SUMMARY

This report presents the analysis and findings of the research within the framework of the RMIT studio at the TU Delft with specific subject of interest a redesign proposal for the complex of the former artillery warehouses of Holland and West Friesland in the historical center of the city of Delft.

The conducted investigation is conducted through a very specific point of view which is defined and elaborated at the introduction of the report as a research question. Aim of this report is to reach certain conclusions that will support the further investigation of this research question. Furthermore, as a final result of the whole report is considered the value assessment which will comprise a solid foundation in order to define the starting points for the upcoming redevelopment proposal.

Structure

The report follows the following structure: At first the studio theme, the research question and the employed methodology are introduced in order to set the framework of the presented analysis. Then follow the three main sections, the urban, architectural and building technology analysis, were all the findings of the research are presented. In the end, conclusions are drawn related to the different scales and to the RQ. Finally the value assessment is presented.

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1. INTRODUCTION

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INTRODUCTION

The assignment is defined within the framework of the overall context and research aims of RMIT and covers a new design proposal for the building complex of the former artillery magazine of Breda and West Friesland. This research is centered on the core of the city of Delft. The final objective of this research is to redefine the complex as a site worthy of architectural and cultural relevance.

The origins of the "Artilleriemagazijn" can be traced within the urban space - after the recent loss of its core function, it managed to adapt appropriately and ended only in 1989, defined the current form and use of the space.

Several observations and conclusions are presented in this report.

Research questions (RQ)

1. The former "Artilleriemagazijn" building complex along with its enclosed open space - in the recent loss of its core function, it managed to adapt appropriately and ended only in 1989, defined the current form and use of the space.
2. Observations on the distribution of the different functions in its southern part. Schematically this could be represented as the dichotomy of the city center by its intense activities and vivid use of space.
INTRODUCTION
scenario 1 _ destination

The 'Artilleriemagazijn' as destination

This scenario is consistent with the current character and situation of the building complex as an ending point on the edge of the inner city. The introduction in the scenario is consistent with the opening space of the complex as a zone that corresponds to the problem prevailing in the entire part of the inner city. Consequently, a connection within the current public and the slightly private parts of the city center will be introduced. The aim is to ensure the original character of the area but transform it to some extent, thus characterizing this scenario as the prevention of the former reference to the complex and of the enclosed character of the complex.

scenario 2 _ passage

The 'Artilleriemagazijn' as passage

This scenario proposes a radical change regarding the current character of the complex. As in the previous scenario, the regeneration of the open space in the complex introduces a new connection between the active and the idle part of the city. However, in this case, this connection does not end in the former 'Artilleriemagazijn' building complex but instead is surpassed in order to reach the opposite side of the barrier. Consequently, the enclosed character of the open space is completely altered as it is transformed to a passage, while the dominant threshold between the inner and outer city is attenuated at this point.
The ‘Artilleriemagazijn’ as connecting point

While the aforementioned scenarios propose two contrasting opposing opinions, one that completely conforms with the current situation and one that is radically altering it, the third scenario refers to a radical transformation of this configuration. Extensive research and profound analysis of this concept. The complex is converted into a scenario to accommodate the relations between the two disconnected areas while currently unoccupied premises and all enclosed areas in order to accommodate this concept without sterilizing its identity and coherent tangible and intangible values.

Methodology

The methodology employed during the research was not completely defined from the beginning, but instead there was a variation in the methodologies and conditions measured at the onset of the analysis until the conclusions were to be drawn. The research process involved a broad scale in order to become aware of the amount and experience of the complex and its surrounding environment in providing it from a more distinct point of view. Researchers identified about taking or characteristic elements are collected, which will be evaluated in the research process.

The research centered at the level of the entire site in order to comprehend the identity of the location, its role in the ‘urban whole’, and finally connect the scale of the city and area at the scale of the region. Cartographic and empirical mapping of the current state is conducted in order to produce almost skits representing the hierarchy and conclusion. The findings are compared with the processes and features that determined the current state. In this part, therefore, regarding the history of the site and its development, it will come to a different scale within each scenario in order to assess a possible boundary spanning the continuous and discontinuous features of the building and the urban context both in the scale of the city and the neighborhood.

Before the closure of the research process the outcomes are analyzed and the research section was concluded.

At this point the parameters identified in the complex are correlated to the conclusions of the previous research. The research section is described in detail in this proceeding. Consequently, the research approach analyzed the patterns and suggested subjects focused on this specific research question.

The research was conducted with the architectural analysis of the complex and of the separate buildings. A part, documentation was used in order to comprehend the historical development of the complex. A historical and spatial timeline was illustrated which indicated all the phases in the development of the complex and the factors and events related to them. In this analysis, land use correlations regarding the architecture of the complex and its open spaces, and attempted to identify the most representative configurations of the scenario.

Through these conclusions possible correlations between the urban situation and the architectural and the complex and the three investigated scenarios set by the RQ are sought. Subsequently the basis is set for the analysis of the current state of the complex as a comparison of more or less a flat plan. At this stage the focus is on the open space shaped by the building while the internal layout of the building is not taken into consideration at all. A more thorough analysis follows the four open spaces of the complex that identified and explained according to the previous scenario. Through plans, sections and perspectives views the site, scaled quality and testing are compared. Conclusions are drawn about the potential values of each of them in the complex and the neighborhood. The focus of the research is related again with the RQ and the site to define the relations between the qualities of these spaces and potentially after the potential scenarios.

The architectural analysis continues with the research of the existing spaces of the complex. At this point the analysis of the existing spaces of the complex and of the role of each of them in the complex and their sequence. Regarding the integral reintegration of the building and the surrounding area, both in the scale of the city and the neighborhood.

Based on the formulated research questions and the three possible scenarios the formulated research questions are defined and a specific perspective. Illustrations of the research proposed in this report is to follow the relations between on specific concept regarding the integral reintegration of the building in the urban and the project, and the limits of the scenario that the complex can undergo in order to accommodate this concept without sterilizing its identity and coherent tangible and intangible values.

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The analysis in the urban scale is very significant as it sets the foundation on which the investigation will be based in the further scales. The aim is not to produce just a collection of maps and diagrams presenting information about the characteristics of the urban fabric, but to understand why the urban fabric is the way it is. To gain a comprehensive understanding of the urban space, it is crucial to identify the reasons behind the provided data. Therefore, it is essential to comprehend the sequence of the social, economical and historical events and to reveal the way in which they were realized in the urban space. All this research contributes into understanding the origins of the 'Artilleriemagazijn' and its interaction with its context through time. Therefore, a significant part of the urban analysis is focused on the historical development of the area in which the 'Artilleriemagazijn' was founded, always in relevance with the development of the whole city of Delft.

**Historical Development**

- **historical data**
- **interrelation of the development of the canal network and the expansion of the city**
- **urban context in city and neighborhood scale before the construction of the 'Artilleriemagazijn'**
- **the 'Artilleriemagazijn' within the context of the inner city**
- **relation with its immediate surroundings**

Subordinated by the theme of the 'redevelopment' the resulting findings and conclusions are very significant in order to identify the reasons that led to the isolation of the complex from the city life. Comparing the current conditions with previous periods can provide an insight of a successful redevelopment proposal.

**RELATION TO RQ**

The urban analysis at first level is very significant in order to define and articulate the research question. It reveals the problematic conditions that the 'Artilleriemagazijn' is facing in terms of consistency with the urban fabric and life and gives motivations for a further research in all the scales, that will define completely the causes of the problem and that will lead to a justified redevelopment concept.
The devastation of a major part of the city was catastrophic for the development of the city. Until then the city was surrounded by a reinforcement, formed by earthen and the surroundings to the city. Until then the city was unprotected. Philip the Good donated the countal court with Market square. After Count Albrecht of Bavaria had occupied the city the city received its city franchise from the Dutch Earl Willem II. After a century of gradual extensions in the southwest and one in the east the city acquired its characteristic outline which would persist until the 19th century.

**Historical summary**

The oldest sources related to the origin of Delft date from 1100. It is said that the city was founded on the basis of a canal, which formed a bow to the market, while it was released through the dominant orthogonal pattern of the town. An overview of the evolution of the city shows how the origins of the 'grachten'/canals (and their precursors) coincide with the urban development of the city. The necessity of buildings suitable to accommodate this role of the city resulted in the erection of the 'Artilleriemagazijn'. The designation of Delft as the 'Armory of Holland' was another significant aspect that defined the military character of the city. The urban jurisdiction of Delft expanded to the West in 1268 with the addition of two new areas, one in the southwest and one in the east. In 1355 after the addition of two new areas, one in the southwest and one in the east the city reached its definitive outline which will remain until the 19th century.

The Artilleriemagazijn, which is a large rectangular block, which together formed long strips. The topography of the land, also significant aspects that defined the urban layout of Delft through the ages. The main water streams were determined for the conglomeration and the consolidation of Delft through the ages. The main water streams were determined for the conglomeration and the consolidation of Delft through the ages. The main water streams were determined for the conglomeration and the consolidation of Delft through the ages.

**Urban development of Delft**

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- a canal was delved making use of a natural creek in the marshy country.
- it served for draining the land at both sides and later also as a waterway for transport.
- the original Delf was from that time on called Oude Delft (Old Delft), as it is still today.
- a second canal was dug, called the Nieuwe Delft (New Delft) it went right through part of the settlement that had grown in the meanwhile.
- the canal was called "Delf", later on "Delft", from the word "delven" that is akin to the verb to "delve" in English.
- the narrower "grachten" which are perpendicular to the main "grachten" are the remnants of former ditches that drained and bordered the pre-municipal meadows.
- the urban development of the city of Delft and of its surrounding area is intrinsically interwoven with the shaping of the canals.
Urban configuration in 1581

At the time, the city was experiencing a very prosperous period, with the headquarters of William the Silent, who was the commander of the Dutch army, located in the city. The city walls and fortifications were already in place, and the city was expanding beyond the original walls. The city had seven gates, five of which were water gates and two were portals, which controlled the entry and exit of the settlement. The eastern reclamation of the city took place from the north, following the direction of the block separations and the allotment from the city area towards the east. The area was not structured in the early stages, and there were no domain structures. The city was in its formative stages, and the city walls were gradually built up from the north-west to the south.

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The Artilleriemagazijn within the Inner City

Functional and spatial interrelations

- Besides, the majority of the designated residential zones in the suburbs, the transitional part of the inner city is also marked by the majority of the designated residential areas.
- Most of the public functions are evidently attached to the market square and the south-eastern part.
- The west zone, which is the oldest part but also the nearest to the train station, is characterized by a blending of public and private functions.

