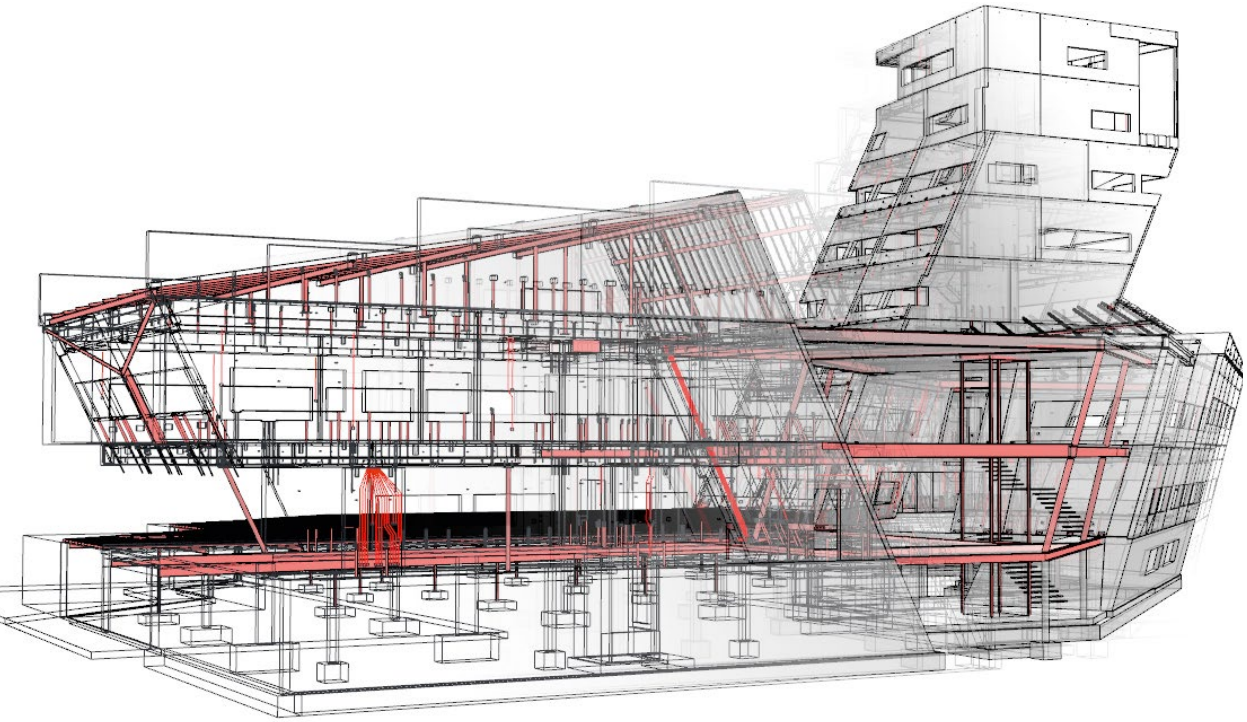


Consulting center of Rabobank in Roermond, Netherlands

Allplan in practice

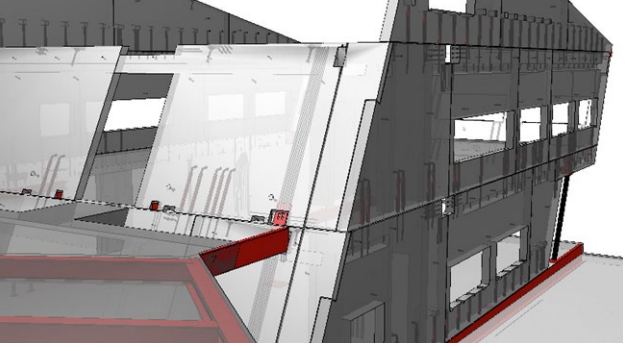
WHERE ART AND FINANCE MERGE

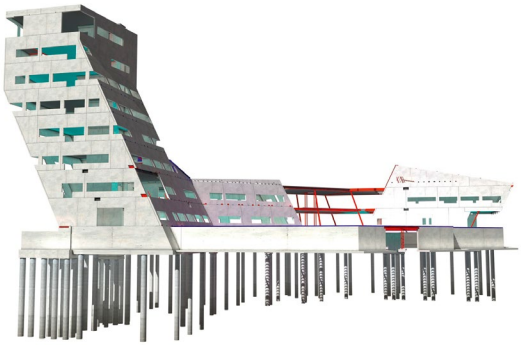
When a work of art is the force behind an architectural design, the engineers are also usually required to find unusual solutions.

In addition to in-depth expert knowledge, software is needed that provides users with the flexibility to create unconventional designs. One example of this is the consulting center of Rabobank in Roermond, Netherlands.

The inspiration for this building, designed by architecture firm Engelman Architecten in Roermond, was a work by American sculptor Isamu Noguchi. The work of art evokes a snake whose outstretched neck and head reach high into the sky. The architects turned this idea into a two-story