

katoenveem

heritage and architecture

harbour heritage

*P1 REPORT UPDATE
26.05.17*

*Lidy Meijers
Bas Gremmen
Nicholas Clarke*



PREFACE

In this report illustration will be used from a diverse selection of sources. External source illustrations, illustrations constructed by group members and illustrations made by myself will alternate. If an illustrations is lacking a source in the description it is a self-made illustration. Images from external sources or group members will be accompanied by a source description.

Each part of the report will start with a question and a method and will be concluded with research conclusion that can be considered as key information for the advancement of the design project.

INDEX

introduction	2	historic development	20	system	53
site	6	skin	28	value	72
problem statement	19	structure	37	personal fascination	75
research question	20	space plan	46	future	78

INTRODUCTION



J.J. Kanter
(P. Groenendijk, Jobsveem Rotterdam een gebouw in beweging 1912-2008, Rotterdam 2008, p78)

QUESTION

Who was the architect of the Katoenveem?

METHOD

By looking into historic information on the architect.

J.J. KANTERS

JJ (Jan Jeronimus) Kanters, was born on 23-8-1869 and died just after the completion of the Katoenveem on 25-2-1920. Both his father and his son were architects as well.

JJ Kanters studied at the "Academie of Beeldende

Kunsten en Technische Wetenschappen" in Rotterdam. He joined the "Vereniging Bouwkunst en Vriendschap", that was founded by his father. He designed the warehouse Santos in 1903, (also included in this studio as well) before designing the Katoenveem. In 1910 JJ Kanters started his own firm. With the design for St. Job (1912-1914) Kanters showed his skills concerning the construction of utilitarian buildings. Still there are not so many other well known buildings designed by Kanters.

Interesting to know is that NV Blaauwhoedenveem has built a warehouse in 1911 on the Ruraalse Kaai in Ant-

werp. This six story building had a brick façade and a reinforced concrete construction built on the principle of Hennebique, this was one of the 6 buildings built like this in Antwerp. The architect was Hendrik Frank van Dijk (1853-1939). Although the construction was much soberer than the one of the St. Job it is likely to say that Kanters designed the construction since he had good connections with the Blaauwhoudenveem.

JJ Kanters' son Philip took over his office in 1923. Philipp went to school at the Technical School Zurich, but he didn't finish it because he wanted to take over his father's business. Philipp continued the relation

with Blaauwhoedenveem. Buildings of his hand are: office and warehouse Blaauwhoedenveem from 1947, warehouse "De Molukken" in the Rijnhaven from 1948 and a big cold house in the Merwehaven from 1952. Philipp was also active outside of Rotterdam in Alkmaar and Brabant. Philipp died in 1972, ending the Kanters architect's blood line.

(M. Enderman and R. Stenvert, Bouwhistorische verkenning Katoenveem, Keilestraat 39 Rotterdam, Utrecht(2005))



**1927
PROGRESSION**
period of loss and rearrangement
brought little profit

**1945
PROGRESSION**
period of profit after World War II

1916 INITIATIVE
initiated to conduct a part of the
cottontrade and transport market
through Rotterdam.
Establishing nv Katoenveem by
Blaauwhoedenveem, Handelsveem,
Hollandsveem, Leydsche Veem, het
Nederlandsche Veem, Vriesseveem
en Pakhuismeesteren, with 'Ver-
eeniging voor den Katoenhandel' as
important entrepreneurs.

1919 NV KATOENVEEM
completion of the building
first storage of Cotton



**1923 - 1926
DEGRESSION**
loss and rearrangement
of the financial situation



1919 FIRE
shortly after construc-
tion fire break out in
compartment E
Services were highly
needed to operate
efficiently



1917 FUSION
because of the insurrance of being a
Cotton Warehouse, standing alone as
'Katoenveembedrijf' was not rendable.
Cooperation was a solution and parties as
Blaauwhoedenveem and Vriesseveem star-
ted to work together to combine forces

1921 SERVICES
due to World War II and the lack of copper the construction of transporta-
tion system was delayed. Also the innovative Sprinklerinstallation was ready
and after these installations the building runned on full speed



1925 FIRE
in compartment D fire
broke out and the
firesystem was well
tested

**1929 - 1945
DEGRESSION**
low efficiency of the cottonwarehouse
loss of profit and high transportation
costs to hinterinlands by railway due
to competition of the ports of Bremen
and Hamburg.

1964 END KATOENVEEM
reduced demand cotton
increasing sypply of synthetic fabrics

history of Katoenveem (1/2) by Audrey Loef
(M. Enderman and R. Stewart, Bouwhistorische Verkenning Katoenveem, Keilestraat 39 Rotterdam, Utrecht(2005), p. 9, Pothoven, B., 400 jaar opgeslagen 1616-2016. Rotterdam (2016), p. 77-78)



**1995 ESTABLISHING
ATELIER VAN LIESHOUT**
founded by Joep van Lieshout, creating
contemporary art, design and
architecture.
First atelier at Kunst & Complex, Keile-
weg, Rotterdam

1986? AC STERBA BV
usage inbetween not clear, possibly sto-
rage of Specerijenfabrikant AC Sterba

**1995? AVL & AC STERBA BV
SITUATED IN KATOENVEEM**

current rented atelier of Kunst & Complex became too
small for AVL and they decided to rent more warehouses.
They rented one from Specerijenfabrikant Sterba which
became too small as well and moved to Katoenveem.

*'Op een gegeven moment huurden we een loods van spece-
rijenfabrikant Sterba en toen ook die te klein werd, stelden zij
ons voor naar het katoenveem te komen.'*

The writing of this sentence make it seem like Sterba were
also in Katoenveem, perhaps before AVL, enhanced by the
fact of the written name on the facade of the building.

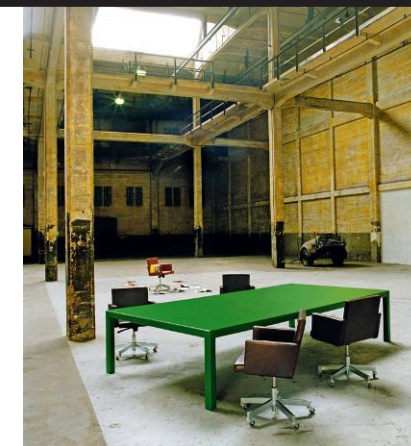


EXHIBITION (?)
Katoenveem used to exhibit objects
of Atelier van Lieshout?

1986 OFFICE

1991 SHED

added structures, specific user and
usage not clear (?)



2016? EMPTY KATOENVEEM
Exact moving out period of AVL and Sterba not clear



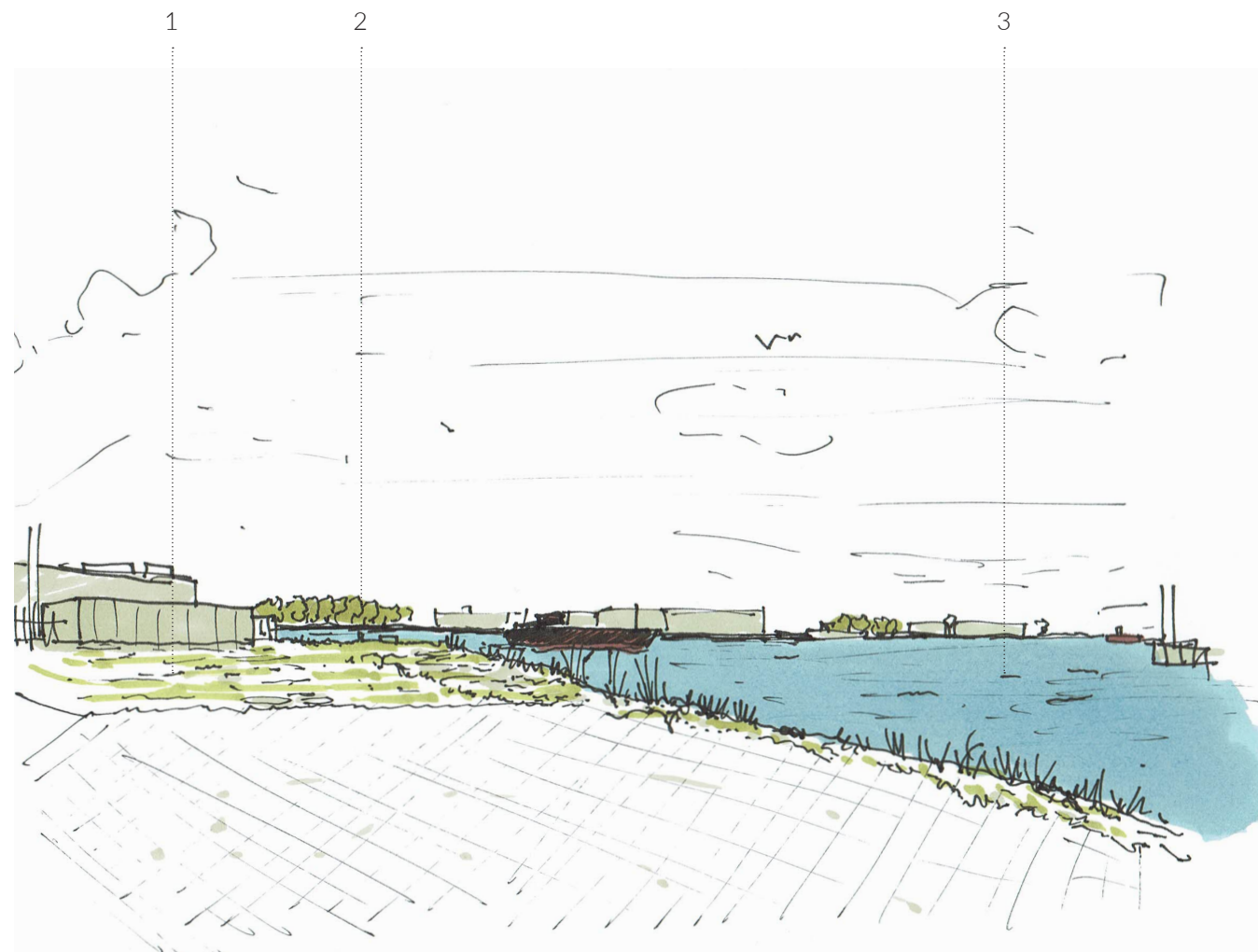
history of Katoenveem (2/2) by Audrey Loef
(Fruitport, een haven in de groei. p. 52, www.ateliervanlieshout.nl)

SITE

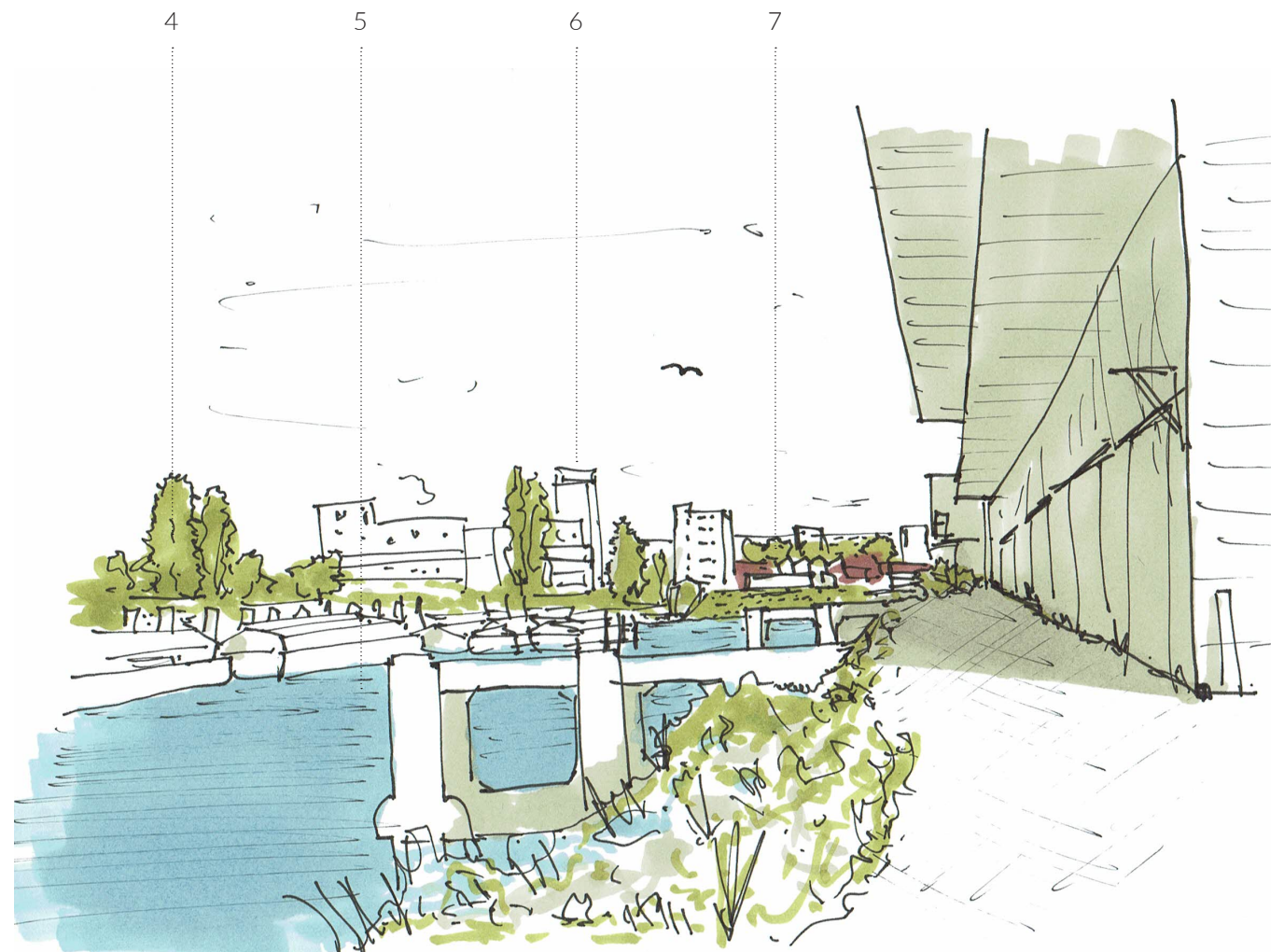


● spatial sequence
 ● vista's

direct surroundings and vistas by Joost van den Berge



vista 1



vista 2

vista 1 & 2 by Joost van den Berge

QUESTION

What is the relationship of the Katoenveem site to its surroundings? How is the building embedded in the harbour environment?

METHOD

By making sketches and analysing them to see what the important sightlines are and of what elements different views are compiled.

VISTAS (1/2)

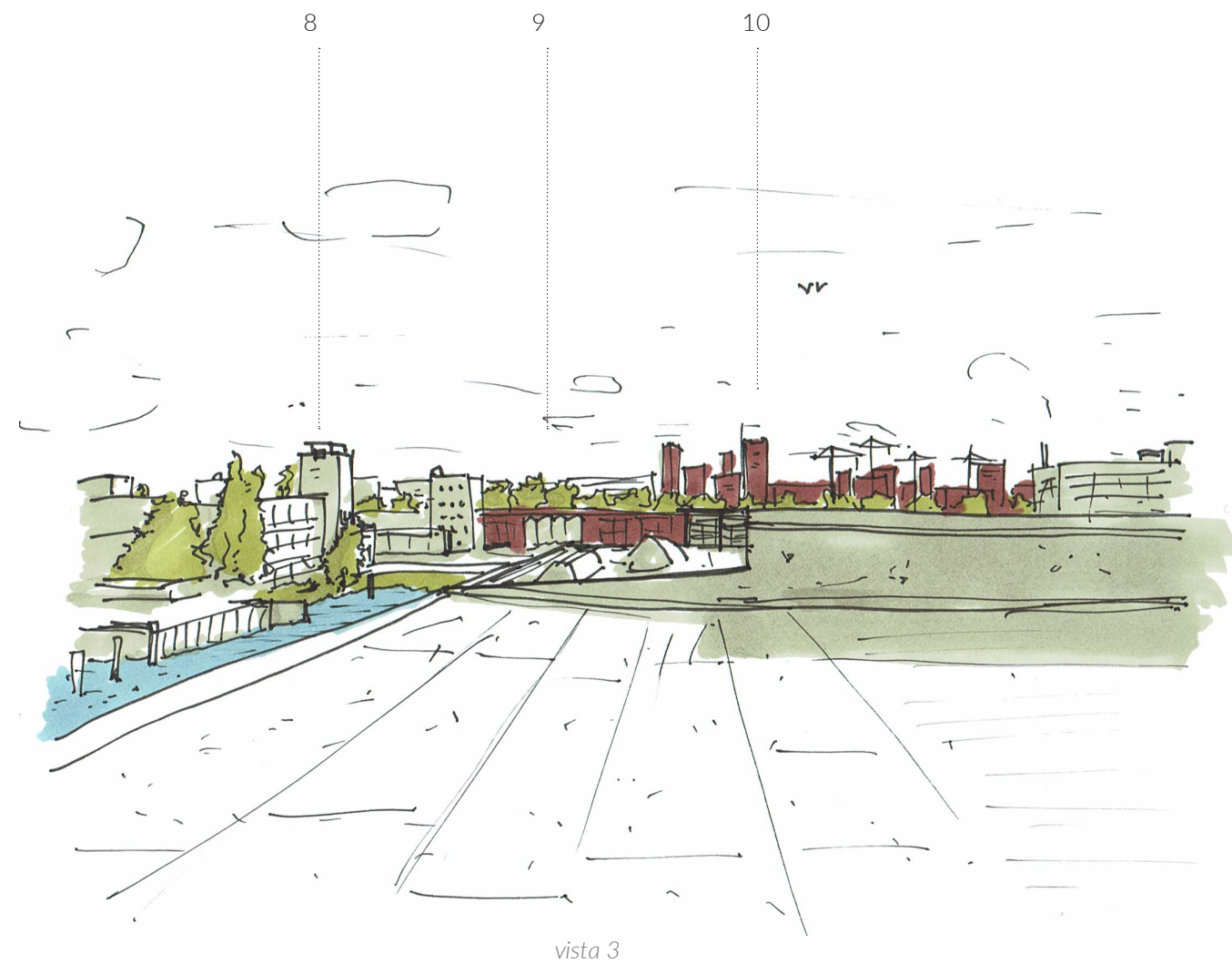
Vista 1 shows the view at the end of the pier over the harbour and the main waterways:

1. At the end of the pier some built structures are present together with grassland and some bushes
2. On the other side of the Maas you can see large built structures of industrial buildings together with green structure; mainly trees
3. The main element clearly is the water. The waterway here is wide and full of activity. A relationship between Katoenveem and the harbours is clearly established.

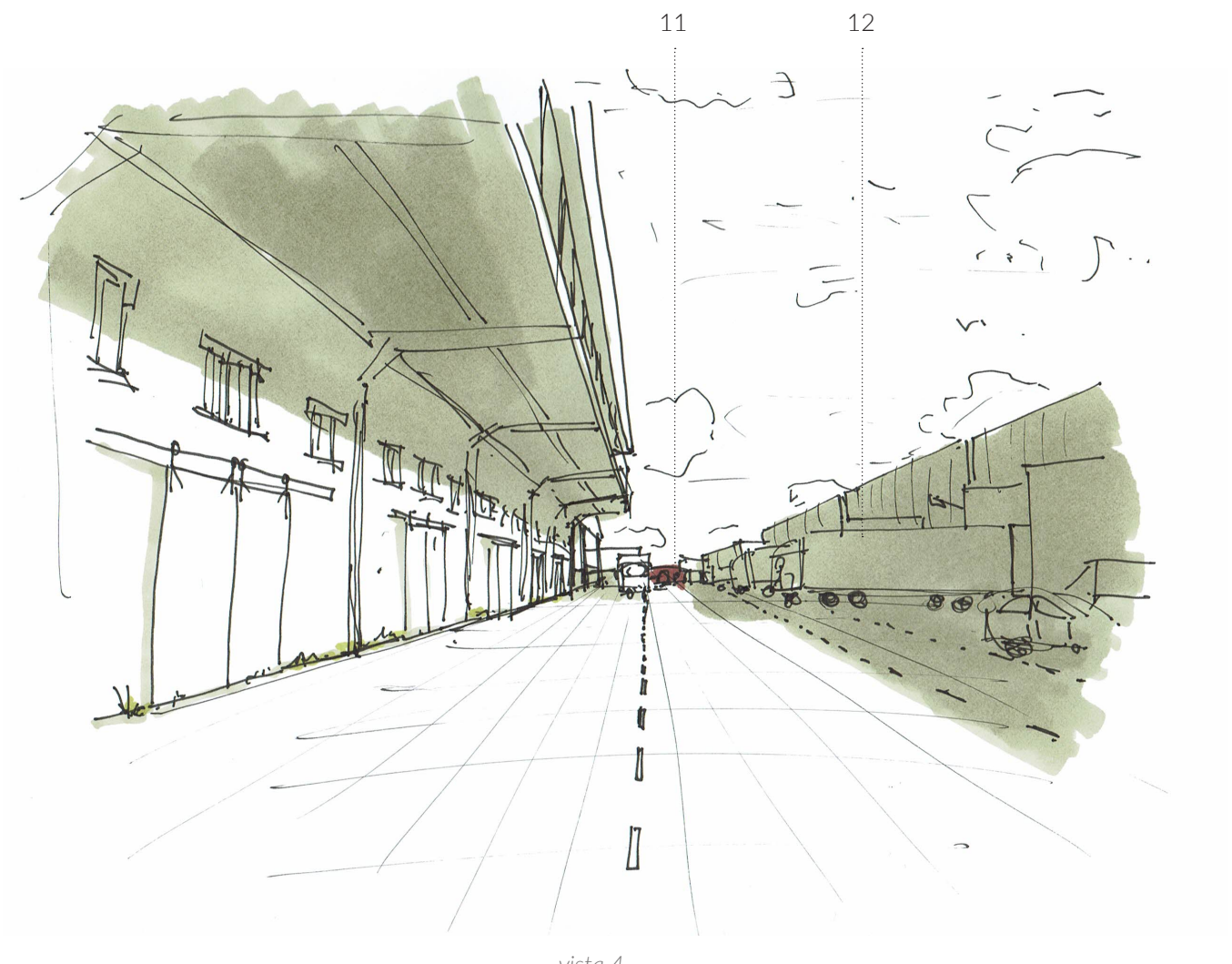
Vista 2 shows the view from Katoenveem along the Keilehaven and the other side of the harbour:

4. The other side of the harbour with large open fields with an abundance of trees and in front of the quays some small ships and pontoons
5. In front the Keilehaven is still very present. The relationship between the harbour and Katoenveem is still intact but needs a push
6. on the end of the harbour you can still clearly see the old industrial buildings and other built structures
7. At the end of the harbour you can see fragments of the main road, the Dakpark and the green structures

it offers.



vista 3



vista 4

vista 3 & 4 by Joost van den Berg

VISTAS (2/2)

Vista 3 shows the view of the roof and the relationship Katoenveem has with the city on a larger scale:

8. The old and newer industrial buildings and other built structures

9. Above the small built structures at the end of the harbour you can clearly see of the main road, the Dakpark and the many green structures it offers

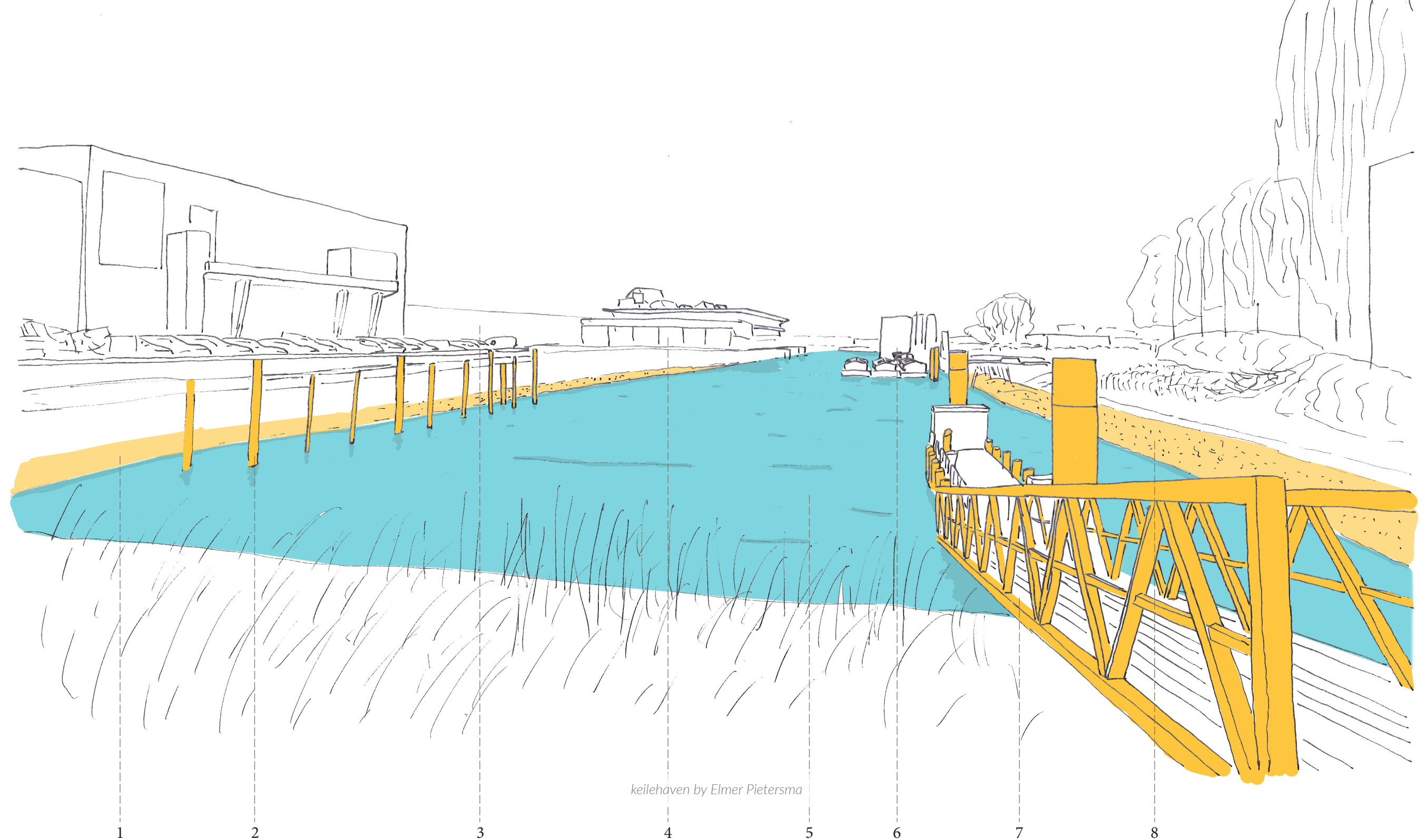
10. From the roof an impressive view unfolds on Rotterdam and it's highrisers

Vista 4 displays the view from Katoenveem to the north-east along the Keilestraat:

11. Asphalt, stone and trucks dominate the view here. There is practically no relationship with the city, water or green. However this area and sightline is very active. Here trucks are coming and going all the time and people are walking along the road to reach their cars and trucks.

12. Bicycles and cars crossing the junction between the Keileweg and the Benjamin Franklinstraat. Finally on the end of the street you can see, if you look very good, the Dakpark, a green structure and the Vierha-

vensstraat



QUESTION

What spatial sequence occur around the Katoenveem?
What elements compose the spatial sequences around the site?

METHOD

By sketching and tracing photographs of the surrounding it is possible to reduce the amount of information in the image to the most important elements.

KEILEHAVEN

This first view show the Katoenveem as it is situated next to the Keilehaven at the end of the pier. This image clearly shows its harbour identity. Although this harbour used to be a very busy area, the Keilehaven is now hardly in use. Only a few ships come here to be cleaned at the facility (6) on the other side of the harbour. Trees hide the industry still remaining facing the Katoenveem.

1. Breakwater
2. Wooden posts
3. Fruit transshipment with loads of trucks
4. Katoenveem
5. Keilehaven
6. Ship cleaning station
7. Water taxi docking point
8. Breakwater

SPATIAL SEQUENCE (1/8)

- Important element; shade determines order of importance.
- Water



KEILEWEG

At the beginning of the Keileweg, one might already see the Katoenveem; behind all the trucks moving about, the top of the elevator shaft and the sample room are visible.

The left side of the image shows the Vertrekhallen, a party centrum. The name and location refer to the original departure halls of the Holland America line, of which multiple warehouses were also present further down the pier.

The markings on the road suggest where the vehicles should be free to move. However, the trucks and cars tend to be parked wherever they might be, waiting in line to deliver or gather their goods. At number two, underneath the Vertrekhallen, the parking of the local offices is shown.

On the right part the office of the fruit transshipment is shown. This function is therefore connected to the warehouses further down the pier.

1. Vertrekhallen (party centre)
2. Car parking for the offices
3. First dock of the fruit transshipment warehouses
4. The Katoenveem; showing only the roof, elevator shaft and the sample room.
5. Marking on the street, showing which part of the road to keep clear
6. Office of the fruit transshipment

SPATIAL SEQUENCE (2/8)

- Important element; shade determines order of importance.
- Water



KEILEWEG 2

Further down the road, a clearer view of the Katoenveem is showing. This is also the gap between the two large fruit transshipment warehouses as is shown on the left. The gate guards the entrance to the quay where the international ships dock to deliver their fruit.

Number two marks one of the truck docks. One might notice that there are three trucks in this image that are just standing around; these are waiting for their turn to go the docking station.

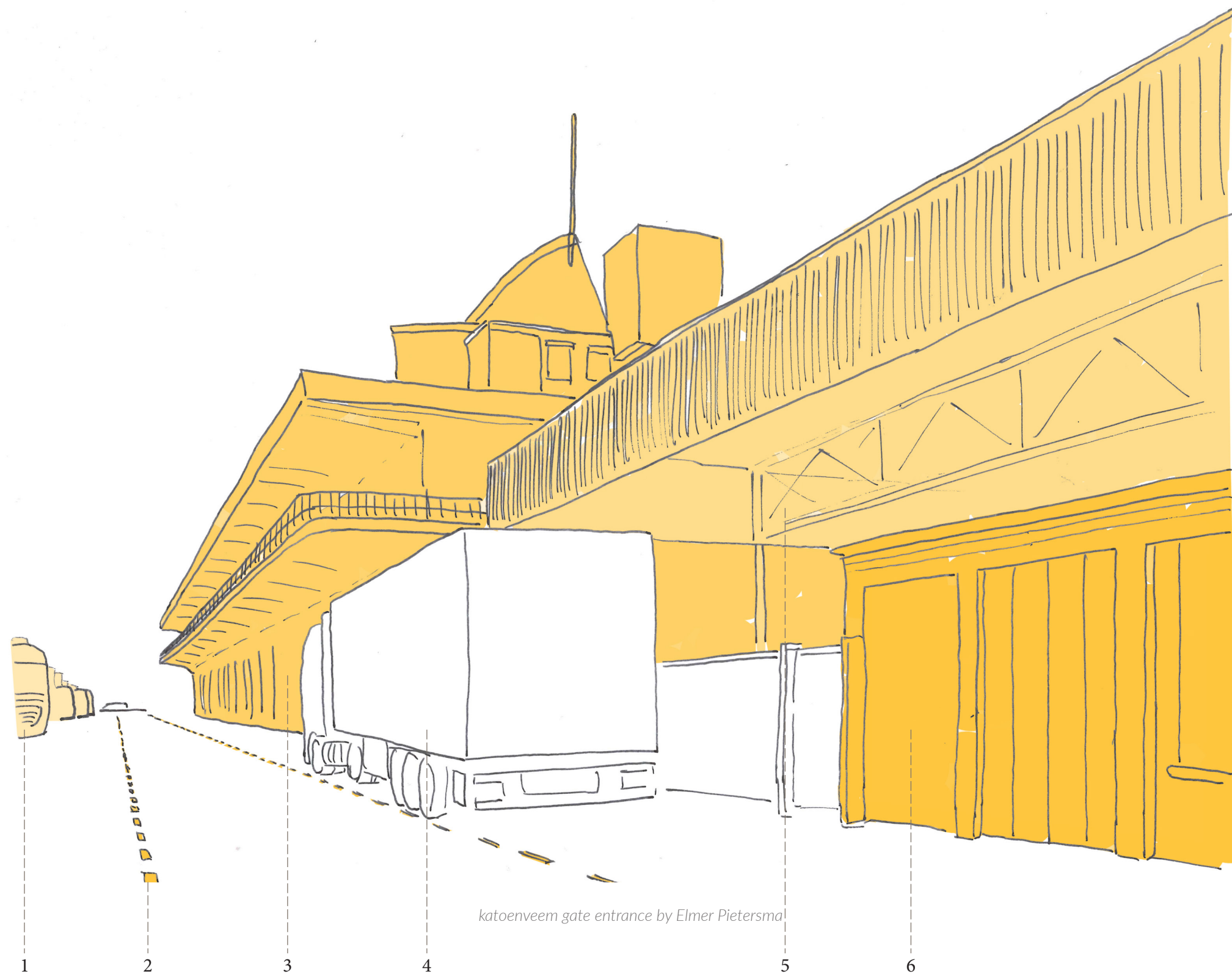
The Katoenveem is now easier to be seen. The sample room on the roof clearly stands out from the rest of the horizontal building. In front of the Katoenveem, a shed is also visible. This metal roof is an addition to the complex build in 1991 (see the chornomap for more information).

