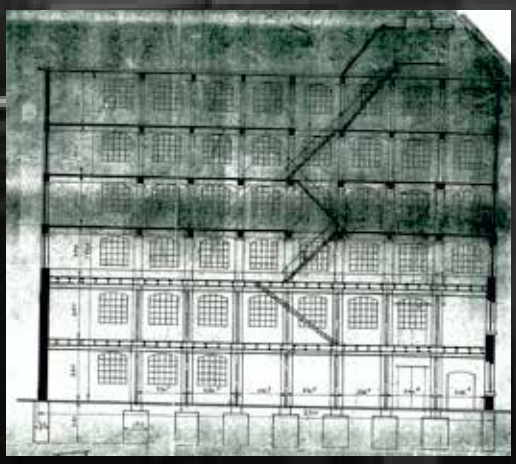
What makes the building unique is the smelting of the structure in the two phases. This smelting are visible in first three floors. In the first two floors, the concrete columns have covered the steel columns. In the third floor the transition from a masonry structure to a concrete structure is visible whereby the increased facade above the floor is smelted with the concrete skeleton.



1. Vaulted through floors



2. Hennebique model



Steel columns are covered with concrete

Second phase

First phase

Transition of the masonry to reinforced concrete structure

Conclusion

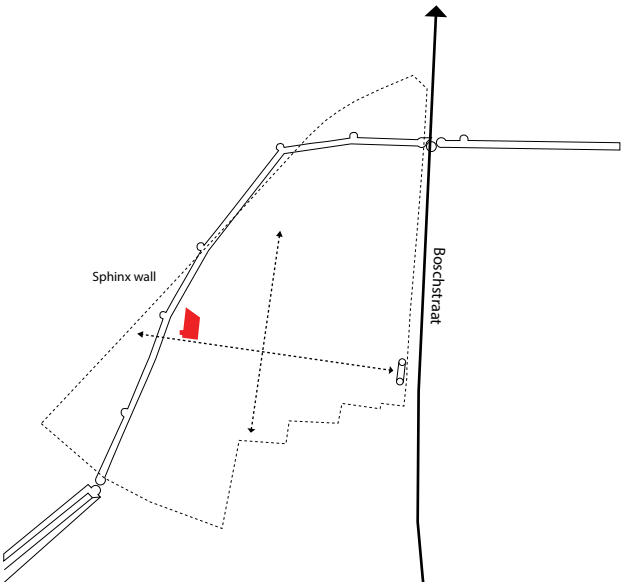
The cultural value assessment of the building is divided in three different scales the contextual, architectural and construction/materialization of the building.

In the contextual cultural value aspect, the object is a part of a coherent urban design, which was an industrial ensemble but this is not visible anymore. The Brikkengebouw have always worked as a part of industrial machine during different times. Therefore, it is essential to see the building as a part of other objects instead of something that stands on its own. Furthermore, two roads in the terrain remain as the most used circulation system between the buildings inside the terrain and connection to the city with the Boschstraat port. One road is from east to west with Sphinx port as the entrance of the site and one from north to south. These roads had divided the terrain in four pieces for a long time as the main circulation roads, which connected all different factory buildings together.

The Brikkengebouw has according to report of BAAC a positive monumental value because the original condition is barely recognizable (BAAC, 2005, p.6). However, the building is a result of different developments of the Sphinx terrain.

The architectural and technical value of the building lies in the smelting of the different time frames according to building style of that specific time. This had made a transition between different structures but yet with the same language. The same language is the Type of the building as an industrial hall. Therefore, all the structural elements which make the typology of industrial facade are highly valuable, the elements which makes the Brikkengebouw as a part of a whole industrial entity of Sphinx like the windows are positive valuable, and the spatial organization of the building is considered as indifferent with flexible spaces. The white paint of the industrial hall is also considered indifferent because it does not belong to the structure of the building itself.

To conclude, the structural appearance of the building follows the typology in a way where different styles make a whole. Materialization of the building is melted in each other resulting in an industrial aesthetic.



Contextual value

High value:
-Hierarchy in roads, Boschstraat and site specific circulation system.
- An urban ensemble, a cluster which have worked together with other buildings as an industrial machine.

Positive value:
- Sphinx port as the main access to the site

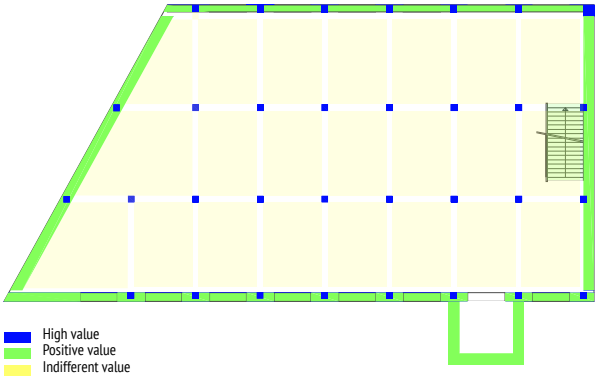
Indifferent value:
- Industry in the city center (intangible value)

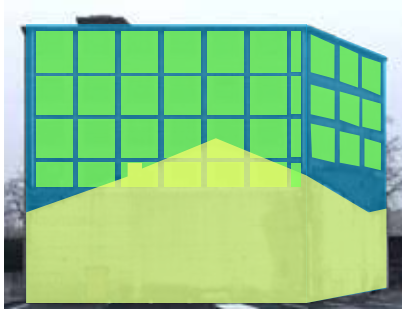
Architectural value

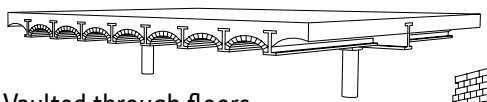
High value:
-Hierarchy in two different building style in daylight, structure, materialization, composition
-Industrial hall typology visible in structure, first phase masonry walls, second phase concrete skeleton

Positive value:
-Composition of elements and spaces in a grid which strengthens the industrial structure like the masonry in fill

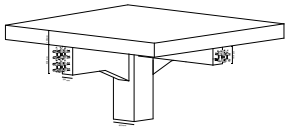
Indifferent value:
- Scars and roughnesses added to the building which makes the industrial facade type not visible anymore.
-Flexible spaces which make the function anonymous



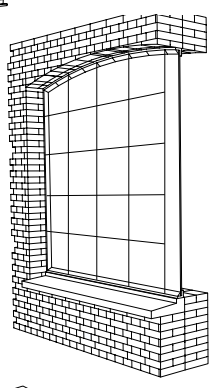




Vaulted through floors



Hennebique model



Construction and materialization

High value
- Juxtaposition of different structures which make one industrial-hall typology as a whole.
-Steel construction with vaulted through
- Concrete frame according to Hennebique model

Positive value:
- Elements with special materialization that are recognizable in other industrial buildings from the site as well, like the windows and wall anchors.

CONTEXT

This chapter investigates the contextual current situation of the Brikkengebouw from the city scale to the urban ensemble of the building.

Maastricht in the Netherlands

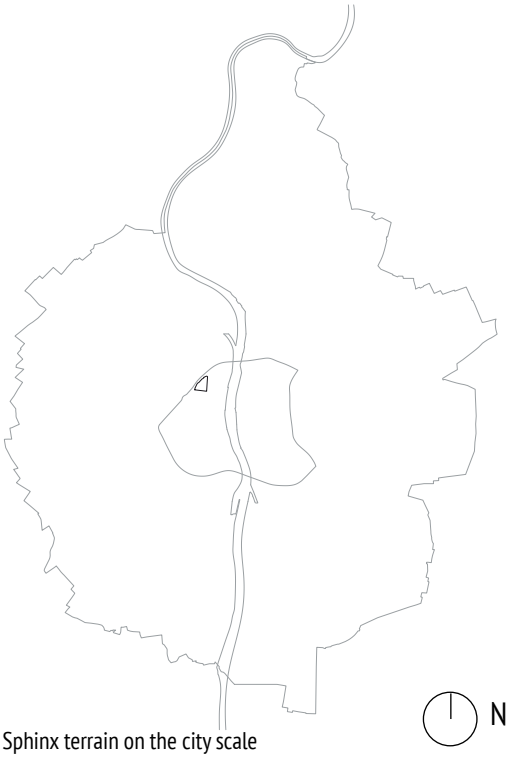
Maastricht is in the south of the Netherlands next to the Belgian city Luik from south and German city Achen from east.

Maastricht

Maastricht is one of the oldest cities of the Netherlands . Al more than 500 years before the start Initially this settlement consisted of two parts , one on each side of the Maas (now center on the west and current Wyck on the east) . Its original name Mosae Trajectum refers to a place where one could cross the river Maas. This made it possible to build a bridge which become the pivot of the city's history. Because of its strategic position, Maastricht was one of the most important fortified and strategic cities of the northwest Europe for centuries. It's the oldest labour and industrial town of the Netherlands.

Maastricht has at this moment 120.000 inhabitants and it is the provincial capital of Limburg. Almost 1/6 of Maastricht will be transformed. According to structural vision of Maastricht from 8.000 to 10.000 dwellings needed to be made in five steps before 2018 (Structural vision 2030). This vision did not happen through economical crisis. The industrial activities of Peteus Regout have developed Maastricht into a Duth industrial city in ninteenth century. Furthermore Maastricht has candidate itself in 2009 to become cultural economy city of the Europe.

City structure



Sphinx terrain on the city scale

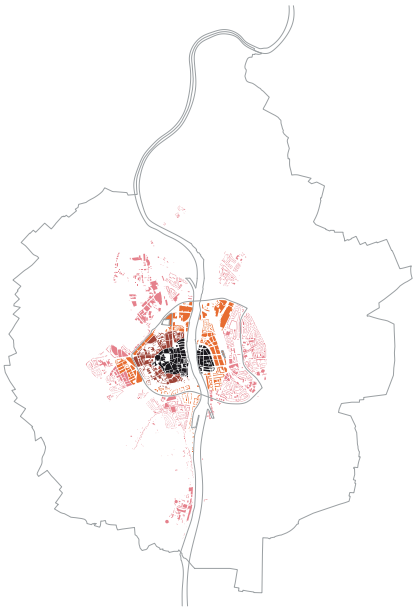
1200 1500 1900

Urban development perionds

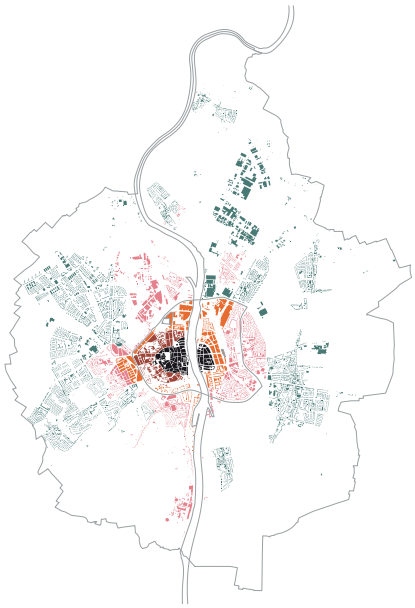
- > 1200 AC
- 1200-1500
- 1500-1900
- 1900-1950
- 1950-1980
- 1980-2010

N

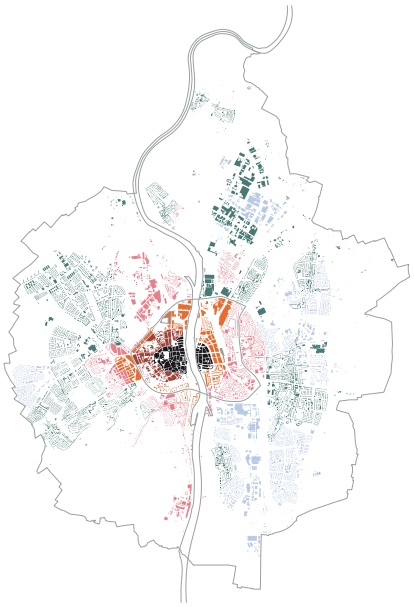
City urban development



1950

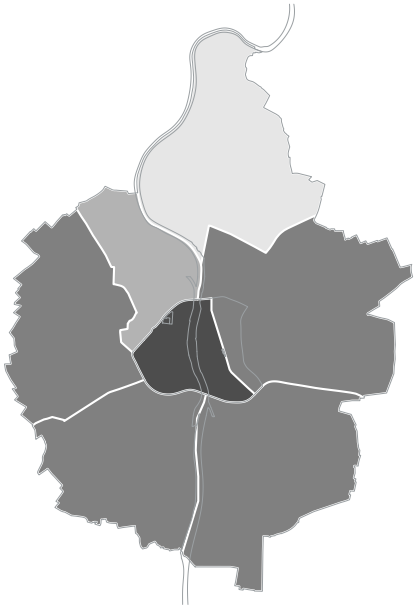


1980



2010

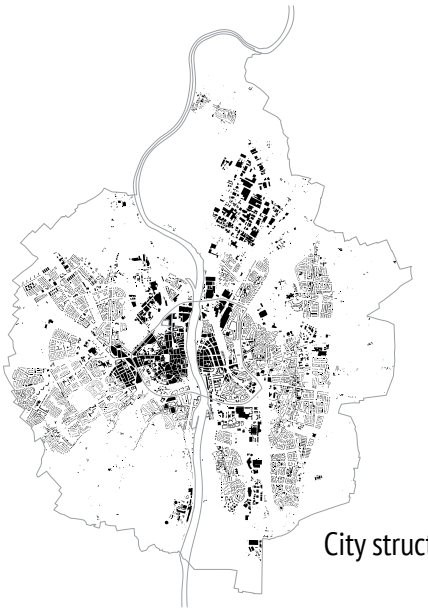
Candidacy for Cultrual capital of Europe in 2018	2009
Cooperative platform is established between the Netherlands,Belgium and Germany.	1991
Maastricht again comes under Dutch rule. General Dibbets succeeds in keeping Maastricht in Dutch hands during the Belgian revolt of 1830.	1814
Maastricht becomes part of the french republic.	1794
Loius XIV captures Maastricht.	1673
The Duke of Parma conquers the City.	1579
Maastricht gets city rights. The duke of Brabant and Prince Bishop of Liege rule it together.	1204
Bishop van Tongeren, the patron saint, is burried. His grave becomes a pilgrimage location.	380
Construction of a Kastellum to protect the bridge.	333
German tribes destroy the city.	250
The Romans build a bridge over the Maas.	50 BC
First human settlement	250.000 BC



City density

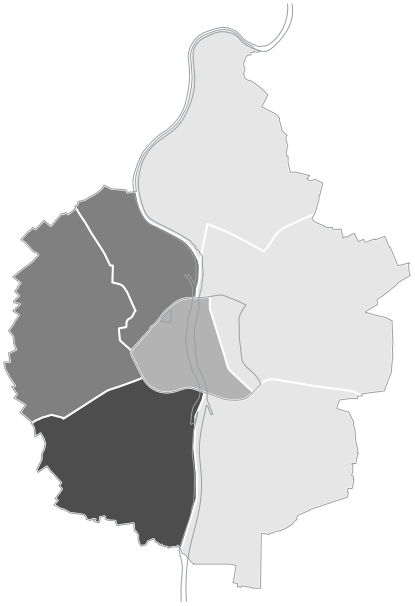
City relief

City districts



City structure

Maastricht is divided in eight city districts. It has 120.000 inhabitants and 40 percent of it are middle aged people between 22- 44. Furthermore, the Sphinx location lies in the northern side of the city center district.

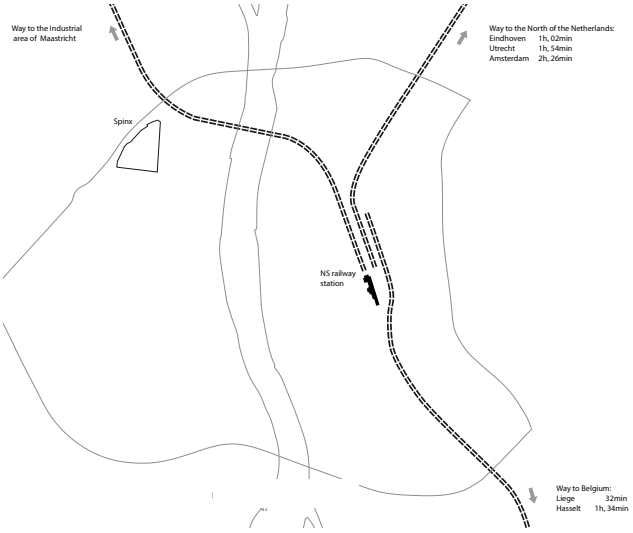


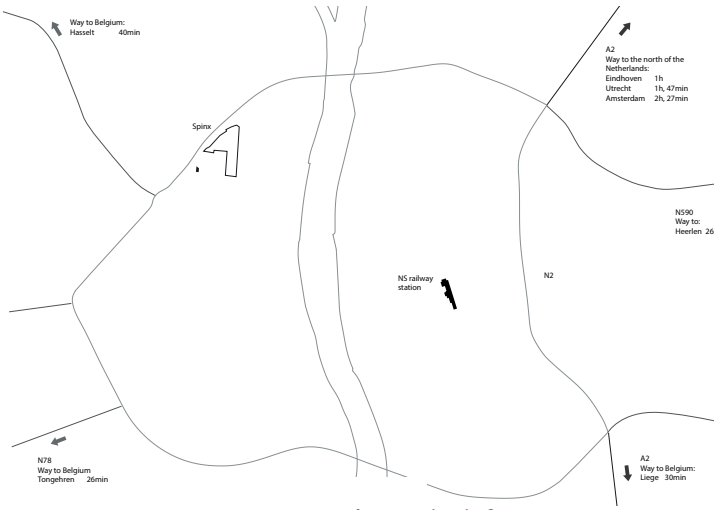
Mean income per person in euro a year (2010).
- No data
- <18.200
- 18.200-20.100
- 20.200-22.000
- 22.100-24.600
- >24.600

City income

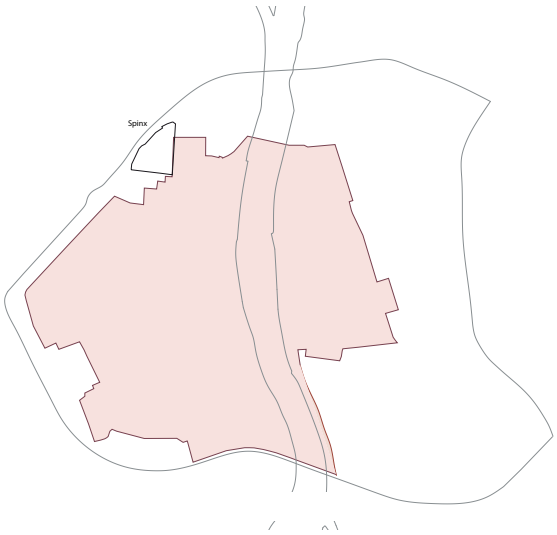
Resource: https://www.cbs.nl/ N

City Center

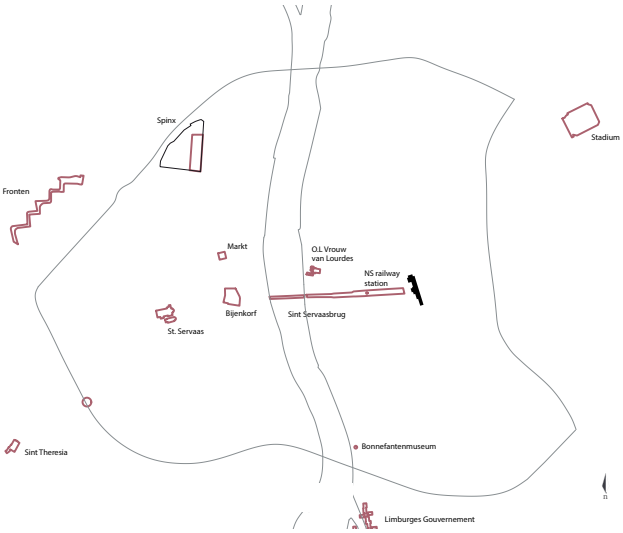




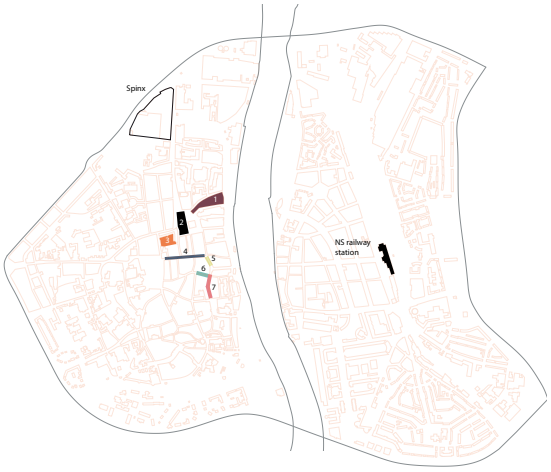
Inner city infrastructure



Inner city monumental area



Inner city Landmarks



Inner city function and shopping

The sphinx is located in the monumental city center and it is good connected to other cities through highway and public transport.

