

DESIGNING

JULIA COOLEN

DEAF

EXPLORE LAB

SCHOOLS



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PROBLEM STATEMENT

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Deaf and hard-of-hearing people do not have these auditory signals. They can not hear people approaching or use sounds to help them navigate. Their sense of hearing is absent or impaired. When a sense is absent or impaired, changes in the brain improve the use of the senses that are present (Napoli, 2014, p.211). Deaf and hard-of-hearing people compensate for their hearing loss through extraordinary sensory "super powers" (Holmes, 2017, p.181). One of these "super powers" of the deaf and hard-of-hearing is heightened visual sense. In his research Renard (2004) describes this as follows: "The deafness is not the world of silence, but that of the vision. It is through the vision that deaf people compensate deafness". Padden and Humphries talk about the same concept in their research on deaf culture but added more to it (2006, p.2): "Deaf people's practices of 'seeing' are not necessarily natural or logical, in the sense that they have a heightened visual sense, but their ways of 'seeing' follow from a long history of interacting with the world

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Deaf and hard-of-hearing have long been aware that their perception of the world is unique, experiences that may not be explained scientifically (Holmes, 2017, p.181). But this different perception and different way of approaching the world can also lead to anxiety. For example some deaf and hard-of-hearing people have a lot of worry in their daily lives: What if I don't hear something important? What if I misunderstand someone and embarrass myself? What if my hearing aid batteries run out (Ehrenfeld, 2021)? Problems that can have a lot impact on someone's confidence or self-esteem. Or if we look back at how our ancestors used sound to locate prey and predators, the inability to do so can lead to anxiety (Blesser & Salter, 2009). And if you cannot hear sirens, you cannot be warned. It can give deaf and hard-of-hearing people the feeling of being unsafe (99% Invisible, 2020). These feelings of anxiety and being unsafe also occur in the built environment. As stated in Coolen's research (2021) the deaf and hard-of-hearing live in world that, from an architectural standpoint, is designed for hearing people. Which causes a set of challenges for the deaf and hard-of-hearing: uneven pavements, unexpected steps - both of which can cause a person to fall when they are concentrating on a signing conversation-, narrow hallways, poor lighting and glares - both of which can make readings someone's face and lips more difficult-, to name only a few of these challenges (Hales, 2017). Furthermore spaces designed for the hearing, can give the deaf anxiety - when you cannot hear footsteps from around the

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Deaf and hard-of-hearing people do not have these auditory signals. They can not hear people or use sounds to help them navigate. Their sense of hearing is absent or impaired. When a sense is absent or impaired, changes in the brain improve the use of the senses that are present (Napoli, 2014, p.211). Deaf and hard-of-hearing people compensate for their hearing loss through extraordinary sensory "super powers" (Holmes, 2017, p.181). One of these "super powers" of the deaf and hard-of-hearing is heightened visual sense. In his research Renard (2004) describes this as follows: "The deafness is not the world of silence, but that of the vision. It is through the vision that deaf people compensate deafness". Padden and Humphries talk about the same concept in their research on deaf culture but added more to it (2006, p.2): "Deaf people's practices of 'seeing' are not necessarily natural or logical, in the sense that they have a heightened visual sense, but their ways of 'seeing' follow from a long history of interacting with the world

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When we experience a space, we experience it through our senses (Marinova, 2009). Sounds, smells and textures can strongly affect our experience of a space, making architecture more enjoyable. We use the information from our eyes, ears, nose and skin to understand a space and what is occurring there (Blesser & Salter, 2009). But what happens when one of your senses is absent or impaired? What happens if you are deaf?

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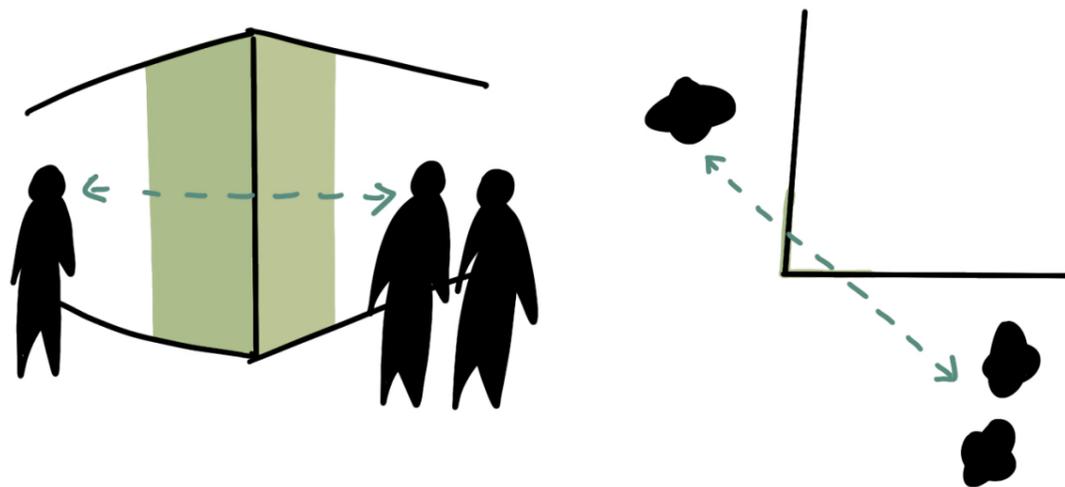


Figure 1. Julia Coolen. (2022). Mobility and Proximity. [Illustration]. Based on <http://inclusion.vn/deaf/deaf-space/>

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DEAFSPACE

The previous paragraph described one of the five design principles of DeafSpace (*Mobility and Proximity*). DeafSpace is about creating awareness and it seeks to design and improve spaces to be functional for the deaf and hard-of-hearing. One place where the challenges from the built environment were particularly prevalent was Gallaudet University in Washington, a university for the deaf and hard-of-hearing. In 2005 the university assigned architect Hansel Bauman to make a design for their new and improved campus. To make this design Bauman, who is not deaf, collaborated with the ASL (American Sign Language) Deaf Studies Department for over three years to create the architectural approach known as DeafSpace (Gallaudet University, n.d.). Together they developed a framework of more than 150 design elements that impacts how the deaf and hard-of-hearing experience a space. These elements aim to address not only the practical needs of communication, but also the need we all have to feel safe and secure in our surroundings. The 150 elements can be placed in what has become the five principles of DeafSpace (Gallaudet University, n.d.): *Mobility and Proximity, Space and Proximity, Sensory Reach, Light and Colour, and Acoustics* (Coolen, 2021).

As of now two buildings on Gallaudet's campus are using these principles of DeafSpace. One of these buildings is the main building of the campus: the *Sorenson Language and Communication Center, or SLCC*, by SmithGroup, with deaf architect George Balsley serving as a consultant. The other is the *Living and Learning Residence Hall 6* of Gallaudet University, or *LLRH 6*, by LTL Architects in collaboration with Quinn Evans Architects. At present these buildings of Gallaudet University are the first and only full-fledged projects based on DeafSpace design.

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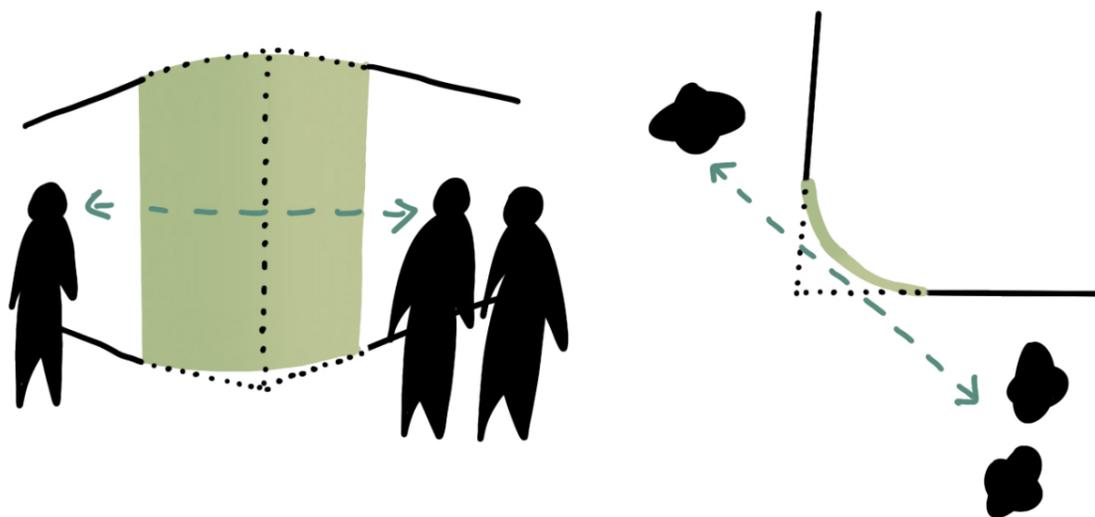


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Figure 2. Julia Coolen. (2022). Deaf and hard-of-hearing schools in the Netherlands sorted by organisation [Illustration].

but specifically on one target group: schools for the deaf and hard-of-hearing. The many problems deaf and hard-of-hearing face in life and the built environment also have major effects at schools for the deaf and hard-of-hearing. These schools are mainly located in buildings that happened to be empty or that already had an educational function anyway. These buildings have never been specifically designed for the deaf and hard-of-hearing, which causes a problem. If a school for deaf and hard-of-hearing pupils was never designed for them, how can these buildings reflect and be good for them?

Learning originates from the perception and concentration of pupils in classrooms (Sanoff, 2004). But, as established, the deaf and hard-of-hearing have a different perception, which leads to a different way of learning. Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Meaning that it is also with the eyes that the deaf and hard-of-hearing learn.

Deaf and hard-of-hearing children in the Netherlands can attend a special school for the deaf and hard-of-hearing, also called cluster-2 schools (Doof.nl, 2018). This can be either primary or secondary education. There are four types of school organisations in the Netherlands that offer education for the deaf and hard-of-hearing: Royal Kentalis, The Royal Auris Group, VitusZuid and VierTaal. Of these four, Kentalis is the largest in the Netherlands. Figure 2 shows an overview of the locations of these schools, both primary or secondary. They are marked per school organisation. The K stands for Kentalis, A for Auris and VZ for VitusZuid and VT for VierTaal.

What is immediately apparent is the unequal distribution of schools throughout the country. On the Wadden islands, there is not a single school for the deaf and hard-of-hearing, and in the provinces of Zeeland, Gelderland, Flevoland, Overijssel, Drenthe, Groningen, Friesland and Limburg schools for the deaf and hard-of-hearing are only found in the larger cities. Meaning that if you do not live in one of these areas with schools, you have to travel a long way to attend a deaf or hard-of-hearing school. Furthermore, each school organisation has its own educational method and approach, and given the freedom of choice of parents, it is therefore also possible that one school will be better suited for a child than another. For this reason, it is possible that the closest school is not the most suitable school. As a result, travel times may be even longer.

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Deaf and hard-of-hearing children in the Netherlands can attend a special school for the deaf and hard-of-hearing, also called cluster-2 schools (Doof.nl, 2018). This can be either primary or secondary education. There are four types of school organisations in the Netherlands that offer education for the deaf and hard-of-hearing: Royal Kentalis, The Royal Auris Group, Vituzuid and VierTaal. Of these four, Kentalis is the largest in the Netherlands. Figure 2 shows an overview of the locations of these schools, both primary or secondary. They are marked per school organisation. The K stands for Kentalis, A for Auris and VZ for Vituzuid and VT for VierTaal.

What is immediately apparent is the unequal distribution of schools throughout the country. On the Wadden islands, there is not a single school for the deaf and hard-of-hearing, and in the provinces of Zeeland, Gelderland, Flevoland, Overijssel, Drenthe, Groningen, Friesland and Limburg schools for the deaf and hard-of-hearing are only found in the larger cities. Meaning that if you do not live in one of these areas with schools, you have to travel a long way to attend a deaf or hard-of-hearing school. Furthermore, each school organisation has its own educational method and approach, and given the freedom of choice of parents, it is therefore also possible that one school will be better suited for a child than another. For this reason, it is possible that the closest school is not the most suitable school. As a result, travel times may be even longer.



Figure 2. Julia Coolen. (2022). Deaf and hard-of-hearing schools in the Netherlands (sorted by location from north to south).

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In the Netherlands, deaf and hard-of-hearing pupils can attend a special school for the deaf and hard-of-hearing (Sanoff, 2018). This can be either primary or secondary education. There are four special schools in the Netherlands that offer education for the deaf and hard-of-hearing: Kentalis, Auris, VitusZuid and VierTaal. Of these four, Kentalis is the largest. Figure 2 shows the locations of these schools, both primary or secondary.

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School organisations

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- A** Auris
- VZ** VitusZuid
- VT** VierTaal



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Figure 2. Julia Coolen. (2022). Deaf and hard-of-hearing schools in the Netherlands sorted by organisation [Illustration].

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RESEARCH QUESTIONS

The built environment has to change and be more inclusive. Deaf and hard-of-hearing pupils are visual individuals and the design of a school for the deaf and hard-of-hearing should be based on that aspect. Within this research it will be studied how to make this change happen, and how to design a deaf school, by means of the following question: *How to design an appropriate school for the deaf and hard-of-hearing?*

SUB QUESTIONS

To help answering the main question the following sub questions will be resolved:

1. *What are the problems deaf and hard-of-hearing people can encounter in daily live?*
2. *What are ingredients for a PvE that can be abstracted from good and bad examples of schools for the deaf and hard-of-hearing?*
3. *How to translate social and behaviour requirements into design guidelines?*

METHOD

To answer all the research questions different methods will be used. For the first two sub questions, *What are the problems deaf and hard-of-hearing people can encounter in daily live?* and *What are ingredients for a PvE that can be abstracted from good and bad examples of schools for the deaf and hard-of-hearing?*, fieldwork will be done at Dutch schools for the deaf and hard-of-hearing by means of observations, interviews and mapping. Interviews will be held with both pupils, teacher and deaf and hard-of-hearing people not associated with schools. During the observations, a classroom, multiple hallways, the auditorium, outdoor areas and in some cases the library are examined on as to how the pupils and teachers use these spaces. Next to this a literature study on the deaf community and Gallaudet University and its principles of DeafSpace will take place. This will all lead to the method for the third sub question, *How to translate social and behaviour requirements into design guidelines?*, a pattern language. The elements of this language are units called patterns. Each pattern describes, by means of text and pictures, a problem that occurs in deaf schools and/or in the deaf community. The solution to that problem is then outlined.

THEORETICAL FRAMEWORK

No typical experience of being deaf exists, and deaf people do not form one unified social group. Every deaf person and also every hard-of-hearing person relates to their hearing loss in a different way (Holmes, 2017, p.175). How people 'label' or identify themselves is personal and may reflect someone's identification with the deaf and hard-of-hearing community, the extent to which they can hear, or the relative age at which they became deaf or hard-of-hearing (National Association of the Deaf - NAD, n.d.). Therefore, when talking about deafness in research and in life, many terms are being used: *deaf*, *Deaf*, *hard-of-hearing*, *late-deafened* and *people with hearing loss*, to name only a few. There is however, a difference between these terms. The term *deaf* is used to describe the condition of deafness and by some people the condition of being hard-of-hearing. The term *Deaf*, with a capital D, describes people that are part of the deaf community. It describes the cultural practises (Padden & Humphries, 2006, p.10). The term *hard-of-hearing* is used to describe people with a partial hearing loss. *Late-deafened* is sometimes used by people who later in life became deaf. Other people use the term *people with hearing loss* to describe people who are somewhere in the spectrum from being deaf to having a slight hearing loss, thinking this is inclusive and efficient (National Association of the Deaf - NAD, n.d.).

In this research the terms *deaf* and *hard-of-hearing* are used. This choice was made for the reason that deafness and hard-of-hearing are two different things: one does not describe the other. The term *Deaf*, with a capital D, is not used, because in this research no assumptions are made as to whether or not someone is part of the deaf community or feels connected to it.

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Existing research and literature on being deaf and hard-of-hearing mainly focusses on deaf culture, including research by Stebnicki and Coeling (1999) and Humphries and Padden (2006) and literature by Ladd (2003), and what it means to be deaf or hard-of-hearing, such as research by Bauman and Murray (2014) and Holmes (2017). Some research has been done on how to create better spaces for the deaf and hard-of-hearing, such as research by Hope (2017), however this research does not specifically talk about designing schools for the deaf and hard-of-hearing. More specific research on schools for the deaf and hard-of-hearing talk about the needs, abilities or social problems deaf and hard-of-hearing children face, including literature

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FIELDWORK



Figure 4. Julia Coolen. (2022). Visited deaf schools [Illustration].

FIELDWORK

As explained, fieldwork has been conducted as research. This fieldwork was conducted in the form of school visits during which observations and interviews were done. A total of six schools in the Netherlands have been visited, as shown in figure 4:

- Auris Dr. M. Polanoschool, Rotterdam
- Kentalis College Zoetermeer, Zoetermeer
- Kentalis Guyot VSO, Haren
- Kentalis Guyot SO, Haren
- Kentalis Guyot VSO Vries, Vries
- Kentalis Compas College, Sint-Michielsgestel

In addition to the school visits, an interview was held with a hard-of-hearing student from Delft University of Technology and contact has been established with the architect, Avesaa Anton Vermeulen Architects, of the new building of the Kentalis Compas College. An overview of the interview questions and an overview of all interviewed persons can be found in Appendix I and II.

SCHOOL VISITS

The first school visited was the Dr. M Polano primary school in Rotterdam of the Auris school organisation. Here, an interview and a tour with the director took place. After that, a visit took place to the Kentalis College Zoetermeer, a secondary school with practical education. Here, a tour and an interview with the PE teacher/team leader, interviews with five pupils and one teacher took place. Next, a visit was made to three schools and a boarding house in Haren and Vries, Groningen: Kentalis Guyot VSO, SO, VSO Vries and Het Verblijf. First of all, a visit was paid to the VSO. There are four educational directions at this school: day care, work, vmbo and havo. During the visit, a tour took place, interviews were held with the director, a pupil and a teacher, and observations were made. Observations were made of the auditorium during the breaks and a free period, a gym class, a maths lesson and the end of the school day when pupils are picked up by taxis. After this, a visit was made to the boarding house of the VSO, called Het Verblijf. Some pupils live here during the week, since they live too far away to travel back and forth every day. Two interviews were conducted here with the supervisors of one of the houses. Next, Kentalis Guyot SO, the primary school



Figure 4. Julia Coolen. (2022). Visited deaf schools [Illustration].

1. Dr. M. Polanoschool
2. Kentalis College
3. Kentalis Guyot VSO
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on the same site as the VSO, was visited. A tour and interview with the concierge took place, a pupil was interviewed and observations were made. Observed were a lesson of group 5/7 DSH, *doof en slechthorend education*, a lesson of group 5/7 CMB, *communiatief meervoudig beperkt*, a short joint lesson in the auditorium and the two schoolyards for the smaller and bigger pupils. Then a visit was paid to Kentalis Guyot VSO Vries, a secondary school for CMB pupils. In addition to a language development disorder or hearing loss, these pupils also have developmental delays or mental or physical disabilities. A tour of the school, three interviews with teachers and observations took place. Observed were a lesson and one of the two daily walks of one of the groups. The last school visit was to the Kentalis Compas College in Sint-Michielsgestel, a secondary school with two directions: practical education and (sheltered) work. It is important to mention that this school will move to a temporary building after the summer until their new school in Zaltbommel, specially designed for them, will be finished. During the school visit, there was a tour and interview with the concierge, one teacher and three pupils were interviewed, and observations were made. Observed were a psycho-education lesson, a math lesson, a mentor lesson and the auditorium during the breaks.

RESULTS

In the end, the schools provided me with a lot of data. From each school visit, I have the interviews, notes from observations, many photos with analyses (as can be seen on the left) and analysed floor plans. The pattern language was developed on the basis of the data from these school visits. The results of these school visits can therefore be found in the pattern language that follows.

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PATTERN LANGUAGE

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As stated, the findings of the school visits, interviews and observations have been translated into a pattern language. The elements of this language are units called patterns. Each pattern describes, by means of text and pictures, a problem that occurs in deaf schools and/or in the deaf community. The solution to that problem is then outlined (Alexander, 1977; 1980; 1985). These patterns form guidelines on how to design a deaf school. These guidelines can be applied in the design, but can also be expanded while designing and testing through design. Some will be specific for a high school for the deaf and hard-of-hearing, others more general for deaf schools or even general for reducing stress or increasing communication and perception by deaf people in architecture. The guidelines will function as a hand book and inspiration for the design process of a high school for the deaf and hard-of-hearing, located in the Netherlands.

STRUCTURE OF PATTERNS

The patterns each consist of a number, a statement and a further explanation or clarification of that statement, followed by a solution. Each pattern is further supported by means of an image. These images were taken during the visits to the six different schools. Furthermore, for each pattern is noted to which other patterns it relates. The complexity of the pattern language becomes apparent from the amount of related patterns. This complexity becomes fully apparent at the end of the pattern language when all patterns are translated into two graphs, one indicating the level of abstraction and scale and one indicating the different relations. Next to this the used sources for a pattern are mentioned. For example, reference is made to when and which literature was used to create a pattern and when a pattern emerged from fieldwork. In the cases where a pattern emerged from fieldwork, it is mentioned whether this came from an interview or observation as well as from which school. Additionally, each pattern is classified with different icons. These icons indicate what each pattern is about, for example a pattern can be about distractions, classrooms and/or about acoustics. An overview of these icons follows next. Lastly, to create order in the patterns, all 71 patterns have been placed in 10 categories:

■ acoustics	■ location
■ advice	■ sight lines & overview
■ furniture	■ spaces
■ kiss & ride	■ visual school
■ lighting	■ walking route

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furniture	spaces
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lighting	walking route

de vindingen van de scholenbezoeken zijn vertaald naar een patronentaal

elk patroon beschrijft een probleem in het dovenonderwijs

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STRUCTURE OF PATTERNS

The patterns each consist of a number, a statement and a further explanation or clarification of that statement, followed by a solution. Each pattern is further supported by means of an image. These images were taken during the visits to the six different schools. Furthermore, for each pattern is noted to which other patterns it relates. The complexity of the pattern language becomes apparent from the amount of related patterns. This complexity becomes fully apparent at the end of the pattern language when all patterns are translated into two graph, one indicating the level of abstraction and scale and one indicating the different relations. Next to this the used sources for a pattern are mentioned. For example, reference is made to when and which literature was used to create a pattern and when a pattern emerged from fieldwork. In the cases where a pattern emerged from fieldwork, it is mentioned whether this came from an interview or observation as well as from which school. Additionally, each pattern is classified with different icons. These icons indicate what each pattern is about, for example a pattern can be about distractions, classrooms and/or about acoustics. An overview of these icons follows next. Lastly, to create order in the patterns, all 71 patterns have been placed in 10 categories:

- | | |
|-------------|------------------------|
| acoustics | location |
| advice | sight lines & overview |
| furniture | spaces |
| kiss & ride | visual school |
| lighting | walking route |

de vindingen van de scholenbezoeken zijn vertaald naar een patronentaal

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de oplossing voor het probleem wordt gegeven

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**de vindingen van de scholenbezoeken zijn vertaald
naar een patronentaal**

**elk patroon beschrijft een probleem in het
dovenonderwijs**

de oplossing voor het probleem wordt gegeven

**de patronen vormen richtlijnen voor het ontwerpen van
een dovenschool**

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**deze richtlijnen fungeren als een handboek over hoe je
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hoe zit een patroon in elkaar?

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80

EXTRA DESKS

P 17

STATEMENT

Give each pupil two desks.

CLARIFICATION

During explanations, pupils sit in table arrangement facing the teacher. This arrangement is not always suitable for independent work or group work. Desks must be moved if this is the case. This results in lost learning time.

SOLUTION

To prevent the desks from moving, it is useful to have extra desks in the room. In this way, every pupil has two desks: one for paying attention during the lesson and one for independent work or group work.

RELATION

P 08 varying number of pupils

P 09 deaf education is diverse

P 14 flexible classrooms

P 16 table arrangement

P 56 additional lighting

SOURCE

Fieldwork: interviews Dr. M. Polanoschool and Kentalis College Zoetermeer

Fieldwork: observations Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO and SO

81



een patroon bestaan uit: titel



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een patroon bestaan uit: nummer



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een patroon bestaan uit: uitleg van een probleem



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een patroon bestaan uit: oplossing op dat probleem



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een patroon bestaan uit: afbeelding afkomstig van de schoolbezoeken



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een patroon bestaan uit: relatie met andere patronen



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een patroon bestaan uit: bron



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een patroon bestaan uit: iconen waar een patroon over gaat



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een patroon bestaan uit: categorie



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81



ONTWERP

LISTEN TO THE DEAF AND HARD-OF-HEARING

P 13

STATEMENT

Listen to the deaf and hard-of-hearing, they are the experts.

CLARIFICATION

Quite often, designs are made for specific target groups without really listening to them. Such has also often been the case with deaf schools. An example of this is Kentalis College Zoetermeer. The architects did not listen carefully to the deaf and hard-of-hearing at the school, resulting in many problems with the design. If a school for deaf and hard-of-hearing pupils was never designed while listening to them, how can these buildings reflect and be good for them?

SOLUTION

When designing for a specific target group, it is important to listen to this target group. The deaf and hard-of-hearing themselves have the most knowledge about what does or does not work for them. Take this into account, start the conversation and listen.

RELATION

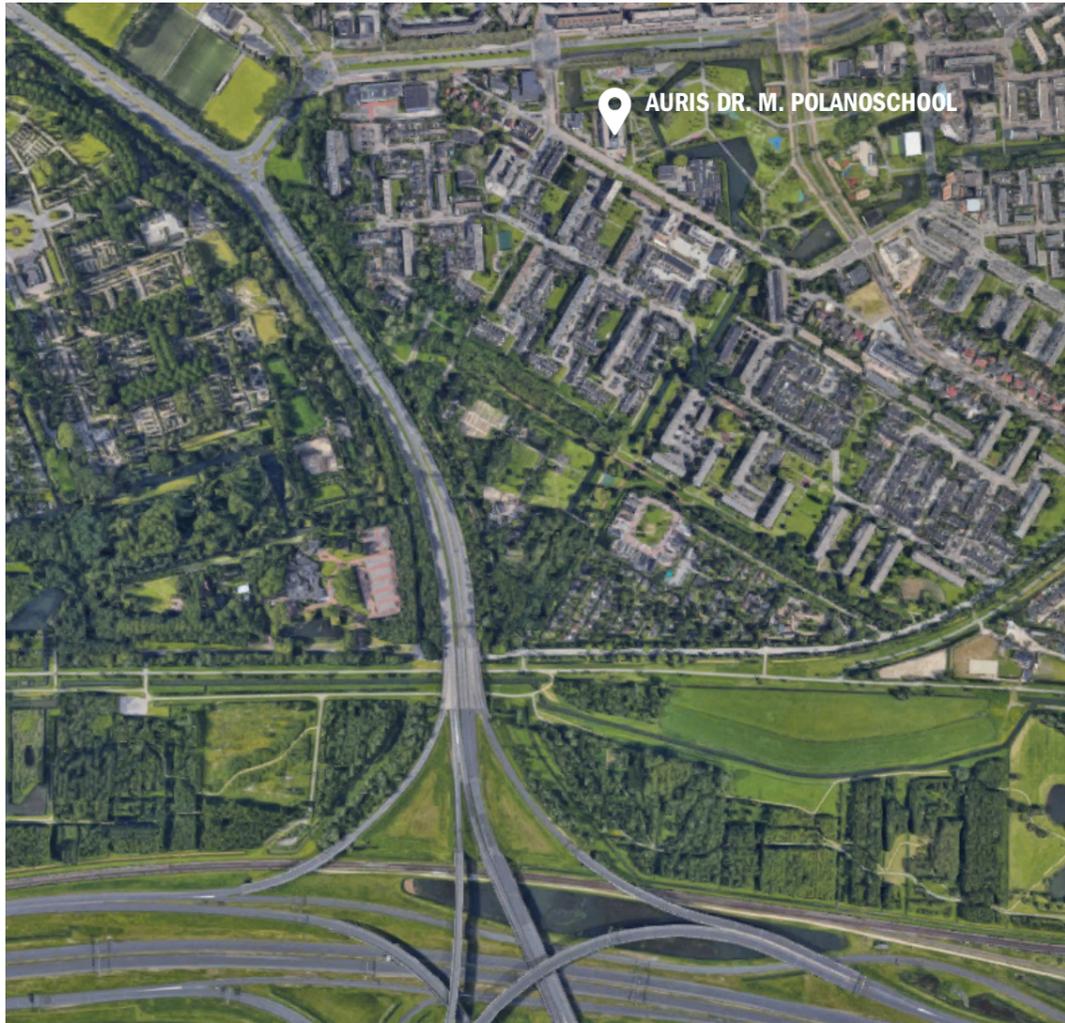
P 65 hallway and classroom floors separate

SOURCE

Fieldwork: interviews Kentalis College Zoetermeer and Kentalis Compas College

Fieldwork: observations Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries





70

CLOSE TO HIGHWAY

P 12

STATEMENT

A school must have a good and fast connection to the highway.

CLARIFICATION

Due to the small number of deaf schools and the uneven distribution in the Netherlands, almost all pupils live far away from school. They therefore travel by taxi, with travel times being up to two hours. Furthermore, if a deaf school is not well connected to a highway, it means that the taxis have to drive a long distance before they reach the highway. Often these places get very busy during rush hour and are therefore prone to traffic jams, making travel times even longer.

SOLUTION

To reduce travel times, it is important to locate the school where there is a good and fast connection to the highway. The closer a school is to a highway, the faster pupils will be at home.

RELATION

P 10 primary and secondary school in one place

P 11 close to hearing school

P 37 kiss & ride

SOURCE

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

Research: Dutch deaf schools

71





66

PRIMARY AND SECONDARY SCHOOL IN ONE PLACE

P 10

STATEMENT

A primary and secondary school must be on the same site.

CLARIFICATION

Deaf schools often have children who, in addition to an auditory restriction, also have other disabilities. This is also called CMB education, *communicatief meervoudige beperking* (Kentalis, n.d.-b). Among the CMB pupils there are some pupils with a low IQ. For them the transition between primary and secondary school is difficult.

SOLUTION

To make the transition between primary and secondary school easier, it is helpful if the two are in the same location. Moreover, it is also beneficial for the cooperation between the schools.

RELATION

P 11 close to hearing school

P 12 close to highway

SOURCE

(Kentalis, n.d.-b)

Fieldwork: interviews Kentalis College Zoetermeer, Kentalis Guyot VSO, SO and VSO Vries

67





68

CLOSE TO A HEARING SCHOOL

P 11

STATEMENT

In order to establish cooperation with the hearing world, it is important that a deaf school is located close to a hearing school.

CLARIFICATION

The deaf world and the hearing world are two different worlds and they hardly mix. In the hearing world, which is based on auditory communication and signals, the deaf are at a disadvantage. But vice versa, hearing people are at a disadvantage in the deaf world that is based on the visual with also a visual language (Tijsseling, 2018). However, both worlds benefit from each other. They can learn from each other. In order to do that, a bridge between the two worlds has to be built.

SOLUTION

This bridge is also important to build in schools. Hearing and deaf pupils can learn from each other. For example, deaf pupils can learn to communicate with hearing pupils and hearing pupils with deaf pupils. In order to establish cooperation with the hearing world, it is important that a deaf school is located close to a hearing school. Through cooperation, it can be achieved that deaf people are no longer excluded from the hearing world, but become a part of it.

RELATION

P 10 primary and secondary school in one place

P 12 close to highway

SOURCE

(Tijsseling, 2018)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO and SO

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LOCATION

GELDERLAND

- Apeldoorn
- Deventer

FLEVOLAND

- Lelystad
- Almere
- Emmeloord

FRIESLAND

- Leeuwarden
- Drachten
- Heereveen

LIMBURG

- Venlo
- Roermond
- Maastricht



School organisations
K Kentalis
A Auris
VZ VitusZuid
VT VierTaal

LOCATIEVEREISTEN

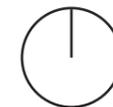
- dichtbij snelweg
- dichtbij horende school
- plek voor basis- en middelbare school



LOCATIEVEREISTEN

- dichtbij snelweg
- dichtbij horende school
- plek voor basis- en middelbare school





OMGEVING
1:5000-niveau

LOCATIEVEREISTEN

- dichtbij snelweg



OMGEVING
1:5000-niveau

LOCATIEVEREISTEN

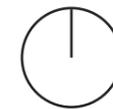
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LOCATIEVEREISTEN

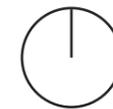
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OMGEVING
1:5000-niveau

LOCATIEVEREISTEN

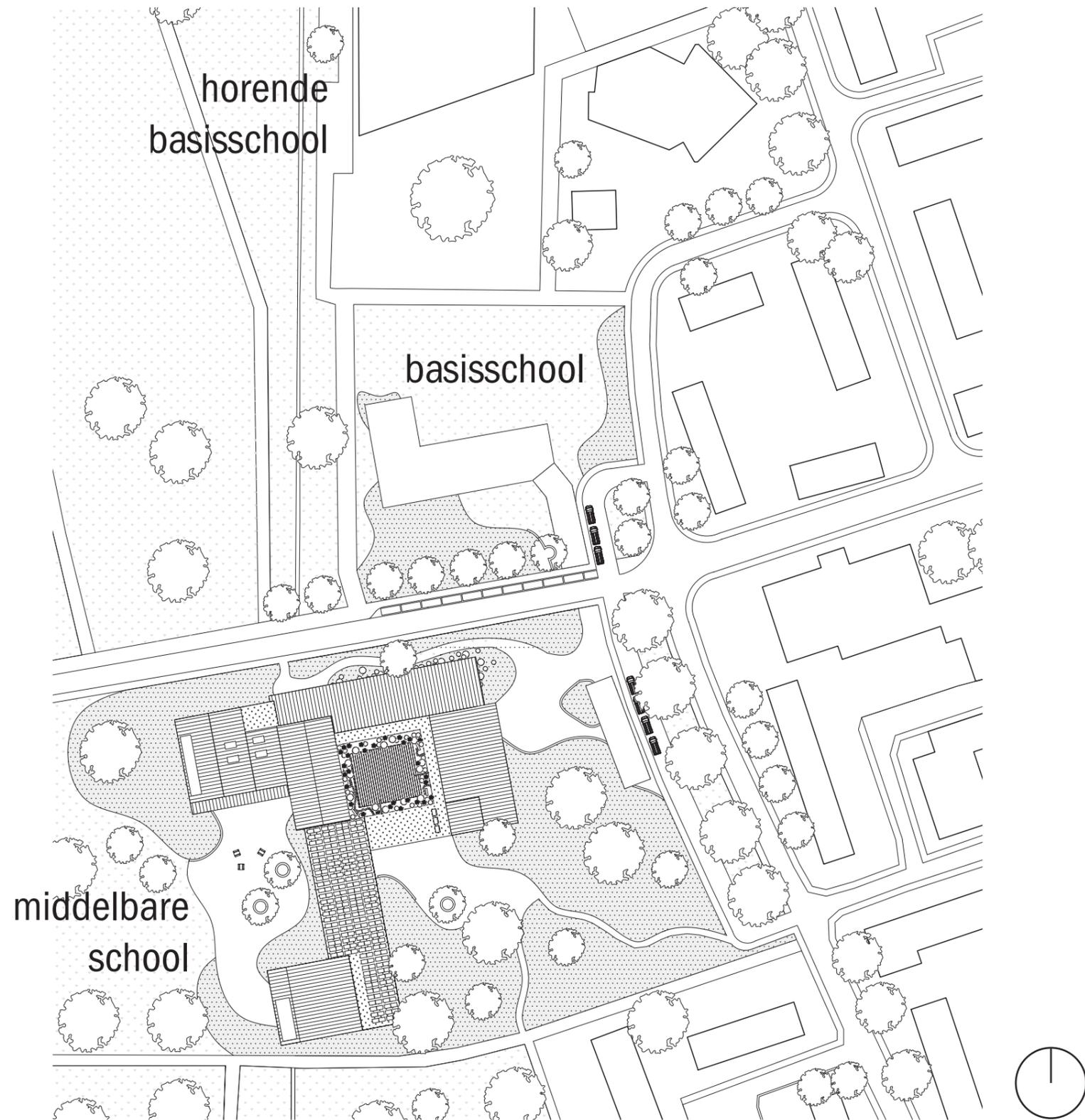
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OMGEVING
1:5000-niveau

LOCATIEVEREISTEN

- dichtbij snelweg
- dichtbij horende school
- plek voor basis- en middelbare school



OMGEVINGSPLAN

1:1000-niveau



120

KISS & RIDE

P 37

STATEMENT

A deaf school must have a Kiss & Ride to pick up and drop off pupils.

