Integration of the highway in the city

The ongoing process of urbanisation in the Randstad area forces us to take into consideration an integration of the Prins Clausplein with the livable part of the city. However, as motorways cause both environmental and noise pollution, most motorways are nowadays isolated from urban areas through tunnels and sound barriers. Highway locations have a great potential since they are accessible, visible and there is lots of space available. Since this project is not seen as integral part of the overall urban fabric a spread of urbanisation is going on at these locations. This graduation project has the objective to research by means of design the possibilities to integrate the highway into the city fabric. Since this project is part of the Architectural engineering graduation laboratory the integration of Building technology and architecture is taken as point of departure in the structure of the research and design. The architectural integration of the highway and the engineering solutions for the neutralisation of nuisance caused by air pollution are integrated at all scale levels.

BUFFER ZONES

A strategy is introduced to create buffer zones that innovatively neutralize pollution without obstructing the connection between the city and the highway. This research will focus on the neutralisation of air pollution caused by the highway in these buffer zones. The technical means of air filtering will be both researched and implemented in the design at all scale levels. The urban plan will be mainly designed to influence the airflow that directs the polluted air into filtering zones. The filtering of air is designed as a façade for the buildings facing the highway.

FILTERING AIR

Filtering air with vegetation is a very delicate matter. Not only should the airflows be optimized so the amount of air that contacts the leaf surface is maximized. Also the right mix of vegetation needs to be planted to neutralize the different types of hazardous substances in the air.

In this design project the combination of strategic urban planning and innovative façade lead to an estimated improvement in air quality of 20 to 30 percent. Above all the developed façade ads architectural quality to the harsh highway environment and could be applied both to new buildings as well as to existing structures.