Heritage & Architecture

Preserving the spatial quality when transforming St. Barbara

Thomas Blauw

CHURCHES IN THE NETHERLANDS

- 7,000 churches

- Until 2030 a thousand churches
  will close

ST. BARBARA

- Roman Catholic church

- Built in 1886

- Municipal monument

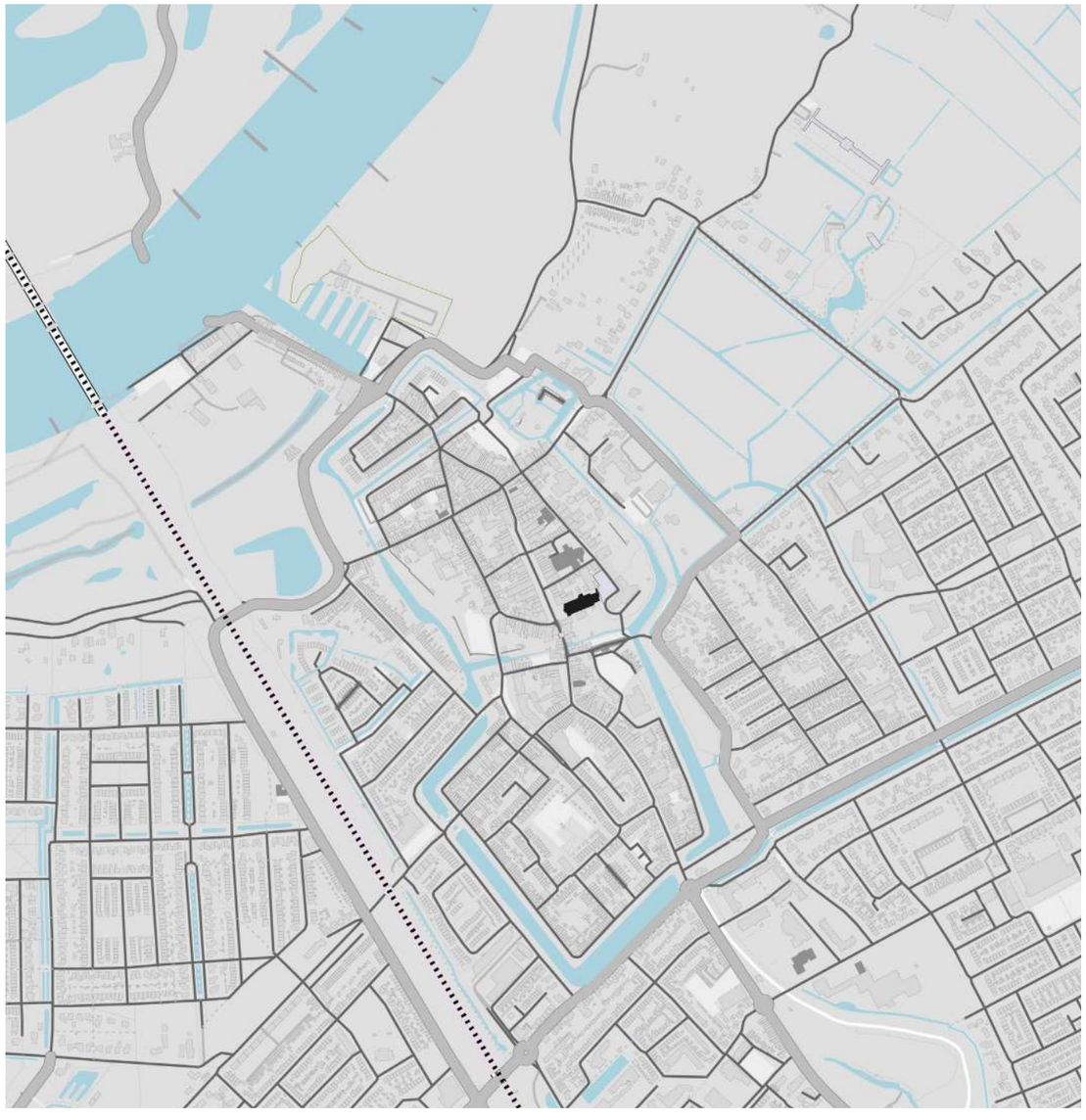
- Neo Gothic style

- Architect: Piet van Genk

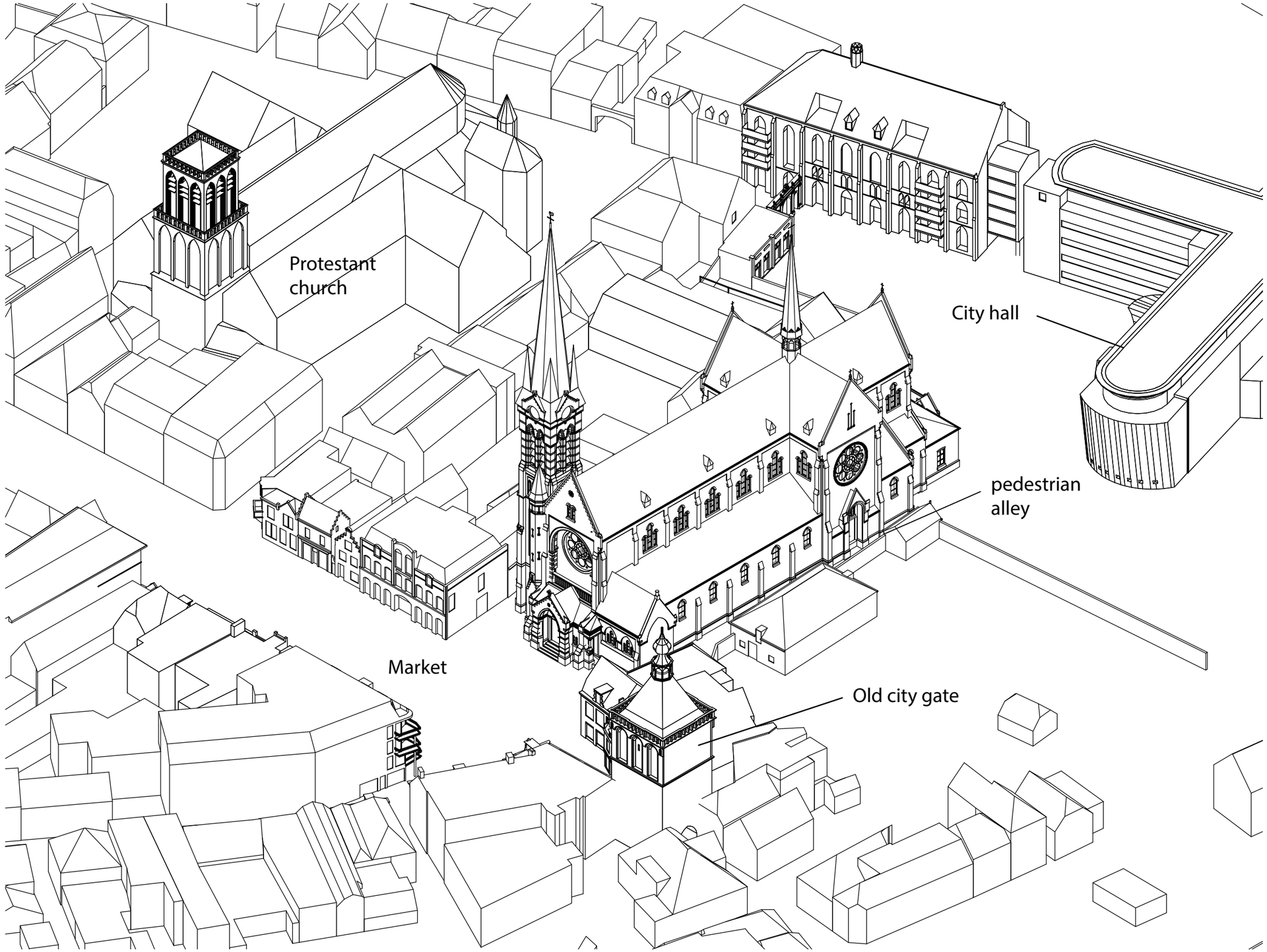
- Decline in church attendees

- Transformation is necessary

CULEMBORG



SITE


Protestant
church
City hall
pedestrian
alley
Market
Old city gate

BUILDING CONDITION

Beautiful frontage with many ornamental elements

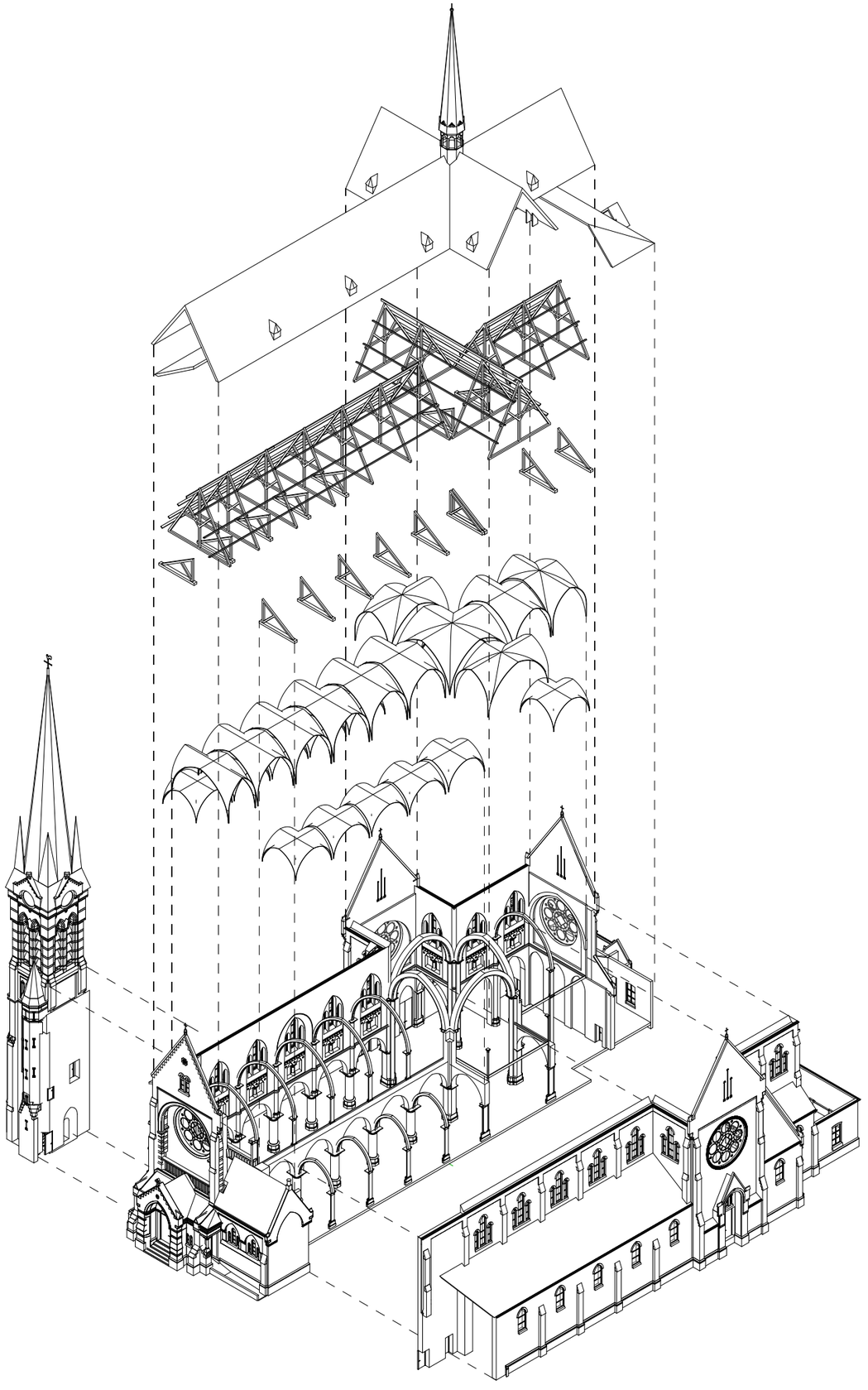
BUILDING CONDITION

Closed facade and rundown square

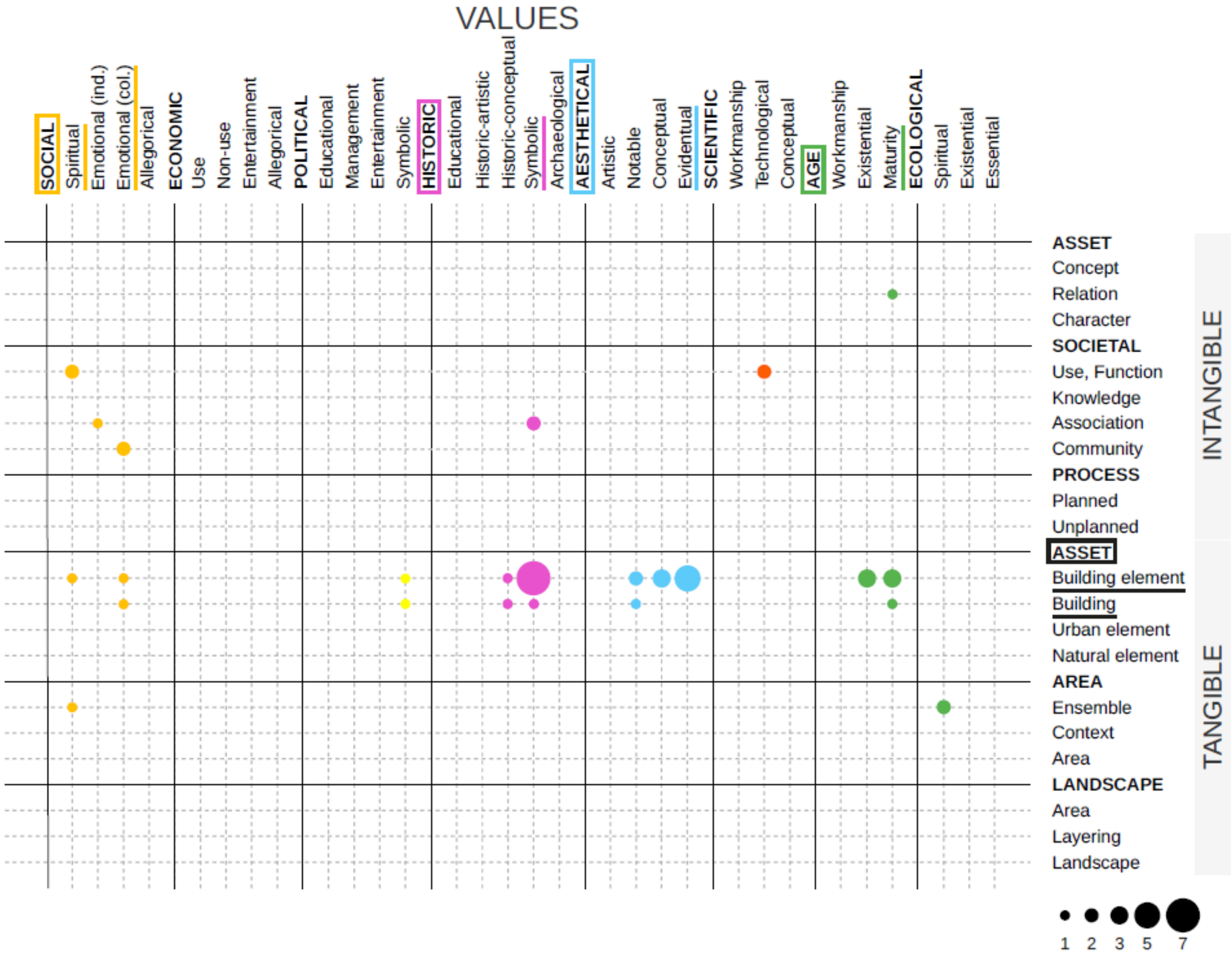
BUILDING CONDITION

Original interior with original details

STRUCTURE



VALUE ASSESSMENT



VALUE ASSESSMENT

High value:

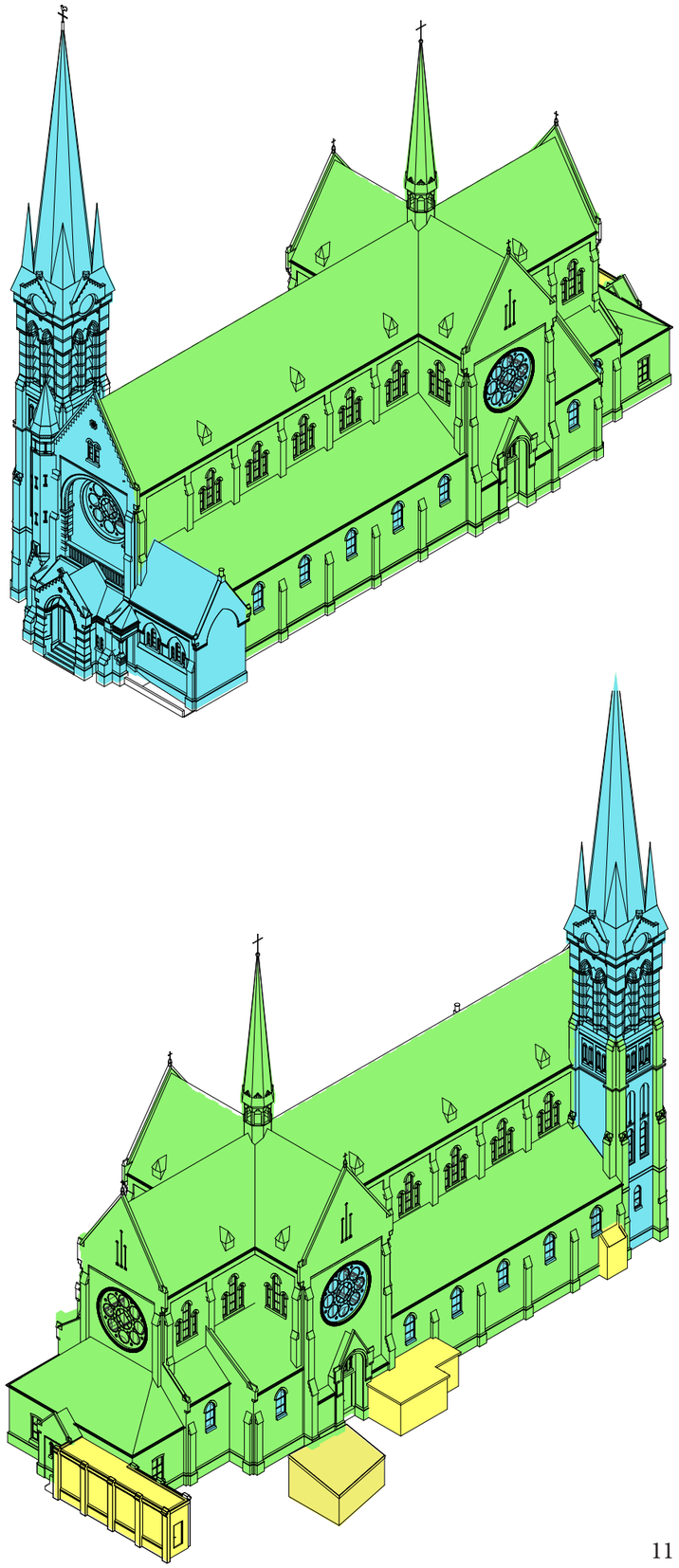
- Entire front façade and tower with highly decorated features
- Day chapel
- Donated stained glass windows with gestures of mercy
- Rosaries on the four ends of the cross shaped church

Positive value:

