

COMPANY

ABT B.V.
abt.eu

LOCATION

Velp, Netherlands

SOFTWARE

Autodesk® Revit®

Transforming the Delivery of Reinforced Concrete Designs

ABT Netherlands Combines the use of Autodesk and SOFiSTiK Technology to Deliver an Innovative BIM-based Modelling and Detailing Solution

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—**Sandra Hombergen**
BIM Specialist at ABT

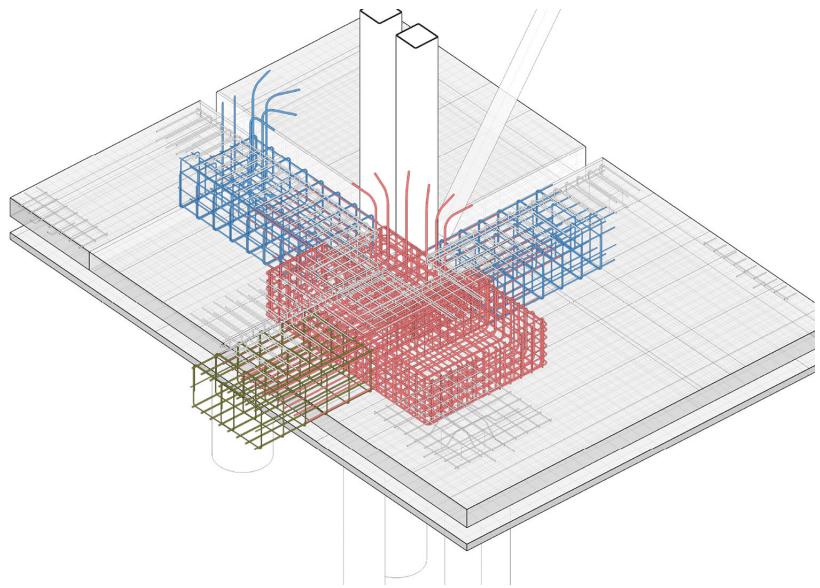


Image courtesy of ABT

Structural engineering firms working on major construction projects today are increasingly modelling concrete reinforcement using 3D Building Information Modelling tools in order to help reduce field errors and waste in the shop and field.

ABT Netherlands, a multi-disciplinary consultancy firm, focused on the structural engineering, civil engineering, architectural engineering, building physics and installation engineering knowledge domains, moved to BIM-based 3D rebar for concrete reinforced design and fabrication as a result of client demand. ABT already had in place the latest version of Autodesk® Revit® software, a 3D design solution that supports the Building Information Modelling (BIM) process for structural engineers, when a UK-based client commissioned the company to handle the structural design on a project, and to produce the accompanying reinforcing bar (rebar) shop drawings.

The UK will mandate Building Information Modelling (BIM) Level 2 for use on all government funded projects from 2016. As

a result, many more projects will require this approach. At the same time, the delivery of integrated design and detailing services for rebar continues to gather pace elsewhere across Europe and North America.

High-quality 3D Design with Revit

In keeping with this innovative focus, ABT used Autodesk Revit for design and coordination. SOFiSTiK, a German software development company with a European and International focus, provided a detailing add-in to complement the Autodesk solution. The visual capability of Revit, coupled with the ability to design in 3D, allowed ABT to gain more insight into the design during the project than would otherwise have been the case. ABT was also able to leverage the Revit model to obtain cost data and to create active links with external programs through the Revit application programming interface (API) in order to add further data into the Revit model.

Autodesk Revit has also helped ABT enhance collaboration across multiple project teams. The Dutch company uses the Revit® Server feature to allow team members to simultaneously work

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within a single model, thereby enabling ABT to share design data with a range of partners, including external consultants.

From 3D Design to 2D Detailing

In order to carry out the detailing on the UK project, ABT realised that it would need to find a way to rapidly create 2D reinforcement drawings from the 3D Revit model. And that's where Reinforcement Detailing, the SOFiSTiK add-in to Revit, played a key role.

ABT applied the SOFiSTiK add-in to produce a 3D model with 2D drawing output for the rebars used on the project and then tailor it to specific needs of the UK market. Sandra Hombergen, BIM Specialist at ABT, said: "We've found the ability to integrate the structural code-based design, delivered by Revit with the detailing is a compelling new benefit. It's not only driven up the quality of the design work we have been able to achieve, but it has also helped to accelerate the project process."

A second important benefit is the way in which the approach helps engineers understand the constructability of what they are designing. In this case, they can more effectively visualise the complexity of the rebar and how it interacts with other materials such as steel anchor bolts and baseplates. Ultimately, the enhanced insight helps construction companies working on the project to start to visualise how the final design may look.

Other key benefits ABT has gained from the SOFiSTiK add-in include the ability to annotate the drawings, create bending lists customised for company standards and generate computer numerical control (CNC) data to 'feed into' the bending machines.

Looking Ahead

While ABT already makes extensive use of this approach, the firm sees many more possible benefits of the technology once the contractors it works with begin to adopt BIM.

One of the most important of these is its ability to help reduce the delivery time from design to construction on the project. In the past, ABT would have created sheets of principals (concepts) of rebar design. Then a

separate company would have carried out the detailing. But now ABT has the opportunity to extract the bending schedules and computer numerical control (CNC) files directly from the model, thereby helping to save time for its project owner partners and minimising waste and excess in the construction and fabrication process.

The ABT project is symptomatic of a broader and growing interest in reinforcement detailing across the globe. SOFiSTiK has observed an increase in BIM demand not only in Germany, Austria and Switzerland, but also across Europe, the US and the wider world. The Revit-based solution has a more rapidly growing user base confirming the delivered added value for professional structural engineers.

With the adoption of BIM building momentum and driving more innovative usage of building and fabrication models, Hombergen sees a bright future ahead for the approach that the combination of Autodesk and SOFiSTiK technology is starting to shape.

"There is a great opportunity here for organisations to branch out and begin offering rebar detailing services," she says. However, she acknowledges, "There will be a learning curve to build this into the work process, with project teams having to learn new software, train staff and take time to develop detailed, fabrication-ready models."

She has a positive vision of the industry coming together to design and detail 3D rebar services. "It's clear to me that 3D rebar will be a standardised deliverable in five years' time. In the future, project stakeholders will come together to work in one multidisciplinary model to coordinate rebar with other interested trades like mechanical, electrical and plumbing (MEP) services.

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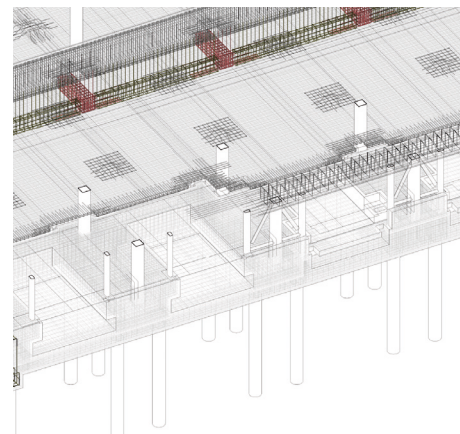


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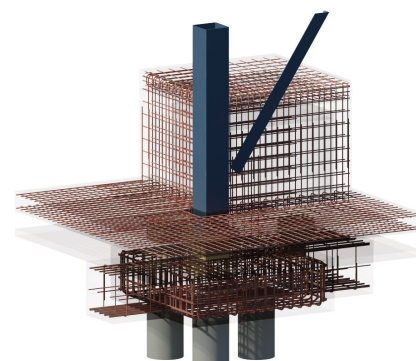


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