

Heritage and Architecture studio Rotterdam Harbour Heritage

# Final research report

Architectural analyses, Building technological analyses and Cultural Value



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# Introduction

## The report

In this report, I will review the group analyses, my personal observations on the analyses and create a list of starting points. First I will look at the analyses and summarise its conclusion. Further, I highlight its importance for the design. In the end, there will be a list of starting points from where I start the designing process.

## The project

The Rotterdam Harbour is one of the most economical and crowded environments of the Netherlands. The Harbour site consists of multiple harbours throughout Rotterdam. The Maasvlakte 1 and 2 are the largest industrial harbours. But the harbours like Katendrecht are no longer the industrial harbours, but there is now space for social aspects, offices and tourism. The old industrial buildings are abandoned and in need of redevelopment. One of these harbour buildings is the Fenix warehouse (former San Francisco warehouse).



Figure 1 - Birdseye view - Google Maps

## Fenix

The Fenix warehouse is located in Katendrecht on the quae of the Rijnhaven. The location is shown in figure 1. The Fenix warehouse was built in 1916-1922 for the Holland Amerika Lijn. The architect of the Fenix warehouse is C.N. van Goor. Van Goor was an important architect, not because of his 17 buildings in his portfolio, but for his contribution to the architectural world. At the time of the construction of the original building, the warehouse was the largest warehouse in the world. In the 40's the building sustains a lot of damage, first by the bombing of Rotterdam in 1944 and later in 1947 by a fire in the building itself. After the fire, the rebuilding starts. In 1951 the rebuilding is completed and the name changes from San Francisco warehouse to Fenix warehouse. The name change is a symbolic one, to show how the building has been rising from its ashes. In 1969 the Provimi Company settles in a part of the building and they add an extra silo. When Steinweg Handelsveem leaves the Fenix II in 2012 it becomes a place for new functions like the Fenix food factory, Codarts and Circus Rotjeknor. Fenix I will become

a new dwelling complex and is planned to be ready in 2018.

## Theme connection

The report has a red line through the whole assignment; the three types of connection. The theme of connection was chosen because the site and its surroundings ask for it. When it comes to heritage and the existing, the history is important and can give motivations for current design decisions. The location next to the river is optimal to research this connection, which is something that throughout my studies have not been explored. Also, the connection with its surroundings is not as optimal as it could be.

### Connection with the history

The connection with the history is connected by the building itself. The layers are visible although some had disappeared over the years by the bombing and the fire. It is possible to revitalise these layers.



Figure 2 - Connection with the history - Own Illustration

### Connection with the water

The connection with the water is not as strong as it used to be, this mainly because of the function loss of the building. The context is at the moment just visual not tangible. The water connection is important, not just for the safety of the urban area but also for cultural reasons. The other two connections are the context of history and the context of the surrounding area.

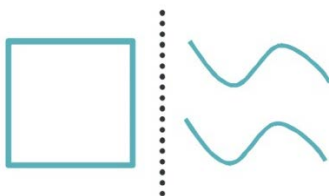


Figure 3 - Connection with the water - Own Illustration

### Connection with the context

The last type of connection, the connection with the context, is at the moment absent, because of the many borders like the infrastructure and the trucks of Provimi.



Figure 4 - Connection with the context - Own Illustration

By looking at these types of connections the analyses have been selected. The chapters first show the analyses and then explain why the research is important and to what type of connection it suits most. The rest of the analyses will be kept in the back of the mind but will not be in this report. To see the whole analyses see Appendix 1.

## Research Question

To connect these three connections with the project a suitable research question had to be formed. There are four aspects I want to research. First, the use of the building. A design is made to be used by people and should be designed for them. Second, its functionality. How does the building function in its surrounding? It influences the space you want to create. Third, the history of the building. The building was built in 1916 and therefore has a history. The shape of the building, its functions and users have changed over time. What impact does this have on the building now? And lastly, its context. The building has a unique and specific location and context. The connection between the building and its context is vital to the design. Putting these four aspects together the following research question was formed.

*What are the use and functionality of the Fenix II loods over time and in its context?*

I choose this question because it is a very board question that incorporates the history of the building, the experience of the user and the connection to its context.

Sub-questions are:

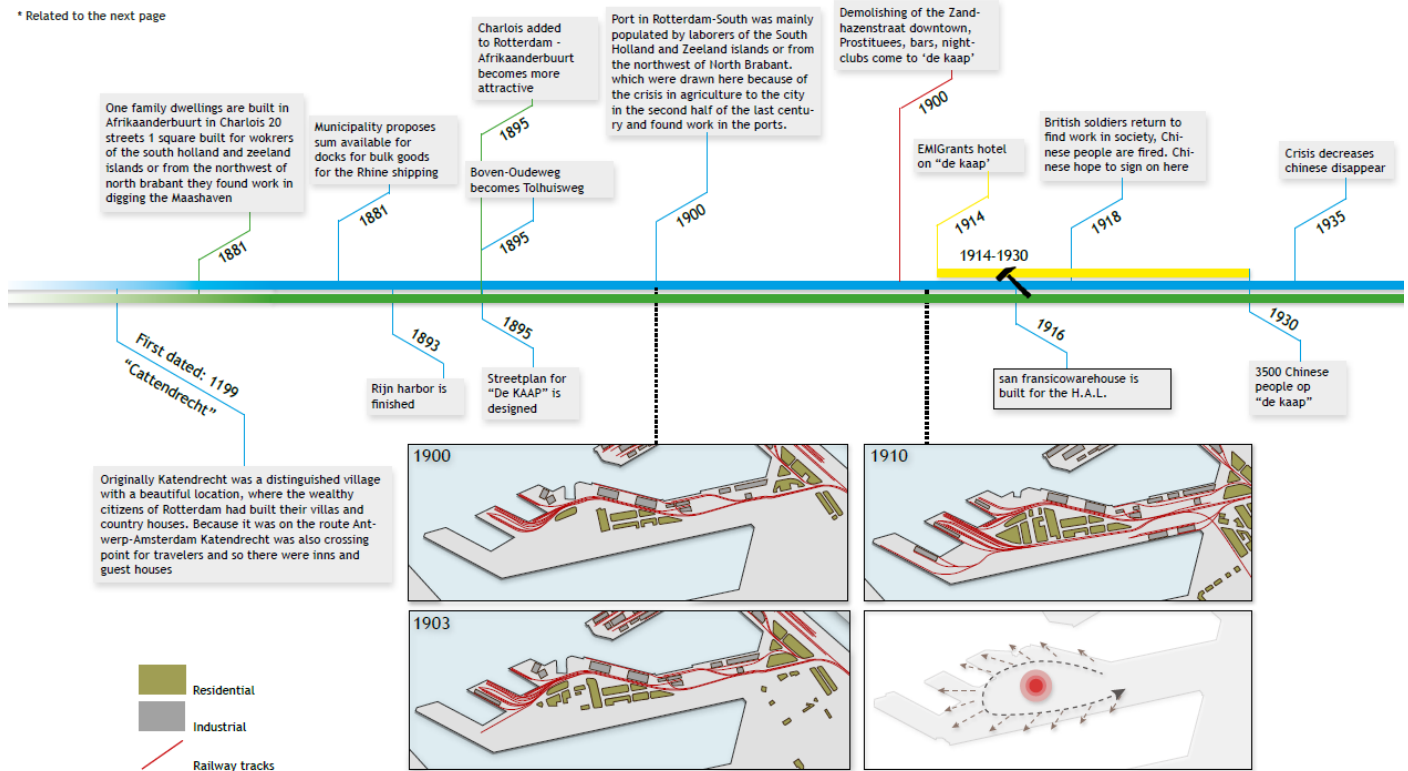
- *What is the use of the building? What aspects does that contain?*
- *What is the functionality of the building? What aspects does that contain?*
- *Which aspects were used in the past?*
- *Which of these aspects are still present?*
- *Which characteristics do I want to keep?*
- *How does the building relate to its context?*
- *What are the problems of this building?*
- *What are the possibilities for the future?*

# Architectural Analyses

## History Katendrecht and the Afrikaanderbuurt

### HISTORIC BACKGROUND KATENDRECHT AND AFRIKAANDERBUURT

\* Related to the next page



### HISTORIC BACKGROUND KATENDRECHT AND AFRIKAANDERBUURT

\* Related to the previous page

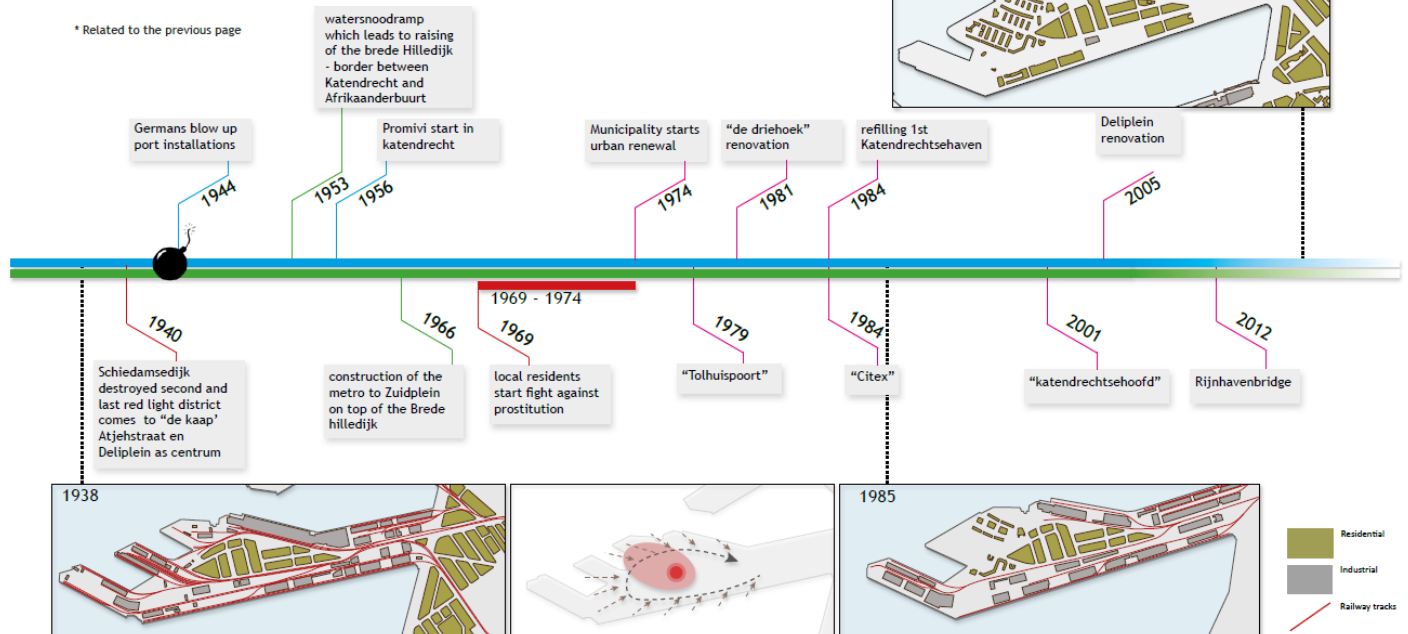


Figure 5 - History Katendrecht and Afrikaanderbuurt - Own Illustration

Katendrecht started as a small village in the middle of the peninsula, but after the construction of the Maas- and Rijnhaven the village becomes enclosed by industry. It becomes a bad neighbourhood full of sailors and prostitutes. But at the end of the 20<sup>th</sup> century the industry, for the most part, leaves to the edge of Rotterdam. This creates the opportunity for Katendrecht again to become a residential area and it slowly becomes a better and even trendy and hip neighbourhood. (Does, 2004)

The Afrikaanderbuurt has a close connection to Katendrecht because this neighbourhood was specifically built for workers who worked on Katendrecht. This connection dissipated after the construction of the metro, which forms a

border, and the moving of the industry from Katendrecht to the ache of Rotterdam. (Soeters & Speksnijder, 1990) The connection with the Afrikaanderbuurt is not as strong as the connection with Katendrecht. Therefore the Afrikaanderbuurt will not be very important for the design.

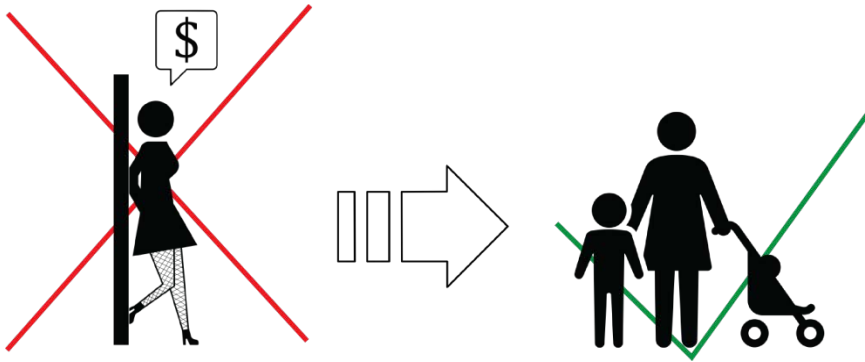


Figure 6 - Conclusion drawing - Own Illustration with icons from the Noun Project

### Importance

This research shows the layers of history of Katendrecht and how it relates to the Fenix. These layers can become important to the story of the future of Fenix.

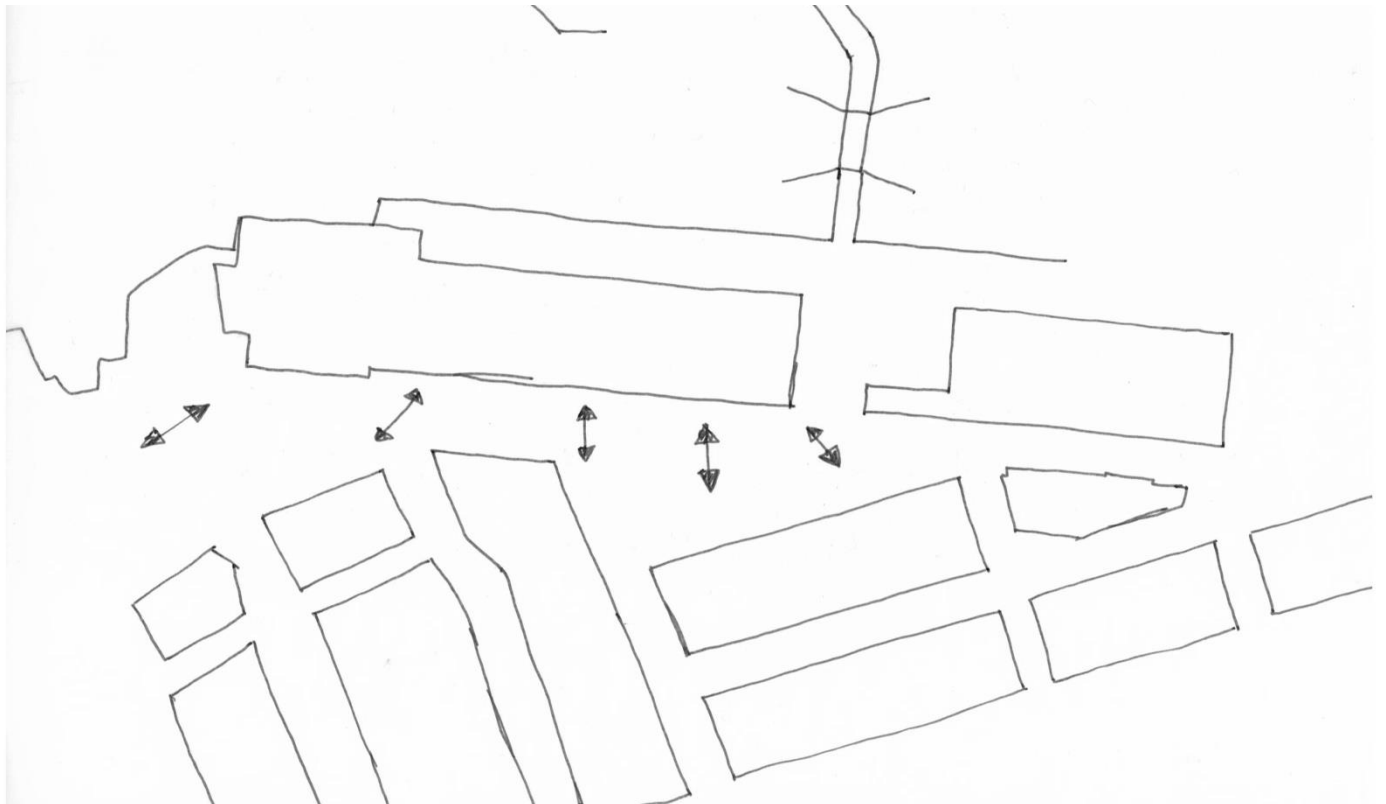


Figure 7 - Possible connections with the neighbourhood - Own illustration

# History of the building

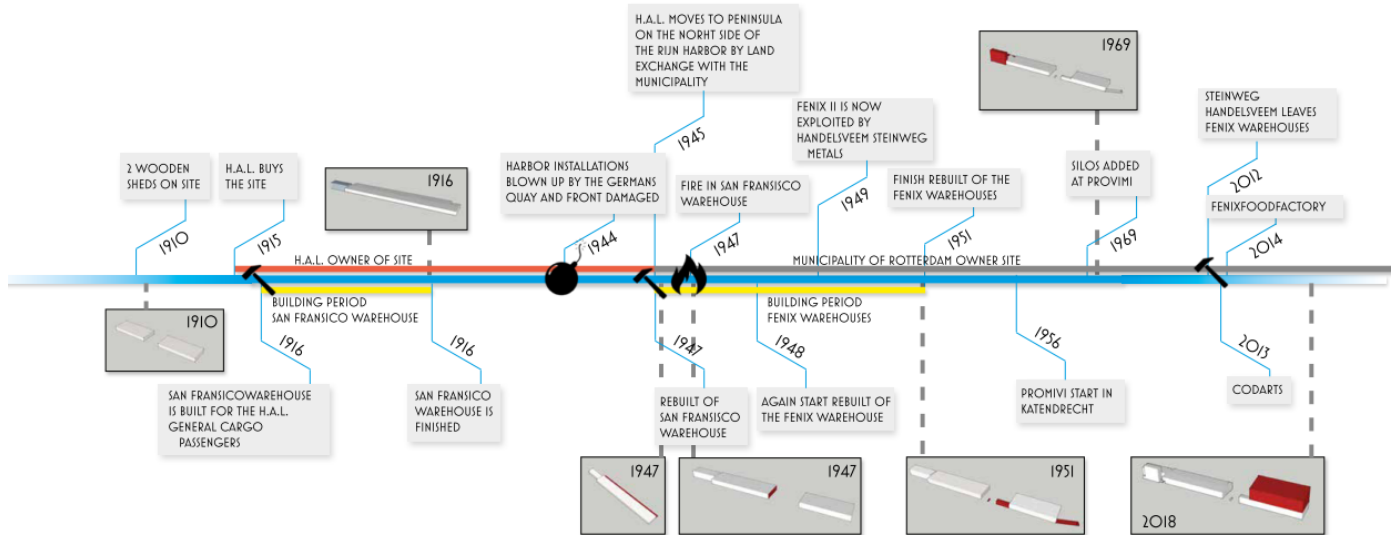


Figure 8 - History of the Fenix warehouse - Own Illustrations

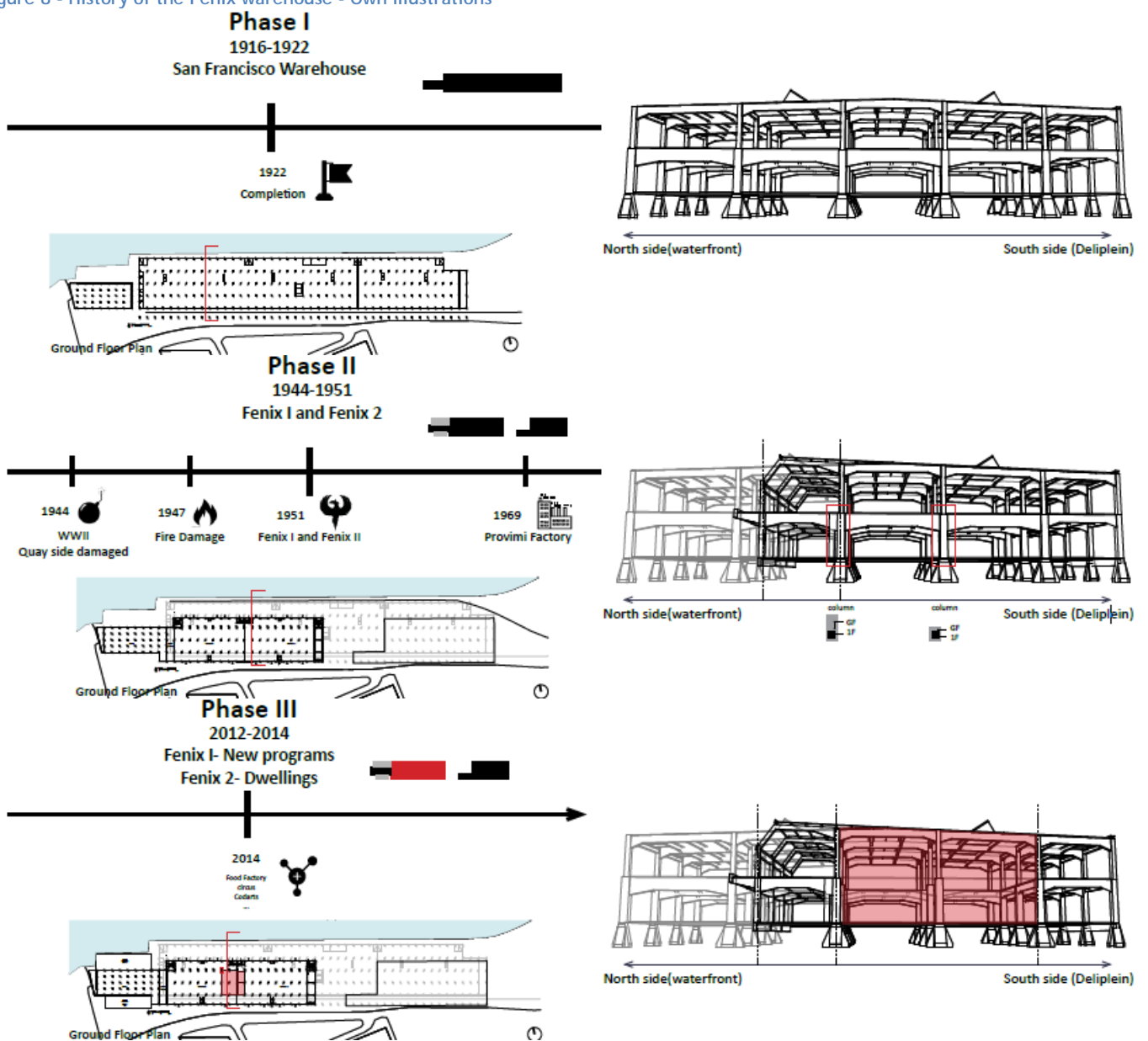


Figure 9 - The three phases of the building - Own illustration



On the timeline of the Fenix warehouse, we can find the events that happened to the building through time. There are three phases of change in the building: 1916-1922, 1944-1951 and 2012-present. In 1916 the building was built for the Holland Amerika Lijn. This cruise line company was an economical industrial and commercial line that transported people and goods from countries within Europa to and from America. The harbour by Katendrecht was partly destroyed during the bombing by the Nazi's in 1944. The Fenix warehouse was even hit harder by a fire three years after. This resulted in the then named San Francisco warehouse to be split up into two different building and was renamed to Fenix. The Fenix warehouses are at this time in the hands of the municipality of Rotterdam. The municipality invests in the building as part of the rebuilding harbour program. So the building had been rebuilt to its former glory. When the former company left in 2012, the building has been used for different kind of functions in different kind of branches. Recent users of the building are the Fenix Food Factory, Codarts and Circus Rotjeknor.

### *Importance*

The connection with the Holland Amerika Lijn is something that is not visible at the moment. Also, its history after WWII is not tangible, except maybe in the name. There are opportunities in this, which I would like to explore.



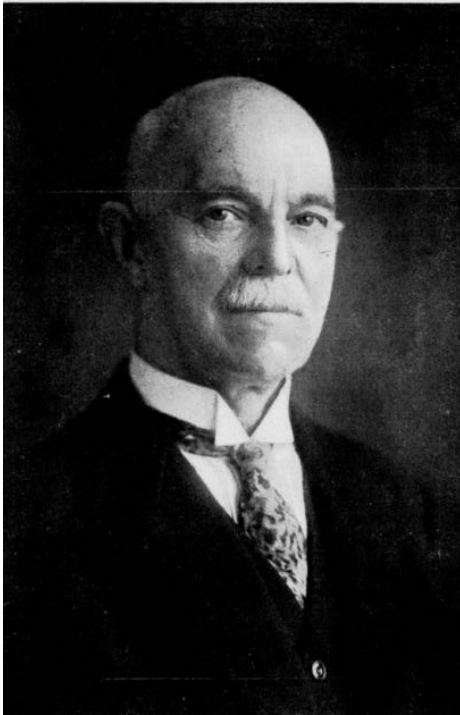


Figure 10 - Cornelis Nicolaas van Goor - Bouwkundig weekblad Architectura 52(13)

The architect from the Fenix is C.N. van Goor. Van Goor was born in April of 1861 in Rotterdam. The amazing thing about Van Goor is that he was very important for the architectural world without designing a lot of buildings. In total, he designed 17 buildings, of which 6 became monuments. The Fenix building was one of the last buildings he designed. Van Goor was so important for the architectural community, because of his work with the BNA. Because of his skills (punctual, structured, organised), he became one of the top secretaries for the BNA and other architectural organisations. (Goor, 1916) (Versteeg, 1931)

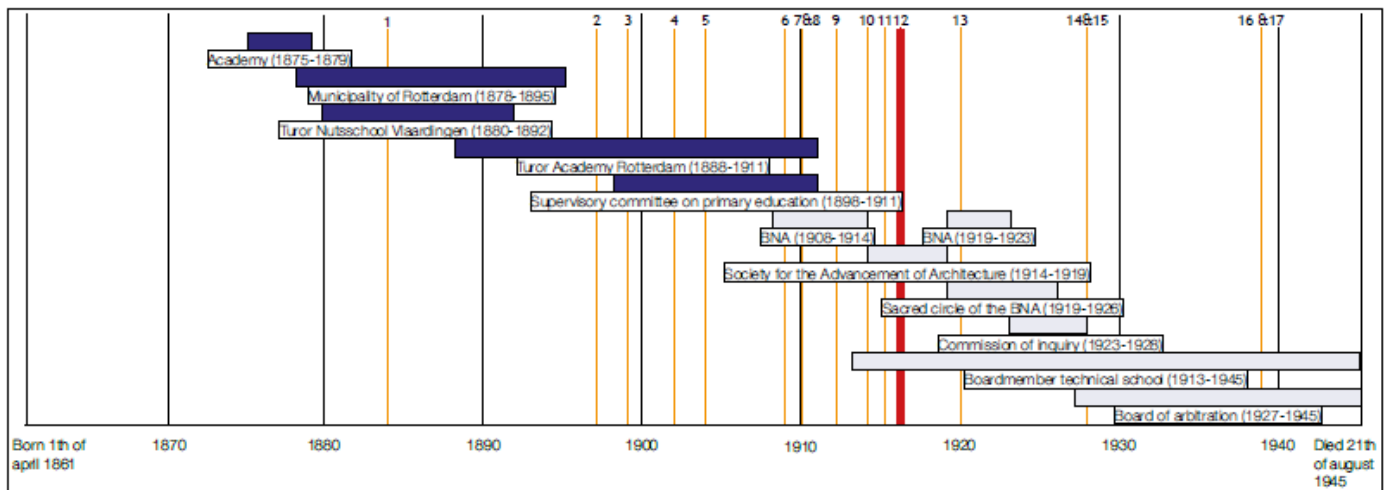


Figure 11 - Timeline career of Van Goor - (Versteeg, 1931)

### Importance

He was an important figure in architecture. His structured skills are still visible in the building.



## Accessibility and Circulation

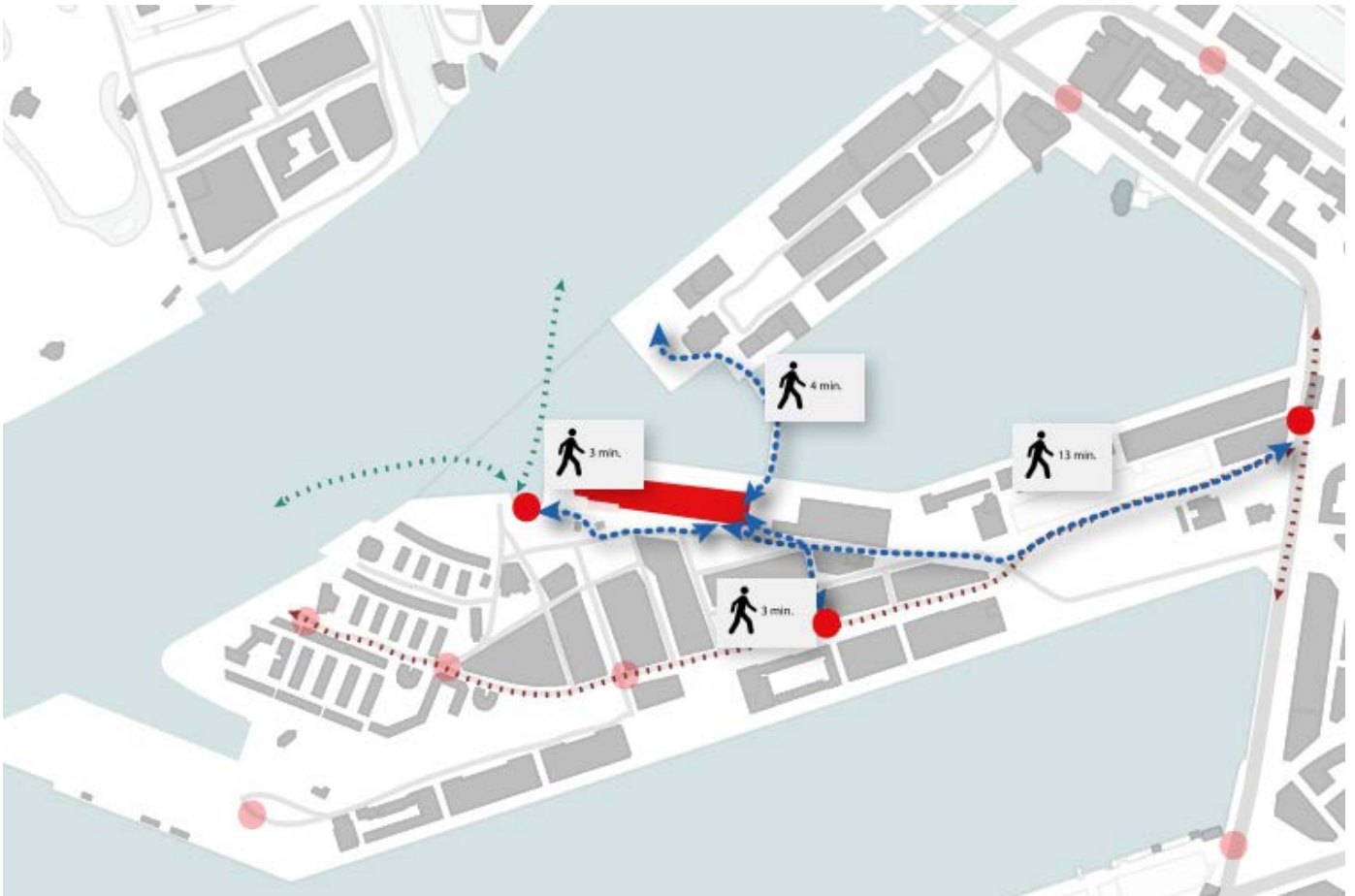


Figure 12- Accessibility - Own Illustration based on (9292, 2017)

The Fenix factory is fairly accessible, as shown in Figure 7, even though it is located on a peninsula. The walking distances to the bus are only 3 minutes, but the walk to the metro is 13 minutes. This distance will be more comfortable by bike. The Fenix is also accessible by car (see urban analyses - Appendix 1).

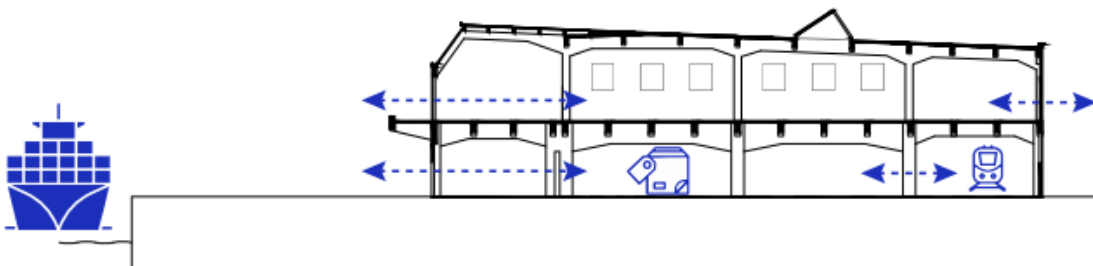


Figure 13 - Former circulation of cargo - Own Illustration

From the San Francisco warehouse till the end of the Fenix II as a warehouse the cargo would come from the ships into the warehouse, was repackaged and shipped to the trains were it would go to its final destination. This circulation is made clear in Figure 8. But because the Fenix has lost its function as a warehouse this circulation is not present anymore. On the ground floor the circulation is more intact because of the routeing of the people, but on the first floor, this is lost. The building used to be a blockade in front of Katendrecht to the Rijnhaven. Now it is more of a hatch to the river.

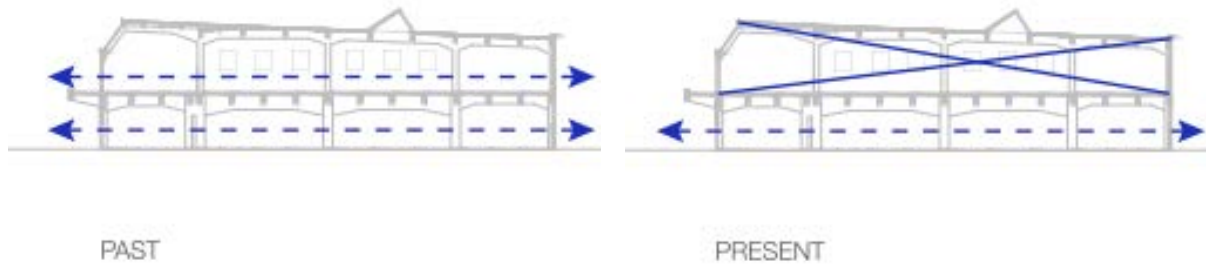
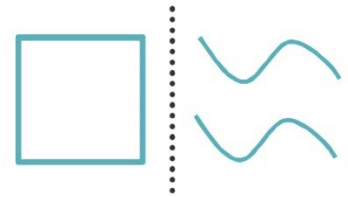


Figure 14 - Conclusion circulation - Own Illustration

### Importance

The connection with the river on the first floor is lost, which is something that I would like to revive.



# Routing

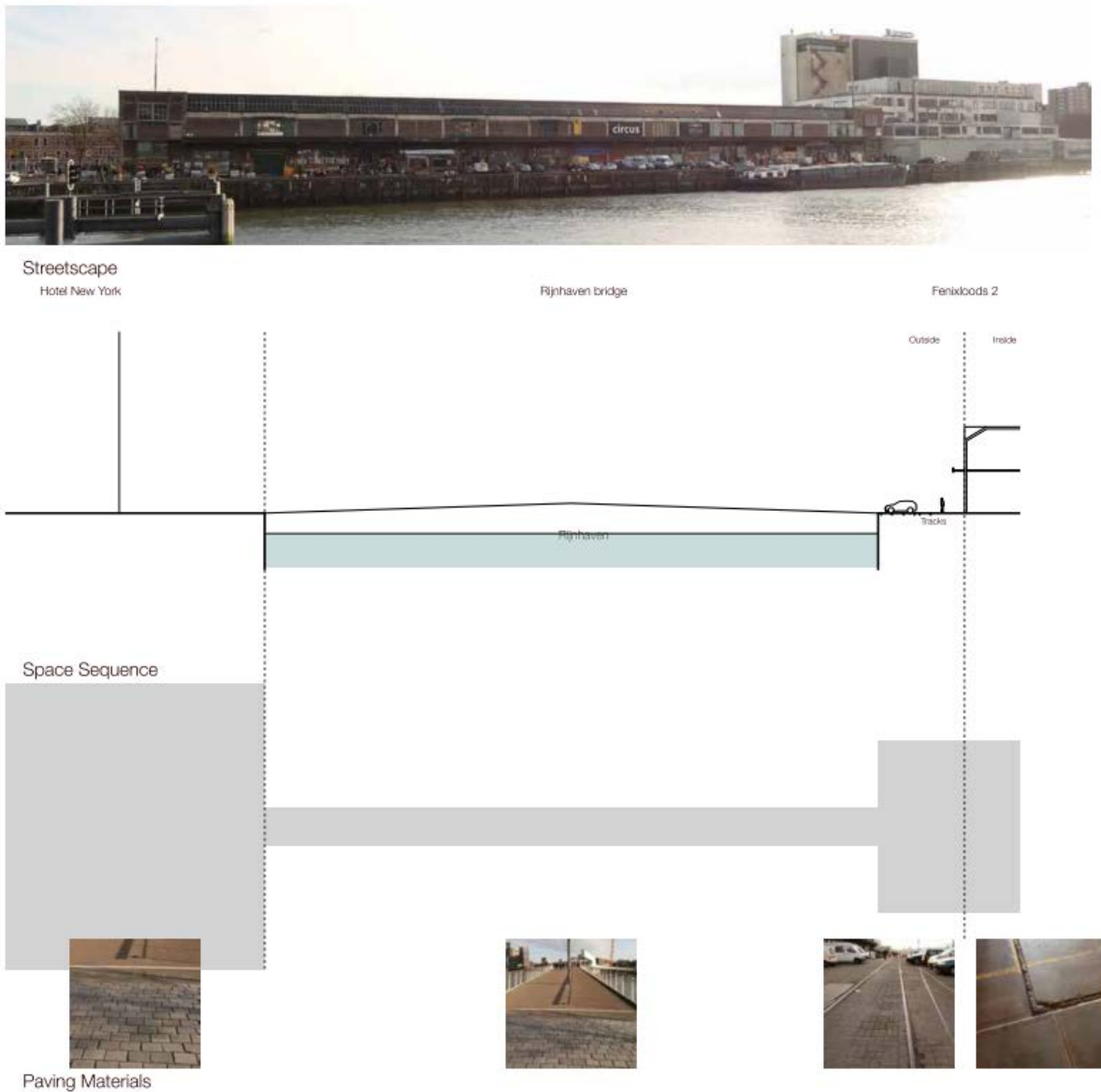


Figure 15 - Routeing from Kop van Zuid - Own Illustration and pictures

Coming from Kop van Zuid, the atmosphere is dramatically changed, even with such close distance connected by Rijnhaven Bridge, from well-developed area to developing area, and from semi-public space to more private residential area. Fenix warehouse is the first building after Rijnhaven Bridge, locating along on the waterfront which can be seen clearly from the side of Kop van Zuid. The change of the density in the sequence of space is emphasised by the bridge. The waterfront on the side of the north side of Fenix is relatively small and disrupted by parking, which interrupts accessibility of users. The space sequence experiences change dramatically.

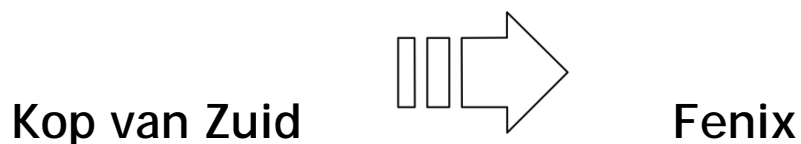


Figure 16 - Conclusion routeing Kop van Zuid - Own Illustration with icons from the Noun Project



Streetscape  
Water Bus

Green Area

Provimi Factory

Fenibloods 2

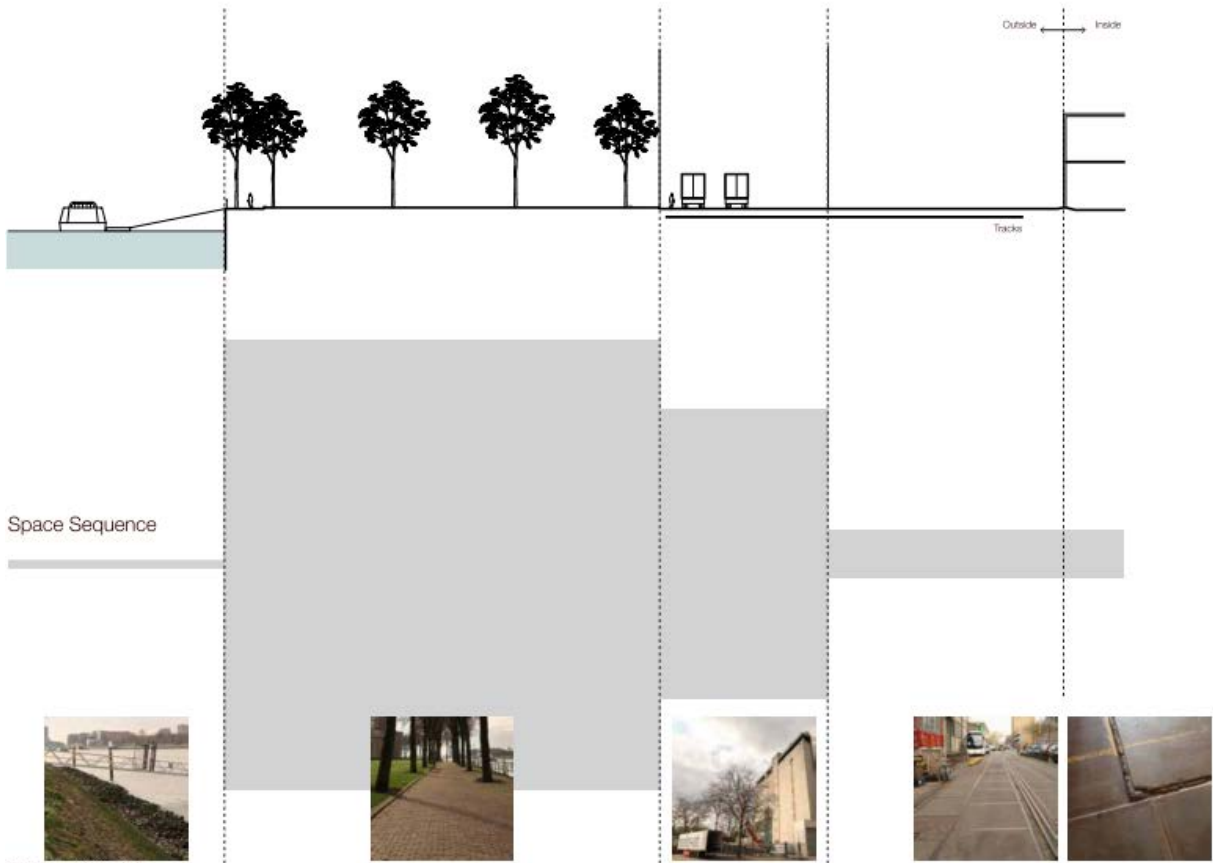


Figure 17 - Routing from the waterbus - Own Illustration and pictures

This routing has the closest relation to the natural environment. From the waterbus, pedestrians arrive at an open green area. Going to the Fenix the routing is disrupted by the Provimi Factory and its large trucks. There is no proper pedestrian linked to Fenix warehouse. The space sequence of this routing experiences the most dramatic change.



Figure 18 - Conclusion routing waterbus - Own Illustration with icons from the Noun Project

**Importance**

Some connections are uninterrupted and form good connections to the neighbourhood. Others need to be enhanced. These connections are important for my design



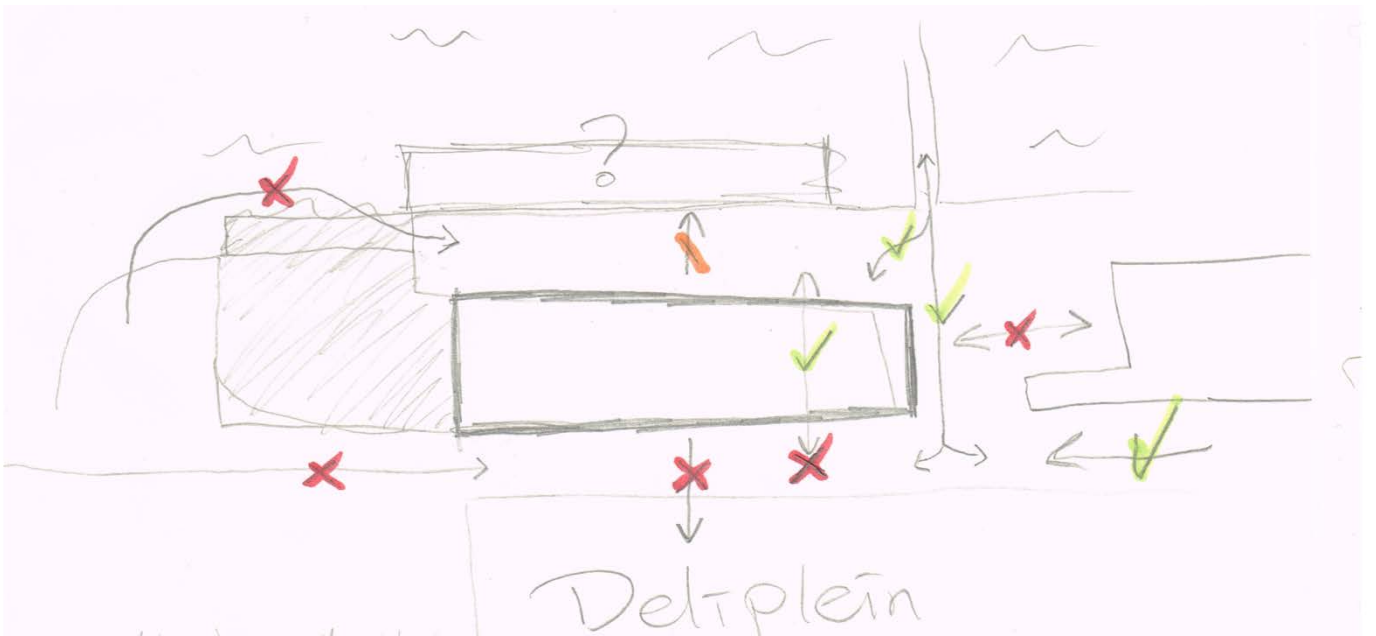
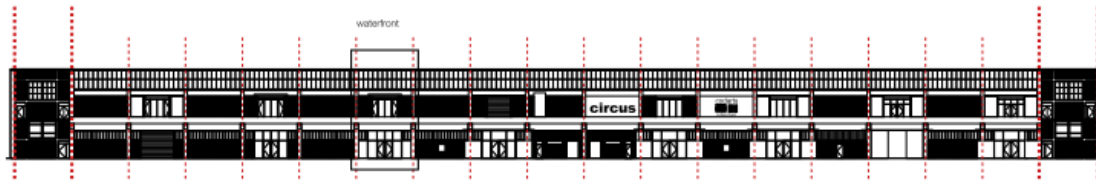


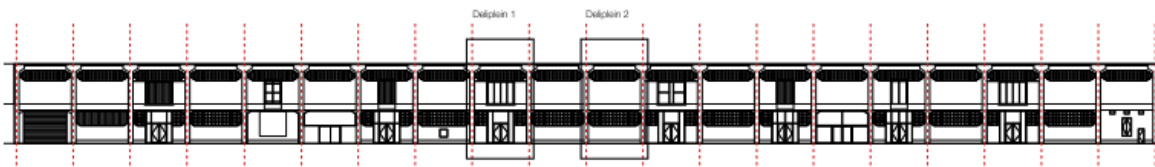
Figure 19 - What is the problem the building? The connections are not as they could be - Own illustration

# Façades

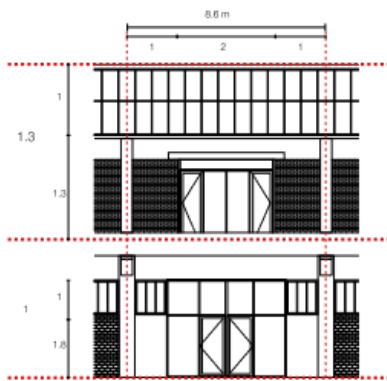
North facade (waterfront)



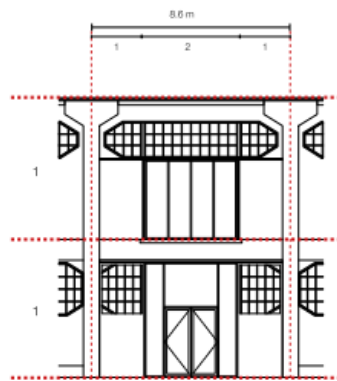
South facade (Deliplein)



Waterfront



Deliplein 1



Deliplein 2

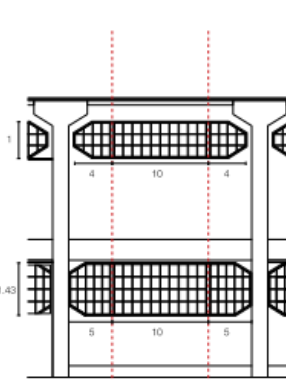


Figure 20 - Façades - Own Illustration based on the original drawings of van Goor <sup>1</sup>

The Fenix warehouse is recognisable by the rhythm within the façade. This combined with the shape of the column and the red colour that is added later makes the south side popping out. The same ratio (1.3) is applied on the ground floor, first floor and on the new edited side window on the south side.

<sup>1</sup> (Goor, 1916) (Rotterdam, 1950)



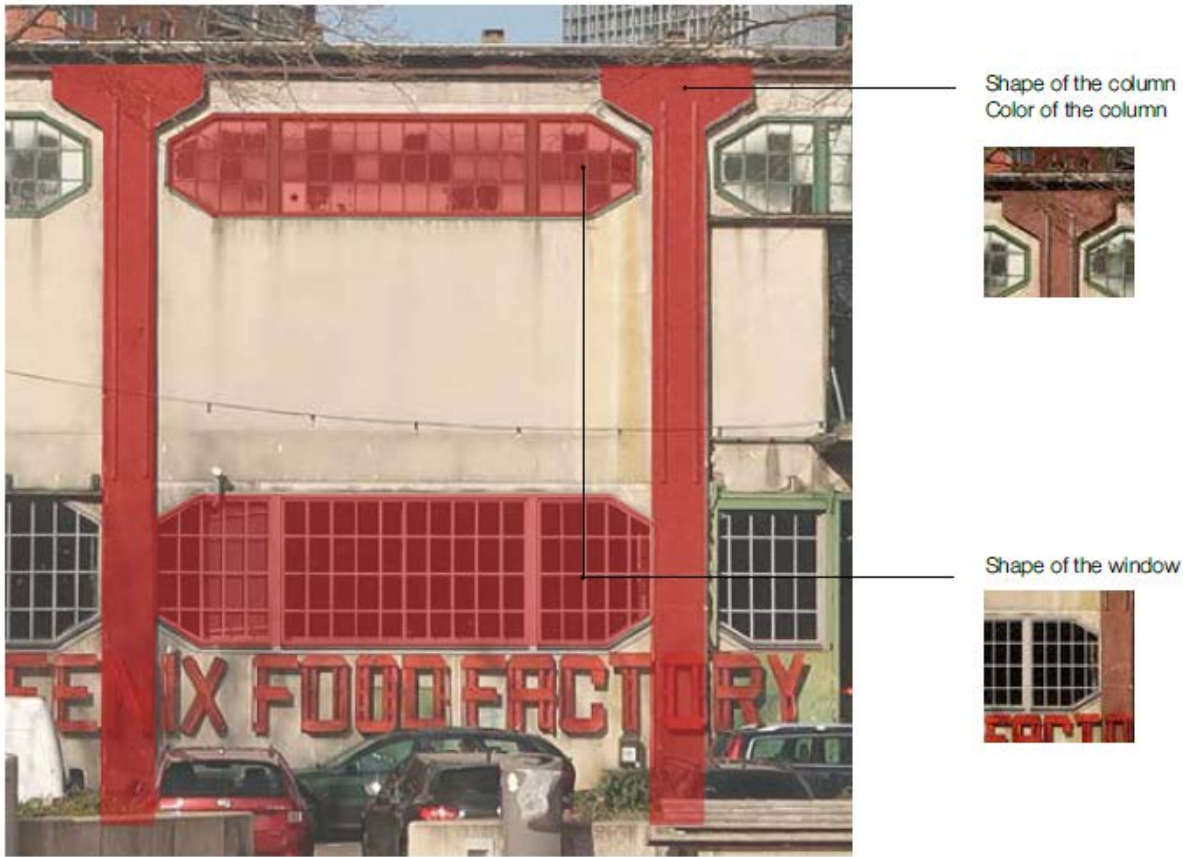


Figure 21 - Expression facade - Own Illustration

It also distinguishes itself as industrial building from the adjacent residential area, with high openings for entrance, and warehouse appearance. Secondly, the sophisticated shape of the window which runs along with the shape of column reinforces the expression of the whole facade. I do need to note that these red and white colours are not the original colours. It used to be smooth and grey. The windows and the doors were the only coloured aspects in the facade.

**Importance**

They are the face of the building and they are the first thing the people see the building. It could be a connection point to the context.



## Functions

Figure 22 - Functions - Own Illustration based on Google maps<sup>2</sup>

The Fenix warehouse is standing in a former harbour area and is the only industrial building momentarily in its immediate surroundings. This is due by the development of Katendrecht and its surroundings. On the Kop van Zuid are mostly public, social and cultural functions located along with office buildings.

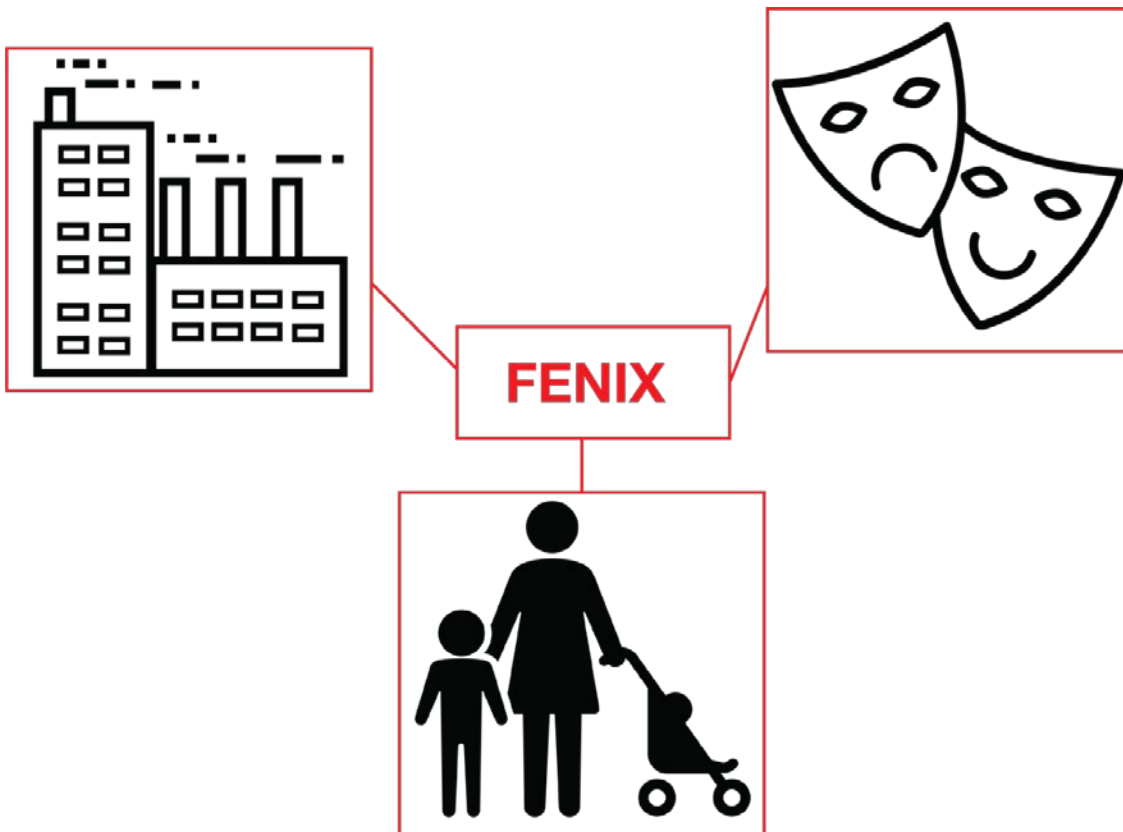


Figure 23 - Conclusion Functions - Own Illustration with icons from the Noun Project

**Importance**

The surrounding functions can affect the choice of the future function(s) in the design. It should be something that is needed in the context.

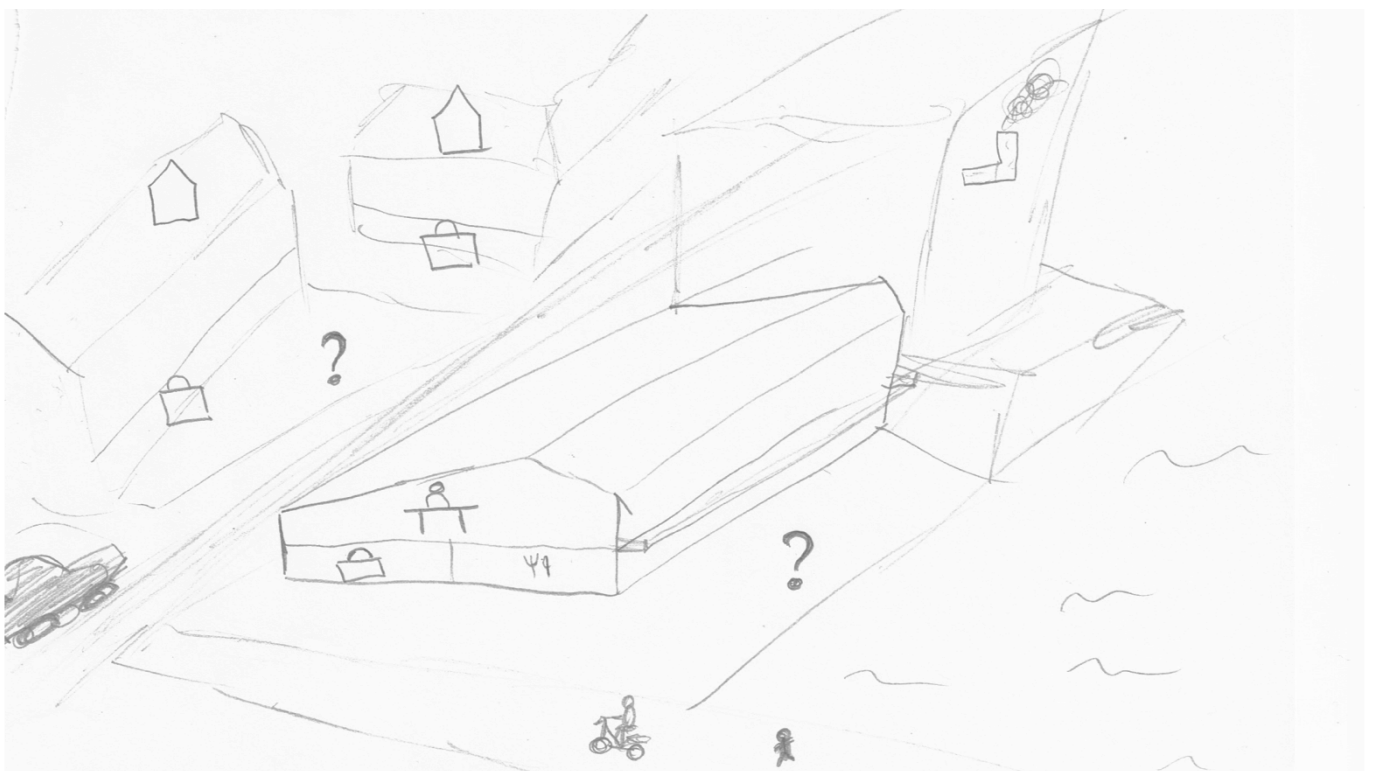


Figure 24 - Possible functions - Own illustration

# Building Technological Analyses

## History of the structure

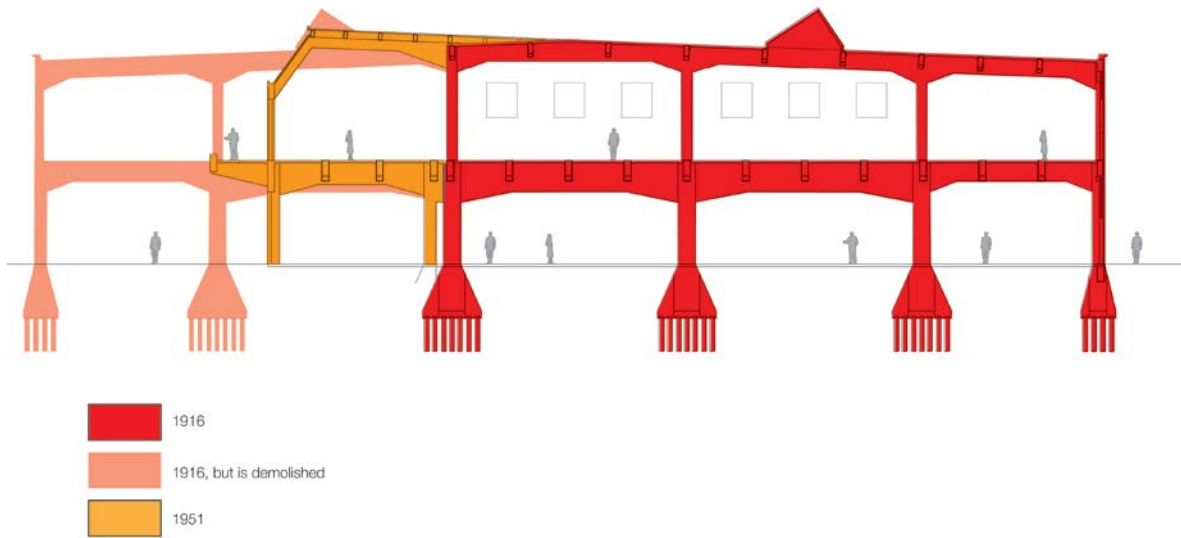


Figure 25 - Chromomap of the structure - Own Illustration

When it comes to the structure there are two-time layers: 1916 and 1951. The original building period of 1916 lasted for 6 years, but because there was damage to the building after the bombing in 1944 a part of the structure has been demolished. The new layer of 1951 was added in the place of the damaged part. So a part of the original structure was sacrificed for the new structure.

### Importance

It shows that there are only two layers still present in the building. The lost part of the structure can also be seen which could be made visible again in a future design.



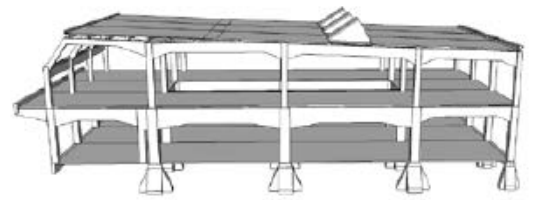
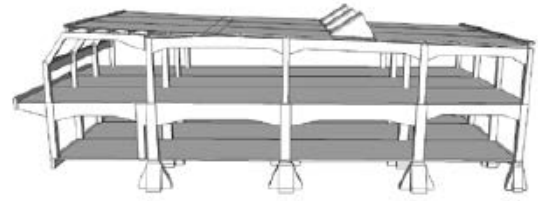
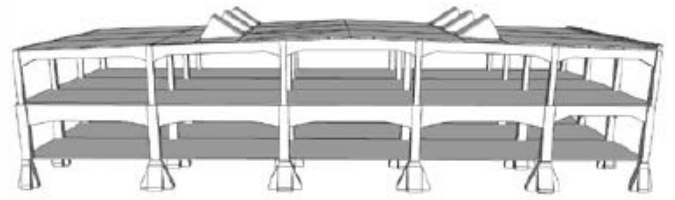


Figure 26 - Materialisation and atmosphere of the construction - Own illustration

## Types of construction

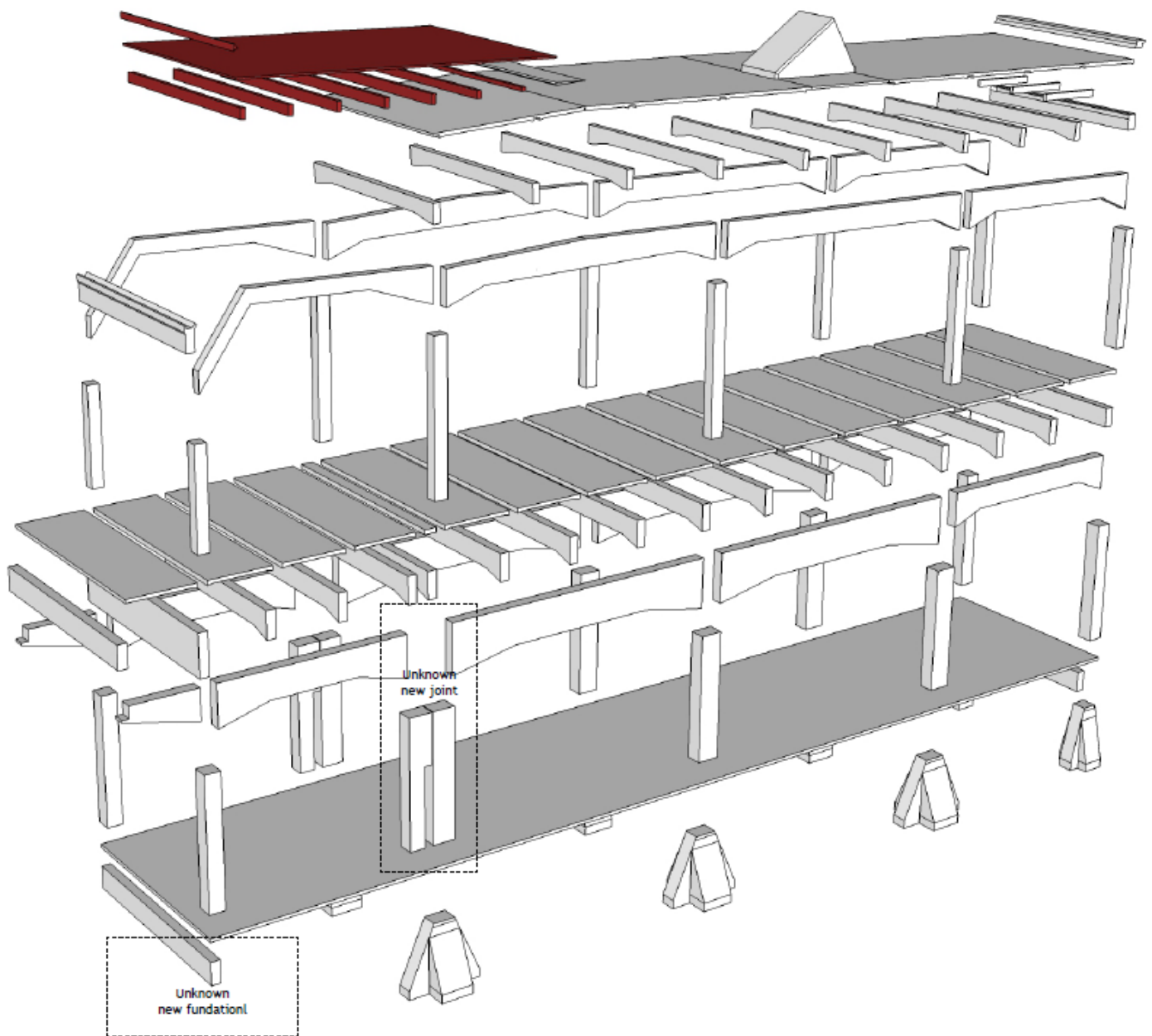


Figure 27 - Explodes view structure - Own Illustration

The Hennebique system was adapted to the structure of 1916, which forms one cast in situ monolithic structure of columns, floors and beams.<sup>3</sup> The newer structure of 1951 is also partly cast in situ, but the roof is made prefab. The foundation of this part not known. Only of the 1916 structure are drawings with foundation available.

