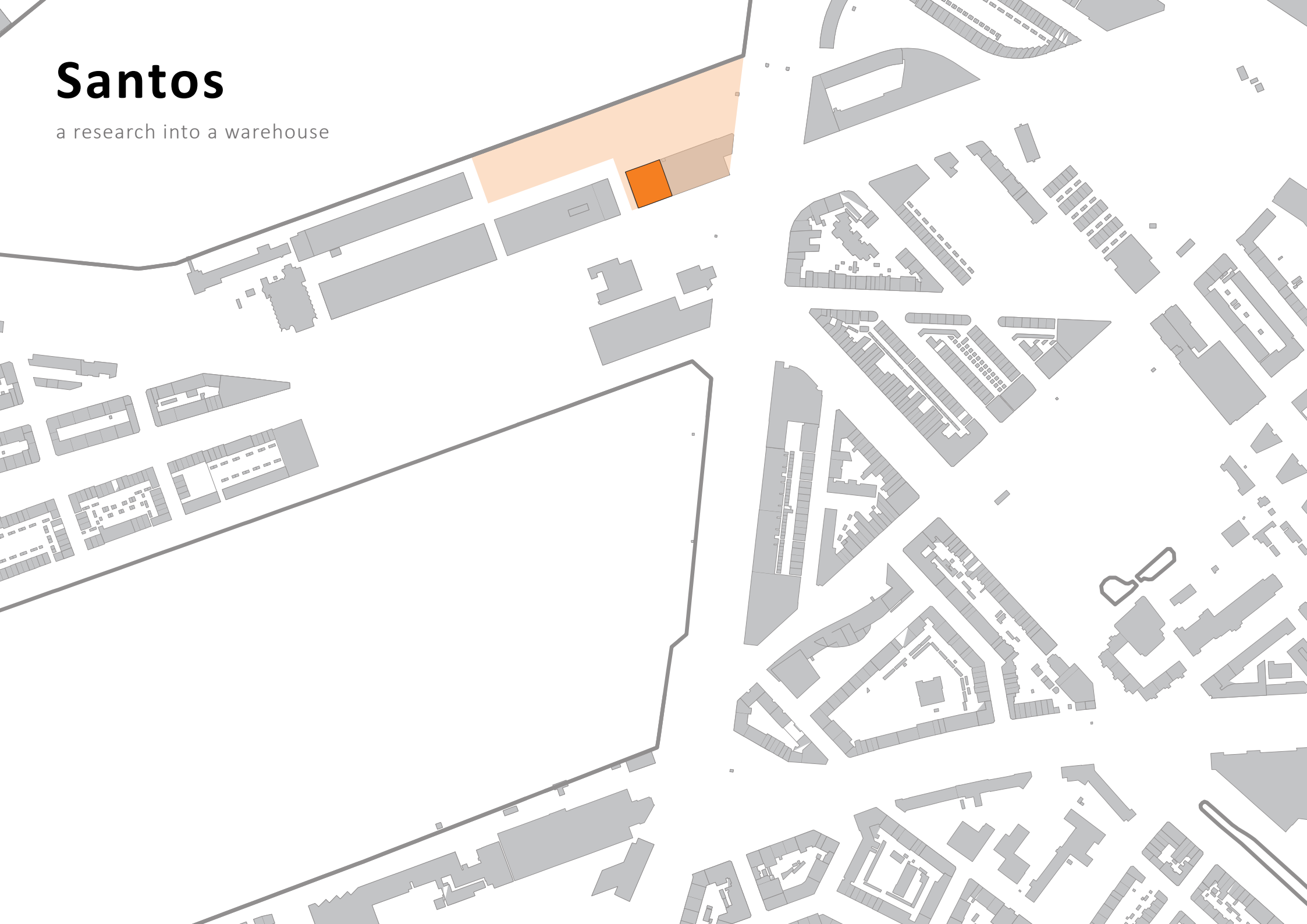


Santos

a research into a warehouse



Santos

a research into a warehouse

Address: Brede Hilledijk 95 / Rijnhaven Z.z. 6,
Rotterdam
Status: rijksmonument nr. 513940
Year of construction: 1901-1902
Client: N.V. Blaauwhoedenveem
Architect: J.P. Stok Wzn. i.s.m. J.J. Kanters

2

Original function: warehouse
Current function: mostly vacant, partly an office
Owner: municipality Rotterdam

Introduction

This analysis is a research about the coffee warehouse Santos in Rotterdam. The warehouse was built in 1902 for the storage for coffee to other harbours or into the mainland. For this particular warehouse has been chosen because in the past I passed it often on the way to my internship. This has interested me to understand more about the importance and the function of the building. Even the name sounds interesting to find out more but due to lack of time it was not possible. The graduation period is the ultimate opportunity to answer these questions.

The most important purpose of this research is to understand how this building works and why it is appreciated on architectural and cultural values. This must be done in such a way that it can form a proper basis for the further design steps. Use will be made of the available studies that have been done and the information provided by the archives of Rotterdam.

The research is roughly separated in two parts, the urban situation and the building itself. Both explains the situation in the past and the current situation.

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URBAN CONTEXT

Coffee warehouse Santos



Rotterdam

The small fishing town was founded on the river Rotte with a dike that should be constructed around 1270. The founder of the city was Wolfert van Borsselen who give city rights to Rotterdam on 17 March 1299 but the final city right where obtained on 7 June 1340. At that moment there lived about 1.000 people in Rotterdam. After finishing the dikes for the river Maas, Rotterdam become a urban settlement in the thirteenth and fourteenth centuries.

In the middle of the sixteenth century the city growth because of the trade and industry. The population doubled between 1550 and 1600 to 13.000 people. Besides the Oude Haven, new harbors were created as the Nieuwe Haven, Haringvliet, Leuvehaven, Wijnhaven and the Scheepmakershaven. This

was also the time that the city triangle took shape. After the Golden Age the spatial development of the city was stopped in the seventeenth and eighteenth centuries.

During the mid-nineteenth century the city expand again because of the rail connection with Amsterdam, Utrecht and later Antwerp. The creation of the Nieuwe Waterweg was the final key to success for the city. Harbors and quays were enlarged and surrounding areas as Feijenoord (1869), Delfshaven (1885), Kralingen (1894) and Charlois and Katendrecht (1895) were annexed.

Those new harbors stimulated the economic growth at the beginning of the twentieth century. The population grew to 450.000 inhabitants in 1915. The

10

Coffee warehouse Santos



inward migrations of workers from the southern provinces are housed in the new neighborhoods on the north and south river sides.

The city center of Rotterdam was destroyed during the bombing at the start of World War II. Immediately after this, Witteveen presented a plan in 1941 but received criticism. In the end the plan of Van Traa was executed in 1946. In this plan is a spatial structure that is different from the old city triangle and takes into account the increasing traffic.

During the sixties, new residential areas were realized and in the seventies there were more activities in the center for terraces, pavilions, more green spaces and a stop on building offices. In the eighties and nineties become more

cultural functions to the city as the Maritime Museum, the Museum of the Art Gallery, Natural History Museum and the Institute for Architecture and cultural facilities along the Westersingel and the Witte de Withstraat.

The relocation of port activities seaward with the Europoort and Maasvlakte and relocation of the industrial to the outskirts, former port and industrial buildings could be re-use for housing during the eighties. The dynamic atmosphere around the Kop van Zuid shifted the city center more around the river (Rotterdam, 2016).

(Museum Rotterdam, 2016)



Katendrecht

Katendrecht is a long peninsula in the Nieuwe Maas bordered by the Rijn and the Maashaven. The nickname of Katendrecht is Kaap and is located in the district of Feijenoord (Rotterdam woont, n.d.). Through the years there have been a lot of different names for this peninsula, for example Catendrec, Cathendrecht, Kattendrec, Cathedregt, Cattendrecht and Catendrecht. The origin of the name can't be guaranteed because of the different stories. The name would remain of Catten or Chatten that is related to a German tribe that would have lived in the region around the beginning of our era. Other versions are about a sandbank in the shape of the back of a cat or that the name refers to a rich family named Cats from Zeeland. There is also a theory about a wall in the Nieuwe Maas which would be the 'ka(de) of muur bij het veer'.

It is also possible to make a relation between 'katen' and the origin of a Saxon word 'koten' which means a piece of land that becomes independent. On that piece of land then built a small house and was called a 'Kate', while 'drecht' indicates a spring or stream (Stichting Historisch Katendrecht, n.d.).

In the year 1199 Katendrecht was a jurisdiction and belongs to Mr. van Putten. Duke Albrecht van Beieren commissioned to frame the area with new dikes in 1375 because of floods in previous the two years. In 1410 Mr. van Putten received the permission from Jacob van Putten to create dikes around a floodplain. This land is now known as Jacob Potsland or Oud-Katendrecht. The part that was repaired after the dike burst in 1463 is called Nieuw-Katendrecht or Meester Arend van der Woudensland (Rotterdam op de kaart, 2013).

In the mid-18th century the village of Katendrecht had only 51 houses. Since



Expanding of the city of Rotterdam, 1880

1811 the village became one municipality with Charlois for five years (Stichting Historisch Katendrecht, n.d.). In the period from 1816 to 1874 Katendrecht was independent again till 1874 when it reunited with Charlois again. In those years Katendrecht was a relatively prosperous village surrounded by fertile polders and was a summer destination for a part of the Rotterdam elite. During that

1199



Katendrecht was a jurisdiction and belongs to Mr. van Putten.

1375



Duke Albrecht van Beieren commissioned to frame the area with new dikes because of floods in previous the two years.

1410



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1811



The village became one municipality with Charlois for five years



New harbors are created, 1896.



Parts of Katendrecht are developed, 1910

time there was a major ferry connection to the Veerhaven on the north side of the Nieuwe Maas (Rotterdam op de kaart, 2013).

In 1887- 1888 and 1895-1896 two ports were created, the Eerste and Tweede Katendrechtse haven. There has been plans as well for a Derde Katendrechtse haven but this was only to avoid the plan of the Maashaven (Stichting Historisch

Katendrecht, n.d.). Rotterdam annexed the municipality of Katendrecht and Charlois as well in 1895 with as main reason to expand the port of Rotterdam (Rotterdam op de kaart, 2013).

1816-1874



Katendrecht was independent again

1874



Katendrecht reunited with Charlois again

1887- 1888 and 1895-1896



Two ports were created, the Eerste and Tweede Katendrechtse haven.

1894



In 1894 the Rijnhaven had dug and become the place for shipping and storage services. Digging the Maashaven was the next step but this also creates the peninsula Katendrecht.

Rotterdam

The port continued to grow and engineer G.J. de Jongh director of Gemeentewerken developed plans to build broad ports for large ships without taking into account the village Katendrecht. In 1894 the Rijnhaven had dug and become the place for shipping and storage services. Digging the Maashaven was the next step but this also creates the peninsula Katendrecht. This was the end for growing companies in agriculture, animal husbandry and horticulture. Also 650 to 700 houses, a church and a school had to be demolished. About 3.500 people had to leave Katendrecht. Almost the whole village of Katendrecht and Charlois disappear because of the necessary areas for trade and industry close to the Maashaven. On December 20, 1905 Maashaven was completed. What was left of the village was an isolated community between the Rijnhaven and Maashaven surrounded by ports, warehouses, storage, shipping and rail yards (Stichting Historisch Katendrecht, n.d.).

Furthermore there were sailor bars and boarding houses. These houses were for sailors waiting for work on the next ship. The district became increasingly shady with gambling, dealing in stolen belongings and prostitution (Rotterdam op de kaart, 2013).

At the end of the 19th century there was a lot of unemployment because of the crisis in agriculture. Katendrecht losing its important function as crossing and stopping harbor because of the construction of the Willemsbrug and the rail link to Antwerp (Rotterdam woont, n.d.).

The bustle of the harbor had a great attraction for people from Zeeland and Noord-Brabant. As a result of this a lot of new houses were built between 1894 and 1908. Most residents did their work in the harbor, the rest in services. In

the first decades of the 20th century was ore and coal the main product in the harbor. This influenced the quality of the life in this district in a negative way (Rotterdam op de kaart, 2013).

Chinese

Most sailors in Amsterdam and Rotterdam went on strike in June 1911. At that time the Rotterdam Lloyd took nearly hundred Chinese as strikebreakers. The Chinese settled in Katendrecht, where there were many low-income housing. This was the start of the biggest Chinatown in Europe. In 1914 was the first boarding house for Chinese sailors and after the first World War more and more Chinese entered Katendrecht. In 1922 there were sixteen boarding houses in the Delistraat and the area around. Often a shop, gambling and opium occasion where part of the guest house. In 1929 there were 534 Chinese and two years later 1306. Thousand Chinese people left the Netherlands again after improvements in the shipping industry in 1936. The authorities played a dubious role in the departure of the sick and elderly who were unsuitable for heavy sailor's life. At the expense of the government are transported about 1.200 people to Hong Kong. In 1940 Katendrecht there were only 200 Chinese left (Stichting Historisch Katendrecht, n.d.).

20th century

During World War II it was forbidden for German soldiers and Marines to visit Katendrecht. Venereal disease could affect the purity. This gave the advantage for a person in hiding and the possibility to play the forbidden jazz music. At

1895



Rotterdam annexed the municipality of Katendrecht and Charlois to expand the port of Rotterdam

1905



Maashaven was completed.

1922- 1936



Large Chinese population

1970



Start of brothels

the end of the war, the Germans destroyed the harbor installations and by that 1.500 homes as well.

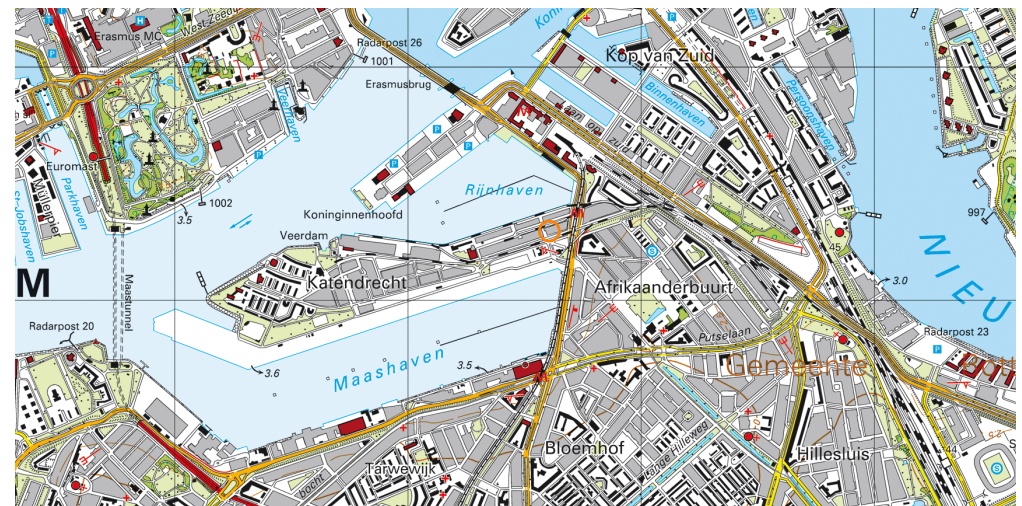
Till 1970 the people where in harmony whit each other. During the day it was busy with thousands of dockers, catering and retail. At night there where different clubs, a lot of sailors and prostitutes. This harmony disappeared when brothel keepers change everything. Buildings were bought and provided with provocative illuminated advertising. In almost every street was a brothel. In 1972 there were 121 brothels with 385 prostitutes. The atmosphere became more combative and there were threats and violence.

Many residents wanted to change the situation and founded Areka which stands for Actiegroep Redt Katendrecht. Under pressure from the many actions of Areka decided the Rotterdam city council to pursue a two-track policy in 1975. One track provided the start for urban renewal in Katendrecht and the other track was removing the annoying prostitution in the neighborhood. In the period of this renewal from 1975 to 1990 were 850 dwellings and 57 commercial spaces renovated. The Eerste and Tweede Katendrechtse harbor will be closed for the realization of 750 new dwellings. Thanks to urban renewal and the continuing struggle of the residents is prostitution entirely gone and is the neighborhood transformed.

Between 1990 and 2000 is was cheerless because many activities had disappeared. Katendrecht was an area where most people don't want to live voluntarily. Difficult people from other parts of Rotterdam were set in the vacant houses. Katendrecht was becoming a ghetto (Stichting Historisch Katendrecht, n.d.).

Since 2000

In 2004 it was decided to invest one billion euros in the physical, social and economic qualities of Rotterdam South (Rotterdam woont, n.d.). The last years there have been changes in Katendrecht as the addition of a new school, renovated houses and new buildings. A new park was created named Kaappark and steamship Rotterdam berthed in the Maashaven. There is a new bridge between Katendrecht and Wilhelminapier and new plans are developed for the Fenix loodsen. The economic crisis delayed the progress thereby the rental agreements for companies at the beginning of the Brede Hilledijk remain up to 2030 (Stichting Historisch Katendrecht, n.d.).



Katendrecht as now a days, 2009

1975

Protests of Actiegroep Redt Katendrecht

1975 to 1990

850 dwellings and 57 commercial spaces renovated. The Eerste and Tweede Katendrechtse harbor will be closed for the realization of 750 new dwellings.

2004

invest one billion euros in the physical, social and economic qualities of Rotterdam South

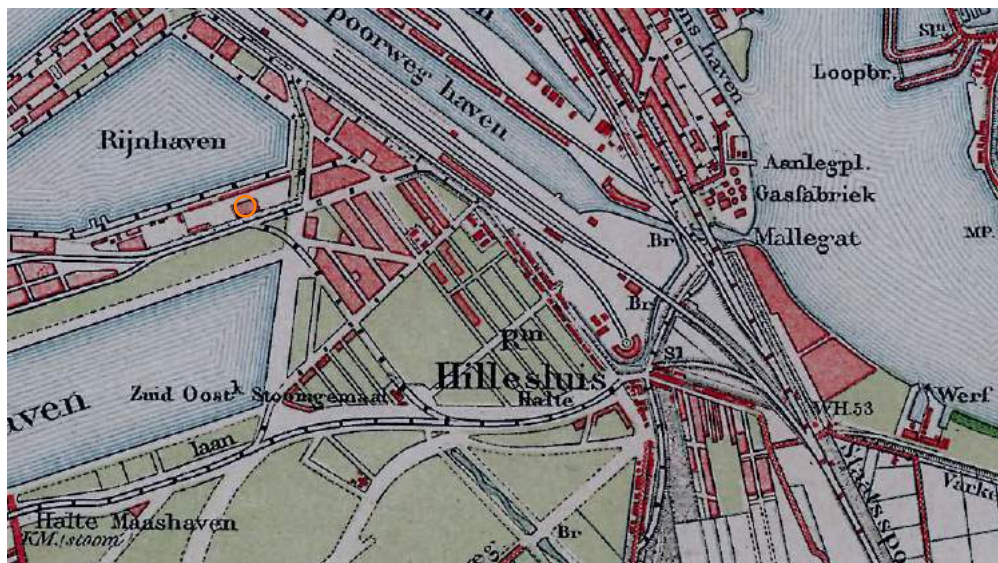
Afrikaanderwijk

The Afrikaanderwijk is centrally located in the former district Feijenoord. The center is the Afrikaanderplein with the market. In the past the Afrikaanderwijk was very isolated but because of new extensions to the surrounding it is improved.

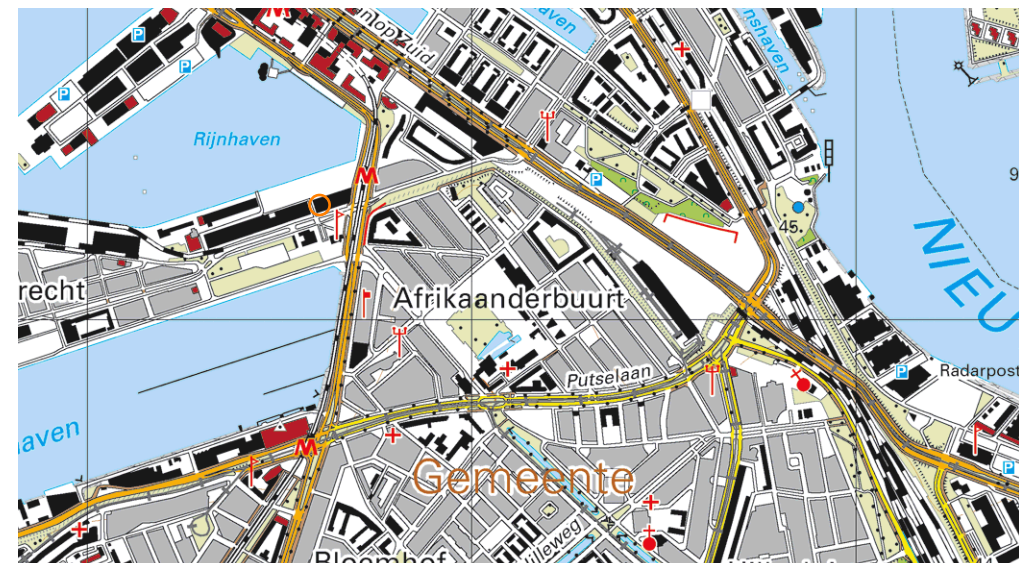
The neighborhood was created as a result of the new ports in the south around 1900. The Afrikaanderwijk is called after different South African streets and leaders of the Second Farmers War in 1899 to 1902. The area was one of the first multicultural neighborhoods in the Netherlands, where a majority of the population has a non-Dutch background (Gemeente Rotterdam, 2016).

From 1960 till 1980 large numbers of immigrant workers came to the Netherlands. First Spaniards and Italians and later Moroccans and Turks. They rent a room or just a bed by individuals or pensions. Landlords buying houses in poor neighborhoods in Rotterdam and rent them to as many as possible. That is in conflict with the native population because they have hardly place to live for themselves. This escalated in such a way that the ME is deployed and

dozens of Turkish and Dutch were arrested (De Monitor Ooggetuige, 2015). Nowadays the Afrikaanderwijk has about 9000 inhabitants. The main part has a different cultural background and education and income level is relatively low. In the coming years there will be 1200 new dwellings, a swimming pool, primary and secondary school, sports facilities and other social facilities (Gemeente Rotterdam, 2016).



The first development, 1910

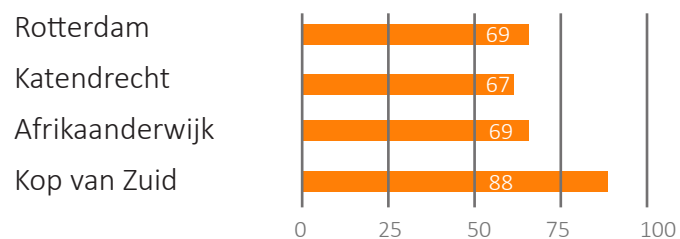


Katendrecht as now a days, 2009

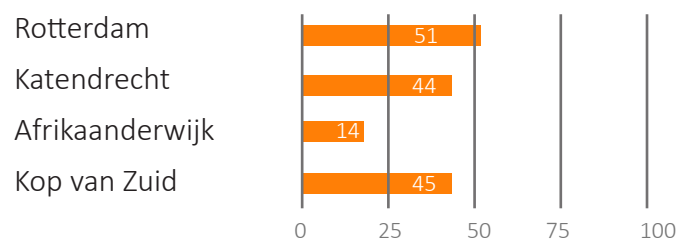
Population	2014	2016
Katendrecht	4.506	4.601
Afrikaanderwijk	8.316	8.221
Kop van Zuid	1.869	2.073

Households	2014	2016
Katendrecht	2.114	2.149
Afrikaanderwijk	3.745	3.811
Kop van Zuid	1.279	1.399

% persons aged 15 to 65 years



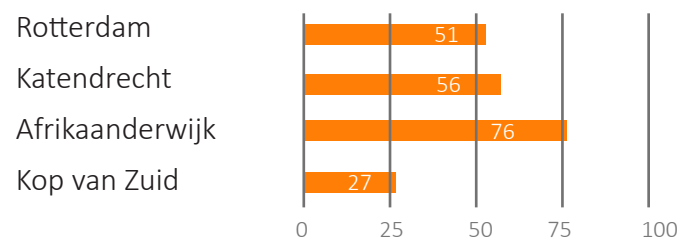
% autochthonous



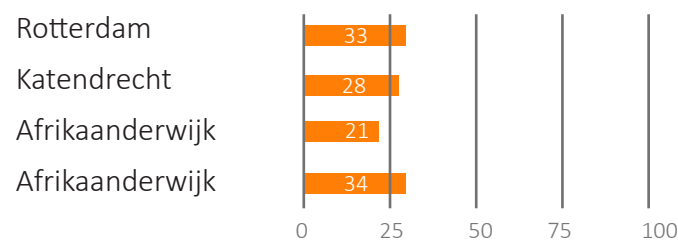
employed population	2014	2016
Katendrecht	758	918
Afrikaanderwijk	1.171	1.017
Kop van Zuid	11.758	15.110

Houses	2014	2016
Katendrecht	2.105	2.387
Afrikaanderwijk	3.720	3.446
Kop van Zuid	1.224	1.683

% household income low



% huishoudinkomen middle

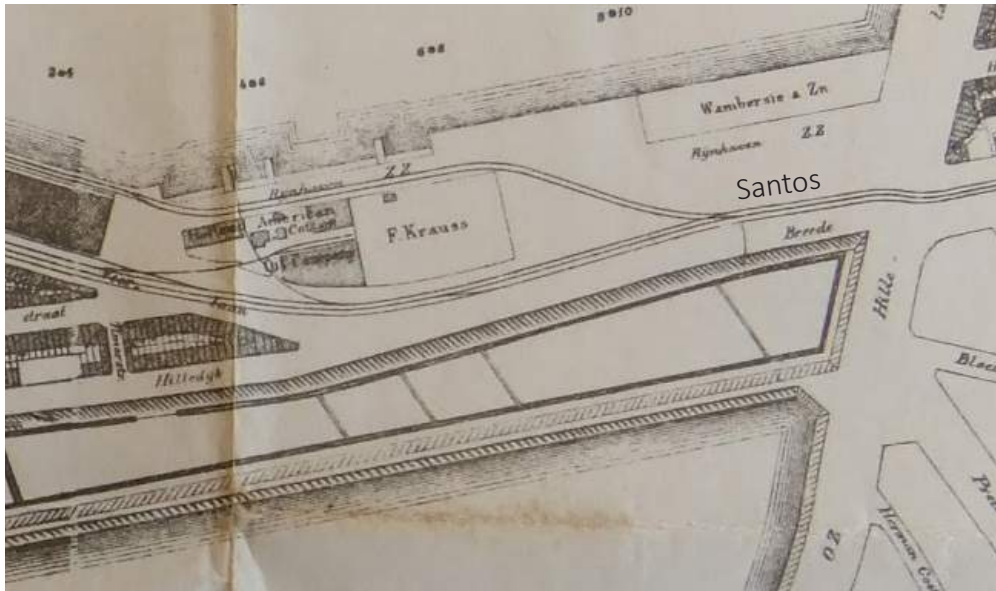


Gemeente Rotterdam, (2016)

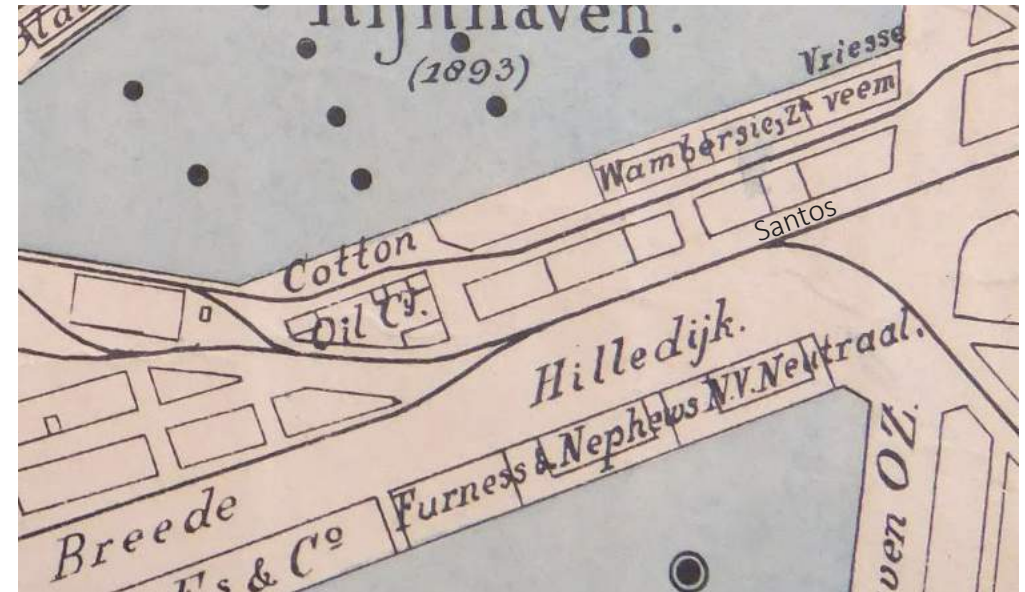
Around Santos

18

Coffee warehouse Santos



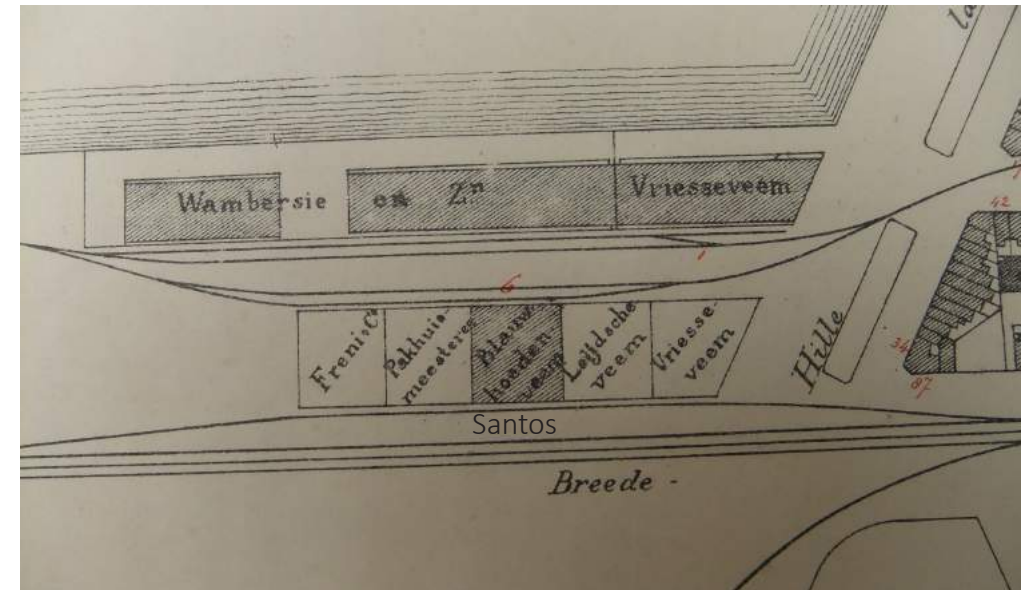
Wambersie en zonen as first company in the area of the later Santos, 1900 (BbKdr, n.d.)



Later developments with Vriesseveem, 1900 (BbKdr, n.d.)



After the War, 1946 (Bedrijvenkdr, n.d.)



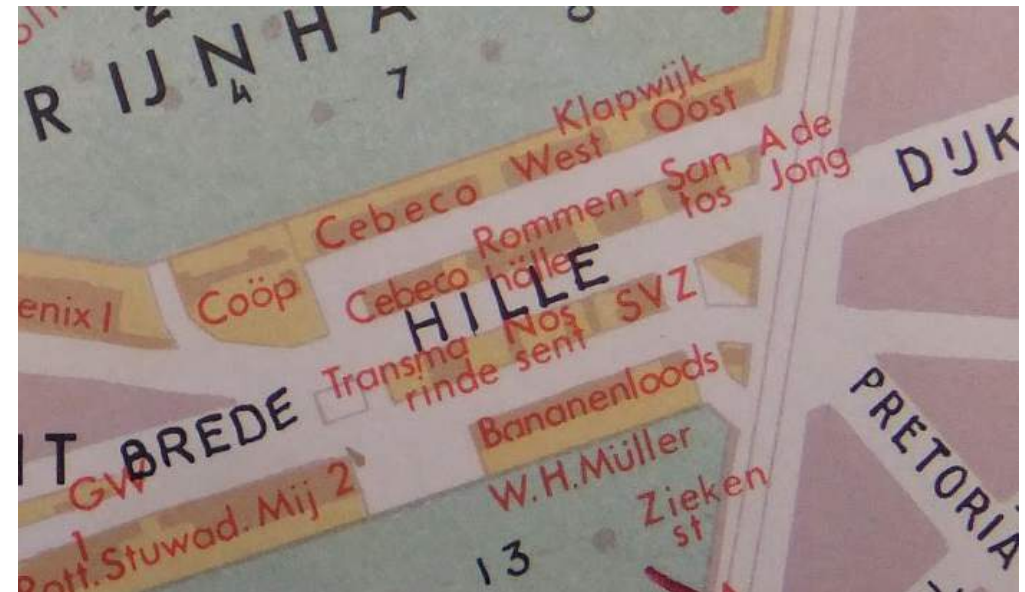
Unrealized plan around Santos, 1903 (BbKdr, n.d.)

The extension of the south part of Rotterdam was attractive place for companies. In 1900 the buildings of Wambersie en zonen has already been completed close to the Rijnhaven (Haven van Rotterdam, n.d.). Consul Emanuel Wambersie and his son John came from Savannah (state Georgia) and started as ship brokers in 1820. They enlarged in Rotterdam and Amsterdam and arranges the transport between Europe and America.

A later map of 1990 shows the further development of Katendrecht with a division of the plots. Vriesseveem is situated next to Wambersie en zonen with a refrigerated- and cold warehouses (Vennix, n.d.). Other businesses nearby were a Cotton and oil company, a steamship company N.V. Neutraal (Stichting Maritiem-Historische Databank, z.d.) and Furness & Nephews (FvI, 2014). This last company was a wholesaler of boating equipment which had its own shipping company to transport accessories.

In the original design on the north side of the Brede Hilledijk were two strips planned. One right on the quay and the other strip behind the Brede Hilledijk. This last strip should consist out of four or five buildings which have on both sides a freight railway and a road. In the end Santos is the only building that has been realized in this period. The side walls express that they should be part of an bigger picture. Probably the other warehouses were never complete because of great distances that goods had to be transported overland from the ships to the warehouses.

During the World War II many buildings were bombed. What also stands out are the train tracks that run along both the north and south facade of the future Santos warehouse. This may have been a motivation for choosing this location. In the different images is also visible the great use of the harbour and all its activities. Those have disappeared nowadays to further away from the city centre.



Katendrecht, 1965 (BbKdr, n.d.)



Redelopment after the war, 1980 - 1990 (Serc, n.d.)





Santos



*S. Hermann
Düsseldorf 04.*

South of Rotterdam in 1904 (Wikiwand, n.d.)

After the war new businesses were realized on Katendrecht as Co-op flour factory (Stichting Historisch Katendrecht, z.d.), Cebeco for the agriculture sector (Wikipaida, 2015), transport company Klapwijk, trading and shipping company W.H. Muller (Wikipedia, 2016) and a shed for bananas.

The Rommenhallen and the buildings of Cebeco are later used for car garages. Behind those garages is the Codrico and is well known for its maize products. On the other side, between those garages and the Santos warehouse was a petrol station from at least 1980 but disappeared between 2004 and 2010.

On the east side of Santos was Finding's self service warehouse what was already a supermarket. This become later the C1000 supermarket. The building is directly built against the Santos warehouse but is since 2013 known under the name Jumbo (Bedrijvenkdr, n.d.). The area includes also a police station and the new MFA Musa towers. This building includes two secondary schools, 135 homes for elderly and some social functions including the new police station.



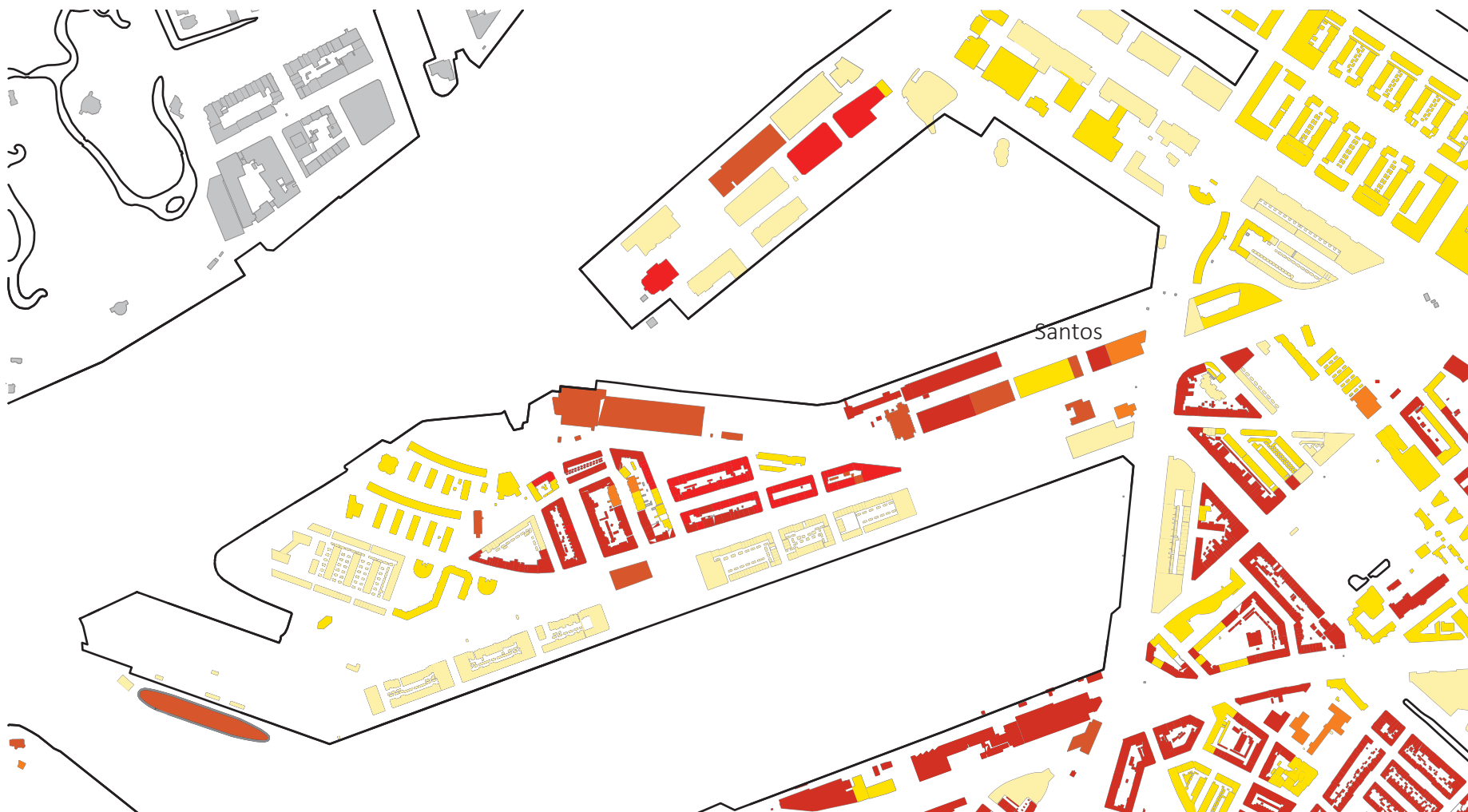
Self service warehouse, 1972 (Gemeente archiefdienst Rotterdam, 1972)



Katendrecht, 1983 (Serc, n.d.)






Santos with on the left side a petrol station, 1980 (Bedrijvenkdr, n.d.)



24

Coffee warehouse Santos



-  National Monument
 Municipal monument
 Future Monument
 (Gemeente Rotterdam, 2016)



1. Holland Amerika Lijn

The Holland America Line is designed by J. Muller and C.M. Droogleeveer for the Rotterdam shipping company in 1901. The office was extended in 1908, 1916 and 1920 by a design of J. Muller and C.B. van der Tak. The function of the office was changed to become Hotel New York in 1993 (Monumenten, 2016).



2. Holland Amerika Lijn

The former arrival and departure hall of the Holland America Line (HAL) for transatlantic passenger. Since the development of the new port area in the second half of the nineteenth century, the Prinsessekade is in use for cargo ships and emigrants to America. In 1896 this become also the start for the HAL which build a new office building at the head of the Wilhelmina Pier in 1901.

By the bombing of Rotterdam on May 14, 1940 big part of the buildings destroyed Immediately after the occupation five warehouses were rebuild and named after differtent port cities (Philadelphia, Norfolk, Baltimore, New York and Rotterdam). Only the Rotterdam is still reamain and in 1949 renovated in the style of the New Objectivity by architects J.A. Brinkman, J.H. van den Broek and J.B. Bakema. In 1972 the HAL stopped because of the competition with airline companies. Since 1988 the space is used for exhibitions, fairs, meetings and parties (Monumenten, 2016).



3. Leidsche Veem

Architect C. Seem designed the warehouse in a eclectic style. It was build in 1898 commissioned by the corporation Leidsche Veem. The former warehouse with a total area of 2020 m² was mainly for storage of tobacco (Monumenten, 2016).



4 & 5. Hoofdgebouw and Graansilogegebouw

Parallel to the quay of the Rijnhaen is the factory which is connected with the grain silo building. The various functions in the production of the flour mill are grouped from east to west. This reflect on the main form, the facade an the variation of construction types (Monumenten, 2016).



6. Scholengem.sch. V. Oldenbarneveldt

The original design was a gardener house but belongs now to the Scholengemeenschap van Oldenbarneveldt. The living which is desinged in the Amsterdamse Schoolstijl was used for the administrator of the botanical garden. The main building was build in 1925-27 by a design of A van der Steur and W.G. Witteveen (Monumenten, 2016).



7. Warehouse Celebes, Java, Borneo en Sumatra

The warehouse of Pakhuismeesteren was used for storage space for spices and tea from the Dutch East Indies. The original building from 1898, burned down in 1937, but on the old foundation and ground floor was a new warehouse built from 1941. The names Sumatra, Java and Borneo refers to the different destinations. The building will have a new role as a hotel (Cobouw, 2015).



8. Las Palmas

Las Palmas was built in 1953 by Van den Broek and Bakema and has served as a workshop for several decades for the Holland America Line. After the renovation of design by Benthem Crouwel, the building is now a multi-tenant building with cultural and commercial functions. Inside is the Dutch Museum of Photography, training for new media and a large event hall an exclusive seafood restaurant and several companies (Plus business, n.d.).



9. School

The in 1856 realised school was partly built on the foundations of the former eighteenth-century city warehouse for peat but was not in use anymore since 1850. The school became a free school for the poor children and was designed by the city architect W.N. Rose (Rijksdienst voor Cultureel Erfgoed, 2012).



10. Walhalla

The former owner was John Eckhardt Dulfer senior and he use the building for his biscuit and confectionery manufacturer. Nowadays it is in use as a Theater 'Walhalla' and designed by architect H. van Schagen (van der Woud, 2013).



11 & 14. Metro stations Rijnshaven and Maashaven

Metro stations Rijnshaven and Maashaven have become iconic through their detached position. Rijnshaven is less crowded and quite simple. Maashaven is an interchange for intersection tramlines. Both stations are covered with a folded concrete roof which is supported by concrete beams. Under those beams are V-shaped concrete columns. The roof is cantilevered and the columns are behind glass gives the impression of a floating roof. Both stations were opened in 1968. The stations are similar to save money and make it more easy to prefabricate elements. Even the lighting is uniform (Architectuur in Rotterdam, n.d.).





12. Commercial building

This commercial building was a design by J.P. Wzn. Stok, just as the Santos warehouse and was built in 1905. The building is now used as livings (Monumenten, 2016).



13. Quaker Oats B.V.

The Graansilo Maashaven consist out of three silos and were built over a period of fifty years. The concrete building was a design by J.P. Stok in 1910 and was with the capacity of 20.000 tons the largest in Europe. Brinkman & Van der Vlucht increased the grain silo in 1930 with a concrete silo that is twice as high as the first one. In 2004 is the Maassilo redeveloped into a building for events and as a Creative Factory (top 010, n.d.).



15. R.K. Broederhuis Saint Louis

Originally the building at Putselaan 178 was a former monastery and was built in 1946. Nowadays it is in use as an elementary School (Nationaal Comite, n.d.).



16. Water company

The former water company used this building from 1896 which is designed in a Renaissance style. Now it is used by a catering company named 'De wijkkeuken' but is also possible to rent for presentations, diner or events (Monumenten, 2016).



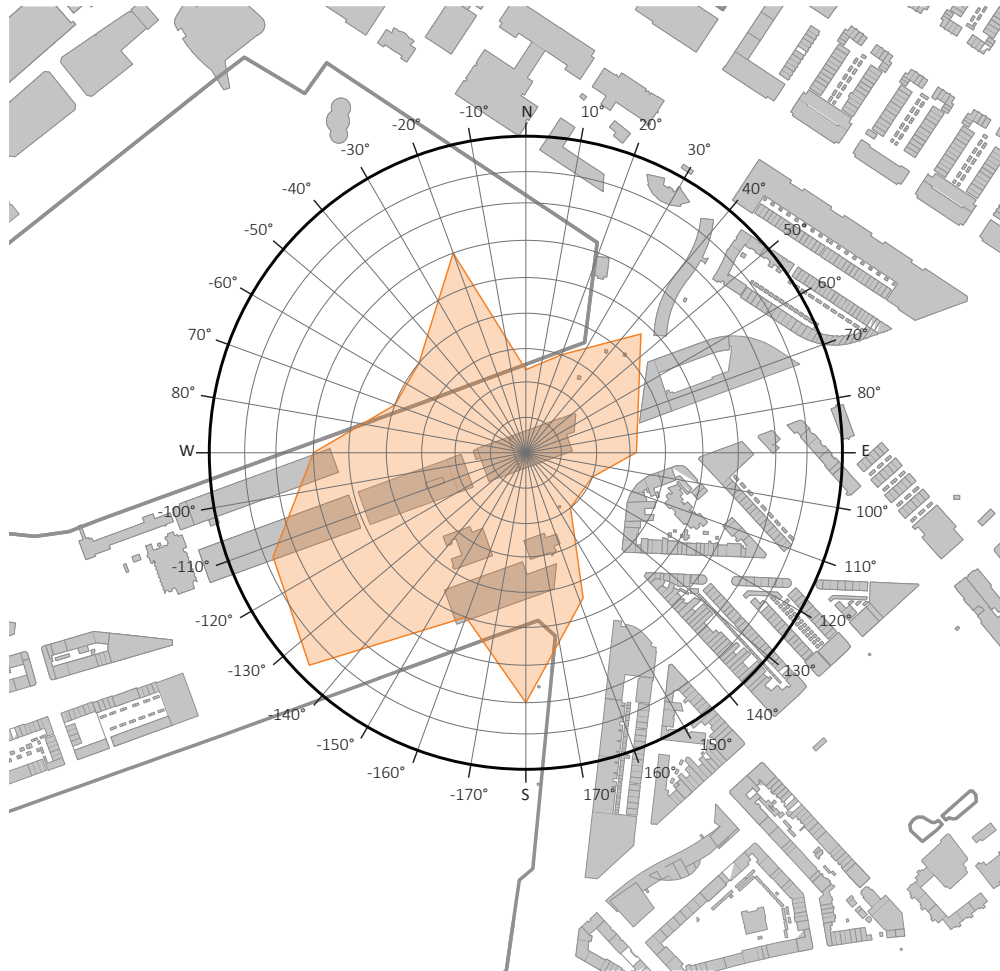
13. School

Architect A. an der Steur designed this school building in the style of the Amsterdamse School in 1928. Till today the building is still used as a school (Monumenten, 2016).

Orientation and relation with the river

28

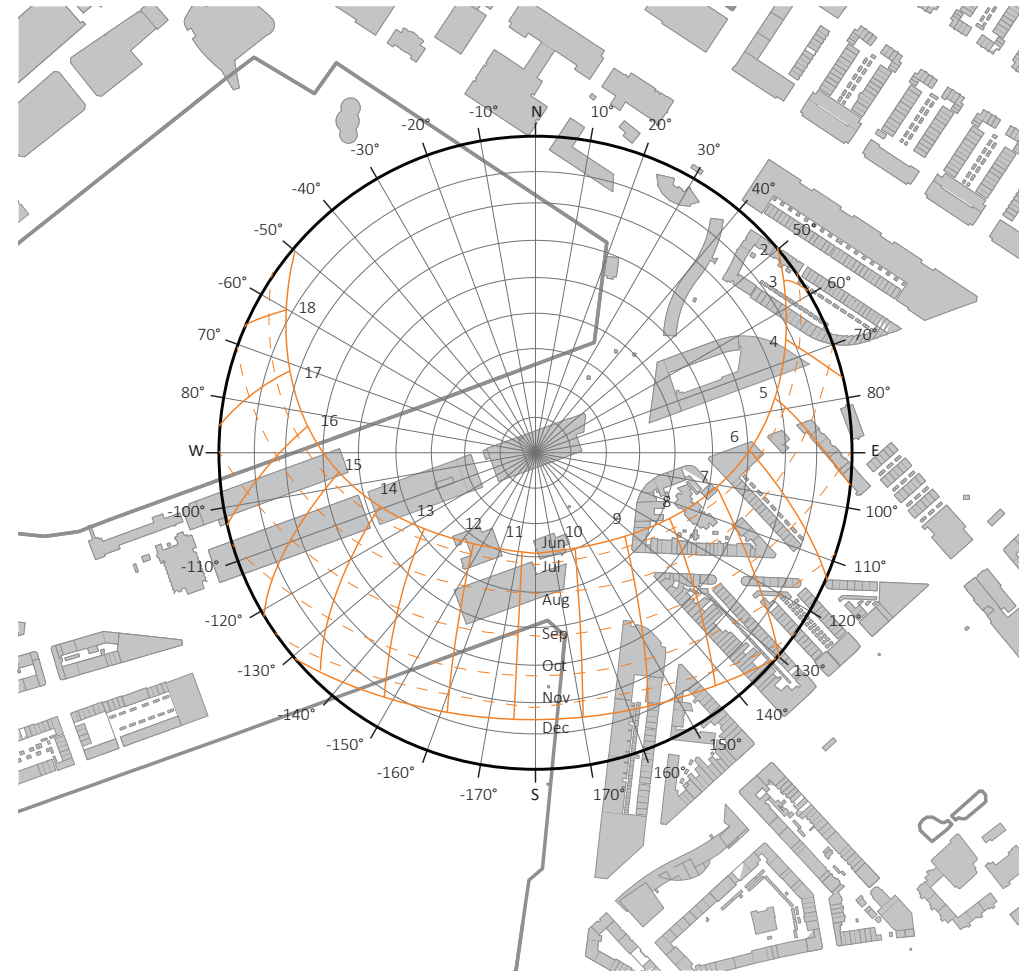
Coffee warehouse Santos



Wind direction (Windfinder, 2016)

Wind

The graphic shows that most wind comes out the south and south west. So those facades are mostly affected by not only wind but rain as well.



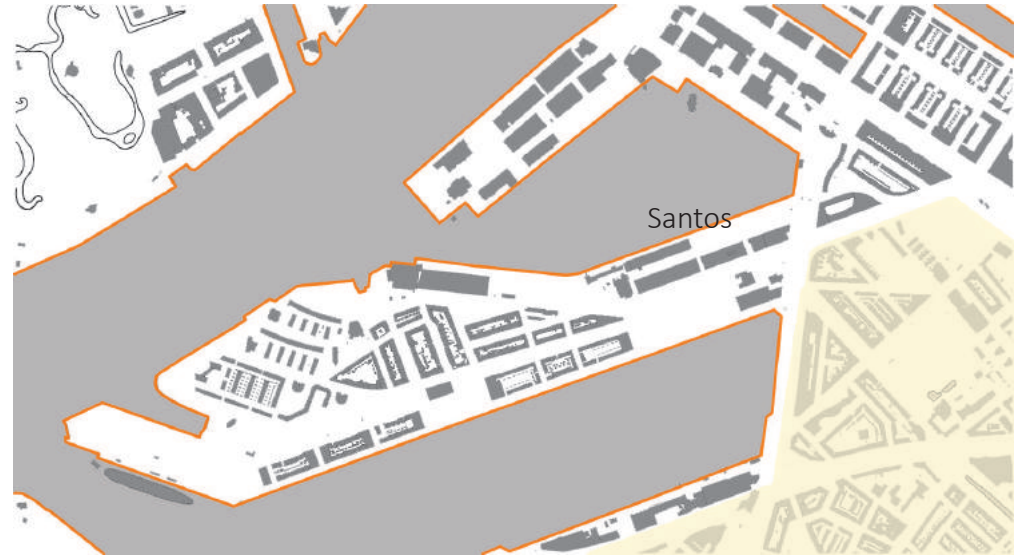
Sun path (Andrewmarch, 2016)

Sun

The sun path diagram explains the direction of the sun. It makes clear that the south facade get most sunlight, what is logical. The eastern facade gets the morning sun only during summer time and the western facade receives the sun during the afternoon and in the summer evening. The sun hit the north facade only during the evening in spring and summer.

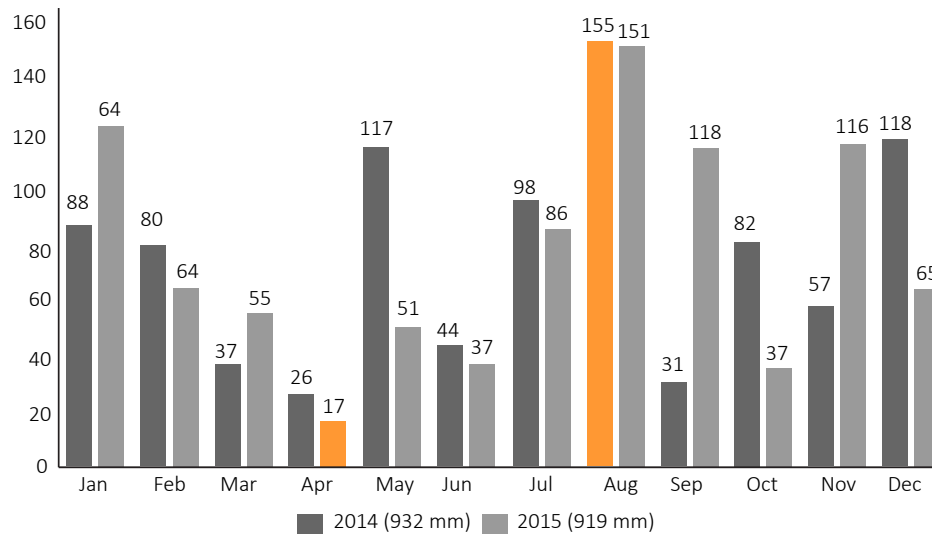


Greenery (Google Maps, 2016)

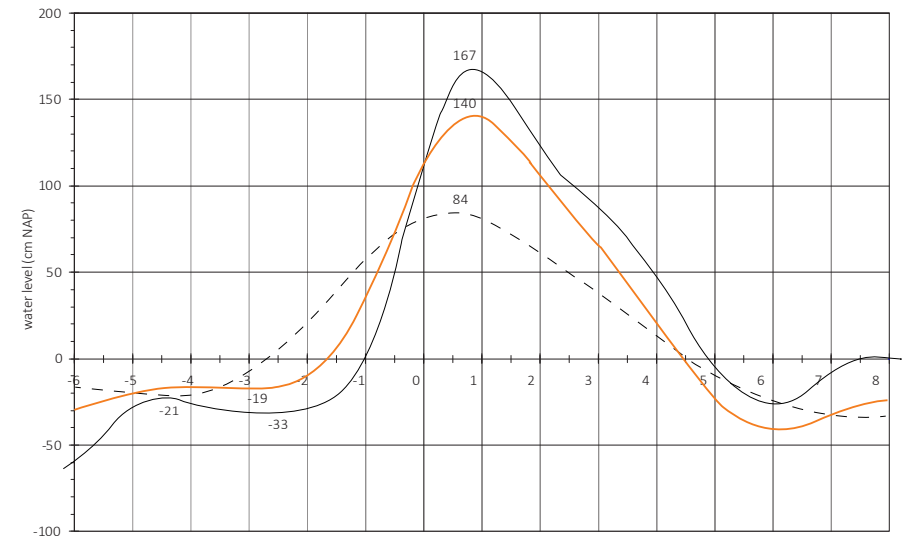


Inner (orange) and outer (yellow) dike area (Gemeente Rotterdam, 2016)

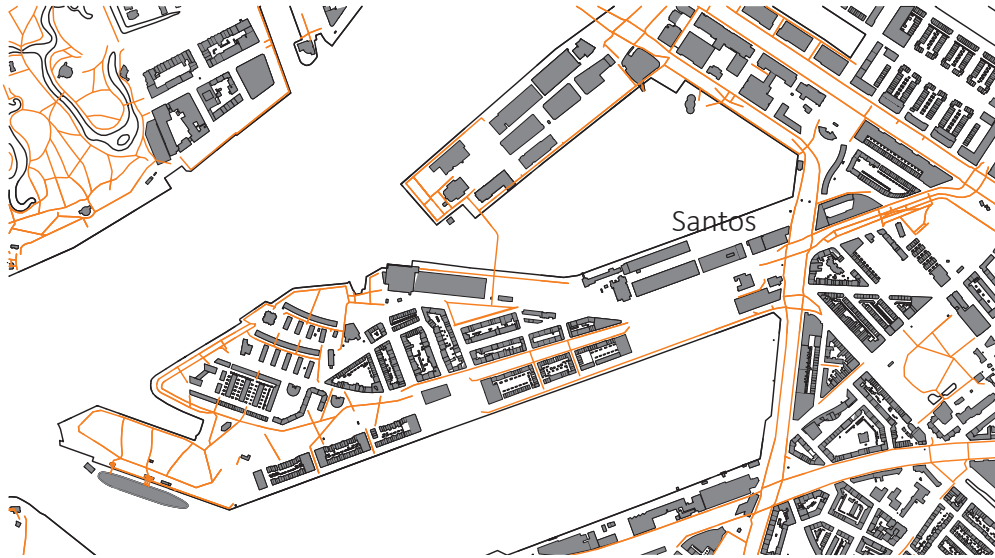
Rainfall (KNMI, 2016)



Water tides in the Maas (Port of Rotterdam, 2016)

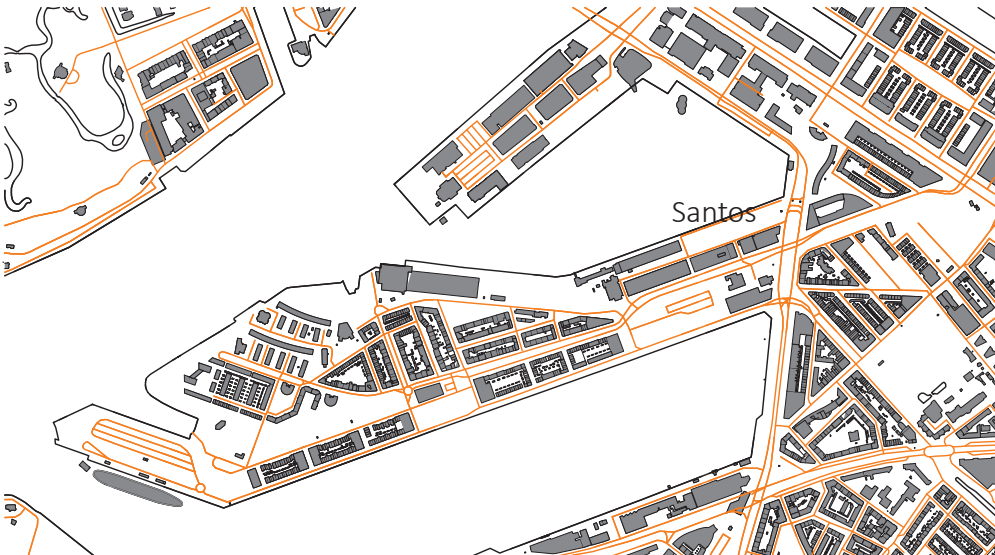


Connections and routes



Pedestrian and cycle route

The whole area of Katendrecht is well connected with the rest of Rotterdam for pedestrians and cyclists. It is possible to cycle the 3,6 kilometers from Santos to Rotterdam Centraal in 13 minutes or to walk 950 meters to the Wilhelminapier in 12 minutes.



Car route

Different roads makes it possible to come from Santos to the highway in 10 minutes. This is especially because of the Maashaven Oostzijde in front of the building and the Laan op Zuid.



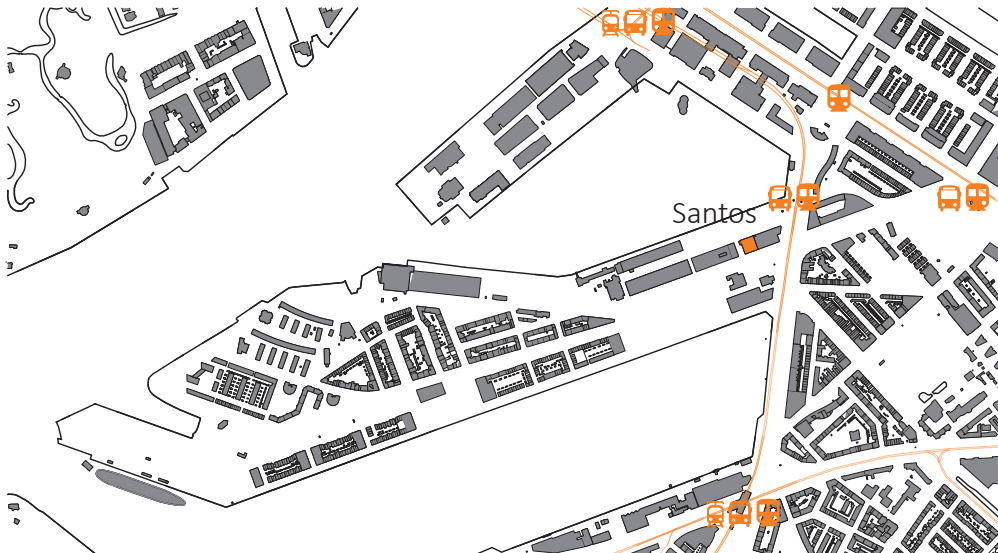
Traveling over or under water

Both the Maastunnel and the Erasmusbrug connects the south with the north of Rotterdam and are designed for pedestrians, cyclists and cars.

The waterbus stops at different locations in Rotterdam as Heijplaat-RDM, St. Jobshaven and the Erasmusbrug (Waterbus, 2016).

 Watertaxi

 Waterbus



Public transport

Close to the Santos warehouse is the metro station Rijnhaven with a busplatform as well. The Metro connects the area Sterrenkwartier in the south-west with Central Station Den Haag and passes along Rotterdam Centraal.

Bus 77 start at SS Rotterdam and stops on different places on Katendrecht to ends by Zuidplein. The second bus start at Rotterdam Centraal and ends in Honselersdijk, Flora Holland (RET, 2016).

 Bus

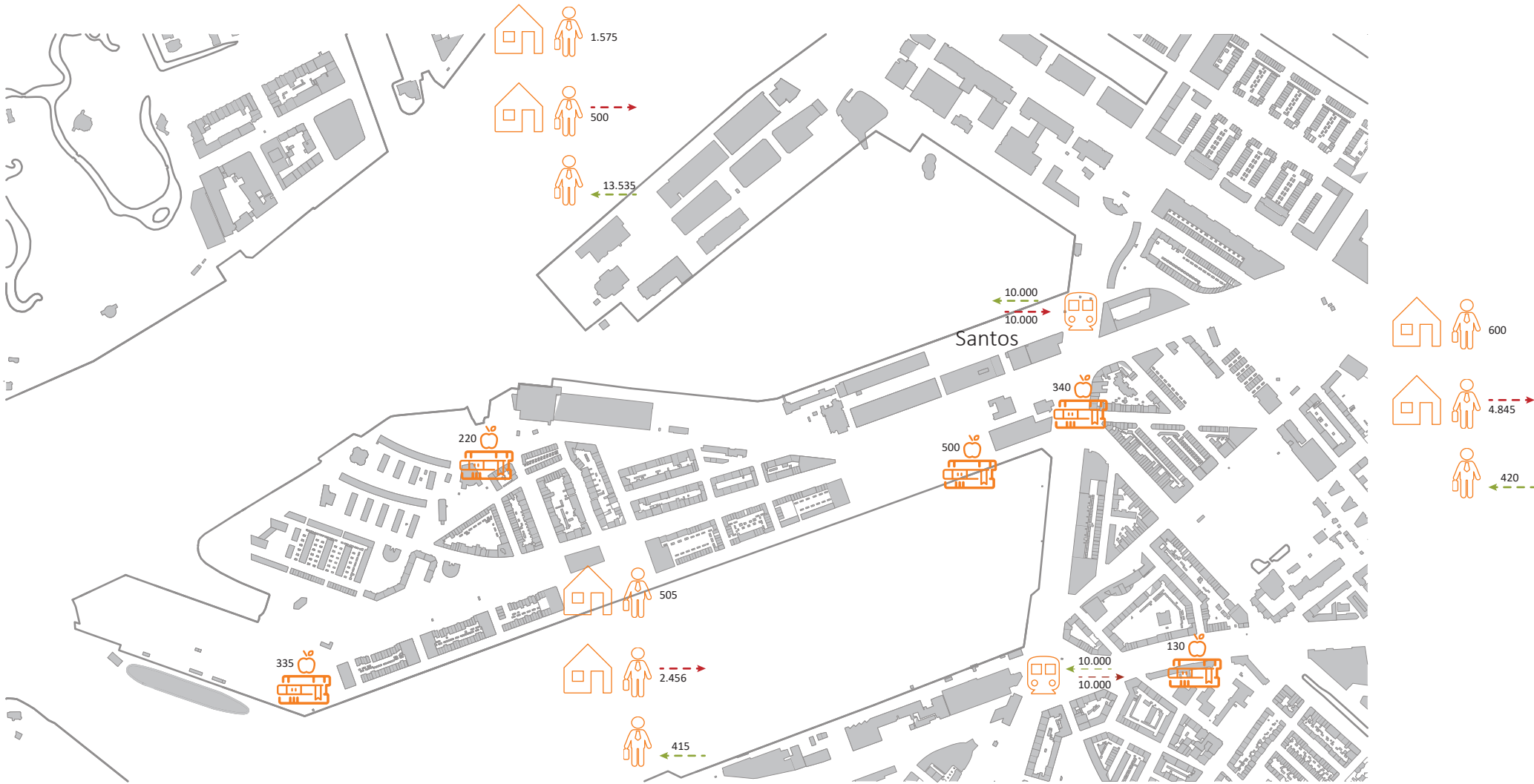
 Tram

 Train

Movements through the city

32

Coffee warehouse Santos



Movement flows Katendrecht (CBS, 2016)

The area around Katendrecht is crowded because of the mixed use as living, schools and work. Especially at the Wilhelminapier is a large amount of people, more than 13.500, which travels every day to this part of Rotterdam. Almost 1.600 people live and work on the Wilhelminapier.

