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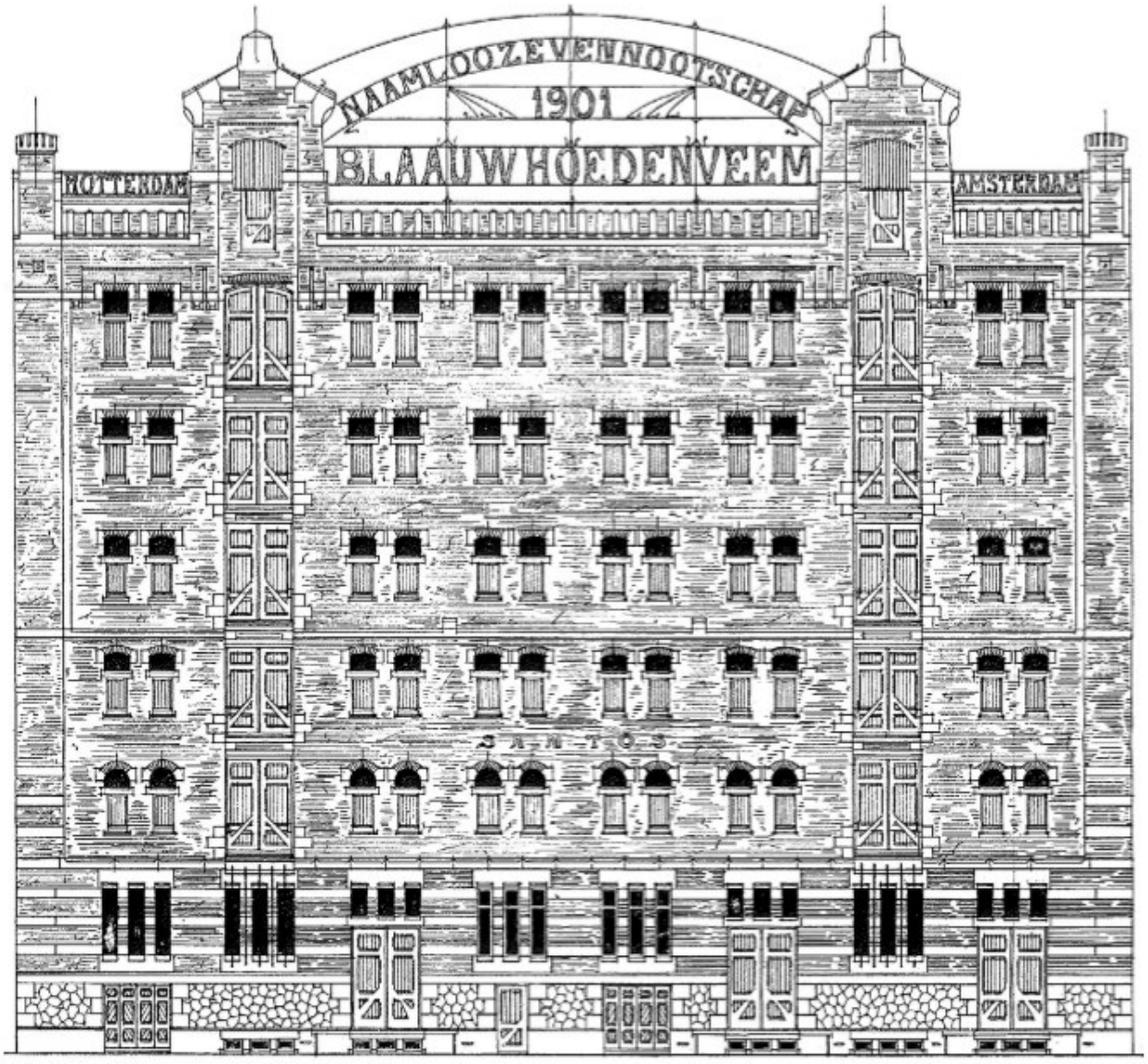
HERITAGE & ARCHITECTURE

# Graduation report: The transformation of coffee warehouse Santos, Katendrecht, Rotterdam




TU Delft Delft University of Technology

Graduation Report Ar3Ar111 Heritage and Architecture graduation studio; Harbour heritage.
Lukas Jespers 1396757 10-7-2018 Tutors: Ir. W.L.E.C. Meijers - Ir. B. Gremmen - N.J. Clarke

# Introduction and general information

1.01 Historic picture of a young boy walking allong the quay with Santos in the background

Colofon

Ar3Ar111 Heritage and Architecture Graduation Studio; Harbour heritage.

Student: Lukas Jespers 1396757

Supervising teachers: Ir. W.L.E.C. Meijers - Ir. B. Gremmen - N.J. Clarke

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1.1 Case and research goals

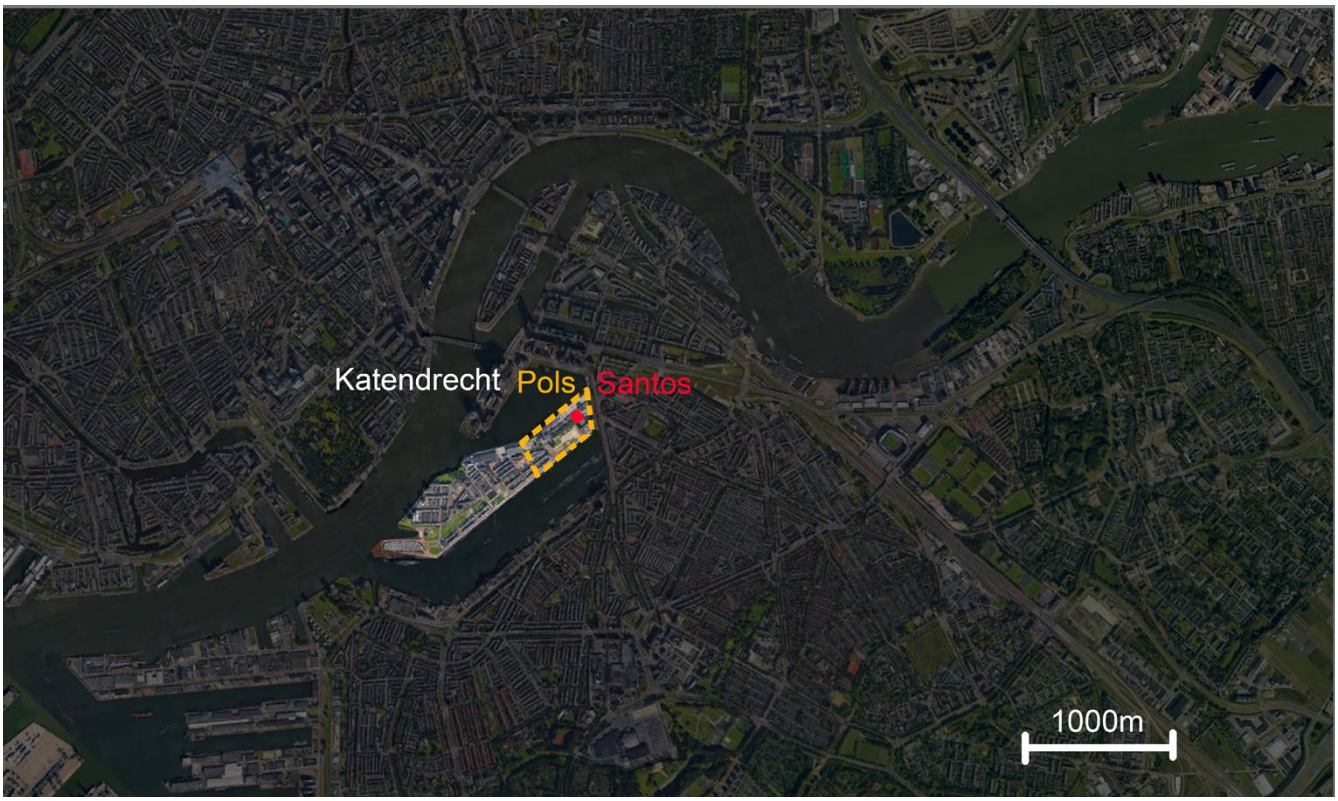
The report before you is a documentation of the graduation studio Harbour heritage of the Master of science Architecture, Urbanism & Building Sciences at the Technical Unversity in Delft, the Netherlands. Inside the master course a specialisation within this field is chosen. Herritage & Architectural Design is a study direction that is focused on handling existing buildings within their technical, cultural and historic context.

The current architecture climate in the world is increasingly confronted with an expanding number of jobs with a 'renovational' character. Also the definition of valuable heritage is broadening and the view on cultural-, historical- and architectural-herritage is continiously changing. This rapidly growing field requires specialized knowledge and skills to cope with these 'one of a kind' assignments wich require a 'tailored made' approach. It touches upon specific fields like historical research, architectural theories, building technology, the field of conservation and architecture. Not only to be able to conserve and honor the historic remnants that brought us to this point in time but also to give it new meaning by letting it contribute to the architectural discourse of today. The goal of this graduation project is to get well-prepared for this exiting future. This will be done by simulating a currently existing design assignment so it takes place in a realistic setting in regards to the proposed design's financial-, structural-, ergonomical-, climatologic- and durability aspects and so on. This assignment will be analysed from a large urban scale to ultimatly the scope of a detail. Because this assignment is done inside the master course of Heritage&Design also layers of time will be analysed by assessing the history of the building and area.
Chosen for this assignment is the nationally listed warehouse of 'Santos'(fig 1.21) wich is one of the remaining vacant historical/cultural/architectural valuable buildings in the harbour area's of Rotterdam. Located on 'the pols of Katendrecht' (fig1.11) it resides in an area on the brink of a large re-development plan led by the municipality. This creates a complex design assignment to develop a proposition to prolongate the warehouse life-span within a rapidly changing context. The goal is to understand the value and meaning the building represents to be able to preserve its historical function and use it to enrich the future plans of the municipality of Rotterdam.

The reason for choosing 'Santos' amongst other warehouses available for this graduation course is multi-faceted:

During my student years I lived in Rotterdam and I know how little historic fabric is left compared to other big cities in the Netherlands. Especially rare are historic building assignments wich were designed in 'classical' style. Because of this rarity and placement in a modern metropolis I find this an interesting architectural challenge in wich I would like to develop a possible solution.

Next to my architectureal interest, 'Santos' also appealed to my love for history and technology. These two topics combined tell me stories of the evolution of human endeavours. These are entertaining stories but they also give our current time a context in wich it can be understood better. The warehouse of Santos has a rich history and was build technologically advanced during the time it was built. For this reason i find the 'Santos' assignment a great challenge in the preservation of this history wich i would like to find a suitable answer for.



1.11. Satalite picture of the city of Rotterdam with the location of the project highlighted.

## 1.2 General information Santos


1.21 Picture of Santos allong the Brede Hilledijk Rotterdam, 2017.

| | |
|---|---|
| Address: | Brede Hilledijk 95 / Rijnhaven Z.z. 6, Rotterdam |
| Status: | National monument nr. 513940 |
| Year of construction: | 1901-1902 |
| Client: | N.V. Blaauwhoedenveem |
| Architect: | J.P. Stok Wzn. i.s.m. J.J. Kanters |
| Original function: | Warehouse for the storage of coffee from the port of Santos, Brazil |
| Owner: | Onwikkelings Bedrijf Rotterdam, municipality of Rotterdam |
| Building condition: | Good |
| Total surface area: | 6420m$^2$ |

## 1.3 Methodology

Designing with protected monuments, physicly altering structures wich are in a state of decay to function often differently than it was designed for, weighing the tangible prosperity the place can provide against the intangible wealth which it can embody and how old- and newly- built fabric should coexist.These are some of the major challanges architects are confronted with when handling cultural/historical sensitive buildings.

Grasping the meaning wich lies within different layers of the architectural remnant that composes its value is an important task in this design proces. Scientific theory will support this value assessment, like the theoretical framwork of Brand, depicted in figure 1.32, to chart the pieces containing meaning and value. Also an understanding of the apraisal made by the Dutch Rijksdienst voor het Cultureel Erfgoed will be needed to fully prepare for possible threats and limitations connected to the case and assist in the argumentation of interventions. The appraisal of 'Santos' sumarises it as :

'An early 20th century warehouse for the storage of coffee. Of common interesst because of the cultural-historical, architectural and typological value.' (This is visualised in figure 1.33)

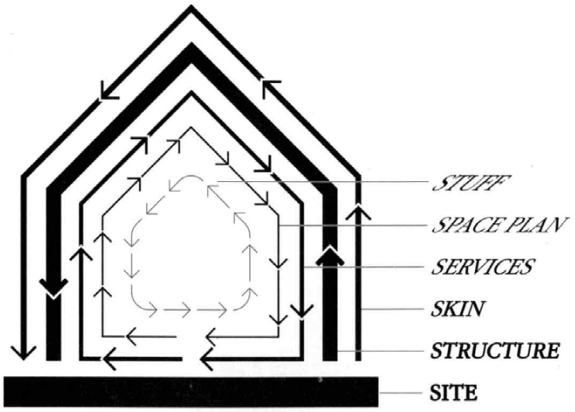
The full appraisal can be found in Apendix I but is only written in Dutch.

The design proposition will be developed by design generated through research and analysis. By visiting the site, analyising refrence projects, reading books, searching archives, watching film and audio sources are used to understand the buildings and provide inspiration for the design.

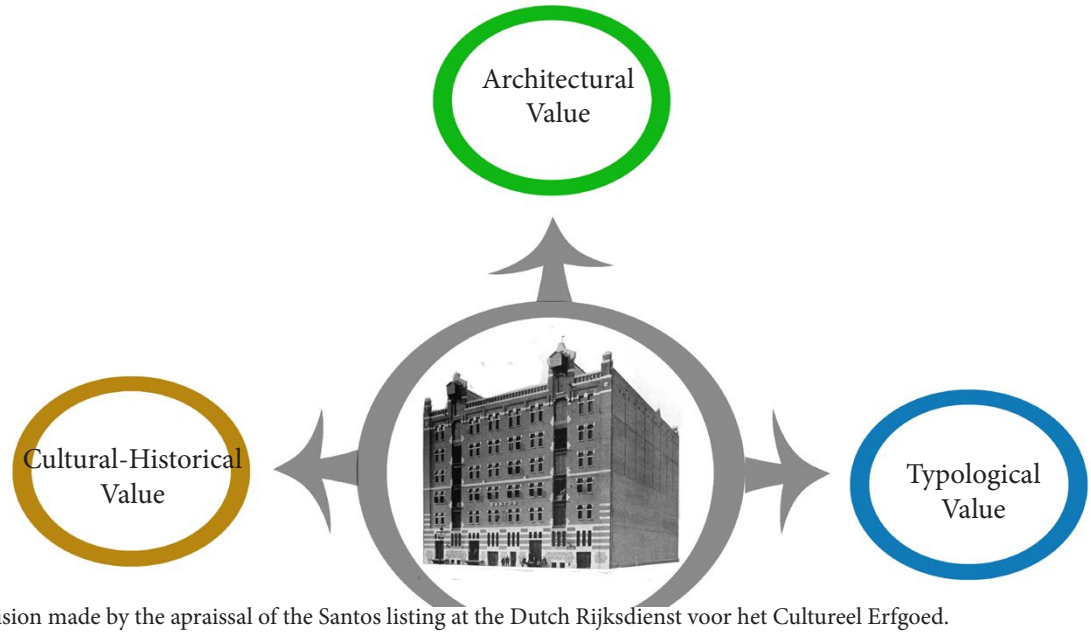
The assignment wil have two theme's guiding it. A durability aspect and a personal fascination. Durability is a present-day topic that can not be avoided when developing a vision for the future of the building and its surroundings. The second theme can be chosen from personal interest and is added to give the graduation a personal touch.

Finally this will acumulate into a set of starting-points, research questions and design propositions to conduct a further development of the design proposal in the second half of the graduation.


1.31 I am a monument, drawing by Robert Venturi.




1.32 Shearing layers of change. Brand's theorie.




1.33 Division made by the apraissal of the Santos listing at the Dutch Rijksdienst voor het Cultureel Erfgoed.

Historical background and direct urban context

2.0 Aerial photograph of the 'Pols van Katendrecht' with 'Santos in the middle and activity allong the Rijnhaven quay, 1983.

## 2.1 History of the company

A key aspect of gaining understanding in a building is investigating its origin. Questioning when-, why- and by who- it was build can give great insight in for example the architectural features, the building method, the building's purpose and the 'zeitgeist' when it was erected.

Research question: What was the Blaauwhoedeveem for organisation? Where did they come from? Do they still exist? What where their motivations and goals when comissioning this building?

-Blauw: Blue -Hoeden: Hats
-Veem: Company for the storage of goods (Definition from: Chronologisch woordenboek(2001)–N. Sijs)

First notice of the Amsterdam guild of carriers (waagdragers) is in 1461. Blauwhoedenveem is established in Amsterdam 1636. ( Archive of Royal Dutch Vopak B.V. 2017)

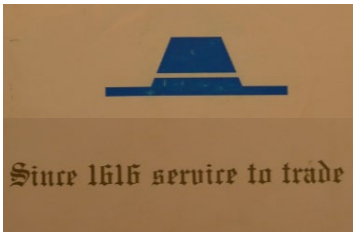
The guild of carriers would unload, transport, weigh, and storage goods to accomodate trade. A coorperation of carriers would be called a storehouse. Working toghether as a company would make it easier to make deals with traders and secure more work. They would give their members health benefits and even a widdows pension.

To distinguish themselves from other coorporations they would wear diffrent colour hats. This was a logical way because it would be visible in the busy streets full of commerce and wearing a hat was common those days.

In the centre of this activity a building was used, called a 'Waag'. It is a Weighing house where they would weigh the goods and pay weighage (tax) over it before it would be stored in the warehouses.

Blauwhoedenveem was the market leader in the Netherlands. Because of their top position in the market they were very aware of their competition. The expansion to Rotterdam is a good example of this. Their main competitor in Amsterdam called Vriesseveem opened a branch in Rotterdam wich motivated Blauwhoedenveem to do the same, to not stay behind of the competition. Also the wealthy expression of their warehouses can be explained by this rivalary.

Blauwhoedenveem is now the market leader in the world in storing goods by way of expansion, takeovers and divesting their activities. Currently called Vopak wich has the largest commercial storage capabilities. Because of its Dutch origin it has a special connection with the country wich is reflected in the royal status the company has.




2.11 Logo of the blauwhoedenveem to duistinguish their members from the competition.


2.12 Currently named Vopak the characterising hat is still part of the logo.

2.13 The blauwhoedenveem tradingpost " de Waag" on the Dam, Amsterdam 1565.


2.15 In the year 1876 blauwhoedenveems biggest competitor Vriesseveem expanded their buisness to Rotterdam.

2.14 Deer Park in Houston, 1976, liquid storage facility.

## 2.2 Relations between involved parties

The warehouse of Santos was designed by J.J. Kanters and J.P. Stok Wzn. Both are well-known early 20th century architects in Rotterdam. This joint venture is their only proffessional collaboration and many buildings in the euvre of Kanters consist of warehouses for the Blauwhoedenveem. This raises the question of how this relationship became such an important part in J.J. Kanters carreer and how J.P. Stok Wzn became involved. How did the field of architecture function in the early 20th century in Rotterdam?

To lead the expansion J.C.L Hol was made director of the Blauwhoedenveems Rotterdam Branch. He was an experienced buisness man to secure a stable management. He comissioned the assignment of the westelijk handelsterein (1894) to T.L. Kanters (1842-1897) and Sons, architects and Carpenters. This was the start of a strong relationship between the Blauwhoedenveems Rotterdam branch and the architecture firm.
(Groenendijk, P. 2008, p.75-58)

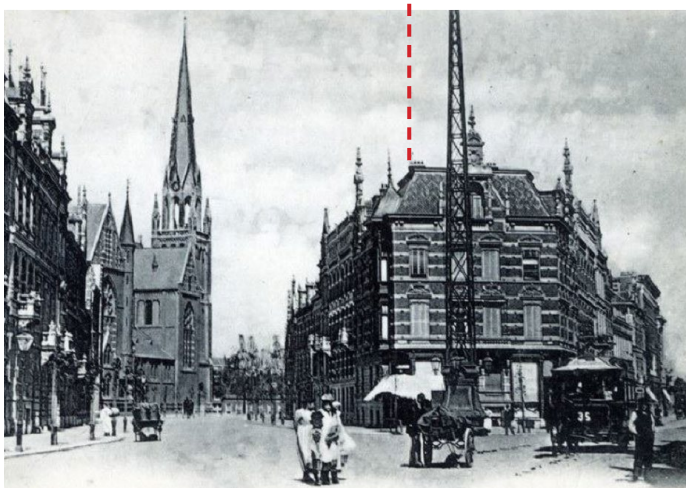
Presumably the work of J.J. Kanters father was up to the Blauwhoedenveem standards because when he died a few years after the construction of the westelijk handelsterein they kept confidence in the architecture firm, eventually resulting in the comission of Santos. Also T.L. Kanters was the Co-founder of the in Rotterdam based society: 'architectuur en vriendschap'. J.J. Kanters (1869 - 1920) becomes a member by his fathers nomination showing the culture of that time in wich sons would follow up on their fathers profession.
(Van Velzen, H.J. 2011, p.17)

J.P. Stok Wzn. (1862-1942) was also a member of the society and son of architect W. Stok sr. Most likely the architectural society was the place where the two architects got to know each other wich led to the joint venture for designing Santos.

President J.C.A. Hol

2.21 Group portrait at the house of J.C.A. Hol, Rotterdam. in honor of his 25th anniversery at the Blauwhoedenveem.

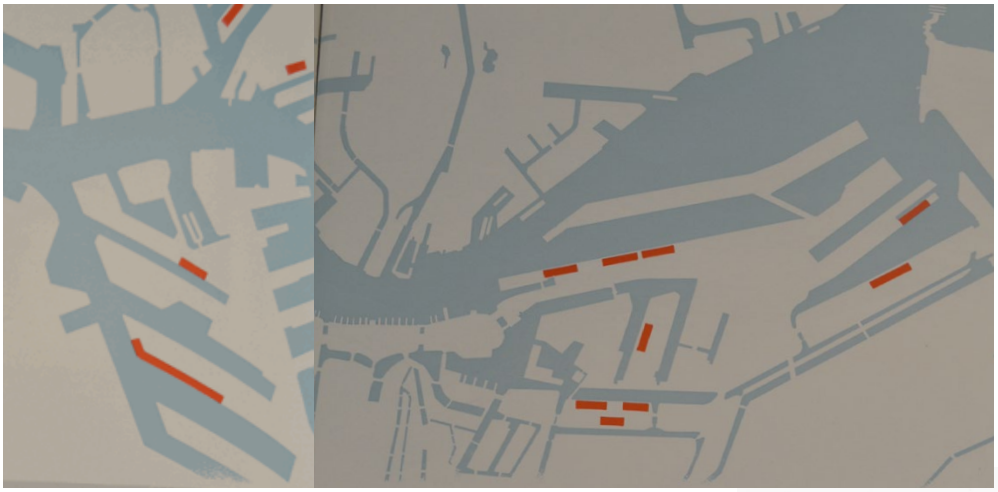
Westelijk handelsterrein



2.23 Historic picture of the Van Vollenhovenstraat Rotterdam 1902.

2.22 Picture of J.J. Kanters and J.P. Stok Wzn.


2.24 Blaauwhoedenveem office 1907 by J.J. Kanters.



2.25 Map of Rotterdam with the locations of the different blau-whoedenveems storage facilities and machinery.

Next to these similarities there was a major diffrence between J.J. Kanters and J.P. Stok Wzn.. J.P. Stok Wzn. had enjoyed the privilege of multiple architecture studies and J.J. Kanters was a product of his fathers architecture firm. Stok started at the academy for the visual arts in Rotterdam, followed by two years at the Academie des Beaux Arts in Brussels (famous for its eclectic architecture in the late 19th century). Finally he studied also for two years at the Politechnische school in Delft

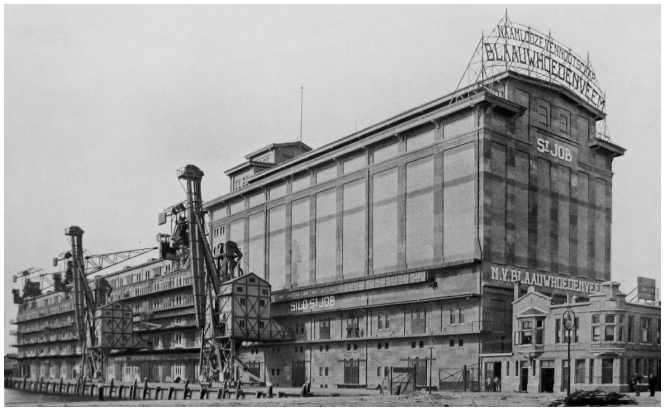
Famous works by J.J. Kanters consist mostly of industrial buildings in Rotterdam (figure 2.24, 2.26, 2.27 and 2.29). Looking at those works it can be seen as very functional but less expressive and/or 'classical' then the works of J.P. Stok Wzn. This is probably due to the lack of traditional architecture education and to the many industrial assignments his architecture firm got. When looking at Santos (fig 2.25) it has a 'classical' order and expression. Because Stok was most educated and profficient in this field of the two, and it can be assumed that they devided the work on the basis of their strengths This makes it very likely the facade design is from the design of Stok, and the interior structure and layout from Kanters.

Presumably also can be said that J.J. Kanters work was much aprecitated at the Blauwhoedenveem because of the multiple commissions for he got. In these projecs J.J. Kanters often used the contracter 'Van Waning' who specialised in concrete products. In this light it would be likely that the concrete ground floor and decorative stones used in Santos were also produced by this company. Unfortunatly this can't be proven because the records form the starting period of Van Waning were lost. (fig.2.28)

Conslusions:
Famous works by J.J. Kanters consist mostly of industrial buildings in Rotterdam and has therefore a strong connection to its harbour heritage.Many works of J.P. Stok Wzn. did not the survive bombing and rapid developments of Rotterdam wich makes Santos extra special. Because 'Santos' is the only joint venture of these two famous architects from Rotterdam wich makes this building have a 'one of a kind' rarity. Its also holds a interesting narrative of how the architecture business functioned in this period. Conections between comissioner, contracter, architectural societies and educational institutions give a in-depth image of the practice of architecture in the late 19th century.


2.28 Advertisement of the Cement-works contractor Van Waning.


2.26 Santos, 1901 by J.J. Kanters & J.P. Wzn Stok




2.27 St. Jobsveem, 1916 by J.J. Kanters

2.29 Katoenveem, 1920 by J.J. Kanters

## 2.3 History of the coffee buisness

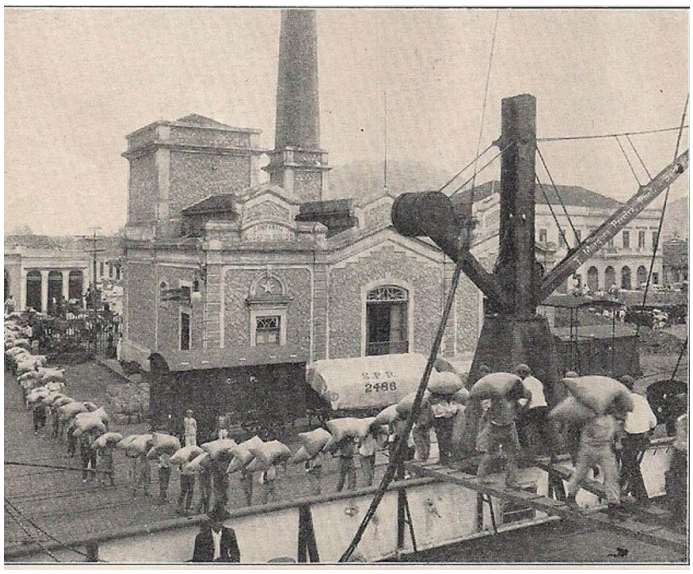
Santos is specificly designed as warehouse for the storage of Coffee and its name has an exotic tone. Therefore the history connected to this becomes relevant. How was coffee imported in the early 20th century and what place did Santos have to accomodate this trade? What does Santos mean?

Santos with the function as a coffee warehouse was one stop in the journey of beans coming from Santos (Brazil) to Rotterdam (Netherlands)(fig.2.31).

Santos performed an important role in the chain of coffee import and distribution. It was used to seperate, store and sample the product so it would stay in optimal condition before distribution (illustraded in figure 2.33). Also it gave the traders more possibilities to play the coffeemarket by waiting till peak moments in the comodoties price development.

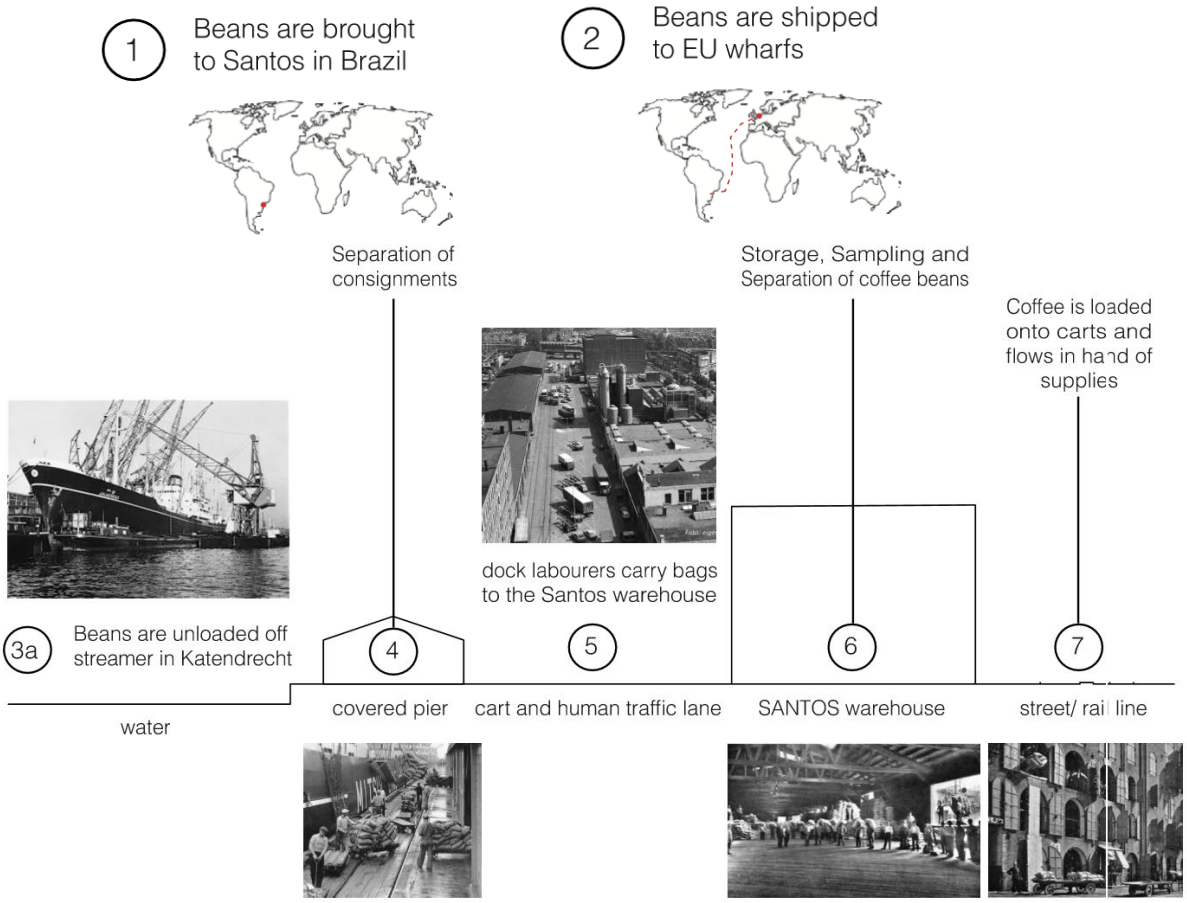
The unloading of the coffee at the Rijnhaven, the seperation of consignments in the first row warehouse and the connection to the railroad become apperrent and explains its former function and the strong relation of the warehouse to the water front.

Worth mentioning is the additional meaning Santos has in the world. Next to referring to the city in Brazil it also became a brand name for coffee (fig 2.32). This shows the quality of this product and the direct relation it has to this warehouse.

