

Curved noise barrier increases livability of residents.

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Allplan in practice

THE GREAT ARCH – INNOVATIVE NOISE PROTECTION MADE FROM PRECAST ELEMENTS

ADVANTAGES OF 3D MODELING FULLY EXPLOITED

Along the Austrian section of the Tauern Highway, a unique project was created to protect local residents from ever-increasing traffic noise. Instead of an enclosure, the decision was made to use the Great Arch, a curved noise barrier developed by Leube Betonteile GmbH & Co KG.

considerable maintenance costs are incurred, the precast arches are completely maintenance-free. Another plus point is the resident-friendly rear side, which can be backfilled with soil and replanted. All materials used are ecological and recyclable.

FREEDOM IN 3D MODELING

As a particularly innovative solution, this curved noise barrier made of precast concrete elements was created that spans the highway like a large arch. Compared to a traditional enclosure, the erection costs can be reduced by around 80%. The precast walls also offer massive advantages in terms of running costs: unlike enclosures, where

Leube faced numerous challenges when designing the curved noise barrier. On the one hand, it was important for the design team to have the greatest possible freedom in 3D modeling for the demanding arch shape. On the other hand, it was important to ensure maximum precision in the design and provision of the production data, including reinforcement.



Image left and bottom right: Construction on the Tauern highway in Eben (Austria).

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Image top right: Detail view of the Great Arch.

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UNIQUE ELEMENTPLAN-TECHNOLOGY

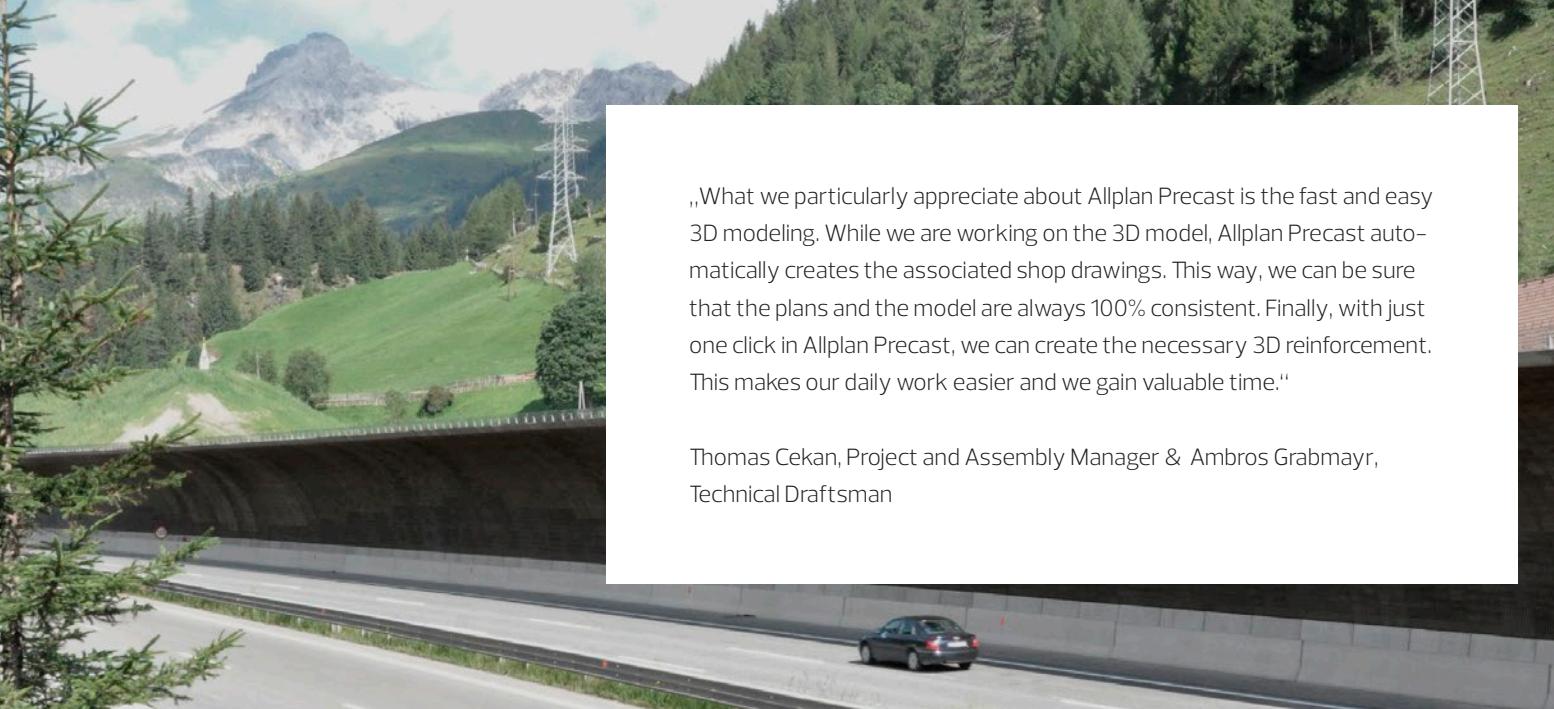
In the design phase, the arch shape, the dimensions of the individual components and in particular the structural requirements placed the highest demands on Leube's precast team. For the design and planning of the Great Arch, the company entirely relied on Allplan Precast for highly automated design and production of slabs and walls.

Allplan Precast enabled precise modeling and design of the precast concrete elements and supported the creation of the assembly and production plans with well thought-out assistants. In project meetings, the 3D model proved very helpful in explaining details in a clear and understandable way for all participants. In addition, layout plans were imported as .dwg files into Allplan Precast and further processed with the software.

Since part of the construction was undertaken in winter, the assembly of the precast elements at over 1,100m above sea level was also extremely challenging. However, with the help of prefabrication, all components could be assembled on time and in the highest quality.

PROJECT INFORMATION AT A GLANCE

- Focus: Precast construction
- Precast design software: Allplan Precast
- Precast design: Leube Betonteile GmbH & Co KG
- 998 curved elements, each 2.00m long, on 4 wall sections
- Approx. 9,000 m² noise barrier on both sides (approx. 1,900lm)
- Approx. 10,000 m² single-sided noise barrier (approx. 2,700lm)
- Production period: October 2018 – October 2019
- Erection time: November 2018 – November 2019



„What we particularly appreciate about Allplan Precast is the fast and easy 3D modeling. While we are working on the 3D model, Allplan Precast automatically creates the associated shop drawings. This way, we can be sure that the plans and the model are always 100% consistent. Finally, with just one click in Allplan Precast, we can create the necessary 3D reinforcement. This makes our daily work easier and we gain valuable time.“

Thomas Cekan, Project and Assembly Manager & Ambros Grabmayer,
Technical Draftsman

LEUBE BETONTEILE GMBH & CO KG

Leube Betonteile specializes in the production of solution-oriented, environmentally friendly and yet economical concrete products. Inspired by customer requirements, the company continues to develop its concrete material into innovative solutions.

With a total of over 200 employees, Leube produces concrete products for railroad and road construction, noise protection, precast elements and retaining walls at its sites in Maishofen (Austria), Berlin (Germany), Gaggenau (Germany) and Jihlava (Czech Republic). Leube group took over 100% of the infrastructure business in 2020.

ABOUT THE COMPANY

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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