



1 Klein Vaticaan AR / CV

Preface

This analysis book is made during the graduation studio *AR3AR111 Zutphen Sustainable City*, in the academic year of 2017-2018. This studio is part of the Heritage & Architecture Master track of the TUDelft. This book is part of a series of analysis on several buildings in the the Nieuwstad, a neighbourhood in the city of Zutphen. The aim of this analysis is to grasp the identity and character of this area.

The unraveling of the identity and character of the specific buildings can form a starting point for the further design of the students in creating a Sustainable City.

The scope of this book ranges from architectural and technical aspects to cultural value aspects with focus on a few building complexes.

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Image 1 Cover: Aerial Photograph Nieuwstad (*regionaalarchiefzutphen.nl*)

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General Info

I. General Introduction

One of the focus areas for the research on the Nieuwstad is the “*Klein Vaticaan*”, a Roman Catholic community in the Nieuwstad. The Klein Vaticaan consisted of a boyschool called the St. Jozef, a girlschool called the St. Anna, a kindergarten called the St. Maria, a Pastorie and a carecenter called the St. Elisabethgesticht with its own chapel, the St. Elisabethkapel. The analysis in this report focusses on the schools St. Anna and St. Jozef and its immediate surroundings.

The analysis of these buildings is done through the perspectives of architecture, technique and culture. These perspectives can be recognised by the logos in the upper right corner, Architectural Analysis (AA), Technical Analysis (TA), Cultural Value (CV). The logos indicate which pages must be read in order to understand the perspective.



The aim of this first chapter is to get a better understanding of both the schoolbuildings. This will be done by chronomapping the different timelayers, the architects will be analysed and the influence on the education and the Roman Catholic community in Zutphen will be analysed.

Chronomapping - Buildings

Development of the Roman Catholic Schools

The first development of the schools was in 1891 when the St. Jozef Boyschool was built. It was designed by the architect Uiterwijk, a local architect from Zupthen.

Drawings of the first design can not be found; the drawings in Figure 1 are based on the combination of the drawings made by G.J. Jacobs in 1933 (see Image 3) and the drawings of the extension in 1914, where is indicated that the existing foundation was used for the extension (see Image 6). This may indicate, by looking at the symmetry of the building, that there was a small extension to the east side, before the larger extension was added in 1914.



Image 3 South facade St. Jozef, existing situation in 1933 by G.J. Jacobs (Regionaalarchiefzupthen)



Image 4 North facade St. Jozef, existing situation in 1933 by G.J. Jacobs (Regionaalarchiefzupthen)

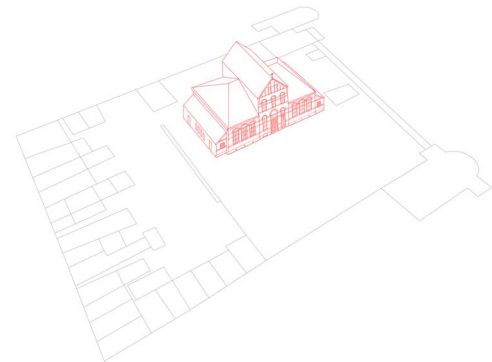
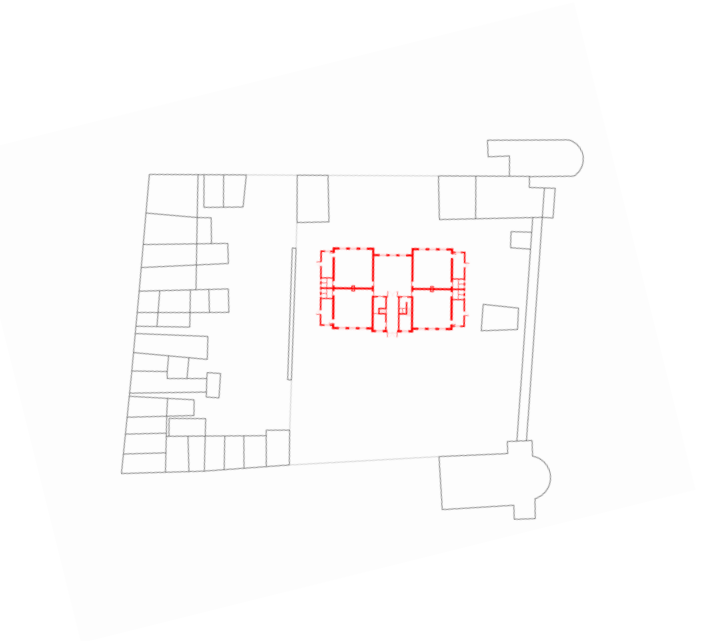


Figure 1 Klein Vaticaán Chronomap - 1891

Development of the Roman Catholic Schools

Eighteen years later the St. Anna girlschool was built, designed by the architect A. Th. van Elmpt. It is a richly ornamented building and a good example of the Post-kantorengeotiek.

The building had two entrances (see Image 5). The purpose of the two entrances was to separate the social/economical classes. One entrance was for the "klompen" and one was for the "shoes" (Woldring, 2004, p. 112)

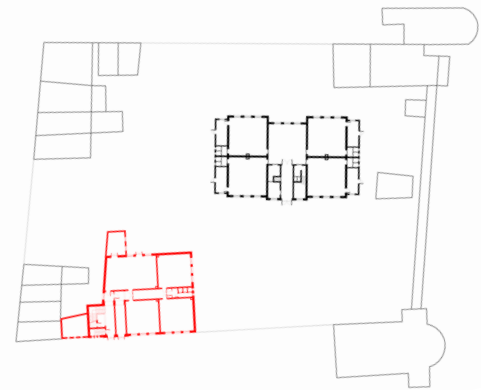


Image 5 South facade St. Anna, design by A. Th. van Elmpt in 1909 (Regionaalarchiefzutphen)



Figure 2 Klein Vaticaan Chronomap - 1909

Chronomapping - Buildings

Development of the Roman Catholic Schools

In 1914 an extension on the east side was added in St. Jozef School, serving as an additional educational space with two classrooms. As mentioned before, this extension is built on the existing foundation, indicating a previous addition to the east side of the building.

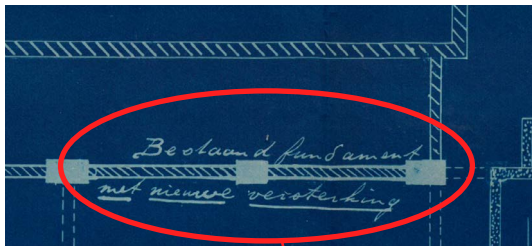


Image 6 Drawing indicating an existing foundation (Regionaalarchiefzutphen)

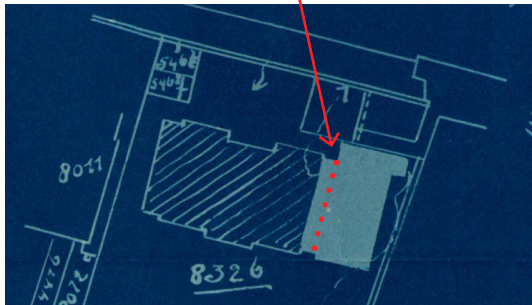


Image 7 Situation 1914 (Regionaalarchiefzutphen)

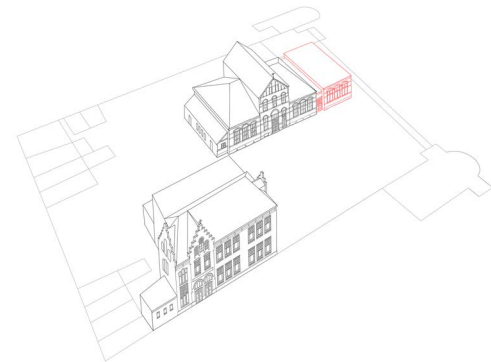


Figure 3 Klein Vaticaans Chronomap - 1914

Development of the Roman Catholic Schools

The St. Jozef school received a huge upgrade in 1934. A second floor was added to create four extra classrooms. The accessibility of the classrooms also changed; each classroom is now accessible from a central hallway, instead of each classroom having its own separate entrance.

According to the historical drawings only a second floor was added but if we look at the previous and current facade the exterior walls must have been changed as well.



Image 8 South facade St. Jozef, drawing of the transformation in 1933 by G.J. Jacobs (Regionaalarchief Zutphen)



Image 9 North facade St. Jozef, transformation in 1933 by G.J. Jacobs (Regionaalarchief Zutphen)

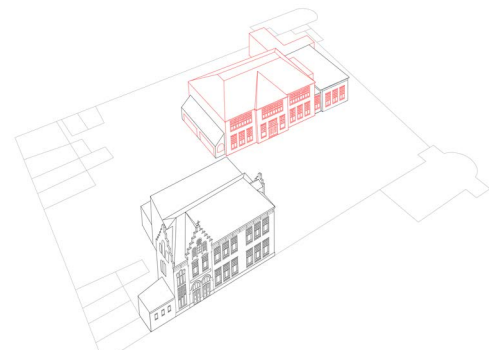


Figure 4 Klein Vaticaan Chronomap - 1933

Chronomapping - Buildings

Development of the Roman Catholic Schools

In 1970 an extension was added on the east side of St. Anna School as a sanitary block. Meanwhile, the original separating wall, which used to separate the two social classes, was removed.

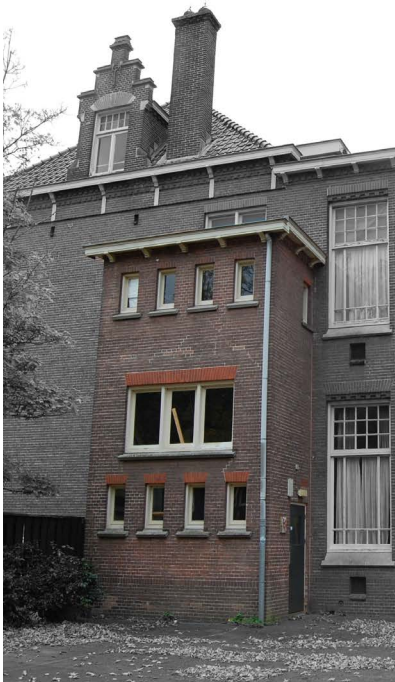


Image 10 Extension of the sanitary block on the east facade the St. Anna (own photo, 2017)

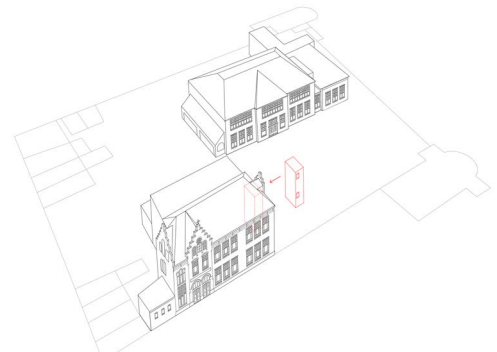


Figure 5 Klein Vaticaan Chronomap - 1970

Development of the Roman Catholic Schools

In the years between 1974 and 1993 a fire escape staircase was added on the back facade of St. Anna School, in order to fit the current regulations. During the same period, some minor changes were made in relation to the spatial plan of St. Anna School.



Image 11 Fire escape staircase on the north facade of the St. Anna (own photo, 2017)

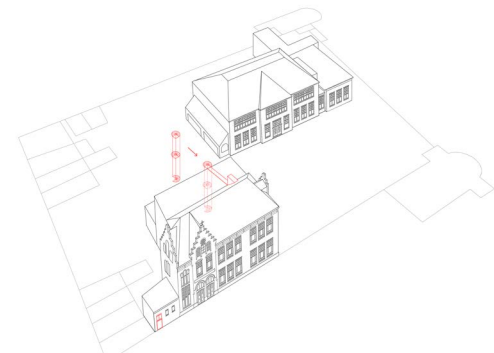


Figure 6 Klein Vaticaen Chronomap - 1974-1993

Chronomapping - Buildings

Development of the Roman Catholic Schools

In 1993 both the schools were bought by the Vrije School of Zutphen. In 2000 they added an extension to the St. Anna on the north-west side adjacent to the Dieserstraat designed by the LKSVD architects. In this extension four classrooms, a theater and a gym were added.

In 2013 a couple of the original heavily damaged window frames of the St. Anna were replaced.

Somewhere in time, a small extension was added to the north east St. Jozef School.



Image 12 St. Anna with the new extension (own photo, 2017)

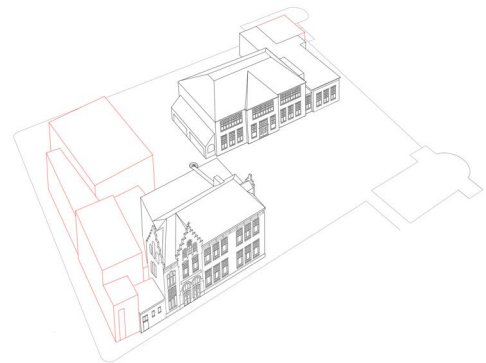


Figure 7 Klein Vaticaan Chronomap - 2000

Summary Chronomap - St. Jozef



Chronomap - St. Jozef

The development of St. Jozef is summarized in the following maps, red indicating the oldest parts and green indicating the newest parts.

Noticable is the interior wall being the only parts left of the original construction in 1891. Intervening should be done with care.



Figure 8 Chronomap St. Jozef - Ground floor

1891	
1914	
1934	
1960/now	

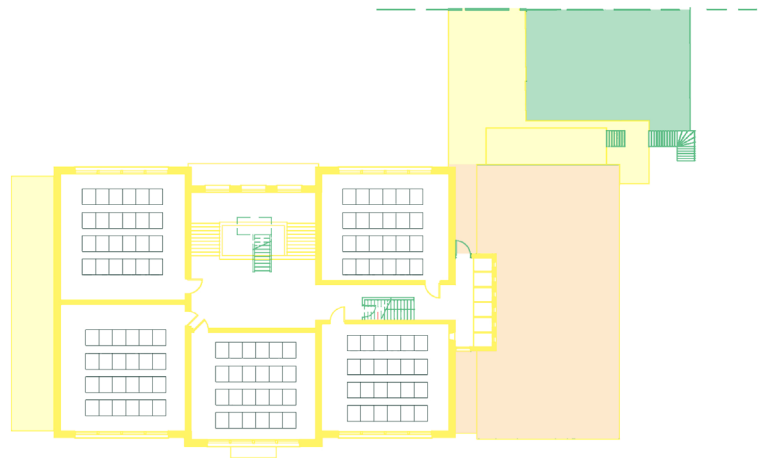


Figure 9 Chronomap St. Jozef - Second floor

Summary Chronomap - St. Anna

Chronomap - St. Anna

The development of St. Anna is summarized in the following maps, red indicating the oldest parts and green indicating the newest parts.

Compared to the St. Jozef allot more of the original construction is left, giving the building more historical value.

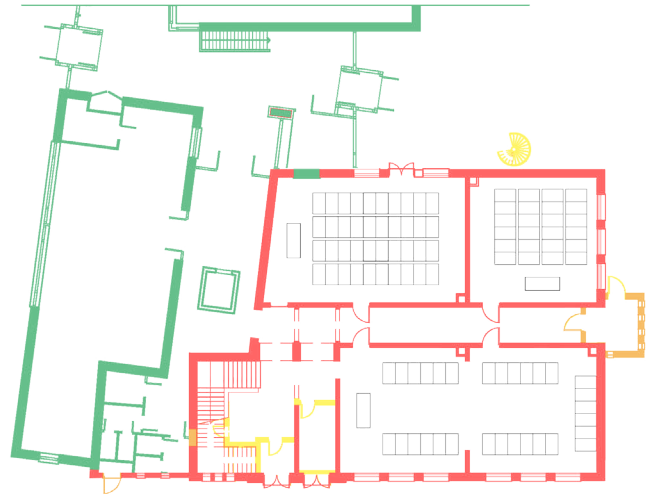


Figure 10 Chronomap St. Anna - Ground floor

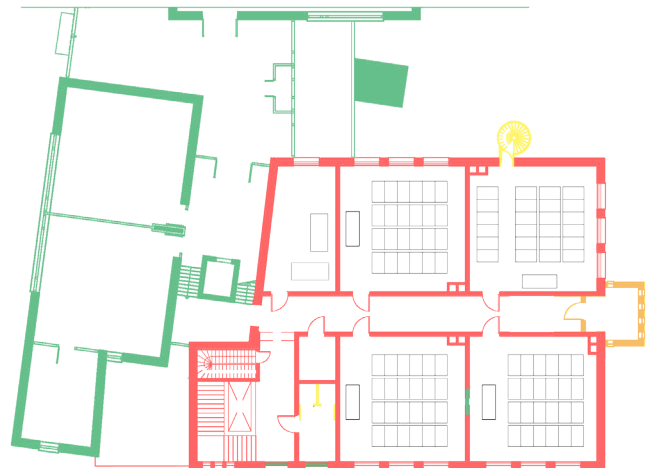
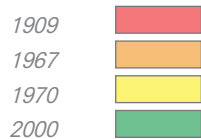


Figure 11 Chronomap St. Anna - Second floor

The architects



To get a better understanding of a building it could be helpfull to investigate the oeuvre of the architect. The profession of an architect changed over time. Until the 19th century the architect was actually the carpenter and the designer at the same time.

As regards the selected schools, the focus is on the architect A. Th. van Elmpst who designed the St. Anna in 1909, the architect G.J. Jacobs who designed the St. Jozef in 1933 and the LKSVD architects who designed the extension of the St. Anna in 1999/2000. These architects and their designs are the most relevant for the current situation in 2017.

St. Jozef 1933 - G.J. Jacobs

There is little known about the architect G.J. Jacobs as a person. It is likely that his firm was based in Zutphen because all of his known designs are found in Zutphen, including the extension and facelift of the St. Jozef School, the renovation of the adjacent Pastorie and the design for the south facade of the Dullaert building in 1953.

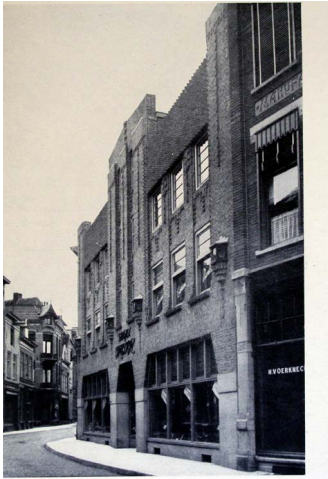
Profile of the architect

G.J. Jacobs, was born on 1 february 1892 and worked as an architect between 1934 and 1956. Some of his designs reflect his appreciation for the Amsterdam School movement. Design of the Turfstraat 21 from 1921 and the Korte Hofstraat 5 from 1932 are good examples of this. The image of the façade of the Turfstraat 21 shows different types of masonry, which is used to ornament the elevation and was a typical characteristic of the Amsterdam school movement. Korte hofstraat 5 is more modest in its ornamentation and could be prescribed to Haagsche School movement, which is a variant of the same style. In this design the masonry is used to give the very small building a wider appearance (Image 16) (amsterdamse-school.nl).

In 1928 G.J. Jacobs redesigned the façade on the Houtstraat 61 in Zutphen, a private house transformed into a shop on ground level. In this case, Jacobs designed the shop facade, while the rest of it is still the original design dating back at the 19th century. At the Spitaalstraat 45 he also made a design for a shop

on ground level and a dwelling above. This design from 1928 shows his appreciation for different uses of masonry, used both horizontally and vertically, while it also has some characteristics of the Art Deco movement (Stenvert, Kolman, Broekhoven, & Olde Meierink, 2000).

In 1953 Jacobs renovated the façade of the Dullaert building in Zutphen and created a completely new façade in the typical style of architecture of the 50s. The side façade kept its original design and as a result the building has now two different faces (see Image 14). This procedure shows many similarities with the complete facelift of the St. Jozef school in 1933.



Arch. G. J. Jacobs: Winkelhuis - Shop - Geschäftshaus - Magasin
1921 - Zutphen

Image 13 Winkelwoningen, Turfstraat 21
(amsterdamse-school.nl, 1929)



Image 14 Dullaert building (mstatema.nl, 2017)



Image 15 St. Jozef school



Image 16 Korte Hofstraat 5
(amsterdamse-school.nl, 2014)

St. Anna 1909 - A. Th. van Elmpt

Bertus Fennema made a book on the oeuvre of A. Th. van Elmpt which helped on the research.

Biography

Antonius Theodores van Elmpt was born on 12 July of 1866 in Groningen as member of a catholic family and being son of Joannes van Elmpt and Derkje Daniels having also one older brother and two younger sisters. His parents had a public house at Hoendiep, Groningen. Van Elmpt got married on 25 november 1897 to his wife Alida Catharina Fenseling, a marriage that was without any children. On 25 december 1953 van Elmpt passed away at the age of 87 after a long career as an architect. (Fennema, B. , 2016).

A catholic architect

At the time of van Elmpt, Dutch society was strictly separated among different religions. Every religion had its own church, educational institutes, shops and even hospitals. The people within this community lived separate and were divided from the rest of the society. The marriage between Antonius and Alida was a marriage between two catholic families which was very common at that time. Evidently each community, like the Catholic one, had its own architects and as so, van Elmpt designed his buildings strictly within the part of the Catholic society.

Education

There is little known about van Elmpt's education; at that time the title of Architect was not protected by any

institution, so everyone could call himself an architect. Bertus Fennema (2016), suspects that van Elmpt must have worked at a building company to get familiar with the practice of building, while he must have followed some education to become an Architect. However, Fennema did not find any evidence in the archives to support these assumptions. We do know that van Elmpt was a tutor at the academy of Minerva in 1920s and that he also gave lessons on design and production of stained glass.

Career

It is known that he established his own firm in 1894, at the age of 28 and that some of his first designs are national monuments and still present nowadays. Figure 18 and 19 show an example of his early work, a pharmacy with a dwelling from 1895. It shows historicism that was typical for that time and which is also visible in the façade of St. Anna. Van Elmpt, as being catholic, referred through historicism to Gothic Architecture, as it was prevalent within the Catholic community in those days. But van Elmpt also incorporated some Art nouveau elements, which the national monument society calls Transitional Architecture. A style that is in between the historicism of the 19th century and modern movement of the 20th century. It is a style that combines the classical styles with Art Nouveau, Jugendstil and the English Chalet style. His early works, including St. Anna could clearly be regarded as good examples of this practice (Fennema, B. , 2016).

Architecture of Catholicism

As part of the Catholic community many of the designs of van Elmpt are related to Catholic institutes or religious structures, since as it is already mentioned, each Catholic community had its own churches, schools, shops and hospitals. This Catholic community had been oppressed for many centuries in the Netherlands. However after the French occupation at the end of the 18th century they were finally allowed to express their religion publicly. Suddenly they could build churches and other buildings according to their own expression; so, they were looking for a way to do this. In their quest for an appropriate style they turned to the Gothic period, the blooming age of Catholicism in history for inspiration. The designs of van Elmpt reflect this Neo-Gothicism in the verticality of the façade and the constantly returning symbolism of the Three Holy Elements of Christianity (The Father, Son and the Holy Spirit). We can also find characteristics of Neo-Renaissance or Flemish Renaissance in the stepped gable and the false arches, expressions which can also be found in the design of St. Anna school (Fennema, B. , 2016).



Image 17 Portrait of A. Th. van Elmpt (Fennema, B. ,2016)



Image 18 Pharmacy and dwelling (Fennema, B. ,2016)

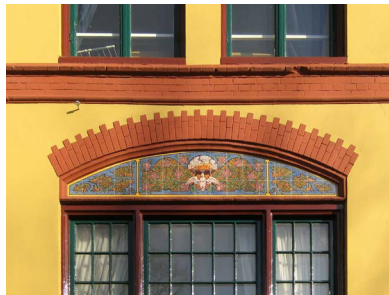


Image 19 Pharmacy and dwelling, detail on the facade (Fennema, B. ,2016)



Image 20 St. Anna with the extension of LKSVDD (Own Image)

St. Anna 1999 - LKSVDD Architects

About the firm

The architects of the new extension of St. Anna school is a practice based in Enschede, led by two senior architects and directors, Hans van den Dobbelsteen and Hein Kappelhoff. They specialize in education, work, sport projects, while they focus on reuse and sustainability in the built environment. The reference projects shown below show the transformation of a school into an office (See), a church into a school (See) and the renovation of an old school.(See) The firm was originally established in 1948 by Leijh Kappelhoff and Seckel van den Dobbelsteen, presumably the fathers of the current directors. It now occupies 45 employees and their designs are mostly found in the area called Twente. The extension of St. Annaschool fits the profile of the reuse of existing buildings, their specialization in education and their main field of designing.

Hans van den Dobbelsteen

Van den Dobbelsteen studied architecture at the Technical University of Eindhoven from 1978 to 1985. He worked at several firms before joining LKSVDD in January 1999. As member of this firm he is in command of the design and the general activities of the office. Besides his own work he is a member of the Dutch Society of Architecture called BNA and he has had a seat in several commissions.

Hein Kappelhoff

Kappelhoff studied Architecture at the Technical University of Eindhoven from 1969 to 1975. He owned his own architecture firm from 1975 to 1995 called Hein Kappelhoff Nieuwleusen architects which specialized in private owned dwellings. During this period he also worked in several other architecture firms. In 1996 he became director and architect at LKSVDD. (LKSVDD.nl, 2017)



Image 21 St. Anna school with the new extension (Own Photo)



Image 22 Heilige Hartkerk, Hengelo (lksvdd.nl, 2017)



Image 23 Sint Jan School, Hengelo (lksvdd.nl, 2017)



Image 24 Heilige Hartkerk, Hengelo (lksvdd.nl, 2017)



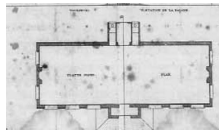
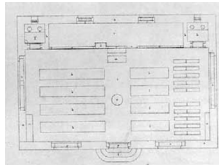
Image 25 Gymnasium, Zwolle (lksvdd.nl, 2017)

Education in the Netherlands



Middle Ages

Classes are given in sheds, dwellings and warehouses.

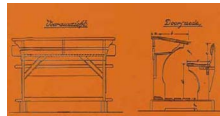


1800

First special building for schools. Big rooms with 3 classes together (school hall). Those schools were sober, only the entrance contained ornaments.

1806

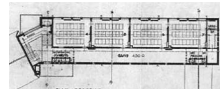
First law; classical teaching.



1820

Law; enough light intensity, correct heights and good furniture.

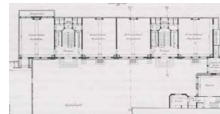
You can recognize the schoolbuildings: elongated floorplan, slide and tube windows and a high building layer.



1857

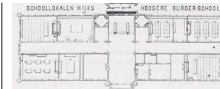
Law; education contains six different subjects. Classrooms necessary, connected with a corridor. Beginning of the corridor schools.

The classrooms were located at the front side, with a corridor at the back.



1857

Besides corridor schools, they also designed the portico schools. Two classrooms connected with a portico.



1863

Law; higher education.

1878

Law; grants for school, this results in big growth of schoolbuildings. The law did not say anything about architectural design. Neo styles were often used. Only the rich schools contained ornaments, the poor schools were sober.

1880

Bouwbesluit; requirements of a school with maximum students and a good ratio between glass and square meters floor.

The development of schools is often related to the development of the education system. The education system in the Netherlands has a long history. The figure shows the timeline of the development of the education system in the Netherlands.

Leerplichtwet

The educational law from 1901 made it obligatory for children from the age of 7 till 13 to go to school. This influenced the growth of the schools and was probably

the reason why the St. Anna was built and the St. Jozef was expanded.

Mamoetwet

The Mamoetwet from 1968 made education obligatory till the age of 18. This resulted again in more need for schools and bigger schools. Another important aspect of this law is the democratization; this could be the reason why the separating wall of the St. Anna was removed, but this is an educated guess.



1901

Law; obligatory education for people at the age of 7 till 13. This resulted in a growing need of schools. After school people started working immediatly.



1902

Cornerschool in Utrecht; a time it was common the built corner schools. Still with symmatic floorplans like the corridor schools. Education and aesthetics became important in the early twentieth century.

1909

First lyceum; high school education for the higher levels (HBS and gymnasium).



1920

Law; obligatory education for people at the age of 7 till 13. This resulted in a growing need of schools. After school people started working immediatly. Schools were designed in Jugenstil, Amsterdamse school and Haagse school. The floorplan was still symmatic and traditional. Floorplans had were no longer rectangular but got a L-, V-, U-, or T-shape. Entrances, staircases and gymnastic rooms were emphasized. Schools became an important urban element. Through the rise of preventive mendice there was attention for light, air and hychiene. Windows always had to be at the left side of the student, because of right handed writing.

1926

Dalton education; independent education, freedom, taking your own responsibility, collaboration (learning form each other).

1945

Big need for schools after WOII because of the babyboom a higher cultural standard and the increasing need of skilled workers. Many temporary or semi-temporary schools with simple floorplans and cheap building constructions were built, building dwellings was priority number one. There was a big material shortage. It was nog allowed to built gymnastic buildings.

1950

Law; obligatory education for people at the age of 13 till 15.

1950

Furniture; more flexible, individual chairs and tables. Community idea; a central space for activities (cultural centre). From passive education to active education after the war, different class rooms for craftsmanship and cooperation. Fences around a school disappeared and replaced by grass and trees. Schools became a community centre so mostly located close to a church. Art; 1% subsidy can be used for decoration: mosaic and stained glass.



1951

Expiriments; H-type, halltype, pavilion school

1960

Segmented education till 1960; Protestants, Catholics, Socialists and Liberals.

1960

Prefabrication; cheaper and faster. Class rooms; changeability, openness, overlap and multifunctional use became key keywords. Large classrooms, outdoor playgrounds (patios) and seperate entrances for younger and older children.

1968

Mammoetwet; obligatory education for people at the age of 15 till 18 and democratization in education. Different levels in one building, students can easily swich to a higher or lower level.

1970

Due the growing need of differentiated spaces and a good internal communication and flexibility more compact shapes became popular. They start using shed roofs and roof lights.

1984

Computer; first plans to introduce ICT in education.

1992

Digital blackboards; start producing by a Canadian company.

1993

Law basic formation; education programm first year high school.

1998

Subject packages replaced by profiles.

1999

Formation VMBO out of mavo and lbo.

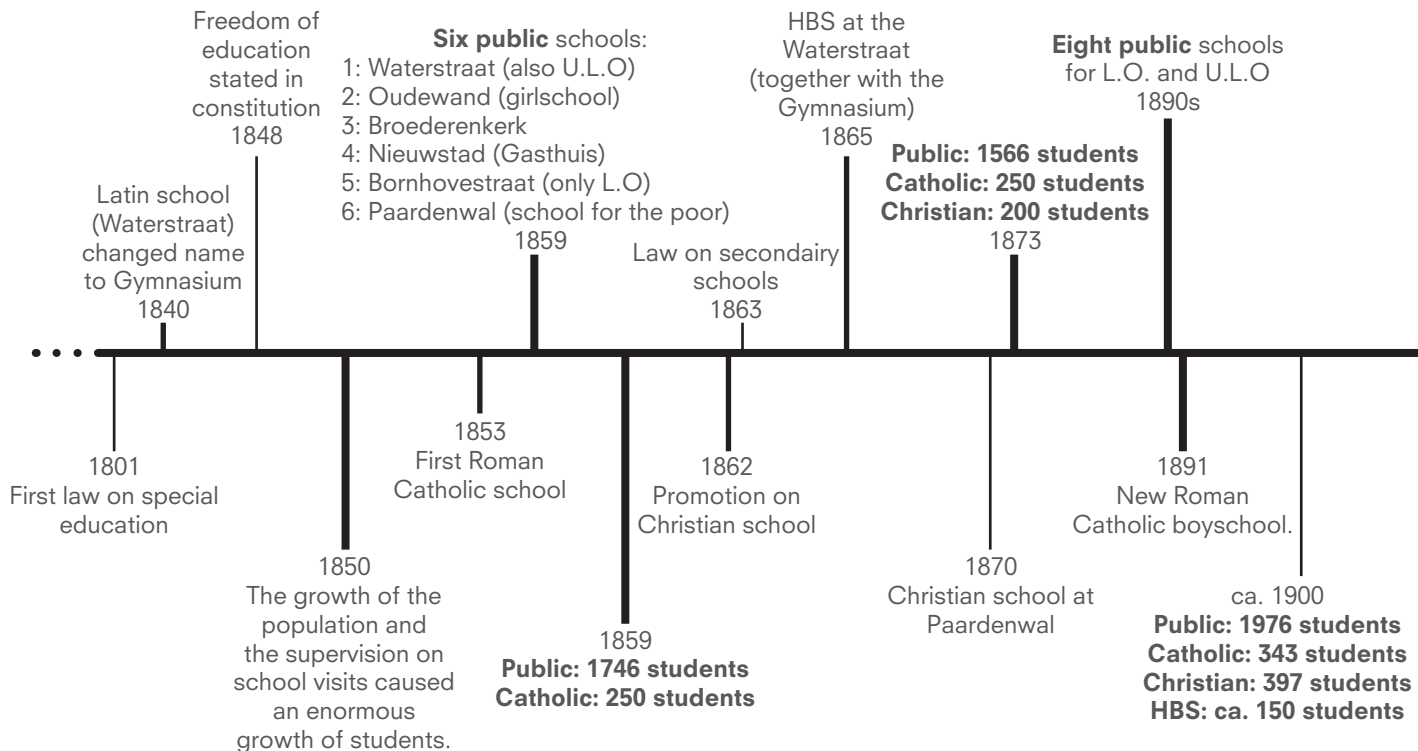
2013

Steve Jobsschools; students and teachers using tablets.

Education in Zutphen

After the downfall of the industrial policy the city of Zutphen had to redevelop their policy. They quickly came to mind that the quality of education was one of the assest Zutphen. A healthy and nice living environment and a huge variety of teaching methods could lure people in to live in Zutphen. (Toekomst en uitbreiding van Zutphen, 1917)

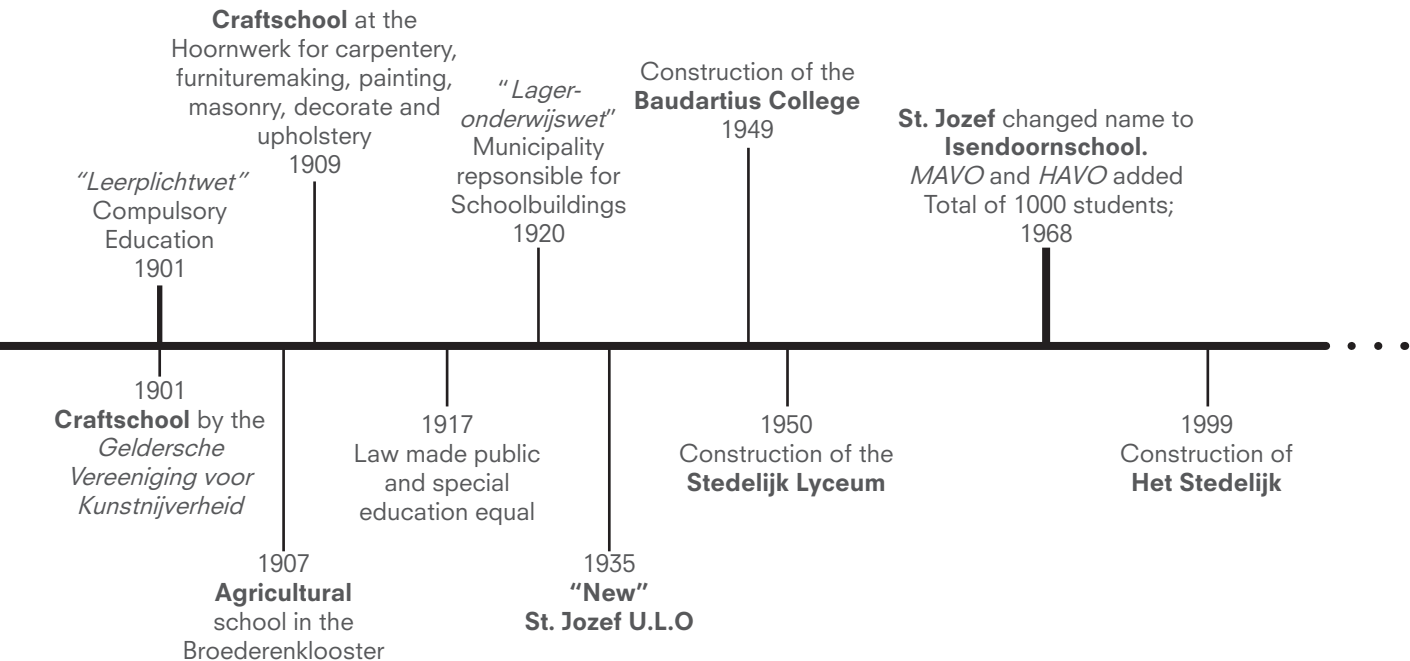
The city had a Latin School, which changed its name to *Gymnasium* in 1840. The primary education (L.O.) and the extensive primary education (U.L.O.) were more important for Zutphen. There were French schools, drawingschools, special education and parish schools. Especially the parish schools of the Roman Catholic community had a huge importance for Zutphen (Frijhoff et al. 1989, p.163).



The big demand for vocational education resulted in the growth of secondary education. This is why in the beginning of the twentieth century a lot of Craftschoools were erected. The Agricultural school had a huge role for the region, attracting students from places all around Zutphen (Frijhoff et al. 1989, p.164).

Mid-twentieth century the children of the bourgeoisie had to be prepared for a managing position in the society. This resulted in the growth of the Gymnasium and the HBS.

Noticable is the influence of the catholic and christian schools for the area. The decrease of students for the public schools at 1873 shows this influence (Laansma, S. 1980).

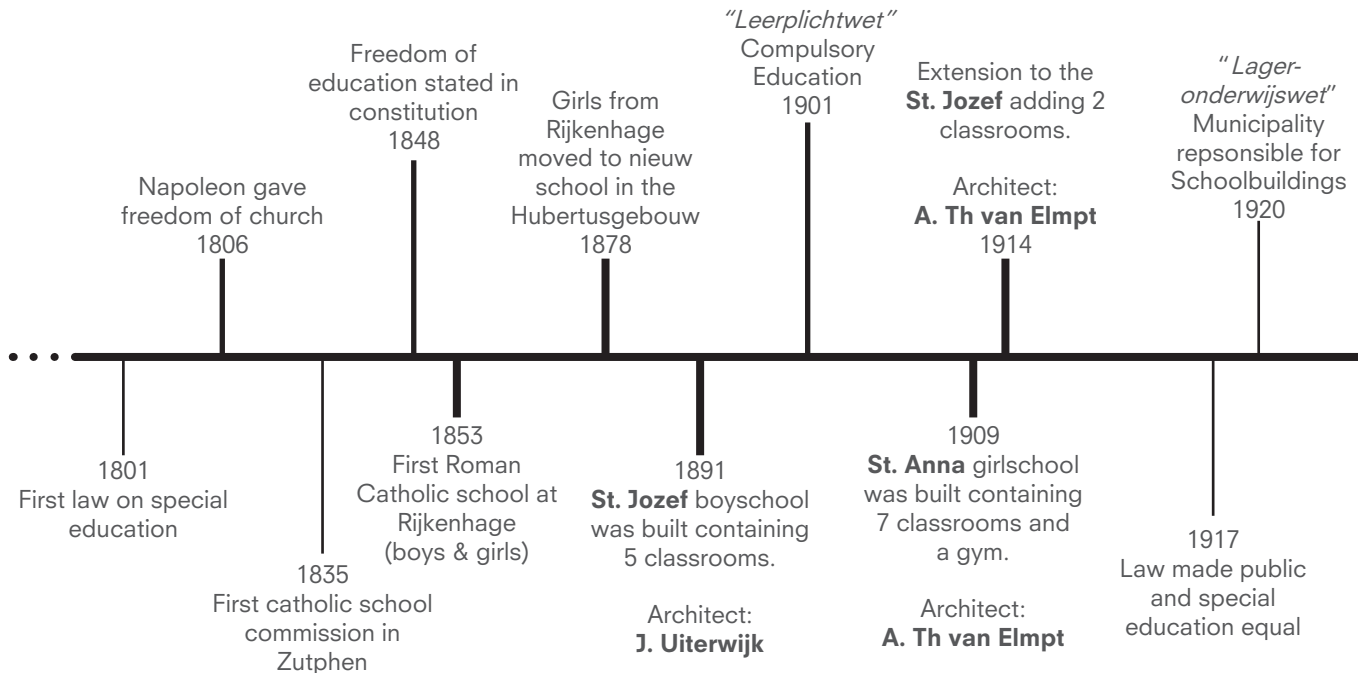


Roman Catholic education in Zutphen

Arrears had to be overtaken after the two centuries of suppression of the Catholic community. When the Catholics got their church back in the Nieuwstad they steadily started erecting their own social and cultural institutes. Schools, Institutes to take care of the ill and the poor and a Hospital were built. This network of buildings later formed the Klein Vaticaan (Woldring, J, 2004).

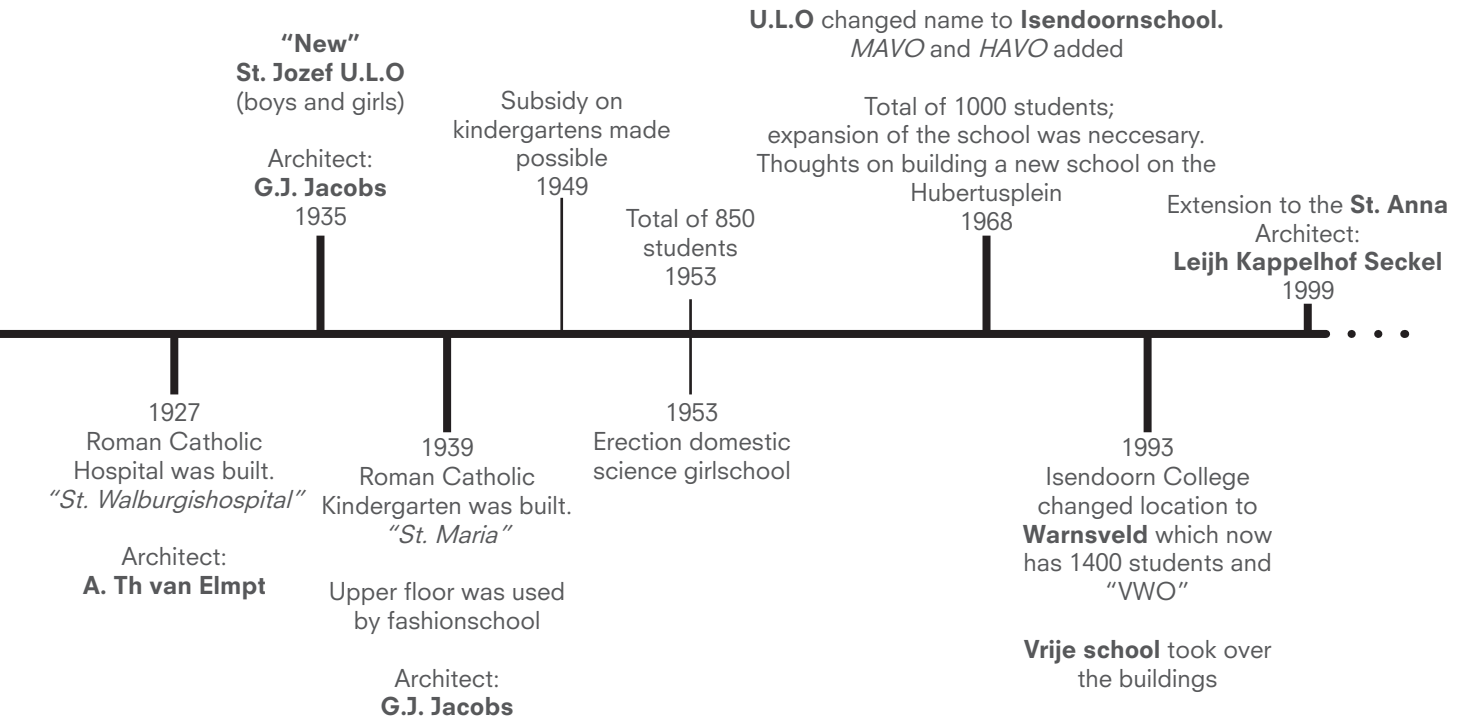
The first educational law in 1801 made it possible

for special schools to be erected, always with the permission of the municipality. In 1835 the first Catholic school commission was erected and in 1853 the first Roman Catholic school was built at the Rijkeshage. This was a school for boys and girls. The school kept on growing and because of this the girls had to move to the Hubertusgebouw in 1878. Later in 1891 the boys moved from the Rijkeshage to the newly built St. Jozef, which contained five classrooms; in 1914, the school was ex-



tended with two extra classrooms. In 1909 the St. Anna school was built, containing seven classrooms and a gym; thus, the girls could move from the Hubertusgebouw. In 1935 the St. Jozef was upgraded with an extra level on top, which added five classrooms to the original building. After the World War the schools kept on growing, which resulted in a lack of classrooms. In 1968 the demand was so high that education had to be facilitated at 9 different locations. In 1993 the Roman Catholic schools left the

buildings and moved to Warnsveld (Woldring, J, 2004). At this time the Vrije School moved into the buildings and in 1999 they added an extension to the St. Anna.



Roman Catholic Education in Zutphen



Image 28 *The St. Jozef U.L.O.*

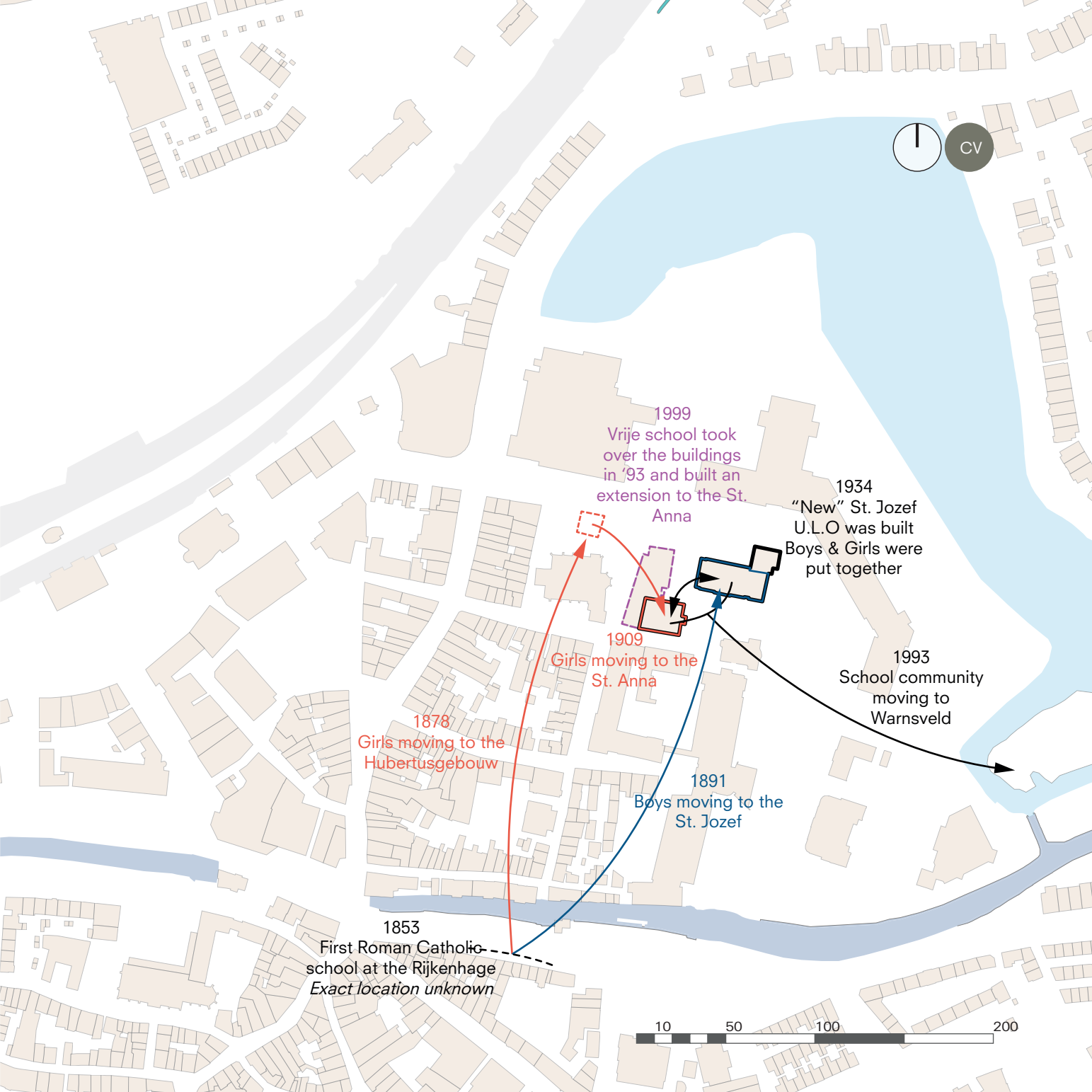


Image 26 *Top: view on the tengnagelshoek with on the left the St. Anna*

Image 27 *Bottom: view on the schools of the Klein Vaticaankerk with on left the St. Jozef and on the right the St. Anna*



Image 29 *The hubertusgebouw*



CV

1999
Vrije school took
over the buildings
in '93 and built an
extension to the St.
Anna

1934
"New" St. Jozef
U.L.O was built
Boys & Girls were
put together

1993
School community
moving to
Warnsveld

1909
Girls moving to the
St. Anna

1878
Girls moving to the
Hubertusgebouw

1891
Boys moving to the
St. Jozef

1853
First Roman Catholic
school at the Rijkenhage
Exact location unknown



Roman Catholics in Zutphen

Klein Vaticaan

The development of the Klein Vaticaan started in the 19th century. First there was only the Nieuwstadskerk, around 1830 the predecessor of the St. Elisabethgesticht was built (not visible in the diagrams). Because of complaints by the caregivers and the residents the gesticht was reorganised in 1853. In 1855 the *Zusters van Liefde uit Tilburg* took care of the institute, they stayed there for 130 years. In 1868 and 1884 the St. Elisabethgesticht was further extended. In 1991 Huize Elisabeth was replaced by a more modern sheltered housing and in 1998 the building was sold to the housing corporation "Ons Huis"

In 1842 the pastorie was built which remained in function till 1993.

In 1891 the St. Jozef boyschool was constructed which was extended in 1914. In 1934 it was renovated by adding an extra floor on the building. The school became an U.L.O for boys and girls.

In 1909 the St Anna girlschool was built. This school had two entrances one for the rich and one for the poor classes. The pastorie, the St. Jozef and the St. Anna were sold by the Catholic community in 1993 to the Vrije School.

The only building which is still part of the Catholic community besides from the church is the St. Mariaschool. Originally built in 1938 as a kindergarten. The rooms in the building are to be hired and is now occupied by the Odensehuis foundation.

The Roman Catholic community is now almost back to the situation how it started in 1823.



Figure 15 Roman Catholic buildings - 1823



Figure 16 Roman Catholic buildings - 1938



Figure 17 *Roman Catholic buildings - 1878*



Figure 18 *Roman Catholic buildings - 1900*



Figure 19 *Roman Catholic buildings - 1950*



Figure 20 *Roman Catholic buildings - 2017*



II. Understanding the Values

The area of the analysis and its buildings tell stories about the past and represent the ideas of a whole community (Roman Catholic); consequently, they are carriers of cultural values. Defining which elements hold cultural values and under what circumstances is a challenging process, since the values are not always quantitative and tangible. However, this step is crucial for the design process and forms a reasonable basis for dialogue and argumentation.