CLARIFICATION

Due to the small number of deaf schools and the uneven distribution in the Netherlands, almost all pupils live far away from school. They therefore travel by taxi, with travel times being up to two hours. This translates to a Kiss & Ride for a deaf school, where pupils can be dropped off and picked up. Where the Kiss & Ride at a hearing school is a luxury, for a deaf school it is an essential component.

SOLUTION

To accommodate the large number of pupils travelling by taxi, it is important that a deaf school has a Kiss & Ride. It is important that the Kiss & Ride is a safe place for pupils. The Kiss & Ride must have a clear route and clear pick-up/drop-off points. It is also essential that there is good flow of traffic possible to prevent traffic jams. A solution for this can be a wide Kiss & Ride. Lastly a good overview of the Kiss & Ride is essential for deaf pupils in order to feel safe and be able to read the area.

RELATION

- P 12 close to high way
- P 38 kiss & ride parking area
- P 39 parking
- P 69 colours on the road

SOURCE

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries
 Fieldwork: observation Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries
 Research: Dutch deaf schools

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122

KISS & RIDE WAITING AREA

P 38

STATEMENT

The Kiss & Ride must have a waiting area that is both safe and resistant to all weather conditions.

CLARIFICATION

Due to the small number of deaf schools and the uneven distribution in the Netherlands, almost all pupils live far away from school. They therefore travel by taxi, with travel times being up to two hours. This translates to a Kiss & Ride for a deaf school, where pupils can be dropped off and picked up. Where the Kiss & Ride at a hearing school is a luxury, for a deaf school it is an essential component. After school when pupils are waiting to be picked up, pupils wait outside the school on the curb. This can make for unsafe situations.

SOLUTION

In order to keep the Kiss & Ride a safe and usable place it is important to have a waiting area near the Kiss & Ride. This waiting area must provide an overview and sight lines over the entire Kiss & Ride, so that pupils can easily see if their taxi has arrived. Furthermore, it is convenient if this waiting area is sheltered from rain, cold and sun, since the Kiss & Ride is in use all year round in all seasons.

RELATION

P 37 kiss & ride

SOURCE

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer and Kentalis Guyot VSO

Fieldwork: observation Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

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124

PARKING

P 39

STATEMENT

It is useful to have parking areas near the Kiss & Ride where taxis that arrive too early can park and wait.

CLARIFICATION

Due to the small number of deaf schools and the uneven distribution in the Netherlands, almost all pupils live far away from school. They therefore travel by taxi, with travel times being up to two hours. This translates to a Kiss & Ride for a deaf school, where pupils can be dropped off and picked up. As for the taxis, there are situations where taxi's arrive before the to be picked up pupils.

SOLUTION

In order to prevent congestion on the Kiss & Ride, it is useful to have parking areas near the Kiss & Ride where the taxis that arrive too early can park and wait.

RELATION

P 37 kiss & ride

SOURCE

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer and Kentalis Guyot VSO

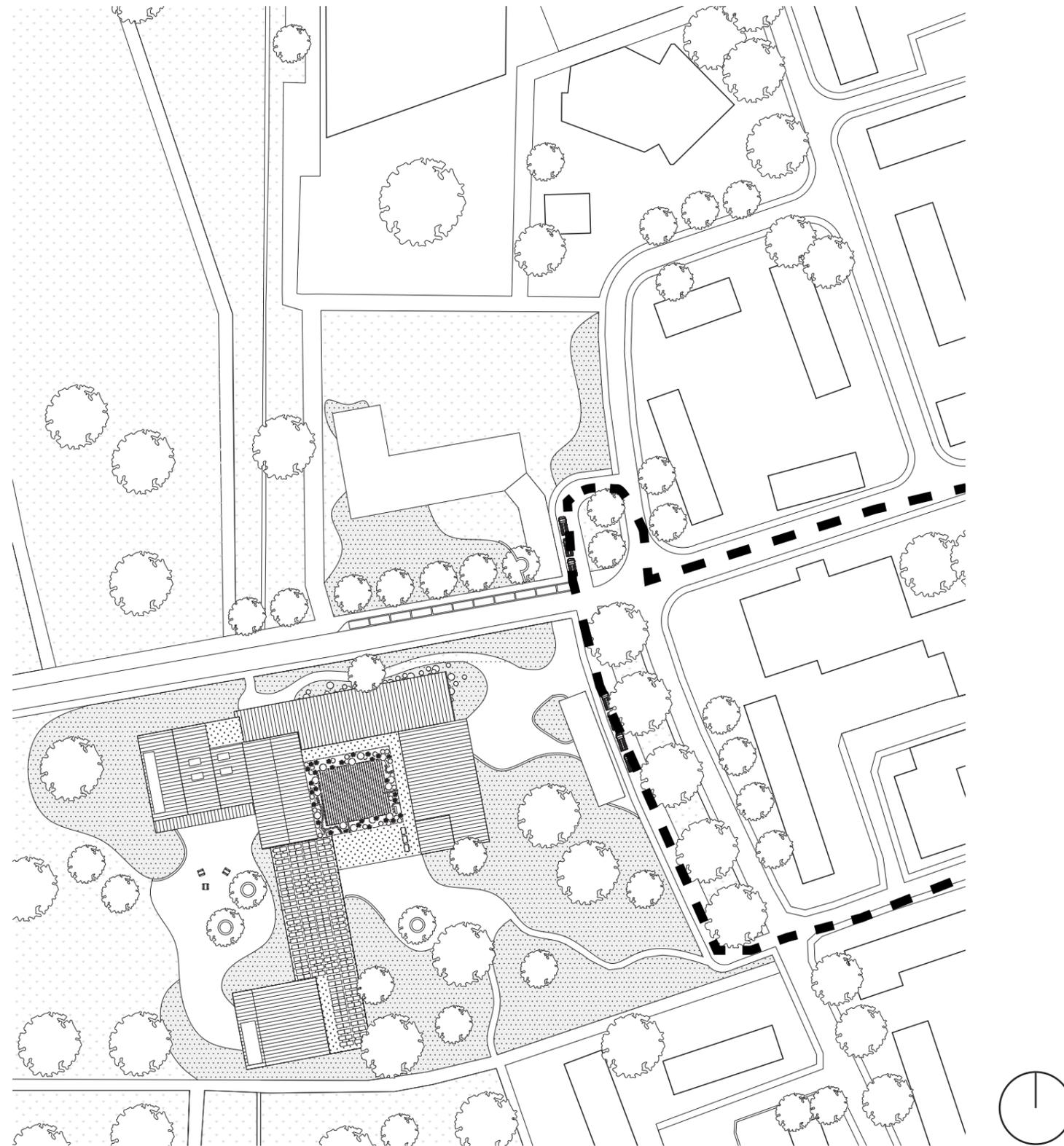
Fieldwork: observation Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

125



LOCATIEVEREISTEN

- kiss & ride



OMGEVINGSPLAN

1:1000-niveau

LOCATIEVEREISTEN

- kiss & ride
- wachtruimte



OMGEVINGSPLAN

1:1000-niveau

LOCATIEVEREISTEN

- kiss & ride
- wachtruimte
- parkeren



OMGEVINGSPLAN

1:1000-niveau



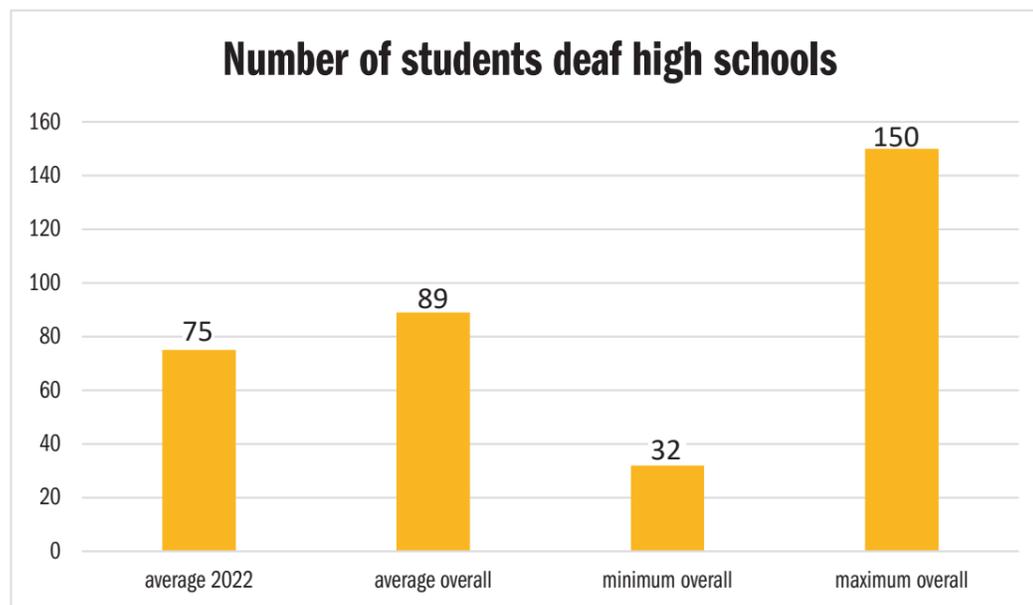
IMPRESSIE
kiss&ride



IMPRESSIE
kiss&ride



IMPRESSIE
kiss&ride



VARYING NUMBER OF PUPILS

P 08

STATEMENT

In deaf education, the number of pupils per class varies. Classrooms must be designed accordingly.

CLARIFICATION

The number of pupils per class at a deaf school is small. A group consists of 7 pupils on average (Doof.nl, 2018). However, this varies enormously. The number can be as high as 14 and as low as 3.

SOLUTION

Classrooms must be designed with this varying number of pupils in mind. Therefore, a classroom must be flexible.

RELATION

P 09 deaf education is diverse

P 14 flexible classrooms

P 17 extra desks

SOURCE

(Doof.nl, 2018)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries



AANTALLEN

200 leerlingen

32 personeelsleden

18 lokalen

NIVEAUS

vmbo-b, mavo, havo, vwo

VAKKEN

nederlands

engels

frans

duits

geschiedenis

aardrijkskunde

wiskunde

biologie

natuurkunde

scheikunde

techniek

tekenen

gym

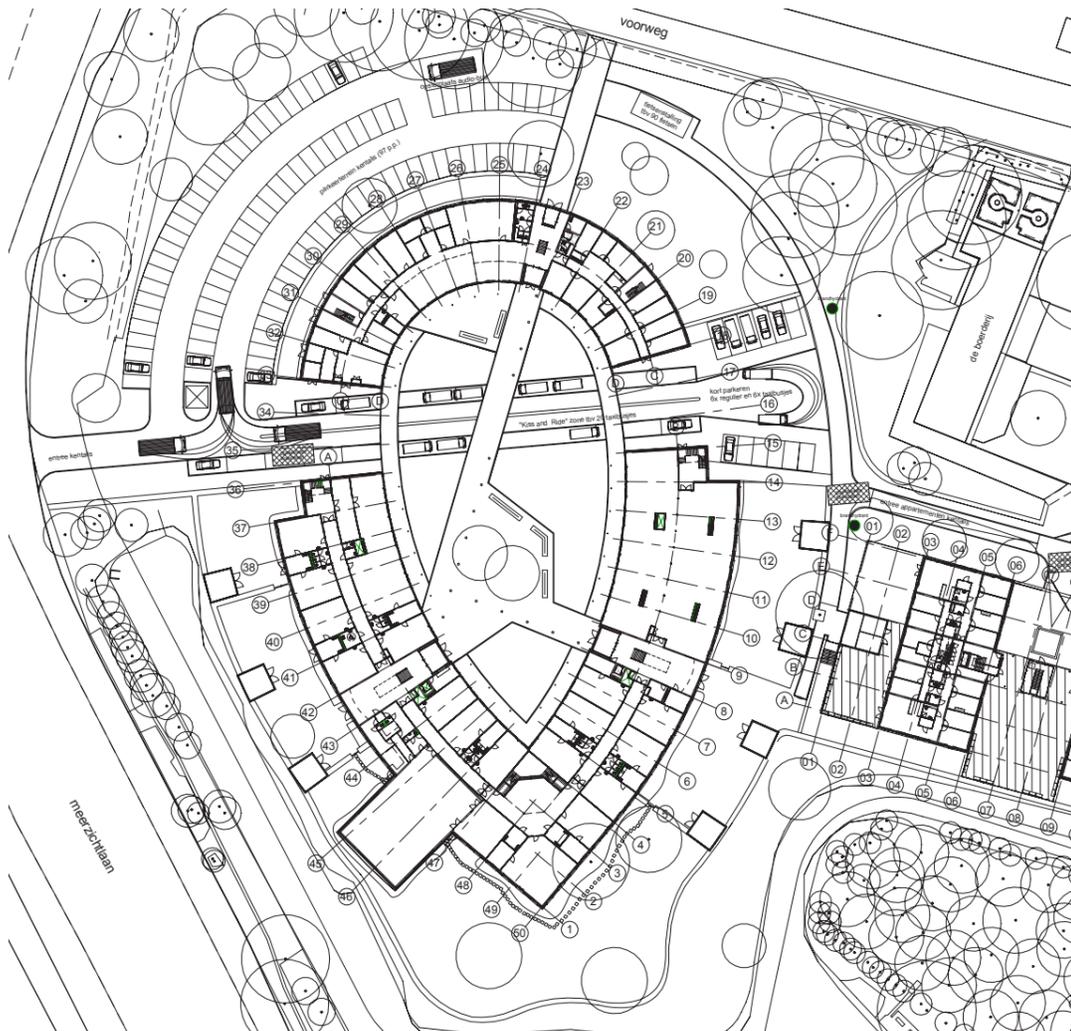
koken

natuur

psyco-educatie

GROOTTE SCHOOL

aantal leerlingen



178

CLEAR LAYOUT

P 66

STATEMENT

The layout of the school must be easy to understand for all pupils.

CLARIFICATION

Deaf schools often have children who, in addition to an auditory restriction, also have other disabilities. This is also called CMB education, *communicatief meervoudige beperking* (Kentalis, n.d.-b). To be precise, two types of education are distinguished in deaf schools: CMB and DSH, *doof en slechthorend*. Schools can be difficult for CMB pupils with intellectual disabilities to follow and understand. They do not always know where to go and get lost.

SOLUTION

The layout of the school must be easy to understand for all pupils. This can be achieved by logical grouping. For example, the auditorium must be centred, the school's additional functions placed together and the upper and lower grades separated.

RELATION

P 67 clear walking routes

P 68 walking lines

SOURCE

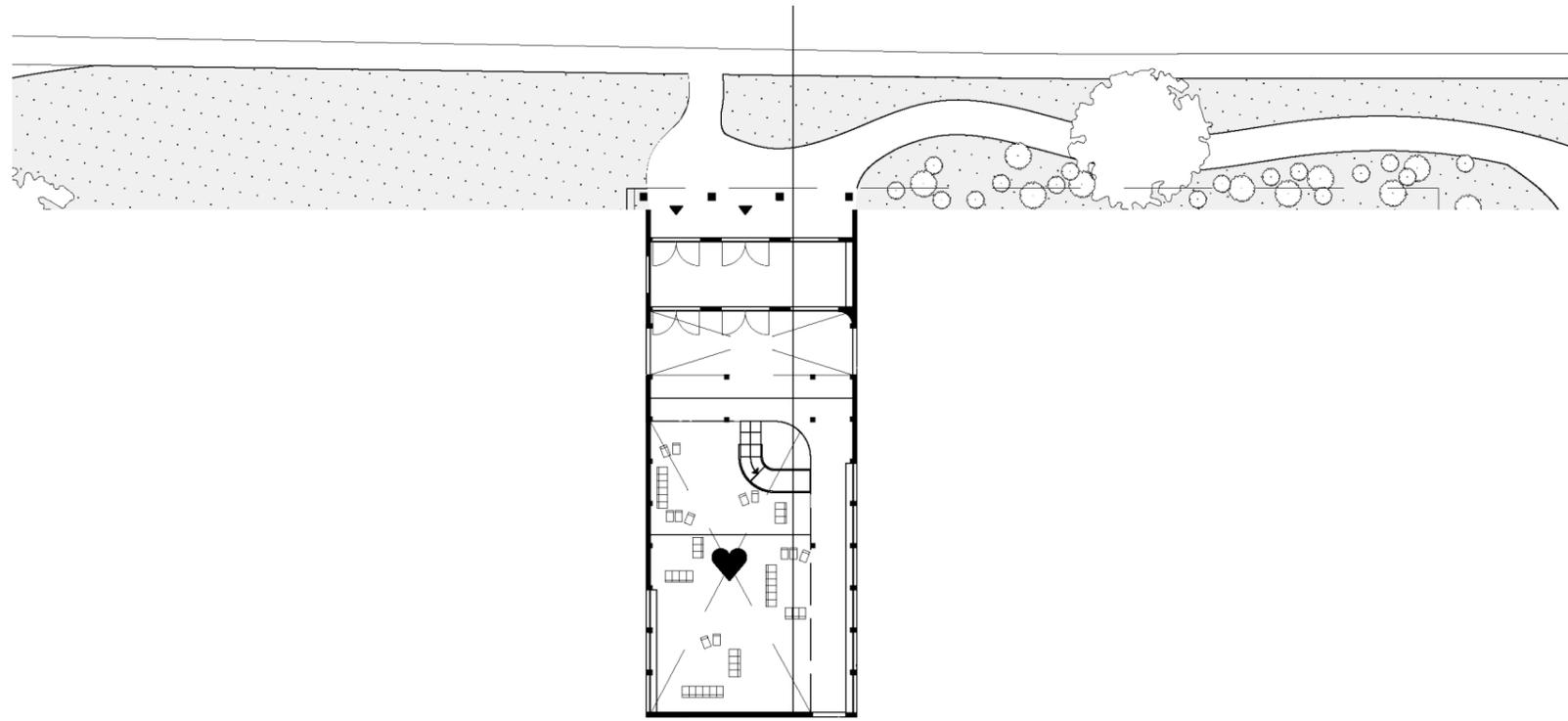
(Kentalis, n.d.-b)

Fieldwork: interviews Kentalis College Zoetermeer, Kentalis Compas College and Kentalis Guyot SO

Fieldwork: observations Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO and SO

179



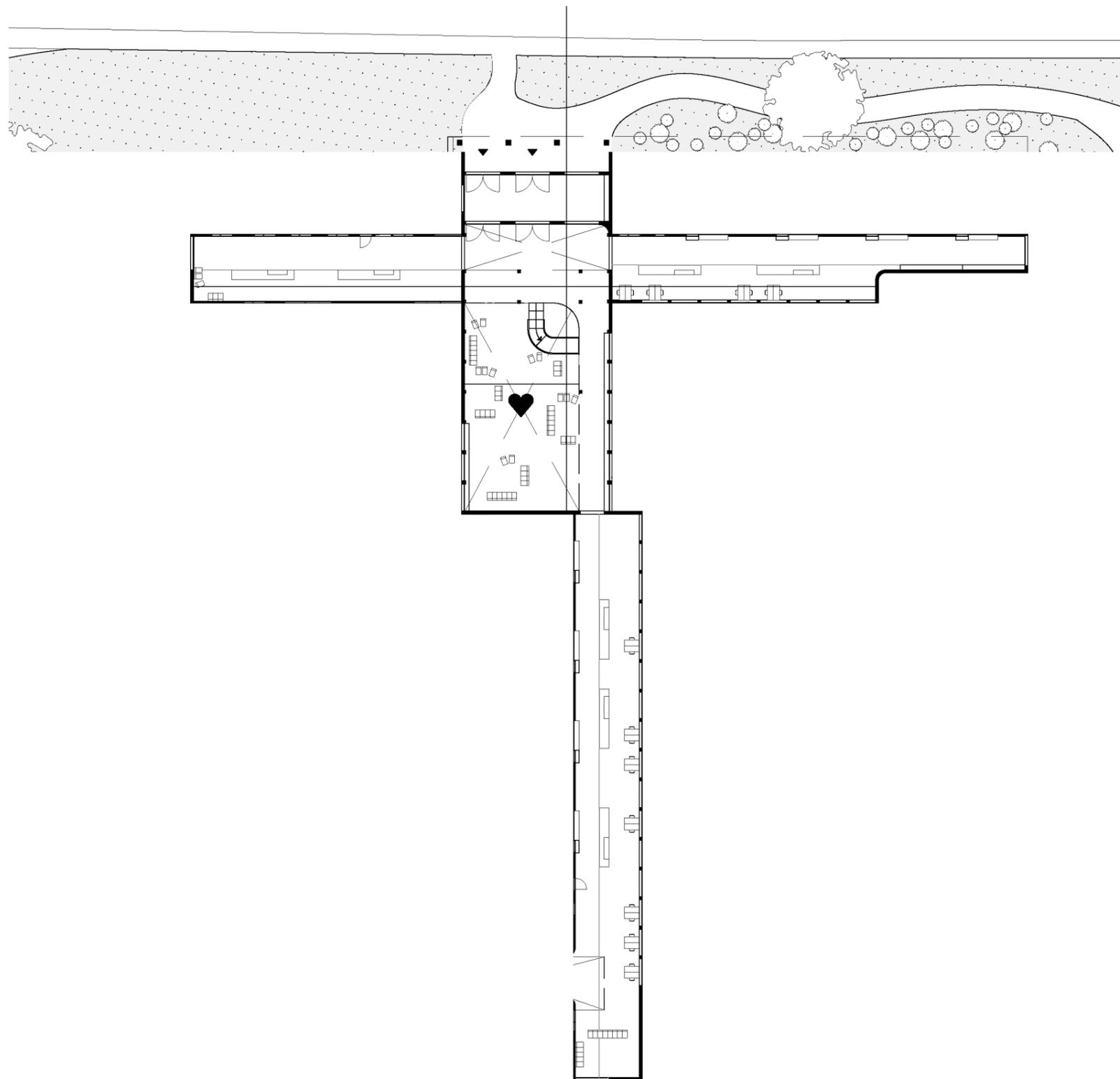


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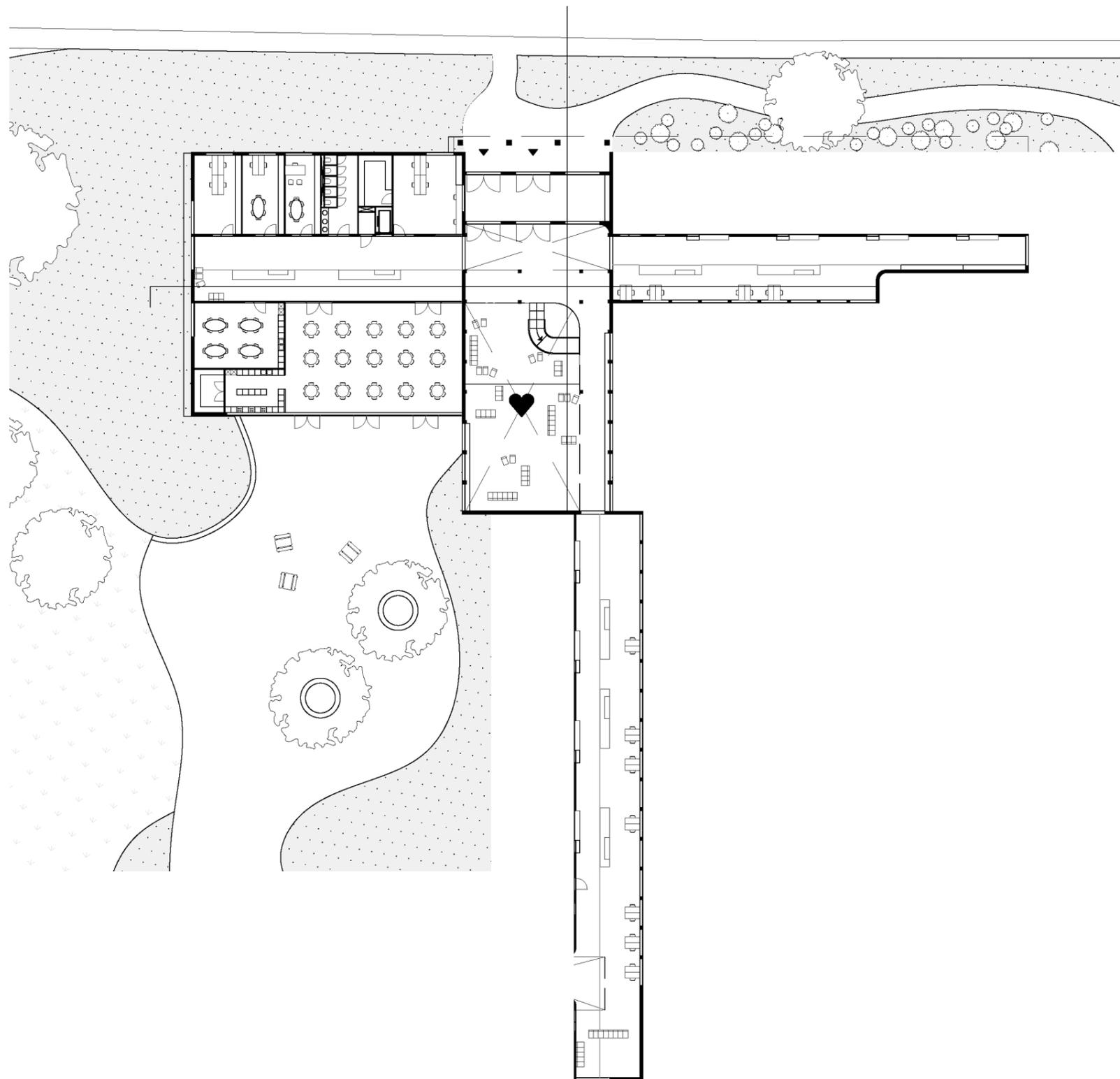


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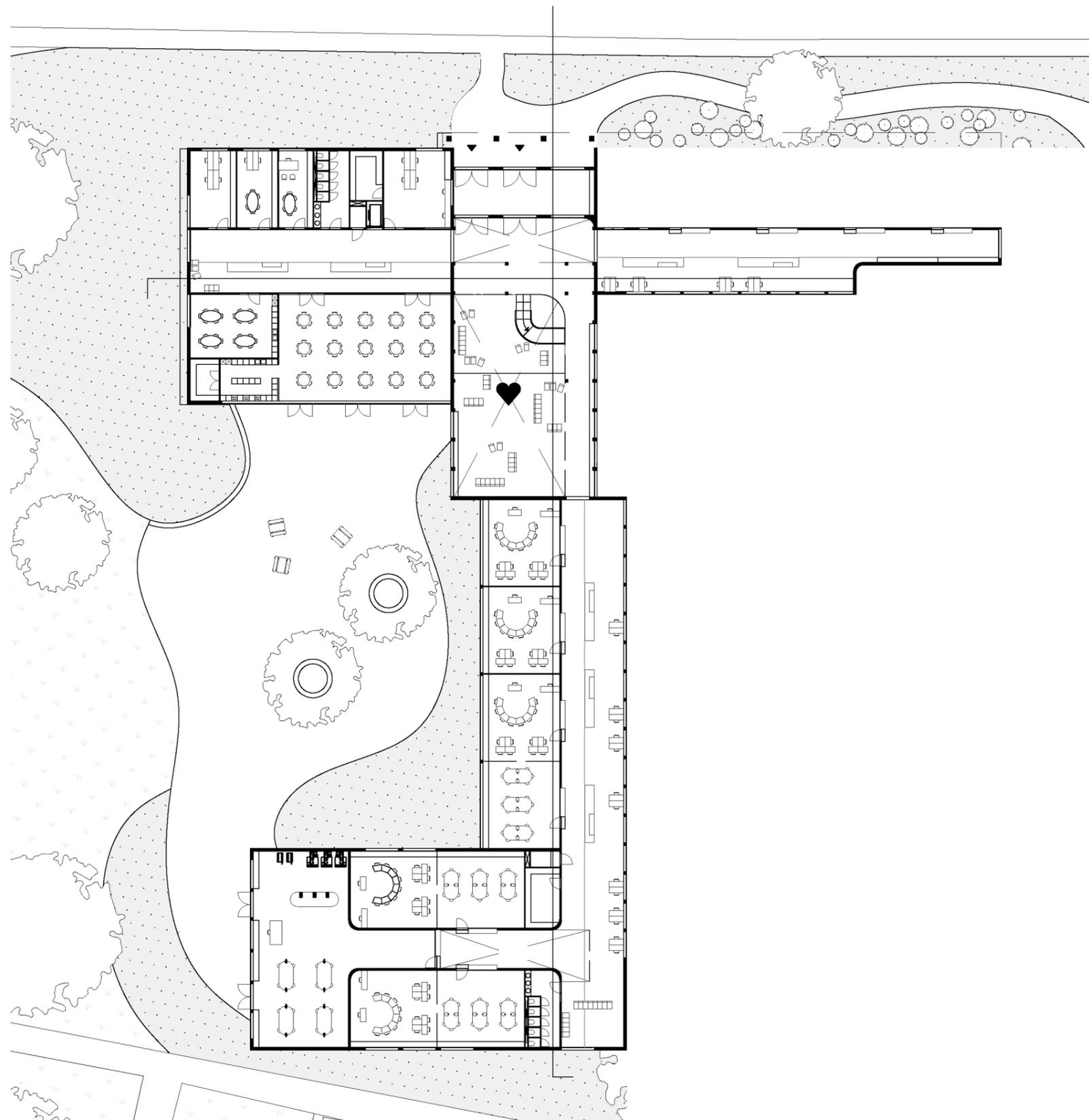


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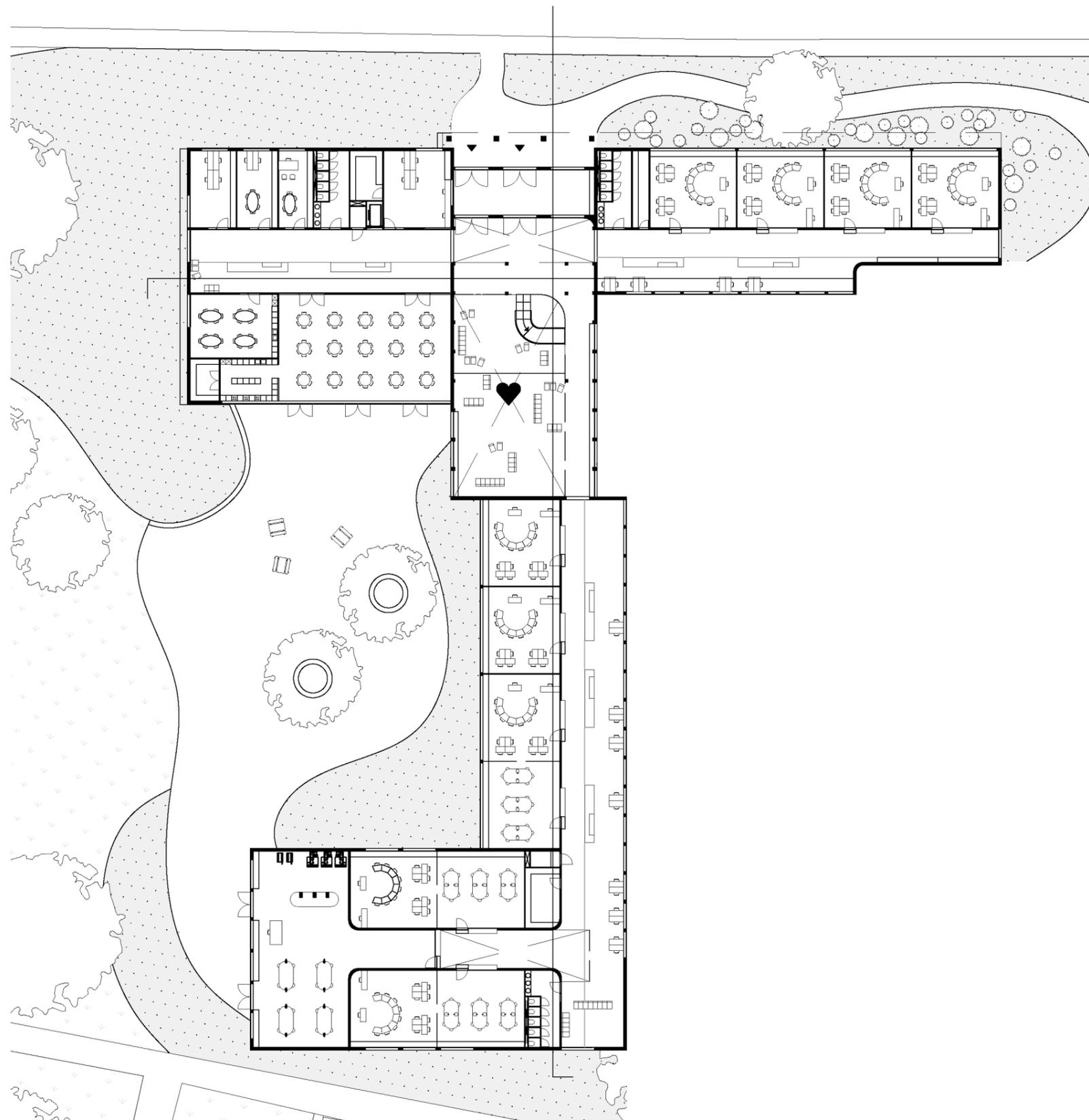