building at the end of which a seven-floor tower boldly extends diagonally. The slanting facade elements and the oblique roof areas, which have the same finish as the facades, are particularly striking.

A closer look at the building immediately reveals the challenges this original design posed for the engineers from van der Werf en Nass BV in Maastricht: Nothing on the building is at right angles, which meant a very unusual load transfer was necessary. As the construction period needed to be kept as short as possible, it was decided to create





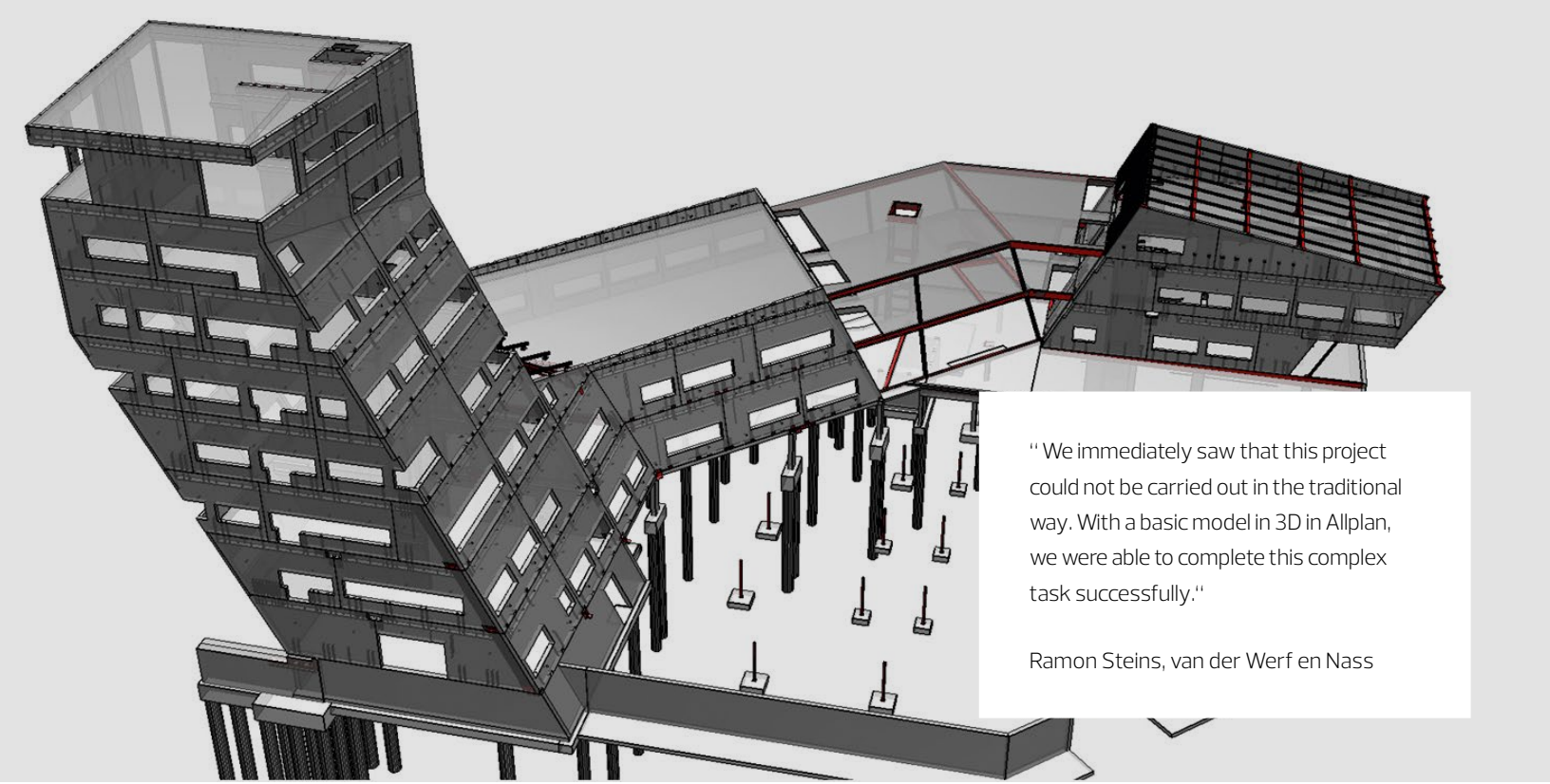
the shell using precast concrete parts. To avoid long lead times in the casting plant, the substructure was created using the in-situ concrete method. During work on the ground floor, the concrete elements for the upper stories were produced in the casting plant.