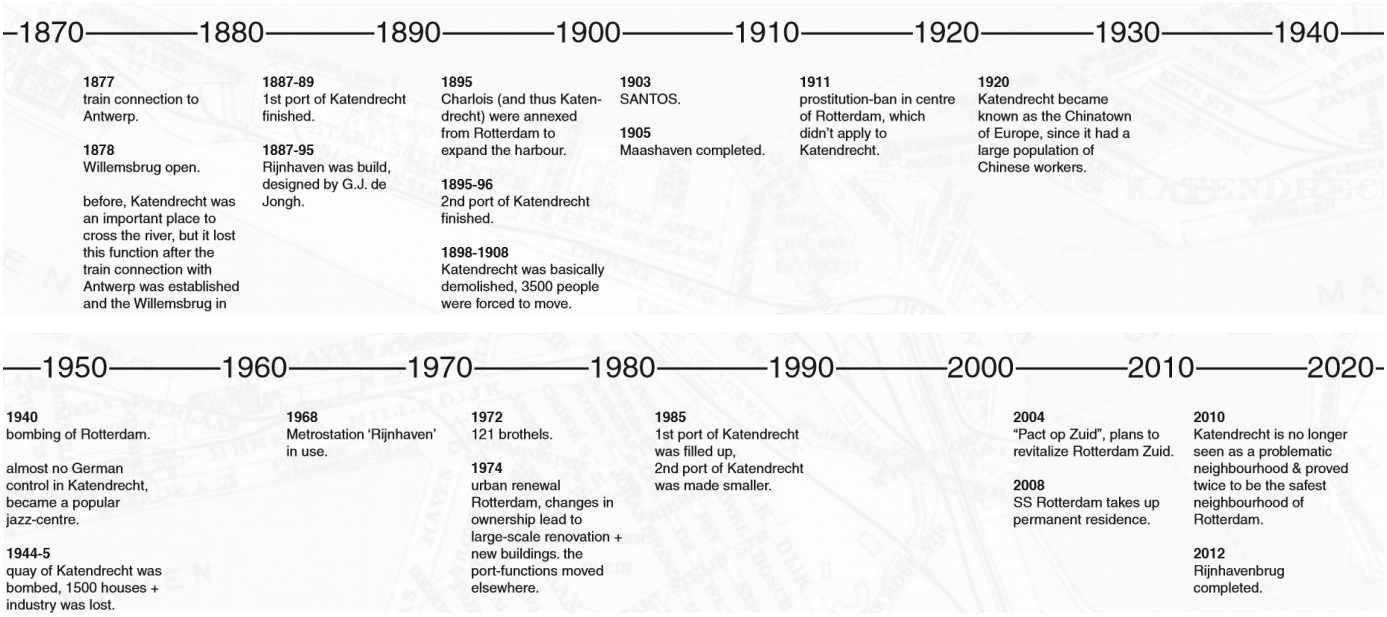


2.31 Historic picture of coffee being loaded on to a schip in Santos, Brazil, date unknown


2.32 Picture of a current day brand using the name of Santos.




2.33 The multiple stages in the transport of coffee.




2.41 Timeline Katendrecht

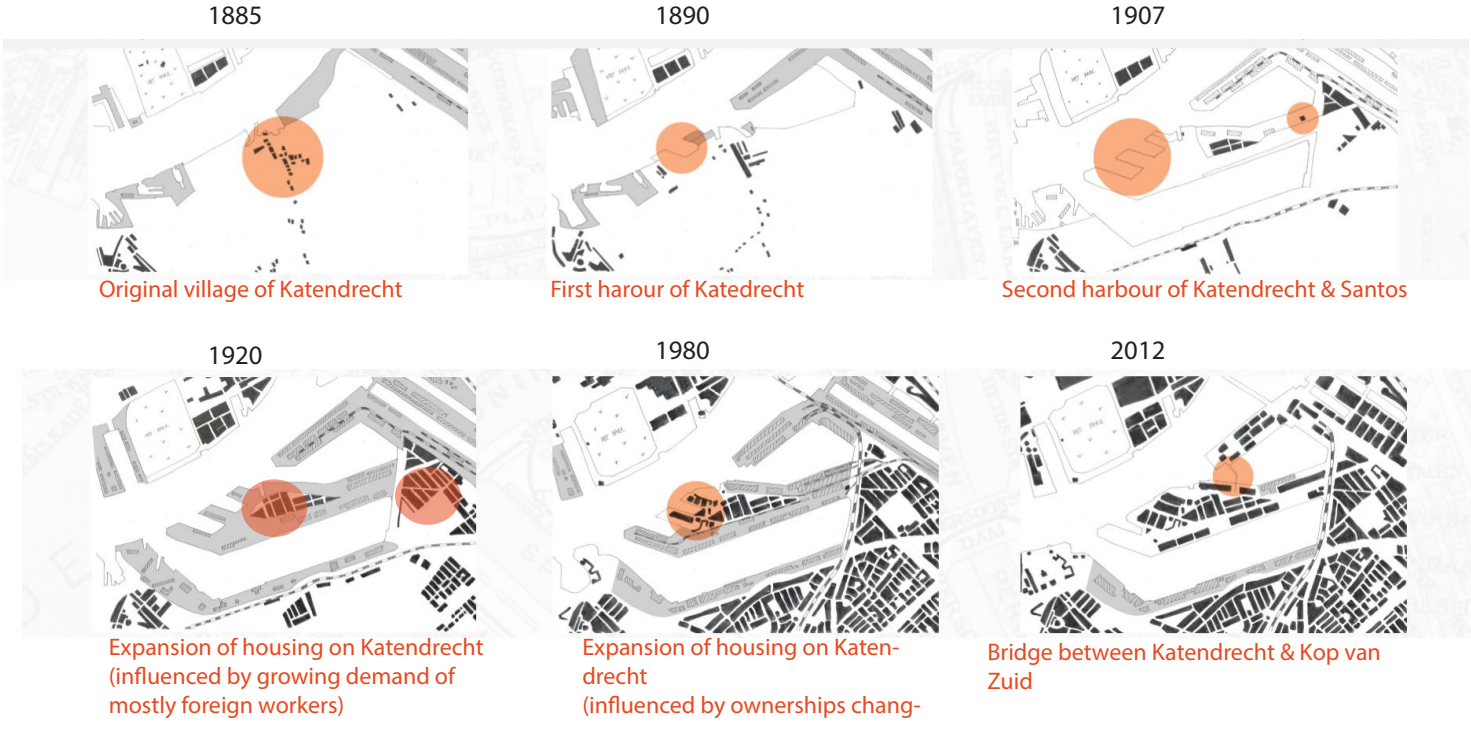
## 2.4 Timeline Katendrecht

Research question: What happened to the neighbourhood, wich events are memorable and how did Santos take part?

Originally Katendrecht was a small setlement in the outskirts of Rotterdam where mainly wealthy citizens had their country house. When the Maashaven and Rijnhaven were created this settlement was almost completly destroyed and replaced with harbour activities and housing for the workers. Because of this change in occupants and the inflow of sailors wich came to shore in this area the functions this district housed changed.

In the timeline 2.41 it becomes evident that Santos took part in the start of the harbour period of Katendrecht. It was a time characterized by the effects of the industrial revolution where Rotterdam positioned itself as one of the most important ports of the European continent. Santos played an important role as it provided jobs and commerce in the newly created harbour which became well known for its travel route with Amerika, the 'Holland-Amerika Lijn'. Large quantities of goods and people came to shore in the harbours which created a multicultural atmosphere wich formed the international identity of Rotterdam.

In 1911 the municipality of Rotterdam decided to ban prostitution in the city centre. This did not reach to Katendrecht and a concentration of these activities developed there. Also the local sailors had a large strike which resulted in a large import of chineze workers which where housed in this district. Azian people and shops were characteristic for Katendrecht in the 1920's. But these shops and residents were later forced out by the municipality when they became obsolete. (Historisch Katendrecht, 2017)




2.42 Analysis of the development of Katendrecht

In the period wich followed the area developed itself as a recreational area for the sailors wich had only a short amount of time ashore to enjoy themselves. Because Katendrecht was situated on the edge of Rotterdam, away form the cities residential areas, it was regarded as an outcast and gained a atmosphere of lawlessness. Local bars and clubs thrived and accomodated the famous prostitution scene of that time (fig 2.27)

Among other things this was one of the main reasons why the area remained lawless in the period of german occupation (1940-1945). The soldiers where not allowed to visit this area due to the fear of them gaining infectional diseases. Interesting fact was that the germans imposed laws against playing music wich was considered to be belonged to the negro-people. With this area being restricted to the occupying force it became a safe haven for the local jazz-scene and a sign of resistance (fig. 2.46).
(Historisch Katendrecht, 2017)

After the war was ended the harbour was heavily damaged and the activities slowly pulled out of the area which resulted in a lot of vacancy, lesser employement oppritunties and a diminishing flow of visitors. A major change was made in the area when the metrostation of Rijnhaven was realised in 1968. This brought the modern public transport system that Rotterdam still enjoys today. It made a big diffrence to the accessability of Katendrecht but also in the experience of the neighbouring neighborhood, called the Afrikaanderbuurt (figure 2.52). There used to be a strong relation with that neighborhood but was visually cut off by the metroline that is raised above the street instead of under the ground.
In recent years the area is changing again. New bars and restaurents are opening wich like to use the atmosphere left behind by this rugged history. This shows how the identity of Katendrecht is currently used to revitalise the neigborhood. The stories of Katendrecht are an important element of the cultural-historical value and the warehouse of Santos was an important part of it as the provider of commerce and work. It was regarded as the bottom of society, but it was real...

2.43 Advertisment remembering the 'fun times' in Katendrecht

2.44 Illustration of the spirit of Katendrecht


2.45 Historic picture of a family in front of their store specializing in chinese goods


2.46 Historic picture of Jazzdancing Belvédère in 1943


2.47 Historic picture of sailors walking allong the bars and clubs of Katendrecht

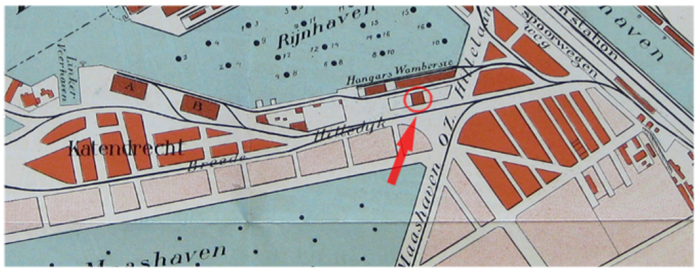
## 2.5 Historical urban setting

When we take a look at the map of Katendrecht made in 1904 it's only 2 years after the realisation of Santos and thus a good representation of the original situation. Because the area was still under heavy development the map still has some empty spaces on it. Even though this changed quickly it does give a clear impression of the original layout.

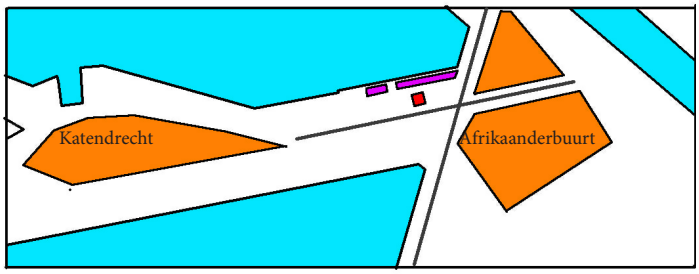
Santos is situated on the second row on the quay of Rijnhaven and lies inbetween two residential neighborhoods that consisted out of low income 'worker' housing. Santos is placed allong the street Brede Hilledijk wich connects these neighborhoods. It is very likely that most of the workers of Santos were housed in these neighborhoods and thus had a historic connection to them.

Important to note is that the original historical urban context was mainly based in the experience that it was the tallest building in Rotterdam of that time with a height of 24.5 meters (fig. 2.53). Compared to its adjecent built enviroment the height diffrence is enourmous and compared to the inner city it still stuck out

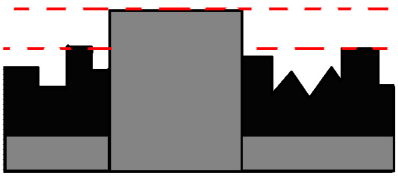
In picture 2.54 this layout can still be recognised. Currently missing is the original building in front of Santos, now occupied by the police station. There was a closed housing building block in the shape of a triangle with a bar in the plinth named after Santos. Even though this is currently missing it portrays nicely the day-to-day life that existed in Katendrecht. Going to the bar after a long day of labor with your fellow workers before returning home to the familly by foot because it was so close.



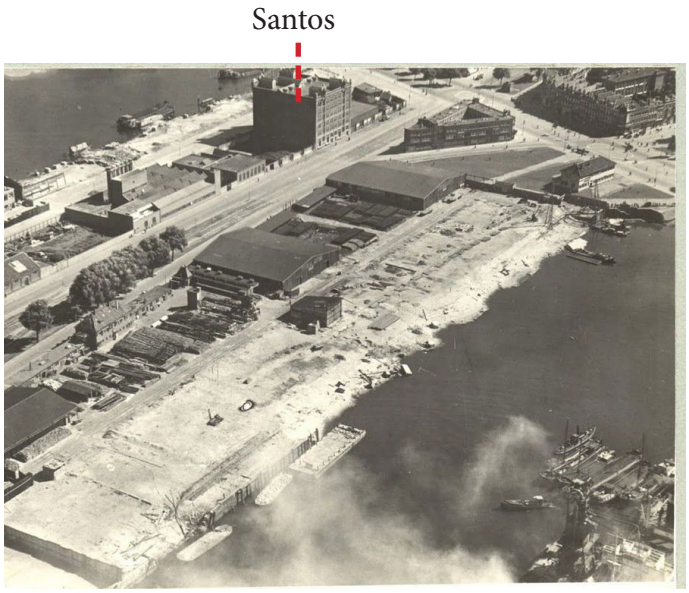

2.51 Map of the original situation of katendrecht in 1904




2.52 Simplification of the original situation of katendrecht in 1904



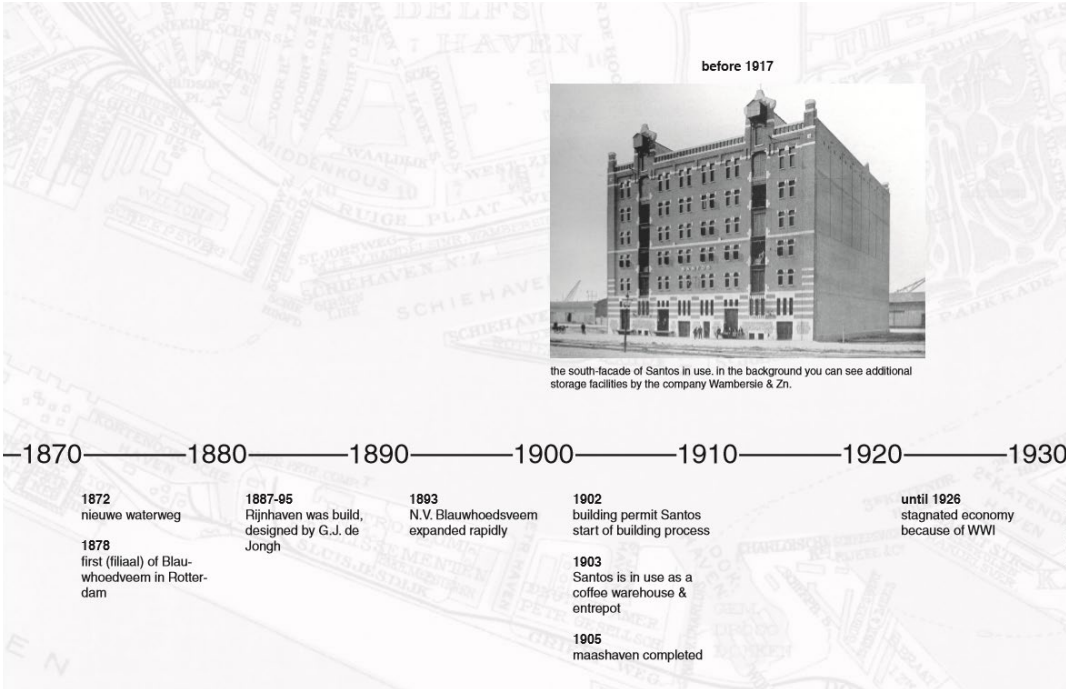
2.53 Diagram showing the original situation of Santos being the highest of Rotterdam




2.54 Aerial picture of Katendrecht in 1946

2.55 Original building in front of Santos

2.56 A bar is named after Santos

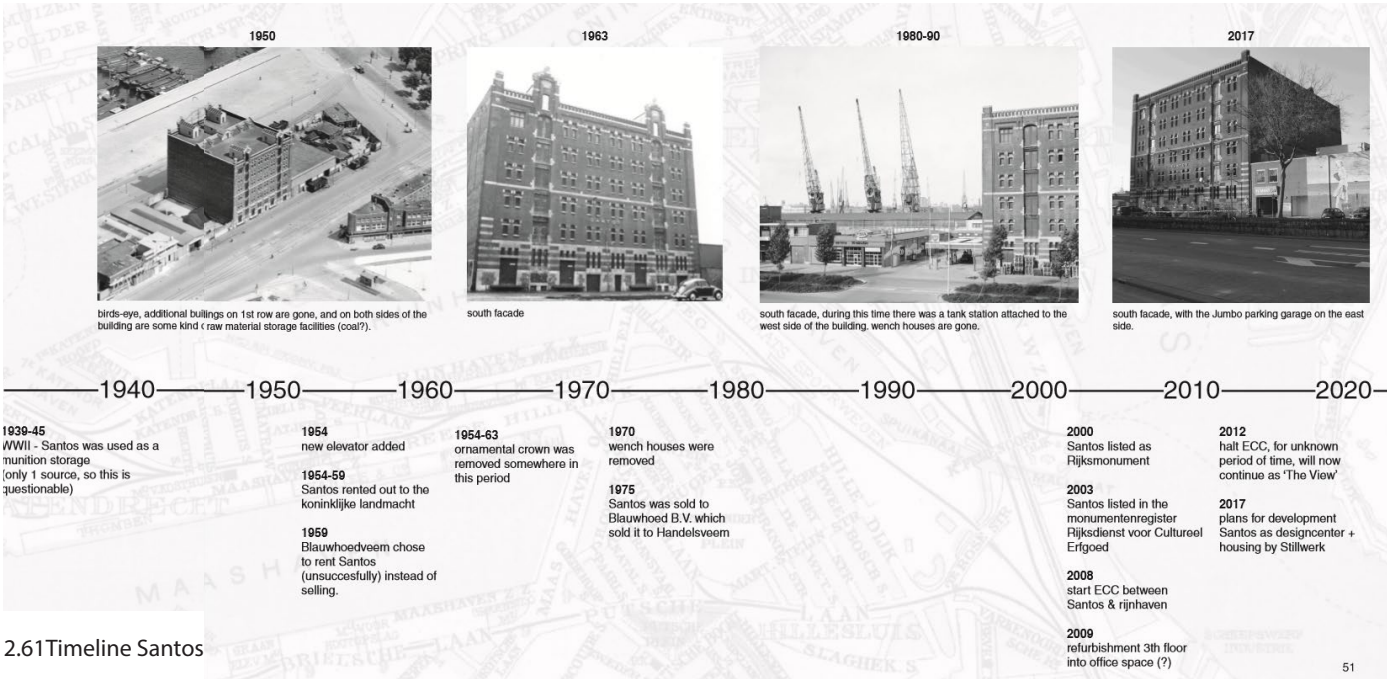



## 2.6 Timeline Santos

What happened with the building after realisation and wich events are memorable? This research question gives insight how long it functioned, what happened after it stopped functioning and how and when it was signifficantly changed.

Particulary the first 50 years of its life-span it had the most meaning to because it contributed to the direct enviroment and was because of its height a landmark. The last 50 years give insight in the most important alterations to the original building and of less meaning because it was mainly vacant. Hardly any documentation could be found about the period it was used as a munition storage, because of this it remains unclear if this part of the history is of special importance . When Santos was rented out to the Royal airforce of the Netherlands some large interior changes were made by replacing the elevator system. Even though this was pretty destructive, this doesn't diminish the remaining qualities as much as the removed winch houses and advertisement crowning the facade. This development has destroyed some of the exterior value because the original design is not readable anymore.

Another big missing element are the cranes on the quay of the Rijnhaven. These would show how the quay originally would function and the strong relation the warehouse of Santos had with the harbour. Another less intrusive change was the addition and removal of a gass station attached to the West facade of Santos. On the brickwork the outlining of the gass station is still visible in white paint but it doesn't influence the legibility of the warehouse.




2.61Timeline Santos


2.71 Profile of both sides of the Brede Hilledijk allong the red dashed line of figure 2.73.

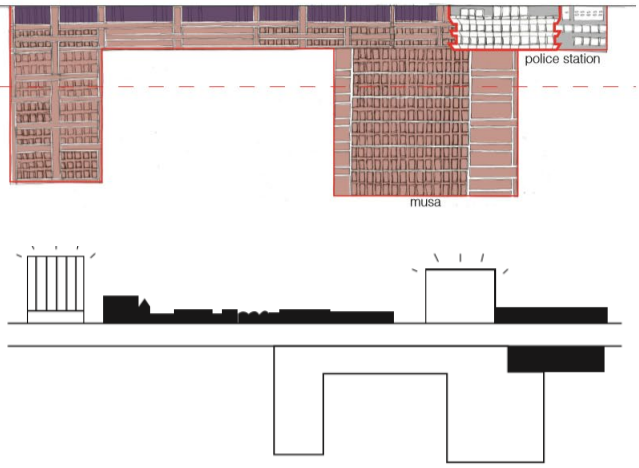
## 2.7 Current urban context

Even though the Pols of Katendrecht will change rapidly in the future, due to the large scale development plans of the municipality, it is definetly not useless to assess this current situation. It is necessary to understand how the location developed after we previously analysed the original context of Santos. It can give insight in the remaining remnants of this time but also show where its current values lie. This can help to adapt the development plans to the proposal that will be made for Santos.

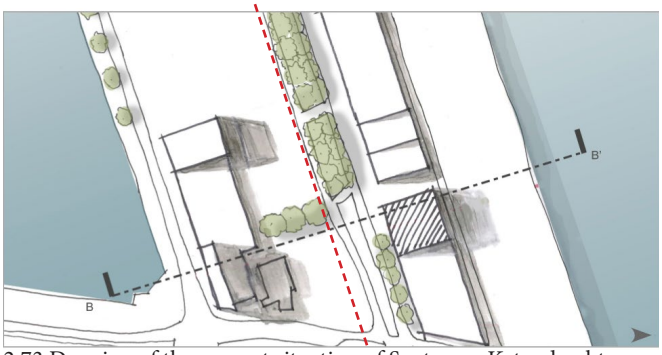
Figure 2.72 views the street profile from the main road called, Brede Hilledijk. The historic landmark of Santos being the tallest building in the area didn't stay intact. The residential building Musa stands a lot taller on the oposite side of the road. Still an argument can be made that the historic picture as being the tallest still exists when only looking at the row of buildings 'Santos' is part of.

The original layout of the area is still very recognisable as it is still divided in two parts by the road and further defined in two rows of predominantly brick buildings. The road has a pedestrian route running trough the middle acompanied by a row of trees on both sides (firgure 2.74). This is the only greenery in the near vicinity of Santos.

A big change from the historic situation is the missing buildings between the harbour and Santos. Those buildings were removed for the realisation of a parking garage that will be the foundation for for future developments.

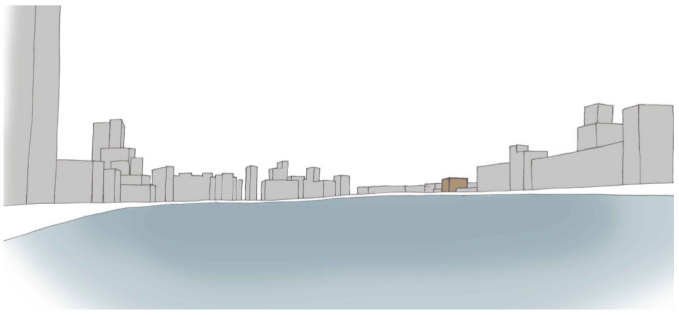



2.72 Current highlights within the profile of the Brede Hilledijk.




2.73 Drawing of the current situation of Santos on Katendrecht.

2.74 Vista from the Brede Hilledijk.



2.75 Vista from the Kop van Zuid.


2.76 Section of Katendrecht allong the black dashed line of figure 2.73.

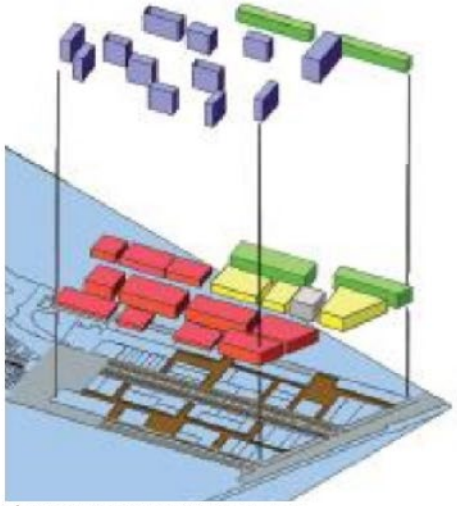
## 2.8 Future urban context

The main reason why the proposed masterplan is of such importance to the design process of Santos is that it's context will rapidly change and impose a totally diffrent urban fabric then the current situation. Only a few buildings will remain that commemorate the districts history like Santos. Staying within the original 4-stroke organisation it is one of the few aspects of the historical urban setting which will also be conserved in the future masterplan. But the great increase in built mass, the large increase of occupants and the change of use of this area will alter it's view and atmosphere and is therefore important to integrate in a future vision for Santos.

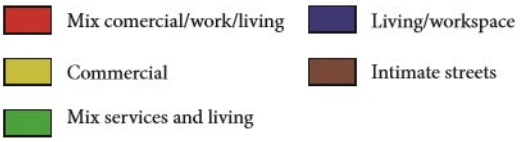
The open view of the harbour will be partially blocked in the future, A square will lie in front of Santos wich never was there before. Instead of being the tallest building in the strip it will become the lowest. The future plan demolishes the connecting building wich means it loses its neighbour and becomes free-standing. In short: a radically changing context.

2.81 Representation of the future masterplan looking at the North quay.

2.82 Representation of the future masterplan looking at the South quay.



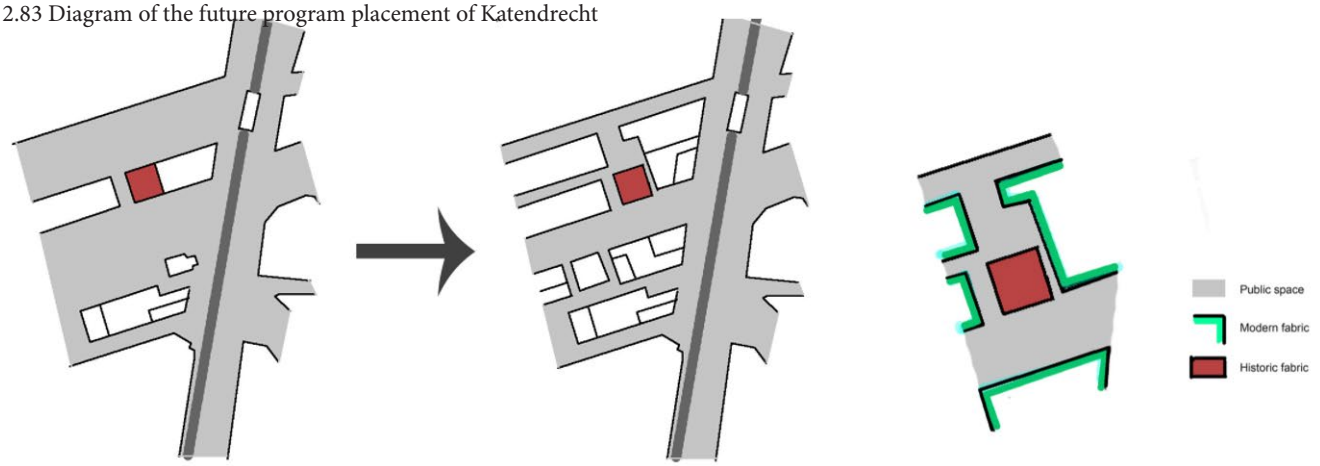
The Katendrecht pols future program




2.83 Diagram of the future program placement of Katendrecht


The Katendrecht pols masterplan

2.84 Map of the future layout of Katendrecht



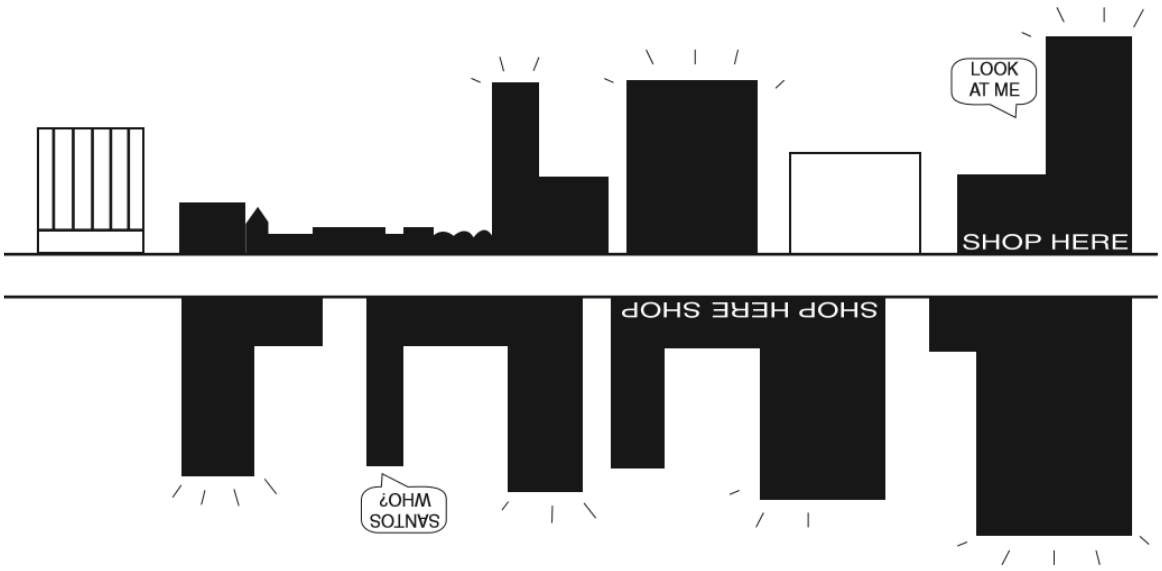

2.85 Diagram of Santos enclosed by modern fabric

When we look at what the future holds for the area it's obvious a big change is coming. Mainly at the narrow entrance of the harbour called the 'pols' (wrist). The plans consits of mostly demolishing the old buildings, creating a new more dense and high-rise urban fabric then previously existed (fig. 2.81). Within these new developments Santos will have an even more important part to play in the preservation of Katendrechts history as a transit port.

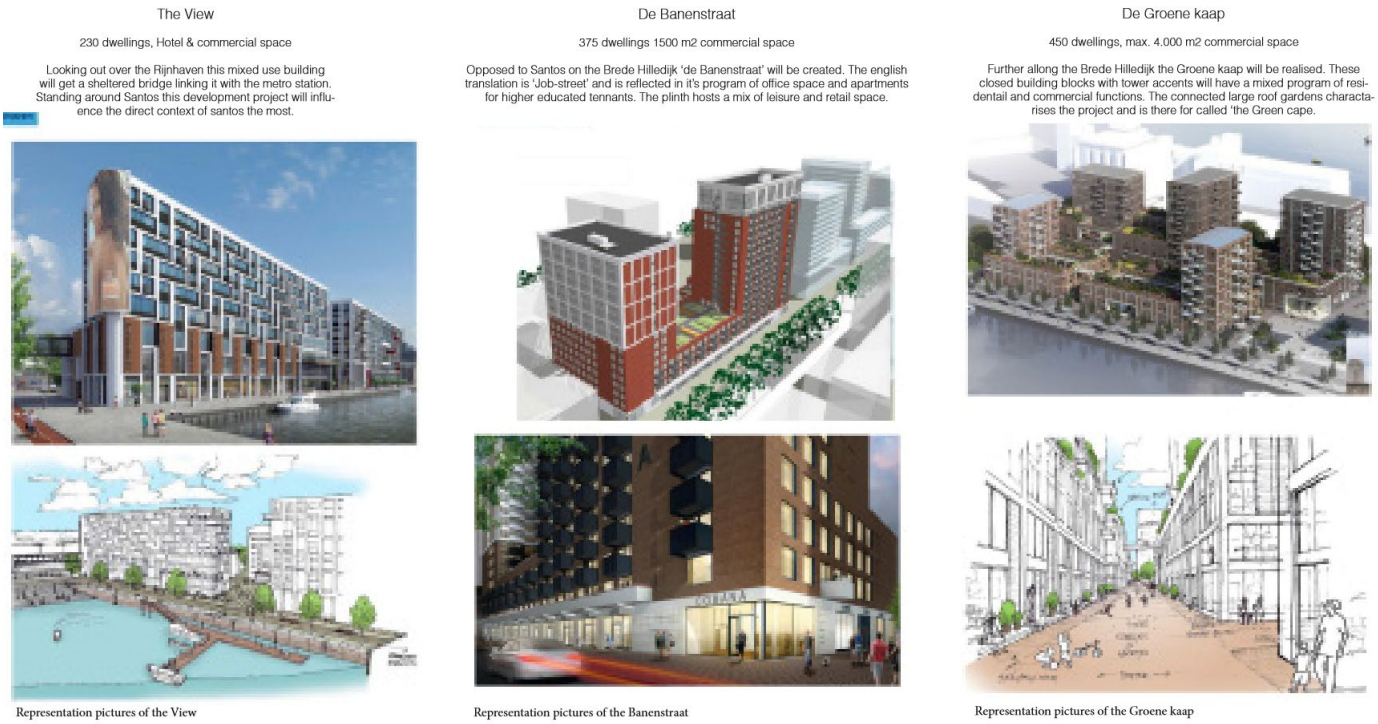
The vision of the municipality is that it can become a cosmopolitan area for leisure, design, food and lifestyle. A wide array of shops, bars, café's, art galleries and restaurents will be placed in the plinth of the proposed urban plan. Also functions giving the area a nightlife will be added. The mid- and top- section of the buildings will house a mix of apartments and offices. For the residential part of this plan there will also be supporting functions like a supermarket, schooling, daycare and so on.

It becomes clear that a vast effort will be made to improve, rebrand and restructure this area into an atractive neighbourhood for living, working and recreation In the new plans, Santos actually becomes one of the smaller buildings in the Brede Hilledijk. Santos will be higher than the base of these new buildings, but the added accents will be almost double its height. These buildings house mostly dwelling & hotel functions, with mixed use in the plinth.

The materialisation in the future plans is continuing the visual concept behind Musa. The new buildings will also be constructed in bricks combined with a pattern of white lines (natural stone). The bricks vary slightly in colourization, to avoid creating a very monotone assembly. The building that diverges from the brick material, is the building right next to Santos (The View II). In the plans as they stand now, this will be a very airy building with a lot of glass and a white finish, similair to The View I that will be located behind Santos. (Lecture 'Rotterdam&Santos, 2017)




2.86 Diagram of the future silouete of the Brede Hilledijk




2.87 Analysis of the building projects that characterize the planned developments.


3.0 Close-up picture of the facade lettering of the Brede Hilledijk.

## 3.1 Exterior Composition

As previously discussed, it is very likely the exterior design was made by J.P. Stok Wzn., or atleast heavily influenced. When investigating J.P. Stok Wz. it becomes appearrent that he was regarded as most-proficient by his peers,. He was an active player in the architectural discourse which is showed by his publications in magazines from architecture societies. This is also seen in the activity he had in architectural competitions, as designer and in his later period as a judge. It becomes clear when analysing the design on architectural elements. It could be of great insight to investigate the architectural discourse of that period to better understand the meaning of the design.

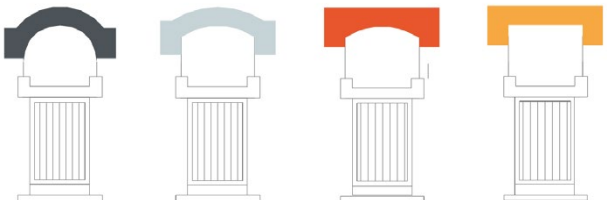
After reading about the architecture debate between 1840 and 1900 which just ends before the design of the warehouse Santos it becomes clear this period in dutch architecture was long underappreciated and simpliffied, partly due to religious influences wich dislogged the general view for a long time. It was also a time with much experimentation in architecture, leaving old dogma's wich lead to the post-modern and modern movements.

The architectural style of Santos is called Eclictisism wich specificly allowed an architect to compose its building from a multitude of diffrent architectural styles. Retaining harmony and unity within this combination was the main challange. In the design of Santos there are architectural expressions found wich relate to Neo-romanesque style theory (example: the applied rustica motif in the ashlar stone layered plinth and round arches above the loading doors). But also Art-nouveau style elements (example: the loading doors and details wich crown the building) and possibly more architecture styles where of inspiration.

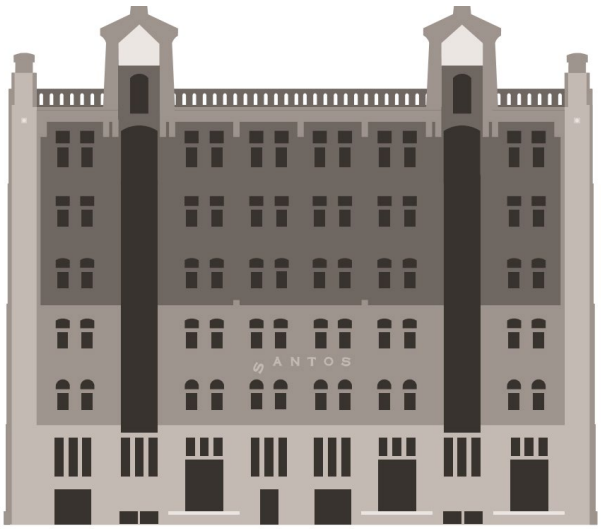
In the architecural debate of 1840-1900 the following two theme's played a signifficant role in what architecture should be. The necessity of being truthfull in architecture (currently called the duck/decorated-shed debate). And expressing the appropriate character, the design has to it's function, was the goal (a theme wich gets less attention in architecture discourse of today). To illustrate these theme's of truth and character the following quotes where selected because of their compactness, acuracy. But most of all because it was said by W.N. Rose. He was for a long time Rotterdams city-architect and adviser, and more importantly also member of the architectural society 'architecture and friendschip'. It could be possible W.N. Rose directly influenced Kanters&Stok.

