



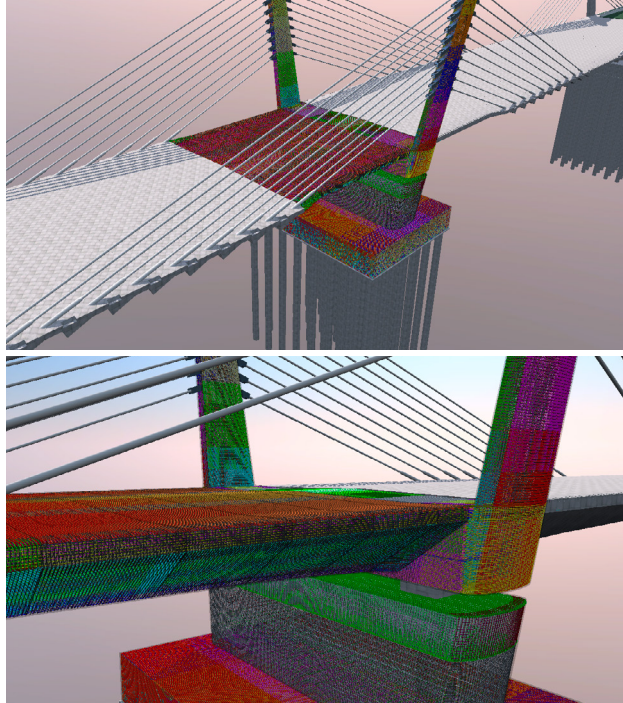
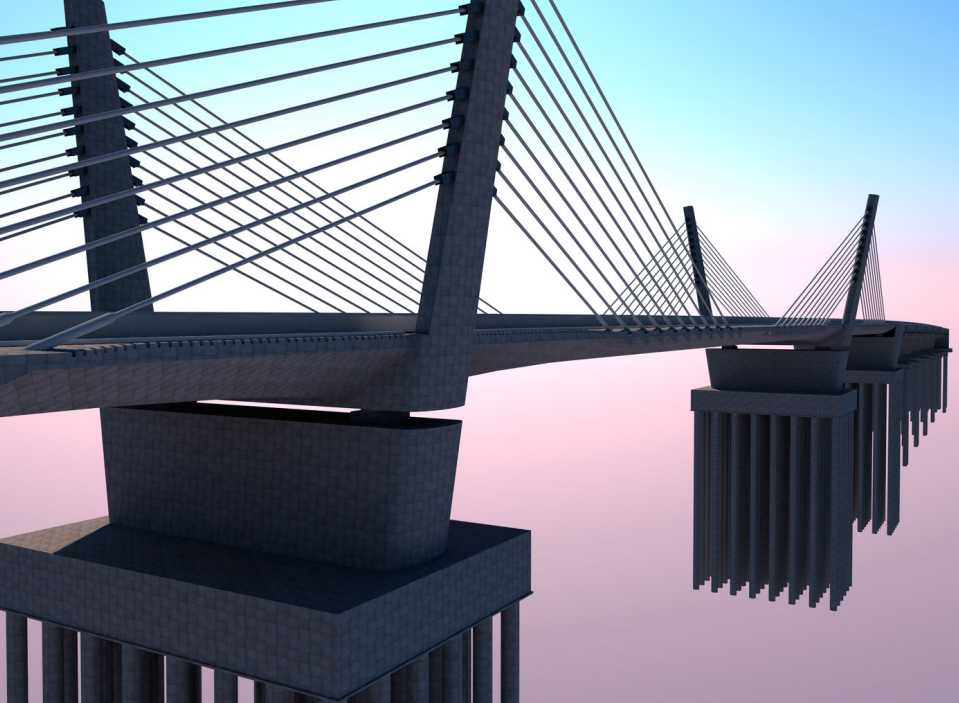
ALLPLAN in Practice | Infrastructure

TRANSCEND BOUNDARIES: THE EVROS BRIDGE BETWEEN GREECE AND TURKEY

When MAVRAKIS CONSULTING ENGINEERS were awarded the complex design of the Greece-Turkey "Friendship Bridge" in Evros, they turned to their longtime partner, ALLPLAN.

