

REINTERPRETING HISTORY

Design principles for the redesign of the Kolonel Palmkazerne Kitchen Building



Abstract

This research-by-design project investigates the redesign of the kitchen building of the Kolonel Palmkazerne in Bussum, one of the standardised military barrack complexes designed by A.G.M. Boost prior to the Second World War. As many former military sites have lost their original function, adaptive reuse offers opportunities to preserve their heritage value while accommodating contemporary needs. The research aims to identify the design principles underlying the Boostkazernes and evaluate how these principles are reflected in the transformation of the Kolonel Palmkazerne kitchen building into a public library.

A comparative case study analysis was conducted on four other Boost-designed barrack complexes: Elias Beeckmankazerne (Ede), Generaal de Bonskazerne (Grave), Constant Rebecquekazerne (Eindhoven), and Saksen-Weimarkazerne (Arnhem). Through archival research and architectural analysis, site morphology, building morphology, functionality, and materiality were studied. The findings revealed a consistent design logic based on pavilion planning, central organisation around the parade ground, hierarchical spatial relationships, grid-based ordering, symmetry, and the integration of modern construction techniques within a traditional architectural language.

These principles were translated into a design framework and used to evaluate the redevelopment of the Kolonel Palmkazerne kitchen building. The resulting design keeps the organisational logic and ensemble value characteristic of the Boostkazernes while adapting the building to contemporary requirements for accessibility, and public use. The research demonstrates that historical design principles can serve as a valuable framework for adaptive reuse, enabling architectural interventions that respect heritage values while accommodating new functions.

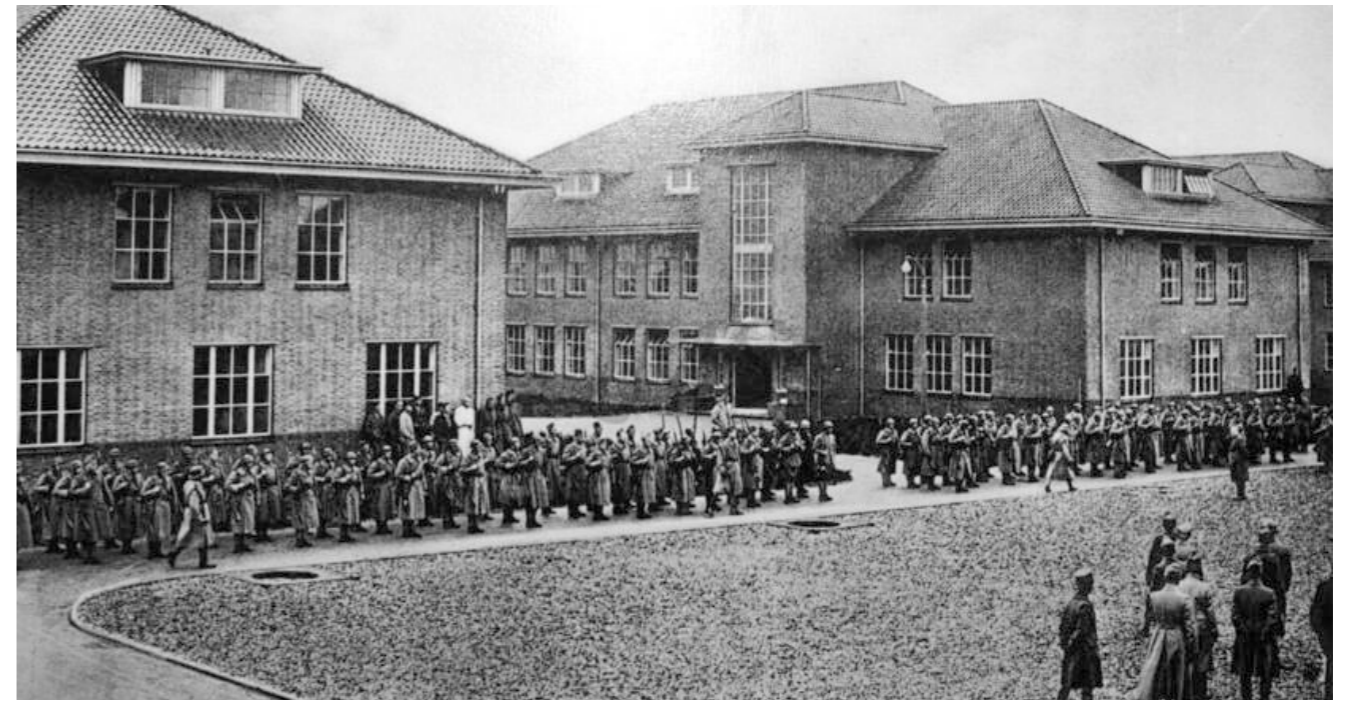


Figure 1: Kolonel Palmkazerne Barracks

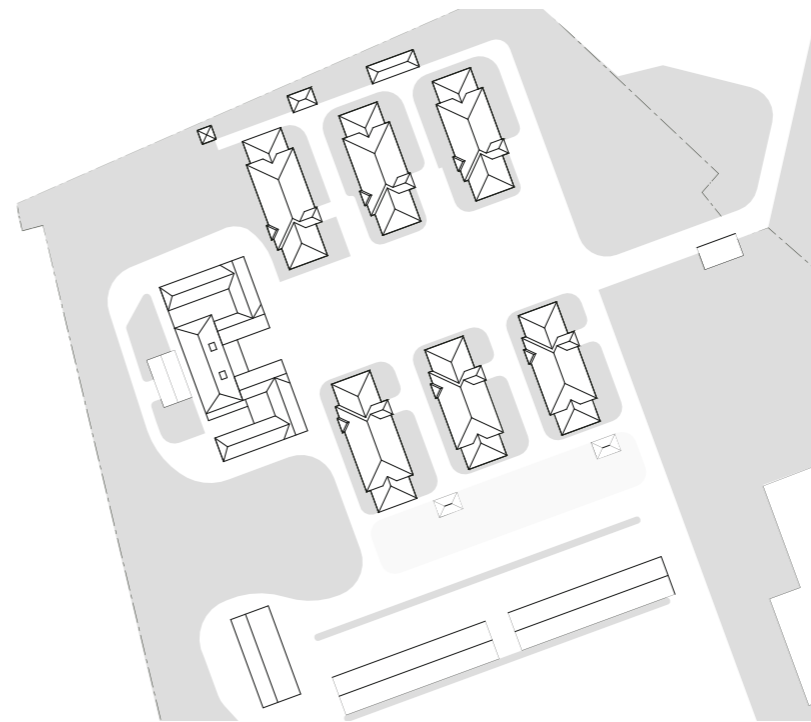


Figure 2: Kolonel Palmkazerne ensemble



Figure 3: Monumental chimney



Figure 4: Kitchen building Kolonel Palmkazerne (project site)

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Introduction

Problem statement

Many military structures constructed in the Netherlands during the Cold War and post-war period have since lost their original function following the end of the Cold War in 1991 (Constant et al., 2019, p.66). As a result, many of these structures stand unused or outdated, while others are embedded within broader urban or landscape settings. Revitalizing and reinterpreting them plays a crucial role in helping future generations comprehend historical contexts, while adapting them to new social, sustainable and ecological needs.

Kapitein der Genie Auguste G.M. Boost designed multiple barrack complexes for military use throughout the Netherlands in the years before the Second World War (WWII). From 1938 to 1939, a mass production of sixteen barrack complexes was realised according to a standard design made by Boost (van Beveren, 2021). Throughout the different Boostkazernes, the barracks are standardized and are relatively similar (Crimson, 2020). The gatehouse and kitchen buildings give identity to each site through their different configurations and detailing.

Battalion barrack complex:

Arnhem	Saksen-Weimar
Bergen op Zoom	Cort Heijligers
Eefde	Detmers
Ermelo	Jan van Schaffelaar
Eindhoven	Constant Rebecque
Roermond	Ernst Casimir
Roosendaal	Engelbrecht van Nassau
Schalkhaar	Westenberg
Steenwijk	Johan van den Kornput
Tilburg	Koning Willem II
Wezep	Willem de Zwijger
Zuidlaren	Adolf van Nassau

Regimental barrack complex:

Bussum	Kolonel Palm
Ede	Elias Beeckman
Grave	Generaal de Bons
Weert	Van Horne

Figure 5: List of Boostkazernes

The Kolonel Palmkazerne is one of A.G.M. Boost's barrack complexes near the town of Bussum and has been selected as part of a design assignment focused on the redevelopment of Cold War military heritage. After the military sold the site in 2006, it was used for temporary occupancy ('anti-kraak') and is currently undergoing redevelopment (Crimson, 2020). Within this transformation, the barracks are being converted into housing, while the kitchen building is assigned a new public function.

The kitchen building of the Kolonel Palmkazerne was developed over several construction phases, resulting in an architecturally and technically inconsistent structure (Crimson, 2020). Additions designed by W.J.A. Herbers were constructed after WWII, during a period marked by material scarcity and abundant labour (A. Snijders, Site visit, 18 November, 2025). These post-war wings differ from the original pre-war design in both form and construction quality. Selective removal of the post-war additions could therefore enhance both the spatial coherence and the architectural clarity of the complex, while simultaneously creating opportunities for a new intervention that responds more closely to Boost's original design logic.

To reflect the history of the site and the significant role A.G.M. Boost played in the rapid construction of barracks pre-war, this research focuses on identifying the underlying design logic of his kazerne system in order to use these principles as a framework for reflecting on the existing building and its transformation.

Relevance

The reuse of Cold War military buildings is an architectural challenge, as many have lost their original function and risk obsolescence. The Kolonel Palmkazerne's kitchen building is an example of this, as post-war additions disrupt the ensemble and material deterioration affects the original structure (Crimson, 2020). This research identifies Boost's design principles to create a framework for a coherent redevelopment, aligning the intervention with the site's heritage value and new public function.

Objective and motivation

Within the design process, the architectural ambition is to redevelop an existing site to a new function. An analysis of different Boostkazernes kitchen buildings will help identify the logic behind Boost's designs, to eventually reflect these principles to the redesign of the Kolonel Palmkazerne kitchen building. The goal is to create a coherent ensemble with the barracks, that also reflects the other Boostkazernes.

From a technical point of view, the design aims to combine the original and new structures within the building. The technical ambition is to create a structure that logically combines both the original and new elements.

The motivation for designing according to the principles of A.G.M. Boost derives from the interest in combining historical logic and contemporary design practice. By working with design principles rather than formal imitation, the new intervention can be related to the existing ensemble of the Kolonel Palmkazerne. This approach enables the design to belong alongside the other original buildings, while still allowing the freedom to reinterpret Boost's principles using contemporary design methods.

Research question

This research and design assignment seeks to answer the research question: "What are the design principles implemented in the Boostkazernes?". By using additional case studies, it is the intention to recognize how Boost designed his buildings and to apply the knowledge gained from the other sites in a redesign of the Kolonel Palmkazerne. The following Boostkazernes will be analysed: Elias Beeckmankazerne (Ede), Generaal de Bonskazerne (Grave), Constant Rebecquekazerne (Eindhoven) and Saksen-Weimarkazerne (Arnhem).

To get a better understanding of the way the Boostkazernes were designed, it is necessary to look into several aspects of a building and its surroundings: materiality, morphology, typology, hierarchy, etc.. Sub questions have been decided to tackle these topics and give an answer to the main research question. The following sub questions will structure

the research:

- What is the morphology of the site and how does it reinforce the hierarchy of the ensemble?
- What is the morphology of the building and how is it distinctive for the typology at the site?
- How did the building function historically and how is hierarchy articulated through its design?
- How do materials contribute to the architectural character and functionality of the buildings?

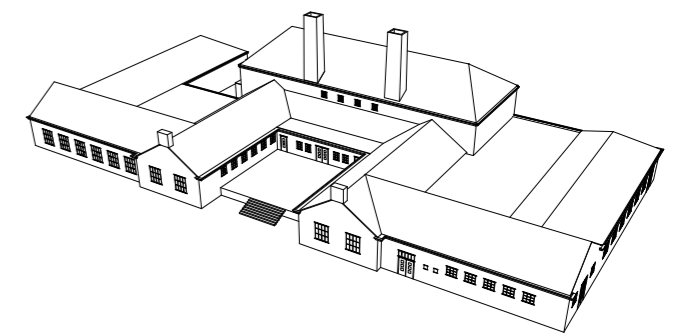


Figure 6: Existing Kolonel Palmkazerne

Scope

The Kolonel Palmkazerne will be redesigned from a previous military function to a public function. The new programme will entail a library with additional educational and office spaces. To realise this new programme, adaptations need to be made to the building for the new public role to be efficient. Challenges, like different height levels and inadequate light conditions, exist that conflict with the public function.

Approach

Methodology

This research adopts a research-by-design methodology, in which historical and architectural analyses form the foundation for the proposed architectural intervention. Through archival research, architectural analysis, and design exploration, key design principles are identified and structured into a coherent framework. This framework is then applied to the redevelopment of the Kolonel Palmkazerne.

To identify the Boostkazerne's design principles, a comparative case study analysis is conducted. The selected case studies consist of other Boost-designed kazernes in the Netherlands, with a specific focus on their kitchen buildings. They are selected based on three criteria: varying typologies to discern differences in spatial logic and hierarchy, a largely intact ensemble that preserves the original spatial and urban context, and a high degree of architectural authenticity, with substantial original pre-war construction and detailing. The selected case studies include the Elias Beeckmankazerne (Ede), the Generaal de Bonskazerne (Grave), Constant Rebecquekazerne (Eindhoven) and Saksen-Weimarkazerne (Arnhem).

The research draws on multiple sources, including archival material such as floorplans, sections, façades, site plans, and historical photographs. In addition, literature research is conducted on A.G.M. Boost. Finally, existing value assessments and reports are also consulted.

The collected material is analysed through architectural drawing-based analysis, structured according to the research questions. For each case study, plans, sections, and façades are analysed focusing on: morphology and massing, typology and functional organisation, spatial and architectural hierarchy, and material use. By comparing similarities and differences across the case studies, recurring patterns and deviations are identified.

Based on the comparative analysis, Boost's design principles are formulated as architectural principles. A lack of consistency or absence of certain principles is also considered a valid research outcome.

The extracted design principles are used as a design framework for the redevelopment of the Kolonel Palmkazerne. Through design exploration, these principles are translated into a new spatial

organisation for a public programme, an architectural intervention that mediates between existing and new structures.

The outputs of this research are analytical drawings, a set of design principles, a redesign proposal for the kitchen building, and a reflective conclusion discussing how the design principles are reflected in the design proposal.

The research and design process is structured in different phases that reflect the research-by-design methodology. The planning follows the logical progression from data collection and analysis to the formulation of design principles and their reflection in the final design proposal (see figure 8). Analysis and design will happen relatively simultaneously due to the short time available for the research and design. Therefore, the order of analysis will be based on what information is needed in the design instead of the proposed hierarchal order.

SUB-RESEARCH QUESTIONS	METHODOLOGY	SOURCES
Question 1: What is the morphology of the site and how does it reinforce the hierarchy of the ensemble?	Massing and composition diagrams Identifying recurring morphological patterns Analysis of axes, symmetry, and positioning within ensemble Mapping primary and secondary buildings Comparison of spatial hierarchy	Archival site plans and ensemble drawings Value assessments (e.g. Crimson)
Question 2: What is the morphology of the building and how is it distinctive for the typology at the site?	Redrawing plans and sections Analysis of volume and form Comparison between kitchen buildings Comparison of plan layouts Typological classification	Archival floor plans and sections
Question 3: How did the building function historically and how is hierarchy articulated through its design?	Analysis of original programme Comparison with current or proposed public functions Mapping entrances and circulation Analysis of spatial sequencing Primary versus secondary spaces	Archival programme descriptions Archival floorplans and sections Current reuse plans
Question 4: How do materials contribute to the architectural character and functionality of the buildings?	Mapping façade materials Analysis of construction logic Comparison of material use	Value assessments Technical report Archival Façades

Figure 7: Methodology per subquestion

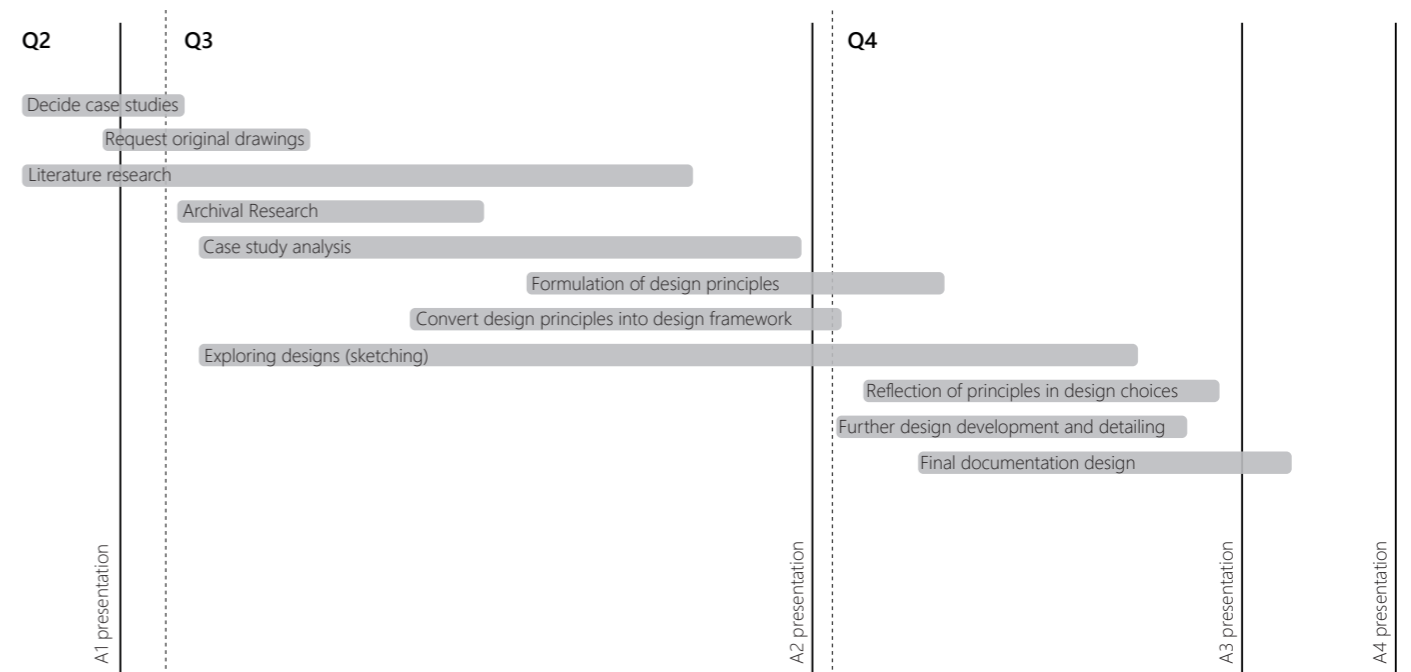


Figure 8: Planning

Theoretical Framework

Adaptive reuse and architectural transformation

Adaptive reuse is increasingly recognised as an active design process rather than a strictly preservative approach. Plevoets and van Cleempoel argue that transformation, selective removal, and contemporary addition can reinforce the relevance and architectural clarity of historic structures (Plevoets & van Cleempoel, 2019, p.29). From this perspective, reuse is not aimed at maintaining historical completeness, but at enabling continued use through architectural reinterpretation.