'No art withouth truth' -W.N. Rose 1856
'Truth is the principle where the exterior expression matches with the floor layout and function' -W.N. Rose 1856
'Character is the impression of a building according to it's function and meaning' -W.N. Rose 1856
(Van der Woud, A. 1997)

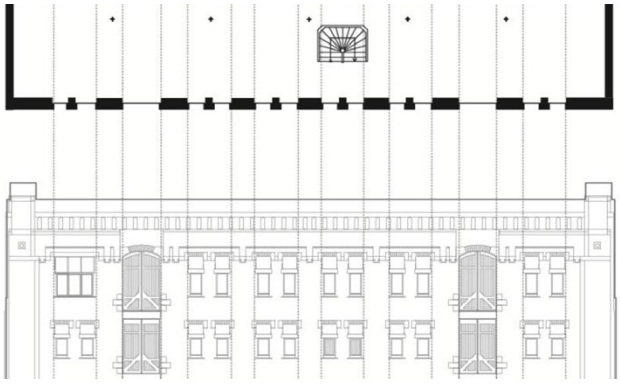
For example a reason for the division of lintel expression on each level (figure 3.13) might have been that the architect wanted to visualize the load on the different floors through these windows (van Velzen & van Winsen, 2011).



3.13 Architectural expression of character within the window lintels.

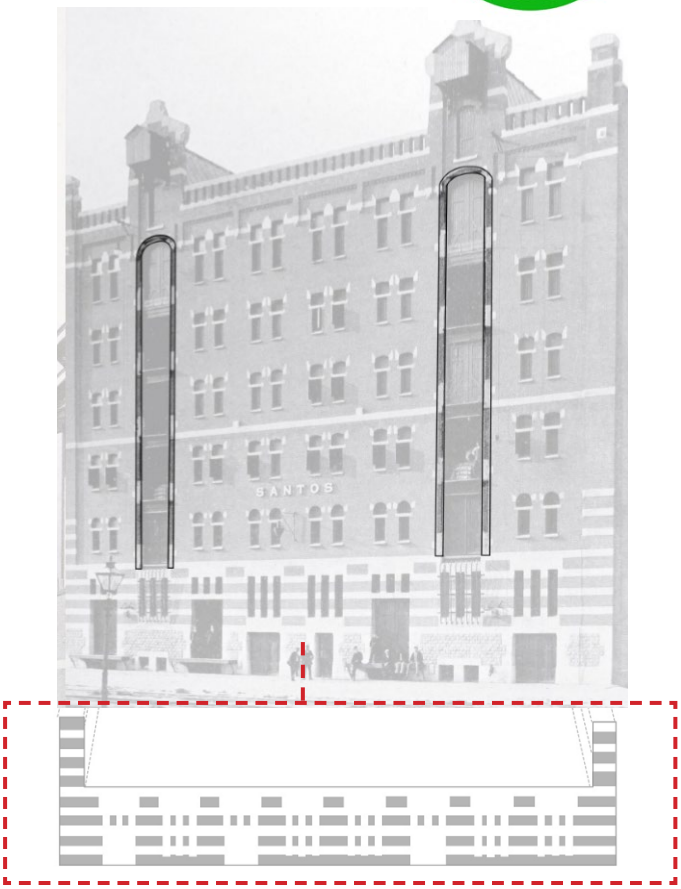



3.11Relief in the facade



3.12 Truthfull expression of the facade

Architectural Value




3.14 Architectural expression of the cargo doors and plinth made of an ashlar stone stroke-pattern,

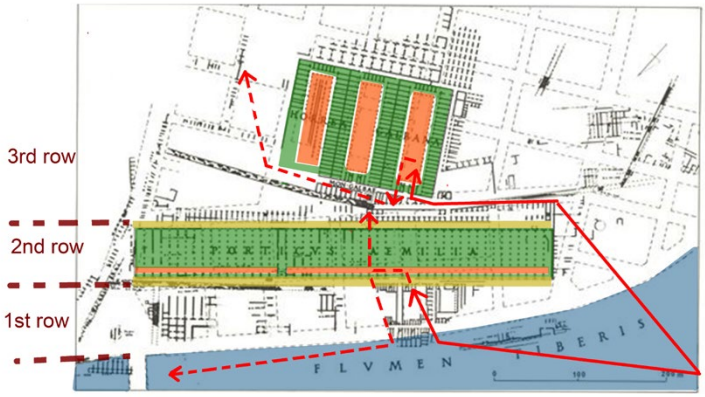
## 3.2 Warehouse typology

Why is the typological value listed in the monuments appraisal and why should we consider preserving these elements?

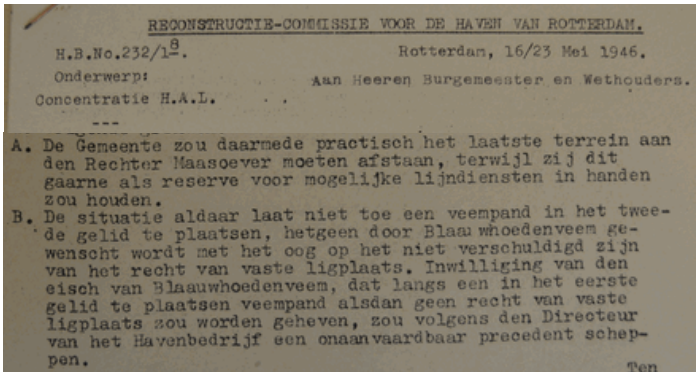
The storage of goods in a shelter is a very old human activity. The example showed in figure 3.21 is a storage facilities at the southern riverbank in Rome, built around 100 BC and shows a simmilar layout compared to the warehouse of Santos on the second row allong the water. This second row model is used mainly for longer term storage and distribution of goods to the city. The first row model acts more as a short term stop for fast unloading and preparation for further transport. Due to the correspondence, found in the municipal archives of Rotterdam (fig. 3.22), we know the main reason for the companies second row preference. A location directly adjecent to the water would also demand payment for the docking availability wich would increase the running cost of the warehouse significantly.

In analysing the typology of Santos (fig. 3.23) many examples are taken from harbour buildings in Rotterdam to emphasise on it's 'family' and the still remaining readability of the development of the warehouse type in the early 20th century. Santos stands in a long line of advancements wich were of great importance to the prosperity and growth of the city in that time and only a few examples of this early period still exist. Looking at the typological development gives insight in the workings of warehouses and the development the type went trough and the similarities it still has with the archetype. But more importantly it shows the position of Santos within this story. It tells about the important development from manual transport systems to mechanical and provides the step towards the movable mechanical transport system. Influenced by the new technologies and materials that became available with the industrial revolution.

Warehouses played a significant role in the prosperity of Rotterdam. Specificly the period where this warehouse originates from is connected to the start of the bloom of Rotterdam in the twentieth century. People like to commemorate and cherrisch the moments, persons and advancements in our culture wich brought great wealth and prosperity. The warehouse of Santos has this connection and quality that it allows to be commemorated as such.


3.21 City map of Rome southern riverbank around 193 BC. Diagram of the use of warehouse position



RECONSTRUCTIE-COMMISSIE VOOR DE HAVEN VAN ROTTERDAM.

H.B.No.232/12[8]. Rotterdam, 16/23 Mei 1946.

Onderwerp: Aan Heeren Burgemeester en Wethouders.

Concentratie H.A.L.

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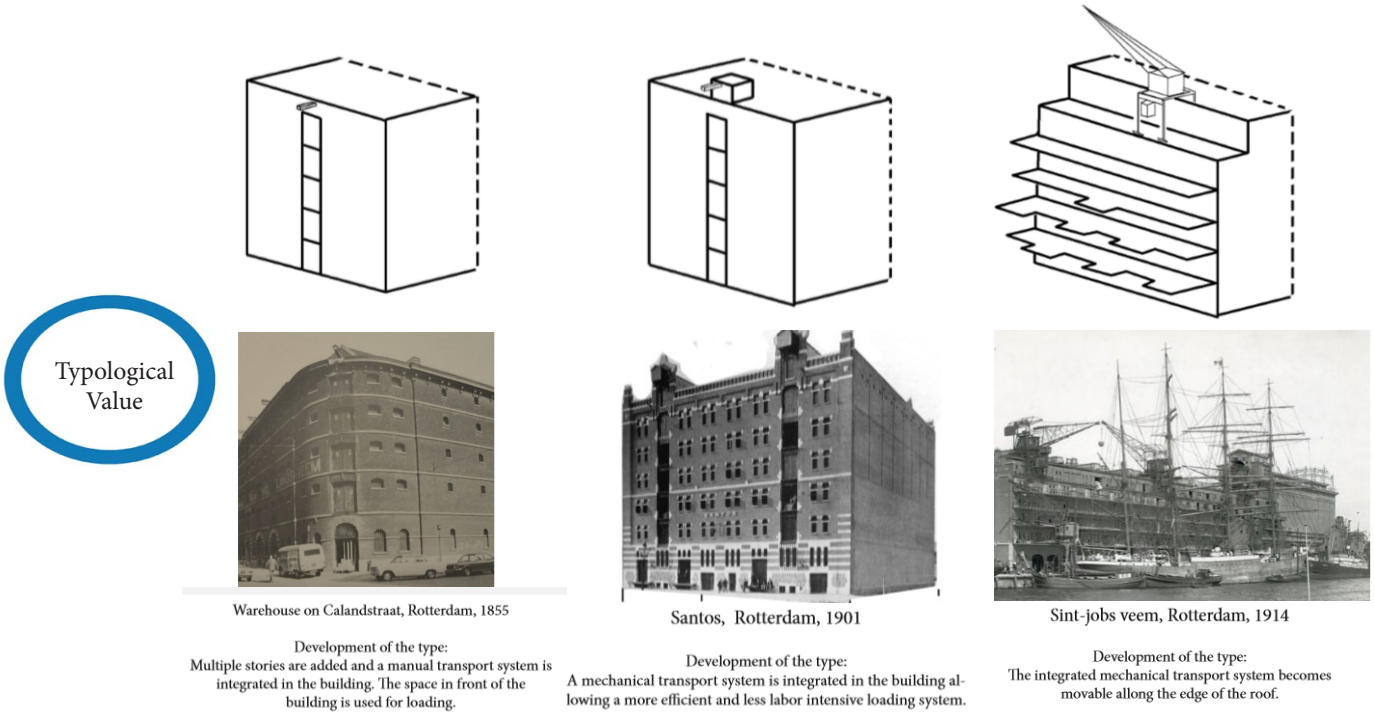
A. De Gemeente zou daarmede practisch het laatste terrein aan den Rechter Maasoever moeten afstaan, terwijl zij dit gaarne als reserve voor mogelijke lijndiensten in handen zou houden.

B. De situatie aldaar laat niet toe een veempand in het tweede gelid te plaatsen, hetgeen door Blaauwhoedenveem gewenscht wordt met het oog op het niet verschuldigd zijn van het recht van vaste ligplaats. Inwilliging van den eisch van Blaauwhoedenveem, dat langs een in het eerste gelid te plaatsen veempand alsdan geen recht van vaste ligplaats zou worden geheven, zou volgens den Directeur van het Havenbedrijf een onaanvaardbaar precedent scheppen.

Ten

3.22 Correspondence about the exchange of locations and explanation of the Blauwhoedenveems wish for a second row placement.




3.23 Part of the analysis showing the typology of warehouses in Rotterdam wich are positioned before and after the typology 'Santos' belongs to.

## 3.3 Interior composition

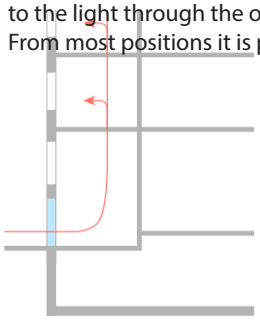
As mentioned previously, the interior composition must be mainly from the hand of J.J. Kanters. He managed the architecture firm, left behind by his father, which has a history of mainly industrial buildings. In this case it is therefore logical to mainly question J.J. Kanters influence and analyse the interior on its functionality. But also relevant are other architectural theme's like the experience and sequence of space, rithm, lighting, materialization etc.

In the facade of Santos, you can find a lot of different doors, most of them are above the level of the pavement (fig. 3.31). Therefore most of them can't be accessed as an entrance for people. This is because they are designed to be used as loading docks to the transporting the goods in or out of trucks.

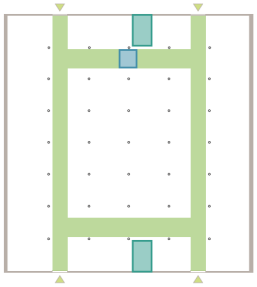
In the floorplan of Santos two adjecent warehouses can be found where only the seperation wall runs till the 3rd floor (fig. 3.34). Ths was because Santos had the privilege to be a bonded warehouse (entrepot). It was able store, register and tax imported goods. This was also acompanied by some prestige because this right was originally restricted to the nations most trusted 'warehouse-masters' (pakhuismeester). The double -floorplan, -loading docks and -entrances allow the warehouse to proccess double the amount of goods, as an ordnary storage and as a bonded storage simultaniously. (Kuipers, M. 1991)

Santos is built and used as storage, so most of the space is meant for this function. Unfortunatly there are no historic pictures of the interior of 'Santos' during the period as a coffee warehouse but it probably looked simillar to picture 3.35. Because the 2nd till the 5th floor got the same function the floor plans and facades are similar (fig. 3.11). The staircases are used for the vertical transport of workers and define the sequencing of space.(fig 3.32, but also the toilets are situated there. This shows how functionally the design is thought through, because it optimalizes the time needed for worker to relieve themselves and gave the option to ascend/decent along the facades where the work needed to be done. Therefor the layout is characteristic for it's function and tells the story of the daily buisness.

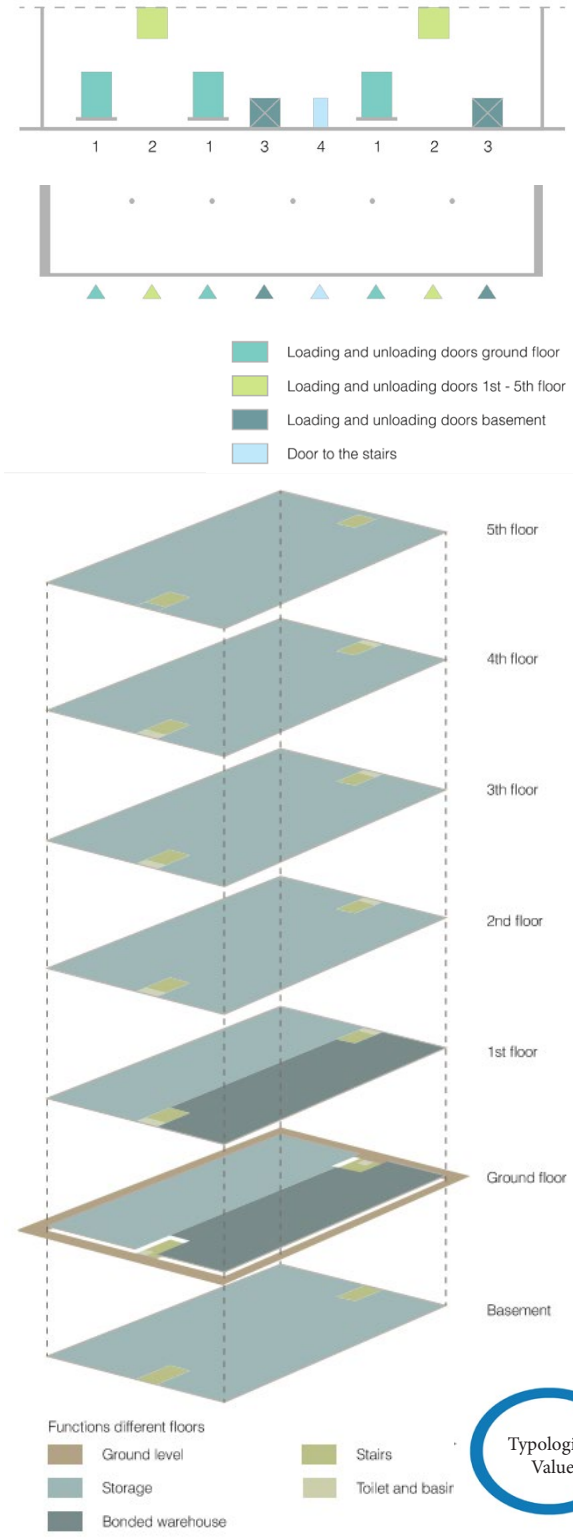
On the 3rd floor and upwards the spatial experience is: a clear grid, a flexible floorplan (fig 3.32), oversight and a strong orientation due to the light through the openings on the North and South facade. From most positions it is possible to see the entire floorplan of the



3.31 The stairwell



3.32 The floorplan




3.33 Building layout

3.34 The storage of 132kg bags of coffee and workers in a warehouse, 1930 Santos Brazil

3.35 Picture showing the oversight of space, taken on the first floor

3.36 The experience of materiality, the repetition of -structure, -space and -openings.

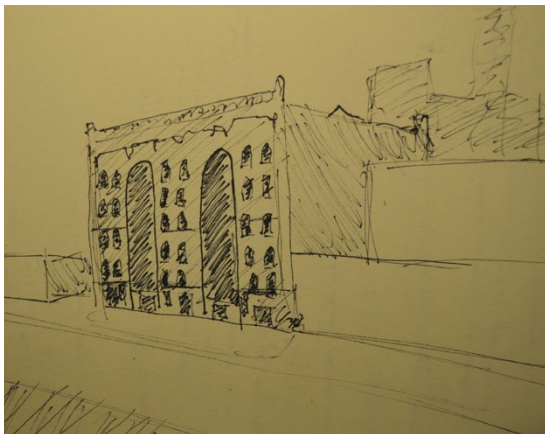
3.36 The interior detailing is of high quality craftmanship and also possesses character.

Architectural Value

As seen in figure 3.36 the structure plays a dominant role in the experience of the space. The rithm of the collumns and beams (wic lie perpendicular to the facades) give the interior a strict and rigid feeling. The materials used are diverse and not covered up in any way, this gives it a great honesty in its materiality and insight in the structure.

Taking a closer look at some details like in figure 3.36 shows the great effort and craftmanship that was put into the building. Most interesting I find the continuous use of different colour brickwork which brings some of the exterior 'character' to the interior. The wooden shutters are also of a special nature. Because the storage of coffee prefered a dark and stable storage place these were only used for ventilation purposes. Therefore it is also of typological meaning.

Another aspect stands out, when experiencing the interior, is the great vieuw the northern windows have on the Rijnhaven (fig. 3.38). The skyline of Rotterdam is well-known around the world and can be seen here from the oposite side wich its normally not viewed from. It also can help imagine the story of the labourers seeing the



3.37 The experience of the facade is mainly affected by the big loading doors and small windows wich is truthfull to its interior layout.

3.38 A priceless vista can be experienced from the windows on the north facade, overlooking the Rijnhaven and the 'Kop van Zuid'.

4.01 Picture of the iron beams impositioned within the brickwork on top of two larger natural stones.

## 4.1 Systems

In the period from 1903, when it was just built, to 1954, Santos was used as a storage. Because of its function, the logistics were the most important aspect of the building. Previously discussed in chapter 3.2, the most important typological advancment of Santos was the development from a manual transport systems to a mechanical and that it provided the step towards the movable mechanical transport system.

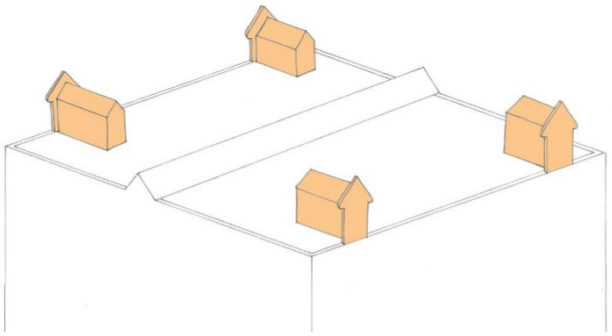
The goods were lifted by four winches on the roof of 'Santos' (fig. 4.13) and an elevator. Inside the building there were also some gaps in the floor to bring the goods from one floor to the one below. (these have been closed of after the warehouse was rented out to the Royal Airforce). The horizontal routing was the same on every floor and was related to the doors, the elevation points and the column system. In this way, the routing was a coherent system that optimalized the workflow.

In the enlarged section of figure 4.15 a fortified roof structure can be seen, the electric winch (wich was very modern in 1903) lying in the back of the shed to place its weight on the collumns instead of the brick wall. This also creates space for the use and maintenance of the machine. The winch house was created to protect the winch from weathering damages. Therefore also a small canopy can be seen sticking out of the facade to give shelter to the pully.

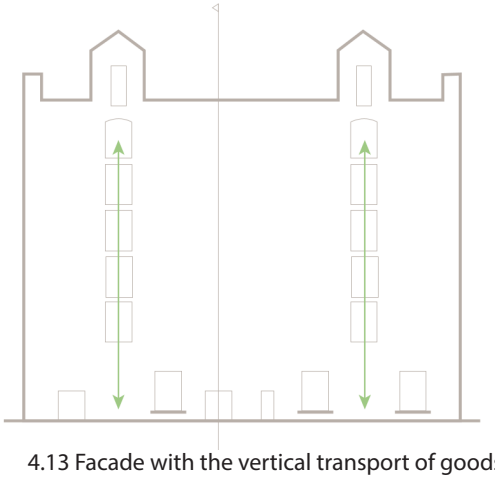
As seen in figure 4.11 the winch-houses played an integral part within the crowning of the facade giving vertical accentuations to the building; they expressed the warehouse function from far away. The removal of the winch houses in 1970 have been destructive to

Architectural Value


4.11 The original facade was characterised by the accents of the winch houses and the bilboard.

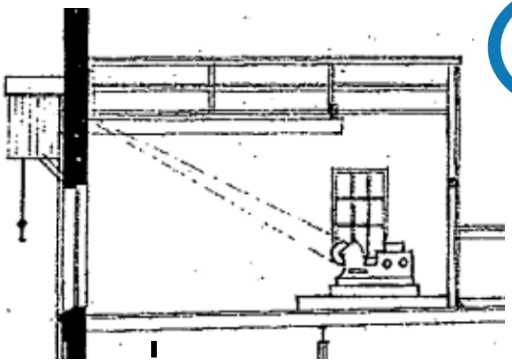


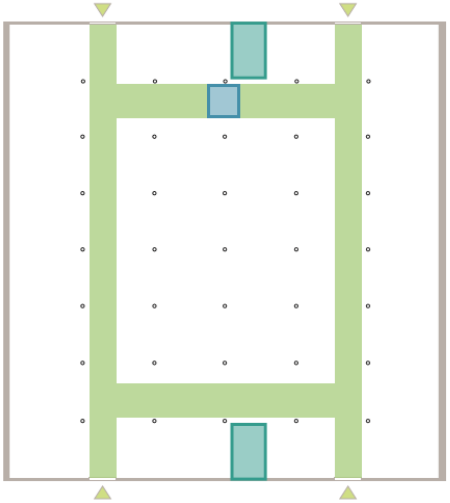
4.12 Winch houses on the roof



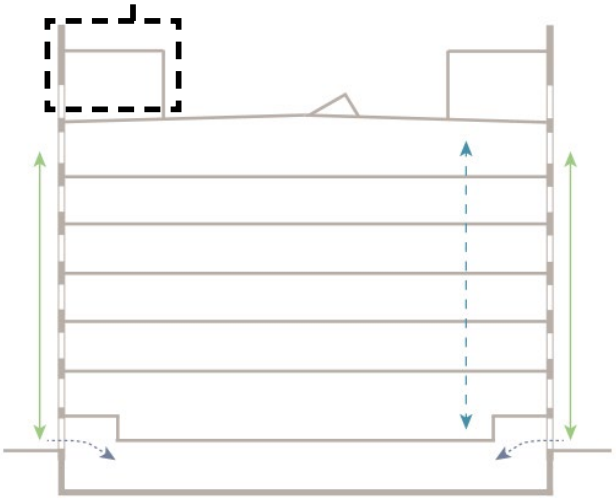
4.13 Facade with the vertical transport of goods

Typological Value





4.14 Floorplan with transport passages in line with the loading doors and stairwells.



4.15 Section with the vertical transport of goods

Also some another system is worth mentioning, not because of its clear typological value but because of its technological ingenuity. Figure 4.16 and 4.17 shows a building designed with knowledge about physics. The reduced entrance of light in the building combined with its natural ventilation possibilities created a warehouse with controlable conditions.

## 4.2 Construction method

The different floors in Santos are quite similar. Because of that, the building method of these floors is similar as well. The exceptions you can find in the basement and the fifth, top floor. Before the building could start a sheet piling (in that time of wood) had to be placed. After that, the ground and water had to be taken out. Afterwards, the foundation could be placed (figure 4.26). To continue with the beams, wooden shelves and the brick floor of the basement. The wrought iron columns of the ground floor are placed on top of the brick columns of the basement. After that, the Hennebique based system will be constructed. After that it would be a repetition of erecting the iron columns and beams, and then placing the wooden girders on top (fig. 4.23). The floor is made out of two layers of planks, spanning each in the opposite diagonal direction. This creates a more rigid floor that less easilly deforms.

Santos was at the time it was built the highest building of Rotterdam. This was possible because of the building systems that was used. Especially the iron Phoenix system (fig. 4.24) made this height achievable and a riveted together with iron bolts. Another important aspect of the building method is the repetition of the different floors. From the ground floor till the fifth floor, the building method is completely the same. The only difference is that the columns, beams and outer brick wall are optimalized and getting thinner at every floor. The basement and roof are also an exception of the building method. In the basement, the used materials are different than the used materials on the other floors. For the roof some extra iron beams underneath the winch houses were necessary.

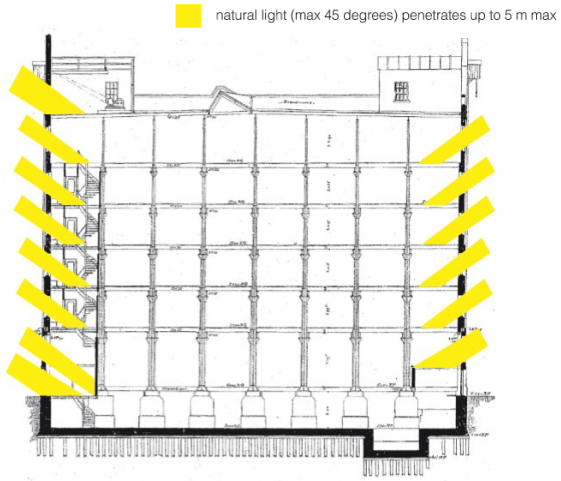



Fig 4.21 Analysis of natural sunlight in the building

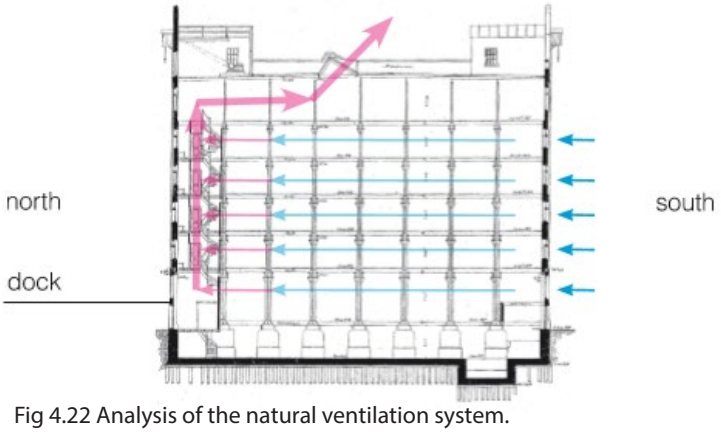



Fig 4.22 Analysis of the natural ventilation system.

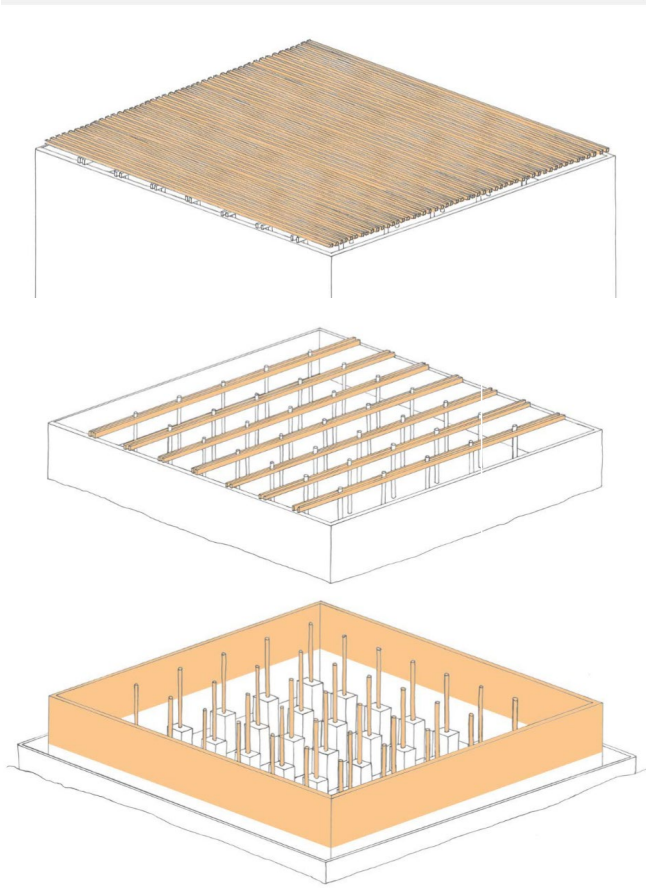


Fig 4.23 Layers of the construction.

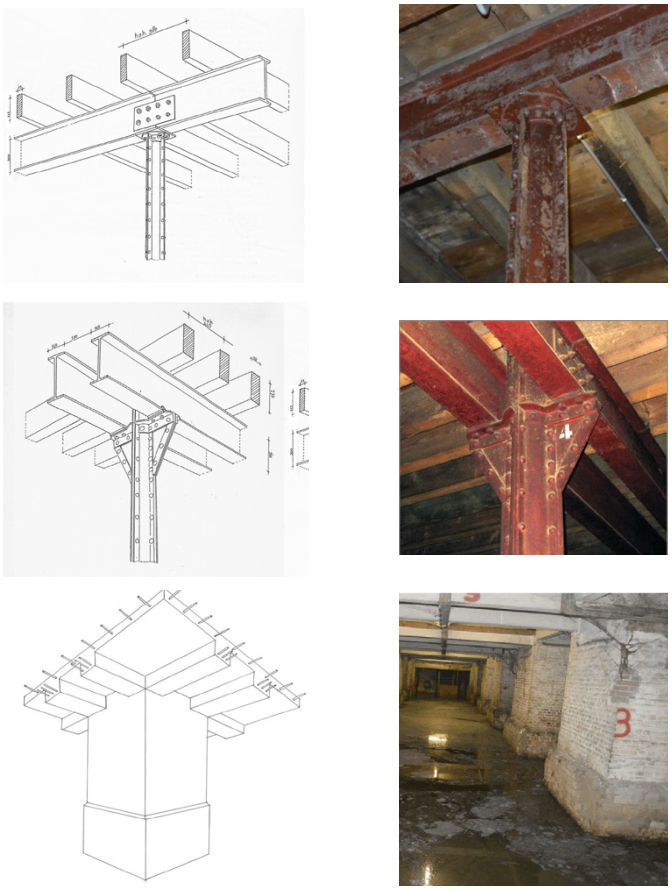


Fig 4.24 Drawings and pictures of the detailing.

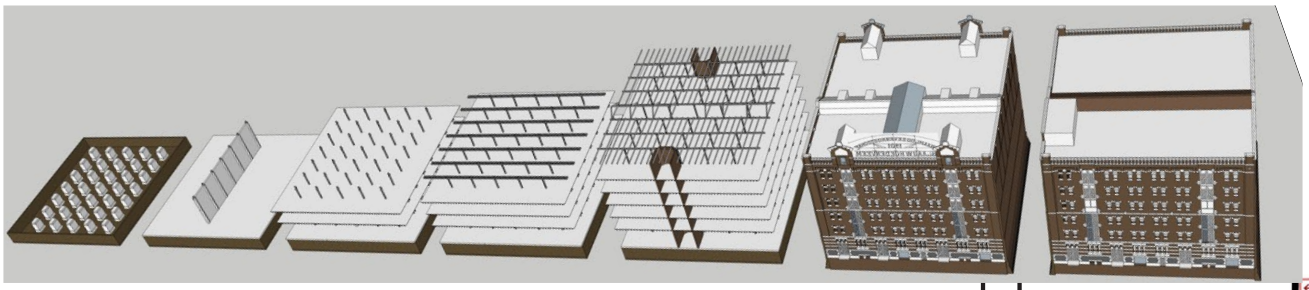


Fig 4.25 Visualisation of the essembly of Santos

## 4.3 Structure

The construction of Santos is an essembly of all kinds of materials and therefore the load bearing construction has the same principle. The brickwork, the iron skelet and concrete/wooden floor(s), all participate to share the load. Also it's composed in such a way that it plays to the strenght of the used material.

The foundation is constructed of wooden poles that support masonry floor and bases in the basement (fig. 4.27). The floor of the parterre is made using the Hennibique system. This includes a concrete floor that is reinforced with steel and that can carry weight. Its span direction is to both sides (fig4.25). , thus it can transfer forces to both sides. The parterre-floor is also the only floor within Santos that uses this system. Most probably because the ground-floor would endure the largest stress. The masonary wall is part of the load bearing construction and also takes care of the stabililty of the building (fig.4.24).

An observation can be made that without the heavy load of an active warehouse the construction is currently overdimensioned and could bear additional weight. Also the construction system is modular which gives possibilities in intervening in this structure. But those interventions wil strongly be influenced much by this strict grid of 5.32x4.22m.

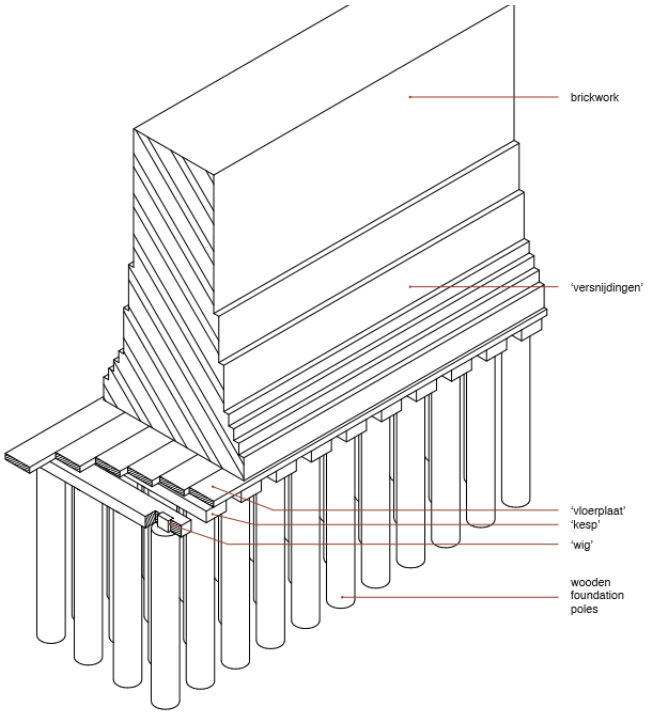
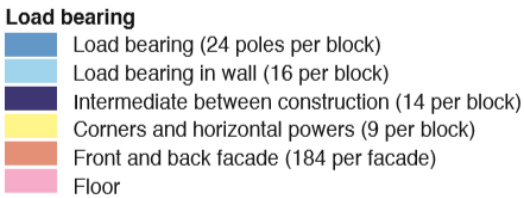



Fig. 4.28 Technical drawing of the composition of the foundation.