From this distance one can also see the balcony running around the building, for the first time. This striking element gives great character to the building and makes it recognisable.

1. Gate to the quay
2. Fruit transshipment warehouse
3. Katoenveem
4. Metal roof in front of Katoenveem
5. One of the parked trucks

SPATIAL SEQUENCE (3/8)

- Important element; shade determines order of importance.
- Water



KATOENVEEM - GATE ENTRANCE

This image shows the main entrance to the Katoenveem, through the gate (behind the parked truck). Next to the gate is the pumping station of the old sprinkler installation of the Katoenveem (for more information see the chapter on the sprinklers). This building is empty now but used to house the pumps to maintain the water pressure for the sprinklers. The building stands apart from the main warehouse but is also listed as a monument.

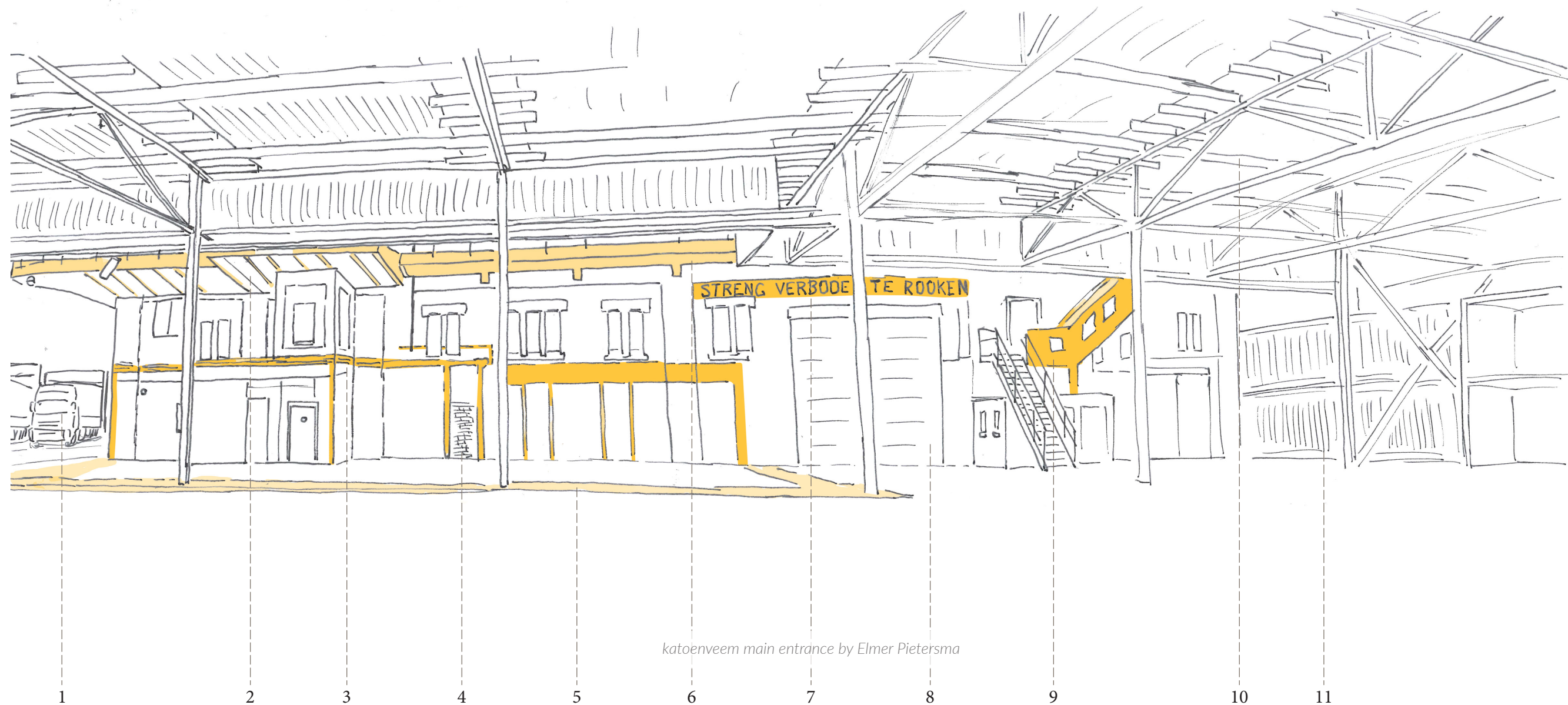
The markings on the street continue all the way to the end of the pier, showing where the trucks can temporarily park. With the continued movement of trucks on the street, it is a unsafe environment to be just walking around; you need to pay attention to all the trucks in the chaos of loading and unloading.

Beyond the gate of number five an oasis of calm starts. The area underneath the metal roofing has been cleared and nothing remains there anymore except for the concrete flooring and traces of activity.

1. Fruit transshipment warehouse
2. Markings on the street
3. Katoenveem
4. Parked truck
5. Metal roof added in 1991
6. Pumping station, added with the complex in 1920

SPATIAL SEQUENCE (4/8)

- Important element; shade determines order of importance.
- Water



KATOENVEEM - MAIN ENTRANCE

The current main entrance of the entire warehouse is the roller door on the northern end of the building. All the other doors have been bolted up to prevent squatters of entering.

When facing the Katoenveem from this side, traces of removed buildings are visible. This line (3&5) marks the old directors office, removed in 1988 (see chronomap). The old entrances to the warehouse have been bricked up as is shown by number four.

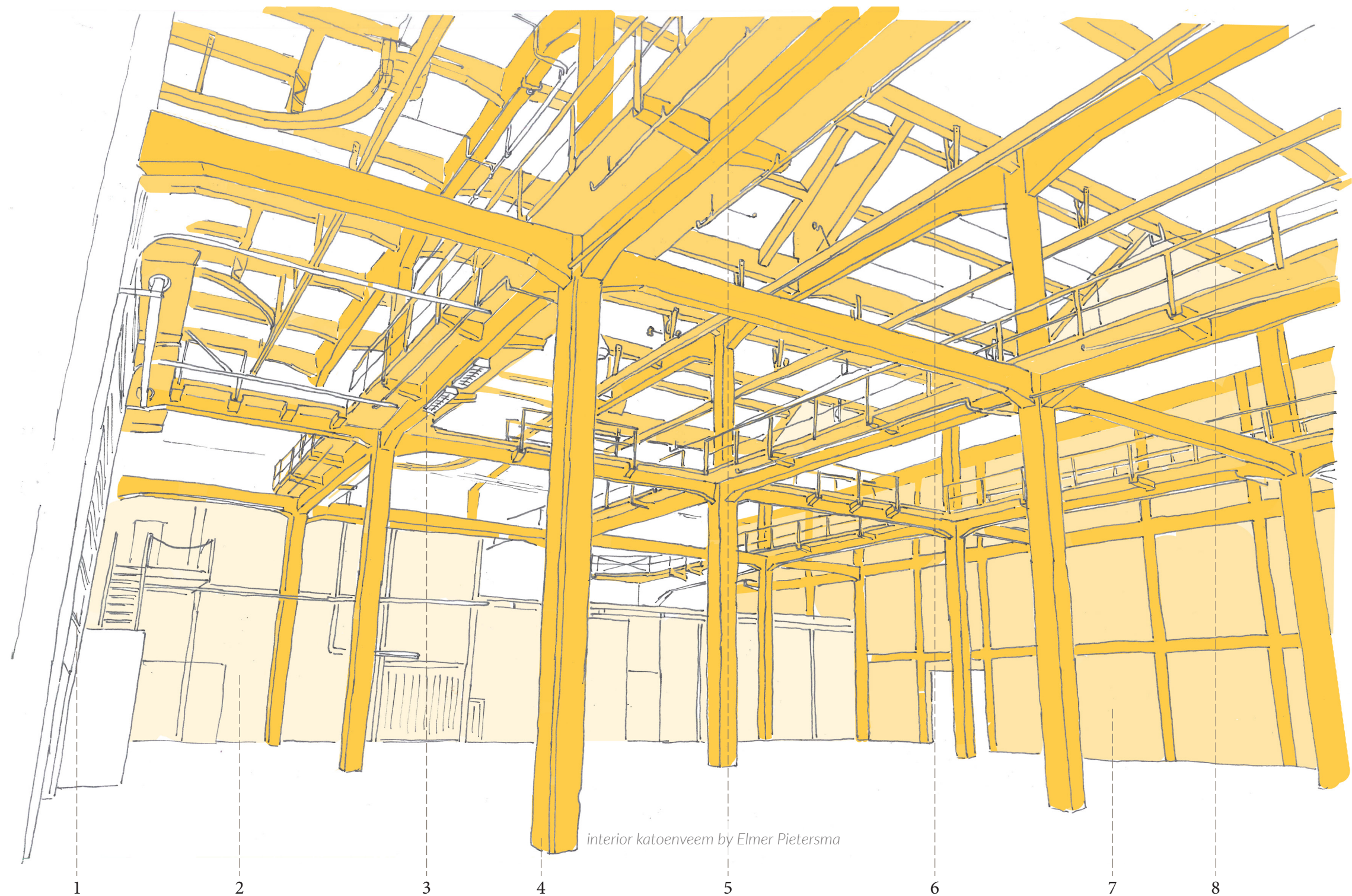
The traces of the building show the complete disregard the owners had for the building, they did not care if the new roof was in front of the windows (at some parts the windows show traces of the old roof crossing the glass). This element shows that the Katoenveem was a very functional building and that aesthetics were not important.

At number nine, one of the original concrete stairs is visible. It is in a very bad shape, the bottom part has already been replaced by a new, metal staircase.

1. Fruit transshipment warehouse
2. Traces of boarding that used to protect the skin
3. Traces of the removed directors office
4. Bricked up entrance
5. Traces of the removed directors office
6. Still present white boarding to protect the skin
7. Original warning against smoking
8. Roller door giving access to the warehouse
9. Original but broken, concrete stairs.
10. Metal roofing added in 1991
11. Shipping containers blocking the view to the harbour

SPATIAL SEQUENCE (5/8)

- Important element; shade determines order of importance.
- Water



INSIDE THE KATOENVEEM

This sketch shows the interior of the warehouse. As is clearly seen at first glance; there is a lot going on. There is a complex network of construction, walkways, installations and roof beams obscuring the room. Due to the complexity of the image it is easy to forget the size of the space, the walkways start at a height of seven and a half metres, allowing for a grand and open ground floor area.

At the back of the room there are some later additions

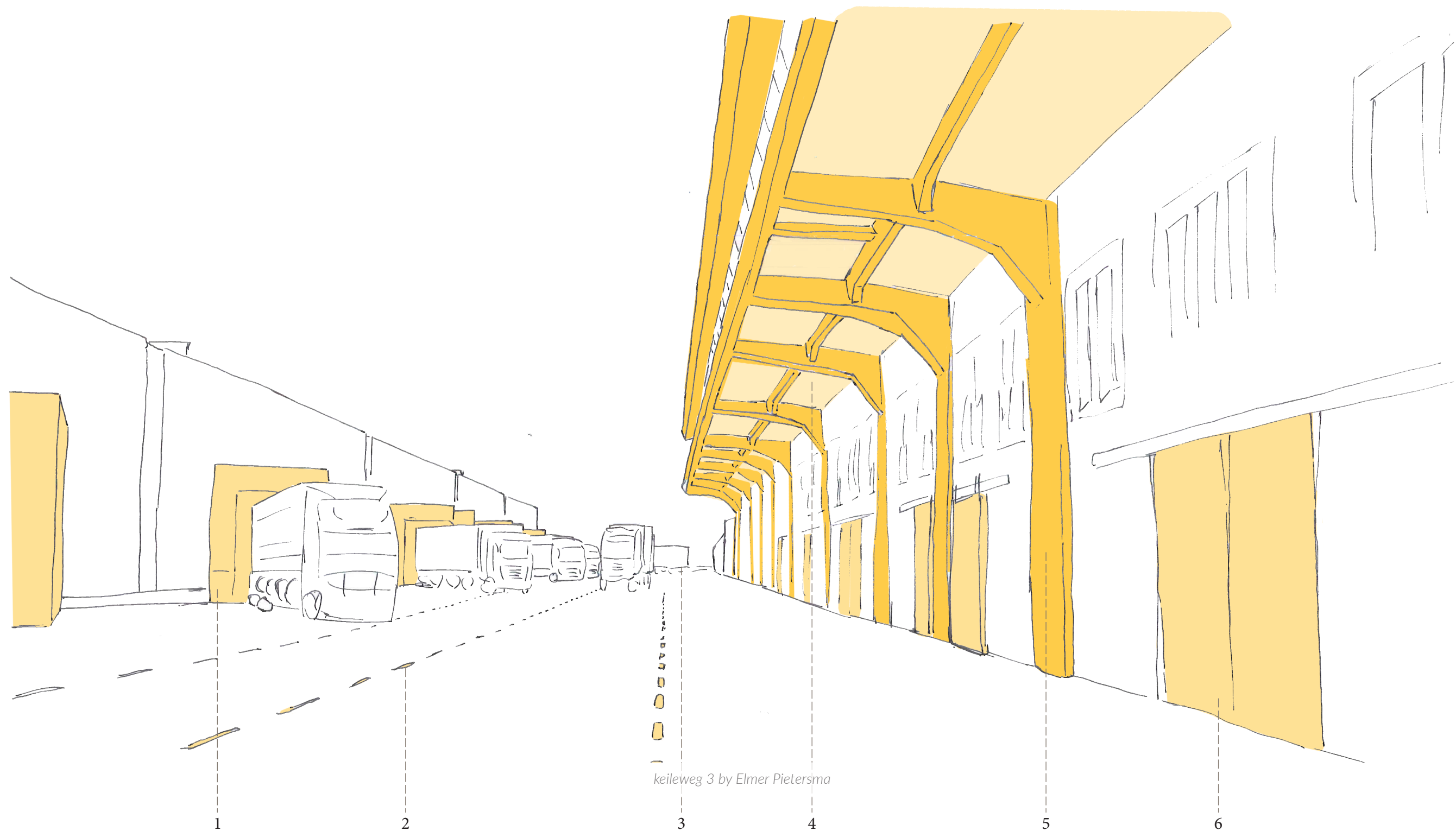
to the warehouse. Built in structures that suited the needs of the users at the time. They hold no value and are damaged in parts (see value assessment).

On the right side of the image, a yellow wall shows the first of four fire proof walls that separate the longitudinal building into five compartments. The breakthrough that is shown in this image is a later addition; it compromises the integrity of the fire proofing and also breaks with the transverse direction of the compartments. The functioning of the walkways and the compartments will be discussed further on in this research.

1. Roller door to the outside (previous image)
2. Later additions to the interior (not original)
3. Walkways
4. Monolithic concrete structure
5. Original sprinkler installation
6. I-beams of the conveyor system
7. Fire proof wall
8. Roof beams

SPATIAL SEQUENCE (6/8)

- Important element; shade determines order of importance.
- Water



KEILEWEG 3

Once outside again, we continue towards the end of the pier. In this image one can clearly see the old and new coming together; both warehouses have doors to allow goods to be moved to whatever medium can transport them elsewhere (more on this later).

The balcony of the Katoenveem is now seen from below, showing its slimming structure. The function and hidden treasures of this balcony are discussed in a later chapter.

The current state of this balcony is very poor; it is due to the degradation of this balcony and especially the falling off of concrete is the reason this building is no longer safe to use. As a safety measure netting has been added along the entire underside of the balcony.

The yellowed sliding doors on the right side, are the original metal doors that were installed nearly a hundred years ago. Although they show clear signs of rust they are in relatively good state.

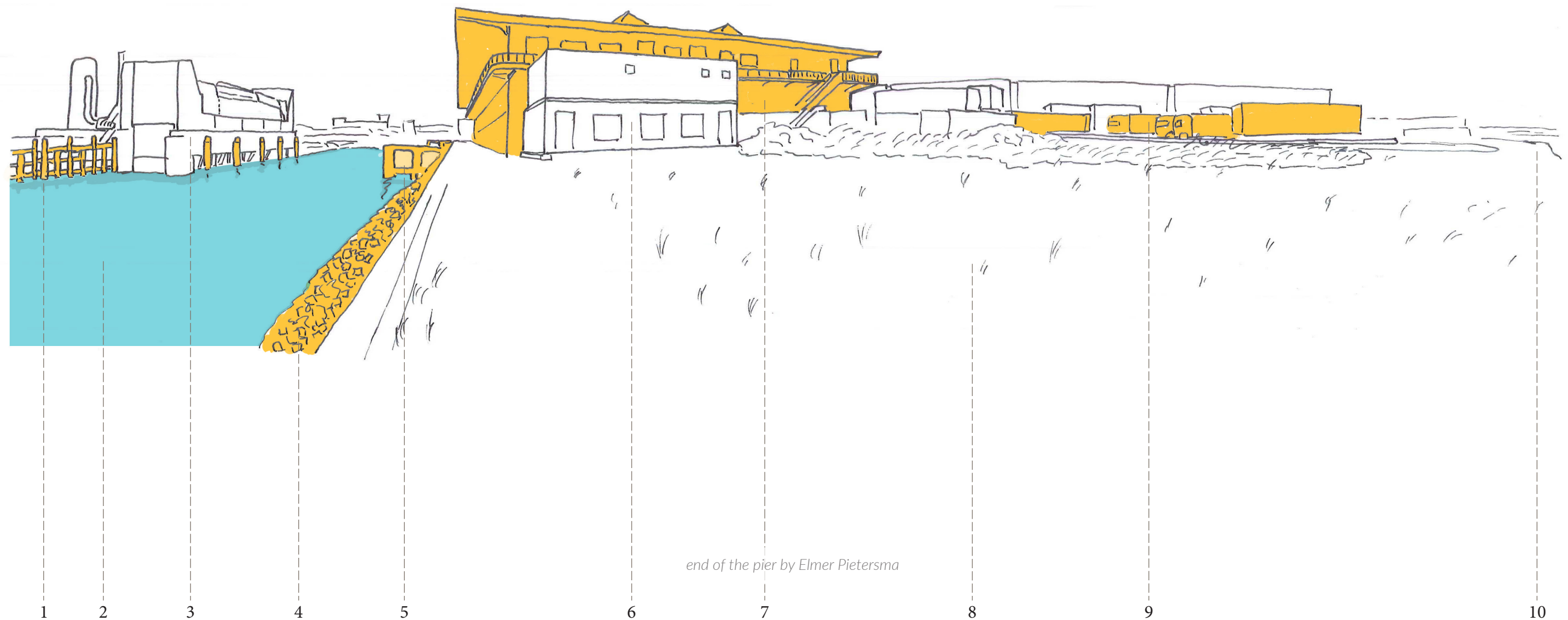
At the end of this road is the end of the pier, giving a

grand vista over the harbour area.

1. Fruit transshipment
2. Marking on the street
3. End of the pier, opening up to the Maas river
4. Structure of the balcony, nets protect against falling concrete
5. Thickening of the wall, resembling a column
6. Original steel sliding doors

SPATIAL SEQUENCE (7/8)

- Important element; shade determines order of importance.
- Water



END OF THE PIER

Shown here is the view of the end of the pier, looking back at the Katoenveem and the Keilehaven. On the far right of the image the end of the pier is visible, but another sketch will show its view. The location of this viewpoint is on a small green field located at the very end of the pier.

Between the water of the Keilehaven and the pier is a quay of roughly three metres high, making the connection with the water only a visual one. The concrete

quay, which was built around 1920 as well, is protected from the waves by breakwater.

At five, the original foundation of the two cranes is visible. This is the position of the dismantled cranes that used to connect the interior conveyor system to the ships that docked next to the building (more on that later).

The head of the building is obscured by a few temporary container units, used as a barrack or shack of the previous users.

1. Wooden posts to guide the ships
2. The Keilehaven
3. Industrial ship cleaning facility
4. Breakwater
5. Foundation of the demolished cranes
6. Derelict barracks and containers
7. Katoenveem
8. Empty grass field
9. Fruit transshipment warehouse
10. End of the pier, with view over the Maas river

SPATIAL SEQUENCE (8/8)

- Important element; shade determines order of importance.
- Water

CONCLUSIONS SITE

- | | | |
|---|---|--|
| - Harbour views need to be strengthened | - Lack of functionality of Keilehaven needs a turn around | |
| - Connection between Katoenveem and water needs to be upgraded | - Removal of trucks from the area could improve the site | - Facades on the head of the Katoenveem lack structure and hierarchy |
| - Visual and functional relationship between Katoenveem and Rotterdam needs improvement | - Striking Katoenveem elements, like balustrade, could be emphasized more clearly | - Katoenveem's history is not significant enough in the surroundings |
| - Adding a green structure to the site could be a design starting point | - The addition in front of the Katoenveem entrance should be removed | - The quay, water and Katoenveem need to be reconnected |

PROBLEM STATEMENT

- - katoenveem lost position within network of systems
- - building has decayed over time
- - functionalist building is lost without functional use
- - relationship with the water is missing
- - high potential area with Rotterdam harbour underused
- - keilehaven pier is disconnected from the city
- - katoenveem is isolated
- - new working and living area needs a centre

RESEARCH QUESTION

RQ: what was the katoenveem system like and what where its architectural phenomenological qualities?

DQ: how can the Katoenveem area be turned into a phenomenologically attractive cultural leisure centure with a new network of systems?

- - *what was the complex around the katoenveem like throughout history?*

- - *what potential can be found in the katoenveem?*

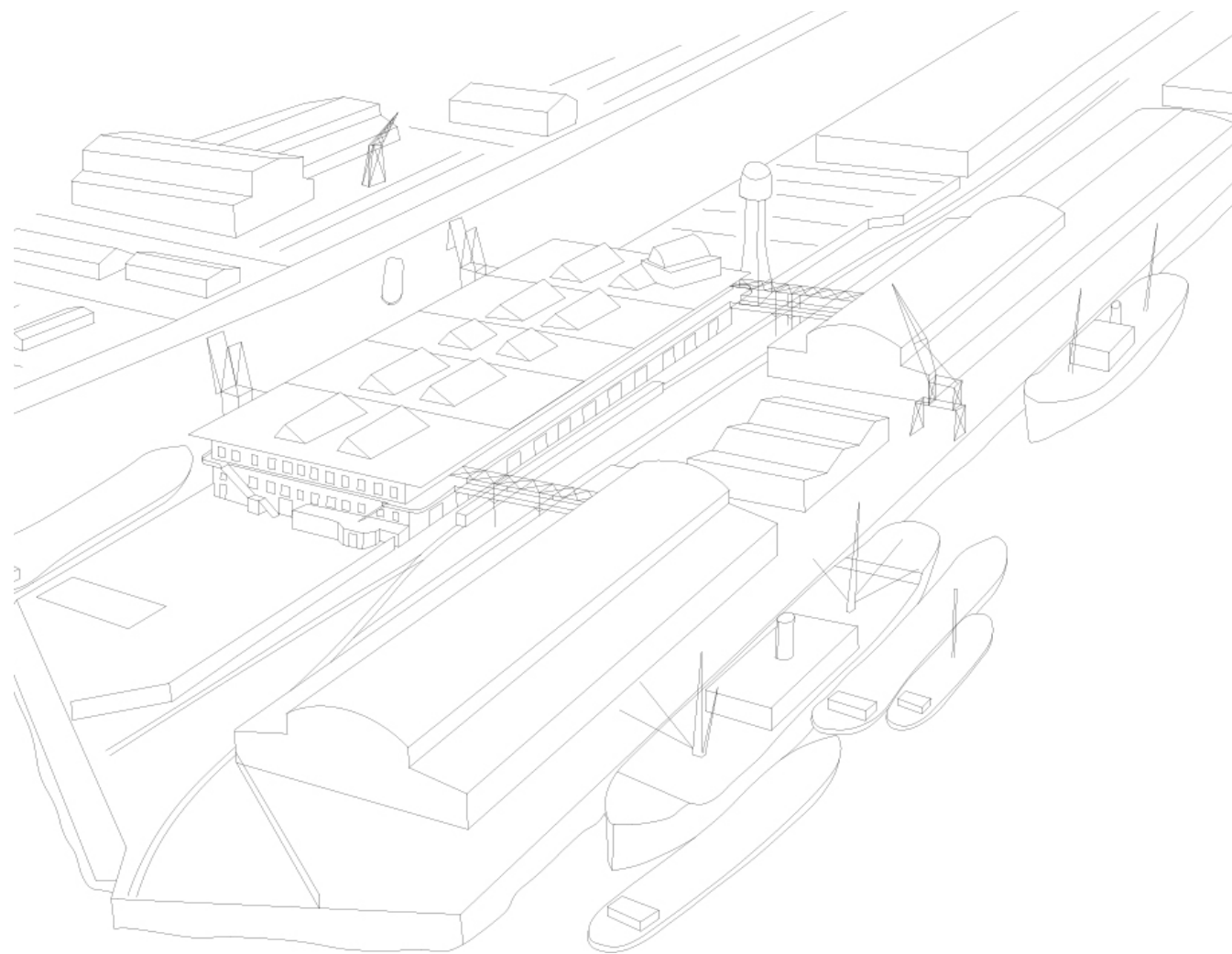
- - *how did the original systems of the katoenveem work?*

- - *how can the katoenveem be reconnected to its environment?*

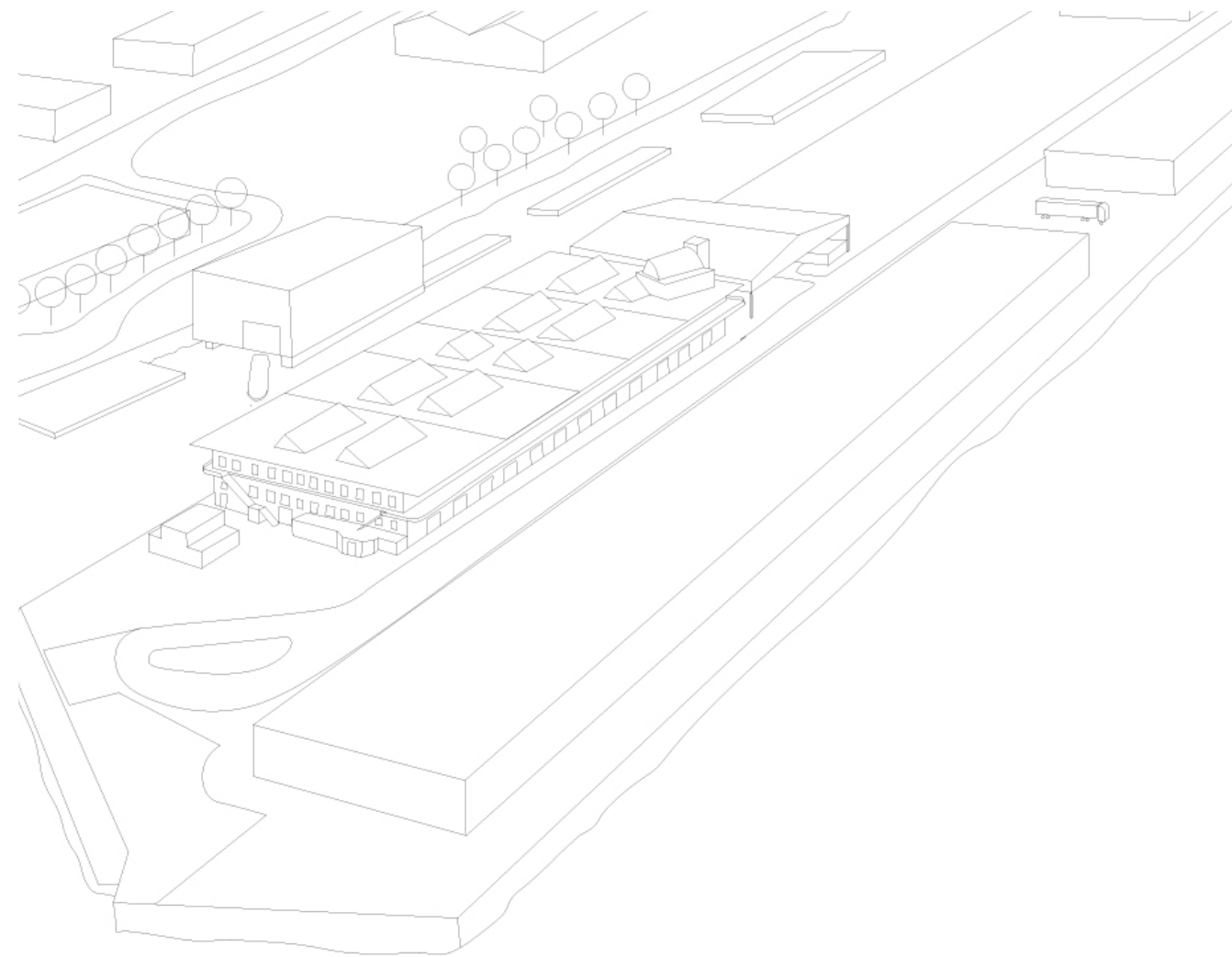
- - *what are the main cultural values in katoenveem's skin and structure?*

- - *what phenomenological tools can be used to create a suitable design?*

HISTORICAL DEVELOPMENT



historic keilehaven by Elmer Pietersma



contemporary keilehaven by Elmer Pietersma

QUESTION

How did the Keilehaven area develop over time?

METHOD

By looking at the history of the Katoenveem and its surroundings through time.

KEILEHAVEN DEVELOPMENT

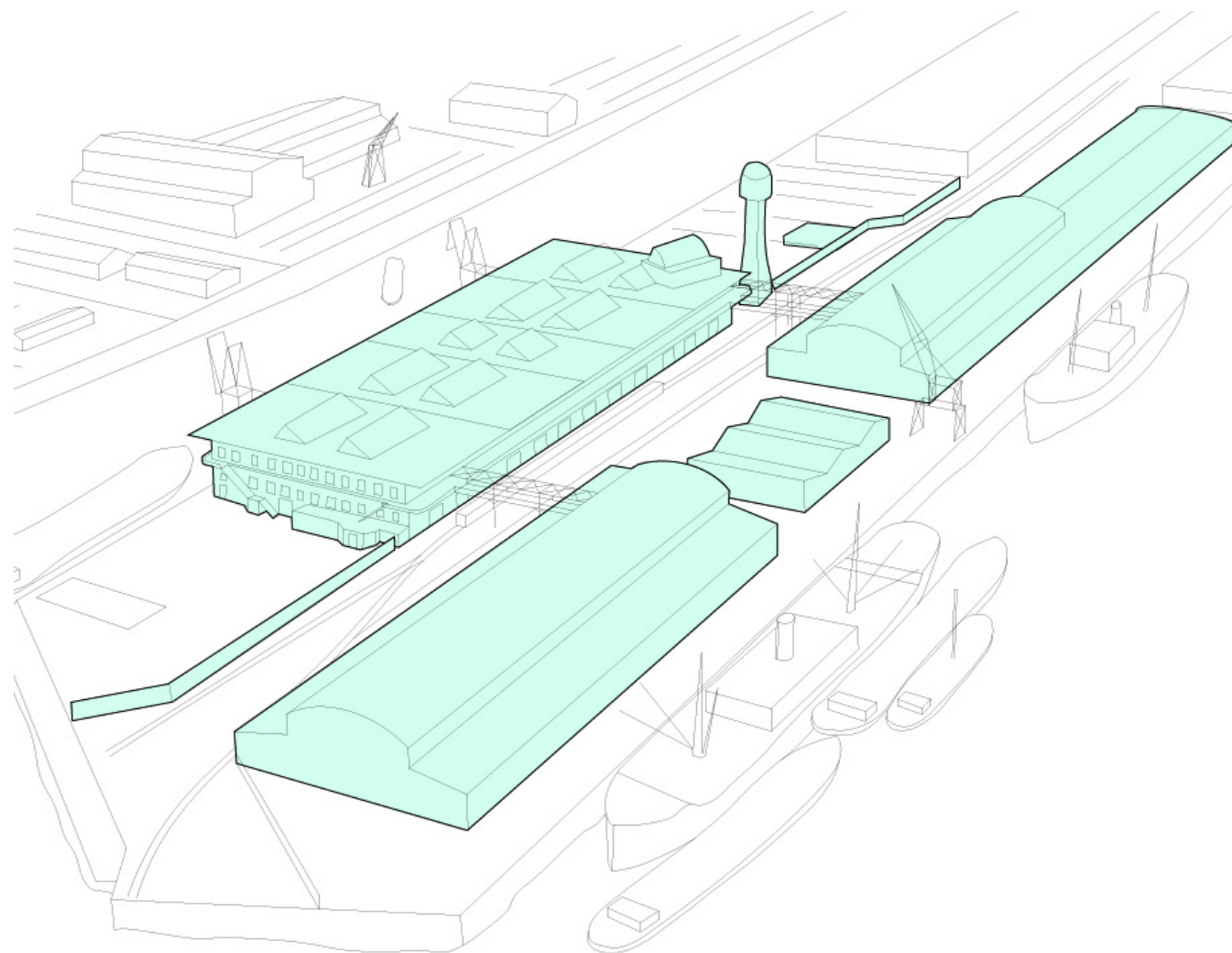
The Keilehaven first started to develop with the erection of the Katoenveem starting in 1919. The Katoenveem used to be part of a complex that was developed through time. Nowadays the Katoenveem building is left alone in the Keilehaven. In the illustrations at the top of this page the historic and contemporary situation of the area are displayed side by side. This way a clear comparison can be made. The historic Keilehaven used to contain numerous objects that are not present

anymore. Cranes, bridges, several buildings, walls and a water tower have been lost over time. The use of the harbour has changed over time and therefore the Keilehaven requires a different assortment of buildings in the contemporary period.

