



# Koepelgevangenis Haarlem

Research Book

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WORLD



1789-Enlightenment and French Revolution: During that period Voltaire and Rousseau launched ideas about social reforms and new perceptions of criminal prosecution arose.

In the UK John Howard publishes "The state of Prisons of 1777" Enlightenment and French Revolution  
Jeremy Bentham's proposal for a New and Less Expensive mode of employing and reforming convicts  
"Panopticum"



1914  
The Netherlands had a neutral position. Its location was vital for both the Allies and the Central Powers. Particularly, The Netherlands controlled the mouths of the Scheldt, the Rhine and the Meuse Rivers.

1929 The Great Depression  
Had terrible effects on Dutch economy. It last longer than in most part of Europe. This led to unemployment and poverty, as well as increasing social unrest.



On 10 May 1940, Nazi Germany launched an attack on the Netherlands and Belgium and quickly overran most of the two countries. However they faced serious resistance which was to a certain extent unexpected.

1948 Universal Declaration of Human Rights, Paris.



2015  
65 million people displaced by war and persecution (UN)

NETHERLANDS

CRIMINAL LAW

Forced work: Corporal punishment + death sentences (eg by beheading)  
Often the rich were treated differently to the poor. Punishments took place in public, as a deterrent

ENLIGHTENMENT  
More attention was paid to humanity in criminal law.  
1790 The Kingdom of Holland had been annexed into the French Empire.

1810 French code, first steps towards equal justice. The guillotine was introduced.  
1811 All forms of torture were abolished in the Netherlands.  
1813 With the independence the guillotine was abolished.  
From then on, capital punishment was carried out by hanging or the sword

1886 Dutch Penal Code was introduced (still used today)  
1894 Abolition of branding and flogging  
1870 Abolition of the death penalty  
1901 Penal Children's act: youth understood as justifying



1886 Two Dome prisons in Arnhem and Breda by J.F. Metzelaar

1914

1917 Men right to vote  
1919 Women right to vote

1939

1950 Model of Pavilion Prisons. For psychological reasons inmates were subdivided in groups and interaction between them was allowed.

1975 "waiting lists"  
The prisons were full. The solution was the "waiting lists". Offenders sentenced to imprisonment did not serve their sentence immediately but as soon as there was room for them. This caused national insecurity.

1974 Committee on Alternative Penal Sanctions:  
To advise the government on new sentencing options in order to reduce number of short term prison sentences.

MIDDLE AGES

1500

1600  
1568-1648 Dutch war of independence

1700

1800  
1795-1806 pro-French Batavian Republic

1839 Separation of Belgium and the Netherlands.  
1848 Constitutional Monarchy

1900

1945 Post War Period:  
The post-war years were a time of shortages, public work and economical recovery.  
Integration in the European Union and the gradual introduction of a welfare state. A baby boom followed the war. They wanted to restart their lives in an easier way, strict traditional rules, rigid hierarchies, strictly orthodox religious doctrines weren't very popular.

1973-81  
This period meant the end of the boom that had its maximum in the 60s. Unemployment increased quickly, causing a growth in social-security expenditures.

1975  
Increase in the construction of Prisons. Although the crime had increased, the amount of sentences remained rather stable but they became much longer. Also high-rise prisons were introduced.

2015  
increase of the number of asylum seekers



The Spanish left in 1577, the Agreement of Veere gave Protestants and Catholics equal rights. Flemish and French Huguenot immigrants came and revived the city's economy as some of them were experts in linen and silk trading. Haarlem's population grew from 18,000 in 1573 to 40,000 in 1622. 50% was Flemish. Expansion plans replaced the plans of just rebuilding the city.



1811 Origins of current Criminal Law of Netherlands as part of the French Empire  
1815 The Creation of The Kingdom of Holland, "Fundamental Law of Holland".  
1823 Dutch Association for the Moral Improvement of Prisoners

1823 - The Dutch Association for the Moral Improvement of Prisoners was established by some citizens. The Association wanted to improve the life condition of prisoners with prison visits, educational measures, religious instruction and books provision. It was a key player for the choice by the Parliament of the cellular prison system.

HAARLEM

1500

1576 Haarlem on fire.  
Haarlem's population had been doubled due to the linen and silk manufacture and trade and the city began to flourish.

1815 Population reduced  
Haarlem becomes capital of the Noord-Holland province. With increases funds from the government  
1839 - Amsterdam-Haarlem railway begins operating. Haarlem railway station opens.

1850 Haarlem's economy began to improve. New factories were opened, and large industrial companies were founded.  
1879 The population of the city doubled in 30 years, from 36,976 to 69,410

1901 The Panopticon prison was inaugurated



Haarlem never recovered after the war as many large industries moved out of the city. However the high immigration meant government funds for building projects.

1944 WWII  
Parts of Haarlem-Noord were evacuated by the Germans to use the area as defensive line. Citizens had to abandon their houses and to move to their neighbours, who weren't very welcoming because of the general shortage.

1964  
Founding Act: The founding act stipulated that every legal settlement, including Haarlem needed its own custody house, a prison for people who are waiting for a placement in the other prison

Haarlem suffered a huge fire. The fire started near the weighhouse at the Spaarne, which was used by mercenaries as a guarding place. The fire destroyed almost 500 buildings (1/3 of the city), included St-Gangolf's church and St-Elisabeth's hospital. The mercenaries were arrested, and one of them was hanged on the Grote Markt in front of a large audience.

Due to the war with England, the trade was reduced and the economy was suffering. The textile industry which supported Haarlem's economy was in a bad moment.

1893 Plans for a new small prison in Haarlem at the site of the courthouse  
1894 Willem Metzelaar made a proposal for a new dome prison in Haarlem.  
1896-1902 The Light Factory a gas and electricity plant that provided Haarlem with light and heat.

77.327

142.686  
1941

169.215  
1960

149.269  
1990

146.956  
2007

146.956  
2016

HAARLEM'S population

77.327

1621

21.000

1796

25.000

1881

64.819

1891

77.327

1921

HOME



1775 Previous prison

1898 NEW PRISON IN HAARLEM (project of the koepel)  
1901 NEW PRISON IN HAARLEM IS COMPLETED  
1903 CELLULAR PRISON IN HAARLEM  
Mean and mocking article about the life of the prisoners.



1948 Renovation of the stables church in te veste  
1957 AGAIN... A PRISONER ESCAPED  
A 27 year old guy escaped from the prison. He found his way out through the kitchen, jumped a 5 meter high wall and ran away. The guards were too late...  
1959 Elevation of the wall from 3.5 to 6m



2000 New building for visitors near the koepel  
1990 New building added by Dupon  
1969 RENOVATION OF THE PRISON  
The renovated prison is in use again!



2016 Protests against closure of prison  
Closure of prison  
The prison houses refugees for 6 months



"OPEN THE KOEPEL" for Universiteit Utrecht

1906 Expansion of storage space  
1921 Start of the construction of the workspace  
1928 First use of the workspace

1964 Extension and renovation of te veste and adding workspace to the veste  
1966 FIVE PEOPLE ESCAPED. THREE OF THEM ARE STILL FREE  
Consequences:  
bars will be strengthened and workspace demolished  
1975 Removing the cellular outside space on the south side and renovation of the cellular space in the north.



1986 Demolishing workspace from 1922, the cellular outside space, the working space and the storage of the koepel.  
1987 THE PRISON WILL DISSAPPEAR  
All teh panopticons (Breda, Arnhem, Haarlem) will disappear, they no longer fulfill the architectural requirements, especially sanitary facilities.



1988 NEW PRISONS: LACK OF PRISON SPACE  
Department of justice is looking for new prison space or extending the existing

1908 Trainstation Haarlem  
1895 Central station Utrecht  
1889 Eiffel tower Paris

1900 Less use of wrought iron and more use of steel in structures in the NL  
Electronic motors replace steam and hydraulic power.  
First use of air-conditioning in large buildings.  
First flat slab floors.  
First developments on reinforced concrete in the NL (mainly in water and civil engineering)

BUILDING TECHNOLOGY

1830 First passenger trains  
Development of the I-beam  
1850 First reinforced concrete by Wilkinson and Lambot  
56 Bessemer steel making process developed

1793 First central heating system (hot air)  
1807 First street lightened with natural gas. Pall Mall, London,

1840 Fireproof cast iron construction in U.S.  
First artificially cooled buildings

Radiator became widespread  
1880 First development on working with concrete in the NL  
Iron and steel frame construction of high-rise buildings  
1800 First reinforced concrete frame buildings  
895 First large-scale central generating station opened at Niagara Falls

1910 First ribbed thin concrete shells  
1925 Welding of structural steel

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# 01 PRISON CULTURE

Before we start with the evolution of the criminal law and the punishment methods of criminals throughout the centuries - generally in Europe and particularly in the Netherlands and in order to better understand the development of the prison typology and consequently the significance of the prison complex in Haarlem which is our main focus, it is important to make a reference to certain important people and their ideas and philosophies. These people attempted to create a more humane environment in those institutions for criminals, each one in his own era, facing different social, economic and political events and from his point of view according to the nature of their profession.



01. John Howard



02. Jeremy Bentham



03. Willem Cornelis Metzelaar



04. Michel Paul Foucault



**John Howard (1726-1790)**

English philanthropist and Prison reformer.

John Howard made a number of inspections in British Gaols in the 1770s, where he witnessed the horrors and torture practices, the absence of discipline, and the unsanitary conditions in such places. Later on, he revealed this information in his report, "The State of Prisons of 1777".

Inside the prisons, the inmates unsupervised for most the time particularly inside their cells. Different kind of prisoners were held in the same place which created a lot of confusion. Men, women, children, hardened criminals and first time offenders, prisoners on remand and debtors mixed with thieves and murderers.

The results were horrific. There was an increase in violence, intimidation, sexual depravity and juveniles were corrupted by older inmates. Inmates even had access to alcohol which further aggravated the problem with idleness, drunkenness and serious diseases.



**Jeremy Bentham (1748-1832)**

English Philosopher, jurist and social reformer.

He is considered to be the Founder of Modern Utilitarianism. He advocated for individual and economic freedoms, freedom of expression, equal rights for women, the right to divorce, the decriminalising of homosexual acts, as well as the separation of church and state. He strongly campaigned in favour of the abolition of slavery, the death penalty, and physical punishment, including that of children.



**Willem Cornelis Metzelaar (1849-1918)**  
Dutch Architect and Engineer.

Willem Cornelis Metzelaar was responsible for the establishment of a number of judicial structures as chief of the prisons and legal buildings at the Department of Justice. Willem Metzelaar was a son of architect Johan Frederik Metzelaar. He studied engineering and civil engineering at the Polytechnic School in Delft. After his studies he had been employed in various different places but then eventually, in 1883 he became the assistant of his father and later on he replaced him as the chief engineer at the Ministry of Justice. In 1886 his son followed him in this position. During the period in which father and son Metzelaar waved the sceptre about the judicial architecture, there was a huge construction activity. An important reason for this is that in 1881 a new Code of Criminal Law was introduced.



**Paul-Michel Foucault (1926-1984)**  
French Philosopher, Historian of ideas, Social theorist, and Literary critic.

Foucault's theories primarily address the relationship between power and knowledge, and how they are used as a form of social control through societal institutions. More specifically, Foucault in his book "Discipline and Punish: The birth of Prisons" he discusses Jeremy Bentham's Panopticon Philosophy as the means to illustrate "the proclivity of disciplinary societies to subjugate its citizens". Particularly, he states that the Panopticon causes a sense of constant visibility that secures the functioning of power. He refers to Panopticon as a laboratory of power where the staff, the guards are conducting experiments on the prisoners. Foucault goes a step further and understands the Panopticon as a generalized model of human functioning, as a way to define power relations in every day life. He says that the Panopticon is not a dream Prison but rather an expression of power in its ideal form, where power is exerted on an increasing number of people while simultaneously the number of the people in charge of this power is decreasing to the minimum so as to provide efficient operation to the system. Thus the system becomes more economic and effective. Michel Foucault initiated the debate of disciplinary action, surveillance and human rights and freedom.



# 01 PRISON CULTURE

## Punishment and confinement in middle ages



05. Executions in Haarlem in 1572



06. Executions in Haarlem in 1573



07. Executions in Haarlem in 1573

In the Middle Ages the “act of Law” was a responsibility of the banks in the towns and villages and while in regional issues the country governor was also part of the process. Incarceration as a form of punishment was infrequently used such as in political matters where people were taken hostages. Cells or better suited at the times, dungeon were placed in the basement of town halls and their use was primarily for the detention of suspects while waiting for their verdict.

From the late middle ages on, the government acquired an active role in the prosecution of criminals. The kind of punishment that was imposed depended on two things: the nature of the crime that was committed and the social status of the criminal. Imprisonment as a punishment only became fashionable around 1600 under the influence of the book “Boeventucht”, in English translated as “Correcting Crooks”, written by Dirck Volckertszoon Coornhert. Since the imposition of punishment was only for the criminals but also the means to set an example to the population, punishments were conducted outside the prison, in front of the public. The Court of Holland in particular had its staging in a busy square: The Plaats, in front of the prison gate. The scaffold was known as the “Green Sod” or “Groene Zoodje” due to the grass that used to grow on it. Moreover, if there was a punishment execution scheduled, it had to be announced earlier so as to ensure that the majority of the public would witness it. During this period, prisoners were kept in common quarters instead of individual cells.

### House of Correction

In the house of correction, criminals were sent to work. The theory was that by occupation the prisoner would become a moral person. Since the penal system was not part of the state’s budget. The maintenance of the house of correction was balanced with the prisoners working.

### Corporal Punishment

Corporal Punishment included public whipping, branding in the face and after the 17<sup>th</sup> century on the upper arm, back or shoulder, chopping off fingers or hands in cases of public violence and theft and in very few cases the criminal’s eyes were gouged out.

### Public humiliation

Public humiliation was used for less serious offences. During this process, the criminal was tied to a pillory or put into the stocks and since it was important that all spectators knew why someone was being punished they were using the so-called “placards of shame” which were placed either beside the criminal or hanged around his neck. This form of punishment through stigmatization was commonly used in minority groups such as heretics, witches, vagrants, Jews, free masons, homosexuals and immigrants.

### Fines and exile

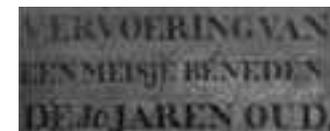
The court used also the imposition of fines as a form of punishment as well as exile. A criminal who was exiled, had to leave his/hers city or country of a period of time or in certain cases for the rest of his/her life. Anyone who did not comply with this order or provided assistance and/or shelter to someone who was exiled was severely punished.



08. Whipping



09. Branding



10. “Placards of Shame”



11. Medieval sword



12. French Guillotine



13. Gibbet



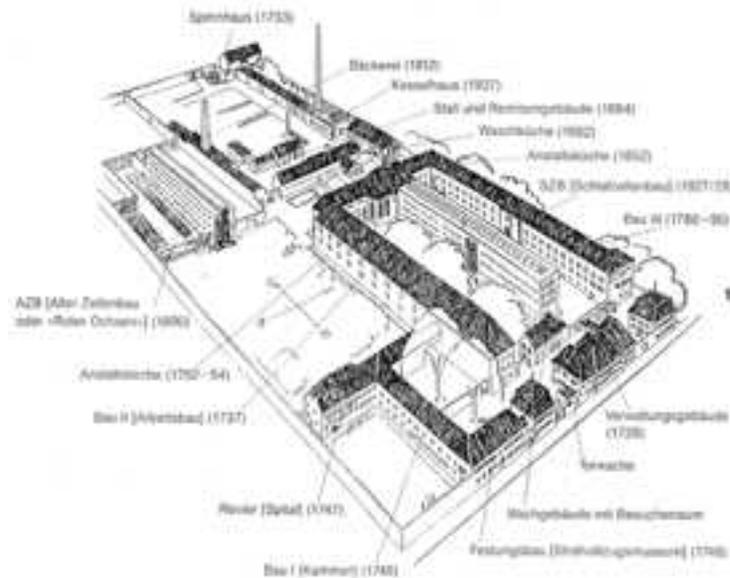
14. Rack

### Death Penalty

The most serious offences were punished by death. Again the death penalty was carried in various different ways depending on the social status of the criminal. The elite was decapitated by sword, while most of the criminals were hanged. The bodies of the criminals were kept on the Gallows Field hanging until they reached the point of decay so as to fall on the ground. One of the most horrific instruments of punishment was the rack. Serious offenders were broken on the rack using an iron cudgel. This resulted to the Dutch term “geradbraakt”, “comparing total exhaustion to the limp state induced by the breaking wheel”. During the era of French occupation, the guillotine was also introduced. It was believed that the guillotine was a more “humane” way of executing the criminal since it was more effective than previous methods such as the gibbets.

# 01 PRISON CULTURE

First prison in Germany 17<sup>th</sup> century



15. Zuchthaus of Ludwigsburg, Germany, 1736



16. Zuchthaus of Ludwigsburg physical model, 1790

At the same time with the Dutch Golden Age in Europe a gradual process from the preference for death and bodily punishment to a preference for imprisonment had begun further to the house of corrections that were previously mentioned.

During the 17<sup>th</sup> century, Germany was creating prisons in a wing structure with central corridors and cells on both sides, with a ring wall around the whole complex. Cellular confinement became more popular though in the course of the 18<sup>th</sup> century. Generally, the layout and form of prisons of that followed the European Enlightenment was inspired by the "San Michele Improvement House", established in Rome in 1704, with a multi-layer rectangular wing arrangement, with cells on both sides and workstations arranged in the hallways.

# 01 PRISON CULTURE

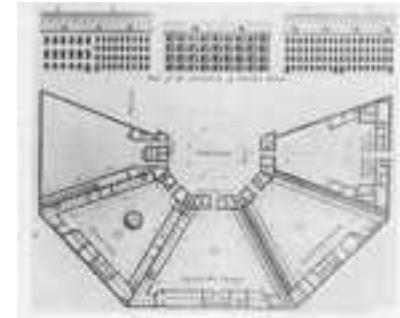
## European enlightenment and cellular type prisons

After centuries of violence and physical punishment in Monarchical states around the world, during the Enlightenment in which Voltaire and Rousseau launched ideas about social reforms, new perceptions of criminal prosecution arose. The progressive modern democratic state was in need of a different system to regulate its citizens and cellular confinement was introduced. Central Buildings and radial land plans were explored, with wing prisons colliding in one central space such as the octagonal plan of "Maison de Force" in Ghent 1773-1836, The Kingdom of Holland, current Belgium, "Cherry Hill Prison" in Philadelphia, 1823, and "The Pentonville Prison" in London, built in 1842. "The Pentonville Prison" became the first cellular prison that was used by many countries, including the Netherlands, as an example model. This prison had four cell wings and an administrative building, meeting in a central space. In addition, there was a chapel with stalls (separated seating areas) and in the ring wall, custodial houses. An important characteristic was the free-standing circular, individual walking places, which were later transformed by the Metzelaars to half-circle constructions adjacent to the cell wing.

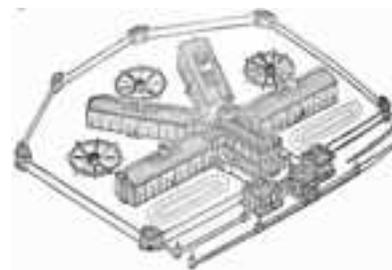
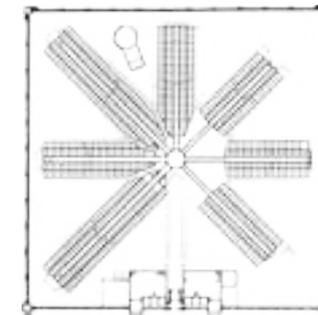
Monitoring was the main focus of these experiments and part of this experimentation was also Jeremy Bentham's Panopticon philosophy that will be further explored in the following pages as it constitutes a key aspect of the Dome Prison Complex in Haarlem which is our focus in this project.



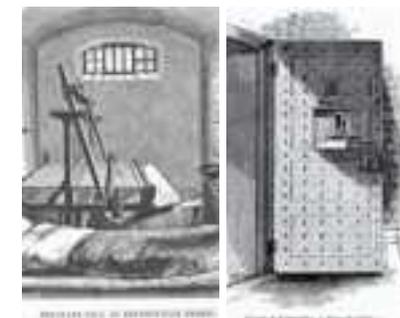
17. Maison de Force in Ghent, 1773-1836



18. Cherry Hill Prison in Philadelphia, 1823



19. Cherry Hill's Pentonville Prison, London, 1842



# 01 PRISON CULTURE

## Panopticon philosophy 1791: psychological punishment & solidarity

The Panopticon offered a powerful and sophisticated internalized coercion, which was achieved through the constant observation of prisoners, each separated from the other, allowing no interaction, no communication.

The word Panopticon comes from Greek.

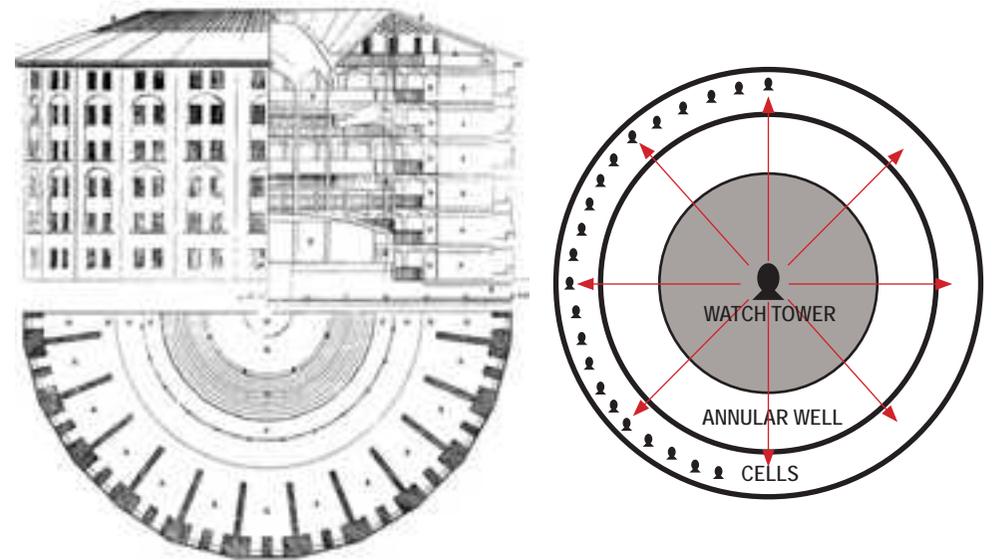
Παν- (Pan = all inmates) and -Οπτικον (Opticon = observation)

There was also a reference in Greek mythology about “Panoptes”: A giant with a hundred eyes, who was known to be a very effective watchman.

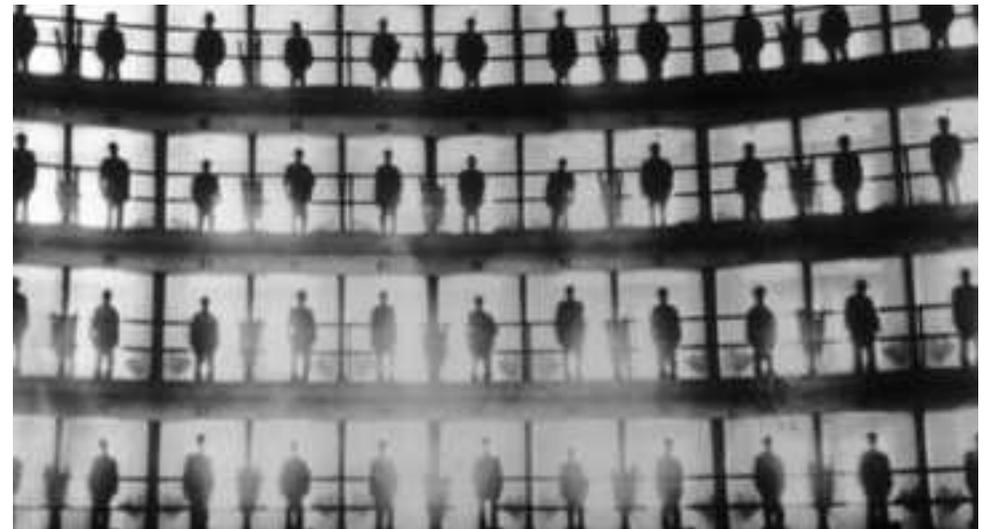
Therefore, the Panopticon allows a watchman-guard to observe the occupants of the cells without the occupants actually knowing whether or not they are being watched. In this way, the constant feeling of observation it was assumed to provide reflection and reform for the inmates.

Jeremy Bentham’s intention was definitely humanitarian; he was offering a solution to societal problems such as violence, sexual depravity and diseases. At the same time, it was intended to be an economic solution, a cheaper solution than the existing prisons up until then since it would require less employees, less guards for observation. More specifically, the reforms that came with this new philosophy of prisons included the following:

- They had to be clean, hygienic, dry and heated.
- They should include prison Doctors and infirmaries.
- Central heating, forced ventilation and running water were also key aspects of the design.
- Basement kitchens had to be constructed in order to provide inmates with hot meals.
- Provide labour to the prisoners



20. Panopticon Penitentiary, Drawing by Willey Reveley, 1791



21. Inmates at the "Isle of Pines Prison", 1939

### “Separate System”

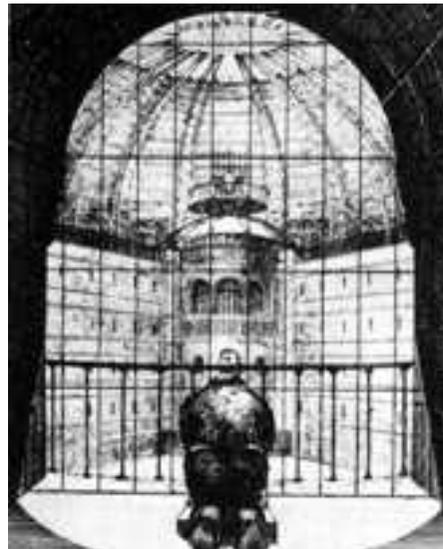
In order to combat violence, sexual depravity etc., the prisoners had to be divided into classes by age, gender and they type and seriousness of their offences. Thus different blocks or wings inside the same prison would shelter different classes. At the same time each inmate would be separated from the rest inmates in his class - one cell per inmate - .

This separation approach with no communication between the prisoners was thought to lead to self-reflection and remorse and ultimately to “moral elevation”.

In addition to this, every time the prisoners were brought out of their cells, they should wear masks so as to conceal their identity. This way, it was believed that after the end of their incarceration, they could begin their new lives without carrying their past along.

An interesting image of the solidarity approaches the construction of a chapel with the prison building. Each inmate was required to sit in isolation from his fellow prisoners, with only the view of the chaplain conducting the sermon. This arrangement resulted in a design where prisoners were confined to their own compartment - more of an image of stacked wooden coffins than a layout of choir stall.

This idea, approach of solidarity in the criminal prosecution, whose disadvantages soon became clear, has been widely used in the Netherlands for a long period of time and three Panopticon Penitentiaries were constructed in Arnhem, Breda and the one we are investigating in Haarlem.



22. N. Harou-Romain drawing, 1840



23. Prisoners wearing masks



24. Auditorium Fresnes Prison

*“Proposal for a New and less Expensive mode of employing and reforming convicts”  
London 1789*

*“Moral reformed - health preserved - Industry invigorated - Instruction diffused - Public burdens lightened - Economy sealed.. All by a simple idea in Architecture”  
Jeremy Bentham - The Panopticon writings*

*“In a Panopticon-prison, one general problem applies to all: to extend to all of them, without exception or relaxation, the influence of the commanding principle. Cells, communications, outlets, approaches, there ought not anywhere to be a single foot square, on which man or boy shall be able to plant himself - not for a moment - under any assurance of not being observed. Leave but a single spot thus unguarded, that spot will sure to be a lurking place for the most reprobate of the prisoners, and the scene of all sorts of forbidden practices.”*

Bentham and the Galleries of Inspection, 1791

After the Second World War and its horrors, as well as the Universal Declaration of Human Rights in 1948, in Paris there was significant thought regarding the imprisonment conditions of inmates. The failure of the "Panopticon" style prisons was evident. The existing approach of solidarity, where inmates were kept separated, prevented from any form of communication resulted in various suicides as well as several successful escapes and thus in 1951 solitary confinement was abolished.

A resistance man caught in WWII states: "...is a prison machine. A horror is the hatch pushing the food cans, shouting the cor veers, taking care of the food and calling the numbers, the barrel, the wooden spoon and the wooden knife..." Consequently, between 1975 and 1980 additional prisons were constructed. The focus of these prisons was on the rehabilitation and reintegration of the prisoners. This also resulted to a significant change in the form of their punishment and their rights during this punishment.

### Imprisonment

The most serious penalty in the Dutch penal system is that of imprisonment. Its most extreme form is that of life imprisonment, which is imposed in crimes such as murder or manslaughter. Furthermore, since 1983 a fine may be imposed as the sanction for any crime, even those for which the Criminal Code prescribes life imprisonment. A life sentence is deprivation of liberty for an indeterminate period. Yet, depending on the prisoners behaviour, several measures allow him to reduce its sentence and acquire extra benefits.

On average, life imprisonments last about 15 years.

### Detention

Detention is the custodial sentence for infractions. The minimum duration of detention is one day and the maximum duration is one year, while in specific cases such as that of recidivism, the detention period can be prolonged to sixteen months. Originally intended as a "custodia honesta", detention is considered as a lighter sentence than imprisonment, however there is slight difference in the way of their execution.

### Community service order

Community service order for adult offenders is an alternative sentence option which is believed to be a restriction of a person's liberty in a softer way than imprisonment yet more serious than a fine. Community service as a form of punishment mandates the consent of the accused for work in order to avoid breaching international agreements prohibiting forced labour. This work must benefit the community therefore it takes place in public organizations such the government or in private organizations linked to the health care system, the protection of the environment, the society and culture.

### Electronic monitoring

Electronic monitoring is a feasible substitute to imprisonment or any other form of deprivation of liberty. Electronic monitoring is used either in the last phase of the serving of the prison sentence or along with a community sentence.



25. Rotterdam Bombardment, 1945



26. Arnhem Disasters, 1940



27. German troupes in Haarlem, 1940



28. Grote Market in Haarlem, 1940

# 01 PRISON CULTURE

## After the WWII: humanitarian punishment rehabilitation & reintegration

The form and layout of the newly constructed prisons was square, rectangular with inner courtyards, high-rise buildings with multiple cells, communal living-rooms, sport facilities for interaction between the prisoners.

These reforms in the prisoners conditions also influence the relationships between the inmates and their guards. When they were confined in solitude with no right for communication, they felt more estranged from the guards since the only established relationship was that of the prisoner being observed by the guard from a distance, while in this more “enjoyable” campus-style arrangement they perceived their relationships with the guards as more positive and supportive. The new prisons had a more “friendly” atmosphere, emphasizing on communal activities and interaction, as part of a more humane treatment of the prisoners which was aiming to their rehabilitation. This process of rehabilitation includes the following:

### Work

A prisoner has the right to participate in prison labour. The prison governor ensures the availability of prison labour provided that this labour is not in conflict with the nature of the detention. Convicted prisoners are obliged to properly perform the prison labour ordered, either within or outside the prison establishment, and they receive wages. With the money they earn prisoners can buy tobacco or other canteen-goods or rent a TV, a microwave or pay for telephone cards or stamps, improving the quality of their life inside the prison.

### Contacts with the outside world

Each prisoner has the right to send or receive letters by post at his own expense. He or she has the right to receive visitors for at least one hour per week or to make telephone-calls for at least ten minutes per week again at his own expense.

### Permissions for leave from the Prison



29. Bijmerbajes Prison Complex, Amsterdam, 1978



30. Penitentiare Inrichting de Schie Rotterdam, 1989



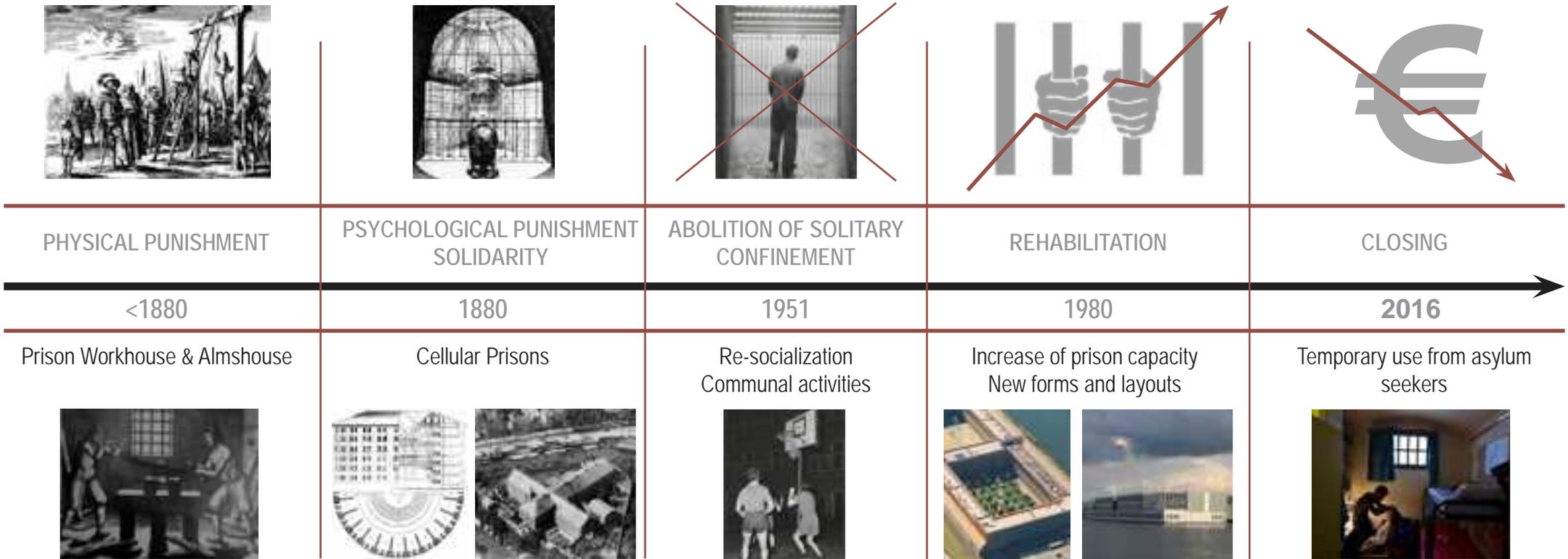
31. Floating Prison, Zaandam, 1990



32. Nieuwegein Prison, Utrecht, 2000

# 01 PRISON CULTURE

Summary of Dutch prison evolution as an institution



# 01 PRISON CULTURE

## Prison types in the Netherlands

It is evident that the evolution of prison as a building is closely related to the way punishment was executed and consequently how the Criminal Law applied, the relationship between the prisoners and their guards etc. As a result of our afore mentioned research, we can distinguish two main types of prisons in the Netherlands, the Panopticon type and the linear type. The latter though includes a number of alternative layouts.

### Round or Panoptic Type

By switching cells into a circle, the desire was to achieve optimal control. However, the shape does not provide much space for care elements, such as sanitary facilities, kitchens and workshops. Often, additional space outside the round building was required to house these elements. As a result, the advantage of this type of prisons which was the reduced distances within the dome itself where compromised by the large distances to these caring facilities. For a government that opted for optimal control, the panoptic type was still a very suitable choice however nowadays this philosophy is not optimal anymore and as a result all round prisons have been shut down in the Netherlands.

### Linear Type

This type arose from the desire to concentrate large numbers of detainees within a relatively small, well-guarded surface. A strict regime was often used to keep the large numbers of prisoners under control. A major drawback of this type was that all traffic within the building was concentrated in the central hallway - or as some of the devices over a walkway to the (blind) outer wall-

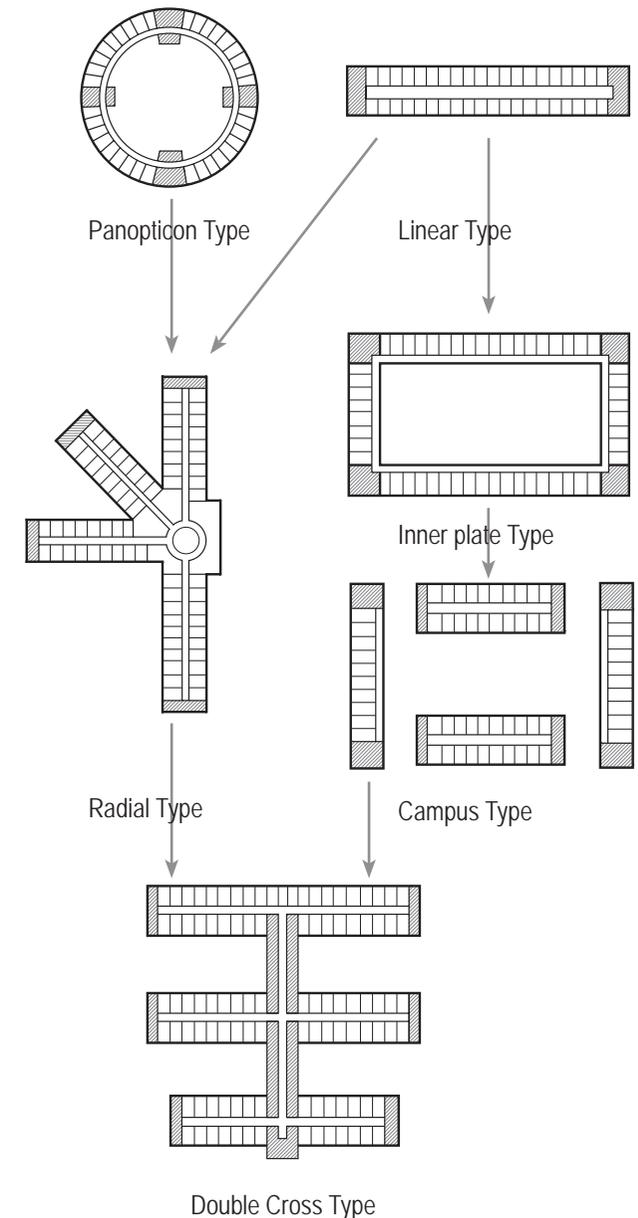
As a consequence, the walking distances of this type, for example to care elements, were quite large, which did not help the rest and control of the regime.

By wishing to have a central area where inmates could rest but simultaneously be monitored, the inner plate type was introduced. By locating four blocks of the linear type around a courtyard a well-guarded terrain was obtained easily. The circular corridor in the four blocks was located either in the courtyard or by the (closed) exterior.

At the campus type, due to changes within the prison policy, a free-intensive establishment of a prison complex was possible and instead of a large jail, loose pavilions were constructed. Each pavilions was completely independent. Within this derivative of the inner plate type, even different administration within the prison in the various pavilions was possible. However, both of these types maintained the large walking distances.

In the radial type, the solution to these disadvantages was partially found. This alternative introduced a central checkpoint from which the prison could be largely covered. By concentrating all caring elements (including the kitchen and workshops) at the central point they reduced the distances to the cells.

The double cross type was a fusion of the radial and linear type. Several linear sections were linked by a zone in which all the care elements were accommodated. As a result, the central control point was not necessary anymore.



# 01 PRISON CULTURE

## Haarlem's prison evolution

In the City of Haarlem, before the 1755, prisoners were kept at the cellar of the city hall opposite to the Grote Markt only for a relatively short period of time until there was a verdict for their sentencing and form of punishment. After their sentence was finalized they received the aforementioned forms of punishment depending on the nature of the criminal act. In the case of minor crimes, "prisoners" were sent to the "Tuchthuis" the local workhouse.

The local work house was usually supervised and run by a middle aged married couple. They were called "Father and Mother" by the convicts whereas the inmates were usually referred to as "journey-men" while the staff of the house were the "masters". The staff lived along with the inmates inside the house. The inmates could gain the privilege of becoming "assistants". The assistants were helping the staff in the works of the house. In the workhouse the prison regime was focus on forced labour, and if the inmates managed to exceed the required output, it is believed that they acquired a certain amount of money, ranging from 13 stuiver and 8 pennies to 14 guilders and 19 stuivers.

Yet, during the 17th and 18th century the prison house system of Haarlem proved to be financially unprofitable. There were attempts to separate the prison workhouse from the almshouse but they were successful only after the 1770s. The change came after the Kingdom of the Netherlands became part of the French Empire and adopted the French Criminal Law.



33. Provincial Government Building, Haarlem 1789



34. Police Station, Haarlem 1768



35. Haarlem's City Council



36. City Council's cells, Haarlem 1617



37. "Tuchthuis", Haarlem 1609

# 01 PRISON CULTURE

## Haarlem's Koepelgevangenis prison evolution

### DE CELLULAIRE GEVANGENIS TE HAARLEM

(Verhijfplaats van Mijnsheffers en Van der Grinten.)  
 Leelijk en loutaal met 'n hoog koepelstok vijf even buiten de eigenlijke stad de cellulaire gevangenis op, waar ommevonden Mijnsheffers en v. d. Grinten 'n goeie zandige maand van hantieren wordt afgewisseld. En dit heeft juist op dat verhoorde getoew voor eens de aardsche gronsticht, mocht 't niet niet te nopen schijnt, er niet eens wat over te zeggen.  
 In Juli 1898 is men naar de kerk begaan en in 'n laait van 1903 is in gebruik genomen. Waaronder 'n gronst van hoog loof opgetrokken, dat de onmenselijke en onmenselijke koepel loof in de kerk stad is niet te, want ik niet 'n nu slijndig geacht.  
 Waar men nu stad de gevangenis van kanten voor, in 'n veld 'n stantsmentagebouw en de koepelgang.



De gevangenis worden per oelagen aangebracht in de gevangenis krijgen er dan 'n nummer, want namen heb je niet meer. Je hebt nu, zoveel er zoveel nu dierbaar en. Bij een heel verblijf mag je je eigen klemmen aantrekken, bij een verblijf boven de drie maanden zijn de kleren van de gevangenis verplicht. Leelijk graf prijs-goud, een boek zonder zakken (je zou zeggen, waarom in klemmen. Je kan nu leerd gaan er af. In een mocht heb je in een veldmaakt loof veranderd, en kan je oelwaars gaen. Er zijn het veld, die stantsment op een gevee het uithouwen. (in foto 2.)



Dere hal is rond en heeft bij 'n hoogte van bijna 50, een breedte van ruim 50 M. Door 'n grote raam valt 'n licht binnen. Gelijksloers zijn de cellen, eenige daarvan zijn ingericht voor magistraat, katecheten enz. en 't voor oekel. Die zijn voor veldmaakt. Want straf is er ook nog. Wat er gebeurt met hen, die ook in 'n veldmaakt niet goed oepenen, weet ik niet. Maar die veldmaakt zelf zijn af veldmaakt gevee. En wat je doen moet aan er in te kanten? Oek, wij veldmaakt zeggen, niet een heel veel. Ik v. die je veldmaakt naar de kerk te gaen. Trouwen de mensse het gevee wat naar de kerk, want 't is nog eens een veldmaakt. In de kerk kan je veldmaakt ook nog veldmaakt oepenen. Bij 'n een gevee bekend van iemand, die na oeliep van de

### 1898 NEW PRISON IN HAARLEM

Budget 510.000

Round prison for three main reasons:

1. Surveillance: Prisoners are monitored by the guard.
2. Communication: The communication between the prisoners is impossible (instead of typical opposed cells)
3. Work space: Possibility of multi-use of the central space as food distribution or work space



### 1901 NEW PRISON IN HAARLEM IS COMPLETED

Start: December 1898 by Willem Metzelaar.

Description: 4 floors, 60 cells each, 240 cells in total.

Administration building and church above (142 seats)(catholic and protestant)

Director's house

'Huis van bewaring' 12 common cells (4 people each)+26 ind.

### 1903 CELLULAR PRISON IN HAARLEM.

Mean and mocking article about the life of the prisoners.

### 1941 CELEBRATION OF THE PRISON

40th anniversary

### THE OLD PRISON AT THE TUCHTHUISSTRAAT IS DEMOLISHED

New schools are built in that location



### 1957 AGAIN... A PRISONER ESCAPED

A 27 year old guy escaped from the prison. He found his way out through the kitchen, jumped a 5 meter high wall and ran away. Te guards were too late...

### 1966 FIVE PEOPLE ESCAPED. THREE OF THEM ARE STILL FREE.

During coffee break five men escaped at the same time.

### DIRECTOR IS SHOCKED..

The director was shocked when he heard about the escape. The department of justice will start an extensive research.

Consequences: Bars will be strengthened and workspace demolished.

### 1987 THE PRISON WILL DISAPPEAR

All the panopticons (Breda, Arnhem, Haarlem) will disappear, they no longer fulfil the architectural requirements, especially sanitary facilities.

### 1988 NEW PRISONS: LACK OF PRISON SPACE

Department of justice is looking for new prison space or extending the existing.

### 1989 RENOVATION OF THE PRISON

The renovated prison is in use again!



# 01 PRISON CULTURE

## Haarlem's Koepelgevangenis prison evolution

At the end of the 19th century there were plenty of discussions around the new prison in the City of Haarlem. Finally, on December 3, 1898, permission was given for the construction of a circular type prison and a detached wing as a custody house according to the official "Criminal Code" that was introduced in 1881, followed by the Founding Act of 1884. The dome prison in Haarlem by W.C Metzelaar has a more modernized approach than the original philosophy of the Panopticon Prison described by Jeremy Bentham. At the same time, it presents a number of differences from the dome prisons in Arnhem and Breda designed by J. F. Metzelaar. The most important is perhaps the missing tower in the central hall of the dome. This may be partly due to W. C. Metzelaar's intention to focus more on the functionality of the building rather on the conditions of the imprisonment of the criminals. However, the treatment of the prisoners remained the same as in the original philosophy, with individual cells, solitary confinement, no communication at least in the beginning and no communal areas, apart from the working spaces. The inmates did not have access to the exterior spaces of prison complex but they were using the "fan-shaped" areas on the north and south parts of the dome to get some fresh air. This areas were designed in such a way that each prisoner would occupy one branch of the outlined space. Similarly, he included the wooden boxes in the church whose utility was mentioned before. W. C. Metzelaar was not prompt to design a Panopticon style prison yet he seems the he used this approach for three main reasons. Firstly due to its economic benefits, explained by Jeremy Bentham, so as to satisfy the economic policy of the Ministry. Secondly, as an obligation to continue the work of his father who build the dome prisons in Arnhem and Breda and last but not least so as to take advantage of the popularity of Jeremy Bentham's ideas to promote his work.



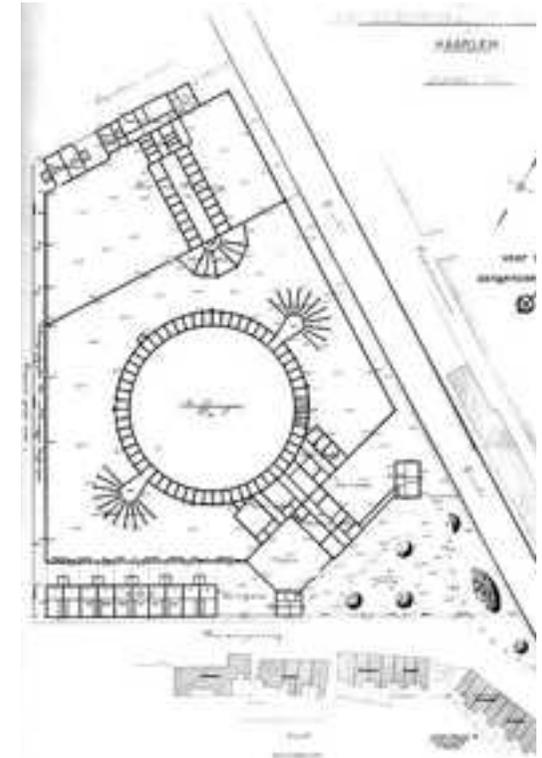
38. Haarlem's Circular Prison



39. Haarlem's Circular prison, river side view



40. Haarlem's Circular prison, 1949



41. Metzelaar's plan, 1898



42. Haarlem's Circular prison, street view

# 01 PRISON CULTURE

## Haarlem's Koepelgevangenis prison evolution



43. Dome Prison interior



46. Prisoner's Individual Cell



48. Exterior Courtyard



44. Dome Prison interior, Guards



47. Prisoner working inside the cell



45. Dome prison interior corridor



49. Individual external spaces for fresh air

# 01 PRISON CULTURE

## Haarlem's Koepelgevangenis prison evolution

However, after the Second World War, as it was mentioned before and recognition of the failure of the Panopticon type institutions important changes were conducted in Haarlem's prison as well. The prison had to adapt to the social changes and the reforms of the criminal law the most important of which was the Abolition of Solitary Confinement in 1951. Initially, changes were performed in the existing buildings. The central courtyard of the dome for instance was used for sports and interaction between the inmates. In the 1980s and 1990s, as part of the expansion in the capacity of prisons in the Netherlands, the dome prison in Haarlem was also expanded and a new building was added by J.W Dupon, including extra caring facilities and communal areas.



26. Dome interior, elevator shaft, 1986



52. Working space for prisoners



55. Dome interior, communal activities



51. Construction works of renovation-extension



53. Prisoners at Church altar



54. Dome interior, Control room



56. Dome interior, basketball court

# 01 PRISON CULTURE

## Haarlem's Koepelgevangenis prison evolution

With crime declining in the Netherlands, Haarlem's circular prison eventually closed in 2016. Since, then the country is looking at new ways to utilise its prisons. Temporarily, the prison in Haarlem was used as a centre for asylum seekers. Yet, since the prison was finally sold from the Municipality of Haarlem so as for its redevelopment plan to begin, it is currently empty with a variety of spaces and facilities awaiting to acquire a new programme.