On Katendrecht is it different for the reason that most people go away for work. 2.456 people who live on Katendrecht work outside this area and only 415 people come here to work.

The metro stations transport everyday 10.000 people who come and leave again for both the station of the Rijnhaven as the Maashaven.

Another important flow of people are the students. Every work day there are almost 1.400 students in Katendrecht.

Masterplan

34

Coffee warehouse Santos

LEGENDA

- Border area
- Municipality border

Functional structure

- Transformation into housing and urban economy
- Restructuring with port-related economy
- Improve port economy
- Transformation to education and creative activity
- Location floating buildings
- Location combination floating buildings and inland waterways
- Port economy

Spatial structure

- Highway
- Urban roads
- Local roads
- Metro
- Tram
- Railway
- Bridge for slow traffic
- New connection (bridge or tunnel)
- New access possibilities
- Upgrade to urban road
- Park & Ride location
- Metrostation
- High quality public transport
- Tram
- Connection inside and outside the dike for slow transport
- Bridge for slow transport
- Indication docks water transport until 2025

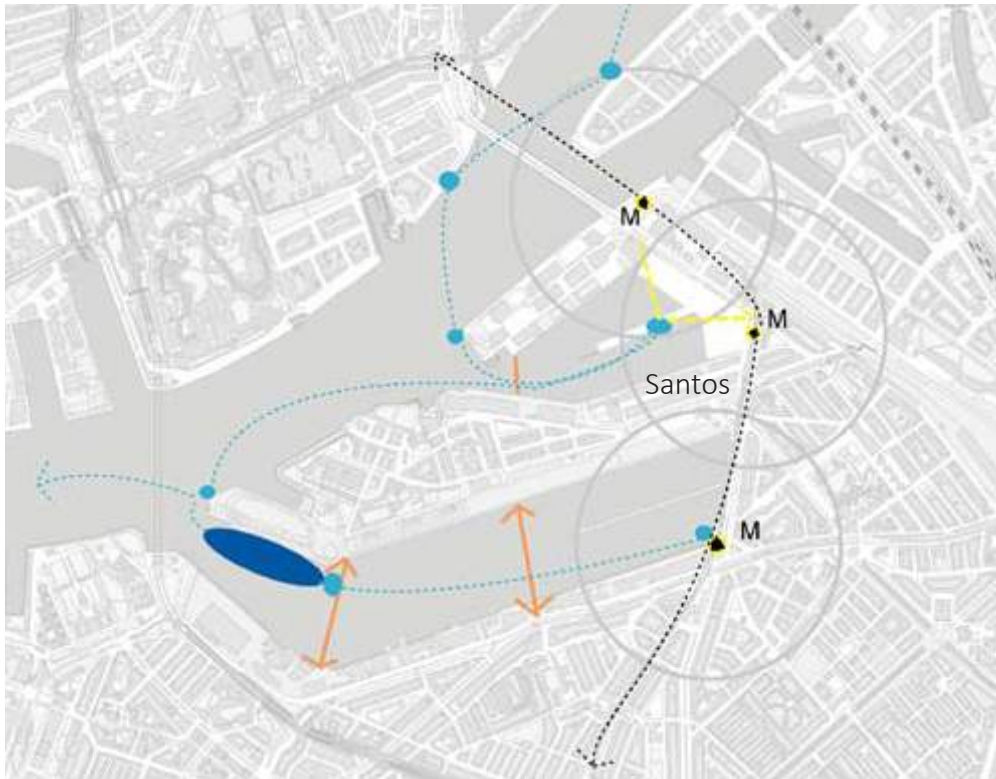
- Public dock
- Partly public dock
- Green dike
- River park or green area
- Sightlines
- Port panorama



Structural Concept Stadshavens 2025- 2040 (Gemeenteraad van Rotterdam, 2011)

Conditions Rijn-Maashaven till 2015

- Extend Brede Hilledijk
- Parking garage Rijnhaven (Park & Walk) in combination with upgrading the Postumalaan
- Construct Rijnhavenbrug (slow traffic connection)
- Create of public walking quays at the Maashaven Noordzijde and Rijnhaven Zuidzijde
- Dock for water transport by Katendrecht



Connections Rijn- en Maashaven by waterbus and future bridges over the Maashaven Concept (Stadshavens Rotterdam, 2009)

Conditions Rijn-Maashaven 2015- 2025

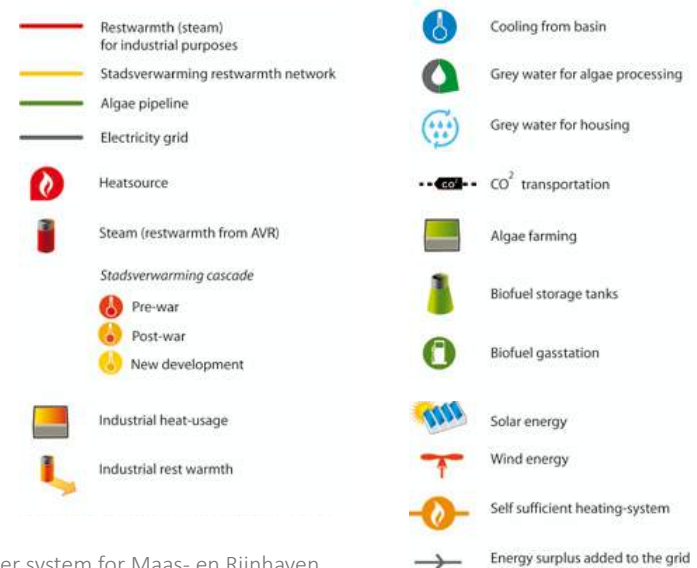
- Slow traffic connection over the Maashaven in the direction of Tarwewijk, Erasmusbrug en de docks of Katendrecht

Conditions Rijn-Maashaven after 2025

- Upgrad the profile of the Brieselaan and Doklaan to a suburban road
- construction public walking quays at the Maashaven Zuidzijde



Legenda



Power system for Maas- en Rijnhaven (Stadshavens Rotterdam, 2009)

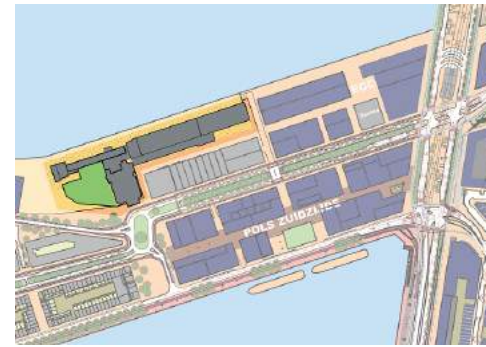
Bestemmingsplan

36

Coffee warehouse Santos



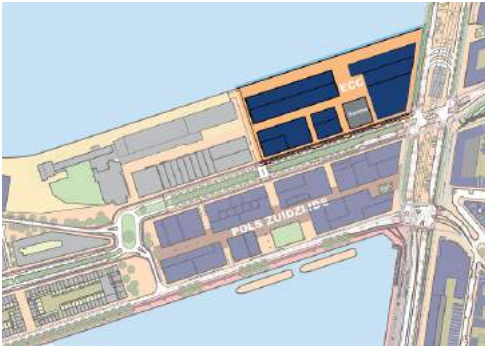
Masterplan Katendrecht (Gemeente Rotterdam, 2016)



This area is the site of the company Codrigo which will stay in the Polderdijk and can continue with its current operations. There is the possibility for expansion for this company on the side of the Rijnhaven.

The bestemmingsplan includes the opportunity to change the business destination in a mixed use "Gemengd- 3" with a maximum of 50.000 m² which allows:

- max. 300 homes (of around 150 m² each)
- max. 5.000 m² offices
- max. 5.000 m² social services
- max. 5.000 m² companies in categories 1 and 2.



The ECC will be developed in phases. The part that will be developed in the first phase has the destination of “Gemengd - 2” and includes the following program:

- max. 110 homes
- max 24.500 m² non living functions of which:
 - max 5.000 m² offices
 - max 3.000 m² companies
 - max 13.000 m² catering of which:
 - max 10.000 m² hotel
 - max 4.000 m² catering
 - max 7.000 m² retail

For the realization of the remaning phases is “Gemengd- 4” applied with the following program:

- max 490 homes
- max 24.500 m² non-living functions of which:
 - max 10.000 m² offices
 - max 7.000 m² companies
 - max 2.000 m² hospitality
 - max 2.000 m² retail
- max 7.500 m² society and culture and leisure, including:
 - max 7500 m² social facilities
 - max 2.500 m² culture and leisure

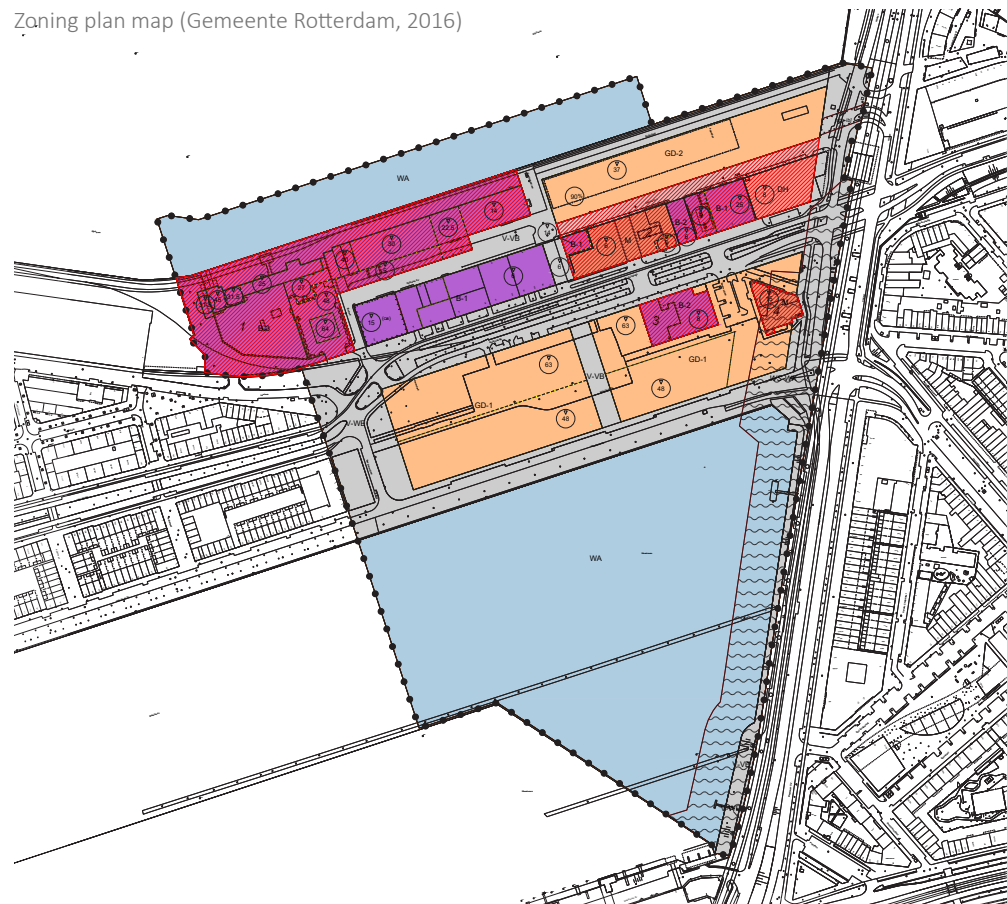




















This location is for “Gemengd- 1” with the program of:

- max 1.100 homes
- 50.000 m² non-living functions, of which:
 - max 5.000 m² offices
 - max 20.000 m² business category 1 and 2
 - max 1.500 m² catering
 - max 6.000 m² retail
 - max 20.000 m² social facilities and culture and leisure of which:
 - max 3.000 m² culture and leisure
 - max 20.000 m² social facilities

It is made possile to add another 5.000 m² of offices.

Zoning plan map (Gemeente Rotterdam, 2016)



- | | | | |
|-------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|----------------------|
|  | Business 1 |  | Modification area 1 |
|  | Business 2 |  | Modification area 2 |
|  | Business 3 |  | Modification area 3 |
|  | Retail |  | Modification area 4 |
|  | Mixed Use 1 |  | Function- casino |
|  | Mixed Use 2 |  | Planning area |
|  | Civic Amenities |  | Max. building height |
|  | Traffic- Destination |  | Max. built area |
|  | Traffic- Road traffic | | |
|  | Water | | |

Business 1

Business and their associated land use and work and amusement halls. Only up to and including business 2 are permitted.

Business 2

Business and their associated land use. Only up to and including business 3 are permitted.

Business 3

Business and their associated land use and a business residence with a maximum capacity of 500 m³ which must be directly accessible from the road. Only up to and including business 3 are permitted.

Retail

Retail with associated storage and administration spaces.

Mixed Use 1

Houses (max 1.100), offices, companies, hospitality, retail, catering, culture and entertainment, traffic and accommodation arrangements, public utilities, parking facilities (above or underground), facilities associated with the above functions as green, water and roads. Further details about the building rules are in 7.2 Bouwregels of the Bestemmingsplan.

Mixed Use 2

Houses (max 110), offices, companies, hospitality, retail, traffic and accommodation arrangements, parking facilities (above or underground), facilities associated with the above functions as green, water and roads. Further details about the building rules are in 7.2 Bouwregels of the Bestemmingsplan.

Civic Amenities

Education, religion, health care, social services and public services, with the associated yard and parking facilities (above or underground). Noise-sensitive functions are not allowed.

Traffic- Destination

Facilities for waling or playing and other vehicles. Greenery, water, Structures for small-scale public utilities, traffic and transport facilities and soundproof facilities. Further details about the building rules are in 10.2 Bouwregels of the Bestemmingsplan.

Traffic- Road traffic

Facilities for waling or playing and other vehicles. Greenery, water, Structures for small-scale public utilities, traffic and transport facilities and soundproof facilities. Further details about the building rules are in 11.2 Bouwregels of the Bestemmingsplan.

Water

All waterways and water traffic with related facilities.

Modification area 1

This part could be changed from “Bedrijf - 3” to “Gemengd - 3”. Further details are in chapter 15 of the Bestemmingsplan.

Modification area 2

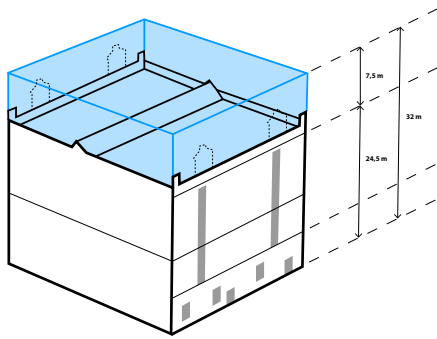
This part could be changed from “Bedrijf - 1”, “Bedrijf - 2”, “Detailhandel” and “Maatschappelijk” to “Gemengd - 4”. Further details are in chapter 16 of the Bestemmingsplan.

Modification area 3

This part could be changed from “Bedrijf - 2” to “Gemengd - 1”. Further details are in chapter 17 of the Bestemmingsplan.

Modification area 4

This part could be changed from “Maatschappelijk” to “Gemengd - 1”, “Verkeer - Wegverkeer” and “Waterstaat - Waterkering”. Further details are in chapter 18 of the Bestemmingsplan.



Maximum building height santos
(Gemeente Rotterdam, 2016)



Santos sqaure (Top010, 2016)

As a result of the new Bestemmingsplan offers new possibilities but also restrictions for the area of Katendrecht. The gas station Baris already disappeared and the building of the Jumbo supermarket will be demolished as well. This means that the Santos warehouse will be a free standing. In the current plans there is the idea for a open area in front of the old warehouse, named Santos sqaure.

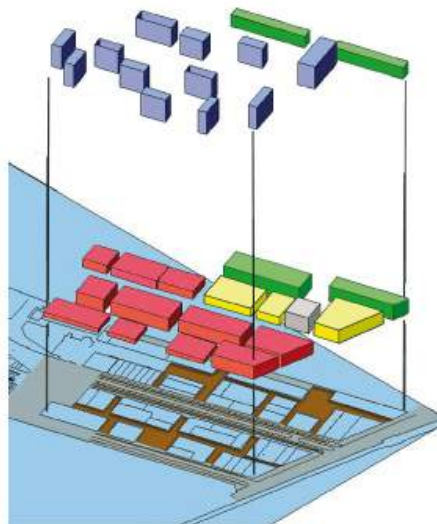
Restrictions for Santos is the new maximum height of 32 meters wich consist out of maximum two floors. This maximum length have probberly to do with the urban context. Santos will be the transition between the high rise and the lower buildings.

The car service companies / workshops are marked in the new plan as 'Bedrijf 2'. Environmental category is given to the Codrico company.

Other regulation concerns the rising water level since this can be 3,4 meters above NAP once every 4.000 years. In the current situation is two-thirds of Katendrecht between 3,45 and 4 meters above sea level so there is a minimum risk of flooding. Along the Rijnhaven and Maashaven is a risk of flooding of up to 0,75 meters.

In determining the potential consequences of flooding considers the safety risks, including possible victims and property damage. The flood in the areas outside the dikes are very slow and predictable. This means limited water depth and a small risk of drowning. An important risk to consider is the safety for human health when water comes into sewers. The result is that the sewage water will mix and come to the surface.

For safety reasons is by the Rijkswaterstaat and the municipality of Rotterdam a future ground level of 3,9 meters above NAP required. The minimum height for housing ground floors is 4,1 meter above NAP. Underground storage and parking garages which are accesible form the street must be waterproof up to 4,1 meter above NAP.



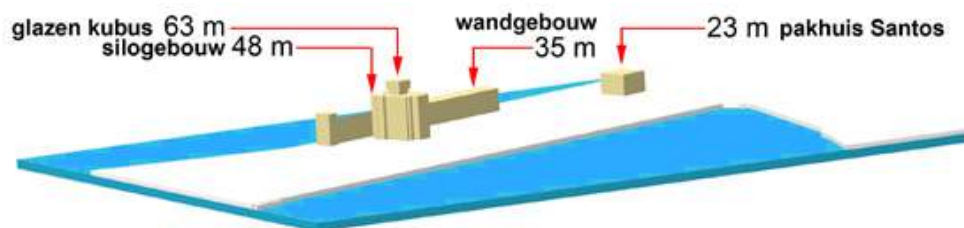
Accents: housing and offices

Basement: public services, apartments, town homes and offices

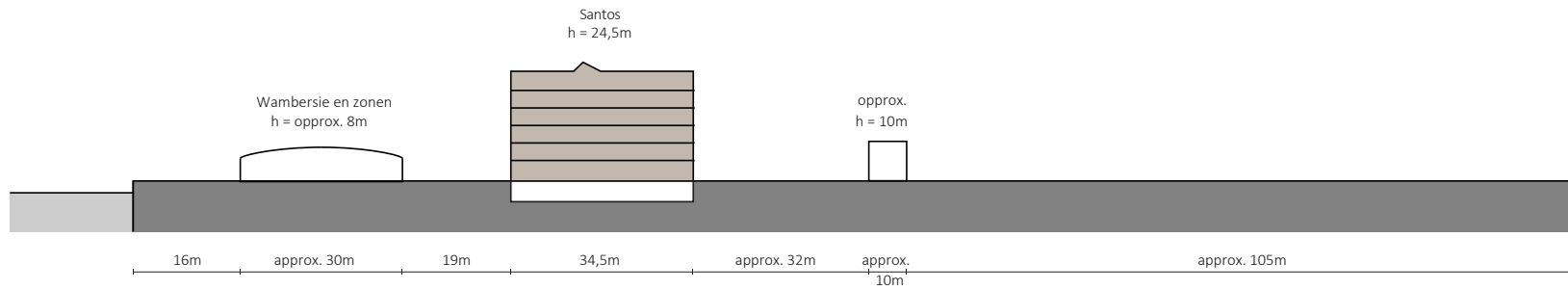
Plinth: facilities, work spaces, entrances, townhouses and space shipping

Urban fabric: intimate streets and wide outer ring

Construction strategy
(Gemeente Rotterdam, 2016)



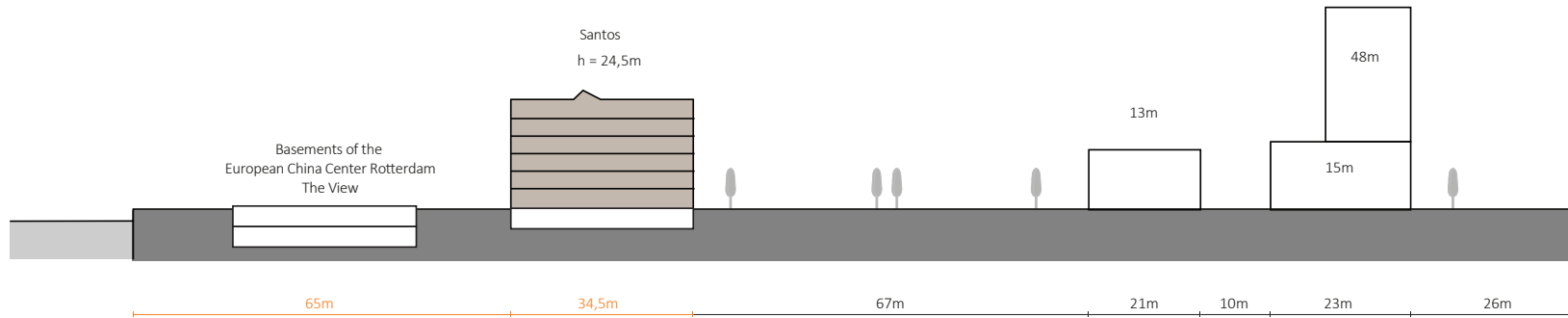
Prominent buildings
(Gemeente Rotterdam, 2016)



Past

Pre 1950

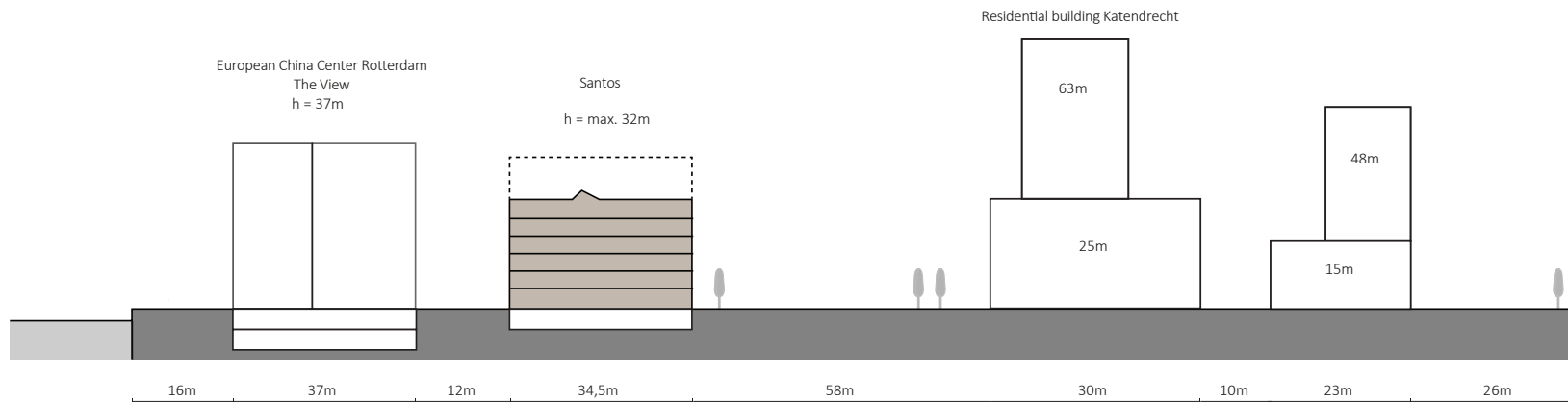
The area around the Santos warehouse was more open.



Present

2016

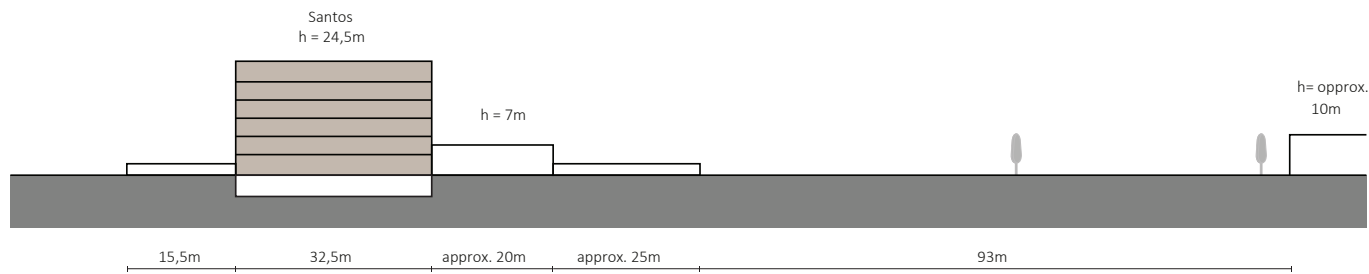
More building are complete around the warehouse. Santos is here still one of the largest buildings. The Brede Hildijk is a wide avenue.



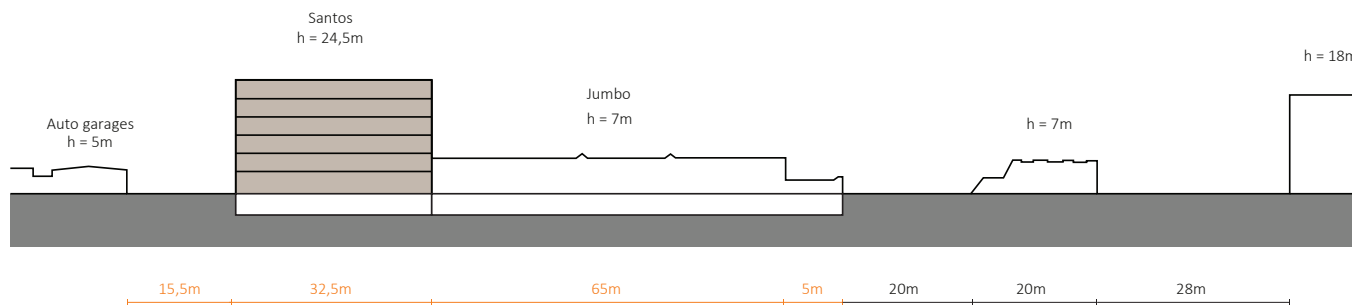
Future

post 2030

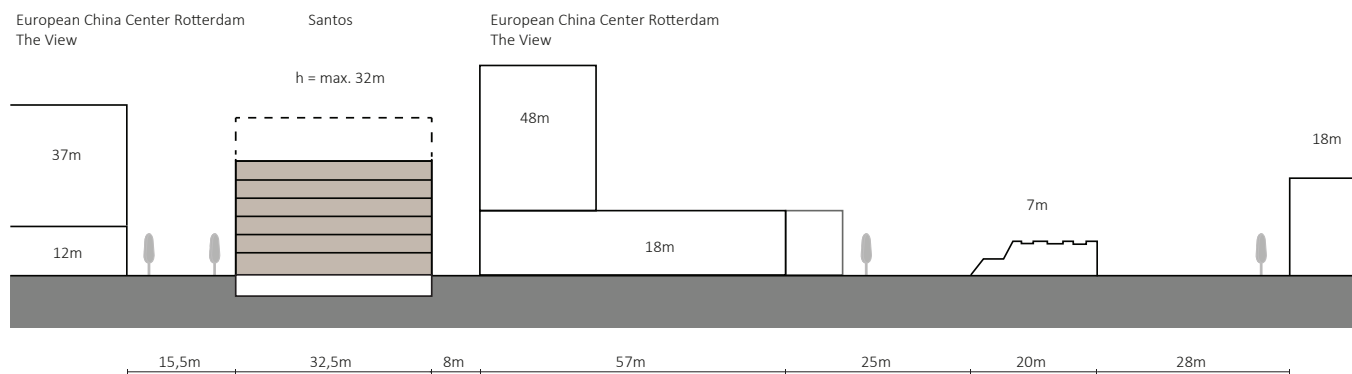
Santos stands alone again and can be build up to 32 meters. In this situation it is surrounded with higher buildings.



1946 (BbKdr, n.d.)



1951 (Serc, n.d.)

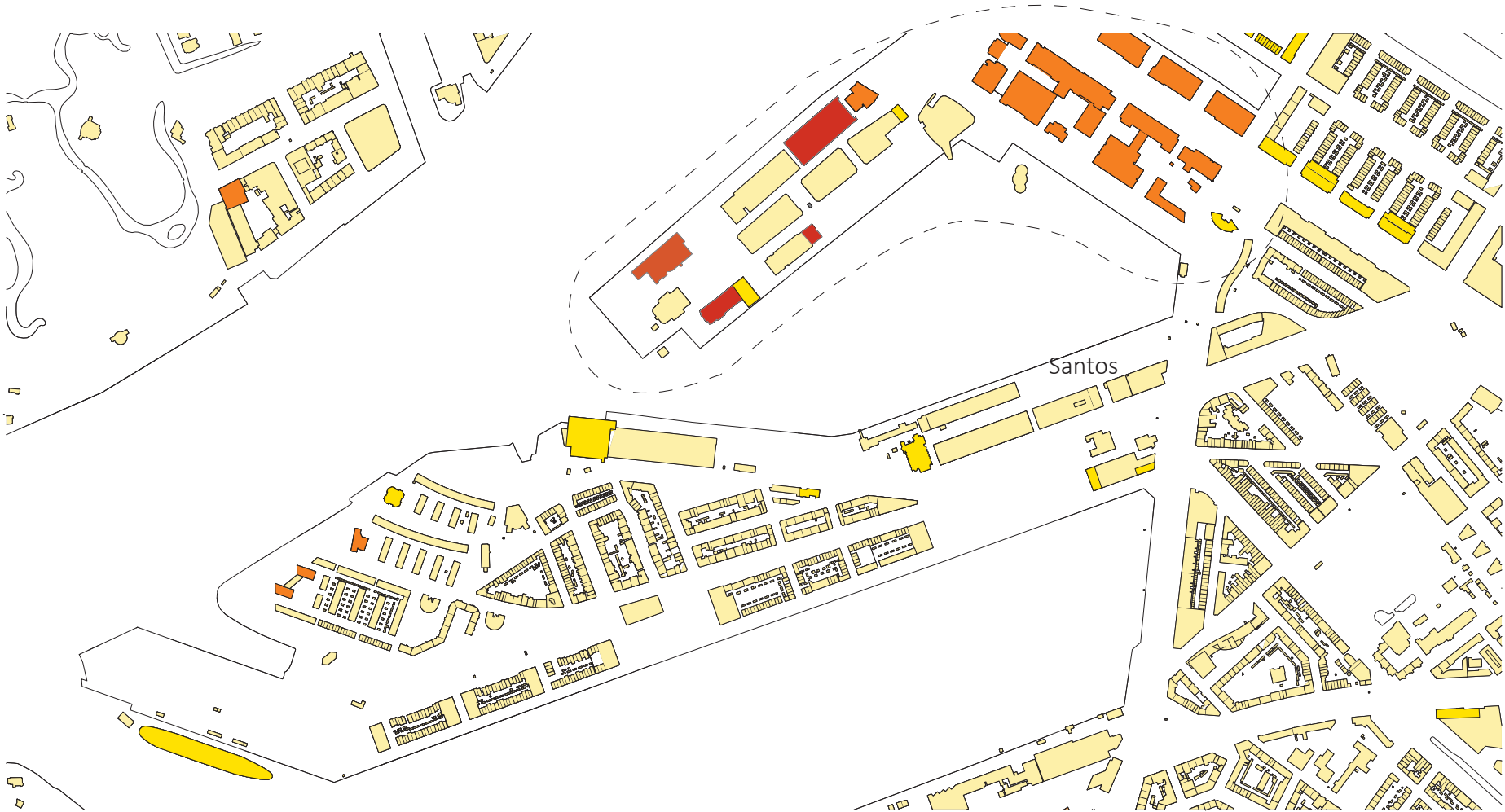


Future (The View Rotterdam, n.d.)

Building height

42

Coffee warehouse Santos



New highrise





1 Peter Stuyvesant Building

50.000 m² with mixed use of apartments, offices, restaurants and leisure facilities. The tower will be 165 to 180 meters high and the highest building on the Wilhelminapier (Top010, 2016)



4 The Sax residential towers Havana

The highest tower is 150 meters for 250 apartments. The second tower of 70 meters includes 110 houses. Both towers are connected with each other on 75 meters. The highest tower includes at the top level a hotel, restaurant, club and skybar. The building process started in 2018 and will be finished in 2020 (Top010, 2016).



6 Pakhuis Meesteren

The former warehouse will be transformed to a hotel with 230 rooms. The owner will be the Spanish company Room Mate Hotels. On the ground floor will be a supermarket with especially Spanish products. Two floors will be added on top and will be complete in 2016 (Top010, 2016).



5 Windwheel

The location is not for sure yet but this wheel should be 174 meters high and become an icon for sustainability. Besides sustainable energy there is also the possibility to enjoy the view, visit the restaurant or live inside the wheel (Top010, 2016).



3 Boston and Seattle towers

Two new residential towers with 220 apartments and a total height of 70 meters. In the five lower floors will be 1.500 m² of commercial space including culture, shops and restaurants, parking for residents and a two-storey underground public car park. Construction will begin in 2014, completion is expected in 2017 (Top010, 2016).



2 The View - European China Center Rotterdam

The design of Joke Vos architects includes two buildings with a total area of 45.000 m². On top of an underground car park is a mixed program of offices, apartments, a hotel, restaurants, a supermarket, Chinese specialty shops and conference and event facilities. The plinth is for commercial functions. In the west part of the building will be 110 apartments and in the other part the commercial functions (Top010, 2016).



7 Residential building Katendrecht

This new multifunctional building includes 350 rental apartments for graduated people who just found a job. The design is made by architect Mattijs Rijnboutt commissioned by IC Netherlands. Construction company Heijmans expects to start in 2017 and finish in October 2019.

The 50 meters high building includes also cooking area, flexible workspaces and a restaurant (Top010, 2016).



8 Groene kaap Katendrecht

In the period from 2017 to 2021 there will be 450 new dwellings realized for the middle and upper class.

The five towers includes 14 floors (Top010, 2016).



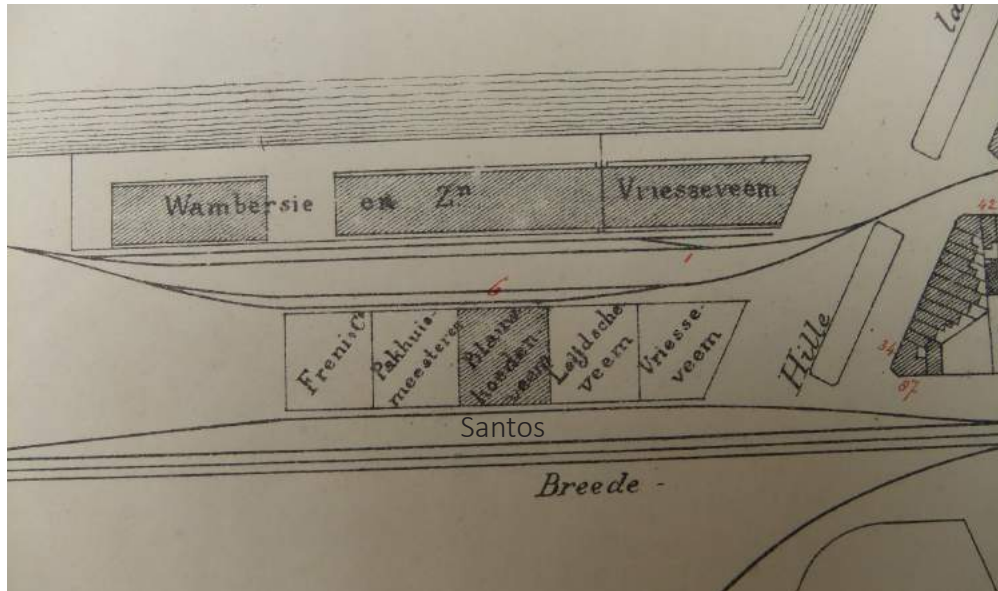
9 Fenix loods factory

The Fenixloodsen are a heritage project. On top of the existing building will be 212 loft homes which will be done in 2018. In the old building will be hospitality, retail, the new theater Walhalla, commercial spaces (Fenix Docks) and an indoor public car park with 227 parking spaces. The new height will be 44 meters (Top010, 2016).

New building height



Urban plot division



Unrealized plan around Santos, 1903 (BbKdr, n.d.)

Both maps on top of each other



Katendrecht, 2016 (Google Maps, 2016)

When the drawing of 1903 is placed on top of the one of 2016 it is clearly visible that the new building The View comes on the same place as the former Wambersie en zonen and Vriesseveem companies and have the same length. The new building is about seven meters wider than the original plan. The Jumbo supermarket and a part of the auto garages next to Santos have the same dimensions as the old map. This means that the urban context isn't changed in the last 100 years. The new buildings are built on top of the old ones.

THE BUILDING

Coffee warehouse Santos



A black and white photograph of a brick building facade. The building features two rows of arched windows. The top row has four windows, and the bottom row has four windows. The windows are framed by light-colored stone or concrete arches. The word "SANTOS" is mounted on the brick wall in large, white, three-dimensional letters. The letters are arranged in a slightly staggered fashion, with the 'S' being larger and more prominent. The brickwork is dark and textured. The overall composition is symmetrical and balanced.

SANTOS

Santos

The warehouse was built in the period 1901-1902 for the storage of coffee and is 24,5 meters high. That makes it in the past the tallest warehouse in Rotterdam with a very sophisticated loading and unloading system. The total surface area is 1140 m².

The contract to build the warehouse Santos was given a July 18, 1902 to contractor A.G. Sonder Meijer for Fl 214.346,-. The cost for the electrical lifting equipment and the electric light was Fl 25.259. According to the arrangements the building had to be completed on July 31, 1902 but because of delays the building was finished by October 4, 1902. In the fifties the warehouse was not profitable anymore for private use so the building was in the period 1954 – 1959 leased by the Royal Army. In 1959 there was a discussion by the management of selling the property. They kept the property based on the idea to rent it as a business space. This proved unsuccessful and the property was sold in 1975 to Handelsveem (Flexus AWC, 2011).

The building is located in the area named Polsgebied next to the Brede Hilledijk. This is the central access to Katendrecht.

Nowadays the building is abandoned except for the third floor which is in use for the promotion of the new building, The View- European China Center Rotterdam.



Santos from the Maashaven, 1956 (Serc, n.d.)



Map of ports around Katendrecht, 1965 (BbKdr, n.d.)



The train to transport the coffee further into the mainland, 1990 (Bedrijvenkdr, n.d.)

The Santos warehouse is named after the city Santos in Brazil and is very close to São Paulo. Brazil is the largest exporter in coffee with the most developed buying system. The coffee goes from planter to trader in the shipping ports. Thereout to the exporter who sells it to an importer of the consuming country. The importer brings it to a roaster who prepare it for consumption. Samples will be taken of the coffee that will be stored in the warehouses. Santos is until today important for coffee all over the world. Even the coffee is not produced there, it still named after this harbor (Cluesheet, n.d.).



Trade route between Rotterdam and Santos



Last samples are taking before export (Cluesheet, n.d.)



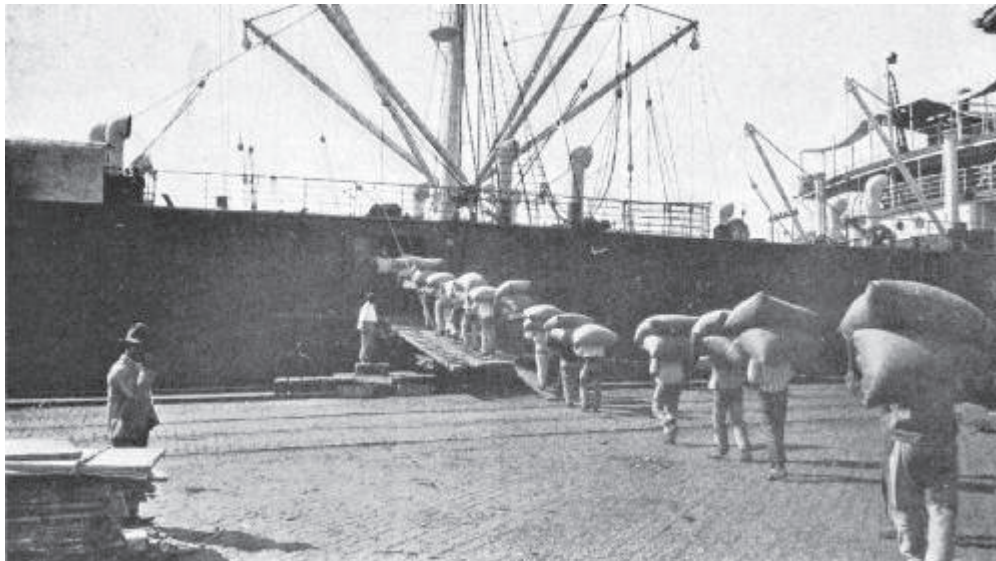
Stamping bags for export (Cluesheet, n.d.)



Interior of a Santos cleaning and grading warehouse where coffee is prepared for export (Cluesheet, n.d.)



Coffee production area around Santos



Loading the ships (Cluesheet, n.d.)

Brazil exports 32 million bags (1 bag = 60 kg of green coffee beans) which is a third of the world production. Most of it comes from the Brazilian state of Minas where 14 million bales are produced. For that there are over 4 million coffee plants in Brazil. For Belo Horizonte, coffee is one of the main export products; 800,000 people are involved in coffee farming, indirectly 300,000. Of the 853 cities in the state of Minas, there are 600 active in coffee cultivation. Brazil ensures 35% of the world production and half of this amount comes from the state of Minas (Koffiebean, 2016).



Unloading and loading in a coffee store (Cluesheet, n.d.)

Blaauwhoedenveem

The customer of the Santos warehouse was NV Blaauwhoedenveem and is now the biggest tank storage company in the world with 400 year of experience. Has been established through cooperation between Blaauwhoedenveem, Pakhuismeesteren van de Thee, Van Ommeren and Pakhoed. Blaauwhoedenveem already start with small activities in 1565 but the official founding date is 26 March 1616 in Amsterdam (Vopak, 2016). In those days the phenomenon of 'vemen' started. In those days the goods had to be unloaded from the ships and transported to the weight house and after to the warehouses. The person who carries the cargo of coffee, tea or tobacco are the carriers. A cooperation between those carriers was a storehouse what had the benefit of getting more work and security as insurance. To distinguish the different companies everybody who works for the same storehouse wear the same colored hat. This makes the red-head-storehouse, the white-head-

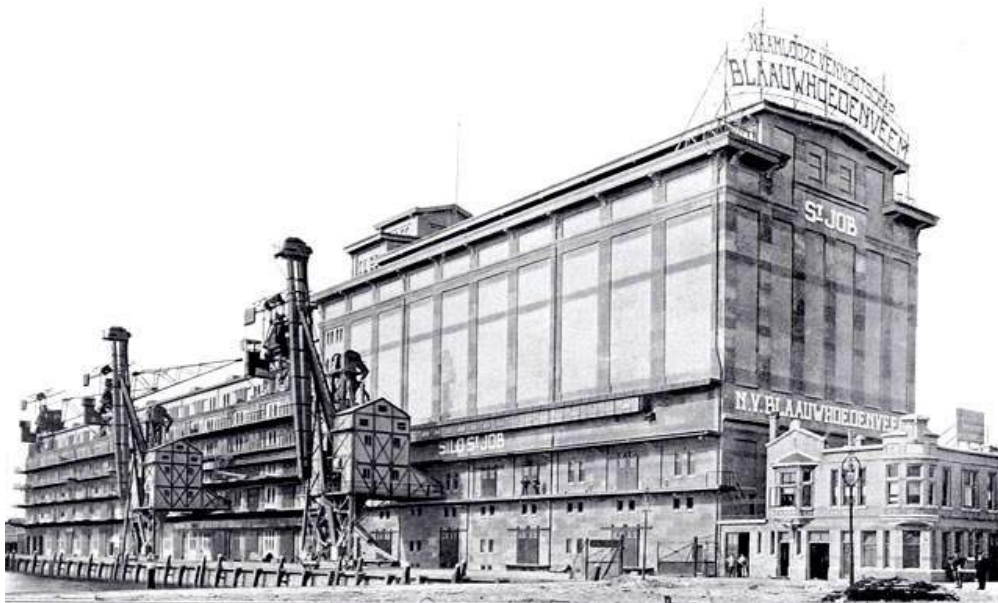
storehouse or the Blue-hat-storehouse (Blaauwhoedenveem).

Blaauwhoedenveem wanted to expand in 1870 outside of Amsterdam. In May 1878 branch was established in Rotterdam with the name 'Blaauwhoedenveem, firma Sterbe, Klyn en Co'. The company start together with 'NV Handelkade' with a new name, 'Naamloze Vennootschap Blaauwhoedenveem' in 1886. The new warehouses 'Scheepvaart, 'Handel' en 'Nijverheid' were built at the Wilhelminakade to storage oil, grease and margarine. In 1902 was the realisation of warehouse Santos for storage of coffee.

The company became bigger with a branch in Antwerp and a representative office in London 'Britisch Blaauwhoedenveem Ltd'. There was also a separate organisation called 'Maatschappij Koffiepellerij Blaauwhoedenveem' (Flexus AWC, 2011).

54

Coffee warehouse Santos



Warehouse St. Job (Skyscrapercity, n.d.)



Mechanised storage of tobacco at Amsterdam warehouse of Blaauwhoed, 1967 (Vopak, 2016)

Pakhuismeesteren



Pakhuismeesteren became in the sixties the largest company in Rotterdam (Vopak, 2016)

The founding of Pakhuismeesteren van de Thee was in 1818 for both the location Amsterdam as Rotterdam. P. Cate and Josua of Oak jr., Whose father was the founder of Pakhuismeesteren Tea started in 1828 Pakhuismeesteren van de Koffij. The company went bankrupt because they were dependent on one customer, namely the Nederlandsche Handel-Maatschappij (NHM), established and funded by King William I. At the moment that the NHM choose for the governmental warehouse it means the end of Pakhuismeesteren van de Koffij.

Pakhuismeesteren van de Thee in Amsterdam came up with the idea for a new warehouse named Pakhuismeesteren van de Rijst. They choose a new name for every new company to keep a pure name for the tea storage. Even this idea from 1850 never was conducted, it shows new potentials for the settlement in Rotterdam. They initiated a new warehouse for all the other goods. From 1850 they start to become well known.

Collaboration

In those days there was a major competition between in the harbour of Rotterdam. Despite of that a cooperation started between Blaauwhoedenveem, Handelsveem, Hollandsveem, Leydsche Veem, het Nederlandsche Veem, Vriesseveem and Pakhuismeesteren under the name NV Katoenveem on April 20, 1916. Economic reasons made this cooperation attractive because of the high premiums of the insures for the storage in separate warehouses. Because of the benefits Blaauwhoedenveem and Vriesseveem merged with a new name, Blaauwhoedenveem-Vriesseveem. In 1954 the name changed again into Blaauwhoed and they did more than just storage. Also warehouses were rebuilt and later leased to afford much profit. Pakhuismeesteren and Blaauwhoed merge to Pakhoed in 1967.

Ommeren

Jan van Ommeren was shipbroker and agent and forms the basis for the company. His son, Philippus, joined the family business but started his own company in 1839 called Phs. Van Ommeren. The firm was continued by his son in law and grandson.

The shipping company had some hard times because of the wrong decisions. It was the time of the developing of steam ships but van Ommeren remain to sailing ships. When the Suez Canal was opened it was the final breakthrough of those new steam ships. Between 1872 and 1874 the ships were be disposed. In 1910 the strategy changed in tank storage because of the beliefs of Henri Deterding. He was CEO of Royal Oil, the predecessor of Royal Dutch/ Shell. Van Ommeren started on his own the company Matex what later becomes Nieuwe Matex and storage vegetable oils and fats.



Amatex with 500.000 cubic meters in Amsterdam, 1950 (Vopak, 2016)

1818

The founding of Pakhuismeesteren van de Thee in Amsterdam and Rotterdam.

1902

The realisation of warehouse Santos for storage of coffee.

1565

Blaauwhoedenveem start with small acitvties

1616

official founding date is 26 March 1616 in Amsterdam

1878

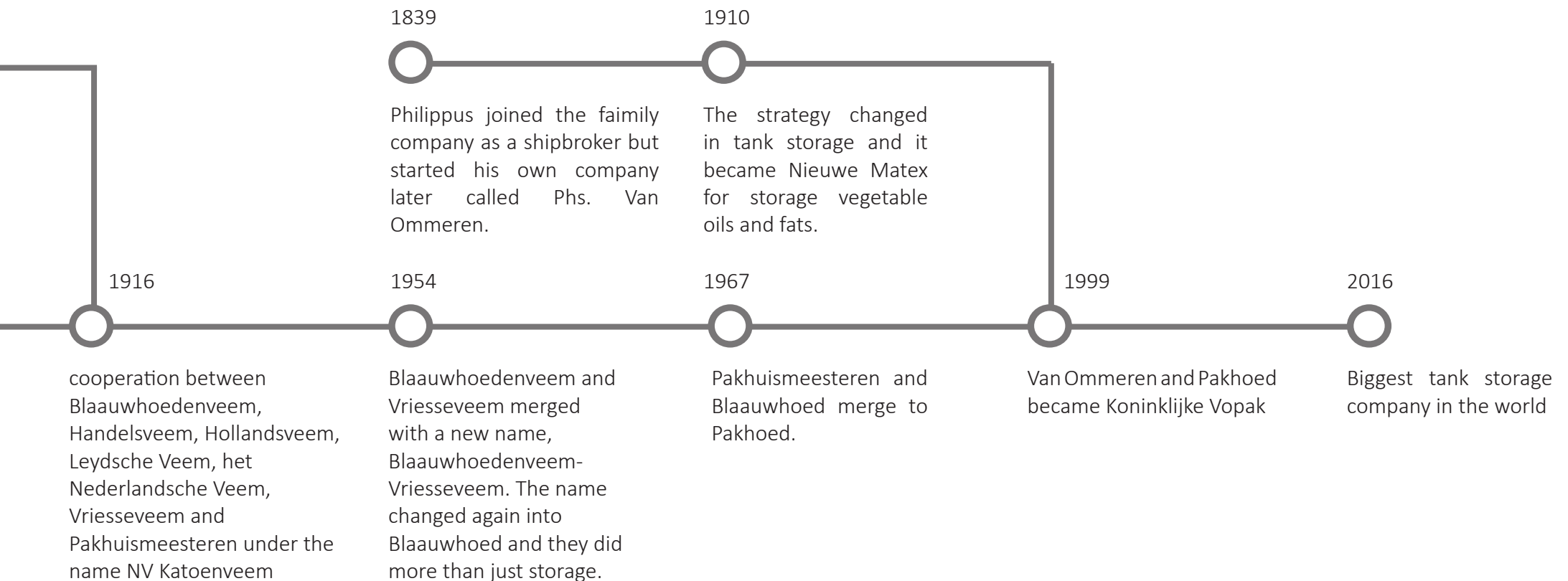
The branch was established in Rotterdam with the name 'Blaauwhoedenveem, firma Sterbe, Klyn en Co'.

1886

Blaauwhoedenveem start with 'NV Handelskade' with a new name, 'Naamloze Vennootschap Blaauwhoedenveem'

On June 30, 1862 an American ship was entering the port of Rotterdam. That happened quite often, but this ship had a special cargo: barrels of petroleum. The first oil cargo in Rotterdam was stored by Vopak precursor Pakhuismeesteren. At that time the danger and characteristics of this new estate were hardly known because only a few years earlier was the first modern oil drilling in Canada and America. Thereby the cargo was stored in the 150 years old warehouse called East India House on the busy Boomjeskade in the city centre. Shortly after the first oil shipment stories from America reported about explosions. After consultation with the city council Parkmeesteren build outside the city on the south of the river a new building. In 1865 the first pilots specially developed for oil were completed and would be the future core business of Vopak.

In 1999 Van Ommeren and Pakhoed came to an agreement to work together and start a new company called Koninklijke Vopak. This worldwide company is still in development and the is the Gas Access To Europe (Gate) terminal in the harbour of Rotterdam. This is a result of cooperation between Gasunie and Vopak to storage liquid gas. They assumes that the Netherlands will run out of gas in the near future and will became and importer. The terminal has a storage capacity of twelve billion cubic meters, spread over three tanks. In the future, may be added a fourth terminal to create a key function for the gas industry in Europe (Vopak, 2016).



Properties of Blaauwhoedenveem

58

Coffee warehouse Santos





1. Leuvenhaven

Blaauwhoedenveem bought in 1885 warehouses in the Leuvenhaven. This includes an office as well (Groenendijk, 2008).



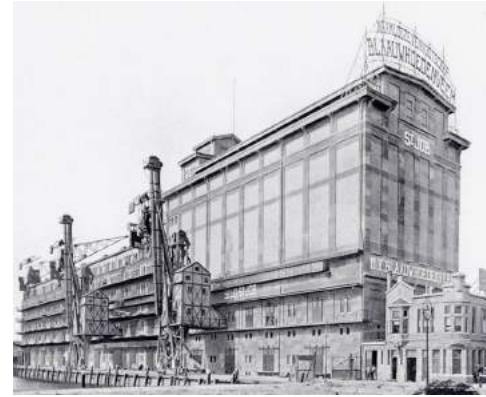
2. Westelijk Handelsterrein

Blaauwhoedenveem was involved in the realization of the Westelijk Handelsterrein. During the construction in 1891, nine large and nine smaller warehouse spaces were rented (Groenendijk, 2008).



3. Wilhelminakade

A warehouse on the Wilhelminakade in was commissioned in 1893 (Groenendijk, 2008).



4. St. Jobsveem

The storage of cereals, beans, coffee and other cargo was in the St. Jobsveem from 1912 (Cobouw, 2008).



5. Katoenveem

Was built in 1920 for the supply and storage of cotton (Architectuur in Rotterdam, n.d.).



6. De Herder

This building was a combination of an office and warehouse from 1947 (Architectuurgids, n.d.).

The architects

The design of Santos is made by two architects: J.P. Stok and J.J. Kanters. There must have been a project-based partnership because they never worked for the same office and there are no other buildings who relates them to each other. Stok have designed several villas and houses but his main focus were buildings for the harbour, industry and trade. J.J. Kanters also designed mostly for the harbour and was for some time even the house architect of Blaauwhoedenveem. Kanters probably received the commission for the reason that he also designed several warehouses on the Wilhelminakade. Kanters added Stok to the team for the design of the façade. Kanters oeuvre is characterized by a high degree of new objectivity, while Stok is more focused on design and the architectural debate of the period. Both architects knew each other undoubtedly through participation in the Rotterdam professional association 'Bouwkunst en Vriendschap'.



J.J. Kanters (Groenendijk, 2008)

1869



Jan Jeronimus Kanters

1890



member of Bouwkunst en Vriendschap

from 1912



Worked closely together with the Waning firm which were specialized in concrete products and concrete structure.

1920



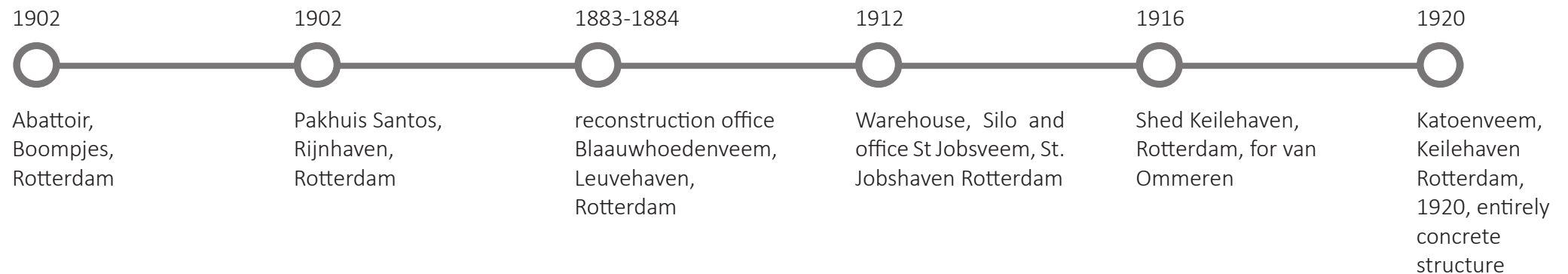
Death of Jan Jeronimus Kanters

The Kanters family

John Jerome Kanters was the second son of Theodore Lourens Kanters, a Rotterdam architect / contractor. Theodore Kanters named his company T.L. Kanters en Zonen, architecten en timmerlieden from 1895. Kanters senior was member of the Amsterdam Society for the Promotion of Architecture and also member of the famous society Architectura et Amicitia. In 1885 he was co-founder of the Rotterdam architect association Labor et Studium and was later renamed to Bouwkunst en Vriendschap. This association played a major role in the innovations in Rotterdam and was most of the influential architectural associations in the Netherlands which was primarily known for its progressive nature.

The relationship with Blaauwhoedenveem

The three generations of the Kanters family can be seen as the main architects of Blaauwhoedenveem, a relationship that probably started through the renovation of the Queen's Hotel to the Leuvehaven which was original designed by the Rotterdam architect van Spyck. The Kanters company was for this work the contractor. In August 1891 they received a new commission for a feasibility study for a new shed and warehouse on the side of the Wilhelminakade. In 1894 they also make the design for it. T.L. Kanters desined in the same year also the Westelijk Handelsterrein on the Van Vollenhovenstraat for Blaauwhoedenveem (Flexus AWC, 2011).



Jan Jeronimus Kanters

Jan was very influenced by the work of his father. He also choose for the profession as an architect an joined the professional associations. His father nominated him in 1890 as a member of Bouwkunst en Vriendschap. The work of Jan was, just as that of stok, already presented in 1903 at an exhibition of 43 architects.

Jan Kanters has especially built for the industry and from 1902 designed already many buildings. Since 1912 he worked closely together with the Waning firm which were specialized in concrete products and concrete structure. Kanters designed a concrete part for the Katoenveem warehouse to the Keilehaven in Rotterdam in 1920. He was unable to continue his career because he died the same year so his architect profession was taken over by his oldest son Philipp Pierre Kanters which also realized different industrial buildings.

The most famous building from Jan is the St. Jobsveem at the Sint Jobshaven in Rotterdam. This enormous building is completed in 1912 and was commissioned by Blaauwhoedenveem. The silo building was mainly build out of concrete. The architecture of the façade is more rational organized than the facades of the Santos warehouse (Flexus AWC, 2011).



St Job current situation (Rotterdam woont, 2016)

St. Job original situation (Wikipedia, 2015)



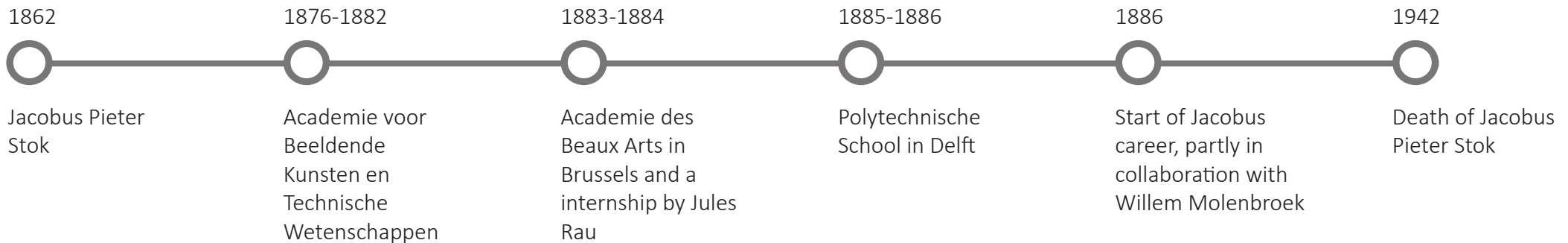
Jacobus Pieter Stok Willemszoon (1862-1942) designed in his career with a great diversity even a church and schools but most of his work has been lost in the bombing in May 1940. Jacobus fathers, Wilim Stok senior, was an architect as well and worked for the office of ingenieur Cornelis Outshoorn in the middle of the nineteenth century. One of the design of this company is the first Rotterdam train station in 1857. Well known designs of Stok senior are a house (1878) and a monumental panorama building (1881) both in Rotterdam. Jacobus younger brother Willem junior studied architecture as well at the Rotterdamse Academie and later at the Plythechnische School in Delft. After some abroad experience he returned to Rotterdam as dealer in construction materials and to work together with his brother. This was until 1888, after he went to Dordrecht where he, Van de Kaa and Reus launched an architectural firm. In 1919 junior went back to Den Haag where he start his own office. There are only two well know design, the theaters in Gouda (1913) and Alkmaar (1916).



J.P. Stok (Groenendijk, 2008)

Jacobus started his study at the Academie voor Beeldende Kunsten en Technische Wetenschappen (1876-1882). After he went fort two years to Brussels for the Academie des Beaux Arts and had an internship by the belgium architect Jules Rau. The next two years Jacobus studied at the Polytechnische School in Delft.

Jacobus begon his career and after a few designs, some in collaboration with Willem Molenbroek, in Neo-Renaissance style Jacobus started his own office in Rotterdam. In the first few years the Stok brothers worked together till 1888. He received his first important assignment form the Lammings & Sons firm in 1889 to build a factory and office building. In 1914 he collaborate with G.Diehl under the name Bouwkundig Bureau J.P. Stok Wzn. During this collaboration were office Scheldt, the villa in Honingen, office SHV and the Rotterdam Bank Association designed (Flexus AWC, 2011).



Influences

Jacobus was trained by different persons on different places such as the Belgian capital. In the first period of his professional career he designed buildings in the Dutch Neo-Renaissance style. During the nineties there were changes in Dutch architecture thank to the influence of Semper, Viollet-Le-Duc, Pugin, Crane and Morris who express strong doubts about the historic architecture styles. The essence become more important and a architecture style of new and existing elements started. The Art Nouveau started in Belgium and later in Den Haag and Rotterdam. Stok was sensitive for this new influences and designed a house to the Westplein not anymore in the Neo-Renaissance but with more international, historicizing 'chateau-style'. Those where very popular among some American architects as well.

In the years 1896-1898 there was a collaboration with Henri Evers for the design of the Remonstrante Kerk on the Westersingel. Evers had a major influence on Stok because he was not only a theoretical teacher but also head of the architecture department of the academy Rotterdam and president of the association Bouwkunst en Vriendschap. He was a architect with international

experience and had a great influence on the architectural debate in Rotterdam. Important to him was the knowledge of division, conception and composition, sense of proportion, harmony of form and color, knowledge and construction. Good architecture have an honest expression, the building must express itself. A church is not a town hall, and a courthouse is not a factory. The basis for this was according to Evers in consistency between the plan developed for the requirements of the program, and facade arrangement, the two main components of an architectural composition. He argued that a various mix of architectural styles was required to achieve.

Stok experiment during this time with arches, the American neoromanesque' style and the Art Nouveau in for instance the ironwork of the railings and the window layouts. He also was interested in the Rationalism of Berlage.

In the last years of his career Stok designed with a greater simplicity and in a more rational form. Those grain silos express theme self with a generous of concrete, their size and a very simple but powerful design (Flexus AWC, 2011).

1888



Building for the Louisa-
stichting aan de Balilaan,
together with Willem Stok,
Den Haag

1893



Factory Fabriek Gobah
aan de Prins Hendrikkade
Rotterdam

1898



Warehouse for v.d. Lugt
& Zn company, Prins
Hendrikkade Rotterdam,

1654



Weaving factory and boiler
house of the Royal Tapestry
Factory "Werklust 'for
the firm W.Stevens and Zn,
Lage Oostzeedijk Rotterdam

1680

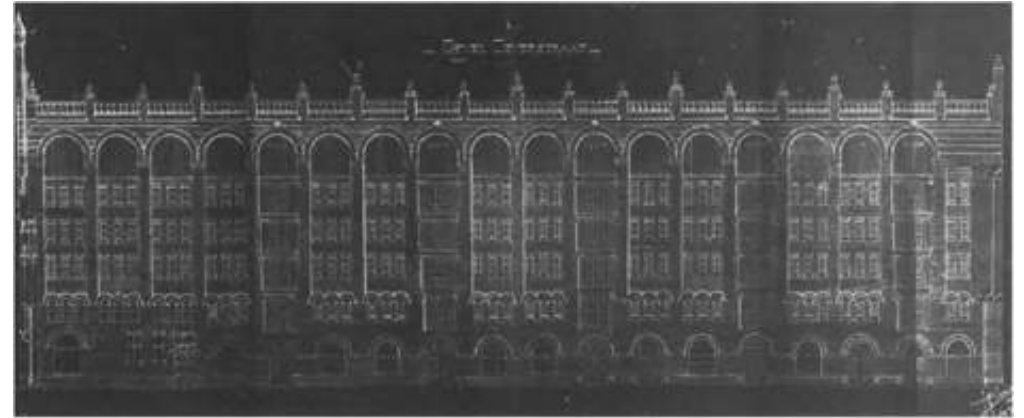


Weaving factory and boiler
house of the Royal Tapestry
Factory "Werklust 'for
the firm W.Stevens and Zn,
Lage Oostzeedijk Rotterdam

To get a better understanding of the design of Santos it is interesting to see the projects shortly before. An important work that represents a direct relationship with the New York School and that had the same function as Santos, is a warehouse to the Prince Hendrikkade in Rotterdam. It was 1898 when Stok designed for the company v.d. Lugt a huge warehouse. The façade was inspired on a design of another warehouse known as the American 'arcaded building' in Duane Street New York designed by Cook & Babb. The façade of the v.d. Lugt warehouse was from bottom to top divided in three parts: a plinth, central zone with arches and windows and an attice zone. The most dominated part are the monumental arches, as well as the warehouse at Duane Street, but was much more vertical and with a much flatter façade. This results in a very powerful mass and gave expression to the use of a warehouse. The loading and unloading doors are with less details and is properly by the influences of Berlage. The 26,5 meters high, 21 meters wide and 95 meters long building burned down after four years.