Current network
- Most of the commercial functions show an apparent concentration along the traffic-free zone axes in the south part of the inner city.
- They are interrelated with the cultural/touristic functions and the leisure and café/restaurant functions, which are mainly concentrated around the Market Square and the touristic attractions and landmarks.
- The offices are scattered around the city centre and even in the suburbs as they do not have the necessity of immediate interaction with the visitor.
- The most remarkable in this context are the offices, which are the oldest part of the same city, in the northeast of the city to be the first to be developed and the one that concentrated the most prominent functions and buildings.

New network
- T here is an apparent accumulation of the more public functions in the southern part.
- Schematically this could be represented as the dichotomy of the inner city into an active and an idle part.

Integration in the network
- The presence of open public spaces in the vicinity of Paardenmarkt and the Artilleriemagazijn creates the preconditions of the redefinition of the network of open public spaces in a way that will include them.

Artilleriemagazijn

Urban Analysis

Division in zones
- The inner city is mainly organized by longitudinal axes that direct the focus towards the Market Square.
- The pedestrian routes are mainly circumscribed by these main axes.

Integration in the network
- This intense directionality results in the isolation of the Artilleriemagazijn.

Design in zones
- The design in zones includes the following categories of urban functions:
  - Commercial functions
  - Cultural/touristic functions
  - Public functions
  - Residential functions
  - Mixed functions
- The commercial functions show an apparent orientation towards the traffic-free axes in the south part of the inner city.
- Cultural/touristic functions and public open spaces are related to the open public spaces in the vicinity of Paardenmarkt and the Artilleriemagazijn.
The area was very sparsely built and it lacked the dense and strict organization of the rest of the city. There were situated secondary public functions that needed abundant space ('Lakenramen', 'Doelen'). The area was bordered by the 'singel' and the Kantoorgracht. The Clarissenklooster was abandoned and reused for military functions. The 'Doelen' changed orientation. The already allocated building blocks acquired a stricter organization. The open field where the 'Lakenramen' used to be was used to serve the housing needs of the growing population. The 'Lakengracht' was created. The gunpowder explosion devastated the area and stimulated its reconfiguration. The 'Artilleriemagazijn' was erected at the location of the former Clarissenmonastery. The Paardenmarkt was founded. The 'Lakengracht' was extended up to the 'Kantoorgracht' in order to accommodate the transportation needs of the 'Artilleriemagazijn'.

The city remains enclosed in its medieval boundaries. The immediate surroundings of the 'Artilleriemagazijn' do not appear to have changed significantly. The railway was constructed in 1846. Consequently the expansion towards the outskirts commences. The Barrack building is constructed on the north of the Paardenmarkt. On the north of the 'Artilleriemagazijn' the route of the ring canal is altered resulting in the extension of the city towards that direction. The railway was constructed in 1846. In 1914 the Lakengracht is closed. A subtle development occurs on the east of the 'Artilleriemagazijn'. New axes of transport are constructed. Both on the north and east of the 'Artilleriemagazijn' an extreme urban development took place. The 'Artilleriemagazijn' loses its marginal position and acquires a more central position in the urban configuration of the city. The medieval singel has been segmented and physically disappeared in many locations but there its imprint is still visible through other elements and axes.

Data: Braun & Hogenberg 1575, source: TU Delft kaartenkamer
Data: Blaue 1633, source: presentation by Gemeente Delft, I. Rijneveld
Data: Blaue 1649, source: TU Delft kaartenkamer
Data: Bleyswijk 1675, source: TU Delft kaartenkamer
Data: H. Suringar te Leeuwarden 1876, source: TU Delft kaartenkamer
Data: Topografische kaarten van Nederland 1913, source: TU Delft kaartenkamer
Data: Topografische kaarten van Nederland 1940, source: TU Delft kaartenkamer
Data: Topografische kaarten van Nederland 2009, source: TU Delft kaartenkamer

Urban analysis

- The area was very sparsely built and it lacked the dense and strict organization of the rest of the city.
- There were situated secondary public functions that needed abundant space ('Lakenramen', 'Doelen').
- The area was bordered by the 'singel' and the Kantoorgracht.
- The Clarissenklooster was abandoned and reused for military functions.
- The 'Doelen' changed orientation.
- The already allocated building blocks acquired a stricter organization.
- The open field where the 'Lakenramen' used to be was used to serve the housing needs of the growing population.
- The 'Lakengracht' was created.
- The gunpowder explosion devastated the area and stimulated its reconfiguration.
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- On the north of the 'Artilleriemagazijn' the route of the ring canal is altered resulting in the extension of the city towards that direction.
- The railway was constructed in 1846.
- In 1914 the Lakengracht is closed.
- A subtle development occurs on the east of the 'Artilleriemagazijn'.
- New axes of transport are constructed.
- Both on the north and east of the 'Artilleriemagazijn' an extreme urban development took place.
- The 'Artilleriemagazijn' loses its marginal position and acquires a more central position in the urban configuration of the city.
- The medieval singel has been segmented and physically disappeared in many locations but there its imprint is still visible through other elements and axes.
conclusions

The analysis of the location of the Artilleriemagazijn regarding its position and relation within the context of the whole city reveals that the complex is located within the boundaries of the city walls.

In the past, the area surrounding the site has been transformed to a residential area, while the Kantoorgracht has lost its connecting character. Even though historically the area of the Artilleriemagazijn is a part of the inner city, today it seems not to be consistent with it in terms of function.

Finally, the Artilleriemagazijn appears to be an isolated island in the urban fabric that is not able to relate with its surroundings.

URBAN DEVELOPMENT OF THE AREA OF THE COMPLEX

The barrier

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DISCONNECTED

CONNECTED

DISCONNECTED
ARCHITECTURAL ANALYSIS

In the following section of this report the focus is set on the complex itself. While the wide range of aspects that can be analyzed and researched, certain themes have been identified and are investigated in order to answer the research question that has been set as a connecting backbone of this whole research and report.

I. Cultural and historical analysis - PAST

In order to acquire the background that will assist in understanding the complex, it is significant to investigate the history that shaped the complex and the events that have modified the complex and its surrounding area. The following aspects have been analyzed.

- Historical facts
  - render the complex as an organic part in the course of the city of Delft
  - reveal its role and significance
  - provide a cultural and social time-based perspective

- Historical development
  - an analytic historical and spatial timeline of the development of the complex within the aforementioned cultural and historical context emphasizing on the most characteristic instances in time

RELATION TO RQ

This analysis lead to conclusions regarding the authenticity of the complex and its open spaces, and it is attempted to identify the most representative configuration of the complex. Through these conclusions possible correlations between the original operation and character of the complex and the three investigated scenarios set by the RQ are sought.

II. Physical analysis - PRESENT

After having set the cultural and historical background the focus is set on the complex as a whole at first and then on the separate buildings that compose it. The analysis approach is not the same for the complex and for the separate buildings as different conclusions are sought in the two cases regarding the RQ.

- Complex scale
  - The analysis of the articulation/composition of the complex as mass and void provides information regarding the following themes which are related both with typology and space.
  - masses
  - dominance
  - boarders
  - open space
  - gradation of privacy
  - greenery (as structural element)
  - types of buildings (in terms of mass)
  - types of open space (in terms of the types of buildings surrounding them)
  - relation with context

From all these analyzed aspects the theme ‘open space’ appears to be of major importance. It is immediately related to the RQ. The present openness of the complex is analyzed in a comparative way regarding the same different aspects:

- scale
- spatial quality
- stimulation with the other open spaces

RELATION TO RQ

From this analysis conclusions are drawn about the role of each of them in the complex and their sequence. The focus of the research here is related again with the RQ and aims to define the relations between the qualities of these spaces and their potential within the proposed scenarios.

At this point the inner space and organization of the separate buildings of the complex are investigated and compared.

- typology
- program

Consequently, the analysis of both the inner spaces and the program provides information about conclusions about their interaction.

The analysis of the following themes gives conclusions about the spatial and connectivity within the internal and the open space of the complex.

- entrances
- visual connection

Building scale

The three most representative and characteristic buildings of the complex are chosen for a more thorough analysis. The themes analyzed are the following:

- articulation (elevation and plan)
- rhythm
- structure
- visual connections
- accessibility
- circulation
- space

The rest of the buildings of the complex are presented briefly not so much in an analytical way but in a more comparative way to the three main buildings.

RELATION TO RQ

The architectural analysis based on the aforementioned approach and selected themes aims to conclude to a coherent value assessment regarding the complex that will set the framework within which the three presented scenarios will be elaborated and further researched.
During the mid-seventeenth century, the manufacture and storage of military equipment was crucial. The complex on Paardenmarkt played an important role. The ammunition of the States of Holland and West Friesland was stored here. This location was chosen because it was close to the city and had easy access to the harbor. The complex was extended and equipped with a new vault in 1654, which was designed to withstand the explosion of the powder. The famous Delft gunpowder was stored in one of the buildings. The powder was manufactured from nitrate and sulfur, which were gathered by the Ministry of Defense. During the eighteenth century, the complex continued to be used for the storage of rifles and gunpowder. The buildings were later occupied by the Army and Arms Museum General Hoefer.

The Armamentarium at the Korte Geer and the warehouses in the Houttuinen were the other large military warehouses and workshops within the city. The Armamentarium continued until 1989 when the complex acquired its present appearance and organization. The following part of this report presents the significant historical events that influenced the evolution of the complex. The information presented are drawn from various sources:

- Monumenten in Delft, p.122
- Paardenmarkt Depot Legermuseum, Gemeente Delft, p. 16-21
- Bruges en Kantoorgracht 76 (voorheen Artilleriemagazijn van Holland en West-Friesland) te Delft, Drs. E. van der Kuijl – Hamaland
- Rijksgebouwendienst_Bureau Rijksbouwmeester, p. 4
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The following part of this report presents the significant historical events that influenced the evolution of the complex. The information presented are drawn from various sources:

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HISTORICAL DEVELOPMENT OF THE COMPLEX ARTILLERIEMAGAZIJN VAN HOLLAND

architectural analysis

1671 - 1989

1410

the Clarrise monastery is founded at the site

1602

the Armamentarium functions as the main artillery warehouse

1637

construction of gunpowder tower in the yard of the former monastery

the remnants of the Clarisse monastery were used as artillery warehouse in a rebuilt or new building

the rest of the former monastic area was also used as storage space of war equipment according to historical sources before the construction of the first building of the ‘Artilleriemagazijn van Holland’ complex

1641

construction of the first building of the ‘Artilleriemagazijn van Holland and West-Friesland’ complex along the edge of Paardenmarkt

current building

A

explosion of the gunpowder tower

few remnants of the monastery along the ‘Kantoorgracht’

available storage space for sulfur, nitrate and canons

1746

‘Salpeterloods’

1741

existing situation

1750

completion of the ‘Salpeterloods’

part of the existing ‘ringmuur’ was integrated in the new construction of the ‘Salpeterloods’

spaces in 1741:

- building A (Affuitenloods)
- building B (Waag- en kelder gebouw)
- building I (proefplaats tot hansnapen)
- ‘playhouse’ of the land commies
- garden with gazebo next to the city walls
- main square which served for storage of guns, grenades and bullets

‘Affuitenloods’ despite its position on the edge of the site as a boarder, it actually functioned as an entrance building that declared the power and importance of the function that it was accommodating.

