Baudartius College and Het Stedelijk

Analysis Baudartius College & Het Stedelijk

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Preface

We are presenting to you the report with analysis of Baudartius College and Het Stedelijk, two high schools in Zutphen, in the province of Gelderland. This report is emphasizing the architecture, technology and cultural value of the schools. The aim is to do research to those specific buildings and the conclusions of the analysis can be the starting points for the design.
This report is written within the framework of the faculty of Architecture and the Built Environment at TU Delft. From September till November we have been working on this research by analyzing maps, pictures, reading books and visiting the schools.

We want to thank caretaker Gerarld Fisser and facility manager Cyril Hendriks for their hospitality and guiding tour through the schools. Also we would like to thank Job Roos, Hielkje Zijlstra, Sara Stroux and Wido Quist for mentoring and guiding us through the research and giving critical reflection.

Enjoy reading this report.

Jessica Admiraal
Malon Houben
Delft, November 2017

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Introduction

This report discusses two buildings in Nieuwstad in order to get an understanding of the development, character and identity of Nieuwstad. Nieuwstad is an area at the north side of the old city center of Zutphen. This area is rich in different functions, schools is one of these functions. For this research we focus on two high schools in the north of Nieuwstad: Baudartius College and Het Stedelijk. Both are located at the Isendoornstraat, close to the old gate at the north side of the city. It was one of the entrances to the city, an important routing into the city for trade. When developed those trade routes in history? What is the development of the Isendoornstraat? How do the schools function? Why are they located there? So many questions coming up with the location of Baudartius College and Het Stedelijk, and there are more.

To answer all those questions we analyze the development of the area at the Isendoornstraat by using different sources: literature, maps, prints and material of the archive, which are described in the list of references. By analyzing we try to find an answer to the questions.

The analyses are done on three different perspectives: architecture, building technology and cultural. On every page is indicated to which one the analyses belong, by three different symbols:

AR CV BT

This report is showing all the analyses and conclusion, divided in different chapters.
The first chapter is general info about the architects of the buildings and the development of the education system in the Netherlands. The second chapter is a study to the surrounding of both buildings. The third till sixth chapter describe the buildings on different scale levels and aspects.
For each chapter, an overall conclusion will be given within four subjects: values, opportunities, obligations and weaknesses. All the analyses and overall conclusions will lead to the seventh chapter, the chapter about the cultural values of the buildings.

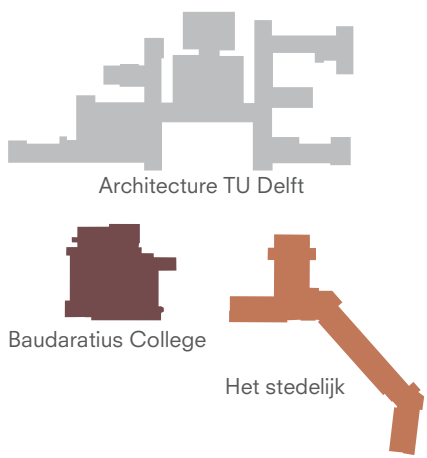


Figure 2 *Scale different schools*

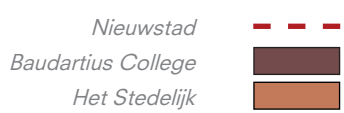
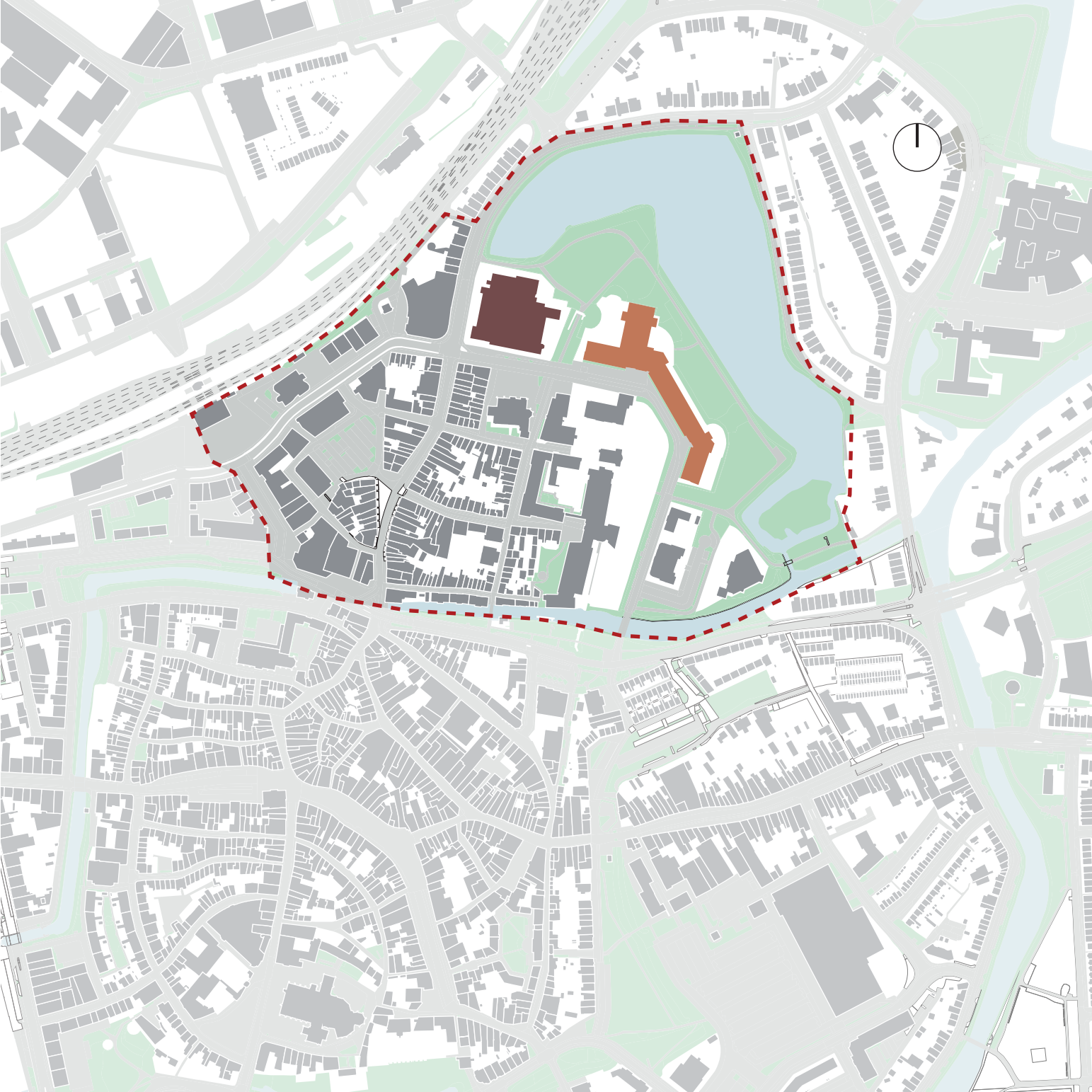


Figure 1 *Nieuwstad*



1 General Info

1.1 Facts

1.1.1 Baudartius College

The information of both schools is from the web page of De Zaak Onderwijs, a organization which gathers information about schools in the Netherlands and put it on www.10000scholen.nl.

General information

Name:	Christelijk Lyceum, Baudartius Lyceum, Baudartius College
Addess:	Isendoornstraat 1, Zutphen
Architect:	E.J. Rotshuizen, A. Meerstadt
Construction:	1951, 1955, 1964, 1966, 1974, 1998
Size:	Around 70 x 66 meters
Square meters:	9500 m^2
Students:	1545 at two locations, approx. 900 at Isendoornstraat 1
Teachers:	117 (10000scholen, 2017)
Education:	VMBO T / HAVO / VWO
Vision:	Regular
Religion:	Protestant / Christian
Rate students and m^2:	9500 m^2 for 900 students 10,6 m^2 per student

Location

Baudartius College has two locations: Isendoornstraat en Berkenlaan. At the Berkenlaan you get classes in the first and second year.

History

The first part of Baudartius College was built in 1951, after this the school was extended five times.

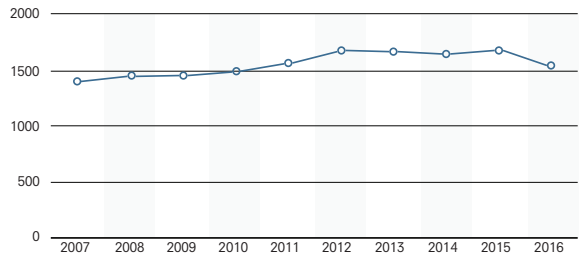


Figure 3 *Amount of students (De Zaak Onderwijs, 2016a)*

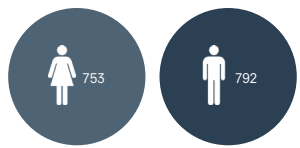


Figure 4 *Division girls and boys (De Zaak Onderwijs, 2016a)*

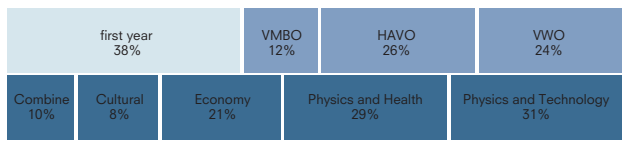


Figure 5 *Division sectors (De Zaak Onderwijs, 2016a)*

AR CV BT

1.1.2 Het Stedelijk

General information

Name:	Dalton College, Het Stedelijk Lyceum, Het Stedelijk
Addess:	Isendoornstraat 3, Zutphen
Architect:	Jón Kristinsson
Construction:	1999
Size:	Around 170 x 17 meters
Square meters:	7700 m2
Students:	661, but the Vrije School is also using a part of the building
Teachers:	96 (10000scholen, 2017)
Education:	VMBO / HAVO / VWO
Vision:	Regular
Religion:	Public
Rate students and m^2:	7700 m^2 for 660 students 11,7 m^2 per student

History

In 1955 the Dalton College was built at the Isendoornstraat 3. This school did not function in a good way, so they decided to demolish the building in the 90s. A totally new building was built in 1999.

Conclusion

In both schools, the amount of students is decreasing, in Het Stedelijk a lot more as in Baudartius College. This is a problem for Het Stedelijk, because the amount of students decreased intensively, but the amount of m^2 does not decrease. In the future, it can be necessary to move to a smaller building.

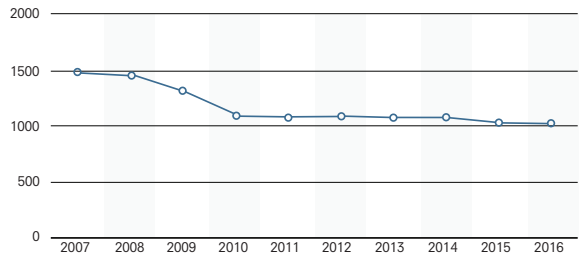


Figure 6 *Amount of students (De Zaak Onderwijs, 2016b)*

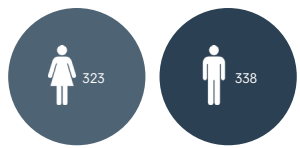


Figure 7 *Division girls and boys (De Zaak Onderwijs, 2016b)*

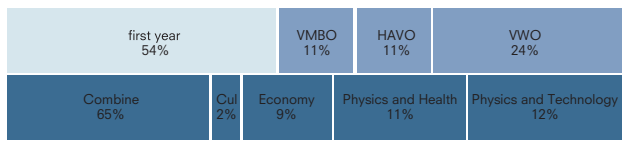


Figure 8 *Division sectors (De Zaak Onderwijs, 2016b)*

1.2 Baudartius College

AR CV

1.2.1 E.J. Rotshuizen

General information architect

Name:	Evert Jan Rotshuizen
Date of birth:	12-06-1888 (Heelsum, Gelderland)
Date of death:	01-09-1979 (Arnhem, Gelderland)
Residence:	Arnhem and Velp (Gelderland)
Functions:	Architect, PBNA director since 1912 and chief editor of Centraalblad der Bouwbedrijven voor Nederland en Koloniën since 1913

E.J. Rotshuizen

In an article Werkgroep Historie (2011, Februari 26) gives more information about the architect. Rotshuizen followed different engineering courses. With his reformed background he received assignments for Christian schools, churches and care institutions.
He also designed several dwelling blocks, villas and country houses during his career.
His first designs do not show a clear architectural style. From the twenties is a strong tendency towards the styles: Amsterdamse School and Haagse School. Later, he was influenced by the Delftse School and Nieuwe Zakelijkheid. The characteristics of these architectural styles are described in the next paragraph.

In 1933 he started his own architectural company: BUVANI NV. In 1939, he changed his name from Rothuizen to Rotshuizen. When he collaborated with the architect C. Dekker after the war, the office received the name 'Rotshuizen en Dekker'. After the Second World War Rotshuizen developed himself further towards Delftse School and Nieuw Zakelijkheid.
Besides his architectural office, Rotshuizen was also active in education. He was the founder and director of the office 'Polytechnic Bureau Netherlands' Arnhem, PBNA. PBNA cared for written education, which is a form of distance learning. Both, the students and the teachers, are outside the institutions building. PBNA meant for many working technicians a kind of second chance education.

An article of Stichting Bonas (n.d.), all the projects of Rotshuizen are shown, with additional information. This information is used to make a timeline of the projects of Rotshuizen. Baudartius College is one if last projects he worked on. If we compare his projects with each other we see his own style, a traditional style but at the other hand modern for his time. Characteristics of the projects of Rotshuizen are:

- the use of bricks;
- sloping roofs with tiles;
- traditional;
- repetition in the facade;
- window frames;
- shape;
- barely use of decorations.

All the characteristics of Rotshuizen are also visible in Baudartius College. The school fits in the list of his works. But it is hard to frame it in time, it could also be designed in 1920.

Figure 9 *Timeline work Rotshuizen*

1915 1920 1925 1930 1935 1940 1945 1950

1913
Lobokschool; Arnhem

1921
Oranje Nassauschool; Ede

1922
Bavinckschool; Delft

1922
Schoolverlengde Maanderweg; Ede

1925
Christelijk Lyceum; Arnhem

1925
Psychiatric clinic; Wolfheze

1925
Nassauschool; Velp

1925
Zorginstelling Sanatorium; Ermelo

1925
Christelijk Lyceum; Arnhem

1932
Van Loben Selsschool; Arnhem

1935
Dwellings Velperweg; Arnhem

1937
Dwellings Julianalaan; Arnhem

1939
Geformed church; Ede

1939
Reformed church; Silvolde

1951
Baudartius Lyceum; Zutphen

1.2.2 Architecture style

Delftse school

At the beginning of the twentieth century, as a counterpart of the Amsterdamse School, the Delftse School was created. According to the traditionalists, Amsterdamse School was too decorative.
The Delftse School is characterized by traditionalist architecture, a style based on universal standards and values. In addition, one wanted to honor the tradition of the Dutch rural development. Characteristics are:

- the use of bricks;
- sloping roofs with tiles;
- hgh gutters;
- the use of natural stone at important constructive points;
- traditional;
- the form is determined by the function;
- barely use of decorations.

(Boekraad, C., e.a., 2009, p 116-118)

Nieuwe Zakelijkheid

Nieuw Zakelijk, also knows as the International Style, is an architectural style characterized by functionality, soberness and the use of new materials. Glass, steel and concrete were used for the first time. Characteristics are:

- no ornaments and other unnecessary decorations;
- using technique to build in a good way (not like constructivism);
- efficient layout of floor plans, optimal use of square meters;
- walls just used for space-forming;
- geometric blocks;
- the use of steel window frames, results in an open and transparent facade;
- big windows with a lot of glass for enough light and air.

(Boekraad, C., e.a., 2009, p 118-120)

Reconstruction architecture

During the reconstruction period after WO II in 1945, the hard dividing line between traditionalism and functionalism was eliminated. This period does not contain a new architectural style, but a variety of all kinds of highly individualized combinations of traditional and modern elements.
Due to shortage of materials and skilled employees, industrial-manufactured construction products had to be used. Even in traditionalist architecture, modern materials such as steel windows and prefab concrete elements were used. Characteristics are:

- more abstract shapes;
- details and decorations, often in modern materials, referring to historical examples;
- often monumental application of fine arts, especially in public buildings;
- order and repetition;
- use of concrete frames around the windows;
- reinforced concrete construction covered with bricks.

(Boekraad, C., e.a., 2009, p 156-158)

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Delftse school

Image 1 *Market Wageningen*

Image 2 *Sint Ludgerus primary school, Zwolle*

Nieuwe Zakelijkheid

Image 3 *TNO Amsterdam*

Image 4 *Van Nelle factory, Rotterdam*

1.2.3 Architectural language Baudartius College

Comparison

If we compare Baudartius College with the styles of the architect Rotshuizen: Delftse school and Nieuw Zakelijkheid. We see a lot of similarities with the Delftse school.

Characteristics Delfse School:

- The use of bricks;
- Sloping roofs with tiles;
- High gutters;
- The use of natural stone at important constructive points;
- Traditional;
- The form is determined by the function;
- Barely use of decorations.

Baudartius College:

- Use of bricks;
- Sloping roofs with tiles;
- Use of natural stone at important constructive points: the entrance and the concrete frame around the windows;
- Traditional: windows and shape;
- Barely use of decoration, only the fence in front of the windows, window frames out of concrete.

Image 5 *Sint Ludgerus primary school Zwolle*

Image 6 *Dwellings Zoetermeer*

Image 7 *Main entrance*

Image 8 *Fences*

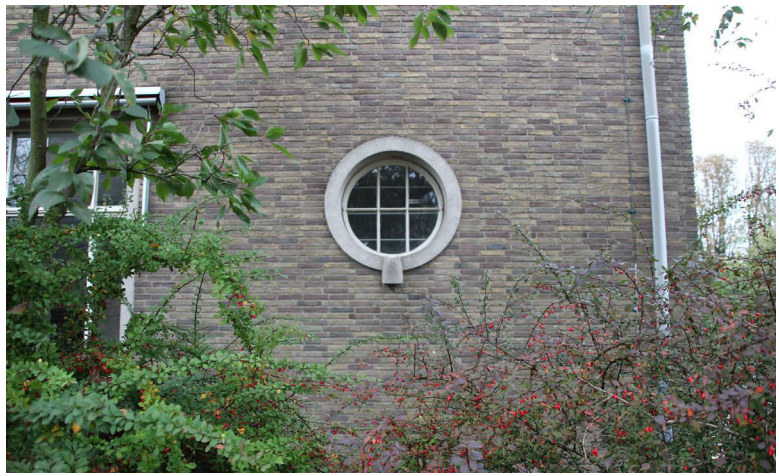


Image 9 *Facade opening*

Image 10 *East facade*

1.3 Het Stedelijk

AR CV BT

1.3.1 Jon Kristinsson

General information architect

Name:	Jón Kristinsson
Date of birth:	07-05-1936 (Reykjavik, Iceland)
Residence:	Reykjavik, Delft, Deventer
Functions:	Architect and professor

J. Kristinsson

Prof.ir. Jón Kristinsson had a short career in the navy. After this career he started in 1956 his architectural study at the TU Delft. Kirstinsson started with his wife and colleague Riet Reitsema a architectural and engineering office in Deventer in 1966.

His big career started in 1976, he designed an integral sustainable city hall for Lelystad. A building with the world's first seasonal heat storage in the wet clay ground, solar collectors in the parabolic roof shells, indoor climate control, natural humidification, self-regulating lights and other very innovative, techniques.

Kristinsson worked between 1979 and 1983 on the development of 'minimum energy homes' for the social sector in Schiedam, using passive solar energy, new thermal insulation techniques, and a compact air heat recovery system.

During the period 1992 and 2001 Kristinsson was Professor at the Faculty of Architecture at the TU Delft. (Hogenes, 2012)

An article of Stichting Bonas (n.d.), all the projects of Rotshuizen are shown, with additional information. This information is used to make a timeline of the projects of Rotshuizen.

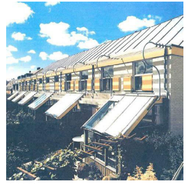
The information from the website of Kristinsson Architecten is used to create a timeline of several projects of Kristinsson. During his career he developed several technical sustainable concepts and sustainable buildings. The sustainable concepts and several buildings are shown in the timeline. If we compare his projects with each other we see his own style and vision: technical sustainability. Kristinsson is in the field very progressive, he is ahead of time.
Het Stedelijk does not fit in his list of designs if we look to the topic sustainability. He did not use any extra sustainable solutions: big parts in the facade made out of glass and no use of the roof only covered with tiles.

Figure 10 *Timeline work Kristinsson*

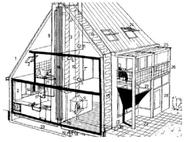
1975 1980 1985 1990 1995 2000 2005 2010 2015

1976
City office; self-sufficient, Lelystad.

1981
Atolls; North sea.



1983
Dwellings; solar cavity wall; Leiderdorp.



1984
Dwellings; minimum energy, Schiedam.

1990
Fire brigades; Zutphen.

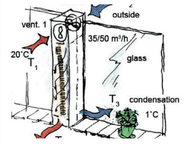
1990
Fire brigades; Deventer.

1999
School; Stedelijk Daltoncollege, Zutphen.

1999
Fire brigades; Soest.

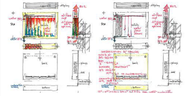
2001
School; De Lingeborgh, Geldermalsen.

2005
School; De Meander, Ede.



2005
Concept; breathable window.

2008
School; Greijdanus Scholengemeenschap, Meppel.



2008
Concept: HCCV (Heat Cool Clean Ventilation).

2012
Vila Flora; self-sufficient exhibition and office building, Venlo.

2018
School; De Zuidstroom, Venlo.

1.3.2 Architecture style

Ecological architecture

In 1970 the first initiatives of ecological architecture started. The main element in ecological architecture is the sustainable use of materials and raw materials. Nowadays environmental concerns are not only about ecology, but has also a broad social layer.

You can not recognize ecological architecture at his shape and own distinctive design, the trend has other characteristics:

- Designing in an overall living environment;
- Natural materials which do not change the environment or suitable for recycling;
- Traditional materials: bricks, ceramic tiles and sustainable wood;
- Alternative materials: natural stone, bamboo and loam.
- Individual buildings;
- Solar panels part of the design;
- Roofs not only with tiles but also green roofs.

(Boekraad, C., e.a., 2009, p 191-192)

Neomodernism

In the early 1980s the style neomodernism started, a style that re-focus on functionalism. Architects start focusing on the pre-war style: Nieuwe Bouwen. In the education, a lot of attention was paid to this architecture.

You can recognize neomodernism at:

- Elementary main shapes: cube, rectangle, cylinder et cetera;
- Strong main shape of the building, impression of the mass;
- Material and color use is abstract;
- Facades with a powerful horizontal structure;
- Ground floor facade with concrete or bricks;
- Plastered facades painted in light tones, but mostly white;
- Balconies, loggias provides depth to the facades;
- Prefab concrete elements;
- Double facades.

(Boekraad, C., e.a., 2009, p 216-218)

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Ecological architecture

Image 11 *Villa Flora, Jón Kristinsson*

Image 12 *Stadswijk Nieuwland Amersfoort*

Neomodernism

Image 13 *Hillekop Rotterdam, Mecanoo*

Image 14 *Zwarte Madonna Den Haag, Carel Weeber*

1.3.3 Architectural language Het Stedelijk

Comparison

If we compare Het Stedelijk with the styles of the architect Kristinsson: ecological architecture and neomodernism. We see a lot of similarities with neomodernism.

Characteristics neomodernism:

- Elementary main shapes
- Strong main shape of the building, impression of the mass;
- Material and color use is abstract;
- Facades with a powerful horizontal structure;
- Ground floor facade with concrete or bricks;
- Plastered facades painted in light tones, but mostly white;
- Balconies, loggias provides depth to the facades;
- Prefab concrete elements;
- Dubble facades.

Het Stedelijk:

- Elementary main shapes
- Strong main shape of the building, impression of the mass;
- Material and color use is abstract;
- Facades horizontal structure;
- Balconies provides depth to facade;
- Prefab concrete elements.

Image 15 *Hillekop Rotterdam, Mecanoo*

Image 16 *De Roef Almelo, Duinker van der Torre*

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Image 17 *Balcony*

Image 18 *Horizontal facade*

Image 19 *Geomatric shapes*

Image 20 *Impressive mass*

1.4 Education system

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The education system in the Netherlands has a long history. Figure 11 shows the timeline of the development of the education system in the Netherlands, which is based on the publication Categoraal onderzoek wederopbouw scholen 1940-1965 from Rijksdienst voor het Cultureel Erfgoed (2002).

Lyceum

As we saw in the timelimes of the schools, Het Baudartius College started in 1920 as a lyceum and Het Stedelijk started in 1950 as a lyceum. A high school with only education with the higher levels (havo/vwo). The first lyceums in the Netherlands arised in 1909.

Dalton education

At Het Stedelijk Dalton education is an central element. Dalton education started in 1926, an independent education system. Students get a lot of freedom and their own responsibility. They do not have classes the hole day, but can fill in their own time.

After World War II

Baudartius College and the old Stedelijk are both school built straight after the Second World War. After the war their was an increasing need of schools, education became obligatory till the age of 15, their was a need of skilled workers and because of the babyboom.

1950

The education system stayed more or less traditional till 1950. In the 1950's the community idea started, translated in a central space for cultural activities. Besides this also different class rooms developed for different kind of craftsmanship. Fences around schools disappeared and replaces by grass and trees. Baudartius is built in 1951, extended in 1955 till a school building with a courtyard. Space for cultural activities. Baudartius College consist many rooms with different sizes. Every room with his own function within the building. The school still built a traditional fence around the plot.
In contrast, the old Stedelijk had a connection with the park, a lot of green, no fence around the plot. In the new Stedelijk we still see this connection between school and park.
In that time schools became a community center, so mostly located close to a church. Also Baudartius and Het Stedelijk are located near the church.

Mamoetwet

From 1968 education became obligatory till the age of 18. This results in more need for schools and bigger schools. Baudartius College is extended in 1967 and 1977.

Prefabrication

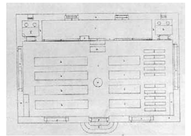
Building cheaper and faster school buildings started in the sixties. Het Stedelijk is a good example of prefabrication of schools. The school has long, prefabricated facades with a repetition of windows.

Figure 11 *Timeline development education in the Netherlands*

1800 1820 1840 1860 1880 1900 1920 1940 1960 1980 2000

Middle Ages

Classes are given in sheds, dwellings and warehouses.

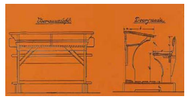


1800

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

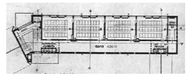
1806

First law; classical teaching.



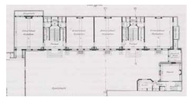
1820

Law; enough light intensity, correct heights and good furniture.
You can regonize the schoolbuildings: elongated floorplan, slide and tuble 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 contected 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 maxium students and a good ratio between glass and square meters floor.

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 symmatric 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 symmatric 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 writting.

1926

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

1945

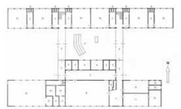
Big need for schools after WOII because of the babyboom a higher cultural standard and the increasing need of skilled workers.
Many temporary or semi-temporary schools with simple floorplans and cheap building constructions were built, building dwellings was priority number one. There was a big material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

1.5 Conclusion General Info

Baudartius College

Values
- Post-war architecture
- Architectural language Jan Rotshuizen
- Attracting young people to the area

Opportunities

Obligations

Weaknesses

Het Stedelijk

Values
- Attracting young people to the area

Opportunities

Obligations

Weaknesses
- No extra sustainable solutions
- Decreasing number of students

2 Surrounding

2.1 Development surrounding

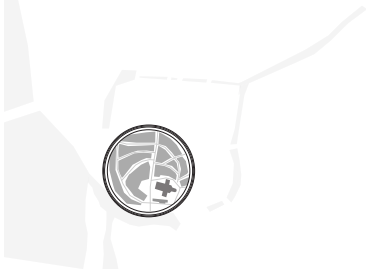
2.1.1 Zutphen

In figure 12 is shown the development of the fortification of Zutphen. These maps are based on the maps in the book of Michel Groothedde (2008). The area of Baudartius College and Het Stedelijk is indicated in red.

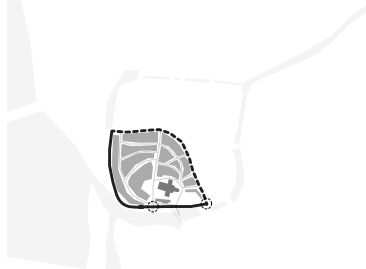
The first city wall was built around Zutphen in the year 900, a circle around the old city center. This wall was extended twice till 1200. In the 13th century, Nieuwstad was built as a independent city at the north side of Zutphen. In 1312 Nieuwstad and Zutphen became one city and this city extended to the east; Spitaalstad. Till the 19th century, the fortification developed. In 1874 the time of the fortress ended and the wall could be removed.
The position of the gate in the north changed from location during history: first the Spanish Gate and later the Nieuwstad Gate more to the west.