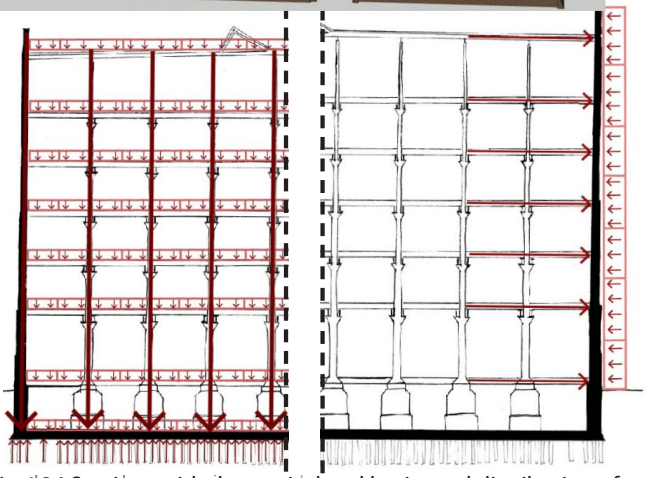



Fig 4.26 Sections with the vertical and horizontal distribution of

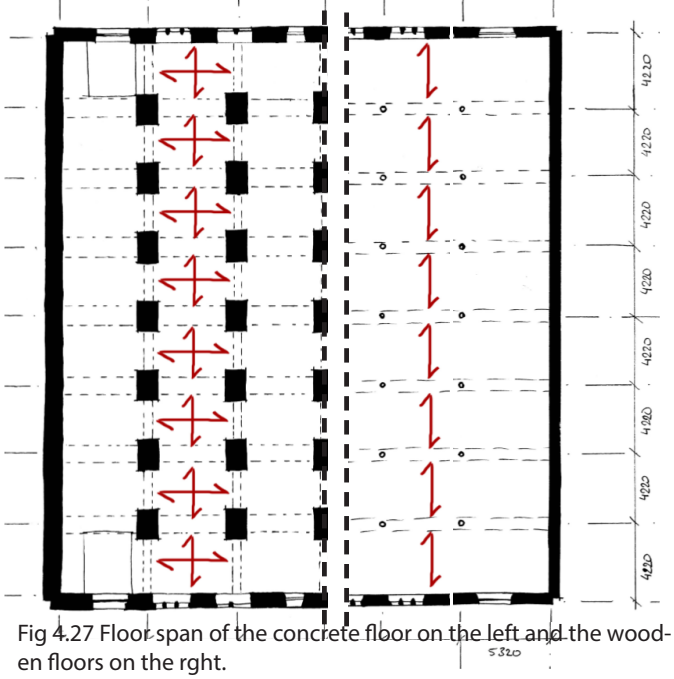


Fig 4.27 Floor span of the concrete floor on the left and the wood-en floors on the rght.

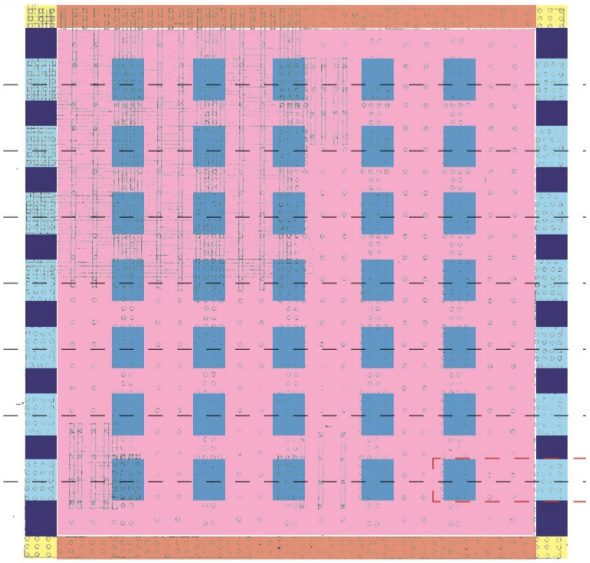


Fig 4.29 Analyisis of the load bearing elements in the facades and foundation

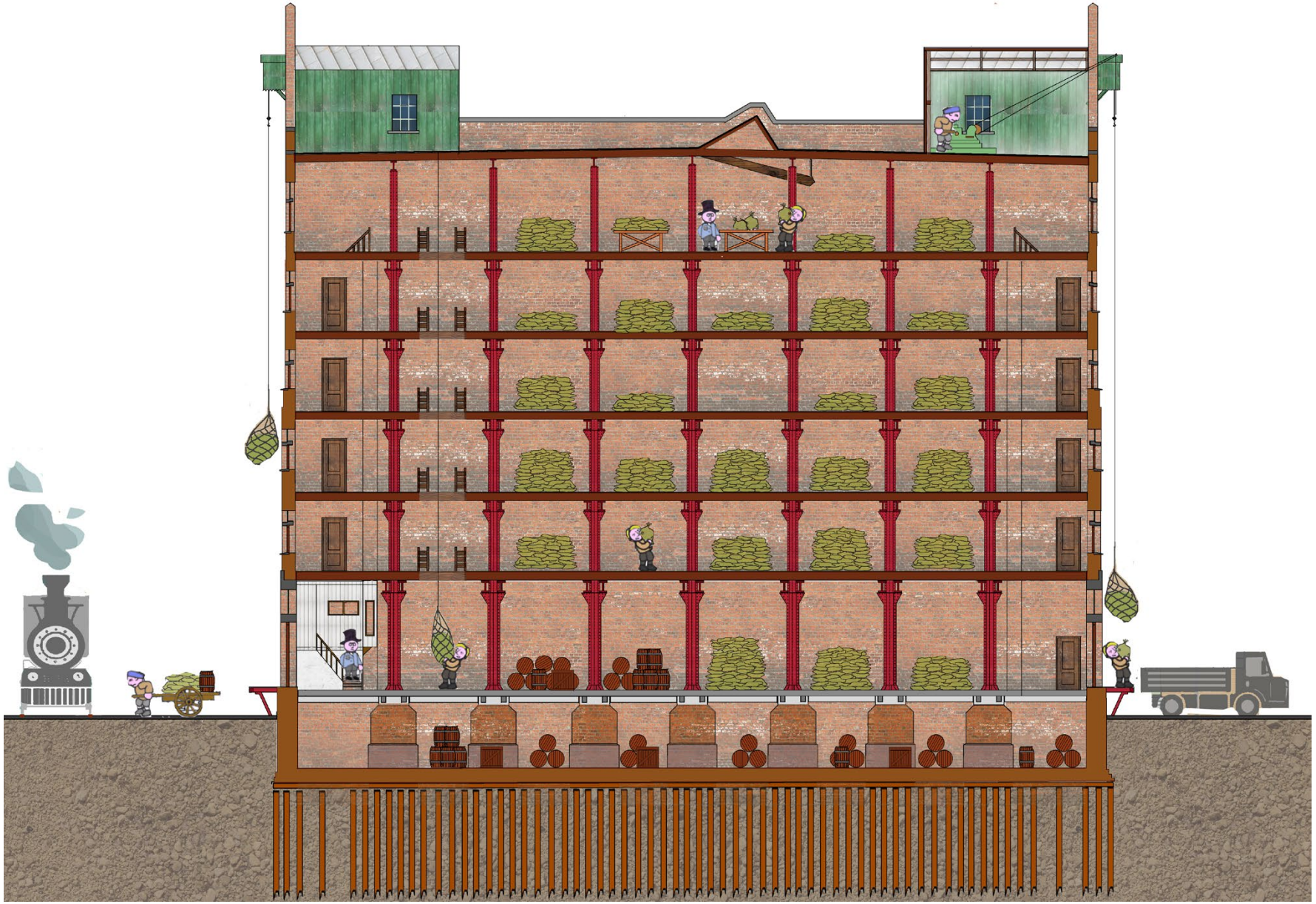


Fig 4.30 Reconstruction of the original use

# 5 Cultural value

Fig. 5.0 Historic picture of the Maashaven with 'Santos' in the background, 1950.

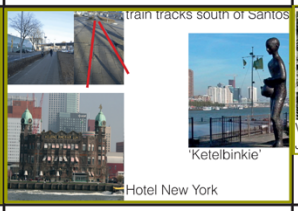
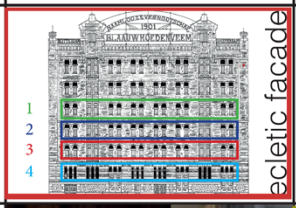
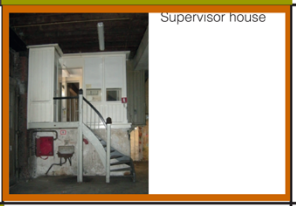
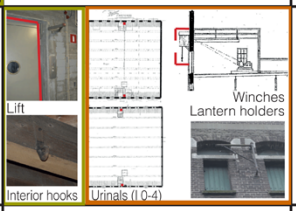
| | Age value | Historical value | Intentional com-memorative value | Non intentional commemorative value |
|---|---|---|---|---|
| **Surroundings / setting** |  |   |   |   |
| **Site** | | | | |
| **Skin** |   |   | | |
| **Structure** |  |   | | |
| **Spaceplan** | |   | | |
| **Surfaces (interior)** |  | | | |
| **Services** | |   | | |
| **Stuff** | | | | |
| **Spirit of place (the story)** | |  | | |

Fig. 5.11 Value assessment matrix of Brand and Riegl.

## Use value

2 min

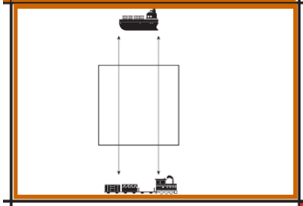
7 min

Centrum

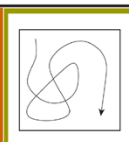
10 min

A15/ A16

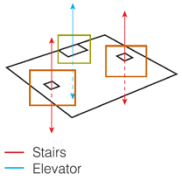
Potential use of this space



Clear grid



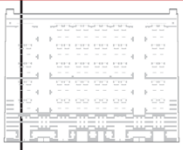
Flexible floorplan

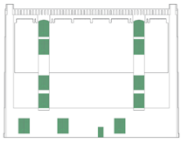


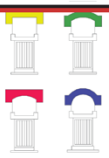
Stairs

Elevator

## Newness value







the facade is electic, with different depths (1), repetition of the (slightly different --> 4) windows, and richly ornamented (2). most of the doors (3) are still original.

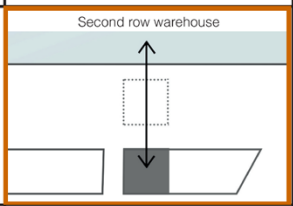
## Art value

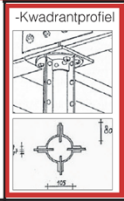
visible brickwork

craftmanship

## Rarity value

- Only joined venture of Stok & Kanters
- A lot of Stok's buildings were distroyed



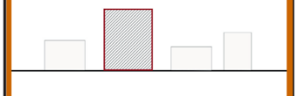
-Kwadrantprofiel

- Composed system of materials

- Hennibique system

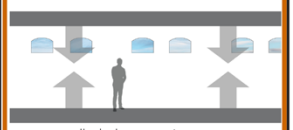
There are only a couple of warehouses with these dimentions left from the 19th century

- It was the highest building at the time it was build



## Spirit of place

relation to water



small windows create an introverted feel.

high importance

medium importance

low importance

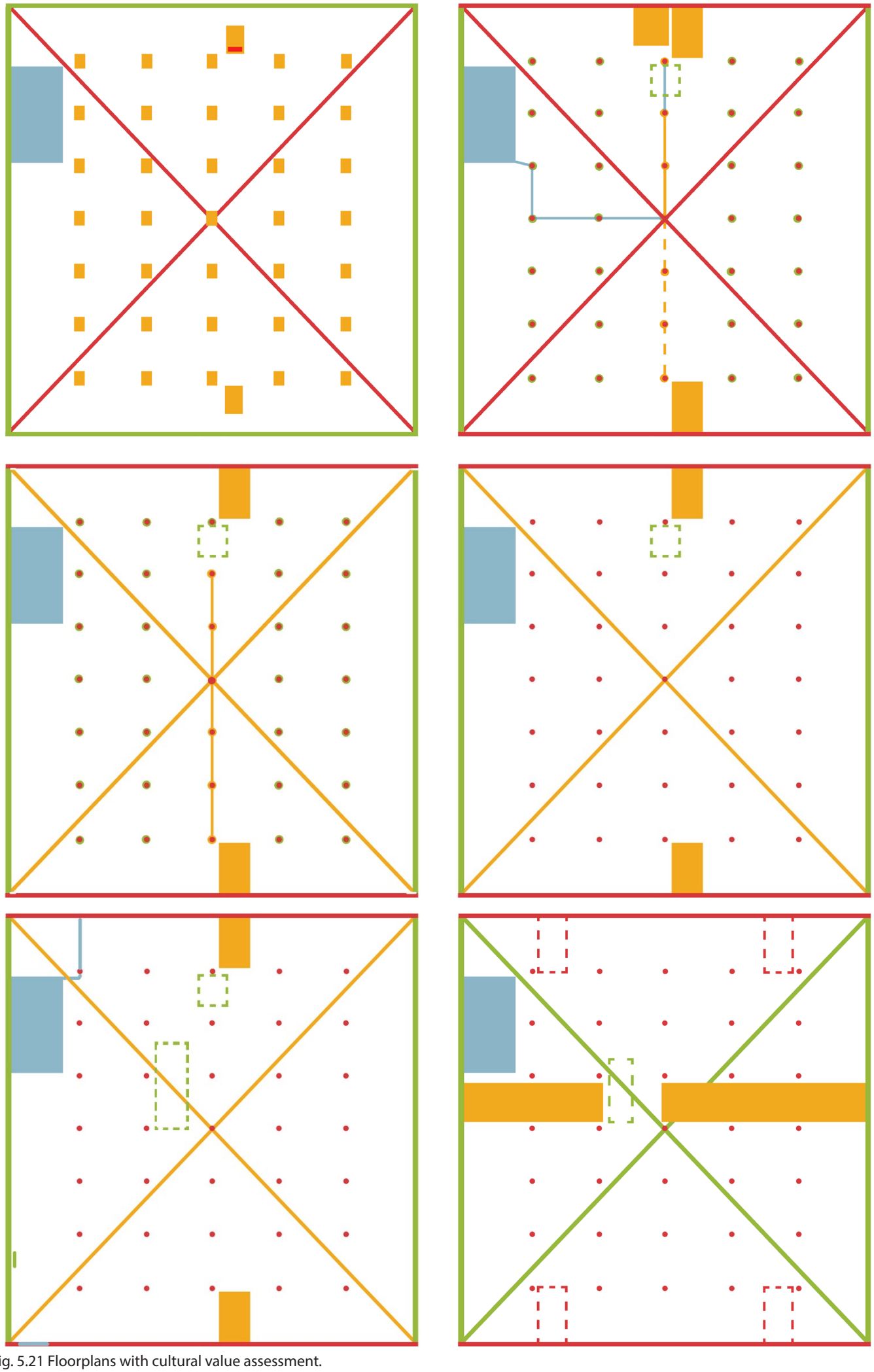


Fig. 5.21 Floorplans with cultural value assessment.

## 5.2 Cultural value assessment

To make the value assessment first a framework has to be established wich period in the life-span of Santos is regarded of the highest importance or meaning. In this case it is pretty easily determined to be the first 50-years of its existence when it was most active and functioning as the design intended. Also in this period it had relevance because of its visibility and its contribution to the great succes of the harbours of Rotterdam and the prosperity it brought to the city. The past 50-years are not regarded to embody high cultural value because it lacks this meaning and relevance to its surroundings. It does give insight in the when and why some parts of the building have been modified or removed. This can be viewed in the chronomapping analysis of the building wich is added as Apendix II.

Also a value statement has to been made:
The warehouse of Santos is of 'a general public interest' because it is a rare example of both an innovative and artisticly developed storage facility for coffee. Build in the early 20th century, this warehouse played part in Rotterdams greatest historic bloom; the modernisation of the harbours. Already highlighted in most chapters and visualized in the cultural value matrix, are the main values that I found relevant within the case of 'Santos'. This cultural value matrix is composed of the architectural theories of R. Brand and A. Riegl, both designed to help chart these tangible and intangible values. It can be concluded from the crowded matrix that this warehouse has a richness of value in cultural-history, typology and architecture. This results in the conclusion that Santos is a monument of importance and should be handled as such.

As one can see in the matrix (fig. 5.21-5.24), there are two main building elements that are assigned as red, or high monumental value. These are all of the elements of the facade and the phoenix system and beams from the the structure.

The high monumental value of the skin is mostly focused on the eclectic north and south facades because it shows the architectural idea's and language of J.P. Stok Wzn. and the architectural discourse of that time. This eclectic-ness shows itself in various ways: the textured facade, the rich ornaments, the different windows, the strong vertical and horizontal lines, and they all contribute to the art value of the skin. This art value of the expression of the facade is one of the most important exterior elements of Santos. It creates a strong image that can be recognized from afar, and plays a large role in the monumentality of the building.

The facade also shows the age of the building through its patina, as well on the exterior as the interior. This element is filed underneath age value, again in red. It shows that the building is older than its surroundings, and that its one of the few harbour buildings still remaining on Katendrecht. What strengthens this feeling is the Santos lettering on the front, with the 'S' falling sideways (which is filed under orange because it can also produce some negative assosciations).

Finally, there's the aspect of disappeared elements within the skin, most notably the steel advertisement and the winch houses. These two elements were very important for the noticeability of Santos back in the day (as seen on picture (4.11), and formed the crown of the building. The winch houses also helped with the strong vertical lines in the building. However, these elements are not present anymore. But since they were once so important for the building, their historical value is high. When transforming the building, these elements should be taken into account.

Structurally speaking, there's only one aspect that can be valued highly: the Phoenix column system and beams (fig. 5.23). This American system is not completely uncommon for Dutch warehouses. But because this system has international historic narritive, it is being the main reason for accomplishing the achievement of tallest warehouse and characterises the interior, it gained a high 'over-all' value, part art, part historic, part rarity. Not visually represented yet in this report are the some elements on the detail scale. Detailing, attributes and the numbers/letters appointed to certain rows, windows and doors. Highly valued because they are the real proof it was used and brings that narrative to life. The fireproofing of the collumns on the first floors also shows advancements in the building technology but diminishes this art value by covering the collums. For this reason they are designated with a neutral value.

Fig. 5.22 South facade with the cultural value assessment

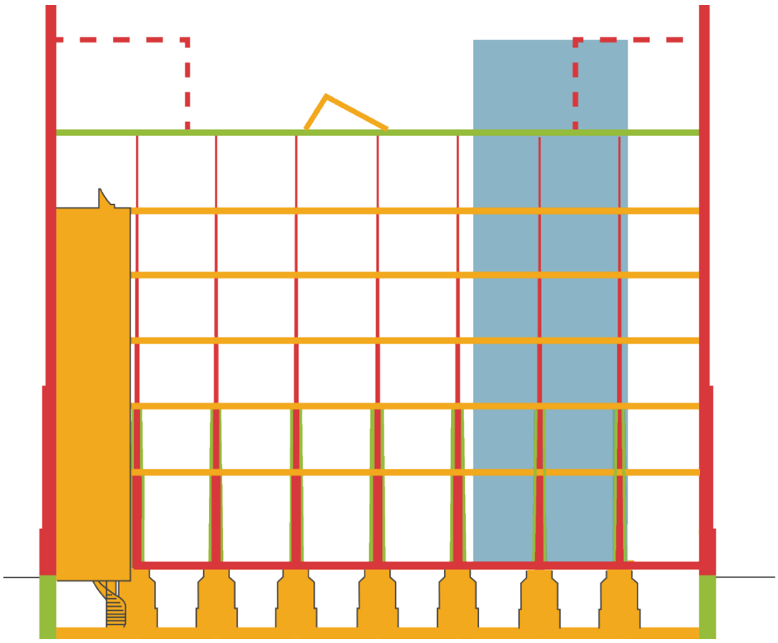


Fig. 5.23 Section with the cultural value assessment

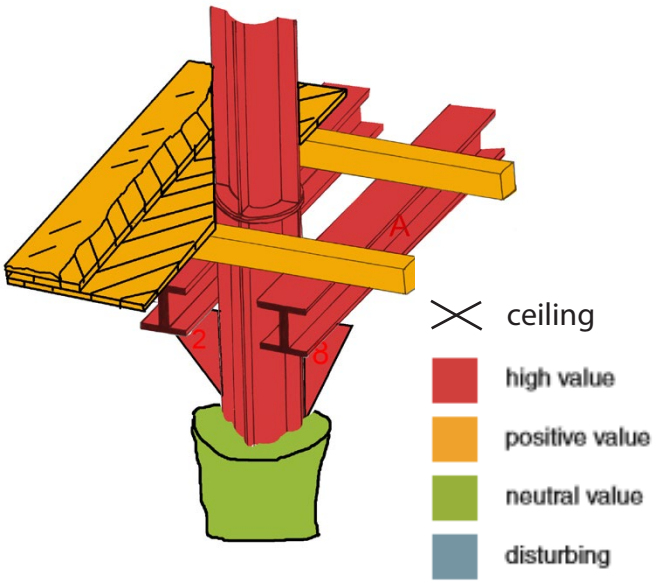


Fig. 5.24 Detail with the cultural value assessment

## 5.3 Dilemma's and Opportunities

When mapping the cultural value, dillema's and opportunities become noticable. Every value poses a risk in one way and another way a chance on succes. Charting these challanges help clarify the strenghts and weaknesses underlying the assignment. For example the changing context of adjecent higher buildings diminishes the story of 'Santos' being the tallest warehouse of its time. On the other side a opportunity lies witihin to distinguish 'Santos' from the neigboring buildings in a diffrent relation then height.

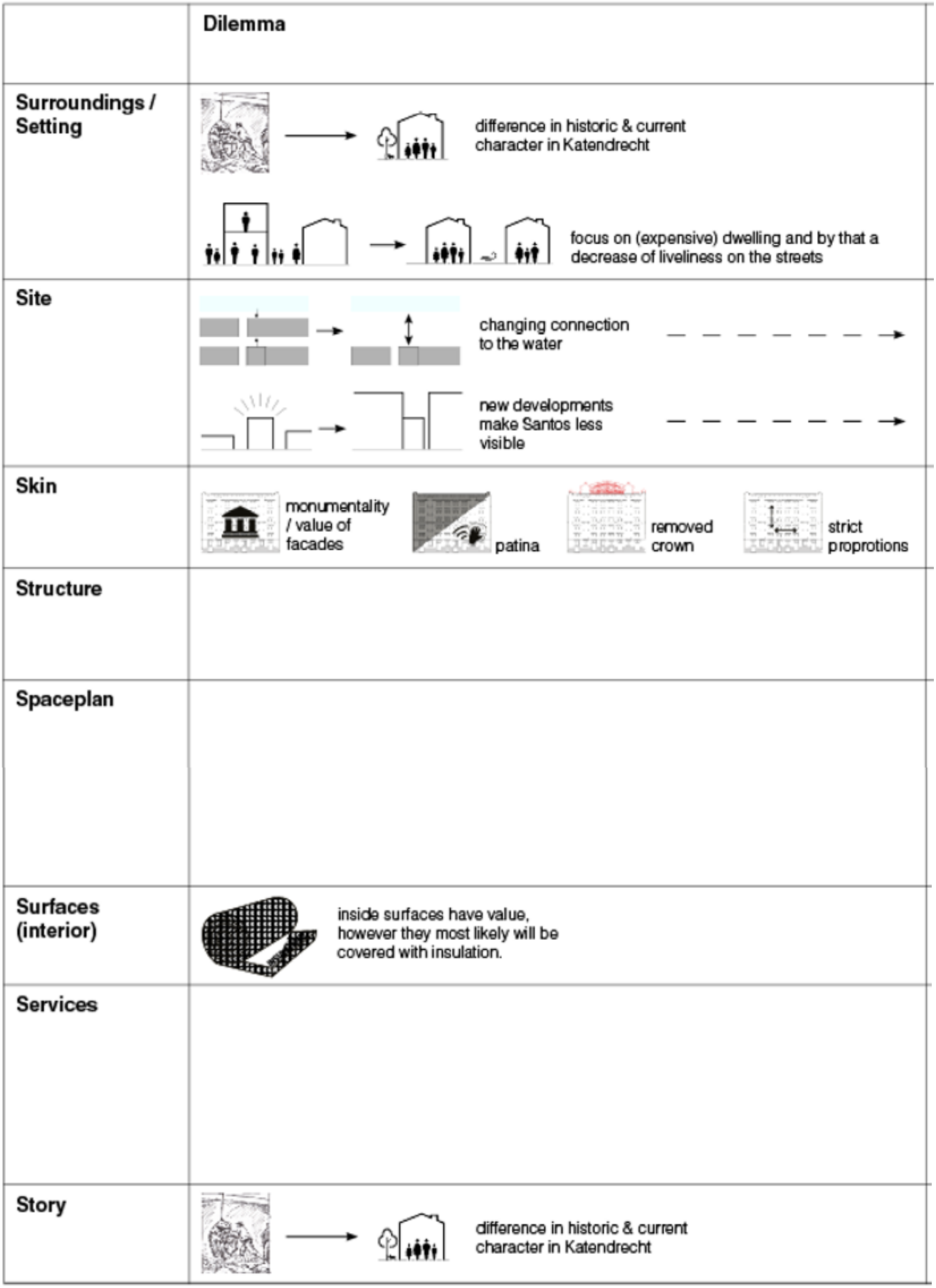
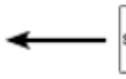
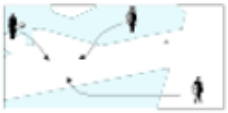
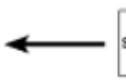



Fig. 5.31 Matrix of dilemma's, oppurtunities and obligations.

| Opportunity | Obligation |
| --- | --- |
|     Santos as middle man between history and new use | |
|  Katendrecht is becoming more attractive because of the development | |
|  new developments give the opportunity to create a renewed connection with the water | |
|  a Santos that stands out between the new | |
|   side facades  use the idea of a crown  follow proportions or be free |   be very careful with the north & south facades |
| | |
| | |
|  visible brickwork can create atmosphere | |
| | |
|     Santos as middle man between history and new use | |

## 5.4 Reflection on the preliminary design

A conclusion can be made from the cultural value assessment in combination with the future development plans of the municipality: Santos has a strong obligation to retain and express the identity of Katendrecht as a transit harbor. Because it is one of the few remaining buildings of the historic fabric from that period, which will continue to exist in the new situation.

A major part of the cultural/historical values that lie within this case are related to the eclectic north & south facade of the warehouse. It shows the original layout and orientation of the warehouse, waiting on adjacent buildings to form a row. The art value (eclecticism), the rarity value (joint venture of Stok & Kanters) and the historical value (landmark of the area) create an obligation to be careful with the exterior of Santos. These facades express a certain status and grandeur, but also they have an introvert nature. To be able to preserve this essential element of Santos I chose the future function to be able to benefit from these qualities. To designate the building as mainly high-end retail space it takes advantage of the rich facade expression and the facade is therefore restored in its original design. Also this program lacks the necessity of a strong visual connection with outside, because it could distract attention from their products. I believe this is a suitable future function for the warehouse because it is in the spirit of Santos to import and distribute luxury goods.  This function also fits in the future vision of the municipality. On the floors above, offices, specifically tailored for design companies, will be created to support the high-end retail shops below. Within the roof a restaurant/lounge will be created in combination with spaces for events (for example fashion shows, product launches, stake-holder meetings or parties). These programs are placed within the tripartite facade division to retain the relation between exterior expression and the interior activity. Each of the programs is orientated in the same north-south direction, which the original building has. This places the shops, offices and restaurant along the eclectic facades.

The main intervention of the preliminary design consists of adding a rounded off roof structure on top of the warehouse. The main reasoning for this is to retain its 'super position' in relation to the neighboring buildings. Because of its uncommon and contradicting roof ending it will stand out in the urban fabric without being the tallest building anymore. The shape is inspired by the former advertisement that stood on the roof which had a rounded off shape. And the dark blue roof finish is inspired by the former commissioner of the building who branded it self by having all their employees wear a blue hat. The shape and lack of windows on the east and west side emphasizes the north-south orientation further.

Another important element brought forth by the cultural value analysis is the diminished art-value and typological value due to the missing winch houses. They highlighted the original silhouette of the building and where the main result of the typological advancement. The winch houses should be restored and investigated further, in the following period, to integrate with the future program and design. The newly added roof shape frames the original silhouette by lighting it from behind. Also a reference to the original design of Santos is made with the interventions placed on the 'blind' sides of the building. The vertical transport of goods was originally mainly visible on the exterior of the warehouse. In the same way vertical transport of people is highlighted in the preliminary design by making it visible in the exterior.

Fig. 5.41 Model of the preliminary design

Fig. 5.42 Model of the preliminary design

Within the interior of Santos mainly the elements stand out that are connected to technological advancements, which made the unprecedented height (for the start of the 20th century) possible. In preliminary design multiple floors will be opened up to create new interior spaces for common use, which produces a view that contains multiple levels of this construction. This uncovers the structure of phoenix columns and beams further because the floors block the view of seeing the vertical repetition. Also to emphasize this structure there are two strategies used in adding new division walls. Glass curtain walls (clear, semi-, translucent) will be placed between- and attached on to the phoenix columns. Solid walls will be placed with a set-back along the column grid (fig. 5.43). This creates a clear differentiation between translucence and non-translucence in relationship with the original structure. Within the interior some of the expression of the north and south facade is also visible through the use of rounded off- and colored bricks. This will be preserved by not allowing insulation being placed along these facades but only at the 'blind' facades. The insulation properties of the north and south facade will be upgraded with insulated glass. I also would like to bring back the concept of a natural ventilation system for the communal spaces. For the retail space this natural concept is not possible because the retailers want control over their shops climate. This wish demands a mechanical climate concept.

Finally: to embed Santos in the future development plans of the municipality some propositions for the area's master plan are made. The intervention strategy that is chosen adapts Santos gradually to its new urban fabric (fig 5.44). By using an architectural expression, which has visual kinship with the eclectic style and following the overall dimensions of the building, it retains unity. But with the use of modern material and scale it also adapts to the expression of the future surroundings. To retain the connection of Santos with the harbor it's possible to set-back the top floors of the first row buildings, which would preserve the vista on the Rijnhaven. Also it creates space for Santos, to have a place in the new view of Katendrecht seen from the Kop van Zuid (fig 5.41).

The future public spaces around Santos like the quay and the newly created square lack a strong connection to the history of Katendrecht. The adjacent warehouses, cargo cranes and railroad tracks are not present anymore. Because of the little visible remains that refer to this harbor identity I believe it is fitting to commemorate this history by making it explicit. For example placing statues in a line between Santos and the quay represents the laborers hauling cargo.

This question, how to embed more history and identity of Katendrecht within the new plan of the municipality, will be an important task to investigate further in the period leading up to the final design.