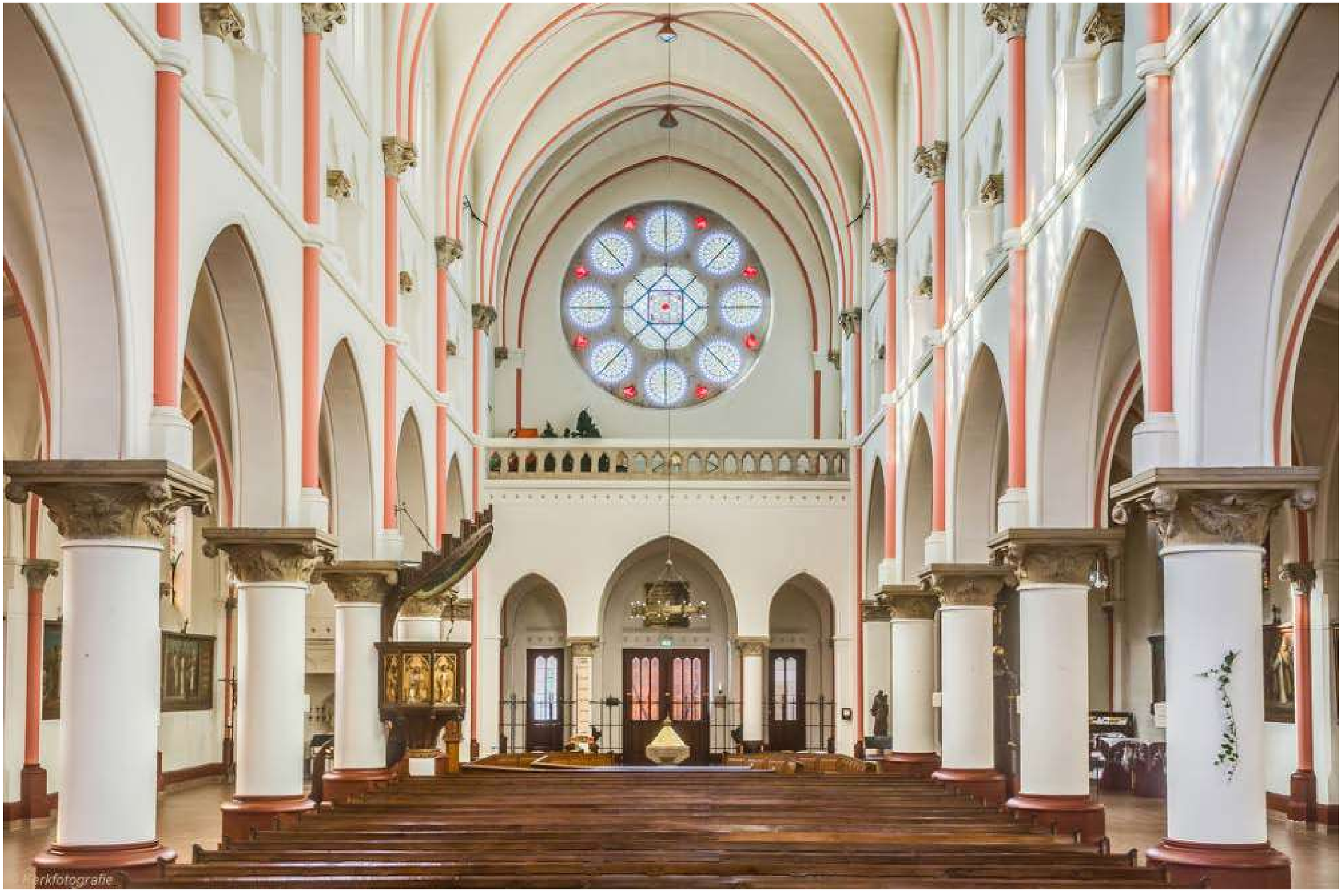
- Facades and floors of the main building
- Floorplan layout
- Interior walls with decorative colums, triforium and cross-ribvaults

Indifferent value:

- Later additions



SPATIAL QUALITY IN NEO GOTHIC CHURCHES



RESEARCH QUESTION

What are the effects of the most typical spatial interventions used to repurpose Neo-Gothic churches in the Netherlands on the spatial quality and characteristic architectural interior elements of the church?

SUBQUESTIONS

- Which attributes of Neo-Gothic churches make up the spatial quality?

  Literature and analyses

- What are in general the architectural characteristic interior elements within Neo-Gothic churches?

  Literature

- What are the most common and typical kinds of interventions made when repurposing Neo-Gothic churches?

  Literature and analyses

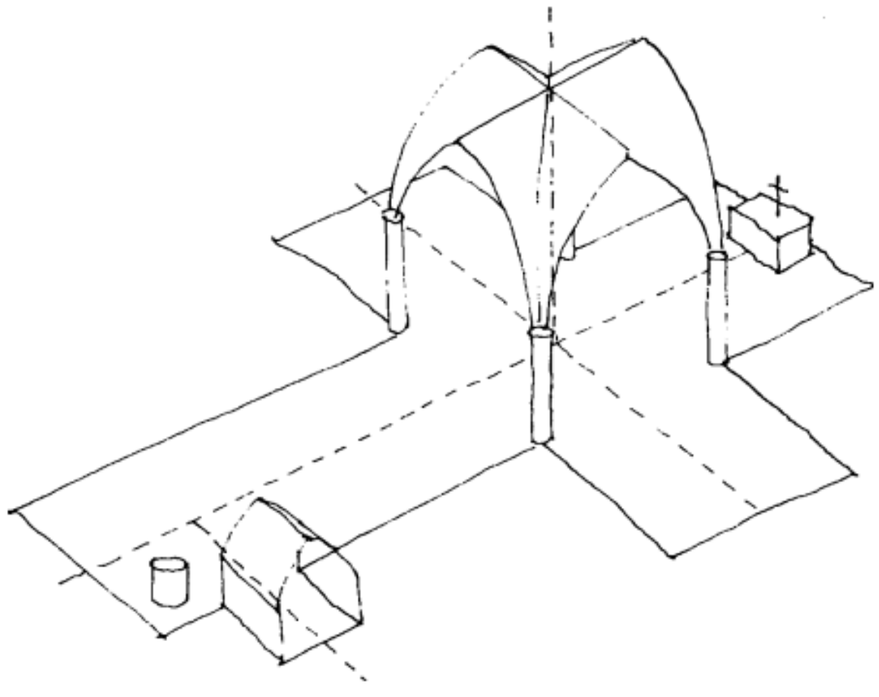
- What is the design attitude of the architect?

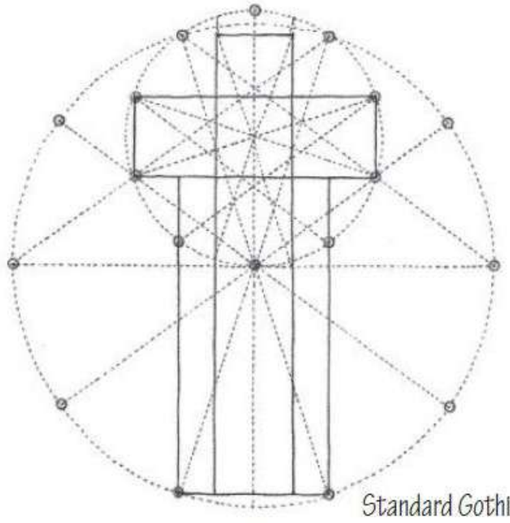
RESEARCH GOAL

The purpose of the research is to identify the effects of different spatial solutions for transforming churches on the spatial quality and draw learning from them for future design assignments involving churches.

ATTRIBUTES OF SPATIAL QUALITY

- The dimensions of the space - great hight, smaller width, long length
- Proportions/ scale - big
- Threefold division
- Rithm/ repetition
- Shape of the floorplan - cross shaped
- Lighting from above
- Long sight lines
- Symmetry
- Detail and ornamentation



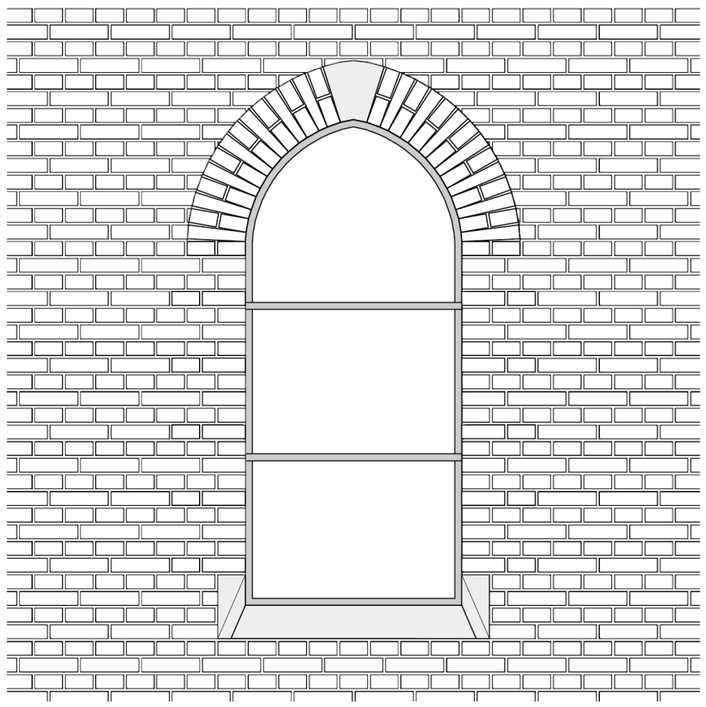


Standard Gothic Plan and Section

After Moessel

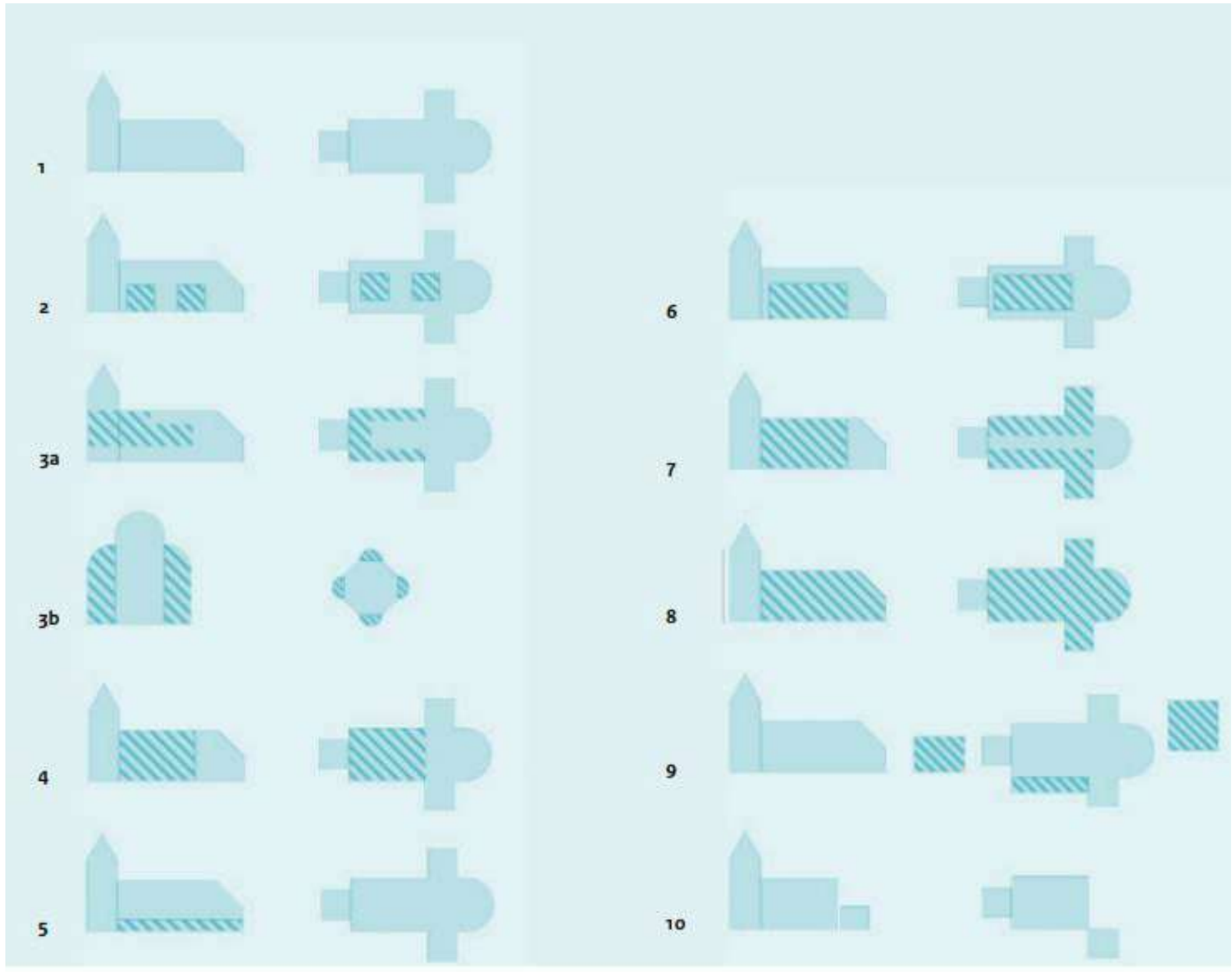
CHARACTERISTICS OF NEO GOTHIC CHURCHES

- large stained glass windows
- rose windows
- pointed arches
- rib vaults
- (flying) buttresses
- ornate decoration



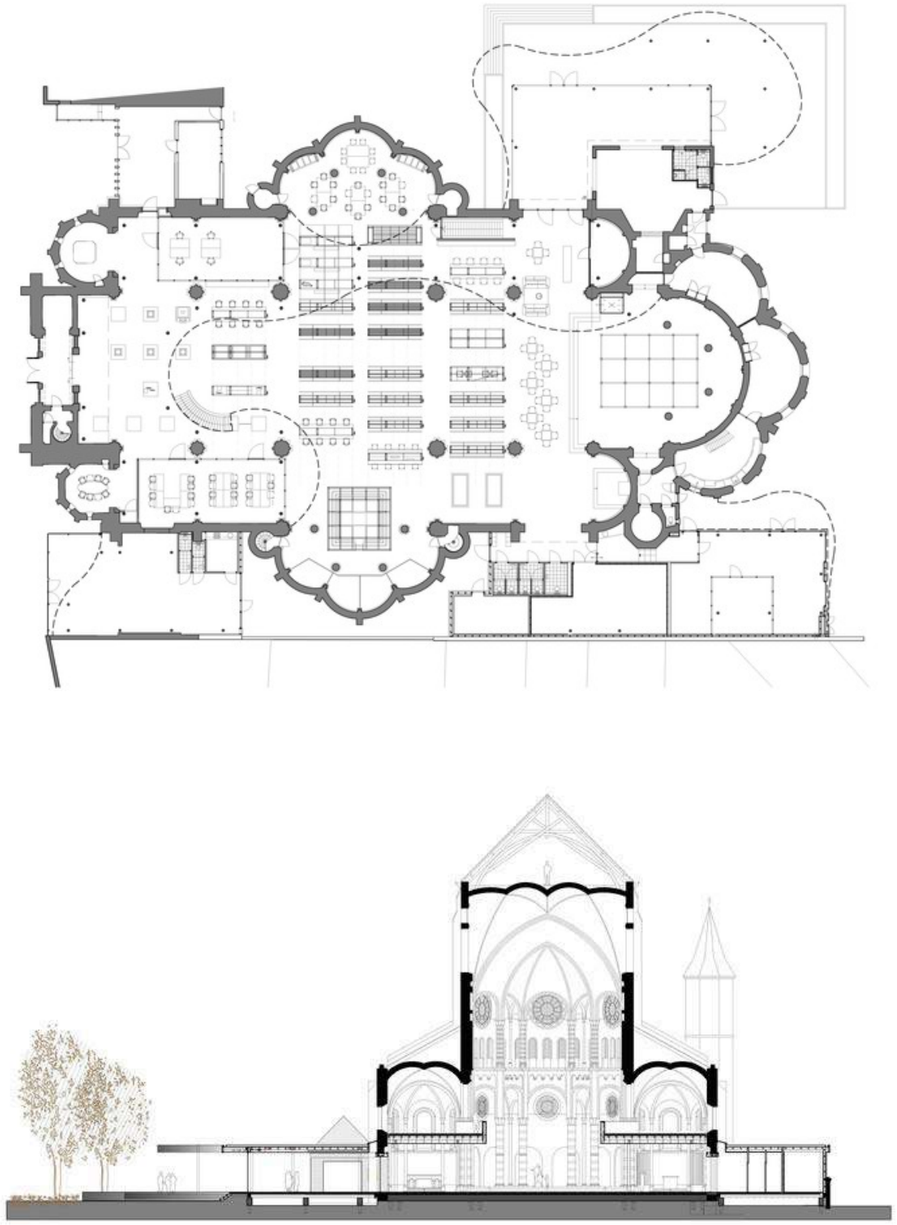
SPATIAL SOLUTIONS

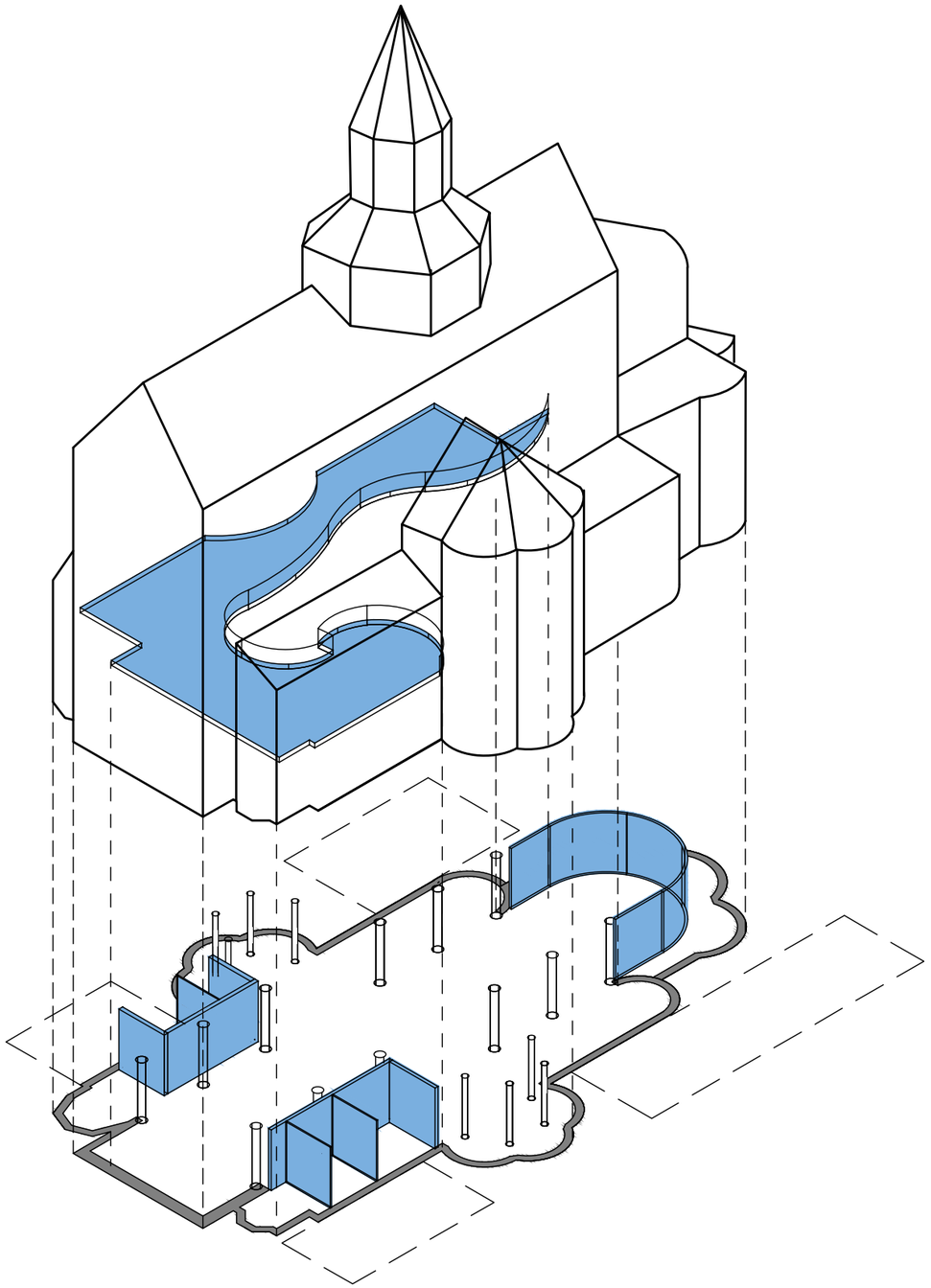
1. Full space remains intact
2. Loose built-in
3. Use ancillary spaces
4. Vertical splitting
5. Horizontal splitting
6. Box in the church
7. Lines of sight preserved
8. Fill
9. Additions
10. Partial demolition