The main open space behind it was an organic part of the building and the two of them functioned as one and formed the core of the complex.

In the north part of the complex was a secondary open space surrounded by buildings of smaller scale and of less architecturally elaborated

‘Salpeterloods’ was constructed in a way that took completely in consideration the existing building A. Aim was to achieve the maximum available space for storage and the optimal functional synergy between the buildings and the open space. This attempt is apparent as Building C was built at the other edge of the plot and also mainly by the fact that its entrances were completely in line with the ones of building A on the opposite site. Clear linear corridors connect the two buildings and organize the open space. In that way the two buildings and the open space form one consolidated functional but also monumental space.

construction of the ‘proefplaats tot hansnapen’ on the northwest corner of the site

current building

I

C

main square for storage

‘playhouse’ of the land commies

garden with gazebo

floor plan of 1741

floor plan of 1750
Building A

thoroughly remodeled and repaired during these maintenance works in the whole complex specific color was designated for each different category of materials

BLACK
lockes, hinges, and other iron work

GREY
ashlar stones

LIGHT YELLOW OCHER
frames, doors, windows, modillions, gutters, lead containers

RED
gates, doors, windows, tubes

Building B

the complete north wall was rebuilt

Building C

new attic ceiling for more storage space

the linear building in the middle of the square is demolished to ensure complete supervision of the complex from the guard house

HISTORICAL DEVELOPMENT OF THE COMPLEX

ARTILLERIEMAGAZIJN VAN HOLLAND

architectural analysis

1671 - 1989

1754
- major repairs

1774
- "private couleur"

1815
besides storing artillery the complex was officially designated also as artillery laboratory

Building B
completely renewed masonry walls renew the entire hood with "Philibertspanten"

Building A
renewal of the entire roof with a very modern for the time construction, the so-called "Philibertspanten"

extend the wall 1 meter higher

Building B
extend the roof towards the north gable facade of building C this change in the type of use of the complex resulted in a need of extensive construction and renovation activities

fire in the "Affuitenloods"

1800

1824
- "Vuurwerkerslaboratorium"

1828
extension of the "corps de garde" towards its east side

1787
- "corps de garde" - at this moment the complex has a very clear configuration - there is a central open space which is bounded by two large scale buildings on the west and east side and by other significantly smaller constructions on the north and south side - the alteration of the complex's use from exclusively artillery storage to also production will have crucial impact in its further development

1835
- "Bureau van den Kapiten Vuurverker"

1838
- "Schiekundig laboratorium"

1840

1845
Building I
converted to a house

Barracks built on Paardenmarkt

current building

part of the existing "ringmuur" was integrated in the north side of building H

part of the existing "ringmuur" was integrated in the south side of building H

current building

part of the existing "ringmuur" was integrated in the south side of building H

current building

current building

current building

current building

current building
1671 - 1989

**Historical Development of the Complex**

**Artilleriemagazijn van Holland**

Architectural Analysis

- Building A (Affuitenloods) 1671
- Building B (Waag- en kelder gebouw) 1830
- Building C (Salpeterloods) 1746
- Building D (Vuurwerkerslaboratorium) 1787
- Building E (Pyrotechnische werkplaats) 1860
- Building G (garage) 1989
- Building H (Bureau van den Kapitein Vuurwerker) 1835
- Building I (proefplaats tot hansnapen) (XVII)
- Building J/K (Schiekundig Laboratorium) 1838

**Floor Plan of 1989**

- Building F demolished in 1989
- Building I was extended to the east
- Building G was constructed on the north side of building A
- Building B was extended to the east
- Building C was extended to the north side of building A
- Building D was extended to the east
- Building E was extended to the south side of building C

**1875**

- The main floor was added to the north part of building E

**1882**

- A wall is constructed between buildings C and E

**1892**

- The original iron fence from 1679 was reassembled and rebuilt

**1893**

- The ditch on the east side of the plot is closed

**1897**

- Building H is converted to dwellings for married couples

**1899**

- Buildings H and J/K are converted to dwellings for married couples
- A wall is constructed on the north side of building I

**1903**

- A transformer house is constructed against its south wall
- The wooden shed in the northern part of the courtyard is demolished

**1904**

- The ditch on the east side of the plot is closed
- The main floor is added to the north part of building E

**1907**

- An extra floor is constructed on the south part of building E

**1915**

- The wall on the east side of the plot is closed

**1918**

- A wall is constructed on the south side of building C

**1923**

- Buildings H and J/K are converted to dwellings for married couples

**1925**

- Building H is converted to dwellings for married couples

**1928**

- Buildings H and J/K are converted to dwellings for married couples

**1937**

- The main floor is added to the north part of building I

**1939**

- Building J/K is converted to dwellings for married couples

**1947**

- Building H is converted to dwellings for married couples

**1950**

- A wall is constructed on the south side of building C

**1971**

- An extra floor is constructed on the eastern extension of building E
- A wall is constructed on the south side of building C

**1989**

- The complex has reached almost its final form in terms of configuration of the masses
- It is evident that instead of the one main open space at this moment there was also present a second one which was surrounded exclusively by buildings related to the artillery production processes.

**34.**

**35.**
development of the open space of the complex:

Many with the development of the buildings of the complex the open space had also many different configurations through time. In the early stages of development there were two open spaces, a main one and at its northern side a secondary one. This northern side was surrounded by small scale buildings, and it in time became an entrance area for the complex. After 1860, the ejection of building E resulted in the division of this main open space into two separate open spaces of different scale and distance, too. In the expansion of building D to the west in 1892, another intermediate area that would function as a transition area was added.

development of the open masses of the complex:

Along with the development of the buildings of the complex the open space of the complex also underwent different configurations through time, and were influenced by the changes in the complex itself and in its surroundings. In the early stage buildings were mostly open at the sides. This was the case in the early stage buildings had openings in their external walls that corresponded with their function. After 1860 and the addition of building E this resulted in a completely different configuration. Later on, the extension of building E to the west in 1892 formed another smaller open space.

development of the route of the complex:

One way that resulted in the development of the route of the complex were the changes in the function of the buildings. Along with the addition of new buildings to the complex, the function of the buildings changed over time. In the early stages of the development of the complex, the building functioned mainly as storage space. Later on, the extension of building E to the west in 1892 formed another smaller open space.

emergence of buildings in the composition of the complex:

Building A_1741
Building C_1746
Building I_1749
Building G_1757
Building E_1860
Building H_1835
Building J/K_1838
Building F_1823
Building L_1820
Building K_1815
Building D_1787
Building B_1779
Building G_1989

building of the complex it is significant to evaluate the authenticity of the complex as a compilation of the separate buildings.

architectural analysis

criteria evaluating authenticity:

- original architectural form
- consistence with the architectural expression of its time
- original layout
- modifications and maintenance interventions
- function

architectural analysis

authenticity in terms of the spatial organization of the complex:

Besides the authenticity classification of each specific building of the complex it is significant to evaluate the authenticity of the complex as a compilation of the separate buildings.
**SPATIAL ORGANIZATION AND QUALITY OF THE COMPLEX**

**articulation of the volumes and the voids**

**open space**
- the open space of the complex is a mass that flows between the buildings
- there is a great gradation in the levels of privacy of the different areas
- the level of privacy depends on accessibility, scale, and the character of the borders of these spaces

**greenery**
- greenery functions as a structural element in the open space of the complex and influences the scale, routine, rhythm, and quality of space

**presence in the area**
- the west and north elevation of the complex are the only parts that can be experienced by the surroundings
- the presence of the complex is influenced by the two iron gates and the views in the interior of the complex

**contrasting building types**
- the north part is clear and monumental while the south part is more diffused
- the north part is coherent with the residential buildings that infill the rest of the building block

**contrasting open spaces**
- the contrast in spatial quality is also apparent in the open spaces that are formed by the contrasting building groups

**boundaries**
- the borders of the open space are not clearly defined or ordered
- this creates a gradation of many different qualities of space
- the west and north elevation of the complex are the only parts that can be experienced by the surroundings

**open spaces related to the complex**
- the two iron gates are the only points where views in the interior of the complex are possible
- the two gates are the only points where views to the interior of the complex are possible

**Schematically the complex consists of a perimetric setting of masses that encloses a main and two less dominant open spaces.**

**The open space of the complex as a mass that flows between the buildings.**

**The level of privacy of the different areas depends on accessibility, scale and the character of the borders of these spaces.**

**The west and north elevation of the complex are the only parts that can be experienced by the surroundings.**

**The presence of the complex is also influenced by the two iron gates and views in the interior of the complex.**

**Building E creates an axis that separates the complex in two parts with different spatial quality and typology.**

**The north part is clear and monumental while the south part is of smaller scale and more diffused.**

**The south part appears to be coherent with the residential buildings that infill the rest of the building block.**

**This contrast in spatial quality is also apparent in the open spaces that are formed by the contrasting building groups.**

**3. main courtyard**

**2. secondary courtyard**

**1. entrance yard**

**SOUTH SIDE**
- **West side:** the presence of the complex is influenced by the two iron gates and views in the interior of the complex.
- **North side:** the complex is more diffused.

**NORTH SIDE**
- **West side:** the presence of the complex is influenced by the two iron gates and views in the interior of the complex.
- **North side:** the complex is more monumental.

