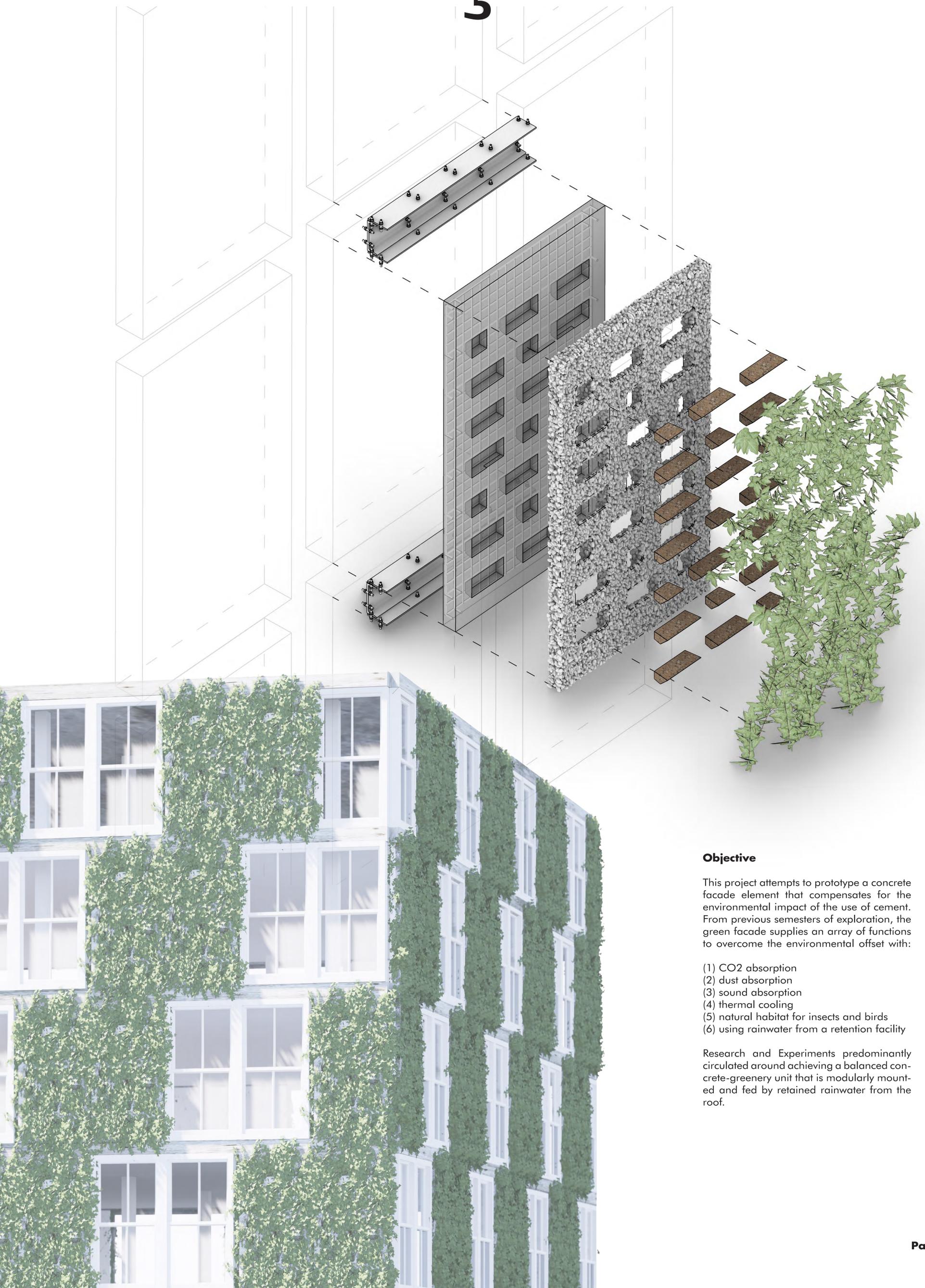


# Multi-Façade



## Objective

This project attempts to prototype a concrete facade element that compensates for the environmental impact of the use of cement. From previous semesters of exploration, the green facade supplies an array of functions to overcome the environmental offset with:

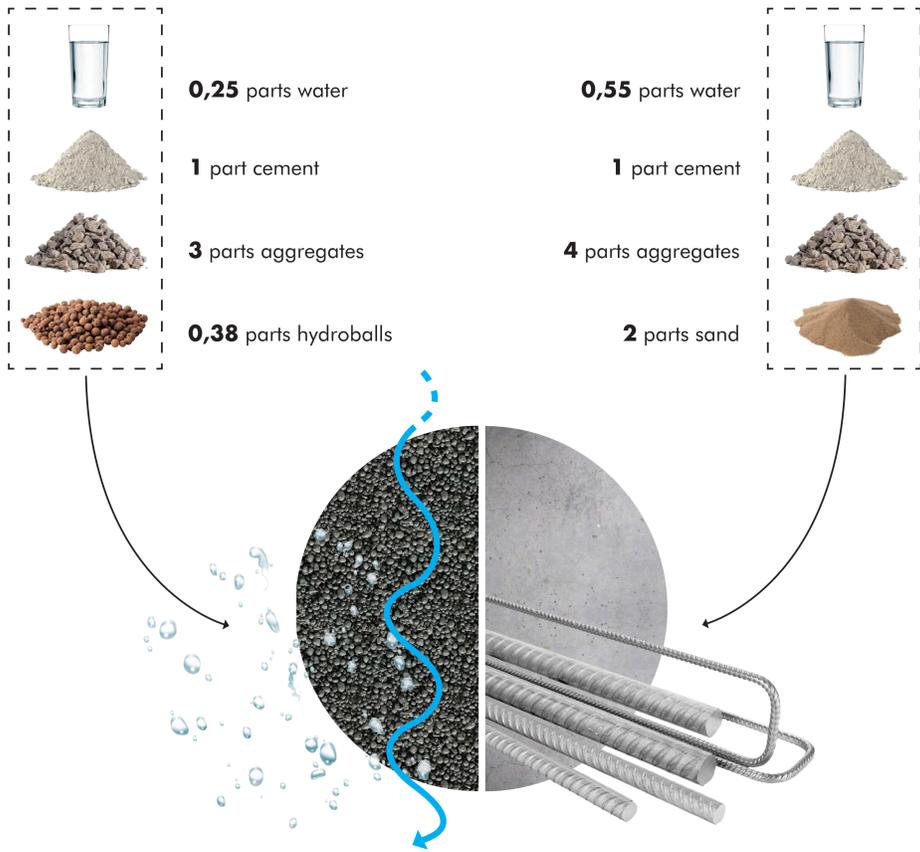
- (1) CO<sub>2</sub> absorption
- (2) dust absorption
- (3) sound absorption
- (4) thermal cooling
- (5) natural habitat for insects and birds
- (6) using rainwater from a retention facility

Research and Experiments predominantly circulated around achieving a balanced concrete-greenery unit that is modularly mounted and fed by retained rainwater from the roof.

# Light Pervious Concrete

All starts with the a double layered base of concrete which becomes the medium for plants watering them with rainwater collected on the roof. The concrete panel is a hybrid with a robust load bearing layer for mounting and a innovative pervious layer for irrigation.

A special composition comes into play with the pervious layer. Removing sand for high porosity and adding common clay substrate, also known as hydroballs, reduces the weight of the panel by 7,5%. Lower mass means lower costs and less carbon emissions in the production process.