In order to understand which stories are important and take a position on what elements are valuable and, thus, require safeguarding for the future, we used a tool called “Cultural Value Matrix”. This tool combines Riegl’s theory on cultural values (Riegl, 1996) and Brand’s theory on the building layers (Brand, 1994). The values and layers chosen for the matrix derived from the analysis and our own interpretation of both theories.

The cultural values of Riegl are shown on the horizontal axis, while the building layers of Brand are shown on the vertical axis (see Figure 21). On the values’ axis the social, spiritual and aesthetic values are added; these three added values are important aspects of the history of the site and its buildings. Moreover, alongside with the six S’s of Brand (see Image 30) the layers “Surroundings” and “Spirit of the place” are added. The former is added since it is important that the site of the analysis and its buildings are seen in their larger urban context. The addition of the latter was based

on the idea of expressing our own ideas and feelings, generated from the way we experience the site and its buildings.

Further explanation as regards our own definition of values will follow.

After filling in the matrix, a colour code was used in order to indicate the hierarchy of the values (red=high value, orange=positive value, green=indifferent value) (see Figure 23).

The filled-in Cultural value matrix can be found in the Appendix.

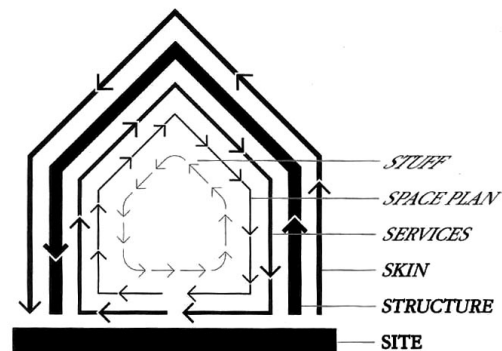


Image 30 The six S's theory of Brand, showing the layers of a building (Brand, 1994, p. 13)

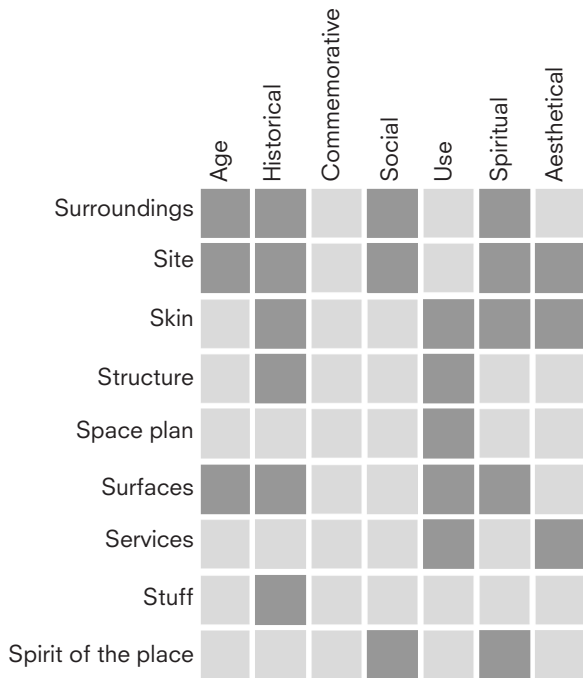


Figure 22 *Filling in the matrix*

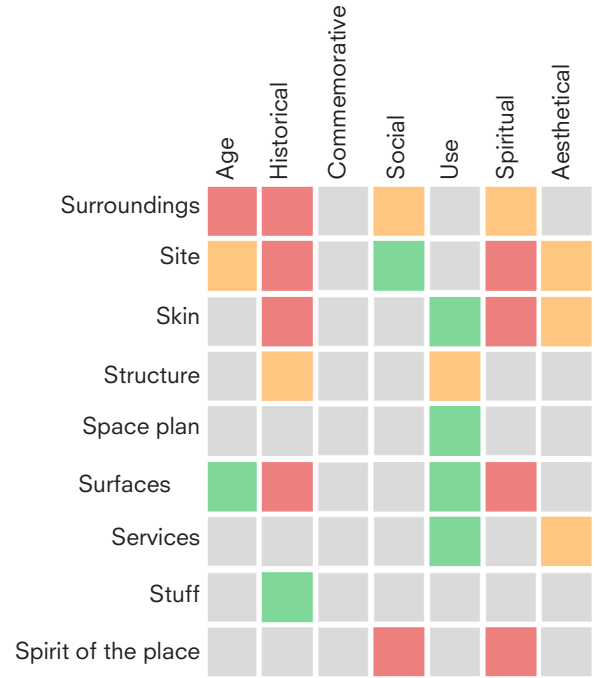


Figure 23 *Hierarchy in the matrix (red=high, orange=positive, green=indifferent)*

Age Value

Something that is old and still there, which either shows decay or has traces of use or patina. In other words, age value is the visual evidence of a building's lifecycle.

Historical Value

Something that:

- shows the craftsmanship (of an era)
- serves educational stimulation
- tells the story of the development of the city
- represents something of architectural, urban or construction history

Commemorative Value

Something that is intended to keep the past alive for present and future generations. This value, as seen in the filled-in matrix (See Appendix), was not filled in. According to the research and the site visits there are no elements or traces found in the area, which could commemorate an significant event.

Social Value

Something that provides social cohesion and represents the identity and the ideas of a whole community.

Use Value

Something that is still in function and maintained and fulfills the current demands for its function.
important for a religious community

Spiritual Value

Something that is related to a religious context and is important for a religious community.

Aesthetical Value

Something that stimulates the senses and the intellect, based on subjective criteria and observation.



Surroundings

III. Surroundings

In this part of the analysis the focus lies on the “Surroundings”, in other words the larger urban context of Klein Vaticaan. The “Surroundings”, as we defined the term, refers to the geographical setting in which Klein Vaticaan was developed and includes the adjacent urban fabric and structures of Nieuwstad, such as the park on the north side and the Baudartius and Stedelijk schools, which formed the new borders of the area.

Studying the larger urban context of Klein Vaticaan is important for the analysis, since it contributes to a better understanding of the conditions under which the development of Klein Vaticaan took place and leads to a comprehensive view of the values that the site and its buildings hold.

Part of the surroundings’ analysis is understanding their relevance with the historical development of Zutphen. The chronological evolution of the surroundings is also important in order to reach conclusions as regards the values that it holds. Going back in time and highlighting the most significant events which influenced the character and morphology of the surroundings is crucial for taking a position. As a result, the chronomapping of the surroundings has been used as a tool, in order to follow its gradual development through time.

Next to the historical development of Zutphen and the chronomapping of the surroundings other themes, such as the infrastructure, the experience of the streets,

functions and activities, are analysed in order to have a more complete view on the area.

At this point it is important to highlight the fact that the choice of 1823 as a starting point of the analysis is based both on the first cadastral drawing of that era and on the fact that 1823 is defined as the beginning of the most significant developments.

Image 31 *Aerial Photograph Nieuwstad (regionaalarchiefzutphen.nl)*

History of Zutphen

This chapter is important for understanding the relevance of the surroundings with the historical development of Zutphen. The maps at the right page highlight the most significant changes in the development of Zutphen; they are based on the historical documents found in the archive of Zutphen.

Zutphen developed near a noble castle in a strategic position next to IJssel. The first city wall was around the, as we know today, old city centre and was built in 900. At that time Nieuwstad did not exist. This wall was extended twice till 1200. At the start of the 12th century the city of Zutphen began to grow and became a trade centre. This was possible because of its location next to the IJssel. Consequently, Zutphen became a booming town and in the 13th century the city was extended to the north side and, thus, Nieuwstad was created. Nieuwstad was a separate city with its own fortification attached to the city Zutphen. In 1312 Nieuwstad got its city rights and became part of Zutphen. Afterwards, the city extended to the east side. Till the 19th century the fortification developed further. Finally, in 1874 the time of the fortress ended and the wall could be removed. From that era on, the wall ceased to be the border. Instead, the new free-standing structures that were introduced formed the new borders, changing drastically the morphology of the urban fabric.



Image 32 National, regional, local scale (Analysis of Lutherse hofje and St. Elisabethgesticht, 2017)

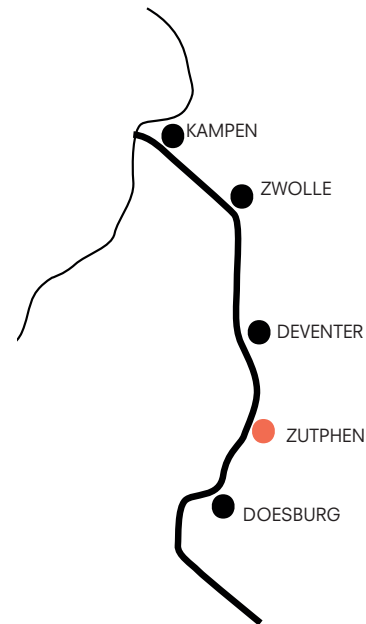


Figure 24 Hanseatic cities next to the IJssel

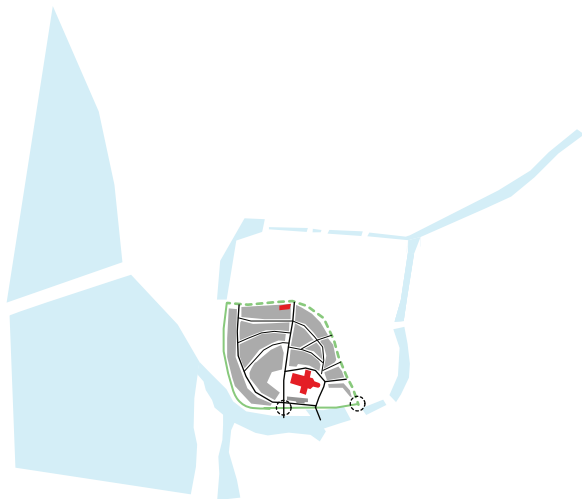


Figure 25 *Development of Zutphen - ca. 1100*

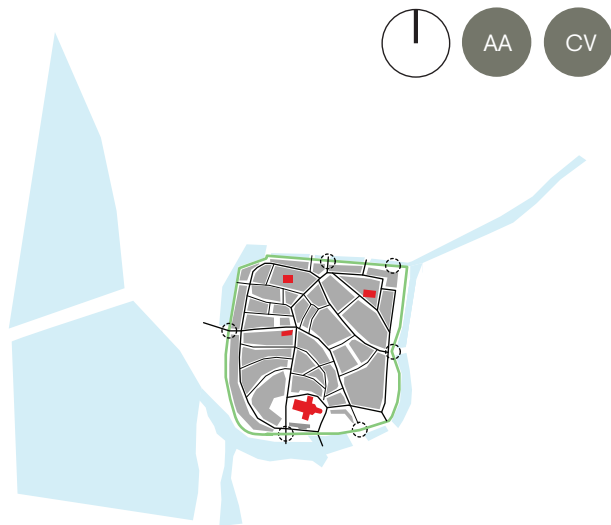


Figure 26 *Development of Zutphen - ca. 1150*



Figure 27 *Foudation of the Nieuwstad - ca. 1250*

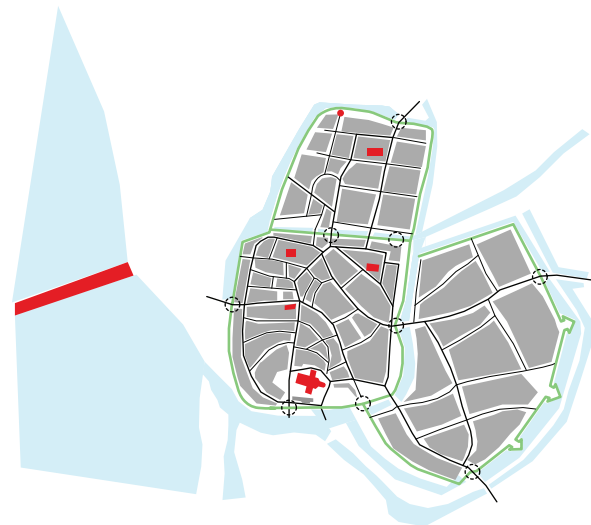


Figure 28 *Development of Zutphen ca. 1400*

Chronomapping - Surroundings

The following diagrams represent the chronological evolution of the surrounding area of Klein Vaticaan. This chronomapping highlights some of the most significant historical changes in the urban fabric, from the beginning of the 19th century till now, and puts the development of the Klein Vaticaan area into perspective. With red colour all the additions are highlighted.

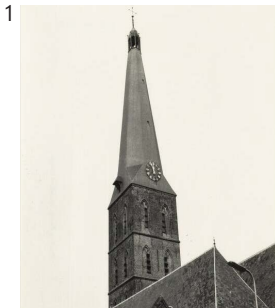
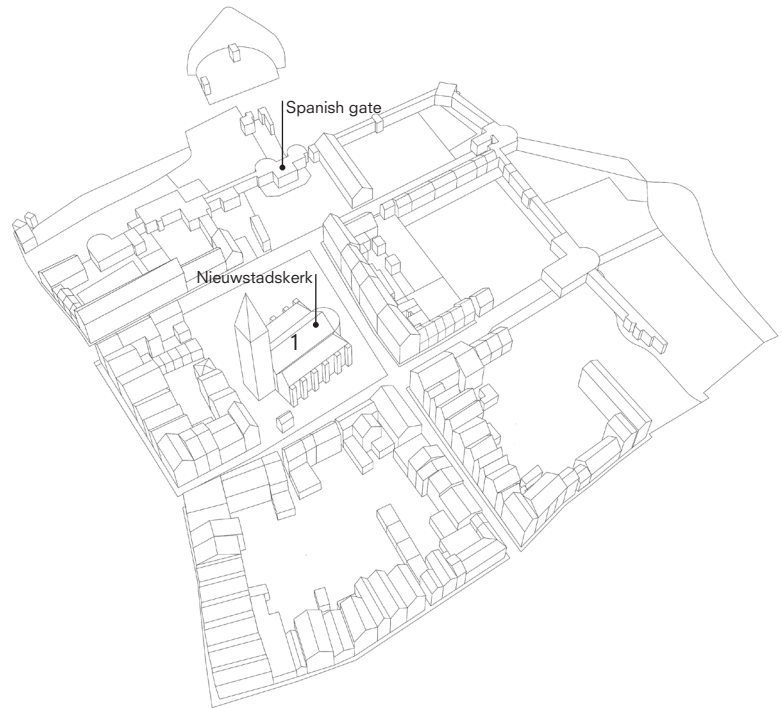


Image 33 *Nieuwstadskerk, 19th century.*



Image 34 Military unit and spanish gate, 19th century.



Image 35 The Hubertusgebouw, 19th century



Image 36 Isendoornstraat's view in 19th century. Part of the military unit can be recognised at the back side of the picture.

Chronomapping - Surroundings

5



Image 37 A small extension was added to Hubertusgebouw, date unknown.

6



Image 38 Hubertusgebouw, the facade facing Nieuwstadskerk.

7



Image 39 St. Jozef school was built in 1891 as a boyschool.





Image 40 Aerial view of Nieuwstad showing the schools of Klein Vaticaen (1940).



Image 41 Dieserstraat (1915). St. Anna school can be partially seen at the right side of the picture.



Image 42 St. Elizabethgesticht was built on the wall (1936).

Chronomapping - Surroundings



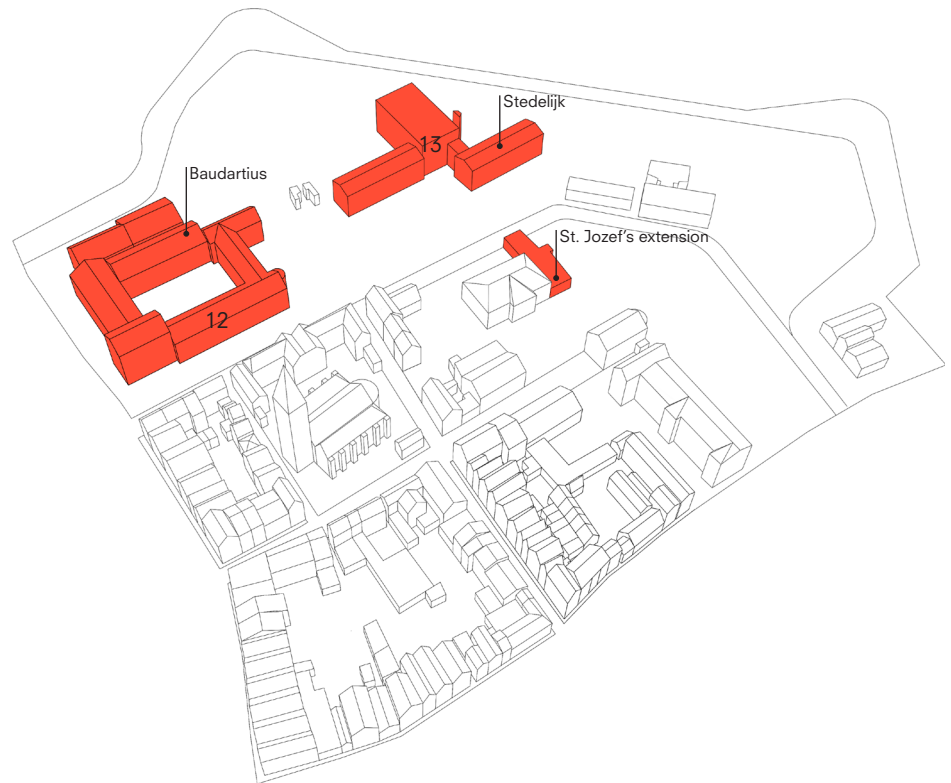
Image 43 Areal view of schools, (1950s).



Image 44 The Baudartius was built in 1950, (1955).



Image 45 The old building of the Stedelijk was built in 1955, (1960).





14



Image 46 The new Stedelijk was built in 1999, (2017)

15



Image 47 St. Anna school's extension was built in 2000, (2017).

16



Image 48 The elderly home was built in 1991, (2017).

Chronomapping - Surroundings

As it became clear from the chronomapping analysis, the core of the surroundings, except for a few transformations and additions during the second half of 19th century, remained more or less the same. On the other hand, the borders were transformed drastically over time, contributing to the heterogenous character of the urban fabric. The latter, as seen on the diagrams, has become more loose and floating towards the borders, while the scale of the added structures is in contrast with the older time layers. As a result, the coherence of the urban fabric is lost.

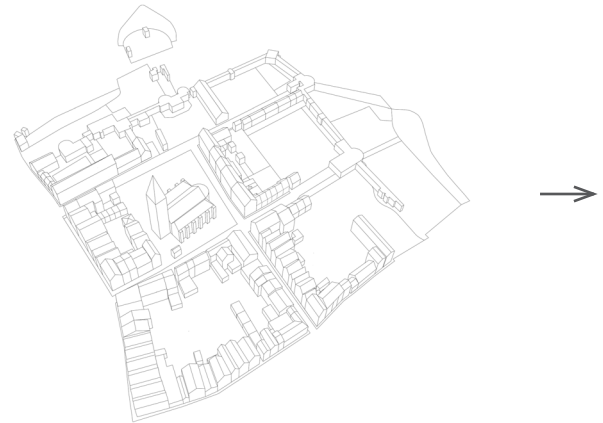


Figure 35 *Development of Nieuwstad - 1823*

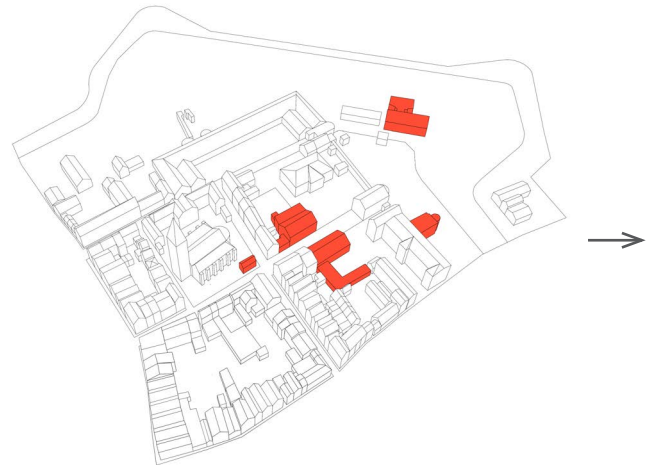


Figure 36 *Development of Nieuwstad - 1938*



Figure 37 *Development of Nieuwstad - 1878*



Figure 38 *Development of Nieuwstad - 1900*

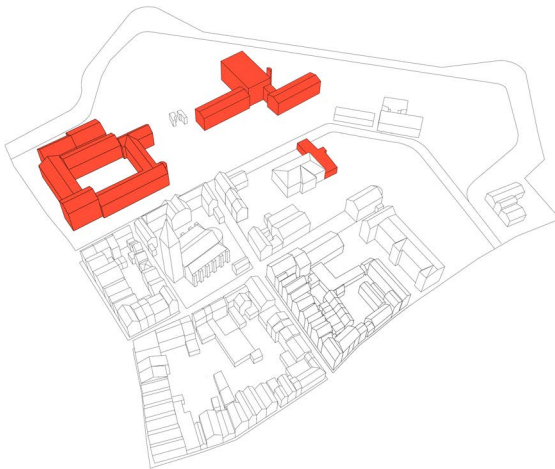


Figure 39 *Development of Nieuwstad - 1950*

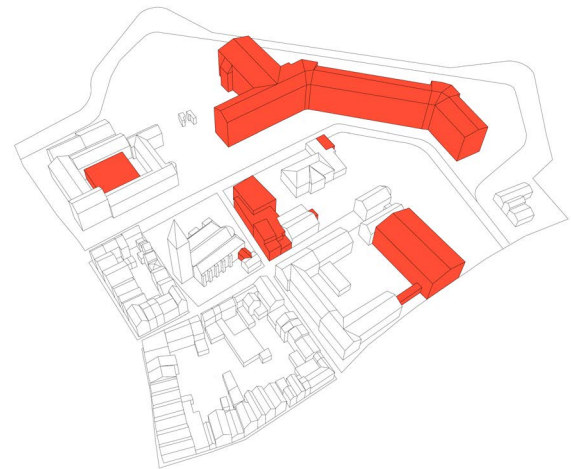


Figure 40 *Development of Nieuwstad - 2017*

Infrastructure

The orthogonal infrastructure of Nieuwstad originates from its relation with the towers of the city wall. It is important to underline that although the development of Nieuwstad changed the borders, the infrastructure remained the same. The only change was after World War II, when the Isendoornastraat was changed to connect with the Rijkshage (see Figure 46).

As regards the focal points of the infrastructure, only three of them still remain. Two of these are close to the Klein Vaticaen; the Spaanse Poort and the Pastorie (see Figure 43).

Within the orthogonal grid structure are the building blocks, where the buildings surround an inner courtyard. These quiet inner spaces are in contrast with the more busy outer space.

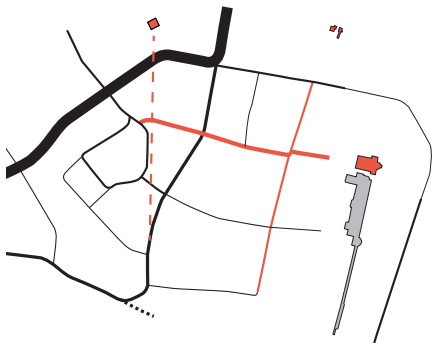


Figure 43 *Relation between streets and the towers*

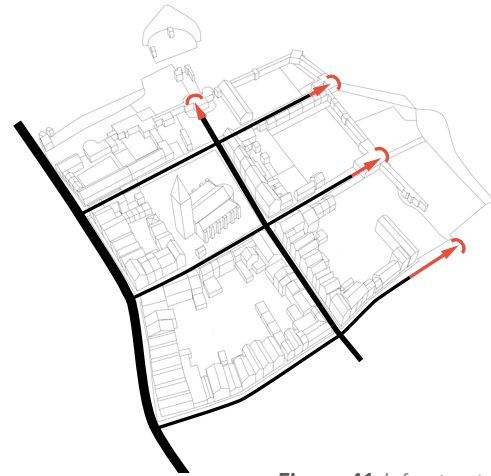


Figure 41 *Infrastructure - 1823*



Figure 42 *Infrastructure - 1938*

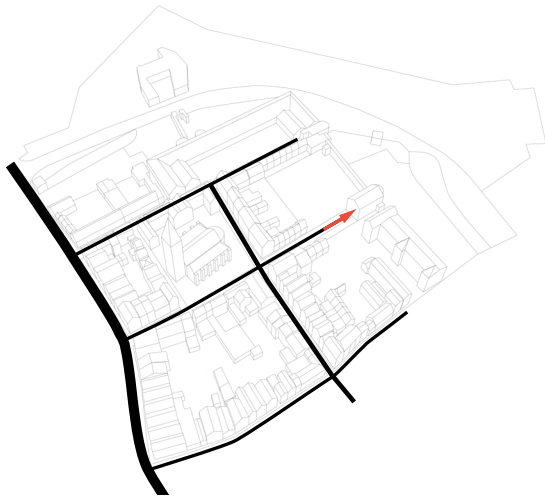


Figure 44 *Infrastructure - 1878*



Figure 45 *Infrastructure - 1900*

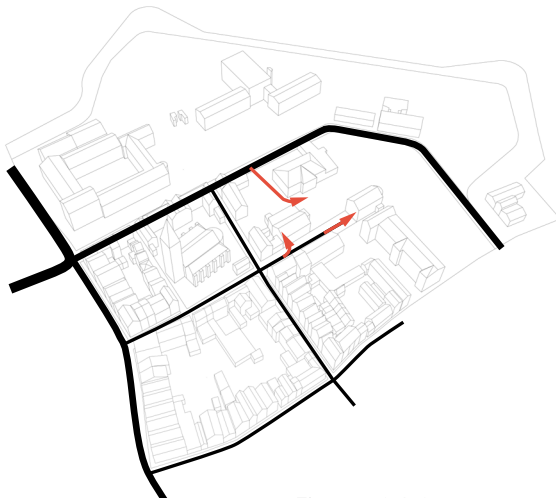


Figure 46 *Infrastructure - 1950*

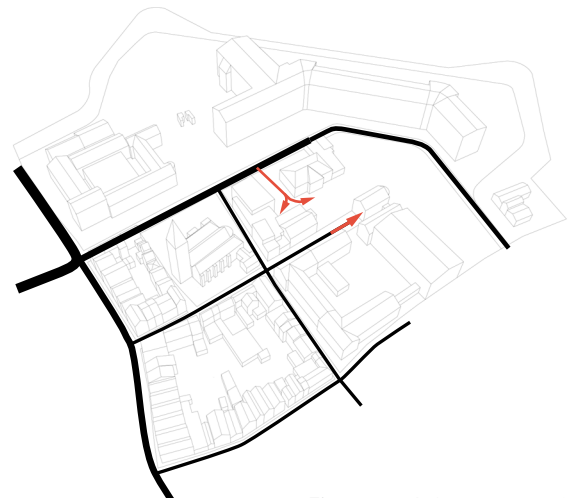


Figure 47 *Infrastructure - 2017*

Experience of the streets

Kevin Lynch

Based on the style of Kevin Lynch which he describes in his book *The image of the city* (1960) some routes through the Nieuwstad are analysed to get a grasp on the experience of the Nieuwstad.

For the experience the two main axes are chosen to be analysed. From the Station to the Isendoornstraat and from the Noorderhaven towards the Pastorie them being the two main access routes towards the Klein Vaticaán

Station - Isendoornstraat

When coming from the station you immediately see the Nieuwstadchurch. Going into the Stationsplein you experience an enclosed area by three story buildings. This enclosed area widens when entering the Isendoornstraat. At the end at the Isendoornstraat this street widens even further.

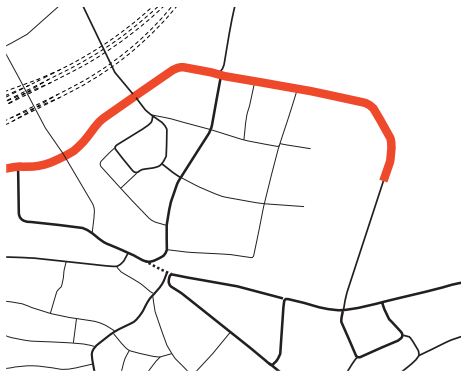


Figure 48 Station - Isendoornstraat



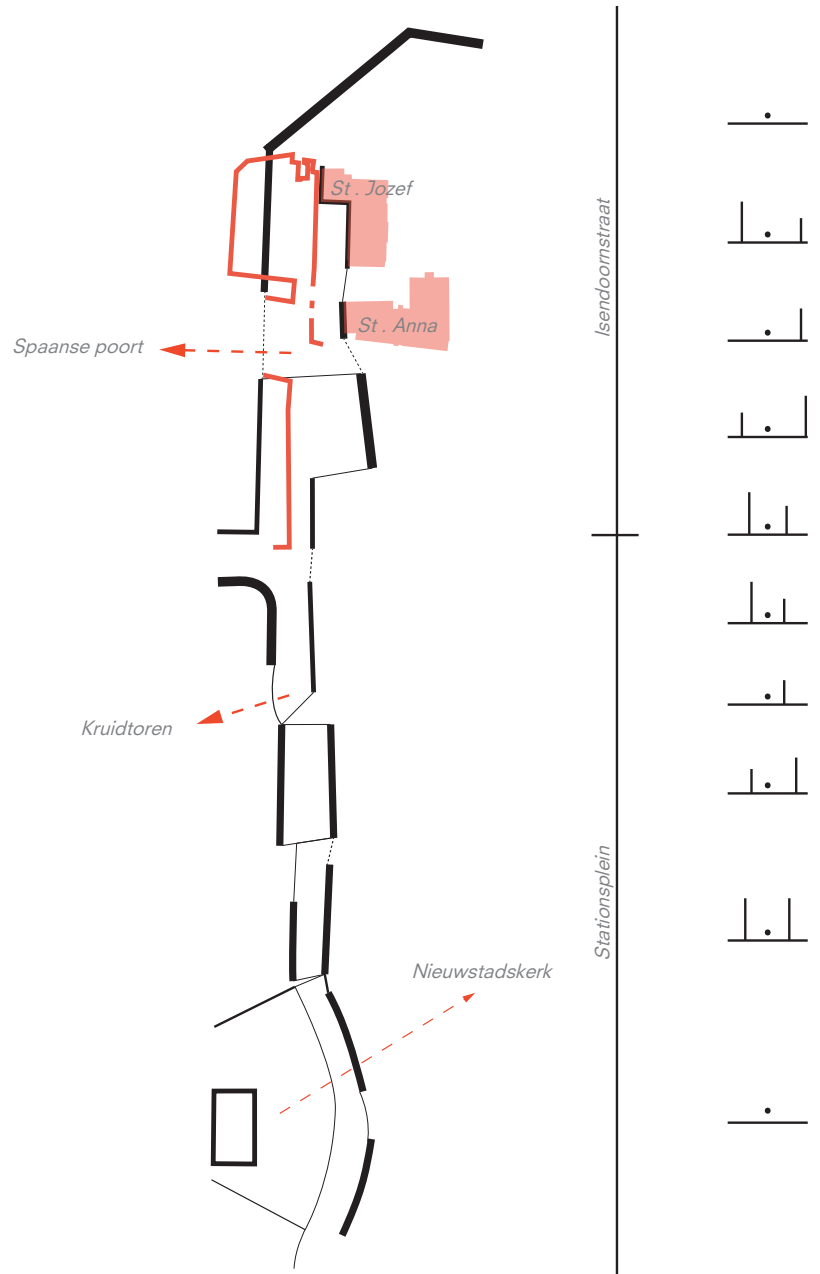
Image 51 Isendoornstraat II (Own Photo)



Image 50 Isendoornstraat (Own Photo)



Image 49 Station square (Own Photo)



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Figure 49 Surroundings - Experience Station - Isendoornstraat

Experience of the streets

Tunnel - Pastorie

When coming from the Noorderhaven, one has to enter the Kostverlorentunnel to go into the Nieuwstad. Before entering the tunnel the Nieuwstadskerk is visible. Coming out of the tunnel the connection with the church is gone resulting in desorientation. Continuing on the Basseroord the view is restored, looking into the Lievevrouwestraat. At the end of this route is the Pastorie which acts as a focal point.

During both experiences the Nieuwstadskerk plays an important role as a focal point. This symbolises its important connection with its surroundings.



Figure 50 *Noorderhaven - Pastorie*



Image 54 *Lievevrouwestraat (Own Photo)*



Image 53 *Norenburgerstraat (Own Photo)*



Image 52 *Kostverlorentunnel (Own Photo)*

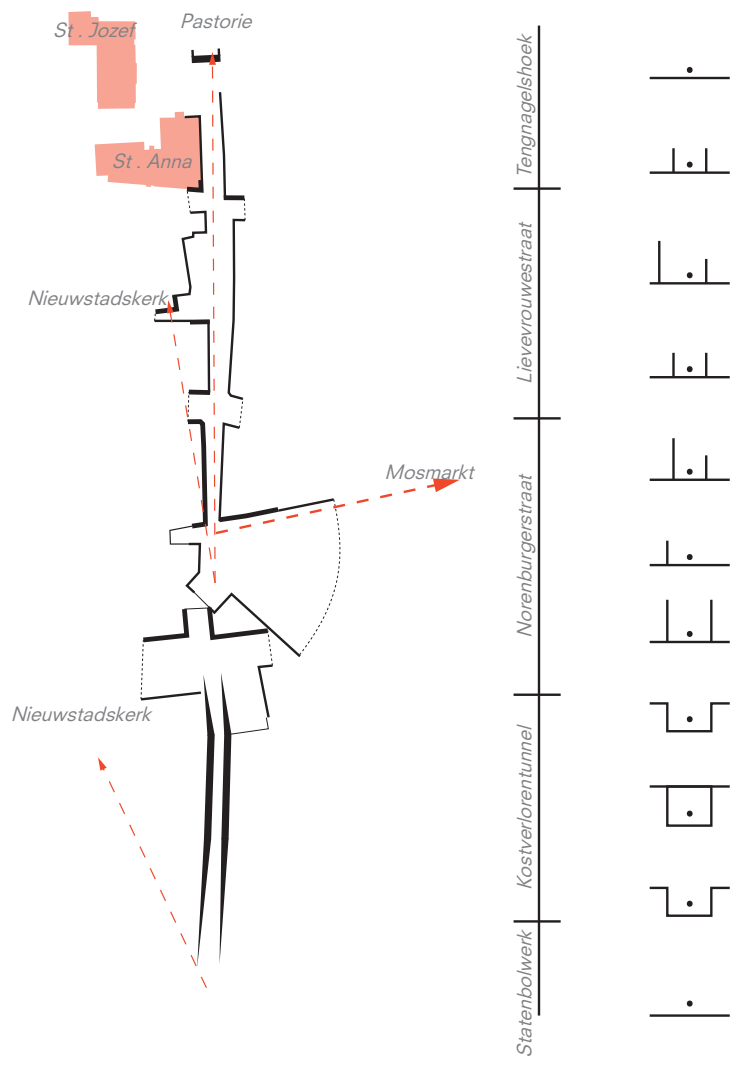


Figure 51 Surroundings - Experience Tunnel - Pastorie

Functions

Surroundings of the Klein Vaticaan

The Nieuwstad has a high variety of functions, but when looking at the immediate surroundings of the Klein Vaticaan this variety is not there. Its functions are mostly for Education. Other functions are Care, Dwellings and the Nieuwstadskerk as a religious building.

Its high use for education results in high use during the day and low use in the evening. To quote a resident from the Nieuwstad: "During the day 4500 people live in the Nieuwstad and during the night only 1500".

Three educational organisations are located in the area. The baudartius with 1545 student, the Stedelijk with 661 students and the Vrije School with 265 students (10000scholen.nl, 2017), which comes to a total of 2471 students. The quote of the resident was a bit exaggerated but it is understandable for the indication of the activity.





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Activities

The diagram shown on the right page illustrates the usage of the surroundings on a typical day of the week. The darker the colour, the more liveable the space.

The full-of-life atmosphere of the schools during the day is in complete contrast with the subdued situation during the evenings and weekends (see Figure 55). As a result, the area of Klein Vaticaan has two totally different characters. The one is vibrant, full of noises and laughs, and the second one is monotonous and deserted, showing signs of abandonment.



Figure 54 *Nieuwstad - Usage of the surroundings Saturday*
(Urban Analysis - Typology, 2017)



Figure 55 *Nieuwstad - Usage of the surroundings Sunday*
(Urban Analysis - Typology, 2017)

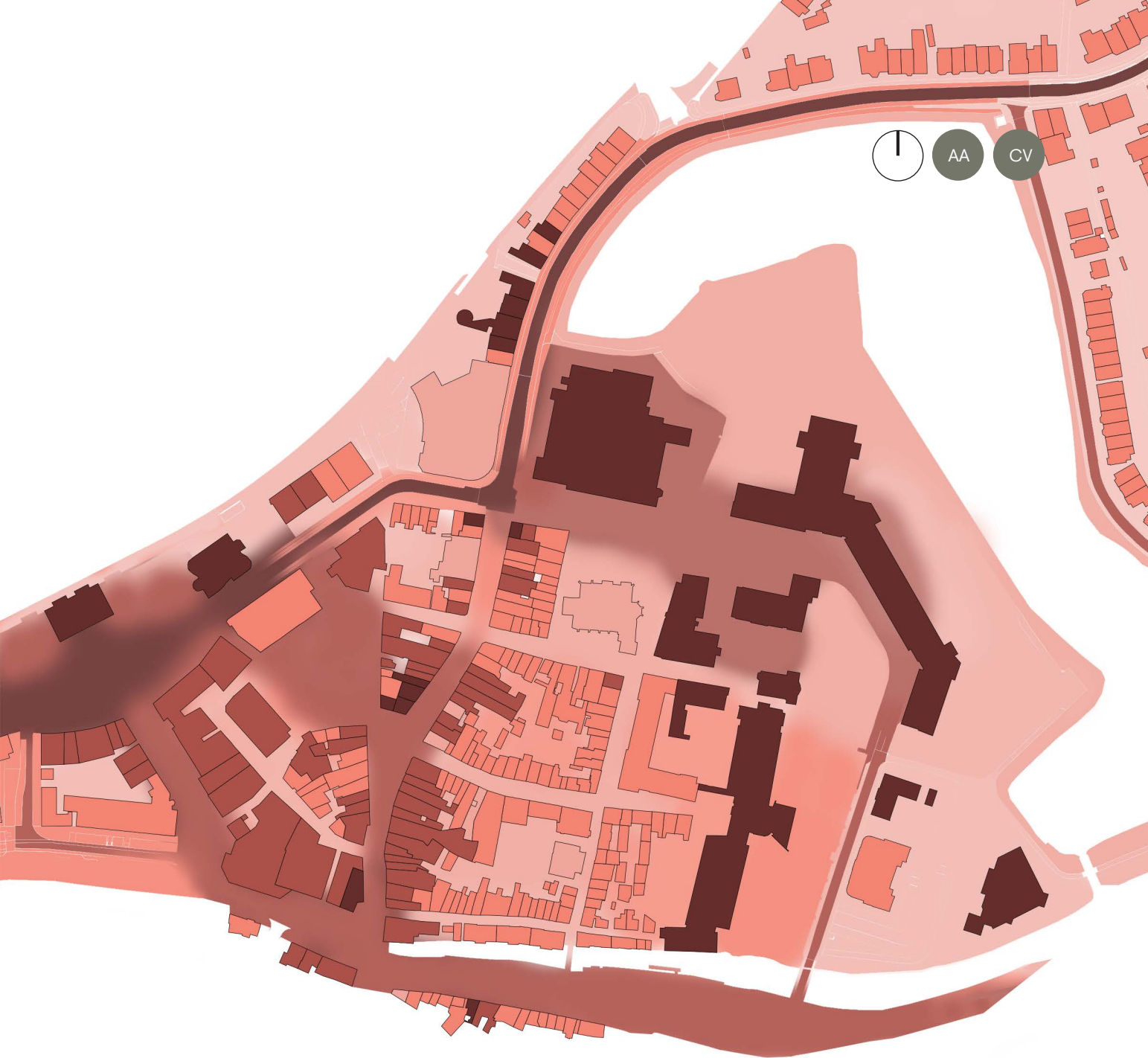


Figure 56 *Nieuwstad - Usage of the surroundings during the week (Urban Analysis - Typology, 2017)*

Conclusions - Surroundings

Architectural analysis

The gradual development of the surroundings in time, as part of the overall evolution of Zutphen, resulted into an heterogeneous and incoherent urban fabric. The removal of the historical city wall led to the introduction of new free-standing structures, which formed a floating space around themselves. These structures form the current borders.

The shift of the borders did not affect the infrastructure, but changed the experience of the streets from introvert and intimate to extrovert and loose.

The functions of the surroundings, merely being educational, affect the aura of the area. Thus, the vibrant and cheerful vibes, during the day, are followed by a monotonous, uncharming and uninviting atmosphere during evenings and weekends.

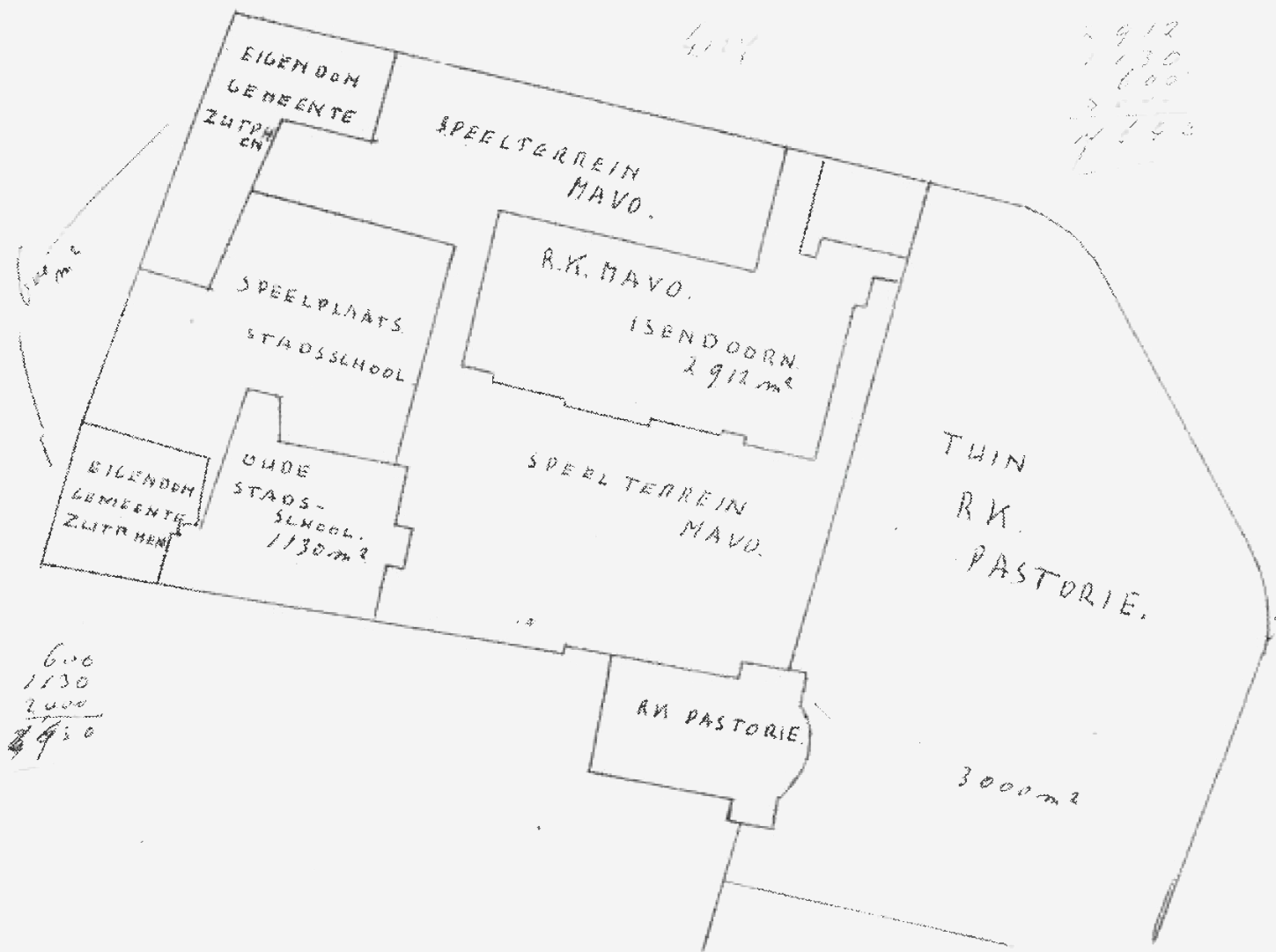
Cultural Value

The remains of the city wall should be preserved as they reflect the old historical time layer. Furthermore, the infrastructural grid structure should be preserved as a tool that creates coherence in the Nieuwstad, by defining the building blocks. As regards the Nieuwstadskerk, it should remain a focal point of the area, as it represents the centre of the Roman Catholic community.

There is the opportunity of integrating the Park and the Grote Gracht into a strategic plan, that could benefit the whole area by creating a more vibrant and inviting place.

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Site

IV. Site

“This is the geographical setting, the urban location, and the legally defined lot, whose boundaries and context outlast generations of ephemeral buildings. “Site is eternal,” Duffy agrees.”

(Brand, 1994, p. 13)

This is how Brand describes the site. In this chapter of the analysis the site will be described, the focus lies on understanding the plot of the buildings through time with its change in boundaries, space and routing. By mapping the characteristics the obligations, opportunities and dilemmas will become clear.

This chapter will start with mapping the development of the site. These maps are based on the kadastral drawings starting from 1878, because this is the last kadastral drawing before the St. Jozef was founded in 1891. The boundaries, the space and the routing will be analysed thereafter.

Site - Development

Development Klein Vaticaán - Schools

Starting at 1878 the area between the houses and the citywall at the end of the Tengnagelshoek was an open area probably used for agriculture. The Roman Catholic community decided to build the St. Jozef in this area with its entrance towards the Tengnagelshoek at the south. In 1909 the St. Anna school was added at the Tengnagelshoek. In 1914 an addition was made to the St. Jozef and in 1933 the school was partly rebuilt. The northern area changed after World War II when the barracks were destroyed. The original border was gone and two new schools were built.

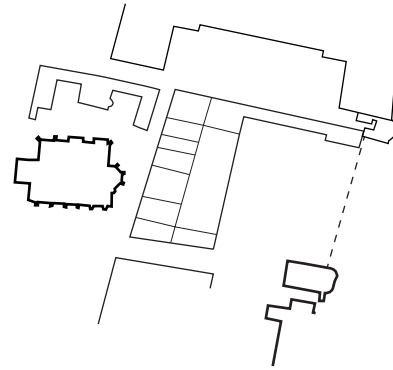


Figure 57 *Klein Vaticaán - Schools - development - 1878*

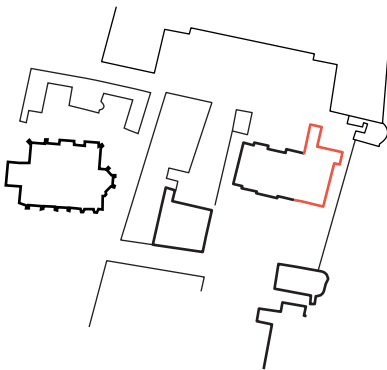


Figure 58 *Klein Vaticaán - Schools - development - 1914*

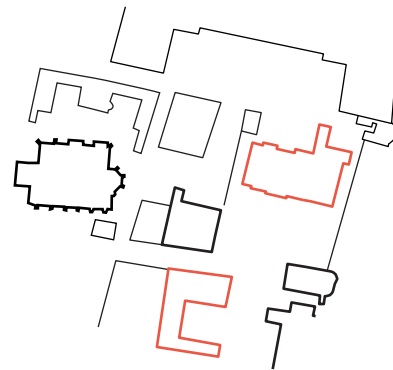


Figure 59 *Klein Vaticaán - Schools - development - 1938*

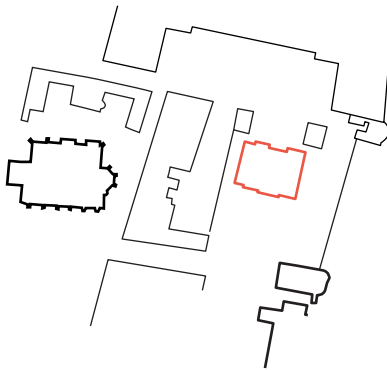


Figure 60 *Klein Vaticaanschools - development - 1900*

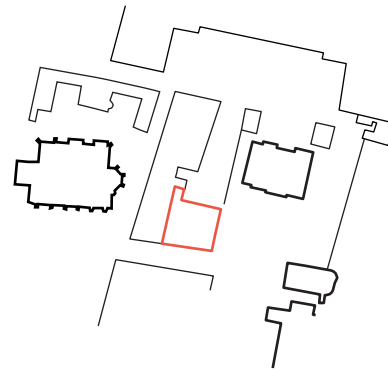


Figure 61 *Klein Vaticaanschools - development - 1909*

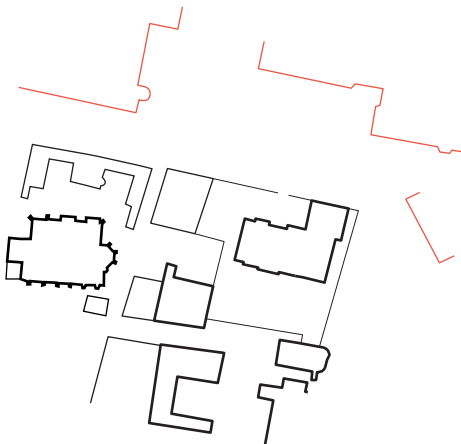


Figure 62 *Klein Vaticaanschools - development - 1950*



Figure 63 *Klein Vaticaanschools - development - 2017*

Site - Border changes

Borders Klein Vaticaán - Schools

With its development came the change in borders. For a long time the city wall to the east and the barracks to the north functioned as the border of the area. This border had a more introvert character; nothing was built outside the wall. The northern area changed after World War II, when the barracks was destroyed. On this area two new school buildings were built which formed a more extrovert border facing outwards (see Figure 67).

Between the school buildings were also borders. The girlschool (St. Anna) and the boyschool (St. Jozef) were divided by a two meter high wall. When this wall precisely disappeared is unknown; presumably after the 1970s, when the school changed its name.