Other works of Stok from this period are several store houses in Rotterdam, a

large office and storage building next to the river Maas, an orphanage in Den Haag and a number of industrial buildings in Rotterdam. All these buildings express a rich decorative façade with influences of the American school as the Art Nouveau. The façade consists out of natural stone, patterns and brickwork (Flexus AWC, 2011).



1902



Pakhuis Santos, Rijnhaven,
Rotterdam

1907



Station Hofplein,
Rotterdam

1910



Graansilo der Graansilo-
Maatschappij, Maashaven,
Rotterdam

1912



Office for Nievelt-Goudriaan
for Nievelt-Goudriaan,
Rotterdam

Changes through time

The first escalator

14 April 1900

The first escalator is shown at the World Exhibition in Paris (Nu eens, 2016).

The first motorized plane

16 september 1904

The Wright brothers were the first in the world who make a successful flight in a motorized airplane (Nu eens, 2016).

The first electric train

1 oktober 1908

the first electric train ran in the Netherlands.
The train went from Rotterdam Hofplein to Voorburg and Leidschendam (Nu eens, 2016).

The first flight oversea

24 juli 1909

In 1909, Louis Bleriot was the first who fly across the sea. 27 minutes after leaving France he lands safely on the other side in Britain (Nu eens, 2016).

1900 - 1910

Opening of the Paris Metro

19 juli 1900

The first subway line was put into operation. The underground of New York comes four years later. That is the first 15-km-long subway into service in October 1904 (Nu eens, 2016).

De woningwet

2 August 1901

The main purpose of this law was to promote public health by improving the living conditions. Buildings must have the minimum quality requirements (NVDO, 2016).

Architectural styles

1890- 1910

Art nouveau,
Catalan Modernism

from c. 1900

Secession

From 1898

Tuinstadbeweging

1905- 1914

Um 1800 (Wikipedia, 2016)

National rail time

1 mei 1909

In the 19th century each city in the Netherlands had its own solar time. As the sun rises in the east, for example, was in Nijmegen 10 minutes later than in Rotterdam. Not really useful to run the trains on time.

Attempts to have a common time always failed. By a merger between two Dutch railway companies and the increase of international trains made the Amsterdam time the new national time (Nu eens, 2016).

Europe's new eastern border

31 December 2007

A lot of new countries joined the European Union in 2004. Nine of these countries are at the end of 2007 also included in the Schengen zone.

New 'Schengen' countries are Estonia, Latvia, Lithuania, Czech Republic, Slovakia, Hungary, Poland, Slovenia and Malta.

The World Heritage List

1 August 2010

The Amsterdam Canal has been added to the World Heritage List of the United Nations. The 17th century canal ring is according to the UN a cultural location with an exceptional value.

Brexit

23 June 2016

Brexit is a composition of 'Britain' and 'exit'. The term refers to the departure of the United Kingdom (UK) from the European Union.

On the referendum organized by the British Parliament voted 51,9 % for retirement.

Immigrants

5 October 2016

The Italian coast guard saved 4.600 immigrants from the sea close to the coast of Libya. Italy conducted over more than thirty rescue missions. In the past two days more than 10.000 people have been rescued from the sea (ANP, 2016).

2006 - 2016

Netherlands become bigger

11 November 2009

The 2nd Maasvlakte near the coast of Rotterdam serves as an extension of the port area. The new 2.000 hectares were completed in 2013.

American forces

31 October 2011

The United States plans to strengthen its military presence in the Middle East, after US troops were pulled out Iraq. This means stationing new combat forces in Kuwait. Soldiers can be used for security in Iraq or a confrontation with Iran (ANP, 2016).

Architectural styles

From c. 2000

Het Wilde Wonen, Gewild Wonen (Wikipedia, 2016)

Facebook

15 October 2016

Facebook has signed a European agreement, which will give the United States access to European private information. Due to the controversial treaty called Privacy Shield, America would get access to data from two elements of Facebook: Ads and Measurement (info from advertisers) and the New Workplace for businesses (Koolhof, 2016).

Typology

Due to the increasing trade in 1600 started the need for warehouses. Before warehouses, goods were stored in the attic of the merchants what was limited and inefficient. The first warehouse were narrow but often 30 meters in depth. This was because the tax was based on the width of the building. The narrower the building the less tax was paid.

The design of warehouses changed and become more developed. The Santos warehouse from early 20th century have a very logically organization with a maximum of workable surface. The traditional lifting beam was changed into an electronic lifting device in a winch houses on the rooftop. At that time it represent maximum efficiency. This lifting solution was in the design for St. Job improved as movable cranes on the roof. The use of the iron phoenix columns and the design for the load bearing structure contributed the development of warehouse architecture in the Netherlands and the use of iron constructions in general.

Other warehouses which are comparable to Santos are warehouses De vijf werelddelen and Leidse Veem (NCSU, 2014).

De vijf werelddelen

This warehouse was built in 1875-1879 in utilitarian eclectic architecture and was initiated by L. Pincoffs and H. A. Then-Bergh, the directors of the Rotterdamsche Handels Vereeniging. In that time it was world's most modern warehouse with its own harbor in order to make the warehouse more accessible. The main function was tax-free storage of goods in transit. The building itself is 197,50 by 37,25 meters and quite sober designed. The four floors and the basement have a total storage of 30.536 square meters. The façade is excited with red bricks, stone lintels and cordon between the ground and first floor.

The building is constructed with I-shaped iron columns and separated in five veempanden by brick firewalls. Every part have the name of one of the five continents, from east to west: Africa, Europe, America, Asia and Australia. In the whole complex are above the cargo doors iron lifting beams.

The south facade have a 10 meter wide loading balcony with iron columns. Partly on this balcony and partly on the quay are four mobile electric cranes situated which date from 1908-1913 (Rijksmonumenten, 2012).



De vijf werelddelen from the water side (Vennix, n.d.)

Leidse Veem

The design from 1898 was made by the architect C. van Seem on behalf of the corporation naamloze vennootschap Leidsche Veem. The in sober eclectic designed warehouse was mainly for the storage of tobacco and is located on the Wilheminaapier. The building consists out of four storeys and a basement and have a rectangular floorplan. The facades are made out of red brickwork with bands of yellow brick and stone lintels and ornamental stones. The warehouse is separated in three vemen next to each other. The east part of the warehouse could be extended with two more vemen. Above the lower indoor cargo doors, of each separate veem, is in stone the names De Ruijter, M.H. Tromp and Johan de Witt. On the eastern blind side wall is the name Naaml: Venz: Leidsche Veem painted in white letters (Rijksmonumenten, 2012).



Leidsche Veem after the transformation (Monumenten, 2016)

Santos

The warehouse is designed in an eclectic style which together form a whole. The applied rustica motif of rough blocks in the plinth can be seen as neo-romanesque. The combination of a stone band motif and lintels result in an explicit façade. The winch houses are shaped in motifs that refers to the Art Nouveau. The façade have more colorful than usual was done in warehouses from that period. This means that the façade has received more attention than was needed for the function (Flexus AWC, 2011).



Santos in 1920. The area had many more activities like the trains that drove by and stopped and the vertical transport along the facade (Flickr, z.d.).

Sequence

The warehouse with its square shape of 32,4 by 34,5 meter and 24,5 meter high stands out in the street. Mostly because the other buildings in the area are lower and the front façade have more details than the surrounding buildings. The relation between the warehouse and the water is very minimal because of the distance of 65 meters. In the future will this be even less with the realisation of The View since this will also block the view over the harbour.

The transition from inside to outside is very direct and starts right on the staircase. By entering the building there is no outside relation anymore because of this very introvert design.

The connected spaces on this staircases feel quite big and darkened with a repetition of columns. This feeling repeats itself every floor. The introvert feeling is partly because all the windows are closed but from the center of the building is no relationship with the outside world. When the windows or the loading doors are open, the light will come only from the north and south façade.

The rooftop is the absolute opposite with the great view over the city and the relation with the water.

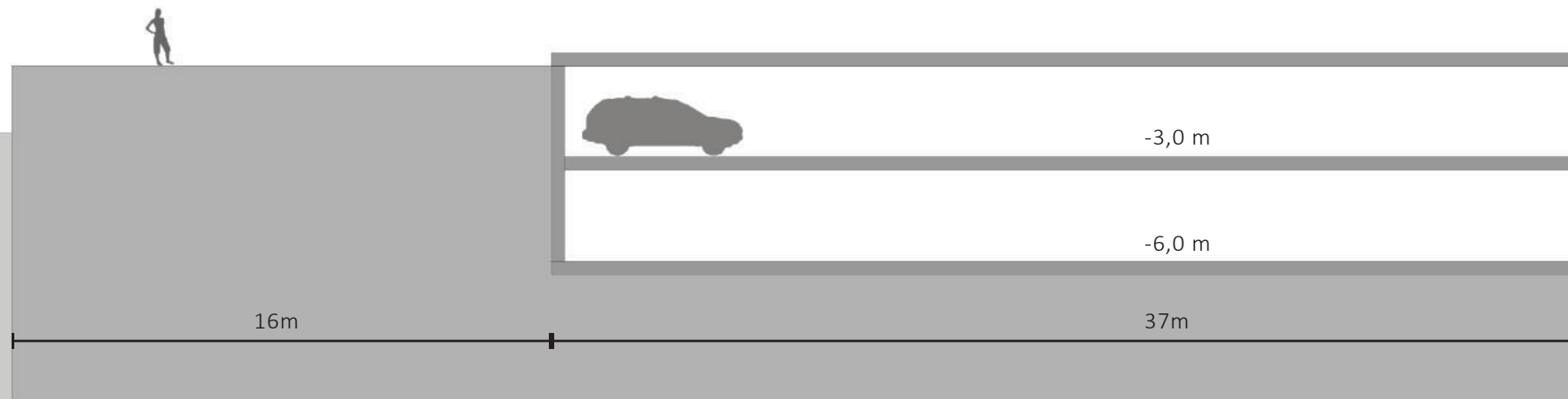


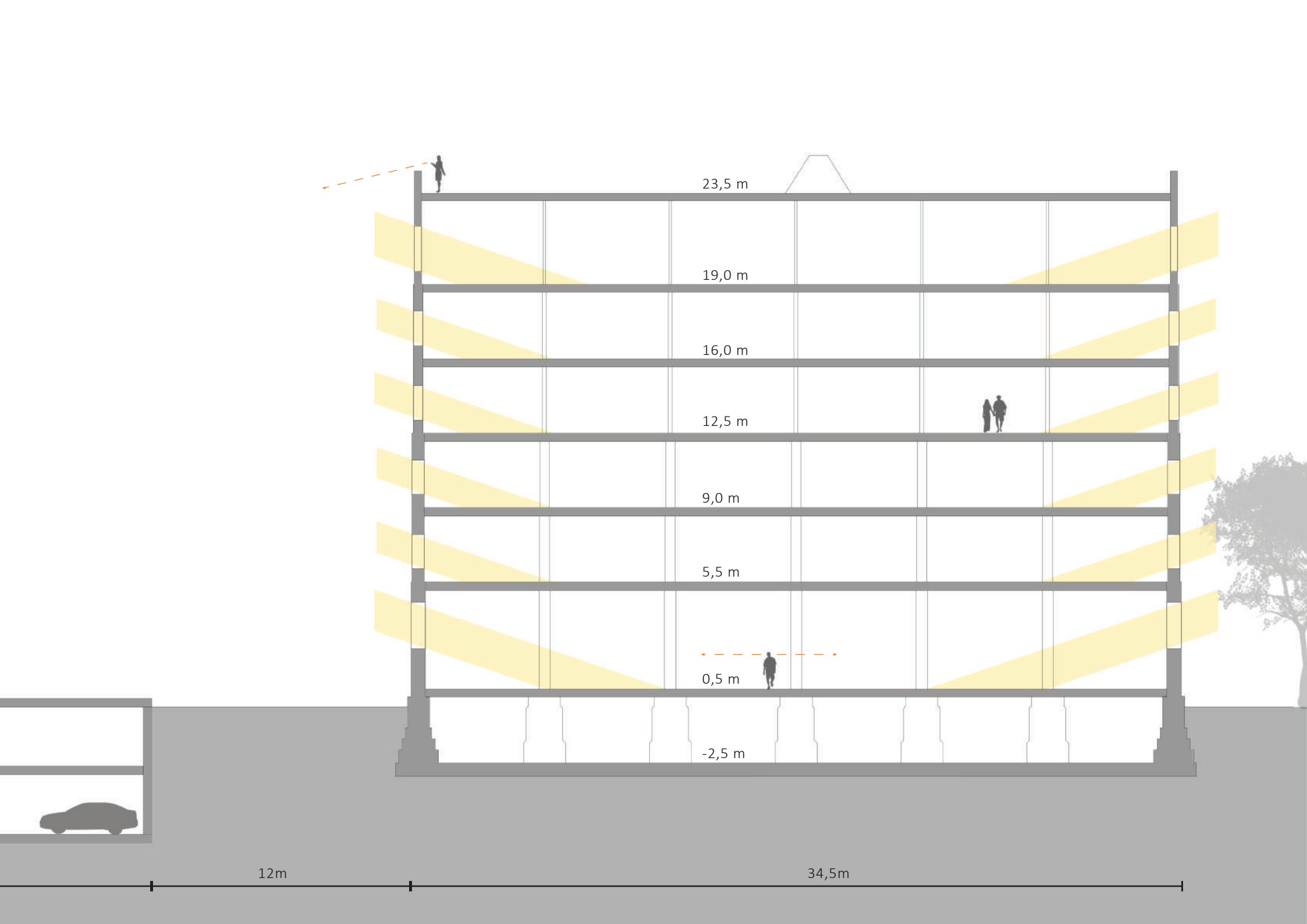
Storage space on the fifth floor



View from the rooftop (B. Bronswijk)

Section 1:200

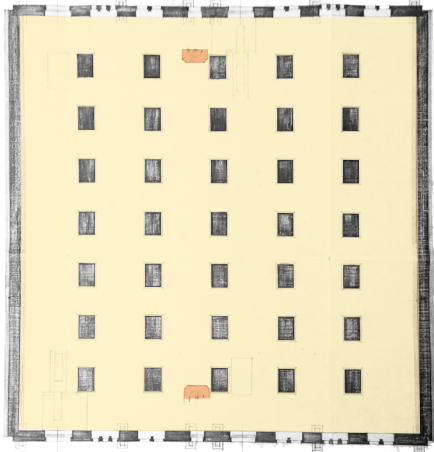




Funtions

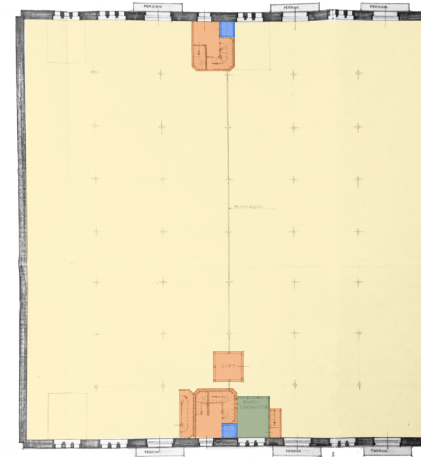
Basement in 1902

Mainly storage space with a staircase on two sides



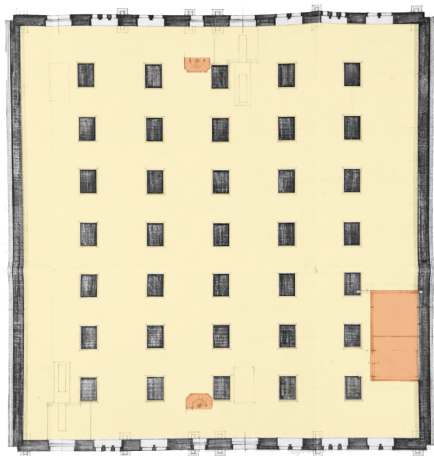
Ground floor in 1902

From the ground floor is the entrance of the building. The staircases include toilet facilities as well. In this part of the warehouse is also a small office.



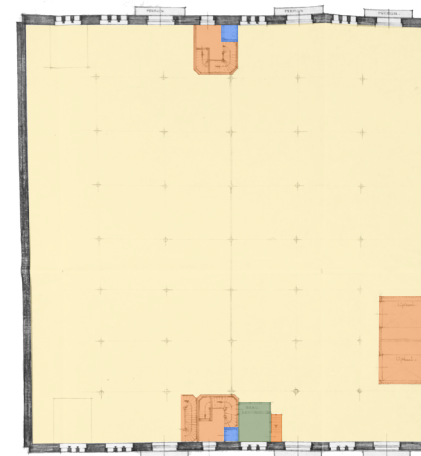
Basement in 1954

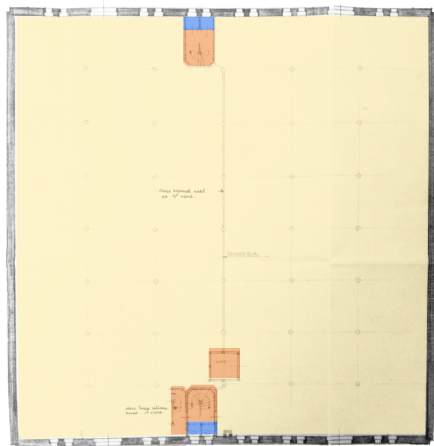
The Royal Army added two elevator shafts for the storage of weapons.



Ground floor in 1954

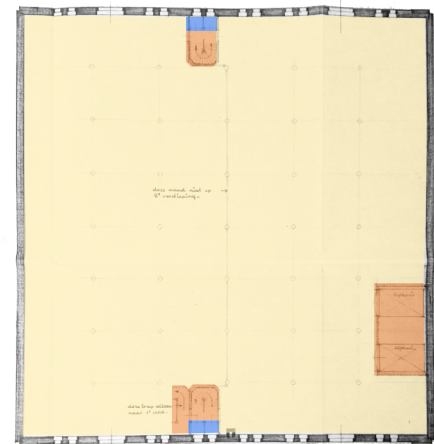
The original elevator shaft has been removed and two elevator shafts are added.





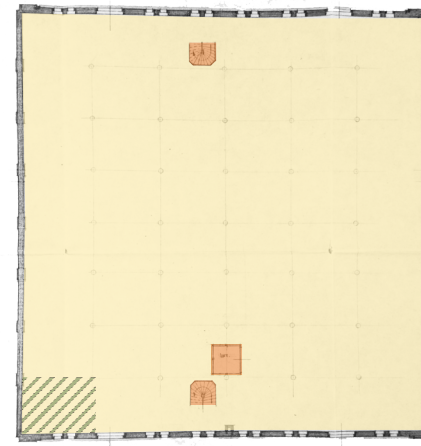
Floors in 1902

The functions of the first to the fourth floor are all similar with a major storage space and staircases on both sides.



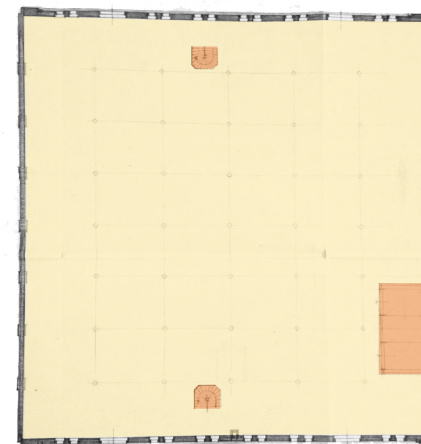
Floors in 1954

The original elevator shaft has been removed and two elevator shafts are added.



Floors in 1902

The functions of the fifth floor are similar except for the fact that there are no toilets on this level. In the lower left corner was in the past an office.



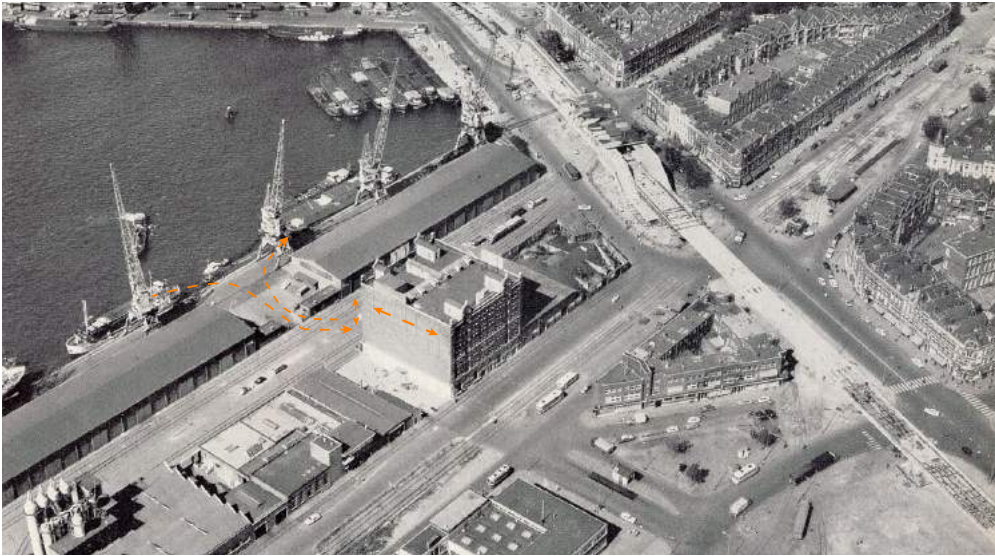
Fifth floors in 1954

The original elevator shaft has been removed and two elevator shafts are added.

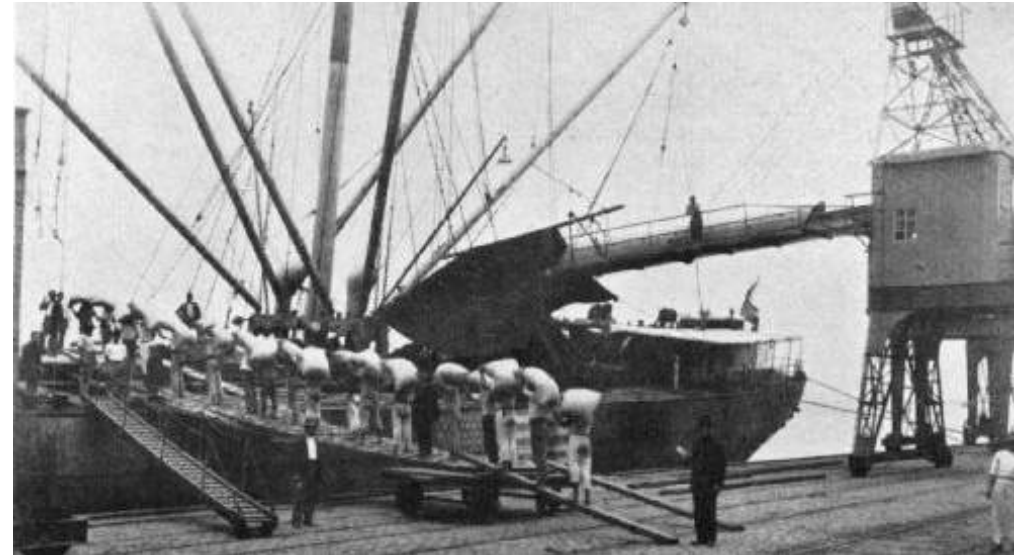
Circulation

74

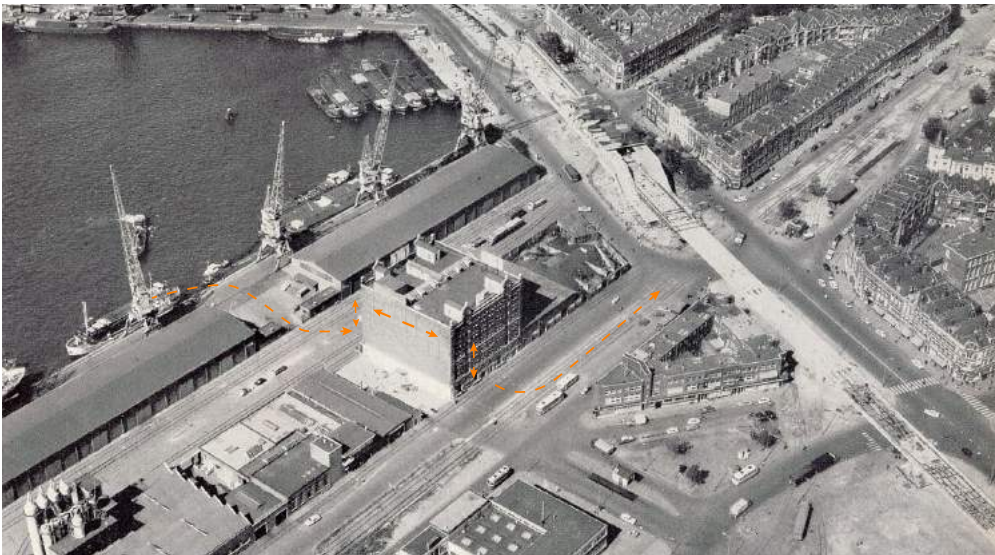
Coffee warehouse Santos



Route for transshipment (BbKdr, n.d.)



Unloading the coffee from a ship on the traditional and new way (Cluesheet, n.d.)



Route for coffee to the mainland (BbKdr, n.d.)



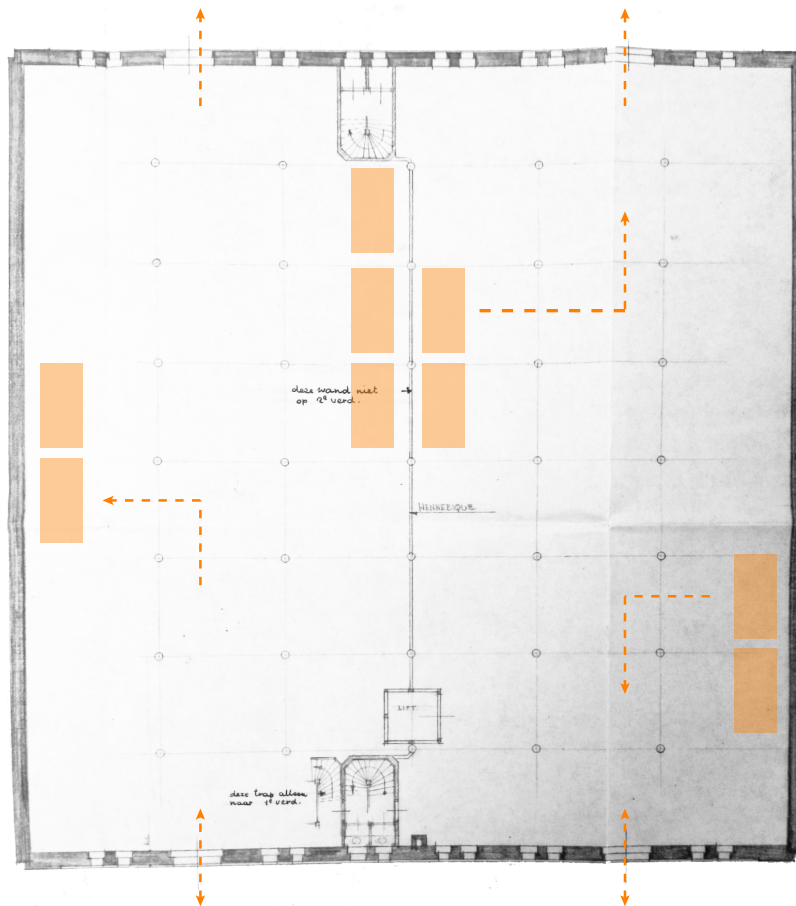
Unloading/ loading warehouse (Pinterest, n.d.)



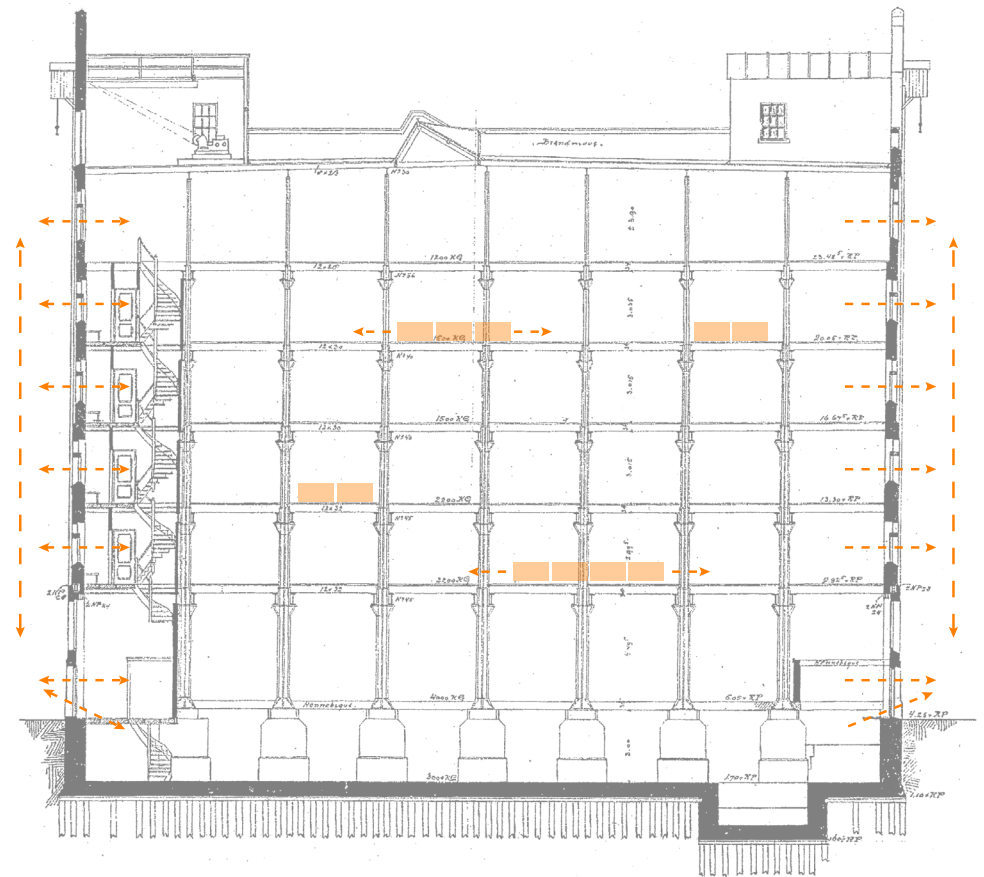
The train to transport the coffee further into the mainland, 1990

The building is designed as a machine what is mostly visible on the outside. After the coffee is of the ship and drove to the warehouse, it is vertically transported with electric elevators on the roof. The elevator transported it to the right floor so it can be further transported in a horizontal way. When the coffee is needed, it will be lowered again along the outside of the façade. Cargo that go

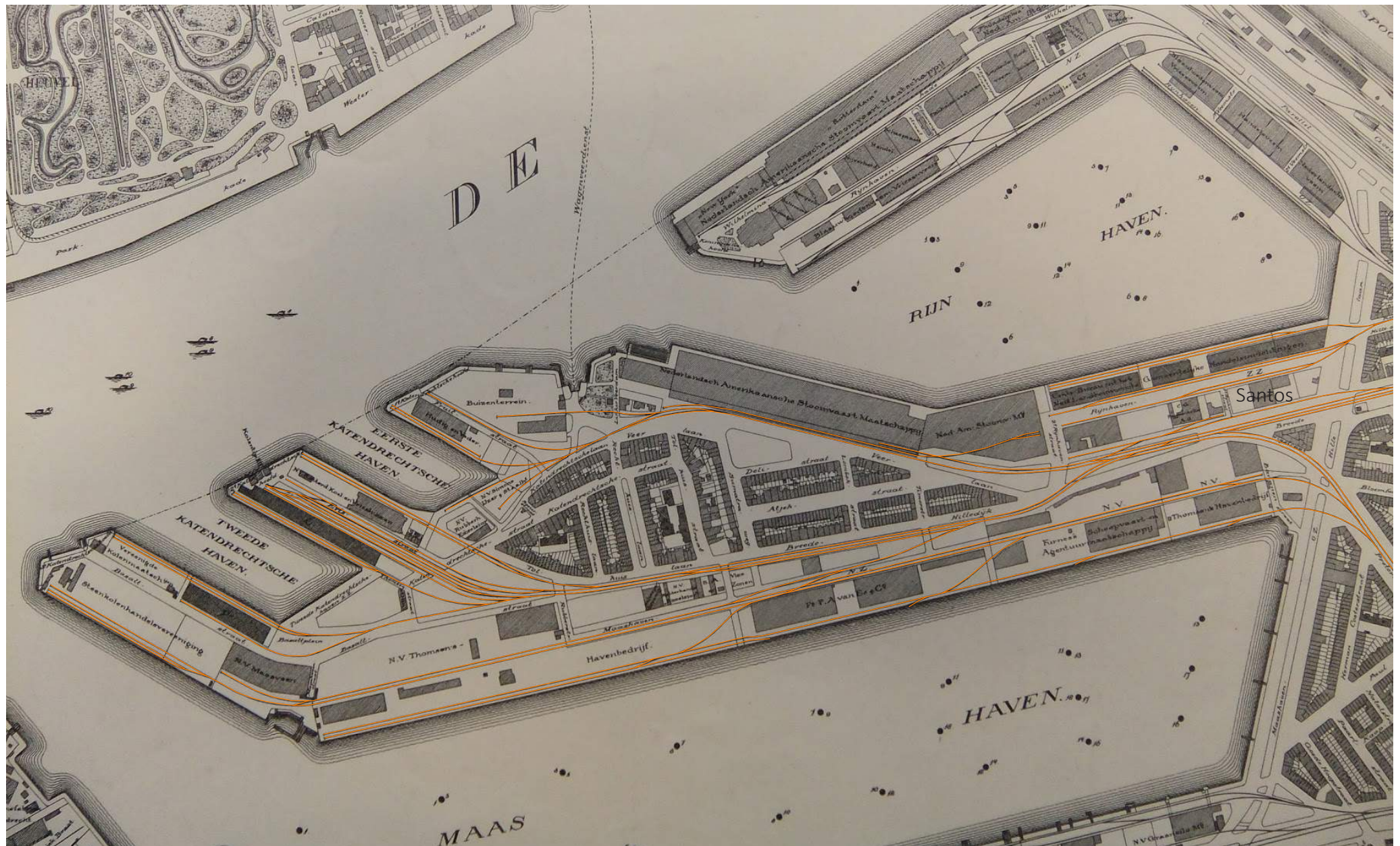
into the mainland will be let down on the Brede Hilledijk side for transport by train. Coffee with a more distant destination as the port of Antwerp, will be transported by ship and leaves the building the same side as it went in.



Floorplan of the transport in the warehouse



Section of the transport in the warehouse



Railway system Katendrecht, 1928 (BbKdr, n.d.)



Brede Hilledijk with railway in 1951 (Serc, n.d.)

Brede Hilledijk with only a part of the left railway in 2016



A refined train track was used in the past for transport further into the Netherlands. Every industrial building is directly connected with this railway system to transport the goods even more easily and faster. Santos even have a railway on the north and south façade.

Nowadays only a few of this is still visible, this is in front of the south façade of the Santos warehouse. Most parts are removed or not in use anymore.

Structure

The construction is created out of different materials made from bearing facades, iron columns and beams and a floor construction consisting out of steel trusses and a wooden floor. The only concrete structure is the ground floor, the platform on the façade, the corridor of the staircases (this is a combination of concrete and iron trusses), the elevator shafts from 1954 and the floor structure of the engine above the roof.

The stability is guaranteed by the masonry walls. The force of the wind are transmitted through the wooden floors to the outside walls.

Floor load:
 1.200 kg/m^2

1.500 kg/m^2

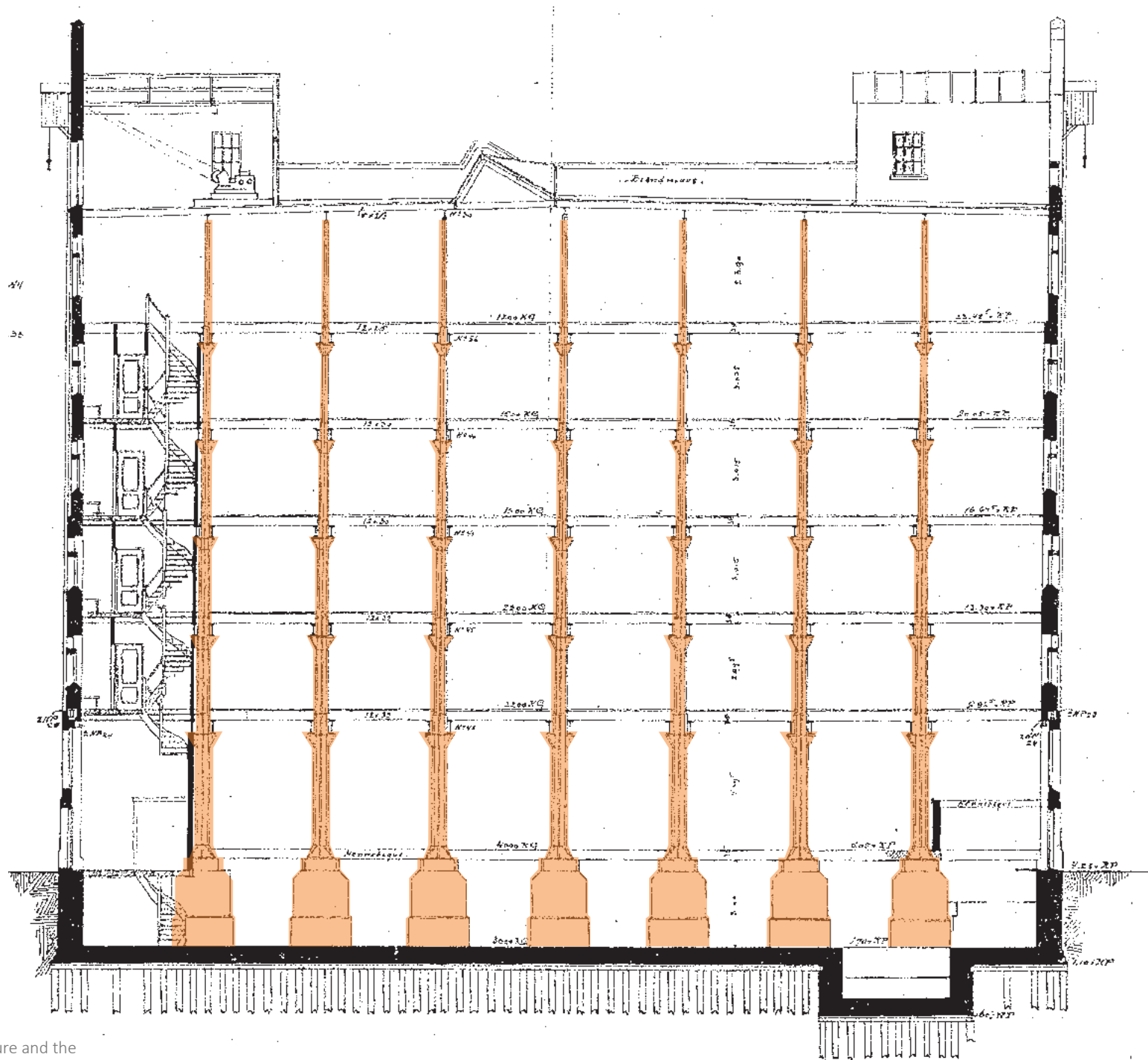
1.500 kg/m^2

2.200 kg/m^2

2.200 kg/m^2

4.000 kg/m^2

3.000 kg/m^2



Section with the main column structure and the
load per m^2 floor

Foundation

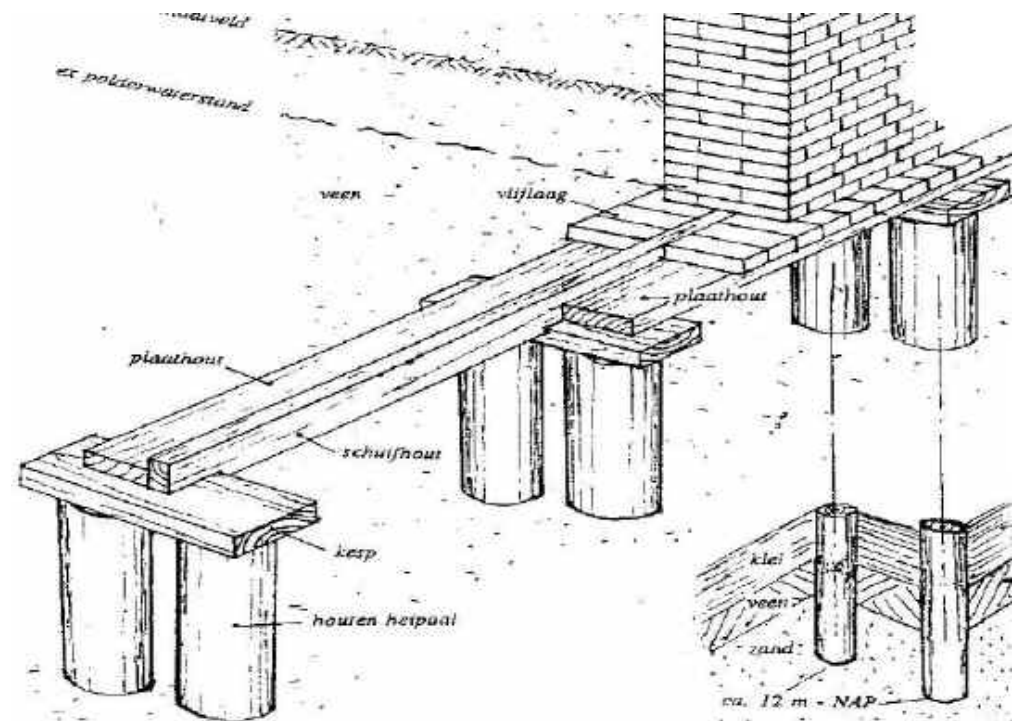
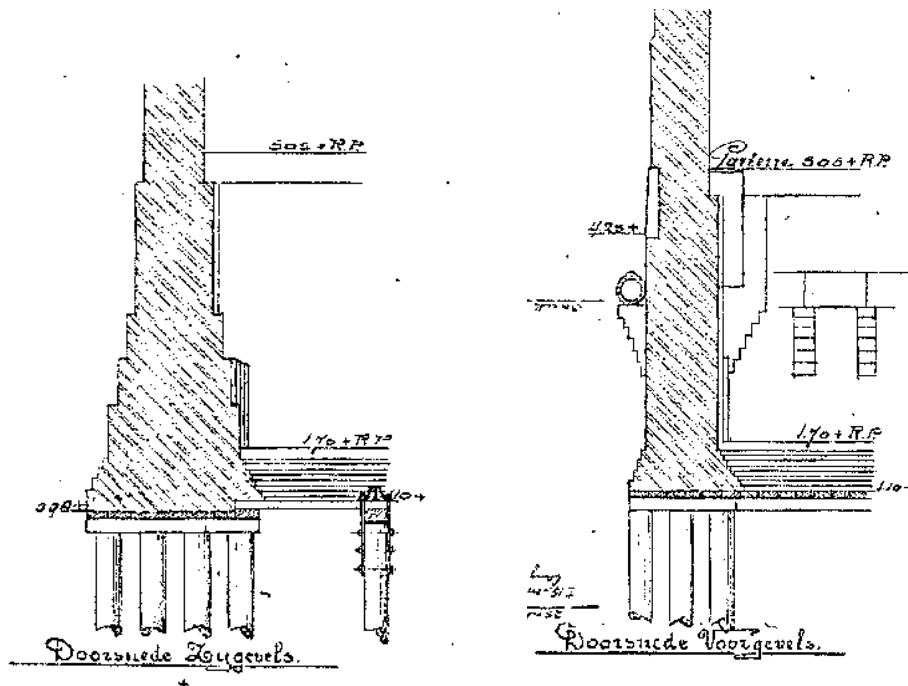
The foundation of the building is made by wooden piles. This is the basis for the steel structure and all the facades. The foundation is the same principal as the Amsterdamse or Rotterdamse method. The different between those two is that mostly two piles are used in Amsterdam and only one in Rotterdam because of the higher buildings in Amsterdam and therefore more weight. Two poles give also more stability what is necessary when they don't reach the sand layers (Joost de Vree, 2016). In the Santos warehouse there is even make use of four piles in a row.

The danger of wooden piles is the fluctuating groundwater level because when the wood is not constantly under water they can rot or bacteria have influence

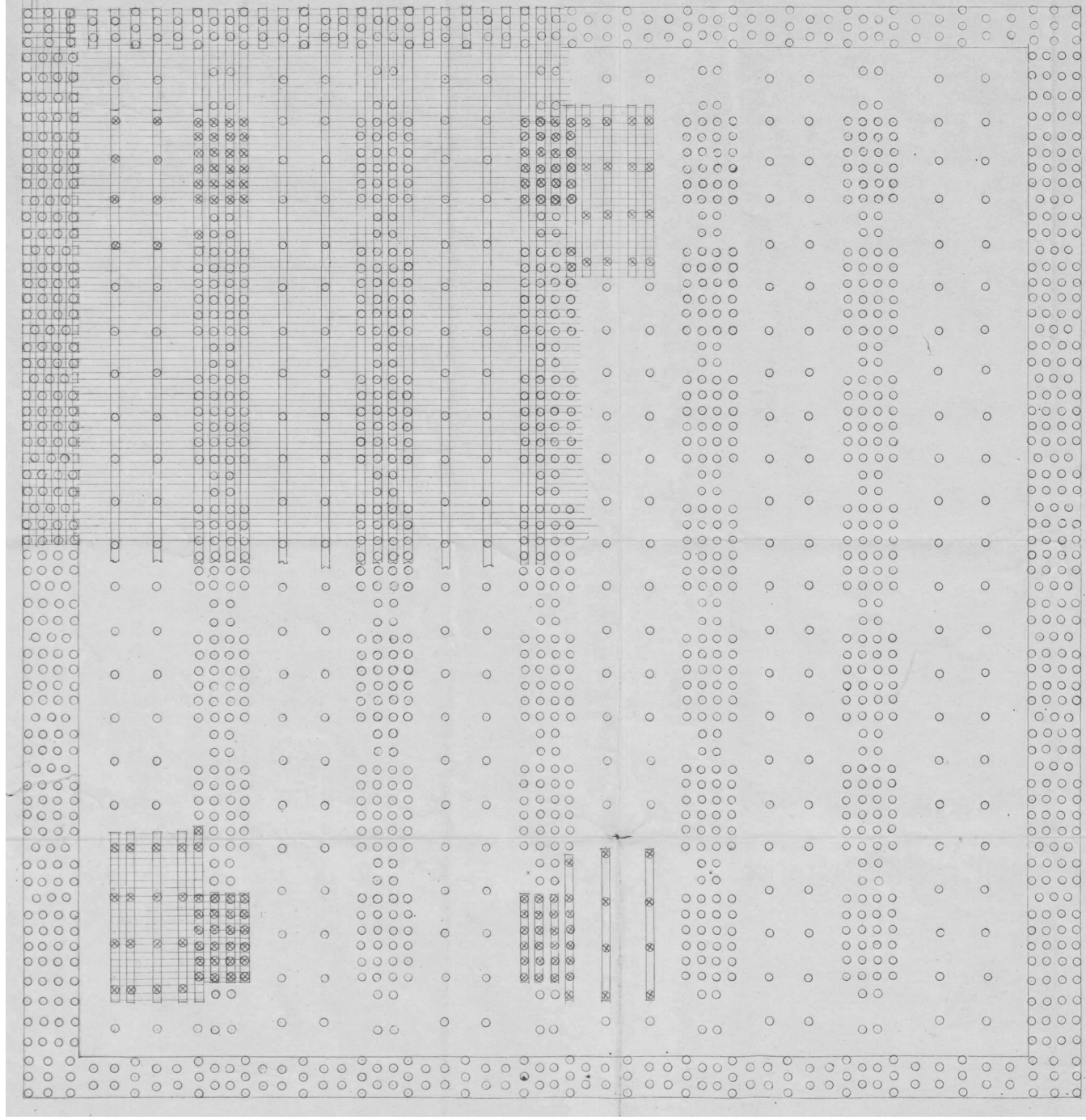
on the quality (Joost de Vree, 2016).

On top of those piles is a wooden frame who connects the piles and forms the basis for the rest of the brick work. A wooden beam which is interlocked between the wooden frame is there to hold the masonry in its place. The masonry foundation footings have a dimension of 1.30 x 1.90 m (Flexus AWC, 2011).

In contrast to the standard method, there are steel trusses added into the masonry in the parts under the columns and just above the wooden piles. This is done to make sure the heavy weight of the building above is spread out over a larger area.



Principle structure foundation (Joost de Vree, 2016)



Columns

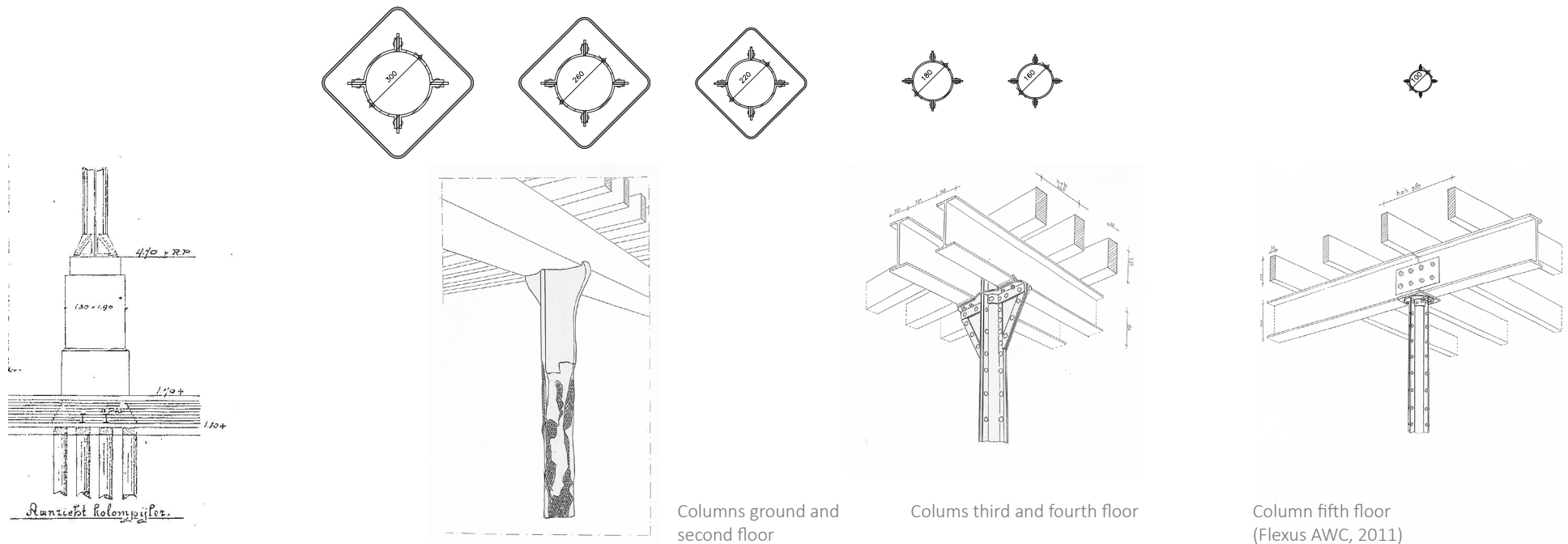
The vertical load-bearing structure consists out of iron columns with a pattern of 4,22 meters (8 grids deep) by 5,30 meters (6 grids wide). The columns are made of riveted rolled quadrant profiles and strips of flat bars. Those flat bars were not only used to reinforced the column but also connect them in a simple way with other elements such as the beams. The high amount of riveted columns made it very expensive. That explains why this method was hardly used before 1900 in the Netherlands. This system comes from the United States where it was called the phoenix-system because it was developed by the Phoenix Iron Company. Originally it was developed by Samuel Reeves in 1862 during the American Civil War for the formation of gun barrels. The hollow cylinder consist out of four, six or eight iron segments which were merged into a single column. The result was a much lighter and stronger than the iron columns of that moment and make it possible to design buildings without the conventionally heavy an load-bearing walls. Higher buildings could now be built on small city lots which accelerated the principle of the skyscraper. The use of this system in the Santos warehouse was very progressive because this system

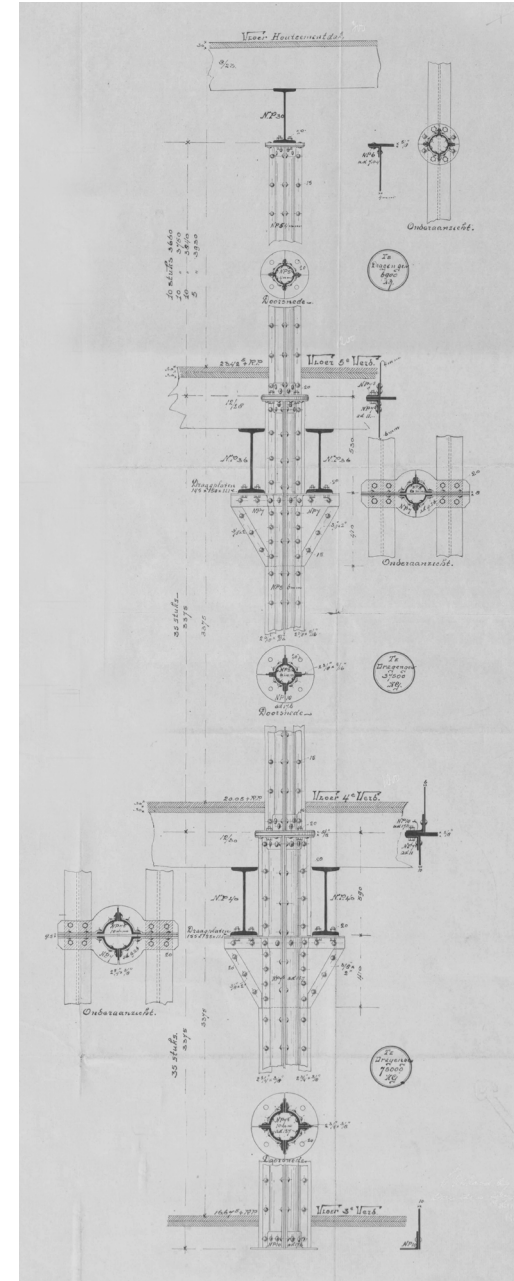
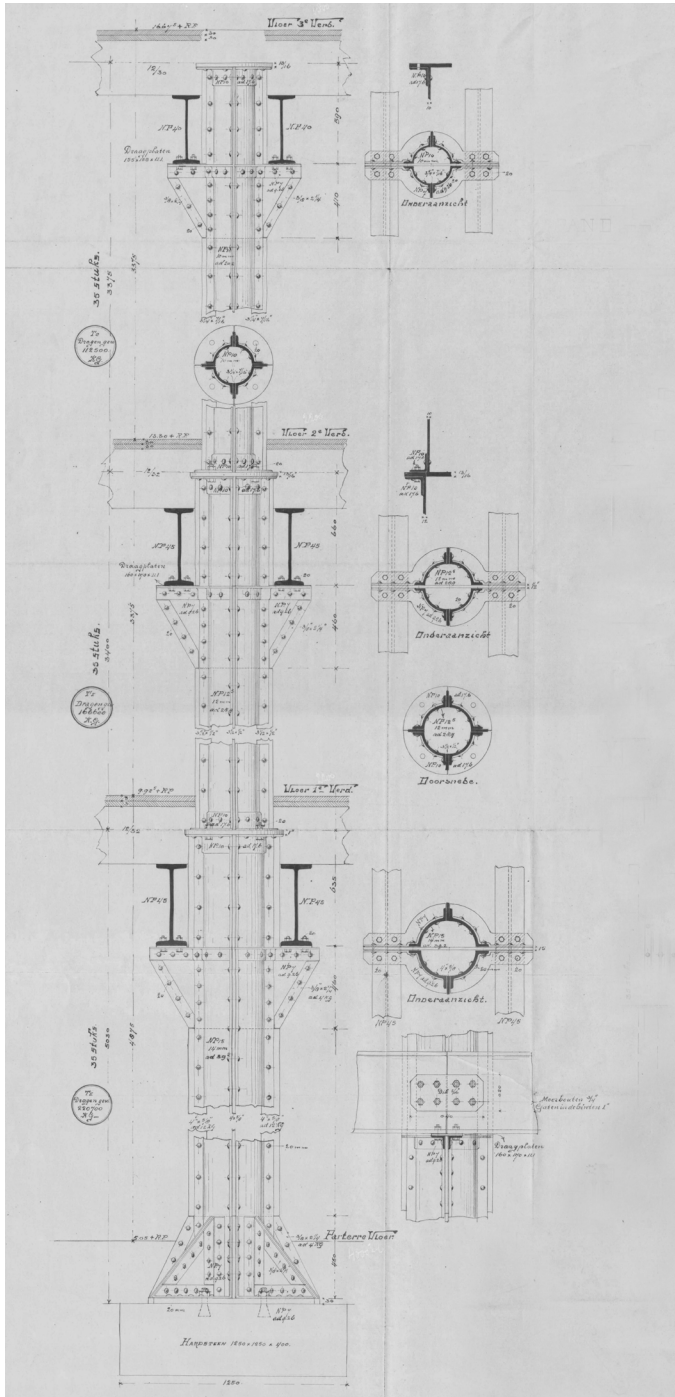
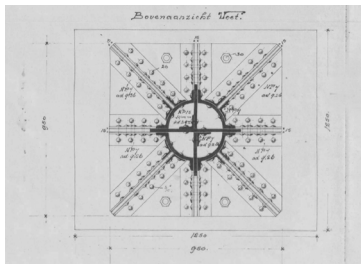
was not applied elsewhere.

The top part of the columns are designed with brackets made of riveted sheet iron and riveted, partly curved, L-profiles. Each column has two brackets with on each an iron bar. Those beams are connected to each other in the longitudinally direction with a gusset plate. The columns on the top floor don't have those brackets and is there only one NP-beam which is placed directly on top of the column. By using the brackets, it is possible to design the columns on top of each other because the floors are besides the columns. The columns are riveted to baseplates by using rolled L-profiles. Those baseplates are connected with the related column with two bolts. The columns are related to the load resting on it. The lower columns are more heavy loaded. This means the columns at the lower floor are larger than the floors above, and they become thinner ever floor. This is probably done for financial reasons. The columns are connected at the ground floor to the masonry foundation footings by a stone plate with a dimension of 1,25 x 1,25 meters and 0,4 meters in thickness (Flexus AWC, 2011).

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Coffee warehouse Santos





Column structure (stadsarchief Rotterdam)

Beams

The beams directly on top of the brackets are the horizontal main construction and run from side wall to side wall. In the side wall they are imposed on lintel made out of stone. There are different kinds of beams used in warehouse. The beams for the ground floor are designed in concrete while the beams of the first, second and third floor are made out of steel with concrete around. The fourth and fifth floor are carried by two steel beams and the roof is only one beam.

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Coffee warehouse Santos



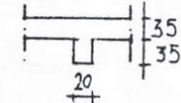
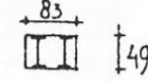
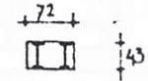
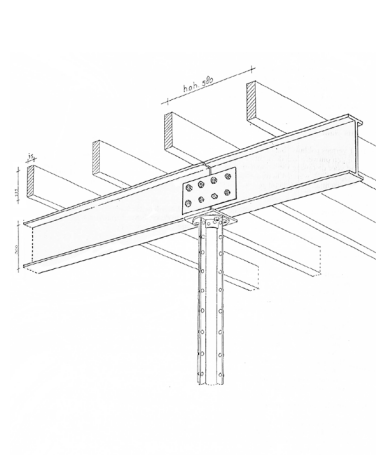
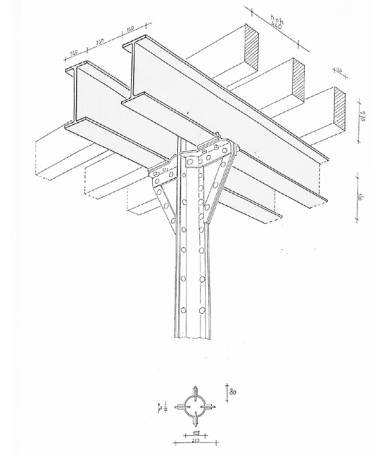
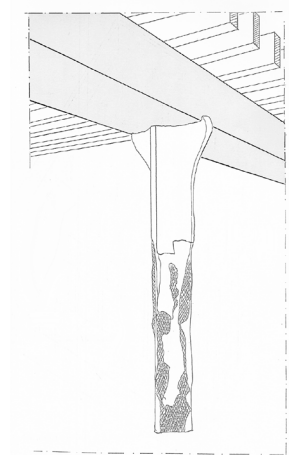
Ground to second floor
(Flexus AWC, 2011)



Third and fourth floor (Flexus
AWC, 2011)

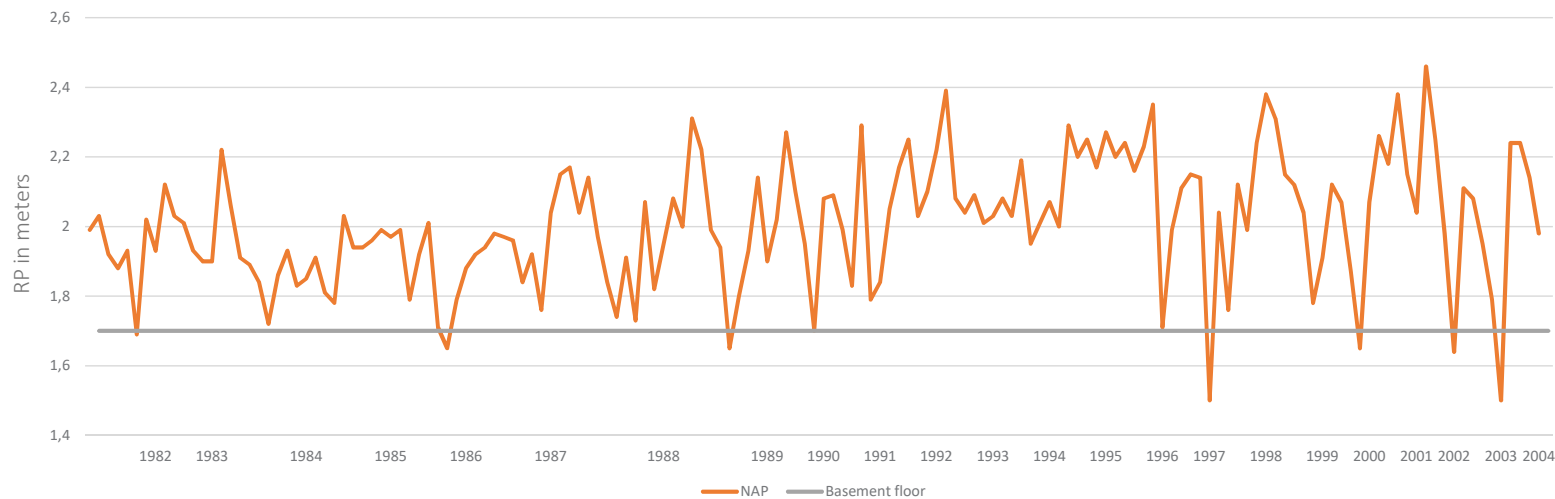
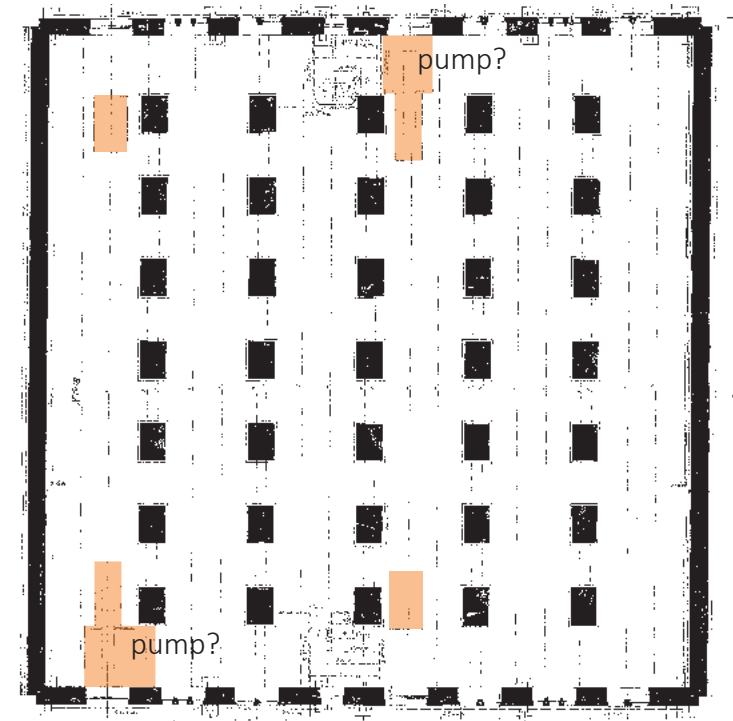
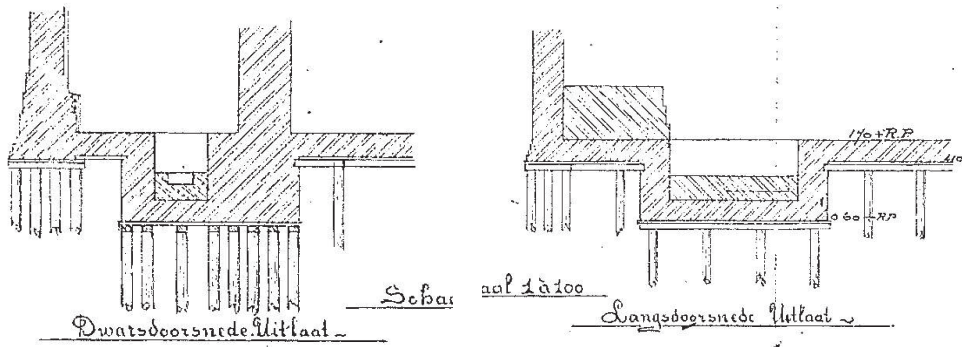


Fifth floor (B. Bronswijk)



Floors

The basement floor is made out of massive brick work with a thickness of 600 mm and is supported by the wooden pile foundation. This basement has weaknesses because it is most of the time full of water. Details explain that in the past there was a gutter system to controll this water but this is filled with concrete. Properbly the worked in combination with a pumpsystem.