### Importance

It shows that for the time they used advanced technology to construct the building. This opens up the possibility to use the newest technology again in the transformation.



## Details

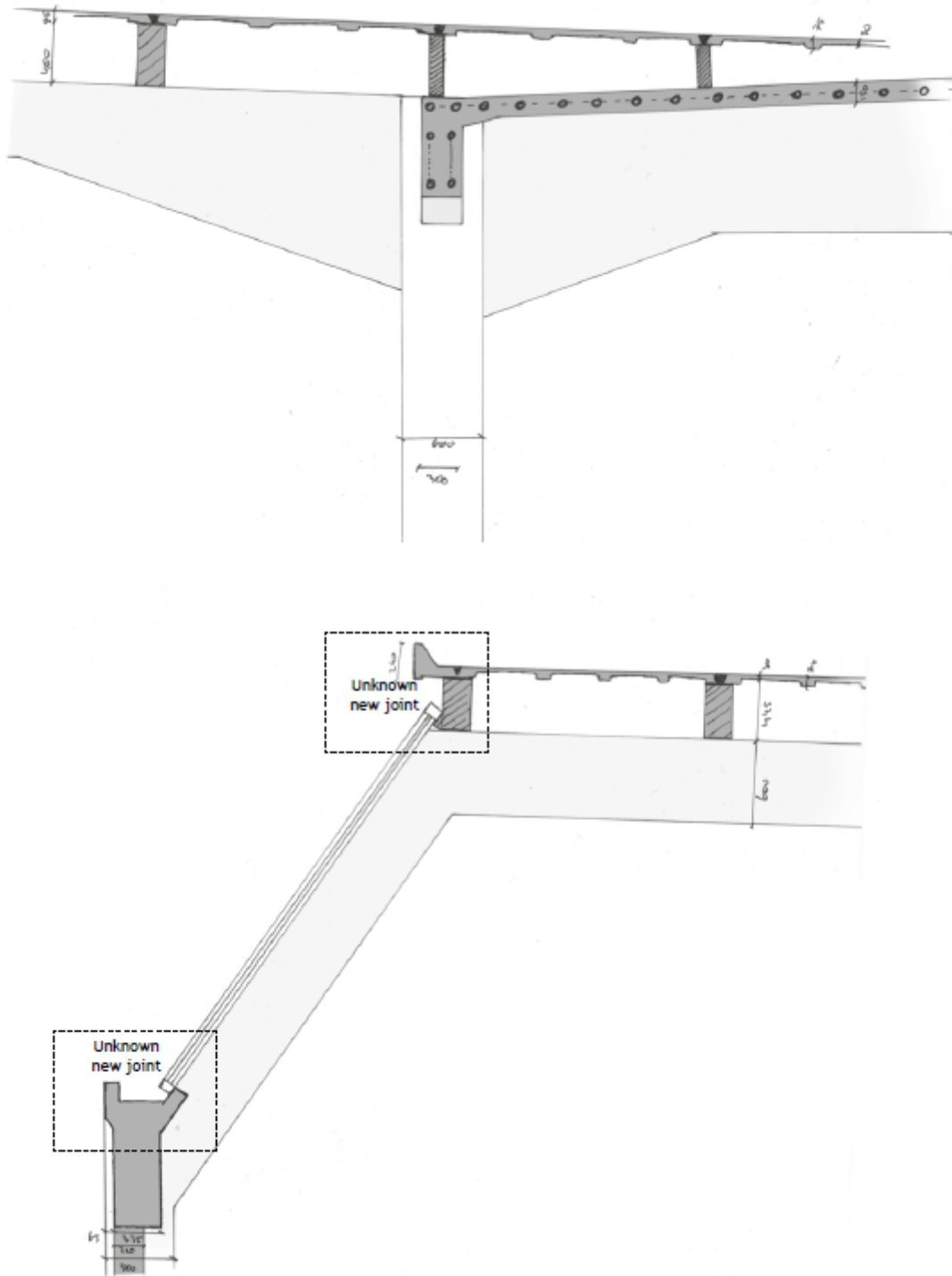


Figure 28 - Details of the added structure in 1951 - Own Illustration

Most of the building is made out of the structure, which is not covered up or made smooth. Everything is functional and there is hardly any added architectural element. The south façade is covered with a plaster layer but the rest of the building is bare of this type of cover. There also no insulation or climate systems present in the building. The details in figure 24 show that there are still some parts of the building that are unknown. The unknown joints are for a window frame added in 1951. This lets in a lot of light and adds to the atmosphere on the first floor.

### Importance

There are still parts of the construction that are not clear. This needs to be researched further.



Interesting detail

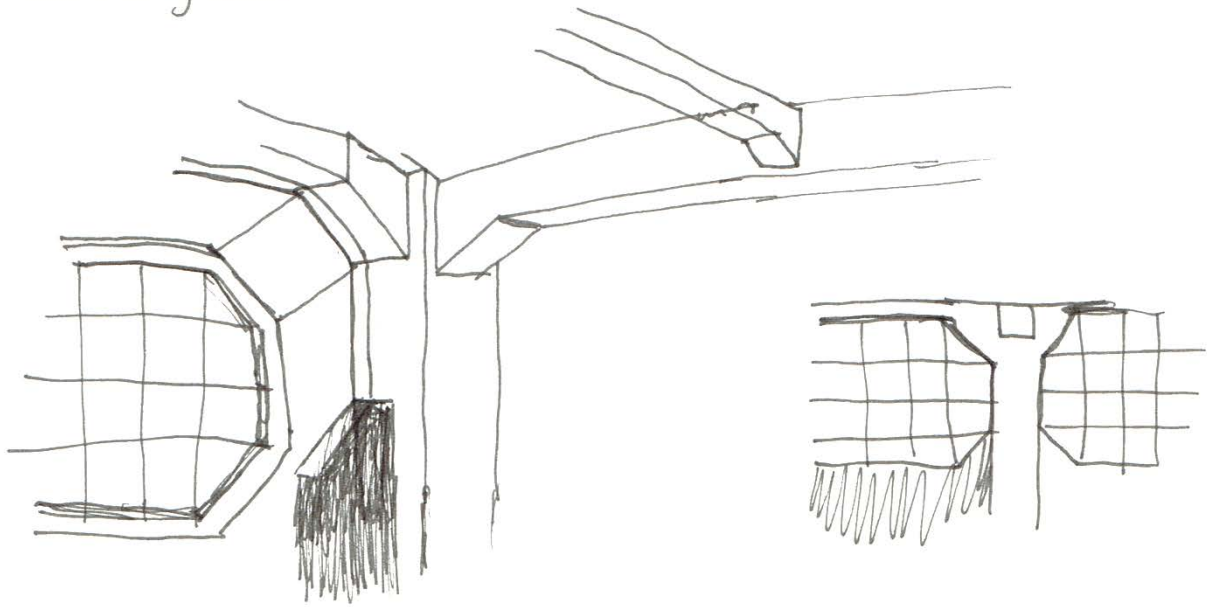


Figure 29 - Interesting detail - Own illustration



## Damages

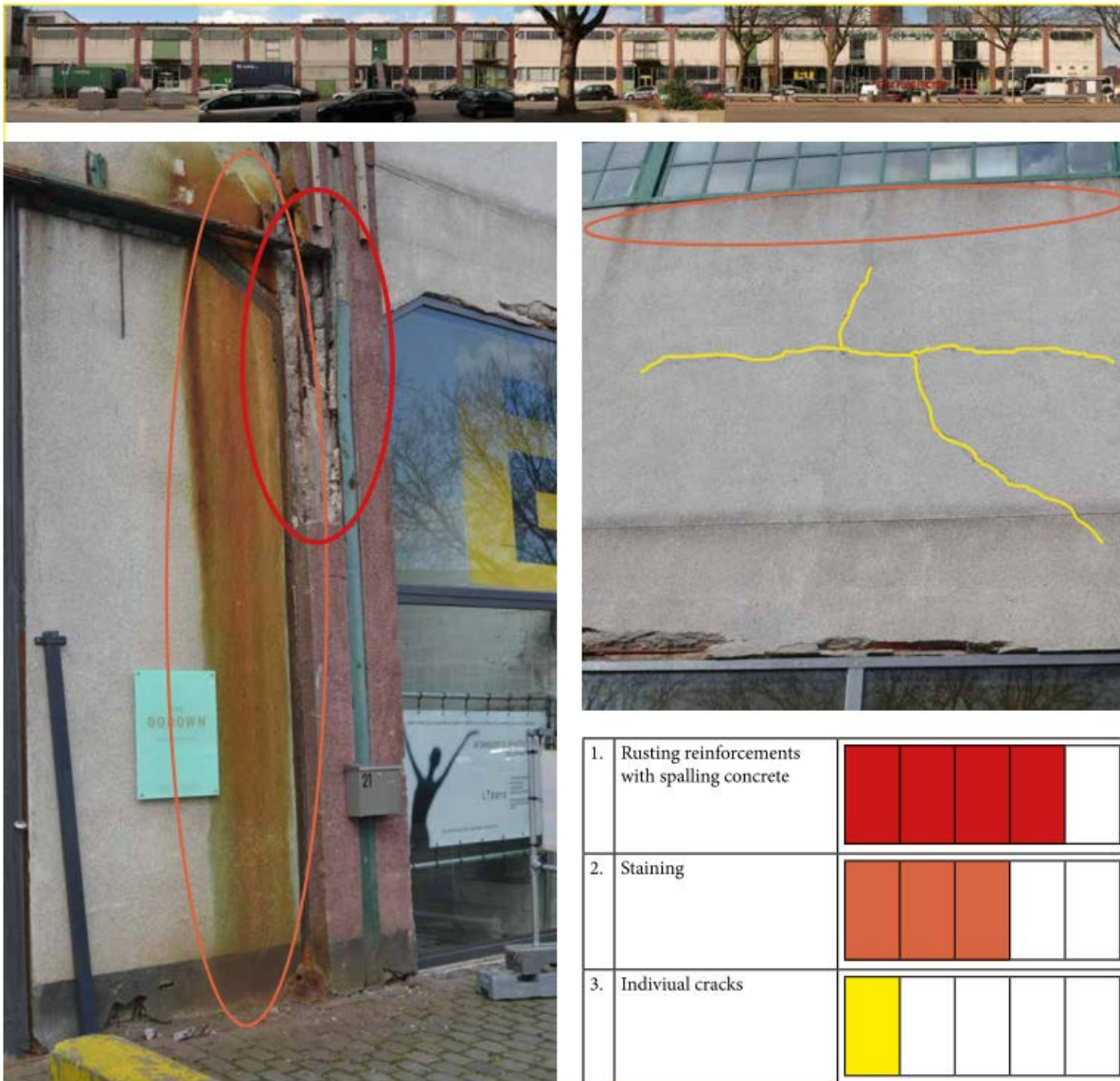


Figure 30 - Damages South facade - Own Illustration

On the south facade there are in general three types of damages:

1. Rusting of the reinforcements which caused the concrete to spall
2. Staining on the facade
3. Some individual cracks

The rusting of the reinforcements is regularly found in this building, but the most severe case is on this facade. The explanation how this can happen is, by MDCS.monumentenkenis.nl:

The reinforcement corroded, and the corrosion products (rust) formed layers around the rebar. Possible causes of corrosion are (I) corrosion due to carbonation, (II) due to chloride attack, or (III) stray currents. (IV) Corrosion also can be initiated through cracks or voids in the concrete. (TNO ;TUDelft, 2016)

The staining on this facade is present at the original doors and doorframes.

Only on this facade are there multiple individual cracks found. They are classified as individual cracks after research in the placing of these cracks.



Figure 31 - Damages North facade - Own Illustration

On the north facade, the rusting of the reinforcements is also present, though not as severe as on the south facade. There are three other damages present on this facade: Leaching, soiling and biological growth. Leaching can mainly be found underneath the balcony, next to the beams.

Soiling occurs all over this facade. This makes this facade very dark. The explanation for this damage is, by MDCS.monumentenkenis.nl: Soiling is due to the deposition of dirt (e.g., dust, particles etc.) originating from the environment. The presence of a limited amount of moisture facilitates sticking of the soiling to the surface of the material. (TNO ;TUDelft, 2016)

Biological growth is found on the small wall on top of the balcony. There are mostly mosses found here, but some algae and plants as well.



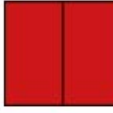


1. Rusting reinforcements with spalling concrete		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Spalling of the brick		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Graffiti		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 32 - Damages East facade - Own Illustration

In general is this facade the least damaged. As the previous facades, this facade also has rusting reinforcements and spalling concrete. Only on this facade it only happens in two places and the damages are not very severe.

There are some damages found on the bricks. Some soiling is found and on one part of the wall, the bricks are spalling.

The graffiti found on this facade is in some places already removed but are mostly still present. Graffiti is the result of an act of vandalism.



Figure 33 - Damages what to do with them - Own Illustration with icon from the noun project

*Importance*

What do you do with the damages? Keep, restore or repair?

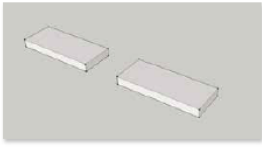
They show that the building has aged, but it also makes the building vulnerable.



# Cultural Value Chronomapping

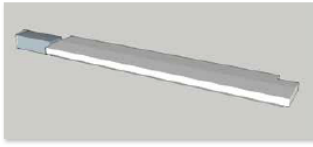
1910

Original wood sheds



1916-1922

San Francisco, Holland America Line



1944



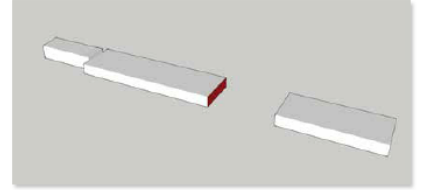
WWII  
Quay side damaged



1947

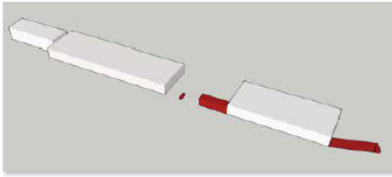


San Francisco to Fenix I, Fenix II



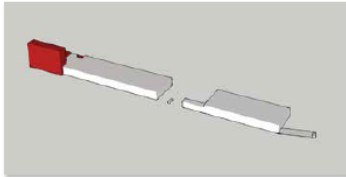
1951

Canteen



1969

Provimi Factory



2018

Fenix I-New residential

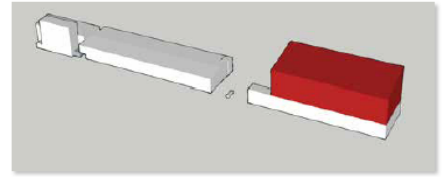
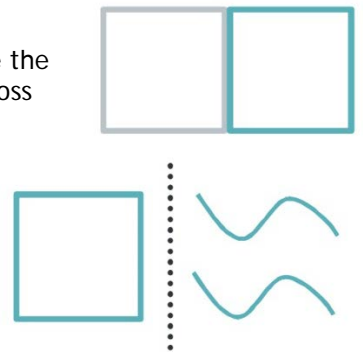


Figure 34 - Chronomap building volume - Own Illustration

The building has changed over the years. First, there were two wooden sheds, but these were replaced by the San Francisco warehouse. After de bombing a part of the building was damaged, so the building was shorted so a new quae could be used in 1947. After the fire in 1947, the building was split in two and the "Kantine" was added to Fenix I. In 1969 Provimi adds to the Fenix II and now the new dwelling complex adds to Fenix I.

## Importance

The three layers of the building and the adding and demolishing over time have made the building to what it is today. The loss of the direct connection with the river and the loss of parts of the building are motivators for a design.



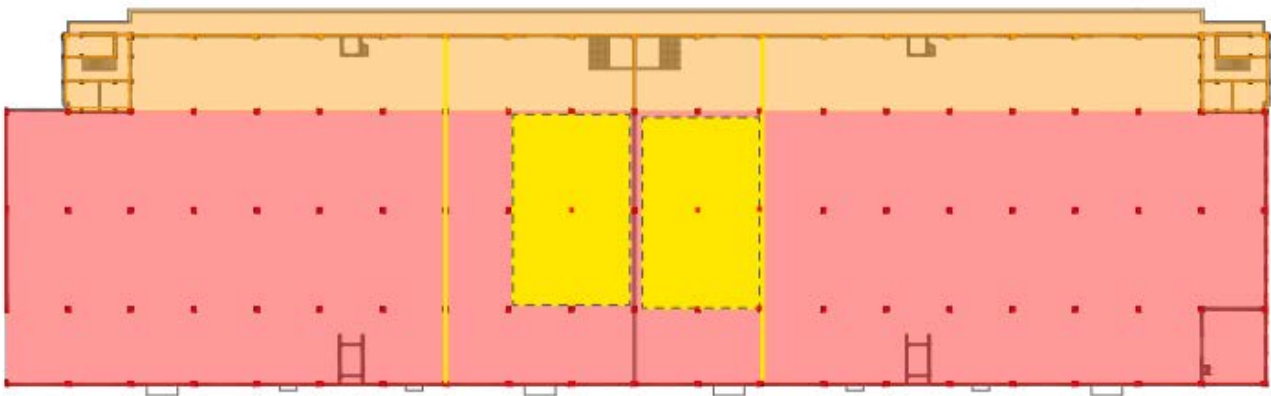
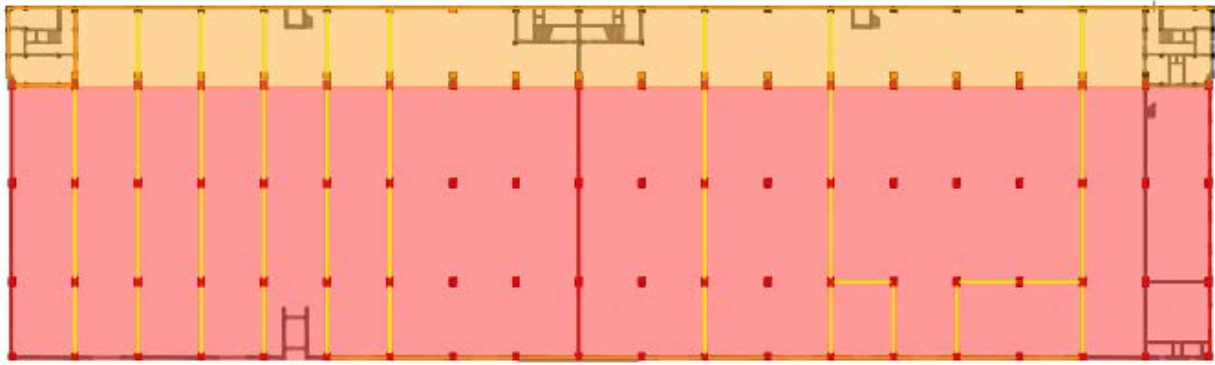


Figure 35 - Chronomap of the existing floor plans - Own Illustration

The layers of the floor plan are described in figure 27. The greatest part consists of the old construction from 1916. The orange part is the construction of the 50's, this is the construction located on the waterside. Also, a few division walls had been made to divide the space in the building. The last years there has been important, because of the creation of the two double height spaces, by making holes in the floors for the circus and Codarts.

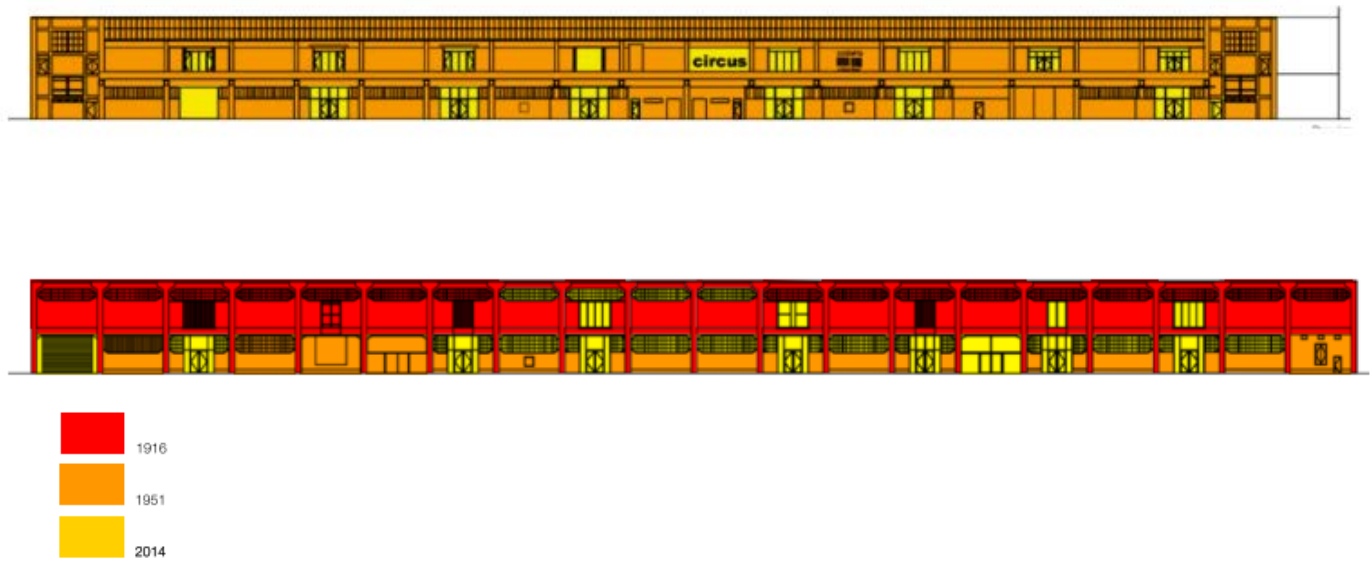


Figure 36 - Chronomap of the existing facades - Own Illustrations

The façades show that there have been some changes over the years. Most of the openings have been renewed with newer window frames and doors. But there are still original windows left.

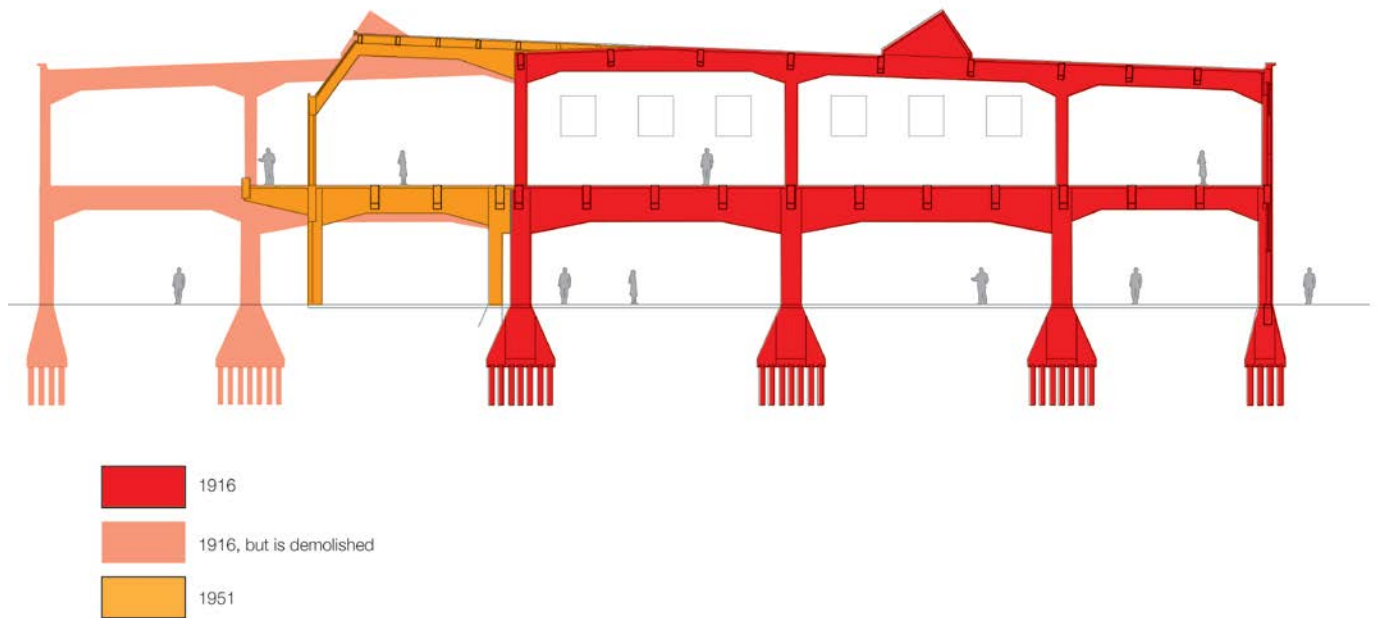


Figure 37 - Chronomap of the existing section - Own Illustration



Figure 38 - Three layers of history - Own illustration

### Importance

The layers of history are clearly visible. Some things are lost but most are still there. The connection is still tangible. For me, the original layer of 1916-1922 is valued the highest. The layer of 1944-1951 is also very valuable to the building, but the most recent layer is not valued.

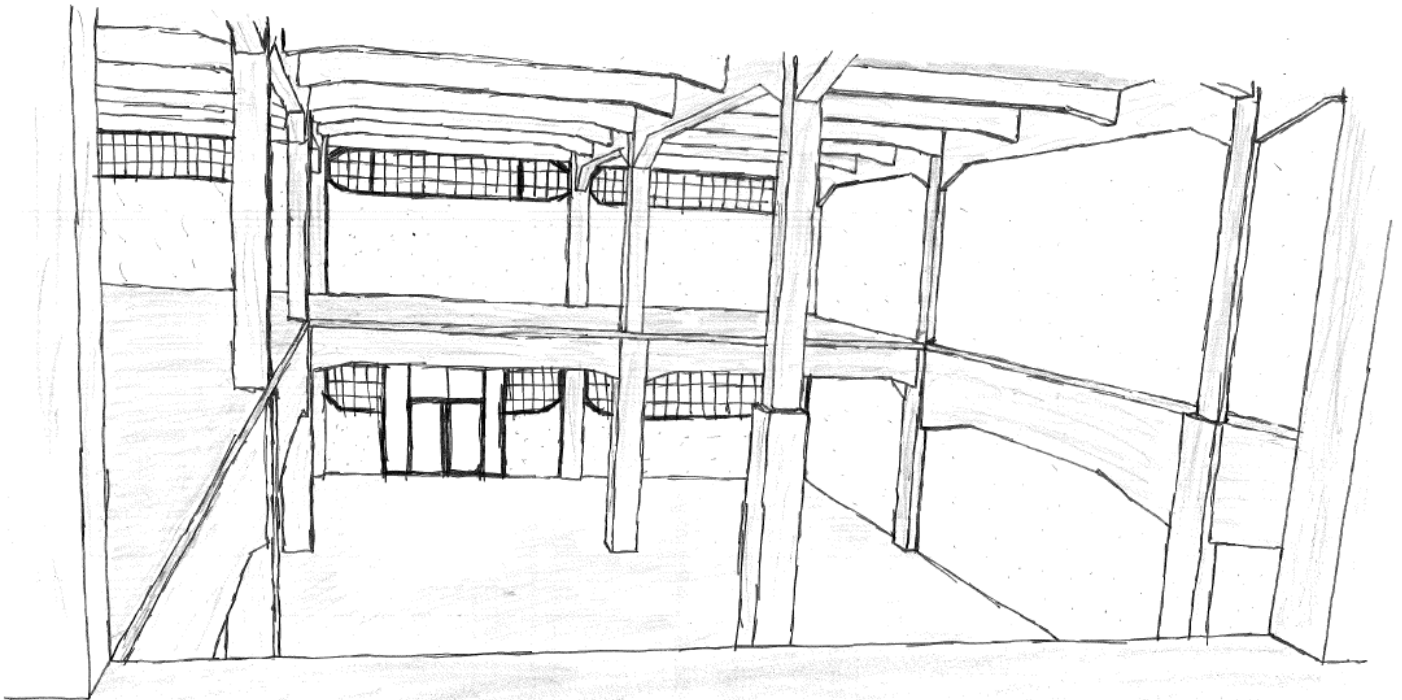


Figure 39 - How the opening in the floor affects the room - Own illustration

Even though I don't agree with the loss of the floor here, it does enhance the space. The light that comes in through the roof lights brightens the whole room.



# Cultural Matrix

Riegl Brand	Age value	Historical value	Intentional commemorative value	Non-intentional commemorative value	Use value	Newness value	Art value (Relative)	Rarity value	Spirit of place	Dilemma
Surroundings/setting		Holland Amerika Lijn								
Site										
Skin (exterior)										
Structure										
Space plan										
Surfaces (interior)										
Services										
Stuff										
Story			Fenix							

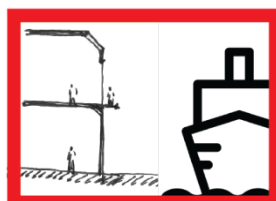
Figure 40 - Cultural Matrix - Own Illustration

In general, the matrix that was made for Appendix 1 holds to my personal values of the building. There are three values in the matrix that I value different than in the Cultural value report - Appendix 1.



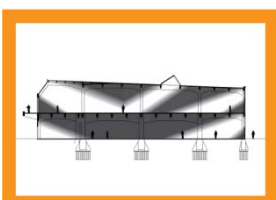
### Intentional Commemorative value - Story

The name Fenix is the identity of the building and tells the story of its rise out of the ashes. It comes back to life again and again.



### Use value- Structure

The historic connection with the water through trade is very important to the identity of the building. This connection is now become blurred.



### Spirit of the place - Story

Natural light is important but it is not as important as the history or the architect, to name a few.

## Opportunities

The matrix is started with the opportunities. These opportunities are beside the positive point for the designing process with the Fenix warehouse, they also include the potential. The opportunities are classified by the connections. So there are three classes within the opportunities (history, water and context). Besides the opportunities that are described below, the opportunities in appendix one will also be included in the design process.

### Connection to the history

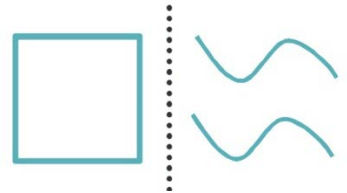
The first of course is the name Fenix. It comes back to life from its own ashes. This should be more evident that it is now. If you don't know the story of the fire, you don't know where the name comes from.

Second is the connection with the Holland Amerika Lijn. It used to be a connection point to the rest of the world. The connection to the company should be something that is explored. Also the connection the building has with the WWII and the reconstruction of Rotterdam is something that can be explored.



### Connection to the water

The location right next to the water is optimal to include it into the design. Some of the possible connections with the water can be found on page 31-33. How can the connection be made tangible?



### Connection to the context

The building is located in an up and coming neighbourhood. And it is already connected to the flourishing Kop van Zuid.



## Obligations

The second point in the matrix is the obligations. These obligations are the challenges with the Fenix building, things to tackle or to find compromises for. The obligations are described below. Also here they are classified by the connections.

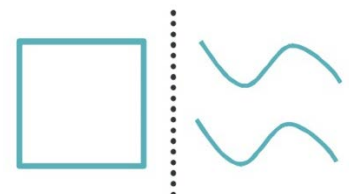
### Connection to the history

As said before in the building technological analyses chapter, there is still a lot unknown of the extension of 1951. This needs to be researched further to understand this part of the building.



### Connection to the water

The connection to the river comes from its location but also from the history. Its former harbour days have passed so how do you connect the building and its functions to the water? Some possibilities have been explored in the chapter references, but further research is needed.



### Connection to the context

The façades are the first thing you see of the building, but these are damaged. Some more server, some less so but all are damaged by something. Also, original parts from 1916 are deteriorating. How do we deal with this damage? Restore has the preference and if that is not possible then the building should be repaired. This also applies to the original doors and windows.



## Dilemmas

Some obligations or other (political) positions make its different meanings and positions create a certain tension. These tensions form the dilemmas. In the designing process, this has to be taken into account. For these dilemmas, I will take a position for the design.

### Connection to the history

During the research, an original part of the San Francisco warehouse was found hidden within the Provimi factory. But Provimi is the last remnant of the industry that used to be

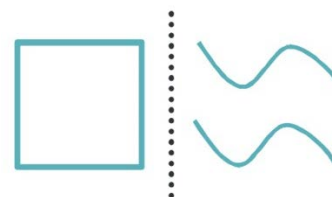


on Katendrecht. Do you keep Provimi or take it away and show the hidden part? Provimi will not leave for a couple of years so it is something the design needs to deal with.

Another dilemma is the lack of isolation in the building. To make it useable, isolation need to be added. But in order to do that a part of the façade or the surface needs to be covered. At the south façade, it is not possible to isolate the outside because it would ruin the aesthetics of the original design of this façade. On the inside of this façade, the surfaces are very rough and contribute a lot to the atmosphere. So a creative solution needs to be found to isolate this façade and this building in general.

### *Connection to the water*

At the moment the people how to work in Fenix parks on the quay. This blurs the connection to the river. It also lowers the atmosphere of the waterside. A solution needs to be found for this parking problem.



### *Connection to the context*

The trucks, that now block the path to the neighbourhood and the waterbus, need to be dealt with. They disconnect the building with its context. This parking problem also needs to be addressed.



All of the opportunities, obligations and dilemmas are the basis for the design and are a solid structure to keep the design process close to the analysis. They deliver design input and lay down the sensitive parts of the building, but they also show the distractions in the building, which dilemmas or values lead to a less quality building or design. An important aspect of the design is to keep in mind is how much of building can be changed without losing its original character.

## Cultural value statement

The Fenix loods II was originally part of the San Francisco loods, designed by C.N. van Goor in 1916. Van Goor was very important at his time for his work within the architectural world. The San Francisco was built for the Holland Amerika Lijn, which is still the biggest cruise ship company in the world. It survived the bombing of Rotterdam and was part of the rebuilding effort of the municipality of Rotterdam. After a fire in 1947, the San Francisco loods was split in two and was reborn from its ashes as Fenix I and Fenix II and the quay was widened by demolishing two grids of the building and building a new façade, still keeping its close relation with the water.

I value this building because of the original design by the important architect C.N. van Goor, its connection to the Holland Amerika Lijn and its connection with the river. It has unintentional commemorative value because it survived the bombing of Rotterdam in 1944 and is the rose from its ashes and became the Fenix. The Fenix II has historic value because it used to be part of the San Francisco loods, which was the largest warehouse in the world.

## Starting points

At the start of the design process, I made a list of starting points from the analyses and from my personal fascination. They are as following:

### Architectural Analyses

- Find the lost connection with the river again
- Resolve problem of the obstacles in between the Fenix and the neighbourhood
- Find (a) function(s) that suit the context
- Tell the story of the building

### Building Technological Analyses

- (Possibly) use the newest technology to improve the building
- Research the details further
- Restore the damages as far as possible, repair the rest

### Cultural value

- Show the history of the San Francisco warehouse, the survivor of the bombing of WWII and the Fenix that rose from its ashes.
- Integrate with the up and coming neighbourhood
- Find a solution for Provimi and the hidden part of the San Francisco warehouse
- Find a solution to the parking problem
- Keep most of the original layer of 1916-1922 and restore it to its former glory

### Personal fascination

- Connection with the river
- Design for the user
- Restore the south facade to the original character and keep it as it is.
- Make a new, clear entrance to the building
- Make a representation of the structure of 1916

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## Appendix 1

### ARCHITECTURAL ANALYSIS, BUILDING TECHNOLOGY AND CULTURAL VALUE REPORT – edition 2

Group analyses

Bonte, J.E., Cheng, C., Pelt (2017)



HERITAGE & ARCHITECTURE

## ARCHITECTURAL ANALYSIS, BUILDING TECHNOLOGY AND CULTURAL VALUE REPORT

### DATE:

26-05-2017

### COURSE:

AR3AR022 - Cultural History - Essential Qualities  
AR3AR032 - Analysis of Building and Material Structure  
AR3AR142 - Architectural Analyses of Buildings and Urban Context

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# INTRODUCTION

## PURPOSE OF THE REPORT

Overall, this report is conducted to understand Fenixloods II building, located at the Veerlaan 19 in Rijnhaven, Rotterdam. Fenixloods II building (previously names San Francisco warehouse) was built in 1916, as the longest warehouse in Europe. Rotterdam city has transformed itself from the previously busy industrial harbour into the various functions, such as commercial area, dwelling, cultural area, offices nowadays; the industrial activities have shifted to west side of Rotterdam, closer to North Sea. Due to this city transformation, there are opportunities for Fenix II to have another life, different inputs, and better integration with the changed surroundings.

## METHODOLOGY

There are 3 major parts of analyses: architectural analyses, building technology, and culture values. In order to have comprehensive overall understanding, architectural and culture values analyses contain 3 different scales, starting from: urban level, site level, and building level; building technology analyses focus on building level.

Frist of all, there was very limited provided information on TU Delft Black Board. The first step was to visit Rotterdam City Archive to gather essential information as much as possible, such as previous drawings and photos from different periods. Secondly, visit of Nieuwe Instituut for the archives was planned, mainly for the background of architect, C. N. van Goor, who designed San Francisco Loods( original building for Fexniloods 1 and Fenixloods 2). There is also information found on newspaper, articles on internet. Finally, many times of site visiting was the important input as well. The Fenix II archives were redrawn by ourselves. With these knowledge, the analyses were made, discussed, and realized.

The respective introductions and conclusions will be drawn in the following chapters, as well as the final overall conclusion.

## ANALYTICAL CONCLUSIONS AS DRIVERS FOR FUTURE DESIGN

With these results and conclusions: history background, developments, current conditions, Fenix II can be understood clearly and show the opportunities and dilemmas. Therefore, these inputs will be the starting points, foundation, and drivers for the future design.

\* Drawings and photographs are ours; unless it is stated.

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HERITAGE & ARCHITECTURE

URBAN ANALYSES

# ROTTERDAM CITY DEVELOPMENT OVER TIME

1340

Using current Maas River as an orientation point

## QUESTION

This research is conducted to understand the way Rotterdam has developed from its establishment to the present. By acknowledging and studying from the past, to the present, to the future, the transformation can be seen and understood.

## METHODOLOGY

By looking at the built environment at different periods throughout history comparisons can be made and the development of the city can be monitored. The development of the river Maas will also be taken into consideration. Eight different images will be shown of the Rotterdam area from 1340 towards 2016. From these images and diagrams will be made and conclusions will be drawn. At the end of this part future developments of the city will be taken into account.

## FINDINGS

The city was founded in 1270 at the intersection of the rivers Maas and Rotte. It started as a fishermen's town but because of its location soon became a harbour city. Rotterdam received their city rights in 1340. This allowed Rotterdam to dig a channel from the river Rotte to the river Schie. An important trading route was thereby established. This was the starting point for the erection of the city's defence wall and the digging of the canals. The image clearly shows early Rotterdam followed the orientation of the landscape. At the left side of the image the start of the city of Schiedam is also visible.

## CONCLUSION

It was the starting point for the erection of the city's defense wall and the digging of canals. The image clearly shows early Rotterdam followed the orientation of the landscape.



Number of inhabitants: 2000

## Sources

M. Rotterdam, 2016  
Erfgoedhuis, 2017

# ROTTERDAM CITY DEVELOPMENT OVER TIME

1570

Using current Maas River as an orientation point

## FINDINGS

Rotterdam grew to be a key player in the trade in wool and agricultural products. Between 1340 and 1570, there were a lot of small wars happening in area of the Netherlands, called Holland, which caused the population of Rotterdam to fluctuate. Delfshaven (middle of the image) was founded in 1389 as a result of a water connection from Delft to the river Maas. Rotterdam did not grow in surface area and remained constrained within the city walls. Between 1449 and 1525 the late gothic Laurenskerk (Laurens church) was built. It was the first stone building in the city. The eastern part of the city suffered a great loss when a large fire destroyed a large area.

## COMPETITION

In this historic period, Rotterdam had intense competition in the trading scene. Schiedam, Delft (through Delfshaven) and Dordrecht were all contending to be the most successful trading city in the Maas area. In this period Rotterdam was not the world leader in oversea trading, but it would become in later centuries.

## CONCLUSION

Rotterdam did not grow in surface area and remained constrained within the city walls. Rotterdam was not yet the world-leading trading harbors in this period.



Number of inhabitants: 10000

# ROTTERDAM CITY DEVELOPMENT OVER TIME

**1690**

Using current Maas River as an orientation point

## FINDINGS

During the 80-year war in 1572, Rotterdam was occupied a few times, and it became clear the city needed stronger defences to keep enemies out. The city was fortified with new defence works and harbours in the period. The city seized the chance to become the gate of the East-, and West-Indian trading companies during the early part of the seventeenth century, which initiated the Golden Age.

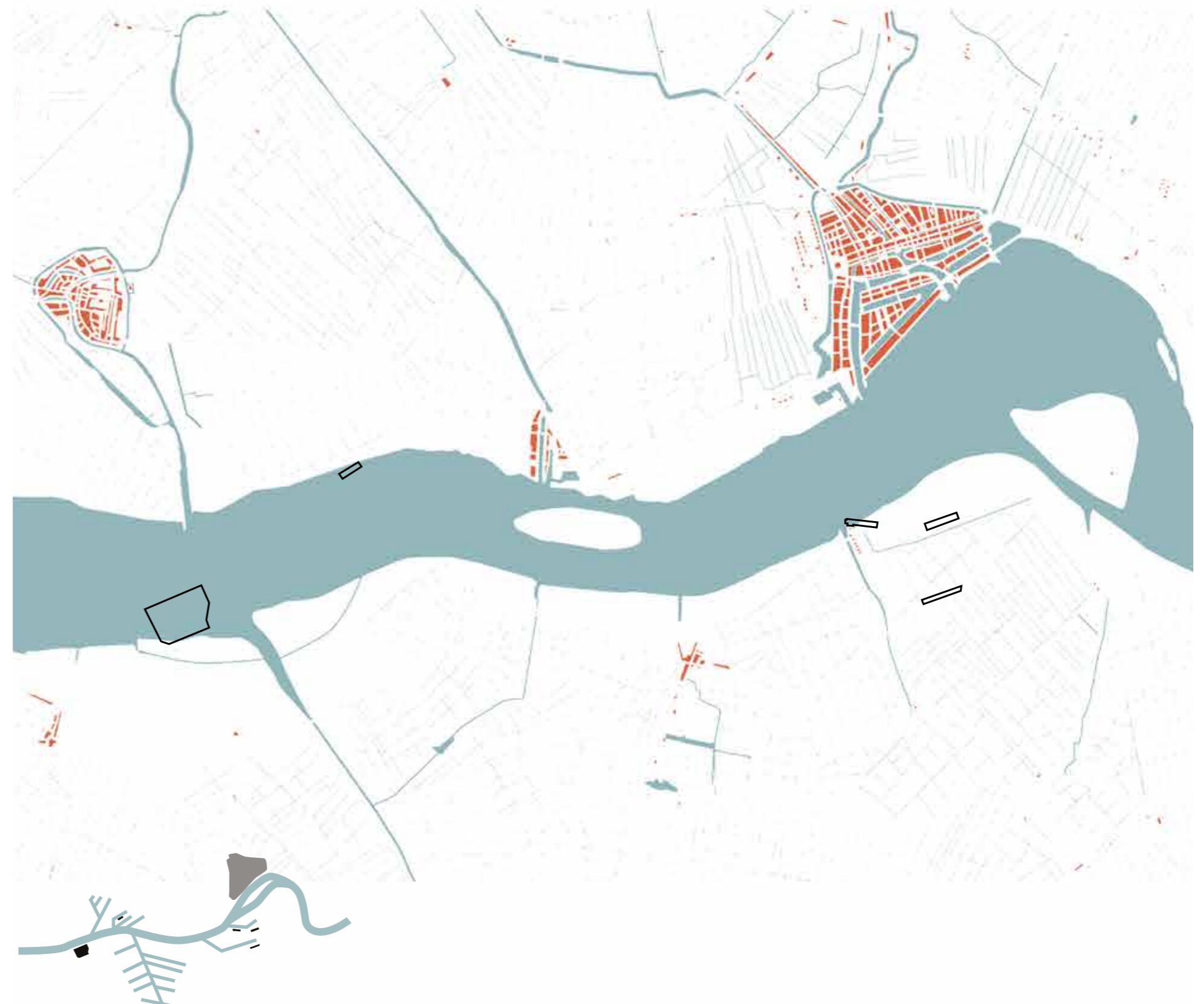
## GOLDEN AGE

In the seventeenth century, Rotterdam experienced tremendous economic growth, as did the rest of the Netherlands (Golden Age). The city expanded towards the river Maas as the harbor became more comprehensive. However, the city remained enclosed within its walls throughout this time. Moreover, Rotterdam was not only blooming economically, but also attracting foreign scientist, painters and philosophers and increased the diversity of inhabitants.

## CONCLUSION

The city expanded towards the river Maas as the harbors became more comprehensive. However, the city remained enclosed within its walls throughout this time.

Attraction for foreigners and increase of diversity of inhabitants.



Number of inhabitants: 50000

## Sources

M. Rotterdam, 2016  
Erfgoedhuis, 2017

# ROTTERDAM CITY DEVELOPMENT OVER TIME

## 1850

Using current Maas River as an orientation point

### FINDINGS

After the stagnation of growth under French occupancy, Rotterdam started to expand again quickly in the first half of the nineteenth century. The disappearance of the merchants and the rise of transshipment businesses was a significant step towards the future. Rotterdam became a transitional harbour between the United Kingdom, United States of America and the Ruhr area. The trade with African continent also enabled a growth in revenue.

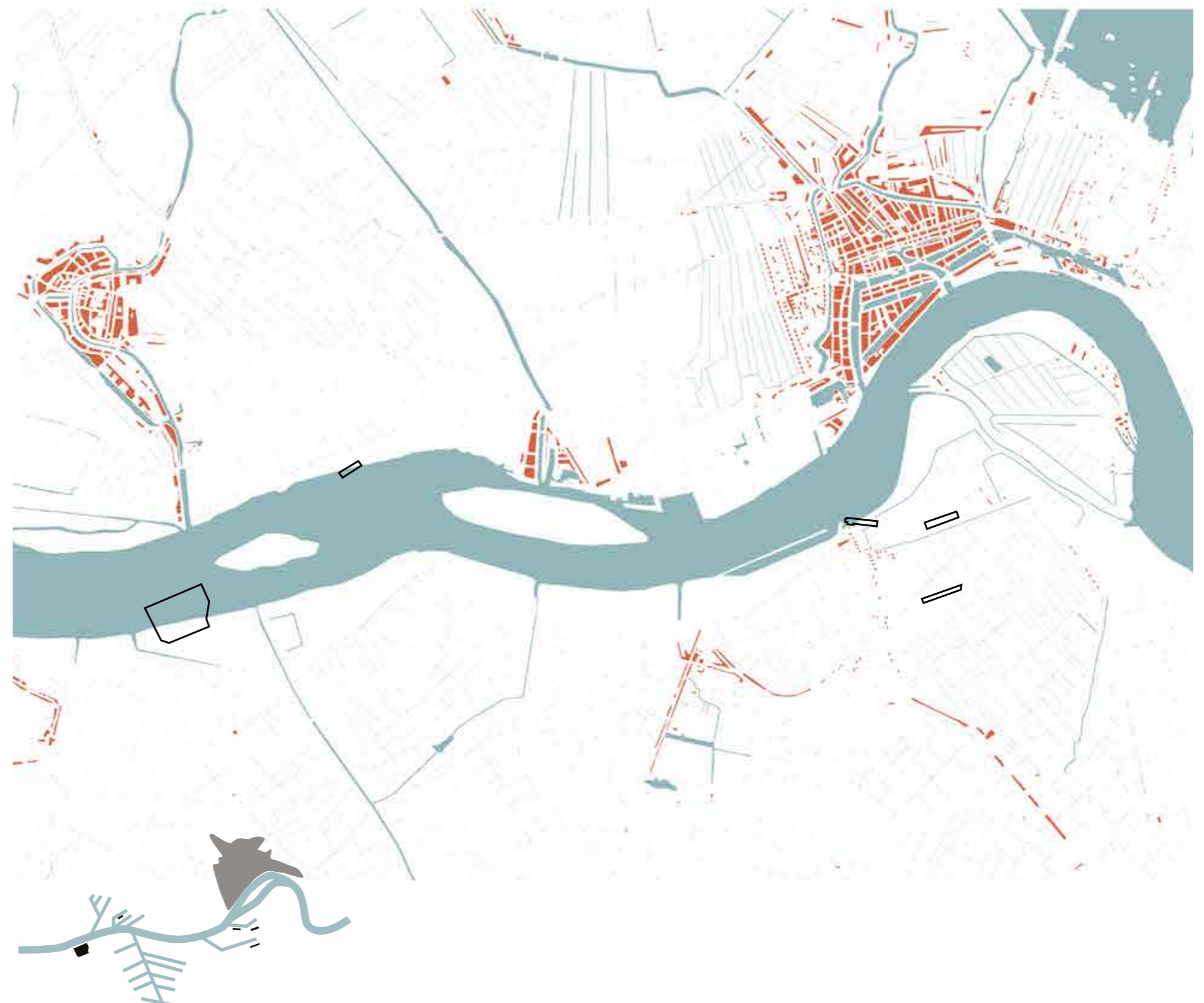
### DESTROYING BOUNDARIES

In 1825, Rotterdam started expanding beyond its traditional city boundaries. The city walls were breached and the possibility for real expansion was presented. The 'triangle' between the Coolsingel, Goudsesingel and the New Maas was demolished at last. The sanding of Rotterdam's main connection to the sea resulted in Voorn channel between 1827 and 1830. This was a connection between Rotterdam and Hellevoetsluis

### CONCLUSION

Rotterdam became a transitional harbour between the United Kingdom, United States of America and the Ruhr area. The trade with African continent also enabled a growth in revenue.

In 1825, Rotterdam started expanding beyond its traditional city boundaries.



Number of inhabitants: 90000

### Sources

M. Rotterdam, 2016  
Erfgoedhuis, 2017

# ROTTERDAM CITY DEVELOPMENT OVER TIME

**1890**

Using current Maas River as an orientation point

## FINDINGS

### NIEUWE WATERWEG (NEW WATER WAY)

made the demand for better accessibility of the harbour to a top priority. Between 1866 and 1872, the Nieuwe Waterweg was constructed between Rotterdam and Hoek van Holland as a direct connection to the North Sea.

This initiated a rapid economic growth and both the city and the harbour would undergo significant expansions. These expansions come in form of annexation of neighbouring municipalities and the erection of the neighbourhoods. Delfshaven, Feijenoord, Kralingen, Overschie, IJselmonde and Charlois were added between 1869 and 1895. Bridges were built across the river Maas to enhance the accessibility of all parts of the city. The population kept growing, in spite of the decline in birth rates. People were coming to work in the city from all over the countryside.

## CONCLUSION

A better accessibility of the harbour to a top priority, Nieuwe Waterweg (New Water Way)

Both the city and the harbor would undergo significant expansions. People were coming to work in the city from all over the countryside.



Number of inhabitants: 201858



# ROTTERDAM CITY DEVELOPMENT OVER TIME

## 1940

Using current Maas River as an orientation point

### FINDINGS

In the early twentieth century, the advancement and extension of the ports continued in Rotterdam. Especially the transshipment of Bulk Goods experienced significant growth. It was the period in history that Rotterdam surpassed Amsterdam as the main harbour city in the Netherlands. The better and more prominent position Rotterdam had, between different major ports, also played a drastic role in this development.

### WORLD WAR I

Stagnation in trade and economic growth occurred in Rotterdam (as well as other cities) due to the outbreak of the First World War. Rotterdam started recovering around 1926, by which time it only had three years left until the great recession in 1929. The recession showed the city's vulnerability and one-sidedness.

### WORLD WAR II

In May 1940, the old city centre and the seventeenth century harbours were destroyed by the German invaders. 900 inhabitants were killed and several 1000's lost their homes. In October 1941 and March 1943, the city was bombed again, by the Allies this time. At the end of the war, the Germans took everything they could from the harbors. In 1946, a plan was devised for the reconstruction of the city and the harbors.

### CONCLUSION

It was the period in history that Rotterdam surpassed Amsterdam as the main harbor city in the Netherlands. The stagnation in trade and economic growth occurred in Rotterdam due to WWI and the city was boomed and damaged during WWII.



Number of inhabitants: 619686

### Sources

M. Rotterdam, 2016  
Erfgoedhuis, 2017

# ROTTERDAM CITY DEVELOPMENT OVER TIME

1970

Using current Maas River as an orientation point

## FINDINGS

After the war, the original streetplan was abandoned and the city centre was accessible through wider roads. The city centre largely became a place of business while new neighbourhoods were built all around the city. The city of Rotterdam and the country of the Netherlands wanted to be less depended on Germany for their trade and was looking for ways to make this happen. The petrochemical industry combined with a major expansion of the harbour where the chosen solution.

## LARGEST HARBOUR

In 1962 Rotterdam became the largest harbour in the world. The newly built Maasvlakte (the first one) in 1970 helped to fortify this global number one position. The economic growth in this period would create a great demand for foreign workers, increasing the demand for living quarters in the city. Rotterdam would have its largest population in history in 1965: 731564 inhabitants.

## CONCLUSION

In 1962 Rotterdam became the largest harbour in the world. The economic growth in this period would create a great demand for foreign workers, increasing the demand for living quarters in the city.



Number of inhabitants: 686586

## Sources

M. Rotterdam, 2016  
Erfgoedhuis, 2017

# ROTTERDAM CITY DEVELOPMENT OVER TIME

## 2016

Using current Maas River as an orientation point

### FINDINGS

In the 1980s, the Basicplan to reconstruct Rotterdam had been concluded for several decades. A new city had been built with a clear division of functions. Small scale housing projects had filled in the open spaces in the city. In the 1990s, large scale building projects had become the new norm. The Kop van Zuid and the Erasmusbrug being the most striking ones. This city had gotten a metropolitan feel to it. Explosive economic growth resulted in a great demand for foreign labour forces. This resulted in 40% being of foreign origin.

### RECENT YEARS

Up to 2008, the economic growth of the city resulted in some famous grand scale building projects. The Witte Keizer, Montevideo, Coopvaart, Wijnhaeve, Scheepmakerstoren, Red Apple, New Orleans and the Maastower and some examples. The economic and financial crisis of 2008 had a deep impact on a trading city like Rotterdam. Unemployment rates rose and the municipality was forced to cut its expenditure. In spite of that projects like the new railway station, the Rotterdam and the Markthal still got built.

### CONCLUSION

It was the period in history that Rotterdam surpassed Amsterdam as the main harbor city in the Netherlands. The stagnation in trade and economic growth occurred in Rotterdam due to WWI and the city was boomed and damaged during WWII.



Number of inhabitants: 631155

### Sources

M. Rotterdam, 2016  
Erfgoedhuis, 2017

# ROTTERDAM CITY DEVELOPMENT OVER TIME

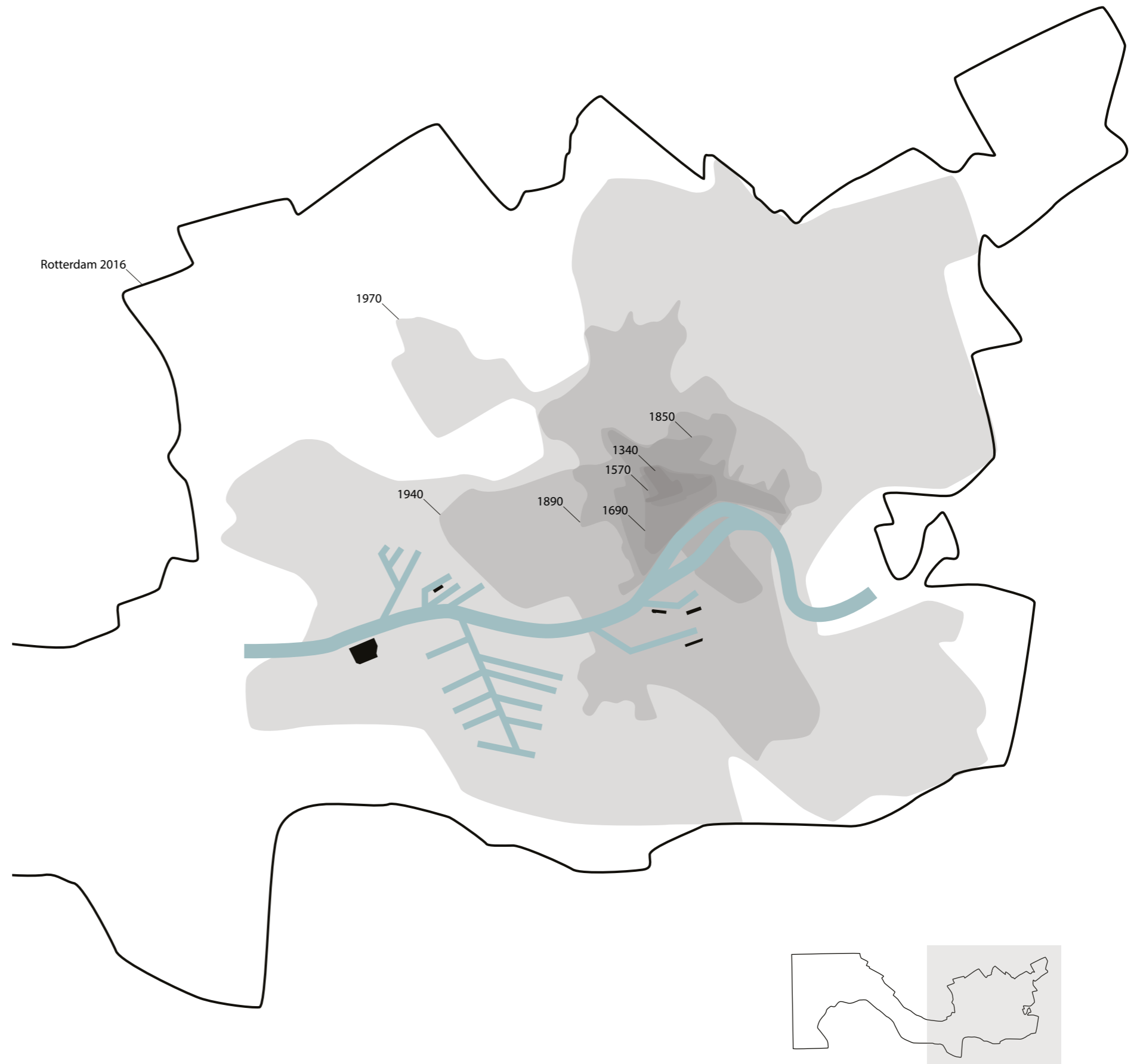
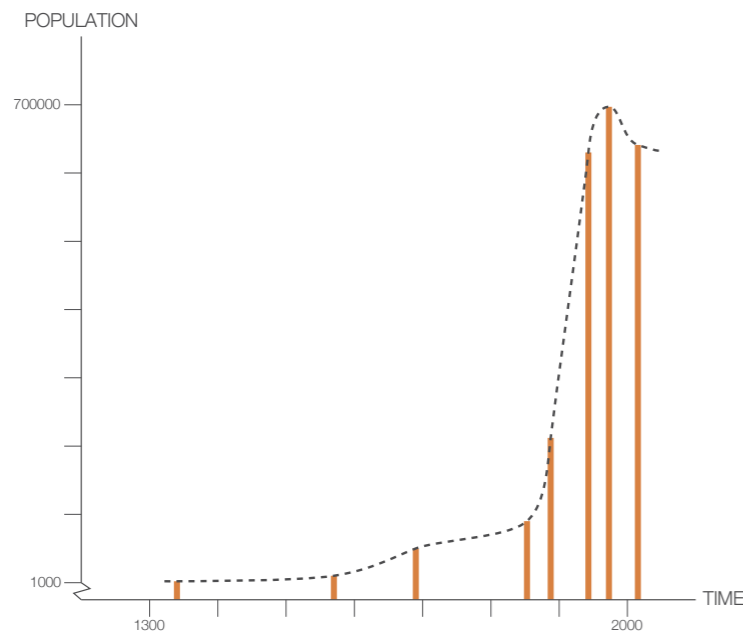
## OVERALL CONCLUSION

Using current Maas River as an orientation point

Rotterdam got city rights in the 1340 and developed into one of the biggest harbor cities in the world. The overall expansion started from the north side of Mass River and crossed the river in 1890; the expansion started from east to west side to North Sea. The harbour has been the main source of economic growth and expanded accordingly.

The city remained within the boundaries of its city wall for nearly five centuries, before expanding beyond them in 1825. Once the walls were down, the city grew extremely rapidly. It attracted many people from the countryside, as well as from abroad.

The World Wars combined with the Great Depression resulted in a stagnation of economic prosperity. However the Basic-plan, designed in 1946, was the start of Rotterdam rise to metropolitan status. The conclusion diagrams give a clear understanding of the growth of the city and its population throughout history. This information can be used to see into the direct future of Rotterdam.



### Sources

M. Rotterdam, 2016  
Gemeente Rotterdam & Westerlengte, 2012

# URBAN DEVELOPMENT OF THE HARBOR CHRONOLOGY

## QUESTION

This research is conducted to understand the development of the harbors of Rotterdam and familiarise with their characteristics.

## METHODOLOGY

By looking at the city on a large scale level we get a general overview of the development of the riverside of the Maas and are introduced to the four modernizations of the harbour system of Rotterdam.

## FINDINGS

Until the start of the 19th century, Rotterdam stayed within its city walls and occupied only the north side of the river and functioned as a Merchant port. The main activity was goods delivering to the merchants in Rotterdam and distributed it to the hinterland.

When the 'Nieuwe waterweg' was constructed in 1872, the harbor activities quickly repositioned to the south side of the Maas. The removal of the fortifications around Rotterdam released an unprecedented growth of the city. In this period, the harbour activities not only provided goods to the hinterland, but also start to function as a Transit port to neighbouring countries like Germany for example.

Around 1950, the growth of the city has been substantial and developed in all directions. The clustering of the harbour activities to the west side of the city expanded to the estuary of Maas River. The ports transformed with heavy industrial activities on the quays. This made possible to not only transit goods, but also played a part in the production process. Under this situation, Rotterdam harbours became essential for the whole Europe and was the largest harbour in the world from 1962 till 2004.

Now in the 21st century the latest transformation took place. The map shows that the process of moving the harbours west continued all the way to the estuary of the Maas. The biggest impact is to minimise the shipping traffic passing through the city. Multiple harbors and industrial areas work together, creating a network of linked activities. The harbor currently handles a staggering amount of 320 mil. tons of goods and its activities has remained the economic motor of the city providing thousands of jobs.

## CONCLUSION

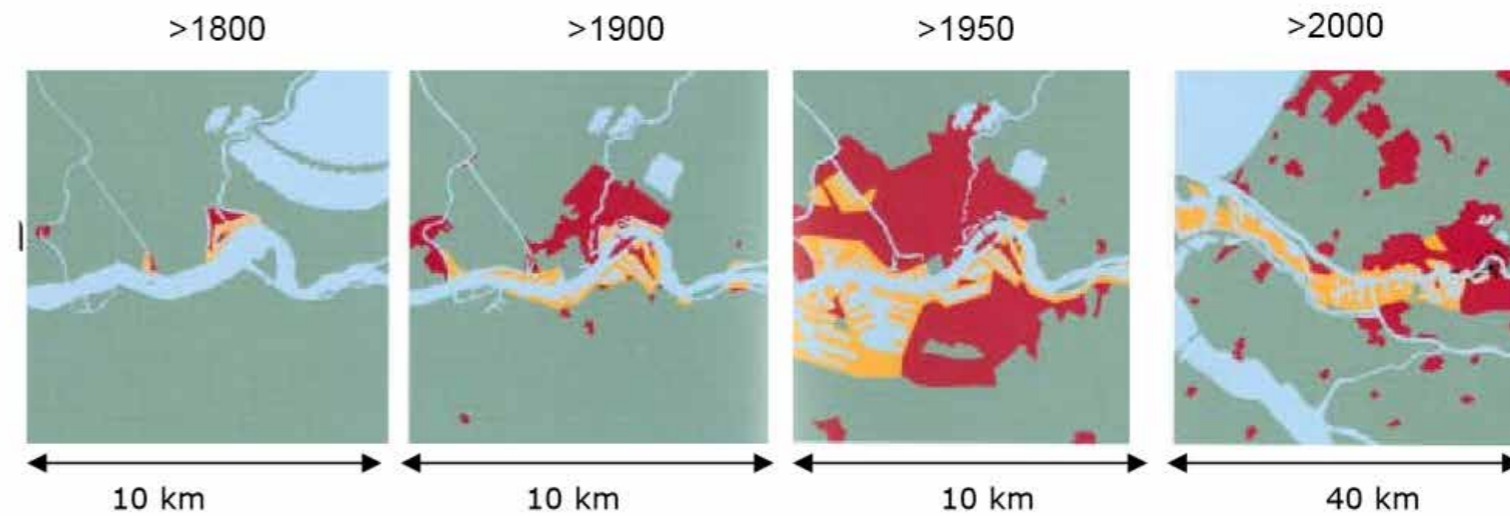
The ports transformed with heavy industrial activities on the quays. This made possible to not only transit goods, but also played a part in the production process. Under this situation, Rotterdam harbours became essential for the whole Europe and was the largest harbour in the world from 1962 till 2004.

Multiple harbors and industrial areas work together, creating a network of linked activities.