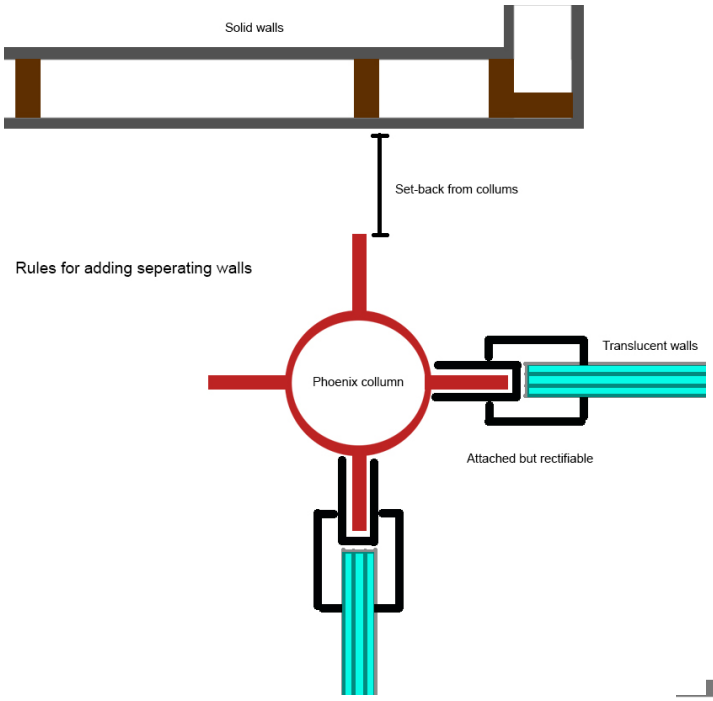



Fig. 5.43 Strategy for relation with existing structure

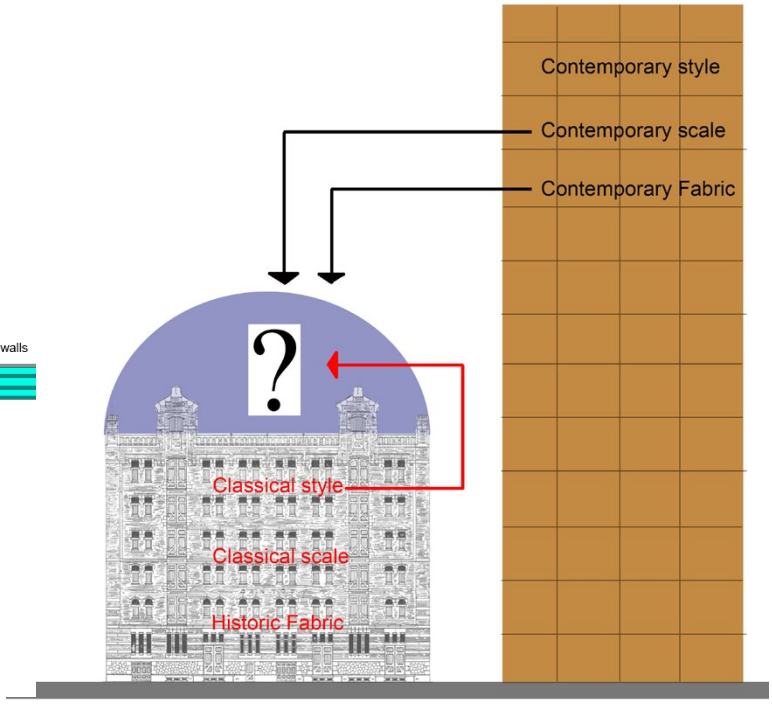



Fig. 5.44 Adaptive design strategy

# 6.0 Final design

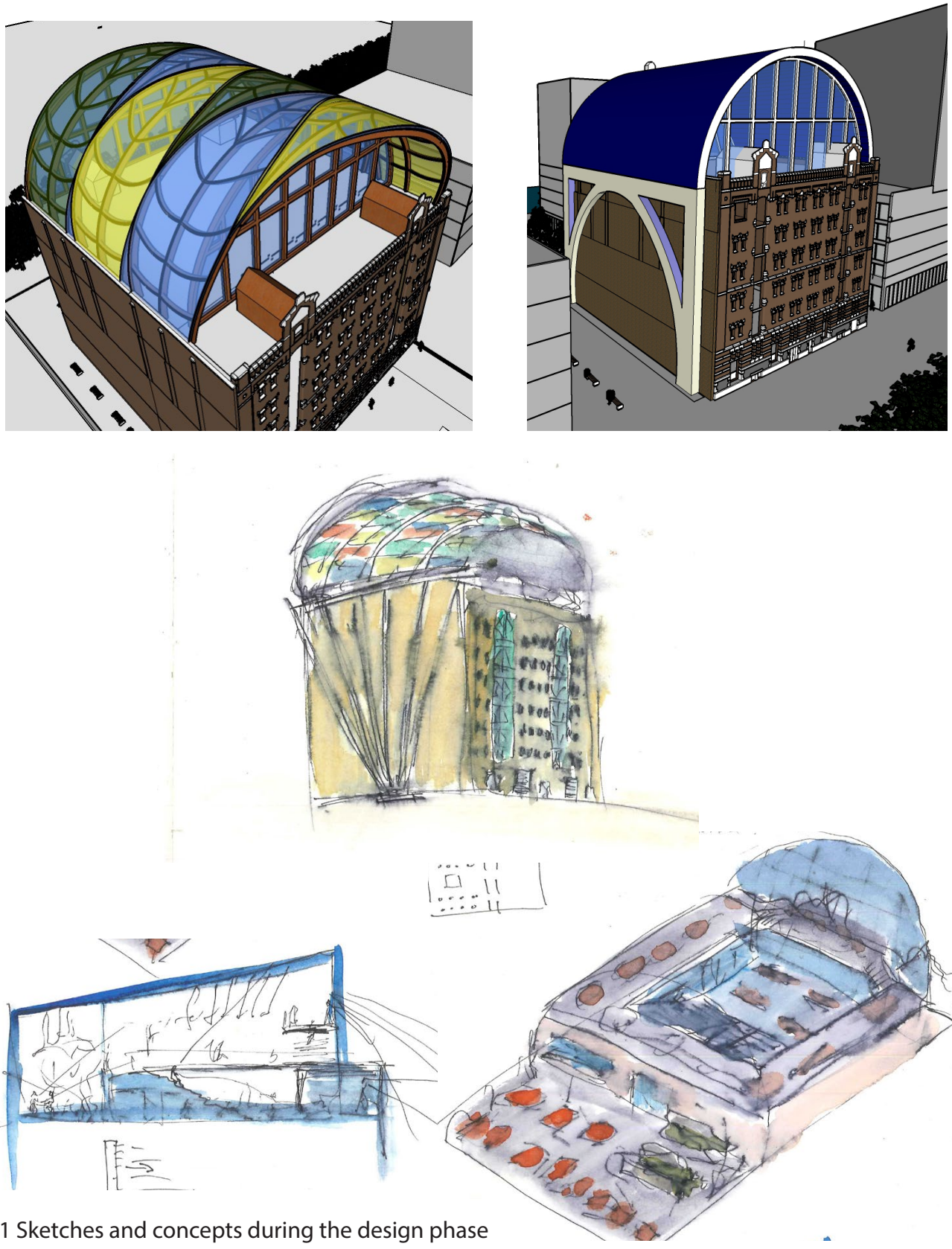


Fig. 6.01 Sketches and concepts during the design phase

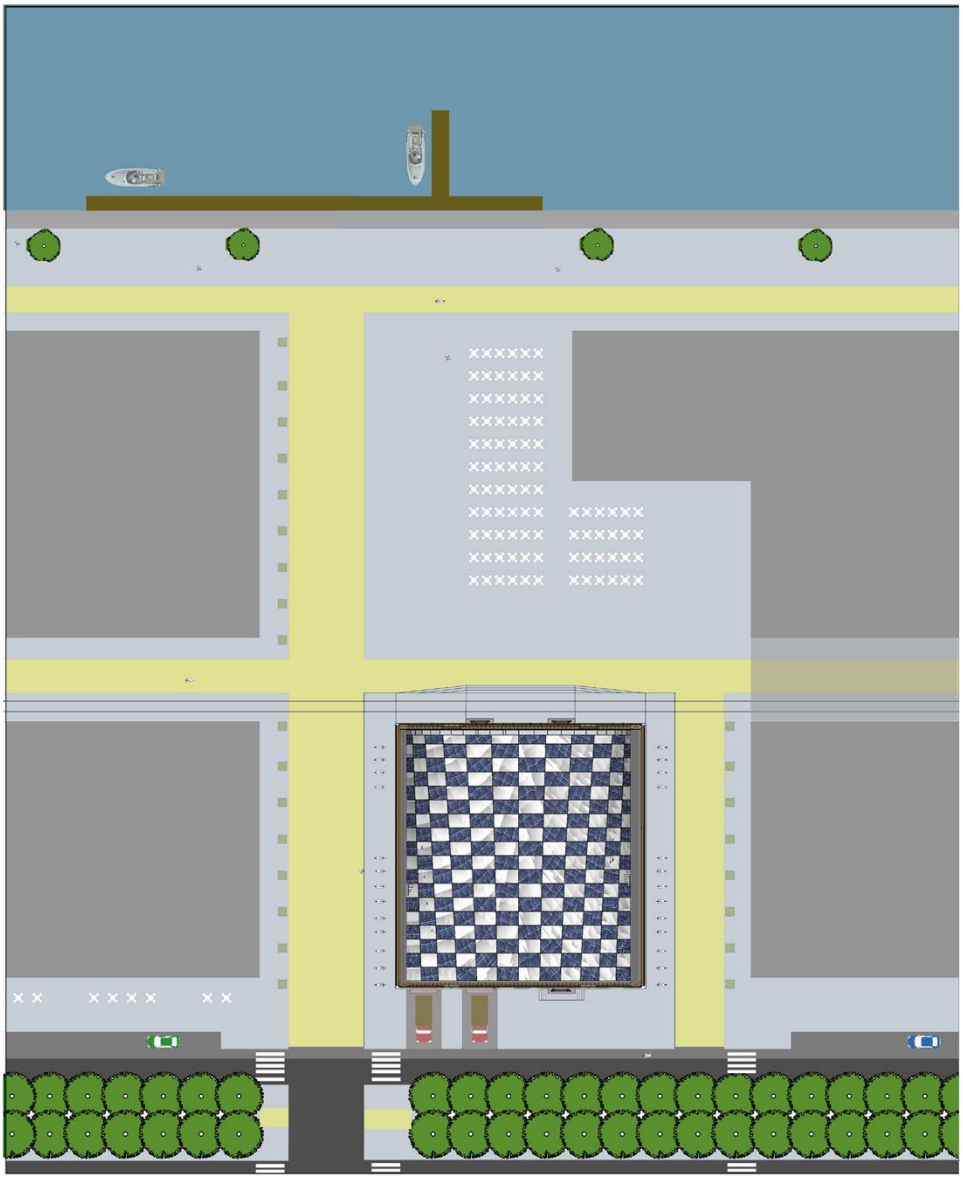


Fig. 6.11 Masterplan

Scale 1:10 000

Fig. 6.12 Urban setting visualisation of the Brede Hilledijk

Fig. 6.13 Urban setting visualisation of the Rijnhaven

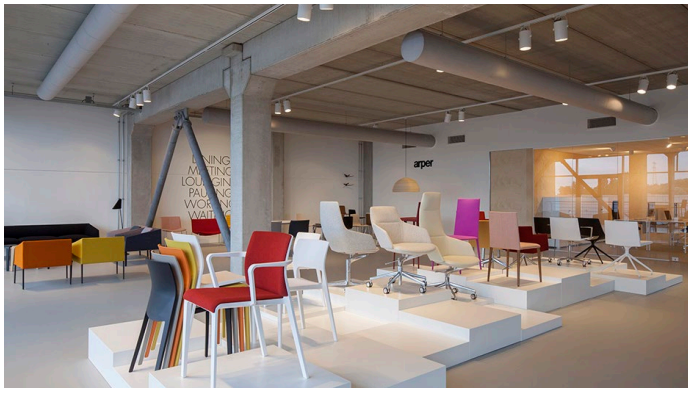


Fig. 6.21 Showroom for design furniture

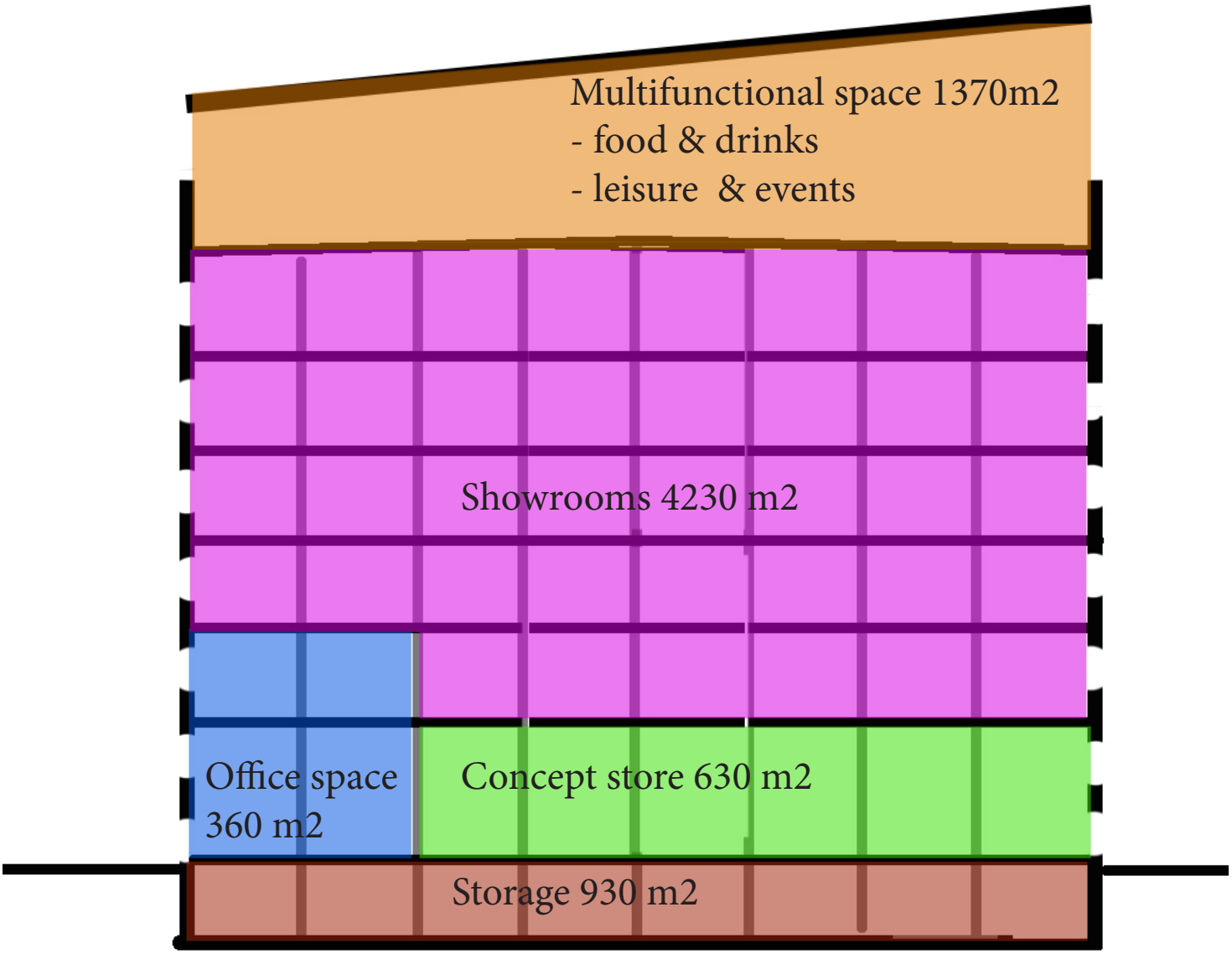



Fig. 6.22 Program definition and placement

## 6.3 Exterior

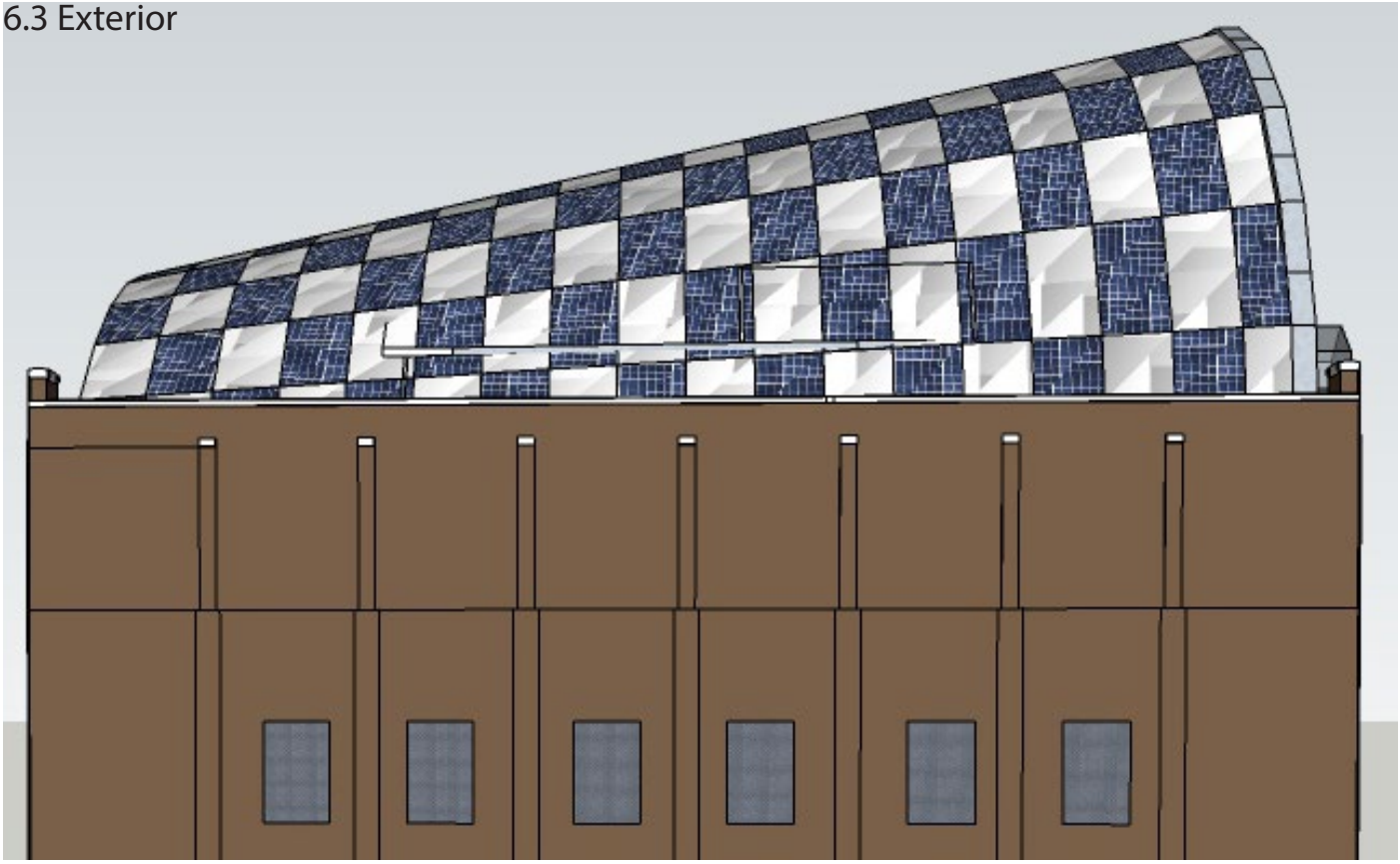


Fig. 6.31 Side view of the roof addition

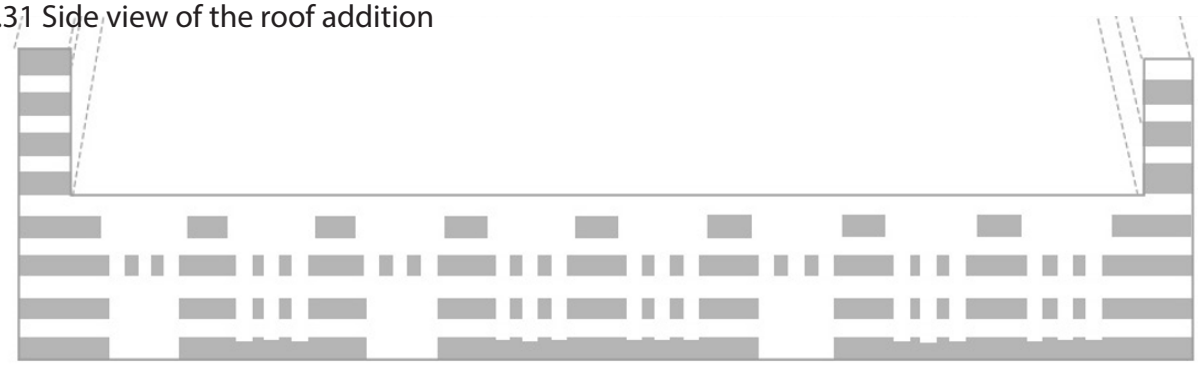


Fig. 6.32 Ashlar stone stroke ornamental pattern


Fig. 6.33 Visualisation of the renovated entrance

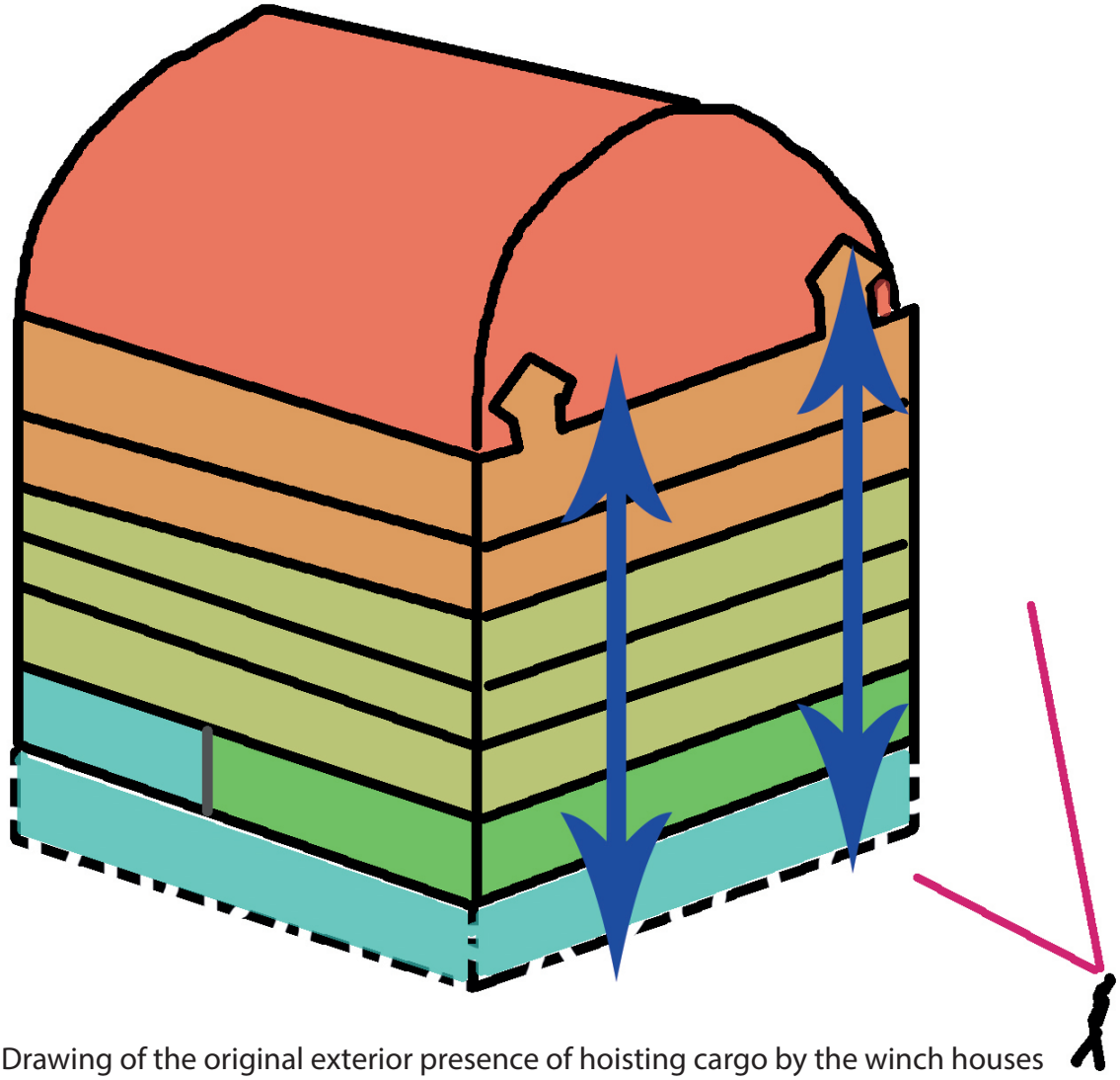


Fig. 6.41 Drawing of the original exterior presence of hoisting cargo by the winch houses

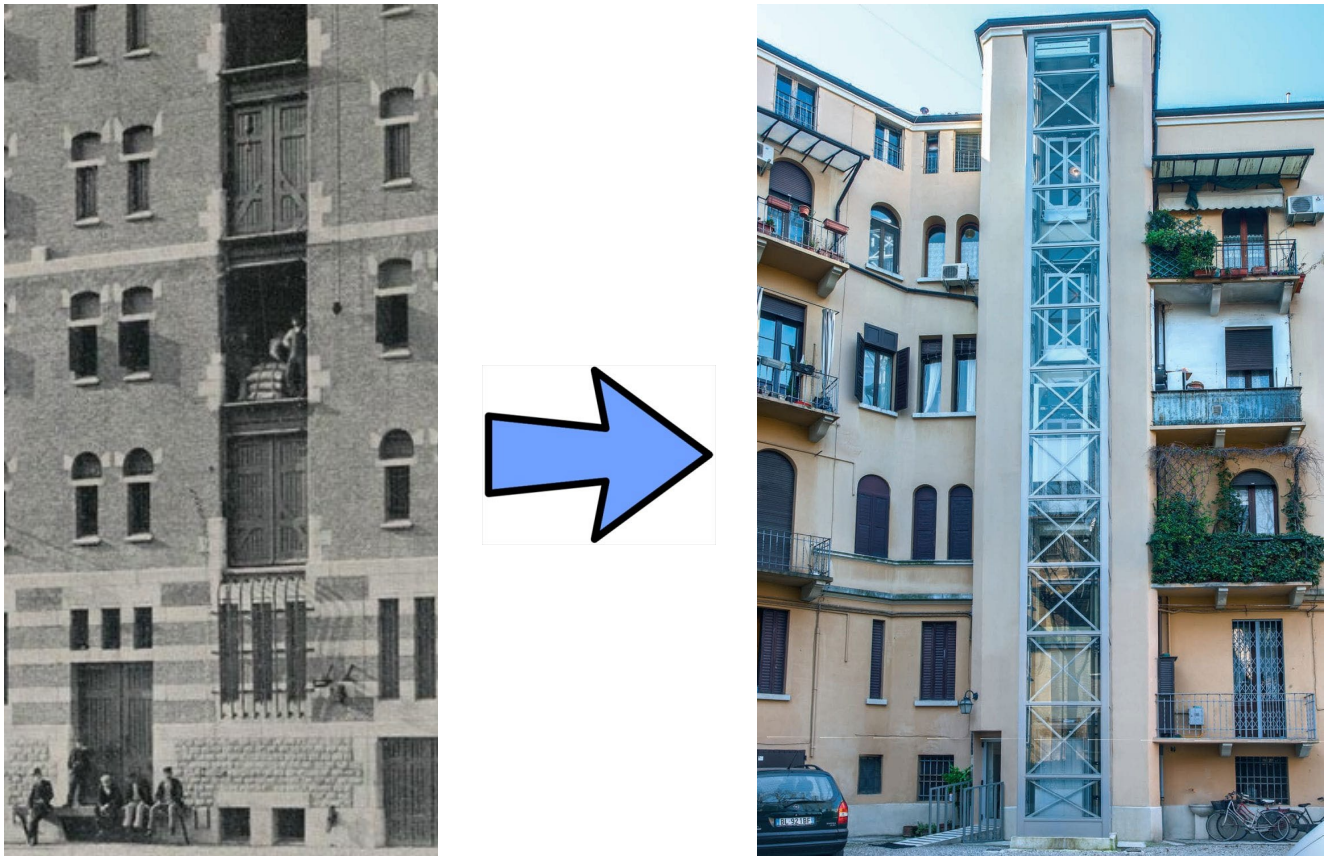


Fig. 6.42 Translation of the original exterior activity into a contemporary function

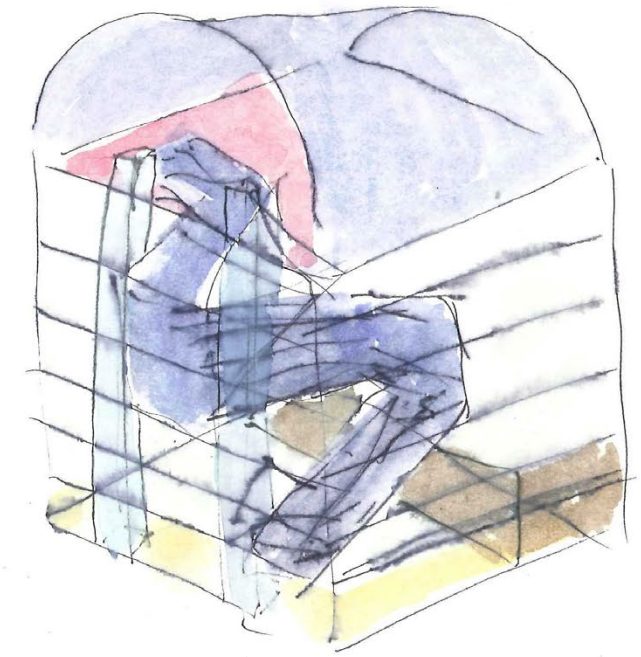


Fig. 6.43 Sketch of the routing concept

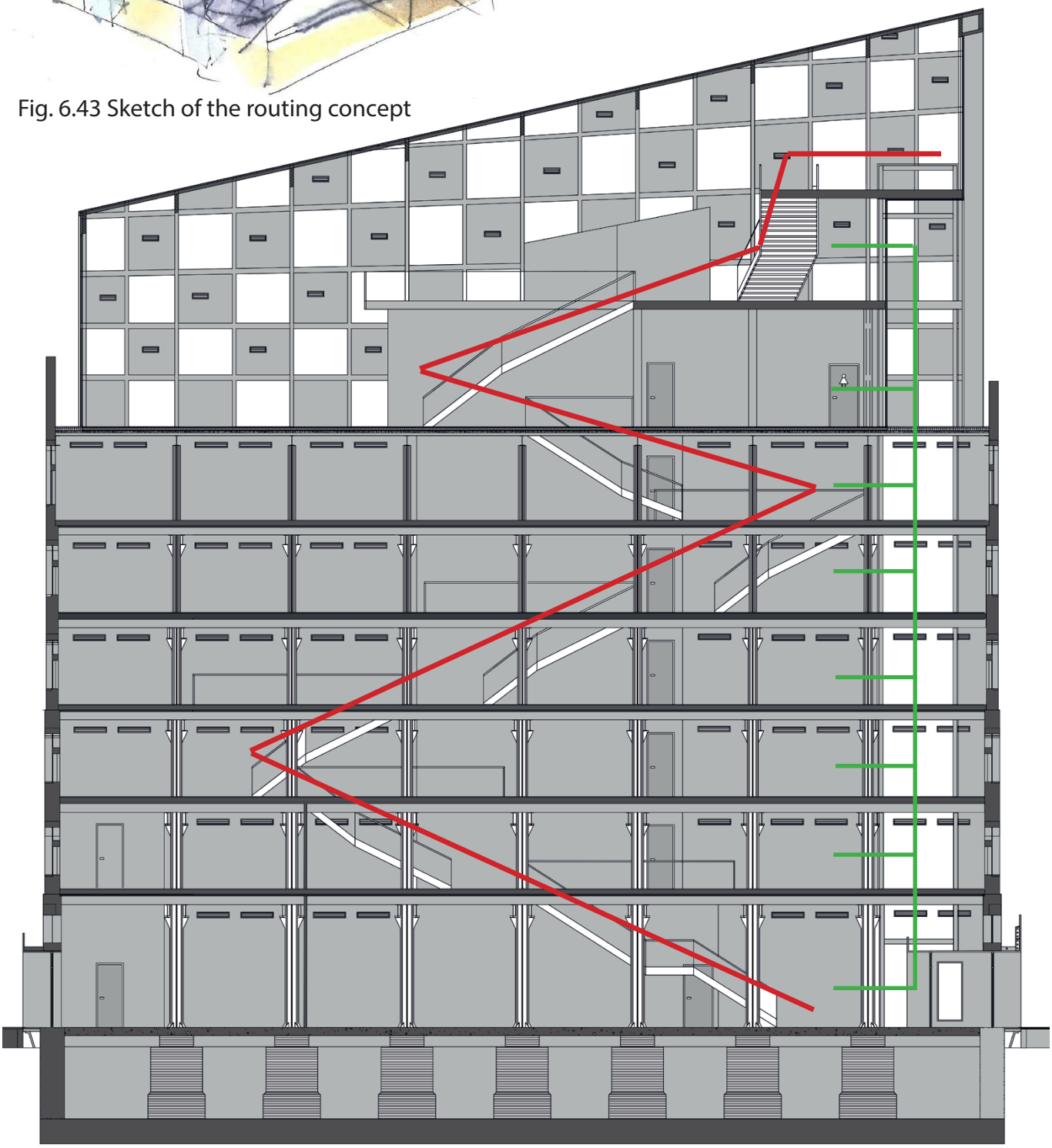



Fig. 6.44 Section AA' with the main routing structure highlighted

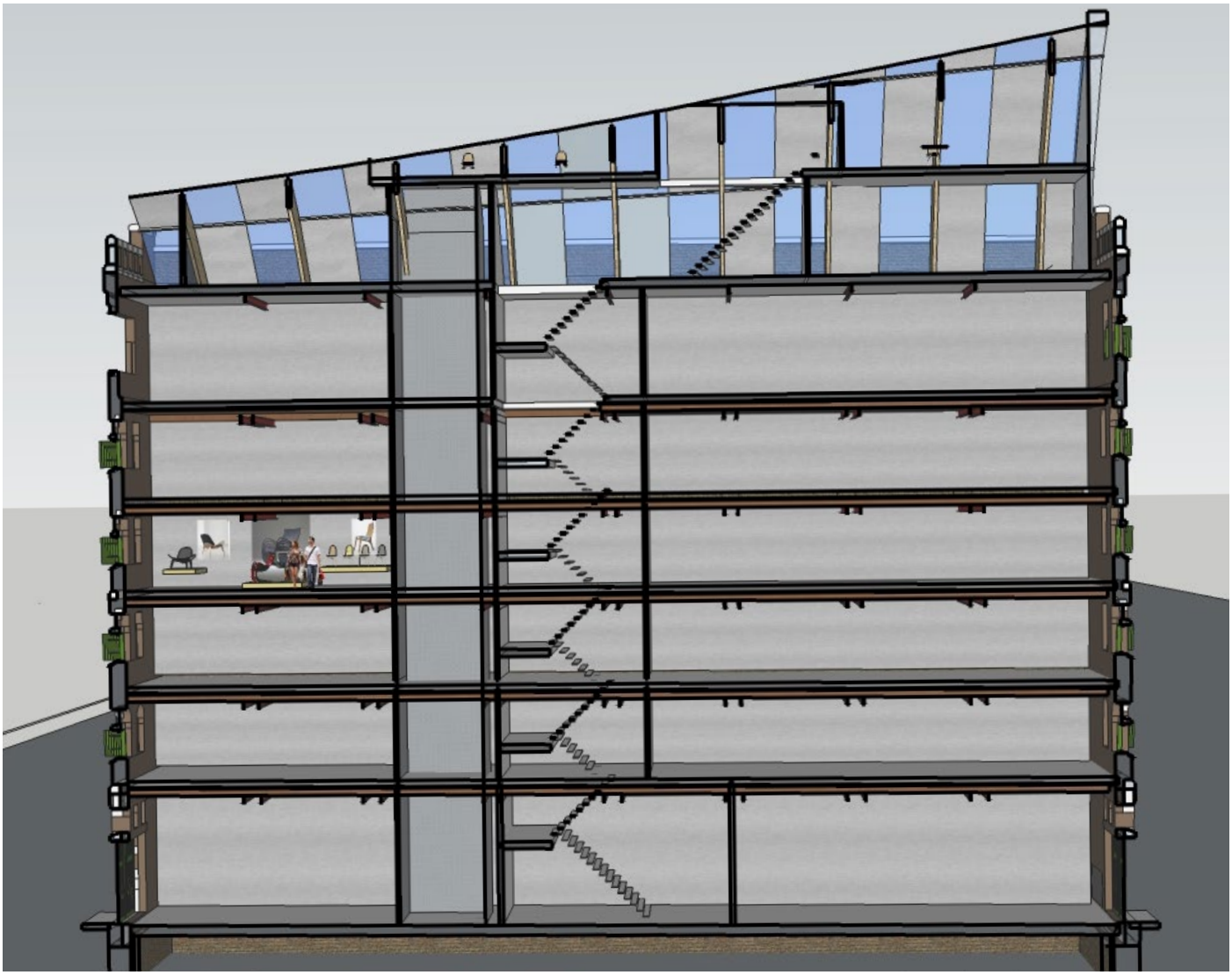


Fig. 6.45 Emergency escape routing

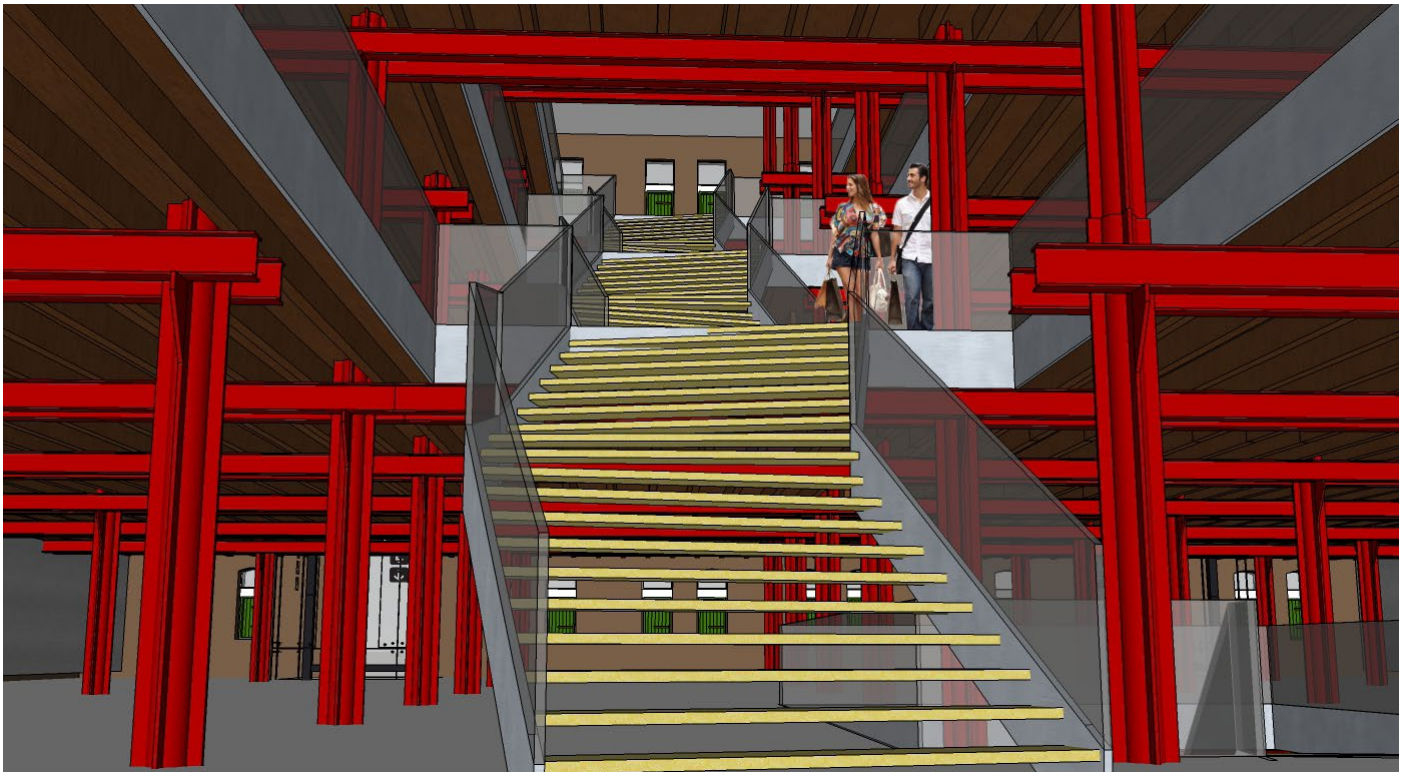


Fig. 6.46 Visualisation of the stairwell cutting trough the length of the building