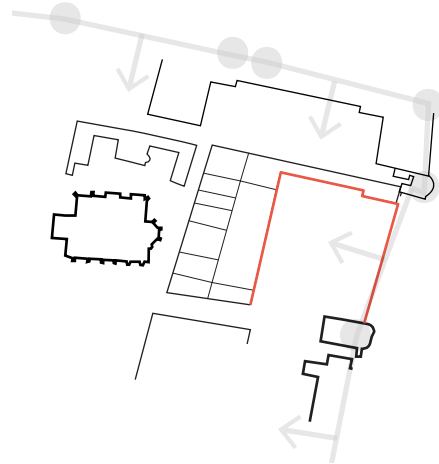


Figure 64 *Klein Vaticaán - Schools - Borders - 1878*



Figure 65 *Klein Vaticaán - Schools - Borders - 1914*



Figure 66 *Klein Vaticaán - Schools - Borders - 1938*

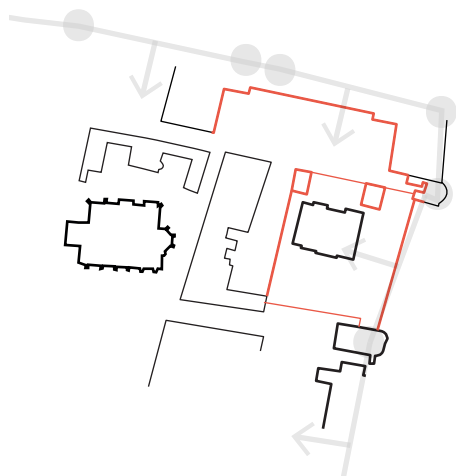


Figure 67 *Klein Vaticaanschools - Borders - 1900*



Figure 68 *Klein Vaticaanschools - Borders - 1909*

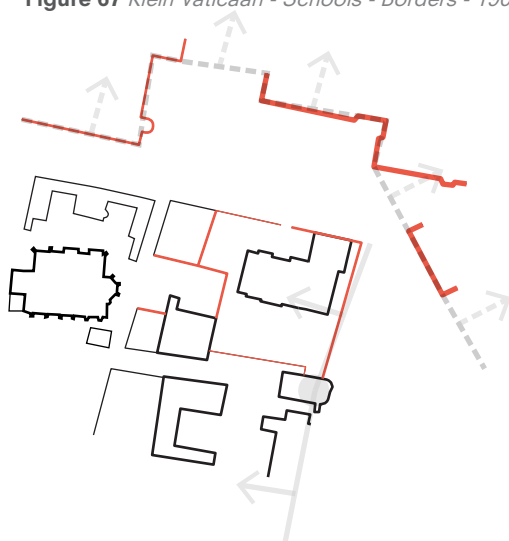


Figure 69 *Klein Vaticaanschools - Borders - 1950*



Figure 70 *Klein Vaticaanschools - Borders - 2017*

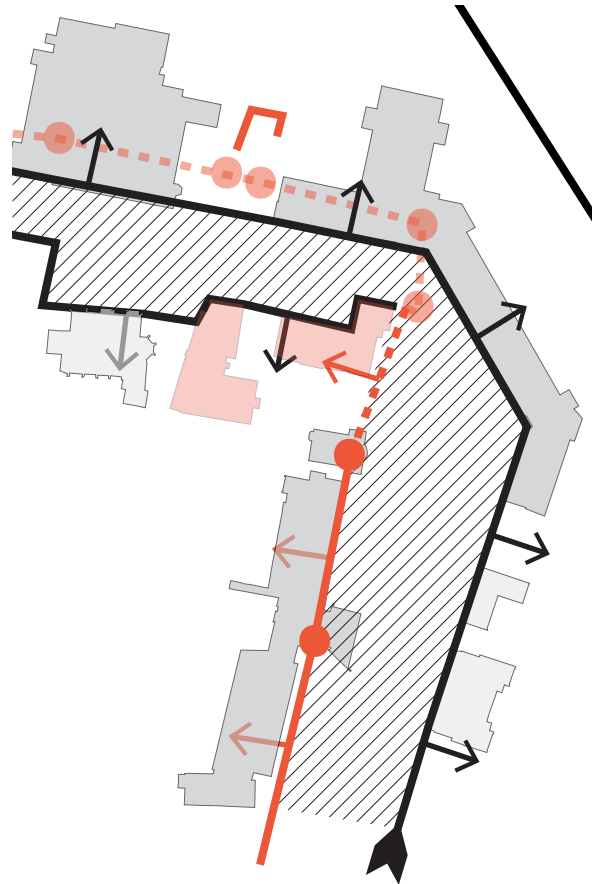
Site - Border changes

Borders Klein Vaticaen - Schools

Only a few historical borders are left in the current situation. The way they are constructed is not original but the location is still the same, such as the border at the east side of St. Jozef. This historical border had an introvert character.

The historical border at the north side is crossed by the two more recent school buildings, the Baudartius and the Stedelijk Lyceum, which now form a border with a more extrovert character.

These multiple borders with different characters, the historical citywall and the Stedelijk Lyceum, contradict with each other. An undefined space is created.



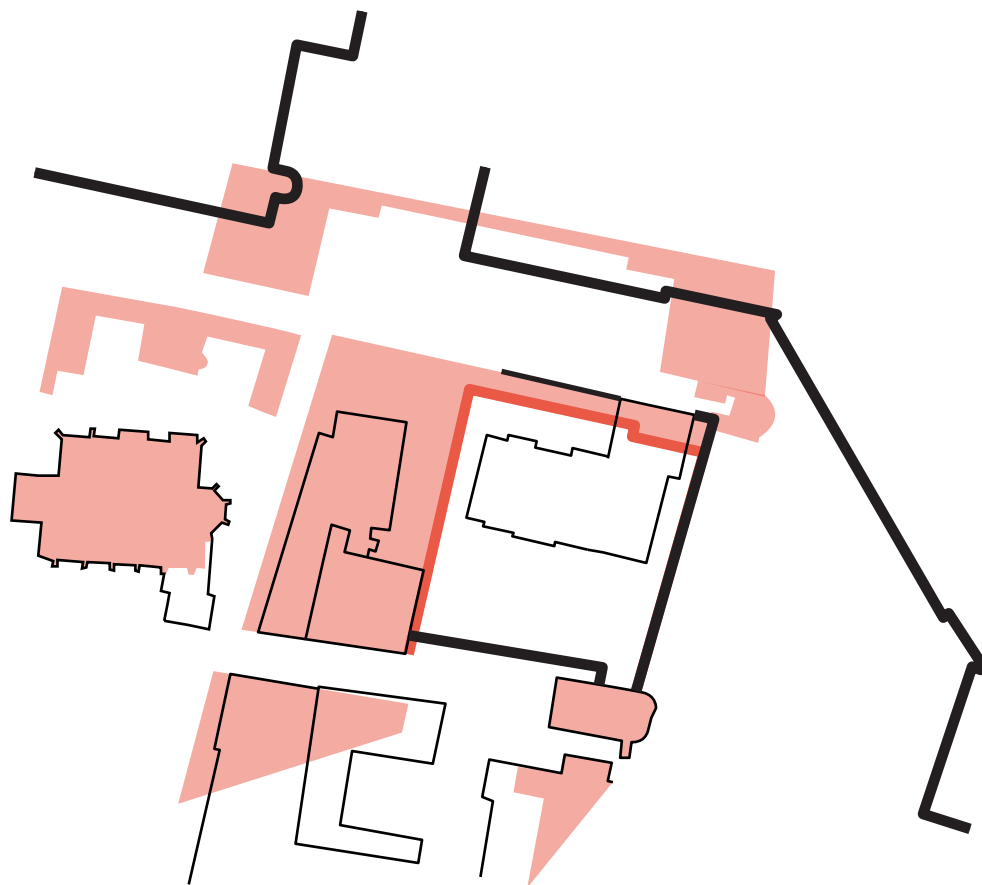


Figure 72 *Klein Vaticaanschools - Borders - 2017*

Site - Spatial changes

Space Klein Vaticaan - Schools

The change of the borders had a huge influence on the defined space. The space was originally defined by the city wall; when the infrastructure went through this border the space behind the wall was made accessible. The widening of the Isendoornstraat also affected the defined space.

There is still a spatial barrier on the place of the original citywall. This wall not being original creates a contradiction in the definition of the introvert border and its space.



Figure 73 *Klein Vaticaan - Schools - Space - 1649*

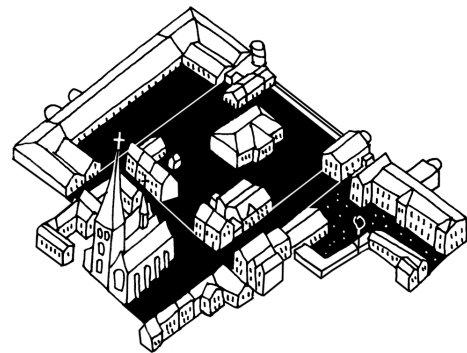


Figure 74 *Klein Vaticaan - Schools - Space - 1909*

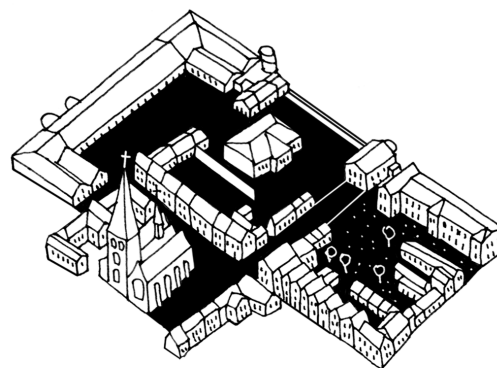
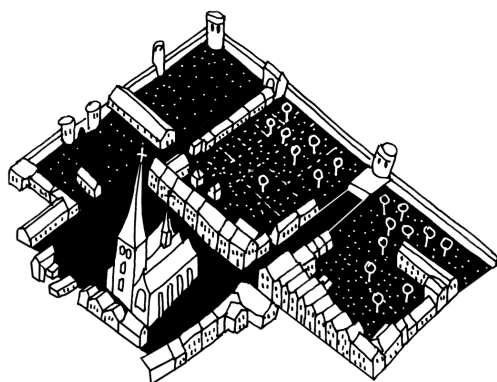


Figure 75 *Klein Vaticaanschools - Space - 1823*

Figure 76 *Klein Vaticaanschools - Space - 1900*

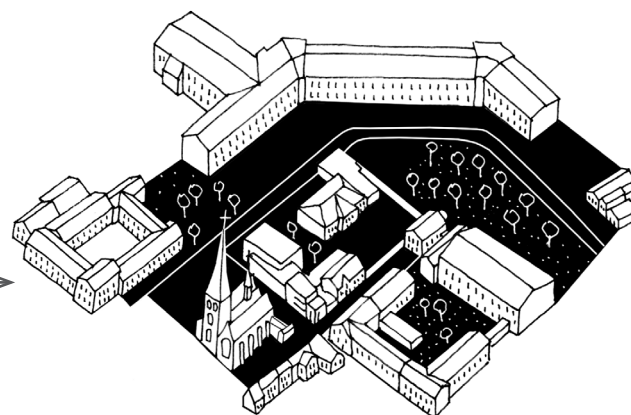
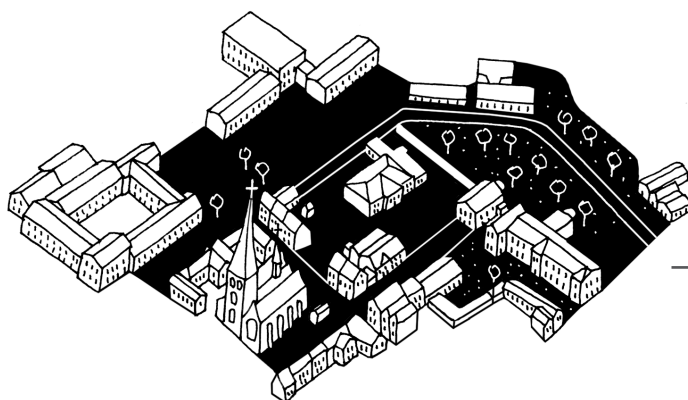


Figure 77 *Klein Vaticaanschools - Space - 1950*

Figure 78 *Klein Vaticaanschools - Space - 2017*

Site - Spatial changes

Space Klein Vaticaán - Schools

The figure on the next page shows the open space around the schools. The current situation is shown in black, while the situation in 1878 is shown in red. A clear change in the defined space is visible.

The shift of borders, as explained earlier, resulted in the change of space. The space to the east was not available in 1878 because of the introvert character of the city wall. The break through the wall after World War II made this space available and became a garden of the Pastorie.

Eventhough this garden is part of the site now, it is seperated by a wall which is located on the historical border.

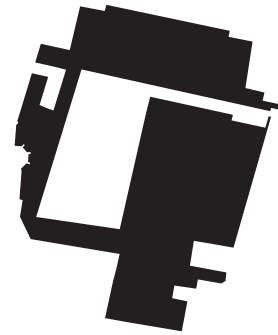


Figure 80 *Klein Vaticaán - Schools - Space - 1878*

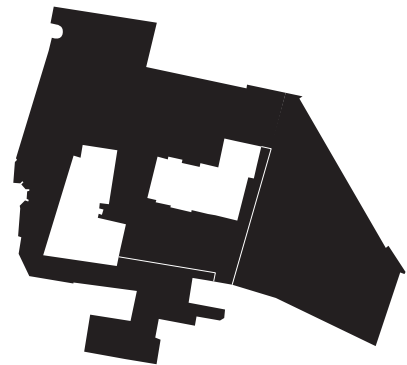


Figure 81 *Klein Vaticaán - Schools - Space - 2017*



Site - Routing

Routing Klein Vaticaan - Schools

Both schools started out with access from the Tegnagelshoek; because of the dwellings on the north side of the plot, the access from the Tegnagelshoek was necessary. Later, when these dwellings were demolished, the access changed. With the construction of St. Anna's extension in 1999 both buildings got their main access from the Isendoornstraat. This change is probably related to the change of the role of the Isendoornstraat. After World War II, this road was widened, becoming an axis of high priority (see Figure 46 on page 51).

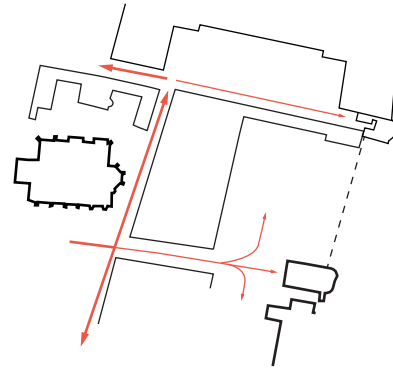


Figure 82 *Klein Vaticaan - Schools - routing - 1878*

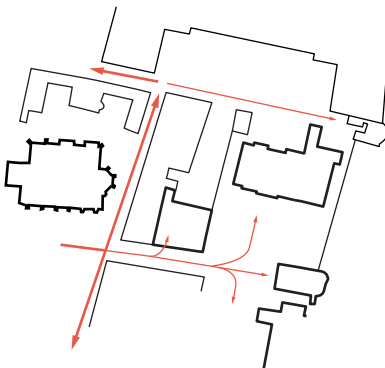


Figure 83 *Klein Vaticaan - Schools - routing - 1914*

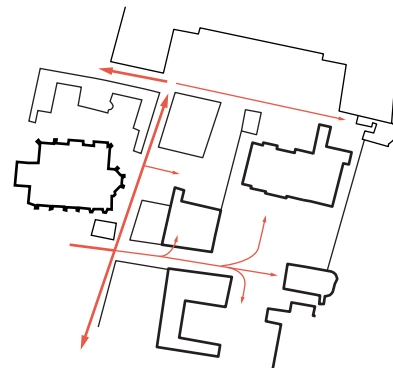


Figure 84 *Klein Vaticaan - Schools - routing - 1938*

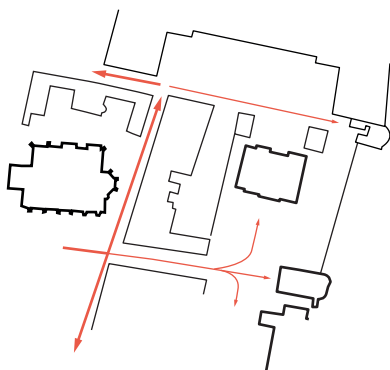


Figure 85 *Klein Vaticaan - Schools - routing - 1900*

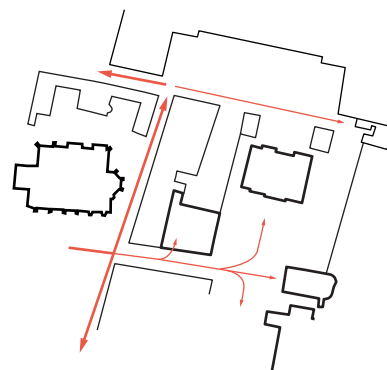


Figure 86 *Klein Vaticaan - Schools - routing - 1909*

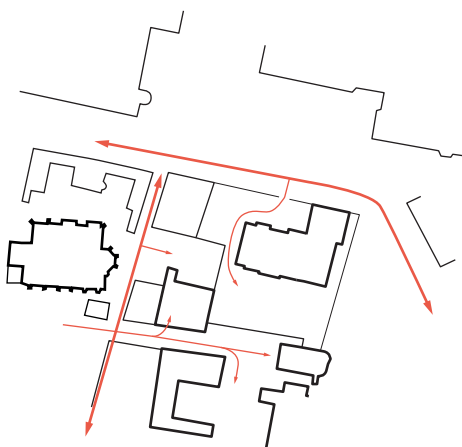


Figure 87 *Klein Vaticaan - Schools - routing - 1950*

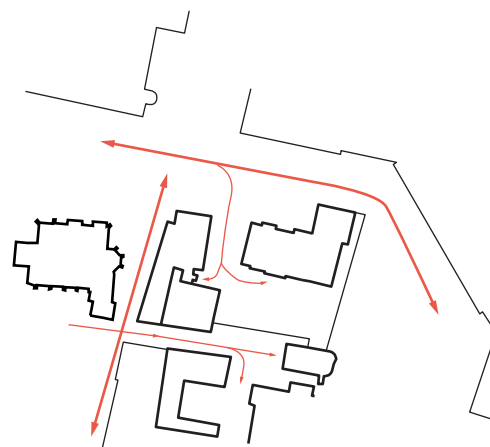


Figure 88 *Klein Vaticaan - Schools - routing - 2017*

Site - Routing 2017

Routing Klein Vaticaan - Schools

As aforementioned, the routing shifted from the Tengnagelshoek to the Isendoornstraat. From the Tengnagelshoek, the approach to the buildings is frontal compared to the current situation, which is a kind of spiral approach; the entrances remain hidden until the corners of the buildings are passed. Because of this, the visitors' experience shifted; instead of experiencing the front facades, visitors experience the building's side facades before entering (see Figure 96).

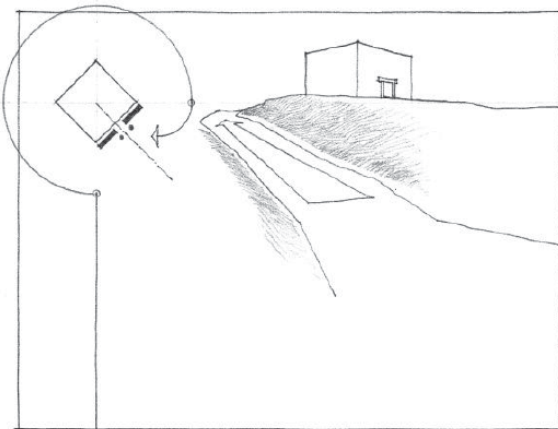


Figure 92 *Spiral Approach by Ching (2007, p. 255)*



Figure 89 *Klein Vaticaan - Tengnagelshoek*

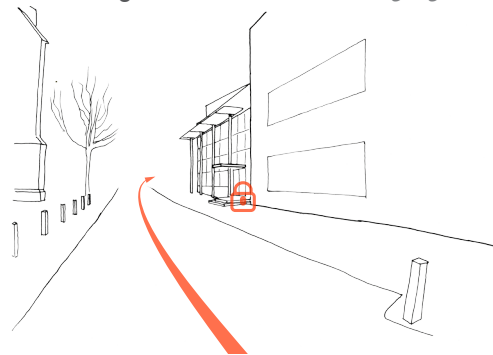


Figure 90 *Klein Vaticaan - Dieserstraat*

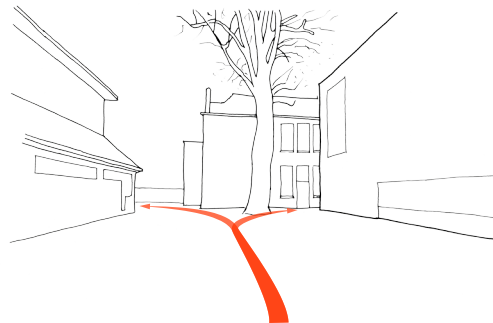


Figure 91 *Klein Vaticaan - Vrijeschool*

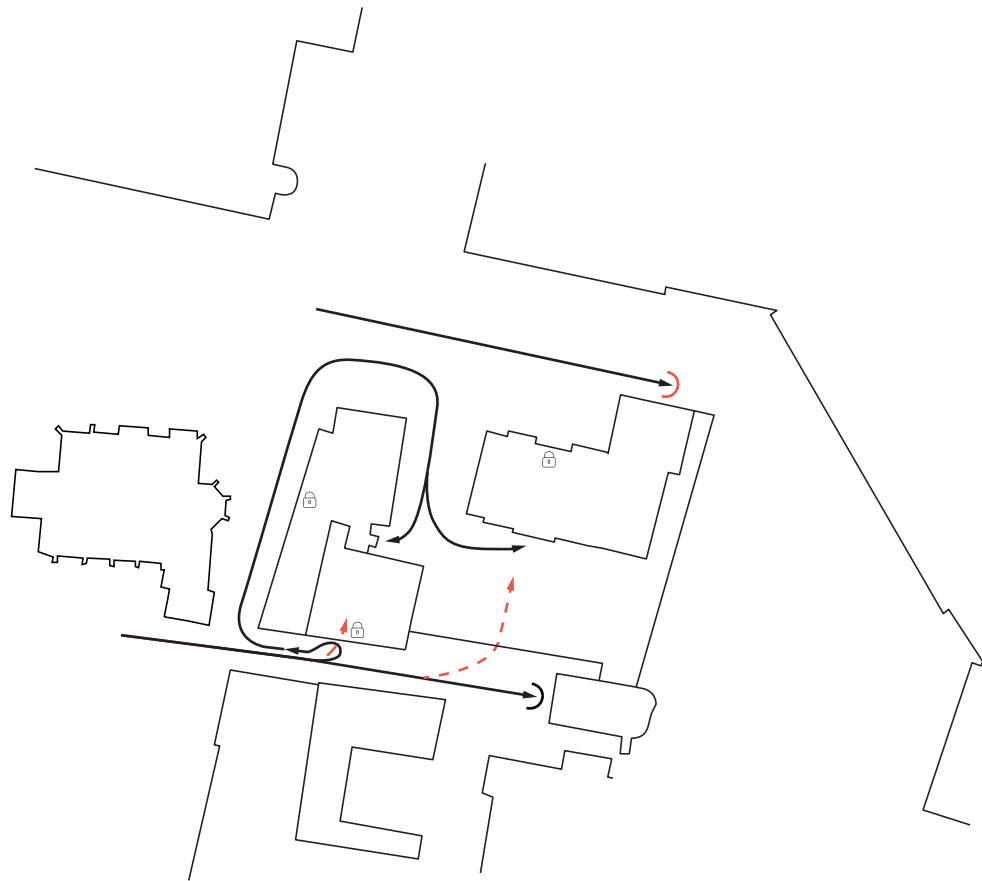


Figure 93 *Klein Vaticaan - Schools - routing - 2017*

Conclusions - Site

Architectural analysis

The development of the site influenced the characteristics of the site. The introvert character of the city wall is disturbed by the more extrovert character created by the new buildings at the north-east side. This resulted in the loss of coherence and created an undefined space for the garden of the pastorie.

Cultural Value

The city wall gave the site an important introvert character, which defined the building plots. As a result the wall holds important historical value.

The undefined space between the borders creates opportunities for interventions.

The introvert character of the citywall created a coherent and defined space; this character is now lost because of the new free-standing building blocks. This creates a dilemma upon which someone has to take a position.

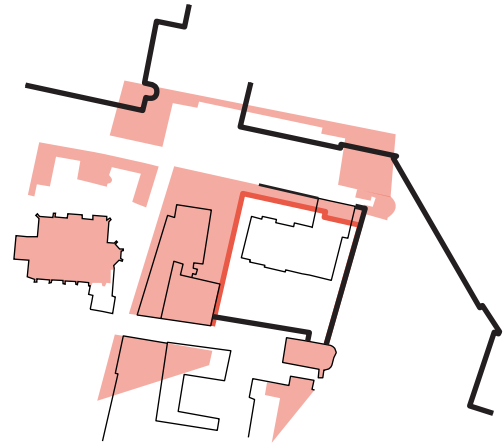


Figure 94 *Klein Vaticaan - Schools - Borders - 2017*

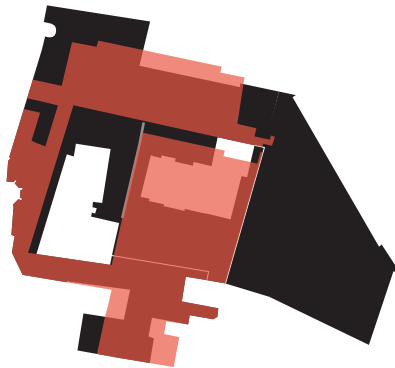


Figure 95 *Klein Vaticaanschools - Space - 1878 / 2017*

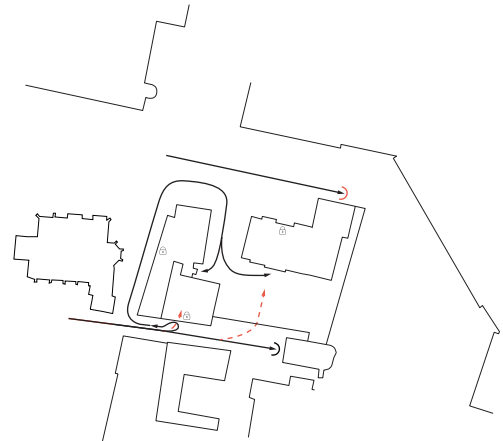


Figure 96 *Klein Vaticaanschools - routing - 2017*



Skin

V. Skin

“Exterior surfaces now change every 20 years or so, to keep up with fashion or technology, or for wholesale repair. Recent focus on energy costs has led to re-engineered Skins that are air-tight and better-insulated.”

(Brand, 1994, p. 13)

In this chapter the “Skin” will be analysed. The term refers to the facades, in other words the buildings’ exterior surfaces, which play a great role in the atmosphere and identity of a building and its context. The focus lies on understanding which features are valuable and, thus, require safeguarding for the future. The colours, the materials, the textures, the bonding techniques, the ornamentation, even the scale, are very important aspects, which might represent the ideas, the architectural history or the technology and craftsmanship of an era.

Consequently, by studying the skin one can recognize the architectural influences and style of an architect or a whole architectural movement. Trying to define these specific features and connect them with precedents is a necessary step in order to understand the values that these hold.

Additionally, the skin’s ornamentation might indicate a kind of hierarchy. For instance, it is very common that the main facades of a building, those that are more exposed to public view, are more ornamented than the facades

located at the least visible sides. This differentiation is of great importance when it comes to the way we experience a building.

Next to these aspects, other themes are also analysed, such as the symmetry, the ratio between the transparent and opaque surfaces and the interconnection between the internal organisation and the facades’ openings. Besides, wayfinding is also described, as it is related to the way one experiences the skin.

By analysing and interpreting the aforementioned themes, the obligations, opportunities and dilemmas will become clear.

Image 56 *Corner of the west and south facade St. Anna (Own Photo)*

Materiality & Ornamentation - St. Jozef

The facelift on the facades of St. Jozef, made in 1930s (see Image 57), did not take into account the more ornamented skin of the original building. Consequently, the current facades show minimal ornamentation, being a result of a more pragmatic approach.

South and North facades

South and North facades are more elaborate in comparison to the side facades. The focus has been given on these two as they are the most exposed; when St. Josef was built there was a building located next to the west elevation making it invisible, while the east facade has always been next to the wall.



South Elevation



North Elevation



Image 57 South facade St. Jozef, existing situation in 1933 by G.J. Jacobs (*Regionaalarchiefzutfen*)



West Elevation



Figure 97 Elevations of the St. Jozef - Scale 1:300

Ornamentation

The ornamentation found on the skin is minimal. The architectural design is simple, while the linearity of the openings is the guiding theme of the organization of the skin; one of the few decorative elements are flat-arch lentils above the openings, made of wedge shaped bricks. The arches found on the left and right side of south and north facades, respectively, are the only non-orthnogonal element. Finally, the use of the cross on the roof pitch, being the ultimate expression of the Catholic spirit, adds to the ornamentation of south facade.

Materiality

As regards the materiality, brown brick has been used for the entire skin, while the trasraam has been highlighted with glazed brick. The ceramic tiles used for the sills and the linted made of wedge add an extra layer to the materiality.

East and west facades

As aforementioned, the east and west facades are less ornamented, as they are lower in hierarchy. Here, the ornamentation is reduced to the flat-arch lentils above the openings. Meanwhile, on the west elevation, the push-back of the masonry wall highlights the structural grid, adding an extra layer to skin's ornamentation. The materiality is reduced to two elements; brown brick and ceramic tiles, used as sills.

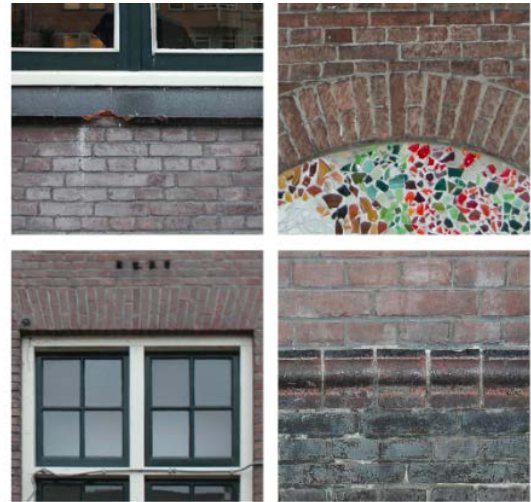


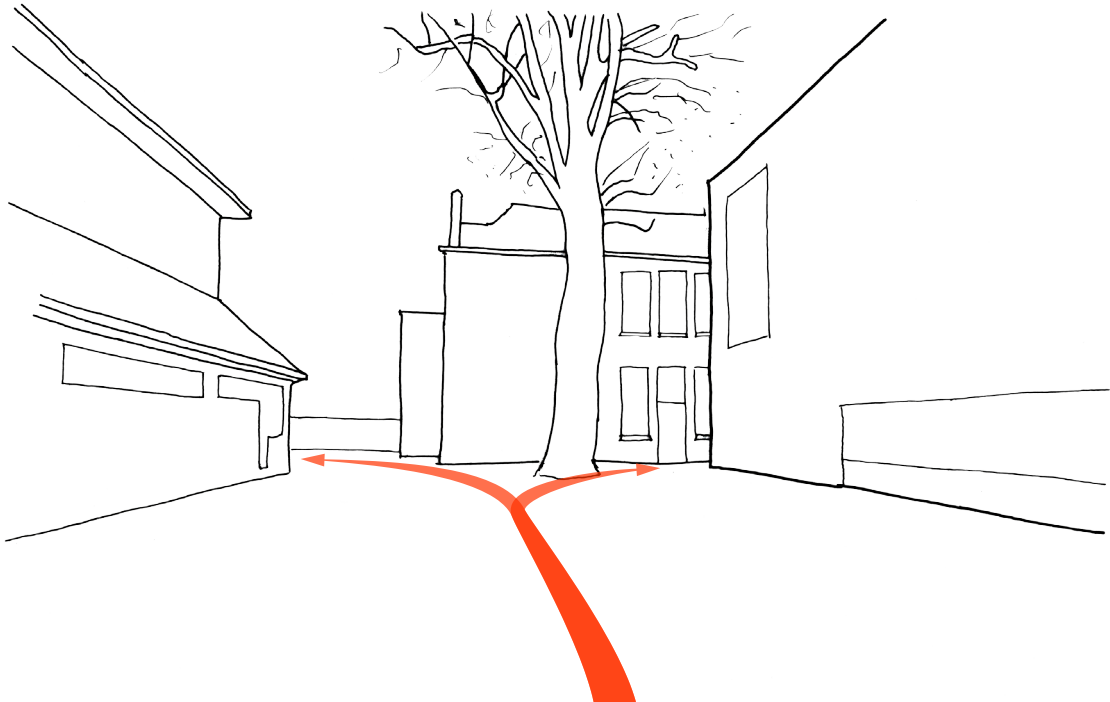
Figure 98 *Materiality and ornamentation of south facade*



Image 58 *The Cross symbol on the roof pitch (Own Photo)*

Wayfinding - St. Jozef

The approach to the main entrance is a kind of spiral. The entrance remains hidden until the corner of the building is passed. Because of this, visitors experience the side facade at first; afterwards the experience of the main facade is possible (see Figure 103).



The main entrance of the St. Jozef is emphasized by a projection of canopy and steps. The doors are a bit recessed into the facade. The flush continuity of the facade is obscured. The canopy also provides shelter.

In the below diagram, the experience of building's skin is visible.

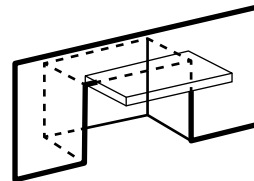


Figure 100 *Diagram on the entrance*



Figure 101 *Main entrance of St. Jozef - Located at the back side*

Symmetry - St. Jozef

The original design, dating from 1891, was a very pragmatic and symmetrical design.

The addition of 1914 obscured the symmetry. When the building was partly rebuilt and extended in 1934 the symmetry of the main building remained, but the extension is an element which obscures the overall symmetry.

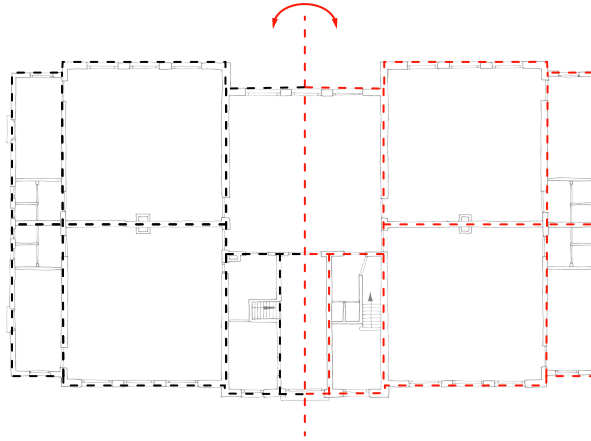


Figure 102 *Symmetry - Ground floor 1891*

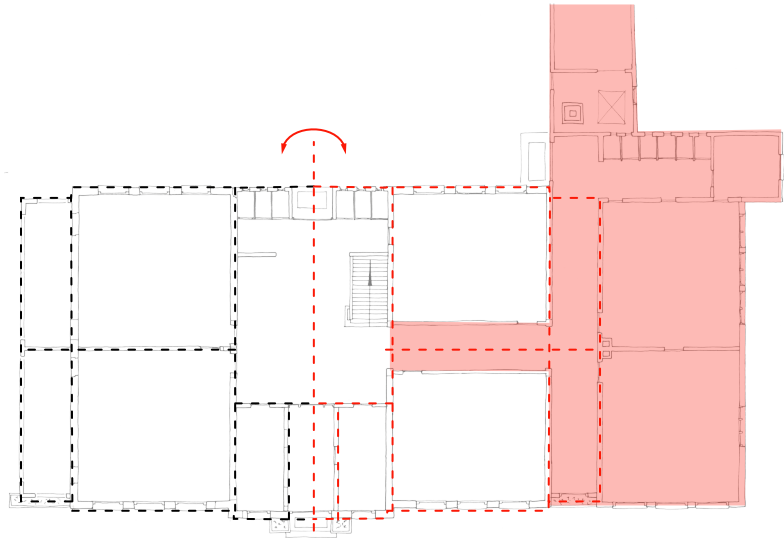


Figure 103 *Symmetry - Ground floor 1934*

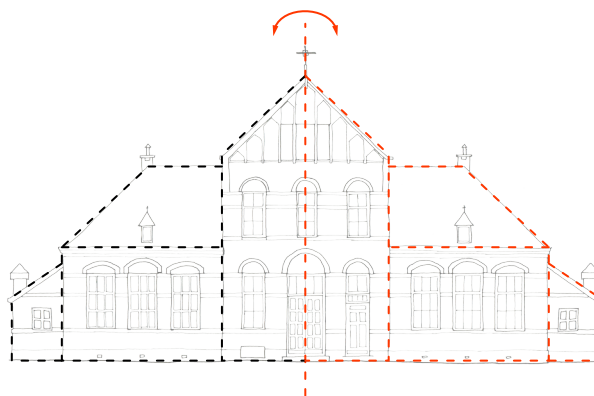


Figure 104 *Symmetry - Front facade 1891*

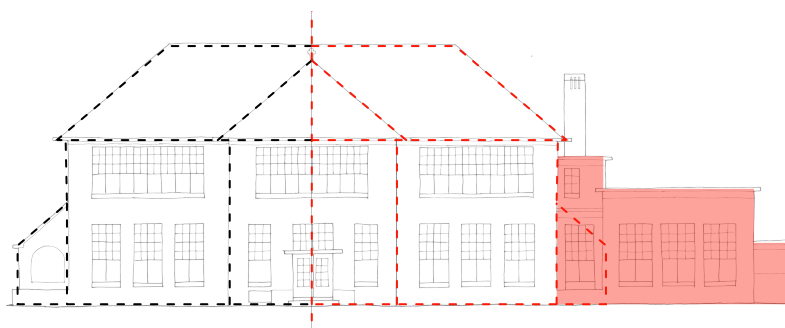


Figure 105 *Symmetry - Front facade 1934*

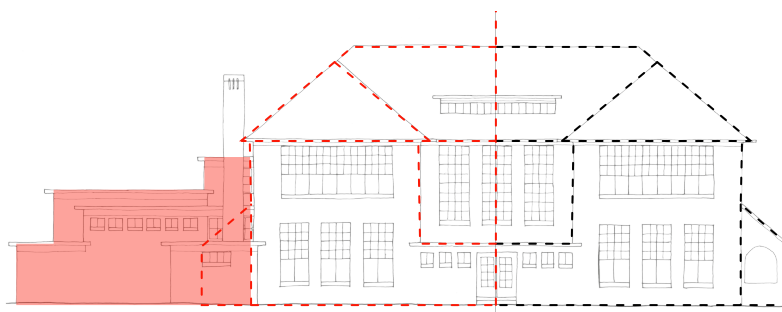


Figure 106 *Symmetry - Back facade 1934*

Ratio of transparent to opaque - St. Jozef

The west facade of the St. Jozef is almost opaque, since the ratio of the transparent to the opaque surfaces is insignificant. The only openings found in the west facade serve for bringing daylight into the storage rooms. The other facades have more transparent surfaces, as they must bring enough daylight into the classrooms.

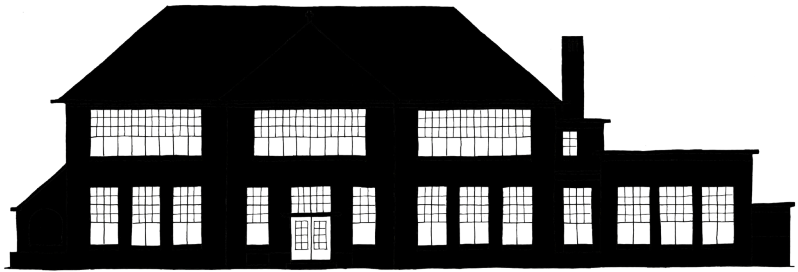


Figure 107 *Opaque surfaces of south facade - 2017*

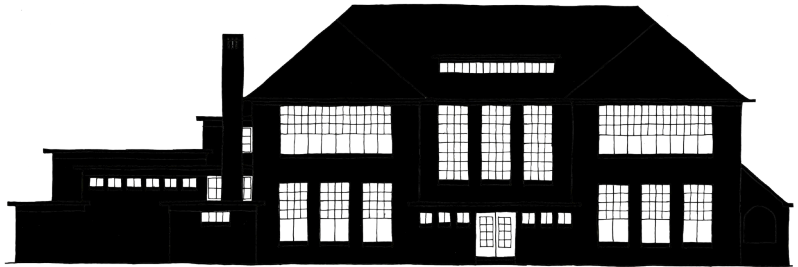


Figure 108 *Opaque surfaces of north facade - 2017*



88 Figure 109 *Opaque surfaces of west facade - 2017*

Figure 110 *Opaque surfaces of east facade - 2017*



Figure 111 *Transparent surfaces of south facade - 2017*



Figure 112 *Transparent surfaces of north facade - 2017*



Figure 113 *Transparent surfaces of west facade - 2017*

Figure 114 *Transparent surfaces of east facade - 2017*

Linearity & relation with interior - St. Jozef

Interrelation between skin and interior

The openings in the facade are related to the orientation of the classrooms. In fact, they are perpendicular to the orientation. This decreases the distraction off the student by looking outside.

Linearity

The openings in the facade are structured according to an orthogonal grid. The openings of the first floor correspond to the openings of the ground floor, resulting into a symmetrical facade organization. Moreover, the large gutters emphasize the horizontal linearity.

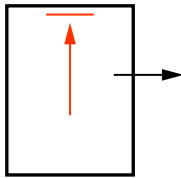


Figure 116 *Diagram relation with the outside*

1m 2.5 10 15

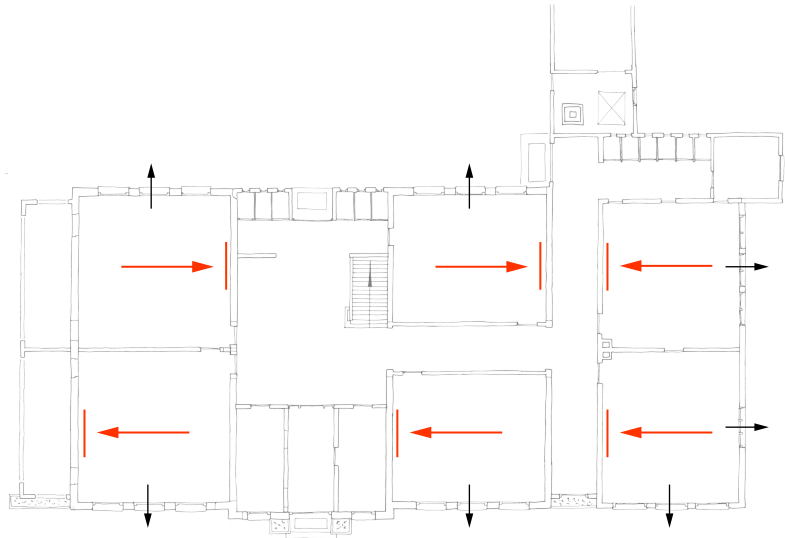


Figure 115 *Ground floor relation with the outside*

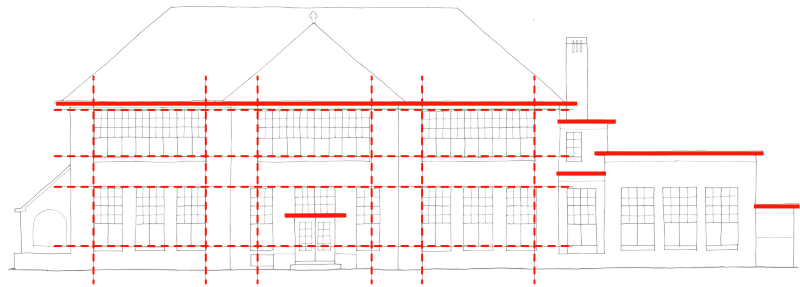


Figure 117 *Linearity and partitioning south facade - 2017*

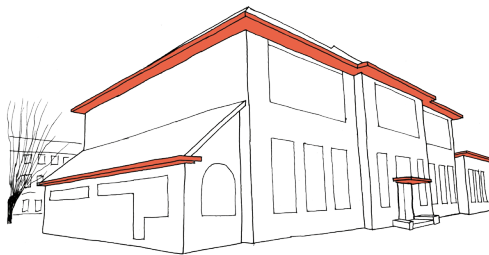


Figure 119 *Linearity in perspective view*



Figure 118 *Linearity and partitioning north facade - 2017*

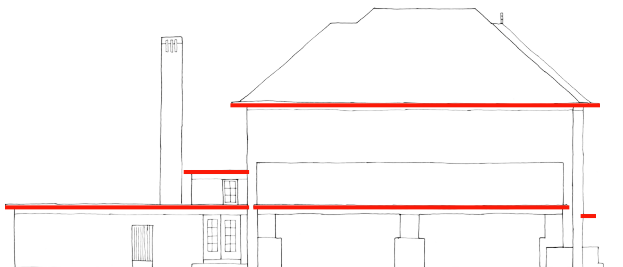


Figure 120 *Linearity west facade - 2017*



Figure 121 *Linearity east facade - 2017*

Ornamentation & Materiality - St. Anna

South and West facades

The rich materiality and ornamentation of the south and west facades of St. Anna, suggest their high hierarchy; they have always been the most exposed facades to public view and they were designed in such a way that they would reflect the ideas and spirit of the Roman Catholic community.

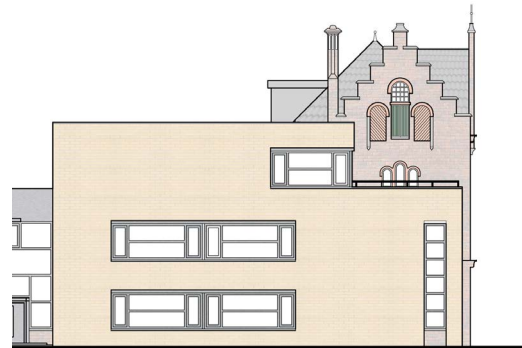
Ornamentation

The symbolism that has been used on both facades, such as the repetition of the number 3 in regards to the openings, is related to the beliefs of the catholic community (Three Holy Elements of Christianity). Besides, the use of the cross on the roof pitch is the ultimate expression of the Catholic spirit.

The choice of the architectural language, which shows the influence of Neo-gothic style, is also related to the Catholic community. The community chose the Gothic style to be expressed on building's skin because the Gothic period was the blooming age of Catholicism in history. Other architectural influences can also be recognized on the skin such as the Neo-Renaissance's expression on the stepped gable and the false arches.



South Elevation



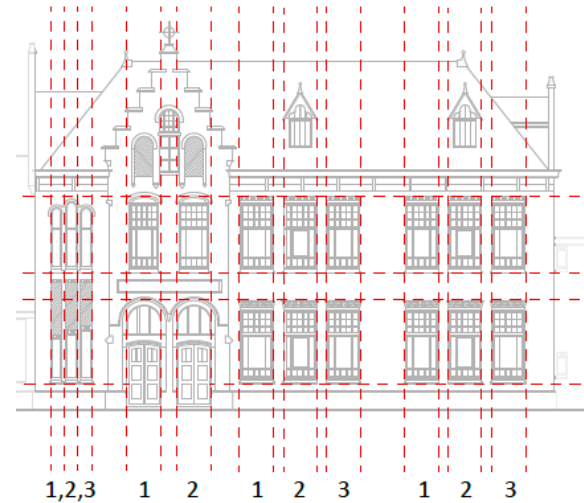
West Elevation

1m 2.5 10 15

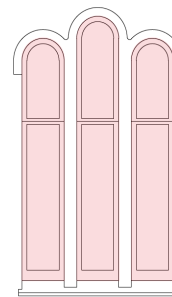
The choice of the architect Van Elmpt also played a great role in the architectural expression of the skin. Being a catholic, he referred through his historicism to Gothic Architecture, but he also incorporated some Art-Nouveau and Renaissance elements. This style is in between the historicism of the 19th century and modern movement of the 20th century and is called “postkantorengotiek” by the national monument society.

Materiality

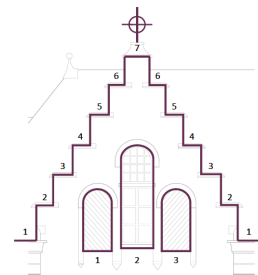
As regards the materiality, a wide variety of materials has been used. The main element used is brown brick, while red and glazed bricks have been used to highlight the ornamental features. Additionally, natural stone has been used either as sill or as keystone and buttress, emphasizing the arches of the openings. Key-element of the south facade is the “St. Anna School” inscription made on blue glazed bricks.



Organization of South Elevation, use of number 3



Use of number 3

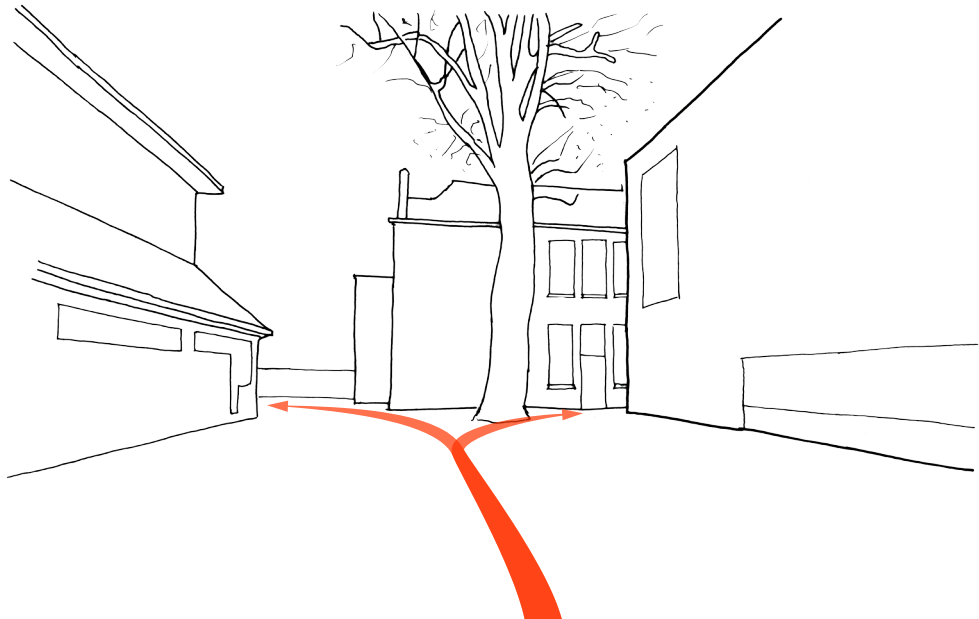


Use of number 3

Figure 123 Elements showing the symbolism used on St. Anna's south facade - Repetition of number 3

Wayfinding - St. Anna

The approach to the main entrance is a kind of spiral. The entrance remains hidden until the corner of the building is passed. Because of this, visitors experience the facades of the extension first (see Figure 124). Especially in the case of St. Anna wayfinding is very important, since the extension introduced a new entrance. As a result, visitors don't experience the historical entrance hall.



Wayfinding - St. Anna

The main entrance of the St. Anna is emphasized by a projection of an entrance block with a canopy. The doors are put on this blok. The canopy provides shelter.

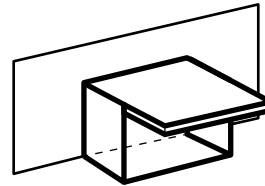


Figure 126 *Diagram on the entrance*

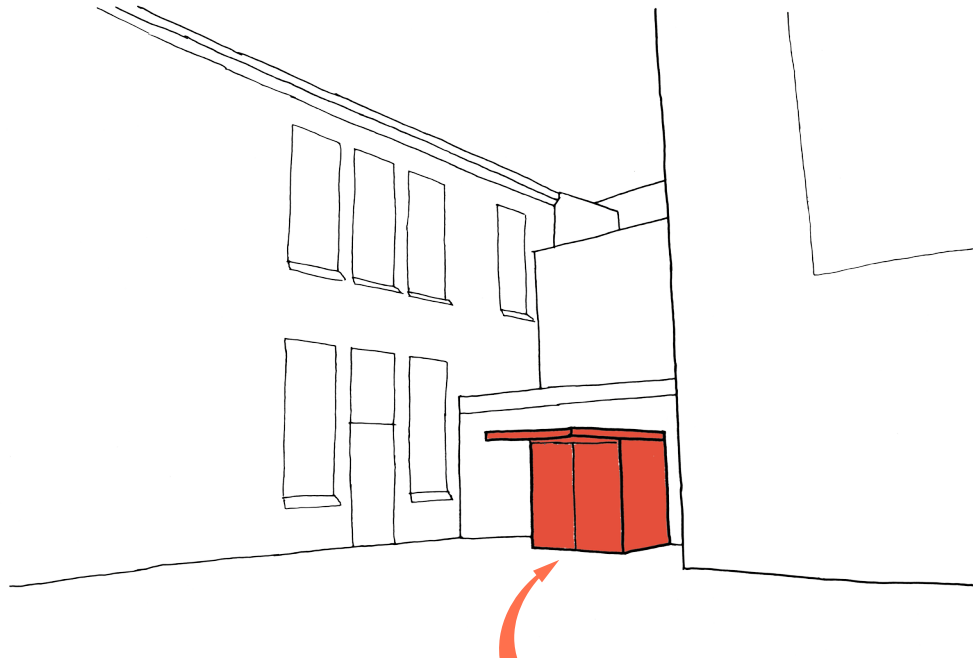


Figure 125 *Main entrance of St. Anna - Located at the back side*

Ratio of transparent to opaque - St. Anna

As regards the St. Anna, the ratio of the transparent to the opaque surfaces is more balanced, compared to the St. Jozef. The spatial diagram (see Figure 158 on page 122) of the extension is clearly interconnected with the organization of the facades. There is a clear distinction between the transparent and opaque surfaces (see Figure 132).