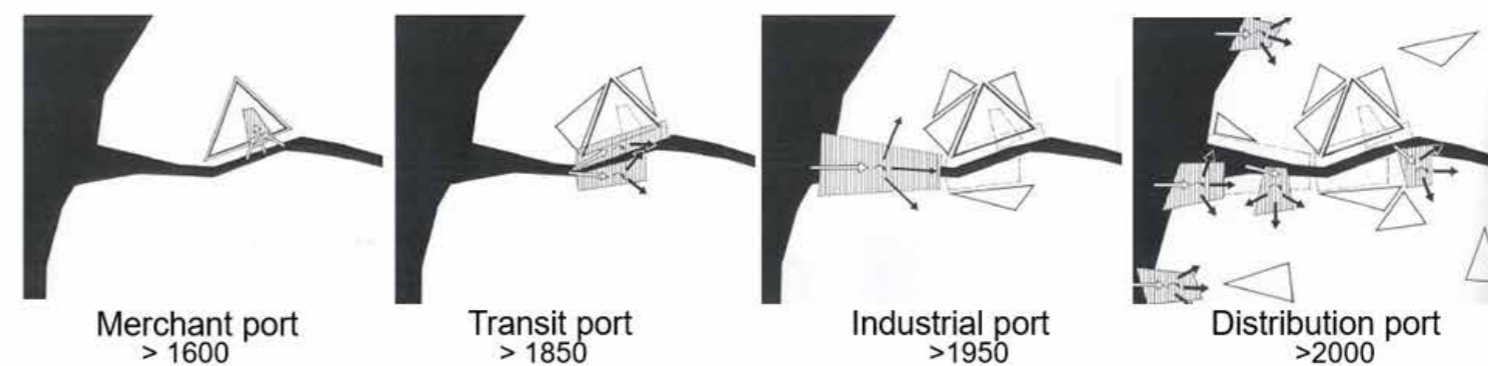
## Sources

Rotterdam N.V., 2016  
Meyer, 2016  
Laar et al., 2004

Residential area  
Harbour area



## 4 modernizations city & port – 4 transformations



# URBAN DEVELOPMENT OF THE HARBOR CHRONOLOGY

## QUESTION

This research is conducted to understand the development of the harbours of Rotterdam and familiarise with their characteristics.

## METHODOLOGY

By looking at the city on a large scale level, a general overview of the development can be seen along the riverside of Maas River. There are four modernizations of the harbour system of Rotterdam.

## FINDINGS

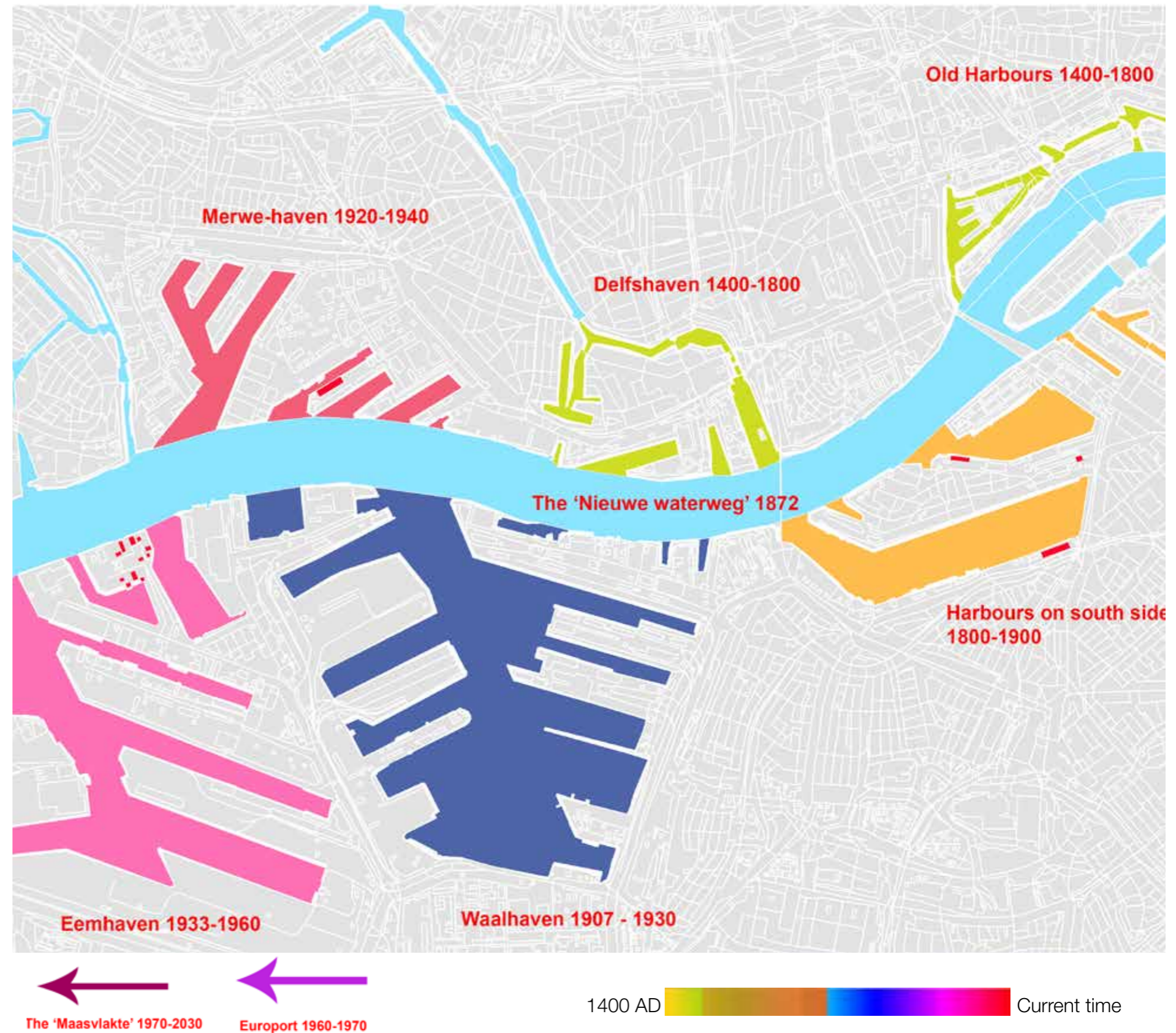
In this map the development of the harbours direction is clear. First expansions close to the city centre were realised on the south side of the Maas in 1800. This gave the harbour activities room to grow and relief some of the stress on the clogged up city centre of the 18th century. It is also remarkable the large scale expansion of southern harbors with wider entrances, wider harbours and an increase in surface area on the quays.

The southern expansion was a great success and was followed quickly by the developments of the Waalhaven, Merwe-haven and Eemshaven. These harbours grow considerably in size. The harbors move further to west direction and located between the estuary of Maas River and the edge of the city. This disconnects the major transit activities from the city centre.

This development continues until now where the Europort and Maasvlakte expansions have reached the estuary of the Maas and these ports are geographically disconnected to the city of Rotterdam anymore. Currently the extension Maasvlakte 2 has been realised and is planned to be under development till 2030.

## CONCLUSION

In this map the development of the harbours direction is clear. First expansions close to the city centre were realised on the south side of the Maas in 1800. It is also remarkable the large scale expansion of southern harbors with wider entrances, wider harbours and an increase in surface area on the quays. The harbors move further to west direction and located between the estuary of Maas River and the edge of the city. This disconnects the major transit activities from the city centre.



## Sources

Gemeente Rotterdam & Westerlengte, 2012

# URBAN DEVELOPMENT OF THE HARBOR TYPOLOGY

## QUESTION

This research is conducted to understand the development of the harbours of Rotterdam and familiarise with their characteristics.

## METHODOLOGY

By looking at the city on a smaller scale level we get a closer look at the individual harbours of Rotterdam and what is typical about them.

## FINDINGS

The Waalhaven and Eemshaven expansions show the further development into an industrial port. The harbours, quays still remain to grow in size. Further developments in transport systems and organisations reach the harbor activities to its fullest. More heavy industry is positioning itself in a close proximity. These harbors not only transport goods but also start to play parts in production processes to maximise the profits generated by the port.

These large harbours with its mixture of light and heavy industrial buildings and equipment give the characters to the area. Currently these harbors are still partially used, although it's overshadowed by the exponentially larger expansions of the Europort and Maasvlakte.

## CONCLUSION

The harbors, quays still remain to grow in size. These harbors not only transport goods but also start to play parts in production processes to maximise the profits generated by the port. Currently these harbors are still partially used, although it's overshadowed by the exponentially larger expansions of the Europort and Maasvlakte.



Aerial view of Waalhaven



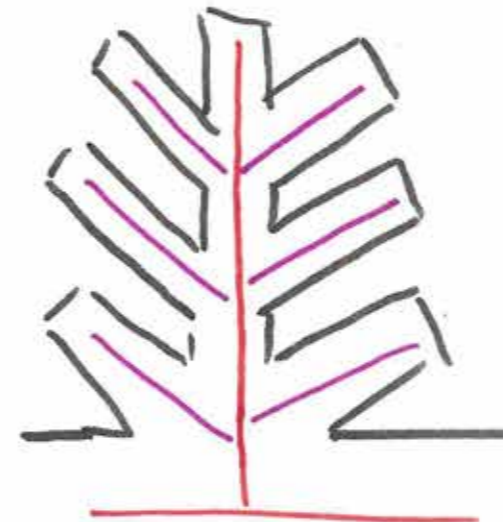
Aerial view of Eemshaven



Historic picture of the activities at Waalhaven, dated around 1950 from the collection of Kees de Keijzer.

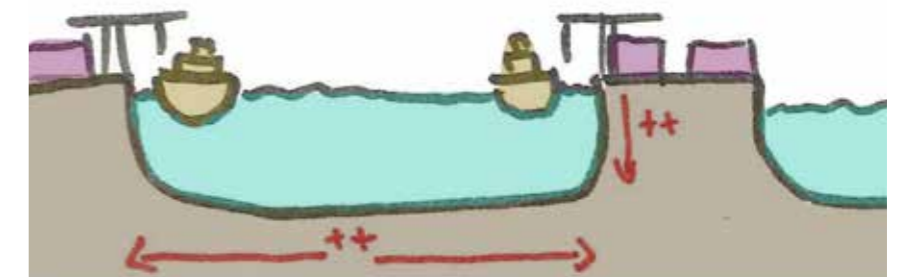


Aerial picture from Eemshaven with its recent activities, 2010



Main harbour road

Secondary quay road



Section of the Eemshaven

# URBAN DEVELOPMENT OF THE HARBOR FUTURE PLANS

## QUESTION

This research is conducted to understand the development of the harbours of Rotterdam and familiarise with their characteristics.

## METHODOLOGY

By looking at the future plans of the city on a large scale level we can get a peek at the further developments of the harbours by the municipality.

## FINDINGS

When taking a closer look at this general plan for future development one thing stands out. At the Merwe-haven and Maashaven the harbours will be re-developed as inner-city districts with residential and commercial functions. Partially renovating the old fabric of warehouses but also with new high rise buildings on the quay and on the water.

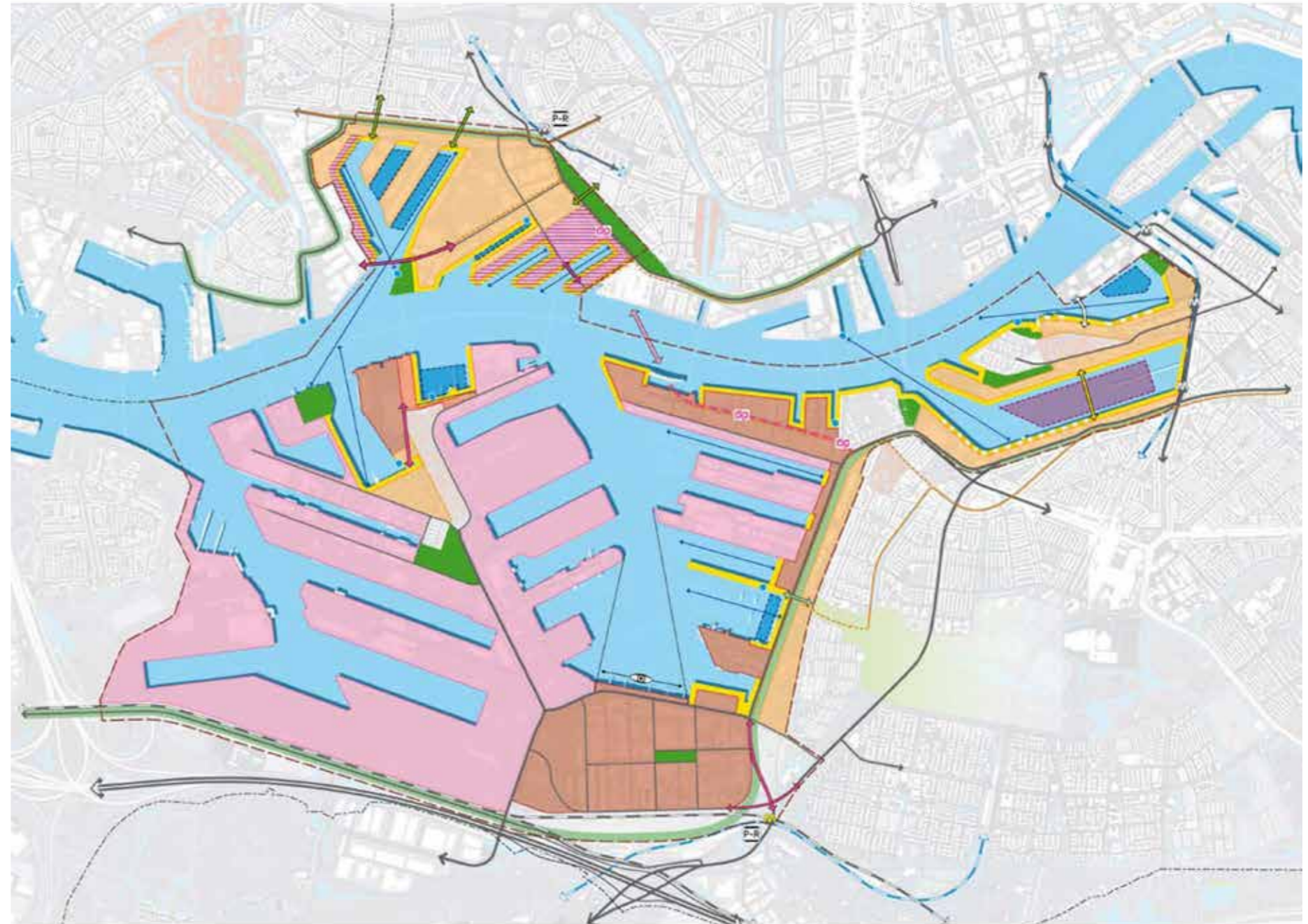
Eemshaven and Waalhaven will mostly remain a functional harbour and is planned to restructure its business.

Also the increase of accessible quays for public activity is a big change from the original situation. New routes of transportation and relation between districts are proposed which will create new possibilities and challenges in the future.

## CONCLUSION

At the Merwe-haven and Maashaven the harbours will be re-developed as inner-city districts with residential and commercial functions. Partially renovating the old fabric of warehouses but also with new high rise buildings on the quay and on the water.

The increase of accessible quays for public activity is a big change from the original situation.



### LEGENDA

- Gebiedsgrens
- Gemeentegrens

#### Functionele hoofdstructuur

- Transformatie naar wonen en stedelijke economie
- Herstructurering met havengerelateerde economie
- Intensivering haveneconomie
- Transformatie naar onderwijs en creatieve bedrijvigheid
- Zoeklocatie drijvende bebouwing
- Zoeklocatie combinatie drijvende bebouwing + binnenvaart
- Haveneconomie (zoeklocatie wonen en stedelijke economie na 2030)

#### Zoekruimte

- ↔ Nieuwe Oeververbinding (brug of tunnel)
- ↔ Nieuwe ontsluitingsstructuur
- Opwaarderen tot stedelijke weg
- P+R Park & Ride locatie
- Metrostation
- ⊕ Halte hoogwaardig openbaar vervoer
- Tramlijn
- ↔ Verbinding binnendijks- buitendijks voor langzaam verkeer
- ↔ Brug voor langzaam verkeer
- Indicatie aanlegplaatsen vervoer over water tot 2025

- Openbare kade
- Gedeeltelijke openbare kade
- Groene dijk
- Rivierpark of groene verblijfspl
- Zichtlijnen
- Havenpanorama
- Lokale wegen
- Metrolijn + station
- Tramlijn
- Goederenspoorlijn
- ↔ Brug voor langzaam verkeer



# URBAN DEVELOPMENT OF THE HARBOR

## URBAN LAYERS

### QUESTION

To understand the urban structures of Rotterdam identifying it as a cityscape.

### METHODOLOGY

By looking at the diversity of layers through its structures of the urban fabric.

### FINDINGS

Rotterdam has three main structures which define the cityscape of the city:  
Development of cultivation by street + block  
Division by the dynamics of the water  
Enclosure of the cityspace through traffics

Different types of urban structures are visible and show Rotterdam its diversity. Recognition is by memorizing the unique structures as individual entities part of the cityscape as a whole (ill. 1). Orientation is through the sequence of place as they are all independently presented. Calling it a collage each part links the different places by recognizing and memorizing the unique characters, such as: landmarks, green zones or harbour places.

### CONCLUSION

Development of cultivation by street + block  
Division by the dynamics of the water  
Enclosure of the cityspace through traffics

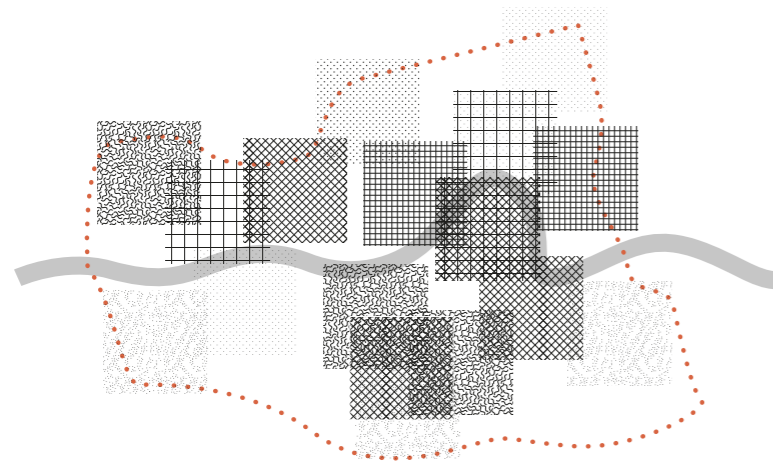
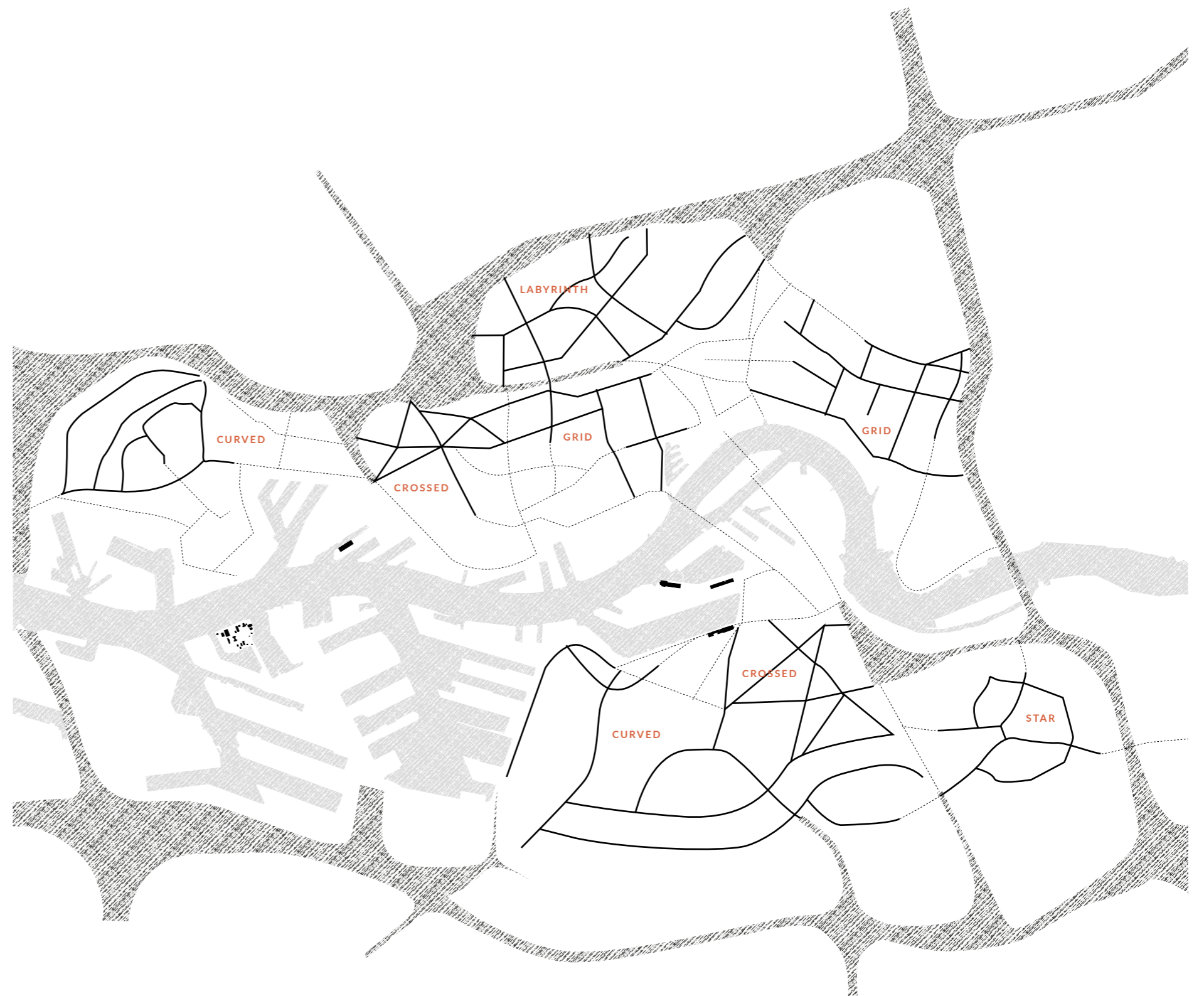


Illustration 1 (above) collage of structures

Illustration 2 (left) structures as unique cityscape



## MORPHOLOGY OPEN STRUCTURE

### QUESTION

To focus on the open structures in the harbour area and their meaning related to the flow between buildings.

### METHODOLOGY

By linking the inverse structure of building and open space to the way they create a specific flow and place.

### FINDINGS

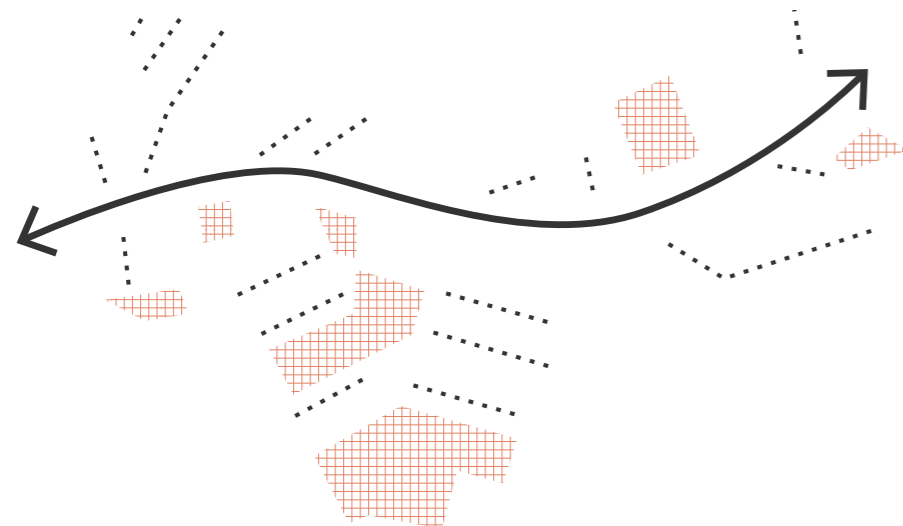
In the left map, a diversity of black structures can be seen: the open spaces between the buildings. Relating them to flow and space we can understand that there are three different types to achieve this:

- Long routes
- Cutting lines
- Open islands

These three define the open spaces of Rotterdam its Harbour Heritage site. Long routes as direction through space, cutting lines to create enclosed areas and open islands floating in the space. These structures can be seen as starting points to define others structures in the cityscape.

### CONCLUSION

Long routes as direction through space, cutting lines to create enclosed areas and open islands floating in the space. These structures can be seen as starting points to define others structures in the cityscape.



# INFRASTRUCTURE ROAD SYSTEM

## QUESTION

This research is conducted to understand the connections of Rotterdam by car.

## METHODOLOGY

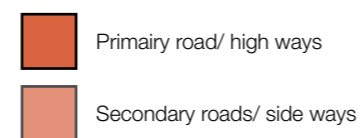
Trace the existing traffic system

## FINDINGS

By looking at current maps of road system, it is clear that Rotterdam is well connected by car. The ring of Rotterdam, made by the four highways, A4, A15, A16 and A20, not only connect to the rest of the Netherlands, but also within the city.

## CONCLUSION

The city is well connected by the highways to the rest of the country and the city accessibility is remarkable.



# INFRASTRUCTURE METRO SYSTEM

## QUESTION

This research is conducted to understand the underground network of metro system.

## METHODOLOGY

Trace the existing traffic system

## FINDINGS

There are 5 subway line in Rotterdam.

Line A - Binnenhof to Schiedam center

Line B - Nesselande to Schiedam center

Line C - De Terp to De Akkers

Line D - Rotterdam central to De Akkers

Line E - Den Haag central to Slinge

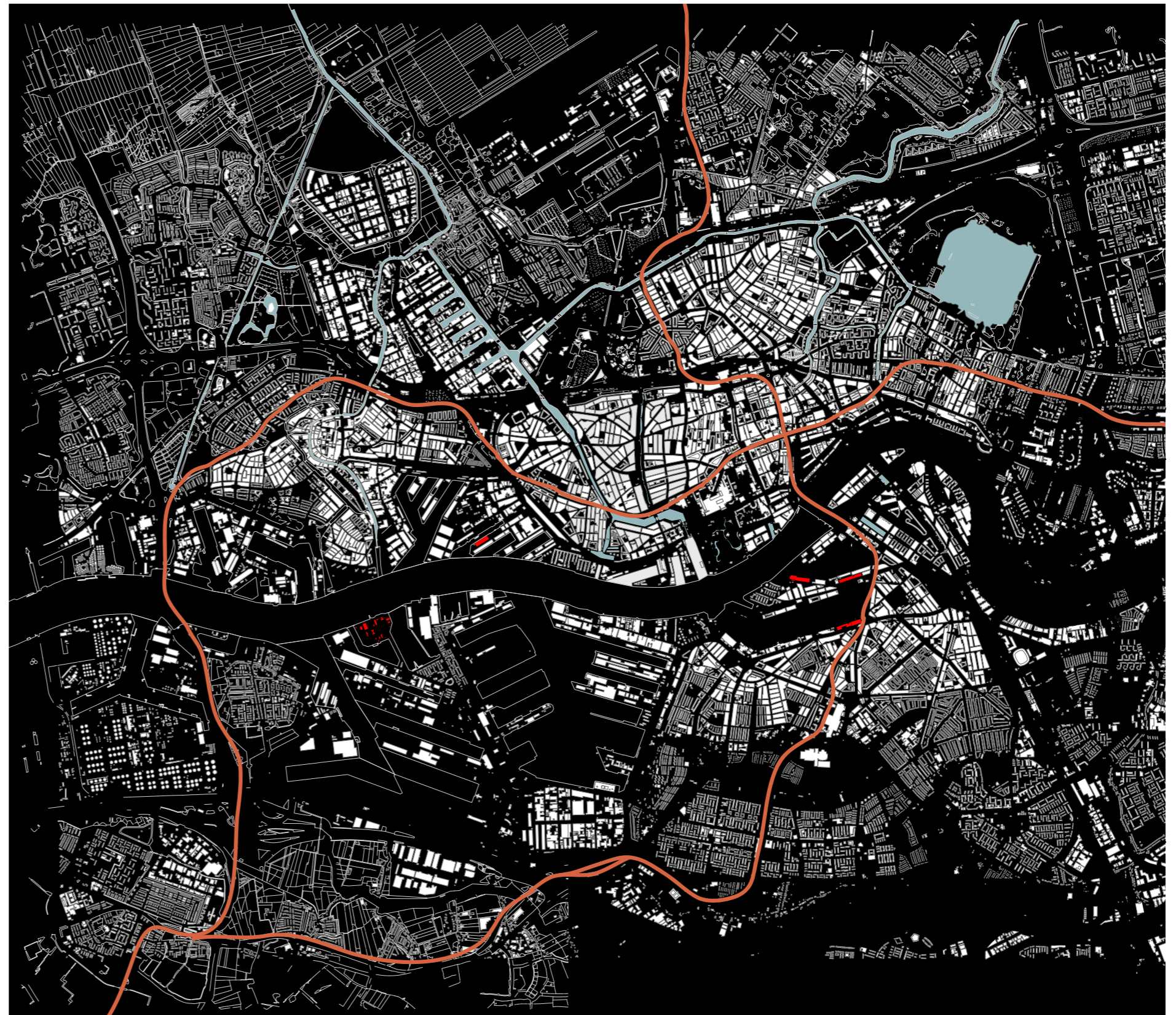
Line A, B and C are going in the East and West direction and Line D and E the North and South direction.

## CONCLUSION

These lines are overlapped considerably. The metro system might be improved and wide spreaded in the future, in order to reach every corner of the city.



18)



 Subway

19)

# INFRASTRUCTURE HARBOR

## QUESTION

This research is conducted to understand the water traffic.

## METHODOLOGY

By looking at current maps and the schematic representation of the metro system, the underground network of the subway can be made visible.

## FINDINGS

The main route through the river goes from North Sea far to Germany. This main direction is also the point where the harbors can be entered. There is only one entering point to further hinterland in Rotterdam.

## CONCLUSION

The water connection mainly happens along Mass River, expect one water routing connected to the hinterland; the water traffic can reach to Germany.



# INFRASTRUCTURE BIKING ROUTES

## QUESTION

This research is conducted to understand the routing for cyclists around Rotterdam.

## METHODOLOGY

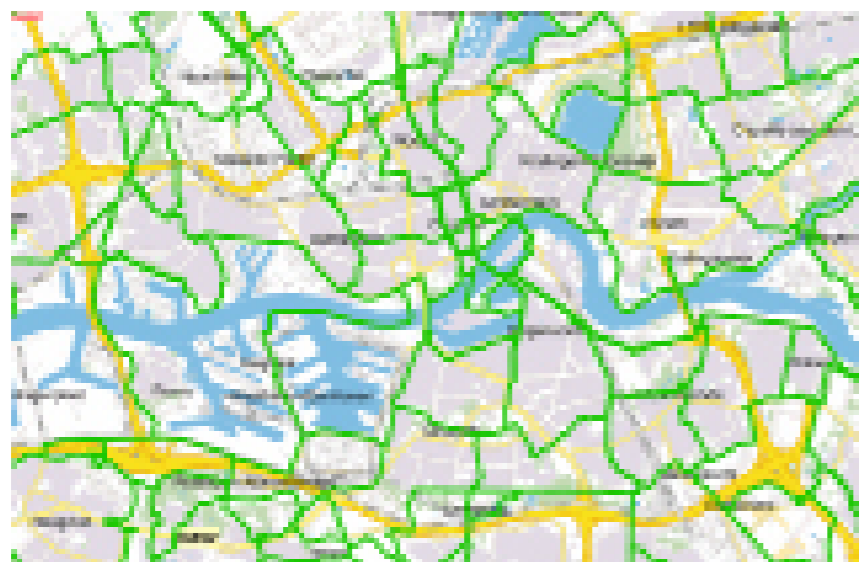
By looking at the information of PDOK, there are two maps with cyclist related information. One with the long distance routes and one with short cyclist routes.

## FINDINGS

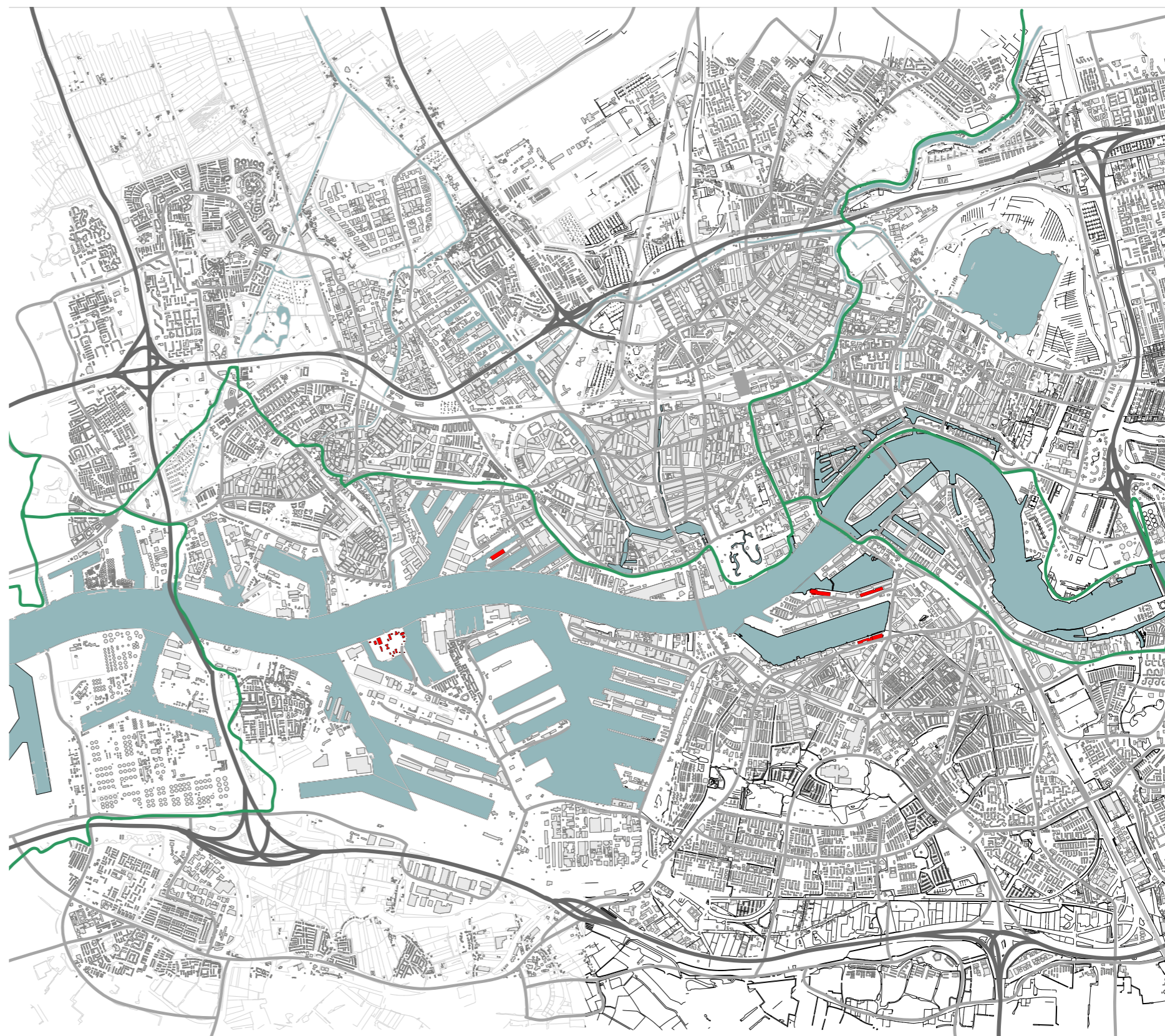
The map on the right shows the long distance routes for cyclist that goes through Rotterdam. The map below (direct map of PDOK) shows all possible cycling routes.

## CONCLUSION

The biking path is well connected to the main axis of the city, and covers some waterfront of the city from residential and commercial areas to industrial areas in the city.



21)



Long distance routes cyclists

22)

# LANDSCAPE

## OUTER DIKE AND INNER DIKE

### QUESTION

This research is conducted to understand the height difference of the city and relation to the urban context.

### METHODOLOGY

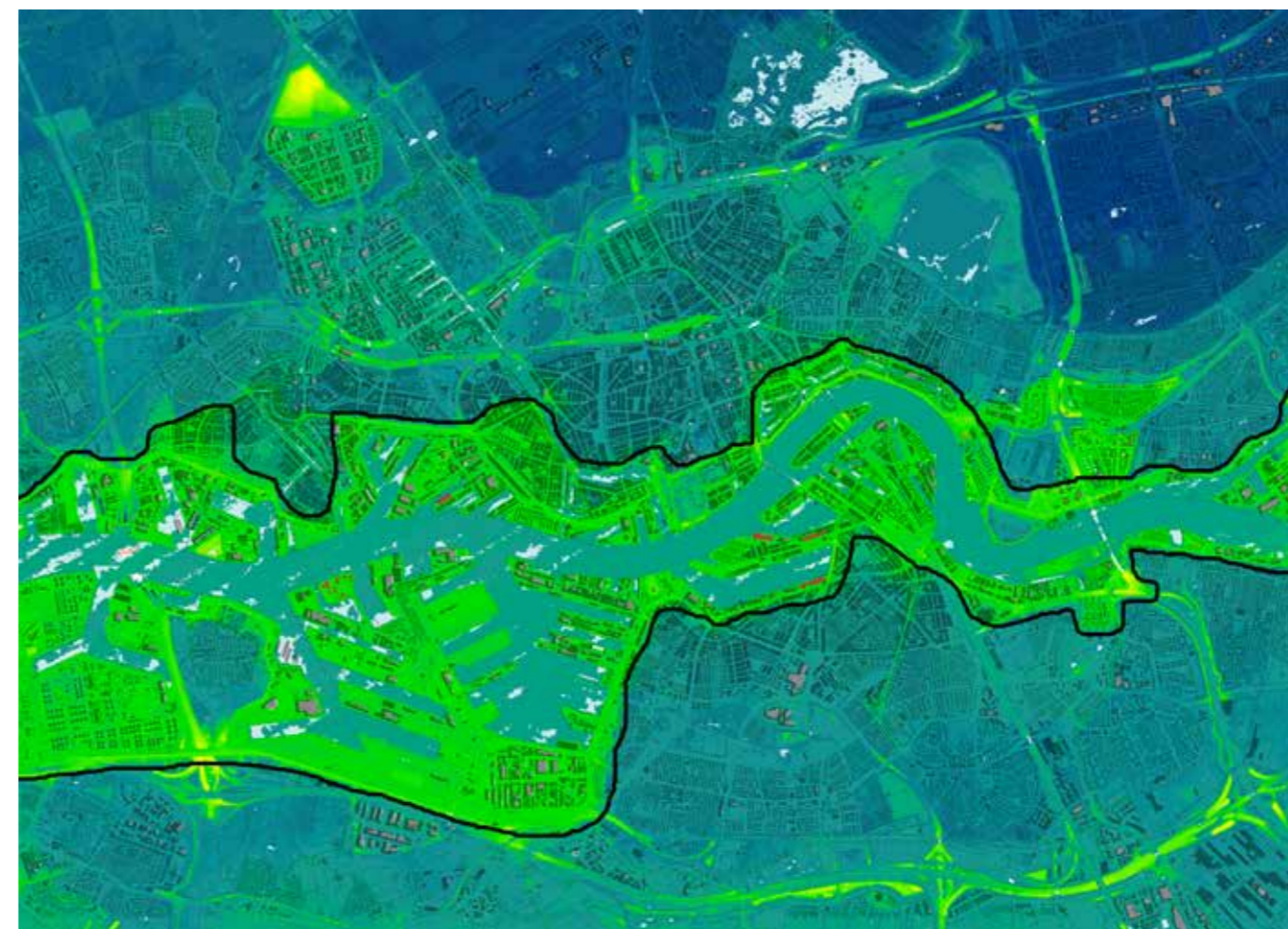
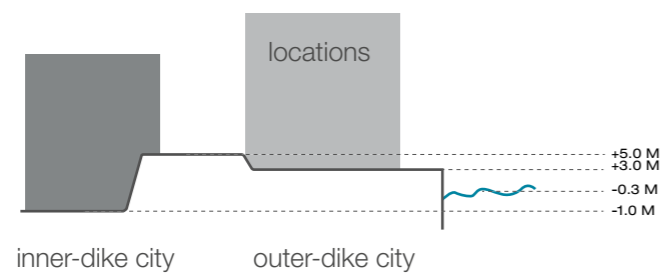
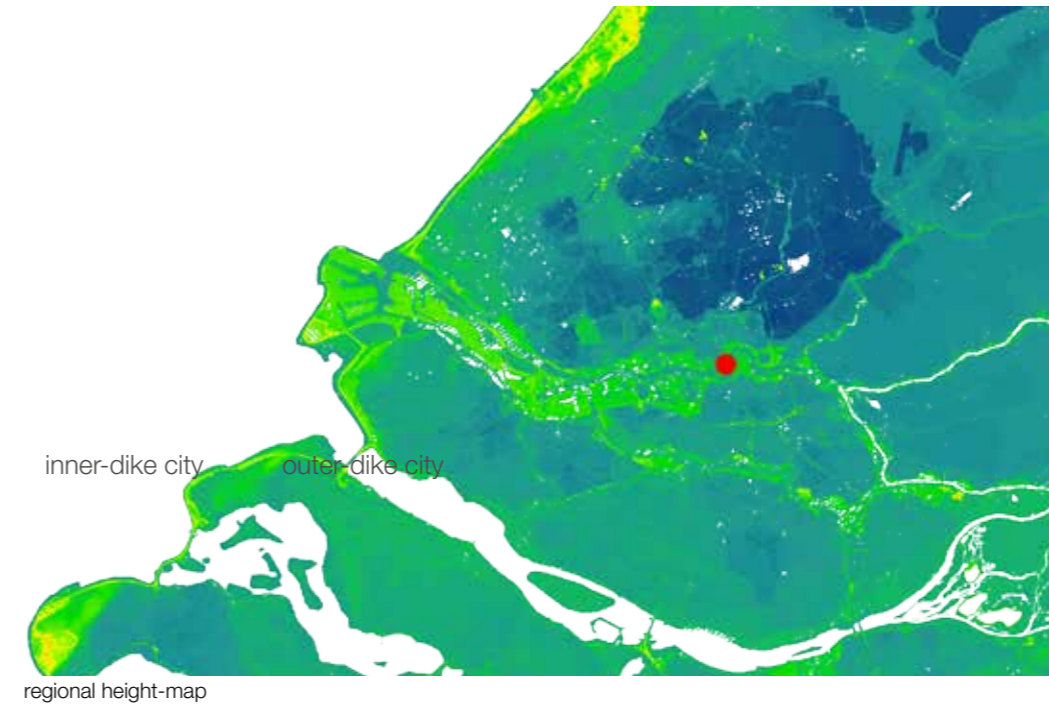
By looking at the current height of the soil, it can be traced back to the different layers of the soil.

### FINDINGS

Rotterdam is built around the delta of the river Maas. By looking at the maps and the section, hinterland is much lower than the river and the dikes. This leads to a vulnerable position once water break through behind the dikes. The outer dike city regions are also quite vulnerable, because there isn't a dike to protect them from the water.

### CONCLUSION

Rijnhaven is located inside the outer dike which means the area is more vulnerable to water impact.



Rotterdam height-map



# LANDSCAPE

## NATURAL ELEMENT AND PUBLIC SPACE

### QUESTION

The distribution of natural elements and public space in the city.

### METHODOLOGY

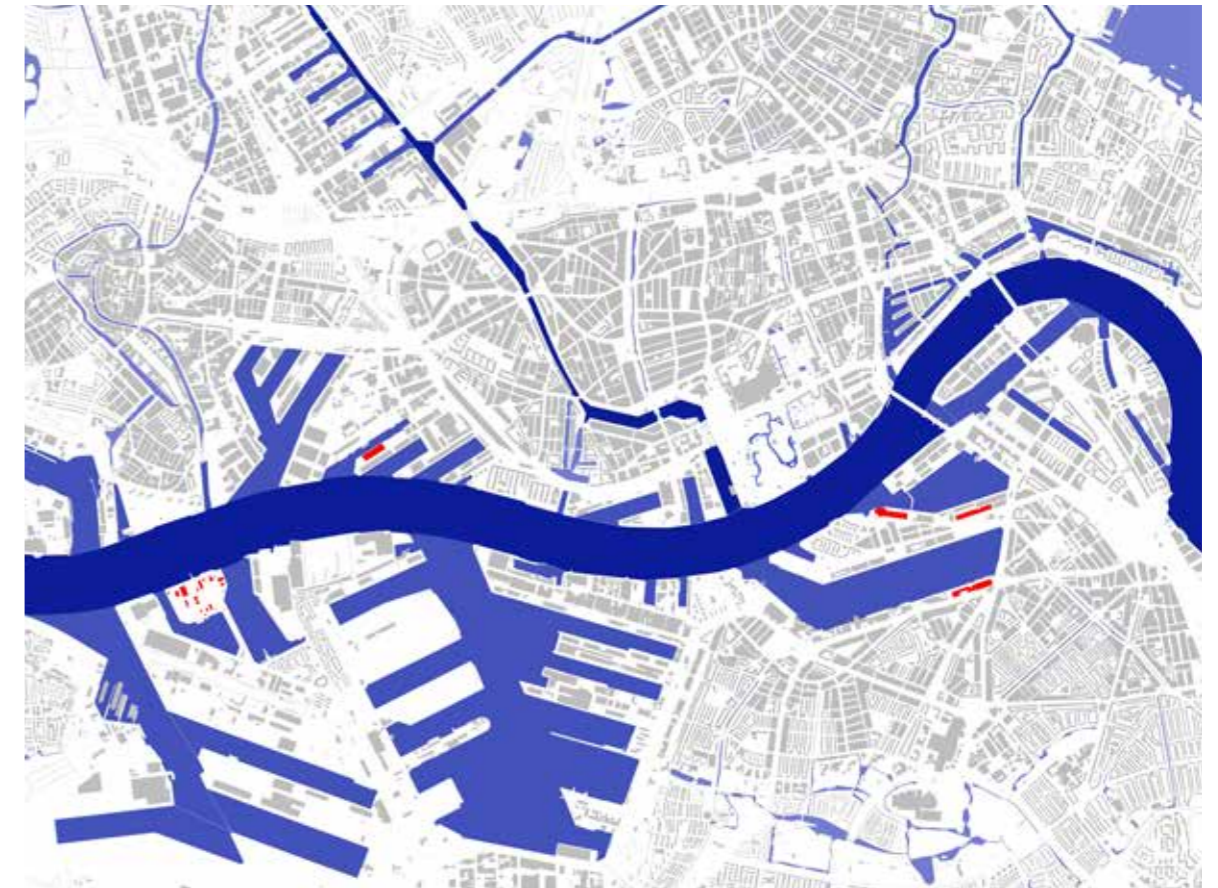
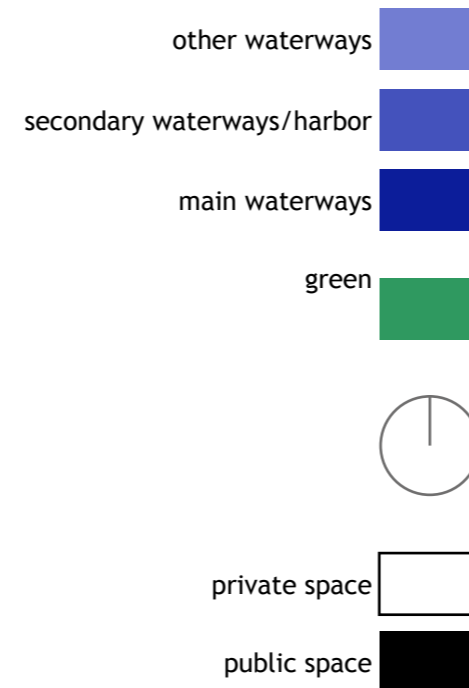
By looking at the infill of the location of water, greenery and public space.

### FINDINGS

Maas River divides the city into two major parts, and there are several huge harbors on the south side of the river. The greenery is scattered in the city, with much less influent surface than water. Rotterdam isn't really a green city. It has a number of bigger parks but they are all located outside the city center. As visible in the nollli-map, Rotterdam has a lot of open public space. But most of it is Maas River and the harbors.

### CONCLUSION

As visible in the nollli-map, Rotterdam has a lot of open public space. But most of it is Maas River and the harbors. The greenery is considerably little within the city center.



water

green





# CLIMATE

## SUN DIRECTION, WIND DIRECTION, PRECIPITATION, AND TEMPERATURE

### QUESTION

The basic climate characteristics in Rotterdam

### METHODOLOGY

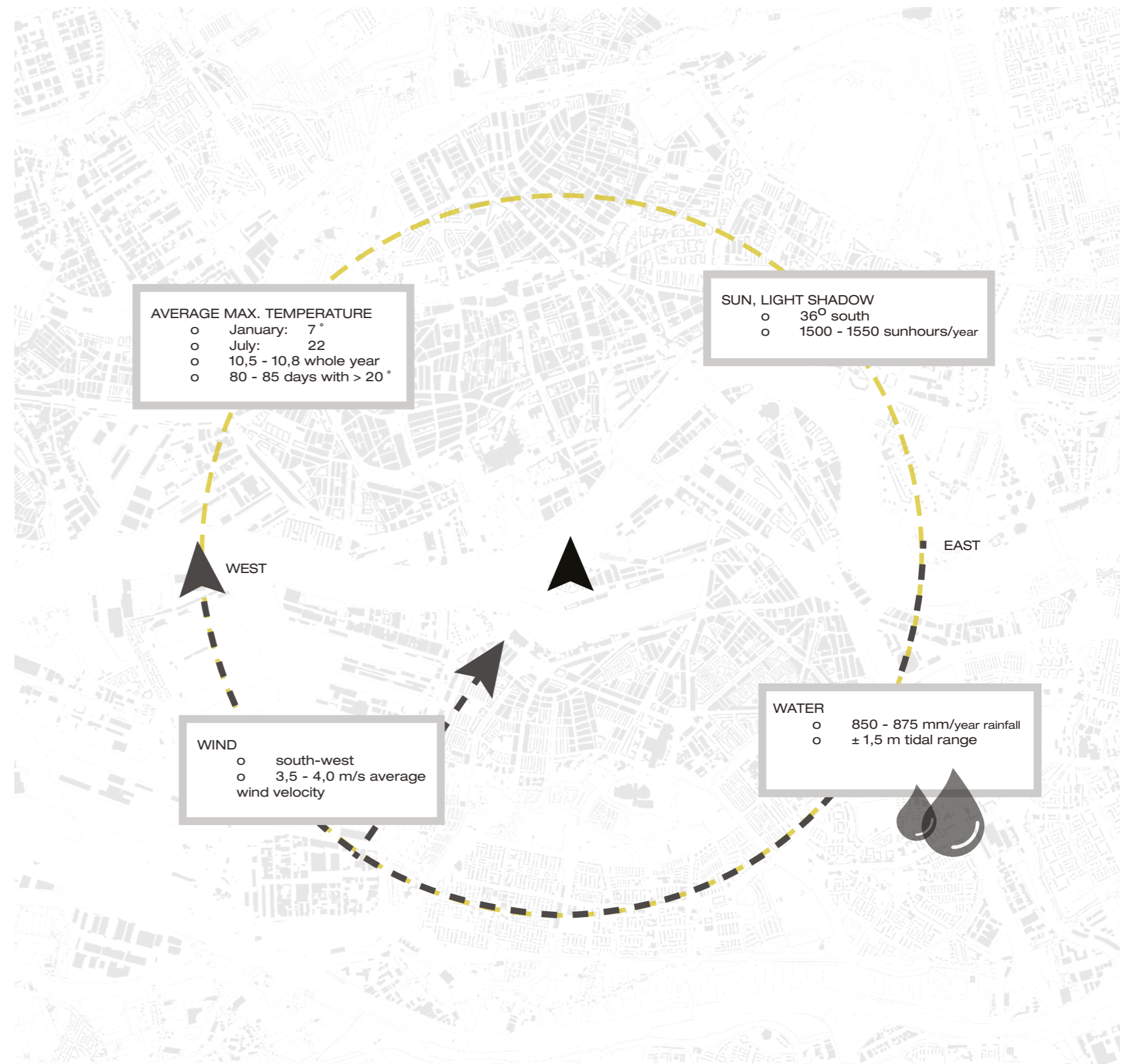
By gathering statistics about the local climate in Rotterdam.

### FINDINGS

Rotterdam is close to the sea which performs a moderate temperature; the tide difference gives the impact to the city harbors.

### CONCLUSION

Overall the climate condition is agreeable. The only thing needs to be dealt carefully is tide difference within city harbors.



# CLIMATE EXTREME CONDITION

## QUESTION

How does the city of Rotterdam cope with the current and upcoming climate change?

## METHODOLOGY

By looking at the cities strategies to cope with the more extreme weather conditions.

## FINDINGS

There are 4 important threats detected that will affect the city in the upcoming century. Higher sea and river levels, longer hotter periods, longer periods of drought and more intensive rainfall. All these phenomena have their own serious impacts.

## CONCLUSION

The future planning is better to integrate within these topics, in order to increase the flexibility and sustainability.

Higher sea and river levels

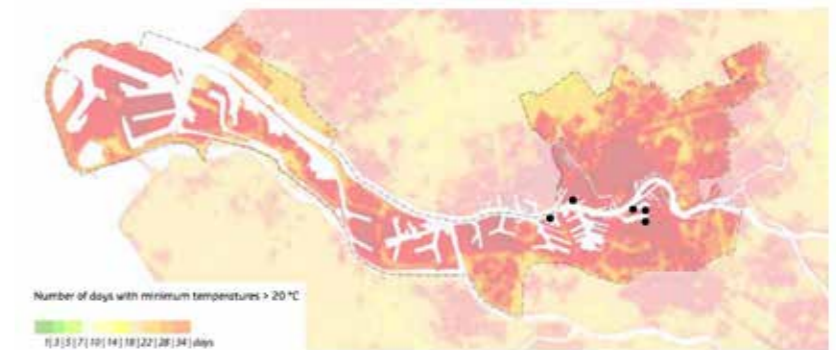
- o Increased risk of outer-dike flooding
- o More frequent closure of the Maeslant storm surge barrier
- o Increased risk of inner-dike flooding



outer-dike flooding in Rotterdam in 2100

Longer hotter periods

- o Decrease in the thermal comfort in the city
- o Negative effects on health and well-being
- o Increased likelihood of damage to flora and fauna



urban heat island effect in 2100

Longer periods of drought

- o Lower water tables
- o Decrease in the water quality
- o Increased likelihood of damage to built-up area, flora and fauna
- o Low river levels obstruct shipping



areas at risk by droughts in 2100

More intensive rainfall

- o Water is less able to drain away
- o Increased risk of disruption and water damage



insufficient water storage capacity in 2100

# DEMOGRAPHY POPULATION

## QUESTION

From the developing history of Rotterdam, Maas River plays an important role, but also a role of barrier; it can be regarded as transition zone nowadays, from north to south of Rotterdam development, which reflects how new comers settle themselves within the city.

## METHODOLOGY

Through different developing periods, Rotterdam can be divided into three parts including 15 districts. From earliest to the latest development, areas are north of Maas River, south of Maas River, and industrial area.

Our sites are located in 3 districts. Feijenoord and Charlois are in south area of Maas River; Haven-en industriegebieden is in the new industrial developing area.

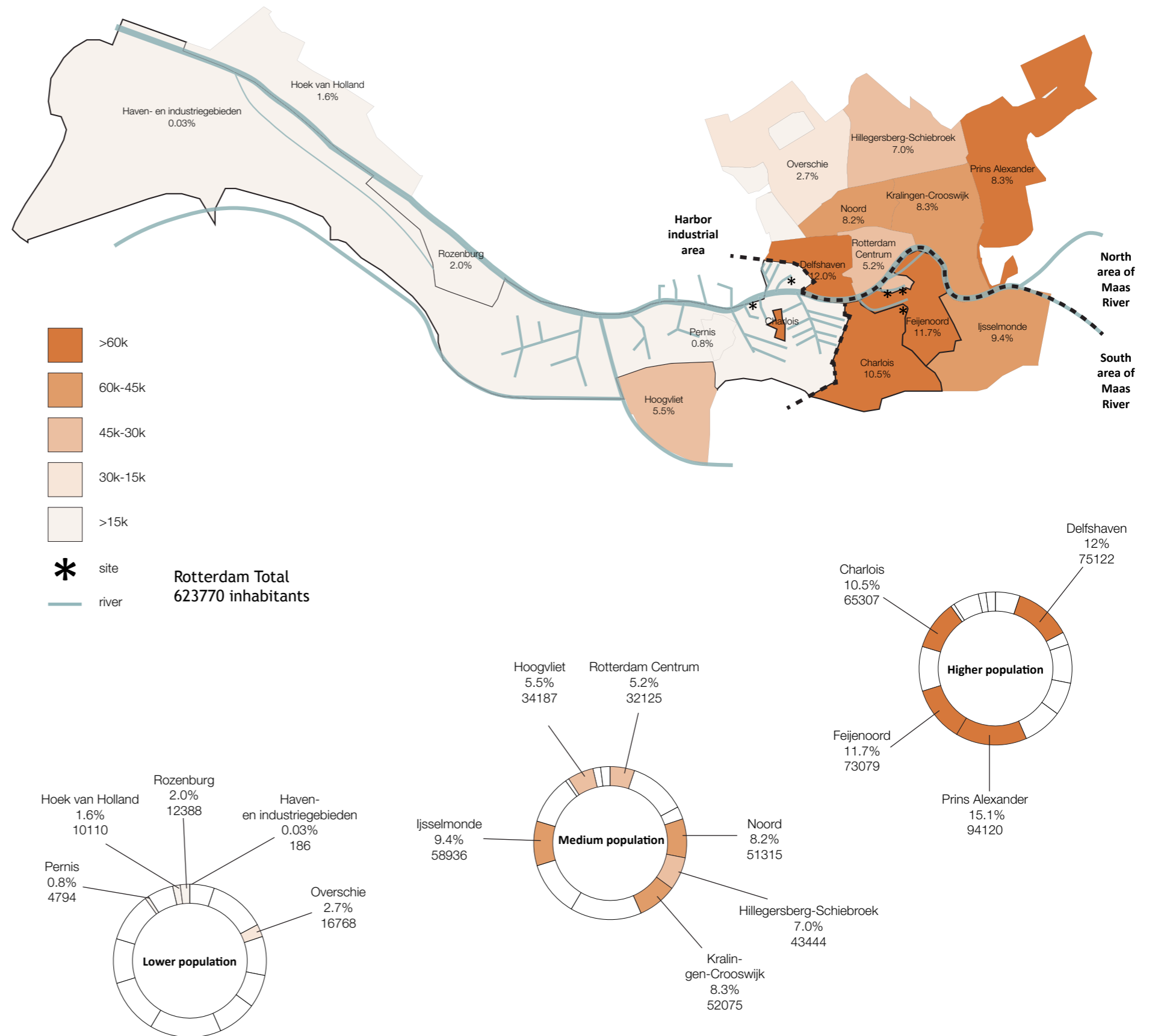
## FINDINGS

It is obvious the residential areas are focused on north and south areas, not in harbor industrial area. In north area of Maas River, it consist almost 60% of Rotterdam population; around 30% in south area of Maas River. Only 10% of population lives in harbor industrial area. The top 3 highest residential density occurs in Delfshaven, Feijenoord, and Charlois. Two of them, Feijenoord, and Charlois, are located in the south of Maas River. Also, it is remarkable that the number of inhabitants in Haven-en industriegebieden are only 186, which only occupies 0.03% of the entire population of Rotterdam.

For Rotterdam centrum, the population is relatively low, considering as the earliest developing area which consists of more public facilities and spaces in the city.

## CONCLUSION

The top 3 highest residential density occurs in Delfshaven, Feijenoord, and Charlois. Two of them, Feijenoord, and Charlois, are located in the south of Maas River. For Rotterdam centrum, the population is relatively low, considering as the earliest developing area which consists of more public facilities and spaces in the city.



# DEMOGRAPHY AGE

## QUESTION

By analyzing the age structure, the majority of age groups can be found and predicting the city productivity and active city vibes.

## METHODOLOGY

There are five groups of age population; the focus will be the age of 20 to 64 as the main working labor source.

## FINDINGS

In north area of Maas River, the younger working labor group, from age 20 to 44, is centered, especially in Delfshaven, Noord, and Kralingen-Crooswijk.

In south area of Maas River, the youngest and the second youngest groups present relatively higher percentage, which means the family structure is different and also shows the need of educational facilities.

The percentage of the older working labor group and the group above age 65 are relatively high within the harbor industrial area; it is around 50% of industrial population.

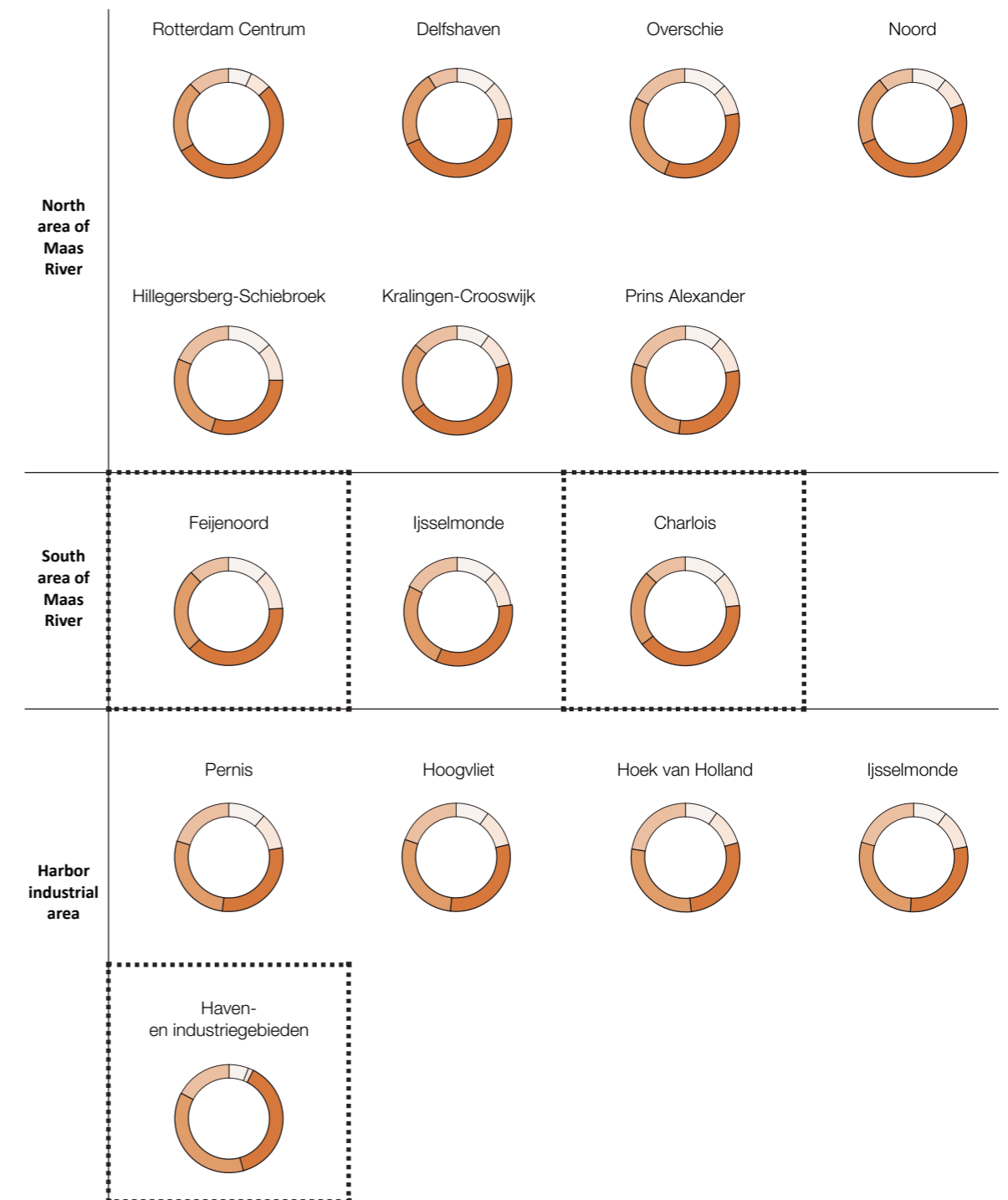
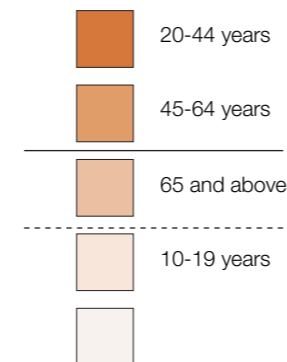
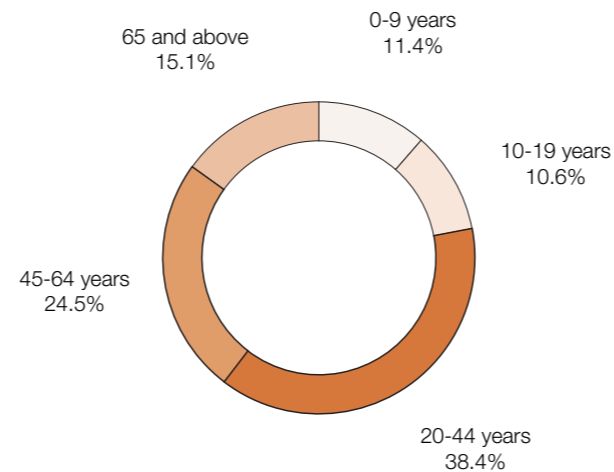
## CONCLUSION

In south area of Maas River, the youngest and the second youngest groups present relatively higher percentage, which means the family structure is different and also shows the need of educational facilities.

The city mainly consist of main working labor source, which reflects the productivity of the city. However, the city is approaching to aging population.

### Rotterdam Average Age

20-64 years old, main work labor source



# DEMOGRAPHY

## EDUCATIONAL LEVEL

### QUESTION

In general, the higher educational level also indicates higher incomes and healthier living and body condition. The main focus will be on the high educational groups.

### METHODOLOGY

Divided the population into 4 groups of educational levels: High (HBO, University), High-Medium (HAVO, VWO, MBO), Medium-Low (VMBO-level 1), and Low (only primary).

### FINDINGS

Overall, there is only around 33% of the population is under high education group, who graduated from vocational school or university.

It can be observed that in north area of Maas River inhabitants tend to obtain high education, generally more than half of population.