Wong further frames adaptive reuse as a changing practice that reflects the social, environmental, and cultural concerns of its time, with design decisions being inherently shaped by the pre-existing conditions of the host structure (Wong, 2021, p.11 & 17). This understanding emphasises that reuse strategies are context-dependent and evolve alongside changing societal priorities.

Within this research, adaptive reuse is understood as a design strategy that allows for the replacement of post-war additions to the Kolonel Palmkazerne kitchen building. In order to strengthen the ensemble and align the building more closely with A.G.M. Boost's original design logic, while accommodating a new public function.

Architectural Design principles

Design principles can function as a foundation for architectural design by abstracting the underlying logic of existing buildings beyond their formal appearance. The first principles reduction by Plowright describes design as a process of putting aside initial ideas about how a building should look in order to identify fundamental effects, needs, and actions that shape the building. Rather than focusing on what architecture looks like, this method prioritises what it does (Plowright, 2014, p.105).

One of the strengths of reducing a situation back to its fundamental principles is that it allows a designer to approach that situation without a predetermined conclusion. This process of abstraction is essential because it makes the resulting principles transferable, reusable across different contexts and independent from the original object. By translating specific architectural conditions into general, conceptual

rules, designers can reuse the principles without reproducing the original form.

Within this research, design principles derived from the analysis of the Boost-designed kitchen buildings are understood as abstractions of spatial organisation, hierarchy, and construction logic that inform a contemporary intervention without replicating historical form.

Architectural coherence and ensemble value

Architectural meaning is not only found in individual buildings, but also how they relate to their surroundings. Concepts of ensemble and coherence address how buildings relate to one another through scale, orientation, hierarchy, and spatial organisation. Lynch's notion of legibility highlights the importance of clear spatial hierarchies in enabling users to understand and navigate complex environments (Lynch, 1960, p.3).

Within military complexes, hierarchy is often reinforced through architectural means, such as massing and positioning. Disruptions to this hierarchy, through later additions or alterations, can weaken the legibility and coherence of the ensemble as a whole.

In the case of the Kolonel Palmkazerne, a value assessment has identified the kitchen building as a contributing factor to the incoherence of the ensemble. This research uses the notion of architectural coherence as a guide, aiming to restore clarity within the complex by spatially aligning the kitchen building with the surrounding barracks.

Introducing case studies

Elias Beeckmankazerne

The Elias Beeckmankazerne, located in Ede, was constructed from 1938 as part of the Dutch military expansion prior to the Second World War. The site remained in military use until its transfer to the municipality in 2011. Since then, the complex has been redeveloped, with former barracks converted into residential units and the kitchen building repurposed for a care home. The barrack complex is named after Elias Beekman, a 17th-century officer known for defending Aardenburg against a French attack in 1672.



Figure 9 & 10

Generaal de Bonskazerne

The Generaal de Bonskazerne in Grave was built starting in 1938 and came into use shortly before the Second World War. It served as a military site until the last troops departed in 1997. Following its closure, the area was redeveloped into a mixed-use site, including a refugee centre (AZC) and a business park. The barrack complex is named after Andreas de Bons, an 18th-century Dutch general who led the defence of Grave during a French siege in 1794.



Figure 11 & 12

Constant Rebecquekazerne

The Constant Rebecquekazerne in Eindhoven was constructed between 1938 and 1939 and functioned as a military complex until its closure in 1996. After a period of vacancy and temporary uses, parts of the site were redeveloped, including the establishment of the International School Eindhoven in 2013. The kazerne is named after Jean Victor de Constant Rebecque, a Dutch general who played an important role in the Battle of Waterloo and served as a senior military strategist.



Figure 13 & 14

Saksen-Weimarkazerne

The Saksen-Weimarkazerne in Arnhem was completed around 1940, shortly after the German invasion of the Netherlands, and was initially used by occupying forces. The site remained in military use until its closure in 1999. In the following years, it accommodated various temporary functions, including a refugee centre and artist studios, before being redeveloped for housing. The barrack complex is named after Karel Bernard van Saksen-Weimar-Eisenach, a German-born Dutch general active during the Napoleonic Wars.



Figure 15 & 16

1. Site morphology

"What is the morphology of the site and how does it reinforce the hierarchy of the ensemble?"

The barrack complexes were constructed according to the standard design of Boost, based on a pavilion system in which military functions were separated into individual building volumes (see figure 17). This separation improved hygiene, organisational efficiency, and the possibility for future expansion. At the same time, the system allowed the barrack complexes to adapt to local conditions such as terrain, infrastructure, operational requirements, and differences in military scale. Although the individual layouts vary, the underlying organisational logic remains consistent across the sites.

The spatial organisation of the ensemble is centred around the parade ground, which functions as the organisational and visual core of the barrack complex. The primary buildings are positioned directly around this open space, creating a clear hierarchy between collective military functions and secondary support functions. From the parade ground, the main buildings remain visually connected, reinforcing orientation, control, and military order within the complex.

The primary buildings follow a strict grid and symmetrical composition. In the regimental barrack complexes at Ede, Grave, and Weert, the barracks are mirrored across the parade ground, creating a highly ordered ensemble. The battalion barrack complexes display greater variation due to their smaller scale and site-specific constraints, although spatial balance within the composition remains important. The strict geometry and symmetry express military discipline and create a legible spatial structure.

Within this composition, certain collective buildings play an important spatial role. In Ede and Grave, the kitchen building ends the axis of the parade ground and acts as a spatial closure of the ensemble. At other sites, the placement of the kitchen building extends the open space and reinforces circulation routes through the complex. Open space is therefore not residual, but used deliberately to structure movement, orientation, and relationships between



Figure 17: Standardized Boost buildings

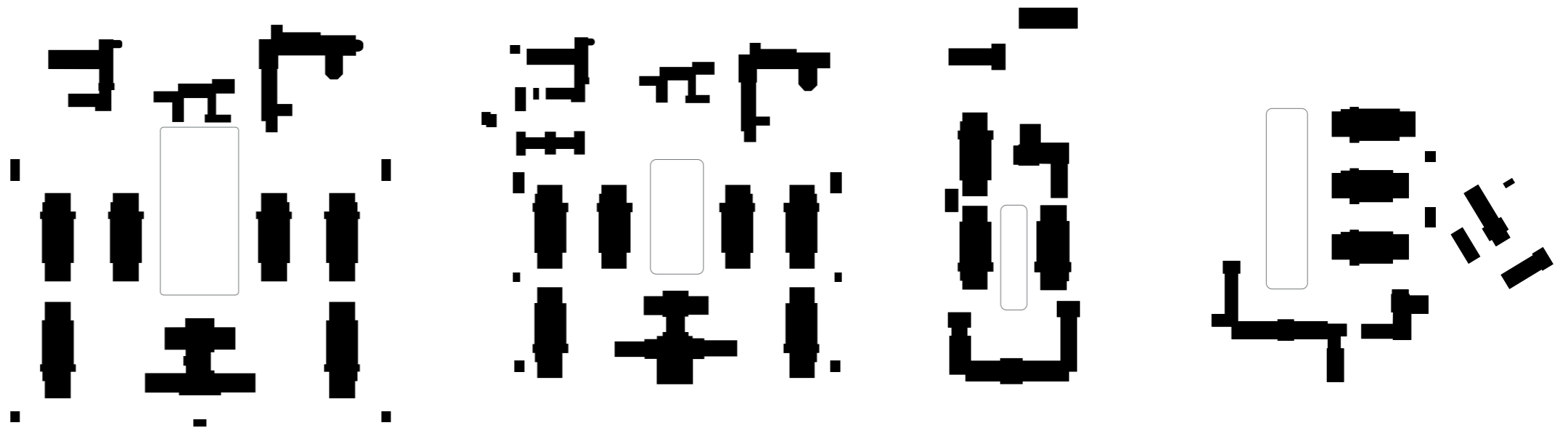


Figure 18, 19, 20 and 21: Morphology ensemble Ede, Grave, Eindhoven, and Arnhem (L-R)

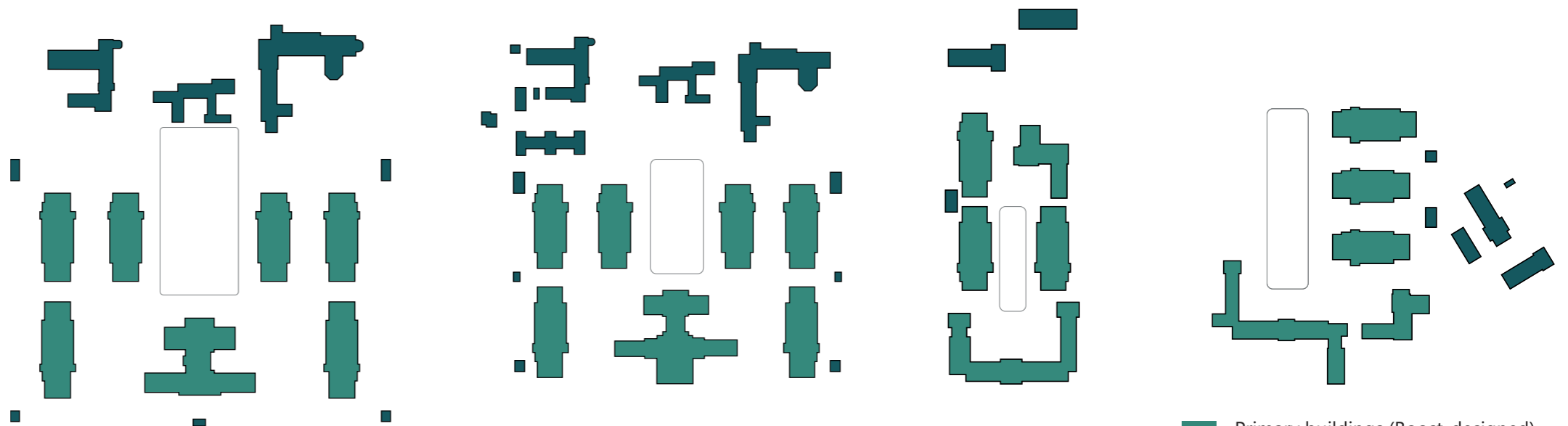


Figure 22, 23, 24 & 25: Primary and secondary buildings Ede, Grave, Eindhoven, and Arnhem (L-R)

■ Primary buildings (Boost-designed)
 ■ Secondary buildings

functions.

Functional relationships also determine the proximity between buildings. The kitchen building is consistently positioned close to the barracks to support efficient daily routines for soldiers. Primary buildings maintain strong visual and spatial relationships with the entrance and parade ground, while secondary buildings are positioned more freely outside the main grid. Archival drawings show that these additional structures were more prone to demolition and replacement over time, whereas the primary structure of the complex largely remained intact. This reveals a distinction between a permanent organisational core and a more adaptable secondary layer.

The morphology of the barrack complexes can therefore be understood as a standardised yet adaptable system, organised through pavilion planning, hierarchy, symmetry, and the strategic use of open space.

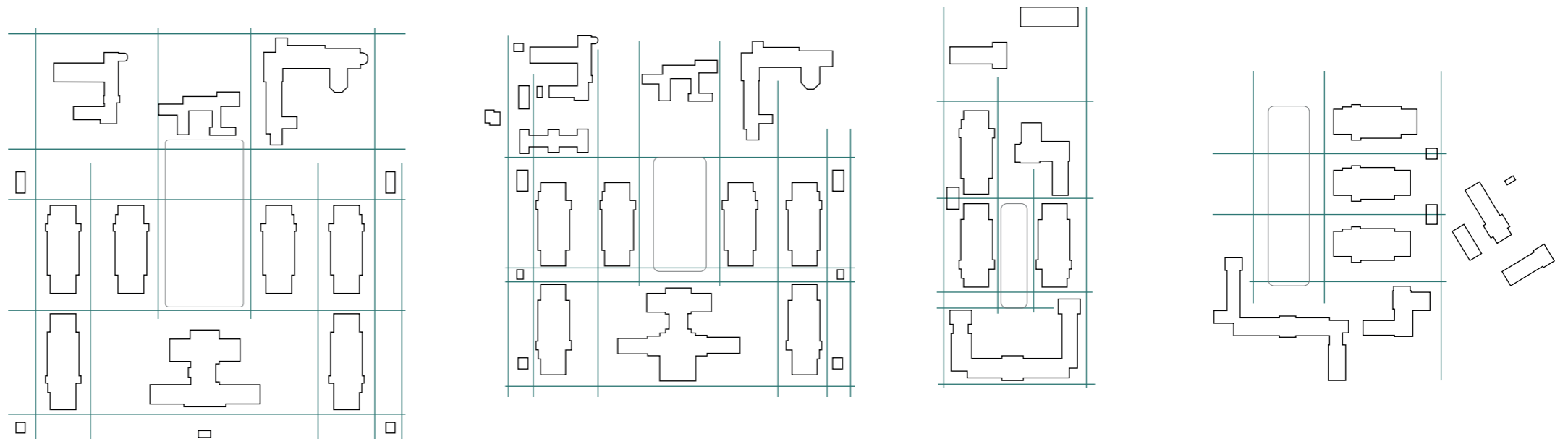


Figure 26, 27, 28 & 29: Grid Ede, Grave, Eindhoven, and Arnhem (L-R)

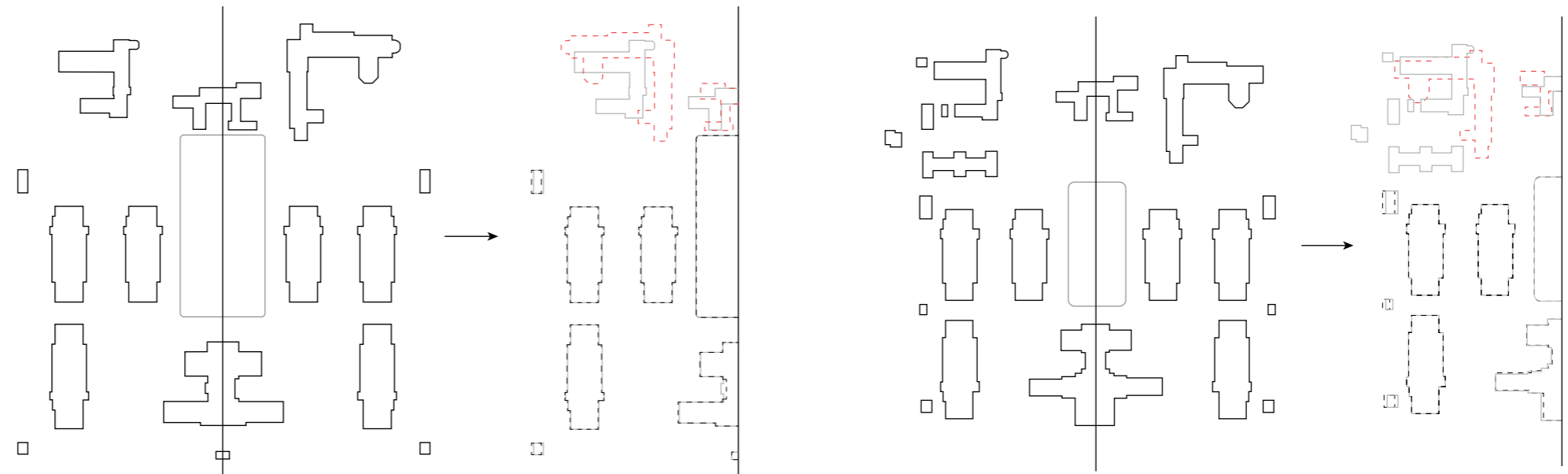


Figure 30 & 31: Symmetry Ede and Grave

Building principles

- Functional separation through pavilion planning
- Central organisation around parade ground
- Clear hierarchy between primary and secondary buildings
- Grid based ordering system
- Symmetry enhances military order
- Adaptability within a standardised framework
- Buildings are part of an ensemble rather than isolated objects
- Site specific adaptation without losing organisational logic

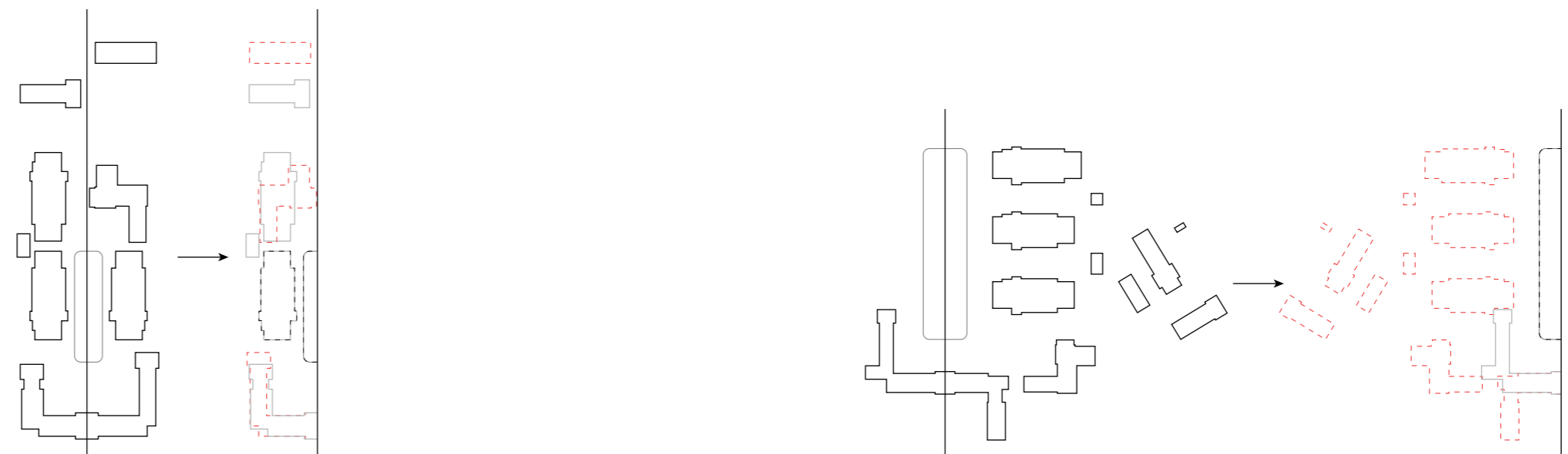


Figure 32 & 33: Symmetry Eindhoven and Arnhem

2. Kitchen building typology and morphology

"What is the morphology of the building and how is it distinctive for the typology at the site?"