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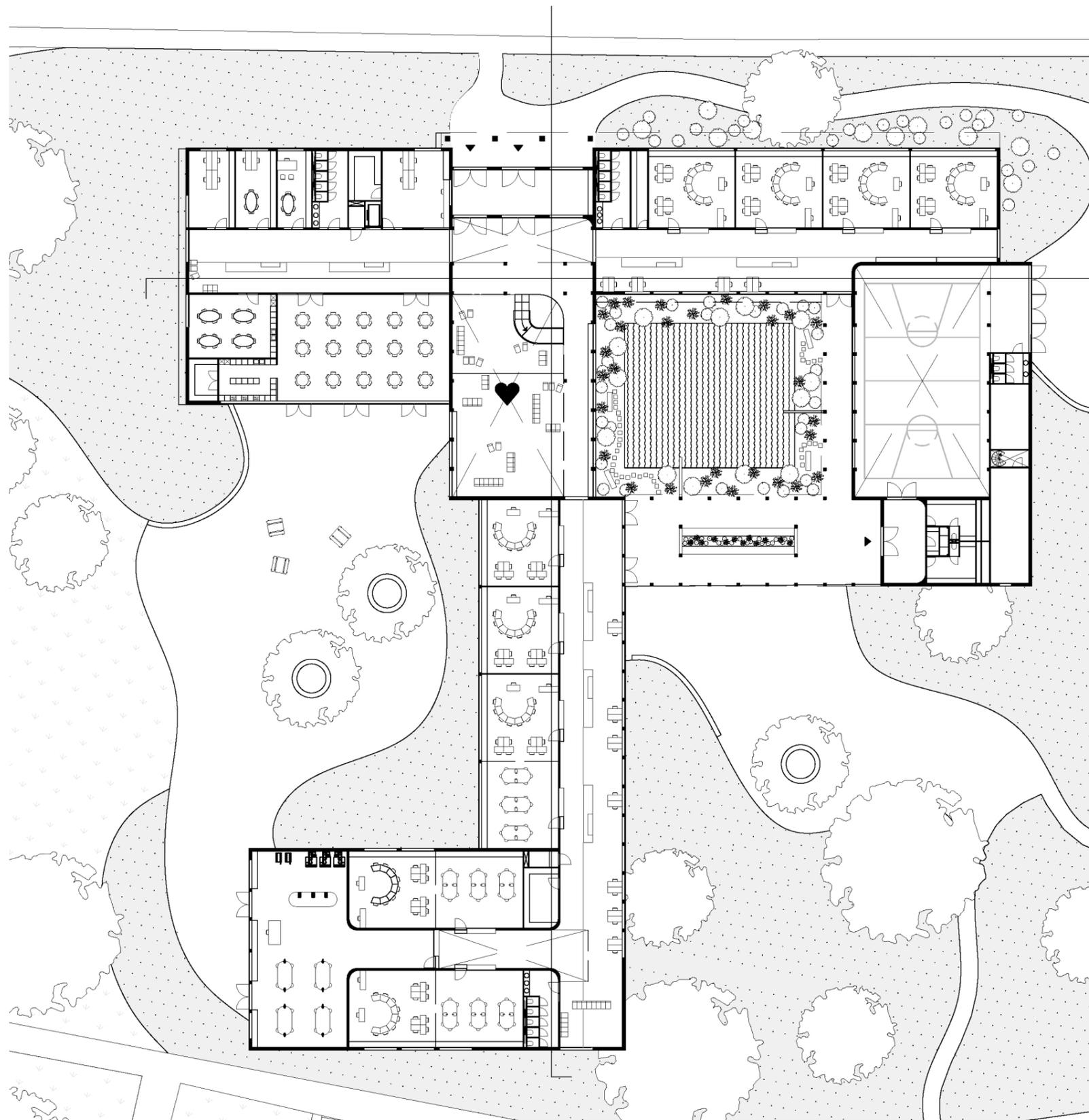
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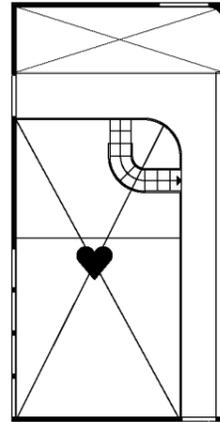
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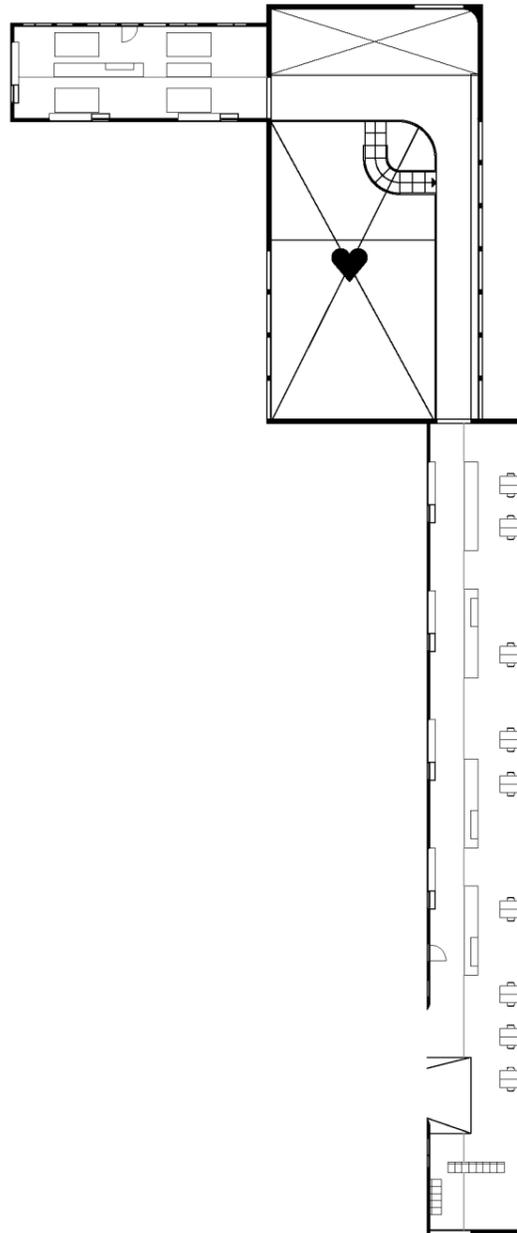
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eerste verdieping

PLATTEGROND
1:500-niveau



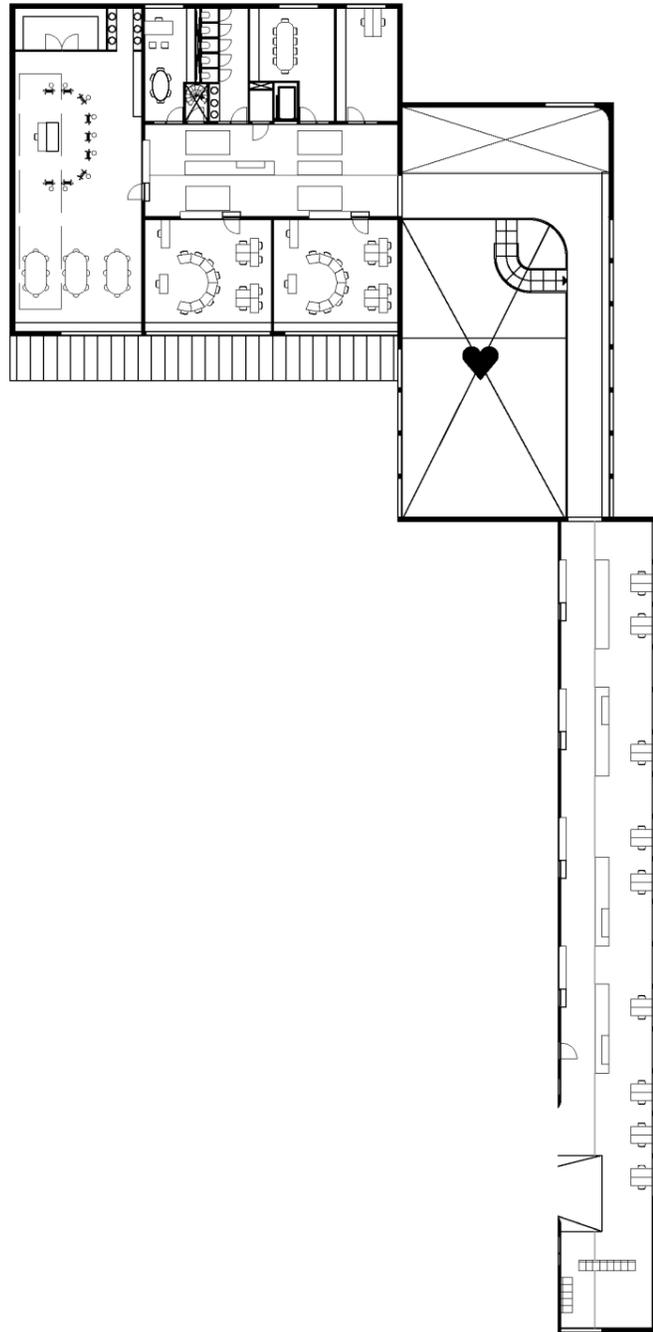


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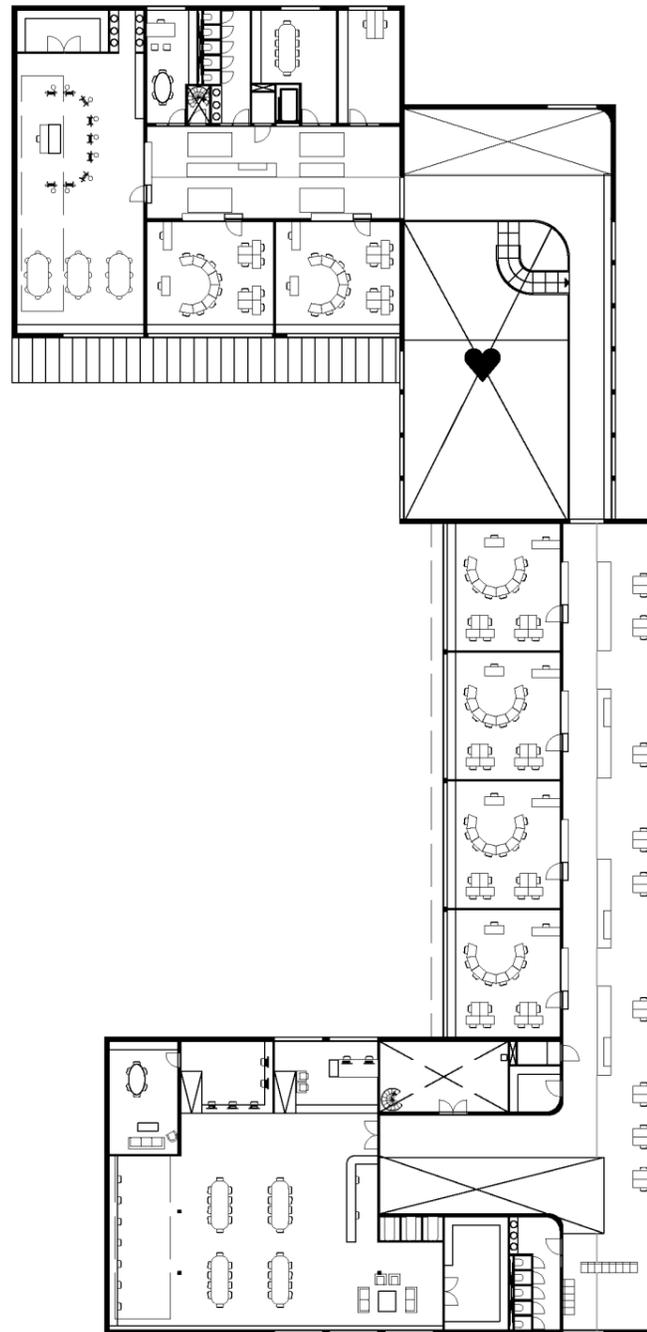




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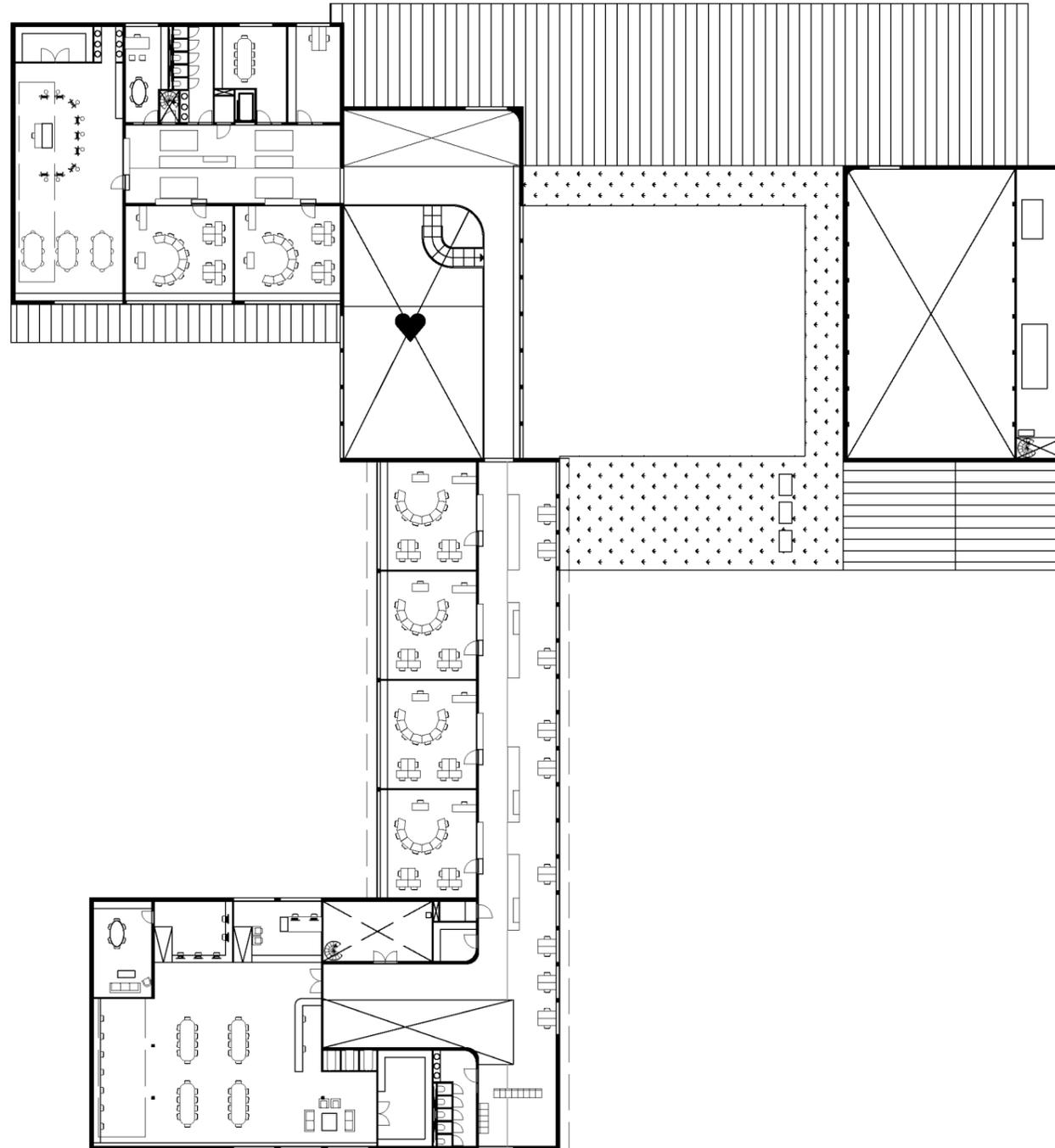




eerste verdieping

PLATTEGROND
1:500-niveau





eerste verdieping

PLATTEGROND
1:500-niveau





96

RELAX ROOM

P 25

STATEMENT

A school must have a relax room where deaf and hard-of-hearing can de-stress and relax.

CLARIFICATION

Deaf and hard-of-hearing pupils are often tired or stressed because of the continuous use of their eyes, the constant switching of their attention and direction of vision, focusing on teachers and blocking and ignoring background noise and distractions (van der Wilk, 2020).

SOLUTION

In order to be able to de-stress and relax properly, it is important for pupils to have a place at school where they can do so: a relax room where a pupil can retreat for a while.

RELATION

P 24 extra spaces for extra functions

P 27 workshop classrooms

P 28 outdoor classrooms

P 29 surroundings for walking

P 30 kitchen and laundry room

SOURCE

(van der Wilk, 2020)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Guyot VSO, SO and VSO Vries

Fieldwork: observations Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

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100

WORKSHOP CLASSROOMS

P 27

STATEMENT

A deaf school must have workshop rooms to give practical lessons.

CLARIFICATION

Deaf schools often have children who, in addition to an auditory restriction, also have other disabilities. This is also called CMB education, *communicatief meervoudige beperking*. These pupils often have lessons such as woodwork, steel, art etc.

SOLUTION

In order to give lessons such as woodwork, steel, art etc., it is of importance that a school has workshop rooms.

RELATION

P 24 extra spaces for extra functions

P 25 relax room

P 28 outdoor classrooms

P 29 surroundings for walking

P 30 kitchen and laundry room

SOURCE

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College and Kentalis Guyot VSO

Fieldwork: observations Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College and Kentalis Guyot VSO

101





102

OUTDOOR CLASSROOMS

P 28

STATEMENT

A deaf school must have outdoor 'classrooms' to give practical outdoor lessons.

CLARIFICATION

Deaf schools often have children who, in addition to an auditory restriction, also have other disabilities. This is also called CMB education, *communicatief meervoudige beperking*. These pupils often have lessons outside. They can learn how to maintain a garden and look after a vegetable garden outside, as well as how to lay paths or look after animals.

SOLUTION

In order to give lessons outside, it is of importance that a school has space for this. A school therefore needs places for a vegetable garden, animals, a sensory garden, maintenance etc.

RELATION

P 24 extra spaces for extra functions

P 25 relax room

P 27 workshop classrooms

P 29 surroundings for walking

P 30 kitchen and laundry room

SOURCE

Fieldwork: interviews Dr. M. Polanoschool and Kentalis Guyot VSO

Fieldwork: observations Dr. M. Polanoschool and Kentalis Guyot VSO

103





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ENOUGH STORAGE SPACE

P 36

STATEMENT

A school must have enough storage space.

CLARIFICATION

Schools often have little storage space. This often leads to schools' own solutions by using hallways for extra storage. For a deaf school, however, this leads to a problem: hallways become too narrow to walk and sign in. When walking together in conversation deaf people tend to keep a wide distance from another for clear visual communication using sign language (Bauman, 2005). It is therefore important that hallways are wide.

SOLUTION

It is important to think of enough storage space when designing. In addition, the eye must be on the future, because when schools grow, more storage space will be needed.

RELATION

P 23 closed cupboards

P 34 storage for suitcases

P 35 wheelchair parking area

P 49 wide hallways

SOURCE

(Bauman, 2005)

Fieldwork: interviews Kentalis Guyot SO

Fieldwork: observations Kentalis Guyot SO

119





STAFF ROOM NEXT TO AUDITORIUM

STATEMENT

The school's staff rooms must be next to the auditorium.

CLARIFICATION

Teachers want to be able to see pupils who use the auditorium to maintain control. The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision (Gaudiot & Martins, 2018). Meaning that for deaf teachers in particular, it is important that there are good sight lines from the staff room to the auditorium.

SOLUTION

In order to maintain control and keep overview of pupils using the auditorium, it is important that the staff room is located next to the auditorium.

RELATION

P 41 auditorium with sight lines

P 42 tribune in auditorium

SOURCE

(Gaudiot & Martins, 2018)

Fieldwork: interviews Kentalis Guyot VSO and SO

Fieldwork: observations Kentalis College Zoetermeer, Kentalis Guyot VSO and SO





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KITCHEN AND LAUNDRY ROOM

P 30

STATEMENT

For CMB education it is important to have a laundry room and kitchen in the school.

CLARIFICATION

Deaf schools often have children who, in addition to an auditory restriction, also have other disabilities. This is also called CMB education, *communicatief meervoudige beperking* (Kentalis, n.d.-b). There are also special schools with only CMB pupils. In addition, the pupils of these schools have a low IQ, which means that their school day is structured differently from regular education for the deaf. The curriculum of these pupils is focused on becoming independent and taking care of themselves. For example, they are taught how to do their laundry or learn how to cook.

SOLUTION

To be able to give these cooking and washing lessons, it is important to have a laundry room and kitchen in the school. In addition, it is important that both the kitchen and the laundry room are accessible to wheelchairs, as some pupils may be in wheelchairs.

RELATION

- P 24 extra spaces for extra functions
- P 25 relax room
- P 27 workshop classrooms
- P 28 outdoor classrooms
- P 29 surroundings for walking
- P 31 high-low kitchen
- P 32 kitchen with overview

SOURCE

(Kentalis, n.d.-b)

Fieldwork: interviews Kentalis Guyot VSO Vries

107





110

KITCHEN WITH OVERVIEW

P 32

STATEMENT

A kitchen for the deaf and hard-of-hearing must provide an overview to the rest of the room.

CLARIFICATION

Deaf people are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. To explain: when deaf people walk into space they immediately 'read' the entire room to maintain control. Think of the movement of shadows or subtle changes in facial expressions and the positions of other people. They scan the environment and activities around them and see things that hearing people tend to overlook (Bauman, 2005). This is also called sensory reach. Meaning that the deaf and hard-of-hearing want to have a constant overview of a room. In other words, they prefer not to have their back turned to a room. However, when using a kitchen, this is often the case. Kitchens are often oriented against a wall, resulting in a deaf or hard-of-hearing person standing with their back to a room. When we look at, for example, a staff room with a kitchen, this means that when the kitchen is on the wall, a deaf teacher will have their back turned to the rest of the staff room. In other words, there is no overview of the room.

SOLUTION

In order for deaf and hard-of-hearing people to always have an overview of a room when using the kitchen, it is important that a kitchen is not oriented towards a wall. A solution for this is a kitchen island.

RELATION

P 30 kitchen and laundry

P 31 high-low kitchen

SOURCE

(Bauman, 2005)

Fieldwork: interviews Kentalis Guyot VSO, SO and VSO Vries

Fieldwork: observations Kentalis Guyot VSO, SO and VSO Vries

111





76

ROUND/OVAL TABLES

P 15

STATEMENT

A school must have round or oval tables to allow for overview and sensory reach.

CLARIFICATION

Deaf people are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. To explain: when deaf people walk into space they immediately 'read' the entire room to maintain control. Think of the movement of shadows or subtle changes in facial expressions and the positions of other people. They scan the environment and activities around them and see things that hearing people tend to overlook (Bauman, 2005). This is also called sensory reach. This is also the case at tables. Deaf and hard-of-hearing people want to have a good overview of the entire table and be able to see everyone at the table. With a rectangular table, the problem is that you can not simultaneously see the person next to you and across from you sign or be able to read both their lips and facial expressions.

SOLUTION

In order to provide overview and sight lines to everyone at the table, the solution is a round or oval table.

RELATION

P 16 table arrangement

SOURCE

(Bauman, 2005)

Fieldwork: interviews Kentalis Guyot College VSO

Fieldwork: observations Kentalis Compas College, Kentalis Guyot VSO and SO

77





134

CLEAR SCHOOL YARD

P 44

STATEMENT

A clear school yard allows for sensory reach.

CLARIFICATION

Deaf people are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. To explain: when deaf people walk into space they immediately 'read' the entire room to maintain control. Think of the movement of shadows or subtle changes in facial expressions and the positions of other people. They scan the environment and activities around them and see things that hearing people tend to overlook (Bauman, 2005). This is also called sensory reach. This also applies to the school yard.

SOLUTION

Teachers and pupils must have a good overview and clear sight lines of the school yard. This ensures that accidents are prevented and that everyone can play safely.

RELATION

P 43 view of classroom

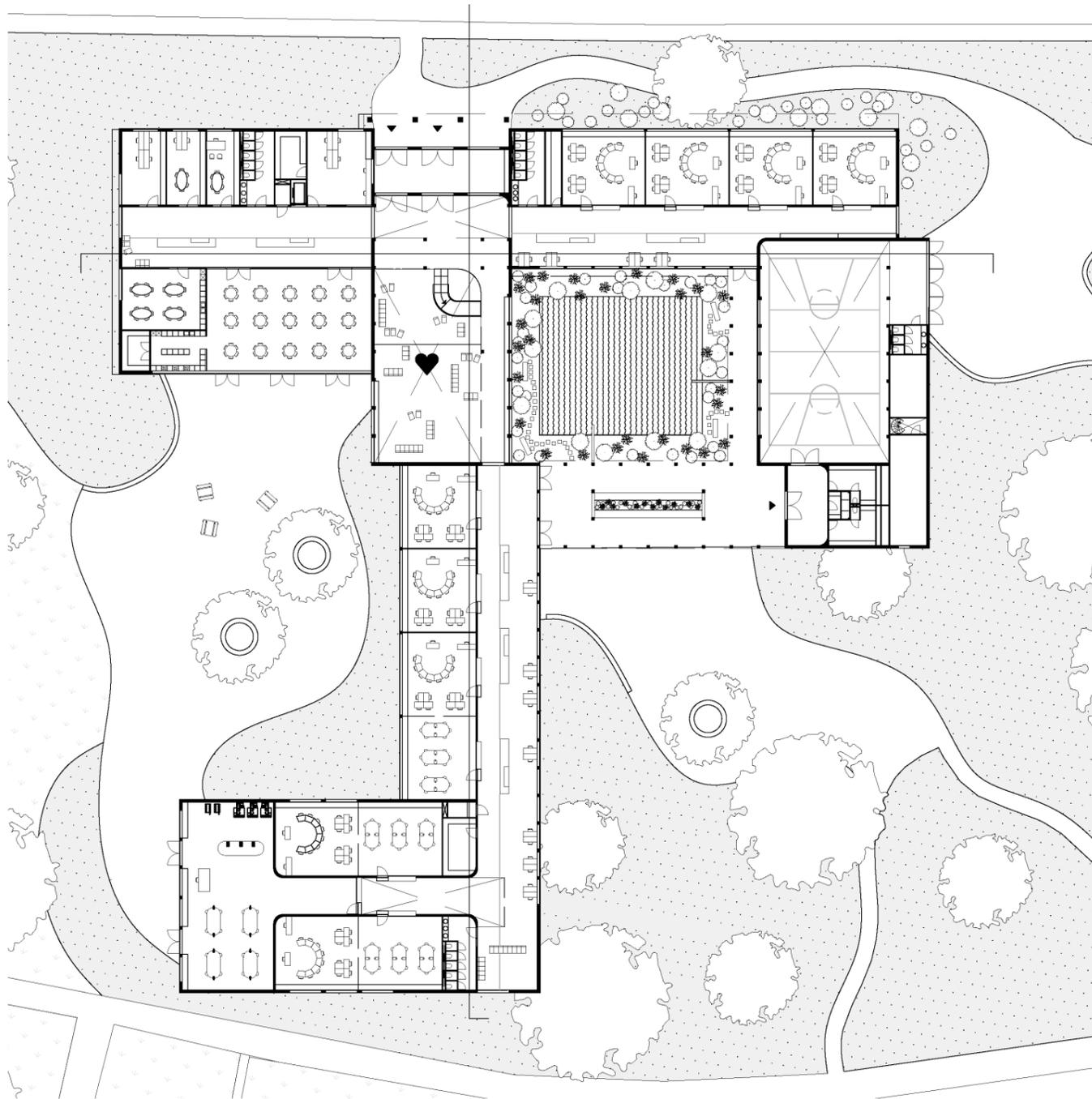
SOURCE

(Bauman, 2005)

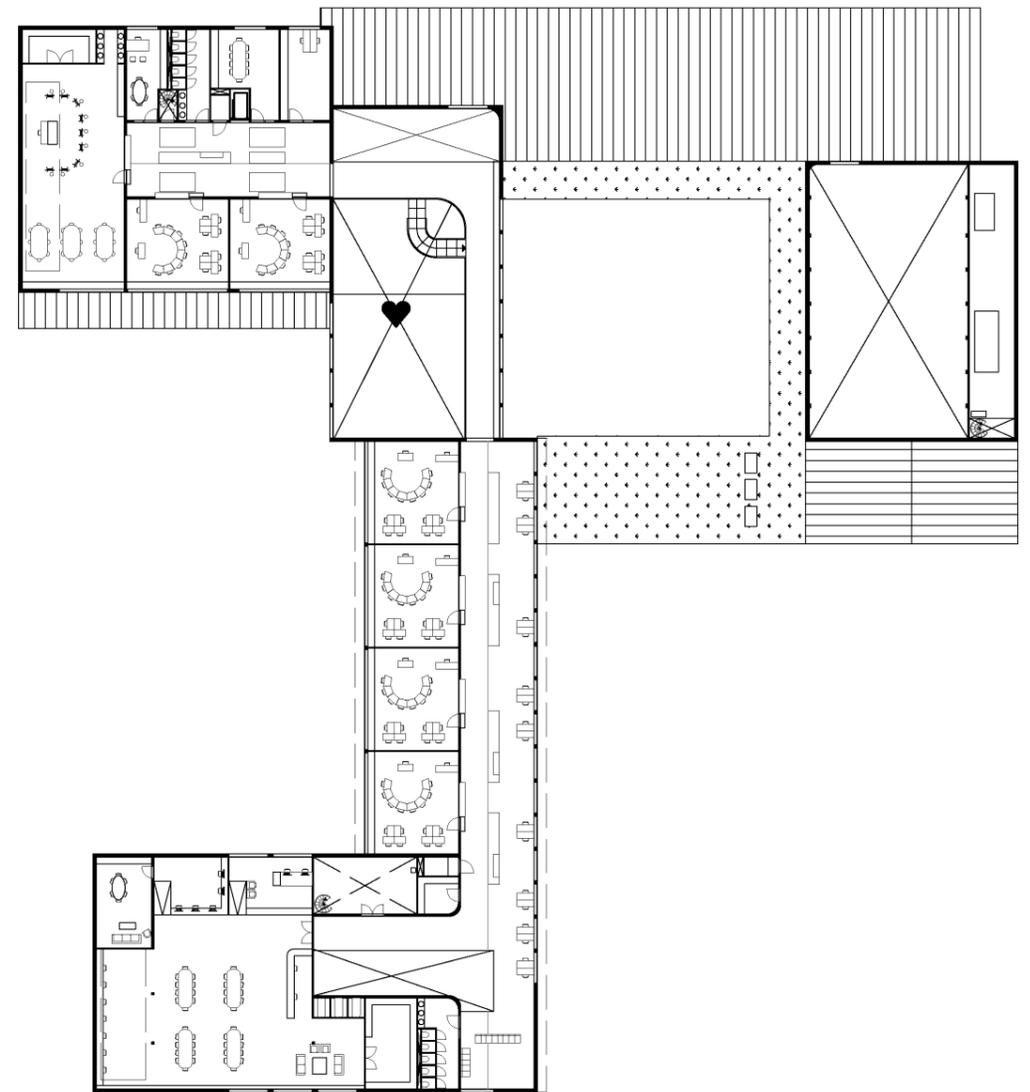
Fieldwork: interviews Kentalis College Zoetermeer and Kentalis Guyot SO