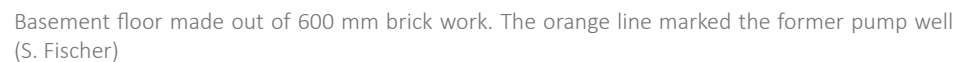


Gutter in the basement floor

Lowest water level: 1,50 m + NAP
 Highest water level: 2,46 m + NAP
 Floor level basement: 1,70 m + NAP
 (Gemeente Rotterdam, 2016)

All the wooden floors are made with a two-layer of 30 mm thick boards and are mounted diagonally to each other. By this method of crosswise connections, it

On top of those wooden construcion is a layer of asphalt floor (Flexus AWC, 2011). This asphalt is strengthened and connected to the timber by use of wire mesh.





Asphalt layer with wire mesh (S. Fischer)



Bottom side of the floor with diagonally boards (S. Fischer)



The fifth floor with a clear division of the diagonal structure in the floor.

Sawtooth roof

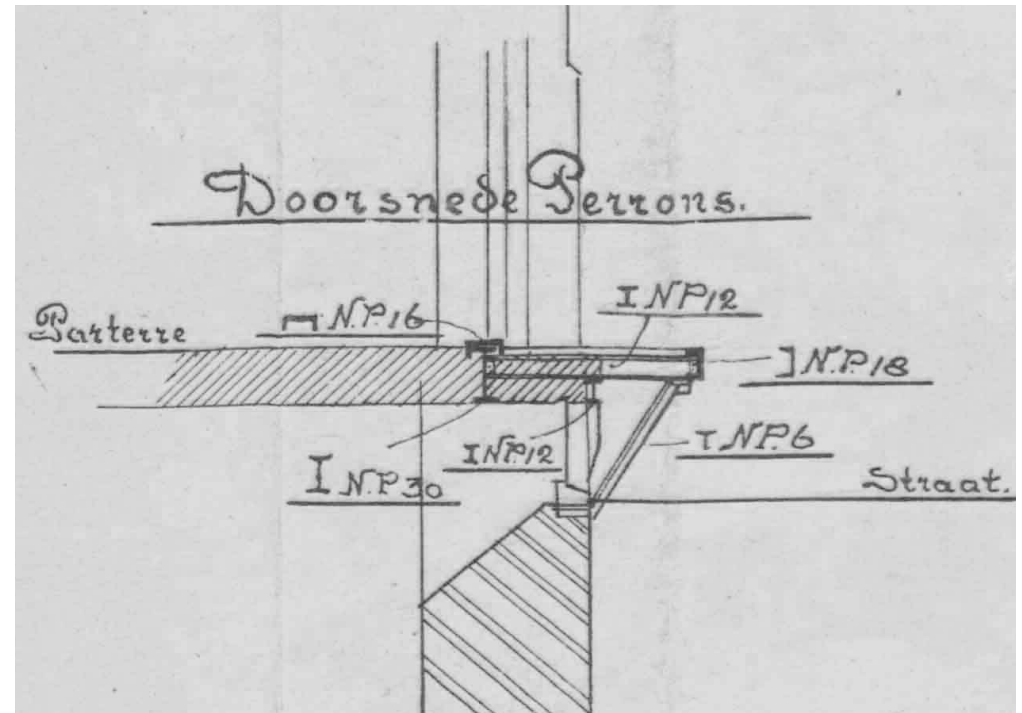
On the roof deck were along the width of the building sawtooth roof. In the middle these were locally interrupted as a result of the original elevator. The construction of the sheds is by triangular wooden trusses and rafters. On the north side were legramen (similar to stained glass) and dormers on the south side. The roof of the warehouse is accessible through a hinged staircase which hung on the roof structure and there was a small extension/ dormer above the roof with a door.

Loading platforms



Loading platform (both pictures S. Fischer)

Detail (stadsarchief Rotterdam)



88 The Hennebique system

The groundfloor is an exception to the floors above because this one is a reinforced concrete floor. This floor is constructed out of concrete beams which are placed on top of the brick foundation footings of the basement. The floor is based to the system of Hennebique what means this is a floor with a combination of iron and concrete.

On the ground floor and first floor are also concrete walls and columns with a concrete layer around. Those walls are not for structural reasons because they don't go all the way down to the basement but to prevent the spread of fire. During this first years of this new reinforced concrete was not enough experience to build the whole warehouse in concrete. This have to grow over the years so companies start only with small-scale elements. With this knowledge, the choose of the Hennebique system was very progressive for those times. It is plausible that the concrete work is done by the company Waxing because they did more in relation the Blaauwhoedenveem.



unknown

The iron structure (columns and beams) are in the current situation in for the ground floor, first and second floor provide with a mesh reinforcement which is plastered / cemented. This is probably done for fire safety but it is unclear when this was done.



unknown

The Hennebique floor is closed on different places just as the windows in the basements. This makes it possible to connect the floor with the walls but it is not sure when this was done.



unknown

Another change in the structure is the adding of steel columns underneath the Hennebique floor to support the side walls.



unknown

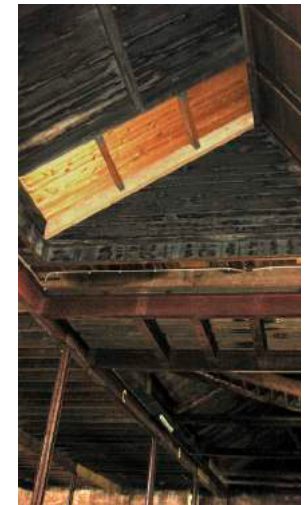
It is also unclear when a part of the Hennebique wall was demolished on the north side of the ground floor. This part is later replaced by a masonry wall. Also on the first floor is a part of the wall demolished.



1954

The old elevator shaft is removed and the floor areas are covered with a wooden beams and steel structure to the existing iron beams.

Also a new concrete elevator shafts is made on all the floors and an elevator machine room was created above the roof next to the west façade.



after 1983 (Flexus AWC, 2011)

The sawtooth roof are closed off with roofing materials. The dormers are deleted and a new steel construction is added to support the roof deck.

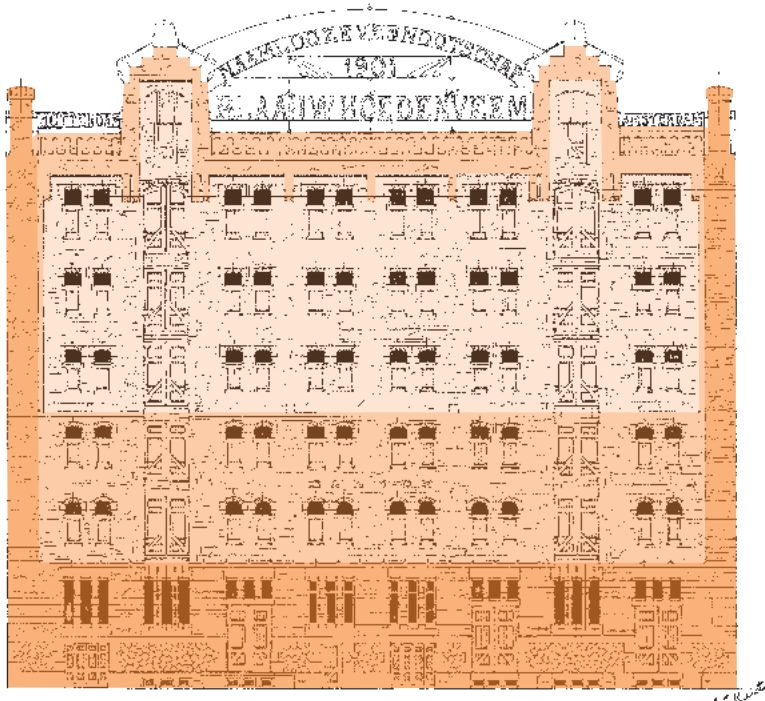
Facades

The warehouse have facades with a rich elaboration and a careful chosen composition. The composition in those facades and the proportions makes this 24,5 meter high building unique. The façade on the Brede Hilledijk and the Rijnhaven Zuidzijde are almost similar and symmetrical. The side walls are designed as blind walls without any openings. The facades consist out of a combination between masonry and natural stone. The masonry is designed in a cross bond.

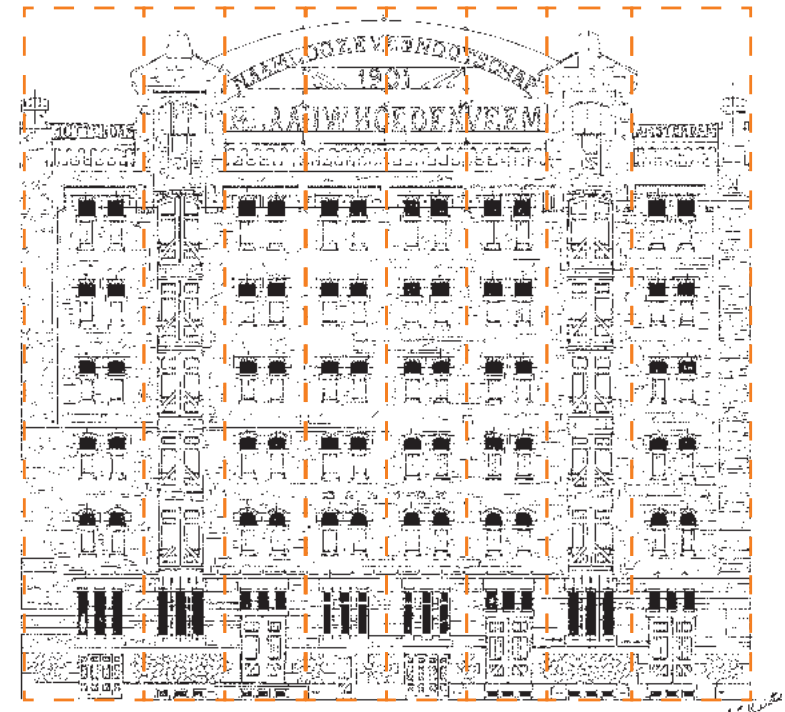
Front façade

Even though the construction exist out of six segments, the façade has remarkable enough eight parts. This is done to give the façade a vertically coherent shape but also because more than six segments on the ground floor level were needed for the programmatic requirements. This involved two transit doors to the basement, three cargo doors on the ground floor, two segments for vertical transport of goods related to the position of the loading doors on the floors and an entrance to the staircase.

The front walls have a vertical structure which exist out of a plinth, a middle part and a front closure, in the shape of an attic. The corresponding measurements between those three parts increase this verticality. An example are the loading doors on the spot of the winch houses (Flexus AWC, 2011).



Depth in the facade



Division in the facade



Santos 1950
(Flexus AWC, 2011)

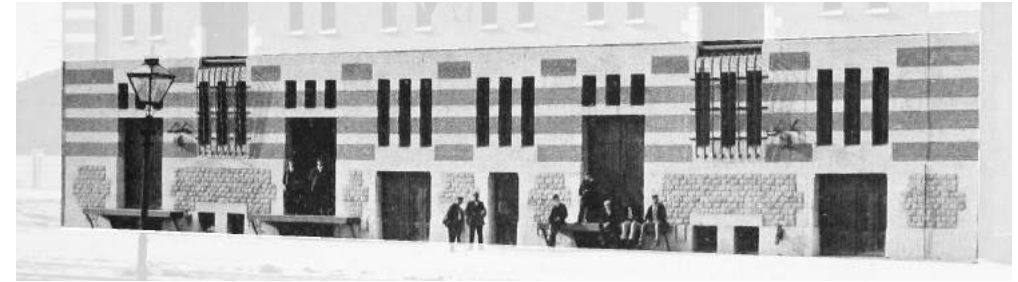
The plinth

The plinth façade consist out of a one and a half floor which is made out of two separately shaped parts. The lower part consists out of a sandstone plinth that is connected with the ground level and on top a rustication ribbon. This ribbon is be expressed by openings in the façade and with parts of rough limestone blocks in between in a rustication motif.

The upper part of the plinth is designed with horizontal ribbons made of sandstone and brickwork. Those elements are crossed on several places by vertical shorter and longer windows.

In contrast of the rest of the façade is the plinth not completely symmetrical designed. The reason for that are the high and low loading doors wich are located for functional reasons for supplies to the basement. At the point of the stone connection with the ground are cellar windows. On the original drawings from 1901 are designed combinations of three windows but in the final plan are only two executed in every segment.

The ground floor loading doors are always provided with a concrete loading platform. The windows underneath the loading doors were provided with bars. This were typical curved elements on the outside of the façade. In the windows of the entrance part were also fences but they were in the wall opening itself (Flexus AWC, 2011).



Plinth (Flexus AWC, 2011)



Loading door



Bordes (Flexus AWC, 2011)

1901-1954

The windows of the basements on both facades are closed off just as one of the larger façade openings for the delivery of goods to the basement. At these locations is the concrete floor extended till the façade.

Unknown

It is not known when, but the lower parts of the standard façade openings are provided with hung windows with glass. The top parts are filled with brickwork.

1901-1950

In the façade of the Brede Hilledijk at the top part are two windows demolished and replaced by a large window frame with three upper and lower windows. Above the window is a steel lint

Unknown

The cargo doors are removed at some places or provided with cladding on the outside and sometimes with glass. It is unknown when this happened.

The middle part

This part of the façade is a little laid back thanks to the fact that the strips on both sides is extended with a half brick length. This part is in the same line as the plinth. The middle part is build up with five floors and is divided by a sandstone ribbon in an upper zone with three floors and a lower zone with two levels. This ribbon correspond to those in the plinth and in the attic.

The transition between the plinth and the middle part is softened by three ribbons on both side of the building. A similar technique is used in the upper part for the change with the attic. In the façade are three different kinds of openings. The bottom row on the first floor is with round arches. The two floors above are provided with segment arches and the last two floors have rectangular shapes. All the windows have an external window sill made of stone and are divided in a lower and upper window whereby the last one wider is. Both parts are separated by a stone lintel. Originally the lower window was provided of a frame with an outward opening wooden door. The upper window was with glass. The windows on the fifth floor are higher because of the higher floor height as well (Flexus AWC, 2011).

The loading doors in the façade turn inwards and made out of wooden parts which are interlocked to each other. The typical diagonals for firmness, give also an Art Nouveau-style expression. On both sides on the bottom part of the



Middle part (Flexus AWC, 2011)



North facade with on the third floor new windows.

1954



The lifting system of the gables houses was removed.

1954-1963



The iron construction has been removed.

1970

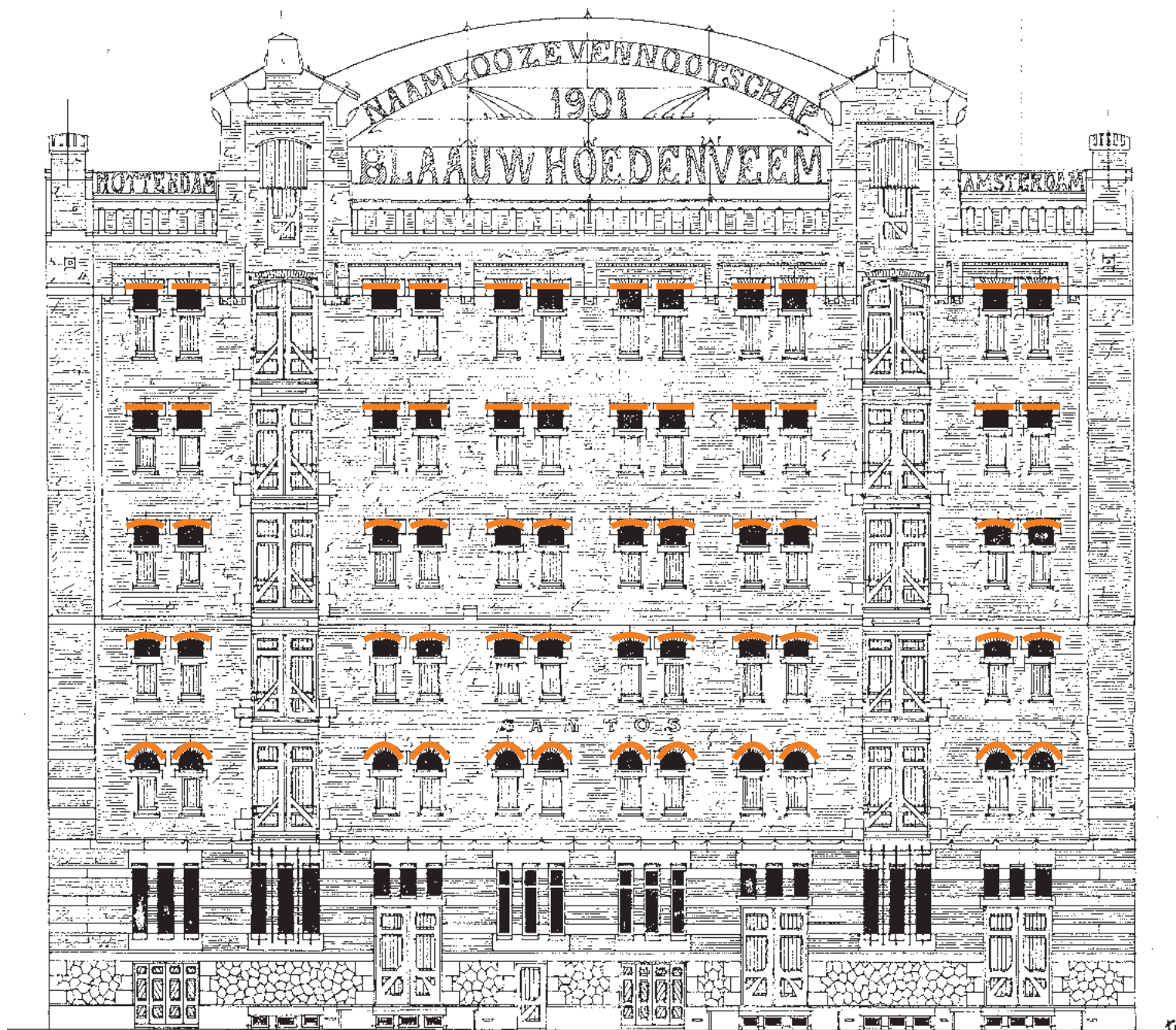


The four gables houses are removed from the roof and the parapet was extended. The top parts on the four corners are removed as well.

Unknow



The bars are disappeared but it is unclear when this happened. Same for the lights on the facades.



Design lintels



doors are stone blocks in a staggered pattern.

In the past there were fences on the first floor above the entrance. These fences were placed within the wall openings. Other additions to the façade were the two large, bulbous lamps which could be moved up and down with a pulley. This is to illuminate the loading doors in the evening. Another way to illuminate the façade was by triangular iron rotatable consoles with lamps. On both sides, the Brede Hilledijk and the Rijnhaven, are the iron letters with the name Santos and on different spots are iron lifting beams (Flexus AWC, 2011). The third floor is in use as an office space for the promotion of The View-European China Center Rotterdam. To create a better inner climate the windows are replaced for aluminium frames with double glazing. This is done after 2007.

Attic

The transition between the middle part of the façade and the attic is reinforced by the outstanding masonry, staggered pattern and consoles. Above this is a brick balustrade on a stone ribbon. On top is an external window sill made from stone to increase the horizontal effect. The ends of the building are high-rise masonry with a stone block ornament and characteristic details.

Very striking elements in the attic were the gables on top of the winch houses. Those trapezoid shaped walls are covered with stone with a profile that refers to the Art Nouveau. The winch houses were provided with a door just as the floors underneath, and ends with a bow segment. Wooden lifting equipment were in place to bring the goods to the various floor levels.

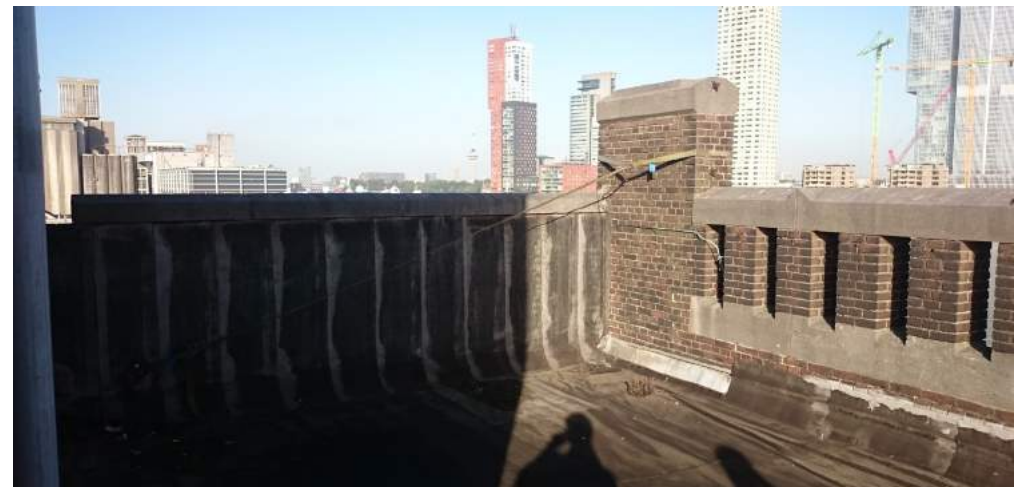
In the past was on top of the roof on the side of the Rijnhaven a decorative iron construction with the company name and the establishment year of the construction of the building. This steel structure was placed between the two gables houses. On the outside of the building were the name placed of the two cities where Blauwhoedenveem was active: Amsterdam and Rotterdam. This iron construction on the water side makes this façade to the main façade. It was the first part of the building which was visible at arrival on a ship (Flexus AWC, 2011).

Side walls

The side walls are made of masonry as well and created with pilasters at the upper three levels which divide the façade into eight parts. On the top floor are vents in the façade. The shape of the sawtooth roof because the brickwork is following the outline.



Original attic (Flexus AWC, 2011)



Attic from the roof top

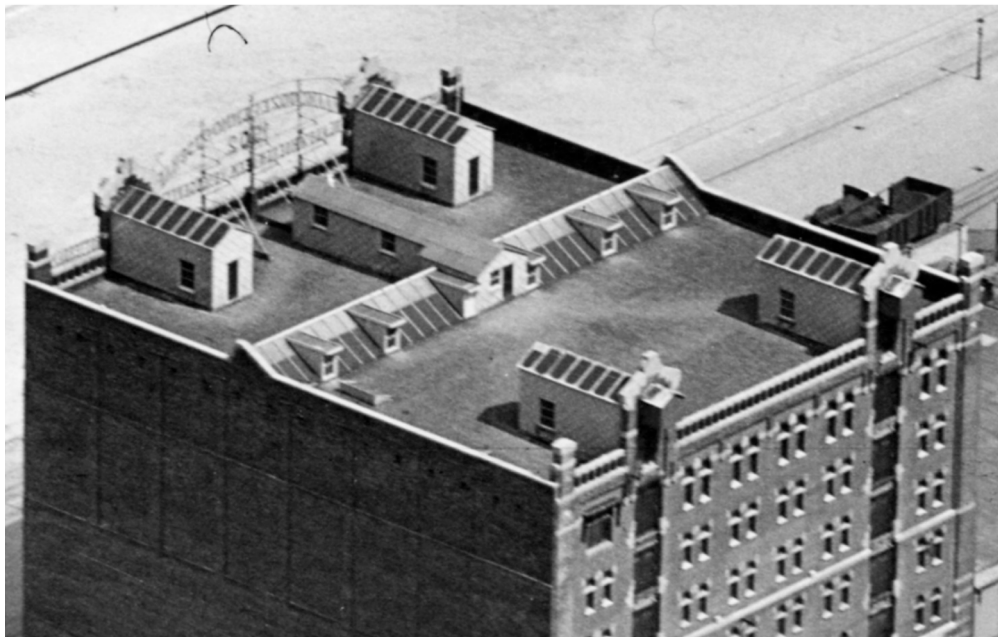
Winch houses and sawtooth roof

On top of the roof are 4 winch houses for the vertical transportation of the coffee outside the building. They are about 7 meters high, 5 meters wide and 7 meters long. The function of the houses is to protect the electrical lifting equipment against weather conditions. It doesn't need a strong construction for the reason that there is nothing on top so they were executed in a very light material. Only the front façade is made out of masonry and decorated with sandstone. The cabin which hangs on the brick wall had a wood finish.

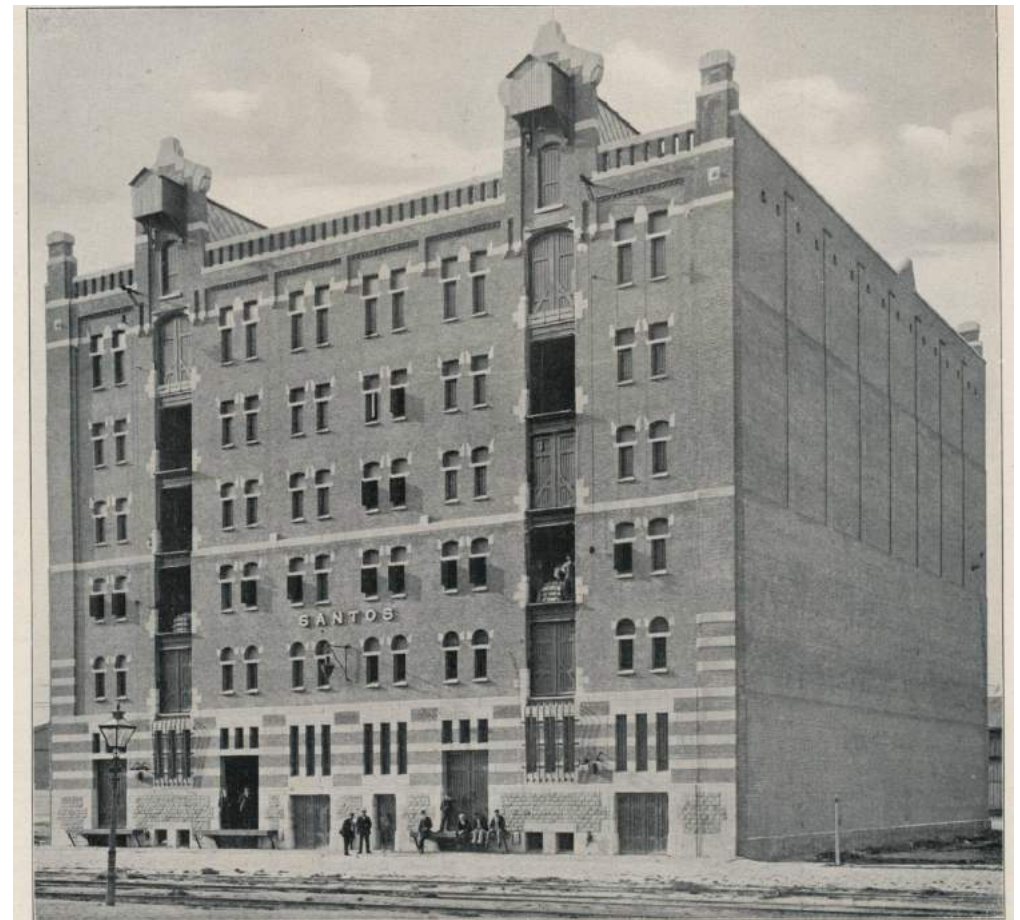
The part behind this façade, what is not visible from the street is a wooden construction just as the sawtooth roof. In order to ensure the waterproofness, both constructions are finished with steel roof sheeting. All the winch houses have windows for natural light and are accessible via the roof of the warehouse through a door. The roof of Santos can be reach by the elongated roof construction that runs from the north to the south facade.

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Coffee warehouse Santos



Rooftop Santos 1950 (Flexus AWC, 2011)



Santos in 1920 with on top the winch houses (Flickr, z.d.).

Interior

The interior is hardly changed for the reason that the function of the building is not changed during its use. Not only the layout of the floorplans were designed in a practical way but the interior as well. The materials express theme self truthfully without the use of distinctive and precious materials. The outside walls are also masonry on the inside. The iron construction element are treated with red lead and unfinished. The wooden elements in the interior are left untreated like the outside window frames, front doors, interior window frames, the wood floor and the floor beams. However the outside of the window frames and doors and façade shutters are painted in green.

The boss office

The office is accessible from the staircase and is only on the side of the Rijnhaven. From this office is an overview over the ground floor because its 1,80 above this level. From this office was the monitoring and control of the import and export of goods. The boss office consists out of two rooms. The first room is directly linked to the ground floor of the warehouse and the other is the area next to it. This part was mostly used for storage, kitchen or office work that require more silence. The floor and the walls are build out of wood (Flexus AWC, 2011).

The main staircase

The main staircases connects the ground floor with all the other floors off the building. This wooden staircase is from the first to the fourth floor provided with a corridor which give access to a toilet and sink of stone. Next to this is a storage space. Those spaces are not present at the fifth floor because there is no closed stairwell.

The staircase is a spiral staircase which is executed as an open stair case except above the boss's office it is closed. The stairs are provided with an iron handrail on the outside and in the inside there is a wooden rail.

The walls of the main staircase are made of brick masonry from the ground floor till the fifth floor. The wall are built on top of an iron beam for every floor level and finished with cement plaster. On the side of the storage space is the masonry still visible (Flexus AWC, 2011).



Main staircases out of wood and the doors to the toilets (Flexus AWC, 2011)



The boss office (Flexus AWC, 2011)



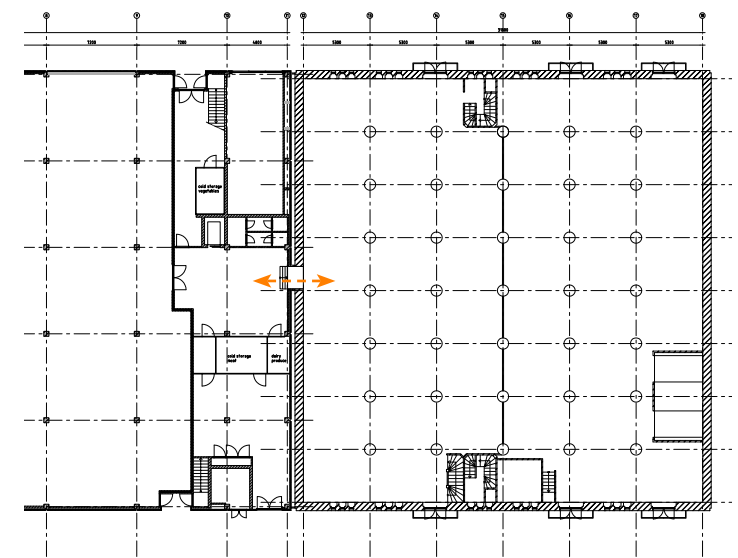
after 1950 (Flexus AWC, 2011)



After 1950 (Flexus AWC, 2011)



1954 Flickrhivemind (n.t.).



after 1970

after 1970



A triple window was added later in the façade of the Brede Hilledijk on the top floor. Inside the building is close to this window a later applied masonry chimney from the same period as the window was realized. Those were probably made for an office or common room.



Remove old elevator shaft. The floor is covered with wooden beams and a steel beams. In the floor is a steel plate.



Against the west façade of the building is on the full-height two concrete elevator shafts built. In the basement is lift pit and on the roof a small building for the installation of those goods lifts.



On the ground floor is build an extra wall for the separation for the current storage of the Jumbo supermarket.



In the façade is made an opening to create an indoor connection between the supermarket and the Santos building.

Materials

- Sandstone
- Brick
- Steel
- Limestone
- Concrete
- Wood

Sandstone (possibly Bentheim sandstone) consists for the most out of quartz. This make this stone is very durable, colorfast and acid resistant (MO-B, 2016).

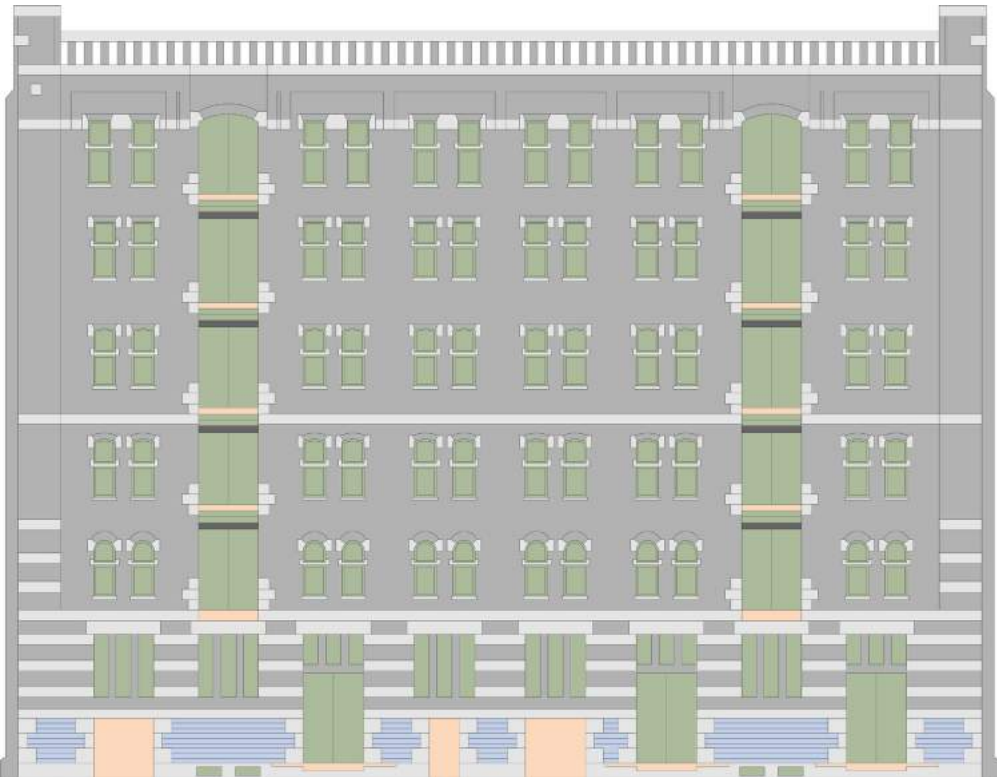
Flickrhivemind (n.t.).



Limestone (likely Blue Belgium limestone, petit granit) is created by erosion and deposition of calcium over a very long period. During this period the stone becomes a very compact mass what makes it suitable as a construction product. Limestone is characterized by its colors, structures and veins and is relatively easy to work with. Limestone belong to the family of the limestone (MO-B, 2016).

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Coffee warehouse Santos



Front facades



Side facades



- Brickwork
- Sandstone and brickwork lintel
- Sandstone mullion
- Wooden panel
- Sandstone window sill

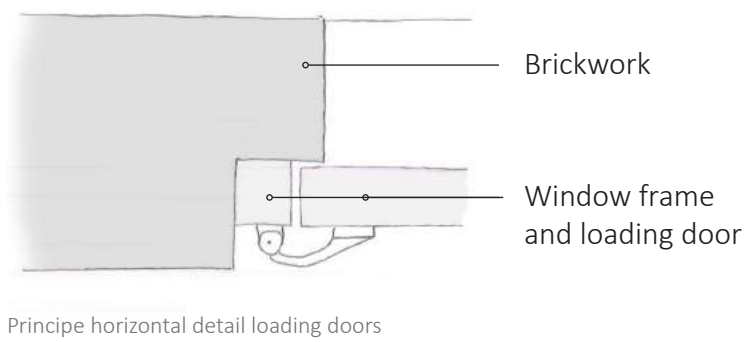
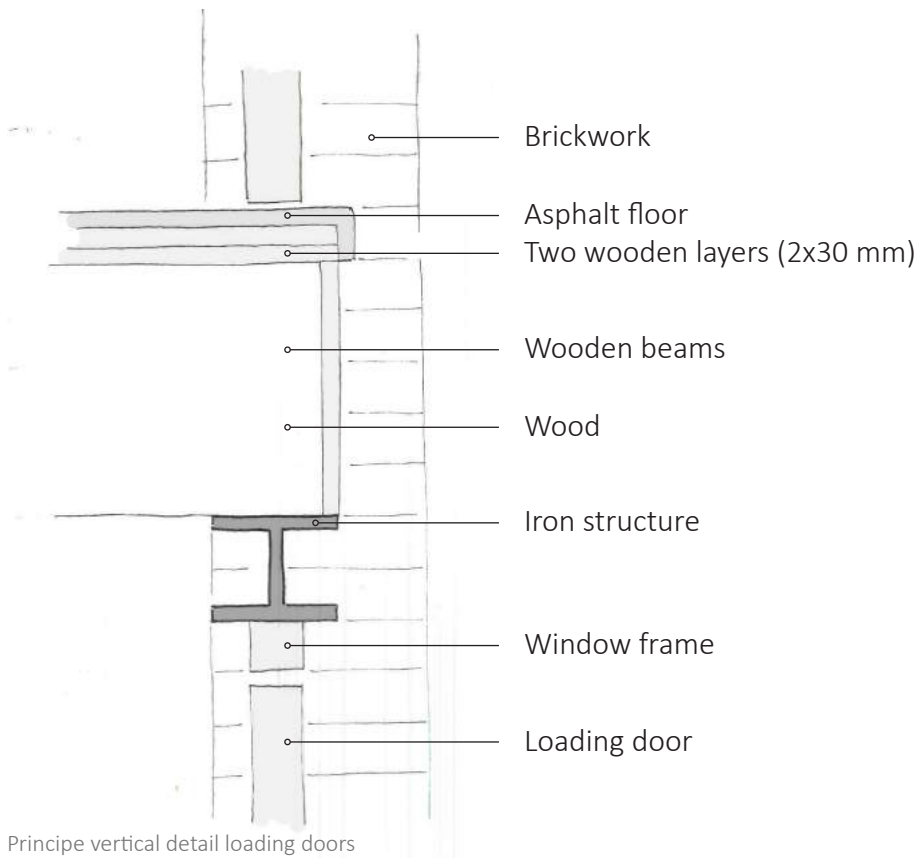


- Concrete
- Wood
- Steel
- Wooden doors
- Sandstone
- Concrete



Both images show the top of the facade which is covered and detailed in sandstone.





Window frame





Dimensions masonry

The façade exist out of a lot different elements as windows, doors and natural stone with all different dimensions. All those elements have in common that there measures are all determined by the sizes of the brickwork. For example there are everywhere in the façade 18 bricks next to the lower window, 3 bricks for the lintel in the middle of both windows and 8 bricks on for the upper lintel. Between both lintels are 3 times the headers next to each other



Division facade by masonry

or two times stretchers. The average dimensions of different bricks is for this façade is 202 mm long, 96 mm wide and 49 mm high. The joint have an average of 6 mm wide and 11 mm high.

Installations

Ventilation

For ventilation is in the current situation a mechanical system located on the fifth floor and is mainly used for the transformed third floor which is temporarily in use.

In the past the ventilation was controlled by ventilation gaps in the side walls of the building.

Heating and cooling

As a result of the original function as warehouse it was not required to heat or cool down the whole building. This happend probably only in the offices. Cooling down the office should never be a problem because of the thick brick walls and the fact that this part is located on the north facade. Nowadays it is done by the same unit as the ventilation.



Unit for ventilation and heating

Toilets

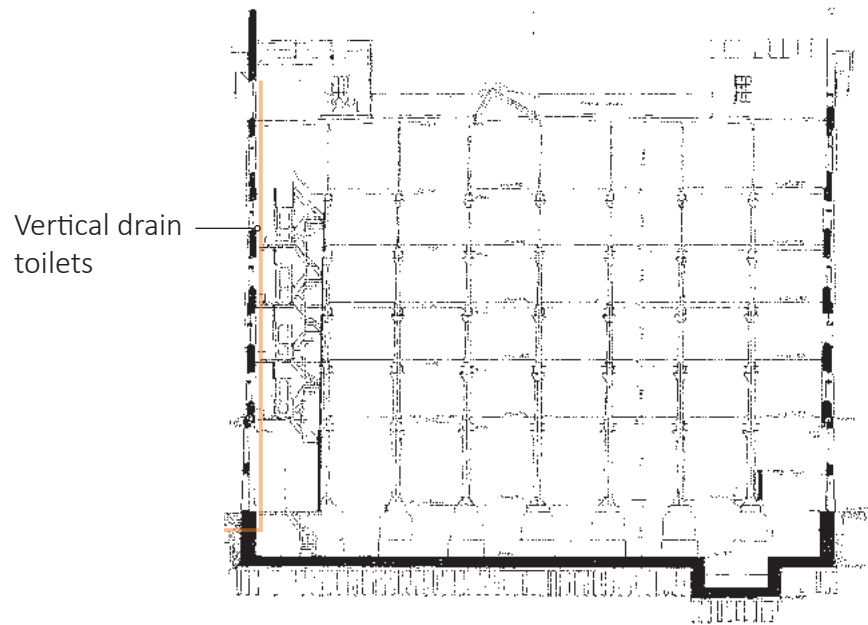
The toilets on both side of the building have a vertical drain which start above the roof and ends in the basement of the warehouse.

Rainwater

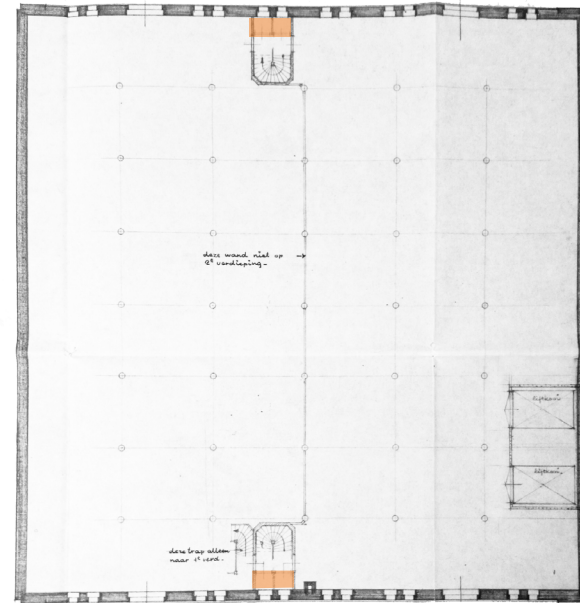
The rainwater drains go through the building along the north and south facade. Both facades are on the inside provided with four drains. On the roof are different emergency overflows for the case, the drains are blocked. This is all possible for the reason that the structure of the roof was built with a slope.



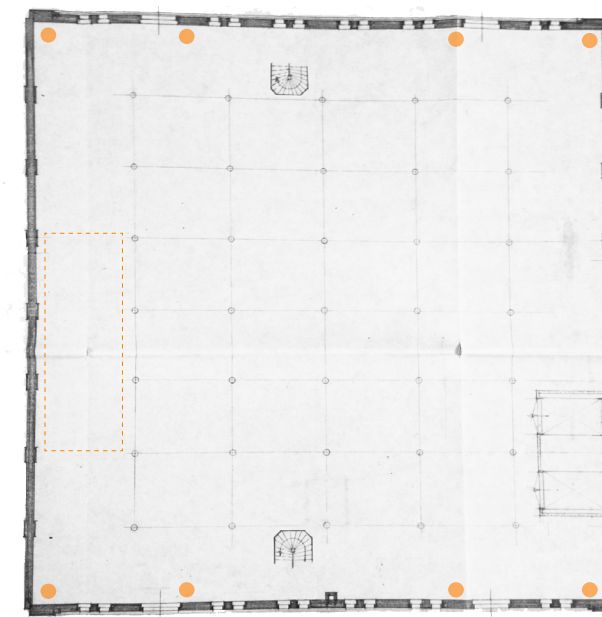
Supply and return ducts on the roof



Drains inside the building (B. Bronswijk)



Toilets



Drains
Ventilation unit

Floorplan with the ventilation unit and the drains

Elevator

The later added lift in 1954 was in use by the army to transport there equipment. For this elevator new concrete foundation beams were made on top of the wooden pole construction. The shaft is made out of a concrete construction and is connected to the existing brickwork. By partly break up the existing brickwork it was possible to create therein the concrete structure. This is done at the location of west facade and the columns in the basement and is appointed in the drawings as 'hamerstuk'. This is a constructed element that distribute the forces that comes into one point to spread theme to a larger surface. The connection between the existing floor and the new concrete elevator is a weak spot what could bring water inside the basement.

In order to make this elevator shaft, the existing floors has been removed except for the steel structure. This is still inside the elevator shafts.

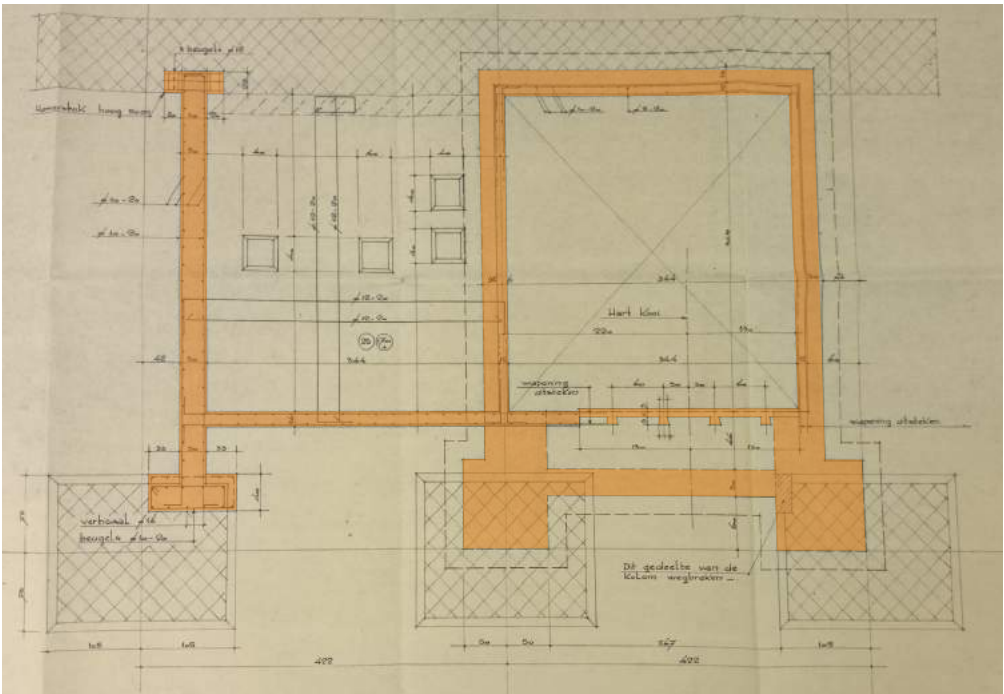
What is striking is that only one elevator shaft goes from the basement to the fifth floor, the other one starts from the ground floor.

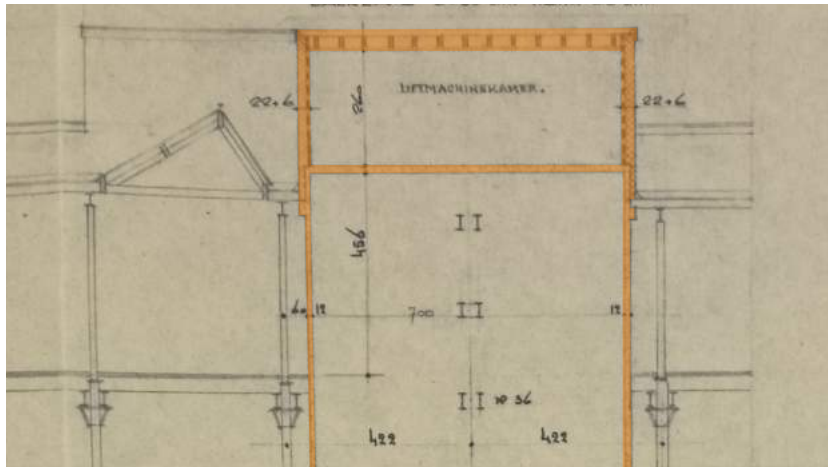
On top of the roof is the engine room, it is unclear of this machinery still works and is still safety to use. There must be taking into account that the elevator was in use for transporting materials and was not designed for people.

The engine room is accessible by steel ladder. From this area is possible to get onto the roof.



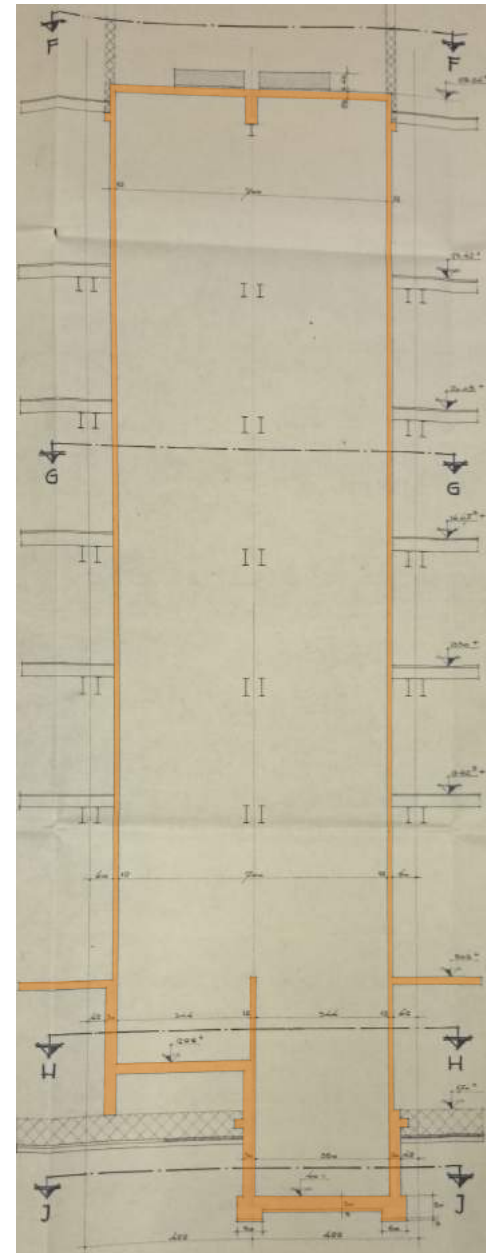
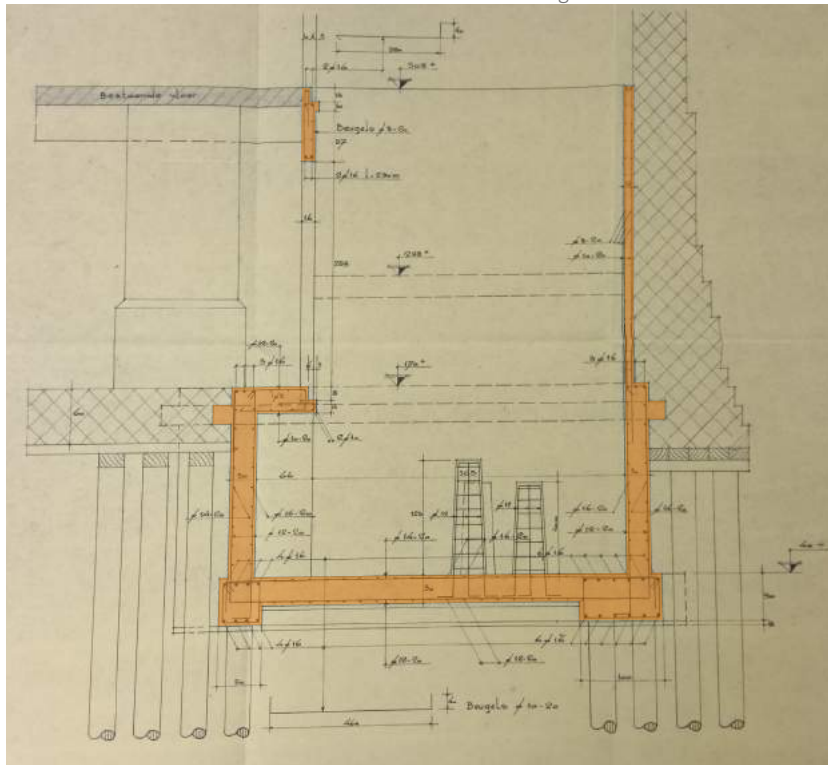
Engine room
Floorplan of the connected concrete structure in the existing brickwork



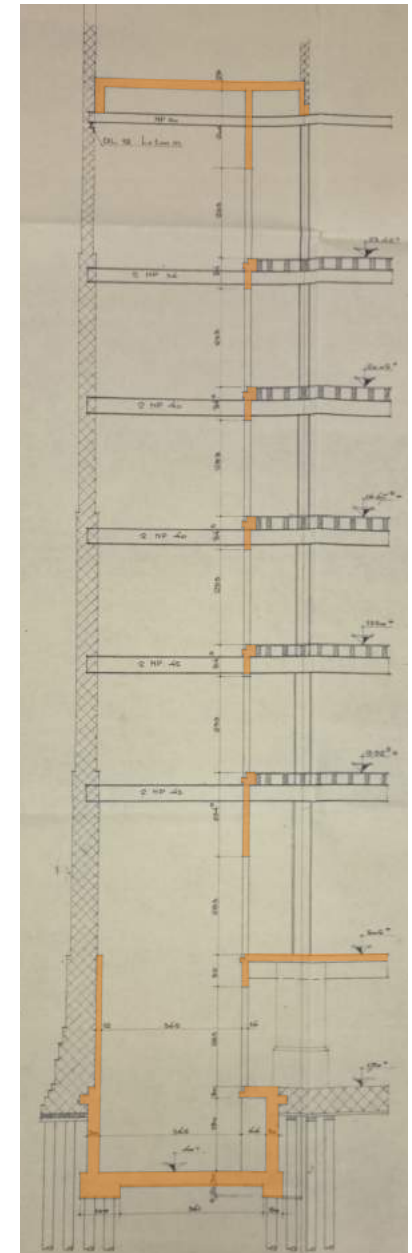


Section engine room

Section of the connected concrete structure in the existing brickwork



longitudinal cross-section



Cross section

Damage

A crack is the result of a cause or force somewhere in the building. A tilt will usually result in more functional problems. Many monuments have cracks or subsidence but there is rarely acute collapse. Therefore require cracking, tilt and subsidence cause no problems. Secondary damage is often more important than those problems. It is mainly more efficient to solve this secondary effects for example on the bearing construction.

The main reason for the cracks in the side facades are created by the load pressure of the weight of the coffee. The beams are not enough or in the right way supported by stone blocks and brickwork which should distribute the

forces over the rest of the wall. It may have occurred that too much weight is placed than was calculated. This in combination with temperature changes and the wind increase the risk for cracking (TU Delft, 2011).

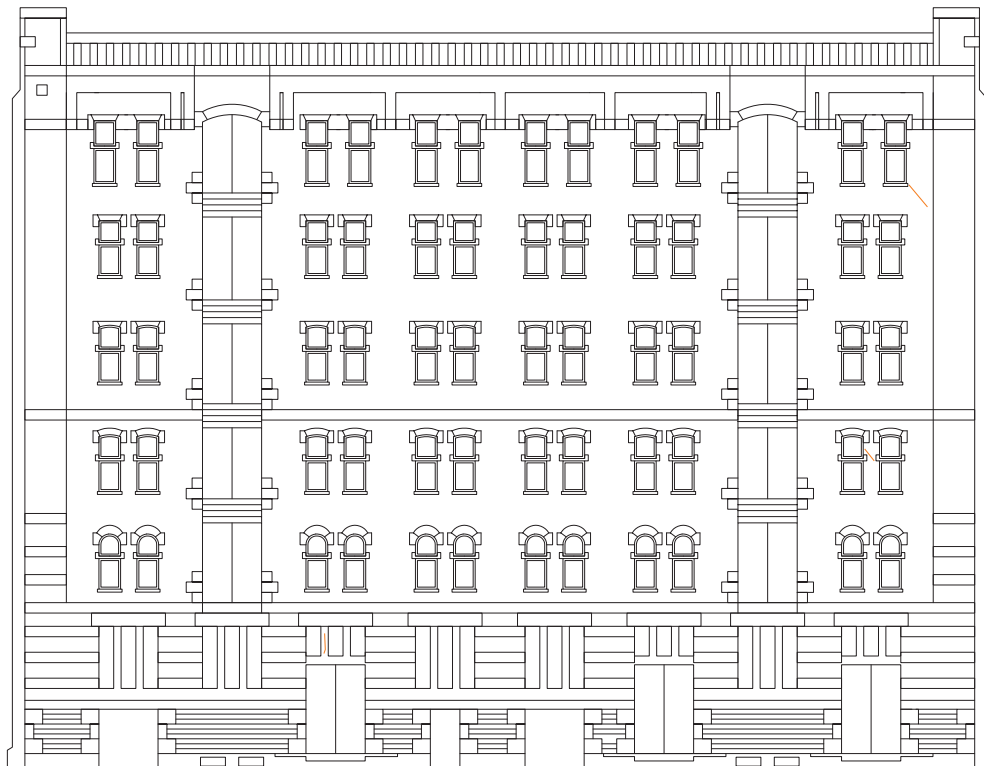
Other causes have strengthened this process:

Expansion joints

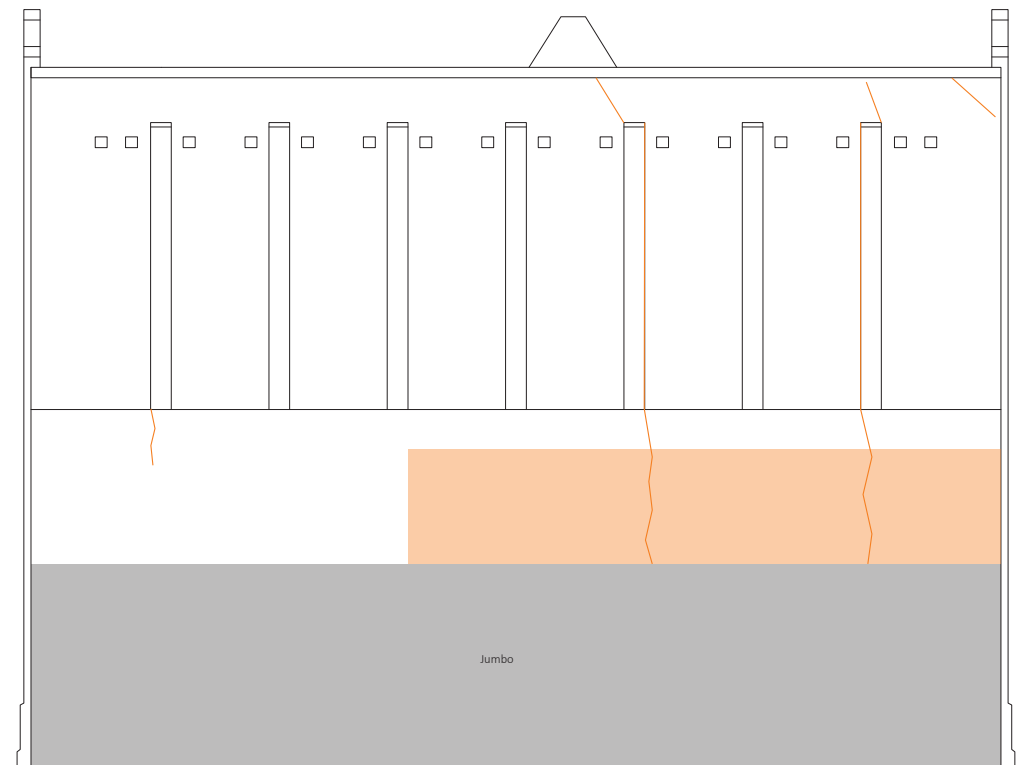
One of the reasons of the cracks is the lack of expansion joints in the brick façade. The risk may be increased by temperature differences and a lot of moisture on the facade. The cause of the problem must be solved to avoid the crack will come back and function as a natural dilatation. An expansion joint can

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Coffee warehouse Santos



North facade



East facade

prevent injury but must be chosen carefully to keep the character of the façade intact. As well the addition of sufficient reinforcement will spread the load in the façade (Perfectkeur, 2016).

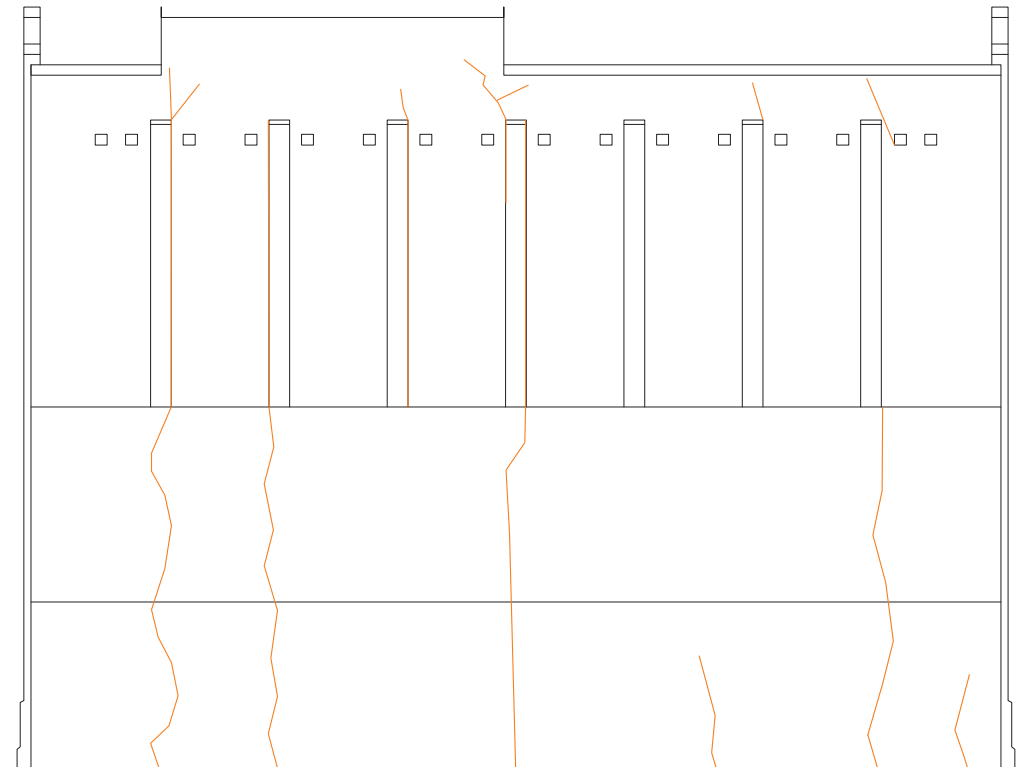
Thermal changes

Materials expand as they get warmer (expansion) and they shrink by cooling (contraction). These expansion and shrinkage under influence of temperature changes is also called thermal length change. All materials must have sufficient space to be able to undergo the required creep and shrinkage. This movements are not always taken into account causing what create tensions which are too

big for the tensile forces of the masonry. The dimensions of this crack will easily become larger since crumbling wall pieces avoid that the crack can close by rising temperatures. In the Santos building are different places close to the roof with those cracks where the temperature different between the inside and the outside is the largest. As well on the place where the fire place is situated are cracked areas (Perfectkeur, 2016).



South facade



West facade

Petrol station

In the past was next to the Santos warehouse a petrol station but over time this activity pollutes the soil. To clean this the soil must be excavated to a few meters what could have damage the facade, foundation or basement walls. Also the newly added soil creates new tensions in the soil, also known as negative skin friction.

The elevators

Probably both, the original and the new elevators, have had influences on the building. It is remarkable that there are more cracks on west facade. This can be explained by the formation of the surrounding buildings. The coffee was transported from the ships to the building over the road and had to cross a gap between two buildings. From this gap was the elevator on the west facade more closer and therefore probably used more often. The more often use of a lift with possibly more weight than was allowed had an influence on the facade. Also the vertical movements of the new elevator effects the building with its



Cracks underneath the beam

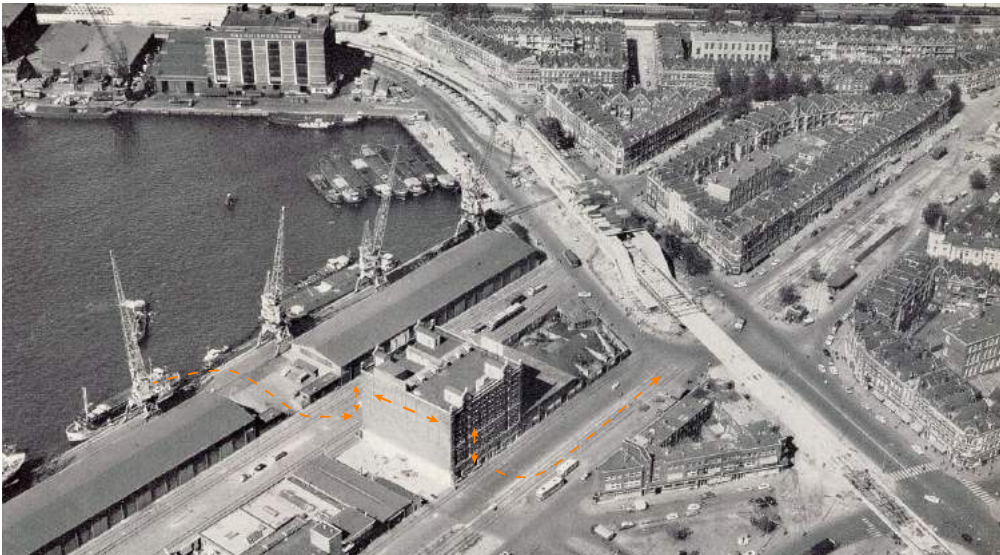
heavy loaded army material. The new foundation plays a role as well in the cracks of the facade for the reason that both are from a different time and material. That means they can both move separately from each other what creates different tensions.

Lintels

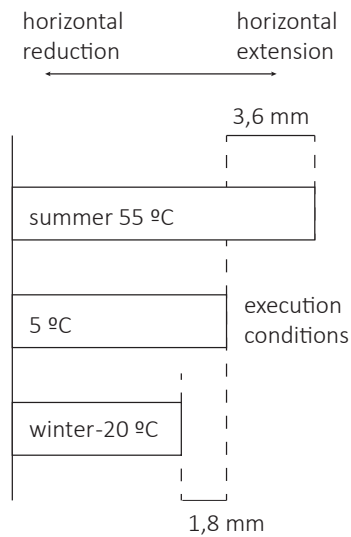
The place where different materials comes together creates different tensions. When this is not designed or executed well, it creates damage. Other reasons what this makes a sensitive spot are temperature changes (especially south facades) and exposure to exceptional moisture (Perfectkeur, 2016).