The rest of this chapter will be a journey through history, looking at different aspect of the complex that were built and demolished at different times. The times periods that will be displayed have been chosen by the buildings that were built or demolished, in that

way small and large steps in history are displayed. The Katoenveem will of course remain present through all this, but the relationship with other buildings and the water will differ almost each step.

Buildings that are built in a time period are displayed in green, while buildings that have been demolished have been displayed in red. At the end of the chapter a value assessment of the different parts of the Keilehaven has been displayed of the historic and contemporary (thus remaining buildings).



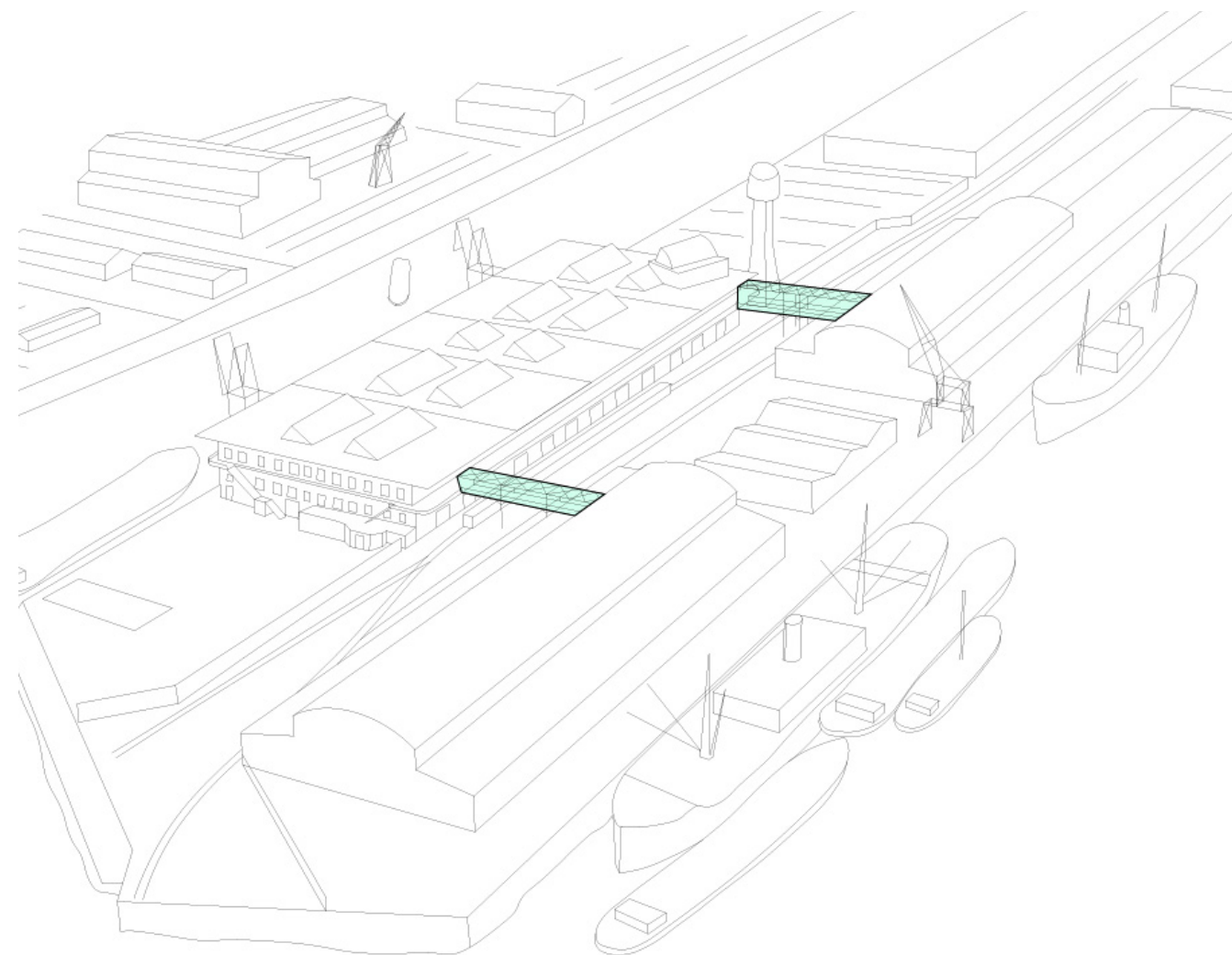
development keilehaven 1920

1920

The erection of the Katoenveem complex started in 1919 and was finished in 1920. In the begin of the development of the Keilehaven area made a leap forward. The original Katoenveem complex was finished in this time period. Besides the Katoenveem, the two Holland America Line warehouses, the water tower with pump building, the walls were erected in this period.

1921

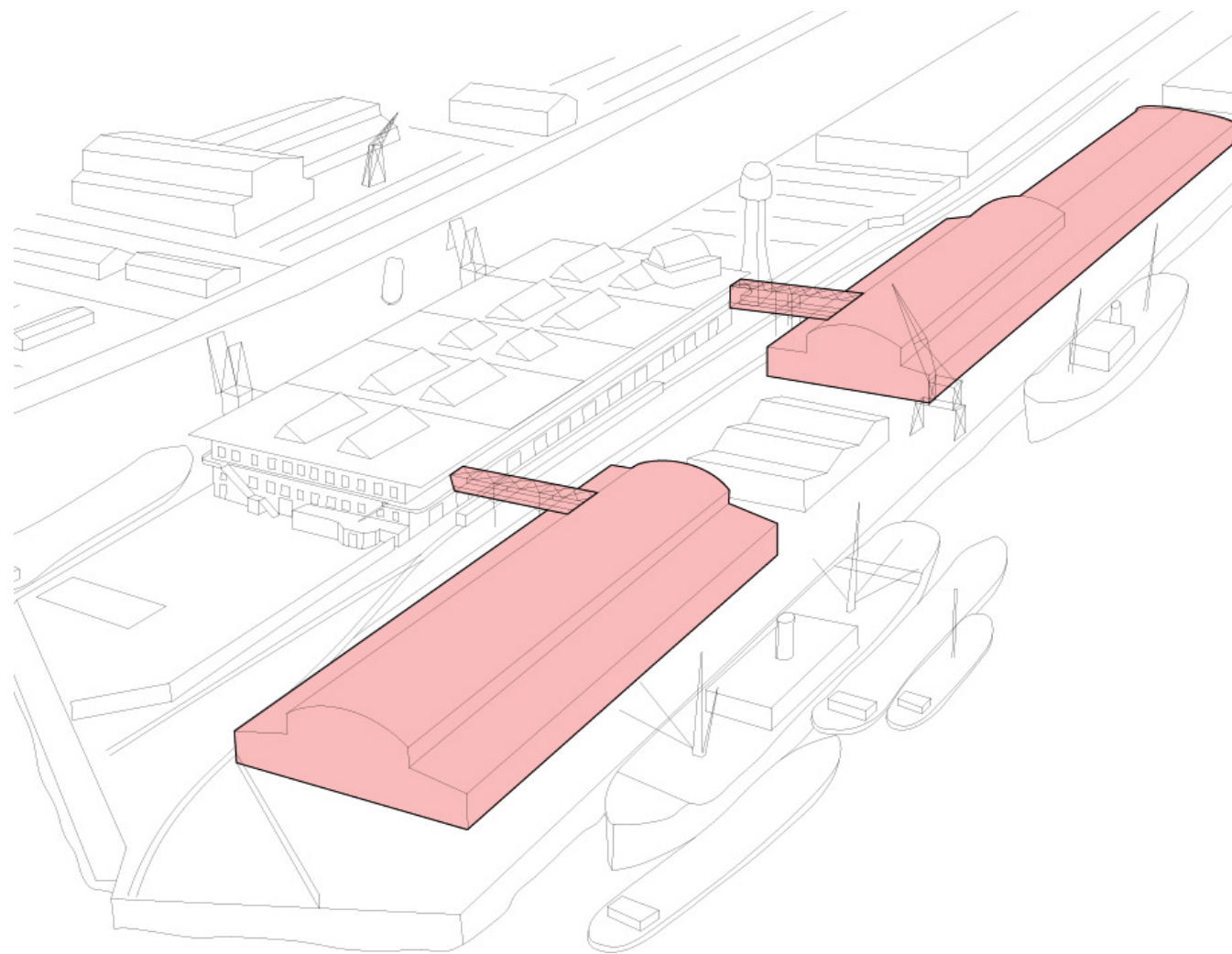
One year later the complex was expanded by building two bridges between the Katoenveem and the two Holland America Line warehouses, making the transport of goods between the buildings possible.



development keilehaven 1921

DEVELOPMENT 1920-21

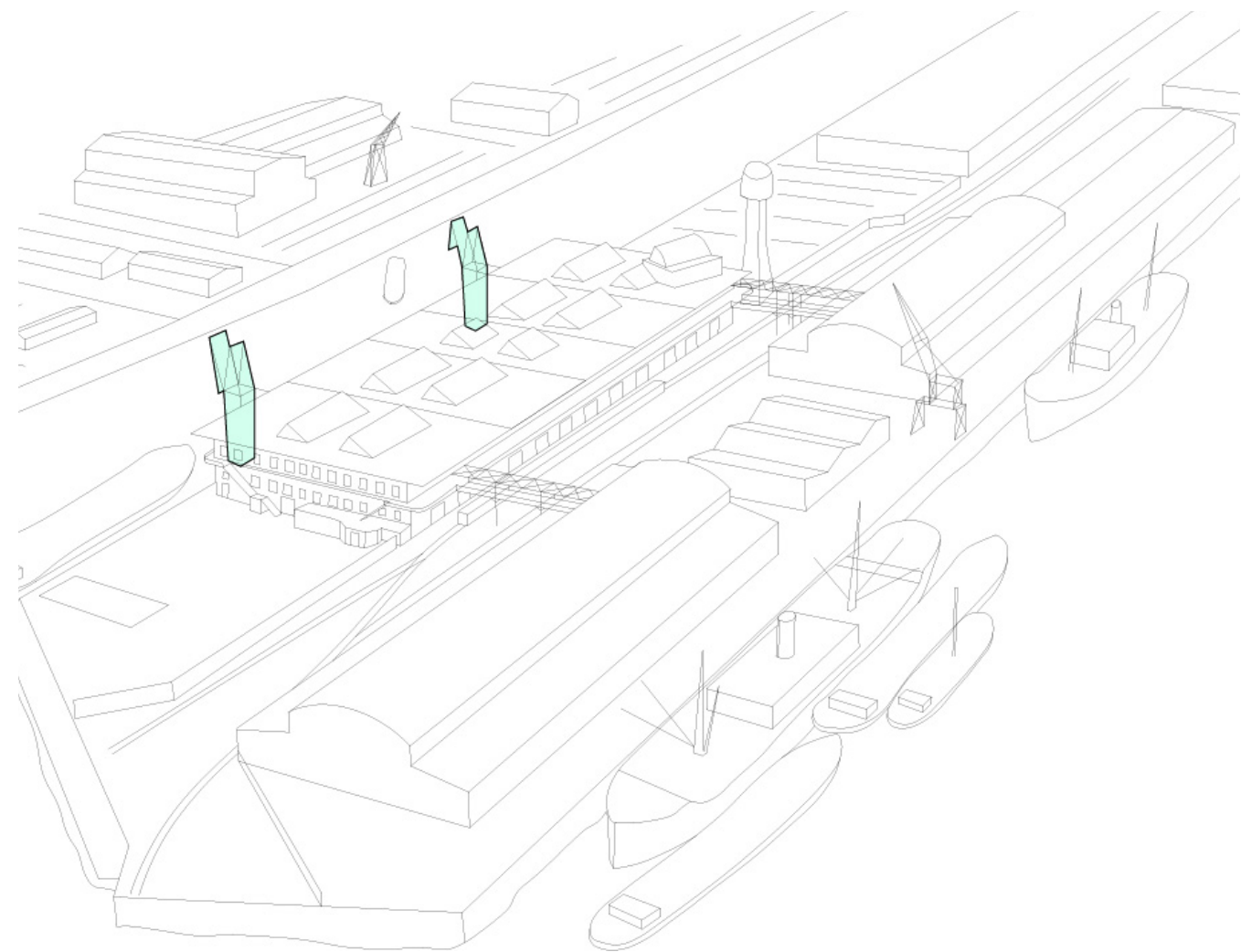
■ constructed
■ demolished



development keilehaven 1931

1931

The two Holland America Line warehouses and the accompanying bridges were demolished. From the three main buildings of the complex only the Katoenveem was left because of that after 1931. The rest of the complex remained for a longer period of time.



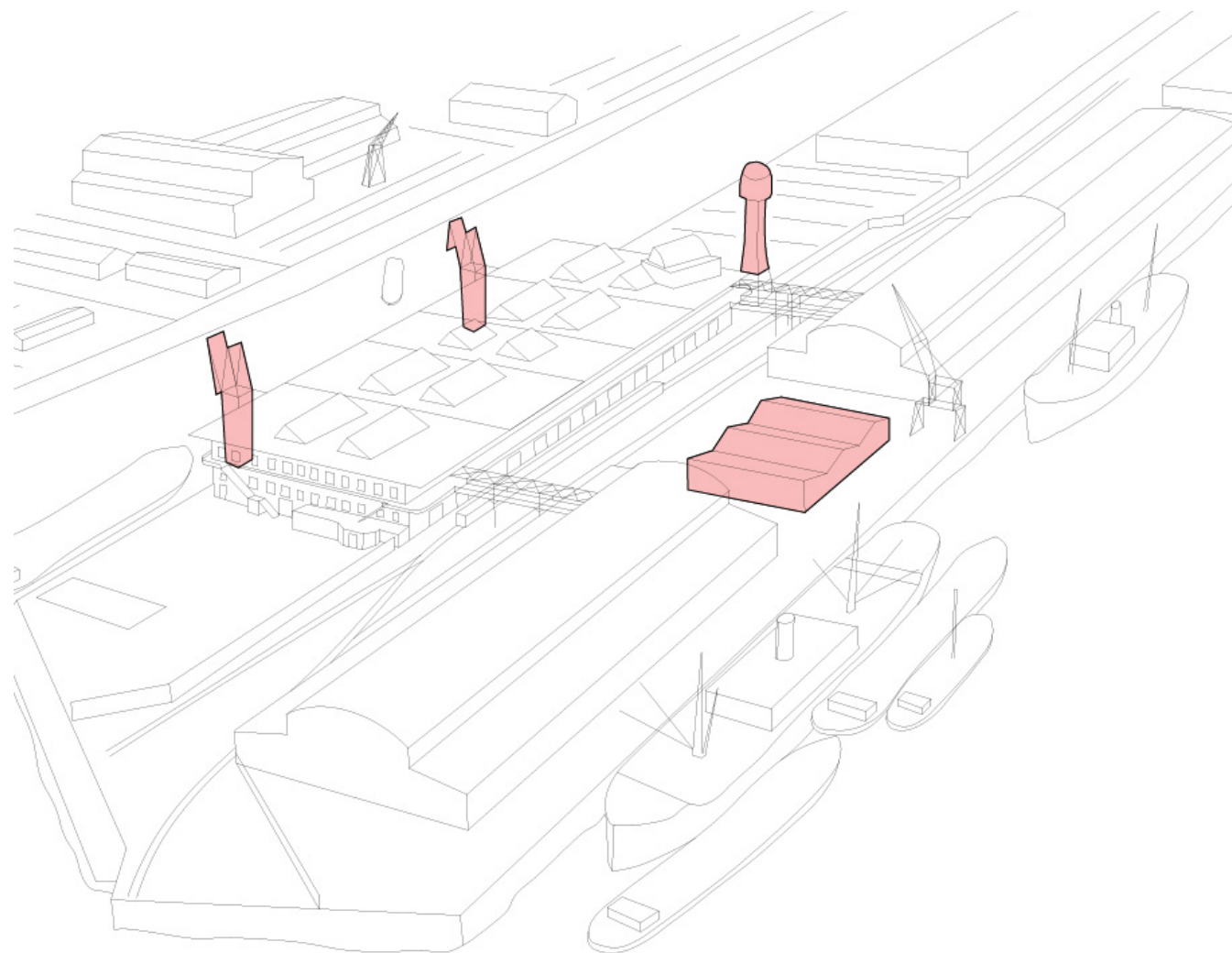
development keilehaven 1946

1946

Directly after the Second World War, two large cranes at the Keilehaven side of the Katoenveem were built to increase the efficiency and power of the system. Transshipment of cotton bales could therefore be done a lot quicker.

DEVELOPMENT 1931-46

■ constructed
■ demolished



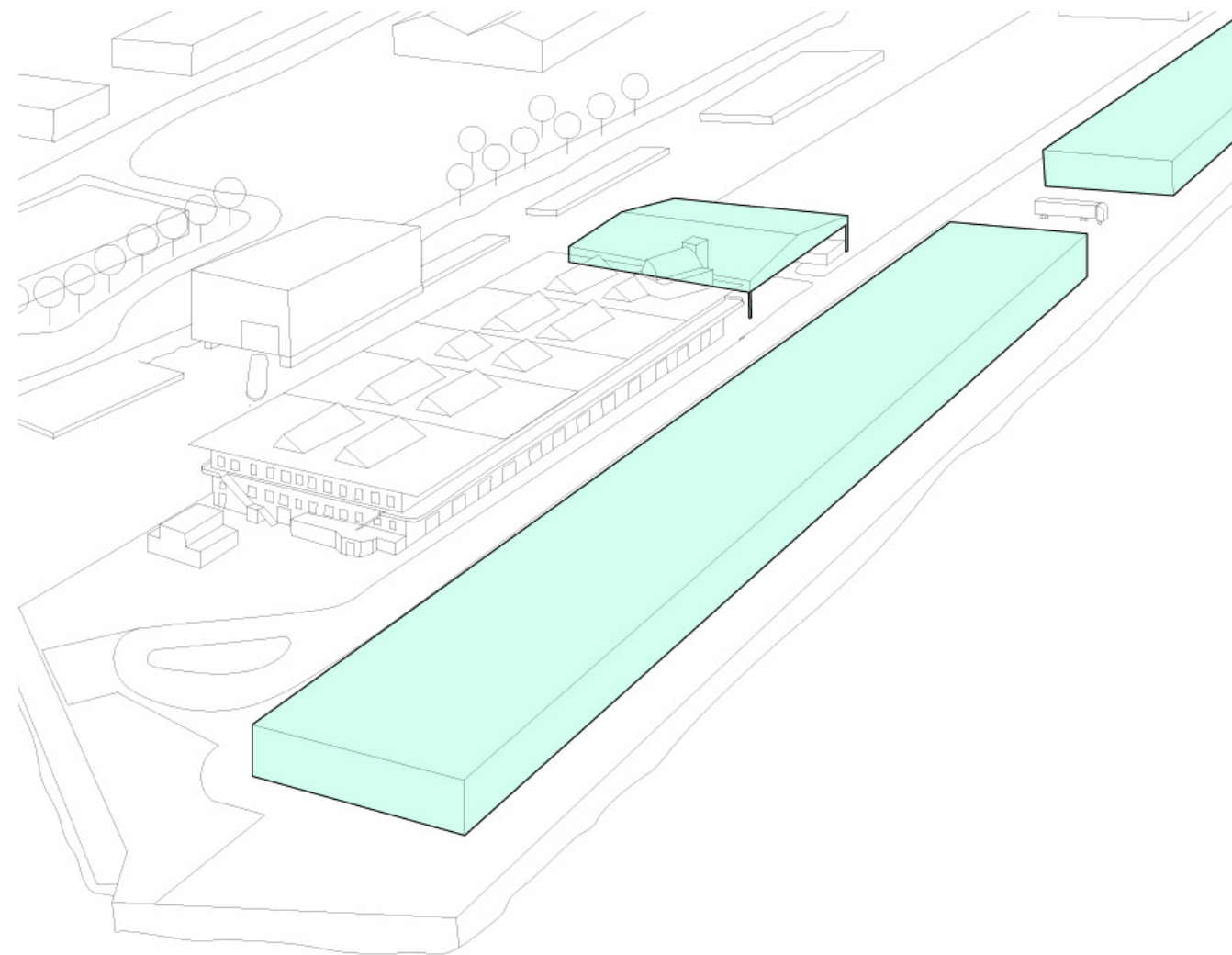
development keilehaven 1964-66

1964-1966

In this image two years of the development of the area have been combined. In 1964, after being present for 18 years the cranes were demolished and because the Katoenveem was not functioning in the original way anymore. In 1966 the water tower and the shed between the HAL warehouses were taken down as well.

1991-2017

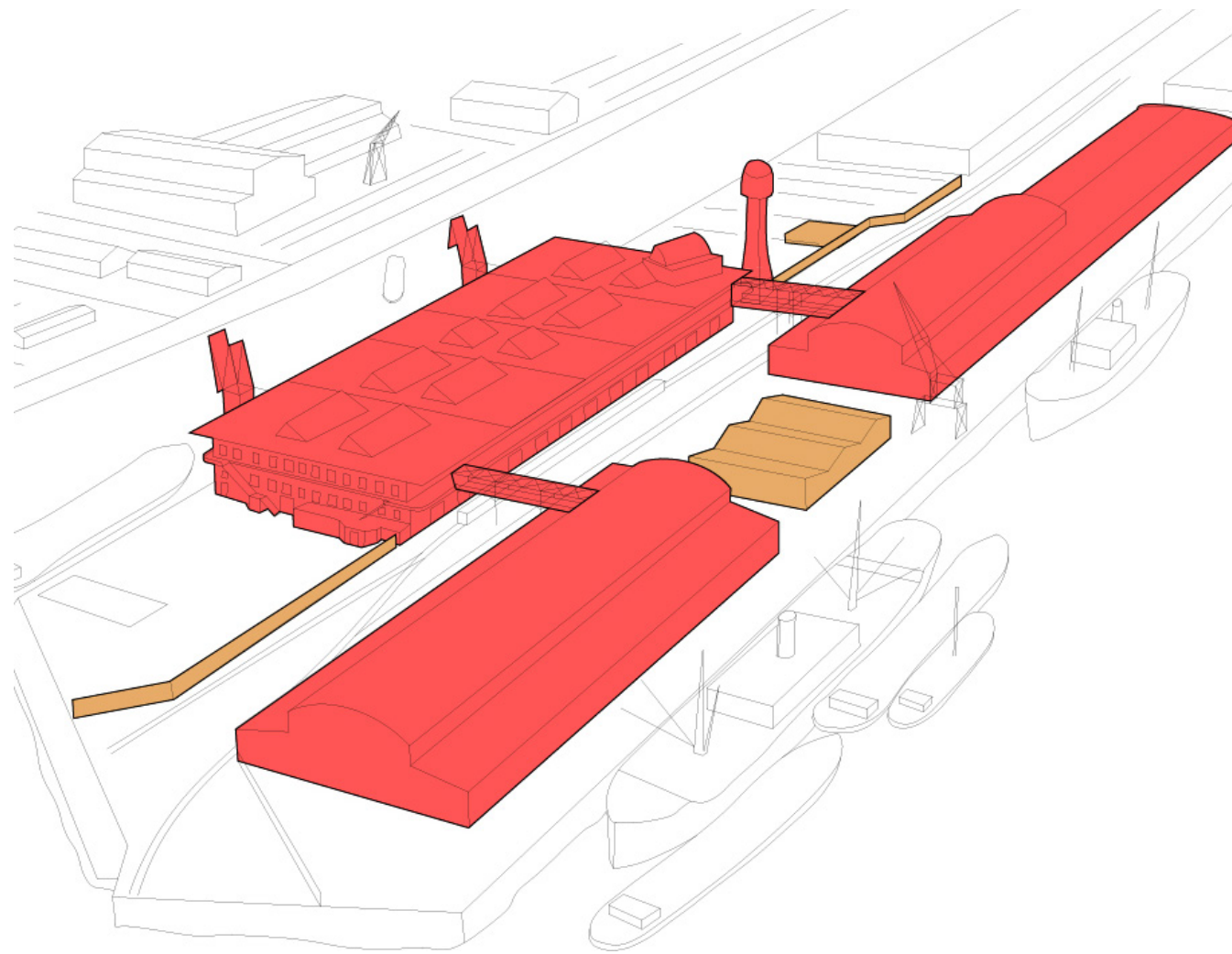
For the last image of the historical development a longer time period has been selected for one simple reason: the exact date of the construction of the buildings on the spot of the HAL warehouses has remained unknown so far. The roof that enabled outside storage next to the Katoenveem was built in 1991 however.



keilehaven 1991-2017

DEVELOPMENT 1964-2017

■ constructed
■ demolished



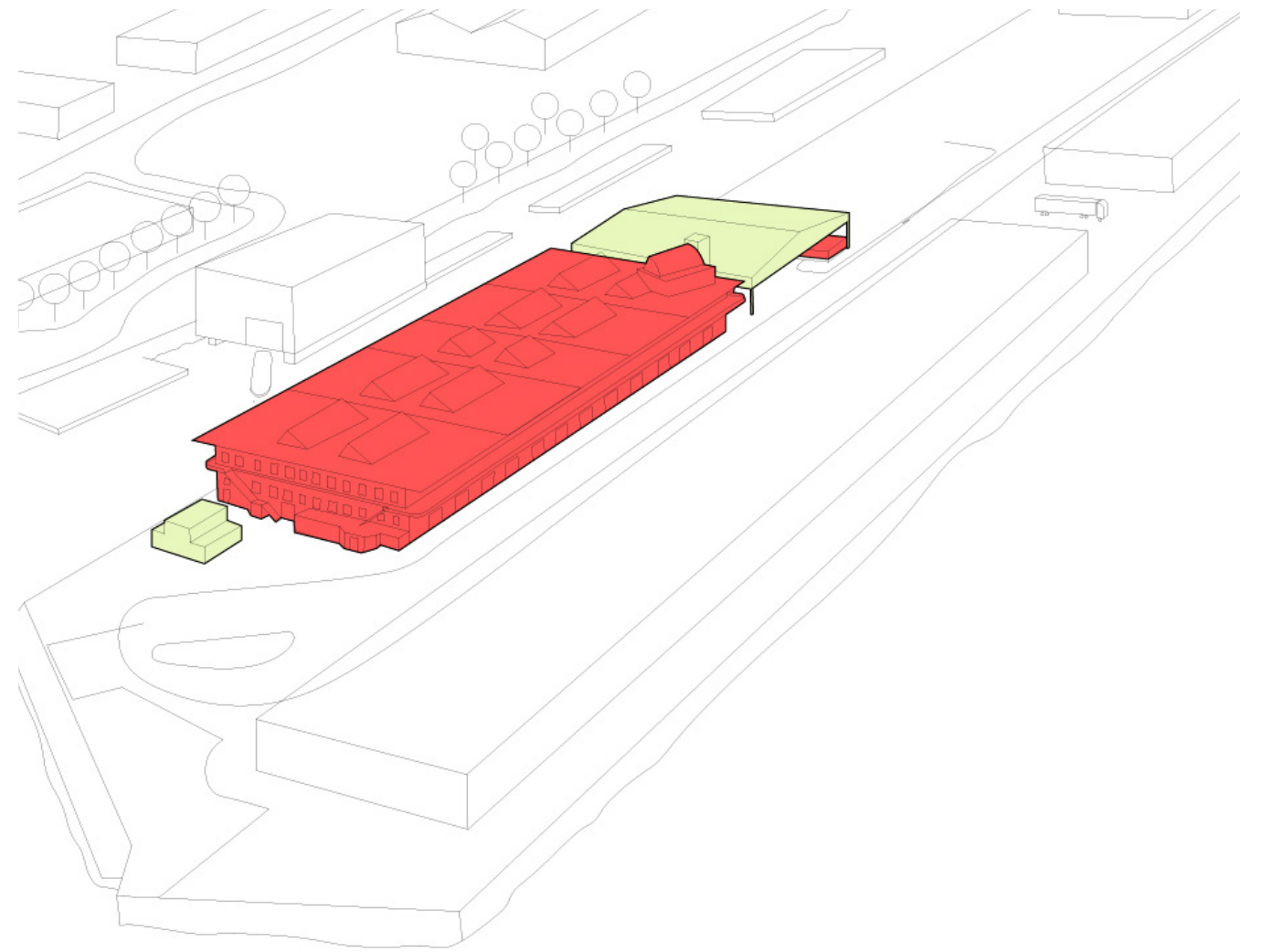
values historic keilehaven

VALUES HISTORIC KEILEHAVEN

The image on the top left side of this page is not a state of the Keilehaven in a specific time period. It is an accumulation of different time periods of the complex during history. The high value aspect have been selected as such because of their significant role in the original process of the Katoenveem. The cranes and bridges were developed to increase the number of goods that could be transhipped. The water tower was not only a landmark in the Keilehaven, in the period that it was erect, but also a significant part in the system of the sprinkler system of the Katoenveem (as will be

displayed later in the report).

The two warehouses of the Holland America Line have only been there for ten years in history, but they were once connected with Katoenveem directly through the conveyor system and therefore have been given a high value as well. If they had remained the would be as important as the Katoenveem in the historic understanding of the harbour process that took place in the Keilehaven. As discussed before most of these buildings have disappeared but their value in the historic system of the Keilehaven is something that is important to take



values contemporary keilehaven

into consideration in future redevelopment.

VALUES CURRENT KEILEHAVEN

In the contemporary situation four elements can be differentiated; the Katoenveem, the roof, the pump building, that was used as an office as well and the containers near the water. The Katoenveem is of course valued high, as well as the pump building because it is the only aspect, beside the Katoenveem that is left from the original complex. There are traces from the others buildings, but this one is the only one that is intact. The containers and the roof have low value because of their poor materialisation and their lack of his-

VALUES KEILEHAVEN

- high value
- positive value
- low value

CONCLUSIONS HISTORICAL DEVELOPMENT

- | | |
|--|---|
| - Katoenveem complex in 1920s represents the sites prime period | - Newly built elements have deminished area's value and possible demolition needs to be considered. |
| - Demolition of HAL warehouses deminished the area's value greatly | |
| - Adding new building(s) to the area could revive strong historic complex | - Isolation of Katoenveem needs to be abolished bringing back former glory |
| - Landmark elements like cranes and watertower are missed, new landmark needs to be introduced | |

SKIN



section of south facade
(photograph by Xihao Yi)

QUESTION

What is the importance of the skin in the Katoenveem?

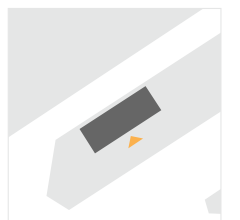
METHOD

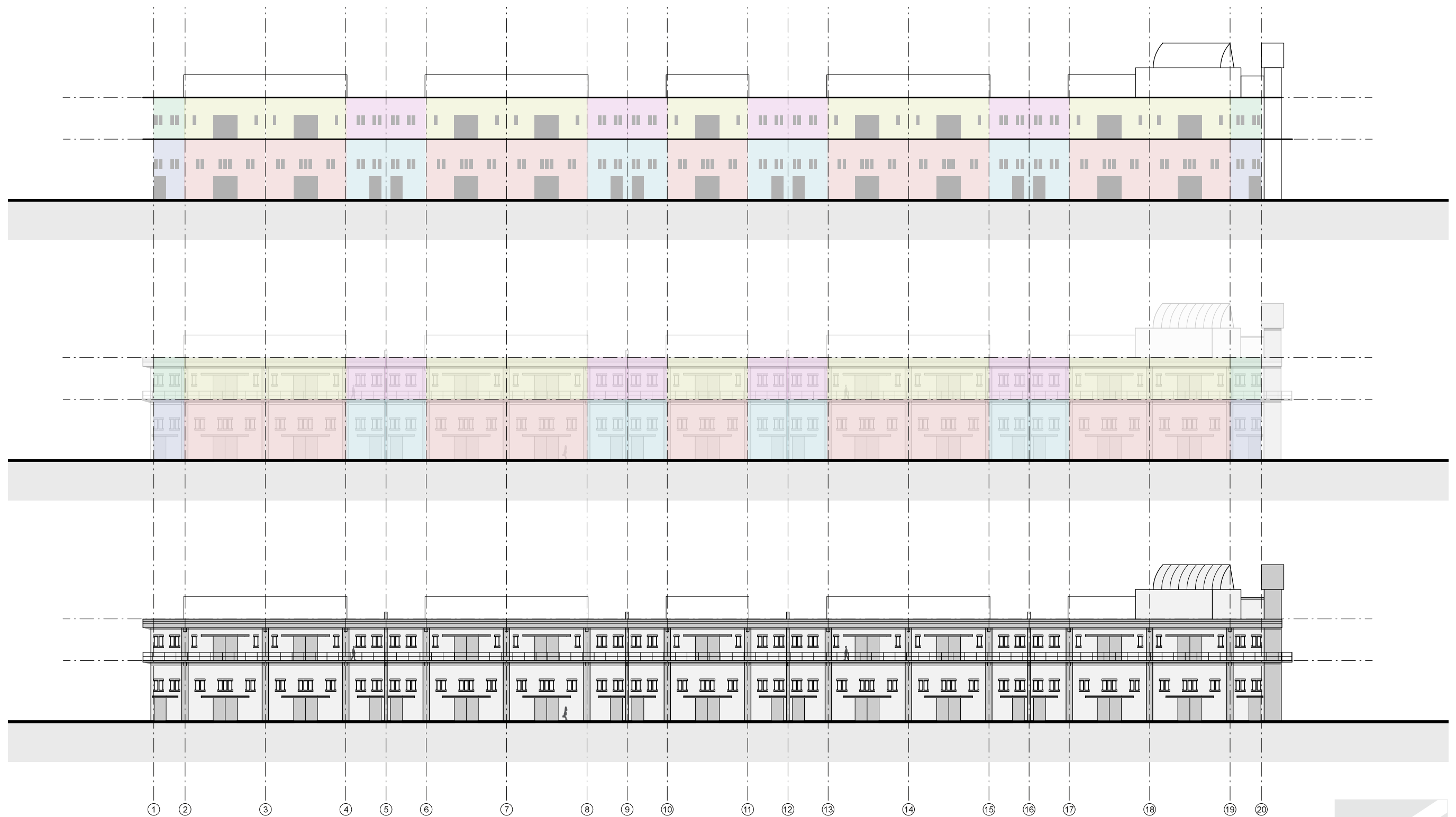
By looking at the south facade in depth and relating it to the system of the Katoenveem.