**ARTILLERIMAGAZIJN VAN HOLLAND**

**architectural analysis**
OPEN SPACES

Paardenmarkt

- Paardenmarkt is intrinsically related to the Artilleriemagazijn as there was a reciprocal interaction between them during the development of both through time.
- Its position marks the north-south axis of the complex as the main and representative facade.
- The entrance, defined by two barracks and clearly segued by the rows of trees, however, the detailed spatiality can only rely on a mental and indirect experience of the space.
- The main structure is hardly more apparent in the square, directing to the entrance of the complex.
- The consummation of the spaces with its direct continuity space to form a gradation of sight axes, with the one adjacent to the complex being the best used.
- The vicinity with the canal is imperceptible.
- It could well be considered as analogous to a closed space in the foliage of the trees under a feeling of enclosure and that set an order and rhythm in the space.
- It comprises a significant element for the spatial experience of the complex as it functions as transitional and preparatory space before entering the complex.
- Its scale, proportions and clear shape have a determinant impact on the perception of the open spaces that are enclosed in the complex.
OPEN SPACES
analysis of scale, spatial quality and routine

1. Entrance courtyard
- A transition and preparatory space between the exterior of the complex and its core
- On the one hand there are relatively narrow openings that allow diagonal views in the two courtyards
- There is a gradual difference of scale between Paardenmarkt and the first open space of the complex
- It has a much more neutral character compared to the other two courtyards

2. Secondary courtyard
- It has an elongated layout
- The buildings surrounding it have a more modest scale which reminds that of dwelling buildings, thus the courtyard has a similar quality with that of a housing backyard
- Its diffused borders and the presence of trees are segmenting the courtyard into subspaces with a variety of spatial qualities

3. Main courtyard
- It has an elongated layout and it is accessed through its corner, which allows an enhanced perception of the vastness of the space
- The shape of the courtyard and the scale of the buildings surrounding it give it a monumental character
- The south part has a very clear and monumental perception of openness while the north part has a more diffused, monumental and architectural expression of the buildings screening it
- There is a very subtle subdivision of the space, mainly due to the different height of the buildings along the frame of the building’s scale
- The rows of trees cause a very subtle subdivision of the space, creating more private corridors along the facades of the buildings A and C
- From the cross-sections of the courtyard it is visible that the proportions of section profiles are significantly different

4. Transition
- It functions as a transitional and preparatory space between the exterior of the complex and its core
- On its two corners there are relatively narrow openings that allow diagonal views in the two courtyards

ARTILLERIEMAGAZIJN V AN HOLLAND
architectural analysis
country yard functions as a transitional and preparatory space before entering the actual spaces of the building.

- It is a connection point for the various courtyards, but at the same time it is a neutral space between the two outer open spaces.

- There is no immediate connection visual or physical between the two courtyards (2,3) of the complex.

- It comprises a neutral space that resets the experience of the visitor gained from each of these different open spaces and prepares him to experience the following:

  - The approach and access to the two courtyards is quite similar.
  - A diagonal view from the corner of each courtyard reveals its space.
  - Because both courtyards are accessed from their short edges, the perception of the depth of the space is enhanced.

- There is no clear focus point in either of the courtyards that would create a clear destination in the space and an alignment with the entrance point.

- main courtyard:

  - There is a remarkable contrast between courtyards 1. and 3.
  - The experience of openness and horizontality is more present than enclosure.

- secondary courtyard:

  - The transition between courtyards 1 and 2 is not as noticeable due to the tree rows in Paardenmarkt.

sequence of open spaces:

- The door, fenestration, rhythm, and enclosure wishes are interpolated by the tree rows in Paardenmarkt.

spatial experience through the courtyards:

- Entrance courtyard
- secondary courtyard
- main courtyard

enclosure and horizontality:

- Main courtyard:
  - There is a remarkable contrast between courtyards 1 and 3.
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- secondary courtyard:
  - The transition between courtyards 1 and 2.
  - Due to the tree rows in Paardenmarkt, the experience is less noticeable.

enclosure and horizontality:

- There is a remarkable contrast between courtyards 1 and 3.

- The experience of openness and horizontality is more present than enclosure.
**Typology of spatial and visual connections**

**COMPLEX ANALYSIS**

**Typology matrix**

**Artilleriemagazijn Van Holland**

**Architectural Analysis**

**Entrance connection points**

- There are only two main entrance points, which connect directly to the surroundings with the architectural space of the complex.

**Visual connections**

- The visual connections are concentrated to the side facing Oostplantsoen, even though the lush greenery blocks any view towards outside.

**Spatial continuity**

- There is a clear gradation of connectivity within the main courtyard, as the connecting points in the southern part within buildings A, E and C are a lot more than those of the northern part within buildings I, B and G.

- The enclosed character of the complex becomes clear by the lack of visual connections between the buildings and the environment. Even though there are windows present, they allow only penetration of daylight and no visual interaction between interior and exterior space.

- In contrast with the entrance points the points of visual connection are concentrated to the side facing Oostplantsoen, even though the lush greenery blocks any view towards outside.

- The distribution of visual connections within the main courtyard is similar to that of entrance points.
Building A ("Affuitenloods") is an elongated building of approximately 15 to 63 meters, consisting of a ground floor and attic. On the ground floor the building is divided into two naves by a row of 'standvinken' while the attic consists of two adjacent pitched roofs, between which in the longitudinal direction a 'zakgoot' is situated.

In both front and rear facade of buildings A three gates are located. Above the middle gate facing the main courtyard there is a plaque with the following inscription, "On the July 13, 1671 is the first stone of this building laid by Cornells Reyer van der Burch Son". The middle gate facing Paardenmarkt is crowned with the emblem of Holland, a red Lion adorned with a crown, six guns and the phrase 'Vigilate Deo Confidentes'. Originally the facade towards Paardenmarkt was blind, the facade towards the main courtyard had 16 windows, while each of the side walls possessed four "bolkozijnen". The original structure was composed of a continuous load-bearing wall, 20 "standvinken" bearing the "onderslagbalk" while "korbelen" provided the necessary rigidity. The roof structure is original even though some of its parts have been replaced through the years. The original roofs had two dormer windows on each, of which the two between ports also had lifting hooks. Besides the long anchors that are also currently present there used to be smaller anchors indicating the intermediate beams.

In 1894 the seven skylights on both facades were removed while in 1899 the renewal of the cornice on the facade facing Paardenmarkt resulted in the current absence of the modillions on that side. Significant alterations took place in the 40s, as the "standvinken" and the "onderslagbak" were replaced by steel HE-profiles. Also new "bolkozijnen" were added on the wall towards Paardenmarkt. Furthermore, the "bolkozijnen" on the wall facing the main courtyard were renewed in concrete. The building activities of 1989 resulted in the current format of the building. New partition walls, stairways and portals were built on the ground floor while security bars were installed on the windows.


description

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Main alterations

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source: Bouwhistorische aantekening _ Artilleriemagazijn van Holland, Rijksgebouwendienst_Bureau Rijksbouwmeester, p. 18-19

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analysis of articulation, order, space and routing

1. rhythm of the openings

2. rhythm of the anchors

3. rhythm of the modillions

- symmetry is a main characteristic of the articulation of the facades of building A
- the outline of the elevations is completely symmetrical
- the main symmetry axes on both main sides coincide with the middle portals which are both emphasised with decorative elements (emblem and plaque)
- the clear articulation of the facades is nearly a result of the building’s pure utilitarian character; the symmetry is achieved by positioning the front portals on both sides, over which the main symmetry axes coincides with the middle window openings during the transportation and storage processes
- the absence or presence of certain elements (extra dormer window, missing ‘bolkozijn’) distort the symmetric articulation of the rear facade
- the main principle in both facades is identical, the north-east facade appears to have a more dense rhythm of vertical axes
- the rhythm of the anchors and the modillions is the same in both facades, however on the north-east elevation the anchors and modillions have additional elements
- the lack of the dense rhythm of modillions renders the south-west elevation more sober than the more decorative and densely repetitive north-east elevation
- the presence of the anchors on the facades comprises an indication of the rhythm of the roof structure which is not visible from the exterior

- the floor plans both on the ground level and the attic have the same longitudinal and transverse symmetry axes
- portals and windows on the floor level are completely in line, as are the connections on the attic level
- while the longitudinal symmetry axis on floor level is reflected by rows of posts (“onderstel”), on the attic level it is a more dominant and continuous element
- while the transverse symmetry axis on the floor level is reflected by the columns, on the attic level it does coincide with any specific element

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- currently the structure differs from its original form as certain former wooden elements have been replaced by steel HE-profiles
- however the main principle remains the same
- on the ground level the load-bearing walls and the roof frames coincide with the main structural elements
- on the attic the roof frames have a more dense grid than that of the columns, but still coincide with them
- the frames are connected with the load-bearing walls through the roof frames of the “balklaag”
The presence of openings does not necessarily indicate an extrovert character of the building as the majority of them serve purely functional purposes (transportation and access of daylight). The height of the window sill and also the presence of shutters determine the character of the openings. Even though the south-west elevation has an adequate amount of windows the height of the window sill does not allow any visual connection between the interior of the building and the exterior space.

The south-west elevation is completely blind while the north-east elevation allows visual connection in both ground and attic levels. The side facades are quite open on the level of the attic, while on the ground floor the present windows are currently blocked by other structures.

The north-east elevation shows a significant level of transparency especially on the ground floor. The south-west elevation could be considered as completely blind both on ground and attic level, with the south-east elevation showing a sightly level of transparency mainly on the ground floor.

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The south-west elevation is completely blind while the north-east elevation allows visual connection in both ground and attic levels. The side facades are quite open on the level of the attic, while on the ground floor the present windows are currently blocked by other structures.
- The articulation of the entrances is identical in both main facades of the building.
- The way of approach is different and it influences the space preceding the entrance each time.
- Entering through Paardenmarkt has a more staccato character and the approach is more abrupt due to being preceded by a narrow passage, whereas the main threshold to Paardenmarkt is concealed and it is possible to cross it with the free-world possibility in the façade which is organized by the row of trees.
- Even though in terms of articulation all entrances towards Paardenmarkt have equal importance, within the context it is evident that the north-east entrance is the most dominant as the other two are blocked by the barrack building.

**On the ground floor the circulation is organized by the row of steel columns into two linear axes towards the longitudinal direction which are crossed by the three axes connecting the entrances on both sides which are traversing the building.

- The subtle presence of the columns allows an almost completely free movement in the space.
- On the attic level the circulation is organized in an absolute way by the roof structure which creates two linear routings along the longitudinal direction with certain connecting points.

