



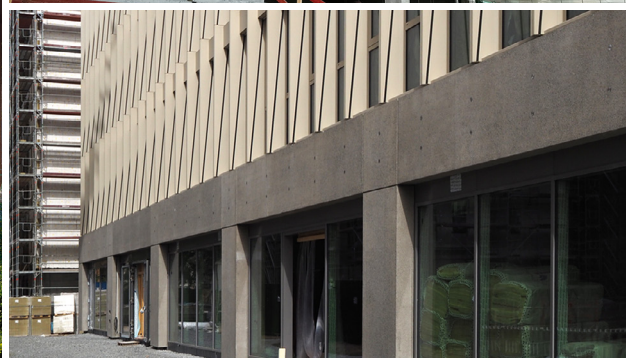
ALLPLAN in practice | Architecture

MACHEREI BERLIN-KREUZBERG: INNOVATIVE WOOD-CONCRETE HYBRID BUILDING

Macherei Berlin-Kreuzberg is setting new standards for modern neighborhood development with innovative impulses. One of a total of three pioneering sub-projects is being planned with ALLPLAN.

A new urban quarter in the heart of the capital will be built on the site of the former Postscheckamt Berlin-West by 2026 under the name Macherei Berlin-Kreuzberg. The development around the old Postbank Tower is being shared by the Berlin housing company degewo and the project developer Art-Invest Real Estate. The former is building six new residential buildings with 337 apartments (75 percent of which are subsidized), while the latter is building the „actual“ Macherei. Behind this is a vision of better living and working. Their three programmatic pillars – Happy Healthness, Work Life

Flow and Pro Climate – support a range of offices, co-working, condominiums, retail, restaurants, fitness, and urban greenery. At the heart of this modern neighbourhood are three buildings at Hallesches Ufer 40-60 that are as disparate as they are pioneering: M40 is a timber-concrete hybrid building with a New Work environment, M50 is the ecologically revitalized, 90-metre-high existing tower on the site. M60 offers a climate-neutral office building. Each of these unique sub-projects is being realized by a renowned architectural firm. In the case of M40, this is KEC Architekten from Berlin. Planungsbüro



The eight-storey office and commercial building M40 is being realized as a timber-concrete hybrid building using the innovative CREE system.

Bade (PB) from Isernhagen was entrusted with the factory planning of the prefabricated elements. This means that the ZECH Group is not only responsible for the client (Art-Invest Real Estate), but also for the planning (KEC, PB and others) and implementation (ZECH Bau) of the project.

Digital twin and circular construction

M40 is an eight-story office and commercial building with a gross floor area of 27,800 square meters. The space program, which is geared towards New Work, provides for a functional mix of space for offices, conference rooms, events, commerce, and restaurants. The upper floors are made up of up to four units that can be flexibly designed and combined. Extensive green roof areas and a lush green inner courtyard ensure a pleasant microclimate and attractive outdoor areas on site. Due to its appearance and square shape with a large inner courtyard, M40 is also known as the Holzcarré.

All three buildings of the Macherei Berlin-Kreuzberg are planned and realized as BIM projects to such an extent that a highly detailed digital twin of each exists. These BIM models, enriched with precise material information among other things, will be uploaded to the Madaster platform once the project is complete. This gives them the status of a transparent raw materials bank – the basis for a genuine circular economy in the construction industry.