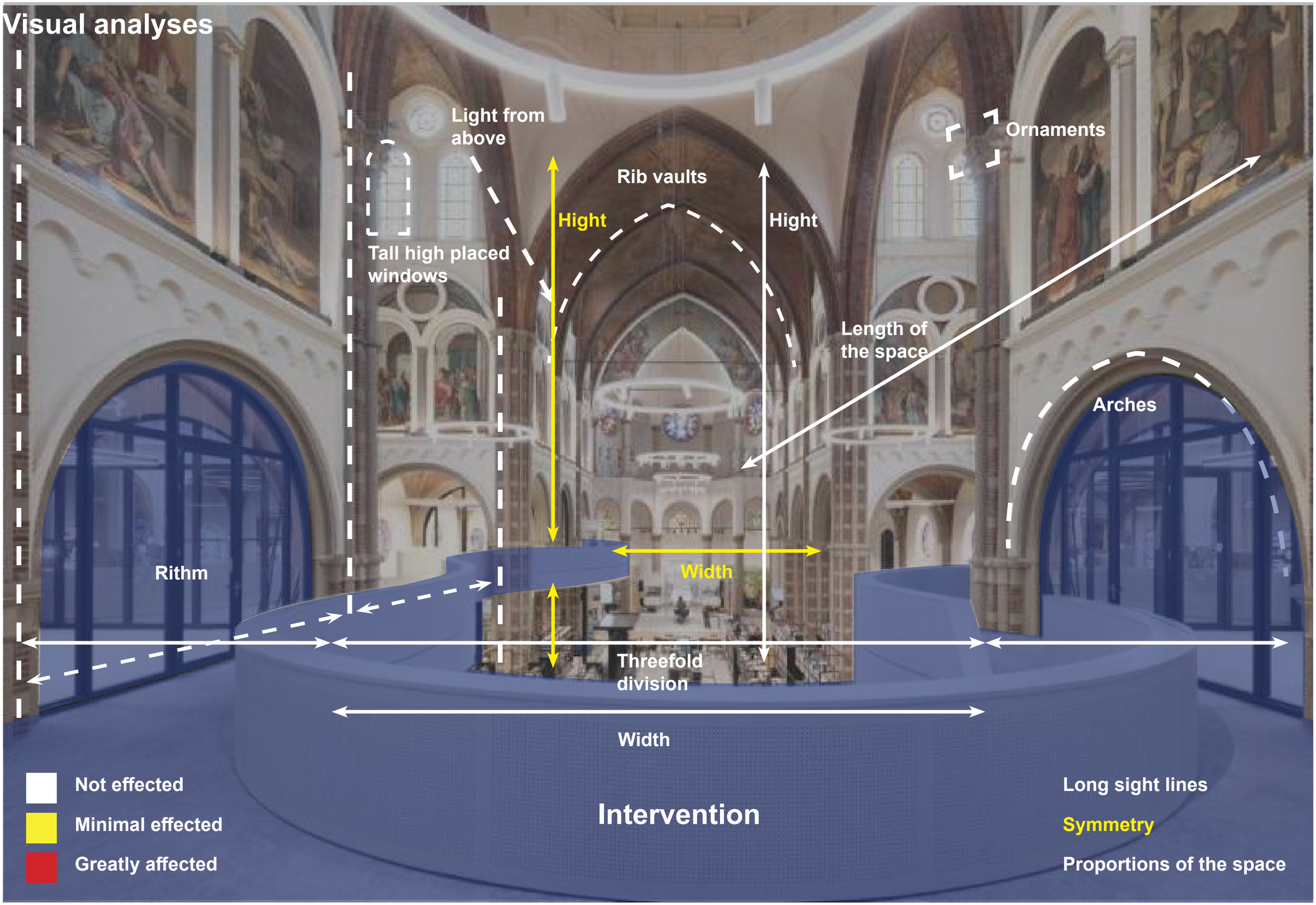

Rib vaults
Light from above
Hight
High placed win-dows
Arches
Length of the space
Ornaments
Threefold division
Width
Rithm

ANALYSES DE PETRUS





Visual analyses



ANALYSES DE PETRUS

Attributes defining the spatial quality in Neo Gothic churches			
Attribute	**Is the attribute affected by the Intervention?**	**Effect**	**Which type of intervention caused this effect?**
Dimensions of the space			
Height	minimal	The height of the space is affected at a few places by adding an extra floor, this is mainly in the ancillary spaces but also a part of the nave.	5. Horizontal splitting
Width	minimal	At the level where the new floor is placed, the width of the space is affected, because the floor is a wavy element the width is larger at some places than others.	5. Horizontal splitting
Length	no		
Threefold division	no		
Rhythm/ repetition	no		
Lighting from above	no		
Long sight lines	no		
Symmetry	minimal	The symmetry of the interior space is affected because, de floor is an asymmetrical addition that goes through the entire space. The symmetry of the existing church is still visible.	5. Horizontal splitting
Proportions of the interior space	no		
Characteristic building elements of Neo Gothic churches			
Large stained glass windows	no		
Rose windows	-		
Pointed arches	minimal	The pointed arches are still visible but glass walls have been placed inside the arches opening. The arches itself have remained untouched.	3. Use ancillary spaces
Rib vaults	no		
(Flying) buttresses	-		
Ornate decoration	minimal	Some of the ornaments are less visible, because of the added floors and glass walls, but everything has remained intact and mostly visible.	5. Horizontal splitting 3. Use ancillary spaces

DESIGN ATTITUDE OF THE ARCHITECT

Element: Window

- Shape
The shape of the windows is in line with the shape of the arches

- Material/ Texture
The material of the windows is aluminium this is a contrast with the traditional materials from the church

- Color
The color of the windows are black, in contrast with the brick and stucco from the church

- Rhythm
The windows are placed inside the existing voids of the arches of the building ad thus the rhythm is the same, the rhythm of the mullions is not derived from the existing church

- Detailing
The detailing of the windows is very sleek and smooth in contrast with the ornamental detailing of the church

Element: Bookcases

- Shape
The shape of the bookcases has no reference to the existing church, also the scale is not in line with the church so there is a contrast.

- Material/ Texture
The material of the bookcases is aluminium and wood, thus there is a contrast with the brick of the church

- Color
The color of the bookcases is black, so again a contrast

- Rhythm
The bookcases are placed in rows on a certain grid. This grid has no reference to the grid of the church exept that it all fits in the main nave of the church.

- Detailing
The detailing is very sleek and smooth in contrast with the ornamental detailing of the church

Element: Floor and railing

- Shape
The shape of the floor and railing is like a wave and meanders through the pillars of the church. This is a strong contrast with the structured design of the church.

- Material/ Texture
The material of the floor and railing is steel beams and wooden cladding. Also a contrast.

- Color
The color of the railing is white, which is similar to the stucco of the church, this has continuity.

- Rhythm
There is no rithm to be founf in the waving shape of the floor, so there is contrast.

- Detailing
The detailing is again very sleek and smooth but the wood of the railing has been perforated with small holes which suits with the ornamental detailing of the church.

Element: Columns

- Shape
The shape of the columns is round , this is in continuity with the round shaped columns that can be found in the side aisles of the church.

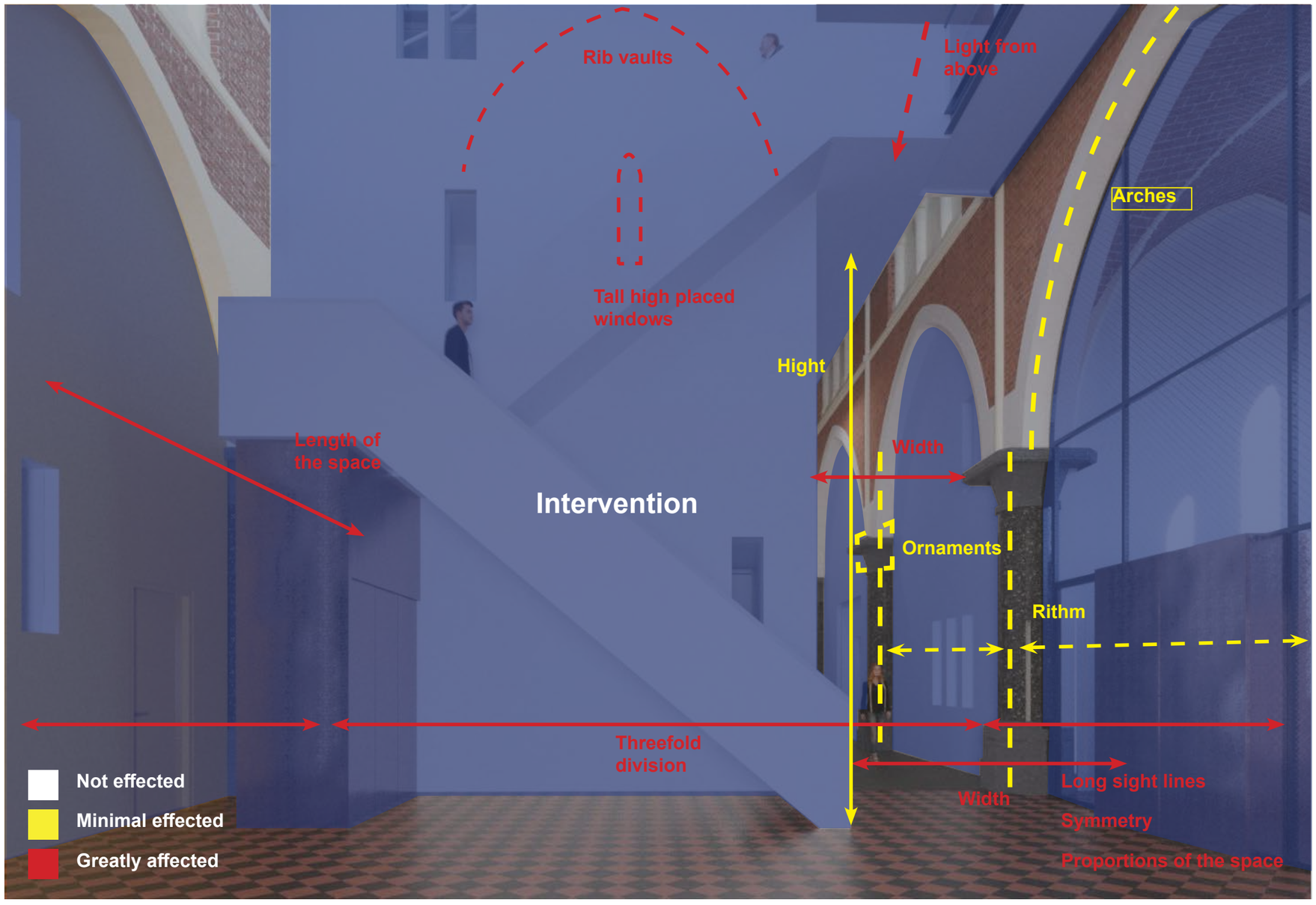
- Material/ Texture
The columns are made of steel and have a smooth surface, this is a contrast with the brick.

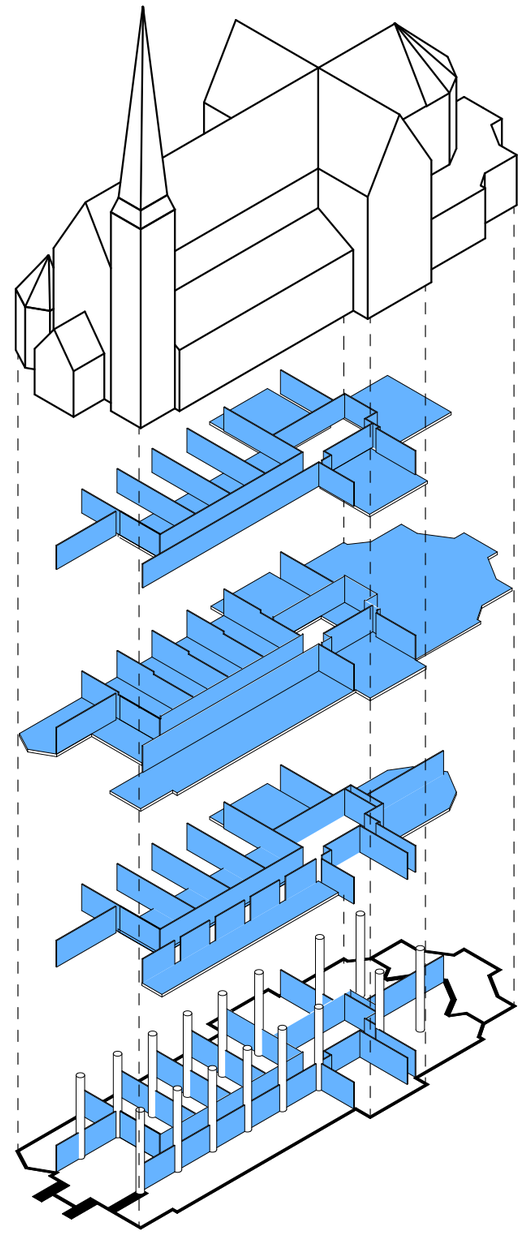
- Color
The columns are black, this color is nowhere to be found in the existing building.

- Rhythm
It looks like the columns are placed randomly in the space, in fact the columns are positioned to follow the shape of the floor. This does not have coherence with the existing grid.

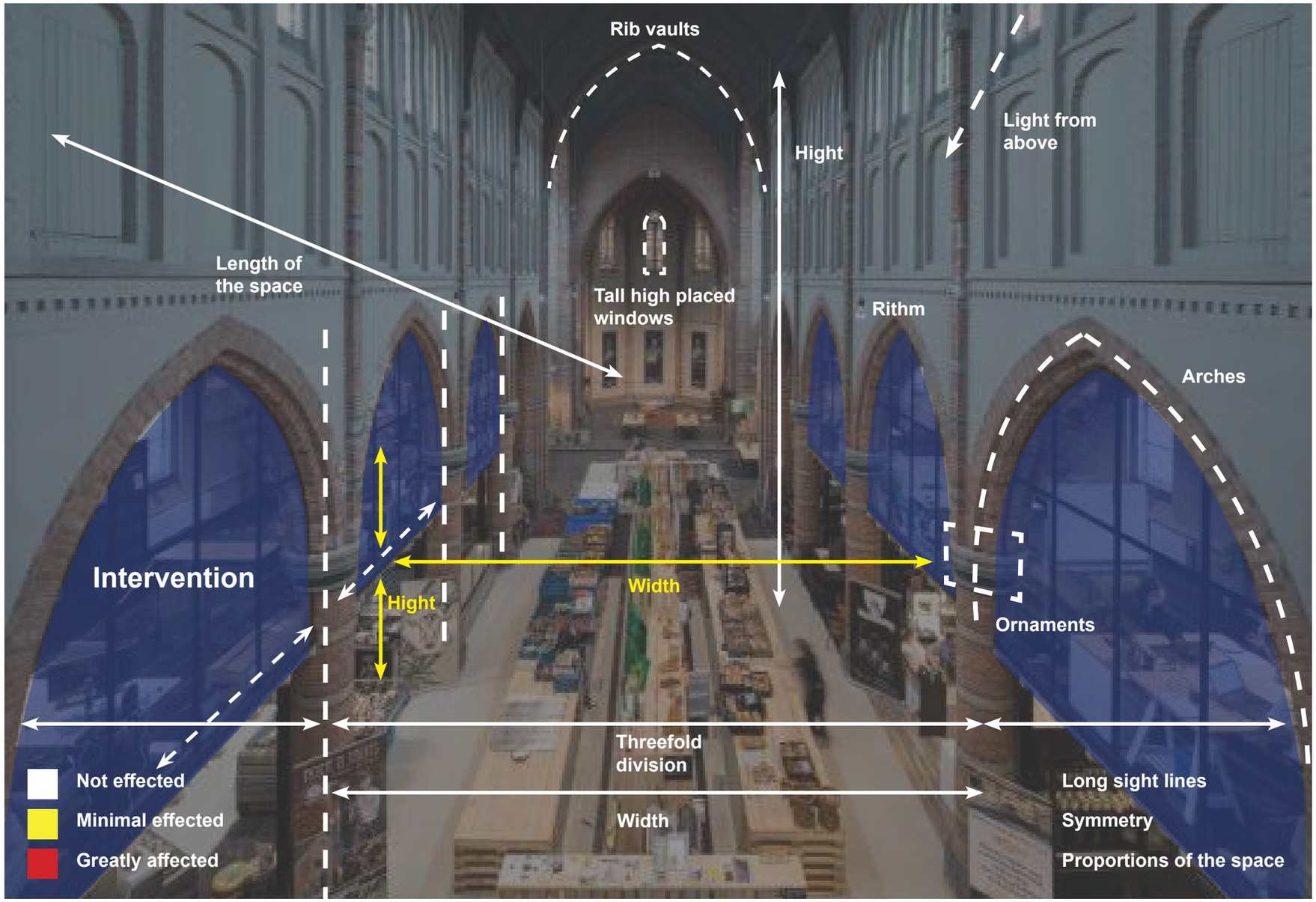
- Detailing
The detailing is again very sleek and smooth in contrast with the ornamental detailing of the church

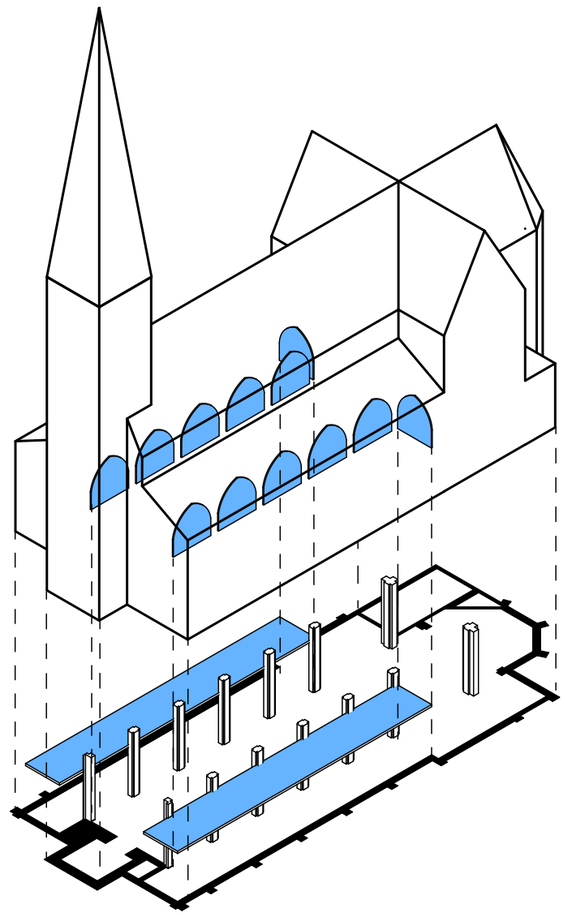
ANALYSES HEILIGHARTKERK





ANALYSES CUYPERSKERK





RESULTS AND CONCLUSIONS

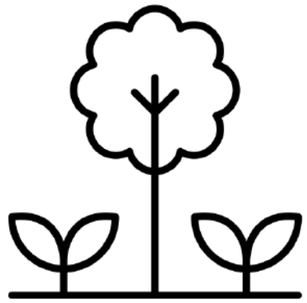
Spatial solutions	Loose built-in		Use ancillary spaces			Vertical splitting (transverse)	Horizontal splitting		Box in the church	Lines of sight preserved (partly fill)		Fill
Case study	Dominican	Broeren	De Petrus	Broeren	Cuypers	Grote	De Petrus	Grote	Wester	St.-Gertruidis	St.-Theresia	Heilighart
Height	🟡🟡		⚪🟡🟡			⚪	🟡🔴		🔴	🟡🟡		🔴
Width	🔴🟡		⚪🟡🟡			⚪	🟡⚪		🔴	🟡🔴		🔴
Length	🟡⚪		⚪⚪⚪			🔴	⚪⚪		🟡	🔴🔴		🔴
Threefold division	🟡⚪		⚪⚪⚪			⚪	⚪⚪		⚪	⚪🟡		🔴
Rhythm/ repetition	⚪⚪		⚪⚪⚪			⚪	⚪⚪		⚪	⚪🟡		🟡
Lighting from above	⚪⚪		⚪⚪⚪			⚪	⚪🔴		⚪	⚪🟡		🔴
Long sight lines	⚪⚪		⚪⚪⚪			🔴	⚪⚪		⚪	🟡🟡		🔴
Symmetry	🟡🔴		⚪⚪⚪			⚪	🟡⚪		🔴	⚪🟡		🔴
Proportions of the interior space	🟡⚪		⚪⚪⚪			🟡	⚪🔴		🔴	⚪🟡		🔴
Tall stained glass windows	⚪⚪		⚪🟡⚪			⚪	⚪🔴		🟡	⚪🟡		🔴
Pointed arches	⚪⚪		🟡⚪🟡			⚪	⚪⚪		⚪	🟡⚪		🟡
Rib vaults	⚪⚪		⚪⚪⚪			⚪	⚪🔴		⚪	⚪⚪		🔴
Ornate decoration	🟡🟡		🟡🟡⚪			🟡	🟡🟡		🟡	⚪🟡		🟡