Typology

The Boostkazernes were designed according to a standardised architectural system, creating strong recognisability across the different sites. Barracks, kitchen buildings, and gatehouses follow recurring typological principles in which only minor variations in detailing and materialisation create a site-specific identity. This standardisation results in a legible ensemble where spatial organisation and building functions remain consistent between sites.

Two primary kitchen building typologies can be distinguished: one for the regimental barrack complexes in Ede and Grave, and another for the battalion barrack complexes in Eindhoven and Arnhem. The regimental kitchen buildings are more symmetrical and dominant within the ensemble, while the battalion kitchen buildings are more compact and integrated into the site composition.

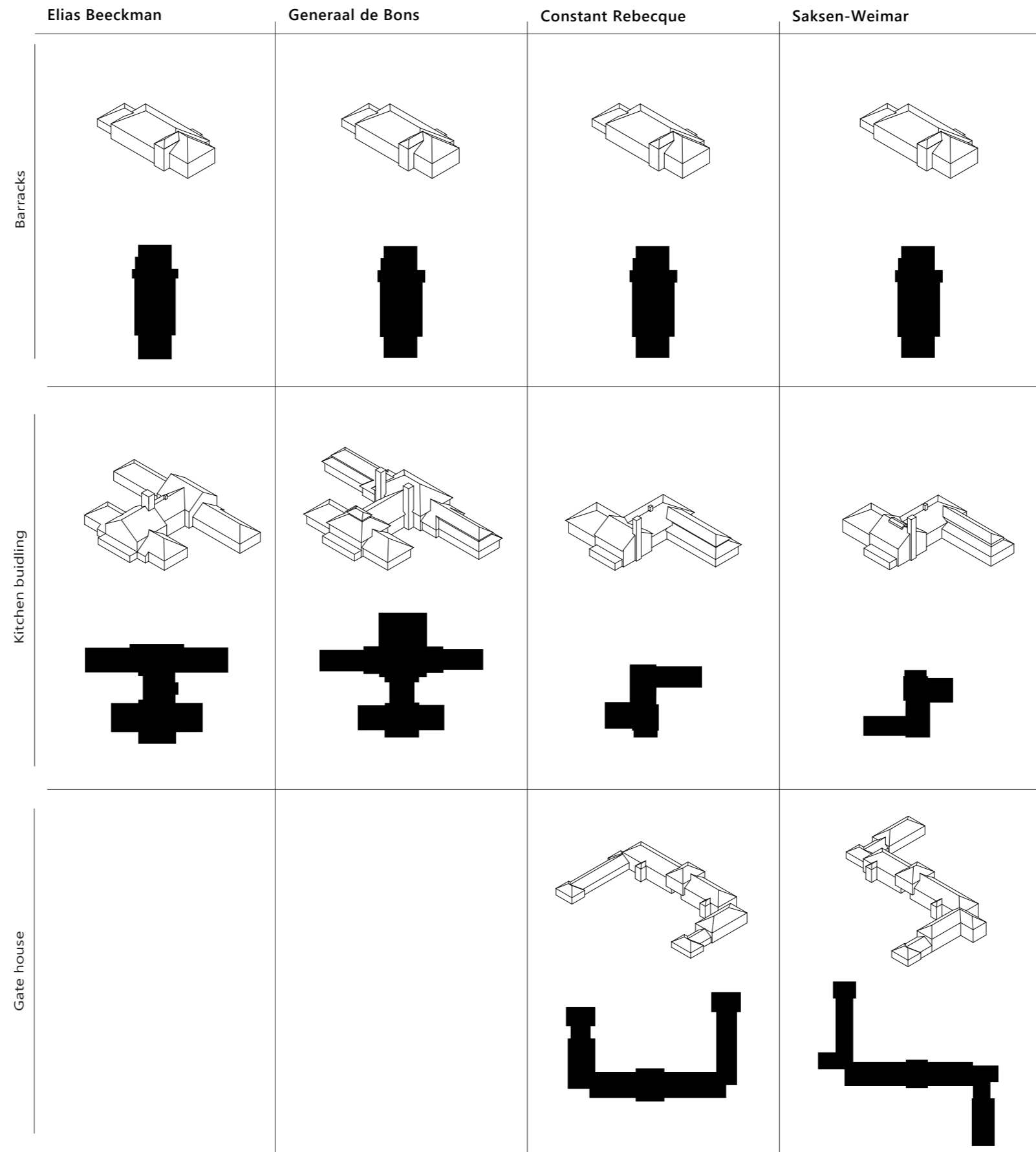


Figure 34: Typology

Morphology

The regimental kitchen buildings share a symmetrical cross-shaped morphology, while the battalion kitchen buildings follow a more compact and asymmetrical composition adapted to the smaller scale of the battalion barrack complex. In the regimental barrack complex, additional front and rear wings reinforce symmetry and strengthen the building's role as a terminating element at the head of the parade ground. Similar to the gatehouse in the battalion barrack complex, the kitchen building contributes to the spatial balance of the ensemble.

The massing of the kitchen buildings directly reflects the internal functional organisation of the building. The serving area occupies a consistent position within all analysed kitchen buildings and functions as the central organisational element within the plan. The kitchens for the soldiers and officers are spatially separated, expressing military hierarchy within the building layout. Archival drawings suggest that in the regimental barrack complex the officers' dining rooms were organised as separate volumes, while in the battalion barrack complex these spaces were integrated within the main mass.

The chimneys form dominant vertical elements within the composition across all sites and act as recognisable markers of the building's collective and infrastructural function. Minor variations such as the chimneys, extensions, and façade detailing distinguish the buildings from one another while maintaining the recognisable typological framework.

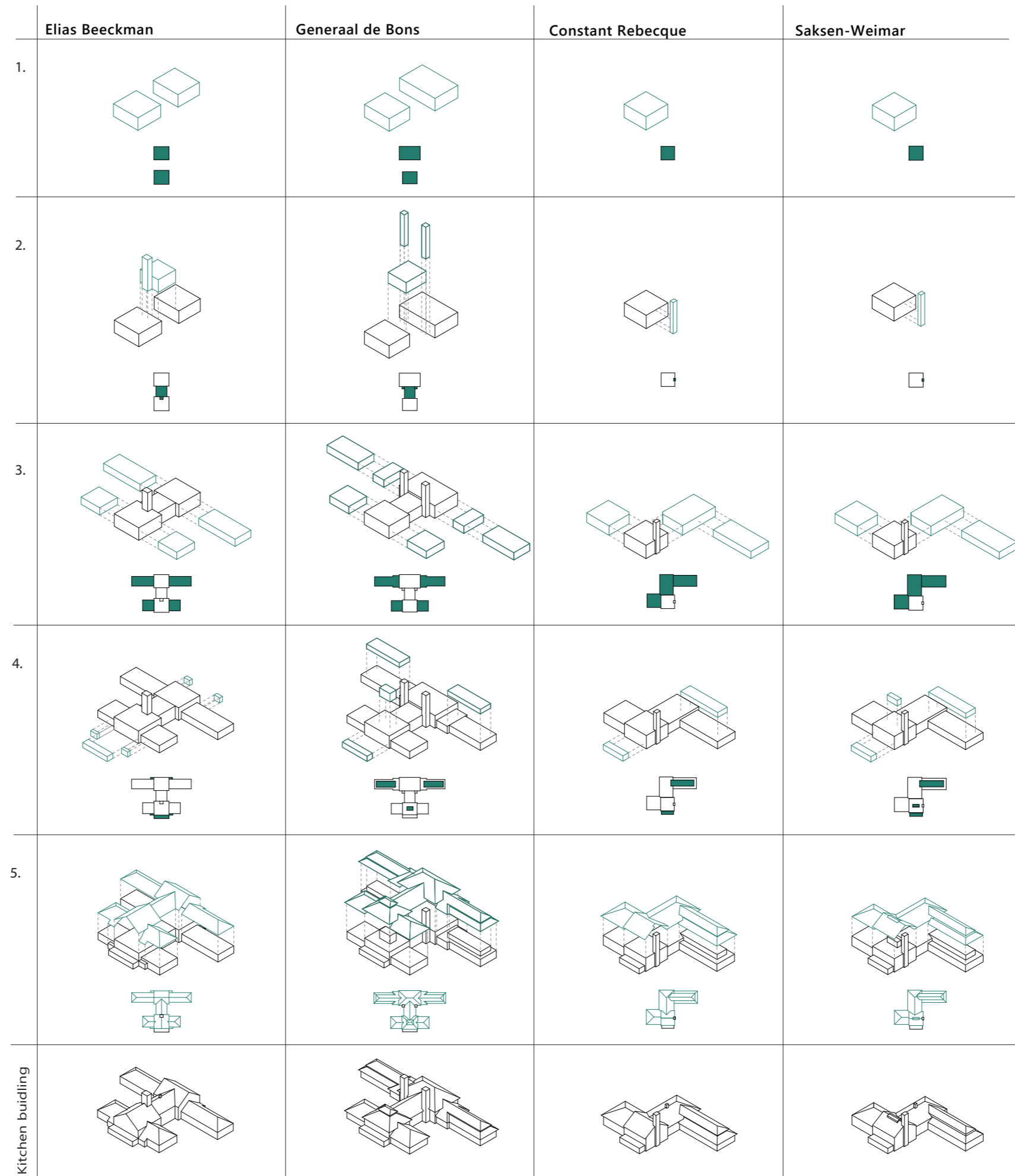


Figure 35: Morphology breakdown

New additions and transformations

All analysed kitchen buildings received extensions during their military use, likely due to changes in dining organisation and the increasing need for collective eating spaces. Most additions consist of relatively simple rectangular volumes attached to the original building mass.

The kitchen buildings of Eindhoven and Arnhem integrate these additions more coherently due to their more compact original morphology. The additions visually merge with the original architecture through similar materialisation and roof forms, making the distinction between old and new less apparent. The cross-shaped morphology of the regimental kitchen buildings proves less adaptable to extension, as additions can disrupt the original symmetry or obscure the historic composition.

Later additions generally remain subordinate to the original building by staying below the historic roofline and preserving the recognisable silhouette. At Ede, additions enclosed the side spaces into two smaller courtyards while maintaining the symmetry of the original composition. At the Eindhoven kitchen building, contemporary additions establish coherence with wider site interventions through the repeated use of glass volumes connected via a shared basement structure.

The varying success of the additions demonstrates that the clarity of the original morphology strongly influences the adaptability of the building over time.

Building principles

- Buildings create identity through repetition within a standardised system.
- The morphology expresses hierarchy of the military ensemble.
- Internal programme organisation directly shapes external massing.
- Symmetry reinforces military order and spatial legibility.
- Chimneys act as functional and symbolic markers within the composition.
- The clarity of the original morphology determines adaptability to later additions.
- Successful additions maintain hierarchy by subordinating themselves to the original massing and roofline.

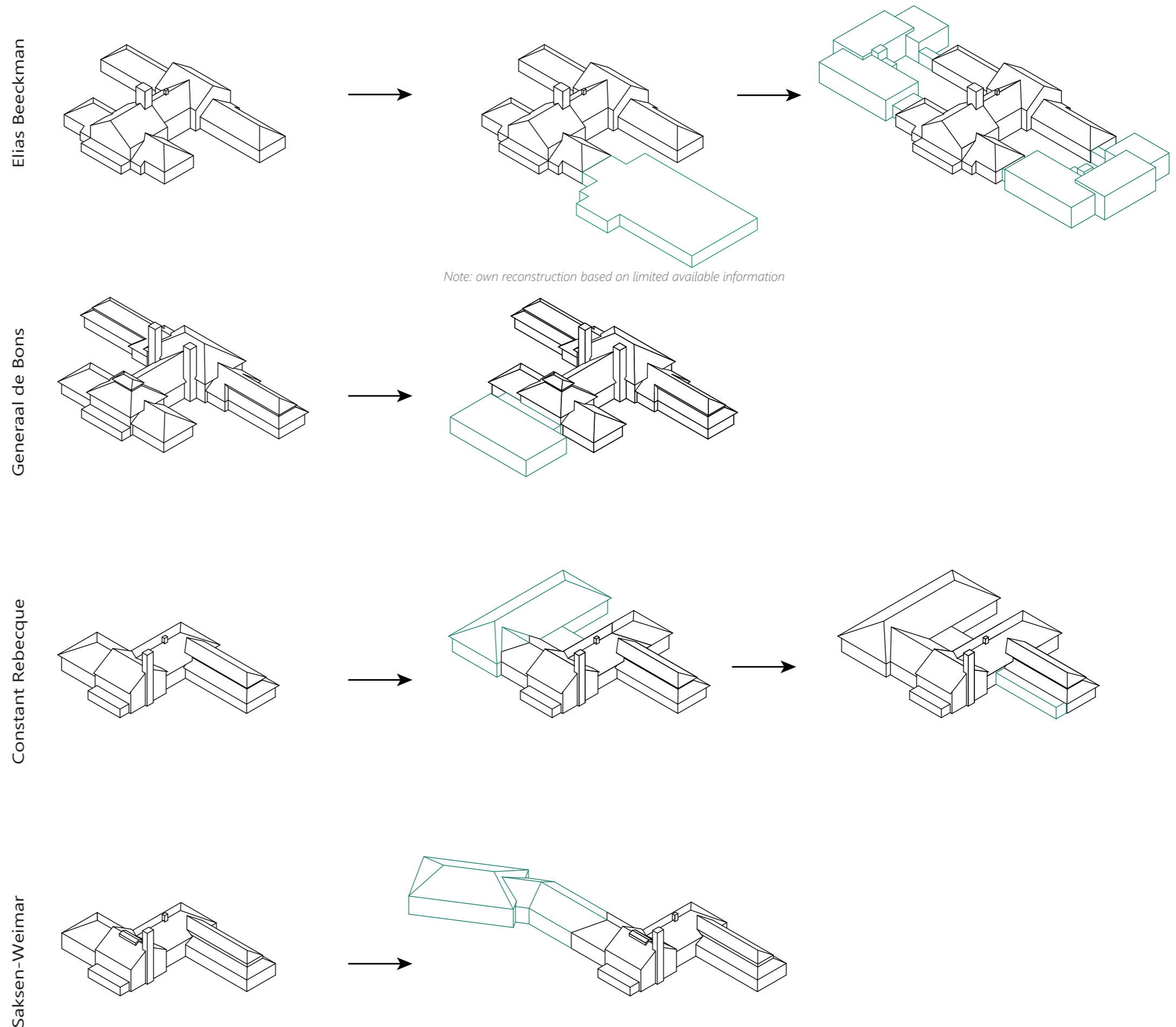


Figure 36: New additions

3. Functional organisation and hierarchy

"How did the building function historically and how is hierarchy articulated through its design?"

Functionality

The kitchen buildings follow a highly standardised functional organisation that can be adapted to the scale of the regiment or battalion. The regimental kitchen buildings in Ede and Grave expand the standard layout through additional sanitary and support kitchen wings to accommodate a larger number of soldiers.

The plan is organised through clearly separated functional zones, including kitchens, serving spaces, dining areas, and sanitary facilities. The functional organisation reflects military hierarchy by separating facilities for soldiers and officers. The regimental kitchen buildings demonstrate how the standardised organisational system could be scaled while maintaining the original spatial logic.

