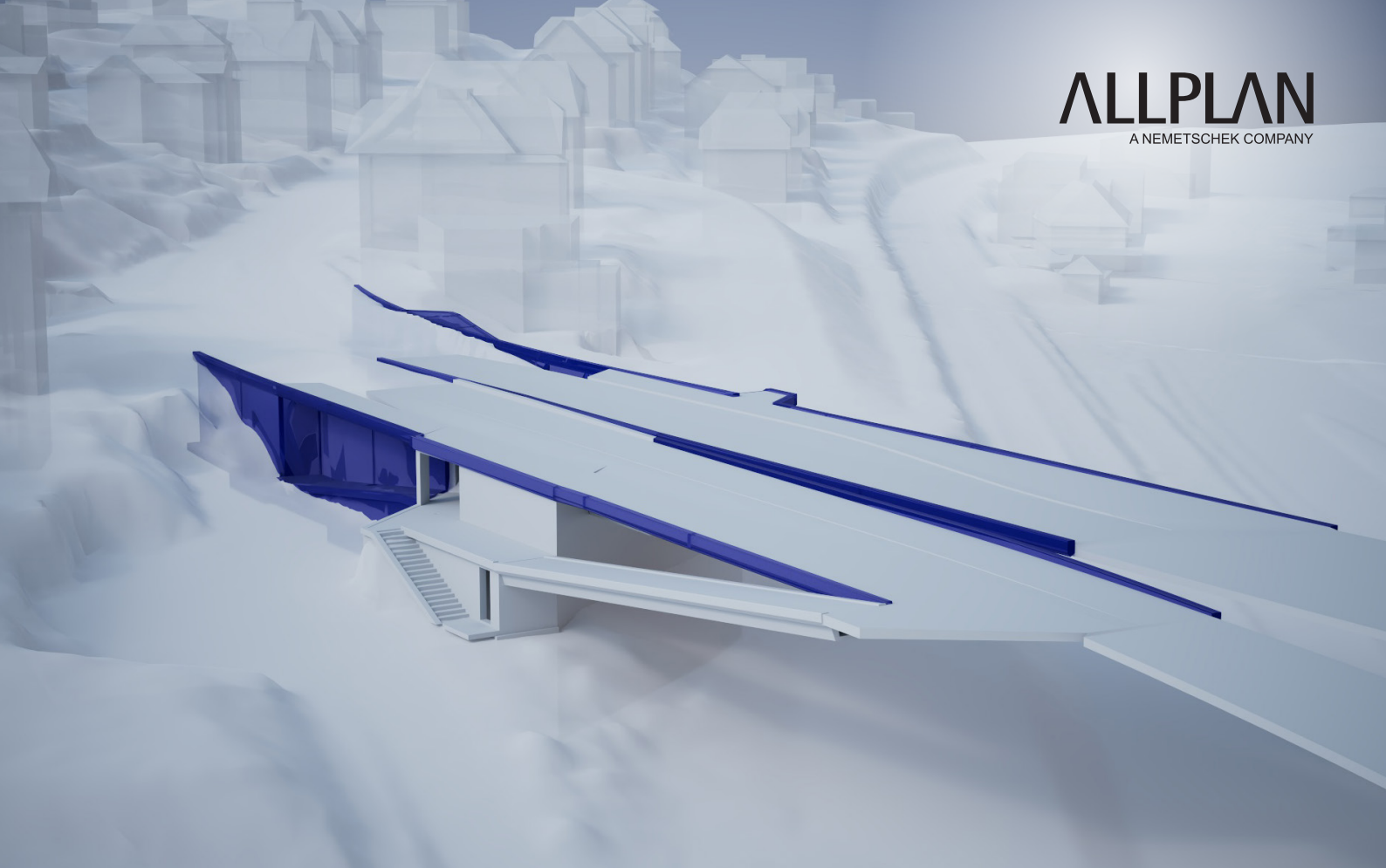




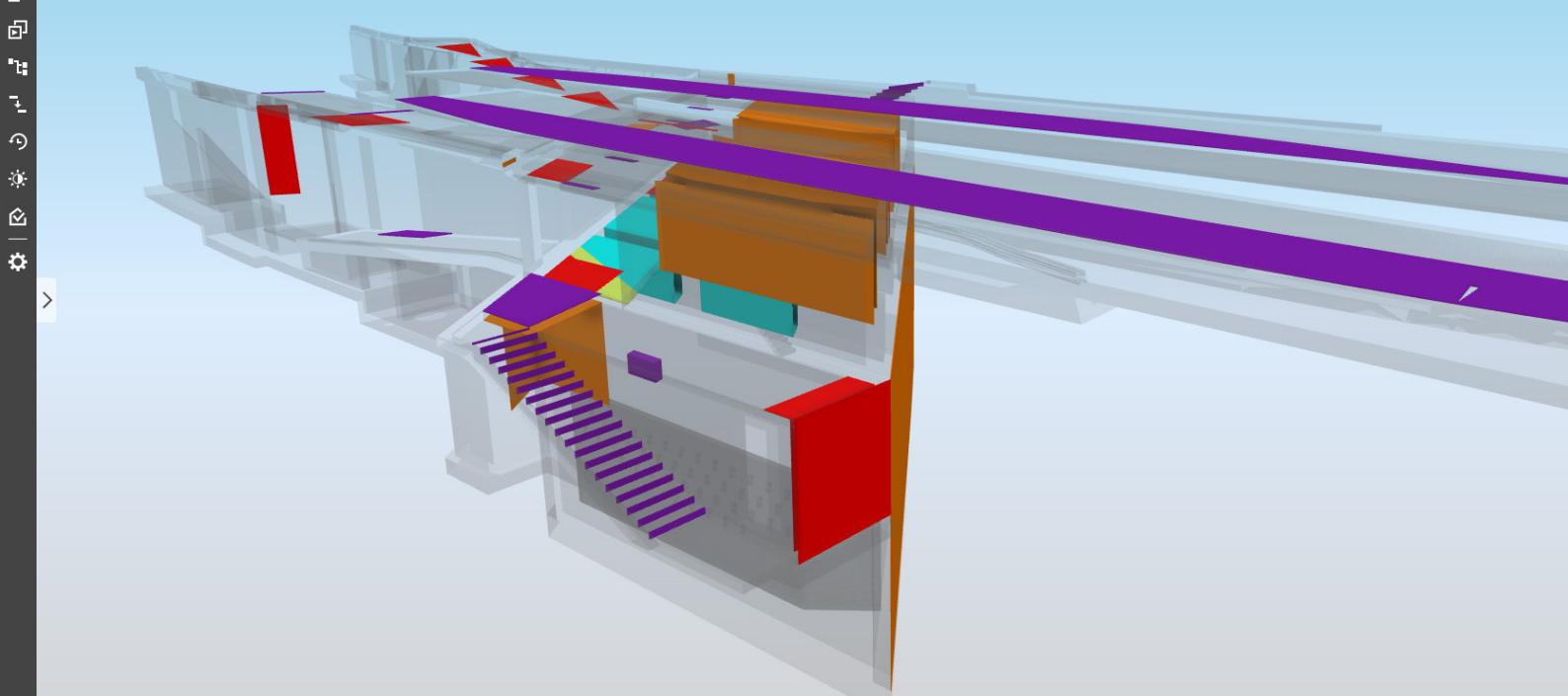
ALLPLAN in Practice | Infrastructure

BIM PILOT PROJECT DUFOURSTRASSE

The Dufourstrasse BIM pilot project, initiated by the Civil Engineering Office of the Canton of Zurich, is investigating, among other things, the potential of BIM for managing existing infrastructure.