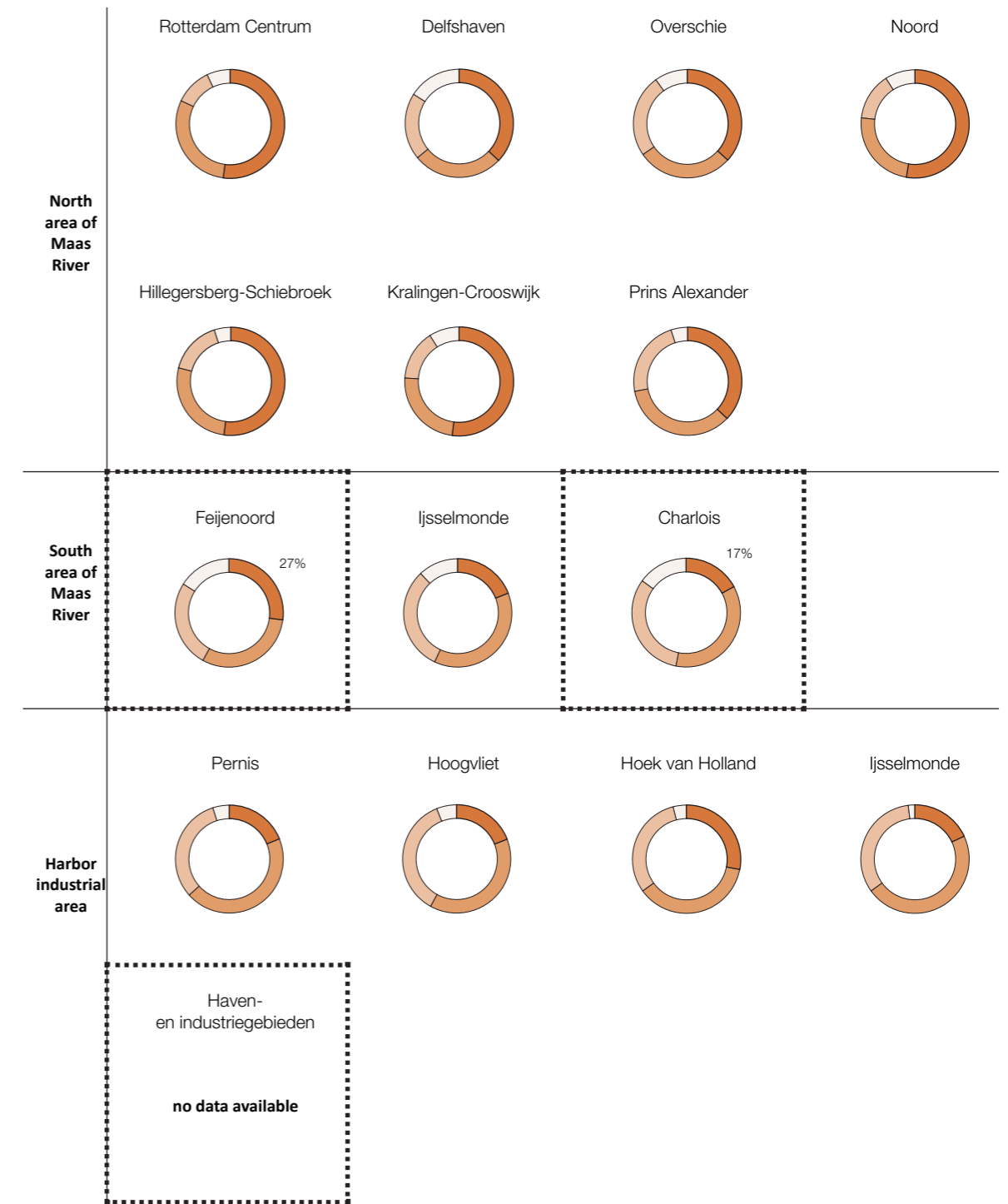
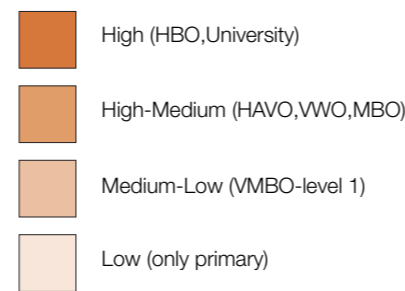
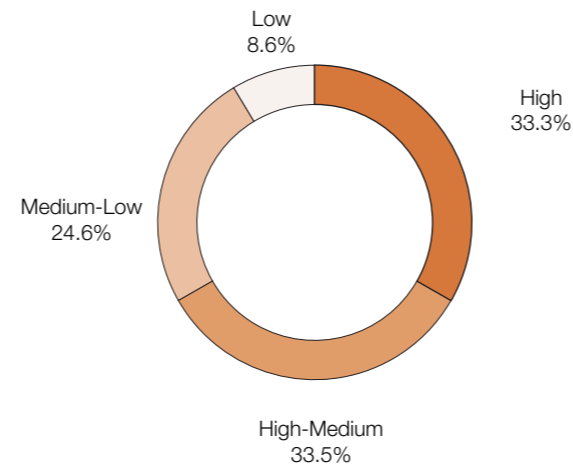
In south area of Maas River, it occurs the highest percentage of low education group, with 16%.

In harbor industrial area, the high to medium education inhabitants are the majority.

### CONCLUSION

In general, the higher educational level also indicates higher incomes and healthier living and body condition. In south area of Maas River, it occurs the highest percentage of low education group, with 16%.

### Rotterdam Average Educational Level



# DEMOGRAPHY

## ROTTERDAM AVERAGE NATIONALITIES

### QUESTION

The diversity of a city cannot be ignored. It shows the difference of culture backgrounds, social habits and the common sharing values.

### METHODOLOGY

The population can be divided into 9 groups: Indigenous, Surinamese, Antillean, Cape Verdean, Turkish, Moroccan, Other non-Western, Other European, and Other Western. By looking at the percentage of each district distribution, the majority culture influence and habits of the districts can be assumed.

### FINDINGS

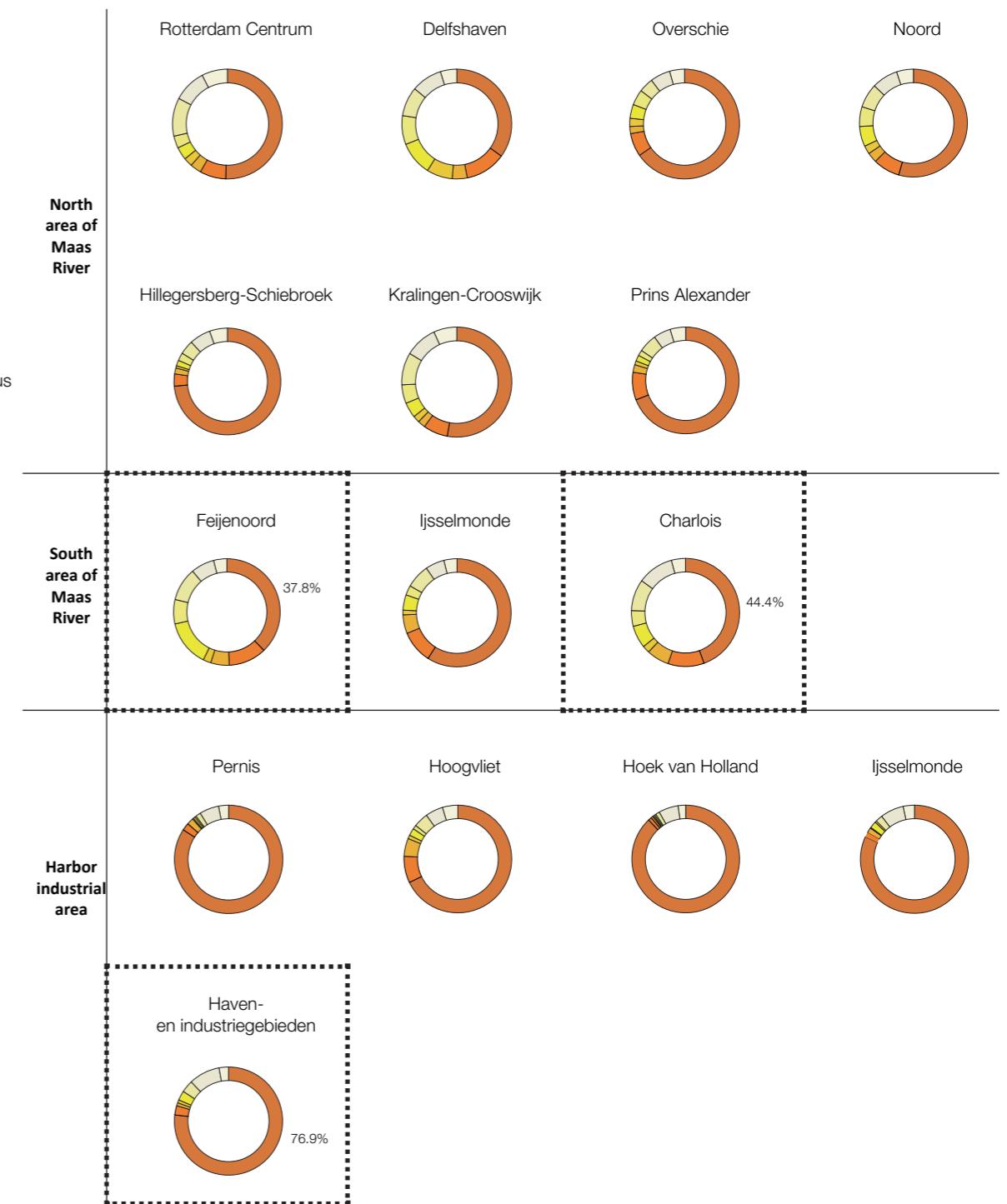
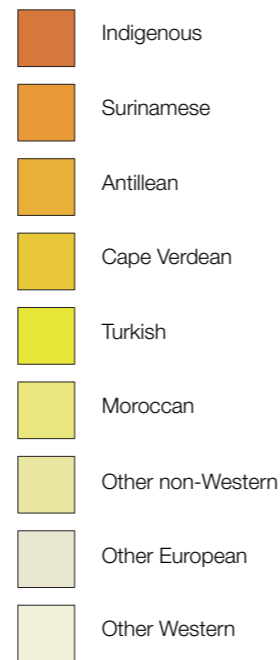
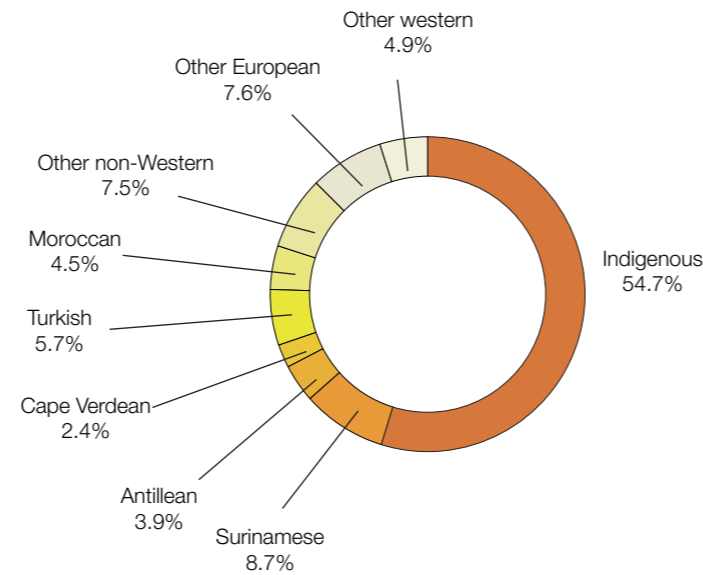
The diversity of nationalities in Rotterdam is impressive. Overall, the indigenous inhabitants are still the majority, but only with 55%. It can be observed that there is a high percentage of immigrants, who live in south area of Maas River and also in Delfshaven. Surinamese, other Europeans, and other non-westerners are the majority of immigrants in Rotterdam.

Second popular districts for non-indigenous are Rotterdam Centrum, Noord, and Kralingen-Crooswijk.

### CONCLUSION

The diversity of nationalities in Rotterdam is impressive. Overall, the indigenous inhabitants are still the majority, but only with 55%. It can be observed that there is a high percentage of immigrants, who live in south area of Maas River.

Rotterdam Average Nationalities



# DEMOGRAPHY

## ROTTERDAM AVERAGE FAMILY STRUCTURE

### QUESTION

By looking at the family structure, the different needs of facilities to inhabitants can be predicted.

### METHODOLOGY

The population can be divided into 8 groups: Single, Unmarried couple without kids, Married couple without kids, Unmarried couple with kids, Married couple with kids, One-parent household, Institutional, and the Rest.

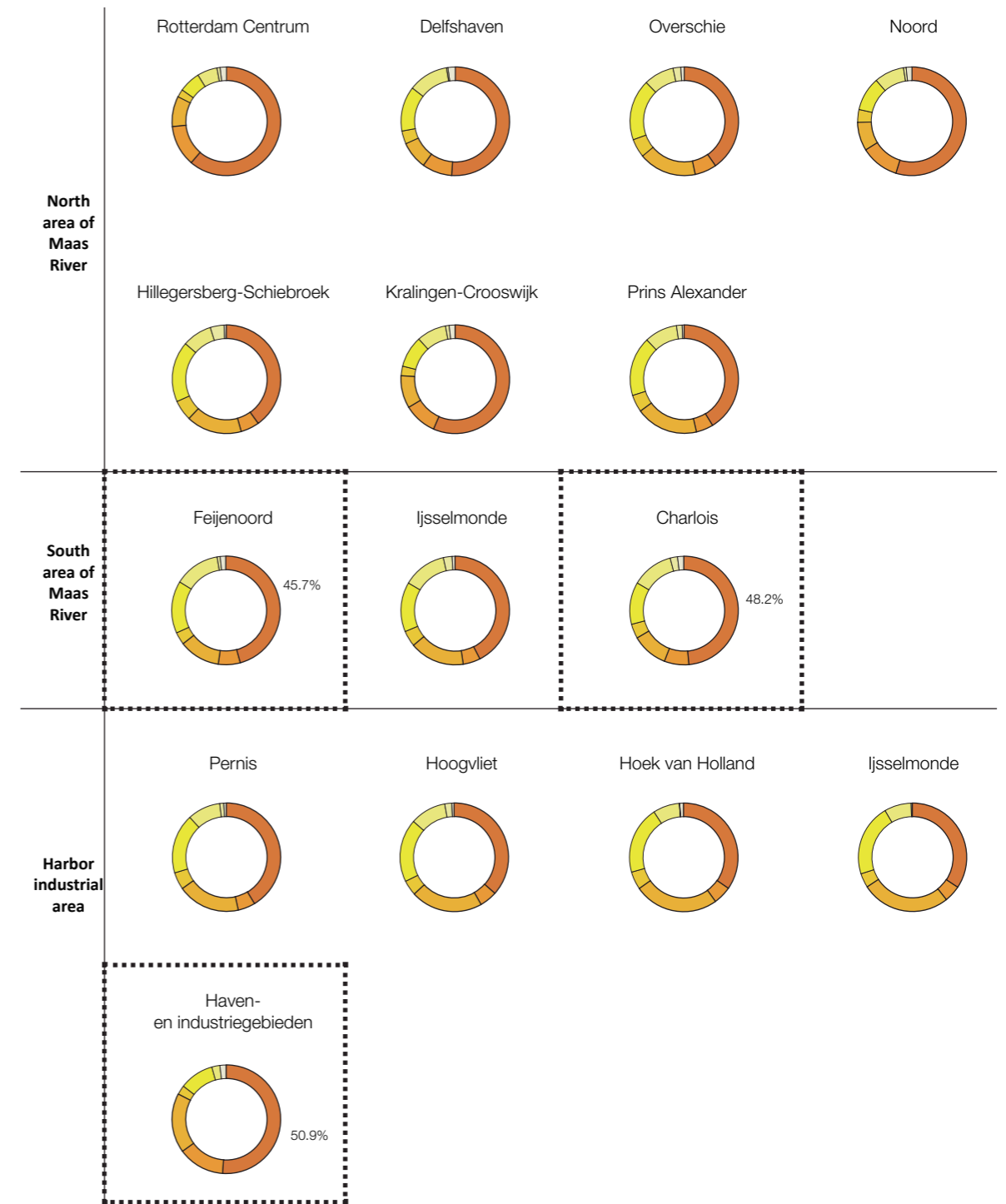
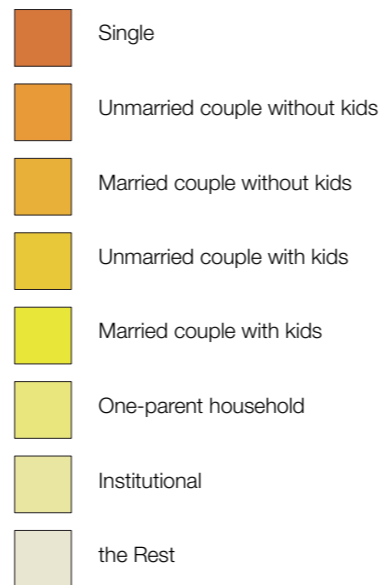
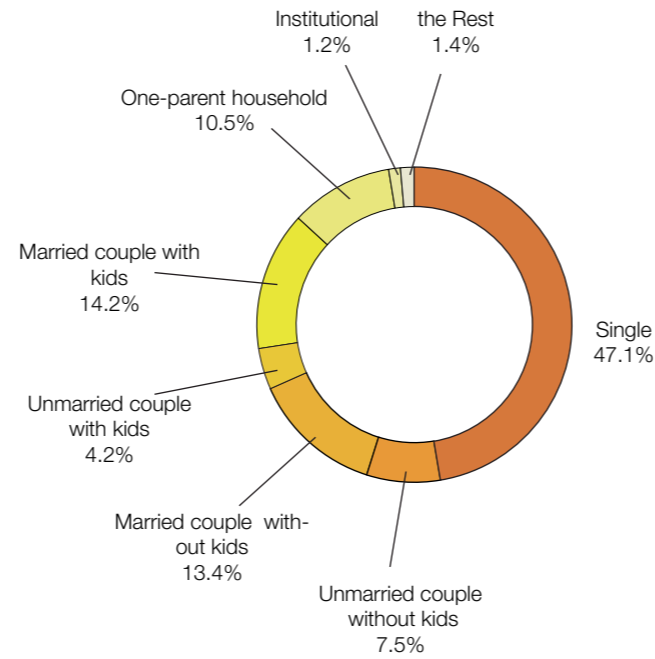
### FINDINGS

It is surprising that almost half of the population in Rotterdam are single, especially in north area of Maas River. The groups of married couple without and with kids are concentrated in south area of Maas River, harbor industrial area, and Prins Alexander.

### CONCLUSION

It is surprising that almost half of the population in Rotterdam are single. The groups of married couple without and with kids are concentrated in south area of Maas River, harbor industrial area, and Prins Alexander.

### Rotterdam Average Family Structure





HERITAGE & ARCHITECTURE

DOCUMENTATION



# DOCUMENTATION

## TRANSFORMATION OF THE BUILDING

### QUESTION

This research is conducted to understand how the building transforms over time.

### METHODOLOGY

By looking at the old drawings from Rotterdam city archive and redrawing them.

### FINDINGS

There are 3 major phases in the building transformation:

#### Phase I-1916 to 1922

San Francisco warehouse was completed.

The original building was extremely long, with the length around 430 m in total. The building is based on a simple and repetitive grid. The building was built for storage purpose by Holland Amerika Lijn, mainly for goods and luggage of immigrants and emigrants. Assumingly, the boarding activities also happened occasionally with lower class travellers, in order to enter lower parts of the ship. The building contained entrances on both ground and first floor for goods import and export activities. The goods was loaded, and distributed by train. The rail was located on ground floor, only on south side (Deliplein) within building grid.

#### Phase II-1944 to 1951

Even though the building survived from WWII bombing in 1944 and mainly damaged on waterfront side, San Francisco warehouse experienced a serious fire damage in 1947. In this period, the entirety of the building was interrupted and divided into two parts: Fenix 1 and Fenix 2. The reconstruction was finished in 1951 and a canteen was added between to gap of Fenix 1 and 2. The building functioned as storage warehouse as well, remaining entrances both on ground and first floor. The rails was moved to outside of the building on south side (Deliplein), and new rails were added on the north side (waterfront).

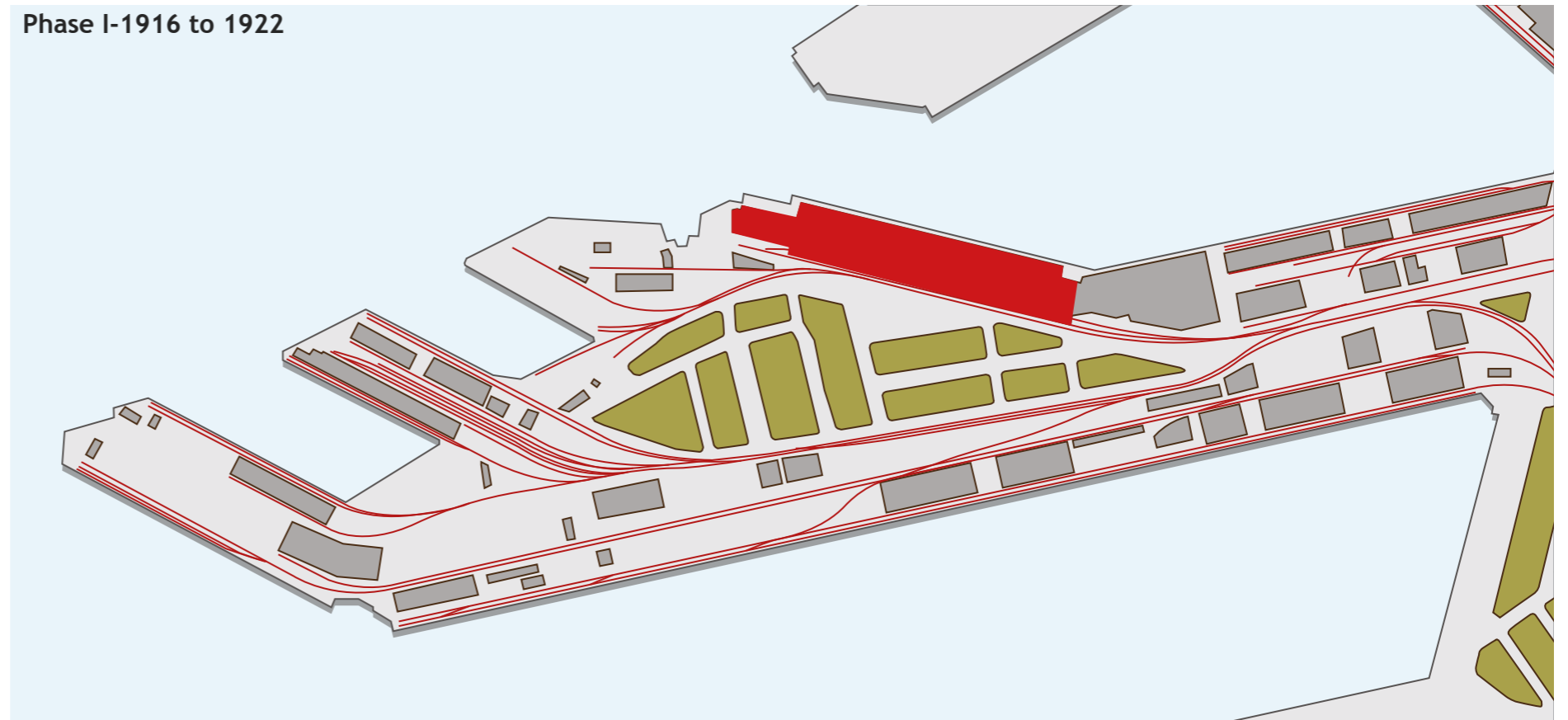
#### Phase III-2012 to 2014

The new programs and space arrangement were applied and has been in use till present. The most influent change on floor plan is the new openings on first floor, made by circus and Codarts. The entrances are only in ground floor, no longer accessible on first floor.

### CONCLUSION

There are 3 major phases in the building transformation. The building, San Francisco warehouse, was divided into Fenix 1 and Fenix 2 due to fire damage. The accessibility to ground floor and first floor changed, due to different programs applied.

Phase I-1916 to 1922



Phase II-1944 to 1951



### Sources

Rotterdam City Archive, 2017  
Own illustration

1916-1922

# Phase I

1916-1922

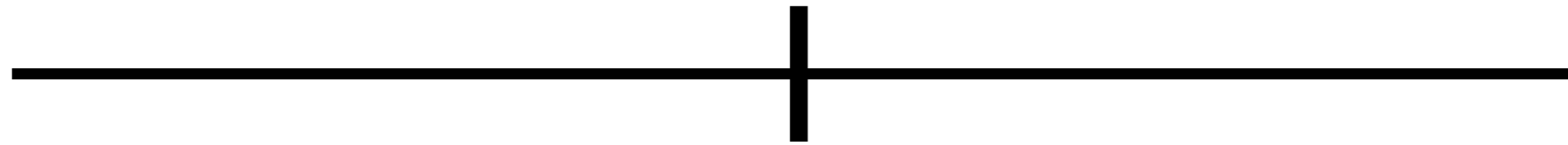
## San Francisco Warehouse



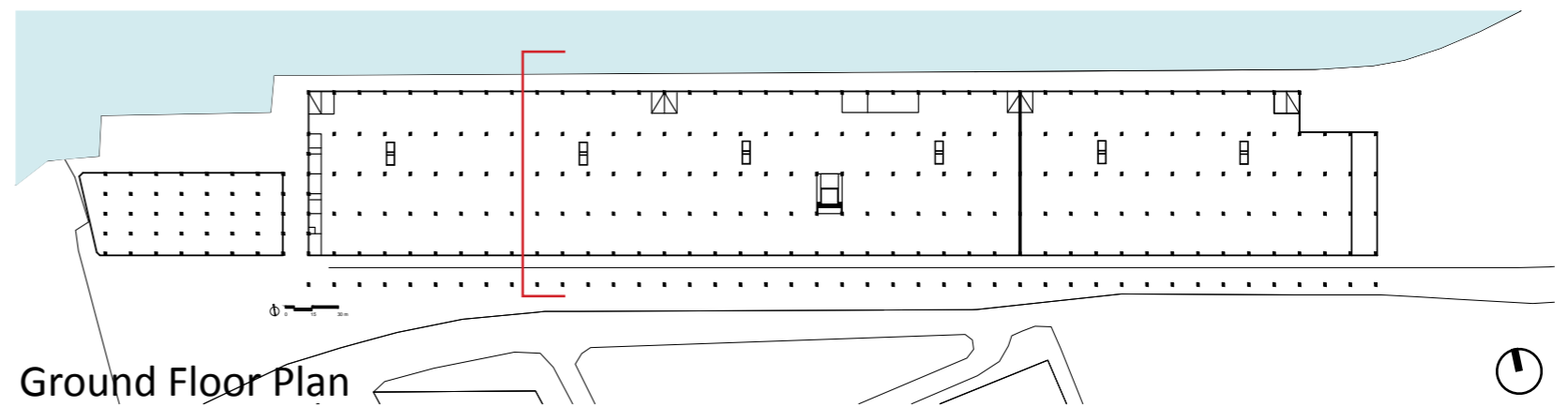
coll. Spaarnestad Archief, foto KLM 3328



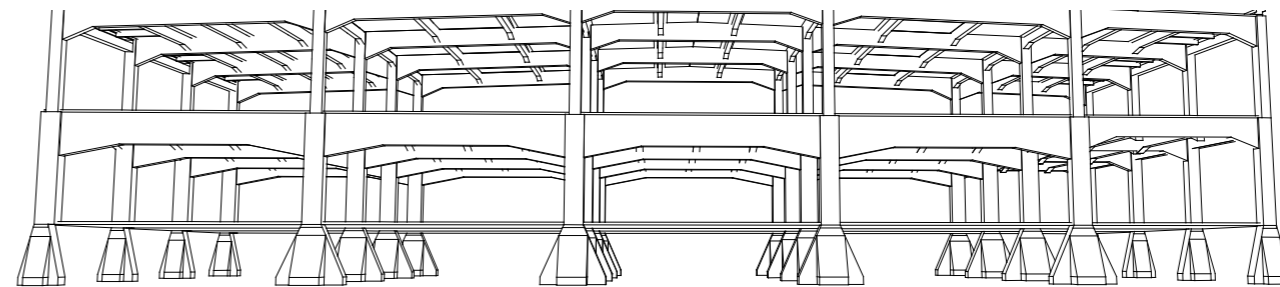
Bouwkundig Weekblad, p. 110 jg. 1931



1922  
Completion



Ground Floor Plan



← North side (waterfront)

→ South side (Deliplein)

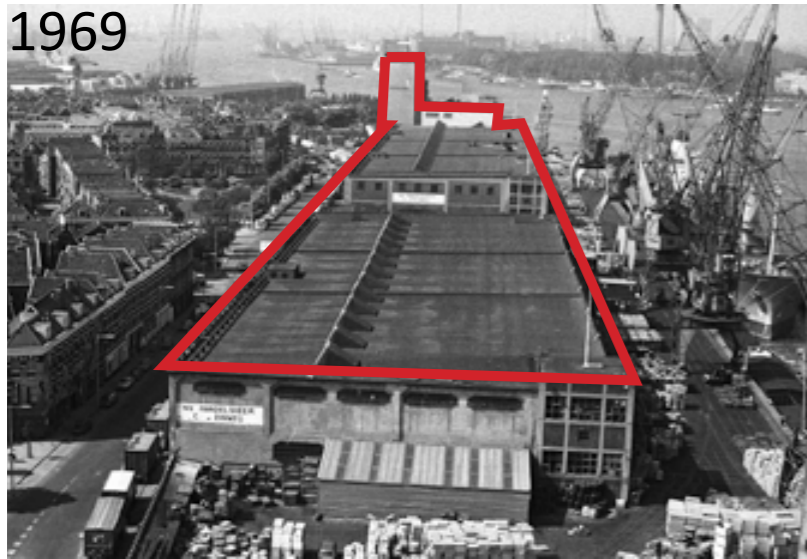
1944-1951

# Phase II

1944-1951

## Fenix I and Fenix 2

1969

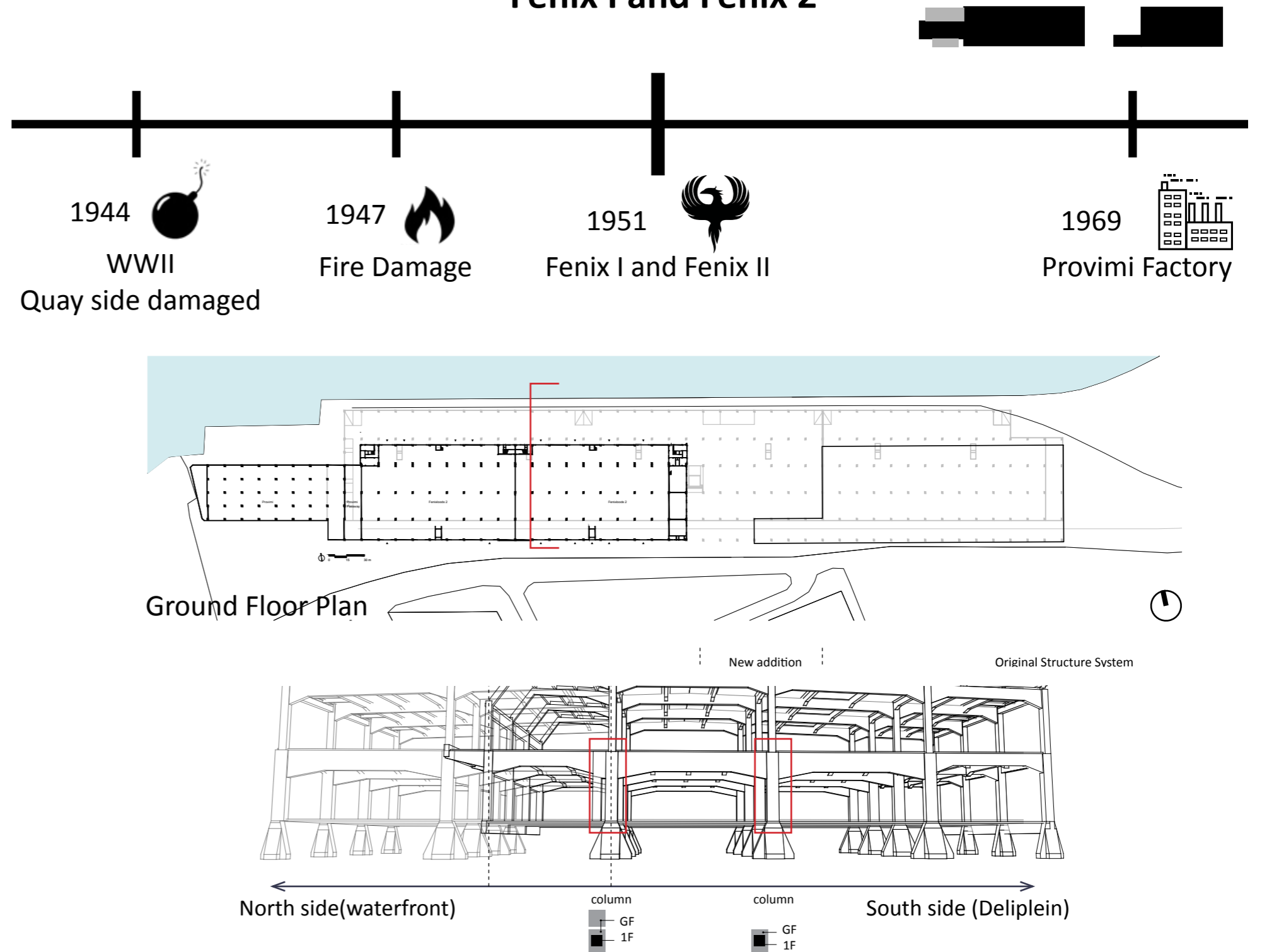


Fenixloft (<https://www.heijmans.nl/nl/projecten/fenixloodsen/>)

1974



Rotterdam City Archive



2012-2014

# Phase III

2012-2014

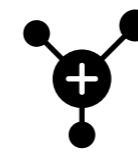
Fenix I- New programs

Fenix 2- Dwellings



2014

Food Factory  
circus  
Codarts  
...



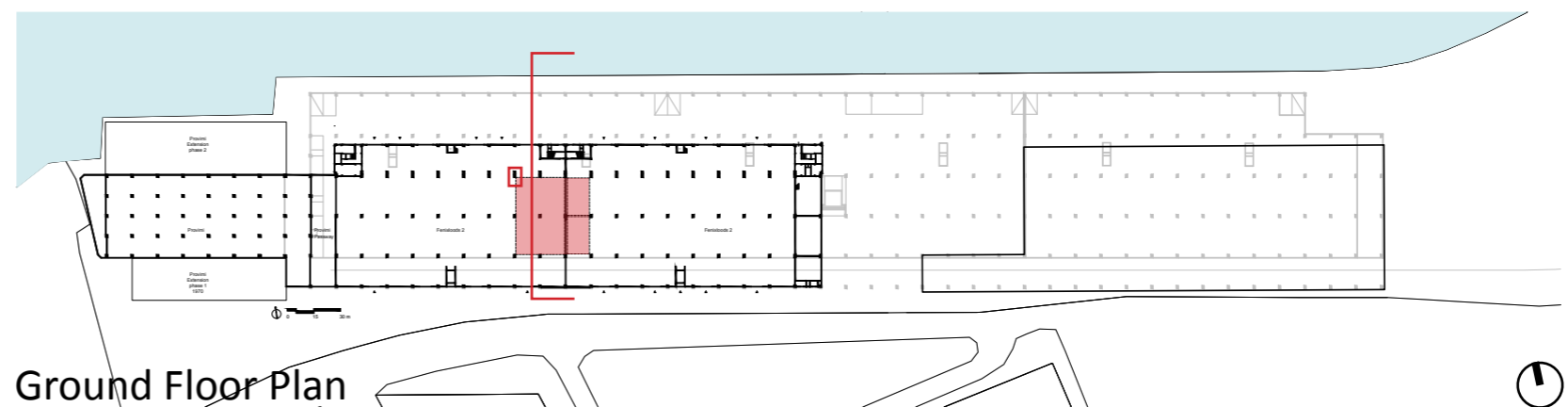
2017

Google Maps 2017

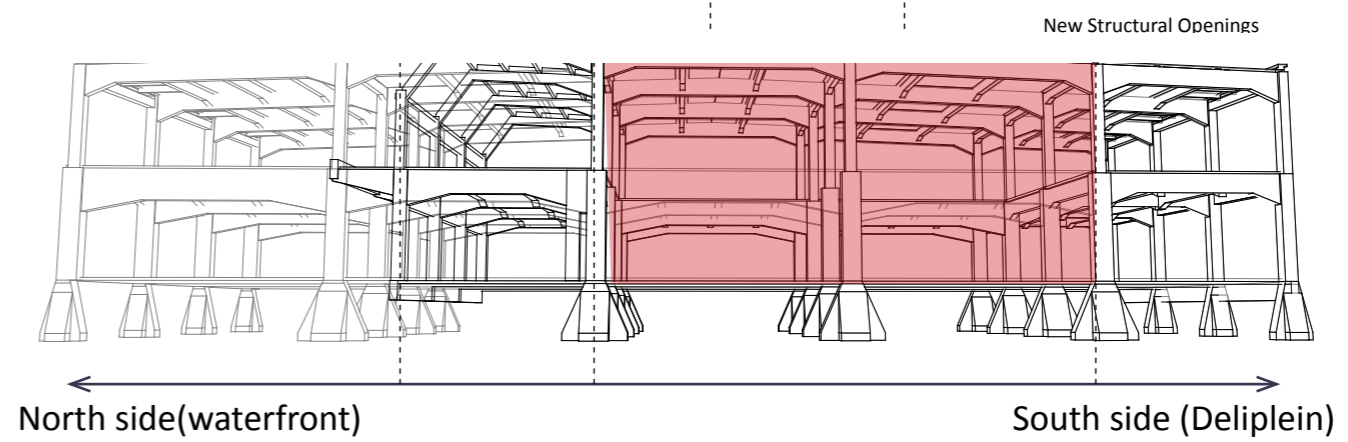


2017

Own Photo



Ground Floor Plan



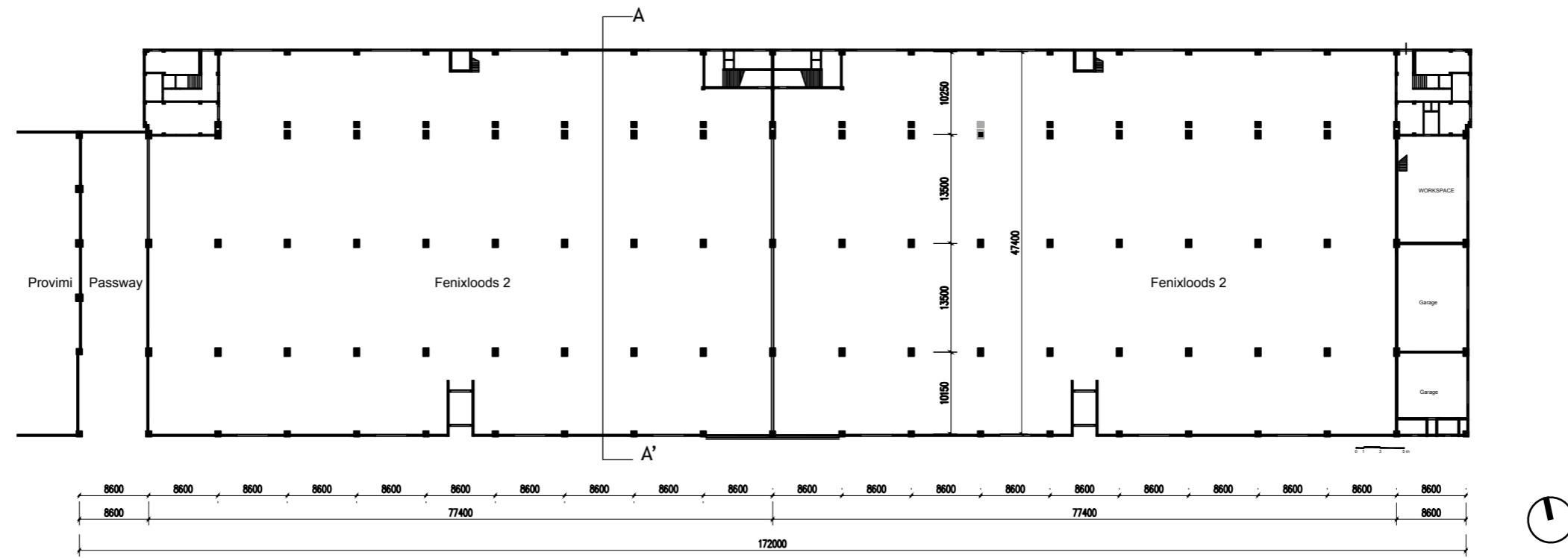
New Structural Openings

North side(waterfront)

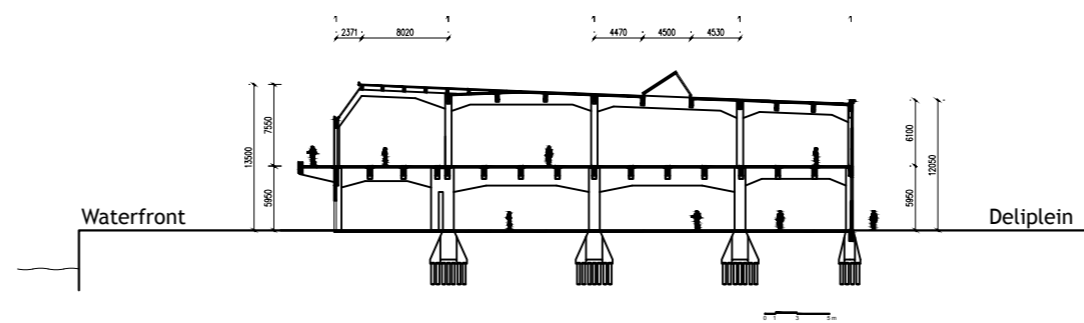
South side (Deliplein)

2012-2014

Ground Floor Plan



AA' Section

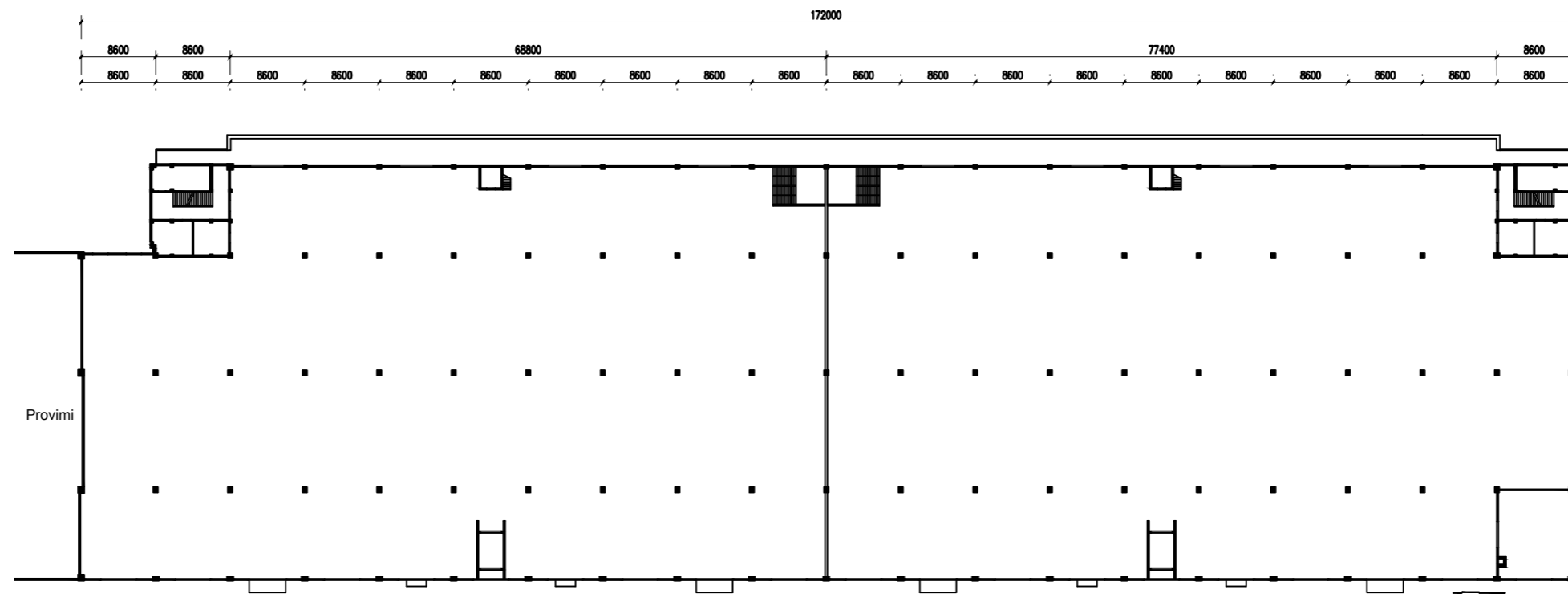


2012-2014

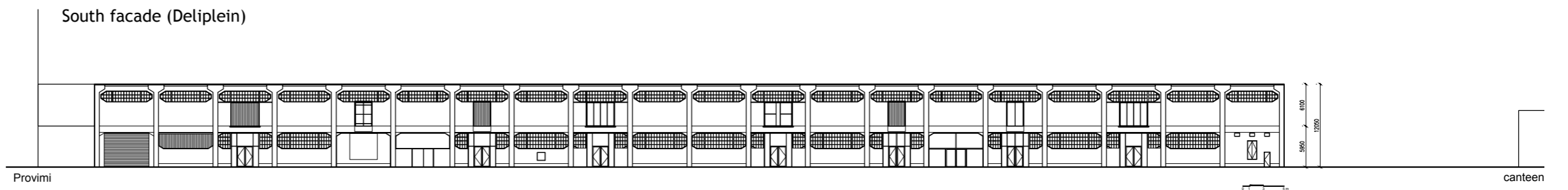
North facade (waterfront)



First floor plan



South facade (Deliplein)





HERITAGE & ARCHITECTURE

ARCHITECTURAL ANALYSES

# INTRODUCTION

There was very limited available information on TU Delft Black Board at the beginning. The first step was to visit Rotterdam City Archive to gather essential information as much as possible, such as previous drawings and photos from different periods. Secondly, visit of Nieuwe Instituut for the archives was planned, mainly for the background of architect, C. N. van Goor, who designed San Francisco Warehouse (original building for Fenix 1 and Fenix 2). There is also information found on newspaper, articles on internet. Finally, many times of site visiting was the important input as well.

The architectural analyses contains 4 part: historical analyses, site analyses, building analyses, and future plans.

## HISTORY ANALYSES

Firstly, the development of Katendrecht and Holland city are introduced.

Secondly, the background of the architect for San Francisco warehouse is concluded, along with the development of the building.

Lastly, typology of adjacent warehouse is compared; Fenixloods 1 and Provimi factory are also shown within the context.

## CURRENT SITUATION

The current situation information are divided from larger scale to small scale, from site level to building level. The following topics are introduced:

### SITE ANALYSES

Infrastructure, zone mapping, green and water area, public space to private space, routing, and sun study (waterfront)

In order to understand the representation of the city, mental map from Kevin Lynch is introduced.

### MENTAL MAP

From Kevin Lynch theory, a good city should performance the ability of fulfilling requirements of biological, psychological, social and cultural aspects to the inhabitants. Lynchian elements composited 5 elements: paths, edges, districts, nodes, and landmarks.

In the following analyses, the routings will show the space sequences approaching from different parts to Fenixloods 2, to understand within the city context, what the current role of Fenixloods 2 represents.

### BUILDING ANALYSES

Plan usage (original and current)  
Rhythm of building  
Expression of building  
Sun study  
Atmosphere

## FUTURE PLAN

The future development of Fenix I and Provimi factory in residential area.

\* Drawings and photographs are ours; unless it is stated.



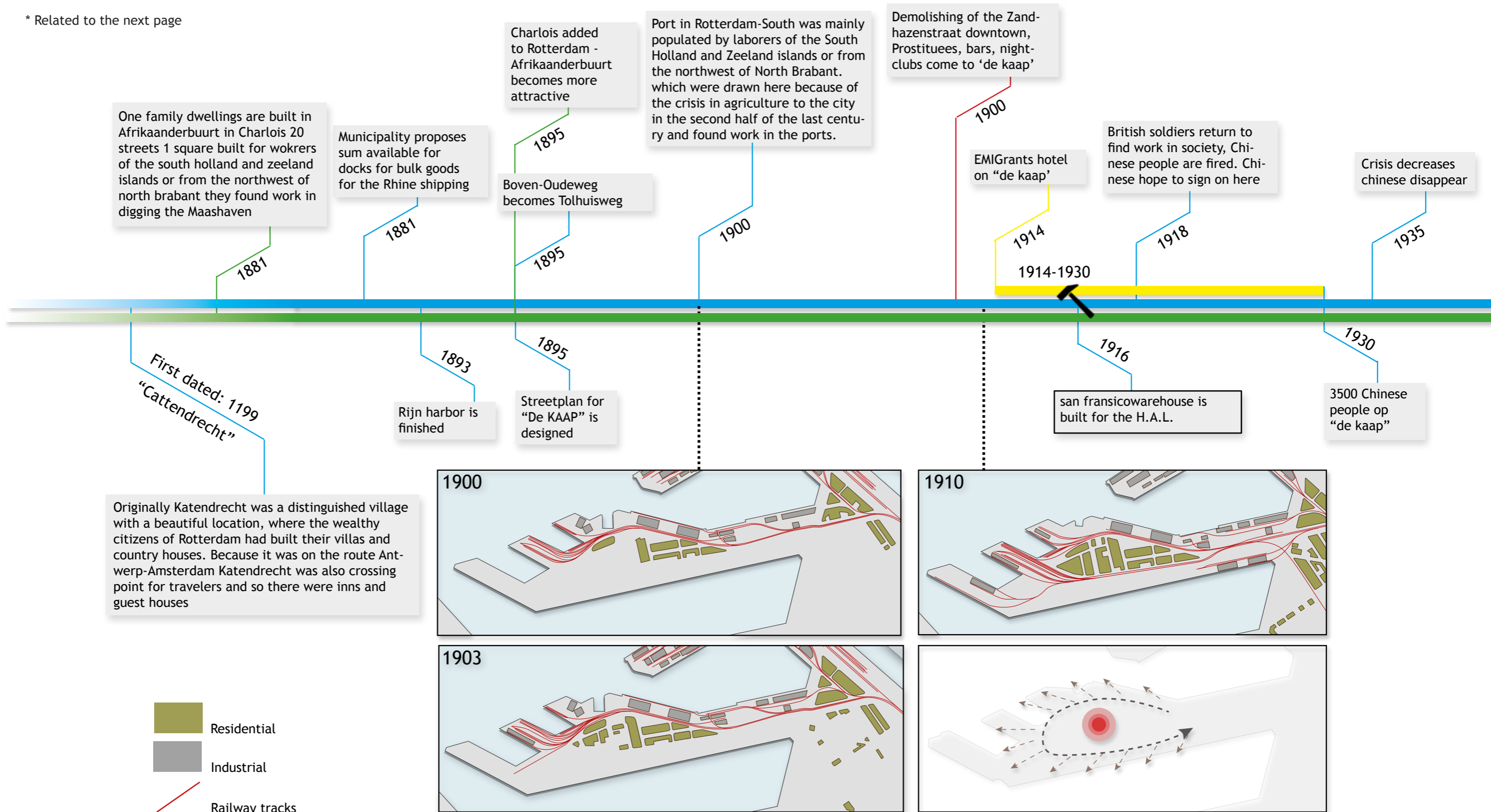


HERITAGE & ARCHITECTURE

ARCHITECTURAL ANALYSES  
HISTORICAL ANALYSES

# HISTORIC BACKGROUND KATENDRECHT AND AFRIKAANDERBUURT

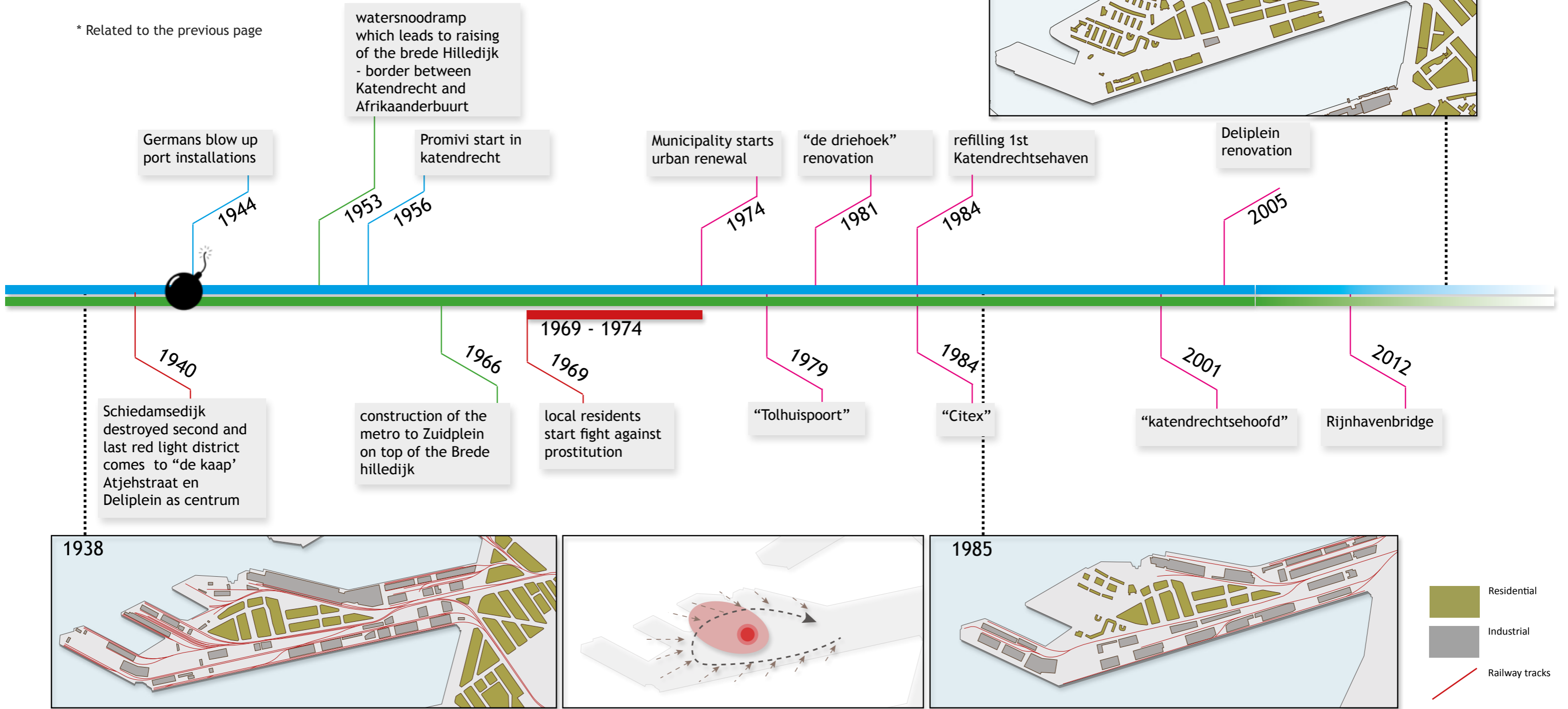
\* Related to the next page



Originally Katendrecht was a distinguished village with a beautiful location, where the wealthy citizens of Rotterdam had built their villas and country houses. Because it was on the route Antwerp-Amsterdam Katendrecht was also crossing point for travelers and so there were inns and guest houses

# HISTORIC BACKGROUND KATENDRECHT AND AFRIKAANDERBUURT

\* Related to the previous page



## QUESTION

This research is conducted to understand the lifecycle of the peninsula of Katendrecht.

## METHODOLOGY

By looking at different books, maps, photographs and newspapers we found at the archive we have come up with this timeline of events.

## FINDINGS

We did find out that Katendrecht started as a small quite village, but after the construction of the Rijn- en Maashaven the village becomes enclosed by industries. And also, the still remaining neighborhood is in a very bad shape, because of all the local prostitution.

But in the end of the 20th century the industrie slowly leaves and the empty spots were filled with dwellings. Which results in a way better neighborhood and Katendrecht is slowly becoming more and more trendy and hip.

## Sources

Borselen, 1995  
Does, 2004  
Klaassen, 1992  
Rotterdam City Archive, 2017  
Soeters & Speksnijder, 1990  
Wolters, 2002a, 2002b

Own Illustrations

# HISTORIC BACKGROUND

## HOLLAND AMERIKA LIJN

### QUESTION

This research is conducted to understand the background of the Holland Amerika Lijn and the relation to the site.

### METHODOLOGY

By looking at various sources at the Stadsarchief Rotterdam, the major timeline of Holland Amerika Lijn have been created, happening in Katendrecht and Kop van Zuid.

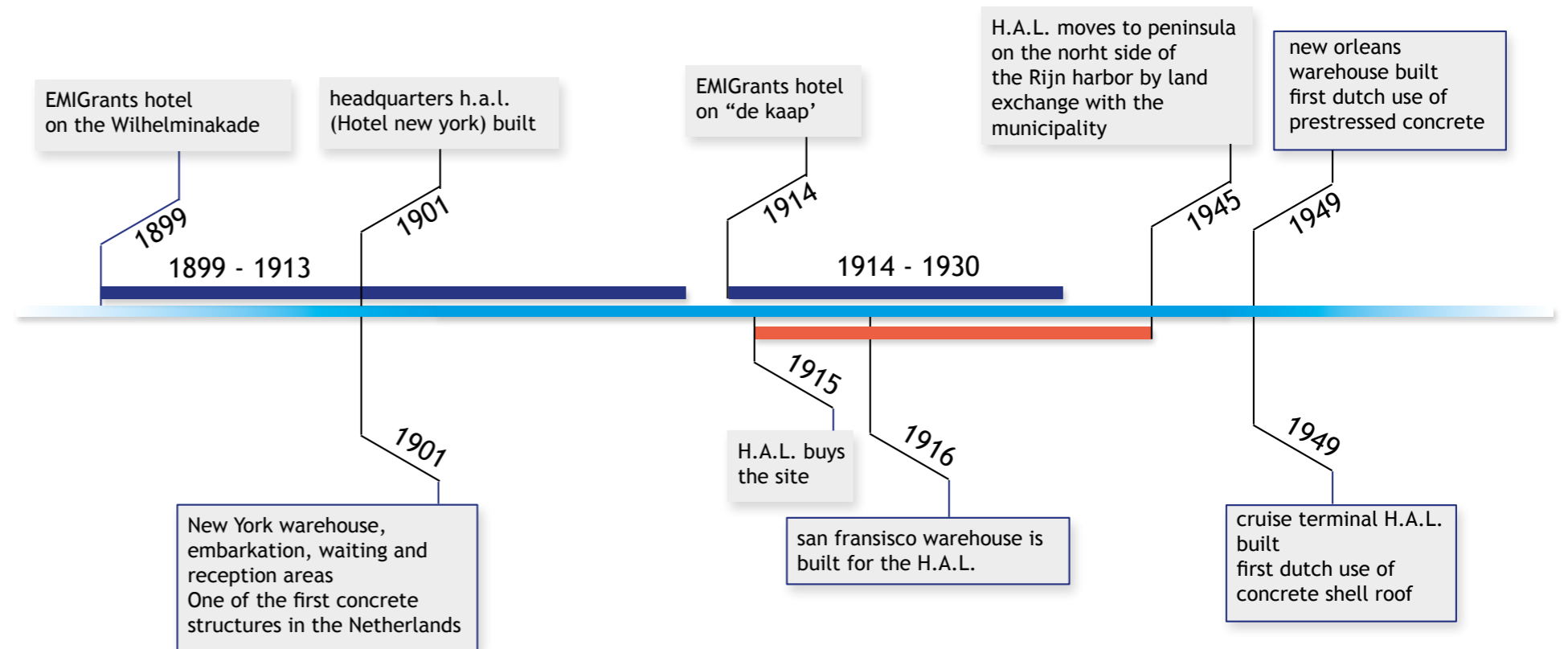
### FINDINGS

With the timeline of Holland Amerika Lijn, it can be found that Fenix II is in a series of unique and modern buildings constructed by the time. H.A.L. clearly desired to express the American way of living. Therefore, the buildings clearly showed modernity and built in an advanced construction method. Moreover, H.A.L. was very active in the area of Katendrecht and Kop van Zuid. The atmosphere here once showed modern, busy industrial expression with activities, which no longer exists today, especially on Katendrecht. Fenix I and II are the last two buildings, representing the liveliness of H.A.L. activities on Katendrecht.

### CONCLUSION

The lost atmosphere should be brought back and relink the liveliness in any form of history layers.

## Holland Amerika Lijn

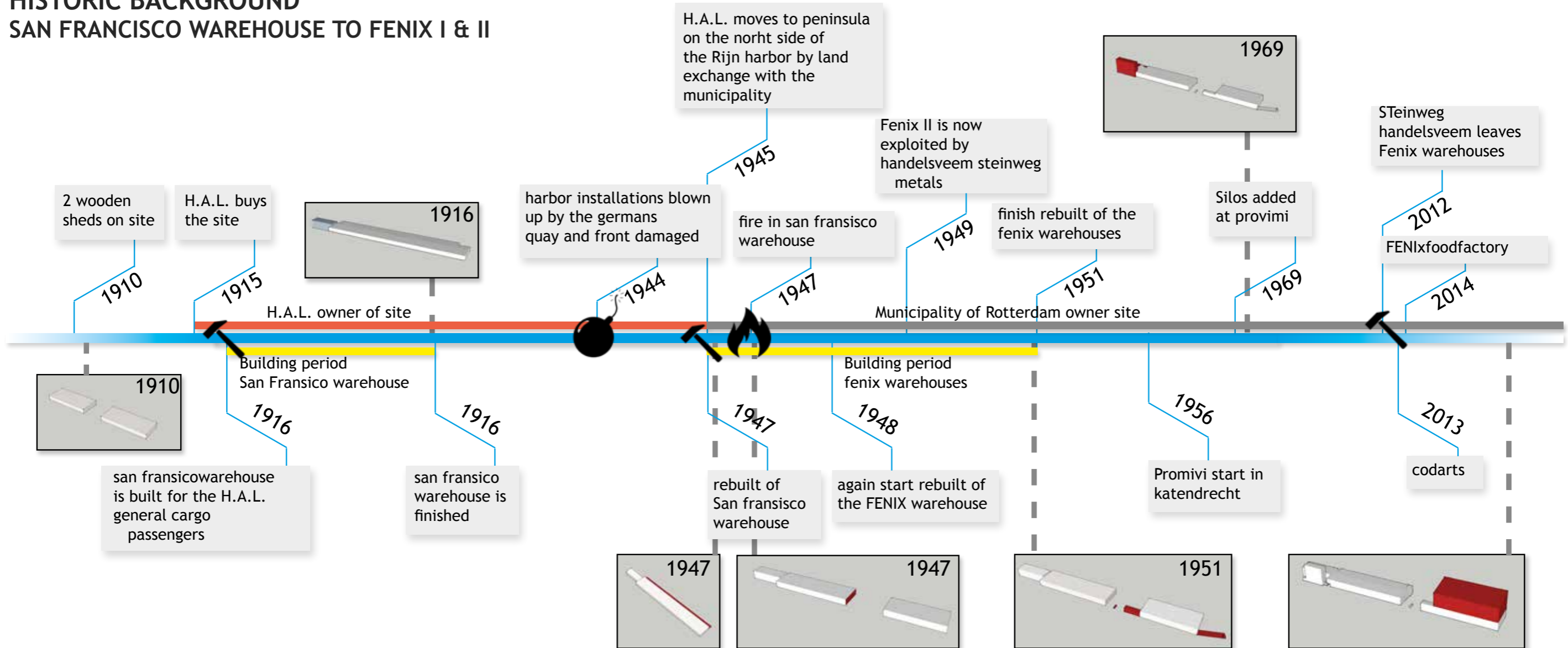


### Sources

Borselen, 1995  
 Does, 2004  
 Klaassen, 1992  
 Soeters & Speksnijder, 1990  
 Wolters, 2002a, 2002b  
 Own Illustrations

# HISTORIC BACKGROUND

## SAN FRANCISCO WAREHOUSE TO FENIX I & II



### QUESTION

This research is conducted to understand the lifecycle from San Francisco warehouse to Fenix I and II.

### METHODOLOGY

By looking at the archives of newspapers, plans and photographs of the building, in order to create a timeline of all the major events.

### FINDINGS

There were several major events happened to the building: an international connection, WWII survivor, fire damage survivor, former glory of Rotterdam industrial harbor, and new programs applied.

San Francisco warehouse once played a role of connection, not only in the Netherlands and Europe, but also acted as a gate of international trading. However, the quayside was partially damaged during German bombing in WWII, and later suffered severe fire damage. The entirety raised from the ashes, however, was separated into two since then, from San Francisco warehouse to Fenix I and II.

The Rotterdam municipality initiated the city reconstruction after WWII. The municipality made a deal with H.A.L. to switch the business to Kop van Zuid which also gathered the entire H.A.L. business on the same peninsula, in order to preserve the former industrial glory of Rotterdam harbor and reuse Fenix I and II.

In the last few years, Fenix II starts with another transformation. The temporary new programs brings back the lost liveness and gives the new life of Fenix II and Katendrecht, programs including Fenix Food Factory, circus Rotjeknor, Codarts, and several start-ups.

### CONCLUSION

The transformation of the building was rich, continuing over 100 years and still in process. With these transformations of the building, it shows the character of itself in various potentials and resilience over times. The former glory layers of Rotterdam industrial harbor should be stressed in future design.

### Sources

- Borselen, 1995
- Does, 2004
- Klaassen, 1992
- Rotterdam City Archive, 2017
- Soeters & Speksnijder, 1990
- Wolters, 2002a, 2002b

Own Illustrations

# ARCHITECT BACKGROUND

## CORNELIS NICHOLAAS VAN GOOR

### QUESTION

This research is conducted to understand the architect and his work.

### METHODOLOGY

By looking at previous works of the architect and his career.

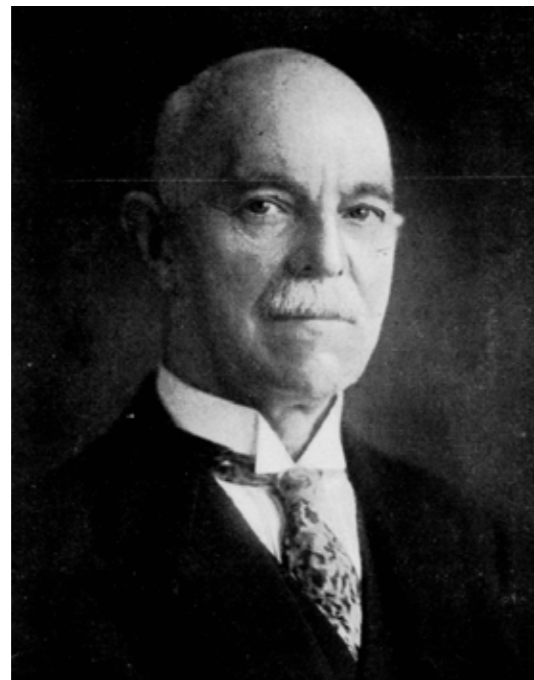
### FINDINGS

C.N. van Goor was from Rotterdam. He did not design a lot of buildings, only seventeen buildings in total, and twelve of these buildings were located in Rotterdam. San Francisco warehouse was in his later works. During his practice, he was very active within the architectural community and was also involved with many boards and committees that are still important nowadays.

Six of the buildings van Goor designed are monuments heritage today.

### CONCLUSION

C.N. van Goor played an important role in Dutch architecture field. Due to his enthusiasm in architecture, this made San Francisco warehouse performed in an advance design during that period, such as the scale of the warehouse and the applied technique.