Figure 127 *Opaque surfaces of south facade - 2017*



Figure 128 *Opaque surfaces of west facade - 2017*



96 Figure 129 *Opaque surfaces of east facade - 2017*



Figure 130 *Opaque surfaces of north facade - 2017*



Figure 131 *Transparent surfaces of south facade - 2017*

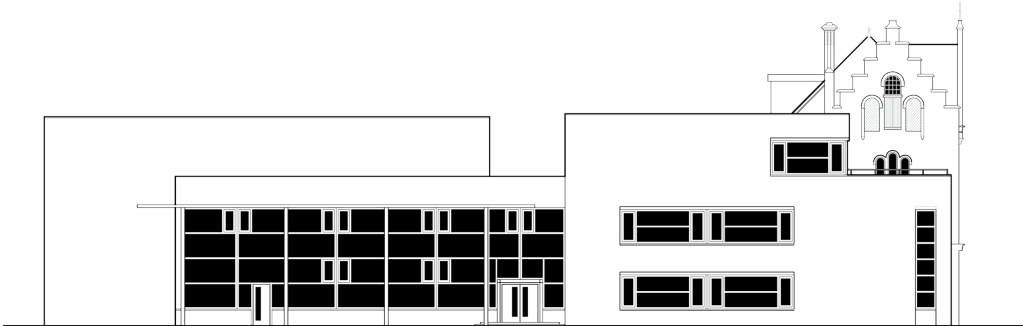


Figure 132 *Transparent surfaces of west facade - 2017*

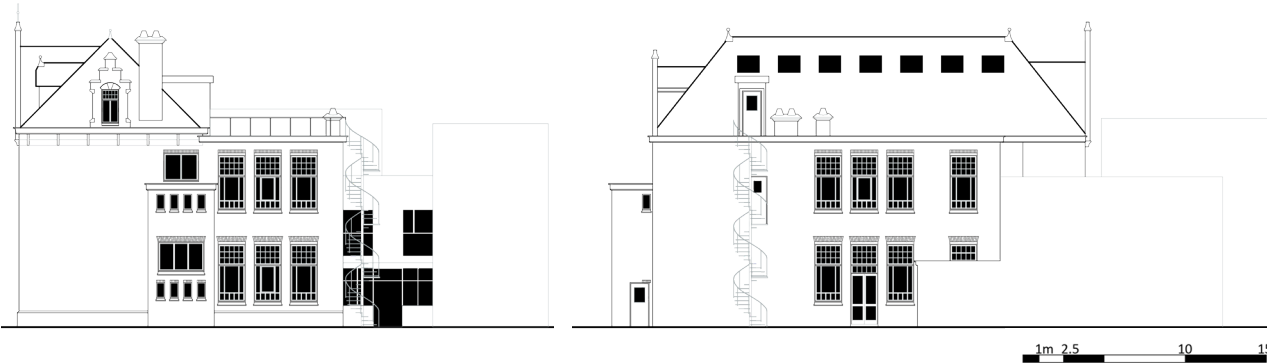


Figure 133 *Transparent surfaces of east facade - 2017*

Figure 134 *Transparent surfaces of north facade - 2017*

Partitioning of the facades - St. Anna

Interrelation between skin and interior

The openings in the facade are related to orientation of the classrooms. In fact, they are perpendicular to the orientation. This decreases the distraction off the student by looking outside.

Partitioning

The transparent surfaces are emphasized by the partitioning of the facade (see Figure 138). The canopy which is supported by columns defines a more open and transparent space. On the other hand, the opaque masonry blocks define a more enclosed space.

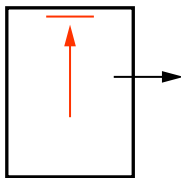


Figure 136 *Diagram relation with the outside*

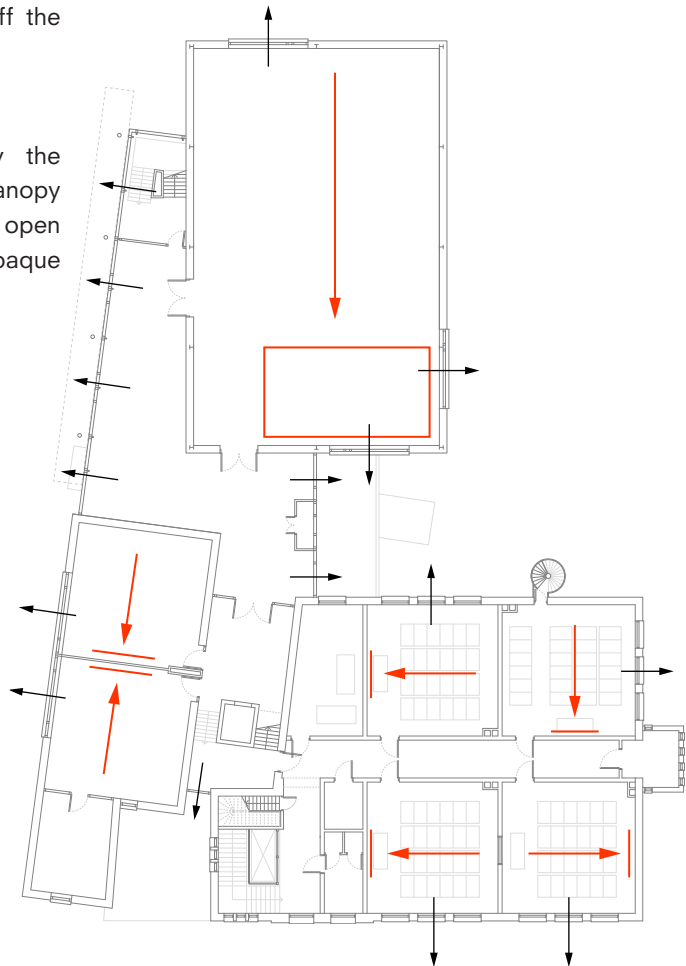


Figure 135 *Relation with the outside*

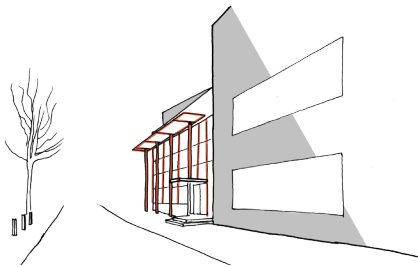


Figure 138 Partitioning dieserstraat

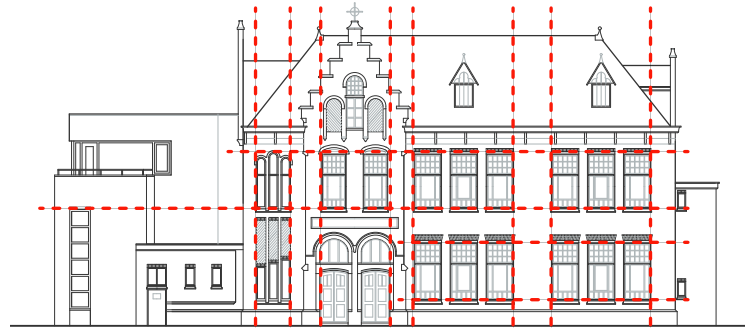


Figure 137 Partitioning south facade - 2017

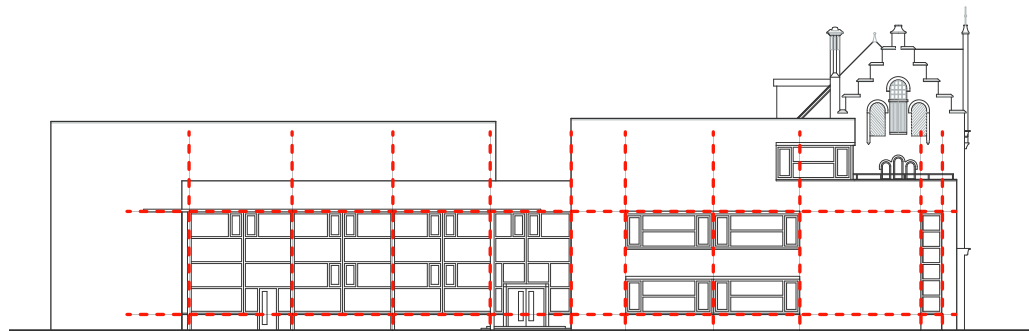


Figure 139 Partitioning west facade - 2017

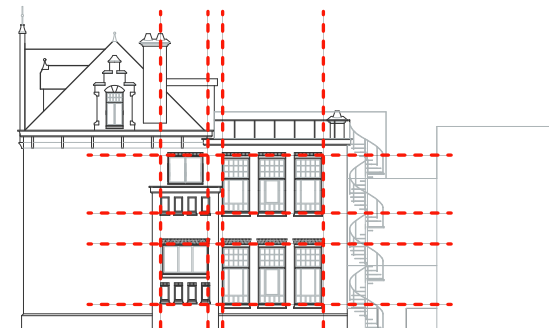


Figure 140 Partitioning east facade - 2017

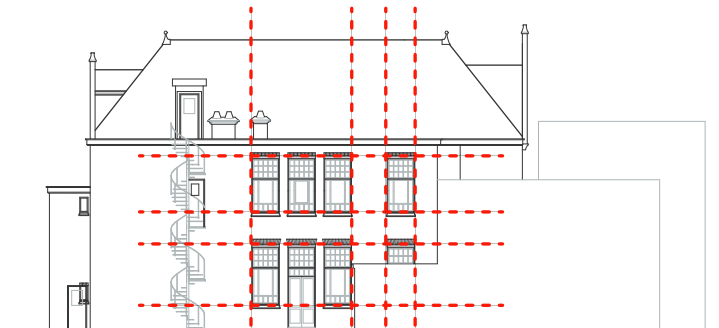


Figure 141 Partitioning north facade - 2017

Conclusions - Skin

Architectural analysis

The architectural style of “postkantorengotiek” influenced the ornamentation of St. Anna’s facades, resulting into a rich architectural language, which consists of a wide variety of materials, colours and textures. On the other hand, St. Jozef school, based on the influences of Amsterdam school, is more simple as regards its architectural expression; it is an example of a more pragmatic approach.

It is important to highlight that, in both cases, the matter of hierarchy in the facades is noticeable. Both buildings have more elaborate and ornamented main facades, while the side facades are lower in hierarchy and, thus, less detailed.

The change in the routing is in contrast with the hierarchy of the facades. Because of this change, one experiences the buildings and their facades in a different way; first in sequence are the plain side facades and afterwards the main facades.

Cultural Value

The monumental facades which are higher in hierarchy and richer in architectural expression should be treated with more care.

The cross symbol on the roof pitch of both buildings should be recognizable, since it is important to the religious heritage.

The double door entrance reflects the social context of the past and is important for St. Anna’s history.

The less ornamented and lower in hierarchy side facades could be treated with more freedom; for example creating new openings in order to introduce more daylight.

The roof construction is aesthetically pleasing and because of its dimensions has the potentials to be used for different functions.

The construction of the extension offers a large open floor plan which can be used for multiple functions.





Structure

VI. Structure



“The foundation and load-bearing elements are perilous and expensive to change, so people don’t. These are the building. Structural life ranges from 30 to 300 years (but few buildings make it past 60, for other reasons).”

(Brand, 1994, p. 13)

This is how Brand describes the structure. In this chapter of the analysis the structure will be briefly analysed based on the aspects of architecture and cultural value.

The chapter “XI. Structure” has a more detailed analysis on the structure.

Structure - St. Jozef

Load Bearing walls - St. Jozef

The space of the St. Jozef is defined by the load bearing walls. This limits the transformation of the space.

Timber roof construction - St. Jozef

The roof construction is not a standardized construction. It is specially designed for the St. Jozef to create such a huge span for the space which was needed. The truss is an adjustment of the standard "Dutch Truss"



Figure 142 Load bearing walls - St. Jozef

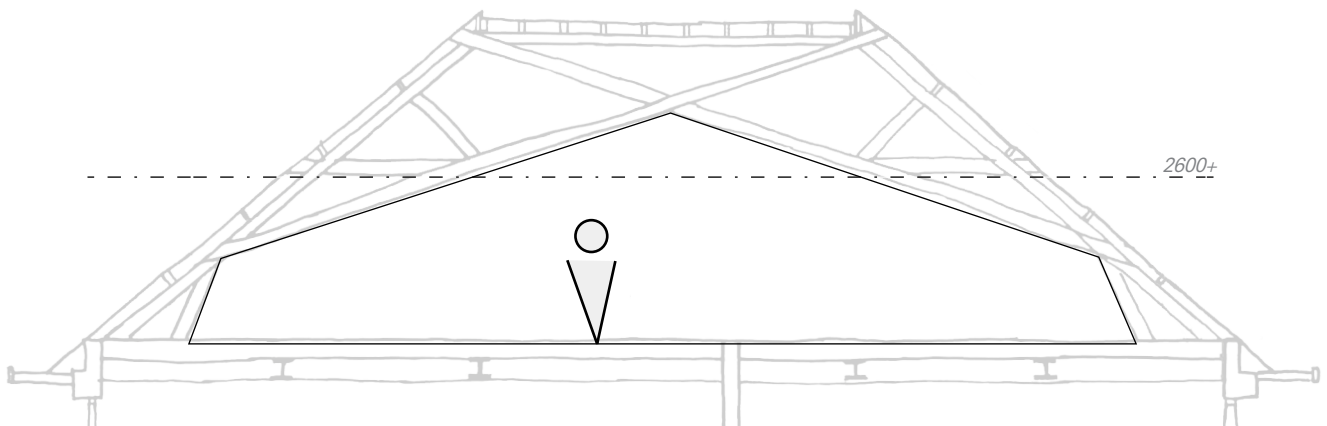


Figure 143 Spatiality - Timber roof construction - St. Jozef - Scale 1:200

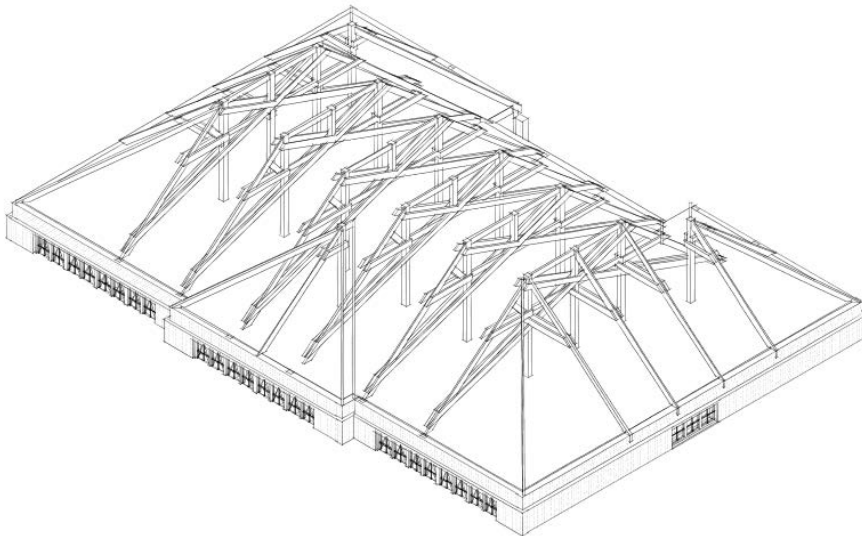


Figure 145 *St. Jozef - Roof Construction - Axonometric view*



Image 60 *Construction St. Jozef*

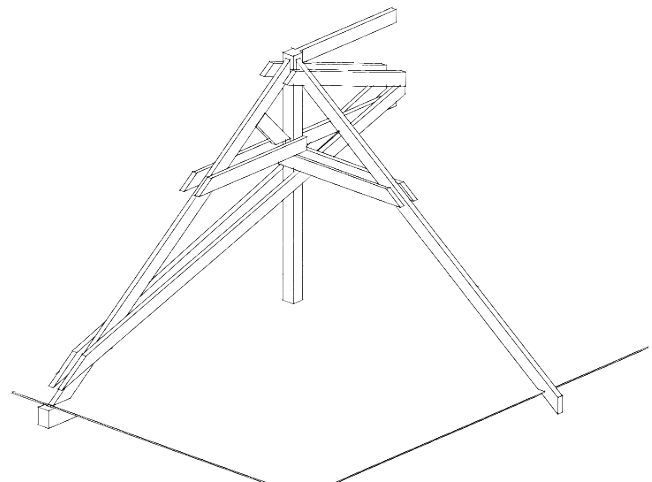


Figure 144 *St. Jozef - Detail on roof construction*

Structure - St. Anna

Load Bearing walls - St. Anna

The space of the St. Anna is defined by the load bearing walls. Like the St. Jozef. This limits the transformation of the space. For the extension the structure was part of the spatial concept, the two closed blocks with the more transparent in-between space (see page 108).

Timber roof construction - St. Anna

The roof construction is a standardized construction. This type of truss is known as the "Improved Dutch Truss"

Timber floor construction - St. Anna

To anchor the floor beams to the facade very detailed wall anchors were used, these anchors are part of the architectural design (Image 61).

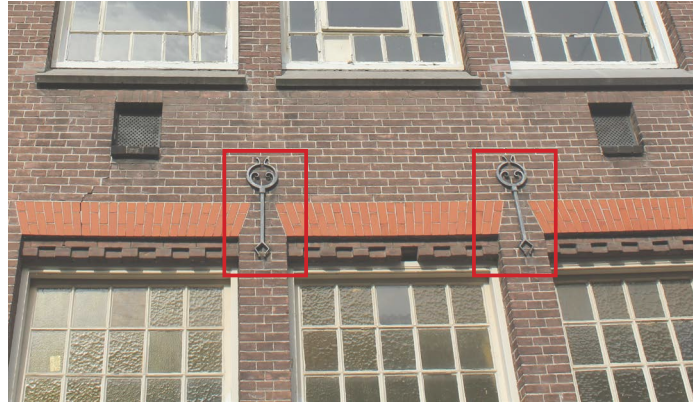
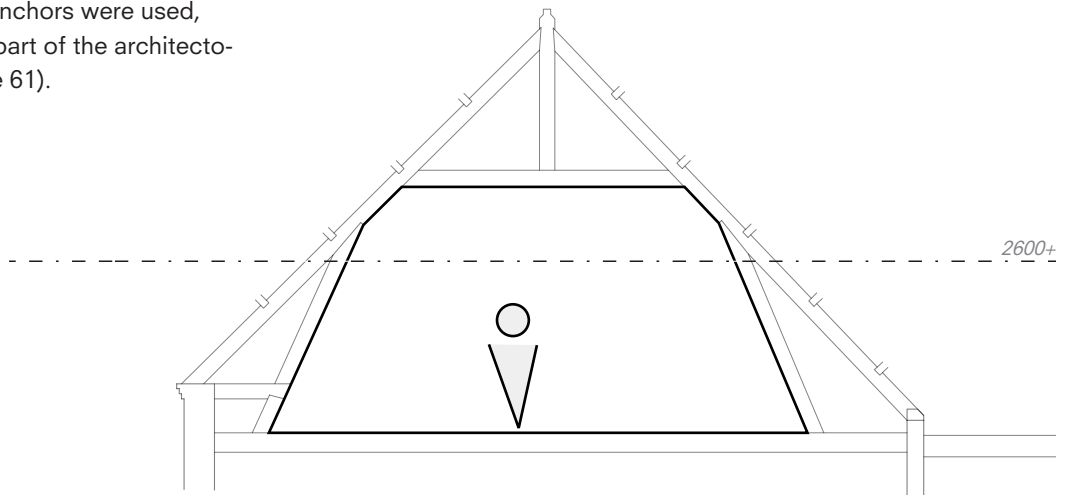


Image 61 Wall anchor of the first floor- St. Anna (Own Photo)



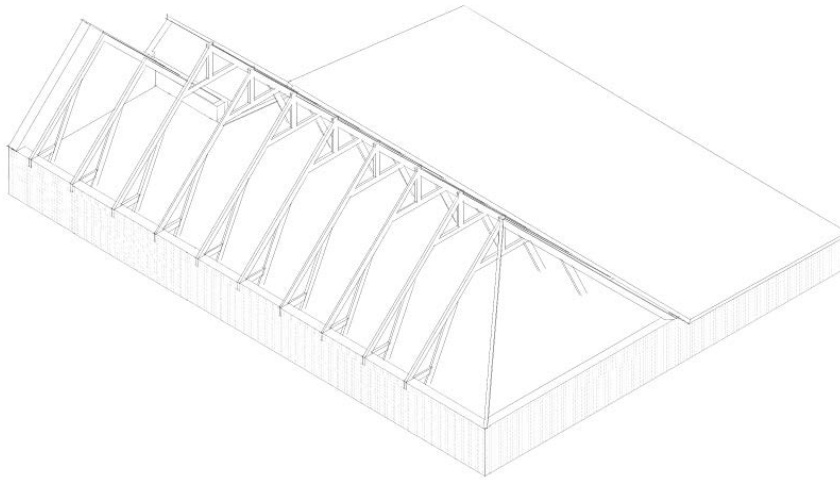


Figure 147 *St. Anna - Roof Construction - Axonometric view*



Image 62 *Construction St. Anna (Own Photo)*

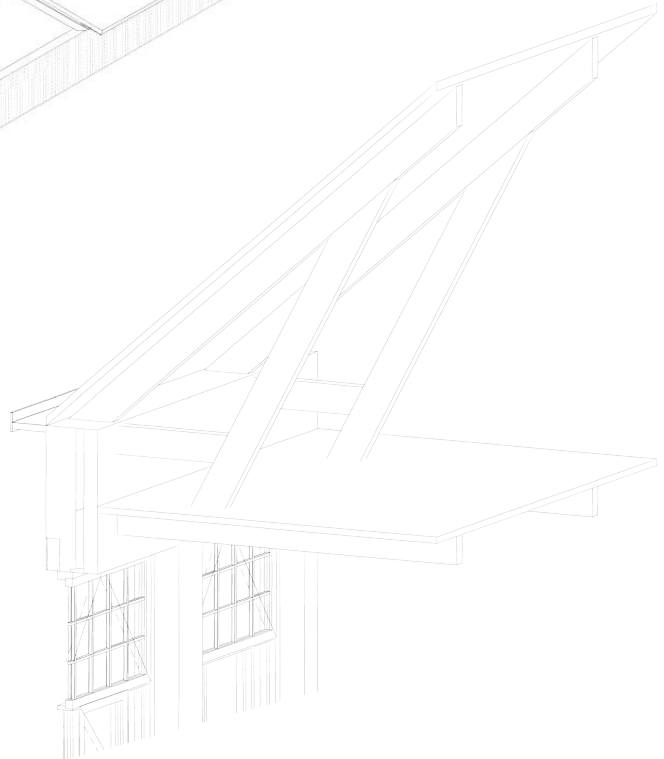


Figure 148 *St. Anna - Roof Construction - Axonometric view*

Structure - St. Anna Extension

Space plan - St. Anna Extension

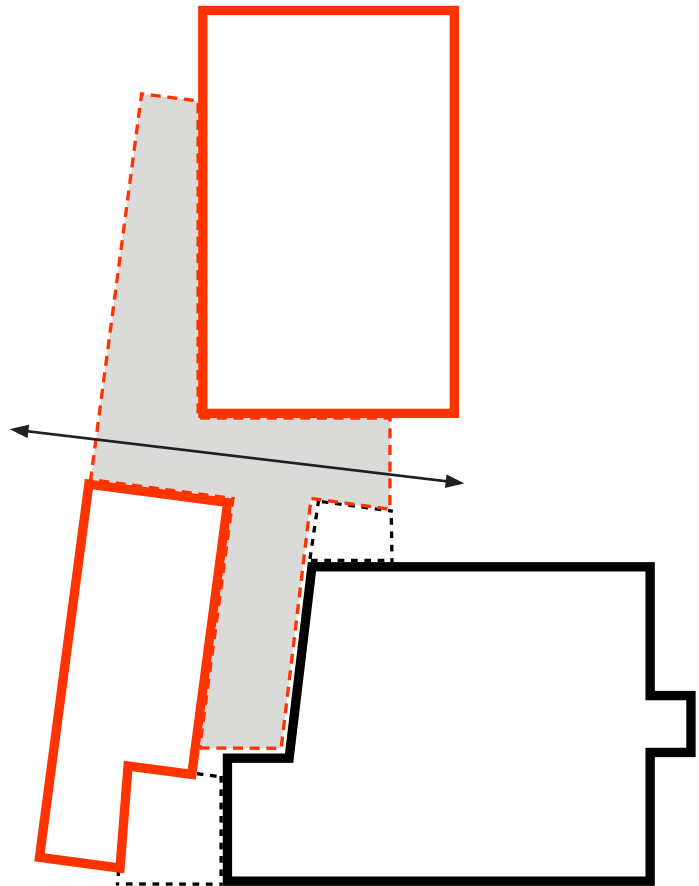
The spaceplan of the Extension from 1999 consists of two closed blocks with a more transparent inbetween space.

The load bearing structure of the extension is part of the spatial program. Two enclosed building blocks which are connected by a more transparent inbetween space. This inbetween space also functions as a connector with the original St. Anna.

The enclosed blocks have a steel frame construction which is filled in with limestone elements. The basement is made out of concrete.

The smaller skeleton construction of the inbetween space is constructed in such a way that the construction is less apparent, creating a more transparent and open space.

The construction of this in-between space is not connected to the St. Anna, small columns are placed next to the original wall to support the floors of this in-between space (see Figure 215 on page 164). No interventions had to be made to the monumental building for the new construction.



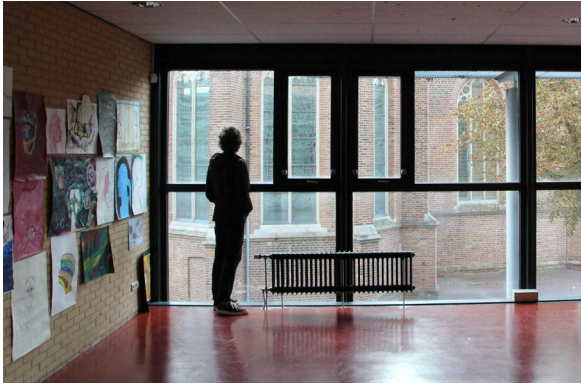


Image 63 *In-between space St. Anna Extension*
(Own Photo)



Image 64 *In-between space St. Anna Extension*
(Own Photo)

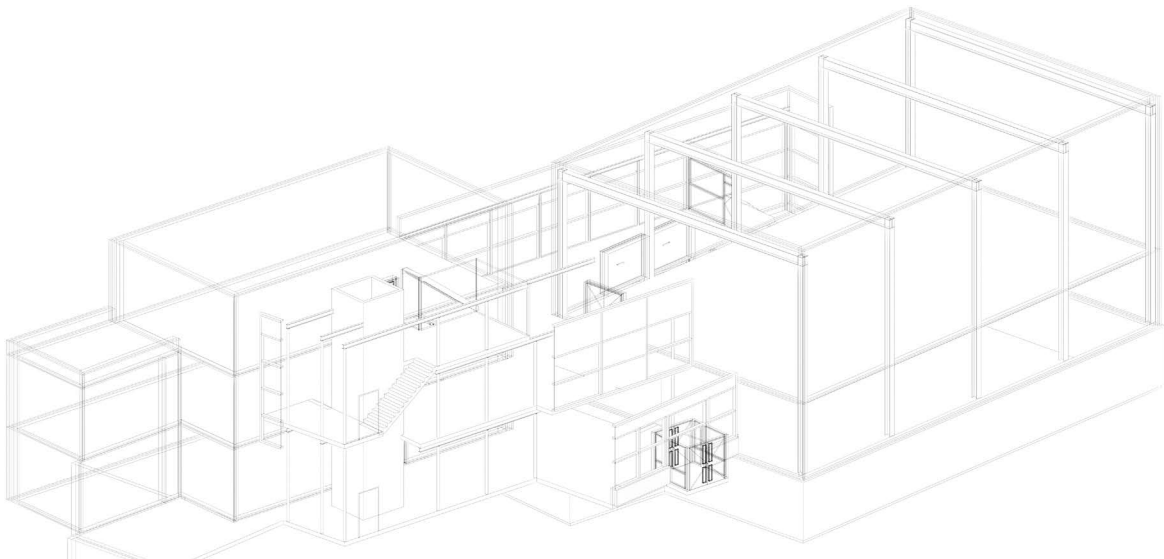


Figure 150 *Load Bearing structure - St. Anna extension*

Conclusions - Structure

This conclusion is also based on the analysis made in the second part of this booklet “Technical Analysis”

The timber roof constructions of both the schools are aesthetically pleasing to see and create an large space which can be used by multiple functions. The construction of the St. Jozef has more historical value than the construction of the St. Anna, it being a not standardized construction.

The construction of St. Anna’s extension is a steel skeleton structure filled in with limestone blocks. This construction creates large spaces and offers alot of design freedom for interventions. An important aspect of this construction is the separation from the historical building. This method is also usable for future developments.

The structures of the original buildings have a lot less freedom. The facades of both the buildings are mainly load bearing, carrying the forces of the roof, and the floors.

The side facades of the St. Jozef have a lower priority in the load bearing structure, they only have to carry the roof construction and the secondary load bearing beams of the floor. This offers opportunities for intervention (see Figure 153).

Same goes for the St. Anna but here one has to take into account the monumental status of these facades, one should intervere with more care (see Figure 154).

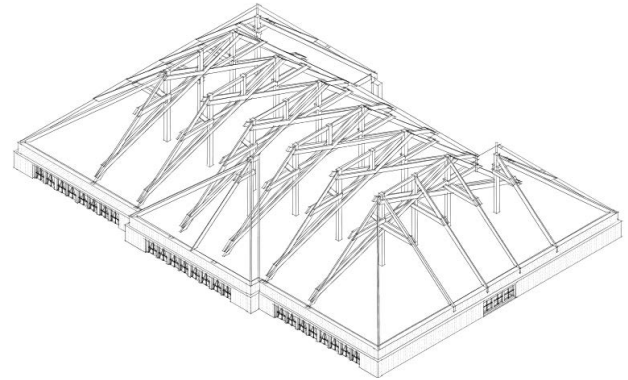


Figure 151 *St. Jozef - Roof Construction - Axonometric view*

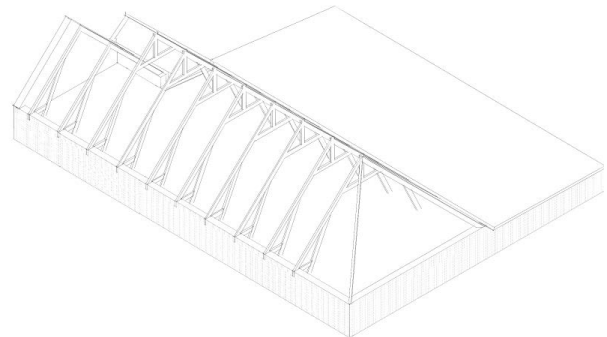


Figure 152 *St. Anna - Roof Construction - Axonometric view*

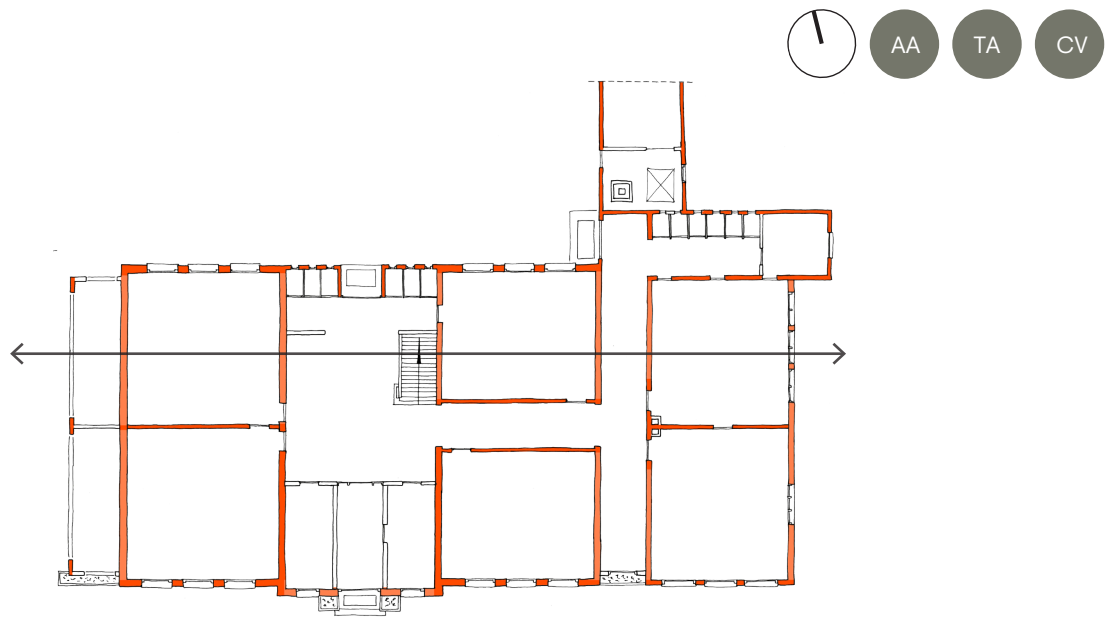


Figure 153 *St. Jozef - Section A-B - scale 1:400*

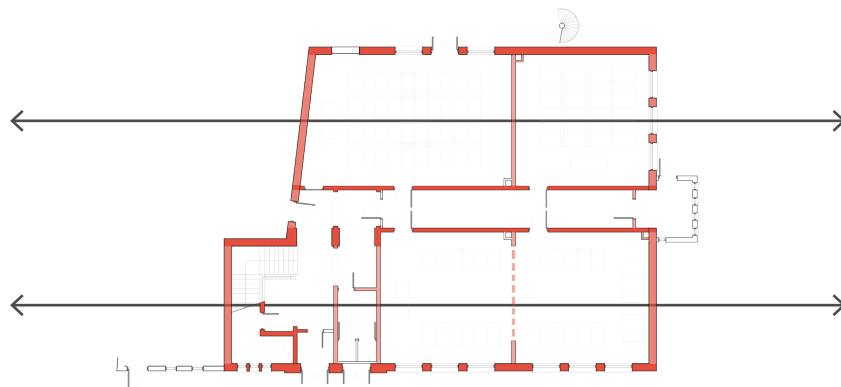


Figure 154 *Load Bearing - Ground floor St. Anna*



Space plan

VII. Space plan

“The interior layout - where walls, ceilings, floors, and doors go. Turbulent commercial space can change every 3 years or so; exceptionally quite homes might wait 30 years”.

(Brand, 1994, p. 13)

In this chapter, several themes related to the interior organisation and atmosphere are analysed. The focus of the analysis lies on understanding what features are valuable for the experience of the interior. The routing and how this changed over time, is one of the most important themes, since it has a big impact on the way one experiences the interior space.

Lighting also plays a big role. The incoming daylight has a great impact on the way one experiences an interior space; a space could be totally transformed with the right amount of light. Especially when it comes to an educational building, lighting conditions are extremely important for students' spirit and mood. Consequently, dark corridors could make a space look dull and monotonous, while bright hallways could make the interior look more spacious and welcoming. Next to light, the interior surfaces and textures can also influence the character and spirit of the place.

By analysing and interpreting the aforementioned themes, the obligations, opportunities and dilemmas will become clear.

Image 65 *Entrance hall St. Anna (Own photo)*

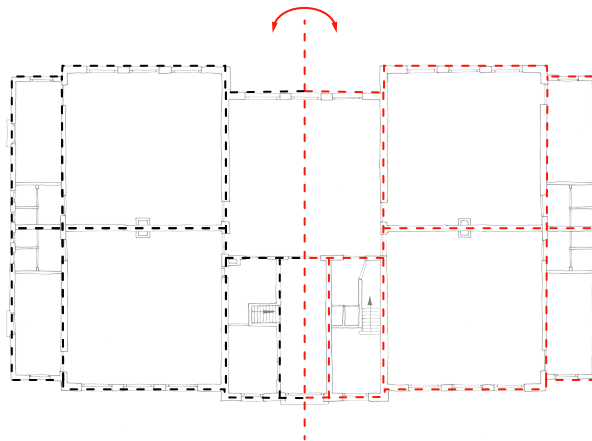
Space and Routing - St. Jozef

Routing

The symmetry, as mentioned before, is visible in the routing of 1891. Each classroom had its own entrance from the outside. A transition space between the classroom and the outside prevented cold air coming in the classroom.

Private

The ground floor of the St. Jozef in 1891 had hardly any private rooms. The ones which were there, were used either as storage or as an entrance hall to the teachers' house on the first floor.



1m 2.5 10 15

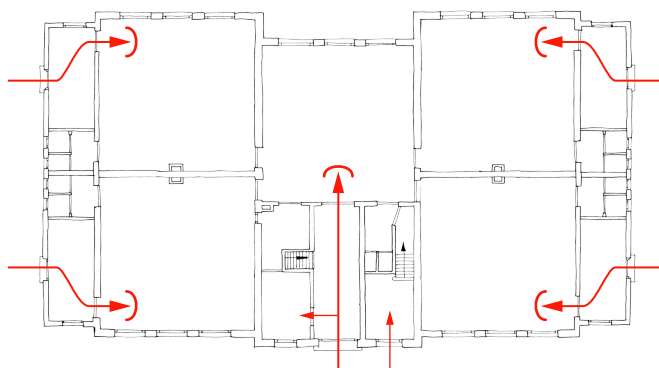


Figure 156 *Routing ground floor - 1891*

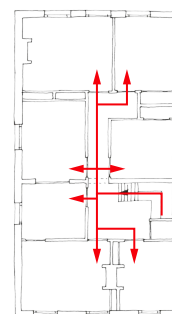


Figure 157 *Routing first floor - 1891*

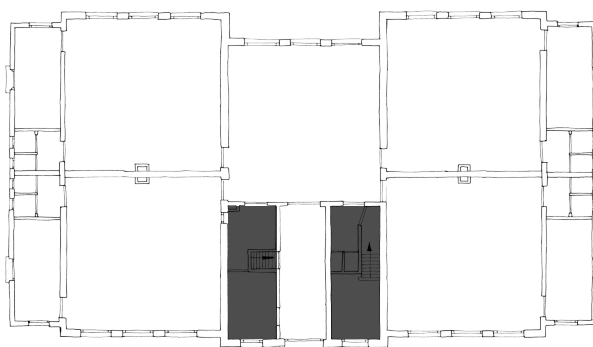


Figure 158 *Private space ground floor - 1891*

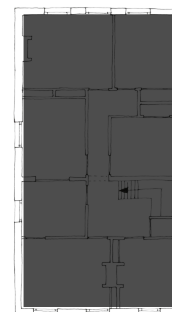


Figure 159 *Private space first floor - 1891*

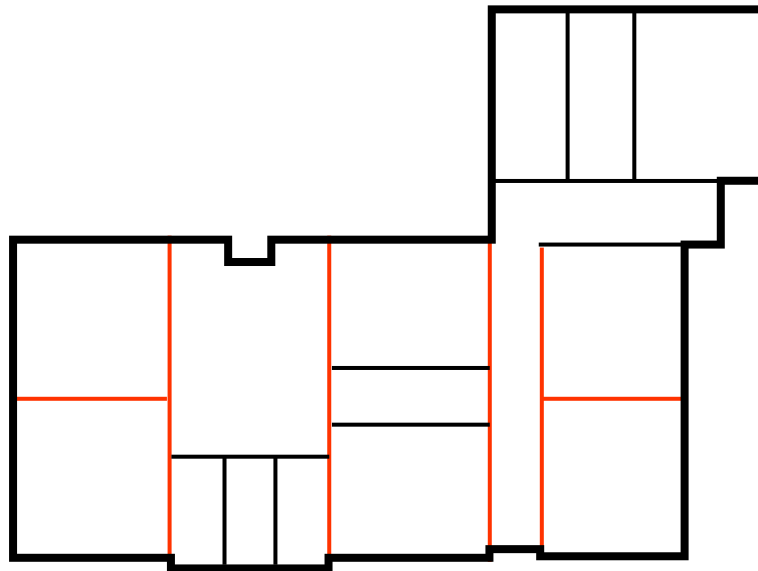
Space and Routing - St. Jozef

Spatial diagram

The spatial diagram of the St. Jozef changed compared to the original one in 1891 (see Figure 160). In 1914 an addition was added to the east side and later in 1934 an extra floor was added to the building.

Routing

The extra floor which was added resulted in a change of the organisation of routing; a staircase had to be added. Moreover, the routing changed from every classroom having their own entrance from the outside to a central hallway with a linear routing, which connects the classrooms internally.



1m 2.5 10 15

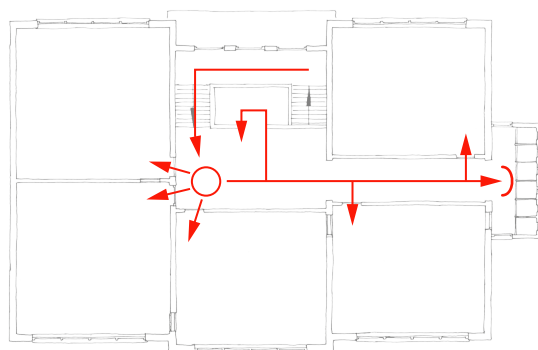


Figure 161 *Routing first floor - 2017*

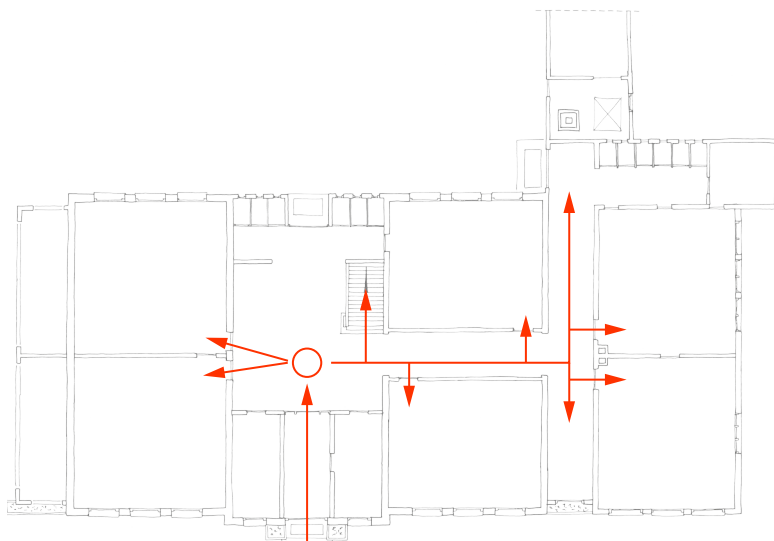


Figure 162 *Routing Ground floor 2017*

Spatial Atmosphere - St. Jozef

When studying the incoming daylight in the St. Jozef, it became clear that the amount of light in the corridors is not enough. This is due to the spatial organization of the interior, which does not allow openings in the hallways. As a result, the corridors are really dark, making the space

look monotonous and uninviting. Only the entrance hall is brighter, due to the big openings in the north facade and the white colour used on the walls, which helps the light reflection.





AA

CV

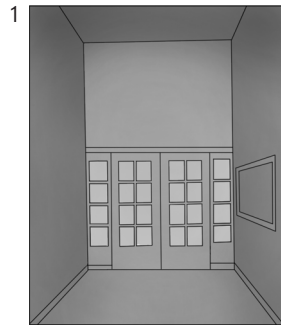


Image 66 *Entrance*

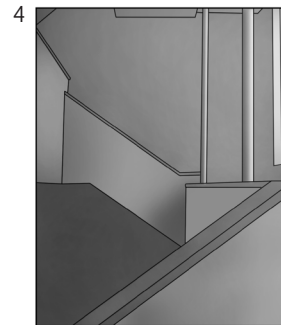


Image 69 *Staircase*



Image 67 *Entrance hall*

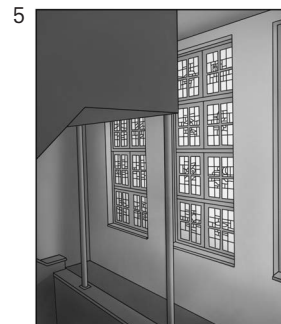


Image 70 *Landing*

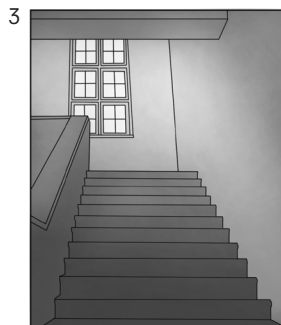


Image 68 *Staircase*



Image 71 *Hallway*

Hallways - St. Jozef

Next to light, the interior surfaces and textures can also influence the character and spirit of a place. In St. Jozef, as seen on the images, the variety as regards the materials used is limited; most walls are covered with white plaster. However, one interesting element of the interior, which adds a unique layer to the space, is the floor, made of ceramic glazed tiles. This floor, although is not the original, is remarkably valuable, since it shows the craftsmanship and style of the 20th century.

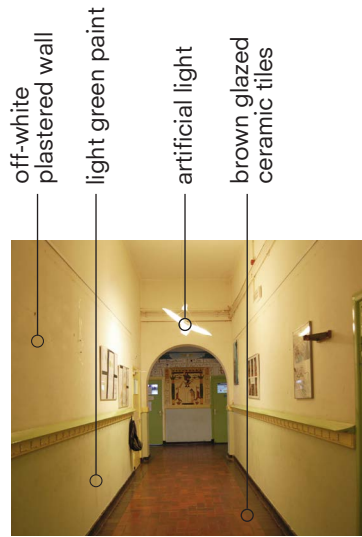


Image 72 *Hallway, ground floor*

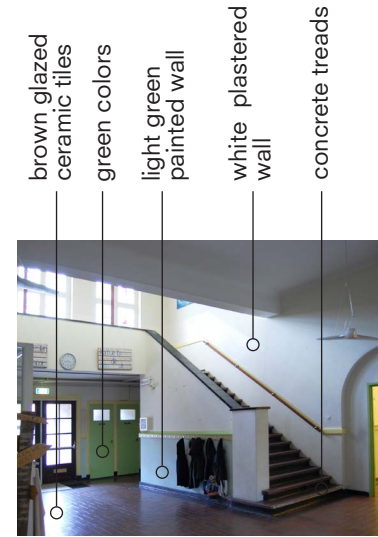


Image 73 *Entrance hall*

Another significant element of the interior is the stained glass, used in the central windows of the north facade. The stained glass and its colourful scenes might represent the ideas of Vrije School; this is merely a hypothesis.



Image 74 *Stained glass*

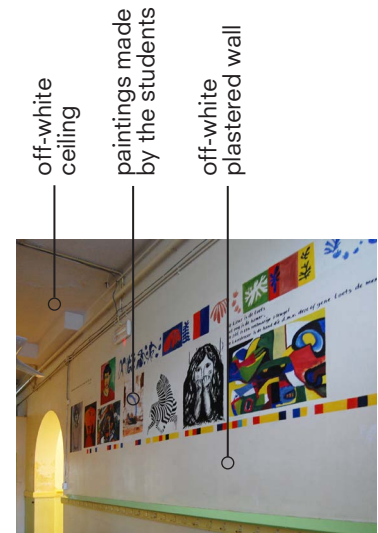


Image 75 *Hallway, ground floor*

Finally, the paintings on the walls made by the students attribute to the space an additional character, transforming the white plastered corridors into vibrant routes. These drawings are part of school's history and, thus, hold cultural value.

Classrooms - St. Jozef

As regards the classrooms of St. Jozef, they are all painted with either white or light colours. The ceilings are covered with white false ceilings, made of plasterboards. The floor is covered with linoleum.

An important element of the classrooms are the custom-made cabinets, which were designed alongside the building. These cabinets are considered valuable for the building, since they show the craftsmanship and style of the 20th century.

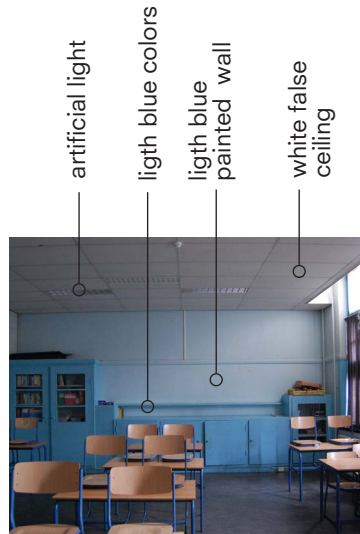


Image 76 Classroom, ground floor

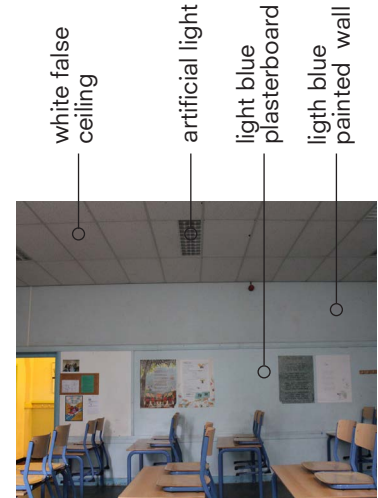


Image 77 Classroom, ground floor

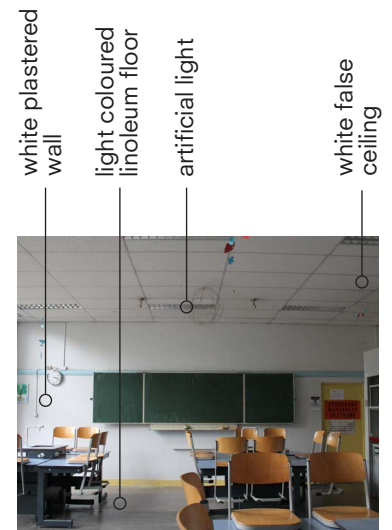


Image 78 Classroom, ground floor

Spaceplan & Routing - St. Anna

Spatial diagram

The original building dating from 1909 had two entrances on the Tengnagelshoek, which are still visible in the current situation. These entrances were separating the two different classes. The “klompen” (the wooden shoes) and the “schoenen” (normal shoes); in other words, it was a separation between the rich and the poor. The entrance on the left gave access to the first floor and the entrance on the right gave access to the ground floor. Both floors shared the gymnasium, which was located at the back side.

Routing

Because of the separation, the building had two different routings. Both routings were linear with classrooms on either side and the route ended at the sanitary units. Later, the right entrance was closed off and the separating wall was removed.

Private

The only private room is the teachers' office on the first floor and a small storage room.