Till 1850, Nieuwstad is the entrance and exit of Zutphen. More specific to the site, it was always the border of Zutphen. Today the location of the schools is not the end of the city, because at the north side is another neighborhood situated. This notion change the orientation of this area. It is not necessary to keep it introvert for fortification. This are now can be a more extrovert.

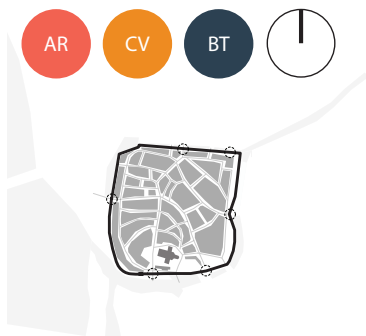
Figure 12 *Development of the city wall (made by Sophie Wijting)*



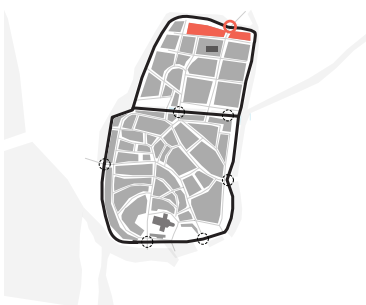
900



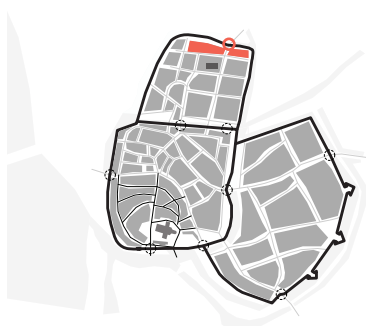
1125



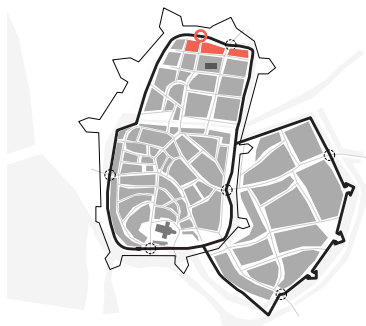
1200



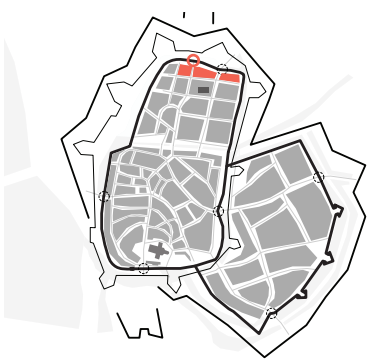
1250



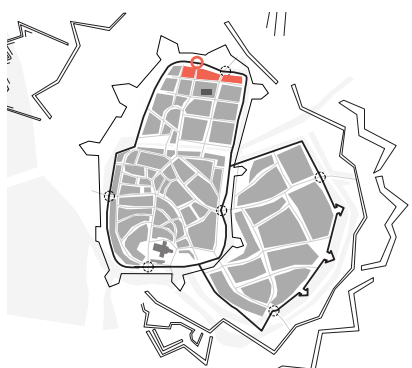
1300



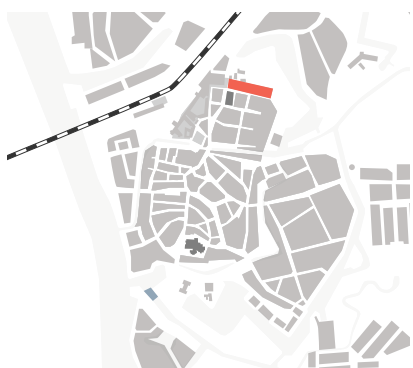
1616



1700



1850



1945

2.1.2 Nieuwstad

In figure 13 is the development of the northern part of Nieuwstad shown. These drawings are based on the maps showed in the publication of M. Groothedde (1993).

It started with the monastery, which changed into a military complex in the 19th century. After World War II, some building were demolished and Baudartius College and Het Stedelijk are built. Some expansion had been made to both school building and in 1999 the new building of Het Stedelijk is built.

The main building of the monastery and military complex was as the spot of the current Baudartius College. The buildings more to the west and east were facilitating buildings (storage, manufacture, etc.) In the future, the functions of the buildings need to be more related to each other and a hierarchy is needed to give people more focus to specific buildings.

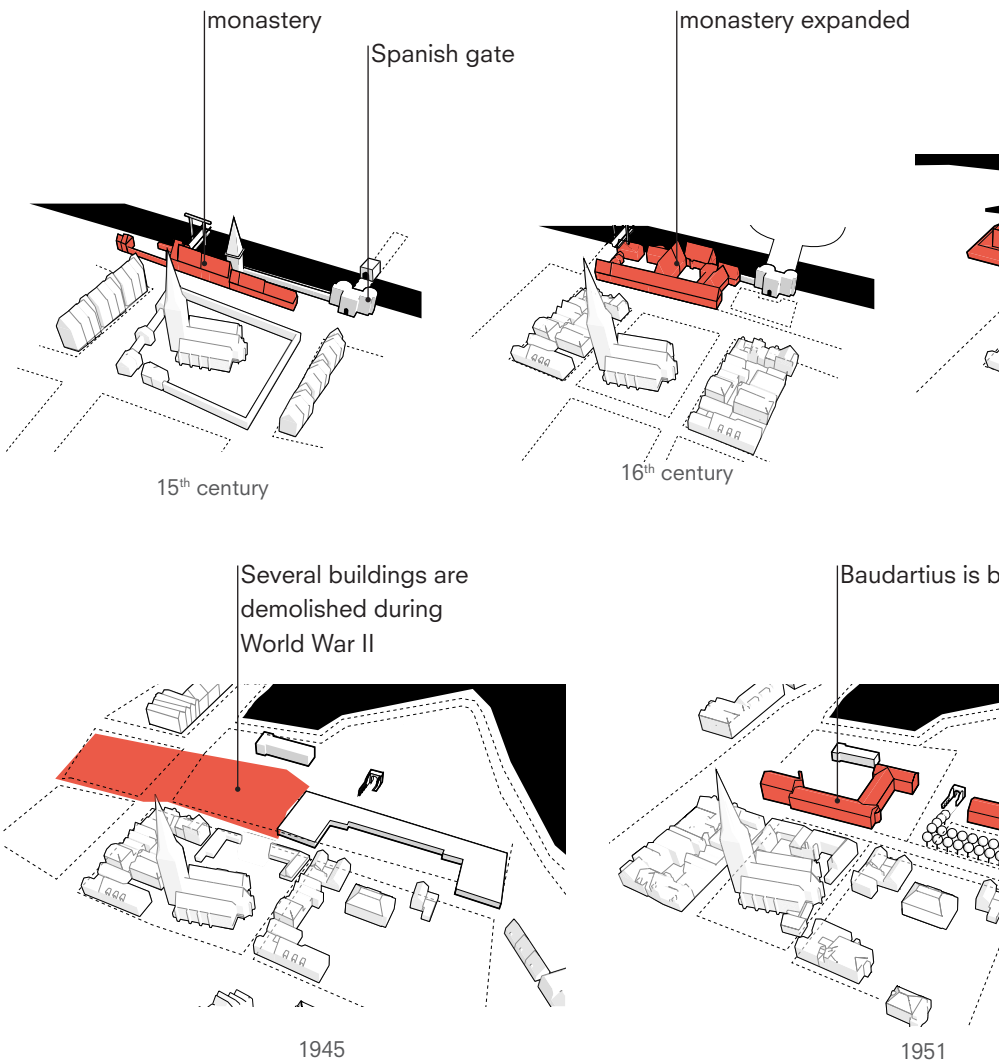
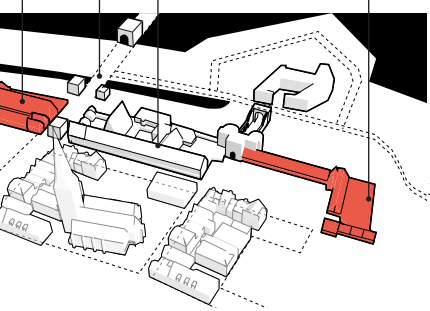


Figure 13 *Chronomap of the northern part of Nieuwstad made by My My Ngo, edited by*

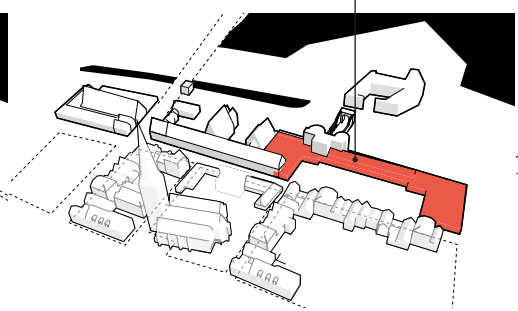
AR CV

stables
Nieuwstad gate
monastery changed
in military complex
buildings for artillery



1863

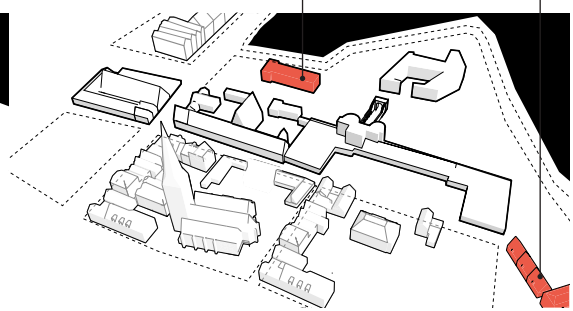
buildings for
artillery expanded



1878

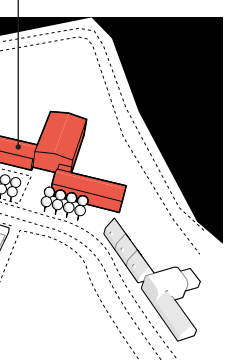
gymnastic
building

houses and
hospital ward



1900

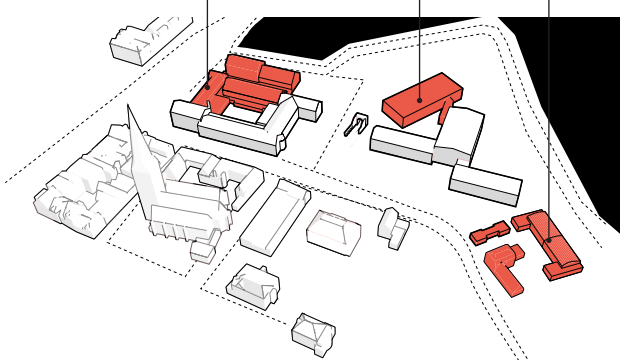
uilt
Het Stedelijk is built



Baudartius is
expanded

Contemporary
rooms
Het Stedelijk

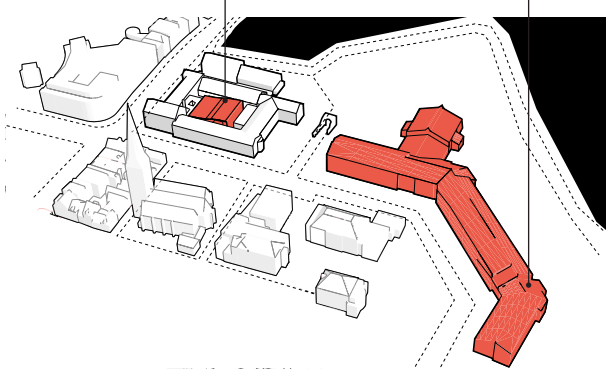
Gymnastic
building
Het Stedelijk



1974

Baudartius is
expanded

New building Het
Stedelijk



2017

2.1.3 Border Nieuwstad

In figure 16, the development of the border of Nieuwstad is shown. The map of 1832 is based on the cadastral map of Zutphen (Regionaal Archief, archive no.: SZU005000189) and the map of 1878 is based on the cadastral map of Zutphen (Regionaal Archief, archive no.: SZU004000275)

Historical maps

The top maps show the growth of Nieuwstad in 1832, 1878 and how it is nowadays. To explain the urban structure we looked at the borders and the building blocks in Nieuwstad.

Borders

In 1832 Nieuwstad was surrounded by a city wall, the monastery in the north at the Isendoornstraat was the only building attached to this wall. In 1878 we see a growth of buildings close to the wall. Now, some part of the wall are remained, but the border is mainly formed by large building blocks.

Urban expansion

Between the building blocks and the wall in 1832 we see an open space. This open space was meant for the growth of amount of inhabitants. This growth never came, and now tis area is more and more filled with larger buildings.

The thin and fragile character of the border is lost. The big building blocks are now floating in the area and give a different feeling of the border.

Figure 15 *Zoom fortification Nieuwstad*

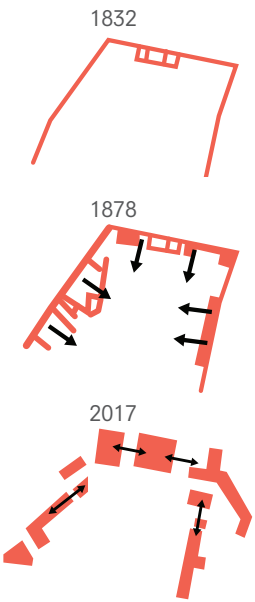


Figure 14 *Diagram development of the border*

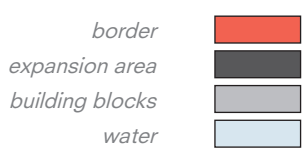
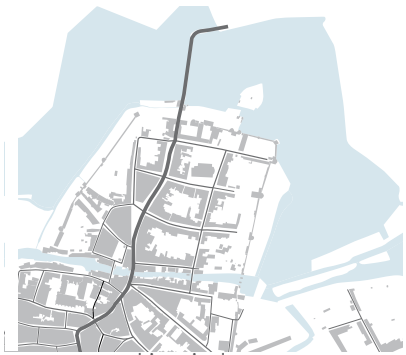


Figure 16 *Development of the border*

1832

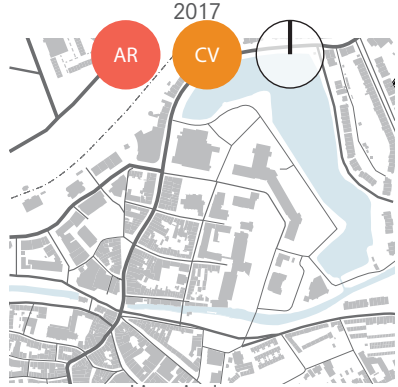


historical map

1878

historical map

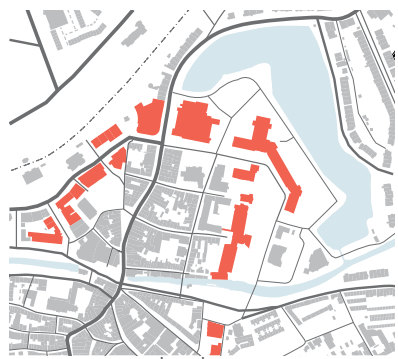
2017



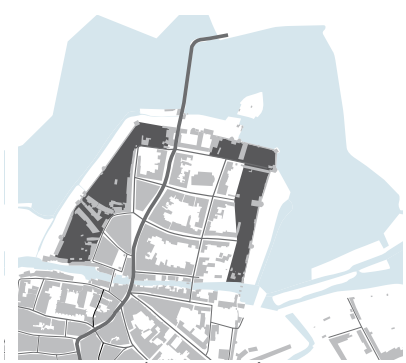
historical map

borders

borders

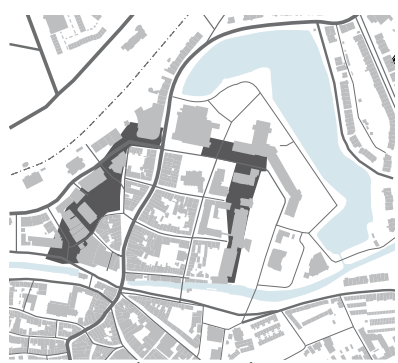


borders



urban expansion

urban expansion



urban expansion

2.1.4 Border northern border

Proportion building blocks

The buildings at the northern part of Nieuwstad were always bigger as the other building blocks in Nieuwstad. It started with the monastery in 1350-1595 the building was thin and fragile. In 1874-1945, when the building is used for the barrack, the mass became bigger. After World War II, the school buildings again became bigger.

Shape

In 1350-1595, the building was one, thin building. The shape of the building resulted in courtyards and enclosed outdoor spaces. In 1874-1945, the barrack consisted of three separate buildings, which were related to each other and felt as one complex. The courtyards and enclosed outdoor spaces were still present. From World War II, when the school buildings are built, the building blocks are not connected to each other anymore. Each building block is more focused on the street. In the beginning, Baudartius College had a courtyard in the building. Nowadays, both buildings do not enclose a space anymore.

Infrastructure

In 1350-1595 the main road for trade went through the monastery. Secondary roads ended at the city wall or a building. In 1874-1945, the main road was not through the building anymore, but in between two buildings. The secondary roads still ended in the city wall or buildings. Nowadays, all the streets are continuous lines through Nieuwstad. The main trading route from the past shifted to the west, to the train station.

When renovation this area, it is important to keep the proportions and shape in mind from the past. Now, the enclosed spaces are lost and the building are floating. By again relating the buildings to each other and changing the shape of some of the buildings, the coherence of the area can be restored.

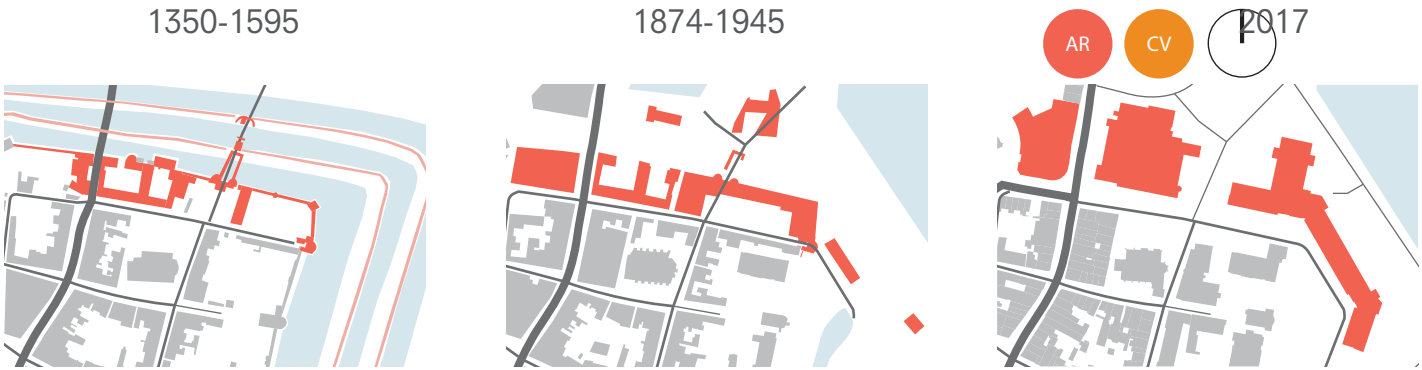


Figure 17 *Development Isendoornstraat*

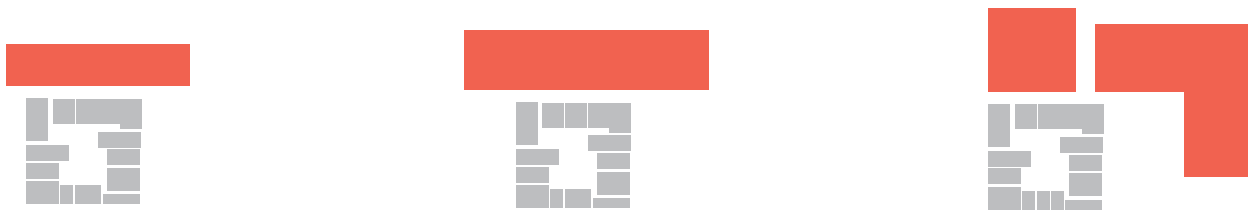


Figure 18 *Proportion building blocks*

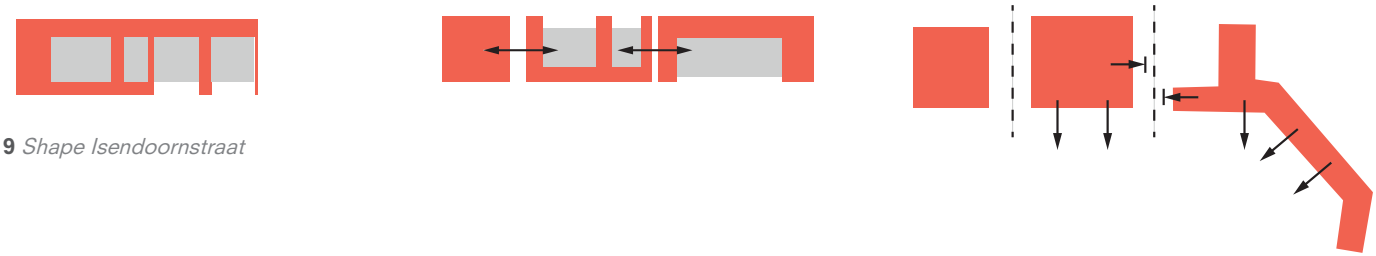


Figure 19 *Shape Isendoornstraat*

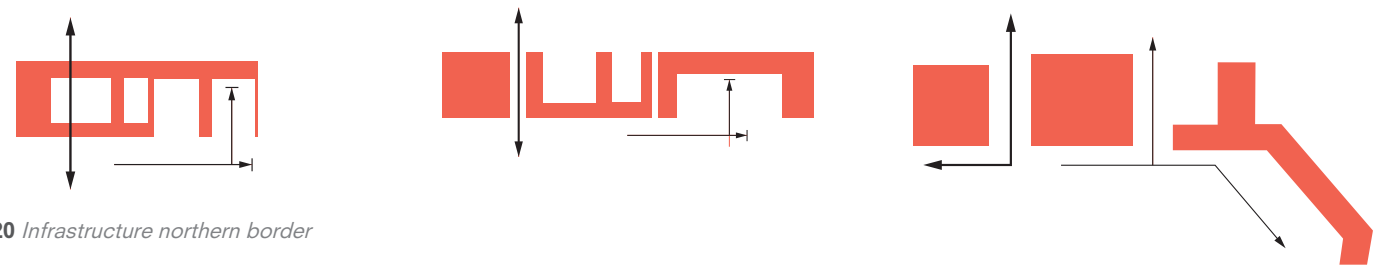


Figure 20 *Infrastructure northern border*

2.1.5 Isendoornstraat

Figures 21-24 show street profiles of the Isendoorstraat in 1920 and 2017. The Isendoornstraat in front of Baudartius College is changed a lot. It used to be a small street and now it is a much wider street. This changed in World War II, because the existing street was not wide enough for the tanks of the Canadians. Some building blocks were demolished to make the road wider.

The Isendoornstraat in front of Het Stedelijk was already in 1920 a wider street. This is mainly because the buildings of the military complex enclosed a public space. The building in front of the St. Jozef school made the road a bit smaller in 1920. Now it is gone, the road is wider.

The use of the Isendoornstraat also changed. In 1920 is was used by pedestrians and horses. Nowadays, it is used by cars, bicyclists and pedestrians.

The width of the Isendoornstraat changed the area in an 'empty' area between the old part of Nieuwstad and the northern part. In the future, it is desirable to narrow the street and bring back the intimate feeling. When the building of Baudartius College or Het Stedelijk is not going to be demolished, study needs to be done how to narrow the street with other elements.

Figure 21 *Street profile Baudartius 2017*

Figure 22 *Street profile Baudartius 1920*

AR CV

Figure 23 *Street profile Het Stedelijk 2017*

Image 21 *Isendoornstraat 2017*

Figure 24 *Street profile Het Stedelijk 1920*

Image 22 *Isendoornstraat 1920*

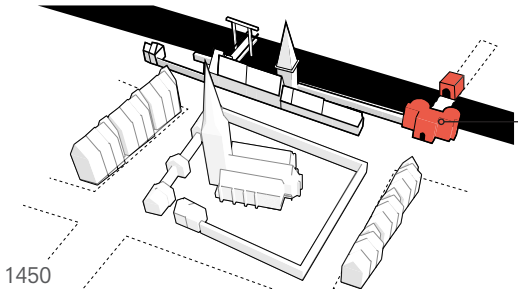
2.1.6 Entrance Nieuwstad

AR CV

The first gate of Nieuwstad was the Spanish gate. Till approximately 1600, this gate was the northern gate of the city. When the fortification was extended with bastions, the gate shifted more to the west, the Nieuwstad Gate. In the 19th century, the fortification of the city disappeared and there was no gate anymore. A new neighborhood was built at the north side of Zutphen and the street Nieuwstad continued to this area. From that time the entrance to the city is an open en continuous line of movements.
Nowadays, the street from the north goes to the train station and not through Nieuwstad anymore. So Nieuwstad is not the entrance and exit of the city as it was in history.

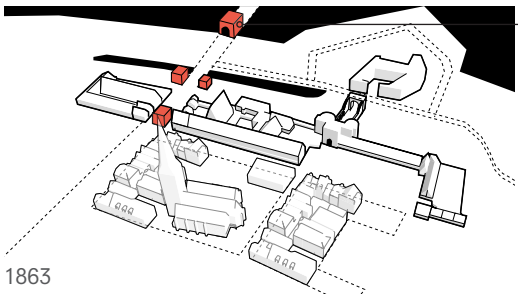
Because the main infrastructure is not going through Nieuwstad anymore, less car traffic goes into the area. This makes the area more quiet and safe to walk and bike.
The plots of Baudartius College and Het Stedelijk are no longer located at the beginning / end of the city. They are now located between two different areas.

Figure 25 *Entrance to the city (edited by My My Ngo)*



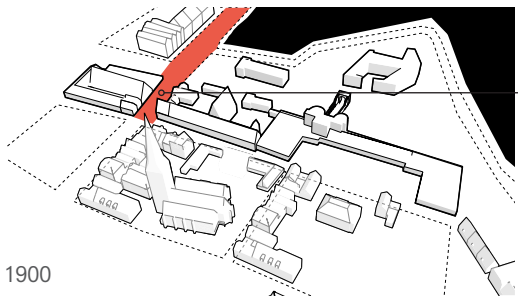
1450

Regionaal Archief Zutphen,
SZU002025994



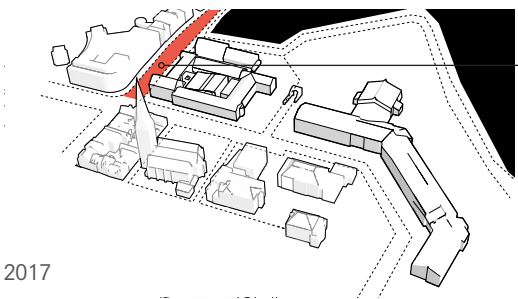
1863

Regionaal Archief Zutphen,
SZU002025998



1900

Regionaal Archief Zutphen,
SZU002026309



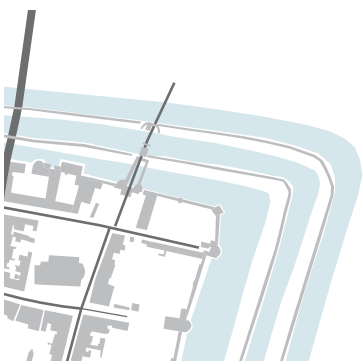
2017

2.1.6 Waterfront

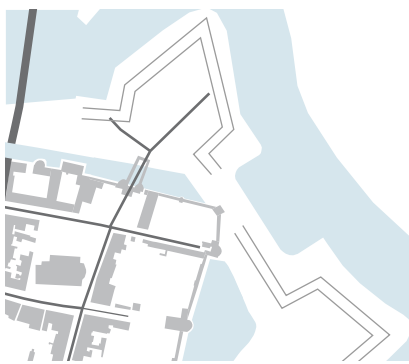
AR CV

The city was surrounded by water, as part of the defense system. From the end of the 16th century, bastions were present to increase the fortification. From the 19th century, this area was used as a sport area for the military. After World War II, two schools came into this area and the waterfront became a park.

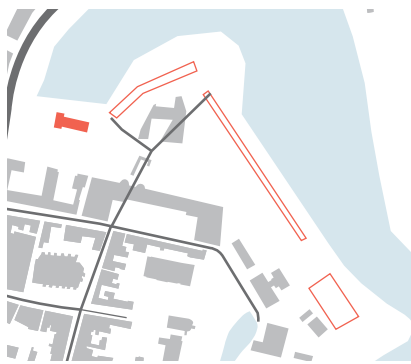
The area around Nieuwstad was always connected to a function. First, it was part of the defense system and after that, part of the barracks. Now the park is not related to a function anymore, and this results in a park which is not used as it could be. In the future, the park has to be more related to the buildings and its function.