**On the ground floor the longitudinal direction of the space is clearly dominant and implied by the load-bearing walls, while the presence of the columns is very subtle and does not affect that much the experience of the space, thus the space is perceived as one continuous space.

- On the attic level the space is clearly divided in two subspaces by the roof structure even though it is not continuous. It is a demarcation that creates an entrance before Not discontinuous equivalent to a wall.

**Circulation**

**articulation of space**

**vertical connections**

**physical border**

**free routing**

**linear routing**

**segmented space**

**longitudinal direction dominant**

**continuous space**

**both directions present**

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- The subtle presence of the columns allows an almost completely free movement in the space.
- On the attic level the circulation is organized in an absolute way by the roof structure which creates two linear routings along the longitudinal direction with certain connecting points.

**On the ground floor the longitudinal direction of the space is clearly dominant and implied by the load-bearing walls, while the presence of the columns is very subtle and does not affect that much the experience of the space, thus the space is perceived as one continuous space.

- On the attic level the space is clearly divided in two subspaces by the roof structure even though it is not continuous. It is a demarcation that creates an entrance before Not discontinuous equivalent to a wall.

**Circulation**

**articulation of space**

**vertical connections**

**physical border**

**free routing**

**linear routing**

**segmented space**

**longitudinal direction dominant**

**continuous space**

**both directions present**

**on the ground floor the circulation is organized by the row of steel columns into two linear axes towards the longitudinal direction which are crossed by the three axes connecting the entrances on both sides which are traversing the building.

- The subtle presence of the columns allows an almost completely free movement in the space.
- On the attic level the circulation is organized in an absolute way by the roof structure which creates two linear routings along the longitudinal direction with certain connecting points.

**On the ground floor the longitudinal direction of the space is clearly dominant and implied by the load-bearing walls, while the presence of the columns is very subtle and does not affect that much the experience of the space, thus the space is perceived as one continuous space.

- On the attic level the space is clearly divided in two subspaces by the roof structure even though it is not continuous. It is a demarcation that creates an entrance before Not discontinuous equivalent to a wall.
Building B, the 'old saltpeter warehouse' or 'waag-en kelder gebouw' is probably in origin the oldest building of the complex. The current building is possibly the result of the last remnants of the Clarisse Monastery and the early building activities of events. The age of the current building is not earlier than 1830.

Description
It is a L-shaped building consisting of one floor and a hipped roof. The building is characterized by a very sober facade layout with very few "bolkozijnen" and a gate in each the west facade. In 1830, the last fragments of the old cellar vault together with a possible cover were removed and the current cap with pine Philibertspanten was applied. The roof frames were placed on a new joisted floor ('balklaag') with wall studs ('muurstijlen') and supporting struts ('korbeels').

Main alterations
The walls were renewed in 1837 and once again in 1978, when the whole building was extensively renewed. Efforts have been made to comply with the "historical value" of the building.

1. Partially removed in 1837 and renewed in 1978, the eastern roof was changed. Furthermore, the roof tiles date back from this time. During these building activities, new pine joists were added between the existing ones. The "balklaag" of the north wing was completely renewed.

2. In 1950, the whole building was extensively renewed. While the facades were completely renewed, the cap was maintained. The current exterior with "bolkozijnen" and the gate in the west wall were introduced then. Furthermore, the walls were reinforced locally with steel beams while the interior side of the external walls was covered with false walls of steel and stucco in order to protect the collection of the museum that was stored in the building.

Source: Bouwhistorische aantekening _ Artilleriemagazijn van Holland, Rijksgebouwendienst_Bureau Rijksbouwmeester, p. 20
All the facades of building B have a clear and sober articulation, while all the elements (windows, dormer windows, doors) are consistent in form and scale. The aforementioned observation is a result of a quite recent overall renewal of the building. All the facades have an evident central vertical symmetry axis. The west part of the L-shape building has a symmetrical outline on its one side with a sloped roof and on the other side with a gable. The rhythm of the facades is indicated by the openings and the modillions as no anchors are present on this building. The rhythm of the modillions is consistent in all the facades while the rhythm of the openings gradates a lot. Due to the lack of anchors, an indication of the rhythm of the inner structure is not possible. The structure assembly is the reason why, from the ground floor to the attic, the main beam structure is not present. On the ground floor the load-bearing elements are the walls which bear the joisted floor structure ("balklaag"). On the part 1. of the building the beams begin as perpendicular to the load-bearing walls at the west side and then they gradually rotate until they become parallel to the part 2. of the building. A similar rotation shows also the roof frames in the attic. In the part 2. of the building the beams are constantly parallel with the main beam structure of the part 1. of the building to ensure the same structural continuity.
Even though there are openings present on all the facades, the articulation of the openings on one side is completely different from that on the other side: 

- In the case of the north and south elevations, the windows are covered with shutters.
- In the case of the east and west elevations, the windows are recessed.

The inner and outer facades of each part of the building do not correspond to each other in terms of the articulation of the openings.

The facades facing the main courtyard have an opposite order, as on the south side the windows are in line with the dormer windows while on the west side the dormer windows are located between the axes of the windows.

Building B appears to have an opposite articulation of the different layers of depth on its façades compared to the buildings A and C. In this case, the windows are the only elements that are recessed while the portals are in line with the masonry front.
accessibility - there are two possible entrances to the building B, both of which are approached through the main courtyard.
- one entrance is located directly next to one of the two main entrances of the complex. Therefore, it is the one that is most used.
- however, it is adjacent to the only vertical connection of the ground floor with the attic.
- the other entrance, although it is more monumental and centrally placed, is located on the corner of the courtyard and therefore it is disconnected from the main routing.

south - west elevation

ground level floor plan
entrance s in relation with the rest complex

attic level floor plan

C
I
G

BUILDING B ... ‘WAAG - EN KELDER GEBOUW’ ... end of 17th century
analytical study of articulation, order, space and routing

articulation of space
- both on the ground floor and the attic there is only one continuous space with internally arranged properties.
- even though the space in both levels has the same width, on the attic floor the space is experienced as much smaller due to the roof construction that occupies a lot of space.
- even though building B and C have the same roof construction type, the different scale results in very different spatial experiences.

linear routing
free routing / dominant the longitudinal direction

continuous space / longitudinal direction dominant

articulation of space
- the routing in both parts and in both levels of the building is linear along with the longitudinal direction of the space and completely undisturbed by the structure.
- even though on the ground floor the articulation could be considered as completely free, on the attic the shape of the roof construction imposes a linear movement along the central axis of the space.
Building C ("Salpeterloods") was built in the period 1746 to 1750 and functioned as a nitric warehouse. It is an elongated building, 75 meters long and 13 meters wide and consists of a two-aisled ground floor and a roof.

The construction of the new Nitric warehouse was already planned in 1741 and it was constructed between 1746 and 1750. In the north side of the new construction a part of the existing perimeter walls was incorporated. The current facades, the ‘balklaag’ and the ‘standvinken’ date from this period of construction. The gates and the windows are arched and have both on the interior and exterior stoneblocks for keystones and springers and also at the locations where the hinges are placed. Originally the openings were equipped both with shutters and grilles. There were also several ventilation holes in the east and west facade, most of which have been removed. The current roof structure is currently unknown but it could be similar to the 17th century ‘Affuitenloods’.

In 1828 the roof construction is replaced by ‘Philibertspanten’. In total there are 30 frames with a gable facade (‘topgevel’) on the north side and a sloped roof (dakschild) at the south side. On the facade towards the main courtyard the difference in the masonry in the part of the parapet, which resulted by the change of the roof, can be easily identified. The long wall anchors are connected with the Philibertspanten. Between the 20s and 1947, various activities took place. The staircases leading to the attic, which were originally situated behind the two main gates were moved to the most northern and southern sides of the building. Consequently two additional ports and two additional windows were installed on the courtyard wall. The rings on the courtyard facade were probably installed by German soldiers during the period 1940-1945 for the storage of horses. Finally, during the building activities of 1989 the central gate was broadened in favor of storage.

source: Bouwhistorische aantekening _ Artilleriemagazijn van Holland, Rijksgebouwendienst_Bureau Rijksbouwmeester, p. 21-22

Description
Main alterations

1746
1747
1748
1749
1750

In 1746 the first construction was completed by Philibertson. In 1747 the building was equipped with a nitrogen storage. In 1748 the construction of the Nitric warehouse was completed. In 1749 a continuous beam was added in the longitudinal direction. In 1750 the construction of the new Nitric warehouse was completed.

In 1828 the Nitric warehouse is replaced by ‘Philibertspanten’. In total there are 30 frames with a gable facade (‘topgevel’) on the north side and a sloped roof (dakschild) at the south side. On the facade towards the main courtyard the difference in the masonry in the part of the parapet, which resulted by the change of the roof, can be easily identified. The long wall anchors are connected with the Philibertspanten. Between the 20s and 1947, various activities took place. The staircases leading to the attic, which were originally situated behind the two main gates were moved to the most northern and southern sides of the building. Consequently two additional ports and two additional windows were installed on the courtyard wall. The rings on the courtyard facade were probably installed by German soldiers during the period 1940-1945 for the storage of horses. Finally, during the building activities of 1989 the central gate was broadened in favor of storage.
analysis of articulation, order, space and routing

1. rhythm of the openings
2. rhythm of the anchors
3. rhythm of the modillions

- on both facades there are many elements which have been added later and are disturbing the original articulation of the facade
- there is a certain relation between the presence of anchors and modillions with the roof frames and the ‘balklaag’ beams, thus the order of the internal wooden structure becomes visible on the facades
- no strict order is present in the main elevations of building C
- the outline of the building is not symmetrical as on the north side it has a gable roof while on the south a sloped one
- on the south-west elevation there is a main vertical axis at the location of the main portal, however it is not a symmetry axis
- on the south-east elevation no axis or altered dimensions

- on the south-west elevation the openings, the anchors and the modillions are indicated by an approximately similar rhythm which is the same on both facades
- on the south-east elevation the openings, the anchors and the modillions are disturbed by many elements which have been added later

- on the ground floor there is a clear symmetry axis along the longitudinal direction which is realized by the row of ‘standvinken’ under the row of the main doors
- as main transverse axis could be considered the one that passes through the main gate, even though it is not a symmetry axis
- on the attic floor the presence of both the longitudinal and the transverse symmetry axes is very subtle
- on the ground floor there is a clear symmetry axis along the longitudinal direction which is realized by the row of ‘standvinken’ under the row of the main doors
- on the attic floor the presence of both the longitudinal and the transverse symmetry axes is very subtle
- on the ground floor the load-bearing elements on the south side are the ‘balklaag’ which is composed by main beams (‘muurbalks’) of two alternating dimensions
- the roof frames and the large ‘muurbalks’ are connected to the walls with iron anchors
- the roof frames have the same grid as the larger ‘muurbalks’ with which they are also connected
- the south wall and the large ‘muurbalks’ are connected to the south wall with iron anchors
- on the attic floor the ground floor and the roof frames
- on the south-west elevation there is a main vertical axis at the location of the main portal, however it is not a symmetry axis
- on the north-east elevation no axis or altered dimensions
- on the north-east elevation no axis or altered dimensions
- on the north-east elevation no axis or altered dimensions
- The south-west facade is a lot more transparent than the others, as all of its windows have glass panes. However, it is known that originally these windows were also equipped with shutters.

