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STUDIO
Architectural Engineering
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PROJECT TITLE
Compact living, the minimum will be the maximum
As part of the Architectural Engineering graduation studio students are required to write a technical research paper based on their interest in research and fascination in design. The subject of the research is chosen by the student based on a personal interest. The final research results are a starting point for an architectural design.

From the beginning of the graduation studio I knew in what direction I wanted to design and research. My personal fascination, fascination for small buildings and the triangular shape, could be combined with the beach house assignment from stated by Rijkswaterstaat.

The research process started by researching the location. Right from the beginning I chose to leave the beach location and focus on the dune area. The research focuses on four main research subjects; Compact, Self-supporting, Comfort and Structure. The research didn’t cover all the aspects of these four research subjects. The research focuses on what applies to the small scale design. Research about the self-supporting installations is done for electricity, water and sanitary facilities usable on small scale. The ‘grow your own food’ aspect is not included in the design.

The main research methods for the research part of the graduation studio (till the P2 presentation) that were used were case studies, literature, and partly research by design. For this I collected a verity of projects which I could use for research. In the case studies the research mainly focuses on size, configuration of interior elements, and material usage. Literature was mainly used for the environmental research.

For the design part of the graduation project I mainly used research by design. This was done by drawing and models. In the beginning of the second part of the graduation studio (after the P2 presentation) the design research was done by drawings and sketches. While sketching the tools that were found during the research were used as a ‘baseline’ for the sketches.

After a couple of weeks the sketches and 2D representation couldn’t provide the necessary design steps and wasn’t enough any more so I switched to the 3D model making method. Started with square blocks with were cut in shape to represent the research outcomes the shape of the design started to get shape. This shape was only a combination of the outside influence (sun-, rain-, water directions and the lose sand ground) of the location.

The next step that was taken was to make wired models of the models so the interior could be designed.

The models research started from the outside in and the switched from the inside out. The interior design was done by a combination of models and sketches. In this design the space is a important part of the research and design so by combination interior elements and trying to find the best combination with the smallest amount of wasted space but with the maximum level of comfort.

While making models takes a lot of time, material energy the design process started to switch again. This time from 3D model making to 3D model making in the computer. The digital modelling allowed to combine the ‘paper models’ in a quick and easy way and this leaded to the final design of the ‘Folding Dune House’.

The technical part of the design process was mainly done by sketches in combination with the digital model. The construction and therefore the detailing took me a while. Exported images of the digital model and sketches were the ‘magical combination’ for me to understand the construction and to fit all the elements from the research into the model.
The way the Architectural Engineering graduation studio is structured is slightly different from other architectural studios. Like all other architectural studios where you 'get a building or a building plot' the Architectural Engineering studio starts with a research semester based on the personal fascination of the student. This research semester leads to a design semester. The results of the research should provide the design base of the design.

Where most of the other graduation studios provide their students with an architecture theme and research, the Architectural Engineering studio asks the students to come up with a technical or design fascination as a subject for their research.

From the very beginning I started the graduation studio with a clear fascination and an idea for my research. The graduation assignment of Rijkswaterstaat fitted my fascination well. The only thing that I changed was the location. Instead of the beach area I chose to design in the dune area. This was in my beliefs a more challenging environment because of all it’s restrictions.

To answer the research question the research was divided into two sub researches; The ‘environmental research’ which answers the question; “How to build on the specific location” and the ‘design research’ which answers the question; “How to build the building itself”. The reason I separated the research was to keep an overview on the research material, which worked very well for me.

Both researches were divided into a couple of criteria. These criteria are developed out of the location and out of personal fascination.

The results from the research could easily be fitted in the design (or the design fitted the research results) because of the precise research that was done and therefore I could say my research method was useful for this project.
The dune area is a protected area and a delicate place. Therefore it is necessary to disturb or damage the environment as less as possible. This you can do by keeping the carbon footprint of the building as minimal as possible. By building a compact beach house the literal footprint of the building is as minimal as possible.

The wider social context of this project is that Rijkswaterstaat has a new kind of dune houses, a new dune house typology with houses which work with the environment and no adjustments needs to be done to the dune.

The dunes were always a protected area ware no people were allowed for recreation. With less beach houses on the beach the beach could be used again as a recreational space in nature.

With these new dune houses a recreational function is added to the dunes but we have to keep in mind that the dune houses are meant for eco-tourist and people who got the best intentions with nature.