1350-1595



1595-1861



1900-1935

1935-1945

1945-1955

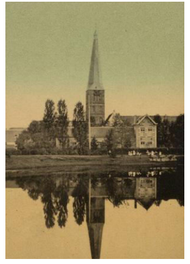
2017

Figure 27 *Development water front*

Figure 26 *Timeline water front*

1600 1800 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010

1396
Isendoornklooster; monastery to city wall, outside the wall the defence area with green and water.



1830
Isendoornkazerne; the area was used for military exercises, practice area.

1932
Gymnastic buildings and sports fields outside used by the schools.

1934
Vogelpark; opening.

1940
The area during WOII

1946
Vogelpark; initialated by Emiel Wustefeld, a citypark with his hobby birds

1946
Events organized after WOII, to collect money for the reconstruction after the war.

1952
Vogelpark; park with entrance fee (animals, cafe, sports field).

1961
Vogelpark; biggest glory.

1975
Vogelpark; closed.

1981
Vogelpark; aerial photograph

2008
Vogelpark; pavilion.

2011
Vogelpark; fire pavilion.

2013
Grote Gracht; boottour.

2.2 Surrounding 2017

2.2.1 Relation buildings and park

Around the Baudartius are fences. This results in not using the park by the students. Some teachers of the school said they are not organizing activities in the park, only in winter ice-skating. So the school does not use the park and is also not oriented to the park. The trees around the buildings enhance this enclosed feeling.

Het Stedelijk is more opened up to the park. From the two auditoriums, students have access to the park. Students also do this in the breaks. Also (sport) activities are organized in the park by the school. The dotted area in figure 28 is mainly used for these activities.

In the future, the park can be more related to the buildings in the northern part of Nieuwstad. This can give more activity to the park and make it pleasant to stay.

Image 24 *The fence with a hedge around Baudartius*

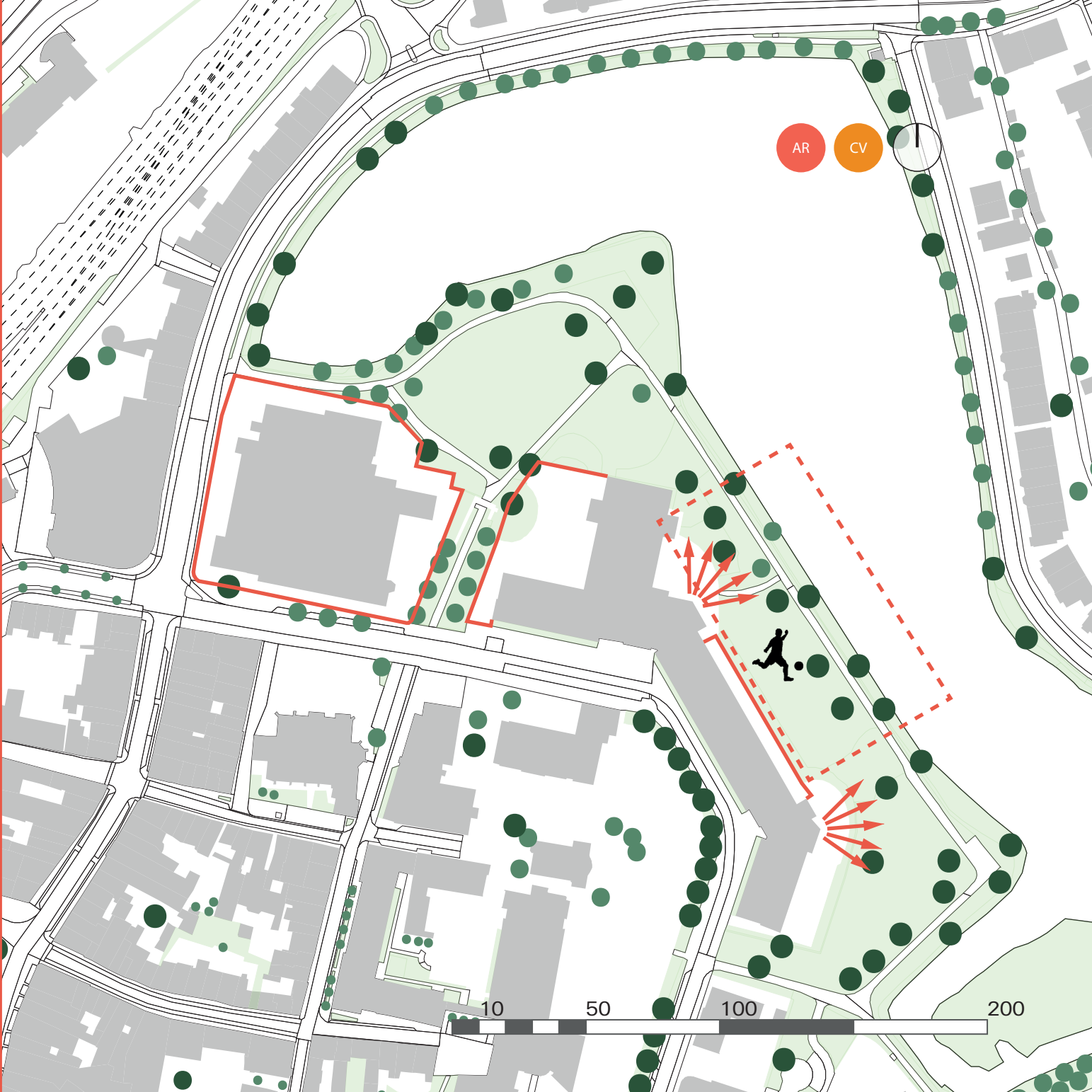
Image 23 *Activities in the park, organized by Het Stedelijk*

fence

area which is used for activities

park

Figure 28 *Relation buildings with the park*


AR
CV
10
50
100
200

2.2.2 Fortification

Most of the building blocks in Nieuwstad are more or less on the same spot as they where in history. But at the north and east border is a shift. The building are more outside the original city border.

Underneath the auditorium of Het Stedelijk are remains of the old city wall still visible. Also a part of this wall is outside, in front of the school building. More remainings of the monastery could be underneath the Baudartius College and the road. No research has been done in this area so far.

When redesigning the building of Het Stedelijk, it is important to highlight the remains of the fortification. Those remains are a commemorative value for the site and could be more emphasized.

Image 26 *Remains of the city wall in front of the building*

Image 25 *City wall underneath the auditorium*

outline buildings 2017
buildings in 1350-1595
water in 1350-1595

Figure 29 *Map of 2017 with the map of 1350-1595*


AR
CV
10
50
100
200

2.2.3 Historical layers

In figure 30 is shown from which date the different elements in the surrounding are. Some elements are more important than others. The elements of the defense system are important for the area, because they tell the story of the history of the fortification. These elements are the park, the Grote Gracht, the wall of the bastions, the city wall and the Spanish Gate. The remains of the fortification (the city wall and the Spanish Gate) have the highest value, because they are tangible elements from history.

To determine the value of the school buildings, more research needs to be done. So in the coming chapters, the buildings will be analysed furthers, to value them.

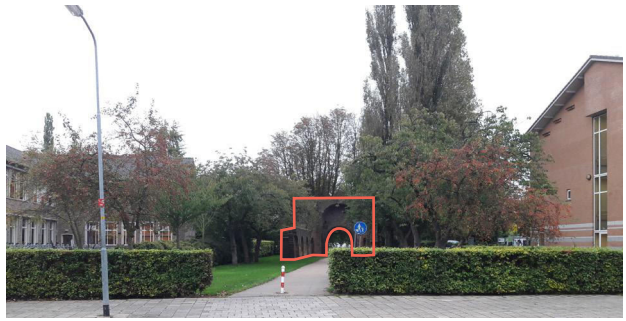
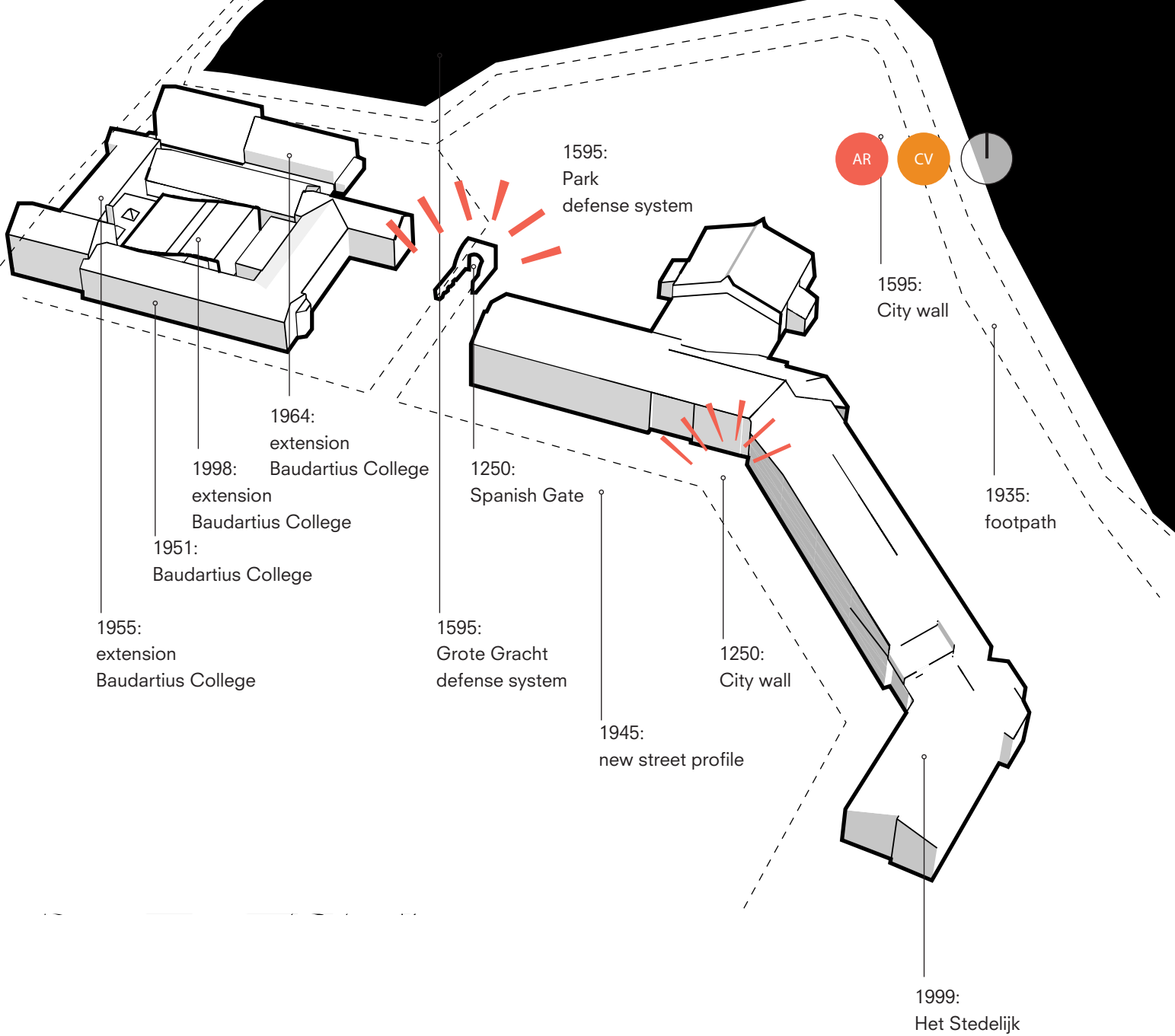


Image 27 *Spanish Gate*

Image 28 *Remains of city wall*

Image 29 *Shape bastions*

Figure 30 *Historical layers 2017*


AR
CV
1595:
Park
defense system
1595:
City wall
1964:
extension
Baudartius College
1998:
extension
Baudartius College
1951:
Baudartius College
1955:
extension
Baudartius College
1250:
Spanish Gate
1595:
Grote Gracht
defense system
1945:
new street profile
1250:
City wall
1935:
footpath
1999:
Het Stedelijk

2.2.4 Experiencing the area

Images 27 shows the surrounding of both school buildings. These pictures shows the two sides of the schools: a city side and a park side. The materials at the Isendoornstraat is all stone. Not much space is created for green; there are only a few trees and small hedges. The park side shows the total opposite. It is a large area covered with grass and trees. From the park is a wide view over the water to the other side.

A second remarkable item is the connection with the park. Het Stedelijk has an entrance to the park and an playground for the students. Baudartius College, on the other hand, is totally isolated from the park with fences and trees. The school has no connection with the park at all.

Entrances to the park is the third item. The park is visible from the city and in between buildings are some narrow entrances.

With the redevelopment of the area, it is important to think about the two sides of the building, the city and the park. Is this a positive or negative notion? In history, it always have been two different atmospheres, so nothing changed.

Figure 31 *Location pictures*

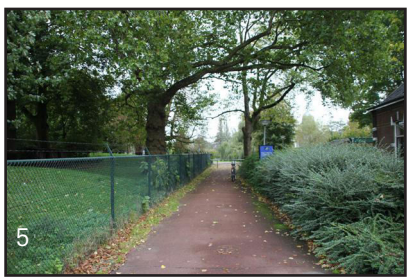
Image 30 *Pictures of the area*


1


2


AR
CV
SP
3


4


5


6


7


8


9


10


11


12

2.2.5 IJsselkade Hanseatic cities

The spirit of the place can also be related to the view of the city from the water. There are several Hanseatic Cities in the area of the IJssel, just as Zutphen; Arnhem, Bolsward, Deventer, Doesburg, Elburg, Harderwijk, Hasselt, Hattem, Hindeloopen, Kampen, Oldenzaal, Ommen, Rijssem, Stavoren, Zwolle.
Zutphen, Deventer, Hattem, Kampen and Zutphen are situated directly to the IJssel and therefore have a quay to the IJssel. Image 31-33 show the characteristics of the different cities. They have some characteristics and atmosphere in common, for example the white facades and different towers. When you have been visiting those cities it will reminds you of a Hanseatic City.

tower of the Walburgisch Church

tower of the Broederen Church

buildings with often a white facade
small trees along the IJssel
height difference between the IJssel and the street

tower of the St. Lebuinus Church

buildings with often a white facade
small trees along the IJssel
height difference between the IJssel and the street

tower of the Boven Church

small trees along the IJssel
buildings with often a white facade
height difference between the IJssel and the street

Image 31 *IJsselkade Zutphen*

Image 32 *IJsselkade Deventer*

Image 33 *IJsselkade Kampen*

2.2.6 View on Nieuwstad

Image 34 *View from Jacob Damsingel to Nieuwstad*

AR CV

tower of the St. Jan Church

canal as part of the defense system in history

road around the canal with buildings from the beginning of the 20th century

Image 35 *View from Jacob Damsingel to Nieuwstad and Burgermeester Dijckmeesterweg*

2.2.7 Isendoornstraat

Image 36 and image 37 represent the isendoornstraat in two different time periods,1920 and 2017. In 1920, the Isendoornstraat was enclosed by buildings and the width was approximately 10 meters. Now the building line is more to the back and the road is wider. The width of the street profile, with the sidewalk is 18 meters nowadays. The width of the street profile did change over the centuries and this gives a different atmosphere to the public space. In 1920 you felt more enclosed, while nowadays you do not.

So the original character and atmosphere has been lost over the years. It is therefore necessary not only to think about the building along the street, but it is also necessary to think about the Isendoornstraat itself. To search for solutions to get the enclosed character of the street back.

Image 36 *Isendoornstraat 1920*

Image 37 *Isendoornstraat 2017*

2.3 Conclusion Surrounding

Values
- Spanish Gate
- Remains of the old city wall
- The park
- Grote Gracht

Opportunities
- The park in combination with the water in terms of use and social value

Obligations
- An area with coherent functions and buildings
- Connecting the city with the park
- Connecting the buildings with the park

Weaknesses
- Development of the surrounding: floating buildings over the years, in the past it was one coherent area
- Widened Isendoornstraat
- Isendoornstraat as a border between the north and south part of the city
- Baudartius College has no relation with the park
- Hidden entrances to the park

3 Exterior

3.1 Baudartius College

3.1.1 Development building

Baudartius College is built in 1951 and it extended five times. In 1955, the L-shaped building became a block with an inner courtyard. It was a communal place for the students, because in that time people start thinking differently about education (see Chapter 1.4 Eduction system). The traditional classes in rooms changed to more communal places, learning from each other.
In 1964 there was need for an extra gymnastic room, the old room was demolished and made space for a new one at the north side of the plot.
After this extension the school start developing more in the courtyard, the outdoor communal space became smaller and smaller over the time. The reason of the extensions was the growing amount of students and the need of other spaces, for example media library.

The school had no other choice then extending to the courtyard, because the plot was not big enough to extend to the outside. Nowadays, almost the entire plot is covered.

When redeveloping the building, it is important to think about the several extension which have been done and which time period was the best solution for the building. In the next paragraphs, the different building periods are linked to the facade.

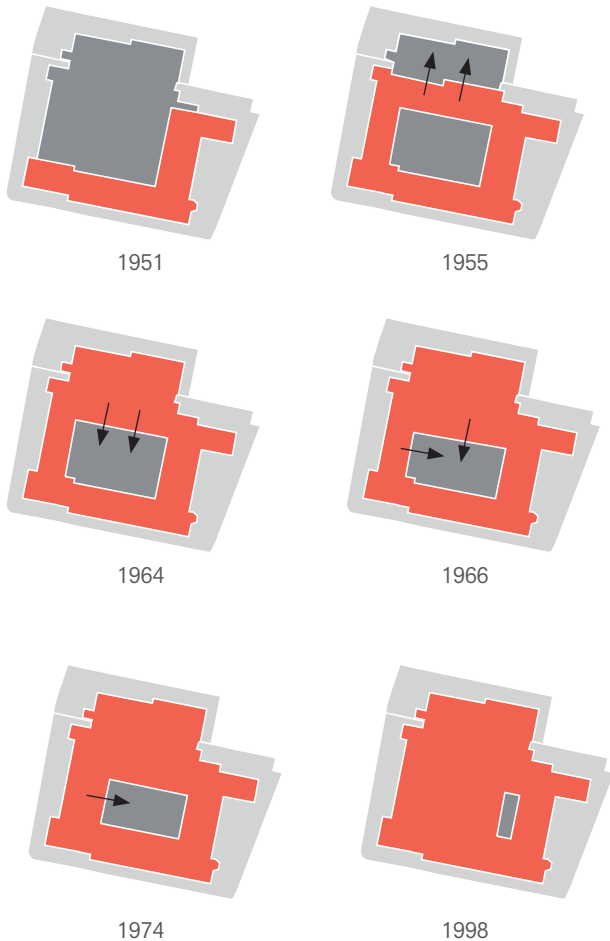
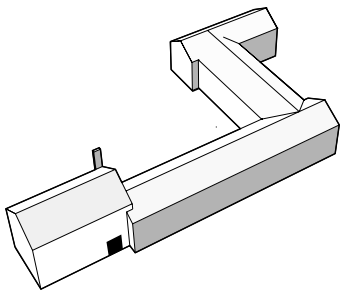


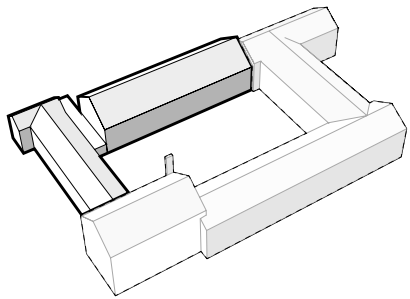
Figure 32 *Diagram development Baudartius College*

Figure 33 *Development step by step Baudartius College*

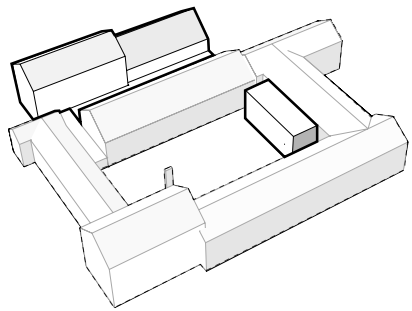
AR CV BT



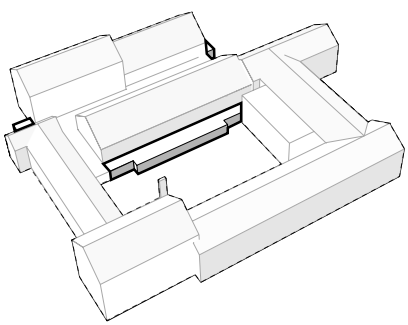
1951



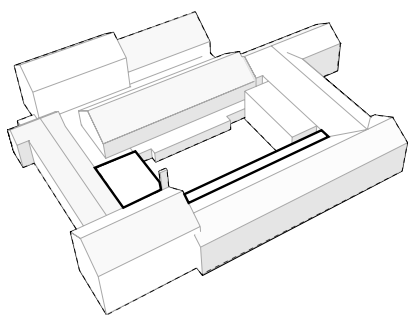
1955



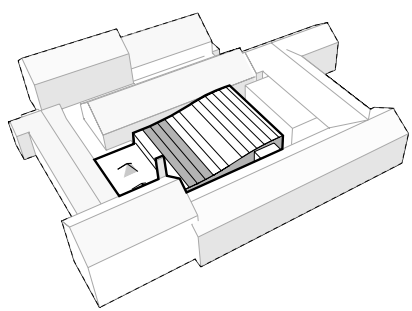
1964



1966



1974



1998

3.1.2 Facade 1950

The first part of Baudartius College was built in 1951. The facade is made out of brickwork and the window openings contain thin steel frames. The south and east facade have the same lay-out, with a repetition of big window openings. These window frames are placed in the middle of the thickness of the wall.
The windows show the sizes of the rooms behind it: one clustered window is one classroom at the floor plan. Also other types of windows are present. The small single windows are connected with the corridor, the bigger single windows are located at the rooms for tutors.

A few windows in the north facade of this part of the building disappeared. A smaller window opening is placed in the center of the existing window opening. The rest is filled with brick, shown in image 37.

Also there are many details and ornaments at the facades, shown in image 38. The steel window frames are surrounded by a concrete frames. Squared concrete window frames are situated in the staircases and entrances of the building. Fences in front of the windows are detailed in a blue curved shape.

Because the facades are oriented to the south and east, sun screen is placed in front of all windows, except the concrete ornamental openings. These sun screens are not original. It is unknown if other sun screens were present from 1950.

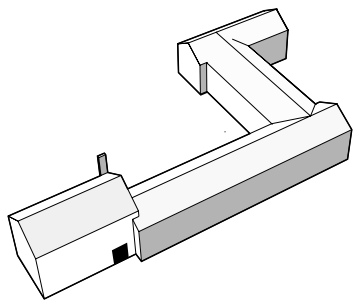


Figure 34 *3D 1950*

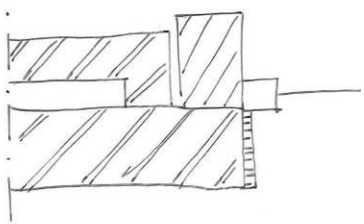


Image 38 *Detail window frame*

Image 40 *Lost windows*

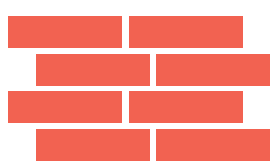


Image 39 *Brick bond*

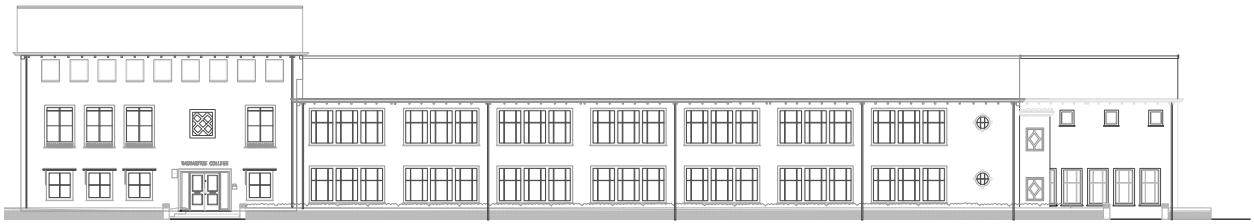


Figure 35 *South facade*

Image 42 *South facade*

Image 43 *South facade*

Image 44 *East facade*

Image 41 *Ornaments in the facade*

3.1.3 Facade 1955

Baudartius College is extended in 1995 (figure 37) with facades focusing to the west and north side. The west facade is shown in figure 38.
These facades are also made out of brick, with almost the same color and structure. If you look close, you see a line in the corner, which shows the connection between the old and new brick facade. It indicates that the building is made in different time periods.

The windows still have steel frames and have single glass in the north facade. In the west facade, a secondary window frame is used (image 43). The window openings are matching with the window openings from the existing facade of 1950 and are connected to the same kind of rooms behind the facade.
The former house of the caretaker was already on this plot and is merged with the extension of the building. This part of the building has still its own type of windows. One of these windows of this house disappeared and is filled with brick, shown in image 42.

The facade contains less ornaments then the part built in 1951. Only the brick pillars between the clustered window openings is an ornament at the facade. These brick pillars are not part of the load-bearing structure.

At the west facade, sun screens are placed in front of the windows. These sun screens are not original and again it is unknown if sun screens were present from the beginning.

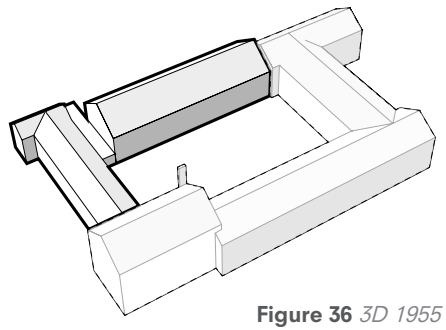


Figure 36 *3D 1955*

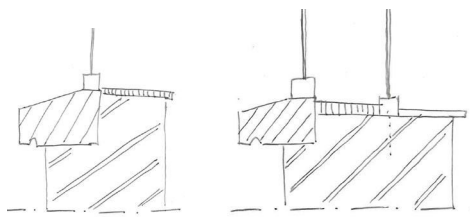


Image 46 *Detail window frame*

Image 45 *Lost window*

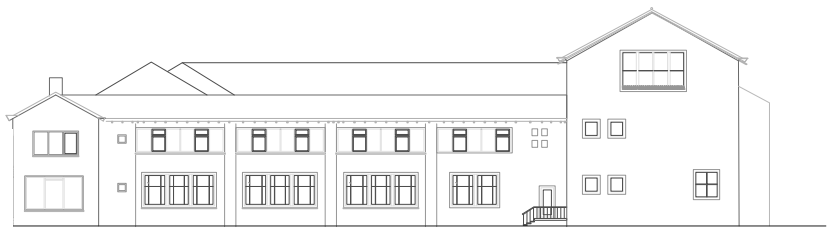


Figure 37 *West facade*

Image 47 *Caretaker house*

Image 48 *Wast facade*

3.1.4 Facade 1964

In 1964 Baudartius College was extended at the south side with classrooms and a gym. Also extra classrooms were built in the courtyard (figure 38). Again, the same materials are used for the facade and window frames.

The facade of the extension at the north contains only single window openings, without any details. A part of these windows lie deeper in the facade (image 46) then we saw at the other facades from previous times.

The facade of the new classrooms in the courtyard has a different facade with a strong expression of the construction, filled in with big window openings and brickwork. This is the first time, the construction is shown in the facade of the building.

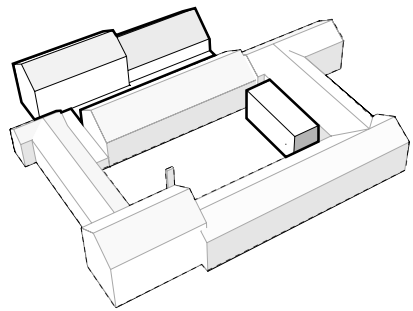


Figure 38 *3D1964*

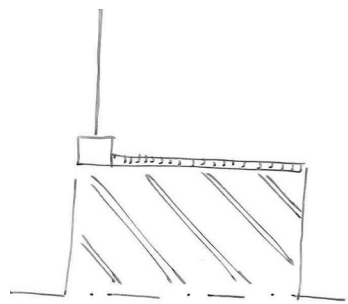


Image 49 *Detail window frame gym (see also image 49)*

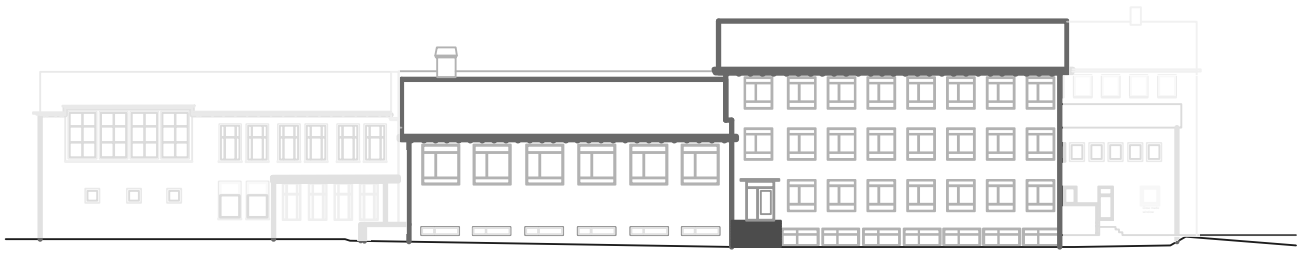


Figure 39 *North facade*

Image 50 *North facade*

Image 51 *Facade gym*

Image 52 *West inner facade*

3.1.5 Facade 1966/1974

In 1966 and 1974 the courtyard of the school became smaller, elongated shapes were added. The facades contains window openings with wooden frames and single glass, with brickwork at the bottom and grey boards on top.
These openings were previously connected to outside. Nowadays it is different, some of these facade openings are now inside walls.