59. Aerial photo of the prison complex, Haarlem 2017



57. Dome interior current condition



60. External sport facilities



62. External courtyard



58. "De Vest" current condition



61. Internal sport facilities



62. Prison extension, current condition

The whole complex of the prison constitutes a representation of the Prison evolution throughout the centuries as well as the evolution of the Criminal law in the Netherlands. Different parts of the building are connected to various events of the Dutch History. Consequently they carry different structural, aesthetic and cultural characteristics of the eras that they were constructed. The Koepel may be the most important aspect of the complex in terms of form, strength and influence in the city of Haarlem but the story we discovered is only understood with every building of the complex.





# 02 URBAN CULTURE

## 02 URBAN CULTURE

### Industrial history

In comparison to surrounding countries the Netherlands is a backslider in industrialization and was very hard. The process started slowly. The first (textile) companies went bankrupt due to various setbacks. This was a deep dip. Then the metal industry slowly started. The government was prepared to re-use this. There came machines, slowly industrialization in Haarlem went well.

#### Textile Industry

The textile industry had always been part of its history. Between 13 and 17 century the Haarlem textile industry became nationally and internationally famous, even between the European monarchies. It meant enormous economic prosperity. The production was mainly linen, wool and sheets.

In the 1930s (1830 Haarlem was regarded as pre-industrial) the textile industry was the main industry. Even though there was unemployment, especially in winter. Under the NHM-program to create employment, and as one of the cities in the western part of the Netherlands with the worst economic situation in the 1830s, three Belgian textile factories were founded in Haarlem. The reason was also the need to find a new spot to replace Ghent textile industry. In Ghent the textile industry was the basis for the trade with India. Trained staff from Belgium came across too. The government also struggled with money, resulting in bankruptcy for many companies.

These were run by experts from the Southern Netherlands. Thomas Wilson, whose factory was situated north of what is today the Wilsonplein, Guillaume Jean Poelman, who was in business with his nephew Charles Vervaecke from Ghent and had a factory on what today is the Phoenixstraat, and Jean Baptiste Theodore Prévinaire, who had a factory on the Garenkokerskade.

The programme was initially successful, but after 1839 when Belgium was split away from the Netherlands, the protectionist measures for the Dutch East Indian market were removed and the business began to flounder. After the American Civil War 1863, the cotton business went down. Only Previnaire was able to survive.



01. Three Textile Industries



02. Interior view of a Textile Industry

## 02 URBAN CULTURE

### Industrial history

#### Cacao Industry

In 1897 the cocoa and chocolate factory Droste settled at the Spaarne in Haarlem. Since then, the name Droste has become world famous. The history of Droste has been connected to the city of Haarlem for a century. It belonged to the Van Nelle proprietary.

In 1930, 800 people were employed.

In 1960s over 1000 employees.

In 1986 the production of Droste was transferred to Vaassen, Gelderland.

The building was abandoned in 2004

Reconverted into houses in 2006

#### Metal Industry

In the 1970s, another industry started slowly, the metal industry. Making machines, ground and dredging mills. Due to the construction of the first railway lines, the production of wagon started slowly in the mid-1960's. At the end of the 1990s, the government released the concept Free Market and began to support its own industry again.

#### Dutch Iron Railway Company

In 1837, the Dutch Iron Railway Company (HIJSM) was established. In 1844, the HIJSM decided to set up a central workshop in Haarlem.

#### Harpsichords Manufacture

Klavecimbelbouw Fred Brettenhausen

Fred Brettenhausen is one of the world's leading manufacturer of harpsichords in the world. It's an artisan construction.



03. Droste Chocolate Factory 1890



04. Train Station



05. Haarsichord



06. Shipbuilder signal



07. Van Dijk Logo

#### Former Haarlem Bread and Meal Factory

In 1876 a new warehouse was built in Haarlem at the Bakenessergracht for the purpose of the Haarlem Bread and Meelfabriek. Since 1990, the building has been used as an apartment building.

#### Biscuits Factory Van Dijk

Van Dijk's Beschuitfabriek was built between 1900 and 1902. The factory management was formed by, inter alia, HJ van Dijk, and the contractor GPJ Beccari. During World War II, the company was under German management. The company was closed on December 1950.

#### Beer Brewing

Beer brewing reached a high importance in Haarlem. Until the 16th century the water for the beer was taken from the canals in the city till it got too polluted. Then they started taking it from outside the city. From the 17th century the water was transported through the canal. The location where the water was taken is called the Brouwerskolkje, the canal now is called the Brewers' Canal (Brouwersvaart).

Haarlem was a major beer producer in the Netherlands, specially in Noord-Holland. During the Spanish siege there were about 50 brewing companies in the city; while 45 years later in 1620 were 100.

From the end of the 17th century the economic situation went worse. In 1752 there were only seven beer breweries left, and in 1820 they were definitely gone. Recently some of the old recipes have been rescued.

#### Ship Builders

Along the Spaarne. (No information)

## 02 URBAN CULTURE

### Industry and Employment nowadays

It is a capital province city, a capital court city, and a capital diocese city. Therefore, Haarlem has a lot of government officials and administrators. (30% of the current employment).

Other big employers are the hospital, Ikea, a train refurbishment company and the pharmaceutical companies MSD and Teva.

There is not a leading sector of Haarlem's industry, although the creative industry is developed a little bit above average, with recently around 3D printing.

70% of Haarlem population works outside Haarlem.  
After graduation and finding a job, many students move from Amsterdam to Haarlem to settle down.

#### Tulip Bulbs Cultivation Industry

Haarlem has the image of 'Haarlem floral city'. Up until the early 20th century the city was located among the flower fields, later the industry moved away from the city. After 1880 the bulb industry begins to attract tourists, conveniently located and easily reached thanks to the steam trams that had recently been built. The industry expanded further, thanks to modernisation. As Haarlem slowly expanded southwards, so did the bulb fields that expand between Leiden and Haarlem.

#### MSD (international)

Started in the Netherlands in 1954. From the Dutch headquarters in Haarlem (1956), local activities in the Netherlands are coordinated.

Teva: since 1977

Ikea: since 2005

#### NedTrain Refurbishment and Overhaul (R & D)

The origin goes back to the first railways in the Netherlands and the construction of the then station in Haarlem in 1839. The workplace in Haarlem was built later (1844). The workshop in Haarlem is still very important for train travel Netherlands. It is the largest workshop of NedTrain with its area of 14 hectares and about 800 employees.



08. Tulip Cruise Route

### The Coster Legend

#### A Haarlem fantasy of bookprint invention in the early 15th century

In early 15th century Laurens Janszoon Coster went for a walk in the Haarlemmerhout park. There he carved a letter in the bast of a tree. The letter fell down in the sand. It left an imprint. This is how Coster got the idea for bookprint. His helper Johann Gutenberg stole his idea and went to Mainz in Germany to conduct further experiments and is now regarded as the inventor of bookprint. The claim that Coster invented bookprint, or even his existence, cannot be verified. It's known as the Coster legend. Even a prominent statue of Coster at the Grote Markt square in the middle of the city centre cannot change this.

### History

Printing press was in operation in the city of Haarlem from 1483.

Jacob Bellaert was an early Dutch publisher who produced seventeen books in Haarlem from 1483 to 1486. As a result of the legend regarding the first printing press the printers of Haarlem were very popular and due to that the most notable Dutch history books from the Dutch Golden Age period were published in Haarlem. These include "Batavia" by Hadrianus Junius, "Works" by Dirck Volkertszoon Coornhert, "Schilderboeck by Karel van Mander, "Description and Ode to Haarlem" by Samuel Ampzing, "Batavia Illustrata" by Petrus Scriverius, and "Origin of the Dutch Wars" by Pieter Christiaenszoon Bor.



09. "Batavia" by Hadrianus Junius



10. "Schilderboeck by Karel van Mander



11. "Description and Ode to Haarlem" by Samuel Ampzing

## 02 URBAN CULTURE

### Libraries

The term “Stadsbibliotheek Haarlem” (Haarlem Public Library) is a collective name for all public libraries in Haarlem. Most libraries are establishments of the “Bibliotheek Zuid-Kennemerland” spread in various locations of the city.

The first public library of Haarlem opened in 1921 at the cloisters of the Haarlem City Hall where the academic library had been since 1821. People had access to a public reading room only after 1913. As of 2009, there are six public libraries with ten lending points in various places such as in hospitals.

The largest of Haarlem’s lending libraries, is the “Centrale Bibliotheek”, which moved to the Doelenplein on the Gasthuisstraat in 1974. The history of its location is older than the collection itself.



12. De Bibliotheek Haarlem Centrum



13. Library of Heemstede, Haarlem



14. Bibliotek op het Station, Haarlem

#### Paintings

After the fall of Antwerp, many artists and craftsmen went to Haarlem and received commissions from the Haarlem council to decorate the city hall. The paintings commissioned were meant to show Haarlem's glorious history as well as Haarlem's glorious products. Haarlem's cultural life prospered, with painters like Frans Hals and Jacob van Ruisdael, the architect Lieven de Key and Jan Steen who made many paintings in Haarlem. In fact, between 1605 and 1635 over 100,000 paintings were produced in Haarlem. At that time art ownership in the city was 25%, consequently, more art has survived up to today from that period in Haarlem than from any other Dutch city, thanks mostly to the *Schilder-boeck* published by Karel van Mander in 1604, in Haarlem as it was mentioned previously.



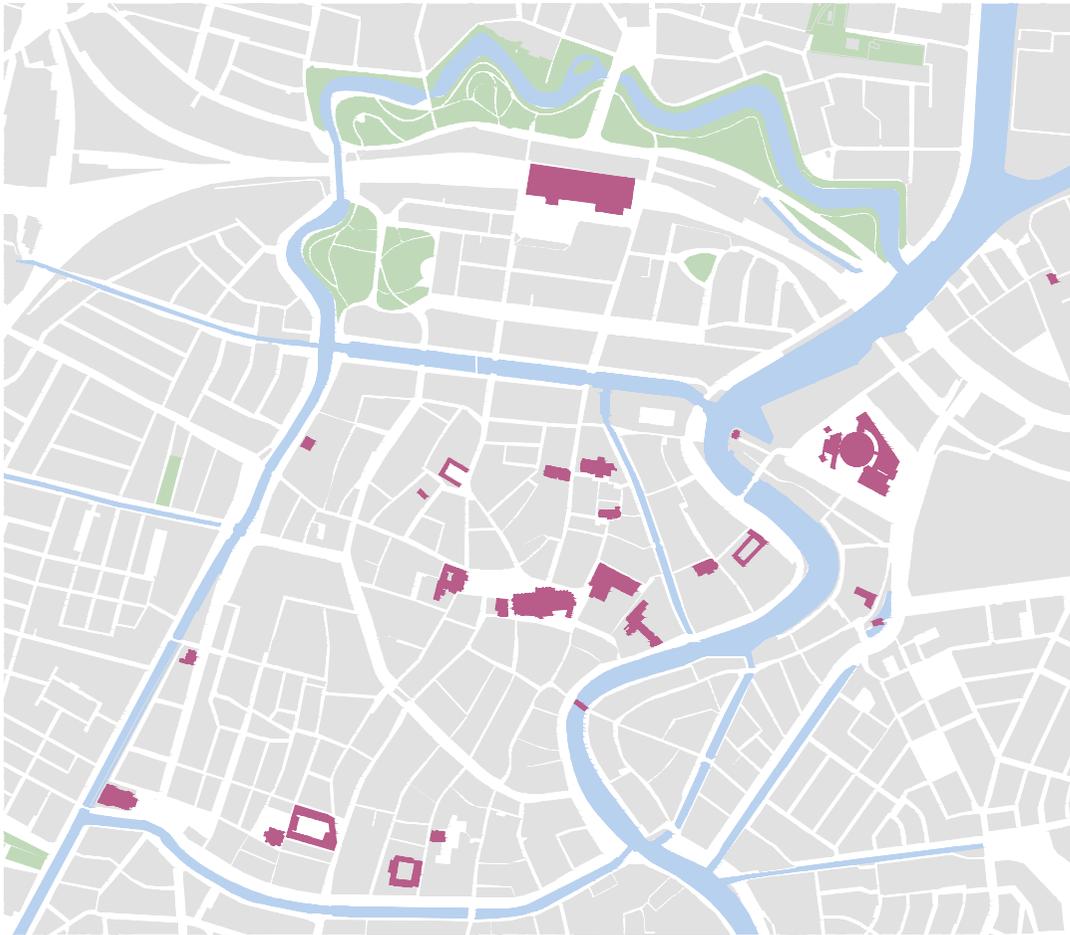
15. Festive banquet of the Officers of the St. Hadrian Nights Watch, Frans Hals 1633, Haarlem



16. Regents of the Old Men's Almshouse, Frans Hals 1664, Haarlem



17. The Windmill at Wijk bij Duurstede, Jacob van Ruisdael 1670, Haarlem



Most of the important historical monuments, which in most cases are used as museums or gallery spaces, are situated around the Grote Markt square. However there are a few in the surrounding area of the prison Complex inviting people to explore this area of Haarlem too. They underline the cultural activity in the area as well as the potential of our project to reinforce this activity by redesigning the prison complex and open it more to the public since it constitutes an important aspect of the city cultural history.



Frans Hals Museum

The Frans Hals Museum has enjoyed growing fame and interest ever since it opened its doors in Groot Heiligland in 1913. The museum's collection of Haarlem Old Masters of the Golden Age, including the world's largest collection of paintings by Frans Hals, is unique. In the early seventeenth century painting underwent a radical change, and the foundations for this were laid in Haarlem. This change ultimately determined the style and the grandeur of the Golden Age, so Haarlem can rightly be regarded as its birthplace. The Frans Hals Museum's collection, which encompasses the entire spectrum of sixteenth- and seventeenth-century painting, reflects this revolutionary change.



Modern Art Museum De Hallen

Just as seventeenth-century Haarlem offered fertile soil in which an innovative urge expressed in art could grow and flourish, today De Hallen Haarlem aims to provide a platform for developments in contemporary art, based on the same open and proactive attitude. Innovations always provoke great resistance, particularly when they cross existing boundaries and challenge established norms. De Hallen Haarlem aims to position itself unequivocally as the champion of a living culture—a culture constantly in flux with the capacity to accomplish something new. De Hallen consists of three different buildings, the Vleeshal (Flesher's hall) on the east side and the Verweyhal (named for Kees Verwey) on the west side are two large "halls" sandwiching the small entrance building. All three buildings are National Heritage sites today and provide the city with a variety of architectural styles, from renaissance architecture to eclectic style with Art Deco features.

#### Teylers Museum

Teylers Museum is an art, natural history, and science museum in Haarlem. Established in 1778, Teylers Museum was founded as a centre for contemporary art and science. The historic centre of the museum is the neoclassical Oval Room (1784), which was built behind the house of Pieter Teyler van der Hulst (1702–1778), the so-called Fundatiehuis (Foundation House). Pieter Teyler bequeathed his fortune for the advancement of religion, art, and science. He was a Mennonite and follower of the Scottish Enlightenment.

The executors of Teyler's will, the first directors of Teylers Stichting, decided to establish a centre for study and education. Under a single roof, it would house all manner of suitable artefacts, such as books, scientific instruments, drawings, fossils, and minerals. The concept was based on a revolutionary ideal derived from the Enlightenment: that people could discover the world independently, without coercion by church or state.

The museum is on the top 100 Dutch heritage sites list compiled by the Department for Conservation in 1990. It was nominated on 12 December 2011 by the Dutch Cabinet for UNESCO world heritage status, based on its long history as a public knowledge institute and its continued efforts to preserve public access to its collections. However, the nomination was withdrawn in 2013.





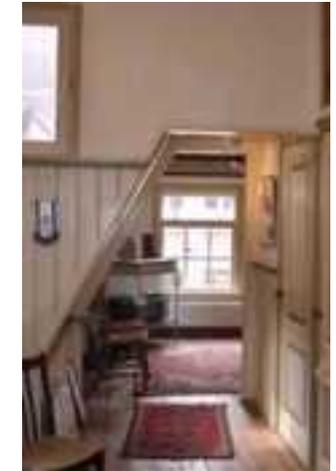
#### Archaeological Museum

The Archeologisch Museum Haarlem is a museum in the cellar of the Vleeshal on the Grote Markt, dedicated to promoting interest and conserving the archaeological heritage of Kennemerland. It has exhibitions in showcases, as well as a reconstruction of a medieval Haarlem cesspit dig. The Museum opened in 1991 and aims to engender respect for the unlocked underground treasures that can surface in Haarlem's many building projects.



#### Haarlem History Museum

Museum Haarlem is a city museum on Groot Heiligland 47, Haarlem, Netherlands, located across the street from the Frans Hals Museum. It shares its front door with the ABC Architectuurcentrum Haarlem, which is located next door. The museum is devoted to presenting and preserving the cultural history of Haarlem and the surrounding region.



#### Ten Boom Museum

The Ten Boom Museum is a museum dedicated to The Hiding Place, the subject of a book by Corrie ten Boom. The Ten Boom family ran a watch shop (horlogerie) on the corner of an alleyway and the main shopping street of Haarlem, where during the Nazi occupation of Haarlem they provided safe harbour for Jews and other underground refugees.



**Museum of the human mind "Het Dolhuys"**

Het Dolhuys opened in 2005, and it constitutes an attempt to allow people to experience the world of madness. The Dolhuys is situated in a unique medieval building. For years the building lay outside the city walls of Haarlem, sheltering the 'insane' and people with contagious diseases such as plague and leprosy.



**Windmill Museum "De Adriaan"**

The windmill, originally built in 1779, was destroyed by a fire in 1932 and it was later rebuilt in 2002 and now functions as a windmill museum, showing windmill techniques and history.



**Cathedral Museum**

The museum opened in 2015, in the cellar of the St. Bavo Cathedral.

## 02 URBAN CULTURE

### Historical monuments



Former city hall "De Hoofdwacht"

The 13<sup>th</sup> century building is considered to be the oldest building in Haarlem. From 1250 to 1370 it served as the first city hall when Haarlem received its city rights. After that it had a residential function, and in 1755 it became the residence for the municipal police. Since 1919 it is the residence of Vereniging Haerlem, a society that wants to keep the history of Haarlem alive.



Wallonian Church

Oldest church building in Haarlem. The church was built around 1262. After a big fire in 1348 the tower and ship was rebuilt. Inside are paintings dating back from before the fire. Before the reformation it was a catholic church. After the reformation it was appointed to the French Protestants who held ceremonies here since 1590. Still the ceremonies on Sunday are in French.



## 02 URBAN CULTURE

### Historical monuments



Former city gate “Amsterdamse Poort”

Solemn survivor of twelve medieval city gates surrounding Haarlem it managed to withstand the Spanish fury (1572-1573) and the urban planners' fury in the 19th century. Nowadays it is just a passageway but there are certain times where it is used as an artist studio.



City hall on Grote Markt

Built in 1250 as hunting lodge for the Counts of Holland, but it burnt down in 1351. Then, it was rebuilt and became the city hall in 1370. Around 1385 an expansion was added where people were brought to justice/beheaded (see the statue of Lady Justice). In 1622-1630 the gables were reconstructed. Now it serves as a place where citizens of Haarlem get married.



Almshouse “Hofje van Bakenes”

“Hofjes” are medieval retirement homes for poor women, built between 13th century and 19th century. Their typical layout was courtyards with small houses around it. Haarlem used to have about 40 hofjes but only 20 have managed to survive and some are still in use. The oldest is Hofje van Bakenes established in 1395.





**Great or St. Bavo's Church on Grote Markt**

St. Bavo's Church is considered to be Haarlem's most important landmark. It was converted from a Catholic to a Protestant Church with force during an iconoclastic fury in 1578. It has the largest wooden stellar vault in Europe. The floor is made up of nearly 1500 gravestones marking tombs below, including that of Frans Hals. Known for its world famous Müller pipe organ (1738), the world's largest organ at the time.



**Former weigh house "De Waag"**

The building was originally constructed in 1597, as the place for weighing trading goods and paying taxes. It served like that until 1915 due to its ideal location near the Spaarne water-way. It is a piece of renaissance architecture in the city of Haarlem that nowadays houses a bar and an art exhibition space on the first floor.



## 02 URBAN CULTURE

### Historical monuments



St. Joseph church

St. Joseph Church was the first official catholic church after the iconoclastic fury in 1578. An example of Neo classical architecture in the city of Haarlem completed in 1843. In 1853 it was declared as the cathedral of the newly erected diocese of Haarlem. With Catholicism becoming more popular the church became too small and there was a request from a bigger one at turn of the 19<sup>th</sup> century.



St. Bavo's Cathedral

Built by the Roman Catholic diocese of Haarlem. Construction begun in 1895 and it was complete in 1930. An example of eclectic architecture, partly Neo-Gothic, Neo-Roman, Art Deco and Jugendstil. It is named after the city's patron saint. It is now the main cathedral for the Roman Catholic diocese of Haarlem-Amsterdam and one of the most important churches in Europe amongst Sagrada Familia (Barcelona), Sacré-Coeur (Paris), Westminster Cathedral (London) and Koekelbergbasiliek (Brussels).



Central station (1906-1908)

The Railway station was completed in 1908 and constitutes an example of Art Nouveau style in the city of Haarlem. Some people believe that it is the most beautiful railway station of the Netherlands. The train station is a rijksmonument - national heritage site of the Netherlands - listed by the agency Rijksdienst voor het Cultureel Erfgoed (RCE) acting for the Dutch Ministry of Education, Culture and Science. Consequently, many authentic details have been preserved like the old waiting rooms.



## 02 URBAN CULTURE

### Statues



18. Laurens Janszoon Coster statue, 1856



19. Frans Hals statue, 1900



21. Tied Men statue, 1975



20. Hendrik Antoon Lorentz bust, 1929



22. Hannie Schaft statue, 1982



23. Kenau Simonsdochter Hasselaer & Wigbolt Ripperda, 2013



24. Harry Mulisch bust, 2013

#### History

Haarlem has been labeled 'organ city.

The city houses some famous church orchards in its churches, of which the Müllerorgel in the Great Church is the most famous.

The organ was built between 1735 and 1738 by German Christian Müller. It was played by G.F. Händel in 1740 and '50, who travelled to Haarlem especially for this purpose

The organ is played in 1766 by the 10-year-old Wolfgang Amadeus Mozart.

After the very first Improvisation Competition in 1951, the fame of the Haarlem Organ Festival quickly spread far beyond Holland and nowadays an International Organ Festival takes place every year.

Also in the street culture the music has always been very present in Haarlem, the street organs collection can easily prove that.

#### Today

Today Haarlem is well-known for a number of music festivals for every taste.



25.



26. International Organ Festival Poster



27. Street Organ



28. Drawing of the New Church Organ



### Events

#### April

- Bloemencorso (flower parade) April . Wagons decorated with flowers drive from Noordwijk to Haarlem, where they are exhibited for one day.
- Funfair organised on the Grote Markt and the Zaanenlaan in Haarlem-Noord.

#### May

- Caprera Open Air Theatre in Haarlem's north. Performances by famous musicians in a magical forest.
- Biannual Haarlemse Strippedagen (Haarlem comic days)
- Bevrijdingspop is a music festival to celebrate the Dutch liberation from the Nazis after World War II.

#### June

- Haarlem Jazz & More (formerly known as Haarlem Jazzstad), a music festival,
- Haarlem Culinaire, a culinary event, as well as the
- Haarlemmerhoutfestival is also held every year, which is a music and theatre festival.

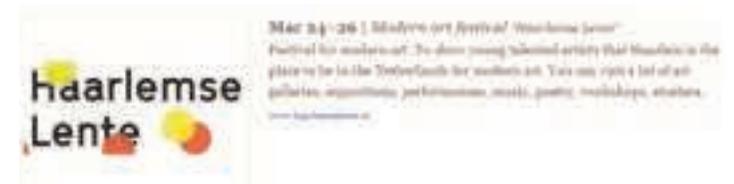
### Cultural Facilities

The city contains several theatres, cinemas and other cultural attractions.

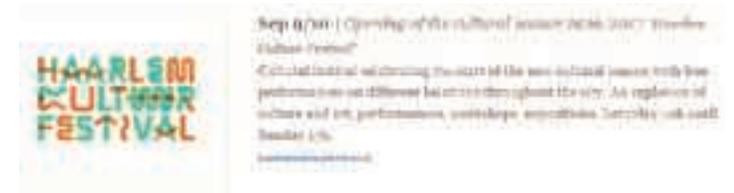
The Philharmonie is a concert hall in the north east of the city centre. Next to it is the Toneelschuur theatre, which also has some movie theatres (Filmschuur). The Stadsschouwburg on the Wilsonsplein reopened in 2008 after a renovation and can seat 698. This theatre area is nearby the prison.

There used to be two more cinemas, but both closed recently. Nowadays, the only cinema is Pathé Haarlem, in the Raaks shopping mall.

The Patronaat is a pop music hall, one of the largest in the Netherlands of its kind. It is a popular night spot.



Mar 24 - 26 | Haarlemse Lente Festival "Haarlemse Lente"  
Festival for modern art. The show brings talented artists that flourish in the place to be in the Netherlands for modern art. You can enjoy a lot of art galleries, exhibitions, performances, music, poetry, workshops, events.  
[www.haarlemse-lente.nl](http://www.haarlemse-lente.nl)



Sep 6/2011 | Opening of the cultural season 2011-2012 "Haarlem Culture Festival"  
Cultural festival celebrating the start of the new cultural season with live performances on different locations throughout the city. An explosion of culture and art, performances, workshops, exhibitions, lectures and much more!  
[www.haarlem.nl](http://www.haarlem.nl)



2011-18 | World music festival "Houtfestival" [www.houtfestival.nl](http://www.houtfestival.nl)  
A free open air festival attracting around 15,000 visitors every year with a relaxed and family friendly atmosphere. Music, food, dance and theatre from all over the world (Ghana, Colombia, Bolivia, India, Nigeria, Trinidad) on four stages, between 11h and 12h. Artists from countries where it is sometimes not possible for them to perform in public because of their message.  
[www.houtfestival.nl](http://www.houtfestival.nl)



Apr 23 - 24 | Bloemencorso  
Annual parade of wagons decorated with flowers, starting in the village of Noordwijk and after 20 kilometers arriving around 11h in the centre of Haarlem on Saturday April 23. On Sunday April 24 you can admire the 17 flower wagons in the city centre of Haarlem between 11h and 17h. The flower wagons will be fixed up along the whole street Gelmerplein-Dijk Gracht accompanied by live music, shows and food stands.  
[www.bloemencorso.nl](http://www.bloemencorso.nl)



May 5 | Liberation Day "Bevrijdingspop" [www.bevrijdingspop.nl](http://www.bevrijdingspop.nl)  
National holiday to celebrate our freedom and to remember 3 May 1945 when the German World War II army surrendered in the Netherlands. National flags are flying high. Free pop music festivals throughout the country. The largest and oldest will be right here in Haarlem! Three stages, local bands, and international bands.  
[www.bevrijdingspop.nl](http://www.bevrijdingspop.nl)



Aug 18 - 20 | Jazz festival "Haarlem Jazz & More"  
Reminds to be the largest free jazz event north of Europe. But it has nothing to do with jazz music anymore. It's a free event and during last year's edition was accompanied by family live musical entertainment in an old city centre setting. It's a great festival. Performances of mostly national bands on a big stage on the Grote Markt square and smaller stages on the Oude Stroomsteeg square (pop), Kerkplein square and Prinsenveld square (jazz). After the live performances the party continues in the bars in the local neighbourhood.  
[www.haarlemjazz.nl](http://www.haarlemjazz.nl)

Haarlem is home to many different sport clubs offering a great diversity of sports. There are several amateur football associations. Haarlem also had a professional football club, HFC Haarlem, which however went bankrupt in January 2010.

Another Haarlem based football club, still in existence, is the Royal Haarlemsche Football Club. It was founded by Pim Mulier in 1879 and constitutes the first football club in the Netherlands, making it the oldest sportsclub in Dutch History. The Tennis club HLTC Haarlem which was founded in 1884, and the Judo association Kenamju (1948) are also the oldest Dutch clubs in their sport.

Haarlem is also known for hosting several international sports tournaments such as the Haarlem Baseball Week, and the Haarlem Basketball Classic. Haarlem also hosted the 2014 Women's Softball World Championship.



30. Pim Mulier Stadium, Baseball Week, Haarlem



31. HLTC Tennis Club, Haarlem



32. Judo Association Kenamju



33. Swimming Pool De Houtvaart

### De Houtvaart

Originally constructed in 1904. However, in 1927 a new monumental open-air swimming pool was built in the same place. The building is characterized by a cubic building style with consistently applied symmetry. Use was made of new material such as steel and concrete, with the characteristics of this material being brought to the fore as much as possible. Thus, the concrete water reservoir has a gray color scheme and the concrete was not plastered or finished.

In 1999 became the Houtvaart Rijksmonument.

Today, the pool is open only during the months of May, June, July, and August. It has a heated 50m basin surrounded by dressing cubicles. During the 1928 Amsterdam Olympics, Johnny Weismuller, who later became famous as Tarzan, trained here and won a gold medal at the 100m.



34. The Yoga Temple



35. Soccer Club "De Brug"



36. Sport City Haarlem



37. Sports Haarlemse Kano Vereniging



38. Tennis and Squash Overhout



39. Sportvereniging Olympia



40. OBS Hannie Schaft



41. Stedelijk Gymnasium



42. St. Franciscus School



43. OBS "De Kring"

The Dutch education system consists of 8 years of primary education, 4, 5 or 6 years of secondary education (depending on the type of school) and 2 to 6 years of higher education (depending on the type of education and the specialisation).

Primary education is intended for children in the age group 4 to 12 and is compulsory for children from the age of 5. The city of Haarlem has 36 schools with this type of education (elementary schools).

After the primary education there is the next type of education, which is called middelbaar onderwijs (high school). It is intended for children in the age group 12 to 16, 17 or 18. Fifteen of these type of schools are situated in Haarlem.

After high school there is the possibility to continue with two types of higher education; higher professional education and research-oriented education. Given at a Research University, like the Delft University of Technology, or an University of Applied Science, like the Hogeschool InHolland. This is a type of school that does not exist in the city of Haarlem.



Haarlem Culture is a very strong aspect of the City's identity it has been evolved throughout the centuries and still constitutes an important aspect of people's lives. Various theatres, festivals and other events place Haarlem on the map for visitors.

Haarlem has a number of important museums and historic buildings that express its long history.

It was also noticed that the past few years Haarlem is attempting to educate people about its long and important history through renovations in the museums, new programmes and exhibitions, new statues around the city etc. Our project thus which is located in the prison complex can use this aspects to regenerate the area and connect it to the city. The dome it self constitutes an icon, a landmark that could contribute to this cultural education and evolution of the City of Haarlem.



# 03 URBAN CONTEXT

Qualities on an urban scale of Haarlem nowadays are clearly Haarlem as a junction in the Randstad.

It is situated only 10 minutes by train from Amsterdam Central Station. The international Airport is between Amsterdam and Haarlem. The coast seen as a recreational area is very close.

Haarlem is a city with a beautiful center that grew over the centuries, old buildings gives the city its charme. The water that is very present in the city is a present resource for spaces with a quality for people along its side instead of cars.

The cupola has potential on various layers form an urbanistic point of view.

First the situation in the urban fabric. Since it was at the edge of the city when it was built it could be seen nowadays as a connecting element between the old and the new part or an gateway to the city

The location close to the trainstation as well as the medieval center is another quality to mention and develop further

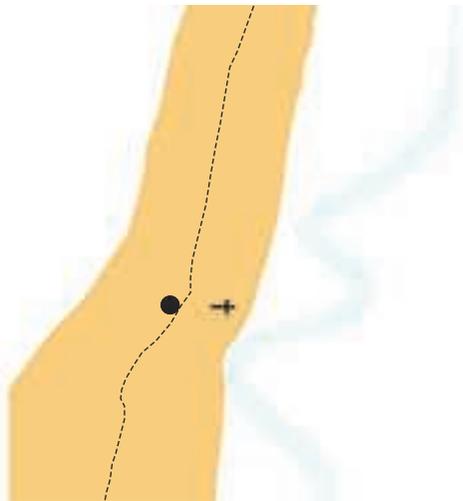
We think that the particular form of the building on the scale of the town is a quality that highlights the importance of this spot for the community. The accesability to the cupola could be emphasized stronger.

To close we also want to mention the East West Axis in whichs middle the cupola stands and therefore could contribute as a central public space to the urban fabric.

## 03 URBAN CONTEXT

Haarlem in the Randstad





placement of the settlement on the dune

The development of Haarlem starts in the 9th or 10th century after Christ with the growth of a small agricultural settlement. It's placed on a sand dune besides the river Spaarne. The dune is a connection between the north and the south of the Netherlands.

Haarlem originated on the oldest and therefore most inland dune row of the Netherlands. Exactly on the plaque where that sand bridge coincides with the Spaarne. There were already two old roads in the north-south direction on the sand ridge. A fort was built on the old road structure. Through the fort and the location at the Spaarne, some fishermen and other traders lived in the fortress. As a result, a church was also built for the new inhabitants of the settlement

Since 1990 Haarlems townscape is heritage. Due to this the transformation of the city core has clear restrictions.

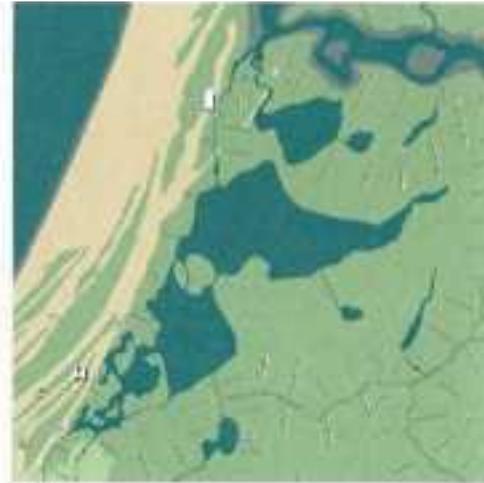
In our research we try to touch the historic development of the city, the morphology, the typologies, the mixture of use and functions, the infrastructure, the orientation and accessibility of places as well as the image of the town.

## 03 URBAN CONTEXT

### The Haarlemmermeer



800



1200



1500



1700



1900



2000



present day

The Haarlemmermeer area from 800 to 2000. In six sections. The spatial transformation of the area is based in part on analysis of geo-referenced source maps.

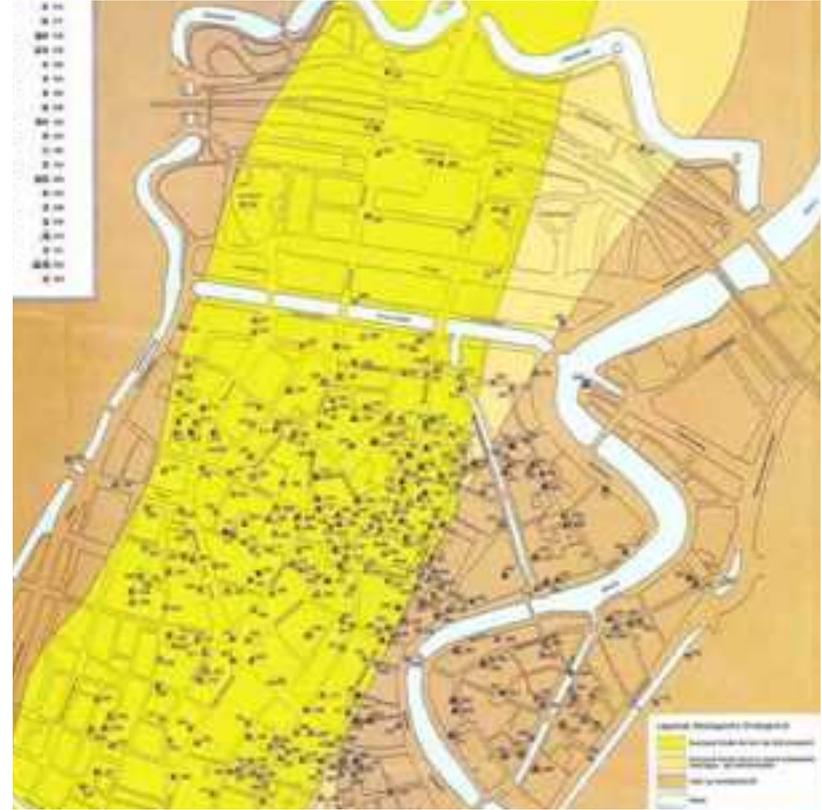
The original edge of the haarlemmermeer defined the shape south-east border of Haarlem.

## 03 URBAN CONTEXT

### Landscape Morphology



bottom of the dutch coastline , the city of Haarlem and the Haarlemmermeer



ground of the city

There are geographical factors that explain why the settlement which later grew to the city of Haarlem, originated in this place in the Netherlands. These factors include a beach shore, a river and a dune stream.

In the map on the left, the bottom of part of the Dutch coastline is shown. Within the red circle is the city centre of Haarlem. This map shows that elongated beach banks run from north to south along the coastline. These beaches have formed about 3000 years before Christ. Sand dunes that came out of the sea resulted in sand banks rising above sea level. Several of these types of beach walls formed themselves.

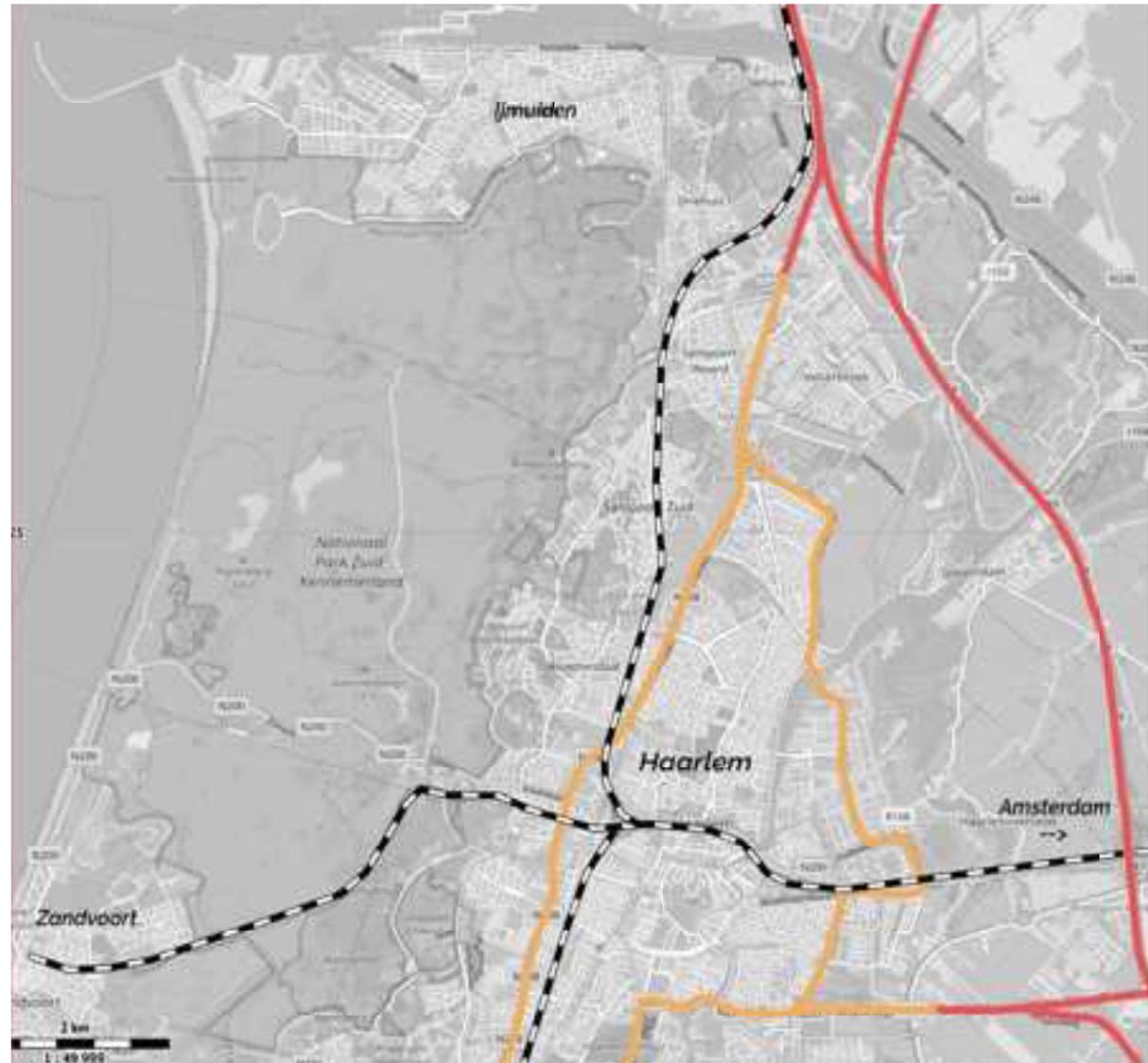
In the image on the right, you can see how the beach wall runs through Haarlem city centre.

The bottom of the beach is sand. This is a suitable place to build without the need for soil cultivation, as is necessary in the case of a farmland. Thus, on the beach shore, it could easily be built without the need for drainage of groundwater.

## 03 URBAN CONTEXT

### Connections to Haarlem

Haarlem is a city in the middle of the Randstad with good connections to the area, by car and public transport. Haarlem railway station is on a quay of tracks, which leads to connections in all directions. The city is in good and quick connection with our capital city of Amsterdam and Schiphol. There is also connections to the beach and dune areas, which brings nature and regeneration space closer. The city is easily reached by car but is not directly connected to the main highways. Via smaller highways, the large network connects.



Railway (black and white), national routes (orange) and highway (red)

## 03 URBAN CONTEXT

### The backbone of Haarlem

The river Spaarne runs straight through the middle of the municipality of Haarlem, splitting it in 2 almost equal parts. The river Spaarne could be considered the lifeline of Haarlem for business and transport for centuries on end. The main roads from that time were also aligned with the river and on the west bank, heading from the south to the north with a single road straight to the east towards the city of Amsterdam. Due to this geographical situation, Haarlem grew mostly on the west bank of the river Spaarne, all the way up to the 1950's. From that point on, Haarlem expanded quickly on east bank of the river.

The west side of Haarlem has many a routing one can take to reach their destination. With the Leidsevaart from the south, and the Schoterweg (which becomes the Soendaplein and later the Rijksweg) in the north there is a straight axis and easy access for the entire western part of Haarlem.

The ring road of Haarlem even gives access to towns the north, the west and to the south, but this is on the west bank of the Spaarne. On the east bank it only gives access further east, towards Amsterdam and Schiphol.

The Prins Bernhardlaan (which becomes the Europalaan) is the only main road here and it functions as the backbone for the entire eastern part of Haarlem. This severely hinders the accessibility of the east side of Haarlem, which makes this road even more important.

*Max van Aerschoot*, city architect of Haarlem, emphasises the importance of this backbone and defines a passion to improve the routing of east Haarlem.

Where west Haarlem has the axis, a ring road and several parallel roads, east Haarlem only has this road which functions as both the ring and the backbone of east Haarlem.



## 03 URBAN CONTEXT

### Historical maps



1578



1646



1829

# 03 URBAN CONTEXT

## Historical maps



1921



1950



2017

#### Historic placement and growth

The history of Haarlem can be divided into a number of large-scale events. Haarlem is very clear four times beyond the late medieval core. The first and oldest is that after Haarlem has received city rules. On the map the darkest core. The first core lies all around the old fort and the great church. It is also precisely on the sand bank that meets the Spaarne. After a large population growth around 1340, the Bakenes and a part of the other side of the savings were added. The first population explosion was due to growth in trade and shipbuilding in the northern Netherlands. There was also an immigration stream from the southern provinces of the Netherlands to northern yet free cities. The third expansion from the fifteenth and early sixteenth centuries tripled the surface of the city. The city limits stopped at Wilhemina Street, the Gasthuisseel and the Herensingel. Interestingly, enlargement was not very populous at that time. A large area next to the present Wilhemina street remained fairly unbuilt, for example. In the sixteenth century, despite the population growth (a doubling), it was not extended to the outside. Instead, choice was made for densification. The empty textile district next to the Wilhemi Street was completely built for example. The fourth major expansion was made in 1670. In fact, it was realized too late, in those days there was already a population shrinkage in Haarlem. Because of that bad timing, it was almost impossible to build in the new city (so-called 17th century irrigation). only the Nieuwe Gracht, Parklaan (then a canal) and parts of the old structures were inhabited.