In a region where history and geography intertwine, a new symbol of cooperation is taking shape. The Greek Ministry of Infrastructure and Transport, partnering with Turkey, has embarked on a transformative endeavor: the construction of the "Friendship Bridge" in Evros. This monumental project, nestled within the Egnatia – Thessaloniki – Kipi motorway in Greece, will seamlessly connect to the Ipsala – Istanbul section in Turkey. Once completed, it will forge a physical and metaphorical link between the two nations, acting as a symbol of unity and progress.

This ambitious undertaking has been entrusted to a joint venture of MAVRAKIS CONSULTING ENGINEERS and Egis, who are responsible for both the preliminary and final design of the whole structure including the structural, geotechnical, and hydraulic design, as well as the temporary works. The 400-meter extra-dosed bridge, stretching across the Evros River, embodies not only enhanced road safety and streamlined trade but also the burgeoning partnership between Greece and Turkey.



3D model and 3D model with reinforcement

Given the intricate design of the bridge and the geopolitical significance of this cross-border collaboration, MAVRAKIS CONSULTING ENGINEERS decided to use ALLPLAN software. These cutting-edge tools have proven indispensable in navigating the complexities of the bridge's unique architecture, from managing intricate geometries to integrating critical structural elements.

Managing Complex Geometries

The Evros Bridge's pylons feature elliptical cross-sections with variable dimensions, which posed a significant challenge in achieving both structural integrity and aesthetic appeal. The design required a high level of precision to ensure that the pylons could support the bridge's significant load while maintaining the desired geometric complexity.

ALLPLAN Civil provided the necessary tools to define the main geometry of the bridge efficiently. The software's robust parametric modeling capabilities allowed the design team to create and adjust multiple cross-sections with varying parameters easily. For the special geometry of the pylons, MAVRAKIS CONSULTING ENGINEERS utilized ALLPLAN, which offered the flexibility to design the elliptical cross-sections accurately. The integration of these tools ensured that the pylons were both structurally sound and visually striking, aligning with the overall design vision.