Baudartius College contains a complicated drainage system, because the building has been expanded a number of times. The drainage has to be redirected or linked with each other. As a result, leakages can easily arise. A few spots showing some moisture problems close to the gutters (image 52).

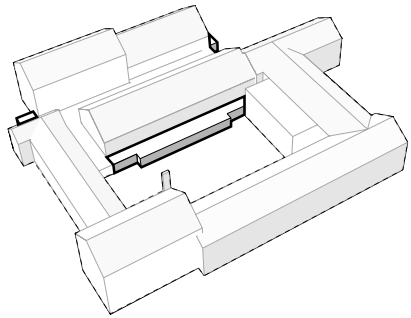


Figure 40 *3D 1966*

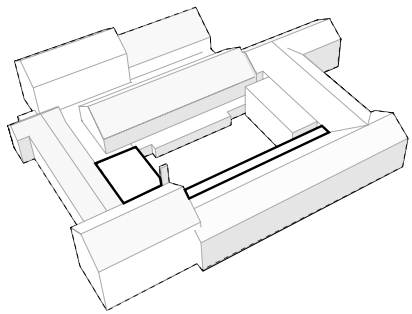


Figure 41 *3D 1974*

Figure 42 *North inner facade*

Image 53 *North inner facade*

Image 54 *Drainage system*

Image 55 *Damages*

3.1.6 Facade 1998

Almost the entire courtyard was built in 1998 with a big media library. This media library has a large facade facing the east. At the bottom is a strip of brickwork, above these bricks you see large window openings with wooden frames and double glass for the first time. Like the facade across the media library, the construction is also strongly reflected here by columns and beams. Wooden columns standing in front of the facade openings.
The roof lines and the north and south facade are covered by grey boards. These boards show damages: they curl at the edges and are not well connected with each other anymore.

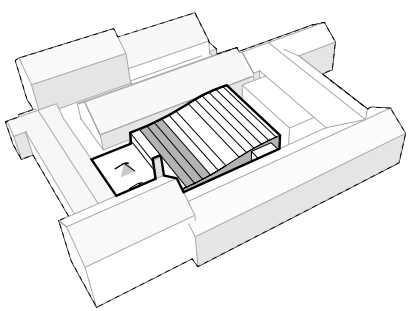


Figure 44 *3D 1998*

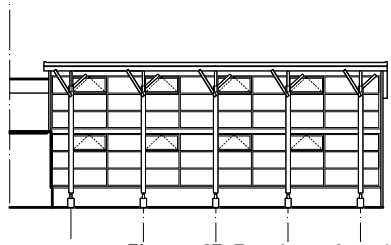


Figure 43 *East inner facade*

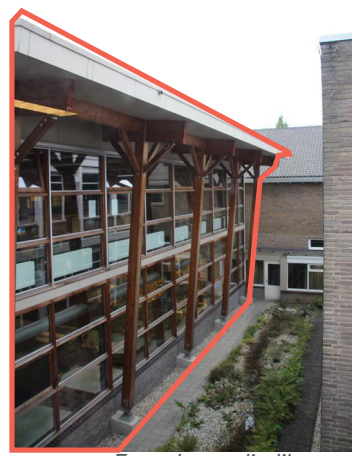


Image 56 *Facade media library*

Image 57 *Damages*


AR
CV
BT

3.1.7 Construction

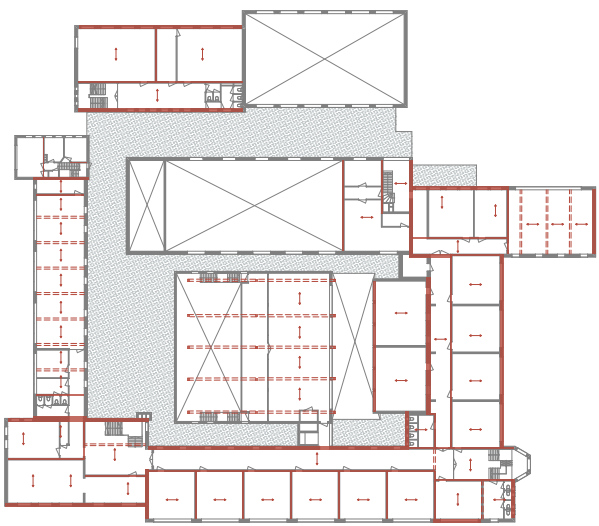
The floor plans on the right page shows which walls are bearing and shows the direction of the floor slabs.
The southern part of the plan contains bearing inner walls, this makes it possible to make large window openings in the south facade. This provides plenty of light in the classrooms and an open facade on the street side. The western part of the plan is the same as the southern part. Inner walls are bearing, which makes it difficult to change the floor plan with inner walls, but allows large window openings in the facade.
The eastern facade, on the other hand, contains a bearing exterior. This makes it harder to make large window openings in this facade. However, this ensures that the floor plan remains freely divisible and flexible. Classrooms can be made larger or smaller by the ability to move interior walls.
The corridor structure is strongly reflected by the constructive walls at both sides.
The media library and the basement contain columns, which gives an open floor plan that can be freely divided.

Construction

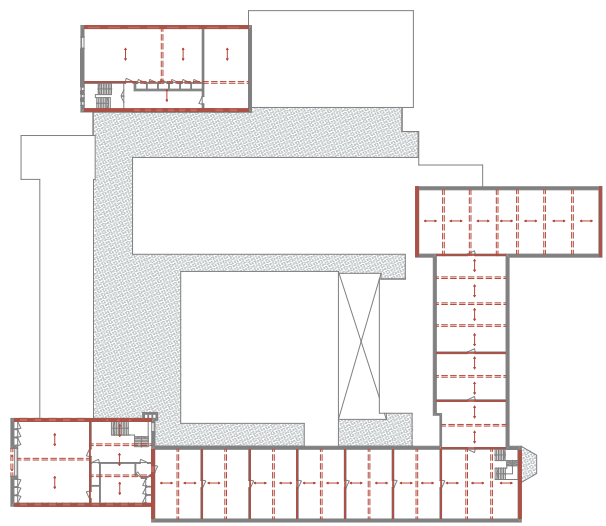
Figure 45 *Construction floor plan*

Basement

Ground Floor



First Floor



Second Floor

10 50 100

3.1.8 Relation construction and facade

The constructive decisions have different consequences for the facade which you can recognize. Clearly, a part of the south facade is very open, the other part is very closed through the smaller window openings. This is because the facade with the main entrance is a supporting wall. The facade in front of the classrooms is not bearing and can be provided from large openings. The eastern facade is fully bearing in front of the classrooms, although we see large window openings at the second floor. This is because the weight on the second floor is very low due to the wooden roof construction. The windows on the first floors are comparatively smaller because this floor has to carry more weight.

The west facade contains bricks pillars, compared with the constructive structure we see that these pillars have no constructive function, but are pure for decoration at the facade.
In the courtyard the constructive structure is clearly visible in the facades and in front of the facade.

Figure 46 *Load-bearing walls south facade*

Decorative
Constructive

AR CV BT

Image 58 *South facade: big openings vs small openings*

Image 59 *bearing facade with big openings*

Image 60 *brickwork pillars non constructive*

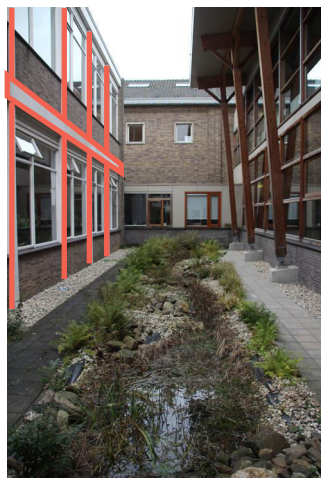


Image 61 *Visable construction*

Image 62 *Visuable construction*

3.2 Het Stedelijk

3.2.1 Development building

The development of Het Stedelijk does not count that many steps as Baudartius College.
The building of 1955 did not provide the needs of the school, they decided to demolish the entire building and built a new building.
This new building is an elongated building, following the line of the street Isendoorn and the Grote Gracht.
The shape of Het Stedelijk is forming a connection with Baudartius College at the west side and is connecting with dwellings in the south.
A part of Het Stedelijk is more or less built at the place of the old Stedelijk, with the same shape structure.

Figure 49 *Het Stedelijk 1955*

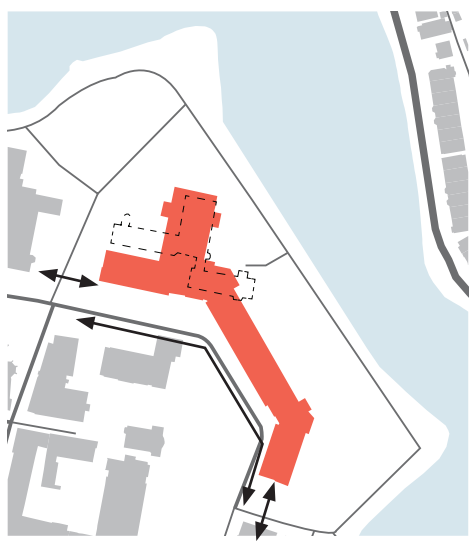
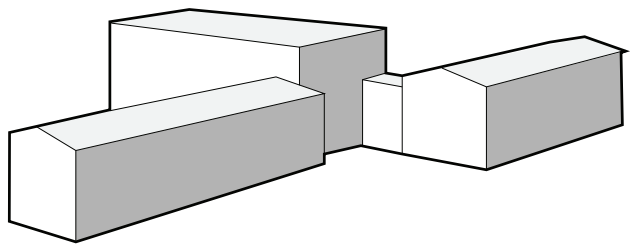


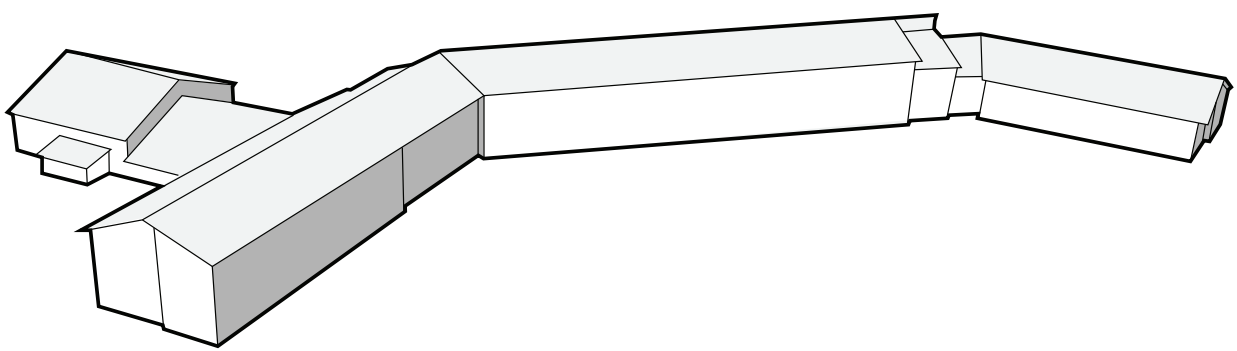
Figure 48 *Het Stedelijk 1999*

Figure 47 *Development Het Stedelijk*

AR CV BT



1955



1999

3.2.2 Construction

Figure 50 shows the construction on floor plan. Figure 51 and 52 on the next pages show the sections with all the construction elements.

The facades are part of the load-bearing structure. To decrease the span from facade to facade, concrete columns are placed, with concrete beams on top to carry the floor. In the wing at the north side, the structure consist of steel columns, which are placed against the facade and in the interior walls. Prefab concrete elements are used in the facade, which results in window frames being flat in the facade (image 63 and 64).

The foundation consist of concrete beams with poles. The measurements of the beam differ a lot. Underneath the facade, the beams are 400 by 500 mm. Other beams are more than 400 wide.

The roof construction is made out of laminated wooden beams, which are resting on steel columns. These steel columns are placed on top of the concrete columns on the ground and first floor. This construction is also visible in the facade, it goes from inside to outside (image 60 and 61).

The inner walls are not part of the load-bearing structure, this ensures the floor plan remains freely divisible and flexible. Classrooms can be made larger or smaller by the ability to move interior walls.

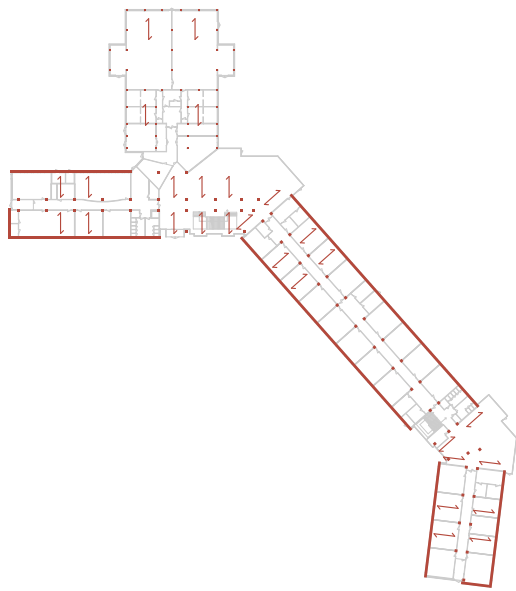


Figure 50 *Construction ground floor*

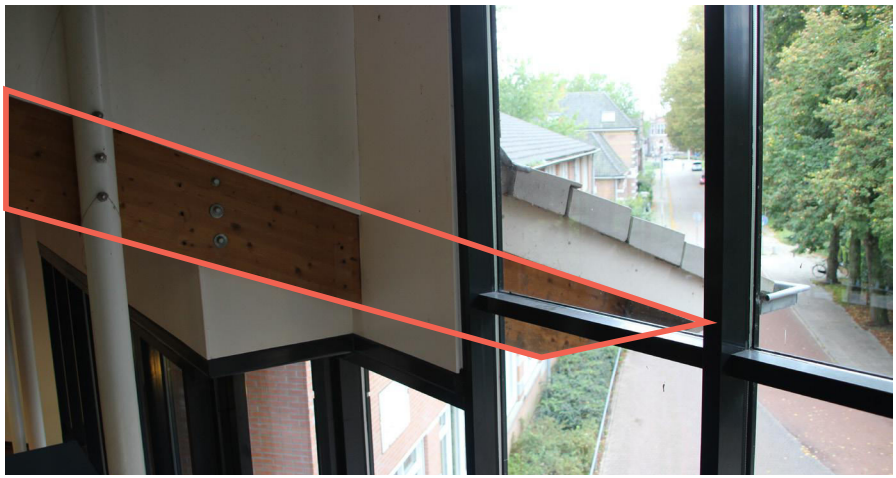


Image 63 *Wooden construction*

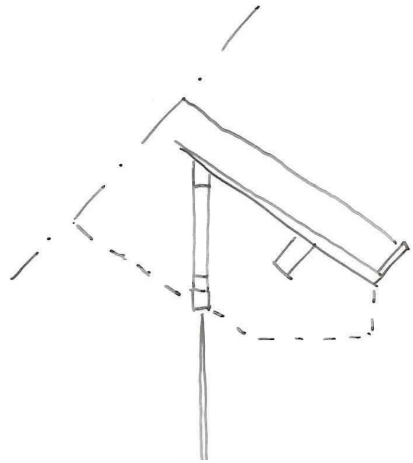


Image 64 *Detail roof*

Image 65 *Steel columns glass facade*

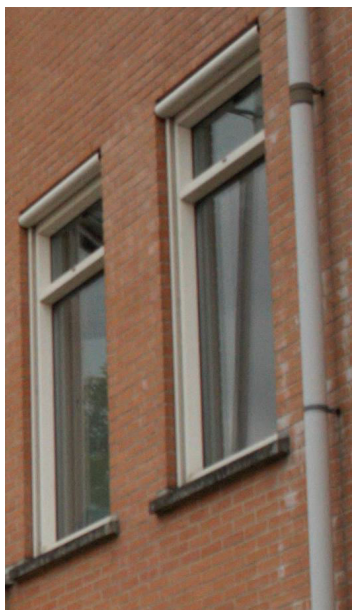


Image 66 *Windows*

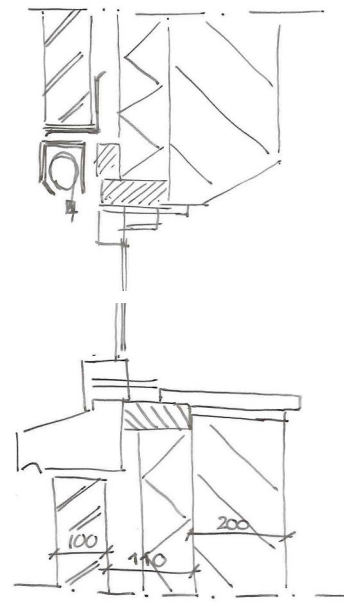


Image 67 *Detail window*

3.2.3 Sections

These sections show the elements which are part of the structure of the building. This structure is already explained on the previous page. Most parts of the construction are prefab concrete elements. On the second floor, steel columns and beams are used, specially for the construction of the roof. The construction of the roof is made of wood, with steel wind bracing. This construction is not visible in the classrooms or in the corridor, because suspended ceilings are used. However, in the auditorium the wooden construction of the roof is good visible.

The staircases do have their own steel construction and the glass facades are made of aluminum and also have their own support.

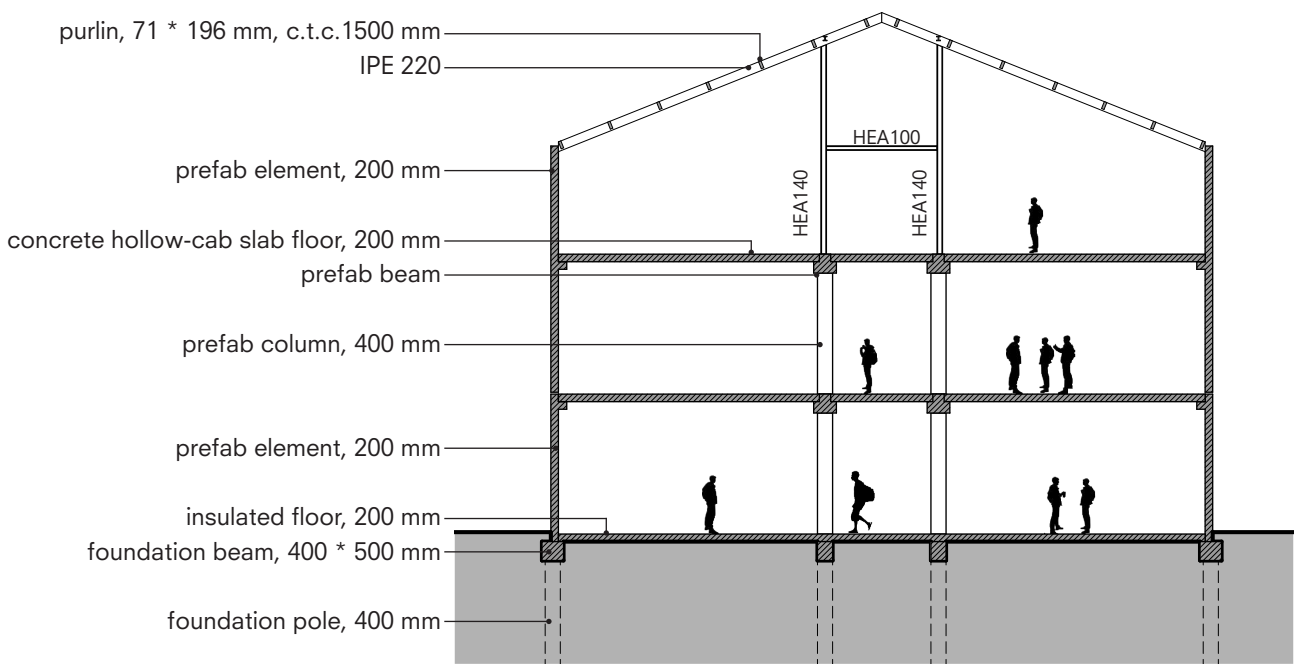


Figure 51 *Section classrooms*

AR CV BT

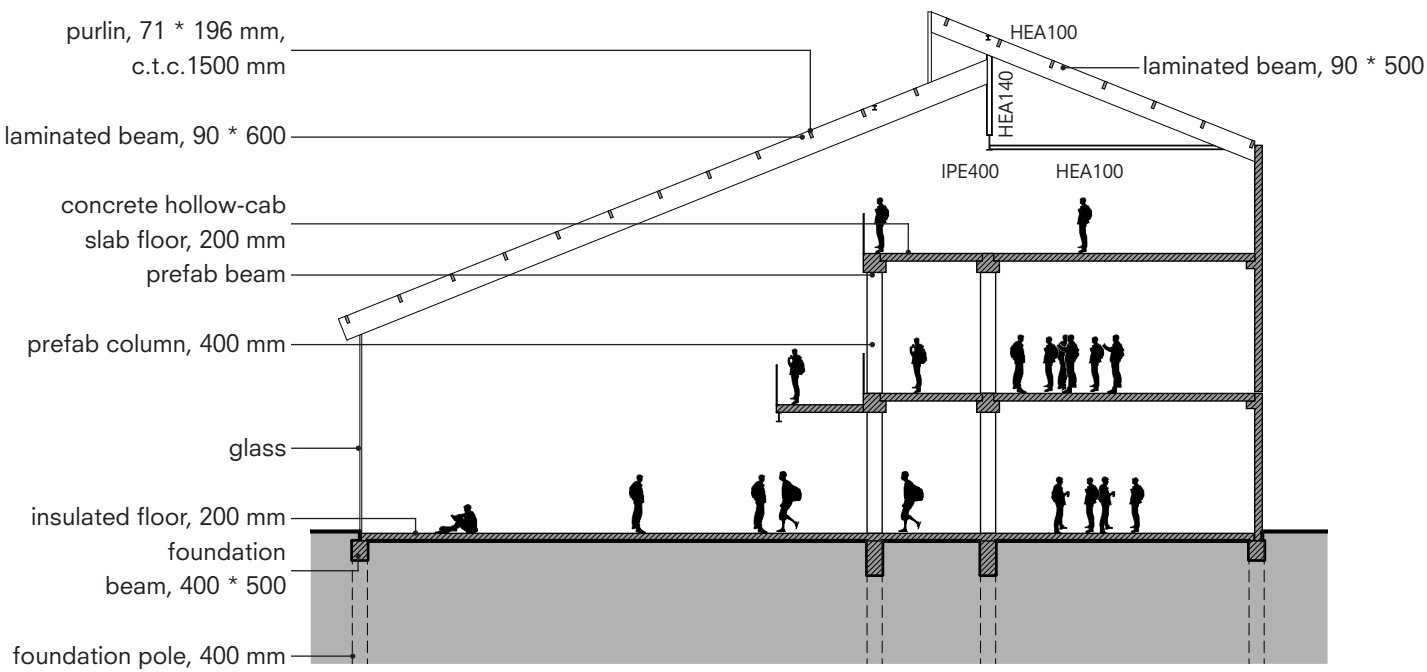


Figure 52 *Section auditorium*

3.2.4 Front facade A and B

Figure 54 shows the front facade of part A and B of the building. The facade is made out of brick in stretcher bond and show a strong repetition of windows, with window frames made out of plastic. The facade shows some decorative elements, like horizontal lines of stone in the plinth, relief of brickwork on the upper part and triangular extensions on the first floor.

The facade contains just a few materials. The single windows are made out of plastic frames. The large glassed facades consists of aluminium frames. The rest of the facade is covered with bricks in stretcher bond.

The south and west facade of the building has sun screens on the outside of the building. These screens are all the same. On the other facades, there are no sun screens.

Het Stedelijk has gutters at the end of all the rooms. Rain pipes are connected to them, to bring the water to the sewage system. The rain pipes are placed at the nodes of the grid of the building. The drainage system is missing at the triangular extensions. When there is a lot of water, this needs to be removed by hand.

The back facade of part A and B are almost identical to the front facade. Only the triangular extensions are not placed at the back facade.

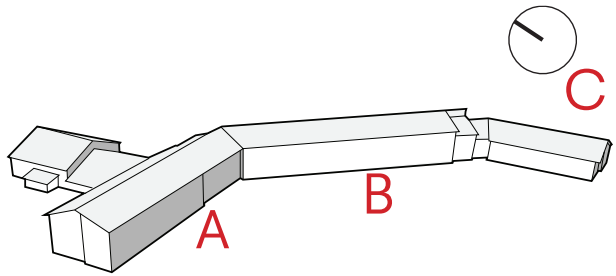


Figure 53 *3D 2017*

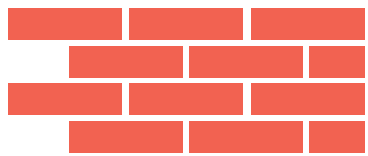
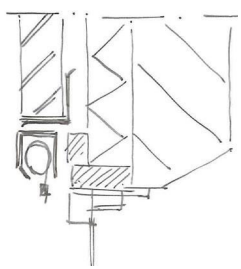


Image 70 *Brick bond*

Image 68 *No sun screen*



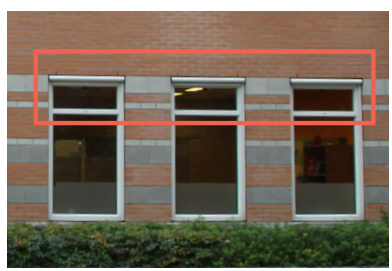


Image 69 *Sun screen*

AR CV BT

Image 71 *Triangular extension*

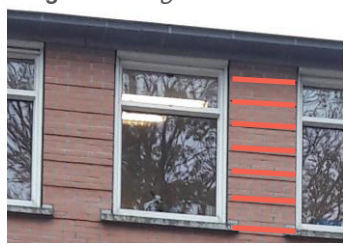


Image 72 *Relief brick*

Image 73 *Commemorative stone*

Figure 54 *Front facade A and B*

Image 75 *Front facade A and B*

Image 74 *Horizontal lines*

3.2.5 Front facade C

Figure 55 shows the facade of part C. This facade has some small differences with the facade part A and B. Part C is one story lower as the other parts of the building. The window openings are not single windows, but they consist of three parts. Because of these bigger window openings, you can see how many classrooms are behind the facade.
The back facade of part C is exactly the same as the front facade.

Every facade of Het Stedelijk shows damages caused by moisture: close to the rain pipes, gutters and balconies. These moisture problems cause white eruption at different places on the facade.

Image 78 *Damages*

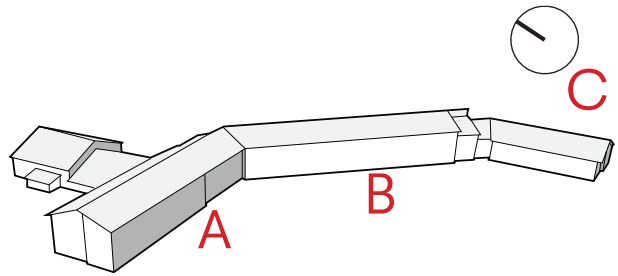


Figure 56 *3D 2017*

Figure 55 *Front facade C*

Image 76 *Front facade*

Image 77 *Window*

3.2.6 Glass facade

AR CV BT

In between the facades of the three parts, glass facades are used to highlight the entrance. Image 74 and 75 show these facades. The main entrance is between part A and B of the building. These parts have three levels. Image 75 shows the facade between part B and C. Part C is one level lower as the part B, so the glass facade is the transition between the different heights.

Behind these glass facades are the two auditoriums. At the back facade, also these glass facades are used to highlight the auditorium (image 76).

Image 80 *Glass facade between A and B*

Image 81 *Glass back facade*

Image 79 *Glass facade between B and C*

3.2.7 Northern wing

The northern wing of the building is the gym. Not a lot of windows are placed in the facade, because it is not necessary. Most of the daylight is coming from the roof light, shown in image 82. A triangular shaped window is placed at the north facade of the gym (image 73). The shape of this window is related to the shape of the triangular extensions at the front facade. Why this shape is used, is unknown.

The roof at the park side of the building is used to have all the exhausts of the installations in the building. This makes the front facade of the building free from any installation. The question is, which side of the building is more important; the front facade facing the street or the back facade, facing the park.