Konigsstraat 1911



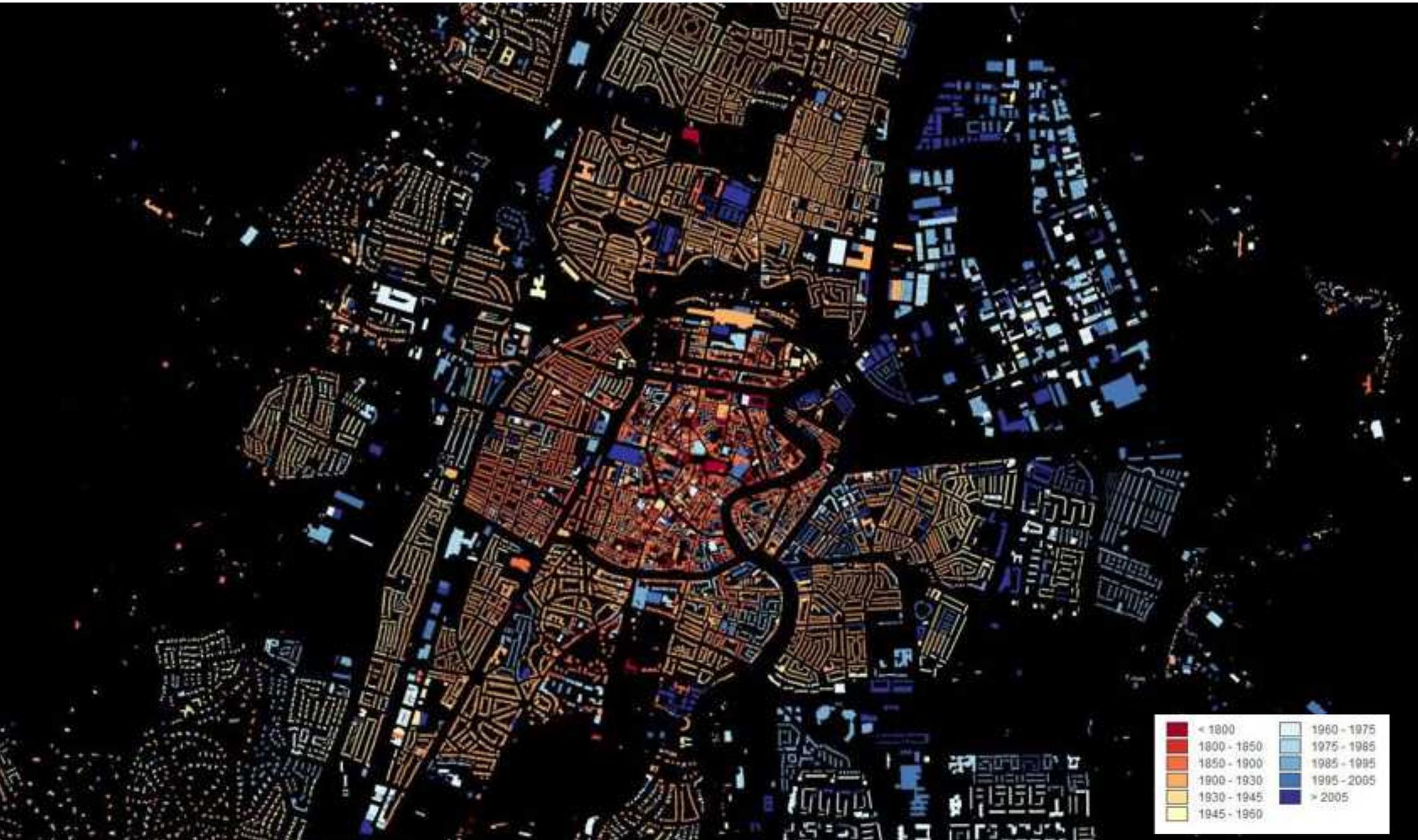
the new prison



Cathedral 1908

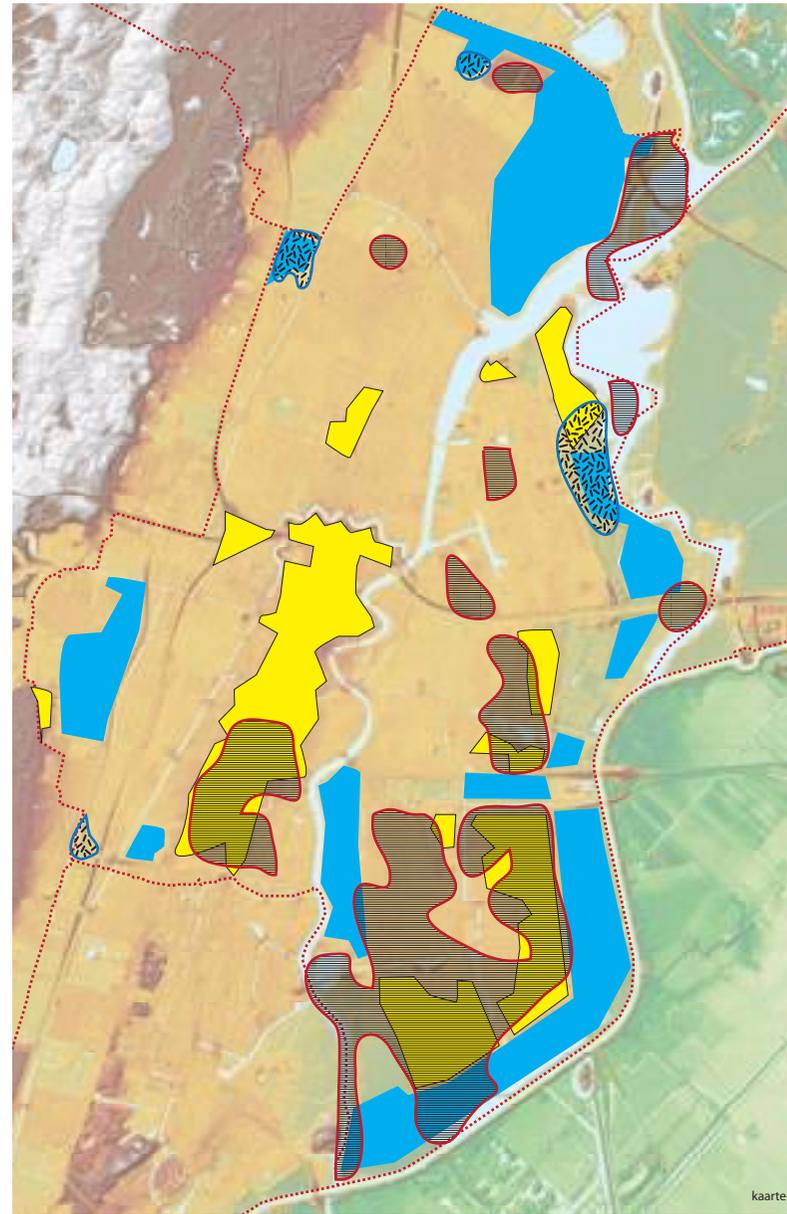
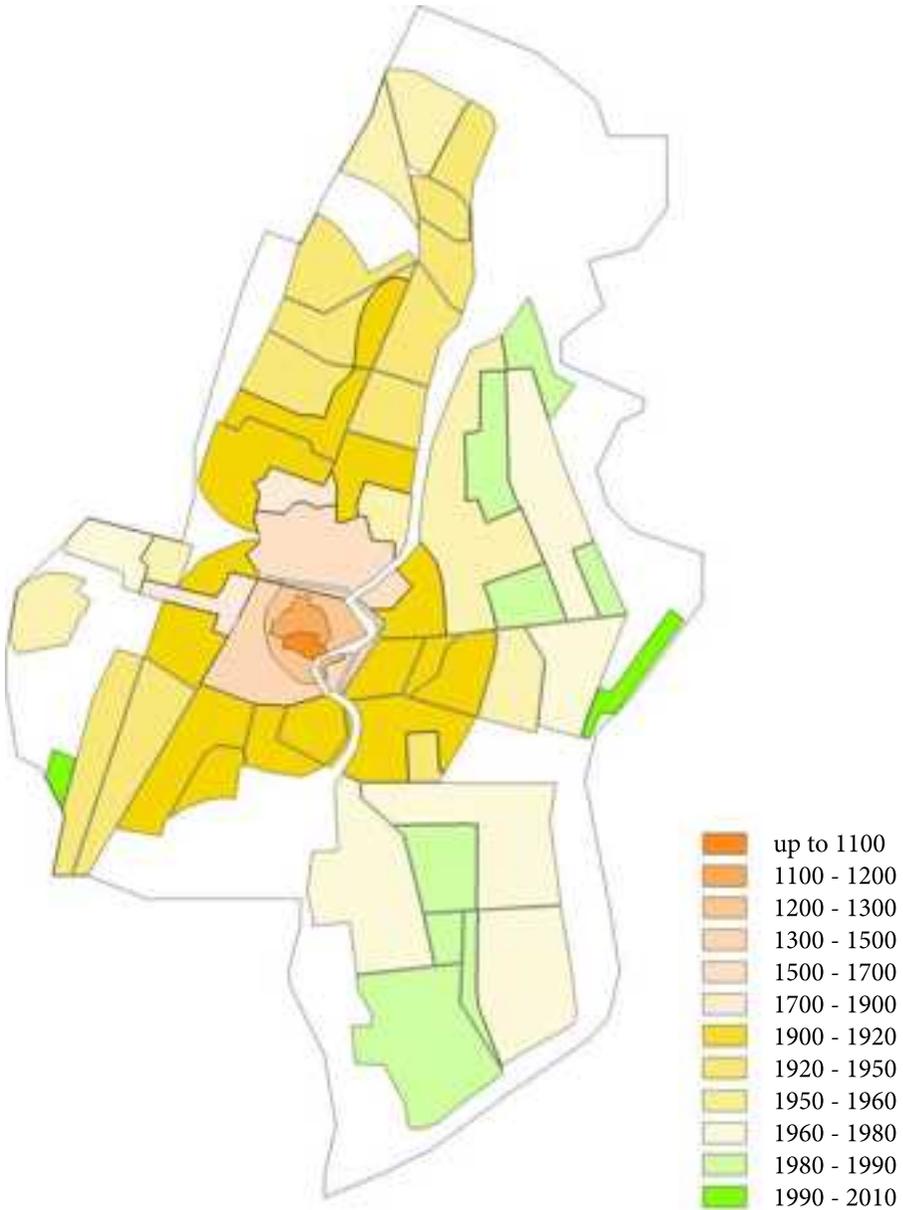
## 03 URBAN CONTEXT

### Map of the ages of the buildings



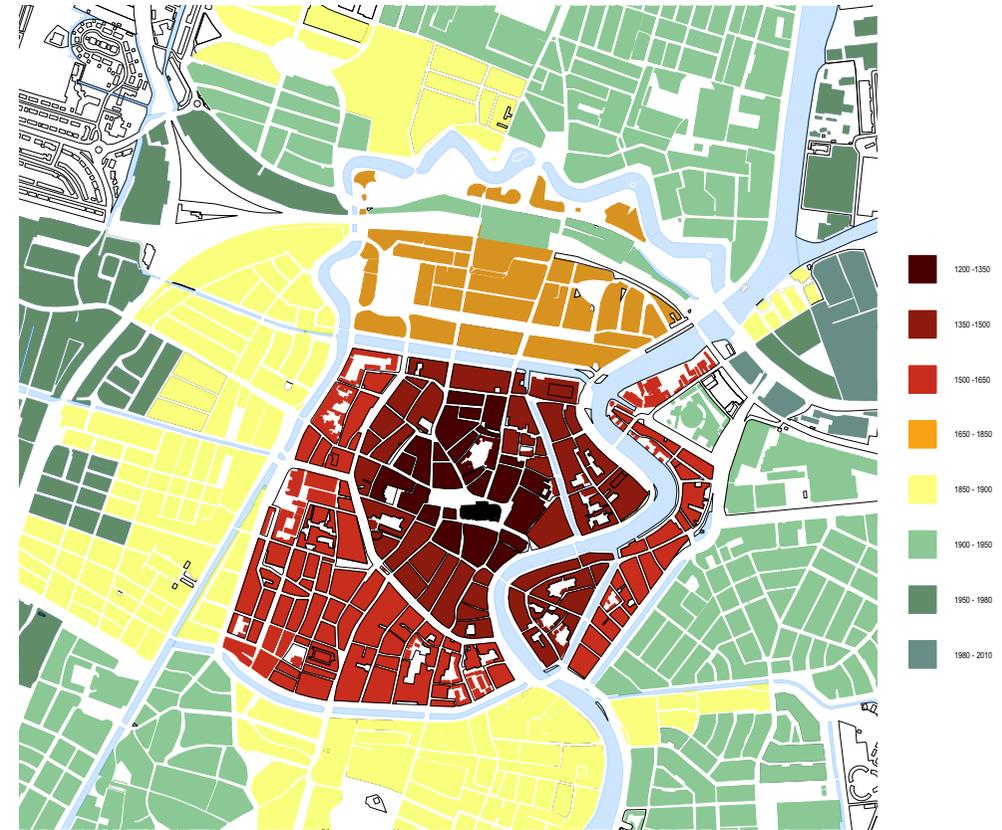
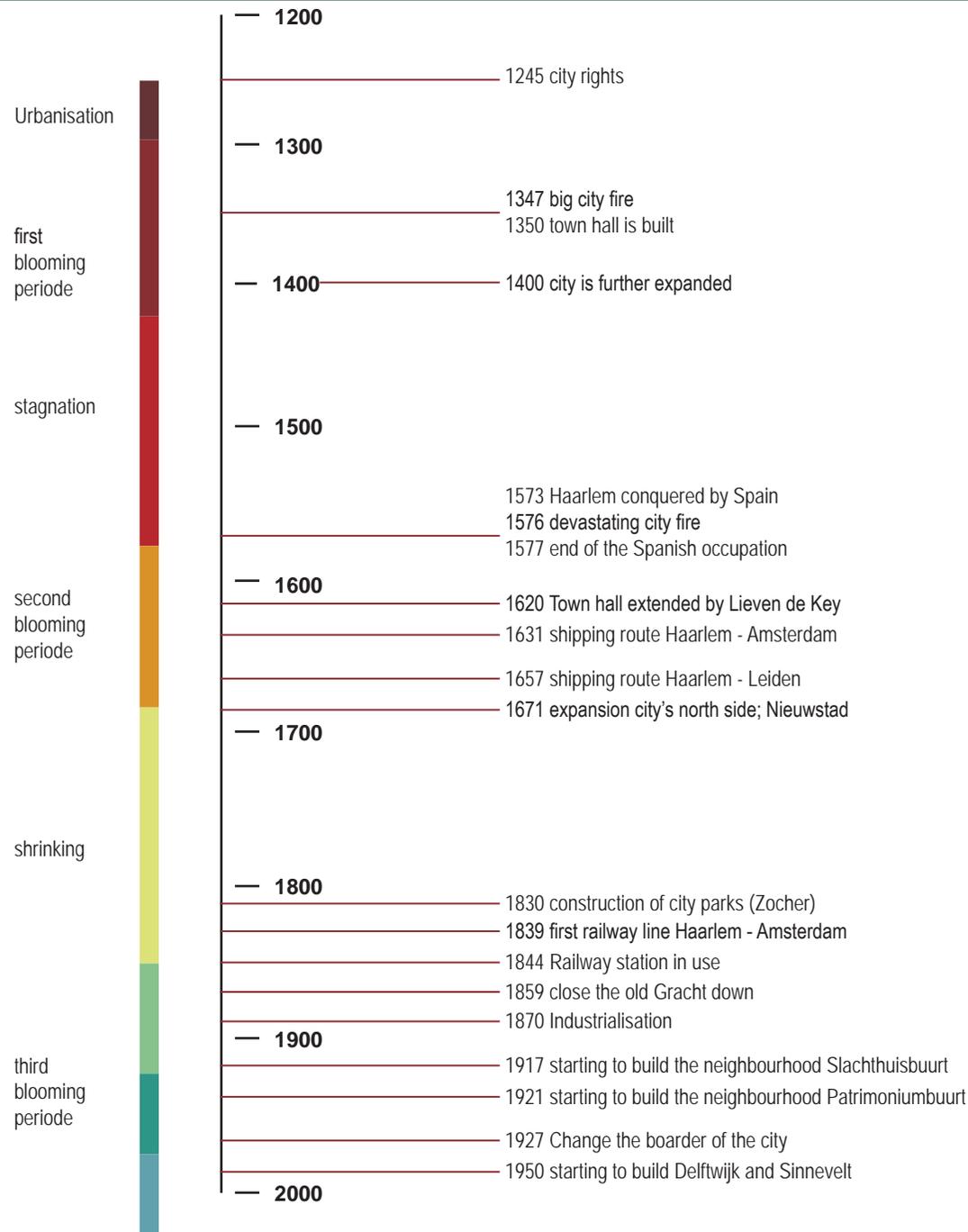
# 03 URBAN CONTEXT

## Growth of Haarlem



# 03 URBAN CONTEXT

## Timeline for the town building



# 03 URBAN CONTEXT

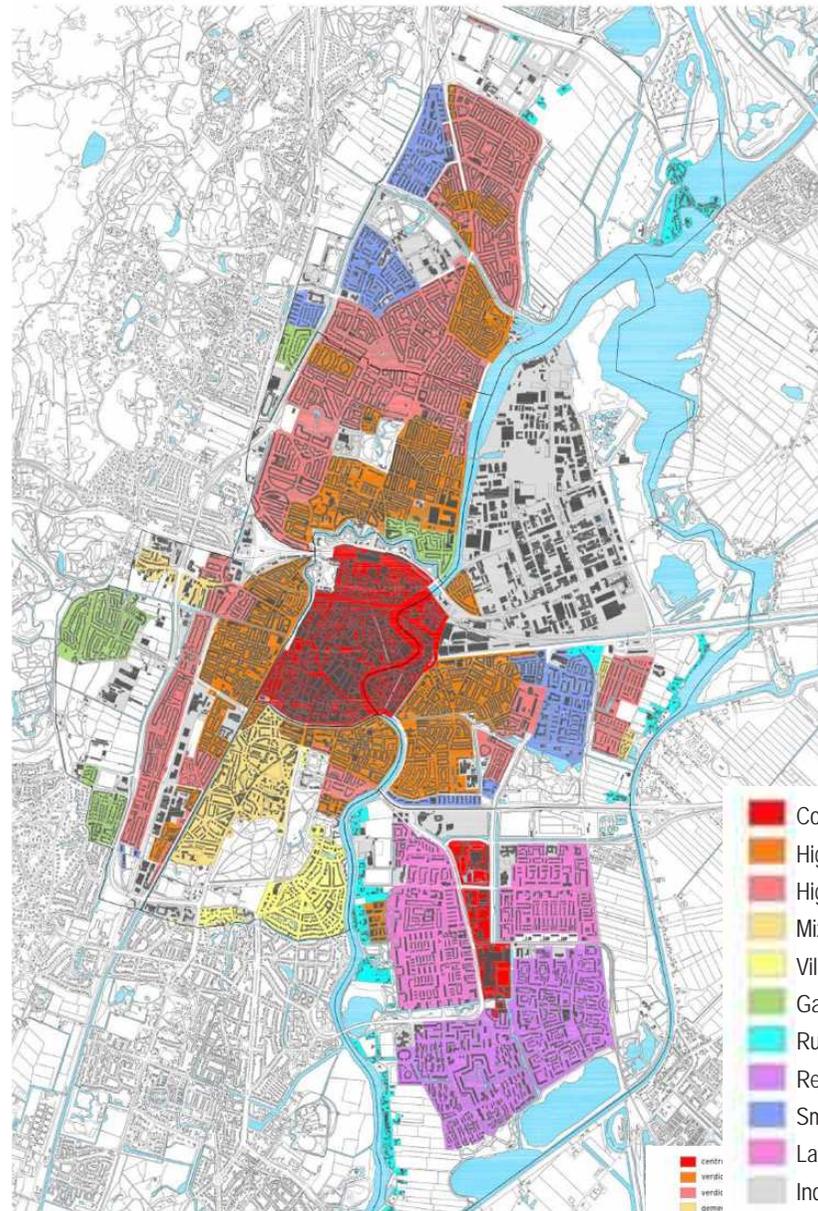
## Building typologies

When looking at Haarlem for typologies you will notice quite a patchwork. With the introduction of the Housing law in 1901 and the economic growth of the time, Haarlem expanded strongly around 1900. This caused a lot of the same type of buildings to be built in a short time (orange). The same happened in the period after this, but the set-up for these dwellings was still high density only this time with front yards. The location and distance from the city centre allowed for this.

After the second world war, 25 years of recovery took place. In this time a lot of dwelling shortage needed to be addressed during this time of strong economic growth. With the expansion of 1957 in the south-east part of Haarlem, Schalkwijk, meant approx. 12000 new homes were build and a new more local commercial centre was also introduced. However, because this was mostly done cheaply, in 1993 the first high rise buildings were already being demolished.

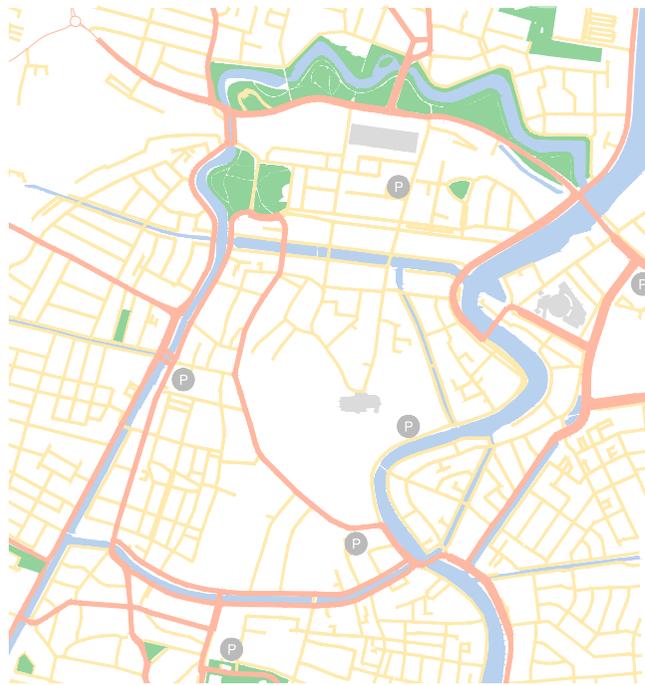
This urgent need for dwellings, the cheap buildings and the addition of a new commercial centre in east Haarlem, did however come with another side effect. Because most of the residents from west Haarlem rarely go to the eastern part (nothing really there for them), a feeling of a social division between east and west seems to have emerged.

The lack of bridges over the Spaarne didn't help solve this fact.

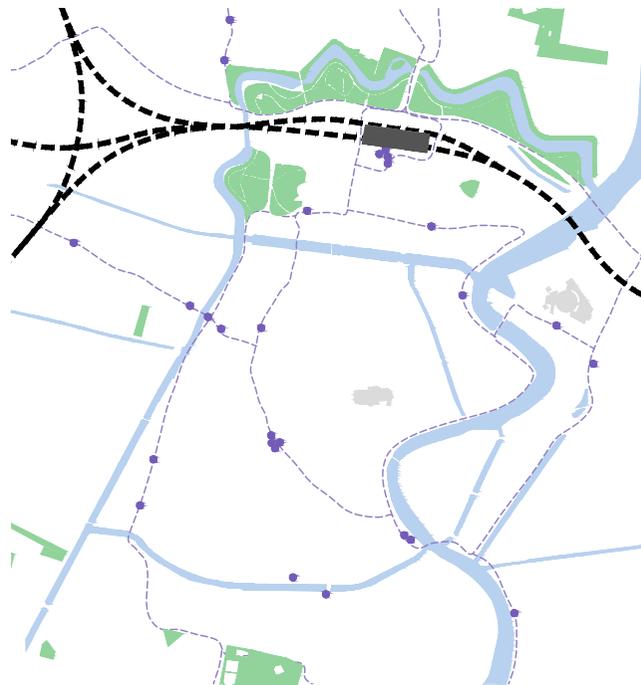


# 03 URBAN CONTEXT

## Means of transport



- high traffic car ways
- secondary car ways
- P parking lots



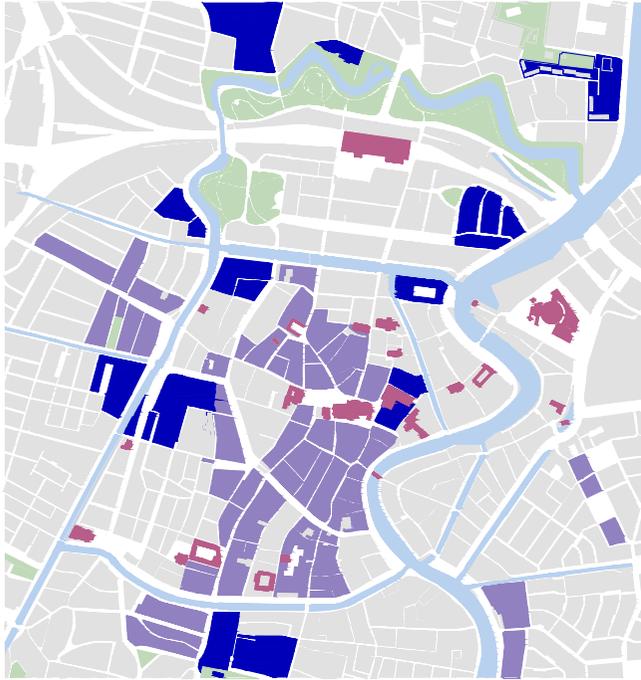
- bus stops
- bus lanes
- train line



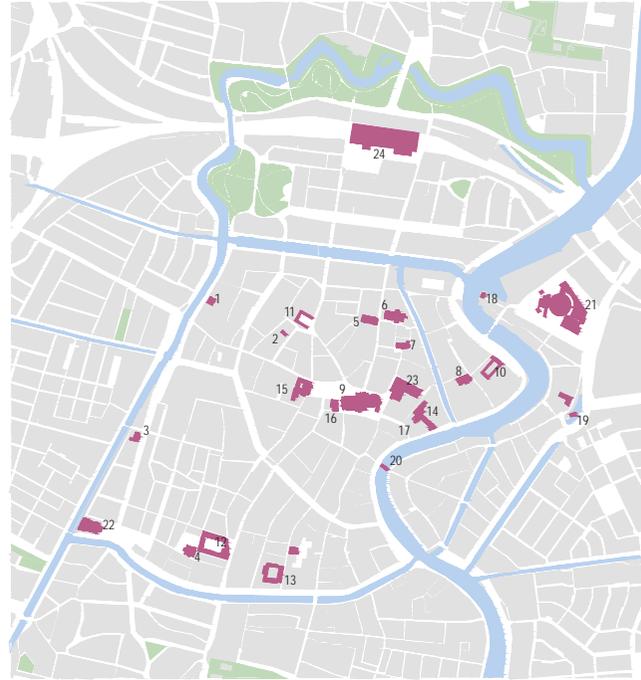
- bikelanes
- bike parkings

# 03 URBAN CONTEXT

## Public spaces and Culture



- industrial
- commercial area
- landmarks/culture relevant buildings
- housing



- |                        |                       |
|------------------------|-----------------------|
| 1. Luthers Kerk        | 15. Waag              |
| 2. Groenmarkt kerk     | 16. Molen de Adriaan  |
| 3. Nieuwe Kerk         | 17. Amsterdamse Poort |
| 4. St. Janskerk        | 18. Gravestenenbrug   |
| 5. St. Josephkerk      | 19. Koepelgevangenis  |
| 6. Waalsekerk          | 20. Stadsschouwburg   |
| 7. Bakenesserkerk      | 21. Philharmonie      |
| 8. St. Bavokerk        | 22. NS-station        |
| 9. Teylers hofje       |                       |
| 10. Hofje van Oorschot |                       |
| 11. Sint Jorisdoelen   |                       |
| 12. Frans Hals museum  |                       |
| 13. Stadhuis           |                       |
| 14. Vleeshal           |                       |



- kindergarten
- playgrounds
- sports centres

## 03 URBAN CONTEXT

### Green in the city

Noticeable in the centre of Haarlem is the lack of green spaces, only as you get more away from the cities core, there is more space for greenery. The narrow street trials lend little space for greenery. On the cards on the left there is a clear absence of green in the centre.

The small green that can be found in the inner city is often private green and is hidden within the building blocks. In the north of the city centre around the expansion district from the Middle Ages, it has become more public green, as it is a large park-round bulb of the city.

In addition, the broader street trim and a single submerged canal provide space for greenery. In the suburbs after the Middle Ages, there is more space for greenery, and often it is primarily green because the building blocks have an open appearance is that private green more in publicity.



the green of the town with plan



the green of the town

## 03 URBAN CONTEXT

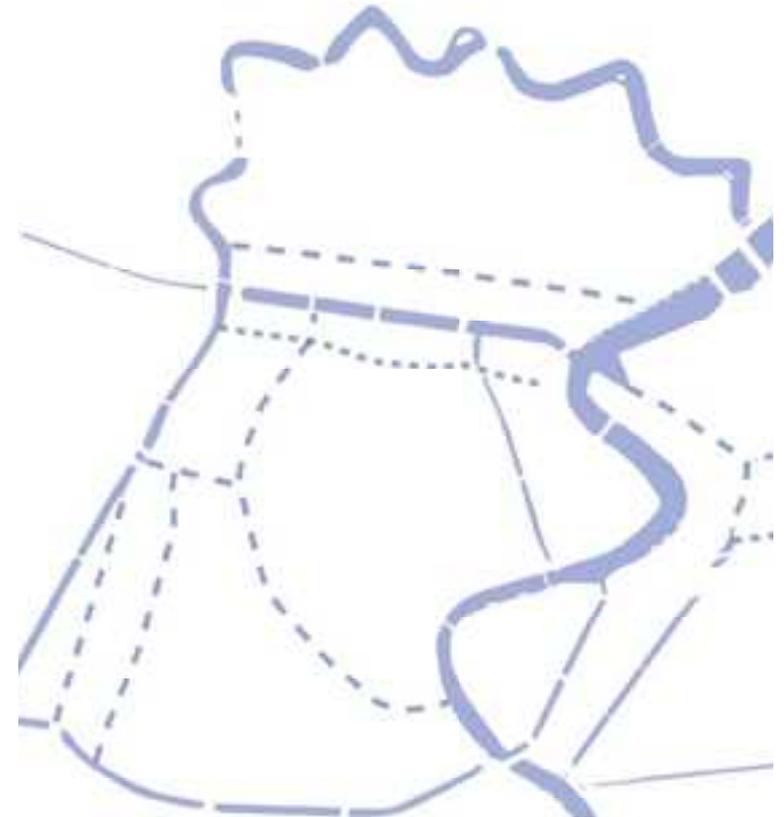
### Water in the city

The most important waterway of Haarlem is the Spaarne river. The river was an important route of commerce in the Golden Age and an important reason for the city of the city. The Spaarne was at that time the gate to the city. Other important waters are the Nieuwe Gracht and the water that forms part of the north-facing spheres.

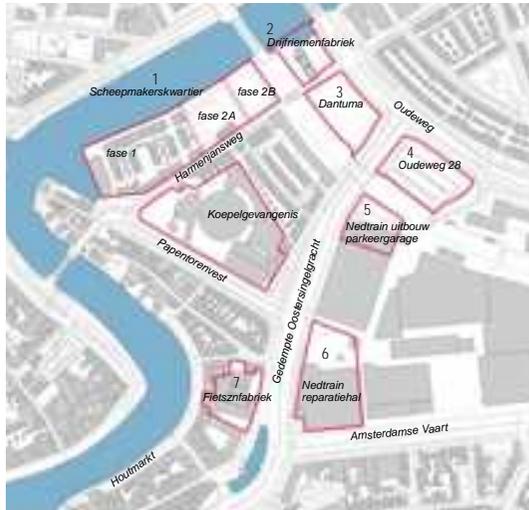
Water previously played an important role in Haarlem. The trade and industry were highly dependent. Over the years, a large part of these waterways have been muted for various reasons. In the second image, the disappeared waterways are displayed.



chanal system nowadays



previous waterways



Contextual Projects

### Area development plan: Spaarnesprong.

In the direct vicinity of the dome prison, there are several contextual projects currently under development.

These are:

1. Scheepmakerskwartier
2. Drijfriemenfabriek
3. Dantuma
4. Oudeweg 2b
5. Nedtrain parking garage
6. Nedtrain repairhall
7. Fietsznfabriek

#### 1. Scheepmakerskwartier (Schipbuildersdistrict)

This area is being developed in 3 stages and will result in 98 dwellings and an apartment building with 55 dwellings. The apartment will have several heights, ranging from 5 -8 stories high. This 'high rise' building will also function as a sound barrier for the noise from traintracks.

#### 2. Drijfriemenfabriek (transmission belt factory)

For this building an urban planning framework is still being formulated. One of the key points of this plan is that this building has to be a stepping-stone for the growth of the city center and a link in the route along the Spaarne. Furthermore this building has to become an icon for the mental map of the citizens and visitors of Haarlem.

Currently it is in temporary use as horeca facility with a citybeach under the name Oerkap.

"The Drijfriemenfabriek has grown into a meeting place for the neighborhood and the city," thanks to the big city beach at Spaarne and the practice location of a number of Haarlem bands in recent years," according to Cecile Hubers of the municipality of Haarlem.

#### 3. Dantuma

This former Dantuma office terrain is now barren and awaiting a new plan. The city of Haarlem is looking into the possibility of high rise dwellings at this location. This, however, is slowing down due to sound issues of the busy road and traintracks passing this location.

#### 4. Oudeweg 2b

This is currently still a parkinglot mainly used by NS (National Railways) and Nedtrain employees. As soon as Nedtrain has extended their own parking garage, the city of Haarlem will undertake steps to develop this location. They prefer to give it a function that will add to the rest of the Spaarnesprong area.

#### 5. Nedtrain parking garage

There are currently plans being made to extend the current parking facilities on the north side of the Nedtrain building for 250 parking spots. This will be where the current building stands. There is still an option to extend this building with more capacity for public parking in order to relieve the parking pressure of the local residents.

#### 6. Nedtrain repairhall

This concerns the existing repair hall in the far southwest corner of the Nedtrain terrain, which is owned by NS Vastgoed. The repair hall will be enlarged on the north side and stripped and renovated on the south side.

#### 7. Fietsznfabriek

This project also still needs to be developed. The city Haarlem prefers a mixed urban and residential environment for the new complex. One of the key point however is that the former printing building must be conserved. The area however does consist of a lot more than just the printing building.



1. Scheepmakerskwartier



2. Drijfriemenfabriek



6. Nedtrain repairhall (new)



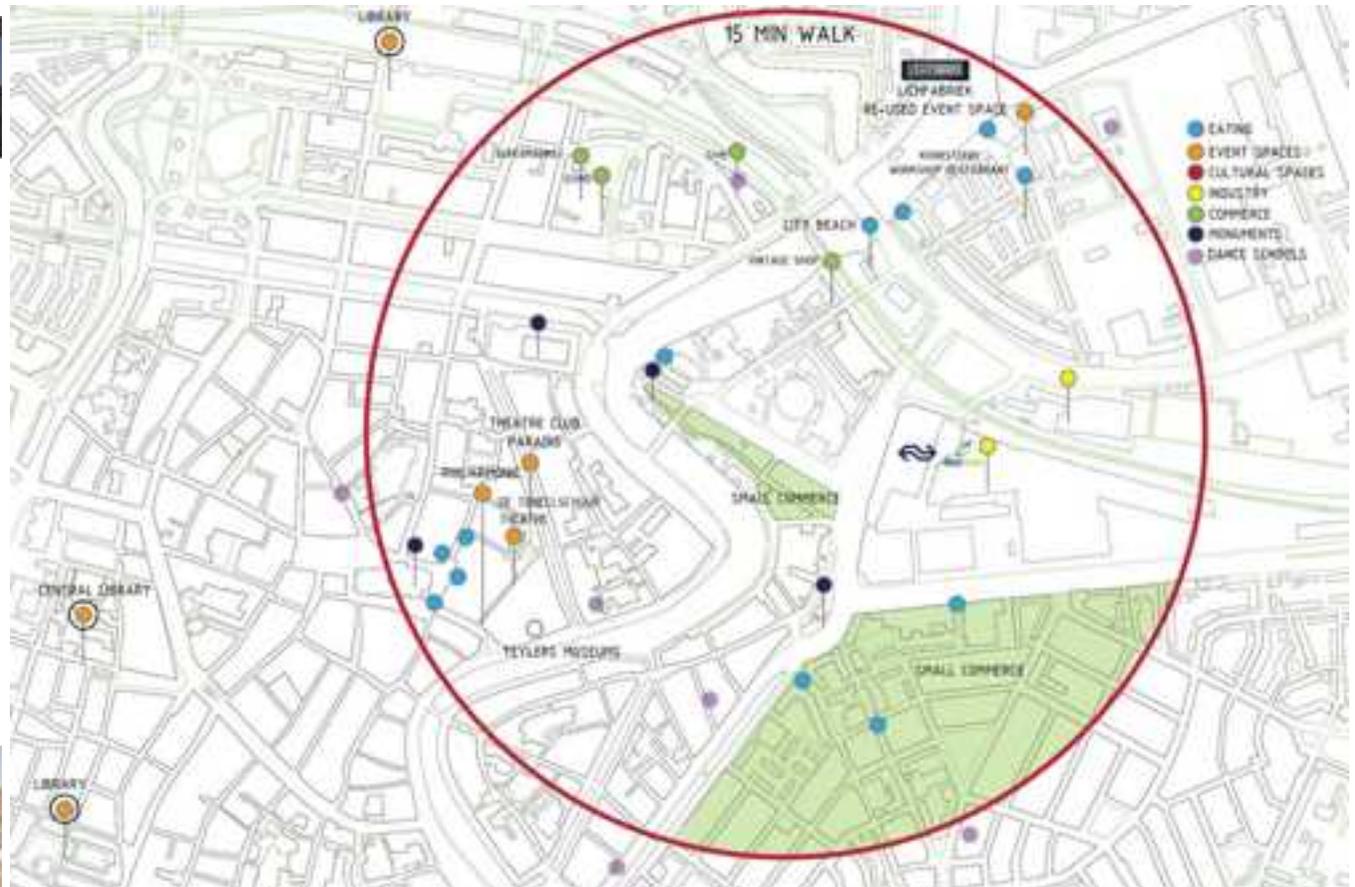
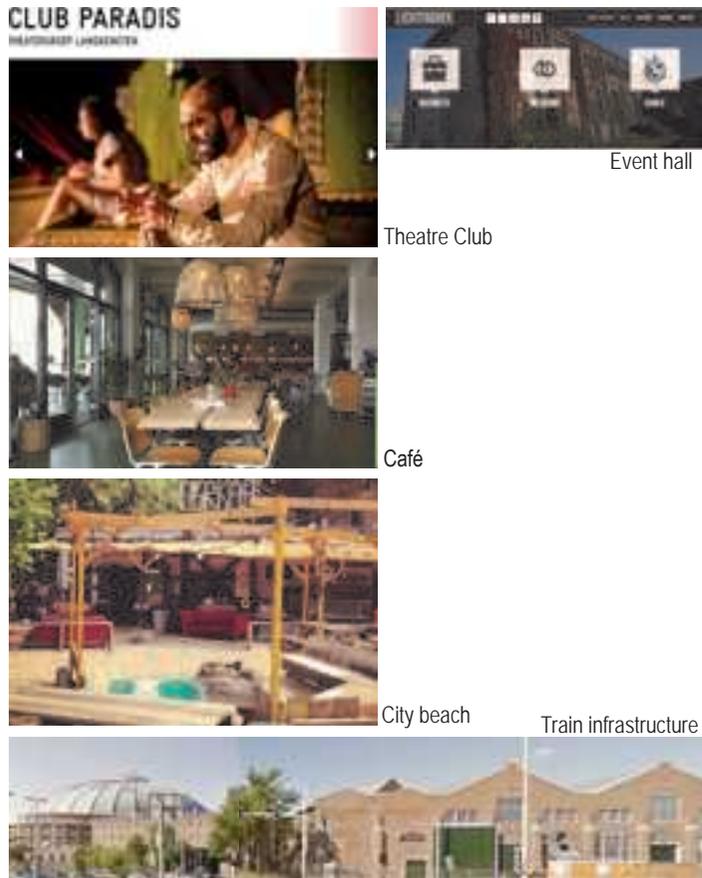
7. Fietsznfabriek



Spaarnesprong contextual projects around the dome prison

# 03 URBAN CONTEXT

## Cultural Activity in the area around prison complex



The Koepel is located in the midpoint between the Historical centre of Haarlem and one of the industrial areas of the town. Furthermore it is both limited by the train lines (and facilities) and the Spaarne river, which makes it a rather isolated spot. Even though, it's well connected, by the Harmenjansweg Bridge, towards the southwest (historical centre).

In that direction within no more than 10 minutes' walk we find some streets around the Philharmonic with several facilities related to theatre and performance activities. Citizens are really engaged with the theatre culture, prove of this are the various theatre associations and clubs, many of them settled in this area. Little more far there is the Teylers Museum, one of the main museums. This part of the centre is full of cafés and restaurants.

We can also see widespread around the town plenty of dance schools.

In the immediate surroundings of the prison there is an area of small commerce related to the dwelling next to it. The same happens towards the south part of the prison.

In the east the space is limited in one hand by the train lines and in the second by the train industrial infrastructures. However in the North east area we can see some recent changes, some brand new restaurants and alternative shops and workshops can be found, as well as some halls for events and concerts.

The only monuments around the koepel are the Amsterdam's Port (1400) and The Molen de Adriaan. (1779)



# 04 PLOT CONTEXT

# 04 PLOT CONTEXT

## Time origins

1858



Gradual densification of urban tissue:

1877



1905



1952



1981



2014



1905



Urban blocks formation time

2016



- urban block XVIIIth
- urban block XIXth
- urban block XXth
- urban block XXIth
- industrial area
- koepel

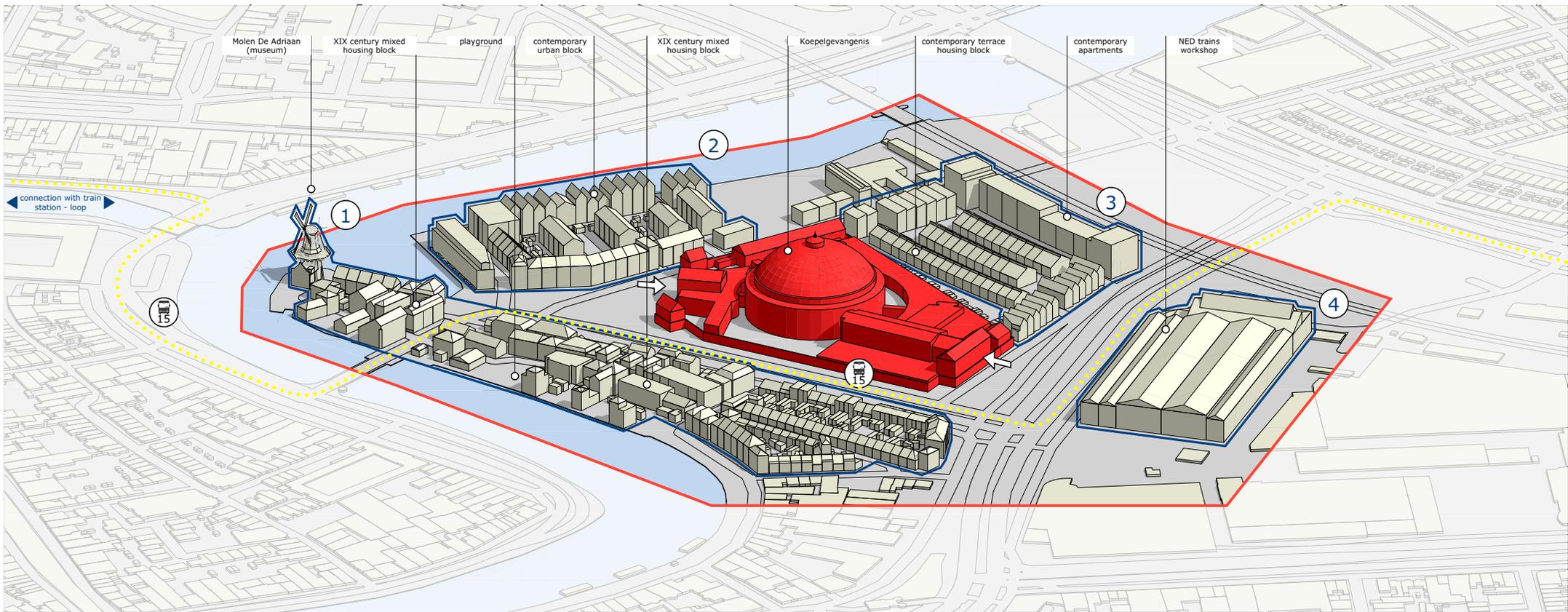


# 04 PLOT CONTEXT

## Current plot surrounding



Koepelgevangenis is neighbourhood is divided in four urban blocks. Each of them has different morphology and relation with prison site. This relation is a summary of different building heights, distances to prison, street type as a border between urban blocks and density of urban tissue. Block 1 has origins in XX th century and therefore has highest density. Blocks 2 and 3 are contemporary built dwelling assembles. 2 is a block of 3-4 storey multifamily residential with promenade, while 3 is a cluster of terraced houses followed by one multi-dwelling building at the back of quarter. Block 4 is an assemble of NED Train workshop hall- part of bigger industrial facility.

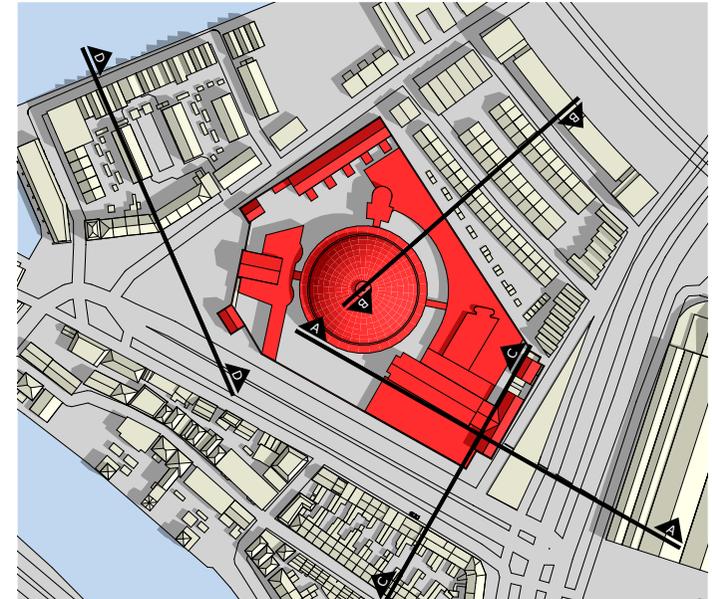


# 04 PLOT CONTEXT

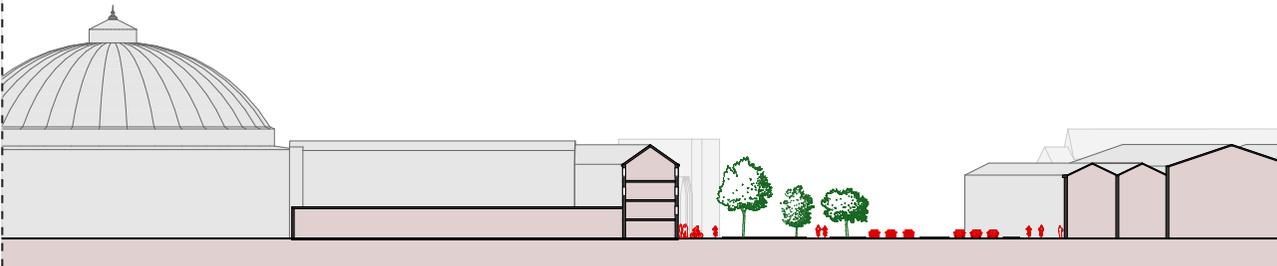
## Surrounding Street profiles



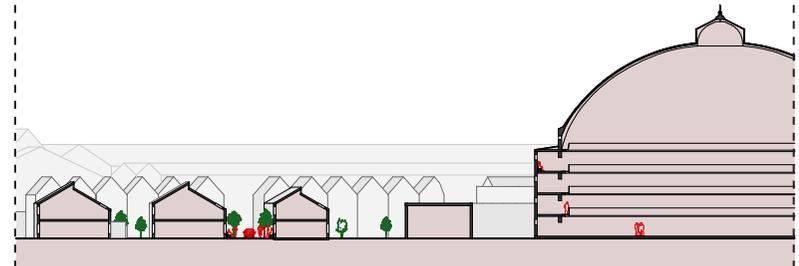
Profiles of streets surrounding the prison site show different relation with urban tissue. In section A industrial assemble is separated from prison by highway. XX century dwelling block in section C is more connected due to slower traffic- road is more of a buffer zone than a barrier. Section B shows intimate urban interior of street between rows of terraced housing in close vicinity of prison. In section D entrance through administration building is visible, together with adjacent contemporary multi-dwelling neighbourhood and eventually Spaarne promenade- recreation space for newly built dwelling quarter.



section A



section B



section C

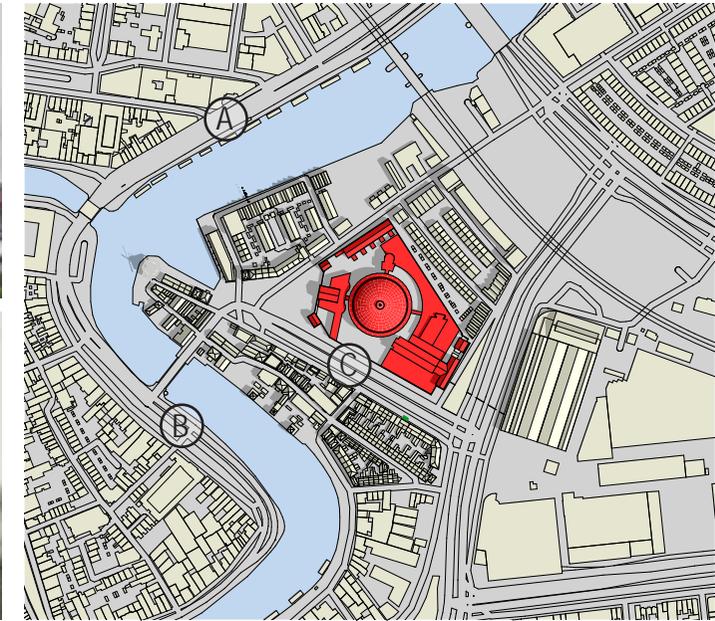


section D



# 04 PLOT CONTEXT

## Dome Visibility



Originally prison was designed as a stand alone complex, at the edge of the city, to be well visible from the western side of Spaarne as a warning. Development of urban tissue around the monument obscures its view (A), usually what is possible to see is zinc scale covered dome (B). In its close neighbourhood Koepelgevangenis can be observed through gaps between the surrounding buildings, except the street on the south (C), where clear view on whole construction unveils.

# 04 PLOT CONTEXT

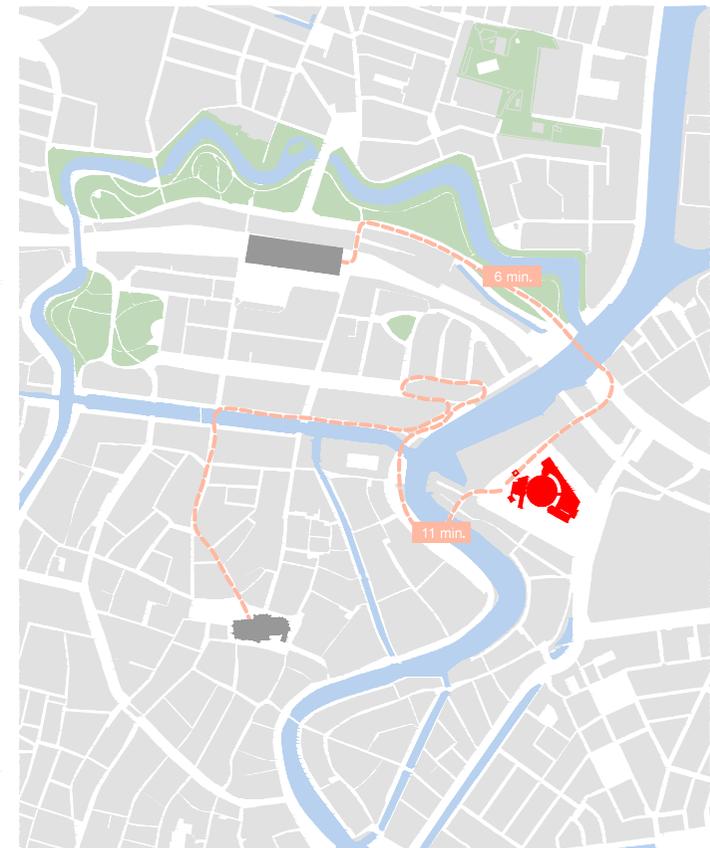
## Site Accessibility



Koepel is in 10-15 minutes walk distance from railway station and main square. Site has two main entrances: administration building and De Veste.