Figure 164 The two entrances at the tengnagelshoek - St. Anna 2017

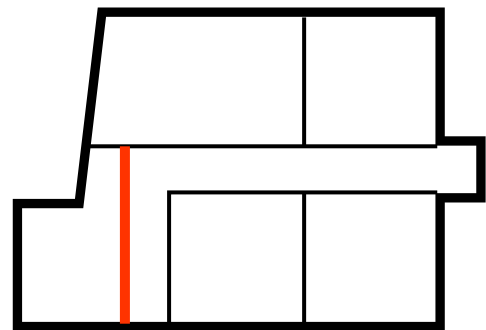


Figure 165 Space plan - St. Anna 1909 - Indicating the separation wall

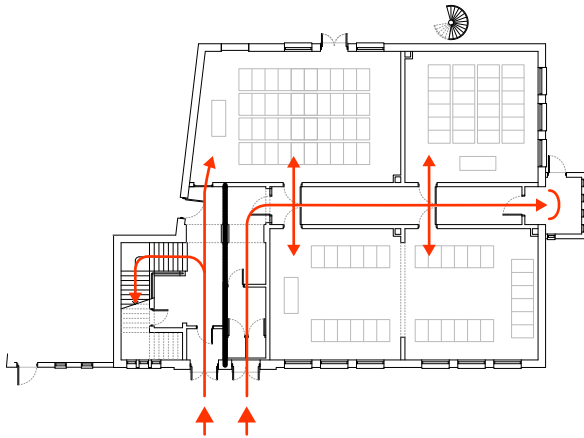


Figure 166 Space plan - Routing ground floor St. Anna 1909

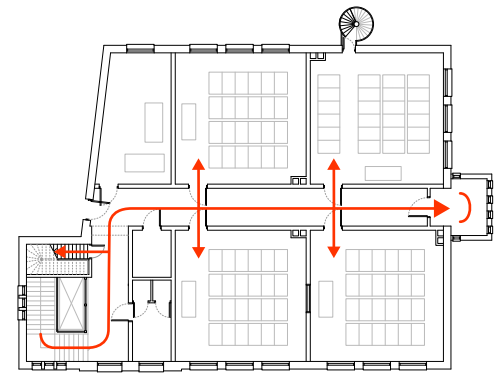


Figure 167 Space plan - Routing first floor St. Anna 1909

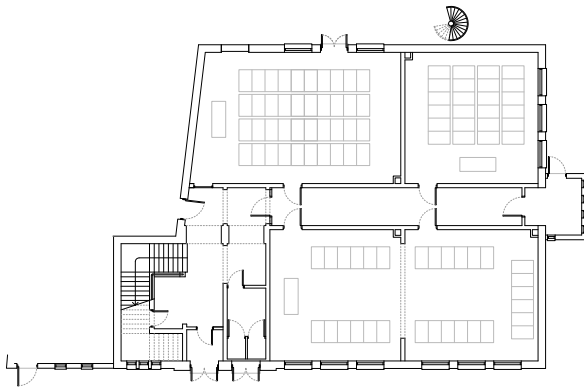


Figure 168 Space plan - Private ground floor St. Anna 1909

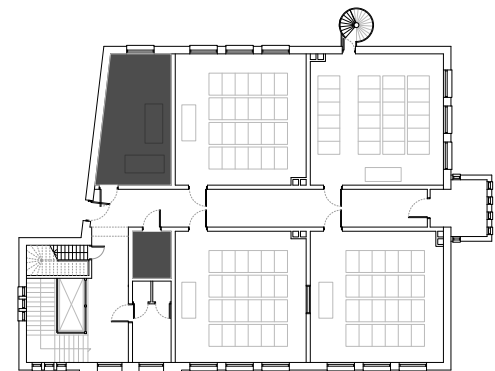


Figure 169 Space plan - Private first floor St. Anna 1909

St. Anna - Spaceplan & Routing

Spatial diagram

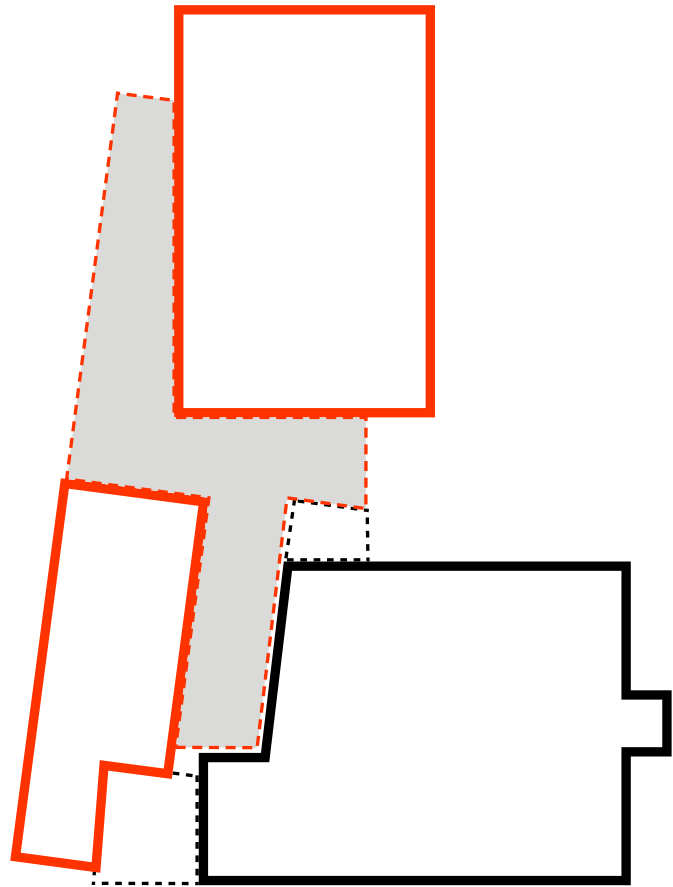
The spatial diagram of the original St. Anna remained the same. As regards the extension, two enclosed blocks were added together with a transparent in-between space, which connects the old and the new. This in-between space is constructed in such a way that it is separated from the original building.

Routing

Alongside the extension a new entrance was added, which is now located on the north side of the building, sharing the space with the St. Jozef school. Because of this new entrance, the routing in the building changed but kept its original linear character.

Private

The new extension did not add much more private space. Near the entrance, a small room was added for the concierge, while the kitchen in the cafeteria is a private space.



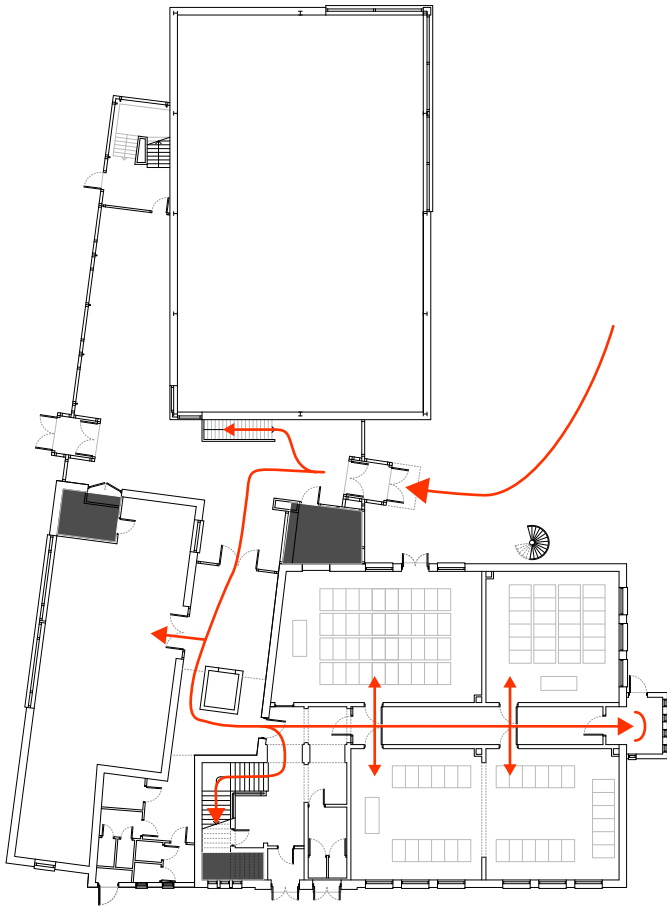


Figure 171 Space plan - Routing ground floor St. Anna 2017

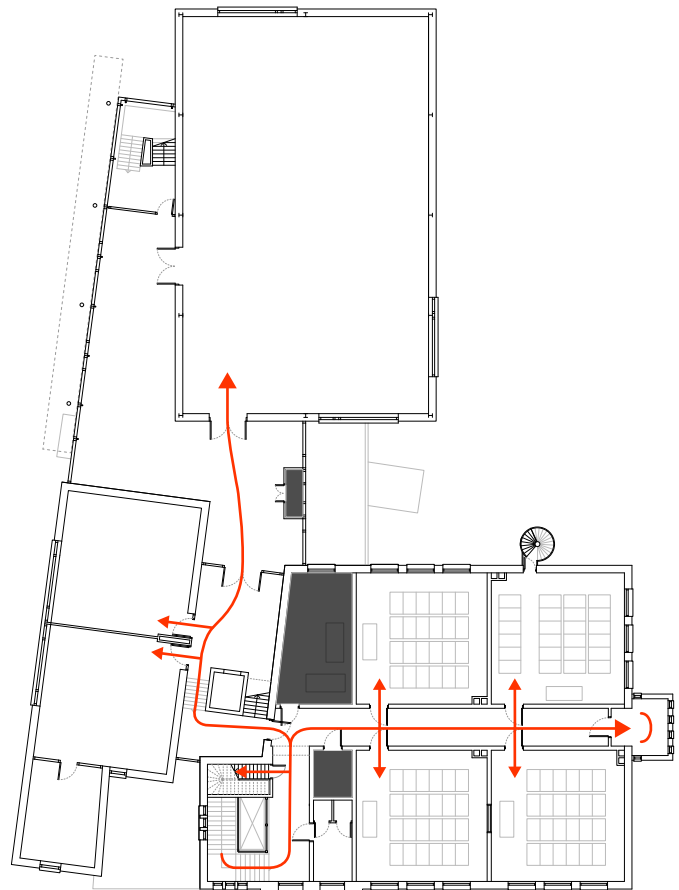


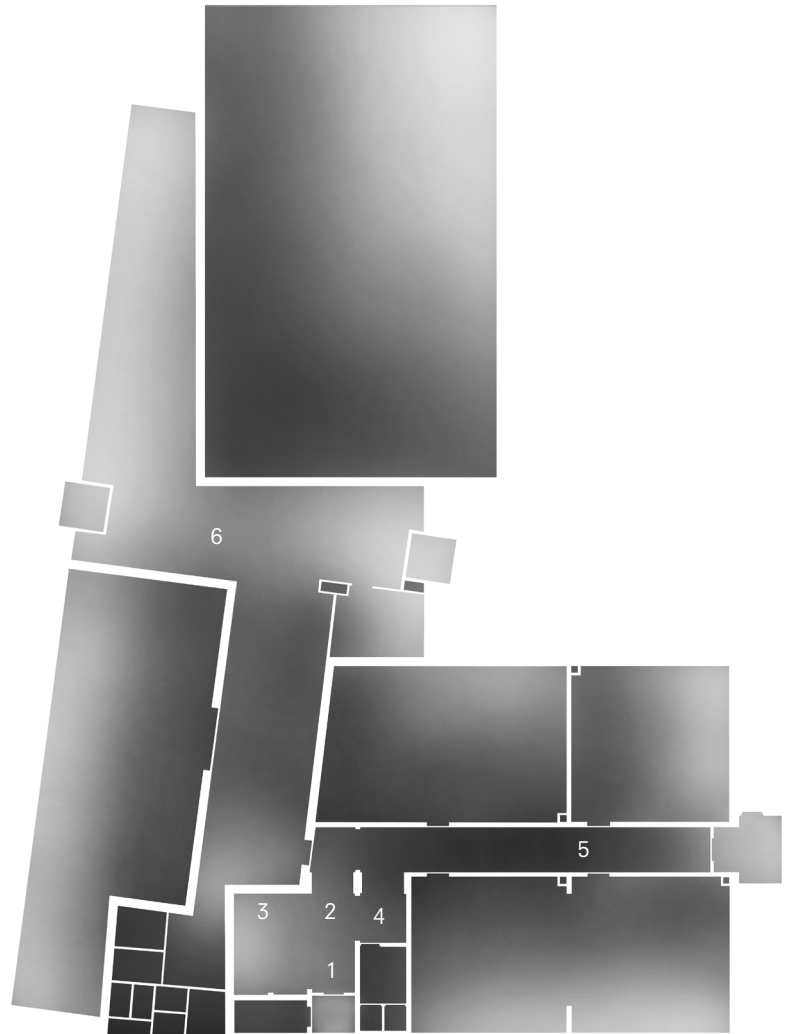
Figure 172 Space plan - Routing first floor St. Anna 2017

Spatial Atmosphere - St. Anna

When studying the incoming daylight in the St. Anna, it became clear that the situation was similar to the St. Jozef; the amount of light in the corridors of the original building is not enough. This derives from the spatial organization of the interior, which does not allow openings in the hallways. As a result, the corridors are really dark, making the space look dull and monotonous.

However, the entrance hall is brighter, due to the openings in the west and south facades. The atmosphere of this hall is really important for the spirit of the whole building.

As regards the extension of St. Anna, the lighting conditions are better and make the space look more vibrant. This is due to the morphology of the structure, which allows transparency and, thus, plenty of incoming daylight.





AA

CV

1



Image 79 *Hall*

4



Image 82 *Hallway*

2



Image 80 *Staircase*

5



Image 83 *Hallway*

3



Image 81 *Staircase*

6

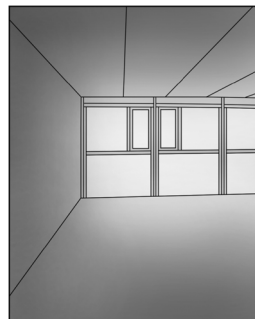


Image 84 *Hallway, extension*

Hallways - St. Anna

In St. Anna, the variety as regards the materials used is richer compared to St. Jozef. The walls in the entrance hall and hallways are more detailed, having engraved lines and profiled corners. Additionally, the original terazzo flooring is a noticeable feature of the interior. Although damaged, it holds cultural value, since it represents the style and construction history of the 20th century.

Another significant element of the interior is the historical staircase, which is original and shows the influences of Art-Nouveau. The dark coloured stone used for the threads and risers, highlights the staircase, making it predominant feature of the interior.

Finally, the paintings and ceramic mosaics made by the students attribute to the space an additional character, making it look vibrant and appealing. These drawings are part of school's history and, thus, hold cultural value.



Image 85 *Main hall*

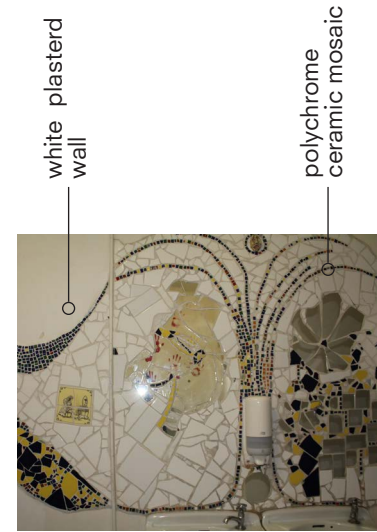


Image 86 *Sanitary, ground floor*

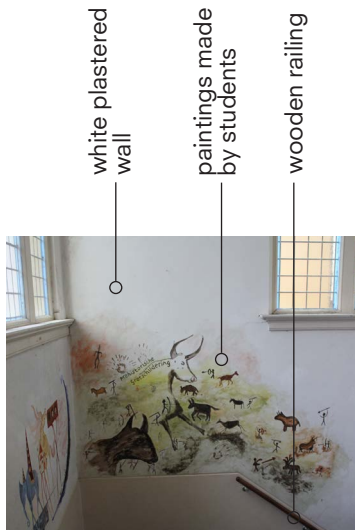


Image 87 *Wall paintings*

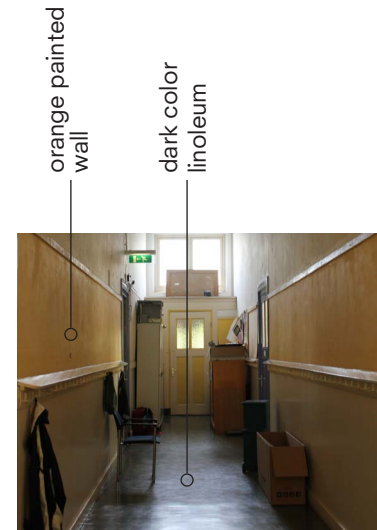


Image 88 *Hallway, first floor*

Classrooms - St. Anna

As regards the classrooms of St. Anna, they are all painted with either white or light colours. The ceilings are covered with white false ceilings, made of plaster-boards. The floor is covered with red linoleum.

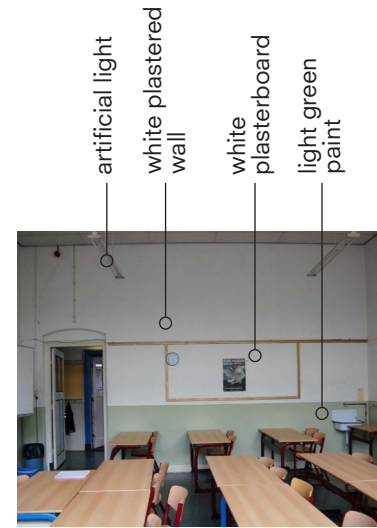


Image 89 Classroom, first floor

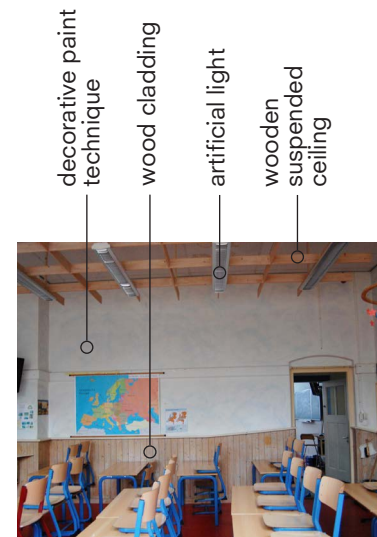


Image 90 Classroom, first floor

Hallways - St. Anna extension

As regards St. Anna's extension, the variety of the materials and textures is low. The red linoleum flooring stands out; not only because of its vibrancy, but also because it is reflected by the false white ceiling and, thus, dominates the whole space. The walls in the hallways are either bare, showing the yellow brick masonry, or plastered.

In general, the quality of this interior space is less compared to the original building. The incoming daylight might be more but the textures and colours used make the space uncomfortable.



Image 91 *Entrance hall*

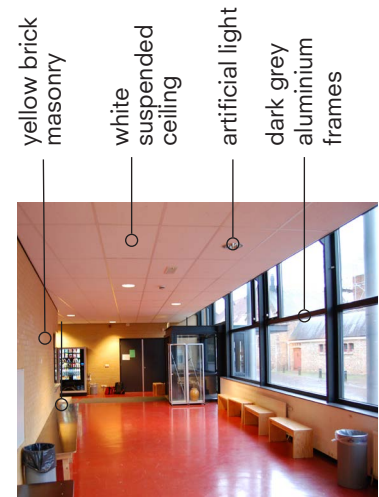


Image 92 *Hallway, ground floor*

Classrooms - St. Anna extension

As regards the classrooms of St. Anna's extension the situation is similar; the same materials were used. However, the atmosphere changes when it comes to the gym, which is designed in a different way.

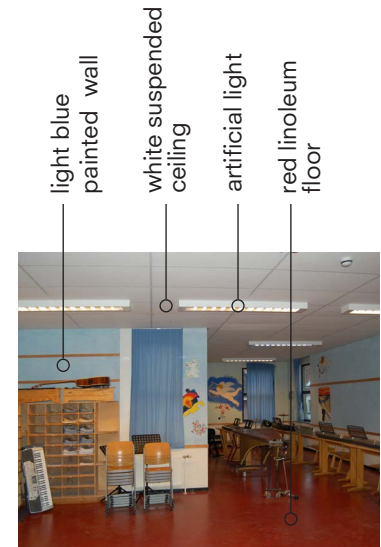


Image 93 Classroom, first floor



Image 94 Gym, basement

Conclusions - Space plan

Architectural analysis

When it comes to the interior atmosphere of both schools, the lack of daylight in the hallways makes the space look dull and uninviting. However, both entrance halls are brighter, making the experience of the interior more pleasant. The drawings on the walls, made by the students, add an extra layer to the character of the space. These drawings are an integrated part of the history and identity of the buildings and, thus, are considered valuable.

In the extension of St. Anna nothing interesting is found or experienced, as regards the atmosphere of the interior space. Although enough daylight enters the building, making the space look more vibrant, the quality of the space is less compared to the original building.

Cultural Value

As regards St. Jozef, the historical floor and the stained glass are important features of the character and atmosphere of the interior and define the age and history of the building.

In regards to St. Anna, the design of the staircase of the main hall reflects the influences of the Art-Nouveau style and plays an important role in the organisation of the building. Besides, the historical terazzo floor is important for the character and the atmosphere of the interior. Repairs are needed to restore the damages.

Alongside the extension to St. Anna in 1999, the entrance hall and the routing had to be changed because of convenience (see Figure 174). The new entrance has positive values on the circulation of the building but the atmosphere of the historical entrance hall is lost. Is the more convenient circulation more valuable than the experience of the historical entrance hall?

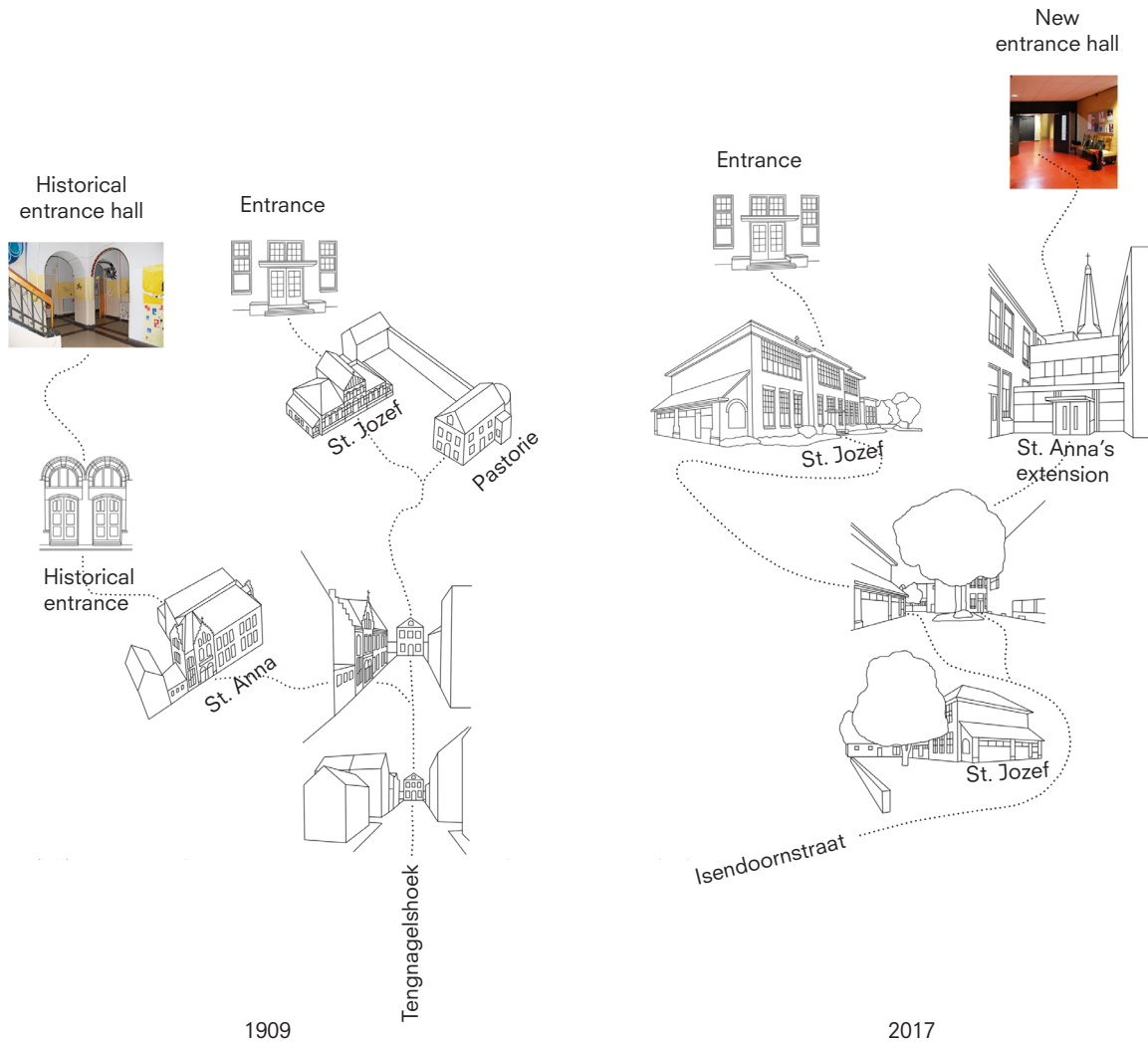


Figure 174 *Change in routing resulted into a new way of entering St. Anna school*



Services

VIII. Services

“These are the working guts of a building: communications wiring, electrical wiring, plumbing, sprinkler system, HVAC (heating, ventilating, and air conditioning), and moving parts like elevators and escalators. They wear out or obsolesce every 7 to 15 years. Many buildings are demolished early if their outdated systems are too deeply embedded to replace easily.”

(Brand, 1994, p. 13)

This is how Brand describes the services. The analysis of the services can be found in part 2 “Technical Analysis” in the chapter “XV. Services” on page 227.



Stuff

IX. Stuff

“Chairs, desks, phones, pictures; kitchen appliances, lamps, hair brushes; all the things that twitch around daily to monthly. Furniture is called mobilia in Italian for good reason.”

(Brand, 1994, p. 13)

This is how Brand describes the stuff. The St. Jozef and St. Anna school are in use by the “vrije school” of Zutphen. Their approach to education differs compared to the more traditional education system. This different approach is visible in the stuff used in the building.

Stuff - Vrije School

The Vrije School is a education system which evolved from the anthroposophical philosophy by Rudolf Steiner. Steiner found it important for children to have the ability of developing themselves individually and be critical to the developments of the society.

For the Vrije School the development of the “head, heart and hands” (vszutphen.nl) are crucial. They do this by educating in three different ways, by project-based education which change every three weeks, normal lessons which are given throughout the year and the third is education in the arts.

The latter is mainly visable in the Stuff of both the schools. They have rooms for the students for crafts, as shown in Image 97, classrooms for the education in music as can be seen in Image 99 and the education

in performing for a large crowd. As can be seen in Image 100 and Image 101 where both the theatres are displayed.

The influence of the Vrije School on the buildings can also be seen in the chapter of Surfaces with the wallpaintings created by the students.



Image 97 *Crafts room (Own Photo)*



Image 98 *Sewing machine (Own Photo)*

Conclusion

The Vrije School left its traces throughout the building. The elements like the music instruments and the theatres define the character of the place. A character where the development of the mind is centralised.

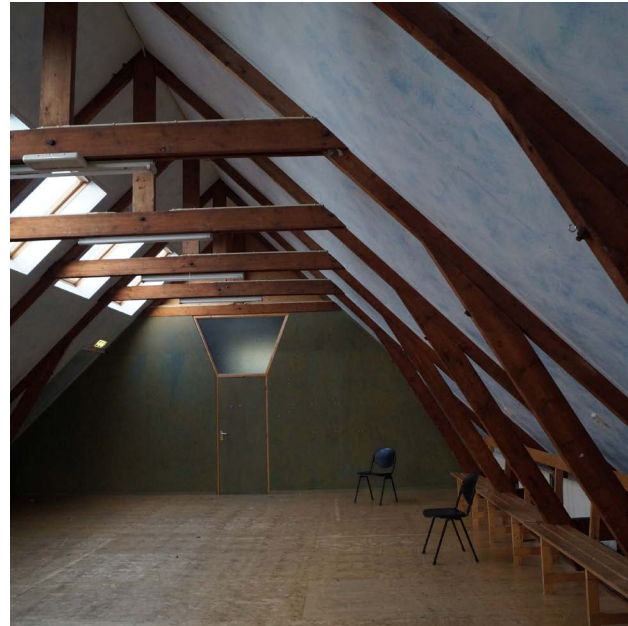


Image 101 Theatre St. Anna (Own Photo)



Image 99 Musical instruments (Own Photo)



Image 100 Theatre St. Anna (Own Photo)

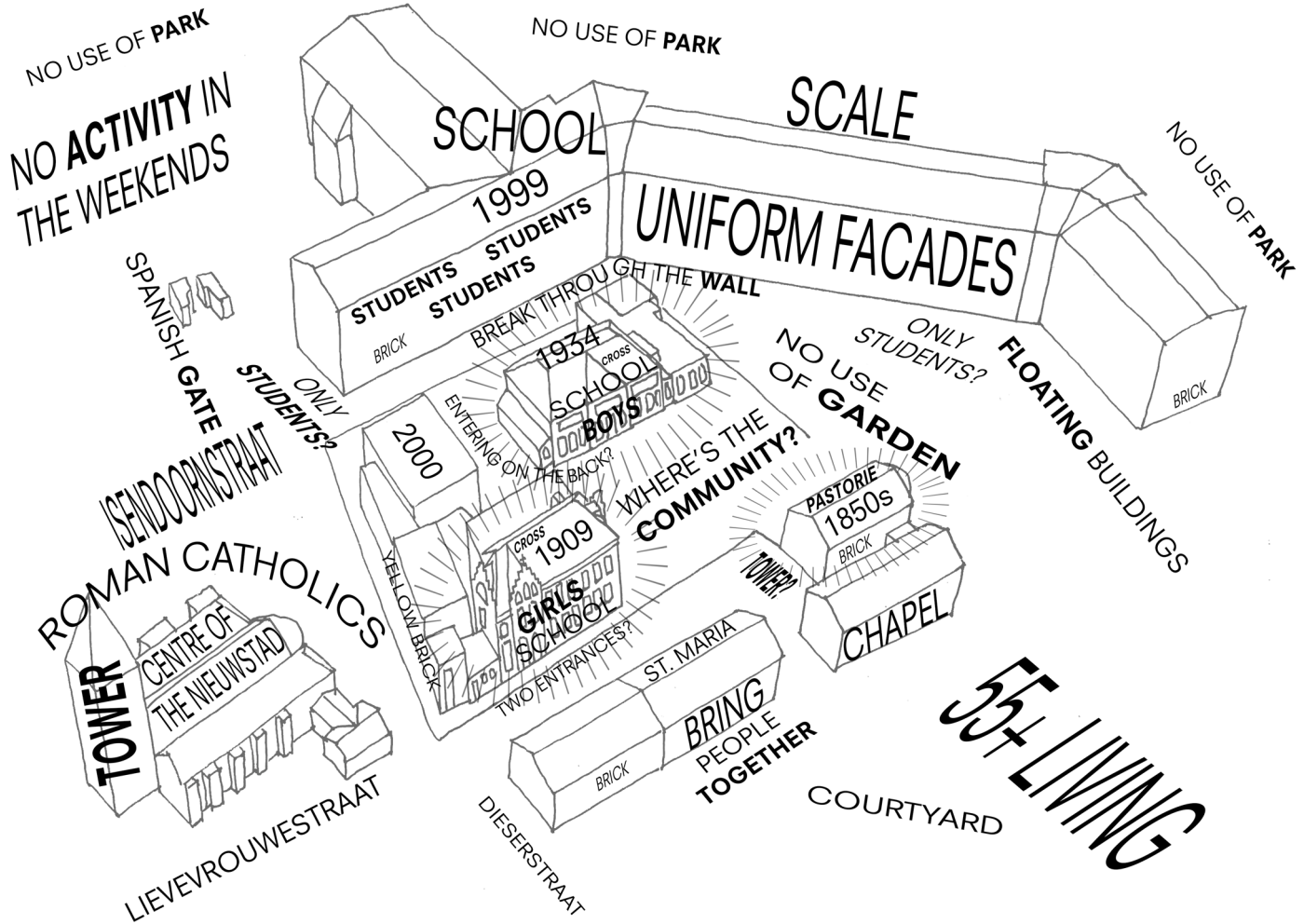


Spirit of the place

X. Spirit of the place

The Spirit of the place is based on the idea of expressing our own ideas and feelings, generated from the way we experience the site and its buildings. In a way mapping the (in-) tangible features and values. We did this by creating a 'Soft Atlas' of the artist Jan Rothuizen (2014). Together with pictures from the area we try to get a grasp on the spirit of the place.

Mind Map



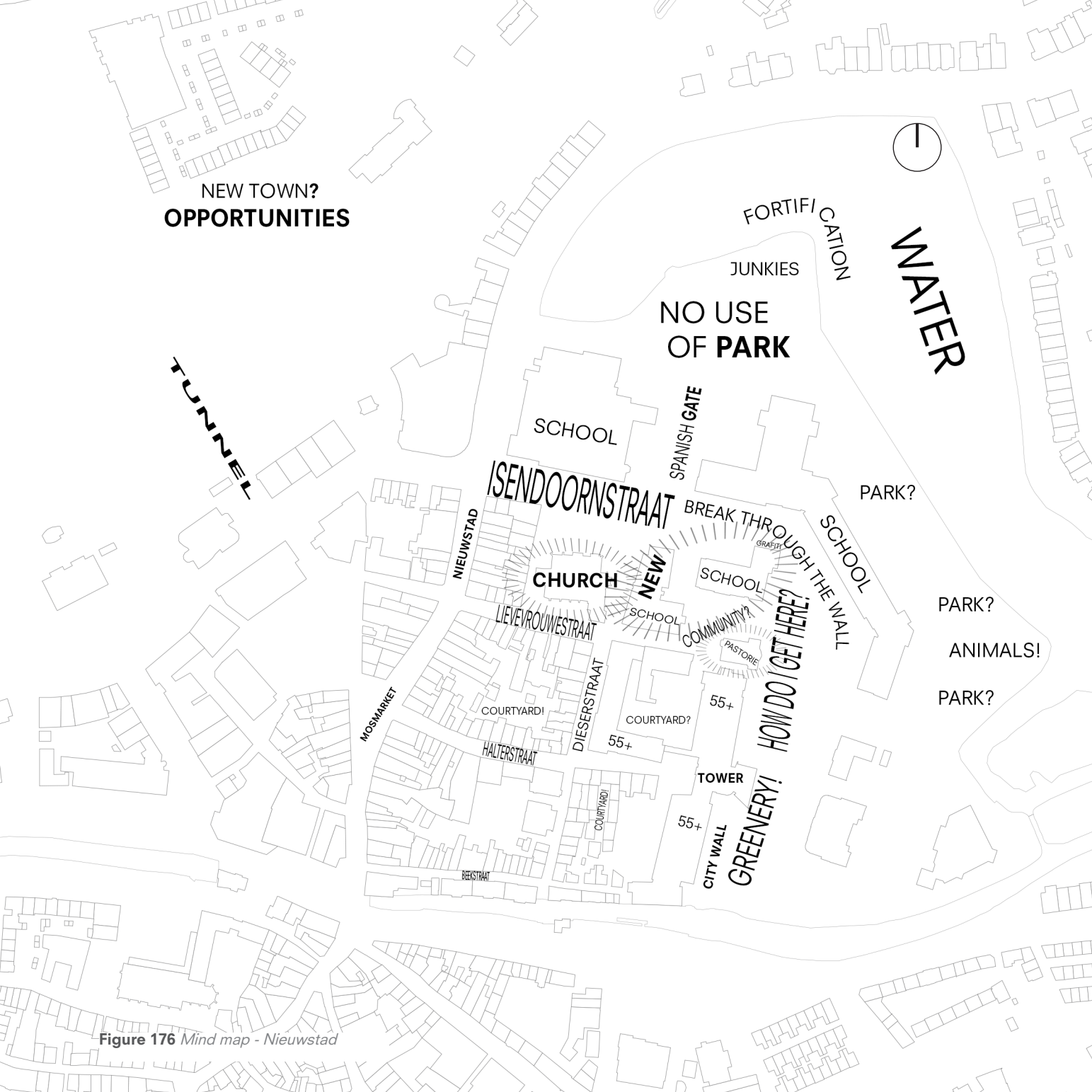


Figure 176 Mind map - Nieuwstad

Conclusions - Spirit of the place

The Roman Catholic Community was one of the driving factors of Nieuwstad with its Klein Vaticaen. The Nieuwstadskerk is the biggest evidence of this. The ensemble of the schools discussed in this booklet was also part of this Community. The buildings were sold to the Vrije School which resulted in the loss of the original Roman Catholic Community, but the signs of this community are still there, like the Catholic Crosses on the roof pitches of the buildings. The Vrije School introduced a new spirit to the building with its wall paintings and the *Stuff* in the building to emphasize the anthroposophical thoughts in the creative development of the mind. The Vrije School has to leave the building due to the lack of space. Resulting in the loss of another Community.

Here lies the opportunity for the future design, the location is known for its community and one could emphasize on this spirit.

The place also has alot of historical time references like the Spanish Gate. These resemble the heritage of the site and offers opportunities for future development.



Image 103 *Spanish Gate (Own Photo)*



Image 104 *The relation with the church (Own Photo)*



Image 105 *The Isendoornstraat (Own Photo)*



Image 106 *Graffiti at the Isendoornstraat (Own Photo)*



Image 107 *The Tengenelshoek (Own Photo)*



Image 108 *Wall paintings by the students (Own Photo)*



2 Technical analysis

Technical Analysis

This analysis book is made during the graduation studio *AR3AR111 Zutphen Sustainable City*, in the academic year of 2017-2018. This studio is part of the Heritage & Architecture Master track of the TUDelft. This book is part of a series of analysis on several buildings in the the Nieuwstad, a neighbourhood in the city of Zutphen. The aim of this analysis is to grasp the identity and character of this area.

The unraveling of the identity and character of the specific buildings can form a starting point for the further design of the students in creating a Sustainable City.

This part will focus on the technical aspects of the buildings. The structure, materials, damages and services will be analysed to get a grasp on the buildings structure and conditions for interventions in the future.

This part is made by:

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Stavroula Birda	4621204
George Sitarenios	4619544



Structure

XI. Structure

“The foundation and load-bearing elements are perilous and expensive to change, so people don’t. These are the building. Structural life ranges from 30 to 300 years (but few buildings make it past 60, for other reasons).”

(Brand, 1994, p. 13)

This is how Brand describes the structure. In this chapter of the analysis the structure will be analysed in more detail. The dimensions, the load bearing structure, the roof structure, the floor spans and the detailing will be analysed.

The goal is to understand the structure for interventions in the future.

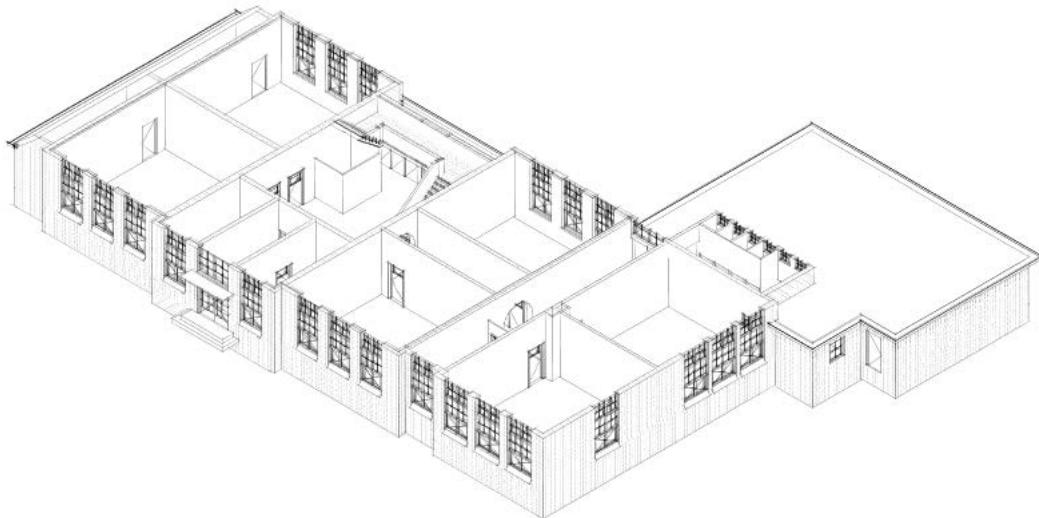
St. Jozef - Dimensions

Dimensions - St. Jozef

The space plan of the St. Jozef is defined by the load bearing structure. The inner dimensions of the classrooms are around 8 meters by 8 meters.

The exterior wall consists of a 220mm wide outer brick wall, 40 mm cavity and 100mm wide inner brick wall. We suspect that the outer wall is load bearing, the cavity for moisture transport and that the inner wall is used to carry the plasterwork.

The interior load bearing walls are 350mm and 220mm thick made out of brick.



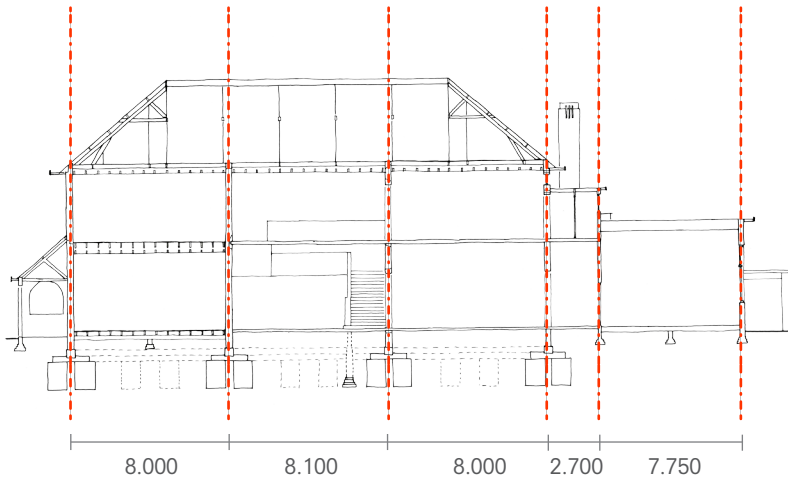


Figure 178 *St. Jozef - Section A-B - scale 1:400*

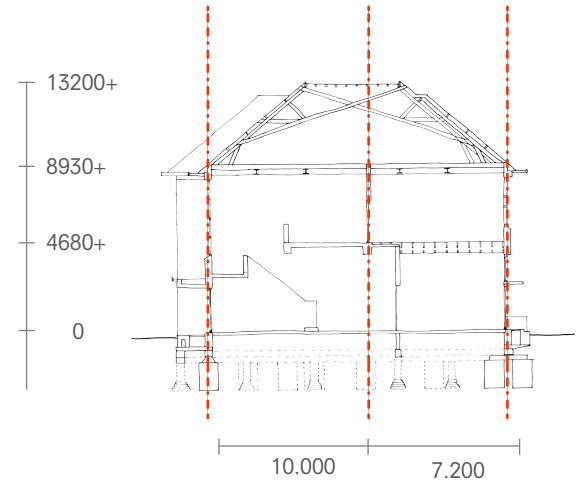


Figure 179 *St. Jozef - Section C-D - scale 1:400*

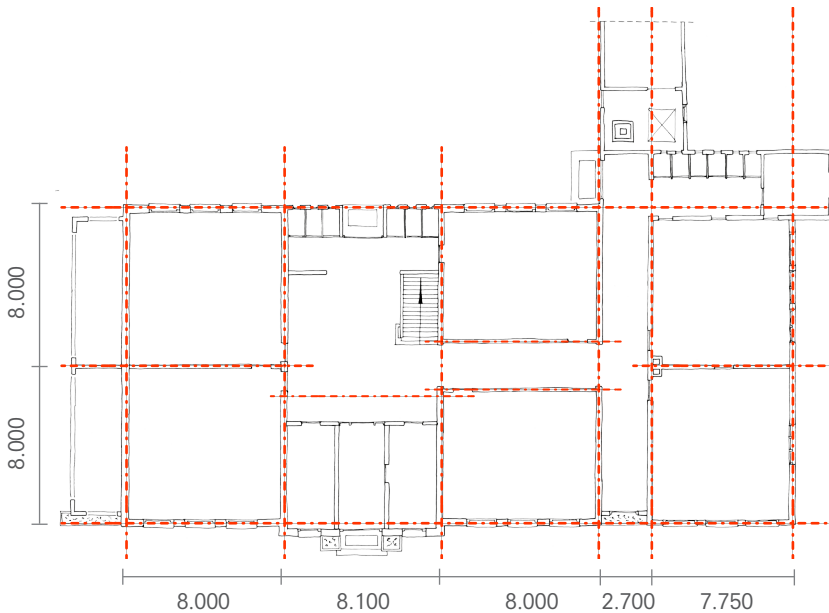


Figure 180 *St. Jozef - Ground Floor - scale 1:400*

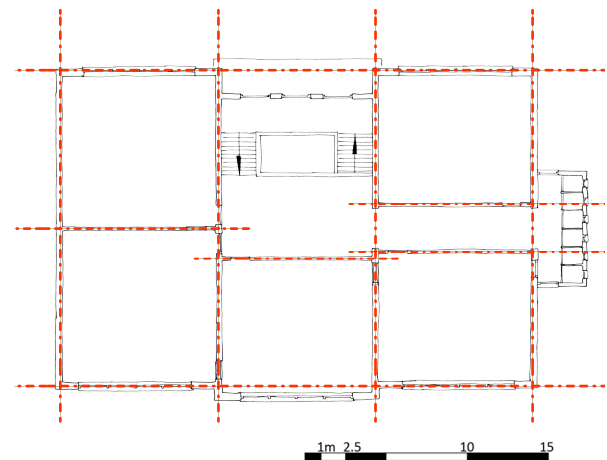


Figure 181 *St. Jozef - First Floor - scale 1:400*



St. Jozef - Load Bearing structure

Foundation - St. Jozef

The building has a pit foundation which is set to the sides of the wall. The foundation consists of concrete rings which are sinking in the ground on their own weight when the ground in the inner ring is digged out. When one ring is almost in the ground the next ring will be put on top of the former ring. The foundation beam underneath the wall rests on some sort of "kerp" which creates a bridge between the two pits (see Figure 182).

From the original drawings it could be indicated that the foundation beam is made out of concrete, to bear the load the concrete in the beam has to be reinforced. For 1891 it is too early to have reinforced concrete so we could conclude that the foundation is altered in 1934 when the extra floor was added to the building.

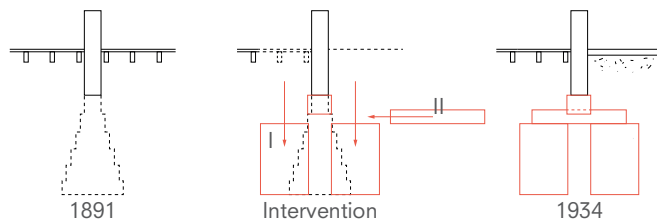


Figure 182 St. Jozef - Diagrams on foundation

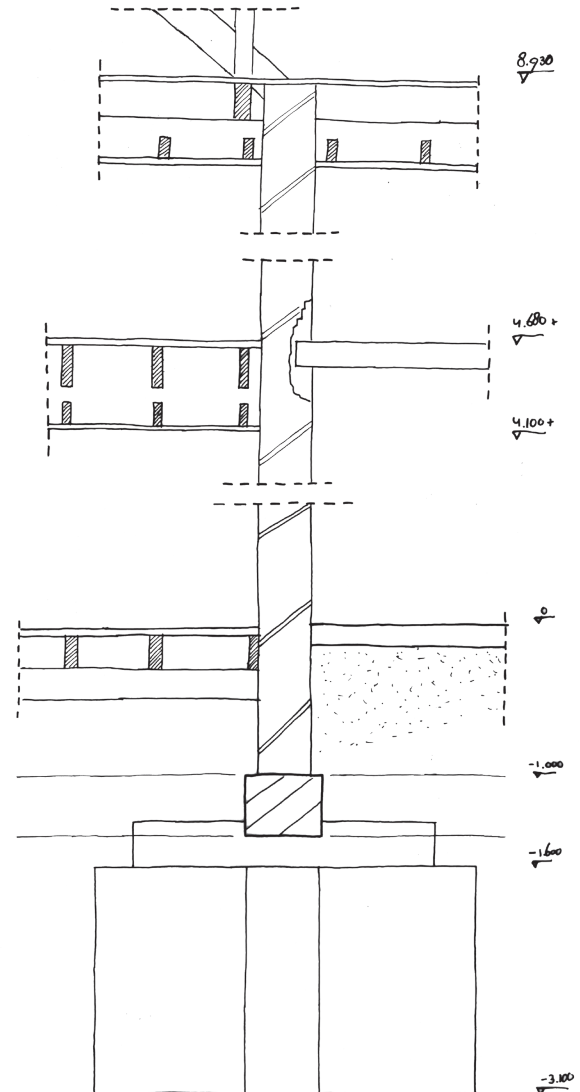


Figure 183 St. Jozef - Interior wall details - scale 1:25

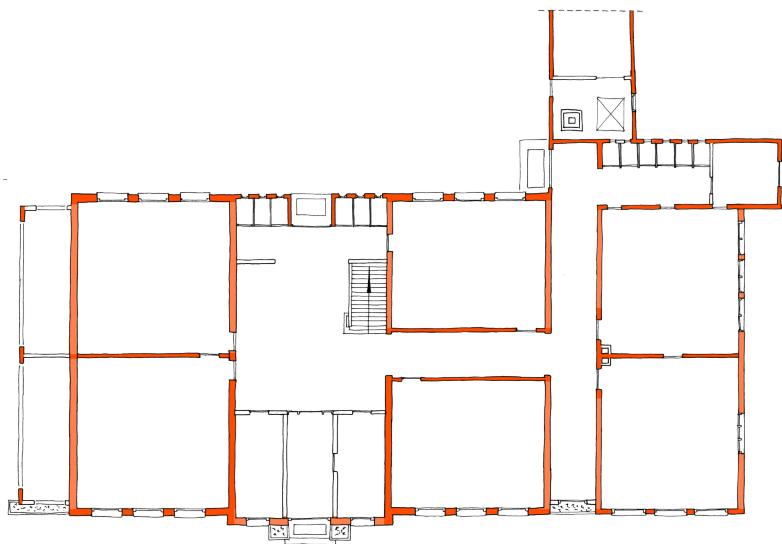


Figure 186 *St. Jozef - Section A-B - scale 1:400*

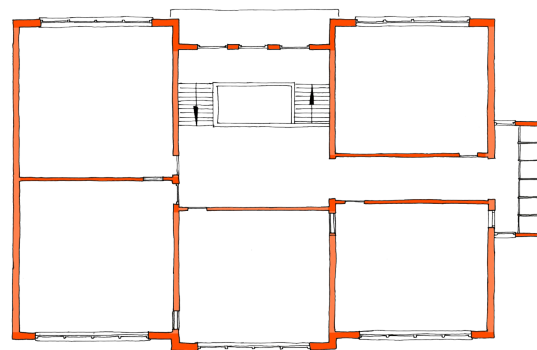


Figure 187 *St. Jozef - Section C-D - scale 1:400*

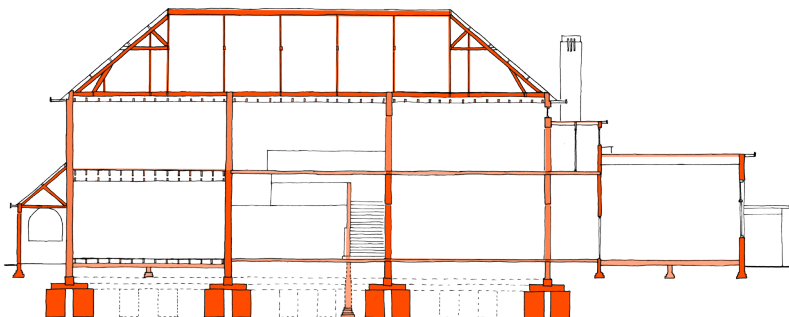


Figure 184 *St. Jozef - Ground Floor - scale 1:400*

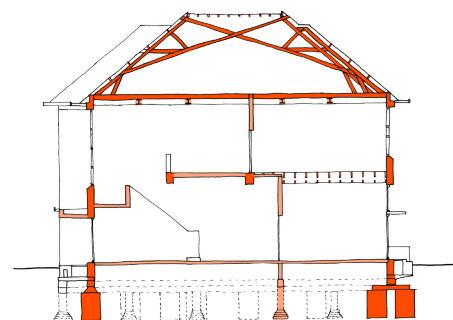


Figure 185 *St. Jozef - First Floor - scale 1:400*

St. Jozef - Roof structure

Timber roof construction - St. Jozef

The timber roof construction is made out of pine wood. The width of the building resulted in a construction which is specially designed for the St. Jozef. It is an adjustment to the standard "Dutch Truss"

Because of this design 17 meters could be spanned and a large space was created which is usable for many functions.