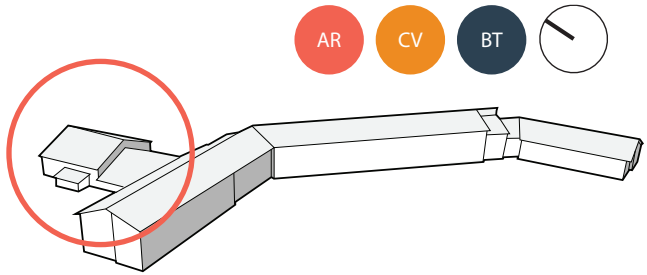


Figure 57 *3D 2017*

Image 83 *North facade gym*

Image 84 *Services roof*

Image 82 *West facade gym*

3.3 Conclusion Exterior

Baudartius College

Values
- Concrete ornaments
- Slender steel window frames
- Rhythm of the facade
- Steel window fences
- The original shape and elements of the caretakers house
- Large window openings

Opportunities

Obligations

Weaknesses
- The entire plot is fully built, there is no open space anymore
- Single glass
- No insulation
- Facades are becomming interior walls, because of the extensions

Het Stedelijk

Values
- The load-bearing facade ensures flexibility in the interior
- Well insulated, and double glazing

Opportunities

Obligations

Weaknesses
- The prefab components provide a flat facade
- The long facades with repetition
- Damages of the brickwork caused by moisture
- The proportions of the building mass

4 Space plan

4.1 Baudartius College

4.1.1 Functions

In order to understand the space plan with routing through the building properly, we first look at the various functions in the building.

In figure 58 is shown the functions of Baudartius College. The spaces along the corridor at the south and east side are all classrooms, connected with the facade. At the other side of the corridor, looking into the courtyard, other functions are situated: rooms for tutors and toilets.
Rooms for tutors are often clustered together in the south west corner and at the second floor.
The north side contains less classrooms, the gymnastic rooms with changing rooms are situated over there.
The center of the building is a big multi-functional room, connected with the canteen. There is not one specific place for all the lockers, they are located at several places in the corridors. Toilets are situated at different floor levels, not exactly above each other.

With these basis knowledge about the functions, the next two paragraphs elaborate more on the entrances and routing in the building.

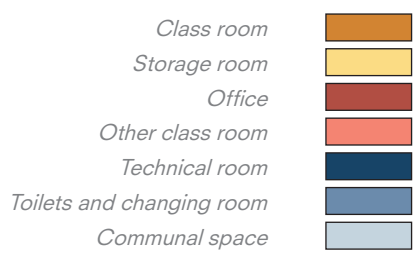
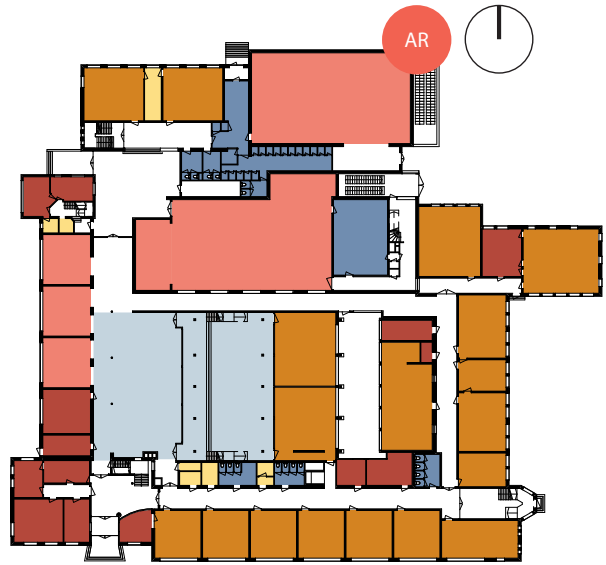
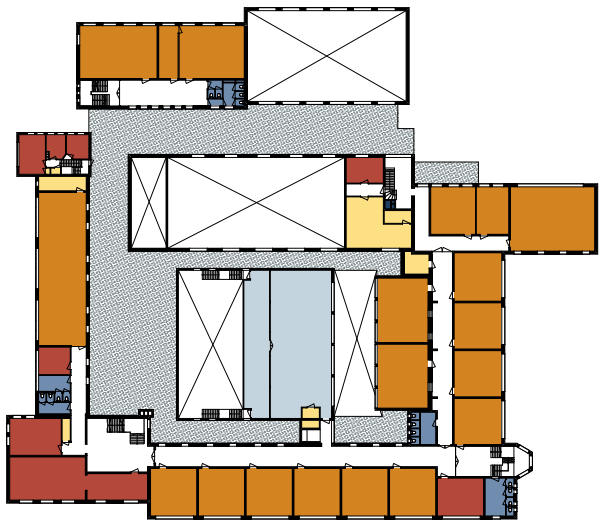


Figure 58 *Functions*

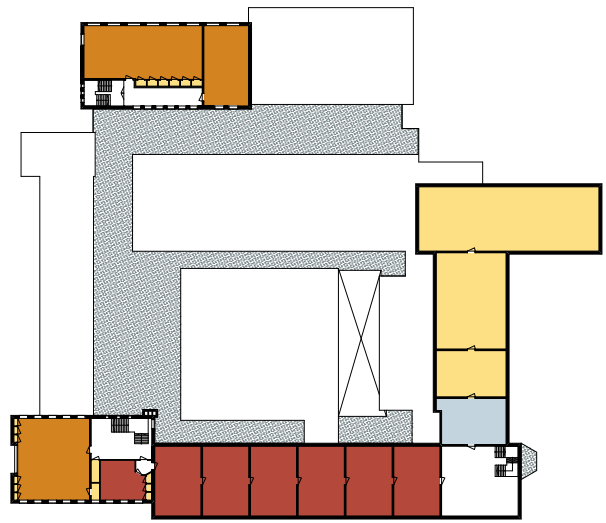
Basement



Ground Floor



First Floor



Second Floor

10 50 100

4.1.2 Entrances

By looking at different entrances of Baudartius College, it becomes clear where the central point in the buildings is located.

The main entrance is in the south facade. This entrance is highlighted with ornaments in the facade, shown in paragraph 3.1.2. At the north, east and west facade are also several entrances. These are connected with the car and bicycle parking.

The entrances from the car park, the cycle shed, and the basement, lead to the hall close to the canteen (figure 59, red dot). The canteen becomes the central point in the building were people enter the building. Only students who come by bus and visitors will use the main entrance of the building.

The wide Isendoornstraat is located in front of the Baudartius College. From this wide street, the students have to enter the cycle sheds via a narrow entrance. All the entrances also lead to one central point. When redesigning the building, it is important to think about the function of the Isendoornstraat. The street can contribute more to the entrance of the building. Also the routing from different sides can be better utilized.

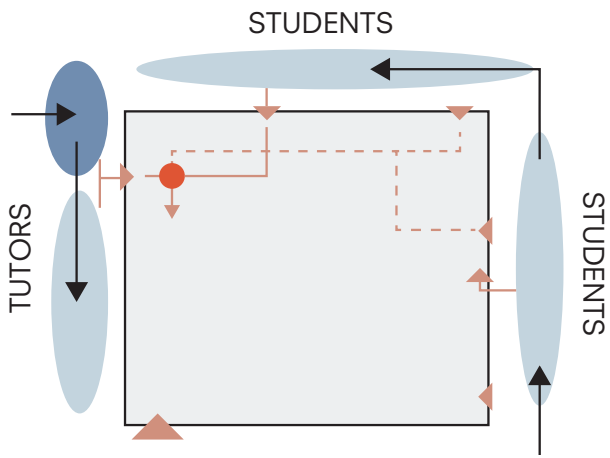
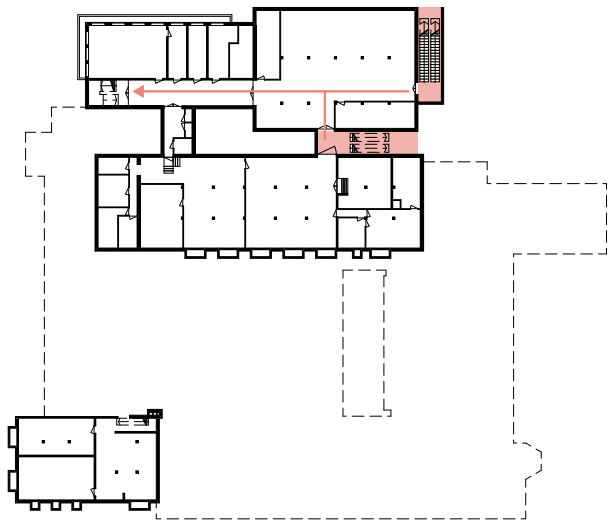


Figure 59 *Diagram entrance and routing*

Figure 60 *Entrance*

AR



Basement

Ground Floor

10 50 100

4.1.3 Routing

It is important to visualize the routing, because it has consequences for the experience of and orientation in the building.

Because the building expanded several times, the routing also changed several times. In 1950, the building had one long corridor, connected with the different classrooms. The different entrances ensured a short walkway to the specific destination. The expansion in 1955 created a circular routing. This routing is no exception in school designs. In the following years the school expanded further. In figure 62, the routing through the building in 2017 is shown. The school contains a circular routing, with some dead-end extensions at the ground floor. The ground floor looks very clear at the floor plan, but in real it is hard to find your way in the building. This is caused by the expansions with different corners. You can not see where you are going. The first floor contains the linear corridor from the 1950's. The basement and second floor do not have a corridor. From the hall, you enter a room, and from this room you can enter the other rooms.

For the redevelopment of Baudartius College, it is important to develop a clear routing through the building, so people can easily orient themselves. This improves the comfortable feeling for people in the building.

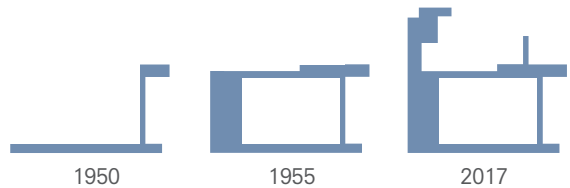


Figure 61 *Diagram development routing*

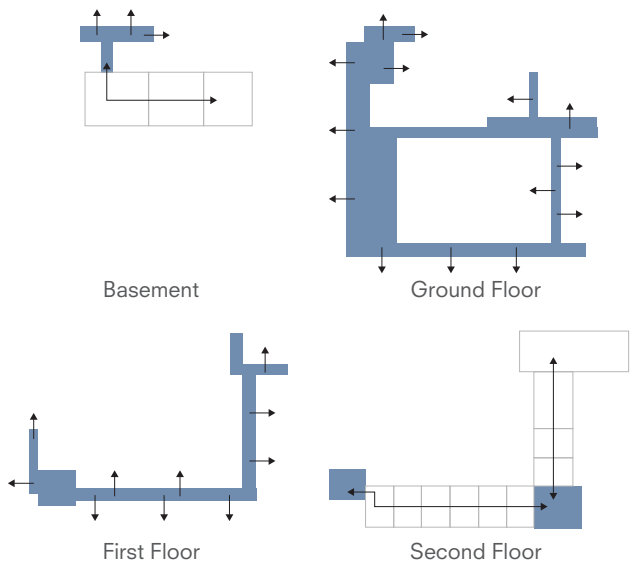


Figure 62 *Diagram routing 2017*

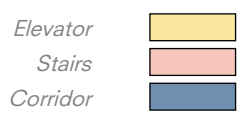
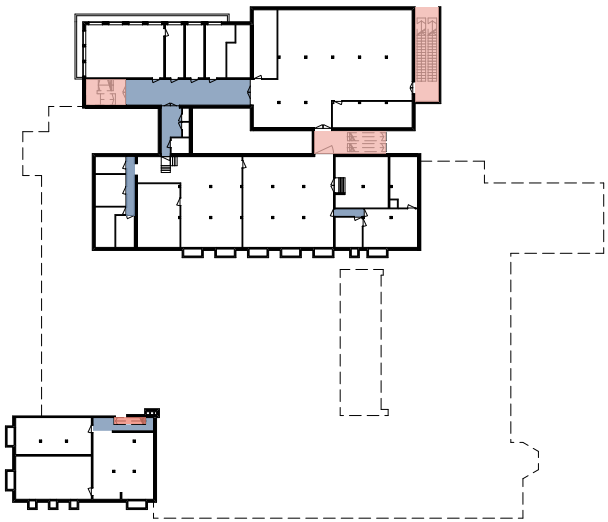
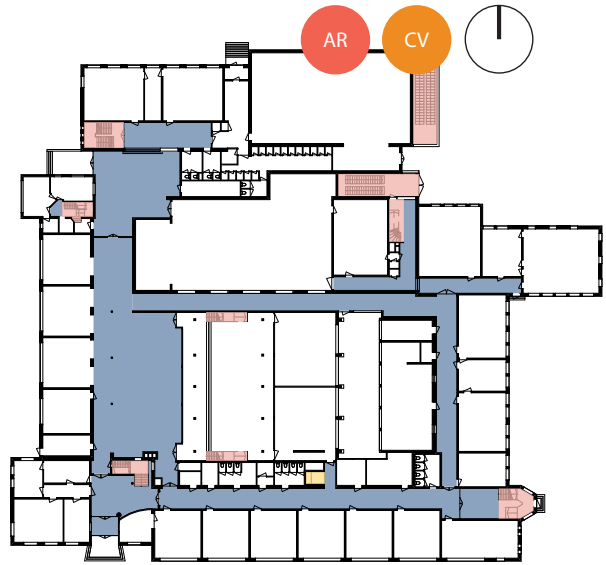


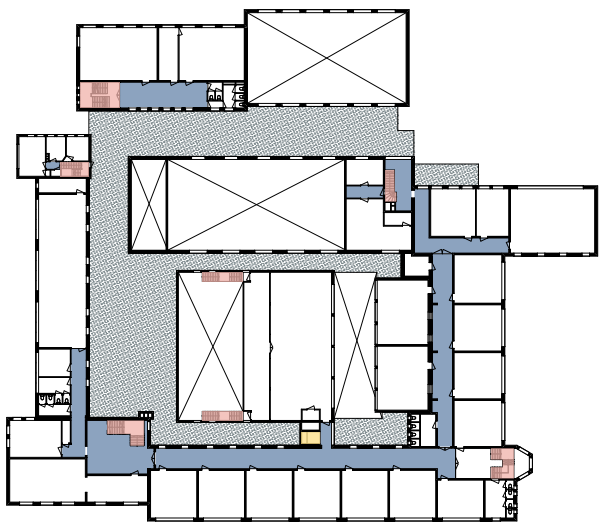
Figure 63 *Routing*



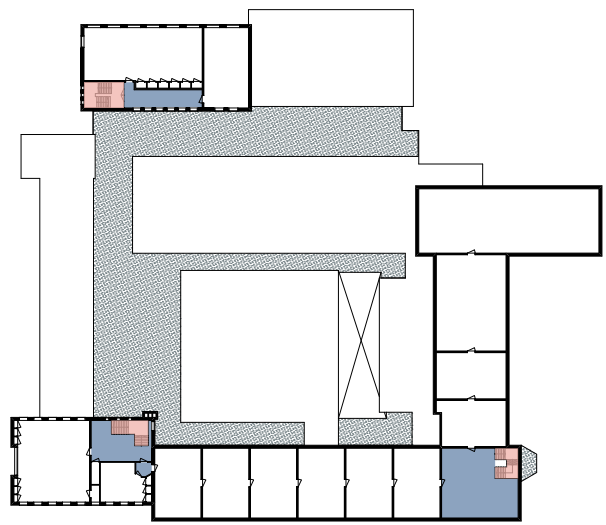
Basement



Ground Floor



First Floor



Second Floor

10 50 100

95

4.2 Het Stedelijk

4.2.1 Functions

In order to understand the space plan with routing through the building properly, we first look at the various functions in the building.

In figure 64 is shown the functions of Het Stedelijk. The spaces along the long corridor are mainly classrooms, except for the the first floor, where the rooms for the tutors are situated. In the northern wing are the gymnastic rooms with the changing rooms situated. On top of these changing rooms, on the first floor, is a space for all the lockers. Toilets are clustered at two spots in the building, in the east and west part of the building. The elevator is combined with the toilets.

With these basis knowledge about the functions, the next two paragraphs elaborate more on the entrances and routing in the building.

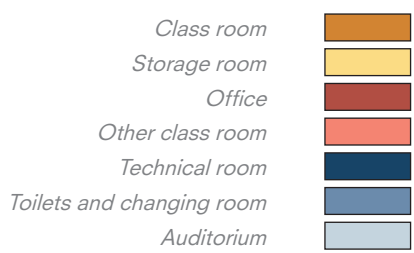
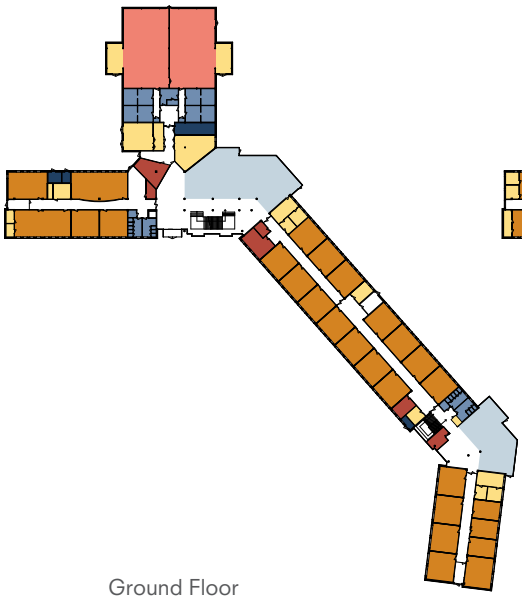
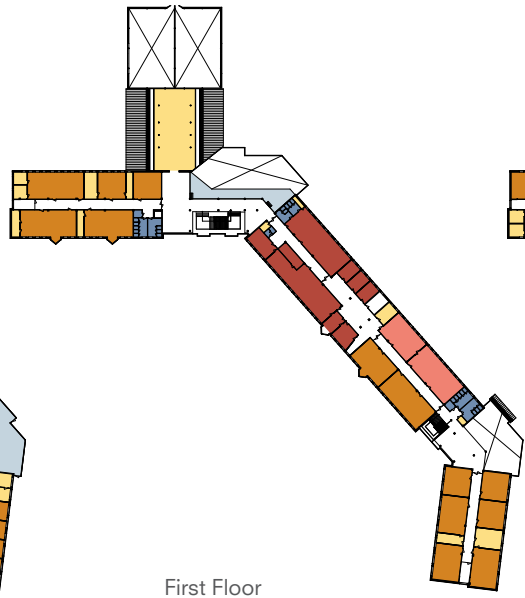


Figure 64 *Functions*

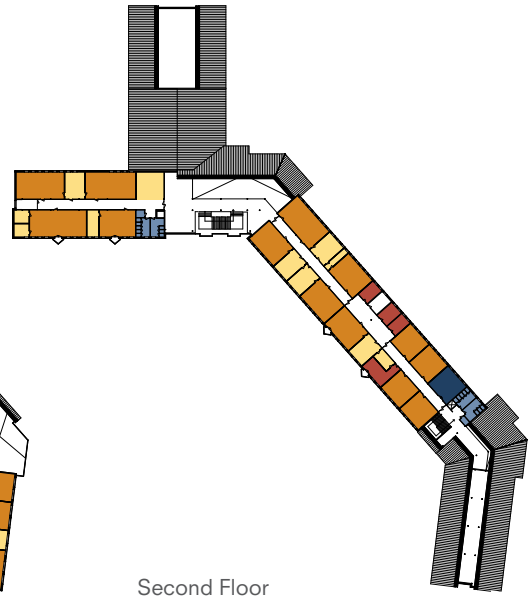
AR



Ground Floor



First Floor



Second Floor

10 50 100

4.2.2 Entrances

By looking at different entrances of Het Stedelijk, it becomes clear where the central point in the buildings is located.

Het Stedelijk has two main entrances at the south-west facade, connected with the Isendoornstraat.
These entrances are highlighted by the glass facade. You would expect that these entrances are used most, but in reality the back entrances in the glass facade of hte auditorium are more used, because the cycle shed for students is at the north side of the building.
The parking place for tutors is at the north-west side of the building. From this parking place, you enter the building by a back entrance, which end in a hall. So only students who come by bus and visitors will use the main entrance of the building.

The wide Isendoornstraat is located in front of the Het Stedelijk. This part of the street is only accessible for bicyclists. From this wide street, many students have to enter the plot via a narrow entrance to the bicycle sheds. When we start thinking about transformation, it is important to think about the function of the Isendoornstraat, because the street can contribute more to the entrance of the building. Also the entrance at the north side should not only function as a back entrance, but should also make a better connection with the park.

Image 85 *Main entrance*

Image 86 *Back entrance*

Entrance

Car / Bicycle parking

Figure 65 *Entrance*

AR
CAR PARKING
TUTOR
STUDENTS
10
20
30
40
50

4.2.3 Routing

It is important to visualize the routing, because the routing has consequences for the experience of and orientation in the building.

Figure 68 shows the routing through the building. This routing is a long linear line which gives access to the classrooms. Along this routing are two big staircases, which end in the auditorium on the ground floor. At both ends of the routing is also a staircase. This is the emergency staircase, which can always be used.

The facades of the building are part of the main structure. The span from facade to facade is to big, so columns are placed in the building to carry the floors. These columns are at both sides of the corridor. So the columns determine the routing through the building (figure 66).

The organized structure of the construction and the linear routing in-between results in a character that does not belong to the function of a school. It does not have the character of a school building. If the building will be transformed in the future, the character of the routing should be related to the new program.

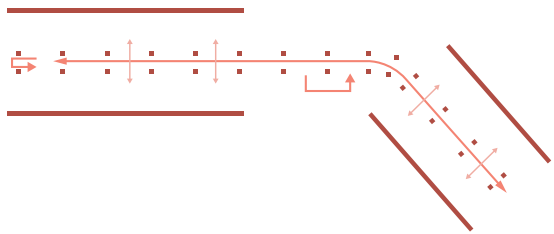


Figure 66 *Diagram routing in combination with structure*

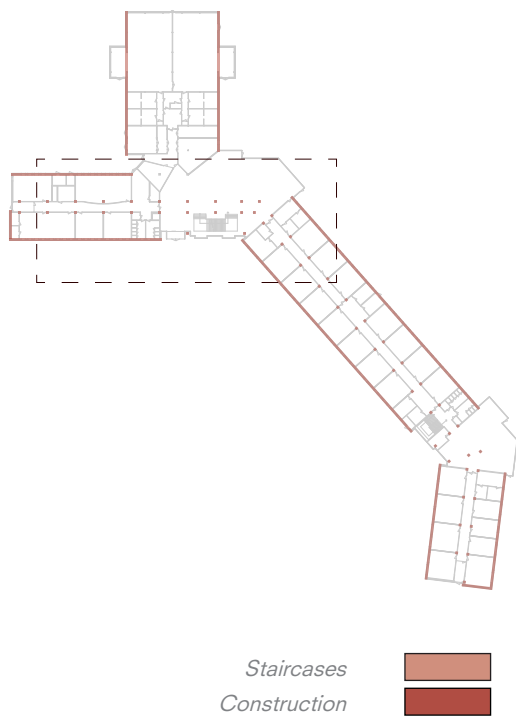


Figure 67 *Construction*

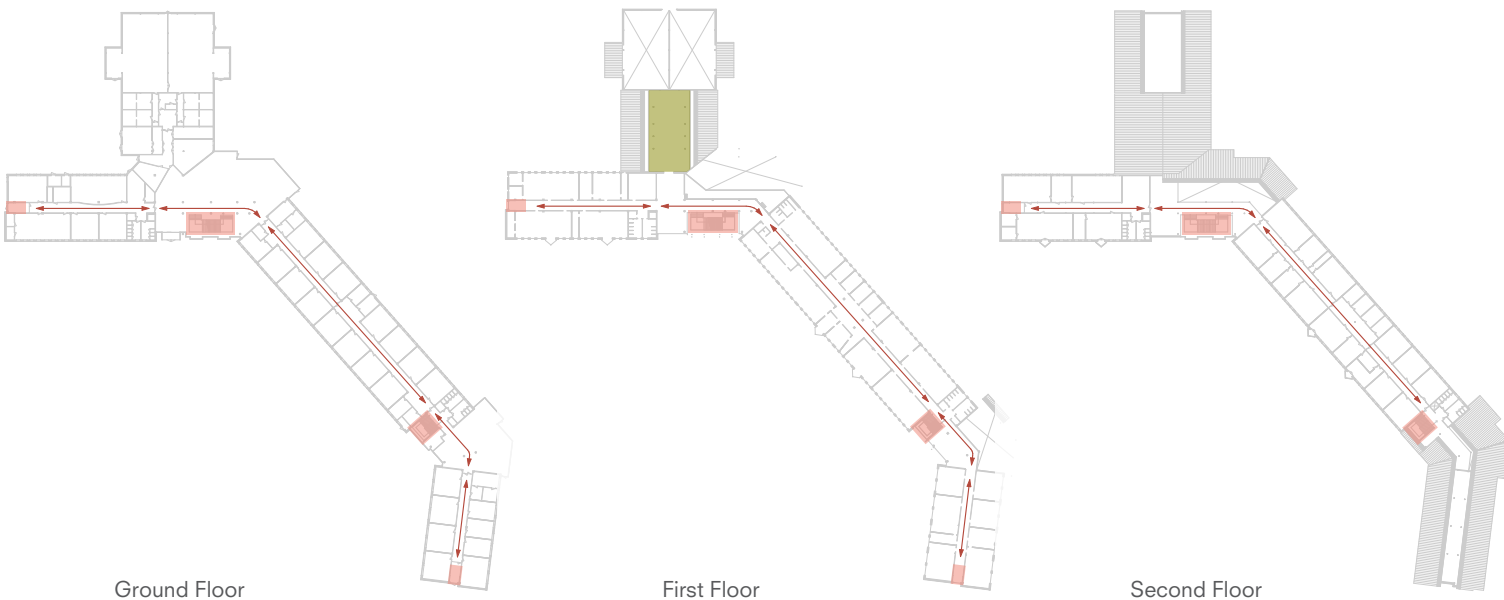


Figure 68 *Routing*

4.3 Conclusion Space plan

Baudartius College

Values

Opportunities

Obligations

Weaknesses
- Wayfinding in the building is hard; unclear corners and spaces in the corridor.
- The classrooms are to small for the amount of students.
- Narrow entrances to the plot.

Het Stedelijk

Values
- Easy wayfinding in the building

Opportunities
- Relation between building and park

Obligations

Weaknesses
- Narrow entrances to the plot
- Ordered structure does not give a feeling of a school building

5 Interior

5.1 Baudartius

5.1.1 Walk through the building

These selection of photos show the walk through the building. It shows which different areas you enter and which different atmospheres the Baudartius College contains.

The street is wide and you do not feel enclosed (1). The more you go to the building, the more you feel enclosed by it. When you enter the building through two double doors, you will enter the reception area (3). From this hall you have a view into two corridors (9). These are quit long, narrow and low, so it feels more like a dark tunnel. It is hard to orientate where you are.
When you enter the media library in the center of the building (6) you will get a totally different atmosphere, because there is a high ceiling. Also the class rooms (10) feel open and have enough natural light. All the class rooms have a good view to the park or street. In the basement (11) you will have the same atmosphere as in the corridors, the ceiling is low, no natural light and it is hard to orientate.

Five different spaces will be explained further in the following paragraphs: main staircase, canteen, media library, classroom and corridor. These subjects will contribute in having a better understanding of the different atmospheres in the building.