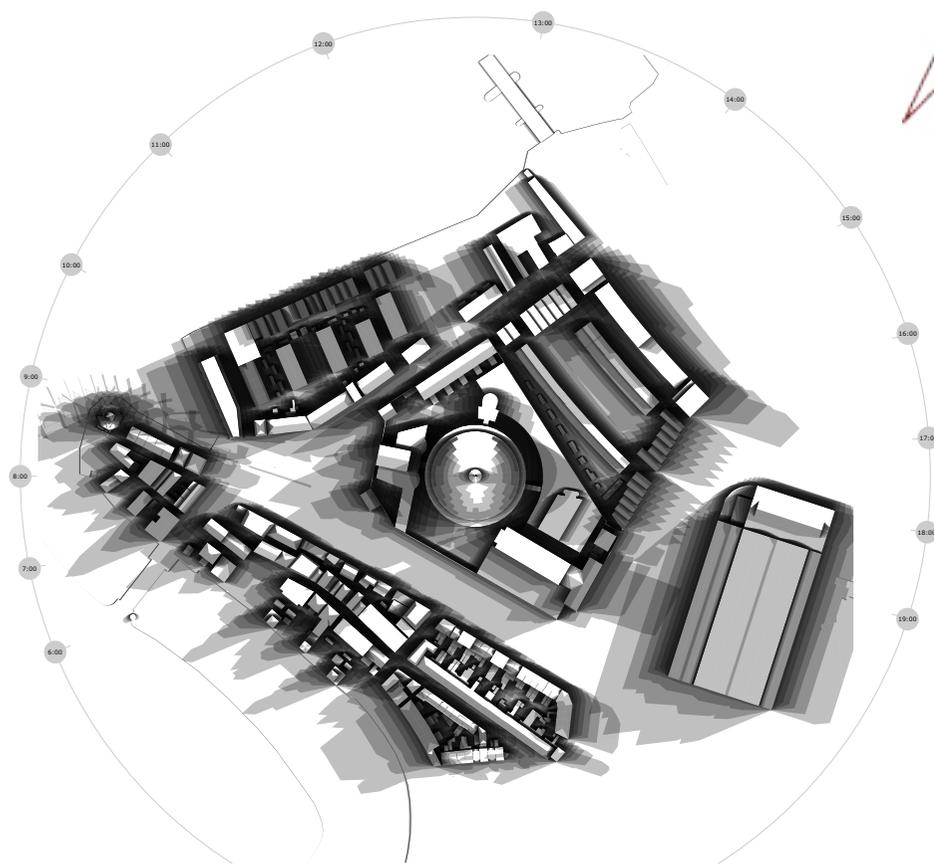
Bike lanes connect Koepelgevangenissen with west side of Haarlem via two bridges. Bike commuting time is the fastest way to reach the site.

Parking near Koepel is possible in front of main entrance, on side of De Veste. Site can also be accessed by looping bus connecting railway station and east coast of Spaarne.

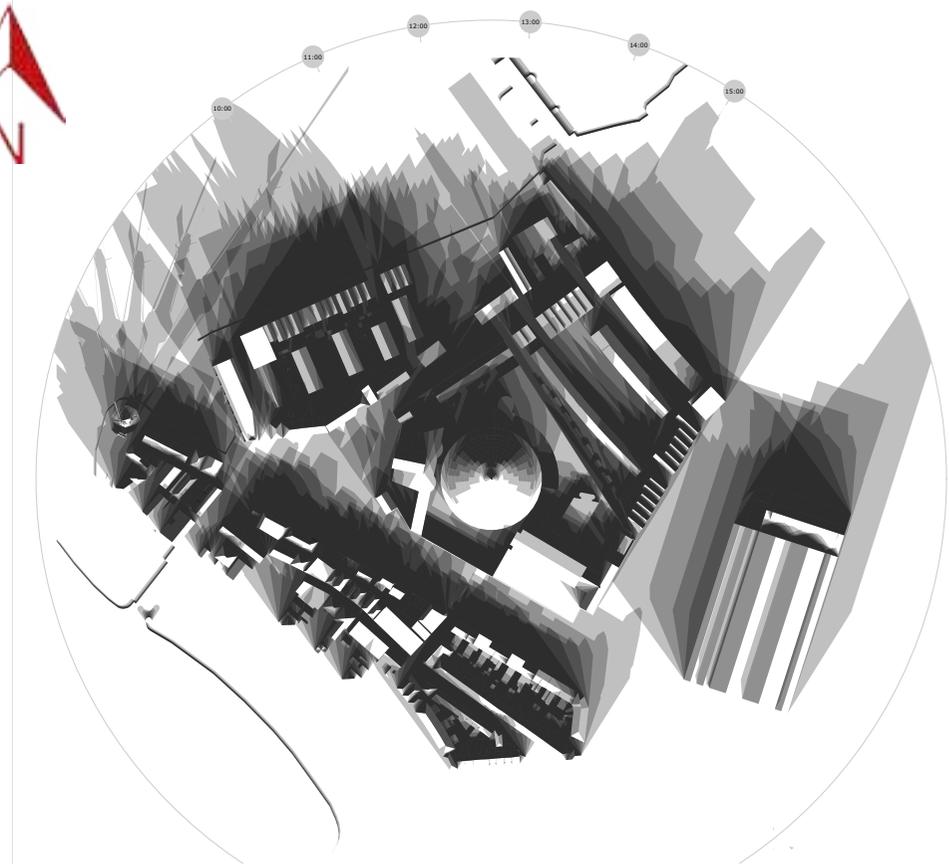


# 04 PLOT CONTEXT

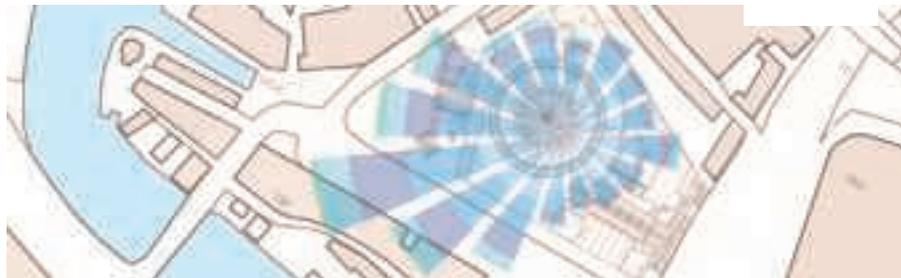
## Environmental Factors



Sun study: 21 June



Sun study: 21 December



Prevailing wind diagramme

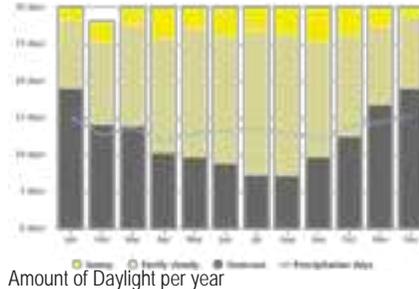
Site and the dome itself is exposed from the south: adjacent low rise buildings don't cast shadows on its walls. Dome is also exposed to the prevailing wind direction: south west. This factors resulted in damage to the structure due to excess heat expansion and moisture carried by wind. Additionally there are interiors between buildings that are never isolated, and there algae growth can be observed.

# 04 PLOT CONTEXT

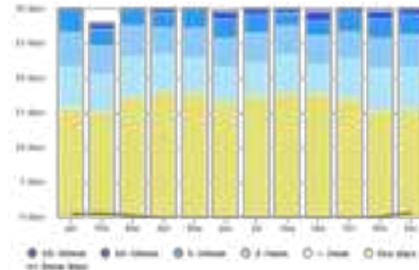
## Climate data Haarlem



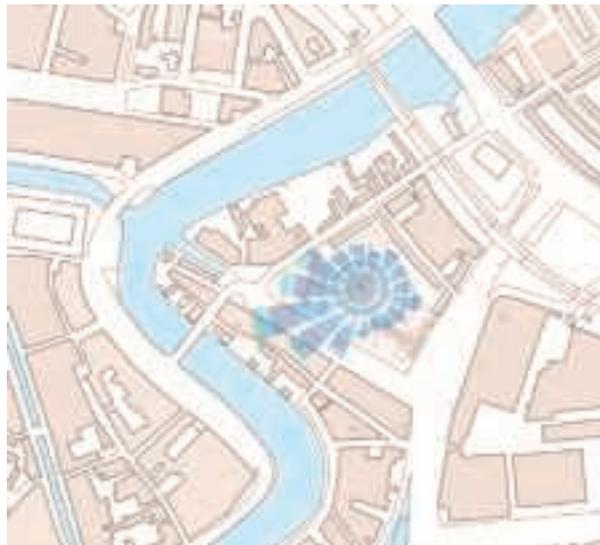
Sun



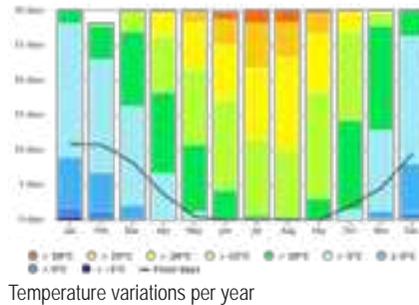
Amount of Daylight per year



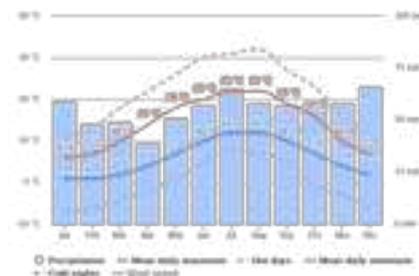
Amount of Rain per year



Prevailing wind direction



Temperature variations per year



Prison Complex and the Surrounding area

Haarlem, like the rest of The Netherlands, has an oceanic (maritime) climate, particularly the Köppen Climate Classification subtype for this climate is “Cfb”. (Marine West Coast Climate). This climate is characterized by its mild winters. There is almost no snowfall and just a few days (sometimes weeks) a year with temperatures below zero during the day. The average temperature for the year in Haarlem is 50.0°F (10°C). The warmest month, on average, is August with an average temperature of 63.0°F (17.2°C). The coolest month on average is February, with an average temperature of 37.0°F (2.8°C). The highest recorded temperature in Haarlem is 89.0°F (31.7°C), which was recorded in July. The lowest recorded temperature in Haarlem is 5.0°F (-15°C), which was recorded in January.

There are an average of 214.0 days of precipitation, with the most precipitation occurring in January with 20.0 days and the least precipitation occurring in February with 15.0 days. In terms of liquid precipitation, there are an average of 208.0 days of rain, with the most rain occurring in November with 20.0 days of rain, and the least rain occurring in February with 12.0 days of rain.

Prison plot is a diverse urban tissue that originated in steps - first there was a stripe of worker dwellings on coast of Spaarne, mainly built in years 1900-1930. As the oldest part of the neighbourhood it had the most time to develop organically. More recent dwelling blocks on north and north west are not as dense and more organised. In the East, on the other side of the traffic artery expands the NED Train industrial facility.

All the above mentioned sectors of dome surrounding enter in the relation with the Koepelgevangenis site differently. Factors that form this relations are their distance to prison, type of street separating urban blocks, difference in building heights and site openings. Design of the university-college should compliment the context respectfully, minding the privacy of the adjacent dwellings.

Koepelgevangenis is a dominant in its surrounding and creates a strong accent in Haarlem east coast skyline. Although it is visible from distance in multiple locations in its close neighbourhood adjacent buildings of 3-4 storey height obscure its view. Preserving the visibility of the dome will require mindful placing of new buildings.

Site of Koepelgevangenis has very good communication with railway station and city center. Within a quarter of hour it can be accessed with any mean of private transport, also on foot. Additionally it is a stop of looping bus line, which also connects west and east coasts of Spaarne.

Dome exposition to excess isolation and wind together with its current technical condition create challenges that technical aspects of the design will have to tackle.

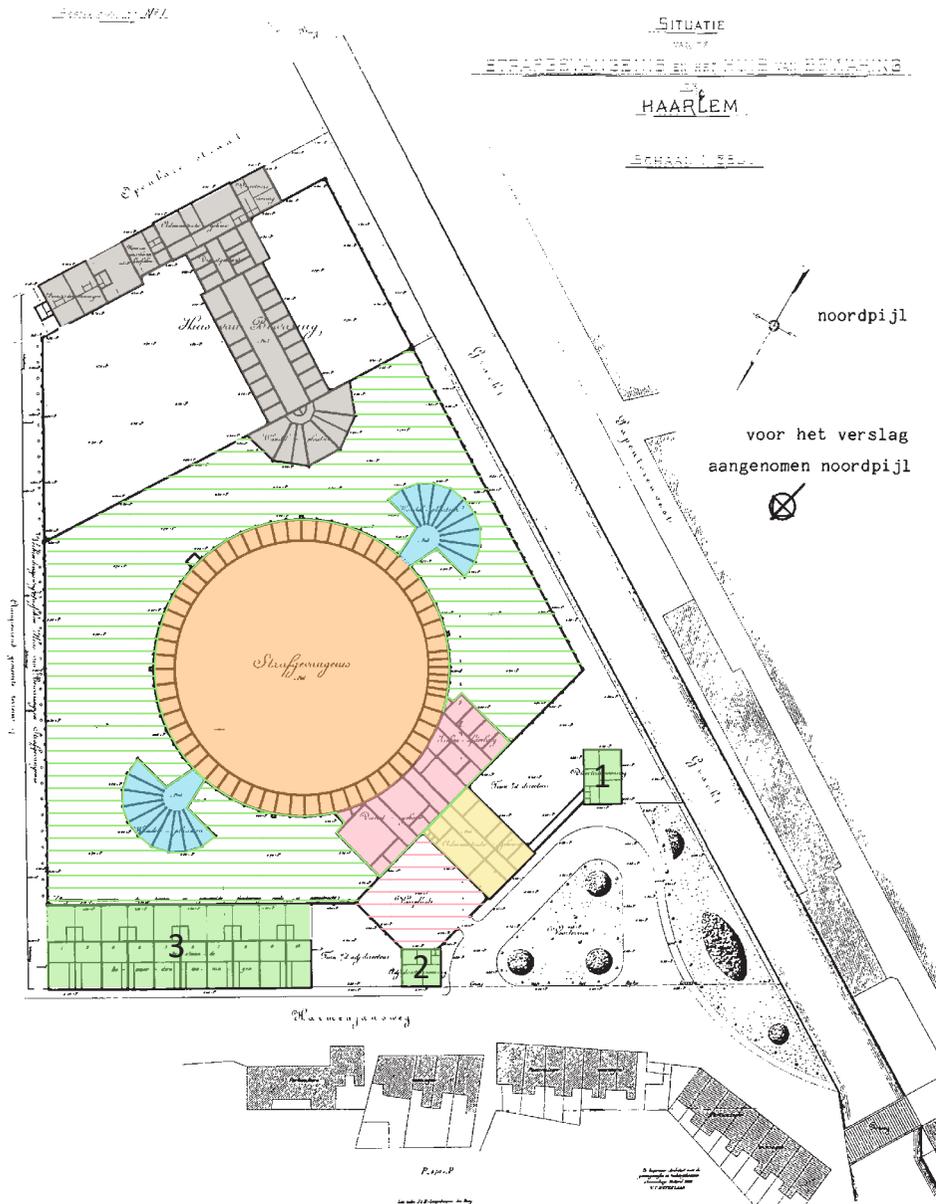


# 05 BUILDING

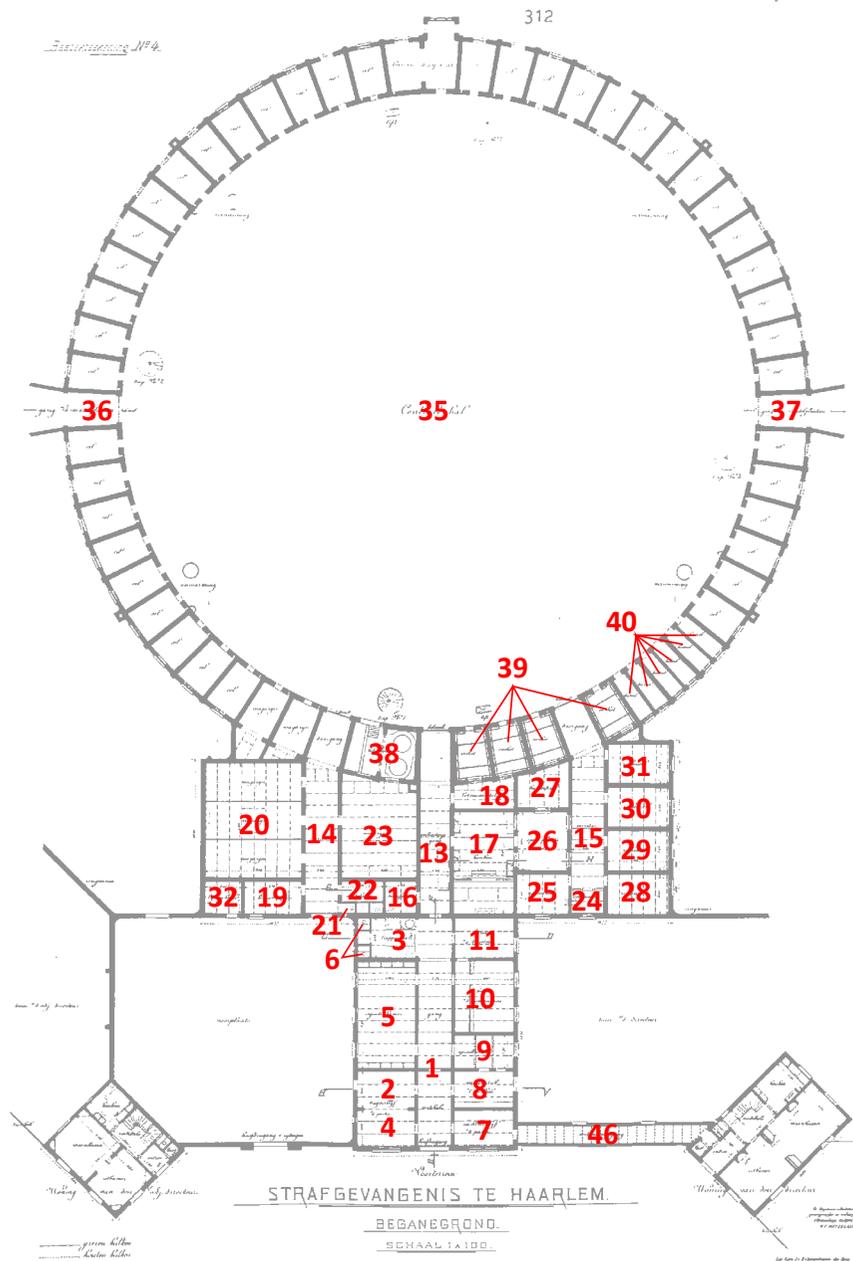


De Koepel

299

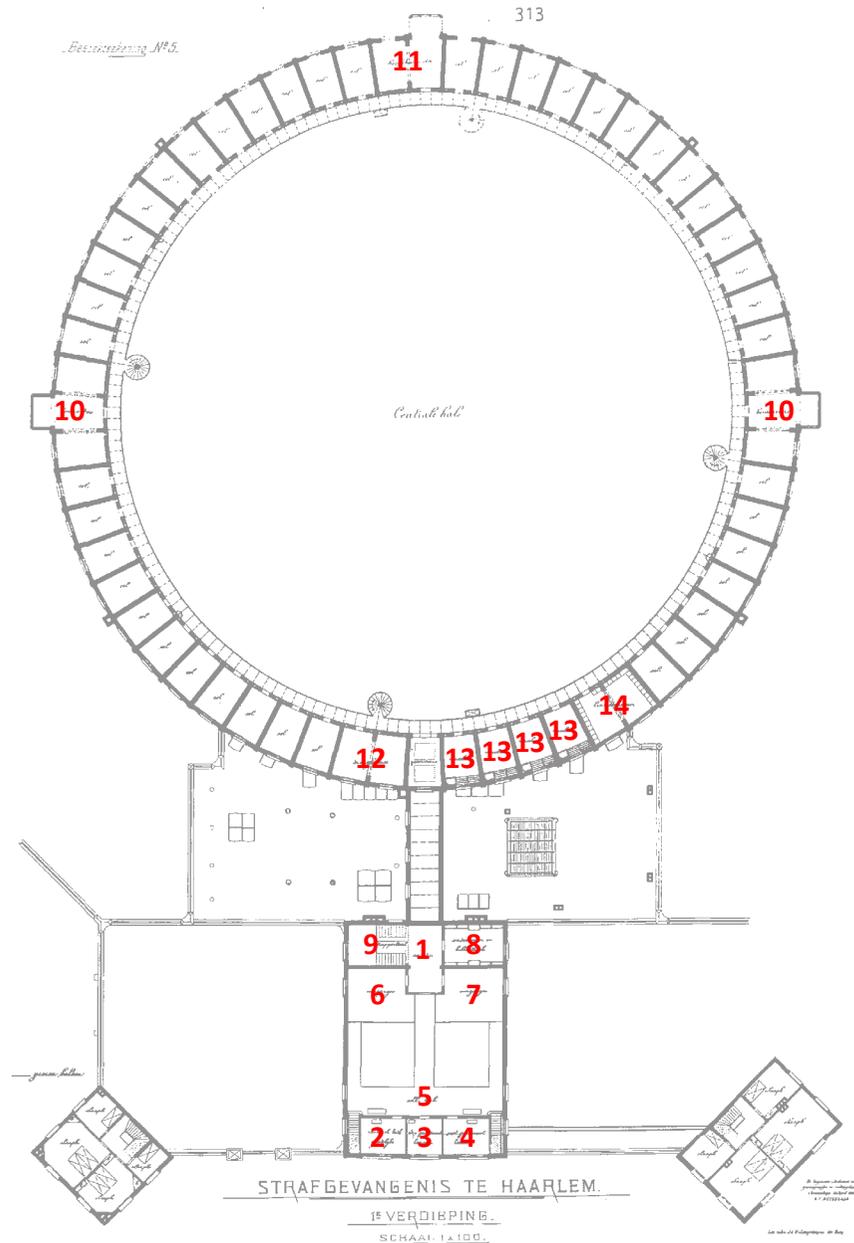


- Administratie gebouw / Administration office
- Dienstgebouw / services building
- Voorhof / forecourt
- 1 Directeurswoning / directors dwelling
- 2 Adjunct directeurswoning / adjunct-directors dwelling
- 3 Bewaarderswoningen / Guards dwellings
- Cellengebouw / cells building
- Wandel- luchtplaatsen / air spaces
- Huis van bewaring / detention centre - jail



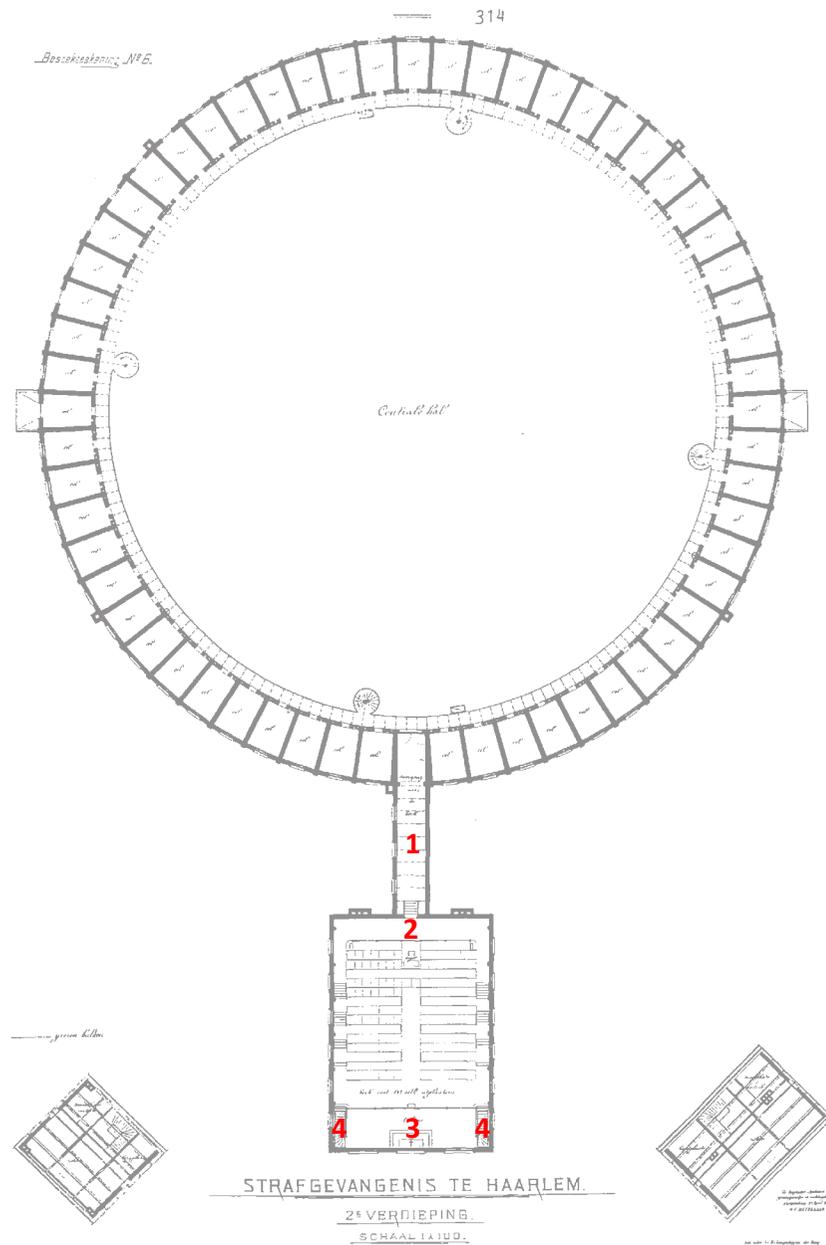
### GROUND FLOOR

- 1 Central hallway
- 2 Room for the gateman during the day
- 3 Staircase
- 4 Entrance portal
- 5 Accountants room
- 6 Toilets
- 7 Room for the gateman during the day
- 8 Waiting room
- 10 Clearance office
- 11 Directors office
- 13 Central hallway
- 14 Hallway
- 15 Hallway
- 16 Disinfection space
- 17 Kitchen
- 18 Food storage
- 19 Fuel storage
- 20 General storage
- 21 Guards toilet
- 22 Fuel dumping area
- 23 General storage
- 24 Ziekenvader (person taking care of the sick)
- 25 Medical practitioners room
- 26 Open courtyard
- 27 Bathroom
- 28/31 Cells for the sick prisoners
- 35 Central hall
- 36 North hallway to airspaces
- 37 South hallway to airspaces
- 38 Boiler room
- 39 Dark punishment cells
- 40 Bathcells
- 27 Cells for the sick prisoners



### 1st FLOOR

- 1 Small hallway
- 2 Catholic priest
- 3 Israelite Rabbi
- 4 Protestant preacher
- 5 Hallway to cellular church
- 6 Storage under the tribune of the cellular church
- 7 Storage under the tribune of the cellular church
- 8 Library
- 9 Staircase
- 10 Office and bedroom guards (3cells)
- 11 Office main guard (2cells)
- 12 Drying room
- 13 Washing room
- 14 Laundry storage
- 9 Staircase



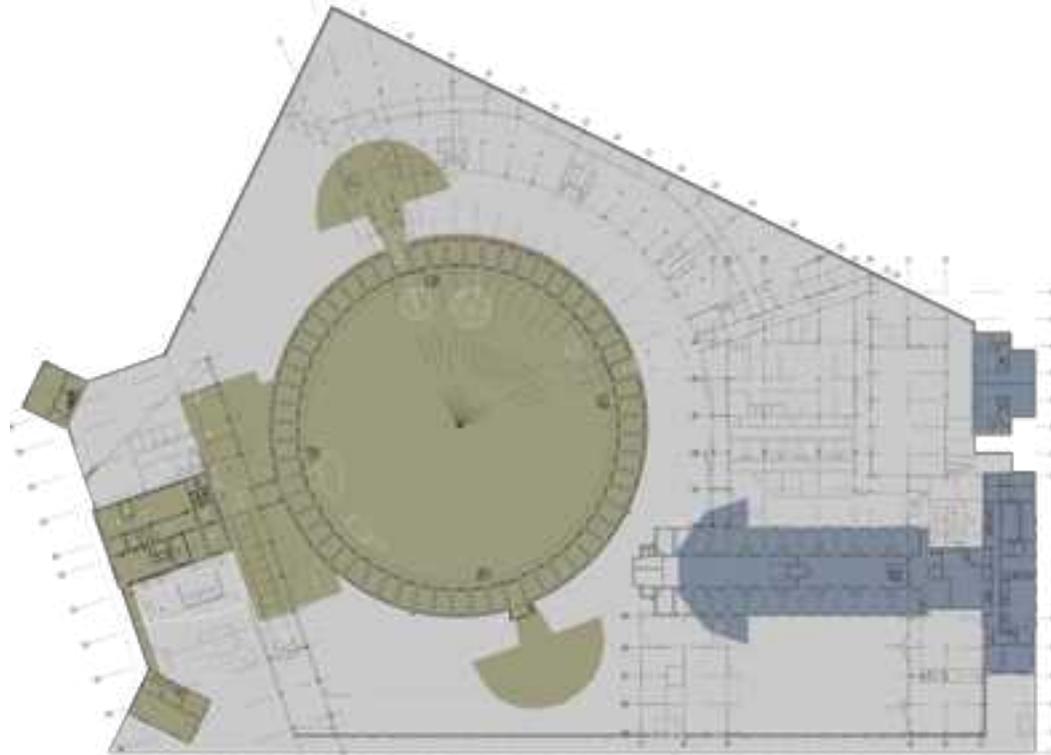
### 2nd FLOOR

- 1 Hallway to cellsbuilding
- 2 Hallway church
- 3 Podium church
- 4 Stairs to podium

# 05 BUILDING

## Changes in the Prison Complex

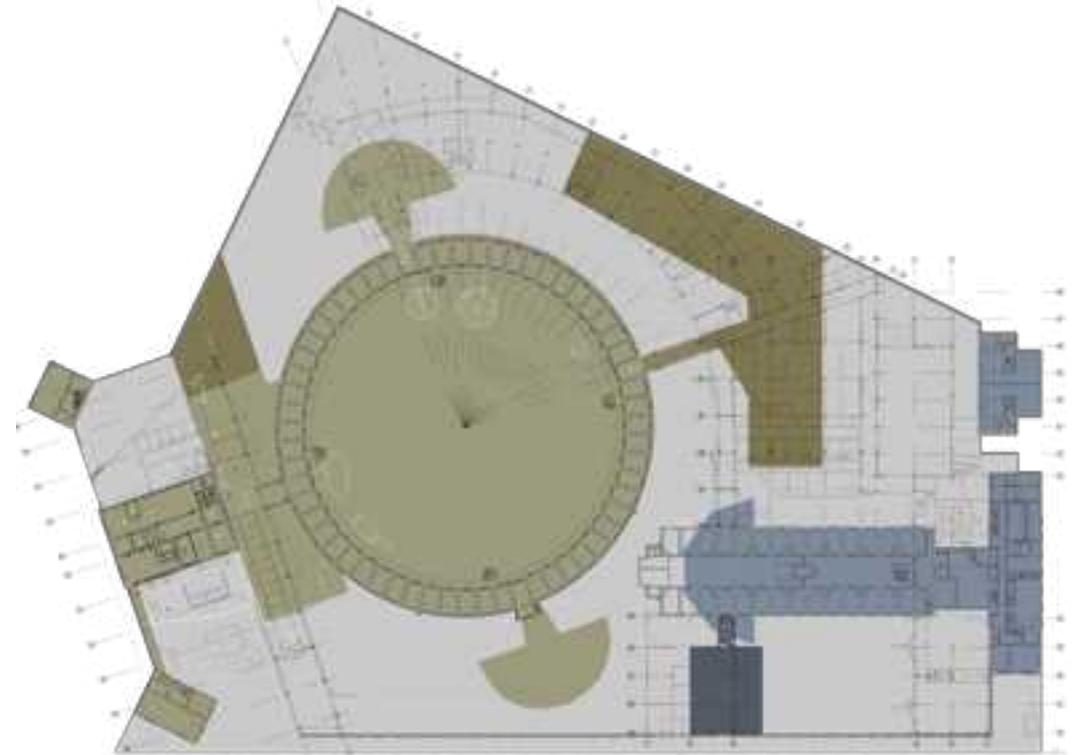
1901 de koepel  
1901 de veste



original situation 1901

These floor-plans give an overview on the renovation that have taken place. The construction started at 1899 and finished in 1901. There is a distinction between 'de koepel' (brown) and 'de veste' (blue). De koepel housed convicted criminals and de veste people that were awaiting their trial. The two departments are working separately from each other and have their own administration and wardens office.

1901 de koepel  
1901 de veste  
1903 de veste church  
1922 extension of working space and storage



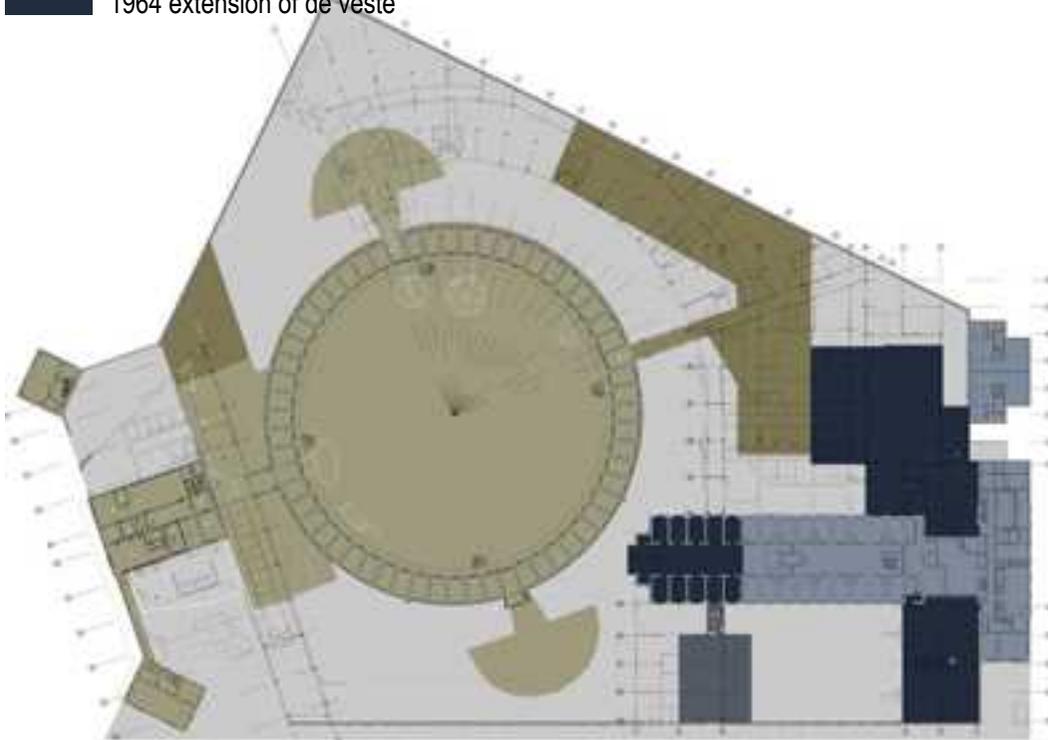
renovation situation 1922

Short after the completion of the building de veste build a new church 1903. In 1922 there is an extension from the warehouse and an extra building was added to the east. This extra building housed working space for the prisoners and storage.

# 05 BUILDING

## Changes in the Prison Complex

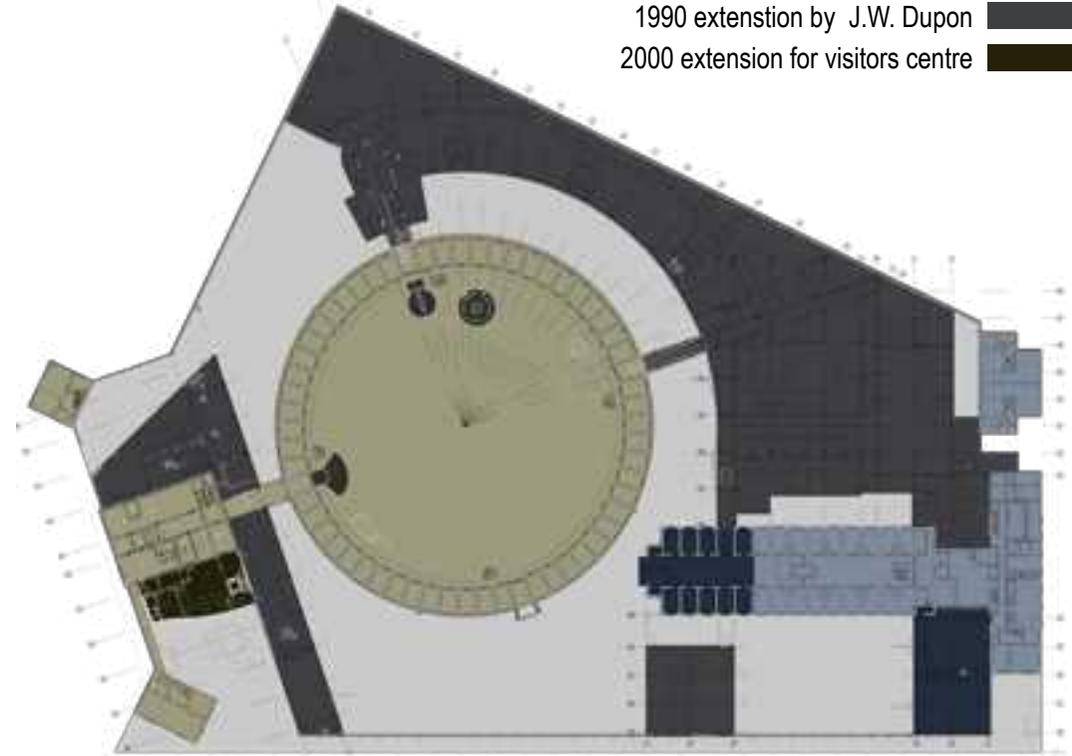
- 1901 de koepel
- 1901 de veste
- 1903 de veste church
- 1922 extension of working space and storage
- 1964 extension of de veste



renovation situation 1968

In 1964 de veste was extended with extra cells. To the north extra working space is created for the prisoners of the veste. To the south there are some extra showers and office space.

- 1901 de koepel
- 1901 de veste
- 1903 de veste church
- 1964 extension of de veste
- 1990 extension by J.W. Dupon
- 2000 extension for visitors centre

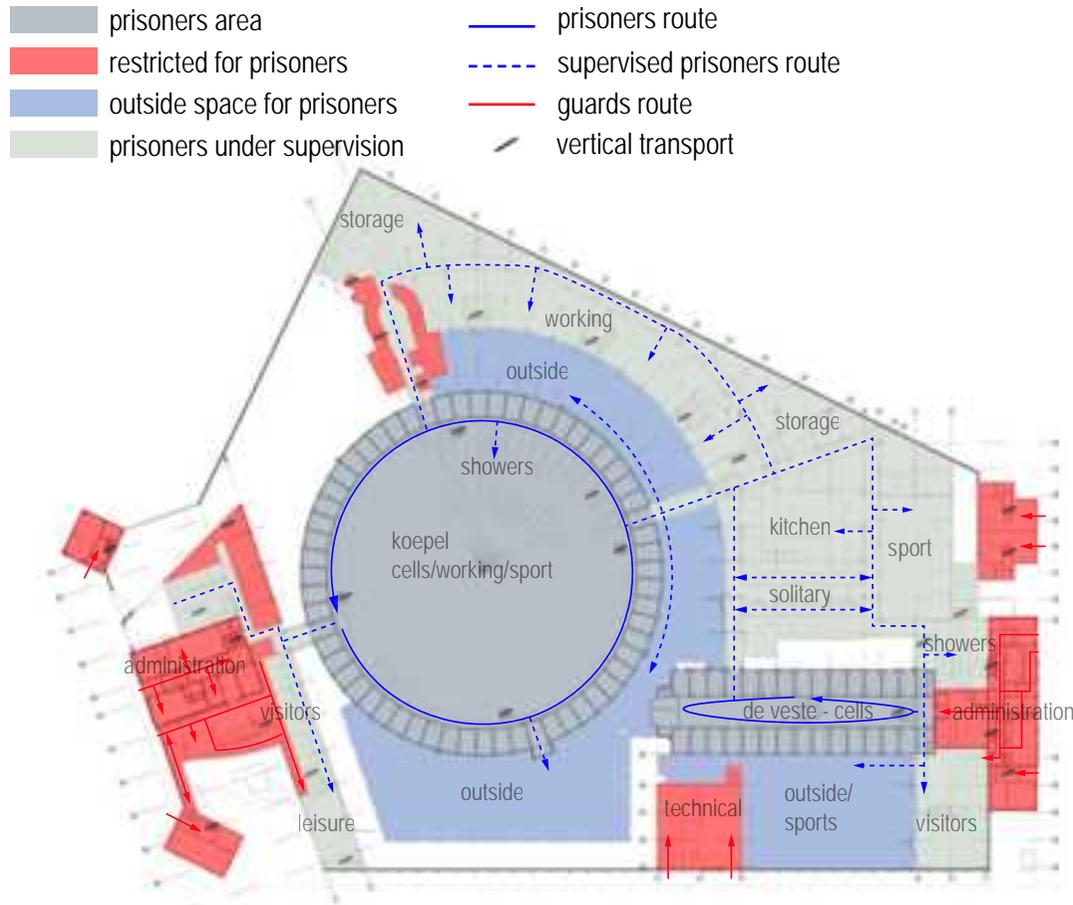


renovation situation 1990-2000

In 1990 J.W. Dupon designed a major extension for the working space, offices, library, fitness sport and leisure areas. For this renovation, the older extension from 1922 and 1928 were demolished in 1984 together with the cellular cells to the north and buildings between the administrations, - and entrance building and de koepel. The cellular cells to the south from de koepel were already demolished in 1975. In 2000 the extension for the visitor's centre was made.

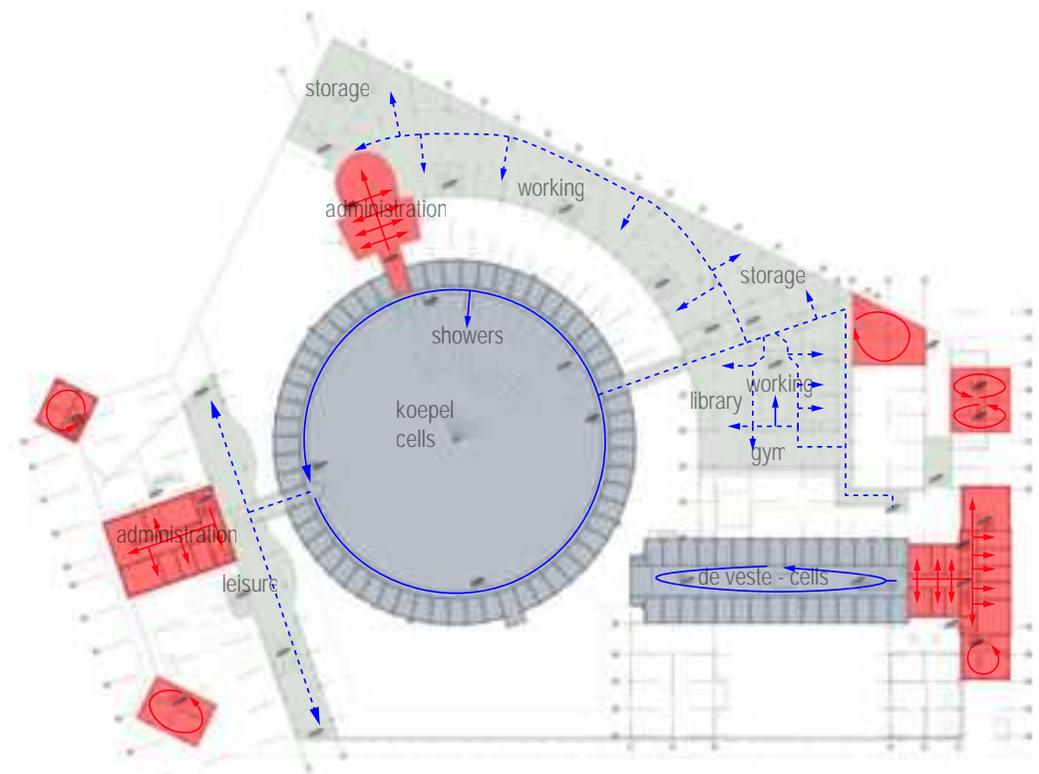
# 05 BUILDING

## Circulation-Routing in the Prison Complex



Ground floor

In order to get a clear overview in the routing of the building it was necessary to make a distinction between areas. These areas divide the areas where prisoners are allowed to go and where they were under supervision. De koepel and de veste were working apart from each other. This caused for two different kind of routes in the original plan. After the decision to merge the two prisons together the 1990 extension from J.W. Dupon became the connection between the buildings. This extension houses the functions that were necessary for both the prisoner's blocks. These functions were kitchen, sport, library, gym, working space and doctor's area where the prisoners could get basic treatment.



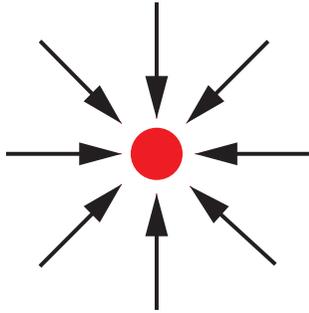
1th floor

The routing of the building tells you something about the day to day schedule of the prisoners. The building is organized in such a way that it could work like a machine. Every function also has its own kind of routing. The cell-blocks have a circular routing due to its shape and function. The routing is always focused on the middle. The restricted area for prisoners are mostly offices for administration and guards. These offices have a hallway with offices connected to it. The areas where prisoners were allowed under supervision have a long hallway with different functions attached to it. These hallways are connections between the different prison blocks.