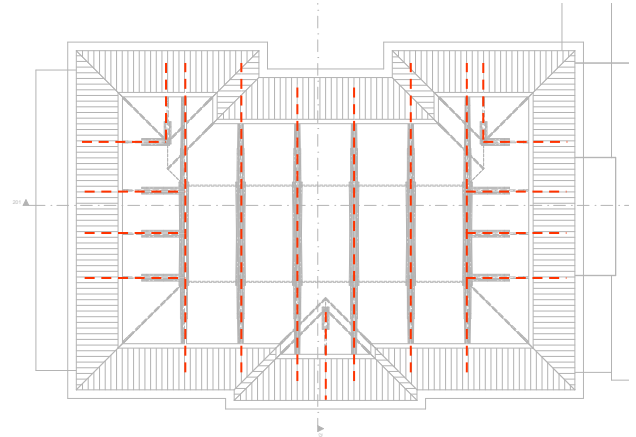


Figure 188 St. Jozef - Roof plan - scale 1:400

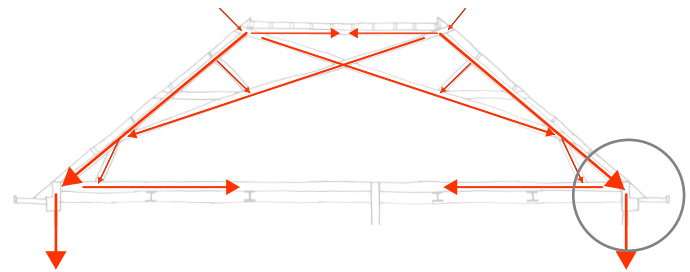


Figure 189 St. Jozef - Roof construction - scale 1:200

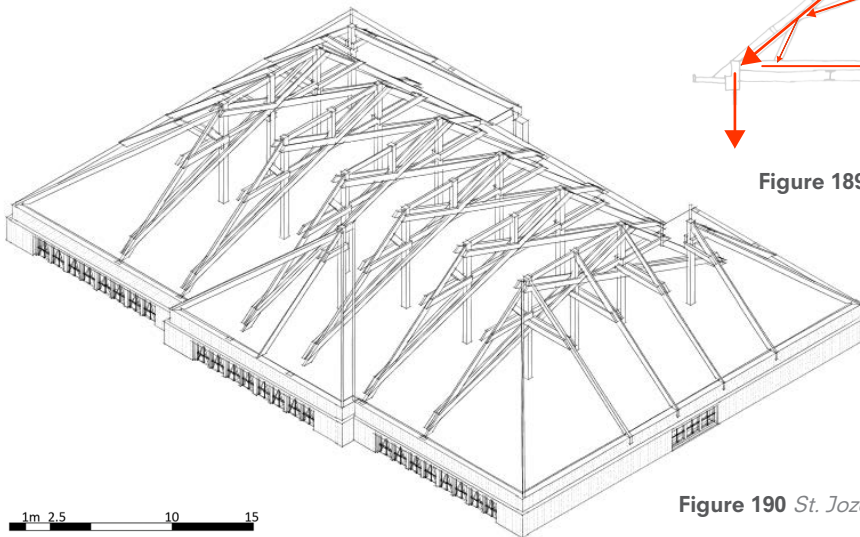


Figure 190 St. Jozef - Roof Construction - Axonometric view





AA

TA

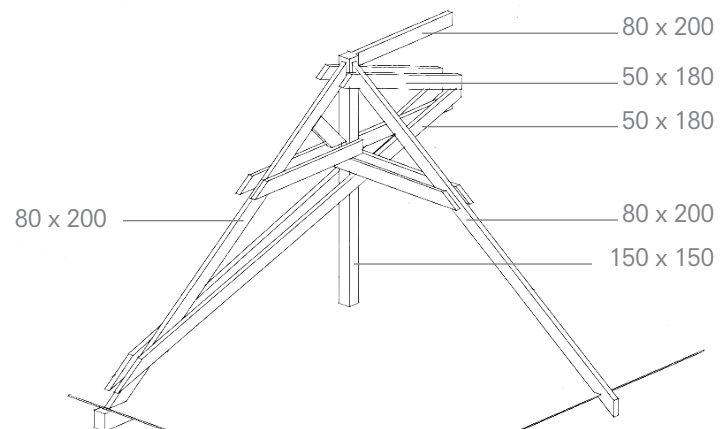
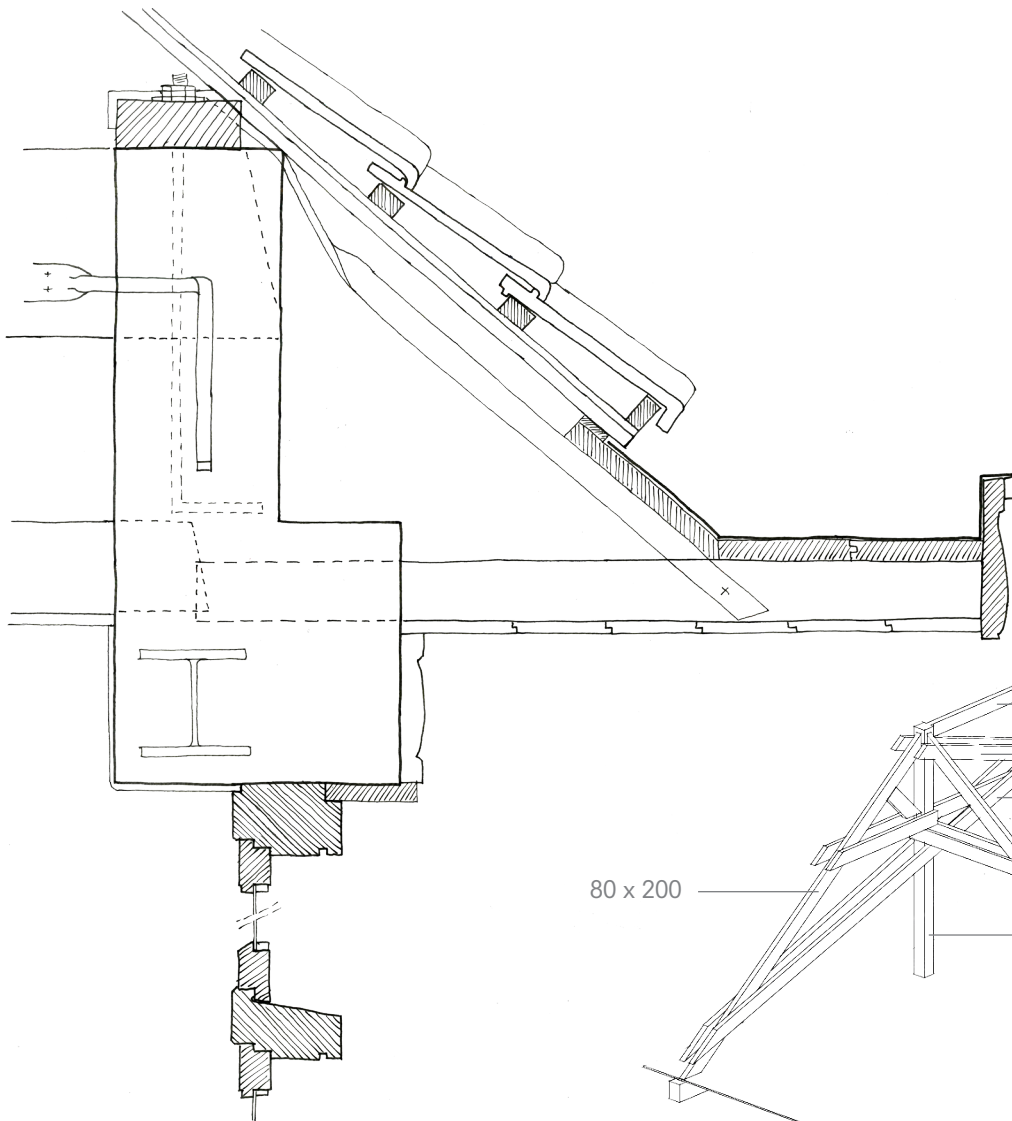


Figure 191 *St. Jozef - Gutter Detail - Scale 1:10*
Indicated on the original drawing

Figure 192 *St. Jozef - Detail on roof construction.*
Dimensions (mm) based on original drawings

St. Jozef - Floor Spans

Floor construction - St. Jozef

St. Jozef has three types of flooring, timber flooring in the classrooms, stamped concrete in the hallways on the ground floor and reinforced concrete flooring in the hallways of the first floor.

The timber flooring spans from north to south and is supported on two sides. To decrease the span of the beams a secondary beam is added underneath which spans from east to west. The dimensions of the beams can be found in Figure 198 and Figure 199. The dimensions are based on the original drawings from the archive. These spans create a cavity on the ground floor which is used for ventilating the floor and for services.

The concrete floor on the ground floor is resting on the soil. During construction the soil was heightened to the demanded height then the concrete was pored and stamped together to create a solid slab. There is no cavity underneath the floor because of this.

The reinforced concrete first floor is supported on 4 sides by the load bearing walls. In the entrance hall two large concrete beams are added to support the floor.

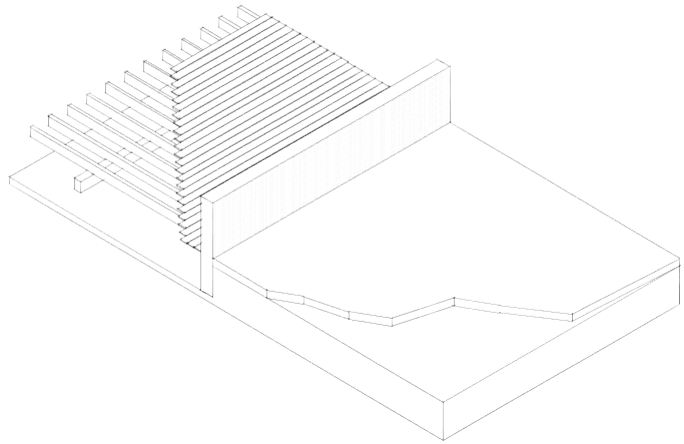


Figure 193 *St. Jozef - Concrete floor on soil "stampbeton"*

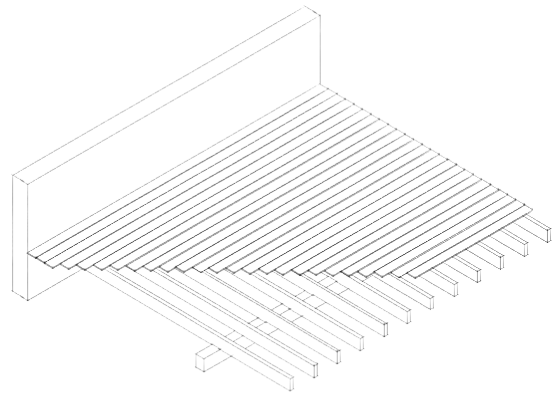


Figure 194 *St. Jozef - Wooden floor construction with ventilated cavity*

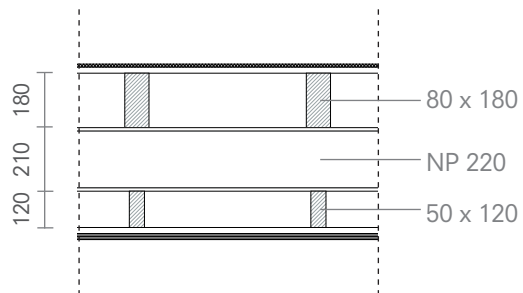


Figure 198 *St. Jozef - First Floor detail - scale 1:25*
Dimensions based on original drawings

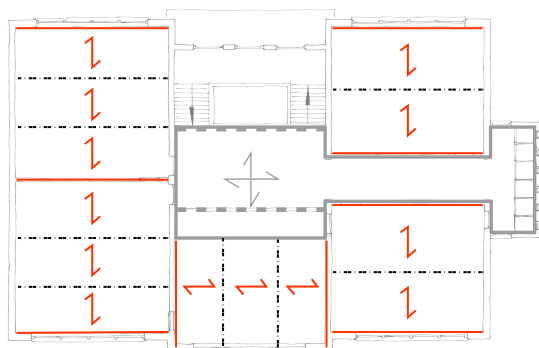


Figure 196 *St. Jozef - First Floor - scale 1:400*

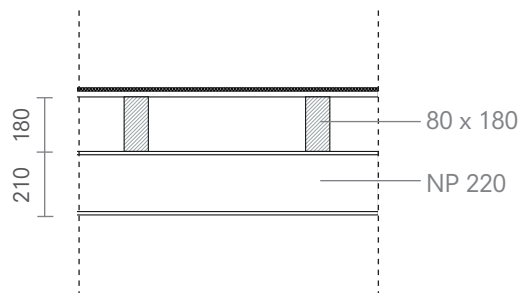


Figure 199 *St. Jozef - Ground Floor detail - scale 1:25*
Dimensions based on original drawings

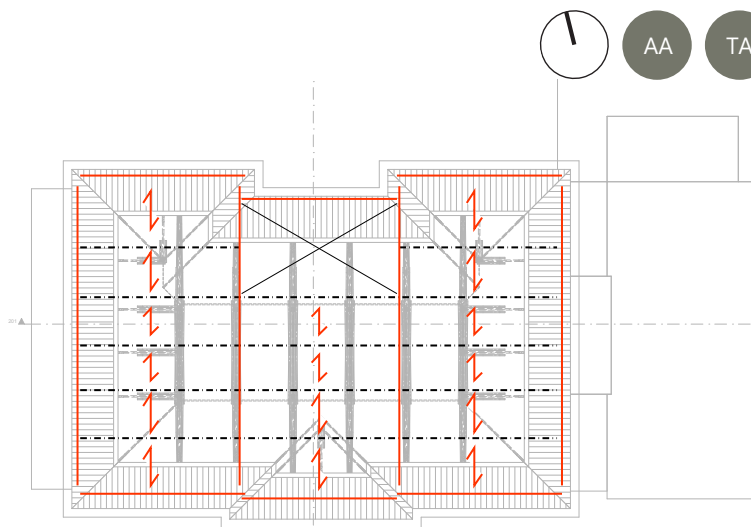


Figure 195 *St. Jozef - Second Floor - scale 1:400*

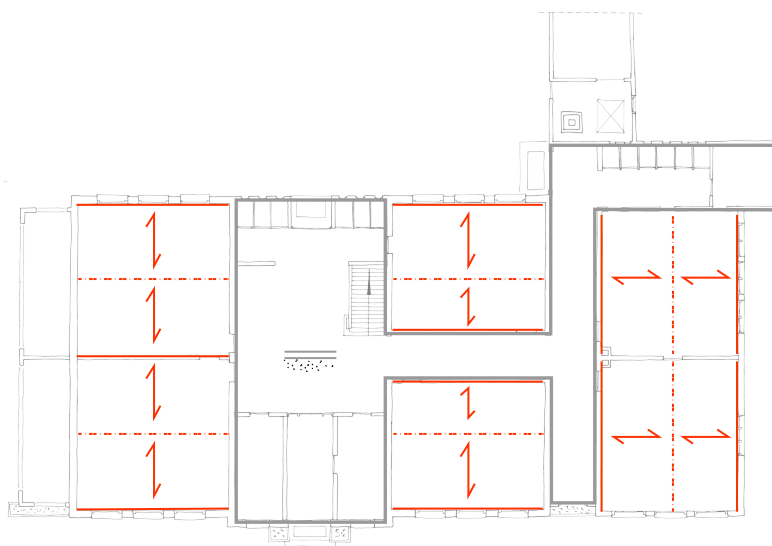


Figure 197 *St. Jozef - Ground Floor - scale 1:400*

St. Anna - Dimensions

Dimensions - St. Anna

The space plan of the original St. Anna is defined by the load bearing structure. The dimensions of the classrooms are around 7 by 7 meters.

The exterior wall consists of a 220mm wide outer brick wall, 40 mm cavity and 100mm wide inner brick wall. We suspect that the outer wall is load bearing.

The interior load bearing brick walls are 220mm thick.

Extension

The space plan of the extension as previously mentioned consists of two blocks with an inbetween space (see Figure 149 on page 108). These blocks are 13.9 by 21.7 meters and 20.5 by 7.9 meters.

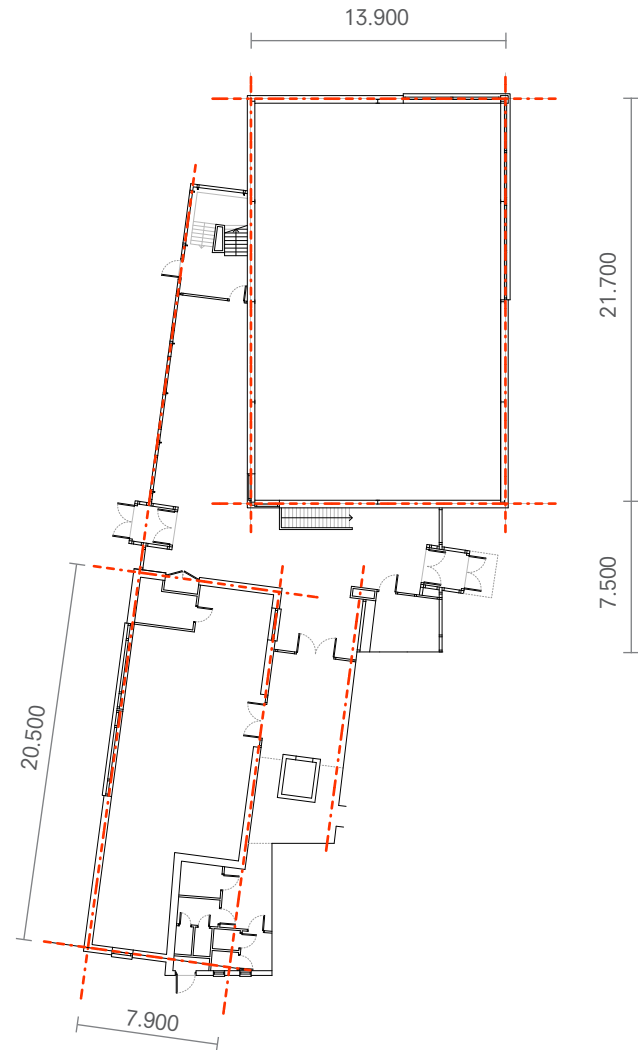


Figure 200 *Grid Structure - Ground floor Extension*

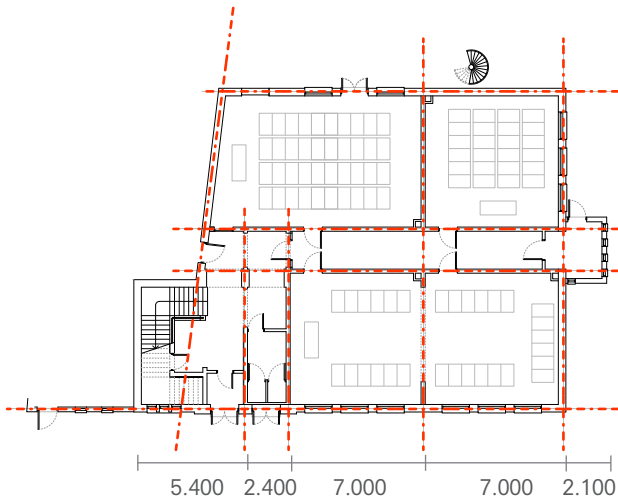


Figure 201 Structure - Ground floor St. Anna

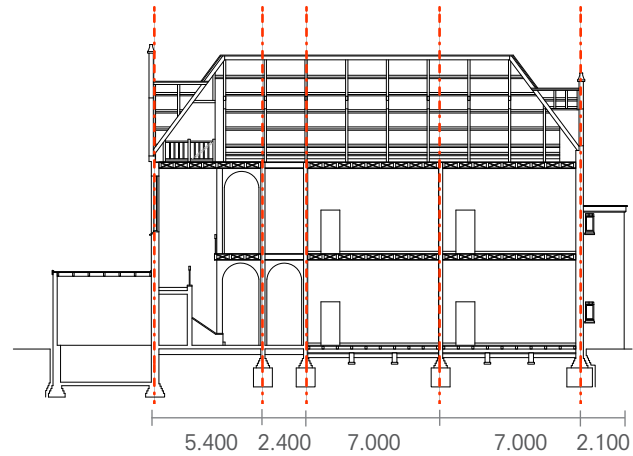


Figure 202 Structure - Section A-B, St. Anna

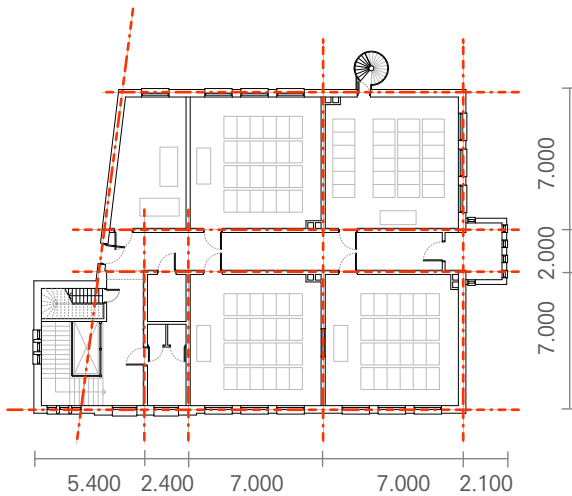


Figure 203 Structure - First floor St. Anna



Figure 204 Structure - Section C-D, St. Anna

St. Anna - Load bearing Structure

Structure - Extension St. Anna

The load bearing structure of the extension, as mentioned earlier, is part of the spatial program. Two enclosed building blocks which are connected by a more transparent inbetween space. This inbetween space also functions as a connector with the original St. Anna.

The enclosed blocks have a steel frame construction which is filled in with limestone elements. The basement is made out of concrete.

The smaller skeleton construction of the inbetween space is constructed in such a way that the construction is less apparent. The construction of this in-between space is not connected to the St. Anna. Small columns are placed next to the original wall to support the floors of this in-between space.

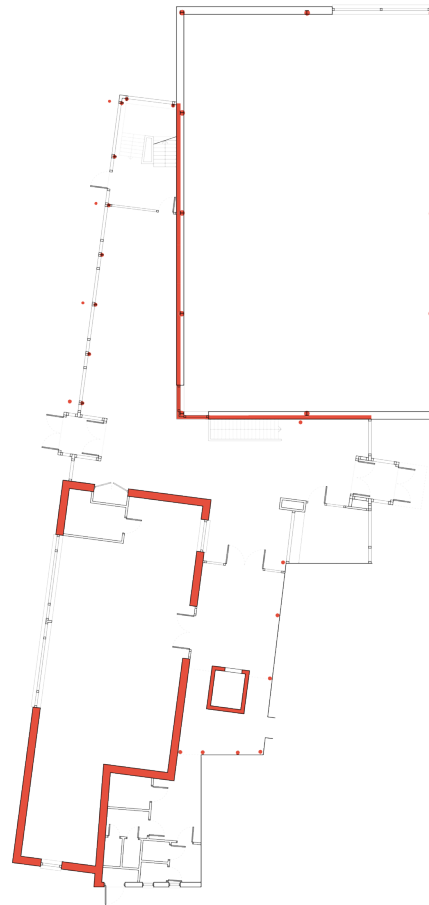


Figure 205 Load Bearing - Ground floor Extension

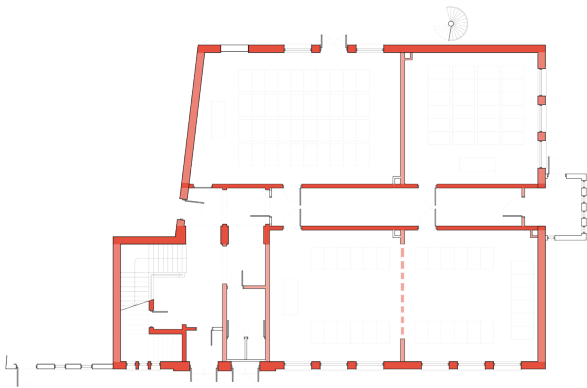


Figure 206 *Load Bearing - Ground floor St. Anna*

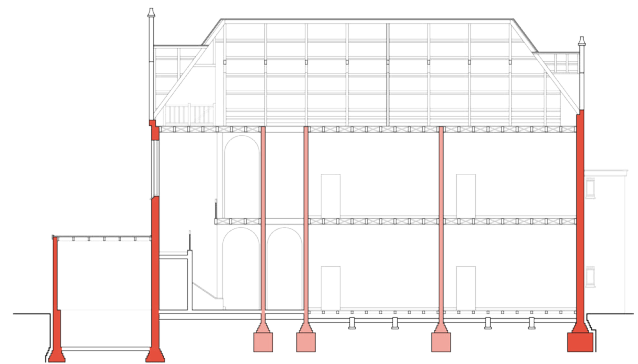


Figure 208 *Load Bearing - Section A-B, St. Anna*

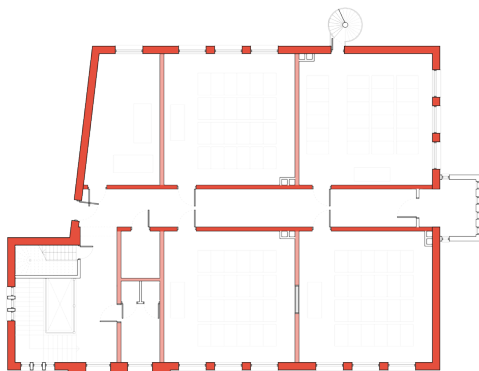


Figure 207 *Load Bearing - First floor St. Anna*

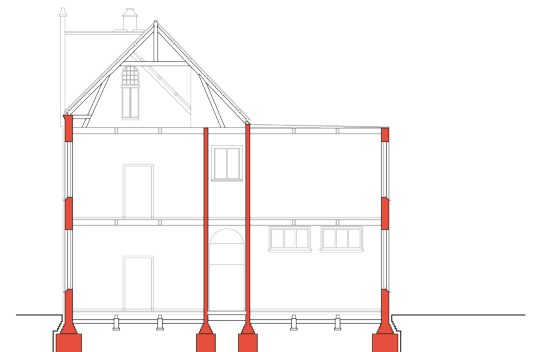


Figure 209 *Load bearing - Section C-D, St. Anna*

St. Anna - Roof Structure

Timber roof construction - St. Anna

The timber roof construction of the St. Anna is known as the “Improved Dutch Truss” type. It is a standardized construction which is used in many roofs in the Netherlands. The construction is made out of pine? wood.

The standardized construction might be the reason that not the complete roof of the St. Anna is created into an attic, it also might have been too expensive or just not necessary to have a larger attic.

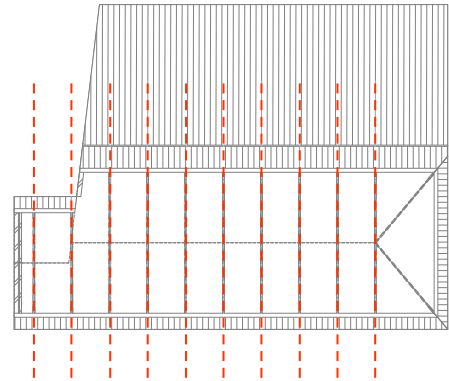


Figure 210 *St. Anna - Roof plan - scale 1:400*

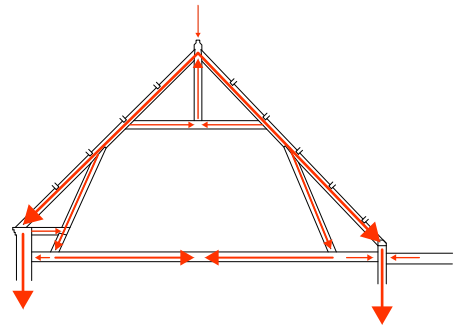


Figure 211 *St. Anna - Roof construction- scale 1:400*

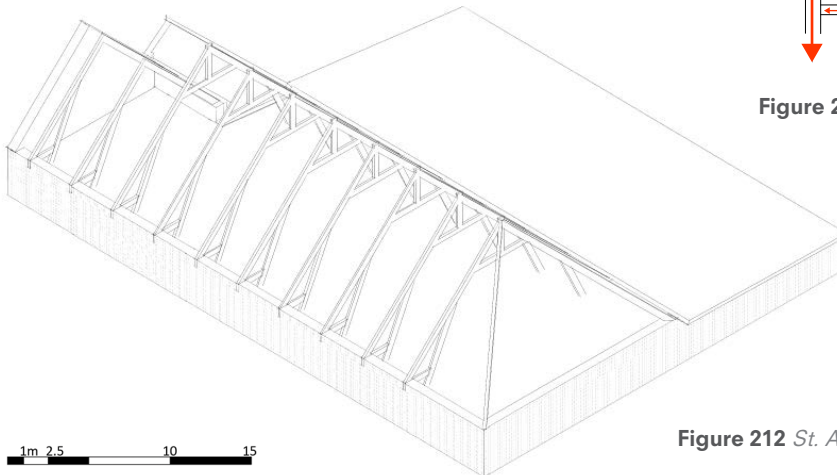


Figure 212 *St. Anna - Roof Construction - Axonometric view*



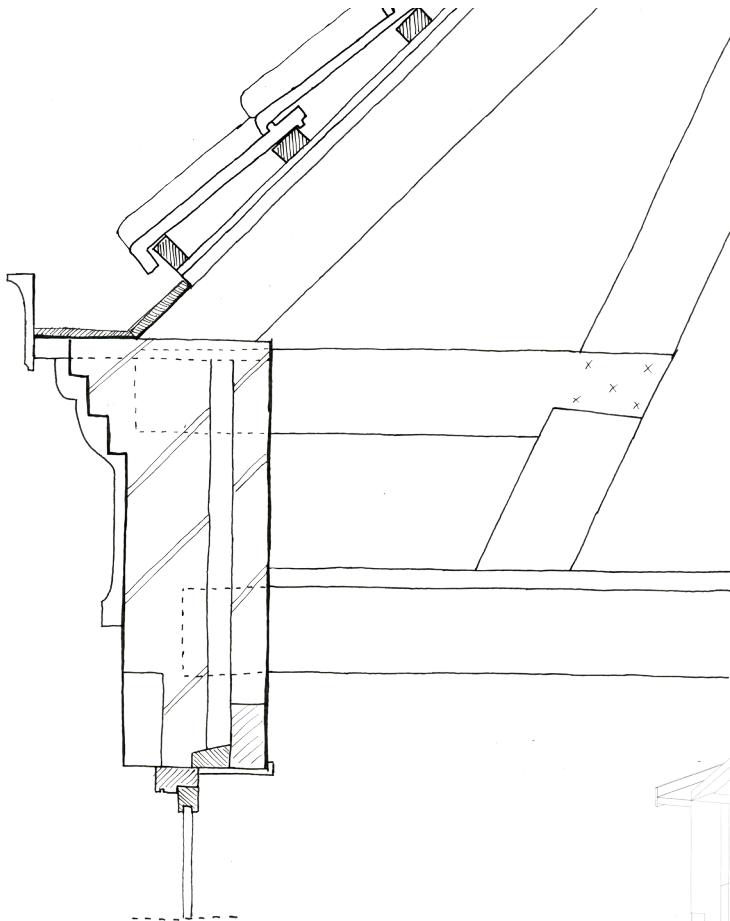


Figure 213 *St. Anna - Gutter Detail - Scale 1:10*

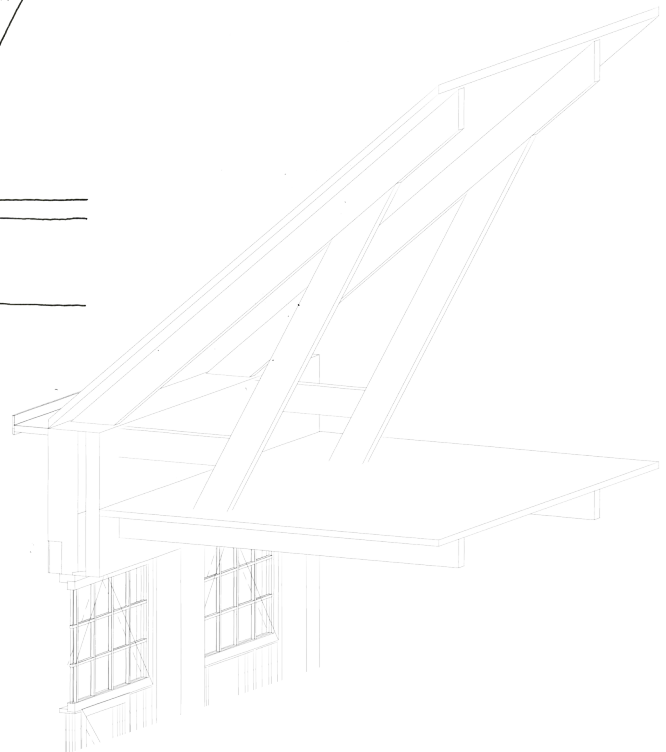


Figure 214 *St. Anna - Roof Construction - Axonometric view*

St. Anna Extension - Structure

Detailing old vs. new - St. Anna

The construction of the new extension is separated from the original St. Anna. This is done by adding small columns alongside the wall. These columns support the floors. By creating this structure no interventions had to be made to the monumental facade.

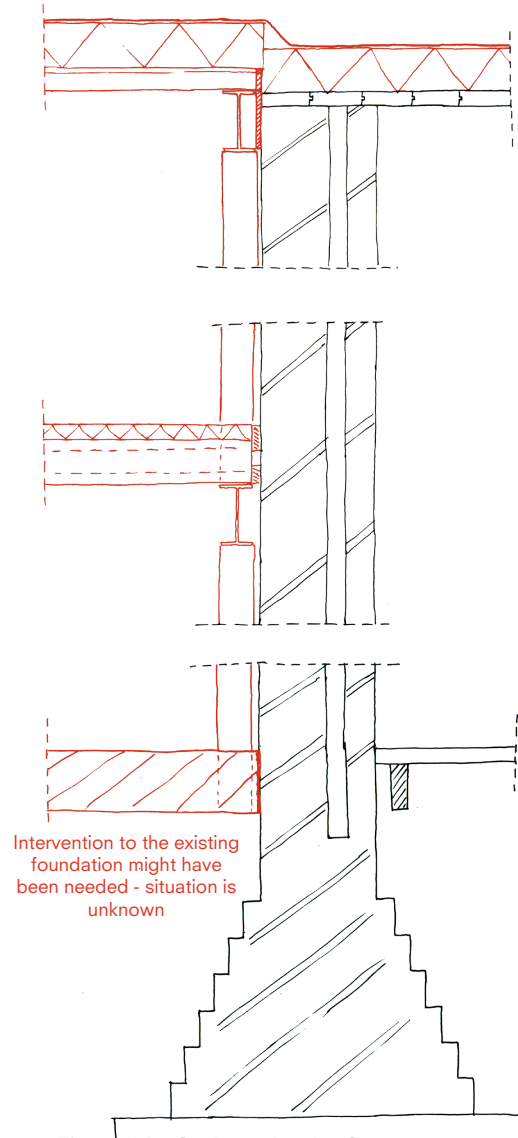


Figure 215 St. Anna detail - Connection existing & new drawing is based on observation

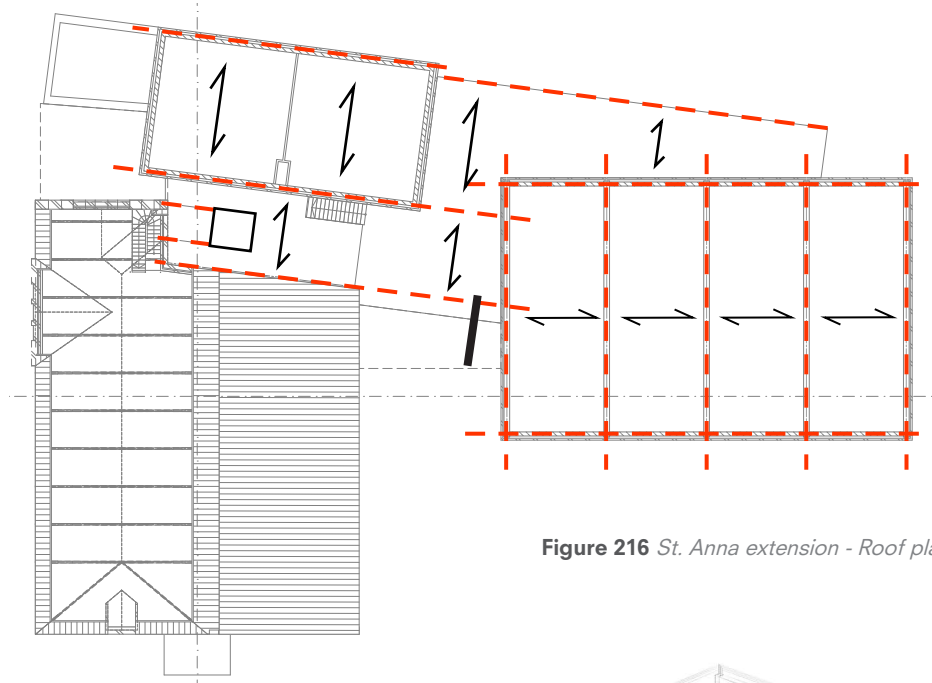


Figure 216 *St. Anna extension - Roof plan - scale 1:400*

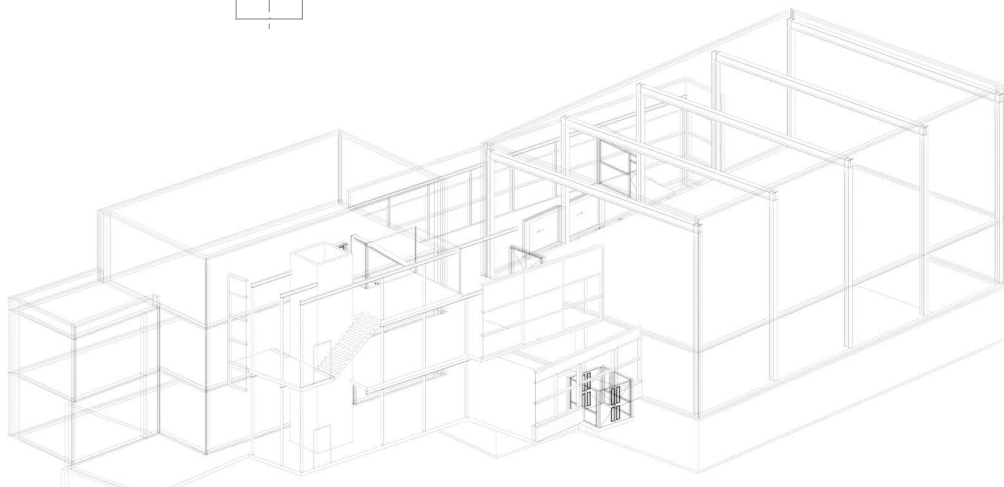


Figure 217 *St. Anna extension - Construction - Axonometric view*

St. Anna - Floor Spans

Floor construction - St. Anna

St. Anna has two types of flooring, timber flooring in the classrooms and on the first floor, stamped concrete in the hallways on the ground floor.

The dimensions of the timber floorings are shown in Figure 220 and Figure 221, based on the original drawings. It is noticeable that the dimensions of the beams do not have the proportion we are used to. Another thing is the use of “*andreakruizen*” between

the beams to provide stability (see Figure 221).

For the extension prefabricated hollow core slabs are used for the floors of the enclosed volumes. For the inbetween space in between these volumes wide slab floors are used.

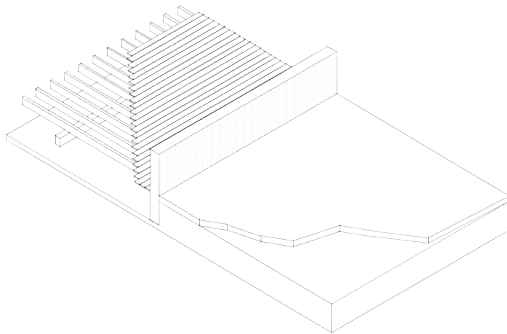


Figure 218 *St. Anna - Concrete floor on soil “stampbeton”*

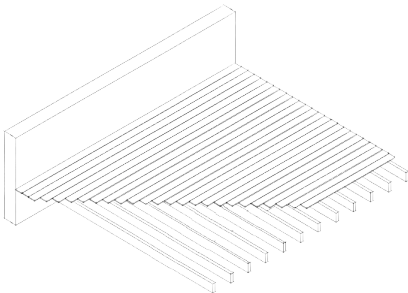


Figure 219 *St. Anna - Wooden floor with cavity*

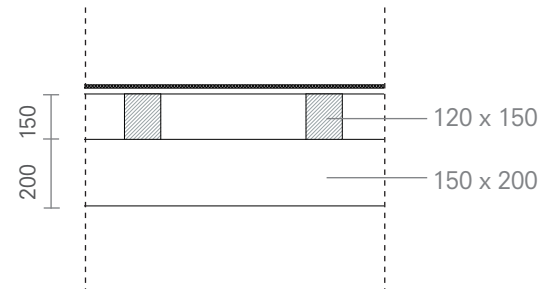


Figure 220 *St. Anna - Ground Floor detail - scale 1:25
Dimensions (mm) based on original drawings*

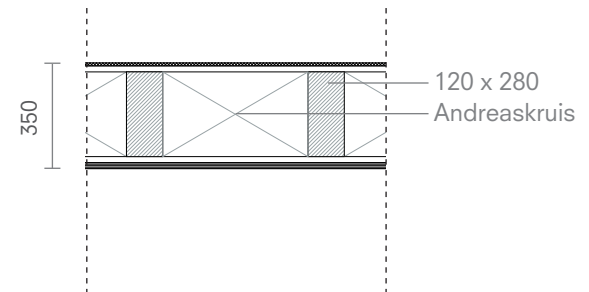


Figure 221 *St. Anna - First Floor detail - scale 1:25
Dimensions (mm) based on original drawings*

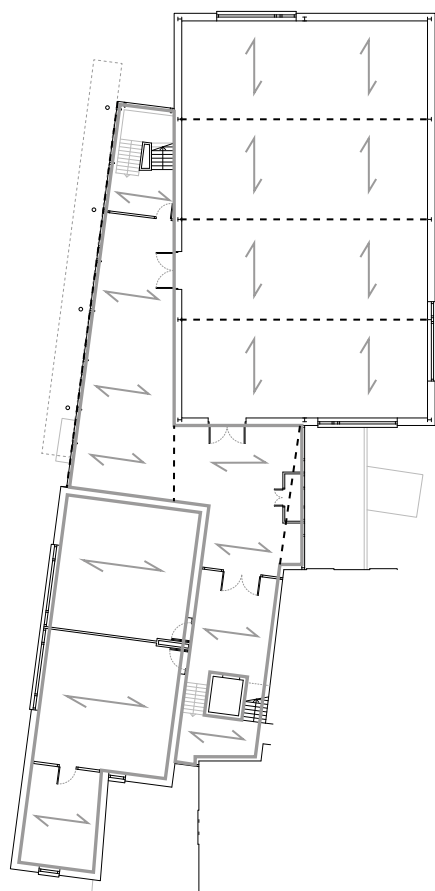


Figure 222 Floor Spans - Ground / First floor Extension

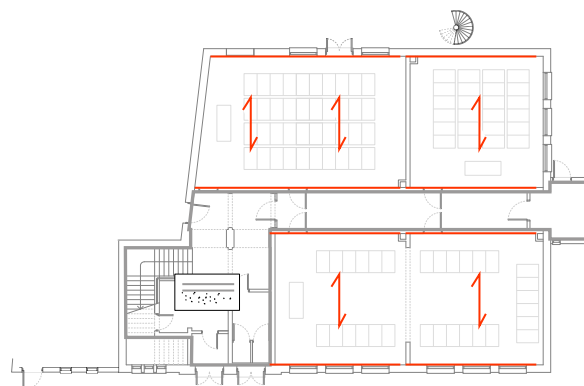


Figure 223 Floor Spans - Ground floor St. Anna



Figure 224 Floor Spans - First floor St. Anna

Conclusions - Load Bearing Structure

The timber roof constructions of both the schools are aesthetically pleasing to see and create an large space which can be used by multiple functions. The construction of the St. Jozef has more historical value than the construction of the St. Anna, it being a not standardized construction.

The construction of St. Anna's extension is a steel skeleton structure filled in with limestone blocks. This construction creates large spaces and offers alot of design freedom for interventions. An important aspect of this construction is the separation from the historical building. This method is also usable for future developments.

The structures of the original buildings have a lot less freedom. The facades of both the buildings are mainly load bearing, carrying the forces of the roof, and the floors.

The side facades of the St. Jozef have a lower priority in the load bearing structure, they only have to carry the roof construction and the secondary load bearing beams of the floor. This offers opportunities for intervention (see Figure 227).

Same goes for the St. Anna but here one has to take into account the monumental status of these facades, one should intervere with more care (see Figure 228).

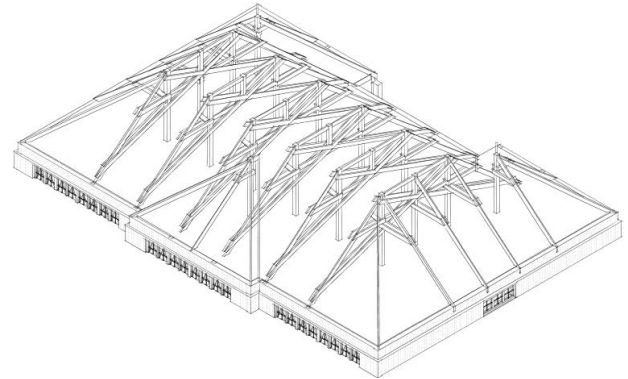


Figure 225 *St. Jozef - Roof Construction - Axonometric view*

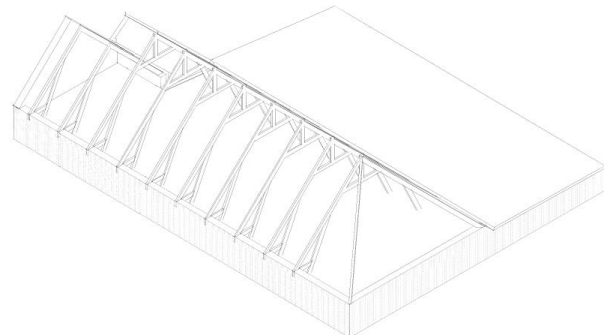


Figure 226 *St. Anna - Roof Construction - Axonometric view*

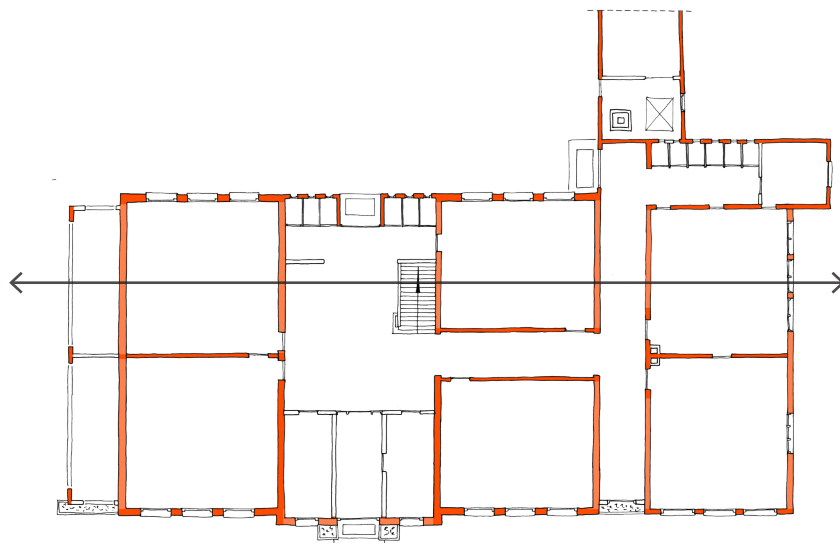


Figure 227 *St. Jozef - Section A-B - scale 1:400*

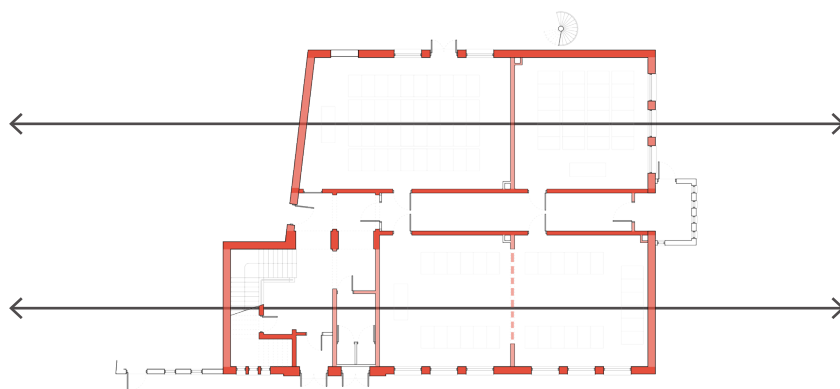


Figure 228 *Load Bearing - Ground floor St. Anna*



Materiality (Exterior)

XII. Materiality (Exterior)

In this chapter, the technical aspect of the materials used on the skin will be analysed. Thus, the analysis is going to focus on the identification of the most significant elements of the buildings' facades, such as the different types of stone and brick, the bonding techniques, the patterns used for the placement of the elements, the timber etc.

The goal is to understand how the different materials are related to each other and how the facades were constructed. This understanding will lead to the right decisions, as regards future interventions.

Materiality- St. Jozef



Figure 229 *Materiality of front facade - south - 2017*



Figure 230 *Materiality of back facade - north - 2017*



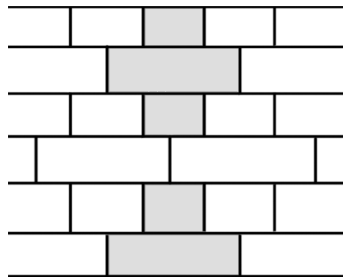
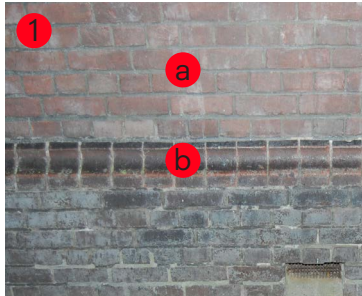


Image 110 *Brick masonry*

a. The masonry is made of soft mud brown bricks, placed in “English Cross” bond (layout shown on diagram).

b. A row of “Cove profile” glazed bricks is placed as a header above the “trasraam”.

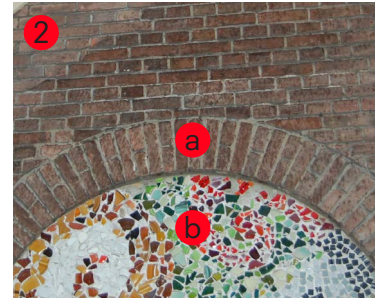


Image 111 *Arch*

a. Semi-circular arch made of soft mud bricks.

b. Polychrome mosaic made of glazed ceramic tiles.