135





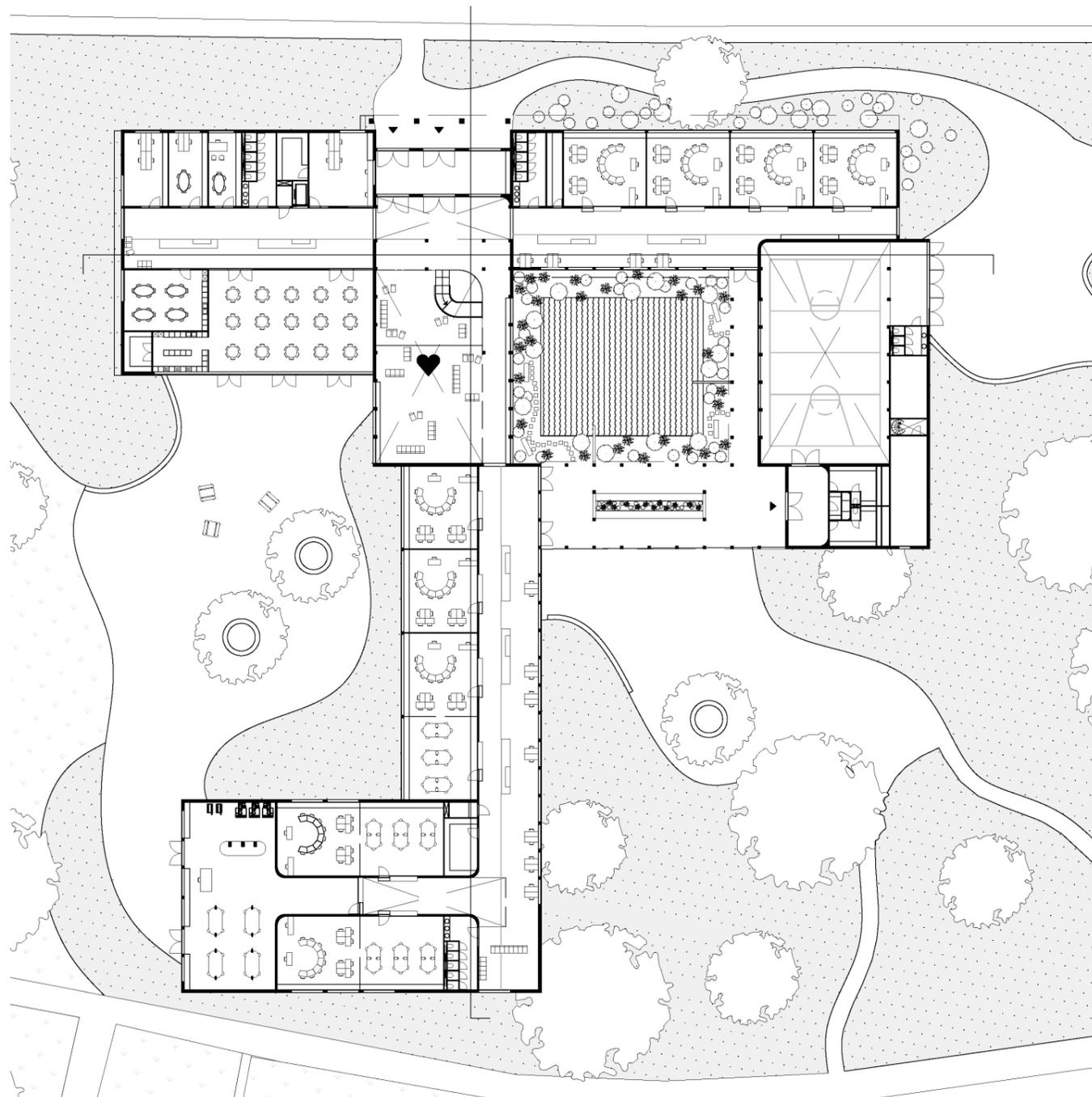
begane grond



eerste verdieping



PLATTEGROND
1:500-niveau

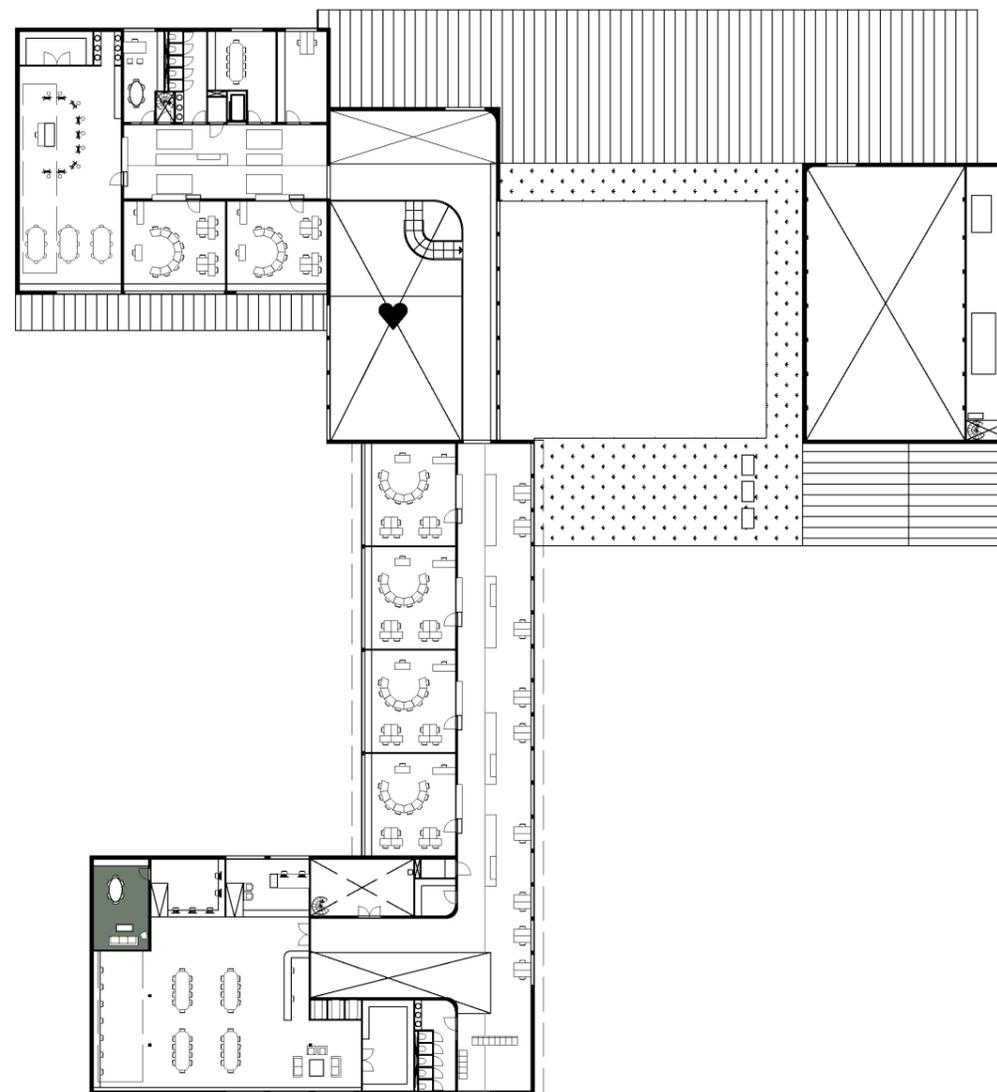


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FUNCTIES

- relaxruimte

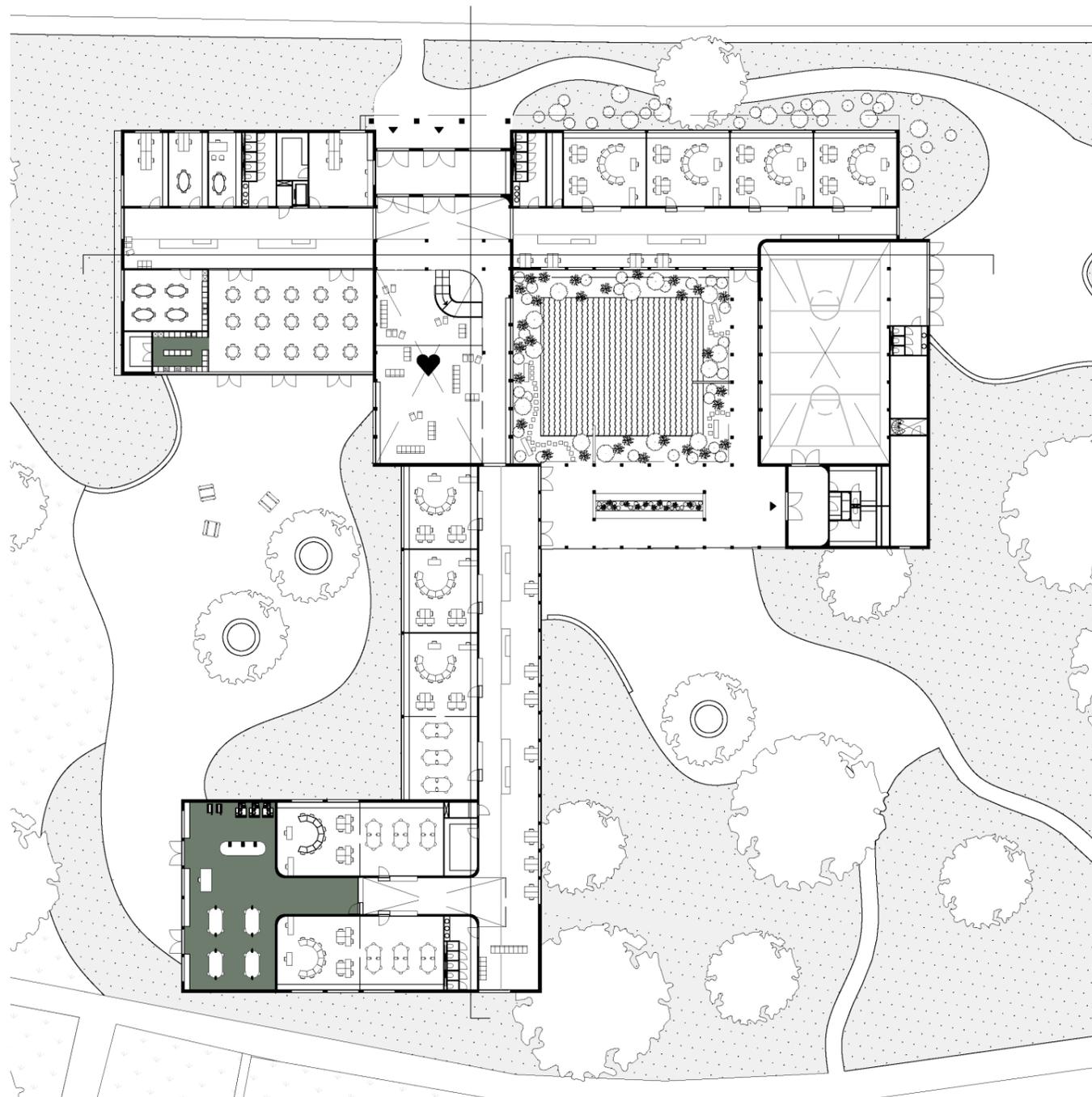


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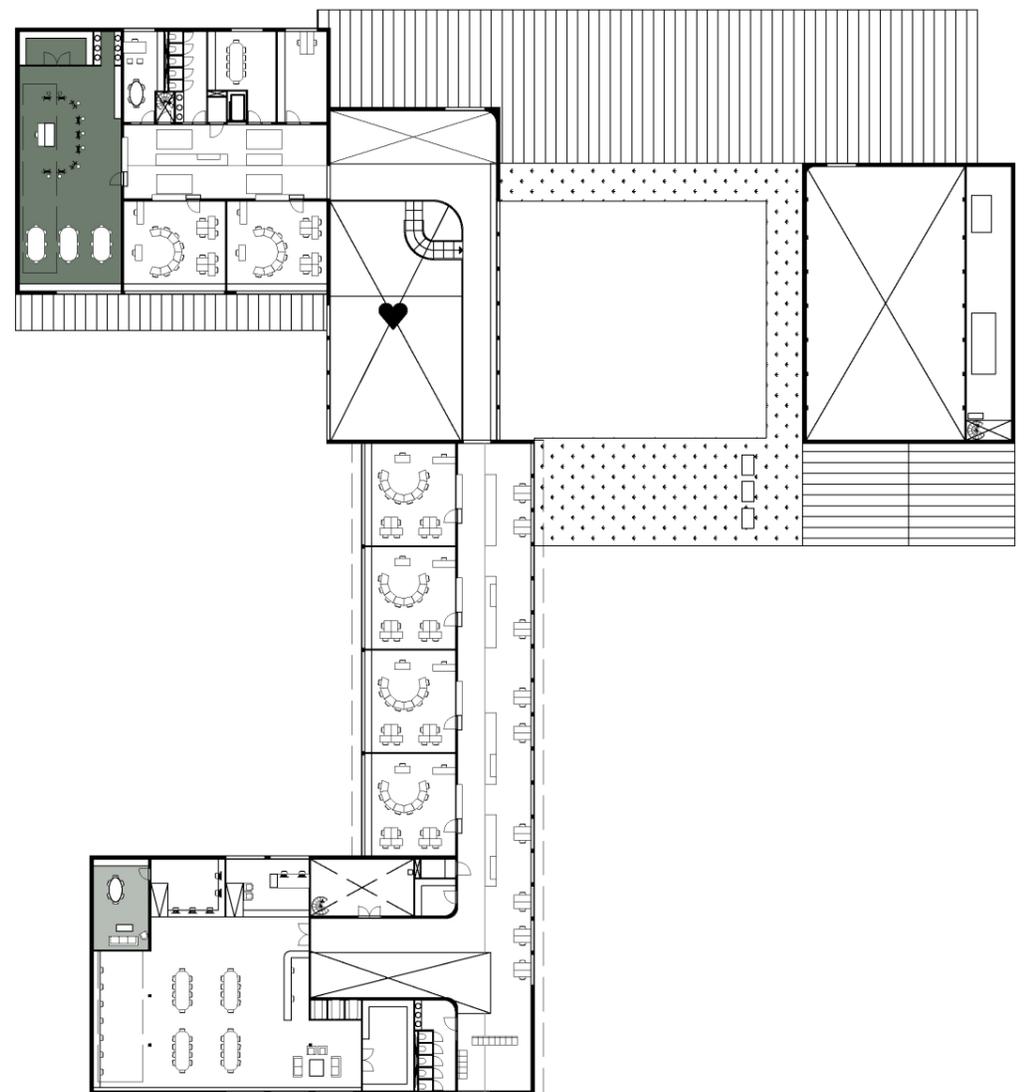


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FUNCTIES

- praktijklokalen

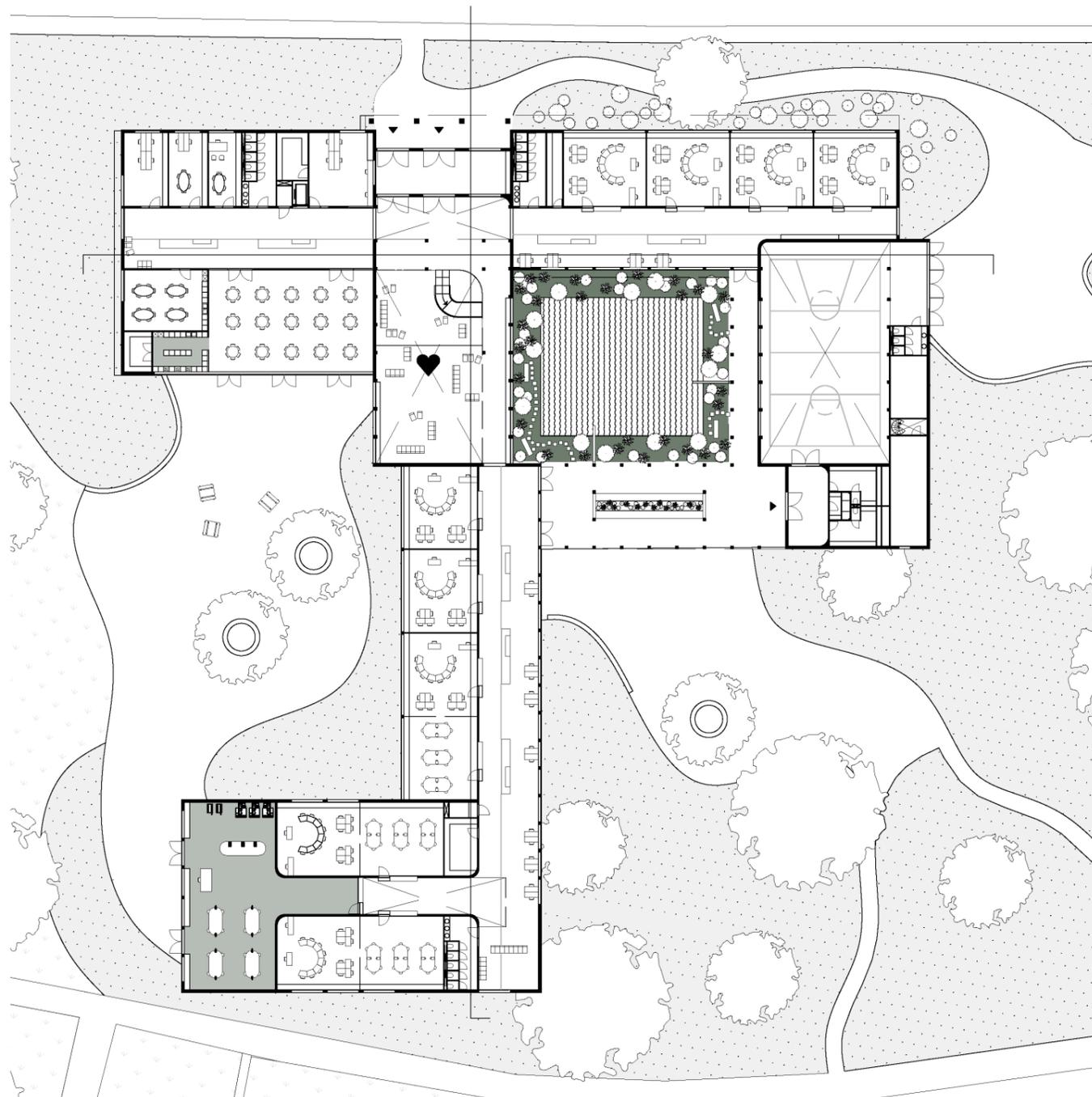


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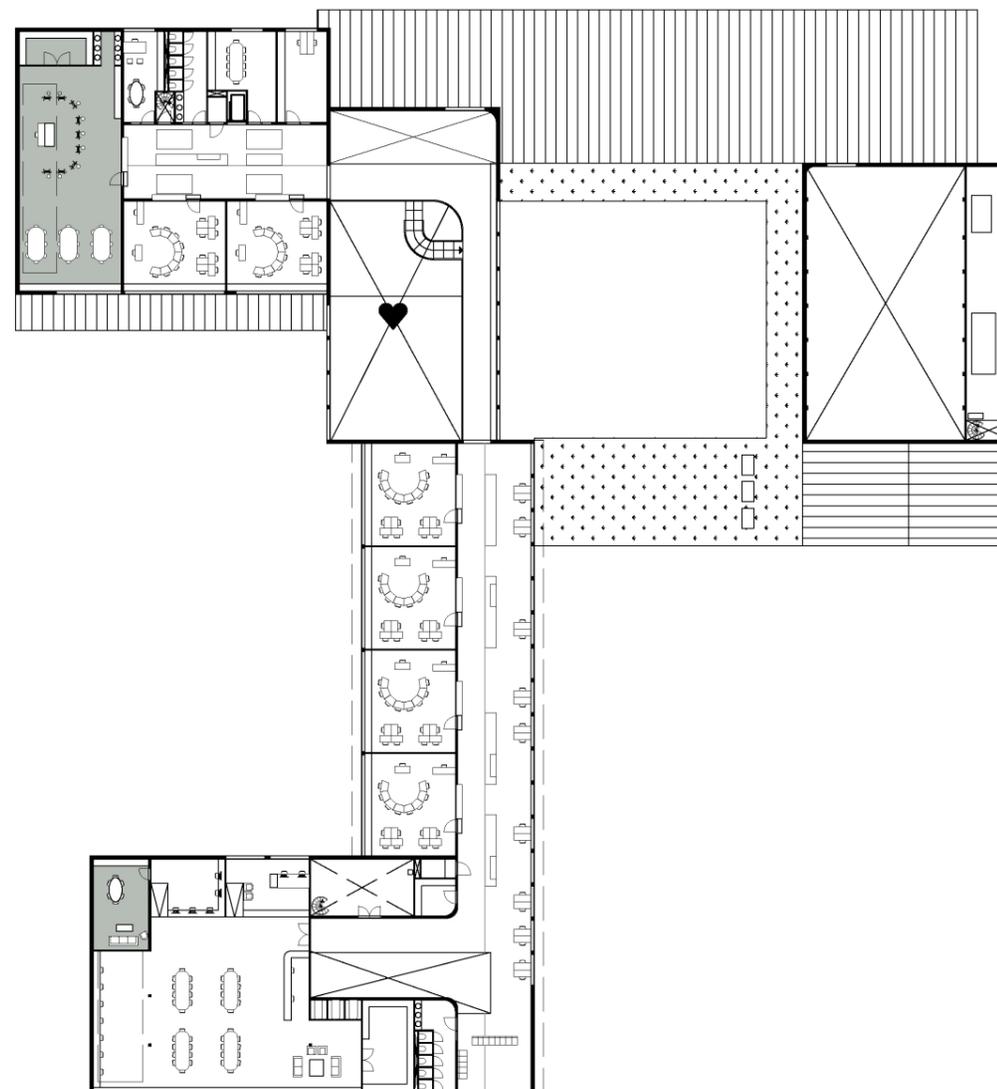


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FUNCTIES

- buitenlokaal

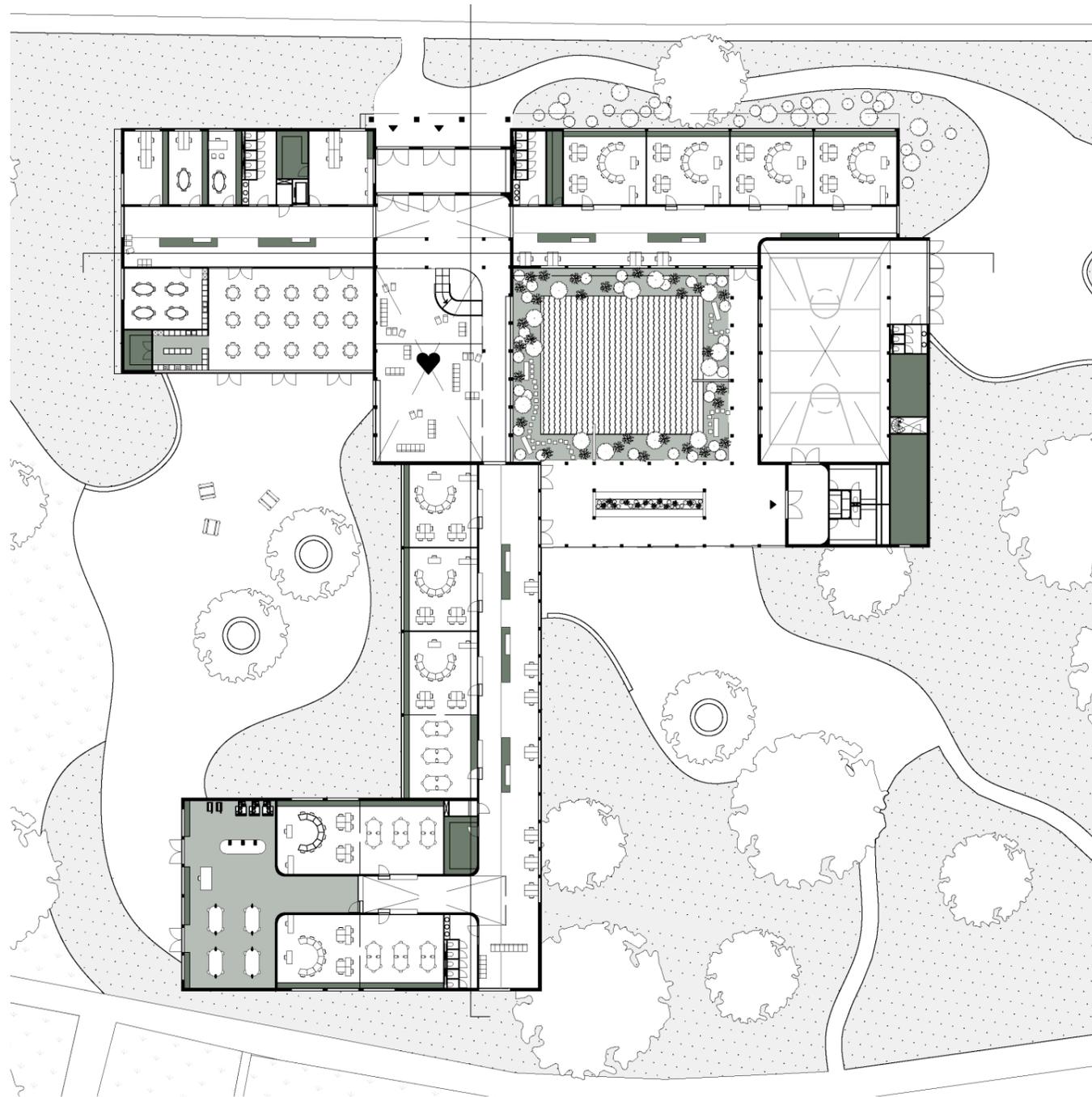


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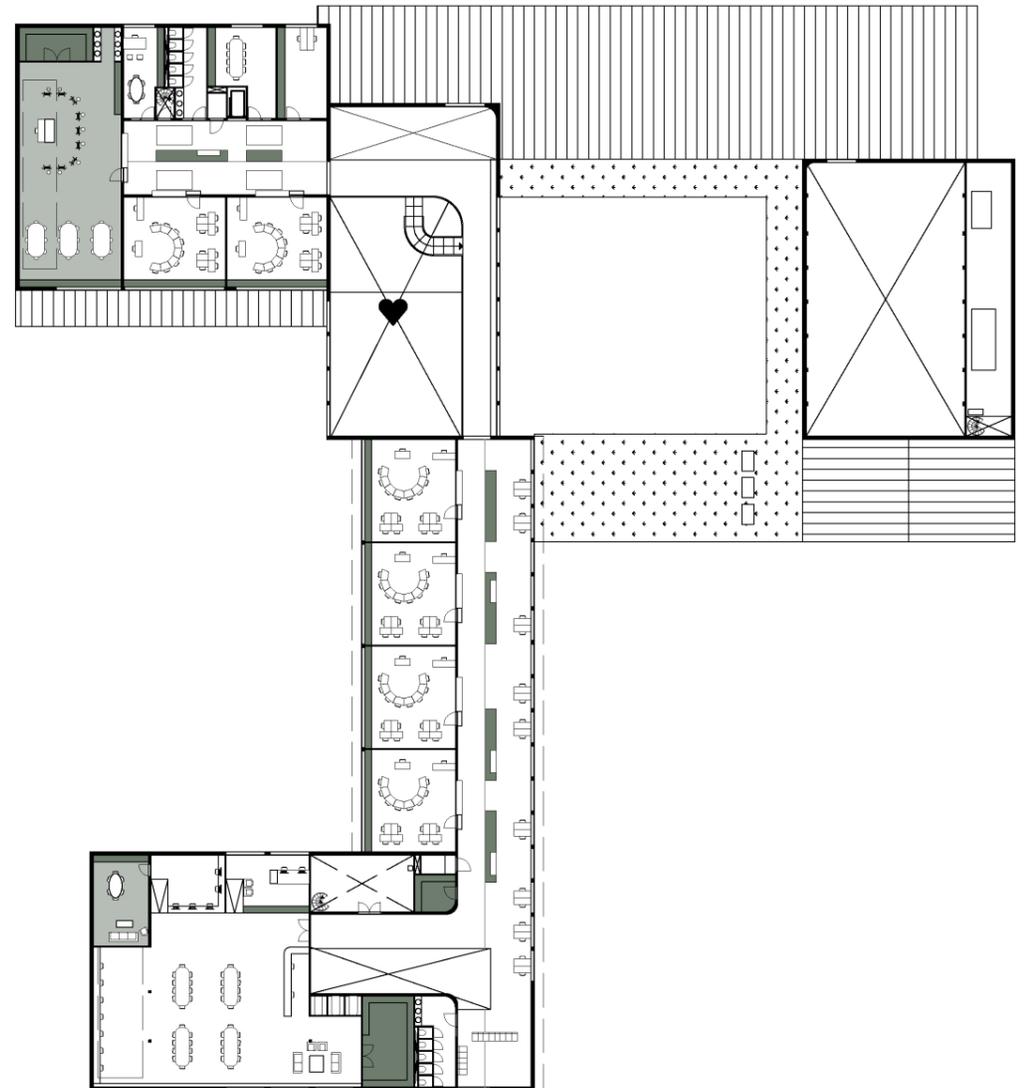


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FUNCTIES

- opslagruimte

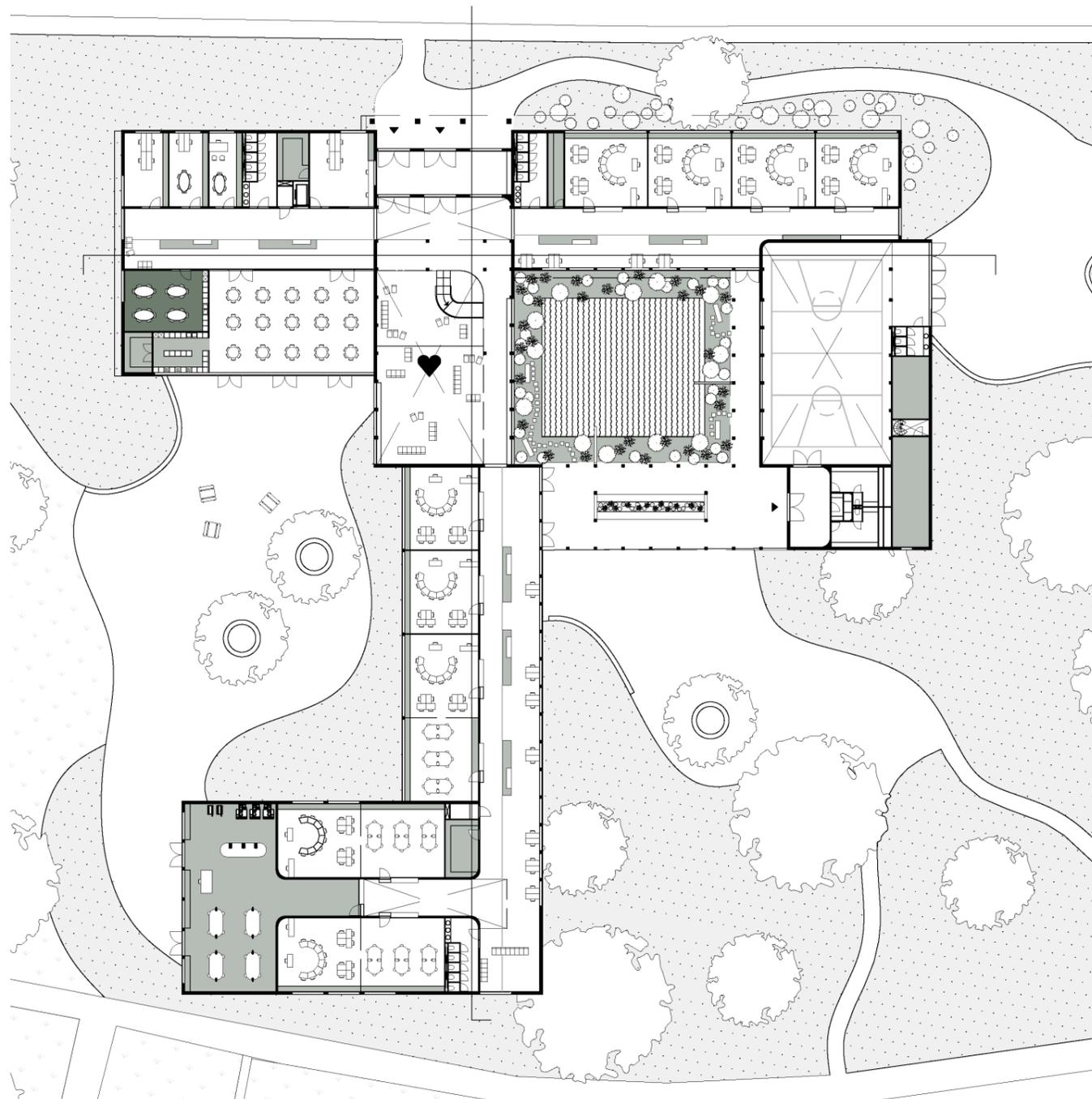


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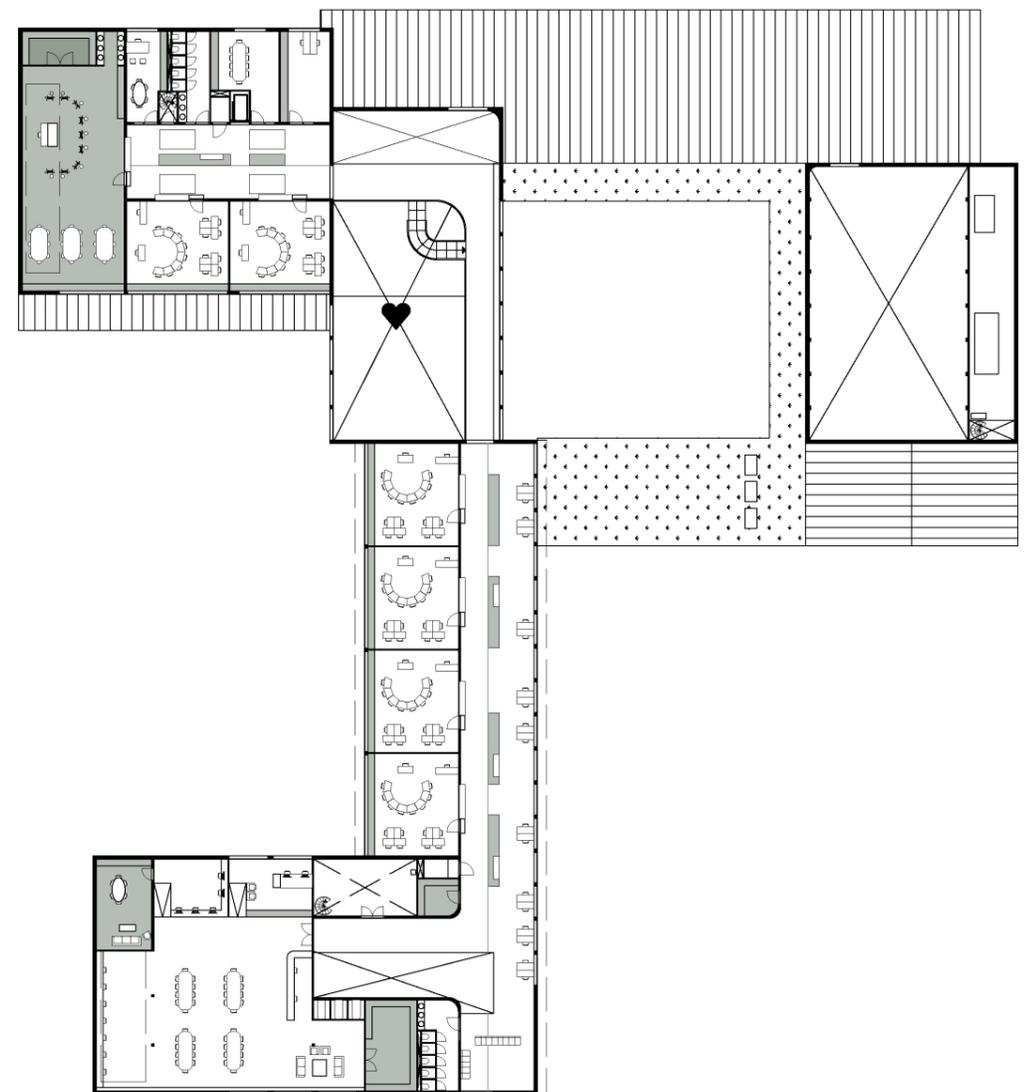