DESIGN CONCEPT

New hotspot

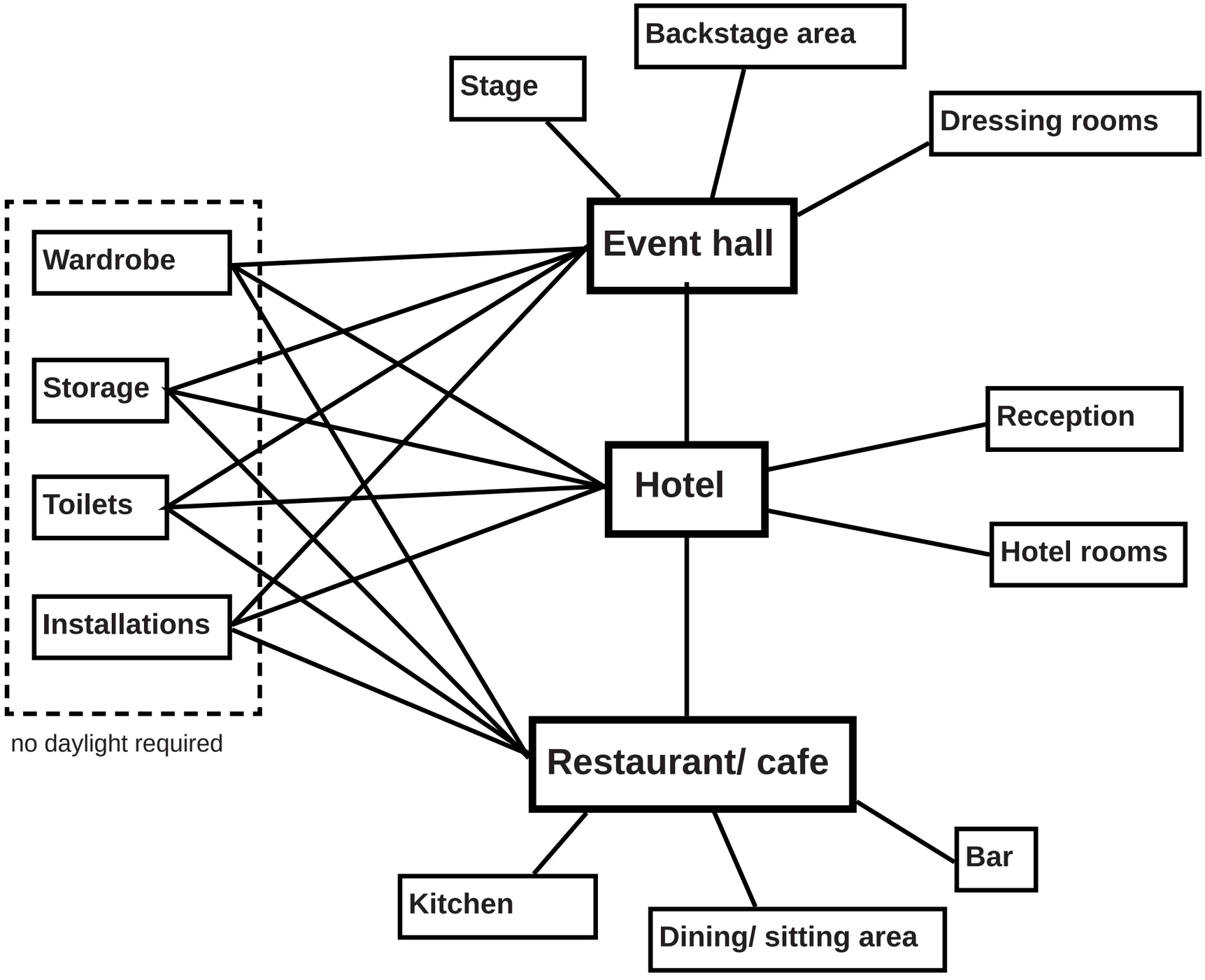
Enhancing spatial quality

Activating the square

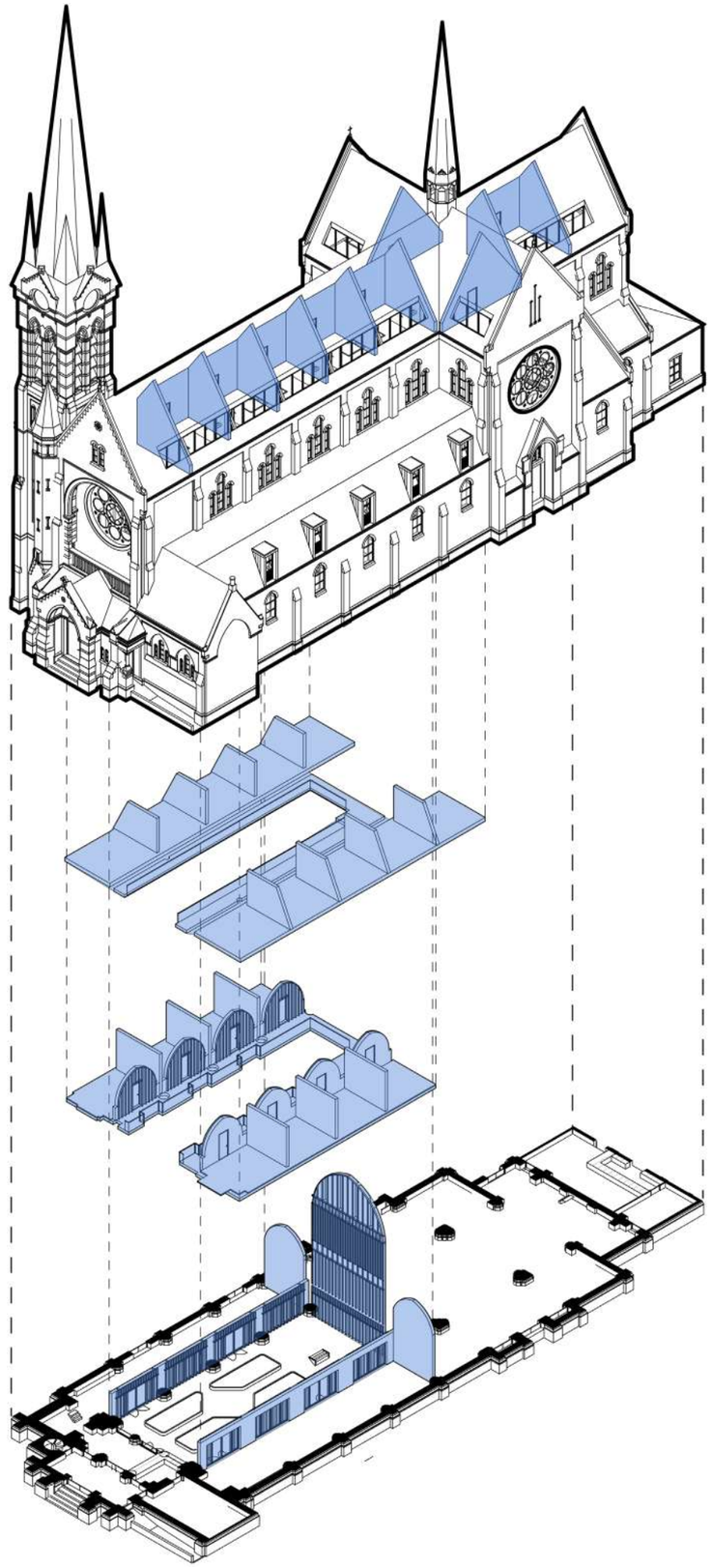


Greenery and bio based materials

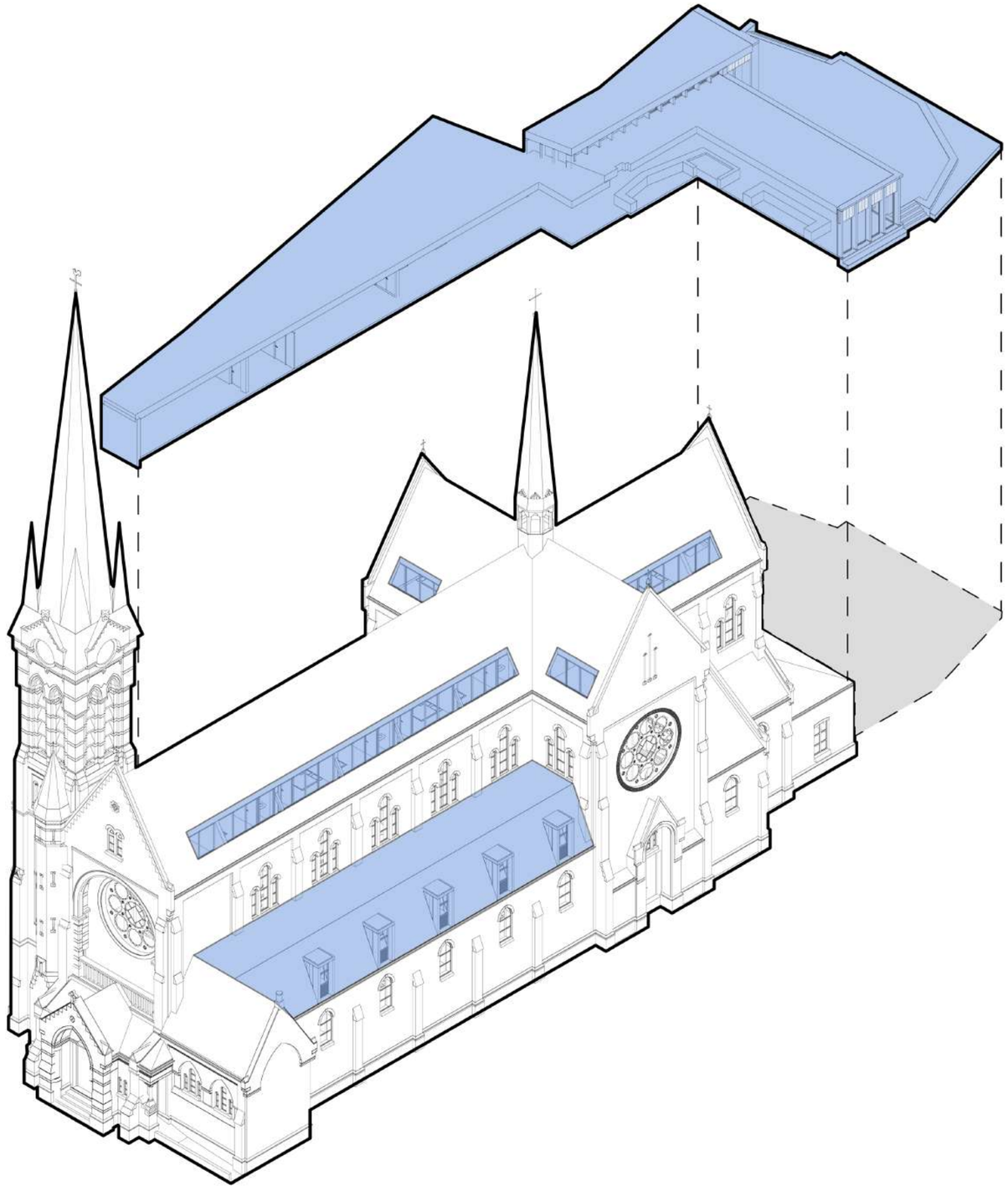
PROGRAM


Backstage area
Stage
Dressing rooms
Event hall
Wardrobe
Storage
Toilets
Installations
no daylight required
Reception
Hotel
Hotel rooms
Restaurant/ cafe
Bar
Kitchen
Dining/ sitting area

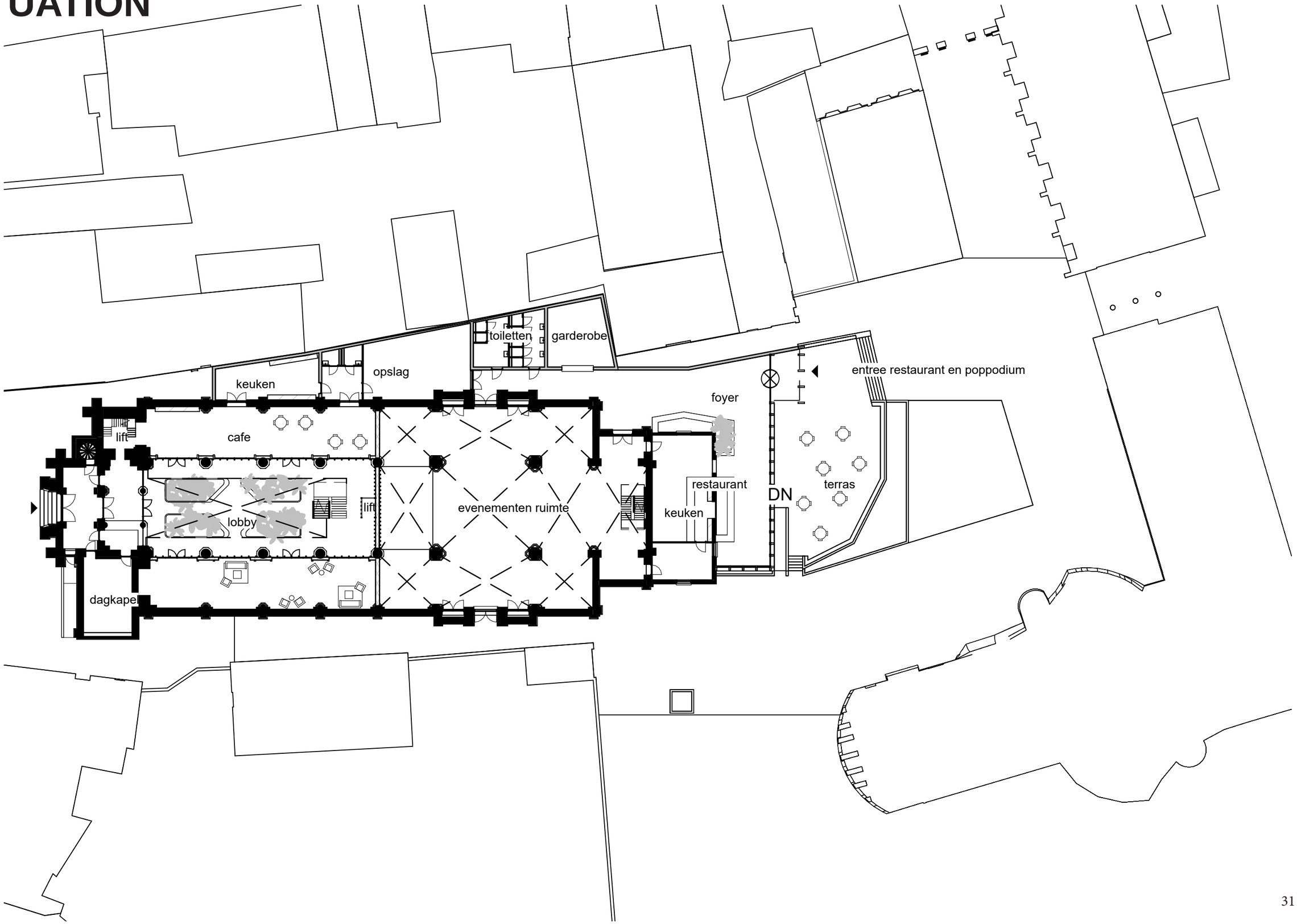
INTERIOR INTERVENTION



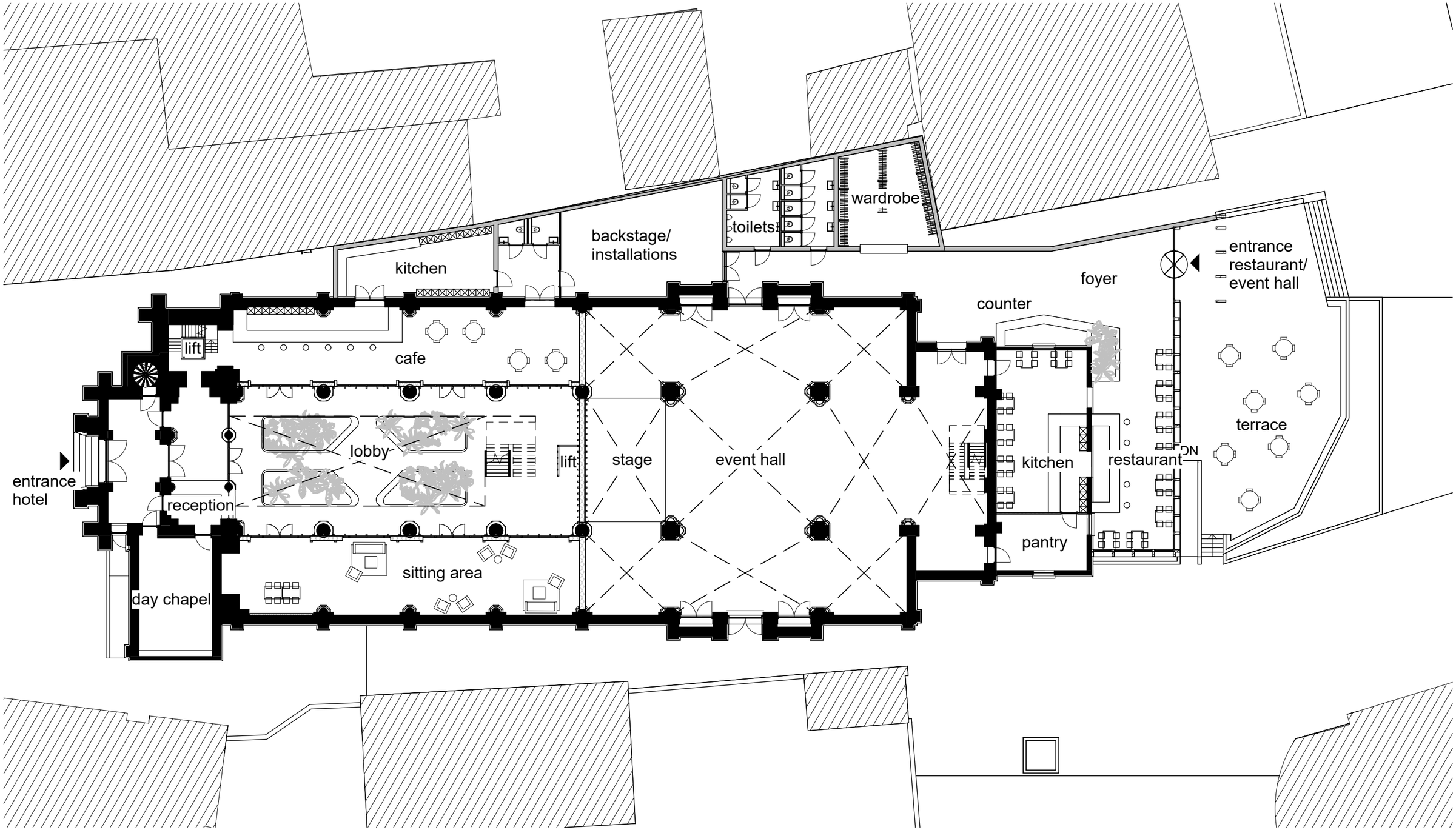
EXTERIOR INTERVENTIONS



SITUATION

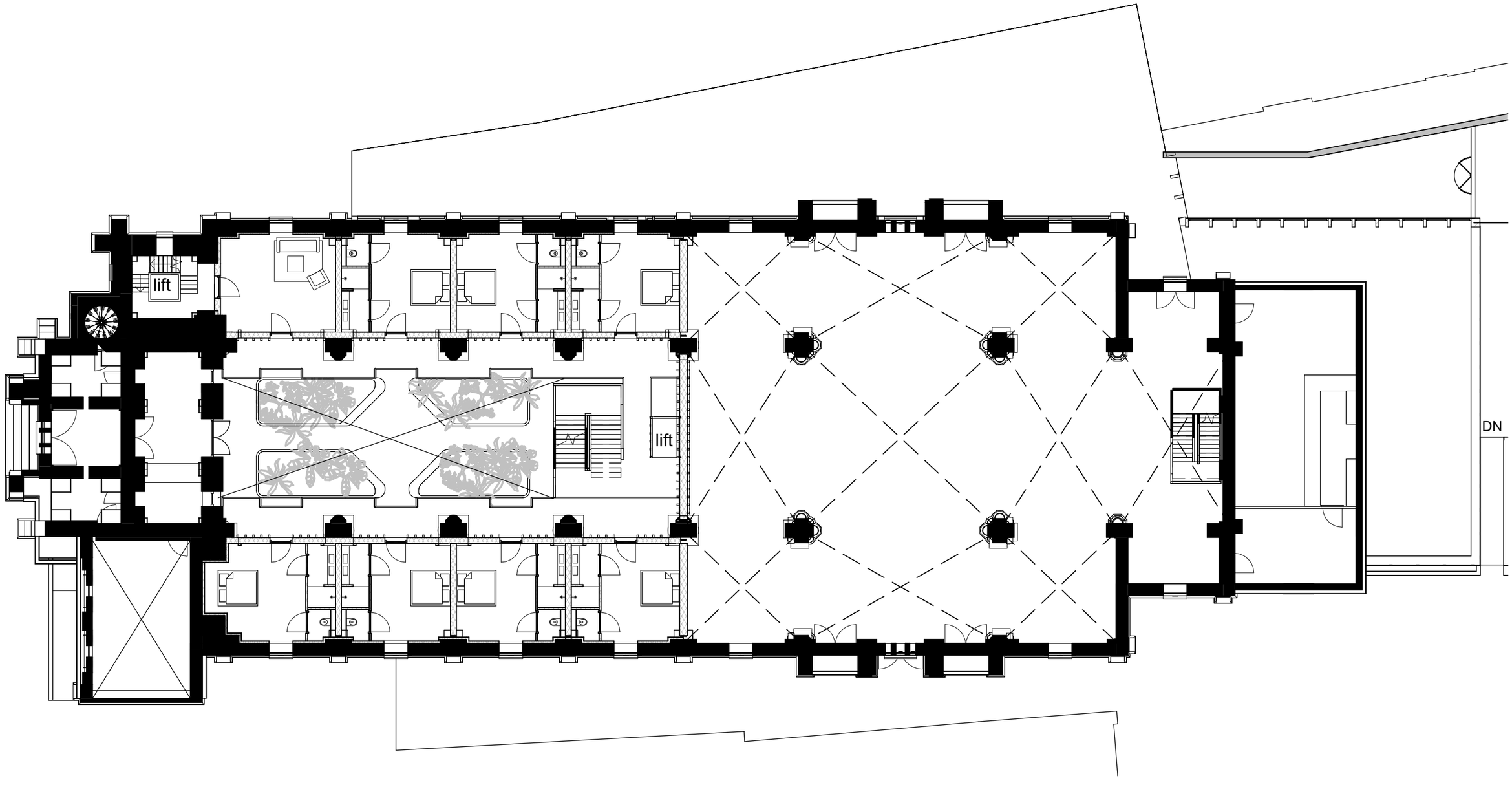

toiletten
garderobe
opslag
keuken
entree restaurant en poppodium
foyer
lift
cafe
restaurant
terras
DN
lift
lobby
evenementen ruimte
keuken
dagkapel