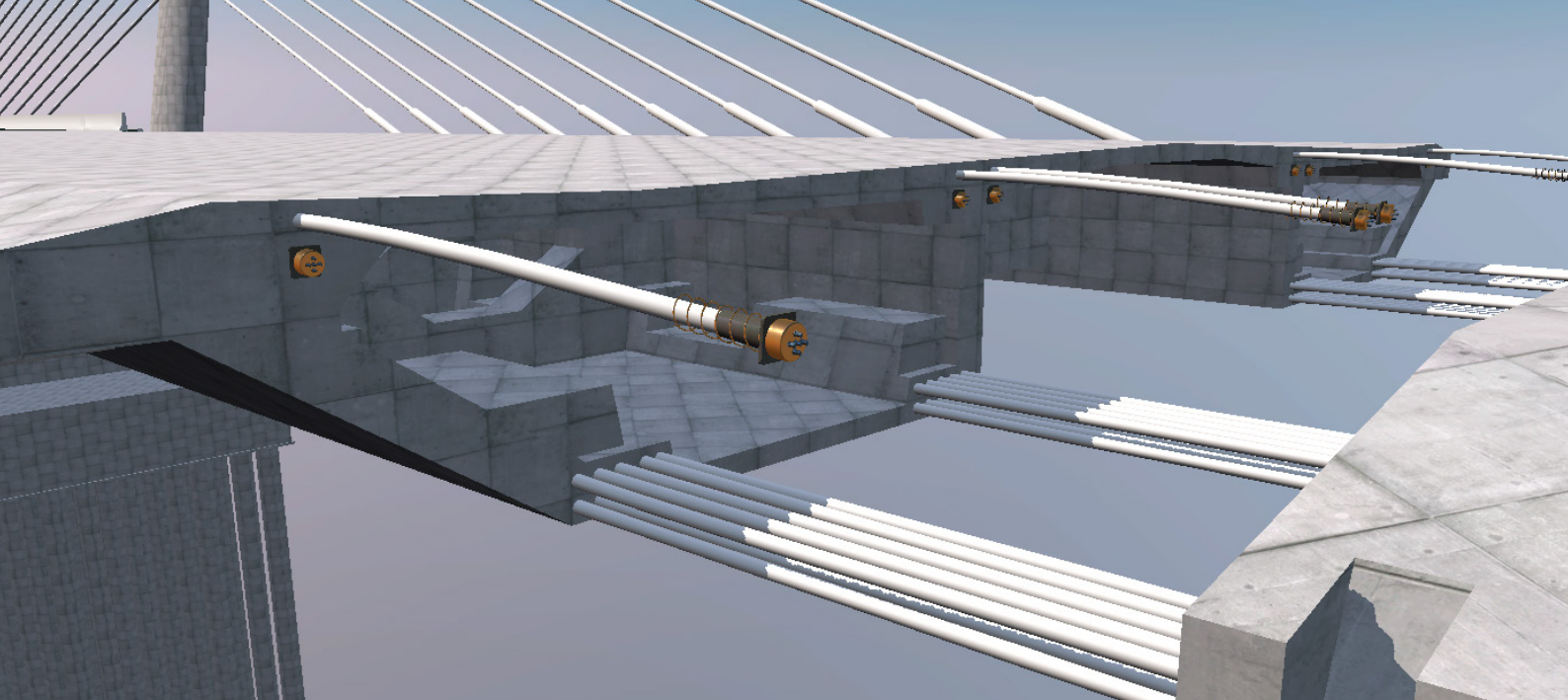
PROJECT INFORMATION AT A GLANCE

- > **Focus:** Civil engineering / Infrastructure
- > **Software used:** ALLPLAN Civil, ALLPLAN
- > **Client:** EGNATIA ODOS S.A.
- > **Implementation planning:** MAVRAKIS CONSULTING ENGINEERS, Egis
- > **Service phases:** Preliminary Design, Final Design, Construction Documentation
- > **Start of construction:** 2025
- > **Planned completion:** 2027

Streamlining Reinforcement Design

The reinforcement of the bridge's concrete box and the tendons required precise design and coordination due to the bridge's length and the complexity of its structural components. Ensuring that the tendons were properly aligned and that the reinforcement elements could withstand the loads was crucial.

ALLPLAN Civil facilitated the detailed design of the reinforcement by providing advanced features for tendon layout and reinforcement placement. The software's ability to handle multiple cross-sections and variables allowed the team to effectively design the tendons and their anchorage effectively. Using the template function, MAVRAKIS CONSULTING ENGINEERS was able to quickly and easily create the precast girders for the access bridges.



3D model with tendons and cables

Additionally, PythonParts were used to import the seismic isolators. To generate accurate reinforcement drawings, the team chose to use ALLPLAN. This process saved significant time and ensured that the reinforcement was both robust and efficiently executed.

Handling Structural Integration with Ease

Integrating the various structural elements, such as stay cables, piers, and abutments, while maintaining overall structural coherence was a significant challenge. The design required careful management of these components to avoid collisions and ensure that the bridge could handle the anticipated loads.

The use of ALLPLAN Civil's variation tables was crucial in managing the integration of the stay cables and other structural elements. The software allowed the team to easily adjust the height of the piers and check for potential collisions between tendons and other components. Smart symbols in ALLPLAN were used for the placement of objects such as tendon couplers and saddles, which were used for the stay cable connections to the pylons. BIMPLUS played a vital role in enabling seamless communication between the different teams involved in the project, ensuring that all structural elements were aligned and properly integrated. This approach minimized errors and streamlined the overall design process.

Optimizing Collaboration and Workflow

Coordinating the efforts of multiple teams across different countries was a logistical challenge. The project required smooth communication and collaboration to ensure that the design phase proceeded without delays or misunderstandings.

BIMPLUS was instrumental in optimizing collaboration across the various teams working on the Evros Bridge. The platform enabled real-time sharing of data and models, allowing team members to access the latest project information and make informed decisions quickly. This seamless integration between ALLPLAN Civil, ALLPLAN, and BIMPLUS facilitated better understanding of the structure and enhanced cooperation between the engineers, resulting in a more efficient workflow and a higher-quality final product.



„Allplan Bridge provided us with the advanced tools needed to tackle the complex challenges of the Evros Greece–Turkey Bridge. The software's precision and flexibility allowed us to design with confidence, ensuring the project's success.“

Georgios Mavrakis, Deputy Managing Director,
MAVRAKIS CONSULTING ENGINEERS

The customer

MAVRAKIS CONSULTING ENGINEERS, established in 1999, is a leading civil engineering firm based in Greece. The company specializes in the design and execution of major infrastructure projects, including bridges, transportation networks, and large-scale civil engineering works. Known for their technical

excellence, innovation, and commitment to quality, MAVRAKIS CONSULTING ENGINEERS has built a reputation as one of Greece's most reputable engineering firms, serving both public and private sector clients domestically and internationally.

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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