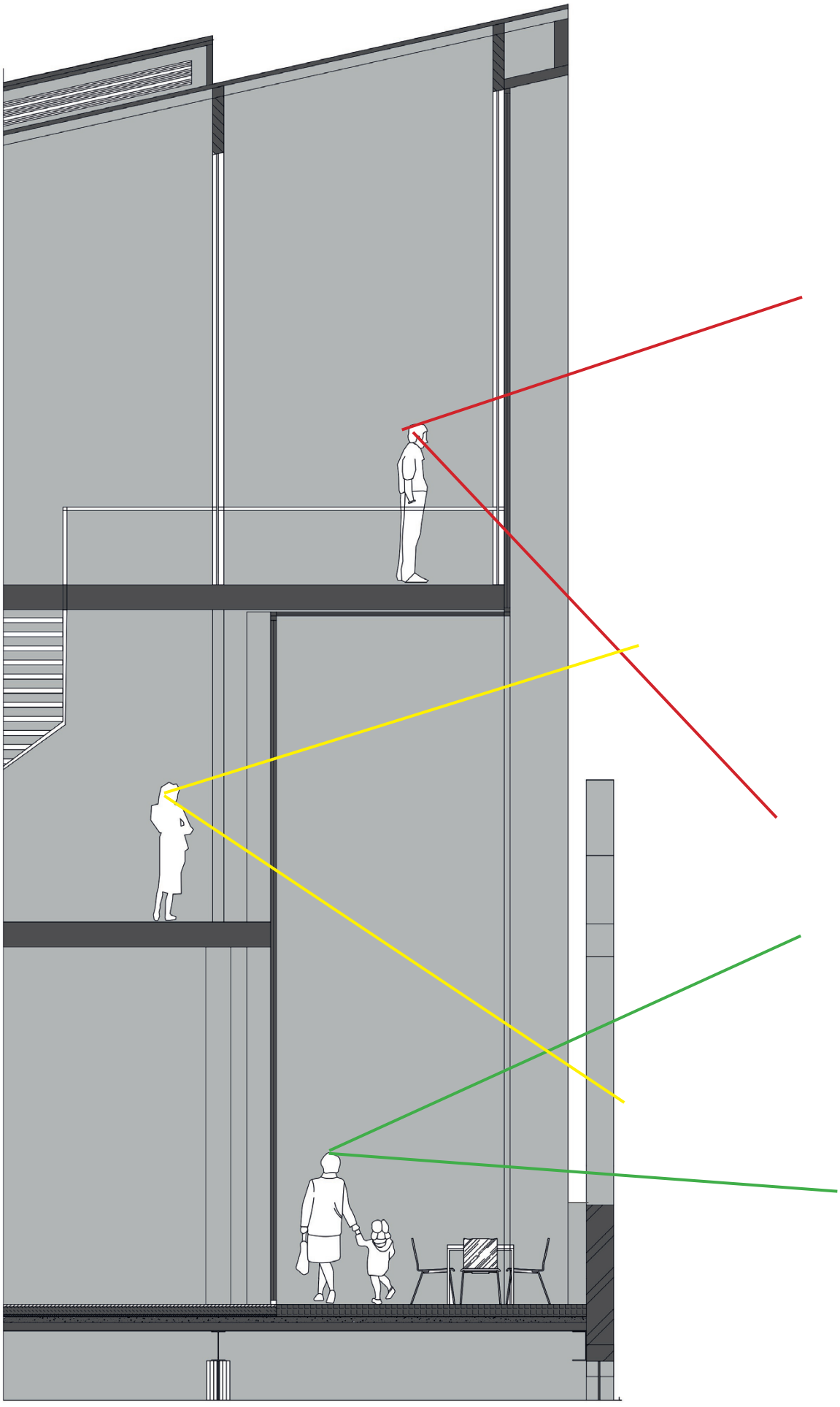


Fig. 6.47 Vertical cross-cut of the facade fragment with diffrent vista's on each level

Fig. 6.48 Visualisation of the vista that will form by the redevelopment plan of the municipality

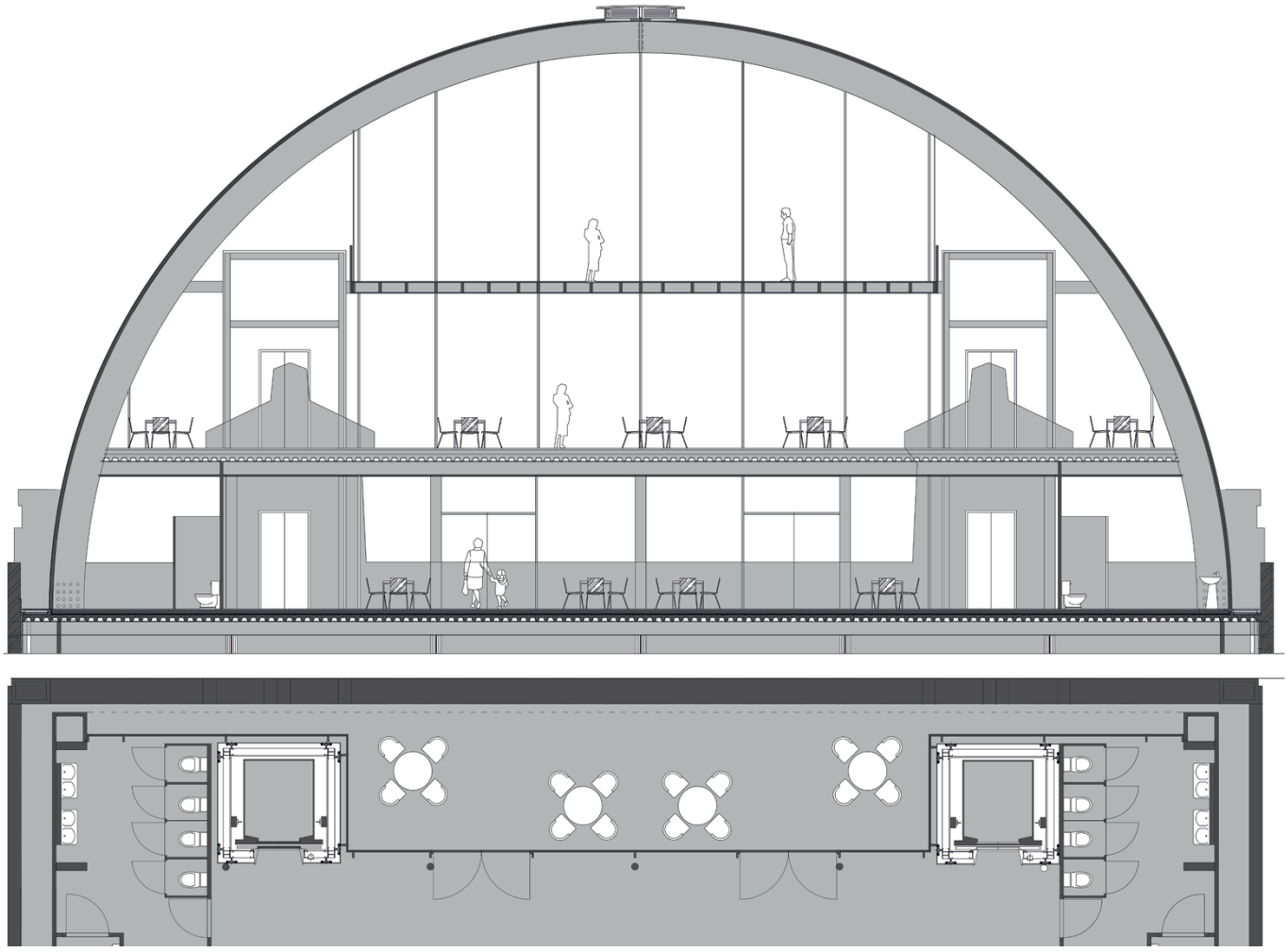
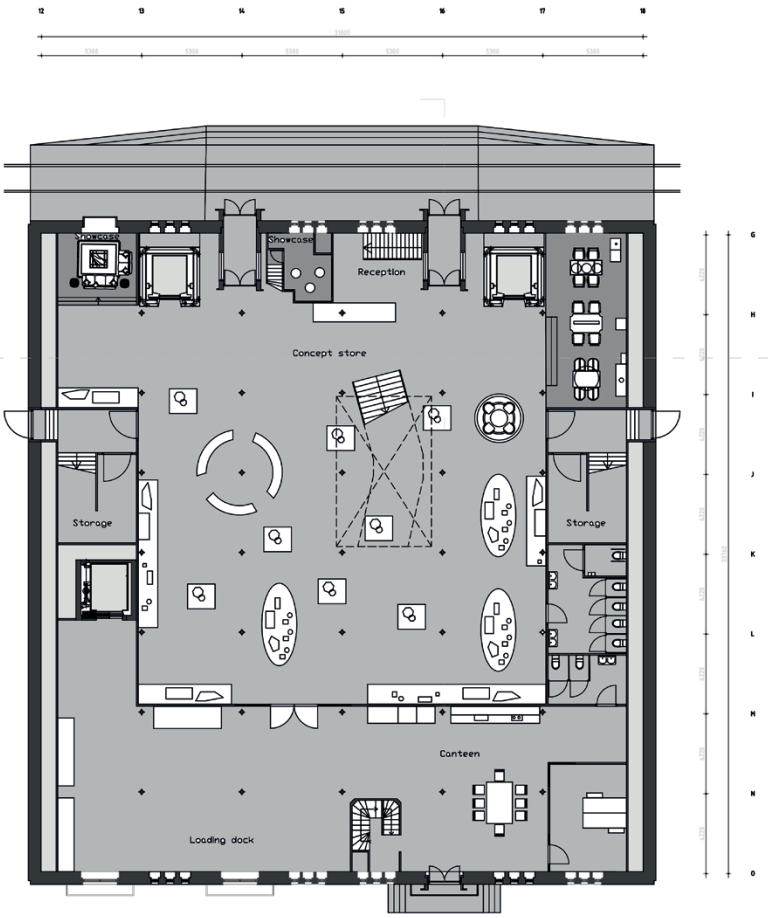
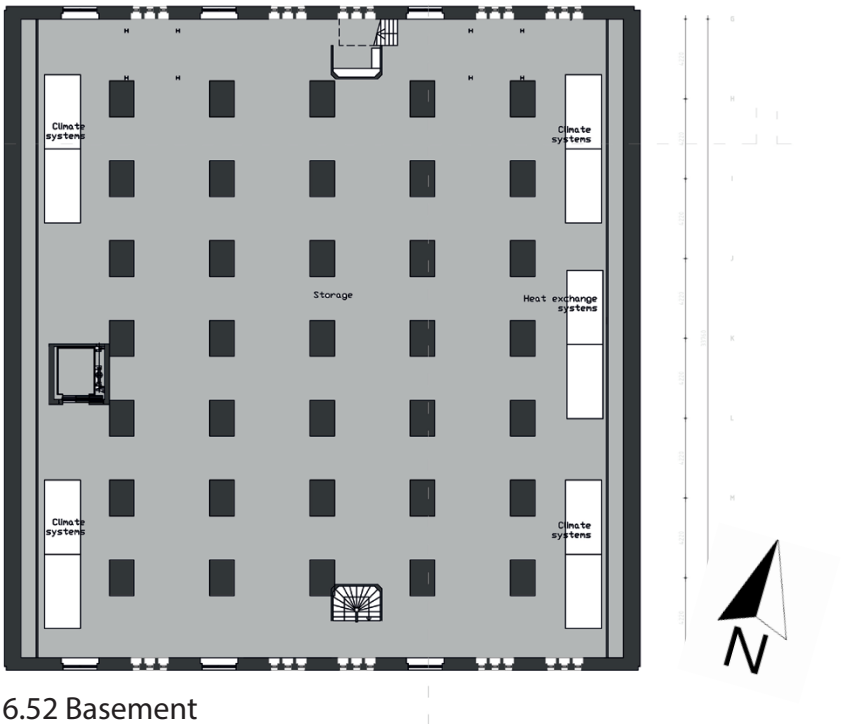


Fig. 6.49 Section and horizontal cut allong the new roof

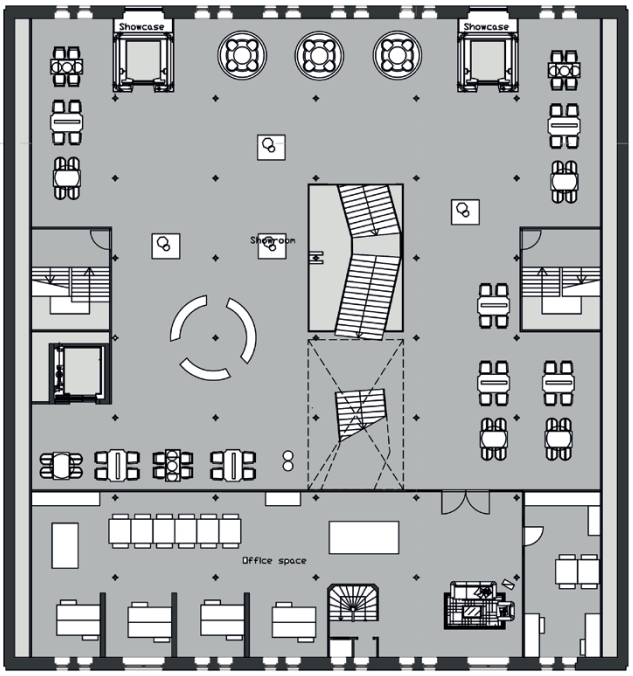
# 6.5 Floorplans



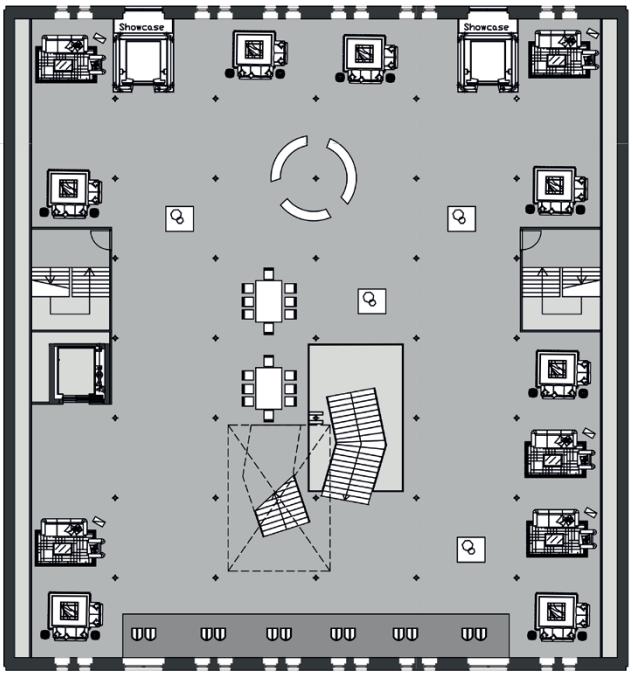

6.51 Ground floor



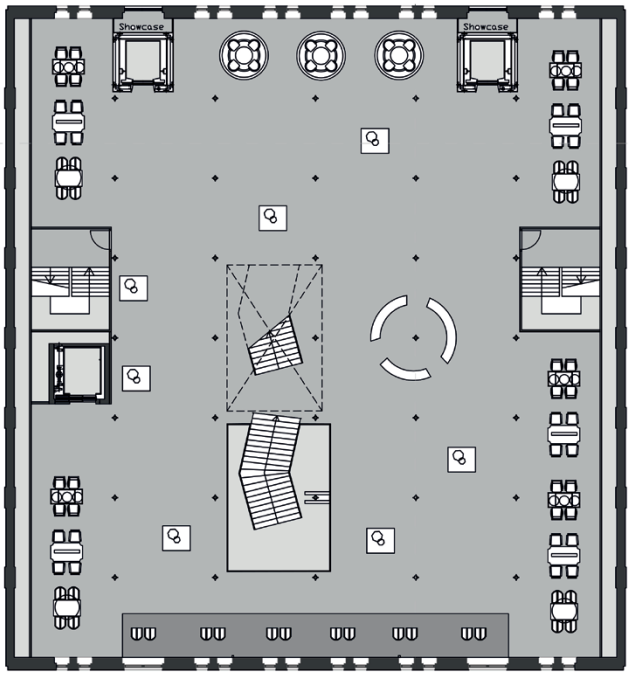

6.52 Basement



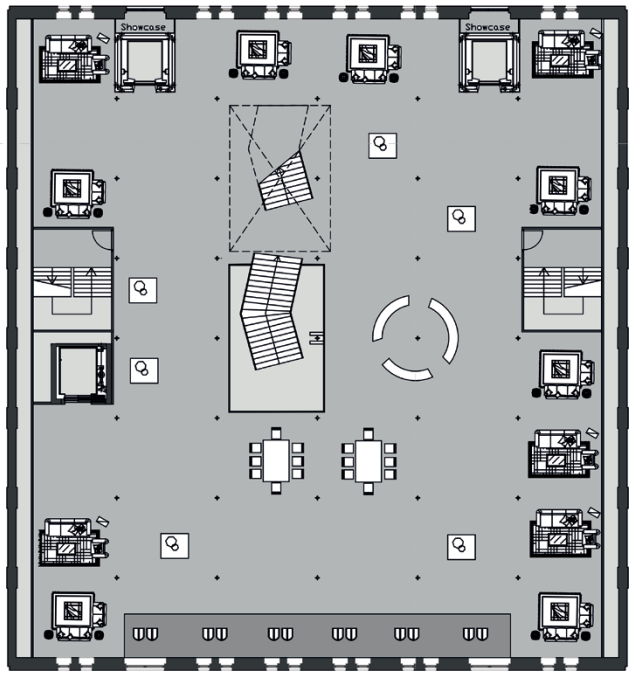

6.53 First floor



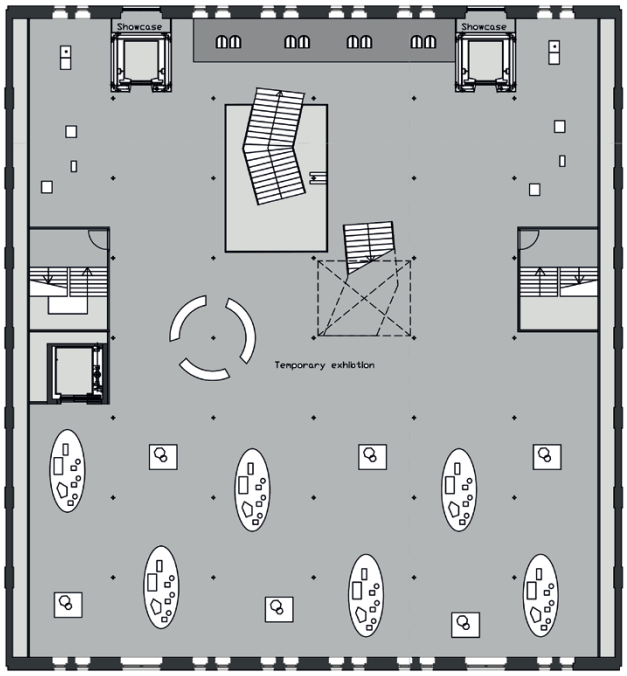

6.54 Secod floor



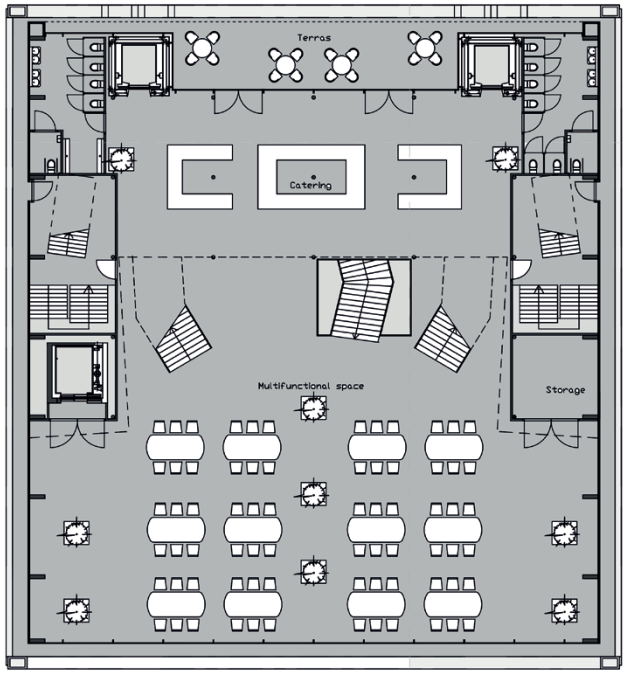

6.55 Third floor



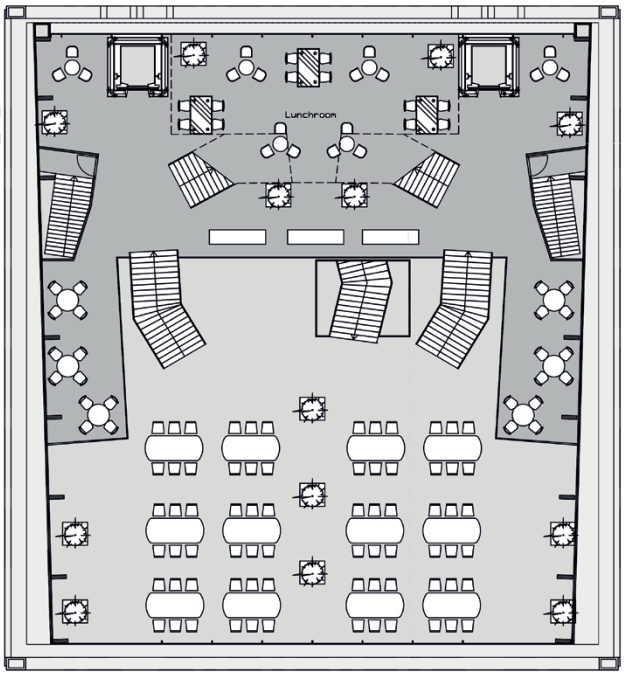

6.56 Fourth floor



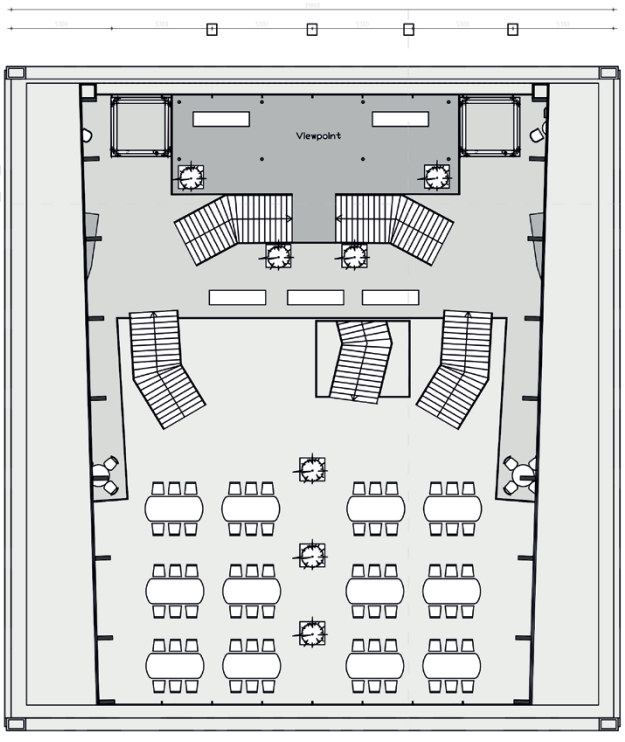

6.57 Fifth floor




6.58 Sixt floor



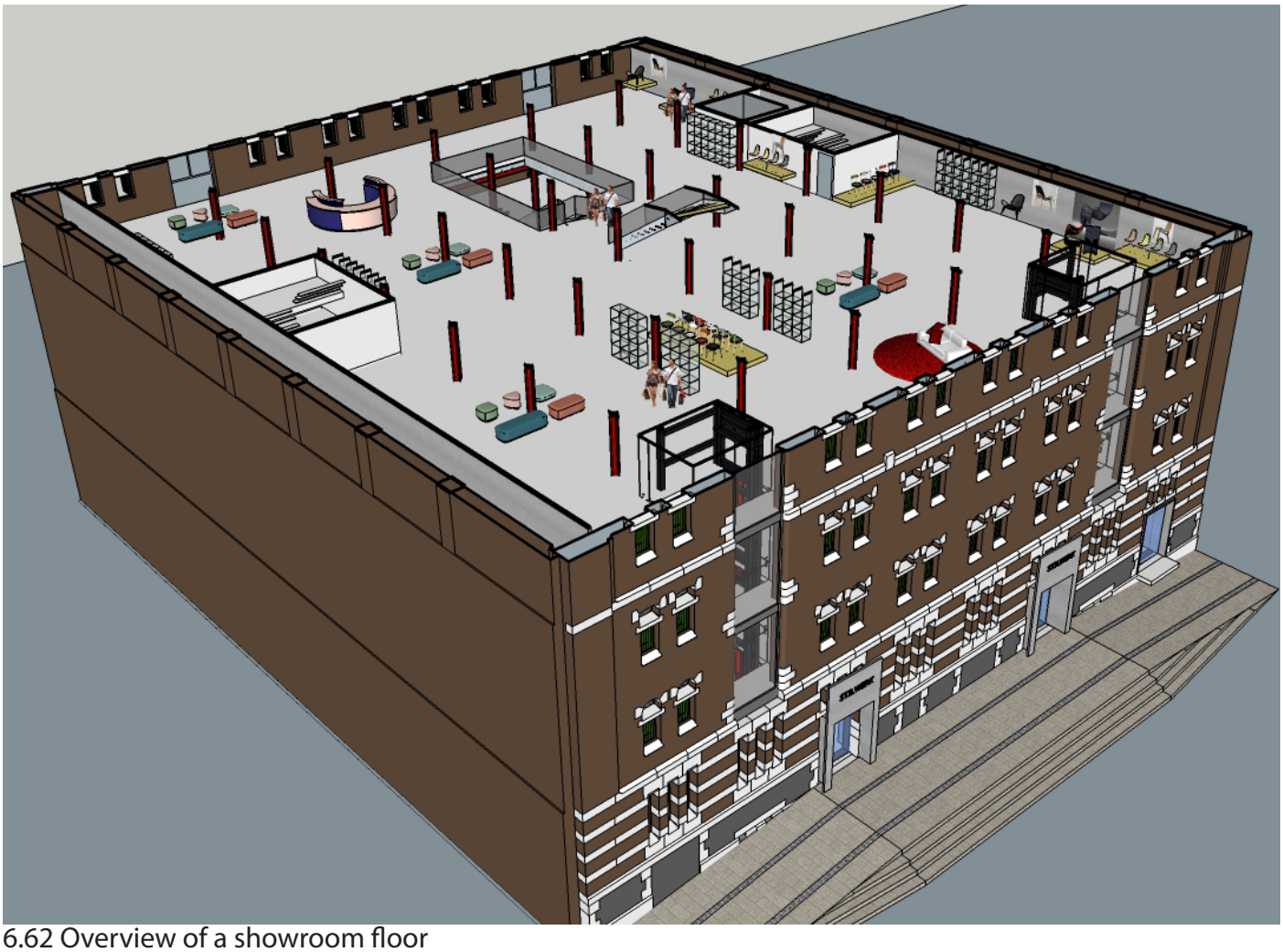

6.59 Seventh floor



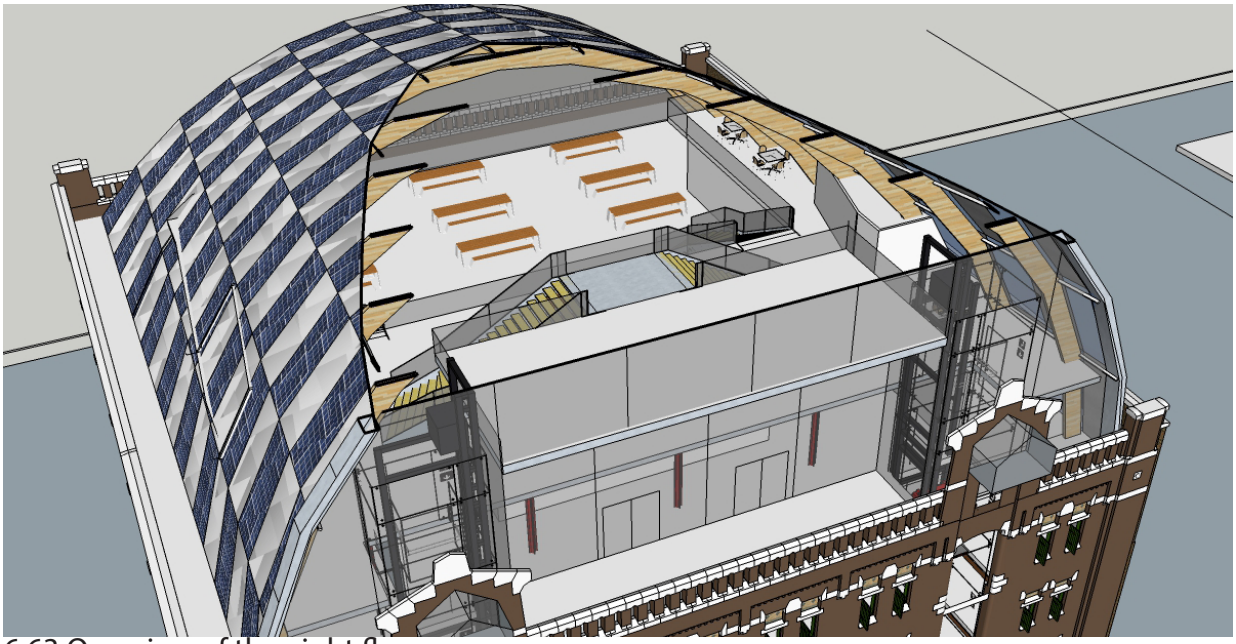

6.510 Eight floor

## 6.6 Interior

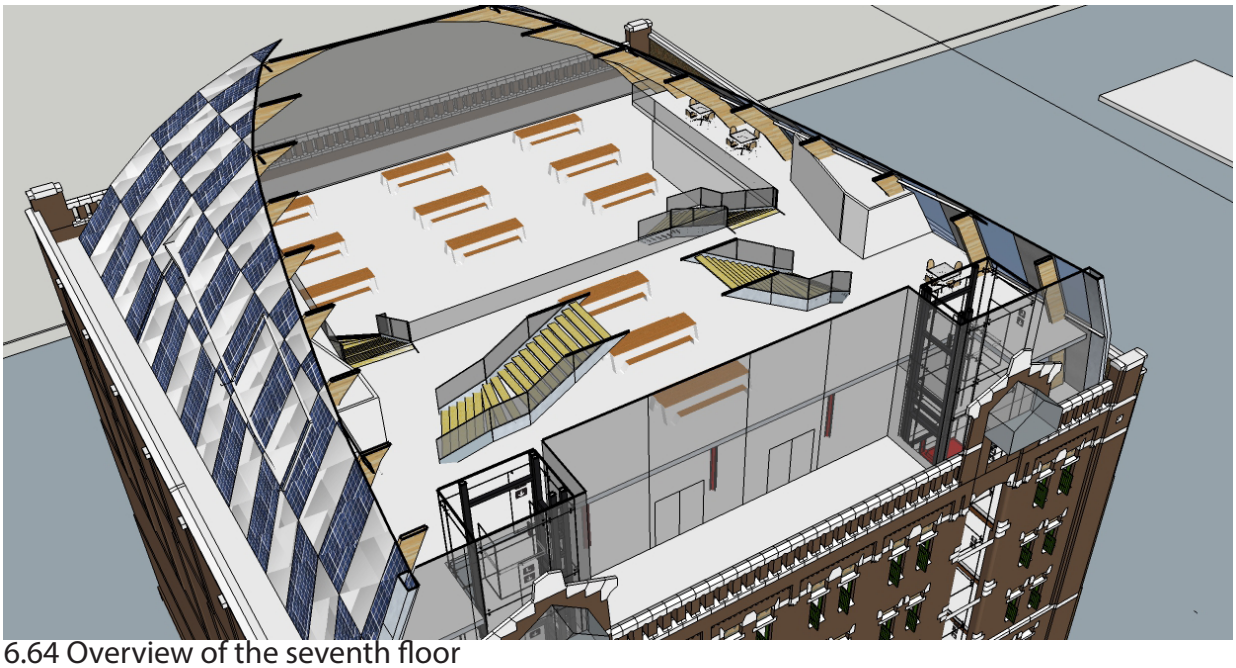
6.61 Visualisation of the showroom experience



