BREED Integrated Design

Contact Gilbert Van der Lee
Address Korte Molenstraat 12
2513 BM Den Haag, Netherlands

Phone +31 70-7852944
Email info@breedid.nl
Website www.breedid.nl

BREED Integrated Design started as a company that wanted to work differently.

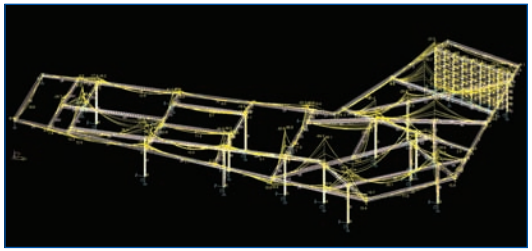
Or better, in a way that used to be the standard in the old days of constructing. We think that designing buildings is a beautiful thing to do. Designing buildings has become too much a business instead of a profession of passion. We care about the projects we do.

We think that a better integration, with real interest in the other professions in the field, make better buildings. We want to be part of the design team as early as possible, before a stroke has been put on paper. We would like to hear the concept of the building, so we can make a structural concept that is part of the complete picture. Not squeezing in some columns and beams in the end and destroying the general idea with it. The structure can be a big part of the architecture and it should be used in whatever way. Even lack of structure is an architectural statement. If the structure is ignored in the design process, it will most certainly be a dissonant in the design as a whole.

BREED Integrated Design is founded by Gilbert van der Lee. At the university he studied to be a structural engineer as well as an architect. Not to practice architecture, but to understand it and become a better structural engineer. We think the structure of buildings has been ignored too long, it is not used enough to express the buildings' architecture. Structure gives rhythm, shelters, breaks the light, sets boundaries and encloses spaces. Lack of structure confuses, maybe scares but certainly surprises the person who visits the building. It is essential to think about it. What will the effects of the structure be? We love buildings as much as the architects do. It is essential to develop a concept of the building as a whole. An architect can design with complete freedom, but if it can't be erected, what's the use? There has to be the perfect skeleton for it. It is not only about doing the calculations right, it is about designing the right structure. By giving multiple options, the architect and the client can make decisions based on costs and architecture. This is in our opinion the only way to practice structural engineering.

And it works. We have been building and are working on beautiful buildings. Villa 1 is the first example that has been build. We are currently working on several projects with the same attitude concerning the structure. There is so much more to be build. So many structures to design.


Photo: Jeroen Musch



Short Description

Villa in Ede

The project regards a villa which has been designed upside down. All daily functions are situated above ground and all bedrooms below, but all provided with ample daylight.
The structure is really a part of the architecture. The open ground floor is placed on a concrete basement. The roof is carried by a complex steel structure put in pieces of furniture. The 'heavy' concrete basement carries an almost weightless ground floor, were structure is almost absent. The house seems to be floating in its surrounding.

Project Information

Owner: Privat
Architect: Powerhouse Company
General Contractor: Valleibouw
Engineering Office: BREED Integrated Design

Construction Start: 01/11/2006
Construction End: 20/01/2008
Location: Ede, Netherlands

Architecture

The area used to be a site for foresting. All trees were planted in the fifties for production of straight stems that could be used as beams. The trees, Douglas Pines, became mature in the seventies, so they could be harvested. At that time it became immoral to cut down trees, so the area became a natural forest. Now the site falls under the local "building-in-nature" regulations, which include a number of prescriptions. Local regulations only allowed a small house to be built. The special needs of the house called for at least twice the volume allowed by regulations. Powerhouse Company designed the villa upside down: all day functions above ground and all bedrooms below, but still with ample daylight.

In nature the sun is the source of life. The villa is designed optimally to the sun and to its surroundings. There are three wings in the house: one wing for working, studying and music making; one for cooking and eating, and one for living and painting. In the basement the Y-shaped plan has the same clarity. One wing for the master bedroom; one wing for cars and one wing for bedrooms, storage rooms and guestrooms. A big patio provides daylight for the guestrooms. Maximum transparency was wished for. The Y-plan offers large panoramic views on the surrounding scenery. On the south and east sides two large covered decks create sun shading in the summer. The views are really important in the house. That's why all mass is concentrated in one big piece of furniture in each wing. The furniture contains all needed services and the structural elements. They shape the plan and create different rooms within the glass space.

Thinking of Structure

Such an open plan asks for a structure suitable to the needs of the architecture. We made in cooperation with the architects, an extensive study of the structure. The furniture should be the location for the structure. Because two plans are placed on top of each other, the structure needed to be aligned on the two floors. We used ESA-Prima Win as a design tool, rather than a piece of calculation software. It was not about strength of the structure but about deformations. The trick is not about the result of the structure but the way the concept was conceived in structure. 'The road to a perfectly suitable structure'. That's why the roof has its distinctive structure. It was about putting stiffness in the structure on the right places. ESA-Prima Win is a good tool to only do the final calculations. But without ESA-Prima Win we couldn't have designed this house in this way. It gave us good insight in the structure's forces and deformations, so we knew what to do to make the right design. We really used it as a design tool and later as a calculation tool.