INTRODUCTION

The image shows the facade of the Katoenveem. It is a display of a representative piece of the facade (the north and south facade are completely designed like this). The sliding doors, windows, balustrade and rhythm of the facade are clearly visible in this photograph. In the rest of this chapter more details of the facade will be discussed. The composition, the expression, the materialisation and the use will all be discussed. As well as the skin's relationship to the functionality of the Ka-

toenveem 'machine'.

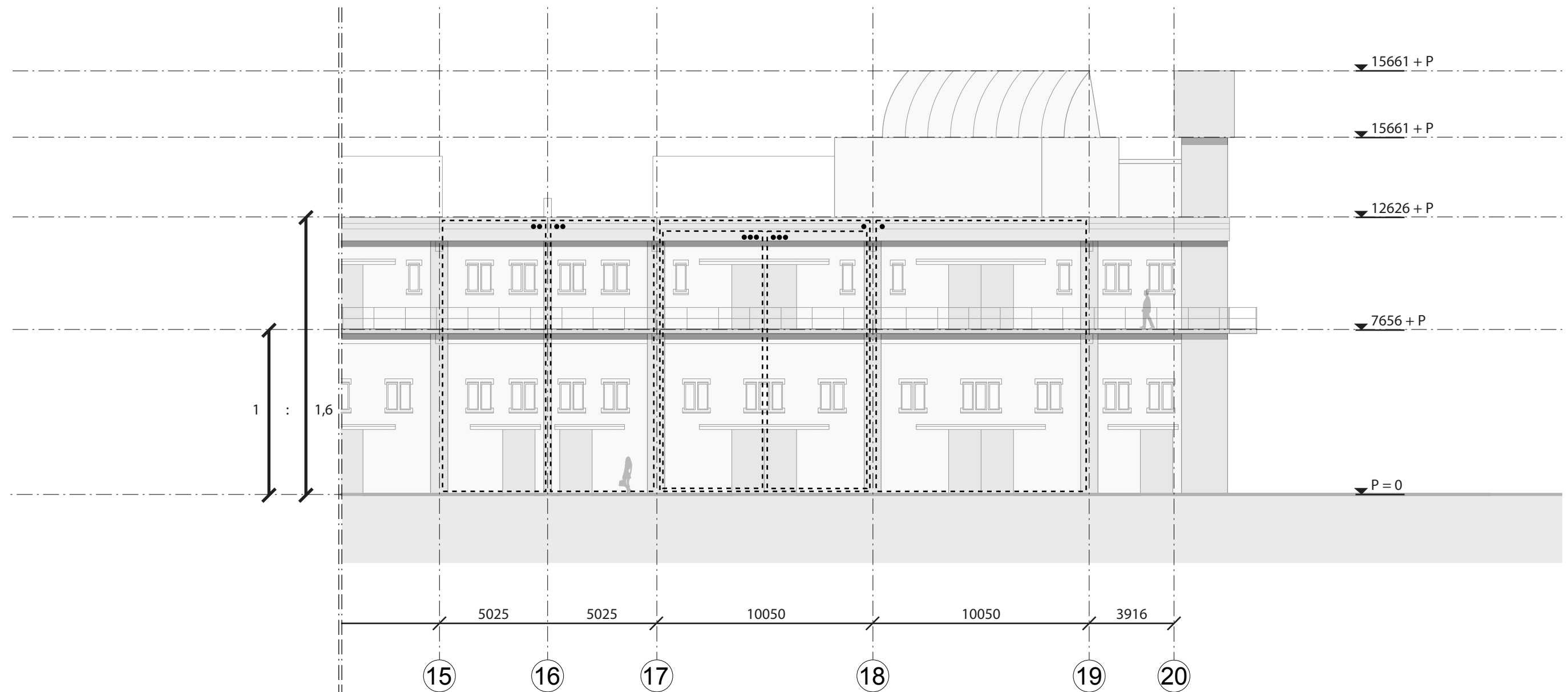




south facade elevation 1,2,3



1:500



south facade elevation

QUESTION

How can the skin be understood through the façades?

METHOD

By looking at the elevations of the façades in different ways and layers.

COMPOSITION AND EXPRESSION

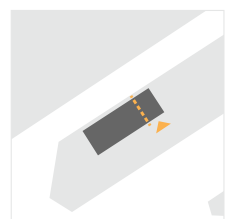
The façades of the building have been designed in accordance with the structure and functionality of the building. The openings have been chosen in order to facilitate the process of the Katoenveem system in the most

optimal way. The placement of the doors corresponds directly to the conveyor system that transports the cotton through the building. The rhythm in the facade is organised with great consistency because of the same original function of the entire building. A few identical building blocks have been used to make the composition of the longitudinal façades (north and south). The 1:200 image provides a more detailed insight in the dimensions, angles and ratios used within the different façades of the building. The recurring and mirroring elements have been marked through the dotted lines in the 1:200s. The 1:500 drawings provide a gradual

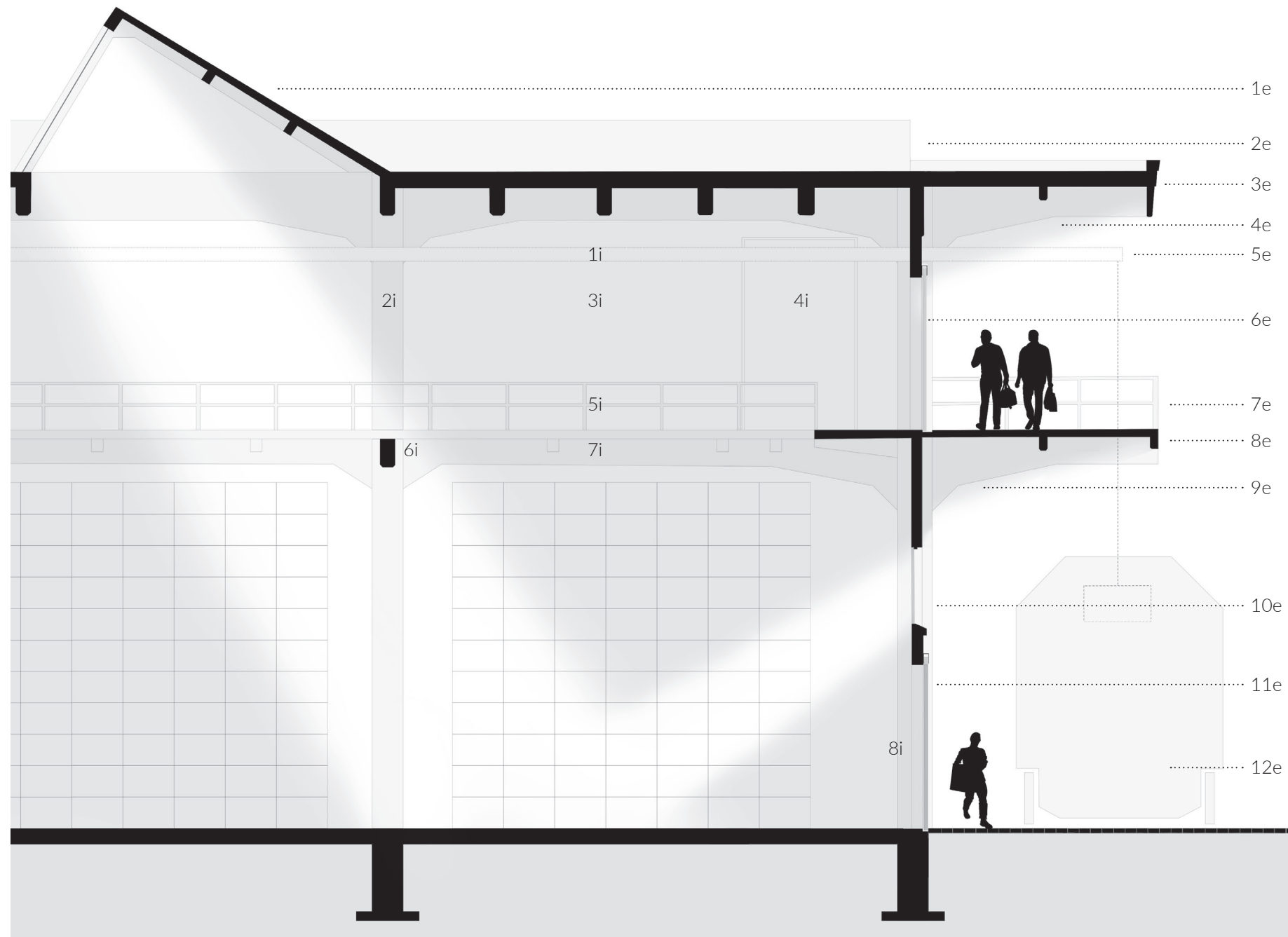
transition from elevations to simplified schemes of the façades, showing the key elements. The south facade is similar to the north facade (historically) and because the conveyor system is moving from north to south through to building these are the most functional façades. The façades provide a skin around the 'machine' that is the Katoenveem.

SOUTH FACADE

- building block 1
- building block 2
- building block 3
- building block 4
- building block 5
- building block 6
- facade opening
- mirroring part



1:200



SOUTH FACADE SECTION

exterior

- 1 concrete and steel skylight structure
- 2 separation wall at dilatation
- 3 concrete profiled eaves, sand cement finishing
- 4 concrete supporting beam roof edge, sand cement finishing
- 5 steel beam trolleys for transport/relocation of cotton
- 6 green steel double sliding door suspended from steel railing
- 7 iron balustrade
- 8 concrete gallery with openings for relocation of cotton
- 9 concrete supporting beam of gallery, sand cement finishing
- 10 wired glass window with sand cement sealing on inside
- 11 green steel double sliding door suspended from steel railing
- 12 steel railtrack for transshipment cotton bales by trains and trams

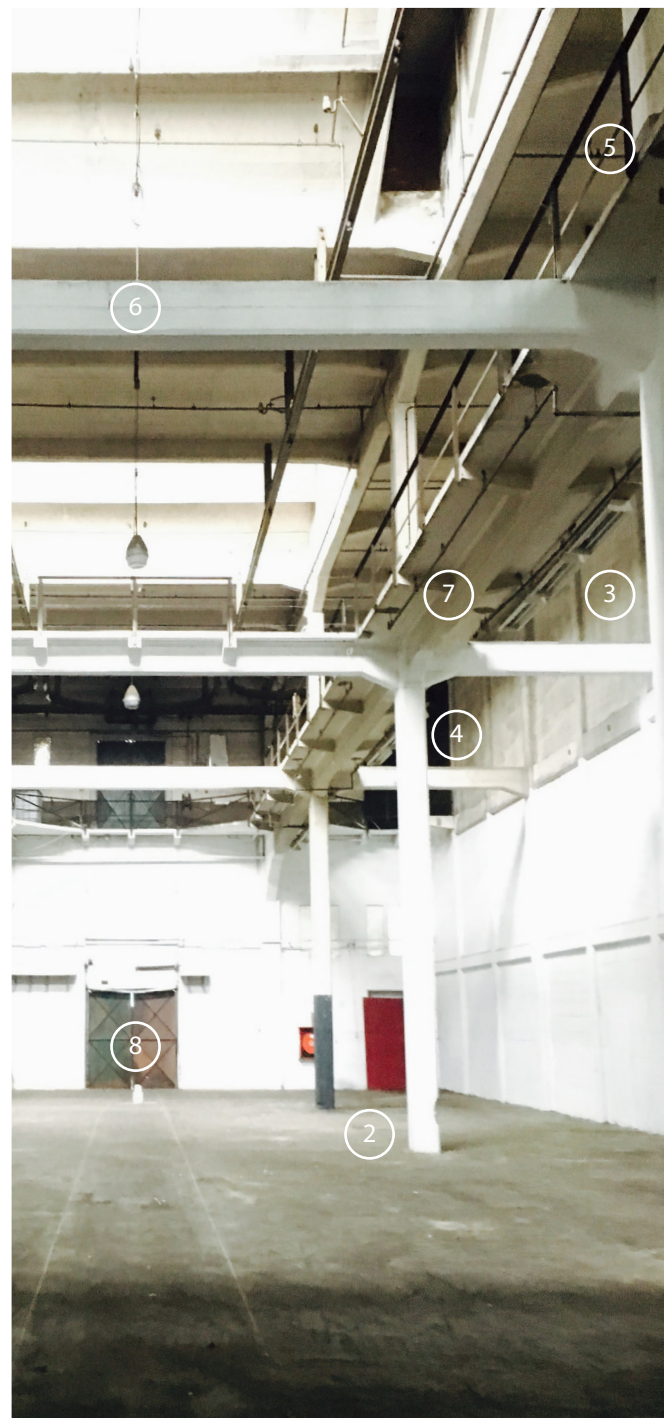
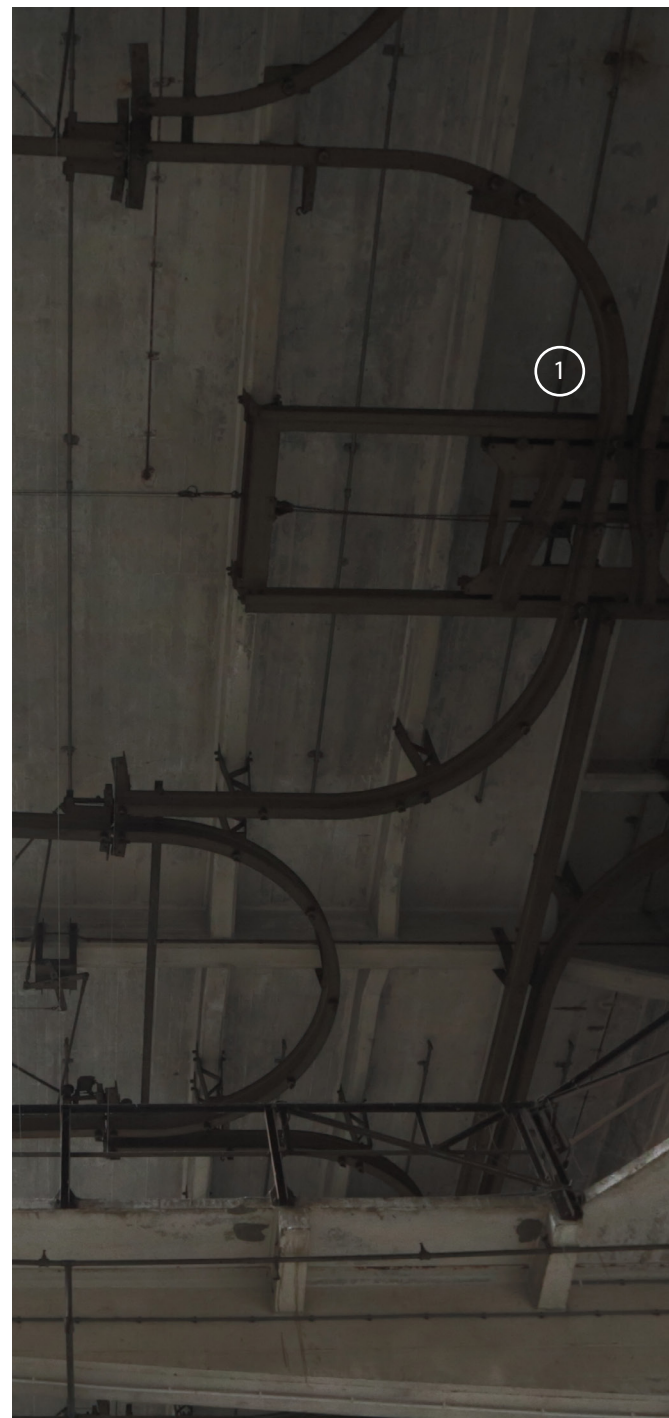
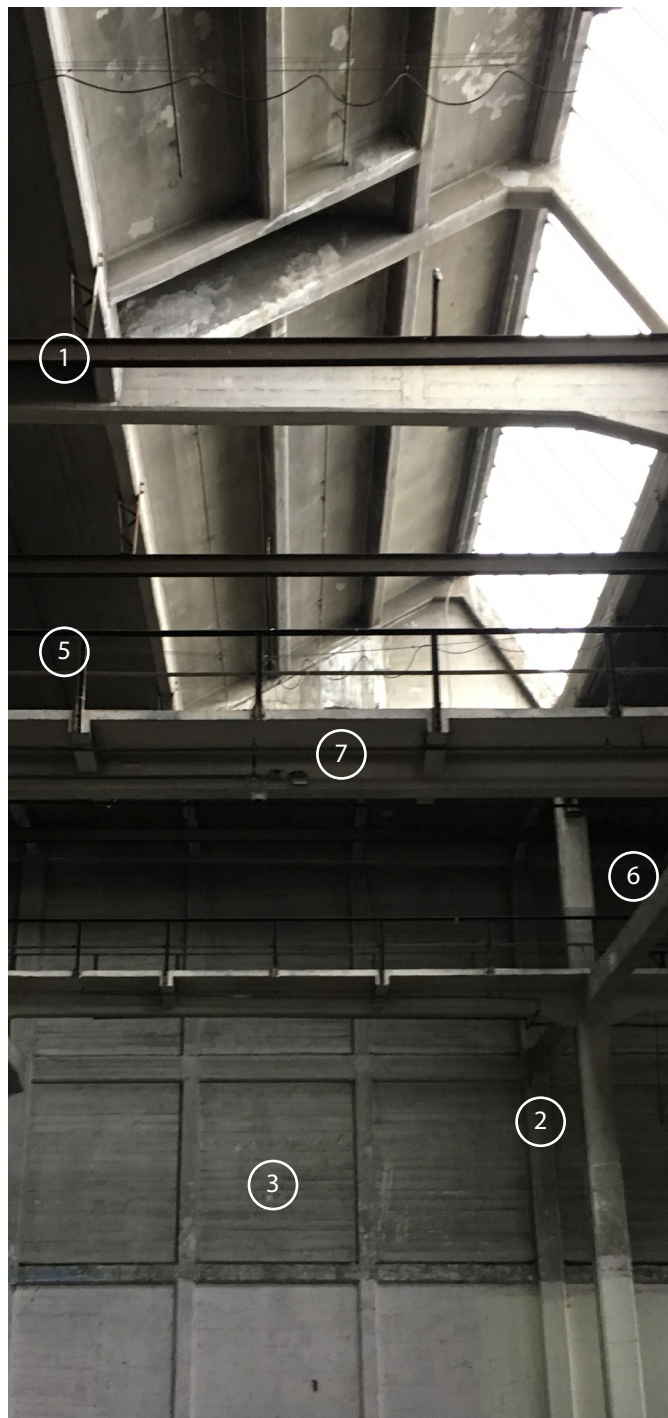
interior

- 1 steel railtrack for transshipment cotton bales
- 2 large concrete columns painted from ground till 2m above ground
- 3 concrete separation walls, no finishing
(traces timber casings visible)
- 4 Kinnear iron curtain doors/roller doors
- 5 iron balustrade
- 6 concrete beams connecting columns and walls
- 7 concrete in situ gallery's supported by small concrete beams
- 8 steel double sliding door suspended from steel railing

south facade section by Joost van den Berge



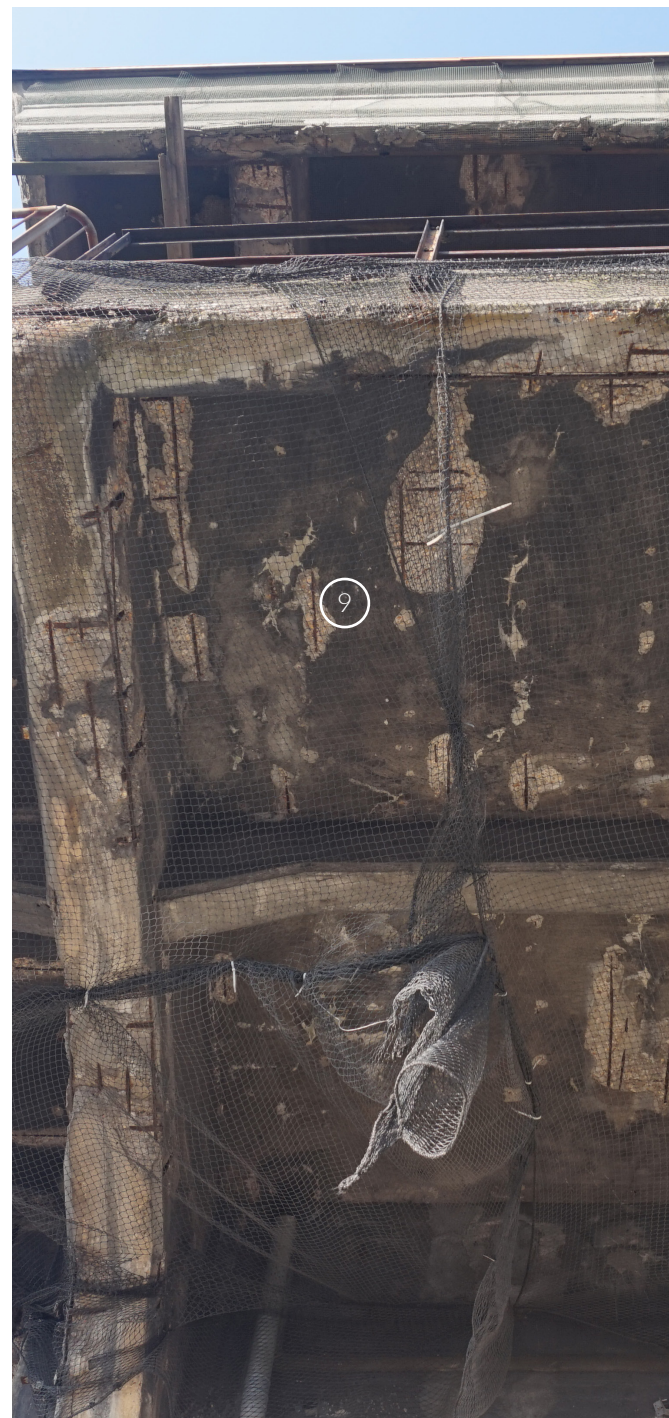
1:100



MATERIALISATION INTERIOR

- 1 loopkat or steel railtrack still in good shape -
- 2 large concrete columns
(Sometimes unfinished state but mostly painted untill 2 meters from the floor.)
- 3 large concrete seperation walls
(Way of constructing by wooden castings still visible, some walls are painted white.)
- 4 Kinnear iron curtain doors/roller doors
- 5 iron balustrades along the galleries
- 6 concrete beams which connect columns and walls
- 7 galleries with the small concrete beams
- 8 inside of the steel doors
(Quite large amounts of rust but are still in quite good condition.)

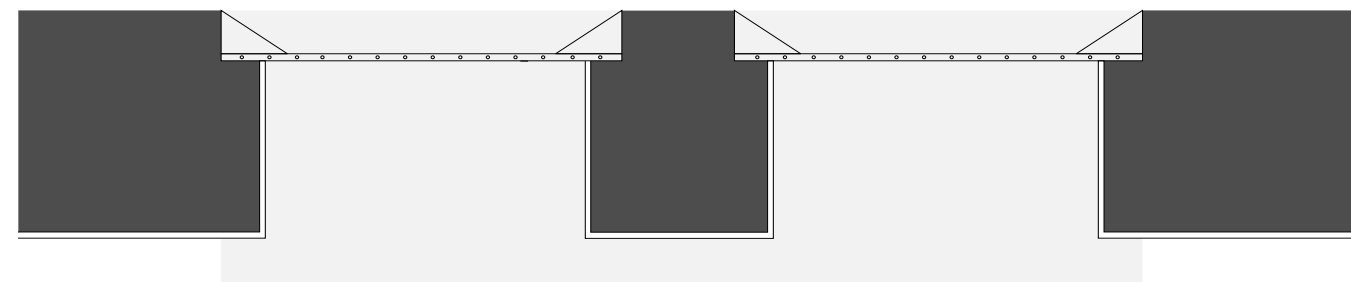
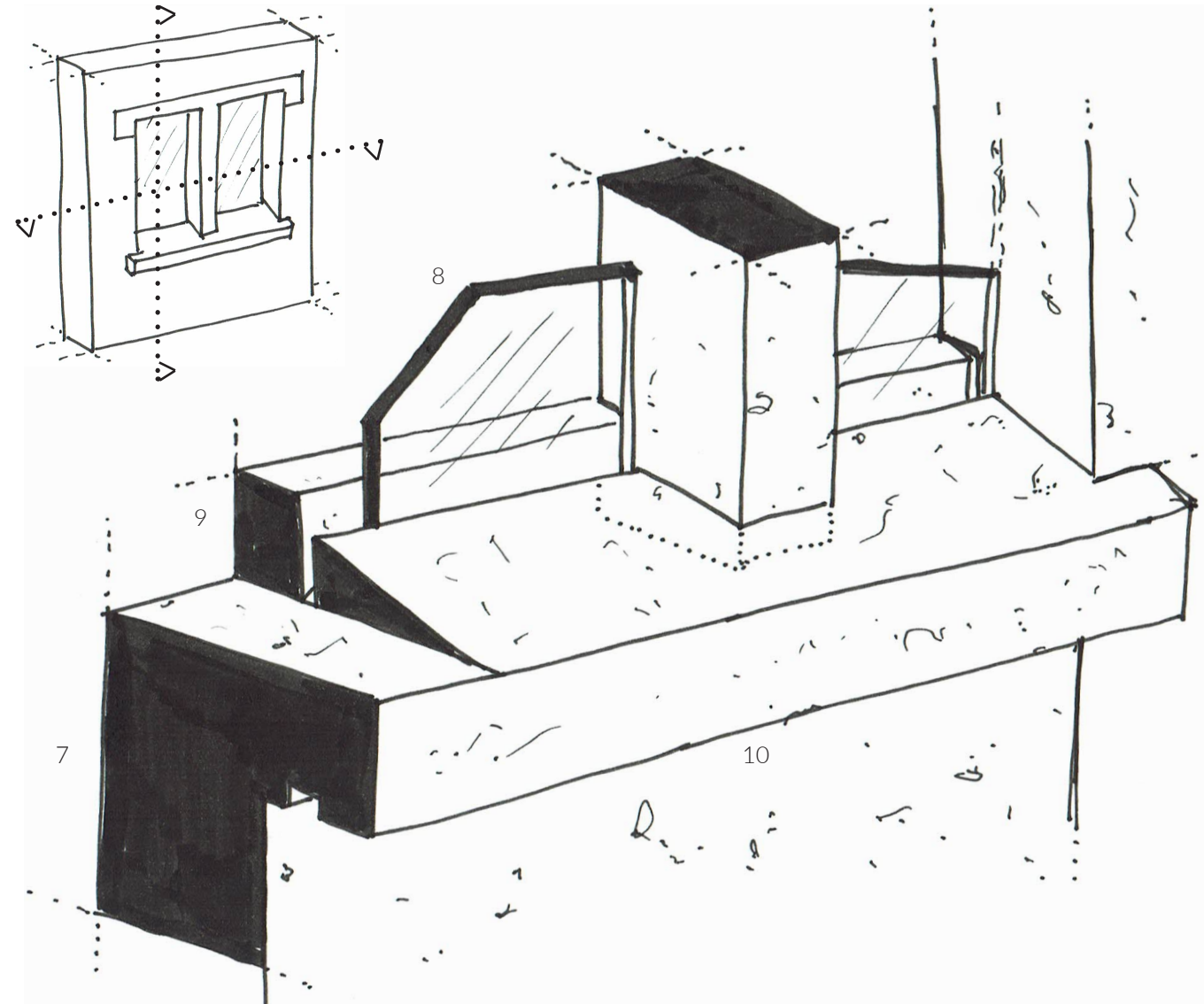
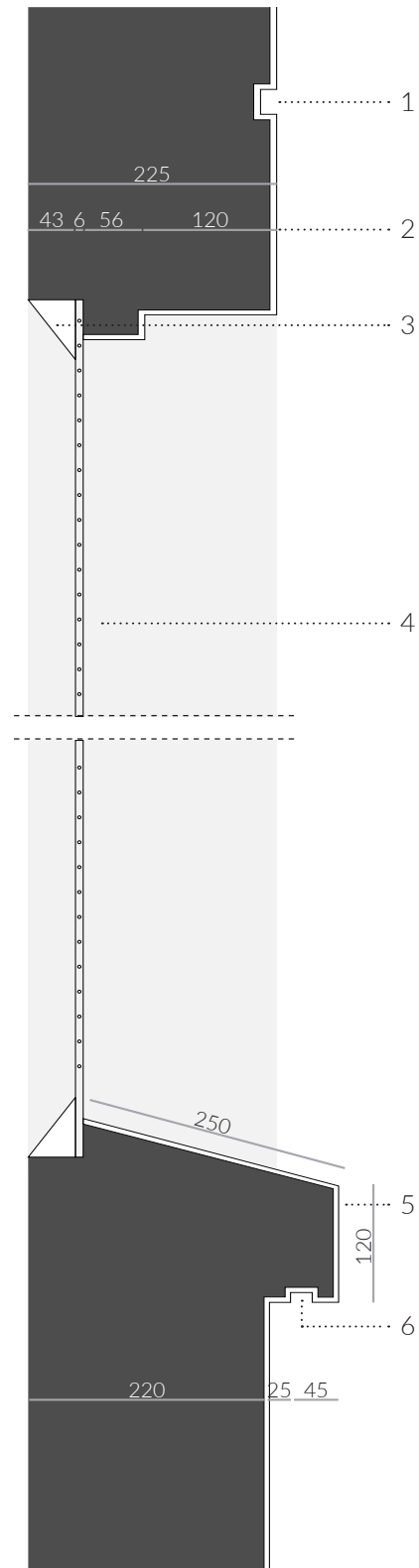
skin materialisation interior by Joost van den Berge



MATERIALISATION EXTERIOR

- 7 steel balustrade on gallery in bad state
(The balustrade is extremely weathered and damaged; some parts are even gone or destroyed.)
- 8 traces of the former holes in the gallery
- 9 bottom of the gallery with supporting beams
(Clearly it has weathered in great measure and at several places the sand cement layer has come of.)
- 10 window sill and window itself
- 11 green steel sliding doors American Kinnear system
(They have many traces of damage and rust but are still in quite a good state.)

skin materialisation exterior by Joost van den Berge



DETAILED VIEW

- 1 hole to suggest a lintel
- 2 10 mm sand cement layer
- 3 sand cement sealing
- 4 wired glass
- 5 profiled concrete window sill
- 6 water cutting hole
- (The window frames are built in one piece on the construction site, and poured into the concrete wall.)