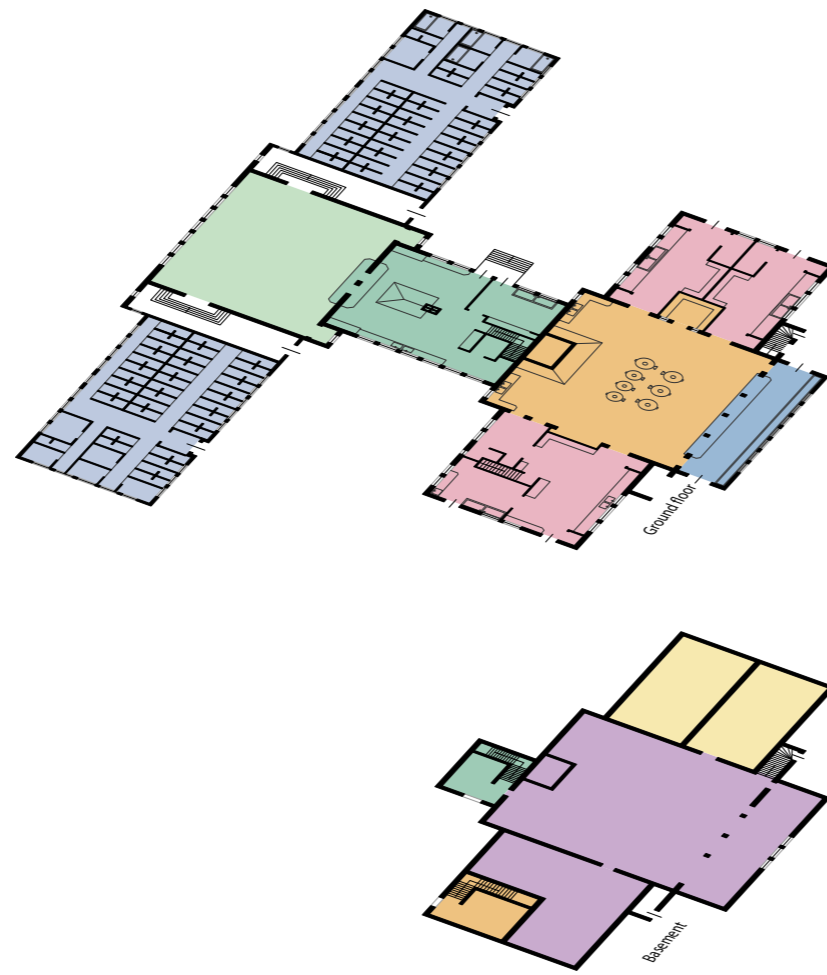


Figure 37: Ede

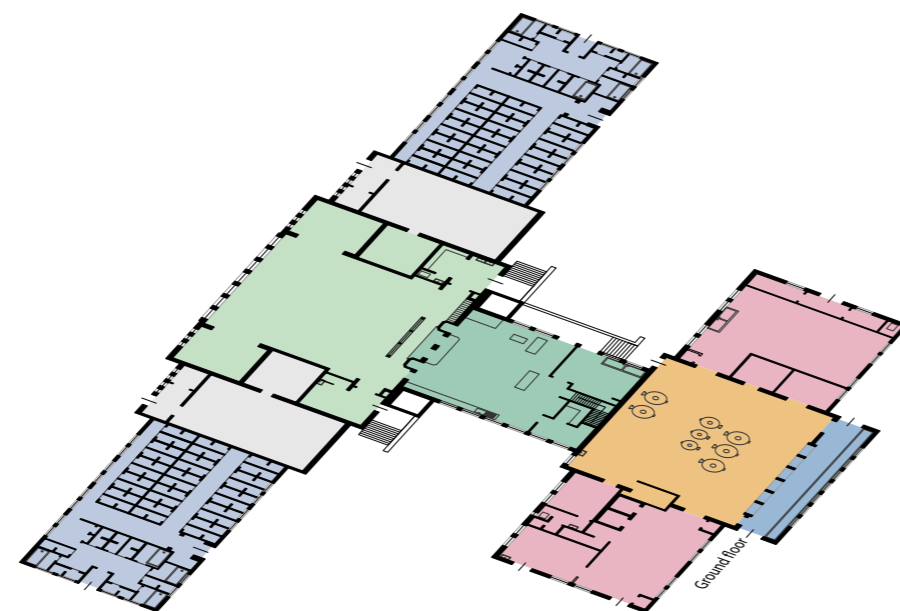


Figure 38: Grave

Note: Floorplan for basement Grave not found in archive

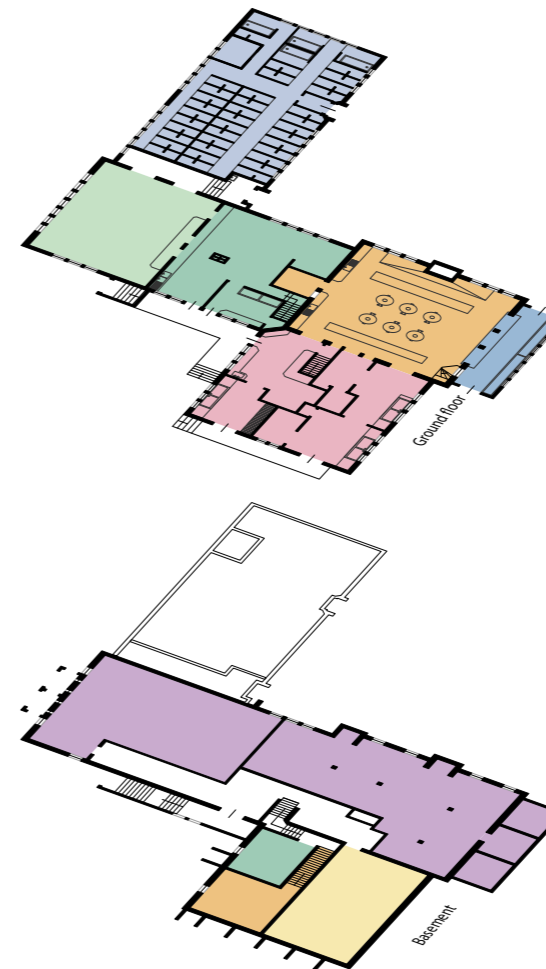


Figure 39: Eindhoven

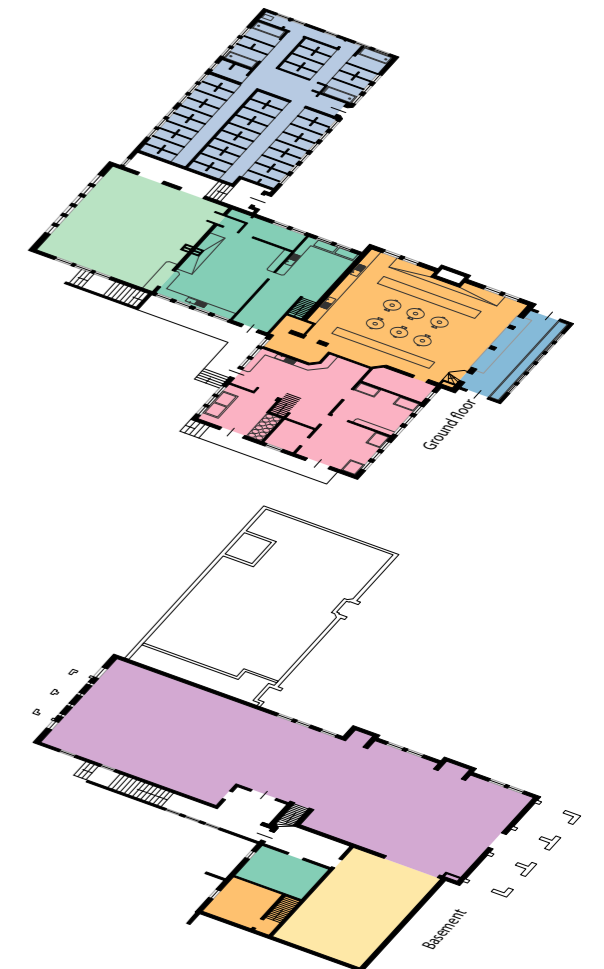


Figure 40: Arnhem

- Sanitary facilities
- Serving counter
- Kitchen soldiers
- Extra kitchen soldiers
- Kitchen officers
- Dining room officers
- Drying room
- Boiler house

Note: assumption of functions for Ede, Grave, and Arnhem based on similar furniture and standardised principle of Eindhoven. Some spaces are building specific and thus function wise unknown.

Circulation

The circulation within the building is highly compartmentalised, with separate entrances and movement routes assigned to specific user groups and functions. Users can generally only access the spaces directly related to their role or activity, reinforcing efficiency and control within the building. The kitchen and dining spaces for soldiers and officers are fully separated, expressing military hierarchy within the circulation system. Internal circulation mirrors the pavilion system of the wider barracks site, where functions are similarly divided into separate volumes. The kitchen building operates almost as a collection of connected functional units rather than as one continuous interior spaces. The circulation system prioritizes operational efficiency and organisational clarity over flexibility or openness.

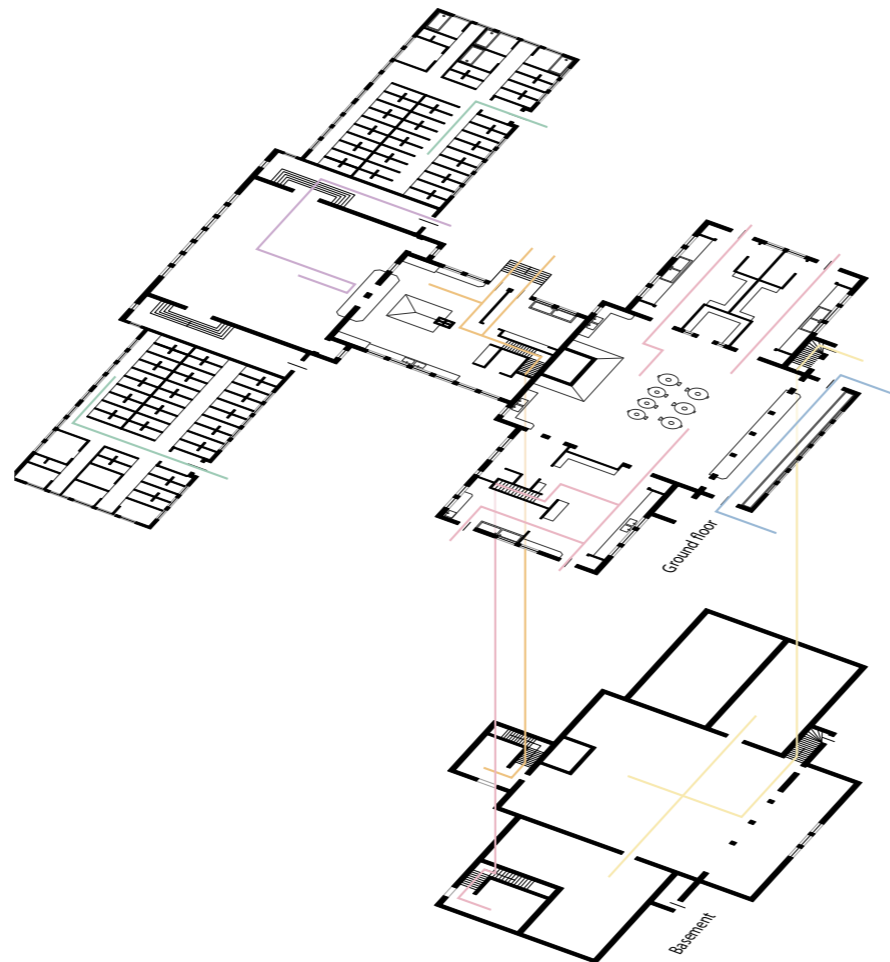


Figure 41: Ede Circulation

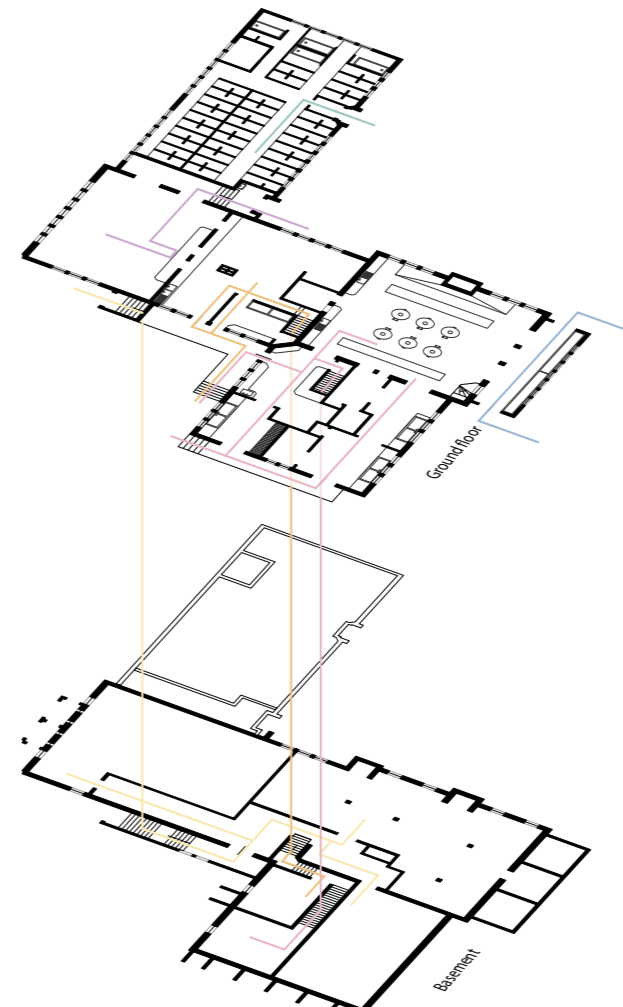


Figure 42: Eindhoven circulation

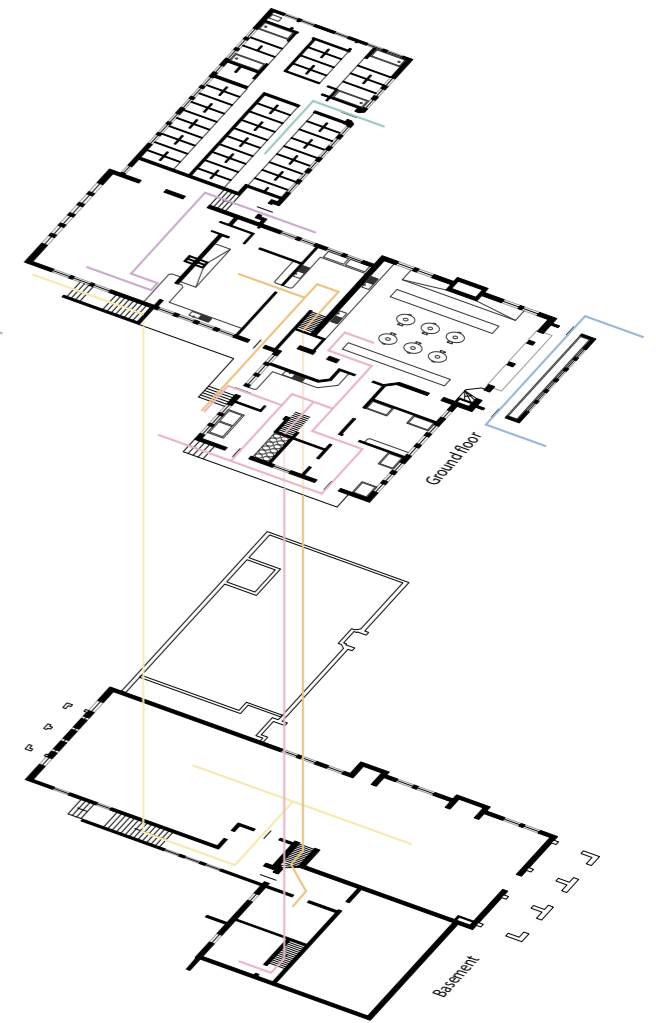


Figure 43: Arnhem circulation

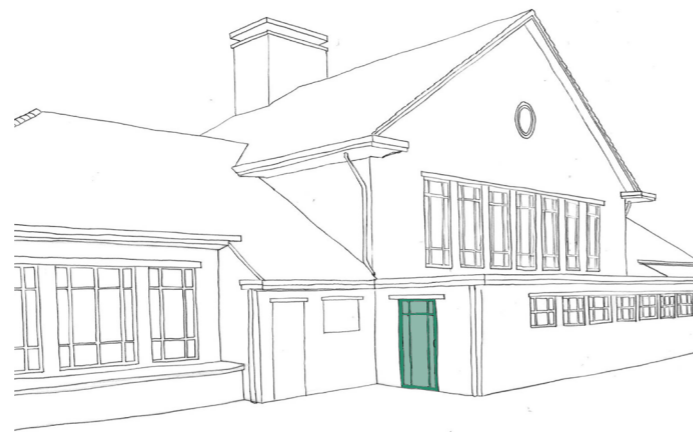


Figure 44: Entrance soldiers Ede

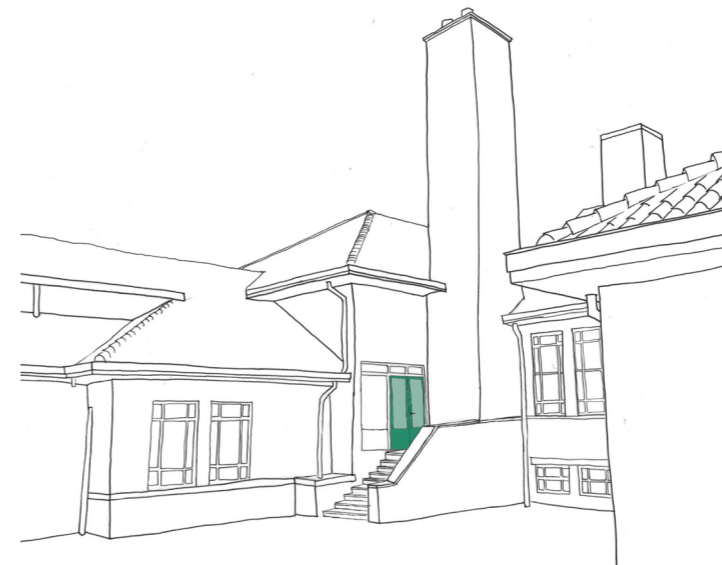


Figure 45: Entrance officers Grave

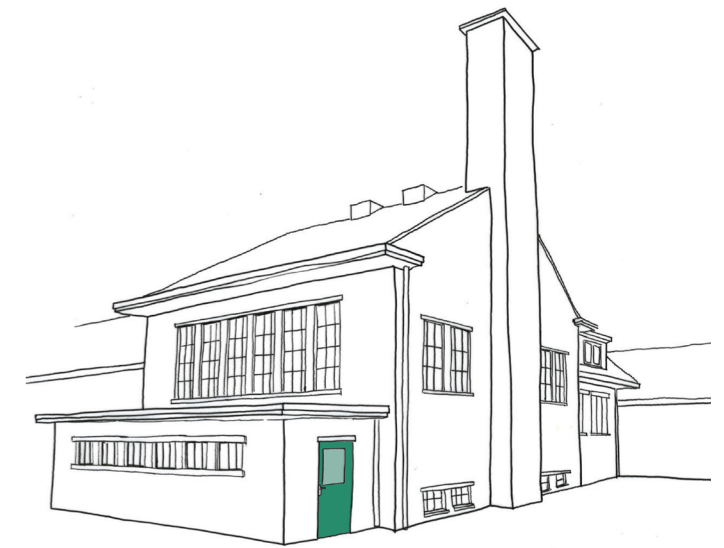


Figure 46: Entrance soldiers Arnhem

- Soldiers getting dinner
- Cooks officers
- Cooks soldiers
- Soldiers washing up
- Officers getting dinner
- Heating management

Height differences and redevelopment

Height differences within the building result from partial basements beneath specific sections, causing floor levels to align differently with the surrounding ground level. These level changes reinforce the separation between functions and circulation routes within the building. Within the original military context, the split levels posed little problem due to the physical requirements of military life.