Shopping Mall:
1.The entre Deux
3. Mosae Forum

Shopping streets:
3. Grotestraat
4. Kleinestraat
5. Maastrichter smedenstraat
6. Stockstraat

Market
2. Vrijhetof

N

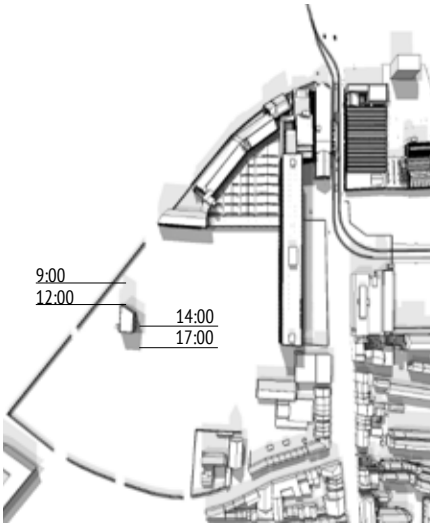
Sphinx Characteristics

Infrastructure

Brikkengebouw stands on a parking lot within the Sphinx terrain. The Sphinx terrain has an introvert structure and it is surrounded by Frontensingle on west-north side, Boschstraat on the east side and the Maagdendries on the South. The parking lot with about 700 spots can be entered from the Frontensingle.

Landscape

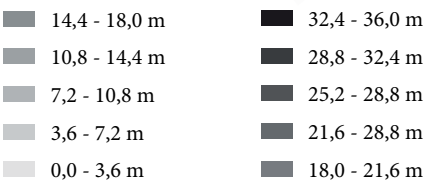
The rest of fortifications are in the Fronten park. The traces of the fortification structure is visible in the structure of the park which makes the ground highly valuable.



Shading 21 April

During the design of the first phase of the Brikkengebouw, the orientation of the building was one of the main focus points. A lot of buildings needed to be built with maximum amount of daylight. The south and west facades, which could get the most daylight were open and the east and north facades, formed a boundary to other buildings.

Heights



The Eiffel is the highest building of the terrain as a landmark. The Brikkengebouw with six stories is one of the highest buildings of the terrain after the Eiffel.

Monuments

Monuments

The monument's dialogue shows traces of three periods in the history. The first is the raw Industrialization from the mid-19th century inspired by industry in Belgium. Buildings like the Belgen and Mouleurs with Brick walls and large roofs are from the first period. The second period is the rationalization in the industry during 1920 and 1930. The Eiffel, a modern high-rise made from concrete and steel is as a result. The third period is the increasing of prosperity between 1950 and 1960, with the trend towards representation, customer orientati on and service. The kantoorgebouw and the green courtyard immediately behind the gate refer to this period. The Mouleurs and Eiffel are national monuments.

The combination of the monuments with other characteristic parts , such as the wall and the entrance gate, the Sint Andries Kapel and the subdivision direction perpendicular to the Boschstraat , says an story that is part of the history of Maastricht.

Age

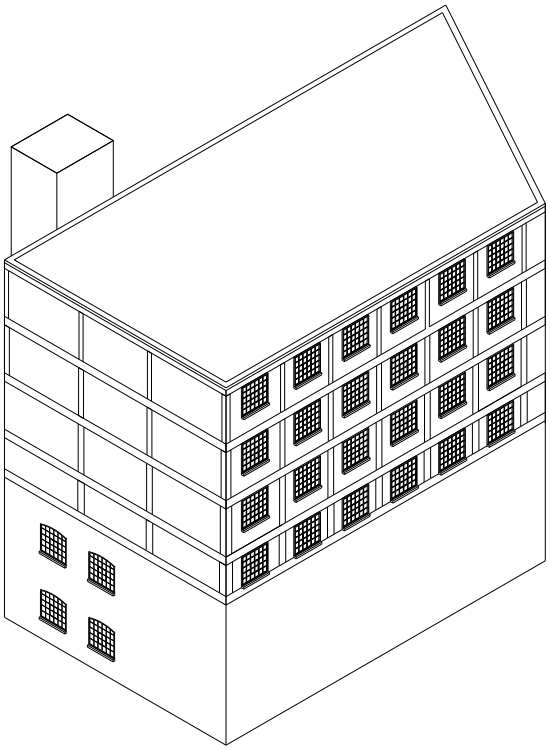
Brikkengebouw behind the Sphinx wall

Street-view from the Fronten singel showing Brikkengebouw and Eiffel in the right side and the Fronenpark in the left

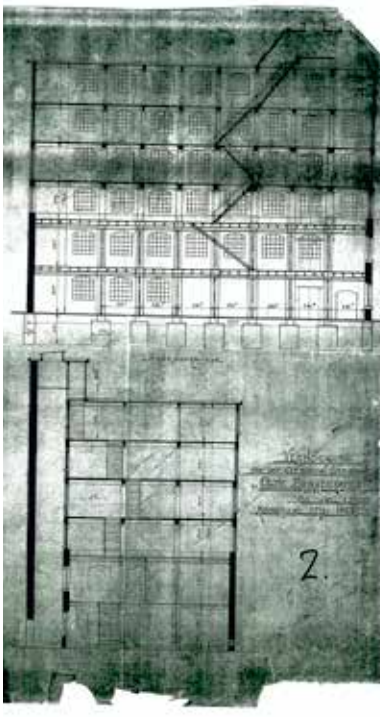
ARCHITECTURE

This chapter focuses on architectonic aspects of the existing Brikkengebouw. The appearance of the building will be described and illustrated with photos, floor plans, sections, elevations and models.

Typology: Industrial hall



Industrial hall typology



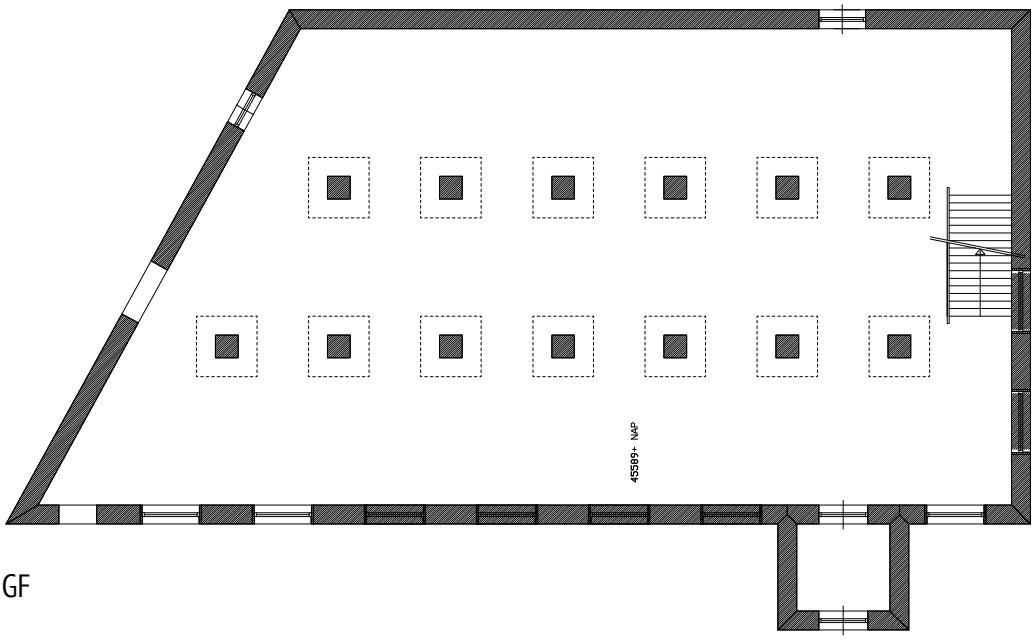
Original drawing of up-topping from 1923

The Brikkengebouw is a repeated room (Brikkenkamer from the drawing of 1923) in six open-flexible floors made in two different periods. Each room has its own spatial characteristics. Each floor consists of three equal-shaped spans of 4200 mm. The length of the building is shorter in one side (19500mm) than the other side (27100), This is because of an oblique axis, which makes the building rare in industrial typology.

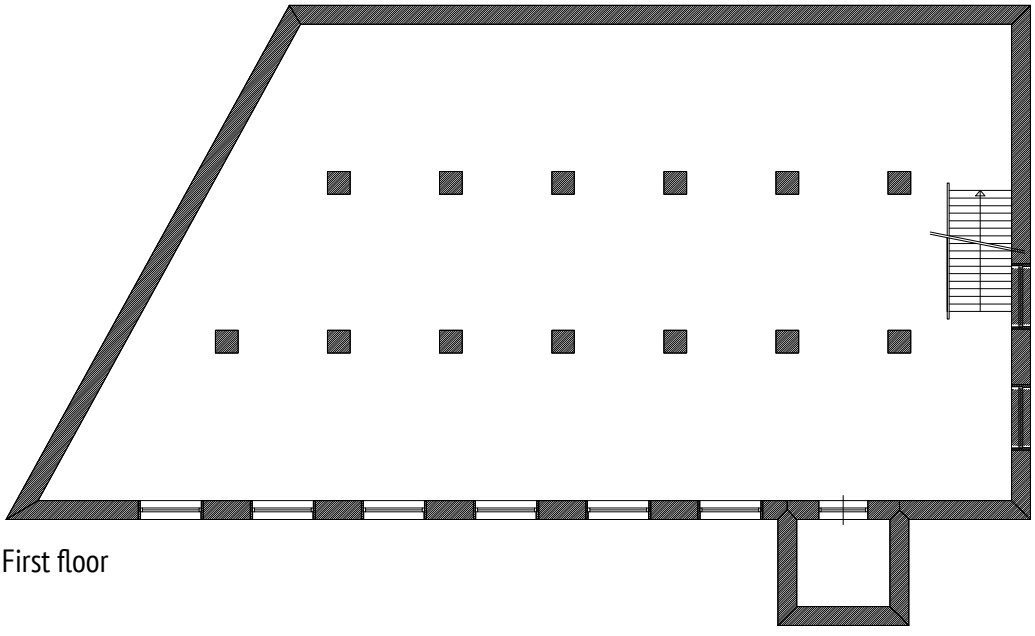
The current state of the building consists of three interrelated compositional elements, which are the lower two levels out of bearing brick walls, steel columns, and vaulted floors; the upper four levels consisting of a structural frame out of monolithic reinforced concrete; and the recently exposed layer of white paint covering the exterior masonry of the Brikkenbouw and resembles the interior finishing of what used to be factory halls, enclosing the body of the Brikkenbouw. All these layers refer to one type and that is the industrial hall typology in which that the function remains anonymous.

The hierarchy in different building styles is visible in all the architectural aspects of the building like the structure, spaces, light and materialization. Yet they are juxtaposed in one whole.

Floorplans



GF



First floor

Scale 1:200

10.000 mm

First floor:
The rough materialization and openings of the facade gives a rough industrial character to the room

The structurally smelted room:
Two different structures, Masonry walls and concrete skeleton is most visible in the second floor

There are several openings in the ground floor of the building which is a proof that the building has always been a part of a bigger part. Therefore, there is no recognizable entrance door in the building. These openings were made for purely functional reasons. Al the openings are now covered which makes the ground floor very dark and rough. Besides, the ground floor lies 56 cm lower than the sphinx terrain ground.

The first floor has a rough industrial character in materialization and facade openings. The openings are only in the west facade which makes the building in one direction oriented to the daylight. Structurally smelted room is most visible in the second floor whereby the elements of 1875 and the elements of the 1923 create a spatial whole.

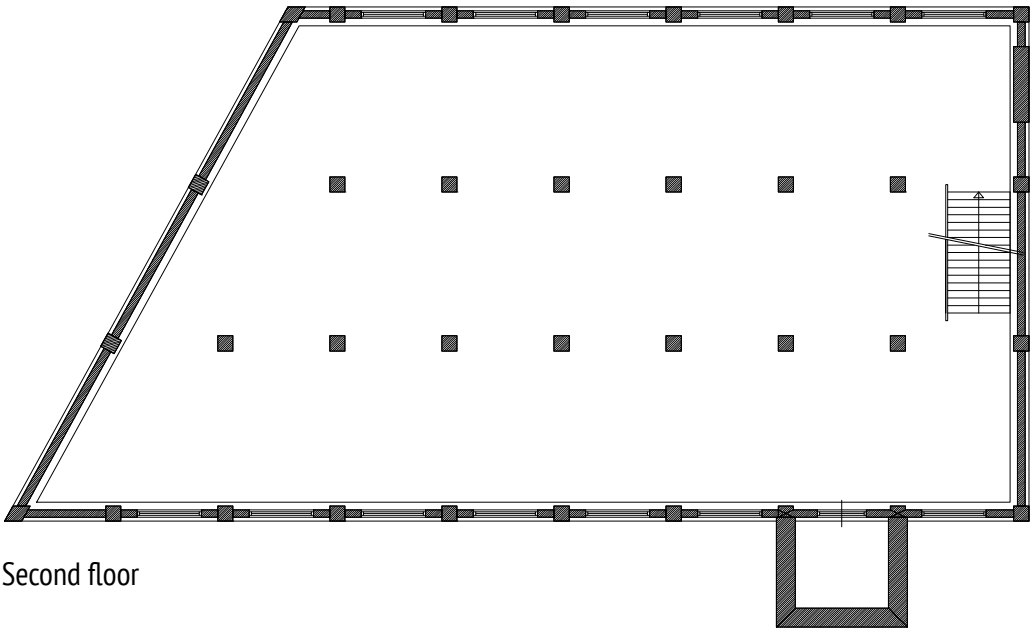
The second, third, forth and fifth floors built in 1923 are oriented in both east and west directions which gives an open character to them. Another characteristic of these floors is the increase of the dimension is the columns of the building from 400 mm to 250 mm.

Third floor:
Reinforced concrete structure with openings in the west and east facade which gives a rational character to the room

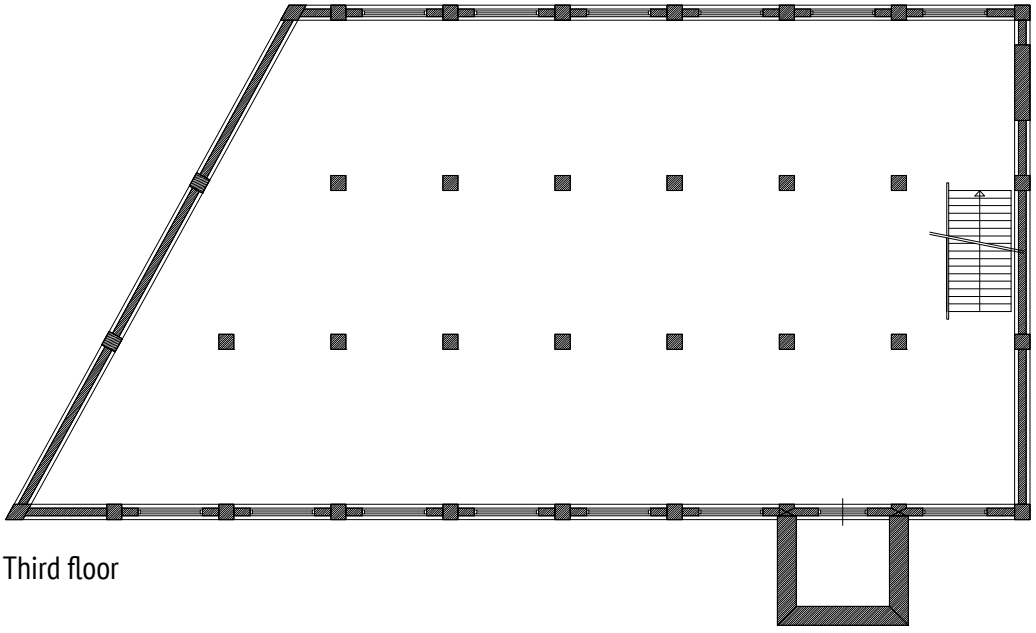
The two different styles are visible in the facades of the building as well. The first two floors have a closed rough industrial appearance and the upper four floors have rational repetitive character made by concrete skeleton, masonry infills and windows.
Another interesting fact about the facades is that the entrance door is not visible in the ground floor. There are several big and small openings for purely functional reasons.
The white paint with a thick layer of bitumen of the roof of the buildings that were next to the Brikkengebouw refers to the image of the industrial hall typology which is now demolished. This layer has caused some imperfections in the appearance of the windows of the building which gives an industrial rough character to the facades.

Furthermore, The difference in lighting and materialization of each room is shown in the sections of the building. All the different rooms are connected with each other through horizontal and vertical circulation systems.

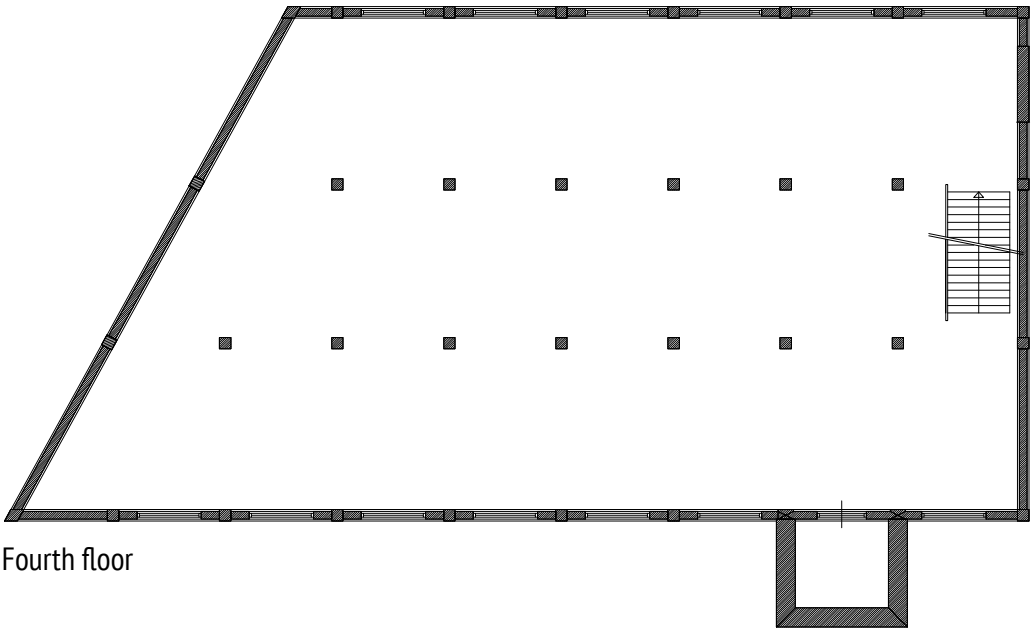
Next pages illustrates these characteristics in floor plans, facades and the sections of the building.



