CONTENT

- RESEARCH
- RESEARCH QUESTION
- PROGRAM
- URBAN CONTEXT
- DESIGN
- BUILDING TECHNOLOGY
RESEARCH
HISTORY
The following maps show the development of water and buildings in Rotterdam, focused on the southside of the Maas and the areas around the Maassilo. The four analysed times show the area before the Maashaven was dug (1900), after the first phase of the Maassilo by Stok was built (1910), after the second phase by Brinkman & Van der Vlugt was built (1930) and after the third phase by Postma & Postma was built (1951). On the maps we see that the Maassilo was one of the first buildings in the south of Rotterdam and that with its expansion in building volumes and in harbour activity, the surrounding neighbourhoods attracted working people and grew as well.
HISTORICAL DEVELOPMENT
BUILDINGS AND WATER

1930 - Maassilo phase 2
Underlying map retrieved from TopoNederland.nl on 17 March 2017

1951 - Maassilo phase 3, after WO II
Underlying map retrieved from TopoNederland.nl on 17 March 2017
On this page, the movement of grain and workers through the building is made visible per building phase. In the first phase, the grain was transported into the building using mostly the west grain elevator. Two elevators transported the grain to the attic, where the grain was distributed among the silos. In the east part of the building, the grain was weighed and cleaned. The former entrance was located at the north facade. This entrance is not present anymore. In the second building phase, the horizontal transport was connected to the first phase, so the building worked as a whole. In the machine tower, machines were placed to weigh, filter and dehumidify the grain. An extra entrance with a rounded wall was added, an interesting detail that is not present anymore. In the third phase, two extra silo clusters were added.
ACTIVE ENSEMBLE
BUILDING FUNCTIONS

The functions within the Maassilo are pretty much all build up the same way in each phase. The basement and groundfloor of the buildings are used to transport grain horizontally as well as allow workers to move about and have access to the funnels, machines and train tracks. The middle “floors” of the building or in the case of the Maassilo the slots take up the most space in the building. The top floor of each building phase gives room to distribute grain to the slots and also for workers to adjust the grain pipes and have a place to the machines. As for the two vertical exceptions, they are used as resting areas for the workers as well as storage and other activities such as washing grain. The office and former dwelling were situated over the water due to the lack of space on the site.
The industrial areas have shifted over time from being near the center of Rotterdam and Rotterdam south to the west side. This happened due to the fact that the residential areas were expanding and the complaints about different kinds of pollution kept increasing. Resulting in the movement of industry away from Rotterdam and leaving behind the old industrial buildings/areas. Which over time created a big contrast between the newly build low rise residential areas and for example the Maassilo with its monolithic concrete mass. This movement created an icon out of the Maassilo which now looks like a remnant of the past and a little out of place which makes it really special. The whole ensemble shows the development of harbour activities in that area that are now slowly but clearly fading away.
Creative Factory new main entrance 2008

10th floor party 010 factory 2008

Danceclub Now & Wow, door publiek en pers uitgeroepen tot de beste club van Nederland

Groundfloor removing and adding columns and fortifying floor for Now & Wow 2004

CHRONOMAP - 2008
ANALYSIS
Directly connected to the creation of the Maashaven and defining its southern edge, the Graansilo acted as the generator of the southern working class neighborhoods of Tarwewijk and Bloemhof.

In this context, the building assumed a central pivotal role towards the city and harbour, also acting as a 'gate' between north and south.
Being strictly defined by the arteries of Maashaven Oostzijde and Brielselaan and bordered by the railway, the building becomes clearly separated from the eastern neighborhoods of Bloemhof and acts as a northern terminal (yet abstracted) for the southern district of Tarwewijk.