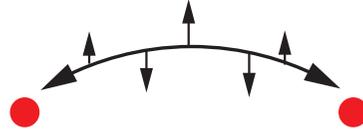
# 05 BUILDING

## Circulation-Routing in the Prison Complex

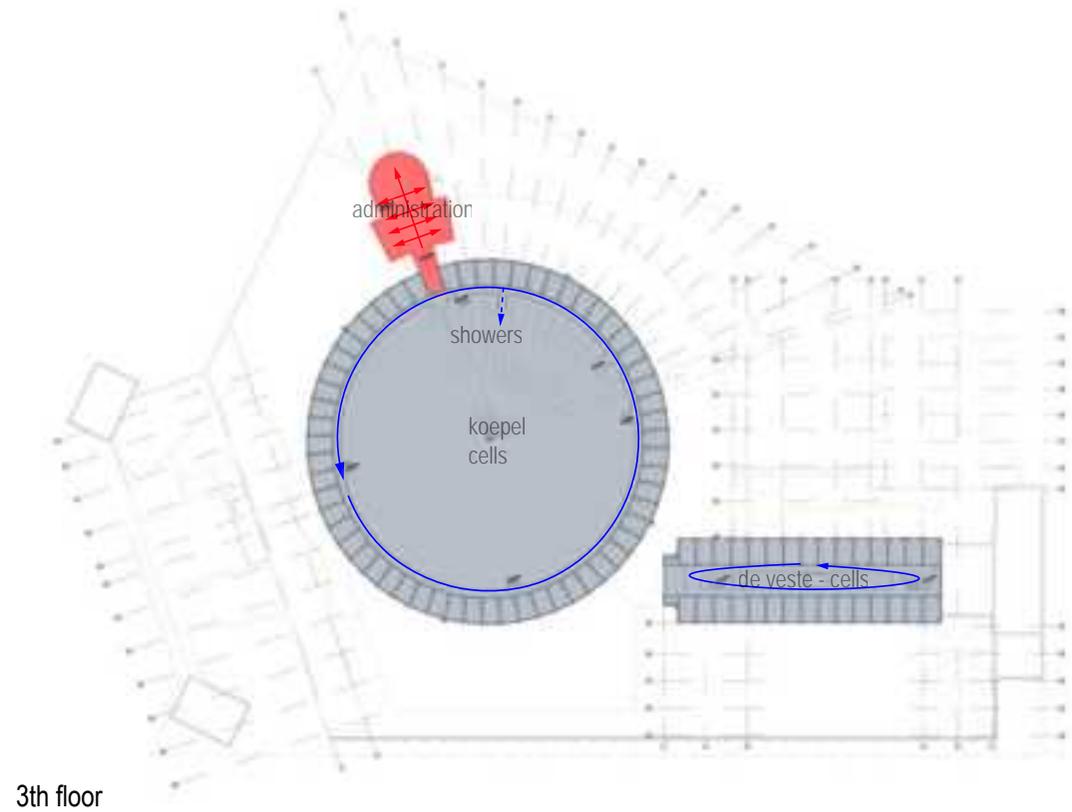
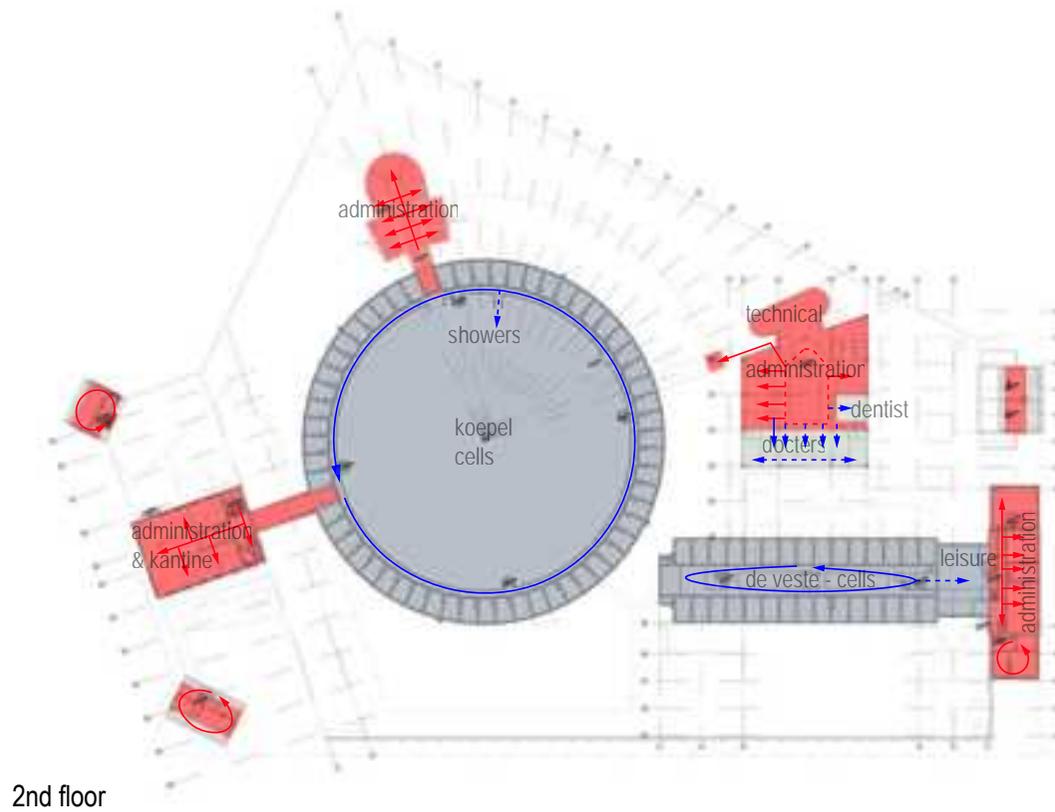
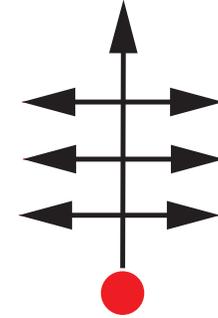
prisoners route  
- Central  
- Focused on one point



supervised route  
- connecting  
- distributing



Staff route  
- distributing

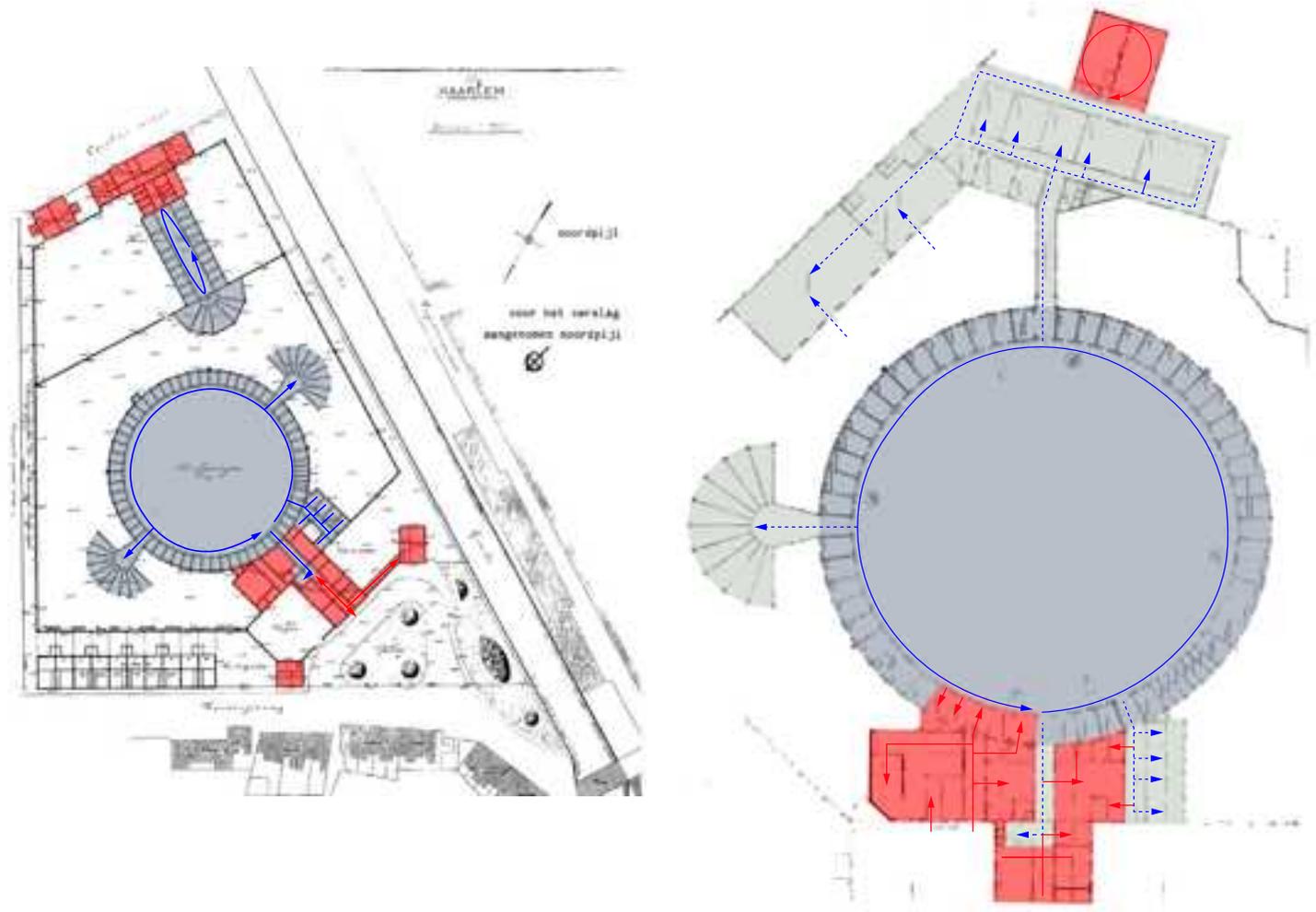


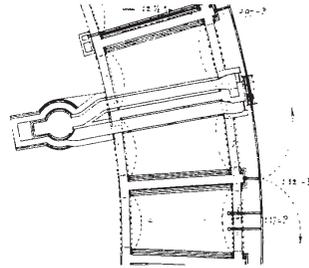
# 05 BUILDING

## Circulation-Routing in the Prison Complex

Looking at the routing from the situation in 1901 it's clear that there's a distinction between the route for the staff and prisoners. The inmates were only allowed to go to outer cellular cells, working space, doctor and church under supervision. After the renovation from 1922 an extra building for working space and storage was added. These areas were also allowed to visit under supervision. Comparing the day to day schedule from the early 20th century in the prison you can make up a clear idea about the days in the prison would look like. The day to day schedule from that time was:

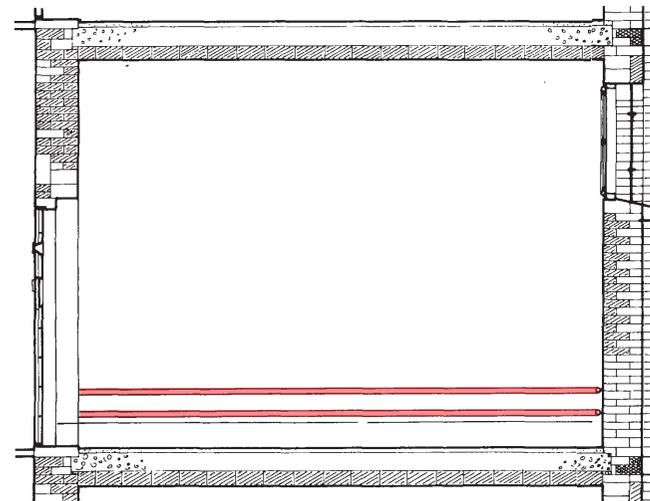
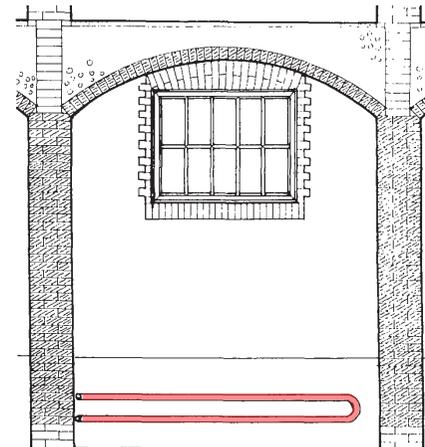
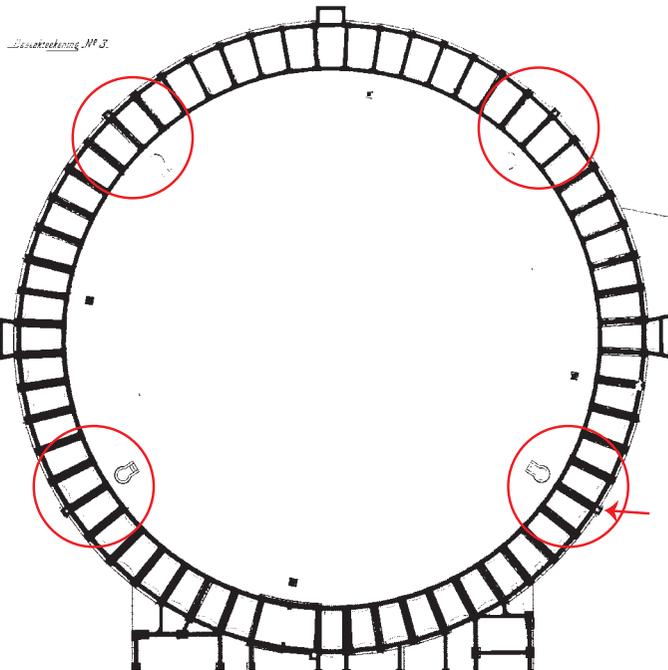
- 06:00 - 06:30: wake up and get dressed
- 06:30 - 08:00: work
- 08:00 - 08:30: breakfast
- 08:30 - 12:00: work (45 minutes to go outside)
- 12:00 - 13:30: rest and hot meal
- 13:30 - 16:30: work
- 16:30 - 17:00: rest time
- 17:00 - 20:30 work (45 min for bread and coffee)
- 20:30 - 21:30 rest time

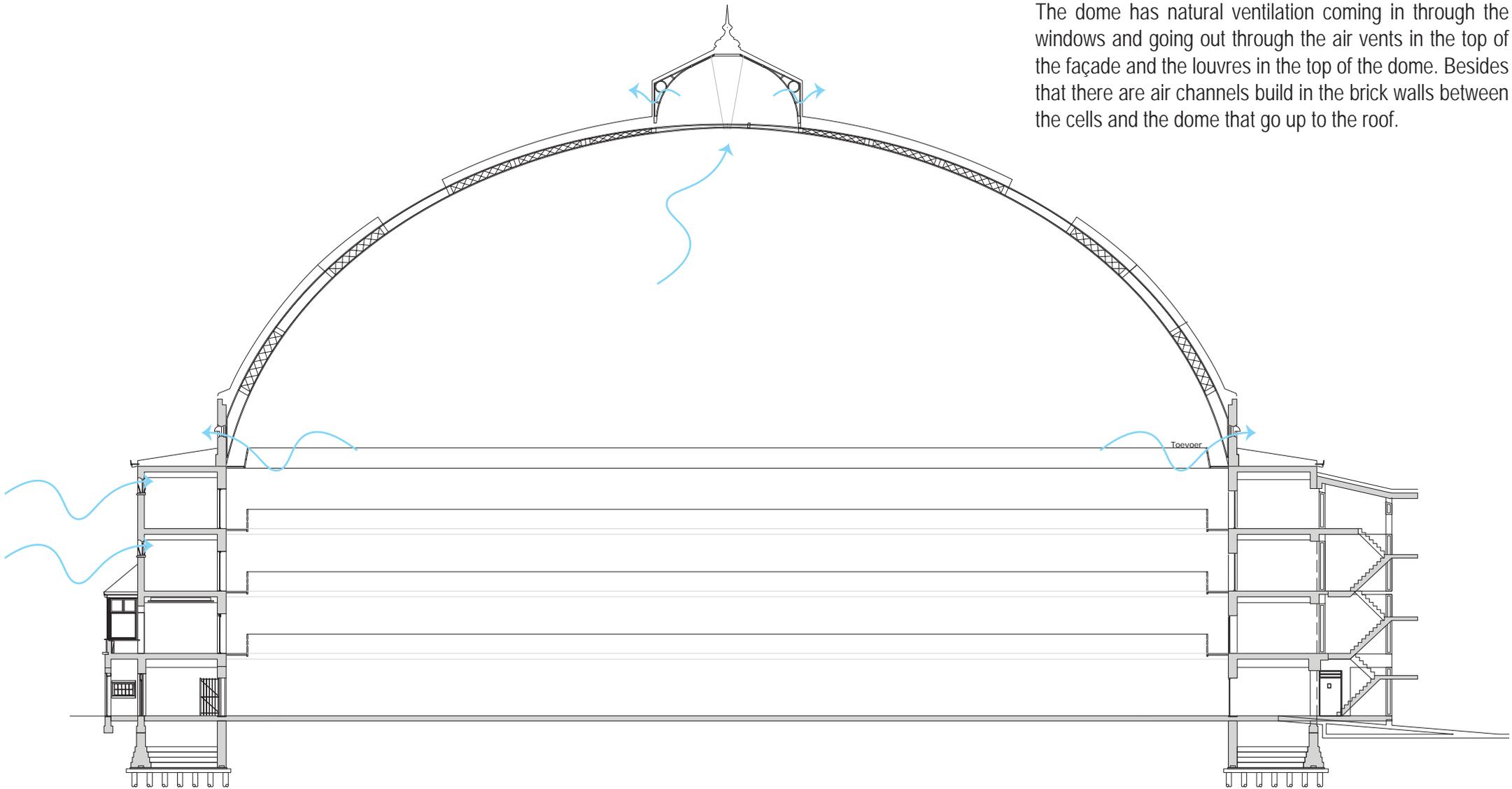




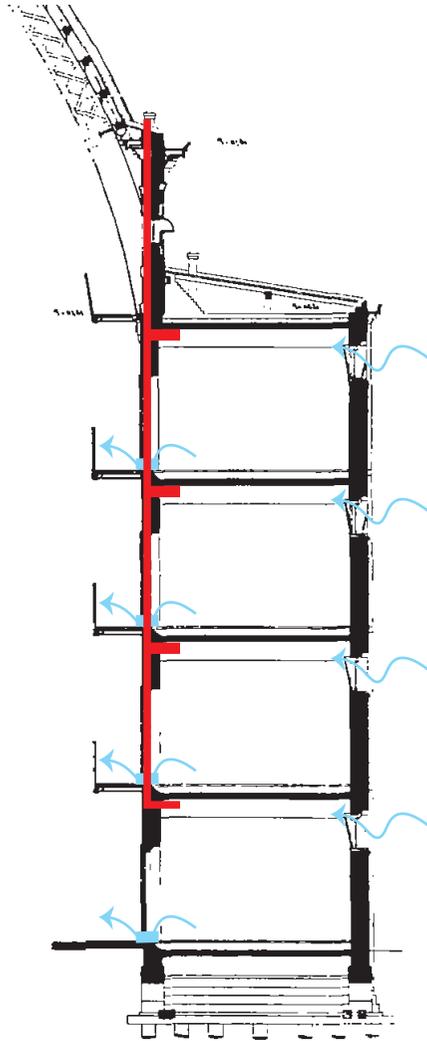
afb. 167a Haarlem - fundering van de ondergrondse luchttoevoer- en veegkanalen behorend bij de kachels in het celledgebouw.

In the foundation there is two channels that connected to the heating furnace. One was for the air and the other one was for the smoke to go out. This is repeated at 4 parts in the dome.

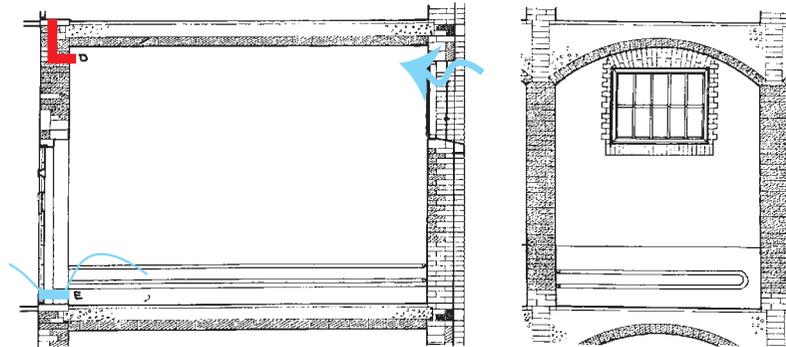




The dome has natural ventilation coming in through the windows and going out through the air vents in the top of the façade and the louvres in the top of the dome. Besides that there are air channels built in the brick walls between the cells and the dome that go up to the roof.



Air channels are built in the brick walls between the cells and the dome. One at the floor level and the other one towards the ceiling. A channel that goes to the roof at the point where the dome starts air can go out creating a natural ventilation system. This system can't be regulated.



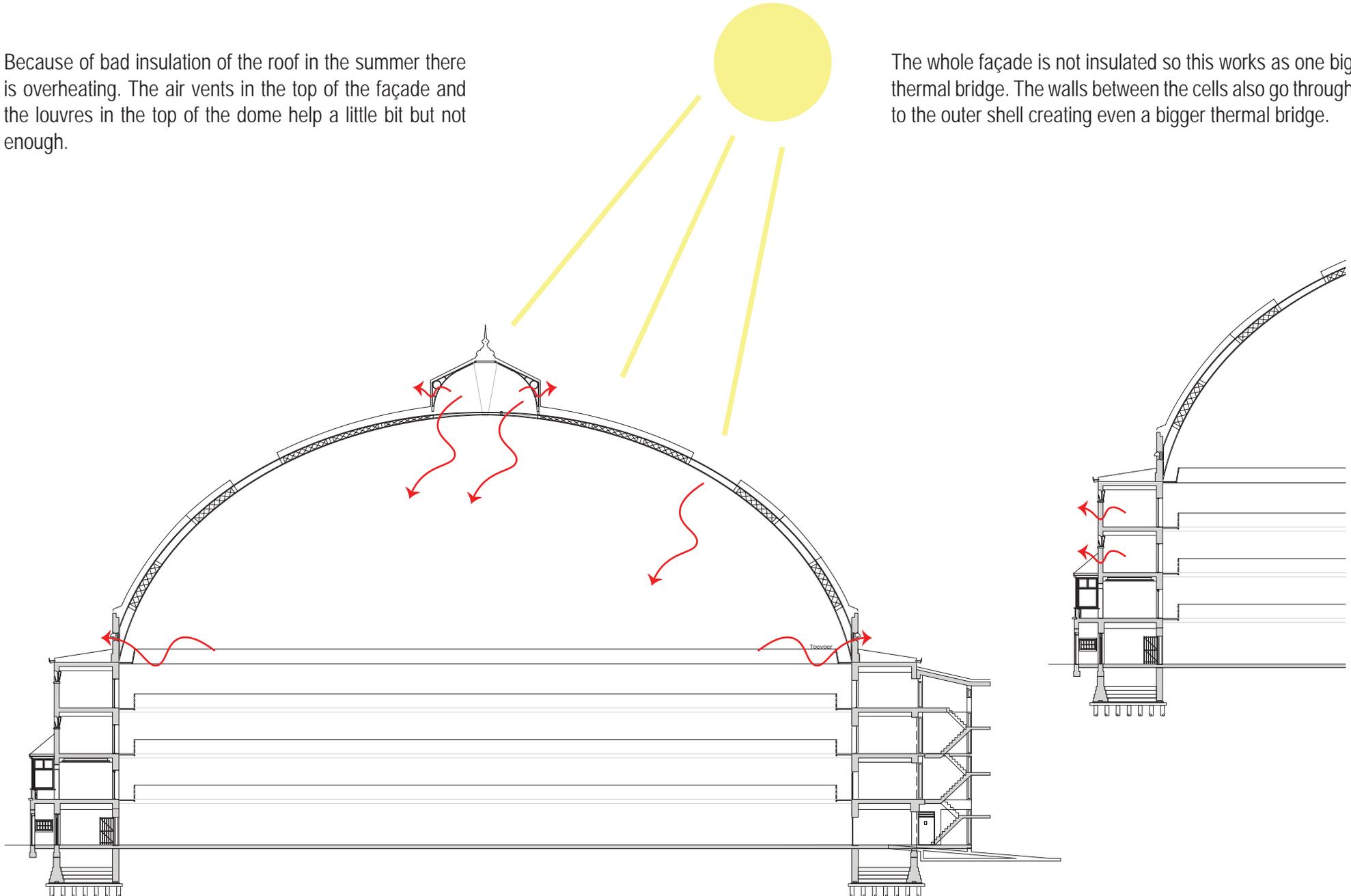
afb. 199 Haarlem - dwars- en lengtedoorsnede van een cel.  
Vergelijk de methode van natuurlijke ventilatie met die in Arnhem en Breda. De ventilatie was eveneens gebaseerd op een natuurlijke trek, zij het dat door de constructiemethode geen hinderlijke trek ontstond. In de muur tussen de cel en de centrale hal werden voor elke cel afzonderlijk twee ventilatiekokers ingemetseld. Een van deze kokers mondde boven in de muur uit (d) en de andere onderin bij de vloer (e). Doordat deze kokers op verschillende niveau's bovendaks kwamen (ter hoogte van de aankapping en bij de geboorte van de koepelkap) werd een natuurlijke ventilatie bewerkstelligd. Regeling van deze ventilatie was niet mogelijk.



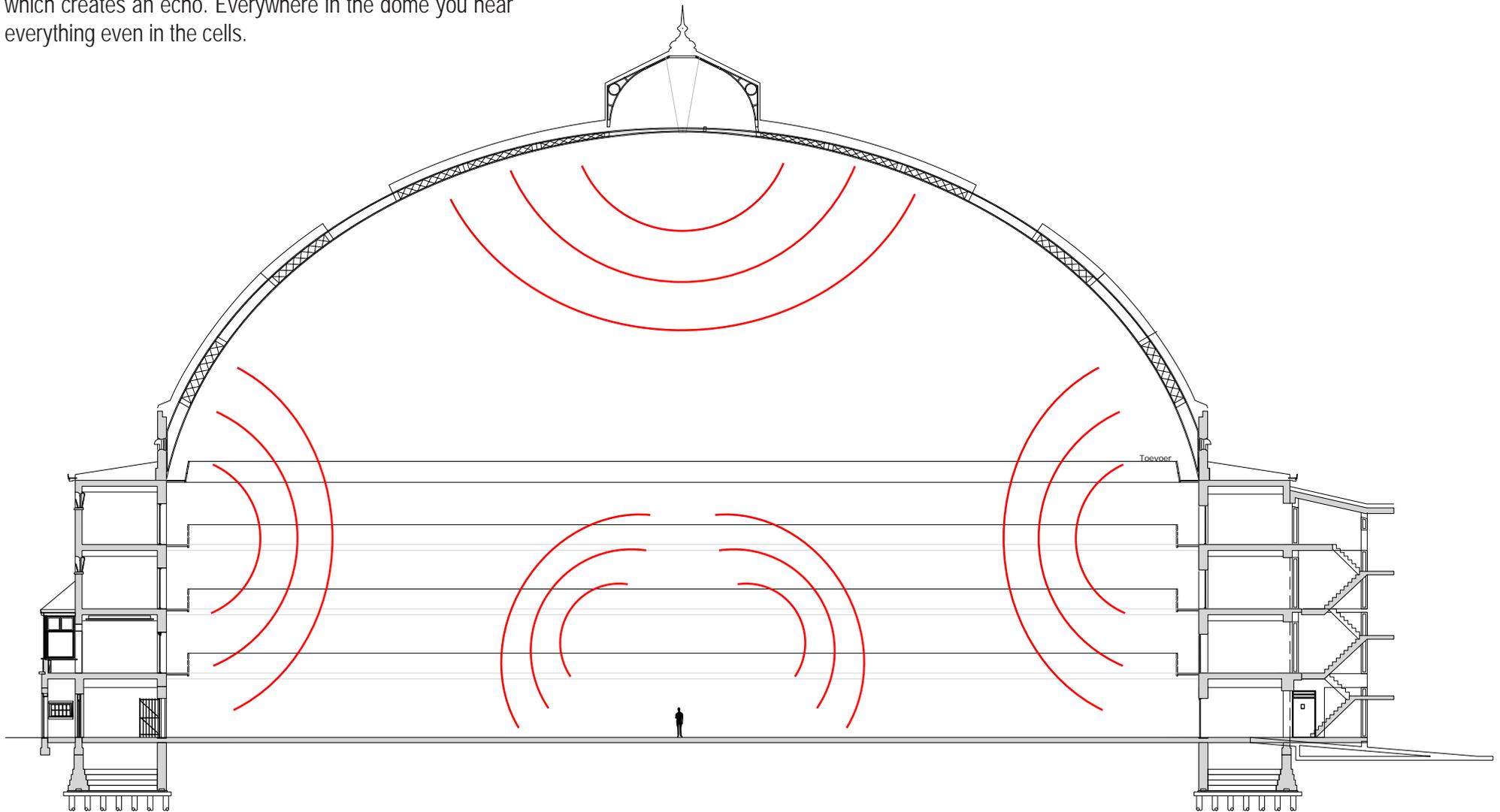
According to the report of Pieters Bouwtechniek from 2016 ventilation in the building of the dome has natural ventilation. Looking at the ventilator fan in the window you would suspect the building makes use of mechanical ventilation.

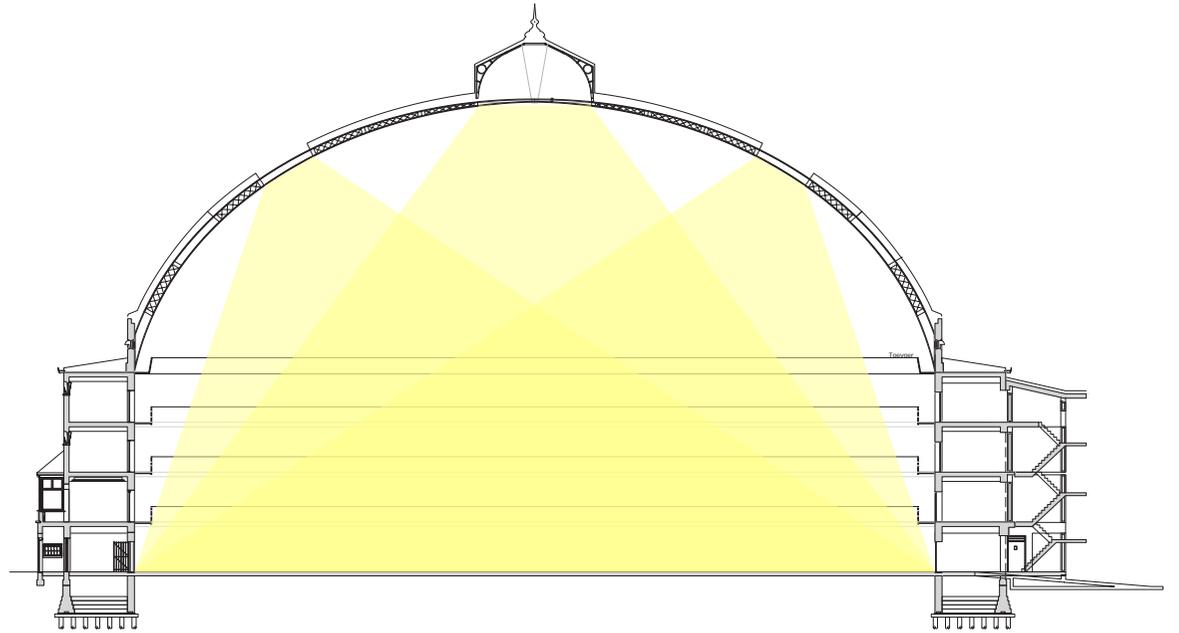
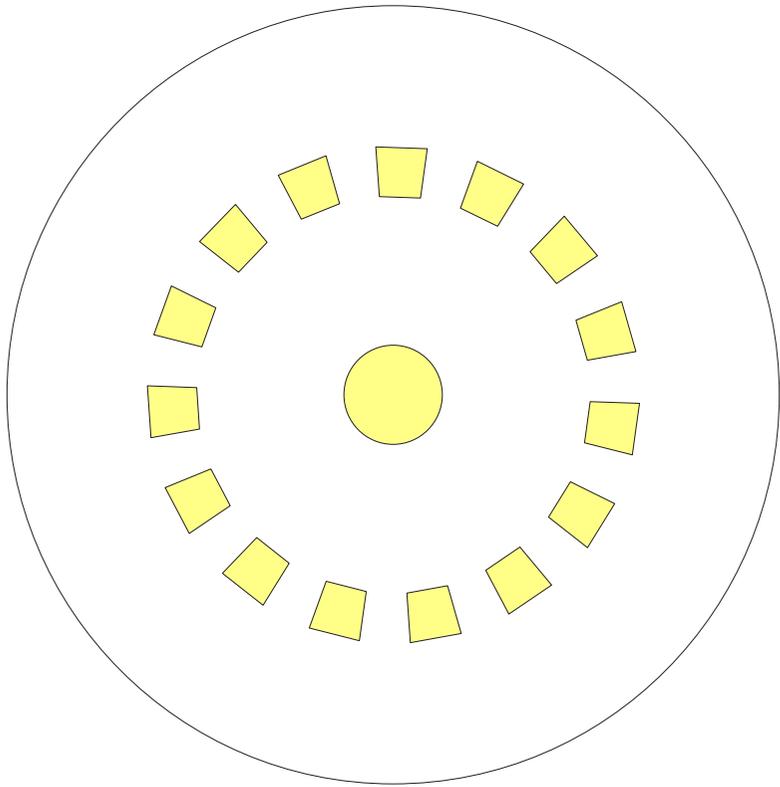
Because of bad insulation of the roof in the summer there is overheating. The air vents in the top of the façade and the louvres in the top of the dome help a little bit but not enough.

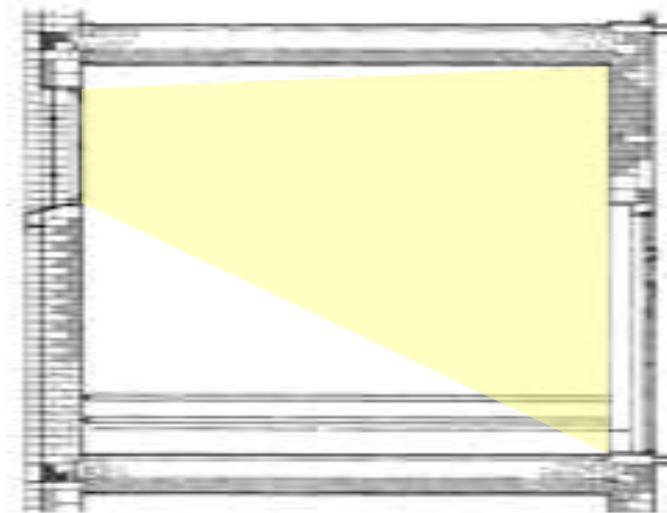
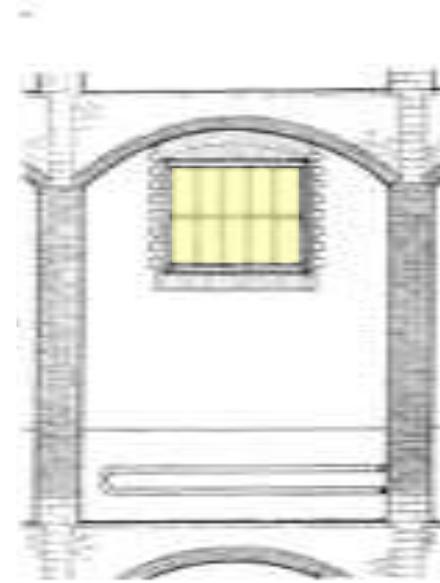
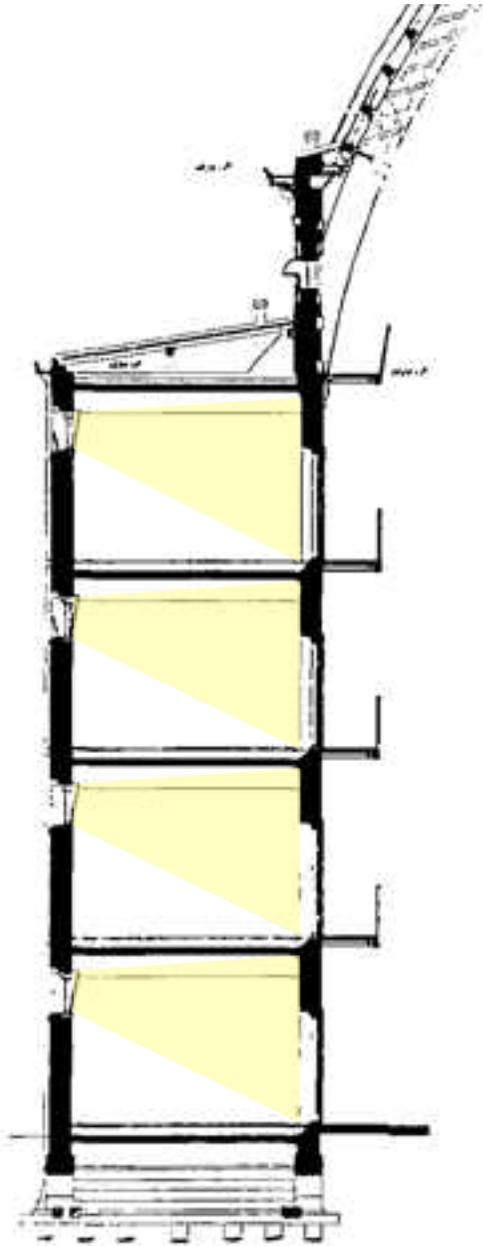
The whole façade is not insulated so this works as one big thermal bridge. The walls between the cells also go through to the outer shell creating even a bigger thermal bridge.

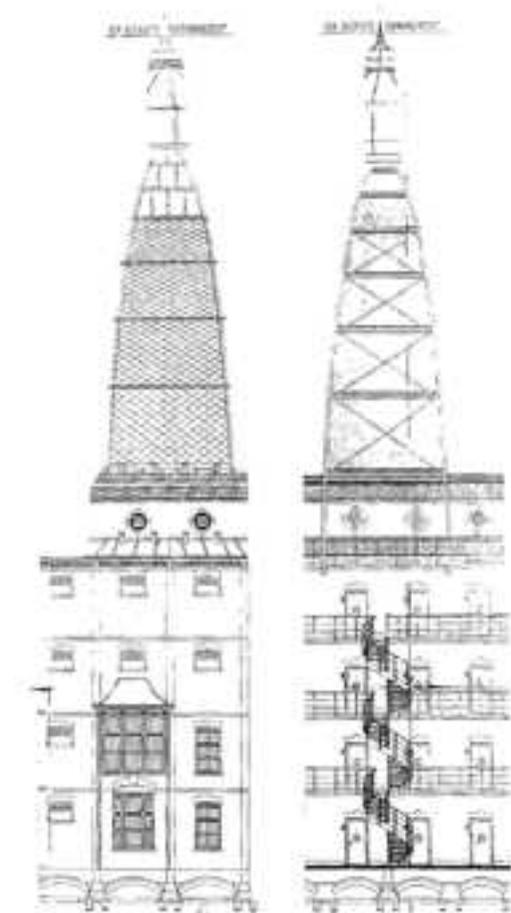
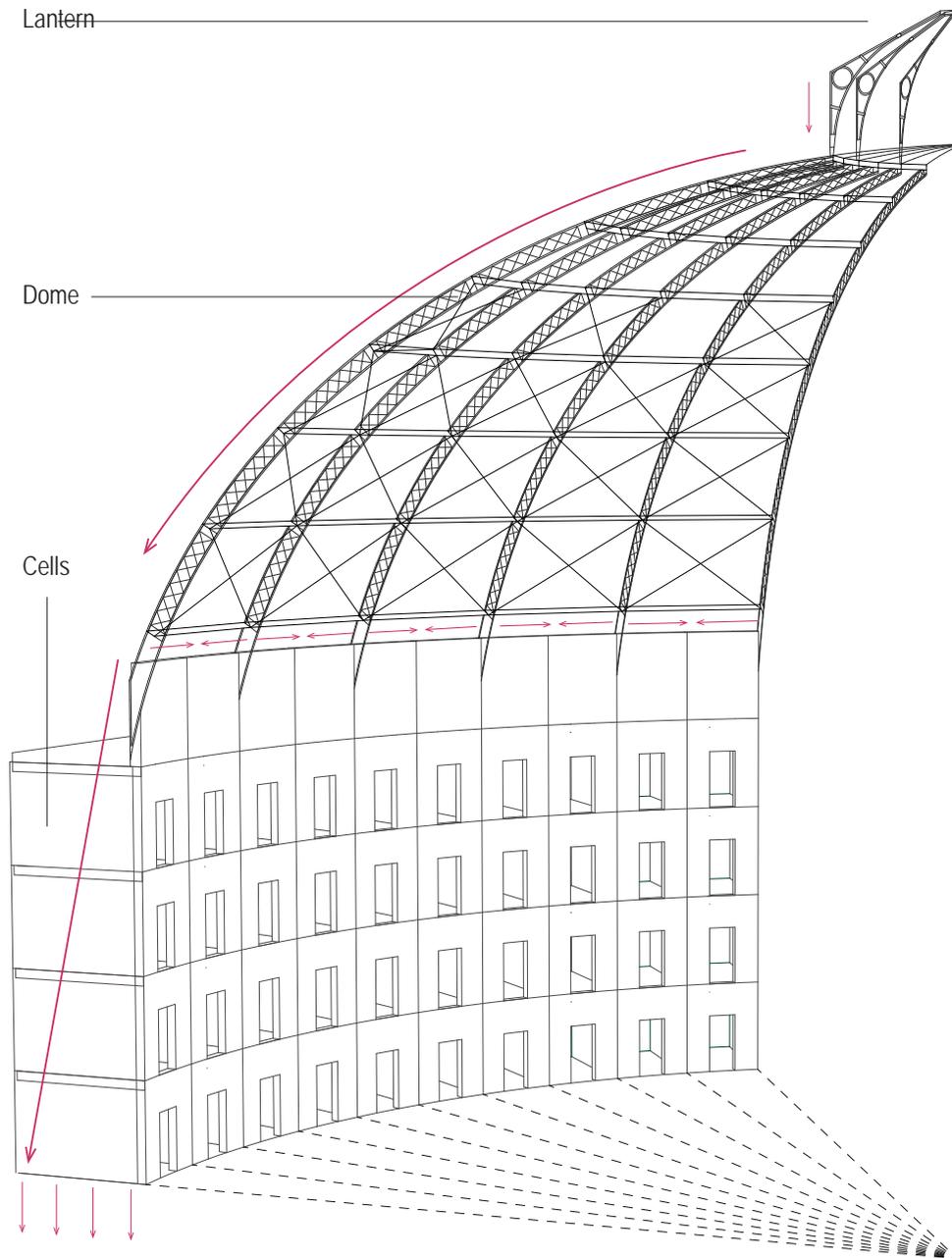


The dome construction bounces sounds back to the middle which creates an echo. Everywhere in the dome you hear everything even in the cells.

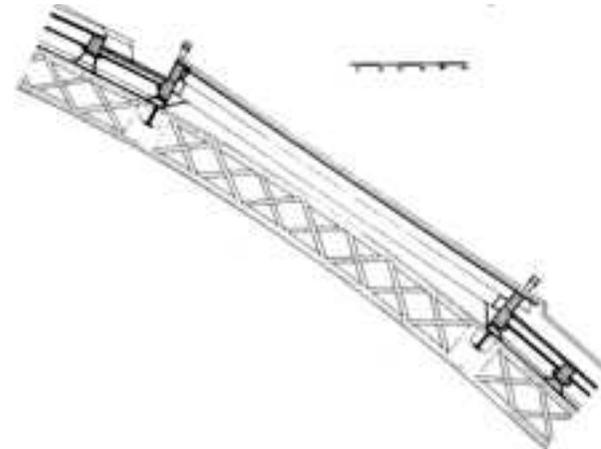




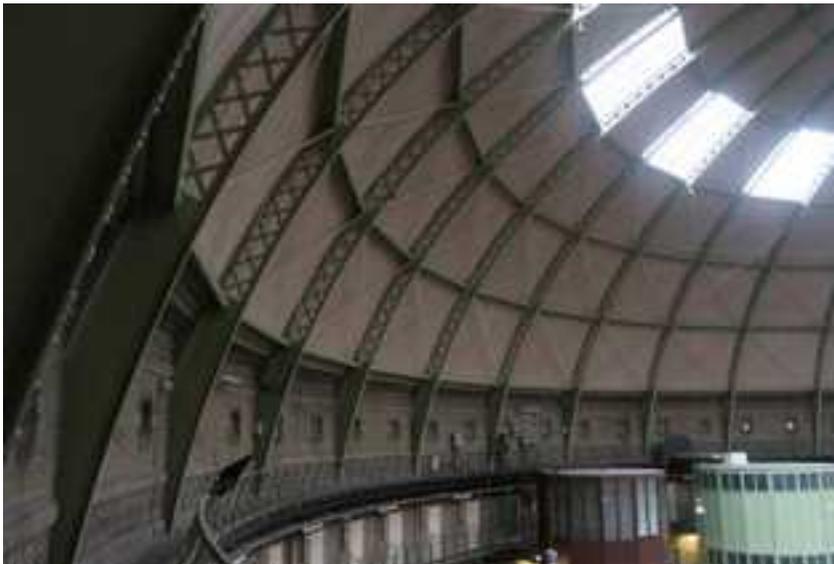




The huge steel truss structure enables the large span of the dome. The cells made of bricks work as buttress to transfer the load to the ground and eventually to the foundation. The foundation is made of wooden poles with brickwork and arches peering. Use the central point as reference, the rotation from one cell to the one next to it is 6 degree. The rotation of the iron structure is doubled to 12 degree. There are 4 floors of cells with 60 cells on each floor.

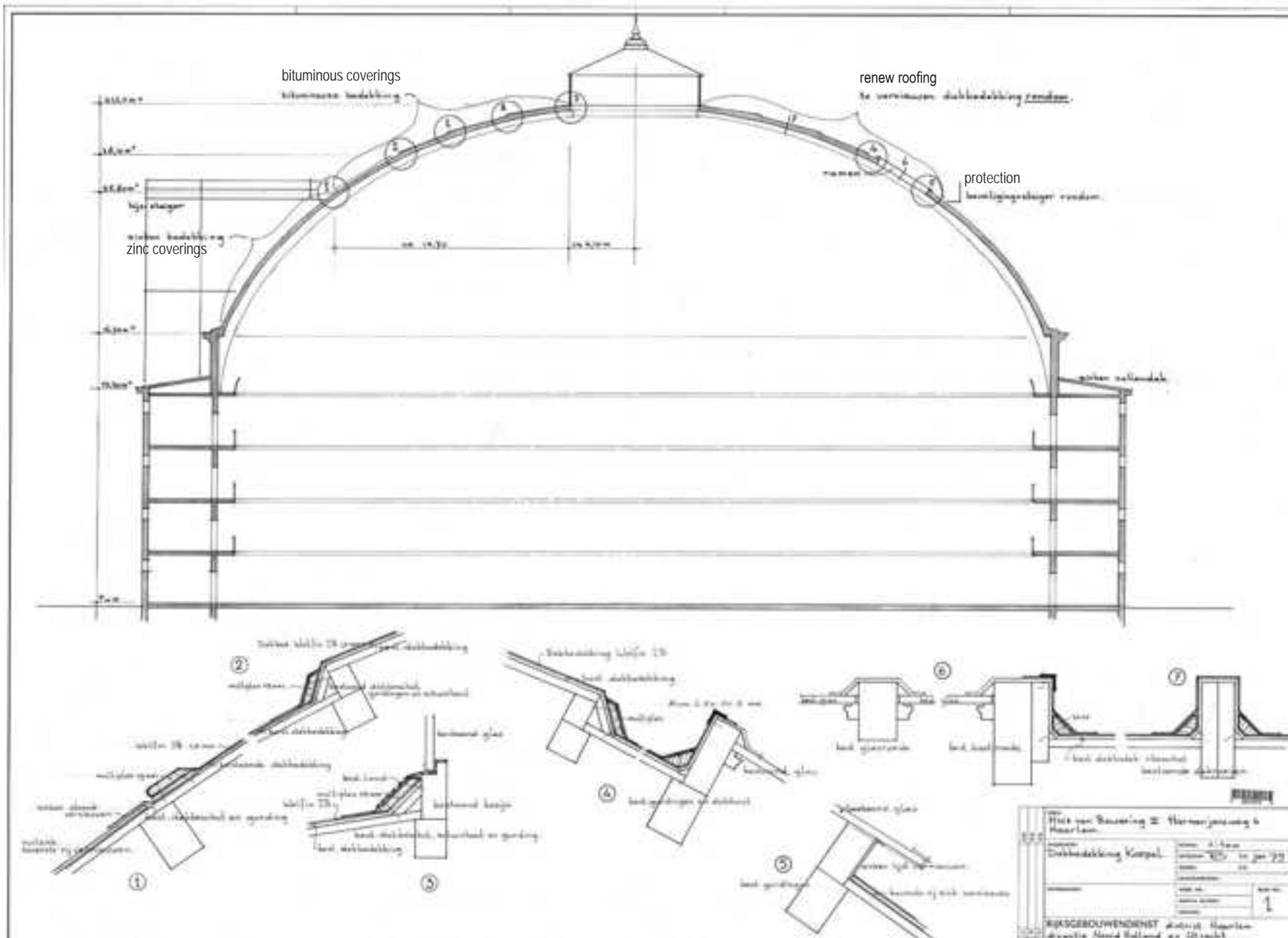


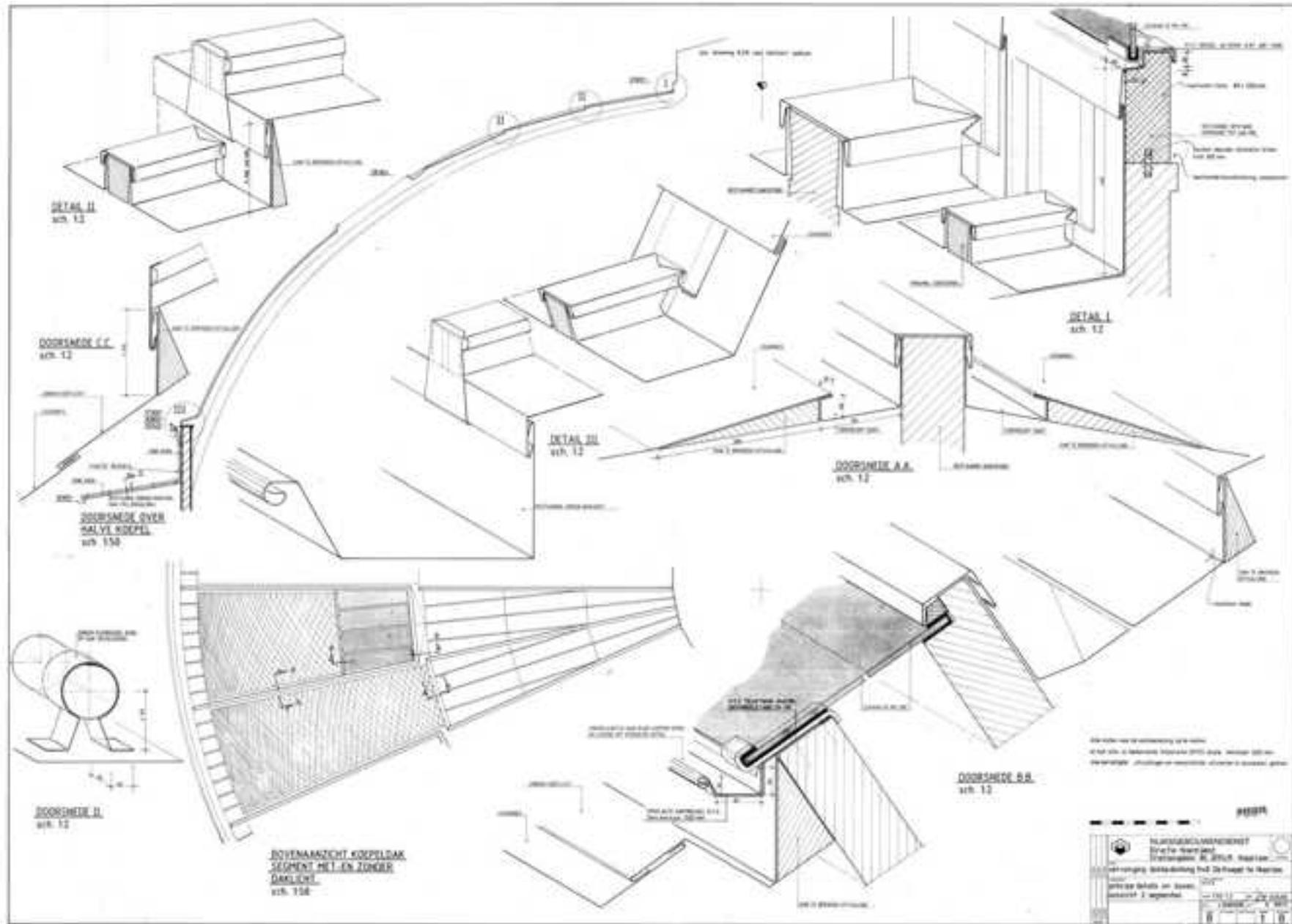
Skylights were renewed in 1990 concurrently with zinc-work. by lexaan / glazing.