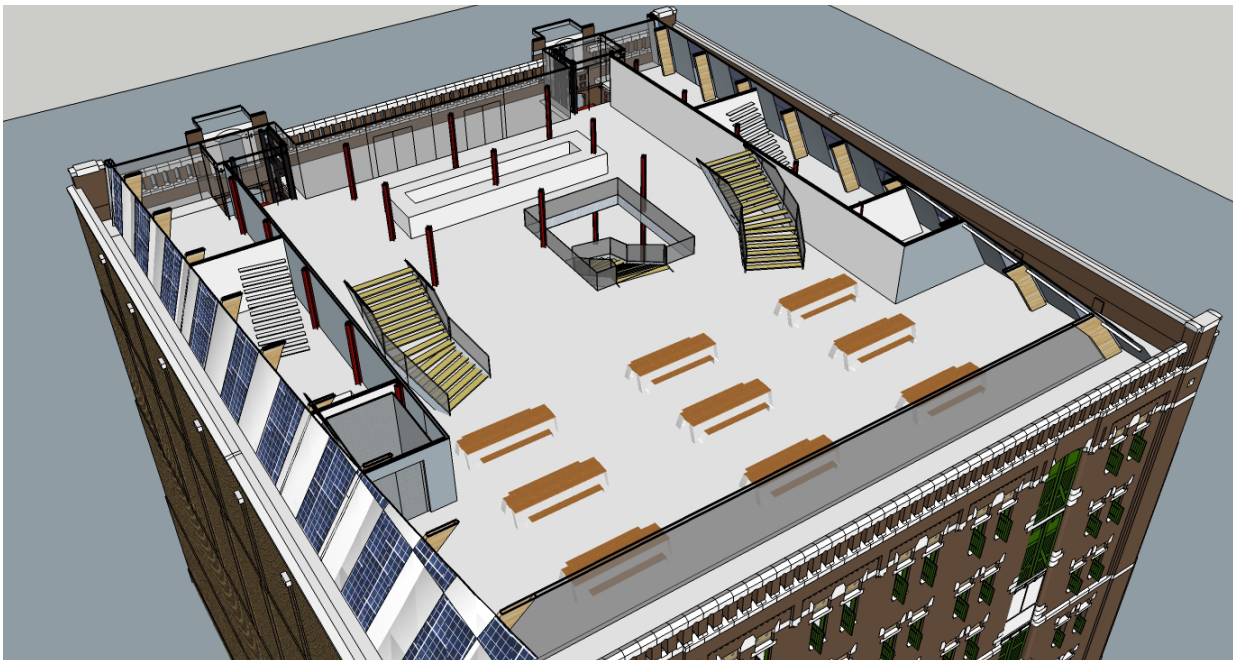
6.62 Overview of a showroom floor



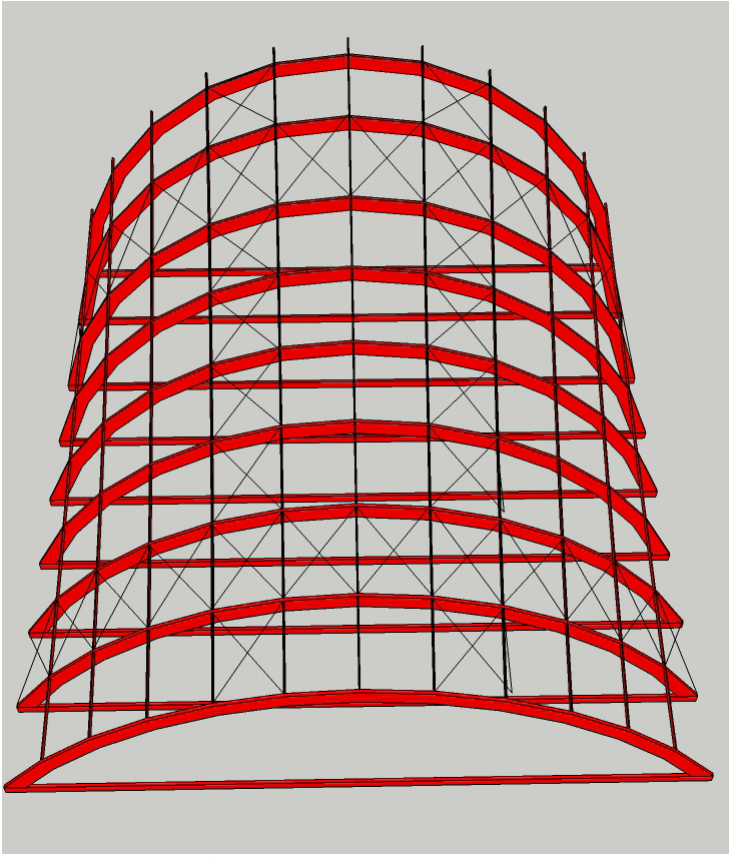
6.63 Overview of the eight floor



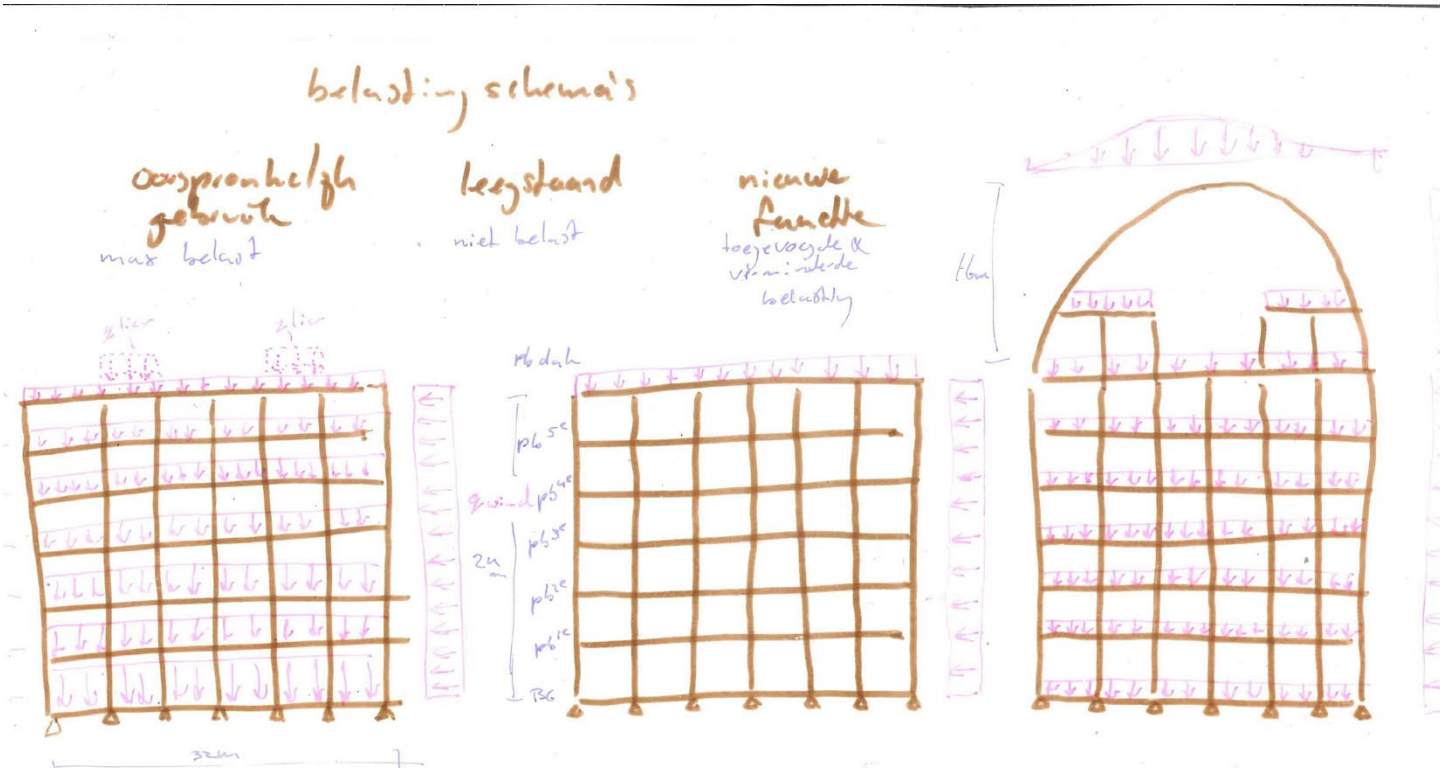
6.64 Overview of the seventh floor



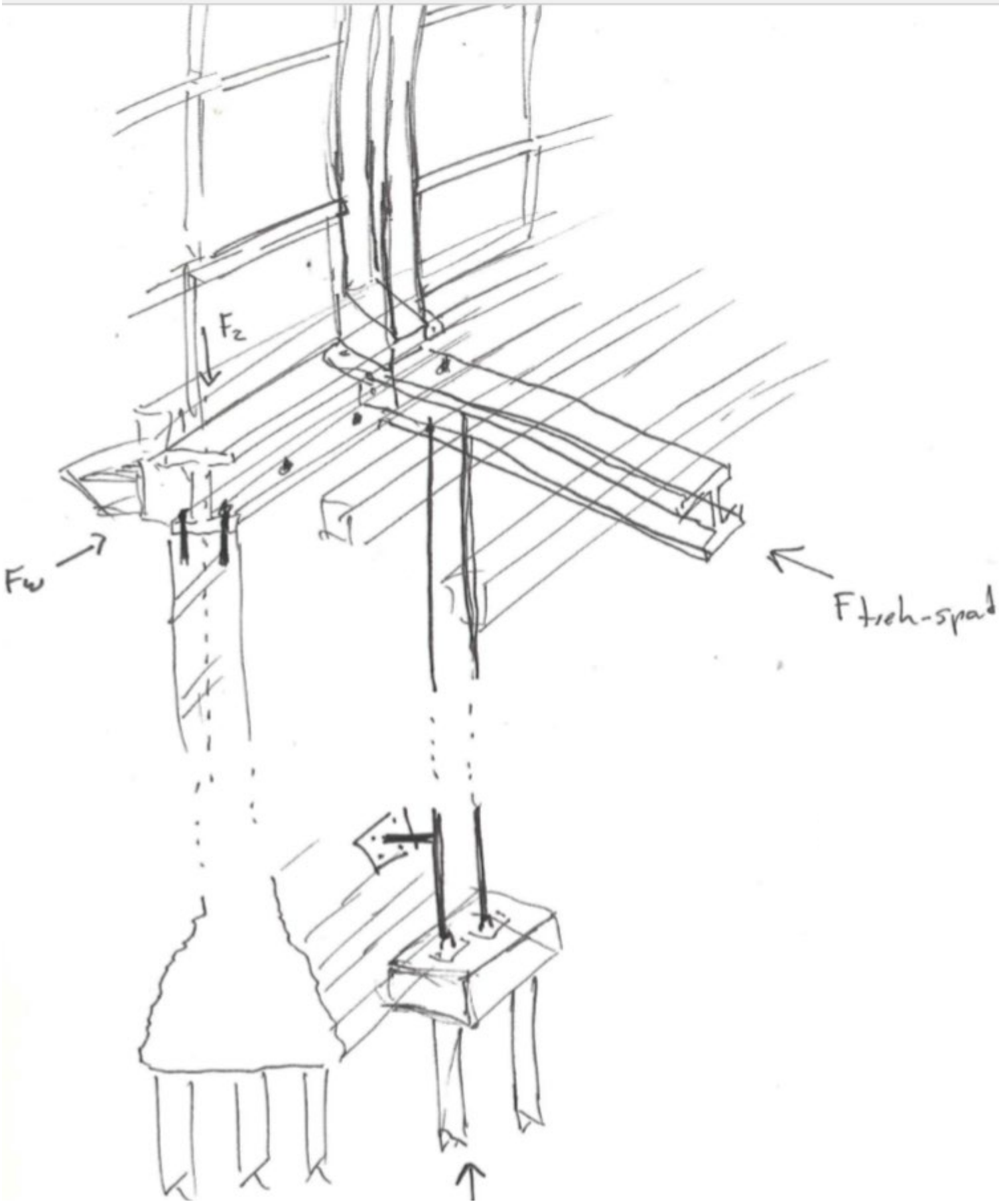
6.64 Overview of the sixt floor



6.71 Added roof structure

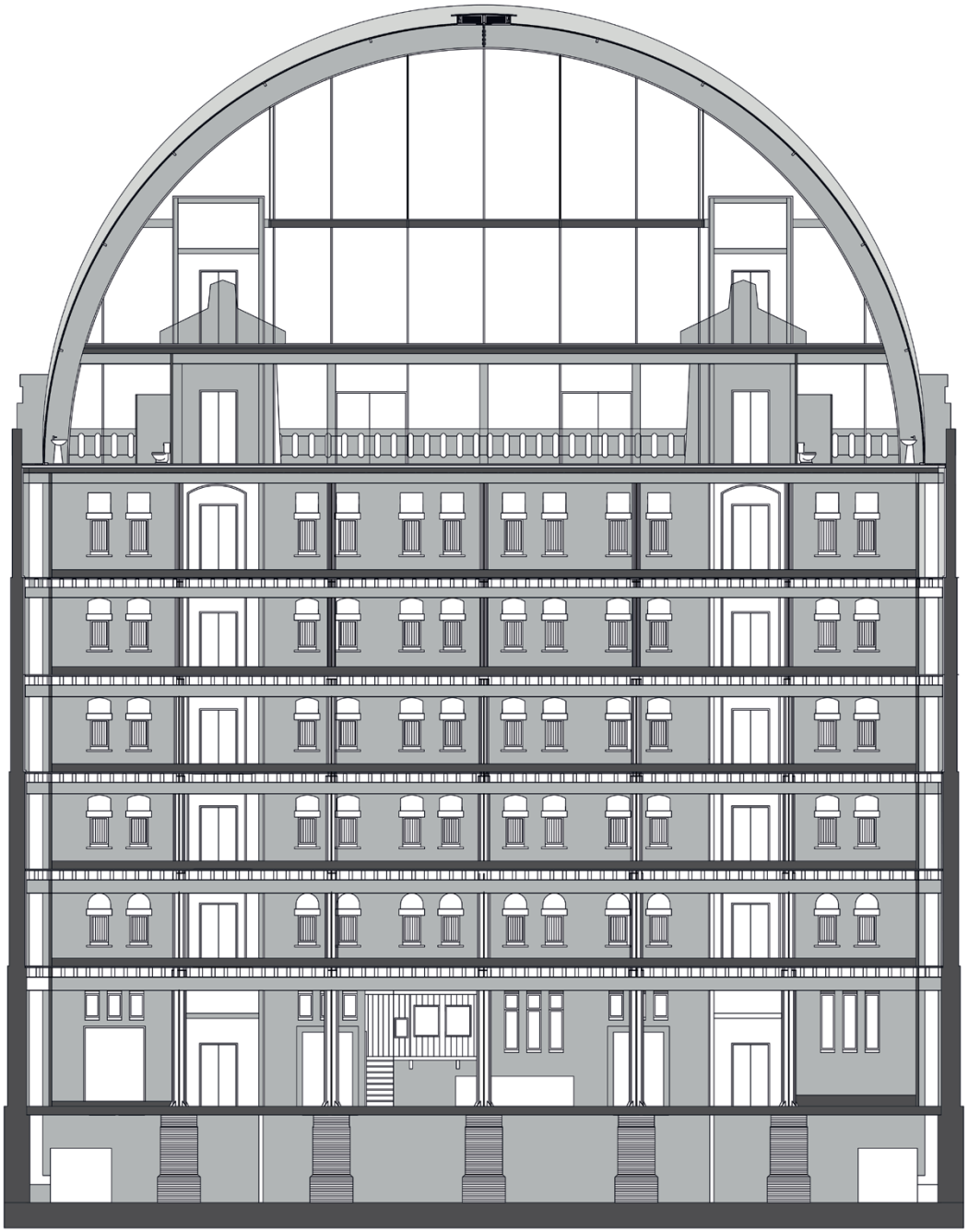



6.72 Weight bearing sheme of the historic, current and future situation



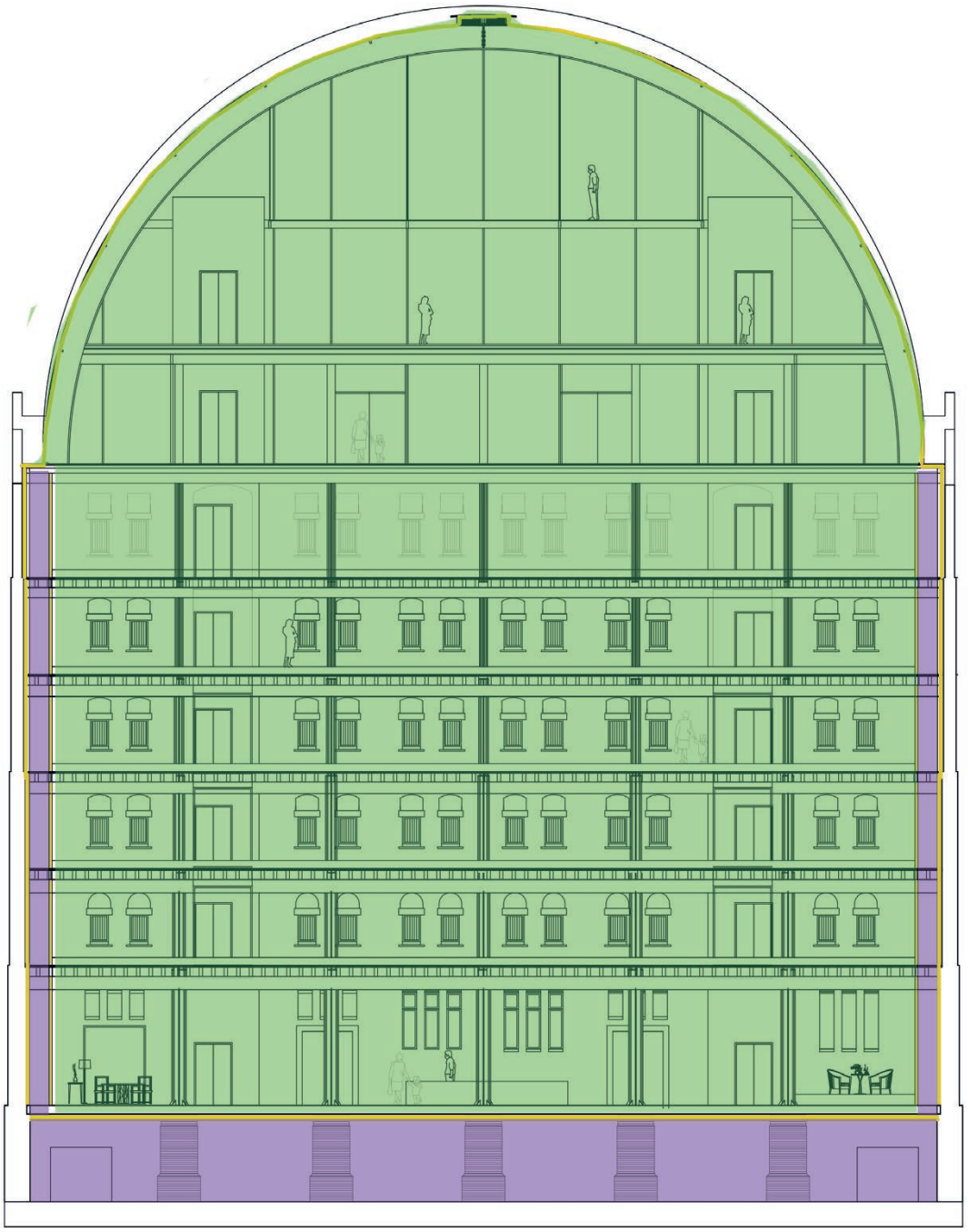

6.73 Sketch of the distribution of forces from the added roof structure on the foundation

Current facade insulation degree: Rc=0,36
N-S = 0,34  and E-W = 0,38



6.81 Section BB'

Proposed facade insulation degree: Rc= 4,15
N-S = 1,23 and E-W = 7.07

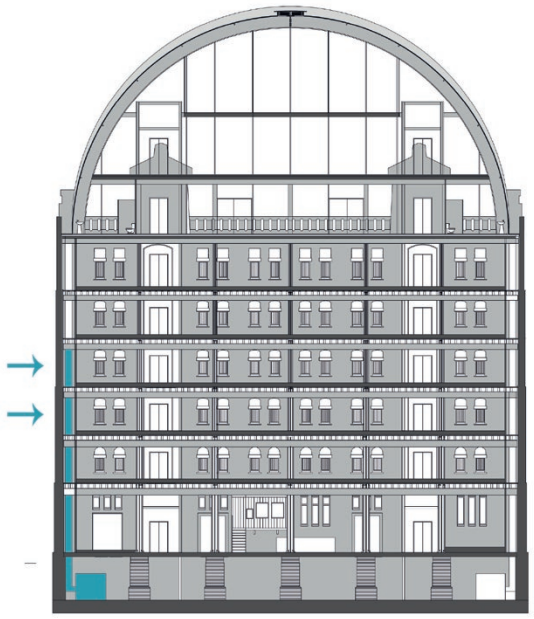


6.82 Climate concept

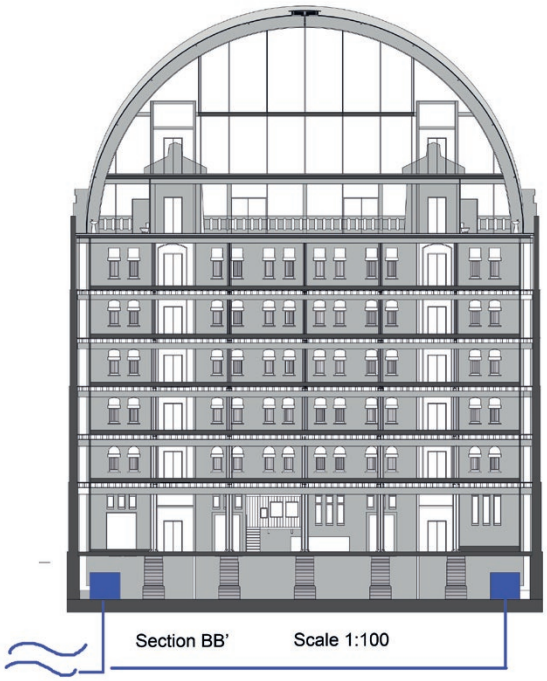
Climate buffer space

Climatised space

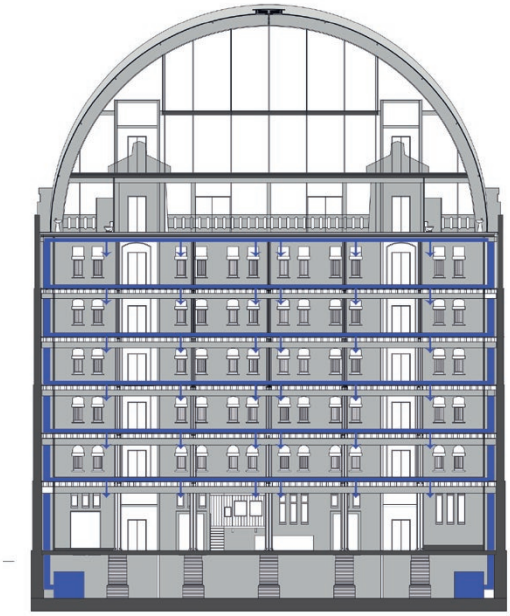
Insulation



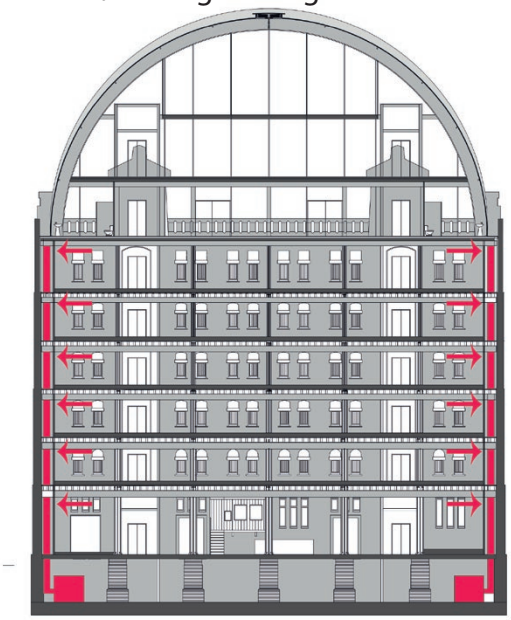
6.83 1-Air intake



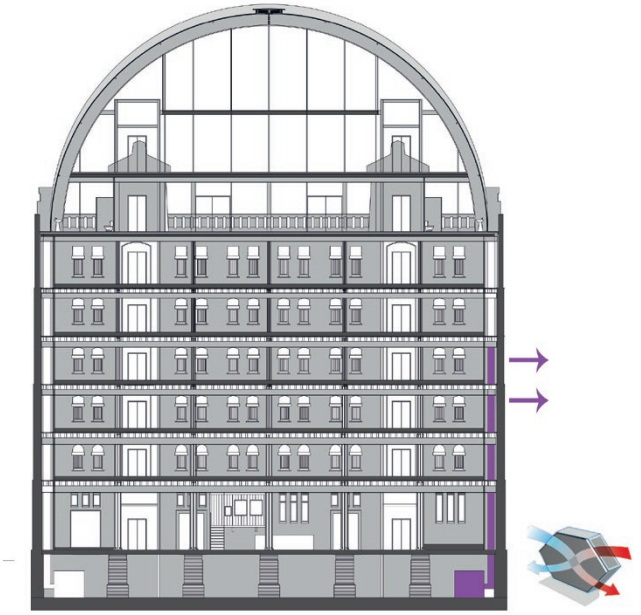

6.84 2-Heat/cooling exhange with surface water



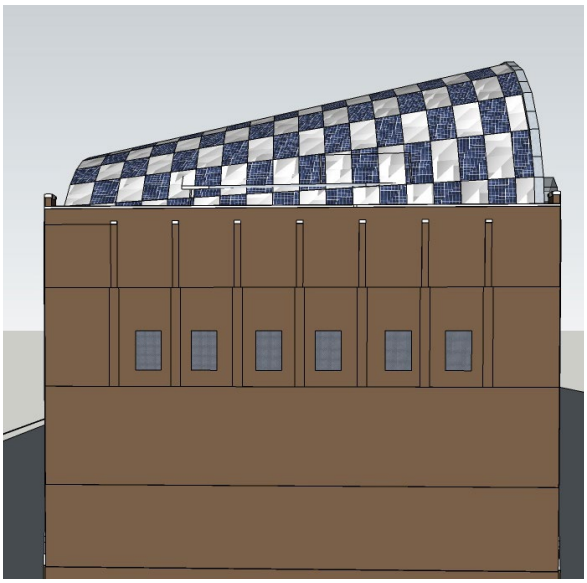
6.85 3-Air distribution through ceiling fans



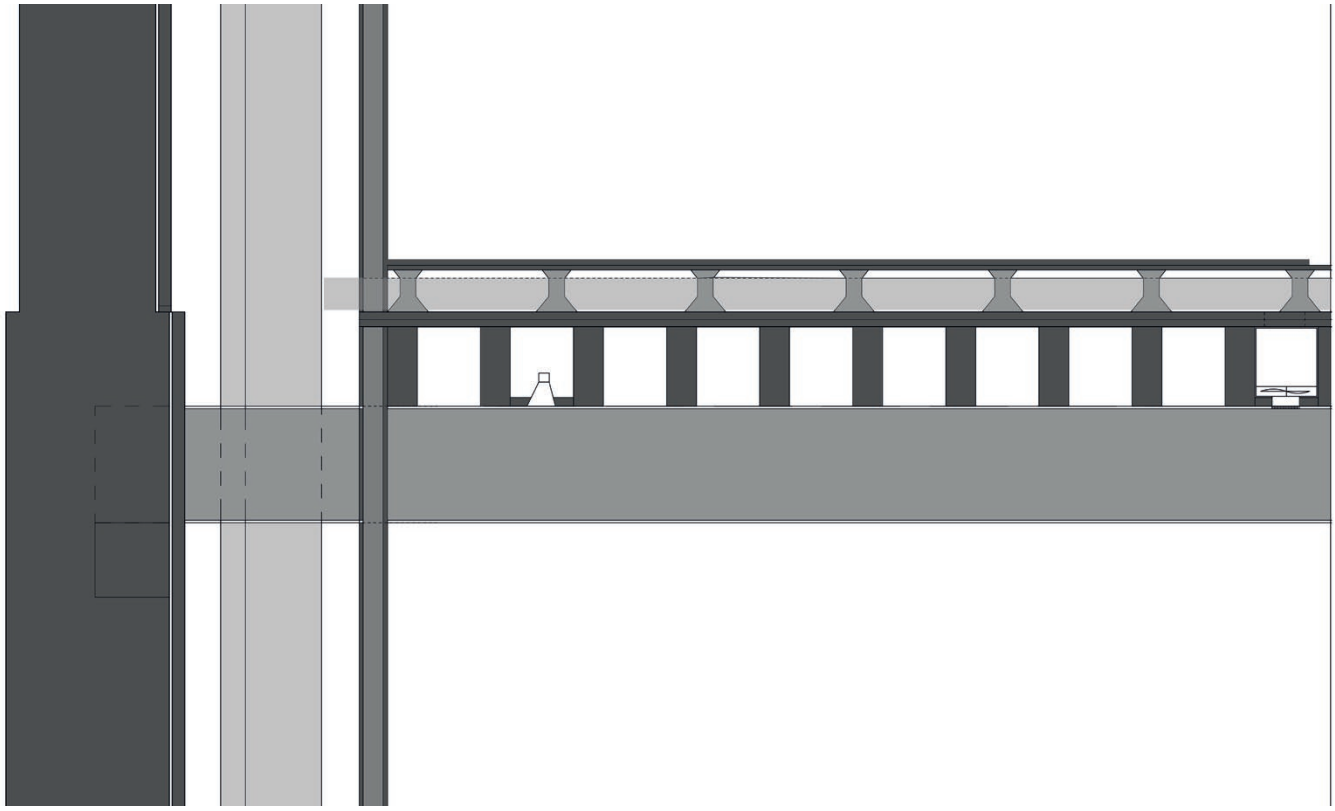
6.86 4-Air retreival through wall intakes



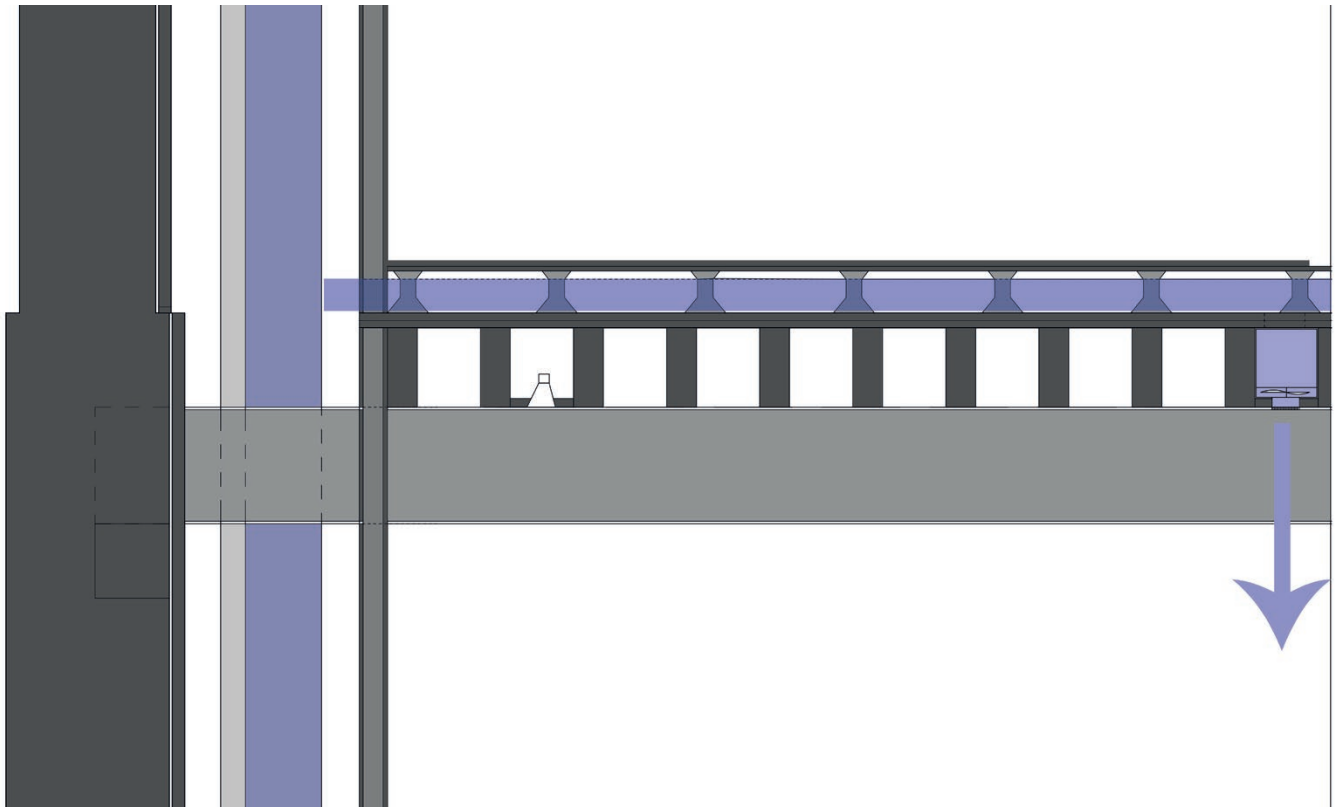
6.87 5-Air exhaust after heat/cooling exhange by air



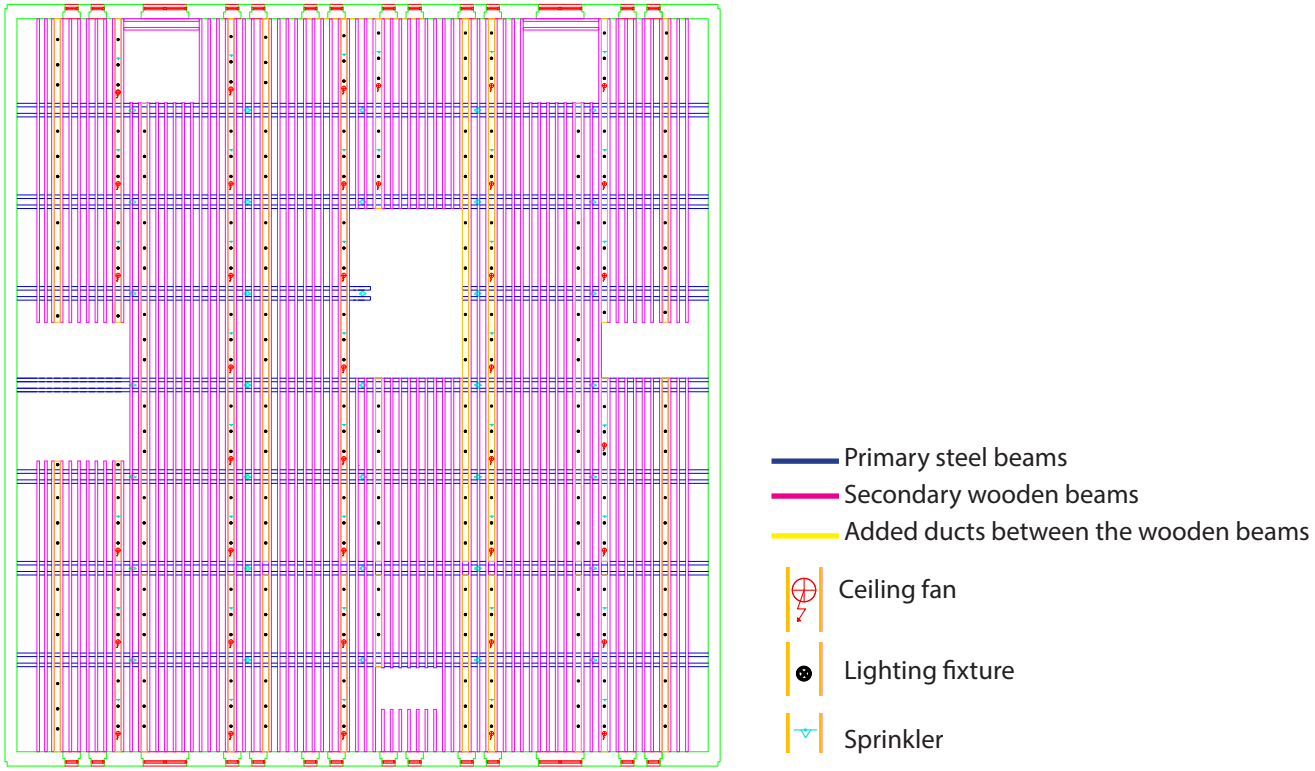
6.88 Side facade with added air exhausts