Restoration

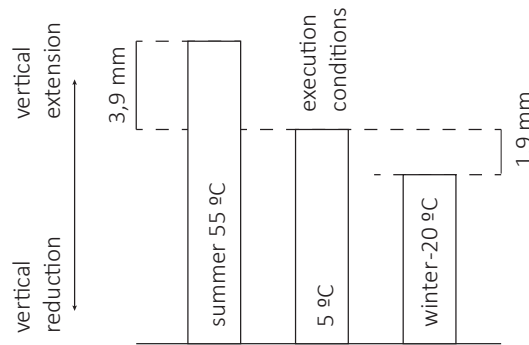
Before the cracks can be repaired it is important to research certain aspects such as the movement in the crack. By monitoring can be measured if the crack is still moving and in which direction. If they still get bigger it is impossible that the imposed loads influence these damage because this weight is already gone



Logistics route of goods (BbKdr, n.d.)



Horizontal expansion / shrinking
Wall length 12m (KNB, 2016)



Vertical expansion / shrinking
Wall height 11 m (KNB, 2016)

for years. If the cracks are older the cause can be either the empty weight of the building as the imposed loads. During the time of the army the building was maybe overloaded since the equipment was heavier in comparison with coffee.

Due to the cracks change the division of forces. This means that not supporting parts can have taken over a part of the role of the supporting structure which may affect the safety. As well the stability of the structure can be affected and the further consequences of moisture and frost should be examined (TU Delft, 2011).

Columns

The fire protection layer of concrete around the columns is on different floors damaged. Especially on the ground floor this is the most common and is the metal and straw layer visible. This damage reduces the time to leave the building in case of an fire alarm.

The steel structure on the fifth floor has rust in several places.



Graffiti on the east facade



Rust on the main structure of the fifth floor
(B. Bronswijk)



Damage to the fire-resistant cladding

Oxidation

Many element in the facade are made out of iron and not well protected against the influences of the weather. This means that they will react to the rain and will rust. Elements that rust will expand whereby it needs more space. If this space is not there, the material around the iron will burst. Those burst are again vulnerable for water what can come in, will freezes and brakes the stone even further.



Rust elements of the loading platform and the stair (S. Fischer)



Damage caused by rust in sandstone along the loading door



Damage caused by rust in sandstone along the windows

The basement

At various moments there is water in the basement where the amount depends on the height of the ground water. The basement is made out of brickwork, this was mostly done with special bricks and mortar what proofing it for soaking-through or rising moisture. The outside is covered with a mortar layer and over that another tar product to make it waterproof. The ground around the basement is completed with well drained in order to reduce the risk of leakage. These measures do not avoid ground and water pressure on the basement walls what create tensile force in the structure. Brickwork is not suitable for these kind of forces what creates cracks (Berkela, 2016). Another option for water in the basement are mistakes during construction what influence the quality of the building.

Also is it important to realize that the warehouse was built over a 100 years ago and the age of the material plays a role. Salt in the water breaks down the brickwork and one of the properties of brick is that it absorbs moisture what makes it more delicate to damage (Van Toog, 2016).



Water in the basement (TU Delft, 2011)

Different options are possible to solve this problem:

- Injecting the ground around the basement
- Injecting the floor and the walls
- Lower the ground water
- Create new basement into the existing

The hard part of injecting the ground is that it is difficult to check if it is done well since it is on the outside. This is the same for injecting the walls of the basement.

By lower the ground water level will affect the surrounding building and the wooden foundation as well. When the wooden piles are not underwater they will rot.

The best option so far is by creating a concrete basement in the existing one. This will be a layer of 200 to 300 mm thick what makes it still possible to use the space.

Another problem is the lack of ventilation options what will probably makes other problems such as mold. The creation of new openings or to open existing windows can ensure that walls above the groundwater level will be dryer.



Inject the ground around the basement



Inject the walls of the basement



Lower the ground water level



A new basement inside the existing one.

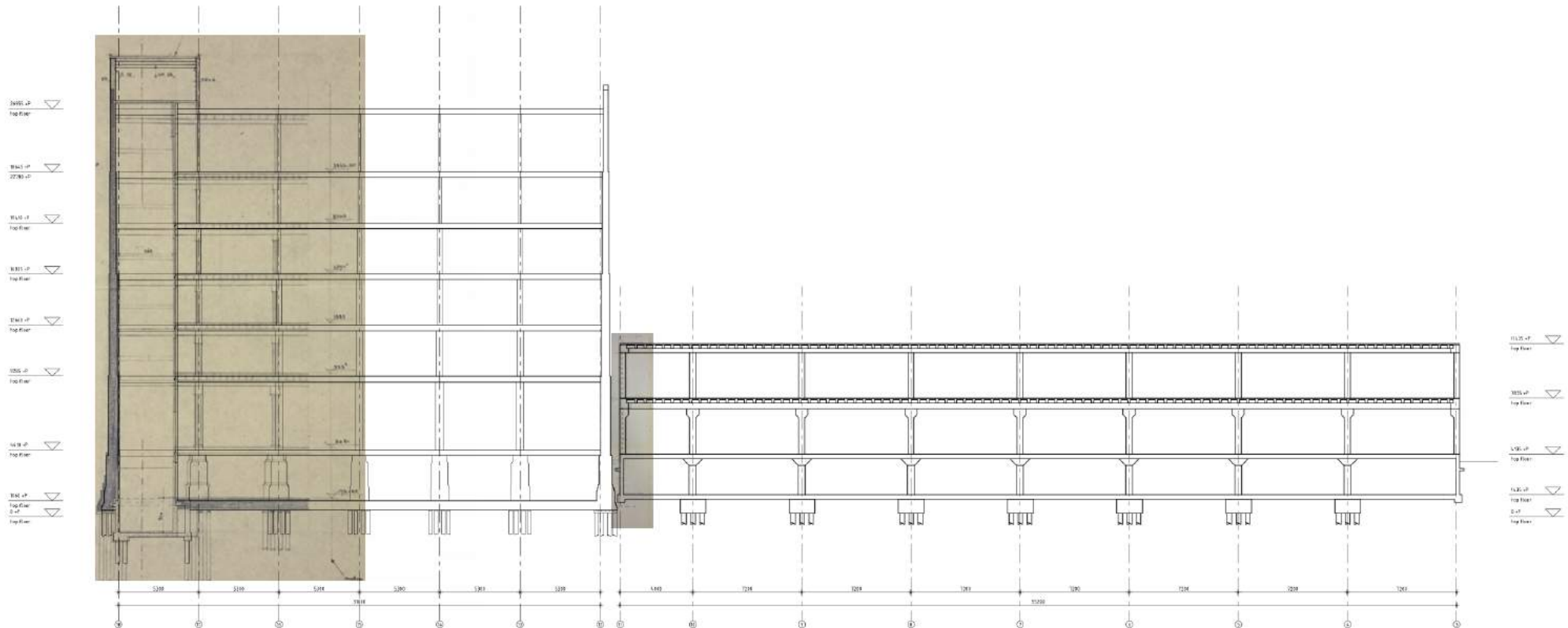
RP vs NAP

Rotterdam used in the past its own measurement system for heights which was also known as Rotterdams Peil (RP). This system was used as well in the drawings of the Santos warehouse but it not common anymore. Nowadays the Nieuw Amsterdam Peil is in use so for that reason the RP should be translated to NAP.

The Jumbo supermarket next to Santos was designed with this new NAP system and by compare the drawings of both it is possible to transform the dimensions of Santos to NAP. The difference between both is 650 mm.

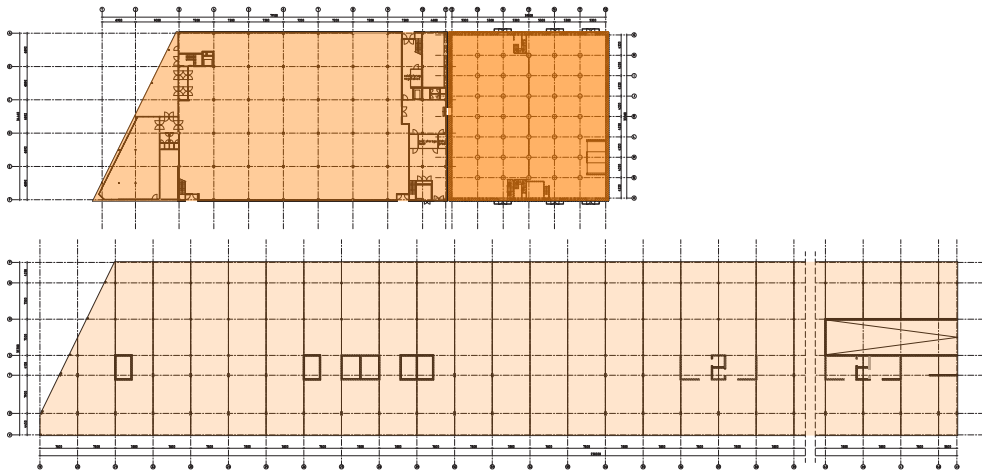
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Coffee warehouse Santos



Historical value assessment

Jumbo and The View- European China Center Rotterdam



Overview of the plot

Next to the Santos building is the Jumbo supermarket recognizable by its gray concrete facade elements. The future plans of the municipality Rotterdam this building will be demolished. The structure consists of concrete columns on a repeating pattern size. The canopy have its own steel structure which follow form.

The supermarket have a parking garage and two floors on top. The storage space is partly in the ground floor of Santos.

- Santos warehouse
- Jumbo supermarket
- The View- European China Center Rotterdam



Entrance to the parking garage of the Jumbo supermarket next to the south facade of Santos



Main entrance of the Jumbo

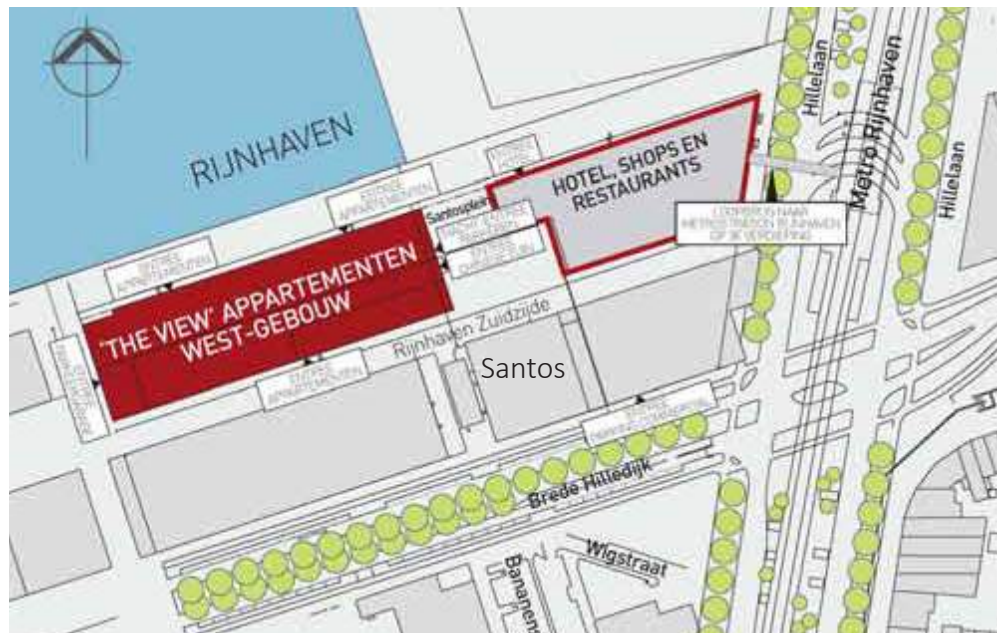
The construction of The View started on 30 June 2010 but stopped at the end of 2012. The reason of this shutdown is the retreat of the Belgian investor for the parking garage. A second cause is the lack of decisions from the government about the residence permits for the Chinese investors. It is not clear when this will be continued.

So far there is on the water side a basement with two parking levels and storage space. This concrete basement has a load-bearing structure of concrete columns and there are different access opportunities for staircases and elevators. In the middle part of the ground floor, in front of Santos, are no columns to create an open space. Also called the Santos square.

This 230 meter long and 360 meter wide basement has a ramp on the west side and is part of phase 1 and 2.



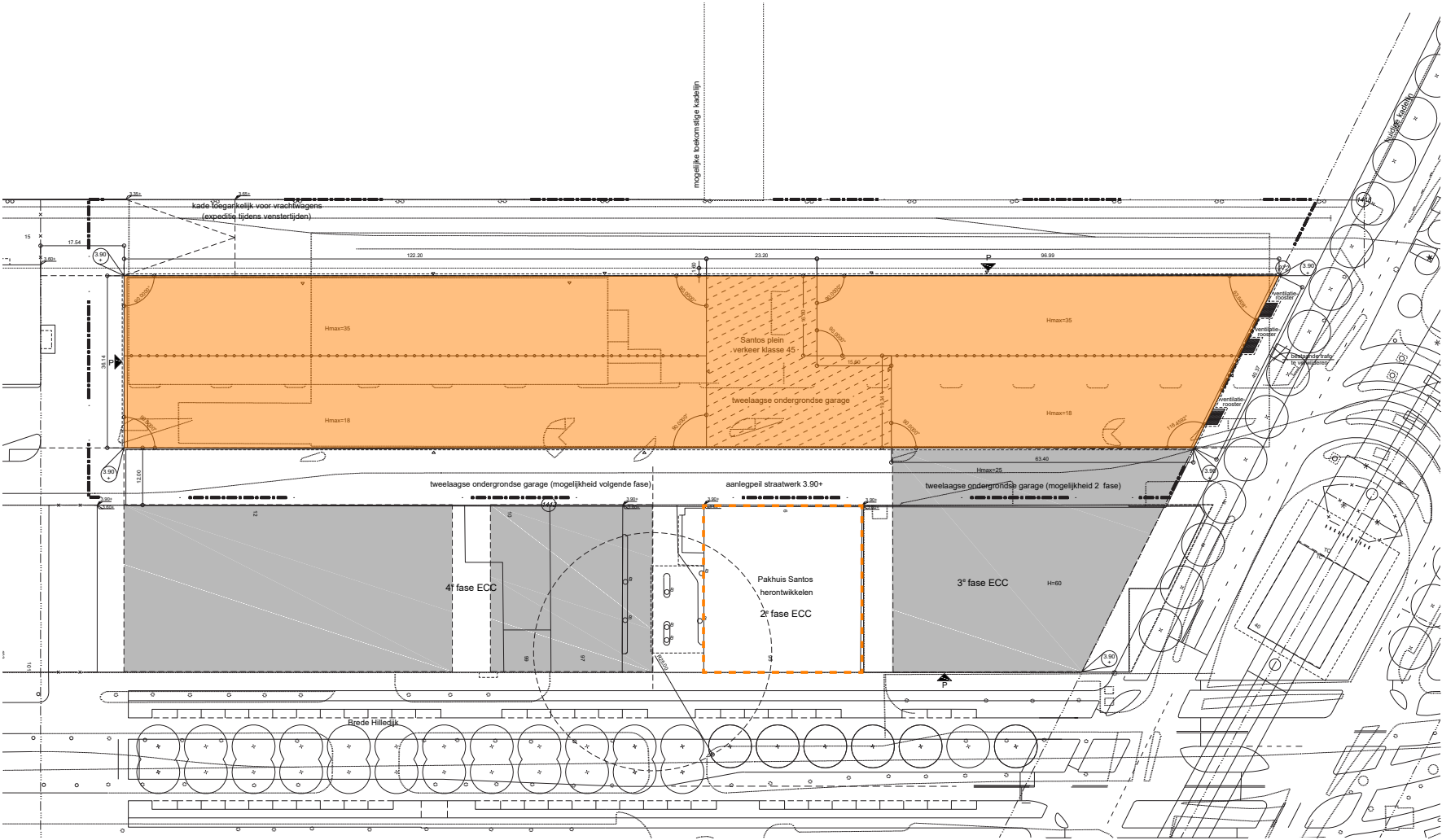
Already realized parking garage

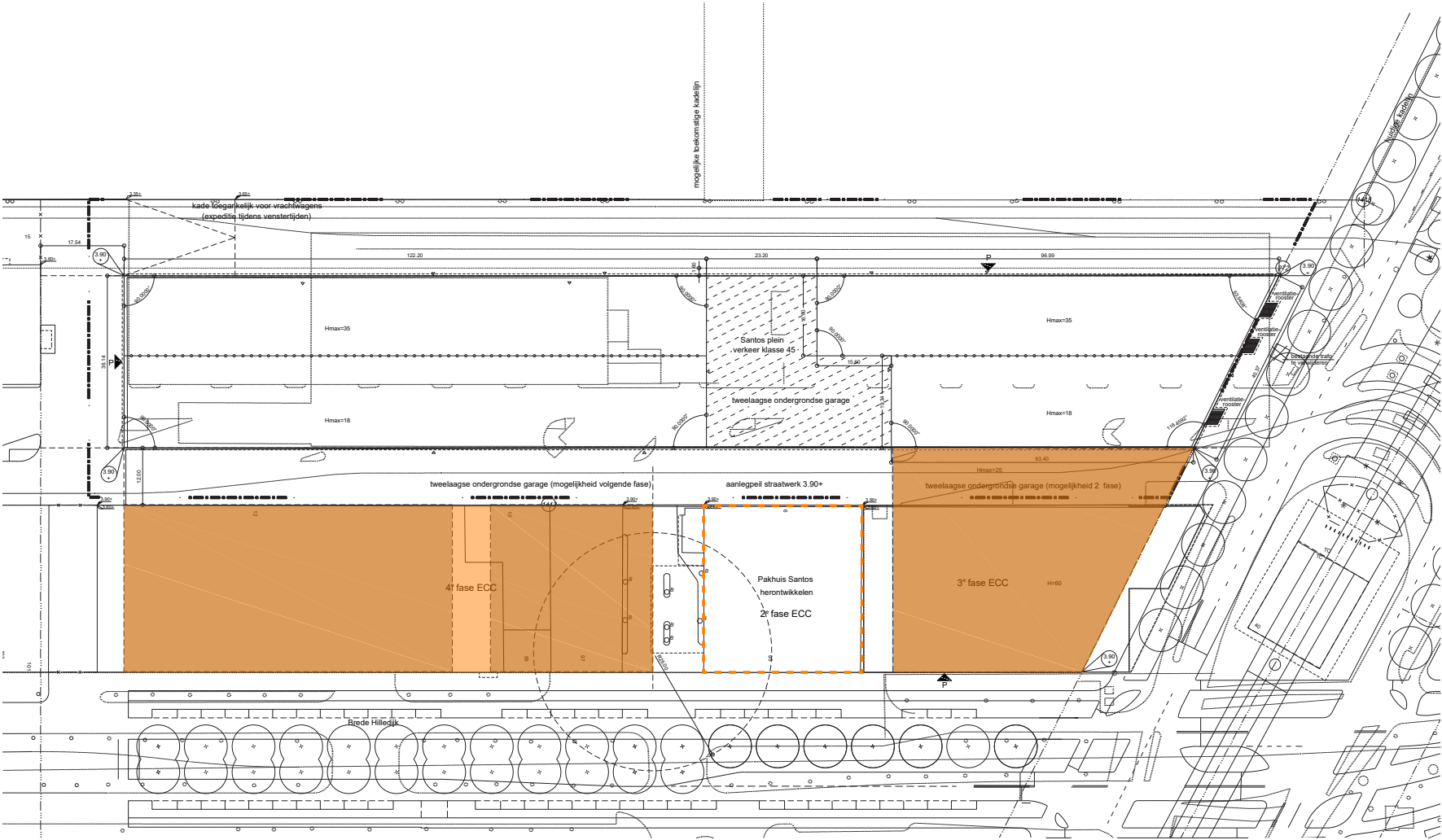


Future situation of the View (The View Rotterdam, n.d.)



New building of the View from the Hillelaan (Top010, 2016)





PERSONAL RESEARCH

Coffee warehouse Santos



Preface

As a student at the University of technology I wanted to know more about how Santos should be understood since this is a hard feeling to grasp. Santos was a coffee warehouse from 1902 till 1954 and had different functions afterwards. Nowadays this building is only for a small part in use and becomes part of the new city centre. For my graduation project I want to extend the building and create a closer relation with the water.

To make an intervention to an existing building, there must be a well thought research as a starting point. I think this moment is perfect for this for the reason I have been in the warehouse only once. That means that I still can research with this feeling of a first visit and impressions.

Mostly, we as designers try to understand how a space will feel of would be understood by models but still with those tools it is hard. With this research I want to understand better the different meanings of elements and how they influence the surrounding specifically focused on the Santos warehouse, for both the past as in the current situation. This may be one of the starting points for my new design for the warehouse but also for other assignments.

I hope you find this report enjoyable and informative.

Mark van Os,
Delft, 22 December 2016

Introduction

This report is a continuation on the research of the whole Santos building and should be interpreted as an extra chapter. The research question arise from an interest of several remaining questions which were left after the first analysis about the warehouse. The report is also based more on my own interpretation and opinion of the building.

This part explains more about how Santos interact with its surrounding and its appearance as the meaning of a formation, interpretation of a colours, how people experience stairs, if light influence a space and the relation between architecture and functionality. Many architects have already written about this subject and define the different meanings of those elements. The difference with this research is the focus on the warehouse and that it explains the meaning of architecture and functionality. The research question is:

How should the Santos warehouse be interpreted?

To answer this question, the sub studies in this report are about the past and the present, the surrounding area and about the in- and outside of the warehouse. The research is strengthened by using drawings, photographs and models and should be a guideline to see what is there and what should be reinforced.

Importance of understanding a space

Space and the experience of these is hard to grasp since they are very personal and different in every situation. Even the definition doesn't explain very well what space is: 'an extent or expanse of a surface or three-dimensional area', 'a blank or empty area' or an area provided for a particular purpose'. (The free dictionary, 2016).

A space is influenced by experiences which are reinforced by sequence, light, dimensions, materials and rules. Space or the elements which enclose it, are more important to people than only technical, aesthetic or semiotic interpretation. Space is both a means what brings us together or separate groups. Space often explains how to behave for example in a religious place or a prison.

However the expectation of a space is in most cases that it could also entertain or feel comfortable. The human being is also longing for stability and structure in our lives what can be seen as a need for safety, so we require spaces to keep us secure.

Robert Ardrey, the American screenwriter who start on a later age with anthropology and the behavioural sciences, mentions that people always search for the three needs of stimulation, security and identity (Ardrey, 1967). The amount of stimulation depends on the person, some people prefer a simple and quiet life while others want more action. It is not possible to create a space which is suitable for all of us. People need a certain continuity and predictability in live but besides that there should be enough mystery and complexity to keep

it interesting. Le Corbusier said once: 'Space and light and order (Arki students corner, 2011) are the things that men need just as much as they need bread or a place to sleep.' This means that there must be a certain simplicity or system in the complexity to understand a space and feel comfortable.

Other conditions of a space should be security for the fact that we all have a need to stability, continuity and predictability in our lives. Live would be stressful if it was constantly flux and unpredictable since this will influent the mental health. Social aspects are very important to let people behave in an ordinary way.

Spaces can be seen as the 'settings' in which we behave our self and behaviour can be influenced by this 'behavioural settings'. This is done by certain elements create a setting which generate a feeling of security. Those settings explains how to deal with the social norms to avoid mistakes and stress. If the rules about behavior are not clear, many mistakes would be made and upset large numbers of people. By entering a library, an office or an theatre it is clear by those what the scene or settings are. Even if we have never been in this particular library it is clear for the reason we recognize the setting as a library with its own social norms. If this kind of settings are not clear it would give chaos because that means we should constantly try to understand the rules again. By the time those rules are clear it could already create mistakes or will upset large groups of people (Lawson, 2011).



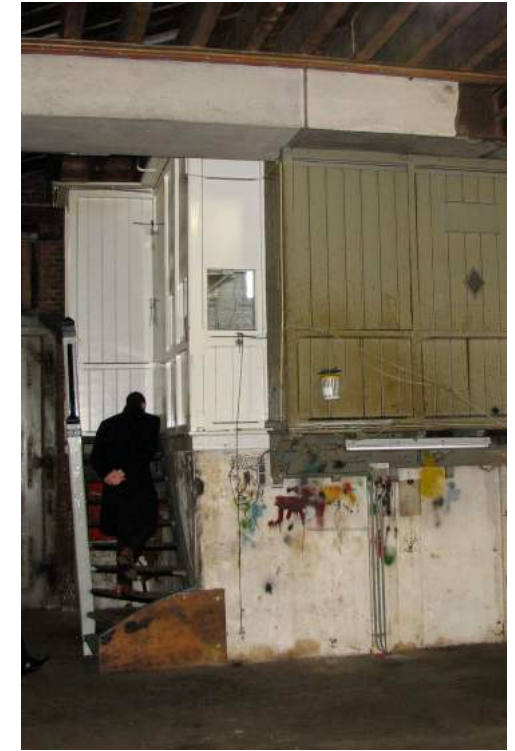
In-between space enclosed by Santos and the water

The Santos warehouse divided the area in different spaces as well by the fact it creates an in-between space. There is no relation anymore with the Brede Hilledijk. Despite, this area is huge when you compare it to the human scale. It also doesn't 'describe' any rules about how to behave what gives the experience of freedom.



The boss office (Nelissen, Vanderbeke, van Rooijen, de Haan, Fischer, 2011) (S. Fischer)

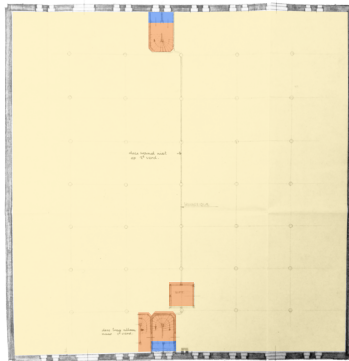
Inside the warehouse it is still a very wide and open area. To define the human scale more and create a pleasant work area there is an small office created. This office is accessible and gives an overview of the storage space. Both aspect give the feeling of authority.



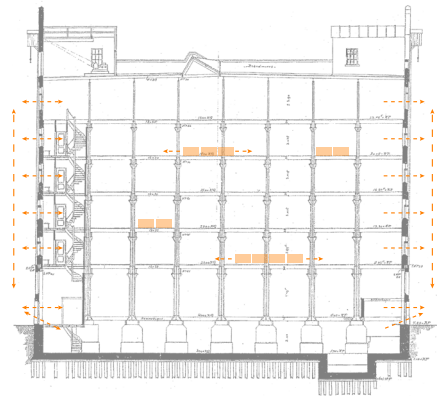
In relation to the text of Lawson, different aspects in Santos determine how to behave in Santos. This makes this place different than a library where people should be silent or a theatre where there is a clear route. This building gives more the feeling that a lot is possible without strict rules how to behave. Everything could be entered, touched and seen. Santos gives the feeling of freedom.

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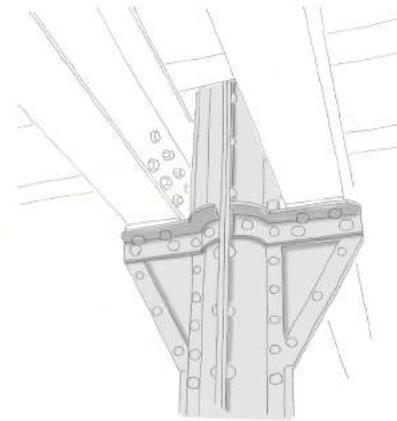
Coffee warehouse Santos



The large open spaces give a feeling that everything is visible and that there are no secrets.



The building is empty and there are no people working anymore. This makes it harder to understand the purpose of the warehouse.



The use of rough materials as iron and brickwork express the harbour feeling. This means movement and action. All those materials are visible, they do not have a finish layer.



The building is quite dark inside what gives at the same time a more uncertain feeling about what happens inside. This is especially inside the staircases.



The interpretation of an object

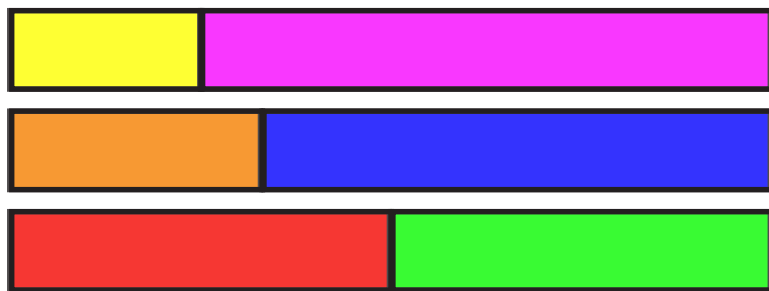
Understanding a building on the outside depends mostly on the context. This means the kind of objects, the materials, dimensions and the formation. The perception of a building on the outside depends also if a person is going fast or slowly passing by. A pedestrian can walk directly along the building whereby it is possible to feel the materials. Also the temperature, the wind or shadows influence the experience. The city in a broader context influence the circumstances with sounds that reflects on the facades or the smell of the area, materials or other processes. Is a building seen as a complex on its own or is it part of a bigger order.

The different characteristics determines how a place is interpreted and can be seen as the back and foreground of a building. The foreground is the part that is in focus and the background is mostly less clear but shall be completed by similar situations in the past.

Foreground focus is also obtained by geometrical characteristic. Lawson mentions that traditional forms in architecture get more interest by the human eye. This could also be explained by the fact that symmetrical parts are mostly placed on important places for example the location of formal main entrances (Lawson, 2011).

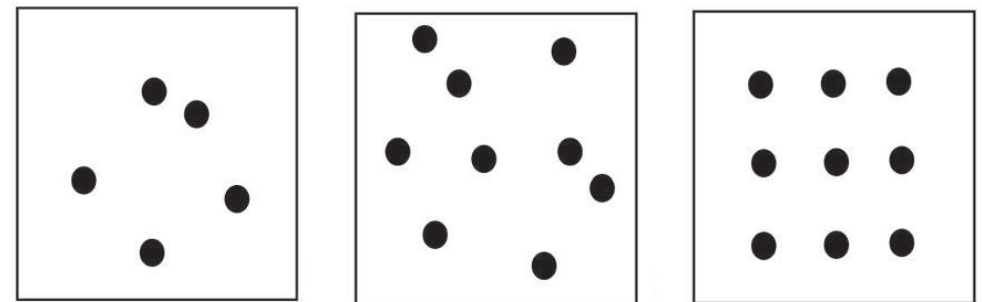
Color can be seen as change of the reflection of light and claims by this a more foreground position. The yellow, orange and red color are more dominant than blue, green and violet shades. The general idea of 'warm' colors, red and yellow, get also more attention than the 'cool' blue and green tints. A space covered in red seems smaller than when it is painted in blue (Kleurencirkel, 2016).

Besides the amount of colors, the repetition of an object depends as well if it still outstanding. Simplicity and repetition of an object can itself disappear. An easy to understand example is that we don't see every individual tree but consider the whole as a forest. In architecture is this comparable with a column what becomes a colonnade. The short-term memory is only reliable up to seven items, but beyond this it will be hard to see have the overview. This means that when an object repeats itself more than seven times it will no longer be part of the foreground but disappear in the background. All those different characteristic components determine how an object is interpreted and where the focus is. It is clear that personal mood and interest plays a role in this as well (Lawson, 2011).

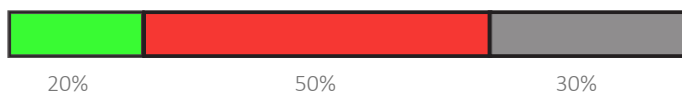
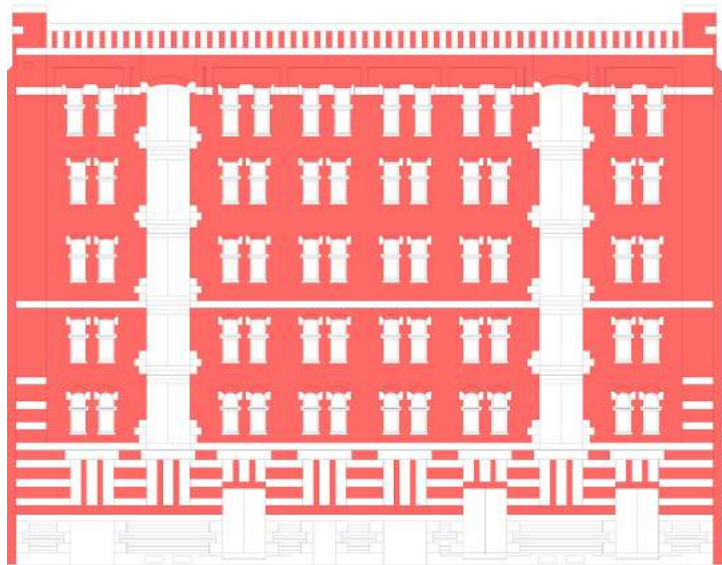


Not every color have the same domineering appearance. Yellow is much stronger than violet. The ratio is 9 to 3 for an equal distribution of attention.

yellow	orange	red	violet	blue	green					
9	:	8	:	6	:	3	:	4	:	6



By only having a quick look at the left image it is easy to see that there are five dots. This is much harder for the second image, unless they are counted one by one. In the last figure it is immediately clear that there are nine dots since the configuration is recognized as $3 \times 3 = 9$. That means that beyond about seven our ability to identify numbers decreases quickly.



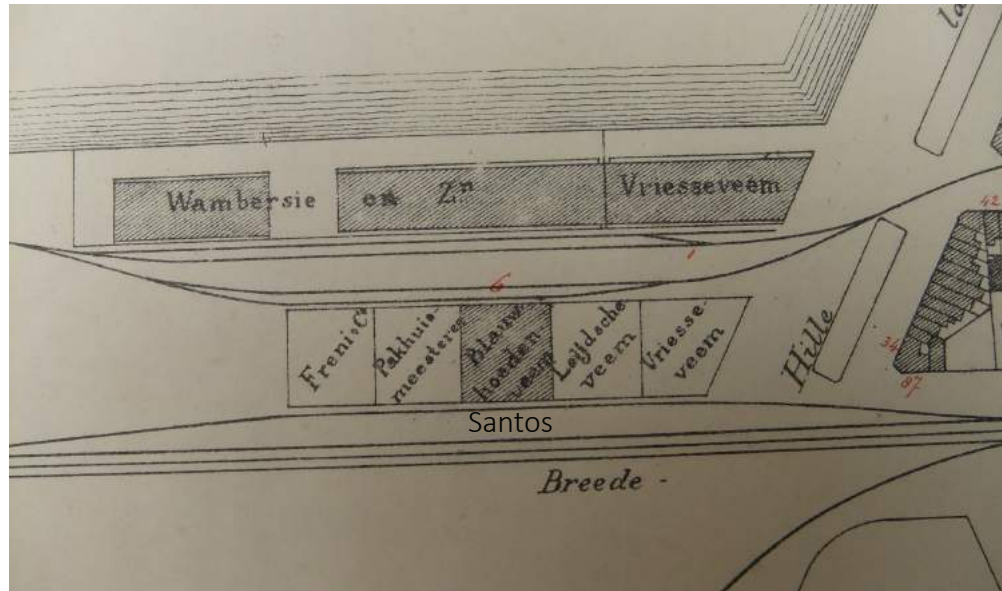
Inside the warehouse it partly the smell of coffee which determinate experience. On the outside the materials and the composition are important. Both the front and back façade consists for 50% out of brickwork, 20% is green and the left 30% is natural stone. Despite that the façade is mostly brickwork, the red color is not dominating for the reason that the grey part neutralizes the effect. That makes the great, green loading doors more prestige.

As mentioned by Ching in his book Architecture Form, Space and Order he mentioned when there is a repetition of more the seven it will disappear to the background. This counts as well for all the small windows. There are 60 of these windows in the façade but they are never seen individually but as a whole.



Santos as a landmark

History until now



Unrealized plan around Santos,1903 (BbKdr, n.d.)



After the War, 1946 (Bedrijvenkdr, n.d.)



Santos from the Maashaven, 1956 (Serc, n.d.)



Santos, 1968 (Serc, n.d.)



Santos with on the left side a petrol station, 1980 (Bedrijvenkdr, n.d.)



Katendrecht, 1983 (Serc, n.d.)

In the original masterplan from 1903, there would be two other similar buildings on both sides of the Santos warehouse. This four other warehouses were never realised for the reason that it is too far from the water. The result was that Santos, with 24,5 meters, was the highest warehouse of Rotterdam. It is unclear till what time exactly but in 1912 was the St. Jobsveem realised with a height of 25 meters (Architectuurgids, 2009). In the image of 1904 is already clear that other buildings around the Rijnhaven had a similar height what makes Santos less unique. Santos was not high enough to be a skyscraper, especially not for the north of Rotterdam. For the south it was characteristic building which marked the location Katedrecht in Rotterdam. Nowadays, Santos is still one of the highest buildings on Katendrecht but this will change very quickly when new buildings are realised in the area.

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Redeloptment after the war, 1980 - 1990 (Serc, n.d.)





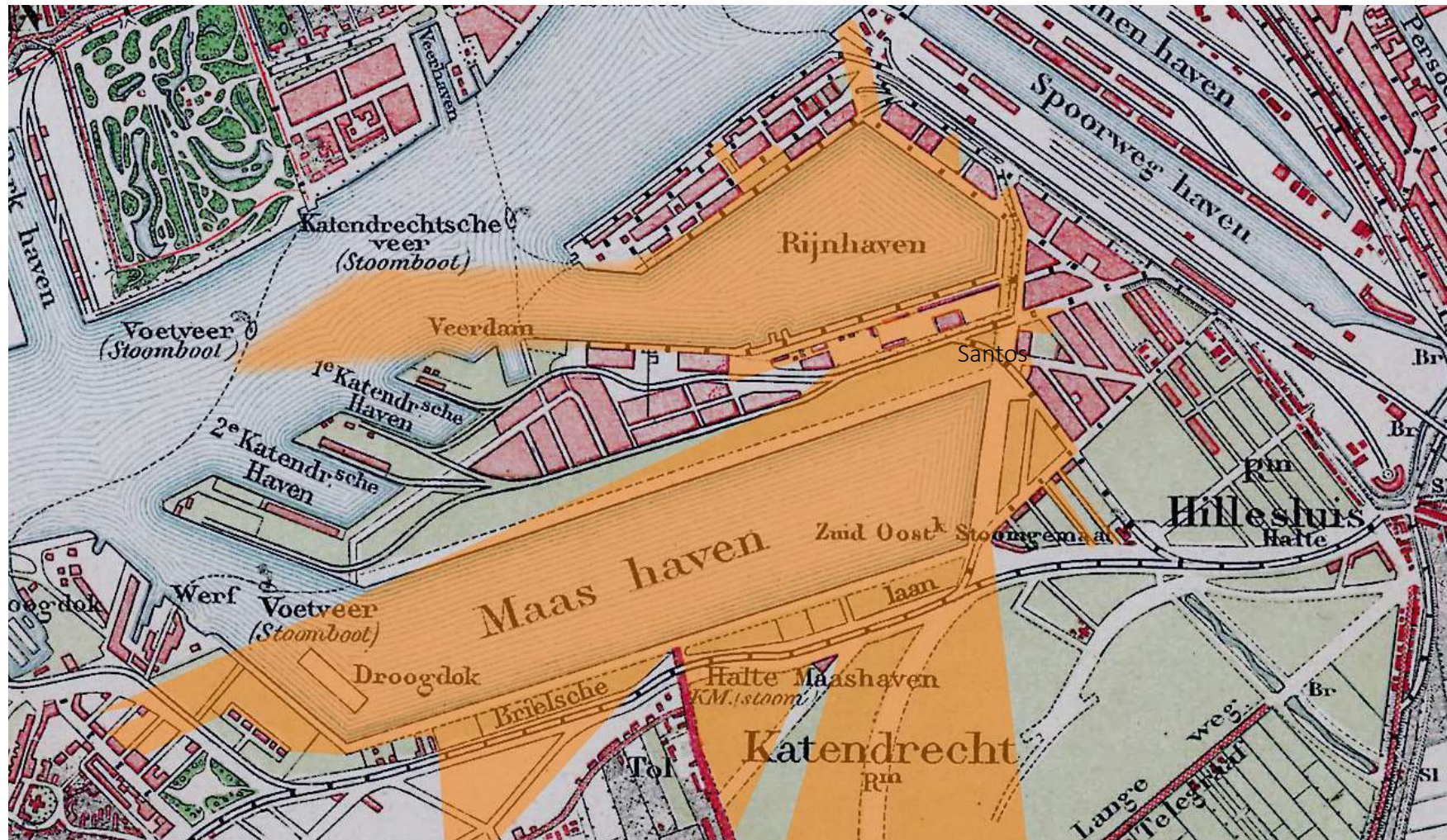
Santos



*S. Hermann
Düsseldorf 04.*

South of Rotterdam in 1904 (Wikiwand, n.d.)

Conclusion



Explanation from where Santos was visible in 1910



Explanation from were Santos is visible in 2016

The Santos warehouse was much better visible in the beginning of the 20th century than it is now. It is also clear what the influence was of the harbour since the building is already recognizable from the Nieuwe Maas what means that Santos function as a 'landmark' to guide the ships. In the current situation

is this not that important anymore and is Santos only visible in the area around. When the building The View will be realised, Santos will only be visible from the Brede Hilledijk. From that moment it doesn't influence the area around anymore but only the street.

Development of Santos



Building height



New highrise

The warehouse was built in the period 1901-1902 for the storage of coffee but in the fifties the warehouse was not profitable anymore for private use. In the period 1954 – 1959 the building was leased by the Royal Army. In 1959 there was a discussion by the management of selling the property. Blaauwhoedenveem kept the property based on the idea to rent it as a business space. This proved unsuccessful and the property was sold in 1975 to Handelsveem (Nelissen, Vanderbeke, van Rooijen, de Haan, Fischer, 2011). In 2003 the Santos warehouse became a national monument (Rijksdienst voor cultureel erfgoed, 2016). Nowadays the building is abandoned except for the third floor which is in use for the promotion of the new building, The View- European China Center Rotterdam. The building is now owned by the municipality Rotterdam and a part of the ground floor is in use by the Jumbo supermarket.

Remarkable is that the building was never demolished for the reason that it was already not profitable as a coffee store around 1950, there is damage in the facade, the basement is leaking and there have been different periods of

vacancy. In-between those periods of vacancy, the building served for other purposes as storages but those all seem temporary fall-back solutions. As well with the fact that there have been different changes of the building and especially those on the roof. The iron construction and the winch houses were removed but it is unclear for what reason. This raises the question why only those elements were removed and not the whole building after long vacancy? Why was there never someone who saw new potential in the area and developed it before the 21st century?

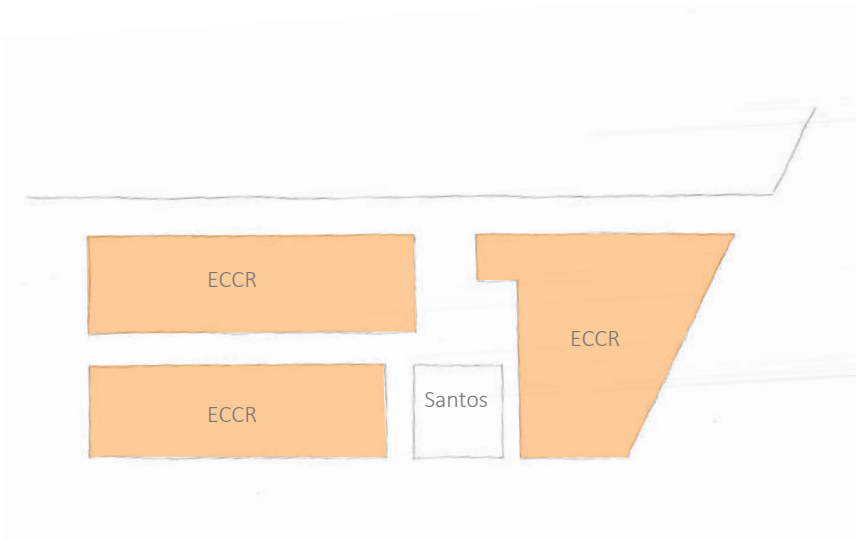
During the last 20 years the development starts around Rijnhaven with the Kop van Zuid and this proceeds towards Katendrecht with new high-rises. The quay around will be surrounded with high-rise buildings and will get new potentials. This will become part of the new centre of Rotterdam. The strip around the water is quite wide but and it seems like Santos in the middle of it or partly blocking the continuation.



New building height

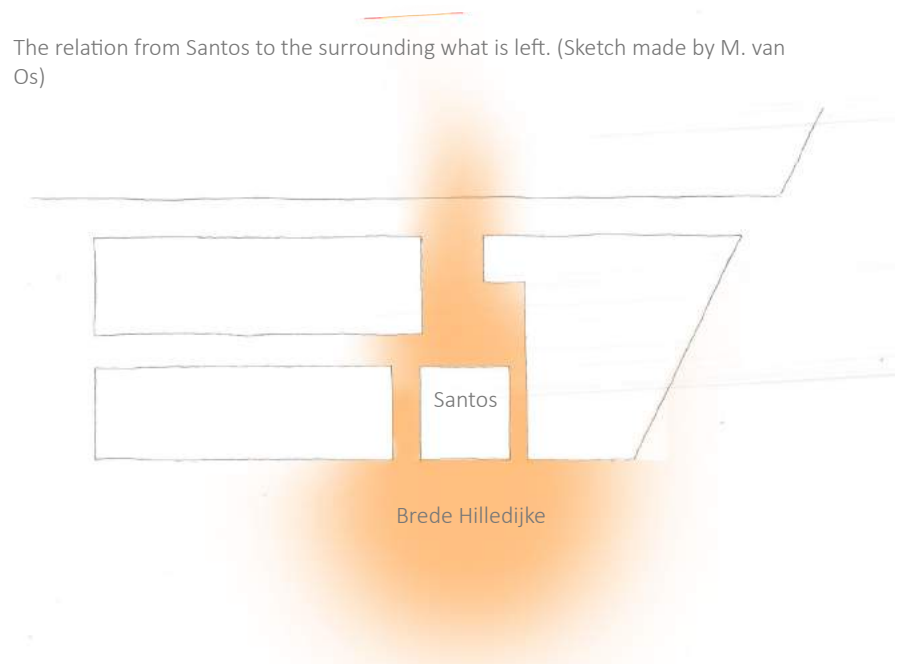


The drawing of the different phases express that Santos will completely enclosed by the buildings of the European China Center Rotterdam. Only a small open space in front will be the connection between the warehouse and the water. Santos will be more orientated to the Brede Hilledijk.



Phase 1 till 4 of the European China Center Rotterdam where Santos is surrounded .(Sketch made by M. van Os)

The relation from Santos to the surrounding what is left. (Sketch made by M. van Os)



Timeline Santos major changes



1901-1954

1901-1950

after 1950 (Flexus AWC, 2011)

After 1950 (Flexus AWC, 2011)

1954 (Flickrhivemind, n.t.).

The windows of the basements on both facades are closed off just as one of the larger façade openings for the delivery of goods to the basement. At these locations is the concrete floor extended till the façade.

In the façade of the Brede Hilledijk at the top part are two windows demolished and replaced by a large window frame with three upper and lower windows. Above the window is a steel lint

A triple window was added later in the façade of the Brede Hilledijk on the top floor. Inside the building is close to this window a later applied masonry chimney from the same period as the window was realized. Those were probably made for an office or common room.

Remove old elevator shaft. The floor is covered with wooden beams and a steel plate.

The lifting system of the gables houses was removed.

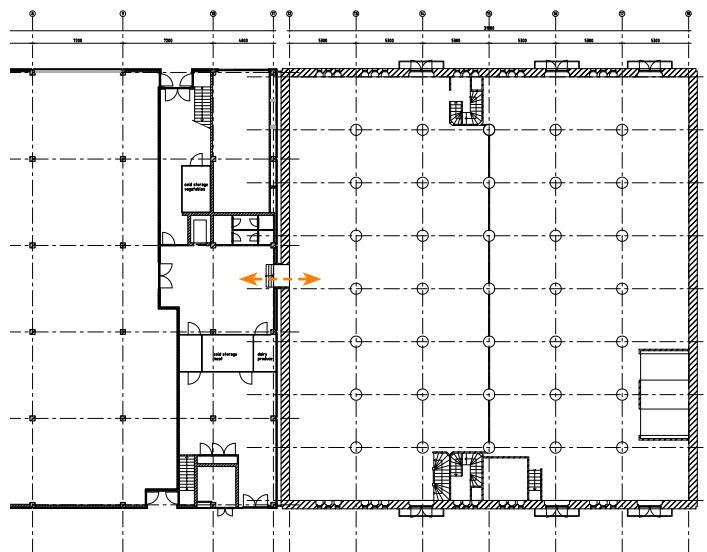
The old elevator shaft is removed and the floor areas are covered with a wooden beams and steal structure to the existing iron beams.

Against the west façade of the building is on the full-height two concrete elevator shafts built. In the basement is lift pit and on the roof a small building for the installation of those goods lifts.

1901

1954

Coffee warehouse



1954-1963



The iron construction has been removed.

1970



The four gables houses are removed from the roof and the parapet was extended. The top parts on the four corners are removed as well.

after 1970



On the ground floor is build an extra wall for the separation for the current storage of the Jumbo supermarket.

In the façade is made an opening to create an indoor connection between the supermarket and the Santos building.

after 1983 (Flexus AWC, 2011)



The sawtooth roof are closed off with roofing materials. The dormers are deleted and a new steel construction is added to support the roof deck.

1959



leased by the Royal Army

Rent as a buisness space

1975

Sold



Handelsveem
dates unkown

2003

Monument



Municipality Rotterdam
dates unkown

Conclusion

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Coffee warehouse Santos



Facade Brede Hilledijk (Sketch made by M. van Os)

1905



Maashaven was completed.

1922- 1936



Large Chinese population

1970



Start of brothels

There have been different moments during the existence that it was likely to break down the building but it was never done. The first reason this was never done was probably because Katendrecht was not a popular location to invest for the last decades. Comparing the timeline of the warehouse itself with the one of Katendrecht explains the situation. During the time the building was empty but rented as business space, there also start brothels on Katendrecht what decreases the attention on this area. That means that nobody want to spend money in the real estate.

Since 2004 there is money available to invest in the physical, social and economic qualities of Rotterdam South but by this time Santos became already a monument and there are other open plots close by to redevelop what safes the warehouse as well.

Perhaps one of the most important reasons is the building itself with all its details and appearance what keeps it worthwhile to remain for the next generations.



Open areas on Katendrecht to develop

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Coffee warehouse Santos

1975



Protests of Actiegroep Redt Katendrecht

1975 to 1990



850 dwellings and 57 commercial spaces renovated. The Eerste and Tweede Katendrechtse harbor will be closed for the realization of 750 new dwellings.

2004



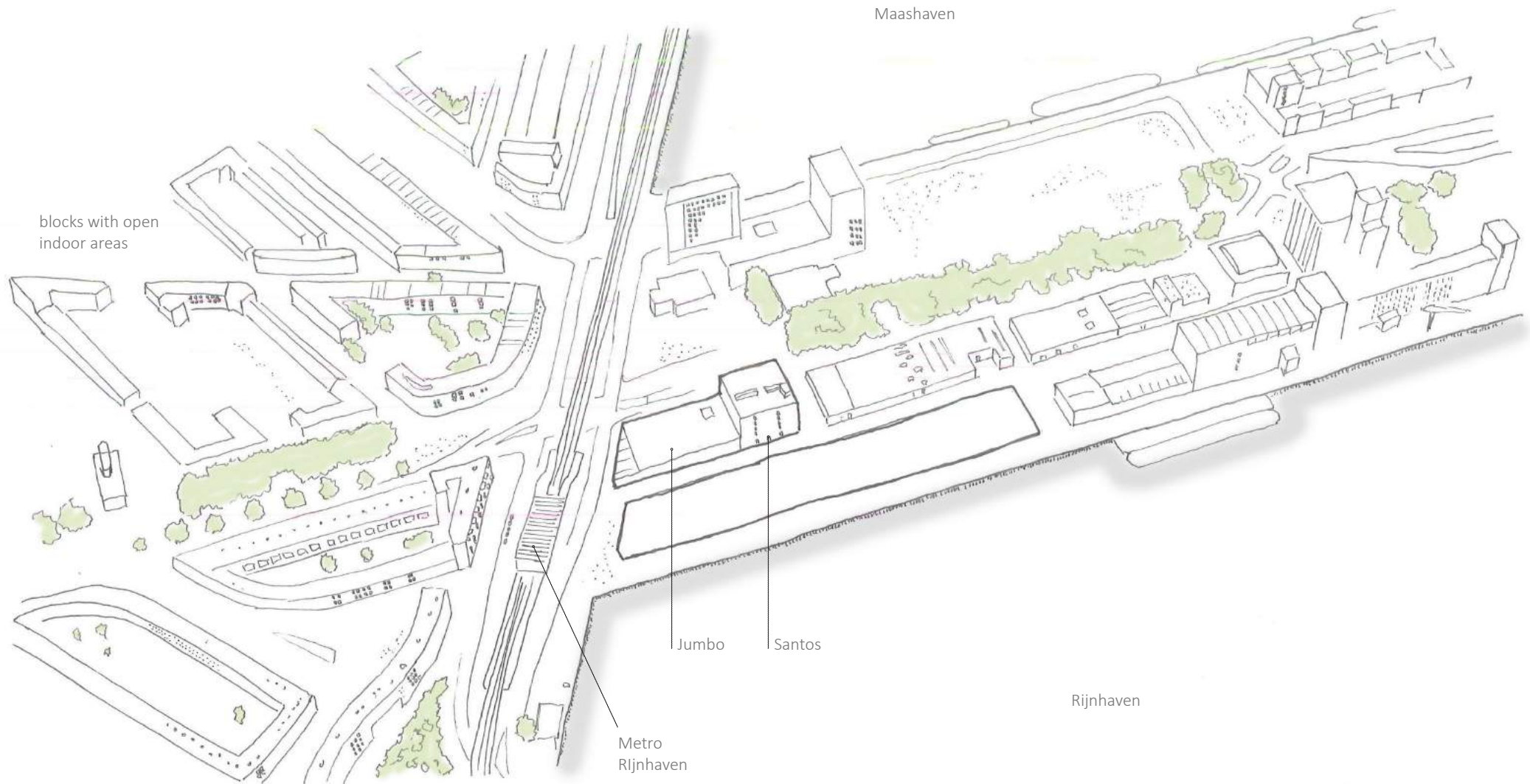
invest one billion euros in the physical, social and economic qualities of Rotterdam South

Urban context

Katendrecht & Afrikaanderwijk

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Coffee warehouse Santos



Santos is located on former peninsula named Katendrecht. The main road is the Brede Hilledijk, which is in front of the Santos warehouse, and ends halfway of Katendrecht. The Jumbo supermarket is directly build against the warehouse and next to it is the basement of a new design: The View.

In front of the Jumbo is the Hillelaan which comes from the centre of Rotterdam, over the Erasmusbrug and goes further south. On the cross point of the Hillelaan and the Brede Hilledijk is the metro station Rijnhaven which connect Den Haag central station, Rotterdam central station and Spijkenisse. It also seems that this metro line is a border between Katendrecht and the Afrikaanderwijk. This is because it is a long and dominance structure along the neighbourhood. Negative about this is that it blocks the view and bring shadow. The place underneath this bridge is undefined.

Most buildings around Santos, especially those in the Afrikaanderwijk, are residential areas. Outstanding is that the houses in the Afrikaandewijk are built with an inner space. Most of them are designed as gardens or small parks. The blocks with this inner spaces gives from the outside an urban feeling but on the inside it is more as own neighbourhood inside the bigger picture.

Both on Katendrecht and on the Afrikaanderwijk are different open area`s for parks or as urban gardens. This create a very spacious feeling. The port activitie of the harbour are mostly gone. There are only some small details left as part of the train tracks and the places where the boats docked. Most of the harbour activities on the water have disappeared as well.

Street profile and shape

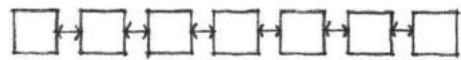
Composition

Santos is situated on the Brede Hilledijk. 'Hille' have a double meaning, it refer to 'height and dune' but also to 'island'. The Bred Hilledijk was in the past the dyke to protect the polders on the south side (Stadsarchief Rotterdam, 2016). Despite on the name, the original function of this road is not visible anymore. The Brede Hilledijk have now more the appearance of a lane. This is characterized by the width of 40 to even 67 meter, the different kind of traffic as pedestrians, cyclists, cars and buses. In the middle of the lane is an unused rail track with greenery. The wide dimension and different layers give more status to the warehouse because of the possibilities to observe it from various perspectives. Also the variety and uniformity play an important role in the perception of the environment. In this case the variety are the different height and width of the plots. The uniformity is the front of all the facades which are in one line. What is striking is that Santos in the north side of the Brede Hilledijk is the only high building It's almost three times higher than the Jumbo supermarket next to it.

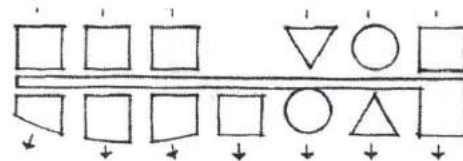
The formation of the buildings itself can be seen as a linear line. This line function as a wall and guides traffic along the lane. A linear organization organize itself along its length and consist out of different spaces which can be directly related to each other or are connected by a space between those volumes.

Symbolic volumes can be added to those linear lines and are recognizable by their size and shape. The presence may also be strengthened by their location. This can be at the end of the linear sequence, offset from the rest of the organization or as a central point (Ching, 1996).

The Santos warehouse and the Jumbo supermarket can also be interoperated as a composition or fusion of two separate elements. Santos is a square block what is combined with the rectangular shape of the Jumbo supermarket.



Linear composition with spaces in between



Linear composition which consists of several sizes, forms or functions.



Linear composition with a symbolic volume in the middle and at the end



Linear composition with Santos (Sketch made by M. van Os)

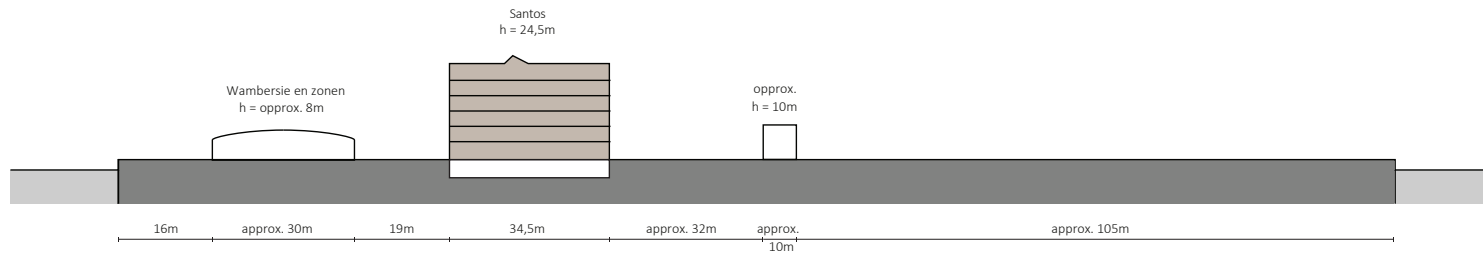
The open space in front of the Jumbo supermarket works as an entrance (Google Maps, 2016)



Santos as square melts together with the rectangular shape of the Jumbo (Sketch made by M. van Os)



Section



Past - Pre 1950

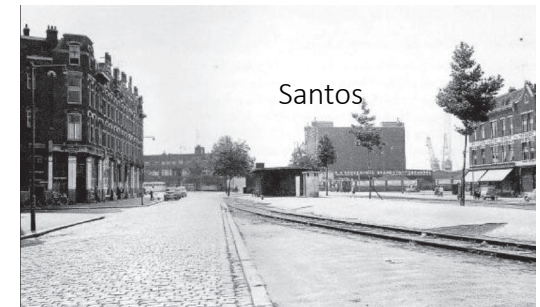
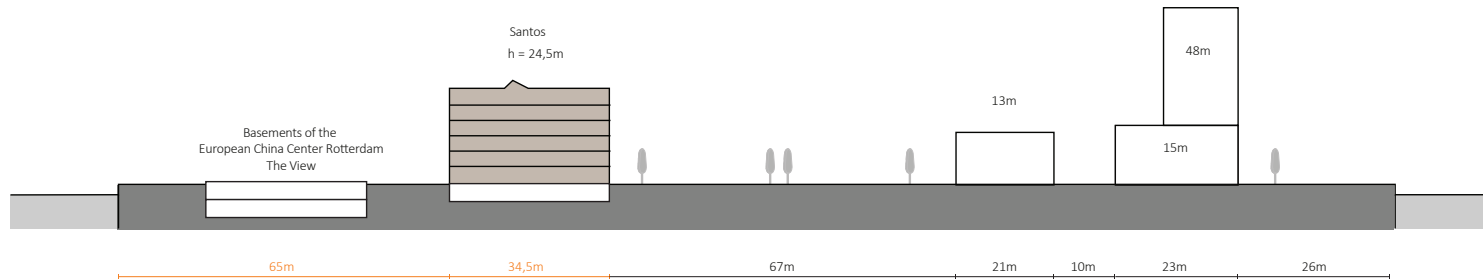
The area around the Santos warehouse was more open.



1946 (BbKdr, n.d.)

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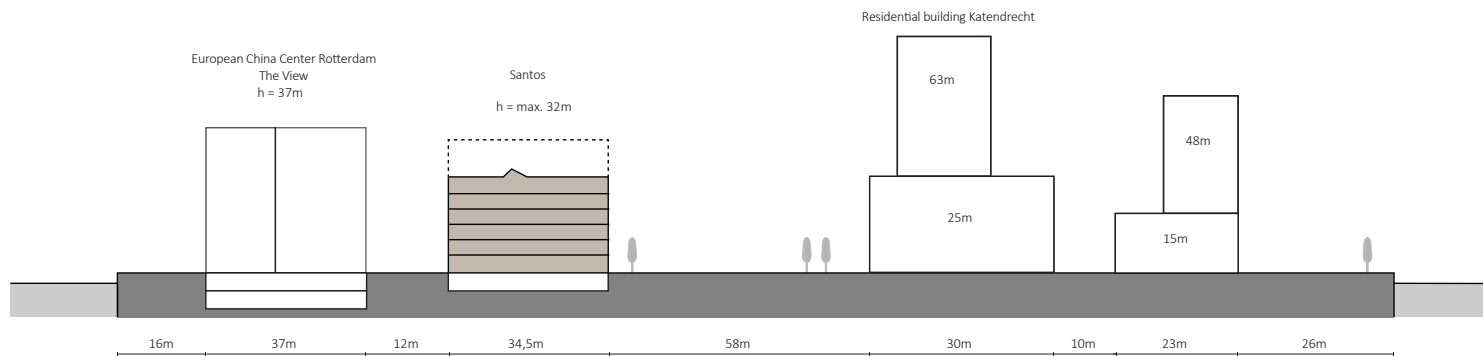
Coffee warehouse Santos



1951 (Serc, n.d.)

Present - 2016

More building are complete around the warehouse. Santos is here still one of the largest buildings. The Brede Hildijk is a wide avenue.

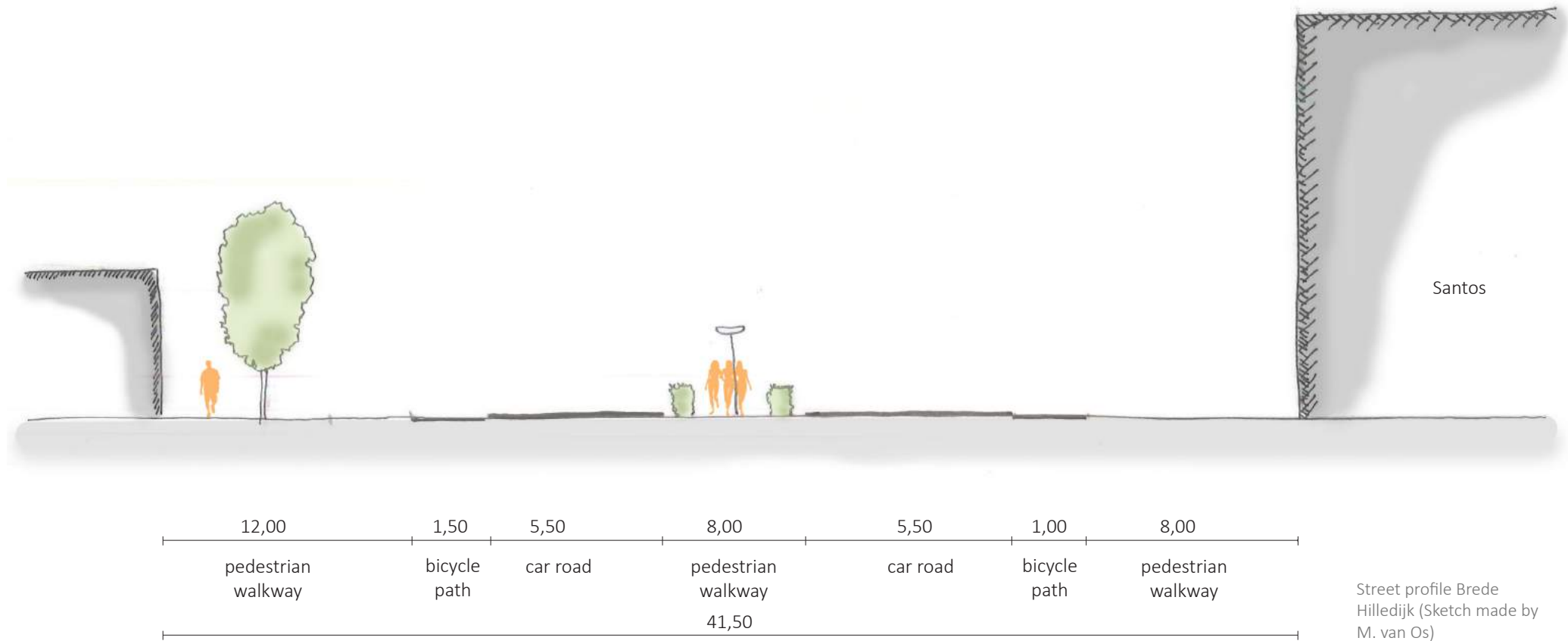


Future (European China Center Rotterdam, The View, n.d.)