In addition to the fact that the sculptural form required an extremely innovative approach for a correct calculation of the main load-bearing structure, another major challenge was ensuring the dimensional accuracy of the precast parts and assembly drawings. To solve these two problems effectively, the designers decided to work in a virtual 3D environment.

The entire structure was transferred to Scia Engineer, a modern calculation software that uses the finite element method (FEM). The engineers then subjected the structure to the loads expected for the building during its life. This procedure showed which loads could occur for each individual component. All the results calculated in this way were then checked in several steps and all components modified until they were able to withstand even extreme conditions.

The shape of the entire shell was then modeled with the help of 3D CAD software Allplan Engineering. Various drawings needed for production of the precast parts could then be derived from this 3D building model with ease. As a result, the designers were able to meet the high requirements relating to dimensional accuracy and at the same time ensure maximum clarity. In addition, the building model was the optimum tool for determining the correct assembly sequence.

The design work by the engineers from van der Werf en Nass was equal to that of the architects' creative design in terms of complexity and precision. It is a result that is achieved in particular when experts go about their task with care and attention to detail.



" We immediately saw that this project could not be carried out in the traditional way. With a basic model in 3D in Allplan, we were able to complete this complex task successfully."

Ramon Steins, van der Werf en Nass

Since 1965, Engineering van der Werf und Nass BV in Maastricht has designed and calculated thousands of constructions for residential, commercial and industrial projects. The qualified engineers have an in-depth knowledge of materials and computer-aided technologies – as well as a wealth of practical experience.

They use the latest software to create and calculate complex models and variants quickly and reliably. In 2009, the engineering firm switched from 2D drawing to 3D modeling.
Since then, practically all projects have been executed in 3D.

ABOUT ALLPLAN

ALLPLAN is a global provider of BIM design software for the AEC industry. True to our "Design to Build" claim, we cover the entire process from the first concept to final detailed design for the construction site and for prefabrication. Allplan users create deliverables of the highest quality and level of detail thanks to lean workflows. ALLPLAN offers powerful integrated cloud technology to support interdisciplinary collaboration on building and civil engineering projects. Around the world over 500 dedicated employees continue to write the ALLPLAN success story. Headquartered in Munich, Germany, ALLPLAN is part of the Nemetschek Group which is a pioneer for digital transformation in the construction sector.

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