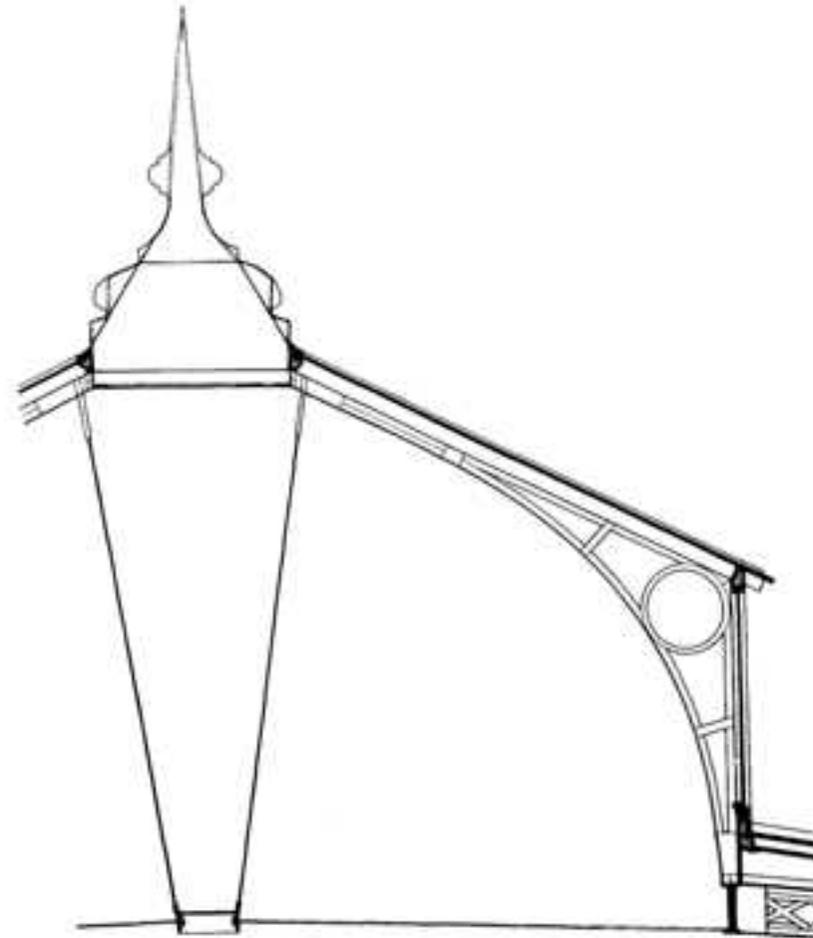


The steel structure works as primary structure: iron truss from the wall to the top. Then beams and bracings as secondary structure to reinforce the dome. At the very top of the dome, there's a small lantern. Roof panels are made of zinc. Skylights are opened around the halfway to the top, fitted between two rings of beams.

Steel structure, consisting of 30 semi-buckets of curved box-workplaces interconnected with 7 girders (iron I-pro-fielen). Steel spikes resting on hard stones nuts in the masonry of the inner ring. On the girders the lower roof protector is made of fire-resistant corrugated boards (1901).

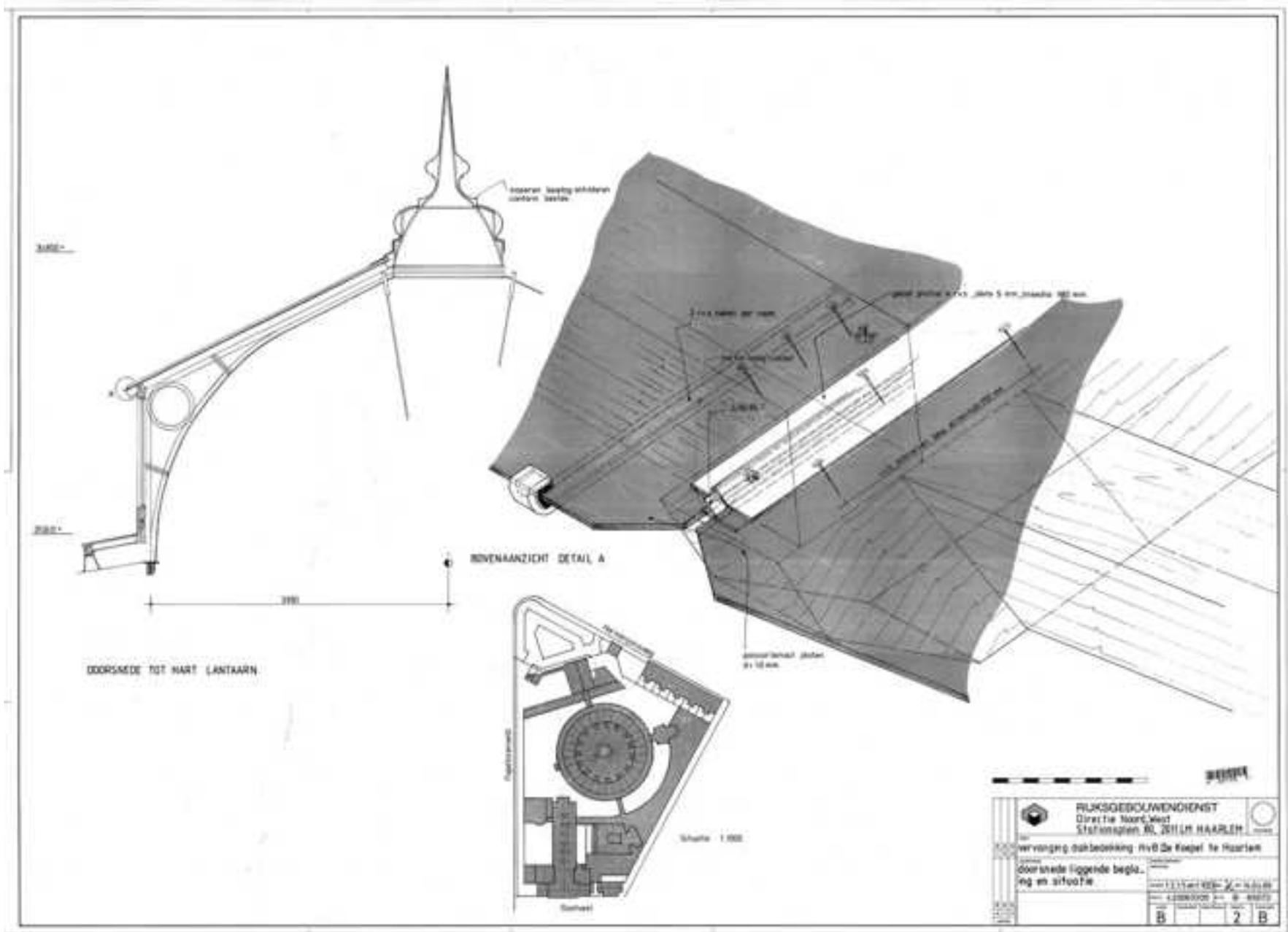


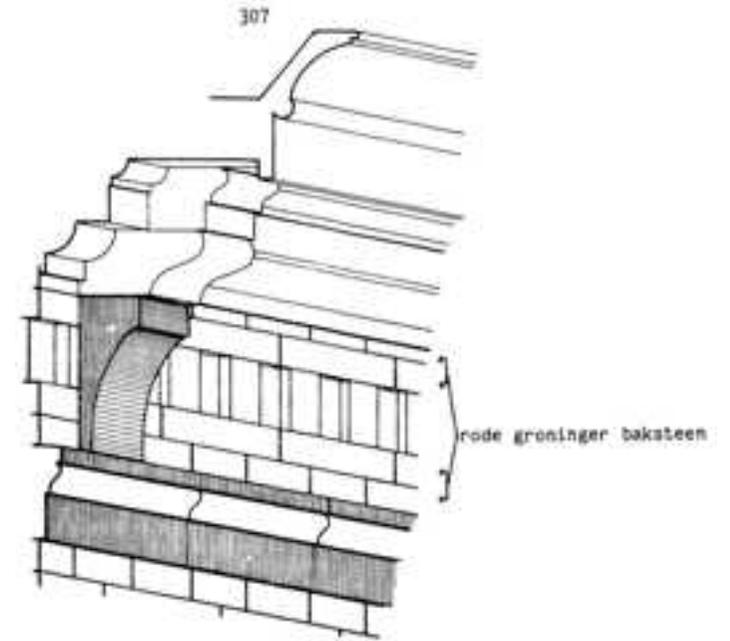
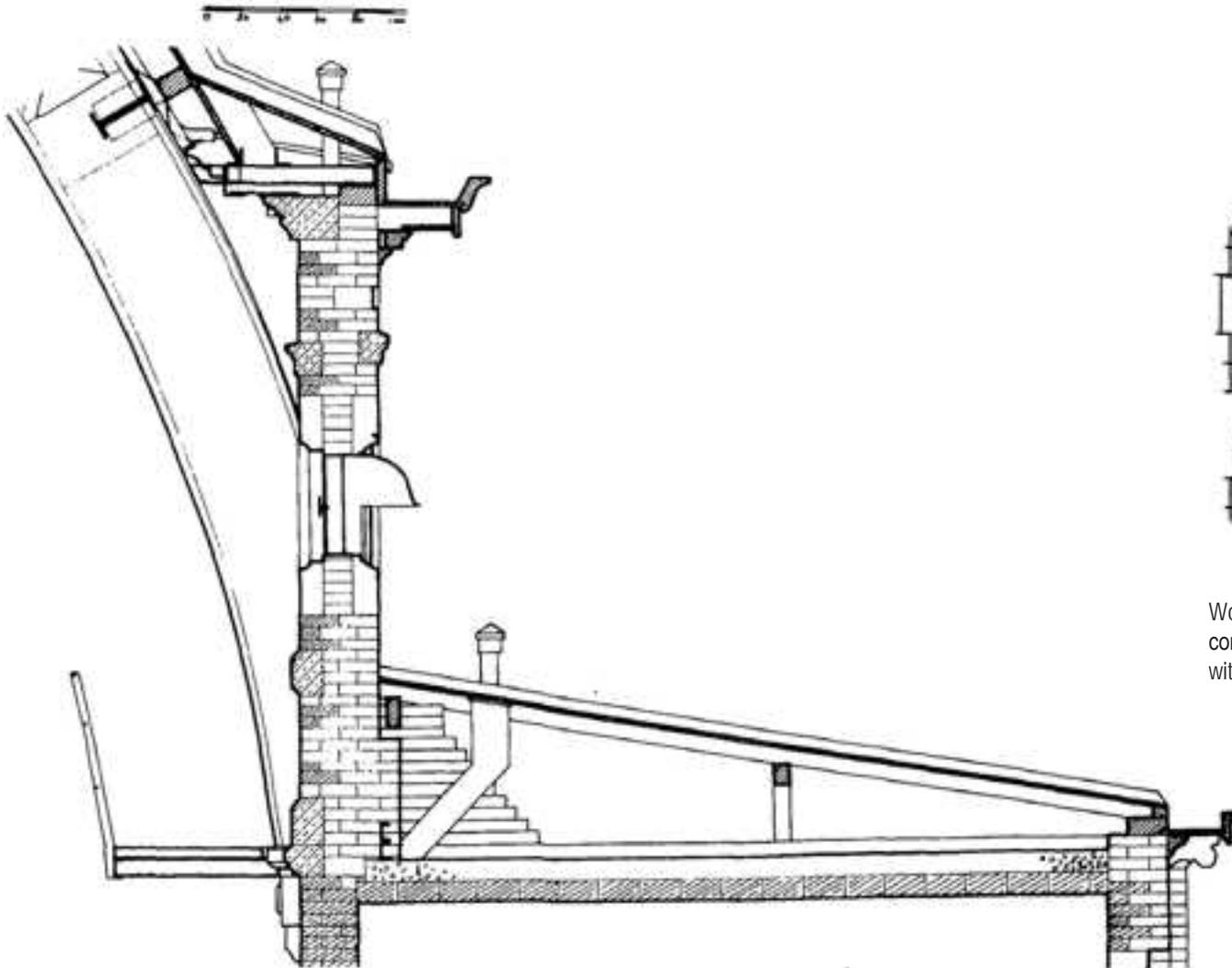




Steel pendants on an iron ring with 15 drawbars linked to smaller upper ring. Fillings of wood with vertical glazing .

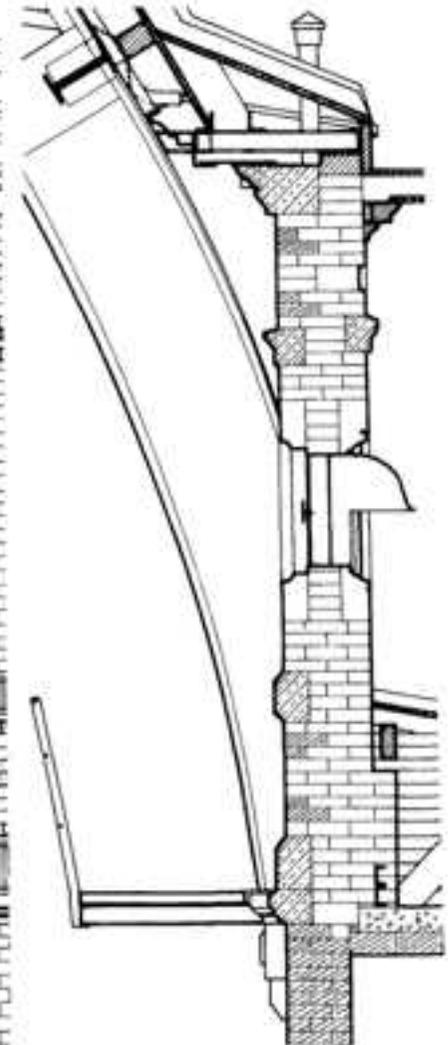
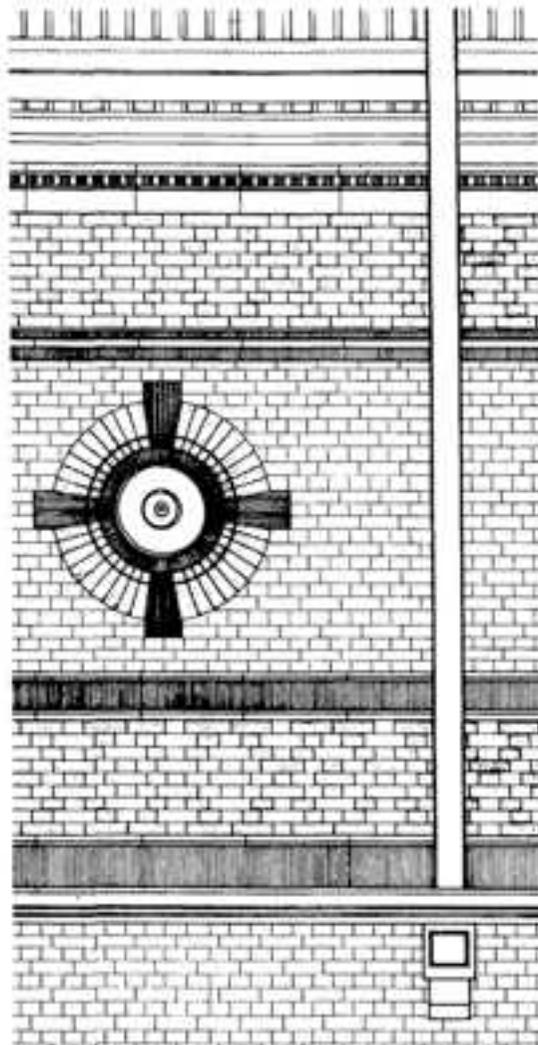
15 surfaces with translucent plastic sheets (1990), of which 3 with electrically adjustable translucent louver frame in slim profiles.





Wooden pine jug on profiled consoles (above cells) and sandstone consoles along the dome. Sink sink with expansion pieces. Zinken hwa's with steel base.

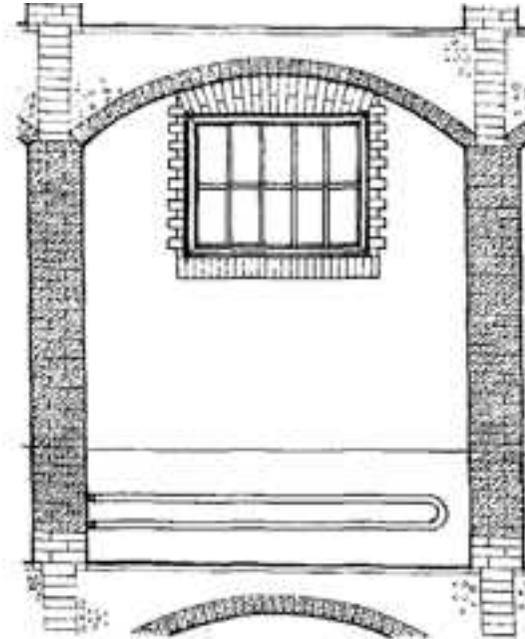
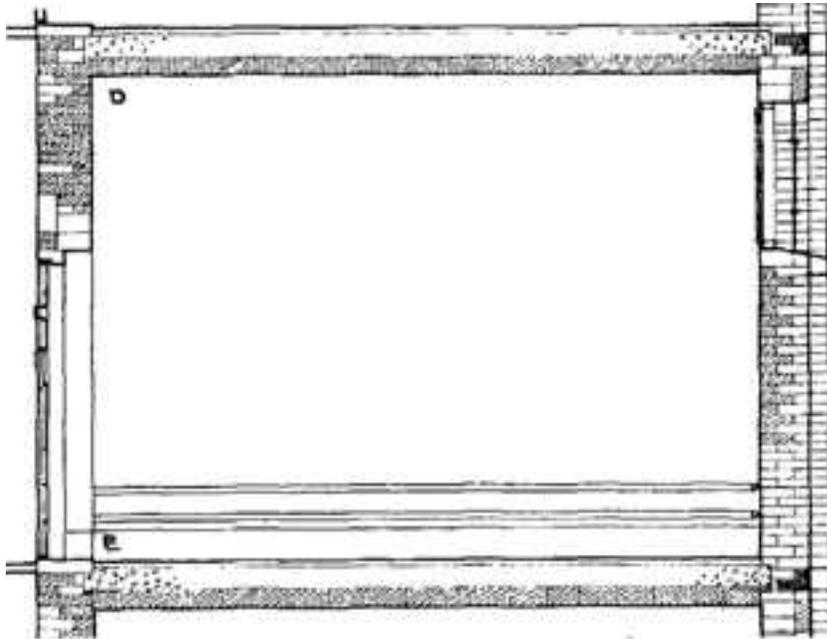
Sloping roof above cells: wooden roof construction, ventilated hollow construction above the vaults of the upper cell ring.





#### Interior Openings

Looking from the interior, above the doors there are brick lintels to support the openings. For the water sink, it is formed with brick arch.



Inside the cell, the ceiling is curved as can be seen from the section. Some ceilings made of brick and are covered by plaster.

The window seen from the interior is in rectangular shape. However, from the exterior, the opening forms a similar curvature as the ceiling.



Wrought iron windows with cast iron window sills. Windows with single glass with texture in different types, in some places, originally *fjngeribt* Hartley-glass. On the outside, a strip of stained glass is sliding placed.



Ground

#### Central Hall:

1901, a low portland cement concrete of 0.16m thick asphalt, baked yellow and black tiles and hard stones fittings.

1953: tiles replaced with hardstone plates. Finish with loadable paint and color lines for marking the sports fields. Open heating radiators poem with hardstone coverings.

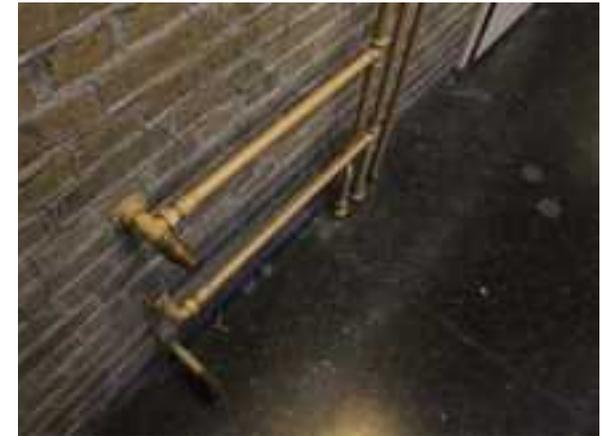
Now: finished in concrete as the upper surface.



Cell Floor

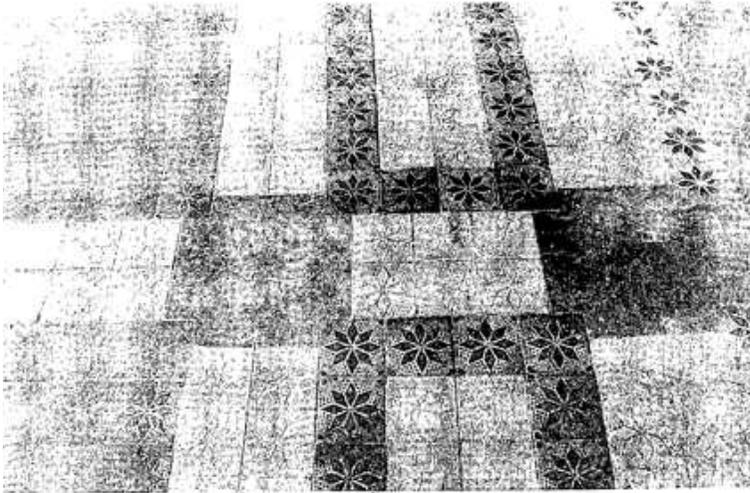
1901, masonry vaults with 0.42 m porridge finish with Portland cement floor.

1953: floor finishing using Linoleum.

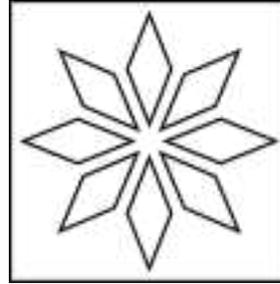


### Corridor Floor

1901, hardstone plates (2640-2710mm x 650mm x 55mm thick) plastered on iron I profiles (60x110mm, length 700m) hoh 830-860mm, coupled with curved curves U-profiles (60x150mm). Per floor 60 floorboards and 178 fence supports. Floors laid in wall except 4th floor (free imposition).



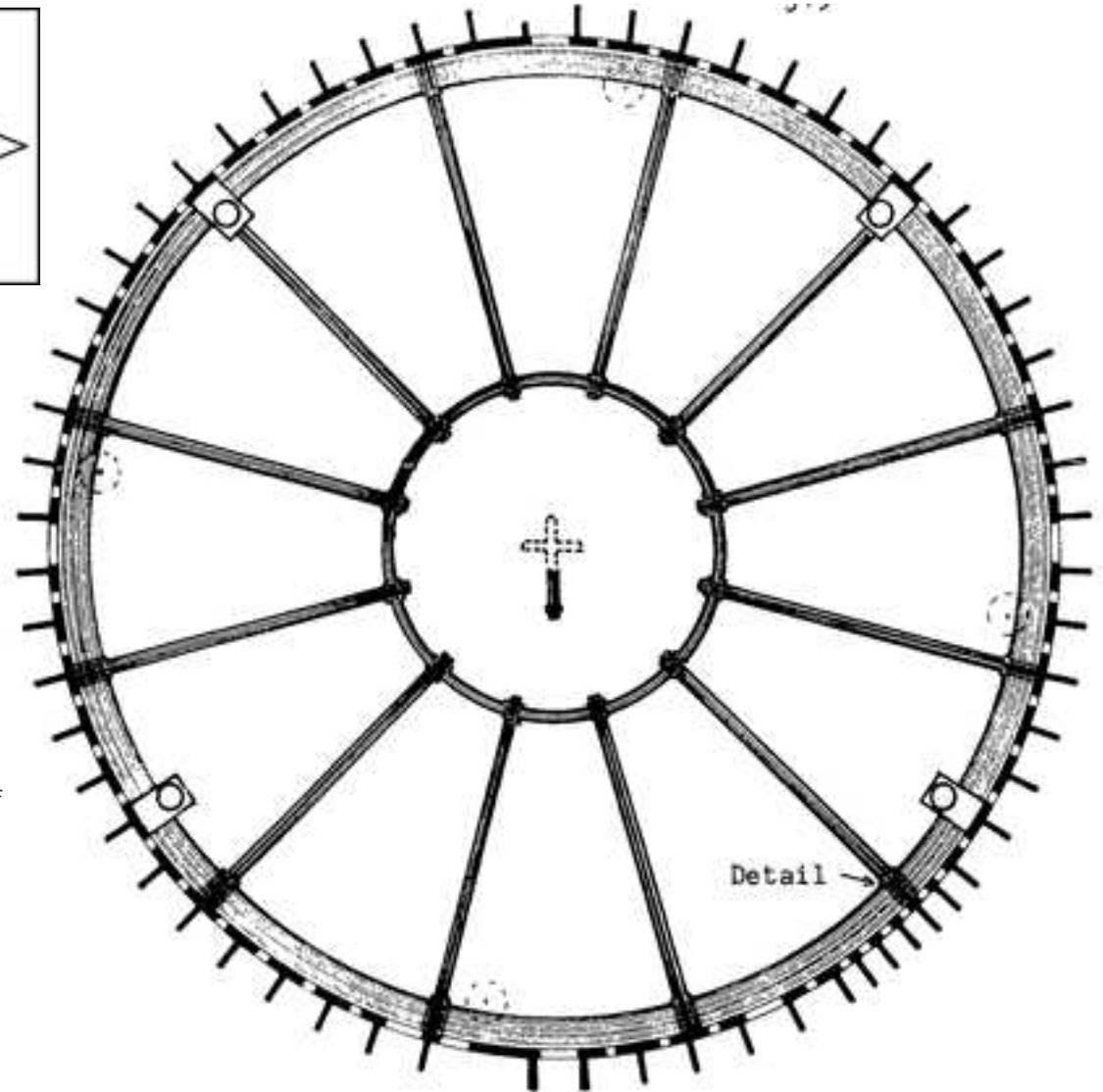
Detail



Above: the tile pattern that was used, the colors were black and yellow

Right: how the baked tiles were placed

Left: the tiles and asphalt on a layer of portlandcement, in the middle on the intersection of two strokes they used natural hard stone



## DOME: Wall

Corrugated metal sheet

I-beam steel

Zinc gutter for condensation

Sandstone  
Utrecht grauwe brick  
(Friese) yellow Waal brick

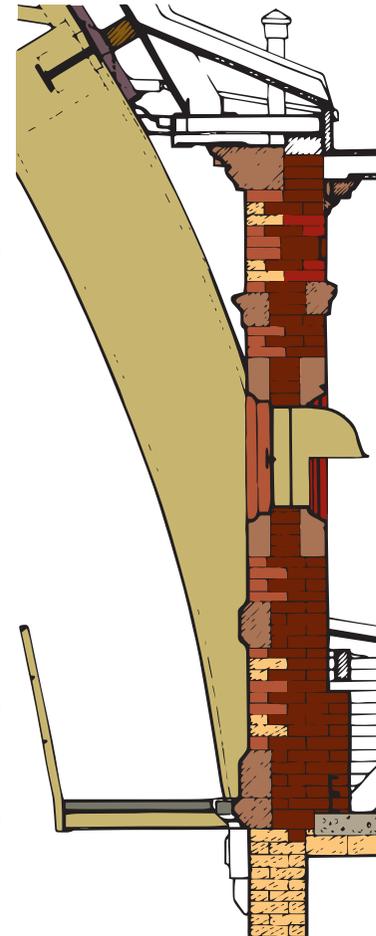
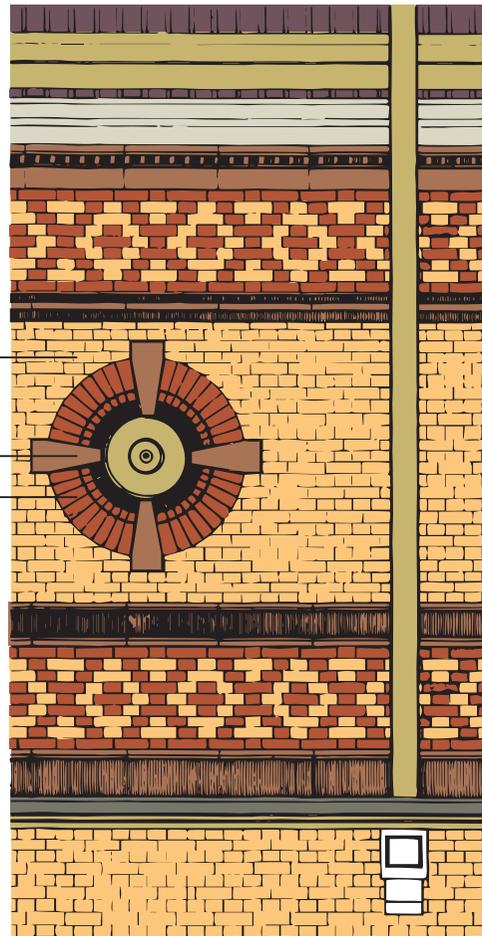
Dutch bond masonry

(Udelfangen) sandstone  
Utrecht grauwe brick

(Udelfangen) sandstone  
Utrecht grauwe brick  
(Friese) yellow Waal brick

(Udelfangen) sandstone  
Petit granit de l'Outhe

(Friese) yellow Waal brick





Ventilation hole

Utrecht grauwe brick



Yellow Waal brick

Decoration with  
(Udelfangen) sandstone

Petit granit de l'Outhe

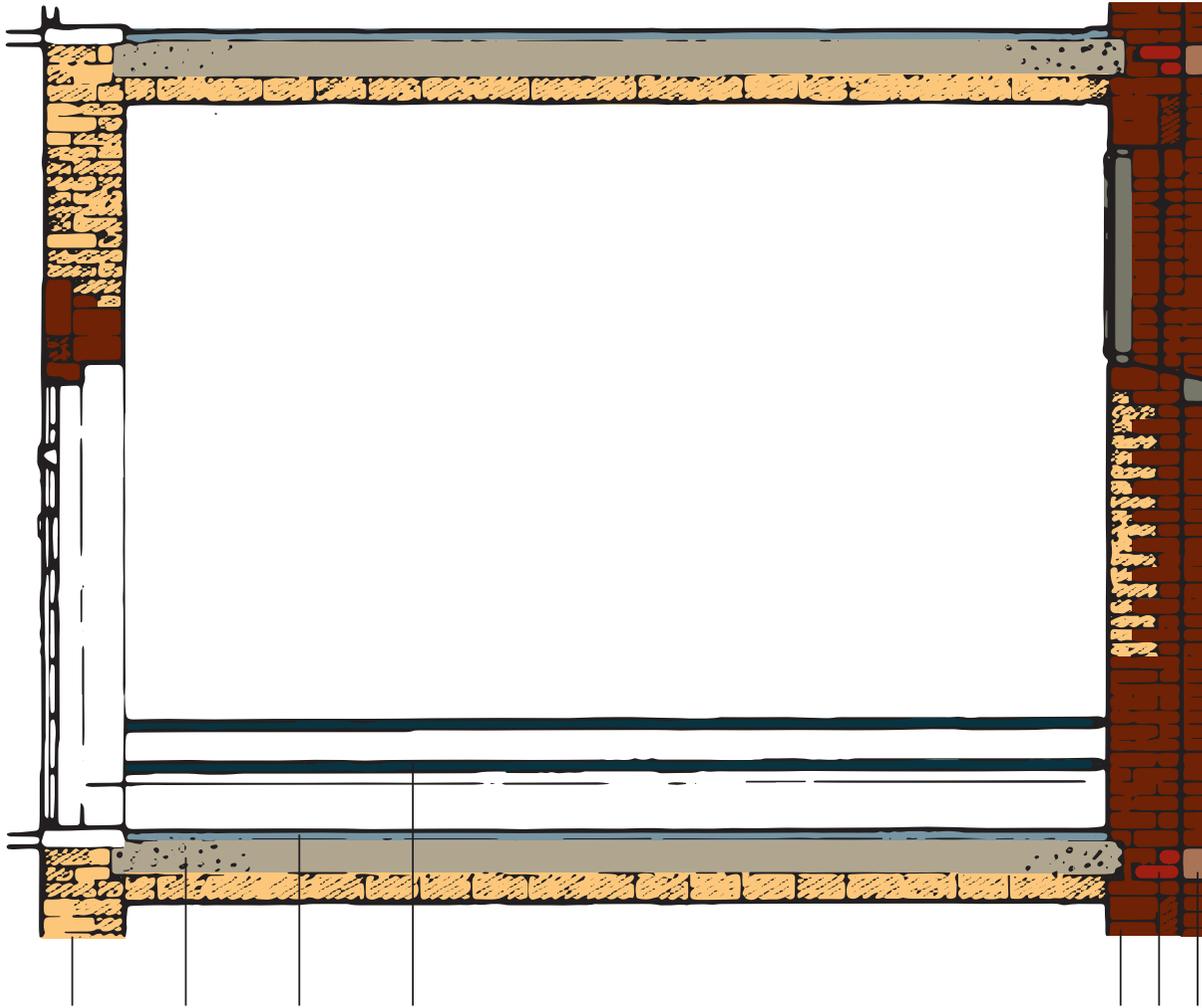




Four spiral staircases in total. One elevation contains sixteen cast iron steps. The steps were placed in the middle on top of each other around a tube. On the outer-side they were bolted on an ongoing piece of sheet metal.

# 05 BUILDING

## DOME: Prison cells



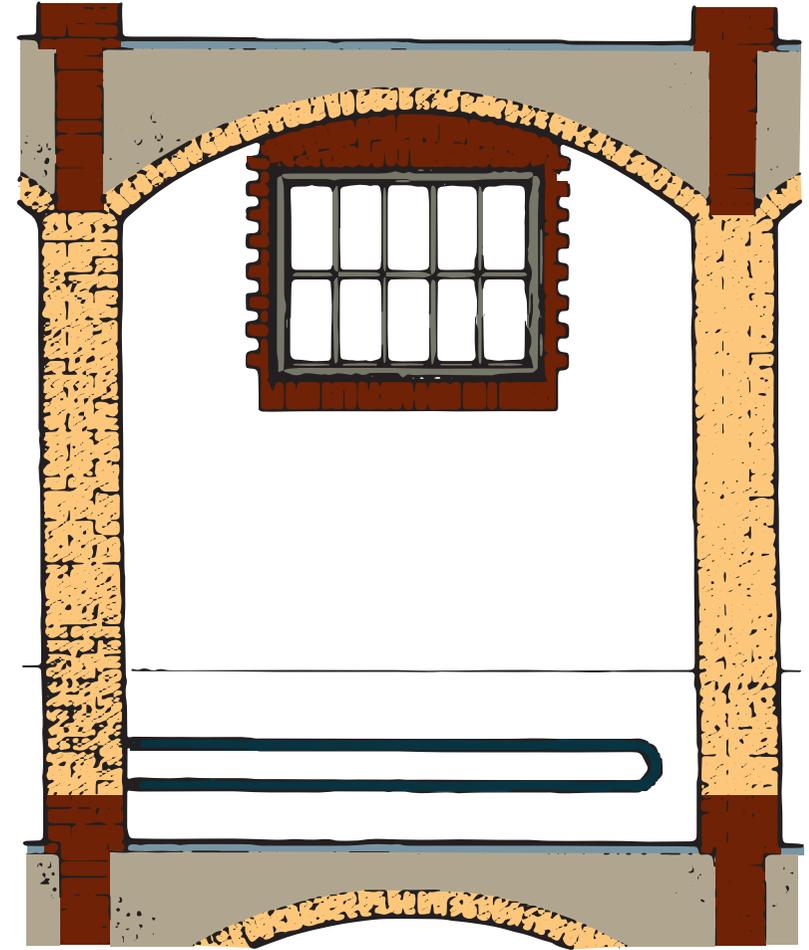
Yellow Waal brick

Concrete

Portland cement floor

Heating pipes

Hard grauwe brick  
Red Groninger brick  
Sand stone





The loadbearing walls of the cells were mainly built in (Friese) yellow waal brick, just like the arches. Only the first three layers were done in hardgrauwe brick and in between the floors they used hardgrauwe bricks as well.

On top of the brick arches they used concrete with a top layer of Portland cement. For the outer wall they used mostly hardgrauwe brick.

The doors were reinforced with metal plates and rivet 33 bolts. They also had a small viewing hole for the guards and a small opening that was normally closed.



		m 2824/1 spanten	m 2824/2 ventilatie-roosters	m 2824/3 dakvlak	m 2824/4 liggers	m 2824/5 binnengoot	m 2824/6 wente/trap	m 2824/7 bafwaaide	m 2824/8 oefleur
afwerking 11	afwerking voorbewerking grondering	-	-	-	-	-	grijszwart grijszwart wit wit	grijszwart grijs wit wit	-
afwerking 10	afwerking	-	-	-	-	-	-	-	-
afwerking 9	afwerking	-	-	-	-	-	-	-	-
afwerking 8	afwerking grondering	-	-	-	-	-	-	-	geelgroen
afwerking 7	afwerking	-	-	-	-	-	-	-	zwart
afwerking 6	afwerking	-	-	-	-	-	-	-	bruinroze
afwerking 5	afwerking voorbewerking	-	-	-	-	-	-	groen groen	bruinroze
afwerking 4	afwerking voorbewerking voorbewerking grondering	-	-	-	-	-	-	bruinroze bruinroze bruinroze bruinroze	bruinroze
afwerking 3	vul laag afwerking grondering	vul laag bruinroze wit	vul laag lichtgroen lichtgroen	-	-	-	-	bruinroze	bruinroze
afwerking 2	vul laag afwerking voorbewerking grondering mense	scheidingslaag lichtgroen	scheidingslaag lichtgroen groen orange	vul laag lichtroze	vul laag groen	vul laag	-	bruinroze	bruinroze
afwerking 1	vul laag afwerking voorbewerking grondering mense mense mense metalen drager	scheidingslaag lichtgroen lichtgroen wit orange orange bruinroze groen	lichtroze	lichtroze lichtroze lichtroze orange orange bruinroze groen	scheidingslaag lichtgroen lichtgroen	scheidingslaag lichtroze lichtroze	groen groen orange orange	groen bruinroze orange orange	scheidingslaag lichtroze lichtroze lichtroze orange orange

# 05 BUILDING

## DOME: Color historical research

		s 301/1 balk oude celdeur	s 301/2 wenteltrap	s 301/3 wenteltrap	s 301/4 binnenpooi	s 301/5 dakvlak	s 301/6 dakspanten	s 301/7 ventilatieuiken
afwerking 11	afwerking voorbewerking grondering grondering	-	zwart wit	zwart wit	-	-	-	-
afwerking 10	afwerking	lichtroze	-	-	-	-	-	-
afwerking 9	afwerking	groen	-	-	-	-	-	-
afwerking 8	afwerking grondering	groen wit	-	-	-	-	-	-
afwerking 7	afwerking	zwart	-	-	-	-	-	-
afwerking 6	afwerking	groen	-	-	-	-	-	-
afwerking 5	afwerking voorbewerking	-	-	lichtgroen	-	-	-	-
afwerking 4	afwerking voorbewerking voorbewerking grondering	bruin	-	-	-	-	-	-
afwerking 3	vul laag afwerking grondering	bruin	-	-	-	-	-	vul/vet lichtgroen
afwerking 2	vul laag afwerking voorbewerking grondering menie	bruin	-	lichtbruin	vul laag lichtroze lichtblauw	vul/vet lichtgroen lichtroze lichtblauw	vul/vet groen lichtroze lichtblauw	lichtroze lichtblauw
afwerking 1	vul laag afwerking voorbewerking grondering menie menie menie metalen drager	lichtroze orange grijs	lichtgroen orange orange bruinorange grijs	lichtgroen orange orange bruinorange grijs	lichtroze orange orange bruinorange grijs	lichtroze orange orange bruinorange grijs	lichtgroen orange orange bruinorange grijs	lichtroze orange bruinorange grijs

The original colors were more simple

The pallet was bright

The cell doors, ventilation holes and inside gutters were painted pink

The dome structure was painted light apple green

The stairs and balustrades were painted moss green

Parts that were used more often, were also re-painted more often

The roof is re-painted ones

## 05 BUILDING

### DOME: Typical Facade



Pinewood gutter painted in ochre

2 layers of Groninger brick marking the height of the floor

Hardgrauwe\*\* brick in Dutch bond masonry with 'waal' format \*

Pilasters in Hardgrauwe brick dividing the cells, one and a half stone brickwork

Udelfangen

Zinc pipes with steel underpiece

\* 'waal' format; a standardized size for a brick in the Netherlands, 210 x 100 x 50 mm

\*\* hardgrauwe; there are 4 types of hardness, 'hardgrauw' is the second hardest

\*\*\*Udelfangen sandstone: A characteristic feature of Udelfangen sandstone is the occurrence of very small stains of dark coloured manganese oxide.

# 05 BUILDING

## DOME: Typical Facade Details



Udelfangen sandstone bloc

Udelfangen sandstone block

2 layers of Groninger brick

Segmental brick arches

Cast iron windows with clear glass

Wrought iron bars

Tilted steel frames

Translucent glass with various textures, original fijngeribt Hartleyglas at some places

Cast iron window ledge

Hardgrauwe brick (1990)

Hardgrauwe brick (original)



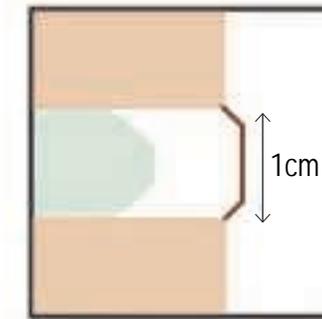
Wrought iron

Wrought iron bars

Single clear glass

Cast iron window frames

Cast iron window ledge



"Geknipte" (Cut out) pointing



Dutch bond

# 05 BUILDING

## DOME: Roof Exterior



Copper pine cone

Single clear glass

Polycarbonate (originally glass)

Standing seam zinc roof  
(originally bitumen)

Translucent lexan sheets

Titanium zinc tiles (1990)  
(originally zinc)

Titanium zinc sloped roof (1990)  
(originally zinc)

Pinewood gutter painted in ocher

Hardgrauwe brick

Zinc tiles

Pinewood gutter painted in ocher



Original roof with bitumen on the upper part of the roof



- Zinc tiles system
- Pinewood gutter painted in ocher
- Sandstone consoles
- Red Groninger brick
- Udelfangen sandstone
- Hardgrauwe brick
- Steel ventilation hood (20)
- Red Groninger brick
- Udelfangen sandstone
- Pinewood gutter painted in ocher
- Sandstone consoles
- Red Groninger brick



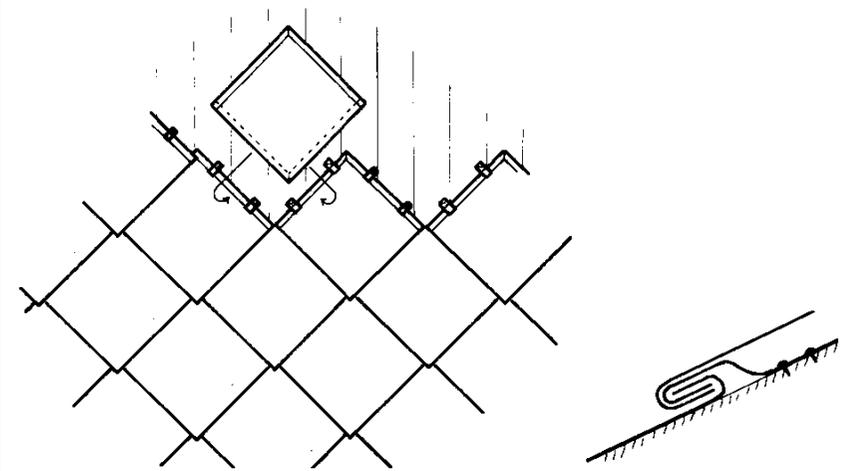
- Pinewood gutter painted in ocher (cladded with zinc on the inside)
- Pinewood cornice painted in ocher
- Udelfangen sandstone consoles



Zinc tiles system on wooden rafters and girders (replaced in 1990)



Zinc sloped roof



Detail of roof tile arrangement

# 05 BUILDING

## DOME: South Facade

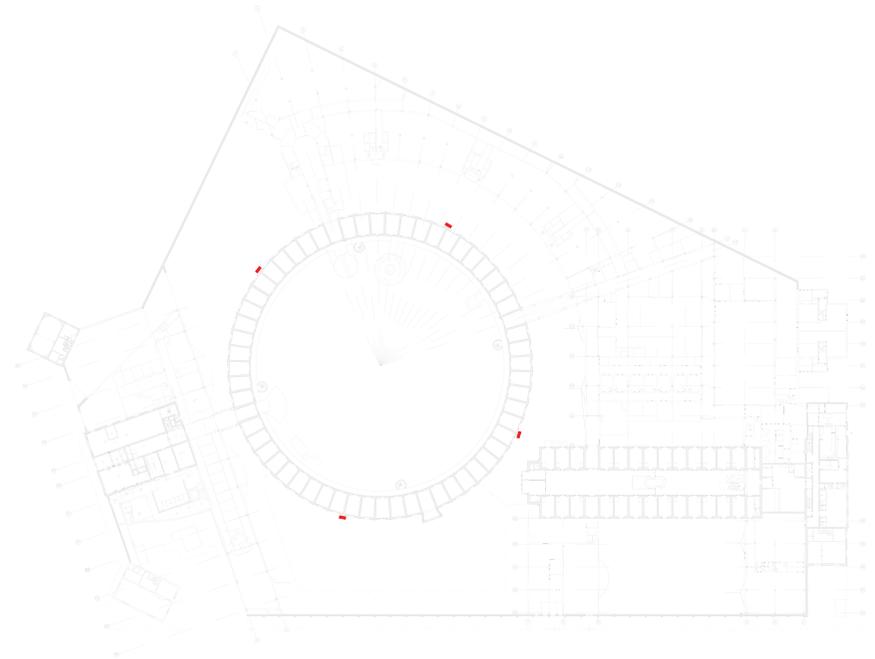


Three sided bay window

Pine wood window frame

Zinc pipes with steel underpiece





Four chimneys around the building

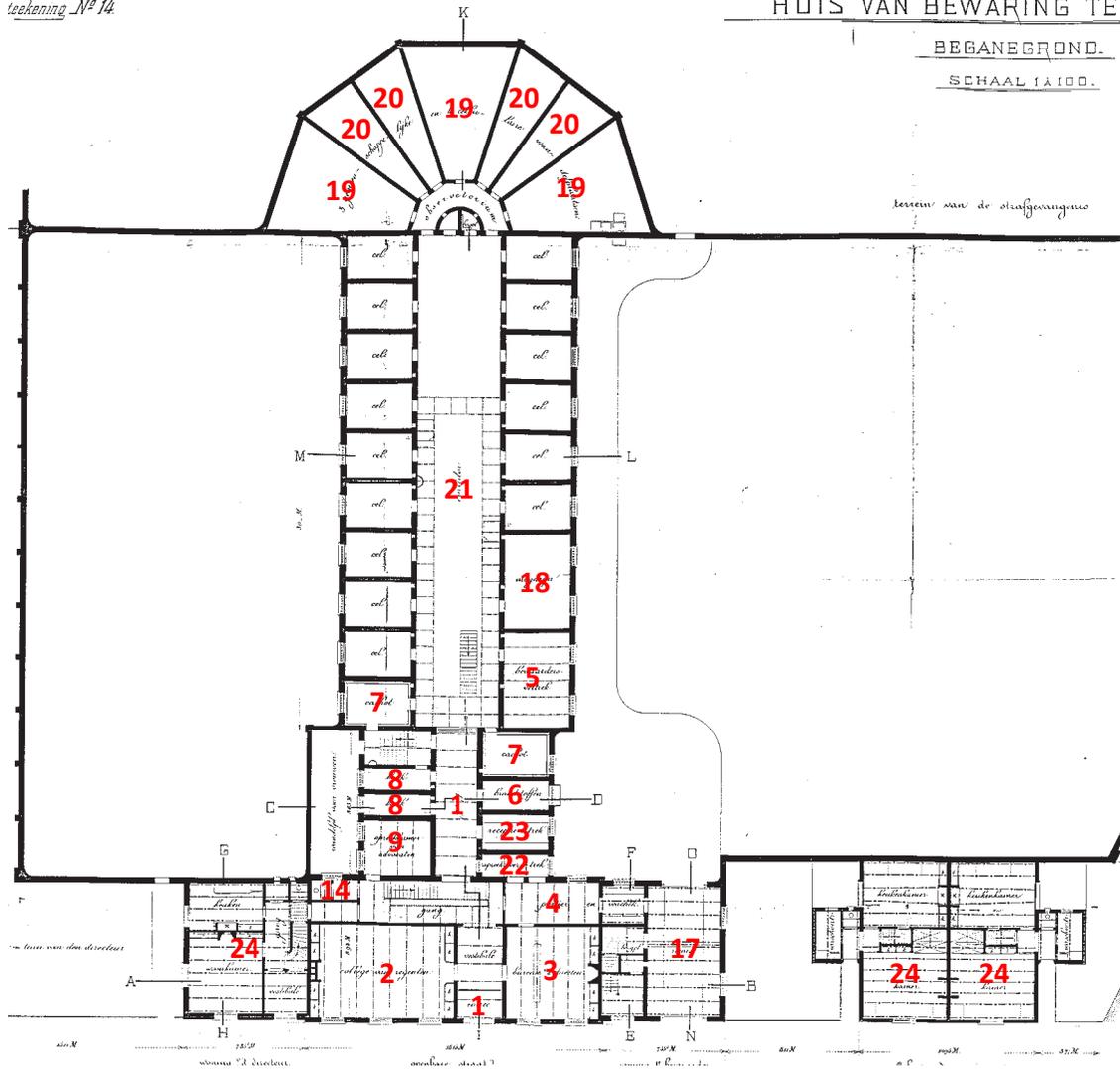


Huis van Bewaring De Vest



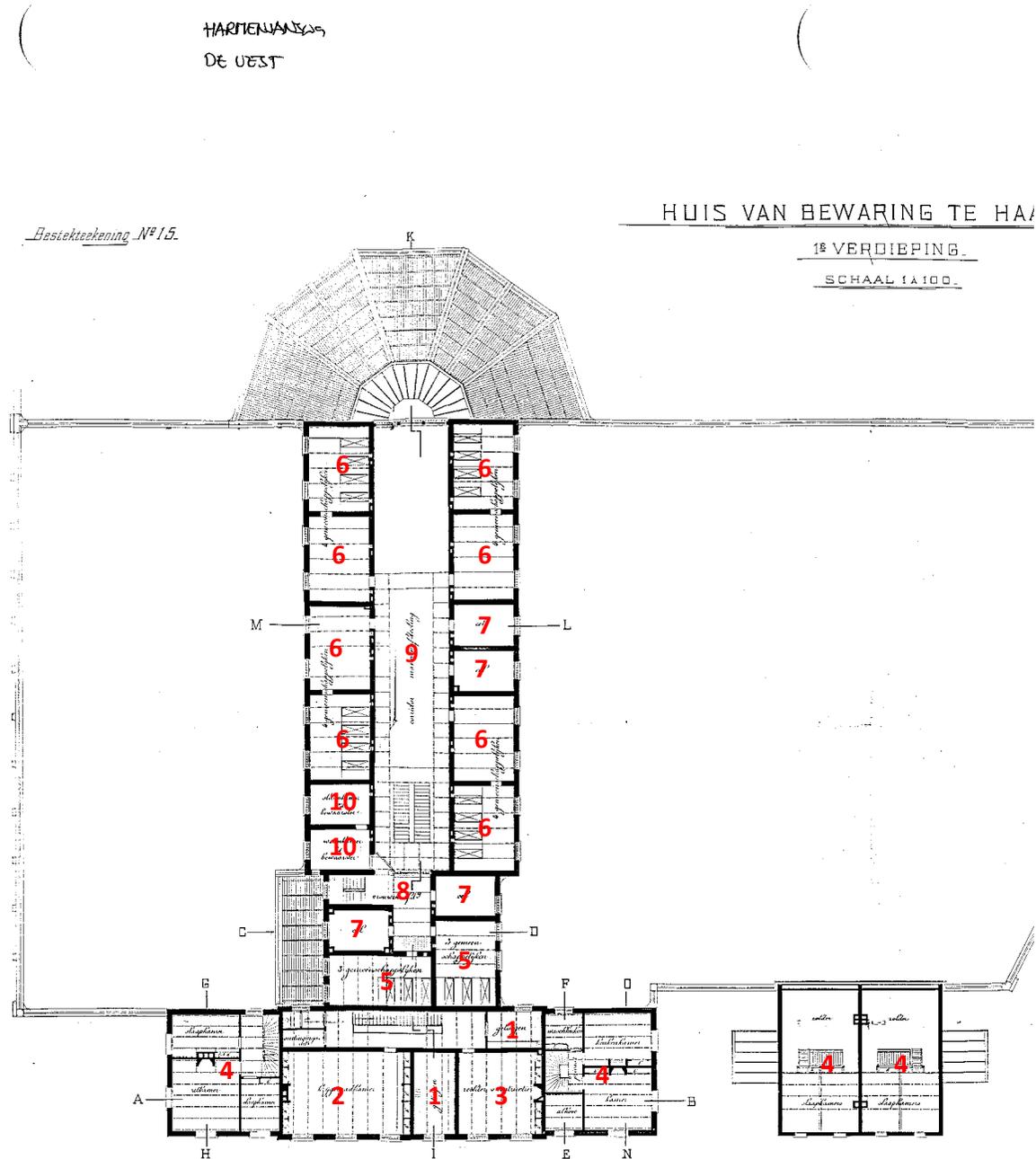
HARTENJANSLIJG  
DE VEST

teekening N° 14



### GROUND FLOOR

- 1 Central hallway
- 2 Clearance office
- 3 Directors office
- 4 Room for the gateman
- 5 Guards room
- 6 Fuel storage
- 7 Dark punishment cells
- 8 Bathroom
- 9 Meeting room lawyers
- 10 Kitchen
- 11 Livingroom
- 12 Vestibule
- 13 Hallway
- 14 Toilet
- 17 Garage / remise
- 18 Storage
- 19 Shared air spaces
- 20 Individual air spaces
- 21 Corridor
- 22 Meetingroom
- 23 Reception
- 24 Guards dwellings