The open, model-based platform BIMPLUS was used to support this process. The introduction of the BIM method has been a strategic goal of the Civil Engineering Office of the Canton of Zurich since the beginning of 2022 and is to be vigorously pursued. The following objectives have been defined for the BIM pilot project Dufourstrasse: documenting the condition assessment in the model, documenting static results in a software-independent form (digital/visualization), creating the basis for future maintenance planners, and defining standards and requirements for future orders. However, the model and the BIM method should also be used to gain experience in order to be able

to provide answers to the following questions: how can BIM be optimally used in building maintenance? How can all the information, damage, conditions and investigations of the supporting structure be stored in BIM? Which tools are available and which properties are necessary for successful implementation? How compatible are these with today's bridge management systems? The engineering firm Equi Bridges AG was commissioned to implement this pilot project. This firm consists of bridge engineers specializing in engineering structures with close ties to research and development. Before the pilot project Dufourstrasse in Zurich, Equi Bridges employees implemented the BIM pilot project for



3D damage model including inventory, using the BIMPLUS CDE platform

the restoration of the Maillart Bridge in Aarburg on behalf of the Civil Engineering Office of the Canton of Aargau and gained experience in modeling restorations and in digital execution (BIM2FIELD). With the software from ALLPLAN, they develop the models, and the data and information management of the project partners is carried out via BIMPLUS.