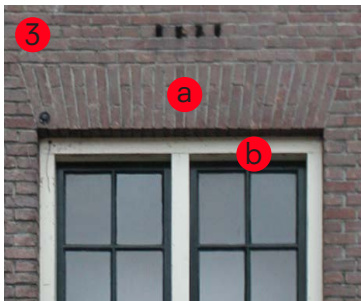


Image 112 *Window lintel and sill*

a. Above all windows of the lower level there is a “Flat Arch” lintel with wedge shaped bricks.

b. The window frames are made of wood, while glass has been used for the transparent areas.

c. The sill of all the windows is made of glazed ceramic tiles.



Image 113 *Roof tiles*

The tiles used for the roof cladding are improved Dutch tiles.

Materiality - St. Anna



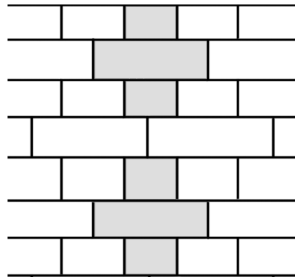
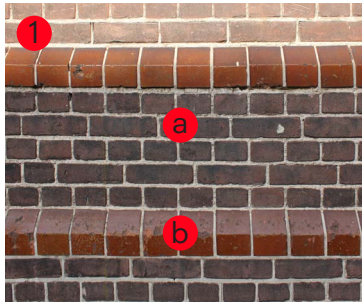


Image 114 *Brick masonry*

a. The masonry is made of soft mud brown bricks, placed in “English Cross” bond (layout shown on diagram).

b. A row of “Bevel profile” glazed bricks is placed as a header above the “trasraam”.

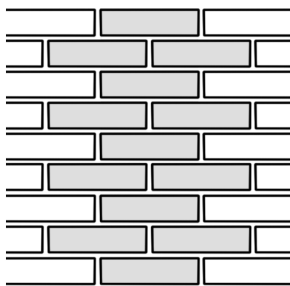


Image 116 *Brick masonry*

The masonry of the extension is made of extruded yellow brick, placed in “Running” bond (layout shown on diagram).



Image 115 *Arch lintel*

Above both entrances there is a two - row “Rough Arch” lintel, made of red brick and natural stone keystones and buttresses.

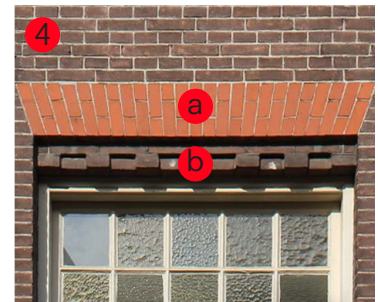
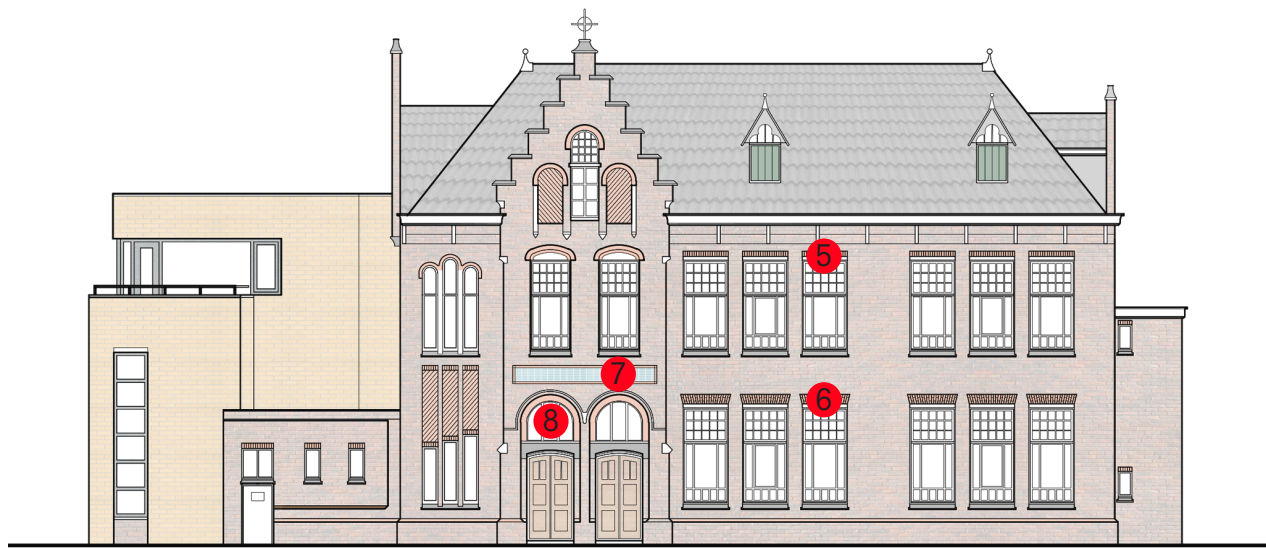


Image 117 *Window lintel*

a. Above the windows of the lower level there is a “Flat Arch” lintel with wedge shaped bricks.

b. Below the lintel, a “Dentil” pattern gorgon is placed. The gorgon is made of soft mud brown bricks.

Materiality - St. Anna



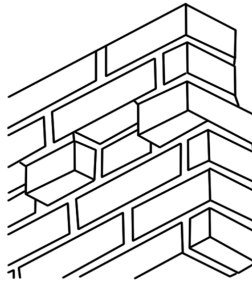
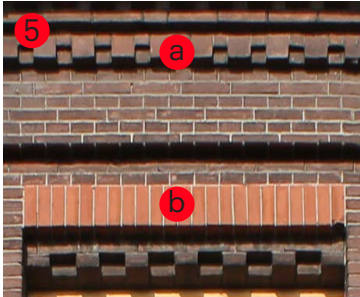


Image 118 *Window lintel*

- a. The ornamental projecting gable is made of soft mud bricks and is placed in "Dentil" pattern (layout shown on drawing).
- b. Above the windows of the top level there is a "Flat Arch" lintel with projecting soldier in "Running" pattern.



Image 119 *Window sill*

The sill of the all windows is made of Blue Belgian Limestone. This can be confirmed by the visible trapped fossils shown in the picture.

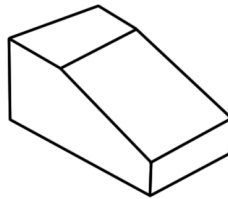
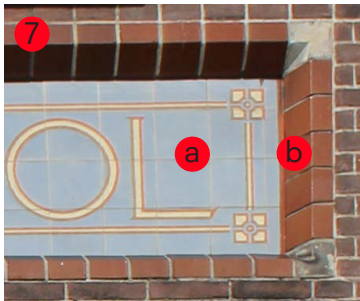


Image 120 *"St. Anna School" inscription*

- a. Key ornamental feature of the facade is the "St. Anna School" inscription above the entrance. It is made on blue square ceramic tiles.
- b. The blue ceramic tiles are enclosed by "Bevel profile" glazed bricks, as shown on the drawing.

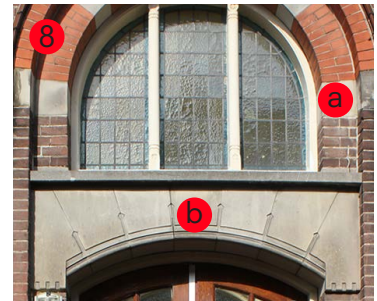


Image 121 *Door lintel*

- a. Seems to be a sandy limestone, most probably a Baumbergen sandstone is used as key stone and buttress.
- b. The arch-shaped lintel is made of Blue Belgian Limestone. Fake lines are curved on the stone to imitate joints.

Materiality - St. Anna

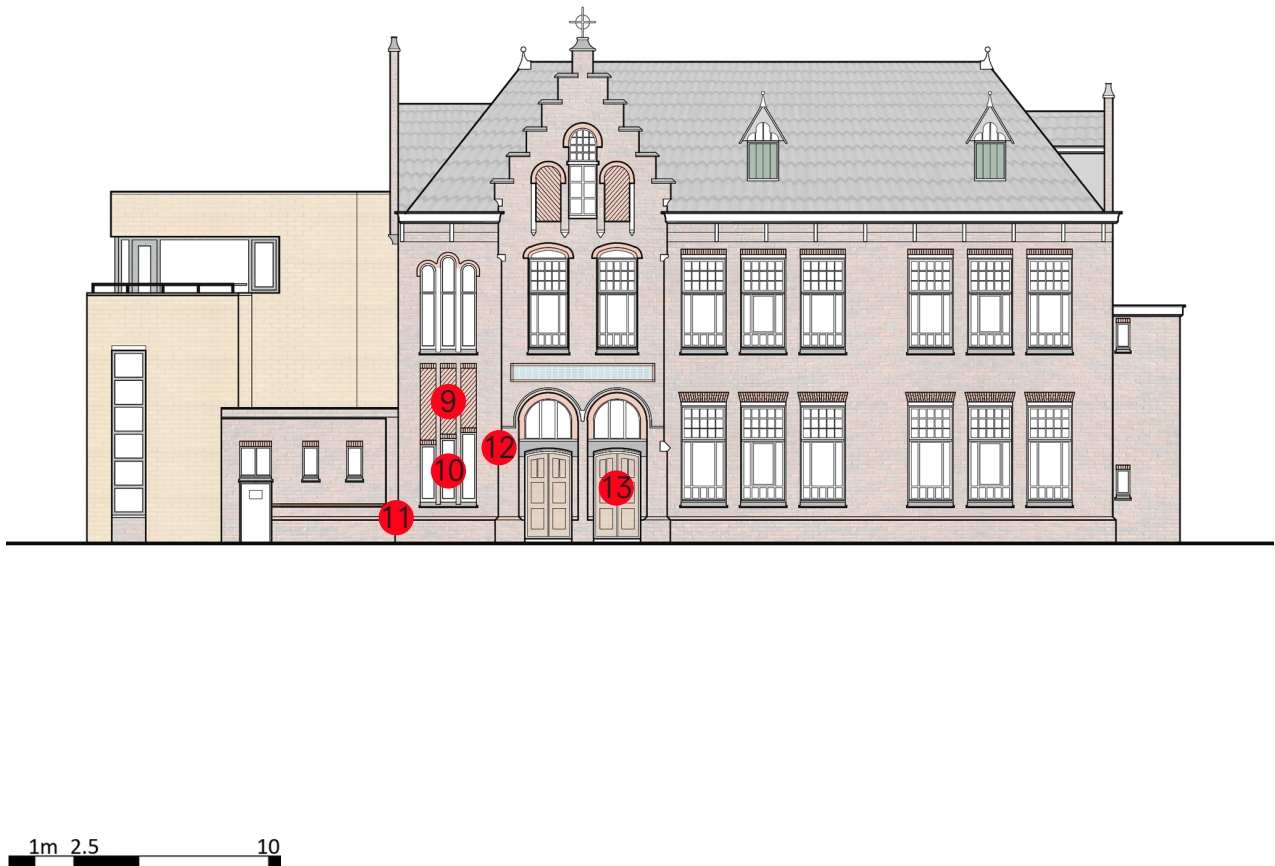




Image 122 *Brick blinds*

Openings are filled with red brick blinds. The pattern that is used for the placement of the bricks is the “Double Basketweave”.



Image 123 *Kathedraalglas*

The so-called “Kathedraalglas” has been used for the transparent areas in several cases.



Image 124 *Corner stone*

Blue Belgian limestone has been used at the corners of the facade.



Image 125 *Stone decorative element*

Except for the Blue Belgian Limestone, Baumbergen sandstone might also have been used for decorative elements. It can be identified by its yellow undertone. The black crust could be formed due to the presence of calcium carbonate.



Image 126 *Wooden door*

As regards both entrances, a double arch-shaped wooden door is used. On the upper part of each panel, a two-piece glass layout is used.

Materiality - St. Anna

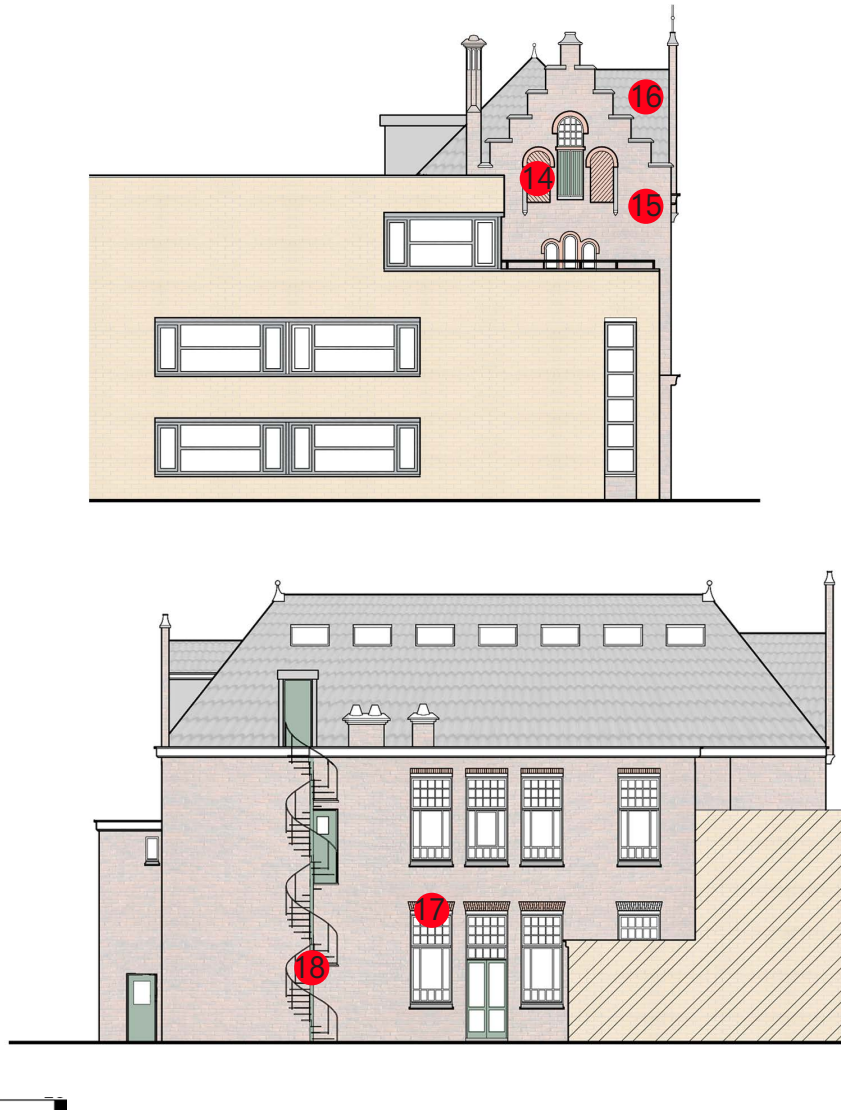




Image 127 *Brick blinds*

Openings are filled with red brick blinds. The pattern that is used for the placement of the bricks is the “Diagonal Basketweave”.



Image 128 *Ormanental gorbel*

On the left facade, the ornamental projecting gorbels is placed in “Dogs-tooth” pattern. The “Dogs-tooth” pattern has only been used on this facade (layout shown on drawing).

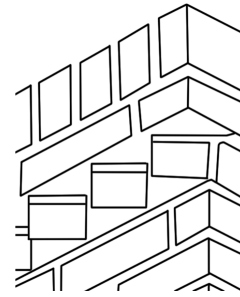


Image 129 *Roof tiles*

The tiles used for the roof cladding are “Friese” ceramic tiles.

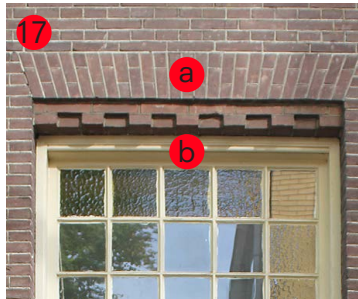


Image 130 *Window lintel*

a. Above the windows of the lower level there is a “Flat Arch” lintel with wedge shaped bricks.

b. All window frames are made of timber. Mainly glass and partially “Kathedraalglas” have been used for the transparent areas.



Image 131 *Fire staircase*

The fire escape staircase, placed at the back side, is made of steel.



Materiality (Interior)

XIII. Materiality (interior)

In this chapter, the technical aspect of the materials used in the interior will be analysed. Thus, the analysis is going to focus on the identification of the most significant elements of the buildings' interior surfaces, such as the different types of flooring, the bonding techniques, the patterns used for the placement of the elements, the staircases, the roof structure etc.

The goal is to understand how the different materials are related to each other and how the interior surfaces were formed. This understanding will lead to the right decisions, as regards future interventions.

Materiality - St. Jozef

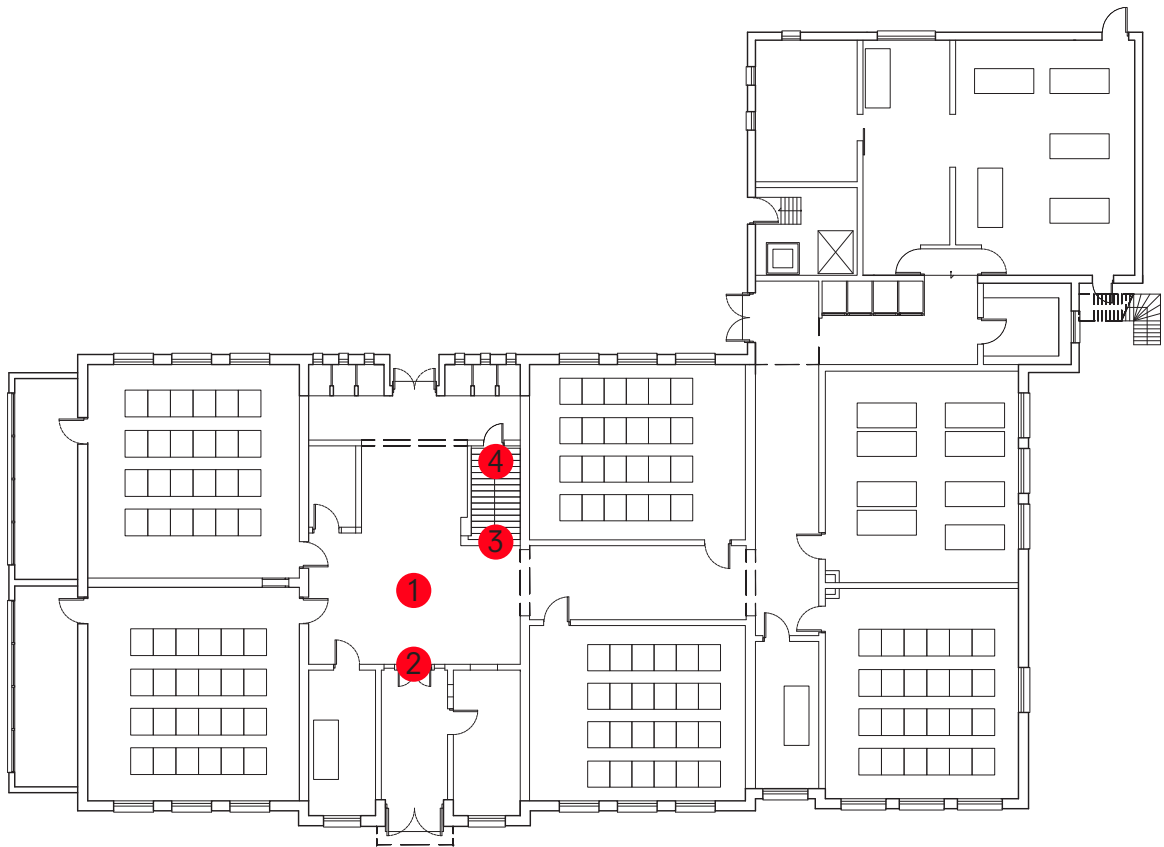




Image 133 *Hallway, groundfloor*

Throughout the building, mainly as regards the entrance hall and hallway areas, ceramic glazed tiles have been used as flooring material. The tiles have been installed in “Herringbone” pattern.



Image 134 *Entrance door*

All window frames and doors are made of timber, while glass has been used for the transparent areas.

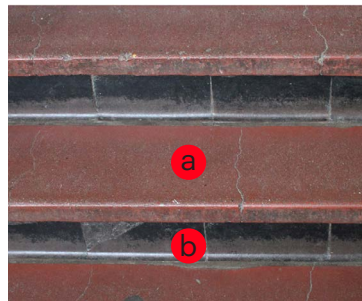


Image 135 *Main Staircase*

a. The thread parts are made of unreinforced concrete, which has been painted over. This becomes clear when looking at the cracks that have been formed on the surface of concrete.

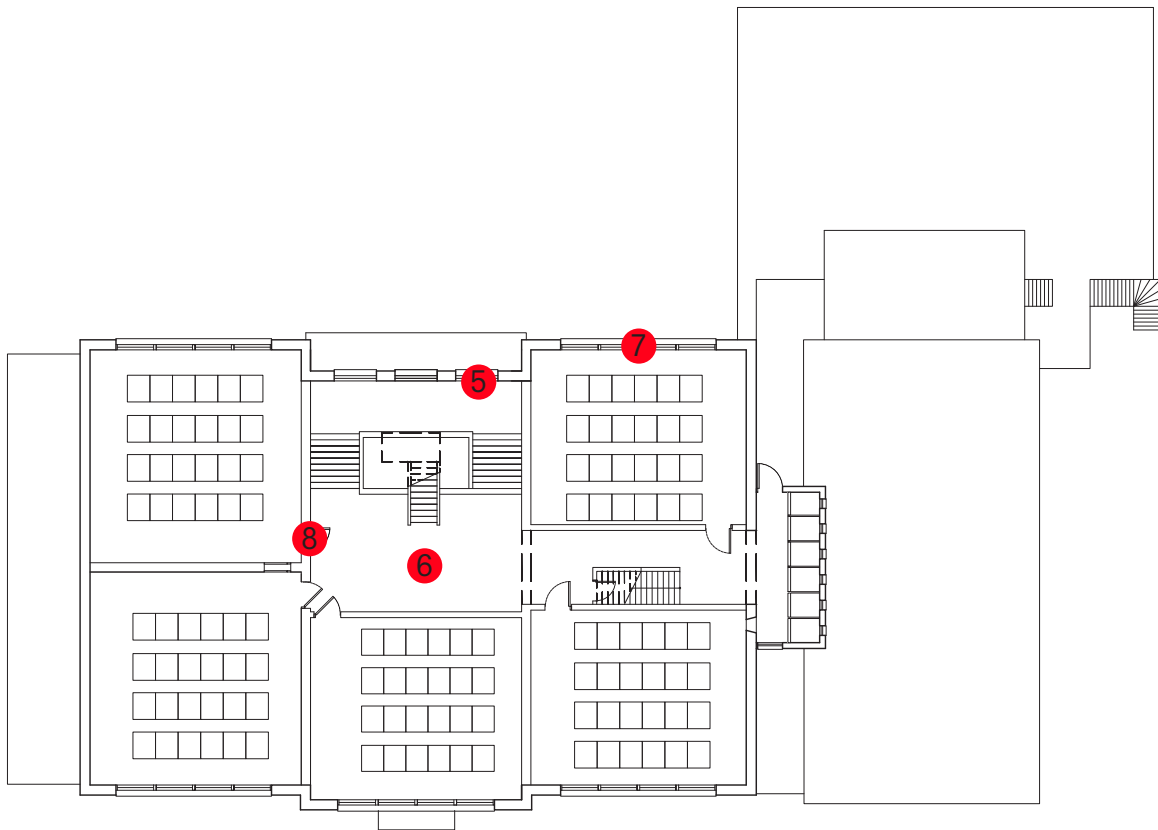
b. The riser parts have been cladded in ceramic glazed tiles, which have a partially curved profile.



Image 136 *Handrail, main staircase*

The same type of ceramic glazed tiles used for the riser parts has also been used for the handrail of the staircase.

Materiality - St. Jozef



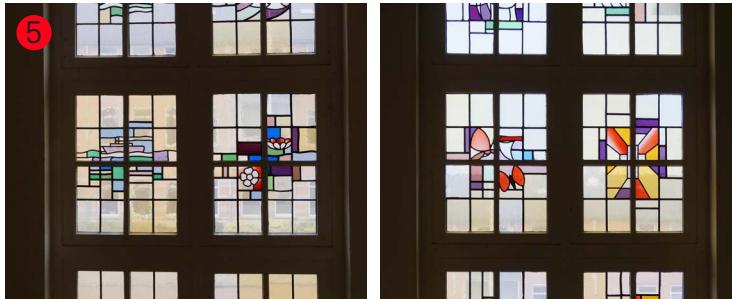


Image 137 *Stained glass*

Predominant ornamental feature of the entrance hall is a series of stained glass decorations, placed next to the main staircase. They depict different themes, from airplanes and boats to flowers and butterflies. The joints are made of zinc.



Image 138 *Hallway, first floor*

Ceramic glazed tiles have also been used on the first floor as flooring material. The tiles have been installed in "Herringbone" pattern.

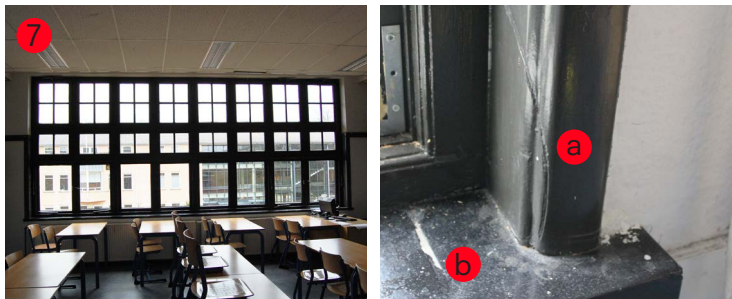


Image 139 *Window frames*

a. The window frames are made of timber, while glass has been used for the transparent areas.

b. The sill part of the windows is made of ceramic glazed tiles. The same type of tiles was used for other cases as well, such as the riser and handrail of the main staircase (see images 22-23).



Image 140 *Plinth, first floor*

Ceramic glazed tiles have also been used on the first floor as flooring material. The tiles have been installed in "Herringbone" pattern.

Materiality - St. Jozef





Image 141 *Roof construction*

The roof construction is presumably made of pinewood. This hypothesis is based on the look of the woodgrain, as shown on the picture.

Materiality - St. Anna

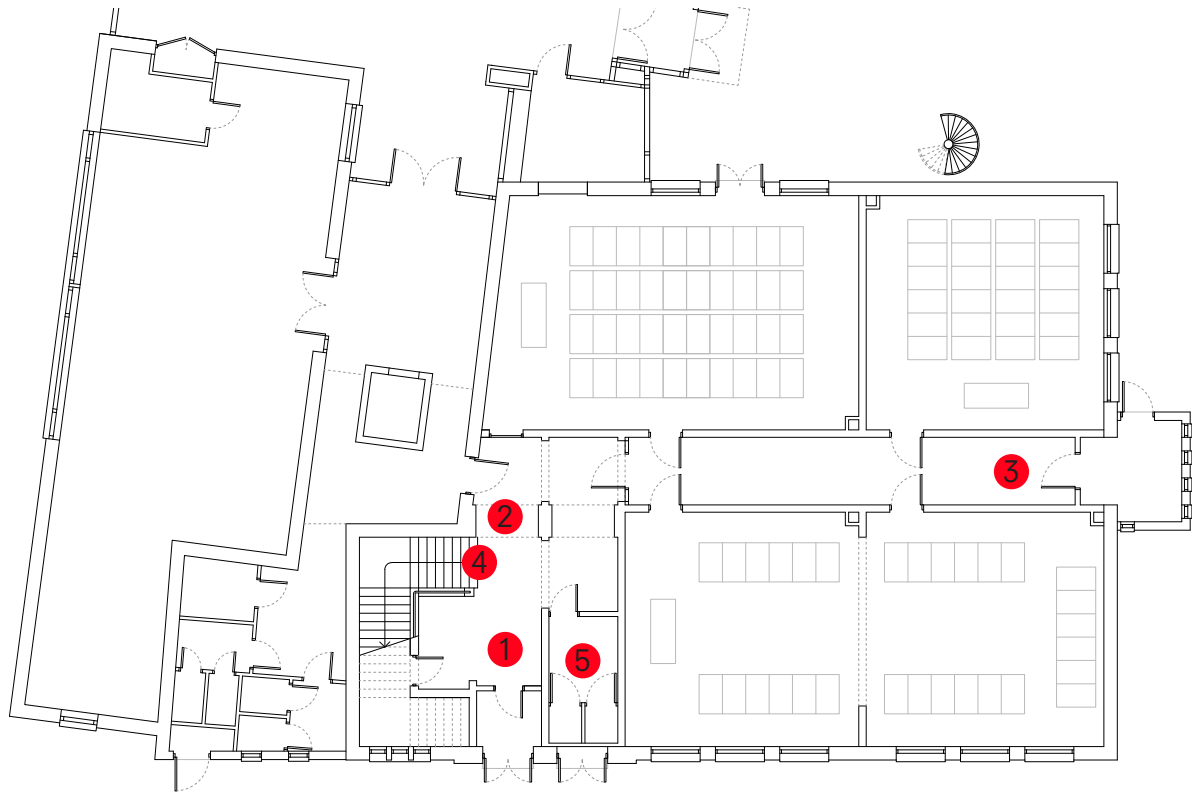




Image 142 *Terazzo flooring*

Terazzo flooring has been used on the groundfloor, both in the main staircase hall and the hallway.



Image 143 *Wooden frames*

All window frames and doors are made of timber, while glass has been used for the transparent areas.



Image 144 *Main staircase*

The material used for the cladding of the staircase, as regards both the thread and the bottom rail, is Blue Belgian limestone. As for the handrail, it is made of a light coloured type of wood and steel.



Image 145 *Mosaic*

In the sanitary area a polychrome mosaic of ceramic glazed tiles has been created by the students.

Materiality - St. Anna

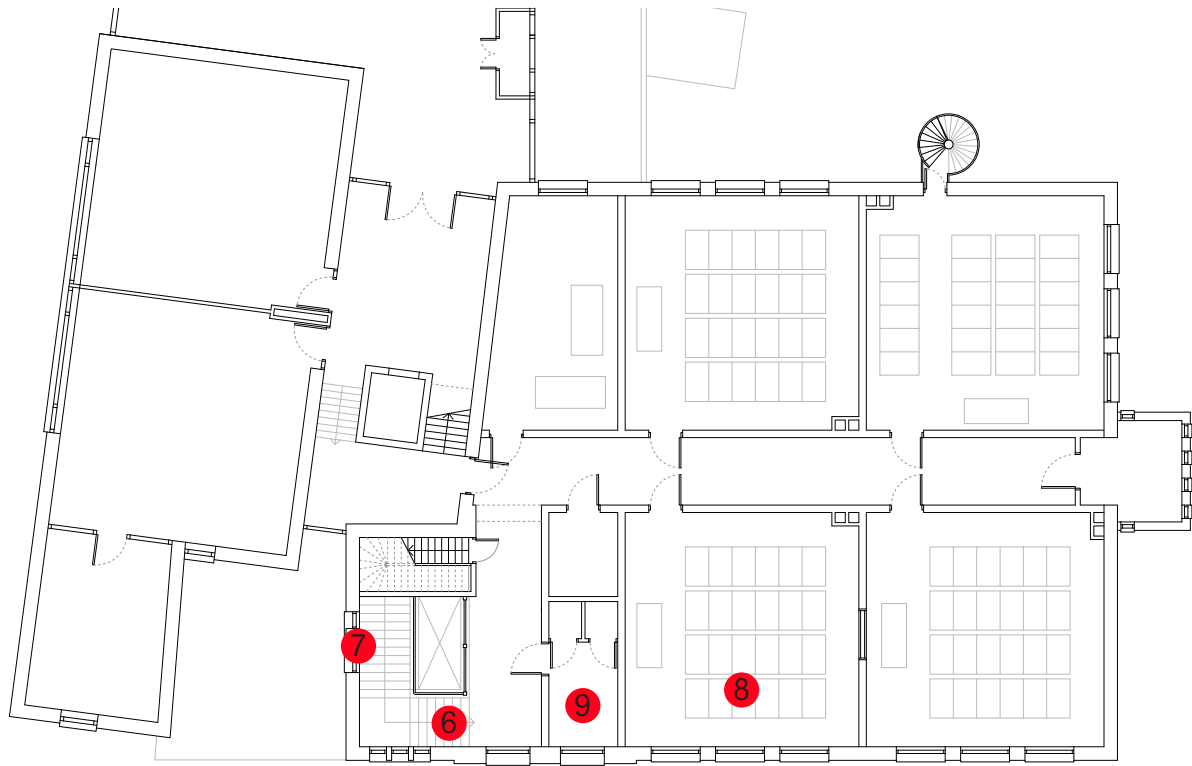




Image 146 *Handrail, main staircase*

- a. The handrail of the main staircase is made of a light coloured type of wood and steel.
- b. On the first floor linoleum has been used as flooring material.



Image 147 *Kathedraalglas*

In several cases, stained “Kathedraalglas” has been used for the transparent areas of the windows.

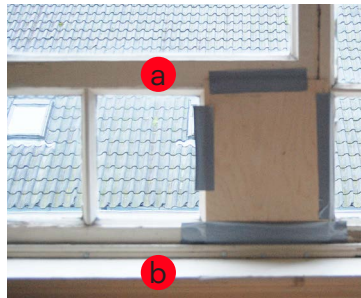
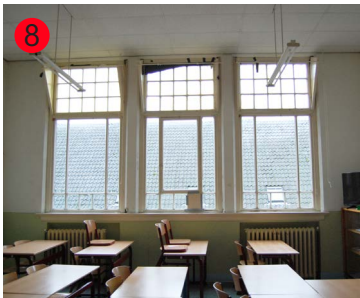


Image 148 *Window frames*

- a. The window frames are made of timber, while glass has been used for the transparent areas.
- b. The sill and apron parts of the windows are also made of timber.

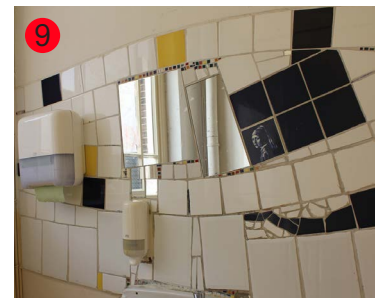


Image 149 *Mosaic*

In the sanitary area, a mosaic of ceramic glazed tiles has been created by the students.

Materiality - St. Anna

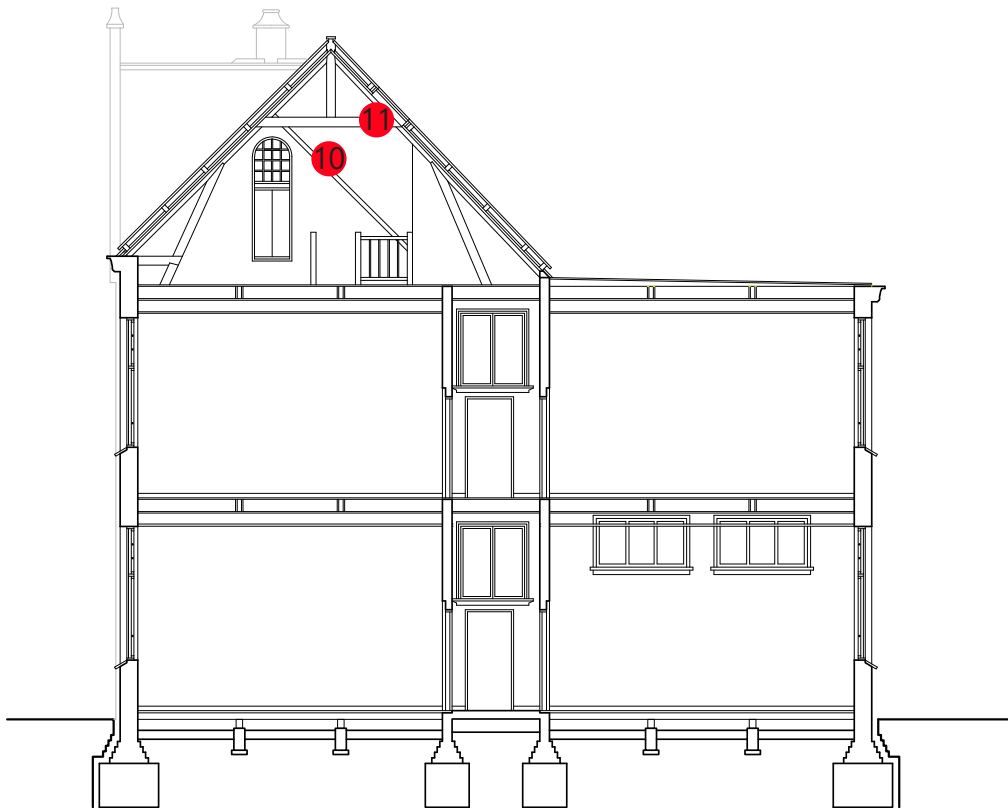




Image 150 *Roof construction*

The roof construction is presumably made of either pinewood or spruce. This hypothesis is based on the look of the woodgrain, as shown on the picture.



Image 151 *Skylights*

At this side of roof construction rectangular skylights have been added. The inner frames are made of timber, while the outer parts are aluminium.

Materiality - St. Anna's extension





Image 152 *Hallway, groundfloor*

- a. The masonry is made of extruded brick placed in "Running" bond.
- b. Linoleum has been used as flooring material.
- c. The window frames consist of both timber and aluminium parts.
- d. The false ceiling is made of plasterboards.



Image 153 *Hallway, first floor*

- a. The masonry is made of extruded brick placed in "Running" bond.
- b. Linoleum has been used as flooring material.
- c. The window frames consist of both timber and aluminium parts.

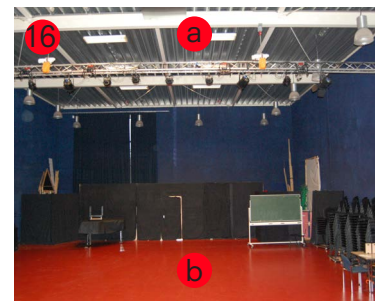


Image 154 *Theater, first floor*

- a. The floor construction is made of steel.
- b. Linoleum has been used as flooring material.



Damages

XIV. Damages

Someone may say that both of the examined case studies, have managed to stand the test of time for over a century, period through which they have undergone constant and extensive use.

As natural, both exterior and interior fabric of the structure carries the traces of this functional performance, as well as the damages caused either by exposure of the fabric to weather conditions or due to failure of certain design details.

Our recording approach, is based primarily on in situ visual observation and photographic capturing, made through several site visits. The structure of the damage recording as viewed in the following pages is outlined by: identifying and grouping the type of damage, detecting the occurrence of the damage while also illustrating the extent of the damage and finally by proposing further actions which are considered to be valuable before proposing or specifying a suitable treatment.

Above all, the main reason for illustrating this research of ours in the building's fabric, is primarily to record the damages related traces of the structure itself, so as to be in position to assess the condition and ability of the building to perform for the future. Furthermore, by acknowledging and reacting to those damages through stabilization or repairing actions, we hope to formulate the first steps before any restoration and architectural transformation strategy.

Image 155 *Damages window frame St. Jozef (Own photo)*

Damages - St. Jozef





The windows at the top floor level pose a state of overall decay, mainly due to the presence of wood rotting and fungus growth as well as paint detachments. Traces of recent repairs can also be seen.

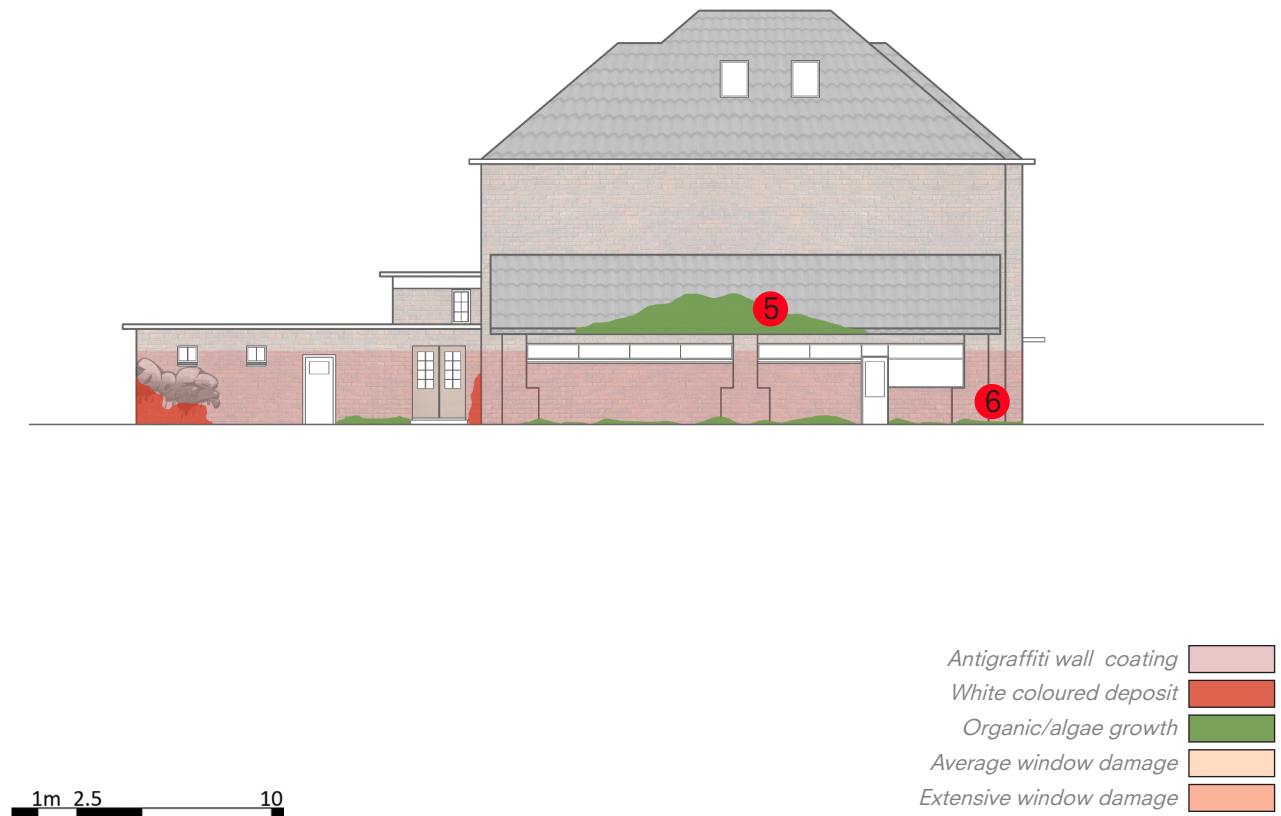
An example of a window frame showing the average state of St. Joseph's openings, related with paint detachment and wood quality alterations. The edges of the window ceramic sill are also partly broken.

Deposit of a white substance can be spot spontaneously on the exterior wall surfaces, mainly just below the window lids. This location could support the assumption that the effect is related with high humidity levels and the splashing of water on the bricks. Chemicals analysis and moisture content level tests should be done to invest if the deposit is calcium or natrium (most likely) based.



A considerable number of St. Joseph's windows present a serious state of decay. The major source of damages has to do with wood-rot, leading in disintegration of the frames and in many cases white fungus growth. Paint detachment and colour disintegration are damages caused by the high moisture levels of the wooden elements. Extent of damage of windows marked with darker shade of orange is such that immediate repair actions should be taken.

Damages - St. Jozef





Algae growth can be observed at the lower central part of this ceramic tiled roof. The cause of this effect is strongly related with the position of the water gutter just above the examined area, which directs water rain at this exact location. The high water levels of this spot in combination with its partial exposure to direct sunlight create the perfect conditions for biological growth.



At the bottom right end of this wall we can spot an effect of brick disintegration and cracking. However a closer look can support the hypothesis that cause of damage could be biological growth in the form of plants (part of which now removed), the roots of which caused the masonry mortar weakening and cracking due to loads they stressed.

Damages - St. Jozef





Around the whole building periphery a layer of white deposit finishing at the same high is present. This must be a kind of anti-graffiti application, which due to aging or trapping of salts below its surface causes this effect.

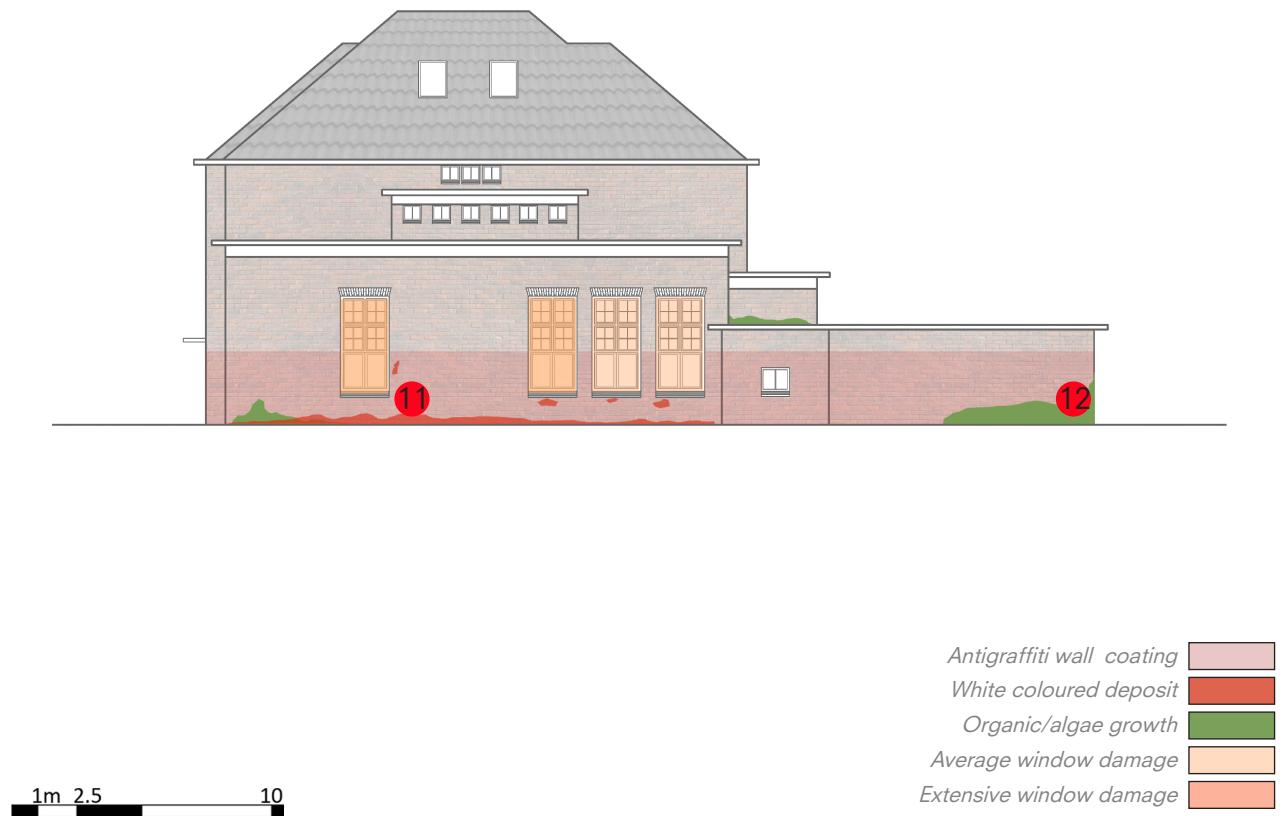
Plant growing next to the gutter, deriving from a major mother ground root but also attaching itself with smaller ones on the brick surface.

Extensive graffiti can be found covering almost the whole wall surface of this build extension. Methods such as water jet cleaning or chlorine based chemical application can be among the solutions for their removal.



At the areas of the wall around the northern entrance of the school the level of white substance deposit is significantly higher. The reason could be that at the interior side of this wall we find the toilets, which inarguably could be great source of moisture. Furthermore two gutters located right next to the areas of focus could be deteriorating the condition in case of leakage or water splashing. Chemicals analysis and moisture content level tests should be done to invest if the deposit is calcium or sodium. However a basic test we did on situ by throwing water on top of the white deposit showed that the substance is highly soluble, making the scenario of efflorescence (sodium) much more likely.

Damages - St. Jozef





Located at the whole lower extent of the building's eastern wall we find a dense concentration of a white substance attached onto the brick surface. The fact that this damage effect continues along the whole lower end of this wall makes the scenario of rising damp a likely one. That's the reason why moisture content test along different sections of the wall is crucial in order to define the source of moisture and the pattern of its extent, so as to act accordingly.



Traces of graffiti and dense biological growth is covering a considerable extent of this wall. The exact relation of the plants with the building could not be specified since the area was inaccessible. Closer investigation should test if roots and algae could be of harm to the walls' structural stability and state of its material.

Interior damages - St. Jozef





Image 160 *Mechanical damage*

Mechanical damage on wooden planks, caused probably by the pupils.



Image 161 *Splits on wooden beam*

Damage has been caused on the specific wooden beam. The splits along the wood grain are presumably caused by shrinkage during the drying process.



Image 162 *Fracture on wooden beam*



Figure 248 *Cross-grained tension*

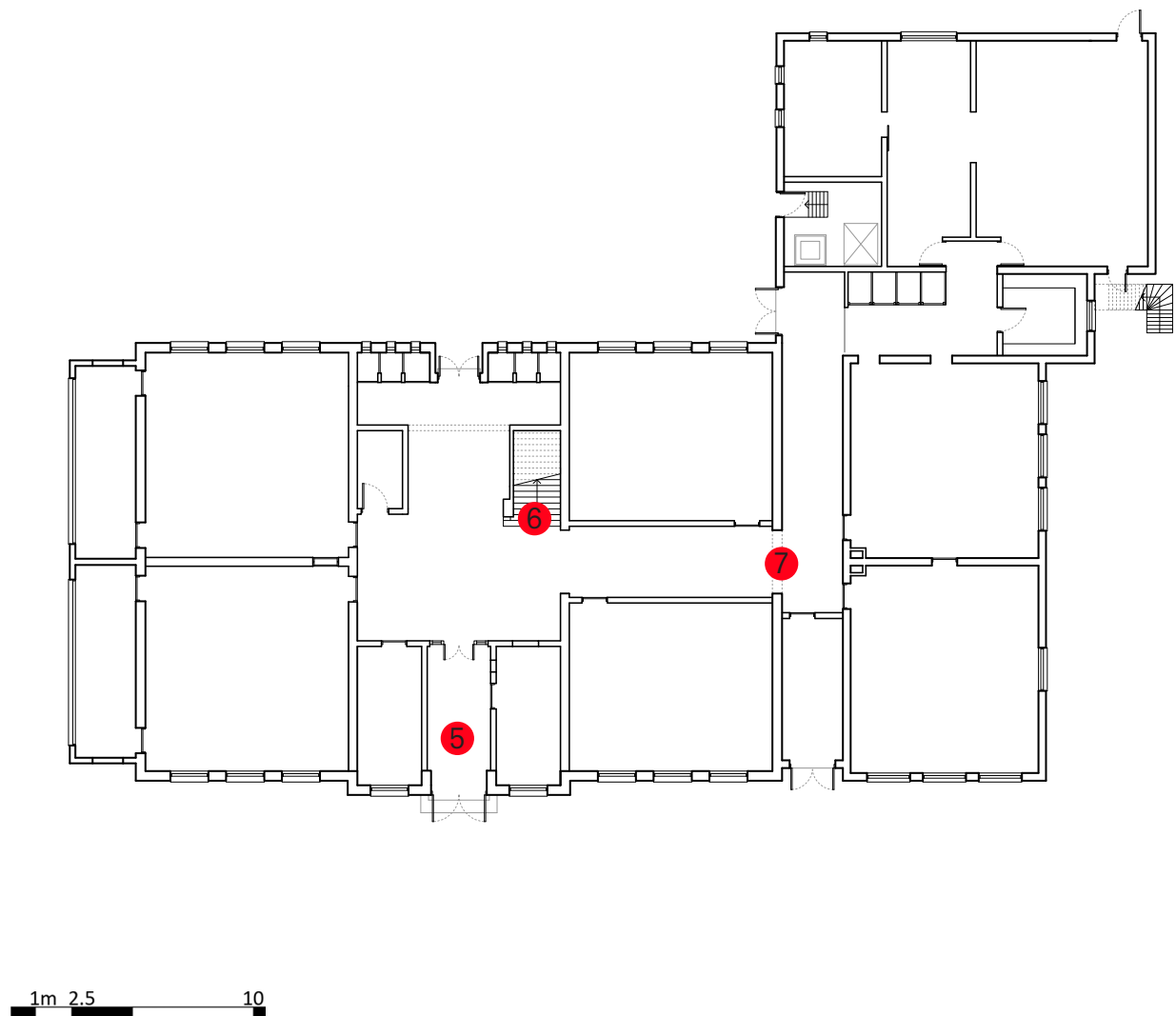
Bending failure in the wooden beam. In this case, the span is relatively big and the fracture is caused by a tensile force acting oblique to the wood grain (image 95).