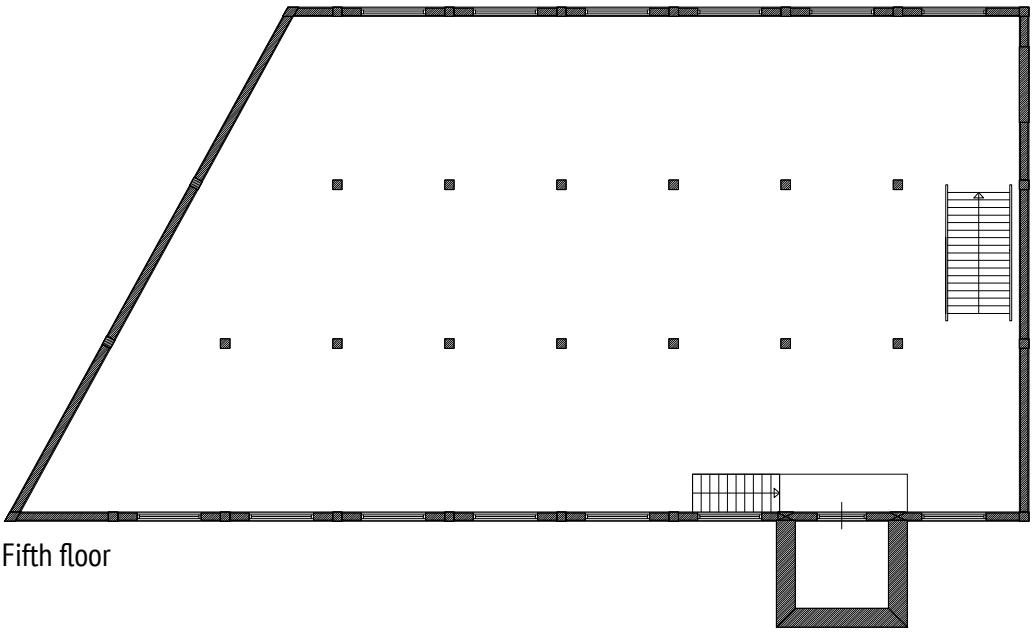
Second floor



Third floor



Fourth floor

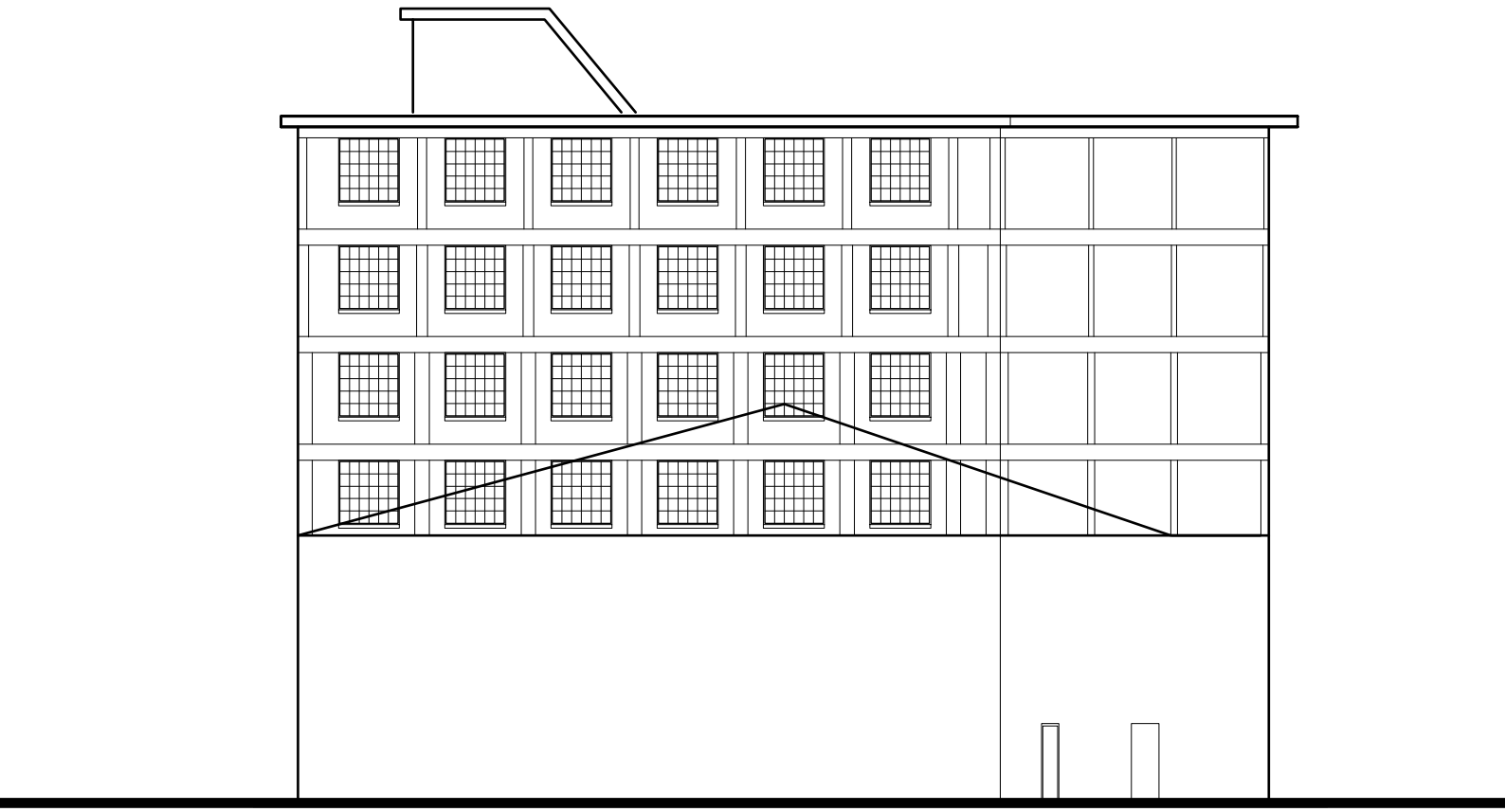


Fifth floor

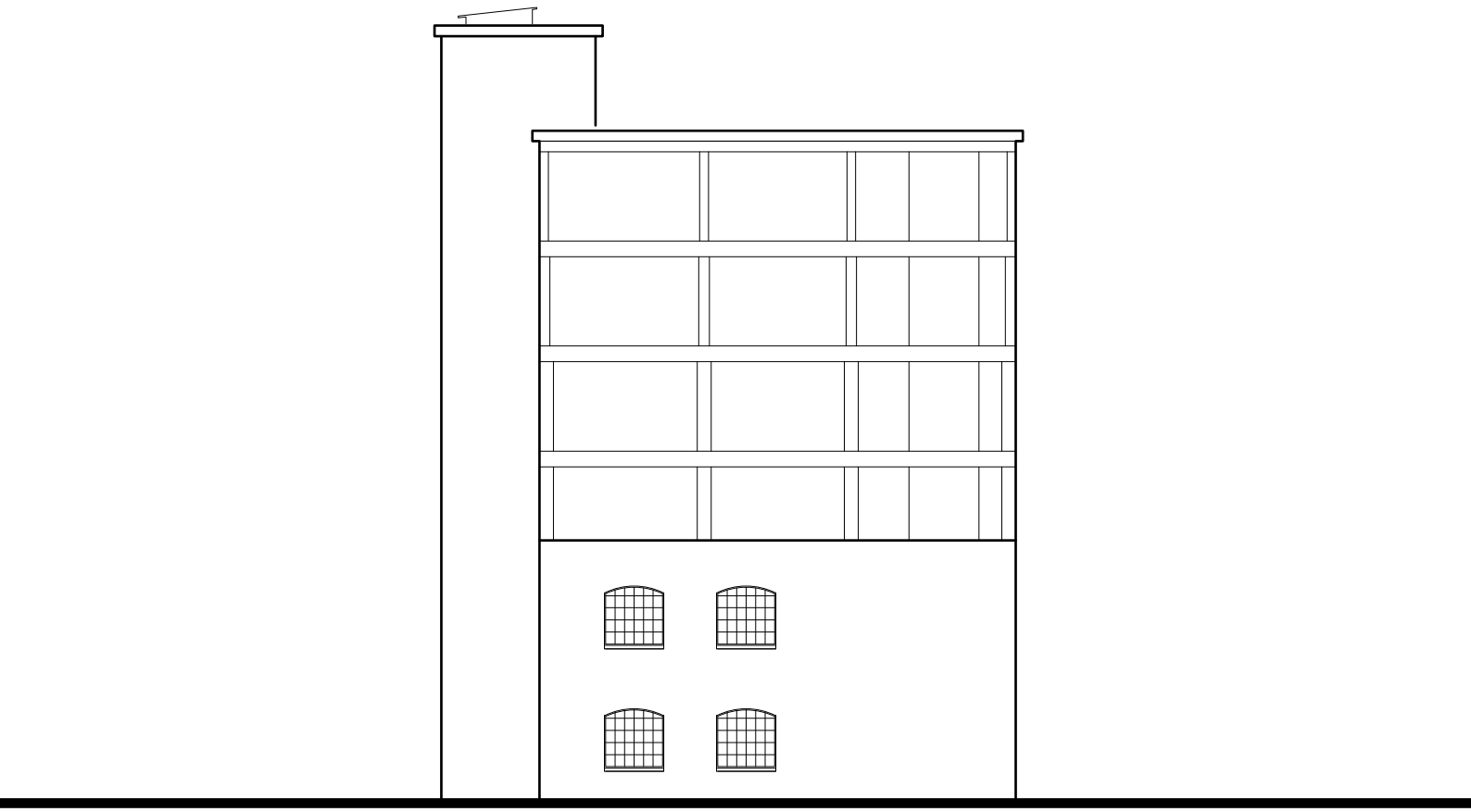
Scale 1:200

10.000 mm

Facades



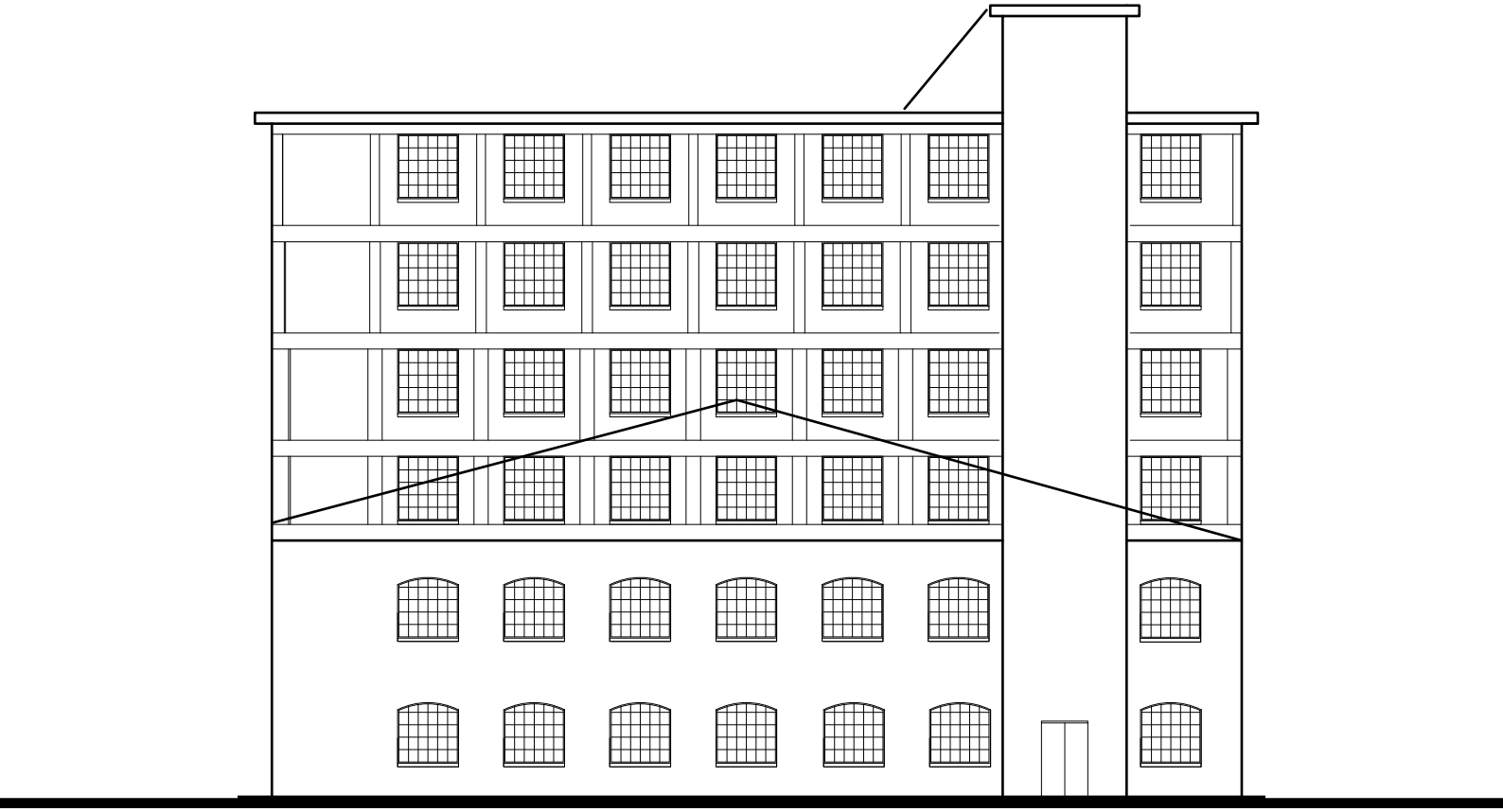
West



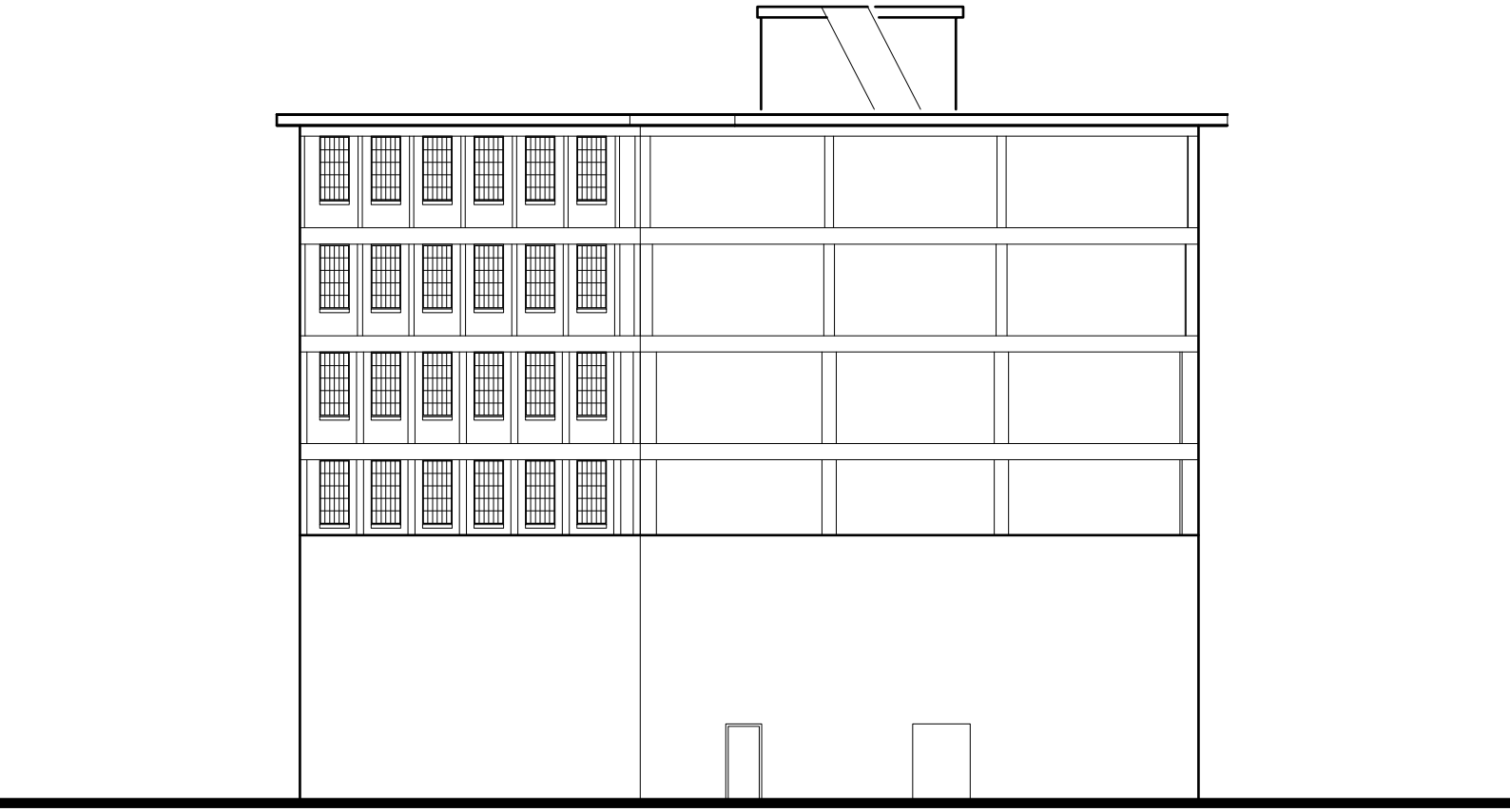
South

Scale 1:200

10.000 mm



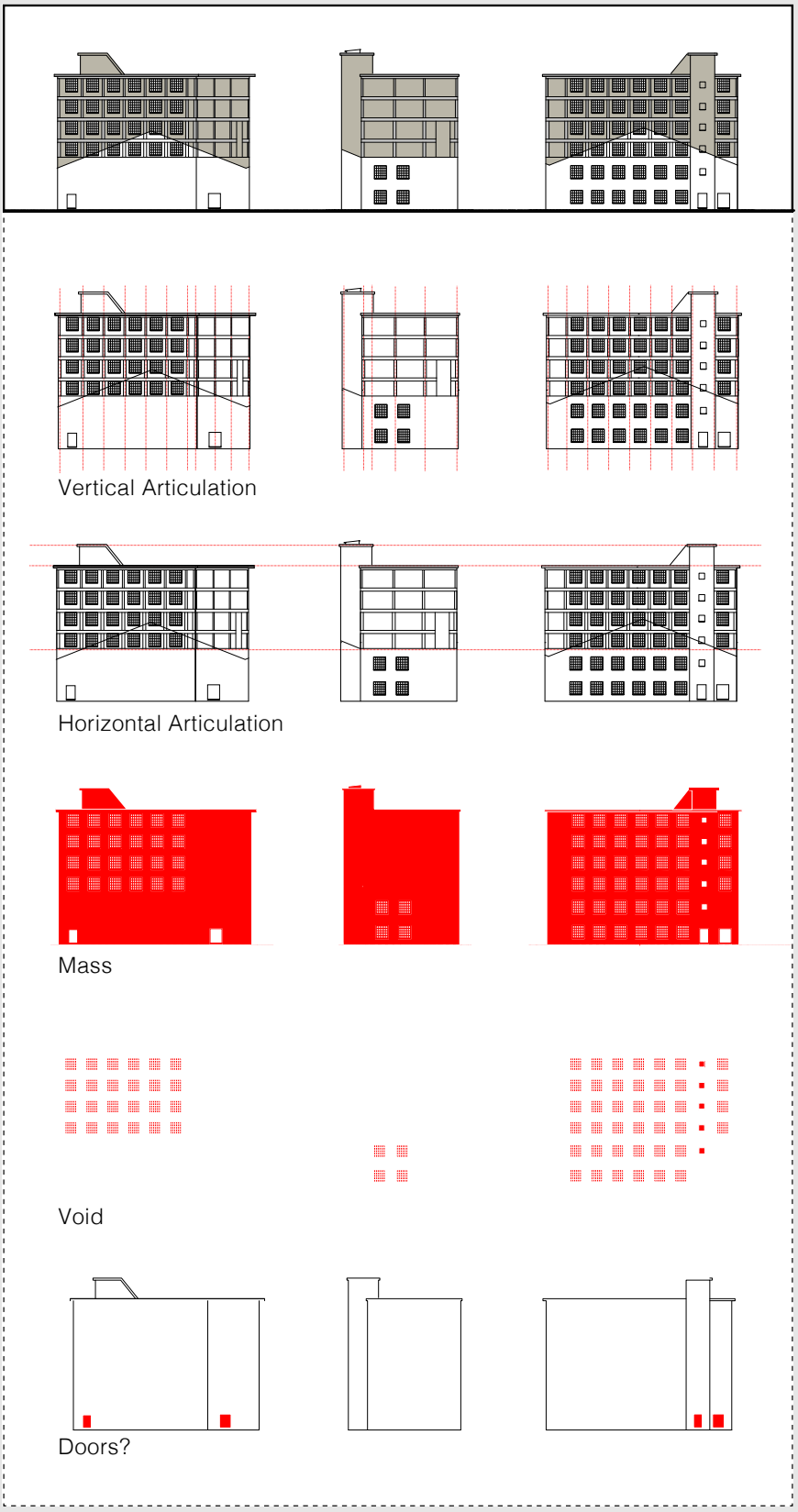
East



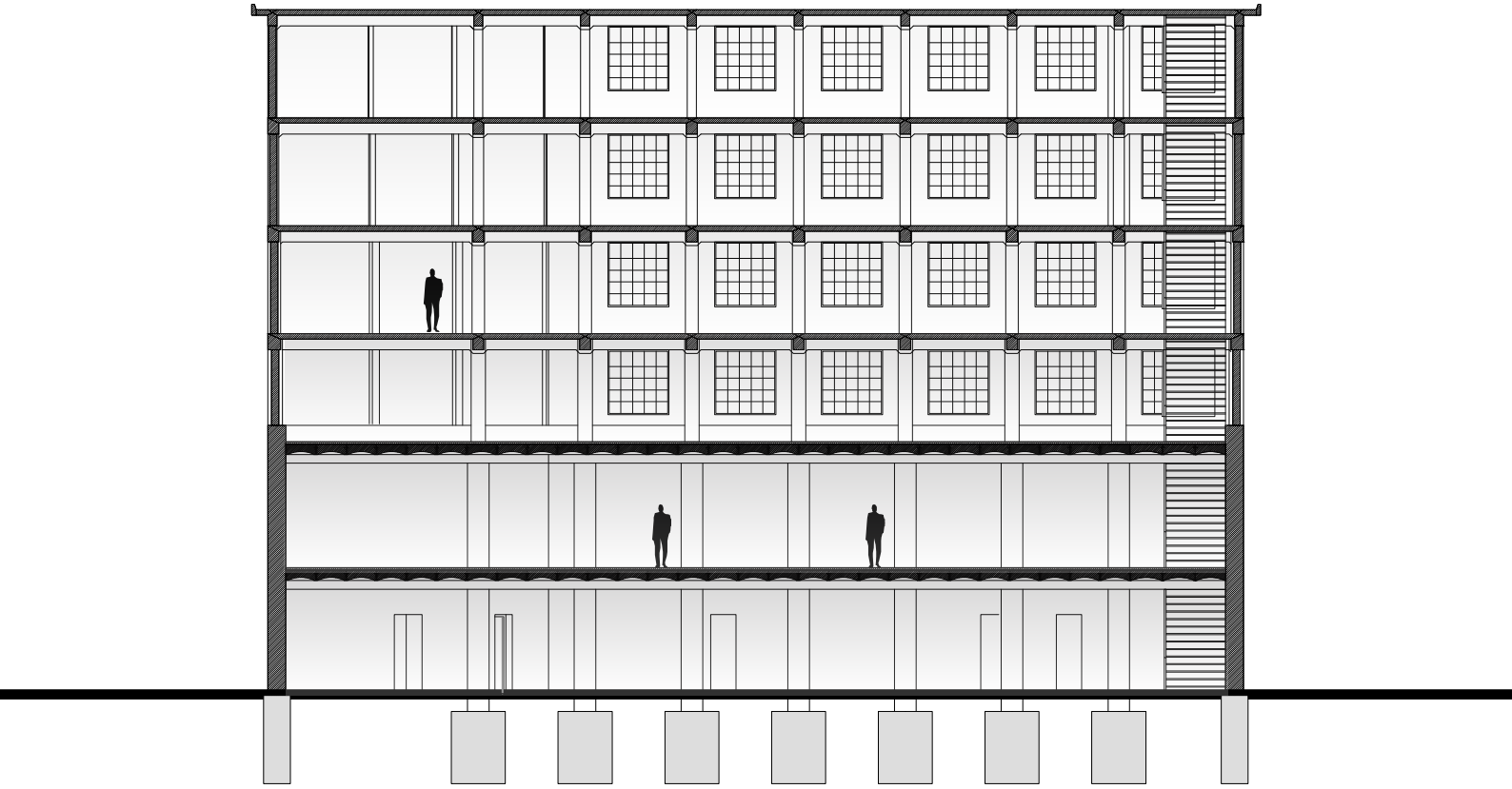
North

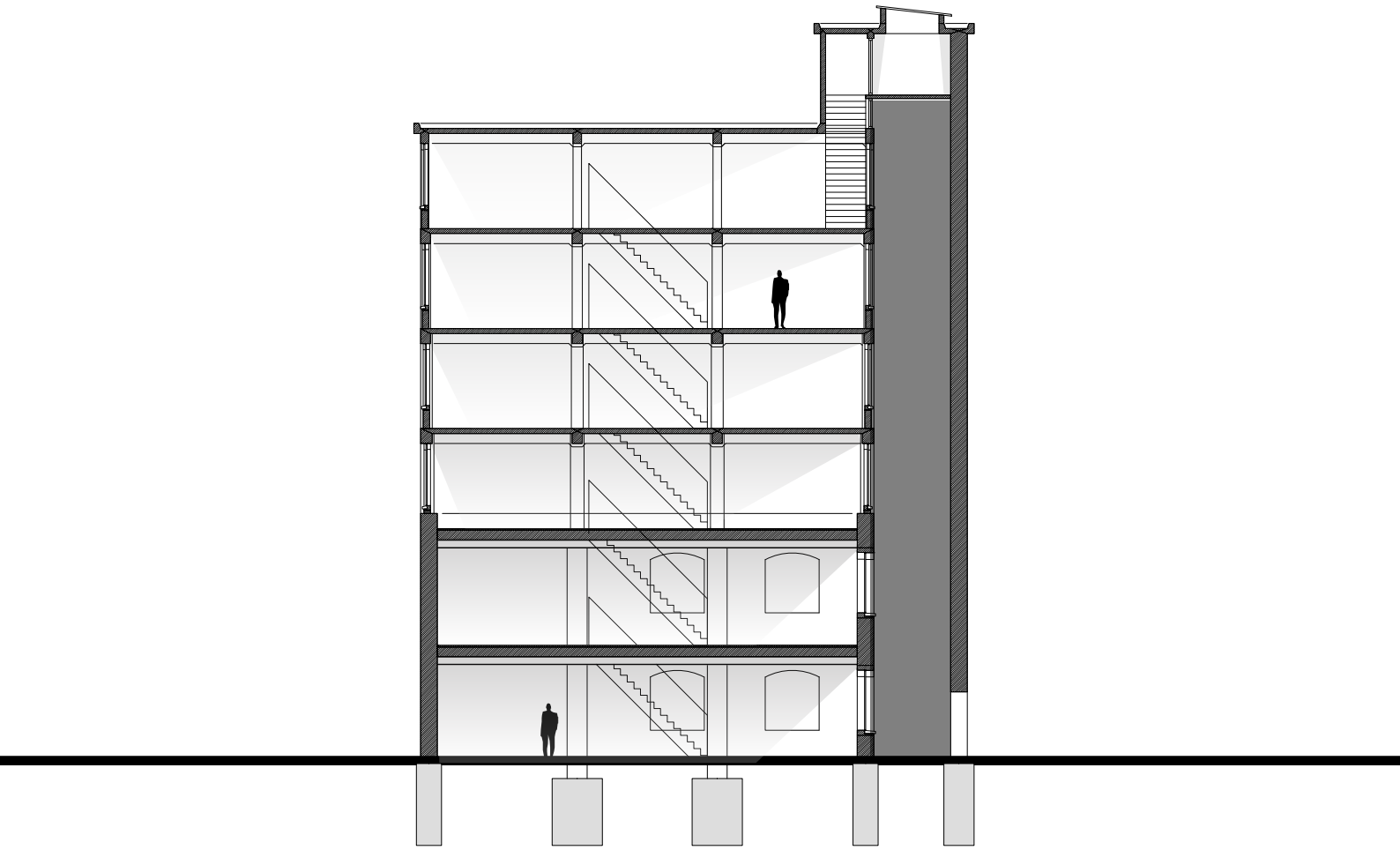
Scale 1:200

10.000 mm


Vertical Articulation
Horizontal Articulation
Mass
Void
Doors?

Sections





Scale 1:200

10.000 mm

Interior

While representing the 3d skeletal structure, the façade of the Brikkenbouw simultaneously conceals the interior spatial configuration. Economical use of materials and methods of construction, are not hidden but clearly expressed. The visible reinforced concrete frame of the Brikkengebouw is the witness of this attitude. Different scale regions are related to each other to each other making the building as a whole.

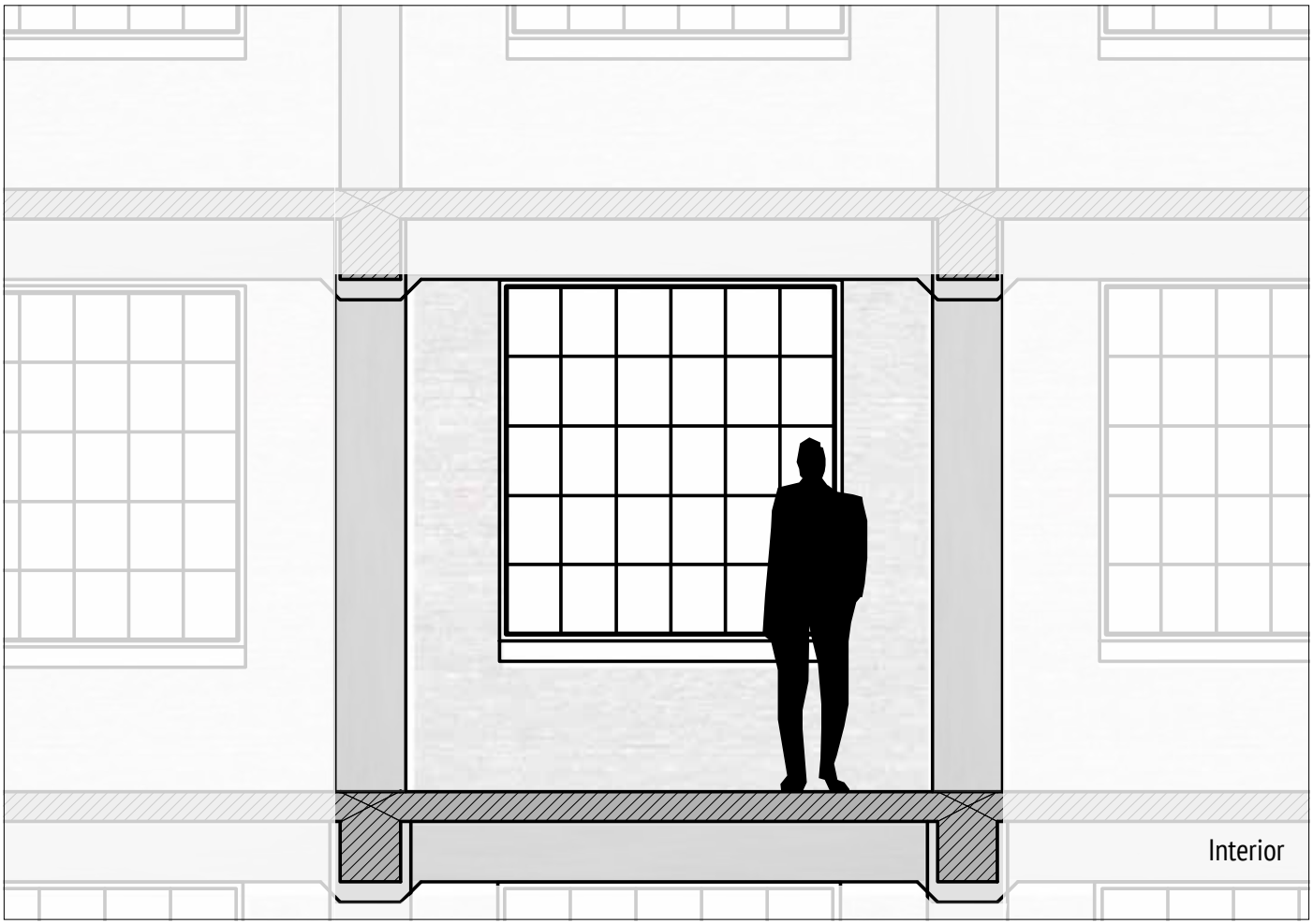
Multiple repetition of a module formed by a concrete skeleton with a brick infill and a window. The combination of the two different materials in the façade, the structural concrete columns and the bricks infill, creates a hierarchy. Their rhythmic repetition and the variation in size of the concrete columns (becoming smaller from bottom to top of the façade) show the clever use of the qualities of the material. Moreover, the aesthetic composition of the façade relates to the interior of the building.