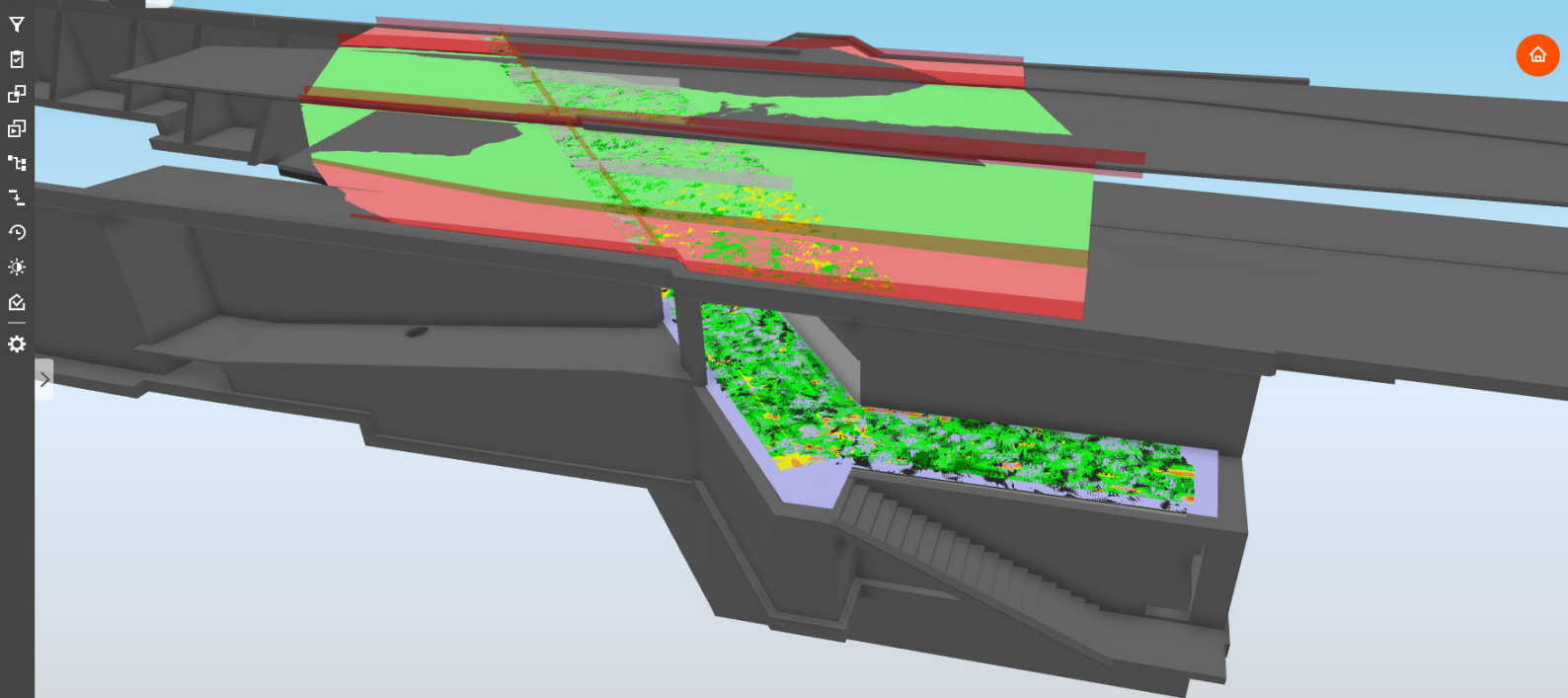
The Structure

The Dufourstrasse overpass was opened in September 1971 and is one of the main access routes into the city of Zurich. Located near Tiefenbrunnen station, the bridges cross several roads and the SBB railway tracks. Due to various damages, the structure was renovated in 2001/2002 over a one-year construction period. The abutment on the Zollikon side is still largely in its original state. This component, together with the integrated pedestrian underpass, is being examined in this pilot project. Complicated ownership structures, challenging geometric shapes of ramps, and the multi-level building structure make the initial situation demanding.

Various specialized models with different contents

Various models were created for the processing. They present the results of the inspection. The basis for developing the model was the existing

formwork and reinforcement plans, as well as the official measurement. All the information obtained is clearly visible in the status assessment model: the results of the potential field measurement, including earlier measurements, the location of the drill cores, and further investigations (carbonation depths and chloride contents). Furthermore, the data collected using the georadar for the thickness of the surface in the underpass, the depth of reinforcement cover and potential damp spots were recorded in the model. The results were assigned to these objects as attributes and linked to images and additional information to describe the damage. The damage plan with the additional attributes is visible in the damage model. The structural engineering model shows the most critical static points identified, which should be given special attention during inspections. It also shows the static systems used and refers to the summary of the inspection results. When viewing the model in BIMPLUS, even without extensive BIM knowledge, you can quickly gain insight into the project and its details thanks to the intuitive navigation. It is also possible to set filters to narrow down the views. The desired views can also be saved as "slides" for other users. Based on the experiences with the pilot project, it was possible to determine which attributes are relevant for the maintenance management of existing structures in BIM. These do not necessarily have to be the same as for new structures.



3D model with visualization of the condition assessment, using the BIMPLUS CDE platform

Conclusion

Marcel Imbach, project manager at Equi Bridges, has been involved in the pilot project and draws the following conclusion: "The BIM model is becoming a valuable source of information for inspections and project reviews. It increases efficiency in the processing of maintenance projects because all the information is mapped in the BIM model. The model is also the starting point for the workflow between the engineer and the contractor. In the near future, augmented reality and the further development of scanner solutions will offer us even more possibilities for creating BIM models more efficiently."

Further information about ALLPLAN and BIMPLUS is available at [allplan.com](https://www.allplan.com).

PROJECT INFORMATION AT A GLANCE

- > **Client:** Civil Engineering Office of the Canton of Zurich
 - > **Planning team:** Equi Bridges AG in collaboration with WaltGalmerini AG
 - > **Processing:** 2023–2024
 - > **Engineering services:** Review of the pedestrian underpass as a BIM pilot project
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Marcel Imbach, Bauing. MSc ETH/SIA, Equi Bridges AG, Zurich; © Photo: Equi Bridges AG

The customer

Equi Bridges AG – Building bridges with passion.

Equi Bridges is a bridge engineering firm specializing in artful construction with close ties to research and development. The employees are experts in their field and have many years of experience in domestic bridge construction as well as in international large-scale bridge construction. Equi Bridges offers a full range of bridge construction services: concept studies, project planning, condition assessments, expert reports, inspection mandates, client support.

Bridge owners – federal, cantonal, municipal, or private infrastructure managers – have specific needs and their own internal and project management procedures. Equi Bridges develops customized solutions for each client type in every phase of the entire process. Owner decisions contribute significantly to project success. Equi Bridges also supports owners in carrying out their activities, such as preparing decision-making frameworks, to improve and accelerate project delivery.

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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