Image 163 *Penetrating damp*

At this part of the roof construction measures have been taken in order to deal with the penetrating damp.

Interior damages - St. Jozef



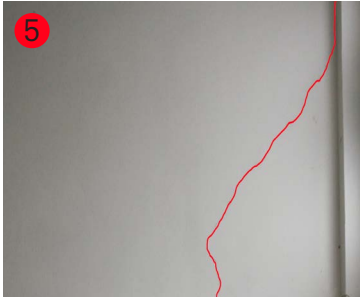


Image 164 *Crack on interior wall*

The crack formed on the interior wall is either created when the foundation settled after construction, or is formed due to the weather changes and the expansion or shrinkage of the building materials.



Image 165 *Cracks on threads*

The cracks on the staircase are caused due to the fact that the threads are made of unreinforced concrete; unreinforced concrete is notorious for cracking easily at any sources of stress.



Image 166 *Stain*

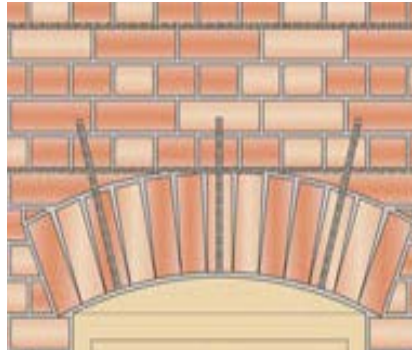
Some kind of stain can be seen on this part of the wall. The orange-red color might be a sign of rust or, in other words, it might indicate the presence of iron ochre.

Damages - St. Anna



- White coloured deposit
- Organic/algae growth
- Mechanical damage
- Window damage
- Wall cracks

1m 2.5 10



Two cracks derive from the upper corners of the window lintel and extend towards a ventilation opening. It's probably a localized structural failure due to inadequacy of the opening to support the load stressed to it. The red brick lintel is probably intended for ornamental purposes, having not any particular reinforcement behind. Potential repair strategy could be to reinforce the lintel with metallic bars which tie it together while transferring the load at the sides of the opening.

The blue Belgian limestone window sills at the openings of the lower level present a series of cracking, as a result of localized structural failure deriving from stress performed onto the surface from the window positioned above it.

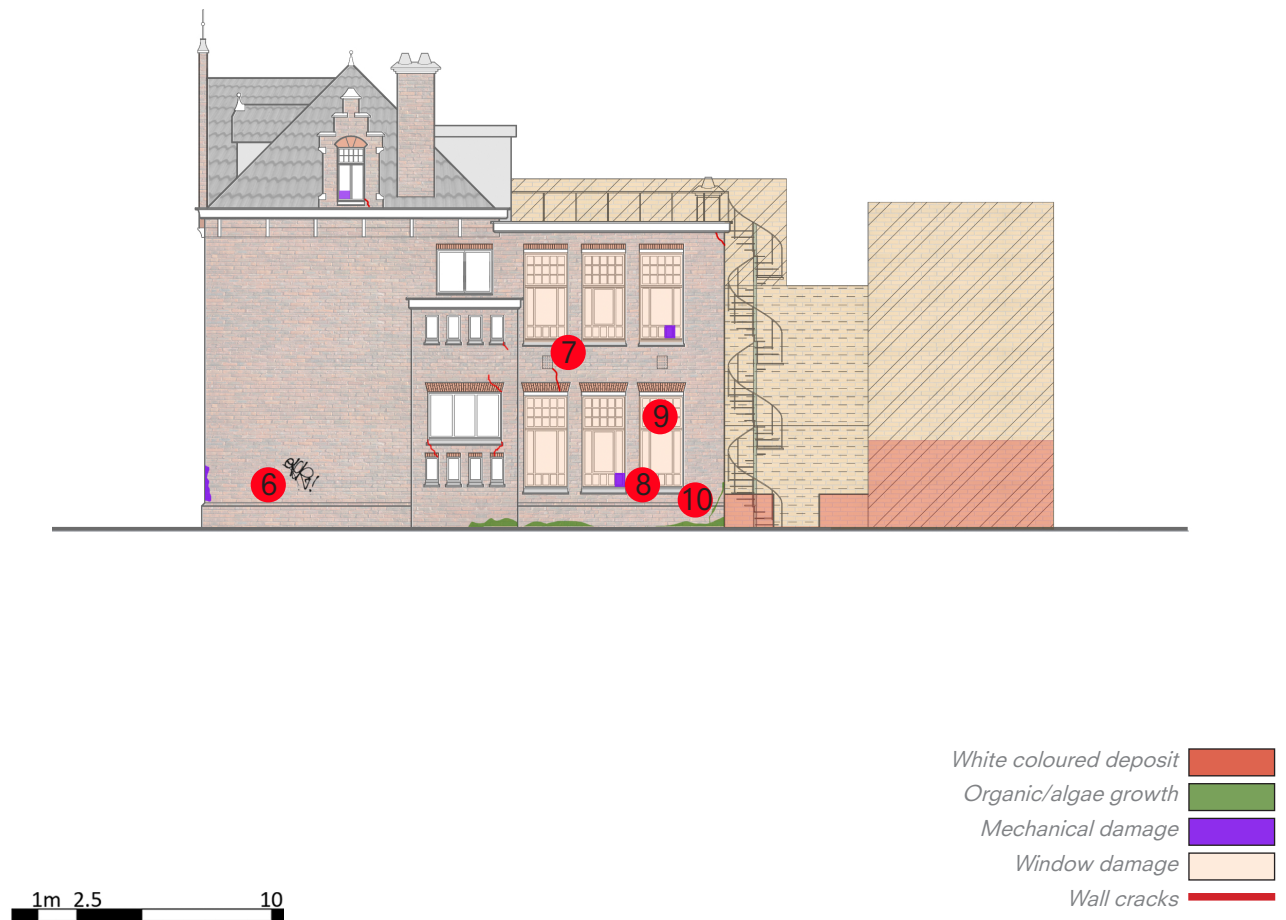


The corner of masonry wall in present shows signs of mechanical intervention since parts of bricks have been broken or removed. Given the height of this damage it could be caused by vehicles crashing on the surface or by careless movement of elements such as bikes or bins around those edges.

Some windows present cracks or have some of their parts smashed. One scenario could be that this is a result of vandalism or mistreatment by the students, while a second cause could be related with the overall decay of the window leading in failure of the rotted wooden frames to support the glazed elements.

Around the whole periphery of the 2001 school building extension a layer of dense white deposit finishing at exactly the same high is present. (Look case study no.15 for further analysis).

Damages - St. Anna





Graffiti can be found covering part of the eastern wall surface of this build extension. Methods such as water jet cleaning, shooting onto the wall with lasers and chlorine based chemical application can be among the solutions for their removal. The small extent of the graffiti however most likely would request for the application of a soluble substance, such as the latter, in order to weaken the paint bonds and lead to its removal.

A crack connects the sill of the upper window with the lintel of the lower one through the ventilation opening. Localized structural failure which becomes visible at the weakest points.

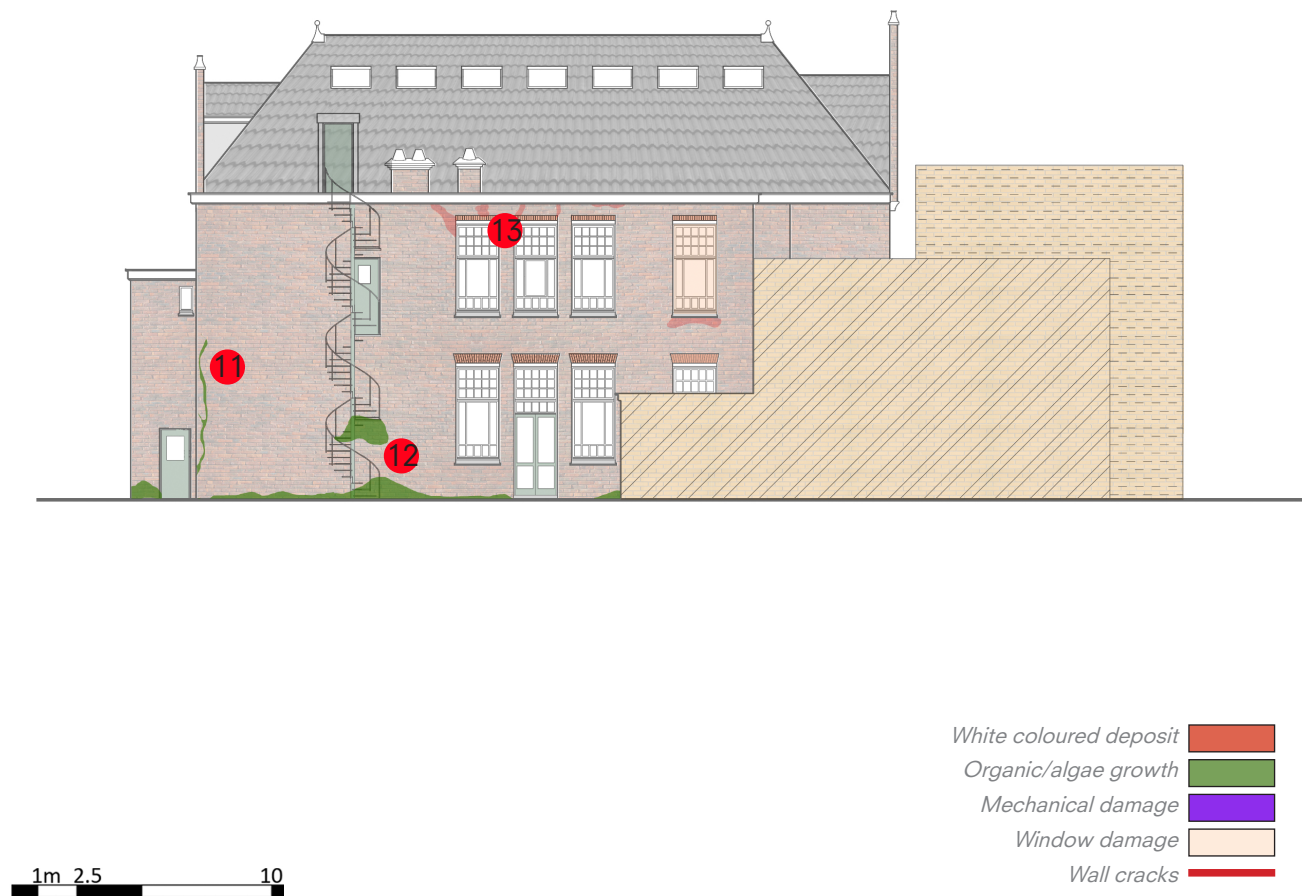


Just like in the examined case no.4 the parts the window openings have been brutally crashed, allowing in this instance room only for the scenario of mechanical damage caused either by accident or by throwing heavy elements directly onto the glass surface.

The windows of this façade present an overall, yet average in extent image of decay, primarily related with wood rot, paint detachment and in some instances disintegration of the bonding between the wooden and glass elements. Repair and restoration action should be taken to prevent deterioration of their state.

Algae and biological growth is evident at the lower level of the wall surface most likely due to gathering of rain water and high moisture levels at this spot.

Damages - St. Anna





Being the corner just around the case examined in picture no.10 biological and green algae growth on the brick surface can be spot. The location being just next to the rain water gutter makes the conditions ideal for organic growth since moisture levels are high. The plants should be removed before they affect with their roots the foundation .



Dense mass of green algae is visible in the area below the spiral staircase and on the brick surface where it is attached on the walls. The location is ideal for their not only because water is expected to be collect there but also because the shadow casted by the stair delays the process of surface drying and creates semi-lighted environment perfect for bacteria growth.



A white colored substance can be found to concentrate on localized spots just below the roof gutter. The look of it from a distance give the impression that it has a hard textured appearance, fact supporting that this could be a calcium based deposit. Clorium based test should be done in order to define if it salts or calcium, and accordingly propose treatment.

Damages - St. Anna



1m 2.5 10

White coloured deposit
Organic/algae growth
Mechanical damage
Window damage
Wall cracks



Here we find an extensive wall cracking presenting a V shaped pattern. Most likely scenario is that the cracking is result of a structural failure due to loads stressed by the pitched roof of the building at its façade. The exact location of the cracking is the point where the wooden rafter of the roof is resting on the front façade. As a result the façade structure failed to adequately support this lateral loads and lead to cracking. This potentially could be a serious damage since it may result in detachment of this part of the wall and cause roof structure instability.



Around the whole periphery of the building a layer of white deposit finishing at the same high, is causing a continuous effect. A hypothesis could be that this is a kind of anti-graffiti coating applied to prevent acts of vandalism. On the other had given the fact that the brick walls where built on site, this effect could be result of the nature of the extruded bricks used, and that the level where this effect stops reflects the fact that the builders moved from one brick palette to another, using bricks with the same look but with different properties. A chemical analysis and testing on both bricks and white deposit should be done to subtract further information.

Interior damages - St. Anna

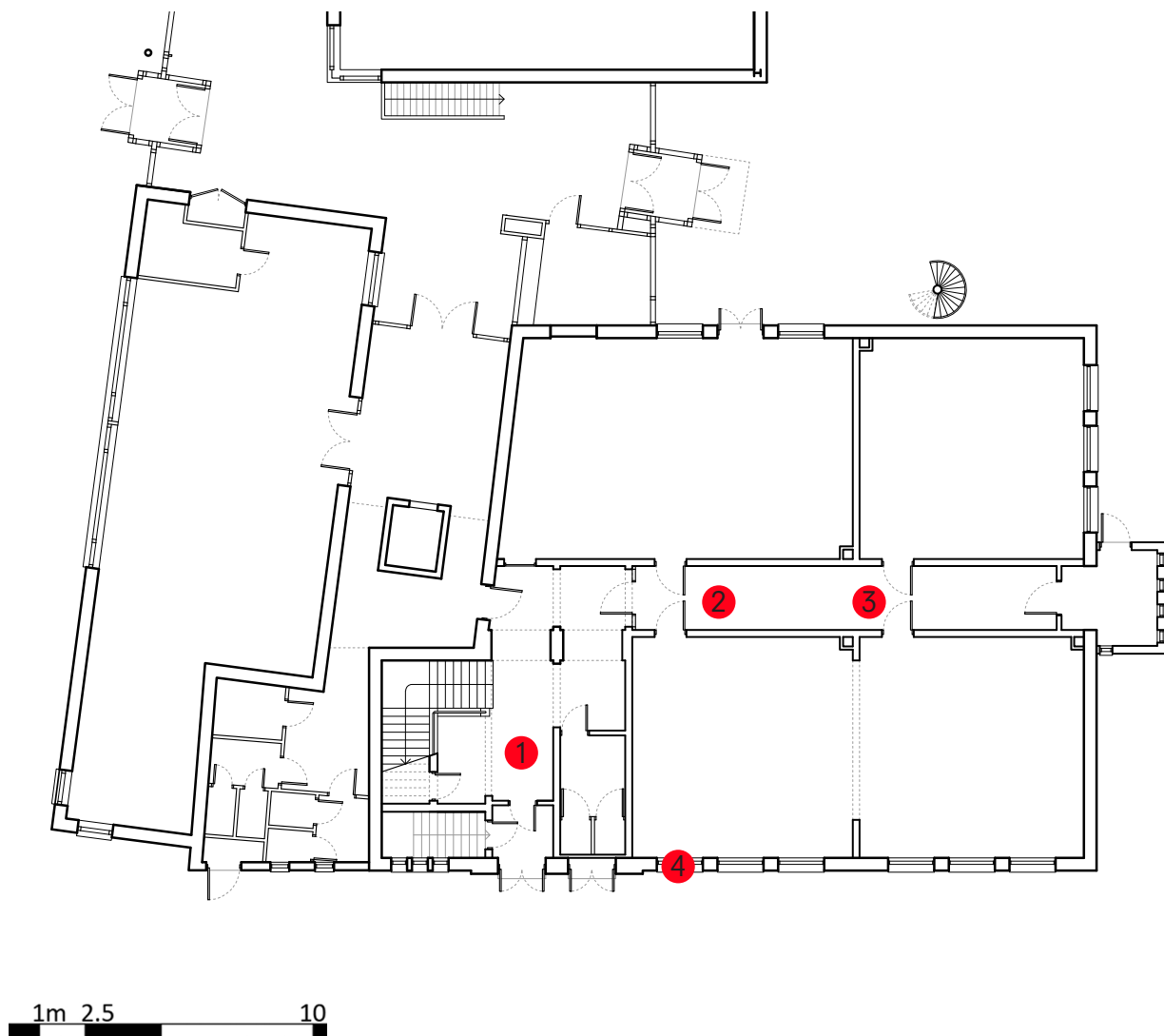




Image 171 *Cracks in terrazzo flooring*

The cracks in the terrazzo flooring could be caused by different reasons. Either the subflooring concrete slab is uneven and thus the terrazzo cracked under pressure, or the subflooring has been subjected to high levels of moisture, or it did not have the chance to fully bond.



Image 174 *Damage on window frame*

The damage on the exterior side of the window frames is visible on the interior side as well, which also shows signs of decay.

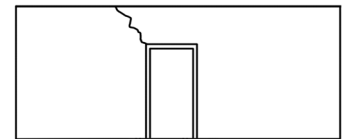


Image 172 *Damage on ceiling*

The white deposits formed on the plaster surface suggest high levels of moisture and probably the presence of salts. The cause could be water leakage. Further investigation would prove whether this damage is related to efflorescence or something else.

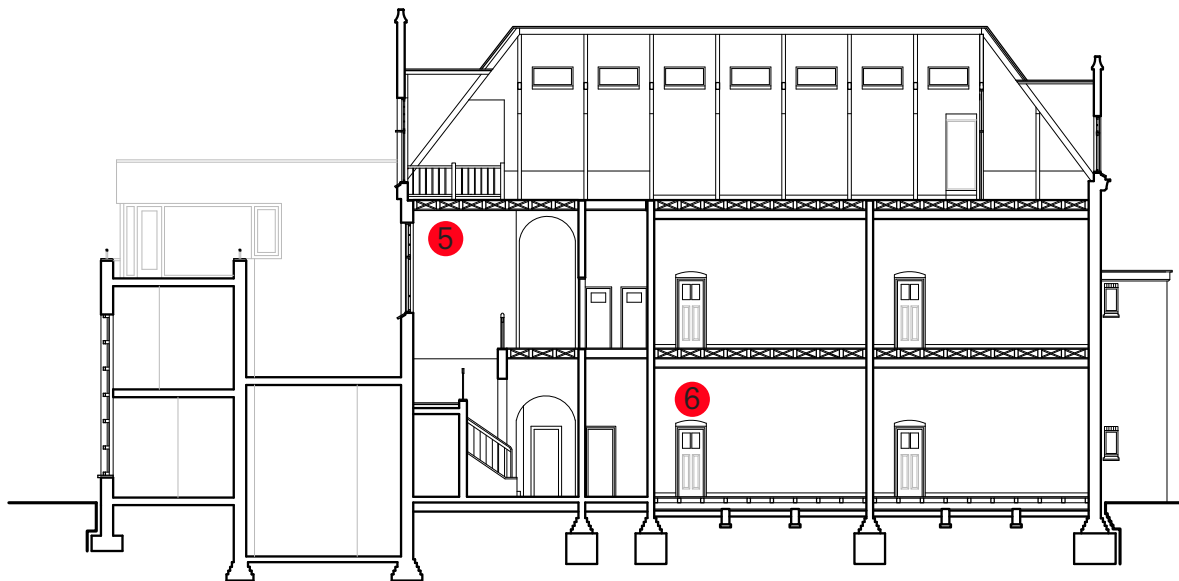


Image 173 *Cracks above openings*



Cracks have been formed at the upper part of the walls, specifically close to door openings. These kind of cracks are presumably relief joints. These joints move during the changing of the seasons as indoor and outdoor humidity levels change.

Interior damages - St. Anna



1m 2.5 10



Image 175 *Cracks on west facade*

The cracks at this part of the west facade have probably been developed due to settlement in the groundwork. Further investigation is needed in order to conclude in the cause of damage.



Image 176 *Cracking in the arched part of the doors*

Cracking in the brick arched part of the door is the result of some form of movement, which is localised around the arch itself. Presumably, cause of the damage is the opening and closing of the door which results into the movement of the door frame.



Conclusions - Damages

In an attempt to draw preliminary conclusions from the damage recording and assessment process we could say that both examined structures do not present a picture of severe decay and that the majority of damages can be grouped together in families of damages, that we often meet to buildings exposed to similar climatic conditions and use.

To be more specific, cracking present almost exclusively in the St. Anna building is within a logical range with the exception of the V shaped crack located on the western facade, for which we could recommend stabilizing actions prior to any intervention.

In addition a type of damage with severe extent, evident in both case studies, is related with fungus growth and glass breakage found on windows, condition which in certain cases is almost irreversible and as soon action should be taken the soonest possible. Finally, treatment for damages having to do with biological growth and wall anti graffiti measurements should be proposed mainly due to their negative aesthetic impact on the building surface.





Services

XV. Services

“These are the working guts of a building: communications wiring, electrical wiring, plumbing, sprinkler system, HVAC (heating, ventilating, and air conditioning), and moving parts like elevators and escalators. They wear out or obsolesce every 7 to 15 years. Many buildings are demolished early if their outdated systems are too deeply embedded to replace easily.”

(Brand, 1994, p. 13)

This is how Brand describes the services. In this chapter the services will be analysed. The buildings heating, ventilation and lighting will be analysed to get a better understanding of the use of the building. This can help for future interventions.

Heating - St. Jozef

The classrooms were heated by stoves from 1891 until 1934. These stoves were fueled with wood, coals or peat. The storage was most likely in the cellar.

The comfort level of these stoves were probably not high, the heat source was very localized and there would have been a cold draught from the windows.

With the upgrade of the building in 1934 a central heating system was introduced, a plant room with storage was added in the north east. With this central heating system the comfort level was improved, radiators were placed underneath the windows to prevent the cold draught.

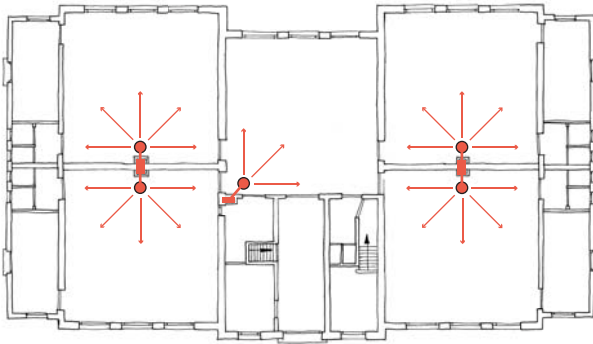


Figure 259 1891: Stoves in every classroom

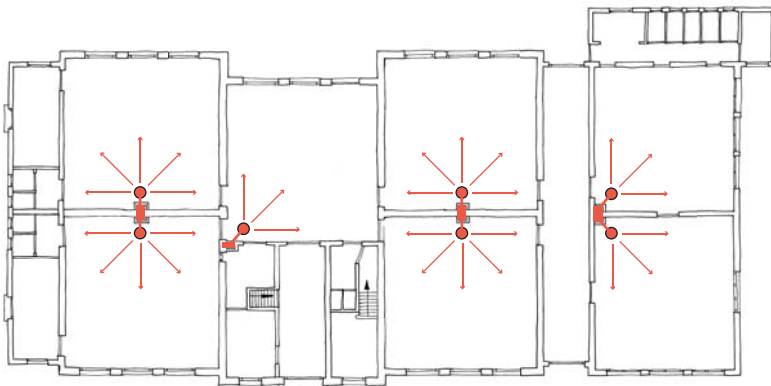
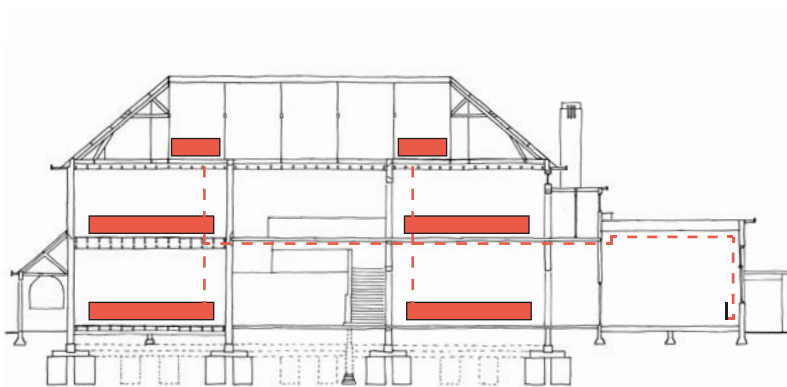


Figure 260 1914: Stoves in every classroom

1m 2.5 10 15



Figure 261 1934: central heating



1m 2.5 10 15

Figure 262 1934: central heating



Image 178 Classroom radiator (Own Photo)

Ventilation - St. Jozef

AA

TA

CV

The ventilation of Sint Jozef is without any mechanical intervention. In the lower part of the facade air inlets are made to either ventilate the timber floor construction or the floor cavity. Next to this the user can open the windows to adjust the ventilation to its own comfort.

The mechanism to open these windows is still as it was from 1934 and is aesthetically pleasing to see.



Image 179 *Openable window (Own photo)*



Image 180 *Window mechanism (Own photo)*



Image 181 *Air inlet in facade (Own photo)*

Lighting - St. Jozef

TA

CV

The classrooms are luminated by fluorescent tube lighting which are placed in the suspended ceiling.

The condition of the original ceiling is unknown because it is hidden by the suspended ceiling, further investigation might be needed. Next to this the ceiling lowers the height of the classroom by about 40 to 50

centimeters resulting in a cove in front of the windows which blocks a small part of the incoming light. But this is negligible (see Image 179).



Image 182 *Suspended ceiling with fluorescent tube lighting (Own Photo)*

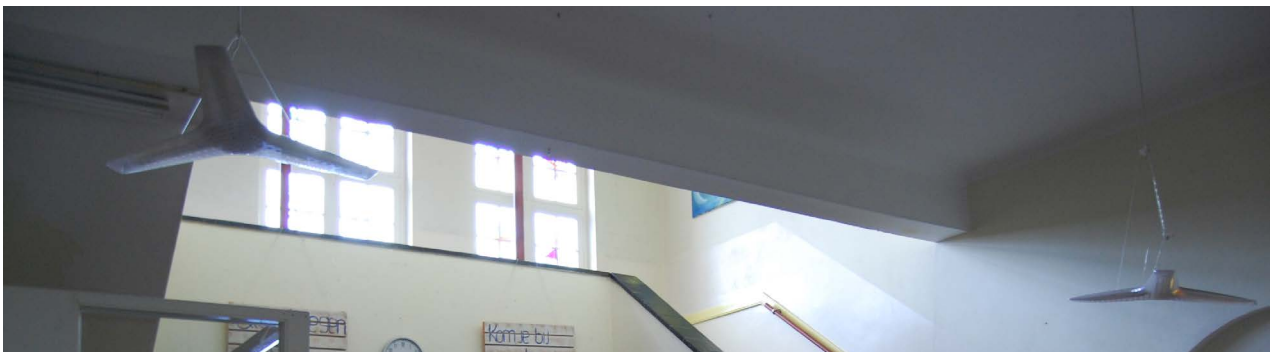


Image 183 *Special luminaires in the hallway (Own Photo)*

Heating - St. Anna

Like the St. Jozef, the classrooms of St. Anna were heated by stoves at the start. These stoves were fueled with wood, coals or peat. This fuel was stored in the addition in the southwest. Like the St. Jozef the comfort level of these stoves was very low, the heating was localised and there was presumably a cold draught from the windows.

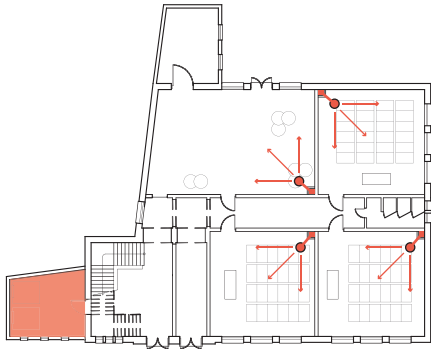


Figure 263 1909: *Wood or coal stoves*

The heating system of the St. Anna was presumably upgraded to a central heating system at the same time the St. Jozef was upgraded in 1933. The heat was distributed between the ground level and the first floor with the radiators situated at the windows to prevent the cold draught. The central system was located in the old storage room.

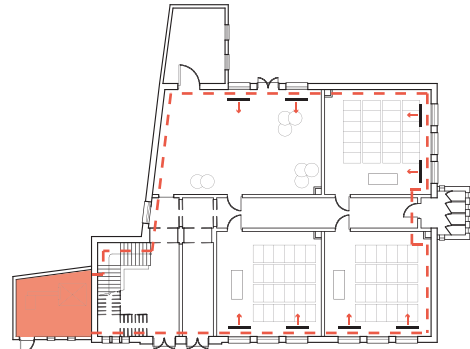


Figure 264 1967: *Central heating*

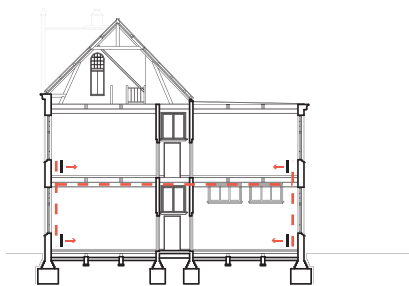


Figure 265 1967: *Central heating*

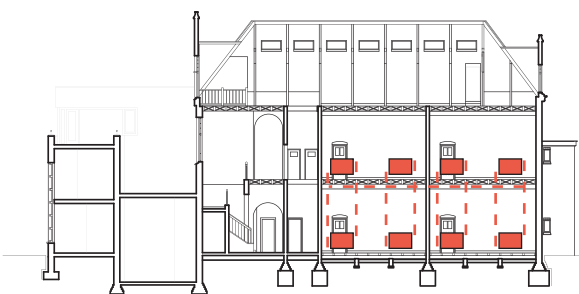


Figure 266 1967: *Central heating*

This plantroom was replaced by a toiletcluster in the renovation of 2000. Four boilers for the new central heating are placed in the corridor on the second floor of the extension. Each boiler in heating its own zone in the building. The building is heated by wall mounted radiators with the gym being the own exception which is heated with radiators attached to the ceiling. This

presumably has to do with its use where the radiators at the ceiling are less likely to be damaged.

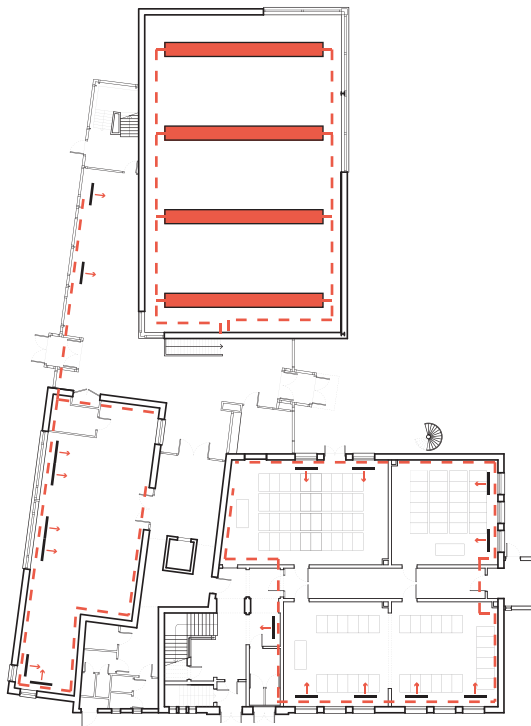


Figure 267 2001: *Central heating in extension*

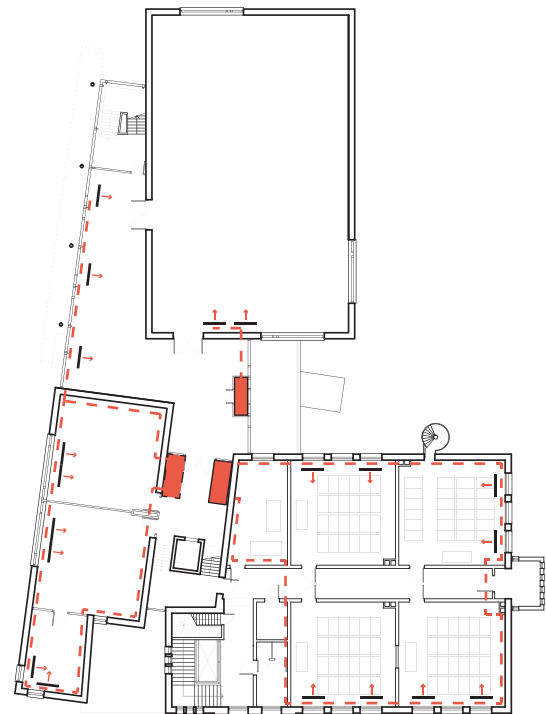


Figure 268 2001: *Central heating in extension*

Ventilation - St. Anna

AA

TA

CV

The ventilation in the old part of St. Anna is without any mechanical intervention. Small air inlets are made in the facade at the height of the floors to either ventilate the timber floor construction or the floor cavity. Larger grates are put underneath the windows. The function of these grates is unknown, presumably they could have been exhausts for furnaces placed underneath the window to prevent the cold draught.

The skylight of the windows could be opened by the user to adjust the ventilation to its own comfort. Like the St. Jozef the mechanism of this system is aesthetically pleasing.

In the extension of 2000 some mechanical ventilation is introduced. How this system works is not quite clear, we assume a system of natural inlet and mechanical outlet. On the roof mechanical ventilation units are placed for the extraction of air (see Image 177). The air inlet for the extension is quite unknown. No air vents could be seen for the inlet of air. The assumption is that the old St. Anna building is used as an air inlet, the building not being airtight because of its age could function as the air inlet, but this is an educated guess. Further investigation is needed to get a clear understanding.



Image 184 *Natural ventilation, air inlet in facade (Own Photo)*



Image 185 *Natural ventilation, air in- and outlet in facade (Own Photo)*

Lighting - St. Anna

TA

Like the St. Jozef the St. Anna has a suspended ceiling, the fluorescent tube lighting is suspended from this ceiling. In the case of St. Anna they did not make the decision to create a cove in front of the windows, making the ceiling higher than the St. Jozef. Reason being that the fluorescent tube lighting is suspended from the ceiling to provide enough light.

In the extension fluorescent tube lighting is put on the suspended ceiling. A special construction, like in other small theatres, is added in the auditorium for the stage lighting. This makes the lighting adjustable for any occasion.



Image 186 *Special lighting in the auditorium in the extension*



Image 187 *Fluorescent tube lighting in the extension*



Image 188 *Lowered fluorescent tubes in St. Anna*

Conclusions - Services

The services offer the buildings the ability to function well in the current situation. The heat is generated by a central heating system which fulfills the demands of the building. The ventilation of the building could be adjusted to the users own comfort by opening the skylight of the windows. Which have an aesthetically pleasing mechanism.

The suspended ceilings in the classrooms have a negative influence on the experience of the building. There lies an opportunity by removing the suspended ceilings showing the original ceiling again.

The grates in the facade of the St. Anna offer opportunities for the use of localised mechanical ventilation/ heating systems when needed.



3 Cultural Value

XVI. Cultural Value

After filling in the matrix and before taking the next step of defining the transformation framework of the design, it is of great importance to try to define the obligations, opportunities and dilemmas, derived from the analysis. These three aspects play a significant role in the formulation of the starting points, since they can be used as a basis and guidelines for the following steps. Even after starting the design process, it is crucial to have something to refer to, except for the Value matrix; something that basically summarizes the most outstanding findings, thoughts and ideas.

Thus, the obligations serve as reminders of what values are considered to be the most meaningful and, consequently, demand safeguarding for the future. They could be described as a commitment to a certain value, idea or cause, which must be kept. Opportunities refer to ideas and thoughts originated from the analysis that, if realized, would benefit and promote specific elements or values. Finally, dilemmas are related to contradicting values, and serve as a tool of argumentation and dialog, upon which a decision has to be made.

Obligations - Surroundings / Site

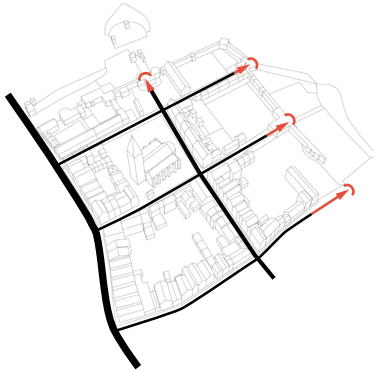


Figure 269 *The grid structure of the Nieuwstad*

The infrastructural grid structure should be preserved because it is creating coherence in the Nieuwstad by defining the building blocks.



Figure 272 *The historical border of the Nieuwstad*

The remains of the city wall reflect the old historical time layer and should be preserved. The wall also created an introvert character which defined the Nieuwstad.

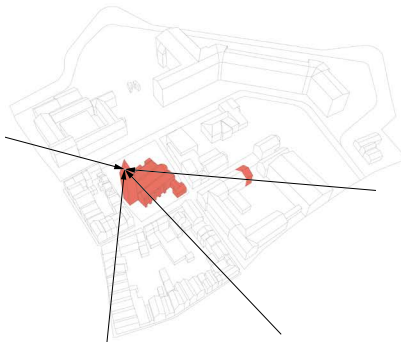


Figure 270 *The church as the centre of the community*

The church functions as a focal point and resembles the centre of the Roman Catholic community.

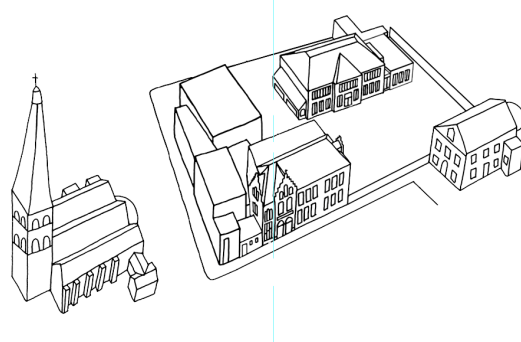


Figure 271 *The ensemble with its different architectural types*

The ensemble has different architectural types, which defined its character. Due to its historical heritage it functions as a whole and should be treated as a whole.

Obligations - St. Jozef



Figure 273 *The south facade of the St. Jozef*

The facades which are higher in hierarchy and richer in architectural expression should be treated with more care.



Figure 275 *The cross symbol on the roof pitch of the St. Jozef*

The cross symbol on the roof pitch should be recognizable on the building, since it is important to its religious heritage.



Figure 274 *The flooring and the stained glass of the St. Jozef*

The historical floor and the stained glass are important features of the character and atmosphere of the interior and define the age and history of the building.

Obligations - St. Anna



Figure 276 South Facade - St. Anna

The monumental facades which are higher in hierarchy and richer in architectural expression should be treated with more care.

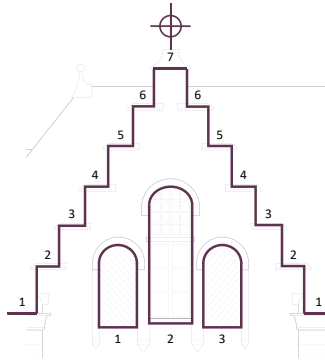


Figure 278 Symbolism - St. Anna

The cross symbol on the roof pitch should be recognisable on the building since it is important to its religious heritage.

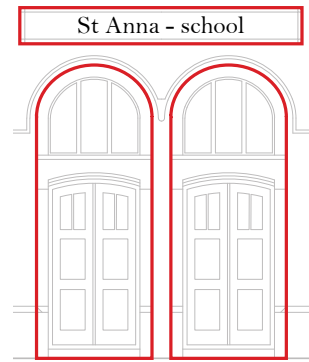


Figure 280 Double doors - St. Anna

The double door entrance reflects the social context of the past and is important for the buildings history.



Figure 277 Staircase - St. Anna

The design of the staircase for the main hall reflects the influences of the Art-Nouvea style and has an important relevance to the organisation of the building.



Figure 279 Terrazzo floor - St. Anna

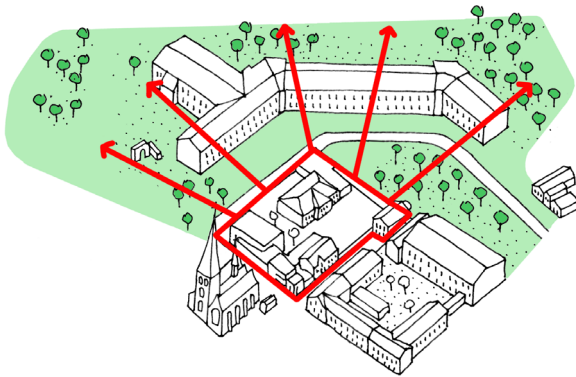
The historical terrazzo floor is important for the character and the atmosphere of the interior. Repairs are needed to restore the damages.



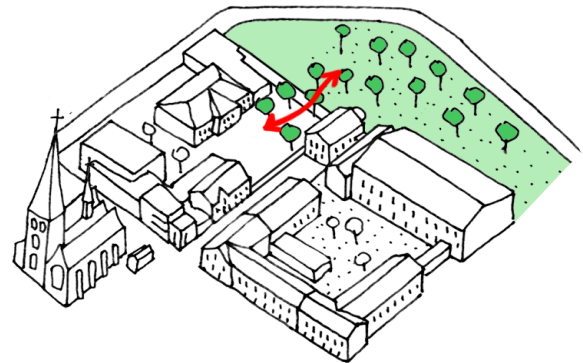
Figure 281 Wall paintings - St. Anna

The paintings on the wall are part of the spirit of the place showing the influence of the students on the interior.

Opportunities - Surroundings / Site



The connection with the Park and the Grote Gracht could benefit the area creating a more vibrant place.



The connection with the garden to east of the ensemble could serve as a catalyst for the area.

Opportunities - St. Jozef



Figure 282 *East Facade - St. Jozef*



Figure 283 *West Facade - St. Jozef*

The less ornamented and lower in hierarchy side facades could be treated with more freedom; for example creating new openings in order to introduce more daylight.

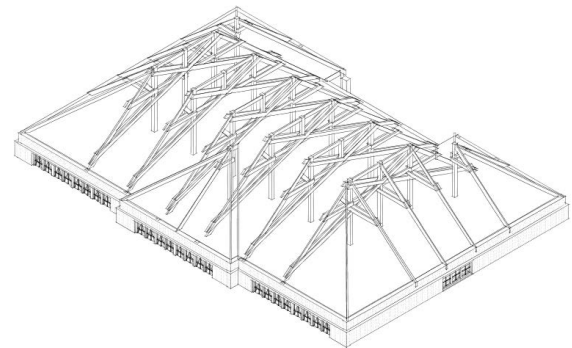


Figure 284 *Symmetry - South Facade - St. Jozef*

The roof construction is aesthetically pleasing and because of its dimensions has the potentials to be used for different functions.

Opportunities - St. Anna

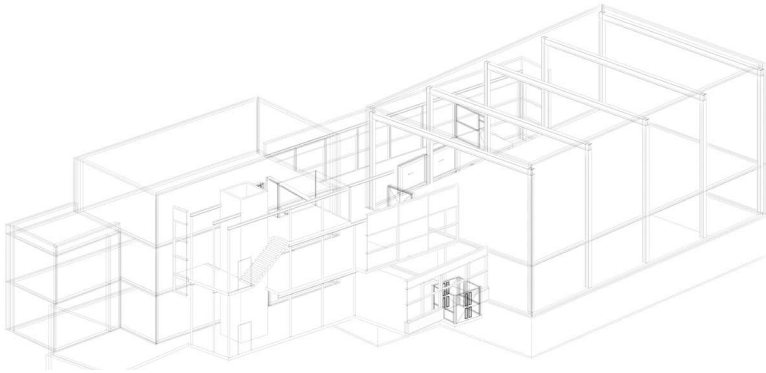


Figure 285 Axonometric view construction - Extension St. Anna

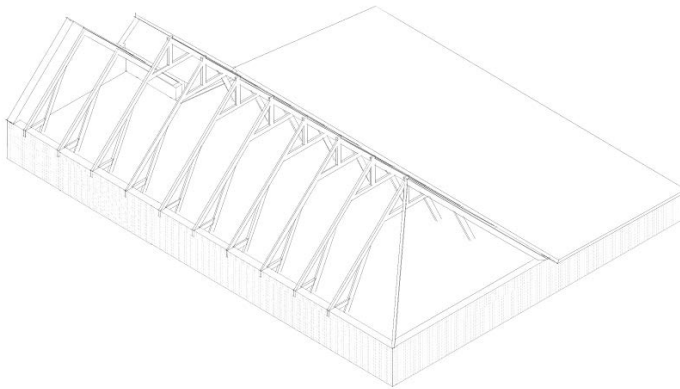


Figure 286 Roof construction - St. Anna

The roof construction is aesthetically pleasing and because of its dimensions has the potentials to be used for different functions.

The construction of the extension offers a large open floor plan which can be used for multiple functions.

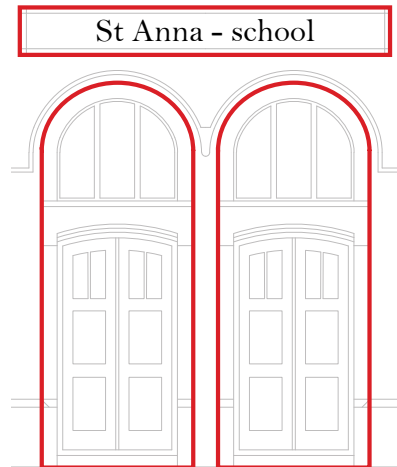


Figure 287 Double door entrance - St. Anna

The double door entrance at the south facade could be reintroduced, in case that the building is used for multiple functions which have to be separated from each other.

Dilemmas

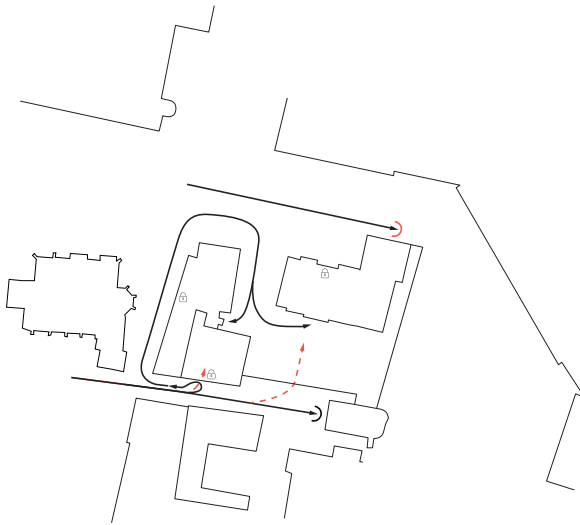


Figure 288 *Klein Vaticaanschools - routing - 2017*

The wayfinding towards the ensemble changed from the Tegnagelshoek to the Isendoornstraat, it being more convenient for the circulation. This new routing is in contrast with the original one and influences the experience of the ensemble. Should the practical solution overrule the historical approach?

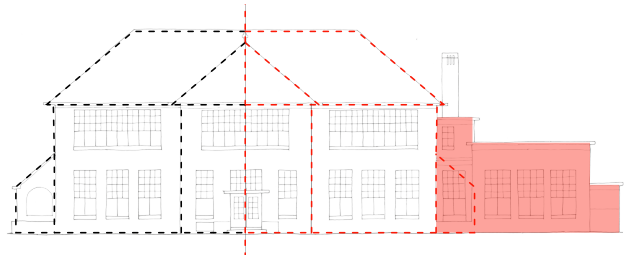


Figure 289 *Symmetry - South Facade - St. Jozef*

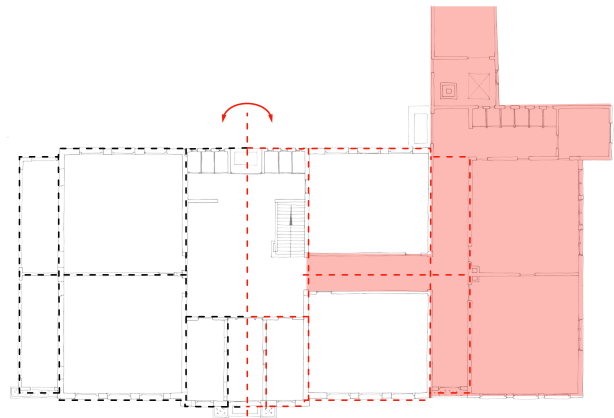


Figure 290 *Symmetry - Floor plan - St. Jozef*

The upgrade to the St. Jozef in 1934 changed the layout of the spaceplan to connect with the extension, resulting in the loss of the more pragmatic and symmetrical appearance of the building. In other words it changed the balance of the building. Is the practical solution of creating more space more valueable than the balance of the building?

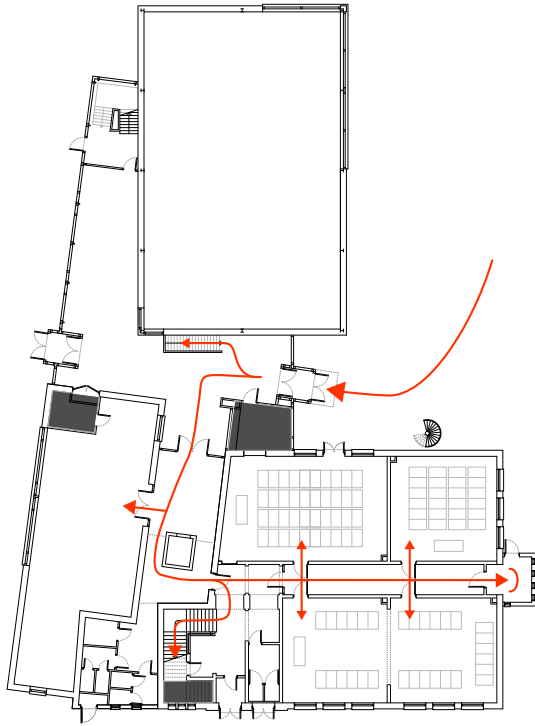


Figure 291 *Routing - Floor plan - St. Anna*

Alongside the St. Anna's extension in 1999, the entrance and the routing had to be changed because of convenience. The new entrance has positive values on the circulation of the building but the atmosphere of the historical entrance hall is lost. Is the more convenient circulation more valuable than the experience of the historical entrance hall?

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Appendix - Cultural Value Matrix