GROUND FLOOR

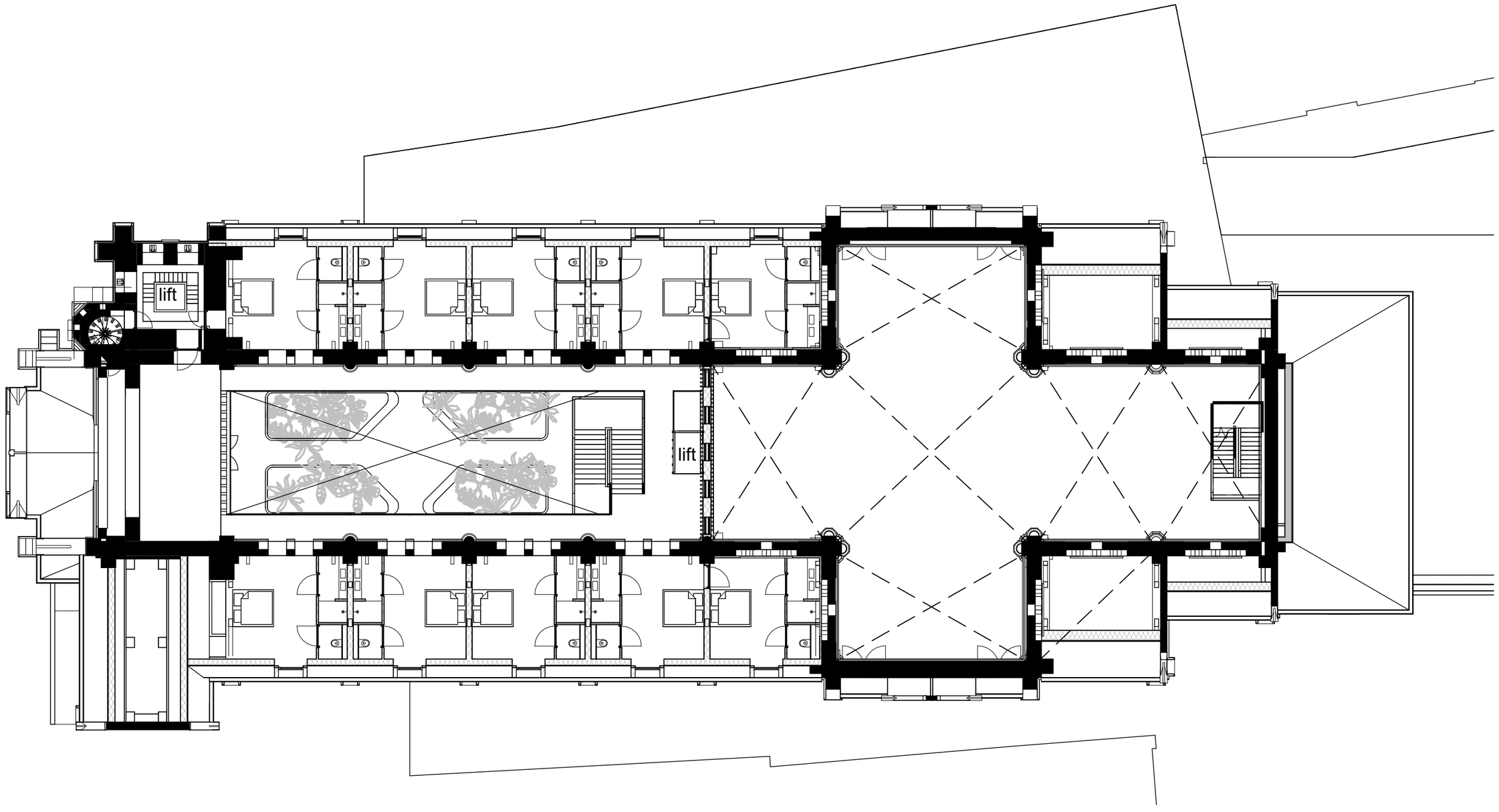


Ground floor new 1:250

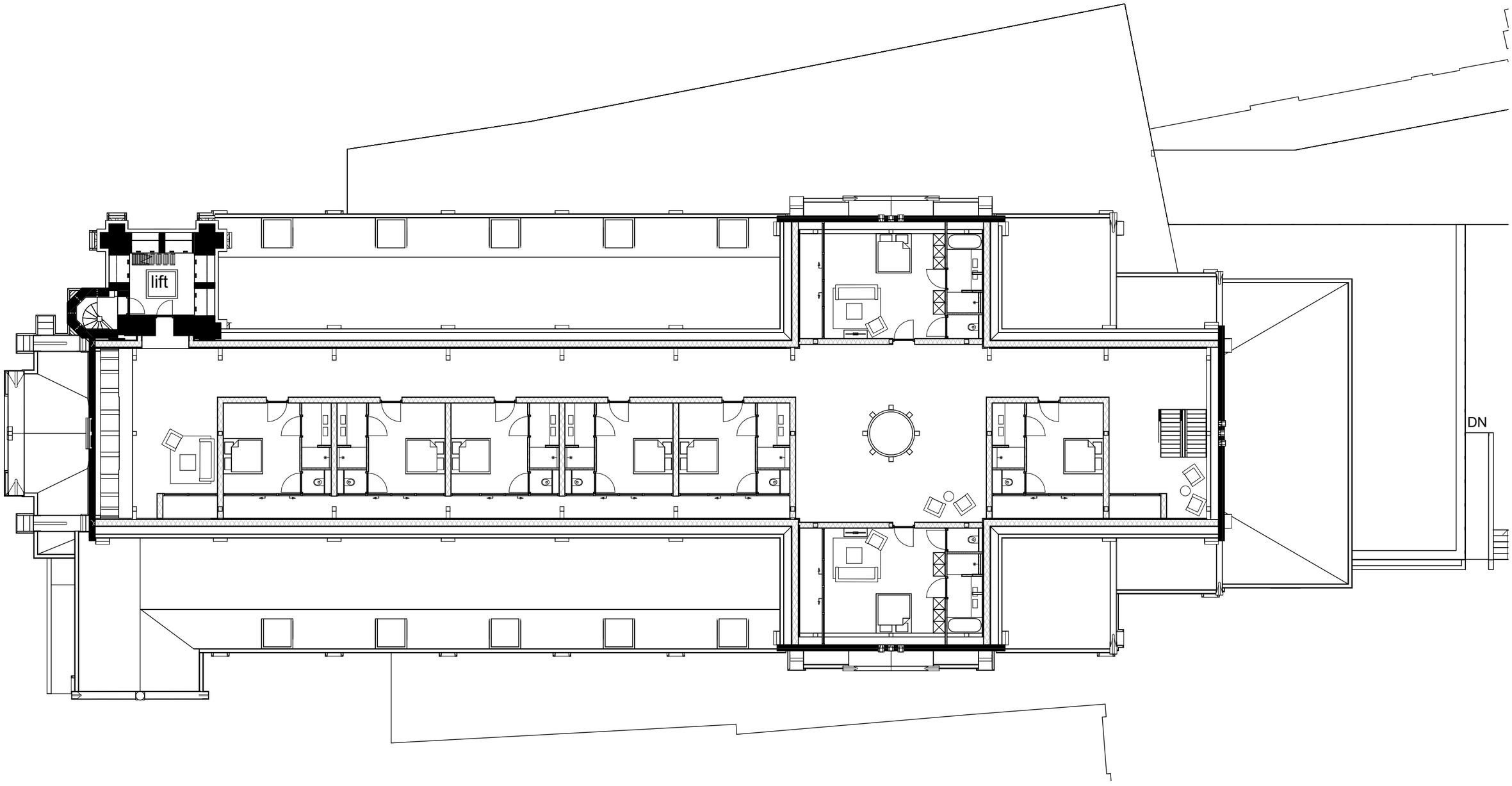
FIRST FLOOR



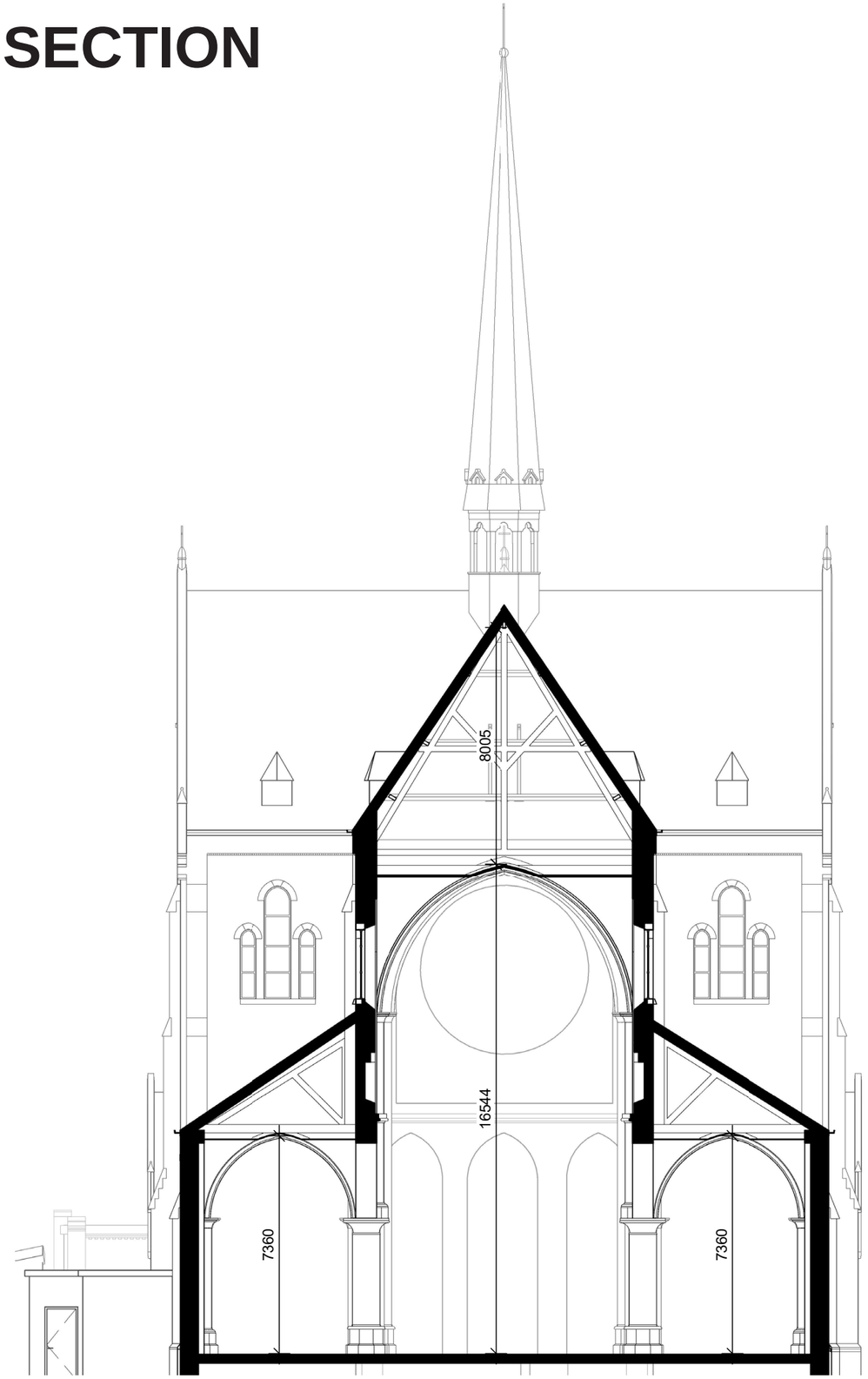
SECOND FLOOR



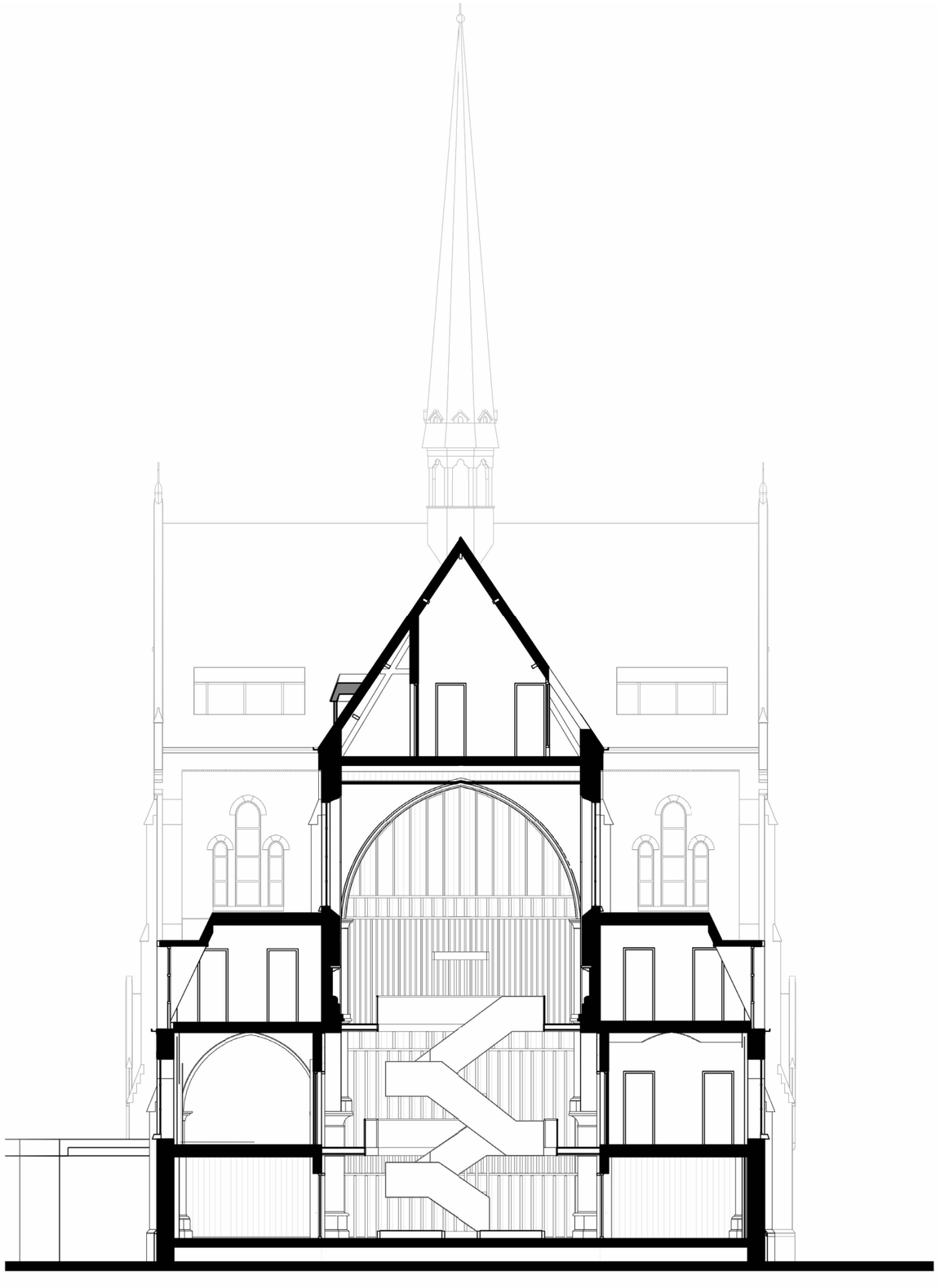
THIRD FLOOR



SECTION

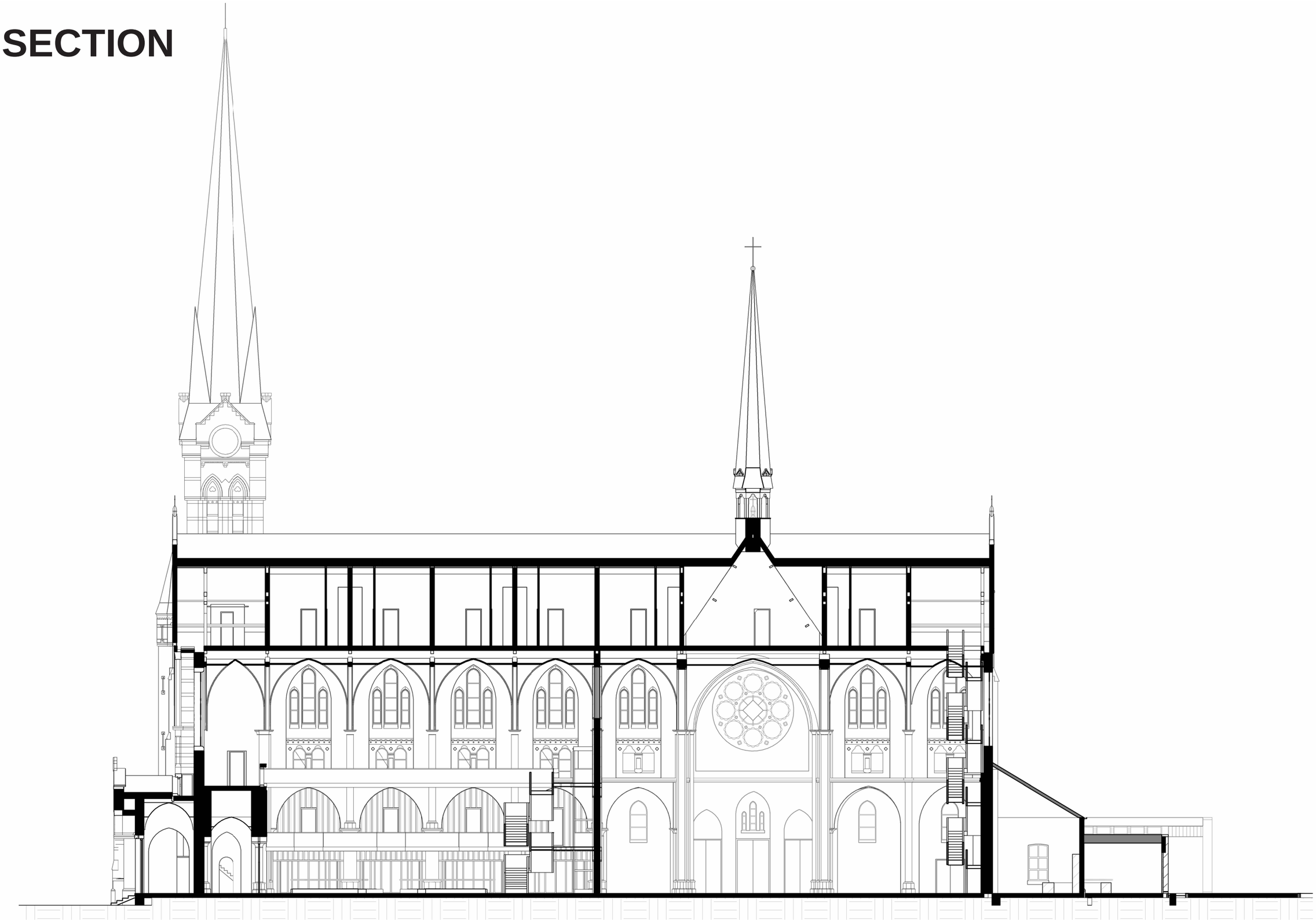


EXISTING

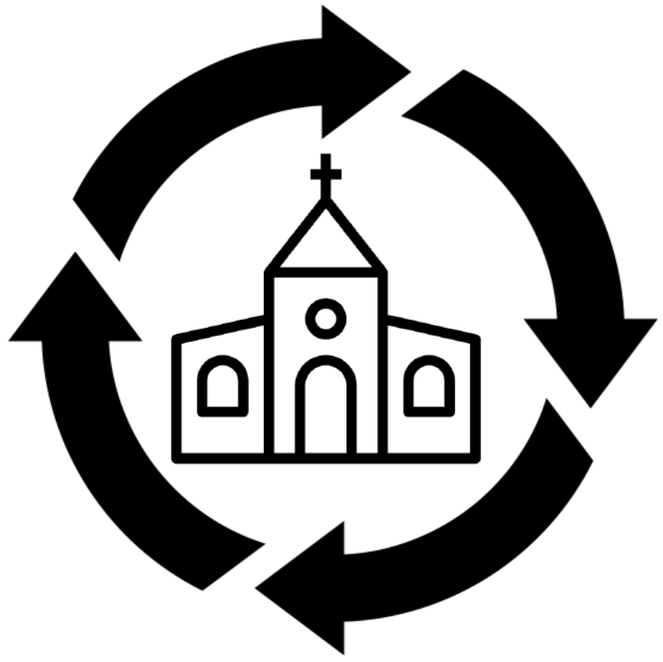


NEW

SECTION

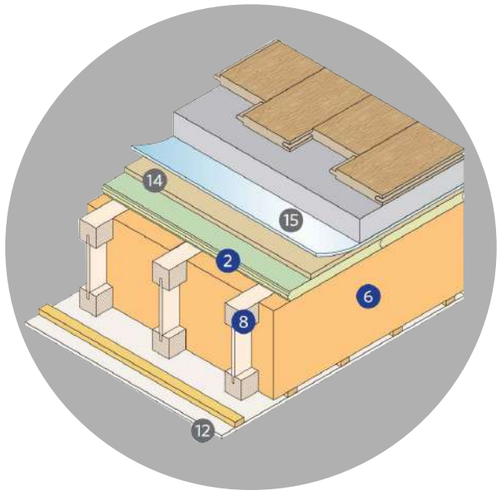


ZERO WASTE AND CIRCULAR STRATEGY



MATERIALS & CONSTRUCTION

Glulam columns and beams



Wooden I - beams

Woodfiber insulation

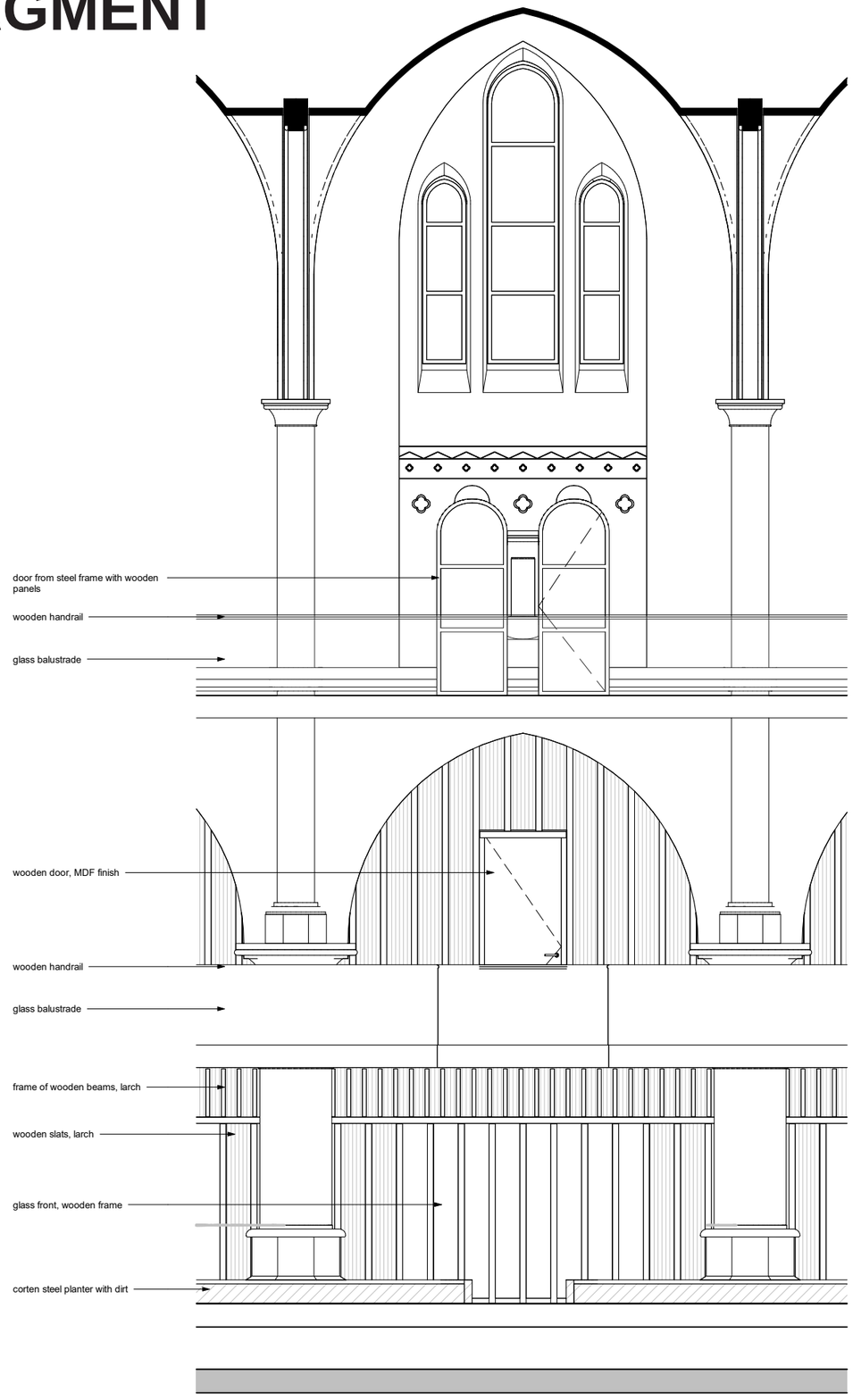
Reuse of Brick, slates and church benches