In later redevelopments, such as the transformation of the kitchen building in Ede into an elderly care facility, these level differences create accessibility challenges. Contemporary interventions, including ramps and new circulation elements, reveal the tension between the original military functionality and present-day accessibility standards. The redevelopment demonstrates how the original circulation logic can conflict with contemporary requirements for inclusive and continuous movement through the building.

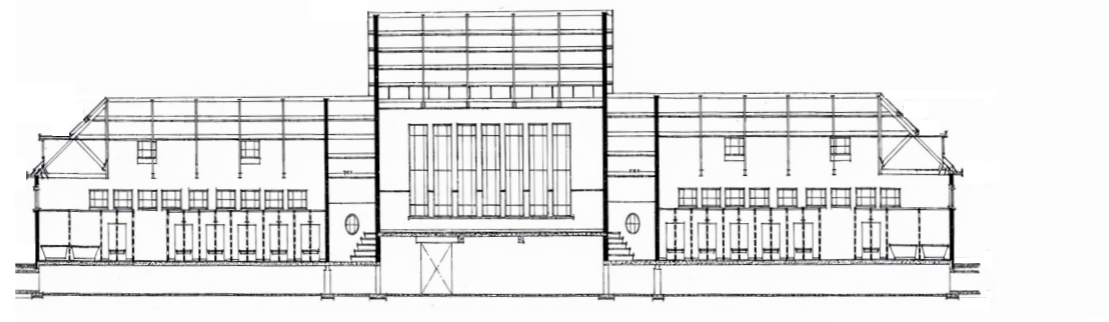


Figure 47: Ede section (side-to-side)

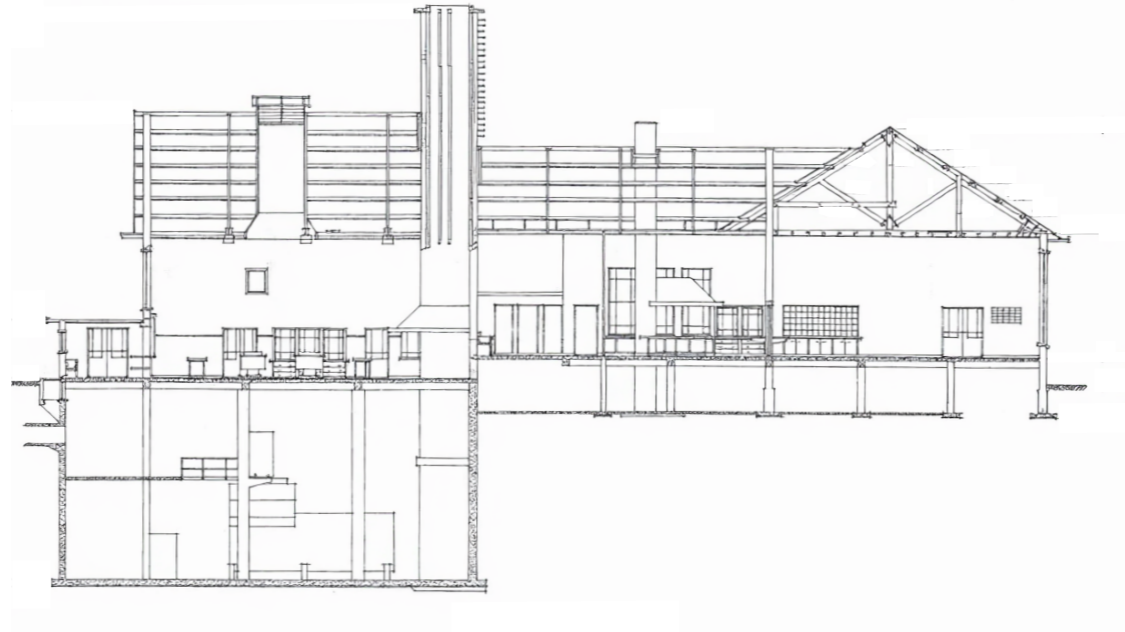


Figure 48: Ede section (front-to-back)

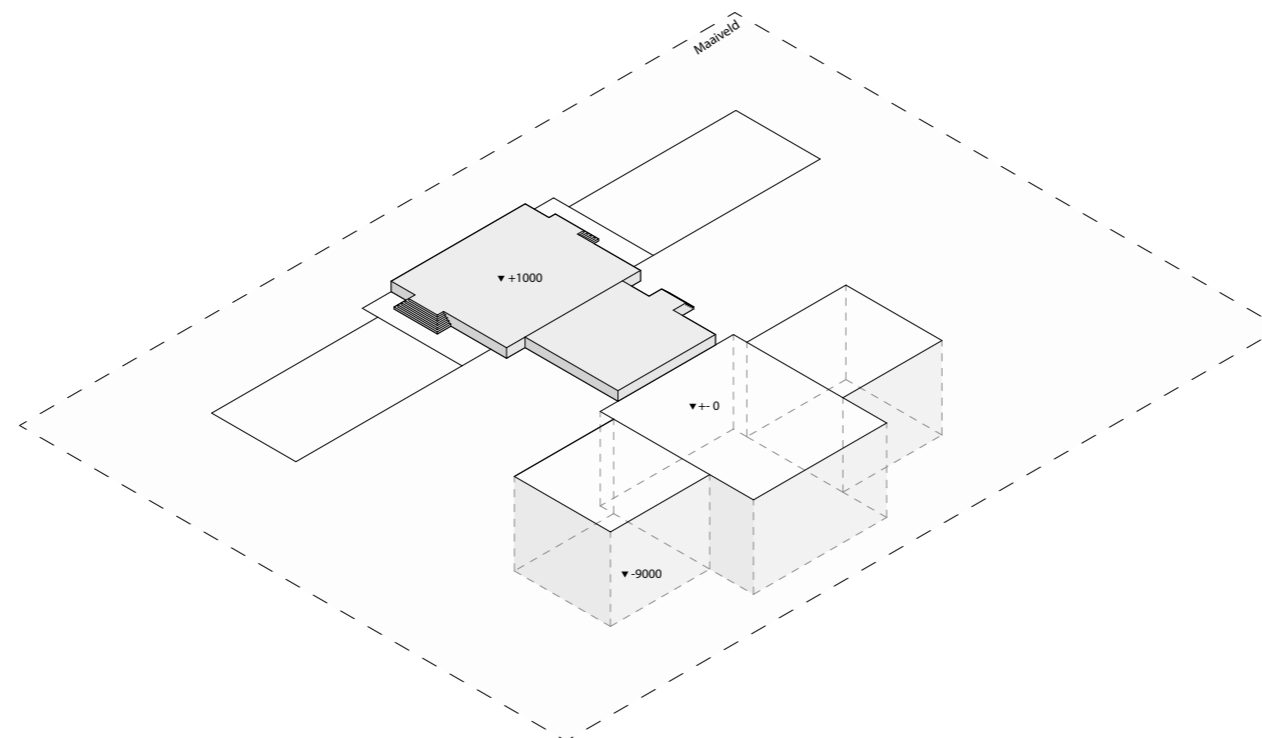


Figure 49: Ede height level diagram

Building principles

- Military hierarchy is embedded within the spatial and circulation structure of the building
- Functional separation determines both plan organisation and movement patterns.
- The kitchen building extends the pavilion logic of the wider barracks site into the interior.
- Circulation prioritizes efficiency, control, and restricted access.

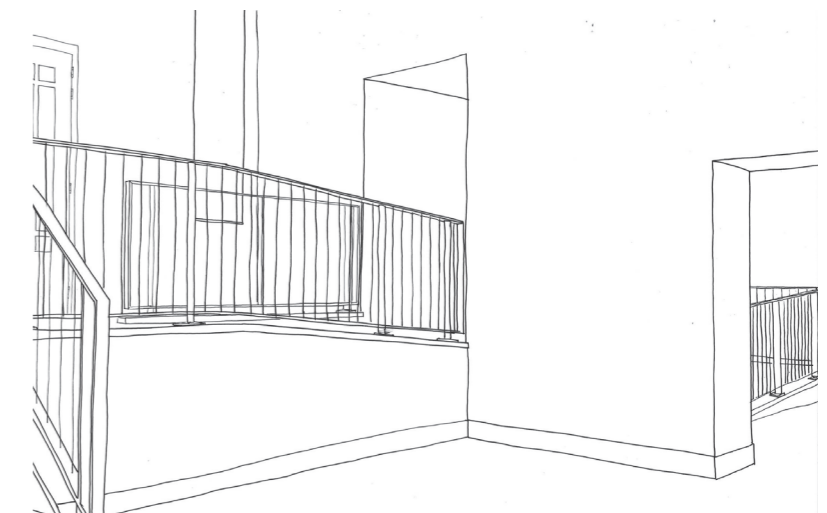


Figure 50: Ramp in Ede to solve accessibility issues

4. Materiality and architectural expression

"How do materials contribute to the architectural character and functionality of the buildings?"

The materials were selected based on durability, hygiene, fire safety, and low maintenance, reflecting the functional requirements of military architecture. Brick was used consistently across the barracks complexes due to its durability, fire resistance, availability within the Netherlands, and association with permanent civic architecture. Concrete floors were applied because of fire safety concerns (Monumenten Advies Bureau, 2017, p. 21), while the roofs were constructed using steel roof trusses. Steel window and door frames allowed for larger openings and slender profiles compared to timber frames, increasing daylight and ventilation within the buildings. These large steel windows are among the clearest functionalist elements within the architecture (Monumenten Advies Bureau, 2017, p. 21). The use of steel frames, concrete floors, and large window openings reflects broader interwar ideas surrounding hygiene, light, and efficiency. The specific materialisation is decided by the *Eerstaanwezend officier*, who leads the realisation of Boost's design.



Figure 51: Façade Ede



Figure 53: Façade Grave

Despite these modern construction methods, the buildings maintain a traditional appearance through the use of pitched roofs, clay roof tiles, and brick façades. The architecture resembles enlarged interwar residential buildings rather than defensive military structures, softening the institutional character of the complexes. The architectural style of the Boostkazernes can be described as *Nieuwe Zakelijkheid*, combining influences from the *Amsterdamse School*, *Delftse School*, and *Nieuwe Bouwen*.

The darker brick plinth (*cementraam*) protects the lower façade against moisture, dirt, and wear while visually grounding the buildings within the landscape. Horizontal brick detailing and variations in brick colour reinforce the long horizontal composition of the façades and add

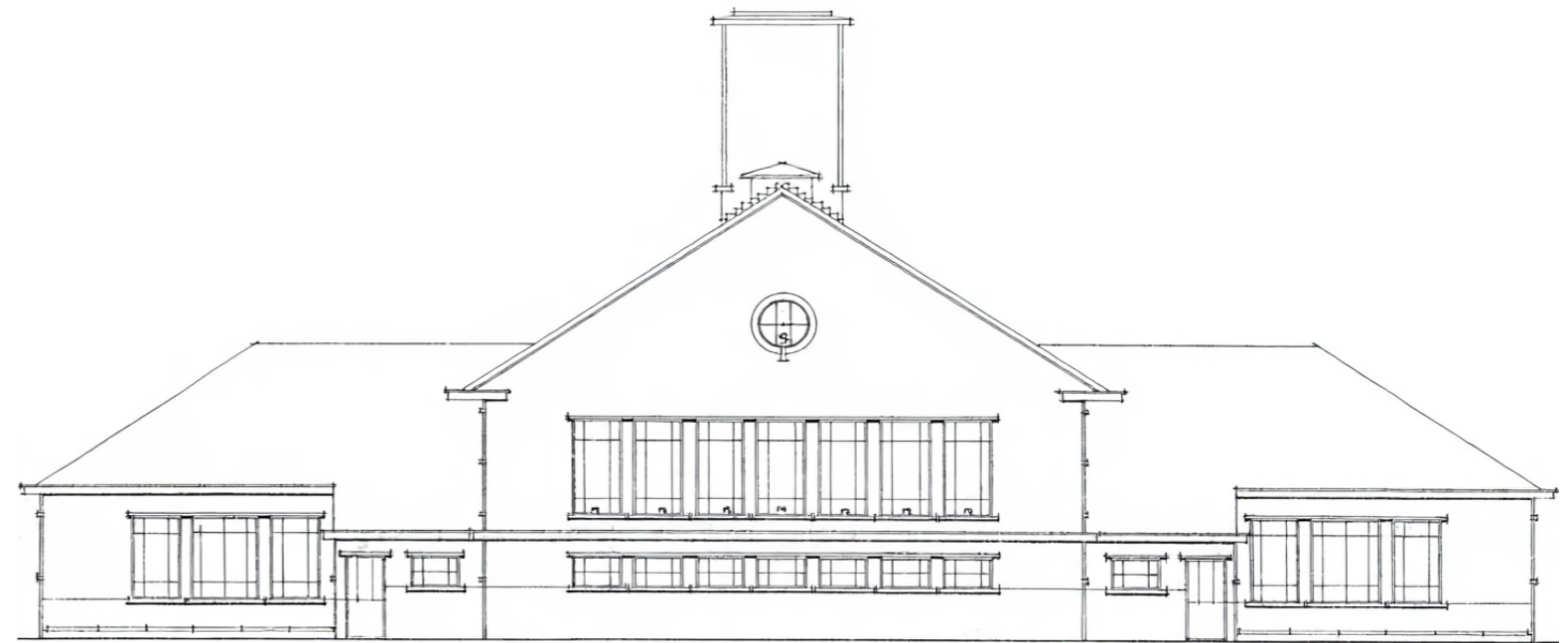


Figure 52: Façade Ede

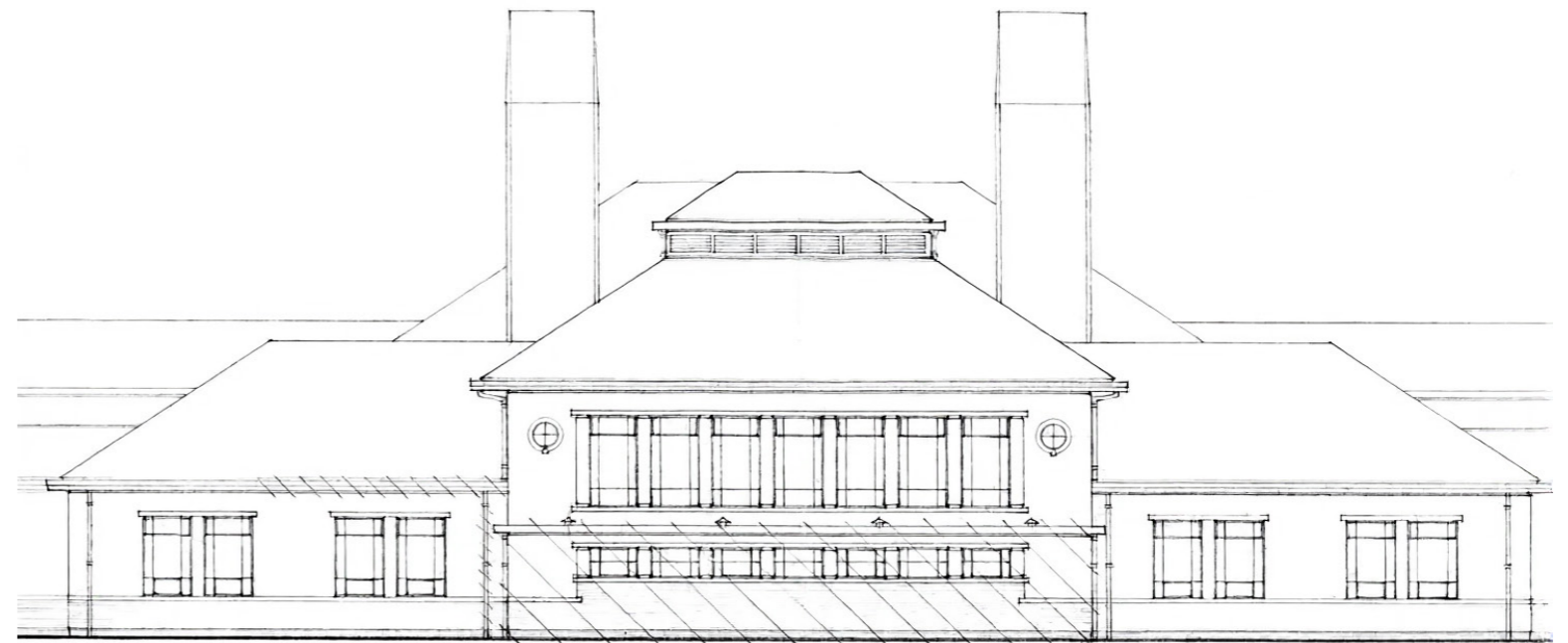


Figure 54: Façade Grave

rhythm to the otherwise standardised buildings.