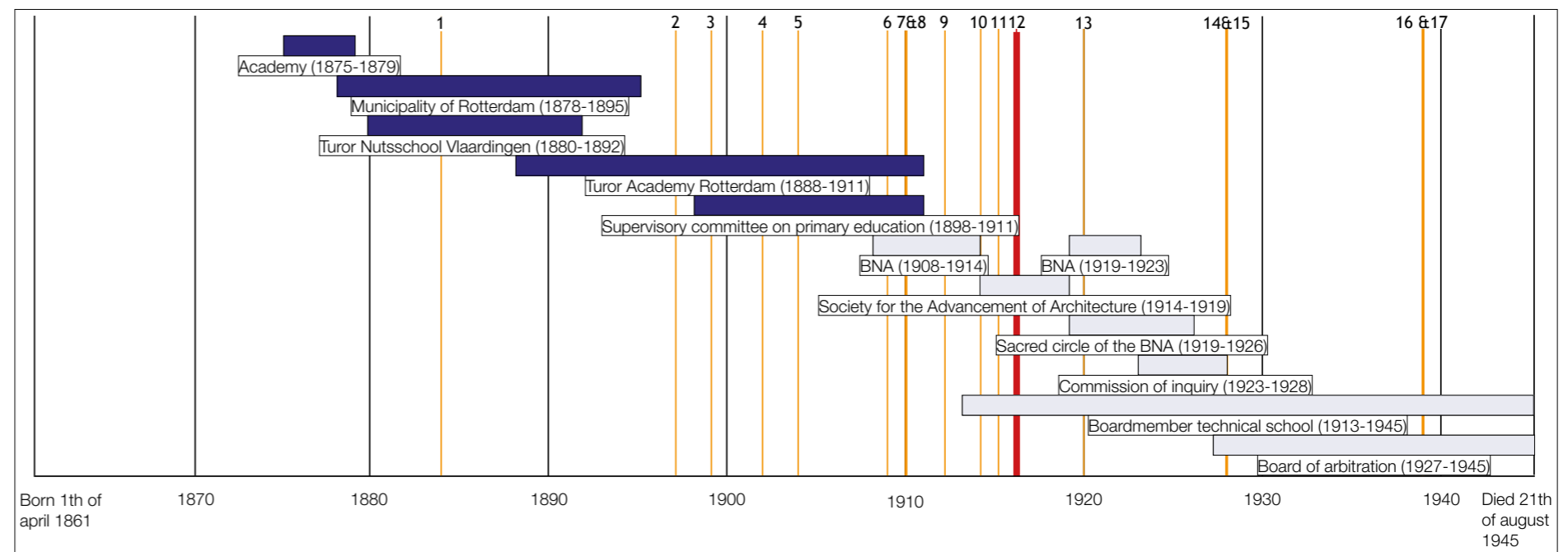
42)

### Sources

Erfgoed, 2016  
Versteeg, 1931  
Wikipedia, 2013

Own Illustrations

Nr.	Year	Building	City	Street	Remark
1	1884	Gasfabriek	Rotterdam	Oostzeedijk	Supervisor for the municipality of Rotterdam
2	1895-1902	"Walenburg"	Rotterdam	Walenburg	Monument of the government
3	1895-1902	Local evangelism	Rotterdam	Oranjeboomstraat	
4	1902	Printing house Immig & zoon	Rotterdam	Nieuwe haven	
5	1904	Building of Arts and Sciences	Rotterdam	Unknown	Burned down in 1936
6	1909	Dwellingcomplex Schans	Rotterdam	Esch	
7	1910	Dwellings	Rotterdam	Persoonshaven	
8	1911	Officebuilding Stokvis & zonen	Rotterdam	Westzeedijk	Monument of the government
9	1912	Gazelle bicycle factory	Dieren	Wilhelminaweg	Monument of the government
10	1914	Offices and storage Stokvis & zonen	Amsterdam	Keizersgracht	Monument of the municipality of Amsterdam
11	1915	Storage Stokvis	Groningen	Tuinbouwdwarsstraat	
12	1916	San Francisco (Fenix)	Rotterdam	Veerlaan	
13	1920	Municipal dwellings Spangen	Rotterdam	Unknown	
14	1928	Timber trading building	Overschie	Abraham van Stolkweg	
15	1928	Hudighuis	Driebergen	Unknown	
16	1939	Administration building of Blijdorp	Rotterdam	Van Aerssenlaan	Monument of the government
17	1939	Access gate of Blijdorp	Rotterdam	Van Aerssenlaan	Monument of the government



# ARCHITECT BACKGROUND PORTFOLIO

## QUESTION

This research is conducted to understand the styles of the works of the architect. chitect.

## METHODOLOGY

By looking at other design works of the C.N. van Goor.

## FINDINGS

C.N. van Goor had three styles during his practice: he started with very traditional housing projects, later shifted to focus on more rigid and functional industrial warehouses, and lastly he designed stylised organic forms in his last four projects.

## CONCLUSION

The styles of C.N. van Goor had huge transition. San Francisco warehouse can be seen as one of his experimental projects, by designing once the longest warehouse in Europe and using advanced technique as reinforced concrete.



Dwelingcomplex Schans

44)



Gazelle bisycle factory

46)



Acces gate of Blijdorp

48)



Walenburg

45)



San Francisco (Fenix)

47)



Administration building of Blijdorp

49)

Traditional



Industrial



Organic

## Sources

- Blijdorp, 2011
- Bloemsma, 2016
- Erfgoed, 2016a, 2016b, 2016c
- Fischer, 2014
- M. Rotterdam, 2016a
- Versteeg, 1931
- Wikipedia, 2013

# TYOLOGY

## WAREHOUSES IN RIJNHAVEN

### QUESTION

This research is conducted to understand the typology of warehouses, in order to understand what kind of building we are dealing with and how it was used earlier.

### METHODOLOGY

By looking at the former function and comparing San Francisco or Fenix II warehouse with other examples from the near period and the same function.

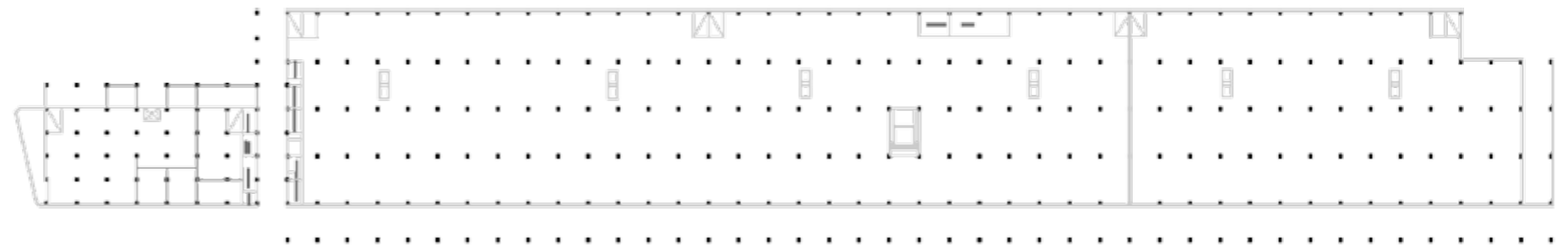
### FINDINGS

The comparison is between Santos warehouse and San Francisco. Santos was built in 1903, also located on Katendrecht, and shared the same side of Rijnhaven.

Santos was built with steel structure, bricks wall, and wooden flooring; San Francisco was built purely with reinforced concrete constructed on situ with an enormous building length. Santos was completed 13 years earlier than San Francisco. However, only within 13 years difference, San Francisco had much more modern appearance and structure system. As it can be assumed, San Francisco was iconic and an advanced design during that period.

### CONCLUSION

By comparing warehouses in near location and period, San Francisco can be assumed iconic and an advanced design during that period.



San Fransisco, 1916

50)



Santos, 1903

51)



Santos, 1903

52)



San Fransisco, 1916

53)

### Sources

Jong & Winter, 1982  
 Oosterwijk & Vennix, 2014  
 Own Illustrations



# TPOLOGY

## GOODS LOADING SYSTEM

### QUESTION

This research is conducted to understand how this building typology and functions.

### METHODOLOGY

By looking at Fenix II and comparing it to other buildings with the same typology in the nearby area.




### FINDINGS

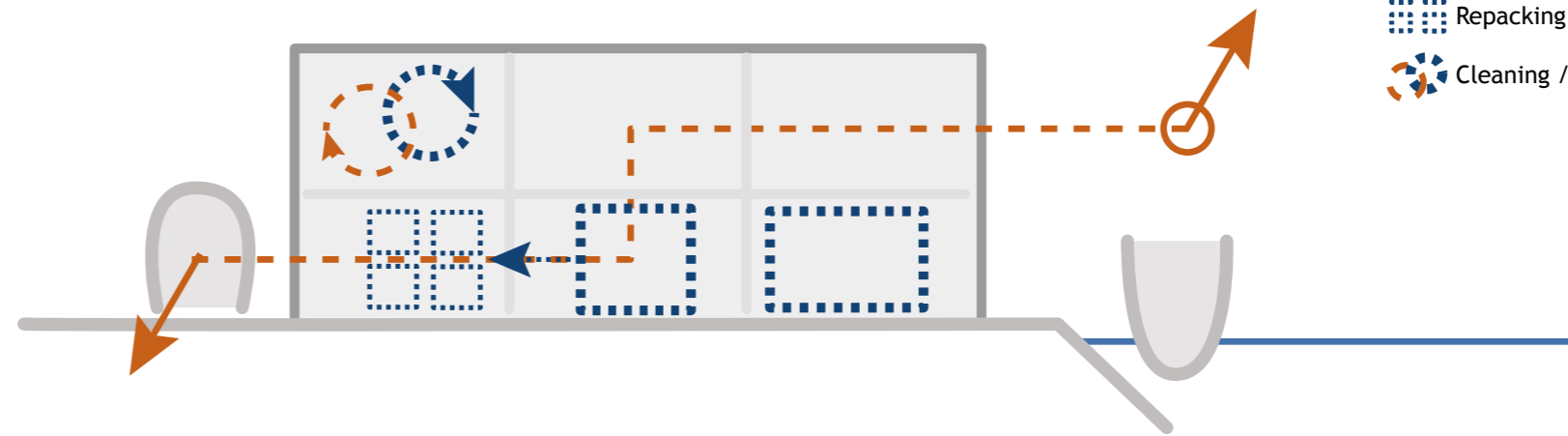
Fenix II did not function as one of the many so called “veempanden” in the Rotterdam harbor. It functioned as an intermediate station between the freighters and the hinterland of Rotterdam. However, Fenix II worked more efficiently than others: a less complex balcony system and only two stories to reduce loading difficulty.

### CONCLUSION

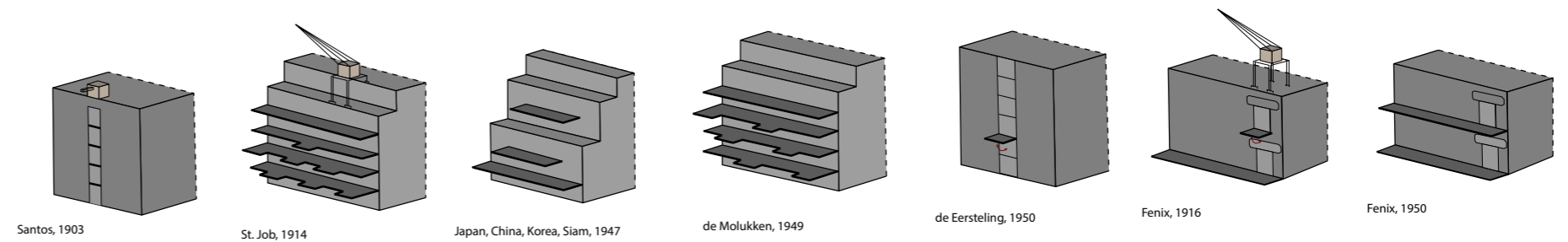
Fenix II worked more efficiently within its loading typology.

“Veempanden”

-  Storage
-  Repacking
-  Cleaning / reconditioning



54)



55)



56)



Fenix

57)



St. Jobsveem

58)

# PROVIMI FACTORY RELOCATION

## QUESTION

This research is conducted to understand the future possibility of Provimi Factory.

## METHODOLOGY

By visiting Provimi Factory, the space usage and requirements can be understood.

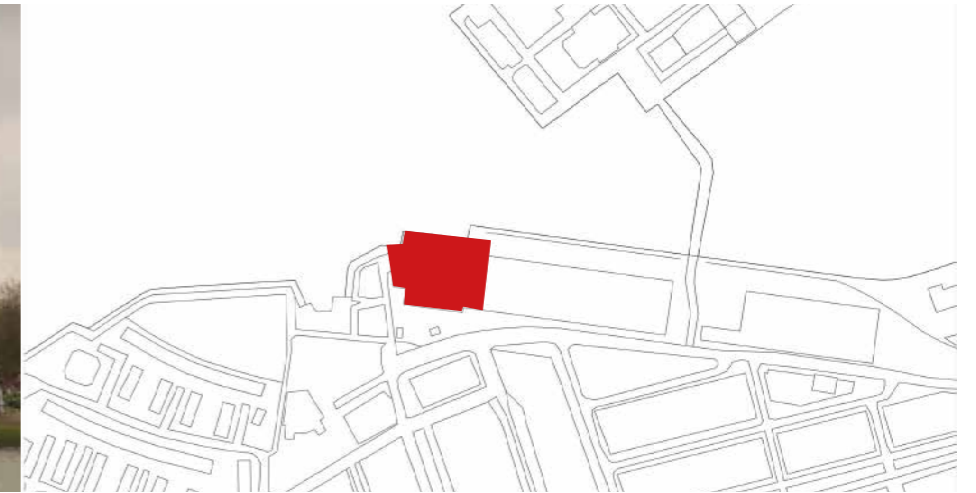
## FINDINGS

Provimi Factory was built in 1969, taking dwelling part of San Francisco. A silo system was added on south side and covered the original façade from 1916. The additional extension was made later, mainly in light structure, such aluminium structure system and metal panels on waterfront and roof-top of previous dwelling volume.

Provimi Factory acts as the last trace of industrial harbour history in Rijnhaven, and located in residential area on Katendrecht. The traffic of trucks disrupts the connection for pedestrians, from both aspects of surrounding neighbourhood and external visitors. The main issues will be the relation between Fenix II: circulations for passenger and trucks and interruption to greenery on west side. Assumingly, there is a high possibility for the factory to leave Katendrecht and relocate in a more suitable place in the future.

## CONCLUSION

Provimi Factory acts as the last trace of industrial harbour history in Rijnhaven. However, the factory function does not fit into surrounding residential area anymore. The traffic of trucks disrupts the connection for pedestrians, from both aspects of surrounding neighbourhood and external visitors. Assumingly, there is a high possibility for the factory to leave Katendrecht in the future.





HERITAGE & ARCHITECTURE

ARCHITECTURAL ANALYSES  
SITE ANALYSES

## INFRASTRUCTURE ROAD SYSTEM

### QUESTION

This research is conducted to understand the Fenix 2 is connected to the city and other part of the city.

### METHODOLOGY

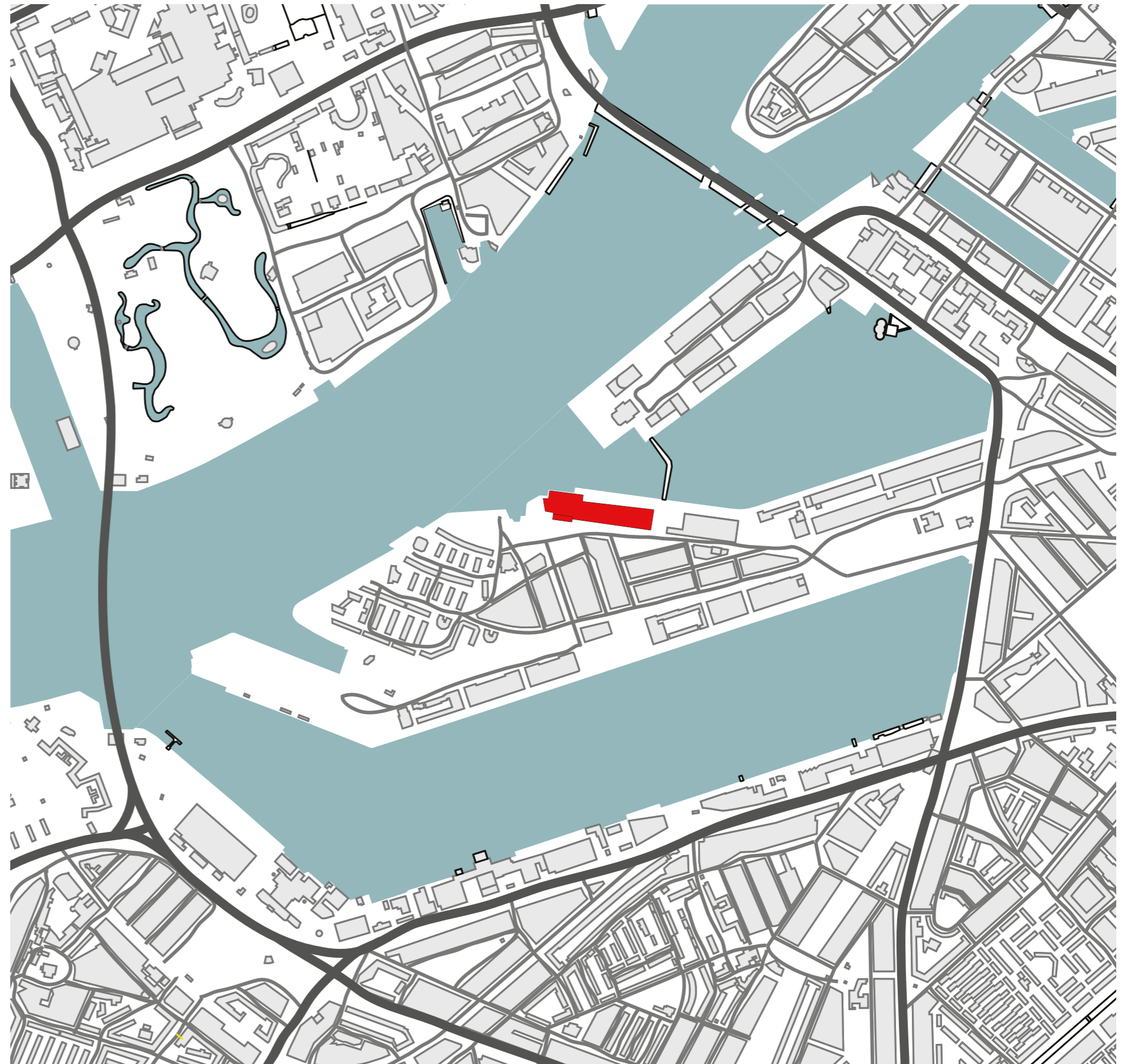
By looking at current maps of the Rotterdam, the road infrastructure can be assessed.

### FINDINGS

There are 4 main roads close to Katendrecht; this indicates a good accessibility. However, since Katendrecht is a peninsula, this means the connection to the city center and other part of the city is quite simplex, only through the tail of the peninsula. The traffic capacity is also smaller than surroundings and leaves the residential neighbourhood more tranquil atmosphere.

### CONCLUSION

There are 4 main roads close to Katendrecht; this indicates a good accessibility. The traffic capacity is also smaller than surroundings and leaves the residential neighbourhood more tranquil atmosphere.



## INFRASTRUCTURE PUBLIC TRANSPORTATION-BUS NO.77

### QUESTION

This research is conducted to understand the Fenix 2 is connected to the city and other part of the city.

### METHODOLOGY

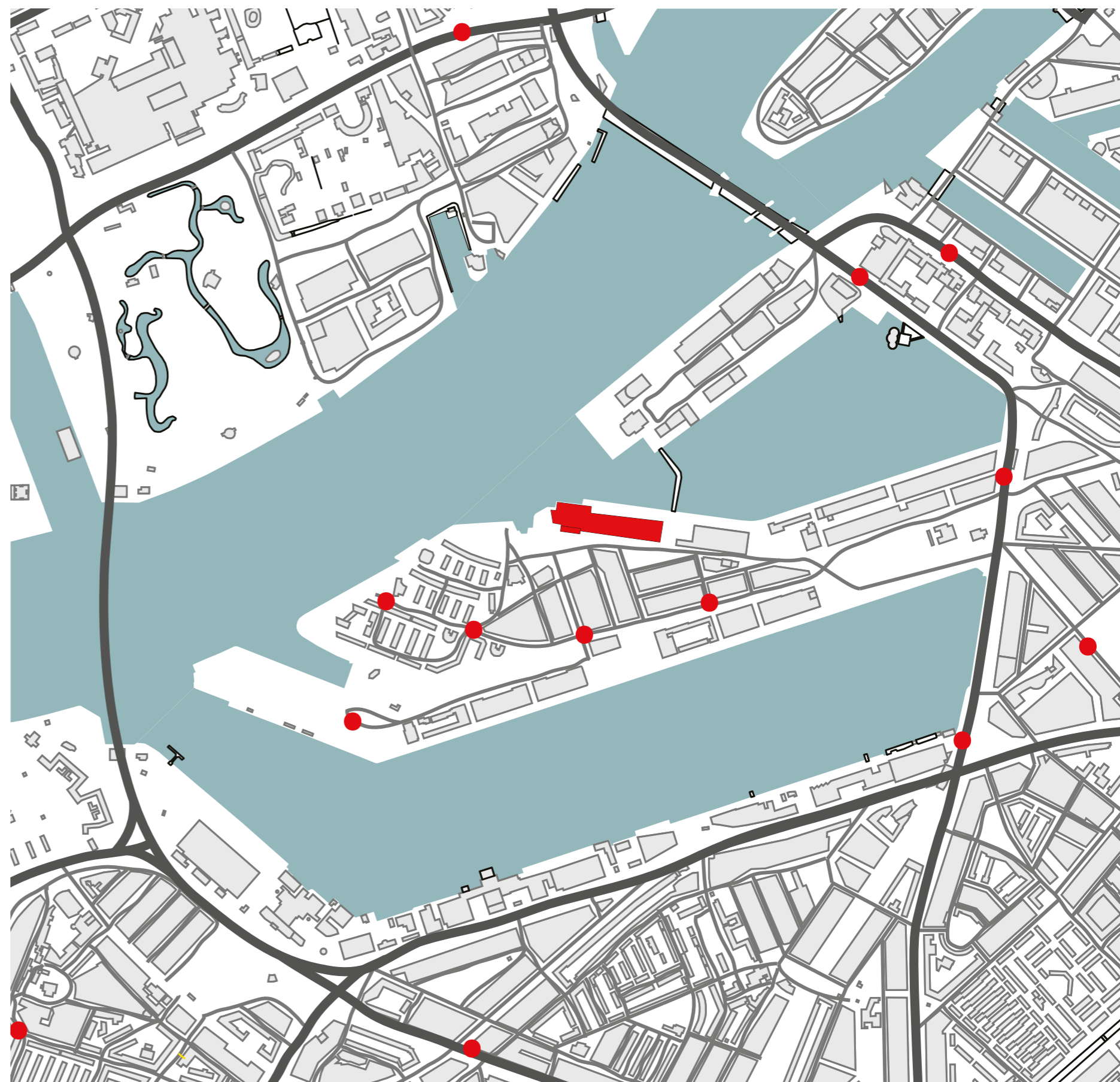
By looking at current maps of the Rotterdam, the road infrastructure can be assessed.

### FINDINGS

There are 4 main roads close to Katendrecht; this indicates a good accessibility. However, since Katendrecht is a peninsula, this means the connection to the city center and other part of the city is quite simplex, only through the tail of the peninsula. The traffic capacity is also smaller than surroundings and leaves the residential neighbourhood more tranquil atmosphere.

### CONCLUSION

There are 4 main roads close to Katendrecht; this indicates a good accessibility. The traffic capacity is also smaller than surroundings and leaves the residential neighbourhood more tranquil atmosphere.



## INFRASTRUCTURE WATERBUS

### QUESTION

This research is conducted to understand the connection within public water transportation.

### METHODOLOGY

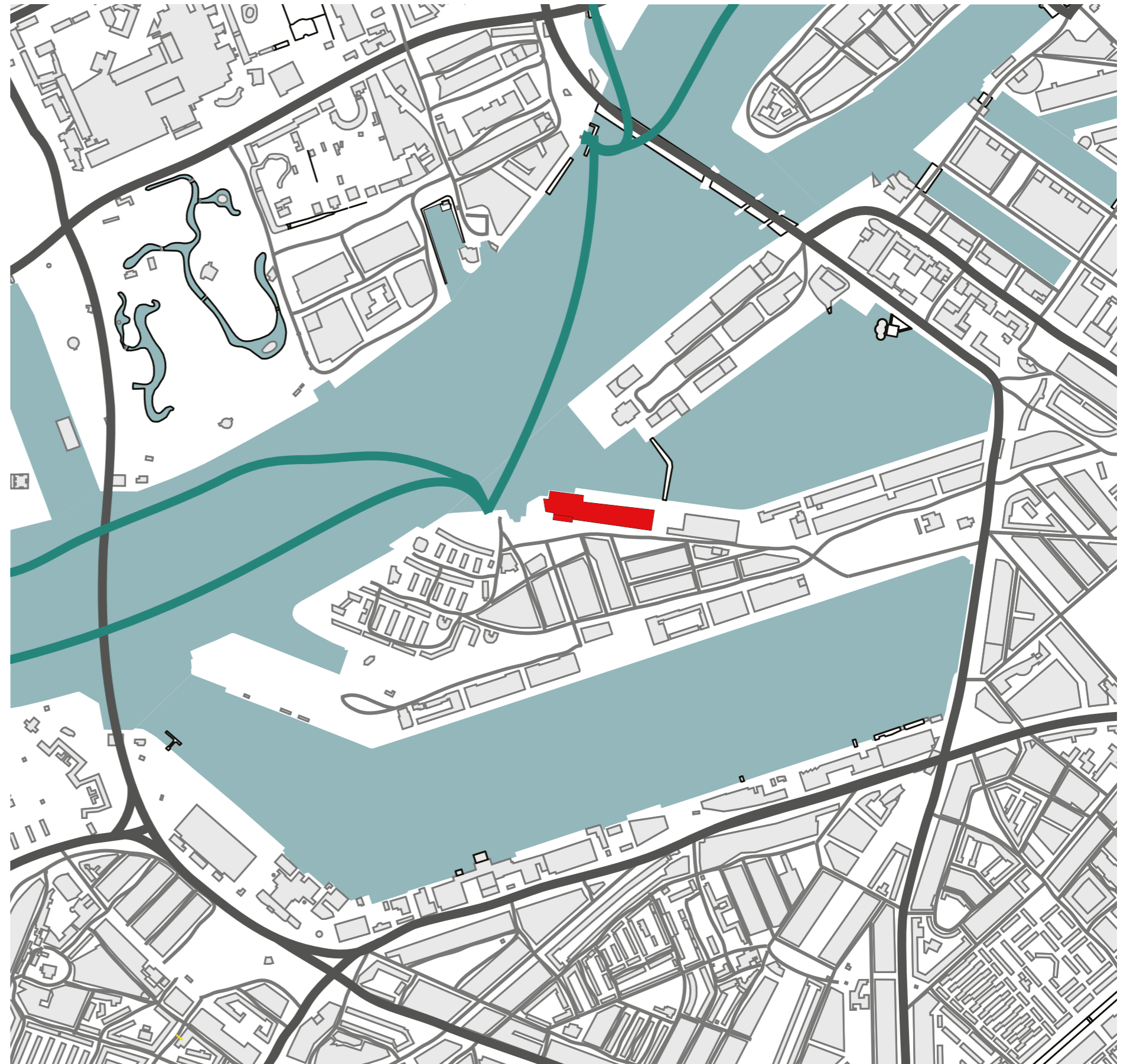
Looking at the routes of waterbus

### FINDINGS

With the information from PDOK, the accessibility of the water is good, with the main sailing direction of Maas River and harbors area. The site is close to the waterbus stop, within 5 mins walking distance by foot.

### CONCLUSION

The public water transportation is well connected to other parts of Rotterdam. The site is close to the waterbus stop, within 5 mins walking distance by foot.



## INFRASTRUCTURE BIKING ROUTES

### QUESTION

This research is conducted to understand the routing for cyclists around Katendrecht.

### METHODOLOGY

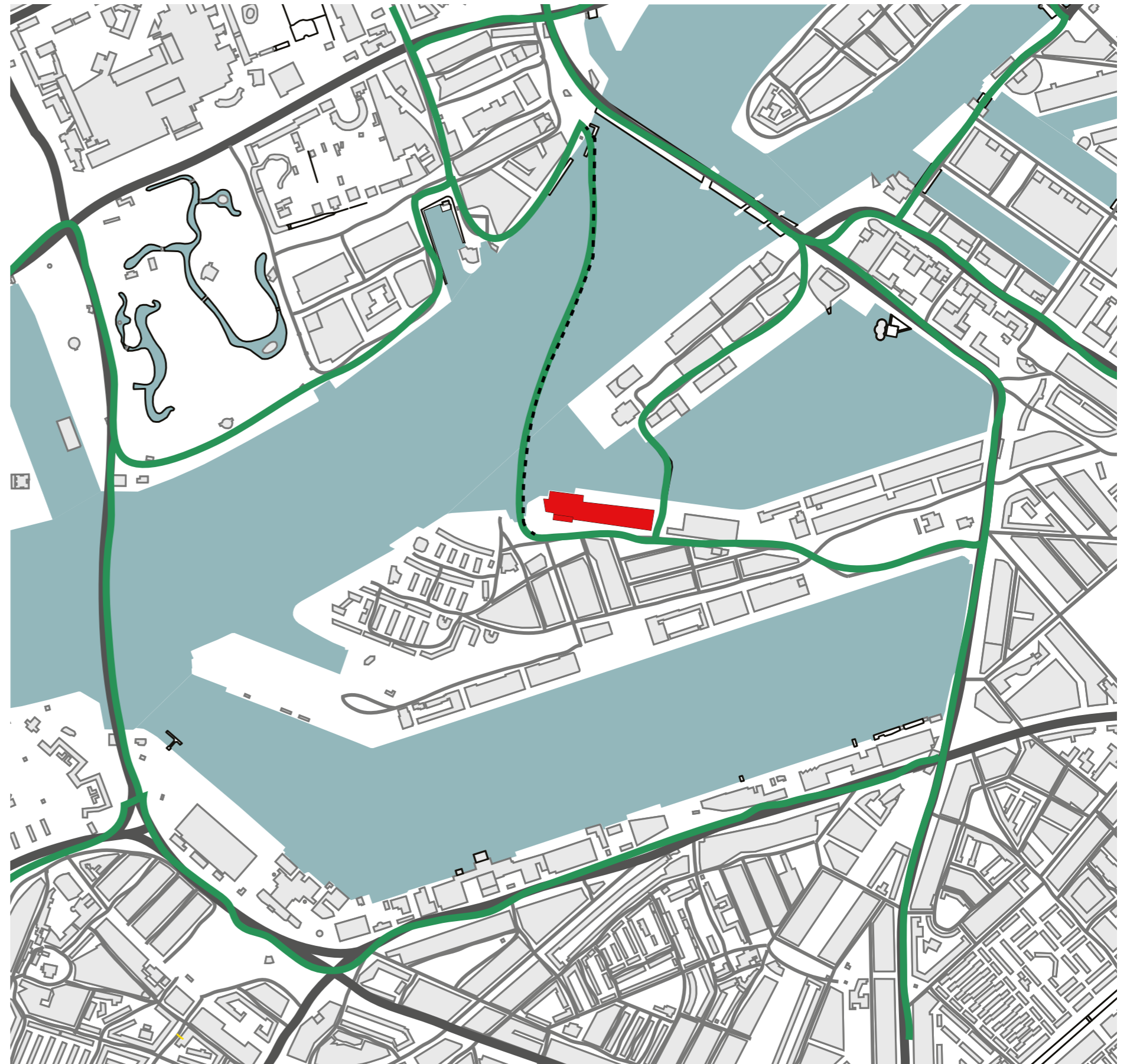
By looking at the information from PDOK of the registered biking routes.

### FINDINGS

Cyclists can approach to the site from three routes: two of them are connected by land road; one is connected with waterbus. However, during multiple times site visiting, there are not many cyclists.

### CONCLUSION

Cyclists have good accessibility by cycling to the site.



## INFRASTRUCTURE PUBLIC TRANSPORTATION-METRO

### QUESTION

This research is conducted to understand the underground network of metro system.

### METHODOLOGY

By looking at current maps and the schematic representation of the metro system, the underground network of the subway can be made visible.

### FINDINGS

Rotterdam city metro system has gone from underground to high elevated rails after station Wilhelminaplein. The impact of the high elevated rails is relatively small. Besides, both station Wilhelminaplein and station Rijnhaven are close to the site; each of stations is within walking distance from metro line D and E.

### CONCLUSION

Visitors have good accessibility to the site from public metro system.





## CIRCULATION ACCESSIBILITY

### QUESTION

This research is conducted to research the accessibility of our site.

### METHODOLOGY

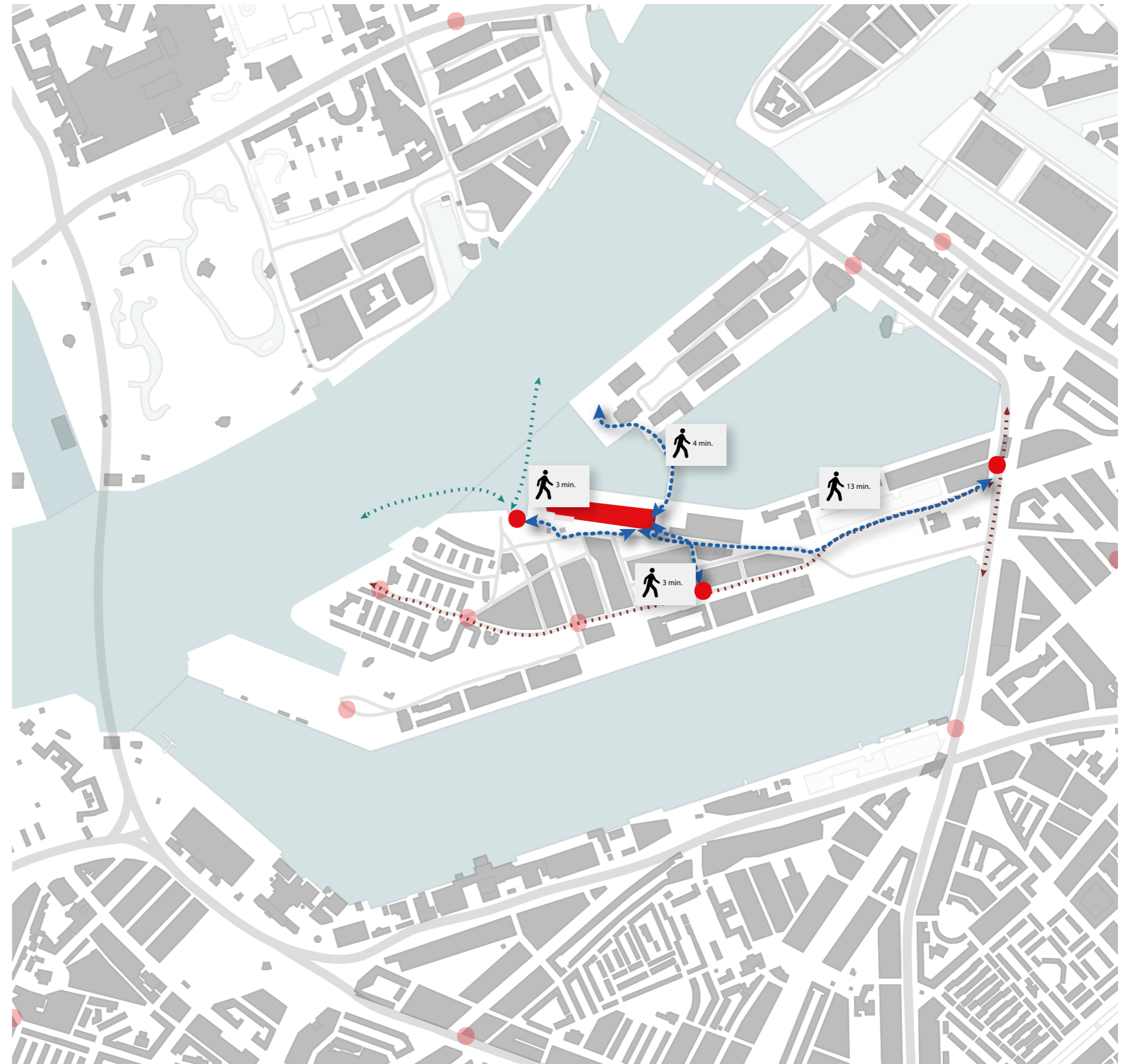
By approaching the site with different public transportation methods, the walking distance can indicate the accessibility.

### FINDINGS

Our site is well connected. Even though the location is at the end of a peninsula, the walking distances from all public transport is within walking distance. The same applies for the bike and car. With the help of newly built Rijnhaven Bridge, the accessibility of visitors by foot increases.

### CONCLUSION

Especially with the public transportation system, the site is well connected, namely metro, bus, and waterbus.



## LANDMARKS ROTTERDAM ICONS

### QUESTION

By remarking Rotterdam icons, the influence and character of the neighbourhood can be observed.

### METHODOLOGY

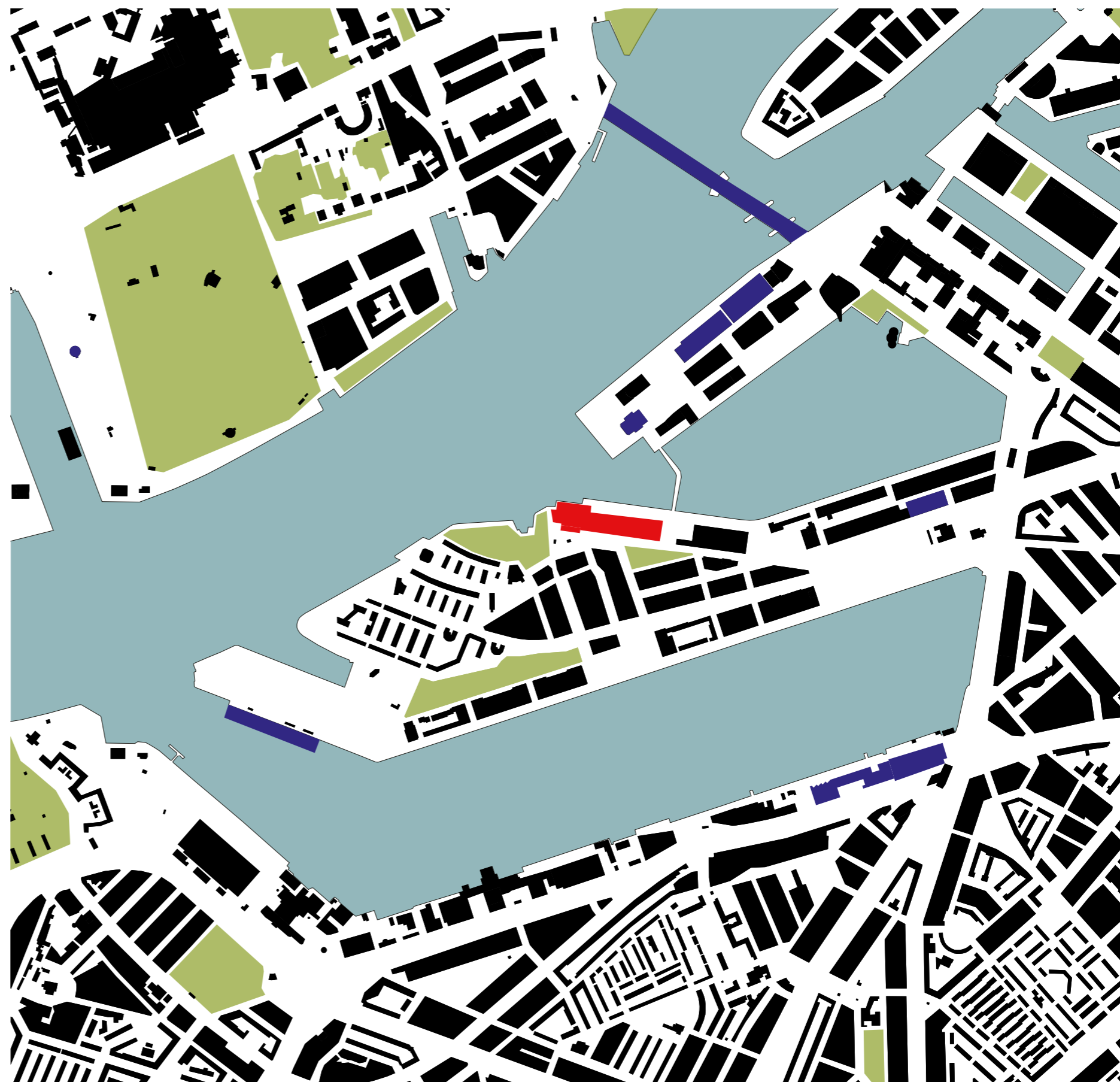
By highlighting the most famous buildings and structure in the city near Katendrecht.

### FINDINGS

It is surprised that several major Rotterdam landmarks are very close the site, namely New York Hotel, De Rotterdam, the Rotterdam cruise terminal, Erasmus bridge, Santos, Maassilo, and SS Rotterdam. SS Rotterdam is located at the end of Katendrecht also gives the opportunities to introduce flows inwards to the end of peninsula.

### CONCLUSION

The site is quite close to these famous landmarks; the opportunities of visitors will increase under the influence.



## GREEN AREA AND WATER RELATION NATURAL ELEMENTS IN THE CITY

### QUESTION

How do natural elements situate in the city?

### METHODOLOGY

By looking at the location, size of the green area, and water area in the city and Katendrecht, the integration of green area with surrounding can be observed.

### FINDINGS

It can be seen that the green area is not integrated, nor equally distributed within the city. The biggest green area which locates closet to the city centre is Het Park along Maas River. Artificial elements consist a high proportion in Rotterdam. The connection to the green space and water front is segmented.

### CONCLUSION

The connection to the green space and water front is segmented.



## GREEN AREA AND WATER RELATION VARIOUS SCALES OF GREEN

### QUESTION

How do natural elements perform in different scales in the city?

### METHODOLOGY

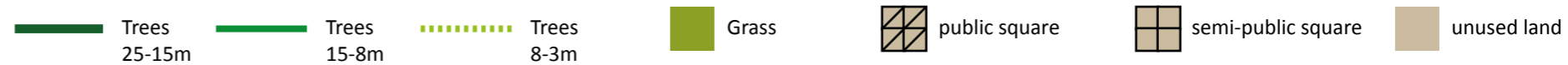
By looking at surroundings in Katendrecht, different scales of existing natural elements and location are marked and can be observed.

### FINDINGS

Defined green areas in the map are mainly covered with grass. Different scales of trees are marked, in order to see the densest and nature area with current situation. Buizenpark provides with the tallest trees and the closest relation to the waterfront. On the south side of the building, Deliplein square is placed.

### CONCLUSION

Buizenpark provides with the tallest trees and the closest relation to the waterfront. What will be the possibility to integrate the waterfront, square, and existing green area to the future design? How to increase overall natural elements within a walking distance in the city context?



## ZONE MAPPING FUNCTIONS

### QUESTION

This analysis is conducted to understand the relation between the building and its surrounding functions.

### METHODOLOGY

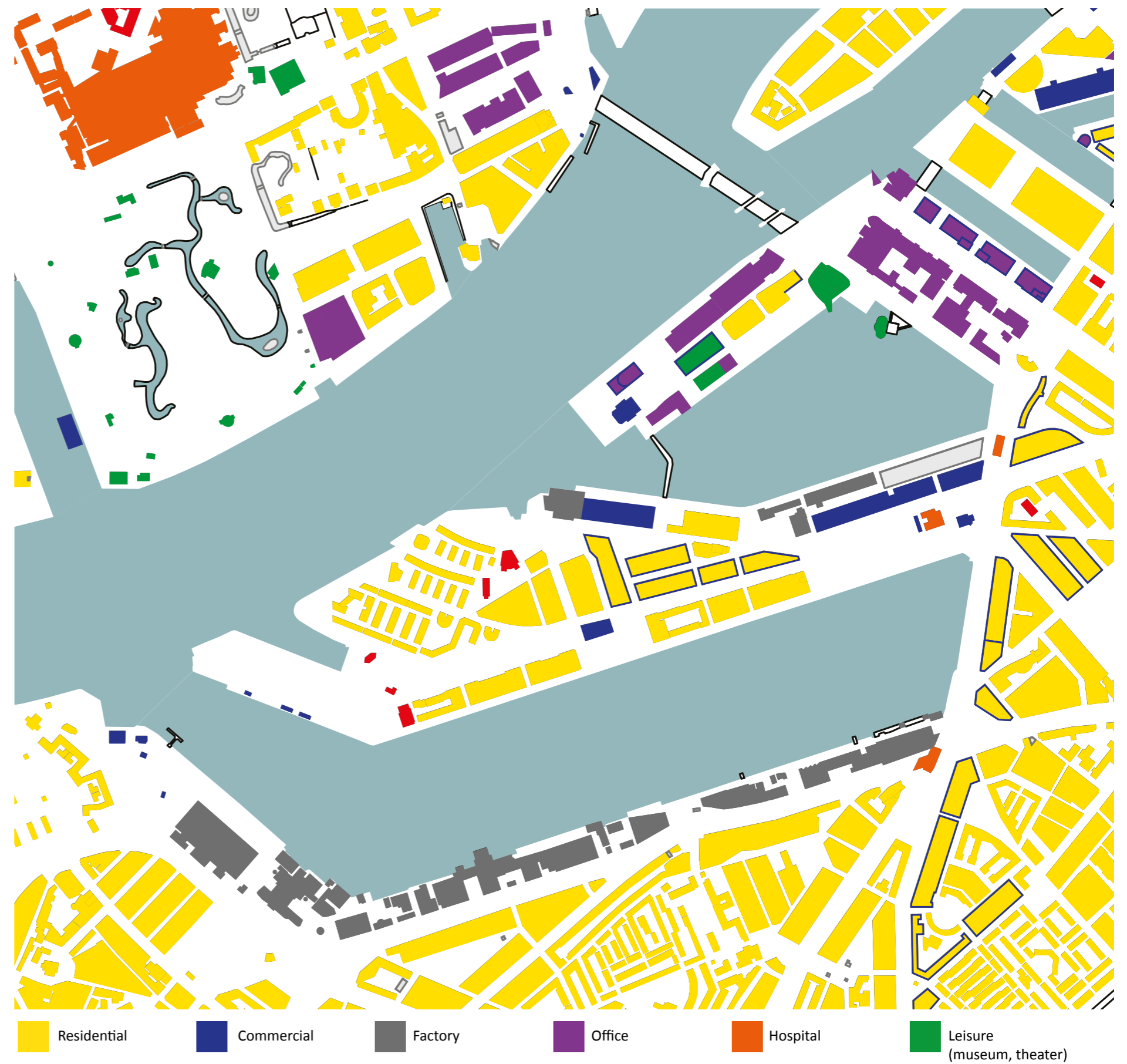
By creating a map of the neighbourhood with the main important functions per building.

### FINDINGS

It can be seen that Fenix II now is mostly enclosed with residential area and semi-public area, instead of industrial area. The residential area is concentrated on Katendrecht; the semi-public area is on Kop van Zuid. It is clear that most of the previous former industrial function has lost and changed to new functions mentioned above.

### CONCLUSION

Functions on Katendrecht have changed, from previous industrial to residential and semi-public.



## PUBLIC, SEMI-PUBLIC AND PRIVATE SPACE ACCESSIBILITY

### QUESTION

By using the method of Nolli Map, the composition of the public space, semi-public space, and private space can be understood.

### METHODOLOGY

By looking at white parts of the Nolli Map, the openness to the public can be seen, contrasting black parts.

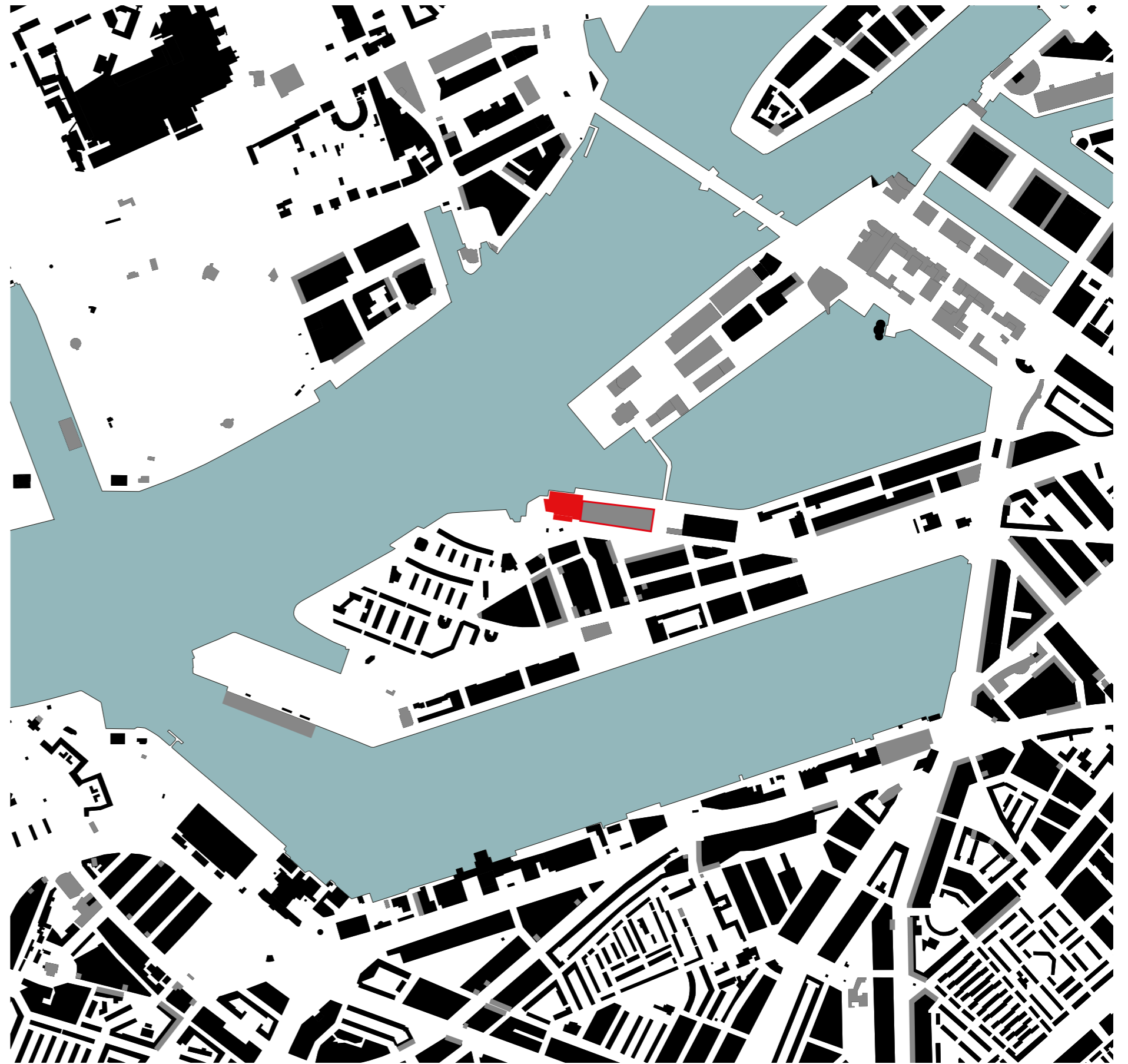
### FINDINGS

From the map, it can be seen that northern part of the map is quite public, mainly contributed by Het Park and traffic lanes (green space and transportation area can be seen in previous analyses). In Kop van Zuid and the southern area across Erasmus Bridge, it highly consists of the semi-public function which shows the character of accessibility. The southern part of the map is mostly private, assuming dwelling clusters. Only little semi-public space runs along the main street of traffic lanes and metro line.

Looking closely to Fenix II, visitors from Kop van Zuid and metro station will mainly encounter these semi-public space.

### CONCLUSION

The waterfront side of Fenix II is close to semi-public space from Kop van Zuid; the south side is facing more private space as residential area.



# SUN STUDY

## SHADE ON THE BUILDING

### QUESTION

This research is conducted to see how the sunlight falls on the building and how the shade falls on the quay.

### METHODOLOGY

In order to see how the sunlight falls on the building and the shade on the waterfront, 3D mass model has been made.

### FINDINGS

Only in summer time, north facade (waterfront) is exposed under the sunlight entirely, at least from 9h to 17h. Besides that, the waterfront is shaded.

The south facade (Deliplein) is always under the sun, with only few exceptions.

### CONCLUSION

Waterfront is the only side which the entire building can be seen. However, it is shaded more than half time of a year. Therefore, the attention should be addressed more in the future design.

	9h	13h	17h
S P R I N G			
S U M M E R			
F A L L			
W I N T E R			

### Sources

Own 3d model in google sketchup

# ROUTING/ STREETSCAPE

## 1 KOP VAN ZUID

### QUESTION

This research is conducted to see how the sunlight falls on the building and What is visitor experiences approaching to Fenix II as destination?

### METHODOLOGY

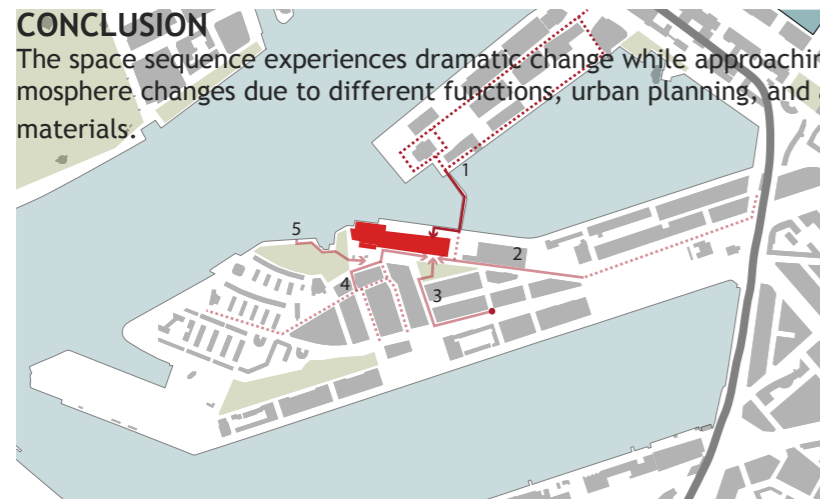
From the starting point of individual routing to the destination as Fenix II, the experience of visitors can be concluded. Different scale of continuous space sequence, the material of the pavement and the height difference are important factors to these routings.

### FINDINGS

Coming from Kop van Zuid, the atmosphere is dramatically changed, even with such close distance connected by Rijnhaven Bridge, from well-developed area to developing area, and from semi-public space to more private residential area. Fenix II is the first building after Rijnhaven Bridge, locating along on the waterfront which can be seen clearly from the side of Kop van Zuid. The change of height difference is emphasized by the Rijnhaven Bridge. The waterfront quay of Fenix II is relatively small and disrupted by parking, which interrupts accessibility of users. The space sequence experiences dramatic change while approaching.

### CONCLUSION

The space sequence experiences dramatic change while approaching; atmosphere changes due to different functions, urban planning, and applied materials.



Starting Point

Destination



### Sources

Own illustrations and photos

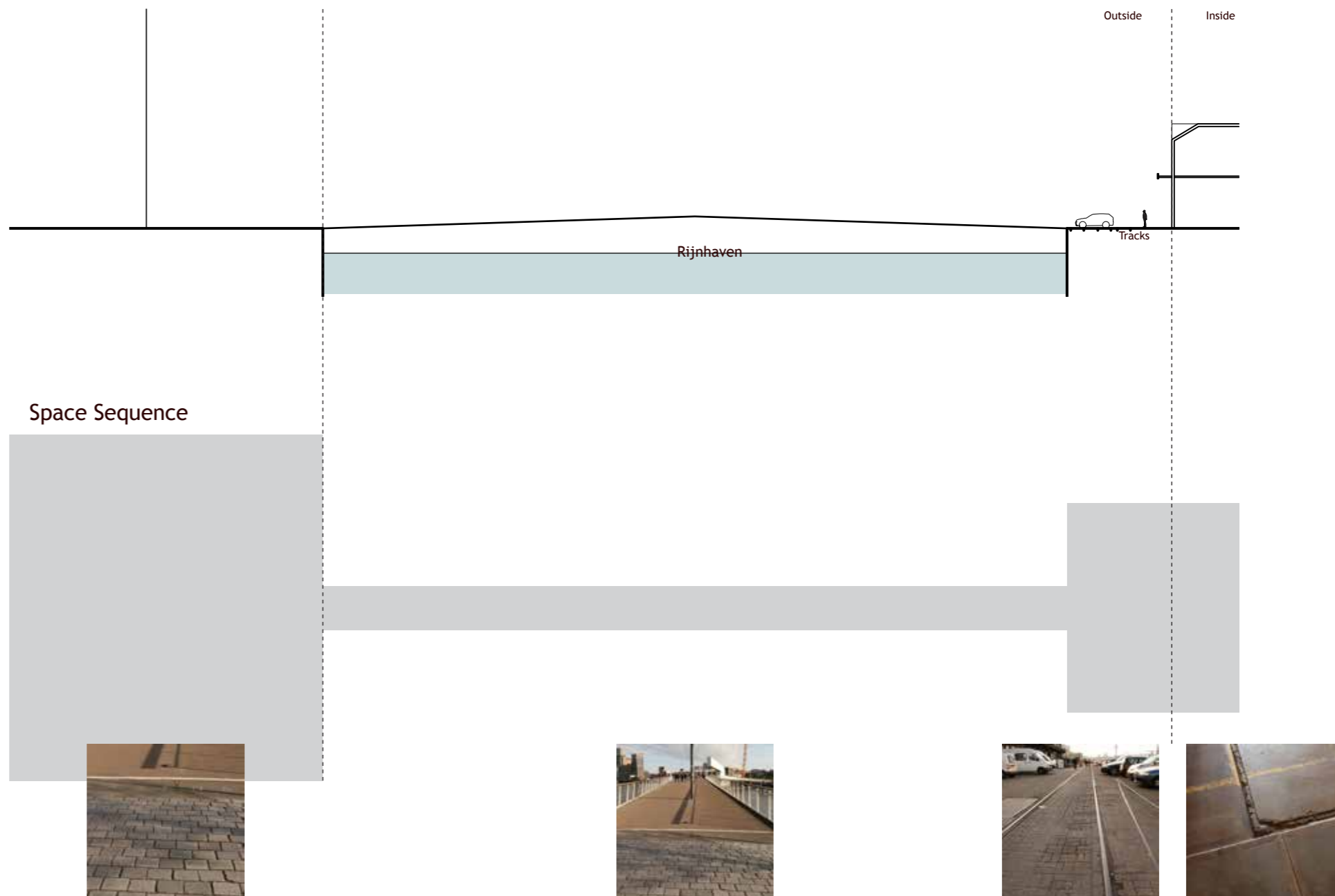


Streetscape

Hotel New York

Rijnhaven bridge

Fenixloods 2



Space Sequence

Paving Materials



# ROUTING/ STREETSCAPE 2 METRO STATION-RIJNHAVEN

## FINDINGS

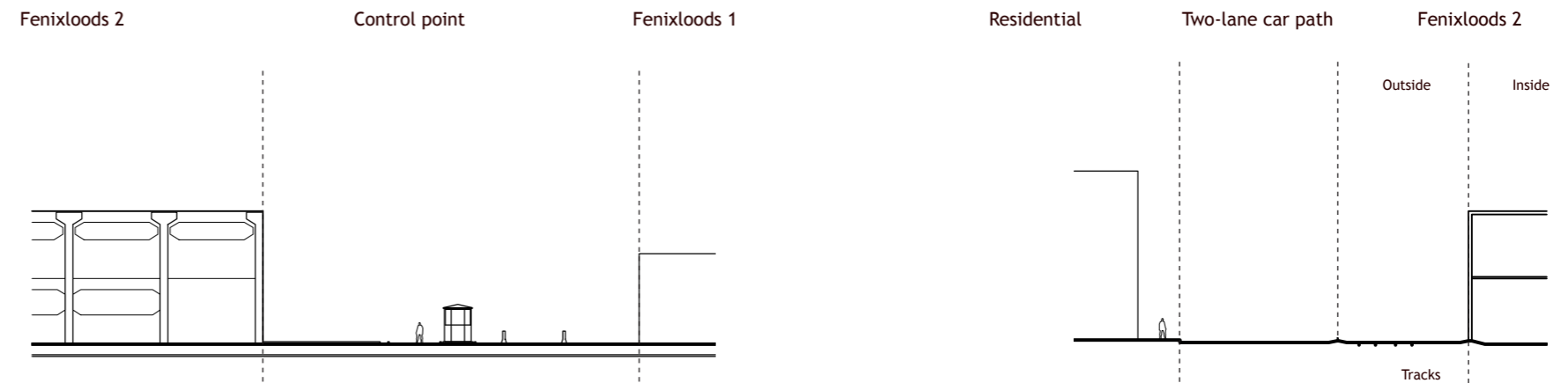
Coming from metro station, visitors will pass by Fenix I which remains some identical appearance as Fenix II. Part of the pedestrian is relatively narrow and unmaintained (damaged paving for example). Right before entering Fenix II, the in between square can be seen. However, it is not a welcome space which is full of obstacles and damaged paving. The high rise of Kop van Zuid can be through the square.

## CONCLUSION

The in between square acts as connection between Fenix I and Fenix II. However, it is not a welcome space which is full of obstacles and damaged paving.



### Streetscape

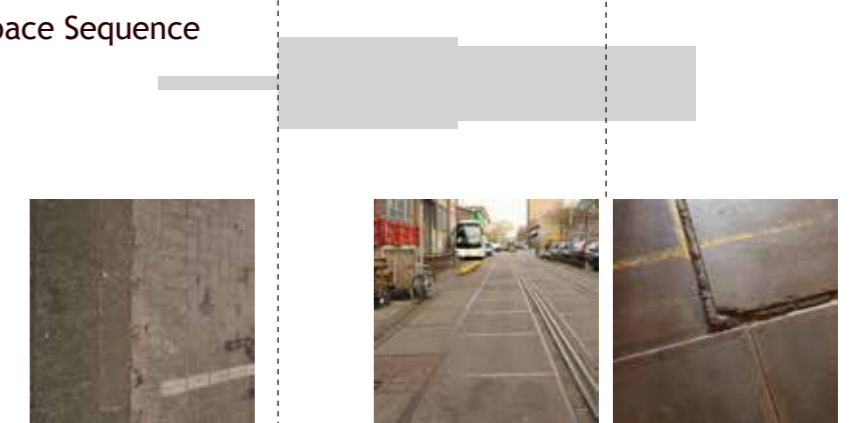


### Space Sequence

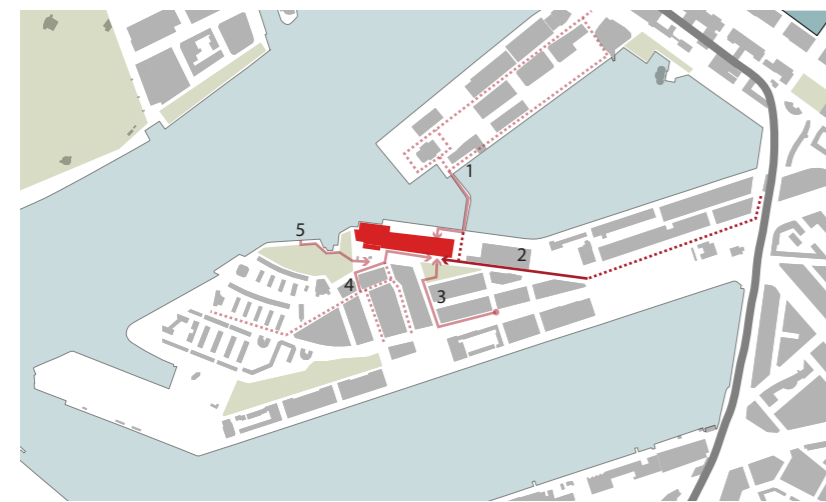


### Paving Materials

### Space Sequence



### Paving Materials



### Starting Point



### Destination



Sources  
Own illustrations and photos

# ROUTING/ STREETSCAPE

## 3 BUS STOP-ROTTERDAM, LOMBOKSTRAAT

### FINDINGS

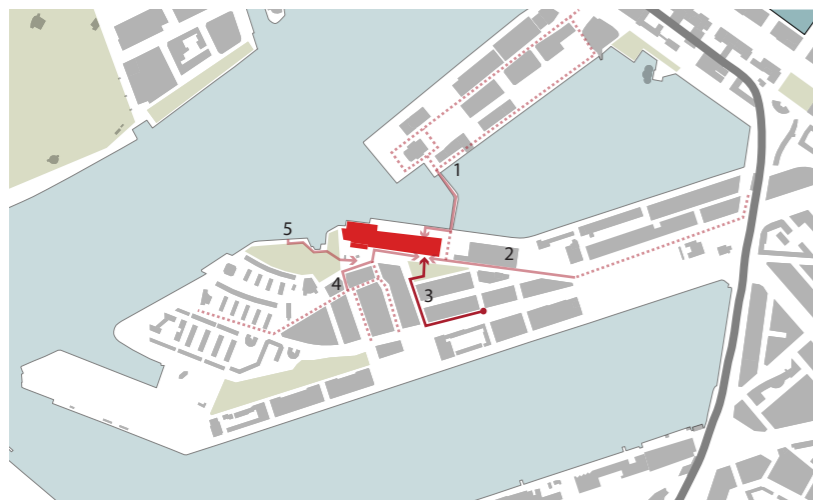
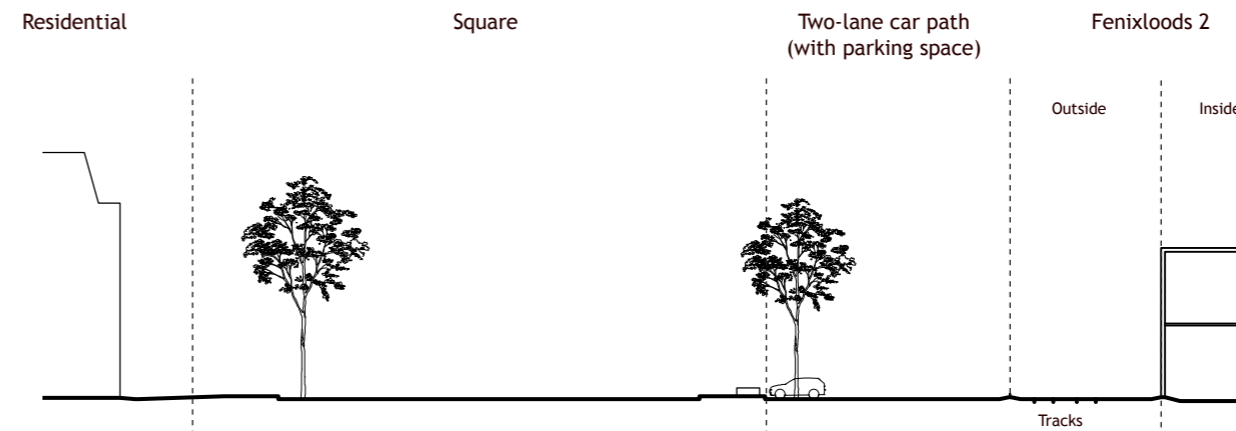
The routing is relatively quiet, reached by bus. Coming from the main road of Katendrecht, visitors enter directly to residential area. Then the huge open square, Deliplein, appears. However, the entrance to Fenix II is disrupted, due to the lack of proper opening of the square and parking space along the road.