### 1st FLOOR

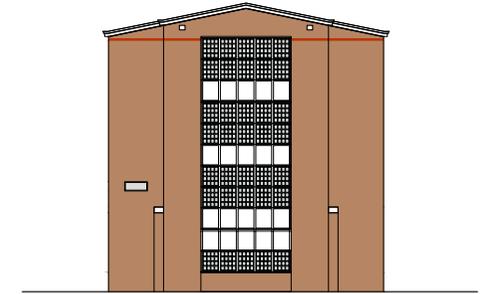
- 1 Witness room
- 2 Military court
- 3 Judge room
- 4 Guard dwellings
- 5 Shared cells (3 beds)
- 6 Shared cells (4 beds)
- 7 Cells
- 8 Woman compartment
- 9 Man compartment
- 10 Guards bedroom

# 05 BUILDING

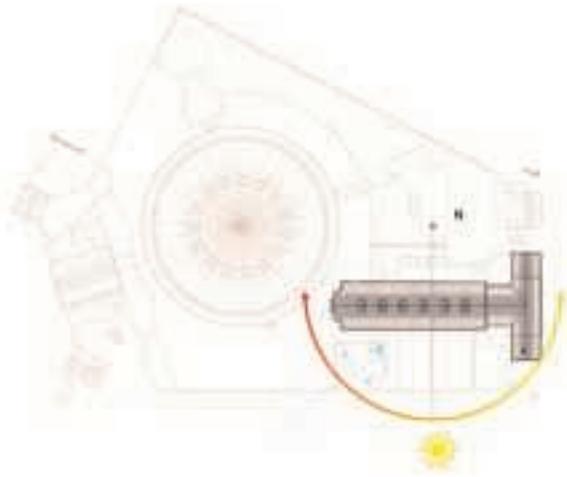
## DE VEST: Climate



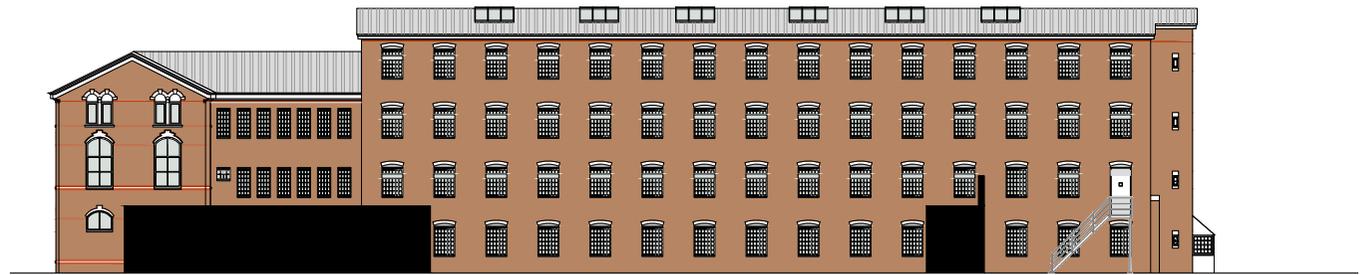
East Elevation



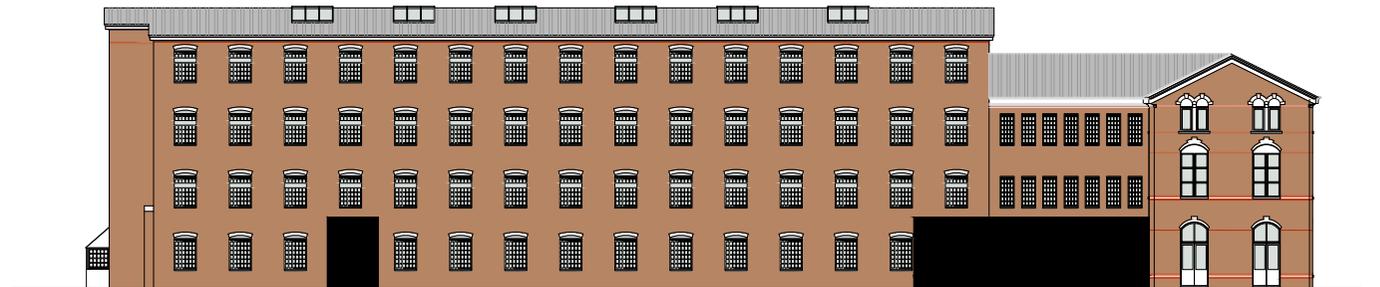
West Elevation



Sun Path and Prevailing Wind Direction



North Elevation



South Elevation

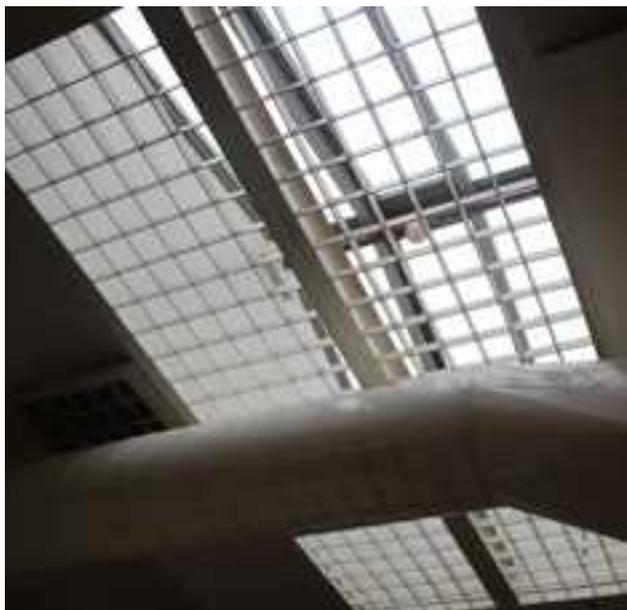
Due to the periphery wall of the prison complex the ground floor and first floor of the “De Vest” are protected from the prevailing South-West winds, however the second and third are fully exposed.

# 05 BUILDING

## DE VEST: Daylight



01 Longitudinal section 'De Veste'



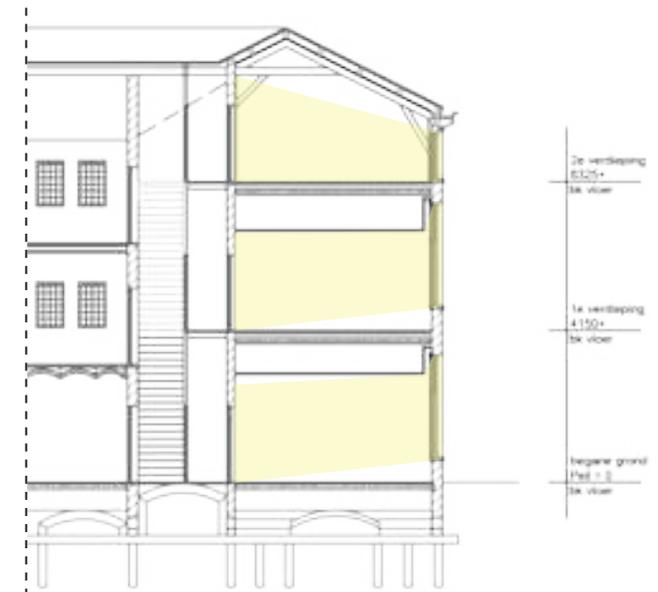
02 Skylight in 'De Veste'

The roof of 'De Veste' has six openings related to daylight. Light goes through these openings and reaches the lower floors of the prison building. The skylights are shielded by steel grids (image 02).

The administration part of 'De Veste' has big openings in the facade, so a lot of daylight can go through the windows.

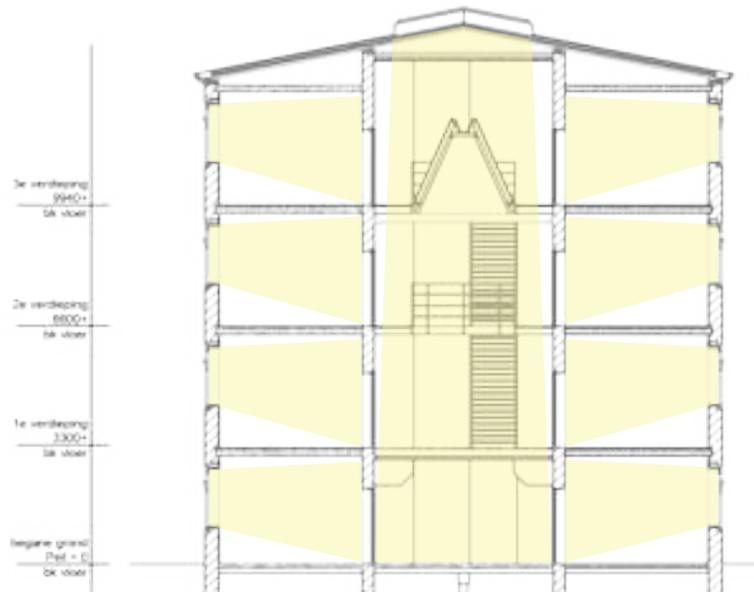


03 Facade of the administration building





03 Cross section 'De Veste'



In the cross section of 'De Veste' there is a lot of daylight coming in. This is because of the large windows in each cell and the six skylights in the roof (image 05). The windows in the cells are 1,1 meter wide, 1,5 meter high and have a surface of 1,65 square meters. The skylights have a surface of 7 square meters (2 by 3,5 meter).



05 Daylight in a prisoncell (extention-part of 'De Veste')

The top floor of the prison has an extra construction, to prevent prisoners throwing stuff down the balustrade. This construction has been added later. The construction is made out of glass, so the daylight still reaches the lower floors.

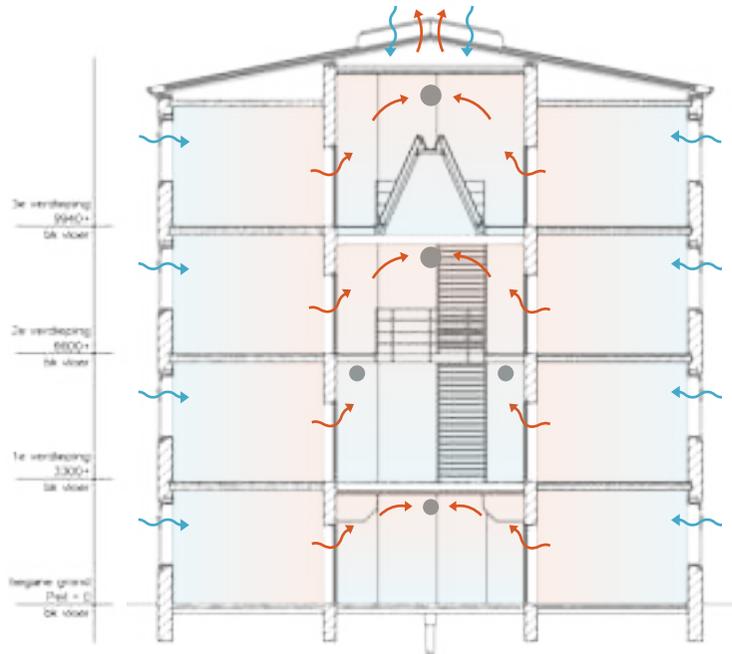
# 05 BUILDING

DE VEST: Daylight



# 05 BUILDING

## DE VEST: Ventilation



06 Ventilation-scheme 'De Veste'



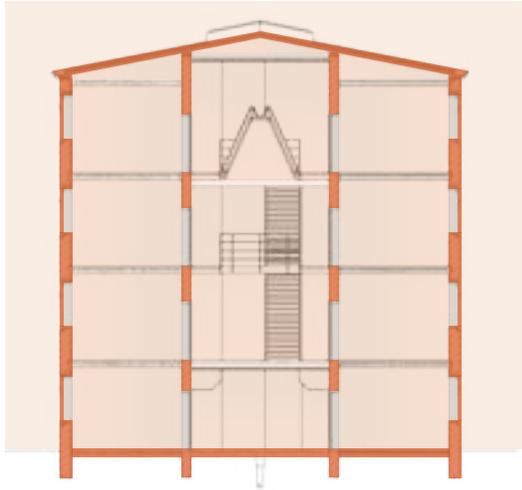
According to the report of Pieters Bouwtechniek the ventilation system has mechanical inlet through a grille above the windows and mechanical outlet through handling units. However, according to the grille in the windows, this cannot be mechanical ventilation. We assumed that the system Pieters Bouwtechniek described works the other way around; natural inlet through the windows and mechanical outlet through the handling units. Besides that, the windows in the skylights have also parts that can be opened.



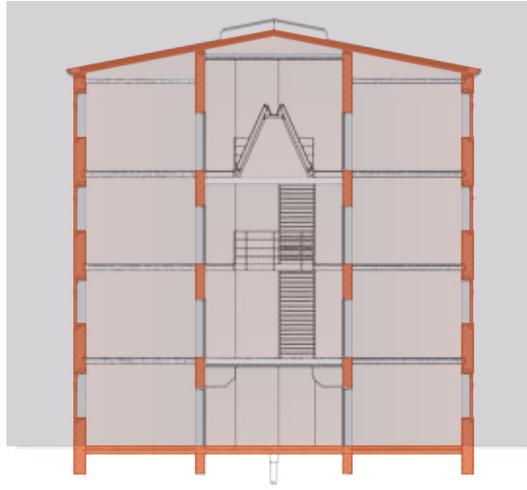
07 Natural ventilation trough a grille above the window

# 05 BUILDING

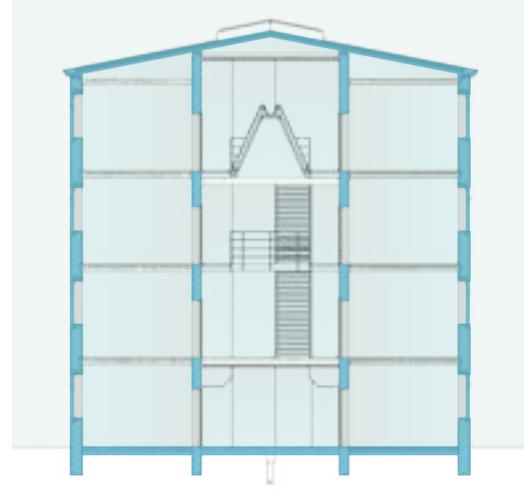
## DE VEST: Heating and cooling



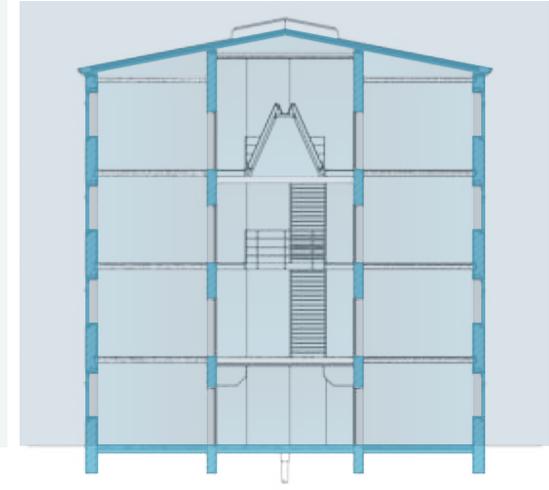
08 Summer situation - day



09 Summer situation - night



10 Winter situation - day



11 Winter situation - night

The building is heated with central heating through radiators and through air handling units. Every prison cell has its own radiator and its own natural ventilation grille above the window.

Besides that, the walls and the roof are not insulated at all. They are huge thermal bridges with the result that there is a significant loss of energy in the prison. During the winter the prison cells become very cold (in day and night situation). During the summer a lot of heat will be produced inside the prison because of the large windows and the skylights in the roof.



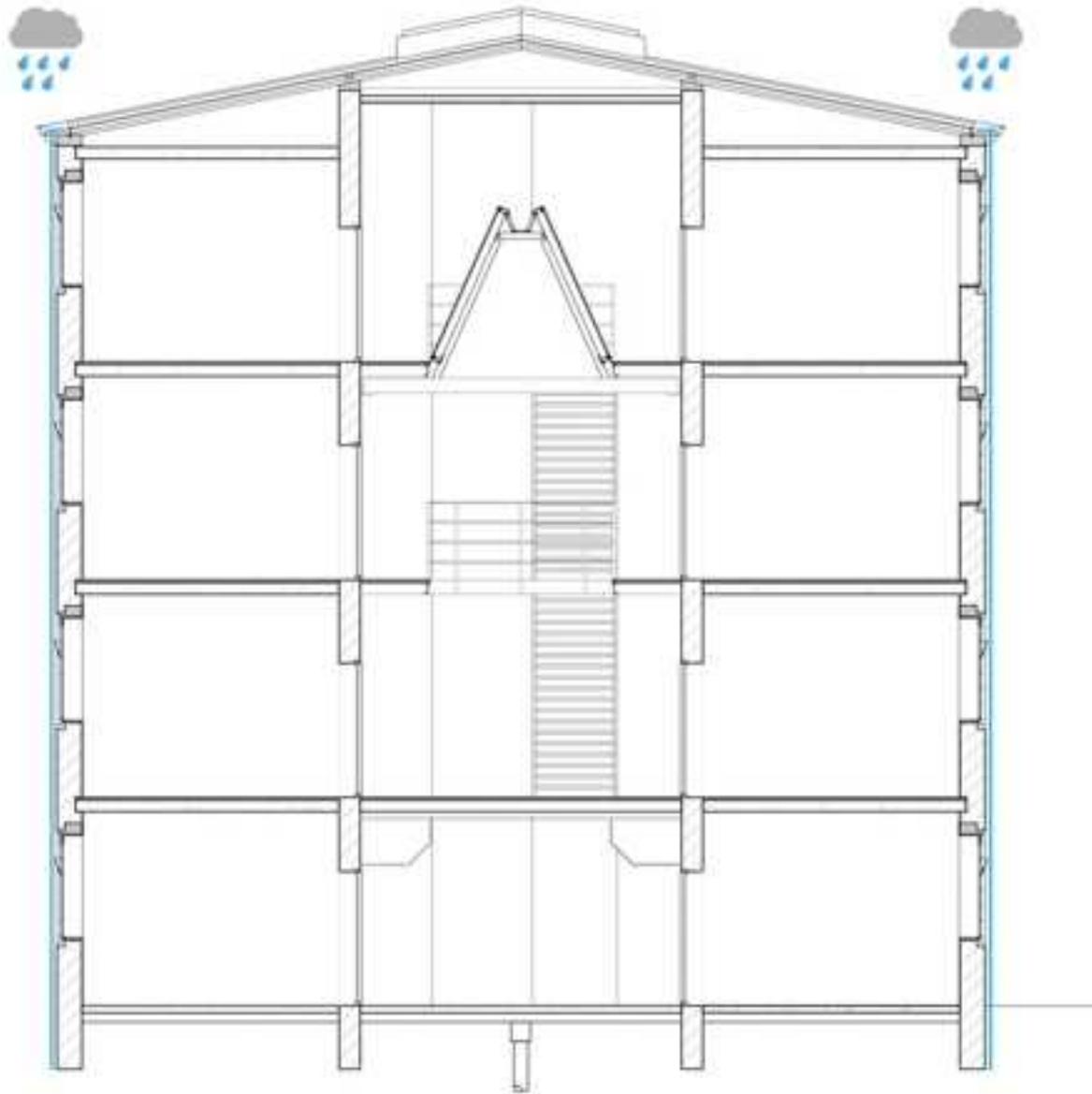
12 Radiators heating up the prison cell



13 Radiators heating up the prison cell

# 05 BUILDING

## DE VEST: Rain water management



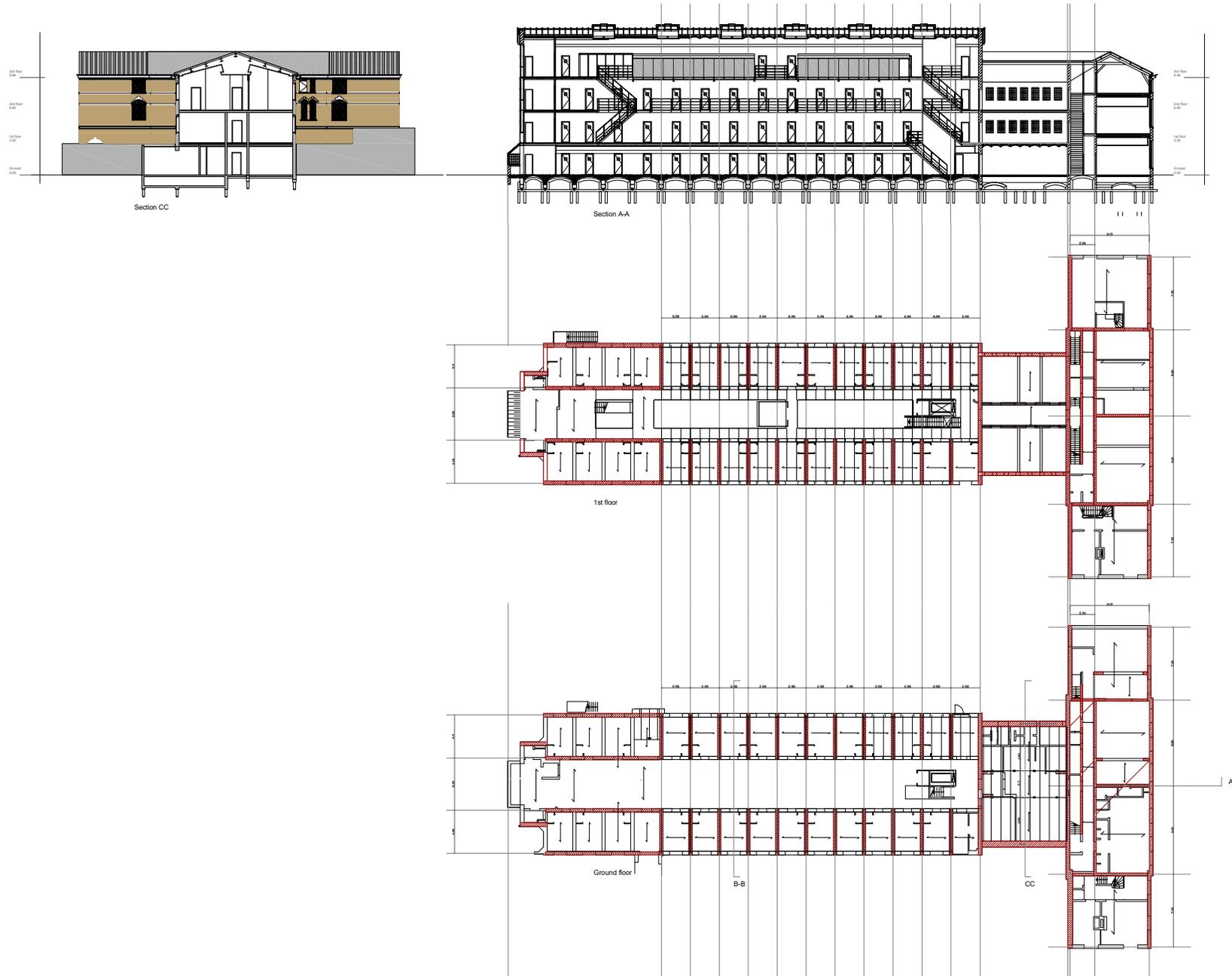
North - South Section - Rain Water Management



South Facade

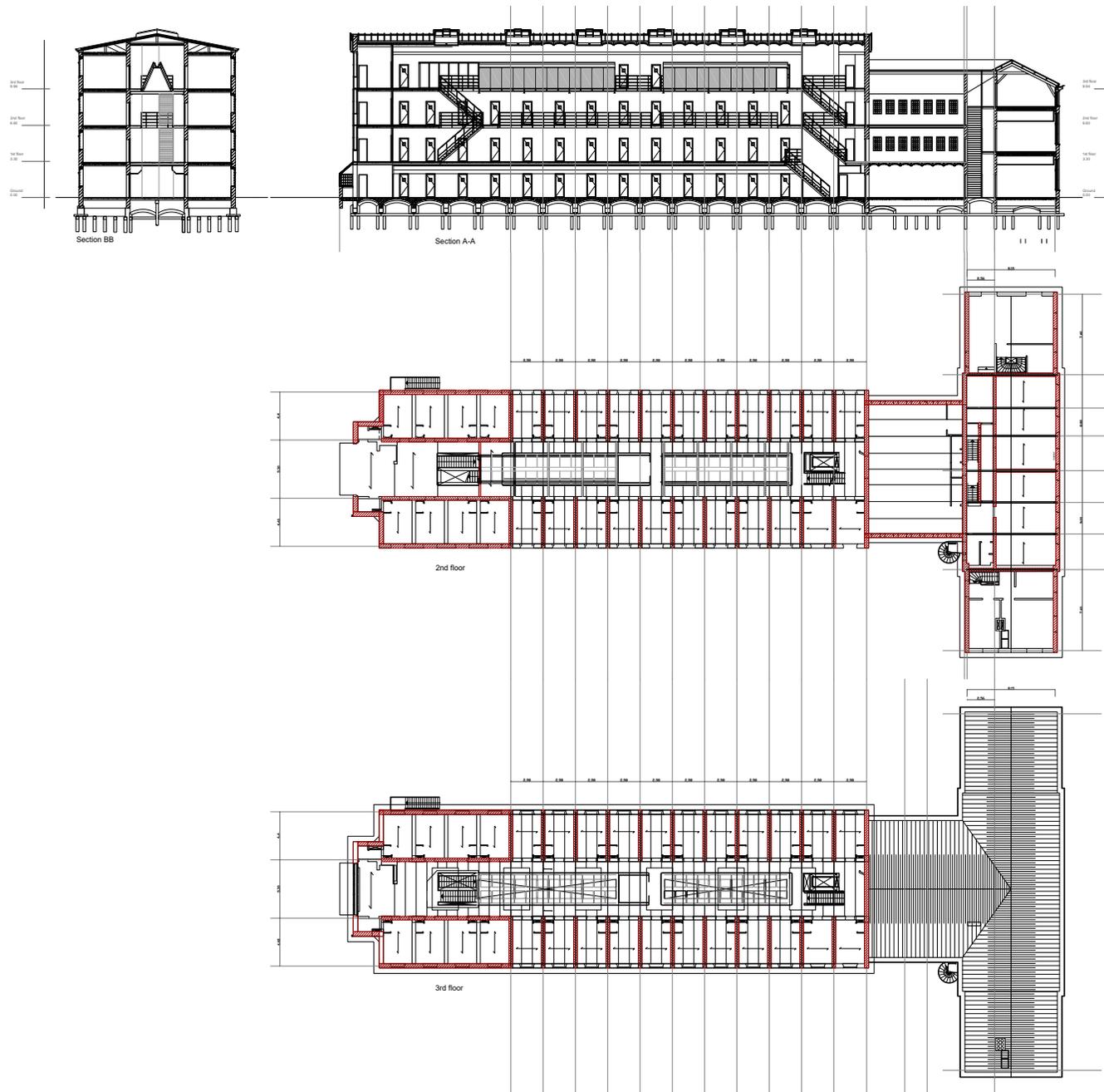


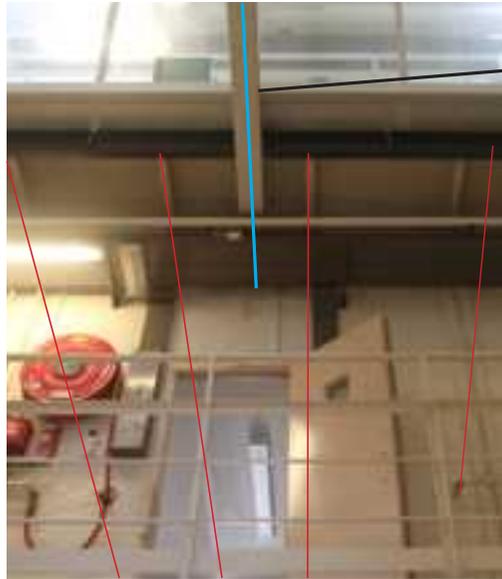
East Facade



# 05 BUILDING

## DE VEST: Structure





Beams from wall to wall to hold the skylight structure



Closing U shape beam

Beams passing through the wall to hold the corridor

Load bearing wall

Original hardstone corridor plates on steel beams that extend from the cells structure (1901). In expansion (1965) the corridor was built in concrete and finished- works with linoleum.

In 1965, 2 steel stairs with cast iron steps were verified catching and raising the corridor fences.

Most of the walls are load bearing. Either because they are supporting other brick walls on top or because the floor beams are laying on them.

We conclude then that many of the internal loading walls could be carefully and partially replaced by beams.



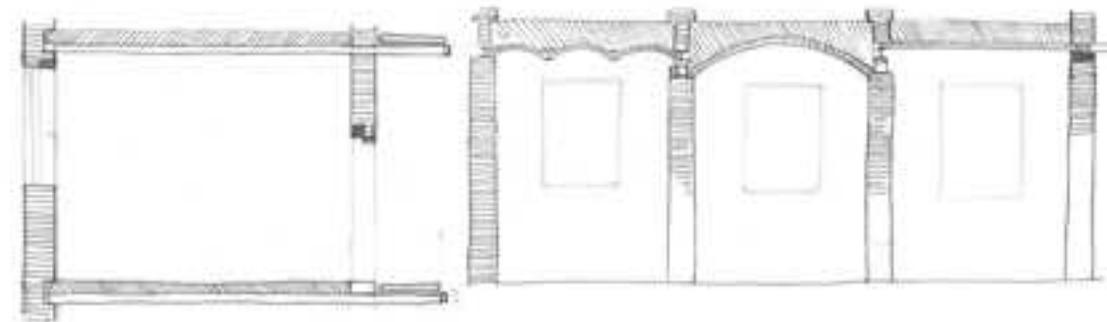
Non load bearing



Load bearing



Load bearing



# 05 BUILDING

## DE VEST: Structure

### FOUNDATION

Amsterdamse (wood) poles foundation  
Extension prefab concrete elements and concrete poles

### FACADE

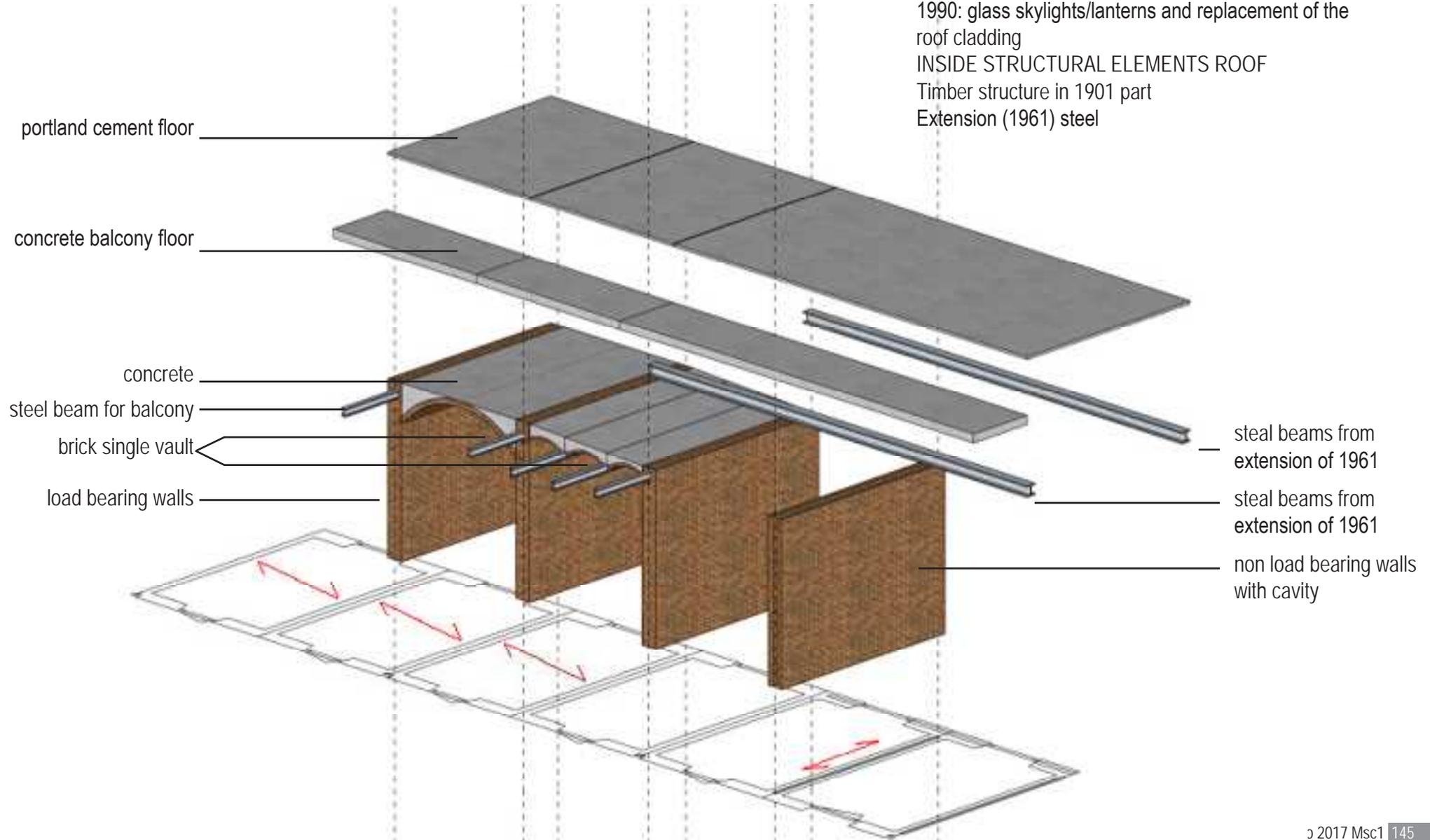
330mm brickwork non load bearing  
extension same as old part but with a cavity

### ROOF

1901: Sink roof cladding  
1965: 2 skylights, on extension sink roof cladding  
1988: extension under lessenaarsdak of Polycarbonate  
1990: glass skylights/lanterns and replacement of the roof cladding

### INSIDE STRUCTURAL ELEMENTS ROOF

Timber structure in 1901 part  
Extension (1961) steel



# 05 BUILDING

## DE VESTE: Stability and structure

### GROUND FLOOR STRUCTURAL

Brick vaulted between steel I-profile with concrete  
Extension hole system floors  
Load bearing capacity: 250 kg/m<sup>2</sup>

### 1,2,3 FLOORS STRUCTURAL

1901 brickwork trogge-vaults and segmentboogvaults on steel I-profile with concrete  
extension concrete elements with flat surface bellow  
Load bearing capacity: 250 kg/m<sup>2</sup>

### INSIDE STRUCTURAL WALLS

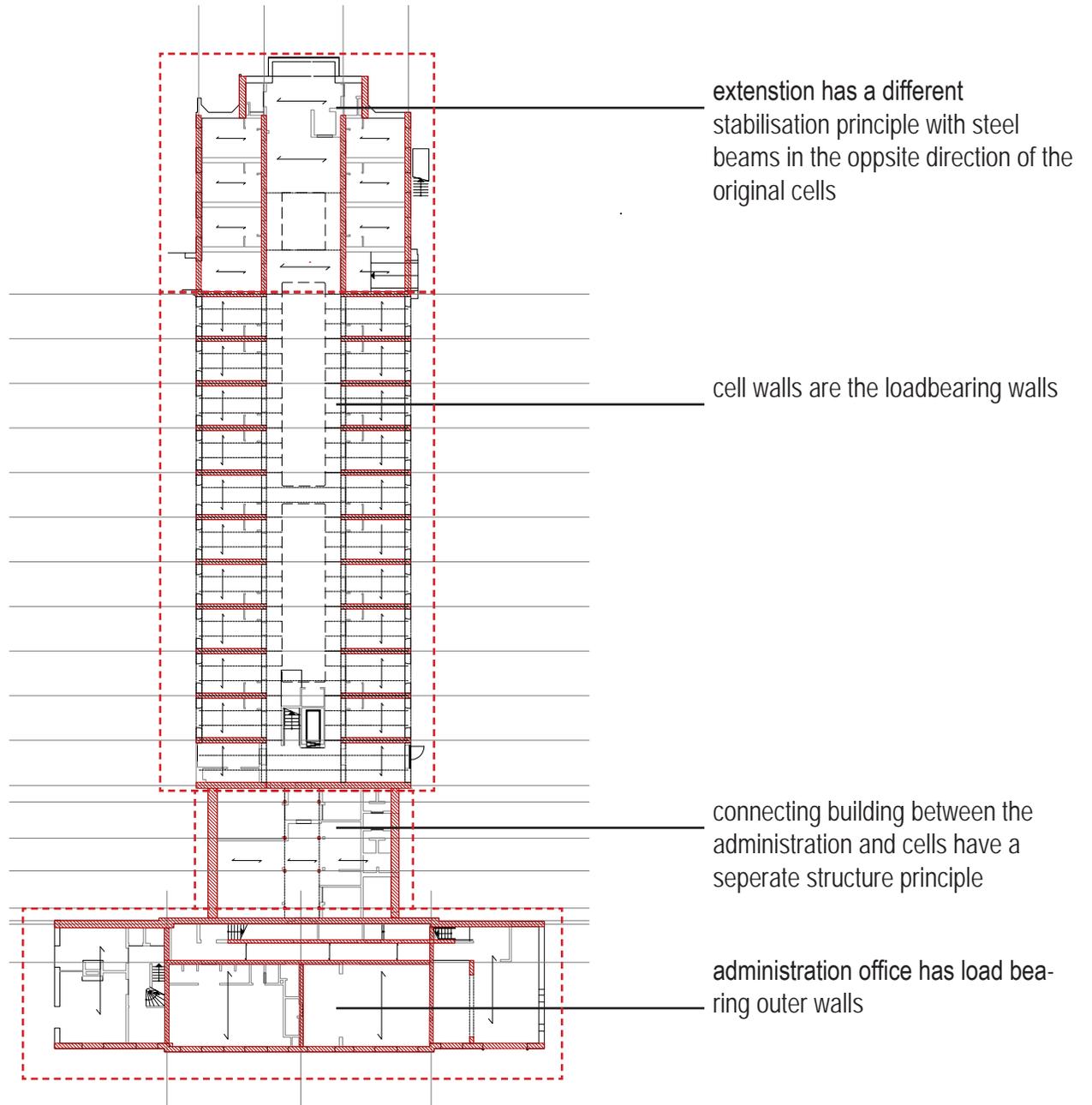
330mm Brickwork

### BALCONIES

Concrete elements

### STABILITY

Stabilized in 2 directions with brickwork walls. Floors makes horizontal stability (schijfwerking). At the connecting part is no dilatation or connection visible (also not visible in archive). For stability the assumption can be made for 2 different stabilized building parts.