- The north-east facade has a larger number of windows but they have a more introvert character as they are covered with shutters.

- Similarly to building A, the architectural expression is also enhanced by the different depth of the separate facade elements. All the windows are at the same front level, while all the portals are recessed compared to the rest facade. Definitely this difference in depth layers accommodated mainly functional purposes.

- Apart from the presence of a large number of window openings, the fact that they have a low window sill implies that not only were they meant to allow daylight to enter the building, but also visual interaction with the outside.

- Visual connection with the exterior is possible both on the ground level and the attic floor. Even though the presence of openings on the north-east facade of the building allows views towards outside, the presence of lush greenery adjacent to it blocks any visual connection with the Oostplantsoen and the Schie canal even on the attic level.

- The main courtyard and the attic level floor plan are shown.
on the ground floor the circulation is strictly organized by the row of 'standvinken' into two linear axes towards the longitudinal direction.

- the circulation on the west side is crossed by the entrance routings.

- on the attic level the organization of the space allows a completely free circulation in the space.

- however the proportions of the space imply a linear movement along the longitudinal direction.

- on the ground floor the longitudinal direction of the space is clearly dominant and implied by the proportions of the space and the row of 'standvinken'.

- the 'standvinken' in contrast to the steel columns in building A are a very dominant element and create a continuous but permeable barrier, dividing the space into two separate though connected spaces.

- on the attic level the roof construction type allows the creation of a completely continuous space with no separations.

- entering building C is only possible through the main entrance.

- the entrances are either approached from the main circulation crossing the courtyard or lead to the linear routing organized by the row of 'standvinken'.

- besides being on the central vertical axis of the facade and having a larger width (due to a more recent modification) the main portal gains its significance due to the fact that it is in line with the central entrance axis of building A and in line with the main entrance from Paardenmarkt.

- the main portal is in line with the central entrance axis of building A, thus in line with the main entrance from Paardenmarkt.

- the 'standvinken' are organized into the main circulation, defining the space's entrance but allowing view continuity to building B.

- the entrances are either approached from the main circulation crossing the courtyard or from the linear routing organized by the row of trees parallel to the facade.

- besides being on the central vertical axis of the facade and having a larger width (due to a more recent modification) the main portal gains its significance due to the fact that it is in line with the central entrance axis of building A, thus in line with the main entrance from Paardenmarkt.
The three aforementioned and analyzed buildings are the most dominant and significant of the complex which determine its essence and identity. Moreover, they are those which occupied the main courtyard, the heart of the complex, the core of the open space around which the buildings were organized. Those buildings, A, B and C, are planed on the scale of the complex, they are considered to be the main principle that subordinates the appearance and spatial quality of the complex as a whole. Since they are the ones that date back earlier in time, they are those that determined the further development of the complex and the pattern of the following extensions.

In the following chapter, the rest buildings of the complex, building E, D, I, H and J/K are going to be briefly presented and the focus will be mainly in their appearance and identity as their typology has been already analyzed and compared within the context of the whole complex in a previous chapter of this report. Aim is to identify the coherence of these buildings with the oldest part of the complex which surround the main courtyard. Moreover, as buildings E, D, H and J/K form the group of buildings that surround the secondary courtyard, it is interesting to identify another coherence among them that would render them as a consistent subgroup which still remains relevant with the complete complex.

The following historical information regarding the separate buildings is based on the Bouwhistorische aantekening _ Artilleriemagazijn van Holland, Rijksgebouwendienst _ Bureau Rijksbouwmeester, p. 23-29.
BUILDING C _ ’SALFTERLOODS’ _ 1746

artillerymagazijn van holland
architectural analysis

Analysis of articulation, order, space and routing

Building D

The sloop-shaped building D consists of a large, high gable at the rear side, which is divided by a double arch.
Finally the research focuses on the material scale. Based on observed behavior and document analysis, the focus lies on the specific elements and methods that are employed in all the buildings and the way they are organized. After the identification of the methods and elements, the findings are documented. The main aim is to find and present any characteristics that can be related to the buildings.

In the main construction complex a similar system is used in most of the buildings. For the "Salpeterloods" the documentation of the method is presented, but for the others, the methods are only briefly mentioned.

- "Salpeterloods":
  - construction methods, elements and materials in the building
  - "balklaag" (specifically and generally)
  - detail of the "dakvoet"
  - rhythm and order of the structural elements
  - load distribution
  - "philibertspanten" (specifically and generally)

Elements that are not present in building C can be found through analysis of building B. Thus it is mainly the "jukkenkap".

- "Affuitenloods":
  - construction methods, elements and materials in the building
  - "jukkenkappen" (specifically and generally)

Finally the focus is set on the construction methods of openings throughout the whole complex as they are significant from a structural but also from a morphological and functional point of view.

Besides the following general data it is important to mention that the findings are based on direct observations on site and on the documents available. A special attention was paid to the elements that contribute to the coherence and blending of all the buildings. Despite the variation of the type of used material mainly in terms of color and also of the pointing due to the constant maintenance work, the masonry walls have a very consistent presence in the complex and define its identity.

RELATION TO RQ
At this part of the analysis the research approach becomes more open and not constrained to the RQ. However, in a later phase, conclusions regarding building technology can be interpreted and employed again from the perspective of the research question, in terms of flexibility and restrictions of the present situation.

The literature used for this part of the report is the following:
- H. Janse, Houten kappen in Nederland 1000 - 1940
- Andrea Deplazes, Constructing Architecture, Materials, Processes
- Structures
- R. Stenvert, G. van Tussenbroek, Inleiding in de bouwhistorie
- J.G. Wattjes, Constructie van gebouwen
- F . Rothuizen, De kleine historische elementen in Zeeland, Kapconstructies
Building C: ‘Salpeterloods’ – 1746

Building technology analysis

1. gable facade - on the north side and this building’s façade, the façade is a timber-framed structure. The façade construction is characterized by the use of thin timber beams and vertical boarding.

2. ‘nokgording’/ridge purlin - in this case, the ridge purlin is not vertically placed but at an angle of 45°.

3. ‘gording’/purlin - the purlin is a rectangular beam that is not situated horizontally as a ‘fliering’, but rather slightly tilted parallel to the roof surface, and on it the vertical roof boarding can be directly nailed.

4. ‘philibertspant’ or ‘schenkelspant’ - the rafters/’spantbenen’ consist of multiple layers of boards sawn in a curved shape (‘schenkels’) in order to form a pointed arch shaped roof truss (‘spant’).

5. ‘klos’/chock

6. ‘dakbeschot’/roof boarding - it is nailed on the purlins.

7. ‘dakpannen’/rooftiles - a ‘Hollandse pan’ of blue gray color, not clear if it is original or a modern type with interlocking.

8. ‘muurplaat’/wall plate - purpose of the wall plate is to pass to the wall the forces of the roof.

9. ‘blokdeel’/spur tie - it ensures a firm connection of the ‘schenkel’ with the wall plate.

10. eave/gutter

11. ‘neuten’/modillions

12. ‘borstwering’/parapet

13. slof’/sole plate - it is a short wooden beam that conveys the load from the ‘philibertspant’ to the balklaag.

14. floor

15. ‘balkanker’/anchor - it anchors the ‘balklaag’ wooden beam with a stone wall, and thus links the facades together and results in a sturdier construction.

16. ‘balklaag’/beam layer

17. ‘onderslagbalk’/primary beam - the aim is to shorten the span of the floor joists in order to prevent them from sagging.

18. ‘korbeel’/corner brace - connects the beam with the stud in order to create a rigid element.

19. ‘standvink’ - bears the ‘onderslagbalk’.

20. massive masonry wall - approximately 50cm thick

21. stone base

In order to bridge the gap between the two main massive masonry walls, a beam layer was added. The beam layer is supported by ‘philibertspanten’ and ‘schenkelspanten’ and is connected to the walls by non-failing ‘philibertspanten’.

The beam layer consists of two different types of beams which are arranged alternately (‘alternende balklaag’). The thicker beams correspond to the ‘philibertspanten’ above and are stronger in order to bear the concentrated forces from the roof structure, while the thin beams serve only for the support of the floor boards in order to avoid sagging. While the thin beams are simply laid on the ‘onderslagbalk’, the thicker ones are mounted with notches. On the facade there are anchors visible which correspond to the thicker beams. These anchors serve both for clamping the wall with the thick beams and also the ‘schenkels’ with the ‘philibertspanten’ of the balklaag.

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The beam layer is a single layer of beams which run from wall to wall (‘moe balken’). Due to the scarcity of timber beams 13 m. long and the possible sagging in the middle due to the loads, a supporting primary beam ‘onderslagbalk’ is placed in the middle of the span. Thus the beams have the half length of the span and lay in the wall and on the ‘onderslagbalk’ which is supported by ‘standvinken’ every 4,70 m. The beam layer consists of two different types of beams which are arranged alternately (‘alternende balklaag’). The thicker beams correspond to the ‘philibertspanten’ above and are stronger in order to bear the concentrated forces from the roof structure, while the thin beams serve only for the support of the floor boards in order to avoid sagging. While the thin beams are simply laid on the ‘onderslagbalk’, the thicker ones are mounted with notches. On the facade there are anchors visible which correspond to the thicker beams. These anchors serve both for clamping the wall with the thick beams and also the ‘schenkels’ with the ‘philibertspanten’ of the balklaag.