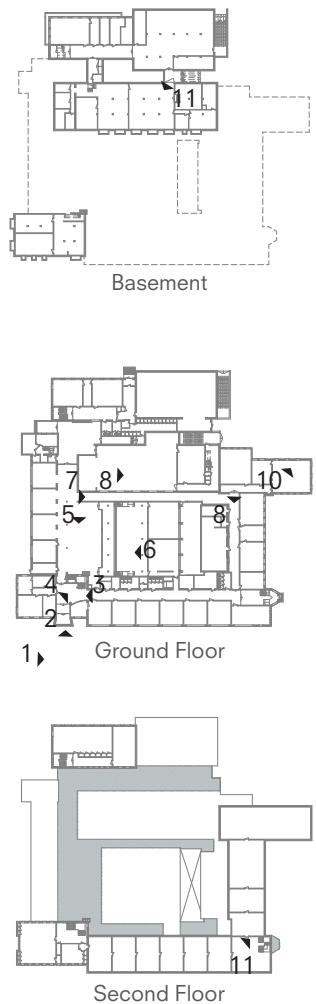


Figure 69 *Routing to and through the building*

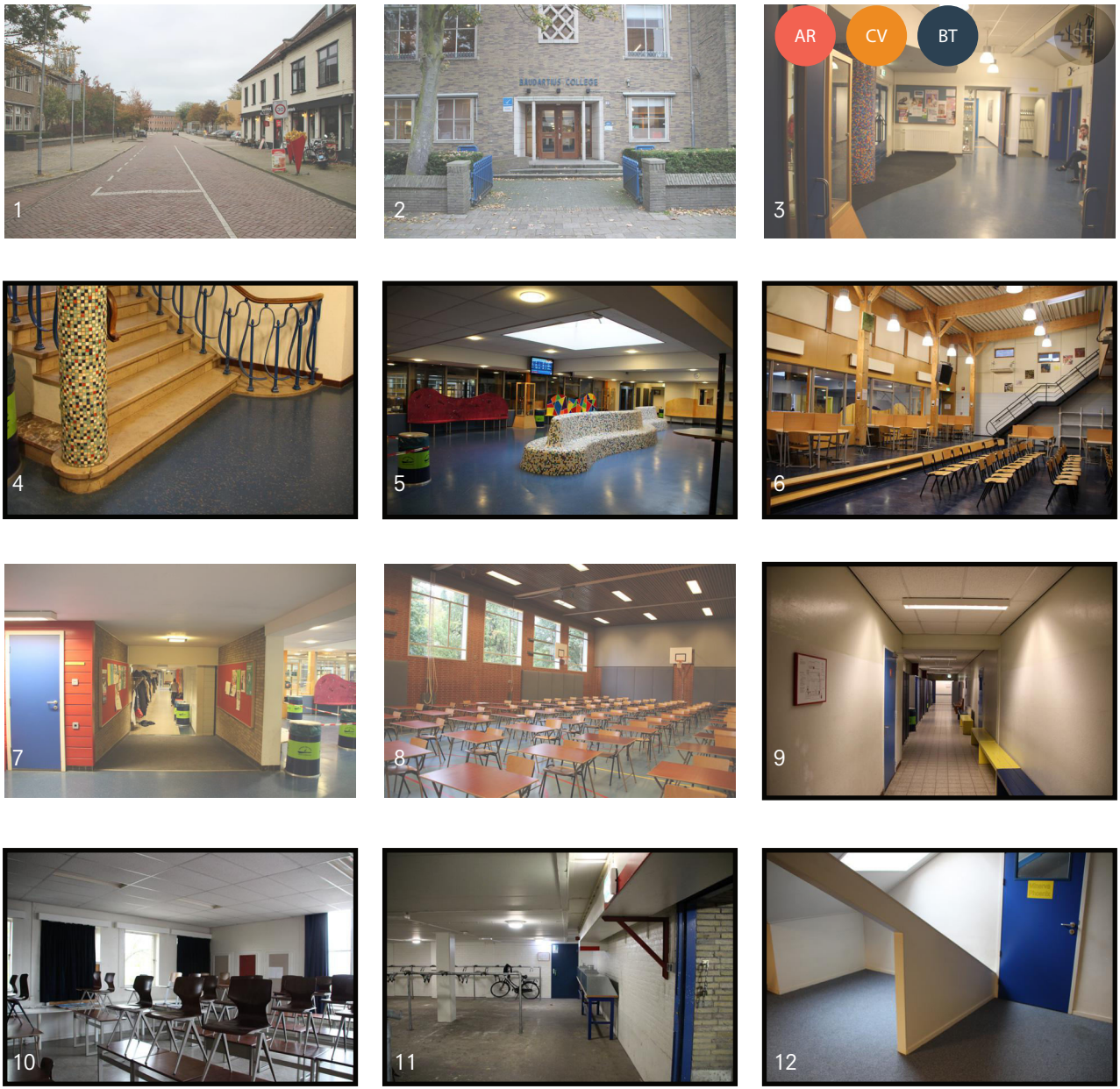


Image 87 *Walk to and through the building*

5.1.2 Daylight

The different atmospheres in the building are related to the amount of daylight.

In figure 70 is shown in five different shades of grey, the amount of natural daylight. The classrooms contain the most direct daylight, because of the big window openings in the outer facade. The classrooms are the most pleasant places in the building.
The amount of daylight in the corridors change, because of the several extension in the courtyard of the building. Before the media center was built, the corridors contained enough daylight, by windows connection with the courtyard. Nowadays the daylight in the corridors is blocked by the extensions. At just a few places, the corridor has direct daylight.
Spaces with no direct daylight are used for storage or technical rooms.

In the future, the amount of daylighting should be improved. This is possible by opening up the central space of the building. It should go back to the open atmosphere of the building in the 1950s, when there was a courtyard.

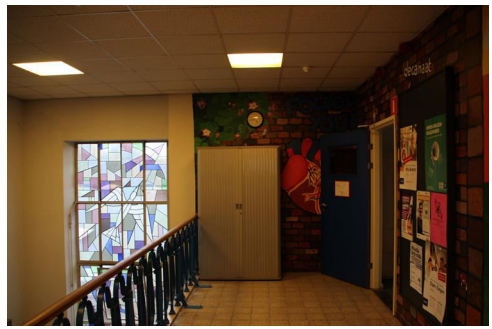


Image 88 *Corridor second floor*

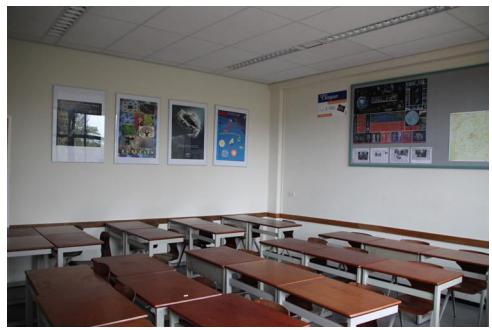


Image 89 *Classroom*

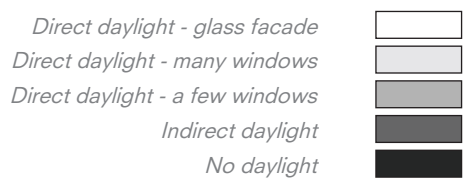
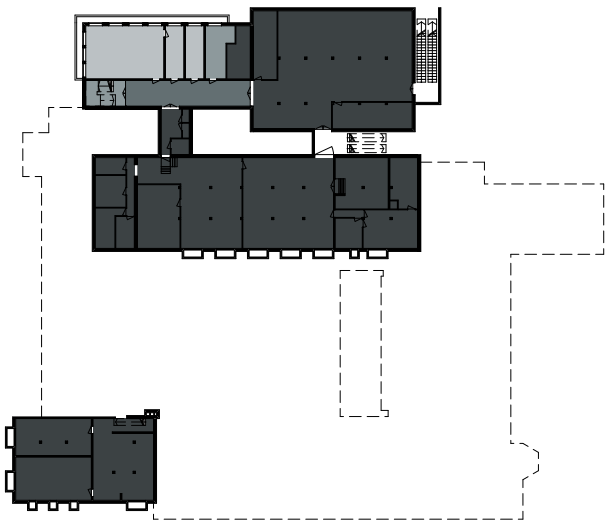
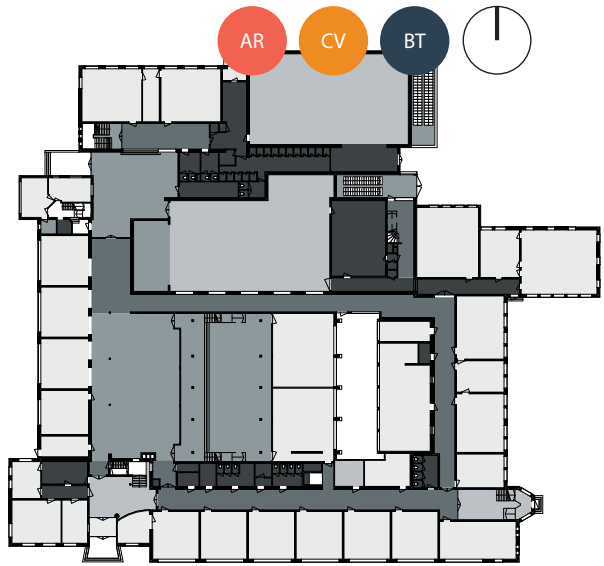


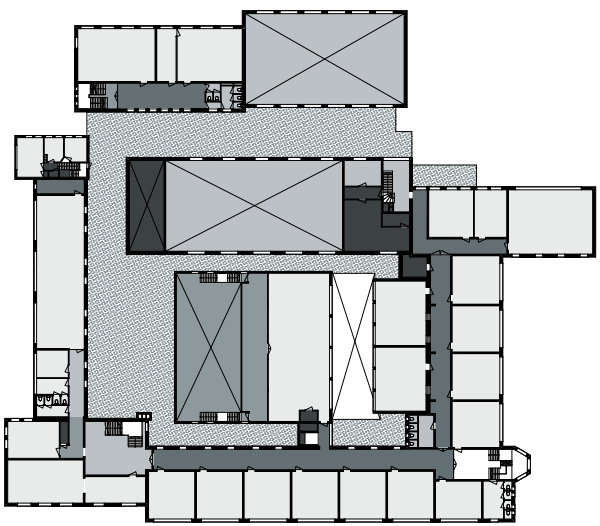
Figure 70 *Daylight*



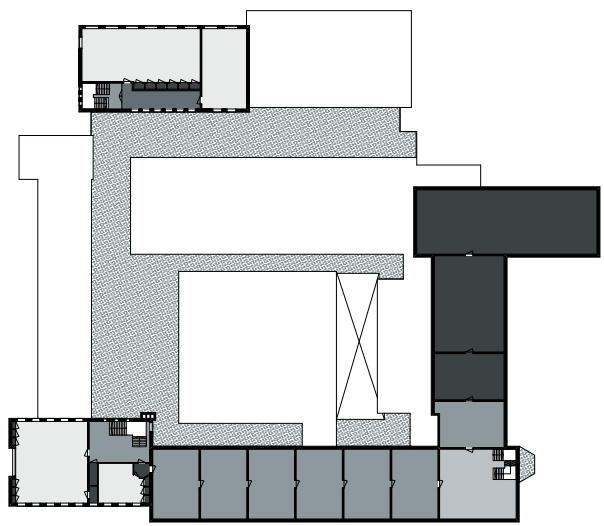
Basement



Ground Floor



First Floor



Second Floor

5.1.3 Staircase

The main staircase is an eye-catcher in front of the main entrance. It is important to look at this staircase, because it contains characteristics from the reconstruction period, but also clearly shows the style of the architect Jan Rotshuizen.

Characteristic of the period of reconstruction in the fifties is the use of mosaics, which can be seen on the column. The steps of the staircase are made out of natural stone, and the steps show traces of use at several spots. The original floor tiles have been preserved at the first and second floor. The staircase shows decorated tiles and the tiles of the corridor are more basic, cheaper tiles. This show the hierarchy within the building.

These recognizable elements from the fifties must be preserved during the redevelopment of Baudartius College, because it shows it origin.

Image 90 *Traces of use*

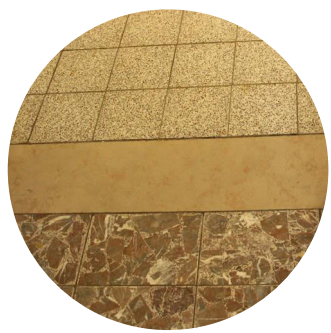


Image 91 *Floor tiles*

Image 92 *Mosaic work*

AR CV BT

Image 93 *Main staircase*

5.1.4 Canteen

As shown in the chapter 4 *Space plan*, the canteen is the heart of the building, but this is not recognizable in the atmosphere.

The use of columns and beams creates an open floor plan in the canteen. However, this space does not feel open but enclosed; it is not a pleasant space to stay. This feeling is caused by the amount of daylight. The canteen only gets direct daylight through two big skylights, so there is no visible connection to the outside. The space is also not very high, which enhance this oppressive feeling.

When this building will be transformed in the future, this space should get a different function and a more open character.

Image 94 *Mosaic work*

Figure 71 *Construction ground floor*

Construction

AR CV BT

Image 95 *Canteen*

5.1.5 Media Library

The character of the media library is totally the opposite in comparison to the canteen, despite the fact that this space also gets a small amount of daylight. The open atmosphere is caused by the high ceilings and an open floor plan.

The media library is not only in contrast with the canteen, also with the rest of the building.
Large wooden beams and wooden columns are dominant in the space. The construction is strongly visible and part of the architecture, this is not been done in the other rooms designed by Jan Rotshuizen. Also the use of materials and the atmosphere is different from all the other spaces.

For the future, the advantages and disadvantages of this media library must be investigated.

Image 96 *Mosaic work*

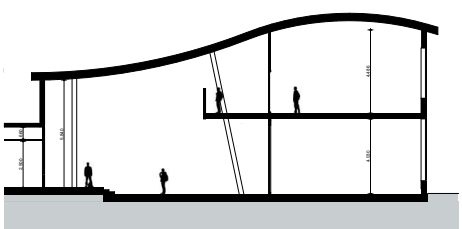


Figure 73 *Section media library*

Figure 72 *Construction ground floor*

Construction

AR CV BT

Image 97 *Media library*

5.1.6 Corridor

As shown in paragraph 5.1.2, the corridors have not much direct daylight, which results in a dark atmosphere. This character was created by the several extensions of the school. First, there was a view into the courtyard, now there is a view to classrooms and the media library.

Their are still some original elements in the corridors preserved from the 1950s. The entire floor is covered with tiles. These tiles have a less luxurious appearance than the tiles in the staircase. This clearly shows the hierarchy in the school. Also different types of doors can be seen in the corridors. The doors with the round edges in the window openings are the original ones from the fifties.

In the new design should be thought about the use of these original elements. Also the orientation must be improved by better sight lines and more daylight.

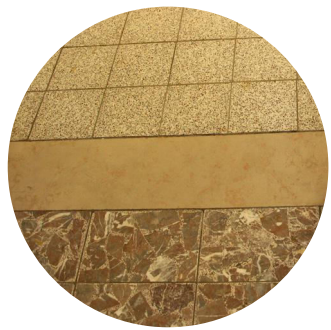


Image 98 *Floor tiles*

Image 99 *Original door*

AR CV BT

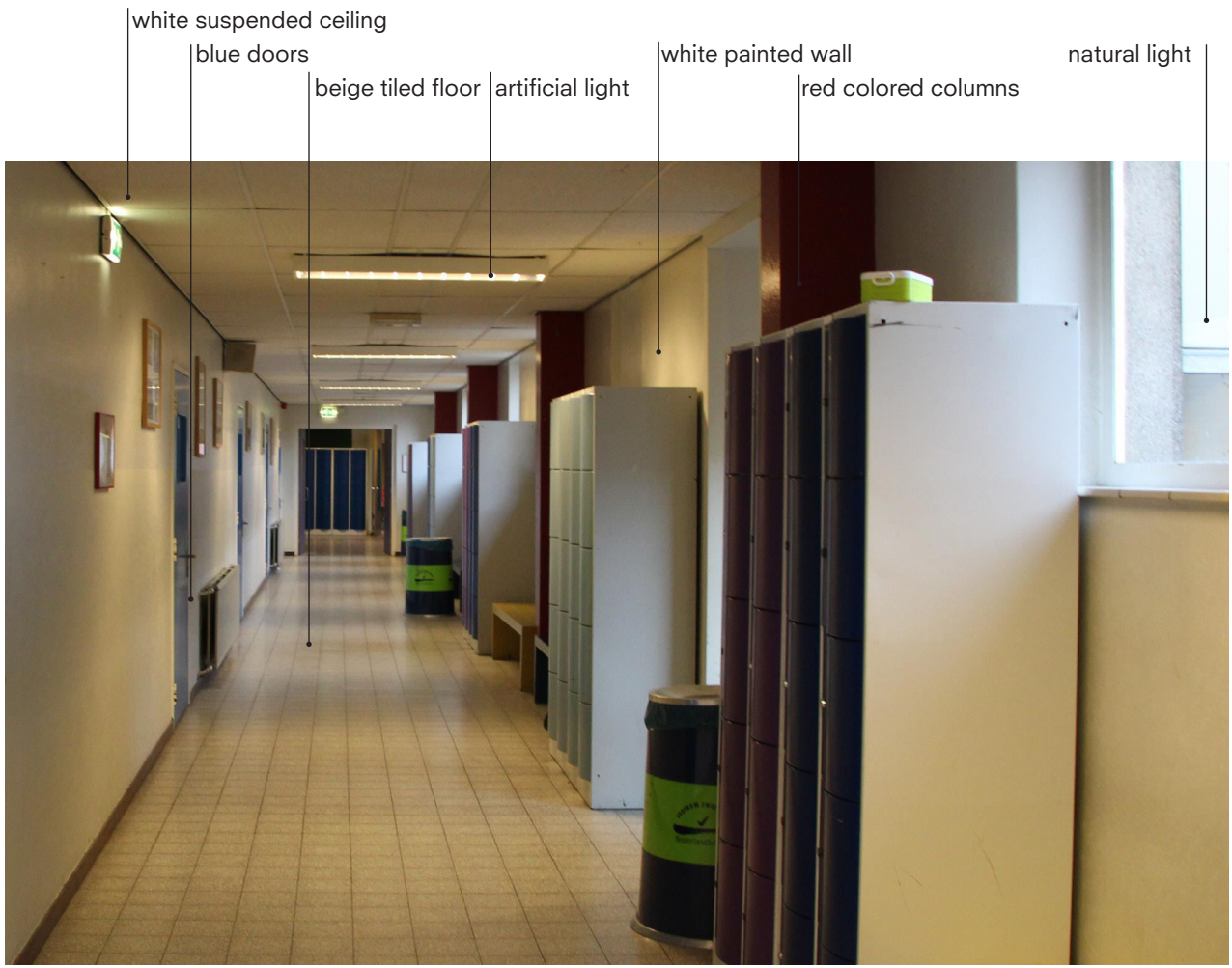


Image 100 *Corridor*

5.1.7 Classroom

In image 102 is shown the different materials in the classrooms. The rooms have a pleasant atmosphere. This spacious feeling is caused by the big windows openings, resulting in a wide view to the surrounding. The classrooms on the north side of the building have a view to the park. The rooms on the south and west side have a view to the Isendoornstraat.
The square meters of each classroom limits the amount of students per class. Because the classrooms contains load bearing interior walls, it is hard to change the measurements of the classrooms.

Image 101 *Window frames*

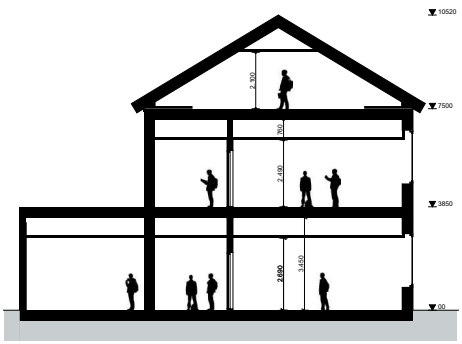


Figure 74 *Section classrooms*

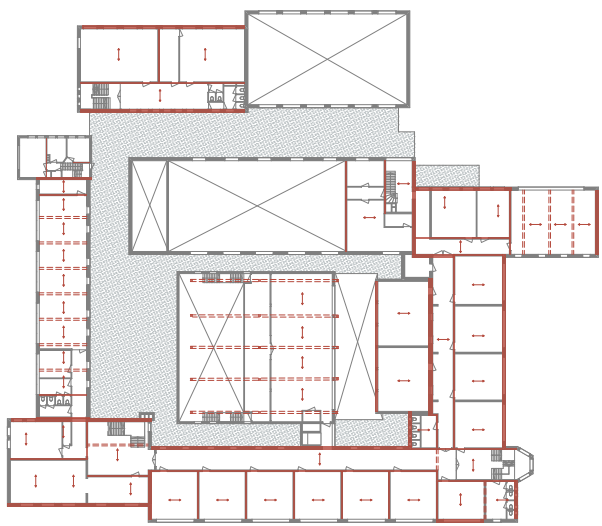


Figure 75 *Construction first floor*

Construction

AR CV BT

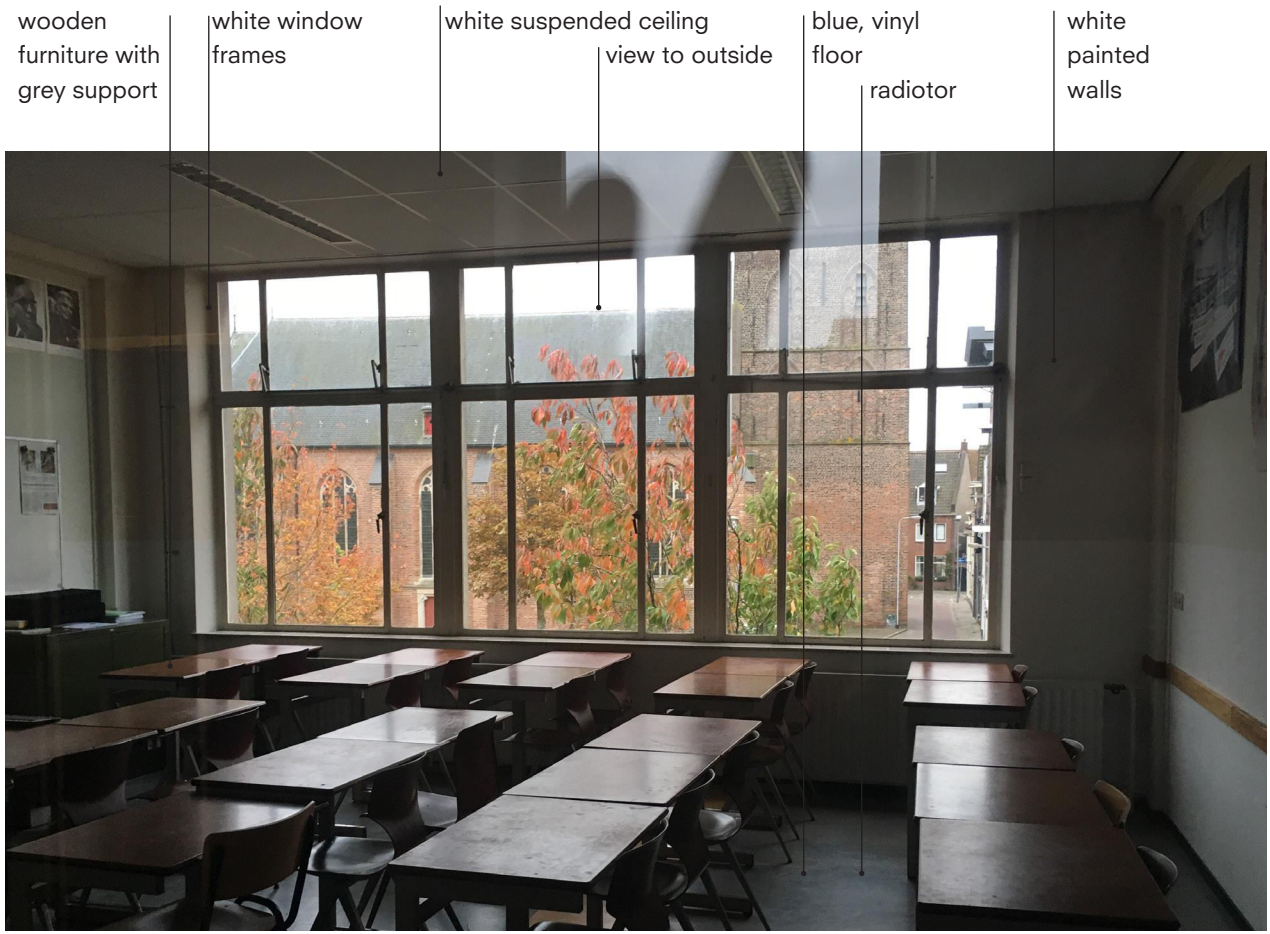


Image 102 *Classroom*

5.1.8 Basement

Image 104 shows the different materials and structure of the basement. It consists of a column construction. This structure results in an open floor plan, and between the structure, bicycles can be parked.
The space now has not an atmosphere that is attractive to stay a long time and is not an attractive entrance for students who enter the building through the basement after parking their bike. The basement requires a transformation that can contribute more to the building than just being a storage.

Image 103 *Concrete columns*

Figure 76 *Construction basement*

Construction

AR CV BT

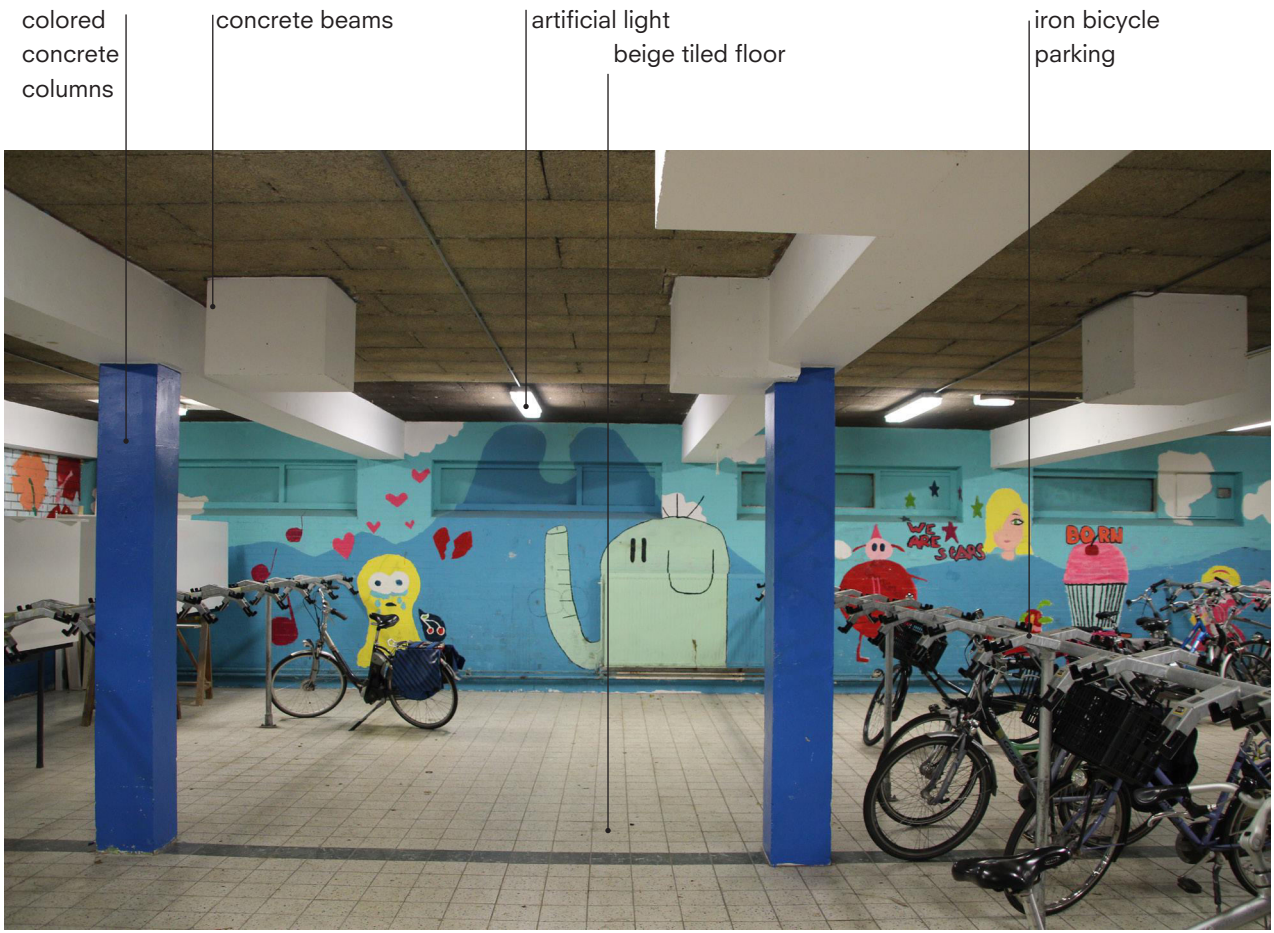


Image 104 *Basement*

5.1.9 Attic

Image 106 and 107 show the construction of the roof. The second floor consists of a repetition of rafters. These are clearly visible in all the spaces at this floor. They are not lways at a very convenient location, which makes some areas difficult to divide and not all square meters can be used properly (image 105).

Striking are the two different materials that have been used for the rafters: wood and steel. This is a characteristic from the 40s and 50s. Their was a material shortage straight after World War II, so they built with the materials which were available at that time. This characteristics from the post-war period is hidden in storage rooms or behind a suspended ceiling and should be expressed more in the future.