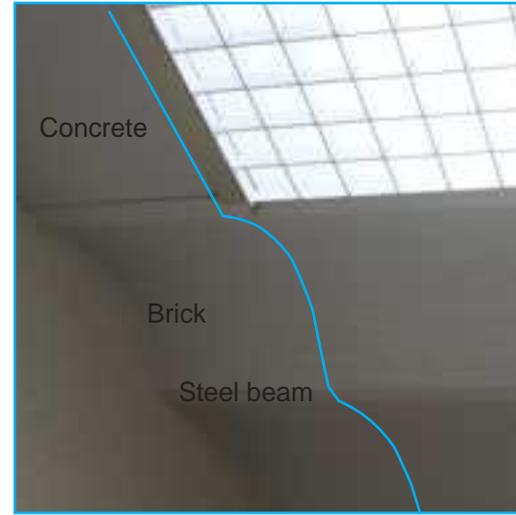
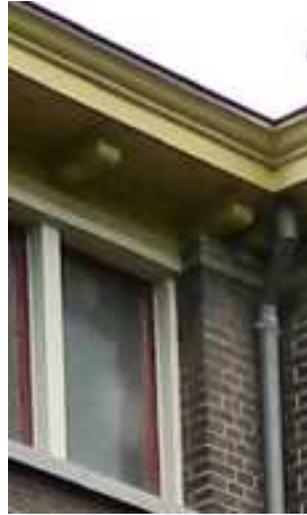


# 05 BUILDING

## DE VESTE: Roof structure

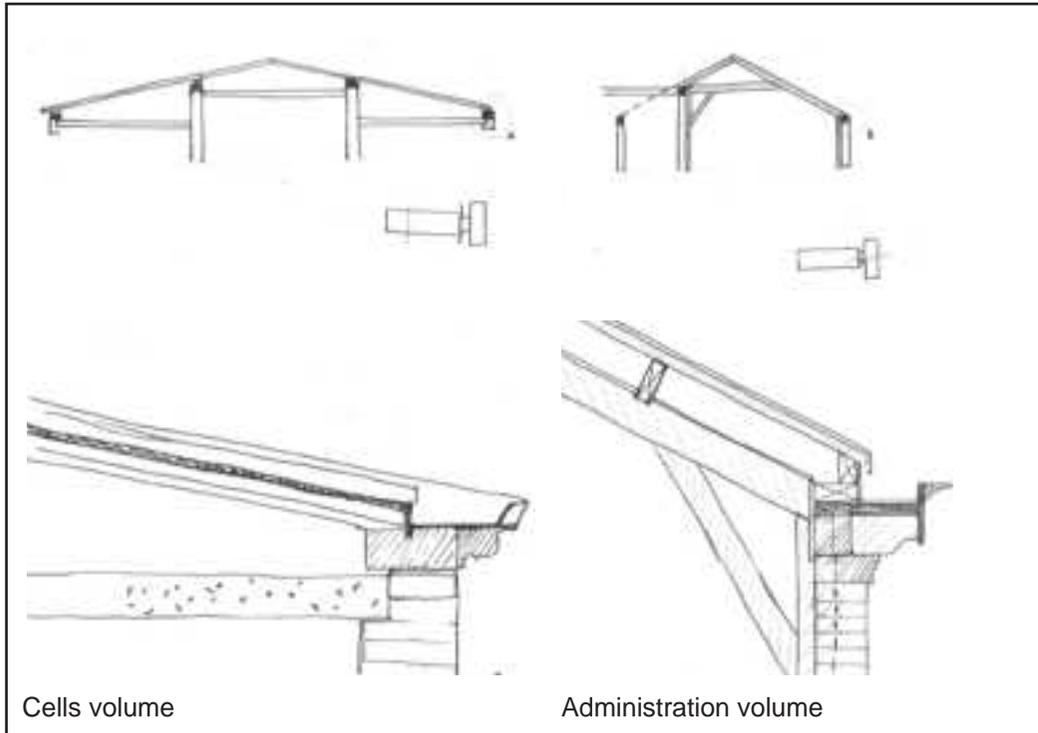


Hanging lift truck structure (cables)



Roof Skylight

Roof intersection btw original building and extension



Cells volume

Administration volume



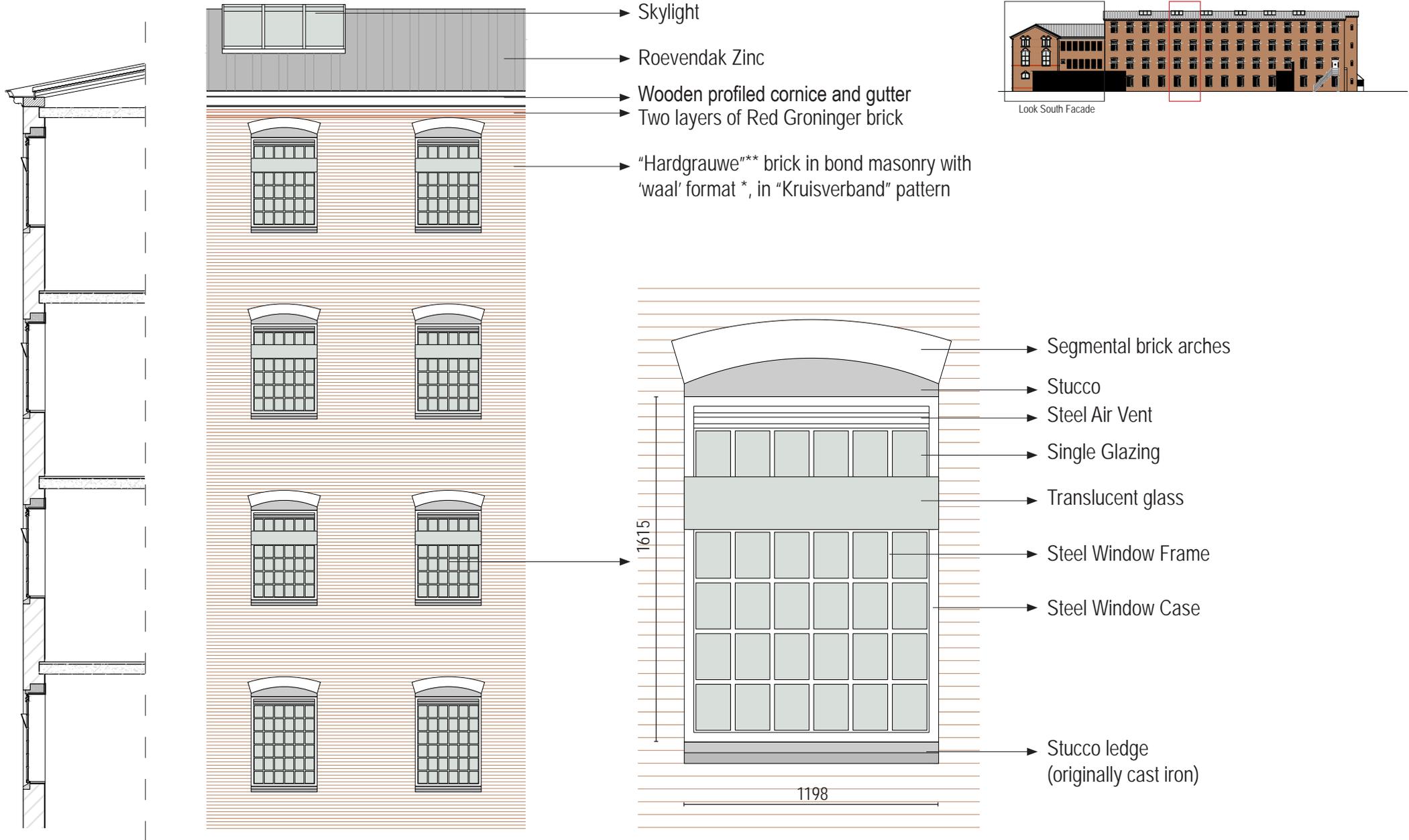
Third floor skylight connection



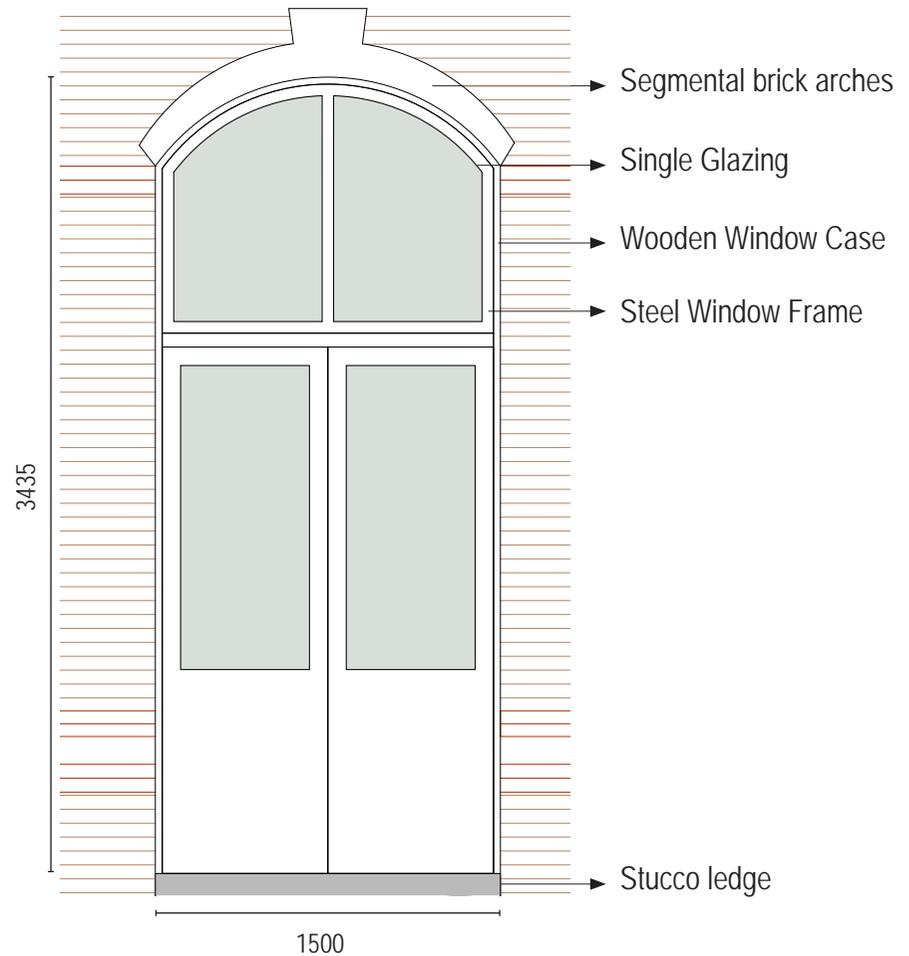
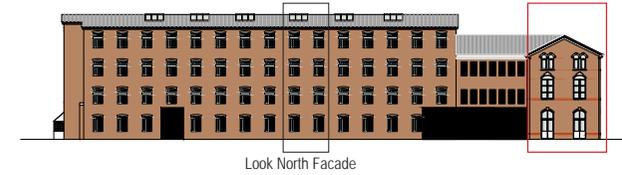
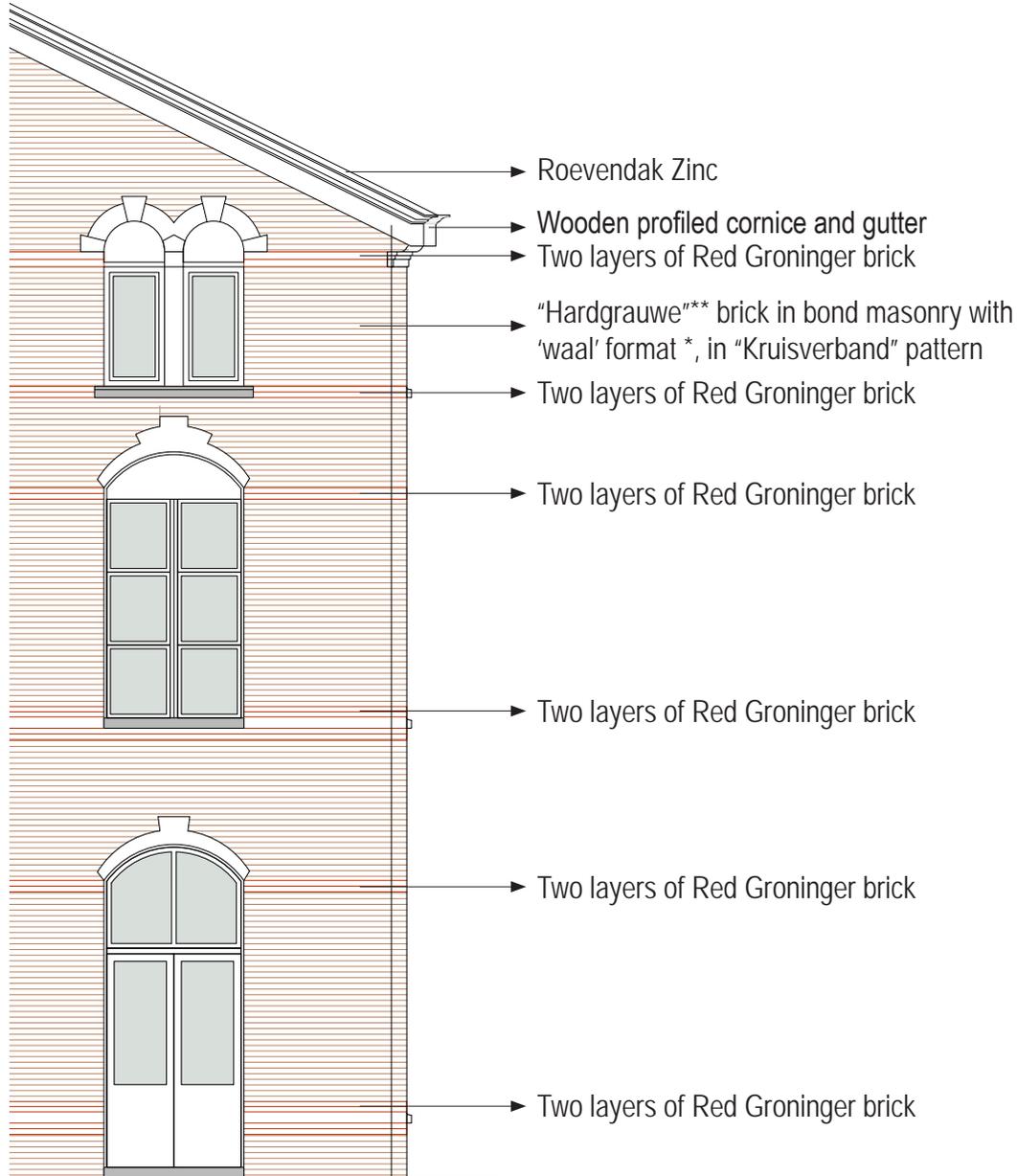
Women area roof

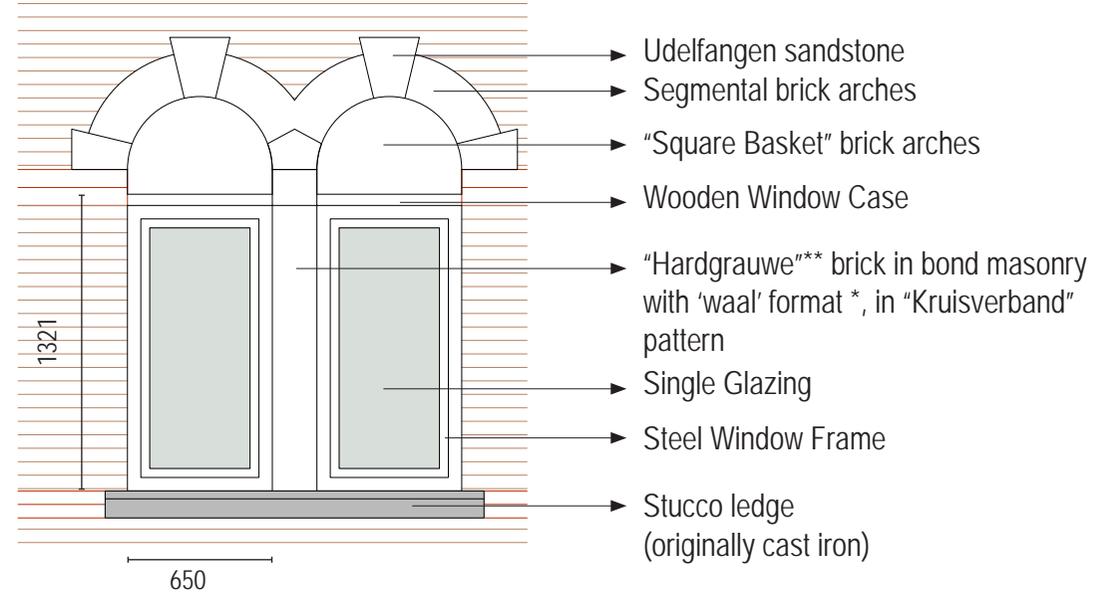
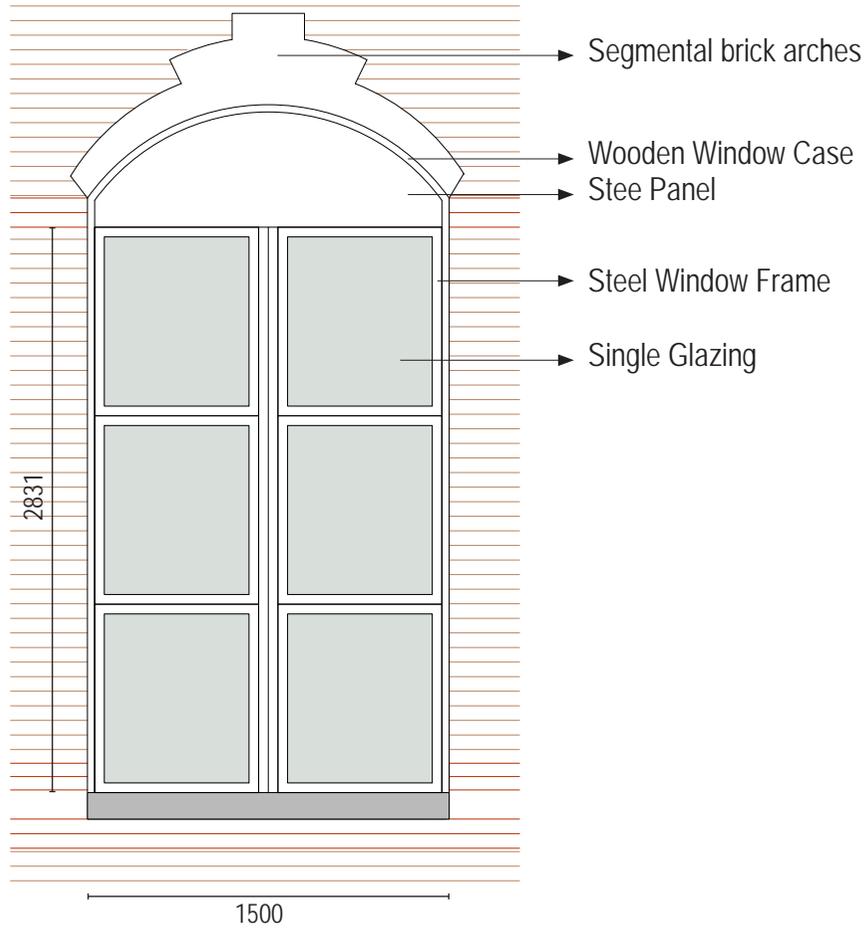
# 05 BUILDING

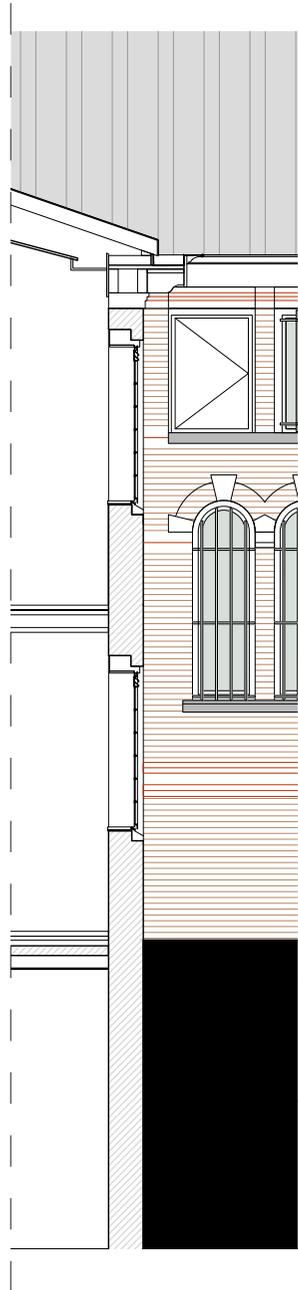
## DE VEST: North facade



\* 'waal' format; a standardized size for a brick in the Netherlands, 210 x 100 x 50 mm



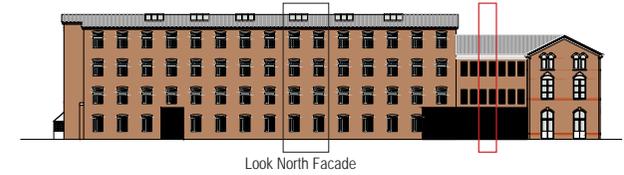




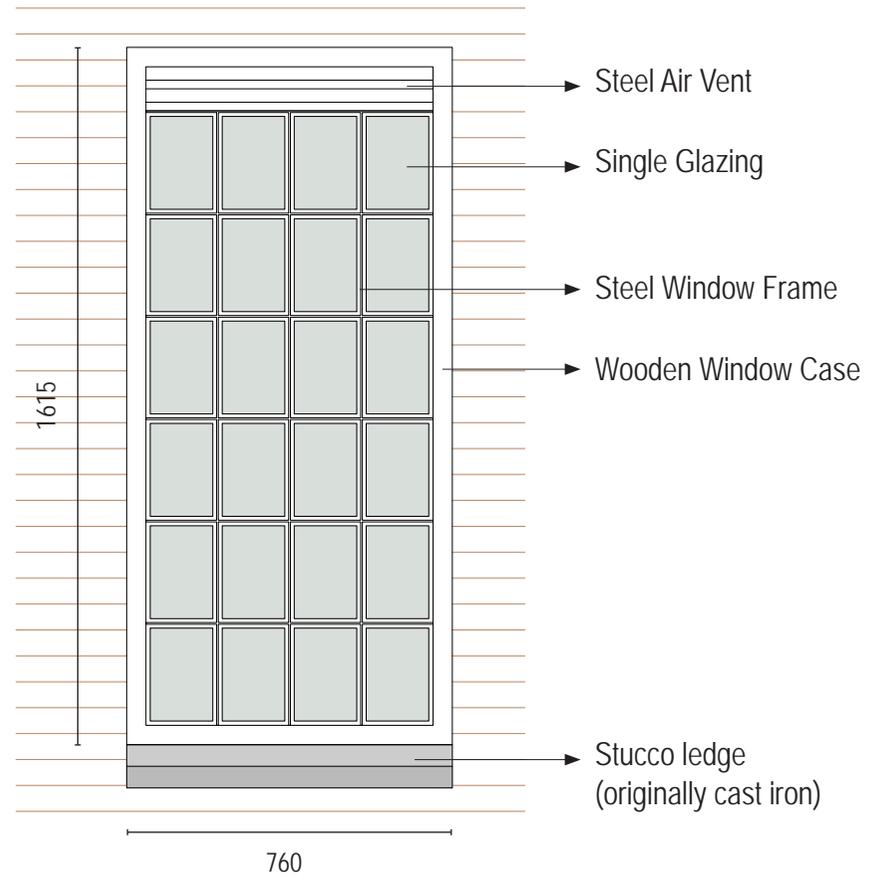
→ Roevendak Zinc

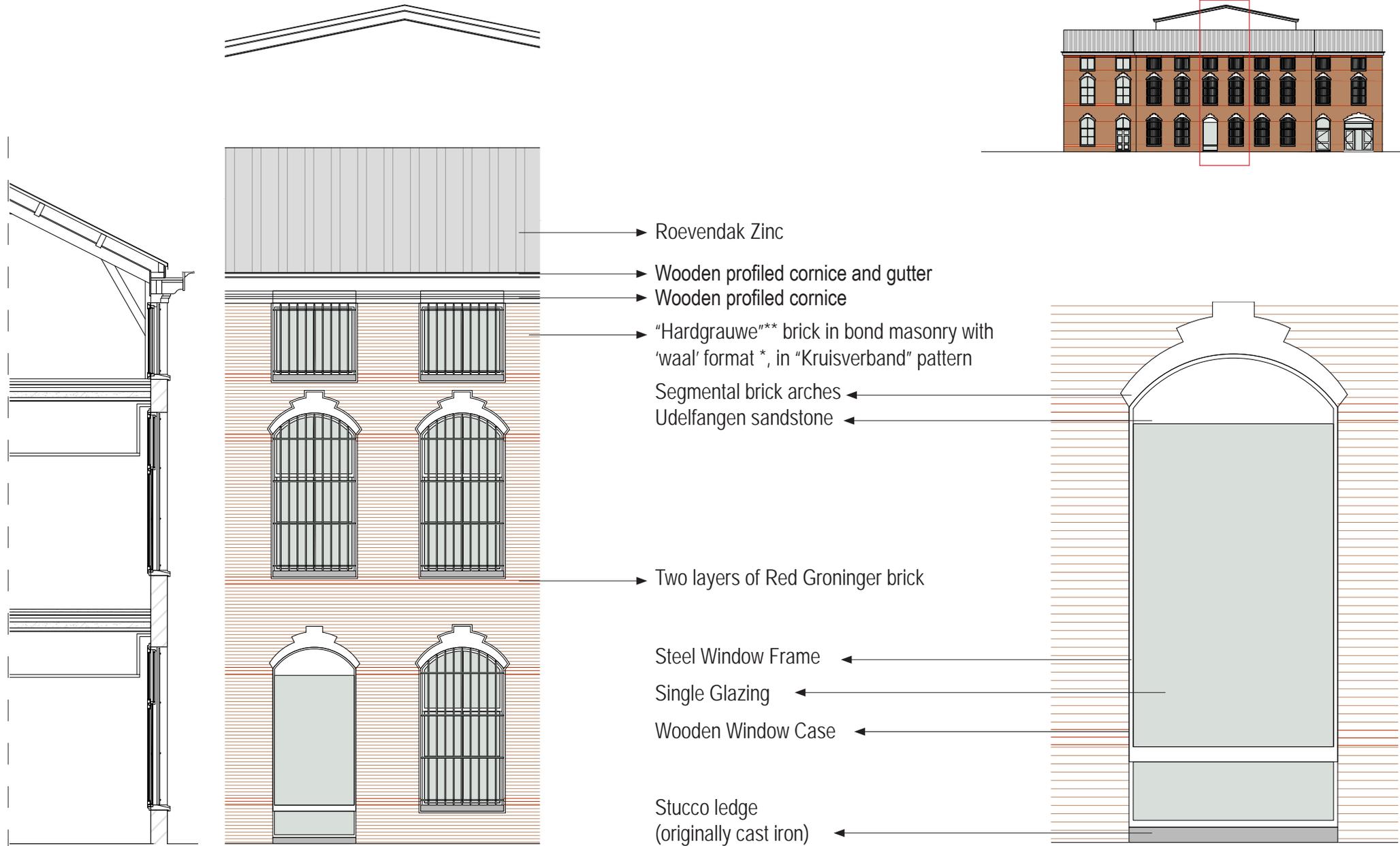
→ Wooden profiled cornice and gutter

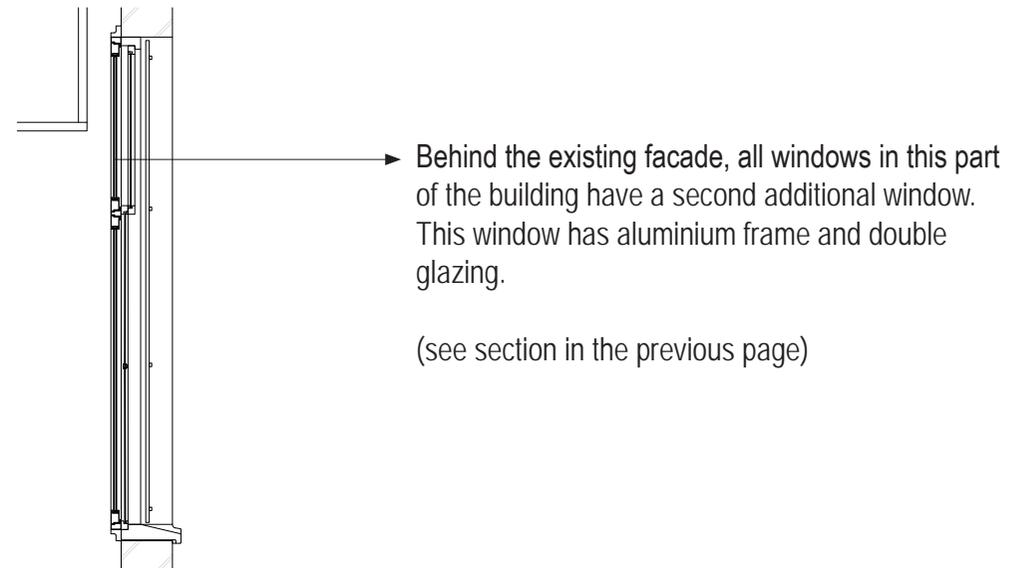
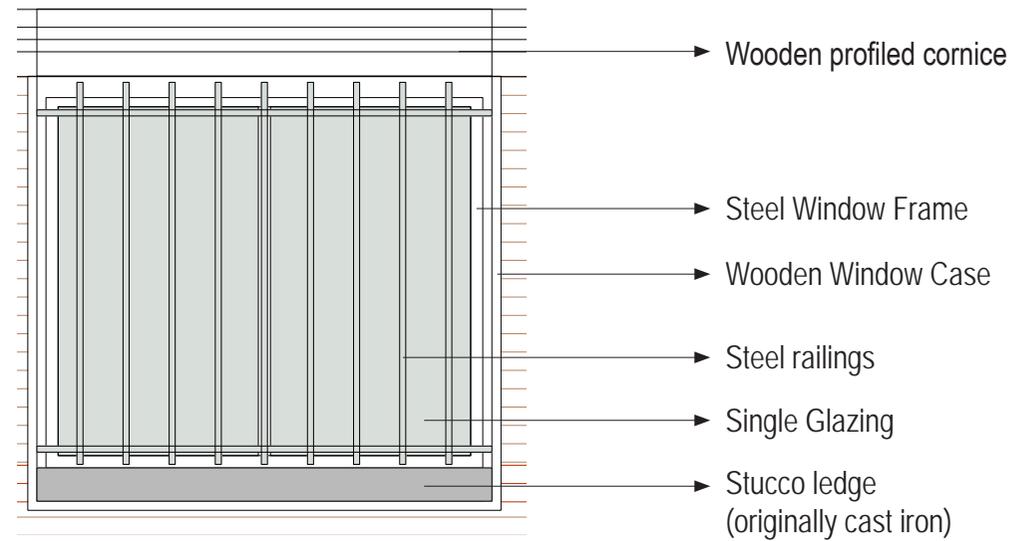
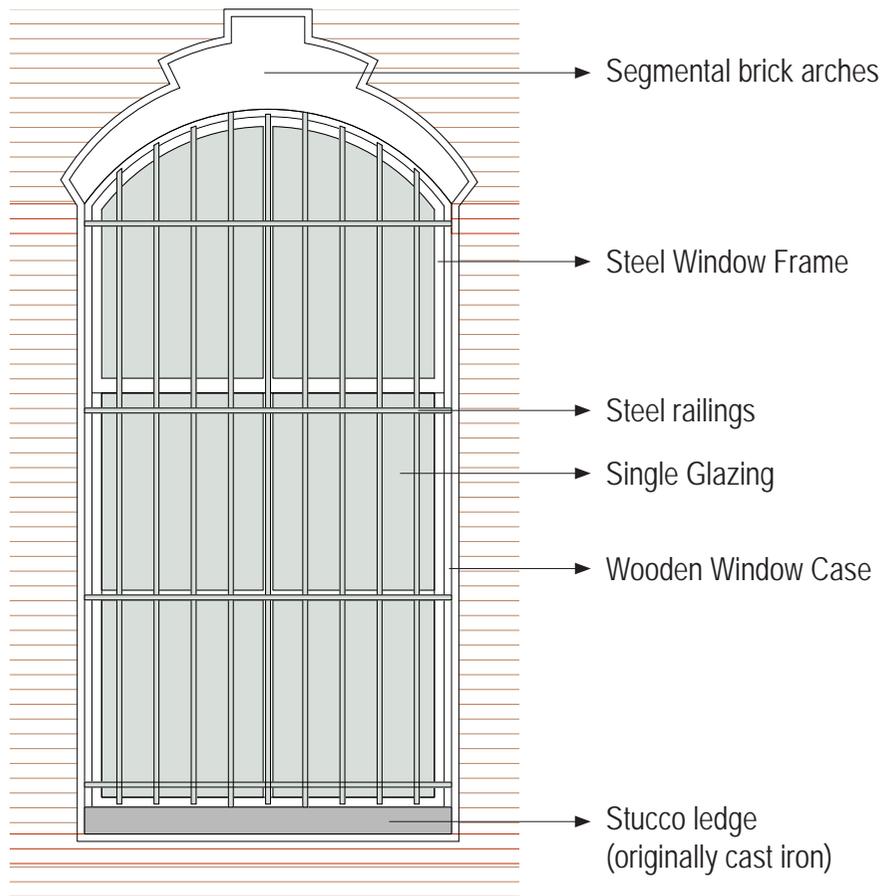
→ "Hardgraue"\*\*\* brick in bond masonry with 'waal' format \*, in "Kruisverband" pattern

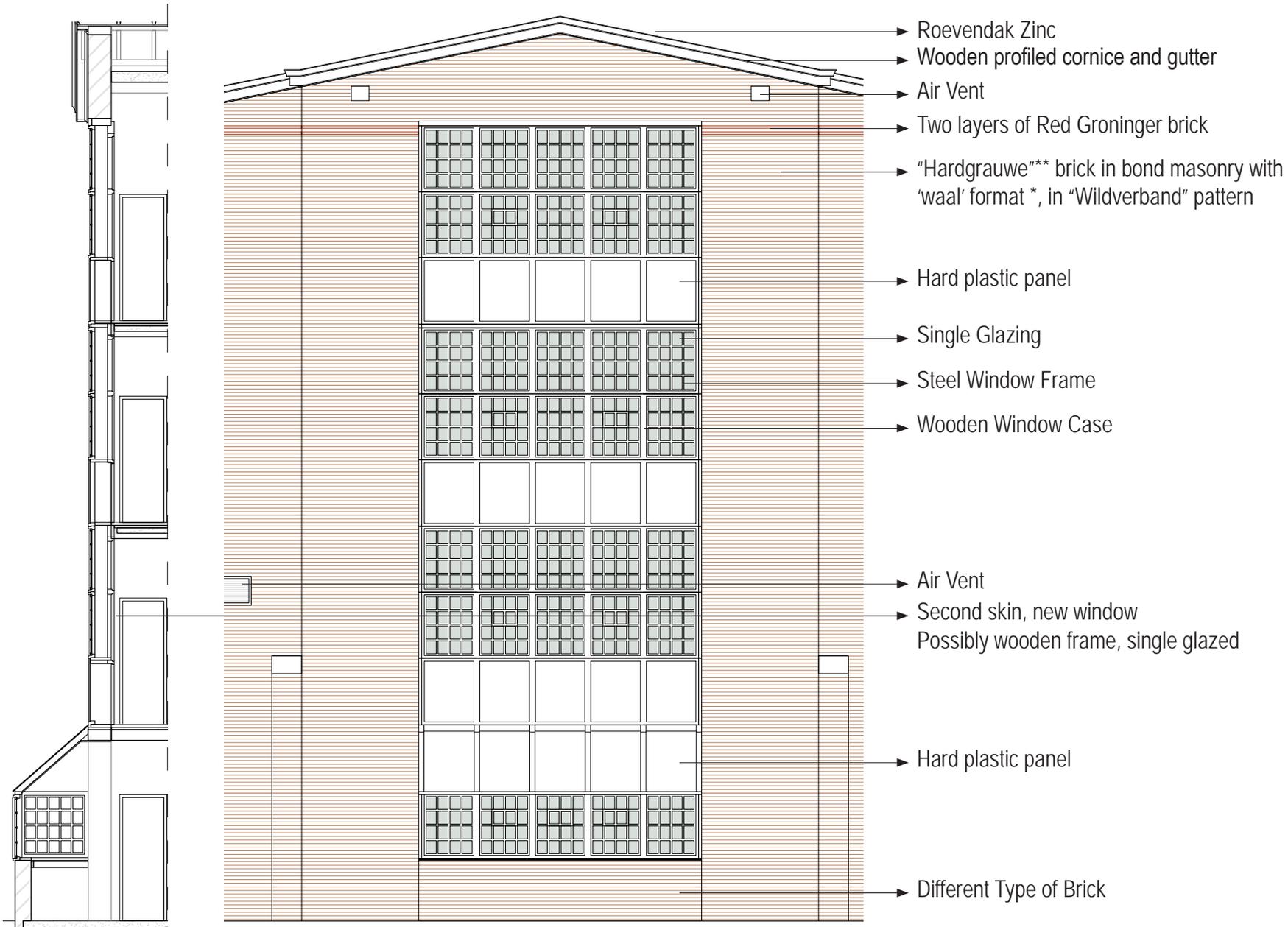


Look North Facade











## Facade

1965: steel windows with cast iron thorns. In north facade for renovated part: wooden frames with steel inserts, railing. In the main street (northwest) is a stacked wooden pillar brought with steel windows.



### Corridor

Original hardstone corridor plates on steel beams (1901), In expansion (1965) the corridor was built in concrete and finished- works with linoleum.

In 1965, 2 steel stairs with cast iron steps were verified catching and raising the corridor fences.

# 05 BUILDING

## DE VEST: Floors



Ground floor tiles are not original

In 1965 the galleries of natural stone and steel beams were replaced by concrete with linoleum



Detail of the current floor tiles

Balustrade placed in 1901 en raised in 1961

Stairs replaced in 1961



# 05 BUILDING

## DE VEST: Walls and doors



The current steel doors are probably placed during the extension, just like the steel door frames

Cells were originally not plastered



Left the original Masonry of the Veste, right the extension of 1961

Original ventilation hole



# 05 BUILDING

DE VEST: More information





Administration Building

## 05 BUILDING

### ADMINISTRATION BUILDING: Front facade



Wooden profiled cornice or gutter on sandstone consoles.

Semi-circular brick arches

Segmental brick arches

Hardgrauwe brick in Dutch bond masonry with 'waal' format \*

Udelfangen sandstone

Red Groninger brick

# 05 BUILDING

## ADMINISTRATION BUILDING: Front facade details



Zinc gutter

Wooden profiled cornice and gutter

Sandstone consoles



Roevendak zinc



Sandstone

Steel anchor



Sandstone

Pinewood frames

Steel frames

Hardstone ledge





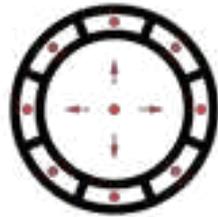
# 06 CASE STUDIES

# 06 CASE STUDIES

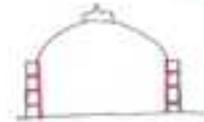
## Analysis on circular buildings

### Koepelgevangenissen

Haarlem, The Netherlands  
1899-1901  
By W.C. Metzelaar  
Prison



#### INTERNAL DIVISION



-clear division between central space and edge

#### FACADE



-small repetitive openings  
-only one entrance

#### ROOF



-dome roof with small skylight

### Tulou

China  
Between 12th and 20th centuries  
Housing familie clans  
Size 70 m x 20 m



-additional inner courtyard in between central courtyard and edge  
-height of inner courtyard does not disrupt reading of courtyard



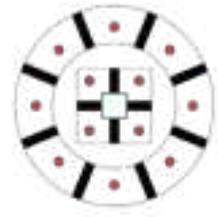
-no windows  
-gun holes on top  
-only one entrance



-big central courtyard

### Tulou Collective Housing

Guangzhou, China  
2005-2008  
By Urbanus  
Housing for low income families  
Size 71,5 m x 21 m



-circle inserted with huge mass



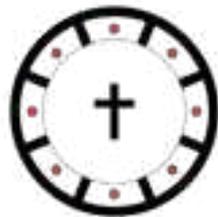
-operable full height shutters



-central courtyard inserted with huge mass

### Fortified Churches

Transylvania  
12th century  
Protecting the church  
Size 72-88 m x 12 m



-church surrounded by fortification



-no windows  
-gunholes on top



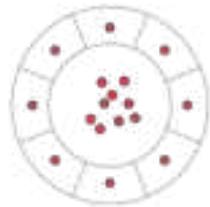
-central courtyard with church in the middle

# 06 CASE STUDIES

## Analysis on circular buildings

Fuji Kindergarten

Tokio, Japan  
By Tezuka Architects  
2007  
Kindergarten  
Size 48-62 m x 4,5 m



INTERNAL DIVISION



-void deck spaces in between classroom and central courtyard

FACADE



-transparent to the exterior, becomes part of environment

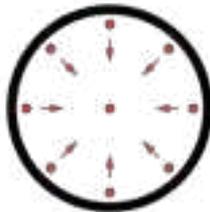
ROOF



-central courtyard  
-roof with running track

Centennial Hall

Wroclaw, Poland  
By Max Berg  
1911-1913  
Concert building  
Size 95 m width



-audience on side, stage in center



-openings on side, but center of attention in center

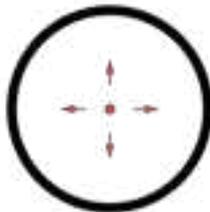


-covered roof



Raclawicka Panorama

Wroclaw, Poland  
1893-1894  
Size 38 m x 15 m  
Exhibition



-center of attention towards edge



-no opening



-covered roof



Wroclaw Contemporary Museum

Wroclaw, Poland  
1942  
Size 30 m width



-partitioned circular space



-no windows  
-holes for ventilation



-closed roof



# 06 CASE STUDIES

## Analysis on circular buildings

Piazza dell'Anfiteatro

Lucca, Italy  
Transformed in 1830  
By Lorenzo Nottolini  
Housing and restaurants,  
cafes, etc.



INTERNAL DIVISION



-square surrounded by different houses  
-street condition within square

FACADE



-different openings on different hours  
-individuality, no repetition

ROOF



-each house has different height  
-central space has no roof

Pantheon

Rome, Italy  
Completed in 125 AD  
By Apollodorus of Damascus  
Temple / church



-no internal division



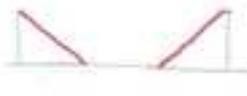
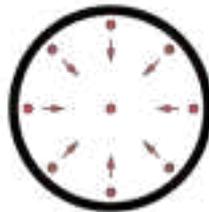
-no openings



-one oculus at the top of dome

Colosseum

Rome, Italy  
Completed in 70 AD  
By Vespasian and Titus  
Amphitheatre



-audience on edge, attention towards center



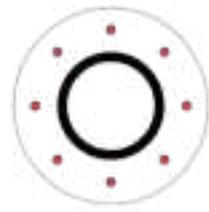
-repetitive openings on edge



-no roof

Watertoren Bussum

Bussum, The Netherlands  
Completed in 1897 and transformed in 2010  
By VOCUS  
Offices



-divided interior space, view dispersed to exterior



-transparent view to exterior

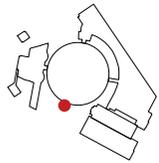


-fully covered roof

# 07 RESTORATION ASSIGNMENT

# 07 RESTORATION ASSIGNMENT

## Cleaning



Deposition: efflorescence

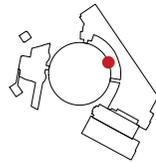
### Description:

**Efflorescence** (which means “to flower out” in French) is the migration of a salt to the surface of a porous material, where it forms a coating. The essential process involves the dissolving of an internally held salt in water, or occasionally in another solvent. The water, with the salt now held in solution, migrates to the surface, then evaporates, leaving a coating of the salt.

### Cleaning Method:

The first step in removing efflorescence should be an attempt to identify the salts. If the salts are water soluble, the best removal method is with a dry brush. Rinsing with water or natural weathering process may also be effective. Alternately, if the efflorescence is in small patches or limited areas, hand washing with a mild detergent and a stiff bristle brush will often prove sufficient.

The traditional method of cleaning has been sandblasting, which, of course, works. Unfortunately it removes just about everything else, too. The abrasive action of the sand erodes the surface of the brick and the tooled mortar joints along with any deposited salts. This increases the porous qualities of the masonry and the water absorptive nature of the wall. Sandblasting will also damage the integrity of the dense tooled mortar joints. A well-tooled and compacted mortar joint readily sheds moisture and provides minimum voids for penetration. After sandblasting, the mortar is more porous, has voids for infiltration, and may even reveal cracks in the mortar.



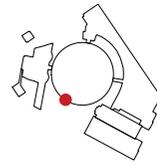
Deposition: staining

### Description:

Kind of discolouration of limited extent and generally of unattractive appearance. Dirt deriving from building activities. These rests are easily recognizable by the naked eye.

### Cleaning Method:

These stains can be removed with a chemical called Restoration Cleaner. The Restoration Cleaner is diluted with water, brushed or scrubbed on the building (depending on the severity) and allowed to set for approximately 5 minutes. Next it will be power washed off with a pressure washer and most or all of the stains will have disappeared. This process is typically done before the whole wall is tuck pointed to prevent damage to the new mortar joints.



Deposition: corrosion

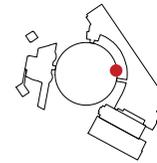
### Description:

Deposition of corrosion products deriving from metal elements present in the construction. Usually this type of deposit can be easily identified because of its red-brown colour and localized appearance. Rust discolours in oxalic acid ( $C_2H_2O_4$ ) or in a solution of potassium bi-oxalate ( $C_2HKO_4$ ).

### Cleaning Method:

**The use of phosphoric acid:** The application strength and duration will vary. As a general guide, use a mixture of 1 part phosphoric acid to 6 parts water. Apply by brush or spray to the dry wall and allow to stand until the stain disappears, usually within 30 minutes, but can be up to 24 hours.

**The use of oxalic acid:** Use a solution strength of 20 to 40 grams per litre of water. The method of application is the same as for the phosphoric acid treatment.



Deposition: micro-organisms

### Description:

Algae are visible, under both external and (sometimes) internal climatological conditions, as a powdery deposit of filaments; they are usually green, red, or brown to black and may change aspect with the seasons. Algae do not have roots. Blue-green algae belong to the bacteria (cyanobacteria). Algae may enter into symbiosis with lichens.

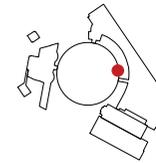
### Cleaning Method:

The removal of algae by the use of steam cleaning is possible.

As much growth as possible should be removed by vigorous brushing with a bristle brush. For heavy growth, scraping and wire brushing may be necessary.

After this dry cleaning, apply a proprietary weed killer or liquid chlorine that should be left on the surface for several days. Brush off and clean with hot water and detergent.

The main risks of cleaning with water are: possible dissolution of some soluble material components (for example calcite or gypsum), transport of salts and moisture infiltration.



Deposition: paint

### Description:

Deposition of paints like graffiti (felt-tip, lac/enamel, etc.) and glue rests (e.g. used for attaching posters). Graffiti are easily recognizable by the naked eye.

### Cleaning Method:

Fresh aerosol paint  
Use a commercial paint remover in accordance with the manufacturers' instructions.

Dried paint  
1. Flood the stained area for a few minutes with a paint remover of the methylene dichloride type.  
2. Scrub to loosen the paint film  
3. Flush with water to wash away the loosened paint.  
4. Scrub with scouring powder until the stain is removed.

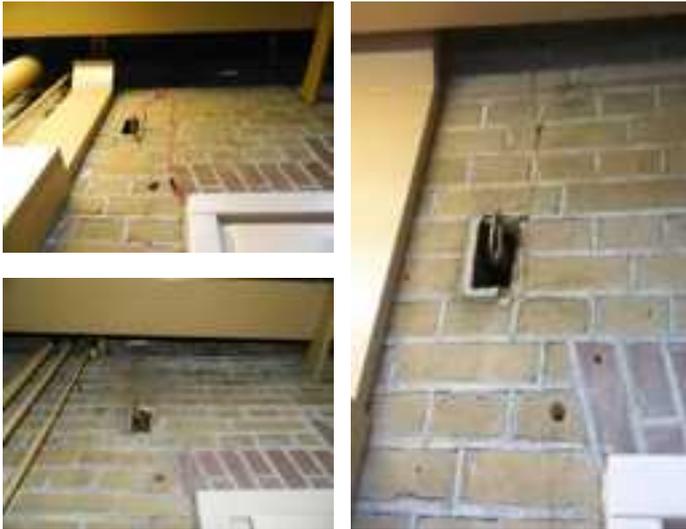
Poultice method  
If these methods do not remove all traces of the paint, it will probably be necessary to apply a poultice:  
1. Mix a strong solution of sodium hydroxide (caustic soda) in an inert base such as diatomaceous earth.  
2. Apply to a depth of about 5 mm, and leave on the wall for at least 24 hours before hosing off.

# 07 RESTORATION ASSIGNMENT

## Cracks

### CRACK PATTERNS ABOVE DOORS

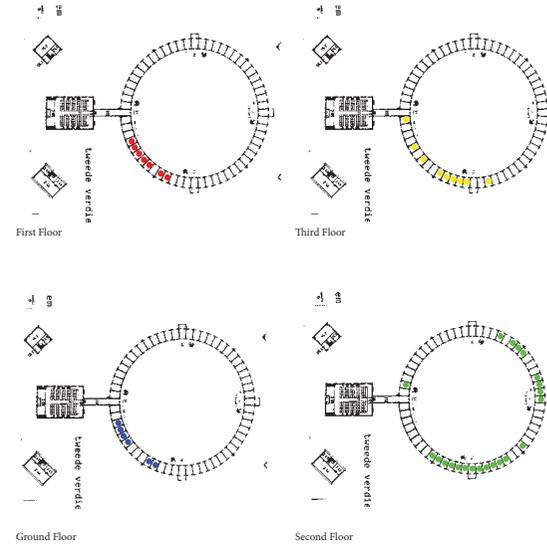
PHOTOGRAPHS



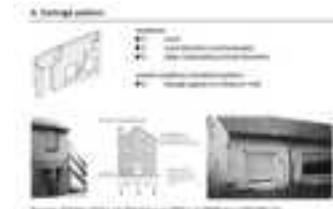
CRACK PATTERN



LOCATION OF CRACKS



CRACK TYPE: 51



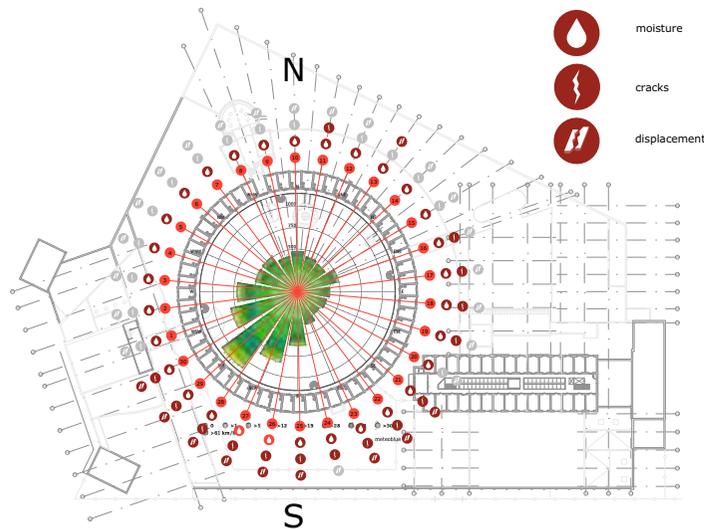
**Decision Tree:**  
 Crack > In composite masonry > In wall >  
 Combination of directions > No horizontal cracks > Directions:  
 other > Type 51.  
 These cracks (and hair cracks) can be found in the inner ring  
 wall, on all floors and predominantly on the southwest side of the  
 building.  
 These cracks are on multiple locations but on identical spots  
 (above the cell doors).  
 They appear on the weakest spots and/or where the most tension  
 is.  
**Possible causes:**  
 Thermal > material reaction to thermal environment, e.g.  
 expansion and compression.  
 Load-bearing > the loads are not distributed evenly on the wall.

### DAMAGES ON TOP GALLERY

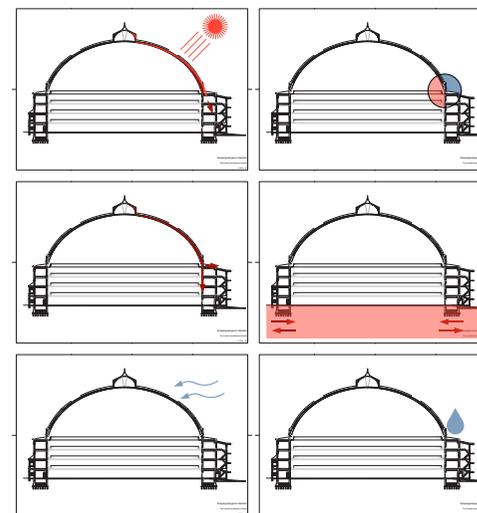
PHOTOGRAPHS



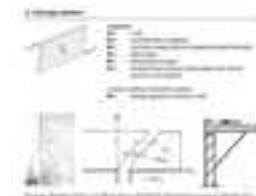
LOCATION OF DAMAGE



HYPOTHESIS



CRACK TYPE: 34



**Decision Tree:**  
 Crack > In composite masonry > In wall >  
 Diagonal, in one direction > Constant size or tapered towards both ends  
 > Deviation from vertical > Type 34.  
 There is cracking in the ring wall on the fourth floor. This is only on the  
 south side of the ring wall and only at the trusses.  
 This type of cracking is identical at all the trusses, but only on the south  
 side.  
 These cracks do not appear to have expanded over quite some time.  
 (according to the 2016 report of Pieters Bouwtechniek)  
 Most of these crackings are on identical spots (at the trusses), but on one  
 spot its exactly between 2 trusses.  
**Possible causes:**  
 Thermal > material reaction to thermal environment, e.g. expansion and  
 compression of the brickwork. Even the difference in conditions between  
 shady and sunny side.  
 Overloading > due to the change in load, vibrational, machinery or traffic.  
 (Like e.g. pile driving for the nearby dwellings)

# 07 RESTORATION ASSIGNMENT

## Cracks

### CRACK PATTERNS ON PERIPHERY WALL

CRACK TYPE: 30



#### A. Damage pattern



##### symptoms:

- D: crack
- E: crack direction is diagonal
- F: crack is tapered towards one end
- G: crack is widest at top, narrowest at bottom

##### root-conditions included in pattern:

- G: damage appears in columns of wall
- G: damage appears with maximum halfway the length



Examples (Dilridge 1976) p.118.

#### Decision Tree:

Crack > In composite masonry > In wall > Diagonal in one direction > Tapered towards one end > crack widest at top > Halfway the length > [Type 30](#).

Since this is a periphery wall, completely outside. Most of the common causes for cracks do not apply here. The soil seems to be the most likely cause here.

#### Possible causes:

Moisture changes / Thermal variation / Creep / Elastic deformation / Foundation movement or settlement of soil / Chemical reaction

### CRACK PATTERNS ON EXTERIOR WALL OF THE BUILDING

PHOTOGRAPHS



CRACK TYPE: 29

#### A. Damage pattern

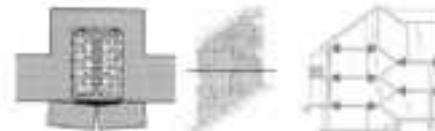


##### symptoms:

- D: crack
- E: crack direction is vertical
- F: crack has constant size or tapered towards both ends
- G: in-plane displacement perpendicular to crack

##### root-conditions included in pattern:

- E: damage appears in columns of wall



Formulas: Dillmann and Korte (1974) fig. 2.14; Bause et al. (2002) fig. 19; Dillmann and Korte (2004) fig. 118.

#### Decision Tree:

Crack > In composite masonry > In wall > Vertical > Constant size or tapered towards both ends > In-plane perpendicular to crack > [Type 29](#).

These hair cracks are only spotted on the south side of the building. Though the west side does have a lot of repairs.

#### Possible causes:

Thermal > material reaction to thermal environment, e.g. expansion and compression of the brickwork. (Hindered dimensional changes, temperature/moisture induced)

Overloading > due to the change in load, vibrational machinery. (Like e.g. pile driving for the nearby dwellings)

Overloading > due to change in load, thrust of arch, vault, dome of roof truss.

Overloading > due to change in resistance, decrease in capacity of masonry, due to wetness / creep.