The material detailing contributes to the architectural hierarchy of the ensemble by combining functional performance with careful façade composition. The restrained palette of brick, steel, concrete, timber, and roof tiles creates visual unity across the barracks sites while still allowing adaptation to local conditions.



Figure 55: Façade Eindhoven

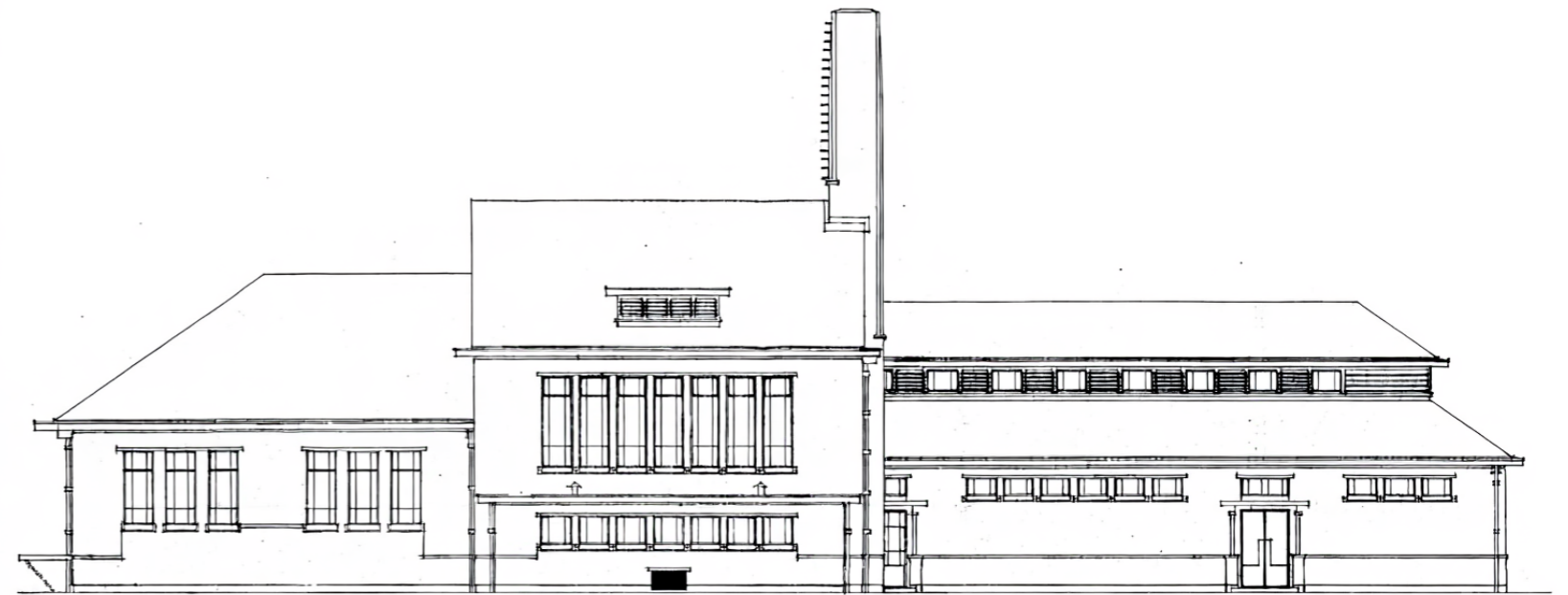


Figure 56: Façade Eindhoven



Figure 57: Façade Arnhem

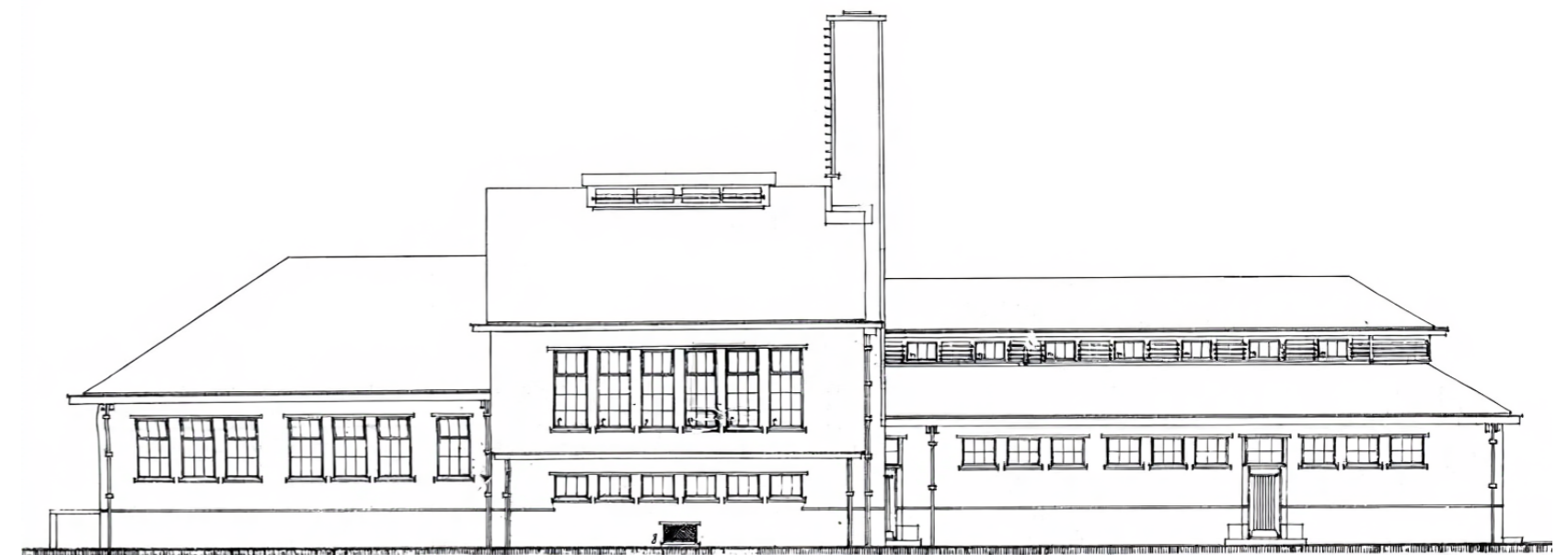


Figure 58: Façade Arnhem

Building principles

- Materials were selected for durability, hygiene, and fire safety.
- Traditional materials softened the institutional character of the barracks.
- Modern construction techniques were integrated within a traditional architectural language.
- Façade detailing reinforced order, rhythm, and horizontality.
- The architecture balances military rationality with civic/domestic familiarity.

Conclusion

Site morphology

Building principles

- Functional separation through pavilion planning
- Central organisation around parade ground
- Clear hierarchy between primary and secondary buildings
- Grid based ordering system
- Symmetry enhances military order
- Adaptability within a standardised framework
- **Buildings are part of an ensemble rather than isolated objects**
- Site specific adaptation without losing organisational logic

The redesign retains many of the organisational principles found in Boost's barracks, while adapting them to a public function. Similar to the original military complexes, the project is organised as a pavilion system in which separate volumes accommodate different functions. However, rather than structuring an entire barracks ensemble, this principle is applied to a single building complex. The original kitchen building remains the primary element, containing the main library programme, while secondary functions are placed within the new pavilions. A colonnade connects all elements into a coherent ensemble and establishes a clear organisational framework. Although the project moves away from military functionality, the underlying principles of hierarchy, adaptability, and collective organisation remain recognisable.

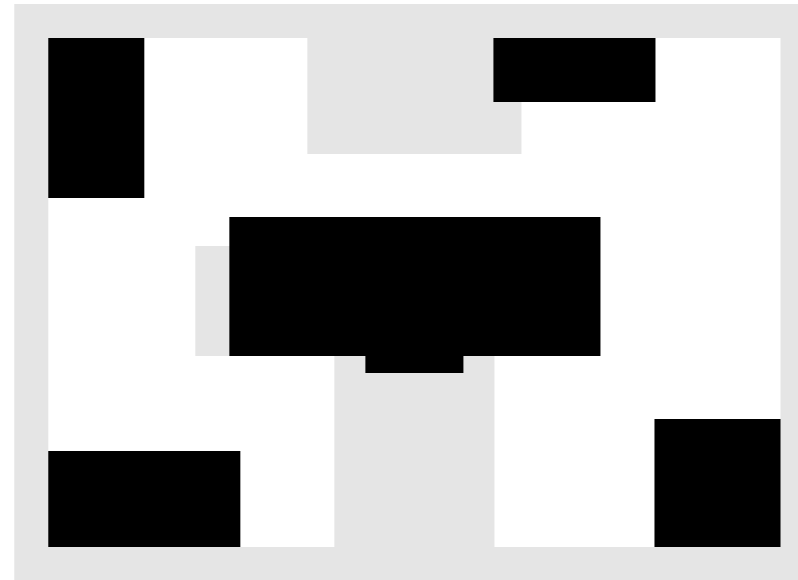


Figure 59: Morphology

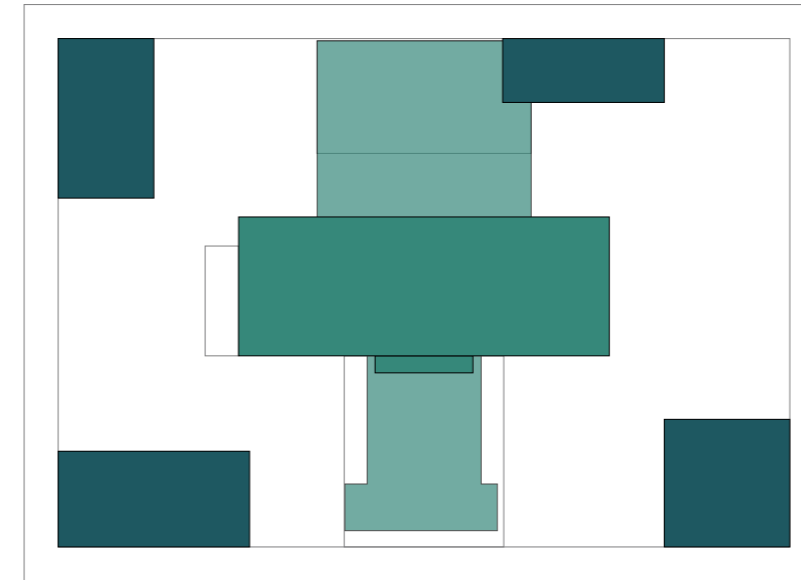


Figure 60: Primary and secondary spaces

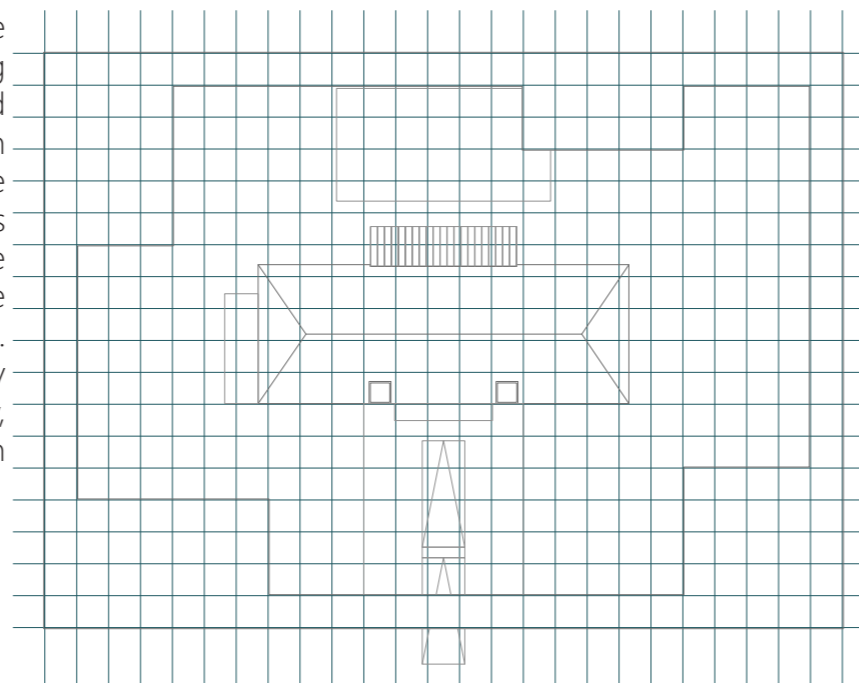


Figure 61: Grid

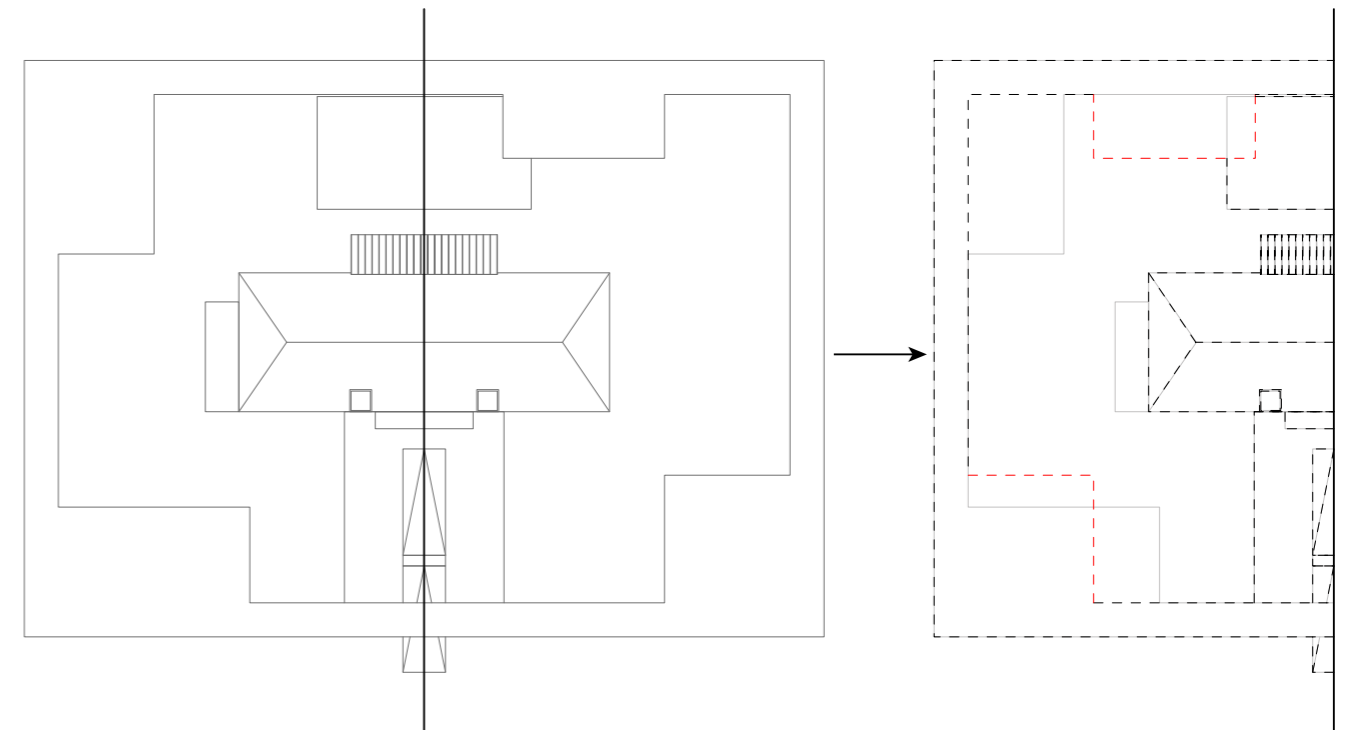


Figure 62: Symmetry

Kitchen building typology and morphology

Building principles

- Buildings create identity through repetition within a standardised system.
- The morphology expresses hierarchy of the military ensemble.
- Internal programme organisation directly shapes external massing.
- Symmetry reinforces military order and spatial legibility.
- Chimneys act as functional and symbolic markers within the composition.
- The clarity of the original morphology determines adaptability to later additions.
- Successful additions maintain hierarchy by subordinating themselves to the original massing and roofline.

Only the basement and the chimney volume were realised according to Boost's original design, yet the building remains clearly recognisable as part of the broader barracks ensemble. Architectural elements such as the brickwork, window treatment, gutters, and chimneys preserve its identity. The original kitchen building continues to dominate the composition, while the new pavilions and colonnade remain subordinate in scale and height. The chimneys retain their role as prominent landmarks, now functioning primarily as historical and symbolic references. At the same time, the robust morphology of the existing structure has enabled new floors and accessibility interventions, demonstrating the adaptability embedded within the original design.