Image 105 *Wooden construction*

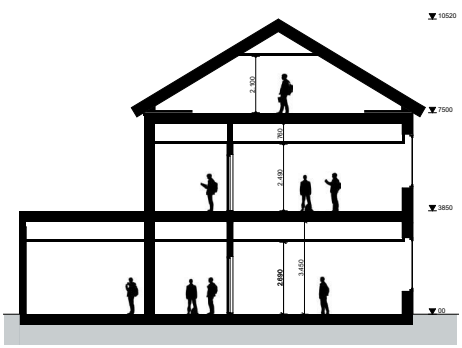


Figure 79 *Section classrooms*

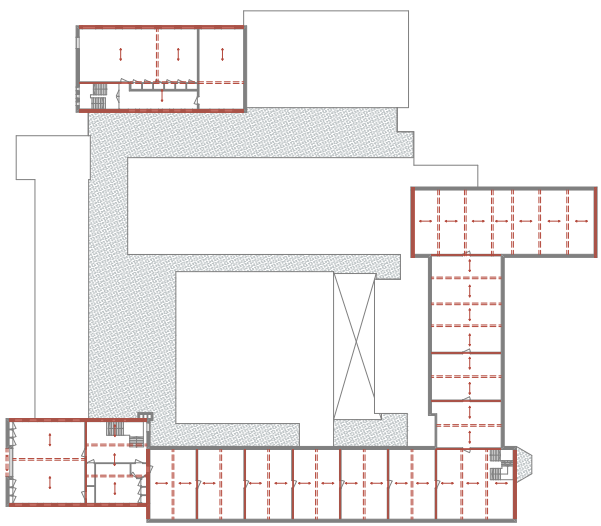


Figure 78 *Construction second floor*

Construction

Figure 77 *Attic*

AR CV BT

Image 106 *Steel construction*

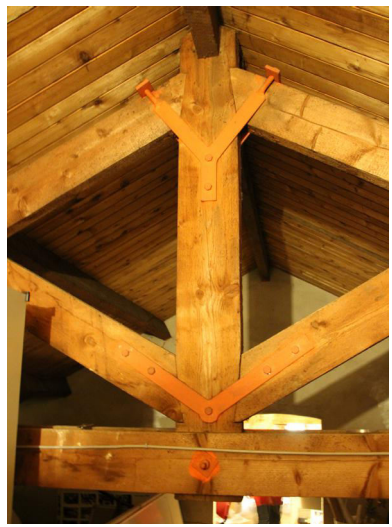


Image 107 *Wooden construction*

5.2 Het Stedelijk

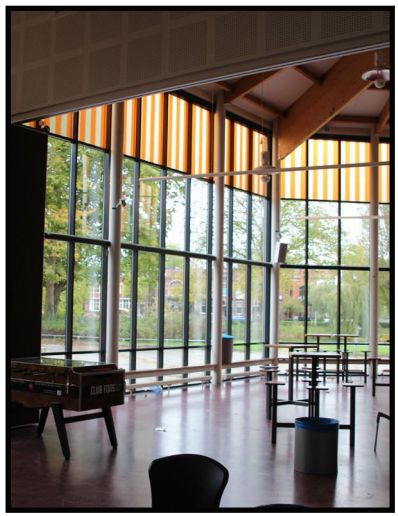
5.2.1 Walk through the building

These selection of photos shown the walk through the building, which different areas you enter and which different atmospheres Het Stedelijk contains.

The main entrance of Het Stedelijk is located at the Isendoornstraat (1). The street is wide and you do not feel enclosed. The more you go to the building, the more you feel enclosed by it. When you enter the building through a double door and sliding door, you will enter the reception area (4). This area has a height of 2,7 meters. From this area you have a view to the auditorium (5). This area has a height of approximately 7,4 meters. This auditorium has a lot of glass at the park side. This gives a different atmosphere in the auditorium as for example in the reception area. From the auditorium, you can go to the corridors (6). They have again a height of 2,7 meters. These corridors are quit long, so it feels more like a tunnel and has also a different atmosphere.

Three different spaces will be explained further in the following paragraphs: auditorium, corridor and classroom. These subjects will contribute in having a better understanding of the different atmospheres in the building.

1 - streetview



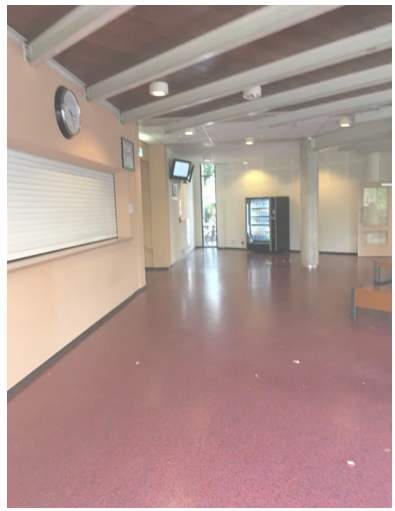
5 - auditorium

Image 108 *Walk to and through the building*

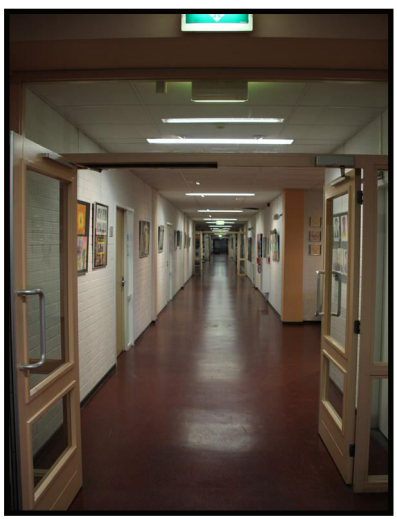
AR CV BT

2 - building

3 - main entrance

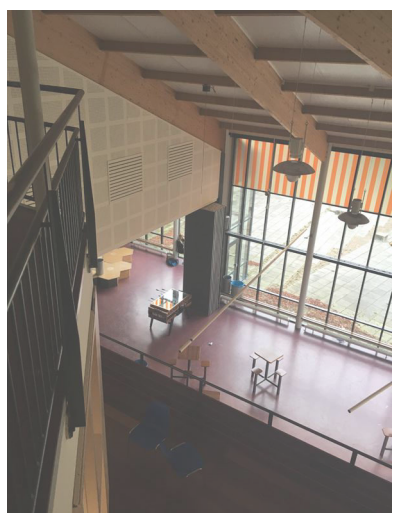


4 - reception area



6 - corridor

7 - classroom



8 - void

5.2.2 Daylight

The different atmospheres in the building are related to the amount of daylight.

In figure 80 is shown five different shades of grey, which are corresponding to the amount of natural daylight. In the auditorium is the most direct daylight, because of the glass facade. In the classrooms is also quit a lot of direct daylight, because they are all situated along the facade. The corridor has no direct daylight, but windows are placed in the wall between the corridor and classroom. So the corridor gets indirect daylight from the classrooms. Many storage rooms and all the technical rooms have no daylight.

Based on the amount of natural daylight, the experience of Het Stedelijk is pleasant.

Image 109 *auditorium*

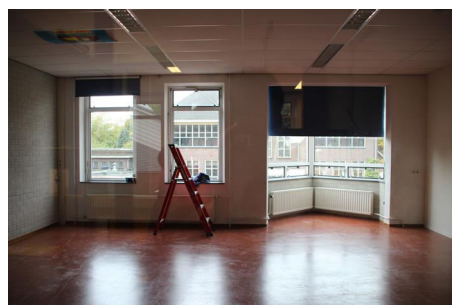
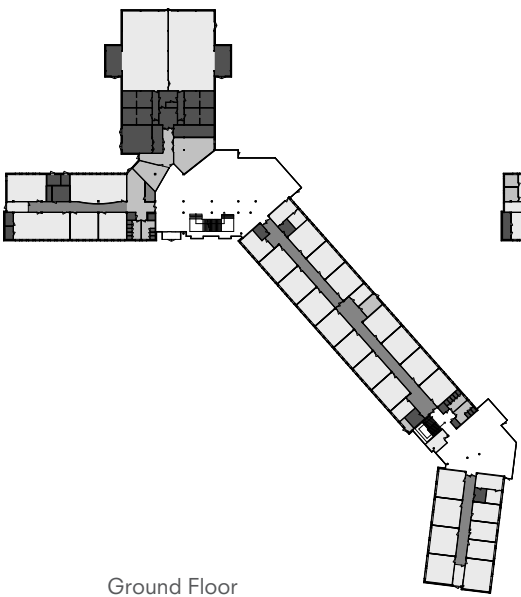


Image 110 *classroom*

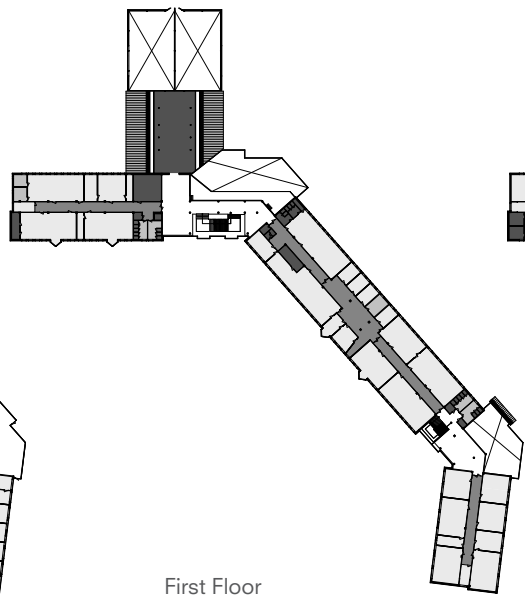
Direct daylight - glass facade
Direct daylight - many windows
Direct daylight - a few windows
Indirect daylight
No daylight

Figure 80 *Daylight*

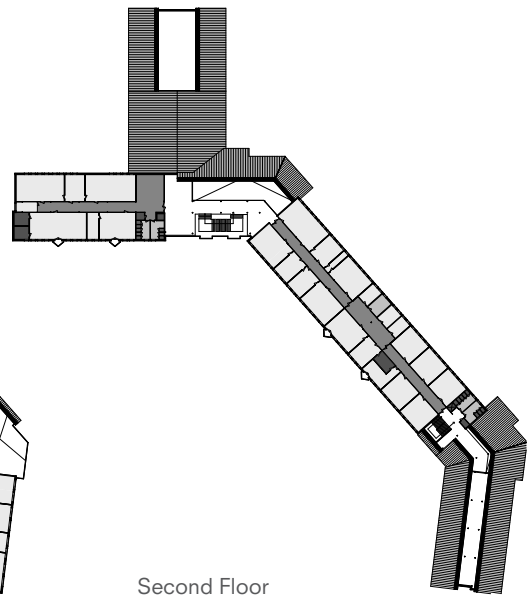
AR CV BT



Ground Floor



First Floor



Second Floor

10 50 100

125

5.2.3 Auditorium

People entering the building will first end up in the auditorium. The auditorium is a space with a lot of natural light, a high ceiling and a lot of space to move around. This space contains voids and also has a view and access to the park. This results in an open, spatial and pleasant atmosphere. The auditorium also contains parts of the old city wall, which is visible through glass openings in the floor. The glass shows traces of uses (scratches), because of this the old city wall is no longer good visible in the interior. In the future, the old city wall should be highlighted and be part of the interior again.

Image 111 *Old city wall*

Image 112 *Round columns*

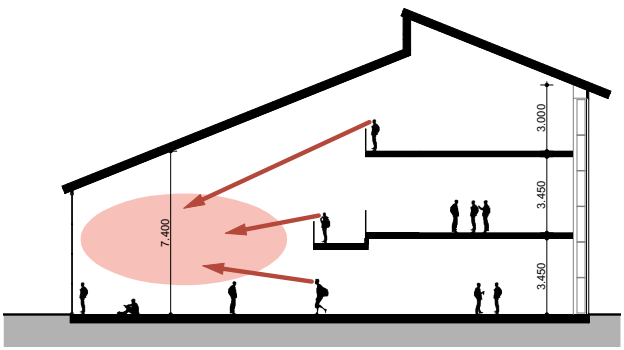


Figure 81 *Section auditorium*

Image 113 *Wooden construction*

AR CV BT

white and yellow pattern on the glass

glass openings to the city wall

natural light

red, vinyl floor

wooden construction

view to the park

Image 114 *Auditorium*

5.2.4 Corridor

The long corridors in the building have a different atmosphere than the auditorium.
As in the auditorium, the construction is also visible in the corridors. Here the construction does not consist of round columns, but square columns. The columns are part of the wall. All the columns are painted in a color which is the same as the door and window frames. Furthermore, the corridors consist of a repetition of doors, window openings and brickwork. All this elements together form a character that does not belong to a school. This corridor could also belong to a hospital or an office building. This corridor does not belong in Nieuwstad, but can also belong to an area with new building blocks. The environment and the school function require a different atmosphere.

Image 115 *Colors per department*

Image 116 *Square columns*

Image 117 *Window openings*

AR CV BT

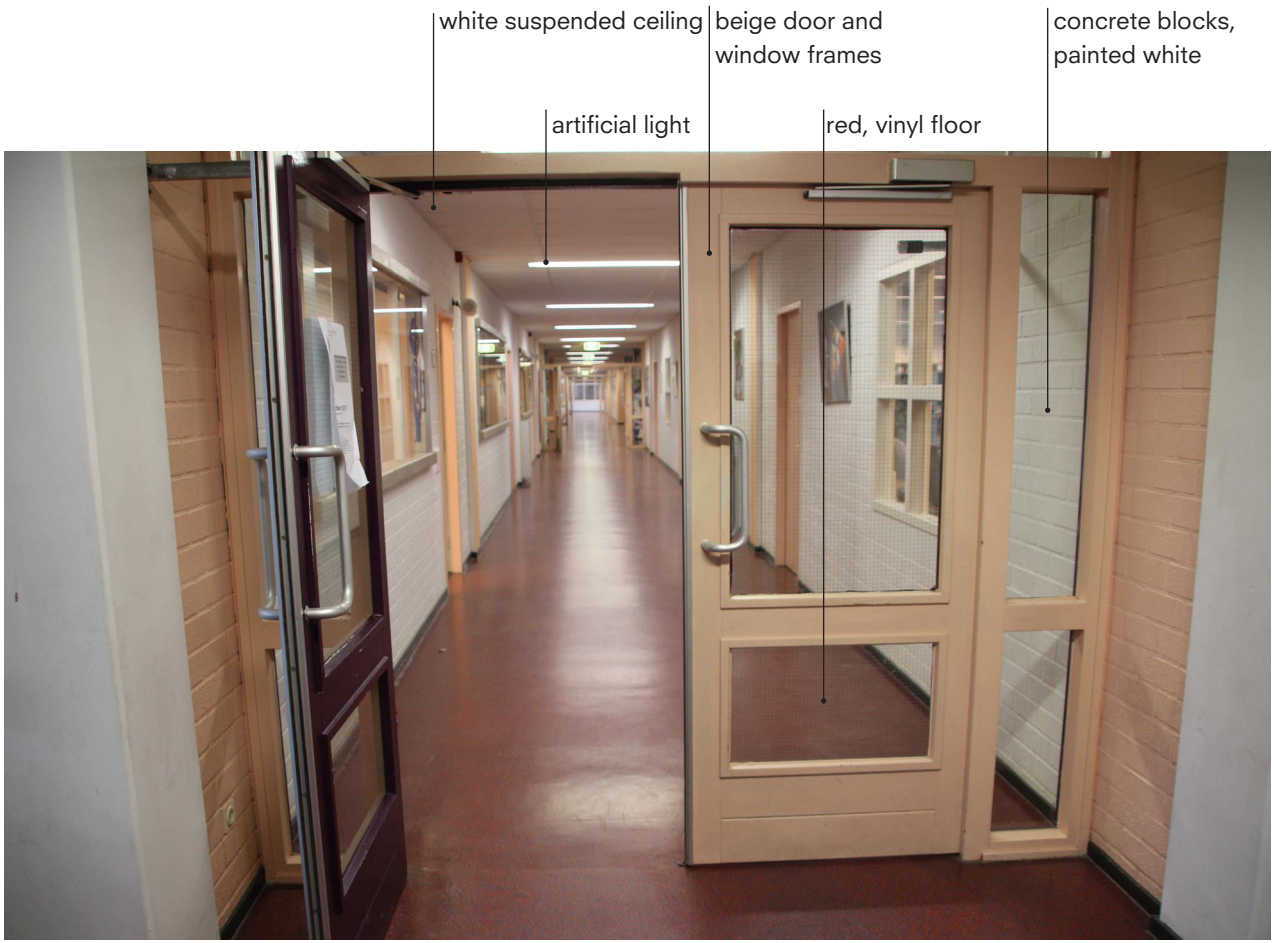


Image 118 *Corridor*

5.2.5 Classroom

In contrast to the corridors, as described in the previous paragraph, the classrooms do have the atmosphere that belongs to a school.

All the walls in the classrooms are painted white, and enough daylight is entering the rooms. Students and tutors have a view to the park on the north and east side of the building The rooms on the south and west side have a view to the Isendoornstraat.

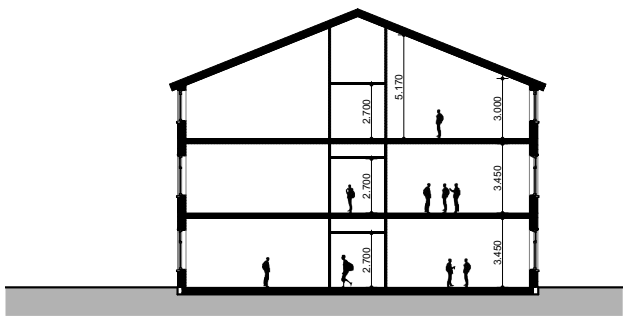


Figure 82 *Section classrooms*

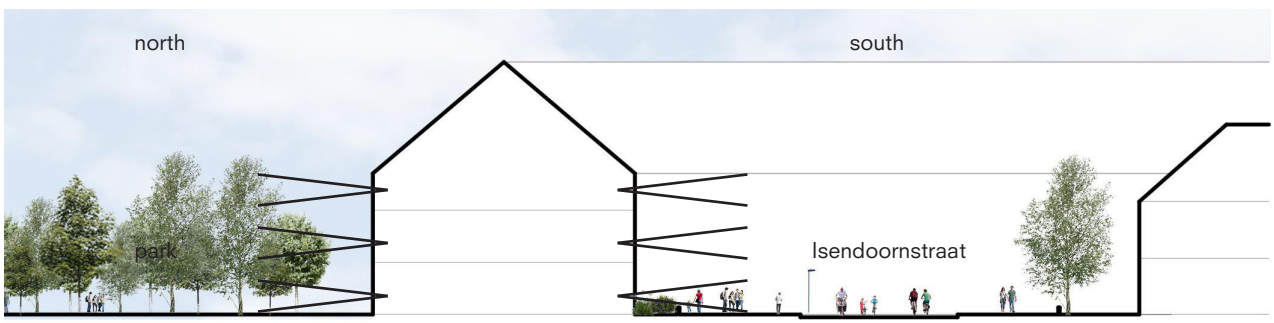


Image 119 *Section building and surrounding*

AR CV BT

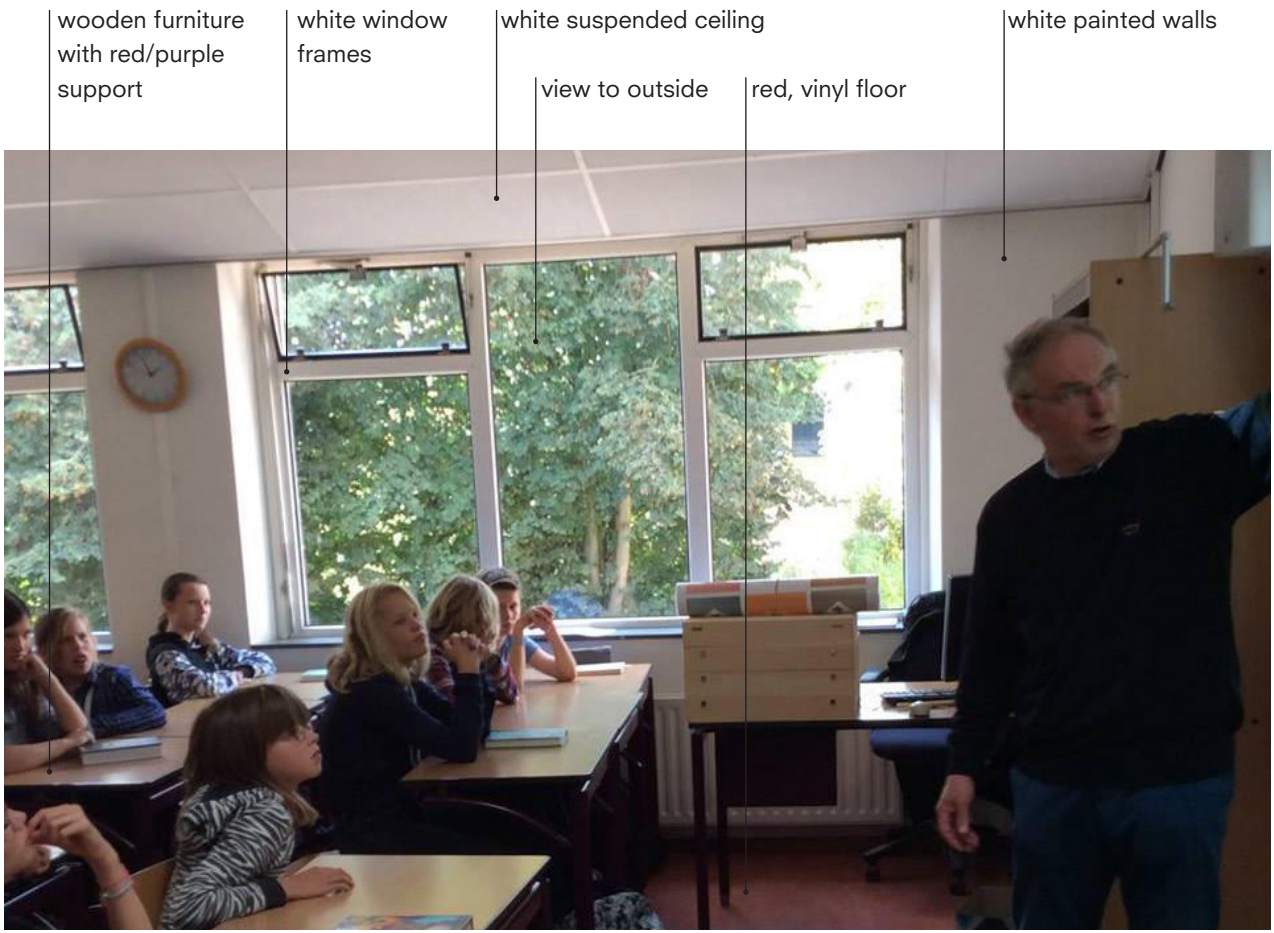


Image 120 *Classroom*

5.3 Conclusion Surfaces

Baudartius College

Values
- Enough daylight in classrooms
- Good view to park and street
- View from the classrooms to the surrounding
- Characteristics of the fifties

Opportunities
- Open up the central part of the building
- Original materials and doors from the fifties are still present in the corridor
- Basement can contribute more to the building
- The materials of the roof construction are typical for the post-war period and can be emphasized

Obligations
- Preserve the characteristics of the fifties: the mosaic, different types of tiles and the decorated main staircase.

Weaknesses
- Isendoornstraat does not feel enclosed
- A oppressive feeling in the corridors and basement
- Not enough direct daylight in the center of the building
- Canteen is the heart of the building, but the space has a narrow feeling
- Load-bearing interiors walls, which limits the possibility of changing the classrooms
- Basement is only used for storage

Het Stedelijk

Values
- Enough daylight in the entire building
- Good view to park and street

Opportunities
- Remains of the old city wall

Obligations
- Remains of the city wall need to be preserved and highlighted

Weaknesses
- Isendoornstraat does not feel enclosed
- A oppressive feeling in the corridors and basement
- Formal character, which not reflects the character of Nieuwstad or the function of the building

6 Services

6.1 Baudartius College

6.1.1 Installations

The largest part of Baudartius College is almost seventy years old. This means the installations are out of date. Nevertheless, it is important to know where which installations are situated and how different rooms are heated and ventilated.

Baudartius College contains three technical areas, all located in the basement. At the south-west side is the first technical space built in 1951. For a better and shorter transport, the other two technical spaces are located at the north and east side. From these rooms all pipes are running to the different floors.
The pipes are covered by a suspended ceiling in the corridors and classrooms. The wet areas are located at different places in the building, in many cases not exactly above each other. Resulting in water pipes through the building at various locations.

Image 121 *Installations technical space*

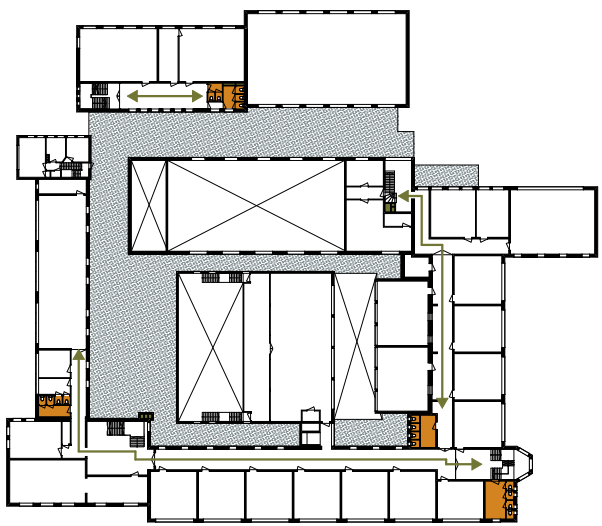
Image 122 *Suspended ceiling*

Shaft
Technical space
Wet space

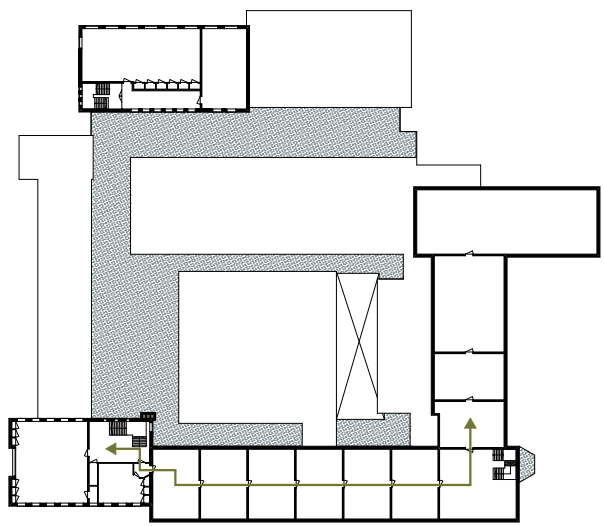
Figure 83 *Circulation*

Basement

Ground Floor



First Floor



Second Floor

6.1.2 Installations per room

Baudartius college contains three different types of ventilation and heating systems: classrooms, media library and basement.

In the classrooms fresh are come in by opening the windows. To ventilate the space better, openings have been made in the doors to the corridor. The rooms are heated with radiators, the pipelines are above a suspended ceiling. Ventilation is therefore not optimally regulated and heat is lost through the windows with single glazing. The climate in the classrooms should be improved.

The media library is mechanical controlled. The room is mechanical ventilated and heated with radiators. The installations and pipes are visible at the ceiling. It is not possible to open the windows in the facade. This combination ensures a pleasant climate in the media library; the room does not require adjustments.

In the basement, at the bike parking, big installations are visible coming from the technical rooms. The bike parking is not heated and only natural ventilated. If the basement will get a different function in the future, a lot has to be done to improve the indoor climate.

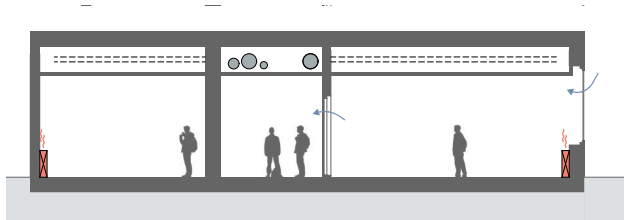


Image 124 *Classroom*

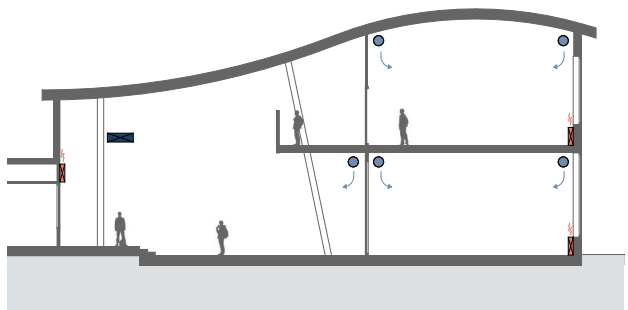


Image 125 *Media library*

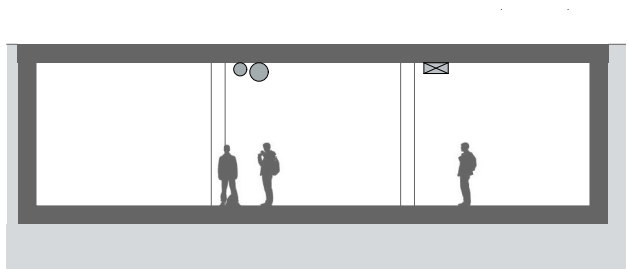


Image 126 *Basement*

AR BT

Ventilation grill door

Ventilation windows

Radiators

Mechanical ventilation

Radiators

Double glazing

Visible installations

Ventilation grills

Installations

Image 127 *Significants*

6.2 Het Stedelijk

6.2.1 Installations

The Stedelijk was designed by Jon Kristinsson, an architect who is known for his sustainable designs. It is important to investigate to what extent sustainable solutions have been done in Het Stedelijk.