CONSTRUCTION PRINCIPLE

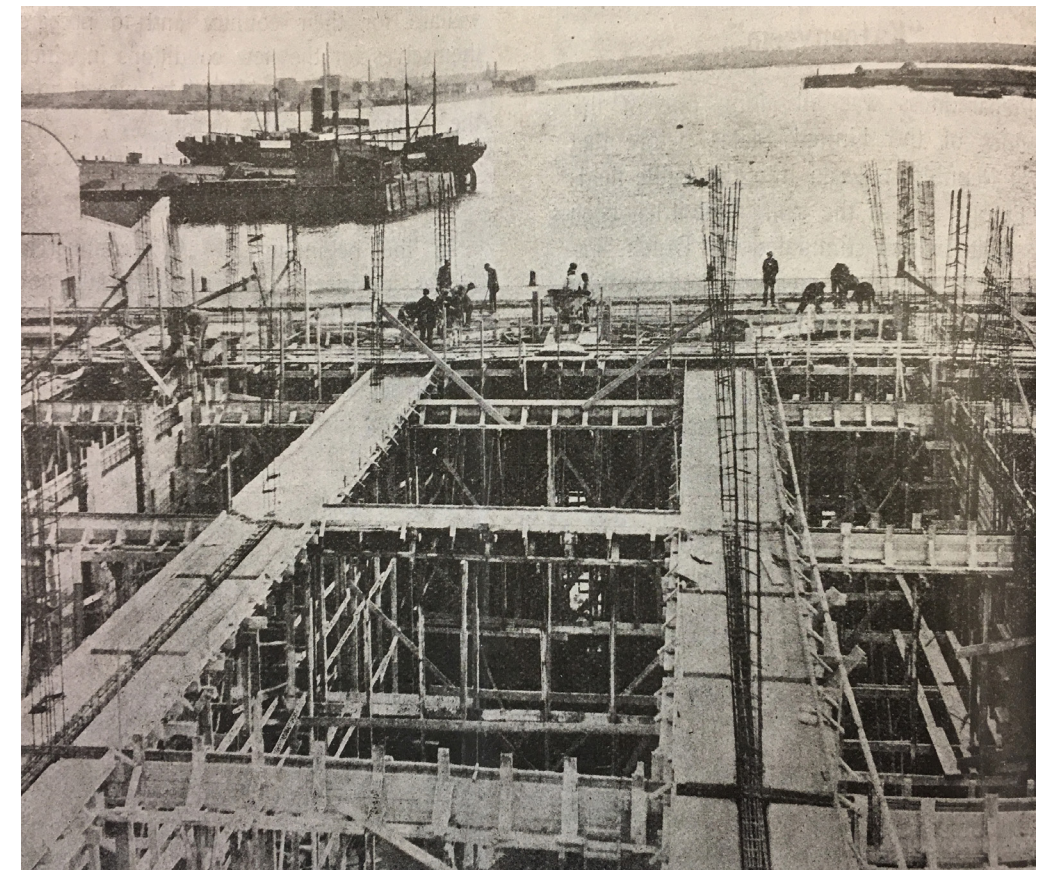
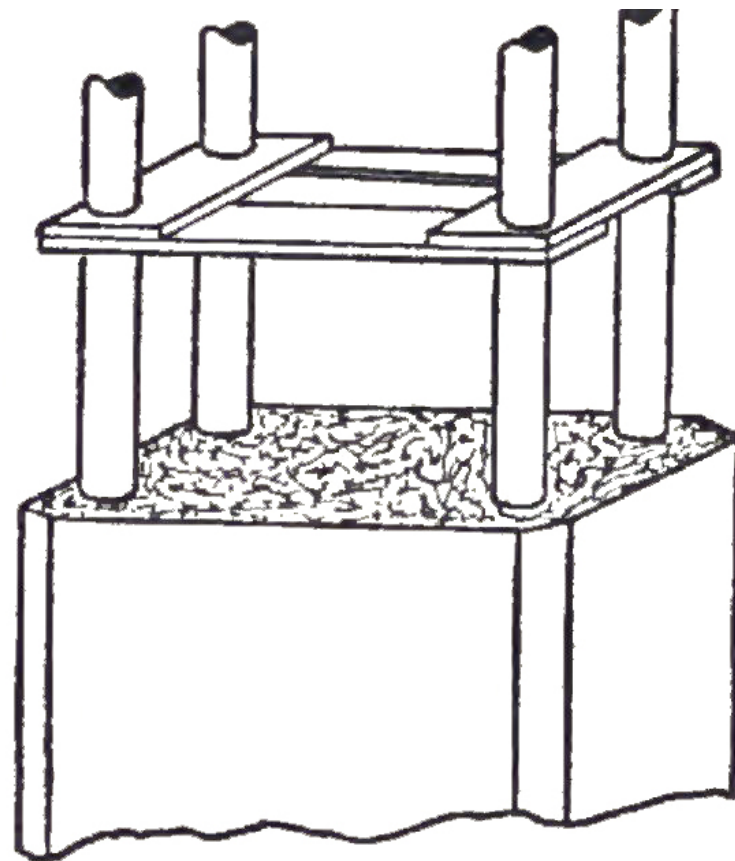
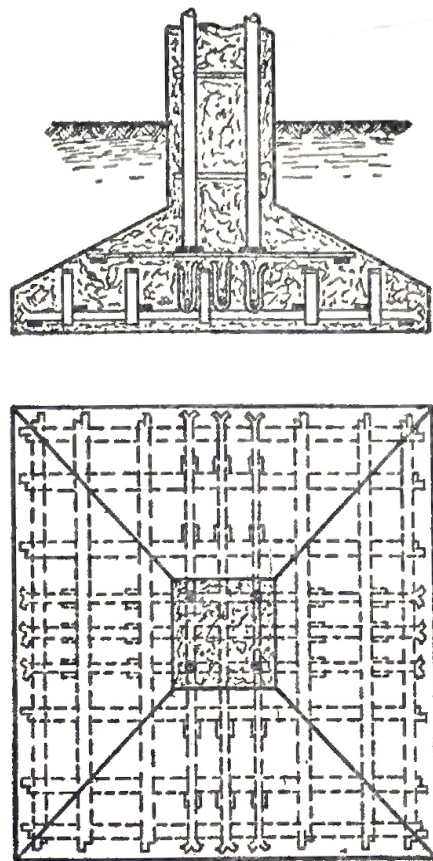
- 7 first step: create window opening
- 8 second step: placement wired glass
- 9 third step: fixation glass sand cement sealing
- 10 last step: addition sand cement layer

skin detailed view by Joost van den Berge

CONCLUSIONS SKIN

- Relationship historic function and skin needs to be preserved
- Repetition in skin is key elements of Katoenveem experience
- Façades provided skin around 'machine' that the Katoenveem used to be
- Restoration of skin is vital part of redevelopment of the Katoenveem
- Materiality of Katoenveem skin is insufficient to support modern climate demands for sustainable building
- Original materials are still very present in the Katoenveem, parts that have been altered do not have the same value anymore

STRUCTURE



*Hennebique System 1,2
(Radfords encyclopedia of construction - Volume 6: Concrete Construction)*

*building site Katoenveem, first floor
(The Pioneer #3, march 1919)*

QUESTION

What structural system is used in the Katoenveem?

METHOD

By looking at the construction principle of the Katoenveem, as well as the way of constructing.

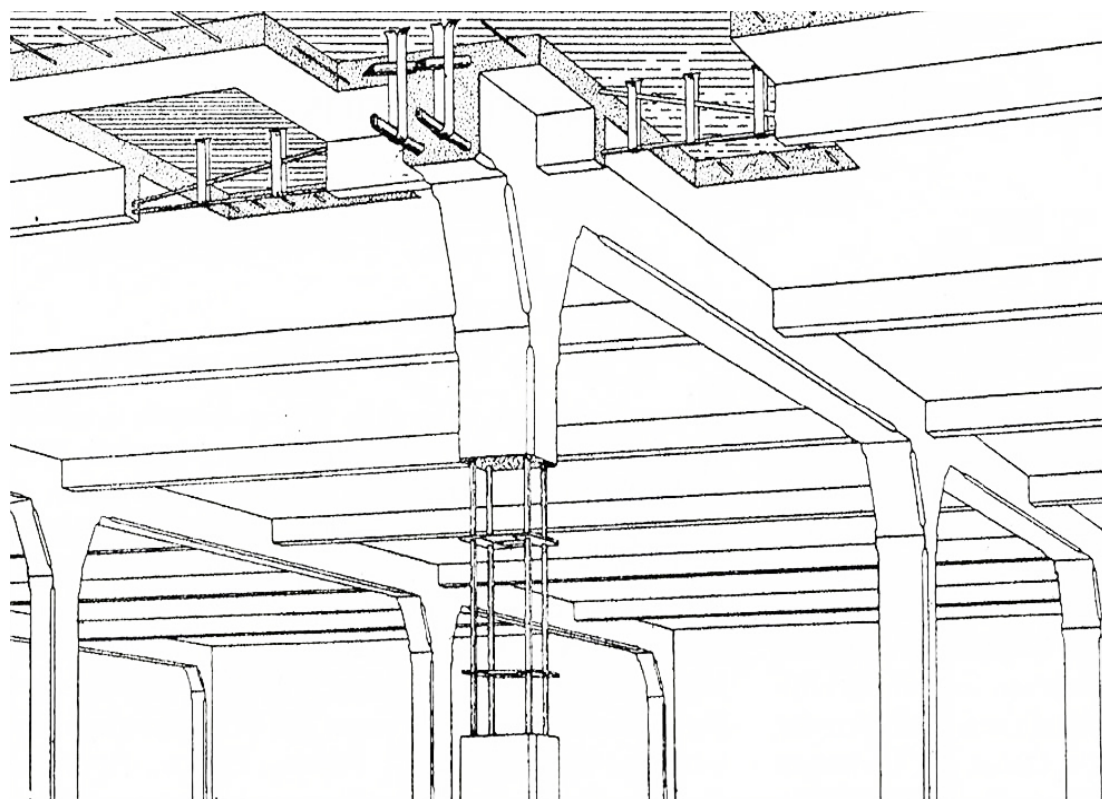
HENNEBIQUE AND KATOENVEEM

The Hennebique system is one of the first building techniques in which concrete is used in a modern way.

François Hennebique was born in 1842 in Neuville-Saint-Vaast in France, but he worked most of his career in Belgium. At the Paris Exposition in 1867 he sees the wire reinforced concrete for the first time and he starts looking for ways to use this technique in housing. He began experimenting in 1879 with slabs of reinforced concrete. In 1886 Hennebique files for a patent on a floor of tubular elements in a reinforced concrete construction. Around 1892 Hennebique files for a series of new patents, which are the basis for his famous concrete beam, which he will develop into a complete

building system. Hennebique used round poles of iron as reinforcement, which he placed in longitudinal direction, parallel to each other. The poles are interconnected with a series of horse-shoe shaped brackets, which are fixed in the concrete mix. The tension forces that will occur can be distributed when the concrete is put under pressure. Without such reinforcement of concrete, it is not strong enough to resist the compressive and tensile forces exerted on a building structure. Within a few years Hennebique perfects his system, which can also be used for upright columns, horizon-

tal support beams and even floors. The patents lasted 25 years, therefore they started to expire from 1911 onwards. New 'Hennebique-like' systems started to emerge throughout Europe. The Katoenveem contains one of these systems. It is closely related to the Hennebique system, but it is not identical. The foundation of the Katoenveem is not displayed in any drawing or photograph in detail, only an outline is visible. Hennebique foundation system (illustration 1). Therefore, without any further knowledge we will assume that the foundation of the Katoenveem.



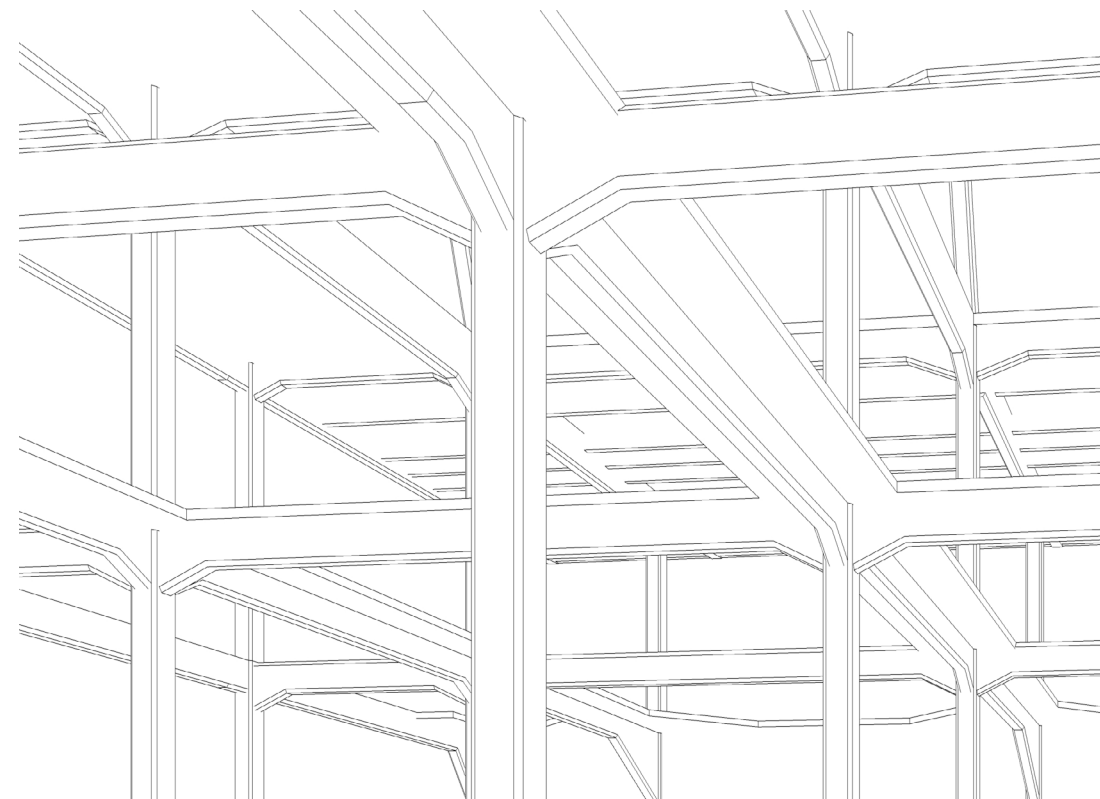
*Hennebique System 3
(Radfords encyclopedia of construction - Volume 6: Concrete Construction)*

The system of the columns in the Hennebique system and the Katoenveem appear to be similar. In certain damaged parts of the Katoenveem the structure was visible. Additionally the construction photograph of the Katoenveem shows a resemblance with the Hennebique system column (illustration 2).

When looking at the illustrations on this page a strong resemblance in the beam and floor systems between the Katoenveem and Hennebique. The column- and beam joints have a fixed angle in both systems and also the edges constructional elements have been round-

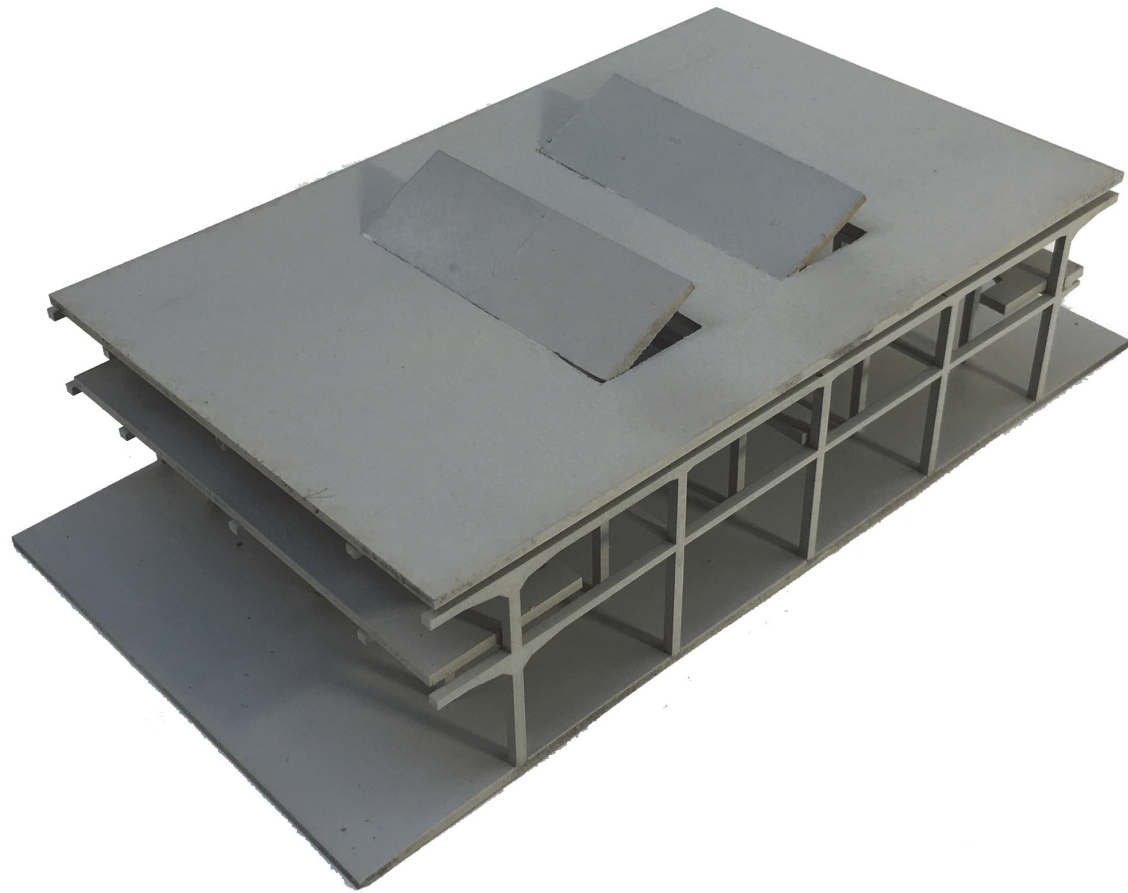
ed off in both illustrations. What sets the construction apart from the Hennebique system, at least externally, is the double direction of the heavy load carrying beams in the Katoenveem. In the Hennebique system the heavy load carrying beams are supported by smaller, thinner beams in the other direction. Therefore we can assume that the entire joint has a different reinforcement system within the concrete.

We can conclude that the Katoenveem has an Hennebique-like system that constitutes the entire construction. The complete construction; foundation, floors, beams, columns and the roof, is interconnected



Katoenveem 3D construction by Xiaho Yi

through the reinforcement of the steel. Certain elements of the Katoenveem bear a striking resemblance to the Hennebique system, where as other elements have been altered to fit the specific building.



model image perspective view by Joost van den Berge

QUESTION

What does the structure in the Katoenveem look like in a more detailed manner?

METHOD

By looking at the structure of the Katoenveem floor by floor, column by column, beam by beam, a more detailed idea can be formed of the structure and its expression.

INTRODUCTION

As spoken of earlier the Katoenveem structure is built according to a system closely related to the Hennebique system. The structure is the same throughout every compartment of the building. By looking at one compartment (D) in a more detailed way, a better understanding of the entire structure of the Katoenveem can be acquired. 3D models, combined with old and new photographs give a detailed account of the structure in this part of the report.



model image top view by Joost van den Berge

FOUNDATION

The foundation is a type without piles, with a cross section of up-side-down "T" shape. The 10m x 10m grid foundation is placed on the hard sand layer of the pier. The columns and the ground floor are directly sustained by this foundation. This foundation can be compared to the foundation of the Santos storage building in Rotterdam, which was also designed by architect JJ Kanter.

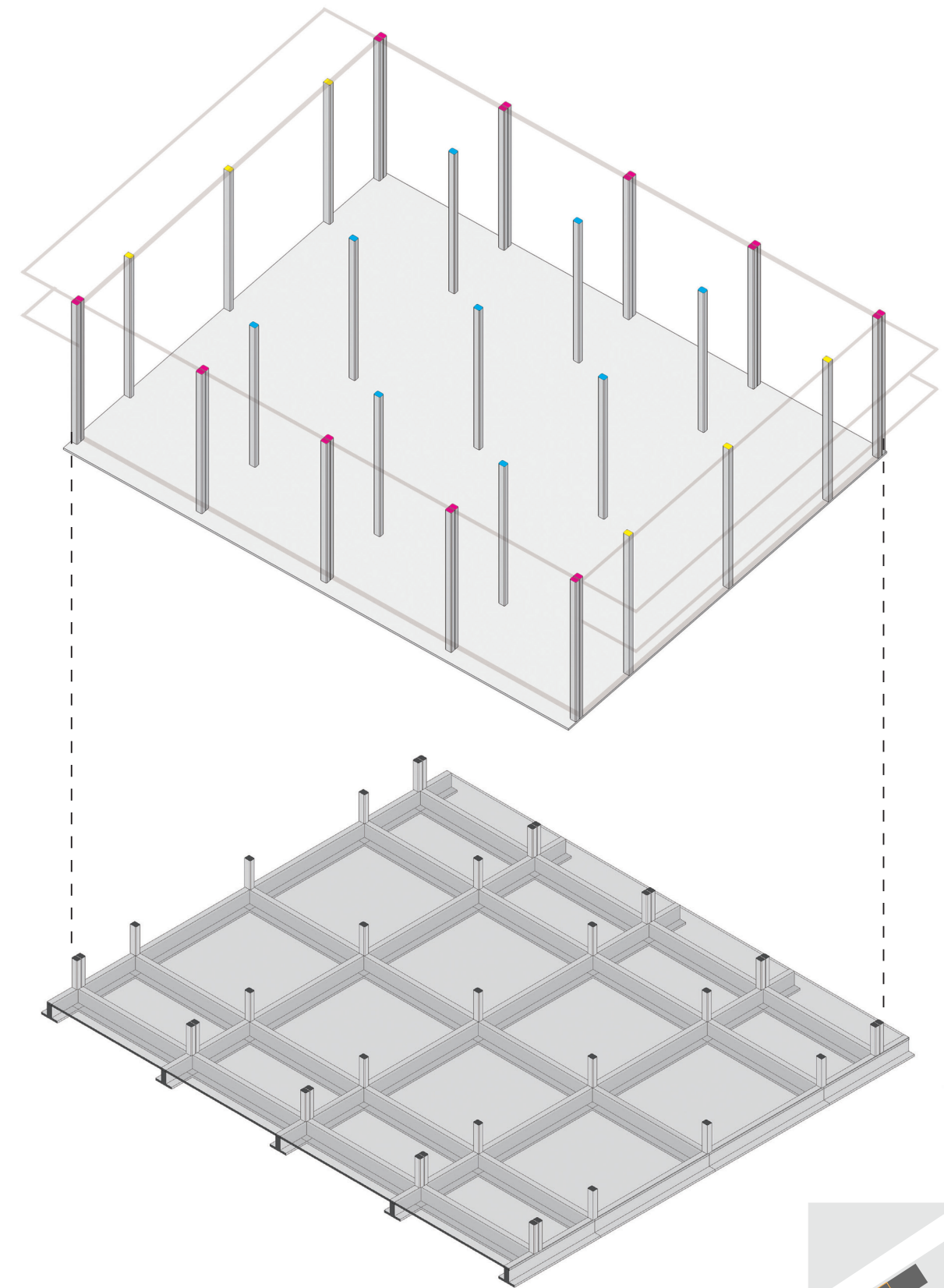
GROUND FLOOR

The columns in the building are thin relative to their height. The width : height ratio is smaller than 1/20. All corners of the columns in the interior have a chamfering

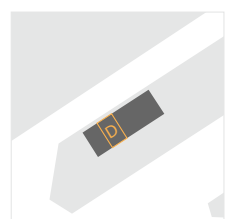
surface, while the corners on the outside of the columns are 90 degrees. This is done to protect the columns against abrasion from cotton bales.

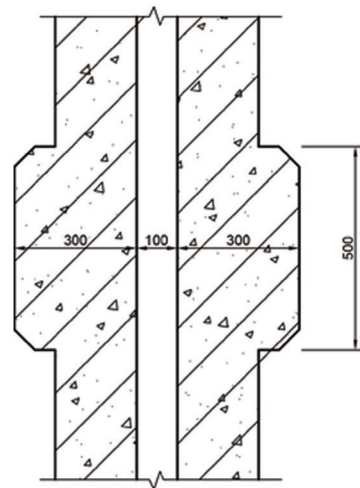
On the ground floor of the Katoenveem three types of columns can be distinguished: the compartment wall column, the outer wall column and the free standing column.

The next page gives a more detailed impression of the different columns that are used.

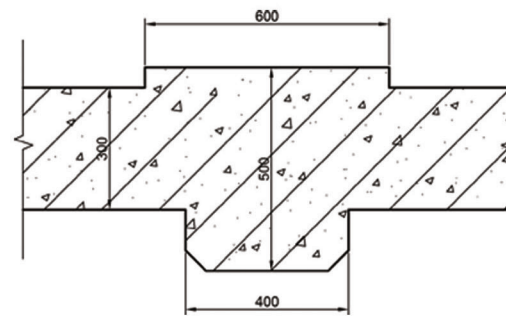


foundation + ground floor 3D structure by Xiaho Yi

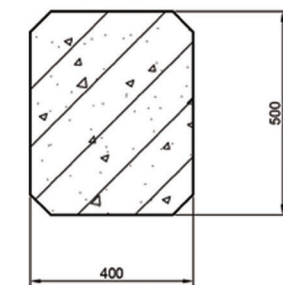




compartment wall columns



outer wall columns



free standing interior columns

columns details by Xihao Yi

COLUMNS

The compartment wall columns always appear in a pair, having a cavity between them. In a standard compartment, there are 10 columns of this kind. In the illustration these are marked **red**.

The outer wall columns has a wider surface on the outside, which results in a repetitive rhythm on the elevations. There are 6 outer wall columns in a standard compartment. In the illustration these are marked **yellow**.

The free standing columns are equally distributed in the tall space. They defined the space without actually dividing it into parts. There are 9 of this kind in a compartment like compartment D. In the illustration these are

marked **blue**.

FIRST FLOOR

The first floor is used by the workers to operate the conveyor system on the narrow walkways. Therefore the maximum load that can be carried is based on the workers. The height of the beams and the floor is thin because of this.

The first type of beams of the first floor is based on the walkways. Two pairs of secondary beams are added for the installation of the steel hand rails. They are marked in red.

The second type of beams are the big brackets on both south and north spans of the interior. These beams help strengthen the structure in its stiffness. They are marked in blue.

The third one is the beams with a slope top surface. This is presumably done to prevent that it could be walked on the beam to the other side of the void for safety reasons.¹ We suggest that it can also prevent dust to some extend. They are marked in yellow.

(1 M. Enderman and R. Stewart, *Bouwhistorische Verkenning Katoenveem*, Keilestraat 39 Rotterdam, Utrecht(2005), p15)

ROOF STRUCTURE

One very recognisable feature of the roof structure is the secondary beams. They are added to carry the load of the conveyor system that was directly installed on these beams, bringing an additional load to the roof structure. For this reason, the main beams in the roof are significantly taller than those on the 1st floor. This is noticeable

in the original section drawn by the architect.

The roof also provides natural lighting. The triangle truss structure of the big skylight windows make this possible. There are secondary beams on the sloped surface as well, possibly to withstand extra wind loads.

On the south and north side of the roof are the cantilever covers for the balconies. Both 4.8m-deep structures are sustained by the tapered beams.

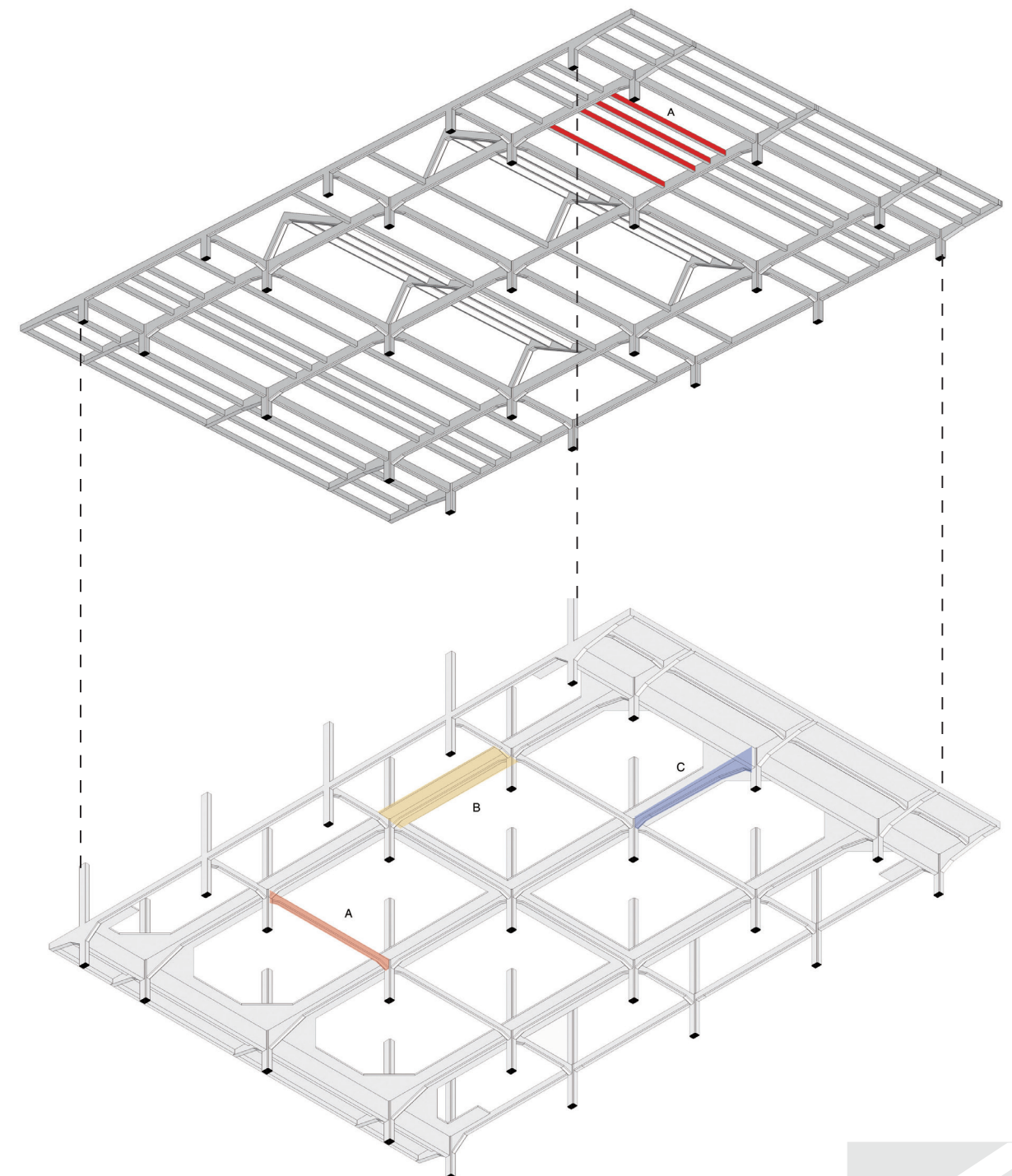
The next page gives a more detailed impression of the different beams that are used.

GROUND FLOOR

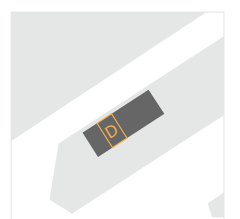
The columns in the building are thin relative to their height. The width : height ratio is smaller than 1/20. All corners of the columns in the interior have a chamfering surface, while the corners on the outside of the columns are 90 degrees. This is done protect the columns against abrasion from cotton bales.

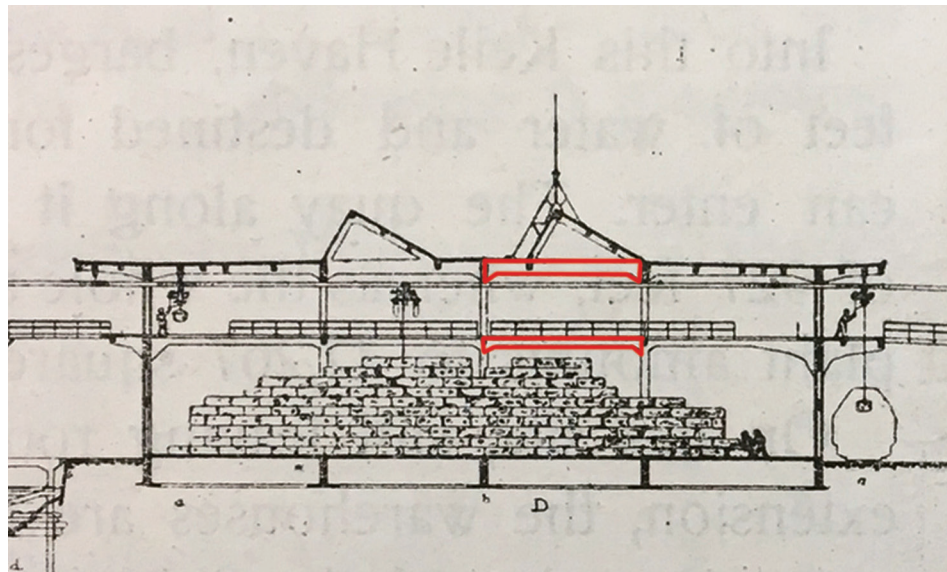
On the ground floor of the Katoenveem three types of columns can be distinguished: the compartment wall column, the outer wall column and the free standing column.

The next page gives a more detailed impression of the different columns that are used.