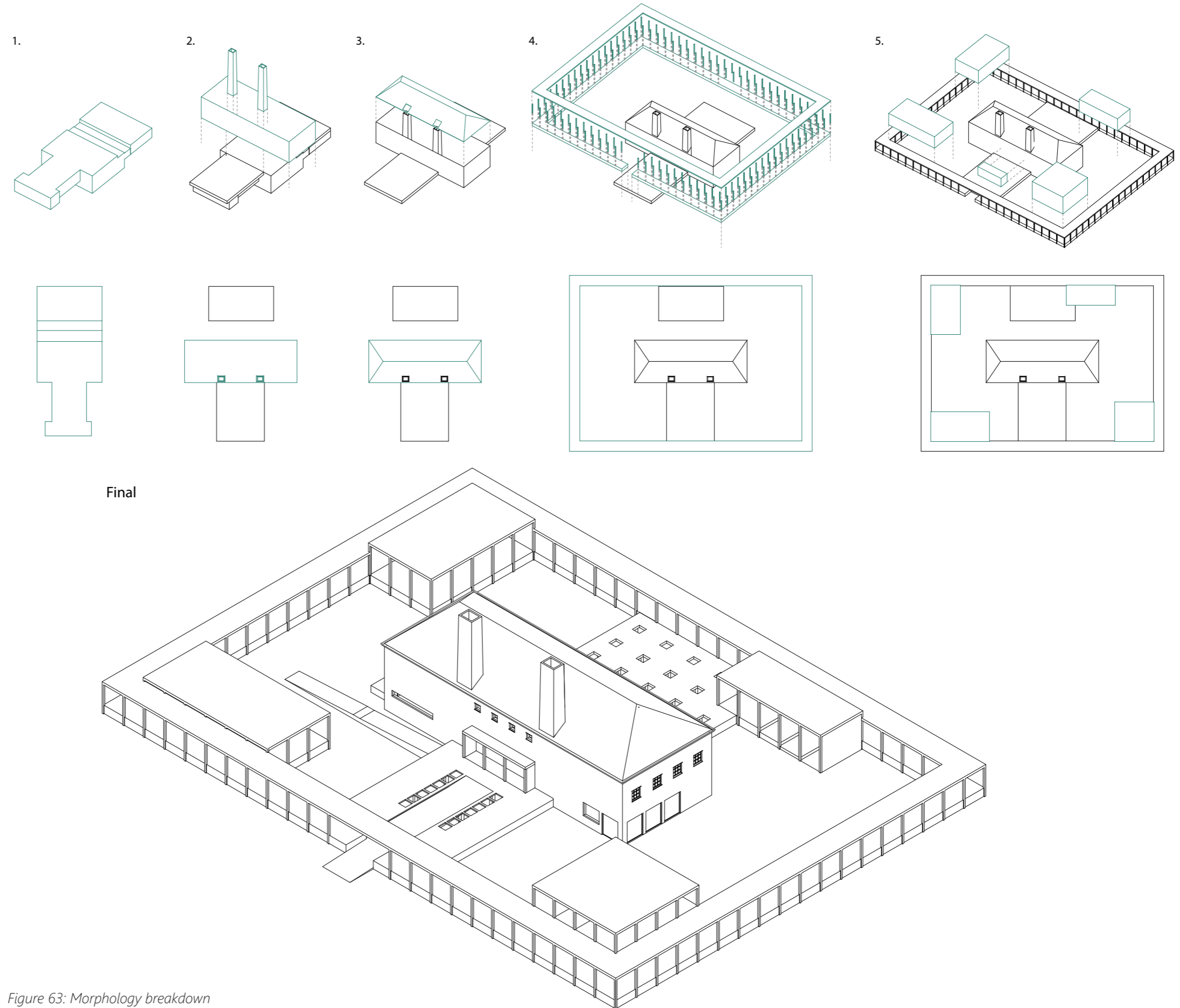


Figure 63: Morphology breakdown

Functional organisation and hierarchy

Building principles

- Military hierarchy is embedded within the spatial and circulation structure of the building
- Functional separation determines both plan organisation and movement patterns.
- The kitchen building extends the pavilion logic of the wider barracks site into the interior.
- Circulation prioritizes efficiency, control, and restricted access.

This chapter reveals the greatest difference from Boost's principles. The original building was organised around separation, hierarchy, and controlled movement, reflecting its military purpose. In contrast, the redesign promotes openness and accessibility. All users enter through a shared entrance, while new circulation elements such as the colonnade, basement connections, and internal staircases create a continuous public route through the complex. Although the pavilions still maintain a degree of functional independence, they are united through a shared circulation system. As a result, circulation remains a key organisational tool, but its purpose shifts from control and separation to accessibility, inclusivity, and social interaction.

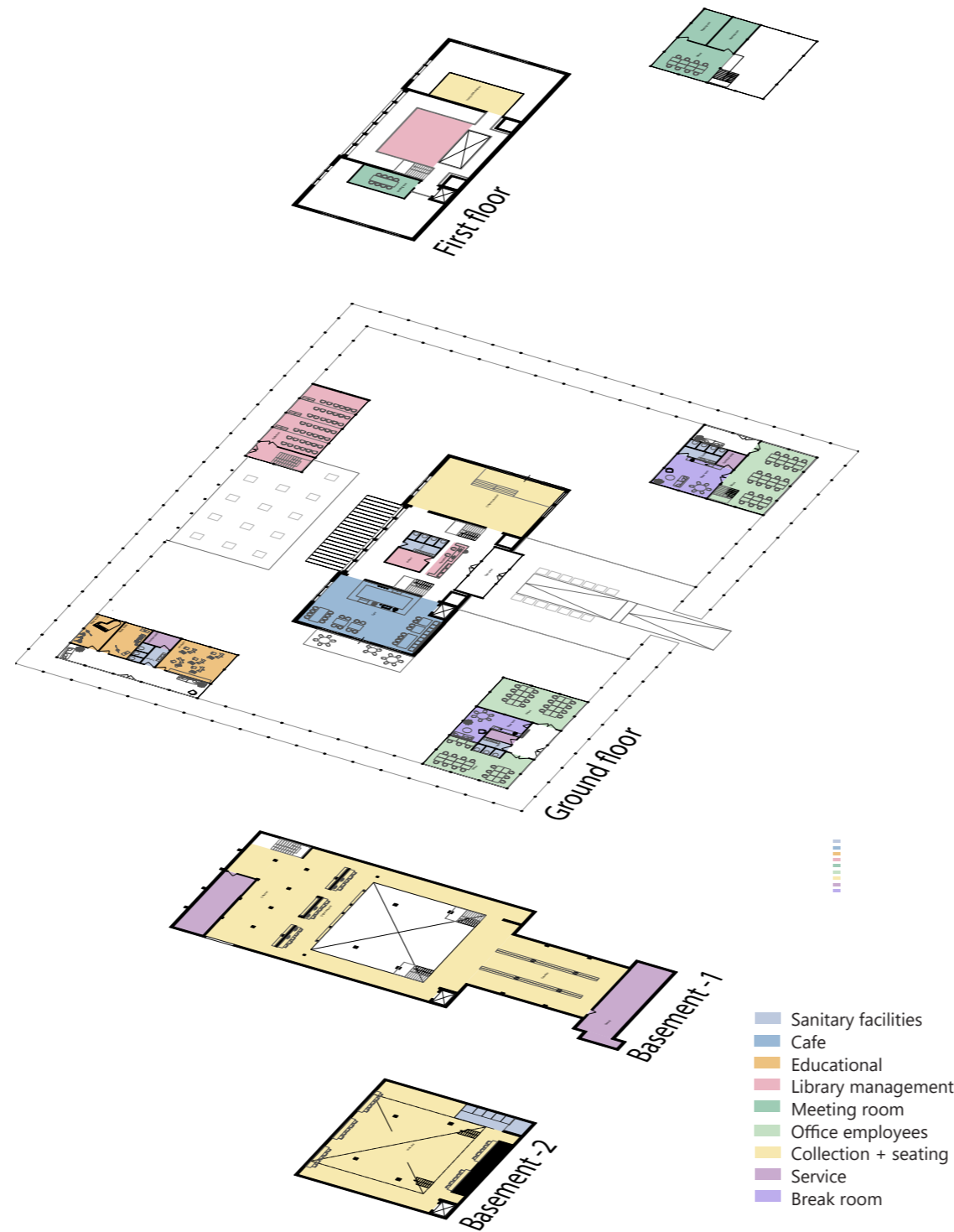


Figure 64: Function

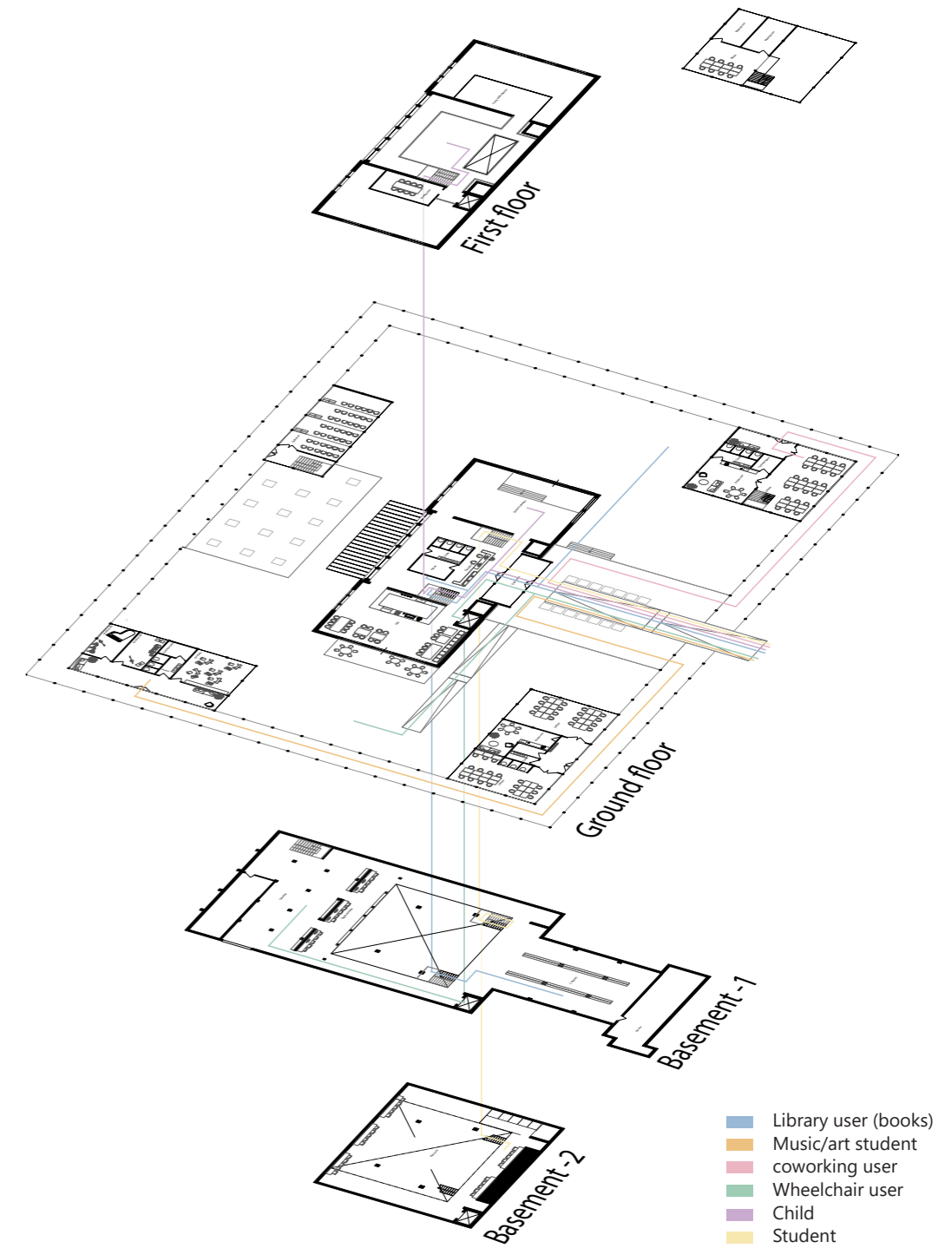


Figure 65: Circulation

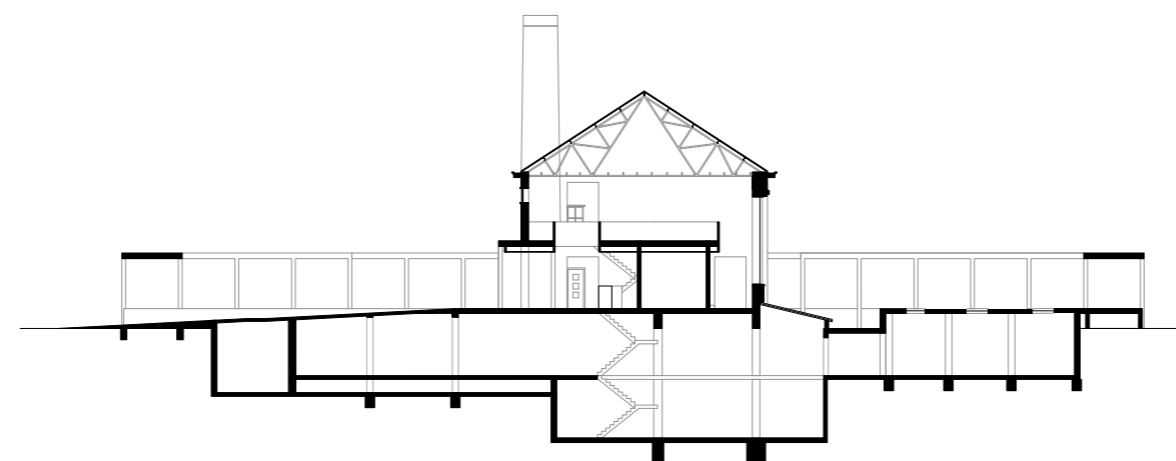


Figure 66: Section (front-to-back)

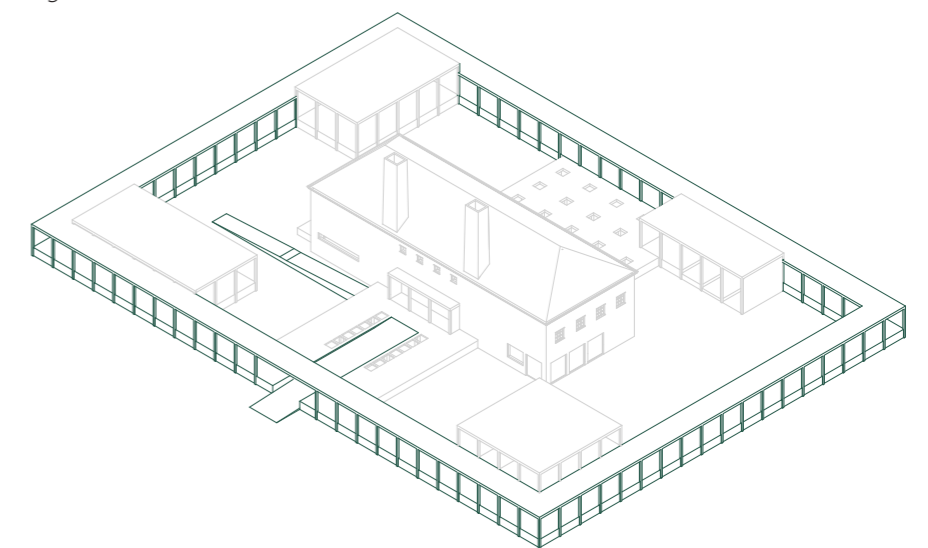


Figure 67: Accessibility

Materiality and architectural expression

Building principles

- Materials were selected for durability, hygiene, and fire safety.
- Traditional materials softened the institutional character of the barracks.
- Modern construction techniques were integrated within a traditional architectural language.
- Façade detailing reinforced order, rhythm, and horizontality.
- The architecture balances military rationality with civic/domestic familiarity.

The material strategy builds upon the architectural language of the existing building while introducing contemporary interventions. Durable materials such as brick and steel ensure longevity and robustness, reflecting one of the key principles of the original design. Traditional elements, including the brick plinth, establish continuity between old and new. The colonnade introduces a strong rhythm and grid that mimic the order and repetition found in the original architecture. By combining contemporary construction with traditional materials and proportions, the project respects the historical identity of the barracks while transforming it into an accessible public building.



Figure 68: Materials

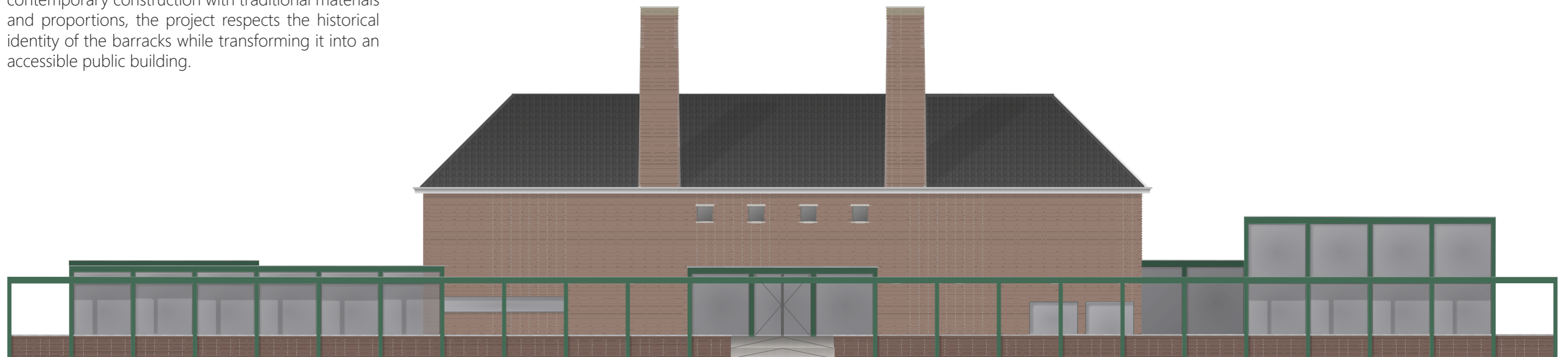


Figure 69: Façade

Implications

The implications of this research extend beyond the redevelopment of the Kolonel Palmkazerne. As the Boostkazernes were developed according to a standardised design system, the identified principles can also be applied to other barracks designed by A.G.M. Boost. They provide a framework for analysing existing conditions and reflecting on how future interventions relate to the original architectural logic of the ensemble.

More broadly, the research demonstrates the value of deriving design principles from historical analysis. While heritage projects often rely on value assessments to justify design decisions, a principle-based approach offers additional insight into how buildings were conceived, organised, and adapted over time. This can support more informed transformation strategies that engage with the underlying structure of a site rather than only its visual characteristics.