Future - post 2030

Santos stands alone again and can be build up to maximum 32 meters. In this situation it is surrounded with higher buildings.

Conclusion



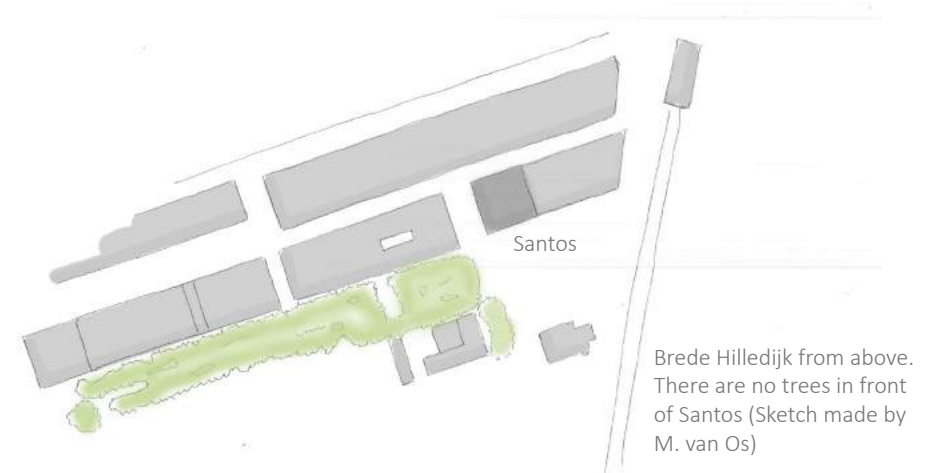
.47

Coffee warehouse Santos

The total width of the road is 41,50 meters but what is striking is that most of the spaces is used for pedestrian. The middle strip was in the past used for the trains but is now transformed into pedestrian walkway. There is no equal balance between the spaces of the different users. Especially the roads for the bicycles are very small.

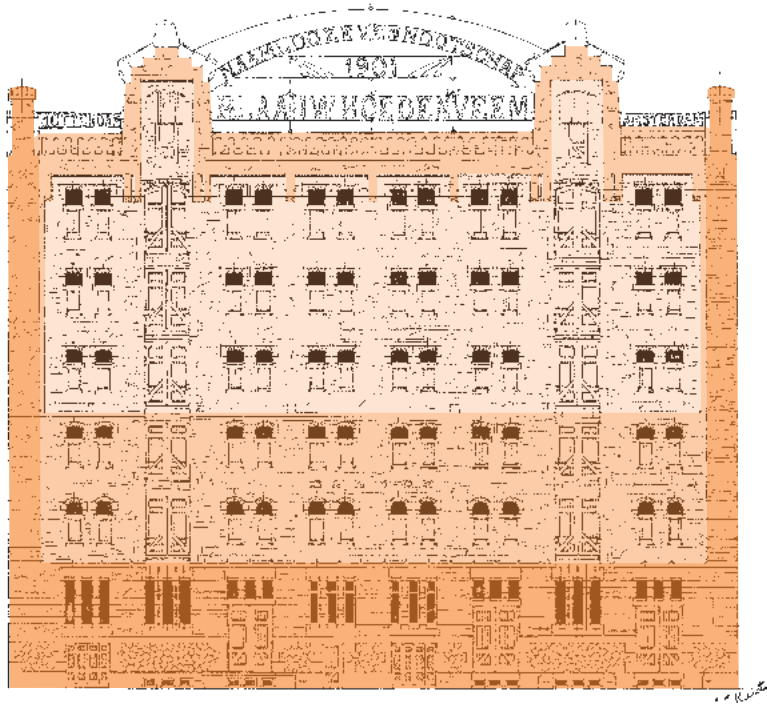
On this part of the Brede Hilledijk are less greenery than a few meters further, where on both sides and in the middle is a row of trees.

The sections of the past, present and future shows again that the front facade of Santos changes from the river to the street of the Brede Hilledijk and that this side become more important. This is for the reason that in the current plans The View will block the relation between Santos and the water. Other high buildings around will make the warehouse less outstanding.

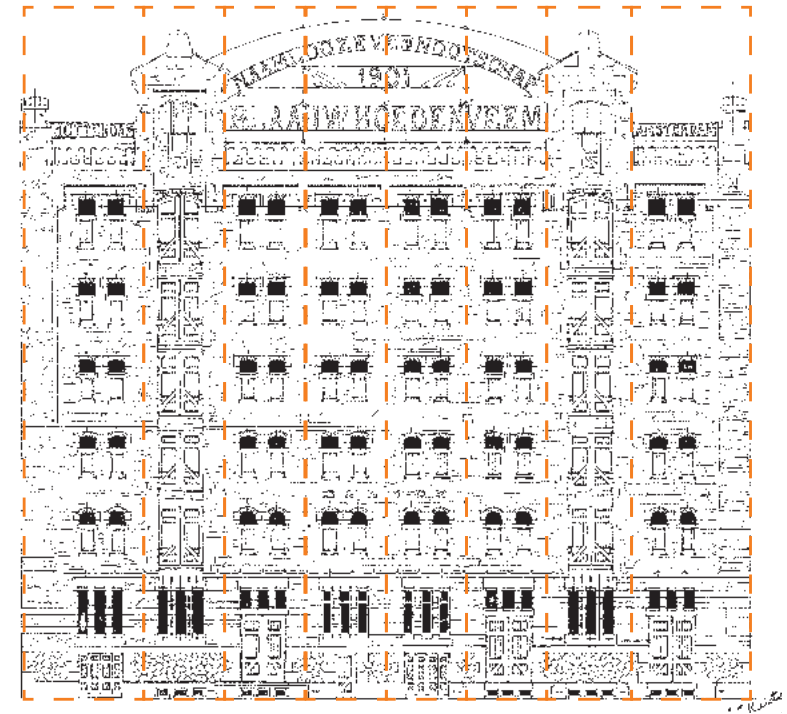


Brede Hilledijk from above. There are no trees in front of Santos (Sketch made by M. van Os)

Facade



Depth in the facade



Division in the facade

The warehouse have facades with a rich elaboration and a careful chosen composition. The composition in those facades and the proportions makes this 24,5 meter high building unique. The façade on the Brede Hilledijk and the Rijnhaven Zuidzijde are almost similar and symmetrical. The side walls are designed as blind walls without any openings. The facades consist out of a combination between masonry and natural stone. The masonry is designed in a cross bond.

Even though the construction exist out of six segments, the façade has remarkable enough eight parts. This is done to give the façade a vertically coherent shape but also because more than six segments on the ground floor level were needed for the programmatic requirements. This involved two transit doors to the basement, three cargo doors on the ground floor, two segments for vertical transport of goods related to the position of the loading doors on the floors and an entrance to the staircase.

The front walls have a vertical structure which exist out of a plinth, a middle part and a front closure, in the shape of an attic. The corresponding measurements between those three parts increase this verticality. An example are the loading doors on the spot of the winch houses (Flexus AWC, 2011).

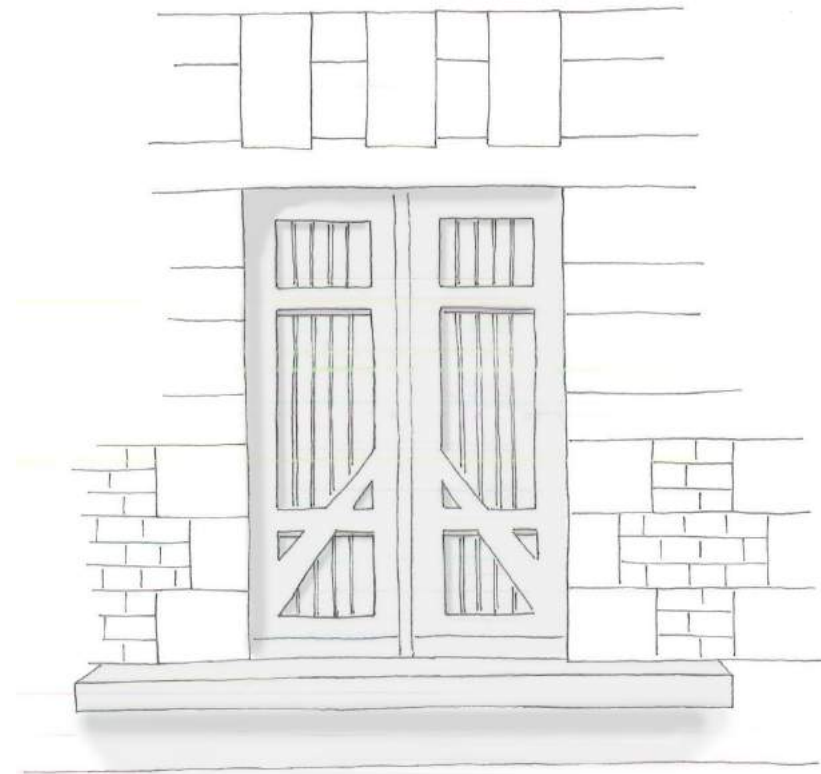
The plinth

The plinth façade consist of a one and a half floor which is made out of two separately shaped parts. The lower part consists out of a stone plinth that is connected with the ground level and on top a rustication ribbon. This ribbon is expressed by openings in the façade and with parts of rough stone blocks in between in a rustication motif.

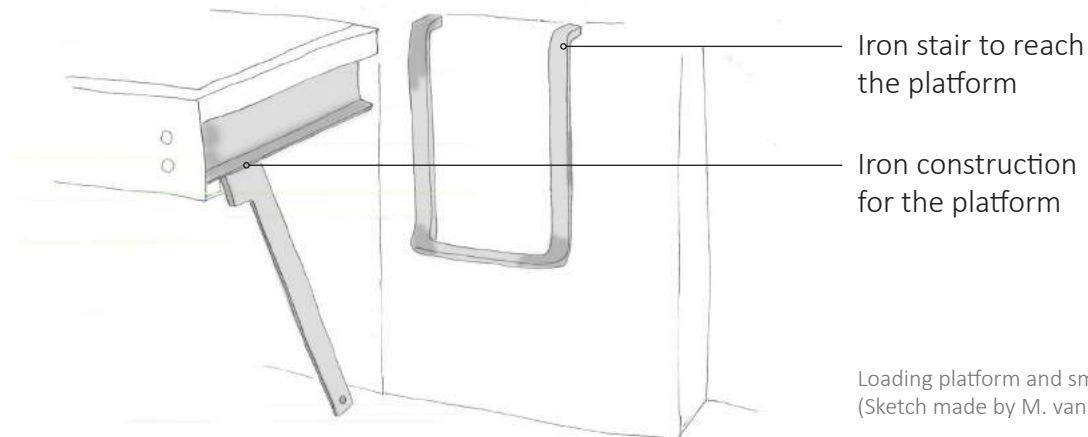
The upper part of the plinth is designed with horizontal ribbons made of stone and brickwork. Those elements are crossed on several places by vertical shorter and longer windows.

In contrast of the rest of the façade is the plinth not completely symmetrical designed. The reason for that are the high and low loading doors with are located for functional reasons for supplies to the basement. At the point of the stone connection with the ground are cellar windows. On the original drawings from 1901 are designed combinations of three windows but in the final plan are only two executed in every segment. It is not clear why this is done but perhaps it was of the water in the basement. That they already realised during construction that this would be a problem and therefor less interesting to use it as storage space.

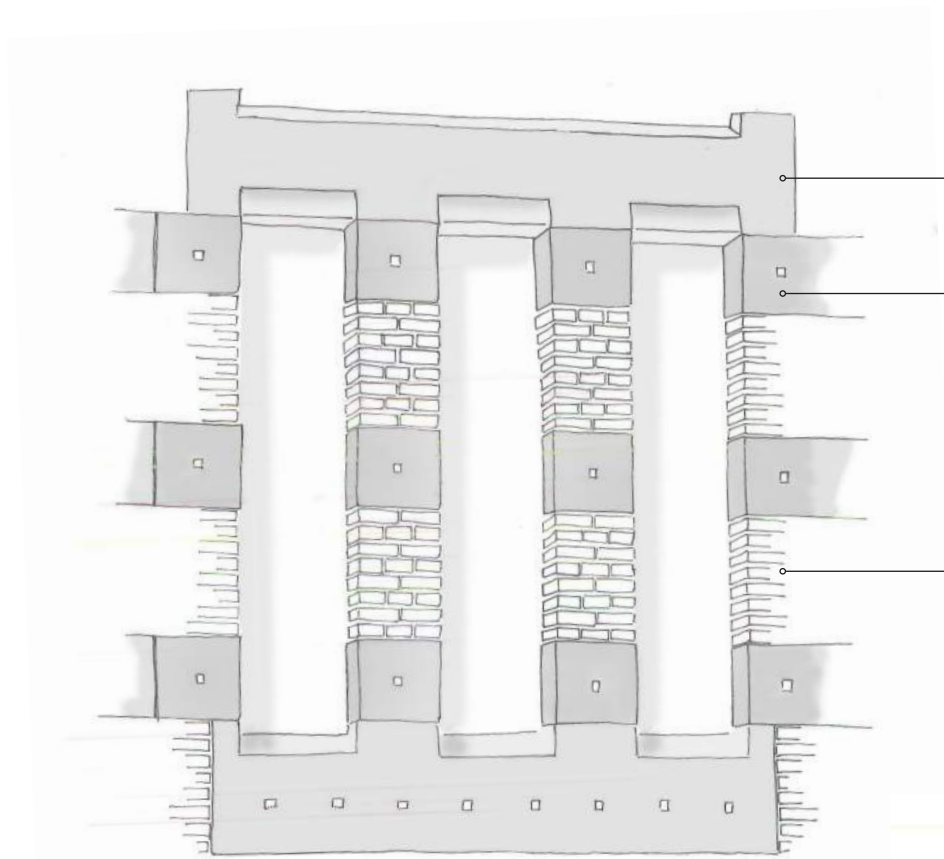
The ground floor loading doors are always provided with a concrete loading platform. The windows underneath the loading doors were provided with bars. This were typical curved elements on the outside of the façade. In the windows of the entrance part were also fences but they were in the wall opening itself (Flexus AWC, 2011).



Door above loading platform
(Sketch made by M. van Os)



Loading platform and small stair
(Sketch made by M. van Os)



Windows in the plinth
(Sketch made by M. van Os)

Sandstone lintel

Sandstone blocks with an
attachment point for bars

Brickwork

The colors in the plinth are grey and red of the brickwork. It is mainly the use of patterns, repetition and the use of different kind of sizes of stones that makes this part of the facade interesting.



Sandstone

Limestone

Natural stone in the plinth (Sketch made by M. van Os)

The middle part

This part of the façade is a little laid back thanks to the fact that the strips on both sides is extended with a half brick length. This part is in the same line as the plinth. The middle part is build up with five floors and is divided by a stone ribbon in an upper zone with three floors and a lower zone with two levels. This ribbon correspond to those in the plinth and in the attic.

The transition between the plinth and the middle part is softened by three ribbons on both side of the building. A similar technique is used in the upper part for the change with the attic (Flexus AWC, 2011).

The loading doors in the façade turn inwards and made out of wooden parts which are interlocked to each other. The typical diagonals for firmness, give also an Art Nouveau-style expression. On both sides on the bottom part of the doors are stone blocks in a staggered pattern.

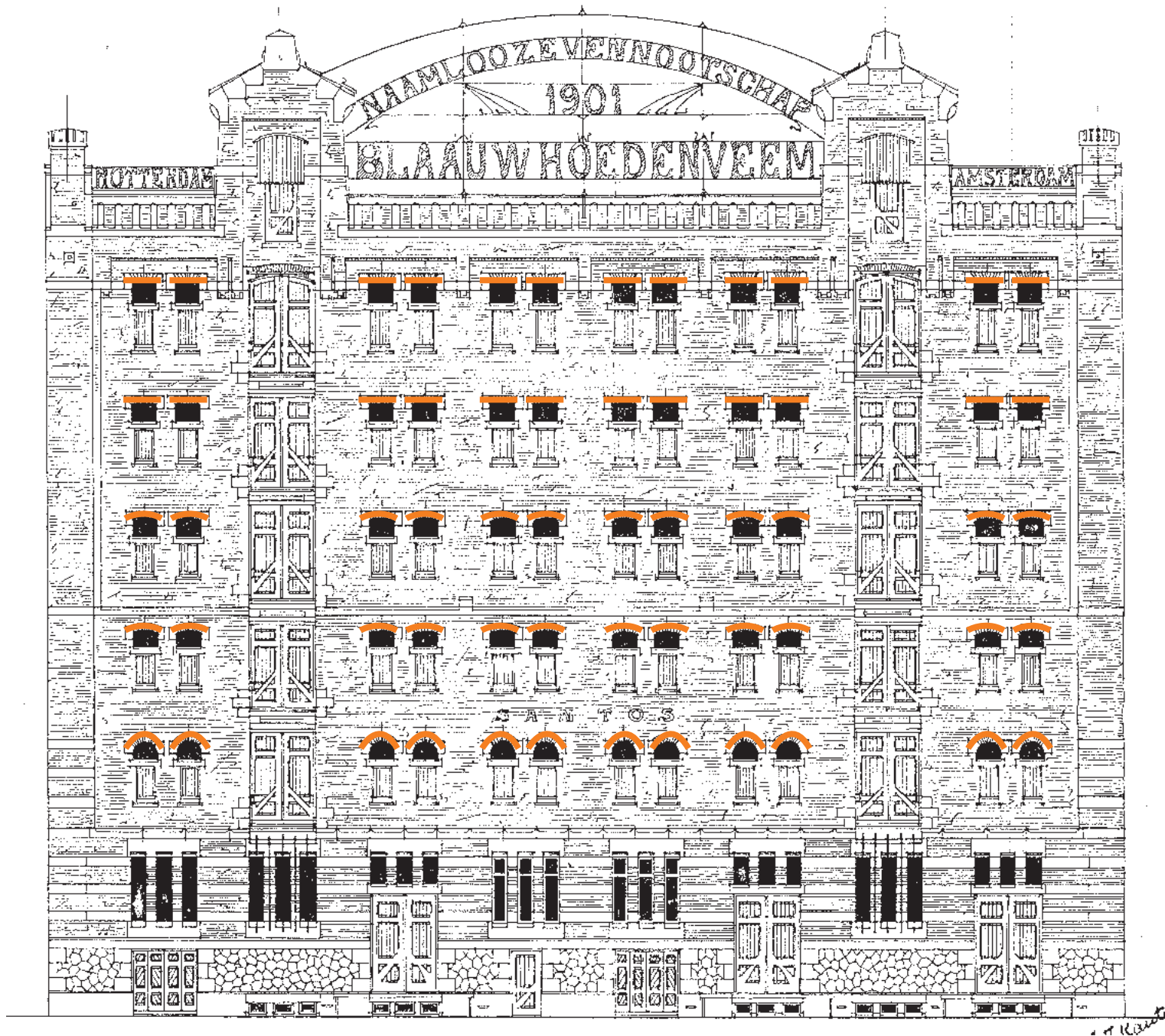
In the past there were fences on the first floor above the entrance. These fences were placed within the wall openings. Other additions to the façade were the two large, bulbous lamps which could be moved up and down with a pulley. This is to illuminate the loading doors in the evening. Another way to illuminate the façade was by triangular iron rotatable consoles with lamps. On both sides, the Brede Hilledijk and the Rijnhaven, are the iron letters with the name Santos and on different spots are iron lifting beams (Flexus AWC, 2011).

The third floor is in use as an office space for the promotion of The View - European China Center Rotterdam. To create a better inner climate the windows are replaced for aluminium frames with double glazing. This is done after 2007.

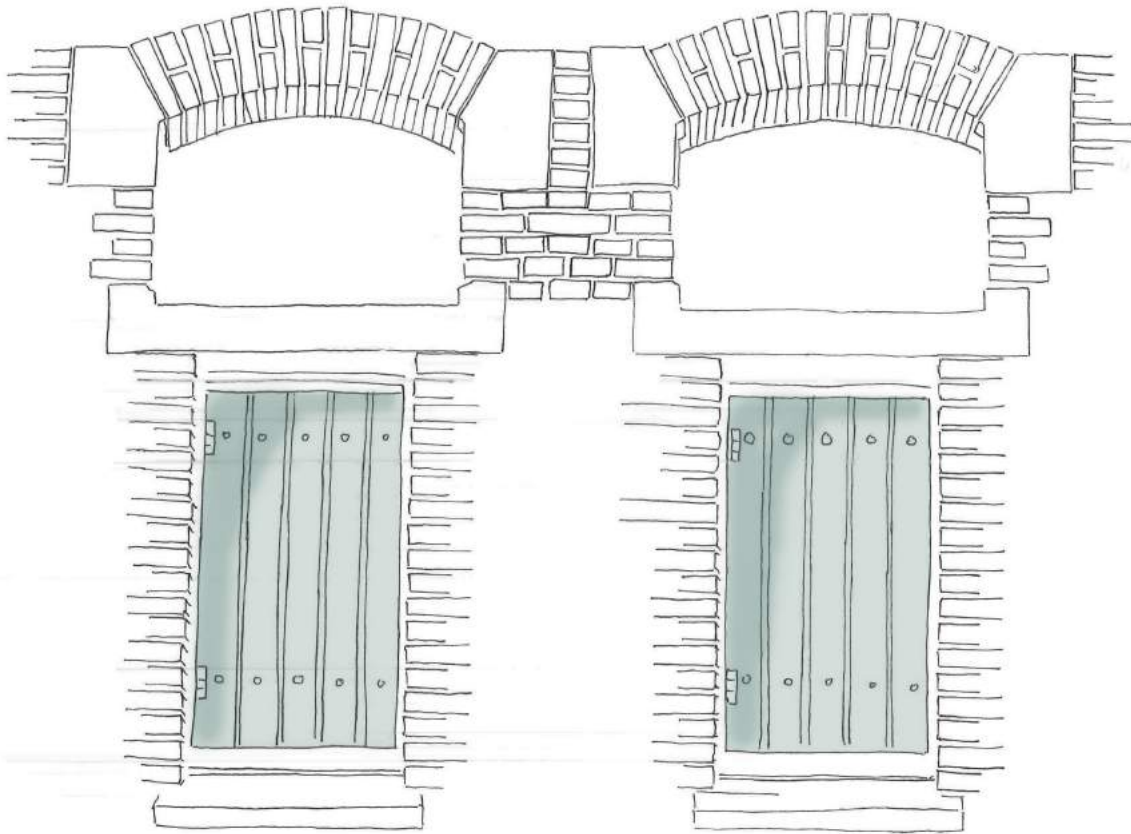
Repetition in loading doors
(Sketch made by M. van Os)



Middle part (Flexus AWC, 2011)



Design lintels



Two windows, second floor (Sketch made by M. van Os)

The windows are placed in pairs what is clearly visible in the top row where there is a connection between both lintels. In the façade are three different kinds of lintels. The bottom row on the first floor is with round arches. The two floors above are provided with segment arches and the last two floors have rectangular shapes. This gives the lower windows a more open expression because of their round shape.

All the openings have an external window sill made of stone and are divided in a lower and upper window whereby the last one wider is. Both parts are separated by a stone lintel. Originally the lower window was provided of a frame with an outward opening wooden door. The upper window was with glass. The windows on the fifth floor are higher because of the higher floor height as well (Flexus AWC, 2011).



fourth and fifth floor



Third floor



Second floor



First floor

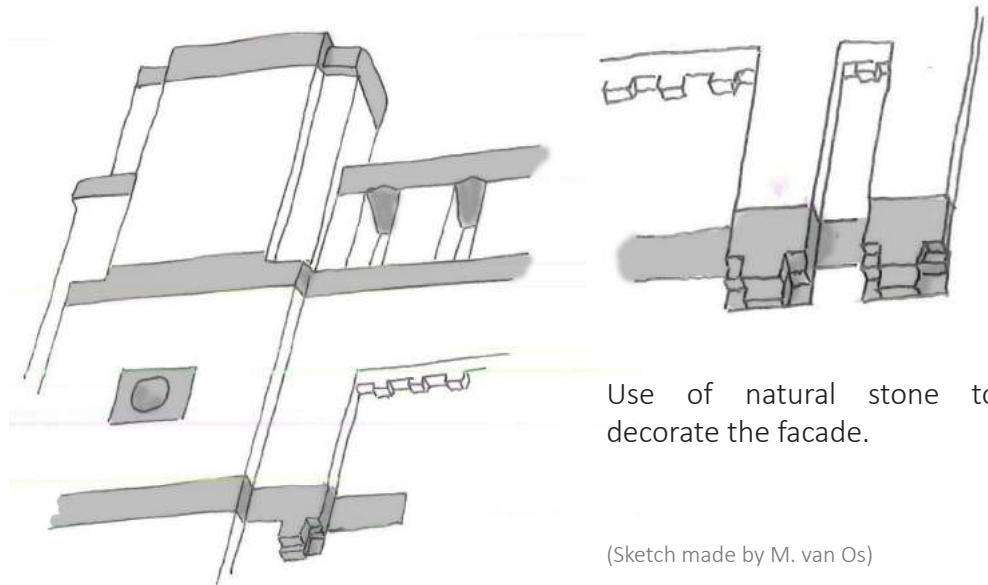
Four different lintel types (Sketch made by M. van Os)

Attic

The transition between the middle part of the façade and the attic is reinforced by the outstanding masonry, staggered pattern and consoles. Above this is a brick balustrade on a stone ribbon. On top is an external window sill made from stone to increase the horizontal effect. The ends of the building are high-rise masonry with a stone block ornament and characteristic details.

Very striking elements in the attic were the gables on top of the winch houses. Those trapezoid shaped walls are covered with stone with a profile that refers to the Art Nouveau. The winch houses were provided with a door just as the floors underneath, and ends with a bow segment. Wooden lifting equipment were in place to bring the goods to the various floor levels.

In the past was on top of the roof on the side of the Rijnhaven a decorative iron construction with the company name and the establishment year of the construction of the building. This steel structure was placed between the two gables houses. On the outside of the building were the name placed of the two cities where Blauwhoedenveem was active: Amsterdam and Rotterdam. This iron construction on the water side makes this façade to the main façade. It was the first part of the building which was visible at arrival on a ship (Flexus AWC, 2011).

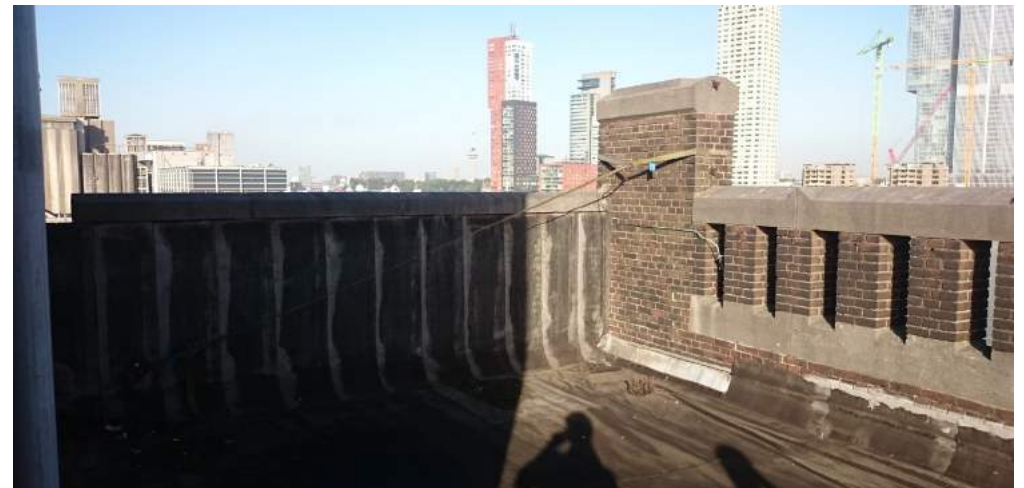


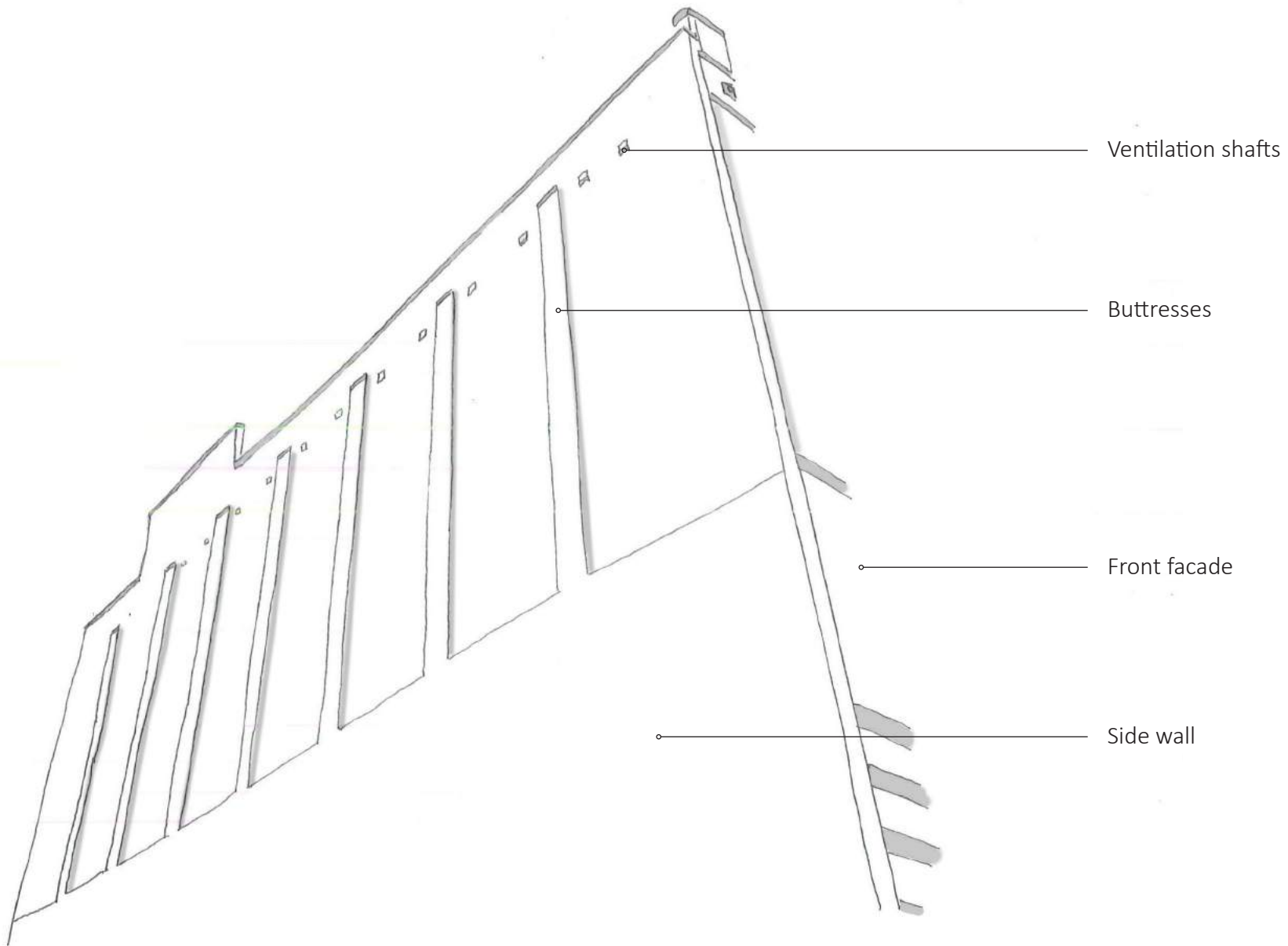
Use of natural stone to decorate the facade.

(Sketch made by M. van Os)

Side walls

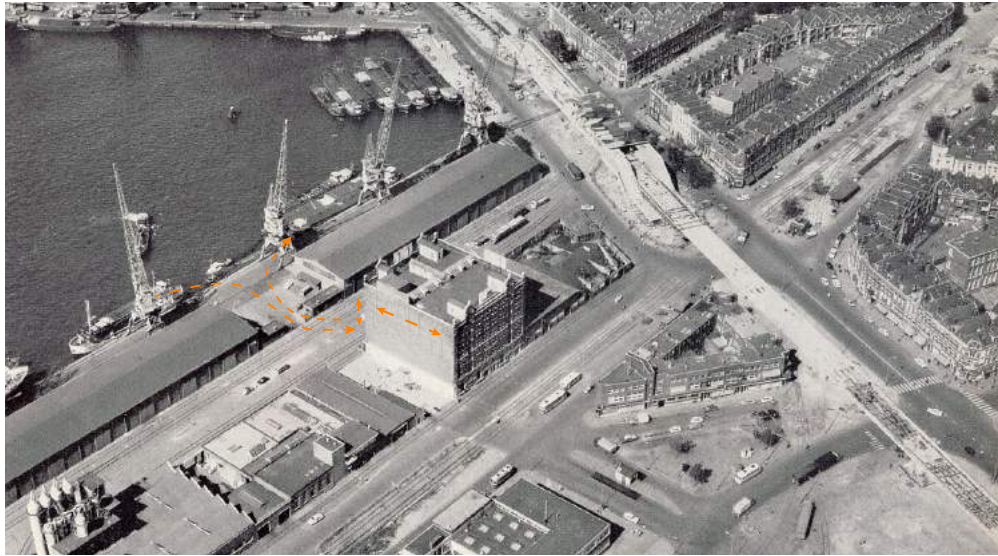
The side walls are made of masonry as well and created with pilasters at the upper three levels which divide the façade into eight parts. On the top floor are vents in the façade. The shape of the sawtooth roof because the brickwork is following the outline.



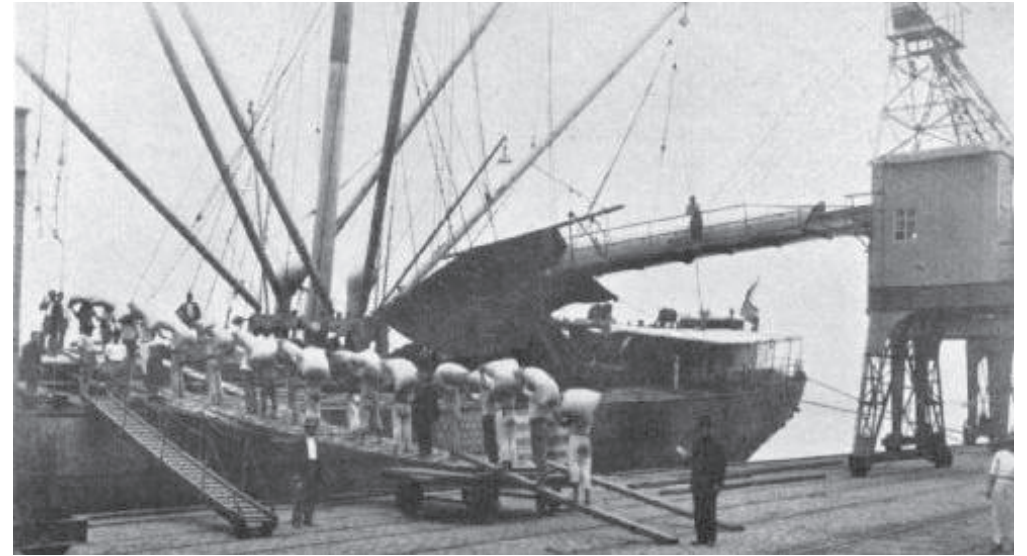


Side wall (Sketch made by M. van Os)

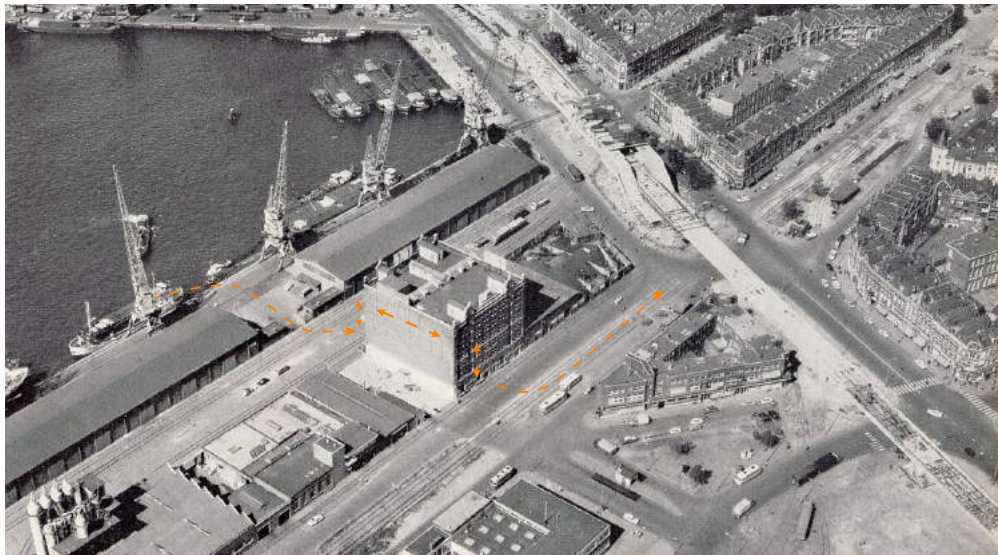
Vertical movement



Route for transshipment (BbKdr, n.d.)



Unloading the coffee from a ship on the traditional and new way (Cluesheet, n.d.)



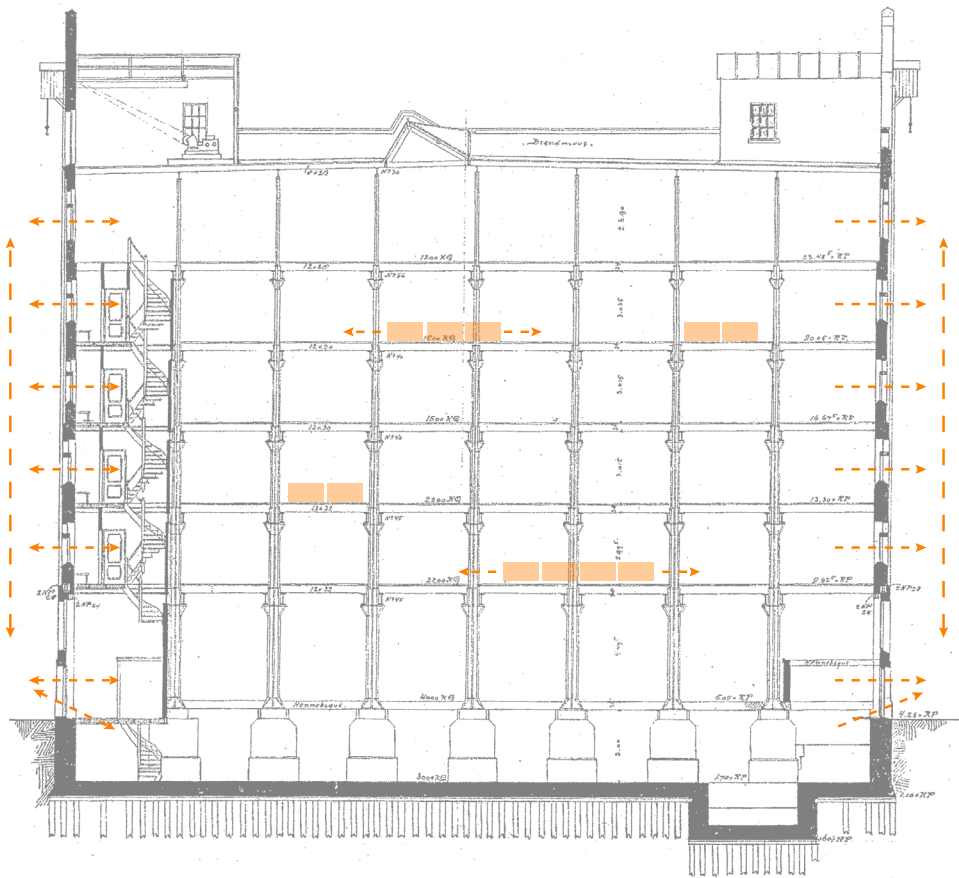
Route for coffee to the mainland (BbKdr, n.d.)



Unloading/ loading warehouse (Pinterest, n.d.)



The train to transport the coffee further into the mainland, 1990

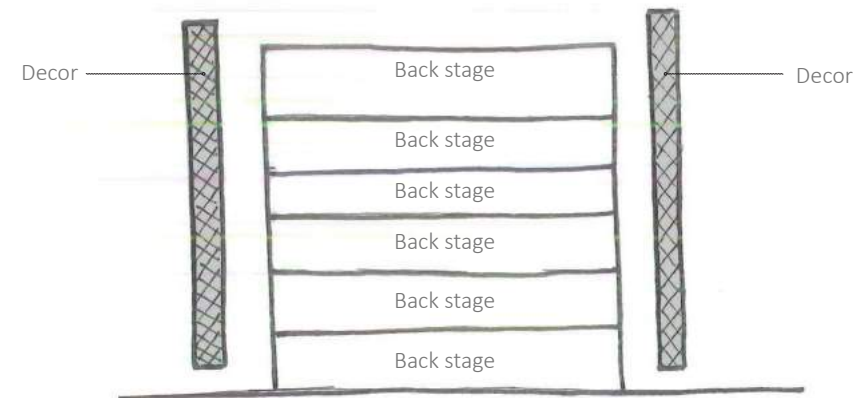


Section of the transport in the warehouse

In the past there were much more activities around the warehouse. The Rijnhaven was in use for ships to load and unload their cargo and on both side of Santos was a train track.

There was also vertical transport along the facade, the facade was more alive and interacting with the surrounding. This has disappeared when the warehouse was not in use as a coffee storage.

Back in the days that the which houses were in use, there was more a harbour feeling. The warehouse could be compared as a scene from a theatre, whereby the facade is the decor. The spectacle or scene is all in front of the building and the storage of all the stuff is backstage in the warehouse itself. Now this is all gone, it could be concluded that the building isn't alive anymore. That all this activities was the motor or the strength of Santos.



Santos as a theatre (Sketch made by M. van Os)

Materials

- Sandstone
- Brick
- Steel
- Limestone
- Concrete
- Wood

Sandstone (possibly Bentheim sandstone) consists for the most out of quartz. This make this stone is very durable, colorfast and acid resistant (MO-B, 2016).

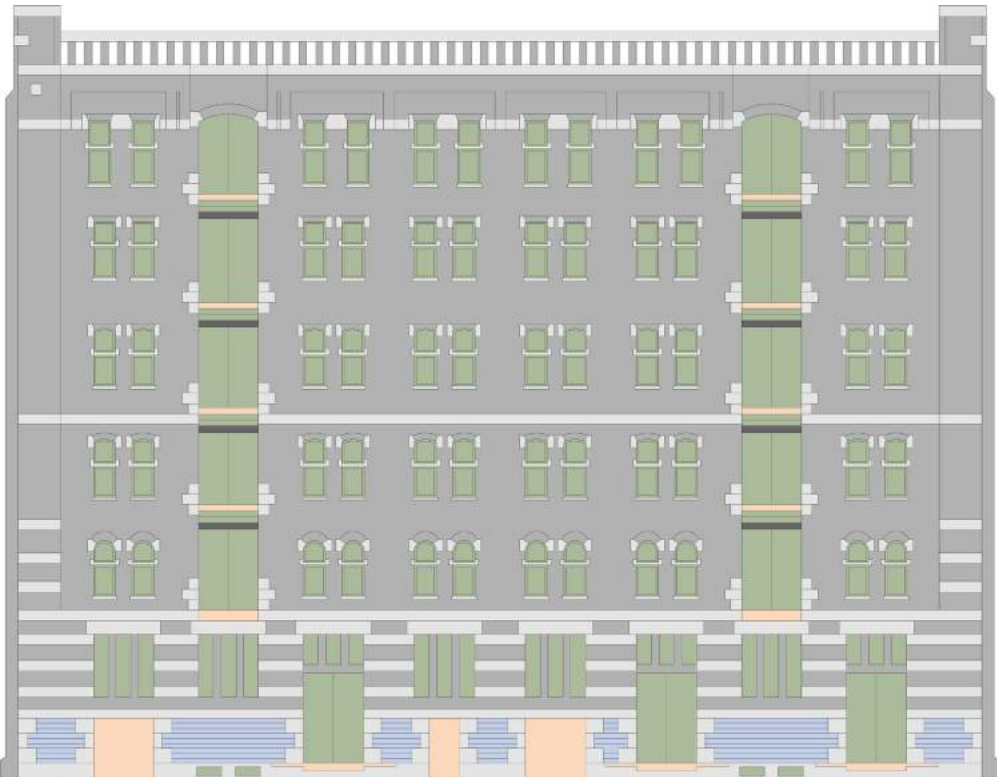


Limestone (likely Blue Belgium limestone, petit granit) is created by erosion and deposition of calcium over a very long period. During this period the stone becomes a very compact mass what makes it suitable as a construction product. Limestone is characterized by its colors, structures and veins and is relatively easy to work with. Limestone belong to the family of the limestone (MO-B, 2016).

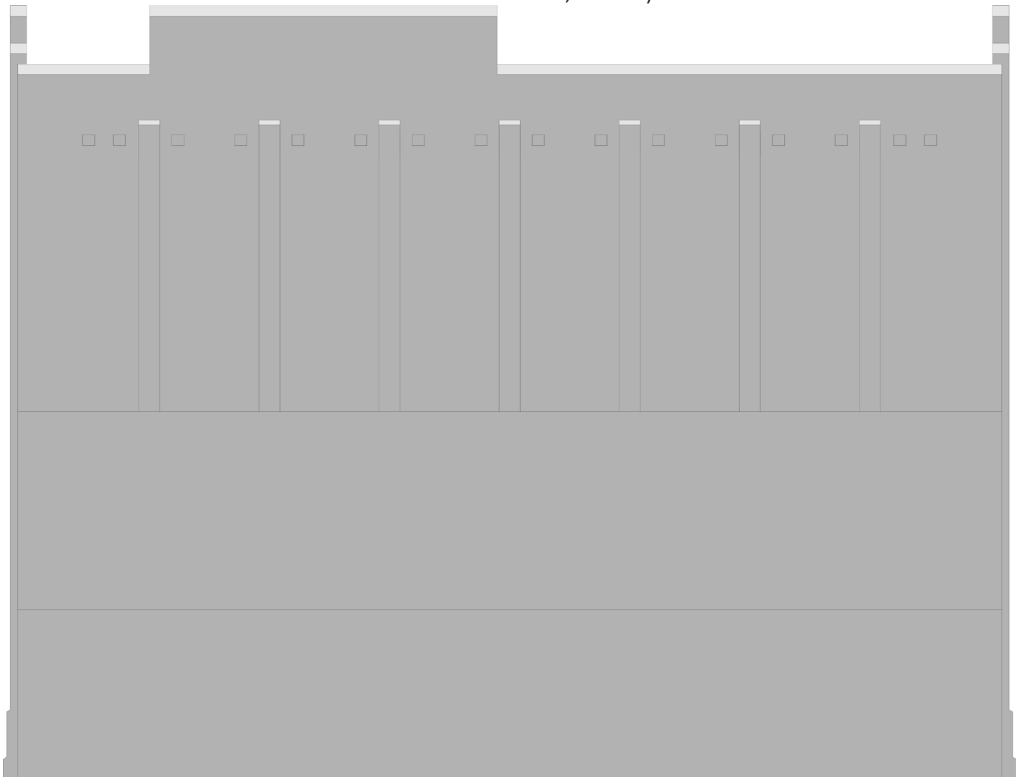
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Flickrhivemind (n.t.).

Coffee warehouse Santos



Front facades



Side facades



- Brickwork
- Sandstone and brickwork lintel:
transfer the weight of the facade
- Sandstone mullion
- Wooden panel
- Sandstone window sill



- Concrete
- Wood
- Steel
- Wooden doors
- Sandstone:
protect the brickwork during
loading and unloading the coffee
- Concrete:
protect the brickwork during
loading and unloading the coffee



Sandstone:
covering to prevent that rain will
soak into the brickwork.
The balustrade is necessary
because the roof is accessible to
enter the winch houses.

Sandstone ornament

Both images show the top of the facade wich is covered and detailed in sandstone.



Sandstone ornament

Conclusion

The south and north facade of the warehouse has a lot of natural stone and different depths what gives it more an architectural expression than a functional one. This does not mean that all those different expressions are there without a function.

The lowest part of the facade can be seen as brick damp course for the protection of ground water. This is not done at the side facades because the original plan was that there would be built against this wall.

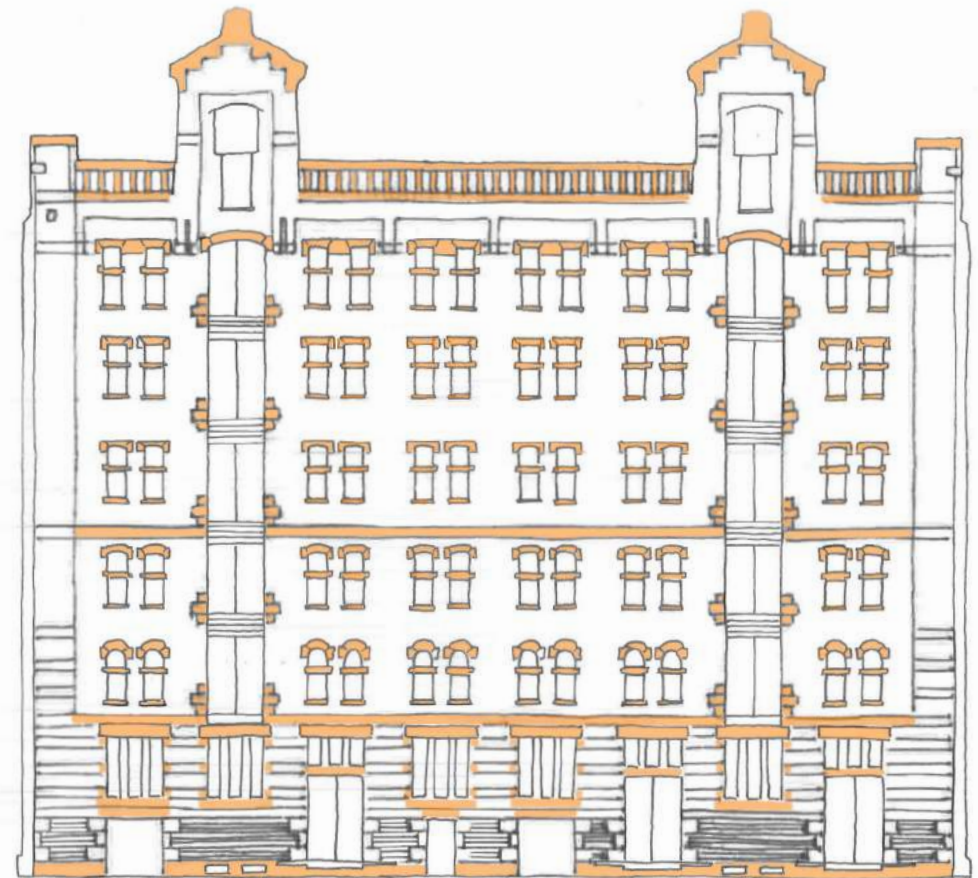
The vertical windows in the plinth were in the past provided with bars. It is much stronger to attach them in the natural stone. This explains the high amount of sandstone in this part. Above the doors is this stone used as a lintel. The pattern which it created was put through as horizontal lines and are only architectural. The same is for the smaller horizontal stone elements on the left and right side which form a transition between the plinth and the middle part of the facade.

From the first floor and from the third floor again the walls become thinner what express themselves in a well-designed facade from the outside but this is also functional. A thinner facade weighs less and saves material. The transition of thickness is covered with natural stone for the protection of rainwater what is falling on this small cantilevering part. For the same reason are the balustrade and the winch houses on top of the facade covered with natural stone.

On both sides of the loading doors are three sandstone blocks what looks very decorative but they have another function as well. They give protection to the door frame and the brickwork against damage during the lifting process of the coffee.

The stone elements of the windows as the lintel and the outer sill are there to carry the load of the facade.

All the other natural stone elements, as in the plinth and the decoration stones in the attic are there for decoration. Also most of the brickwork in the attic is used as ornamentation.

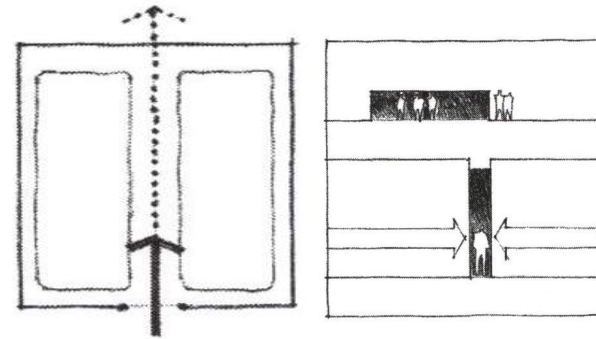


All the orange parts have a double function, both architectural but also functional.
(Sketch made by M. van Os)

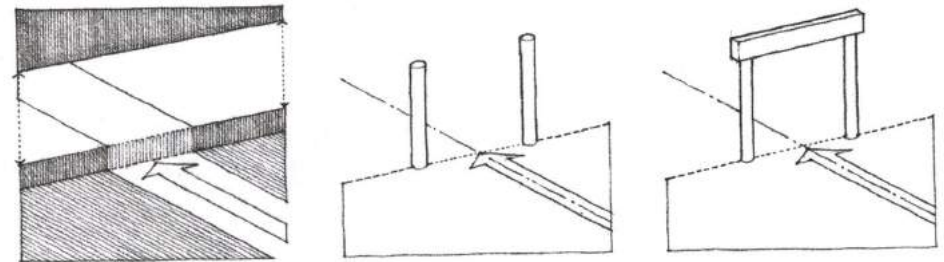
Entrance

The place of the entrance is not easy to define. The north and south facade are identical but in the past it was clear what was the main facade. This was done by an iron construction on the roof top pointing to the water with the name of the company. The water side was more important than the side of the road for the reason the goods came by ship. Nowadays this iron part is removed and the building is not in use anymore. Also the road is now more important.

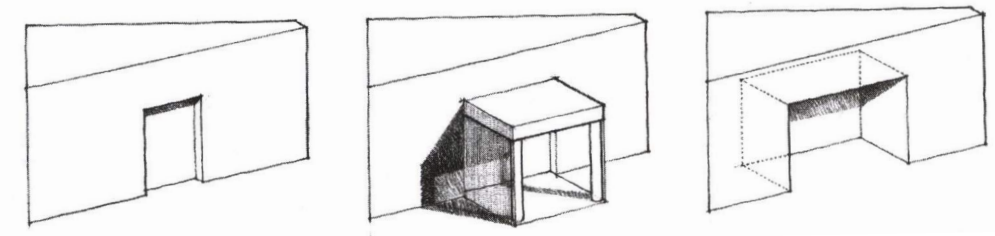
The definition of an entrance is the 'means or point by which to enter' but this is different for every design. First of all, it is hard to find where the entrance is by the Santos warehouse for the fact that there are a lot of different doors and not one of them is higher in the hierarchy. Besides that, the front side of the building is the same as the back side. The only different is that one door at the Brede Hilledijk has a small nameplate and doorbell next to it. By visiting the building, one of the entrances on the water side was used.



The sequence of an entrance can be strengthened by making the opening lower, wider, or narrower than expected. Other options are making the entrance deep or circuitous or use ornaments to articulate.



There are different subtle ways to mark entrances. This can be for example two pillars or an overhead beam. Also a difference in level can establish the transformation from one place to another.



Entrances can be grouped into three different categories, namely flush, projected and recessed. A flush entrance preserves the continuity of the wall and can be obscured. A projected entrance creates a transitional space and function as a shelter as well. This idea of shelter is the same with a recessed entrance but this one has the opening partly into the building (Ching, 1996).



The opening between two buildings, with on one side a fence (Sketch made by M. van Os)

To reach the entrance on the waterside, the passage goes between two buildings. This area is 15 meters wide in total but separated with a fence parallel to the buildings what splits this plot in halve. This 35 meters passage can be described as an undefined space and it is clear that this is not part of the street anymore but doesn't belong to the building as well. This road is mainly used by the car garages to drive the cars to the back of the workshop. It is not a pleasant area to stay for long.



The gate of the fence to create a division between both area's. It makes clear that an private area is entered (Sketch made by M. van Os)

After this in-between space it is possible to enter the iron fence which directly changes the environment. This is an wide and open area with a view over the unfinished concrete floor and the Kop van Zuid.



The facade on the water side with a lot of different doors. None of the doors expresses itself more like entrance (Sketch made by M. van Os)

As the sketch above explain, there are different doors on the ground floor level and none of them explain what is behind. It is clear that most of them are there to load in the cargo but since there are no windows or text on the doors it is not explicit what kind of goods it will be.



There is no canopy above the door, only a small stair which consists of one step. The door is "marked" by an electrical box and a dumpster (Sketch made by M. van Os)

The last step is going through the door what leads immediately into the staircase. There is no further introduction between the borders of outside and inside as a canopy. The difference of in or out all happened in one step upwards as a small stair.



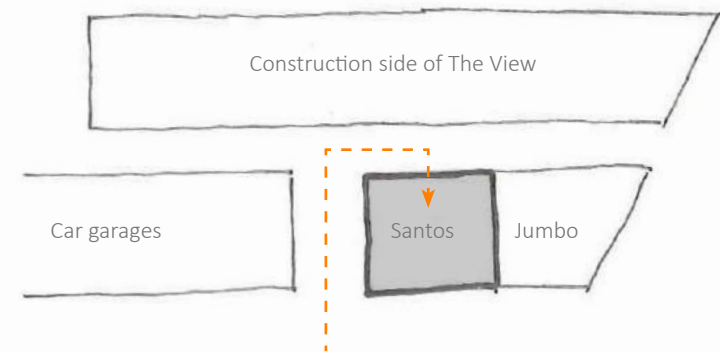
Entrance hall (Sketch made by M. van Os)

The entrance hall is very small and have different functions. It is the place with all the fuse boxes but also the start of the staircases to the floors above. On the left is another door that leads to the basement.

Conclusion

The entrance deserve more attention in a future design because now it is very unclear and a well-designed transition between the inside and outside is missing. The area around feels not very comfortable and works more as an obstacle. The last part is nowadays a construction side.

The front door is lifted up a little and the entrance hall is very narrow.

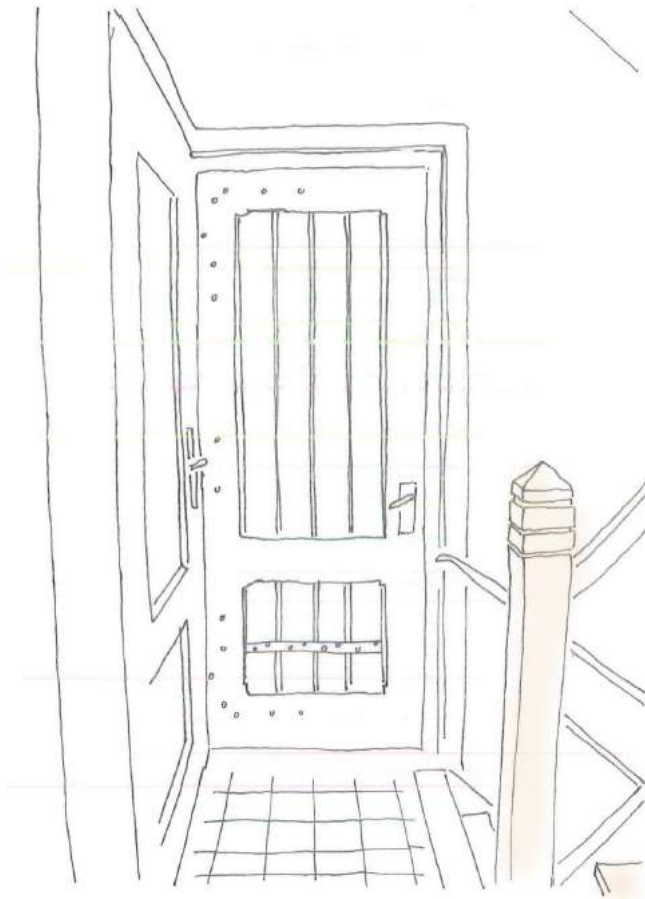


Route to the entrance of Santos (Sketch made by M. van Os)

Staircase

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Coffee warehouse Santos



Small corridor with four doors
(Sketch made by M. van Os)

The staircase in Santos is very narrow, dark and there is no view to the outside world. This makes it an introverted and monotonously staircase.

Also the four doors on every floor doesn't explain anything of the function behind. It is also hard to guess on which floor you are. Behind the wooden doors are the storage spaces and the toilets. The toilets are provided with windows but they are not noticeable from the staircase.

The wooden material give a warmer feeling to the staircases. The small stair doesn't make it feel it is very public, it is even hard to pass an oncoming person. On every floor level is the possibility to go to the storage space or to go higher. For the reason that there is no relation with the outside world or with other floor levels there is no feeling of authority in here. This can only be experience by entering the storage space and looking outside or by reaching the roof. This staircase is on both the north as the south side of the building.

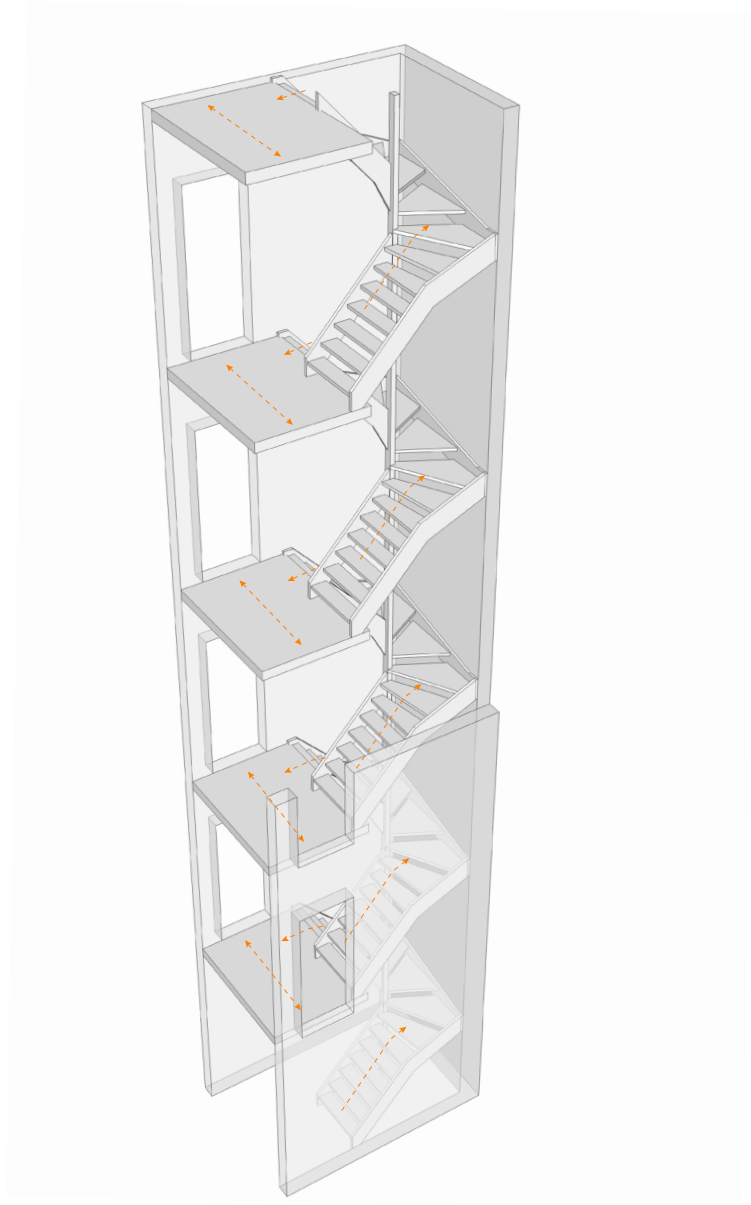


Staircase (Sketch made by M. van Os)

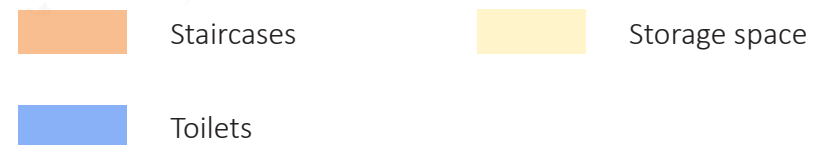
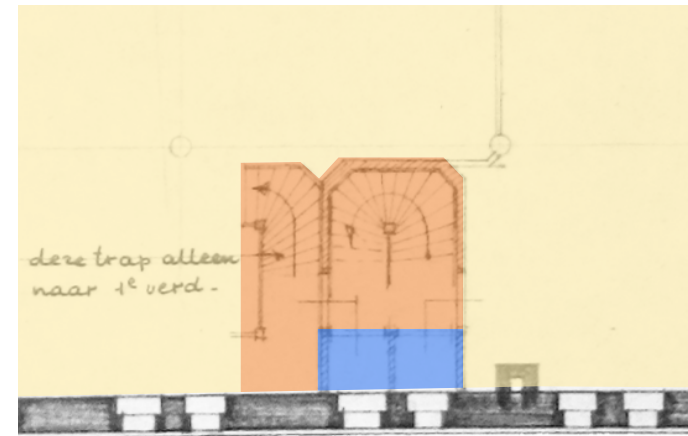


Staircase (Sketch made by M. van Os)

Conclusion



The main staircase in the Santos warehouse



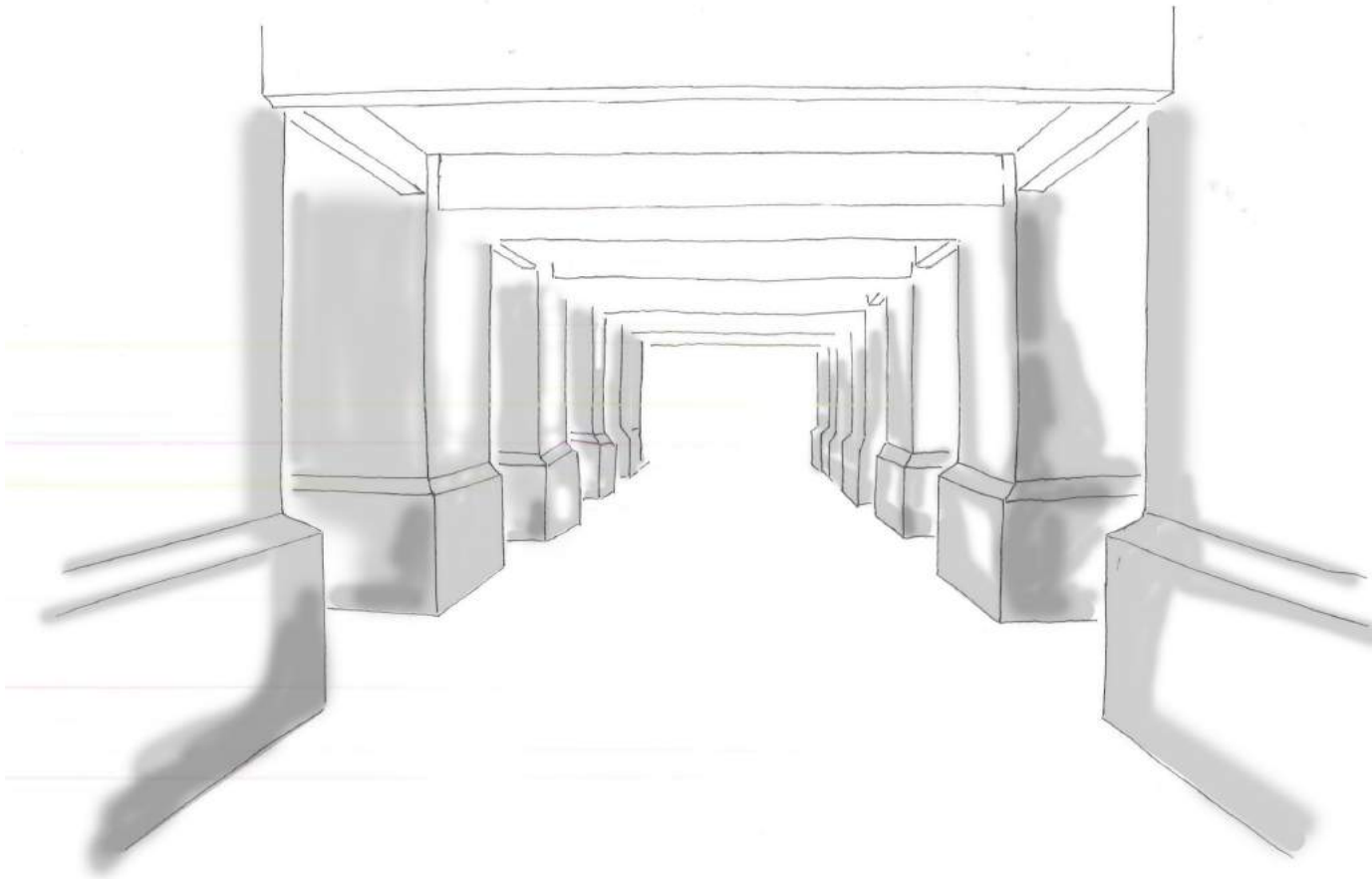
Floorplan of the staircase

The floorplan explains how small everything is in the staircase. It is all designed in a functional way with the only purpose to go to every floor and not meant for grandeur or to be seen. The toilets are both 1,20 x 1,00 meters and the small passage is only 0,90 meter. This is all done to store as much as possible coffee. The more coffee that can be stored, the more profit it means for the building and the more money was made.