### CONCLUSION

The routing is relatively quiet passing residential area. The huge open square, Deliplein, in front of the entrance to Fenix II is disrupted, due to the lack of proper opening of the square and parking space along the road. The reconnection between Deliplein and Fenix II should be concerned.



### Streetscape



### Space Sequence



Starting Point

Destination



Paving Materials

Sources  
Own illustrations and photos

# ROUTING/ STREETSCAPE 4 NEIGHBORHOOD

## FINDINGS

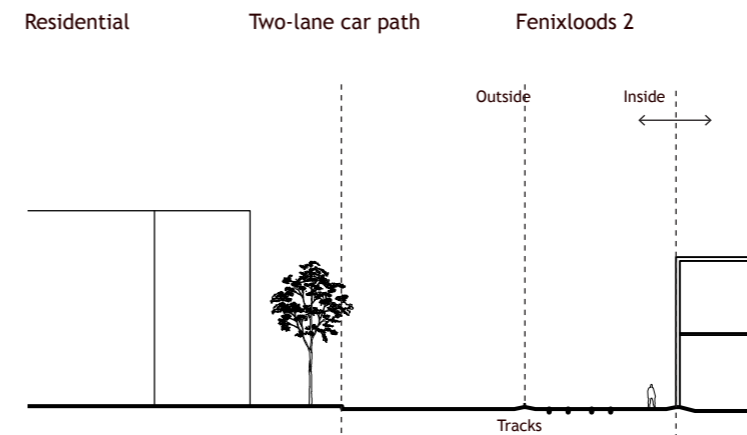
This routing is more for local residents and relatively short comparing to other routings. The space sequence does not change much. The major contrast are encountering Provimi Facotry and the industrial appearance of Fenix II to the adjacent residential façade.

## CONCLUSION

The contrast reflects on industrial heritage and new residential area.



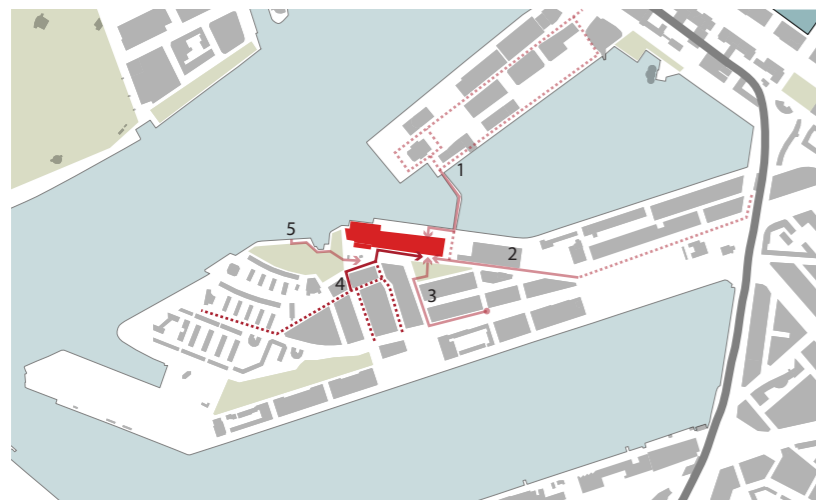
## Streetscape



## Space Sequence



Paving Materials



Starting Point

Destination



## Sources

Own illustrations and photos

# ROUTING/ STREETScape

## 5 WATER BUS-ROTTERDAM KATENDRECHT

### FINDINGS

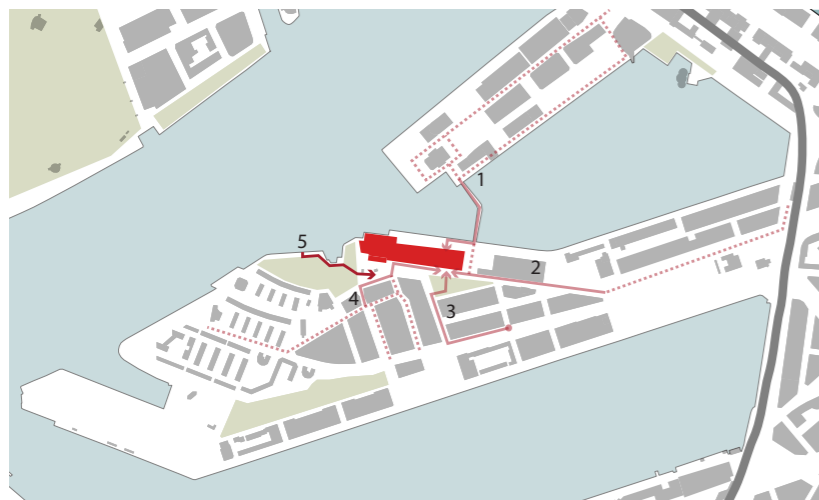
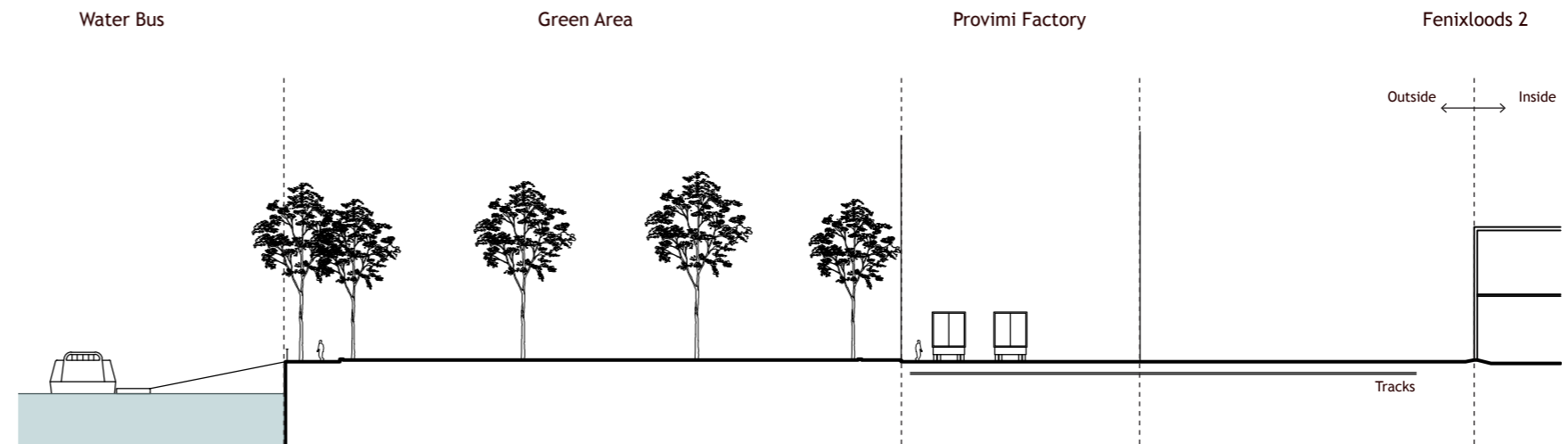
This routing has the closest relation to the natural environment. Visitors take water bus and arrive to the huge open green area. However, the routing is disrupted by Provimi Factory with busy large trucks without proper pedestrian linked to Fenix II. The space sequence of this routing experiences the most dramatic change with greenery and surrounding condition.

### CONCLUSION

The opportunity of reconnecting natural element to Fenix II can be stressed on future design. The interruption of Provimi Factory should also be concerned.



### Streetscape



Starting Point

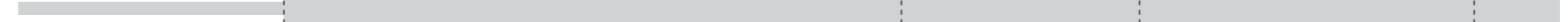
Destination



### Sources

Own illustrations and photos

### Space Sequence



Paving Materials



HERITAGE & ARCHITECTURE

ARCHITECTURAL ANALYSES  
BUILDING ANALYSES

# CIRCULATION ACCESS 1916

## QUESTION

This research is conducted to understand how the previous circulation worked on building level.

## METHODOLOGY

By looking at the former routes of the cargo and people; how goods were moved in, out and through the building.

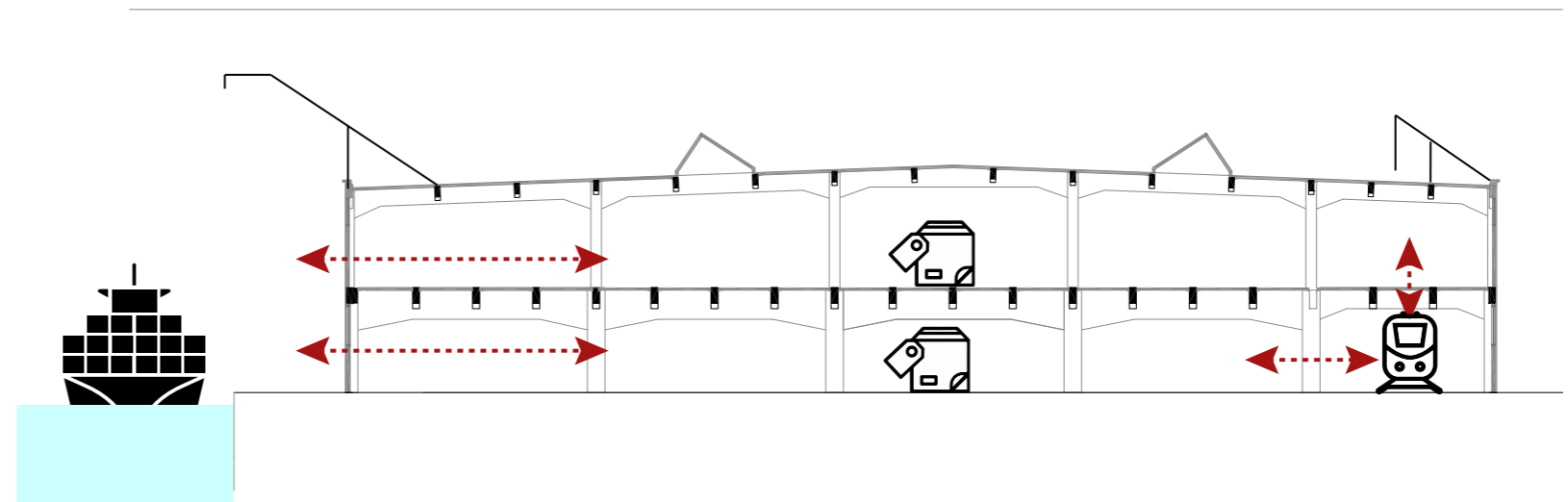
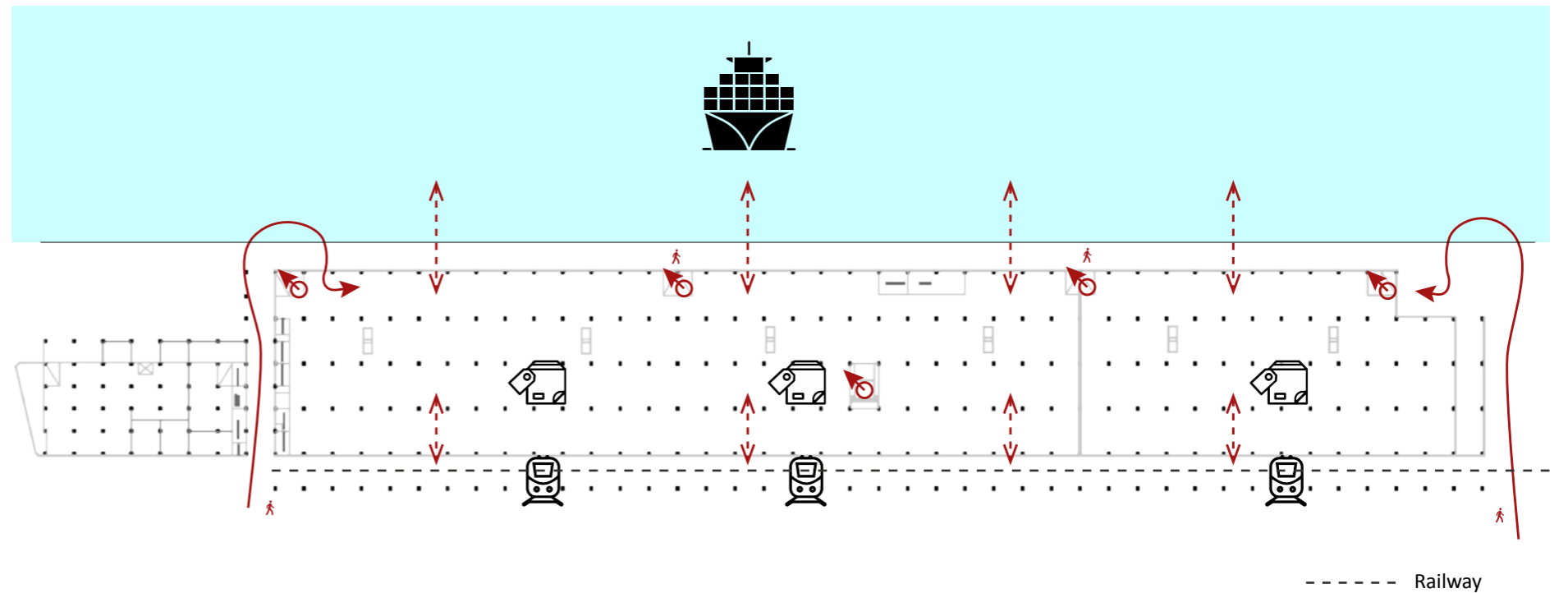
## FINDINGS

Firstly, there were two streams of circulation: cargo and worker. The cargo was transported all over the north façade (waterfront) into the building; the same movement was also happening on the south side (Deliplein). Under this loading and unloading situation, both facades had the same importance. The circulation of worker was the secondary stream in the building, comparing to the main stream of cargo.

Another interesting thing is the fact that both levels had the same importance. Cargo entered or left the building both on ground floor as it was on the first floor.

## CONCLUSION

The circulation was mainly for loading and unloading goods; ground floor and first floor had the same accessibility of this movement.



# CIRCULATION ACCESS 1951

## QUESTION

This research is conducted to understand how the previous circulation worked on building level.

## METHODOLOGY

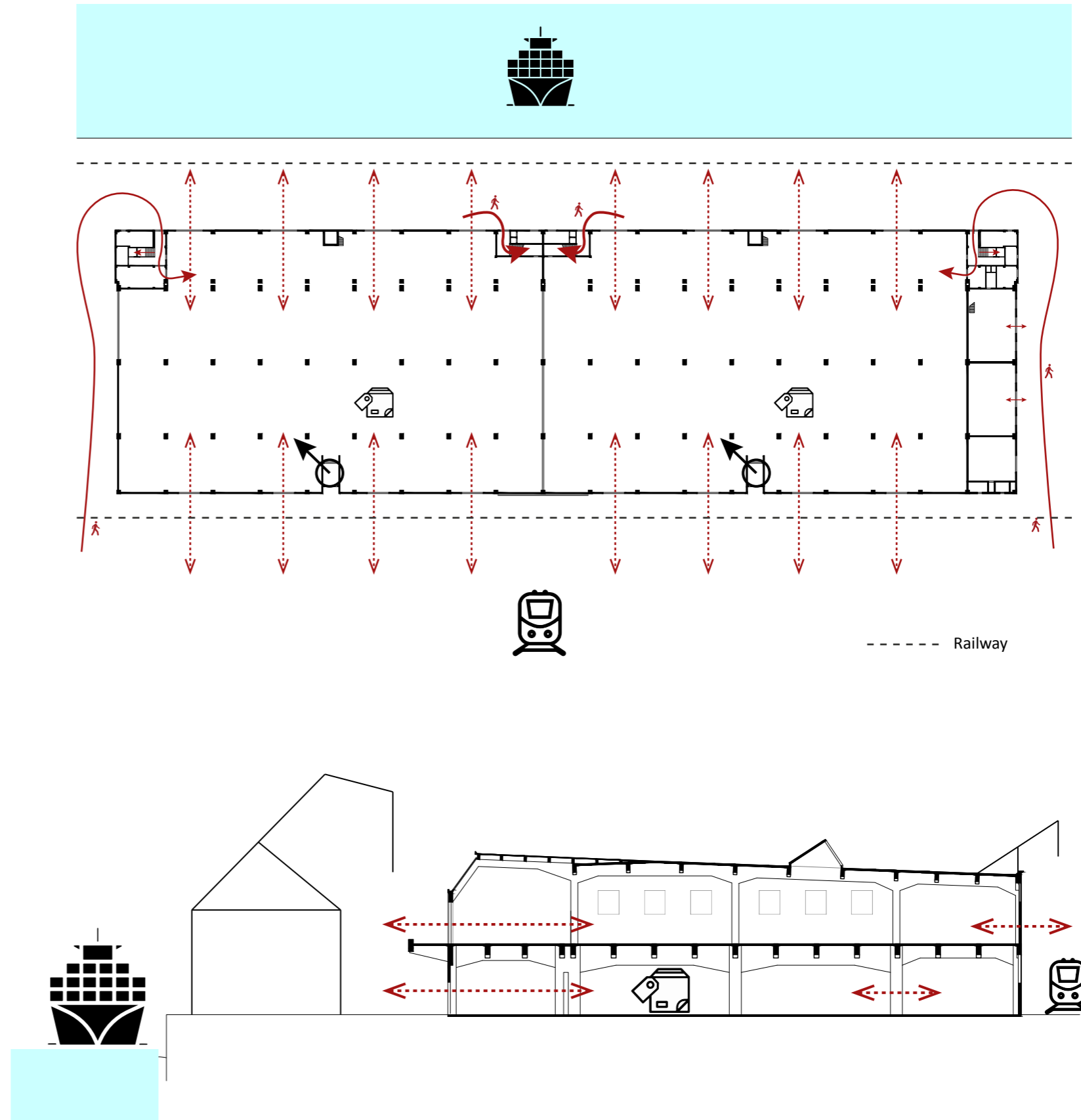
By looking at the former routes of the cargo and people; how goods were moved in, out and through the building.

## FINDINGS

The reconstruction had been made due to the war and fire damage, and the setback of the building can be seen. The circulation of goods and workers was similar to the previous period. However, the south side railways had been moved outwards; the first grid of south side on ground floor had been enclosed with doors, instead of opening railway passage. On the north side, there was railways added on the quay side, and functioned as external loading platform. The transporting circulation happened both on ground and first floor.

## CONCLUSION

The circulation was similar to previous period, and the transporting circulation happened both on ground and first floor. Due to reconstruction of the building after WWII and fire accident, the quay side space was extended and acted as external loading platform.



# CIRCULATION ACCESS 2014

## QUESTION

This research is conducted to understand how the circulation worked on building level nowadays.

## METHODOLOGY

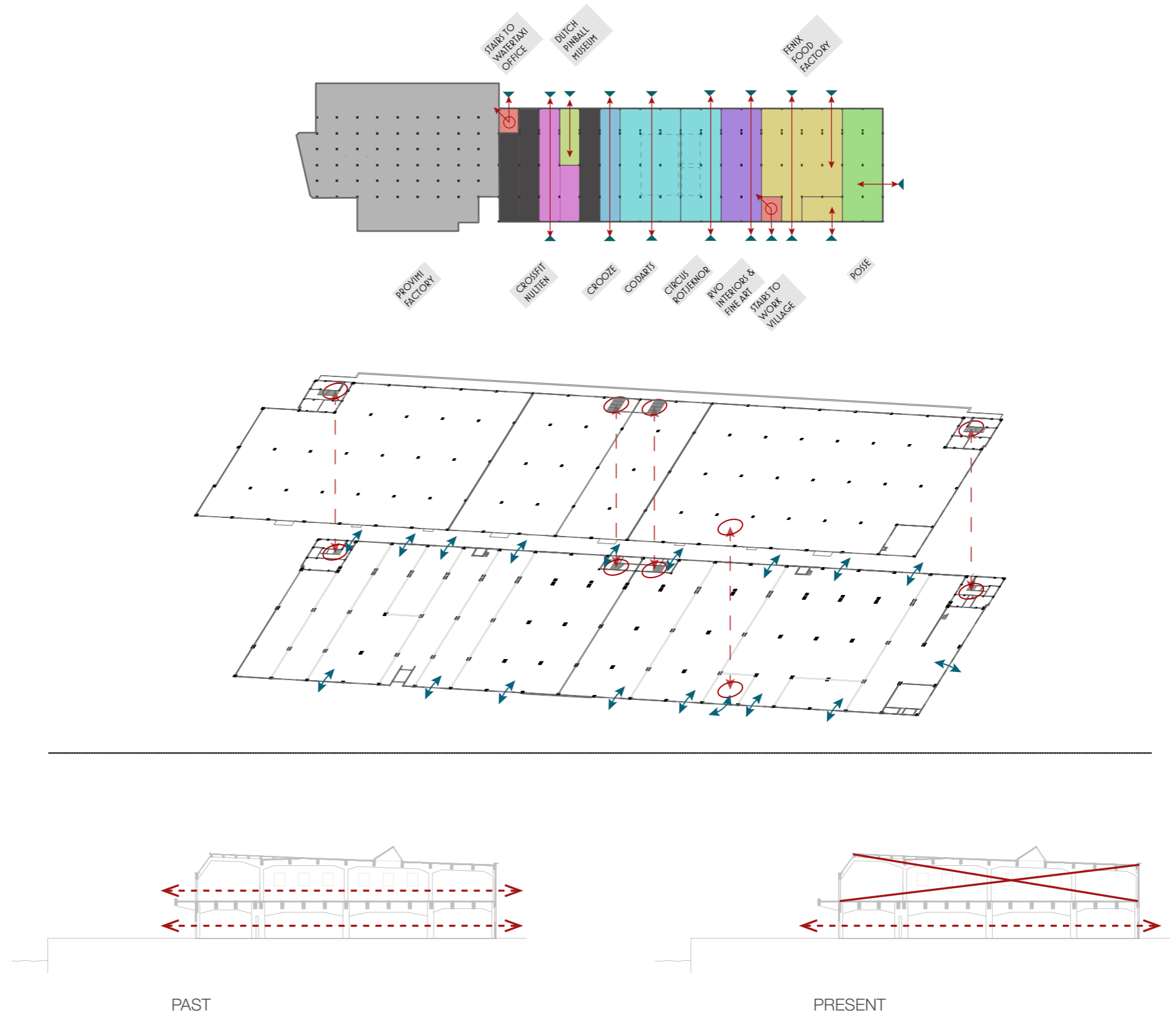
By looking at the current routes of users through the building.

## FINDINGS

It can be seen that small divisions have been made according to new functional needs. There are 11 new programs situated in Fenix II. On ground floor, most of the new divisions keep the same circulation as previous period, accessed by both sides; a clear front and back do not exist. In previous periods, both ground and first floor had the same importance of connection to external. However, on the first floor, the connection of external and internal no longer exists today, only connected with few staircases.

## CONCLUSION

On ground floor, there are small divisions made, still accessed by both sides. On the first floor, the connection of external and internal no longer exists today.





## COMPOSITION SPACE DIVISIONS

### QUESTION

This research is conducted to understand how Fenix II works in space divisions today.

### METHODOLOGY

By looking at the different volumes and spaces in the building.

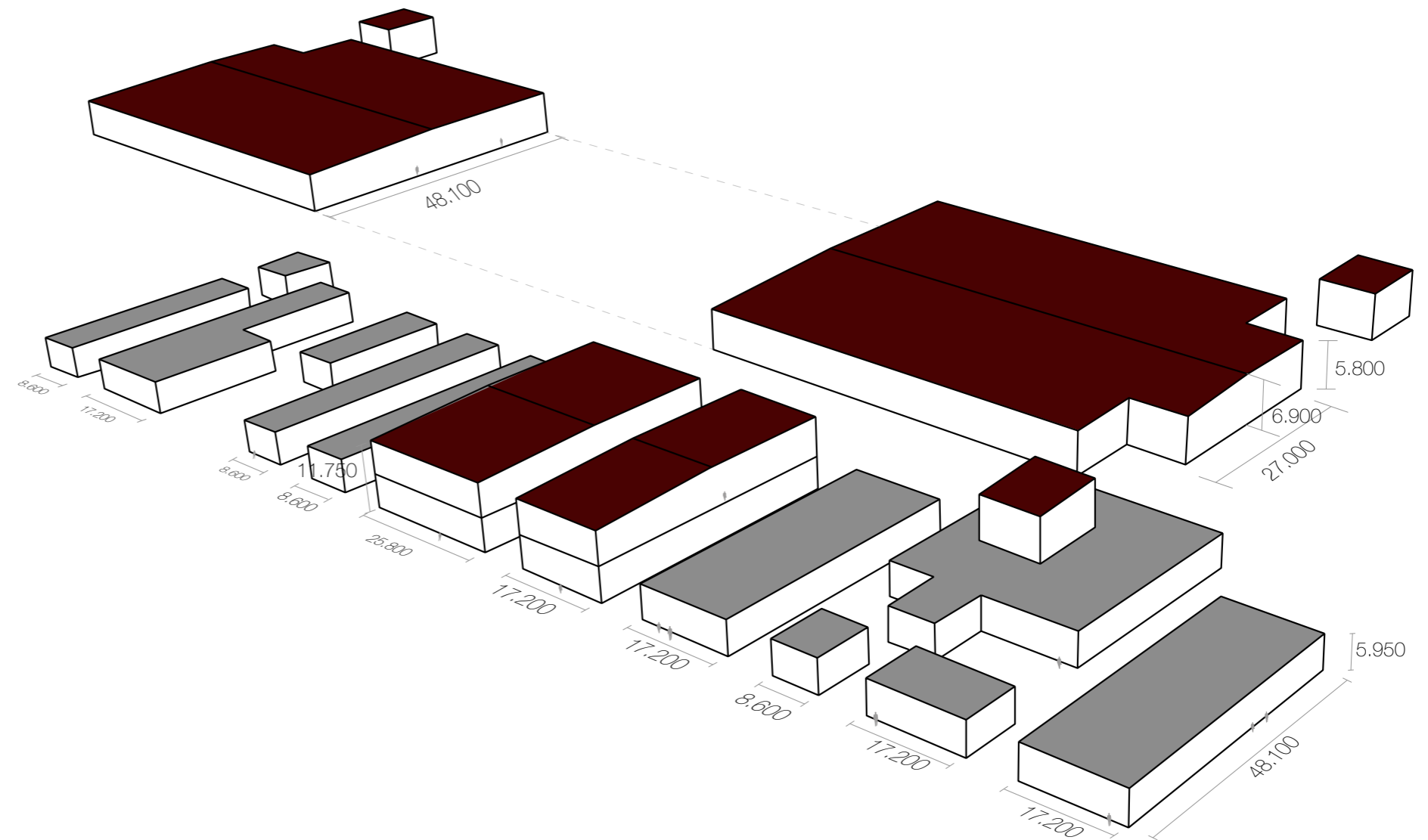
### FINDINGS

The building is divided into many smaller volumes on ground floor, and two huge division on first floor. The width of each new division is at least 1 grid span, and accessible on both sides. However, on first floor, the former dimensions of space are preserved, using the entire floor as a huge space. The first floor is no longer accessible directly from external, and therefore the space is connected with staircases in small volume.

The circus Rotjeknor and Codarts parts are the new highlight in the composition. The openings on the floor had been made to fulfil the needs of circus practice and performance. These openings not only connects ground floor and first floor, but also gives another spatial dimension with 11m high ceiling.

### CONCLUSION

The composition in the building are much more in diversity than previous periods. The connection from external to internal only preserves on ground floor.



# RHYTHM OF FENIX II STRUCTURE

## QUESTION

To understand the character of Fenix II, the rhythm and the proportion of the building can be seen in the following analyses.

## METHODOLOGY

By looking at floor plans, the ratio of the building can be found.

## FINDINGS

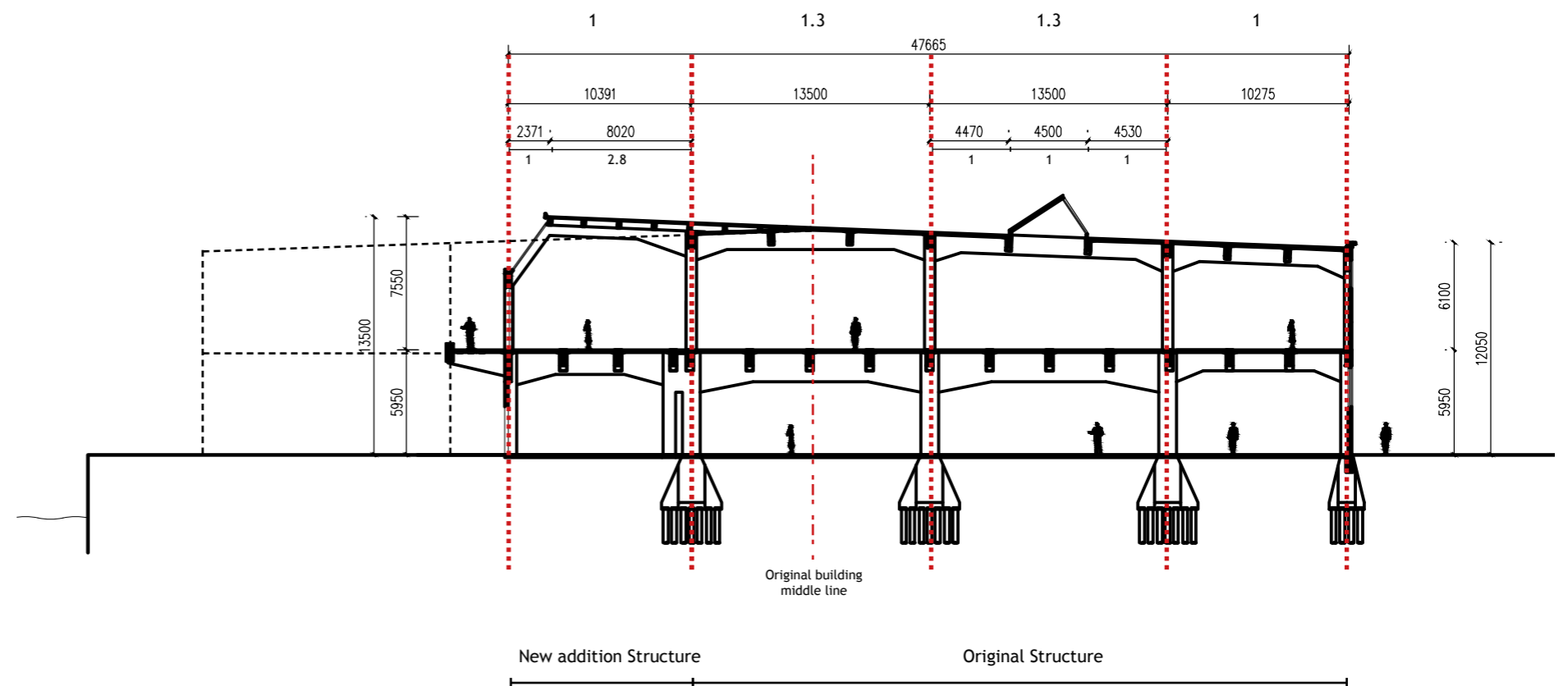
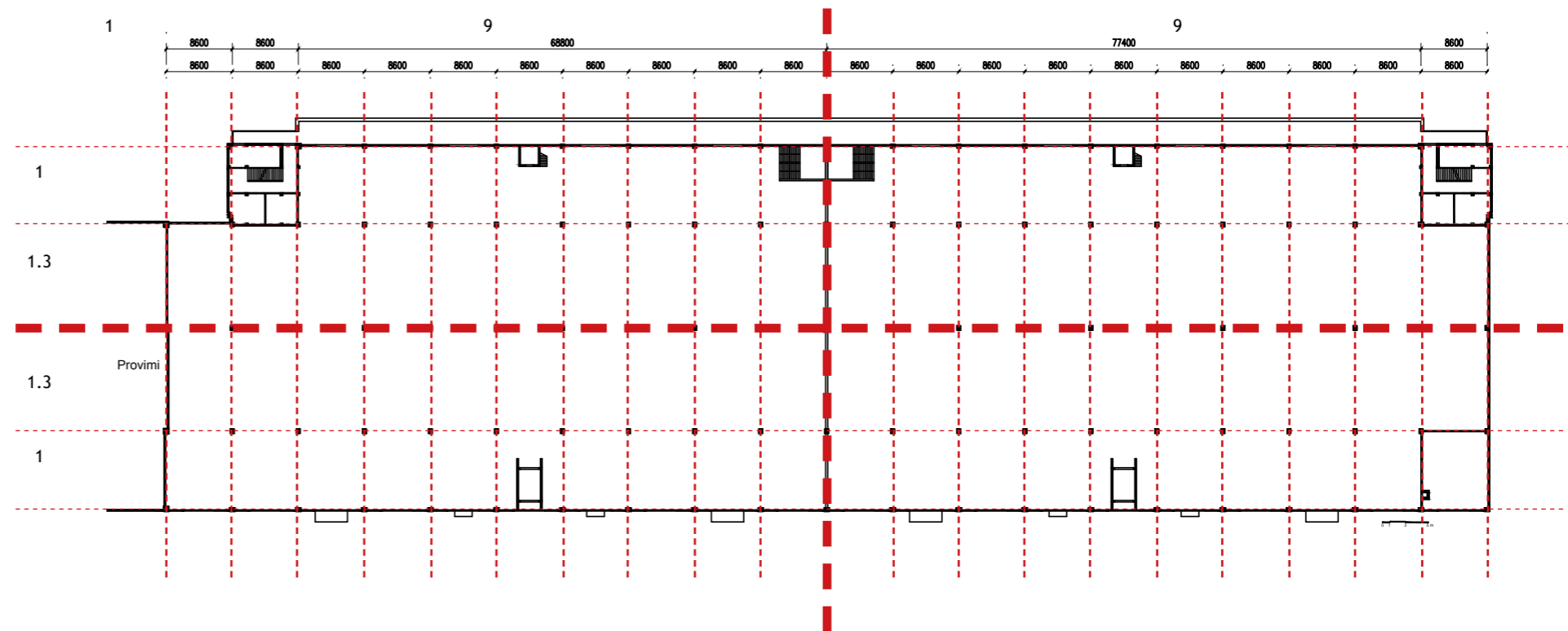
Even though the building has been partially demolished. The new addition has tried to follow the rhythm, and also creating another space quality. Fenix II still preserves its repetitive rhythm of structure.

By looking at the plan, symmetrical middle line can be seen from both directions. The ratio of larger span to the smaller one is 1.3; this ratio has been used over the building, such as in the height and openings which will be shown in the following analyses.

## CONCLUSION

Fenix II has repetitive and symmetrical rhythm. The ratio of 1.3 has been applied to many parts in the building.

First Floor Plan



# RHYTHM OF FENIX II STRUCTURE

## QUESTION

To understand the character of Fenix II, the rhythm and the proportion of the building can be seen in the following analyses.

## METHODOLOGY

By looking at facade, the ratio of the building can be found.

## FINDINGS

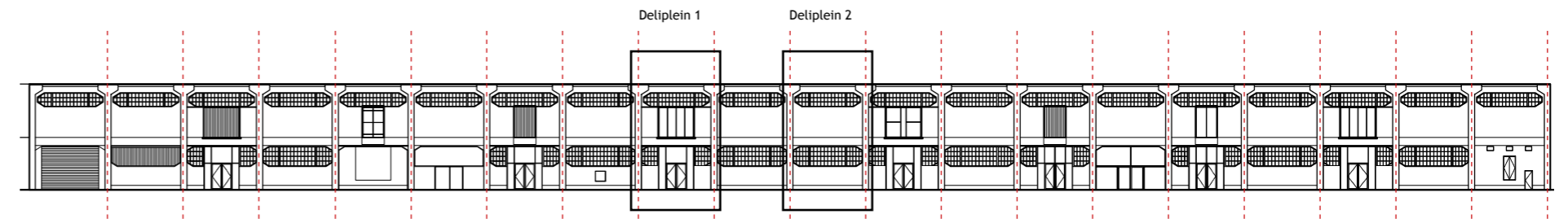
The facade itself has such high repetitive rhythm as the main character and it is also emphasized by the popping out column on the south side (Deliplein), especially with the strong color applied later.

The ratio of 1.3 can be seen applied again on the height of ground floor and first floor, also on the new addition side window which runs all along the first floor on the south side (waterfront).

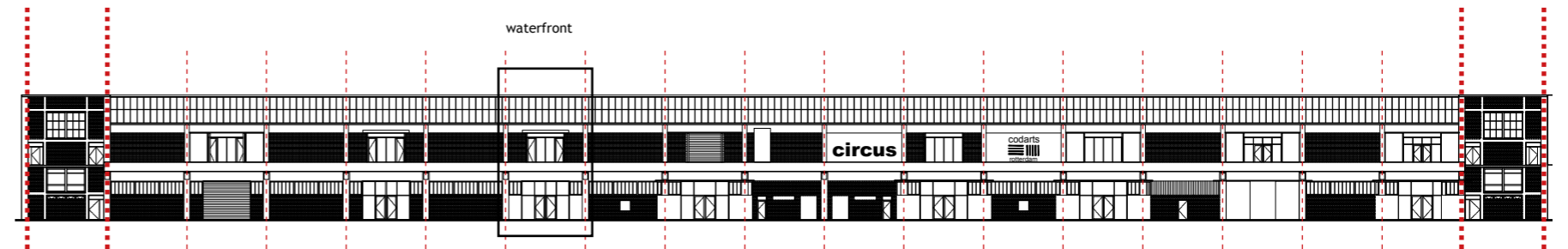
## CONCLUSION

Fenix II has repetitive rhythm. The ratio of 1.3 has been applied to many parts in the building.

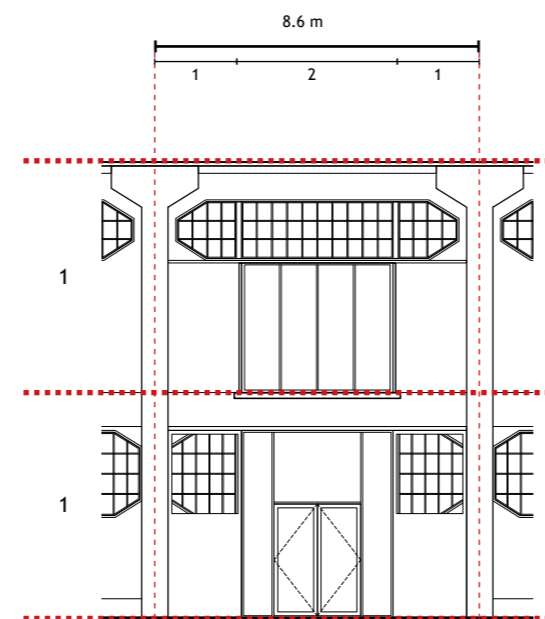
South facade (Deliplein) 1916



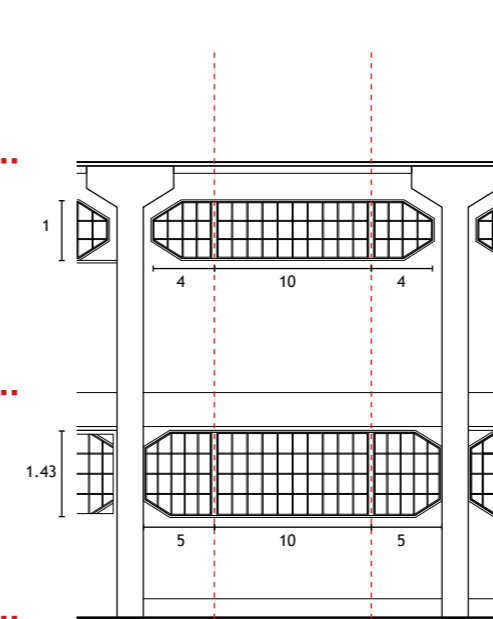
North facade (waterfront) 1951



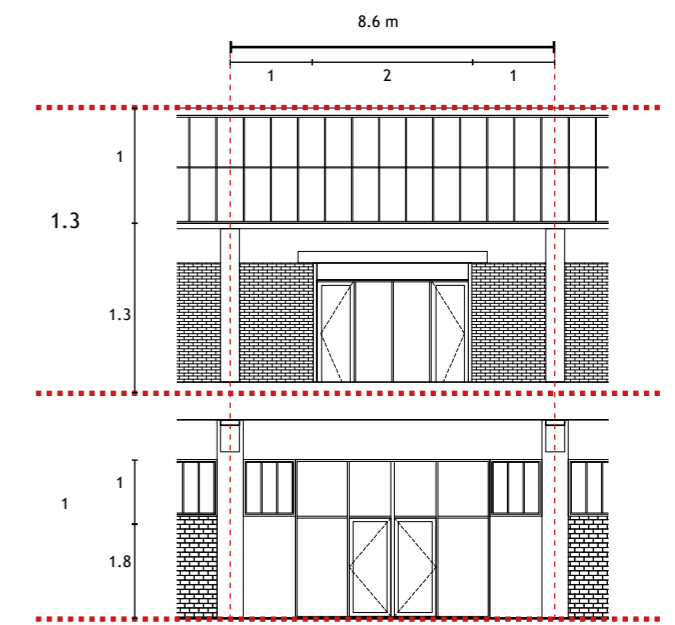
Deliplein 1



Deliplein 2



Waterfront



# RHYTHM OF FENIX II

## OPEN AND ENCLOSED FACADE

### QUESTION

To understand the character of Fenix II, the rhythm and the proportion of the building can be seen in the following analyses.

### METHODOLOGY

By looking at black and grey parts, the contrast can be seen.

### FINDINGS

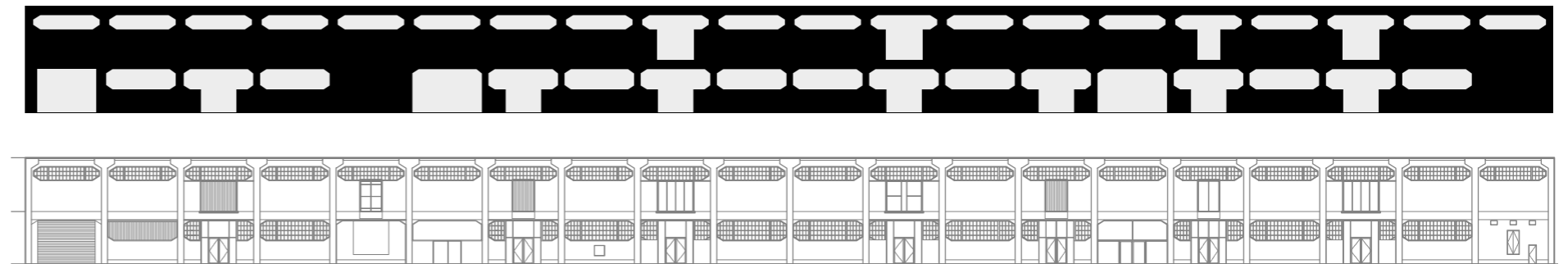
For the south façade built in 1916 (Deliplein), it is relatively more open on ground level than waterfront side which creates connections to a huge open square in the front. The south façade perverts the original design of window shapes which gives strong character to the building. As it can be seen, the window openings on first floor are very high, which it can be assumed not openable for ventilation. It has also more repetitive window openings than the north side.

For the north façade built in 1951 (waterfront), it has several huge entrance openings from the ground level. However, the closet volume approaching from Rijnhaven Bridge is not open, which may reduce the welcoming atmosphere and accessibility to visitors. The side window on the first floor, it has made a strong expression of the building, with consistent glazing without interruption of structure. It also gives sufficient natural daylight to the interior.

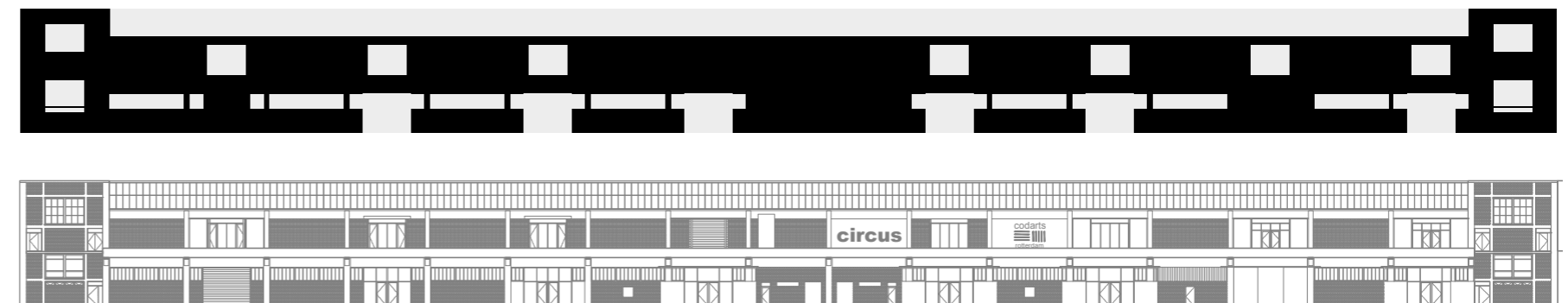
### CONCLUSION

The expression from both façades is very different. For ground level, south façade is more open than the north side. The south façade perverts the original design of window shapes which gives strong character to the building. The ground openings on north façade did not give a good connection to the waterfront. However, north façade side window gives sufficient natural day light to interior space.

South facade (Deliplein)



North facade (waterfront)



# RHYTHM OF FENIX II

## FIRST THING TO NOTICE ON FACADE

### QUESTION

The first thing to notice when approaching to Fenix II can be seen as the main character of the building.

### METHODOLOGY

By looking at the elements in the building, building character can be defined.

### FINDINGS

On the south façade built in 1916 (Deliplein), the first thing appears is the repetitive rhythm; the shape of the columns emphasizes the rhythm and also popped out with the strong applied colour. It also distinguishes itself as industrial building from adjacent residential area, with high openings for entrance, and warehouse appearance. Secondly, the sophisticated shape of the window which runs along with the shape of column reinforces the expression of the whole façade.

On the north façade built in 1951 (waterfront), the first thing comes to eyes is the consistent side window on the first floor. Secondly, the balcony and the structure of the balcony which expose entirely and runs along the building gives strong image. Lastly, the huge transparent opening for entrance expresses the presence.

### CONCLUSION

On the south façade, it emphasizes on the repetitive rhythm and the shape of the columns with industrial appearance.

On the north façade, side window on first floor gives the most expression with its continuous openings without interruption along the entire building.



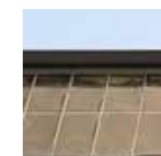
Shape of the column  
Color of the column



Shape of the window



Side window all along the building



Extended balcony and its structure



Huge opening as entrance

# MATERIALISATION

## 1916-1922

### QUESTION

This research is conducted to categorize the materials applied in the building in different periods.

### METHODOLOGY

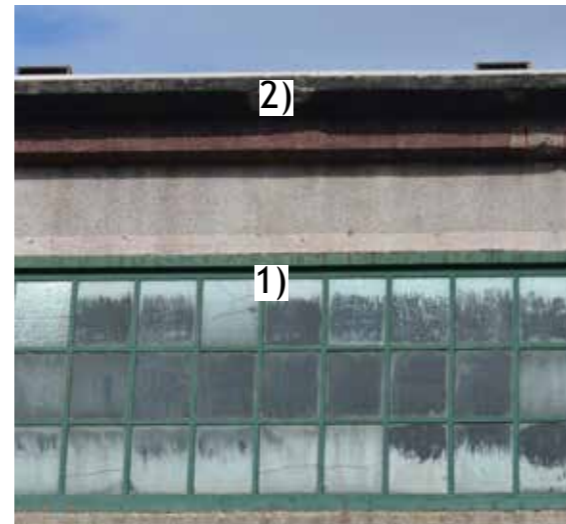
By looking at old photos and taking pictures of the materials on site, it can be categorized.

### FINDINGS

Materials found in the building show different time period. Concrete is the original main material in this building, which can be found with the structure and the plaster, and mainly on the south facade. On the south facade, the original window frames were made with wood and steel.

### CONCLUSION

The applied materials in the building are relatively consistent, mainly concrete, which shows a unified character.



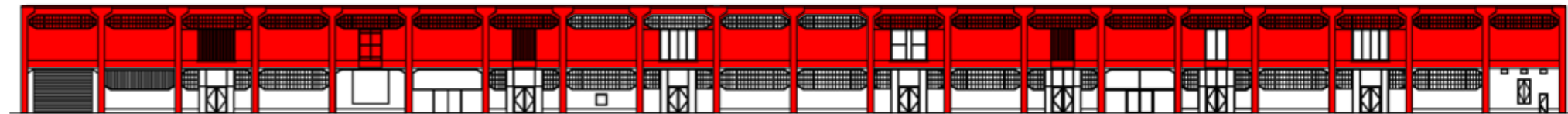
1) Original steel window frame  
2) Concrete structure



3) Original steel door + paint



4) Original steel door + paint



5) Concrete balcony



6) Elevator box



7) Concrete plaster

# MATERIALISATION

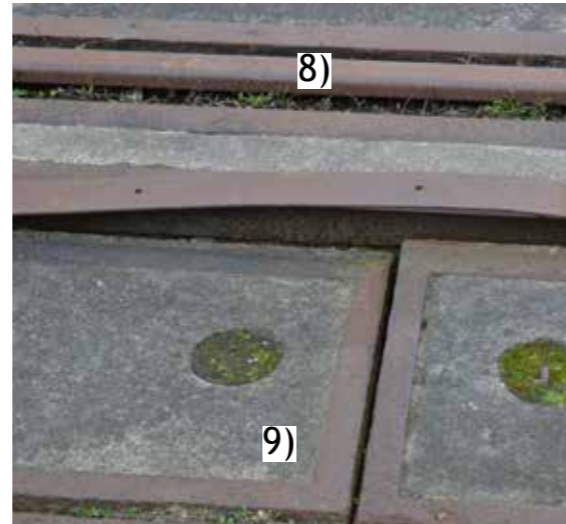
## 1941-1952

### FINDINGS

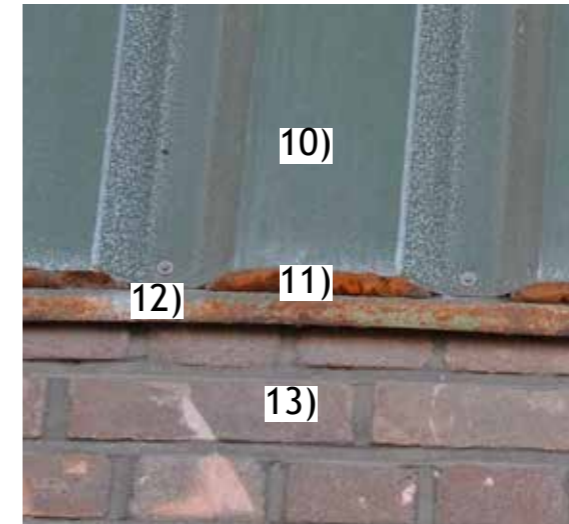
In the second period, brick walls and aluminium window frame was added.

### CONCLUSION

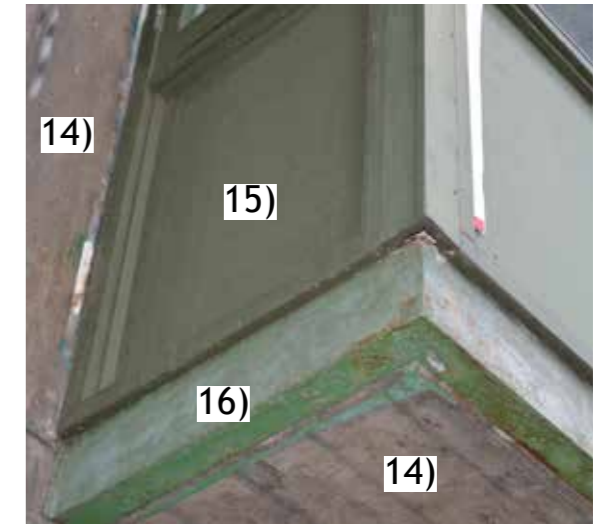
The additional materials were mainly brick walls, due to the reconstruction of the north façade.



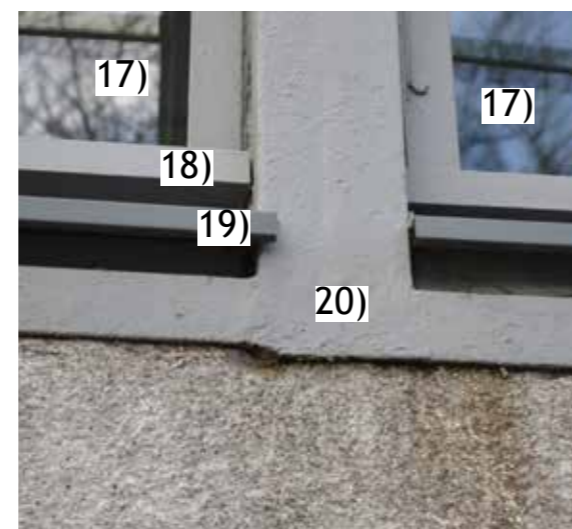
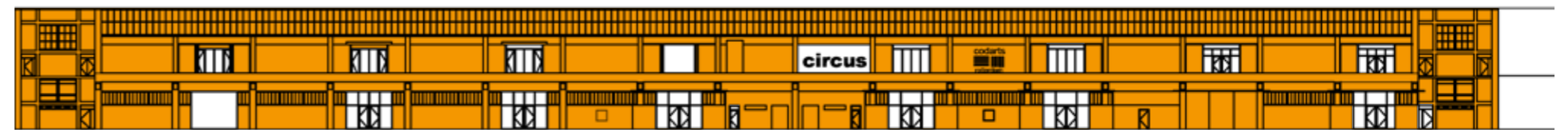
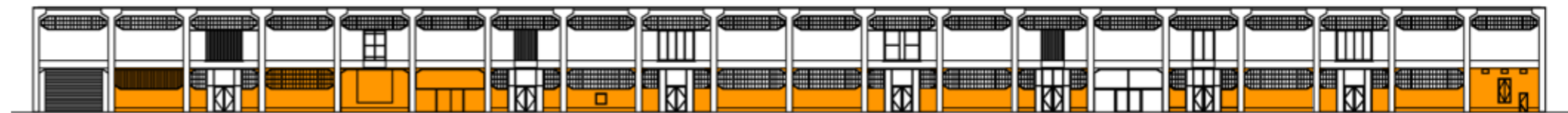
8) Iron tracks  
9) Concrete slabs



10) Aluminium  
11) Purr  
12) Iron  
13) Brick



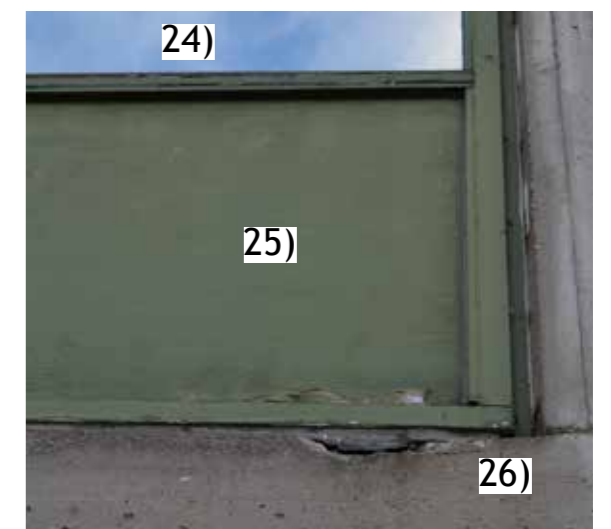
14) Concrete  
15) Wood  
16) Steel



17) Single Glazing  
18) Aluminium  
19) Steel  
20) Steel



21) Brick  
22) Wood  
23) Steel



24) Single Glazing  
25) Wood  
26) Concrete

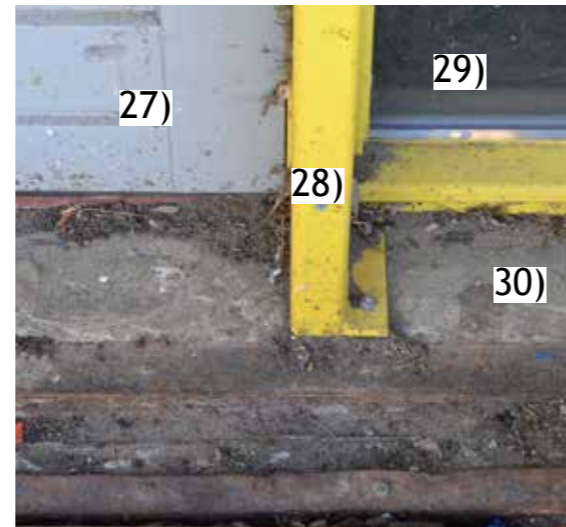
# MATERIALISATION 2012-PRESENT

## FINDINGS

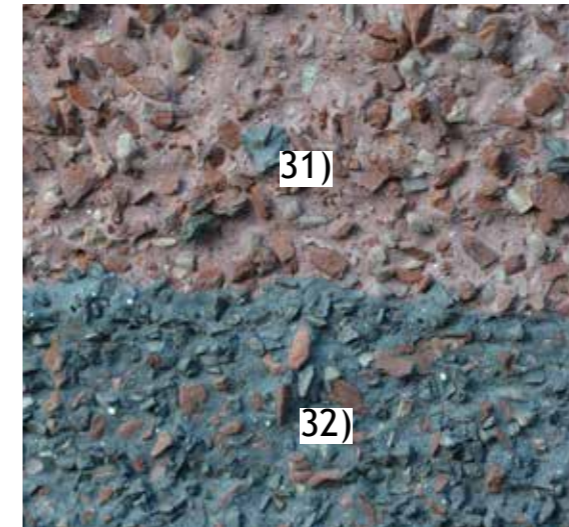
In the last period, double glazing was installed and concrete plaster had been applied with small popping surfaces which in first period was smooth surface. The color of red had also been applied and made a strong expression of the south façade.

## CONCLUSION

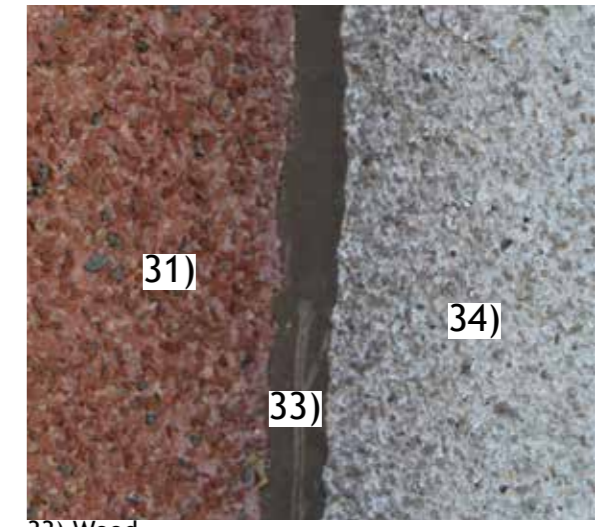
The applied materials has changed the character of façade, such as the texture of column surface and color.



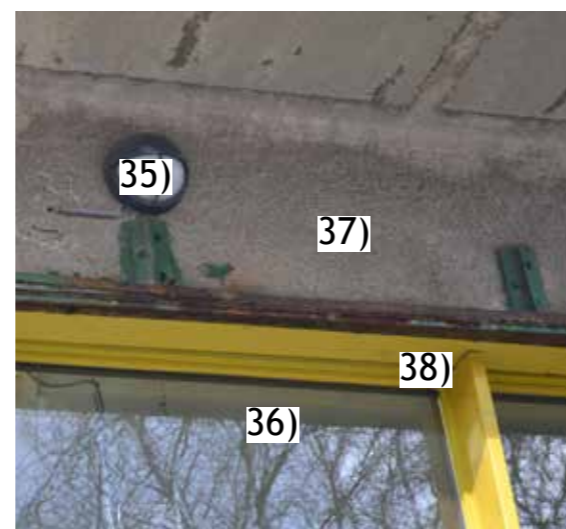
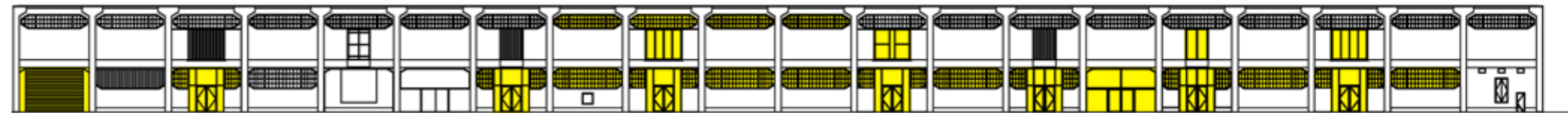
27) Wood  
28) Steel  
29) Double Glazing  
30) Concrete



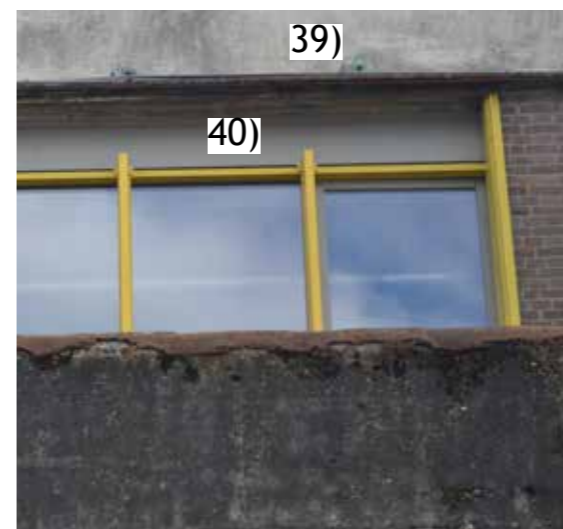
31) Concrete plaster (Red)  
32) Concrete plaster (Blue)



33) Wood  
34) Concrete plaster (white)



35) Lamp  
36) Double Glazing  
37) Concrete plaster  
38) Steel Frame



39) Concrete structure  
40) Wood infill



41) Plastic roll up doors



# SUNSTUDY

## SUNLIGHT ANGLE

### QUESTION

This research is conducted to see how the sunlight falls on the building and how the shade falls on the quay.

### METHODOLOGY

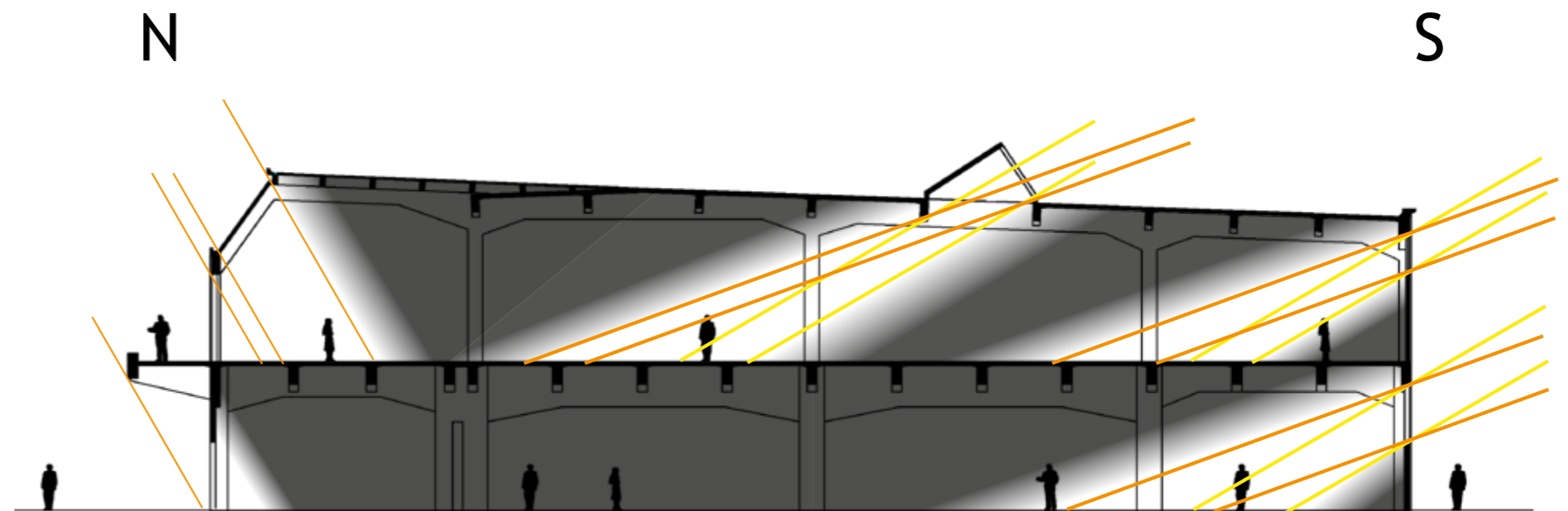
By making a 3D mass model in sketchup of the site and its surroundings, the shadows that the buildings make can be made visible.

### FINDINGS

From the south façade, natural light comes in quite far into the building, one third of the entire space. Especially on first floor, the entire space was very bright and full of natural light, due to the south opening, the skylight, and side window; sufficient natural light introduce reduces the need of artificial light. In contrast, on ground floor, the middle part of the space was quite dark; artificial light needs to be added.

### CONCLUSION

On ground floor, the middle part of the space was quite dark. In contrast, on first floor, the entire space was very bright and full of natural light, due to the south opening, the skylight, and side window. The agreeable atmosphere can be felt on first floor.



# ATMOSPHERE FOOD FACTORY

## QUESTION

This research is conducted to understand the atmosphere or character of the space.

## METHODOLOGY

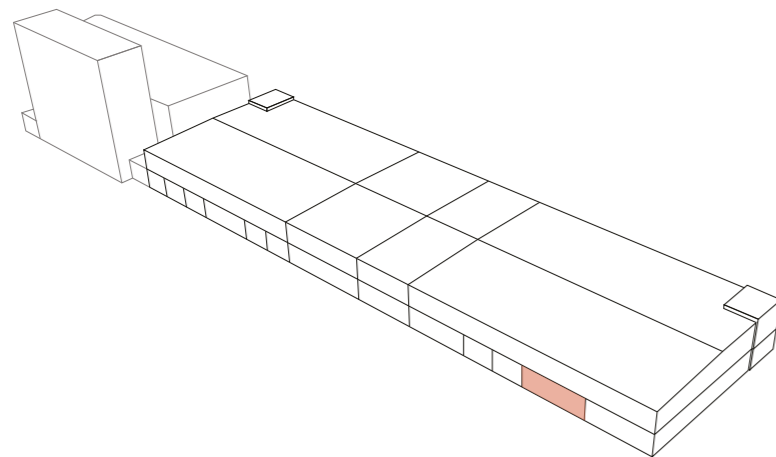
By sketching the space and representing the atmosphere during visits.

## FINDINGS

Fenix Food Factory is the biggest space on the ground floor, but it does not express the enormous open space. Instead, the space is full with venders, tables, and chairs. The atmosphere is lively, crowded, and warm market experience, with a smell of delicious food.