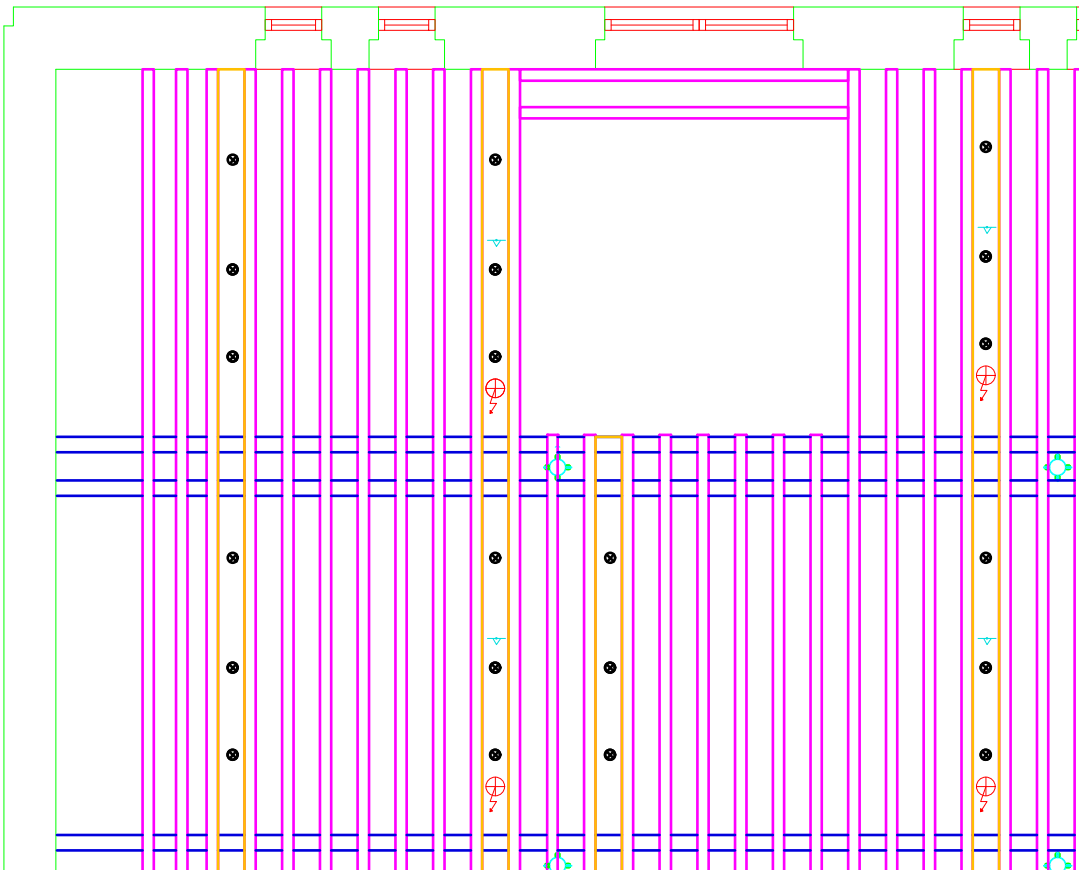
6.89 Vertical detail of the added cavity wall and secondary floor structure



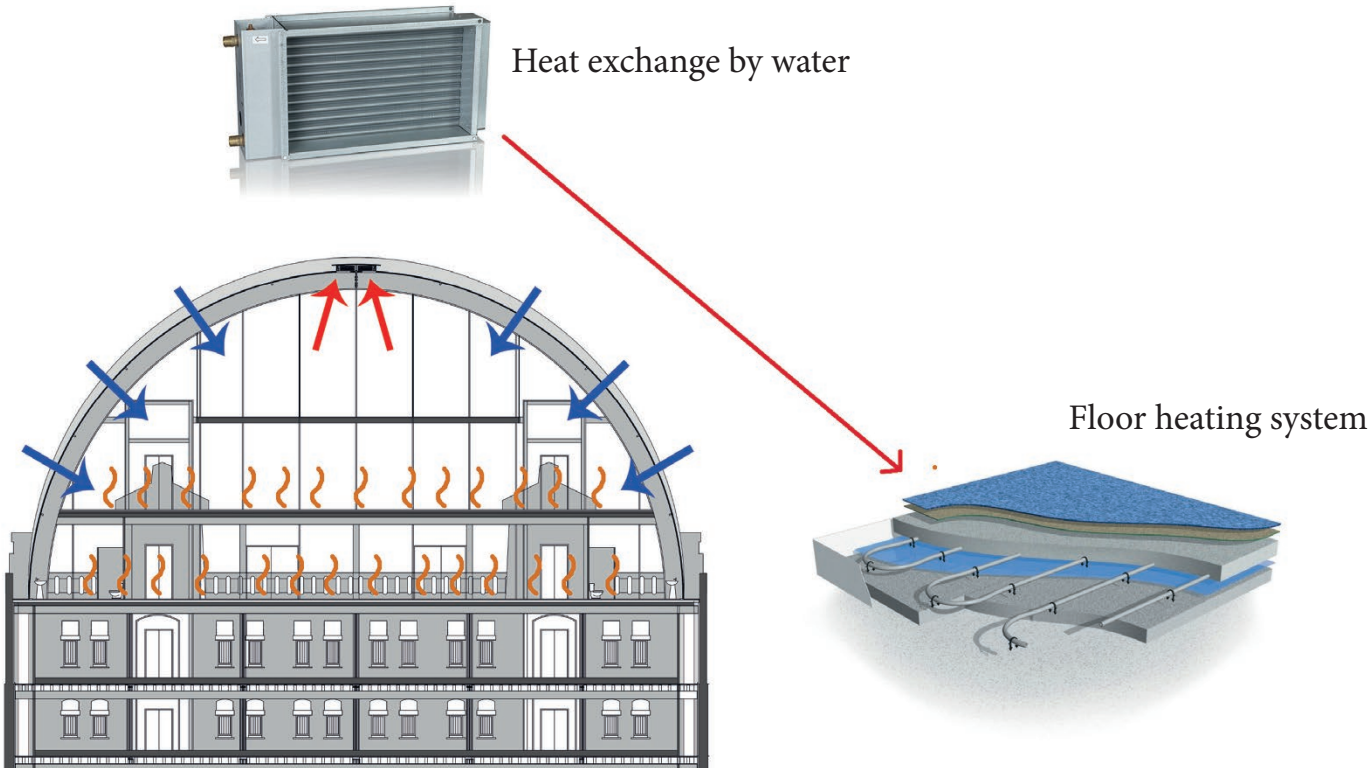
6.89 Visualisation of the heated/cooled fresh air distribution through horizontal and vertical ventilation shafts



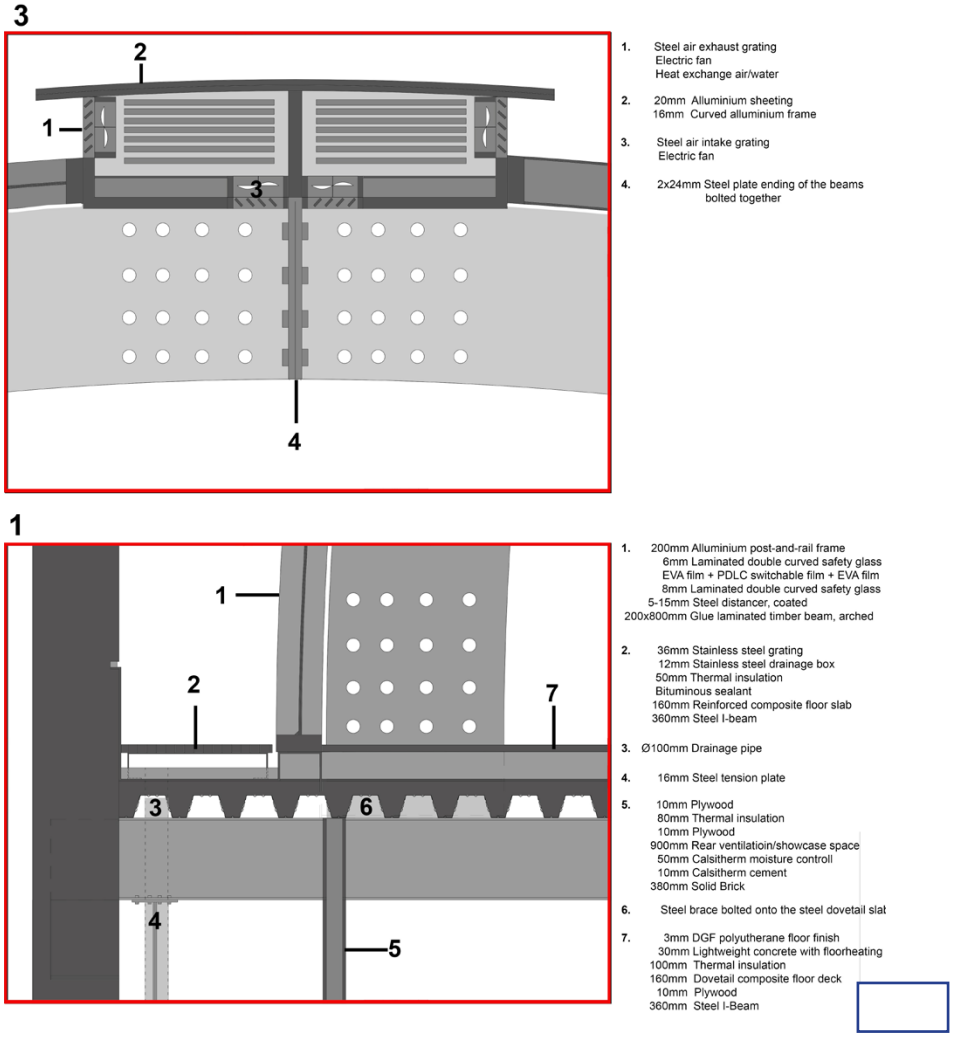

6.810 Floorplan with the ventilation/lighting and sprinkler sys-



6.811 Fragment of the ventilation/lighting and sprinkler systems




6.812 Climate concept of the added roof, linking the heat exhange to the floor heating




6.813 Details of the base and top of the added roof structure

## 6.9 Final reflection

In the following chapter I will reflect on my graduation project. It is an important task to look back at previous work and the process that led to the end result. Defining and reflecting the steps which had a valuable impact on the project and analysing the problems or methods which have room for improvement are essential to grow as an architect.

Chosen for this assignment is the nationally listed coffee warehouse 'Santos' which is one of the remaining vacant historically valuable buildings in the harbour area of Rotterdam. Located on 'Katendrecht' it resides in an area on the brink of a large re-development plan led by the municipality. This creates a complex design assignment to develop a proposition to extend the warehouse's life-span within a rapidly changing environment.

During my student years I lived in Rotterdam and I know how little historic fabric is left compared to other big cities in the Netherlands. Especially rare are assignments for historical buildings that were designed in a 'classical' style. Because of this rarity and the placement in a modern metropolis I find this an interesting architectural challenge for which I would like to develop a possible solution.

Besides my architectural interest, 'Santos' appealed to my love for history and technology. These two topics tell me something about the evolution of human endeavours. These are entertaining stories but they also give our current time a context in which it can be understood better. The warehouse of Santos has a rich history and was technologically advanced during the time it was built. For this reason I find the Santos assignment not only a architectural but also a conservation challenge.

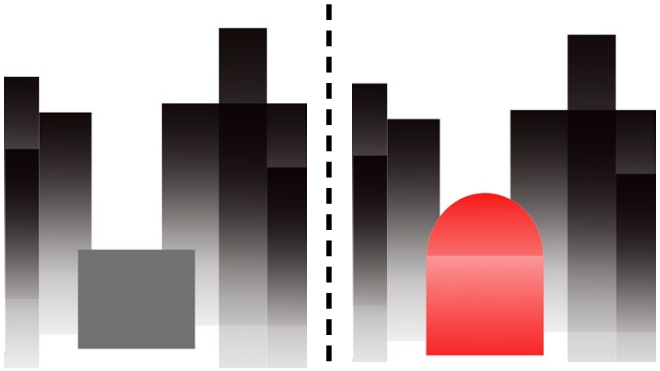
*Aspect 1: The relationship between research and design.*

The connection between research and design is highly present in this graduation project. A part of the assignment is the use of a method called 'Design generated through research'. The performed research should bring forth answers and/or solutions about the subject matter. This obtained knowledge can be useful within the project but can also function as a catalyst for creativity.

An example of this process within the preliminary design of Santos was the development of the roof ending. During the cultural-historical research it became clear that Santos was the most dominant element in the area for a long time because of its height and central placement. Research that was done on the future development of the area showed that Santos will be surrounded by a radically changing urban fabric which will most likely diminish this historical dominant position.

Besides accepting this factual truth, I chose this aspect as a creative catalyst for the design. How can one alter the building of Santos in such a way that it remains the most dominant element of the area within its future setting? This process resulted in the barrel vault roof placed on the top of Santos that contrasts with the rectangular roof endings of the surrounding buildings (fig. 6.91 and 6.92).

6.91 Urban model of the preliminary design



6.92 Development of the roof ending within the future urban composition

*Aspect 2: The relationship between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master program (MSc AUBS).*

The graduation project, studio topic, master track and master program (fig. 6.93) are all connected with each other by their focus on heritage. The different courses from the master program all view the heritage subject from another angle. The subjects architecture, history, building technology, methodologies of architectural reuse and conservation technology provide tools and knowledge that are needed in architectural assignments which contain an heritage element. In addition to the core master programme, I also chose some electives from the heritage & design master track that gave additional understanding of building history and methods to assess buildings from a conservation perspective.

These subjects are all present within the graduation project. For that reason this is the most comprehensive test of my capability to combine and act upon the attained knowledge and skills.

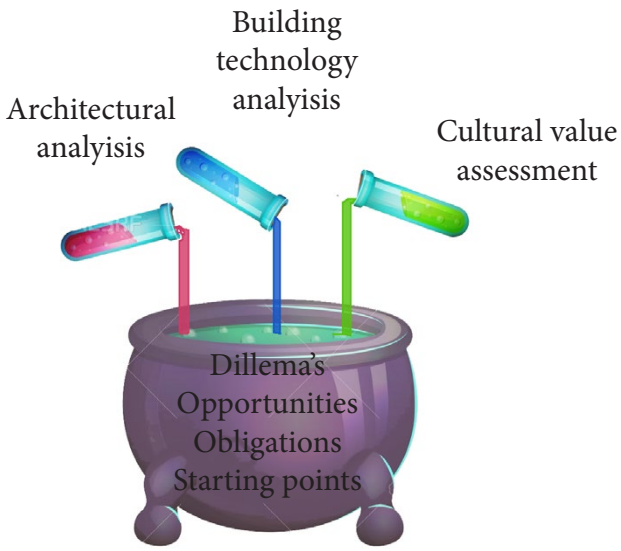
Graduation project: Transformation of the coffee warehouse Santos
Studio topic: Harbor heritage
Master track: Heritage and design
Master programme:
AR1A060 Delft lectures on architectural design
AR1A065 Delft lectures on architectural history
AR1A075 Delft seminars on building technology
AR1A010 Methodologies of architectural reuse
AR1A080 Technology of conservation
AR0015 Building conservation assessment (elective)
AR0014 Building history and technology (elective)

6.93 Summary of Herritage and design track project and courses

*Aspect 3: Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.*

When looking back at the used methodology in the project, multiple strategies and tools were used. My experience with the use of the ABC formula (fig.6.94) and the colored Brand/Riegl based matrix was useful to comprehend, to order and to prioritize a large flow of information. They have given the design process a scientific basis to work from.
As a design method, I slightly adjusted a consequential design development (fig. 6.95). I did additional research and design on the various fields within the preliminary design in order to see if they were compatible with each other, the cultural historical values and the general design concept. Developing and testing the different options was not always successful, but it did produce insight in the reasons to change the preliminary design.

When reflecting personally on the process I have learned that it is important to make choices about which concepts to develop further instead of trying to find the perfect concept at once. I have spent a lot of energy by not making choices in an earlier stage which resulted in endless testing and assessing concepts without achieving the amount of detail that is needed. Eventually I can conclude that my process worked but that it would have been more efficient if I had forced myself into making choices earlier in the process. This was a truly confronting learning experience for me as a student that will help me improve my process during future assignments as an architect.




6.94 Visualisation of the ABC-formula


6.95 Diagram of a Consequential design development

*Aspect 4: Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.*

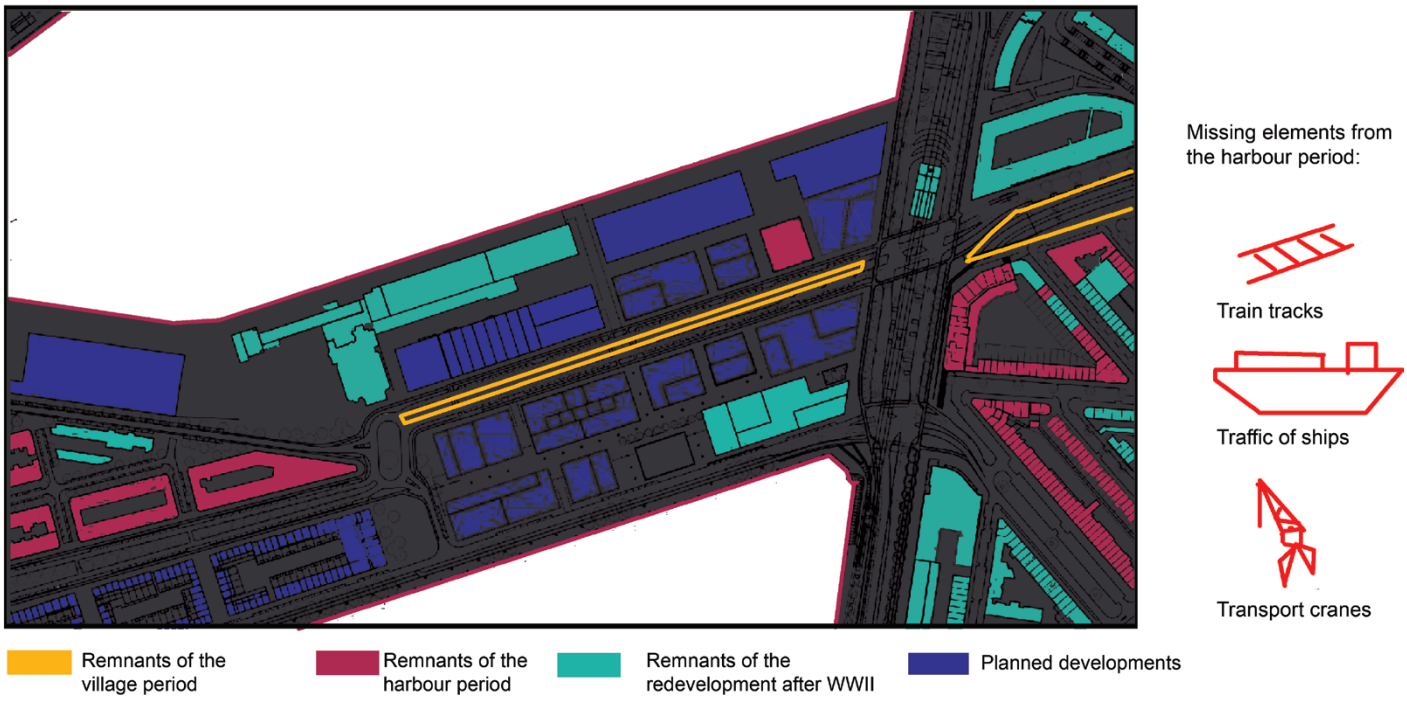
Before looking at the graduation project in a broader perspective I believe it is important to discuss the relevance of the project to the district of Katendrecht. When looking at fig. 6.96 it becomes clear that Santos is one of the few remaining elements which still expresses the harbour period in this area. Therefore a large responsibility is put on Santos to conserve this part of history and to retain some of that harbour identity. Especially this identity/period made Katendrecht famous.

In a broader sense the graduation project has relevance to all cities that cope with their harbour heritage. Every city has its own unique history which results in different connections to their harbour heritage. For example the history of Rotterdam is strongly connected to its function as a transit port where Santos is a direct result off. Even though the identity of harbour heritage can differ amongst other cities they have common elements that transcend these particular differences. All cities benefit economically and socially from their connection to water.

On a technical level this project has relevance to a broader scene of conservation of architectural heritage. The warehouse function has some general technical qualities which are important such as the load baring capability, logistics, climate- and safety-conditions etc. Understanding and dealing with these elements can be transferred to other buildings that are part of this warehouse typology.

The chosen program of Santos, as an exhibition place for design brands of the upper segment, has relevance to the profession of retailers. Based on received feedback the program changed gradually during the graduation project. Starting with typical stores that developed into a more experimental set-up, which touches upon the changing retail environment and the effects of the digital age we find ourselves in. I believe that stores with the intent to merely function as a selling point will become less relevant in the future because most purchases will be done digitally. The future of physical retail space will mainly focus on the brands visibility and conveyed brand experience. For that reason these themes are addressed in the design of Santos to formulate a possible answer to this rapidly changing profession.

Finally, from an architectural perspective this graduation project is relevant because it continues the development of methodologies of architecture and architectural reuse. To embed the building within its future surrounding while still expressing the heritage was a though challenge. The alteration to the North and South facade in the past by removing the winch houses is seen as a real loss of the architectural and cultural-historical heritage fig(.6.8). Therefore a restoration of the original design would be a possible correct strategy to take, but it would also destroy the history of the removal of the winch houses. With the addition of the barrel vault roof a new time layer will be added to the story of Santos. Because the North and South facade are almost identical I chose a design strategy that shows and respects all the time layers that are present. The South facade remains in its current state while the Northern facade will be restored to the original design. The addition on the roof acts as its own entity and therefore the original building and the changes made to it through time remain distinguishable and tell their story (fig 6.99).




6.96 Analysis of the effect of the future developments on the remnants of past periods in Katendrecht

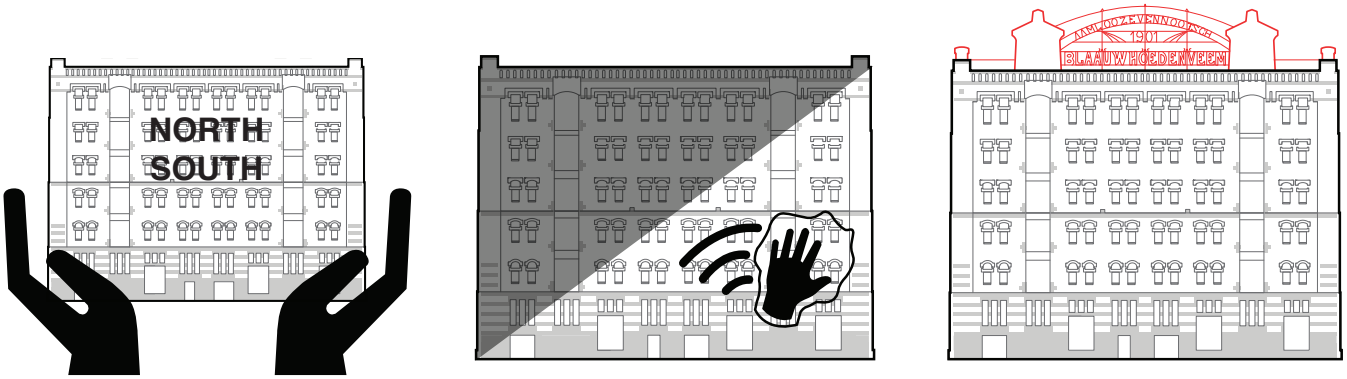
*Aspect 5: Discuss the ethical issues and dilemmas you may have encountered in (i) doing the research, (ii, if applicable) elaborating the design and (iii) potential applications of the results in practice*

The ethical dilemmas I encountered in this graduation project concentrate mainly around the historical and cultural value that Santos embodies. These dilemmas were in particular: How to insulate without diminishing the character of the building?, How to cope with the patina of the facade when the surrounding buildings will be brand new?, How to implement modern systems for ventilation/heating/transport and safety measures without interfering with the experience of the historic building.

The main dilemma concerned the brickwork facades (fig 6.97). They show that the warehouse was a product of the old tradition of making warehouses from brick before they were made of concrete. Santos was built precisely between these two traditions and is therefore important in this historical context.  Because the interior brickwork shows the same craftsmanship a dilemma arose with insulating the building.

Because the North and South facade are highly valuable I chose to only upgrade the windows and accept the poorly insulating brickwork facades as they are. On the West and East facade the brickwork is less expressive and therefore suitable for a new layer of insulation. Furthermore it can provide hiding space for the previously noted challenge of implementing modern systems into the building. This strategy does not raise the insulation properties of the building to the highest level it could reach, but does bring a significant improvement while respecting the conclusions of the cultural value assessment. Another compromise was taken in regard to the patina on the facades that shows the age of the building. This would stand in contrast with the new function of retail space and with the newly built urban fabric that will surround Santos in the future. The age of Santos is expressed sufficiently because the architecture of the facades is of an older style. Therefore the patina can be thoroughly cleaned without diminishing the historical character of the building.

It could be said that most ethical dilemmas place the architect into a position of weighing the cultural-historical values against the necessity of a functioning building in the future.




6.97 Dilemmas of the highly valuable façade design of J.P. Stok

6.98 The orignial facade, the altered facade and the final design of the facades.

*Planning*

Looking forward toward the final p5 presentation I believe some aspects still have room for improvement. These topics might concern the detailing, materialisation, architectural experience and method of conservation. I believe the rest of the planning should mainly involve the organisation and presentation of my work to make a comprehensible and attractive summary. This will consist of finalising the graduation report and producing final presentation drawings and renders.

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3.12 Truthfull expression of the facade.
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3.13 Architectural expression of character within the window lintels.
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Picture taken by L. Jespers on 5-03-2017.

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North facade of Santos from 1901. Municipal archives of Rotterdam no. BW-1126-1901

4.12 Winch houses on the roof.
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4.15 Section with the vertical transport of goods.
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5.23 Detail with the cultural value assessment
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5.41 Model of the preliminary design.
Pictures taken by L. Jespers on 8-05-2017

5.42 Model of the preliminary design.
Pictures taken by L. Jespers on 8-05-2017

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6.96 The original facade, the altered facade and the final design of the facades.
Illustration by L. Jespers. Final design, 2018.

# Appendix I

Appraisal of Santos (redegevende beschrijving)

Inleiding:

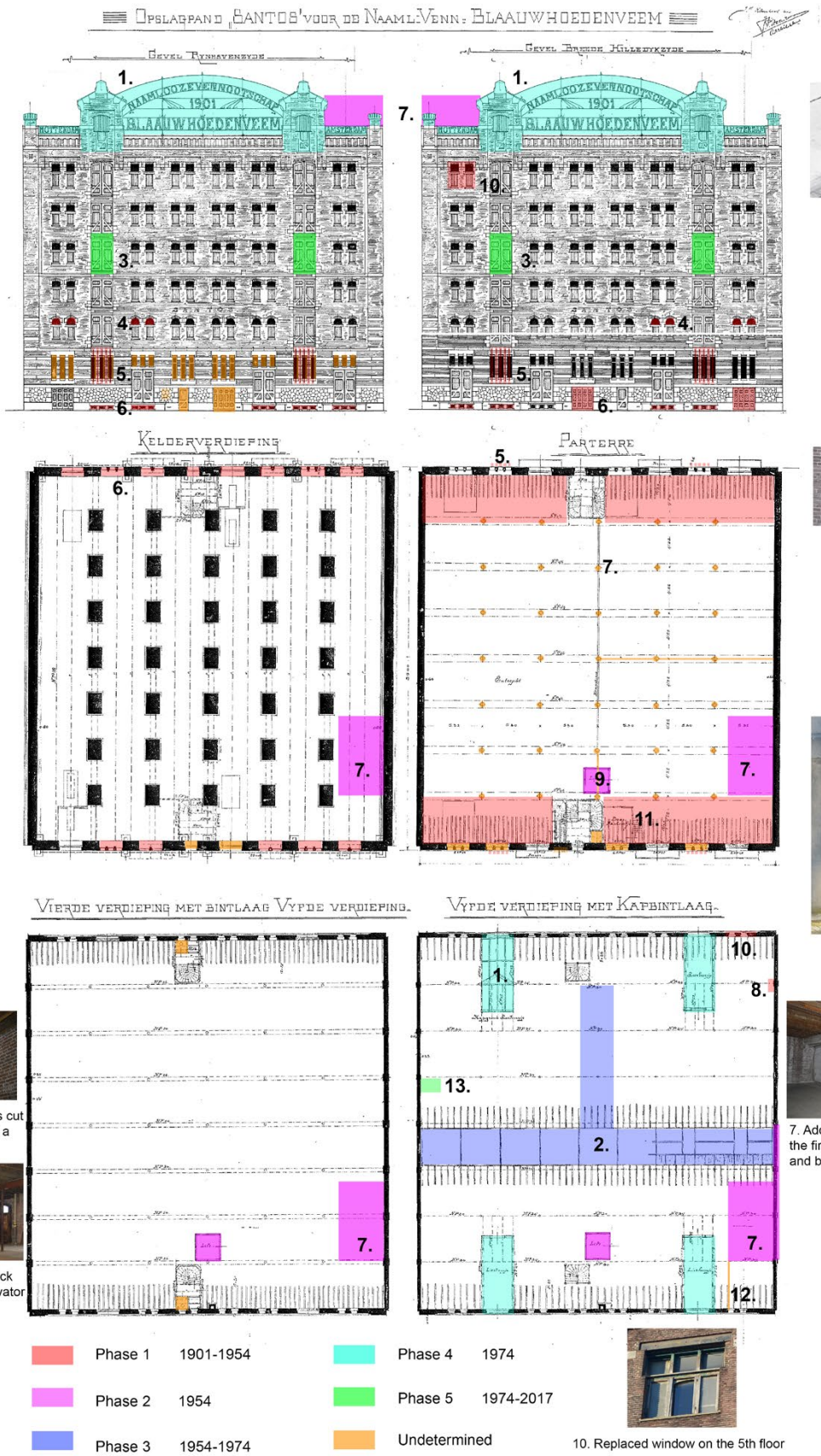
In 1901 gebouwd PAKHUIS in sobere eclectische stijl naar ontwerp van de architecten J.P. Stok Wzn. en J.J. Kanters, in opdracht van de Blauwhoedenveem Rotterdam voor de opslag van Braziliaanse koffie en genaamd 'Santos'. Geruime tijd was het 24,5 m hoge pakhuis Santos het hoogste pakhuis van Rotterdam, met een bovendien zeer geavanceerde laad- en losinrichting.

Omschrijving:

In oorsprong vrijstaand pakhuis gebouwd op een bijna vierkante plattegrond (32,4 bij 34,5 meter) van zes bouwlagen, op een kelderverdieping opgetrokken in rode baksteen op een rustica hardstenen basement en met natuurstenen detailleringen. Vensters en deuren van hout. Het pakhuis is zowel aan de Brede Hilledijk als Rijnhaven zuidzijde ontsloten, waarbij beide (voor)gevels identiek en symmetrisch zijn opgebouwd. Het pakhuis is acht traveen breed, waarbij de op een na buitenste traveeÃ«n op de begane grondverdieping drie smalle hoge vensters en daarboven op de bovenste vijf bouwlagen brede dubbele laaddeuren. De bovenste laaddeuren onder een getoogde rollaag met natuurstenen hoeksluitstenen en aan weerszijden van alle deuren aan de onderzijde een natuurstenen accent in het metselwerk. In de (vanaf het westen) eerste, derde en zesde travee op de begane grond bevinden zich brede rechte dubbele deuren, waarboven drie smalle korte vensters. In de overige traveeÃ«n drie smalle hoge vensters. Op de bovenliggende verdiepingen per travee telkens twee vensters met natuurstenen dorpels en idem hoeksluitstenen in de rollagen. De vensters hebben op de eerste verdieping een boogvormig bovenlicht; op de tweede en derde verdieping getoogde bovenlichten en op de bovenste twee etages rechthoekige bovenlichten. Op de begane grond, boven het rustica basement, natuurstenen speklagen, welke geheel links en rechts in de hoeklisenen nog doorlopen tot de tweede verdieping. Tussen de derde en vierde verdieping een natuurstenen band. De gevel wordt afgesloten door de hoger opgetrokken hoeklisenen waartussen een gemetseld fries dat de traveen accentueert en daarboven een gemetselde balustrade op een natuurstenen band. Oorspronkelijk werden de goederen met behulp van lieren naar de verschillende verdiepingen getild. De vier lierhuizen op het dak werden in 1970 echter weggebroken, waarna de borstwering ter plaatse is doorgetrokken. Voorheen stond op het dak bovendien een gietijzeren constructie, waarop de firmanaam stond vermeld. De zijgevels zijn blind en voorzien van lisenen ter hoogte van de drie bovenste verdiepingen, welke de gevels in acht traveen verdelen.
De draagconstructie bestaat uit geklonken gietijzeren kolommen, in een stramien van 4,22 meter bij 5,30 meter. In de kelderverdieping rusten de kolommen op hardstenen consoles, die zijn gefundeerd op een zeer groot aantal houten palen. De verdiepingsvloeren bestaan uit houten bintlagen en planken.

Waardering:

Vroeg twintigste eeuws koffiepakhuis van algemeen belang vanwege de cultuurhistorische en architectuurhistorische en typologische waarde.




1. Removal of whinch houses and advertisement on the roof

2. Removal of the stairway house and dormer widows on the roof

3. Filling of the 3rd floor door openings with glass doors and a metal railing

4. Filling of the top windows on the 1st floor with brickwork

5. Removal of the metal safety bars on the ground floor windows

6. Filling of the basement entrances and windows with brickwork and finished with a concrete plaster

7. Addition of the elavator and the fireproofing of the collumns and beams

8.Addition of a brickwork fireplace

9. Removal of the old elevator and addition of new yellow brickwork walls

11. Expansion of the concrete floor up to the facade



10. Replaced window on the 5th floor

13. floor and beams cut off for placement of a ventilation shaft

12. Addition of a brick wall next to the elevator