

# **Graduation Plan for AE students**

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Argumentations of choice of the studio	

## **Title**

Title of your graduation project

# **Graduation Project**

## **Problem Statement**

Groningen is subjected to the earthquakes through drilling gas out of the soil. Groningen has a history, which exists for almost 1000 years. The picturesque side and charm of Groningen comes for a big part from its monumental and historical buildings. But 80 percent of the buildings in Groningen are built with unreinforced masonry. This type of construction is not build to be earthquake proof. With the drillings these monumental buildings will be damaged and if nothing is done they will be ruined. This means that the charm of Groningen is getting harmed. At this moment this problem is solved by using an extra steel or wooden structure that is only based on safety of the people. Aesthetics is not important and saving the buildings is also of minor priority. I find it questionable that we make ugly solutions for this problem, because we have to look at it for 50 years (at that moment the gas field is exhausted). Also the buildings need to be saved, so the charm of Groningen will still exist.

## **Objective**

My idea is to create a more architectural justified solution to reinforce the buildings. I want to keep the monumental side of Groningen untouched and help the facades that need medical attention by creating an architectural structure that will prevent damage to the monument. This structure should also add more value to the attaching public space, so it will have an aesthetic/architectural purpose itself during its lifecycle and it therefore contributes to the new (temporarily) charm of Groningen.

## **Overall design question**

*Is there a solution to reinforce the damaged monumental buildings that will save the buildings and also contribute to the architectural value of this building in such a way that this building will have a new (temporarily) function?*

Another purpose is found, to give the reinforcement an architectural value as well. The countryside of Groningen is suffering from shrinkage (aging and reduction of the population). This problem is addressed next to the seismic problem. Therefore another important design question is mentioned here as well:

## **Sub design question**

*Can I find a way to use the reinforcement of the building for solving the shrinkage problem in Groningen?*

## **Thematic Research Question**

### **Design Research (social point of view)**

How can you implement better social cohesion in villages where the phenomenon shrinkage is happening?

What is the best location and target group to do something with social cohesion with in a village.

What are the qualities and values of the existing monuments for public space?

To which extent can you change the façade to keep the picturesque character of the building, but make it also architectural interesting and save.

How can a construction contribute to the architectural value of a building? I will focus on constructions that are added to older buildings. Is the standard way to reinforce a façade with an ugly construction aesthetic enough to accept? If whole Groningen is being reinforced like this, will it have an effect to the well being of people in the city?

Can I use this construction to do something about the shrinkage problem in Groningen?

### **Technical Research**

What are the characteristics of an unreinforced masonry façade, which can be up to 500 years old?

What is the structural function of these facades, how do they transfer the loads?

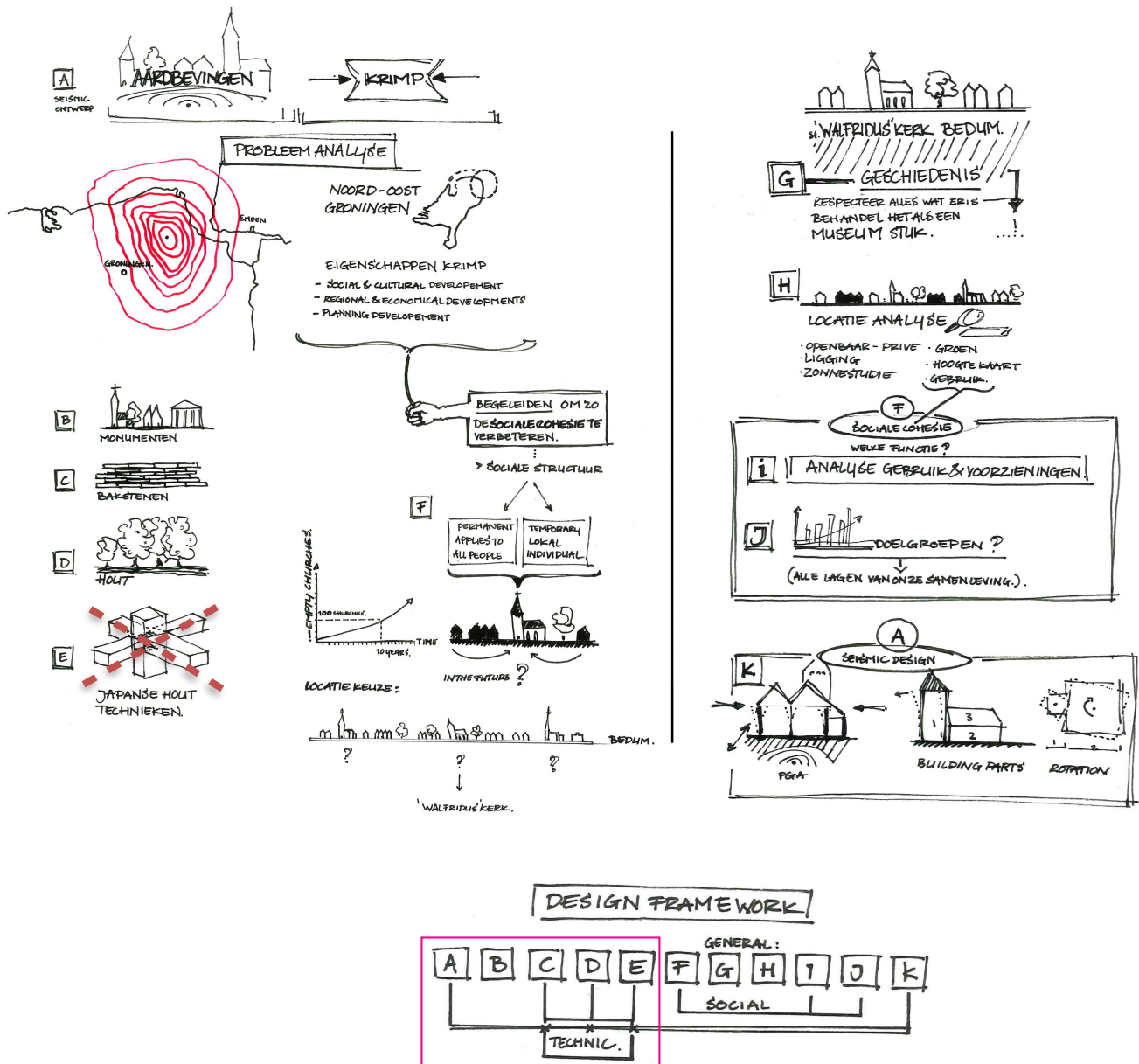
What techniques or possible solutions can you use to reinforce an unreinforced masonry façade, without changing the existing too much?