PROJECT INFORMATION AT A GLANCE

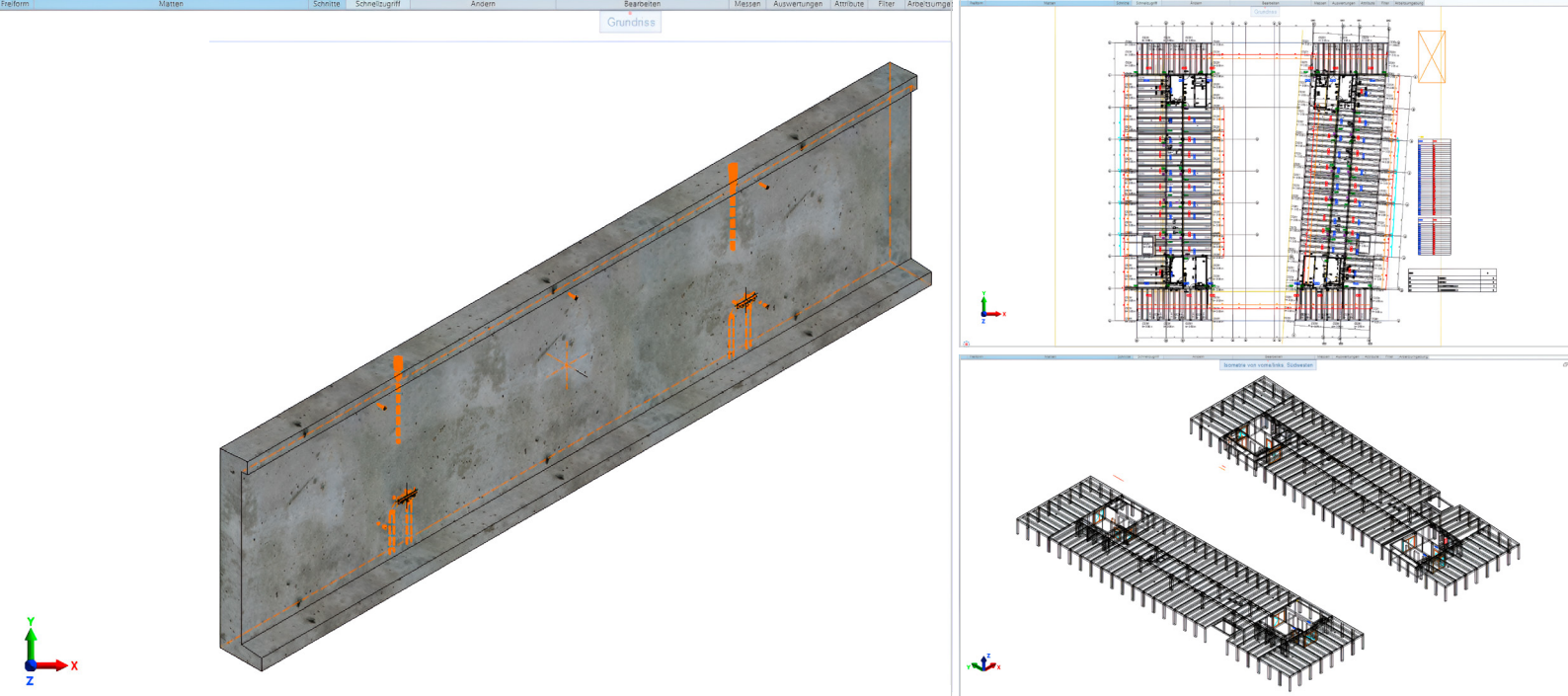
- > **Focus:** Architecture
- > **Software used:** ALLPLAN

Project data

- > **Client:** Art-Invest Real Estate Management GmbH & Co. KG
- > **Work planning:** Bade planning office
- > **Project start:** 2022
- > **Project completion:** 2024

Innovative construction made of wood-concrete composite elements

With its design, M40 is virtually predestined for circular construction. The construction follows the innovative CREE system, which is made up of a grid of prefabricated timber-concrete composite elements. These consist of timber-concrete ribbed ceiling elements, which are supported by double columns made of glulam. Larger room depths, as in the Hallesches Ufer project, require the use of central steel beams (timber-concrete composite is also possible, but leads to larger sub-dimensions). The non-load-bearing timber façade elements are suspended in front of the supporting structure using the CREE system. However, instead of the usual timber frame wall, the M40 is the first to use



The factory planning in ALLPLAN includes all prefabricated components. A total of 2,439 prefabricated parts were modeled from 329 different elements.

a suspended glass façade. The reinforced concrete first floor also has a rear-ventilated façade made of concrete panels with an exposed aggregate surface.