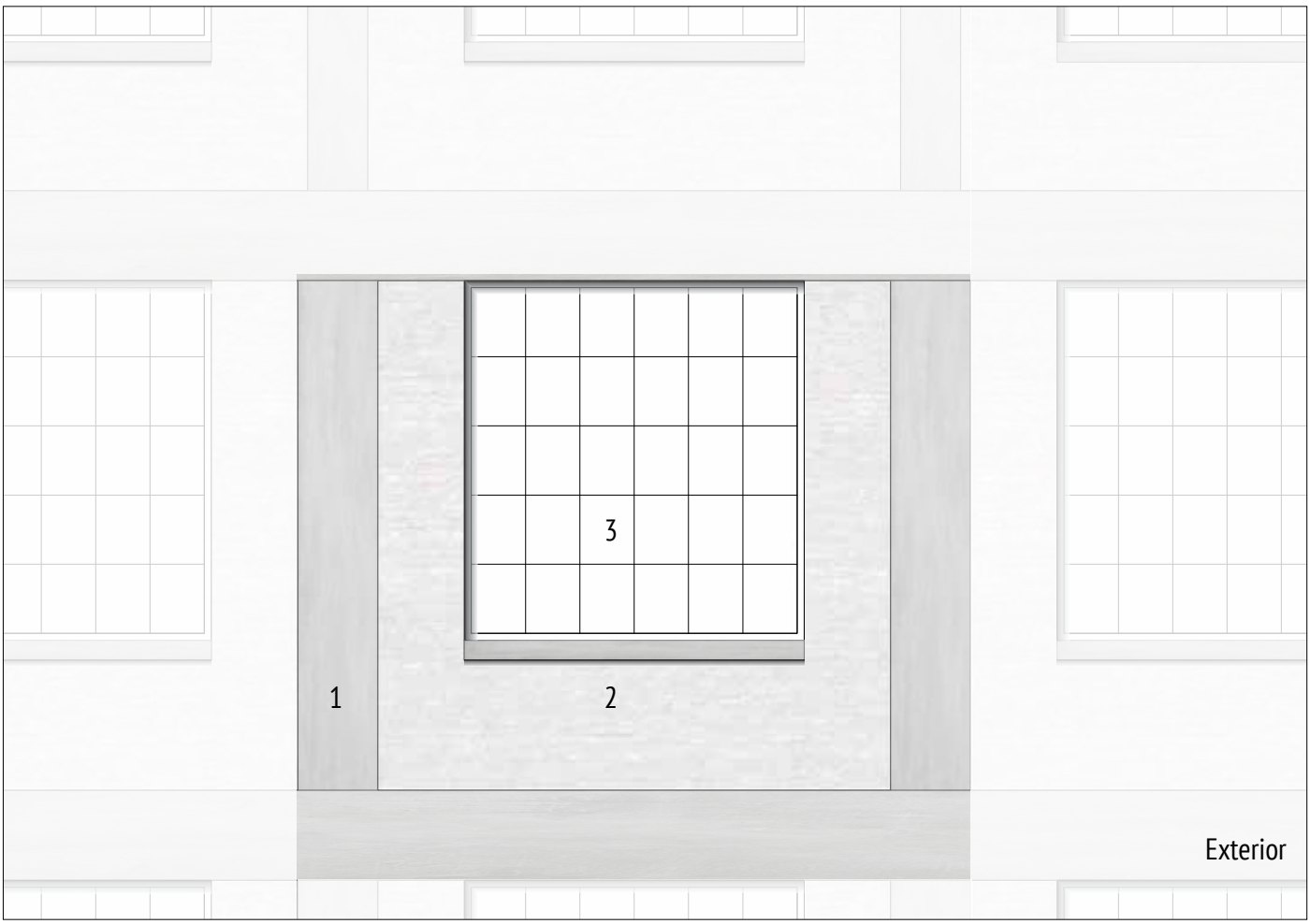
The infill of the bricks creates a pattern that is driven from the larger scale. This refers to the scaled hierarchy in the design and displays a clear order and therefore makes the wall readable to people.

1 Concrete skeleton according to Hennebique system

2 Cross-bond Brick infil

3 Window ...




3
1
2
Exterior

Conclusion

The Brikkengebouw is built in different periods according to one typology, which is an industrial hall. These periods has led the building to become one unique object whereby different developments of the industrial hall typology of the Sphinx terrain is visible in it. The building stands alone on its monumental context. Yet it has a strong structure which is driven from different phases of the history of site. This structure has given special characteristics to the building; in its composition, materialization, spaces and daylight. It has created a hierarchy in building's architectural language which communicates to the observer through its aesthetic of structurally order yet industrially rough appearance.

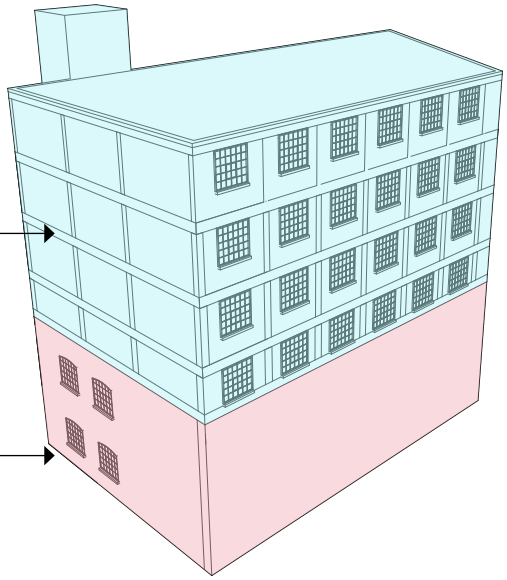
BUILDING TECHNOLOGY

This chapter investigates the technological facts of the building. The structure and materialization of the building in different periods will be analyzed in order to understand how different materials have been constructed into one industrial object.