Sectional relationship with Tarwewijk

Maashaven Oostzijde and waterfront profile
**TWO-FACED**

The main linear layout of the building is closely related to its position towards the Maashaven and the former railways. The result is that the building has two long facades, each with a particular relation to the public space. The public space on the south side (left in the section above) has a strong linear character and is enclosed from both sides. The repetition of concrete columns in the facade enhances this linearity. In terms of scale, the building has an ambivalent relation to this public space. On the one hand, the human scale is introduced through the so-called "plofroosters", the concrete ornament tiles in the lower part of the facade. On the other hand, the division in two parts, mirrored in the high bridge in the middle, imposes a colossal scale.

The north side of the building is perhaps a more challenging public space, mainly because of the distance to the water. The space is narrow, certainly in relation to the height of the building, and is completely cast in shadow. The original elevator constructions block the view towards the Maashaven, and so the space is now used for parking. The facade does not have an articulated expression of the human scale as the south facade has. The result is that the building becomes inconceivable. Its totality disappears because of its swallowing scale in relation to the narrow public space.

Both facades have one thing in common, they completely conceal their interior. The relation between inside and outside is almost non-existent in the Maassilo, certainly in this section.
CONCRETE APPEARANCES

From the urban and site scale, the building is conceived as a monolithic mass of concrete. At a closer look however, the concrete has multiple appearances in the Maassilo. These appearances point to the developments in the economy of the building, the different stylistic choices of the architects and the development of the material itself. All these appearances have their own texture, scale, and relation to the observer.

concrete tiles - part 4 (Haan) - rational - indifferent - sober
hollow concrete stones - part 1 (Stok) - tactile - human scale - contingent
plastered concrete surface - part 1,2,3 - damaged - inconceivable scale - worn
plofroosters - part 3 (Postma) - lively - human scale - active - transparant
LACK OF HUMAN SCALE
CONCRETE MOLOTHIC FACADES
In the original situation, daylight penetrated the concrete mass, in order to provide a more pleasant working environment for the workers. Obviously, the silos were completely dark on the inside, in order to protect the grain from growing into little plants. The bundled rays of light, together with the rigid lines of columns must have been a powerful spatial interplay. Unfortunately, little historic photos can be found to verify this. However, an impression can still be found on the seventh floor in the Stok building part, see image to the right.

In the current situation, many of the openings in the facade have been closed off, mainly in order to prevent noise pollution coming from the disco. This disco completely inverts the system of light penetrating the building. In the current situation, artificial coloured light and laserbeams come from the very center of the building and shine on the inner surfaces of the building. seventh floor building part Stok - current situation

daylight current situation
SILO VOLUMES 71%
URBAN CONTEXT
conflict
The two-faced character of the Maassilo and its historical relation with the public space and infrastructure have historical significance. On the other hand, they form a barrier that makes it difficult to connect the southern districts to the harbour area north of the building.

opportunity
The Maassilo could be treated as a gate, mediating between two different stages of development and help gentrify the districts with a low social standing.

OBLIGATION
The areas north and south of the Maassilo have completely different characteristics and show opposite states of socio-economic development. If the aim is to develop the workers’ districts to the harbour area, the right balance must be sought between connecting the two neighborhoods and respecting their historical separation. The Maassilo, historically connected to both the districts and the border itself, plays a key role in this respect.
Zuidvruchten kweken
Over de betekenis van kunst en cultuur bij de uitvoering van Pact op Zuid
Research Questions

How to redesign the Maassilo into a museum?

How to cope with the lack of daylight without decreasing the cultural value of the facades?

How to deal with the silo structure and potentially enhance its architectural value?

How to use Art&Culture as an instigator for urban social growth?
CONNECTING NORTH AND SOUTH
CULTURAL ROUTE - DEVELOPMENTS
CULTURAL ROUTE - ZUIDPLEIN
CULTURAL ROUTE - TIDALPARK
PROGRAM
museum needs

- Lighting
- A/C
- Sizes
- User experience
- Exhibition space
- Daylight
- Routing
VALUES
MAIN REDESIGN ASPECTS TO CONSIDER