Columns Appearance

168

Coffee warehouse Santos

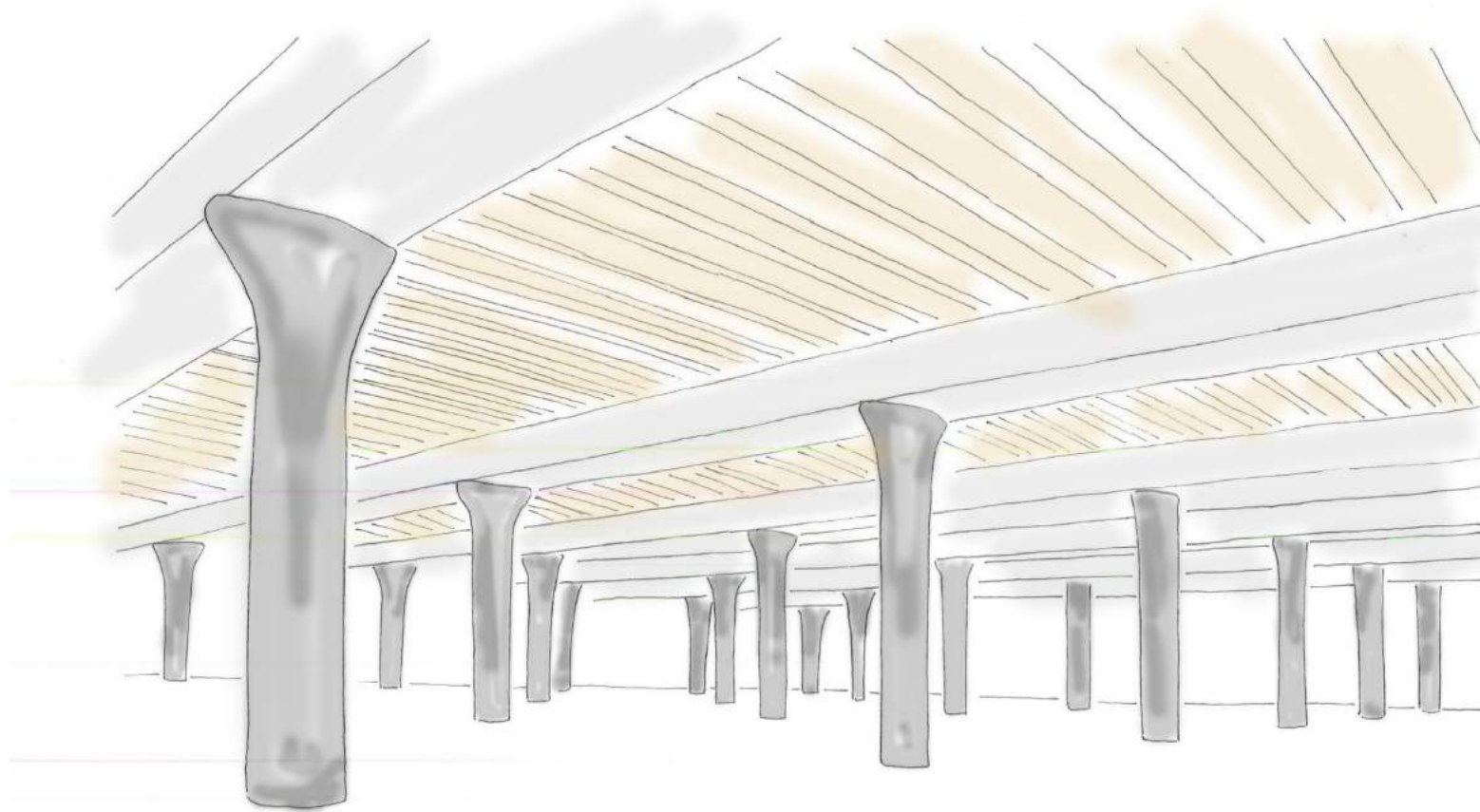


Column construction basement
(Sketch made by M. van Os)

The most part of the basement consist out of columns. They are designed out of brickwork and have a massive appearance since the dimensions are 1,30 x 1,90 meters.

All the windows are closed what makes it very dark and in combination with the 35 columns, this space give an unpleasant feeling.

The floor is made out of brickwork as well but it is most of the time wet for the reason the basement is leaking.



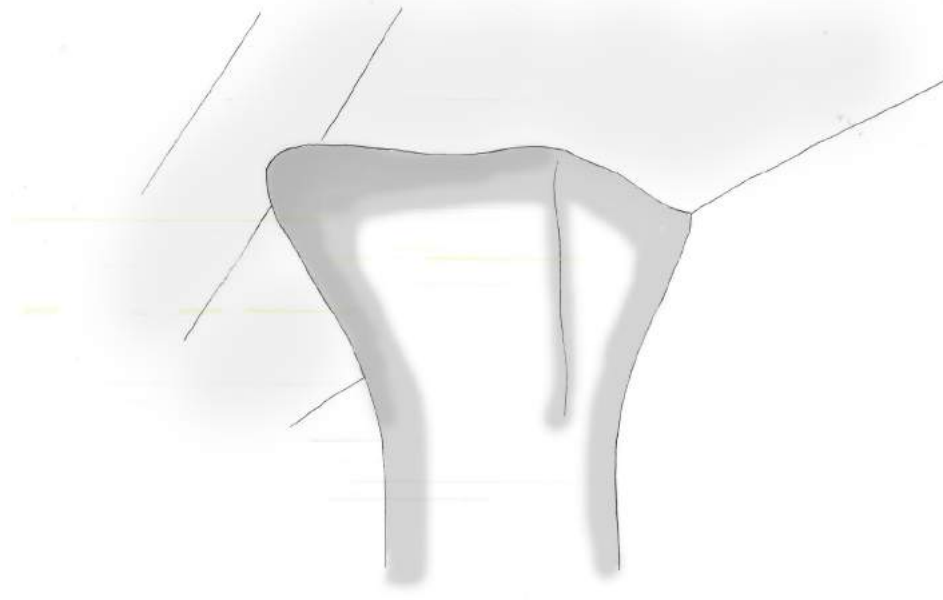
Column construction first floor
(Sketch made by M. van Os)

The columns are designed on every floor in a different way but they become thinner by floor the building rises. The principle of columns with a concrete layer around is used from the ground floor till the second floor. This layer was there as a fire proof protection. The core of this column is made out of steel.

This floor is more open in comparison to the basement and has a clear overview. Above the concrete beam structure are the wooden beams visible what gives a pleasant feeling to the floor.

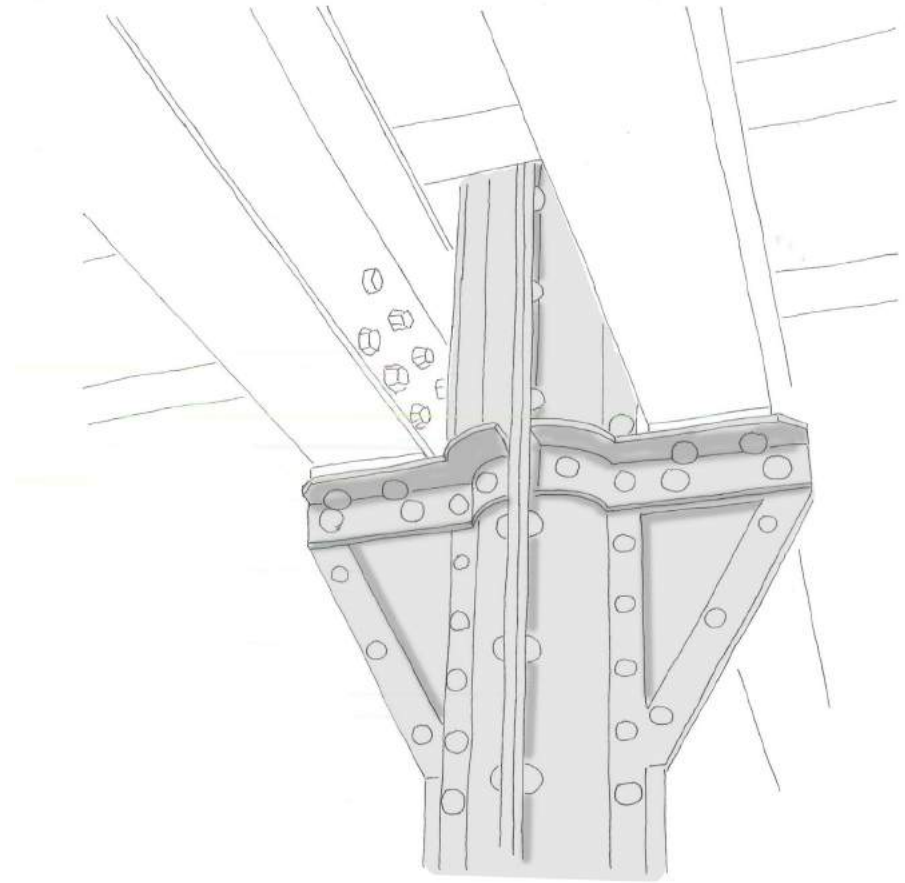
Material and dimensions

The top part of the concrete column have round shapes and it is clearly visible that it follow the form of the steel structure underneath. The steel beams above a combined as a whole in a concrete layer.



Column with concrete layer
(Sketch made by M. van Os)

The vertical load-bearing structure consists out of iron columns with a pattern of 4,22 meters (8 grids deep) by 5,30 meters (6 grids wide). The columns are made of riveted rolled quadrant profiles and strips of flat bars. Those flat bars were not only used to reinforced the column but also connect them in a simple way with other elements such as the beams. The high amount of riveted columns made it very expensive. That explains why this method was hardly used before 1900 in the Netherlands. This system comes from the United



Steel column
(Sketch made by M. van Os)

States where it was called the phoenix-system because it was developed by the Phoenix Iron Company. Originally it was developed by Samuel Reeves in 1862 during the American Civil War for the formation of gun barrels. The hollow cylinder consist out of four, six or eight iron segments which were merged into a single column. The result was a much lighter and stronger than the iron columns of that moment and make it possible to design buildings without the conventionally heavy an load-bearing walls. Higher buildings could now be built



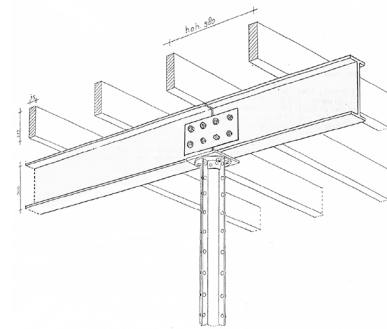
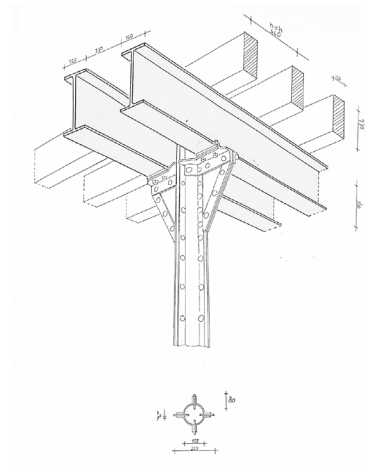
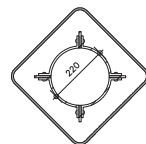
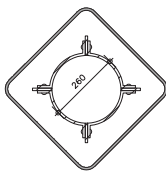
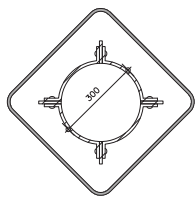
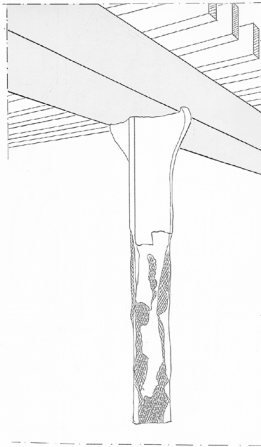
Ground to second floor
(Flexus AWC, 2011)



Third and fourth floor (Flexus
AWC, 2011)



Fifth floor (B. Bronswijk)



Floor load:
1.200 kg/m²

1.500 kg/m²

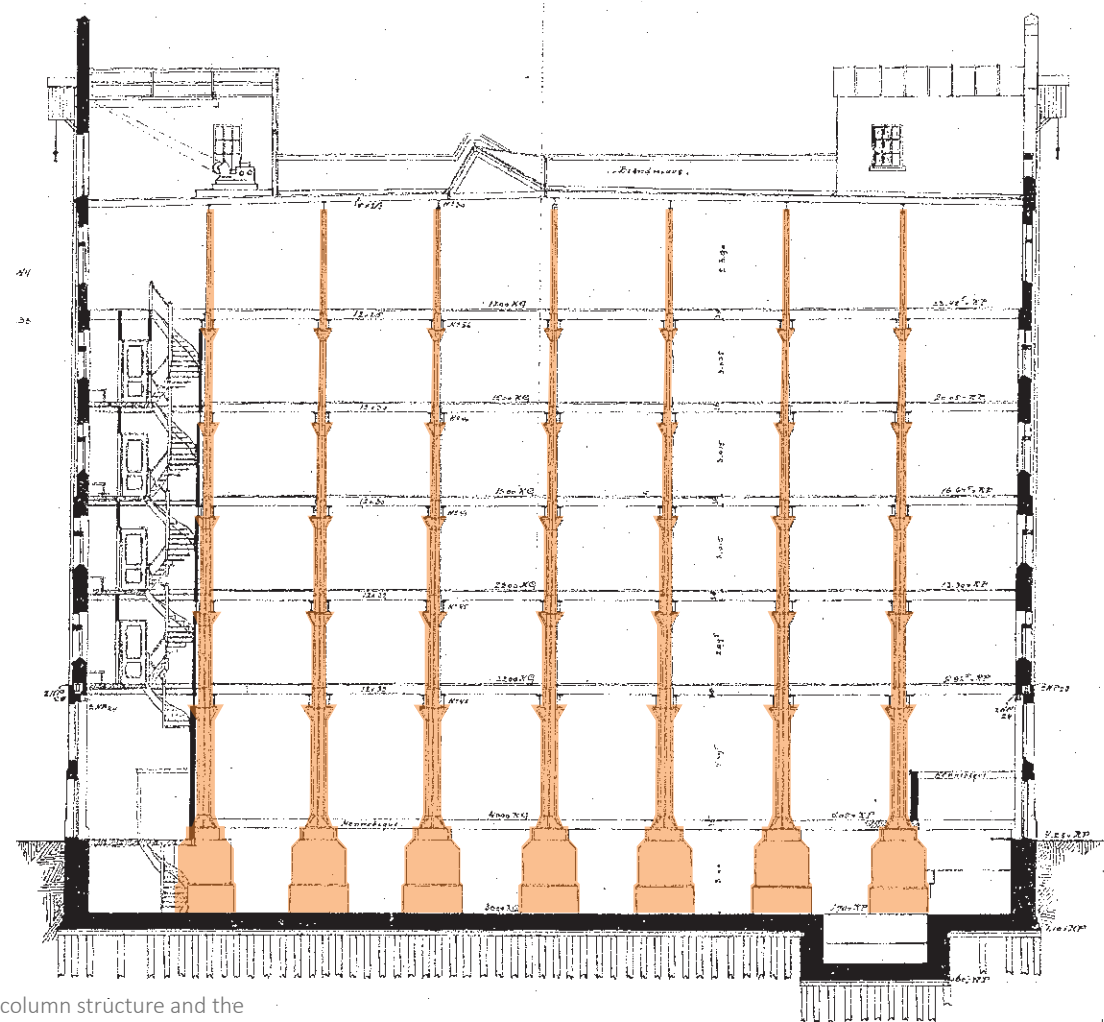
1.500 kg/m²

2.200 kg/m²

2.200 kg/m²

4.000 kg/m²

3.000 kg/m²



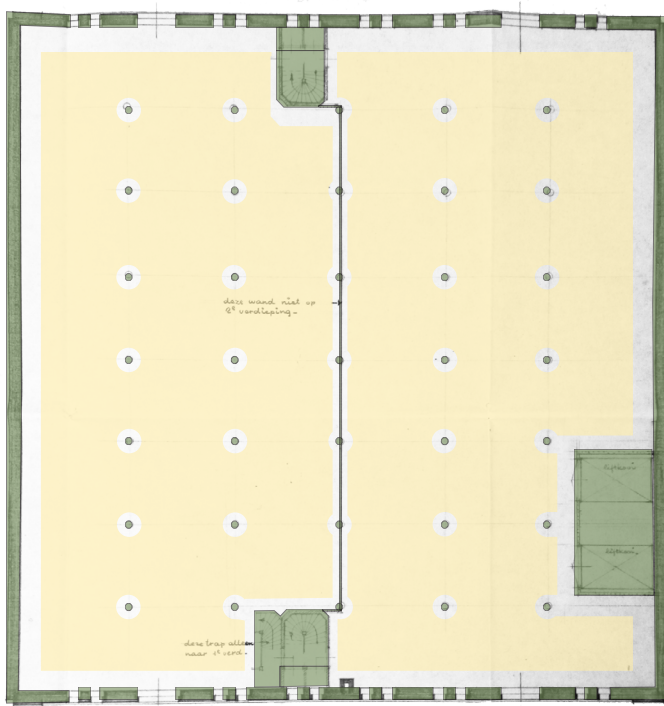
Section with the main column structure and the load per m² floor

on small city lots which accelerated the principle of the skyscraper. The use of this system in the Santos warehouse was very progressive because this system was not applied elsewhere.

The top part of the columns are designed with brackets made of riveted sheet iron and riveted, partly curved, L-profiles. Each column has two brackets with on each an iron bar. Those beams are connected to each other in the longitudinally direction with a gusset plate. The columns on the top floor don't

have those brackets and is there only one NP-beam which is placed directly on top of the column. By using the brackets, it is possible to design the columns on top of each other because the floors are besides the columns. The columns are riveted to baseplates by using rolled L-profiles. Those baseplates are connected with the related column with two bolts. The columns are related to the load resting on it (Flexus AWC, 2011).

Conclusion

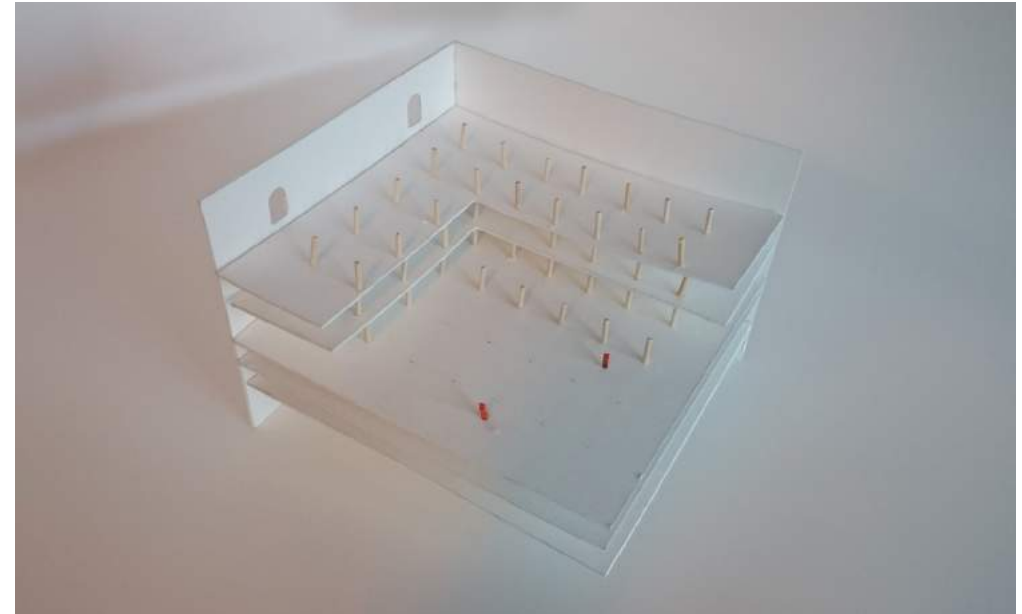


All the elements as the walls, columns and the elevator dominance the space and are coloured in green. The white space is this dominating area around those objects. This means that the yellow parts are the spaces we really use and feel comfortable to move in.



Within the whole area smaller areas are created by the surrounding columns.

(B. Bronswijk)



Model of the building for the expression between the human scale and the columns. The columns form a division in space and there is no reference to the human scale. This can feel as being lost in the space. (Model made by M. van Os)



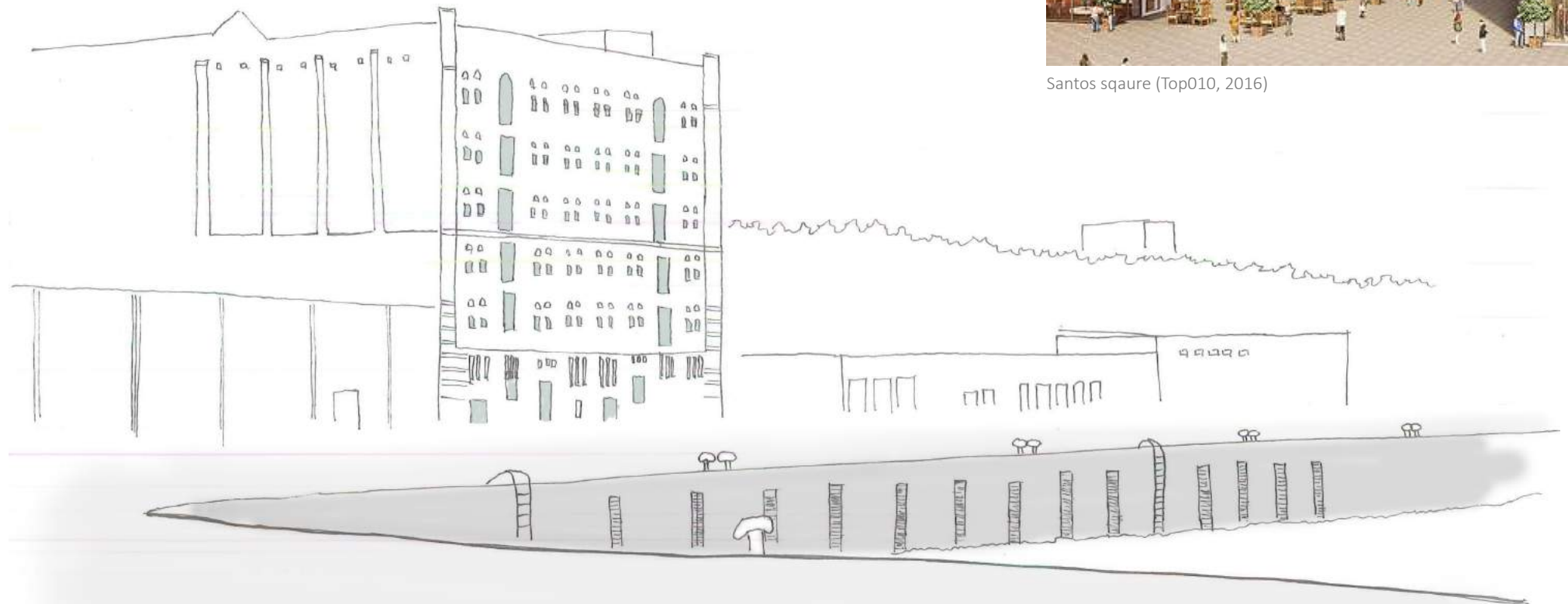
The relation with water

From the surroundings

Inside Santos itself there is no relation with the Rijnhaven unless you really stay in front of a window. The contrast between inside the warehouse and on the rooftop is enormous. The warehouse itself has a very introvert feeling while the rooftop is the absolute opposite with the great view over the city and the relation with the water but from a great distance. When The View will be executed, the relation between Santos and the water will be less.

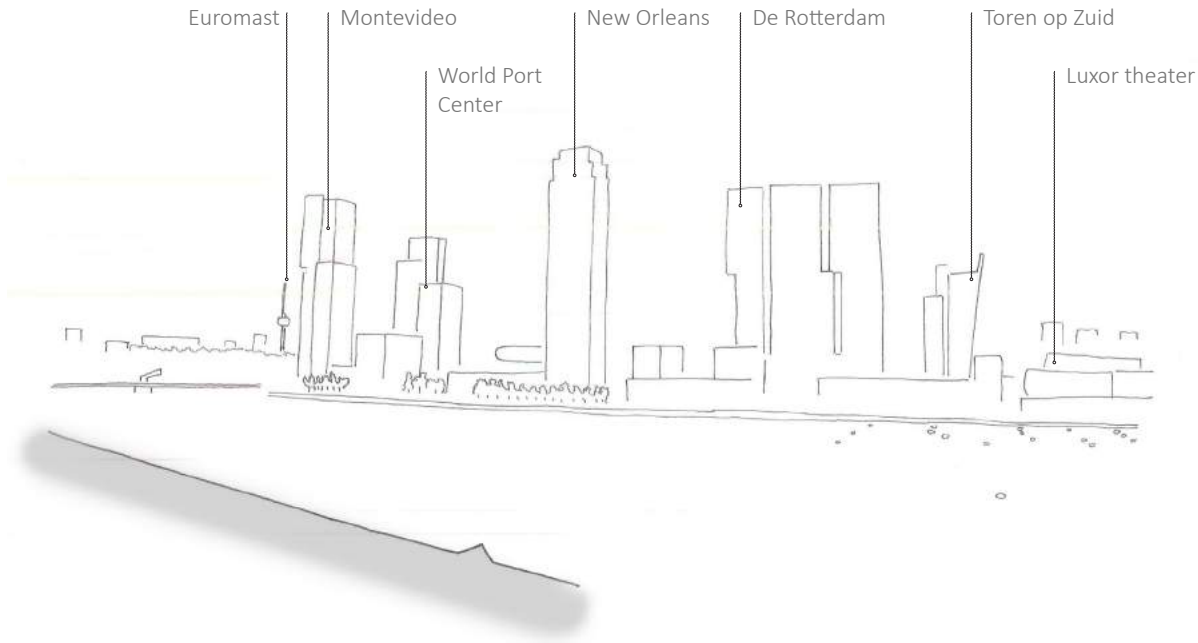


Santos square (Top010, 2016)



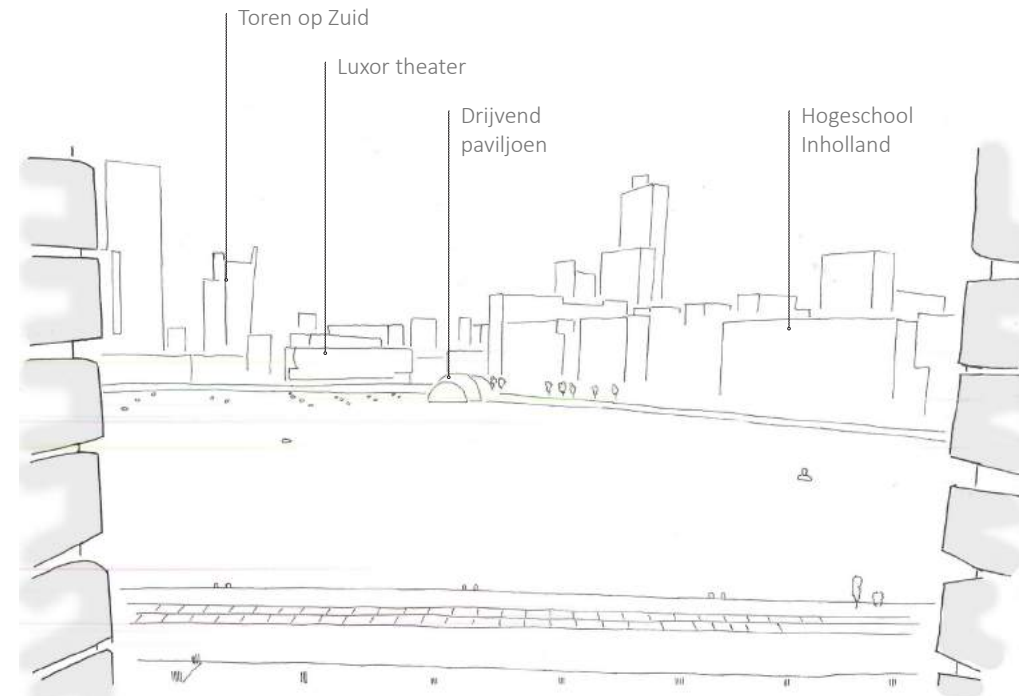
Santos along the quay (Sketch made by M. van Os)

In Santos



View from the roof (Sketch made by M. van Os)

Every window in Santos gives another perspective of the city around the building. From the facade in the south is the Maashaven visible but more interesting is the view from the north facade. This one is facing the north of Rotterdam and especially the Kop van Zuid with the most important buildings of the skyline or Rotterdam as the Montevideo, New Orleans and De Rotterdam.



View from a window (Sketch made by M. van Os)

Section

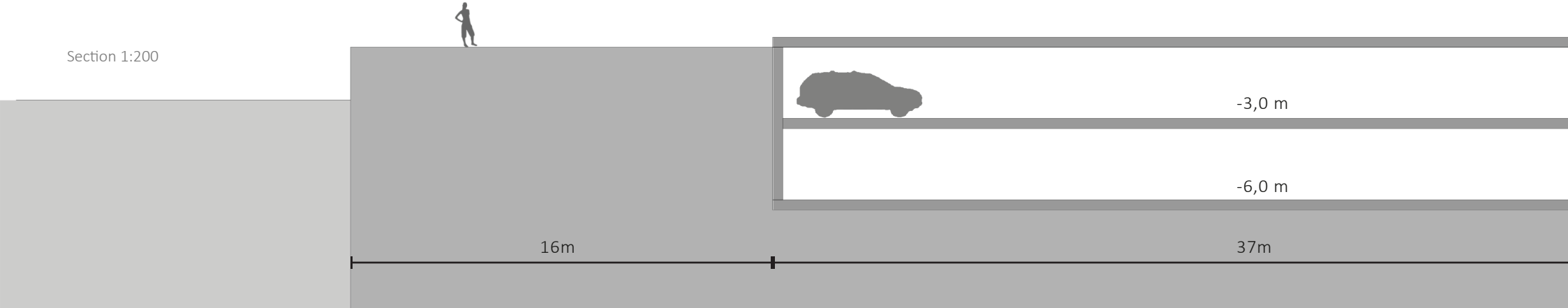


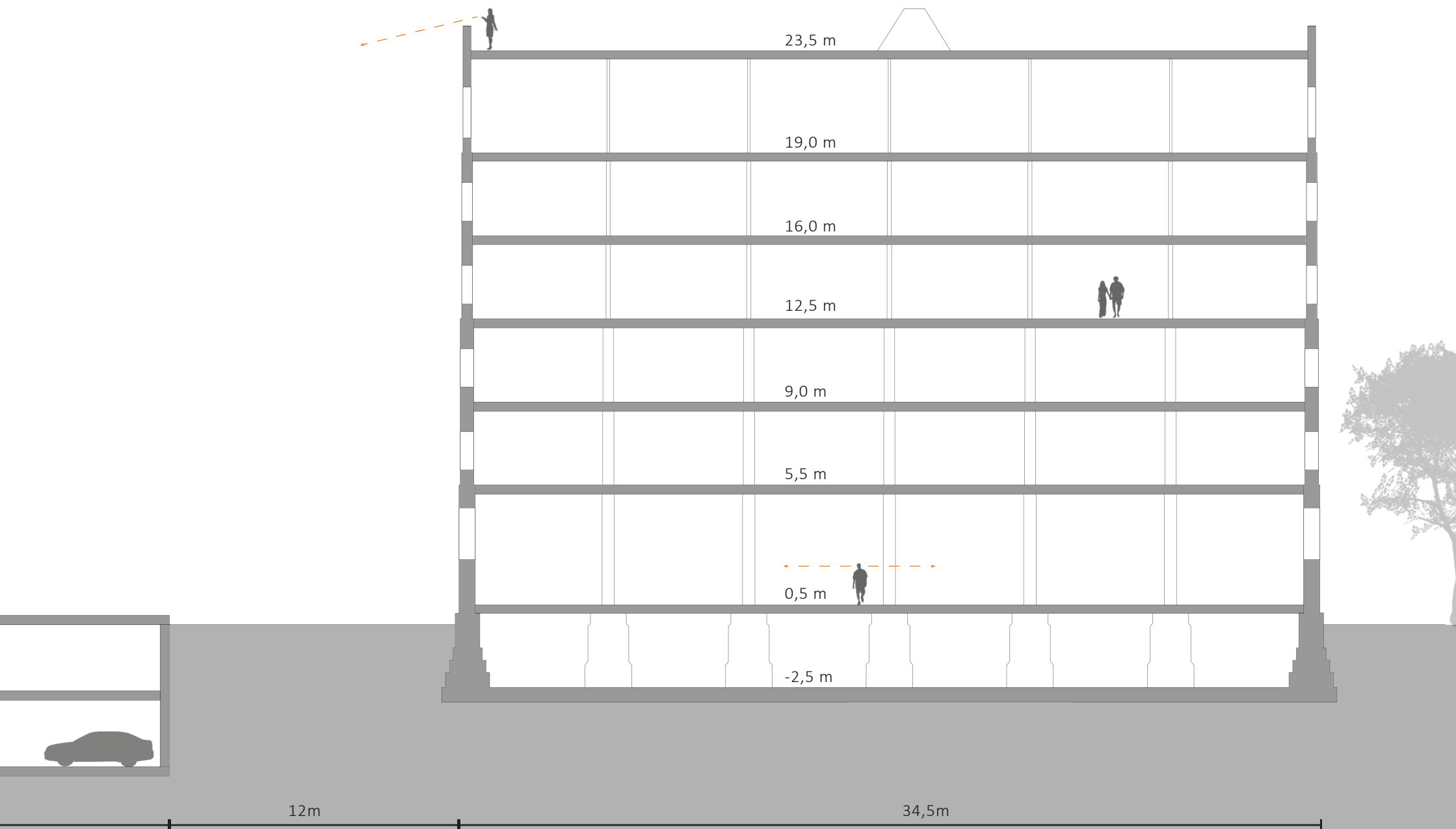
Minimal relation with the water from the concrete basement of The View (Opperman, 2016)



View from the rooftop (B. Bronswijk)

Section 1:200





Daylight



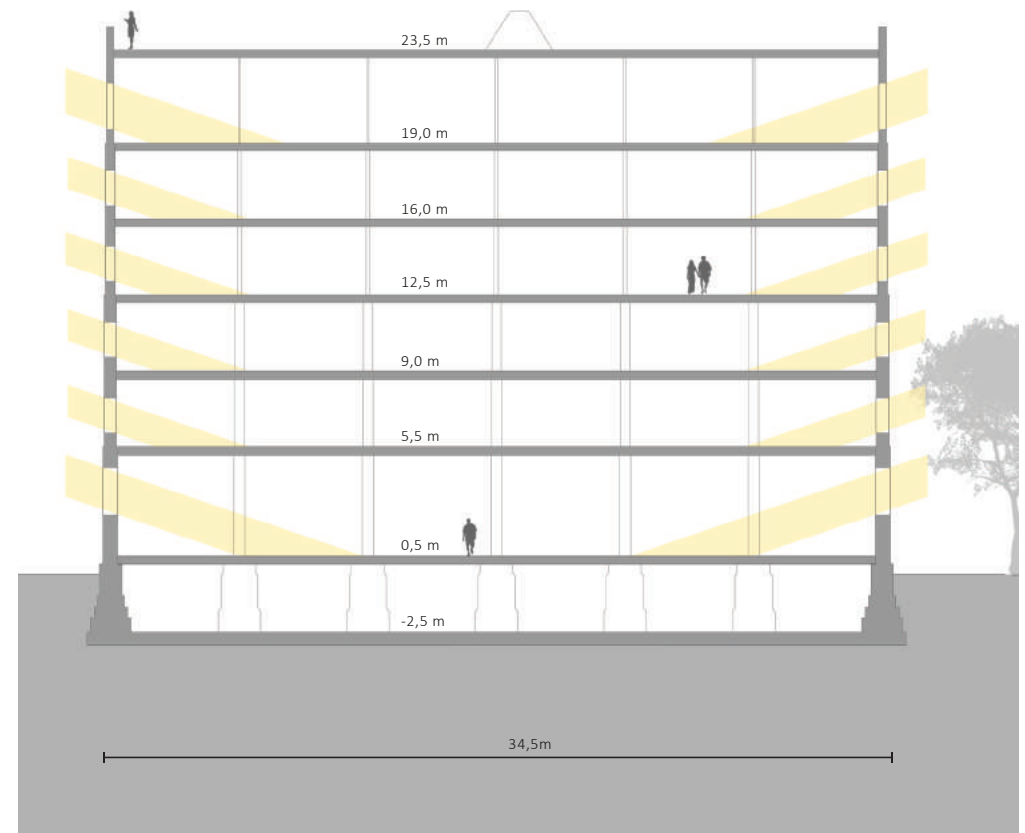
Inside the warehouse with a minimum amount of light. The windows express theme self in a horizontal way.



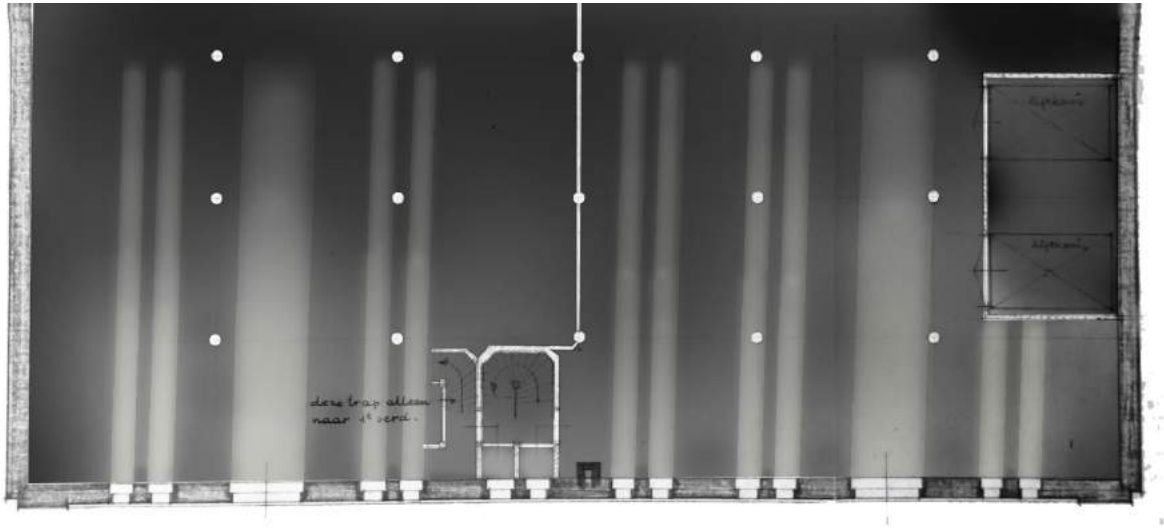
The loading doors divide the facade vertical in three separated parts.

Inside the warehouse, the storages spaces are quite darkened since most windows are closed off. The doors are always closed as well. This experience will completely change when the loading doors are open since a lot of light can enter the building. The windows form a horizontal division on the floor levels while the loading doors are more vertical.

Once there was a skylight above the fifth floor but this one is closed off now. By that time, the fifth floor must be the most pleasant floor to work on.



Section of the Santos warehouse with the direction of the sunlight.

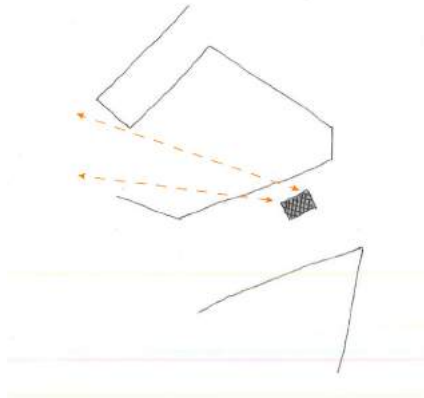


Floorplan and 3D render with the influence of daylight when the doors and windows are open

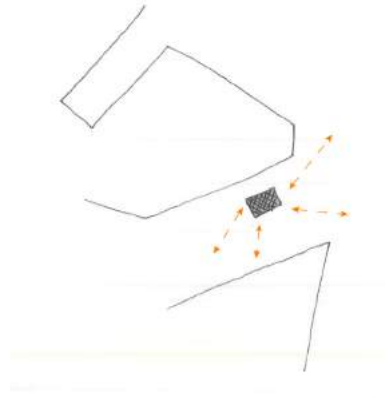


Conclusion

The activities in the harbour of Rotterdam have changed over the last 100 years what influenced the area around Katendracht and Santos as well. In the former years was the Rijnhaven build as a loading and unloading place for the goods from abroad. This results that the Santos warehouse had a closer relation to the water front than nowadays.

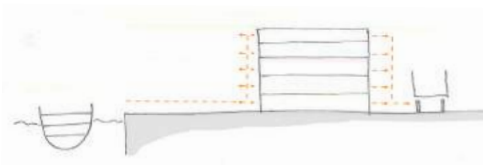


Relation with the surroundings of Santos in 1910
(Sketch made by M. van Os)

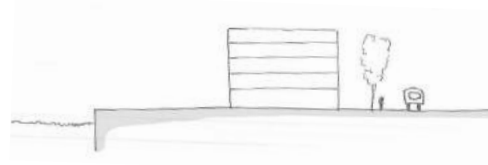


Relation with the surroundings of Santos in 2016
(Sketch made by M. van Os)

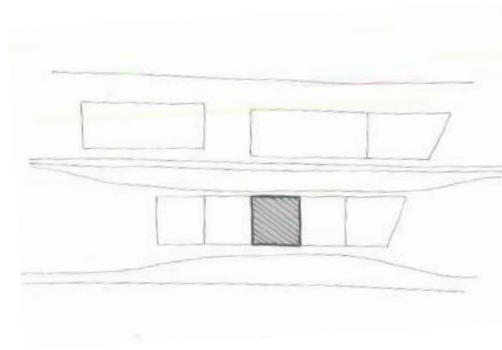
The activities on the water disappeared and the relation as well. New plans are developed to give new opportunities to the waterfront. The result is a reduction of the influence of Santos to the surrounding. When it was in the past a recognizable building to guide ships, it is now changed in and empty building that will be just visible in the surrounding neighbourhood. The new plans of The View will increase this.



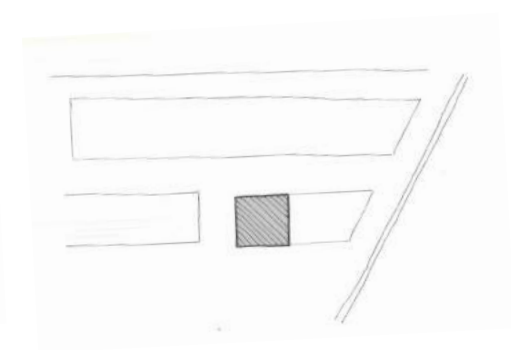
Harbour activities
(Sketch made by M. van Os)



Only activities on the Brede Hilledijk
(Sketch made by M. van Os)

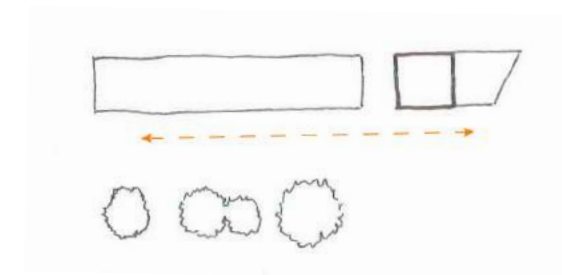


Original plan around Santos in 1903
(Sketch made by M. van Os)



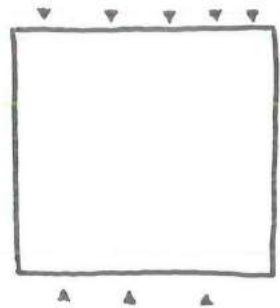
Plan around Santos in 2016
(Sketch made by M. van Os)

The formation of the building is today similar to the situation in the beginning of 1900. Santos and the other buildings along the Brede Hilledijk can be seen as a wall. They guide the traffic through Katendrecht. The Santos warehouse is striking between the lower buildings in this formation due to the height. In the new situation is the only difference the height of The View what blocks the visual relationship with Santos. In the new building is only a small opening in the façade to see a part of the warehouse.

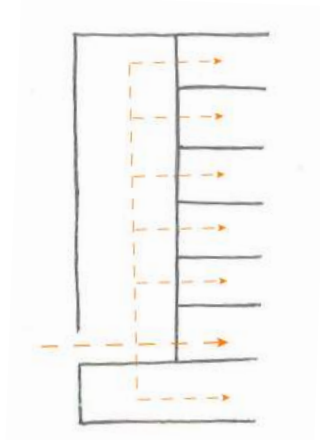


Lineair composition with Santos included
(Sketch made by M. van Os)

By changing the activities from the water side to the Brede Hilledijk, it should be logical that there is a façade on this part of the building. This isn't true for the reason the building wasn't in use for a long time and have a decayed appearance. Also the fact that there are a lot of doors on ground floor level makes it harder to find the entrance. The entrance which is in use nowadays is still on the water side but the route to here is unclear and it doesn't feel like it is allowed to come there. This is mainly because the area along the building with a fence on one side feels belonging to the car garages. The entrance itself is very narrow and have the only purpose to make it possible to enter other floors. This small space is at the same time the cupboard and the staircase.



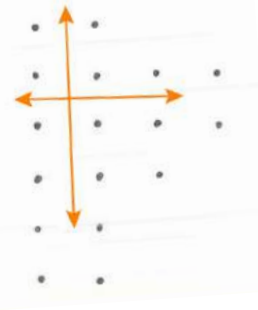
All the doors on ground floor level
(Sketch made by M. van Os)



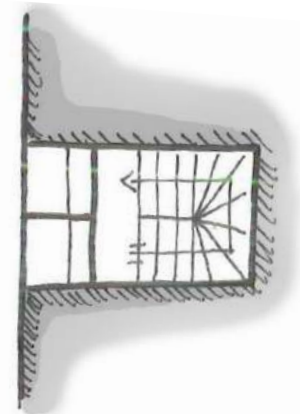
The staircase have the only function to reach the other floors.
(Sketch made by M. van Os)

From the staircase there is no relation with the rest of the building or the outside world. This small staircase is on both sides of the building and not very illuminated. The only light is artificial light. On every platform are four wooden doors which lead to the storage space or the toilets. The staircases have the idea of an enclosed tubes in the warehouse.

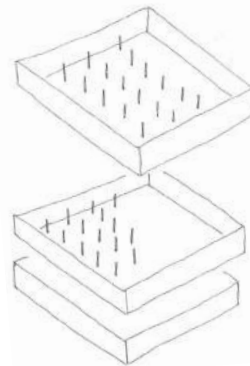
Santos itself can be seen as a repetition of boxes on top of each other with columns. Those columns form an easy to understand grid system but they are also dominating the floors and separate it in different areas. Standing inbetween of those columns, there is no relation with the outside as well the feeling for the dimensions inside are hard to understand since there is no reference to the human scale.



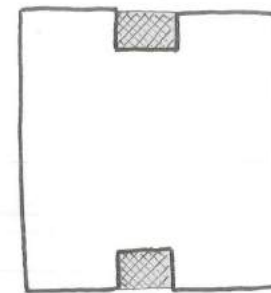
Easy to understand grid system
(Sketch made by M. van Os)



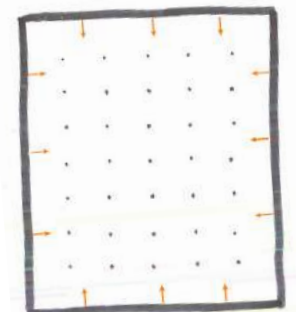
Enclosed staircase by toilets and storage space
(Sketch made by M. van Os)



Boxes on top of each other
(Sketch made by M. van Os)

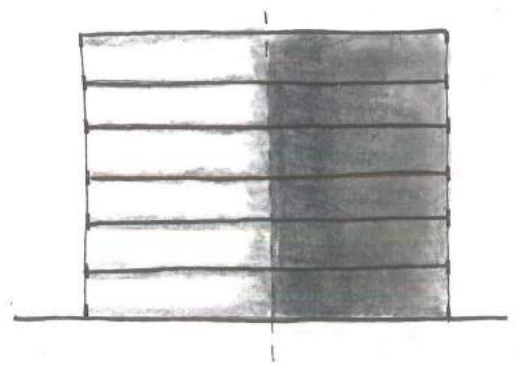


Storage as a large open space



Introvert space

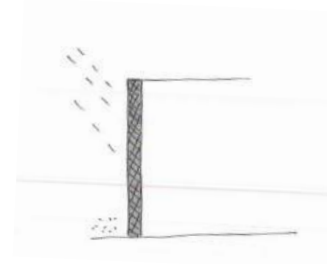
Light influence a room always and as well in the warehouse. In here it depends on the loading doors are open or closed. In a closed situation the warehouse is quite dark but this all change by opening the doors. Not only for the reason there is more light but also the view creates an open relation with its surroundings.



Section of Santos. Left side is with open windows and doors, the right side is with everything closed. (Sketch made by M. van Os)

The whole building is designed as a functional machine. The floors are created in such a way to store as much as possible and the transport for that was done by a lifting equipment on top of the roof. Even the façade is mostly designed in a practical manner, even when it looks architectural. The main ideas for the façade is to protect the brickwork and the coffee against rain and dirt, stealing and is built for the transfer of forces. The elements and materials which were needed are further developed in order to give it an architectural appearance. In the whole building is also a high amount of repetition, order and is the facade and the floorplan mirrored in the middle.

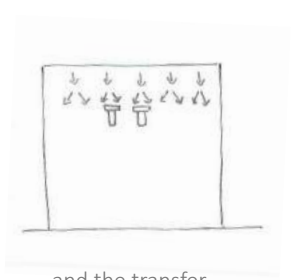
The fact that the building is originally build for storage explains why it is not that user friendly or have a challenging and surprising sequence. Those elements have to take into account for the new design of the building. Especially the relation with the water is at this moment very minimal and should have a stronger relation with the building itself. Not only for the reason that the warehouse was dependent on the water in the past but also since it can be an added quality and is unique element.



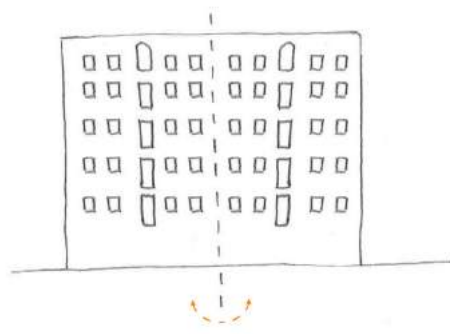
Protection against: rain and dirt



robbery



and the transfer of forces (Sketch made by M. van Os)



Repetition, order and mirrored (Sketch made by M. van Os)

VALUE ASSESSMENT

Coffee warehouse Santos



Resume of Santos

186

Coffee warehouse Santos



1901-1950:
Later adapted window
on the fifth floor



Unknown:
The modified windows
on the third floor



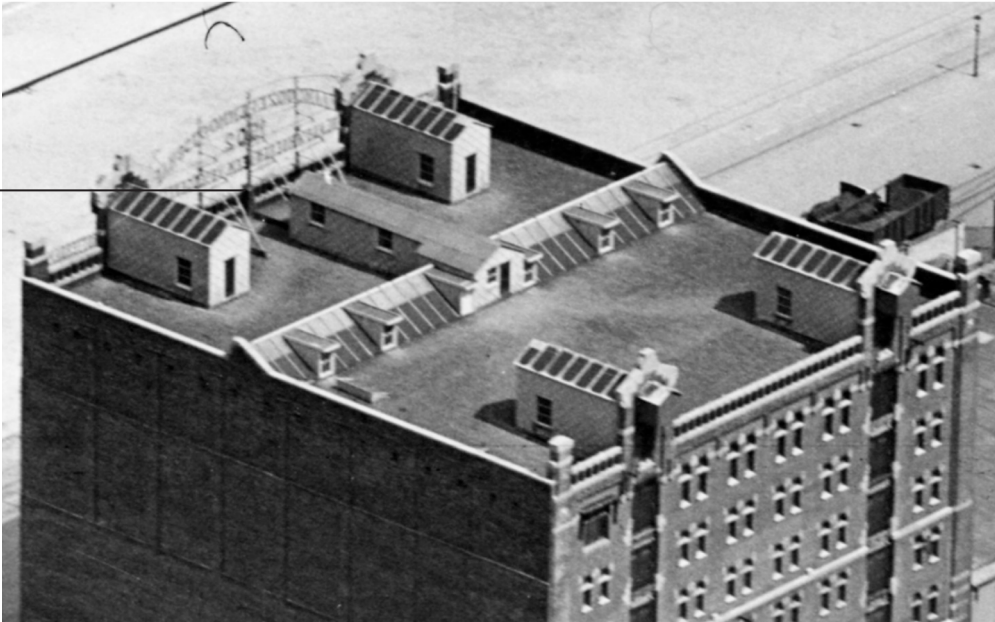
Santos in 1920 with on top the whinch houses (Flickr, z.d.).



1901-1954:
Closed off windows
in the basement
(S. Fischer)



Unknown:
Closed openings
in the plinth
(S. Fischer)



1954: Rooftop Santos 1950 (Flexus AWC, 2011)

The lifting system of the gables houses was removed (Bedrijvenkdr, n.d.)

After 1983:

The sawtooth roof are closed off with roofing materials. The dormers are deleted and a new steel construction is added to support the roof deck.



Plinth (Flexus AWC, 2011)



Santos without the which houses, 1990 (Bedrijvenkdr, n.d.)

1970:

The four gables houses are removed from the roof and the parapet was extended. The top parts on the four corners are removed as well (Flexus AWC, 2011)

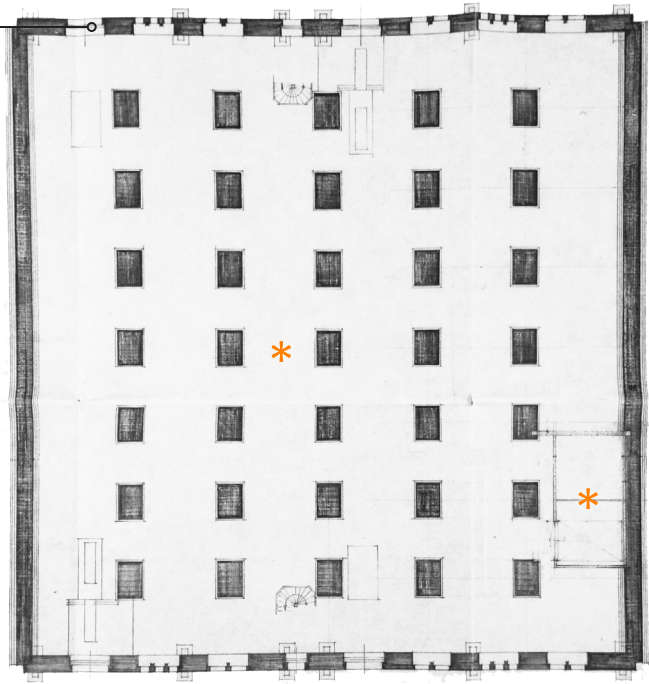
Unknown:

The bars are disappeared but it is unclear when this happened. Same for the lights on the facades. (Flickr, z.d.).



(Flexus AWC, 2011)

unknown
The Hennebique floor is closed on different places just as the windows in the basements. This makes it possible to connect the floor with the walls but it is not sure when this was done.



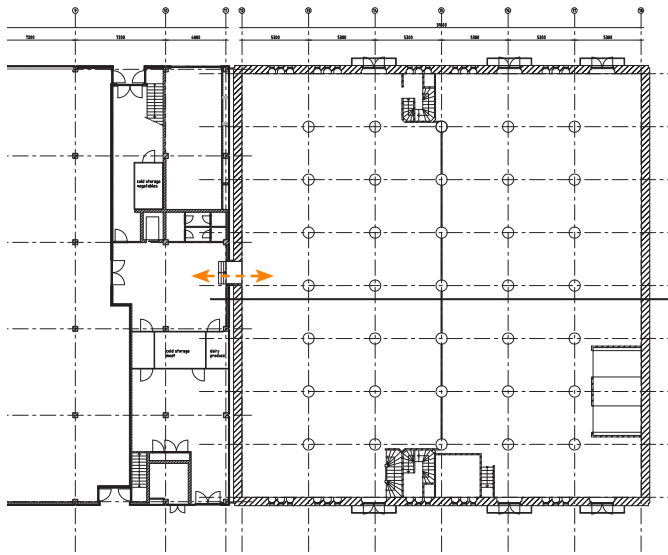
Basement

* unvisited areas



(Flexus AWC, 2011)

unknown
Another change in the structure is the adding of steel columns underneath the Hennebique floor to support the side walls. Location is unclear because the basement is never visited.



after 1970
On the ground floor is build an extra wall for the separation for the current storage of the Jumbo supermarket.

after 1970
In the façade is made an opening to create an indoor connection between the supermarket and the Santos building.



Ground floor



(Flexus AWC, 2011)

unknown
The iron structure (columns and beams) are in the current situation in for the ground floor, first and second floor provide with a mesh reinforcement which is plastered / cemented. This is probably done for fire safety but it is unclear when this was done.



(Flexus AWC, 2011)

unknown
It is also unclear when a part of the Hennebiquewall was demolished on the north side of the ground floor. This part is later replaced by a masonry wall. Also on the first floor is a part of the wall demolished.



unknown
The iron structure (columns and beams) are in the current situation in for the ground floor, first and second floor provide with a mesh reinforcement which is plastered / cemented. This is probably done for fire safety but it is unclear when this was done.



1954
The old elevator shaft is removed and the floor areas are covered with a wooden beams and steal structure to the existing iron beams.

Also a new concrete elevator shafts is made on all the floors and an elevator machine room was created above the roof next to the west façade.

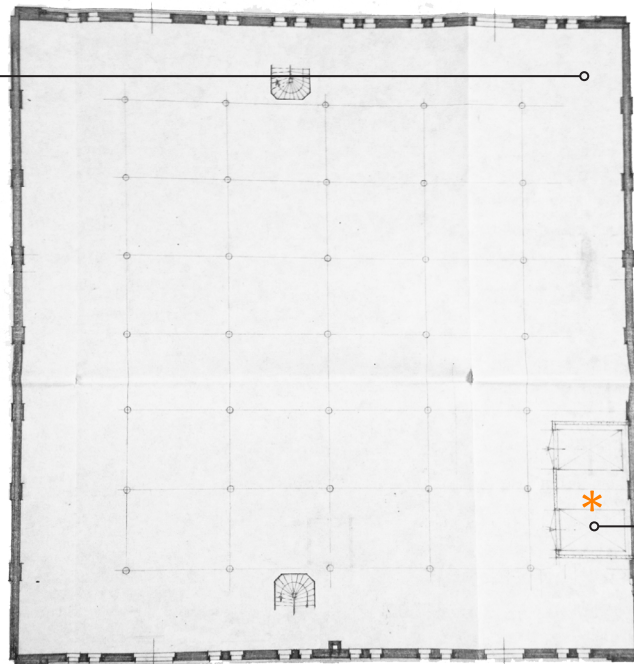
- * unvisited areas



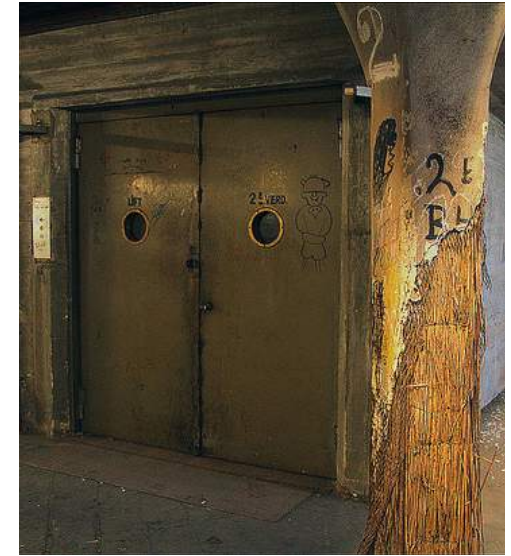
(Flexus AWC, 2011)

after 1950

A triple window was added later in the façade of the Brede Hilledijk on the top floor. Inside the building is close to this window a later applied masonry chimney from the same period as the window was realized. Those were probably made for an office or common room.



Fifth floors



Flickrhivemind (n.t.).

1954

Against the west façade of the building is on the full-height two concrete elevator shafts built. In the basement is lift pit and on the roof a small building for the installation of those goods lifts.

Valuation of the monument

Municipality:

Cultural and historical architecture and historical and typological value.

By (re) development of the monument, the characteristic must always be the starting point and should not be dominated by the redevelopment and the new program.



Rijksdienst voor Cultureel erfgoed:

Culture and history architecture historical and typological value with especially the bearing structure, front and rear facade and the staircase.







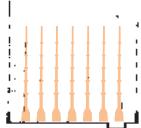





















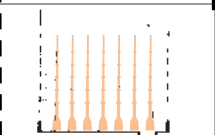


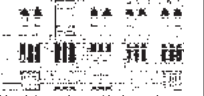



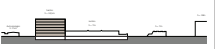






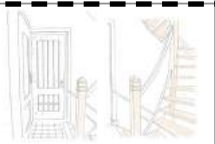
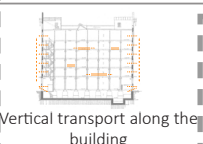
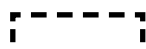
Rijksdienst voor het Cultureel Erfgoed
Ministerie van Onderwijs, Cultuur en
Wetenschap

My interpretation:

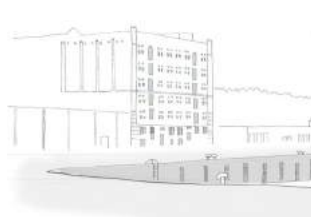
The warehouse have a architectural, cultural and historical value since it have:

- an expression of a historical function because of the loading doors and loading platforms,
- the use and the appearance of the materials as the limestone and sandstone
- The rhythm and repetition in the design of the facade and the columns.

	Age	Historical	Artistic	Comme- morative	Use	Newness	Conflict	Scientific	Etc.
Site	 Original plan had on both side of Santos two warehouses	 Same urban context for the last 100 years			 Shift from harbour activities to new part of the centre of Rotterdam	 New development around the Rijnhaven	 Minimal relationship with the water		 Potential risk to build in the outer dike area
Structure	 Still the original structure	 Phoenix-system structure							
Skin		 Historical materials and techniques	 Norht and south facade are characteristic and very well detailed				 Damage in the facade and water in the basement		
Space Plan					 Large open spaces	 New elevators	 The building is lost in its context now. It does not fit within its environment anymore.		
Services		 Historical lifting equipment from the roof is demolished	 Give more status to the building						
Stuff									
Story				 Remaining train track	 Know for its coffee storage and later use by the army				
Spirit		 Vertical transport along the building							

	Age	Historical	Artistic	Comme- morative	Use	Newness	Conflict	Scientific	Etc.
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Structure	 <p>Still the original structure</p>	 <p>Phoenix-system structure</p>							
Skin		 <p>Historical materials and techniques</p>	 <p>North and south facade are characteristic and very well detailed</p>				 <p>Damage in the facade and water in the basement</p>		
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Services		 <p>Historical lifting equipment from the roof is demolished</p>	 <p>Give more status to the building</p>						
Stuff								 <p>Division in groups:</p>	
Story				 <p>Remaining train track</p>	 <p>Know for its coffee storage and later use by the army</p>			 <p>Original function</p>	
Spirit	 <p>Vertical transport along the building</p>	 <p>Vertical transport along the building</p>						 <p>Historical expression</p>	

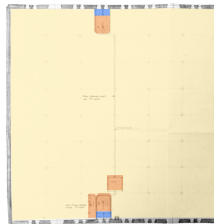
Interaction with
the surrounding



Spatial quality/ experience:

- orientation
- composition of the buildings around the water
- lines of sight

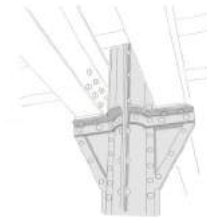
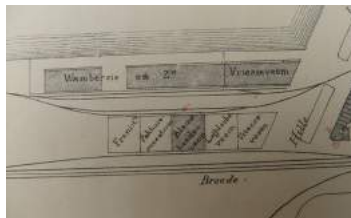
Original
function



Cultural historical value:

- what the building was in the past
- how it changed
- scars of the time

Historical
expression




Uniqueness:

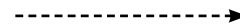
- use of materials and how they are treated
- composition of the facade
- repetition and rytme

Definition of the values


Definition:

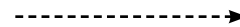
Criteria:


 High value:
Not allowed to demolish or change but keep intact. Those parts express the building.