Building parts

Inner-space concrete hall

Inner-space brick hall: concrete columns and steel beam structure



Structural characteristics

Brick hall with masonry from 1875

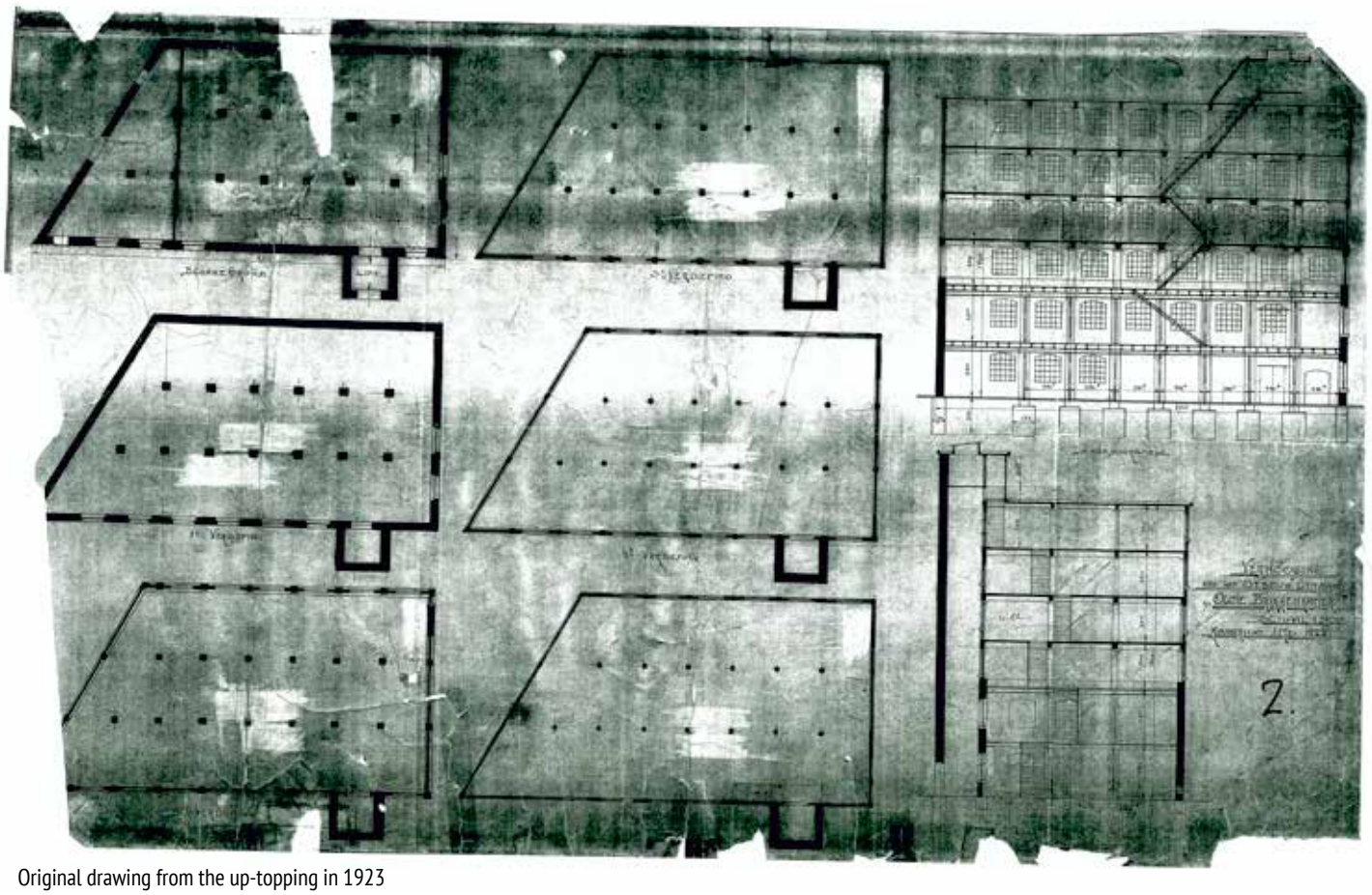
Concrete skeleton hall with masonry infill from 1923

The building has been built in different building styles: one in 1875 with masonry walls, steel columns and gabled roof. One in 1923 in concrete skeleton and masonry infill. The gabled roof of the first phase has been removed in order to be able to built on the top of the building. These two building styles differ from each other. The difference is visible in building structure system, materials and spaces. Yet they are juxtaposed as a whole building.
The first phase of the building is strengthened for the up-topping. The walls together with the columns make a grid which is used as a foundation for the construction of the second phase. Therefore, All the walls from the first phase are load-bearing brick walls in 470 mm.

The original drawing from the up-topping in 1923 shows that the steel columns of the first phase are covered with concrete. However, these are not visible in the building structure anymore. Furthermore, the foundation of the building is drawn in concrete and it is difficult to guess what kind of foundation the building had before the up-topping. A thin layer of stone has been applied on the ground as the ground-floor. The drawing also shows the place of the stairs of the first phase. It can be guessed that the design was meant to continue the existing circulation system where the stairs were in the middle of the building but they are now placed next to the lift. There are some voids visible in the first two floors in the middle of the building which shows that the circulation system of the first phase was in the middle. But these voids do not continue in other floors. I think that the stairs are placed next to the lift in order to place the vertical and horizontal circulation systems next to each other and to create more efficient floor space.

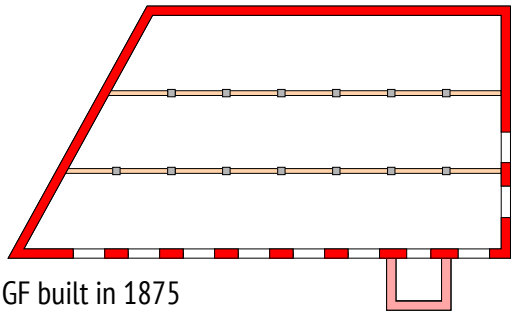
GF, 1st second floor from 1875 are covered with store, The stair voids are filled with concrete

Concrete upper floors from 1923 have no voids for stairs

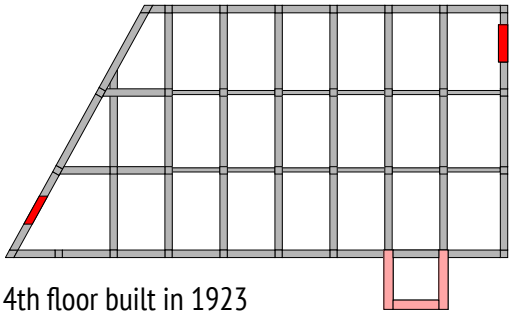


Original drawing from the up-topping in 1923

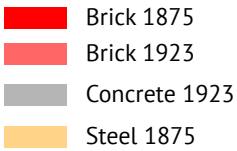
Age of materials



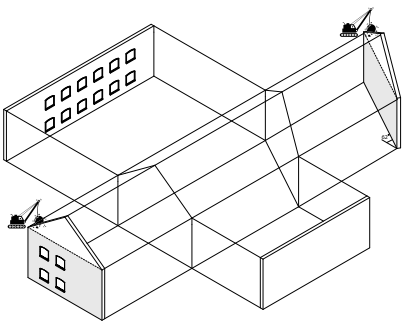
GF built in 1875



4th floor built in 1923



New materials were added to the first phase in order to be able to build upon the building. These materials are the concrete cover around the steel structure and the lift. The diagram above shows the smelting of different materials in different periods.
Furthermore, the chimney walls are not removed and they are visible in the south and north facades of third and forth floor. The beams of the second phase are therefore applied next to the chimney walls which makes an exception in the structure of the second phase

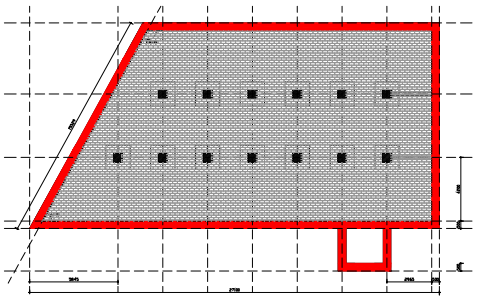


The gabled roof of the first phase has been removed in order to be able to build upon the building, yet the chimney walls are still visible

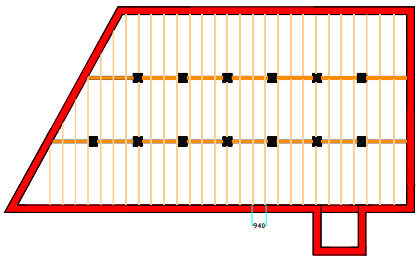
Outer-space appearance north facade
Exception in structure: beams of the second phase are applied next to the chimney wall.

Structure of the first phase with masonry walls, through vaulted floors and strengthened concrete columns

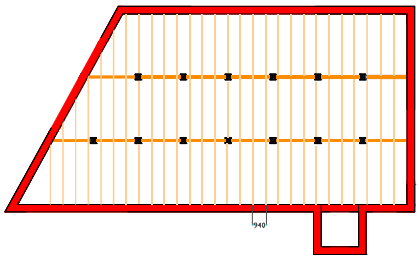
Rational structure from the second phase in concrete skeleton and masonry infill, there is stucco applied in the inside of the masonry infills from the third floor to the fifth floor.



GF



1



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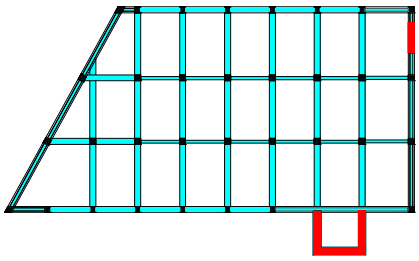

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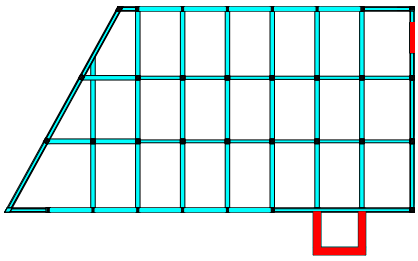

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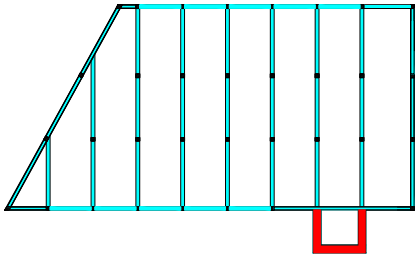
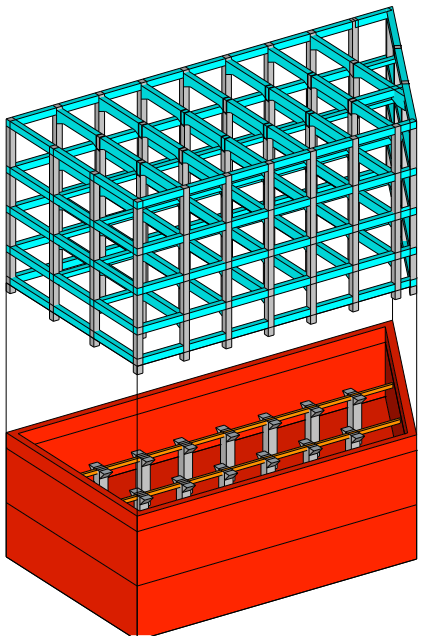


5

Structure Materials



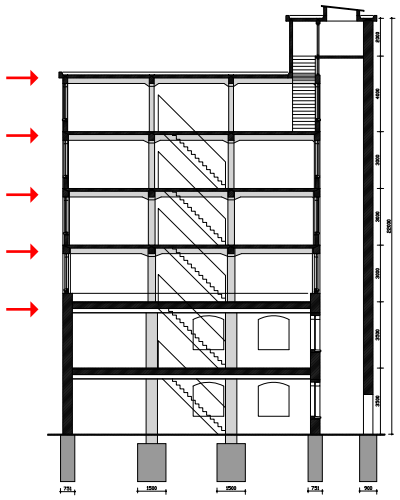
Structural materials

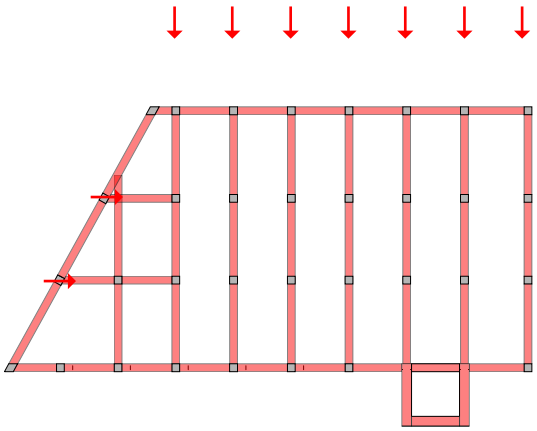
- Brickwork
- Steel beam (load-bearing)
- Steel beam (...)
- Concrete beam
- Concrete column

Horizontal forces are captured through bearing- walls, columns and the lift core. The columns are strengthened in east/west direction which makes the building also stable.

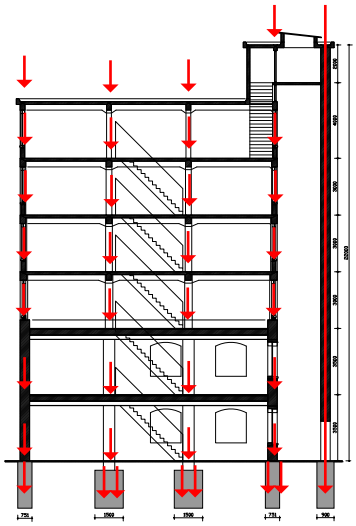
The lift core and the angled wall, the masonry walls make the building stable.

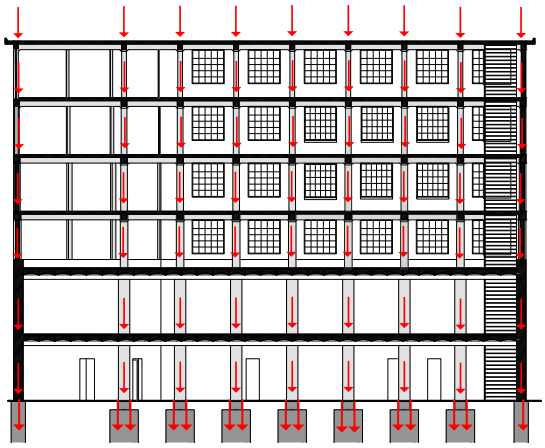
Horizontal forces





Vertical forces

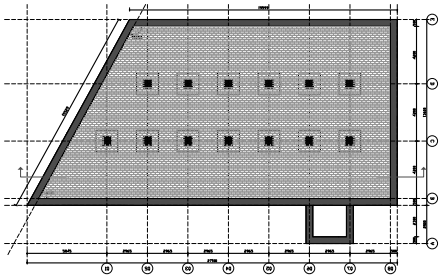




Vertical forces are captured through the columns and the load-bearing walls to the foundation of the building.

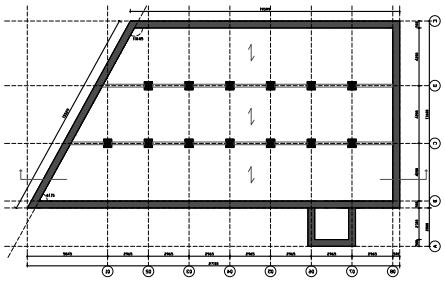
Stones are placed on the ground floor

GF

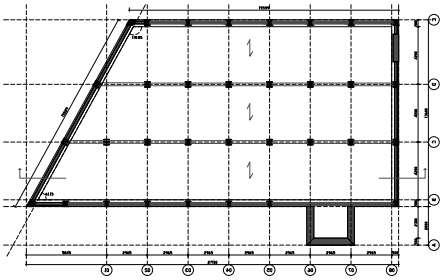


The through vaulted floors built in 1875 are spanned in one direction.

01

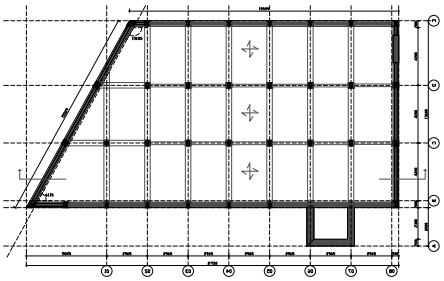


02

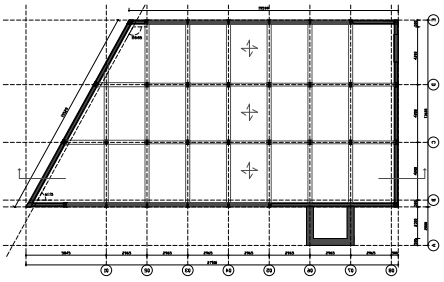


In the second phase, the floors are spanned in both direction. This is because of the reinforced concrete structure whereby the floor and the columns were built at the same time.

03

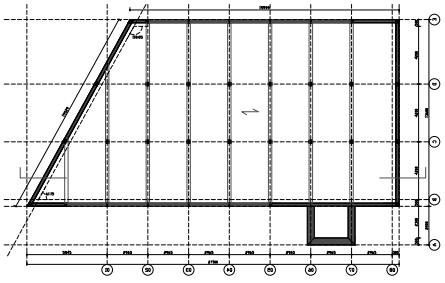


04



The roof of the building is again spanned in one direction because of its lighter weight.