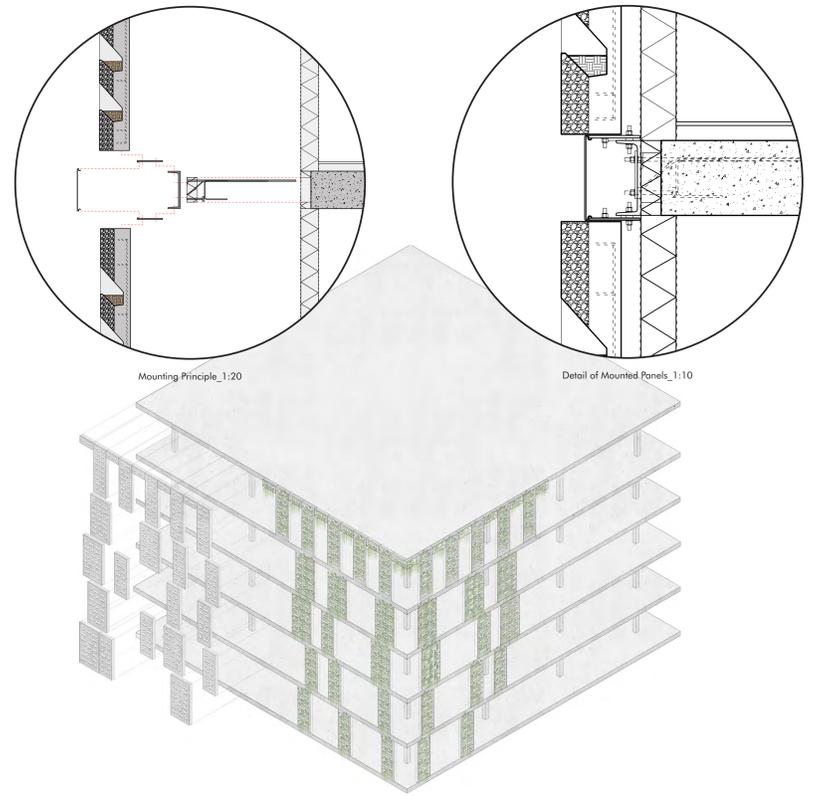


# Fast & Easy Mounting

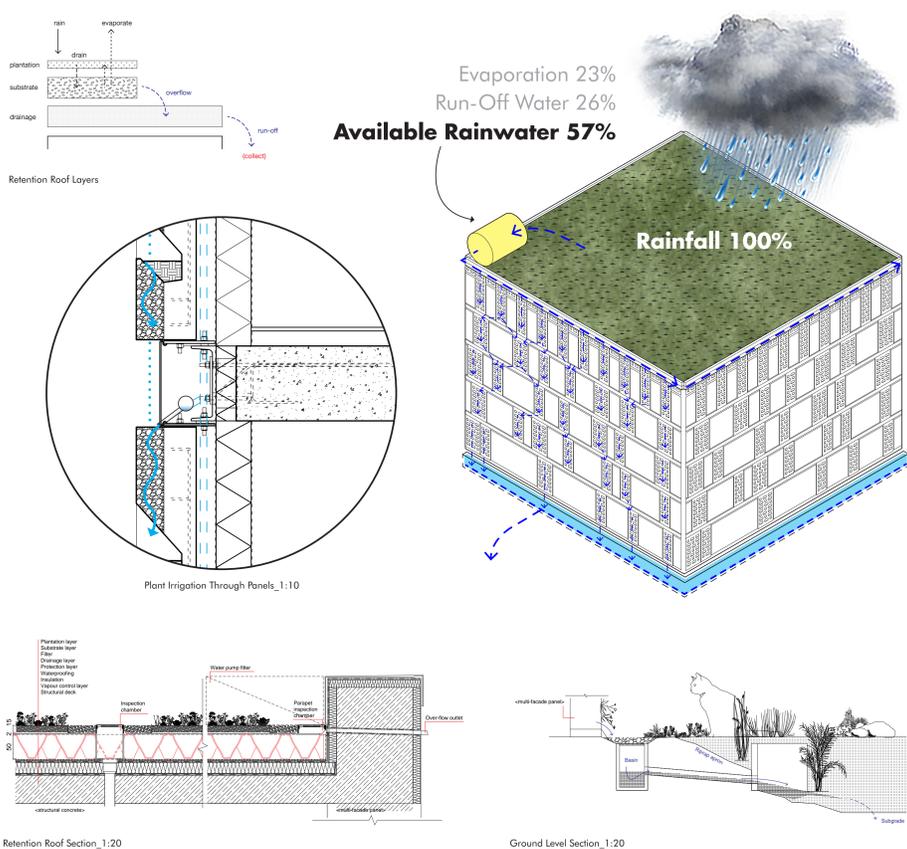
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The Multi-Façade is designed as a prefabricated element to be easily mounted on site, which improves applicability. It is a modular product that can be produced in various sizes. The dimension of the standard-panel fit to the normal floor height of 3,6 m in Dutch office buildings.