Time of construction, important structure, architectural composition, inovative, unique additions

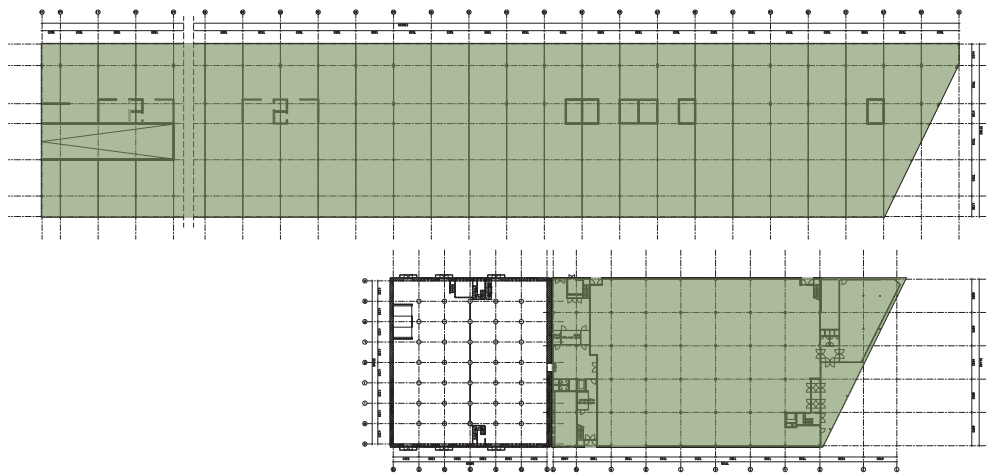
 Medium value
Has historical value because it belongs to the original building and can not be demolished.



 Low value:
Demolish only as less as possible and when is really necessary. Low value doesn't mean that it can be demolished!
Allowed to transform

Later added elements, elements which are not part of the original plan

Value assessment

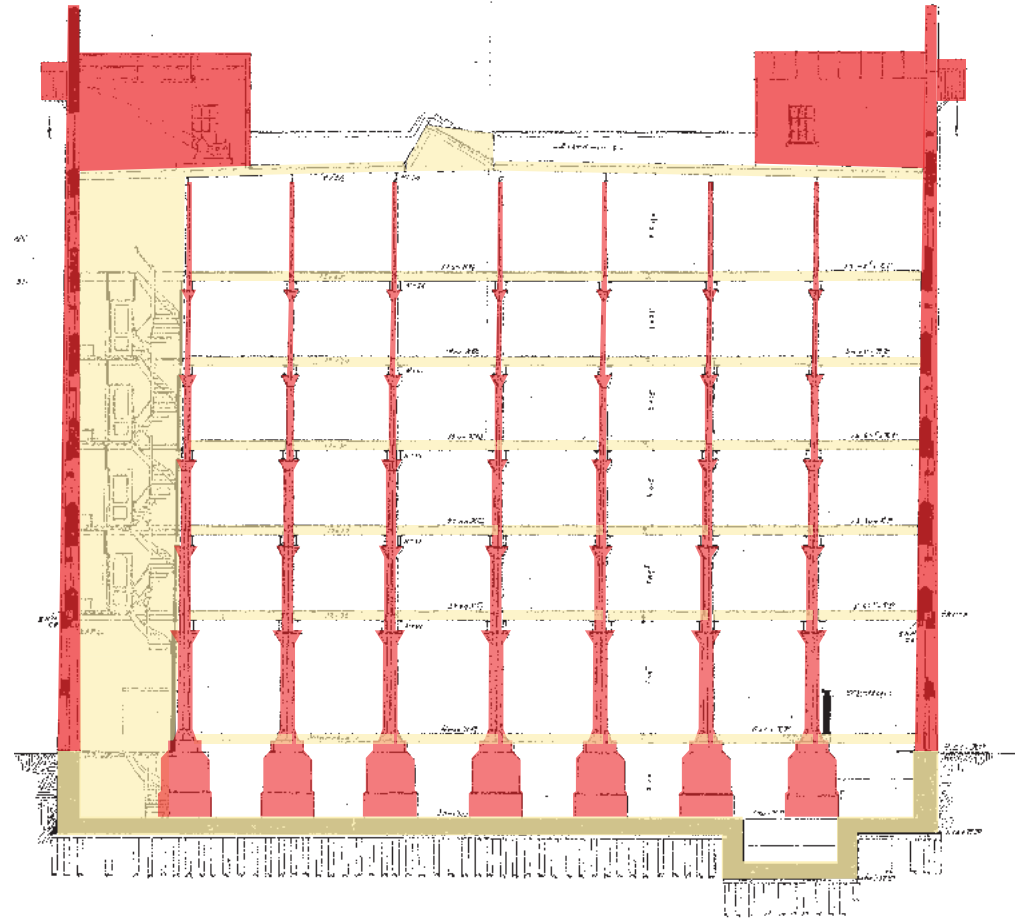


- Low value
- Medium value
- High value

The valuation of the building is based on a chronological order. This means there is a different appreciation between what is original or added later. Also the aspect if an element strengthen the expression of the warehouse is important. This means that the whole Santos building have a “medium value” except for unique elements which have a “high value”. Parts that are added later have a “low value”.

The View- European China Center Rotterdam and the Jumbo supermarket are both low valued. This is since the Jumbo from around 1970 and doesn't have any architectural value. It was also not in the original plans from 1902.

The View is built very recently, since 2010 and doesn't have any historical value.



The north and south facade are very characteristic for the appearance of the building and the larger surrounding. This means that the characteristic expression must remain.

The windows on the third floor have been replaced in the last ten years, as well some openings in the plinth are closed.

Despite the winch houses are demolished they form an important part of the

facade and have an high cultural value. This doesn't count for the letters because they explain something about the company and not about architecture.

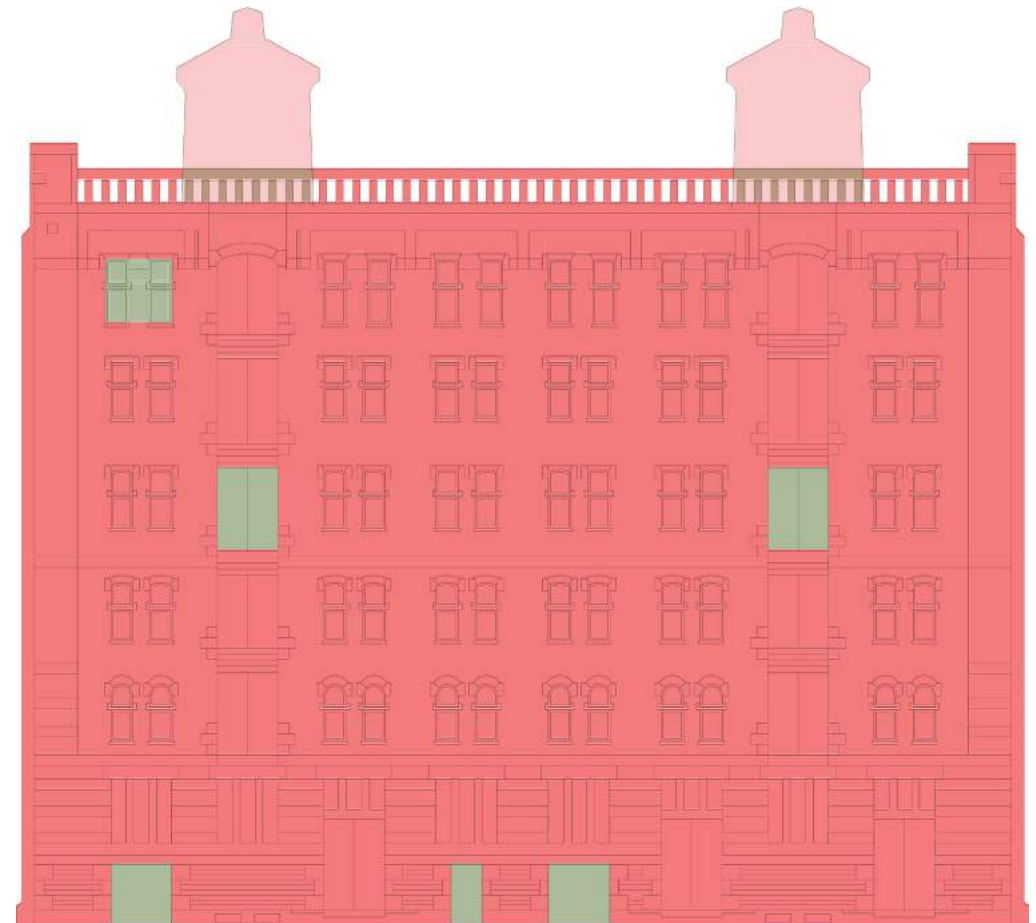
The south facade have a window on the fifth floor which was added later.

198

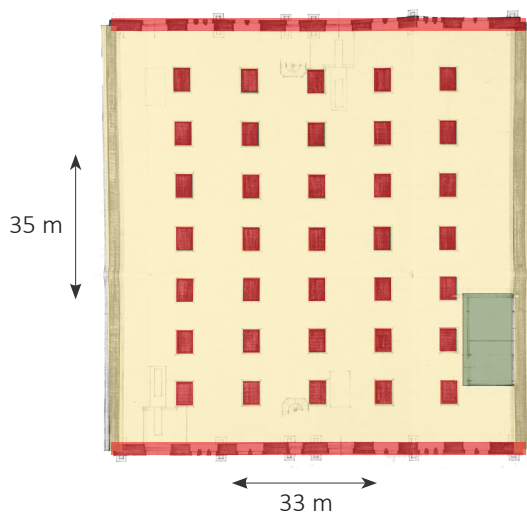
Coffee warehouse Santos



North facades

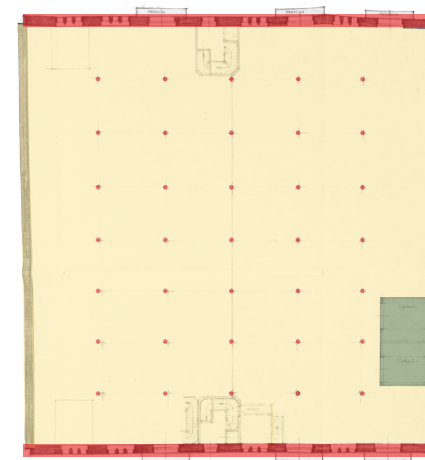


South facades

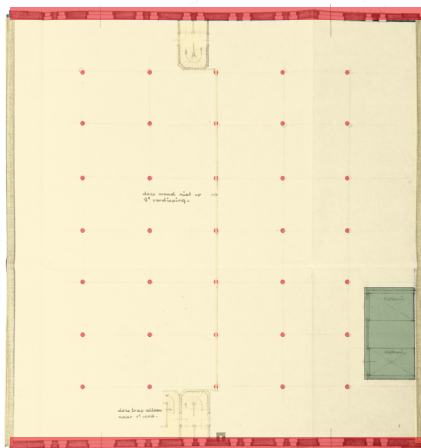


Basement

All the open areas have a medium value since they were only used for storage. The columns are higher valued because they give the building a character. The stairs have a medium value since they are characteristic for the building but they are not unique. The elevators have a low value for the reason its added later in 1954.

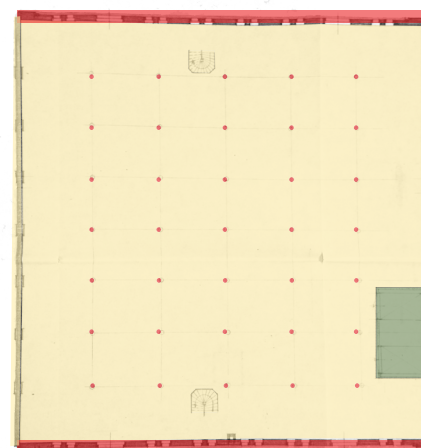


Ground floor



First to fourth floors

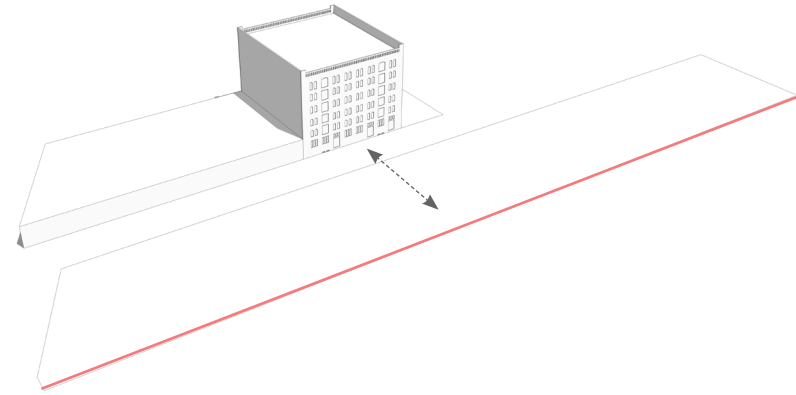
The Hennebique wall is only on the first floor and is not part of the construction and had as only function the prevention of the spread of fire. Most importantly is that it is not a real Hennebique but a system based on the ideas of Hennebique.



Fifth floors

The side facades of Santos were never intended to be seen. Only the stones and the ventilation parts are decorative and would extend above the other buildings.

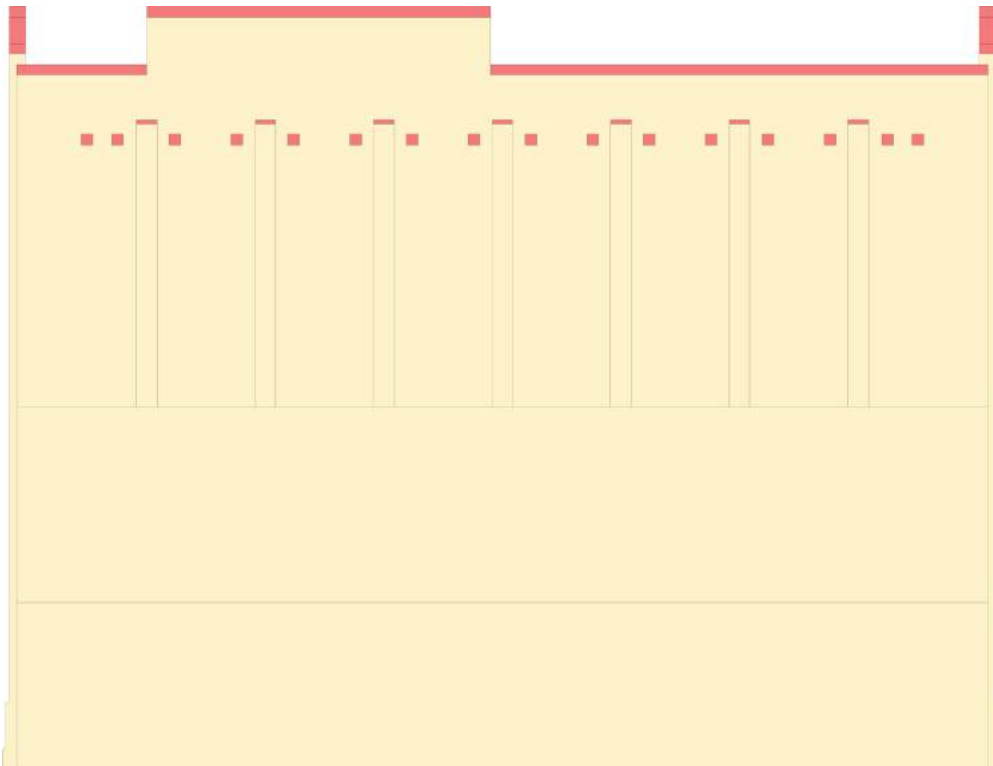
About the skylight is not much information available.



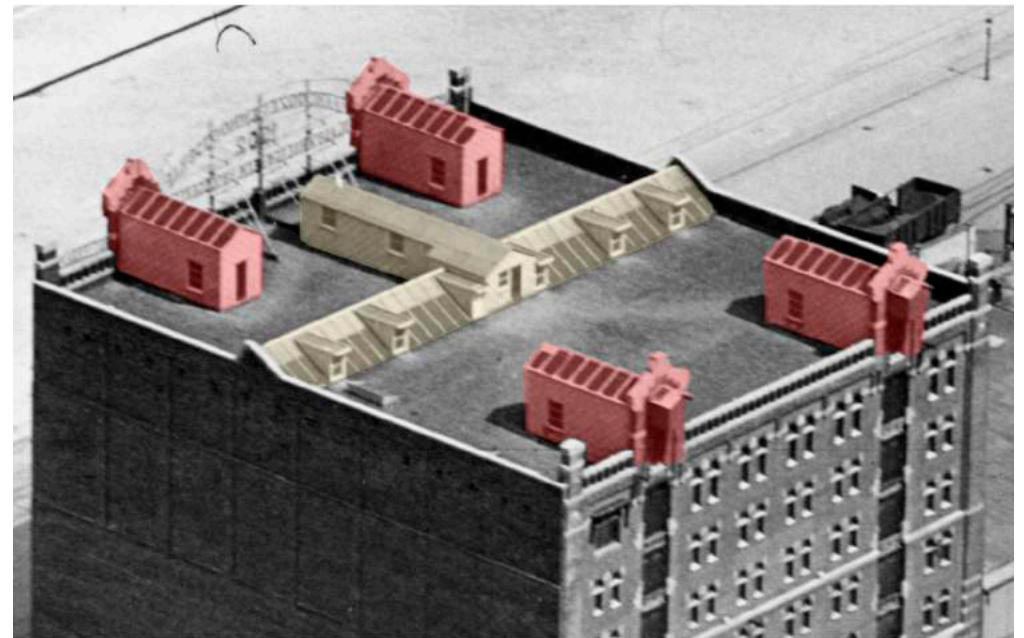
Santos is placed 65 meters from the water but the relation between both is very important and should remain or be strengthened. Santos needed the water transport in the past and the water is an added quality to the building.

200

Coffee warehouse Santos

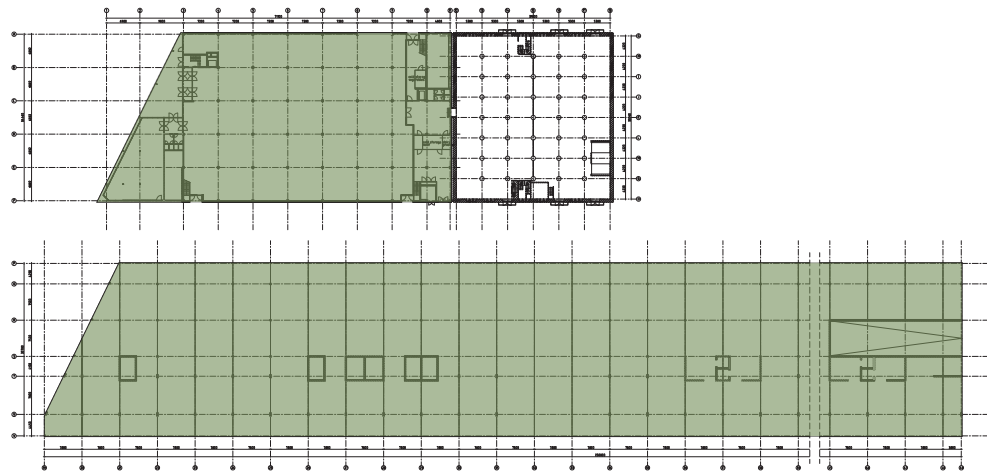


Side facades



Rooftop Santos 1950

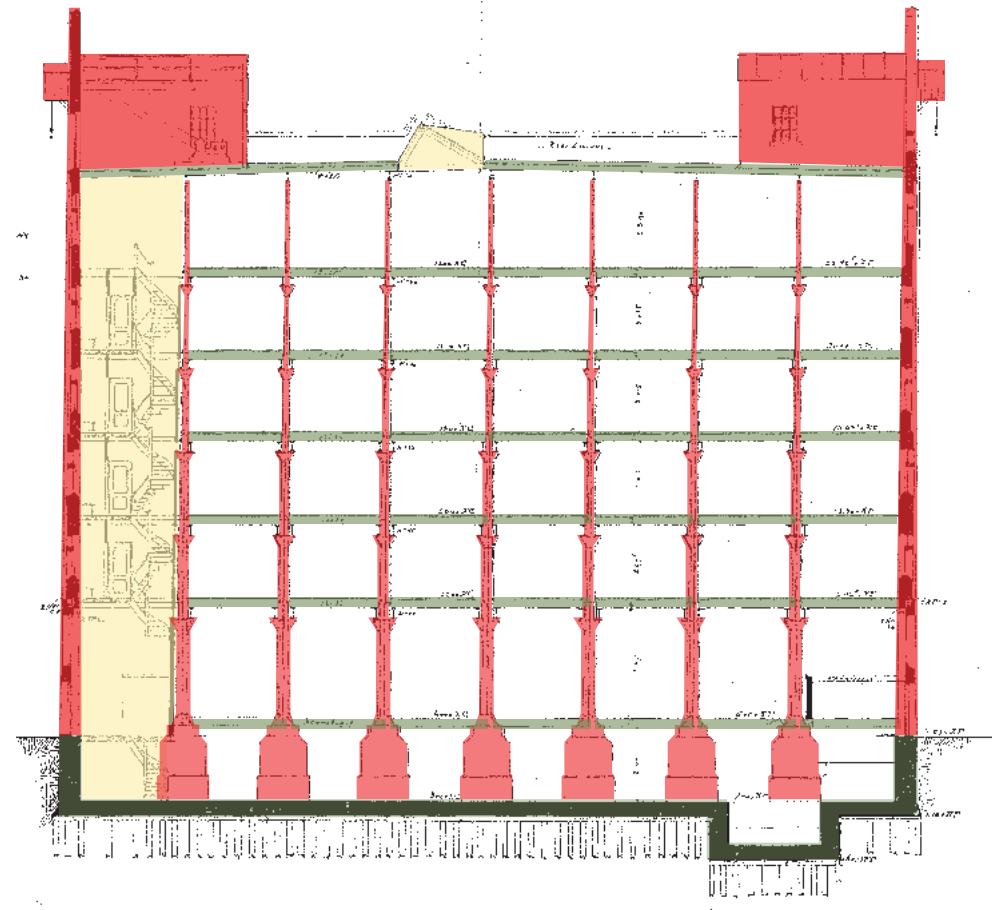
Potential development areas

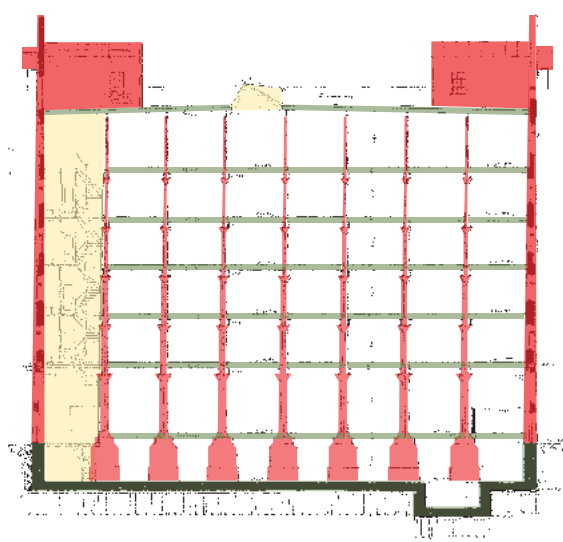
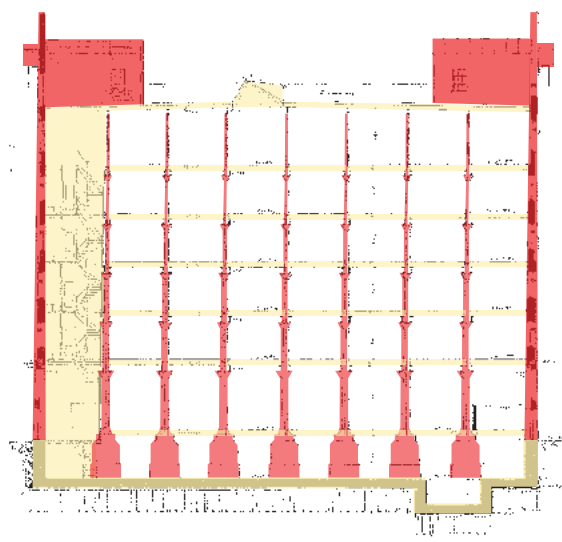


- Many possibilities
- Medium possibilities
- Few possibilities

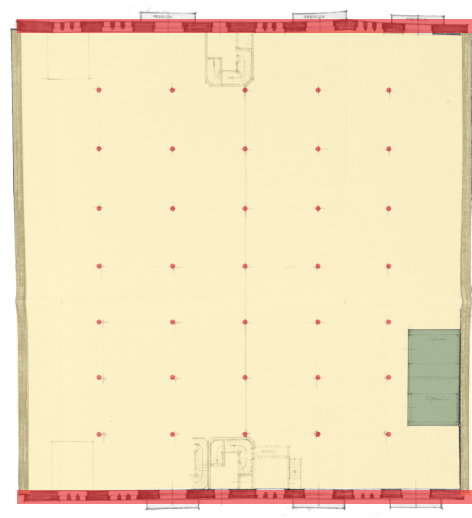
The Jumbo and The View are both great potential areas to redevelop. The supermarket can have more potential and a better relation with its surroundings instead of all those closed facades.

The View is the start of a new building and give new potentials to the area. Another advantage is that there are still possibilities to shape the building to a new purpose.

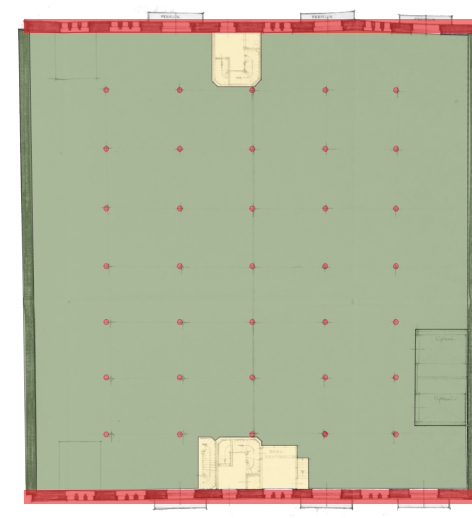




Contradictions
The value assessment will make it harder to develop the building and make new interventions.
Areas as the floors and the side walls are valued as medium but it would be much profitable if they had a low value so they could be transformed.
For the reason this is not the case, changes should be made well thought and with respect to the building.



Value assessment



Potential development areas

CONCLUSION

Coffee warehouse Santos

Wambersie

en

Zⁿ

Vriesseveem

Frenica

Pakhuis-
meesteren

Plaats
hoeden

Leijdsche
veem

Vriesse
veem

Hille

Brede -

The company Naamloze Vennootschap Blaawenhoedenveem was active in the storage of goods as oil, grease and margarine. Their first warehouse was in the Leuvehaven in 1885 and in 1891 they expand to Westeleijke Handelsterrein with nine large and nine smaller storage. During that time the city of Rotterdam was also in development and had to grow for the reason that the town was built over. From 1875 start the development of the south of Rotterdam and the Noordereiland, Katendrecht and Feijenoord were the first areas. Naamloze Vennootschap Blaawenhoedenveem made use of this new opportunities and harbours in the south and located a new warehouse in 1902 on Katendrecht. It was not possible for Blaauwhoedenveem to build it next to water because this area was already taken by Wambersie en zonen and later Vriesseveem. In a later period the area was already divided in zones what further limited the choice. Perhaps Blaauwenhoedenveem had also not enough money to effort a place next to the water at that time.

The Santos warehouse was designed by two architects namely J.J. Kanters and J.P. Stok. J.J. Kanters and his family had already a longer relationship with Blaauwhoedenveen and can been seen as the main architects for the company. Kanters was in the design responsible for the façade. J.P. Stok was likely involved in this project because of his experience with building in Rotterdam and he already designed other warehouses.

Santos was designed as a machine with two winch houses on the front and back façade. The coffee could easily transported in the vertical way to the specific floor and from there on located in the warehouse. It was with five levels the tallest warehouse in Rotterdam and had a surface area of 1.140 m². Striking is that only the front and back façade have windows but because in the original design there were two buildings planned on both sides of the Santos warehouse. That means that those side walls would be part of a bigger structure. Probably the other warehouses were never complete because of great distances that goods had to be transported overland from the ships to the warehouses.

This could also explain why the building was rented by the Royal Army from 1954. The building was to small and too far from the water what makes it not profitable anymore. In that same year Blaauwhoedenveem and Vriesseveem

also merged together with a new name, Blaauwhoed. The company was become bigger and not only stored goods but also rented spaces.

Blaauwhoed had built a larger warehouse named St. Jobsveem for the storage of cereals, beans, coffee and other cargo in 1912. This new building was next to the water and had a bigger capacity.

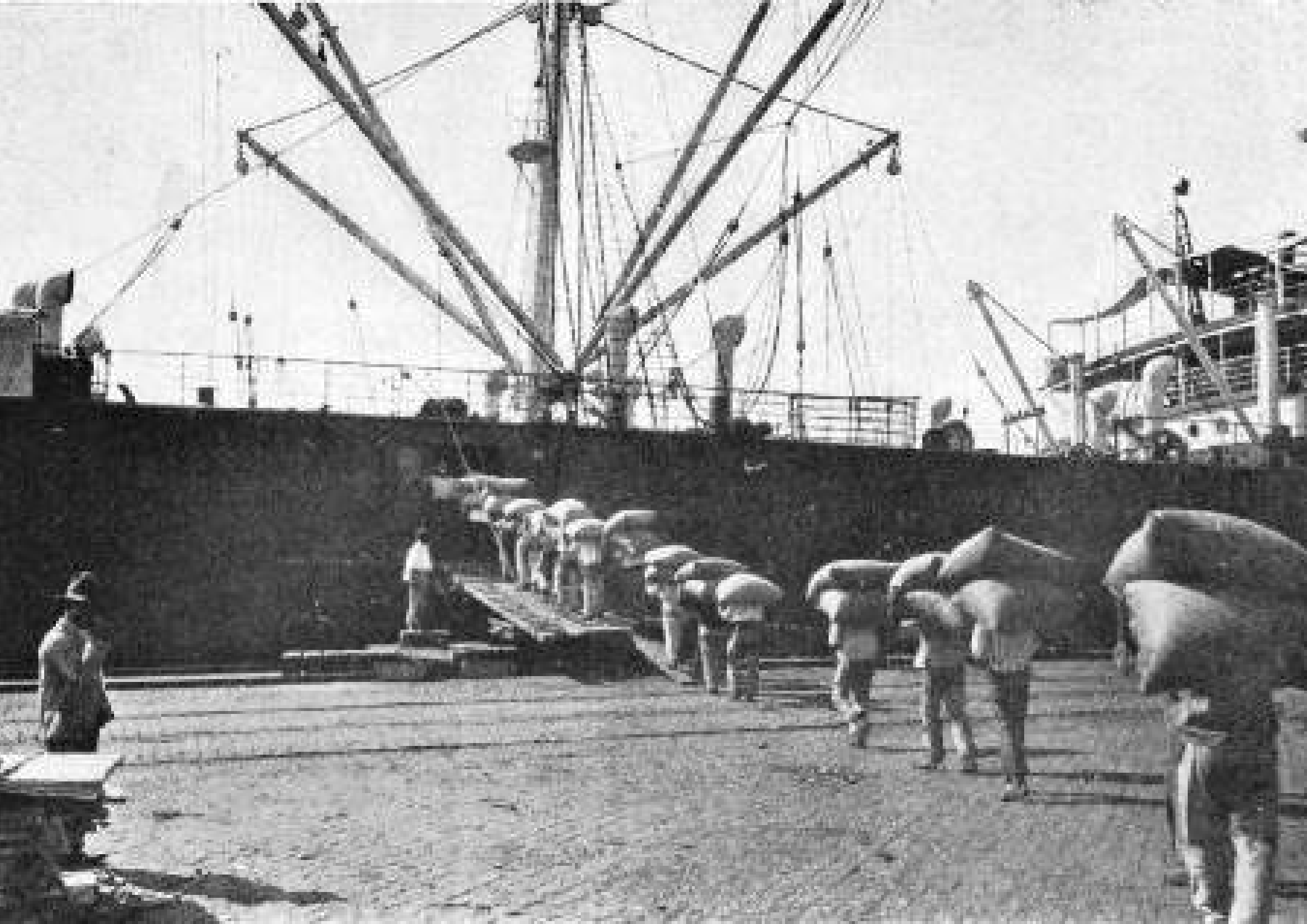
Nowadays there are a lot of new plans around the Rijnhaven with different kind of high-rises what creates a circle. Next to Santos will come the European China Center Rotterdam with a mixed program of offices, apartments, a hotel, restaurants, a supermarket, Chinese specialty shops and conference and event facilities. The Jumbo supermarket will be demolished in the future and the warehouse can be increased to 32 meters.

The value assessment show that the north and south façade are important for the characteristics of the Santos warehouse. The characteristic expression should keep intact but there are possible interventions for the concrete new basement of The View and the Jumbo supermarket.

There must be into account that this research is mainly focused on Santos what means that the Jumbo and The View need a further research.

LITERATURE

Coffee warehouse Santos



The more important sources are coloured in orange since they had more useful information. A lot of information is from the visit itself and the pictures (BbKdr) but also the drawings of the Stadsarchief Rotterdam were important. Different information is used from another research done by Flexus AWC, with contribution of: Nelissen, S., Vanderbeke, M., van Rooijen, R., de Haan, S. Fischer, S. and the available information from the municipality. The other sources were important as well but have had less impact on whole research. I would like to thank for the available information of all those sources.

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ATTACHMENTS

Coffee warehouse Santos

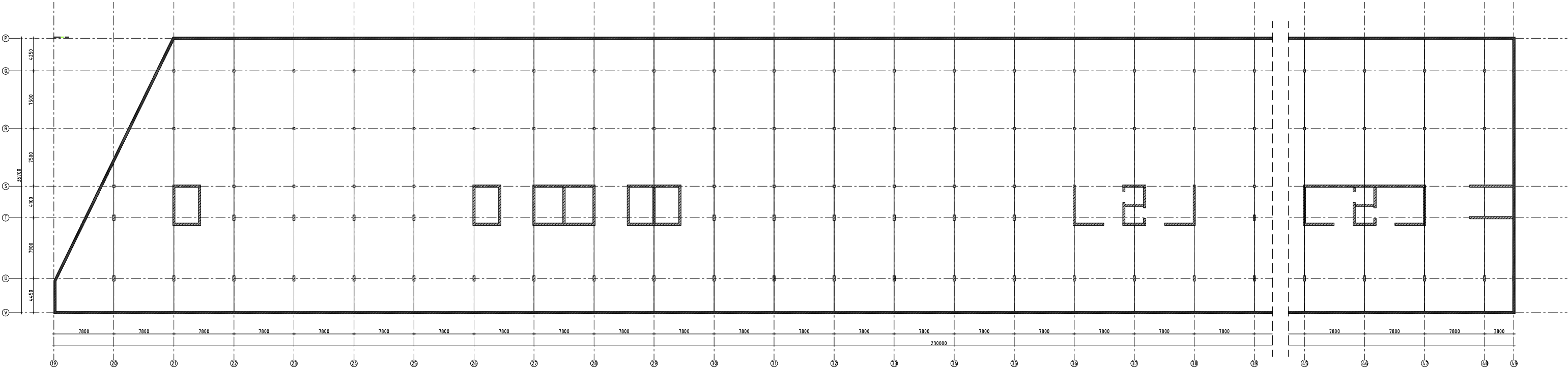


Attachments 1: Drawings current situation

Basement level-2

220

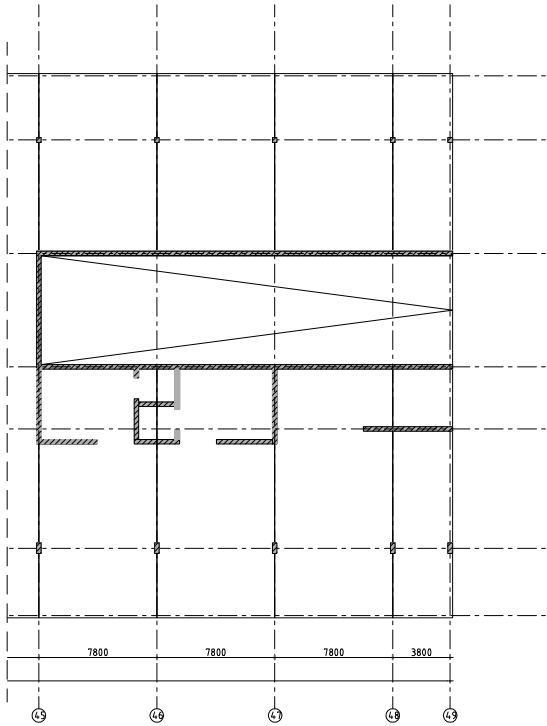
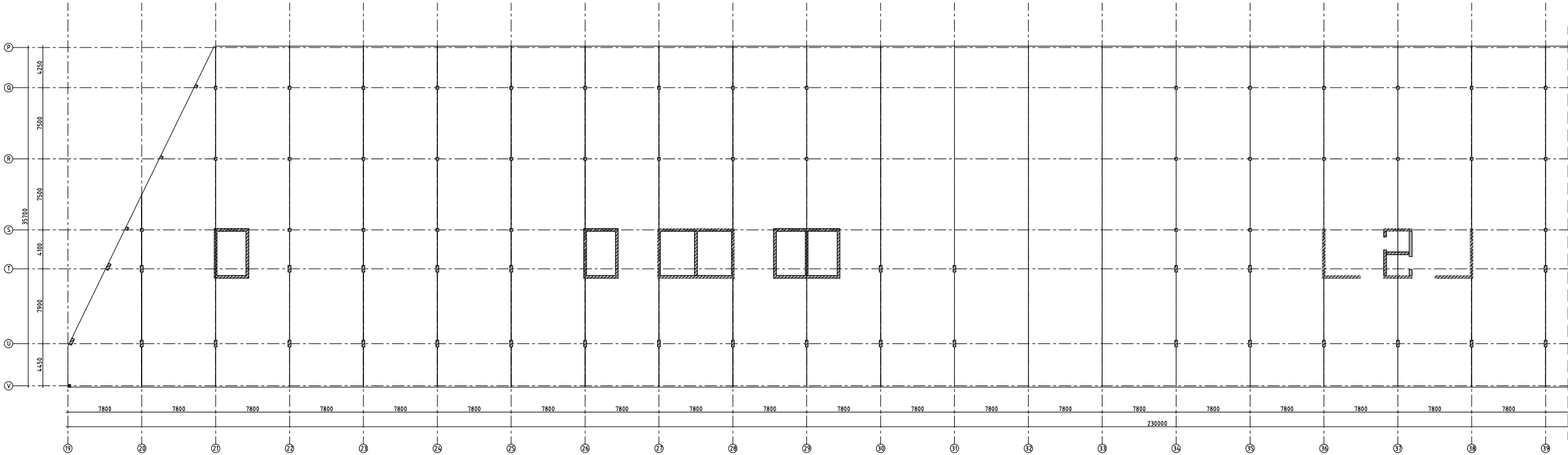
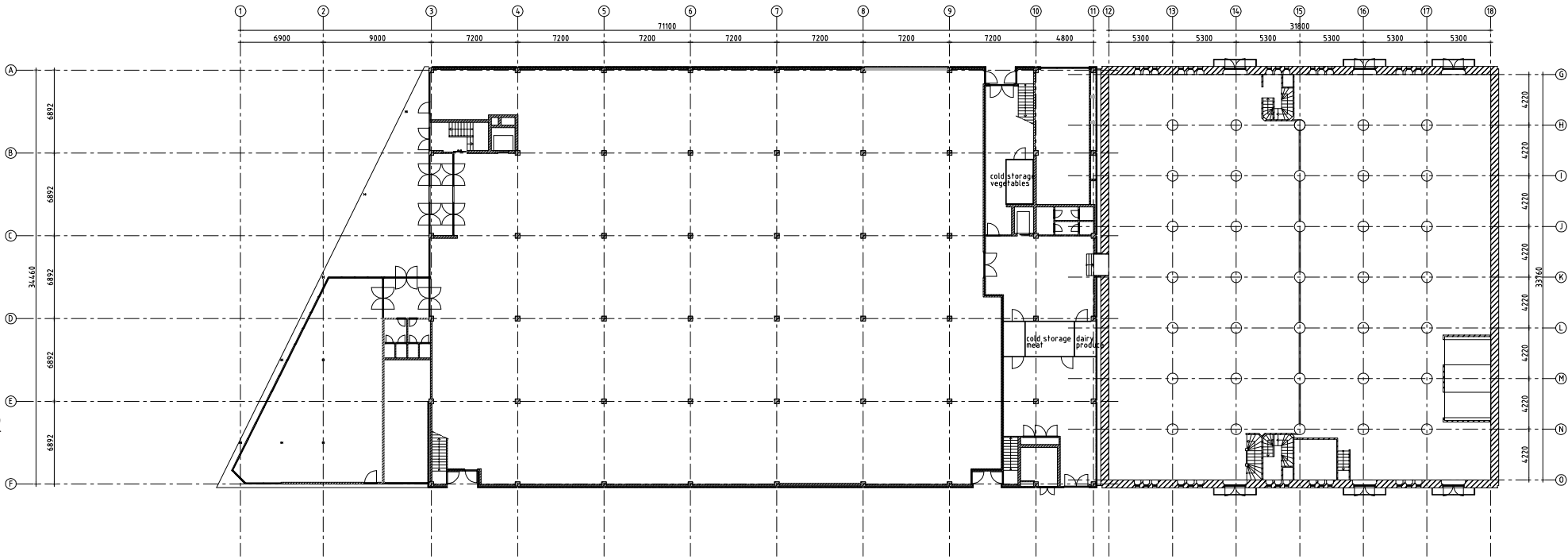
Coffee warehouse Santos

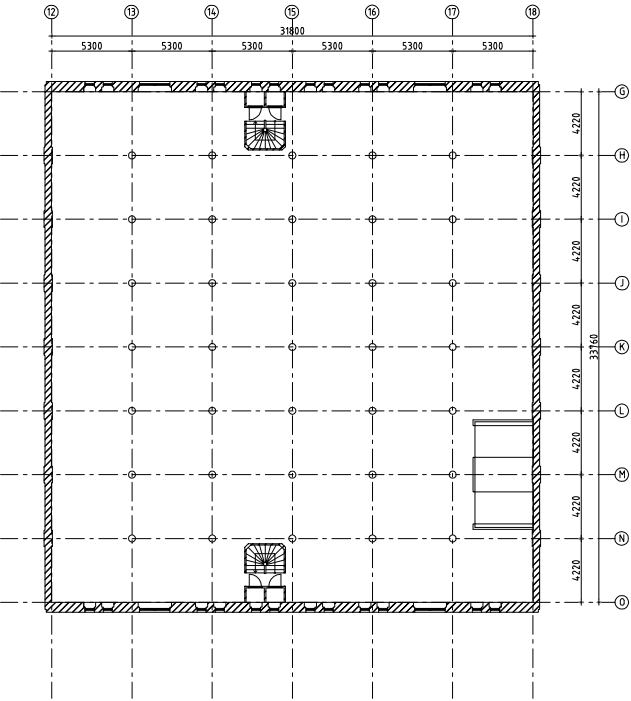


Ground floor

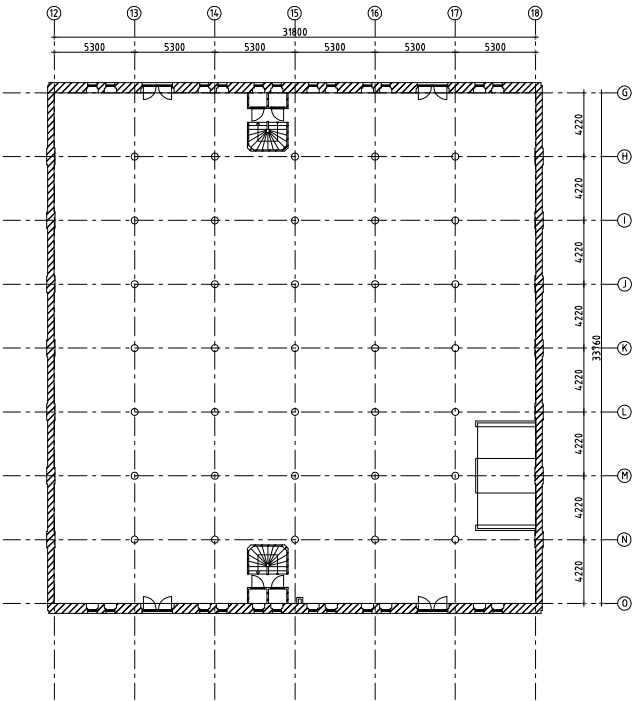
222

Coffee warehouse Santos

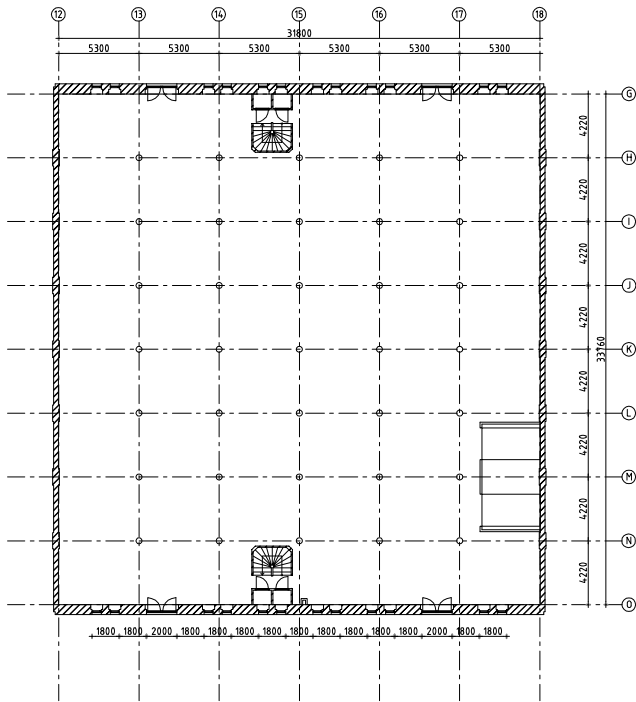




Third floor

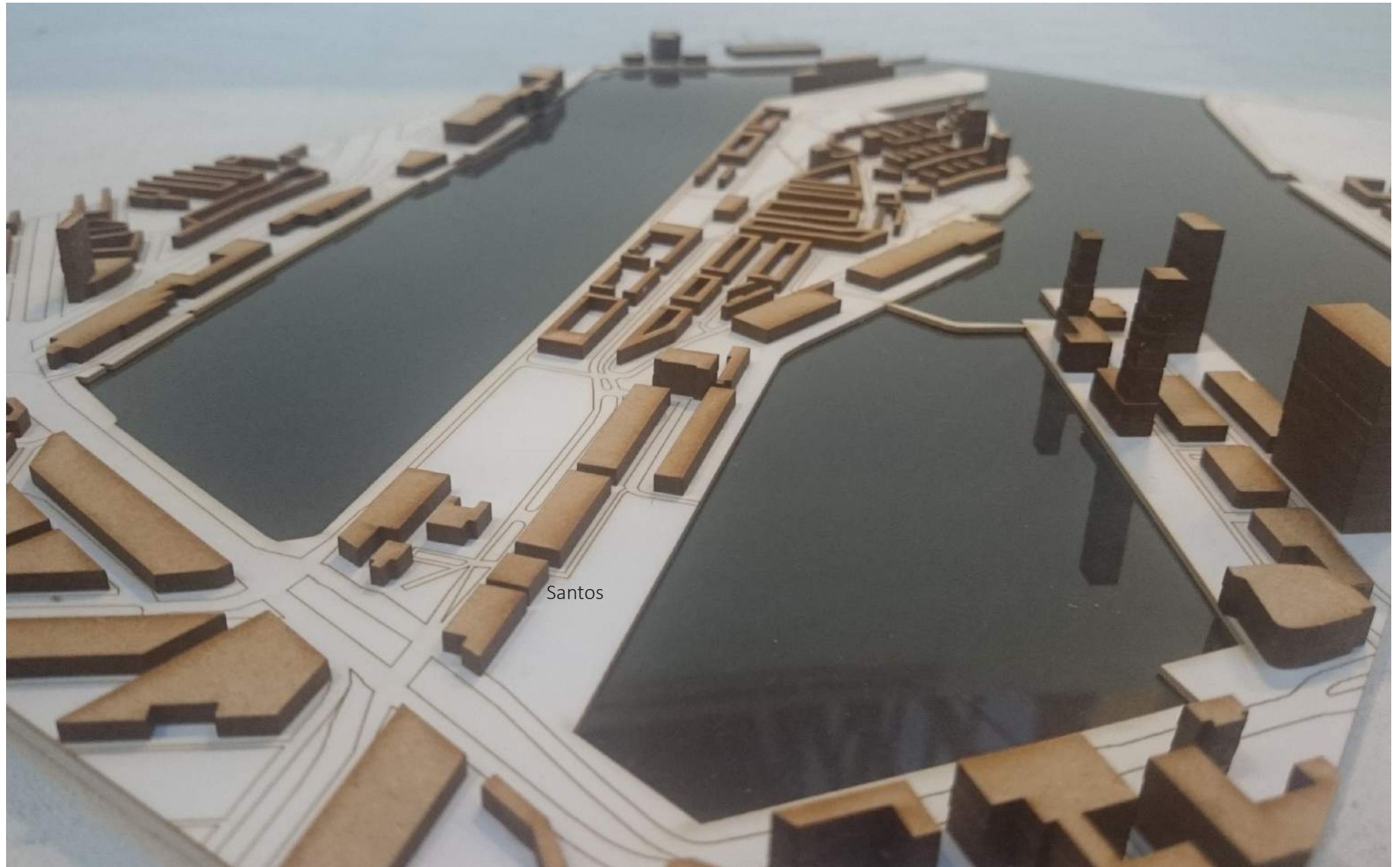


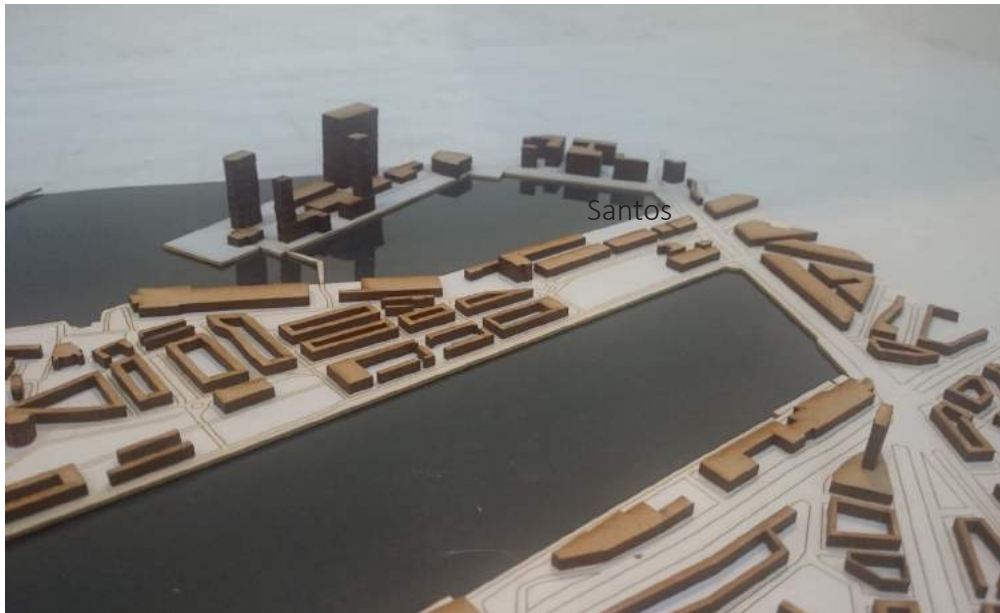
Fourth floor



Fifth floor

Attachments 2: Model of the situation





Attachments 3: Position paper

The interpretation of heritage interventions

Abstract

The present of historic buildings have always been an assignment were a lot of people have a different opinion about and has always interpreted in a different way. This paper will clarify different positions through time and their related interests. The valuation of historic buildings goes from demolition to change nothing or change it to the current situation.

Nowadays the appreciation of old buildings, the protections and the re-use is much higher than it was in the past. In the Netherlands is even an governmental department for the preservation and protection of archaeological, monuments, heritage and cultural landscape.

Redevelopment have even proven in recent years to be beneficial for regional development. Although there are still people who are not completely convinced in the reuse of existing buildings what still brings a lot of discussions. At this time 15% of the offices in the Netherlands are empty and this will probably increase even more in the coming years. Vacant offices are bad for the quality of life. Companies will therefore refuse to start at those locations (Rijksoverheid, 2016). In addition, there is still a need for additional living space. Especially in the large cities. Transformation of offices can be a good solution for this. It seems strange that there are still many new buildings are added when there are also that many empty buildings waiting for a new function. The opportunities for development also depends on the growth of the population or that the abandoned buildings are in a shrink area (van den Ende, 2016). The difficulty of those empty buildings is the fluctuating value which change from the point it is in use, to when it is vacant till the moment someone see new potential. Those moments are critical since there are different opinions and feelings plays a role. The building was there for years and should still be accepted in the area after possible interventions. This raise the question by me if there is a right way to deal with all this architecture, should we protect it and how it can be estimated correct value? Is there one right way to design and renew all the historical and unused buildings to protect them in a better way? This problem of empty buildings is bigger than architecture. It is a political and social problem what is influenced by the changes of our lifestyle.

Restoration is the worst of the destruction

Many architects have taken a position in this heritage questions. The three main individuals who have influenced the further consideration of heritage are Eugene Emmanuel Viollet-le-Duc (1814-1879), John Ruskin (1819-1900) and William Morris (1894-1936). Viollet-le-Duc added elements to his restoration that were not there originally. Restore a building is not about preserve, repair or rebuild but it is a way to restore a building to a state which never really would be exists. Hereby he focuses on the initial thoughts of the architect rather than the building itself. This mean the addition of new architectural innovations using modern materials as wrought iron and cast iron in historical buildings. This was to achieve stability in construction and the idea of renewal but in the same time the denial of a historical building. For Viollet-le-Duc was it important to design for the future generation with adjustments to the existing buildings which should not undo the past but make them stronger. The best materials were needed to extend the life time of the new design. 'Truthfully' was important so that people without knowledge of architectural art would understand (Kalcic, 2014).

This all was in contrast of the believes of the English critic and social critic John Ruskin. Viollet-le-Duc perspectives were according to him a 'total destruction' and a 'lie from beginning to end'. Ruskin named restoration the worst of the destruction. Neither the public or those who have to take care of the monuments will really understand the true meaning of restauration. The restauration is just a false description of something that is destroyed. Ruskin compared buildings



Viollet Le Duc design for a concert hall, 1864
(Mitchel, 2013)

with humans, we are not able to raise people from death and that means it is not feasible to recover the architecture. The original building is created with the spirit of another time, of another workman with other thoughts and hands cannot be summoned again (Ruskin, 1989).

In a quote Ruskin describes: “better the rudest work that tells a story or records a fact, than the richest without meaning. There should not be a single ornament put upon great civic buildings, without some intellectual intention” (Citaten, 2016).

For Ruskin architects should keep the history of buildings as a precious heritage and named the concept of integrated conservation with the main aspect to preserve the style and the character of the architecture to keep the status. Not only for buildings but also for landscape is this same idea of preserving with the concept picturesque. Ruskin wrote that preserve the building is not about interrupt the life cycles but to program the maintenance work. The goal is to make the life time as long as possible by postponing the end (Ruskin, 1989). Nobody had the right to change the architect's truth out of respect for his design and the rest of mankind.

To create more order for restoration in a proper way, Ruskin and Morris wrote a manifesto with guidelines for conservation in a proper way. William Morris was an English textile designer, artist, writer, socialist and pleaded for protection in the place of restoration. His association was named Society for the Protection of Ancient Buildings (SPAB) and founded in 1877. Morris did not agree with the way that has been attempt in order to return buildings to their original state as it was in the past. To Morris opinion, the ability to repair those buildings with later developments was an improvement for the past. He suggested that dated buildings should be repaired instead of restored with as focus to protect the history as cultural heritage (spab, 2016).

Demolition is also a form of transformation

These days there is more resistance against demolition for the reason that this is a destruction of labor and not sustainable to our new lifestyle. It is in a contradiction of keeping the heritage and people become more aware of the value of the buildings around them. Nowadays it is harder to explain why an existing structure should be removed instead of re-used. This is different than in the past, where there was less awareness of the situation.

Rijksbouwmeester Floris Alkemade appreciates that abandoned buildings no longer be seen as limited opportunities for the design task. The qualities of those empty buildings are currently seen as new chances and to distinguish themselves from the standard designs. Alkemade mentioned that the creation of new buildings is a very conservative process, while vacant buildings offers the possibilities of experimentation (Rooijers, 2016). Transformation is no longer be seen as a second class job. One in five homes in the Netherlands is a building that in the past doesn't had a residential purpose. It is to the architects to convince developers and investors that their design transformation is feasible, both technically and financially. This does not mean that demolition is sometimes unavoidable, if the possibilities really are exhausted (Rooijers, 2016). Demolition is also a form of transformation because not every old building is valuable enough to be preserved (NVM, 2016). Demolition can create new routes or connection for example in post-war neighborhoods. Demolition can be a huge relief as it creates many new opportunities. It is also possible that more dwellings can be realized by the demolition of a disused building. The question in shrinking regions is above all if there is enough program to fill vacant properties or whether it is better to demolish it (van Duinen, Rijken, Buitelaar 2016).

This believe is reinforced by two other architects namely, Ruurd Roorda and Bas Kegge. They are from the company Kingma Roorda Architecten and have done different projects in the field of new buildings and heritage. They notice that reuse should be the starting point but demolish isn't a shame and should be done as well. The choice of demolition has not only to do with political decisions, economic condition or the cultural sentiments but Roorda and Kegge named the architecture itself as the main reason. The architecture itself

determines whether a building will remain for hundreds of years or only have a limited lifetime. That is, the hypothesis of the Research ‘Great Spaces’ that is initiated by Roorda and Kegge last year and is currently being conducted for the BNA Research. The main question is how to design architecture with future value. According to Roorda is this more about the experience of the architecture instead of the sustainable purposes. The issue of sustainability is that it is nearly always about energy-efficient systems, extra isolation, detachable techniques and labels. The disadvantage of this approach is that environmentally friendly materials and energy standards again quickly become outdated, while qualities of architectural space is guaranteed. Both architects comment that it is more sustainable to build less in the first place. That means reuse of the existing or temporary buildings. Notwithstanding they remark that building which have nothing to offer should be demolished (Hannema, n.d).

Re-use, never demolish

In contrast to these opinions has the French professor Anne Lacaton the statement ‘re-use, never demolish’. Lacaton’s position is never demolishing, reconstruction or replacing things but always transformation, add, extend, give more and re-use. Transform with the aim of to do more and better. Transformation is more sustainable and less expensive than demolition and rebuild. This can be achieved by good reuse of the existing situation and watch closely to what is already there. Another important issue is that buildings remind people to specific moments, they work as a memory. By re-use the building, it gives the possibility to make new memories. A building could be compared to a human life. Every building will change during time, this can be 50 years but could also be sooner or later. By that it is very important to already consider by a the current design about the future possibilities as renovation, extending of changing of function. Buildings can’t be compared with each other for the reason they have not the same qualities, location or potential and have to study closely for the right innovation. Transformation is also thinking about the new prospects in the future for when it will be re-designed again (Lacaton, 2016).



Keeping the original building and adding a new space next to it (Detail-online, 2014)



New intervention only on the material (Bouwen met staal, 2016)

It is the Dutch professor Paul Meurs of Heritage & Cultural Value and the Built Environment of the University Delft who came up with his own interpretation of the use of heritage buildings. He states that building production is changed from urban growth and expansion to redevelopment and that this changes the role of the architect as well. Meurs changed the question of searching for a proper location of the program by looking to the right existing building. It is the challenge to find a match between supply and demand. The city will be reinvented with existing buildings which still explain what they were but with new functions hidden inside. The professor prefers the historical building in combination with a contrasting solution. Nevertheless the decisions must be well thought and should explain what the consequences are for the existing space and what is the relation between the old and the intervention. Does the heritage value dominate the new addition or has it disappeared. Every new addition to the building should increase the quality and make connections with the context. Meurs also stated that “the art of heritage preservation is literally based in part on doing nothing”. Despite of that new meaning and social relevance can be added if there are possibilities to renew parts. Meurs divides the heritage options in three different parts. The first one is preservation or restoring the former glory of the space. Second is the intervention design: the architectonic design using all the tricks for combining old and new and the last one is about the intervention non-design which focuses on program, sustainability and integration.

Preservation or restoring the former glory of space is about returning to a former glory. This has to be done by first restore the old façade what could be with other techniques and materials than has be done in the original design. The second part is to make the design relevant for the current use wherein the requirements of nowadays are not visible. Meurs describes this as the perfect manner of serving the context since there is an addition of a new high-quality technical design what is at the same time invisible. It is also a way of taking over the design since the architect transform it to his own idea but it is also reproducing the past. We should ask our self whether this should be done or not.

The second idea of heritage as an intervention design can be described as design with respect for the history. It is about open and honestly expressing the new additions instead of creating face history. The building become a complete image about the past, the destruction and the new age.

The intervention non-design is architecture without a design. This could be due to the lack of money in combination with the financial crisis or by the need of purity and authenticity. The renewal is about the new use, program and furniture which is less expensive but give flexible possibilities and new economic perspective to cities, districts or buildings.

The constructional crisis have influent the redevelopment of buildings into a major challenges those days. This give new opportunities to future designers to use their expertise for this bottom-up processes what will give a new character as well. Meurs stated that heritage is about; How can we add quality to a modern life. How can we search our own modern contemporary identity with our grandparents looking over our shoulders (Meurs, 2015).

Demolishing could not be the first solution

To my point of view, the new generation of designers and architects should be aware of the fact that preservation of historical buildings is important and that this must be done with interventions. Those interventions give a new life, expression and possibilities to those buildings. Old architecture should be kept for their cultural value, their historical value, the urban structure and for the reason that heritage express an individuality for cities. Designing with

those buildings should been seen as a new adventure and new possibilities. Demolish something is to easy, because that could always be an answer. I think that buildings should not be restored to their original state as Morris suggested because this is not the truth as well. The beauty of old buildings is the expression of history which is visible as 'wounds' in the façade or construction. This makes them unique and worthwhile to safe. By hiding those 'wounds' and repairing it to their original state, will be wiping out this authentic expression.

I also don't agree with the interpretation of Ruskin on the part that a building has to undergo its life cycles and that this should not be interrupted. Buildings must be treated well to keep them alive and in a good condition so that they do not have any decay. Therefor new interventions are required whereby use is made of new techniques and materials. This keeps a building usable for the current situation. Nevertheless it is important that there should always be a certain balance between the old building and the interventions. The interventions should never dominance the authentic design but only strengthen the original values. The old building was there first and keeping it means that it should be respected for the appearance and design, dominating this would be the opposite of the first intension of keeping heritage alive. Dominating the existing gives the intension of creating a new building.

It is important to realize that by retaining as many as possible of the heritage, we keep the history alive. This does not mean that every building should be saved but that as much as possible could be seen as a new opportunity to let it survive another few decades. A demolished building can never be restored and it is never sure what exactly is removed. Nobody knows how things are be valued in the future.

Despite that, it is unrealistic to demand that first all the existing buildings should be used instead of build new ones. Most of them are not on the right place. Solutions need to be find for this problem whereby demolishing could not be the first solution. Even those have to be treated with respect and well thought ideas. Doing nothing with a building is a form of demolishing as well. That does not mean that Anna Lacaton is right in everything she said. There is also a misleading part in her arguments because not every building can be saved. Some buildings have too much damage or are too old to save what makes it not profitable, especially when the historical and cultural values are not that

important. Those exceptions will allow (partly) demolition, but only as a last opportunity.

Conclusion

The discussion of preserve the old buildings is already going on for centuries whereby it is not easy to come to one point of view. The opinions vary between maintaining and doing nothing to extensive modifications. This started with Viollet-le-Duc who stated that heritage should preserve to design them for the future in stark contrast to Ruskin. He mentioned that the life cycles should not be interrupted.

It is clear that today there is more appreciation for heritage and that preservation of buildings therefore occurs more frequently. This is due in part by the governmental department for the preservation and protection of archaeological, monuments, heritage and cultural landscape in the Netherlands. The group which was founded by Morris and Ruskin can be seen as a first initiative of it. Nowadays buildings will be saved as much as possible. This is also what Floris Alkemade believes but he mention as well that demolition can also be a form of transformation. I think re-use every building and turn it in a positive way so that the building will give more by transformation, extension and replacing things will be more standard for the next generation. Old buildings should be protected better and used even more to keep the historical and cultural value. It is proven several times that demolish isn't the solution. This can be reinforced with the ideas of Paul Meurs. New designs for buildings can be serious changes but also small things as adding new furniture. This is only possible with the addition of interventions whereby the original building is treated with respect. This means there is a clear division between the old and the new or the old and new melt into each other and become something new. Important is that in both cases one is not more dominance than the other.

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