

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Personal information	
Name	Renée de Vries
Student number	5429978

Studio		
Name / Theme	Architectural Engineering (aE)	
Main mentor	Ir. A. Snijders	Architecture
Second mentor	Engbert van der Zaag	Building technology
Argumentation of choice of the studio	<p>If I want to find a solution to live safely in flood prone areas, in a sustainable and nature-inclusive way, choosing a studio that is a bit more angled at engineering would substantiate this project better. Because a building in this location is connected to a lot of technical factors besides architectural ones. In the end, being able to combine this technical knowledge into an architectural design for living in floodplain areas make it a good fit for the architectural engineering studio.</p>	

Graduation project	
Title of the graduation project	IFL – Identified Floating Landscape
Goal	
Location:	Floodplains in the Netherlands
The posed problem,	<p>Currently the Netherlands is experiencing a paradox, where it has to endure extreme dry and extreme wet time periods. For example the floods in Limburg the Netherlands, where the Maas river flooded due to heavy continues rainfall and high river tides (Schyns, 2022). Droughts are a problem for especially for structural foundations of buildings where the slinking of the ground makes the buildings rise above ground level (NOS nieuws, 2021). These together make a very interesting problem where the foundations of buildings need to be able to withstand the forces of a flood, the slinking of the ground due to extreme floods and simultaneously keep the building safe and on its place. A foundation after all needs to be able to distribute all the forces, in and on the building, into the ground (Oosterhoff, 2013). This calls for a new solution into the structural foundation, where it is able to keep de building safe from floods and can survive during multiple transitions from extremely dry to completely wet.</p>
research questions and	<p>What foundation typology, for family housing, is able to withstand the dynamics of flood prone area's and provides the quality of living in a standard family home?</p> <ul style="list-style-type: none"> - What are the dynamics of the soil in floodplains in relation to foundations?

	<ul style="list-style-type: none"> - What are the characteristics of river floods in relation to foundations? - What does an average family home in the Netherlands look like? - What foundation typologies are there and what are their characteristics?
design assignment in which these result.	<p>What are the spatial consequences for a building constructed in flood prone areas that offers resilience against the dynamics of floods?</p> <p>The aim is to design a family home that has the same building and user qualities as the average family home in the Netherlands, but is able to endure the dynamics of flood prone areas. This will create an example project for locations that deal with partially or completely the same context. Therefore, the location of the floodplains are chosen. As in this location in the Netherlands it is already a location that possesses these dynamic characteristics serving as overflows for the river.</p>
Process	
Method description	
<p>Overall this research paper is structured around involving experts through brainstorm sessions. Experts in knowledge fields connected to architecture to literally and figuratively foundation the paper. To support the gathered knowledge found during conversations with experts I will be using literature review, desk research, data analysis and case studies. This will give me an overview of what the characteristics are of the river, the soil and information existing foundation typologies. In general a literature review will put this paper in context with already existing information and academic content to ensure reliability. The desk-research is done to find non-academic content but still relevant information to support the research like, newspapers, company and governmental websites, manufacturers. The data analysis will determine the current and past situation regarding to the soil composition, different water levels and the average family home.</p> <p>The research about the foundation conclude about certain foundation typologies for different locations in the Netherlands. In the design phase the spatial consequences of a building will be discussed. The paper will serve as a base around the foundation and other research through design will be done regarding the rest of the building. The requirements for a family home will be researched through building codes, and case studies. An in-depth hands-on location analysis will be done on the suggested location in the paper. And lastly the spatial consequences will be researched through design, for example view, room orientation accessibility, foundation and materialization.</p>	
Literature and general practical preference	
<p>Previous experiences: Working for an architect, and many previous internships. Practical resources: Analysis, Sketching, Model making, CAD Literature resources: Blöschl, G., Gaál, L., Hall, J., Kiss, A., Komma, J., Nester, T., . . . Viglione, A. (2015, July/August). Increasing river floods: fiction or reality? <i>WIREs Water</i>(2), pp. 329-344. doi:doi: 10.1002/wat2.1079 CBS. (2021, 12 16). <i>Prognose: 9 miljoen huishoudens in 2038</i>. Retrieved from SBS: https://www.cbs.nl/nl-nl/nieuws/2021/50/prognose-9-miljoen-huishoudens-in-2038</p>	

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Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

If I want to find a solution to live safely in flood prone areas, in a sustainable and nature-inclusive way, choosing a studio that is a bit more angled at engineering would substantiate this project better. Because a building in this location is connected to a lot of technical factors besides architectural ones. In the end, being able to combine this technical knowledge into an architectural design for living in floodplain areas make it a good fit for the architectural engineering studio.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

Last November 2022 the government of the Netherlands stated the high importance of our water and soils through a letter. It said that water and soils should be the main priority in every step taken, and therefore never should be badly impacted through new projects. And not only the Netherlands is experiencing the issue of recurrent flooding. Multiple countries all over the world have to endure river floods (Feyen, Dankers, Bódis, Salamon, & Barredo, 2012; Floodlist, 2022). A study shows that in Europe these floods will occur also more frequently and more extreme in the future. Droughts and floods are therefore not a local problem but a global problem. It is caused by a commonly spoken about problem, namely climate change (Golz, Schinke, & Naumann, 2015). Which is partially influenced by global warming, because earth's temperature has risen 1,0 degree Celsius since the pre-industrial period and is expected to rise 0,2 degrees Celsius per decade due to human activities like fossil fuel burning (Nasa, 2022). This makes the project very relevant to current problems around the world.

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