DESIGN

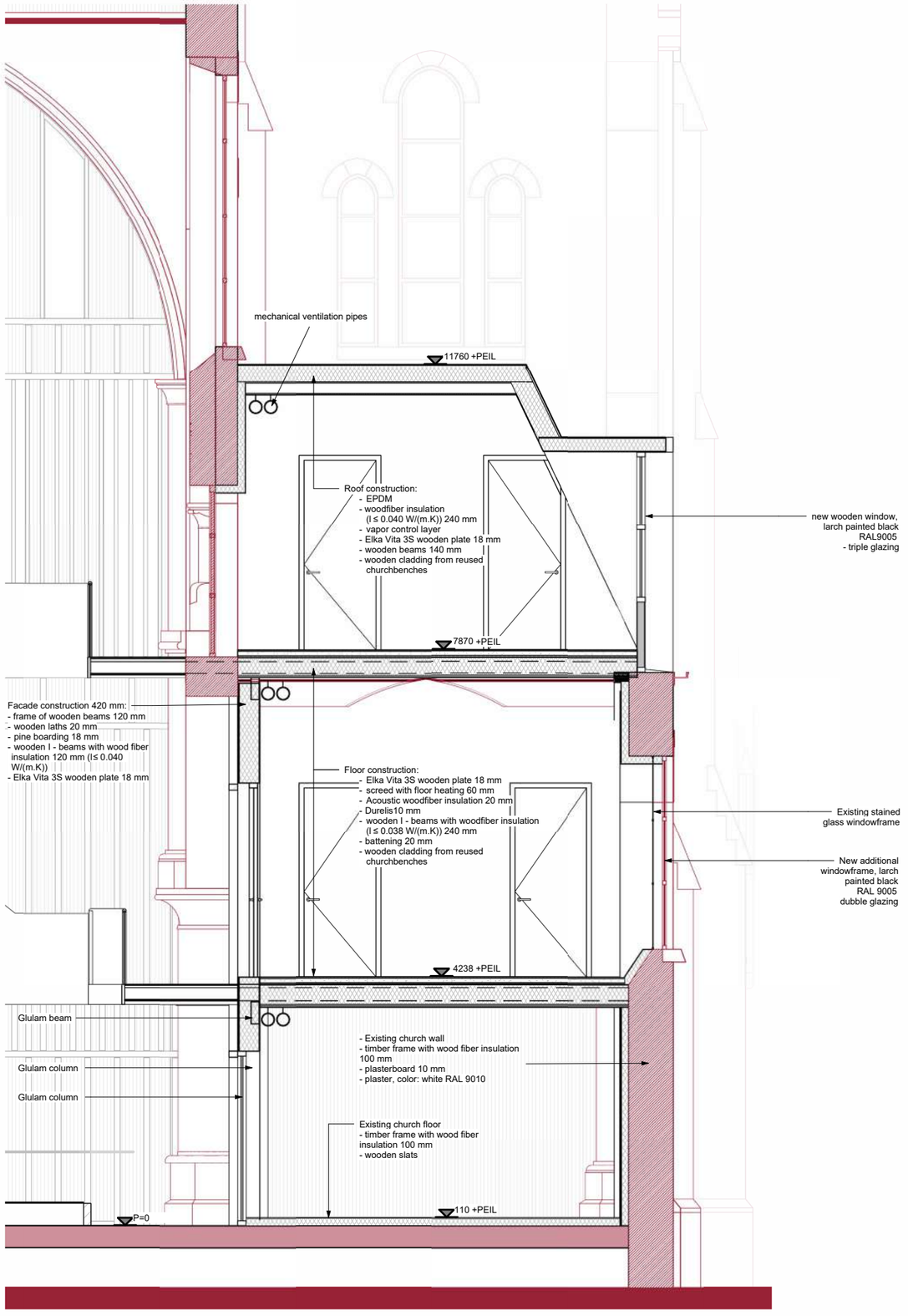
CONTINUITY
IN SHAPE AND
RHYTHM

CONTRAST
IN MATERIAL AND
COLOR

FRAGMENT

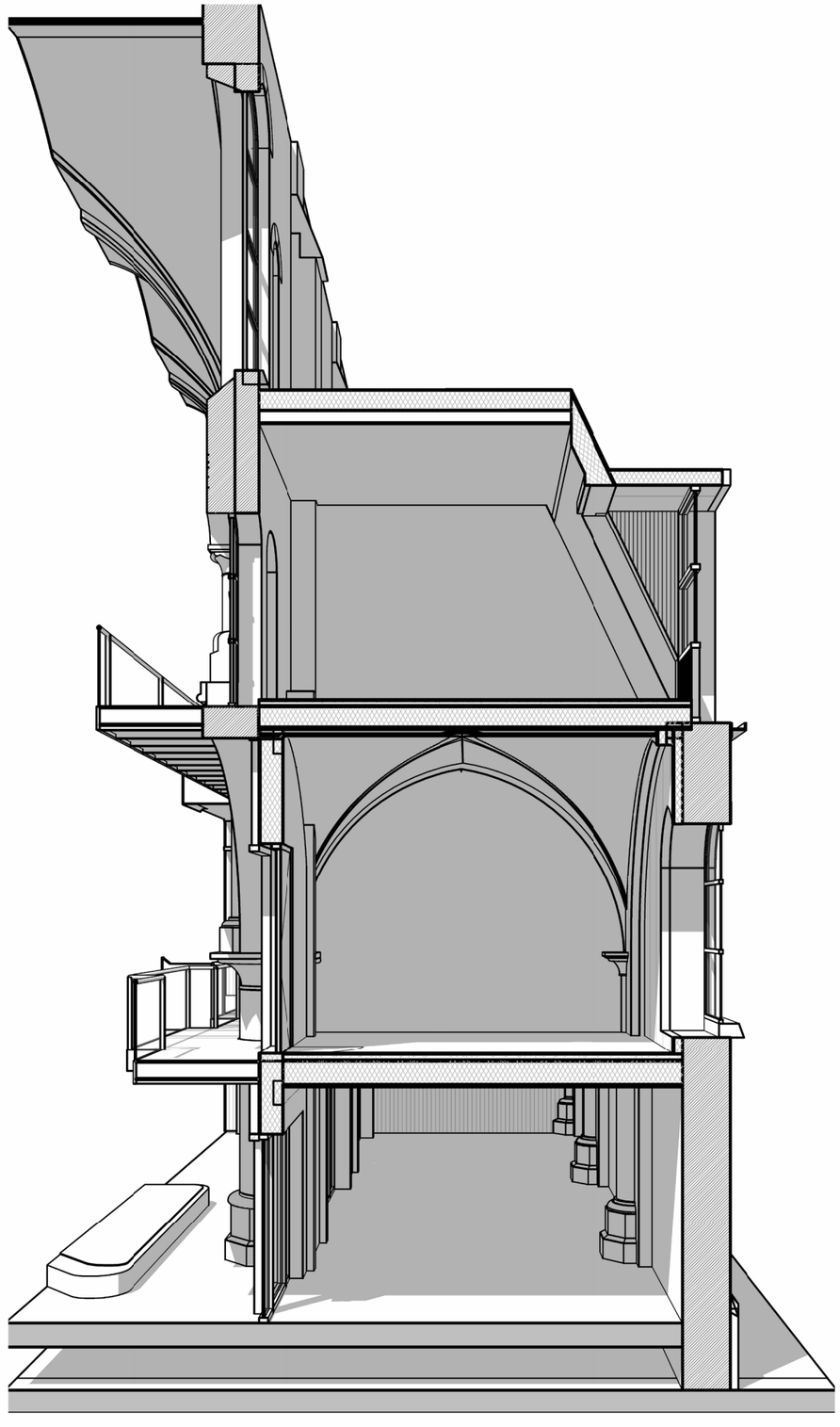


Fragment 1:50

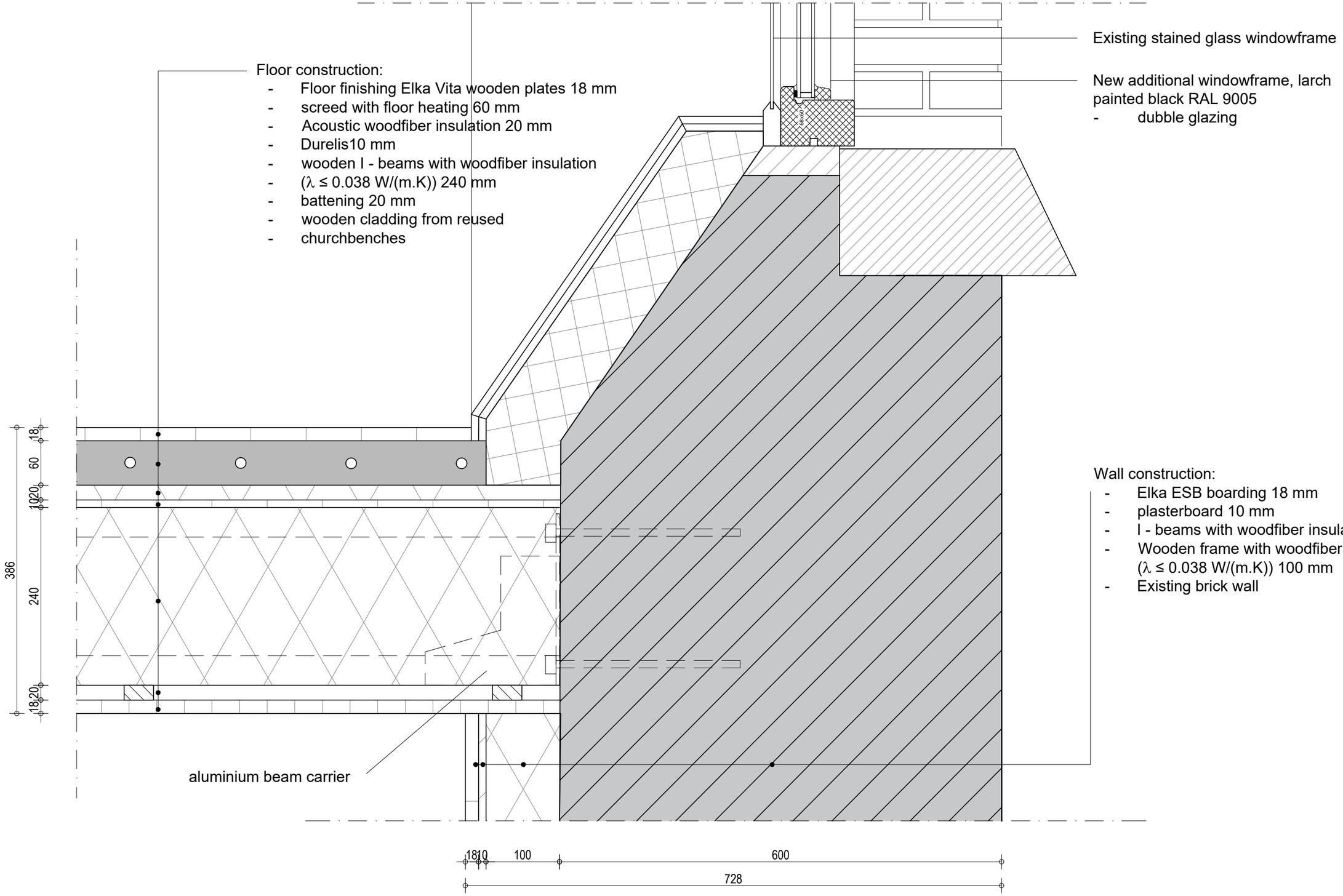


Fragment 1:50

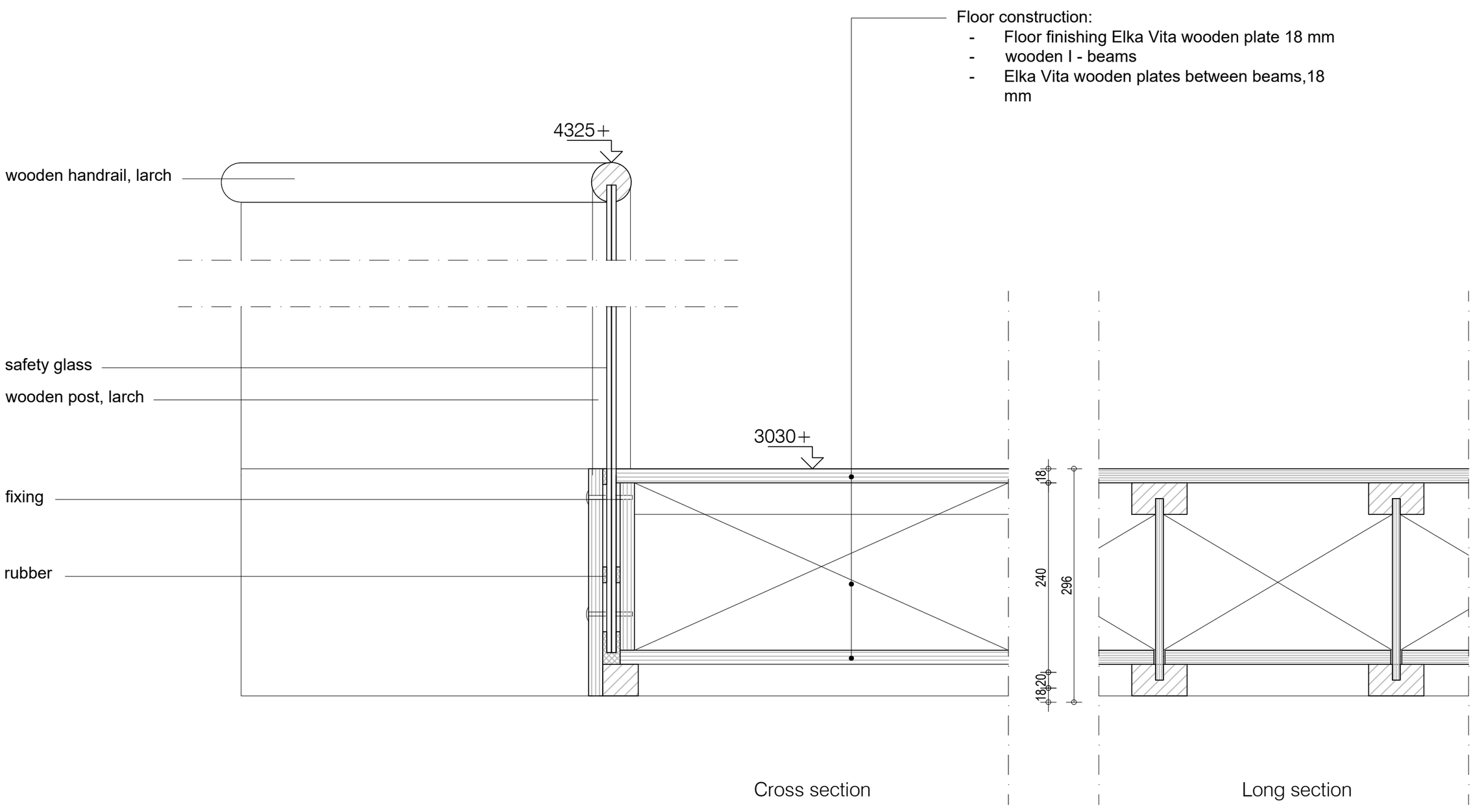
FRAGMENT



DETAIL HOTELROOM FLOOR



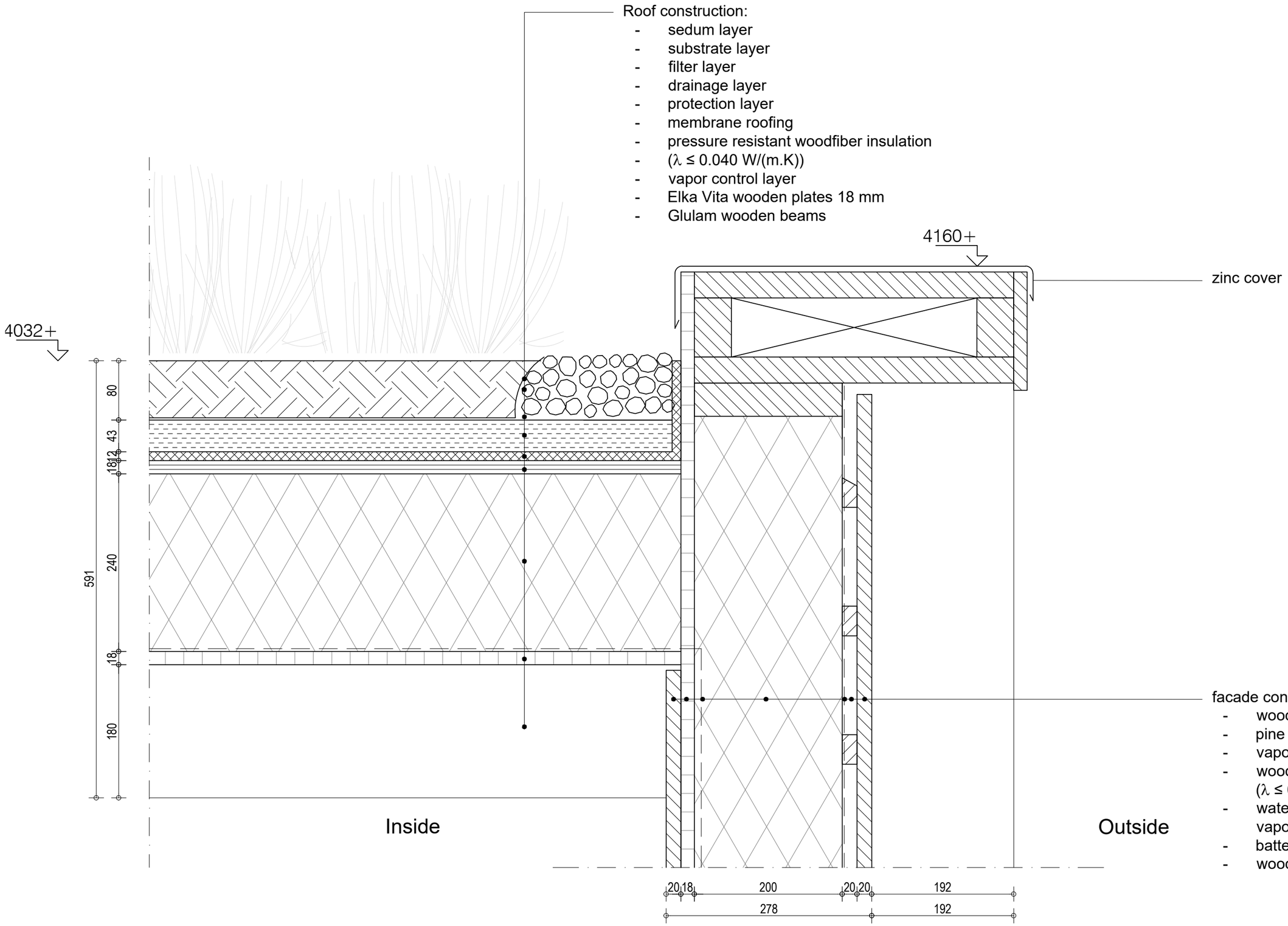
DETAIL GALLERY



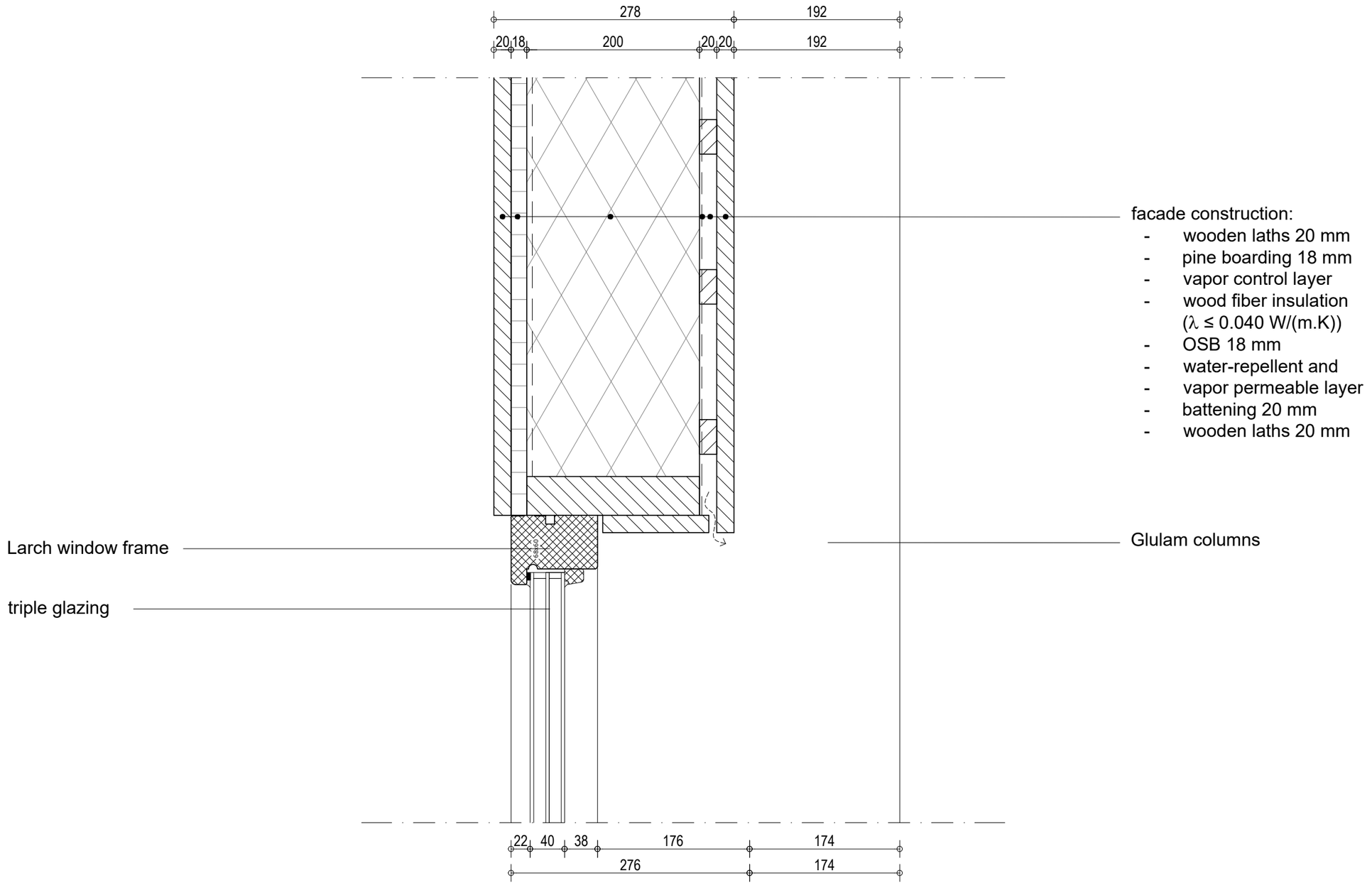
Cross section

Long section

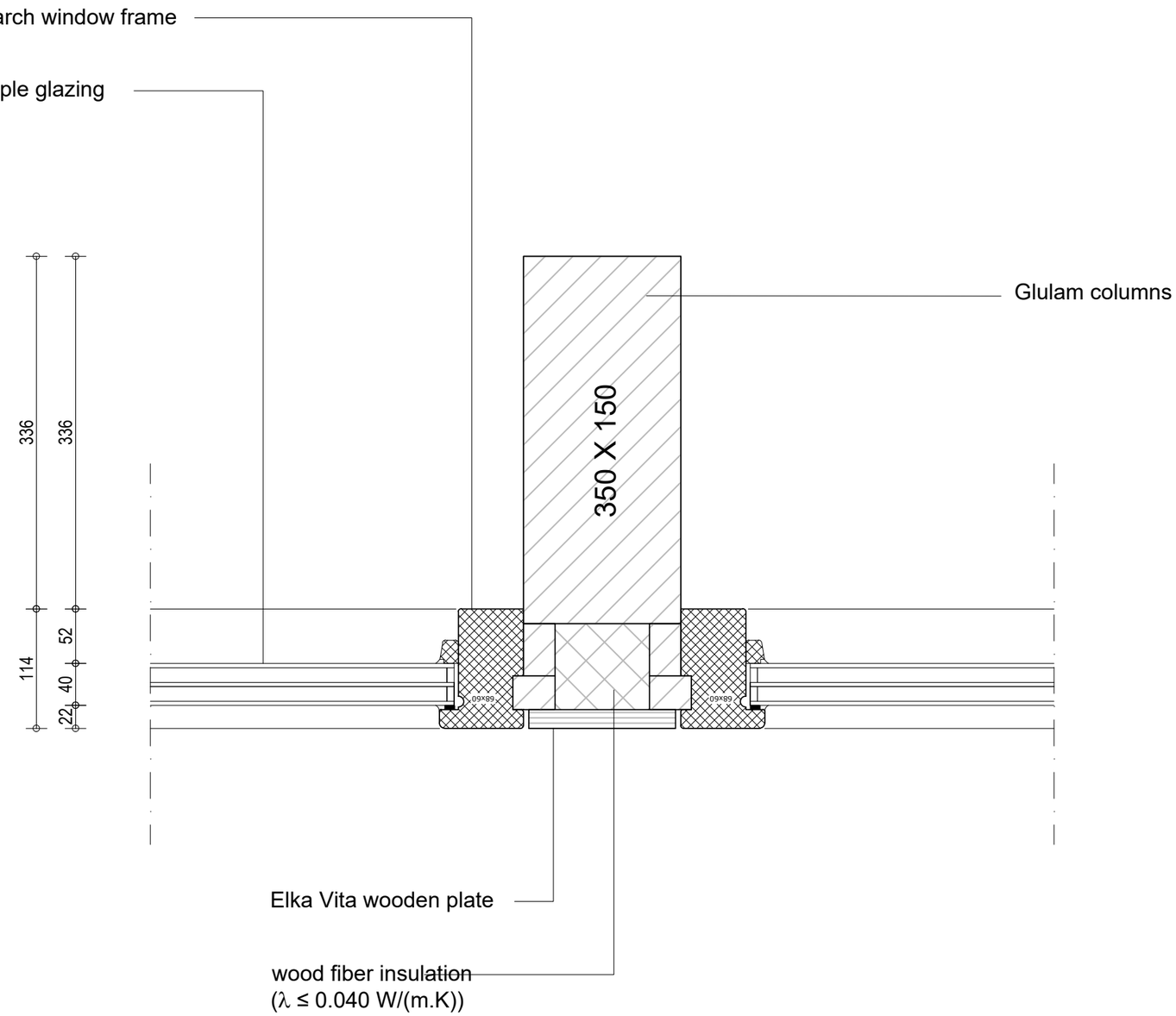
DETAIL EXTENSION