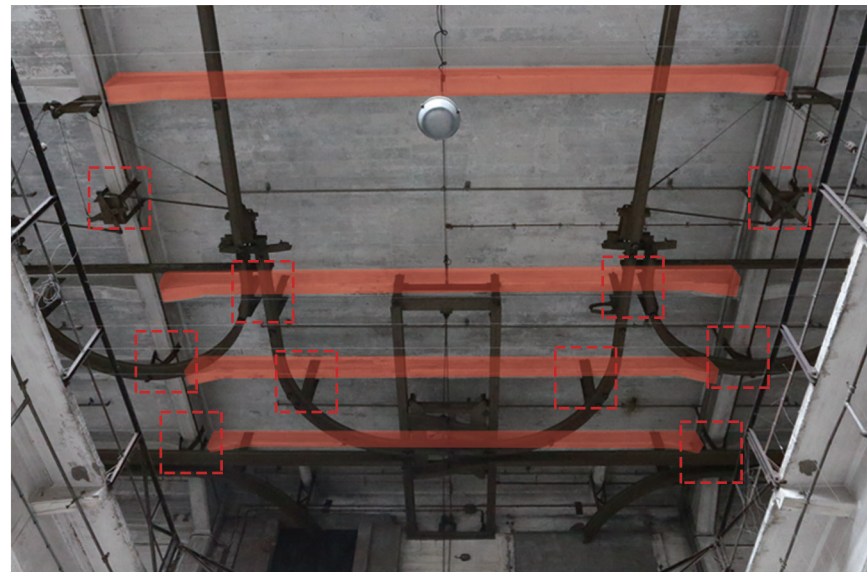


first floor + roof 3D structure by Xiaho Yi





height of roof beams is bigger than the 1f beams



additional smaller beams are designed for load of conveyor system and cotton



close-up look of the beams of the skylight.



walkway with secondary beams and steel hand rails



big bracket on the 2nd beam from the south



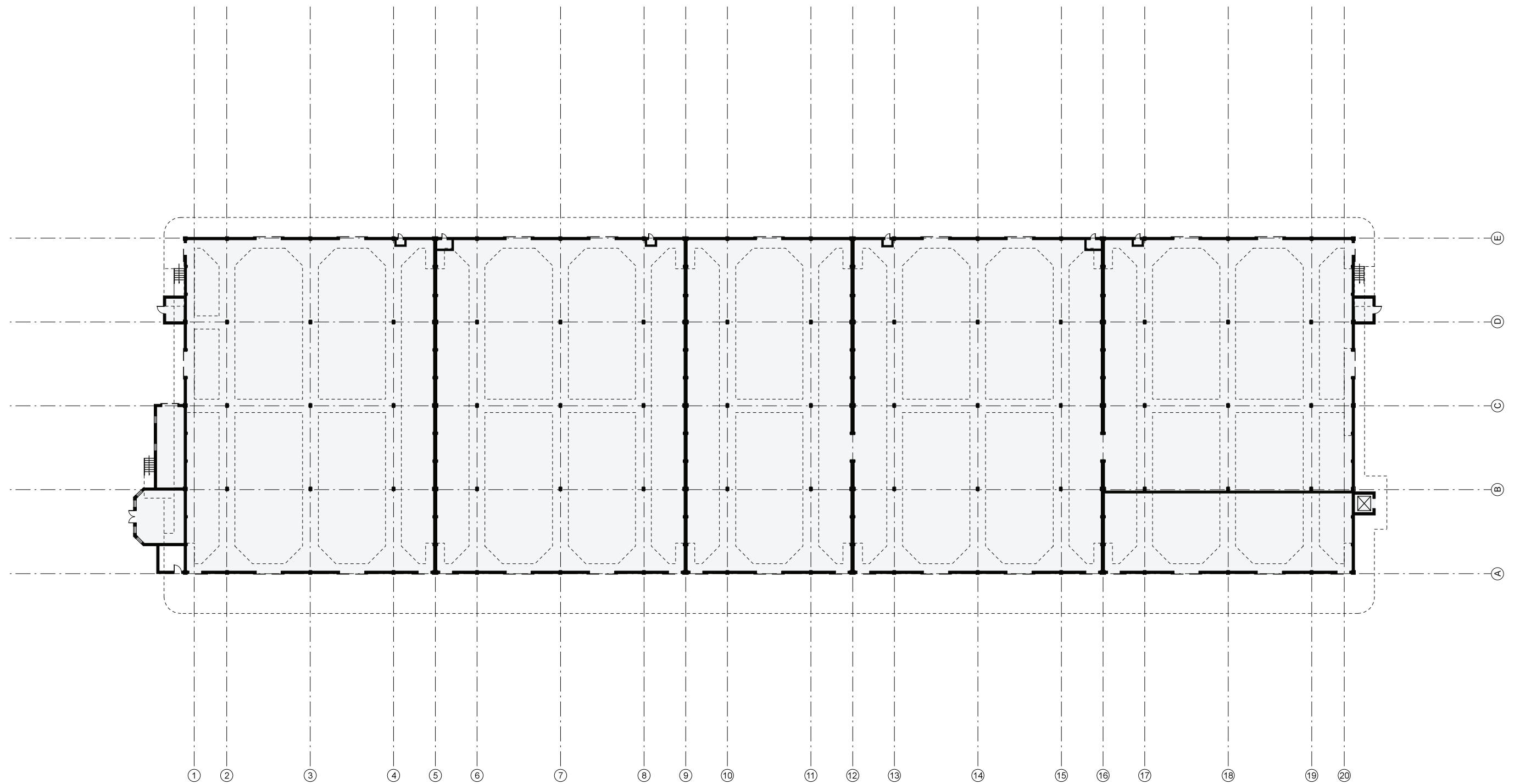
sloped top surface of the beams without walkways

first floor + roof beams by Xihao Yi

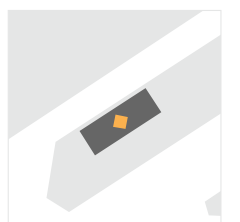
CONCLUSIONS STRUCTURE

- Hennebique-like construction systems makes Katoenveem into monolithic structure
- Introduction of first floor would require updating the structure or implementing new structural elements
- Construction needs to be maintained where possible in order to keep historic industrial aesthetic of Katoenveem building
- Existing structural hierarchy should be integral part of the Katoenveem's redevelopment
- Close link between structure and functionality has great historic value and should therefore be maintained or even strengthened in the future

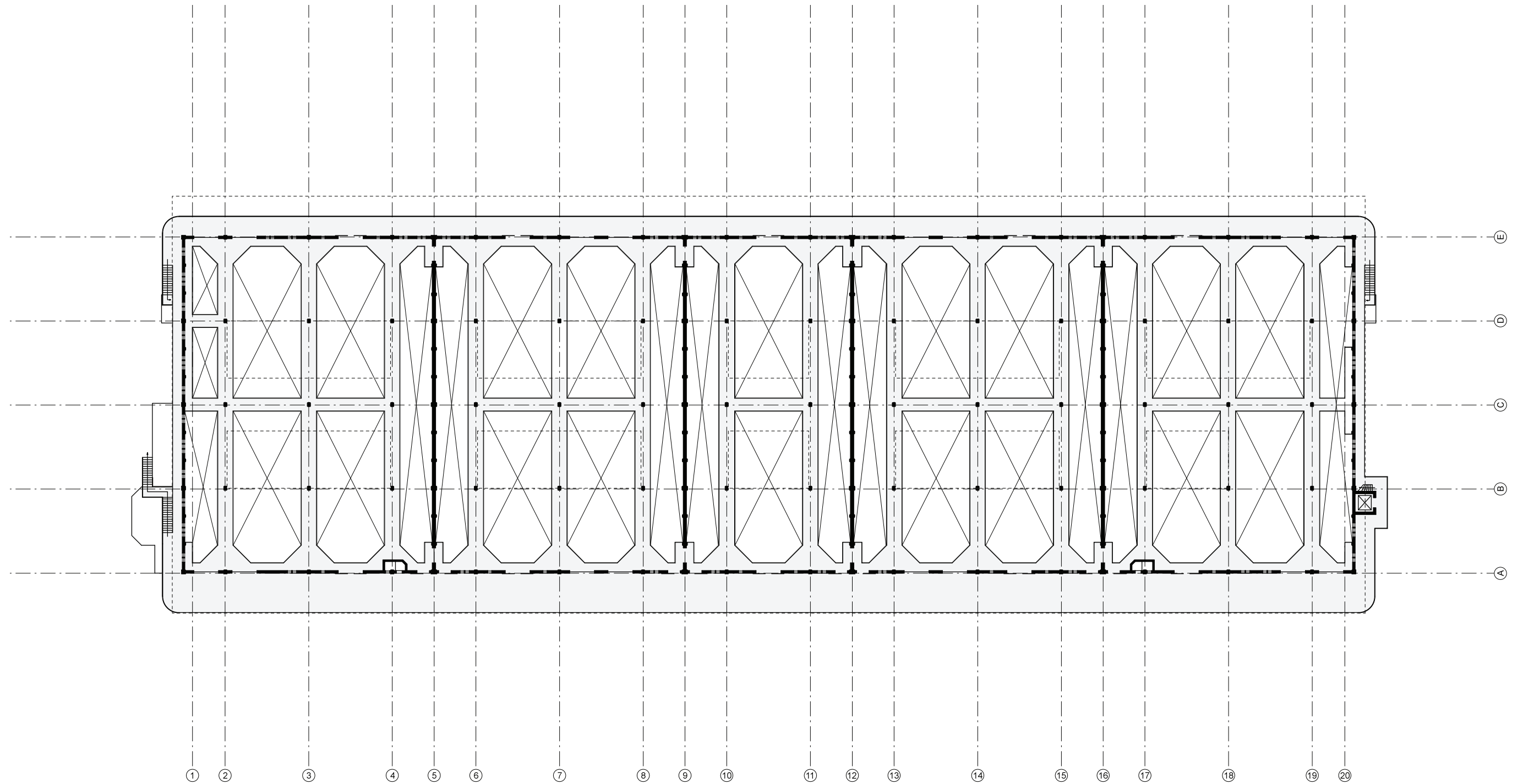
SPACE PLAN



contemporary ground floor plan



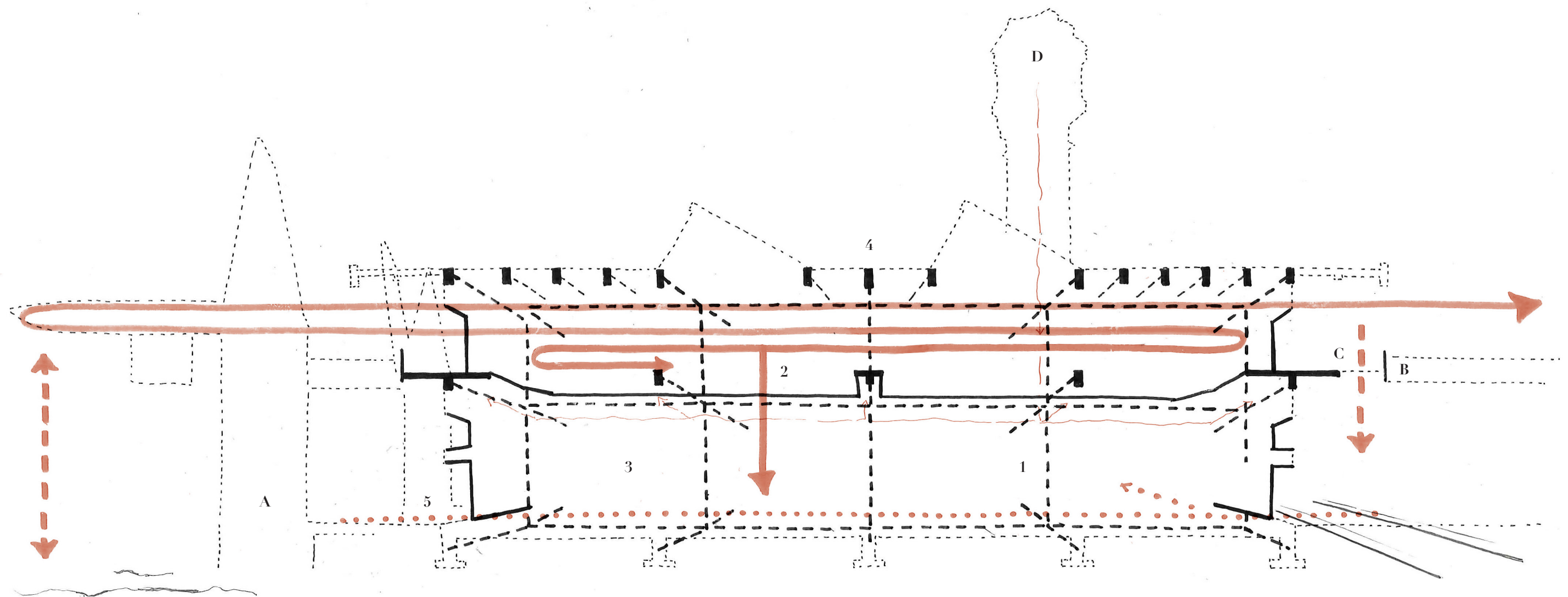
1:500



contemporary first floor plan



1:500



interventions in space plan to serve the functionality by Audrey Loef

QUESTION

How was the space plan organised to serve the functionality of the building?

METHOD

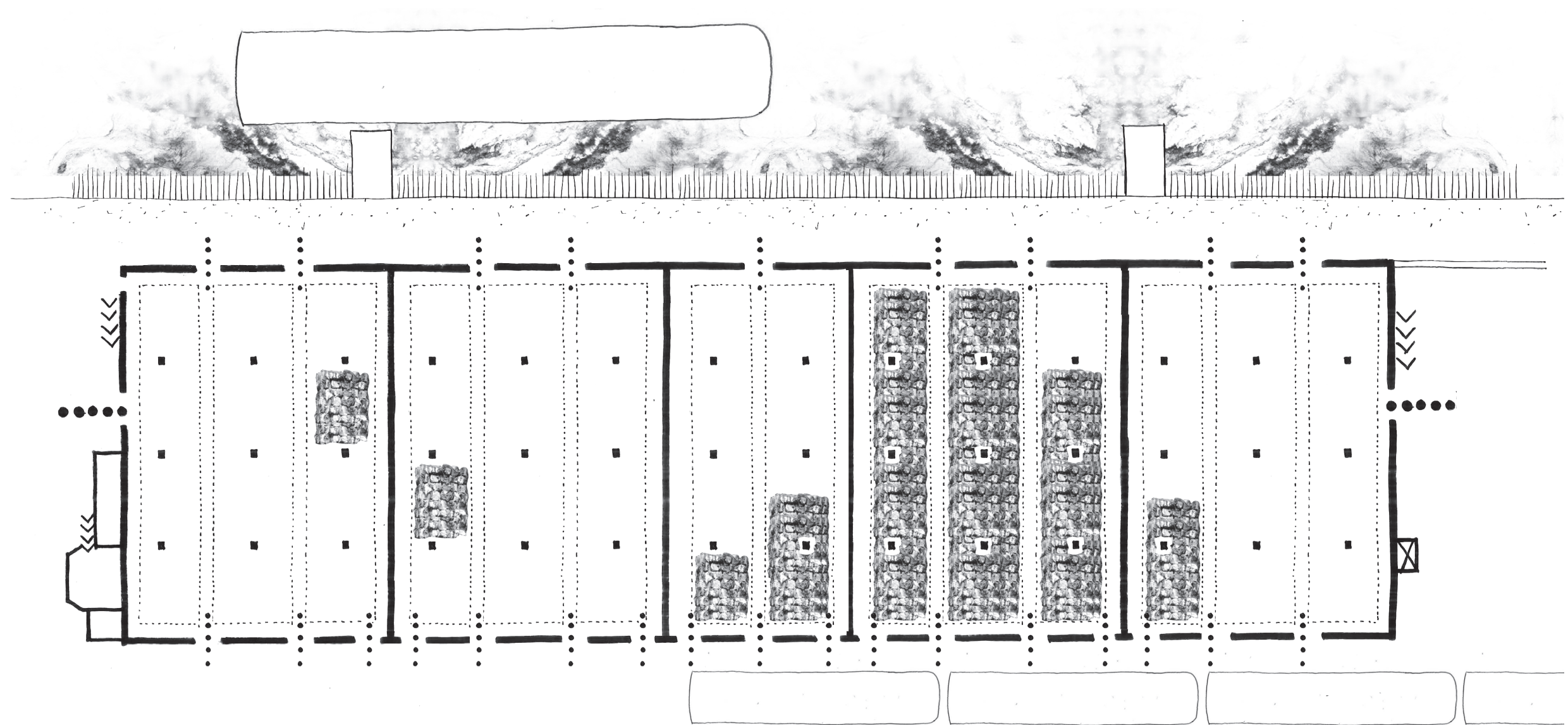
BY looking at the points where the Katoenveem system meets the structure and space plan of the building.

FUNCTIONALITY OF SPACE PLAN

The physical building was designed in such way the Katoenveem system functioned optimally. Starting from a plan libre (1) as constructed structure of the building it allowed the service system to enter in all places where needed. The two layers are designed to create a division between the route of the cotton (2) and the open space of storage (3). At conveyor system level, the route is embraced by interventions to serve the functionality.

The running conveyor is hold in place by a beam and rib structure carried by the roof (4). The openings in the facade allow the system to run continuously, where the workers were also allowed to pass (5). Onto the galleries underneath the system they could continue their route to assist the system, while at the same time looking towards the place where to store, where it was possible to continue on ground level, also opened up towards outside by the direct doors to the places of arriving and departure of the cotton.

These outside interventions were mainly supported by the added structures (A). The bridges attached to the galleries (B) and the holes (C) made to load into the goods-trains. Also the added sprinkler system was running underneath the layer of the conveyor system (D), in the lines of the constructed structure.



historic space plan of ground floor by Audrey Loef

QUESTION

How is the space plan of the historic Katoenveem designed to support the use of the building?

METHOD

By looking at the way the space was used in relation to the physicality.






HISTORIC USE OF SPACE PLAN

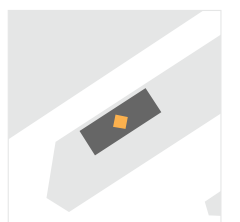
The inside area of the building is separated in five compartments. The middle one is the smallest, two rows of columns to three rows on the other four compartments. Within the compartments on the ground floor we recognize areas where the cotton is placed, this is expressed by tiling a pattern on the floor. In between these zones there were walkways connected to the openings in the facade. These are the relations between inside and outside and guide to either the waterside where the ships were moored or the side where the goods-train were driving. On the short facades bigger openings were located as well as the elevation points.

Arriving at the first floor level, a gallery is running along the complete facade, again with entrances on both sides guiding to the cotton. By a system of galleries running over the grid of the structure of the building interaction between the two levels is enabled. It was possible to see both the zones with stored cotton and the walkways in between, possibly the keep the communication of organisation of use of space optimal.

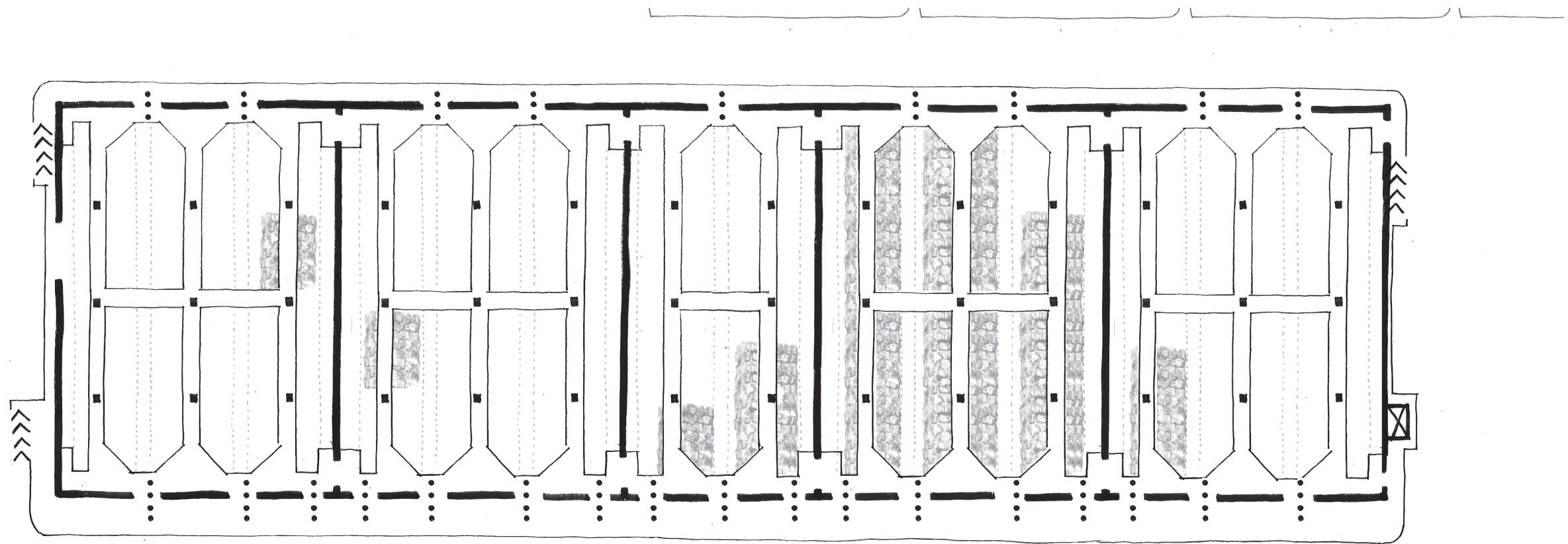
In conclusion we can say that the space plan of the building is fully designed to serve the functionality, visible in its expression and composition of the architectural elements.

GROUND AND FIRST FLOOR

-  cotton
-  tiling
-  passage
-  main passage
-  water



1:500



historic space plan of first floor by Audrey Loef

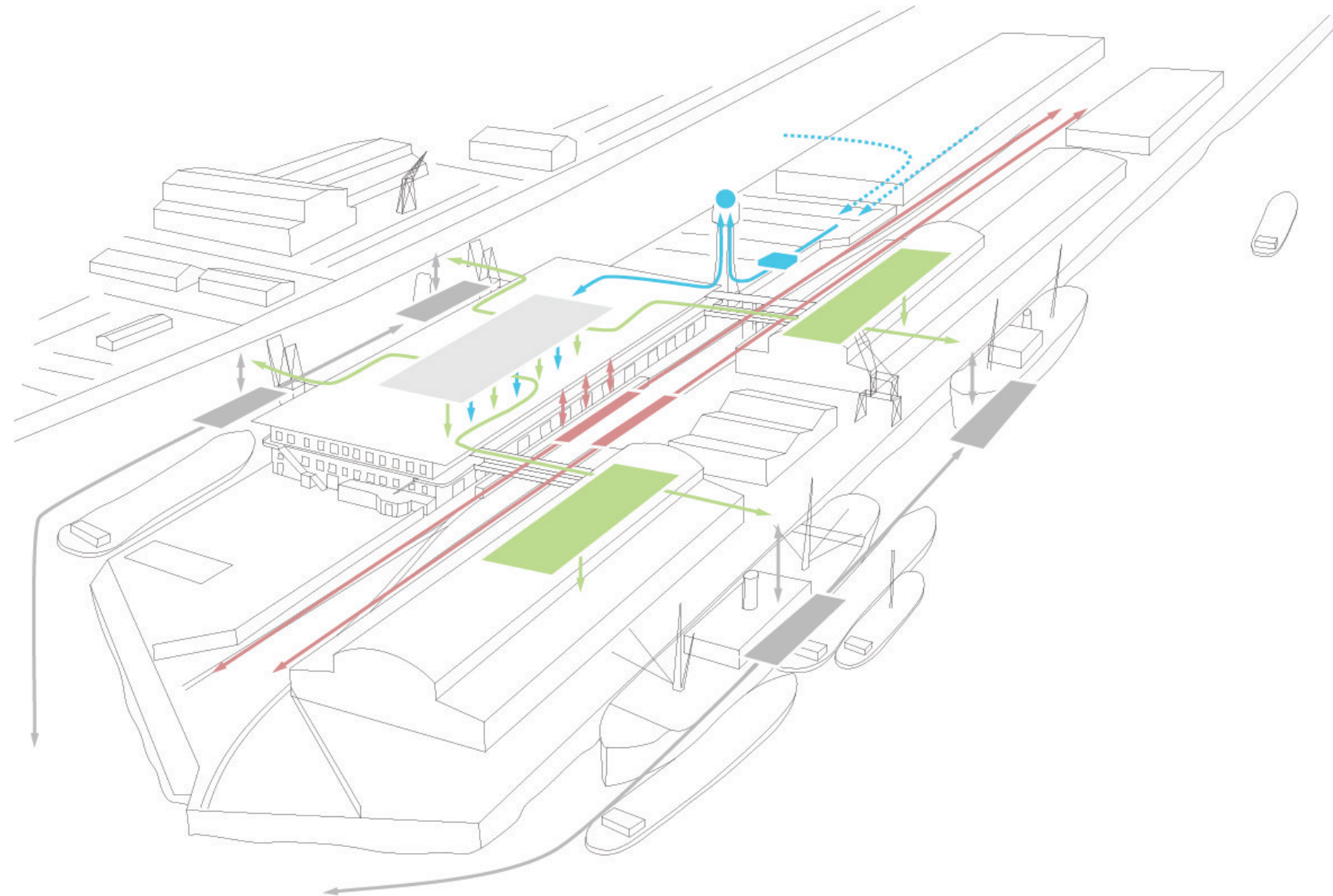


1:500

CONCLUSIONS SPACE PLAN

- Maintenance of compartmentalisation is required to maintain historic value of Katoenveem
- Space plan is very particular for the Katoenveem system, new function should be adapted accordingly
- Even though the space plan is very rigid and historically valuable, 10050 x 10050 mm grid still provides large spaces to move through
- The space plan is one of the elements of the building most connected to the historic functionalist building, adaptation should therefore be considered very carefully

SYSTEM



katoenveem system

QUESTION

How did the original Katoenveem system work?

METHOD

By looking at the different aspect of the system in detail a profound understanding of the functional Katoenveem building can be established.

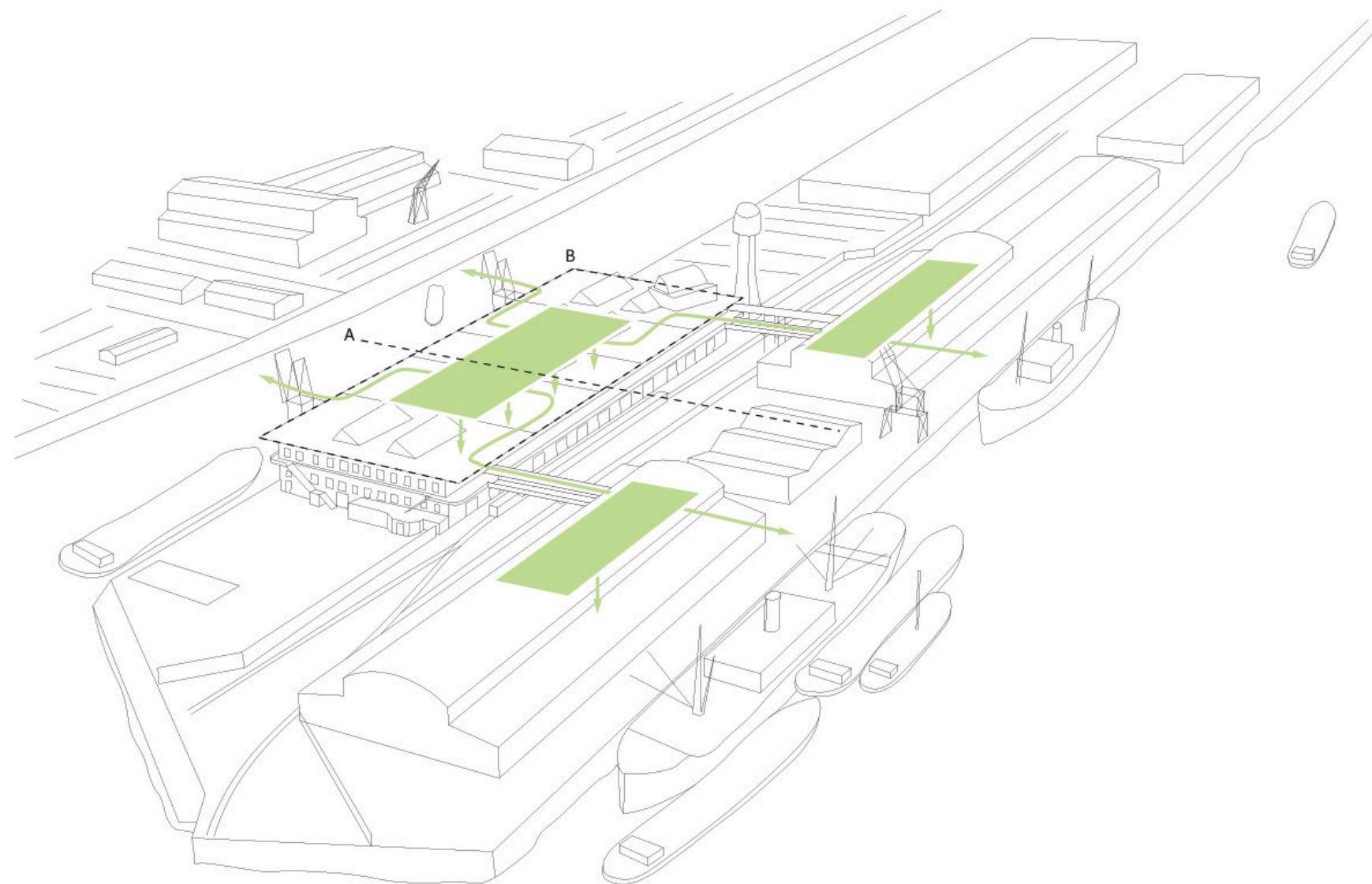
KATOENVEEM SYSTEM

The Katoenveem is a highly functional building. Every aspect of the building is designed in order to create maximum workability and efficiency for the process inside and around the building. The systems is therefore valued higher than any other element of the Katoenveem because it is the aspect of the determines every other aspect. The process is the historic building was the key factor on which every other aspect (e.g. skin, space plan, structure and site) was based. In this chapter different parts of the system have been distin-

guished and displayed in detail. From the ships to the conveyor, the sprinkler and the railway, each aspect is discussed. The fact that the Katoenveem building was designed as part of a machine is key in the understanding of the building. This is valued above all else and will therefore play a key role in the redevelopment of the Katoenveem are in the future as well. Only by having an understanding of the process and the role the different parts of the system have played in history, can the true character of the Katoenveem be understood.

KATOENVEEM SYSTEM

- katoenveem
- conveyor system
- railway system
- ships system
- sprinkler system



conveyor system

QUESTION

How did the conveyor system function?
What is the contemporary state of the conveyor?

METHOD

By creating illustrations of the use of the original system and by looking at images of the contemporary state a good idea of the system in history and now can be established.

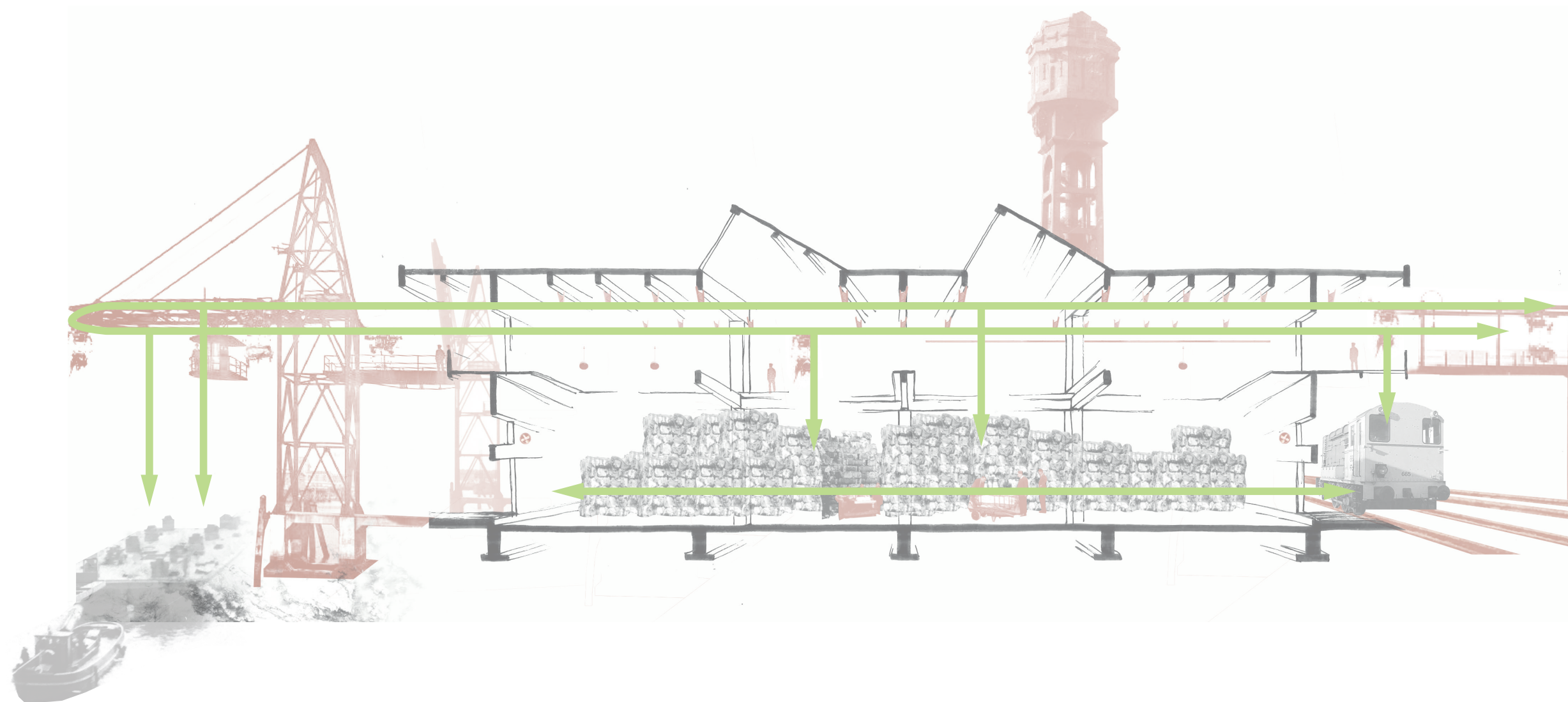
INTRODUCTION

The illustration on this page is a schematic representation of the original conveyor system of the Katoenveem. The conveyor system used to connect both sides of the pier. From the Katoenveem water side all the way across to the water side at the Holland America Line warehouses, it used to be one continuous system. The conveyor would be used to bring cotton into the storage from the ships and bring the goods out of the storage to the railway system. On the following

pages a more detailed display of the conveyor system is shown. In both plan and section a clear insight in the mechanism of the conveyor system is given. Photographs the group members of the Katoenveem display the current state of the system. Even though it does not function anymore the mechanism is still clearly visible in the contemporary Katoenveem, giving an insight in the historic use as well as a clear historic and age value to the building.