Can I develop a standard technique, which can be applied to different kinds of monumental facades? Can the solution be developed to a broader scale?

Is it possible to apply this technique with wood?

How does the production proces fit to the design?

# Methodologies



The drawing above shows in short the storyline of my proces. All the letters stands for a research on different levels. These researches have a technical and social side. Every research is done through studies in literature, hearings, sketches and consults. The conclusions and founding are used into the Design Framework.

## **Context**

Visiting the context. Especially the centre where the damaging facades of monumental buildings meet the public space?

Which monument is the best opportunity in enhancing social cohesion?

What is the importance and the unimportance of this monument to the people who use it and who don't use it? (especially the locals)

What is done to the context for dealing with other areas with shrinkage? And what have we learnt?

## **Social**

Interview inhabitants to get their opinion about how important heritage in Groningen is for them and how they will react to added modern architecture to the existing heritage?

What are the needs for new functions or amenities in shrinking areas?

What are the best target groups to implement better social cohesion for?

The acceptance of building new onto old monuments?

## **Literature study**

Study the existing unreinforced masonry, its qualities and strengths to understand the force distribution of unreinforced masonry facades.

Study existing techniques to understand earthquake proof design.

Specifically study techniques that can be applied to existing facades to reinforce a unreinforced masonry building.

Study the visual qualities of heritage in Groningen.

Find out the values of public spaces in Groningen.

Investigate the needs of inhabitants in Groningen, to find an additional function in the public space.

Characteristics of shrinkage areas.

What is social cohesion? And how to implement better social cohesion.

Investigate the needs of inhabitants in Groningen, to find an additional function in the public space.

## Reference analyse

*The situation in Groningen is quite rare, because the earthquakes are happening for a short time only and the heritage isn't designed to transfer these kind of loads. Therefore a good reference is hard to find:*

Italian studies about reinforcing old masonry buildings can be helpful as a reference in this project.

Also the research that has been done so far on the situation in Groningen can be used as a reference, like the way they use reinforcing (ugly) structures. And what are the technical characteristics of this operation.

How to deal with areas that are harassed with shrinkage:

IBA Parkstad

Blauwstad Groningen

## Research by Design

Develop models to study:

- A (timber) solution to reinforce heritage.
- A standard solution for different kinds of monumental facades.
- The possibilities of different values of public space,
- A way to attach a temporary façade onto an existing monumental facade

Develop sketches to understand the way of building onto existing facades.

Sketches to create and understand new aesthetic value in comparison to the value of heritage.

Develop a standard solution for different kinds of monumental facades.

## Planning

See the appendix.

## Relevance

The existing techniques are lacking aesthetics, while this is an important value of the charm of Groningen. That is why it is important to find a solution that will have architectural value as well.

The earthquakes in Groningen are a big social problem in the Netherlands at this moment. Groningen already had problems with people leaving the area and this problem is increased since the earthquakes. That is why it is important to find a solution to save the heritage and make the public space more tempting.

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