## CONCLUSION

Lively and warm market experience



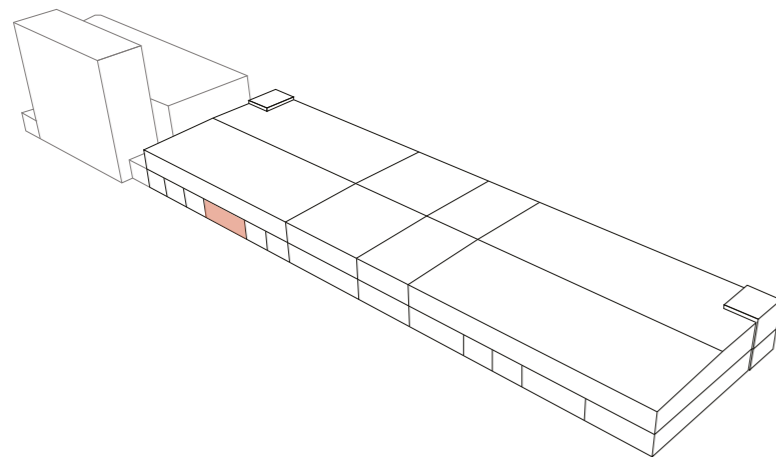
## ATMOSPHERE CROSSFIT NULTIEN

### FINDINGS

It shows very different atmosphere in crossfit Nultien than Fenix Food Factory. Along with the sport related facilities and materials, the atmosphere is cold, tough, and sportive. Even though the entire space is only two spans, it feel much larger, contrasting Food Factory full of small items. The space is functional orientated, and the natural light introduce makes the space larger and open.

### CONCLUSION

In contrast, the atmosphere in crossfit is cold and functional with the work-out facilities.



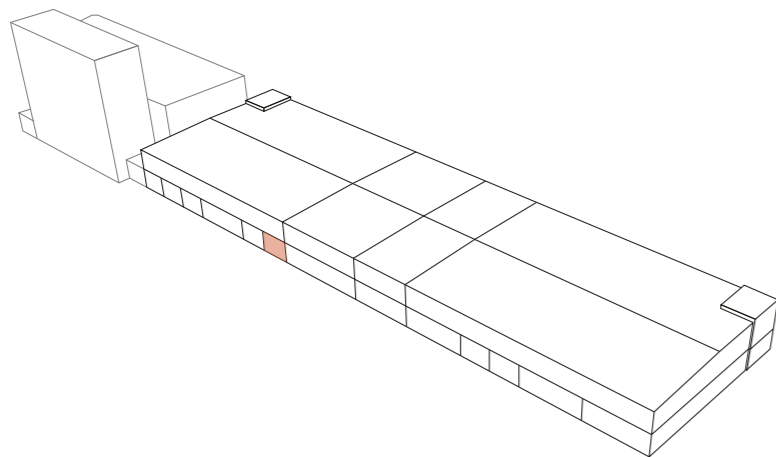
## ATMOSPHERE CROSSFIT NULTIEN

### FINDINGS

Crooze, a bike shop, is one of these typical one grid wide shops. The space looks very long and stretching out far. Especially, with the both sides accessibility, the tunnel-like natural light is seen from the opposite side which also makes the space longer. The end light can be also seen as a guidance that something also happens on the other side. Moreover, it does not feel crowded with one grid span.

### CONCLUSION

It is one of the typical division today, single span width with both sides accessibility. The end light can be also seen as a guidance that something also happens on the other side. Moreover, the space looks long but not crowded.



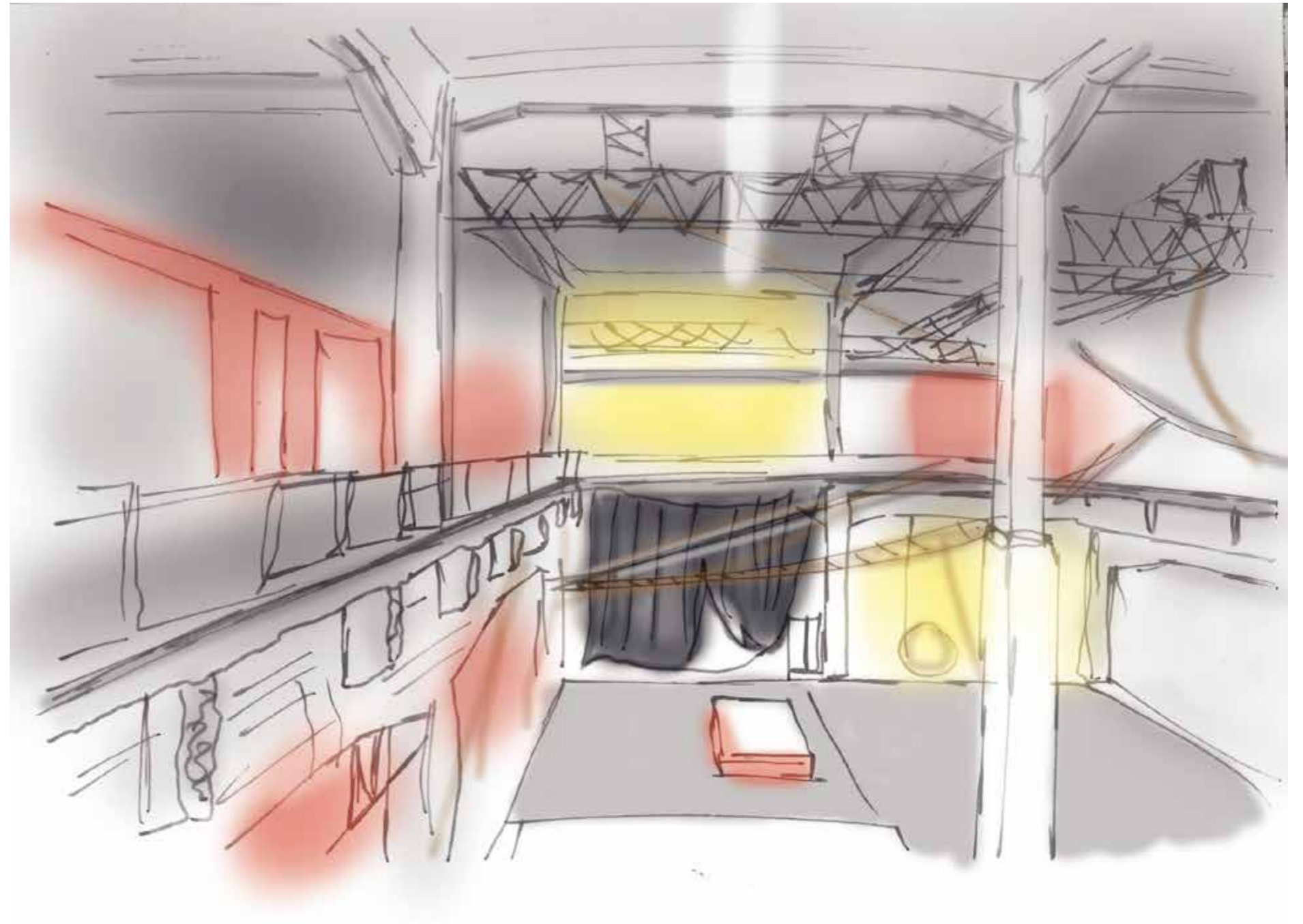
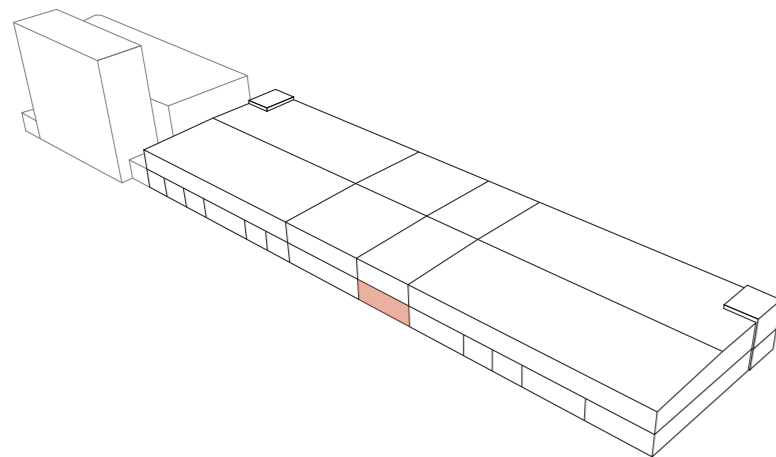
## ATMOSPHERE CIRCUS AND CODARTS

### FINDINGS

These are the only two spaces having direct vertically connection in Fenix II. Due to the needs of circus practice and Codarts performance, there are two openings made on the floor which creates 11m high ceiling in total. The space here gives lighter and more spacious expression than standard height space, since the entire height is doubled than others and natural light comes in further to the building. Also, the applied colors give “happy” atmosphere in circus.

### CONCLUSION

These are the only two spaces having direct vertically connection in Fenix II. The space here gives lighter and more spacious expression than standard height space



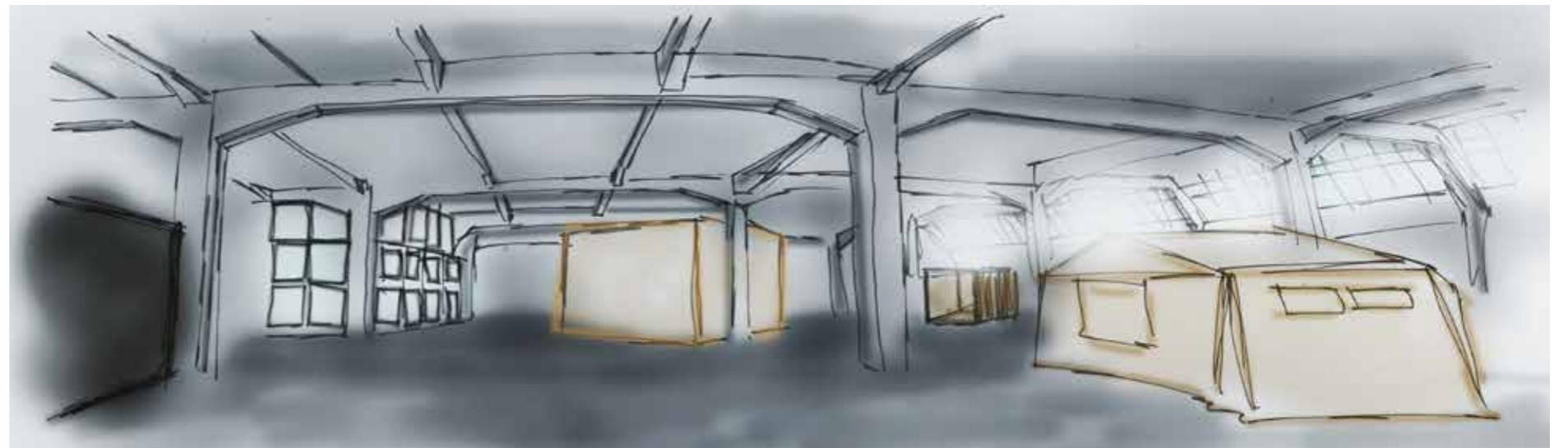
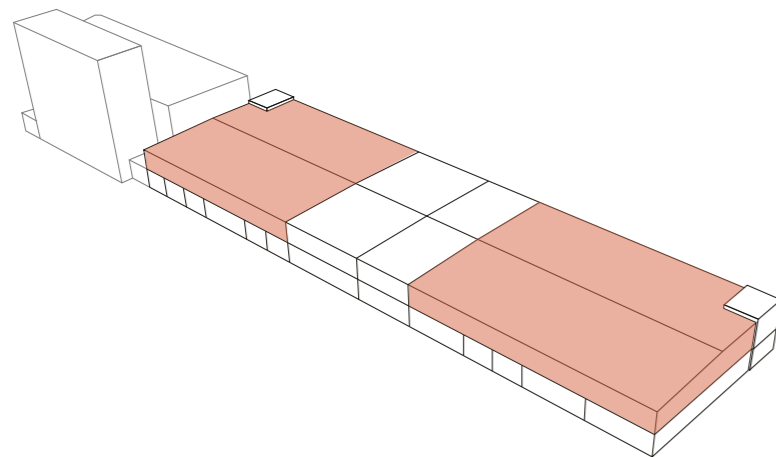
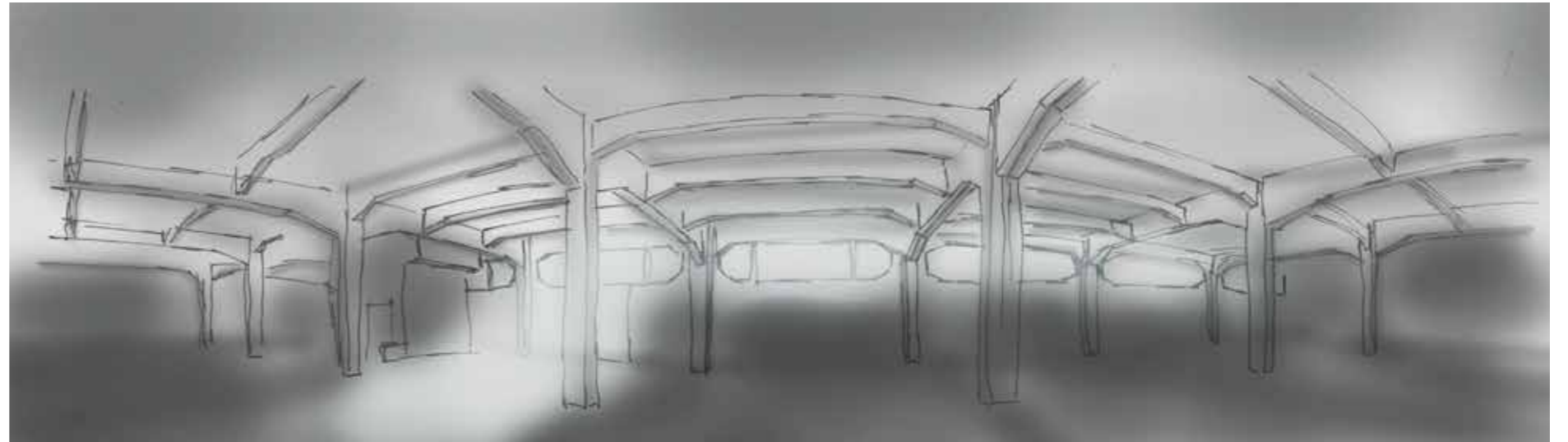
## ATMOSPHERE CIRCUS AND CODARTS

### FINDINGS

On first floor, the entire floor is divided into two large open space. It gives enormous and open expression; the structure system stands out clearly with few items around. This space shows the character of the space vividly: the shape of structure, the texture of casting concrete, and natural light spread inside. It shows more cold and industrial, however, bright spatial quality. Especially, when the weather is bad, it gives the feeling of tranquil and isolated from the noisy surrounding. The sounds of rainfall and wind acts as lively background, and it can be experienced indoor as it is outdoor. The poorly enclosed space creates shelter like experience, rather than a perfectly enclosed and protected space quality.

### CONCLUSION

Especially, when the weather is bad, it gives the feeling of tranquil and isolated from the noisy surrounding. The sounds of rainfall and wind acts as lively background, and it can be experienced indoor as it is outdoor.





HERITAGE & ARCHITECTURE

ARCHITECTURAL ANALYSES  
FUTURE PLANS

# FENIX I NEW DWELLING COMPLEX

## QUESTION

This research is conducted to understand the future function of Fenix I.

## METHODOLOGY

By looking at floor plans found on official Fenixloft website, the proposed plans can be seen.

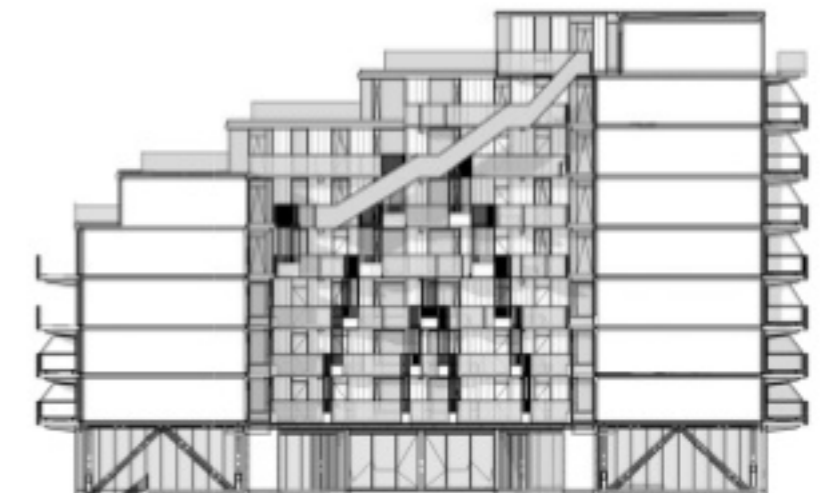
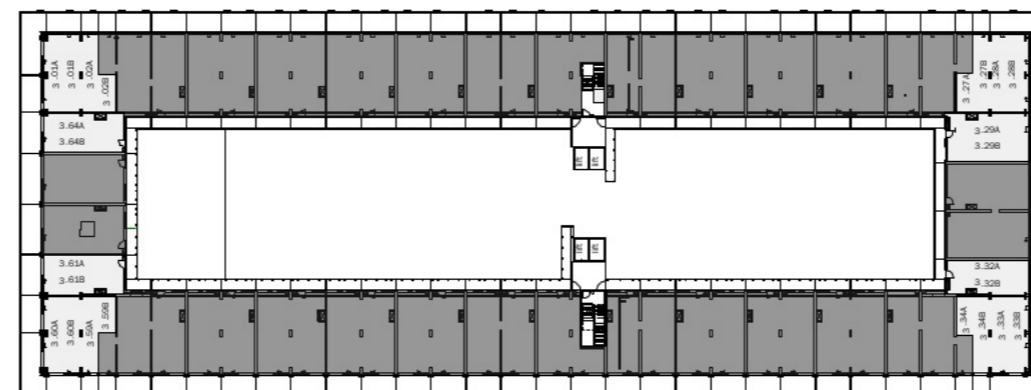
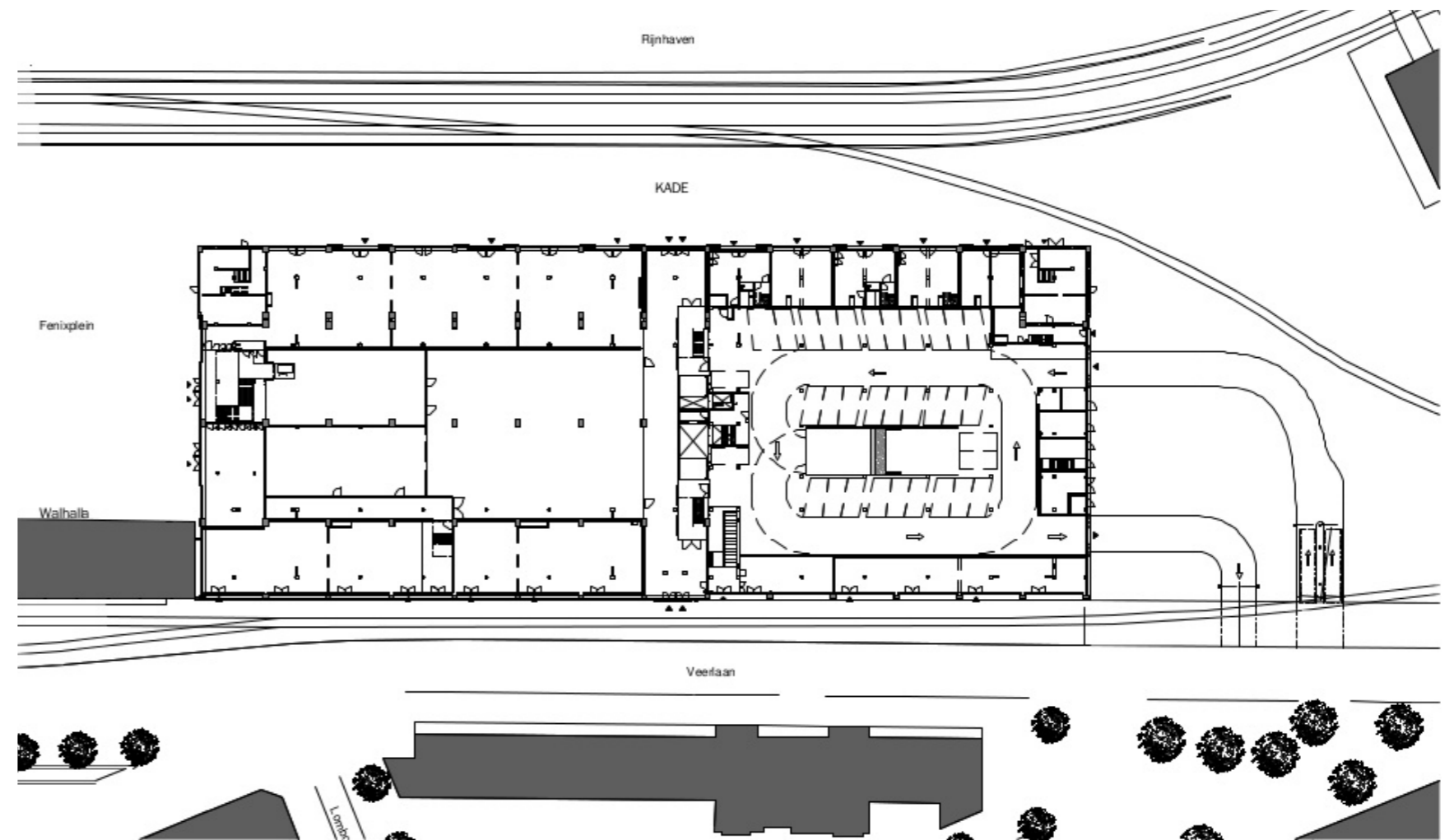
## FINDINGS

The reprogramming of dwelling in Fenix I has initiated by Mei architects and planners in 2011, called Fenixloft. The official demolition has started in 2015 and still been in process today (2017). The project is expected to be completed with renewal in 2018.

The provided units are around 130 in total; the size of dwelling are from 81 to 186 m<sup>2</sup>. Fenixloft will grow much larger when it is completed. One interesting fact is that partially ground floor and first floor programs will be proposed and decided by Fenixloft inhabits.

## CONCLUSION

Due to the close historical connection between Fenix I and Fenix II, the newly provided programs in Fenixloft should be also concerned in the future design.



Fenixplein-zijde

## Sources

Mei architects and planners, 2012  
Ontwikkelaars & N.V., 2014



# PROVIMI FACTORY RELOCATION

## QUESTION

This research is conducted to understand the future possibility of Provimi Factory.

## METHODOLOGY

By visiting Provimi Factory, the space usage and requirements can be understood.

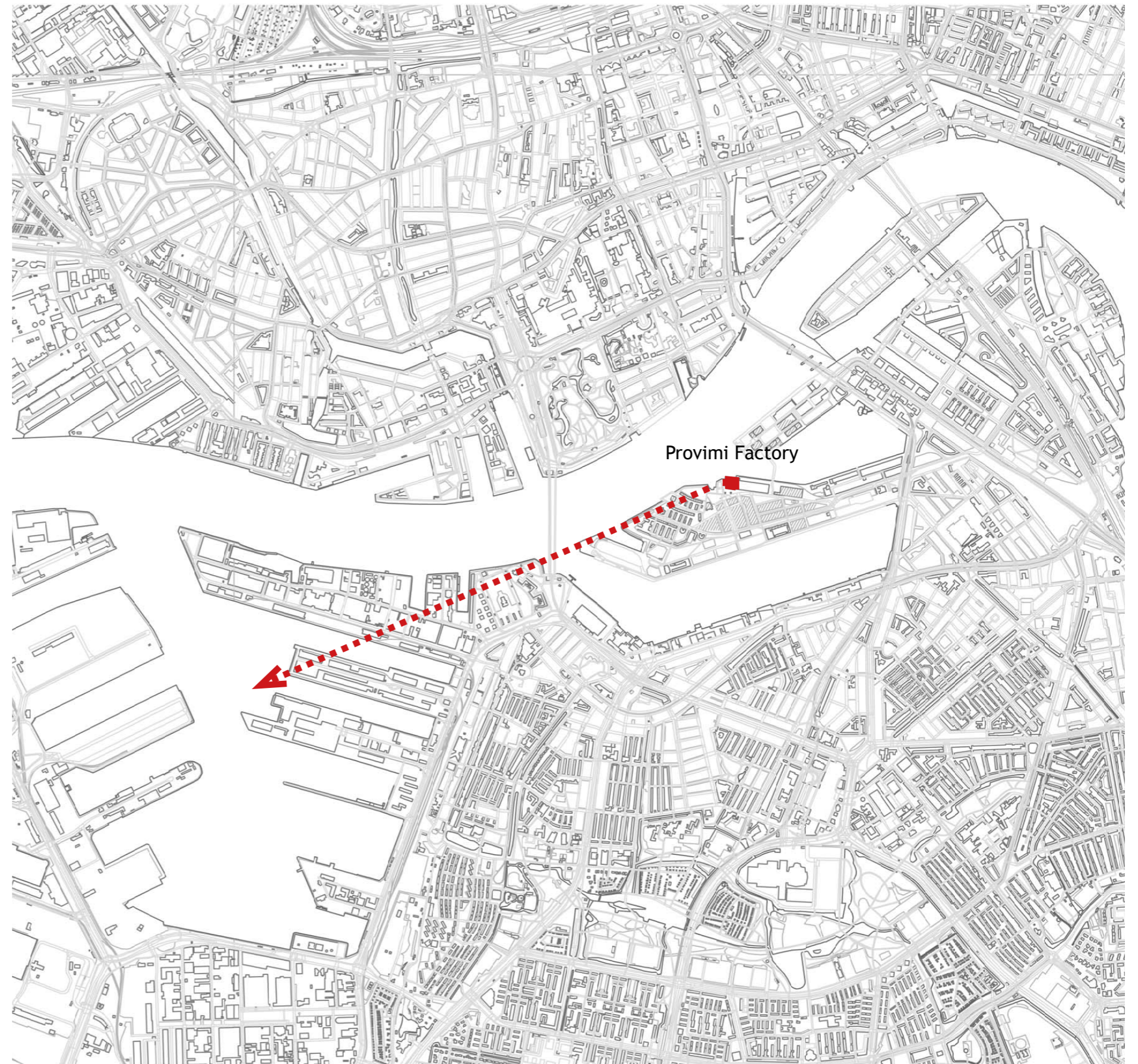
## FINDINGS

Provimi Factory was built in 1969, taking dwelling part of San Francisco. A silo system was added on south side and covered the original façade from 1916. The additional extension was made later, mainly in light structure, such aluminium structure system and metal panels on waterfront and roof-top of previous dwelling volume.

Provimi Factory acts as the last trace of industrial harbour history in Rijnhaven, and located in residential area on Katendrecht. The traffic of trucks disrupts the connection for pedestrians, from both aspects of surrounding neighbourhood and external visitors. The main issues will be the relation between Fenix II: circulations for passenger and trucks and interruption to greenery on west side. Assumingly, there is a high possibility for the factory to leave Katendrecht and relocate in a more suitable place in the future.

## CONCLUSION

Provimi Factory acts as the last trace of industrial harbour history in Rijnhaven. However, the factory function does not fit into surrounding residential area anymore. The traffic of trucks disrupts the connection for pedestrians, from both aspects of surrounding neighbourhood and external visitors. Assumingly, there is a high possibility for the factory to leave Katendrecht in the future.



# CONCLUSION

## GENERAL

In order to understand Fenix II, different scales and aspects have been analysed from urban level, site level, and building level in architectural approaches. Overall, the available information in Rotterdam City Archive is still limited; the visits of Fenix II private space as Biennale Rotterdam on first floor and Provimi factory interior were made. Besides that, the analyses also focused on the history background, previous and current usage, and space quality; some assumptions were made during the analyses.

## REFLECTION

### URBAN LEVEL

The location is well connected with public transportation, and it can be further integrated with Kop van Zuid as culture and commercial area. The neighborhood, Katendrecht has transformed from a small village, lively industrial harbor, and then into a hipster and multiple function area today. Current situation has the potential to contain different programs than just dwelling and enriches the entire area in the future.

### SITE LEVEL

The north side has great potential, not only being the first row on waterfront to show the entire facade at once, but also closely connected with Kop van Zuid developed area by Rijnhaven Bridge. However, the current situation is interrupted by parking space and poorly maintained pavement. Moreover, the tracks are still visible and kept to indicate the former role of the building.

The in-between square of Fenix I and II also shows interesting possibilities, connection and maybe showing once the same building character.

Nature elements on Katendrecht are only in few layers and dimensions. The segregation happens on waterfront, parks, and public square (Deliplein). The integration and reconnection should be addressed.

The current surrounding is mainly dwelling, relatively quiet approaching from south side. What is the capacity of the neighborhood to a lively public and semi-public space?

## BUILDING LEVEL

Fenix II is a repetitive building, through its structure and facade elements. It shows itself with simple and direct rhythm and materials. The shape of the original reinforced concrete is the main character of Fenix II; the shape of window openings also run along with the structure. The original character of the building can be seen in the south facade and interior structure system. The trace of warehouse can be seen from the facade and outside pavement. Turning to space arrangement, Fenix II was once an entirely open space for transporting and storing goods; various divisions are made to suit current situation, which change the character of the building and gives different atmosphere.

## SURROUNDING BUILDINGS

### FENIX I

The other remained part of San Francisco warehouse is Fenix. Fenix I is now under transformation into dwelling. Should it be reconnected with these two identical buildings? How can the future programs benefit and support each other?

### PROVIMI FACTORY

Provimi Factory acts as the last trace of industrial harbour history in Rijnhaven, and located in residential area on Katendrecht; it currently covers the original facade expression and volume with the later extension. The main issue will be the relation between Fenix II: circulations for passenger and trucks, interruption to greenery on west side, and future plan of leaving or staying on Katendrecht.



HERITAGE & ARCHITECTURE

TECHNICAL ANALYSES

# INTRODUCTION

## PURPOSE OF THE REPORT

There are two topics will be mentioned in order to understand Fenix II and how it works in technological aspects: Historical Analyses, and Building Analyses.

Firstly, the history of Fenix II transformation has been shown: the original entirety, reconstruction and new additional structure and façade, and later new structural openings.

Turning to second part, current technical analyses, the structure system has been shown in elements. By using rules of thumbs in concrete nowadays, comparisons have been made, in order to check the structure dimensions. The main materials applied in the building has been noted, followed with some details. Lastly, the damage on the building have been pointed out in levels and understood the causes.

## METHODOLOGY

First of all, there was very limited provided information on TU Delft Black Board. The first step was to visit Rotterdam City Archive to gather essential information as much as possible, such as previous drawings and photos from different periods. Secondly, visit of Nieuwe Instituut for the archives was planned, mainly for the background of architect, C. N. van Goor, who designed San Francisco Loods( original building for Fenix I and Fenix II). There is also information found on newspaper, articles on internet. Finally, many times of site visiting was the important input as well. The Fenix II archives were redrawn by ourselves. With these knowledge, the analyses were made, discussed, and realized.

\* Drawings and photographs are ours; unless it is stated.



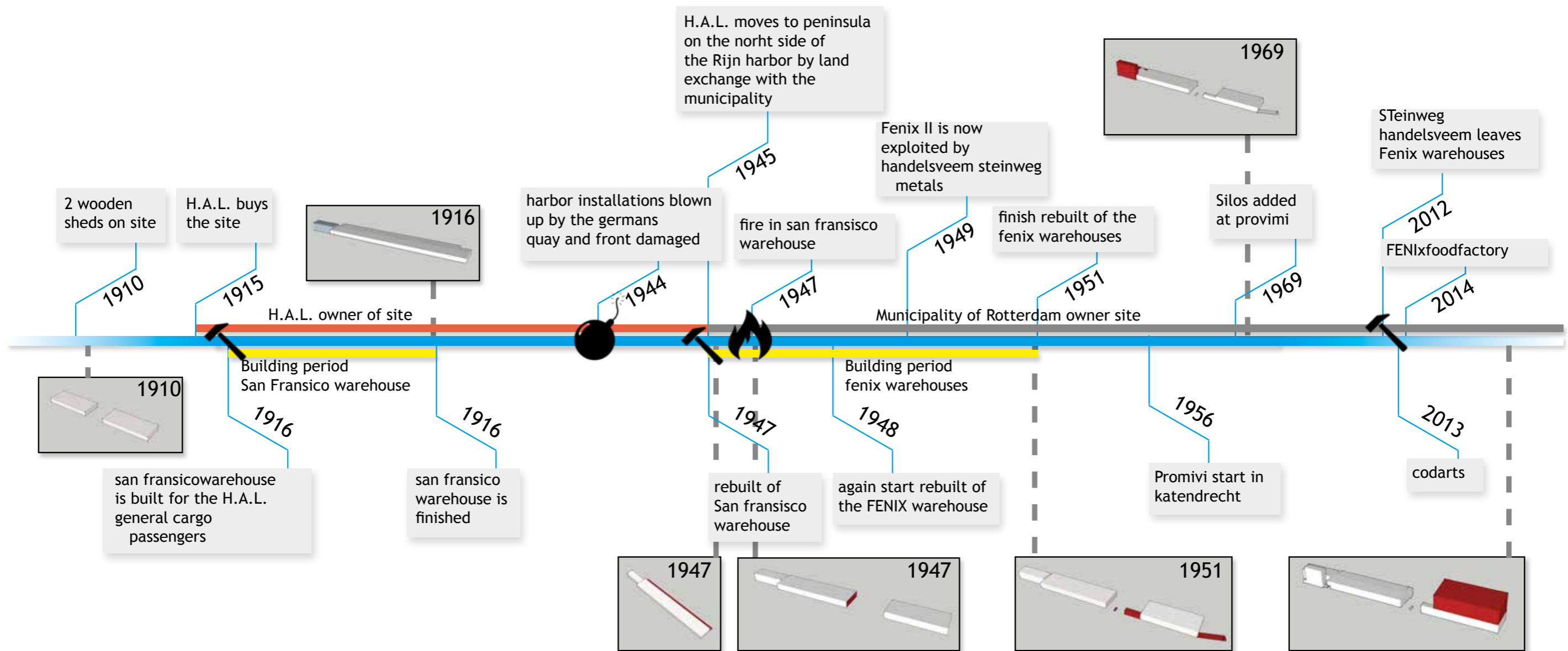
HERITAGE & ARCHITECTURE

TECHNICAL ANALYSES  
HISTORICAL ANALYSES

# HISTORIC BACKGROUND

## SAN FRANCISCO WAREHOUSE TO FENIX I & II

\* Referred to page 46



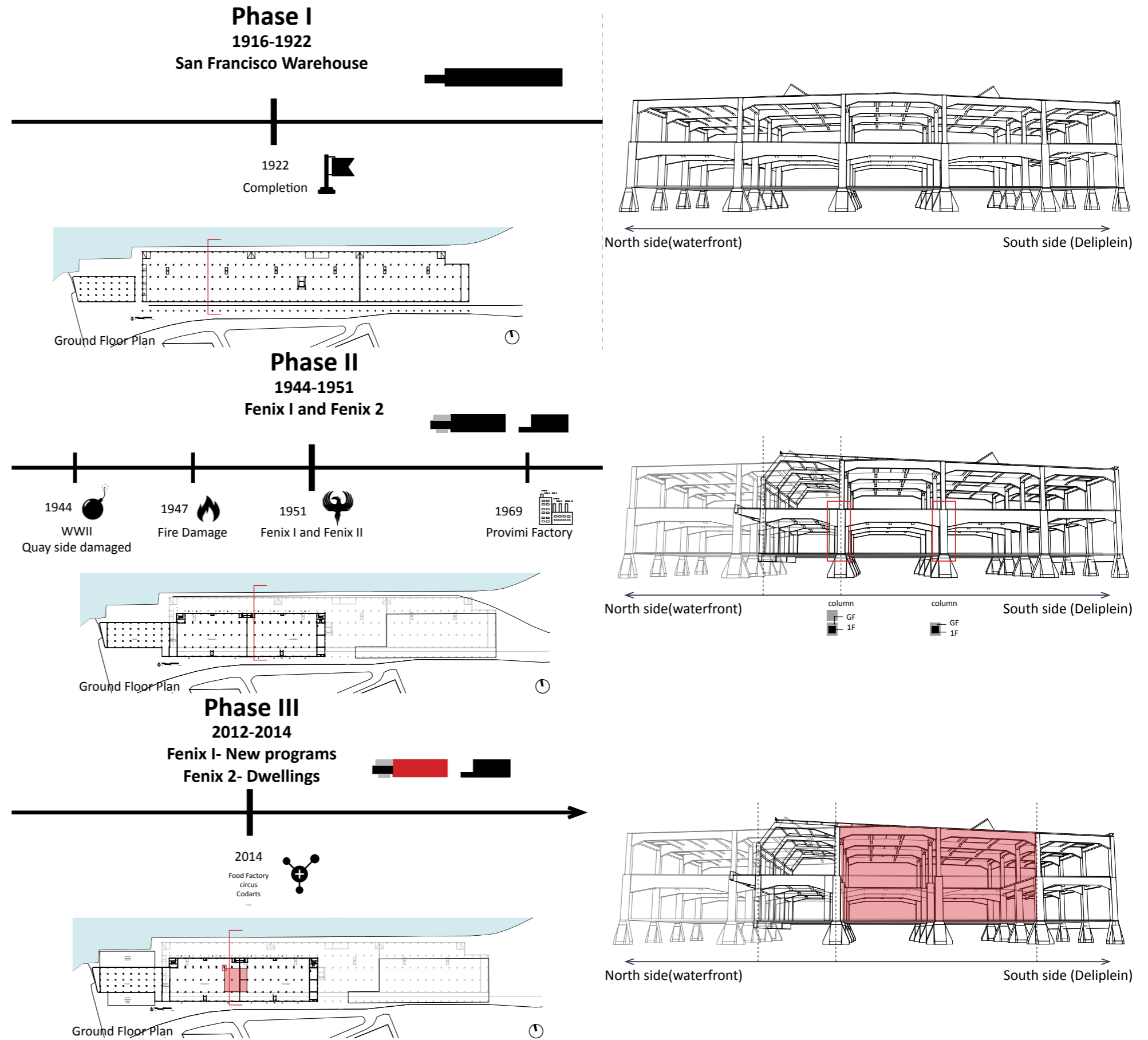
**Sources**  
 Borselen, 1995  
 Does, 2004  
 Klaassen, 1992  
 Rotterdam City Archive, 2017  
 Soeters & Speksnijder, 1990  
 Wolters, 2002a, 2002b

# HISTORIC BACKGROUND TRANSFORMATION OF THE BUILDING

\* Referred to page 34-37

## CONCLUSION

There are 3 major phases in the building transformation. The building, San Francisco warehouse, was divided into Fenix 1 and Fenix 2 due to fire damage. The accessibility to ground floor and first floor changed, due to different programs applied.



# CHRONOMAPING HISTORY OF STRUCTURE

## QUESTION

This research is conducted to understand the history of the construction.

## METHODOLOGY

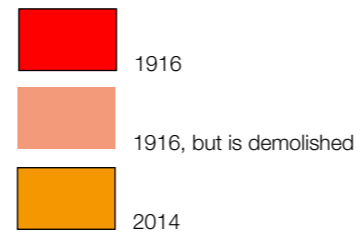
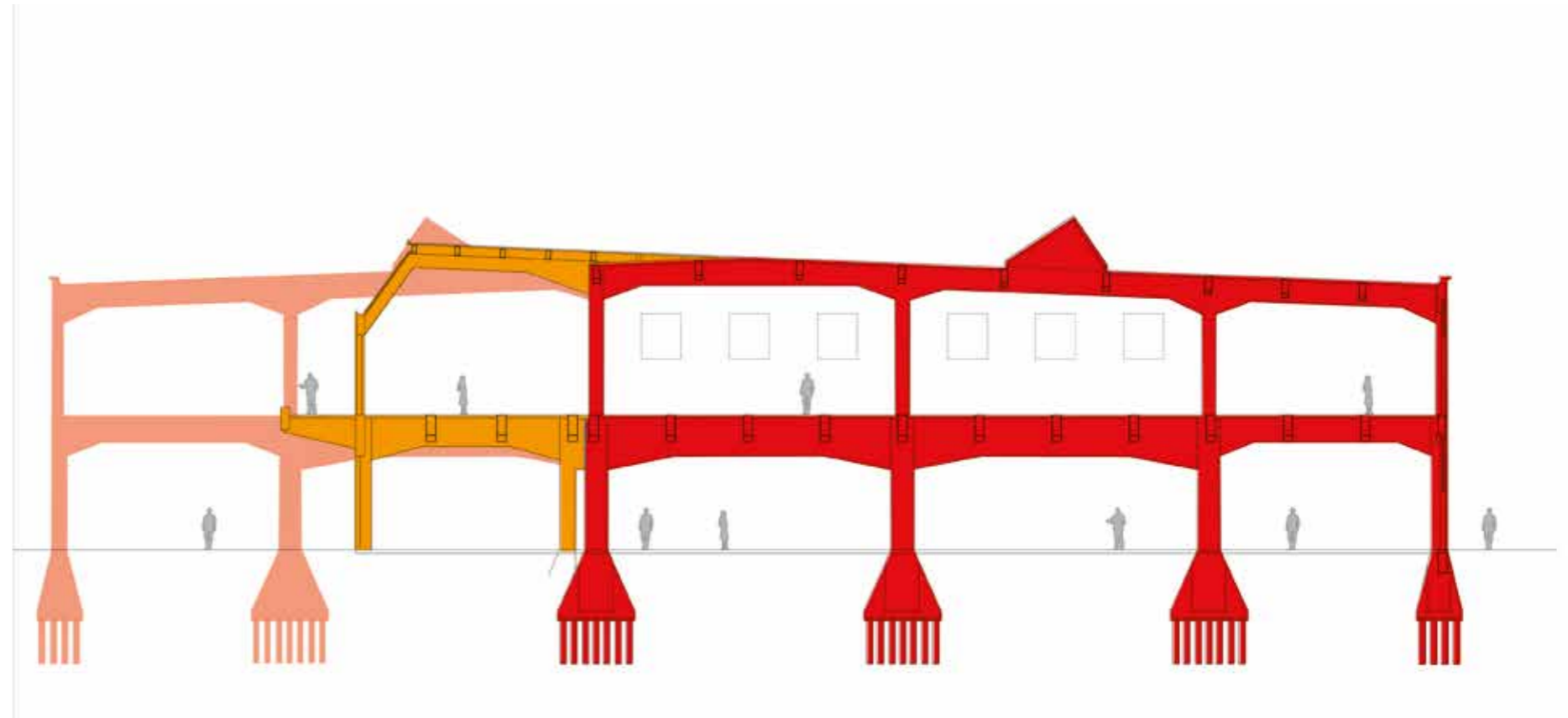
By looking at the plans and overlapped with different periods.

## FINDINGS

The original part of San Francisco is well-preserved, except the reconstruction on north side (waterfront) due to WWII and fire damage. In phase 2, the shape of the additional structure had changed the appearance, in order to have inclined side window which provides much natural day light. However, the new additional structure follows the original dimension. Moreover, the building has recession on north side which creates more waterfront space. In the phase 3, two new structural openings were made to have 11 m high ceiling, and some wall divisions were added.

## CONCLUSION

The original part of San Francisco is well-preserved, except the reconstruction on north side (waterfront). The new structure has been added and provided different shape of structure.





# CHRONOMAPING HISTORY OF FAÇADES

## QUESTION

This research is conducted to understand the history of facades.

## METHODOLOGY

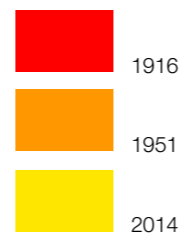
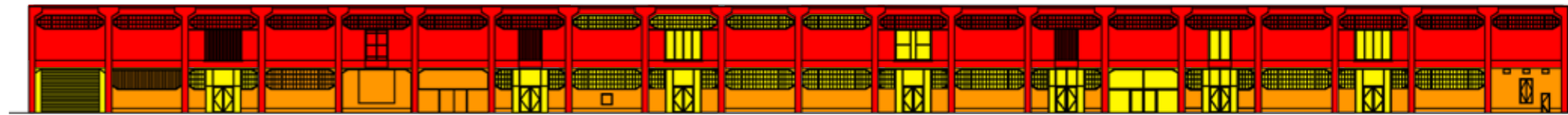
By looking at the plans over the years and overlapped with different periods.

## FINDINGS

The original part of San Francisco is well-preserved, except the reconstruction on north side (waterfront) due to WWII and fire damage. In phase 2, the shape of the additional structure had changed the appearance, in order to have inclined side window which provides much natural day light. However, the new additional structure follows the original dimension. Moreover, the building has recession on north side which creates more waterfront space. In the phase 3, two new structural openings were made to have 11 m high ceiling, and some wall divisions were added.

## CONCLUSION

The original part of San Francisco is well-preserved, except the reconstruction on north side (waterfront). The new structure has been added and provided different shape of structure.





HERITAGE & ARCHITECTURE

TECHNICAL ANALYSES  
BUILDING ANALYSES

# STRUCTURE SYSTEM

## QUESTION

This research is conducted to understand how the building is constructed.

## METHODOLOGY

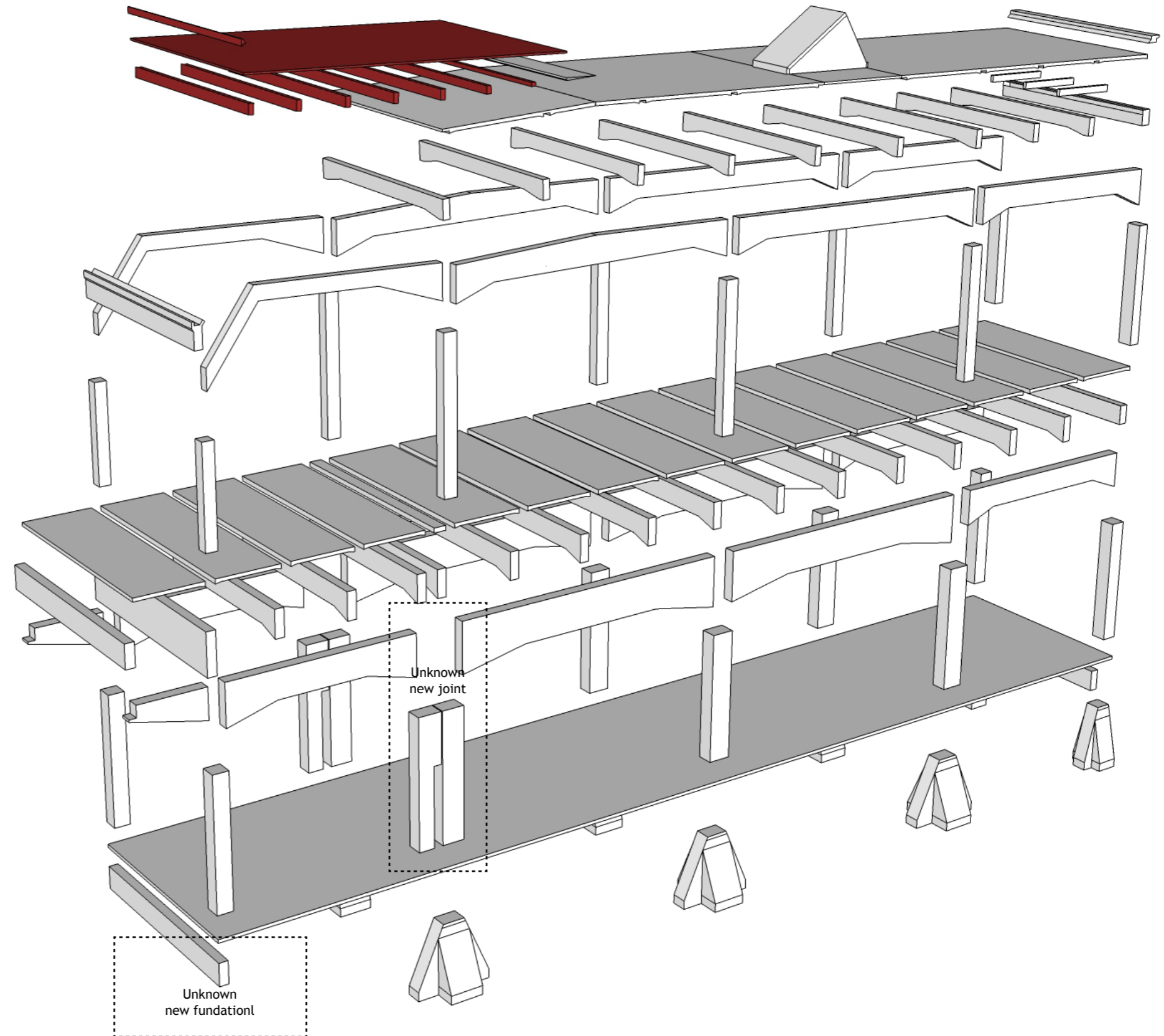
By looking at all the different building elements, in order to understand the structure system and how the building was built.

## FINDINGS

San Francisco warehouse was built in 1916. The structure system is assumingly inspired by Hennebique system, built in reinforced concrete. The entire structure system: columns, beams and floors were monolithic and casted on situ. In the second phase of reconstruction in 1951, the new additional main structure was also reinforced and casted on situ, and only using the pre-fab concrete slabs and beams for the new roof structure. The original and additional structure materials are all reinforced concrete, casted on situ, which gives the consistent appearance and atmosphere. The only unclear part is the new foundation. The information of the new addition part is very limited. Without further information, we can only assume the new addition foundation is the same type of previous foundation as well.

## CONCLUSION

The original and additional structure materials are all reinforced concrete, casted on situ, which gives the consistent appearance and atmosphere. There are some prefab elements used in reconstruction period.



# RULES OF THUMBS

## QUESTION

This research is conducted to see if the structure is over- or undersized.

## METHODOLOGY

By using the rules of thumbs, rough calculations can be made for the structure.

## FINDINGS

According to the rules of thumbs, the primary beams are oversized. It can be assumed to bare the various weight of unknown goods. On ground floor, the columns are oversized and smaller than first floor due to lower height. However, the calculation is based on single flooring. It makes sense these columns are bigger than calculation, since these columns also bare the load of the first floor and the roof. The floors are in line with the rules.

## CONCLUSION

The dimension was built in an efficient way, not oversized comparing to rules of thumbs today.

# Rules of thumbs

## Roof beams

Concrete - cast in situ - continuous field ->  $1/12.5 \times \text{Length span} = \text{Height beam}$

Length span:

primary beam - L = 12870 mm	> 1029.6 mm	current 1100 mm
secondary beam - L = 8100 mm	> 648 mm	current 700 mm
tertiary beam - L = 3240 mm	> 259.2 mm	current 300 mm

## Beams

Concrete - cast in situ - continuous field ->  $1/14.5 \times \text{Length span} = \text{Height beam}$

Length span:

primary beam - L = 12870 mm	> 887.6 mm	current 1080 mm
secondary beam - L = 8100 mm	> 558.6 mm	current 900 mm
tertiary beam - L = 3240 mm	> 223.5 mm	current 300 mm

## Floors

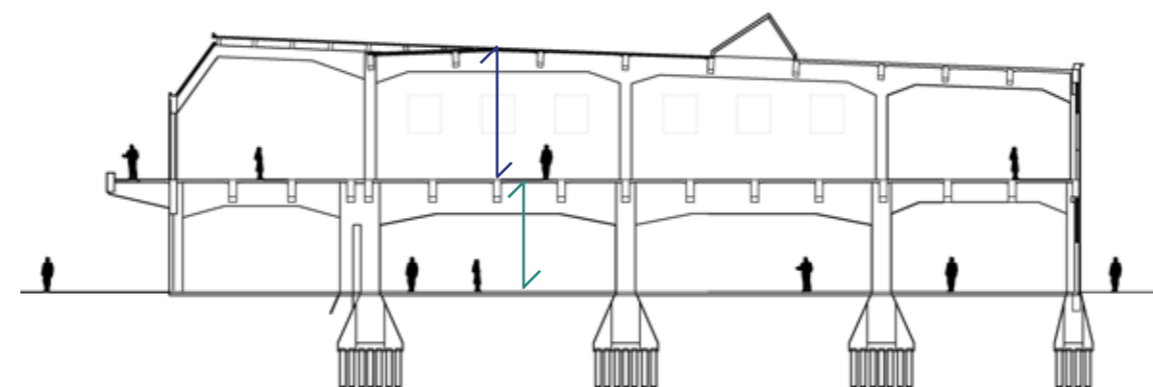
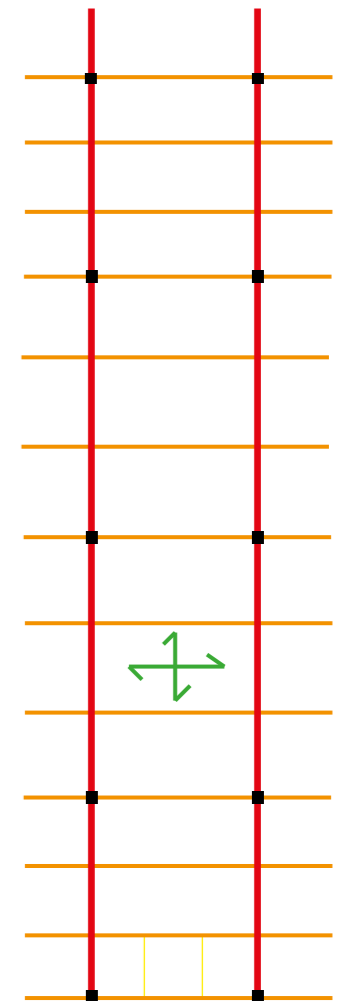
Concrete - cast in situ - linear bearings - supported on both sides ->  $1/32 \times \text{Length span} = \text{thickness of the floor}$

Length span = $1/3 \times 12870 = 4290$ mm	> 145.9 mm	current 150 mm
--------------------------------------------	------------	----------------

## Columns

Concrete - Multiple building layer ->  $\text{Span floor to floor} / 10$  or  $\text{Length of the column} / 12$

Span floor to floor ground floor = 5800 mm	> 580 mm	or	> 483.3 mm	current 1000x910 mm
Span floor to floor first floor = 6780 mm	> 678 mm	or	> 565 mm	current 615 x 510 mm



# CURRENT STATE OF THE LOAD BARING AND STRUCTURE

## LOAD BARING JOINT TYPE

### QUESTION

In order to understand the basic load transmission of the building, Load Baring diagram and Joint Type diagram have been drawn.

### METHODOLOGY

By using the diagram to indicate different load and counter force.

### FINDINGS

The building has been partially demolished and added a new part to the north side. Both of these two part are made of reinforced concrete. The original part was casted at once with column, beams and floor. The information of the new addition part is very limited. Without further information. It can be assumed that the new addition structure is monolithic as well, by observing the column finishing on site. The only unclear part is the new foundation, and it can be only assumed that the new addition foundation is the same type of previous foundation as well.

The slope on the roof is only  $2^\circ$ , which is relatively small that it can be seen as flat roof. Distributed loads can be applied.

Even though the height of the first floor is higher, the ground floor structure system has been reinforced, in order to carry overall weight. Different sizes of the columns and beams can be seen.

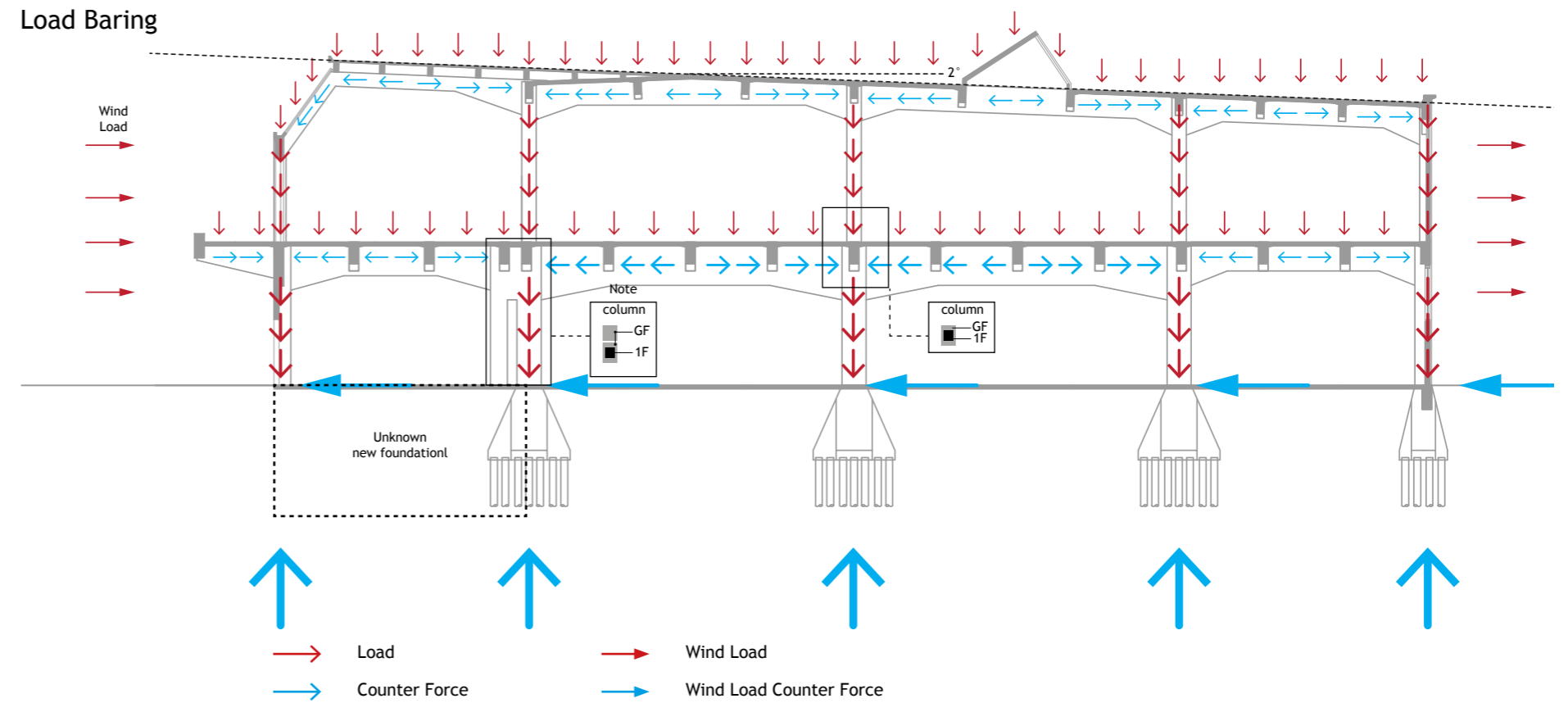
The middle beams can be seen as the central area of the two stories building. Considering the wind loads and larger span, these beams are larger than the rest, and the number of secondary beams increases, in order to perform better resilience of wind load and stability.

### CONCLUSION

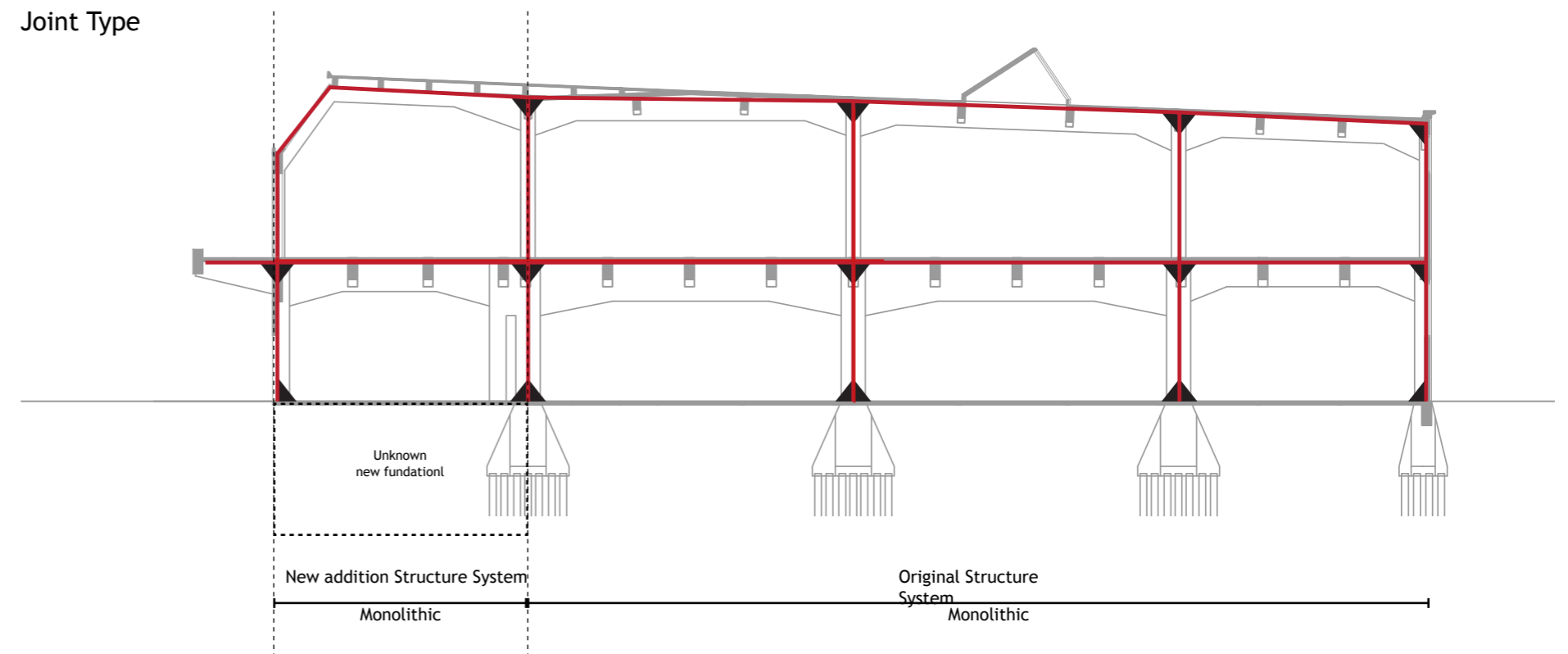
The structure is relatively symmetrical. The distributed loads can be seen with diagram clearly.

#### Note:

Due to the new addition structure system, the extra column was added on ground floor. However, since the extra one is not aligned with first floor column, the force will be transferred to the original column. Therefore, it can be simplified and seen as one column to transmit the force.



### Joint Type



### Sources

Own Illustrations

# CURRENT STATE OF THE LOAD BARING AND STRUCTURE FLOOR SPAN

## QUESTION

In order to understand the flooring baring capacity.

## METHODOLOGY

By looking at the direction of the primary and secondary beams, the span of the floor can be determined.

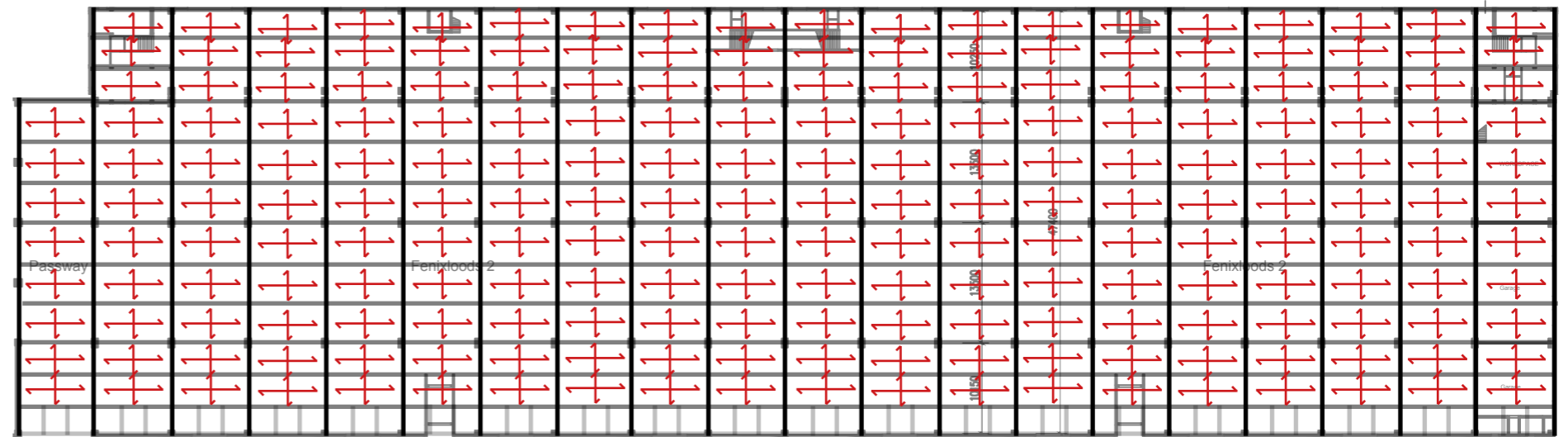
## FINDINGS

The floor span is in both direction which gives better baring capacity than single span.

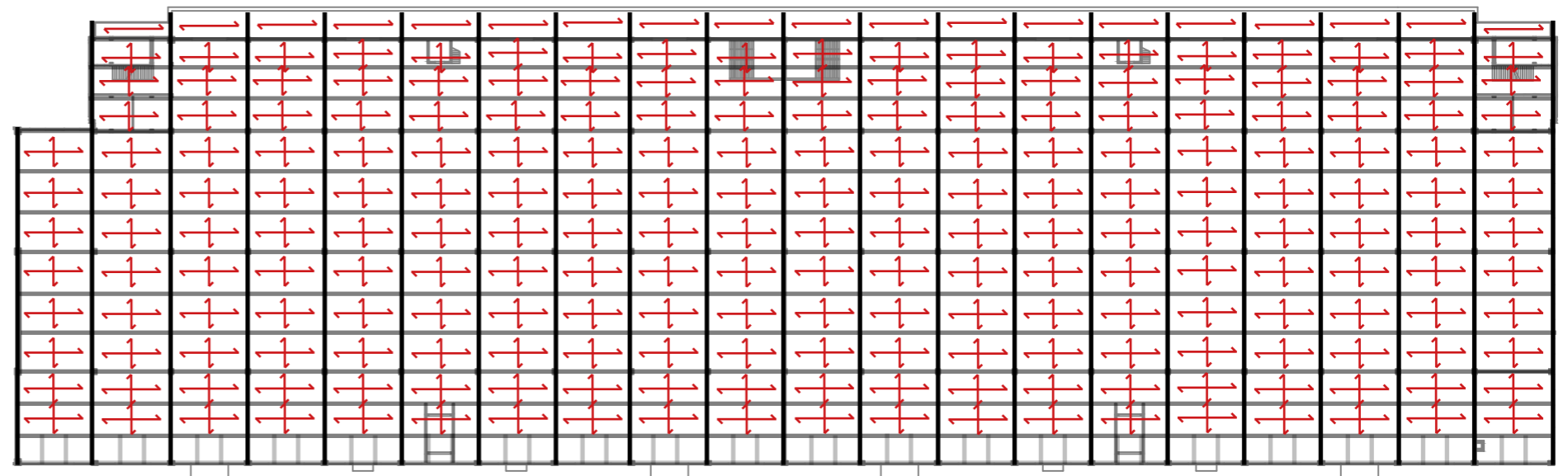
## CONCLUSION

The structure is relatively symmetrical. The distributed loads can be seen with diagram clearly.

Ground floor plan



First floor plan



# MATERIALISATION

## QUESTION

In order to understand the applied and existing materials in current situation.