Het Stedelijk contains several technical rooms, which are located on different levels in the building. Three rooms are on the ground floor and one big space on the second floor. The last one is specially for climate control. All the pipes are running through the corridors, above a suspended ceiling. In both auditoriums, the pipes are not put above a suspended ceiling, they are visible in the space.

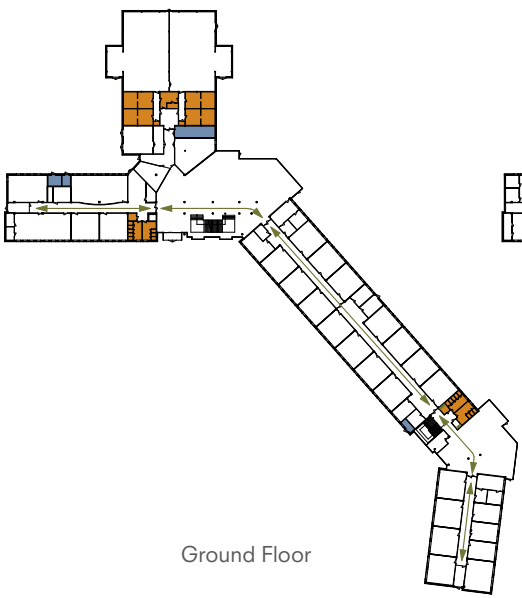
No extra installations were installed in the school to make the building more sustainable. The building contains installations that were generally used around the year 2000. This is in contrast with the other works Jon Kristinsson, which are more sustainable

Image 128 *Installations*

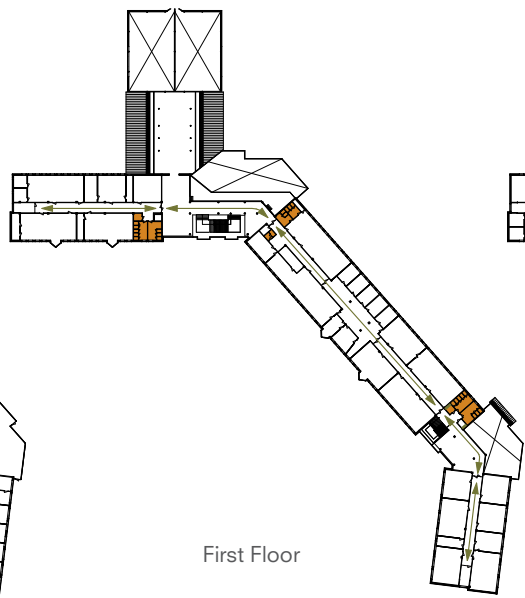
Image 129 *Suspended ceiling*

Figure 84 *Circulation*

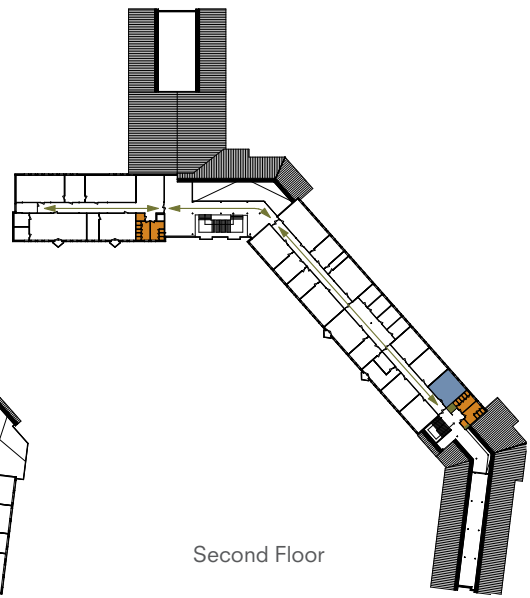
AR BT



Ground Floor



First Floor



Second Floor

6.2.2 Installations per room

Het Stedelijk contains two different types of ventilation and heating systems: classrooms and the auditorium.

The classrooms in Het Stedelijk have a natural air supply and mechanical outlet. The natural supply is through the upper part of the window openings. The outlet is through grilles in the interior wall between the classrooms and the corridor. Because of a height difference between both areas, it is possible to place the grille underneath the suspended ceiling in the classroom and connect it to the technical space above the suspended ceiling in the corridor. The classrooms are heated with radiators. These radiators are in the building since it is built. They are placed underneath the windows in the classrooms. Because the radiators are mounted to the facade, and they have a certain length, it is not possible to move an interior wall to every spot. Sometimes, you need to remove a radiator to be able to move a wall.

Also the auditorium is heated by radiators. These are placed in front of the glass facade, on the floor. The auditorium has a separate air handling system, with two air supply systems. Through ducts and inflow grilles, the air is injected in the areas. The air outlet is the same as the other rooms, through a exhaust system.

The climate is pleasant and satisfies all the requirements, but because the architect has not applied extra sustainability solution, the building will not last extra long in the future.

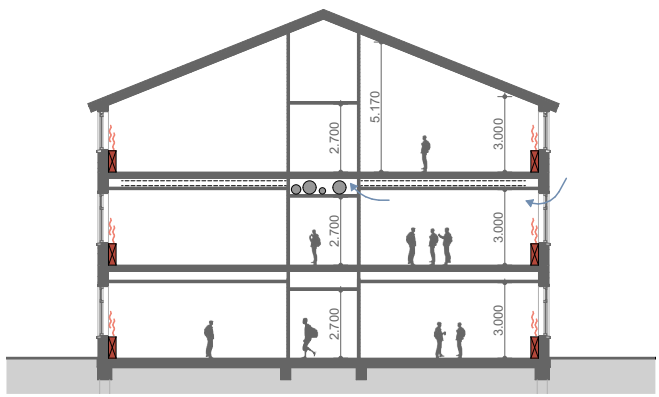


Figure 86 *Classrooms*

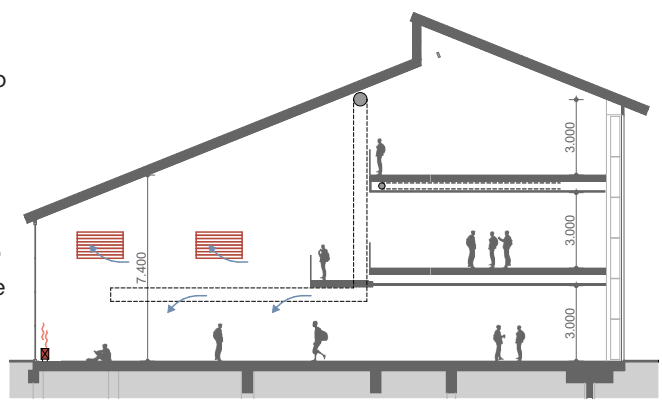


Figure 85 *Auditorium*

AR BT

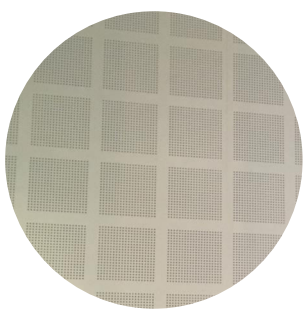
Ventilation grill door

Suspended ceilings

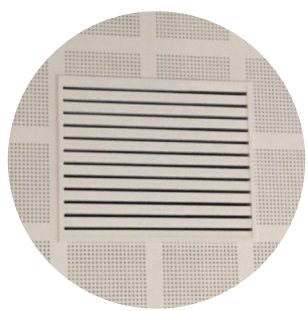
Radiators classroom

Ventilation windows

Mechanical ventilation



Sound absorption



Mechanical ventilation

Radiators auditorium

Image 130 *Significants*

6.3 Conclusion Services

Baudartius College

Values

Opportunities

Obligations

Weaknesses
- Services out-of-date
- Not a comfortable climate

Het Stedelijk

Values
- Up-to-date services

Opportunities

Obligations

Weaknesses
- Jon Kristinsson is known for his sustainable solutions. Not visible in this building

7 Cultural Value

7.1 Introduction

In the chair of Heritage and Architecture it is not only important to understand the tangible elements like the existing built fabric, but also to understand the intangible aspects of a building and link them to the tangible values. The cultural value matrix helps to map all these different values. The matrix has been developed as a graphic mapping, analysis and evaluation tool.

The vertical axis of the matrix is based on the six layers of Steward Brand (1994): site, structure, skin, services, space plan and stuff. Brand shows the different layers of a building, these layers are arranged in a diagram (figure 87).

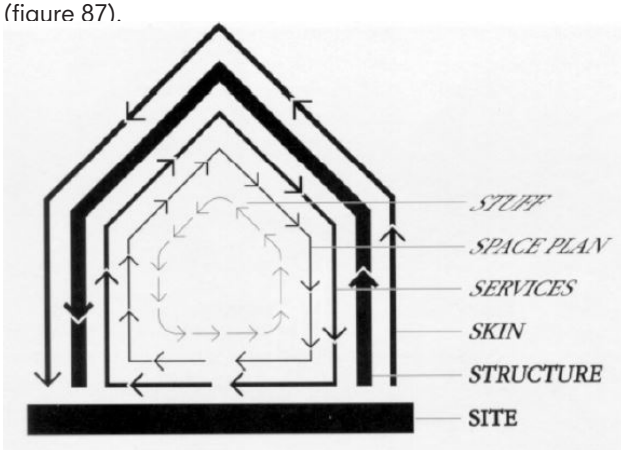


Figure 87 *Steward Brands Shearing Layers model*

By dividing the building into different layers, various values can be determined. Besides the six layers of Brand, we added an extra layers: surrounding, shape, surfaces and sprite of the place. By adding these extra topics, the building is shown even more profoundly. The building gets meaning in its environment and the building in relation to its users. For Baudartius College and The Stedelijk, stuff was of less importance, which means it is removed from the cultural value matrix.

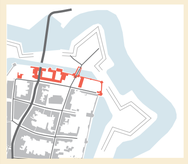
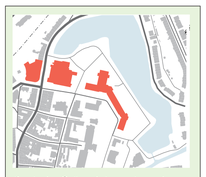
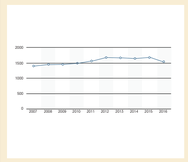
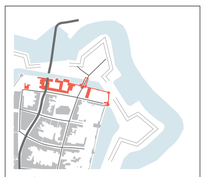
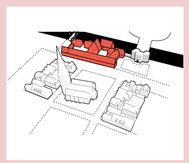
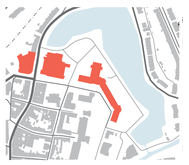
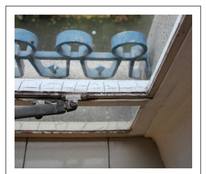
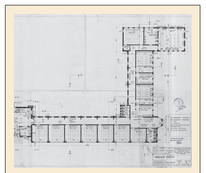
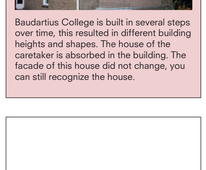
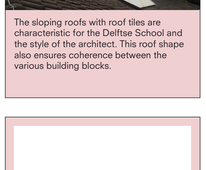
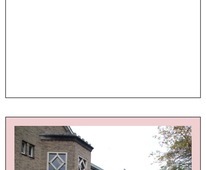
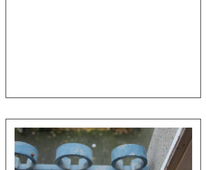
The horizontal axis refers to the set of values mentioned by Alois Riegl. Riegel formulated a system of essential heritage values. He spoke about buildings as if they were sacred remnants of the past and then he spoke about the appreciation of the historical fabric in his essay 'Modern Cult of Monuments' (Riegl 1903/1996). He interpreted the different values in a modern way, no longer religious but in connection with society. We used the following values in the matrix: age, historical, intentional commutative, use, aesthetic and social value.

In the cultural value matrix, a color system is used in addition to the layers of Brand and the values of Riegl. This color system helps to deepen the analyses and communicate the interpretation of the different values. The following colors have been used in the matrix: red for the high values, yellow for medium values and green for low values.

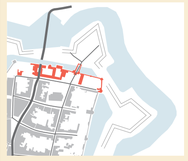
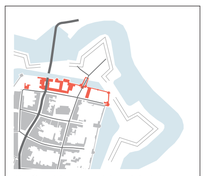
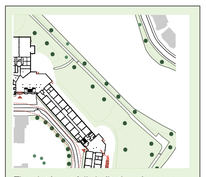
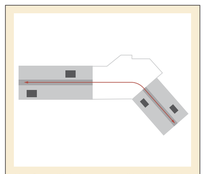
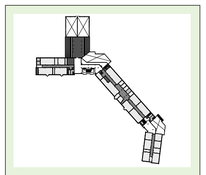
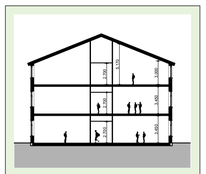
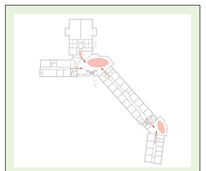
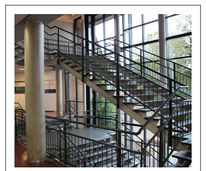
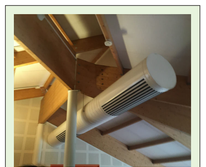
7.2 Matrix

On the next two pages are the cultural value matrix of Baudartius College and Het Stedelijk.

Baudartius College

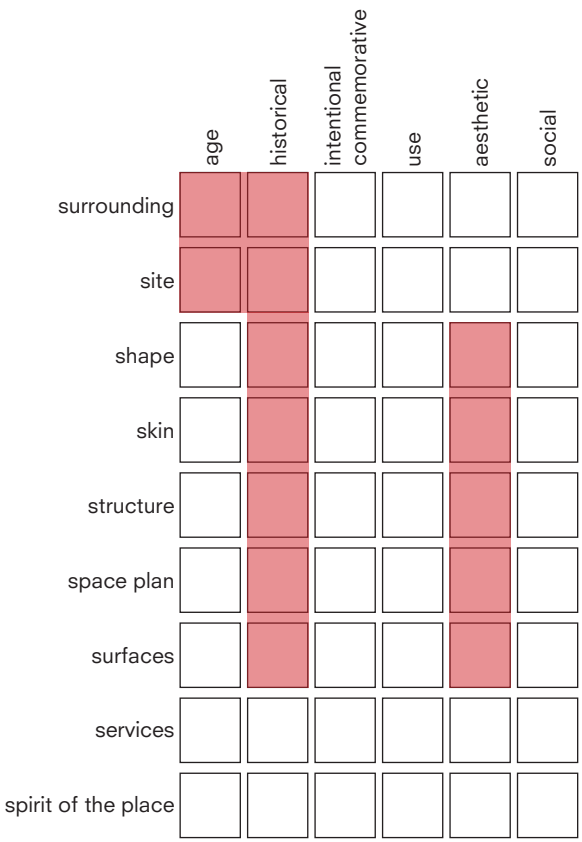
	AGE VALUE	HISTORICAL VALUE	INTENTIONAL COMMEMORATIVE VALUE	USE VALUE	AESTHETIC VALUE	SOCIAL VALUE	OPPORTUNITIES	OBLIGATIONS	DILEMMAS
SURROUNDINGS / SETTING	 The Spanish Gate is built in 1536. During the last centuries, some parts of the gate dissapeared. The part which is still standing, did not change after it was built.	 The park was part of the defense system during history, parts of the wall and the Spanish Gate are still there. After WO II in the park was an event organized, to collect money for the reconstruction of Zutphen.		 Baudartius College is located at an intersection, so the building is easy to reach from different directions. The building has a connection with the city centre, the northern area and the train station.	 From the Baudartius College you have a good view on beautiful elements: the green park, water of the Grote Gracht, the Spanish Gate and the St. Jans church.	 The high school attracts many young people in the area and in Zutphen.	 There is a lot of green in the area, but the park could be more attractive for different target groups. The park can get more use and social value.	 The Spanish gate and the original shape of the bastions must be preserved.	
SITE		 Through history there has been a monastery and barracks. The main buildings of these functions were located at the current location of Baudartius College.					 The crossing offers the possibility to make a connection with the city in different directions. This ensures the building is easy to reach by car and bike.		
SHAPE	 Baudartius College is built in several steps over time, this resulted in different building heights and shapes. The house of the caretaker is absorbed in the building. The facade of this house did not change, you can still recognize the house.	 The sloping roofs with roof tiles are characteristic for the Delftse School and the style of the architect. This roof shape also ensures coherence between the various building blocks.						 An obligation is to keep the character of the caretakers house in the facade.	
SKIN (EXTERIOR)		 The façades of 1950 and 1955 show characteristics of the architect and the post-war period: rhythm of window openings, thick concrete frames and ornaments in contrast with slender steel frames and steel fences.			 The façades from 1950 and 1955 consists of various elements: concrete ornaments, thin steel window frames, steel fences, brick pillars between windows and brickwork. This combination of elements creates an attractive façade			 Showing the ornaments of the façades from 1950 and 1955: concrete ornaments, thin steel window frames, steel fences, brick pillars between windows and brickwork.	 The building needs extra insulation and double glazing instead of single glazing. But the facade has historical and aesthetic value in the skin which must be preserved.
STRUCTURE		 The roof construction consists two materials: wood and steel. The use of different materials is characteristic for the period after WO II, because of a shortage of materials. They start searching for alternatives, which results in a mix of materials.					 The roof frames should be visible to show the characteristics of the post-war period.		
SPACE PLAN		 The floor plan developed form a L-shaped corridor to a H-shaped floor plan. This development of space plan is a conviction of the school system from the fifties.							
SURFACES (INTERIOR)	 The stairs made out of natural stone are used intensively by many students every day. This results in damages at the stairs, showing traces of use.	 The main staircase contains post-war characteristics: mosaic column, stairs of natural stone and the different floor tiles are showing the hierarchy within the building. The detailed hand railing is a signature of the architect Rotshuizen.	 A commemorative stone is placed in the staircase. This stone is coming from the old location (IJsselkade 4) which was bombed during WO II. Next to this stone is also a stained glass window, donated by former students of Baudartius College.		 The staircase at the main entrance contains a lot of beautiful elements: the stained glass window, steel detailed hand railing, natural stone stairs, mosaic column and the tiles in the floor.		 Showing many different characteristics from the reconstruction period: mosaic column, stairs of natural stone and the different floor tiles. The different tiles show the hierarchy in the building. The detailed hand railing is a signature of the architect.		 The floor tiles in the corridor are less beautiful than the tiles in the staircase, but when they are removed you will no longer see the hierarchy of the building.
SERVICES									
SPIRIT OF PLACE		 The atmosphere of monofunctionality at the Isendoornstraat: now occupied by the schools and students. During history this street also consist of one function and one atmosphere: convent and later the barracks.			 If you look from the other side of the Grote Gracht, you feel the history of the city with his fortification, church, park and water. All separately designed, together they contribute to the historical feeling.			 The area needs to have functions, which are related to each other.	

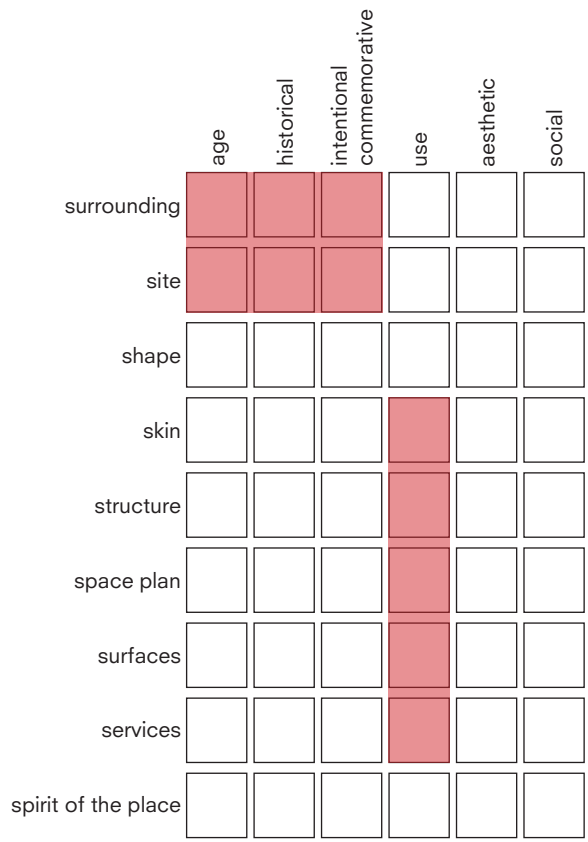
Het Stedelijk

	AGE VALUE	HISTORICAL VALUE	INTENTIONAL COMMEMORATIVE VALUE	USE VALUE	AESTHETIC VALUE	SOCIAL VALUE	OPPORTUNITIES	OBLIGATIONS	DILEMMAS
SURROUNDINGS / SETTING	 The Spanish Gate is built in 1536. During the last centuries, some parts of the gate dissapeared. The part which is still standing, did not change after it was built.	 The park was part of the defense system during history, parts of the wall and the Spanish Gate are still there. After WO II in the park was an event organized, to collect money for the reconstruction of Zutphen.		 The park with the water is good for the use of outdoor space. The school uses the park for school activities.	  From Het Stedelijk you have a good view on beautiful elements: the green park, water of the Grote Gracht, dwellings at the other side of the Grote Gracht, the Spanish Gate and the garden of St. Elisabeth.	 The high school attractes many young people in the area and in Zutphen.	 There is a lot of green in the area, but the park could be more attractive for different target groups. The park can get more use and social value.	 The Spanish gate and the original shape of the bastions must be preserved.	
SITE	 The original city wall is still present underneath the building. Nothing has changed to this wall, they only made it visible.	 The city wall increases the value of the site, because the building is built on top of this existing wall.	 Pieces of the existing city wall are visible underneath the glass floor and in front of the building. This reminds us of the fortification which was built here.	 The plot is not fully built, there is space left for own interpretation: square, cycling shed, activities etc.				 The old city wall must be preserved and more highlighted	
SHAPE				 Het Stedelijk is a long, small building. This results in having a lot of direct daylight in the different rooms and it provides a good orientation in the building.					
SKIN (EXTERIOR)			 In the facade is a stone sign placed, which was in the old building above the main entrance. The stone shows a Latin text, which means 'O Gelukkigen die na geleen verdriet hier rede rijzen ziet, uw muren, poort en gevel'.	 The building meets all the requirements: sufficient insulation, enough direct daylight, roof lights and double glazing. This makes the building usable for different functions.				 The memorial stone and the city wall together tell a story about the history of the place. This must be kept and shown to visitors.	
STRUCTURE				 The interior walls are not part of the construction. This gives the flexibility to use the building for other functions.					
SPACE PLAN				 The space plan is a long linear line, which ensures an organized building and easy orientation.	 The staircase in the auditorium is similar to the glass façade of the auditorium. The staircase provides spatiality and is a clear feature of that time period, with the used materials and the thin, open character.				
SURFACES (INTERIOR)			 Some parts of the floor in the reception area and auditorium is made of glass, to show the original city wall underneath the building.						
SERVICES				 The building meets all the installation requirements. In the building is a combination of natural and mechanical ventilation and a good insulation. The building can therefore also be used for other functions.			 The installations offer opportunities for other functions in the building.		
SPIRIT OF PLACE		 The atmosphere of monofunctionality at the Isendoornstraat: now occupied by the schools and students. During history this street also consist of one function and one atmosphere: convent and later the barracks.			 If you look from the other side of the Grote Gracht, you feel the history of the city with his fortification, church, park and water. All separately designed, together they contribute to the historical feeling.			 The area needs to have functions, which are related to each other.	

7.3 Conclusion

These two diagrams show the most important values of Baudartius College and Het Stedelijk. For both buildings, the age and historical value is important for the surrounding and site. Baudartius College got several aesthetically and historical values on different scales, for example the shape, skin and surfaces.
Het Stedelijk has a lot of economical and use value.





Surrounding

For both schools, the surrounding has a high value. This is because the environment around the schools has often changed during history. Several traces from the past are still visible in the area, those elements are opportunities for the future: the view at the water and park, the Spanish gate and the garden of St. Elisabeth. Those treasures of the past should be preserved and should be fully appreciated in the future.

Function

Throughout history, the area at the Isendoornstraat was monofunctional. Several buildings along the street had a strong relationship with each other and had one strong character together. The main building was always located at the place of the current Baudartius College. Nowadays the whole area has fallen apart. Now there are buildings with the same function without any hierarchy. A coherent function and a character between the different buildings is needed in the future. It could be a world on its own, but building blocks should not be separate elements in the environment. The intimate character should be restored.

If the function of the schools disappears in the future, it will also mean that a large group of young people will disappear. The new function must attract this group of young people and connect them with different other target groups.

Isendoornstraat

Since World War II, the Isendoornstraat has been widened, with the consequence the intimate character of the street has been lost and forms a border between the northern and the southern part of Nieuwstad. The Isendoornstraat should get a new street profile that ensures a connection between the different areas and an intimate character again.

Park

The park is not used optimally, because of the location of the park behind big building blocks and because it does not belong to a specific building. For the redevelopment of both schools, coherence between the different buildings and a relation between buildings and park is needed. The plots of the buildings are the transition zone from city to park, so with the redevelopment of the buildings, the park can be more opened to the city or more closed.

Baudartius College

Baudartius College high historical value on building level. The building has many characteristics that are typical for the post-war period and for the architect Jan Rotshuizen. These elements can be seen in the interior: the main staircase contains a mosaic column, stairs made of natural stone and the floors are covered with tiles. The tiles in the staircase are more decorative than the tiles in the corridors, so the hierarchy within the building is clearly visible. Also the roof construction contains the characteristics of the post-war period, by

the use of different materials.
The post-war elements must be emphasized and integrated into the design. But you also have to consider what to retain. The historical values sometimes give a dilemma with the aesthetical value, for example the floor tiles. The tiles of the staircase are more beautiful than the tiles in the corridor. When you remove the tiles from the corridor, the hierarchy in the building is no longer visible.
The cultural value matrix shows more of these values, dilemmas, opportunities, and obligations.

Het Stedelijk

Not only the surrounding of Het Stedelijk is important for the building, but also the site. On the plot are remains of the old city wall. These are located in front of the main entrance and underneath the building (visible through glass openings in the floor). These remains can be more highlighted and should be better integrated into the new design.
The site of Het Stedelijk has a rich history, but the formal, rigorous character of the building does not reflect this history. Therefore, there is no aesthetic value related to the history.

There is a lot of use value. Installations are up-to-date, the building is provided with a good construction and the building is well insulated. This makes it possible to use the building for other functions. At the moment it has a school function, but the building does not has this character.

The cultural value matrix clearly shows all the values, opportunities, obligations and dilemmas in one diagram.

Need of redevelopment

Both school buildings ask for redevelopment, but for different reasons. The building of Baudartius College no longer meets the requirements of today. The installations are outdated, the façades are not insulated and the façade openings contain single glass. Together, this creates a bad indoor climate for students and teachers. The school is also too small for the amount of students and there are no more possibilities for extensions at the plot.

Het Stedelijk has to deal with a decreasing number of students, so in the future the building will be too large for the number of students. In addition, the building is dominant in the area, this has not a positive influence on the character around the Isendoornstraat, the park and the Grote Gracht.

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Images:

All photographs are made by ourself, unless a source is mentioned on the picture.

Maps:

2017: based on the map of dataset TOP10NL (2012), retreived from https://www.kadaster.nl/-/top10nl
1878: based on the cadastral map of Zutphen (Regionaal Archief, archive no.: SZU004000275)
1832: based on the cadastral map of Zutphen (Regionaal Archief, archive no.: SZU005000189)

Development of Zutphen: based on the maps in the book of M. Groothedde and J. Krijnen (2008)
Development of Nieuwstad: based on the maps in the publication of M. Groothedde (1993)

3D drawings of the development of Nieuwstad are based on the maps in the publication of M. Groothedde (1993).
The 3D drawing of Blaeu is used as underlayer, retreived from Regionaal Archief, archive no.: 0272_0088

Drawings:

For the drawings of Baudartius College, the drawings of ir J. Rotshuizen and C. Dekker are used,
archive no.: 0324-0965-**0001** till 0324-1965-**0022 (1950-1965)**,
archive no.: 0395-1948-**0001** till 0395-1948-**0030** (1975-1986),
archive no.: BAUD2000-**1** till BAUD2000-**5**-12 (2000),
reiceved from the city archive of Zutphen.

For the drawings of Het Stedelijk, the drawings of Architecten- en ingenieursbedrijf Kristinsson bv are used,
archive no.: SL98-**0001** till SL98-**0020 (**1998, January 30), received from the city archive of Zutphen.