05



Stairs from 1923

Rational window frames from 1923

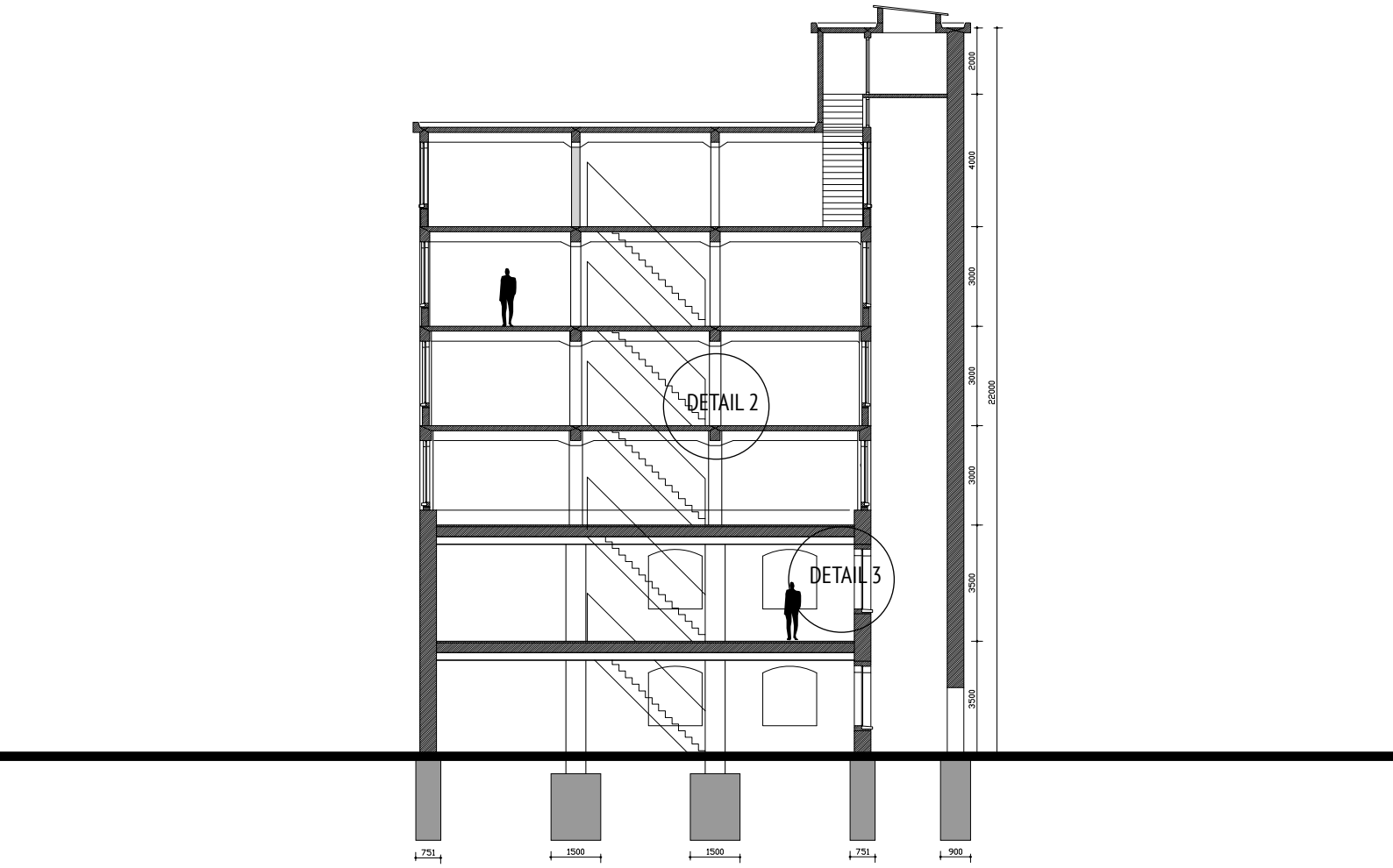
Window frames from 1875

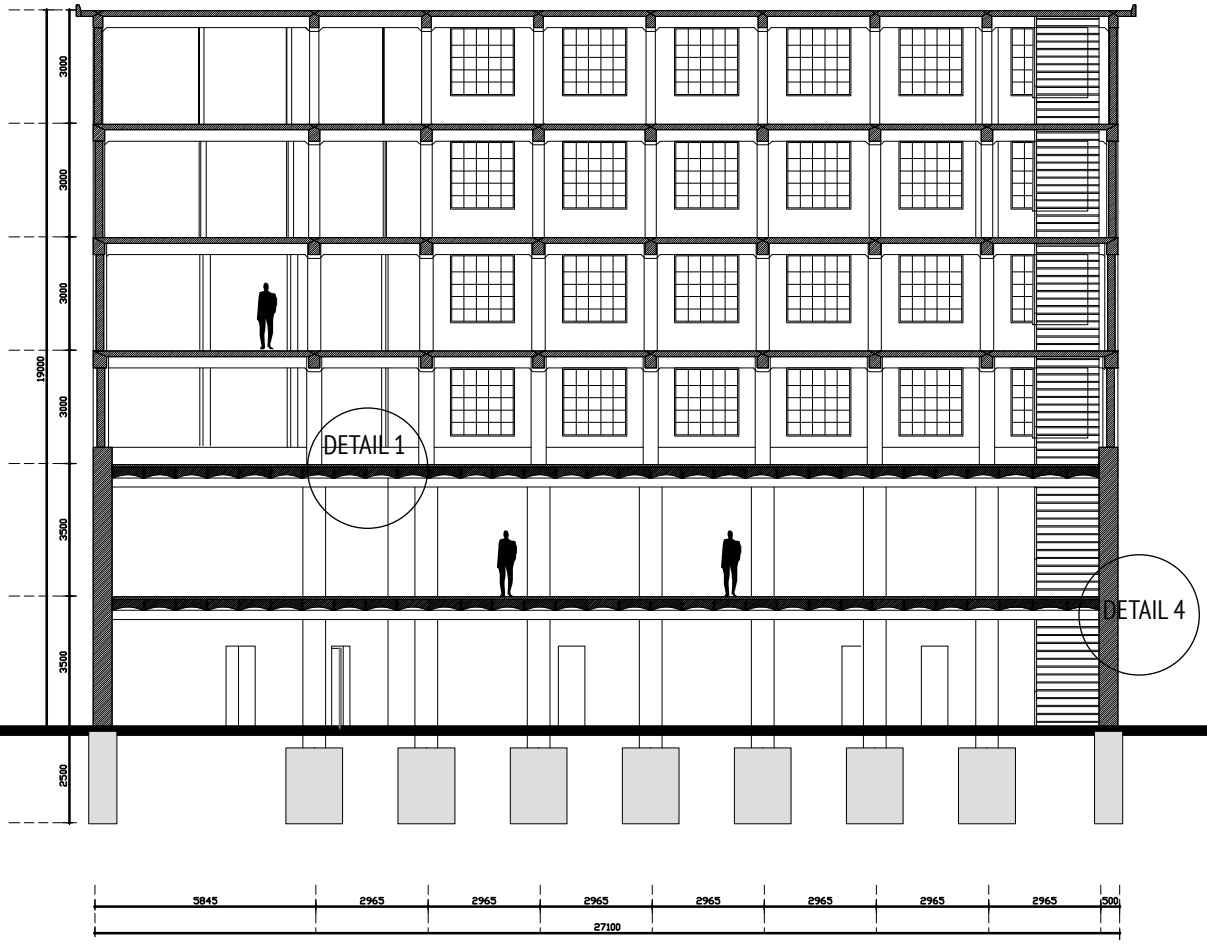
Ornamented wall anchors from 1875

Elements


DAMAGES

Sections


DETAIL 2
DETAIL 3
2000
4000
3000
3000
22000
3000
3500
3500
751
1500
1500
751
900


3600
3000
3000
3000
19000
3500
3500
2500
DETAIL 1
DETAIL 4
5845
2965
2965
2965
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2965
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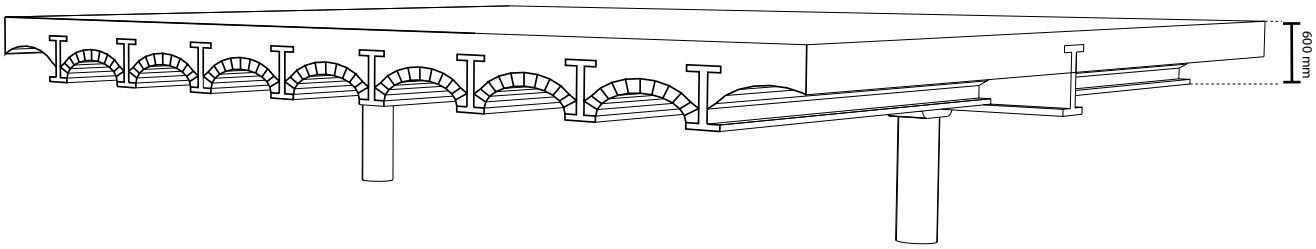
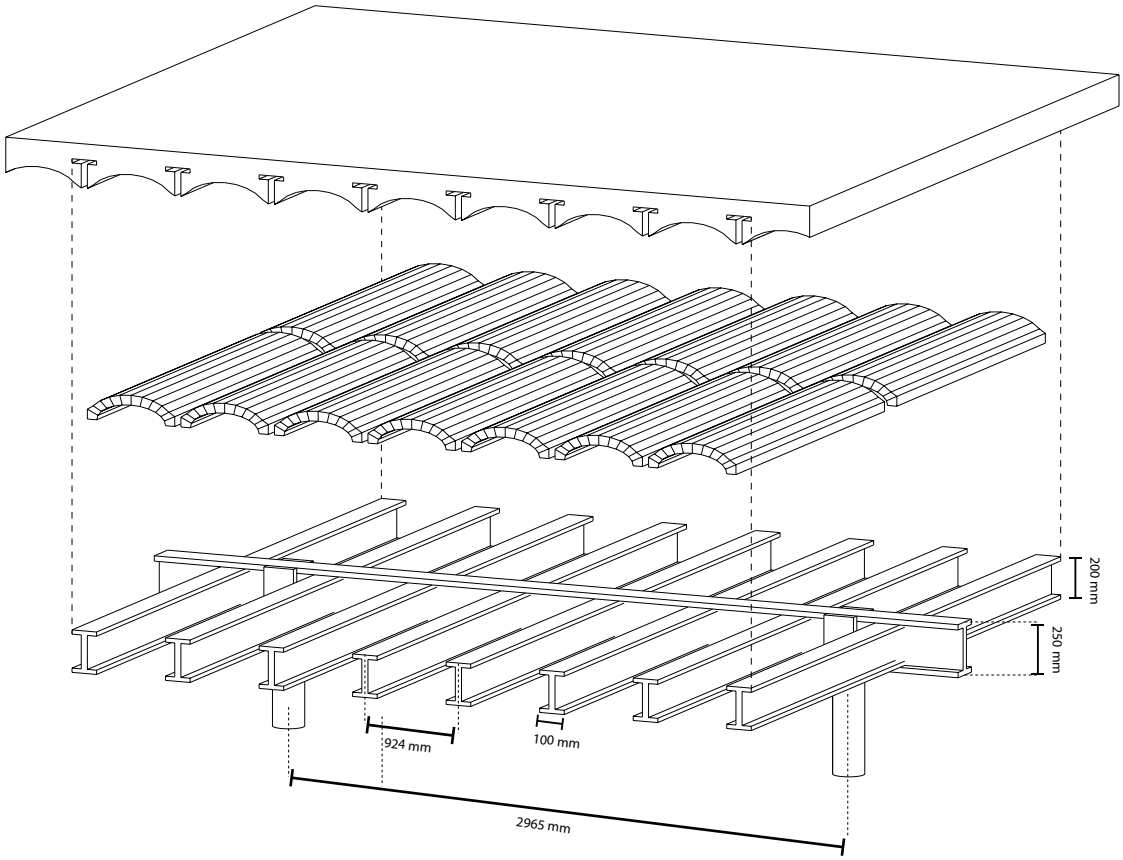
500
27100

Trough vault

First phase 1875

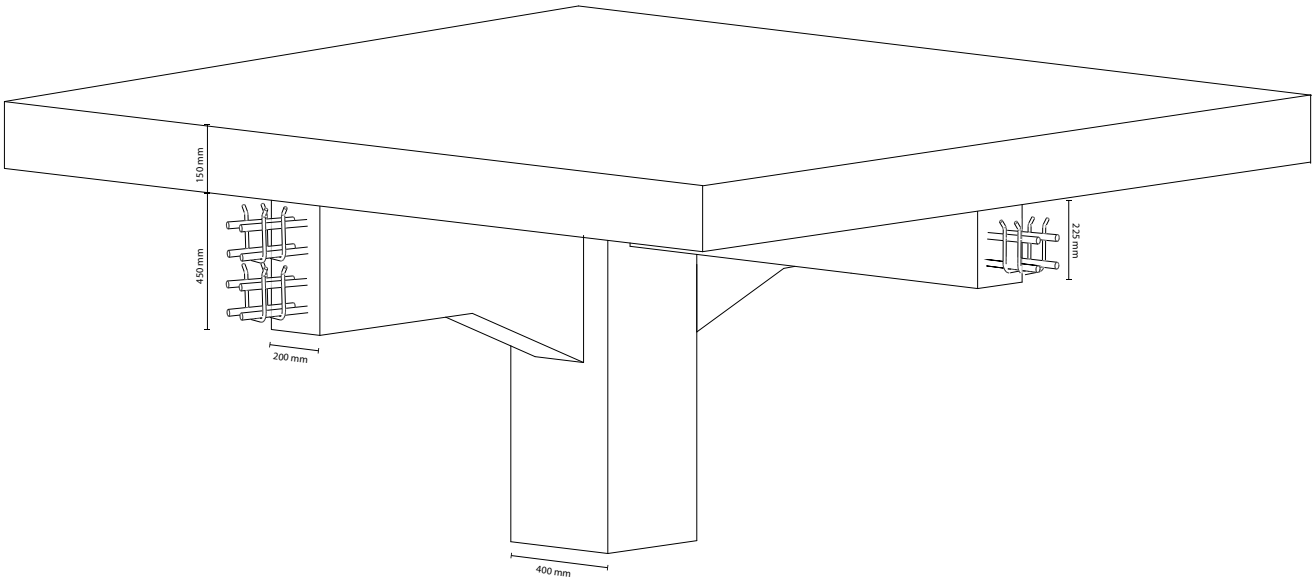




Detail 1 - Scale 1:50

Reinforced concrete columns & beams

Second phase 1924

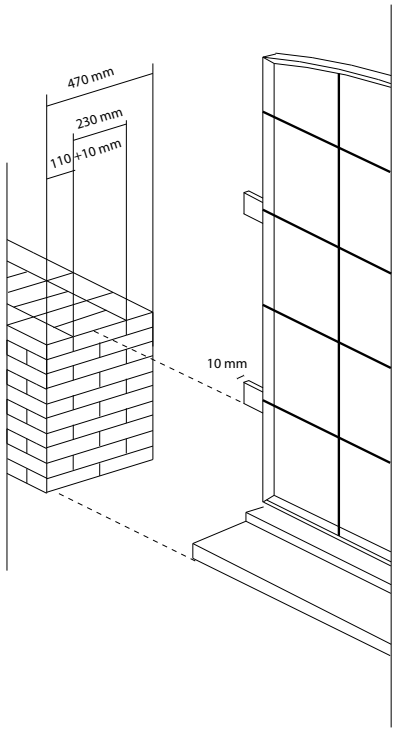


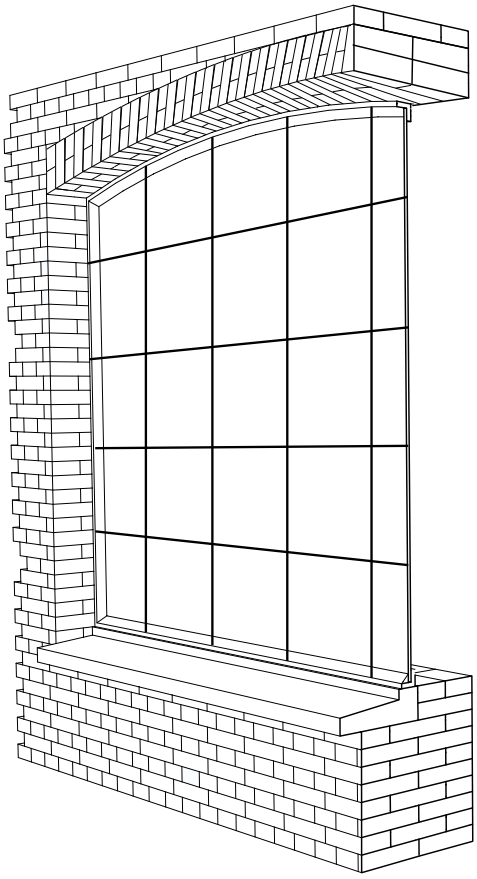
Detail 2 - Scale 1:20

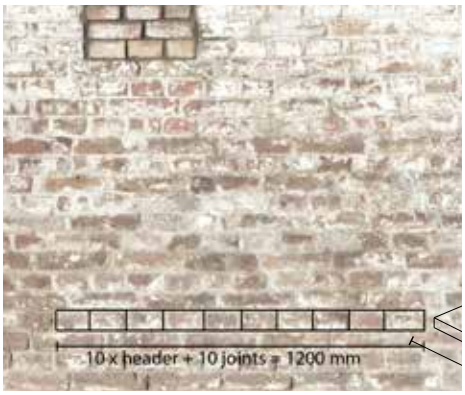
Windows

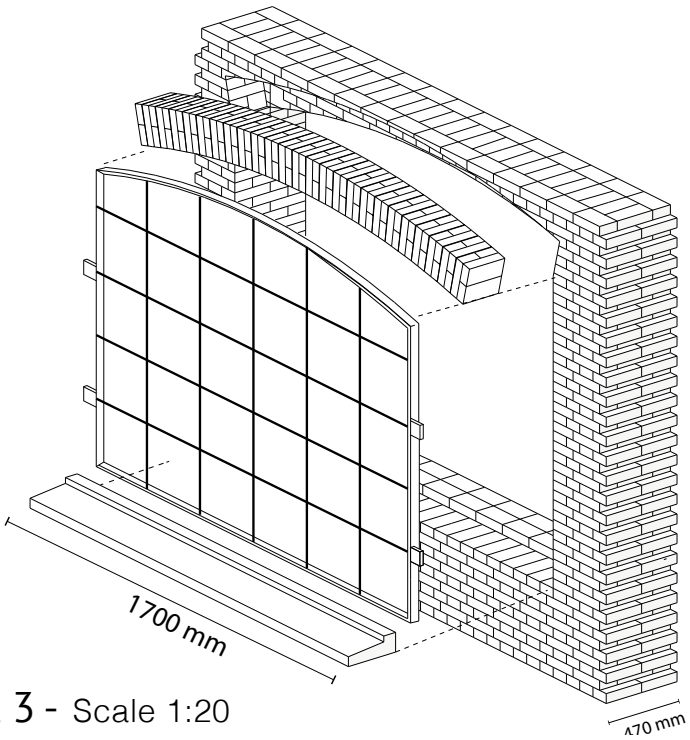
First phase 1875

The window anchors are between the joint of two bricks of 230 mm.





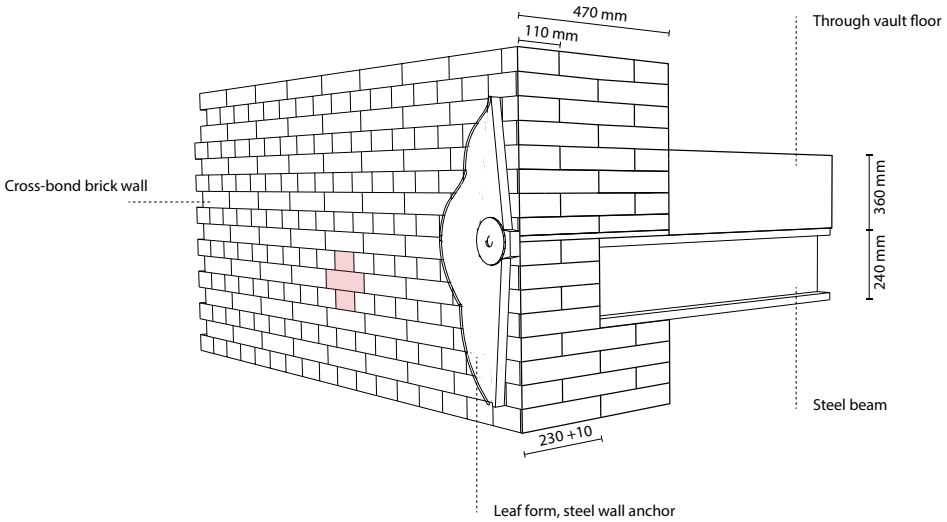


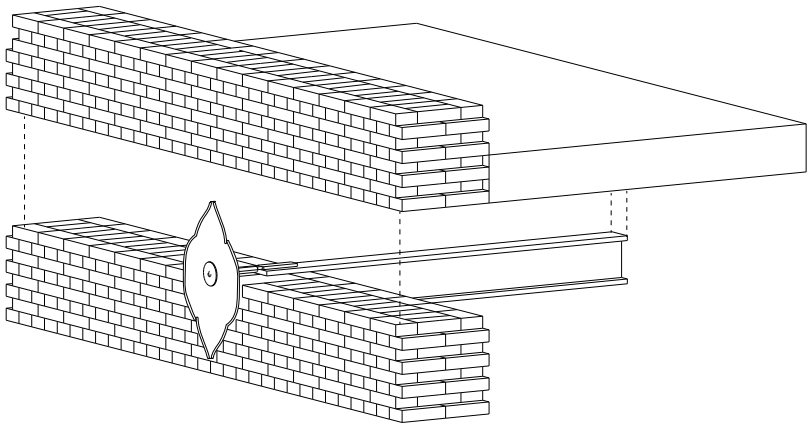


Detail 3 - Scale 1:20

Wall anchor

First phase 1875



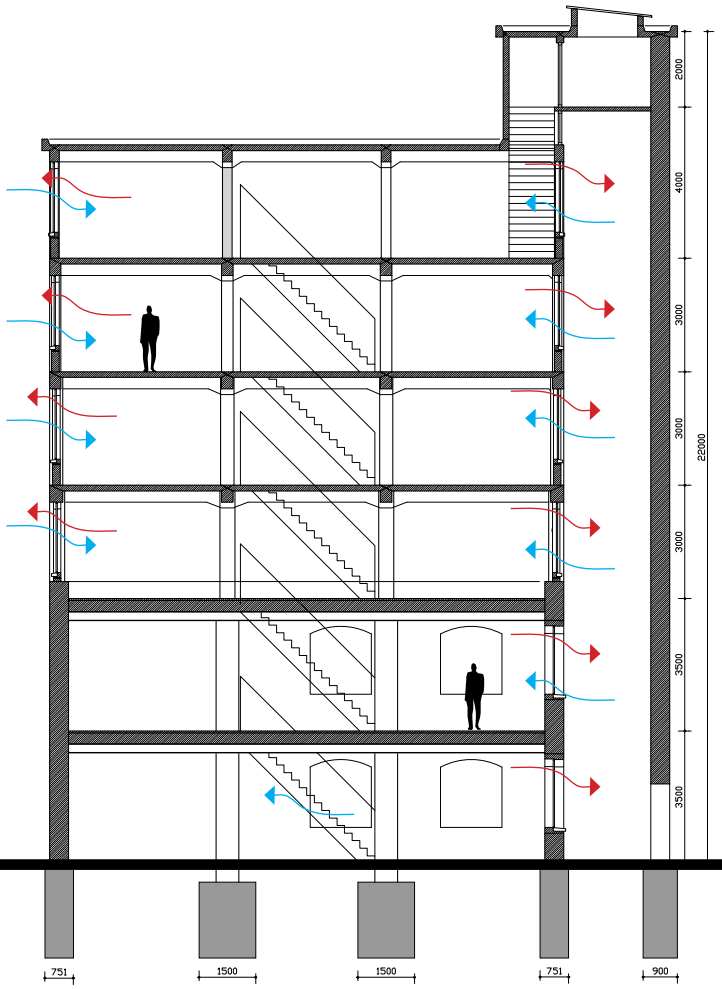


Detail 4 - Scale 1:20

Climate

The building has a natural ventilation system. The openings of the windows function as the ventilation of the building. The building have no isolation which makes the building cold in the winter and warm in the summer.