The panels are designed as a cladding system and mounted to the building structure with U-profiles making it easy to apply or replace the panels. The various sizes and the easy mounting make the panels a great flexible module to customize and personalize any facade.



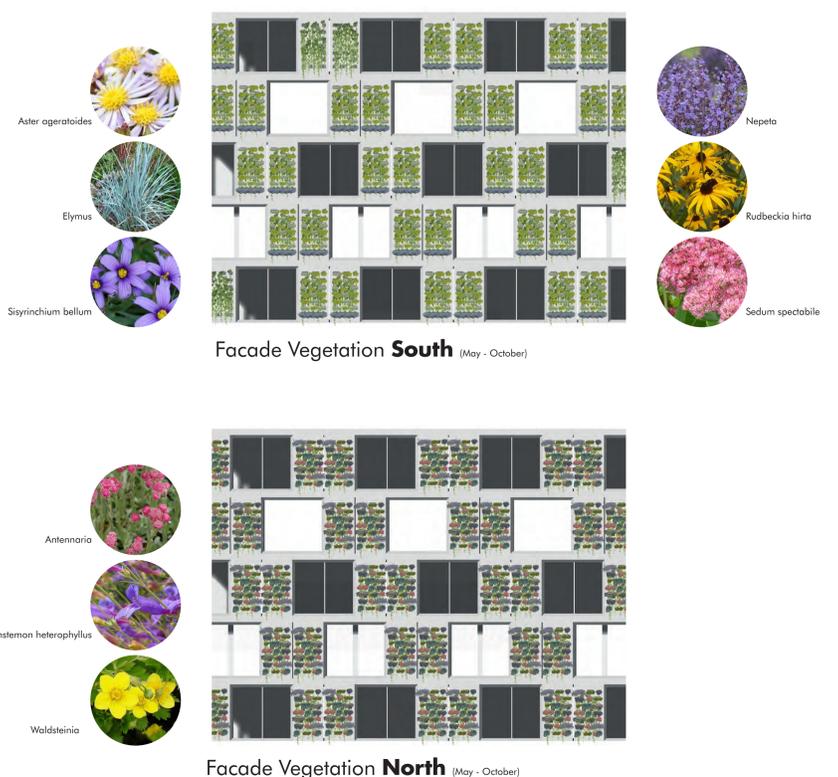
# Water Retention & Irrigation



A water retention roof is used as the water source for Multi-Façade irrigation. The principle of a retention roof is to descend the peak flow of rain to a manageable level. The dry period is supplied with water stored in a pump on the roof.

The facade itself will act as a distributor of the water coming down from the water retention roof. Water is assembled at the briefcases and distributed from there to the facade. Porous concrete is the the solution for the distribution since it is able to diverse water on a small scale.

# Living Green Façade



A selection of self-maintaining and long-lasting plants will survive in a high alkaline concrete environment. The selection based on plants that are common in the Dutch environment require small amounts of soil and are resistant to fluctuation of water resources.

Orientation is a key aspect in the selection process. Therefore it is a combination of sun and shadow plants. All plants are decorative, fast growing, have a long lifespan, high firmness, are disease and pest resistant and attract birds and insects for biodiversity.