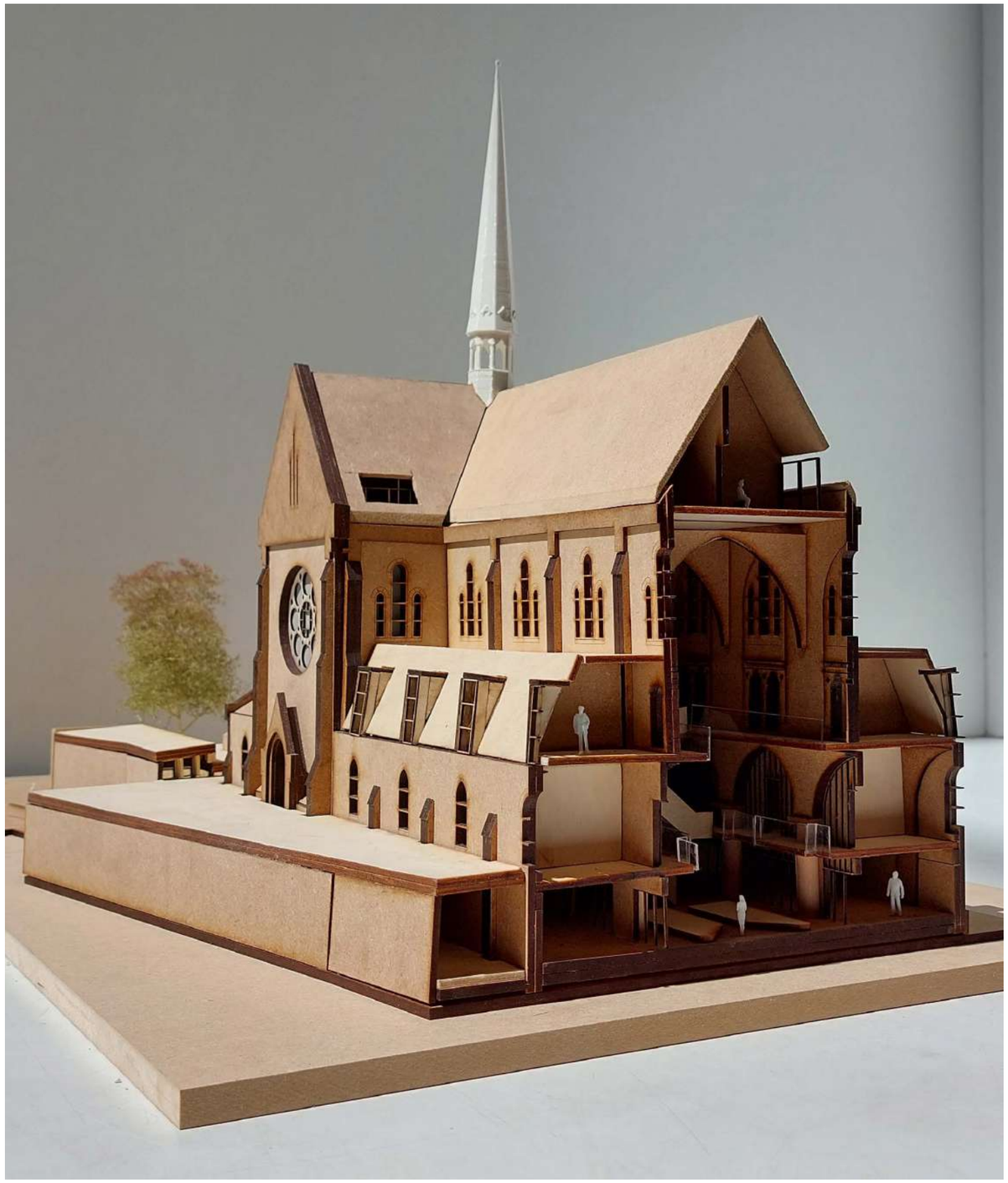


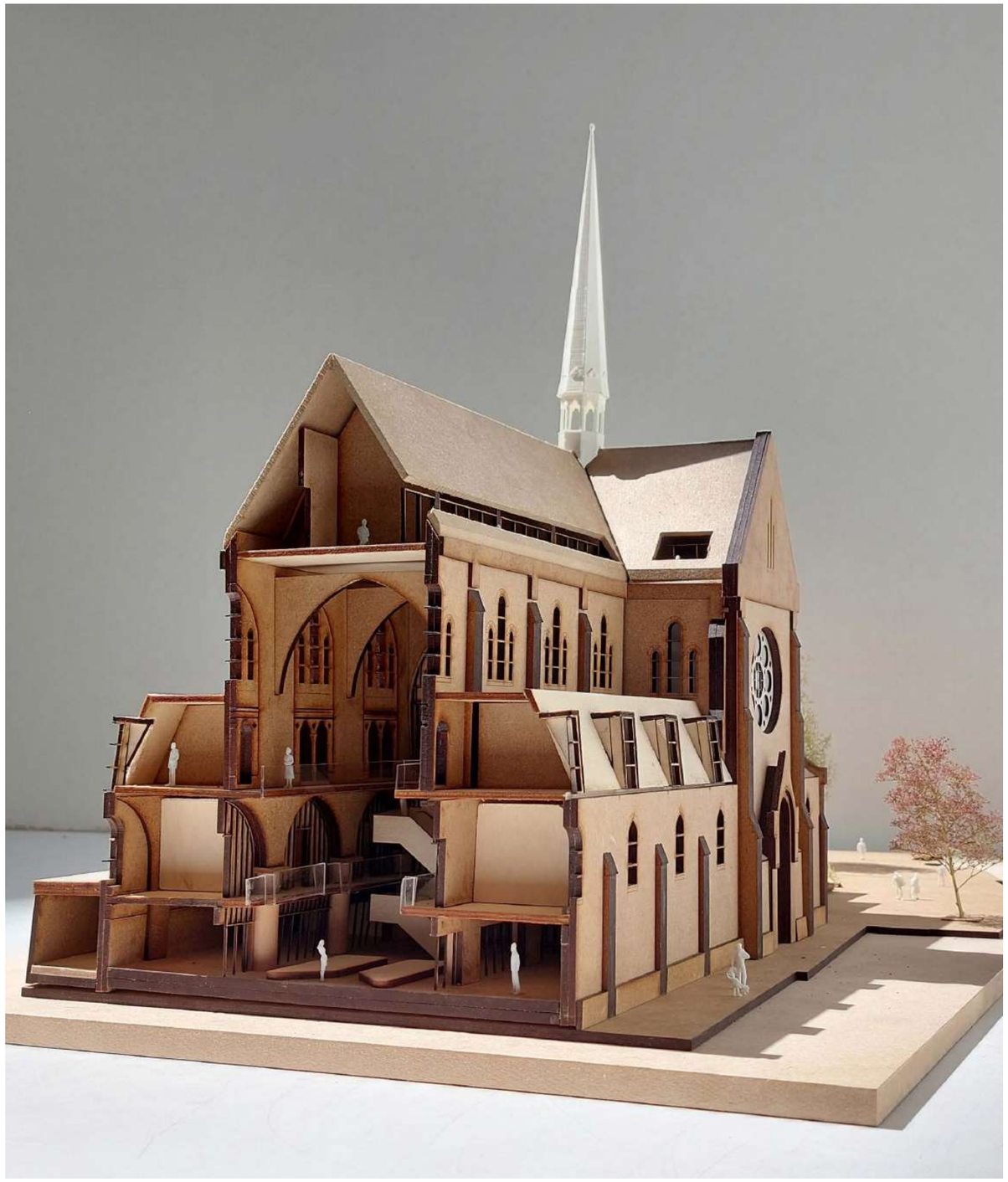
DETAIL EXTENSION

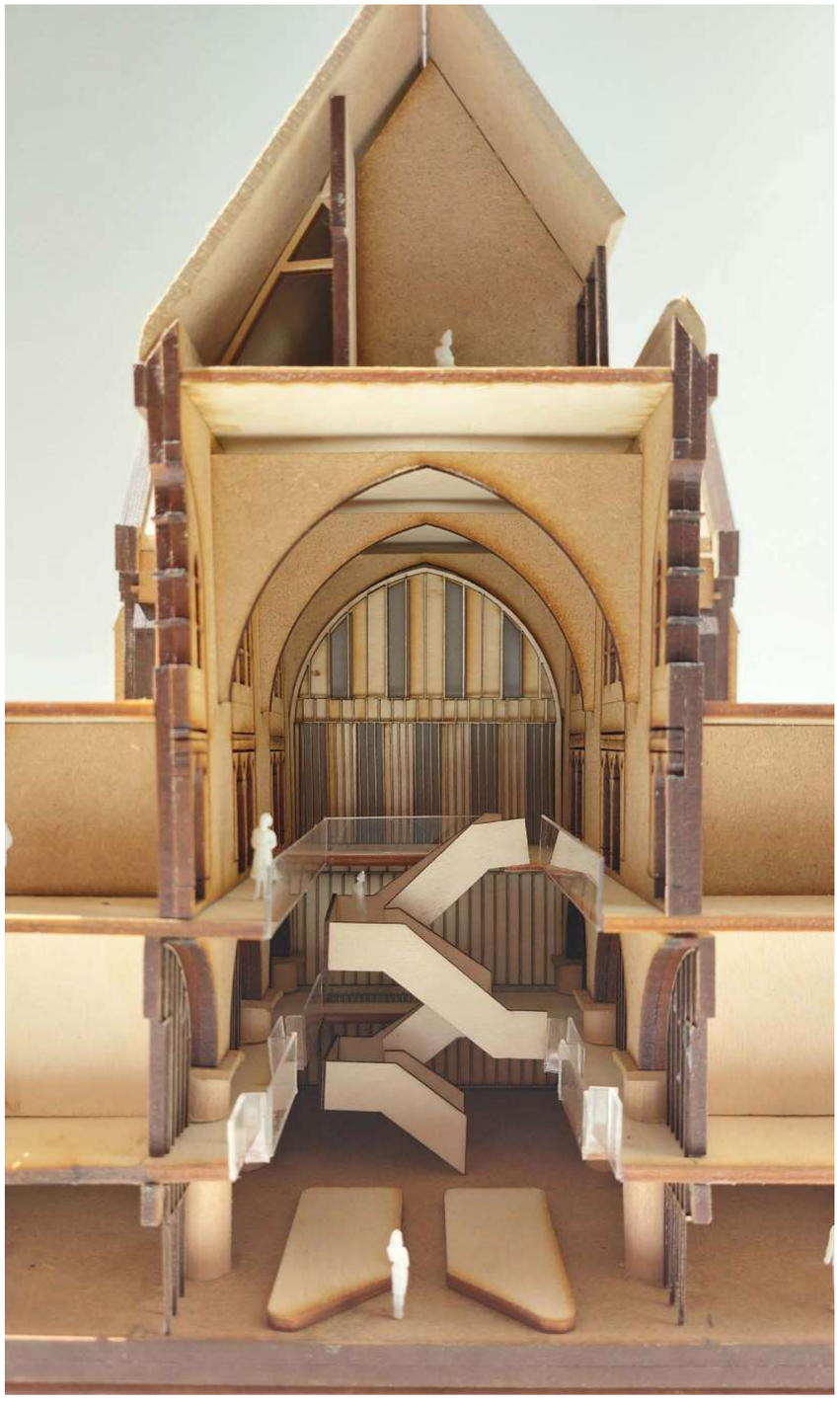


DETAIL EXTENSION





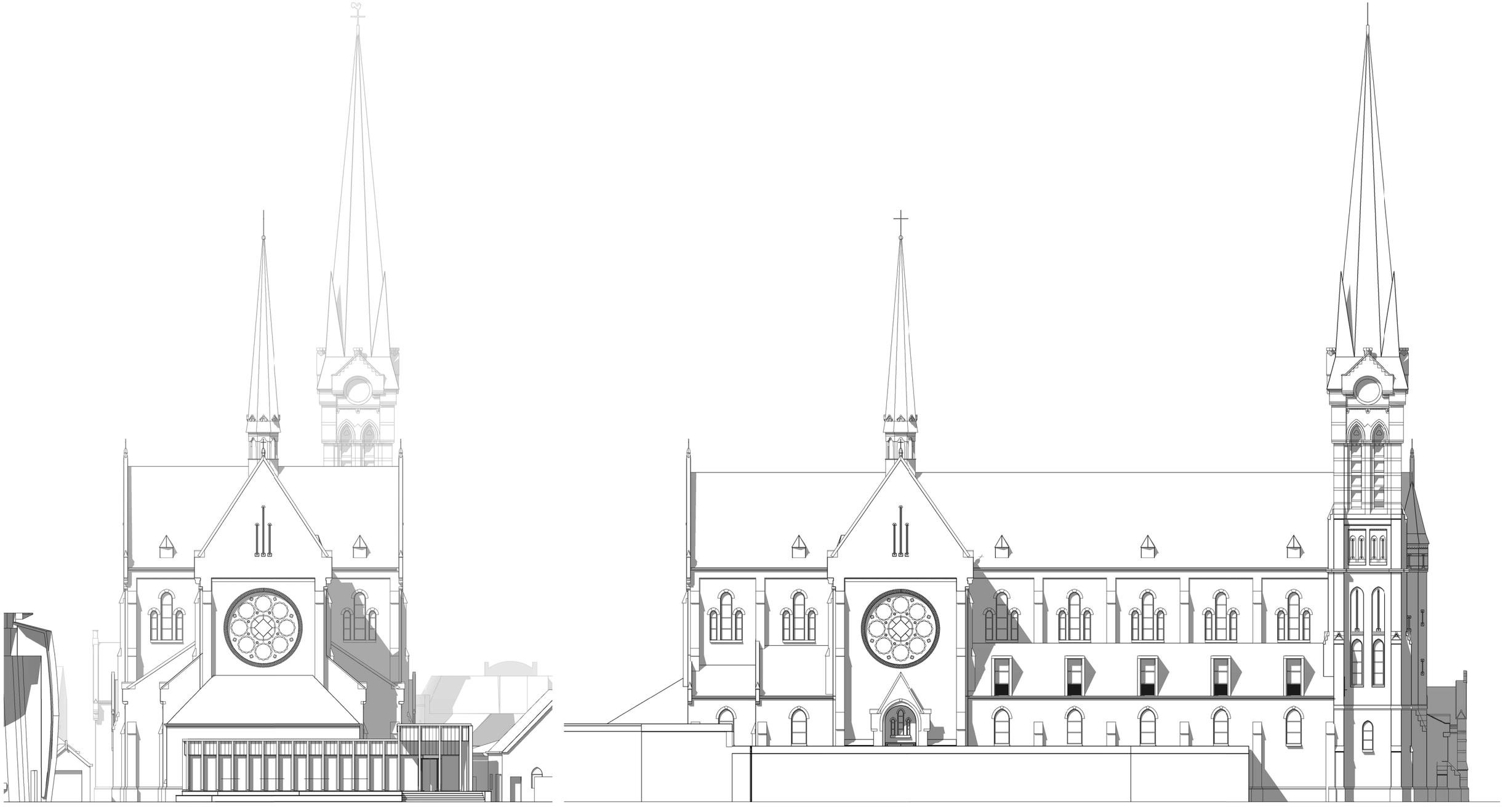




FACADES

West and South facade existing 1:300

FACADES



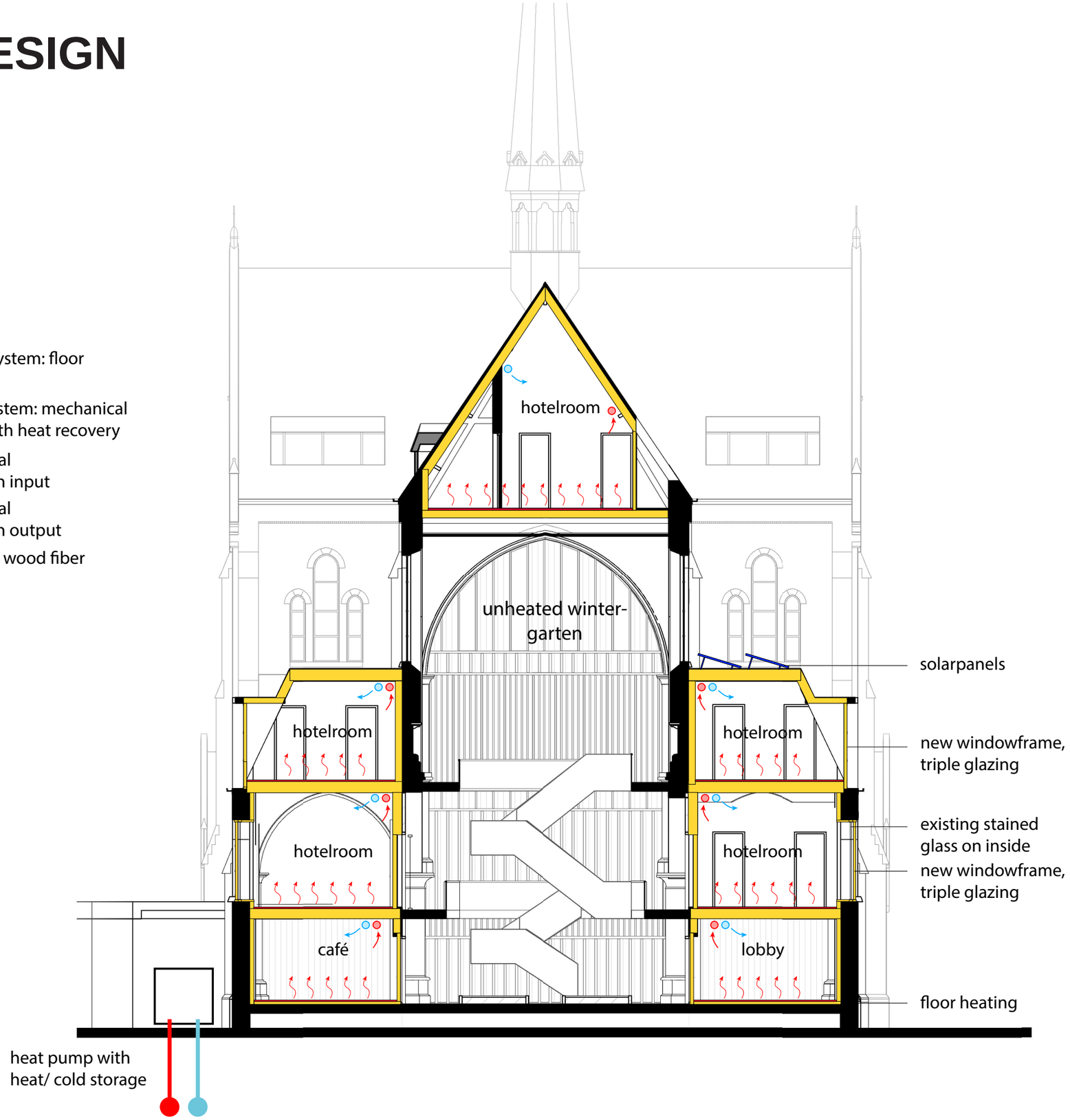
East and North facade existing 1:300

CLIMATE DESIGN

Heating system: floor heating

Ventilation system: mechanical ventialtion with heat recovery

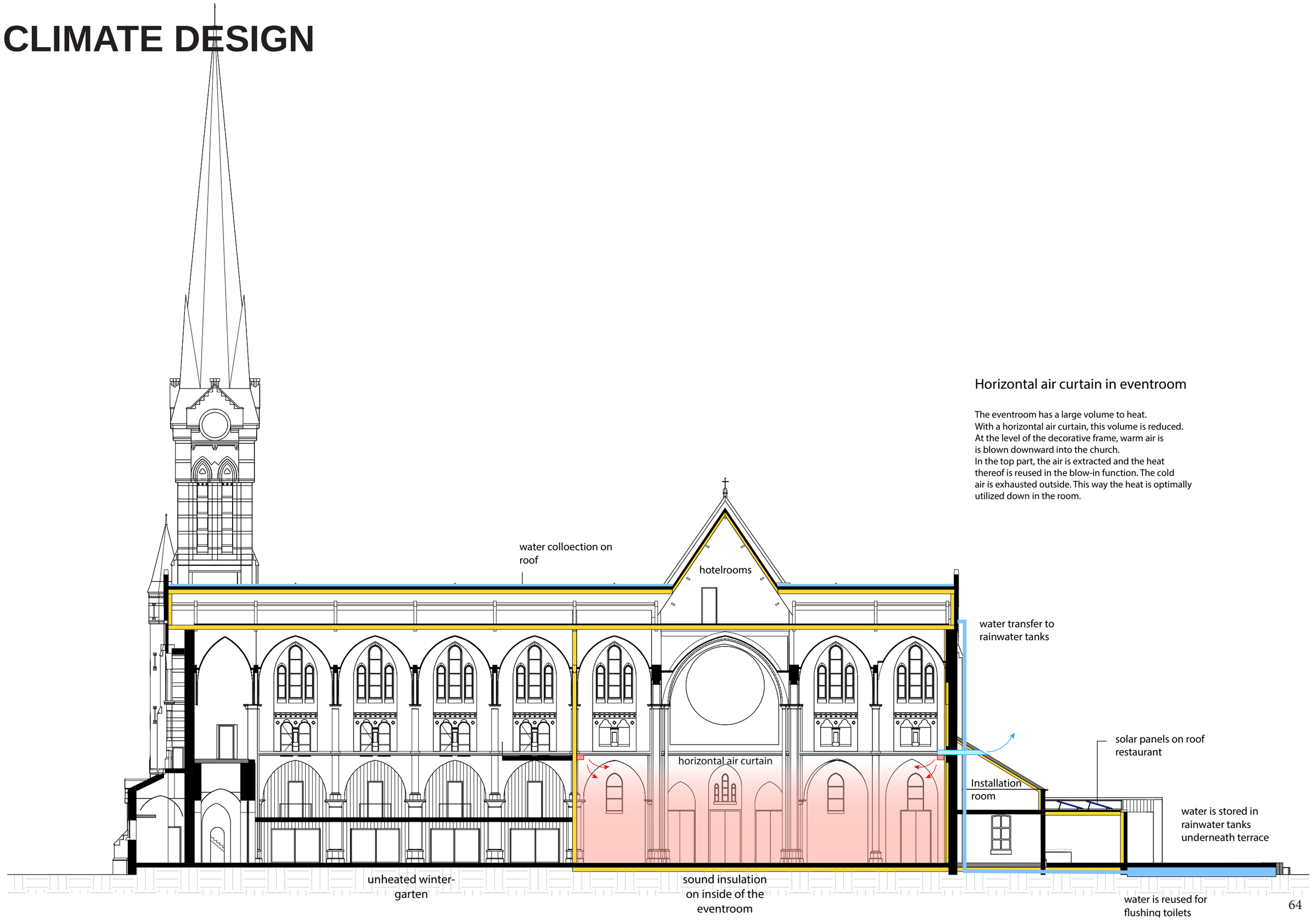
- mechanical ventilation input