There are some ventilation holes in the first and second floor which refers to a ventilation which was probably for a specific use. These wholes can be used for the ventilation system of the new design.



Ventilation holes for a specific use

Windows with openings for ventilation

Conclusion

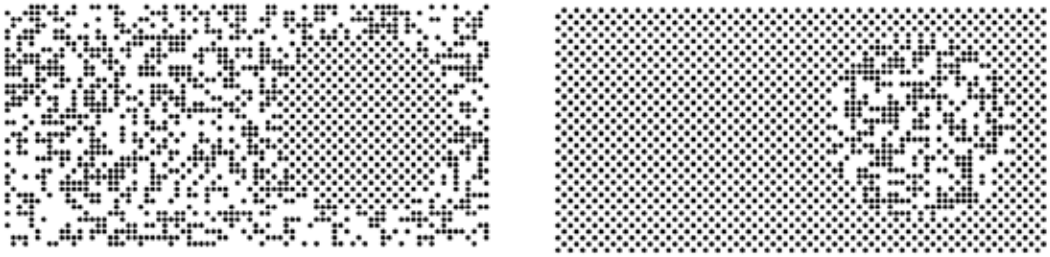
The structure of the building is divided in two different styles. These two different styles are recognizable to the observer in every stage like materialization, detailing, composition, etc. Yet they are smelted in one whole building. The structurally composition of the materials has formed a unified building. Different materials are crafted and assembled to make surfaces which has given the building special characteristics and effect.
The brick size 230 mm by 110 mm and the 10 mm joint is juxtaposed in a cross-bond composition what states the thickness of the walls and its other details. The concrete frames

ORDERING IN ARCHITECTURE

Throughout history, designers have searched for proportions that are neither so obvious as to be dull or so unstable as to be irritating. This Brikkengebouw grew out of proportional systems and their use in industrial design. Industrial design, as a practice, is very young. However, it is rooted in the ancient disciplines of art and architecture. Within ancient cultures, beauty and proportion were defined through two approaches: the idealization of The Physical and The idealization of The Abstract. Systems were based on the human body or geometric principles. The theory of these principles will be investigated in this chapter in order to find proportional system in building itself which defines its beauty.

Chaos and order

It is relatively easy to distinguish between order and chaos in architectural compositions, but the definition of these concepts is difficult. The following definitions can be assumed: The geometric order is represented by ideal mathematical forms (in 2D: e.g. line,circle, quarter,or 3D: e.g. plane, sphere, cube) and ideal relationships (e.g. perpendicularly, parallelism, symmetry, rhythm/regularity). Chaos is the opposite of geometric order; it is represented by forms and relationships that are complex and difficult to describe with the language of classic mathematics. From the point of view of spatial perception, other definitions can be assumed. In figure below, two graphic compositions are presented, which consists of 1600 points each. The average density of points is constant in the whole area of both compositions. In the First composition the circular area of regular points is visible on the background of random points. The other composition is inverse: the circular area of random points is visible on the background of regular points. Based on this example, we can indirectly define chaos as an interference of geometric order and geometric order as an interference of chaos. Geometric order and chaos are the basic components of the composition of architectural and urban structures. Coexistence of these components in architectonic space is very natural. In general, geometric order is a result of design and planning, and chaos is created by self-organizing processes (Highfield, 1996, p. 61).



Two graphic compositions: a regular area on a chaotic background (left part) and chaotic area on a regular background (right part)

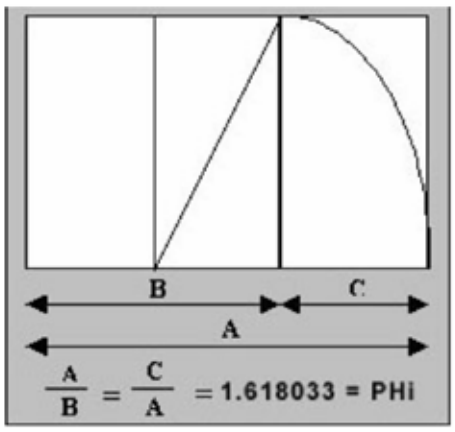
The Brikkengebouw has been also built through chaos and order. The order refers to its geometrical proportions driven from horizontal and vertical directions and the chaos is driven from its context which is visible in its angled wall. This wall is perpendicular to the Sphinx wall (or the fortifications) which have a more broad, complex definition for the place.
Proportioning systems go beyond the functional and technical determinants of architectural form and space to provide an aesthetic rationale for their dimensions. They can visually unify multiplicity of elements in architectural design by having all of its parts belong to the same family of proportions. They can provide a sense of order in, and heighten the continuity of, a sequence odd spaces. They can establish relationships between exteriors and interiors of the building. A number of theories of desirable proportions have been developed in the course of history. The notion of devising a system for design and communicating its means is common to all periods (Ching, 1943, p.163) In the Brikkengebouw I have founded the golden section proportion principle which defines the order of the building.

Golden section

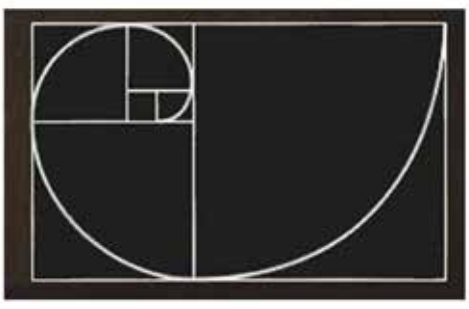
Throughout history, designers have searched for proportions that are neither so obvious as to be dull or so unstable as to be irritating. Pythagoras believed that ideal proportions are the underlying order and harmonic structure of the universe, and that these proportions are the underlying order and harmonic structure of the universe, and that these proportions are explained by consistent whole number relationships between parts. He developed sets of musical scales based on the sounds produced by strings that bore a 6:4:3 numerical relationship once to another. Later, during the Renaissance, these harmonic intervals were applied to architectural design.
The Golden section, also called the golden mean or the golden number, was believed by the early Greeks to be the perfect proportional relationship. They understood the golden section to play an important role in the proportion of the human body, and they proportioned their temples accordingly. The golden section states that the smaller part of a whole is to the larger part, as the larger part is to the sum of the two (Doczi, 1981, p 25)

The Golden Mean is perhaps the best known of all proportional systems. It was defined by Euclid in the third century. (Livio, 2002) He was a mathematician who is largely responsible for the development of geometry. Euclid divided a line in to two sections, whereby the ratio of the smaller section to the larger section is equal to the ratio of the larger section to the whole. It can be expressed using the formula A/C = AB/BC. Numerically, it is an irrational number and is rounded to 1.618. It is symbolized by the Greek letter phi (Doczi, 1981, p 51)

This proportion has garnered so much attention because of the astonishing range of places that it appears. It is found not only in geometry, but in nature as well. It is seen in the arrangement of apple seeds in a five pointed star, which is composed of triangles with the golden ratio between its long and short sides. Each stage of growth of the nautilus shell can be encompassed by a Golden Rectangle as it grows in a logarithmic spiral. It is he same spiral created by successively larger Golden Rectangles progressing from a center point (Doczi, 1981 p. 66).

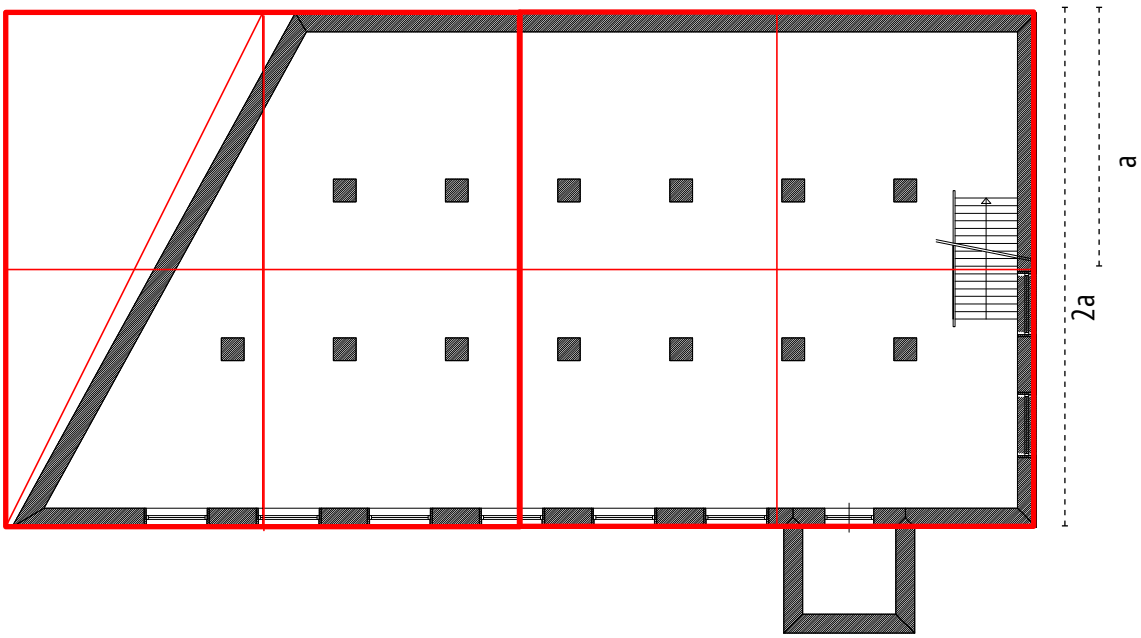


The Golden mean Doczi, 1981, p 51)

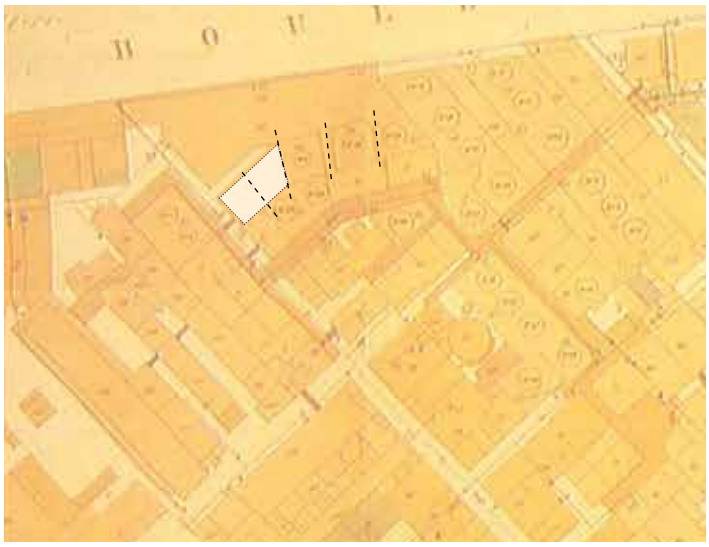


Logarithm spiral of Fibbonaci spiral (Doczi, 1981 p. 66)

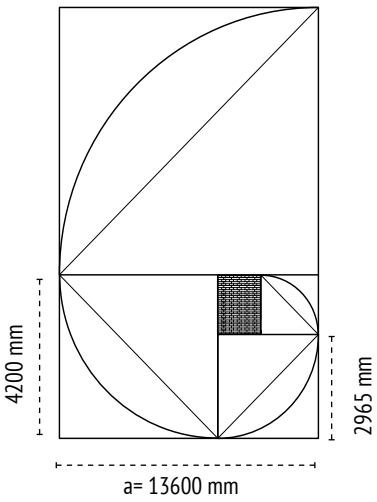
Golden section in Brikkengebouw



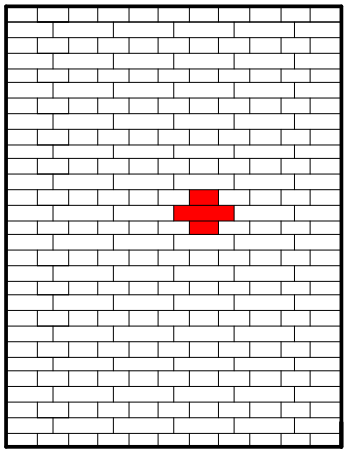
The proportional system of the Golden Section is founded in the Brikkengebouw. The building is designed according to symmetrical proportions. The oblique angle of the building which comes from the building that were perpendicular oriented in the site have made a disorder in the symmetrical ordering of the building. The quite same square size was repeated whereas the Brikkengebouw has two squares as one building and other buildings just one square.



Site planning from 1893

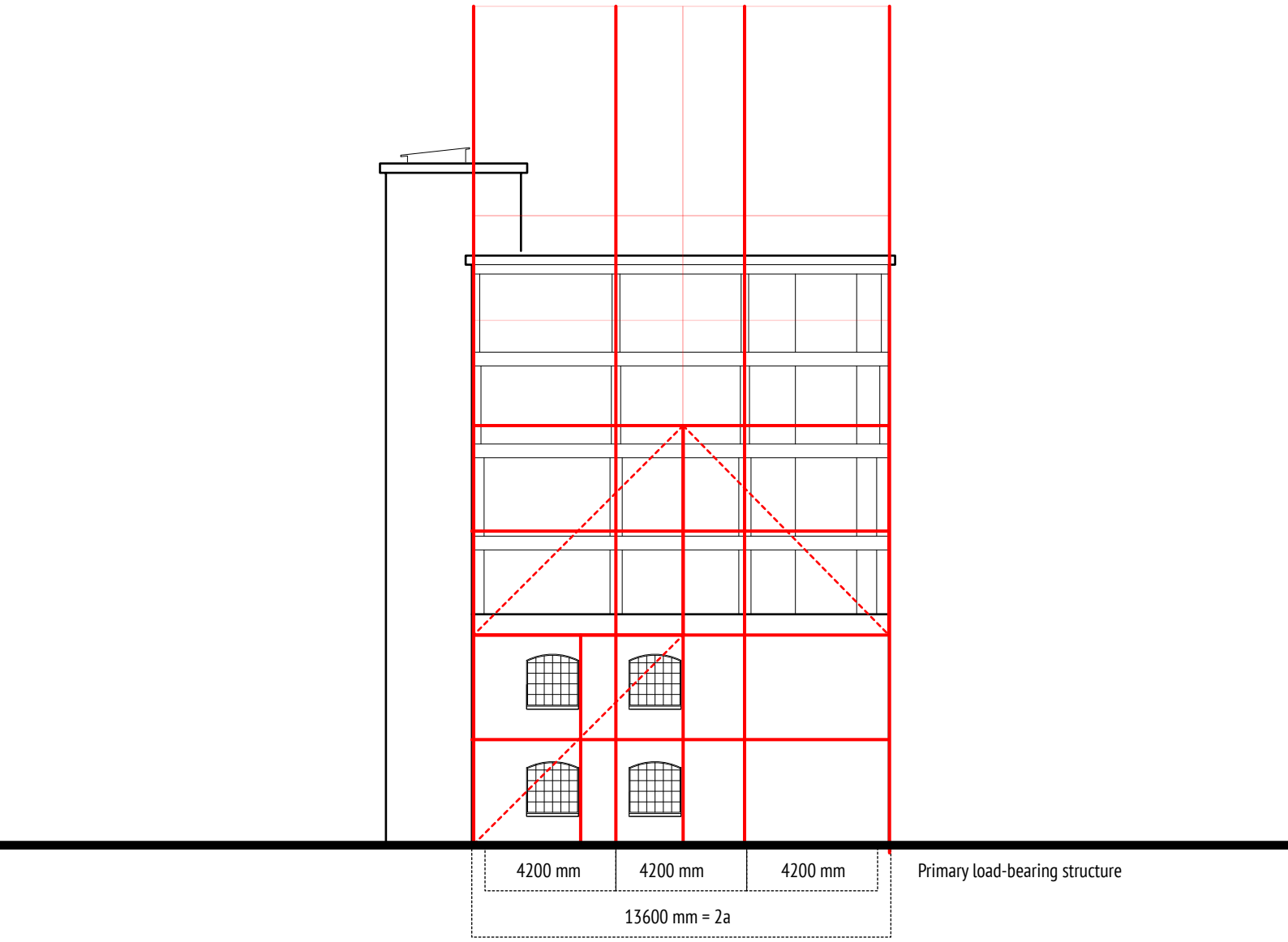


Whole



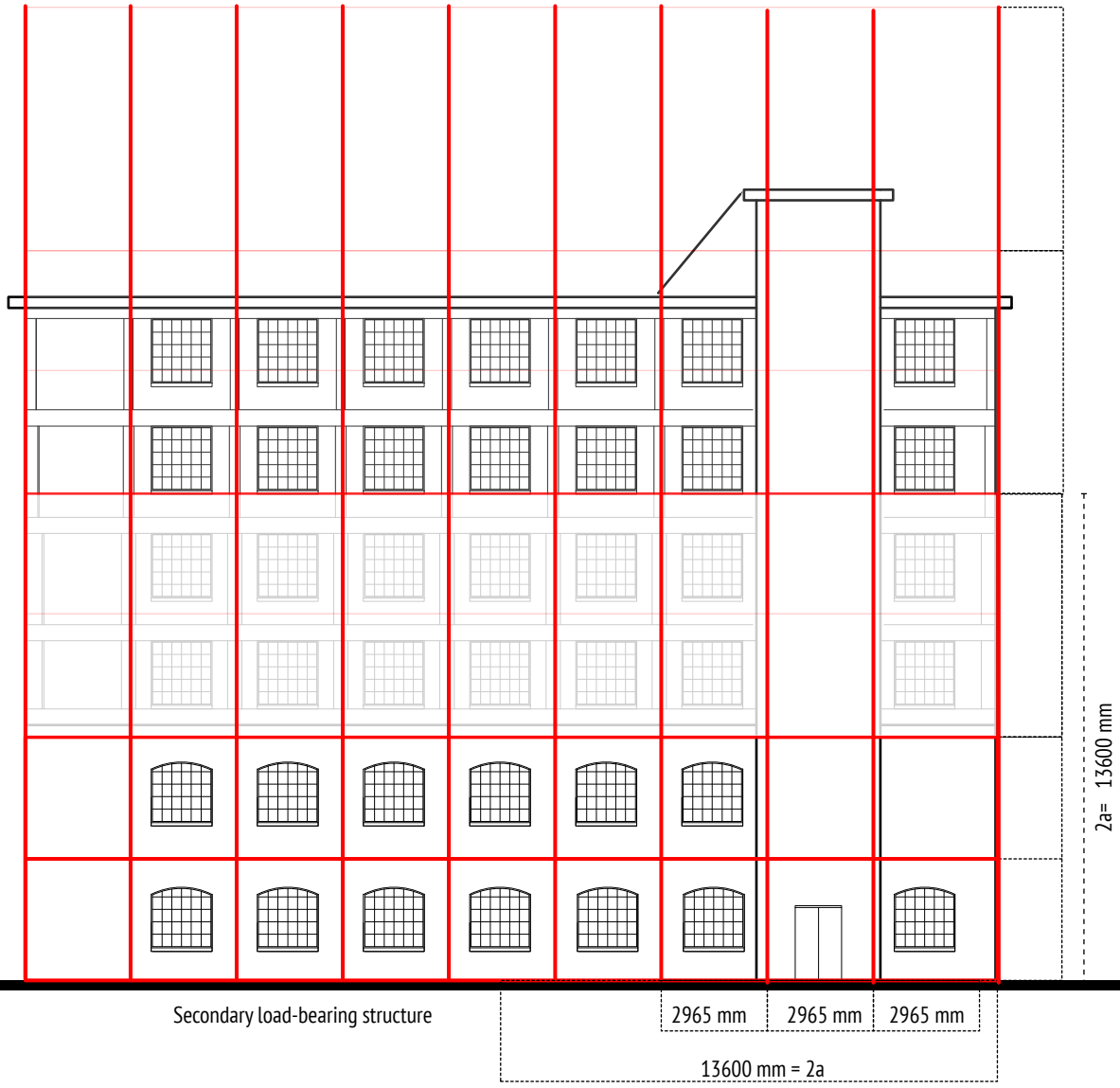
Part: the load-bearing part of the brick wall

The size of the half of the square has defined all other structural measurements of the building according to a Fibbonaci model. The squares are defined from big to small in the following order: the biggest square (2a) is the size of half of the building (a), the primary loadbearing structure (4200mm), the secundary loadbearing structure (2965 mm) , the windows (1700 mm) and the wall between the windows (1265 mm). This refers to the harmonic relations of the small scaled parts to the bigger scale which makes the building as a whole. These relations add quality to the beauty of the building by showing how different parts have relation to each other.