Factory planning for more than 2,400 precast elements with ALLPLAN

The work planning proved to be as complex as it was extensive for Planungsbüro Bade, as it included all prefabricated components: from the precast reinforced concrete elements for beams and columns to the timber-concrete composite elements (CREE ceilings and glulam columns) and the architectural concrete elements of the first floor façade. In total, the project involved the planning of 2,439 prefabricated parts made from 329 different elements. In terms of content, the construction plans for all floors had to be created, including the assembly and grouting plans. The required assembly details in the form of information on geometry and assembly parts were also included. The main task was to create the production plans for around 1,100 CREE ceilings in around 130 variants. In addition, parts, installation, and assembly lists were kept.

PB used ALLPLAN Architecture for the factory planning of the precast elements (3D modeling and creation of the construction and element plans). As the project planning had already been created by KEC Architekten in ALLPLAN, the data could be

transferred natively, which saved time when the project was created. Any changes could also be quickly recorded and easily taken into account.

Modeling and managing more than 2,400 precast elements and their approximately 330 types also proved to be quick and easy thanks to the corresponding filter functions and attribute assignment. Further advantages were provided by the visualization options in ALLPLAN. Dr. Andreas Ehland, Branch Manager at Bade Planning Office, explains: „The visualization options help to provide a quick overview. This enables rapid internal and external communication.“

The licensed CREE ceilings were modeled as free bodies. The modeling and attribution of the glulam beams (glulam beams) and concrete slabs („mirrors“) were carried out separately, so that the joinery drawings for the pre-production of the glulam elements and the quantity determination of the glulam beams and columns could be created without further work steps.

In addition to the precast elements, numerous installation parts such as screws also had to be included in the planning. This included 80,730 screws, of which 24,040 were for the bond between wood and concrete and 20,032 for notches in the wood. The total number of all fixtures amounted to



Each of the three MACHEREI buildings will have a digital twin thanks to BIM-based planning, which will take into account the principle of circular construction, among other things.

116,755, which could be defined as objects and the corresponding quantities calculated in next to no time using ALLPLAN. In order to prevent collisions between embedded parts and reinforcement, highly reinforced components (e.g. the floor slab and building core) were also precisely reinforced in ALLPLAN Engineering for collision control without any significant additional effort.

Sustainable and fast construction

Construction according to the CREE system, coupled with smooth factory planning in ALLPLAN, enables fast, sustainable construction. The ceiling and façade elements are assembled at the same time, so that the timber components are protected against rain as early as possible. By using around 2,000 cubic meters of spruce wood, M40 saves around 2,000 tons of CO₂. Thanks to the material information stored in Madaster, the building materials contained in the building can also be reused in the best possible way in the future. The lush greenery, nesting boxes, and bee hotels contribute to biodiversity and round off the sustainability concept of the new building, which is aiming for DGNB, LEED Gold, and WELL certification.



"With ALLPLAN, even thousands of pre-fabricated parts with tens of thousands of built-in parts can be modeled and attributed within a very short time thanks to intelligent filter functions."

Dr. Andreas Ehland, Branch Manager
Planning Office Bade

The customer

Founded in 1987 by Eckhard Bade, Planungsbüro Bade (PB) is an overall planning office for engineering services and architectural planning. As such, it realizes individual client wishes in both new construction and refurbishment projects for office and commercial buildings as well as in industrial and residential construction. With its strong focus on

prefabricated construction, Planungsbüro Bade is one of the leading planning offices for architectural concrete façades in Europe. It also continuously develops special solutions for the economical use of precast elements. The office has been part of the ZECH Group since 2020, where it belongs to the „Integral Planning“ division.

About ALLPLAN

ALLPLAN is a global provider of AEC software with BIM solutions for architecture, structural engineering, detailing, fabrication and construction. True to our "design to build" claim, we provide tools that enable earlier data-driven design decisions, support digital fabrication and leverage information throughout the entire construction process. Integrated cloud technology further optimizes interdisciplinary collaboration on building and infrastructure

projects. Our innovative workflows empower architects, engineers, and construction professionals to deliver their projects more productively, safely, and eco-consciously.

Around the world, over 700 dedicated employees continue to write the ALLPLAN success story. Headquartered in Munich, Germany, ALLPLAN is part of the Nemetschek Group – a pioneer for digital transformation in the construction sector.

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