CONVEYOR SYSTEM

■ conveyor system
□ details



conveyor system section (A) by Audrey Loef

CONVEYOR SYSTEM (I)

Both the section and the plan of the conveyor system have been shown to get a better understanding of the system. By reading the text and looking at both images a clear idea can be formed of the workings of the system. The basis of the system is that it allows the cotton bales to be transported from the dockside on either the north or the south quay, to the interior of the warehouse.

The layout of the system follows the construction; 14 loops surround the 14 rows of columns. These loops are connected to the big loop running alongside the wall. At the meeting points of these loops there is a relatively simple switch system in which a set of 3 or more tracks allow the monorail to connect with different tracks. By moving the frame in which these tracks are placed, one can select the route. Running on these tracks were devices called "loop-kat-

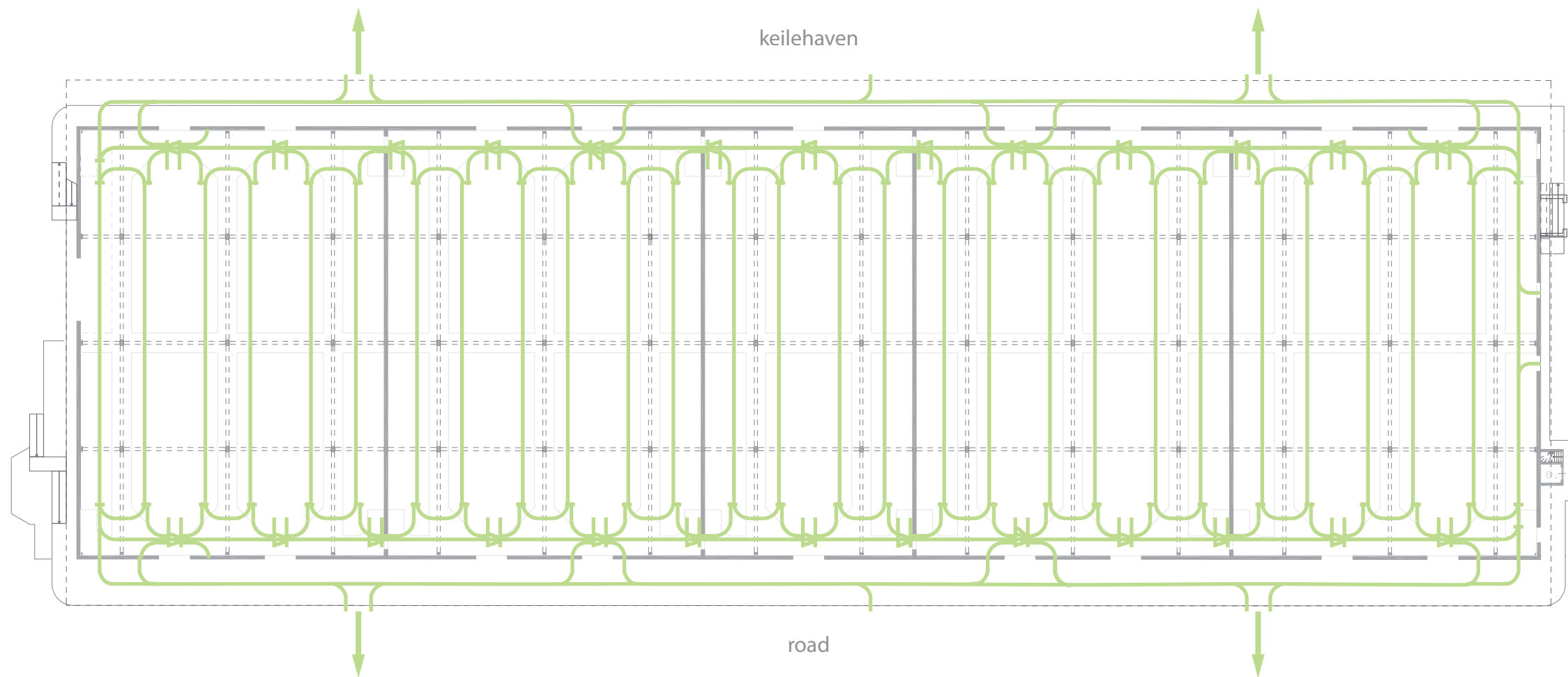
ten" or travellers, these electrical machines could be operated along the elevated walkways by staff that walked alongside the travellers. These travellers could lift one bale of cotton at a time and transport it across the building, either from the inside to the outside or from one compartment to the other. The cotton that arrived would have been stored somewhere on the complex before it was graded and moved to a compartment holding the same type of quality cot-

CONVEYER SYSTEM

■ conveyor system
ton.



remaining parts conveyor system katoenveem
(photographs by Xihao Yi, Elmer Pietersma and Audrey Loef)



conveyor system plan (B) by Elmer Pietersma

CONVEYOR SYSTEM (II)

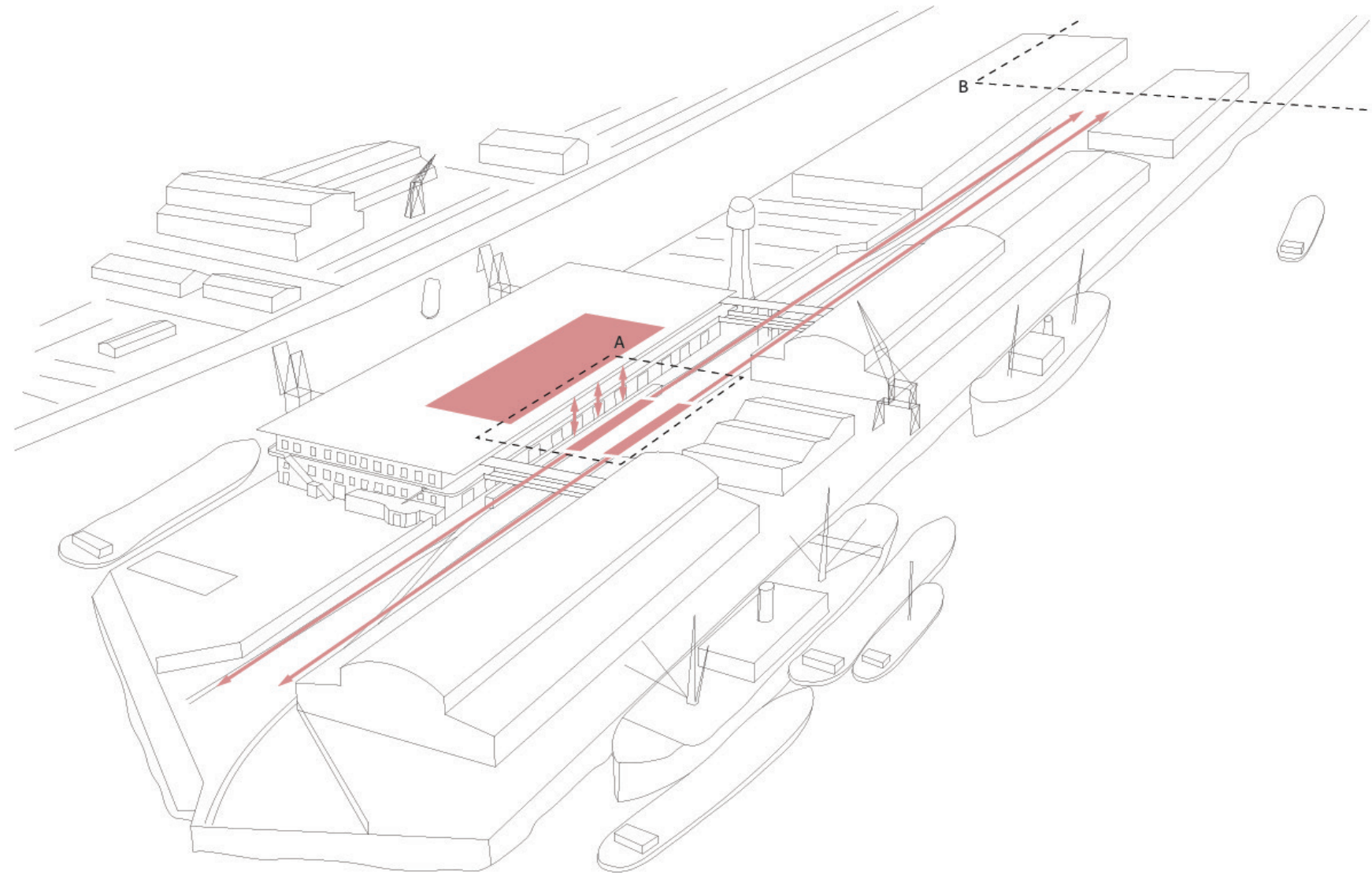
The images on the page before show the conveyor system as it currently is in the Katoenveem. An actual traveller of which several still remain inside the building is displayed. These travellers were powered via electrical cables that ran underneath the I-beams. In most places this electrical system is no longer in place. However the I-beams themselves are still in the original place. The system used to run underneath the roof on the outside, above the balcony. However there is only one

part left on the outside, shown on the right image. This outside track was once used to transport the bales from inside to outside to place it on the trains as is shown in the research on the functioning of the building. In the scheme, the lines show the assumed track of the conveyor system, much of which we can now with certainty, while other parts have been drawn through the making of educated guesses. By looking at the remaining elements and the direction of which we know the system went, a good idea can be established. It

is clear that at the north side the system was directly connected to the two cranes allowing the travellers to directly drop and collect bales from ships. On the south side the system connected the main warehouse to two warehouses of the Holland America Line, how this connection precisely took place is difficult to tell as there are only a few images left. Above the most likely way the cotton travelled is displayed.

CONVEYOR SYSTEM 1:500

■ conveyor system



railway system

QUESTION

What was the role of the railway system?

METHOD

By creating illustrations of the use of the original railway and by looking at the relationship to the conveyor system a clear understanding of the railway system and its trains can be established.

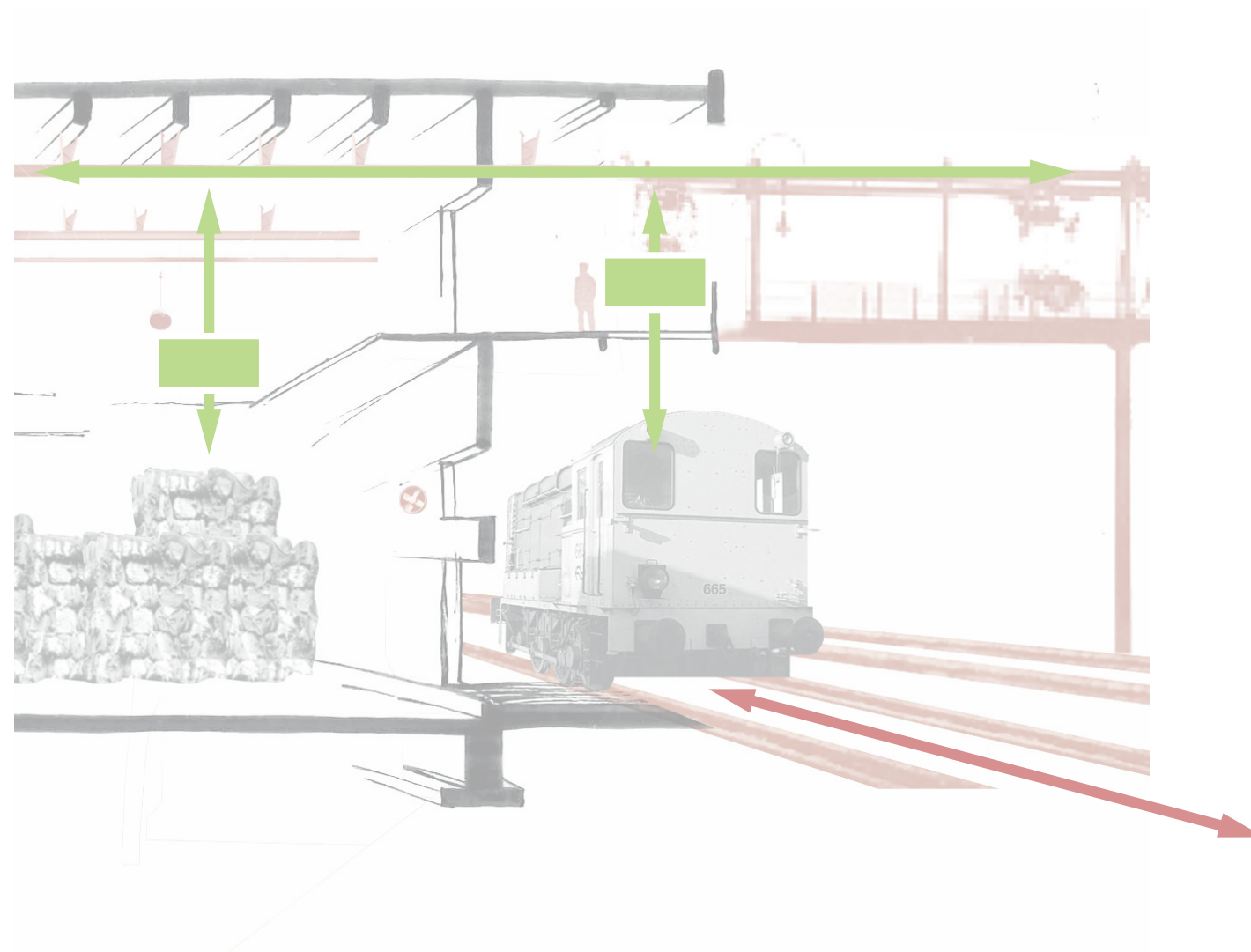
INTRODUCTION

The illustration above is a scheme of the original railway system of the Katoenveem. In this chapter the connection between the trains and Katoenveem, as well as the greater railway system the connected to the Katoenveem will be discussed. The railway system played in major part in the transshipment of cotton to the inland from the Katoenveem. The fact that the railway ran along the Katoenveem was a luxury for the

industry. The conveyor system was used to directly load the trains and therefore was a highly efficient way of moving the cotton to further destinations. The railway system had largely been demolished over time but some small parts of the system are still visible in the general area.

RAILWAY SYSTEM

■ railway system
[] details



loading cotton on to train (A) by Audrey Loef

CONNECTION WITH KATOENVEEM

The illustration above displays the connection of the railway system to the conveyor system of the Katoenveem. The cotton bales were lowered onto the trains through holes in the balustrade around the Katoenveem. The holes were placed in strategic locations for maximum connection with both the conveyor system and the trains. The workers would walk along the walk-

way to manoeuvre the cotton bales through these holes with the help of the conveyor system.

The trains would be parked under the balustrade, right next to the Katoenveem. On the next two slides a better understanding of what happened next is displayed by taking a look at the greater railway system that connected to the rails running along the Katoenveem.

LOADING TRAIN

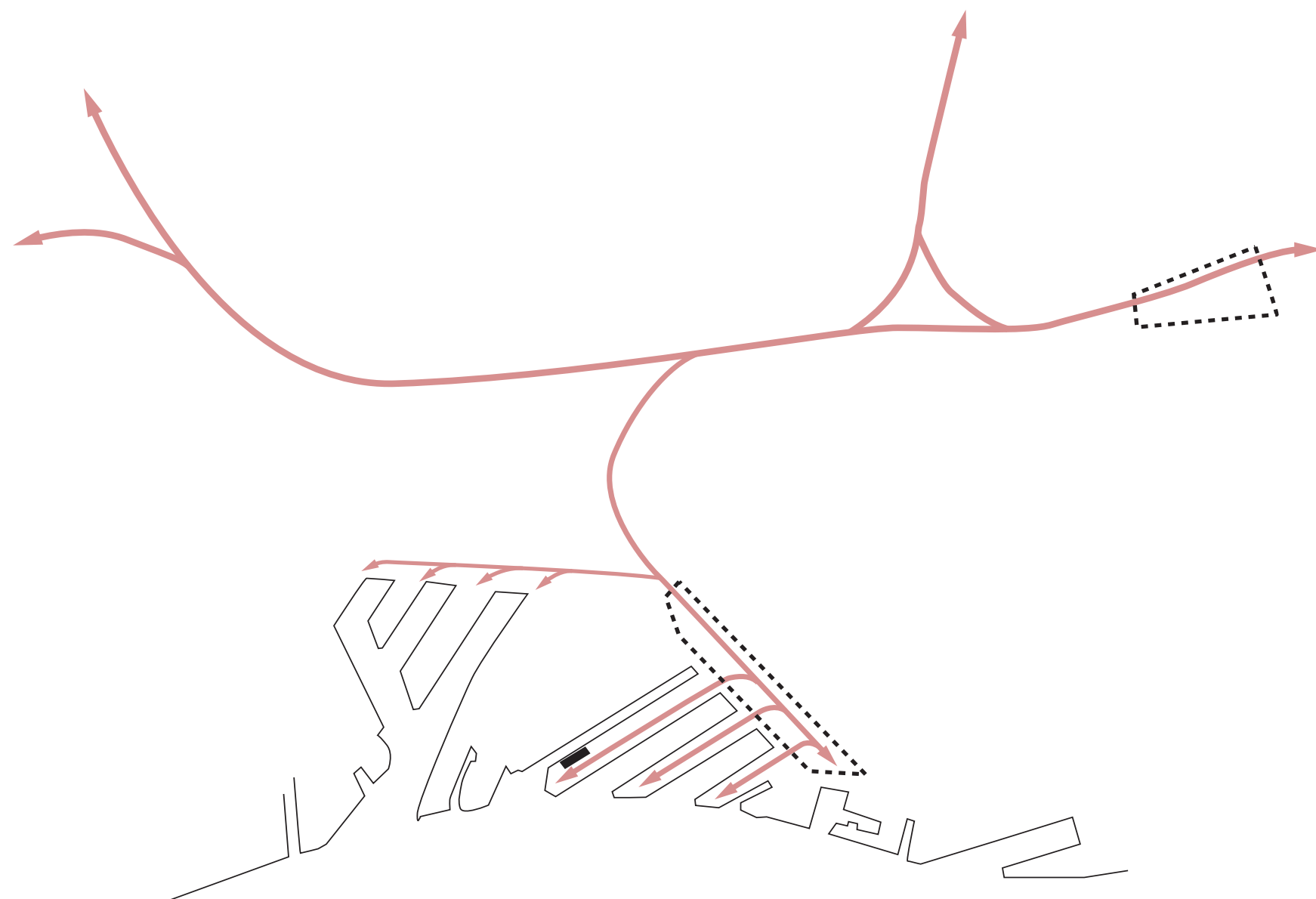
- conveyor system
- railway system



*remaining part of railway keilehaven
(photograph by Joost van den Berge)*



*goods-train used to transport Cotton
(image by Audrey Loef)*



railway system large scale (B)
(adaptation of illustration by Audrey Loef)

TRANSPORTATION OVER LAND

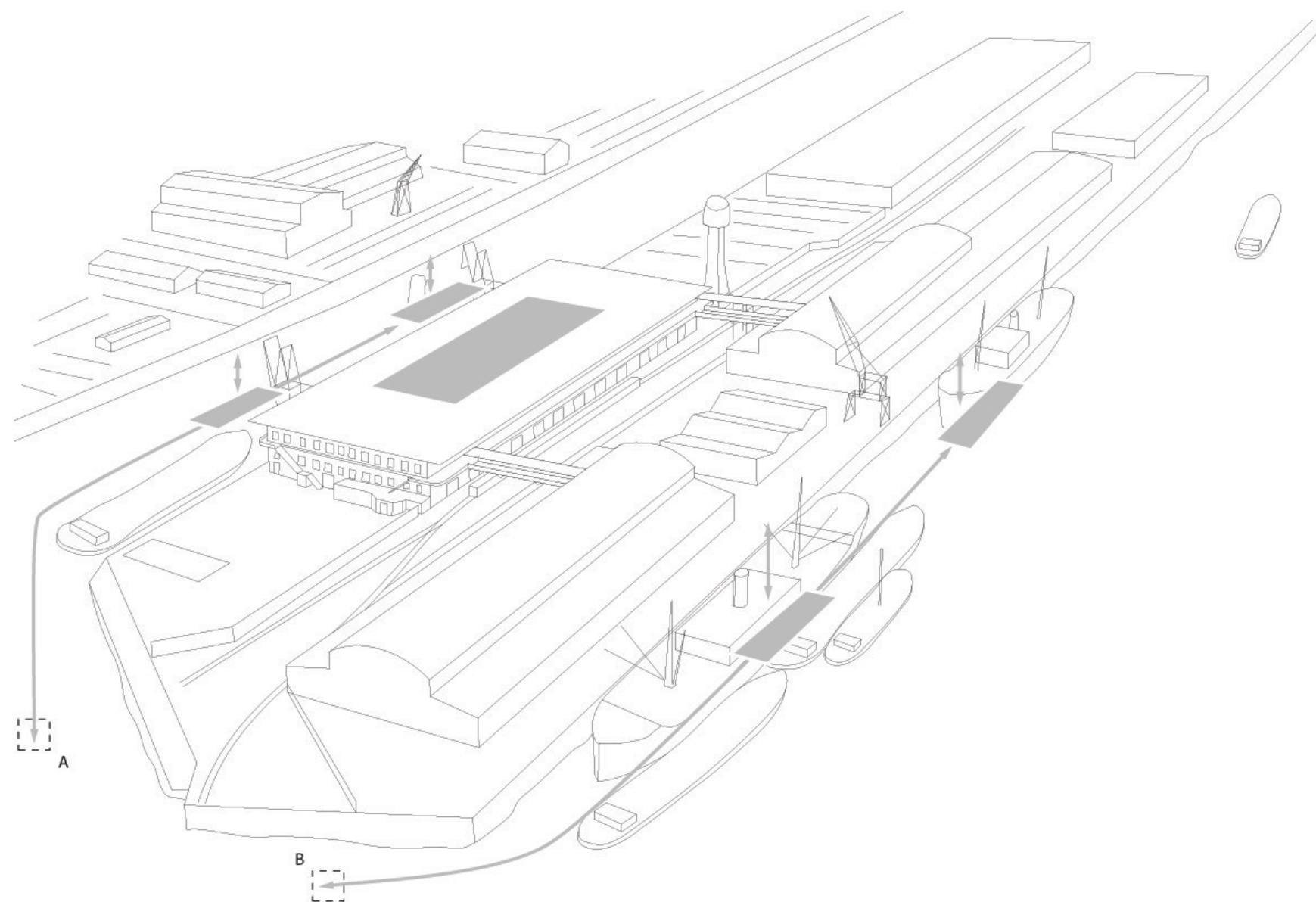
After storage of the cotton in the warehouse, transportation proceeded over land by goods-trains. These trains were traveling over a railway system along the harbour activity of the Maas River. It was the goods-railway system 'Havenspoorlijn Rotterdam West' which started to develop after negotiations from the municipality of Rotterdam between the Rijk and the Hollandse IJzeren Spoorweg Maatschappij (HIJSM or HSM)

to connect a harbour railway line onto the general passenger railway-line between Schiedam and Rotterdam. In 1908 this 'havenspoorlijn' route was opened. After both the Keilehaven and the Lekhaven were constructed, the building of a new emplacement started in 1914, from the Hudsonstraat (with a walking bridge) to the harbour area of the Vierhavenstraat. It was the emplacement of Rotterdam RMO (Rechter Maas Oever), shown in illustration 3. The goods-trains were now

able to reach the warehouses of Katoenveem and New Orleans and Galveston at the end of the Keilestraat. It was most likely that these trains were locomotives running on diesel oil. A part of the railway is still present at the site, as displayed on the page before. The image above displays the railway system at its prime in 1940.

RAILWAY SYSTEM

- katoenveem
- railway station
- railway system



ships system

QUESTION

How did ships bring cotton to the Katoenveem?

METHOD

By looking at the routes of the ships that brought in the cotton an understanding of their relationship to the system can be formed.

INTRODUCTION

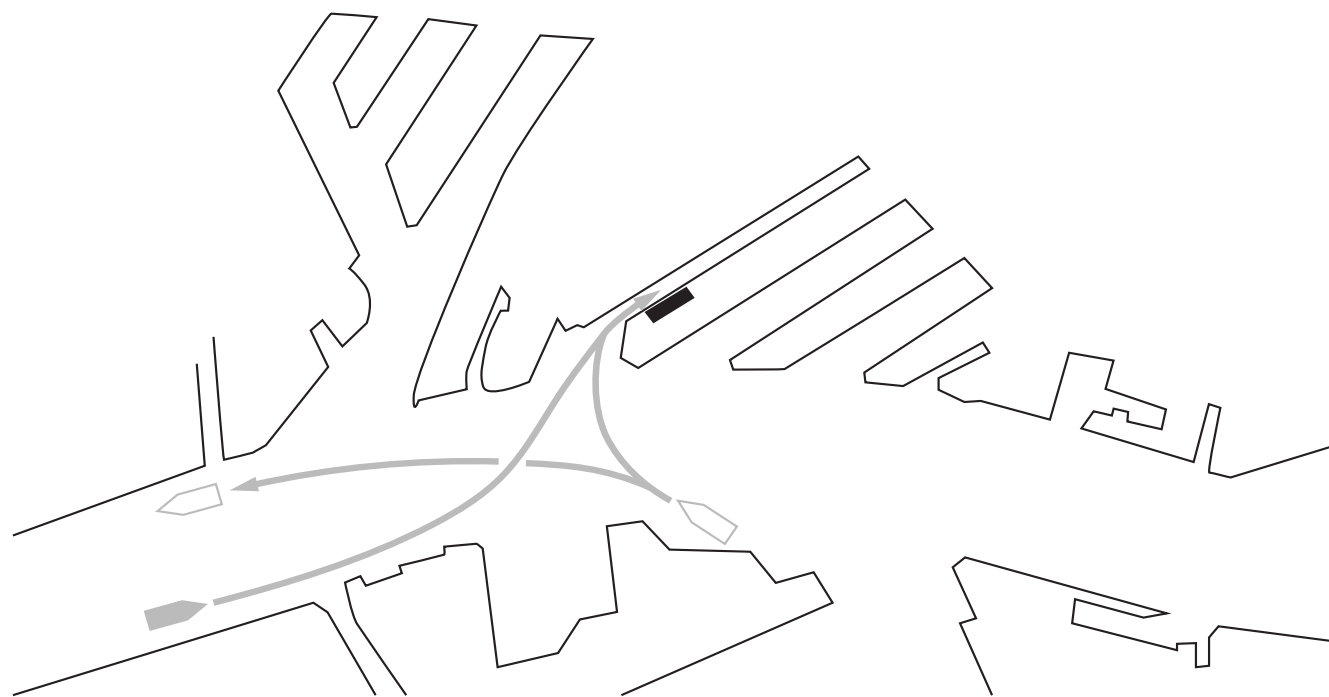
The scheme shows the two possible routes that the ships used to bring goods to the Katoenveem. Later in this chapter the diverse routings of the ships are set out. Cotton purchased in England was brought to Rotterdam for storage. The cotton input for Katoenveem Rotterdam had two routes. For bigger ships, they moored at Lekhaven on the south. Cotton was temporarily stored in the warehouse "New Orleans" and "Galvenston", then transferred to Katoenveem. For

smaller ships, they moored at the two piers on Keilehaven, where cotton was directly brought into the Katoenveem by cranes. Cotton was stored separately according to their quality and owners. A large portion of the cotton storage was transported to Germany and Belgium, partly by rail and partly along the waterways.

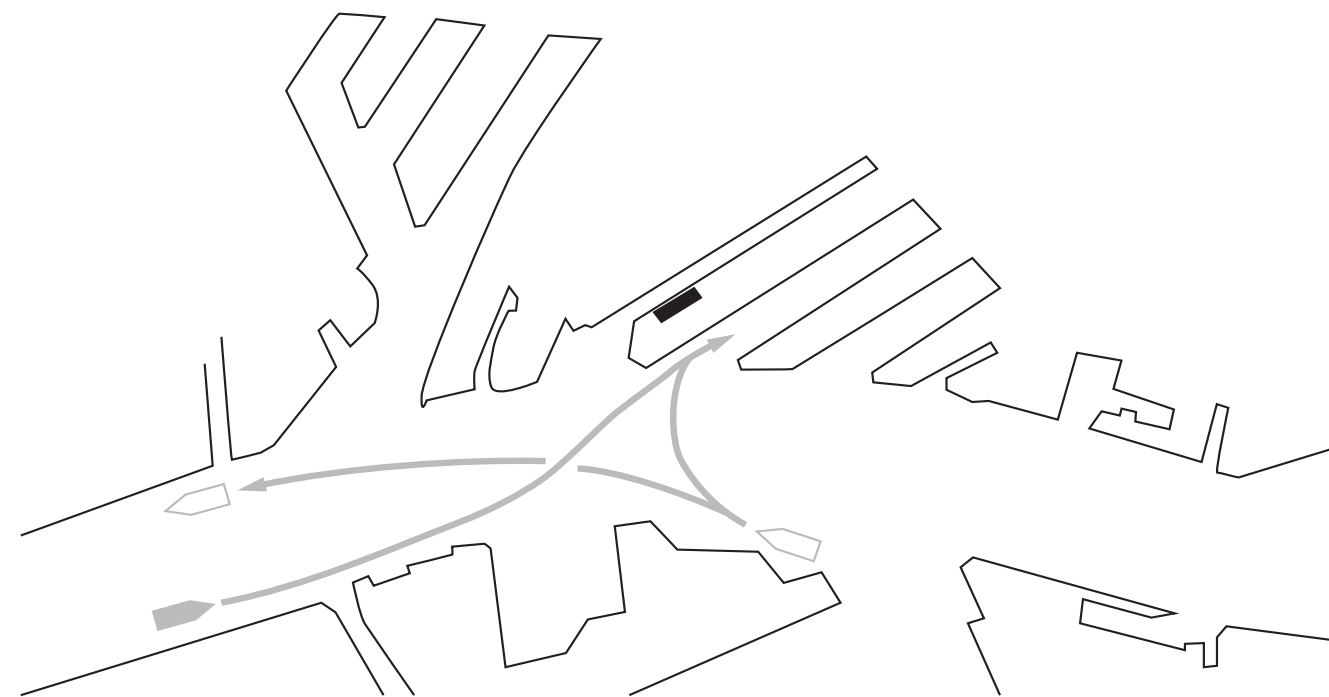
The next pages provide a more extended explanation of the routes the ships followed for import and export of cotton.

SHIPS SYSTEM

■ ships system
□ details



import small ships (A) by Audrey Loef
(illustration according to M. Enderman and R. Stenvert,
Bouwhistorische verkenning Katoenveem, Keilestraat 39 Rotterdam, Utrecht(2005), p 6-7)



import large ships (B) by Audrey Loef
(illustration according to M. Enderman and R. Stenvert,
Bouwhistorische verkenning Katoenveem, Keilestraat 39 Rotterdam, Utrecht(2005), p 6-7)

IMPORT

The two illustrations on this page display the two different routes chosen by the ships in order to import goods. The first images shows the import of cotton from England through the Keilehaven to the Katoenveem. The harbour is narrow and therefore only smaller ships could unload the cotton at this side of the building. The conveyor system would carry the cotton directly from the ships into the building as displayed

earlier in this report.