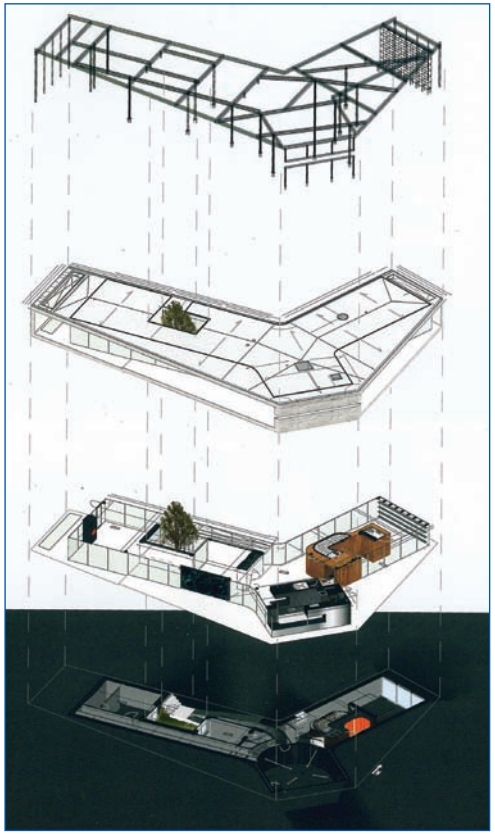
The dichotomy in the villa's architecture; 'closed' basement and 'open' ground floor, is reflected in the structure. The villa is like a stack of different building techniques. The basement is cast in concrete and the roof with extreme cantilevers is like a big umbrella put

Used software: ESA-Prima Win

on top, made in a complex steel structure with wooden beams.

Furniture

The furniture has been placed on the two levels, except for the kitchen, off course. The garage is placed underneath the kitchen, so we couldn't stack the structure there. All the studies led to a design, that embodied al the wishes of the architect and the client. The structure is almost absent on the ground floor, only a few columns can be seen. All the rest is put in the furniture. There was one daring area. The facade of the study-wing. The architect didn't want to put any structure there, but Newtons laws could be bend, but not ignored. The outcome was as ingenious as it was clear to the design team, we had to put a piece of structural furniture there. Where all the other structure was hidden in the furniture, this structure would be in plain sight. But the structure was not allowed to present itself as 'structure'. A structural bookshelf was introduced, made entirely of steel plates. A big Vierendeel frame stabilizing the structure of the roof and carrying it. The result is alienating, the bookshelf is sturdy, but doesn't look like structure as we know it.



Miesian Gimp

The other big trick, that was pulled by the design team, was introducing a huge sliding wall, made in marble. The door is as high as the ground floor and 4 meters wide. One column is put inside the sliding door, so it never can be seen. The sliding wall wraps around a cross-shaped column clad with black rubber skin. The architects baptized it the 'Miesian Gimp'. A cross-over between the "Gimp", the cynical and mysterious character in tight-fitting black leather in the film Pulp Fiction by Quentin Tarantino and a homage to Ludwig Mies van der Rohe. Cross-shaped columns were also used in the Barcelona Pavilion. Now we could introduce two columns, but more importantly, we could introduce a very important feature in the house. It's the only big opening and lets nature inside the house.

The result is a building like we want them to be build. Everything is integrated, nothing stands alone. The structure really 'carries' the architecture and is totally absolved in the architecture. They become one.

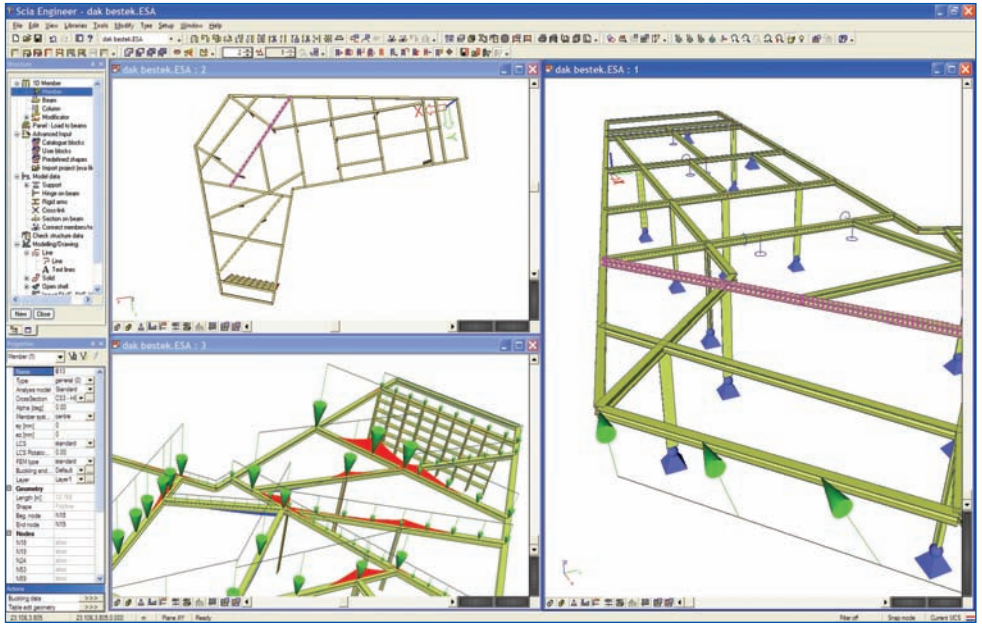



Photo: Jeroen Musch