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FUNCTIES

- lerarenkamer met overzicht

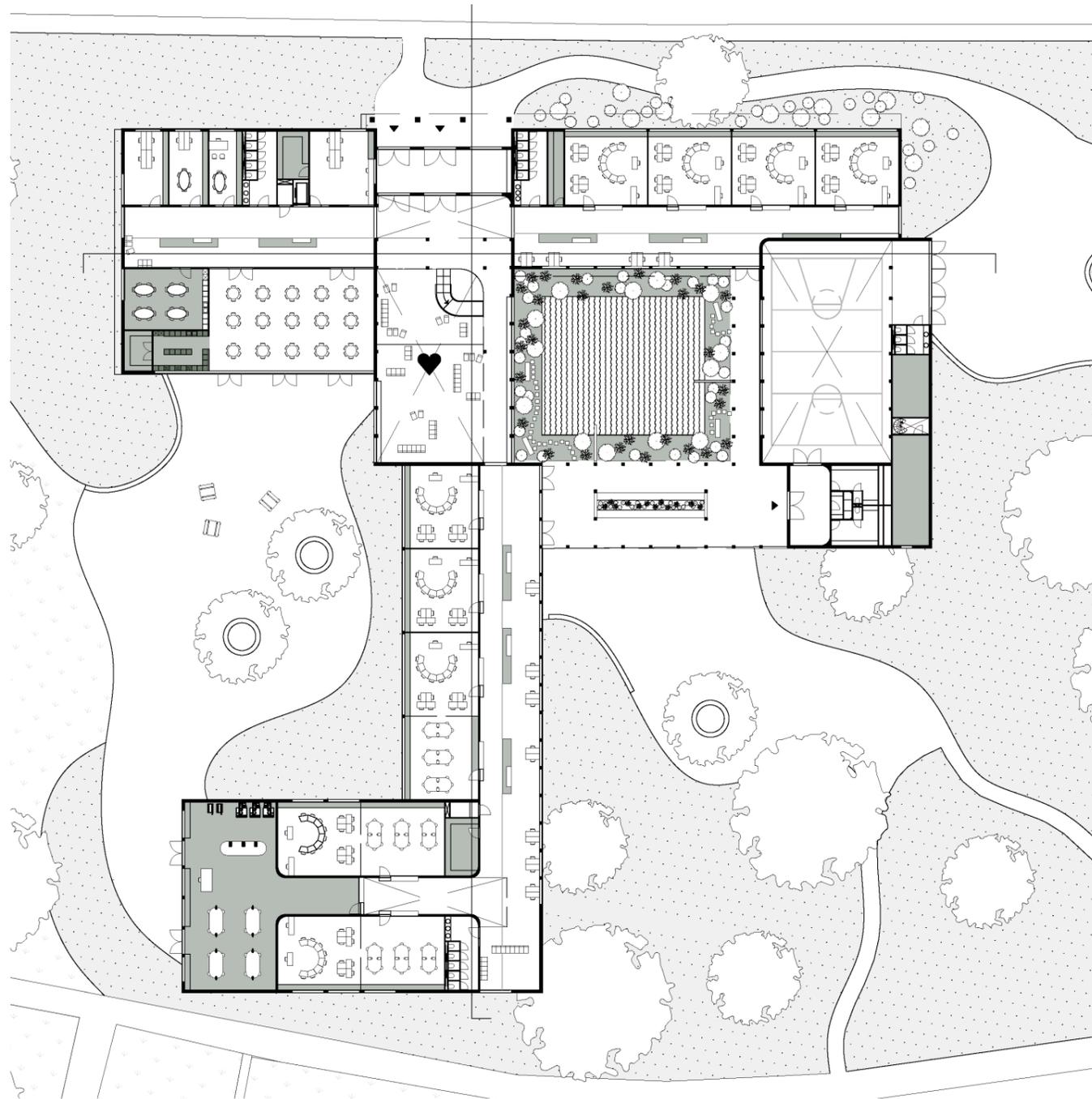


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PLATTEGROND

1:500-niveau



begane grond

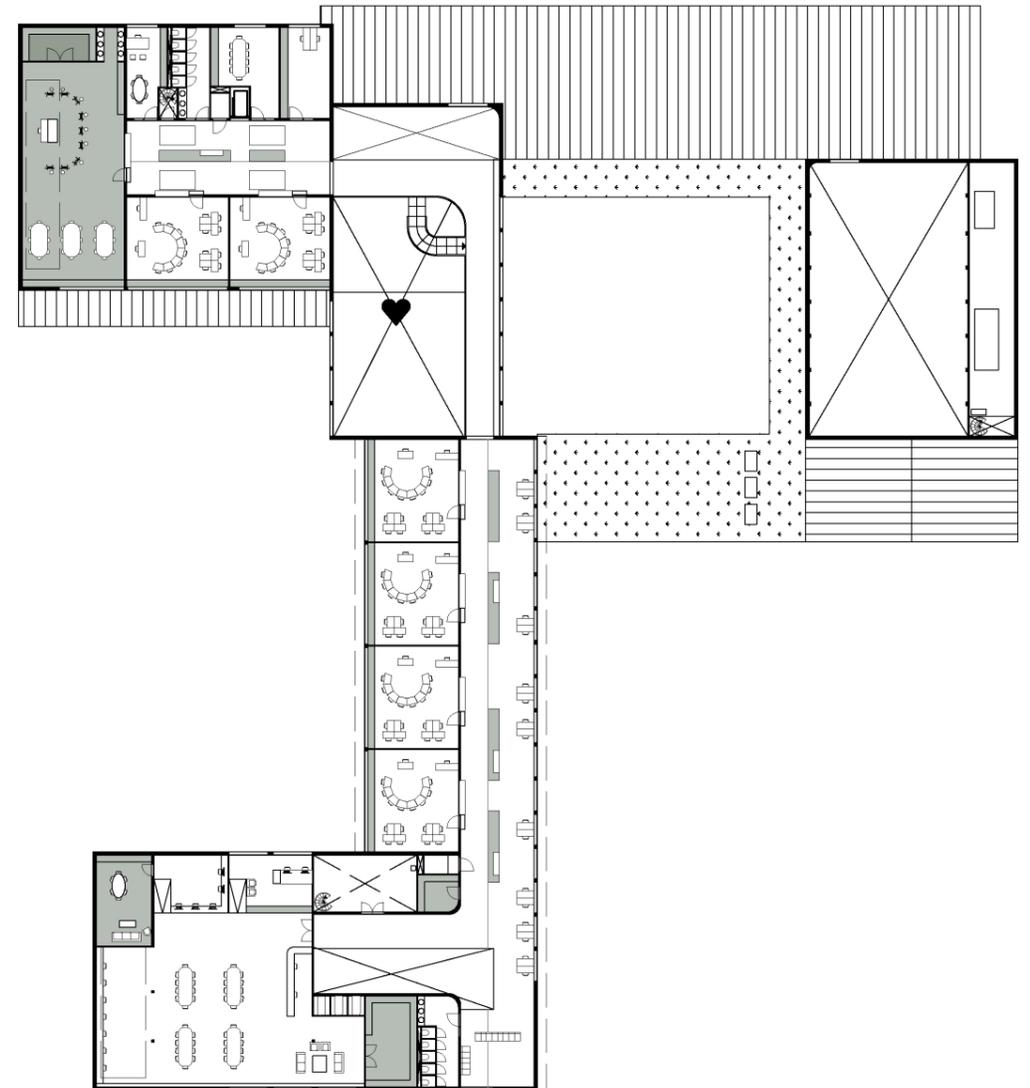


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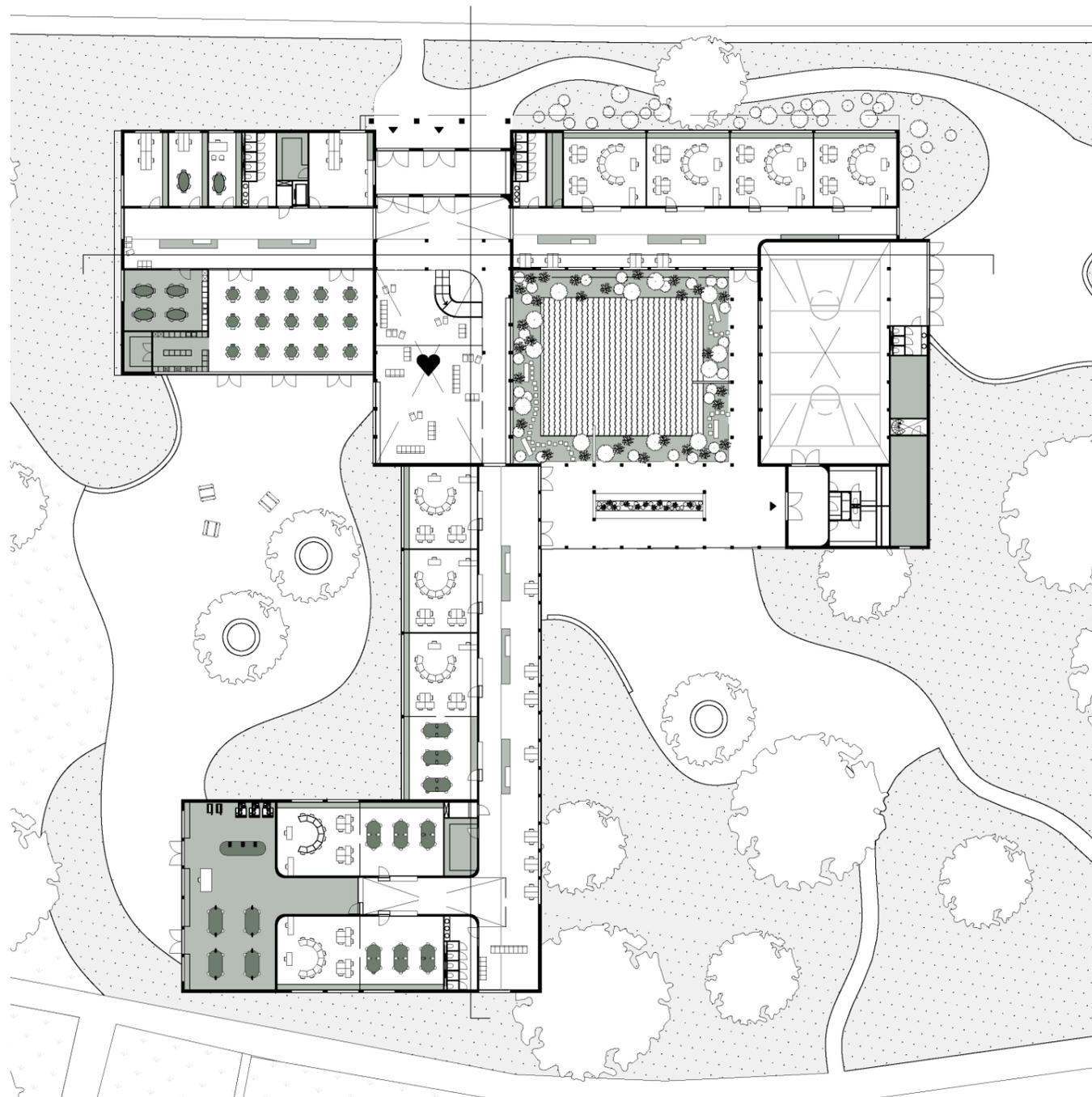
FUNCTIES

- keuken met overzicht



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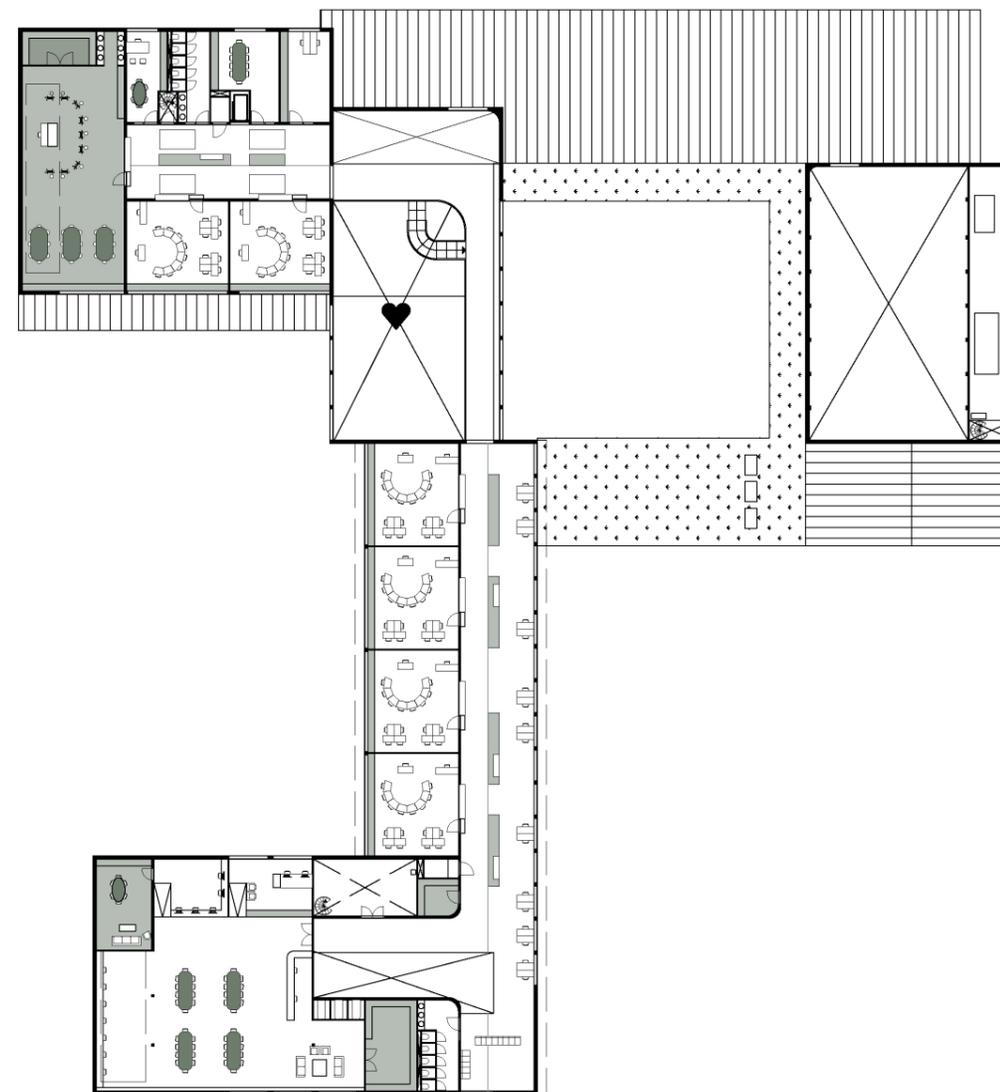
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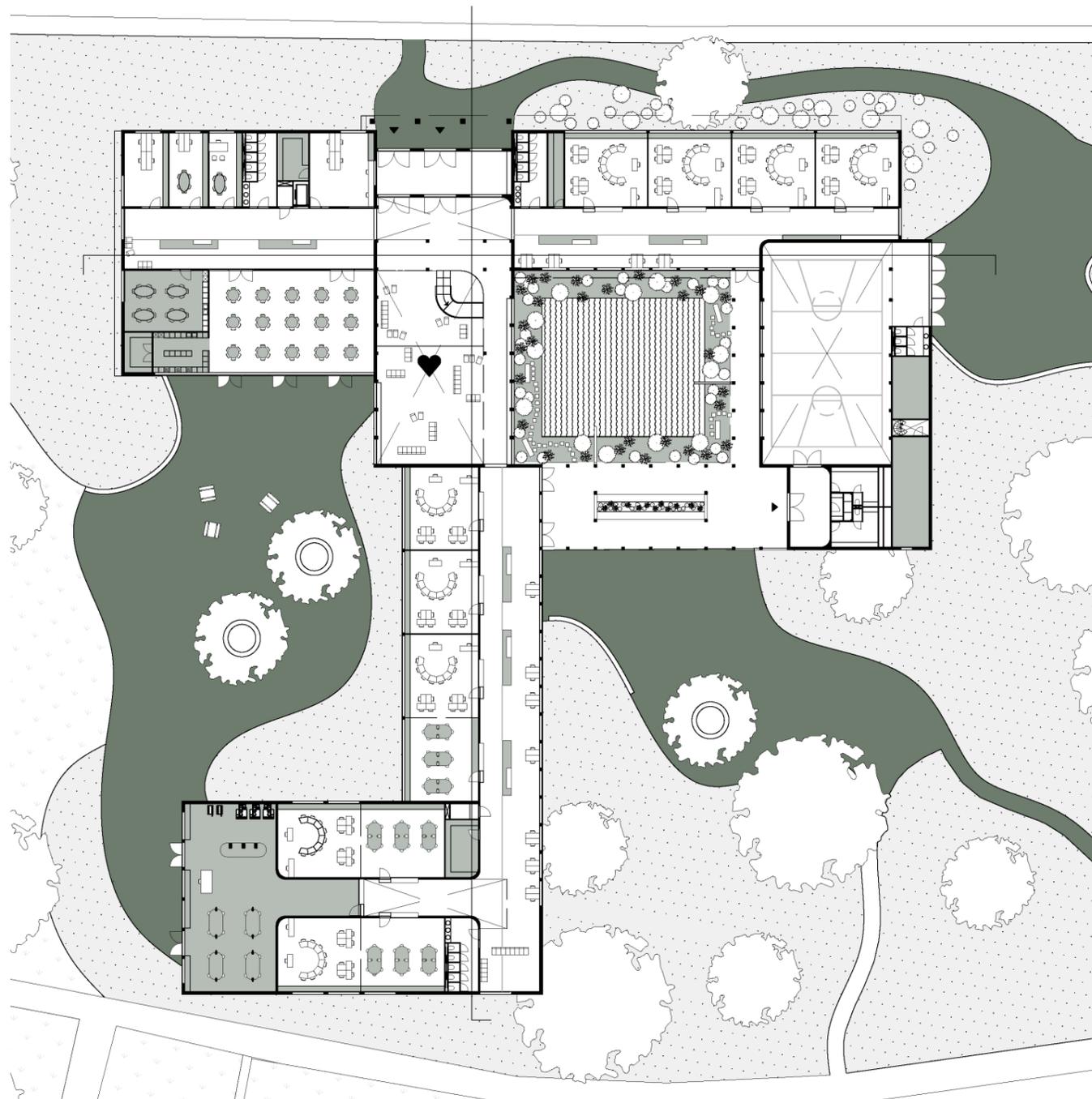
FUNCTIES

- ronde/ovale tafels



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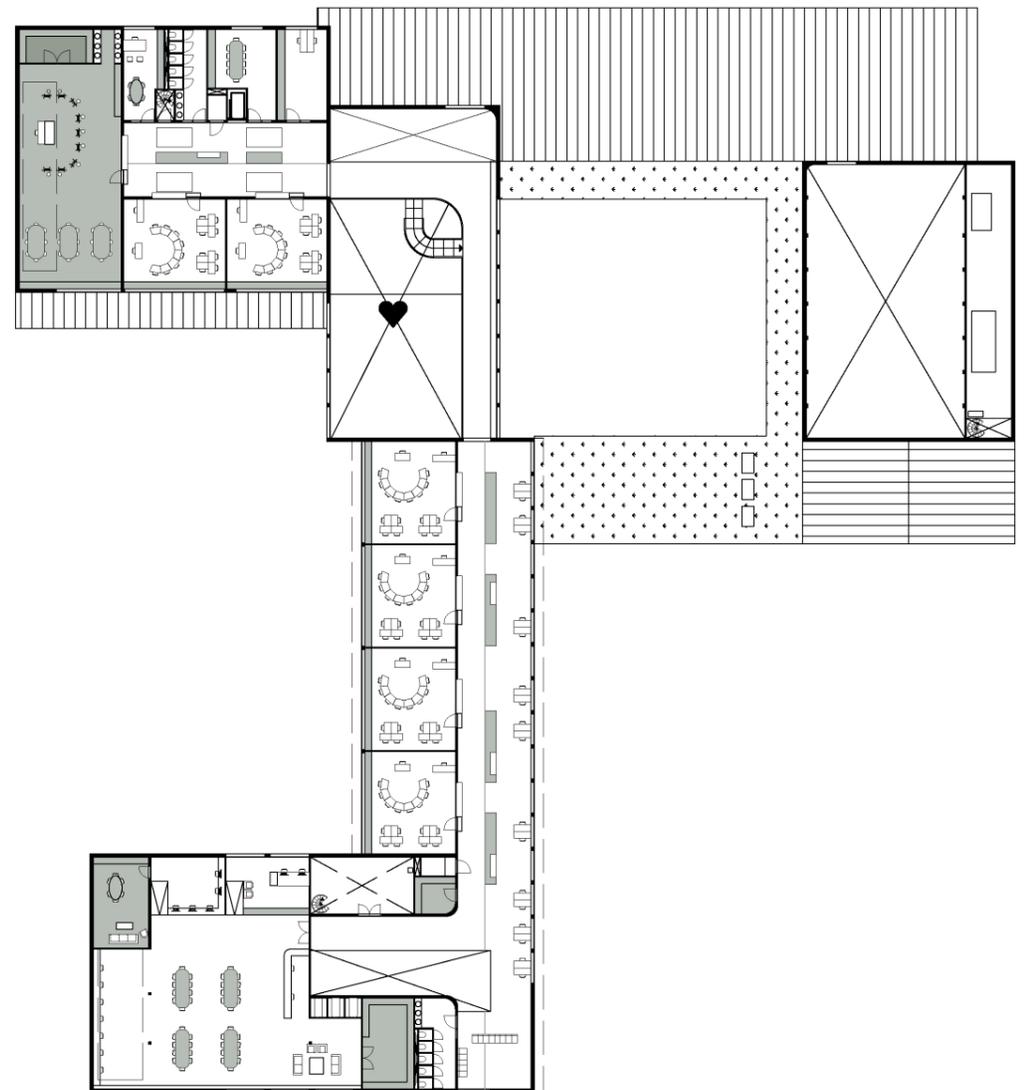


begane grond



FUNCTIES

- overzichtelijke buitenruimte



eerste verdieping



PLATTEGROND

1:500-niveau



IMPRESSIE
relaxruimte



IMPRESSIE
praktijklokaal



IMPRESSIE
buitenlokaal



IMPRESSIE
opslagruimte

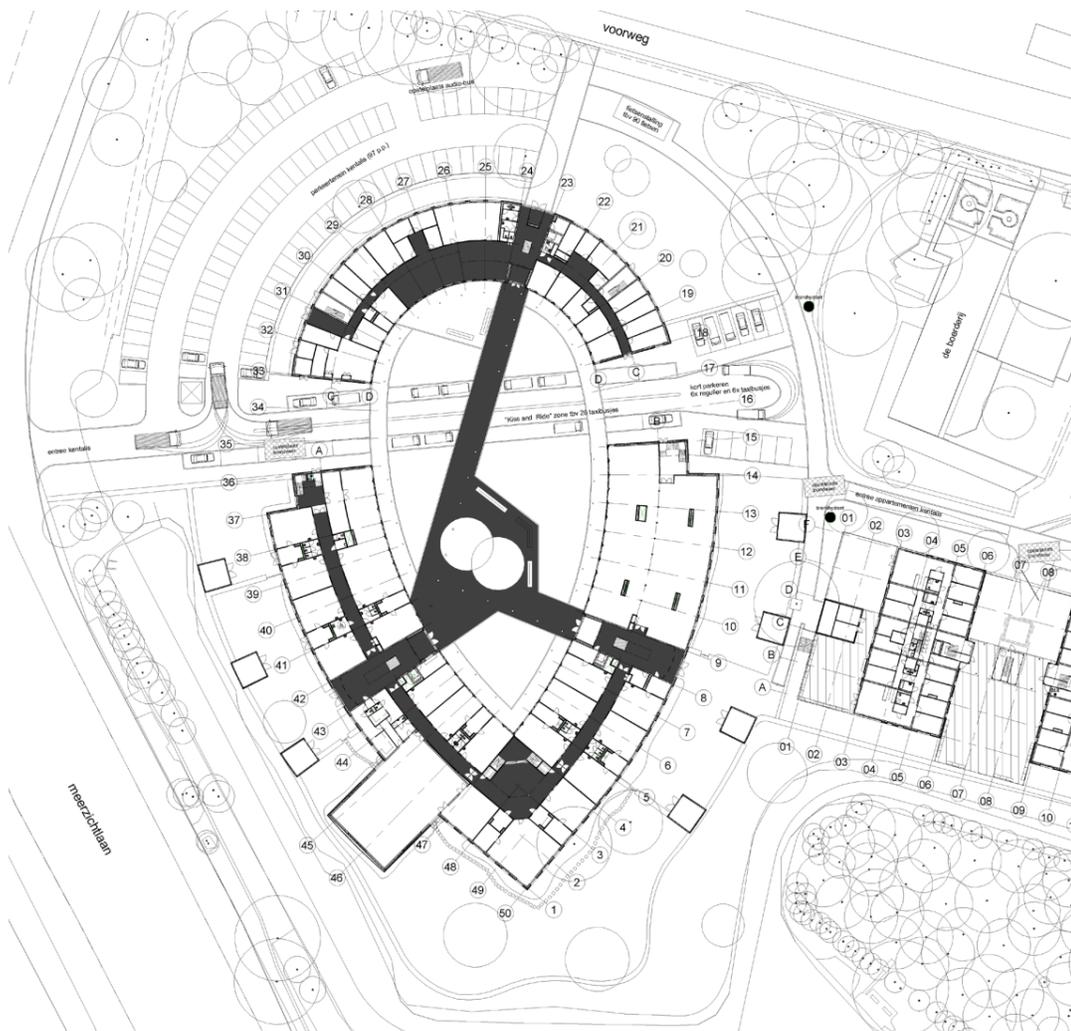


IMPRESSIE

lerarenkamer en keuken met overzicht en ovale tafels



IMPRESSIE
overzichtelijke buitenruimte



180

CLEAR WALKING ROUTES

P 67

STATEMENT

Walking routes must be clear to allow for pupils to have a signing conversation while walking.

CLARIFICATION

When walking together in conversation deaf people tend to keep a wide distance from another for clear visual communication using sign language. During a conversation signers will also shift their gaze between the conversation and their surroundings keeping a close eye for hazards and maintaining proper direction (Bauman, 2005). If a walking route is unclear, pupils will have to focus on which way to go instead of their signing conversation.

SOLUTION

Walking routes must be clear so that pupils do not have to focus on the route, but can focus on their conversation. This is achieved by wide hallways, sight lines to other areas or hallways, overview and good lighting.

RELATION

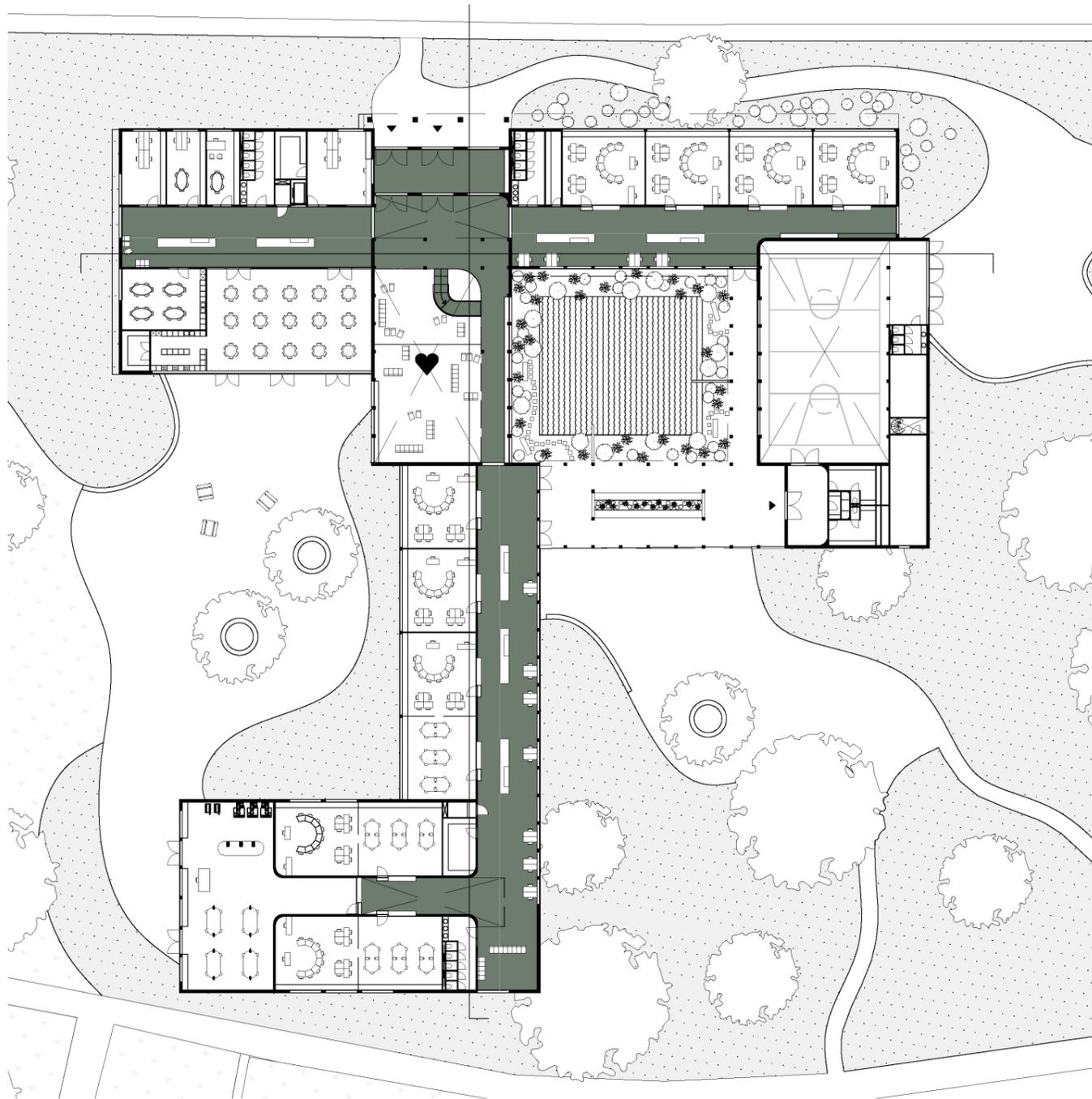
- P 40 sight lines in hallways
- P 49 wide hallways
- P 50 clear area for coats, desks and art
- P 51 no corner walls
- P 66 clear layout
- P 68 walking lines
- P 69 colours on the road

SOURCE

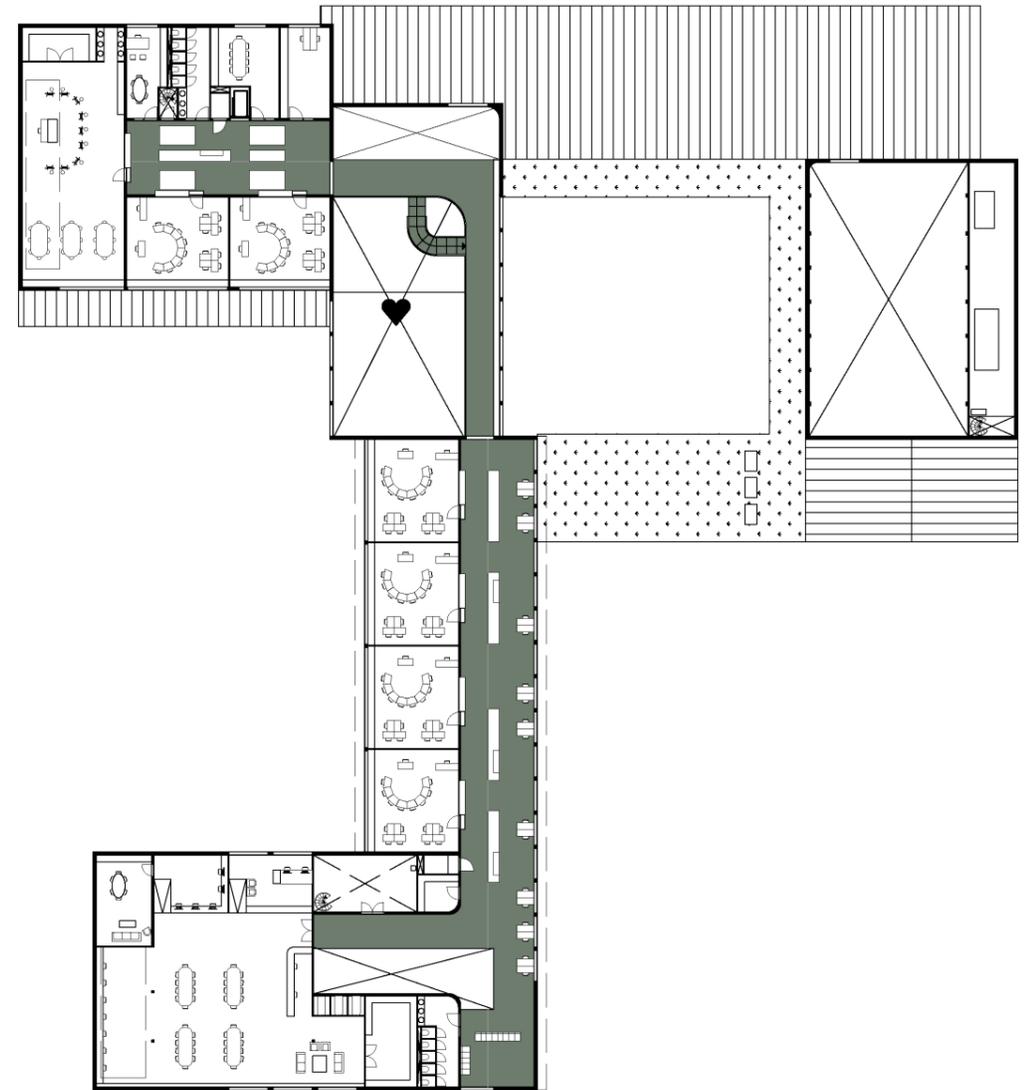
(Bauman, 2005)
 Fieldwork: interviews Kentalis College Zoetermeer and Kentalis Guyot SO
 Fieldwork: observations Kentalis College Zoetermeer, Kentalis Guyot VSO and SO

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begane grond



eerste verdieping



PLATTEGROND
1:500-niveau



144

WIDE HALLWAYS

P 49

STATEMENT

A school must have wide hallways to allow for accessibility and the continuation of conversations.

CLARIFICATION

Deaf schools often have children who, in addition to an auditory restriction, also have other disabilities. This is referred to as CMB education, *communicatief meervoudige beperking* (Kentalis, n.d.-b). Among the CMB pupils there are often children in wheelchairs. If hallways are narrow, wheelchair users will have difficulty moving through it. Furthermore, when walking together in conversation deaf people tend to keep a wide distance from another for clear visual communication using sign language. During a conversation signers will also shift their gaze between the conversation and their surroundings keeping a close eye for hazards and maintaining proper direction (Bauman, 2005). A narrow hallway will not provide enough space for a signing conversation.

SOLUTION

In order to prevent problems for wheelchair users and people in signing conversation, a deaf school must have wide hallways.

RELATION

P 35 wheelchair parking area

P 36 enough storage space

P 40 sight lines in hallways

P 50 clear area for coats, desks and art

P 51 no corner walls

P 59 light hallways

P 67 clear walking routes

SOURCE

(Bauman, 2005)

(Kentalis, n.d.-b)

Fieldwork: interviews Kentalis Guyot VSO, SO and VSO Vries

Fieldwork: observation Kentalis College Zoetermeer, Kentalis Guyot VSO, SO and VSO Vries

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146

CLEAR AREAS FOR COATS, DESKS AND ART

P 50

STATEMENT

Hallways must have clear areas for coats, extra desks and art to allow for overview, signing conversation and sensory reach.

CLARIFICATION

When walking together in conversation deaf people tend to keep a wide distance from another for clear visual communication using sign language. During a conversation signers will also shift their gaze between the conversation and their surroundings keeping a close eye for hazards and maintaining proper direction. Furthermore, deaf people are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. To explain: when deaf people walk into space they immediately 'read' the entire room to maintain control. Think of the movement of shadows or subtle changes in facial expressions and the positions of other people. They scan the environment and activities around them and see things that hearing people tend to overlook (Bauman, 2005). This is also called sensory reach. Both of these principles do not work if a hallway is cluttered with coats, random placings of extra desks and art hung wherever.

SOLUTION

To keep the hallway free of hazards, it is important to have clearly marked areas for coats, extra desks and art. In this way, the hallway is clear, gives a good overview and there is enough space for a signing conversation.

RELATION

P 40 sight lines in hallways

P 49 wide hallways

P 67 clear walking routes

SOURCE

(Bauman, 2005)

Fieldwork: interviews Kentalis Guyot SO and VSO Vries

Fieldwork: observation Kentalis College Zoetermeer, Kentalis Guyot VSO, SO and VSO Vries

147





148

NO CORNER WALLS

P 51

STATEMENT

To avoid collisions and provide an overview, a deaf school must not have any corner walls.

CLARIFICATION

When walking together in conversation deaf people tend to keep a wide distance from another for clear visual communication using sign language. During a conversation signers will also shift their gaze between the conversation and their surroundings keeping a close eye for hazards and maintaining proper direction (Bauman, 2005). A corner wall will keep a person approaching out of view, meaning that the signers will have to stop their conversation once they reach the corner to avoid bumping into each other. Where hearing people can adjust their walking route by being alerted by the sound of footsteps, deaf people are not able to.

SOLUTION

To avoid collisions and provide an overview, a deaf school must not have any corner walls. Signers will benefit from a curved wall to enable them to move through a space uninterrupted.