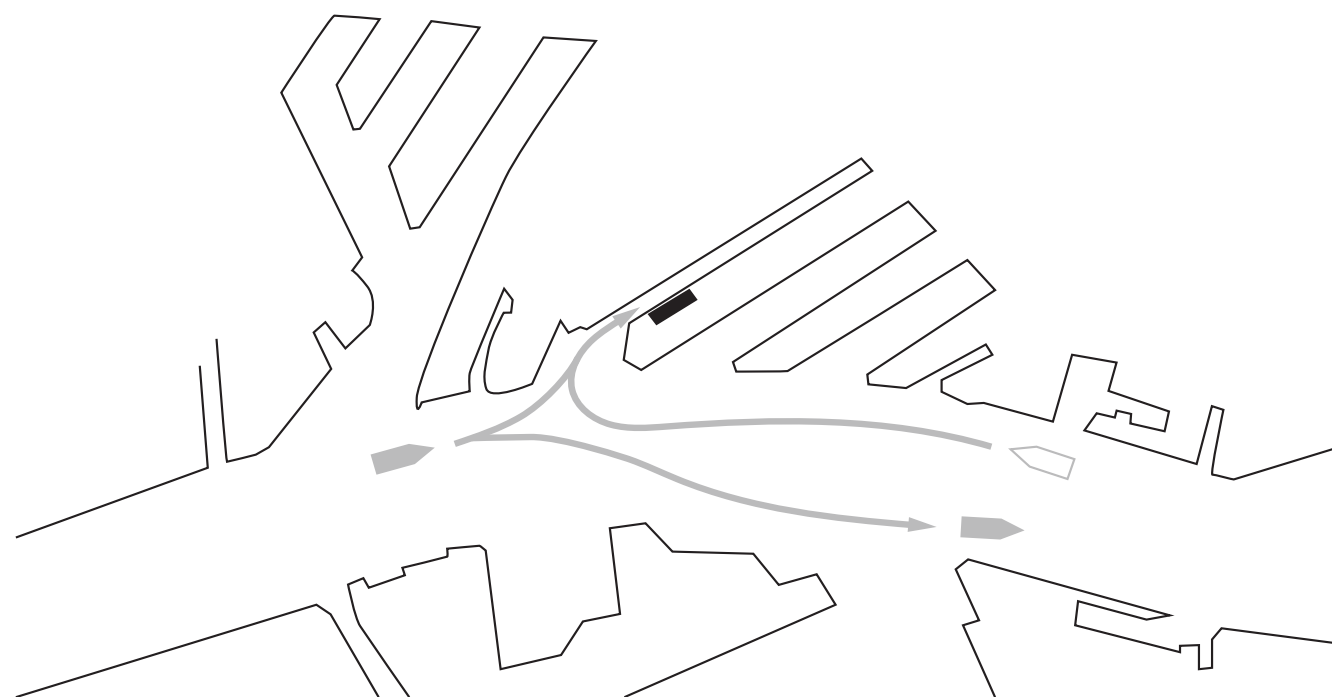
When larger ships would come in, mostly from England as well, the Lekhaven on the other side had to be used to bring in the cotton. The cotton would travel, again by conveyor system, from the ships in the Lekhaven through the Holland America Line warehouses (either the Galveston or the New Orleans warehouse), across the bridges, to be stored into the Katoenveem building.

IMPORT OF GOODS

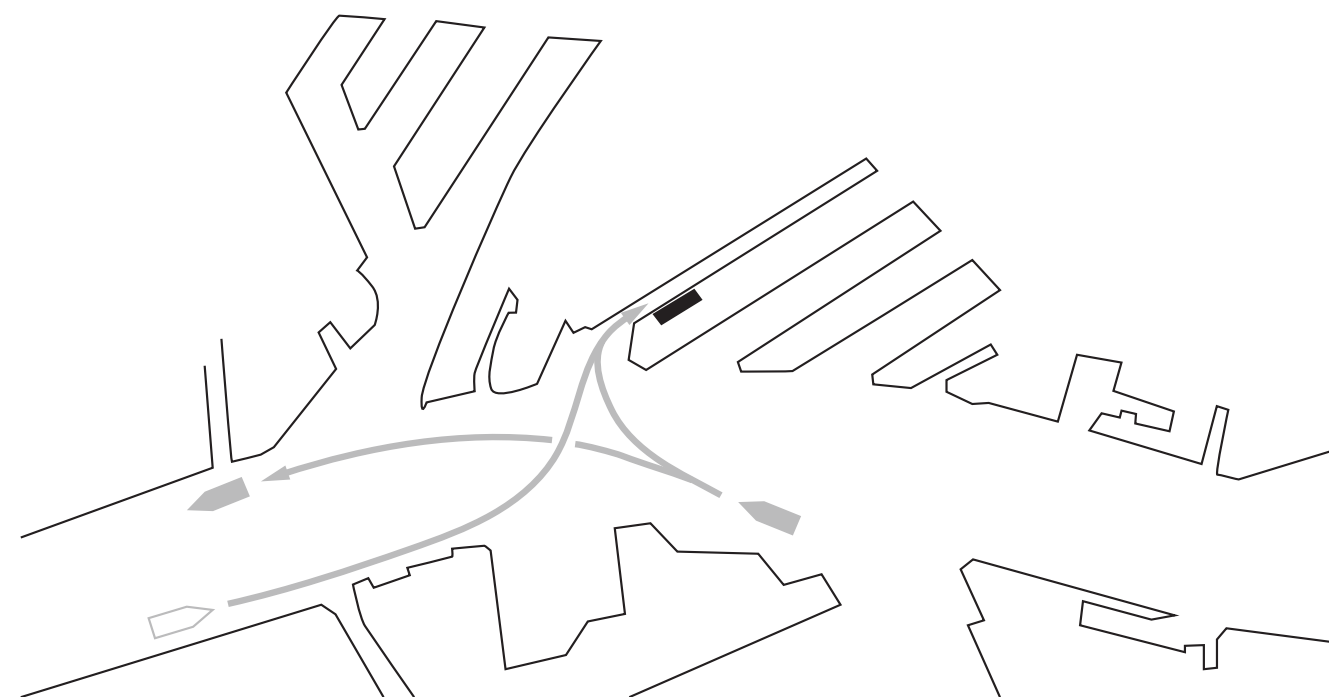
- katoenveem
- loaded ship
- empty ship



(un)loading of ships keilehaven
(Rotterdam archive)



export inlands (A) by Audrey Loef
(illustration according to M. Enderman and R. Stenvert,
Bouwhistorische verkenning Katoenveem, Keilestraat 39 Rotterdam, Utrecht(2005), p 6-7)



export overseas (B) by Audrey Loef
(illustration according to M. Enderman and R. Stenvert,
Bouwhistorische verkenning Katoenveem, Keilestraat 39 Rotterdam, Utrecht(2005), p 6-7)

EXPORT

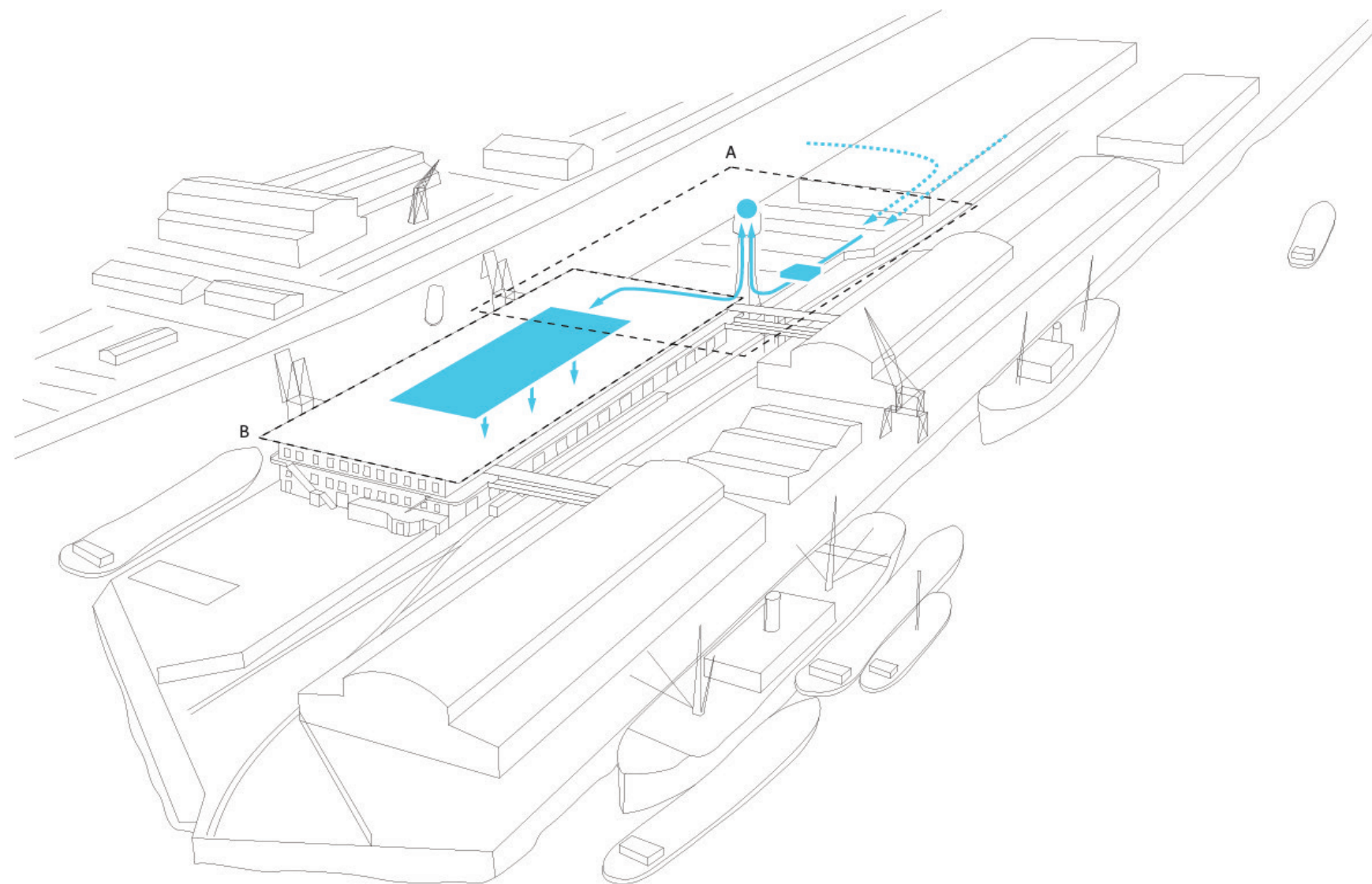
These illustrations display the two forms of export from the Katoenveem. Not only transport of cotton was done by trains. Sometimes the cotton that was brought in by a large ship was then brought through the conveyor system to a smaller ship that would take the cotton from the Katoenveem to the Keilehaven to the inland (as displayed in the first illustration of this page). This would mainly be the export to the German Ruhr area.

The second image is a bit different. The export from the Katoenveem through the Keilehaven to Belgium (Antwerp) or the German city of Bremen is displayed here. The small ships would come in empty and by loaded at the Keilehaven side of the Katoenveem through the conveyor system. Large ships would not conduct export of cotton. Or if they did, no stop at the Katoenveem was needed. The distances that still needed to be travelled were quite large and the easiest route was via

water in that time.

EXPORT OF GOODS

- katoenveem
- loaded ship
- empty ship



sprinkler system

QUESTION

How did the Katoenveem sprinkler system work?

METHOD

By looking at reports, the current situation and old photographs and idea of how the sprinkler system worked has been illustrated.

INTRODUCTION

The capital of the Katoenveem was budgeted initially at fl. 800,000. However the requirements by purchasing a sprinkler system (with water tower), the total increased to fl. 950,000. The sprinkler system was delivered from England in 1918. Katoenveem was one of the earliest buildings that was equipped with an automatic sprinkler system.¹

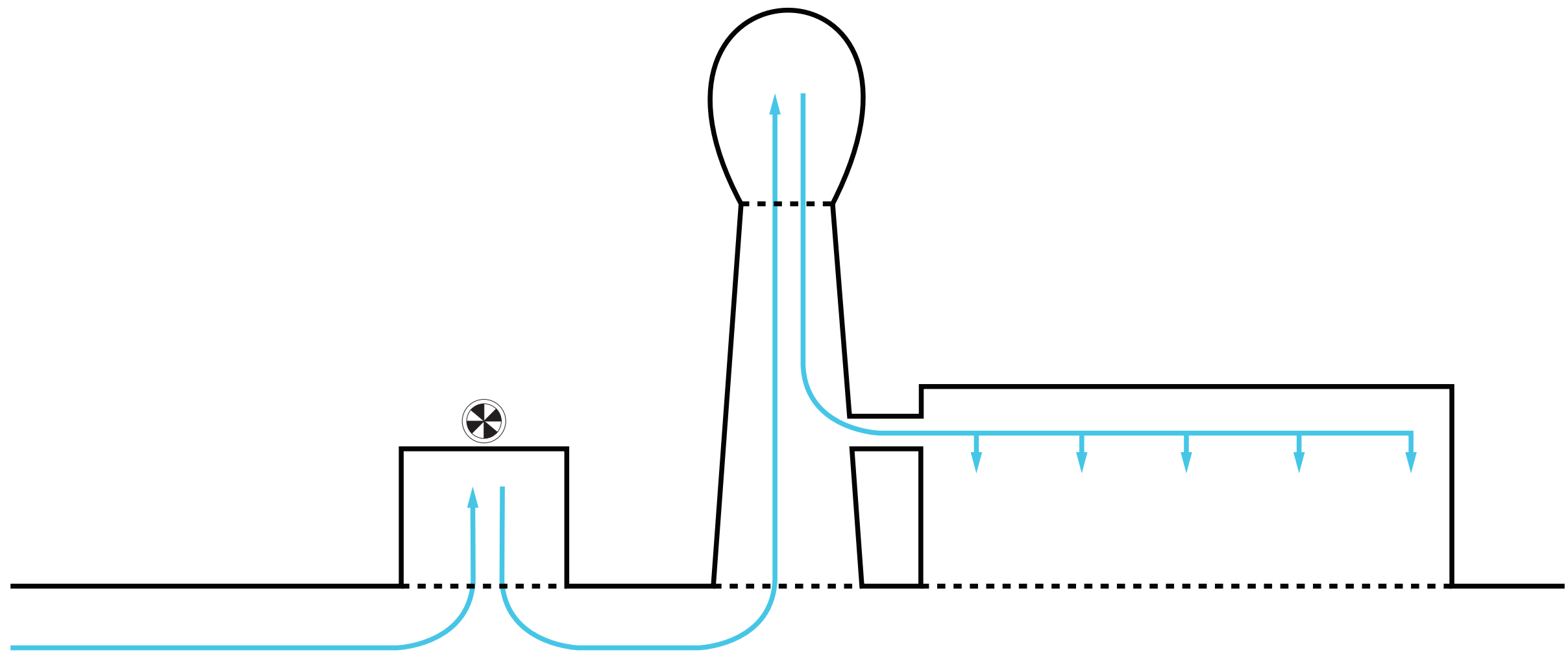
The first bales of cotton were recorded in May 1919 and immediately in that year, on the 5th September 1919, there was a heavy fire in the Katoenveem. On

March 25, 1921 the new sprinkler system of the Katoenveem was tested successfully. It got its first real life test in a fierce fire on December 6th, 1925.² The compartmentalisation of the Katoenveem proved efficient, both large fires that not spread and remained contained in one compartment of the building. The sprinkler system was no longer used after 1966 because of the demolition of the water tower.³

(1,2,3 M. Enderman and R. Stewart, Bouwhistorische Verkenning Katoenveem, Keilestraat 39 Rotterdam,Utrecht(2005), p8-9)

SPRINKLER SYSTEM

■ sprinkler system details



sprinkler system scheme

SPRINKLER SYSTEM SCHEME

The illustration on this page displays the way the sprinkler system works. The water is brought into the pump station (most likely from the Maas river). There the water is pumped up to the top of the water tower. The pressure difference in the top of the tower makes sure that the water is always levelled. From the water tower the water is brought in to the sprinkler system that

spreads the Katoenveem building. The system operates on two layers, which is shown in the plan on the next spread of the report. A water tower is an incredibly simple device. Although water towers come in all shapes and sizes, they all do the same thing: A water tower is simply a large, elevated tank of water. Water towers are tall to provide pressure, that way the water can be sprouted into the Katoenveem when necessary.

SPRINKLER SYSTEM

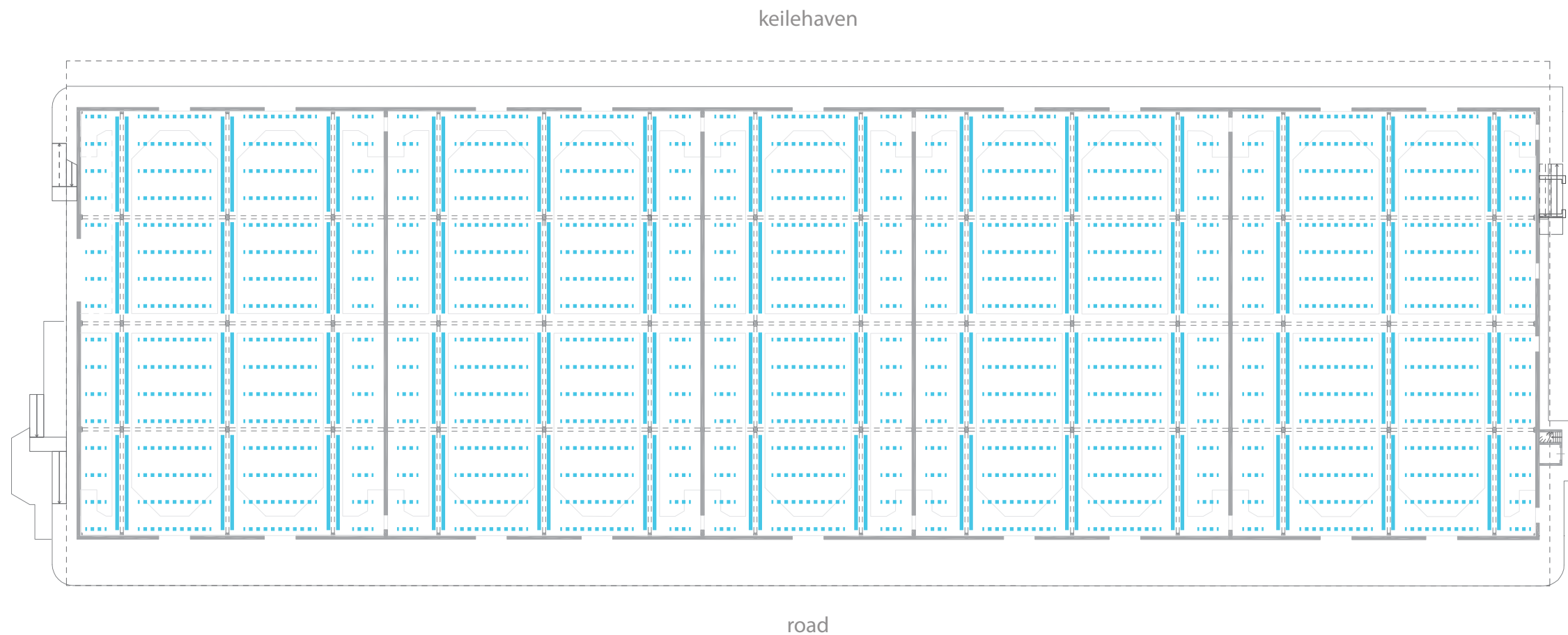
■ sprinkler system



water tower katoenveem 1920
(Rotterdam archive)



two layers of sprinkler system
(photograph by Xihao Yi)



sprinkler system plan by by Xihao Yi

SPRINKLER SYSTEM PLAN

This plan shows the location of the sprinkler system inside the Katoenveem. The system is divided into two layers to achieve maximum efficiency on both levels of the Katoenveem. The dotted lines symbolize the sprinkler lines that run underneath the roof of the building, while the normal lines display the system underneath

the walkways of the first floor. The photograph on the page before shows both layers of the system in one shot. Each compartment has the same sprinkler system. In combination with the compartmentalisation the system keeps fires from spreading in a high risk building (cotton is highly flammable). The system is designed in such a way that the building is protected to the best of

its abilities.

SPRINKLER SYSTEM

- sprinkler under first floor
- sprinkler under roof

CONCLUSIONS SYSTEMS

- | | | | |
|---|--|---|--|
| - | Contemporary reinstatement of historic systems required to up-hold value of Katoenveem | - | System of cotton transport is what every other aspect of the building was based upon. The systems trump the rest of the building's elements in value |
| - | Traces of conveyor system provide great insight in functionality of the building, therefore they should not be removed lightly | - | New systems could restore the value of the Katoenveem, not just use value, but also the historic value could be boosted |
| - | The structure, space plan, facades and systems all worked together as a machine for optimal funtionality | - | Loss of activity through deminished system needs to be revived |

VALUE

QUESTION

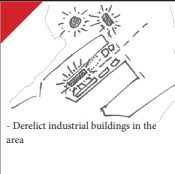
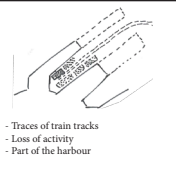
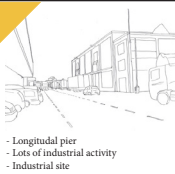

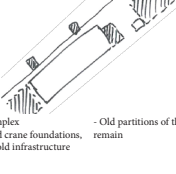
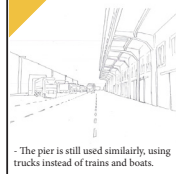
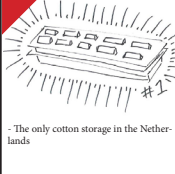

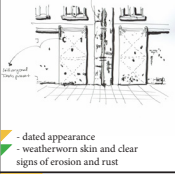
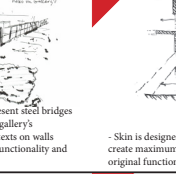
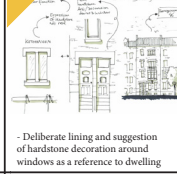


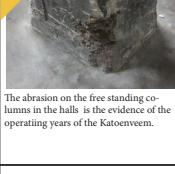
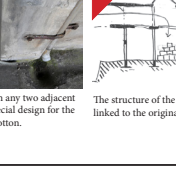
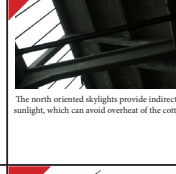
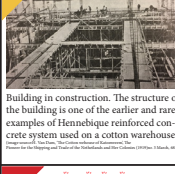
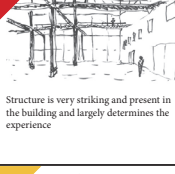
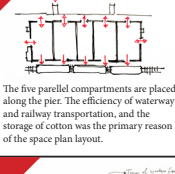
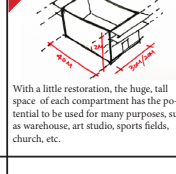
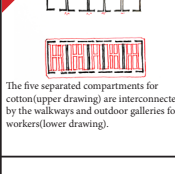
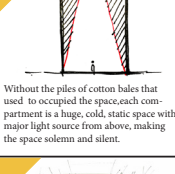

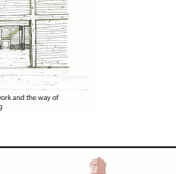
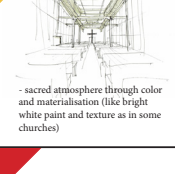
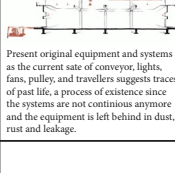
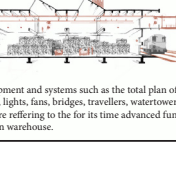
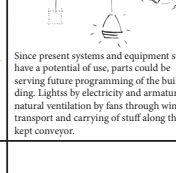
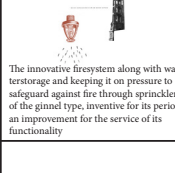
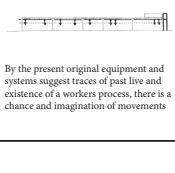
What cultural values are most important?

METHOD

By looking at the different aspects of the report and by making a list according to how valuable the different aspect are.

INTRODUCTION

The matrix showed on this page is the conclusion of the cultural value report of the Katoenveem group. More details on this matrix can be found in the cultural value group report. For this report a focus on the personal cultural value is more important. The system, site, structure, skin en space plan have all been discussed in this report. They are all part of the cultural value of the Katoenveem building. In this part of the report a list will be compiled that displays the hierarchy of personal importance of these cultural values. This hierarchy will be key in determining how to continue to process, and most importantly what to respect and where to focus on.

RIEGL X BRAND	AGE	HISTORICAL	USE	ART	RARITY	BELEVINGS- WAARDE
SURROUNDING SETTING	 <ul style="list-style-type: none">- Derelict industrial buildings in the area	 <ul style="list-style-type: none">- Traces of train tracks- Loss of activity- Part of the harbour	X	X	X	 <ul style="list-style-type: none">- Longitudinal pier- Lots of industrial activity- Industrial site
SITE	 <ul style="list-style-type: none">- Traces of removed buildings	 <ul style="list-style-type: none">- Traces suggest a complex- The two piers are old crane foundations, showing traces of an old infrastructure- Old partitions of the outside wall still remain	 <ul style="list-style-type: none">- The pier is still used similarly, using trucks instead of trains and boats.	X	 <ul style="list-style-type: none">- The only cotton storage in the Netherlands	 <ul style="list-style-type: none">- Strong harbour feed- Free space on either sides- Far view over the water
SKIN	 <ul style="list-style-type: none">- dated appearance- weatherworn skin and clear signs of erosion and rust	 <ul style="list-style-type: none">- traces of formerly present steel bridges and holes on skin and gullery's- still present original texts on walls and doors, which tell functionality and division- Skin is designed in order to create maximum usability for its original function	X	 <ul style="list-style-type: none">- Deliberate lining and suggestion of hardstone decoration around windows as a reference to dwelling	 <ul style="list-style-type: none">- Traces of steel decorative Katoenveem sign on roof/skylight of the building	 <ul style="list-style-type: none">- Repetition in skin is key factor in historic and contemporary experience the Katoenveem
STRUCTURE	 <p>The abrasion on the free standing columns in the halls is the evidence of the operating years of the Katoenveem.</p>	 <p>The dilatation between any two adjacent compartments is a special design for the inflammable goods, cotton.</p>	 <p>The structure of the building is directly linked to the original use of the building</p>	X	 <p>Building in construction. The structure of the building is one of the earlier and rare examples of Hennebique reinforced concrete system used on a cotton warehouse.</p>	 <p>Structure is very striking and present in the building and largely determines the experience</p>
SPACE PLAN	X	 <p>The five parallel compartments are placed along the pier. The efficiency of waterway and railway transportation, and the storage of cotton was the primary reason of the space plan layout.</p> X	 <p>With a little restoration, the huge, tall space of each compartment has the potential to be used for many purposes, such as warehouse, art studio, sports fields, church, etc.</p>	X	 <p>The five separated compartments for cotton(upper drawing) are interconnected by the walkways and outdoor galleries for workers(lower drawing).</p>	 <p>Without the piles of cotton bales that used to occupied the space,each compartment is a huge, cold, static space with major light source from above, making the space solemn and silent.</p>
SURFACES INTERIOR	 <ul style="list-style-type: none">- dated appearance- damages of use and cottonbale movement- weatherworn surfaces and clear signs of erosion and rust on walls, structures, doors and windows	 <p>Traces of wooden formwork and the way of construction and building</p> X	X	X	X	 <ul style="list-style-type: none">- sacred atmosphere through color and materialisation (like bright white paint and texture as in some churches)
SERVICES	 <p>Present original equipment and systems as the current state of conveyor, lights, fans, pulley, and travellers suggests traces of past life, a process of existence since the systems are not continuous anymore and the equipment is left behind in dust, rust and leakage.</p>	 <p>All original equipment and systems such as the total plan of serving as cranes, conveyor, lights, fans, bridges, travellers, watertower, pipes, sprinkler, cart and pulley are referring to the for its time advanced functionality of the building as cotton warehouse.</p>	 <p>Since present systems and equipment still have a potential of use, parts could be serving future programming of the building. Lights by electricity and armatures, natural ventilation by fans through wind, transport and carrying of stuff along the kept conveyor.</p>	X	 <p>The innovative firesystem along with waterstorage and keeping it on pressure to safeguard against fire through sprinklers of the gimel type, inventive for its period an improvement for the service of its functionality</p>	 <p>By the present original equipment and systems suggest traces of past live and existence of a workers process, there is a chance and imagination of movements</p>
STUFF	X	X	X	X	X	X

cultural value matrix by katoenveem group
(own illustration)

1 katoenveem system

- a conveyor system
- b railway system
- c sprinkler system
- d ships system

2 space plan

- a usability
- b compartmentalisation
- c orientation

3 site

- a complex traces
- b harbour feel

4 skin

- a maximum usability
- b strong repetition

5 structure

- a experience
- b close link to use
- c indirect sunlight

hierachy of highest rated cultural value

HIERARCHY

The Katoenveem system has been rated the highest because all other aspects of the building have been derived from this system and its use. The structure, space plan and skin have all been designed in such a way that they facilitate the system optimally. With the system the conveyor part and the resulting use are rated highest because it had the most influence on the design of

the original building. Of the high rated values the space plan is rated number 2 because of the close relation to the functionality of the building. The core of the Katoenveem is the fact that it is a purely functional building. Therefore the way an aspect of the building caters to this functionality is a high requirement to be valued high in the list. The open space plan is still very usable today and therefore sub-rated the highest. The other

aspects have been put in the hierarchy accordingly. To conclude there could be said that the original design, use, and purpose of the Katoenveem have been the main focus of the values. Further exploration for future redevelopment is still required in terms of personal possibilities and obligations.

PERSONAL FACINATION

- * since this is an update of the P1 report and not a P2, I've left the personal fascination the same for now
- ** towards the P2 a shift will be made to architectural phenomenology as fascination, of which the tunnel will merely be a tool

tunnels association				
- - hidden	- - underground			
- - connecting	- - secret			
- - hiding vs showing	- - transcendence			
- - achievement	- - routing			
- - from a to b	- - postponing			
- - surprise	- - vision			
- - focus	- - bridge			
- - light	- - labyrinth			

'tunnel' associations by Jan Huis in 't Veld
(own illustration)

TOOLS

This part of the report has been taken from the P1 presentation directly. Although I was told (and I agree) that there is no strong connection to the other research and analysis I wanted to include it nonetheless. This is the part where there needs to be focus in the next few weeks. I concur with the comments after the P1 presentation on this topic. The true meaning of what I want

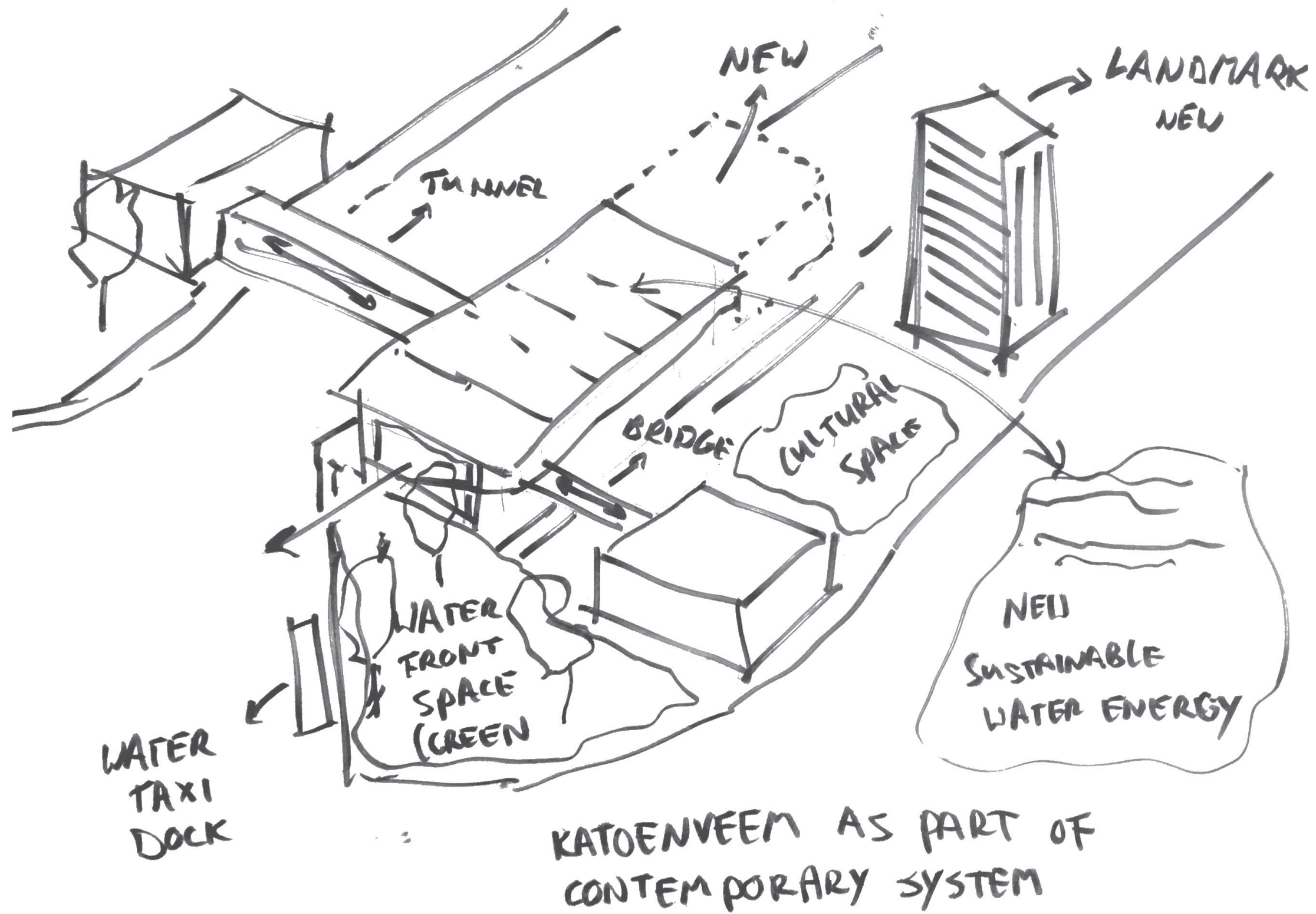
to achieve with this part of the research has not come to the surface yet. It is still in my head and needs to be put onto paper and made concrete. I have renamed this chapter tools, because the purpose is to acquire specific architectural tools for a future design. Tunnels does not describe the meaning of what I intend to create but since the P1 presentation there has not been time yet to create or redevelop a better way of showing my in-

tentions.



'tunnel' references by Jan Huis in 't Veld
(images from the internet)

FUTURE



sketch future by Jan Huis in 't Veld
(own illustration)