Reflection

At the start of the eight month graduation process, I created a plan of what my project would be and how I would approach it the following months. However, during this process, I ran into obstacles and reflected on earlier decisions, ultimately leading me to adapt the previously made plan.

I narrowed the focus from A.G.M. Boost to Boost Kazerne, as this provided a more specific framework for the research. In practice, the *Eerstaanwezend officier* had a significant influence on the placement and materialisation of the project. Analysing only the general principles of Boost would mainly focus on the standard design, while aspects such as morphology and colour would be overlooked. These elements were important for the redesign process, which is why a more specific definition was chosen.

Initially, the research consisted of nine research questions. Due to the 1500-word limit for the results section, I critically evaluated which questions were most relevant to the information needed for the design process. Some questions with overlapping themes were merged, while others were removed during the process.

The case studies were revised during the process, with Weert being replaced by Eindhoven and Arnhem. The initial selection of case studies showed too many similarities in morphology, form, and floor plans, which limited the value of the comparative analysis. The revised selection allowed for more meaningful comparisons and outcomes.

In the new condensed graduation format, research and design are carried out simultaneously. For this project, it may have been more beneficial to complete a larger part of the research before starting the design phase, so the findings could be integrated more effectively into the design process. Because both phases ran in parallel, the focus gradually shifted more towards design during Q2, while the research became more reflective in nature. As a result, some new insights were incorporated less directly into the development of the design and thus the conclusion turned more into an evaluation rather than an implementation.

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List of images

- Figure 1: https://magazines.defensie.nl/defensiekrant/2019/04/06_kazernenamen_04
- Figure 2: <https://www.crimsonweb.org/voormalige-kolonel-palmkazerne/> (edited by me)
- Figure 3: Own image
- Figure 4: Own image
- Figure 5: Own image
- Figure 6: Own image
- Figure 7: Own image
- Figure 8: Own image
- Figure 9: -
- Figure 10: -
- Figure 11: <https://www.bonskazerne.nl/geschiedenis>
- Figure 12: <https://www.boei.nl/mensen-vertellen/het-kazernebouwpakket-van-boost/>
- Figure 13: <https://collectie.nmm.nl/nl/collectie/detail/1975923/>
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- Figure 69: Own image (based on design)

Appendix 1: Glossary

Barrack complex = Kazerne

Barrack = legeringsgebouw

Kitchen building = keukengebouw

Gate house = poortgebouw

Parade ground = Appelplaats

Regimental barrack complex = Regimentskazerne

Battalion barrack complex = Bataljonskazerne

Manschappen = soldiers

Onderofficieren = officers

Basement

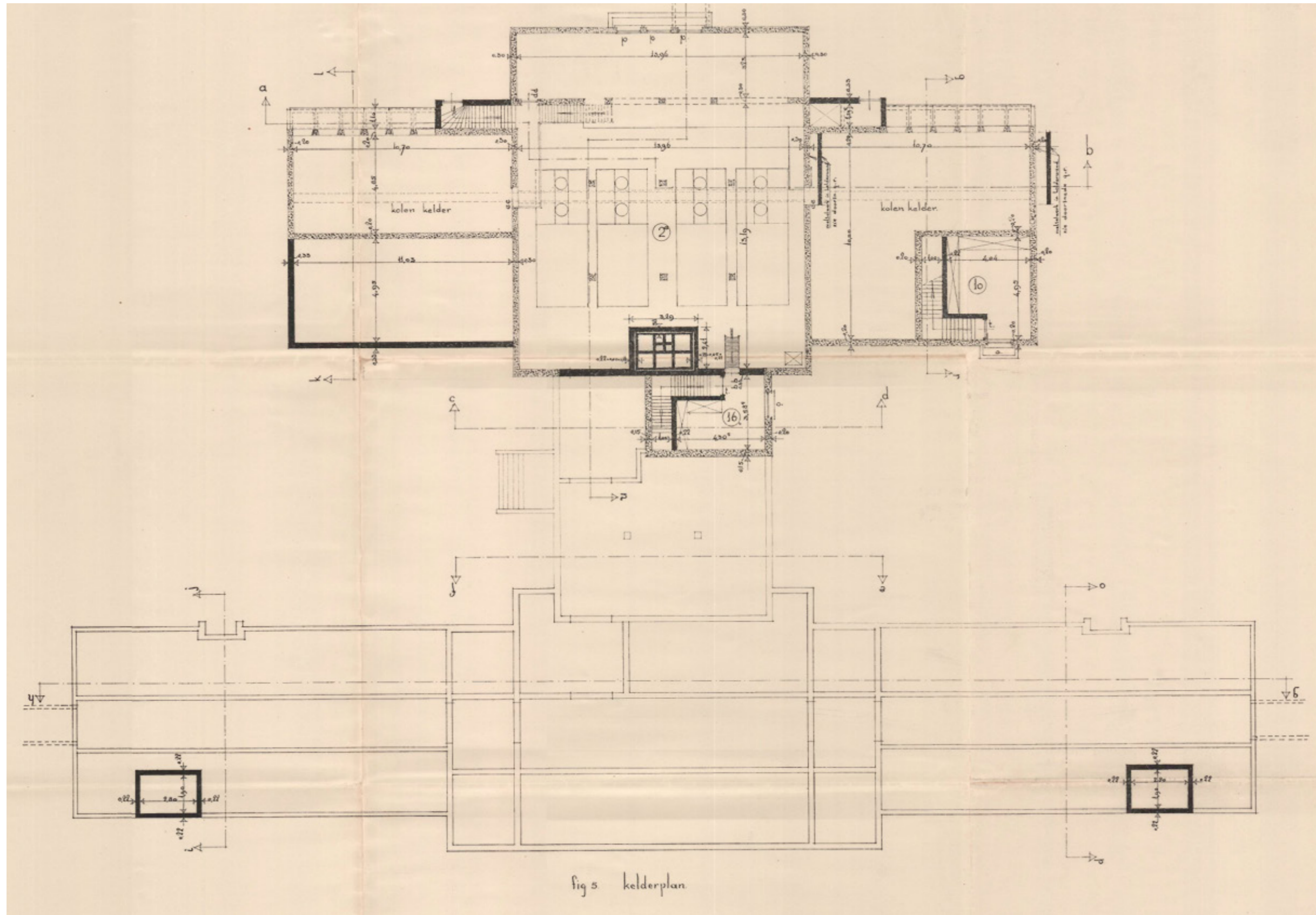
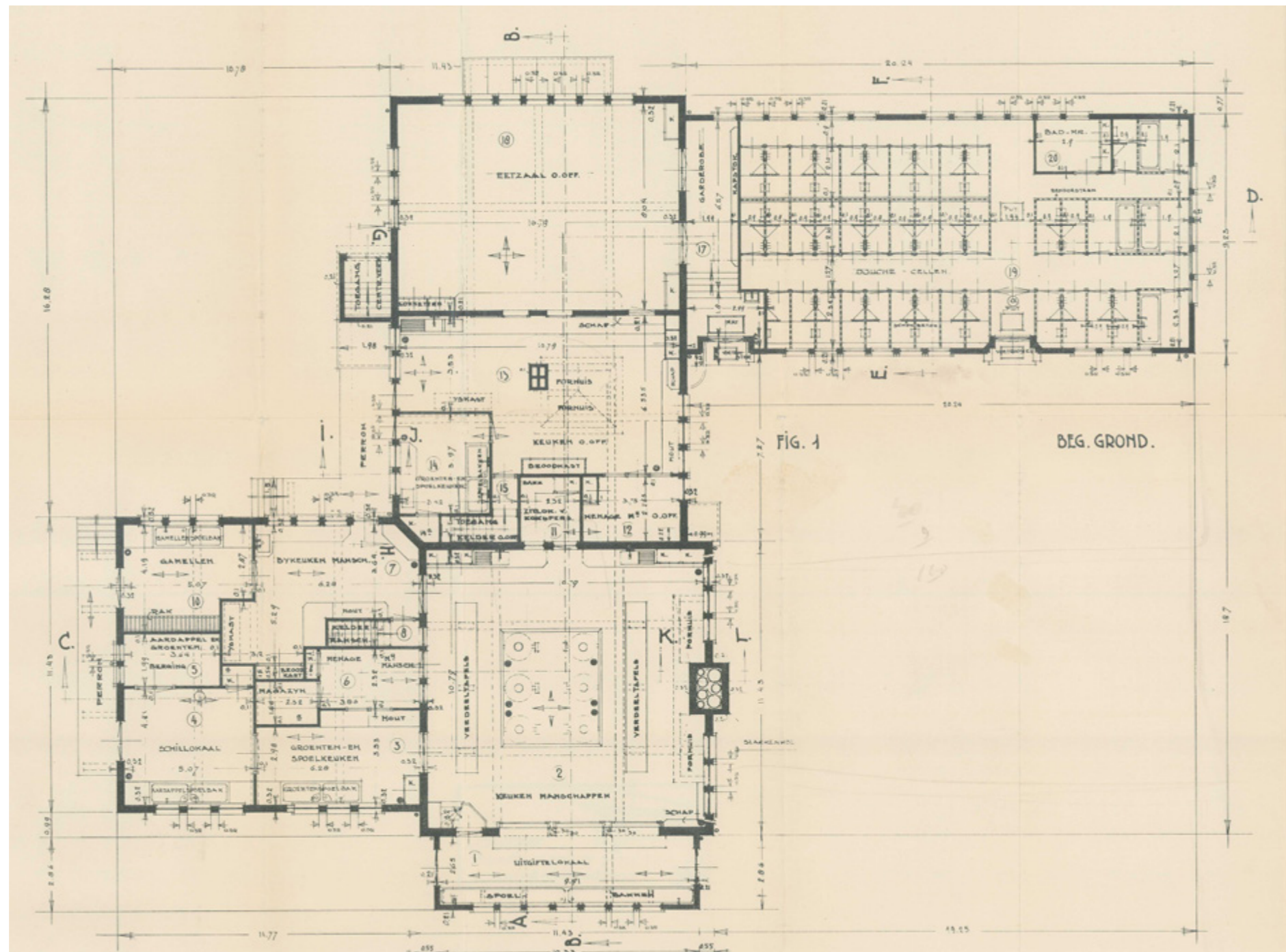
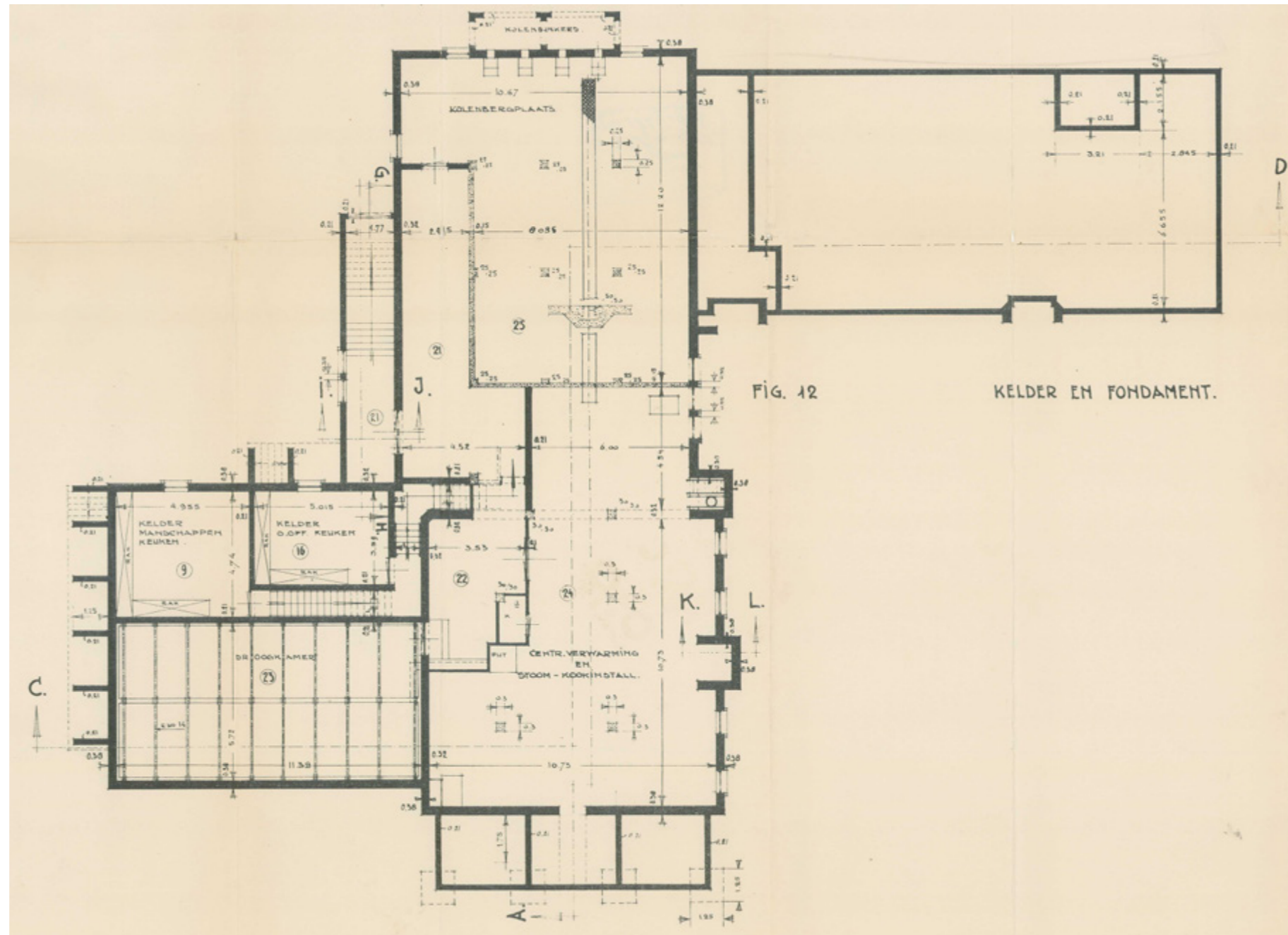


fig 5 kelderplan

Appendix 4: Archive drawing Constant Rebecquekazerne - Eindhoven

Ground floor





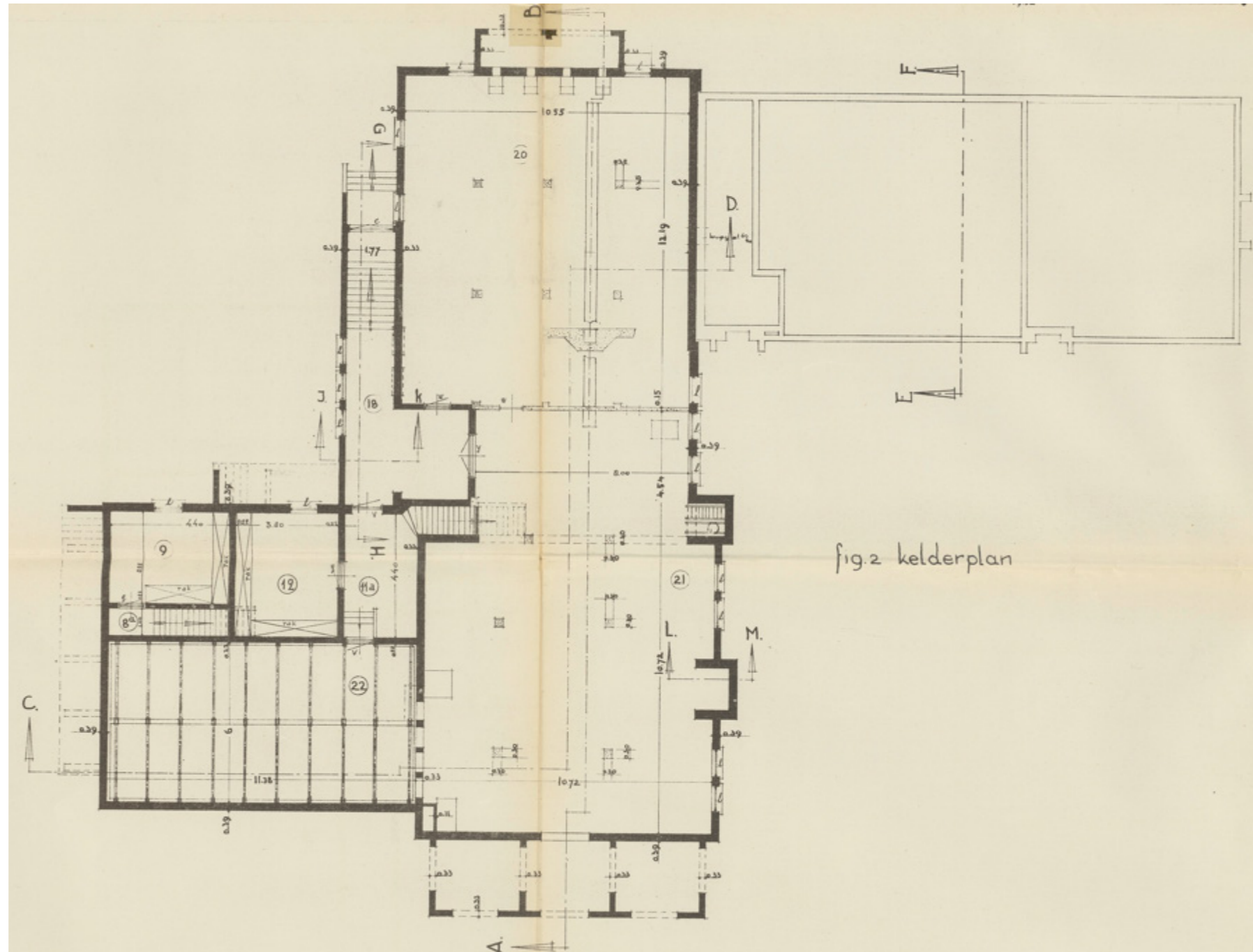


fig. 2 kelderplan