## METHODOLOGY

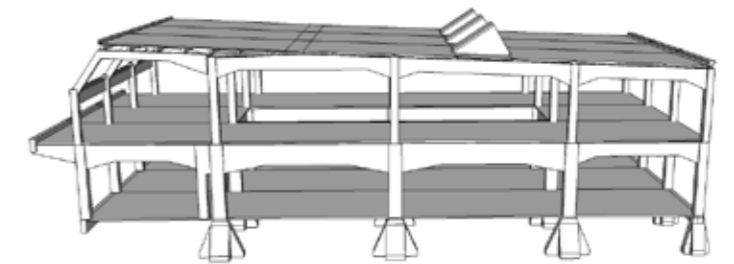
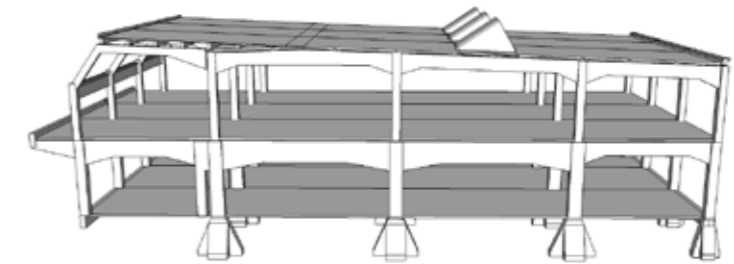
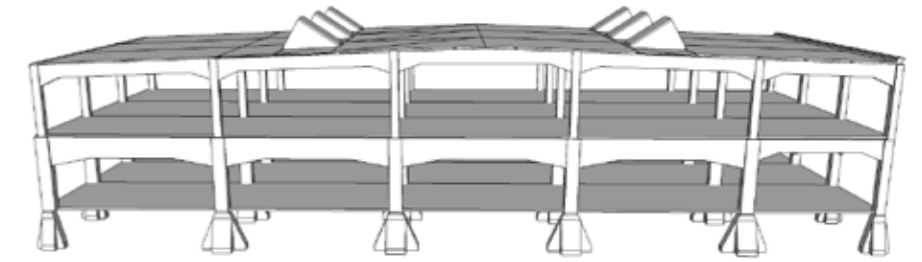
By visiting the site and taking photos of existing materials.

## FINDINGS

The main material of the building is clear: reinforced concrete. The intriguing is the connection between original and additional structure space. This connection part not only shows the height difference, due to the changing angle of roof top, but also gives almost the same expression with the material of concrete. The new additional concrete has smoother surface and the prefab concrete slab in grid lines also adds a new character to interiors.

## CONCLUSION

The applied materials are almost the same: concrete. However, with different finishing, forms and construction methods, the materialization shows the dynamic character of concrete.



# DETAILS REPETITIVE PARTS

## QUESTION

This research is conducted to understand how the building is built.

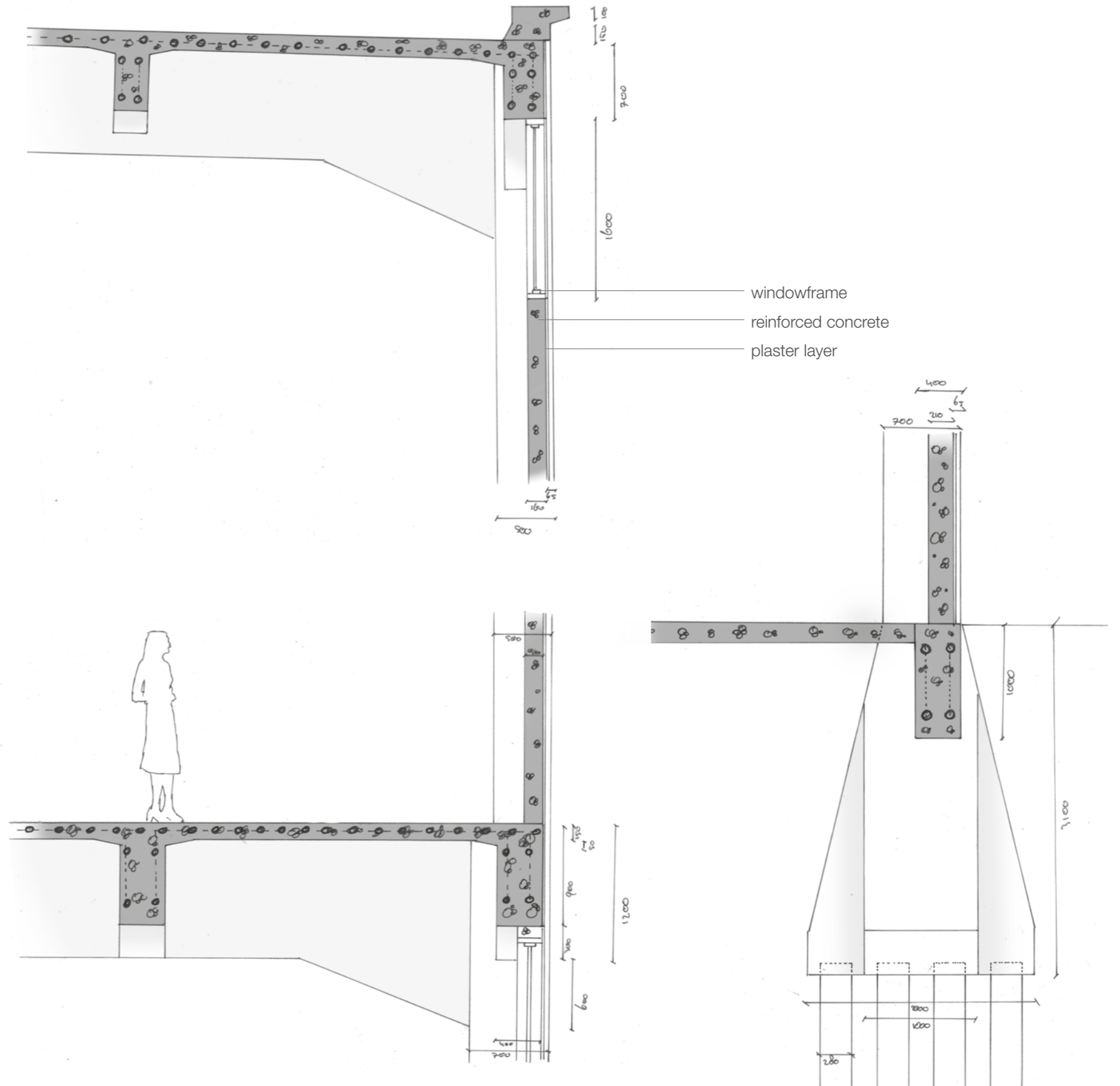
## METHODOLOGY

By drawing the most seen and interesting details.

## FINDINGS

The main construction method is monolithic reinforced concrete casting on situ. The large size of primary beams has lightened the space. The trace of wood casting plate can be found on each original surface built in 1916. However, on the south façade, this trace is lost and replaced by small popping plaster texture which was applied after reconstruction.

The entire building expresses itself well with the structure, without complicated decorations. Everything seems to be built in a functional aspect. However, the window frame was carefully made, metal frame followed the shape of structure.





## DETAILS REPETITIVE PARTS

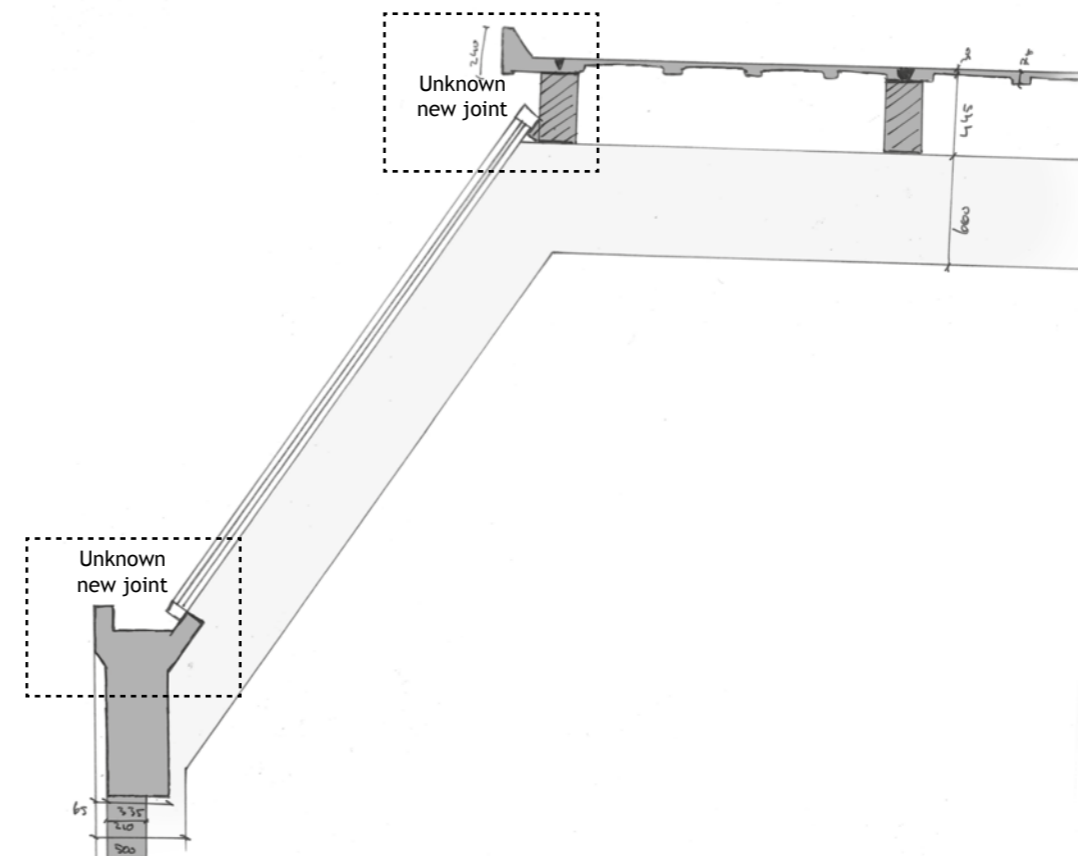
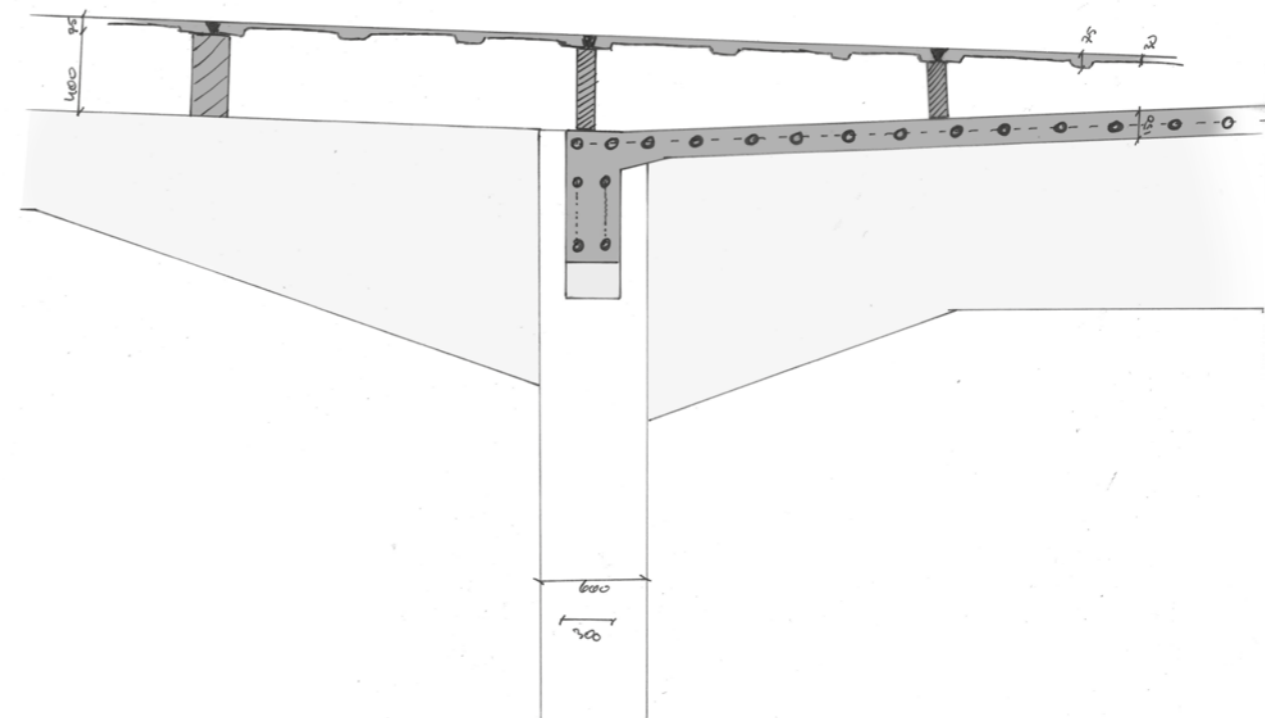
### FINDINGS

The indoor climate was poorly maintained. On the ground floor, double glazing is placed in some places. On the first floor, it maintains single glazing and generally poorly maintained. There is no climate system and insulation found in the building, based on the thickness of walls and assuming from previous function.

There are some minor details are unsure: the connection of side window with roof and gutter along the side window.

### CONCLUSION

Details are repeated in the building. The connection of original and additional is intriguing. Everything seems to be built in a functional aspect. However, the window frame was carefully made, metal frame followed the shape of structure. Lastly, indoor climate should be taken into concern in future design/



# DAMAGES SOUTH FACADE

## QUESTION

This research is conducted to understand which level of damages can be found in the building.

## METHODOLOGY

By observing on site and noting with photos.

## FINDINGS

Reinforcement corrosion

On the south facade there are in general three types of damages:

1. Rusting of the reinforcements which caused the concrete to spall
2. Staining on the facade
3. Some individual cracks

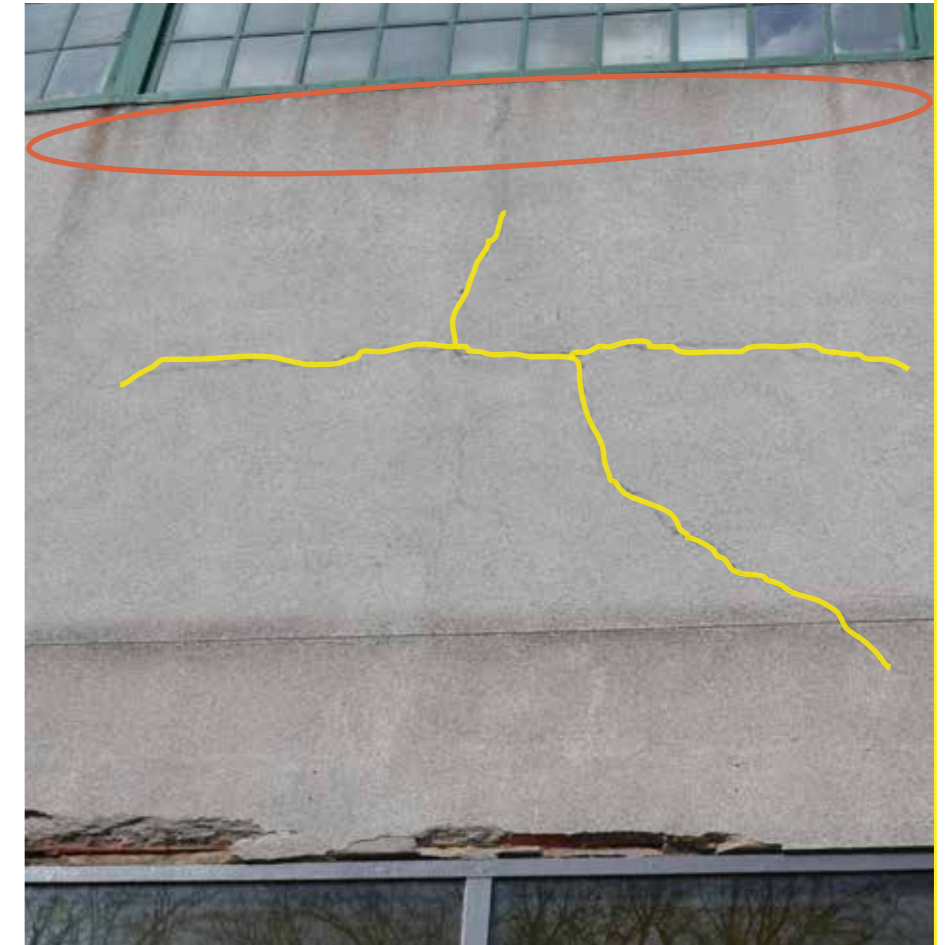
The rusting of the reinforcements is regularly found in this building, but the most serious case is on this facade. The explanation how this can happen, by [MDCS.monumentenkenis.nl](http://MDCS.monumentenkenis.nl).

## CONCLUSION

The most serious concern is rusting reinforcements with spalling concrete.

Note:

The full explanation can be found in appendix.



1.	Rusting reinforcements with spalling concrete	
2.	Staining	
3.	Individual cracks	

# DAMAGES NORTH FACADE

## FINDINGS

On the north facade the rusting of the reinforcements is also present, though not as severe as on the south façade. There are three other damages present on this façade: Leaching, soiling and biological growth.

Leaching can mainly be found underneath the balcony, next to the beams.

## CONCLUSION

The most serious concern is rusting reinforcements with spalling concrete.

Note:

The full explanation can be found in appendix.



1.	Rusting reinforcements with spalling concrete	<div style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>
2.	Leaching	<div style="display: inline-block; width: 15px; height: 15px; background-color: #c0504d; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: #c0504d; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>
3.	Soiling	<div style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>
4.	Biological growth	<div style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>	<div style="display: inline-block; width: 15px; height: 15px; background-color: white; border: 1px solid black;"></div>

## DAMAGES WEST FACADE

### FINDINGS

In general is this façade the least damaged. As the previous facades this façade also has rusting reinforcements and spalling concrete. Only on this façade it only happens on two places and the damages are not very severe.

There are some damages found on the bricks. Some soiling is found and on one part of the wall the bricks are spalling.

### CONCLUSION

The most serious concern is rusting reinforcements with spalling concrete.

Note:

The full explanation can be found in appendix.



1.	Rusting reinforcements with spalling concrete					
2.	Spalling of the brick					
3.	Graffiti					

# CONCLUSION

## GENERAL

In order to understand Fenix II, different scales and aspects have been analysed from urban level, site level, and building level in architectural approaches. Overall, the available information in Rotterdam City Archive is still limited; the visits of Fenix II private space as Biennale Rotterdam on first floor and Provimi factory interior were made. Besides that, the analyses also focused on the history background, previous and current usage, and space quality; some assumptions were made during the analyses.

## REFLECTION

The structure itself is relatively simple, mainly with reinforced concrete and under repetitive grids. Also, the floor span is two directions, which justifies the resilience of the new openings on the floor made in phase 3. The structure shows the spirit of the building within the shape and material. Advanced techniques was applied to Fenix II, even though the original function was only storage.

The most destructive intervention from current function is the new openings from circus, that these openings can be one of potentials since it has been made. However, the maximum openings in future intervention should be further designed, with reinforced materials and possible maximum spans. Moreover, physical models can be used as a method of investigation.

The indoor climate should be well-concerned. There is zero insulation within the building. The intervention should provide a second skin, in order to create suitable climate condition. However, the optimal solution should be further discussed, and prevent interference of the spirit of original structure and façade.

The damages in general are not severed. However, the more specific repair technique needs to be researched further.

The assumption are made. There are still two parts information missed due to lack of accessibility: new foundation in phase 2, and roof floor.



HERITAGE & ARCHITECTURE

CULTURAL VALUE

# INTRODUCTION

## PURPOSE OF THE REPORT

The aim of the Culture Values Report is to determine what types of culture values we found, how these values integrate and reflect on current situation and finally give subjective priorities of these values. With these defined values, it gives a clear point of view of how cultural values represent on different perspective and it will be the foundation and background for the future design.

## METHODOLOGY

Overall, the Chronomapping and Culture Value Matrix have been used as tools to organize the gathered information and give opinions.

## CHRONOMAPPING

By gathering different period of the drawings, chronomapping can reveal the building volume transformation through time, showing the demolition and addition layers.

## CULTURE VALUE MATRIX

For the starting point of analyses, the methodology of Culture Value Matrix has been applied. The concept of matrix is based on Alois Riegl and Stewart Brand. The matrix contains two main topics: tangible (Brand) and intangible (Riegl) matters. The different intangible values discussed by Riegl are made tangible through the layers of Brand. By using the matrix analyse system, it can cover from site level to building level and integrated with existing and potential values in the building.

The following readings are mentioned as background of Culture Values Matrix

Chapter 1 and 2 of How Buildings Learn: What Happens After They're Built (Brand, 1994)

Historical and Philosophical Issues in the Conservation of Cultural Heritage: Reading 6-Alois Riegl, The Modern Cult of Moments: Its Essence and Its Development. (J.Paul Getty Trust ,1996).

## INTRODUCTION OF RIEGL AND BRAND

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### Stewart Brand

The original concept of shearing layers was from a British architect named Frank Duffy. He believed that: "A building properly conceived is several layers of longevity of built components" which orientated towards interior work in commercial buildings, and then divided into four layers: Shell, Service, Scenery, and Set.

Brand elaborated the concept from Duffy and generated into more general-purpose layers. "Time is the essence of the real design problem." The use of the building through time should be emphasized and considered, in order to have sustainable relation between users and buildings. Brand developed the concept into six layers: Site, structure, skin, service, space plan, and stuff.

### Alois Riegl

"By common definition a work of art is any tangible, visible, or audible work of man of artistic value; a historical moment with any of the same properties will possess a historical value".

From the point of view of "The Relationship of Commemorative Values to the Cult of Monuments", it can be seen into three parts: Age Value, Historical Value, Deliberate Commemorative Values. On the other hand, "The Relationship between Present-Day values and the cult of monuments" can be divided into two parts: Use Value and Newness Value.

In order to have a more completed understanding, there are few additional perspectives put into matrix. On the tangible perspective of Brand, surroundings, surfaces (interior), and story have been added. On the intangible perspective of Riegl, non-intentional commemorative value, Art value, Rarity value, Spirit of place, and Dilemma have been put.

From both directions of tangible and intangible aspects, the facts have been analyzed in a comprehensive way from larger scales to smaller scale, from site level to detail level. By conducting the analyses, it gives a sound overall understanding and leads to further discussion of which matters will be preserved and cherished, have potentials, reach sensitive topics which needs extra attention, and even be removed from current situation.

## AVAILABLE MATERIALS

There are several materials have been applied to these analyses: previous drawings , documents and photos of Fenixloods, old pictures and maps of harbor area from Rotterdam City Archives; history background of Holland Amerika Lijn and Katendrecht(referred to previous chapter: Architectural Analyses- Site Analysis- historical background); information and background of Fenixloods architect from previous newspaper in the New Institute (Het Nieuwe Instituut) in Rotterdam; research reports of Ruimtelijke onderbouwing Fenix1, Ruimtelijke onderbouwing Fenix2, FENIX bouw- en kleurhistorisch onderzoek van de gevel aan de Veerlaan van Fenix-loods 1, and site observation through sketches and photos.

\* Drawings and photographs are ours; unless it is stated.



HERITAGE & ARCHITECTURE

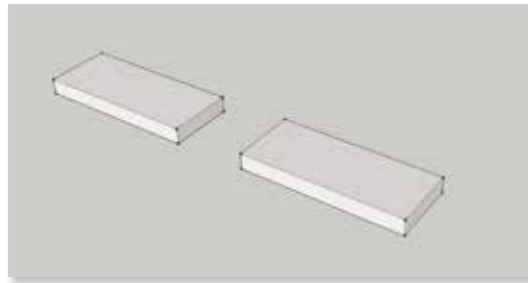
CULTURAL VALUE  
CHRONOMAPING



# VOLUME

1910

Original wood sheds



1916-1922

San Fransisco, Holland America Line

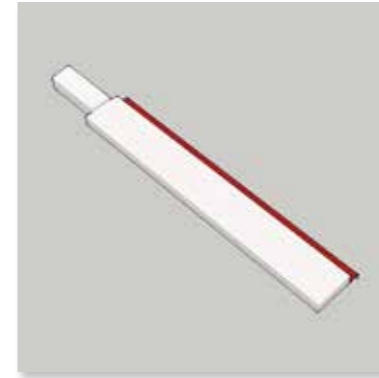


1944



WWII

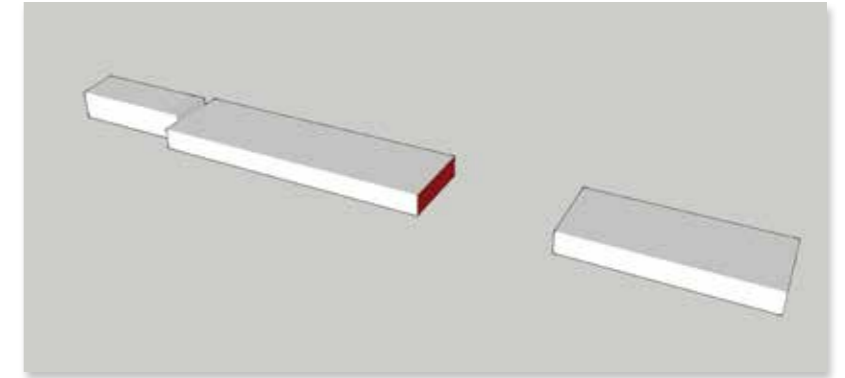
Quay side damaged



1947

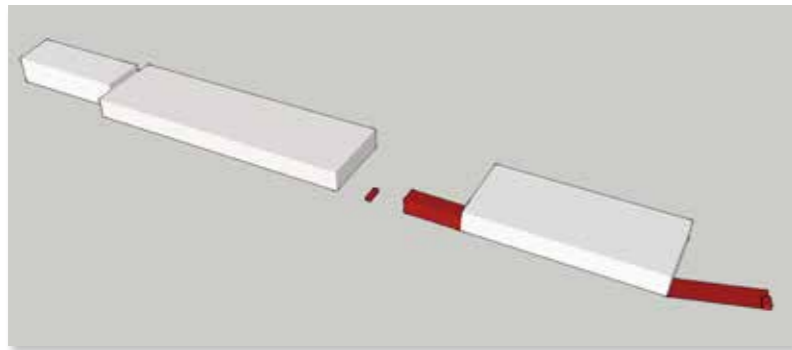


San Fransisco to Fenix I, Fenix II



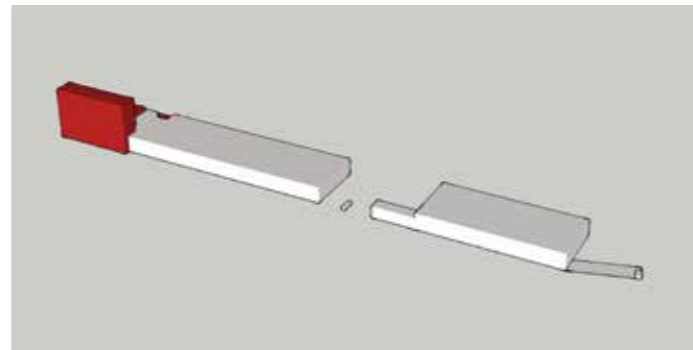
1951

Canteen



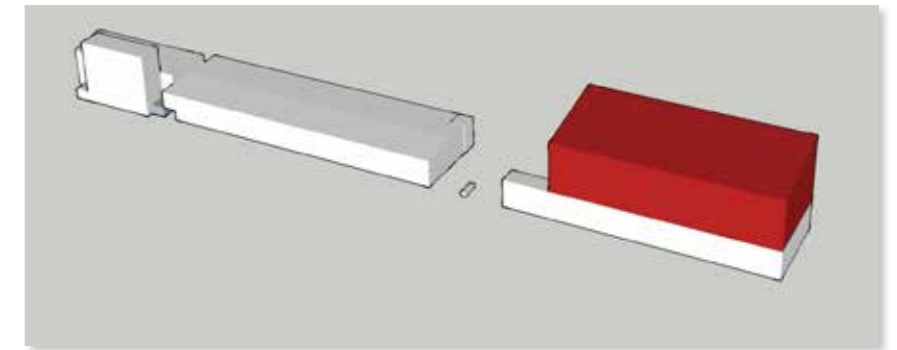
1969

Provimi Factory



2018

Fenix I-New residential



# FLOORPLAN

## QUESTION

This research is conducted to understand the history of the changing construction in different phases.

## METHODOLOGY

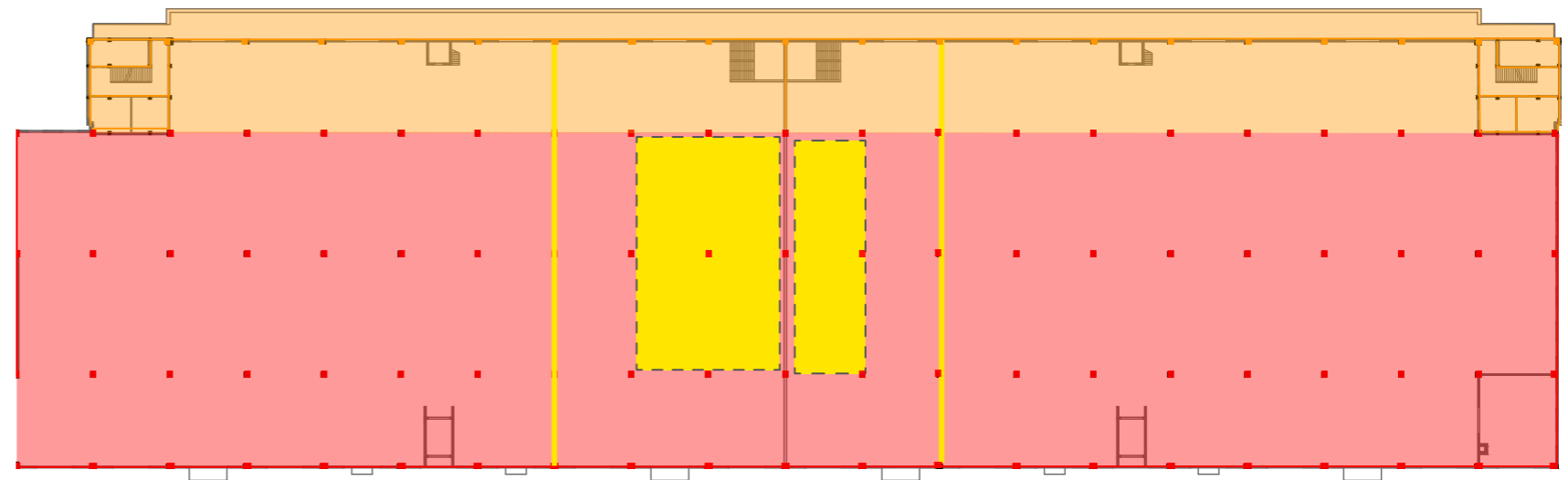
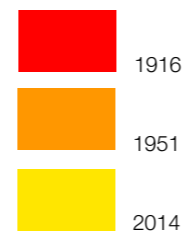
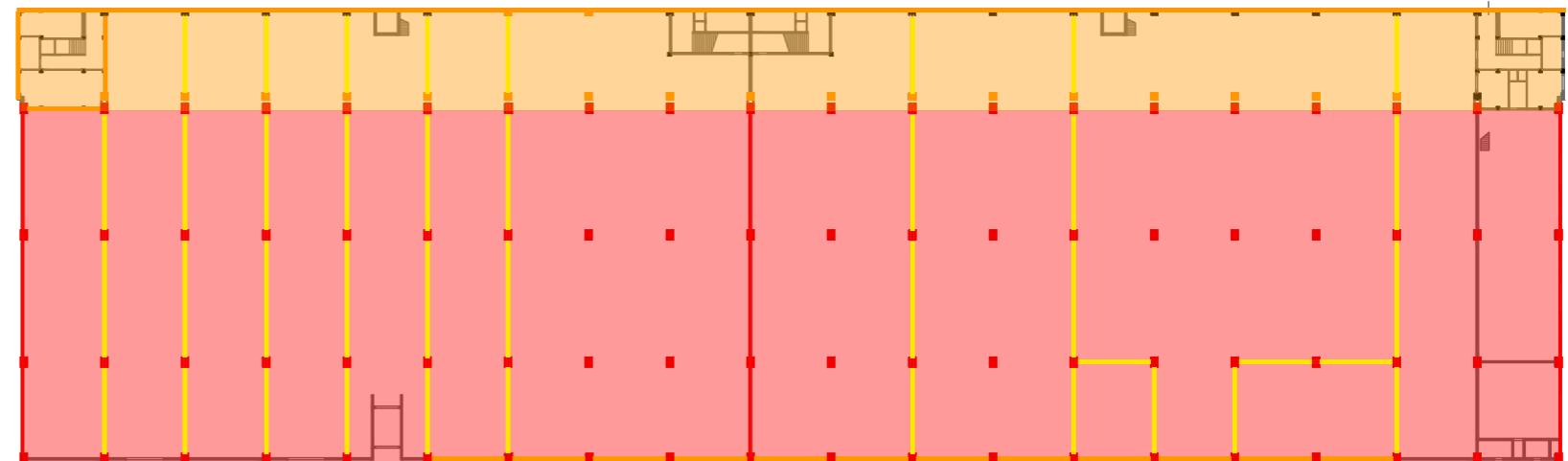
By looking at the plans over periods and the changes have been highlighted with colors.

## FINDINGS

The different layers are clearly visible in the floorplans. The original construction remains mostly. In the phase 2, the north façade (waterfront side) was damaged and reconstructed. The building had a recession and a new span was added. Also, there were few division walls were added, according to new functions. In phase 3, the most destructive intervention of structure is the two new openings made from circus and Codarts, in order to create 11 m high ceiling. These openings can be one of potentials since it has been made.

## CONCLUSION

The change can be seen clearly over time. In phase 2, the building had a recession and a new span was added. In phase 3, the most destructive intervention of structure is the two new openings made, in order to create 11 m high ceiling. These openings can be one of potentials since it has been made.



# FACADES AND SECTION

## QUESTION

This research is conducted to understand the history of the changing facades in different phases.

## METHODOLOGY

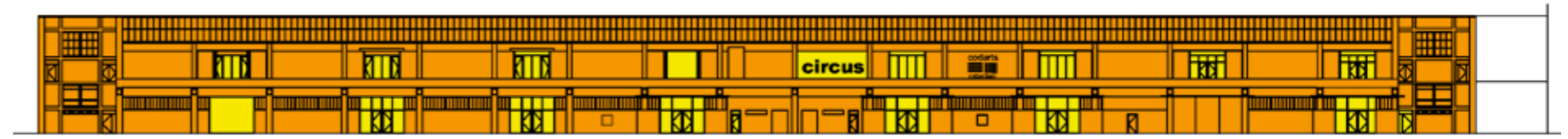
By looking at the facades and section over periods and the changes have been highlighted with colors.





## FINDINGS

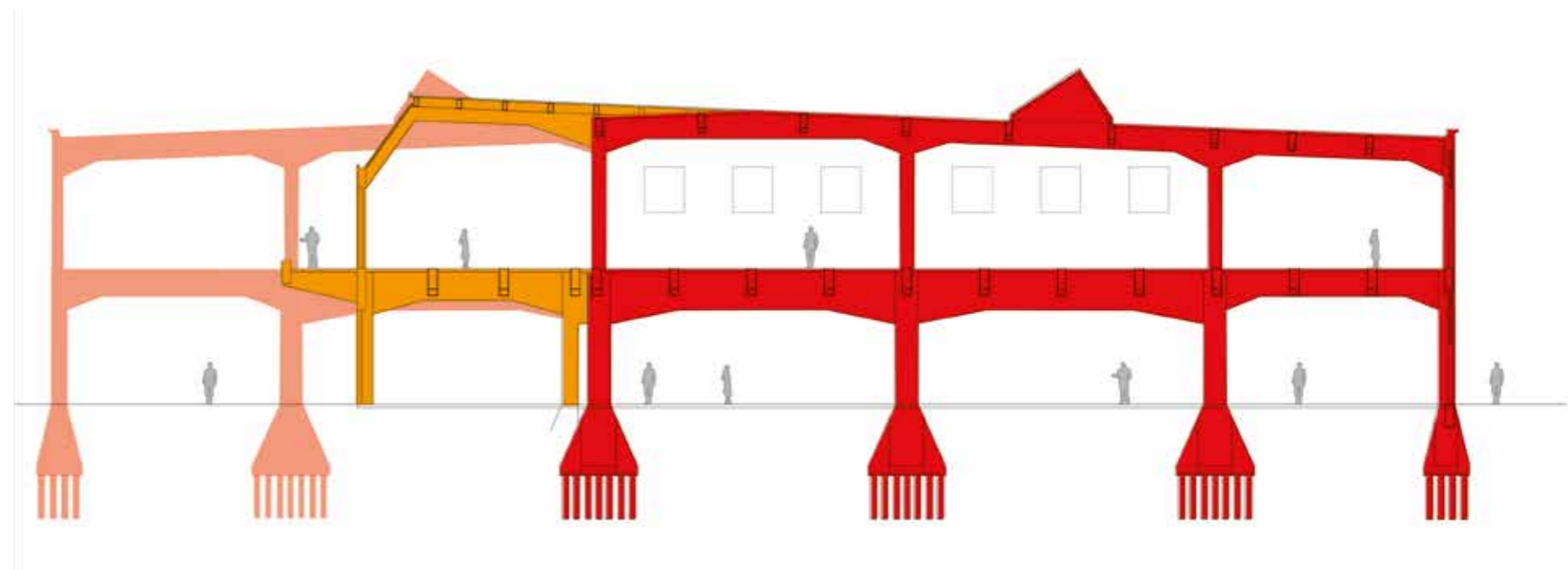
The different layers are clearly visible in the facades and section. The original façade remains mainly on the south side (Deliplein). In the phase 2, the north façade (waterfront side) was damaged and reconstructed. The building had a recession and a new span was added. In phase 3, the change are mainly new entrances on both sides of facades.

## CONCLUSION

The change can be seen clearly over time. In phase 2, the building had a recession and a new span was added. In phase 3, the change are mainly new entrances on both sides of facades. The façade on the north side and new entrances on the south side can be one of potentials since they were made in later periods.



-  1916
-  1916, but is demolished
-  1951
-  2014

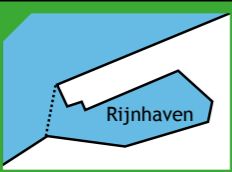
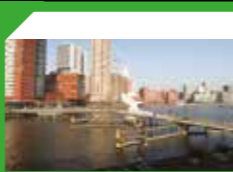



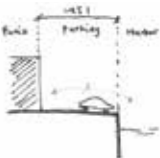

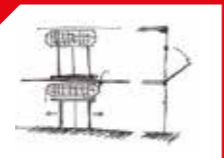







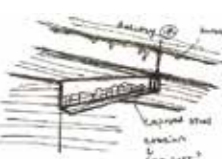

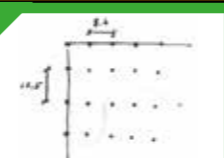
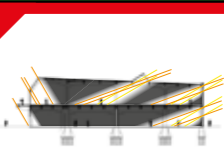
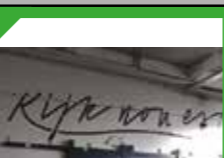
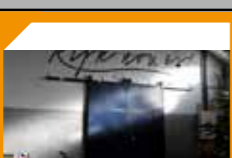


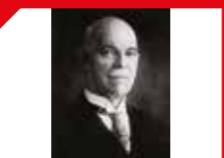




HERITAGE & ARCHITECTURE

CULTURAL VALUE  
MATRIX

# MATRIX

Riegl Brand	Age value	Historical value	Intentional commemorative value	Non-intentional commemorative value	Use value	Newness value	Art value (Relative)	Rarity value	Spirit of place	Dilemma
Surroundings/ setting		Holland Amerika Lijn				Connection to Kop van Zuid		Front seat to the waterside	Former harbor glory	 v.s. 
Site		Multiple development layers		WWII 1944 Fire accident 1947		Liveliness Before After				
Skin (exterior)										
Structure									Patina	
Space plan										Provimi
Surfaces (interior)									Roughness	
Services										
Stuff										
Story			Fenix					Holland Amerika Lijn	Liveliness Before After	

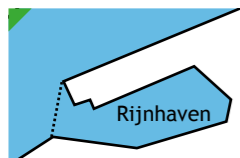






Sources  
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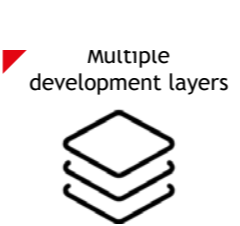



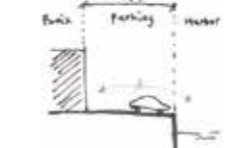


HERITAGE & ARCHITECTURE

CULTURAL VALUE  
VALUES

# VALUES

Surroundings / Setting	
	<p><b>Age value</b></p> <ul style="list-style-type: none"> <li>The Rijnhaven originates from 1893 and look the same as it did then, even though it has aged.</li> </ul>
	<p><b>Historical value</b></p> <ul style="list-style-type: none"> <li>The Rijnhaven: the Holland Amerika Lijn was deeply involved with the development of the harbour from Katendrecht to Kop van Zuid, including our building. (See architectural analyses, chapter historical background)</li> <li>Former prosperous trading harbor: the Fenix II ones was a connection point to the world through trade. (See architectural analyses, chapter historical background)</li> </ul>
	<p><b>Newness value</b></p> <ul style="list-style-type: none"> <li>The new physical connection to the Kop van Zuid. (See architectural analyses, chapter accessability)</li> </ul>
	<p><b>Art value</b></p> <ul style="list-style-type: none"> <li>The aesthetics of the bridge connecting the Kop van Zuid with Katendrecht</li> </ul>
	<p><b>Rarity value</b></p> <ul style="list-style-type: none"> <li>From the site you have a front seat to the waterfront and the iconic skyline of Rotterdam</li> </ul>
	<p><b>Spirit of place</b></p> <ul style="list-style-type: none"> <li>Former harbor glory is presented at the site, because of the remnante of the past harbour function, for example the tracks.</li> </ul>
	<p><b>Dilemma</b></p> <ul style="list-style-type: none"> <li>Trucks vs residential. The trucks form a border between the building and the neighbourhood.</li> </ul>

Site	
	<p><b>Historical value</b></p> <ul style="list-style-type: none"> <li>Multiple development layers of history in the building (See architectural analyses, chapter historical background)</li> <li>Once the longest warehouse in Europe (See architectural analyses, chapter historical background)</li> <li>Part of the reconstruction of the harbour of Rotterdam after WWII (See architectural analyses, chapter historical background)</li> <li>Historic connection with the river (See architectural analyses, chapter historical background)</li> </ul>
	<p><b>Non intentional commemorative value</b></p> <ul style="list-style-type: none"> <li>Survivor of the bombing of Rotterdam in 1944 during WWII.</li> <li>Part of the reconstruction of the harbour of Rotterdam after WWII (See architectural analyses, chapter historical background)</li> <li>Survivor of fire damage in 1947</li> </ul>
	<p><b>Use value</b></p> <ul style="list-style-type: none"> <li>The new functions; food factory, the museum, studios and start ups.</li> </ul>
	<p><b>Spirit of place</b></p> <ul style="list-style-type: none"> <li>Hipster atmosfeer</li> <li>Temporary active programs</li> </ul>
	<p><b>Dilemma</b></p> <ul style="list-style-type: none"> <li>Parking space at the waterfront makes the disconnection to the inside activities.</li> </ul>


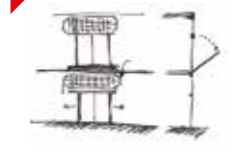

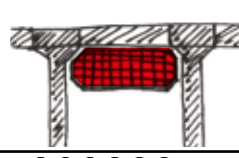

## Sources







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# VALUES

Skin (exterior)	
 <p>1</p>	<b>Age value</b> <ul style="list-style-type: none"> <li>The facade looks aged and damaged because of the patina.</li> </ul>
	<b>Historical value</b> <ul style="list-style-type: none"> <li>The facade shows the former function as a warehouse</li> <li>Shows the former harbour glory</li> <li>The layering of the materials used to restore the facade are similar to the original material (see technical analyses, chapter details)</li> </ul>
	<b>Intentional commemorative value</b> <ul style="list-style-type: none"> <li>The name of the former company is painted on the facade to commemorate the history</li> </ul>
	<b>Art Value</b> <ul style="list-style-type: none"> <li>The shape of the windows</li> <li>The colour on the facade</li> </ul>
 <p>2</p>	<b>Dilemma</b> <ul style="list-style-type: none"> <li>How to deal with the damaged parts of the facade</li> </ul>

Structure	
	<b>Age value</b> <ul style="list-style-type: none"> <li>The roughness of the structure, the patina, shows its age</li> </ul>
	<b>Historical value</b> <ul style="list-style-type: none"> <li>The building itself tried to show modernity by applying advanced construction techniques (See technical analyses, chapter history of the structure)</li> </ul>
	<b>Use value</b> <ul style="list-style-type: none"> <li>The former use as a warehouse also entails the connection between the building and the river. The structure used to be located directly at the waterfront, that the cranes on the roof could load the goods off the ships and move inside the building. However, this connection is no longer located directly at the waterfront at this moment.</li> </ul>
	<b>Rarity value</b> <ul style="list-style-type: none"> <li>The shape of the structure</li> </ul>
 <p>Patina</p>	<b>Spirit of the place</b> <ul style="list-style-type: none"> <li>The patina of the structure adds to the experience of the building</li> </ul>
	<b>Dilemma</b> <ul style="list-style-type: none"> <li>How to deal with the damaged parts of the structure</li> </ul>

## Sources


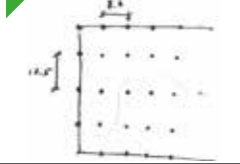
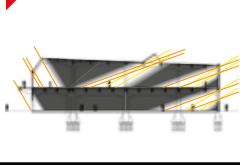

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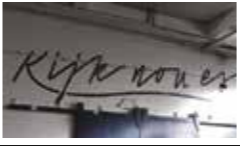

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# VALUES

	
	
	
<p>Provimi</p> 	

Surfaces (interior)	
	<p><b>Intentional Commemorative value</b></p> <ul style="list-style-type: none"> <li>The name of a new company on the interior wall commemorates the rebirth of Fenix</li> </ul>
<p>Roughness</p> 	<p><b>Spirit of the place</b></p> <ul style="list-style-type: none"> <li>The roughness of the surfaces adds to the atmosphere</li> </ul>

# VALUES

Services	
	<b>Age Value</b> <ul style="list-style-type: none"> <li>Authentic doors and windows from 1916</li> </ul>
	<b>Historical Value</b> <ul style="list-style-type: none"> <li>The tracks next to the building are reminders of the history of the building and the harbour activities.</li> </ul>
	<b>Dilemma</b> <ul style="list-style-type: none"> <li>How to deal with the damage on the original doors and windows</li> </ul>

Story	
	<b>Historical Value</b> <ul style="list-style-type: none"> <li>The original warehouse, San Francisco, was designed by C.N. van Goor. He was important within the architecture world. (See architectural analyses, chapter background architect)</li> <li>The building itself tried to show modernity by applying advanced construction techniques (See technical analyses, chapter history of the structure)</li> <li>Former prosperous trading harbor: the Fenix II once was a connection point to the world through trade. (See architectural analyses, chapter historical background)</li> <li>Warehouse San Francisco: once ran business by Holland Amerika Lijn</li> </ul>
<b>Fenix</b> 	<b>Historical Value</b> <ul style="list-style-type: none"> <li>The name Fenix is a reference to the rebirth of this warehouse. It survived WWII then after a fire it was reborn again. (See architectural analyses, chapter historical background)</li> </ul>
<b>Holland Amerika Lijn</b> 	<b>Historical Value</b> <ul style="list-style-type: none"> <li>Once the longest warehouse in Europe and being the last remaining warehouse of the Holland Amerika Lijn.</li> <li>The building itself tried to show modernity by applying advanced construction techniques.</li> </ul>
<b>LIVELINESS</b> 	<b>Historical Value</b> <ul style="list-style-type: none"> <li>The liveliness of the building. Fenixloods was once very active with single working activity. Nowadays, it shows its liveliness with multiple new functions and a spirit of relaxed and hipster atmosphere.</li> </ul>

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HERITAGE & ARCHITECTURE

CULTURAL VALUE  
CONCLUSION

# CONCLUSION

## GENERAL

In order to understand Fenix II, different scales and aspects have been analysed from urban level, site level, and building level in architectural approaches. Overall, the available information in Rotterdam City Archive is still limited; the visits of Fenix II private space as Biennale Rotterdam on first floor and Provimi factory interior were made. Besides that, the analyses also focused on the history background, previous and current usage, and space quality; some assumptions were made during the analyses.

There are 3 aspects can be seen in the followings: obligations, opportunities, and dilemmas.

## REFLECTION

### OBLIGATIONS

#### ORIGINAL ELEMENTS FROM 1916

The transformation of the building is rich. The original elements should be preserved as much as possible. These elements express the essential character of Fenix II. Even though there was an entire recession on the waterfront side, demolished in phase 2, the rest original structure remains well. The reconstruction also provides another character, such as light introduce and spatial quality. The south façade, the expression of columns and whidowe, should be preserved as much as possible.

#### THE RECONNECTION OF WATERFRONT

The relation of the river should be addressed, how it functioned and how it has transformed due to different requirements. The emphases are not only because the history of busy trading harbour activities, but also and used the water to bring prosperity.

## OPPORTUNITIES

### CONTINUITY

The transformation of the building is rich. The building, San Francisco warehouse, was once an entirety. However, as a survivor of WWII and fire damage, the entirety has separated into two parts, Fenix I and Fenix II. How can it be relinked in a harmonious way and shown as once the longest warehouse in Europe?

### LIVELINESS

The former glory of Rotterdam industrial harbour should be brought back, in any form representation. The transformation of liveliness should be relinked with current needs and further discussed.

### CONNECTION POINT

In the history background, San Francisco acted once the important connection point to the Netherlands and Europe, and as a gate of international trading. What can be this connection transformed under current situation?

The physical connection point is also an opportunity. Fenix II is close to Kop van Zuid which is the new highlight of Rotterdam, and the integration of public and semi-public functions can boost the flow of visitors. Moreover, the location is the first front row of waterfront and of crossing the south side of Maas River from Rotterdam city center.

### MODERNITY AND ADVANCED TECHNIQUE

The spirit shows itself on the top edge and the uniqueness. The new technique can be applied during the intervention.

### EXTENSION

The gained waterfront space and Deliplein can be extension as hinterland. The openings from first floor can be further discussed to reconnect these spaces. The accessibility could be rearranged and show the connection on both sides and floors.

### OPEN SPACE ARRANGEMENT AND LIGHT INTRODUCE

The open space arrangement can be seen clearly on the first floor, which indicates the history of storage and warehouse spirt. Along with the daylight introduce, especially from skylight, the space quality is spacious and clear, without extra decorations.

### THE NAME OF FENIX, RISING FROM ASHES.

The name shows the building as survivor, both from WWII and fire accident. Also, the continuous transformation is a spirit to maintain.

## DILEMMAS

### THE POSSIBILITY OF CHANGING STRUCTURE AND FACADES

Since it has been mentioned above, the structure and facades represent the main character of Fenixloods. However, the grids are very repetitive. In order to create different atmosphere and space sequence, the demolition may be required. What is the maximum to demolish and yet preserve the spirit?

### THE ATTACHED NEIGHBOR, PROVIMI FACTORY

It is the last remaining proof of industrial activities on Katendrecht. However, the existence interrupts the living quality of surrounding residential area, and also the direct connection the park by the transportation routing. Should it be removed like the other industrial activities to west end side of Maas River? If it remains, what is the possible way to integrate better with future functions? Should the covered part by Provimi reveal itself?

Fenix II has been analyses through different levels. From urban level, the transformation of Fenix II was rich, the survivor of WWII and fire damage. From site level, it represents the former industrial harbor glory by the trace of facade and tracks on the both sides. How should it be transformed and kept as the spirit of Fenix II, as the mark of industrial harbor as once lively production activities? How can the "Glory Layers" apply to the future design?



HERITAGE & ARCHITECTURE

OVERALL CONCLUSION

# OVERALL CONCLUSION

## GENERAL

Even though the available information in Rotterdam City Archive is limited, the visits of Fenix II private space as Biennale Rotterdam on first floor and Provimi factory interior were still made. Besides that, the analyses focused on the history background, previous and current usage, space quality, and technical aspects; some assumptions were made during the analyses.

In order to understand Fenix II, it has been studied from many approaches: large scale to small scale, from tangible to intangible, from background of the past to the present, and from architecture to building technology.

## URBAN SCALE

The reconnection with Rotterdam city center and Kop van Zuid will be an opportunity. Moreover, Fenix locates at the front seat of the waterfront, this can provide characters in diversity, compared to the inner city. The relation of the river should be addressed, how it functioned and how it has transformed due to different requirements. The emphases are not only because the history of busy trading harbour activities and once acted as a gate of international business, but also this relation with water is rare and should be addressed with the context of Rotterdam. Moreover, with the relation with waterfront, natural elements in the city can be re-integrated and provide better living quality.

Fenix II is also suitable to create public space under this context and acts as catalyst of the city to enrich the diversity. Fenix II not only takes advantages of the well-connected physical location, but also can be seen as a reconnection to the former glory of industrial harbour, once full of production activities and liveliness.

## BUILDING SCALE

The transformation of the building is rich, happening over 100 years, and still continues. There are 3 phases of transformation: 1916-1922 the completion of San Francisco warehouse, 1944-1951 reconstruction after WWII and fire damage, and 2012-2014 new programs applied. San Francisco warehouse was once an entirety as the longest warehouse in that period, and witnessed the glory of Rotterdam industrial harbour in phase I. Then, it became a survivor of WWII and fire damage in phase II; Fenix has risen from the ashes. However, the entirety was separated into two parts (Fenix I and Fenix II). Even though there was an entire recession on the waterfront side, demolished in phase 2, the rest original structure remains well. Moreover, the reconstruction also provides another character, such as light introduce and spatial quality. The representation of continuity can be translated into physical connections or applied functions in the future design. In phase 3, the new programs has been introduced, and started to bring back the liveness of the building.

The original elements should be preserved as much as possible. These elements express the essential character of Fenix II. The south façade, the expression of columns and window, should be preserved as much as possible. As well as, the remained original structure should be also maintained as much as possible. However, in phase 3, there are two new openings were made on the floor, creating 11 m high ceiling. Even though the cuts were destructive, it changes the interior space entirely. It can be rather seen as new approaches than just destructions. These new cuts create a much different space quality, compared to repetitive open space found in rest of the building.

The lowest values occur in phase 3, mainly new entrances and partitions. As mentioned above, the original elements should be preserved as much as possible since it expresses the essential building characters. However, while preserving the main character of the building, the diversity of the intervention could be limited. Where is the limit of intervention, in terms of architectural, culture value and building technology?

Another aspect can be an opportunity is the fact of the advanced building technique was applied, as reinforced concrete and pre fab concrete materials. New materials and techniques nowadays can be solutions during intervention, either showing the similarity or contrast.

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35) Own Illustrations.....	37	79) Own Illustrations.....	73	116) Own Illustrations, the noun project, City archive Rotterdam.....	122
36) Own Illustrations.....	38	80) Own Illustrations.....	74	117) Own Illustrations, the noun project, City archive Rotterdam.....	123
37) Own Illustrations.....	39	81) Own Illustrations.....	75		
Architectural Analyses; Historical analyses		82) Own Illustrations.....	76		
38) Own Illustrations.....	43	83) Own Illustrations.....	77		
39) Own Illustrations.....	44	84) Own illustrations and photos.....	78		
40) Own Illustrations.....	45	85) Own illustrations and photos.....	79		
41) Own Illustrations.....	46	86) Own illustrations and photos.....	80		
42) Versteeg, 1931.....	47	87) Own illustrations and photos.....	81		
43) Own Illustrations.....	47	88) Own Illustrations.....	82		
		89) Own Illustrations.....	83		





HERITAGE & ARCHITECTURE

APPENDIX

Appendix 1-  
population and age

		Rotterdam Rijnmond in Cijfers <a href="https://rotterdam.buurtmonitor.nl/">https://rotterdam.buurtmonitor.nl/</a>			Rotterdam Rijnmond in Cijfers <a href="https://rotterdam.buurtmonitor.nl/">https://rotterdam.buurtmonitor.nl/</a>						
		population (inhabitants)	percentage of rotterdam	population growth(%)	age (%)						
data year		2015	2015	2009-2015	2015						
					0-9	10 years-19	20-44	45-64	65 and above	total	
site*2	North area of Maas River	Rotterdam Centrum	32125	5.2%	9.2	6.9	6.4	53.3	21.1	12.3	100
		Delfshaven	75122	12.0%	5.5	12	11.7	44.6	22.6	8.9	99.8
		Overschie	16768	2.7%	5.5	12.9	9.2	33.8	26.5	17.4	99.8
		Noord	51315	8.2%	3.1	10.4	8.9	49.4	20.9	10.5	100.1
		Hillegersberg-Schiebroek	43444	7.0%	5	13.6	11.5	30.1	26.3	18.7	100.2
		Kralingen-Crooswijk	52075	8.3%	5.7	9.8	10.3	44.9	21.2	13.7	99.9
		Prins Alexander	94120	15.1%	4.2	11.2	11	29.7	27.9	20.2	100
site*1	South area of Maas River	Feijenoord	73079	11.7%	5	12.2	11.9	38.6	24.9	12.2	99.8
		IJsselmonde	58936	9.4%	1.7	12.1	10.8	33.5	25.7	17.3	99.4
		Charlois	65307	10.5%	3.8	12.9	10.4	41.2	22.6	12.7	99.8
site*2	Harbor industrial area	Pernis	4794	0.8%	-0.3	11.2	11	29.7	27.9	20.2	100
		Hoogvliet	34187	5.5%	-2.1	10	11.2	30.4	28.5	19.7	99.8
		Hoek van Holland	10110	1.6%	7.2	9.7	10.9	27.7	29.1	22.5	99.9
		Rozenburg	12388	2.0%	x	10.1	11.7	29.1	28.5	20.4	99.8
		Haven- en industriegebieden	186	0.03%	-23.5	5.9	1.6	38.3	37.1	17.3	100.2
Rotterdam		623770	100%	6.3	11.4	10.6	38.4	24.5	15.1	100	

Appendix 2-  
educational level

		GGD Rotterdam-Nijnmond <a href="https://gd-rotterdam.buurtmonitor.nl/">https://gd-rotterdam.buurtmonitor.nl/</a>					
		educational level(%)					
data year		2012(19-64 years old)					
		high	high-midium	medium-low	low	total	
site*2	North area of Maas River	Rotterdam Centrum	52	30	11	7	100
		Delfshaven	37	27	20	16	100
		Overschie	37	29	25	10	101
		Noord	52	24	14	9	99
		Hillegersberg-Schiebroek	52	27	16	5	100
		Kralingen-Crooswijk	52	24	15	9	100
		Prins Alexander	37	35	23	5	100
site*1	South area of Maas River	Feijenoord	27	31	26	16	100
		IJsselmonde	19	38	31	12	100
		Charlois	17	36	32	15	100
site*2	Harbor industrial area	Pernis	19	45	32	5	101
		Hoogvliet	19	39	36	6	100
		Hoek van Holland	28	37	31	4	100
		Rozenburg	18	47	33	2	100
		Haven- en industriegebieden	x	x	x	x	0
Rotterdam		33.3	33.5	24.6	8.6	100.1	

Appendix 3- nationalities

		Rotterdam Rijnmond in Cijfers										
		<a href="https://rotterdam.buurtmonitor.nl/">https://rotterdam.buurtmonitor.nl/</a>										
		nationalities										
data year		2015										
		Indigenous	Surinamese	Antillean	Cape Verdean	Turkish	Moroccan	Other non-Westerner	Other European	Other western	total	
site*2	North area of Maas River	Rotterdam Centrum	50.6	7.7	3.3	2.6	3.8	3.6	11.3	9.7	7.6	100.2
		Delfshaven	34.9	12	4.4	7.6	10	8.5	8.6	9.1	4.8	99.9
		Overschie	65.3	6.9	2.1	2.4	4.1	4.6	4.3	5.9	4.4	100
		Noord	54.2	8	3	2.5	6	5.9	7.2	7.8	5	99.6
		Hillegersberg-Schiebroek	73.6	3.7	1.8	0.7	1.7	2.4	4.3	6.4	5.4	100
		Kralingen-Crooswijk	52.8	7.2	2.2	2	4.5	5.5	9.5	9.5	6.8	100
		Prins Alexander	69	8.4	2.3	1.2	1.8	1.7	5.6	5.2	4.7	99.9
site*1	South area of Maas River	Feijenoord	37.8	11.5	5.6	2.4	14.1	7.4	10.1	7.1	4	100
		Ijsselmonde	59	9.8	5.6	1.4	4.6	2.9	7.1	5.7	3.9	100
		Charlois	44.4	10.8	6.7	2.2	6.7	4.7	9.4	10.8	4.2	99.9
site*2	Harbor industrial area	Pernis	84.2	2.2	2	0.3	0.6	0.4	1.5	5.8	3	100
		Hoogvliet	67.9	8	5.4	1.1	2.2	1.2	4.4	5.3	4.6	100.1
		Hoek van Holland	88	1	0.6	0.3	0.4	0.4	1.2	5.9	2.3	100.1
		Rozenburg	81.8	1.4	1.6	0.2	2	0.5	2.1	7	3.4	100
		Haven- en industriegebieden	76.9	2.8	0.9	0.9	2.8 x		3.7	9.3	2.8	100.1
Rotterdam		54.7	8.7	3.9	2.4	5.7	4.5	7.5	7.6	4.9	99.9	

Appendix 4- family structure

		Rotterdam Rijnmond in Cijfers		Rotterdam Rijnmond in Cijfers									
		<a href="https://rotterdam.buurtmonitor.nl/">https://rotterdam.buurtmonitor.nl/</a>		<a href="https://rotterdam.buurtmonitor.nl/">https://rotterdam.buurtmonitor.nl/</a>									
		households		family structure									
data year		2015		2015									
		figures	%	single	unmarried couple without kids	married couple without kids	unmarried couple with kids	married couple with kids	one-parent household	institutional	rest	total	
site*2	North area of Maas River	Rotterdam Centrum	20392	6%	61.2	12.1	9.1	2.3	6.4	6	0.9	1.9	99.9
		Delfshaven	38405	12%	51.1	8.8	8.3	3.9	13.4	11.9	0.4	2.2	100
		Overschie	8120	3%	40.2	6.4	17.2	5.5	18.2	9	2.3	1	99.8
		Noord	28772	9%	54.8	11.3	8.6	3.8	10.1	8.9	0.8	1.7	100
		Hillegersberg-Schiebroek	20991	7%	40	5.6	16.4	6.2	18.1	8.8	4.1	0.7	99.9
		Kralingen-Crooswijk	29863	9%	56.5	9.9	9.6	2.9	9.4	8.8	1.1	1.8	100
		Prins Alexander	46077	14%	41.2	5.2	18.5	5.2	17.8	9.8	1.7	0.6	100
site*1	South area of Maas River	Feijenoord	35771	11%	45.7	6.6	12.1	3.8	15.6	13.6	0.9	1.7	100
		Ijsselmonde	29314	9%	42.4	5.2	16.2	4.8	14.8	13	2.6	0.9	99.9
		Charlois	34011	11%	48.5	7.4	10.6	4.4	12.6	12.4	2.2	1.9	100
site*2	Harbor industrial area	Pernis	2228	1%	41.2	5.2	18.5	5.2	17.8	9.8	1.2	0.8	99.7
		Hoogvliet	16268	5%	36.5	5.3	21.3	4.6	18.8	10.7	2.1	0.7	100
		Hoek van Holland	4731	1%	34.6	5.5	25.1	5.4	20.2	7.9	0.1	1.2	100
		Rozenburg	5717	2%	34.1	5	26.3	4.3	21.4	8	0	0.4	99.5
		Haven- en industriegebieden	108	0.03%	50.9	13.9	17.6	2.8	10.2	2.4	0	1.9	99.7
Rotterdam		320768		47.1	7.5	13.4	4.2	14.2	10.5	1.2	1.4	99.5	

## APENDIX 5 DAMAGE EXPLANATION

The explanation how this can happen is, by MDCS.monumentenkennis.nl:

The reinforcement corroded, and the corrosion products (rust) formed layers around the rebar. Possible causes for corrosion are (I) corrosion due to carbonation, (II) due to chloride attack, or (III) stray currents. (IV) Corrosion also can be initiated through cracks or voids in the concrete,

The staining on this facade is present at the original doors and doorframes. The explanation how this can happen is, by MDCS.monumentenkennis.nl:

In case of rust coloured stains, these can originate (I) from corroding reinforcement, (II) from iron containing aggregates such as pyrite, or (II) from pieces of tying wires left in the formwork or other small ferrous objects. (IV) In case the rust stains coincide with the layout of the reinforcement of a soffit, the rust stains can origin from when the reinforcement was placed temporarily of the formwork during construction.

Only on this facade are there multiple individual cracks found. They are classified as individual cracks after research in the placing of these cracks. The explanation how this can happen is, by MDCS.monumentenkennis.nl:  
Cracks appear perpendicular to the direction of the stresses. The causes can be manifold. In order to form a hypothesis, the correlation of the crack with the building (element), the detailing, load bearing system and layout of reinforcement, orientation, construction phases etc. should to be reviewed. Some causes can be for example thermal stresses, settlement, shrinkage, corrosion, mechanical impact or overloading.

The explanation for this damage is, by MDCS.monumentenkennis.nl:  
Encrustation can occur on lime-containing materials (e.g. limestone, lime (and also cement) mortar, concrete) in the presence of a large amount of water: water dissolves the Portlandite ( $\text{Ca(OH)}_2$ ) from the cement paste, and calcium from the CSH gel of the cement matrix. These compounds are transported to the surface where they deposit. This process is often observed on structures where cracks are present, allowing percolation of large amounts of water.

Soiling occurs all over this façade. This makes this façade very dark. The explanation for this damage is, by MDCS.monumentenkennis.nl:  
Soiling is due to the deposition of dirt (e.g., dust, particles etc.) originating from the environment. The presence of limited amount of moisture facilitates sticking of the soiling to the surface of the material.

Biological growth is found on the small wall on top of the balcony. There are mostly mosses found here, but some algae and plants as well. The explanation for this damage is, by MDCS.monumentenkennis.nl:

Mosses are small plants, which grow on damp and shady locations. Their appearance is in the form of green cushions or spiky (hairy) tufts; when dry, their color is brown. Mosses do not have roots, but have an axis or stem bearing a sort of leaves. Mosses send rhizoids (root-like structures) into the substrate. Due to the lower pH value ( $\approx 3$ ) under the layer of moss, the surface of the concrete can deteriorate. Moist moss can increase the risk for freeze-thaw damage when present in cracks or voids. The presence of moss can facilitate the growth of higher plants

MDCS Hypothesis: Spalling can occur as result of frost action or, in some cases, salt crystallization. Frost action can take place under the following combination of conditions: (i) frost sensitive material; (ii) high moisture content in the material; (iii) sudden drop of temperature below freezing point. Spalling due to salt crystallization is generally the result of salt crystallizing under the surface (crypto-florescence). A salt crystallization process can take place in the presence of both soluble salts and moisture.

The graffiti found on this façade are in some places already removed, but are mostly still present. Graffiti (on monuments or other places where they are not wanted) are the result of an act of vandalism.