RELATION

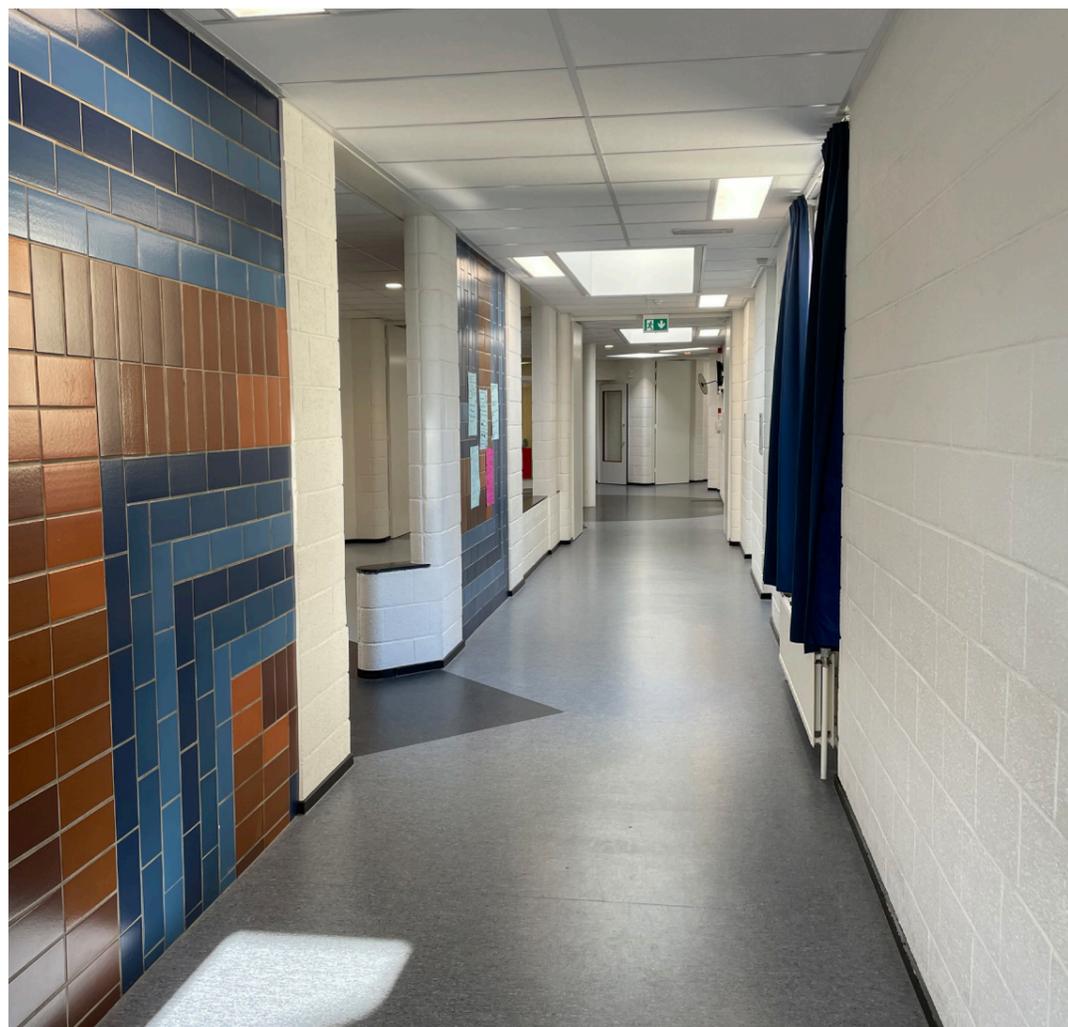
- P 40 sight lines in hallways
- P 45 glass in doors
- P 50 clear areas for coats, desks and art
- P 47 glass interior walls
- P 48 transparent lifts
- P 67 clear walking routes

SOURCE

(Bauman, 2005)
 Fieldwork: interviews Kentalis College Zoetermeer, Kentalis Guyot VSO and SO
 Fieldwork: observations Kentalis College Zoetermeer, Kentalis Guyot VSO and SO

149





126

SIGHT LINES IN HALLWAYS

P 40

STATEMENT

Hallways must have clear sight lines to allow for signing conversations and sensory reach.

CLARIFICATION

When walking together in conversation deaf people tend to keep a wide distance from another for clear visual communication using sign language. During a conversation signers will also shift their gaze between the conversation and their surroundings keeping a close eye for hazards and maintaining proper direction. Furthermore, deaf people are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings (Bauman, 2005). To explain: when deaf people walk into space they immediately 'read' the entire room to maintain control. Think of the movement of shadows or subtle changes in facial expressions and the positions of other people. They scan the environment and activities around them and see things that hearing people tend to overlook. This is also called sensory reach. Both of these principles do not work if a hallway does not have clear sight lines.

SOLUTION

When there are clear sight lines deaf people will both be able to scan the hallways better for hazards and to have better sensory reach in the hallways.

RELATION

P 45 glass in doors

P 47 glass interior walls

P 48 transparent lifts

P 49 wide hallways

P 50 clear areas for coats, desks and art

P 51 no corner walls

P 59 light hallways

P 67 clear walking routes

SOURCE

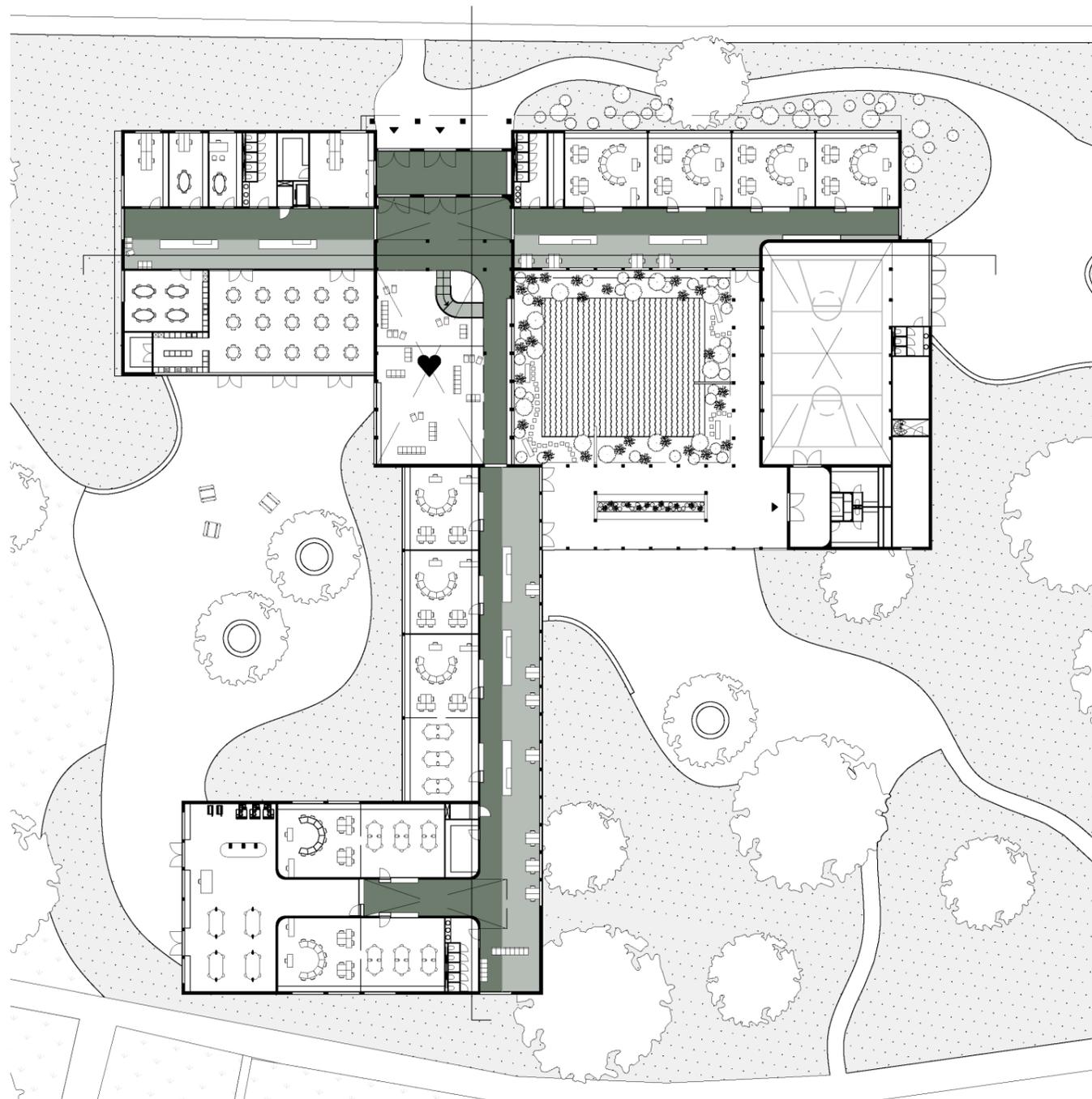
(Bauman, 2005)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Guyot VSO and SO

Fieldwork: observations Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College Kentalis Guyot VSO and SO

127





begane grond

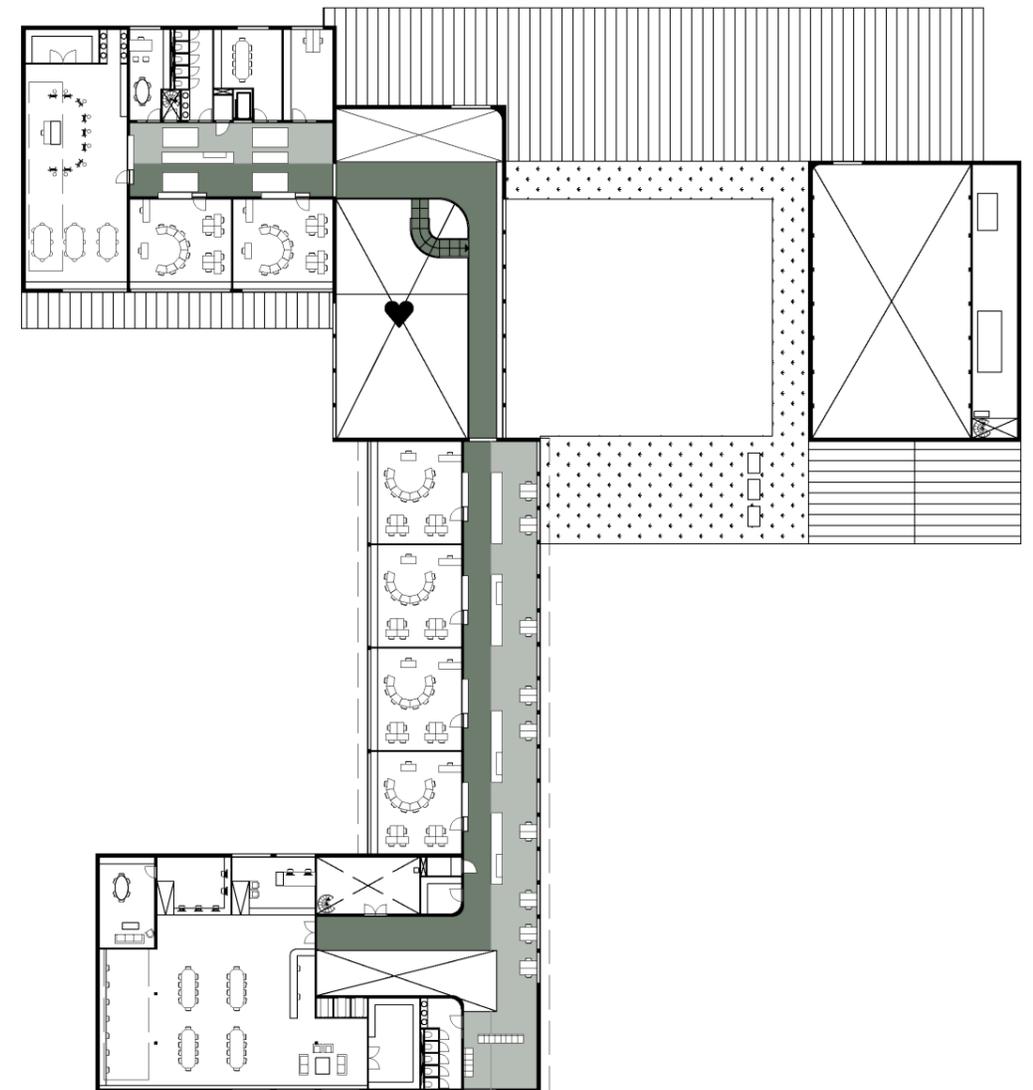


PLATTEGROND

1:500-niveau

FUNCTIES

- wijde gangen met duidelijke zones



eerste verdieping

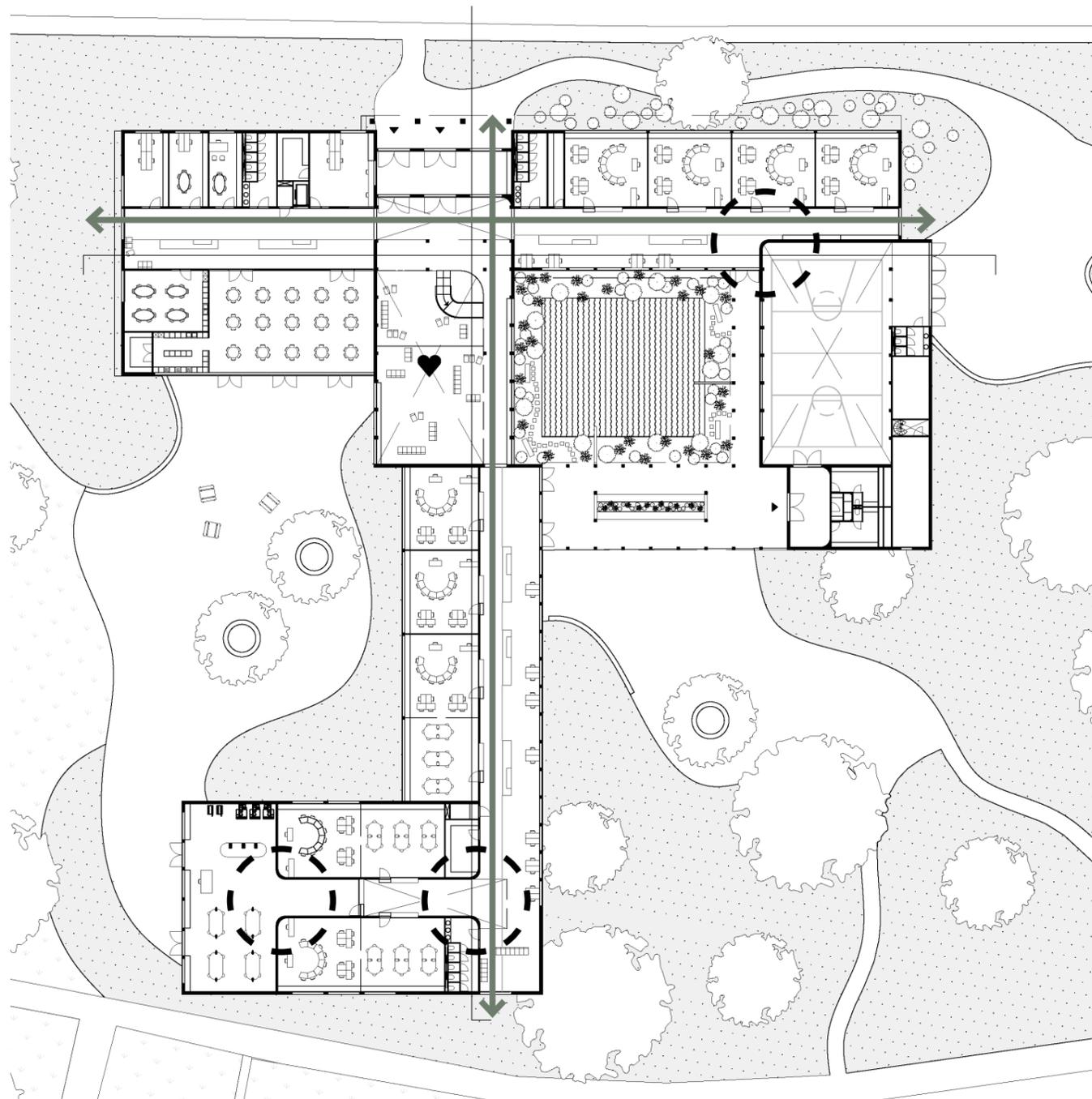




IMPRESSIE
gangen



IMPRESSIE
gangen



begane grond

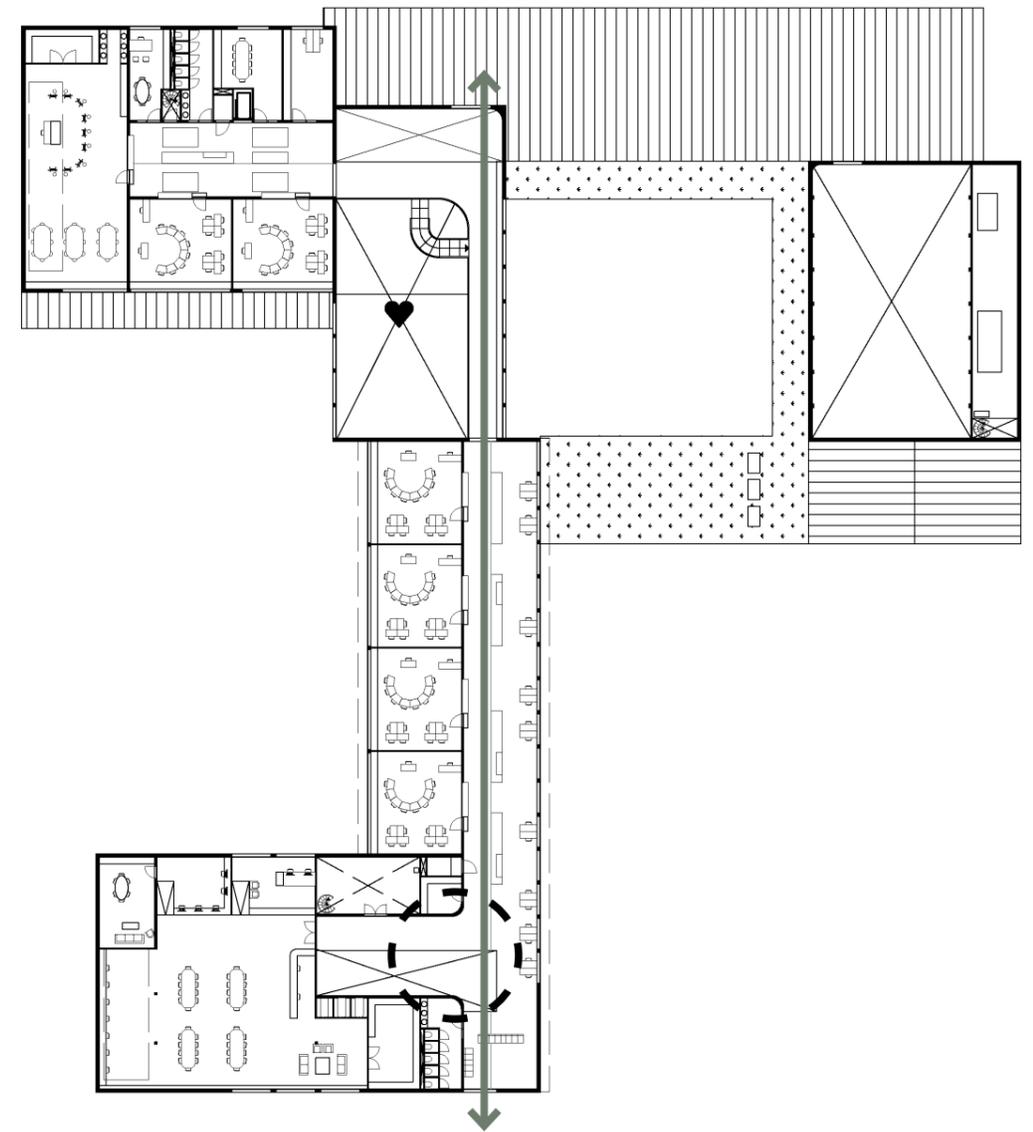


PLATTEGROND

1:500-niveau

FUNCTIES

- zichtlijnen en afgeronde hoeken



eerste verdieping

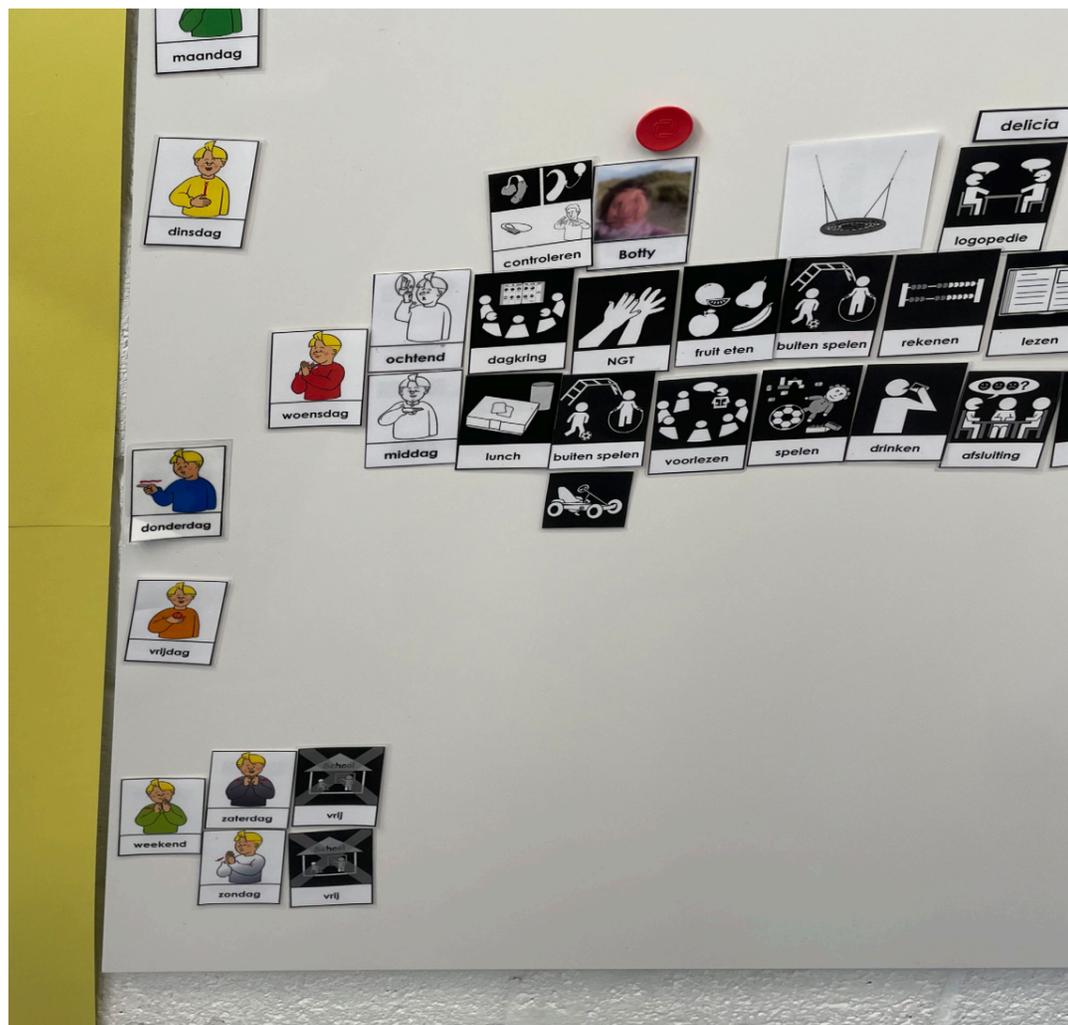




IMPRESSIE
gangen



IMPRESSIE
gangen



48

VISUAL SCHOOL

P 01

STATEMENT

At a school for deaf and hard-of-hearing pupils the focus must be on the visual.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Meaning that it is also with the eyes that the deaf and hard-of-hearing learn. They are for example taught in (partly) NGT, *Nederlandse Gebarentaal*.

SOLUTION

To support the visual way of learning, the classroom must have a digiboard and walls with space for hanging and displaying items. For example, a board filled with pictograms to explain the daily schedule. Hallways must also have walls with space for hanging and displaying items. For example, TV screens and signposting.

RELATION

- P 02 signposting
- P 03 information signs
- P 04 tv screens
- P 05 school bell with lights
- P 06 fire alarm with lights
- P 07 flashing lights in gymnasium

- P 14 table arrangement
- P 20 adjustable digiboard
- P 43 view of classrooms
- P 69 colours on the road
- P 71 correct wall colours

SOURCE

(Gaudiot & Martins, 2018)

49





128

AUDITORIUM WITH SIGHT LINES

P 41

STATEMENT

A school for the deaf must have a large open auditorium with sight lines and good overview.

CLARIFICATION

Deaf people are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings (Gaudiot & Martins, 2018). To explain: when deaf people walk into space they immediately 'read' the entire room to maintain control. Think of the movement of shadows or subtle changes in facial expressions and the positions of other people. They scan the environment and activities around them and see things that hearing people tend to overlook (Bauman, 2005). This is also called sensory reach.

SOLUTION

The auditorium is one of the most important spaces in a school and must therefore reflect its users. The design of the auditorium for a deaf school must therefore be based around visual range. The auditorium must be a large open space with sight lines and good overview.

RELATION

P 26 staff room next to auditorium

P 42 tribune in auditorium

SOURCE

(Bauman, 2005)

(Gaudiot & Martins, 2018)

Fieldwork: interviews Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO and SO

Fieldwork: observations Kentalis College Zoetermeer, Kentalis Compas College Kentalis Guyot VSO and SO

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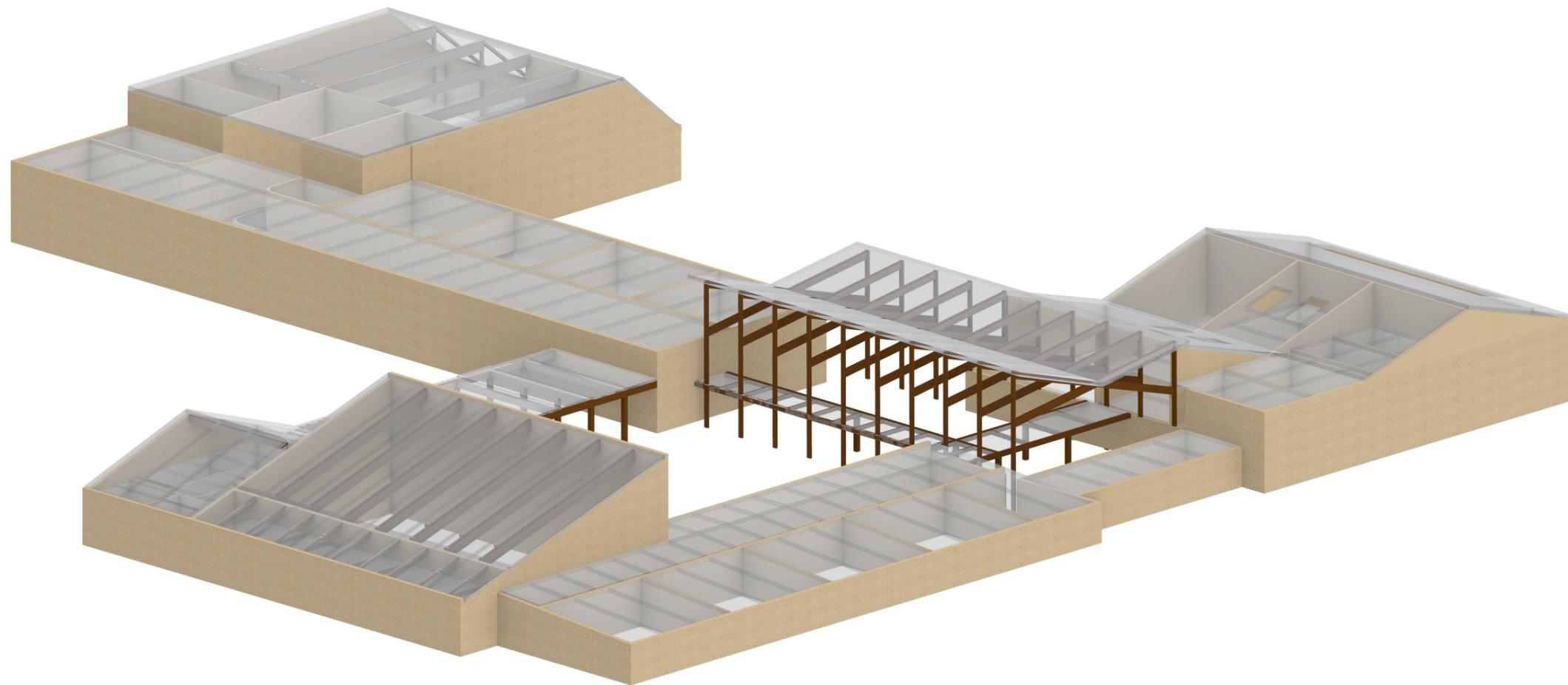
IMPRESSIE
visuele school



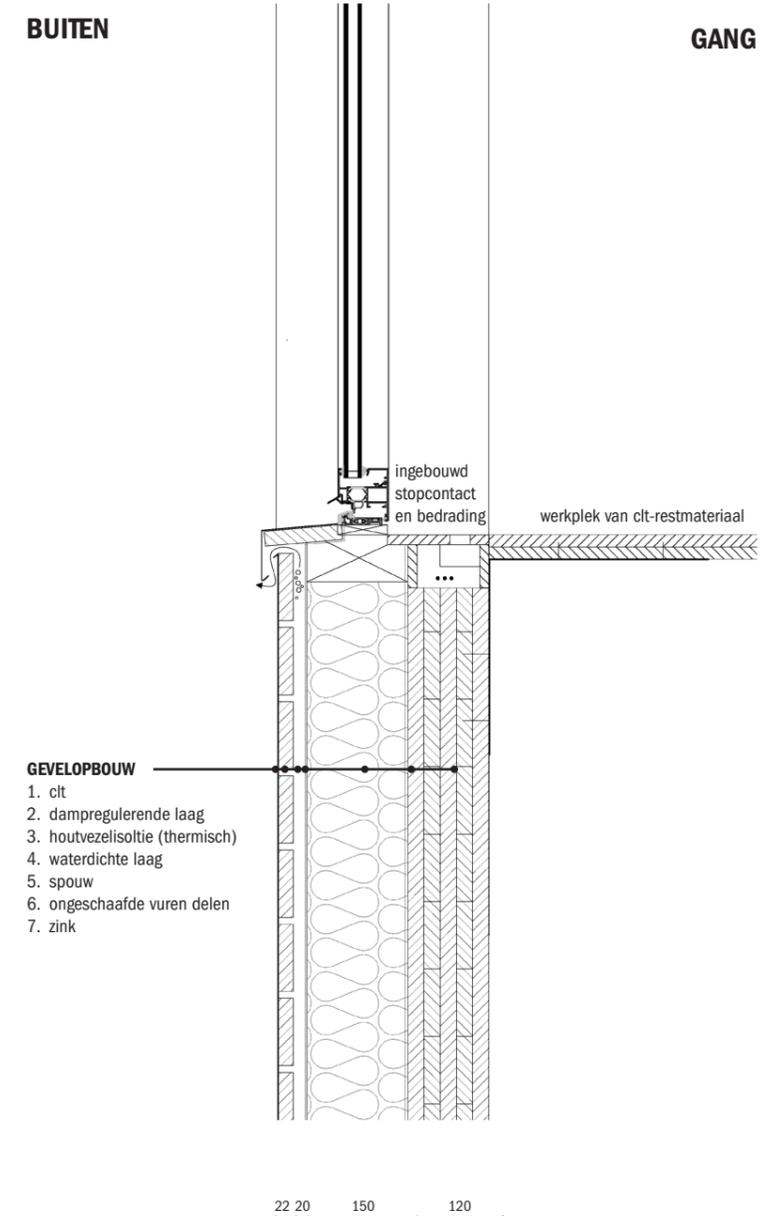
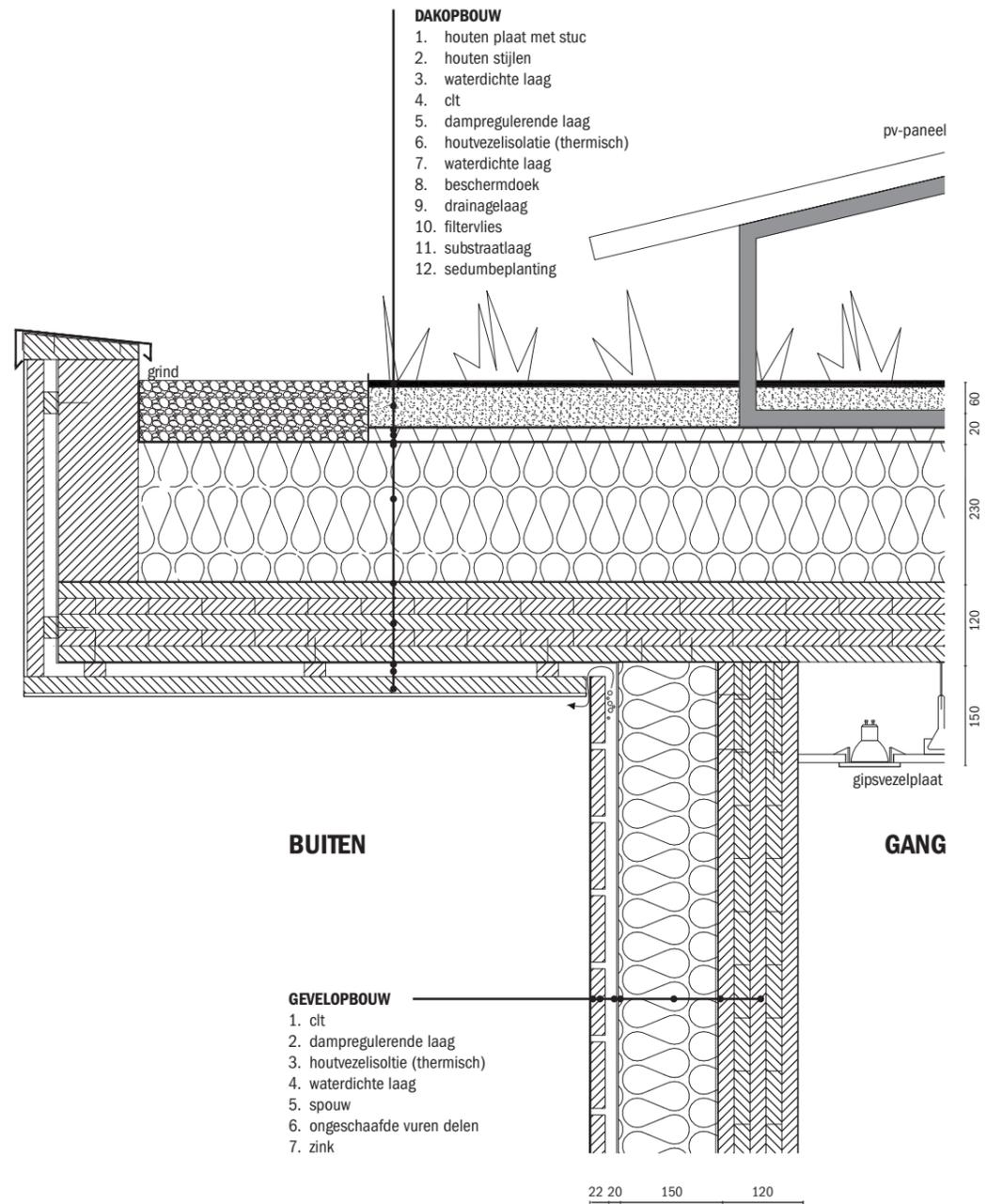
IMPRESSIE
visuele school



IMPRESSIE
visuele school

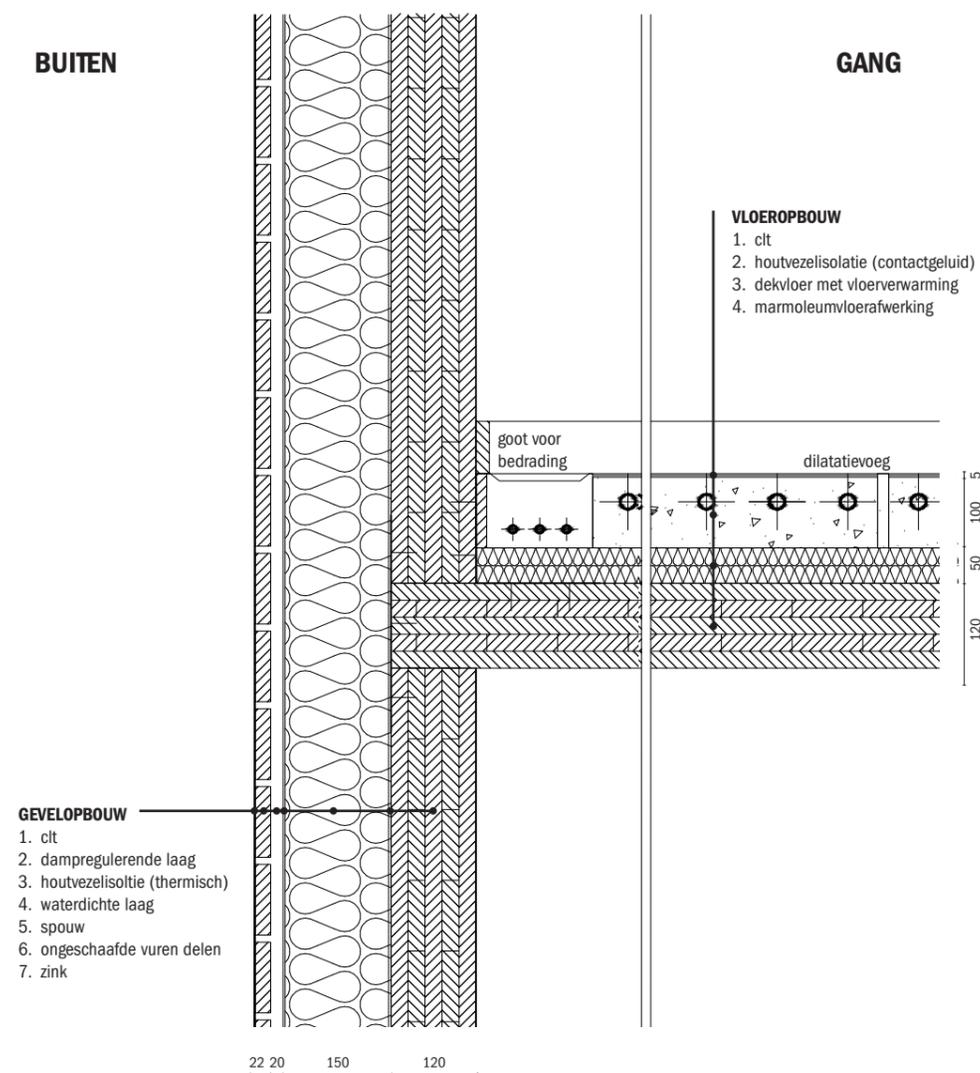
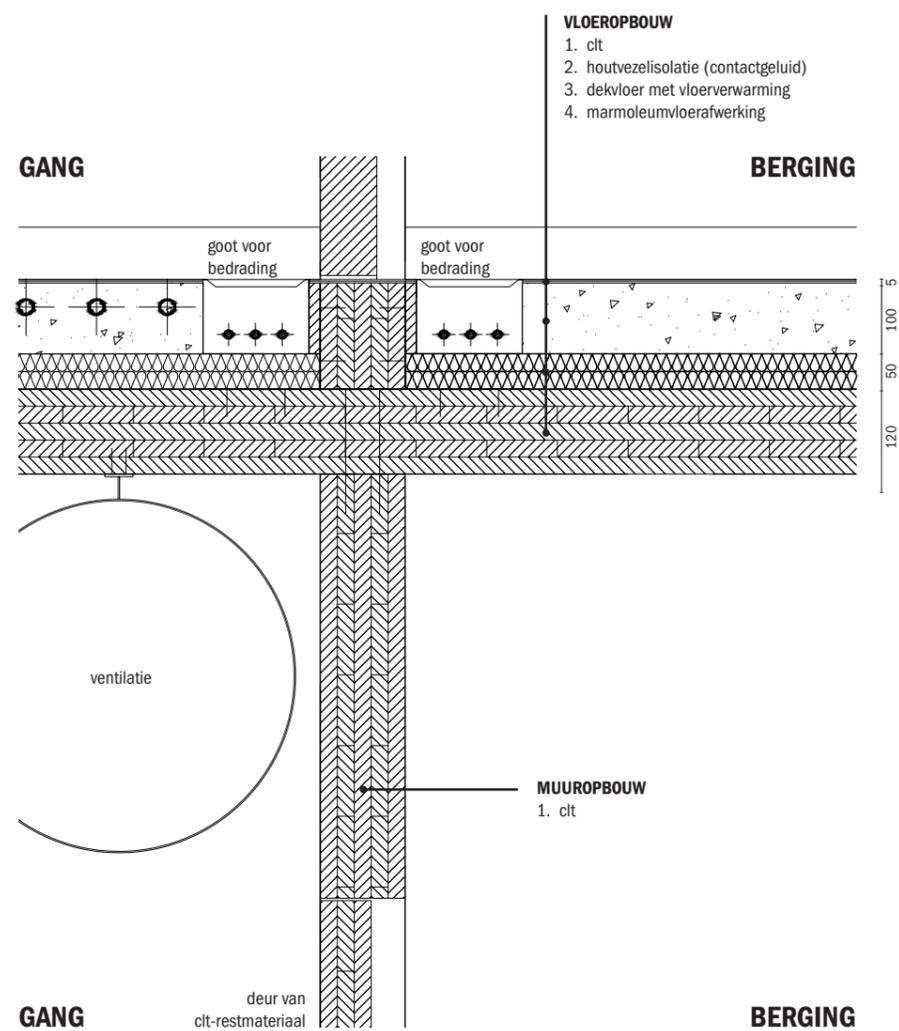


IMPRESSIE
zichtbare draagconstructie



DETAILS

1:5-niveau



DETAILS

1:5-niveau



168

SILENT VENTILATION

P 61

STATEMENT

A school must have silent ventilation in order to not be a distraction to pupils.