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1. 'dakpannen'/ rooftiles

2. 'gording'/ purlin

3. 'dakbeschot'/ roof boarding

4. 'panlat'/ batten

5. 'spruit'

6. 'muurplaat'/ wall plate

7. 'blokdeel'/ spur tie

8. gutter

9. 'muuranker'/ anchor

10. 'neuten'/ modillions

11. 'schenkel' to the balklaag

12. floor

13. floor

14. 'slof'/ sole plate

15. massive masonry wall

16. gap) masoned in a cross bond of approximately 50 cm thickness which becomes thinner through the hole of the strops/ the schieter presses against the wall and that way it swerving/ it consists of two so-called "strops" that are running perpendicular in the wall and are attached to the beam and the blokdeel, and by one "shieter" that passes through the overlapping connection/ it became the most widely used Dutch tile for centuries.

The "dakpannen" or "routetiles" was developed by the French architect Philibert de l'Orme (1512-1577) who in 1561 designed a wooden arch rafter, which was composed of shorter timber planks shaping a circle segment. In respect with "philibertspanten" or "schenkelspanten" the so-formed structure is mounted on it, which carries the roof surface. The purlins are embedded in the rafters and on the top is located a ridge purlin. All the overlapping connection/ it is also called golfpan which is a more minor structural element here, it is in the middle layer is thicker than the two outer ones. No 'makelaar' is present while the two 'spruits' are in order for the 'spruit' to avoid having a minimal thickness which is a more minor structural element here, it is in the middle layer is thicker than the two outer ones. No 'makelaar' is present while the two 'spruits' are.

In 1828 the original roof construction was replaced by one with 'philibertspanten met lichte rechte kapspruiten'/ philibert-spanten which are composed of three to five layers of nailed, which are composed of three to five layers of nailed, which are composed of three to five layers of nailed, which are composed of three to five layers of nailed. The 'philibertspanten' or 'schenkelspanten' consist of one certain number of equal parts, all alternate so that there will not be found two seams in one section. Normally, the seams of the various layers in one section. Usually the seams of the various layers should be composed of at least three layers. Each layer is

The 'philibertspanten' or a 'schenkelspanten' consists of a certain number of equal parts, all alternate so that there will not be found two seams in one section. Usually the seams of the various layers should be composed of at least three layers. Each layer is

Building C ‘Salpeterloods’ 1746

analysis of the construction components and methods

1. "philibertspant" was developed by the French architect Philibert de l’Orme (1512-1577) who in the sixteenth century they were used regularly. In 1561, architect Philibert de l’Orme (1512-1577) who in 1561 designed a wooden arch rafter, which was composed of shorter timber planks shaping a circle segment. In respect with ‘philibertspanten’ or ‘schenkelspanten’ the so-formed structure is mounted on it, which carries the roof surface. The purlins are embedded in the rafters and on the top is located a ridge purlin.

Specifically in the case of the ‘Salpeterloods’ the type of ‘philibertspanten met lichte rechte kapspruiten’/ philibert-spanten with the top and bottom plates of a double roof truss the ‘philibertspanten’ provide the bonding, where the top and bottom plates of a double roof truss the ‘philibertspanten’ provide the bonding, where the top and bottom plates. The ‘philibertspanten met lichte rechte kapspruiten’/ philibert-spanten with the top and bottom plates of a double roof truss the ‘philibertspanten’ provide the bonding, where the top and bottom plates.

1. 'dakvoet' _ detail

2. 'onderslagbalk' / primary beam

3. 'standvinken'

4. 'Philibertspant' was developed by the French architect Philibert de l’Orme (1512-1577) who in 1561 designed a wooden arch rafter, which was composed of shorter timber planks shaping a circle segment. In respect with ‘philibertspanten’ or ‘schenkelspanten’ the so-formed structure is mounted on it, which carries the roof surface. The purlins are embedded in the rafters and on the top is located a ridge purlin.
analysis of the construction components and methods

roof construction

'spruit' / 'schenkel'

connection to the wall

'muurplat' / wall plate

'muurplat' / wall plate

'muurplat' / wall plate

'muurplat' / wall plate

'muurplat' / wall plate

'muurplat' / wall plate

'muurplat' / wall plate

floor boarding

'spruit' / 'schenkel'

floor boarding

floor boards

'spruit' / 'schenkel'

'spruit' / 'schenkel'

'spruit' / 'schenkel'

'muurplat' / wall plate

'muurplat' / wall plate

'muurplat' / wall plate

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floor boarding
BUILDING A ‘AFFUITENLOODS’ — 1671

analysis of the construction components and methods

BUILDING A ‘AFFUITENLOODS’ — 1671

ARTILLERIEMAGAZIJN VAN HOLLAND
building technology analysis

construction components

1. ‘nokruiter’
2. ‘nokgording’/ridge purlin
3. ‘makelaar’/king post
4. ‘kapspruit’/rafter
5. ‘dakbeschot’/roof boarding—it is nailed on the purlins and the flierings
6. ‘panlat’/batten
7. ‘dakpannen’/rooftiles
8. ‘gording’/purlin—the purlin is a rectangular beam that is not situated horizontally as a ‘fliering’, but rather slightly tilted parallel to the roof surface, and on it the vertical roof boarding can be directly nailed
9. ‘klos’/chock
10. ‘zakgoot’/valley gutter—it is a gutter between the sloping roofs. Due to the large amount of rainwater running from both roofs it needs to be quite large and with significant inclination
11. ‘fliering’—horizontal elements placed transversely at the ends of the jukken which carry the dakbeschot
12. ‘jukdekbalk’
13. ‘jukbeen’
14. ‘korbeel’/corner brace
15. gutter
16. ‘balklaag’/beam layer—a single layer of muurbalken of two different sizes where every thick beam is followed by three thinner beams—they are supported by the masonry wall and the ‘onderslagbalk’
17. ‘balk-anker’/anchor—it anchors the ‘balklaag’ with a stone wall, and thus links the facades together and results in a sturdier construction
18. ‘onderslagbalk’/primary beam—the aim is to shorten the span of the floor joists in order to prevent them from sagging—it is a steel HE profile beam
19. column—steel HE profile column placed approximately every 6 m.
20. massive masonry wall—approximately 40 cm thick
21. concrete base
22. floor—by timber planks nailed on the ‘balklaag’
analysis of the construction components and methods

From the late fourteenth century in the south of the Netherlands and from the fourteenth century in other areas appeared the first jukkenkappen. In this type of structure the weight is distributed in a concentrated way to transversely placed 'jukken' at a regular bay. To strengthen a ‘teilkruis’/ cross-brace from the ‘jukbeens’ and the ‘jukdekbalk’ a non-deformable triangle is formed. A non-deformable triangle is formed by attaching a ‘korbeel’/corner brace between the ‘jukbeens’ and the ‘jukdekbalk’. An important feature is that the ‘flieringen’ are always horizontal. For stability in the longitudinal direction there are placed wind braces which connect the ‘flieringen’ and the ‘jukbeens’. In caps with large spans the roof planes are larger and this leads to stacked, ‘jukken’ which is also called ‘etagéjukken’. Apart from some exceptions with three or four, there are usually two stacked ‘jukken’. The upper ‘juk’ consisted usually out of straight rafters placed with an angle and was called a ‘schaarjuk’. Often the ‘jukbeens’ of the lower ‘juk’ were curved elements called ‘krommers’, which allowed the jukbeens to be placed closer to the wall. This curved ‘krommers’ could be performed only in oak because it was the only type of wood that could be curved. With the disappearance of oak from the hood (around 1640) also the naturally curved ‘krommers’ disappeared and only sawn softwood ‘krommers’ could be found. The ‘schaarjukken’ are referred to as ‘oud-hollands spanten’. In ‘Affuitenloods’ the roof consists out of two ‘jukkenspanten’ connected with a ‘zakgoot’. Each ‘jukkenspant’ is composed by two ‘jukken’ stacked on top of each other. The ‘zakgoot’ forms a ridge detail made of two angled secondary rafters/’kapsruiten’ and a ‘makelaar’. While on the lower ‘juk’ there are placed ‘flieringen’ on the upper parts there are ‘gordingen’ which support the roof boarding. This differentiation probably resulted due to the many maintenance works through the years, as in the 19th century ‘flieringen’ were everywhere displaced by the ‘gordingen.’ Here the ‘jukbeens’ are straight elements and at certain parts of the roof there are wind braces connecting them with the ‘flieringen’.

BUILDING A ‘AFFUITENLOODS’ – 1671

ARTILLERIEMAGAZIJN VAN HOLLAND

building technology analysis

roof construction

‘jukkenkap’

‘nokgording’/ridge purlin

’makelaar’/king post

‘jukdekbalk’

‘korbeel’

‘jukbeen’

‘blokdeel’

‘bostwering’

floor boarding

‘zakgoot’

‘gording’/purlin

connection to the wall

Artilleriemaagazijn van Holland building technology analysis
Openings in masonry

Openings in masonry are for windows, doors or other large apertures in a brick or stone wall. They are constructed with a horizontal lintel, a wooden lintel or arch. A lintel is a horizontal element used to support an opening, such as a window or door. It is typically made of brick, stone, or wood, and is placed horizontally across the opening. The lintel distributes the weight of the wall above the opening to the masonry around it.

Type 1: Opening with Rollaag
- Wooden lintel
- Wooden stud
- Glass pane
- Brickwork sill
- Impost
- Hinge
- shutter

Type 2: Opening with Concrete or Wooden Lintel
- Wooden lintel
- Wooden stud
- Glass pane
- Keystone
- Wooden sill
- Hinge

Type 3: Opening with a Flat Arch
- Concrete lintel
- Concrete stud
- Glass pane
- Hinge

Type 4: Opening with a Flat Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 5: Opening with a Semi-Circular Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 6: Opening with a Semi-Circular Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 7: Opening with an Elliptical Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 8: Opening with an Elliptical Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Construction methods of openings

- Horizontal
- Arched

Openings in masonry are constructed using horizontal or arched methods. Horizontal openings are supported by lintels, which are horizontal elements that distribute the weight of the wall above the opening to the masonry around it. Arched openings are supported by arches, which are curved structures that distribute the weight of the wall above the opening to the masonry around it.

Type 1: Horizontal
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 2: Horizontal
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 3: Arched
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 4: Arched
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 5: Three Centered Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 6: Semi-Circular Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 7: Elliptical Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge

Type 8: Elliptical Arch
- Wooden lintel
- Wooden stud
- Glass pane
- Hinge
CONCLUSIONS

Despite the dominant border adjacent to the complex occurring in the north side of the city, a conclusion can be identified between two sides to take this function due to the confined spaces that both sides share. Even though spatially these areas are completely divided in terms of type of use they are quite similar.