- mechanical ventilation output
- insulation wood fiber



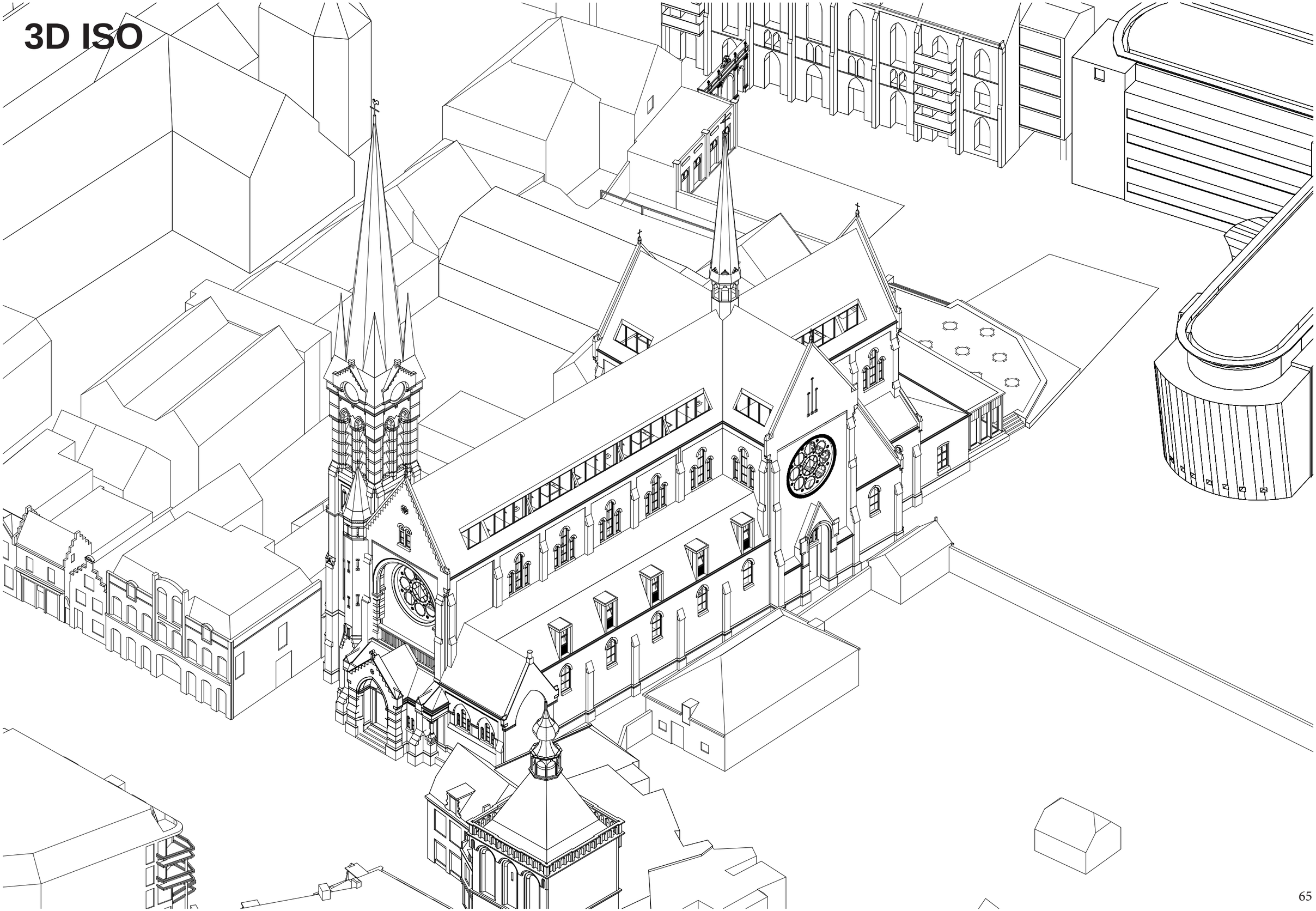
CLIMATE DESIGN

Horizontal air curtain in eventroom

The eventroom has a large volume to heat.
With a horizontal air curtain, this volume is reduced.
At the level of the decorative frame, warm air is
is blown downward into the church.
In the top part, the air is extracted and the heat
thereof is reused in the blow-in function. The cold
air is exhausted outside. This way the heat is optimally
utilized down in the room.



3D ISO



3D ISO