BOLD STATEMENTS

URBAN CONFIGURATION  ENSEMBLE VISIBLE  PUBLIC/PRIVATE  READABILITY/CONCEALMENT
ESSENTIAL ARCHITECTURAL ASPECTS

VERTICAL SILO STRUCTURE

SILO GRID

WEATHERED CONCRETE FACADES

INTROVERT CHARACTER

NO HUMAN SCALE

ORIGINAL FUNCTION
ENTRANCE CONCEPT

CURRENT

INTERVENTION STREET LEVEL

INTERVENTION BASEMENT LEVEL

PRIVATE CHARACTER

PUBLIC CHARACTER

PRIVATE CHARACTER
CYCLING/PEDASTRIAN ROUTES REMAIN
MASTERPLAN 1:1000
SECTION NEW ENTRANCE 1:500
SOUTH FACADE CHANGES
TRANSITIONS TO ENHANCE THE DIFFERENCE
DIKE
CURRENT AND SOLUTION

The effects of climate scenarios on the location

The Dike integrated in new and old buildings

Locaties profielen
CASE STUDY SECTIONS

Technical profiles

1- Dike in new building

2- Dike around existing building

3- Dike integrated in existing building

Illustration: DE URBANISTEN & OWN ADJUSTMENTS
CURRENT DIKE POSITION 1:500
NEW ENTRANCE ON SOUTH SIDE 1:500
SECTION/STREET PROFILE 1:500
INTERVENTION
SILO CHALLENGES

1. Vertical silo structure
2. No daylight entry
3. Repetition/grid
CURRENT BUILDING PLAN & SECTION 1:500
3D IMPRESSION - VOID/DAYLIGHT BRINKMAN PART
STOK SILO’S
HOLLOWING OUT THE STOK SILOS - APPROACH
DAYLIGHT ENTREE THROUGH VOIDS
VERTICAL ROUTING CONNECTION/CENTERPOINT
DAYLIGHT AND CONTROLLED LIGHTING
THE MAASSILO
VERTICAL ROUTING
3D ROUTING THROUGH THE BUILDING
IMPRESSION STOK 1E FLOOR ART
BASEMENT FLOORPLAN 1:500
VIEW FROM TOP NORTH FACADE TO KOP VAN ZUID & KATENDRECHT
BUILDING TECHNOLOGY
BEAUTIFUL IMPERFECTION

kintsukuroi

(n.) (v. phr.) "to repair with gold"; the art of repairing pottery with gold or silver lacquer and understanding that the piece is more beautiful for having been broken.
KINTSUKUROI NORTH FACADE
KINTSUROI NORTH FACADE
EXAMPLE KINTSUKUROI NORTH FACADE
ROOF-SKYLIGHT STRUCTURE
The silo capacities show really well what this structure can handle in terms of loads and also shows with it sheer number of tons how massive this complex really is in terms of cubic meters of space. 86,000,000 KG of grain could be stored in the Maassilo making it Europe’s largest grain storage facility when the three phases were completed. To give some kind of scale to that gigantic number, an full grown elephant weighs 6000 KG. So that would mean that the building could house 14,333.3 elephants in the building, which could also be translated to housing floors on top of the Maassilo because it is no longer used as a storage.
REUSING THE SILO STRUCTURE
LIGHTING SET UP 1:30
CLIMATE ZONES

zone 1

zone 2

zone 3
CLIMATE ZONE 1

zone 1

metal (iron, copper, lead, zinc and silver)

temp: min. : 2 C  max. : 25 C
RH: <45%

no lumen

sculptures (stone)

temp: min. : 2 C  max. : 25 C
RH: <45%
CLIMATE ZONE 2

zone 2

unprocessed leather, wood, painting on canvas, panel painting, Chinese lacquer, bone, horns, pearl, toys, rubber, fossils, skeletons and chalk.

temp: min. : 2 C   max. : 25 C
RH: 52+/-3%
max. 150 lux
CLIMATE ZONE 3

zone 3

office/culture centre

temp: min. : 2 C  max. : 25 C

RH: <45%

no lumen
AHV’S VENTILATION UNITS