CLARIFICATION

When it is too hot or stuffy in a classroom, windows are quickly opened. This poses a problem in deaf education: open windows create background noise and therefore distraction. In cases where there is ventilation to reduce heat, it often makes background noises, thus also being a distraction. A school for the deaf accommodates both deaf and hard-of-hearing pupils. In addition, some pupils have a hearing aid or a CI, *cochlear implant*. A cochlear implant sends sound signals to the auditory nerves and brain. Some hard-of-hearing and deaf people can hear sounds again with a CI. There is therefore a great difference in hearing levels in a deaf school (Kentalis, n.d.-c). However, a CI or hearing aid picks up background noise, which distracts pupils. This leads to pupils not focusing on the teacher, or not focusing at all. Meaning that if either windows are open or the ventilation is not silent, pupils will be distracted.

SOLUTION

To prevent a classroom or other space from heating up and having to open windows, there must be ventilation. It is however, crucial that this ventilation system is silent in order not to be a distraction to pupils with hearing aids or CI's.

RELATION

P 23 closed cupboards

P 43 view of classrooms

P 57 no windows from floor to ceiling

P 60 good acoustics

P 65 hallway and classrooms floors separate

SOURCE

(Kentalis, n.d.-c)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer and Kentalis Compas College

169



TECHNISCHE VEREISTEN

- textiele ventilatiebuizen

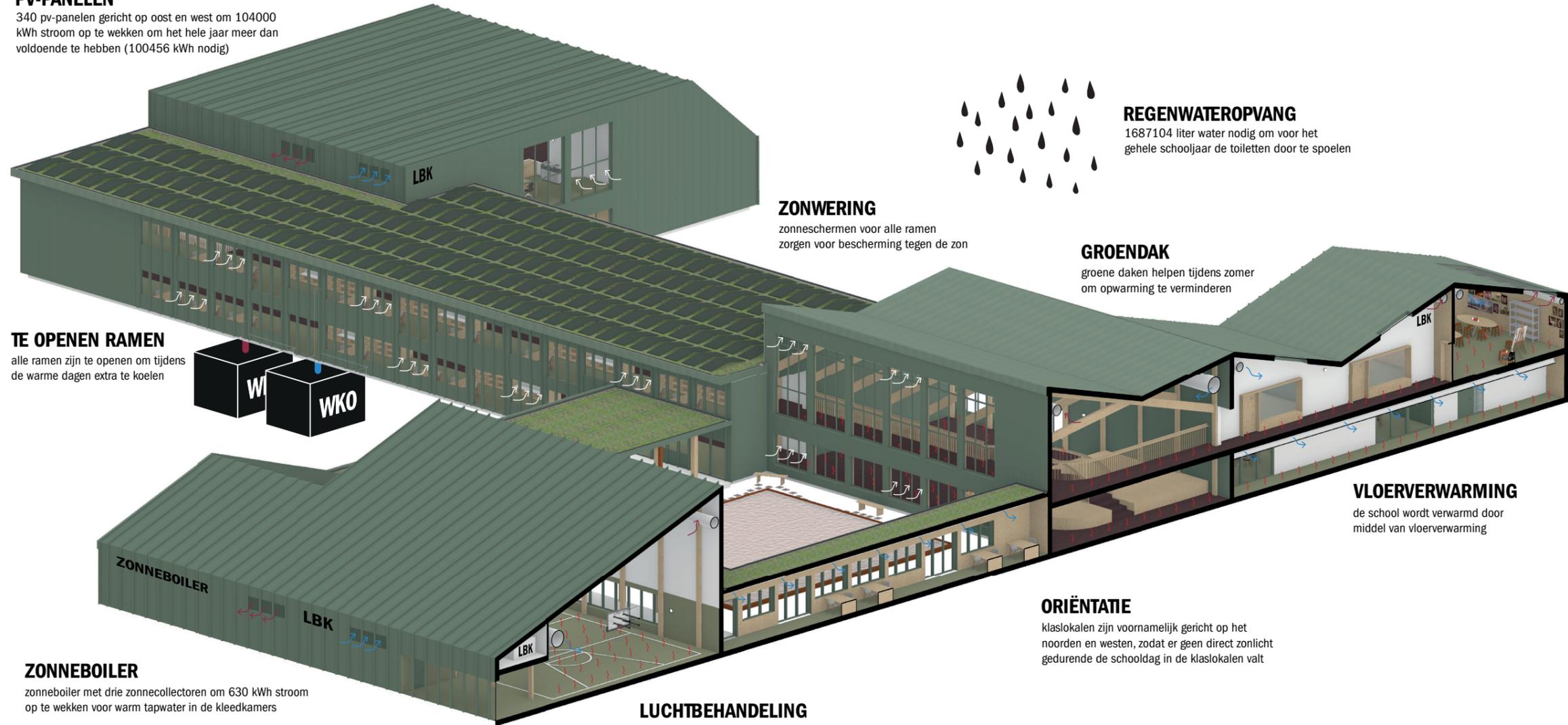


GEVELFRAGMENT

1:20-niveau

PV-PANELEN

340 pv-panelen gericht op oost en west om 104000 kWh stroom op te wekken om het hele jaar meer dan voldoende te hebben (100456 kWh nodig)



ZONWERING

zonneschermen voor alle ramen zorgen voor bescherming tegen de zon



REGENWATEROPVANG

1687104 liter water nodig om voor het gehele schooljaar de toiletten door te spoelen

GROENDAK

groene daken helpen tijdens zomer om opwarming te verminderen

VLOERVERWARMING

de school wordt verwarmd door middel van vloerverwarming

TE OPENEN RAMEN

alle ramen zijn te openen om tijdens de warme dagen extra te koelen



ZONNEBOILER

zonneboiler met drie zonnecollectoren om 630 kWh stroom op te wekken voor warm tapwater in de kleedkamers

LUCHTBEHANDELING

4 luchtbehandelingskasten zijn verdeeld over 4 zones in de school

ORIËNTATIE

klaslokalen zijn voornamelijk gericht op het noorden en westen, zodat er geen direct zonlicht gedurende de schooldag in de klaslokalen valt

KLIMAAT schema



154

NO STAIRS

P 54

STATEMENT

A school must have no stairs to allow for accessibility and the continuation of conversations.

CLARIFICATION

Deaf schools often have children who, in addition to an auditory restriction, also have other disabilities. This is referred to as CMB education, *communicatief meervoudige beperking* (Kentalis, n.d.-b). Among the CMB pupils there are often children in wheelchairs. If there are stairs at school, wheelchair users can not use them. Furthermore, when walking together in conversation deaf people will shift their gaze between the conversation and their surroundings keeping a close eye for hazards and maintaining proper direction (Bauman, 2005). Stairs will interrupt a conversation, since the signers will have to focus on the steps.

SOLUTION

In order to prevent problems for wheelchair users and to allow walking people to continue their signing conversation, a deaf school must have no stairs. A solution for this is the use of ramps and (glass) elevators.

RELATION

P 09 deaf education is diverse

P 52 no thresholds

P 54 no unexpected steps

SOURCE

(Bauman, 2005)

(Kentalis, n.d.-b)

Fieldwork: interviews Kentalis College Zoetermeer and Kentalis Guyot VSO Vries

Fieldwork: observation Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

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IMPRESSIE
flauwe trap



74

FLEXIBLE CLASSROOMS

P 14

STATEMENT

To accommodate the varying number of pupils and use of classrooms, classrooms must be flexible.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Meaning that it is also with the eyes that the deaf and hard-of-hearing learn. To support this visual way of learning, classrooms have a digiboard and walls with space for hanging and displaying items. For example, a board filled with pictograms to explain the daily schedule. In addition, the way of teaching in schools for the deaf is flexible, which means, among other things, that teaching takes place in different table arrangements. Furthermore the number of pupils per class at a school for the deaf is small: 7 pupils on average (Doof.nl, 2018). However, this varies. The number can be as high as 14 and as low as 3.

SOLUTION

To accommodate the visual way of learning, the varying number of pupils and use of classrooms, a classroom must be designed with flexibility in mind.

RELATION

P 08 varying number of students

P 16 table arrangement

P 17 extra desks

P 21 two teachers

P 22 flexible desks for teachers

SOURCE

(Doof.nl, 2018)

(Gaudiot & Martins, 2018)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Guyot VSO and SO

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78

TABLE ARRANGEMENT

P 16

STATEMENT

The table arrangement of a classroom must give a clear view of the board, the teachers and the pupils.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Meaning that it is also with the eyes that the deaf and hard-of-hearing learn. They are for example taught in (partly) NGT, *Nederlandse Gebarentaal*. Pupils must be able to see the board, the teacher and each other at all times. The way the tables are positioned therefore has a great influence.

SOLUTION

The following three table arrangements work well for deaf and hard-of-hearing people: a horseshoe/U-shape, group and half moon/half circle. All three table arrangements provide a view of the board, the signing teacher and the signing fellow pupils. In addition, faces are always visible for lip reading and reading facial expressions.

RELATION

P 14 flexible classrooms

P 15 round/oval tables

P 17 extra desks

P 21 two teachers

P 22 flexible desks for teachers

SOURCE

(Gaudiot & Martins, 2018)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

Fieldwork: observations Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

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80

EXTRA DESKS

P 17

STATEMENT

Give each pupil two desks.

CLARIFICATION

During explanations, pupils sit in table arrangement facing the teacher. This arrangement is not always suitable for independent work or group work. Desks must be moved if this is the case. This results in lost learning time.

SOLUTION

To prevent the desks from moving, it is useful to have extra desks in the room. In this way, every pupil has two desks: one for paying attention during the lesson and one for independent work or group work.

RELATION

P 08 varying number of pupils

P 09 deaf education is diverse

P 14 flexible classrooms

P 16 table arrangement

P 56 additional lighting

SOURCE

Fieldwork: interviews Dr. M. Polanoschool and Kentalis College Zoetermeer

Fieldwork: observations Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO and SO

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88

TWO TEACHERS

P 21

STATEMENT

Classrooms must be able to accommodate more than one teacher.

CLARIFICATION

In deaf schools, especially in primary schools, there are often two teachers present in the classroom. One as a care worker and the other as a tutor (Kentalis, n.d.-a). This is mainly the case with CMB education, *communicatief meervoudige beperking*, one of two forms of education in deaf schools: CMB and DSH, *doof en slechthorend* (Kentalis, n.d.-b). However, due to the smaller number of pupils per class in deaf education, classrooms are small. This means that two teachers often have to share their desk.

SOLUTION

Classrooms must be designed with flexibility in mind. There must be enough space in a classroom for more than one desk when there is more than one teacher.

RELATION

P 14 flexible classrooms

P 16 table arrangement

P 22 flexible desks for teachers

SOURCE

(Kentalis, n.d.-a)

(Kentalis, n.d.-b)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis Compas College and Kentalis Guyot SO

Fieldwork: observations Dr. M. Polanoschool, Kentalis Compas College, Kentalis Guyot SO and VSO Vries

89





92

CLOSED CUPBOARDS

P 23

STATEMENT

Cupboards in classrooms must be closed in order not to distract.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Meaning that it is also with the eyes that the deaf and hard-of-hearing learn. If the cupboards in a classroom are open, it can create a very cluttered appearance. Meaning that the open cupboard will be of great distraction to pupils. Their gaze goes to the cupboards and not to the teacher, but since deaf and hard-of-hearing pupils learn and hear with their eyes, this will result in them missing the whole lesson.

SOLUTION

To avoid the distraction cupboards of classrooms must be closed.

RELATION

- P 36 enough storage space
- P 43 view of classroom
- P 57 no windows from floor to ceiling
- P 61 silent ventilation
- P 65 hallways and classroom floors separate
- P 71 correct wall colours

SOURCE

(Gaudiot & Martins, 2018)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Guyot SO and VSO Vries

Fieldwork: observations Dr. M. Polanoschool, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

93





86

ADJUSTABLE DIGIBOARDS

P 20

STATEMENT

The deaf and hard-of-hearing are visual learners with the digiboard as an important learning tool.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Meaning that it is also with the eyes that the deaf and hard-of-hearing learn. They are for example taught in (partly) NGT, *Nederlandse Gebarentaal*. This way of learning is supported with use of a digiboard.

SOLUTION

In order to accommodate the different teaching styles, a digiboard must be adjustable. For example, the board may be higher in one classroom than in another, or a teacher may be able to adjust the height during the lesson itself. The digiboard must accommodate this.

RELATION

- P 01 visual school
- P 18 adjustable desks
- P 19 adjustable chairs

SOURCE

(Gaudiot & Martins, 2018)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis Guyot VSO, SO and VSO Vries

Fieldwork: observations Dr. M. Polanoschool, Kentalis Compas College, Kentalis College Zoetermeer, Kentalis Guyot VSO, SO and VSO Vries

87



LOKAALVEREISTEN

- flexibel in te delen



IMPRESSIE

lokaal

LOKAALVEREISTEN

- flexibel in te delen
- tafelopstelling: halve cirkel



IMPRESSIE

lokaal

LOKAALVEREISTEN

- flexibel in te delen
- tafelopstelling: halve cirkel
- extra tafels



IMPRESSIE

lokaal

LOKAALVEREISTEN

- flexibel in te delen
- tafelopstelling: halve cirkel
- extra tafels
- twee docenten



IMPRESSIE

lokaal

LOKAALVEREISTEN

- flexibel in te delen
- tafelopstelling: halve cirkel
- extra tafels
- twee docenten
- dichte kasten



IMPRESSIE

lokaal

LOKAALVEREISTEN

- flexibel in te delen
- tafelopstelling: halve cirkel
- extra tafels
- twee docenten
- dichte kasten
- verstelbaar digibord



IMPRESSIE

lokaal



132

VIEW OF CLASSROOMS

P 43

STATEMENT

To avoid distractions, classrooms must not face a playground.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Meaning that it is also with the eyes that the deaf and hard-of-hearing learn. They are for example taught in (partly) NGT, *Nederlandse Gebarentaal*. If the view from a classroom is focused on a playground, pupils are easily distracted. Their gaze goes to the window and not to the teacher, but since deaf and hard-of-hearing pupils learn and hear with their eyes, this will result in them missing the whole lesson.

SOLUTION

To avoid the distraction of looking outside, windows of classrooms must not face a playground.

RELATION

- P 01 visual school
- P 23 closed cupboards
- P 44 clear school yard
- P 57 no windows from floor to ceiling
- P 61 silent ventilation
- P 65 hallway and classroom floors separate
- P 71 correct wall colours

SOURCE

(Gaudiot & Martins, 2018)

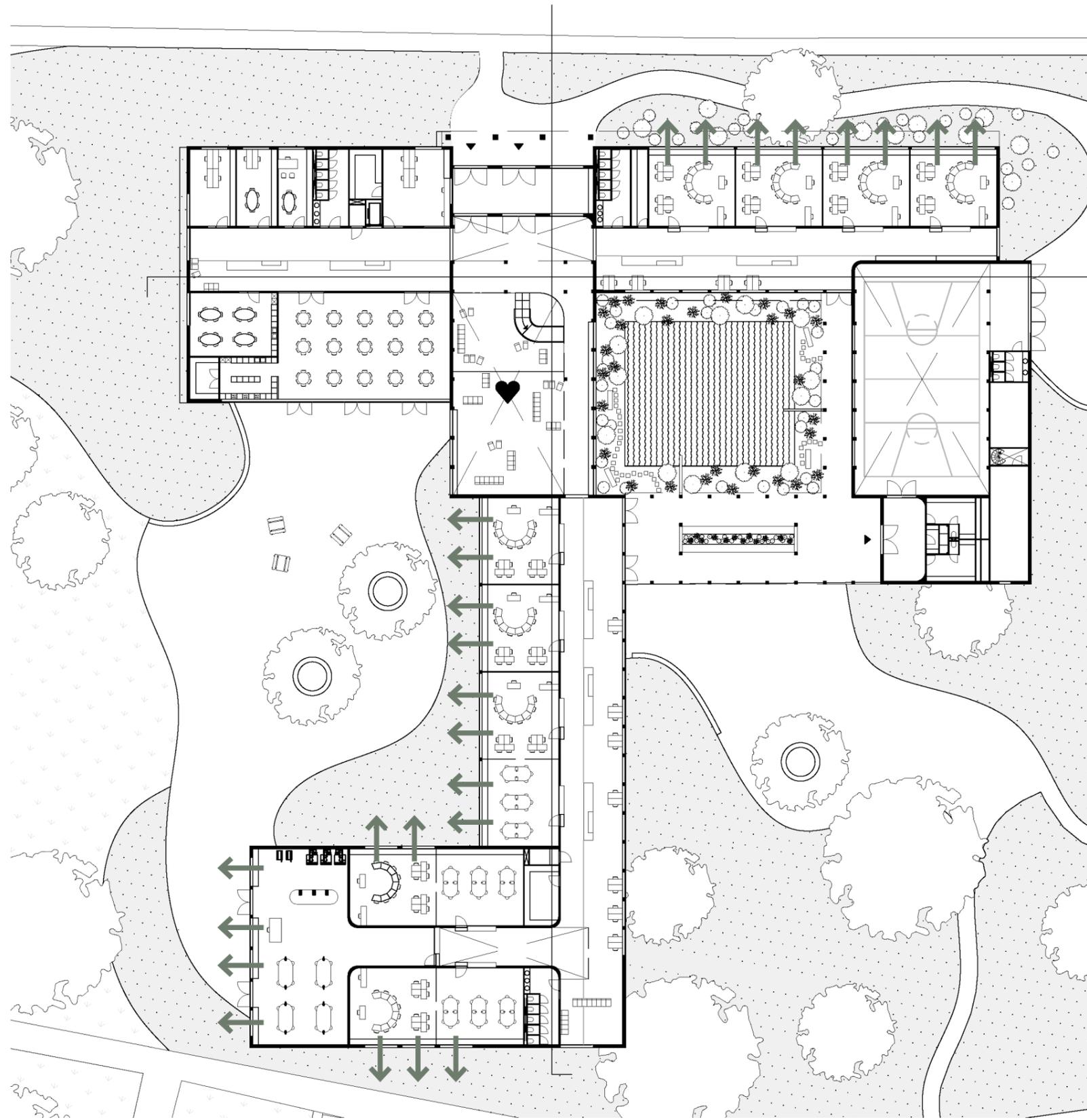
Fieldwork: interviews Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO and SO

133



LOKAALVEREISTEN

- uitzicht op groen
- lokalen veelal gericht op noord en west



begane grond

PLATTEGROND

1:500-niveau



160

NO WINDOWS FROM FLOOR TO CEILING

P 57

STATEMENT

Windows of classrooms must be 500 mm from the floor.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Meaning that it is also with the eyes that the deaf and hard-of-hearing learn. They are for example taught in (partly) NGT, *Nederlandse Gebarentaal*. If the windows are from ceiling to floor, a window has a large surface area and therefore also a large view of the outside. Meaning that the windows will be of great distraction to pupils. Their gaze goes to the window and not to the teacher, but since deaf and hard-of-hearing pupils learn and hear with their eyes, this will result in them missing the whole lesson. Furthermore, windows with large openings cause a classroom to heat up more quickly.

SOLUTION

To avoid the distraction of looking outside, windows of classrooms must not be from floor to ceiling. Windows must be 500 mm from the floor, in order to still give pupils when seated an overview to outside, but not enough to be a distraction, while still giving enough natural light to a classroom.

RELATION

P 23 closed cupboards

P 43 view of classrooms

P 61 silent ventilation

P 65 hallway and classroom floors separate

P 71 correct wall colours

SOURCE

(Gaudiot & Martins, 2018)

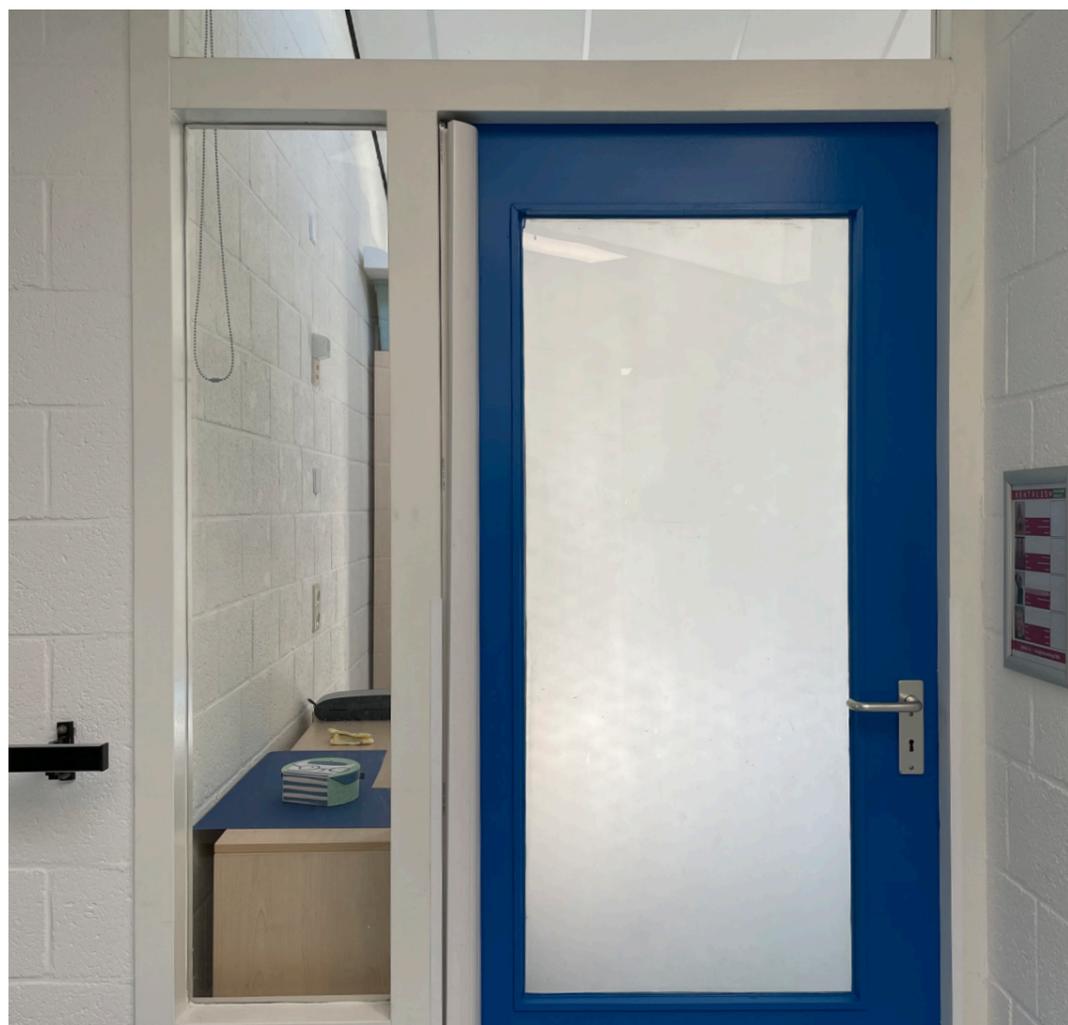
Fieldwork: interviews Kentalis College Zoetermeer, Kentalis Guyot VSO and SO

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IMPRESSIE
ramen lokalen



136

GLASS IN DOORS

P 45

STATEMENT

Doors must have glass in them to allow for sensory reach.

CLARIFICATION

Deaf people are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. To explain: when deaf people walk into space they immediately 'read' the entire room to maintain control. Think of the movement of shadows or subtle changes in facial expressions and the positions of other people. They scan the environment and activities around them and see things that hearing people tend to overlook (Bauman, 2005)

. This is also called sensory reach. When a door is solid, there is no overview. In such a case, the people on either side of the door can neither hear nor see someone coming.

SOLUTION

It is important that doors have a transparent section. This allows deaf people to see when someone is approaching. However, it is important that this glass part of the door is not distracting for pupils inside a classroom. For example, doors may only have a glass section at the top or side or may be made of frosted glass.

RELATION

P 40 sight lines in hallways

P 46 sliding doors

P 47 glass interior walls

P 48 transparent lifts

P 51 no corner walls

SOURCE

(Bauman, 2005)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

Fieldwork: observations Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

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SIGNPOSTING

P 02

STATEMENT

To support the visual way of being, a deaf school must have signposting to give directions.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'.

SOLUTION

To support the visual way of being, a deaf school must have signposting to give directions. This allows the deaf and hard-of-hearing to navigate better during a walking signing conversation.

RELATION

- P 01 visual school
- P 03 information signs
- P 04 tv screens

SOURCE

(Gaudiot & Martins, 2018)
 Fieldwork: interviews Kentalis Guyot VSO and VSO Vries
 Fieldwork: observation Dr. M. Polanoschool, Kentalis Guyot VSO and SO





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INFORMATION SIGNS

P 03

STATEMENT

To support the visual way of being, a deaf school must have information signs next to classrooms and offices.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'.

SOLUTION

To support the visual way of being, a deaf school must have information signs next to classrooms and offices. These information signs show, for example, who the teachers of a class are and when they work. This is done with both text and images. Because, when it comes to names, everyone in the deaf community has their own sign name. On information boards, it is useful to display both this sign name and written name.

RELATION

P 01 visual school

P 02 signposting

P 04 tv screens

SOURCE

(Gaudiot & Martins, 2018)

Fieldwork: interviews Kentalis Guyot VSO and VSO Vries

Fieldwork: observation Dr. M. Polanoschool, Kentalis Guyot VSO and SO

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56

SCHOOL BELL WITH LIGHTS

P 05

STATEMENT

To support the visual way of being, a deaf school must have a school bell with lights.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Looking specifically at the school bell, this means that a school bell with sound does not work for deaf education.

SOLUTION

To support the visual way of being, a deaf school must have a school bell with lights. When the school bell rings, this means that the lights of the school bell will flicker.

RELATION

P 01 visual school

P 06 fire alarm with lights

P 07 flashing lights in gymnasium

SOURCE

(Gaudiot & Martins, 2018)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis Guyot VSO and SO, Kentalis Compas College and Kentalis College Zoetermeer

Fieldwork: observation Kentalis Compas College, Kentalis Guyot VSO and SO

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FIRE ALARM WITH LIGHTS

P 06

STATEMENT

To support the visual way of being, a deaf school must have a fire alarm with lights

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Looking specifically at the school bell, this means that a fire alarm with sound does not work for deaf education.

SOLUTION

To support the visual way of being, a deaf school must have a fire alarm with lights. When the fire alarm goes off, this means that the lights of the fire alarm will flicker.

RELATION

P 01 visual school

P 05 school bell with lights

P 07 flashing lights in gymnasium

SOURCE

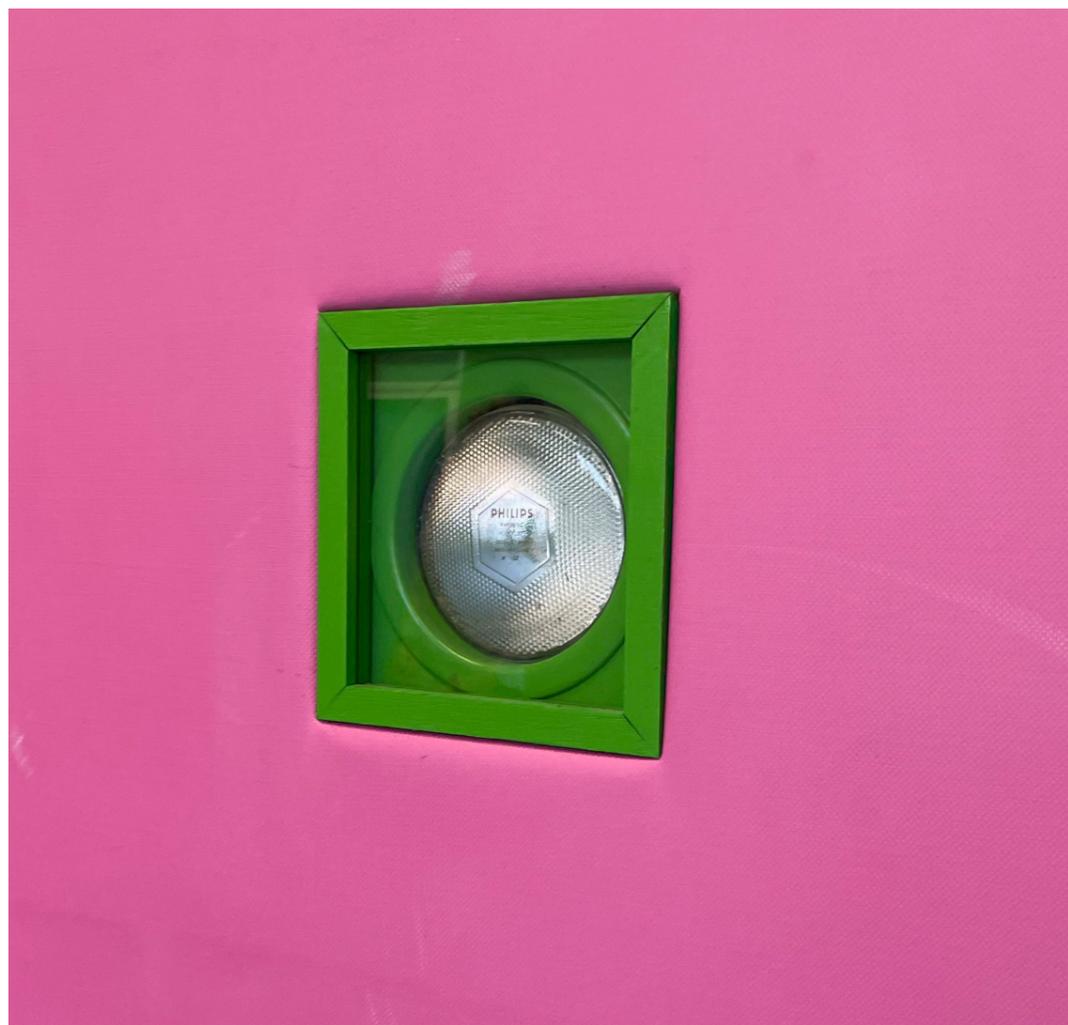
(Gaudiot & Martins, 2018)

Fieldwork: interviews Dr. M. Polanoschool, Kentalis Guyot VSO and SO, Kentalis Compas College and Kentalis College Zoetermeer

Fieldwork: observation Kentalis Compas College, Kentalis Guyot VSO and SO

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60

FLASHING LIGHTS IN GYMNASIUM

P 07

STATEMENT

To support the visual way of being, a deaf school's gymnasium must have flashing lights.