Architectural analysis [Building level]

In the visual spectrum of the architectural analysis the morphological transformation of the historical aspect and the architectural and spatial characteristics of the buildings are in a complex situation related to the following main conclusions

- The apparent alteration in the organization of the complex as a whole and as separate buildings resulted in a conglomerate of buildings organized in a way that obscures the original archetypical and historical aspect.
- The entrance courtyard despite being the less openness, enclosure, verticality and horizontality. Although the first impression of the complex as a simple open space appears very interesting as it radically changes the interaction between the open space and the buildings surrounding it, is more intense in the first courtyard rather in the main one. The interaction between the open space and the buildings, understanding it as a more intense interaction leads to the conclusion that there is a gradation in the level of interaction between inner and outer space.
- The complex seems to express an outdated interaction with its surroundings as it completely ignores the new building and construction methods, the complex could be enhanced or distorted the 'Artilleriemagazijn'. It seems that both the 'destination scenario' and the 'passage scenario' can lead to a transformation that could both support or hinder the different scenarios.
- Regarding the main courtyard there is an apparent gradual development in the zone among the buildings, which are even more representative at the entrance courtyard than in the main one. This renders quite challenging the attempt to transform the zone in a way the proposed scenarios.

Building technology scale

- The main characteristic of the complex is diversity in terms of spatial organization and quality, which is a result of the constant development and the change of function regarding the three defined concepts and provide a solid foundation and direction for the different scales can be combined and interpreted in a way that can formulate some general conclusions.

Further input that will be detrimental for the definition of the final conclusion would be any kind of intervention that will be inevitable in the overall environment and the reaction of the spaces in going to be introduced in the complex. It is crucial that the new function located living compatible with the complex building it should also enhance the choices between the scenarios which are defined as the catalyst for the complete rehabilitation project.

The overall diversity creates unity and common identity. Even though the analysis of the buildings itself is not clear in terms of type of use for the space they are quite similar in terms of spatial organization and quality, which is a result of the constant development and the change of function.

The overall level of interaction between inner and outer space.

The main conclusion derived directly on the scale of the connection that involves the complex. A correlation between the surrounding areas of the complex in a way that would not 댁에 대한 설명이 포함된 건물 구조와 환경 조건에 기반한 결과. 이는 종합적인 도시분석과 조합의 시스템을 통해의 전개를 방해하거나 이에 대한 일반화의 성격을 가지지 않습니다.

The completely introvert and enclosed character of the complex aspect.

Further input that will be detrimental for the definition of the final conclusion would be any kind of intervention that will be inevitable in the overall environment and the reaction of the spaces in going to be introduced in the complex. It is crucial that the new function located living compatible with the complex building it should also enhance the choices between the scenarios which are defined as the catalyst for the complete rehabilitation project.

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Further input that will be detrimental for the definition of the final conclusion would be any kind of intervention that will be inevitable in the overall environment and the reaction of the spaces in going to be introduced in the complex. It is crucial that the new function located living compatible with the complex building it should also enhance the choices between the scenarios which are defined as the catalyst for the complete rehabilitation project.
In the introduction of the research, we set out to be defined by a specific approach towards to its research questions. Therefore certain concerns towards methodological and ethical issues are validated within the framework, for instance the selection of the research questions and their articulation challenge for the research. The purpose-oriented research is not limited in the investigation of the value assessment. It is evident that of the aforementioned categories the first two have a completely objective character as they comprise a solid foundation on which the starting genuine aspects related to the complex) are a result of the employed materials. For the other categories the character is an inherent quality and authentic aspect related to the complex. This fact adds a value of authenticity to it. The research questions should be included in the redevelopment in order to enhance the interaction of the complex with its surroundings and the original spatial quality of the area. The current role of the complex as there has always been an organic interaction between the buildings and the complex towards that direction and characterized by their unique spatial quality and experience are one of the strongest potentials of the complex.

The archaeological remains, testifies the flexibility and adaptability of the complex which is connected with historical facts and their unique spatial quality and experience are one of the strongest potentials of the complex.

Roof structure \([H, A]\)

For the present and future phases of the building technique and materialization and the construction methods used throughout time but their function remains intact. The structural elements besides valuable as evidences of the past and their unique spatial quality and experience are one of the strongest potentials of the complex.

Quality and properties of the inner space \([A, P]\)

The longue structure of the buildings and the core parts of the building towards the inner courtyard and enhance in its future redevelopment.

Landscape \([F\, A]\)

The buildings and outer façade of each building, the intention to orientate the building towards the inner courtyard and externalize the strong inner walls which have been defined earlier in the report. On the one hand the doors and windows comprise the inner and outer façade of the building and the use of analysis tools in the same manner they could be defined in a similar order.

The identification of the main categories function as a comprehensive function that can be grouped generally, while the final two still on a smaller distance on the previous identified tools. This type of application of the main investigation of urban forms that can be recognized by comparing the outward and inward spatial experiences and accommodate many new functions.

DURABLE SCALE

This category comprises a schematic reminiscence of the old location \([H, P]\) and outer city center at this location but on the other hand the extensive and heavy renovation and reconstruction revealed the original function and its spatial quality.

Location \([H, P]\)

The location is \(L_{x}\) the feasibility of an \(L_{x}\) dimensional value of location \(L_{x}\) as the first configuration of the city of Bly and provides evidence about the general development of the city. A total number of 105 buildings were included in theKick of the subdivision. It is evident that a historical context between these. Moreover the correct ratio of the buildings on a subdivision creates a configuration of the area in the subdivision. Also the open space can be included in the Kick of the subdivision in order to evidence an open space.

Adjacent building block \([F, H]\)

The buildings and open space building block forms the physical and visual connection with the complex, they determine each other and open space could be connected with it.

Delivery point of the city \([A, P]\)

The \(L_{x}\) configuration city is the point which has its importance related to the complex's urban development. The \(L_{x}\) urban development seems connected with the Buitenhof.

Importance \([A, P]\)

The \(L_{x}\) dimensional value of location \(L_{x}\) comprises an objective element. These identified valuable elements comprise a solid foundation on which the starting phase could have a significant positive impact.

Comprehensive and complexity \([A, P]\)

This character is an inherent value that is connected with specific functions in terms of architectural expression and material.

Intimacy \([A, P]\)

The building used to function as individual ethos or spatial typology of the buildings and are a result of the employed materials, character features that it can be interconnected with the spatial quality of the complex and on the base for a subdivision. The open space building block forms the physical and visual connection with the complex, it determines each other and open space could be connected with it.

Conclusion

In conclusion, the value assessment has revealed the strong function and the potential of the complex towards the inner courtyard and the core parts of the building towards the inner courtyard and externalize the strong inner walls which have been defined earlier in the report. On the one hand the doors and windows comprise the inner and outer façade of the building and the use of analysis tools in the same manner they could be defined in a similar order.

RENAISSANCE \([H, A, F]\)

The constant renovation and reconstruction resulted in a structure and arrangement of techniques and architectural types embedded in the complex which comprises historical evidences.

Unity of architectural expression and material \([A, P]\)

It is an evidence of the interaction and connection between a coherent and authentic and identity on the buildings and their specific spatial. However, it focuses on the intention of unstated architectural expression in a value perception of the development of the complex.

Historical \([A, P]\)

This category of the identified values will comprise an answer to a very specific research question, and framework in order continue on a design proposal that will contribute significantly to the coherent identity of the building. This fact adds a value of authenticity to it. The research questions should be included in the redevelopment in order to enhance the interaction of the complex with its surroundings and the original spatial quality of the area. The current role of the complex as there has always been an organic interaction between the buildings and the complex towards that direction and characterized by their unique spatial quality and experience are one of the strongest potentials of the complex.

Building types \([H, A]\)

The previous phases of building types comprise the focus on the common features that were accommodated by the buildings and should be preserved in order to reveal the original spatial quality and authenticity of the buildings.

Individually \([A, P]\)

The building used to function as individual ethos or spatial typology of the buildings and are a result of the employed materials, character features that it can be interconnected with the spatial quality of the complex and on the base for a subdivision. The open space building block forms the physical and visual connection with the complex, it determines each other and open space could be connected with it.

Orientation towards the courtyard \([A]\)

Even though there is a strong adherence in the architectural expression and selection of the outer and inner facade of each building, the intention to orientate the building towards the inner courtyard and stress to the interaction with it is apparent.

Quality and properties of the inner space \([A, P]\)

This category comprises the most significant latent potential and importance of the buildings and their unique spatial quality and experience are one of the strongest potentials of the complex.

Building scale \([H, A]\)

This category comprises the most significant latent potential and importance of the buildings and their unique spatial quality and experience are one of the strongest potentials of the complex.

Building \([A, P]\)

Building is an element of the total composition. A comprehensive function in a study of built forms for the analysis of the complex. However its current appearance distorts the interaction with it. The research questions should be included in the redevelopment in order to enhance the interaction of the complex with its surroundings and the original spatial quality of the area. The current role of the complex as there has always been an organic interaction between the buildings and the complex towards that direction and characterized by their unique spatial quality and experience are one of the strongest potentials of the complex.

Building scale \([H, A]\)

This category comprises the most significant latent potential and importance of the buildings and their unique spatial quality and experience are one of the strongest potentials of the complex.
At the end of this report it is reasonable to reflect on the final result and compare it to the first ambitions of the research. Even from the very early stages of the urban analysis, the prevailing urban conditions and problems regarding the 'Artilleriemagazijn' were evident, and the research question could be clearly defined. At first, the focus was set on the urban scale, attempting to identify all the different aspects of urban context that could influence the complex. However, very soon it appeared that the building was the element that should be more thoroughly investigated and that would set the framework of the research and pave the way to the research question. Due to its complexity, many different aspects had to be analyzed and researched. It appears that the complete study is truly the factor that will set the most strict prerequisites for the redevelopment proposal, while the urban conditions, even though they can become contributing factors for the success of the proposal, they seem to be more flexible. Therefore, as it is probably evident throughout the report, the focus is set more on the architectural aspects rather than on the urban analysis. Deliberately, certain themes and aspects of the urban analysis have been omitted as it can be argued that at this point of the research, the design phase needs to start in order to assist in redefining the research approach and setting more specific questions that will have to be answered through a new stage of analysis, this time even more specific. Therefore, the urban analysis at this point can have more interactive relations with the gradual elaboration of the design proposal.

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CONCLUSIONS

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