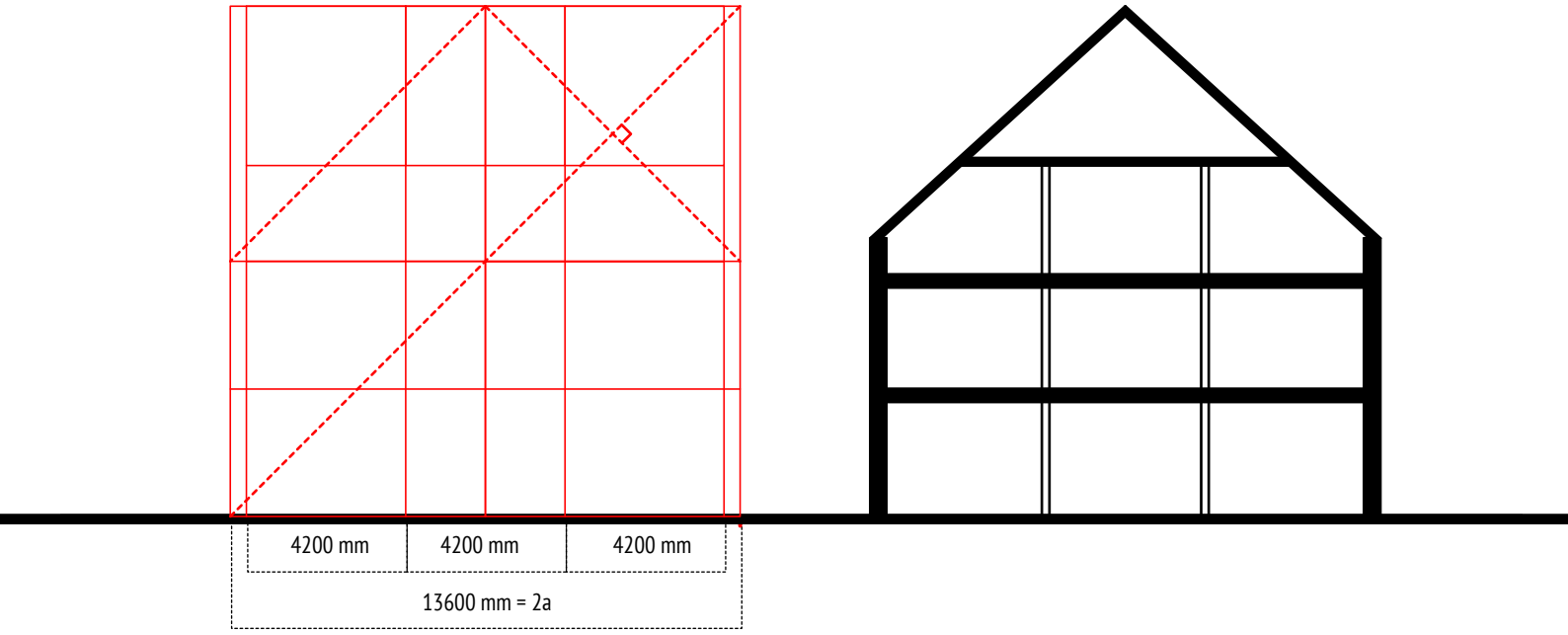
South facade

The initial design of the first phase can be read through the ordering of the building. The building was symmetrical designed. One half of the building is closed and the other half is open in horizontal direction and one half was the second two floors and the other half was the roof of the building in vertical direction.
Furthermore the primary load-bearing structure has divided the building in three zones in the longitudinal axis. The angled axis of the Brikkengebouw creates an disorder in this symmetrical approach.



West facade

A repetition of vertical and horizontal lines have defined the initial building from 1875. The vertical lines are the primary and secondary load-bearing lines and the horizontal lines are the floors of the building.
As it can be seen from the drawings the horizontal lines of the first phase have no relation to the horizontal lines of the second phase which makes also a disorder in the composition of the the building in horizontal direction. The floors of the first two floors are 3,5 m high and the upper floors are 3 m high. This is because of the standard materialization of the building from the rational period of 1923. The vertical lines are following each other in both directions with a distance of 4,2 m in primary load-bearing structure which is visible in the south facade and the 2,96 m secondary load bearing structure which is visible in the west facade.



South facade

Through the ordering of the building, its initial design can be guessed. The initial design was based on perfect proportions, symmetry and hierarchy of scales. The angled axis from an a-sized square with the same size axes has defined the angle of the roof. This angle is shown by dot-lines. All the structural spaces have a relationship to each other which gives a beauty to its monumentality.

ornament

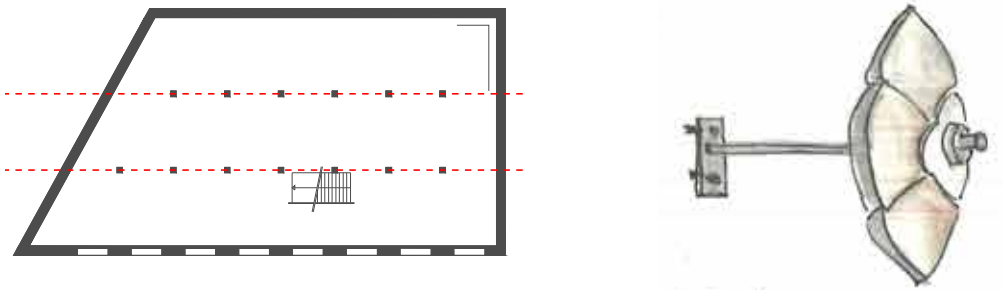
noun or·na·ment \ȯr-nə-mənt\

1. archaic : a useful accessory
2. something that lends grace or beauty

Structural ordering of the building from 1875 has been accentuated by ornaments which makes this ordering principle even in building's aesthetics.
Ornament, despite of all its contradictory meanings and definitions, has been defined as a way of communication, interaction and humanizing feature in design; As a sensory necessity of design, a way to give architecture individuality and voice (Sullivan, 1876), and as a way that material transmits affect (Farshid Moussavi, 2006).

Ornament is an useful accessory and it is used to simply emphasize in a more or less conscious manner the natural laws (the order) of the object. It is a way to make buildings evoke a variety of responses and effects in viewers.

The initial structure of the first phase can be drawn according to its ornamentation principle in the facade without going inside of the building. The structure lines are accentuated by ornamented wall anchors. This was done to emphasize the structure laws of building and its ordering principle. The primary construction anchors are bigger than the secondary anchors.



Bigger size ornamented wall anchors communicating the primary load-bearing structure

Materialization

The ordering quality of the building is also readable through its materialization. Concrete, brick and steel are not communicative by their own. They are inert substances without any expression. They are shaped, assembled and put together to create surfaces. It is by the way of this process of the material that each surface have gained a special characteristic and effect.
The drawing below shows the building with and without its material expression. This materialization have created a strong sense of communicatively ordering of the building. Different time phases with specific materials can be read from the facade. This materialization is exaggerated and overstated and repeated in every part of its interior and exterior, so that wherever you are, inside or outside, the building sings with the same message.

Conclusion

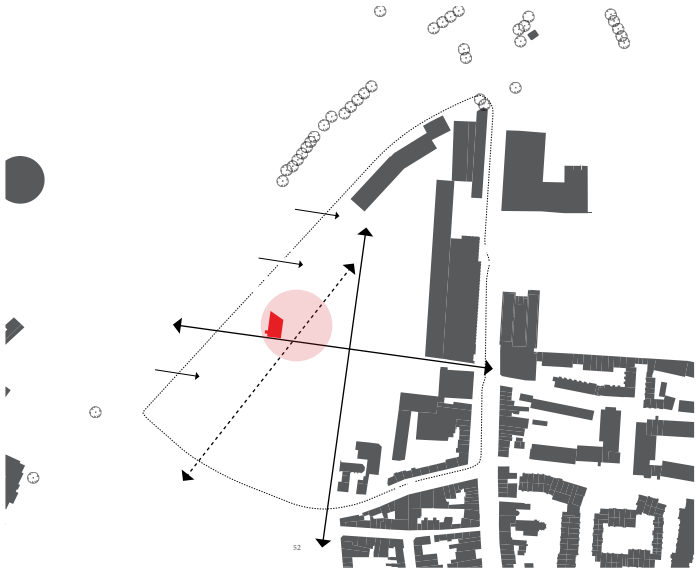
The geometric and chaos are the basic components of the building which can not be distinguished from each other. These two components have led each other to one industrial aesthetic. The Building is defined through different structural ordering which is accentuated by its materialization and integrated in its context. This shows how chaos and geometric have create a whole. The structure of an industrial hall typology which shows the developments of the sphinx terrain in different time frames (order) is smelted into one object through contextual characteristics (disorder).

The ordering of the first phase is really strong through the golden section, symmetry and building's proportion. The ordering of the second phase follows nearly the same structural rules. The only difference of the ordering lies in the standardization of materials, which is driven from the mass-production. The standardization have created a rational ordering principle which is recognizable on its own and yet it is built according to the rules of the first phase. Furthermore, the building's materialization which refers to the crafted industrial building strengthens its ordering.

Conclusion + Starting points

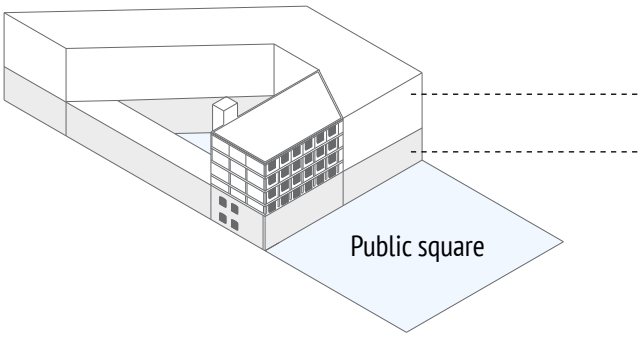
The Brikkengebouw stands alone on the sphinx terrain. The Building is defined through different building styles and the locational characteristics. These two different styles are built according to an industrial hall typology and they are recognizable to the observer in every stage like materialization, detailing, composition, etc. Yet they are smelted in one whole building. The structurally composition of the materials has formed a unified building. Different materials are crafted and assembled to make surfaces which has given the building special characteristics and effect. The building communicates to the observer through its aesthetic of structurally ordering yet industrially rough appearance.
The geometric and chaos are the basic components of the building which can not be distinguished from each other. These two components have led each other to one industrial aesthetic. The Building is defined through different structural ordering which is accentuated by its materialization and integrated in its context. This shows how chaos and geometric have create a whole. The structure of an industrial hall typology which shows the developments of the sphinx terrain in different time frames (order) is smelted into one object through contextual characteristics (disorder).
The geometric order from the rough industrial time in 1875 causes in an observer a feeling of classic beauty and harmony. But as well, the chaotic structures of the angled wall and the white paint creates an individual atmosphere and peculiar beauty. Concluding, in the architectural composition the geometric order, as well as chaos are the basic components. The geometric order evokes the feeling of harmony, seriousness and monumentality. Chaos revives the architectural space and gives it an individual dimension. I think that the elimination of chaos from the architectural composition of Brikkengebouw would have caused a spatial boredom and the elimination of geometric order would have caused the illegibility of compositions in the building. Therefore, the building remains a good quality of architectural space whereby the balance between order and chaos is have created a valuable monument.These characteristics of the building, the balance between geometry and chaos can be used as the starting point for new developments of the site.

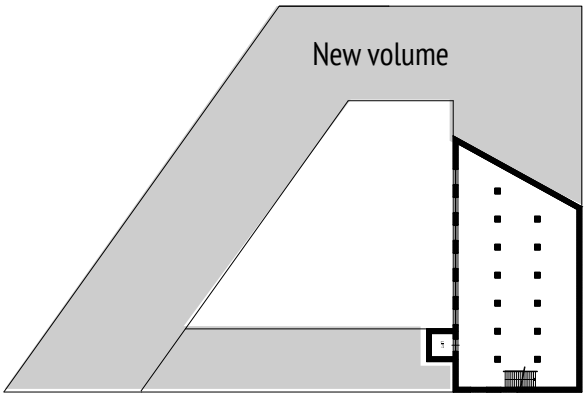
The starting points for the design are the following:



Public core

- Re-integrate the building to its surrounding and the city by using paths and public spaces

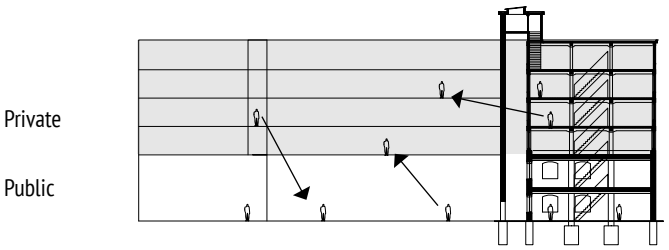




A part of the whole

- Using the structural organization of the sphinx terrain and the building itself in order to re-develope it to a lively place.

- Using order and disorder in the design to define locational and architectural characteristics which makes the place



- Division in program (publicness and privateness) by using the different characteristics of different building styles

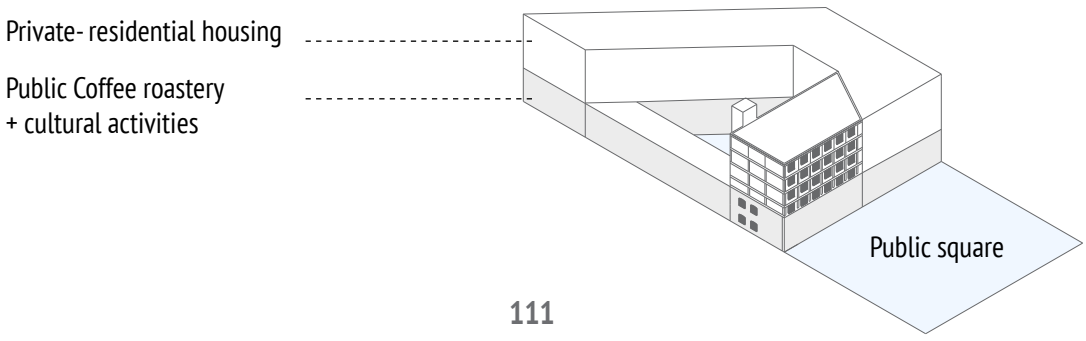
- Public and private are spatially divided and connected to each other through visual connections

New Function

The Brikkengebouw is located centrally in the Sphinx terrain. My design task plays inside and around this building. My architectural concept is to re-integrate the building into its original context by transforming the building itself and also adding additional features around the building in order to make the building a part of the whole again. The new volume and the Brikkengebouw create a composition together which is driven from the structure of the existing Brikkengebouw. The composition is forming a contrast between the existing and the new volumes using the same architectural language in order to make an integrated whole. The contrast is for example like open/ closed, old/ new, shadow/light. The block will participate together with the Brikkengebouw as a family , an ensemble in which the Brikkengebouw is a solid base of it. This will refer to the historical use of the building and helps to see the building not as an isolated object (like the way it is now).
The Sphinx terrain will be a dynamic innercity residential district with public commercial functions. The Brikken-block consists of a public plinth in order to reconnect the building with the city by using paths and public meeting-points. The upper-floors will get living function. In this way the division between two different building styles will be visible in the function of th block as well. Brikken-square as a meeting point next to the east facade of the building will function as a meeting point for the district itself and public. The target group for living part of the block will be starters and ex-pats with low or high income.

Population Maastricht	122.397
> 20	21.642
20-65	76.575
<65	24.180

The Brikkengebouw will become a meeting place for individuals, organizations and visitors and it will be public accessible. The Maison Blanche , a coffee roasting and tea bakery, will move into the building by 2018. I want to make a design for this function. Therefore the public plinth will be a place for making and roasting coffee and thee, a cafe where people can see the whole coffee making process and as a place for discussions or debates, lectures, exhibitions, performances, workshops, education, and social interaction of the district. Another cultural and sport activities will be added to the plinth in order to make it more lively and use it as a meeting core of the Sphinx terrain for its residents and outsiders.



Maastricht

Biermarkt

Brouwers over toekomst

20-21

Koffiebranderij naar Sphinx

Maison Blanche Dael verhuist de koffiebranderij naar het monumentale Brikkegebouw. Voor [de] gemeente [M]aastricht een [ide]ale pionier bij de [on]twikkeling van het [Sp]hinxkwartier.

[MAAS]TRICHT
[J]OHN HOOFS

Het is wat je noemt een droomkoppeling: een oeroud Maastrichts ambachtelijk familie[bedrijf dat ...]sich meldt voor vesti[ging in een] industrieel monu[ment ...] herontwikkelings[gebied ...] ambachtelijkheid [...]rekkers moet wor[den ...]under dat de ge[meente Maas]tricht - regisseur [van het toeko]mstige Sphinx[kwartier - ...] trots de samen[werking beves]tigt met Maison [Blanche Dael, ko]ffiebranderij en [theehandel sinds] 1878. De iden[...]r van wat het [...]rdt genoemd, [...]plagloods van Sphinx. Een [...]nt dat int ro[...] beeldbepa[lend com]plex.

[...]ghof ziet [...]ale plek [...]ts laten [...]cering

Publiek toegankelijke horeca op Eiffel

Maastricht sluit aan bij steden met restaurants en terrassen op hoge gebouwen, waar uitzicht en horeca een gouden combinatie vormen. Op het enorme Eiffelgebouw van Sphinx komt in het voormalige waterreservoir (het zogenaamde eska-gebouwtje) in het midden van het dak een horecazaak met terras, die geëxploiteerd zal worden door The Student Hotel, straks hoofdbewoner van de Eiffel. Niet exclusief voor studenten die er gaan wonen, maar ook voor Maastrichtenaren en toeristen, meldt woordvoerder Erwin Gerardu van het Sphinxkwartier-in-wording.

Het Brikkegebouw waar Maison Blanche Dael zijn koffiebranderij vestigt. Op de achtergrond de Eiffel van Sphinx. FOTO FRED BERGHMANS

rondkomt, wil hij het van de gemeente kopen en voor eigen rekening verbouwen en inrichten als een walhalla voor koffieliefhebbers die geïnteresseerd zijn in het maakproces achter de vele smaken die Maison Blanche Dael handmatig produceert.

Berghof: „We willen graag laten zien wat we doen." Het Brikkegebouw krijgt niet alleen een bezoekersfunctie voor het proces van koffiebrouwen, maar ook een koffie- en theeproeverij, horecafunctie en een breed programmeerbaar cultuurpodium. Allemaal op een plek die vol zit met historie van ambachtelijkheid, vat wethouder Gerdo van Grootheest samen. „De combinatie van de maakindustrie met de hedendaagse ambachtelijkheid van Maison Blanche Dael past perfect bij de functies die we zoeken om het toekomstige Sphinxkwartier aantrekkelijk te maken. Een oer-Maastrichts bedrijf bovendien, dat de tijdgeest als geen ander aanvoelt. Steeds meer partijen krijgen vertrouwen in het nieuwe stadsdeel.

Dan is het fantastisch als zich in Maison Blanche Dael een partner aandient die wil gaan pionieren. We zijn er echt blij mee." De koffiebranderij van Maison Blanche Dael huist nu aan de Gerardusweg. Het is de bedoeling om deze te sluiten zodra de verhuizing naar het Brikkegebouw is afgerond.

Medio 2018

Directeur Berghof denkt dat de nieuwe hotspot voor koffieliefhebbers medio 2018 de deuren kan openen. De landelijk bekende winkel van Blanche Dael in de Wolfstraat blijft gewoon open.

[...]ote Staat ontruimd

Even later bleek uit dat onderzoek dat de boosdoener in een bovenliggend appartement stond: een geparkeerde brommer met een lekkende brandstoftank, aldus woordvoerder Peggy Mommers van de Brandweer Zuid-Limburg.

Na het vinden van de oorzaak heeft de brandweer het pand uitgebreid laten doorluchten. Kort daarna kon modezaak Bershka de deuren weer openen voor het winkelpubliek.

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