CLARIFICATION

Deaf and hard-of-hearing pupils are visual individuals with specific cognitive skills, who pay great attention to the perception of their surroundings. The difference between the cognitive development of deaf and hard-of-hearing and hearing pupils is in the way this knowledge is conveyed through language (Gaudiot & Martins, 2018). The world of a deaf and hard-of-hearing person is not of the hearing, but of the vision. It is with the eyes that the deaf and hard-of-hearing can 'hear'. Looking specifically at gym classes at a deaf school, it is difficult to attract pupils' attention during an activity. Pupils are busy with the activity and therefore not focused on the teacher.

SOLUTION

In order to attract the attention of pupils during gym class, it is important that there are several flashing lights in the walls. The teacher can control these lights with a remote control in order to attract the attention of pupils at any time.

RELATION

P 01 visual school

P 05 school bell with lights

P 06 fire alarm with lights

SOURCE

(Gaudiot & Martins, 2018)

Fieldwork: interviews Kentalis Guyot VSO

Fieldwork: observation Kentalis Guyot VSO

61





IMPRESSIE
lokaaldeur en wegwijs



IMPRESSIE

wegwijs, schoolbel en alarm met lampen



IMPRESSIE
lampen in gymzaal



174

FLOORS THAT ALLOW VIBRATIONS

P 64

STATEMENT

The floors of a deaf school must allow vibrations in order to be use of for the heightened tactile senses of the deaf.

CLARIFICATION

Deaf and hard-of-hearing people compensate for their hearing loss through extraordinary sensory “*super powers*” (Holmes, 2017, p.181). One of these “*super powers*” of the deaf and hard-of-hearing is heightened tactile senses. They can ‘hear’ sound by feeling vibrations (Napoli, 2014, p.222). This means, among other things, that the deaf and hard-of-hearing can feel vibrations from footsteps. This feeling of vibrations can also be used to attract each other’s attention. In schools this can, for example, be used to know that someone is walking behind you. Furthermore, a teacher can use this feeling of vibrations to get the attention of pupils during a lesson. If a pupil is distracted, a teacher can simply stamp on the floor.

SOLUTION

In order to make use of the sensory “*super power*” heightened tactile senses, it is important that the floor constructions of a deaf school are made of a material that allows vibrations. This is equally important for the floor’s finishing layer. Think of materials such as steel and concrete.

RELATION

P 60 good acoustics

P 65 hallway and classroom floors separate

SOURCE

(Holmes, 2017, p.181)

(Napoli, 2014, p.222)

Fieldwork: interviews Kentalis College Zoetermeer

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HALLWAY AND CLASSROOM FLOORS SEPARATE

P 65

STATEMENT

To prevent vibration, the hallway and classroom floors must be separate from each other in the construction.

CLARIFICATION

Deaf and hard-of-hearing people compensate for their hearing loss through extraordinary sensory “*super powers*” (Holmes, 2017, p.181). One of these “*super powers*” of the deaf and hard-of-hearing is heightened tactile senses. They can ‘hear’ sound by feeling vibrations (Napoli, 2014, p.222). This means, among other things, that the deaf and hard-of-hearing can feel vibrations from footsteps. At school, this means that footsteps can be felt in hallways and classrooms. When the floors of the two are connected in the construction, this means that the vibrations of footsteps in the hallway can be felt in the classrooms. This can be very distracting for pupils. This leads to pupils having difficulty focusing on the teacher, or not able to focus at all.

SOLUTION

In order to prevent vibration from footsteps in the hallway and thus distraction, it is important that the floors of the hallways and classrooms are separate from each other in the construction.

RELATION

P 13 listen to the deaf and hard-of-hearing

P 23 closed cupboards

P 43 view of classrooms

P 57 no windows from floor to ceiling

P 60 good acoustics

P 64 floors that allow vibrations

P 71 correct wall colours

SOURCE

(Holmes, 2017, p.181)

(Napoli, 2014, p.222)

Fieldwork: interviews Kentalis College Zoetermeer

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NO THRESHOLDS

P 52

STATEMENT

A school must have no threshold to allow for accessibility and the continuation of conversations.

CLARIFICATION

Deaf schools often have children who, in addition to an auditory restriction, also have other disabilities. This is referred to as CMB education, *communicatief meervoudige beperking* (Kentalis, n.d.-b). Among the CMB pupils there are often children in wheelchairs. If there are thresholds at school, wheelchair users will have difficulty entering rooms. Furthermore, when walking together in conversation deaf people tend to keep a wide distance from another for clear visual communication using sign language. During a conversation signers will also shift their gaze between the conversation and their surroundings keeping a close eye for hazards and maintaining proper direction. A threshold will be a hazard during a signing conversation.

SOLUTION

In order to prevent problems for wheelchair users and people in signing conversation, a deaf school must have no thresholds.

RELATION

P 09 deaf education is diverse

P 53 no unexpected steps

P 54 no stairs

SOURCE

(Kentalis, n.d.-b)

Fieldwork: interviews Kentalis College Zoetermeer and Kentalis Guyot VSO Vries

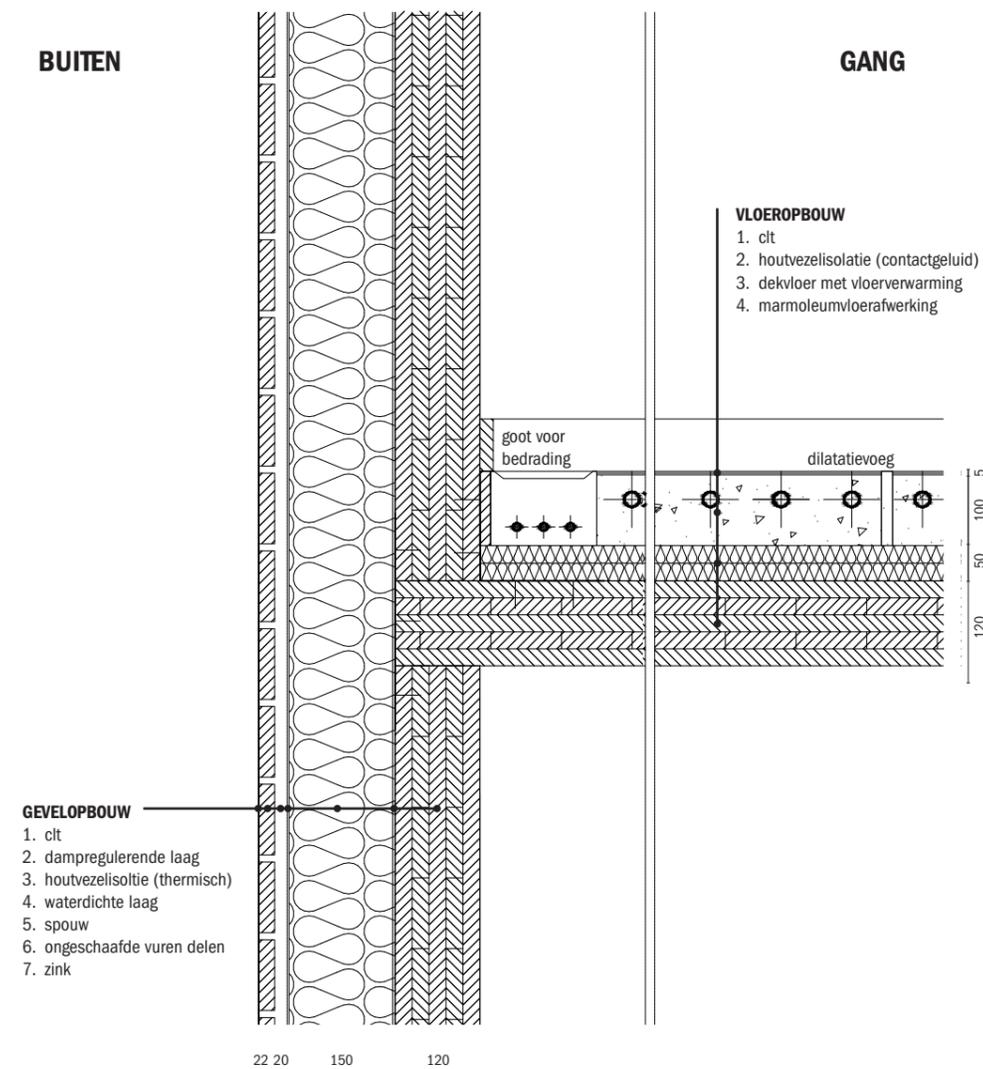
Fieldwork: observation Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

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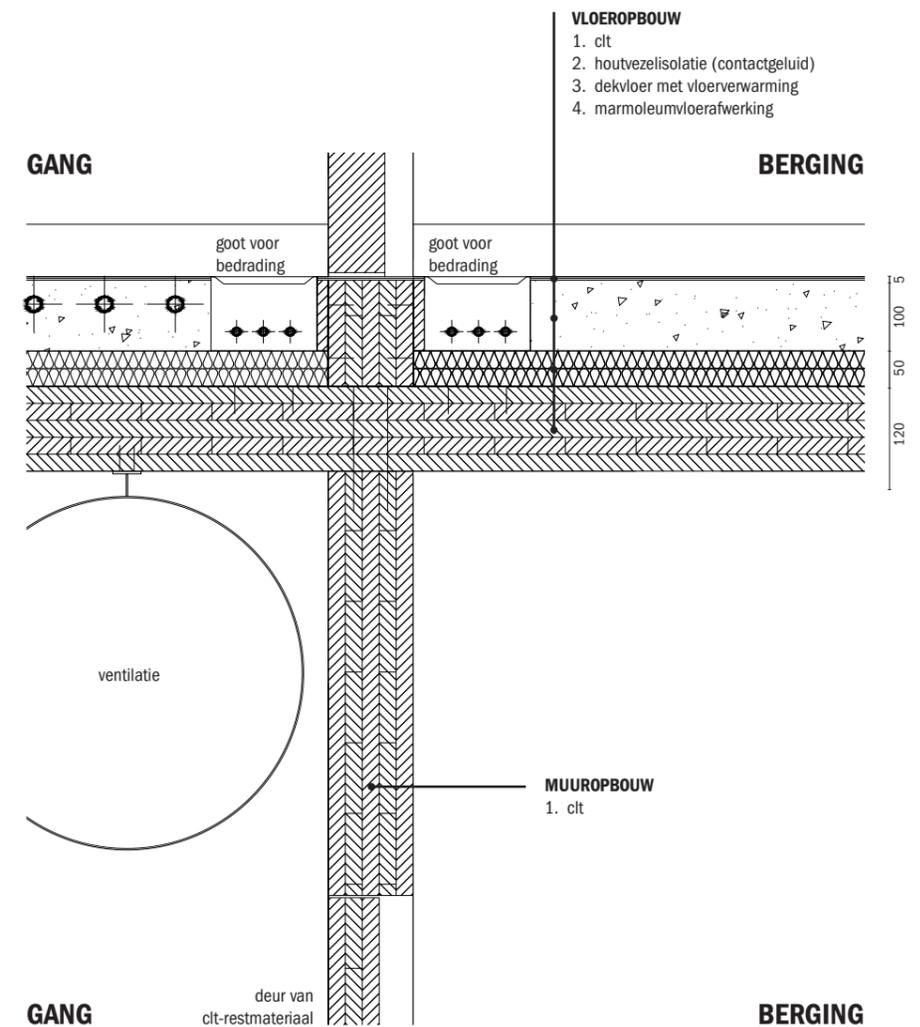
TECHNISCHE VEREISTEN

- marmoleum staat trillingen toe
- vloeren los van elkaar (dilatatatie)



TECHNISCHE VEREISTEN

- geen drempels
- vloeren los van elkaar



DETAILS
1:5-niveau



IMPRESSIE
losse vloeren



166

GOOD ACOUSTICS

P 60

STATEMENT

A deaf school must have good acoustics to avoid distractions and fatigue.

CLARIFICATION

A school for the deaf accommodates both deaf and hard-of-hearing pupils. In addition, some pupils have a hearing aid or a CI, *cochlear implant*. A cochlear implant sends sound signals to the auditory nerves and brain. Some hard-of-hearing and deaf people can hear sounds again with a CI. There is therefore a great difference in hearing levels in a deaf school (Kentalis, n.d.-c). Looking specifically at acoustics, it becomes apparent that when a room has bad acoustics, all sounds reverberate and echo. That is not just the sounds you want to hear, but also all the background noises. For hard-of-hearing people, this makes understanding speech much more difficult and also more tiring. After all, you have to make an extra effort to ignore background noise. A CI or a hearing aid picks up background noise, which distracts pupils. This leads to pupils not focusing on the teacher, or not focusing at all. Meaning that if a classroom has bad acoustics, pupils will be distracted.

SOLUTION

To avoid distractions and fatigue, it is important that a deaf school has good acoustics. The reverberation time must be low and there must be little background noise. Think of sound absorbing panels, stretching an acoustic cloth on the ceiling and the use of absorbent materials such as rock wool and curtains.

RELATION

P 61 silent ventilation
 P 62 sound-absorbing panels
 P 63 sound-absorbing panels in gymnasium

P 64 floors that allow vibrations
 P 65 hallway and classrooms floors separate

SOURCE

(Kentalis, n.d.-c)
 Fieldwork: interviews Dr. M. Polanoschool, Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries
 Fieldwork: observations Kentalis College Zoetermeer, Kentalis Guyot VSO, SO and VSO Vries
 Research: Dutch deaf schools

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SOUND-ABSORBING PANELS

P 62

STATEMENT

In order to reduce reverberation and background noise, there must be sound-absorbing panels.

CLARIFICATION

A school for the deaf accommodates both deaf and hard-of-hearing pupils. In addition, some pupils have a hearing aid or a CI, *cochlear implant*. A cochlear implant sends sound signals to the auditory nerves and brain. Some hard-of-hearing and deaf people can hear sounds again with a CI. There is therefore a great difference in hearing levels (Kentalis, n.d.-c). However, a CI or hearing aid picks up background noise and reverberation, which distracts pupils. This leads to pupils not focusing on the teacher, or not focusing at all.

SOLUTION

In order to reduce background noise and reverberation, sound-absorbing panels must be installed in classrooms and the gymnasium. This will benefit the concentration of pupils.

RELATION

P 60 good acoustics

P 63 sound-absorbing panels in gymnasium

SOURCE

(Kentalis, n.d.-c)

Fieldwork: interviews Kentalis Guyot VSO and SO

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172

SOUND-ABSORBING WALLS AND FLOORS IN GYMNASIUM

P 63

STATEMENT

In order to reduce reverberation and background noise in the gymnasium, there must be sound-absorbing walls and floors.

CLARIFICATION

A school for the deaf accommodates both deaf and hard-of-hearing pupils. In addition, some pupils have a hearing aid or a CI, *cochlear implant*. A cochlear implant sends sound signals to the auditory nerves and brain. Some hard-of-hearing and deaf people can hear sounds again with a CI. There is therefore a great difference in hearing levels (Kentalis, n.d.-c). However, a CI or hearing aid picks up background noise and reverberation, which distracts pupils. Looking specifically at gym classes at a deaf school, loud background noise and reverberation, leads to pupils not focusing on their activity or explanation of the teachers. In addition, constant reverberation and loud background noise can also have negative effects on pupils' health and mood (Akoesta, n.d.).

SOLUTION

In order to reduce background noise and reverberation, sound-absorbing walls and floor must be installed in classrooms and the gymnasium. This will benefit the concentration, health and moods of pupils. Think for example of materials with a high acoustic value such as rock wool and fabrics.

RELATION

P 60 good acoustics

P 62 sound-absorbing panels

SOURCE

(Akoesta, n.d.)

(Kentalis, n.d.-c)

Fieldwork: interviews Kentalis College Zoetermeer and Kentalis Guyot SO

Fieldwork: observations Kentalis College Zoetermeer, Kentalis Guyot VSO and SO

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ruimte	opp wanden [m ²]				opp vloer [m ²]	opp plafond [m ²]	volume ruimte [m ³]	T
	wand a	wand b	wand c	wand d				
klaslokaal	27	24	27	24	72	72	246	0,57
aula	282	90	282	90	435	463	1642	0,50
kantine	54	33	54	33	197	197	568	0,62
gymzaal	40	47	28	30	420	550	1485	0,59
	149	72	79	70				

ruimte	materiaal wanden				materiaal vloer	materiaal plafond	materiaal	α
	wand a	wand b	wand c	wand d				
klaslokaal	clt	houtvezelplc	clt	houtvezelplc	marmoleum	clt	clt	0,37
aula	houtvezelplc	houtvezelplc	houtvezelplc	zink	marmoleum	houtvezelplaat	houtvezelplaat	0,42
kantine	clt	houtvezelplc	clt	houtvezelplc	marmoleum	clt	marmoleum	0,03
gymzaal	40 m ² marn	47 m ² marn	28 m ² marn	30 m ² marn	marmoleum	houtvezelplaat	zink	0,57
gymzaal	149 m ² hou	72 m ² hout	79 m ² hout	70 m ² hout				

formule van Sabine

$$T = \frac{0,161 \times V}{0 \times \alpha}$$

T = nagalmtijd [s]
V = volume ruimte [m³]
O = som van oppervlaktes [m²]
α = absorptiecoëfficiënten

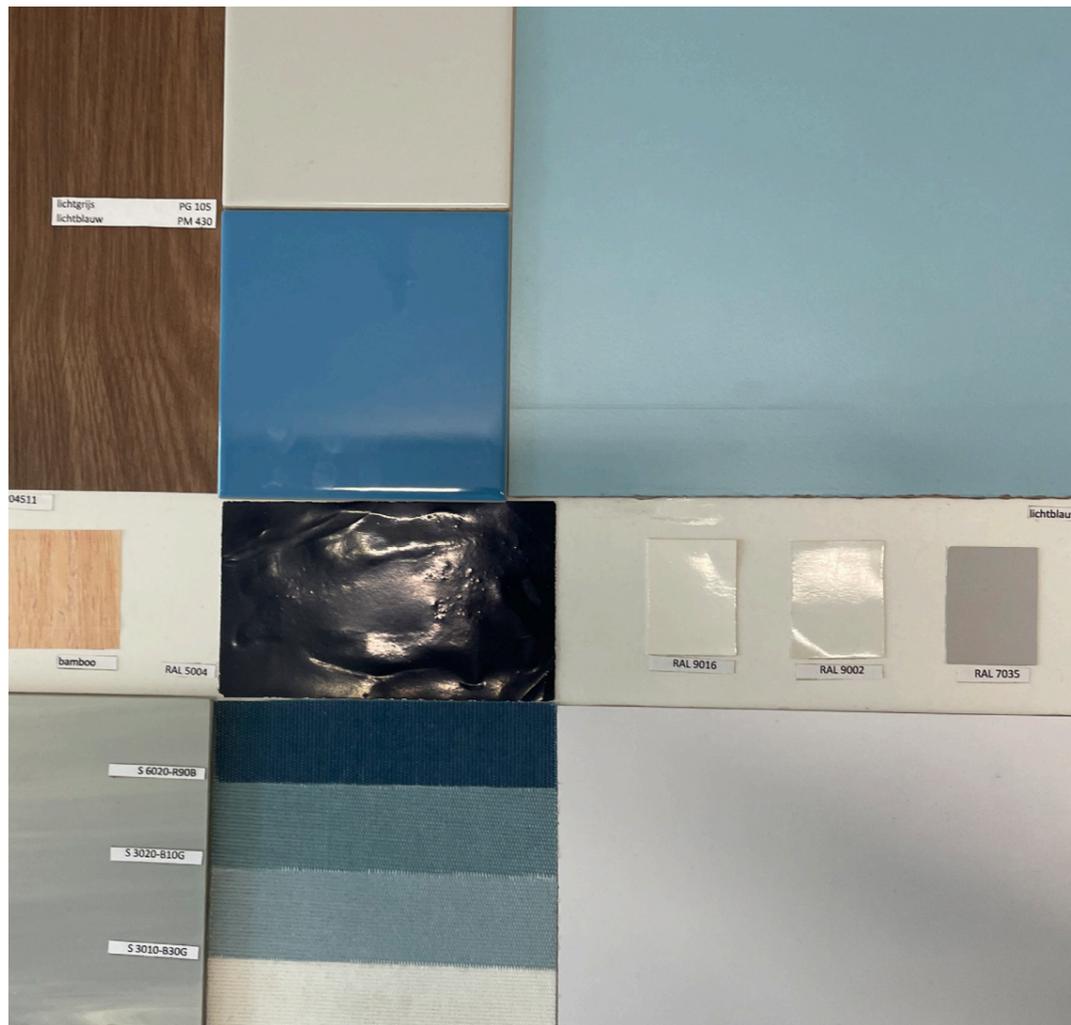
goede nagalmtijd

0,4-0,6 s

acceptable nagalmtijd

0,9-1,0 s

AKOESTIEK berekeningen



188

CORRECT WALL COLOURS

P 71

STATEMENT

Wall colours must contrast with skin colours.

CLARIFICATION

Reading someone's facial expression and lips is crucial while signing. A facial expression for example, can completely change a sentence or the meaning of a word. Lip-reading is even more important, without it a signer cannot know which sign is being used. Wall colours that are similar to a person's skin tone, can interrupt and distract from conversations and can make reading peoples facial expressions and lips difficult (Bauman, 2005).

SOLUTION

Wall colours must contrast a range of skin tones. Think of colours such as muted greens or blues.

RELATION

- P 01 visual school
- P 23 closed cupboards
- P 43 view of classrooms
- P 57 no windows from floor to ceiling

SOURCE

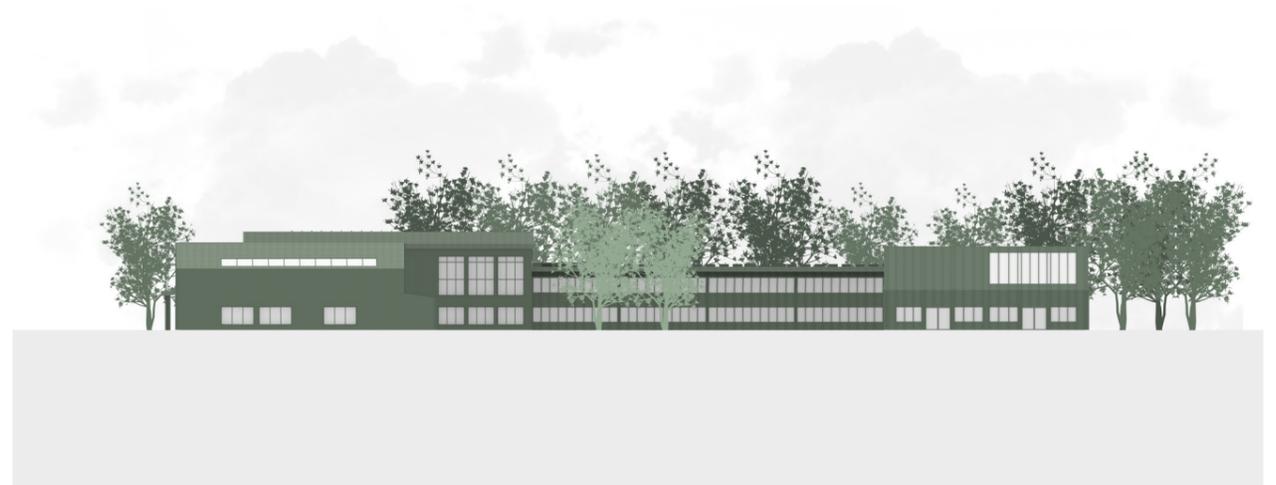
(Bauman, 2005)

Fieldwork: interviews Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

Fieldwork: observation Kentalis College Zoetermeer, Kentalis Compas College, Kentalis Guyot VSO, SO and VSO Vries

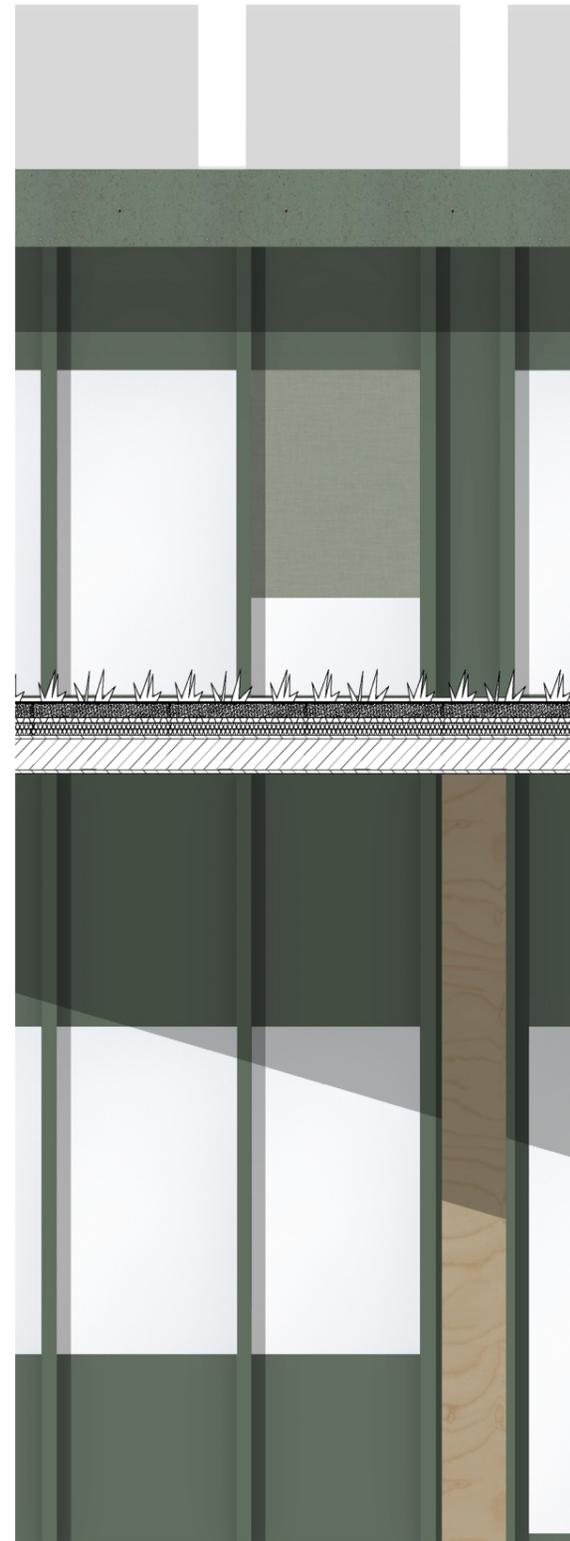
189





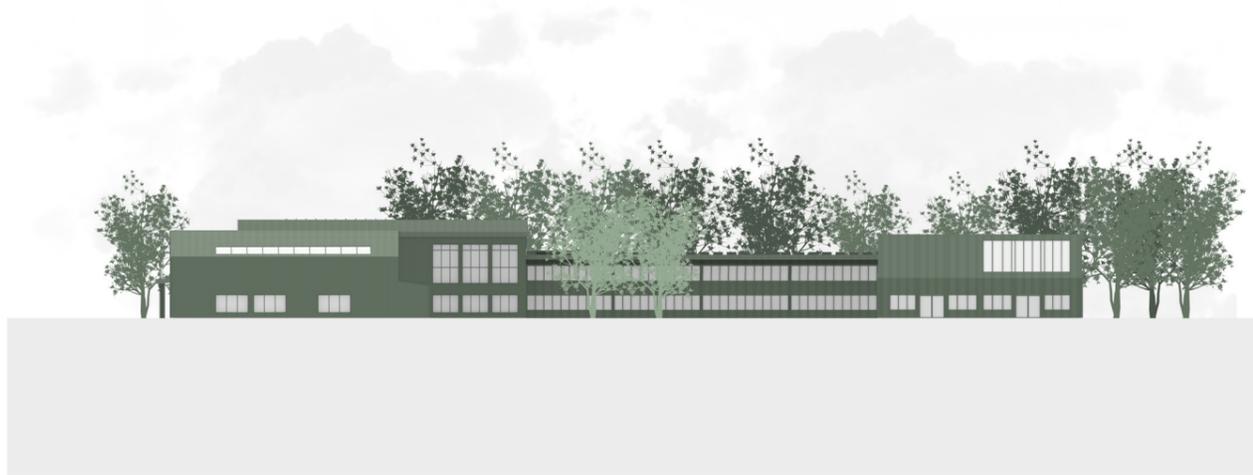
GEVELS

1:500-niveau



GEVELFRAGMENT

1:20-niveau

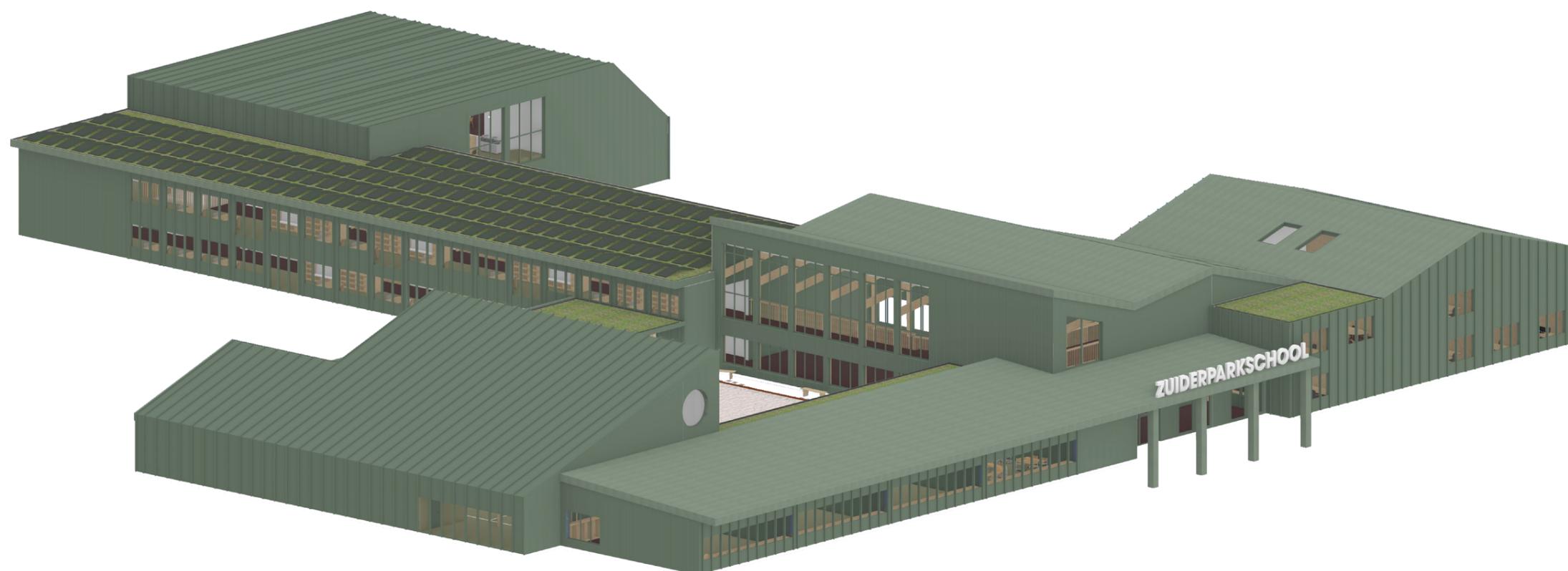


TWEE WERELDEN

1:500-niveau



TWEE WERELDEN
komen samen



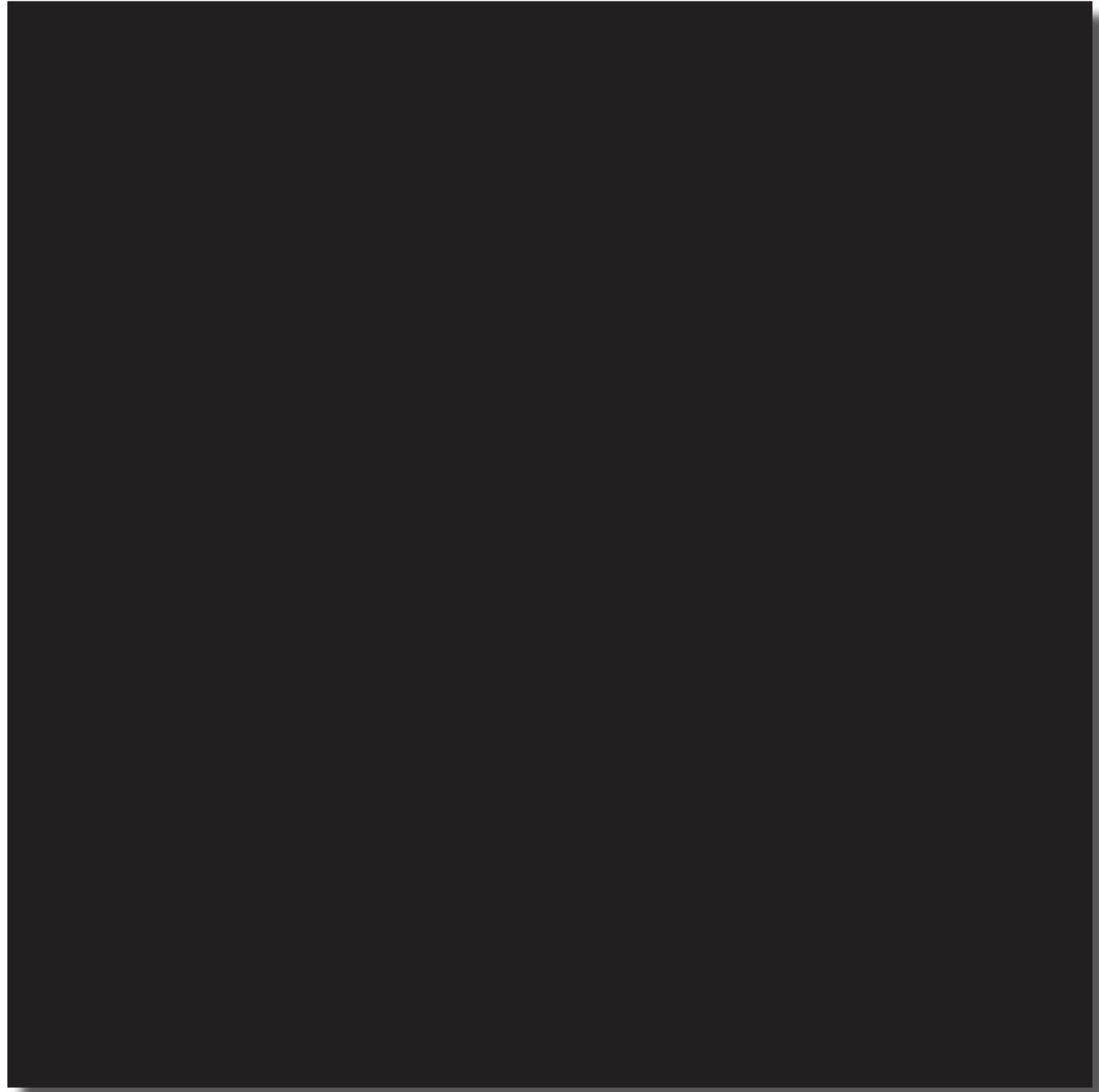
EINDONTWERP
dé school voor doven

DOVENSCHOOL VS. HORENDE SCHOOL

- geen nieuw ontwerp, maar een nieuwe manier van ontwerpen
- elk individueel element is niet nieuw, maar de combinatie ervan wel
- assemblage van gecombineerde elementen
- net als koken: er worden geen nieuwe ingrediënten ontdekt, maar een nieuw recept

WAT MAAKT EEN DOVENSCHOOL?

conclusie





IMPRESSIE
beheer



IMPRESSIE
beheer